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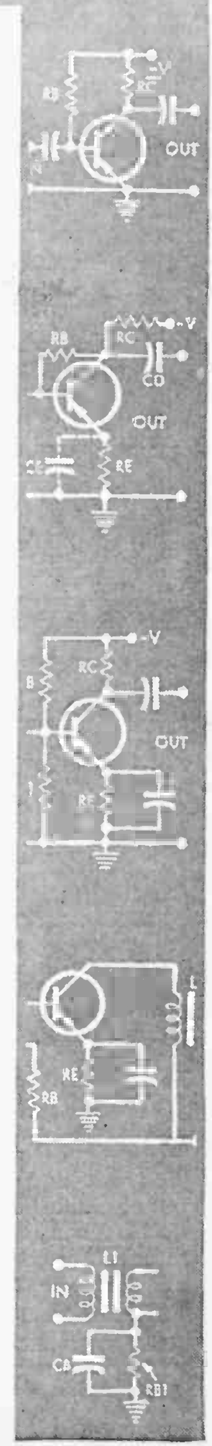
Spring '62 No. 595



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RADIO-TV EXPERIMENTER No. 595 presents a number of the most popular electronics articles that have appeared in SCIENCE and MECHANICS magazine, plus many new projects covering AM-FM radio, television, and dollar-saving test equipment of interest to all experimenters, amateurs, and DX fans. A newly revised White's Radio Log is also included.

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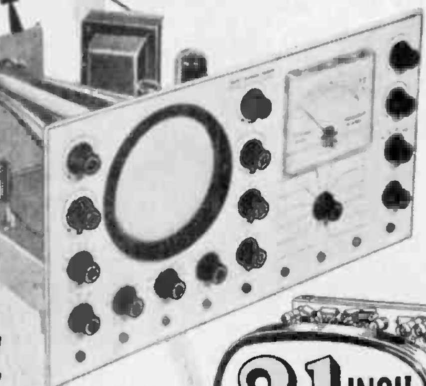

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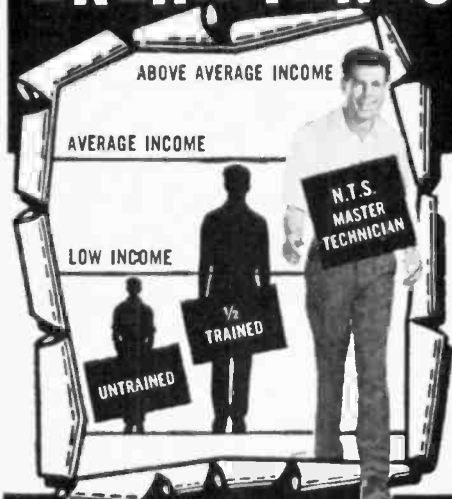

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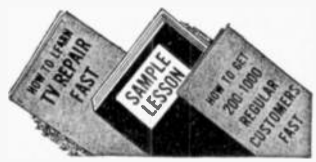

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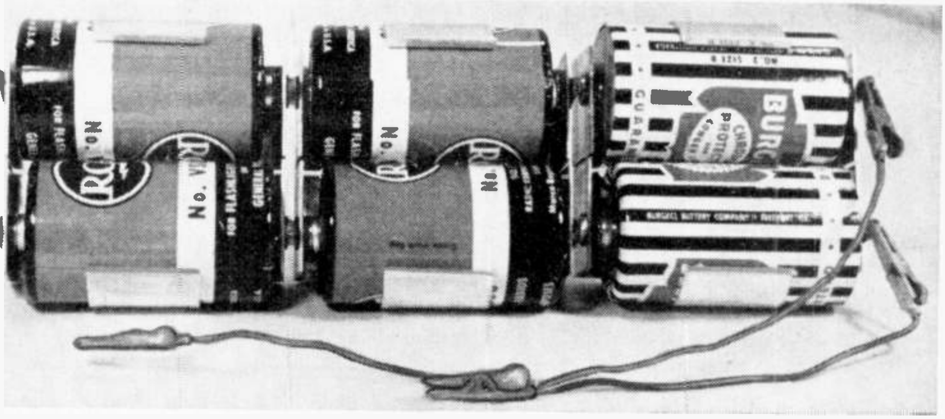

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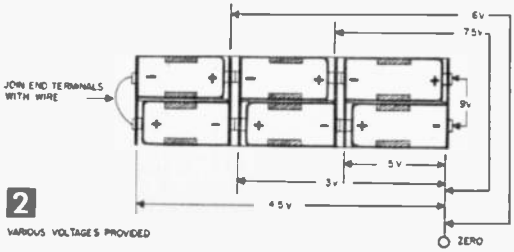
Join holder terminals on one end with a piece of wire, then insert batteries plus to minus as in Fig. 2. Install clips such as Mueller *Mini-Gators* on wire leads soldered to terminals at other end.

Clip one lead on the zero terminal and the other on the terminal which furnishes the voltage required by the equipment being tested (Fig. 2). If you use the lower voltages frequently, interchange batteries or clip connections for longer overall battery life.

Determining Current Drain. To learn how much current your equipment is using, connect a milliammeter in series with the battery and piece of equipment as in Fig. 3. This arrangement is valuable in troubleshooting newly constructed equipment. A one-transistor earphone radio usually requires less than 1 milliamp. You can usually figure on less than 1 milliamp per transistor for all transistor stages except the output which drives a loudspeaker.

Current for a Class A output stage may be as little as 2 milliamps, but it is more likely to be between 5 and 15 milliamps. For a Class B audio output stage (two transistors in push-pull), it may hit between 50 and 100 milliamps on signal peaks. These figures are approximate and represent a relative guide for small transistors such as the CK722, 2N107, and 2N188A. Power transistors such as the 2N255 and 2N307 require much higher currents.



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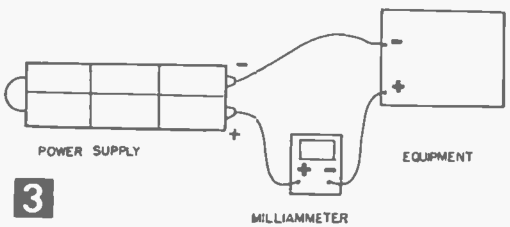
VARIOUS VOLTAGES PROVIDED



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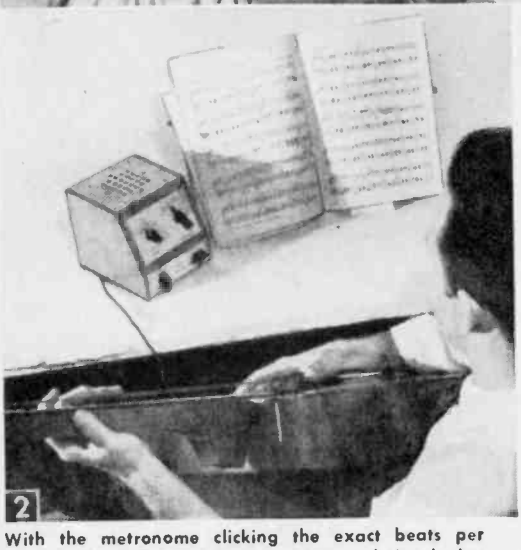
EQUIPMENT POWER (WATTS) = VOLTS X MILLIAMPERES X 0.001

A metronome teaches the music student a sense of timing and pace from the very start. Volume is ample for small group practice or can be cut down so you just barely hear the clicks.



With the metronome clicking the exact beats per second, the advanced musician knows he's playing at the tempo indicated on the music sheet by the composer.

TIMER Sets the BEAT

You don't have to watch a clock or push buttons with this $16 electronic metronome-timer

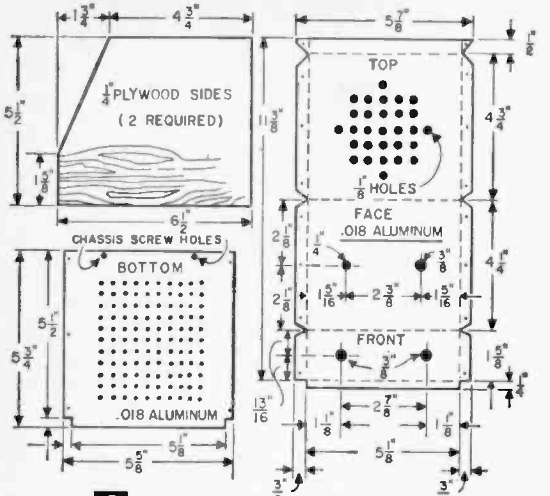
By JOSEPH R. NOONAN

Use it to pace....

music practice • rhythm calisthenics • dance practice gymnastics • high-speed typing

and to time....

photo printing • chem lab tests • tape recordings



3 CABINET DETAILS FOR TIMER

4

On the seconds range, you get a click every 1, 5, 10, 30, or 60 seconds. Each range has its own control pot on the back of the chassis for calibration.

UNLIKE most clock-type timers that ring only once, the loudspeaker in this unit gives you a continuous audible check on elapsing time. Just set the range switch on 5, 10, 30, or 60 seconds, and your hands and eyes are free to concentrate on the work.

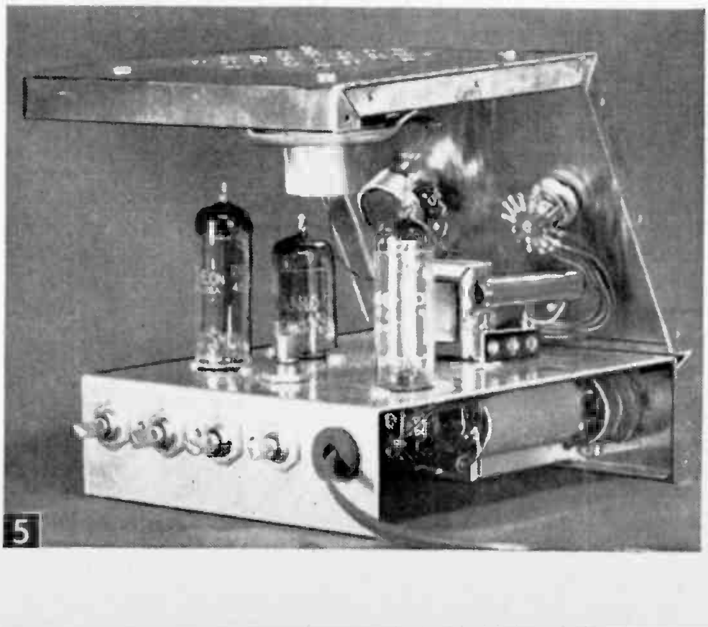
The timer uses many standard parts that can be salvaged from old ac-dc radios. Your first step is to mount the tube sockets and pots on the chassis; P1 goes on the top side at the rear of the chassis while P2, 3, 4, and 5 mount along the rear face. This circuit is the ac-dc type, and the chassis is not used as a ground. Therefore use two lug mounting strips at every spot where you need a tie point or support for the parts.

Filament resistor R1 dissipates considerable heat, so mount it on a 2-lug strip above chassis, with one of the output transformer mounting bolts. Run all the wires passing from above the chassis to the underside through one grommeted hole in front of the output transformer. Mount volume control switch P7-S1 and range selector switch S3 on the chassis front. Later when wiring is finished, a second mounting nut on these parts joins the chassis to the front plate of the cabinet, while the rear of the chassis fastens to the bottom plate with two sheet metal screws. Bolt capacitor C4 by its feet to the inside front face of the chassis at the bottom.

Mount the selector switch S2, and the metronome pot P6 on the cabinet face. Bolt the speaker to the top of the cabinet and wire according to Figs. 5, 6 and 7. There are no special wiring cautions.

Operation of the Circuit depends on the action of tube VI (12AU7) as a multivibrator type oscillator. It generates a pulse heard as a "tick" from the speaker. Timing of the pulse is controlled by the values of the resistors and capacitors in the VI tube circuit. To vary this oscillation, you change the resistance values of the pots through which voltage is fed to the fixed-value capacitors.

Generated pulses are then fed to tube V2 (50C5) through capacitor C2 and volume control P7, and are amplified to speaker volume. Tube V3 (35W4) operates as a half wave rectifier to supply B plus for tubes V1 and V2.



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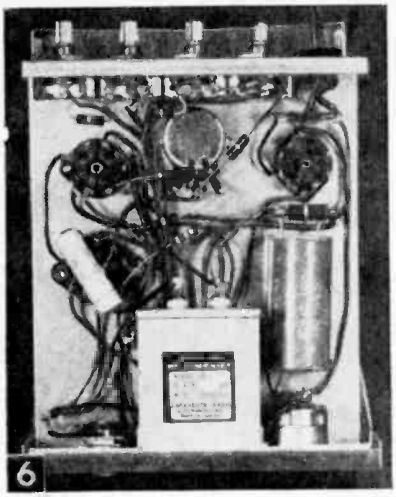
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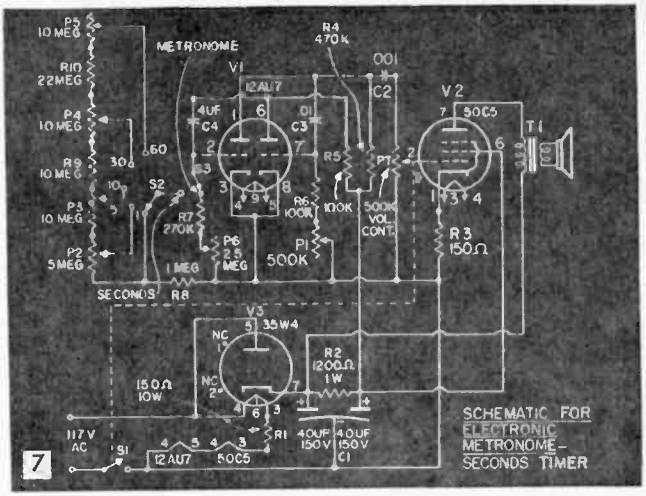

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Calibration is Next, after a wiring check. Turn S3 to "seconds" and S2 to the one-second position. Turn the unit *on* with volume about half way up. You should hear ticks from the speaker in about 30 seconds. Allow a ten minute warm up period, and then use an electric clock second hand to adjust pot P1 until the click frequency is exactly one per second. Pot P1 is left in this position throughout the rest of the calibration.

Next turn S2 to the 5 second range and adjust P2 for a 5 second click interval. Repeat with P3 for 10 seconds, P4 for 30 seconds and P5 for 60 seconds. Probably the timer won't split seconds on the 60 second range. A 5% accuracy on the one second range means an error of plus or minus only 1/20 of a second, while on the one minute range would account for an error of plus or minus 3 seconds per minute.

Calibrating the Metronome. With P1 as previously adjusted so the speaker clicks exactly every second on the one second range, turn S3 to *Metronome* position. Adjust P6 until the timer ticks eighty per minute when the pointer points straight up. Then calibrate the dial on either side of center to cover a range of 40 to 208 clicks per minute. Pot P6 will cover down to 25 per minute and can be so calibrated if desired. If no use of this extended range will ever be made, a 1.5 megohm can be used instead of the 2.5 megohm value to eliminate the low end and provide a wider spacing of the calibration marks.

MATERIALS LIST—ELECTRONIC PULSE GENERATOR

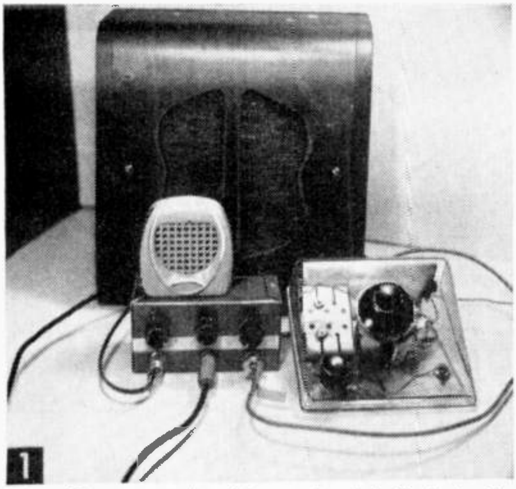
No. Req.	Size and Description
	RESISTORS
1	R1—150 ohm, 10-watt wire wound
1	R2—1200 ohm, 1 watt
1	R3—150 ohm, 1/2 watt
1	R4—470K, 1/2 watt
2	R5, R6—100K, 1/2 watt
1	R7—270K, 1/2 watt
1	R8—1 meg, 1/2 watt
1	R9—10 meg, 1/2 watt
1	R10—22 meg, 1/2 watt
	POTENTIOMETERS
1	P1—500K ohm IRC Q11—133
1	P2—5 megohm IRC Q11—141
3	P3, P4, P5—10 megohm IRC Q11—143
1	P6—2.5 megohm IRC Q11—239 (or 1.5 megohm IRC Q11—138—See Text)
1	P7—500K ohm volume control with switch S1
	CAPACITORS
1	C1—40-40 mfd. 150 v. electrolytic (Lafayette C-126)
1	C2—.001 mfd. 600 v. molded by-pass (Lafayette C-500)
1	C3—.01 mfd. 600 v. molded by-pass (Lafayette C-503)
1	C4—4 mfd. 150 v. oil filled paper (Lafayette CF-115)
	CHASSIS ITEMS
2	7 pin miniature tube socket (Cinch-Jones type 7W2A)
1	9 pin miniature tube socket (Cinch-Jones type 9W1)
1	V1—12AU7 tube
1	V2—50C5 tube
1	V3—35W4 tube
1	T1—output transformer 2500 ohm to 3.2 ohm speaker (Lafayette TR-10)
1	S2—5 position rotary switch (Lafayette SW-78)
1	S3—2 position rotary switch (non-shorting type)
1	4" PM speaker 3.2 ohm (Allied 81P616)
1	line cord and plug
1	5¾ x 4⅞ x 1½" chassis (Lafayette MC-174)
Misc.	pointer knobs, mounting strips, hook-up wire, etc.

TROUBLE SHOOTING GUIDE

Symptom	Remedy
No click at any setting	Check rectifier, C1. If R2 overheats, look for short in C1. Check for shorted or open capacitors, C3 and C4.
Clicks but P1 will not calibrate at 1 second	Too low a timing interval indicates R6 or R8 too high in resistance value, or that C3 or C4 are too large or are leaky. Too high an interval indicates C3 or C4 or R6 or R8 too small in value.
Clicks but does not maintain calibration	Leaky capacitors C3 or C4. Change in resistance values from overheating may be due to restricted chassis ventilation or misplacement of parts.
Clicks but at erratic interval	Defective V1 tube. Poor contacts in S2 or S3. Defective P1. Occasional fluctuations may be caused by power line variations.

Midget Public Address System Amplifier

An excellent project for the beginning or advanced experimenter which can be built for less than $10 in a few hours' time



Amplifier connected to 6-in. speaker in baffle (output) and transistorized tuner (input).

By FORREST H. FRANTZ Sr.

BY USING a ready-made, printed circuit, 3-transistor amplifier, (Lafayette PK 522, complete with transistors, $3.75), the experimenter can avoid the headaches of wiring 12 or 13 resistors, 6 or 7 capacitors, 3 transistors, and an output transformer into an amplifier circuit. This saves not only time, but money.

The midget PA (public address) system in Fig. 1 won't bang off your ears with its maximum power output of 100 milliwatts, but the output signal will drive a single 8-ohm speaker, 3-4-ohm speaker, or two 3-4-ohm speakers connected in series. The power supply is a self-contained 9-volt battery.

It has two input channels (Fig. 2), and can use either a mike and record player, two mikes, a mike and radio tuner, or a tuner and record player. You may even want to fade music and make announcements with a musical background.

The PA system amplifier will accept any high or medium impedance input device such as a crystal microphone, a crystal phono pickup, a crystal guitar pickup, a vacuum tube tuner, a crystal diode tuner, or a transistorized tuner. The input device must be terminated in a phono plug (Lafayette MS-471) to connect to the amplifier.

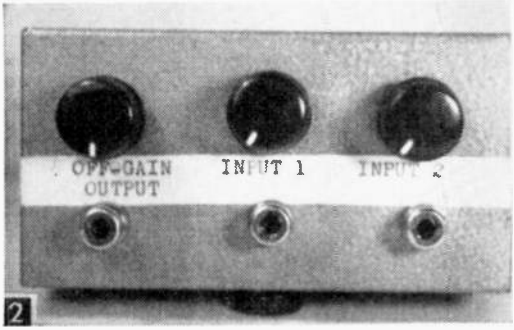
The mike in Figs. 1 and 3 happens to be one that goes with my tape recorder. Any crystal mike listed in the Allied or Lafayette catalogs will work sufficiently, but a high output crystal mike such as Lafayette PA-76 rated as −44 *db* will permit you to realize more volume than a mike rated at −52 *db*.

Drill the Front of the Case as in Fig. 4. Remove the screws packed inside the miniature case beforehand, and snap the case together during drilling. This provides rigid support and minimizes the chances of bending the case out of shape. Clean off burrs and remove chips from the case when drilling has been completed.

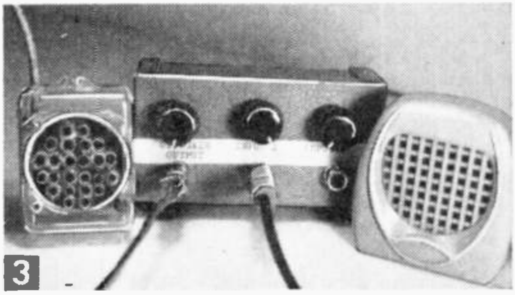
Cut shafts of the volume controls (R6-S, R1, and R3) to a length of ⅜ in. Place the end of the shaft that will be discarded in a vise and cut with a hacksaw. Catch the control as it falls free. This procedure minimizes the chance of damaging the controls.

Mount the volume controls and jacks (J1, J2, and J3) as in Figs. 2 and 5. Connect the grounding wire, the jack connections, resistors R2, R4, and R5, and the 3 amplifier board holding wires as shown in Fig. 5. Use insulating spaghetti on R2 and R4.

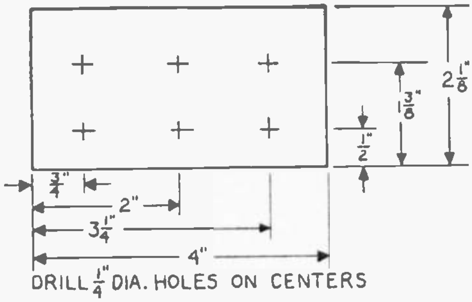
The schematic, Fig. 6, will prove helpful in this and succeeding steps. Use rosin core solder for making connections. The 3 ampli-



Closeup view showing input and output jacks.



Amplifier connected to 1½-in speaker (left) and mike (right).



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fier board holding wires will be soldered to the ground strip on the bottom of the board to hold it in place.

Installing the Subminiature Amplifier. Figures 7A and 7B show top and bottom views of the printed circuit audio amplifier. Unsolder and remove the yellow speaker lead, the green and the blue input leads, and the green volume control lead. Don't overheat the board in doing this and be careful not to unsolder other connections.

Place the front of the case and the amplifier in positions relative to each other as in Fig. 8A. Solder the volume control leads (orange to unused outside terminal on R6, red to middle terminal), the orange and red switch leads to switch S, and the black output lead to the center terminal of the output jack (J3).

Now slip the amplifier into place with the ground strip edge of the board resting on the shoulders of J1, J2, and J3 as shown in Figs. 8B and 9. The bottom side of the board rests against the center connection terminals of J1, J2, and J3. The output transformer case may rest on the insulated part of switch S. Connect the battery (be sure switch S is off) and slip the battery into place (Fig. 9).

Push the amplifier board against the battery and solder the holding wires which were soldered on the ground terminals of J1, J2, and J3 to the copper ground strip that runs along the bottom edge of the amplifier board. Solder the junction of R2, R4, and R5 to the "High" input connection (on the left end of the board just above red battery lead connection). The blue lead was removed from this point during a previous step.

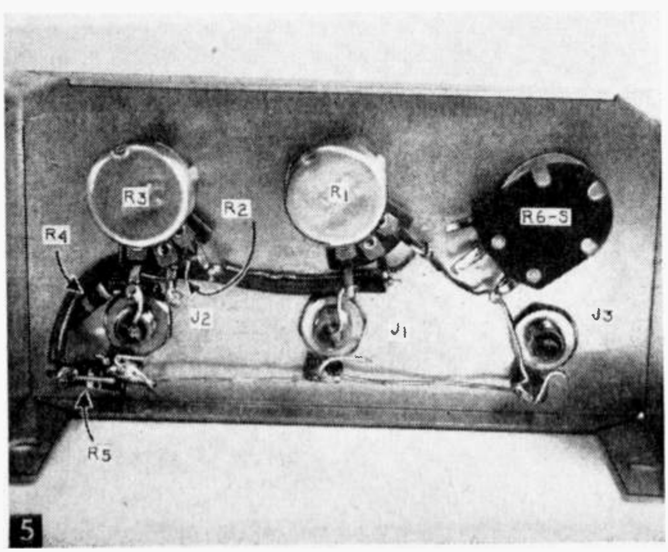
This completes the midget PA system wiring. Place a drop of Duco cement between the output transformer frame and S. Note that everything fits neatly in the case and the battery is held snugly in place.

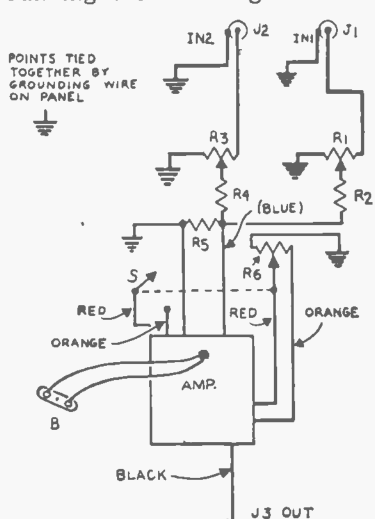
Mark the outside of the battery end of the case with a grease pencil, or a piece of tape. Slip the back of the case into place. You might have to bend the side flanges of the end of the front of the case out very slightly to do this. Be careful not to let the edges of the back of the case rupture the insulation on the battery connector.

Also, dress leads in the case so that the edges of the back won't cut or short them when the back is pushed into place. Fasten the case together with two screws (provided with the case) at the unmarked end of the case. Don't fasten with screws at the battery end (the end you marked with grease pencil or tape) or you may damage the battery or battery connector. If the back of the case seems to fit loosely at the battery end, remove the back and spring the sides slightly.

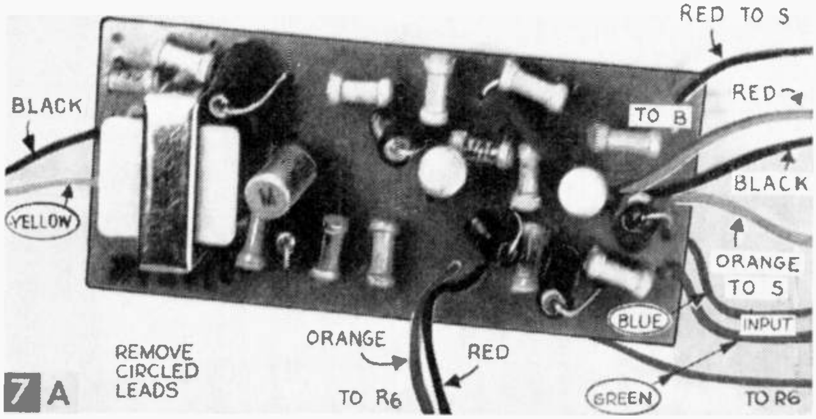
To finish off the PA system, type or hand letter the front panel markings shown in Fig. 2 on a piece of paper and cut to 3/8 x 4 in. Fasten it to the case with a piece of cellophane tape running the full length of the

Preliminary wiring and mounting, showing amplifier board holding wires and common grounding wire.

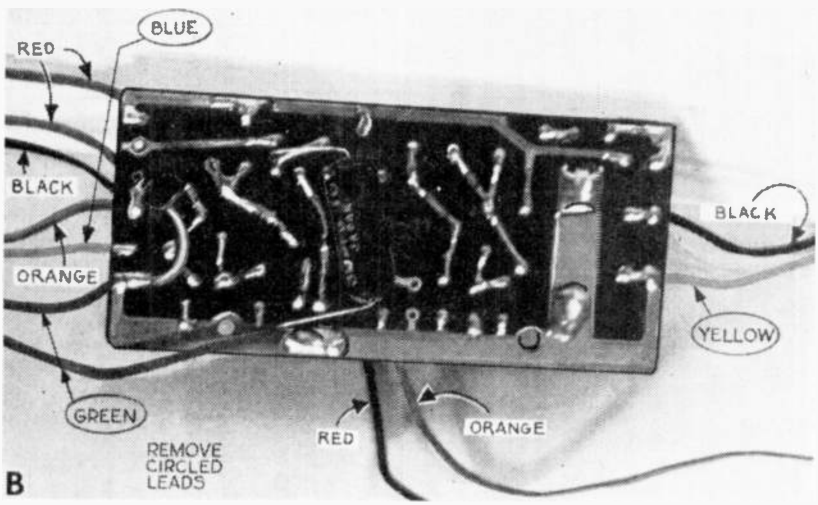




6 SCHEMATIC



Top view of printed circuit amplifier showing colored leads. Be sure to read instructions packed with this board.



Under view of printed circuit amplifier showing ground strip edge of board.

paper and fastening to the sides (ends) of the case. Maybe you would rather stencil the cabinet face with India ink.

Cut a small groove on the front of each of the knobs with a triangular file or a hacksaw. Fill the groove with white paint and wipe excess off of the face of the knob with a rag. Fasten the knobs on the shafts of R1, R3, and R6-S, and the midget PA amplifier is ready to use.

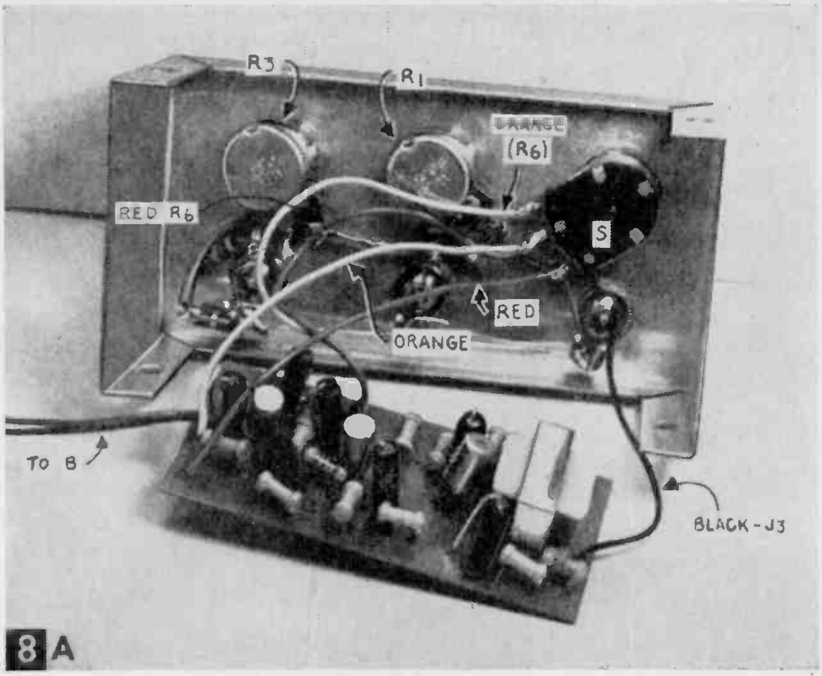
Speaker Selection. The output of the amplifier is 8 ohms. To obtain the best match to this output, connect a single 8 or 10-ohm speaker such as Lafayette SK-61 (1½ in.), SK-66 (2½ in.), or SK-193 (3 in.) to the output. You can also connect two 3-4 ohm speakers in series to the output such as Lafayette SK-25 (4 in.) or SK-27 (6 in.).

In general, the larger the speaker, the greater will be the conversion efficiency from electrical to sound energy. For this reason the 6 in. series arrangement is preferable. Even a single 3-4 ohm speaker will work reasonably well.

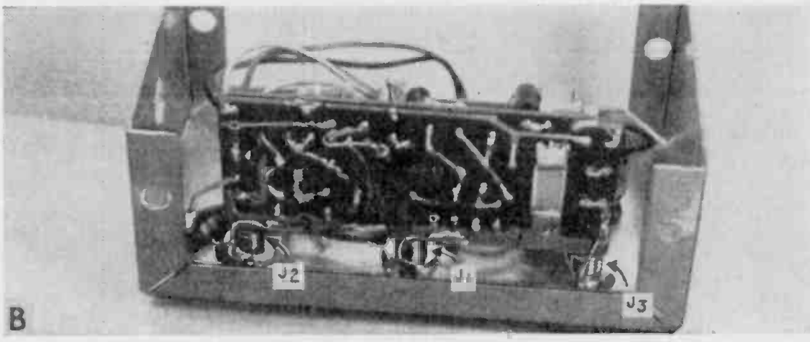
If you use the 1½ in. speaker, it can be mounted in a Lafayette MS-156 plastic case as in Fig. 3. Make the holes in the case with a heated ice pick, fasten the speaker, and

MATERIALS LIST—PA SYSTEM AMPLIFIER

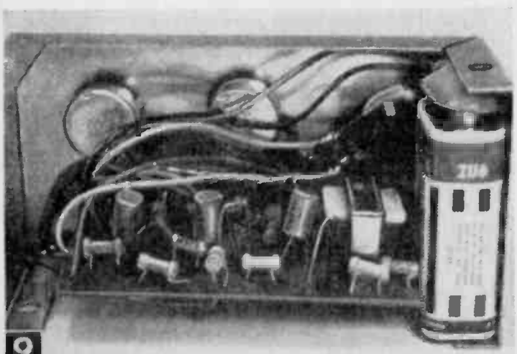
Desig. or No.	Description
R2, R4	68K ½-watt carbon resistors, 10%
R5	100K ½-watt carbon resistor, 10%
R6-S	5K miniature potentiometer with switch (Lafayette VC-27)
R1, R3	50K miniature potentiometers (Lafayette VC-36)
J1, J2, J3	phono jacks, single hole mounting (Lafayette MS-568)
AMP	3-transistor subminiature audio amplifier (Lafayette PK 522)
3	miniature knobs (Lafayette MS-185)
1	1⅝ x 2⅛ x 4" gray hammertone miniature case (Premier PMC-1002)
B	9-volt miniature battery (Burgess 2U6)
Misc.	speakers, mike, plugs and cable as desired (see text)
	Parts for this project may be obtained from Lafayette Radio, 111 Jericho Turnpike, Syosset, N. Y.



Connecting the printed circuit board to the switch and jacks.



Ground strip edge of board rests on jacks J1, J2, J3.



Amplifier completely assembled with battery tucked in place.

solder the wire leads to the speaker. I used shielded wire, but you can use ordinary insulated wire. The other ends of the speaker leads connect to a phono plug (Lafayette MS-471). Solder one lead to the center pin and the other to the outer shell of the phone plug. If you use shielded wire, the center conductor solders to the plug center pin and the shield fastens to the shell of the plug.

The 6 in. speaker in Fig. 1 is a Lafayette SK-27 mounted in a baffle. This baffle has been replaced by a more modern-looking one (SB-10) in the Lafayette catalog. Be sure to provide strain relief for the speaker wires with an insulated staple on the inside right wall of the baffle.

Cover Story

VHF Converter for Shortwave Or Communications Receivers

Bring in the full 2-meter amateur band, or police, fire, airline, taxicab, and other commercial calls on your present quality rig for $35

Ham operator switching on compact VHF converter connected to his powerful shortwave bandspread receiver. With this economical addition, the big rig will pull in 2-meter amateur signals or other VHF bands with the same high quality of sensitivity and stability it offers to high frequency bands.

By EDWIN E. STEINBERG, W9QJO

MANY shortwave broadcast receivers have 7 or 14 *mc* bands but do not cover very high frequencies (VHF). Most commercial and surplus military communications receivers cover high frequency bands but not VHF.

Whether you're a ham itching to get in on the exciting and rapidly growing 2-meter amateur band or simply an interested listener who wants a ringside seat for amateur, government or commercial communications on VHF, here's a converter that's just what you need. You can build it for less than $35 worth of new parts purchased from any of several national mail order houses.

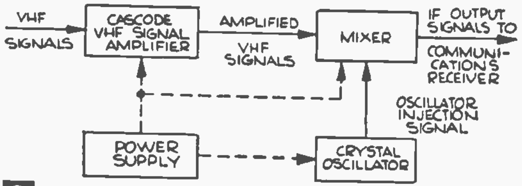
You can make a cheaper VHF rig if you're willing to sacrifice sensitivity, stability and reliability, but this is a small amount compared to what you would have to lay out for a complete commercial VHF receiver having equivalent performance.

A commercial artist friend who had never before built any electronic equipment can well attest to the ease of building this converter and success of its operation. As for durability, though, I have had one model in operation for nearly four years; another for three years. The unit in Fig. 1 has been worked steadily more than five months.

The block diagram in Fig. 2 reveals the simplicity of converter operation. VHF signals are first amplified sufficiently to overcome the circuit noise, which is a characteristic of the converter and receiver circuits that follow. The signals are then combined with an "oscillator injection" signal in a heterodyne mixer to produce the intermediate frequency (IF) output. This output can then be received by a shortwave-broadcast or HF communications receiver.

A frequency (band) spread of four to six megacycles is practical for a VHF converter which allows an operator to tune exclusively by means of the HF-receiver controls. For example, the 144-148 *mc* (2-meter) amateur band can be covered by a single VHF receiver converter. IF output is from 14-18 *mc*, or 7-11 *mc*, depending upon the original converter design chosen. Table 2 lists a choice of four bands you can cover.

The HF (shortwave-broadcast or communications type) receiver functions as a "tunable IF" (for the VHF converter) to select the desired VHF station signal. If no such receiver is available, a surplus "command" receiver can be purchased at a reasonable



2 CONVERTER FUNCTIONAL BLOCK DIAGRAM

TABLE 1—VHF BAND ALLOCATIONS

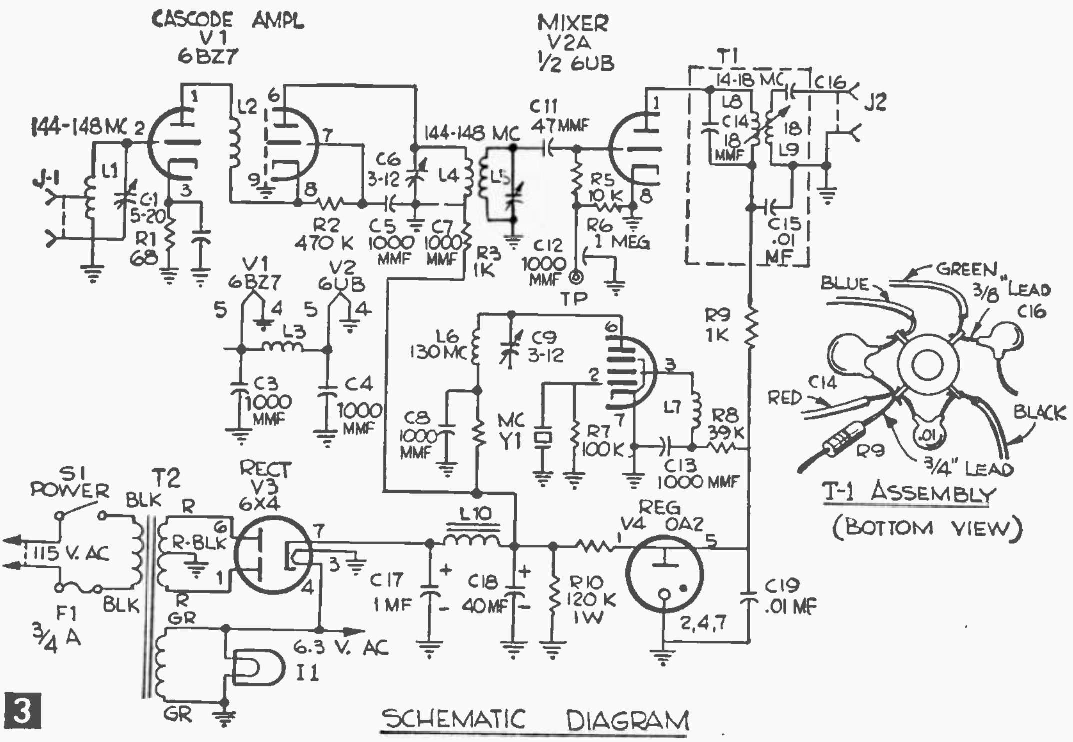
FREQUENCY BAND	SERVICES
108—144 mc	Aviation, Satellite Communications, Military Affiliated Radio Services
144—148 mc	Amateur (Military Affiliated Radio Services are just below 144 mc and Civil Air Patrol is just above 148 mc)
148—150 mc	Government, CAP
150—174 mc	Land Transportation, Taxi, Railroad, Motor Carriers, Telephone Company, Maritime Mobile (Marine), Industrial, Police, Fire, Hospitals, Public Safety
174—216 mc	Television Channels 7—13
216—220 mc	Telemetering
220—225 mc	Amateur

cost. Use of a command receiver with the VHF converter has the advantage of providing a completely independent VHF receiving installation, so that other receiver equipment remains free for normal use.

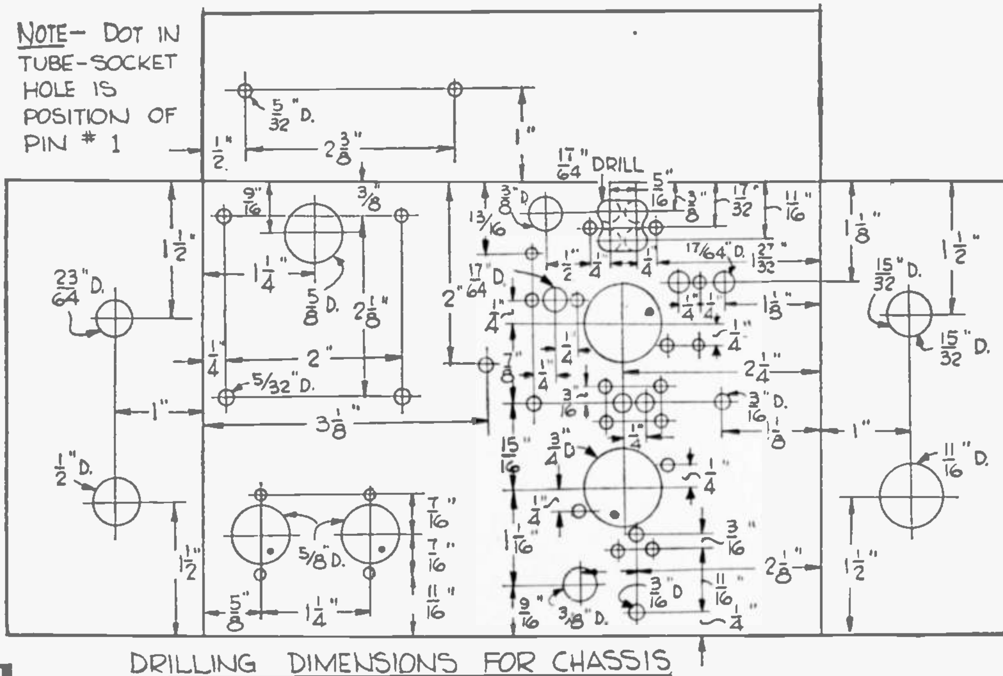
Physical Layout and Wiring of VHF equipment is critical and must duplicate that shown in the illustrations. Don't let this scare you off, however, as satisfactory performance can be obtained even if the wiring isn't "pretty." No special precautions are necessary for power supply wiring. Perform the drilling, assembly, and wiring as follows:

To pre-assemble IF transformer T1 as shown in Fig. 3, remove the coil assembly from its shield can, taking note of its position in the can for replacement. Remove the red lead from the coil. Connect capacitor C14 (see Table 2 to determine value) between the blue lead coil terminal and the coil terminal from which the red lead was just removed. Do not solder this last connection because two more connections have to be made to this lug. Slip ¾ in. of spaghetti tubing over one lead of resistor R9 and connect this lead to the coil terminal in place of the red lead.

Connect C15 between the same lug used for C14 and R9 and the lug with the black lead. Remove the black lead. The lead of C15 can be left long to be used later as a ground connection. Solder all connections just made.



3 SCHEMATIC DIAGRAM



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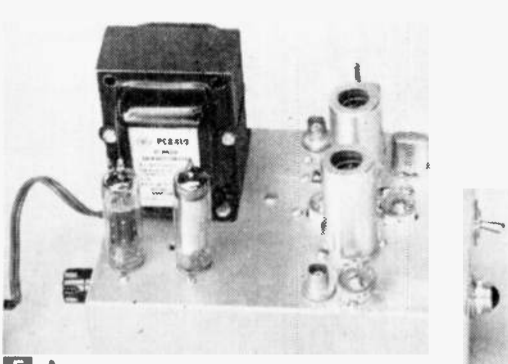
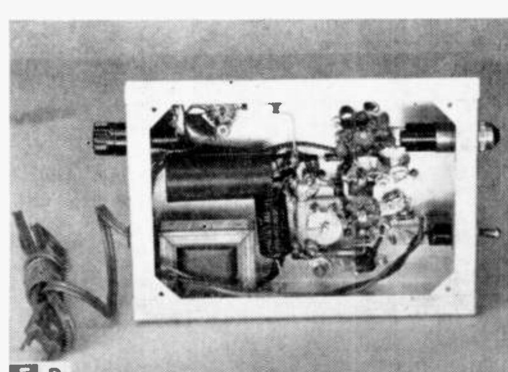
Slip ⅜ in. of spaghetti tubing over one lead of C16 and connect this lead to the coil terminal with the green lead. Remove the green lead and solder the capacitor connection. Replace the coil assembly in its shield in the original position, and now put aside the transformer, ready for later installation.

Center-punch all holes as in Fig. 4. With a ⅛ in. bit, drill holes at all punch marks. Enlarge the chassis holes as in Fig. 4. Note that many of the holes remain ⅛ in. as originally drilled. You can make the cut-out for transformer T1 in many ways. One method is by drilling four 17/64 in. holes as in Fig. 4 and using a file to remove the remainder of the unwanted aluminum. Then remove all burrs from the chassis.

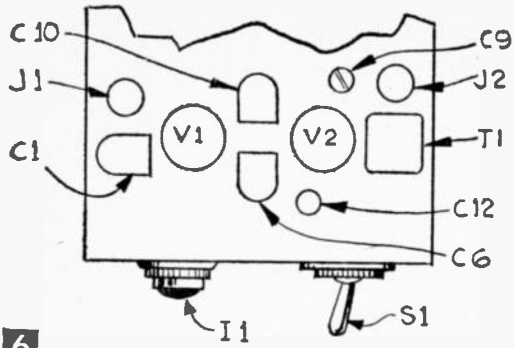
Mount all tube sockets with #4-40 x ¼ in. roundhead (*rh*) machine screws, lockwashers, and hex nuts. Be sure to fit each socket so that the #1 pin is positioned as in Fig. 4. Note that one hex nut and lockwasher are not used for mounting the socket for V2, since this screw threads into one mounting stud of C9. Insert a #4 lockwasher under the other stud of C9 to serve as a spacer and insert a #4-40 x ¼ in. *rh* machine screw into the capacitor stud to complete its mounting.

Now mount the crystal socket and trimmer capacitors C1, C6, and C10, using #4-40 x ⅜ in. binder-head machine screws, fiber washers, lock washers, and hex nuts. The fiber washers are used under the screw heads to prevent trimmer breakage and a fiber


5 A


5 B

Close-up views showing location of major parts on top and bottom of chassis.



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washer is used under the hex nut to prevent crystal-socket breakage. Use care not to tighten these screws excessively. Breakage can still take place, despite the fiber washers.

Use an insulated tie-post in place of the one mounting nut (closest to V1 socket) on trimmer capacitor C6. Mount the other two insulated tie-posts, using #4-40 x ¼ in. *rh* machine screws with #4 lockwashers under their heads. Attach the 5-lug tie-terminal strip with a #6-32 x ¼ in. binding-head machine screw, lockwasher, and hex nut.

Attach coax connectors J1 and J2, mount feed-through capacitor C12, pilot-light assembly I1, and power switch S1. These components are supplied with their own mounting hardware.

You are now ready to wire in all small components, including resistors, capacitors, coil L3, and coil L7. Check Table 2 to determine the value of L7. Pre-form coils L1, L2, L4, L5, and L6 as specified in Table 2. Install coils L1, L4, L5, and L6 parallel to and ¼ in. away from the chassis. Note that L4, L5, and L6 are mounted on a common central axis (Figs. 5A and B). Mount coil L2 on the socket terminals of V1 and position it perpendicular to the chassis. The ground leads of L1, L5, and the plate lead (to pin #6 of V1) of L4 should be straight. Make temporary solder connections to each of these leads to permit future coil adjustment during alignment.

Mount and wire-in power transformer T2, the pre-assembled IF transformer T1, and the

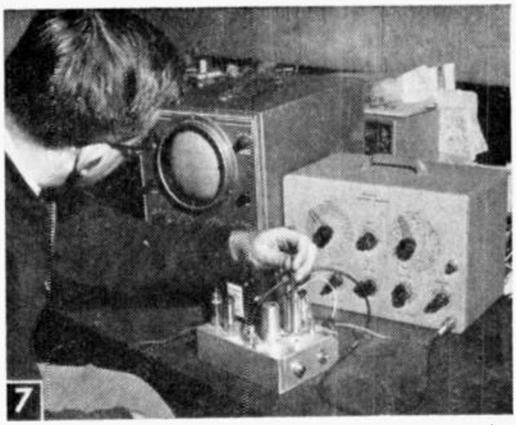
TABLE 2—COIL, CAPACITOR, AND CRYSTAL DATA FOR VHF BAND COVERAGE SEGMENTS

Part	108-112 mc Band	120-125 mc Band	144-148 mc Band	151-157 mc Band	Remarks
L1	5 turns, ½" L, tap at 3½ turns	4 turns, ⅜" L, tap at 3 turns	3 turns, ½" L, tap at 1¾ turns	3 turns, ½" L, tap at 1¾ turns	"Knife" for maximum curve amplitude & minimum tilt
L2	17 turns, CL W, ½" I.D.	15 turns, CL W, ½" I.D.	11 turns, CL W, ¼" I.D.	9 turns, CL W, ¼" I.D.	"Knife" for maximum curve amplitude
L4	7 turns, CL W, ¼" I.D. 3/16" from L5	6 turns, CL W, ¼" I.D. ⅛" from L5	4 turns, CL W, ¼" I.D. 3/16" from L5	4 turns, CL W, ¼" I.D. ⅛" from L5	Space from L5 for required curve width
L5	5 turns, CL W, ¼" I.D.	5 turns, CL W, ¼" I.D.	4 turns, CL W, ¼" I.D.	4 turns, CL W, ¼" I.D.	Use C10 adjustment
L6	5 turns, CL W, ¼" I.D. ⅛" from L5	5 turns, CL W, ¼" I.D. ⅛" from L5	4 turns, CL W, ¼" I.D. ⅛" from L5	4 turns, CL W, ¼" I.D. ⅛" from L5	Use C9 adjustment for max. VTVM reading at C12
L7	Stancor #RTC-8517	Stancor #RTC-8517	Stancor #RTC-8515, 3 turns	Stancor #RTC-8515, 4 turns	Values for 14 mc IF output
	Stancor #RTC-8517	Stancor #RTC-8517	Stancor #RTC-8515, 4 turns		Values for 7 mc IF output
Y1	31.333 mc, 3rd overtone	35.333 mc, 3rd overtone	65.000 mc, 5th overtone	68.500 mc, 5th overtone	For 14 mc output, anti-resonant crystals
	33.667 mc, 3rd overtone	37.667 mc, 3rd overtone	68.500 mc, 5th overtone		For 7 mc output, anti-resonant crystals
C14 & C16	18 mmfd ceramic-disk capacitor, Centralab #ID-180 (Lafayette #CA-498)				For 14 mc output
	91 mmfd ceramic-disk capacitor, Centralab #ID-910 (Lafayette #CA-33)				For 7 mc output

KEY: CL W, close wound   I.D., inside diameter   L, length of coil winding filter choke L10. Use #6-32 x 1/4 in. binder-head machine screws, lockwashers, and hex nuts to attach the power transformer and choke. Mount and wire-in the fuse extractor post (for fuse F1), then attach the line cord and plug. Complete the wiring of the power transformer and switch S1, then hookup the filter capacitors C17 and C18. Install all tubes, tube shields, and crystal Y1, after studying Table 2 for the proper crystal frequency.

Check all parts and wiring, and look for solder splash or other causes of shorting—particularly in C9. An ohmmeter is the best test for power-supply shorts.

To Adjust the Oscillator, connect the negative voltmeter lead of a vacuum-tube voltmeter to the test point (C12 in Fig. 6). Clip the ground lead of the VTVM to the converter chassis and set its range switch for a full-scale reading of from 3 to 10 volts dc. Now turn on the converter power switch S1. Adjust C9 for a maximum VTVM reading. Proper supply voltages and a good 6U8 tube will result in a peak reading of at least 1.5 volts.



7 Aligning the converter for the desired VHF band with the aid of a sweep generator and oscilloscope.

How to Align Your VHF Converter. Connect the output of a sweep generator to jack J1 through a short 52-ohm coaxial cable, and the receiver input (antenna terminals) to jack J2 through a short length of 72-ohm co-

MATERIALS LIST—VHF CONVERTER

Stock No.*	No. Req.	Desig.	Description
	1	V1	6BZ7 electron tube
	1	V2	6U8 electron tube
	1	V3	6X4 electron tube
	1	V4	0A2 electron tube
CA-368	1	C1	4.5-25 mmfd trimmer capacitor (Centralab 822-AZ)
CA-370	2	C6, C10	2.5-13 mmfd trimmer capacitors (Centralab 822-BZ)
HP-28	1	C9	2.3-15 mmfd variable capacitor (Hammarlund MAPC-15)
CA-61	7	C2, C3, C4, C5, C7, C8, C13	1000 mmfd GMV ceramic disc capacitors (Centralab CRL ID.001)
CA-27	1	C11	47 mmfd ceramic disc capacitor (Centralab ID-470)
CA-356	1	C12	1000 mmfd ceramic feed-thru capacitor (Centralab FT-1000)
	2	C14, C16	18 mmfd (CLB ID-180), or 91 mmfd (CLB ID-910) ceramic disk capacitor (see Table 2)
CA-86	2	C15, C19	.01 mfd GMV ceramic disc capacitors (Centralab ID-.01)
Z-142	1	C17	1 mfd, 450 DCWV electrolytic capacitor; single section
Z-139	1	C18	40 mfd, 350 DCWV electrolytic capacitor, single section
RS-10	1	R1	68 ohm, 1/2 watt carbon resistor (Allen Bradley)
RS-10	1	R2	470 K, 1/2 watt carbon resistor (Allen Bradley)
RS-10	3	R3, R4, R9	1 K, 1/2 watt carbon resistor (Allen Bradley)
RS-10	1	R5	10 K, 1/2 watt carbon resistor (Allen Bradley)
RS-10	1	R6	1 megohm, 1/2 watt carbon resistor (Allen Bradley)
RS-10	1	R7	100 K, 1/2 watt carbon resistor (Allen Bradley)
RS-10	1	R8	39 K, 1/2 watt carbon resistor (Allen Bradley)
RS-11	1	R10	120 K, 1 watt carbon resistor (Allen Bradley)
3RS-111	1	R11	5 K, 5 watt wirewound resistor (Allen Bradley)
	1	T1	shielded bifilar IF transformer (Stancor RTC-8569)
TA-324	1	T2	power transformer (Stancor PC-8419)
TA-149	1	L10	filter choke (Stancor C-1325)
CM-56	2	XV1, XV2	9-pin, mica-filled, top mounting tube sockets with shield base
CM-13	2		1 15/16" heater tube shields for 9-pin sockets
CM-229	2	XV3, XV4	7-pin, mica-filled, bottom mounting tube sockets
SW-460	1	S1	SPST toggle switch
SW-468	1		switch plate for S1
EL-369	1 pkg	F1	type 3AG 3/4 amp fuse (5 in pkg)
EL-226	1	XF1	3AG fuse extractor post for fuse F1
PB-104	1	X11	green-jeweled pilot light assembly (Dialco series)
PL-42	1	I1	6.3 volt/0.15 amp bayonet base pilot bulb
		L1, L2, L4, L5, L6, L7	See Table 2 (#20 enam. wire, #18 bare wire, Stancor RFC)
		L3	8 turns #20 enam. wire, close-wound, 1/8" id
		L8, L9	part of IF transformer T1
	1	Y1	frequency control crystal, see Table 2
	1	XY1	socket for Y1, (Millen 33302)
	2	J1, J2	BNC coaxial cable fittings, single hole mounting
EL-13	1	P1	6' line cord with plug
MC-154	1		2 x 5 x 7" aluminum chassis (Premier ACH 426)
	3		insulated tie-posts (Cambion 1942-F4)
	1		5-terminal tie-strip, center mounting terminal grounded
P-114	7		6-32 x 1/4" binder-head machine screws
P-136	7		#6 lockwashers
P-158	7		6-32 hex nuts
	7		4-40 x 3/8" binder-head machine screws
	10		4-40 x 1/4" round-head machine screws
	7		#4 fiber washers
	19		#4 lockwashers
	16		4-40 hex nuts
	10		#4 solder lugs
P-242	1		rubber grommet, 3/8" mtg hole, 1/4" id
	1		#6 solder lug
			red, green, and blue hook-up wire

* Stock numbers are those of Lafayette Radio, 110 Jericho Turnpike, Syosset, N. Y.

NOTE—Communications receiver used with this VHF converter in the front cover photo is the Knight-Kit R-55, which ranges from 530 kc to 36 mc, and also covers the 6-meter ham band. Kit available from Allied Radio, 100 N. Western Ave., Chicago 80, Ill., for $67.50 plus shipping charges.

axial cable. Connect the oscilloscope horizontal input terminal to the sweep generator according to directions given in the sweep generator instruction manual. Connect the 'scope's vertical input terminal to the converter test point (C12) using a shielded cable or oscilloscope probe, as recommended by your oscilloscope instruction manual.

Make certain that chassis ground hookups use short leads or copper braid. After turning on all equipment, allow at least 15 minutes for warmup. Consult your instruction manuals for recommended warmup time.

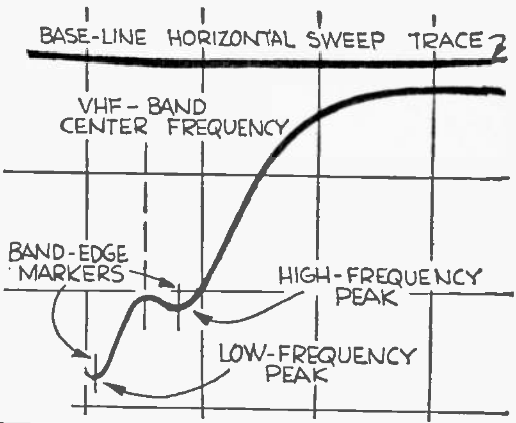
Set the receiver tuning and band switch at the center frequency of the desired IF band, and receiver controls for AM reception (with AGC). Set the sweep generator output frequency to the center frequency of the desired VHF band, and the oscilloscope controls for the proper horizontal (base-line) sweep. Adjust trace brightness and focus as in the manuals. Now you can increase the oscilloscope vertical gain to maximum, or until ac hum begins to deflect horizontal trace. Reduce oscilloscope vertical gain only as required to remove any perceptible hum-deflection of horizontal trace. Then increase the sweep generator output to obtain an oscilloscope vertical deflection of from 1 to 2 in.

Adjust trimmer C1 for maximum vertical deflection of the oscilloscope trace between the band-edge markers for the desired VHF band. It may be necessary to stretch or pinch the L1 coil to adjust C1 properly. If a "birdie (other than a sweep generator marker)" appears on the oscilloscope trace, "knife" (stretch) L2 just enough to eliminate the birdie. Then readjust C1 for maximum vertical deflection. *Warning: The voltage on L2 can cause a severe shock. Use caution in knifing this coil.*

Alternately adjust C6 and C10 to obtain a band-pass curve as in Figs. 7 and 8. While the band-edge markers should be at maximum response, the converter operation will still be satisfactory if the markers are not more than 30% down the outside slopes of the curve. This compromise marker position is often desirable when 5- or 6-*mc* band spread is required. You can obtain 3- or 4-*mc* band coverage easily with the markers at peak response.

If the response curve is too narrow (markers down the outside slopes of the curve), move L4 closer to L5 to increase coupling. If the response curve is too wide (markers within the maximum-response peaks), move L4 away from L5 to decrease coupling. After either change, you will need to readjust C6 and C10.

If the maximum-response peak adjacent to one band-edge marker is larger than that adjacent to the other marker (tilted response curve), you can readjust C1 to make response peaks equal in amplitude. But performance



8 VHF-CONVERTER RESPONSE CURVE

of your converter will generally be satisfactory when one response peak is up to 30% smaller than the other.

Squeeze or stretch coil L2 to obtain the maximum response-curve amplitude, but again use caution to avoid electrical shock. Readjust C1, C6, and C10 as required for the proper curve shape and maximum amplitude.

Now turn the sweep (and marker) generator output down to zero. Replace the oscilloscope with the VTVM at the converter test point (C12) and repeat the oscillator adjustment described earlier.

Disconnect the VTVM and put back the 'scope. Turn the sweep (and marker) generator output back up to obtain a response curve, then recheck the adjustment of C1 (curve tilt). C6 (curve amplitude), and C10 (curve amplitude).

With tests completed, disconnect the sweep generator and oscilloscope, then adjust the slug in the IF transformer (T1), for maximum noise from the receiver speaker (or maximum "S-meter" reading on noise).

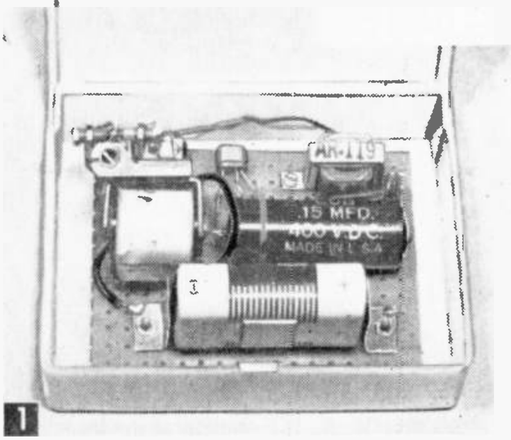
To Operate Your Converter, you'll need a VHF antenna designed for the particular frequency band chosen. It should have a 52-ohm coaxial transmission line (lead-in) to carry the signal input to jack J1 on the converter.

Since the power switch S1 is the converter's only operative control, tune in the desired VHF signals with your receiver's controls, all of which will function in their normal manner.

You should receive normal VHF signals in the IF band for which the converter was built. However, communications-receiver "S-meter" readings will be higher than the normal settings due to signal amplification in the converter.

Signals received will be stable in frequency since both your converter and the VHF transmitters are crystal-controlled. The level of stability is primarily dependent upon the quality of your receiver.

Air Raid Radio Alarm and Electronic Control



The complete circuit fits in a 4-in.-long plastic box. A single hearing aid battery provides 22½-volt power.

This novel circuit converts any radio into a Civil Defense alarm. It can also be used as a remote radio control switch

By T. A. BLANCHARD

A SENSITIVE relay that trips whenever the station to which a radio is tuned goes off the air enables this novel circuit to act as an automatic Conelrad monitor or as a radio controlled switch.

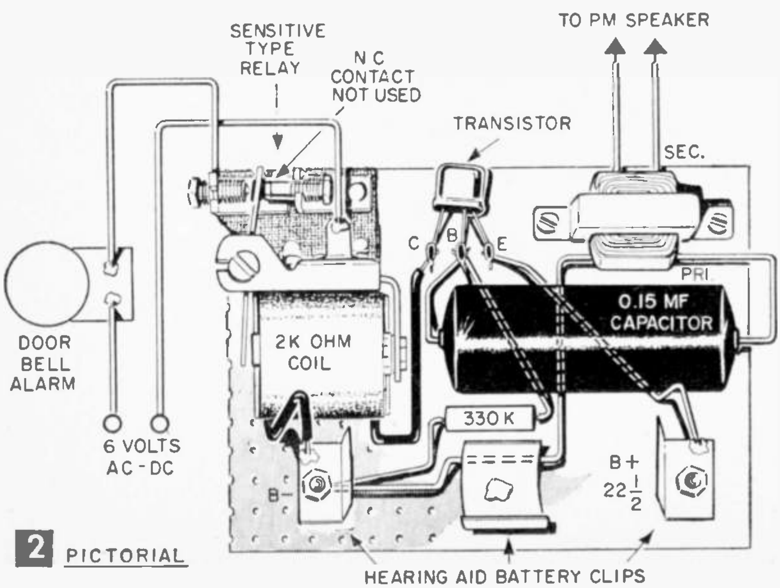
In a defense emergency, if a national alert should be declared, all broadcast radio stations in the U. S. would automatically go off the air. Should such an emergency occur at night, you might not know it until it was too late to reach a shelter. With this device attached to any radio tuned to a 24-hour broadcast station, the alarm would sound the second a Conelrad emergency took place.

Or by simply using the carrier of a wireless phono player that has a normally closed push button switch wired in series with the oscillator's ground return, you can control electrical equipment remotely from any point.

Install the completed unit in a small metal or plastic box. For silent operation, you can add a single-pole, single-throw switch in series with the radio speaker voice coil so that when the set has been tuned, snapping the switch will silence the radio but won't affect the alarm's operation.

When you tune the radio to a station, you'll find that voltage applied to the transistor base results in only a tiny flow of current from emitter to collector. By adjusting the spring which controls the armature tension, set the relay so the contacts drop out at about 50 microamperes and pick up at 2 milliamperes. Now if you tune to a station and then tune away from the station's carrier, the relay contacts should close immediately.

A less expensive relay with similar dropout and pickup characteristics can be selected from a parts catalog. Use your radio volume control as



2 PICTORIAL

a sensitivity adjustment, advancing it to a level that provides the most satisfactory pick-up and dropout of relay contacts. When properly adjusted, the circuit should not be affected by music or speech, but only by the absence of the station's inaudible carrier, which will cause the alarm to draw current and close the relay alarm contacts.

By reducing the relay armature tension, you will be able to use the device for other applications. For example, the relay can be adjusted to follow the voice of a speaker or the beat of a musical selection.

Assemble the circuit parts on a 3⅜ x 2½-in. perforated *Bakelite* board. A thin piece of plywood or plain plastic would also serve. Mount the transistor on three flea clips designed for use with the perforated board, or simply use a regular transistor socket. Use two 6-32 x ⅛-in. binding head screws to fasten the relay base in place.

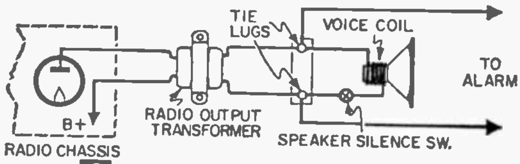
Mount the miniature audio transformer and battery clips with 2-54 x ¼-in. screws. Use either a stock battery clip, or bend the clips from ½ x 1-in. strips of tinplate or brass. The center battery retainer clip is a ½ x 2¼-in. strip of sheet metal bent U-shape and mounted between the contact clips.

Wire the alarm (Figs. 2, 4, 5) next. The battery can be lifted away from the clips when the unit is not in use, or you can add a switch between the B plus battery clip and the transistor emitter. In the circuit shown, the normally closed contact remains unwired.

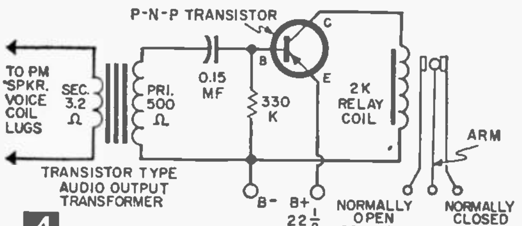
The alarm uses a simple transistor type *dc* amplifier, and uses a 22½-volt hearing aid battery such as *Eveready* #412 or #412E to provide the operating voltage. Connect the input of the alarm to the voice coil lugs of your radio's PM speaker through the 500-ohm primary, 3.2-ohm secondary audio output transformer. Plans show the relay connected to a typical doorbell, however the Sigma relay contacts will handle a full 2-amp, 120-volt non-inductive load to control small motors, lamps and solenoids. Wire each relay contact to a colored light bulb, and the lamps will blink in time with the music.

Another novel application would be to connect the jaw of a toy puppet to a solenoid magnet. Using the original single contact hookup, connect the solenoid in series with a power source and the relay contacts. The puppet will open and close its mouth in perfect synch with the radio voice.

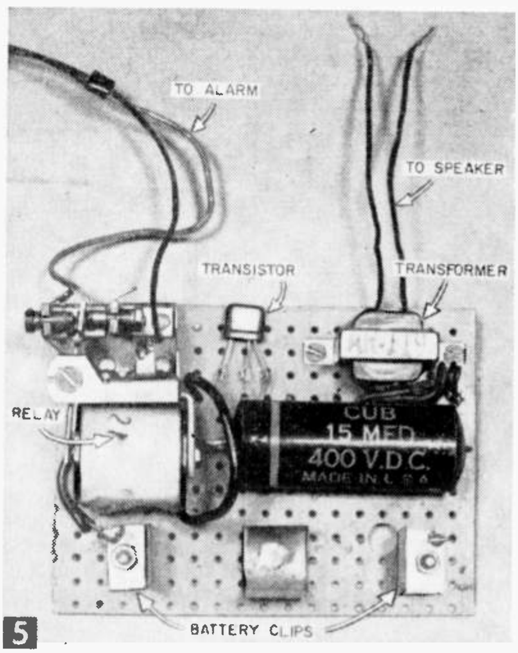
Experimenters are often called upon to fix one of those stubborn receivers that plays for an hour and goes dead. The ideal time to check such a set is at the moment the signal fails, but this would require standing by. Simply connect the alarm and open the voice coil. If and when the radio quits, the bell will signal the fact. The unit also makes an excellent demonstrator to show how radio controls operate.



3 CONNECTING ALARM TO ANY RADIO



4 SCHEMATIC



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For easy assembly, use a perforated circuit board. Make the clips of scrap sheet metal.

MATERIALS LIST—AIR RAID RADIO ALARM

No. Req'd	Size and Description
1	SPDT relay, 2000 ohm coil (Sigma Type 4F)
1	miniature audio output transformer, 3.2 ohm primary/500 ohm sec. (Argonne #AR-119)*
1	P-N-P transistor (inexpensive type such as CK-722 or 2N-107)
1	C-D "Cub" plastic paper capacitor, 0.15 mfd., 400 dcwv.
1	#412 or 412E miniature 22½-v. battery
1	perforated plastic panel 3⅜ x 2½ in.
1	4¼ x 3¼ x 1¼" plastic box to house control
Misc.	mounting hardware

* Available Lafayette Electronics, 111 Jericho Turnpike, Syosset, L. I., N. Y.

The Quickie

A $10 three-transistor-pocket portable for nearby reception

By FORREST H. FRANTZ Sr.

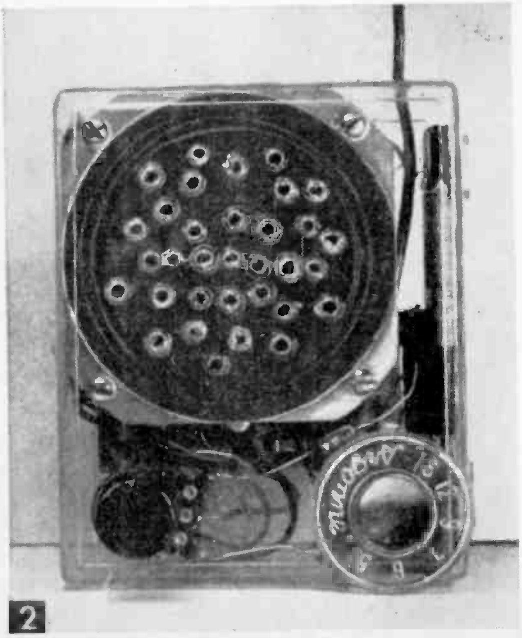
Tuning in a local radio station.

LESS than two hours' work and about $10 worth of parts will provide you a Quickie (Fig. 1), a small portable radio which will pull in most broadcast stations within a 10-mile radius. By using a longer, external antenna, you can receive more distant stations.

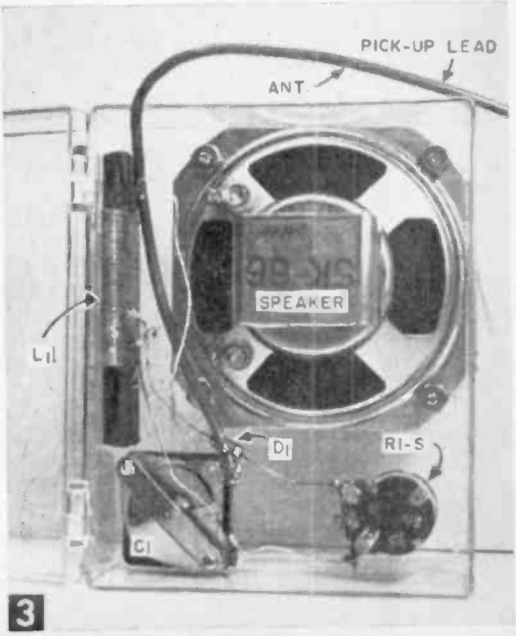
The secret of its quick construction and inexpensiveness can be found in the ready-made, three-transistor amplifier it uses, (Lafayette PK-522 complete with transistors). This subminiature, printed circuit amplifier costs only $3.75, little more than the cost of the transistors alone. Quickie weighs only a few ounces, and is small enough to fit in a coat pocket.

Construction. First place the speaker inside the plastic case positioned against the sides as in Fig. 3. Use the speaker as a template to make the four mounting holes with a heated ice pick. Remove the speaker from the case and make a series of random holes for speaker sound. Start two more holes 11/16 in. from the respective case edges with the heated ice pick to establish centers for the tuning capacitor (C1) and volume control (R1) mounting holes. Enlarge the latter holes to 1/4 in. diameter with a taper reamer.

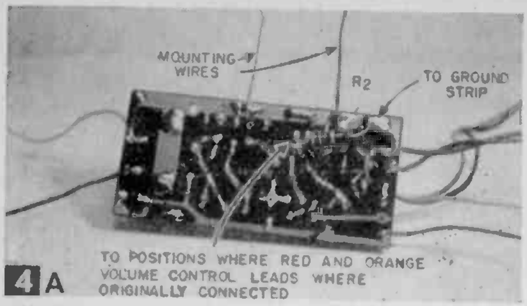
Cut off the excess plastic built up around

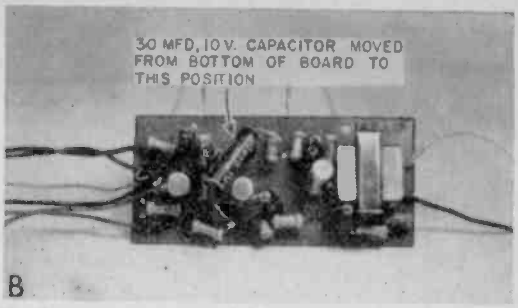


Quickie is made in less than two hours.



Speaker in position for mounting.





Modifying the amplifier with a resistor added on under side of printed circuit board (left) and a capacitor moved to top side (right).

small holes with a knife and wash the case in soapy water. Rinse in clear water and dry thoroughly.

Next, cut the shaft of the volume control (R1-S) with a hacksaw to a length of 3/8 in. An easy way to do this is to place the portion of the shaft to be discarded in a vise. Catch the control as it falls free to prevent damage. Mount the speaker C1, R1-S, and L1. Note that L1 must be removed from the Masonite mounting board. Fasten it to the plastic case with Duco cement.

Connect the parts, including the short antenna lead and the diode (D1) as shown in Fig. 3. Use rosin core solder and a hot, clean soldering iron. Be careful not to overheat the parts and be especially careful not to melt the plastic case. Set the case aside for final assembly later.

Amplifier Modification. Figures 4A and 4B show how the amplifier is modified. The instruction sheet which comes with the amplifier will furnish additional information.

Disconnect and remove the 30-mfd, 10 volt capacitor originally mounted on the bottom side of the amplifier board. Be careful to note polarity and connection points. Install this capacitor on the top of the amplifier board and connect to the same points as before, with leads inserted through the top of the board as in Fig. 4B.

Solder the R2 resistor in the circuit on the bottom side of the board (Fig. 4A). One end of R2 connects across the points to which the red and orange volume control leads are attached. Remove the red and orange volume control leads. The other end of R2 connects to the broad ground strip (Fig. 4A). Disconnect and remove the green volume control lead.

Next, solder two 2¾ in. lengths of #22 bare, solid wire to the amplifier board ground strip, keeping in mind that these two wires should be so positioned that the amplifier can be attached through the speaker magnet frame as in Fig. 5. A trial or two may be required to obtain satisfactory positioning.

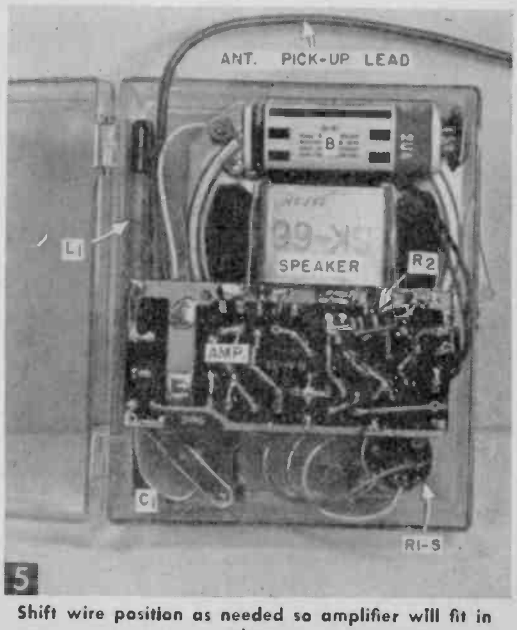
Final Assembly. With the case assembly and amplifier in position (Fig. 5), complete the amplifier wiring. The schematic (Fig. 6) may be helpful.

Connect the green amplifier input lead to the ground terminal on R1, the blue input wire to the center terminal on R1, and the red and orange switch leads to the terminals of switch S1. Connect the black and yellow amplifier output leads to the speaker terminals.

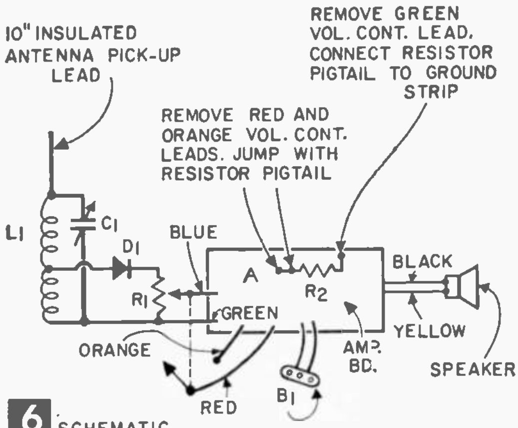
MATERIALS LIST—PORTABLE RADIO

Desig. or No.	Description
R2	4.7 K, ½ watt carbon resistor, 10%
R1-S1	10K miniature volume control wtih switch (Lafayette VC-28)
C1	365 mmfd. tuning capacitor (Lafayette MS-445)
D1	crystal diode (Raytheon 1N60)
L1	Hi-Q ferrite antenna loop (Miller 2004)
AMP	3-transistor subminiature audio amplifier (Lafayette PK-522)
SPKR	2½" pm speaker, 10 ohm voice coil (Lafayette SK-66)
B1	9 volt battery (Burgess 2U6)
1	miniature knob (Lafayette MS-185)
1	1⅛ x 3⅛ x 3⅞" plastic case (Lafayette MS-298)

Parts for this project may be obtained from Lafayette Radio, 111 Jericho Turnpike, Syosset, L. I., N. Y.



Shift wire position as needed so amplifier will fit in place.



6 SCHEMATIC

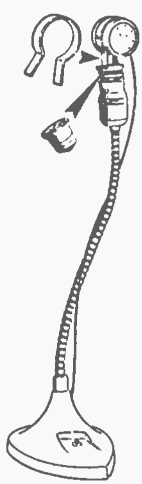
Now position the amplifier for mounting. Pass the two pieces of solid wire through the inside of the speaker magnet frame, bend them around the outside of the frame, cut them to length, and solder them to the ground strip along the upper edge of the amplifier. This arrangement will secure the amplifier in place. Check that none of the amplifier components or leads short against the tuning capacitor, volume control, diode, coil leads, or speaker terminals.

Fasten the battery connector to the battery and insert in place. Attach volume control-switch knob and tuning capacitor dial.

It's a good idea to fasten the back of the case to the front with a drop of Duco cement to prevent accidental opening.

To Test Quickie, turn the volume control all the way up. Rotate C1 until a station is heard. The receiver will be most sensitive and directional with the antenna axis oriented horizontally. The antenna pick-up lead on the original model was about 10 inches long, but a longer lead will provide greater sensitivity.

You can't expect Quickie to perform like a superhet. But, considering the number of transistors and the cost, you'll be getting your money's worth.



Desk lamp mike stand

Record that tall story using the desk lamp reflector to increase the range of your hand mike

A MICROPHONE stand for hand mikes (such as those that come with less expensive tape recorders) can be improvised from a flexible neck desk lamp with its cord removed (or at least disconnected), a plug to fit the lamp's socket, and a 1/8 x 3/8 in. metal strip. Bend the metal strip to the size necessary for the mike in question, and use as shown. To pick up faint sounds attach the lamp's bowl-type reflector to the lamp's socket to "funnel" or focus the sound into the mike. Face the mike toward the inside of the reflector.—ANDY VENA.

Keeping Tube Numbers Readable

• After tubes used in experimental circuits have been handled for some time, the type numbers on the glass envelope wear away and are almost impossible to read. To prevent this and keep numbers readable indefinitely, apply clear fingernail polish to the numerals when tubes are new. If the numbers on older tubes are illegible, apply ammonia with a piece of cotton and let it dry to bring numbers out clearly.—JOHN A. COMSTOCK.

Grommet Is Pilot-Light Bumper

• In some electronics gear, pilot bulbs are placed in locations that make them especially vulnerable to breakage. To prevent such breakage, slip a snug-fitting rubber grommet over the bulb's glass envelope as shown. The grommet will serve as a bumper to ward off damaging blows.—J.A.C.

Keep hands away from the picture tube and the high voltage cage, even though you have pulled the cheater cord. An 18,000 volt shock can kill! And be sure you aren't standing on a damp basement floor.

Don't Kick Your TV Set— *FIX IT*

By JACK GRIMES

IF you know *what not to do* as well as *what you can do*, you can save up to 80% of the cost of maintaining the family's one-eyed monster.

The wise family repairman does not call a serviceman every time his picture tube has the wiggles, or does he immediately jerk out all the tubes and head for the self-service tester at the drug store. Nor does he attempt to become an electronic expert and attack the set with wire cutter and soldering irons.

All too often, a serviceman "loads" the receiver with new tubes, or the owner is informed it will have to go to the shop. Then, from $20 to $100 may be required for a ransom.

(Editor's Note: In many parts of the country, the TV repair industry has organized to discredit shops that habitually gouge the customer. This once all too prevalent practice is no longer the general rule.)

Sometimes the owner having suffered the gouge, fills a paper sack with every tube in the set, only to find the drug store tester shows half or two thirds of his tubes weak or shorted. The bill for replacements may be even larger than a shop repair, and the set may still refuse to operate.

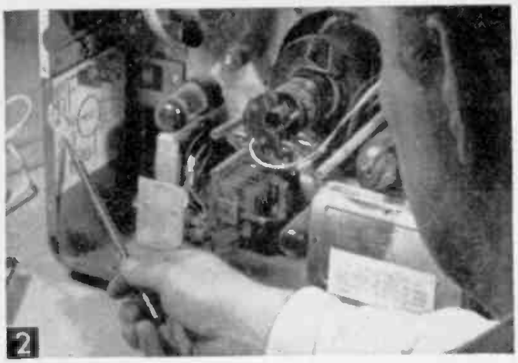
Another owner may search the library and newsstands or send off for every repair-it-yourself book he can find. He may invest in a few hand tools only to wind up with the biggest repair bill yet, the cost of a new set.

These examples may sound fictional, but 10 years of active participation in the TV service industry tells me that 90% of all set owners fall into one or more of the three patterns. The other 10% are home repairmen who have the prime quality of common sense. They know the meaning of such basic terms as video, audio, horizontal, vertical, and tuner, and they know that there is only one worthwhile test for any TV tube: *Will it work in a particular set?*

The Wise Set Owner has usually acquired this knowledge at considerable expense. Seldom has he read it in a "be an electronics expert" book. He knows that he cannot tackle major trouble shooting problems without a shop full of instruments, but he has the sagacity to do all that any TV repairman will usually do in the home. He knows: (1) that 85% of all set troubles are caused by defective tubes; (2) how a defective tube can be located using the set itself as a tube tester; (3) that he should avoid drug-store tube testers, since many of them are built to show a maximum number of shorted or gassy tubes (up to 70% of the tubes showing bad in these checkers may be usable in your set); (4) that he can obtain tubes at a wholesale price, and (5) that he can usually save the average $5 service call charge.

Because there are so many varying conditions within a set—and so many different tube applications, the only valid check is under actual operating conditions. For example, a weak audio tube may provide all the volume you can use, and could last years in your set, yet might be useless in a transmitter. In one case only a fraction of the tube's capacity is needed; in the other full output is required. Replacement in a transmitter would be necessary—in your set foolish. A tube checker would say the tube was bad.

If you do use a public tube checker, all you can save is a service call. You will still pay list price for a tube, and the present average



Every set has a tube layout, either a decal or sticker fastened somewhere on the inside wall or chassis. Do not remove chassis or tamper with picture tube adjustments. You may need a Photofact folder (see text).

is around $4.00. You can buy the same item, wholesale for as little as $1.00, from mail order electronic supply houses who advertise in this handbook.

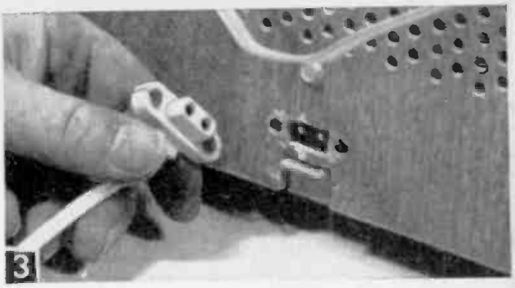
If your set flips, flops, refuses to light or to speak, you may feel you're all set to go to work. Slow down. Before you do anything, make sure that you completely understand *all* instructions. Remember that you are dealing with *lethal voltages*. Never put your bare hand into the back of the set without pulling the line plug, from the wall outlet, and even this may not always be safe. High voltage capacitors can hold a charge for several hours, if a bleeder resistor is defective.

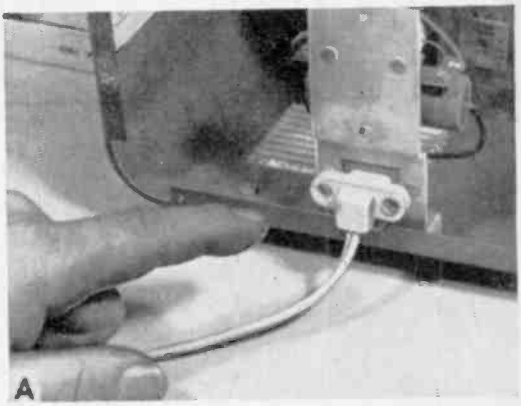
The only tools you need are a screwdriver, wrench, and a long insulated wand or stick. Remove the back and find the tube location chart. Compare it with a block diagram (Fig. 5). If you own one of the larger sets, or run into any unusual problem, it would be a worthwhile investment to order a copy of *Howard Sams Photofact Folder*. These folders are available for every make and model of TV set. (Available Allied Radio, by make and model, 38KK500, $1.95 postpaid).

As the signal travels through your set, in places both picture and sound are present, in others only one. From the antenna, both sound and picture travel through the tuner, through I.F.'s (amplifiers) and detector. Sound splits off, and picture feeds only through the video amplifiers to the picture tube. Sound goes through the audio tubes to the speaker.

Additional circuits are required to "draw the picture." These are horizontal and vertical "sweep" circuits (Fig. 5). Horizontal tubes are also responsible for creation of the very high voltages applied to the picture tube. A completely dark screen is usually caused by one of these tubes often located inside a shield (Fig. 1).

Another set of circuits keeps the picture



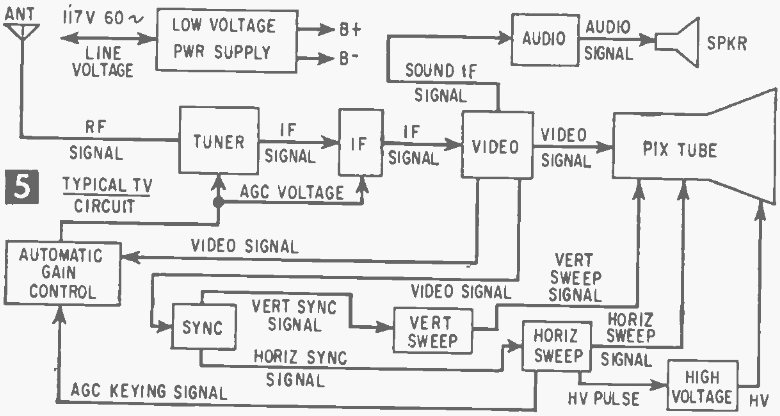


On this set, the cheater cord was originally riveted to the fiber back board. Rivets were removed so the cord could be used as a cheater.

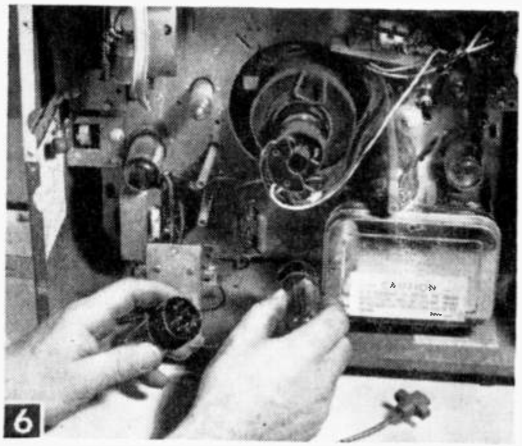
in "step" with the transmitter. Tubes here are designated "sync." Another tube, "AGC" (automatic gain control), keeps the picture level constant under varying signal strengths.

By studying block diagram and tube chart,

The service tech uses an insulated plastic wand to tap tubes. He watches the screen in a mirror, or reflected from a window. Erratic picture or sound pinpoints the faulty tube.



5 TYPICAL TV CIRCUIT



6 With cheater cord pulled out, the repairman carefully replaces an old tube with a new one. He works with one hand only to avoid shock.

try to determine which tubes may be at fault. If a set has a perfect picture, but no sound, the first thing to look for would be a bad audio tube. If a picture is pulled up at the bottom, it could be a bad tube in the vertical sweep amplifier circuit. Or if it is squeezed in at the sides, check tubes in the horizontal circuit.

If both picture and sound are affected, the cause must be in a circuit common to both—tuner or I-F. Sound may appear normal while the picture is snowy because the eye sees more trouble than the ear can hear. Snow suggests a tuner tube. A picture that won't stand still is caused by sync circuit trouble. One that blanks out—the AGC circuit.

Now set up a mirror in front of the set, or use the reflection in a window (Fig. 4). Plug in the cheater cord, and proceed with *caution.* If none of the tube filaments light, look for a blown fuse. Also, the set may be wired in series like Christmas tree lights. When one filament blows, they all go out. You can use the drug store checker to check filaments, or buy one of the filament testers available for about $3.00.

If you notice a pungent acrid odor, you may have a bad selenium rectifier. Turn the set off immediately. It will require shop work. The same applies if you notice any strong smell or smoke.

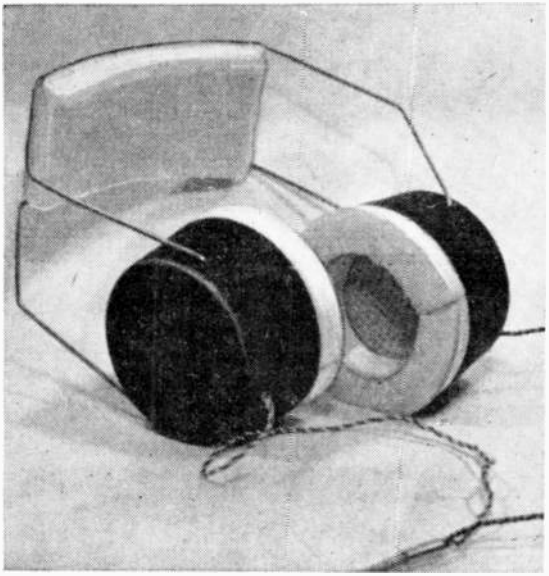
If all tubes light, inspect each one. After the set has been on for a few minutes, pull the plug and feel each tube (*use one finger only*) except those in the high voltage section. All tubes except the high voltage rectifiers must light or feel warm to the touch. Never get closer than a few inches to the high voltage rectifier tubes while power is on. Even with power plug out, the high voltage circuits can carry a stored charge. To be safe, wait a few moments, and then use a well insulated lead wire to short the high voltage tube cap to ground.

If no burnt out tube filaments are found, turn power on again and tap each tube gently with an insulated wand while you watch the picture in a mirror (Fig. 4). A shorted tube will cause lines in the picture, cause it to shift or tear, or cause noise in the sound system. Watch for signs of arcing within the tubes.

This is the method servicemen use to find a bad tube; logic, inspection, jarring under operation, and finally substitution. Sometimes you'll find that one set has several tubes of the same type number used in different locations. Swapping such tubes within the set will tell you that one tube is bad if the trouble transfers.

You'll Save Money by keeping a complete set of spare tubes (except picture tube) on hand. The set may cost you less than $5 if you buy at an electronic jobber, or through one of the mail order wholesalers. Such dealers will send catalogs on request and will sell not only to service shops, but to amateurs and experimenters too.

Never try to replace circuit parts other than tubes and fuses unless you are advanced in electronics. Do not disturb any of the chassis adjusting knobs and screws unless they are clearly marked as to function. For example, the vertical linearity control affects the top of the picture. Height, bottom, and width controls do what they say. Upset other adjustments and your set will have to go to a shop for alignment. In the event that you do call in a repairman, insist that all replaced parts be returned to you with an itemized bill.



1 Unusually light and comfortable, these earphones give you sound quality comparable to commercial stereo headsets.

BUILD YOUR OWN HI-FI STEREO HEADPHONES

By ALTON B. OTIS Jr.

USING two replacement transistor radio speakers that cost less than $2 each, you can build a stereo headset comparable in sound quality, comfort, and looks to models costing five times as much.

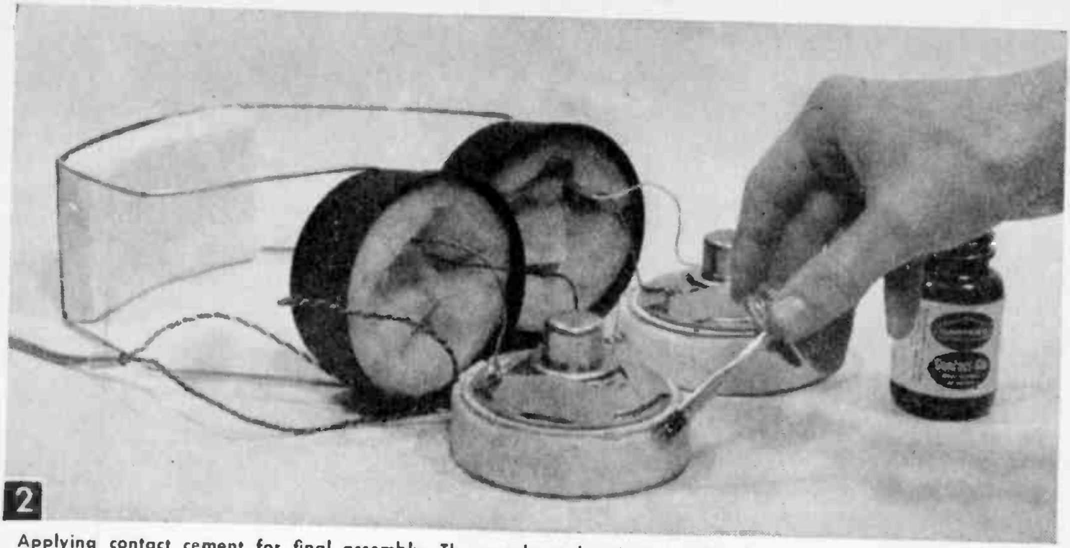
Three factors contribute to the quality of these phones. The speakers, only three inches in diameter, make the phones compact and light in weight. Second, the speakers are sealed to the ear with foam rubber rings, thus high apparent sound levels are obtained with very low power input. Distortion is held to a minimum, increasing over-all response at the same time. Third, the speaker is mounted on a cardboard baffle with a center hole. If you vary the diameter of the hole, the low end of the range is hardly affected. But due to a high frequency beaming effect, the builder can tailor response just by altering the size of the hole.

Make the earphone housings of 8-oz. plastic cups of the type used to package food products and novelty items. Drill two 3/32-in. holes 1/4 in. up from the bottom of the cups directly across from each other on a center line. Drill a third hole at the bottom for the wire lead. Use a spray lacquer such as *Krylon* to paint both sides of the cups in an attractive color.

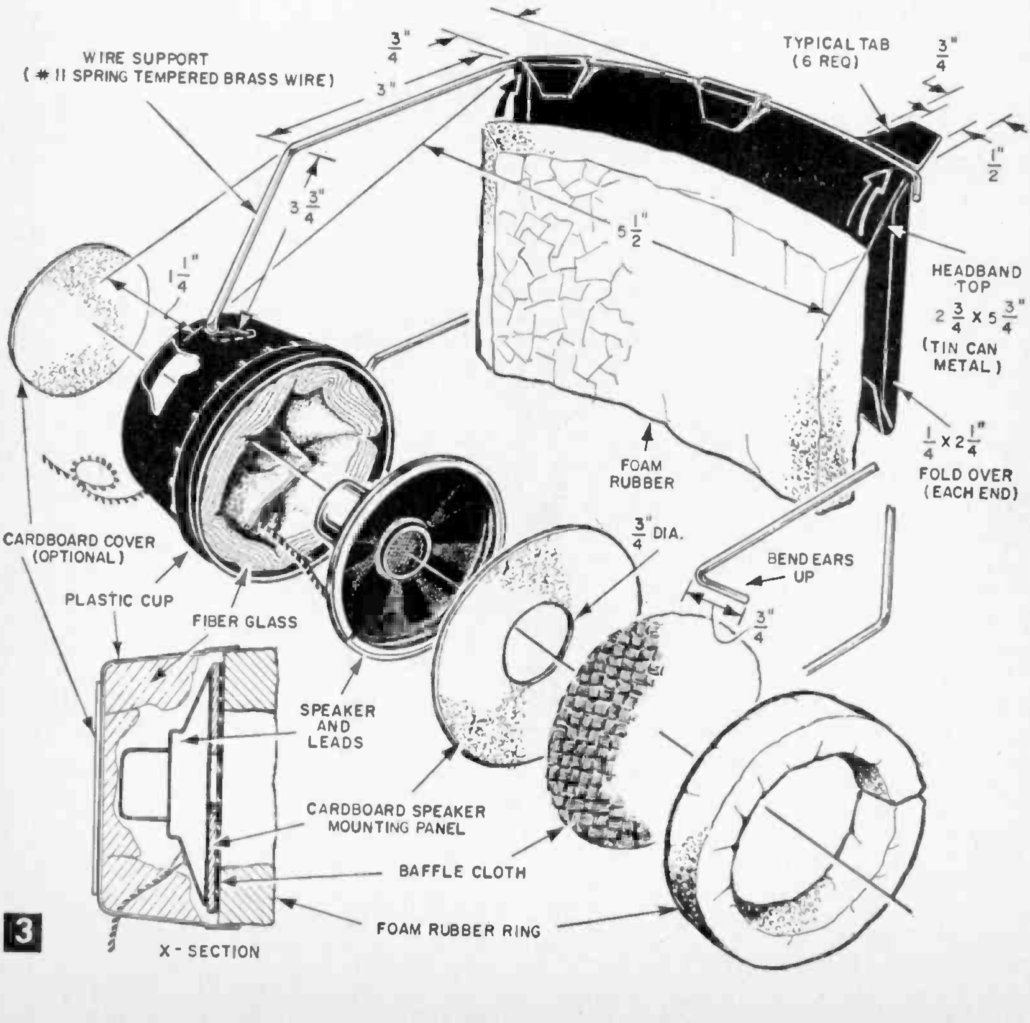
Use 3/32-in. pasteboard, or three layers of 1/32-in. thick or three layers of posterboard to cut two speaker mounting panels 3½-in. diameter to fit the cups. Make a temporary connection from the speakers to a mono source. Be sure phasing is correct. Use rubber cement to temporarily attach each speaker to the mounting panels. Press tightly against the ear during your test. If you want more high frequency response, enlarge the holes until you obtain a satisfactory balance. A ¾-in. diameter will usually give you very good results.

With the hole size determined remove the speakers. Trim and cement a piece of baffle cloth to one side of each panel. Mount the speaker on the other side using contact glue. Be sure to avoid spilling glue on the speaker cone or corrugated edge. Cover, but do not completely seal off the opening in the back of the speaker frame with masking tape.

For the earphone rings, cut two pieces of ¾-in. thick foam rubber 10¾-in. long. At the same time cut another piece 2½ x 5¾-in. for the head band. Brush three heavy coats of rubber cement on the strips allowing a few hours for each coat to dry, and then spray with heavy coats of clear plastic. The rubber cement seals the rubber air tight, yet allows it to remain soft and pliable, while



Applying contact cement for final assembly. The earphone housings, made of plastic cups, are filled with a backing of fiberglass to eliminate stray sounds back of the speaker cones.



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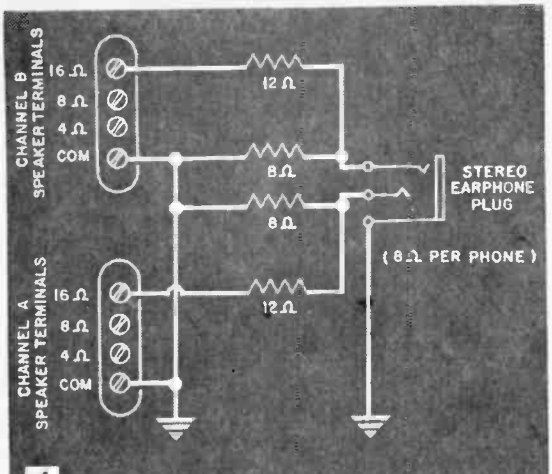


4 HUM REDUCING NETWORK (SEE TEXT)

MATERIALS LIST—STEREO HEADPHONES

Amt. Req'd	Size and Description
2	3" PM transistor radio replacement speakers (Lafayette Radio SK-193)*
10 ft.	4 conductor vinyl covered cable (Belden 8444)
1	3 conductor phone plug (Switchcraft 12-B)
2	8 oz. plastic cups (Auto Pak #1608, Plastic Container Corp., West Warren, Mass.)
4 ft.	No. 11-gauge spring tempered brass wire.
1 pc.	12 x 4 x ¾" foam rubber matting
1 pc.	¾ x ¼" O.D. brass tubing
Misc.	3/32" paste board, tin can metal, ¾" fiberglass matting, soft coarse weave cloth (for panel opening), contact glue, rubber cement, paint, primer, etc.

* Speakers and other electronic items required will be found in the 1962 catalog of Lafayette Radio Electronics, 111 Jericho Turnpike, Syosset, L. I., N. Y.

the spray eliminates surface stickiness of the cement, keeping the foam clean.

Cement the ends of each of the two long rubber strips together in a ring, and contact glue to the cloth side of the speaker mounting panels (Fig. 3).

Make the headset frame of two 25-in. lengths of 11-ga. tempered brass wire. Bend as in Fig. 3. For a brushed brass effect, sand the wire lightly. Cut and shape the top piece from a piece of tin can metal. Bend the tabs over the curved portion of the brass wire and crimp tightly in place. Bend the end tabs inward over the side tabs and solder the joints firmly. Touch up sharp edges with a file and rinse with turpentine to eliminate traces of rosin flux. Use a metal primer and then paint. The brass should be protected with masking tape during spraying.

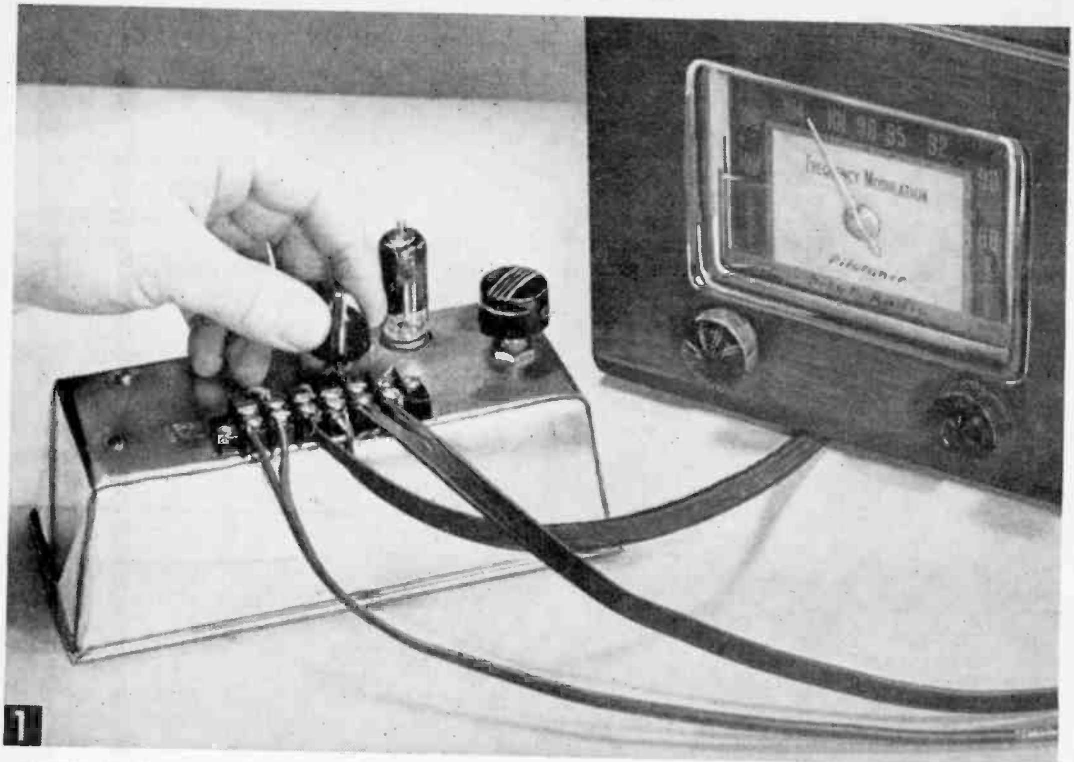
Wire the Headset to a 10-ft. length of 4-conductor cable, or any convenient length you choose. Strip 20-in. of the outer insulation from one end and 2-in. from the other. Cut a ¾-in. length of ¼-in. brass tubing and sand the surface for effect. Clean up burrs and slip over the cable. Separate the four 20-in. conductors into pairs and twist together. Wrap a short length of masking tape around the outer insulation where these leads come out of the cable and press fit the tubing over for a neat connection. At the other end connect a three-wire phone plug to match your equipment, soldering one wire from each of the phones to the ground plug. If your headset will be connected to two amplifiers, use a pair of two conductor plugs instead.

Final Assembly consists of attaching the plastic cups to the frame by bending the ends of the brass wire into the side holes and turning up on the inside. Be sure your third wire lead holes face down. In each cup, insert a piece of ¾-in. fiberglass matting 1½-in. wide by 10-in. long. Use a small square of fiberglass in the bottom. Run the twisted wire leads through the bottom holes and tie knots in each pair 4-in. from the ends.

Solder the leads to the speakers making sure they are correctly phased. Color dots on the speakers make this easy. Use contact glue on the bottom edge of the foam rubber rings and on the inside edge of the plastic cups. Push the speaker assemblies into the cups and position carefully. Contact glue the large strip of foam to the bottom of your head bracket and the project is completed.

Installation. If you are using your headset with a high quality stereo amplifier connect directly to the 8 ohm speaker output terminal. For mono listening connect in parallel to the 4 ohm terminal. If your amplifier is the transformerless ac-dc type or has a high a-c ripple content, the residual hum will make listening uncomfortable. In most cases, the hum can be eliminated by a resistance network (Fig. 4) between phones and amplifier which will permit you to operate at a higher output power level. If one-watt resistors are used, you'll find you can fit the entire assembly within the shell of a large size three conductor plug such as *Switchcraft* 12-B.

Performance Notes. Frequency response measurements in the low and mid range regions indicated that usable response extended to 30 cps, while at 45 cps, it was down only 2 db. Subjective measurements at the high end indicated a top of about 17,000 cps reasonably flat to 12,000 cps. There was a 15 db peak at 32 cps due to the high resonant frequency of the small enclosure. Distortion was extremely low at normal levels, and moderate at ear-splitting levels, while transient response was very good.



Connect the booster chassis to your FM tuner with a short length of twin lead. The other twin lead feeds out to the antenna.

More Power for Your FM Set

Simple one-tube amplifier increases FM signal 15 times for better music and DXing

By C. F. ROCKEY

IF you live just beyond the acceptable quality range of a popular FM station, or if you'd like to chase FM-DX (long distance reception), this RF amplifier is the answer.

Or, maybe you live in an apartment building where you can't install a full grown antenna for your FM tuner. Then this booster will give your tuner a real chance to exercise its built-in noise-limiting abilities to better advantage. Even on local stations, you'll be surprised at the improvement in music quality.

A 7½ x 4-in. cake pan makes an inexpensive easy-to-work chassis just the right size. A coat of spray lacquer in color to match your other equipment will give it a professional touch.

Punch the hole for the tube socket first. If you lack regular chassis punches, just prick a small hole in the right place with an ice pick, and then enlarge the hole to ¾-in. using the tang of a mill file or a reamer. Next drill the holes for the tuning capacitors (Fig. 3) to ½-in. diameter. But do not mount yet.

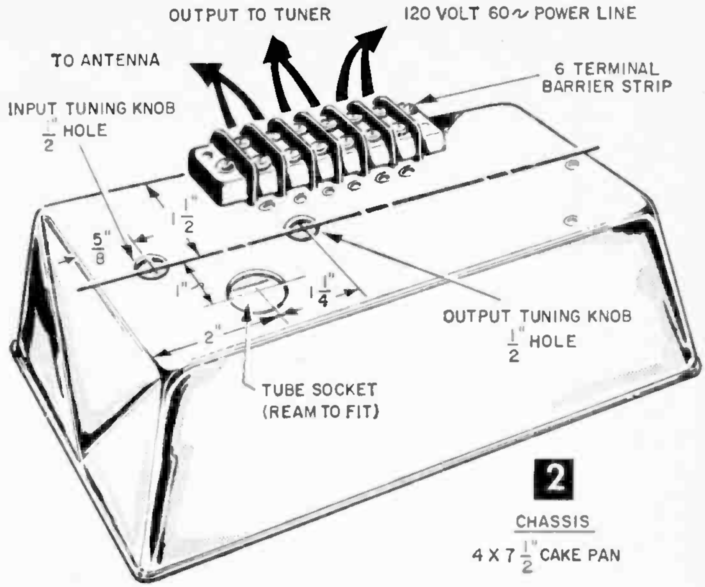
Insert the tube socket in its hole from the bottom of the chassis. Fasten firmly in place by soldering the socket "ears" to the chassis. You can do it with a common 100-watt soldering iron. Mount a six-terminal strip centered on the rear of the chassis (Fig. 2) using 6-32 machine screws and nuts. Punch a hole opposite each terminal for feeding the leads through the chassis.

Next mount the power transformer and capacitors. Fasten the rectifier in place by means of a 6-32 machine screw passed through the center hole. This hole is insulated by the manufacturer for this purpose.

Start the wiring by feeding the black primary transformer leads through the holes to the power line terminals on the strip. Since most sound layouts have one master switch, no separate switch is shown. However, if you need an individual power switch on your booster, connect a SPST toggle switch in series with one of these transformer leads.

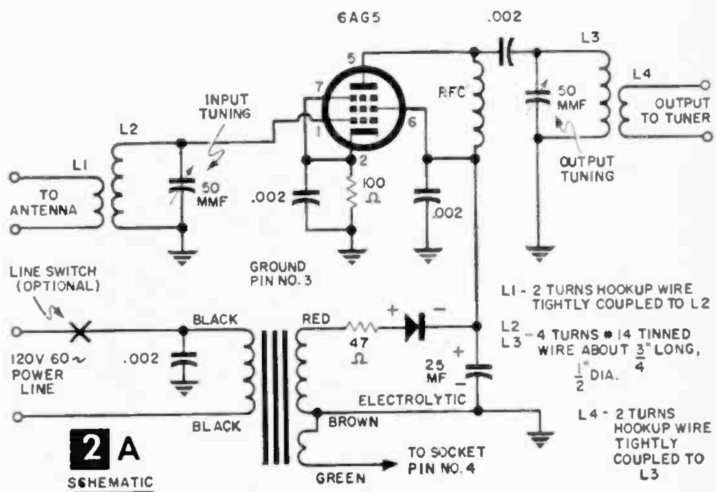
Next wire the selenium rectifier as in Fig. 3. The 47-ohm resistor protects the rectifier from current surge when the electrolytic capacitor charges. Be sure to connect the positive side of the rectifier to the resistor, and the capacitor to the negative side. This connection *must* be right.

Support the "hot" positive connection of the electrolytic capacitor by an insulated tie point to the side of the chassis (Fig. 3). Solder the negative connection directly to the chassis. The rest of the power supply wiring is simple, but be sure to observe the right polarity on both the rectifier and electrolytic capacitor. The ceramic capacitors may be



2 CHASSIS

4 X 7 1/2" CAKE PAN

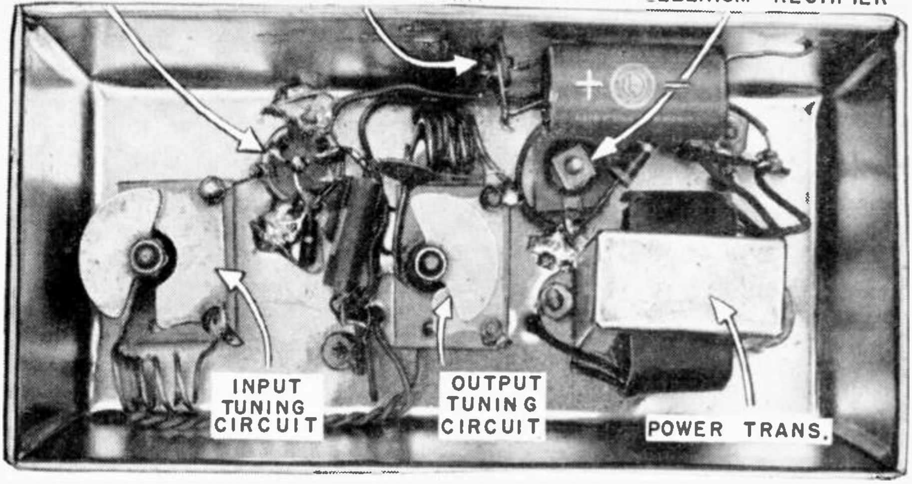


2A SCHEMATIC

MATERIALS LIST—FM BOOSTER

Amt. Req.	Size and Description
1	fruitcake pan, Ekco. 4 x 7½" opening (approx.)
2	50 mmf variable capacitors, Cardwell PL 6004
2	plastic knobs, ¼" shaft
1	six terminal Jones barrier terminal strip
1	power transformer: 120 v. primary, 120 volt secondary Stancor No. PS 8415
1	selenium rectifier, Sarkes-Tarzian type 50 rated at 130 volts at 50 ma.
1	electrolytic capacitor, 25 mfd, 150 w.v. Cornell Dubilier No. 2515

Amt. Req.	Size and Description
1	miniature 7 pin type socket, Amphenol
1	Ohmite Z-50 (50 mc) R.F. Choke
3	0.002 mfd ceramic capacitors, disk type
1	47 ohm, 1 watt resistor
1	100 ohm, 1 watt resistor
1	2 lug (insulated) tie point strip
2	1 lug (insulated) tie point strips
1	6AG5 tube
Misc.	#14 tinned copper wire, rosin core solder, hook-up wire, 6-32 machine screws and nuts, twin-led and line cord



3 All wiring is under the chassis. Six holes just above the output tuning circuit on this photo feed input, output and power leads through to a 6-terminal barrier strip on top.

wired in either polarity.

Check power supply operation by connecting a line cord to the power terminals. Then read voltage across the electrolytic capacitor. From 140 to 160 volts indicates proper operation. If your wiring is correct but you have difficulty, check the rectifier and capacitor first. The transformer seldom will cause trouble.

Wind the input and output tuning coils, #14 tinned copper wire, around any convenient round object (½-in. dia.) such as a drill shank, or fountain pen barrel. Then slide the coil off the form and adjust the turns for uniform spacing over a length of about ¾-in. Connect these coils across each of the tuning capacitors as in Fig. 3.

The rest of the amplifier is easy to wire following the schematic. Keep all high frequency leads as short as possible and separate the grid and plate leads as much as possible. Press these leads close to the chassis to confine their electromagnetic fields. There should be no difficulty in wiring and checking the circuit.

Wind L_1 and L_4 of insulated hookup wire, two turns around the same form used earlier. Remove from the winding form and push between the two turns at the grounded end of each of the two tuned coils. Press these turns in as far as possible for the closest possible coupling and cement in place with *Duco* or equal household cement. Twist the leads of each coil together and connect to the proper terminals.

Keep the input and output leads as far from each other as practical. Ground the inside tuner output terminal to further reduce coupling with the input.

With wiring completed, turn power *on* and connect your FM antenna lead to the antenna terminals. Use a short piece of 200 ohm twin lead to connect the output terminals to the tuner antenna terminals. If the wiring is correct, the 6AG5 tube should light up.

Tune in a fairly strong FM station on the tuner. Then adjust the booster's capacitors for greatest signal strength. If the booster is operating as it should, this adjustment should increase the volume noticeably. If not, check the wiring carefully for short-circuits.

When a decided boost is obtained on strong local signals tune in a weak one, and readjust the booster tuning capacitors. It is on these weaker signals that this unit really should "pay off." When operating correctly, this booster should pull in several stations which were inaudible without it.

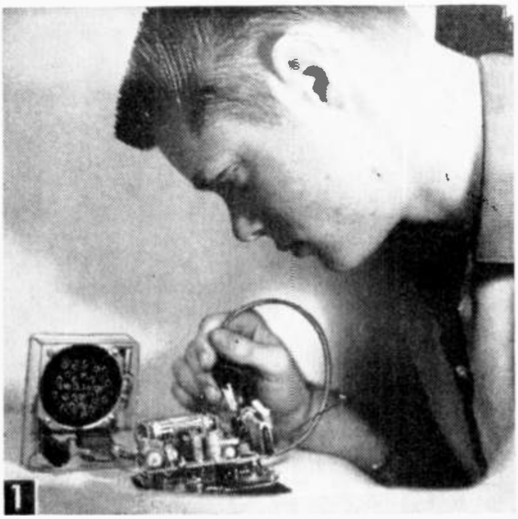
If little or no boost is obtained, but a loud howl, or blocking, is observed at certain dial settings of the booster, the unit is oscillating. This is caused by feedback from the output to the input. To correct, separate the input and output twin-leads more completely or reverse connections at *either* (but not both) the input or the output terminals. If this does not eliminate the oscillation, invert the chassis and bend the plate and grid wires further apart, or press each closer against the chassis, avoiding short-circuits, however. This will correct the tendency to oscillate.

Suitable for boosting FM signals, this unit should not be expected to perform satisfactorily for TV signals. In order to properly reproduce picture detail it is necessary that all TV circuits be designed to pass a signal bandwidth approximately *thirty* times greater than required for FM broadcasting.

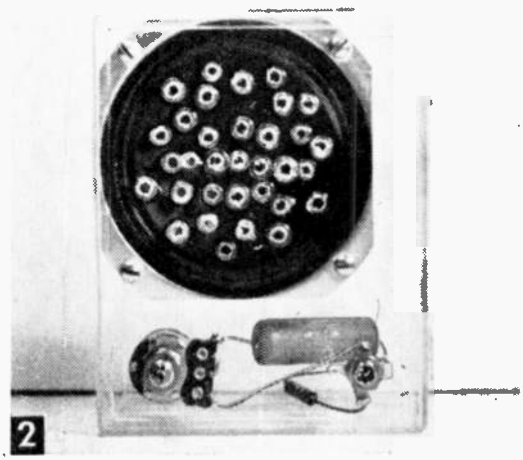
Transistorized Signal Tracer

For less than $8 you can build this compact, portable signal tracer which operates on a self-contained battery

By FORREST H. FRANTZ Sr.



Tracing a signal in transistor radio.



Compact unit is a versatile troubleshooter.

THE signal tracer is a valuable instrument for the experimenter and technician. It can be used to trouble-shoot radios, amplifiers, and other electronic equipment. This transistorized signal tracer (Figs. 1 and 2) will take only an hour or two to build.

Another of its important functions is that of a universal test amplifier to test microphones, phono pick-ups, and other kinds of transducers. The signal tracer can also serve as an amplifier and speaker for earphone radios.

Because of the printed circuit amplifier it employs (Lafayette PK-522 complete with transistors, $3.75), the signal tracer can be built quickly and inexpensively. You will appreciate its small size and portability. It has a self-contained speaker and battery, and weighs only a few ounces. No special tools are required.

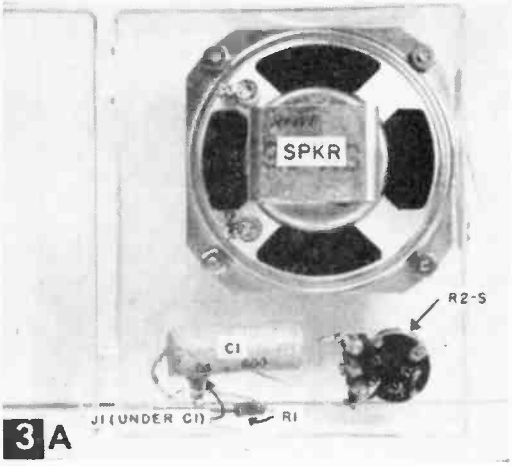
Construction. Make the necessary small holes in the plastic case with a heated ice pick. Place the speaker inside of the case in the position shown in Fig. 3A and use the speaker as a template to make the four mounting holes. Remove the speaker from the case and make a series of random holes (see Fig. 3B) for speaker sound. Make two holes 11/16 in. from the respective case edges with the heated ice pick to establish centers for the jack J1 and volume control R2-S mounting holes. Enlarge these holes to ¼ in. diameter with a taper reamer.

Cut off excess plastic built up around small holes and wash the plastic case in soapy water. Rinse in clear water and dry thoroughly.

Next, cut the shaft of volume control R2-S with a hacksaw to a length of ⅜ in. Place the portion of the shaft to be discarded in a vise and catch the control as it falls free to prevent damage. Mount the speaker, R2-S, and J1. Connect C1, R1, and the ground wire as shown in Figs. 3A and 3B. Use resin core solder and a hot clean soldering iron. Be careful not to overheat the parts, and be especially careful not to melt the plastic case. Set the case aside for final assembly later.

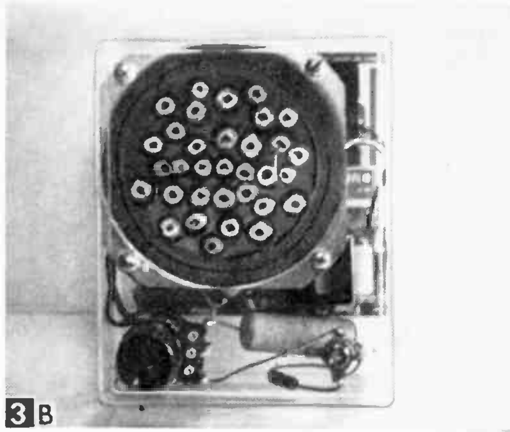
Amplifier Modification. Figs. 4A and 4B show the amplifier as you will receive it with all leads attached. Use the instruction sheet which comes with it to supplement the figures which appear in this article.

Disconnect and remove the 30-mfd, 10-volt capacitor on the bottom side of the amplifier board (see Fig. 4B). Be careful to note polarity and connection points. Install this capacitor on the top of the amplifier board and connect to the same points as before, with



3A

Mounting speaker and volume control.



3B

View showing holes drilled for speaker sound.

leads inserted through the top of the board (see Fig. 4C).

Next, solder resistor R3 in the circuit on the bottom side of the board. One end of R3 connects across the points to which the red and orange volume control leads are connected. Remove the red and orange volume control leads. The other end of R3 connects to the broad ground strip (top edge of board, Fig. 4D). Disconnect and remove the green volume control lead.

Now, solder two 2¾ in. lengths of No. 22 bare, solid wire to the amplifier board ground strip (see Fig. 4D), keeping in mind that these two wires should be positioned in such a manner that the amplifier can be attached through the speaker magnet frame as shown in Fig. 6B. A trial or two may be required to obtain satisfactory positioning.

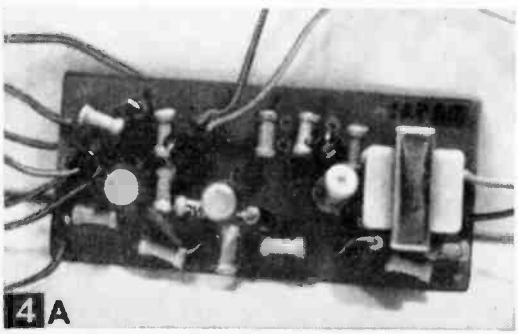
Wiring. With the case assembly and amplifier in the relative positions shown in Fig. 6A, complete the amplifier wiring. The schematic (Fig. 5) may be helpful.

Connect the green amplifier input lead to the ground terminal on R2, the blue input wire to the center terminal on R2, and the red and orange switch leads to the terminals of switch S. Connect the black and yellow amplifier output leads to the speaker terminals.

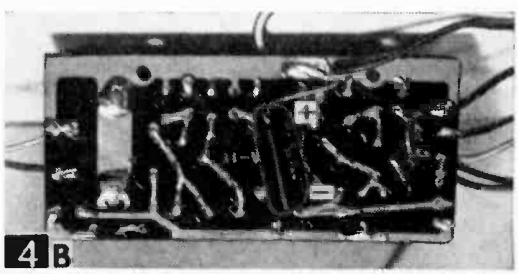
Position the amplifier for mounting as shown in Fig. 6B. Pass the two pieces of solid wire through the inside of the speaker magnet frame, bend them around the outside of the frame, cut them to length, and solder them to the ground strip along the upper edge of the amplifier. This arrangement will hold the amplifier in place securely. Be sure that amplifier components or leads do not short against the volume control switch, jack, or speaker terminals.

Fasten a piece of tape to the battery (Fig. 6A), to prevent it from shorting to the speaker terminals. Fasten the battery connector to the battery, and insert it in place (Fig. 6B). Attach a small grommet to the battery case (with rubber cement) to hold the battery in place when the back of the case is closed.

Make a narrow groove on the face of the volume control knob with a hacksaw or triangular file. Fill the groove with white India ink or white paint. Wipe off excess from the front of the knob, and fasten the knob on the shaft of R2-S.

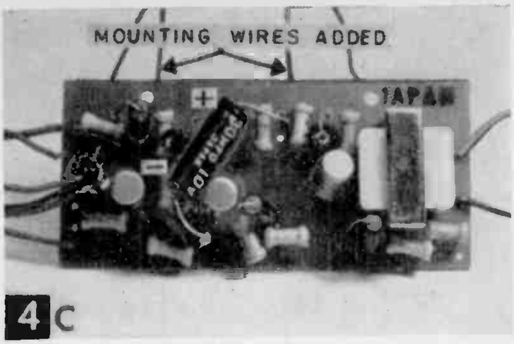


4A

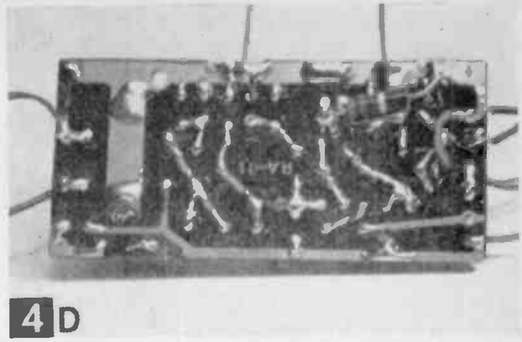


4B

Amplifier before modification with original position of 30 mfd, 10 volt capacitor to be relocated.



4C



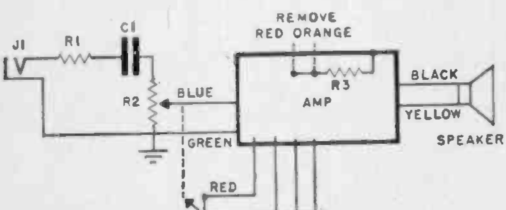
4D

Amplifier after modification, the capacitor having been relocated.

To Test the Signal Tracer, turn the volume switch all the way up. Place your finger on the tip terminal of J1. You should hear a hum if everything is OK. If not, check for wiring errors, shorts, poor connections, and a bad battery. You'll rarely find bad parts among new purchases.

The Test Lead for use in audio signal tracing includes a miniature plug (part of Lafayette MS-370), shielded wire, and two Mini-gator clips for connection to the circuit under test. Remove about an inch of the outer insulating sheath; and, with an ice pick, loosen the metal braid on the shielded wire back to the sheath. Twist the shield strands together. Strip about ¼ in. of insulation from the center conductor. Slip the plug handle over the center conductor and the shield. Solder the center conductor to the center (tip) terminal on the miniature plug and solder the shield to the shell terminal of the plug.

Tape as required to prevent shorting and fasten the plug handle. Strip the other end of the shielded wire and fasten the Mini-gator clips. Tape center lead down to the Mini-gator clip handle for strain relief and identification.

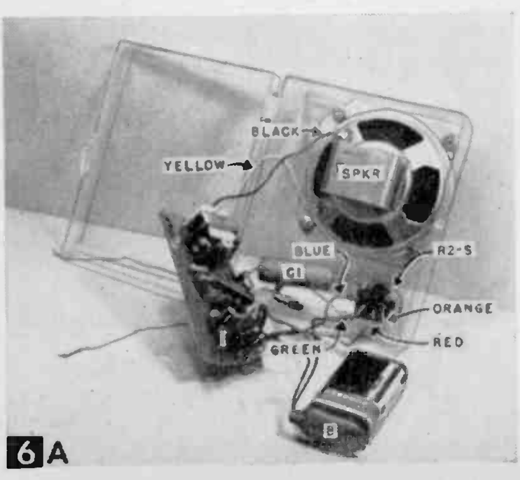


5 SCHEMATIC

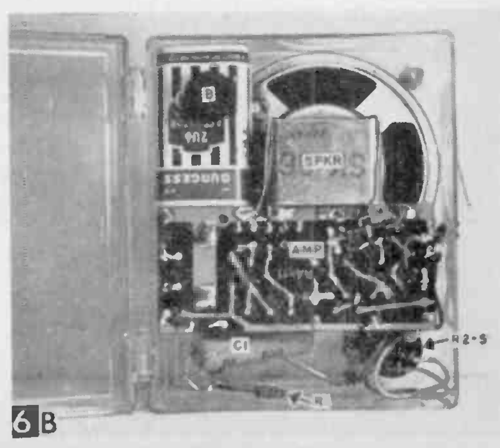
MATERIALS LIST—TRANSISTORIZED SIGNAL TRACER

Desig. or No.	Description
R3	4.7K, ½ watt carbon resistor, 10%
R1	220K, ½ watt carbon resistor, 10%
R2-S	10K miniature volume control with switch (Lafayette VC-28)
C1	.01 mfd., 600 volt tubular capacitor (Lafayette C-503)
AMP	3 transistor subminiature audio amplifier (Lafayette PK-522)
SPKR	2½" PM speaker, 10 ohm voice coil (Lafayette SK-66)
J1	miniature jack (Lafayette MS-370 including plug)
B	9 volt battery (Burgess 2U6)
1	miniature knob (Lafayette MS-185)
1	1⅛ x 3⅛ x 3⅞" plastic case (Lafayette MS-298)
1	30" single conductor shielded wire (Belden 8411) and 2 Mini-gator clips (Mueller 30) for test leads

Parts for this project may be obtained from Lafayette Radio, 111 Jericho Turnpike, Syosset, L. I., N. Y.

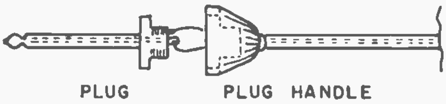


6A



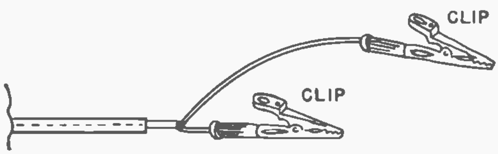
6B

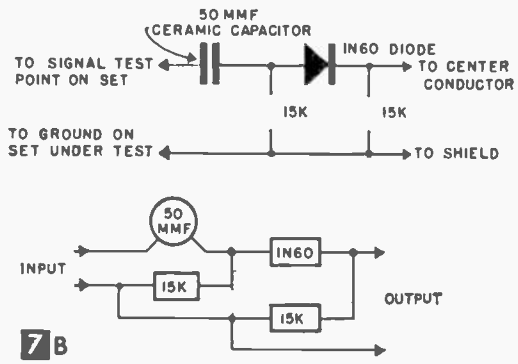
Final assembly



7A

CONNECTIONS FOR SIGNAL TRACING LEAD





7B

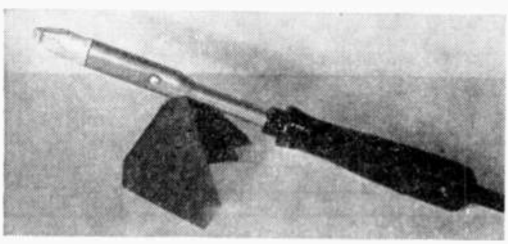
SCHEMATIC AND PICTORIAL SKETCH OF DETECTOR ATTACHMENT FOR RF SIGNAL TRACING

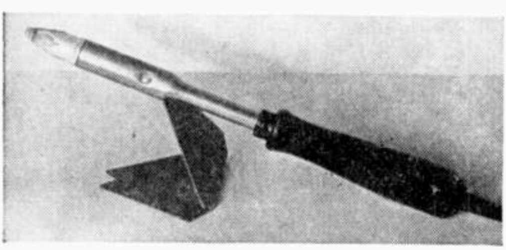
With this test lead you can trace signals in the audio portion of radios, audio amplifiers, and other low frequency radio equipment. You can also test microphones, phonograph pick-ups, vibration transducers, and other "energy changers." When you use it as a test amplifier, connect the test lead shield to ground and the center lead to the high point in the unit under test.

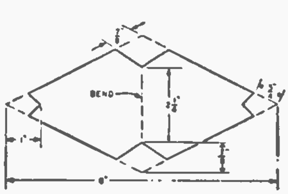
RF and IF Uses. To use the signal tracer in the RF and IF portions of a radio receiver, you'll need a detector attachment such as that sketched in Fig. 7. This detector is similar to the detector in radios and performs the same job. You can build it on a piece of bakelite or stiff cardboard, or into a small plastic tube.

When you are signal-tracing in a radio or amplifier, the signal should become stronger as you progress from the input to the output end of the unit. If the unit under test is inoperative, you will encounter a point where no signal is present. This localizes the trouble between the no signal point and the last point at which the signal was present. Then it's an easy matter to pinpoint the trouble with voltage measurements and other conventional tests.

Pyramidal Soldering Iron Stand

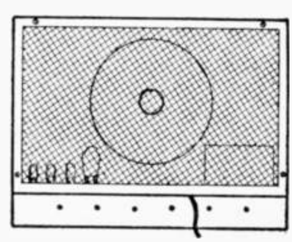






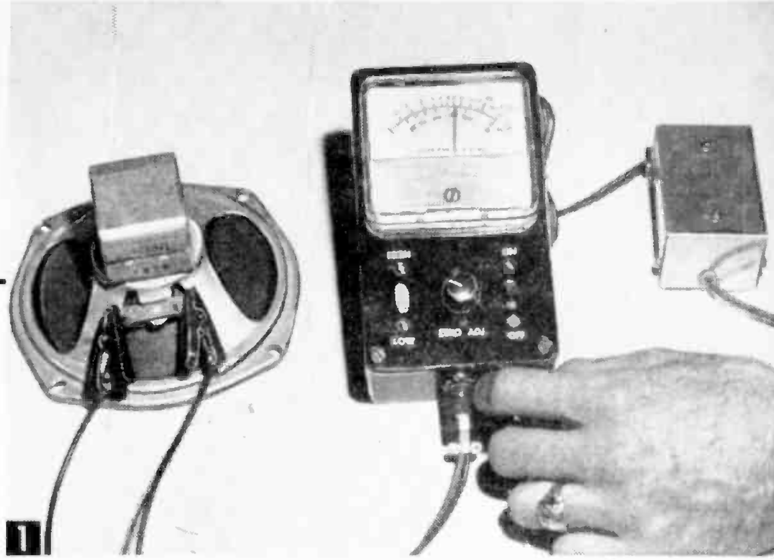
• You can stand or toss this temporary soldering iron rest onto the bench, and use it in whatever position it comes to rest. Shaped like a pyramid, all of whose sides are equal, it cannot fall over and always rests on a firm base. In addition, it does not get warm in use, as the two small points in contact with the iron do not transfer enough heat to warm up the mass of the metal. Cut out the stand from a piece of 20-gage sheet metal (steel, brass or aluminum) and file to shape. Bend stand to a 60° angle across the middle, making a sharp corner. This will close up wide notches at each end of the bending line to approximately the same size as the others.—L. C. MASON.

Ventilate Your TV Set



• Television sets develop a lot of heat and sometimes the only provision for ventilation is a series of holes punched in the back panel. Continued overheating can shorten the life of those costly television tubes.

To get more ventilation, replace the panel with a simple frame covered with plastic screen such as is shown above.—W. H. MCCLAY.



1

Low range on most ohmmeters is 0 to 1,000 ohms. This meter gives you dependable readings of low ohmage parts such as this speaker coil. You can calibrate the meter to read even in fractions of an ohm.

Low Range Ohmmeter

Low scale on most ohmmeters is 1,000 ohms. This meter can read down to fractions of one ohm!

By GUS WESENFELD

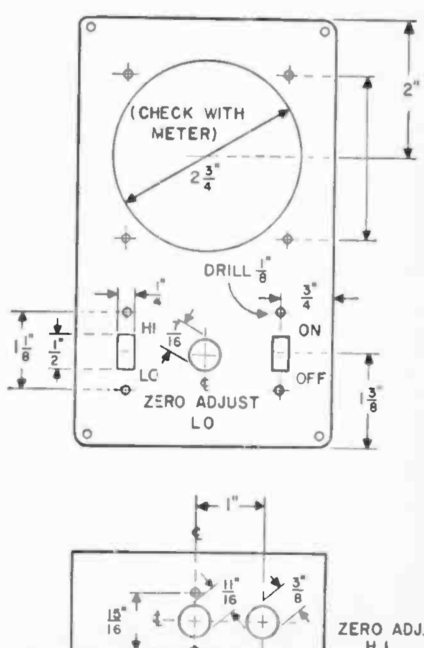
QUITE a few electrical and electronic parts such as ballast resistors, lamp filaments, speaker coils, and extension lines have resistance so low it cannot be read accurately, or at all, on the ordinary volt ohmmeter. This project which priced out at less than $12.00 does the job.

Though the circuit values in the schematic (Fig. 5) provide for a low range scale reading from ½ ohm to 25 ohms, you can easily set up a low range reading from 1/10 ohm to 2 ohms, or any other similar range. This can be done by lowering the value of R3, explained later.

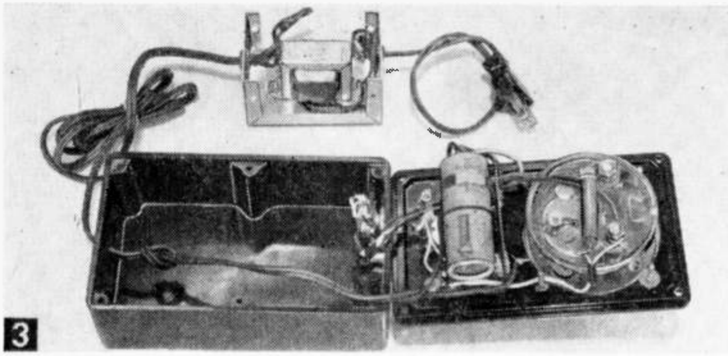
Cut the Holes in the plastic case panel (Fig. 2) with a fly cutter and drill press, or hand coping saw. Thin spiral blades work best. Before you lay out your holes, check the parts for size. Though a 0-1 milliammeter is shown, you can substitute practically any available milliammeter, even a 0-10 ma. meter.

Mount all parts in position, except the meter, safer in its shipping carton until last. Use any thin sheet metal for the chassis. It is held in place by the two upper screws that fasten the switches to the panel. Mount rectifier D1 in place on its mounting stud, and check all wiring carefully.

Pretesting. Turn R1 and R2 counter-clockwise as far as possible. Switch SW1 to off and SW2 to high range. Plug in the ac power cord, and with a vom set for a-c, check voltage across the transformer input. It should read 12.6 volts. Next close switch SW1 and measure d-c across capacitor C1.

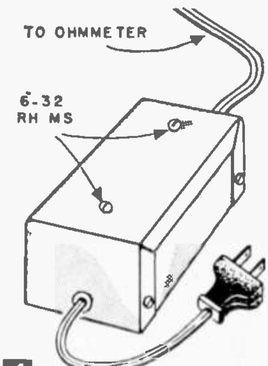


2

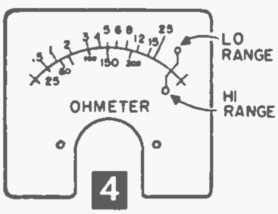


3

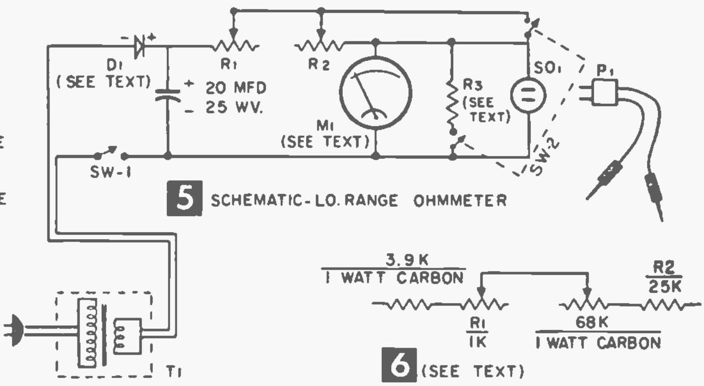
The filament transformer is housed in a small aluminum box (top). Mount the silicon rectifier on an L-shaped aluminum bracket. It is located between the meter and capacitor fastened to the panel with the top switch mounting holes.



4A TRANSFORMER CASE



4 METER SCALE AFTER CALIBRATION



5 SCHEMATIC-LO. RANGE OHMMETER

6 (SEE TEXT)

This should be about 16 volts. Turn S1 off and plug test clips into SO-1.

With your vom on a 10 ma. range, clip the leads to the low range ohmmeter test clips. Turn switch SW1 to on and slowly turn R1 up until the vom reads half scale. Then turn R2 clockwise to bring the meter to full scale. If either test causes the meter to swing down scale, reverse pot connections. With tests finished, complete assembly by installing the milliammeter.

Calibration requires you remove the plastic meter cover. Pry it up with a thin screw driver at several places until the cover snaps off. Use a small sharp screw driver to remove the meter scale plate and replace with a dial (Fig. 4) drawn on white card stock.

Let's assume that you want low scale to read 0-25 ohms. Place a zero mark about ¼-in. left of the meter's full scale point. Clip a 3.9-ohm resistor across the test clips, set R1 to low and switch SW-1 on. Slowly turn R1 clockwise until the meter reads at the new zero mark. Turn SW-1 off, and clip a 25-ohm resistor in parallel with the 3.9-ohm resistor. Turn SW-1 on. The meter should rest about ¼-in. to the right of zero left. If the needle rests too far to left, you will need a larger value, say 4.3 ohms. If it is too close to zero, try a smaller resistor such as 2.9 ohms. During trials *never remove the resistors from the test clips without turning SW-2 off.*

After soldering the shunt resistor into the instrument circuit, calibrate the other scale points using 4 or 5 intermediate resistors. When the shunt is in place, you no longer need to turn SW-2 off when changing resistors. Accuracy of the meter depends on the

MATERIALS LIST—LOW RANGE OHMMETER

No.	Size and Description
M1	0-1 ma Meter, Olson Radio #ME-68
D1	2 amp silicon rectifier, Olson Radio #RE-66 or equal
T1	2.6v filament transformer, Olson Radio T-304
R1	5000 ohm ¼-watt potentiometer, Lafayette VC-937
R2	20,000 ohm ¼-watt potentiometer, Lafayette VC-43
R3	3.9 ohm, 2 watt, carbon resistor (see text)
C1	electrolytic capacitor, 25 mfd, 25 W.V., Lafayette #C-129
SW-1	SPST slide switch, Lafayette #SW-14
SW-2	DPST slide switch, Lafayette #SW-16
SO-1	Cinch-Jones chassis mounting 2 conductor socket #S-2402-DB (Allied #22H481)
P1	Cinch-Jones 2 conductor plug, #P-402-CCT (Allied #40-H-910)
1	set of universal test leads, Lafayette #F-373
1	minibox, 2¾ x 2⅛ x 1⅝, Lafayette MC-358
1	plastic case, 6¼ x 3¾ x 2, Lafayette MS-216
1	panel for above, Lafayette MS-217
Misc.	6-32 *fh* machine screws, line cord
Sources:	Olson Radio, 260 Forge St., Akron, Ohio Allied Radio, 100 N. Western Ave., Chicago 80, Ill. Lafayette Radio, 111 Jericho Turnpike, Syosset, L. I., New York

calibration resistors, for example, if you use 1% resistors you'll get accuracy around 2%.

Calibrating the High Range. Whenever you switch from range to range, be sure to turn the unit off to protect the meter. On high, turn R2 clockwise until the meter reads at the zero mark established earlier. Again use about 5 different values of resistors to mark points on the scale. Ink in your numbers, and replace the plastic cover.

Any low ohmage range can be calibrated. For example if you want a 1/10 to 2 ohm scale, select a trial resistor, say 2 ohms and test as before. Then add another 2 ohm resistor and note the meter deflection. The object is to select a shunt that allows the meter to indicate top value at the desired point on the scale. You'll find the meter may require occasional zero adjustment to compensate for varying line voltage.

Pushbutton MUSIC BOX

By C. A. KITT

THIS musical toy can be enjoyed by children of all ages, and can be built in less than an hour for a cost of $3. To suit your taste in music you have a choice of tunes: "Moonlight Serenade," "Smoke Gets in Your Eyes," "How Dry I Am," "Around the World in 80 Days."

There's no winding. The Swiss-type musical movement is driven by an electric motor energized by a self-contained flashlight battery and pushbutton switch. Depending on who is going to use the music box, the switch can be either the high- or low-pressure type. If low, its leaves will have to be adjusted to obtain desired operation.

Construction. You can house the unit in a small plastic case, which can be sealed shut with Duco or plastic cement if desired. Install the pushbutton switch in a 1/4-in. dia. hole centered 1/2 in. from the edges of the case. Then place the musical movement and battery in the case, secure a good fit, and mark mounting holes for the movement. Be sure that the gear wheel on the drum of the movement does not rub against the case.

Make starter holes in the case with a heated ice pick. Enlarge holes to size with a taper reamer and clean them out with a knife.

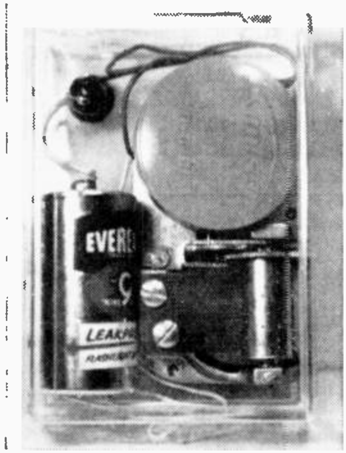
MATERIALS LIST—PUSHBUTTON MUSIC BOX

No. Req.	Description
1	Momentary contact switch low pressure (Lafayette MS-449) or high pressure (Lafayette SW-70); low pressure recommended if toy is intended for a baby.
1	Electric music box movement—"Moonlight Serenade" (Lafayette MS-760) "Smoke Gets in Your Eyes" (Lafayette MS-761) "How Dry I Am" (Lafayette MS-762) "Around the World in 80 Days" (Lafayette MS-763)
1	Battery (Eveready 935 or Burgess C)
1	1 x 2 5/8 x 3 5/8" plastic case (Lafayette MS-159)
	Above parts can be obtained from Lafayette Radio, 111 Jericho Turnpike, Syosset, N. Y.

Mount parts and solder the connections, using clean, well-tinned soldering iron and resin core solder. Roughen battery surface to be soldered with a file, then apply soldering heat to the battery for as short a time as possible. Observe correct battery and motor polarity so that movement does not run backward or stick.

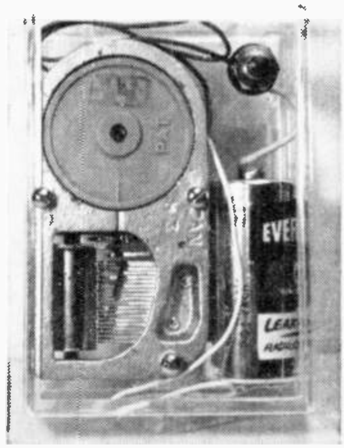
If you wish to hide the contents of the case, remove them and paint the inside surfaces of the plastic. This way, the paint will not come off and endanger children.

If you want light with your music, connect a flashlight bulb in parallel with the musical movement. The box will then light up when the switch is depressed.



Top view showing high-pressure pushbutton switch.

Bottom view.



Adjustable Mike Stand for $1.50

Build it for your tape, recorder, ham transmitter, club, school, or church

By ART TRAUFFER

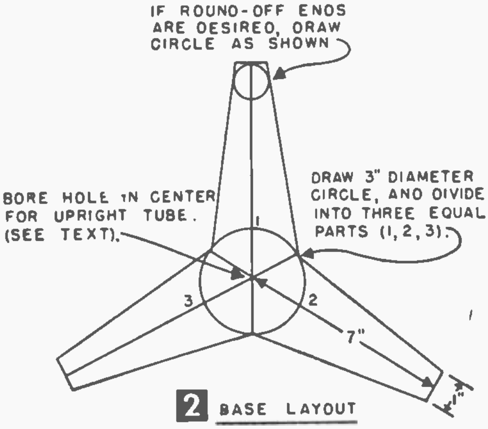
YOU'LL have to look closely to realize that the professional appearing microphone floor stand in Fig. 1 is a homemade job. This stand of many uses rests firmly on its three-point wooden base, adjusts freely for any height between approximately 31 and 56 in., and will fit the sockets of all standard mikes.

With some help from his scrap box, the average home craftsman can build the mike stand for less than a dollar. Even if you have to buy everything, the cost should not exceed $1.50.

Base Preparation. Any knot-free and crack-free slab of wood 11 x 13 in. or larger and at least an inch thick will be satisfactory for the base. You can build this slab easily by gluing together two scrap pieces of ¾-in. plywood. The author used yellow pine, which he happened to have on hand. Draw the base layout directly on the wood as in Fig. 2, then cut out the three-legged base with a jigsaw or hand saw. The wood need not be perfectly flat. Since it will set on three points, it cannot rock. File down the saw marks, and round off the ends and sharp edges, sand all surfaces smooth.

The Stationary Upright Tube used is a Newell adjustable closet pole, commonly available in dime stores. You can try other makes, but where diameters differ, you'll need to modify other dimensions accordingly.

No fussing with a set-screw here. When the little miss has finished her solo, the master of ceremonies can take over the mike after friction-sliding it to suit his height.

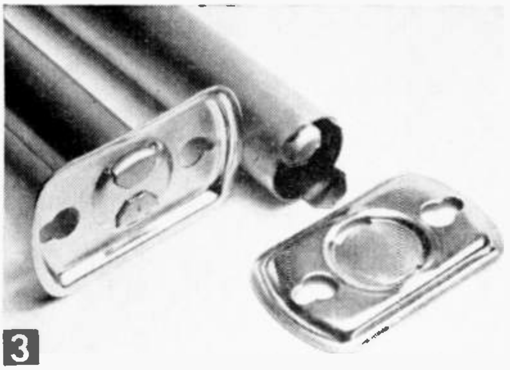


2 BASE LAYOUT

Remove the metal flanges at each end of the rod by prying out the restraining lugs as in Fig. 3.

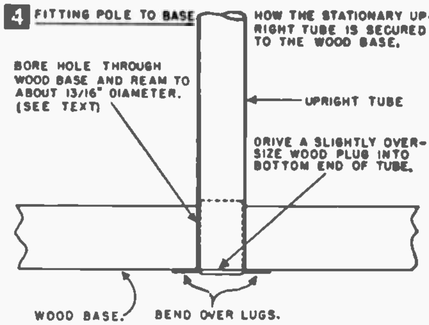
Measure the diameter of the adjustable rod you have selected and use the next size smaller drill to bore a hole in the base as in Fig. 4. Carefully ream the hole to make a tight fit with the open end of the large tube. Force the tube through the hole and bend the two lugs outward against the bottom of the base. Now cut a slightly oversize round wood plug from ¾-in. doweling or scrap and drive it into the end of the tube to secure it tightly to the base.

Finish the wood to match or contrast with other wood pieces in the room where you intend to use the stand. The author applied two coats of a good quality gray paint for a close match with the silver-lacquer coating on the tubes. When dry, attach a screw-type rubber



3

Remove tube flange by prying lugs out with a screwdriver. Do not cut or bend lugs back until pole has been installed in base.



MATERIALS LIST—ADJUSTABLE MIKE STAND

No. Req.	Size and Description
2	¾ x 11 x 13" plywood (base) (or use 1⅛" stock)
1	Newell closet poles (59¢ size at most dime stores)
1	Amphenol series 75-type PC1M non-shorting chassis mounting microphone connector (radio parts dealers).
1	1⅛"-pipe coupling.
1	13/16" od and ⅜" id fiber or plastic washer (you can make this)
3	⅝" screw-type rubber bumpers
Misc.	¾" tape, 1 medium-size rubber grommet, short piece of ¾" dowel, glue, paint

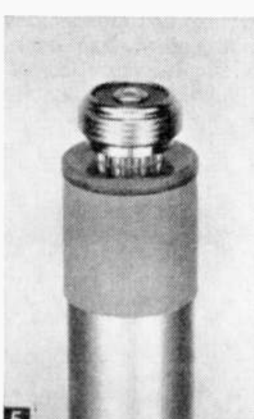
bumper under the end of each leg of the base. This will allow the metal lugs on the end of the tube as well as any unevenness in the wood to clear the floor, assuring a firm, three-point support.

Preparing the Tube Top. The most important step is to fit the top end of the telescoping tube with ⅝-27 threads to hold the mike. There are several ways to do this, but the author feels that his method is simple and it also insulates metal mike heads from the metal stand. This is an important safety factor, for shocks have resulted from touching two metal mike stands which were at different ground potentials, or from touching a metal mike stand while the body was grounded.

Remove the hex nut and washers from an Amphenol 75-PC1M chassis unit, which is a non-shorting microphone connector. Place an insulated washer about 13/16-in. *od* and ⅜-in. *id* on the chassis unit shank. Then twist the chassis unit tightly onto one end of a ⅛-pipe coupling as in Fig. 5A. Tightly wrap enough ¾-in.-wide tape around the pipe coupling so the coupling fits snug into the end of the draw-tube (Fig. 5A). Push the coupling into the end of the draw-tube and then wrap two or three turns of ¾-in.-wide tape tightly around the outside end of the tube (as in Fig. 5). The author used gray *Mystik-Tape* to match the stand and base.

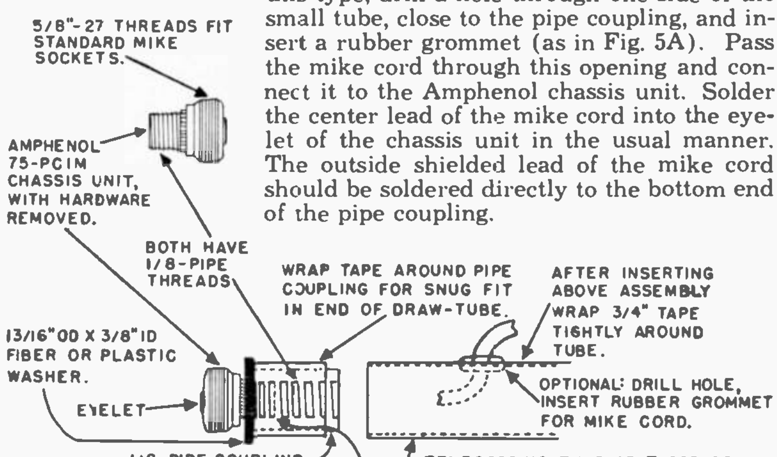
Friction holds the telescoping tube within the larger tube, so it isn't necessary to make a set-screw for this purpose. To increase the friction, simply spread the open seam at the bottom of the small tube.

Some microphones make their cord connections right through their sockets. If yours is this type, drill a hole through one side of the small tube, close to the pipe coupling, and insert a rubber grommet (as in Fig. 5A). Pass the mike cord through this opening and connect it to the Amphenol chassis unit. Solder the center lead of the mike cord into the eyelet of the chassis unit in the usual manner. The outside shielded lead of the mike cord should be soldered directly to the bottom end of the pipe coupling.



5

Insulated installation of connector, ready for any standard mike.



5A

PREPARED TOP OF TELESCOPING DRAW-TUBE

Tune In Europe for $13

DX the Short Waves With a

Crystal Diode Radio

By FRANK WOODS Jr.

Shortwave fun in a small and simple package; the crystal diode tuner combined with a modified "Quickie," three-transistor portable.

RECENT availability of truly compact, high gain transistor amplifiers should whet the appetite of the DX experimenter for bringing in distant shortwave stations on a simple crystal diode tuner.

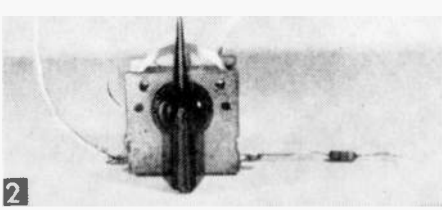
The basic tuner in Fig. 2 pulled in SW transmitters in England, Switzerland and other distant lands when used with modest amplifiers as in Figs. 1 and 4. Using only a 9-volt transistor radio battery for power, a 6-ft. length of insulated hookup wire for an antenna, and a similar wire for a lead to a water pipe or other good ground, this rig operated a loudspeaker at comfortable listening volume and provided moderately good selectivity for such a modest tuning arrangement.

New parts for this tuner need not exceed $3, while a $10 bill will take care of at least one of the amplifiers described herewith.

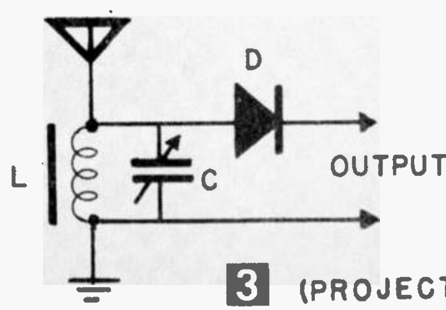
Technical Considerations. Many shortwave stations operate with much more power than the strongest broadcast band stations. Also, shortwave signals travel greater distances than ordinary broadcast band signals. Consequently, the receiving antenna and ground might well deliver about 100 microvolts to the receiver on a signal from a station several thousand miles away.

An inductance coil (L), using a ferrite rod core, and a variable capacitor (C) form the tuning circuit (Fig. 3). This arrangement provides a relatively high Q circuit in the 3.5-7.5 *mc* frequency range. The Q of the ferrite core coil decreases substantially at the high end of this band.

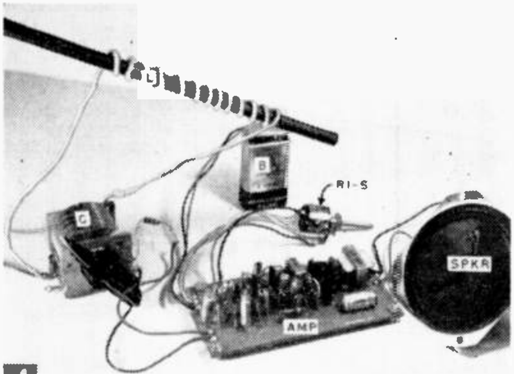
A quick trial with the output of the tuner connected to an audio vacuum tube voltmeter indicated peaks in the 10- to 30-millivolt range when distant powerful shortwave broadcast stations were tuned in. This is more than adequate to operate an amplifier-loudspeaker combination, which arrangement has been particularly attractive since introduction of the low-cost imported transistor amplifiers.



"Triple-C" basic tuner comprises coil, capacitor and crystal.



3 (PROJECT I)



4

Tuner combined with powerful sub-miniature, five-transistor amplifier. All components can be attached to the breadboard or installed in an old radio cabinet.

One of these, Lafayette #PK-522 is a three-transistor job and costs but $3.75. A five-transistor model, Lafayette #PK-544, is priced at $6.95. If you already have it, you can use a high gain amplifier in your experimental work, but most high impedance input ac-operated tube amplifiers will not perform as well with this SW tuner as #PK-544.

Building the Basic Tuner. Obtain the parts listed for Project I in the Materials List. Wind 13 turns of the #18 insulated wire (preferably cotton-covered) close, but not tight, on the ferrite core. Leave about 4 in. of lead on each end of the coil, then pull the turns apart until the winding is about 3 in. long.

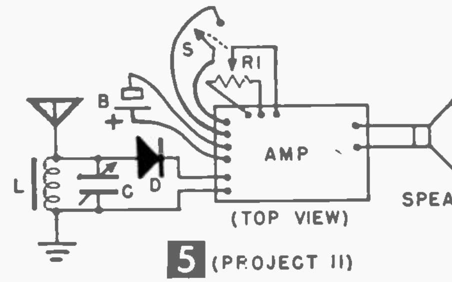
Connect the coil (L) to the capacitor (C) as in Figs. 2 and 3, running one lead to a stator lug and the other to the rotor (frame). Use resin core solder and a clean, well-tinned soldering iron. Also solder the diode to one of the stator lugs. To limit the heat reaching the diode, hold it with needle nose pliers between the soldering point and the diode body.

Cut two 6-ft. lengths of insulated hookup wire. Solder one (the antenna) to a stator lug on the capacitor and the other (ground wire) to the rotor lug. Attach an alligator clip to the other end of the ground.

Cutting the capacitor shaft to length and housing of the tuner are left to the discretion of the experimenter. However, if you do decide to shorten the shaft, place the end to be discarded in a vise before hacksawing. You may damage the capacitor if you hold the frame in a vise while sawing.

Output connections depend on the type of amplifier you choose later. Dial ideas and calibration procedure will be considered after the amplifiers are described.

Tuner Plus #PK-544 Amplifier. If you decide to tie in this tuner with Lafayette's new 5-transistor subminiature push-pull audio amplifier, add parts listed in Project II of the Materials List and wire according to Figs. 4 and 5. Solder the orange leads from this am-



5 (PROJECT II)

plifier to the switch (S) and the black, yellow, and green leads to the volume control (R1). Connect the black lead to the low volume end lug and the yellow to the center lug.

Run the black input lead to the capacitor rotor or frame and the blue input lead to the diode. Attach black output leads to the speaker voice coil lugs. The speaker is not specified in the Materials List; nearly anything you have will do. While the amplifier is designed to couple to an 8- to 11-ohm speaker, this doesn't matter too much since you're not concerned too much about fidelity of shortwave reception. Here are possible speaker-case combinations using Lafayette stock numbers:

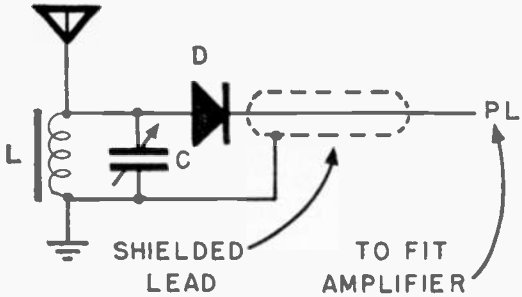
1. Speaker #SK-66, 2½ in., 10 ohms, $1.49; mounted on #ML-81 perforated *Masonite* board, 25¢, or mounted in 1¼ x 3⁹⁄₁₆ x 4⁵⁄₁₆-in. plastic case, #MS-162, 32¢.
2. Speaker #SK-108, 4 in., 3-4 ohms, in wood baffle, $3.25.
3. Good speaker from discarded radio left mounted in the radio case.

If you wish to assemble the entire rig in a single case after you've finished preliminary experimenting, any small radio cabinet will do. You can also assemble it on the perforated hardboard.

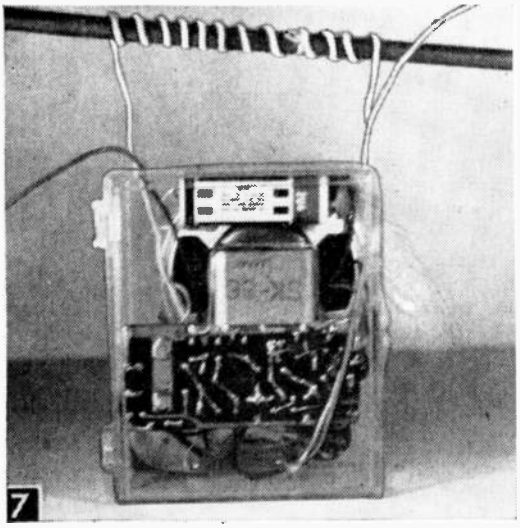
With General Purpose or Hi-Fi Amplifier. The tuner may be connected to any high gain battery or ac-operated amplifier you have. However, do not use an ac-dc amplifier (transformerless power supply) because the grounding situation is potentially hazardous. Attach tuner as in Fig. 6 with shielded cable and plug (see Project III in Materials List). Connect the shield lead to the tuner capacitor frame and center lead to the diode and other end of the cable to a phono plug to fit your amplifier.

Modifying the Portable "Quickie." This tuner adapts well to "Quickie," the three-transistor portable radio described on p. 41, with just a few changes needed in the transistor set (Project IV in Materials List).

1. If you have already built Quickie, remove or disconnect the broadcast coil (L1); if now building it, omit this coil.
2. Make a hole near each end of the top of the plastic case, using the heated point of an ice pick to insert the shortwave coil (L) leads (Figs. 1 and 7).



6 (PROJECT III)



7

Rear view of crystal diode tuner encased with "Quickie."

MATERIALS LIST—CRYSTAL DIODE RADIO

Desig. or No.	Description
	PROJECT I—BASIC TUNER
C	midget 1-gang TRF tuning capacitor (MS-214)
L	1/4"-dia. x 7 1/2" ferrite core (MS-331) plus insulated #18 magnet wire (see text)
D	crystal diode (Raytheon 1N60)
1	pointer knob (KN-40)
1	alligator clip (CN-268)
12 ft.	insulated hookup wire
	PROJECT II—TUNER PLUS COMPACT AMPLIFIER
Tuner	parts listed under Project I
AMP	5-transistor push-pull audio amplifier (PK-544)
R1-S	miniature potentiometer and switch (VC-28)
SPKR	see text, Project II
B	9-volt battery (BA-2)
1	miniature volume control knob (MS-185)
	PROJECT III—WITH GENERAL PURPOSE OR HI-FI AMPLIFIER
Tuner	parts listed under Project I
AMP	any battery or ac-operated high gain amplifier
PL	RCA-type phono plug (MS-167 fits most hi-fi amplifiers)
	PROJECT IV—MODIFIED QUICKIE 3-TRANSISTOR PORTABLE
Quickie	all parts listed in material list on p. 42 except L1
Others	parts listed under Project I except C and D which appear as C1 and D1 in Quickie circuit

Except where otherwise identified, stock numbers are those of Lafayette Radio Electronics, 111 Jericho Tpke., Syosset, N. Y.

3. Connect the shortwave coil across the variable capacitor on the Quickie.
4. Use the 6-ft. insulated hookup leads prepared for the tuner as antenna and ground leads on the Quickie.

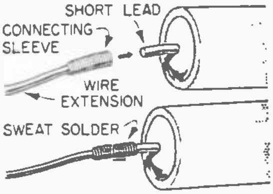
General Operating Tips. Clip the ground lead to a radiator, water pipe, gas heater, or any other available ground. Spread out the antenna lead, but keep it away from radiators or other grounded objects. If you use a long outside antenna, couple it to the tuner antenna through a 50-mmfd mica capacitor.

You can tune in stations either by rotating the tuning or variable capacitor or by moving the coil core in and out of the coil. While the capacitor is intended for this purpose, the possibility of coil core tuning is worthy of mention because it demonstrates permeability tuning.

You can provide a tuning dial scale by attaching a filing card to the tuning capacitor frame. For calibration points, mark the frequency of the stations you log at the pointer knob settings. Better still, calibrate with a signal generator, if possible. If you don't own an RF signal generator, you may be able to use one at your high school, or at a technical school or college.

Crystal tuner shortwave reception doesn't begin to meet the requirements of the serious ham, but it does provide an interesting series of experiences in hearing DX on extremely modest equipment.

Extending Component Leads



• After the same components have been soldered into several different experimental circuits which then have been dismantled, the length of the leads gradually becomes shorter until the parts are no longer usable. You can extend such leads for further use by splicing on a 2-in. length of bare wire about the same diameter as the component lead. Wrap several turns of #22 or smaller bare wire tightly around the larger wire, near one end, to form a connecting sleeve. Scrape both wires clean or remove any enamel coating with solvent. Then push it up until it extends partly beyond the end of the wire. Insert the short component lead into the end of the sleeve and sweat-solder it, using resin sparingly. Grip the short lead with pliers during soldering to prevent overheating the component.—J. A. COMSTOCK.

Practical One-Tube Set

For the Serious Beginner

1

Unhampered by a tiny cabinet, the novice can easily put together this basic circuit in four stages, testing as he goes along to "see" how a radio works. Scrap wood panel and base afford room to rearrange or add parts.

Experiments with this receiver will help the student acquire an understanding of radio theory

By C. F. ROCKEY

WHETHER you are a serious beginner in radio theory or just want an effective personal or bedside radio, the quickly-made receiver in Fig. 1 will provide you with many pleasant experiences.

No attempt was made to miniaturize or "doll-up" this project. The beginning student should have room to experiment and move parts around freely. Use of a wooden chassis and panel minimizes tool and bench requirements, and plywood scraps are cheap. You can always build a cabinet later.

Cut the Chassis Shelf as in Fig. 2A from ¼-in. plywood, tempered Masonite, or plastic. Cut front panel as in Fig. 2B from the same material, but defer mounting it until most of the wiring is completed. Cut two 5¾-in.-long shelf supports from scrap 1 x 2 furring strip (actual size ¾ x 1⅝ in.). Smooth the supports with sandpaper and fasten them to side edges of the shelf with nails or screws as in Figs. 2A and B.

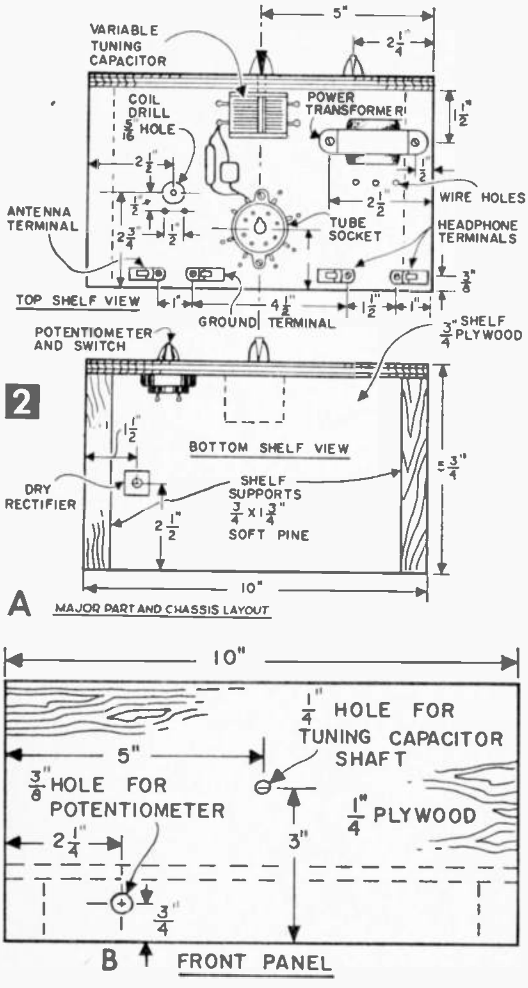
Position the tube socket, transformer, and terminal clips on the shelf as in Figs. 2A and 3 to locate holes for mounting and wiring. Note that no wiring hole is needed for one of the socket lugs. On the underside of the shelf, locate mounting hole for the dry rectifier (Fig. 2A). Locate mounting holes on the front panel (Fig. 2B). Now drill all holes in panel and chassis, sand surfaces smooth, and finish as desired. On plywood, we applied a walnut oil stain. After the finish dries, attach the transformer, socket, rectifier, and terminals with #6-32 x 1-in roundhead (*rh*) machine screws and nuts.

The First Step in Wiring is that of the power supply (Fig. 5, Step 1). All small parts are held in place by the short leads with which they are connected into the circuit. Wherever any of these parts seems "floppy," attach one end to a soldering lug which has been fastened down with a wood screw. As you can see in Fig. 4A, the electrolytic filter capacitors are hung between three lugs fastened to the left-hand chassis shelf support.

An important feature of the circuit design is its "common ground wire" (Figs. 4A, B). This is a piece of #14 tinned copper or bare copper wire to which each ground is connected. It begins at a soldering lug at the center of the left chassis support, runs under the right-hand power transformer mounting screw, across the shelf to the forward socket mounting screw, and forward to a lug under the variable capacitor mounting screw. Being bare, ground connections can be made anywhere along its length.

Be sure to observe polarity marks upon the dry rectifier and the electrolytic capacitors.

Either a red ring or a plus sign will identify the positive end of each. This end of the rectifier should be connected through the 220-ohm resistor to the power transformer. (Figs. 4A, B). A reversed electrolytic capacitor becomes an electrolytic gas-generator, which destroys itself and often some other part. Don't let this happen in *your* set.



2 A MAJOR PART AND CHASSIS LAYOUT

B FRONT PANEL

After completing as much as you can of the power supply wiring, including the 6.3-volt heater lead to pin No. 2 on the tube socket, attach the front panel to the chassis shelf supports with nails or wood screws. Mount the potentiometer with switch on the panel and wire this unit. Install the power line cords and hold it safely in place with an insulated staple driven into the left-hand shelf support as in Figs. 4A, B.

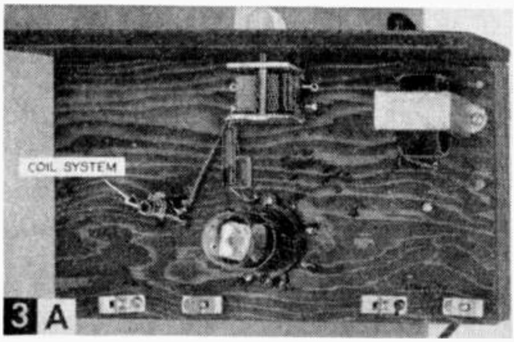
To Test the Power Supply, plug in the line voltage and turn the switch on. Charge a 1 mfd paper capacitor (bought for testing purposes) from point X to the ground wire as in (Fig. 5, Step 1). Upon removing the capacitor and shorting its terminals with a screwdriver, a good spark should be observed. No untoward noises or odors should come from any part so far installed, as long as new parts are used. Should this happen, check for wrong wiring.

If you can obtain a suitable 0-150-volt voltmeter, measure the voltage output of the power supply from both point X and point Y to ground. Observe the effect of varying the potentiometer knob upon the voltage at both of these points. Temporarily disconnect each filter capacitor, separately, and note the effect upon the output voltage.

Connect the 1 mfd testing capacitor in series with your headphones. Ground the phone lead not connected to the capacitor. Touch the free end of the capacitor to various parts of the filter system and note its effect in removing hum. Note the effect of disconnecting one or both filter capacitors upon the hum level from X to ground.

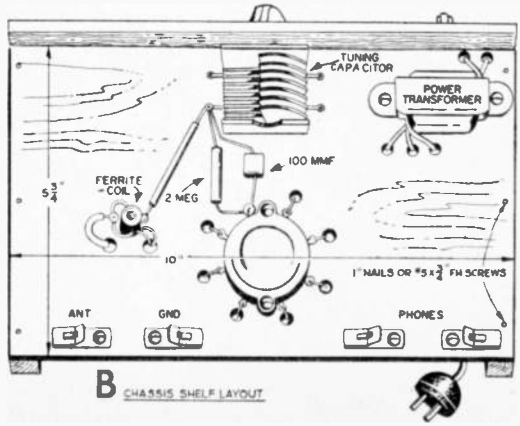
Experiments such as these, along with intelligent study of a good radio textbook, will do much to develop your enjoyment and understanding of radio.

The Non-Regenerative Gridleak Detector is the stage of the radio to build. In this circuit (Fig. 5, step 2) you will wire only one-



3 A

Ferrite tuning coil mounted through chassis is subject of many experiments conducted with temporary "hank" form coils.



B CHASSIS SHELF LAYOUT

half of the 6SN7-GTB tube. Ignore the other half until later.

Mount the tuning capacitor on the panel, following manufacturer's instructions, and ground its frame to the common ground wire by a lug under the mounting screw. Install a five-turn antenna winding on the ferrite tuning coil as in Fig. 6. Fasten the turns in place with Duco or other plastic-type household cement, and insert the coil carefully into the hole provided after the cement is dry.

Complete wiring the circuit and recheck your work. Connect headphones to their terminals. Fasten an antenna—50 to 150 ft. long including lead-in to the antenna terminal. Connect the ground terminal to a cold water pipe or other good, outside "dirt" ground.

After the switch is turned on, the tube heater should glow and warm up in a few moments. Advance the potentiometer to maximum voltage position and rotate the tuning capacitor. If within range of one or more broadcast stations, they should be heard clearly. If no signals are audible, and the tube and headphones are good, recheck your wiring and antenna.

Observe effect of the potentiometer setting upon signal strength when the non-regenerative detector is operating. Note the relative capacitance in the circuit for receiving each of the stations in your area, and compare this to their frequencies. Turn the slug adjusting screw on the coil carefully (Figs. 4A, 6) and note the tuning effect.

Take more #22 heavy Formvar magnet wire and wind a 50-turn antenna coil over the regular coil in hank form. The regular coil should be left untouched but disconnected. Take off turns of the hank coil one at a time and note the effect upon signal strength and sharpness of tuning. This illustrates how to separate stations on different frequencies.

These tests are unnecessary if you just want to build a radio. But to the serious experimenter, they are a truly painless way of learning much valuable theory.

After you have mastered the non-regenerative detector, you are ready to convert it into regenerative form and observe the effects of feedback upon a simple detector circuit. *Be sure to disconnect the line voltage when resuming actual building of the set.*

The Regenerative Gridleak Detector circuit appears in Fig. 5, step 3, with most connections and parts unchanged. But you'll need to add an additional tickler or feedback winding to the coil system. (Fig. 6). Carefully wind three turns of the magnet wire as close to the main and antenna windings as possible. Cement this winding in place and allow it to dry.

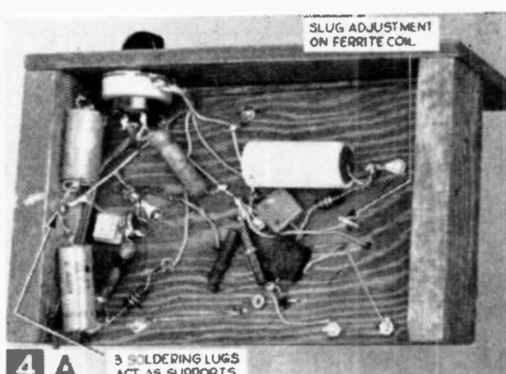
Lift the ground connection from socket lug #3, and connect one side of the feedback winding here. Ground the other side. That's all there is to it.

Now reconnect the phones, line cord, antenna, and turn on the switch. When the tube has warmed up, advance the potentiometer slowly. The "tube hiss" should increase

MATERIALS LIST—ONE TUBE RADIO

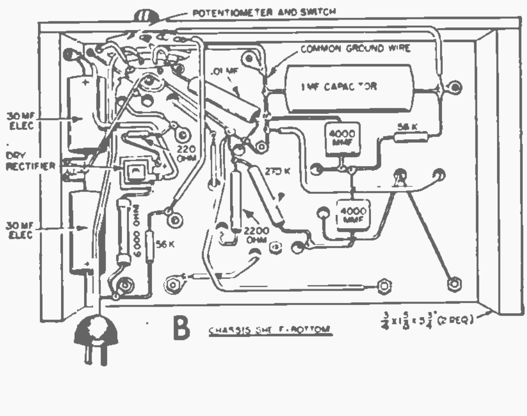
No. Req.	Description
1	125 volt, 15 milliampere, half wave rectifier power transformer (Stancor PS-8415)
1	dry disc selenium rectifier (Federal No. 1002A)
2	30 mfd 150 volt electrolytic filter capacitors (Cornell-Dubilier)
1	base-mounting 8 prong tube socket (I.C.A.)
1	ferrite antenna coil (Miller 6300)
1	variable capacitor 365 mmfd max. (Miller 2111)
1	6SN7 GTB Tube
1	100 mmfd mica capacitor (Aerovox)
2	4000 mmfd mica capacitors (Aerovox)
1	.01 mfd 400 volt paper capacitor (Cornell-Dubilier)
2	1 mfd 200 volt paper capacitors (one for testing) (Cornell-Dubilier)
1	2 megohm 1 watt resistor (I.C.A.)
1	6000 ohm 1 watt resistor (I.C.A.)
2	56K ohm 1 watt resistor (I.C.A.)
1	2200 ohm 1 watt resistor (I.C.A.)
1	220 ohm 1 watt resistor (I.C.A.)
1	50000 ohm potentiometer with switch, linear taper (Mallory)
4	Fahnestock terminal clips
2	bar knobs set screw type for ¼" shaft
1	dial plate for tuning capacitor (Crowe)
1	line cord with plug
1	pair "Dependable" headphones (Trimm)
	wood for shelf support and panel.

Miscellaneous wire, rosin-core solder, and hardware. Similar parts made by other manufacturers may be substituted without difficulty. Resistor and capacitor valves may vary within ±20% without seriously disturbing circuit function.



4A

Underside of chossis shelf offers plenty of wiring room. Insuloted stople on left shelf support protects line cord from undue stroin.



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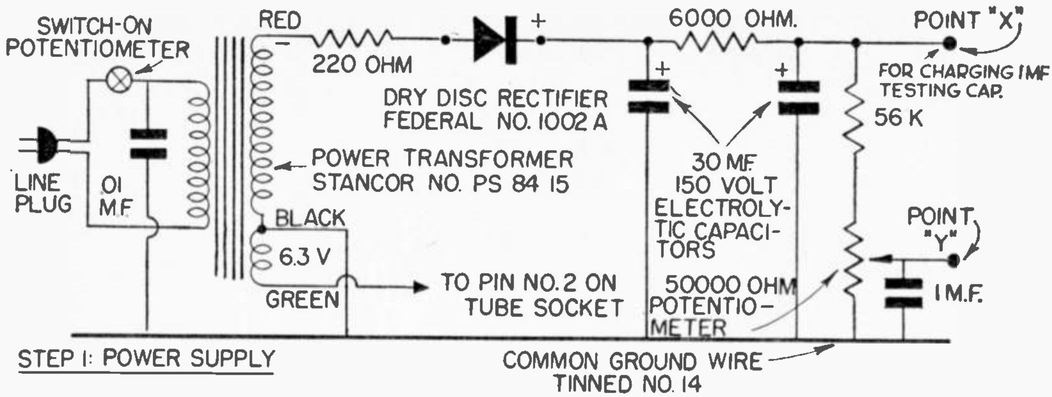
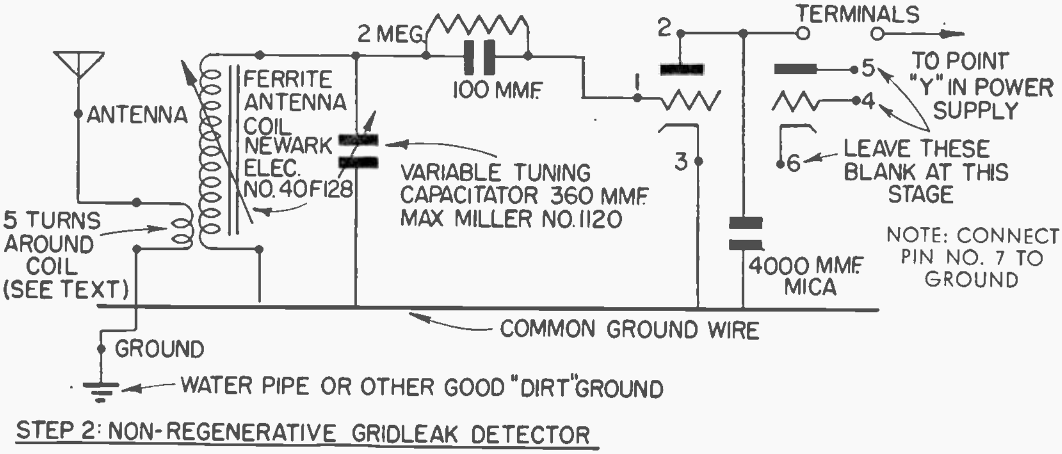


5 SCHEMATICS - STEPS 1 & 2

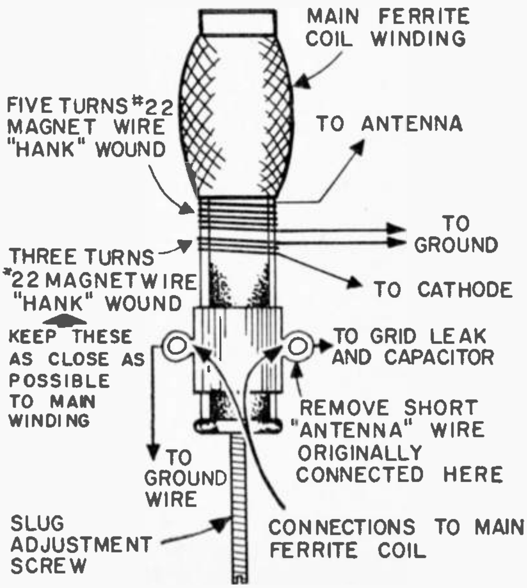


sharply at a given point, followed by a soft thud as the voltage is further increased. If this sequence does not occur, reverse connections to the feedback coil, which should correct the condition. This is known as "regeneration." When it occurs, you are "in business."

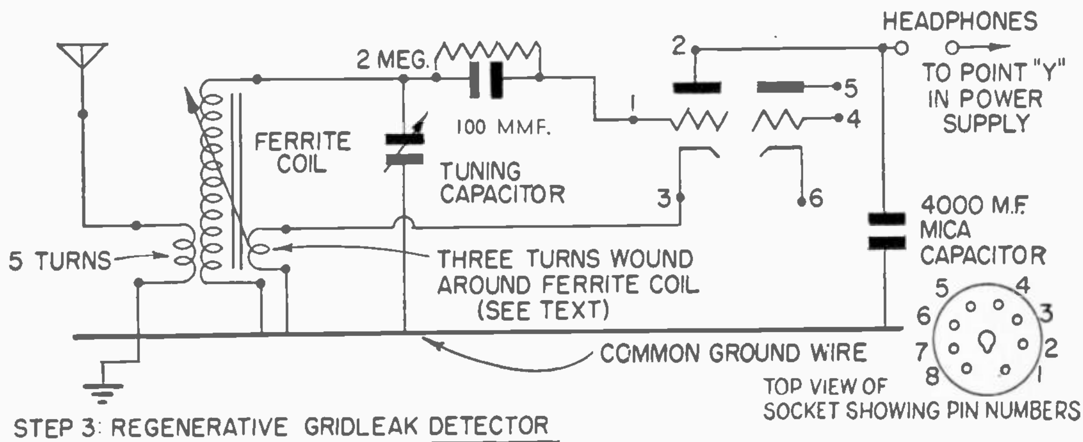
Set the potentiometer well below the "thud point," and tune in a moderately weak signal. Advance the control, and note the effect of feedback upon signal strength. The signal probably will increase markedly up to the thud point, whereupon music or speech will be marred by an unpleasant squeal. Rotate the tuning dial slowly past the stations and observe the pitch of the squeal and how it varies with respect to tuning.

If you have another radio, tune it to the same station and note any interaction which occurs. For this reason it is always a good idea to keep the potentiometer slightly below the thud point and thus avoid "blooping" other nearby receivers.

You will probably find that addition of regeneration will not make the strong stations much louder. It may even make them weaker, but the quality of reception will be

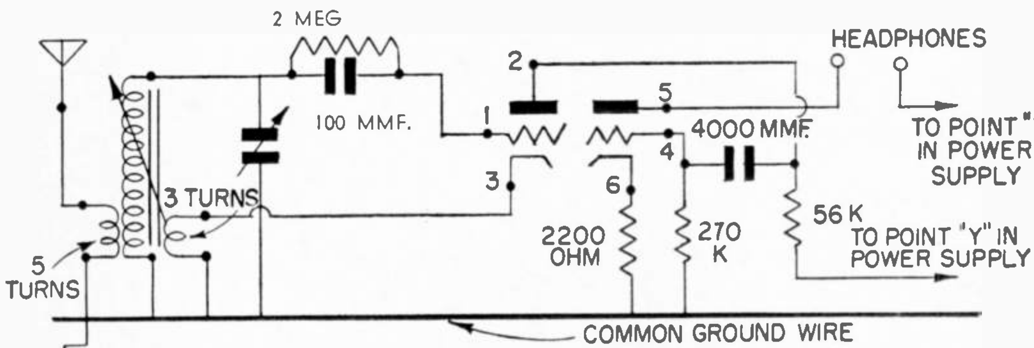


6 HOW ADDITIONAL WINDINGS ARE ARRANGED ON FERRITE COIL



STEP 3: REGENERATIVE GRIDLEAK DETECTOR

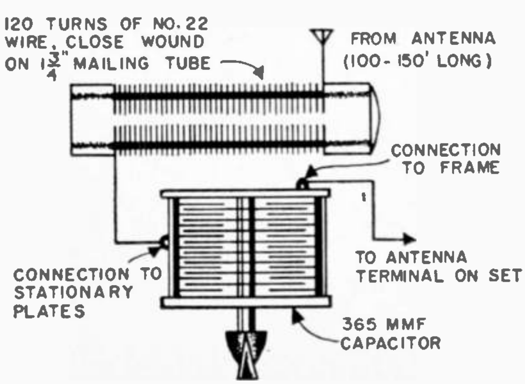
5 SCHEMATICS - STEPS 3 & 4



STEP 4: REGENERATIVE DETECTOR PLUS AUDIO AMPLIFIER

very much better. You should also hear stations which were inaudible before adding regeneration. As your tuning skill grows, you will receive stations from greater distances—particularly at night. Also, sharper tuning will "cut through" strong, local stations.

The Audio Amplifier Stage (Fig. 5, step 4) completes the set, and utilizes the second half



7 OPTIONAL ANTENNA TUNING SYSTEM FOR DX

of the 6SN7-GTB tube. Wire in the three remaining resistors and capacitor.

When the audio amplifier circuit is added signal strength of the radio will be increased about 10 times. You'll hear many more stations and local station volume will be vastly improved. Though designed for headphone use, the set may provide enough strength to drive a small, permanent-magnet, dynamic speaker for strong local stations. This will require an output transformer with a primary impedance of 10000 ohms or more.

After you have completed the set, try tuning the antenna circuit. Connect an additional 365 mmfd (maximum) variable capacitor and coil in series with the antenna as in Fig. 7. You will find this a great help in picking up distant stations. The writer has been able to receive WQXR on 1560 kc, even though this New York station is almost a thousand miles away.

If you know the code, or are learning it, connect a 200 mmfd mica fixed capacitor directly across the tuning capacitor. You will then be able to receive radiotelegraph signals (CW) from ships and shore stations.

Multiple Channel Crystal Selectors

Even hams licensed to use VFO will find a big 24-way rotary switch for crystals much faster and more convenient for a spot operation

By HOWARD S. PYLE, W7OE

DESPITE the great popularity of the variable frequency oscillator, many thousands of amateurs cling to the use of quartz crystals, either as an adjunct to their VFO or for crystal operation exclusively.

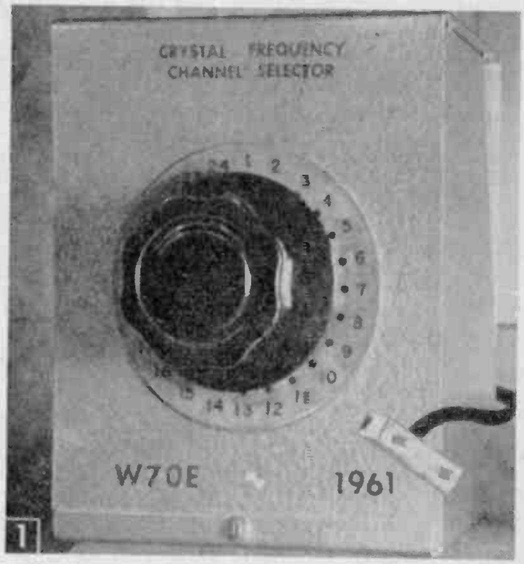
Regardless of your class of license, it is a pretty sure bet that you have two or more crystals handy. I have nearly 30 available, even though I am also VFO-equipped. Those little rocks are mighty convenient for spot operation, particularly when so arranged that they can be switched instantly. What a difference there is when you no longer have to paw through the box searching for the right frequency and then, when you finally find it, trying to plug it in while digging into a dark, recessed panel opening and groping for the contact holes in the socket!

Now making it all worth while is a subassembly comprising 24 crystal sockets and a 24-point rotary switch. Introduced recently by the International Crystal Mfg. Co., 18 N. Lee St., Oklahoma City, Okla., the unit (Fig. 2) is compactly mounted with an appropriate dial plate and comes completely assembled and tested. With a few minutes' work, you can install it in its own external cabinet as in Fig. 1 for use with any transmitter equipped with a plug-in crystal socket. It is available from International dealers or the manufacturer for $12.95 plus shipping charges.

The switch should hold great interest for novices as well as more advanced ham operators. Restricted by their licenses to crystal operation, novices may nevertheless use any number of crystals as long as their frequencies fall within the limits of the novice band. Separate crystals are required for the 80-, 40-, and 15-meter bands. This is also true of the novice 145-147-*mc* band, though few attempt operation there as it requires an additional transmitter and receiver in most cases.

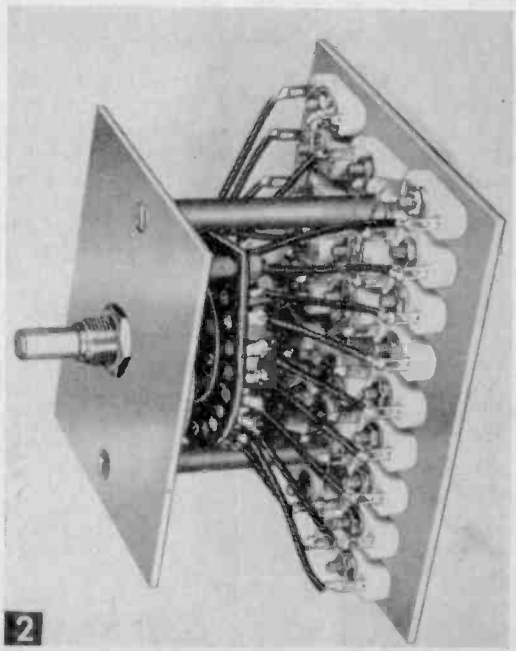
The average novice, then, generally has at least three crystals if he desires to work in his three lower frequency bands, or two to three for a single band if that is his choice. But many have several for each band for greater flexibility of operation.

General and extra class amateurs in large numbers keep a number of crystals available for spot frequency schedules as well as for participation in one or more social or traffic nets. They prefer to merely plug in or switch to the proper crystal at the scheduled time without "whishing" and "zooping" their VFO to find zero beat.



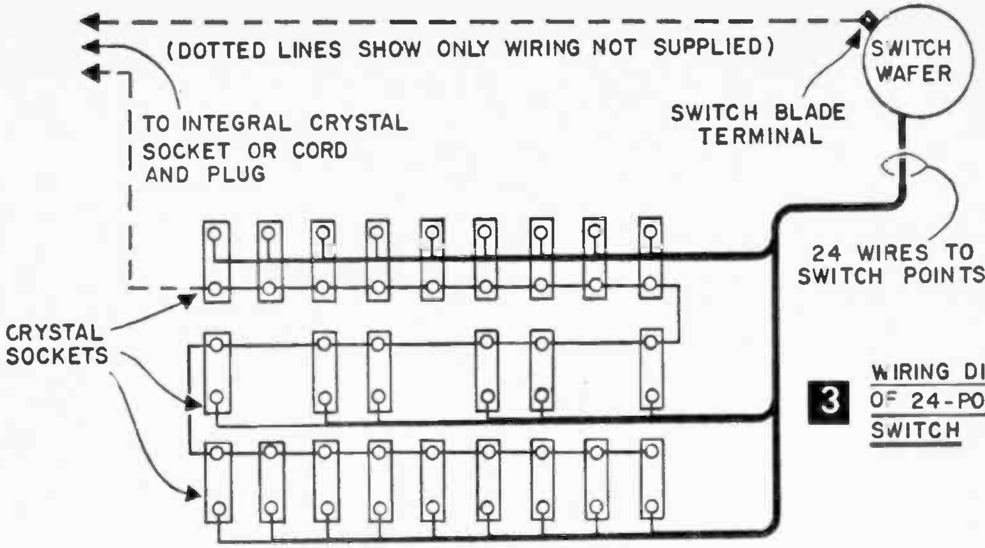
1

External 24-channel crystal frequency selector fitted with coaxial cord and plug to fit crystal socket in the transmitter.



2

Fully wired 24-point switch shown as it comes from manufacturer.



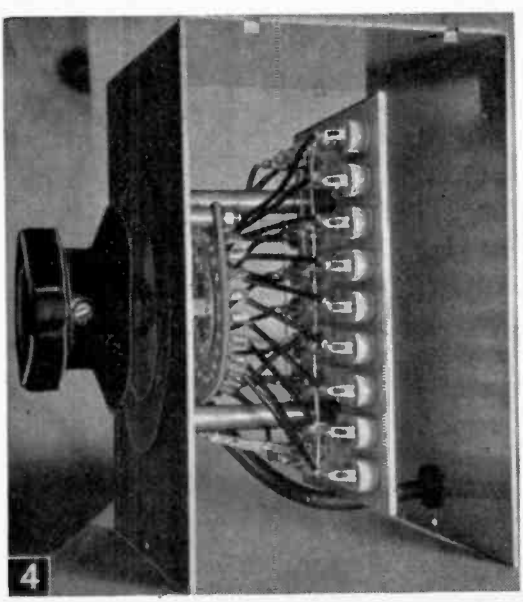
3 WIRING DIAGRAM OF 24-POINT SWITCH

The switch was made to order for them, and for me with my 17 scheduled contacts on prearranged frequencies.

Mechanical Assembly of such a unit, whether in an external cabinet as in Fig. 1 or integrally with the transmitter, is simple. One-hole mounting, the same as for a rotary switch, variable resistor, or phone jack, is all that is required. I mounted the sub-assembly in an LMB-140 aluminum box chassis, attached a big knob obtained from a piece of war surplus gear, and fitted the dial decal furnished with the switch assembly.

Next, I mounted a card holder frame with a

Side views through chassis box. Left, view toward rear, showing position of switch and how coax cable connection is carried through back panel. Right, view toward front showing sub-plate mounting ready for installation of crystals.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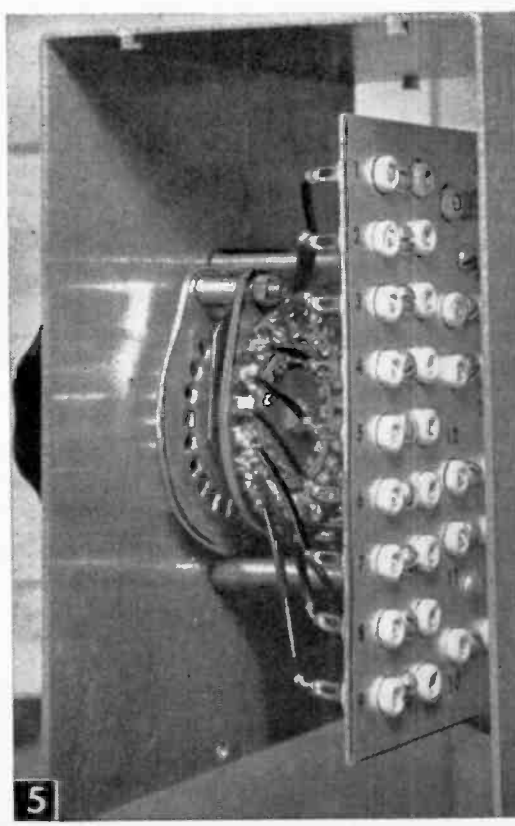
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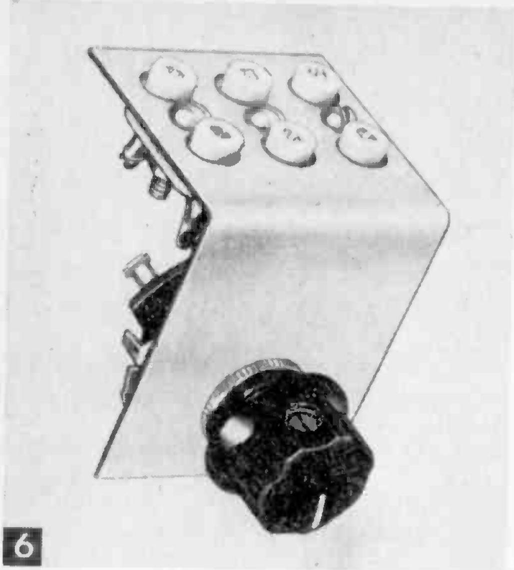

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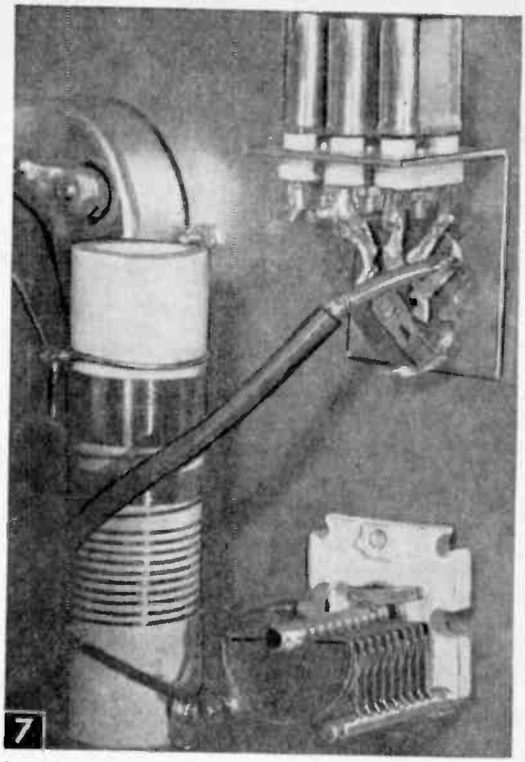
Three-channel crystal selector sub-assembly includes sockets, mounting frame and knob. Right, the three-point switch installed within a Knight-Kit T-50 amateur transmitter.



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plastic window (removed from surplus equipment) on the cabinet top and slid a typed index card listing dial numbers versus frequency under the plastic. All you need do is run a finger down the chart to the frequency you want, match it to its number, and set the switch. This is much faster than setting the VFO. It is surprising how rapidly you will memorize most of your commonly used frequencies so that you can select them without reference to the chart. If preferred, you can neatly mark each frequency or band alongside its equivalent number on the dial plate, using small decals available at ham supply stores.

Wiring Is Extremely Simple. Since all sockets are factory-wired to the switch points, you need only run one wire from the common connection which ties the sockets together on one side, and another from the blade of the rotary switch, as in Fig. 3.

If you're mounting the switch assembly within the transmitter, terminate the opposite ends of these two wires on the two contacts of the existing crystal socket in the transmitter, letting the original two wires remain there. The socket terminals will then form a terminal tie-point.

It's a good idea to cement a small cardboard disk over the face of the original socket to prevent your unthinkingly plugging in a crystal from the face of the transmitter. There's no harm done if you should do this, but two crystals in parallel will hardly be operative!

If you wish to mount the crystal selector assembly in a separate cabinet, connect the braided shield of a short length of #RG58 U coaxial cable (not over 18 in. long) to the common terminal of the sockets. Connect the center conductor of the cable to the switch blade terminal. Fit the opposite end with a standard twin-lead plug such as Mosley 301.

In addition to the 24-point unit, these combination switch and socket sub-assemblies are also available for 3 or 12 channels (priced at $2.75 and $7.50, respectively). All three sub-assemblies have sockets to fit the increasingly popular crystal holder using .050 in. dia. pins spaced .486 in. between inside faces. Check your crystal holder pins for these dimensions if you already have a stock of rocks. If you buy them new, specify this spacing and diameter—they are now standard with most crystal manufacturers. Those made by International Crystal for these switching assemblies are designated as type FA-5 amateur crystals (and holders).

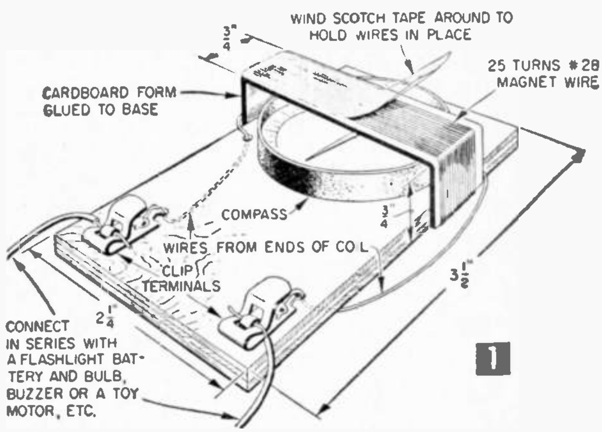
If You Have Larger-Diameter Crystals, such as Bliley AX-2 or Petersen Z-2, you won't find it difficult to make up your own socket-mounting plate with whatever number of sockets you choose. A Centralab, Mallory or similar phenolic-base rotary switch will serve excellently for the selector. These are available in many types and sizes at your local ham store or from the electronic mail order houses.

Choose a single-pole type with sufficient positions to accommodate all of your sockets. Mounted in a small cabinet or in your transmitter cabinet, it will serve every bit as well, as those described here, but will necessarily require a somewhat larger space.

You'll find operation with such a crystal selector arrangement to be a real pleasure. When your net control station tells you to go up or down 5 or 10 *kc*, merely flip your switch to the proper crystal and there you are! For shifts of up to approximately 10 *kc* either side of net frequency, you normally will not need to adjust your grid drive, re-dip your final plate nor tune your antenna; just flip the crystal switch and go to it. A wider frequency departure—15/25 kilocycles, perhaps—may call for a slight touching up of these controls.

If you're experiencing bad QRM on a schedule or during a casual QSO, tell your man at the other end to go up or down 5 or 10 *kc*, flip your switch and call him—it's that easy.

Compass Galvanometer

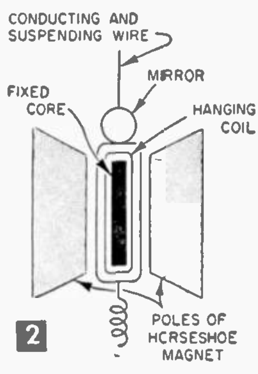


1

MANY electrical measuring instruments are based on the design of the d'Arsonval String Galvanometer, but substitute a needle-suspended coil riding on jeweled bearings for the hanging coil employed in the original precise lab instrument.

The galvanometer is not often used to measure quantity of current flowing in a circuit, but usually to indicate the polarity and presence of small currents by comparison methods.

The d'Arsonval instrument suspends a small coil between the poles of a permanent horseshoe magnet. When a current flows through the coil it becomes an electromagnet and its *like* poles repel the *like* poles of the horeshoe magnet, thus causing the coil to turn or twist on the metallic string or ribbon by which it is suspended (Fig. 2). The strength of the current determines the extent of the coil's rotation.



2

A small pointer attached to the moving coil registers on a curved dial, or a tiny mirror is attached to the galvanometer string. A beam of concentrated light is aimed at the mirror, bouncing the beam off to a wall screen or chart to give great magnification of tiny current changes.

Making a Simple Galvanometer. A small amount of insulated magnet wire, any pocket compass and a 2¼ x 3½-in. scrap of plywood is what you need to make the simple galvanometer shown in Fig. 1. Cut a strip of cardboard ¾ in. wide and 3¾ in. long. Score the cardboard ¾ in. from each end, with a dull knife blade and crease so the cardboard resembles a C or bridge shape. Now glue the cardboard to the edges of the wood base.

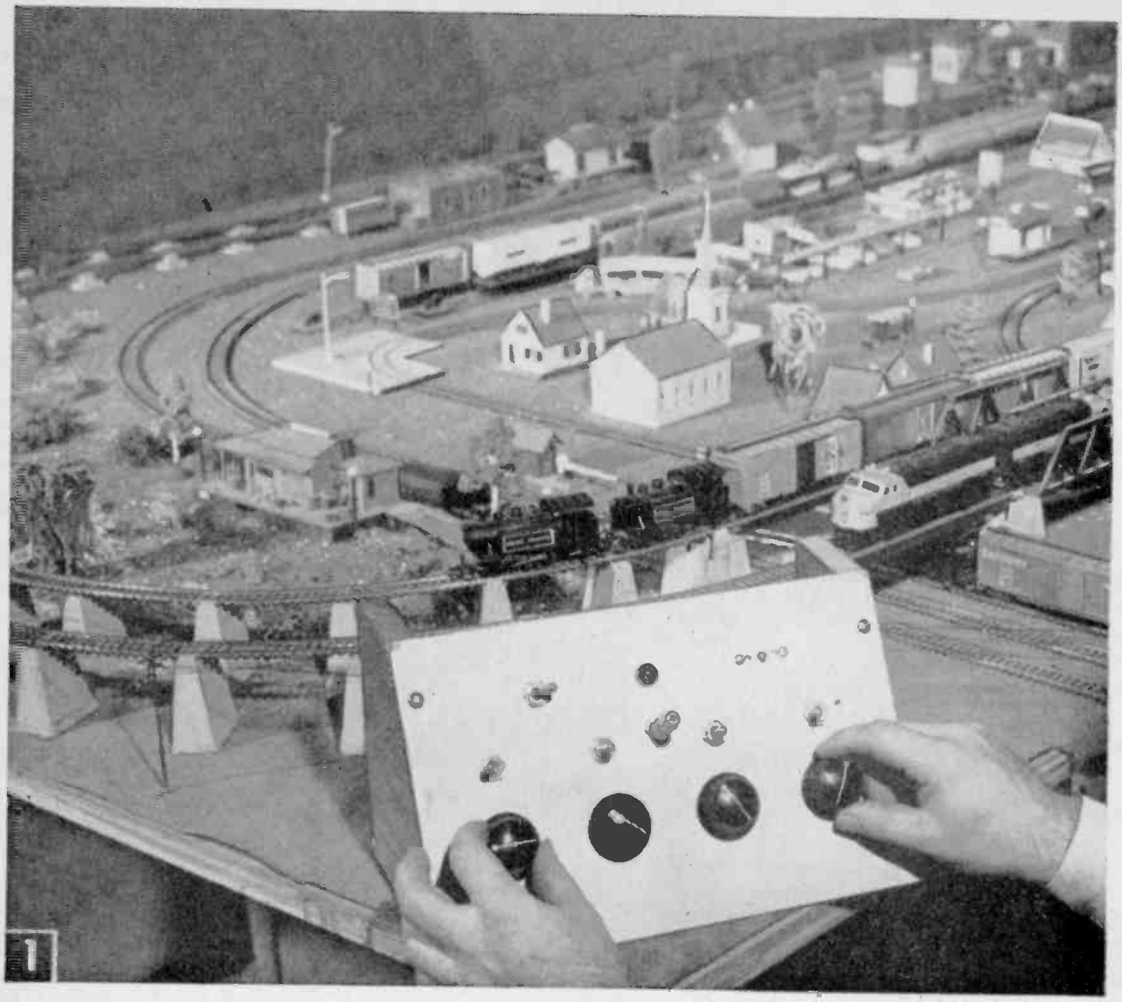
Bind the cardboard with a rubber band until glue or cement dries. We wound 25 turns of #28 magnet wire around the cardboard, but heavier wire and fewer turns will work, too, with a slight drop-off in sensitivity.

Scotch tape is wound around the finished coil to keep the wire turns in place. Connect the ends of the coil to screw terminals or clips. Slip the compass under the coil in a position where its needle comes under the coil and parallel to the coil turns.

Connect the galvanometer in series with a flashlight battery and bulb, a buzzer or a toy motor. etc. When the circuit is closed the compass needle will be drawn so that it is at right angles to the coil (Fig. 1). A slow swing of the needle indicates the circuit is drawing little current. A rapid swing denotes an increase in current flow.

To show how sensitive this simple galvanometer is, connect what appears to be a dead flashlight cell across the terminals, immediately breaking the circuit. The compass needle will spin at a merry clip indicating there is still some life in the "dead" cell.

The compass galvanometer's needle would be the horseshoe magnet in the d'Arsonval instrument. But, here we cause the magnet to turn with the coil remaining in a stationary position. However, the end result is the same no matter how the galvanometer is constructed.—T. A. BLANCHARD.



HO-4 Train Control

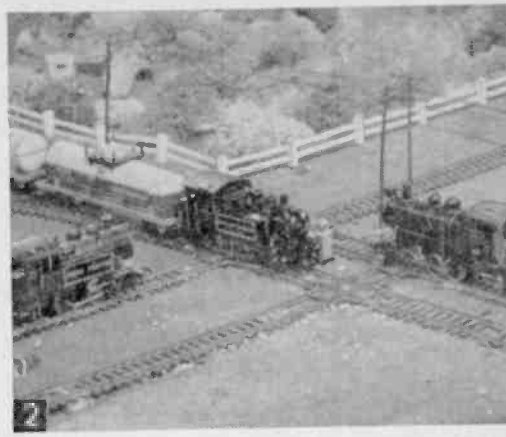
By ERVING EDELL

BUILD this economical *dc* power pack for your HO layout and you'll be able to control four separate sections of track for realistic operating action from reverse up through full speed forward.

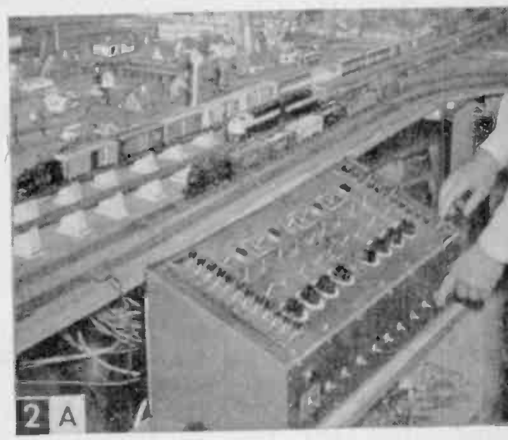
This up-to-the minute design provides features found on few custom control boards. Power is ample to run four heavy HO locomotives pulling full-length trains at top speed. An emergency panic button shuts off all power instantly to avoid collisions at crossings. It will also help to prevent damage when cars are derailed.

With practice, you can control four trains at once, running them individually at various speeds, forward or reverse. A circuit breaker prevents transformer burnout if wiring is shorted. Power leads can be fed out to sections of track so your trains automatically slow down (Fig. 9) when they are passing a station or run around curves, and then speed up on straight sections. If your train layout

The power pack handles full grown layouts with ease. It will also enhance the performance of smaller loop layouts providing more realistic control. The unit will handle model race car tracks too.



If the engineer hadn't hit the panic switch, this would have been a three train crash with damage to expensive hand-worked models.



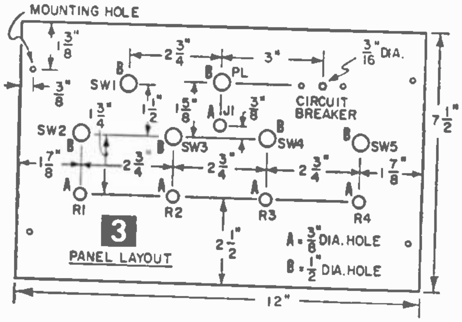
Double or triple the power pack design and you can wire in automatic features that will make your trains behave even more realistically than the most expensive import layouts.

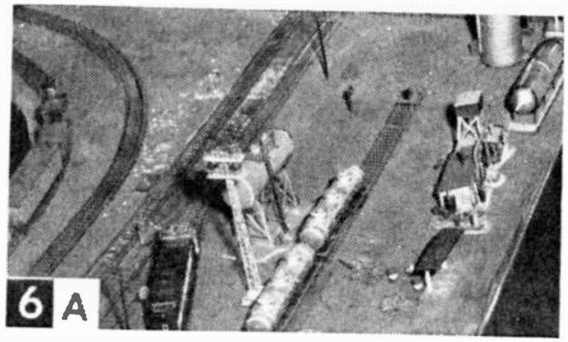
boasts more than four trains, or if you want to control additional sections of track, you can double the power pack design or add more control rheostats and switches.

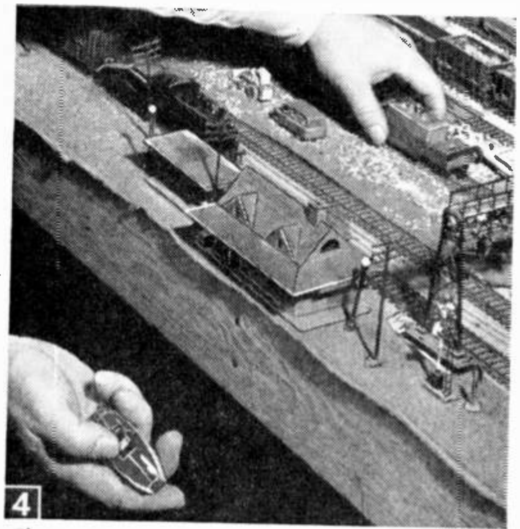
Make the 7½ x 12-in. panel of hardboard or aluminum sheet not over 3⁄16-in. thick. Following dimensions (Fig. 3) drill the ½-in. holes for the switches and the ⅜-in. holes for the rheostats. If you are working with a ¼-in. electric drill, you may want to use a hand reamer to bring the holes up to size. The *Mel-Rain* circuit breaker requires that you drill three holes to match its mounting plate. You can substitute a 5-amp *Mantua* MRC circuit breaker available at hobby dealers.

The Panic Button is made of a ¼-in.-diameter phone plug commonly called type PL-55. A matching single closed circuit jack mounts on the panel, so that when you push the plug down into the jack, the spring contacts open to shut off the dc power. You can use the plug as a safety key to prevent unauthorized engineers from running your layout. Or later on, you can add a control cord (Fig. 4) with a kitchen-type pendant switch that will enable you to control power if you're running the layout while standing some distance away from the central panel.

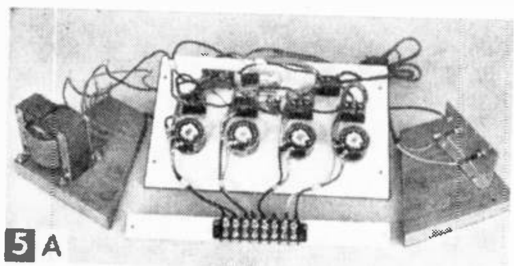
Use 18-gauge solid copper insulated hook-up wire to connect your switches and rheo-

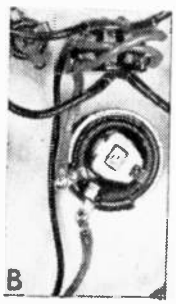


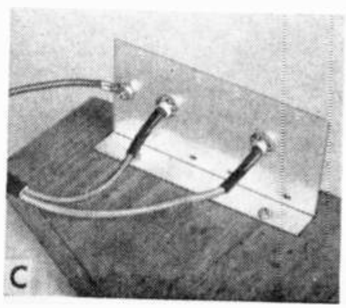




The model engineer is setting up a track cleaning car. In his hand a pendant switch connected to the panic button plug gives him complete on-off power control from any point in the room.







MATERIALS LIST—HO-4 TRAIN CONTROL

Amt. Req.	Size and Description
1	T1. transformer, open frame type Pri. 115VAC to 17 VAC with center tap. 85 Watt output, 5 amps.*
1	S1 Sarkes Tarzian Model S-5670 center tap silicon rectifier rated at 4 amps, continuous service at 12 VDC.*
4	R1—R4 Rheostat, 35 ohm 25 watts.
4	Pointer knobs for above.
1	SW1, DPST toggle switch, 3 amp, 125 volts.
4	SW2, 3, 4 and 5 DPDT toggle switches, 6 amp 125 volts Olson Electronics Inc. #SW156 or equal.
1	Pilot lamp assembly and bulb for 110 volts.
1	J1 closed circuit phone jack, for panic switch.
1	P1 phone plug for above panic switch.
1	Circuit breaker, Mel Rain 5 Amp or equal.*
1	8 terminal barrier strip, Cinch Jones #8-141 or equal
1	7½ x 12" panel, hardboard or aluminum 3/16" thick or less.
15′	18-gage solid copper hookup wire.
Misc.	Wood screws, metal screws, 3 doz. crimp-on or solder type terminals.

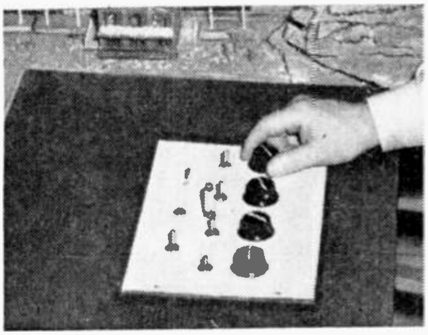
Note: All of the above items can be obtained at your local electronic supply house. Items marked with asterisk can be obtained in a special kit. Send $11.95 for Kit No. 4, SCIENCE and MECHANICS Kit Department, Dept. 825, 450 East Ohio Street, Chicago 11, Ill.

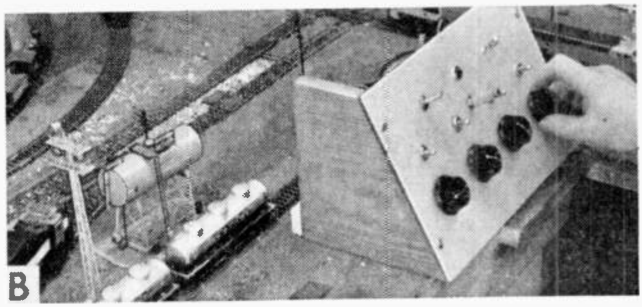
stats. The double-pole double-throw center position off switches provide the forward, reverse, and stop train action by flip-flopping the plus and minus connections to the track. You'll find that wiring is easier and neater if you use crimp-on terminals. There is less chance of poor connection that can cause erratic operation.

In the interests of economy, you can simply use a long-nose electrical plier to form clockwise loops on the end of each lead to fit the screw terminals on the parts. Solder terminals are also a good means of wiring. But be sure to use resin-core solder and a clean iron. Corrosion problems are a sure thing if you use acid-core solder.

If you choose the flush panel method of mounting the control right on your track board (Fig. 6), mount the transformer and rectifier beneath. Be sure to tape all exposed ac leads to prevent accidental shock. If you

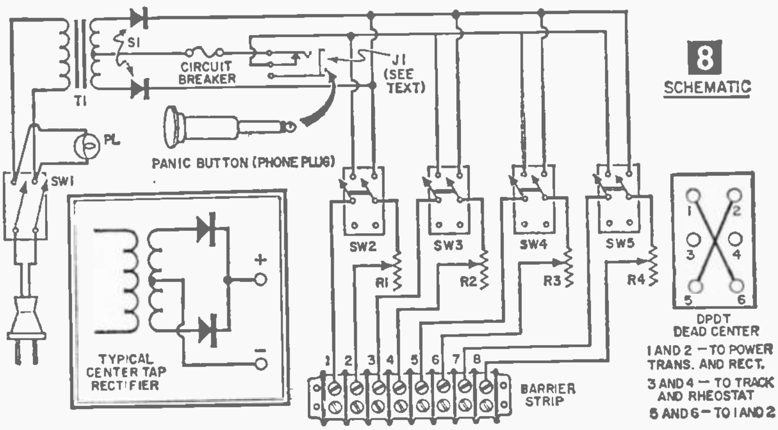
(A) Wiring is easy. Just remember that a side of each DPDT switch is connected in series with the rheostat. (B) Power feeds to the center terminals and a criss-cross gives you reverse polarity. (C) The silicon rectifiers mount on a heat sink plate, holes drilled for an exact fit.





Flush panel mounting (6A) versus a sloping panel (6B), the latter sides made of ¾-in. lumber cut at a 60° angle.

7 Alternate construction—a full wave selenium rectifier mounted over the transformer. Both items can often be obtained in surplus stores.

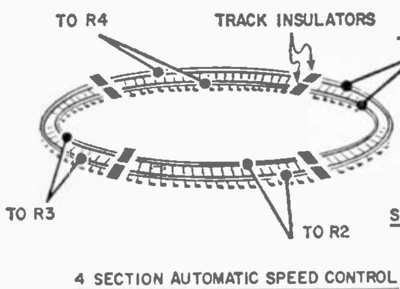


decide to make the sloping front chassis mounting, the transformer and rectifier assembly will fit inside. Be sure to allow for plenty of air circulation around the transformer.

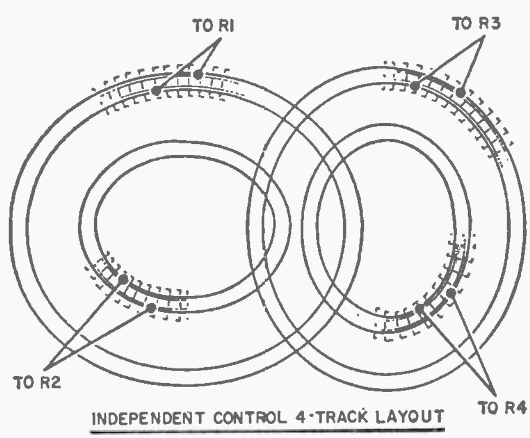
The recently introduced silicon rectifiers (Fig. 5) mount in a heat sink which you can make of a piece of sheet aluminum at least 0.14-in. thick. A full wave selenium rectifier similar to the one shown in Fig. 7 can also be used. You'll find plenty of these older type rectifiers in local salvage and surplus stores.

Run the DC Leads from each rheostat out to an eight-terminal barrier strip. Again, crimp or solder lugs are your best choice for connecting the wires that feed out to the tracks. A 22-gauge solid hookup wire is minimum size for track wiring. Lighter gauge wires on long runs will not feed full voltage to your tracks.

An additional optional feature that you can add to your control panel is a slow speed control. Simply wire push button switches across each rheostat. When you push the button, you get full speed, but when the switch is open, your train will run at whatever setting you've got on the control.



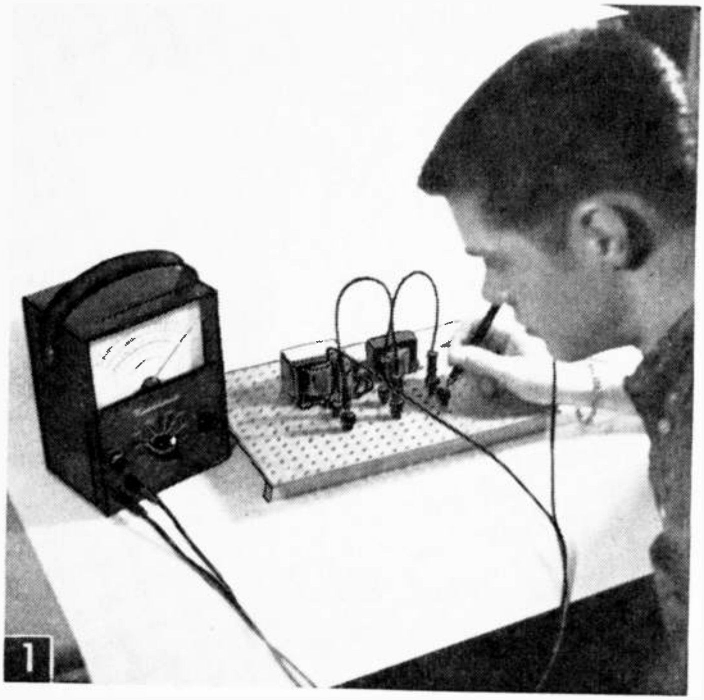
9 LAYOUT SUGGESTIONS



AC Volt Board for $6

Simple 11-step power supply offers a variety of voltages to operate tube heaters, test intermittent equipment, correct line current and handle other applications

By
FORREST H. FRANTZ Sr.



1. Checking an ac voltage after connecting transformer leads and jumper wire to proper binding posts.

EXPERIMENTERS and technicians have frequent use for a variable ac power supply. Inexpensive and simple to construct, this ac volt board provides 11 different voltages from 6 to 146, including in-between steps at 19, 25, 31, 84, 90, 96, 115, 121, and 140 volts. It supplies one ampere of current continuously and can be pushed to slightly higher currents for short periods of time.

One of its many applications is to provide odd ac voltages for the operation of radio tube heaters and other electronic or electrical equipment. You may want to use extreme line voltage conditions to test intermittent radios, or you may want to vary the output of dc power supplies by controlling the ac input voltage. The volt board can jack up line voltage during low voltage periods, or lower line voltage during high voltage periods. Of course, the current rating must be considered.

Construction. The board base (Figs. 2 and 3) is a perforated Masonite board that comes cut to size. Drill an extra ⅛-in. dia. hole to mount the 25-volt transformer, L1. Enlarge one of the perforated holes with a drill or reamer to ½-in. dia. to mount the switch, S1. Enlarge another hole to ⅜-in. diameter for the line cord.

Now mount the components using Fig. 2 as a guide, beginning with the binding posts. Insert the black posts on the bottom row and red ones above, fastening each with a nut. A second nut will hold the connecting wire in place when you get to the wiring. Mount the switch, S1, and then the transformers. Note that a two-lug tiedown terminal strip fastens under the inside mounting nut of the 6-volt transformer, L2, on the top of the board.

Pass the line cord through the top of the board. Tie a strain relief knot in the cord below the board, allowing enough length beyond the knot for circuit connections.

Wire the unit as in Figs. 2, 3, and 4, carefully noting the numbering diagrams given for the transformers in Fig. 4B. Don't cut the transformer leads to length; for, if you get a set of transformer connections reversed, you won't have any trouble changing leads. Solder connections to the switch and tiedown strip, using rosin core solder and a clean soldering iron. Tape these connections as an additional safety measure. I purposely did not tape these in the model so that construction details would be readily seen.

Cut and fasten wooden supporting strips as in Fig. 3, using almost anything you have

TABLE 1—BINDING POST CONNECTIONS

AC VOLTAGE	6	19	25	31	84	90	96	115	121	140	146
OUTPUT TERMINALS	5-6	3-5	3-4	3-6	1-6	1-3	1-5	1-2	1-6	1-4	1-6
INTERNAL CONNECTION		4-6		4-5	2-4, 3-5	2-4	2-4, 3-6		2-5	2-3	2-3, 4-5

available to keep the connections from touching the table. I used a piece of 3/8 x 1 3/8-in. door stop and cut two 11 3/4-in. lengths. Fasten the strips with 3/8-in. wood screws through perforations in the masonite board.

Complete construction by identifying the terminals. You can write the proper numbers on the board with a grease pencil or lettering pen and India ink.

You'll find it convenient to have two leads about 10 in. long with banana plugs at each end for plugging up voltage combinations on the board conveniently and safely. Use flexible test lead wire and insulated banana plugs. If the plugs have a wire holding screw in the insulated handle, wrap a layer of tape around the banana plug handle as a precaution. Tack a piece of Masonite or cardboard about 6 x 11 in. across the bottom of the wooden supporting strips as an extra safety measure.

Using The Volt Board. The ac volt board adds and subtracts to provide the 11 different voltages. Thus, the 6 volts of L2 subtracted from the 25 volts of L1 produces 19 volts. Add these two transformer voltages and the result is 31.

Table 1 shows all the available voltages, listing the terminals and internal connections which provide them.

To get an output of 31 volts, for example, use binding posts 3 and 6 as output terminals and plug a jumper lead between binding posts 4 and 5. To obtain 84 volts, use terminals 1 and 6, run one jumper from 2 to 4, and another from 3 to 5. Simple, isn't it?

You may wish to fasten Table I on the board for quick reference. A celluloid or clear plastic cover plate will protect it against wear. Voltages given in the table are approximate. I rounded the numbers off since line voltages vary from time to time. These numbers are sufficiently accurate for most uses; but, if you desire greater accuracy, measure with an ac voltmeter.

Safety First. Exercise normal precautions when using the board. Since the line is in the circuit, you can get a severe shock if you ground yourself and touch one of the terminals. Therefore, *do not touch a radiator, waterpipe, or other grounded metallic object while you're working with the board. Do not stand on concrete while you're using the board unless you're wearing rubber-soled shoes.*

If you must use the board in a concrete-floored shop, always pull the plug before touching a point in the circuit. A double-pole, single-throw switch would alleviate the need to remove the plug under the circumstances described; but, a switch is easy to overlook accidentally—even when a pilot light is provided.

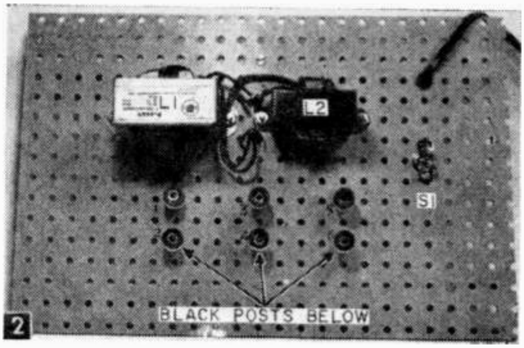
Extras. You can equip your volt board with some frills if you wish. The schematic in Fig. 4C shows how to cut in a DPST switch and a neon glow lamp pilot light.

You can enclose your volt board in a snappy looking case—commercial or homemade. If you fit it into a metal case, be sure to use insulating shoulder washers to mount the binding posts.

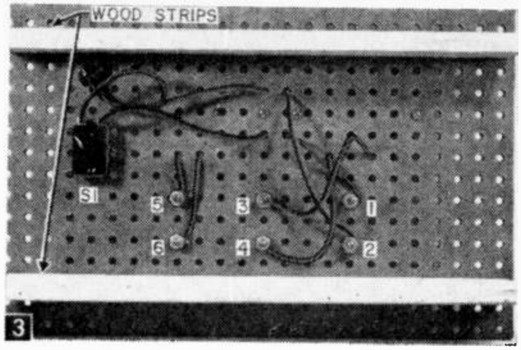
An ac convenience outlet installed on the board will come in handy when you're supplying voltage for plug-equipped radio equipment or appliances. Connect leads about 10 in. long to the convenience outlet. Connect banana plugs to the other ends of the leads to permit easy connection to any binding post on the board. Fasten the convenience outlet on the volt board. You can stick banana plugs in perforation holes on the board to keep them out of the way when not in use.

Troubleshooting. Intermittent troubles in radios are difficult to find. Sometimes they are caused by variations in voltage or temperature. The ac volt board will provide high and low line voltages while you're trying to make the set quit. This is often quite a problem. High temperatures can be induced by jacking the line voltage up and covering the set with newspapers. You must use discretion, of course, or you may induce a new set of troubles. Operation at increased line voltage should not be attempted for a period of more than a few minutes at a time.

Sometimes you can cause marginal components in a radio to fail by increasing the line voltage. Occasionally this will "cure" defects, too. Thus you can sometimes catch bad components while you have a radio on the bench and prevent having trouble later.



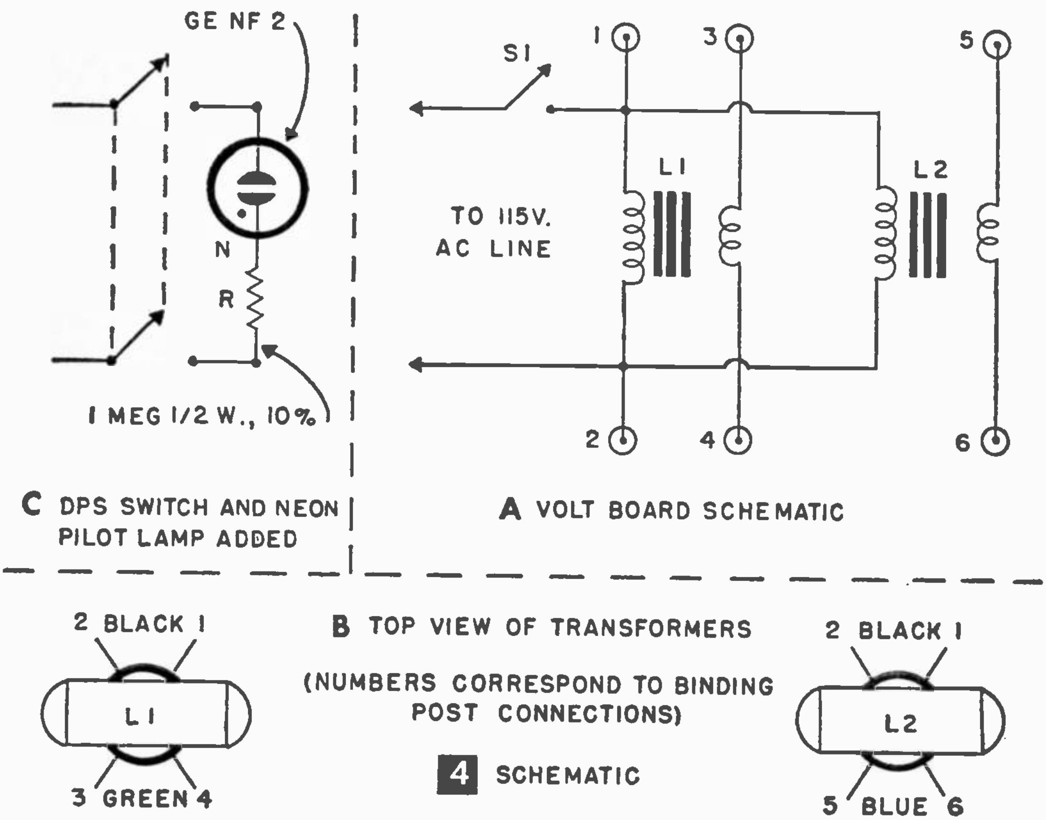
Parts mount easily on a perforated board.



Under view of board.

MATERIALS—AC VOLT BOARD

Desig. or No.	Description
L1	25.2 volt, 1 amp filament transformer (Stancor P-6469)
L2	6.3 volt, 1 amp filament transformer (Lafayette TR-11)
S1	single pole single-throw toggle switch(Lafayette SW-21)
6	binding posts 3 red, 3 black (Lafayette PJ-21) or order Lafayette MS-566, a less expensive kit of 5 red and 5 black binding posts
1	two-lug tiedown strip (Lafayette MS-232)
1	⅛ x 7²⁷⁄₃₂ x 11²⁷⁄₃₂" perforated Masonite board (Lafayette ML-81)
2	⅜ x 1⅜ x 11¾" wood strips
1	ac line cord and plug (Lafayette EL-13)
	For inter-connection leads:
4	banana plugs 2 red, 2 black (Lafayette PJ-13, specify color)
1	test prod wire (WR-421 is 10' long—specify red or black)
	Above parts may be obtained from Lafayette Radio, 111 Jericho Turnpike, Syosset, N. Y.



4 SCHEMATIC

Experimenter's Antenna Impedance Bridge

By JOE A. ROLF, K5JOK

YOU'LL be able to take the guess-work out of antenna design and construction with the compact impedance bridge shown in Fig. 1. Designed especially for the experimenter, the unit will measure impedances from 0 to 1500 ohms at a construction cost of less than $12. The only accessory equipment required is a grid-dip meter or signal generator.

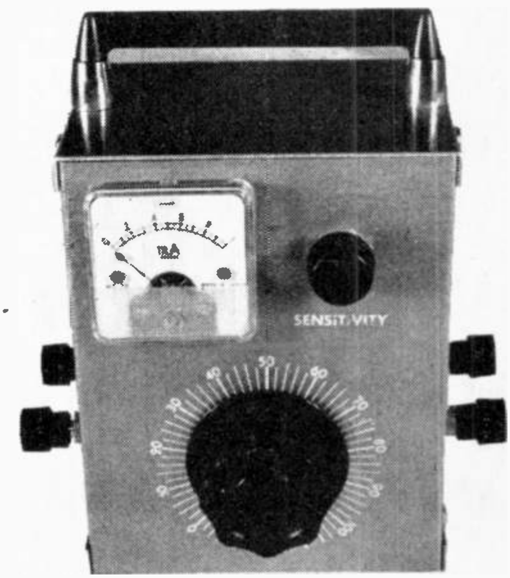
The circuit (Fig. 2) is a resistance-capacitance variation of the well known Wheatstone Bridge. C1, C2, R1 and the impedance to be measured form the bridge arms; the remaining components comprise the metering circuit.

Wiring and Construction should pose no problem. The components are readily available; and, by using Figs. 2 and 3, you will be able to assemble the bridge in short order. It is important that C1 and C2 be quality 5% silver mica capacitors, and that R1 has a linear taper.

The unit is housed in a 3 x 4 x 5-in. Minibox. A partition of light aluminum isolates R1 from C1 and C2 to prevent possible interaction at high frequencies. Make all leads short and direct for the same reasons.

In operation, an RF signal from an external source is fed into the input, J1 and J2. C1 and C2 are identical and therefore have equal impedances, so that when R1 is adjusted to equal the impedance of the antenna connected across J3 and J4, a zero potential exists between J3 and the junction of C1 and C2. The diode, CR1, rectifies any existing potential between these points and indicates bridge unbalance on the meter. R2 is the meter sensitivity control; RFC1 an isolating choke; and C2 a meter bypass capacitor.

To Test the Bridge, couple your grid-dip meter to the input terminals with a three- or four-turn link as shown in Fig. 4. If a signal generator is used, a direct connection should be made. Adjust the meter sensitivity control for maximum meter deflection with R1 set at mid-scale and connect a 50- to 1000-ohm resistor across the bridge output terminals. At some part of R1's rotation, the meter will take a pronounced dip. At this null, the bridge is



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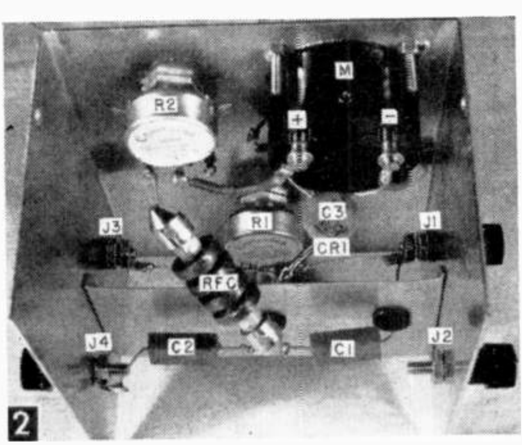
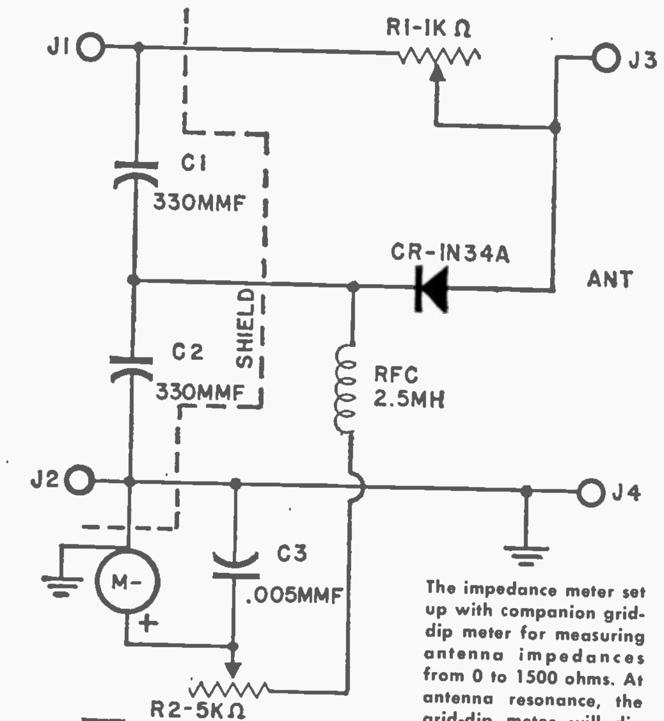
The compact impedance bridge simplifies antenna design and construction.



Aluminum baffle shields bridge arms C1 and C2 from the rest of the circuit to prevent interaction at high frequencies. Binding posts J2 and J4 are grounded to the cabinet, while J1 and J3 are insulated with extruded washers.



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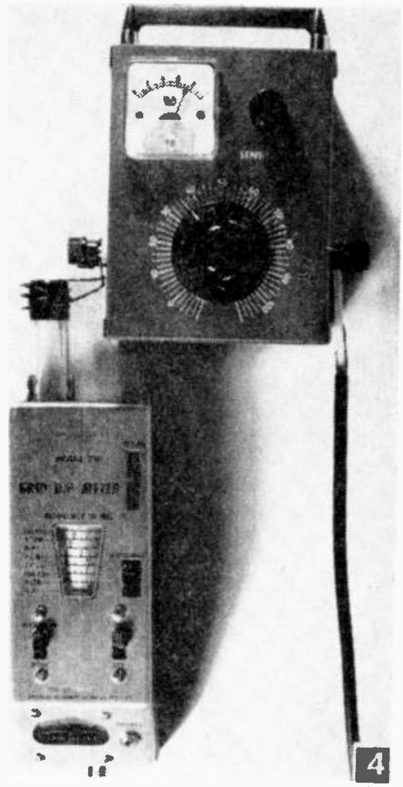


4

The impedance meter set up with companion grid-dip meter for measuring antenna impedances from 0 to 1500 ohms. At antenna resonance, the grid-dip meter will dip as though connected directly to antenna.

balanced and R1 equals the impedance of the resistance across the output terminals.

Bridge Calibration can be made in two ways. The easiest is to connect a volt-ohm-meter across terminals J1 and J3 and calibrate the resistance of R1 in convenient steps. This method is accessible to most experimenters, but the overall accuracy depends upon the accuracy of the VOM used.

The second method permits much better accuracy, but is not readily available to most builders. This involves measuring the impedance of a number of close tolerance composition resistors at about 3 *mc.* In either case, the bridge can be calibrated for direct readings; or, as with the author's unit, a 0-100 logging scale can be used with a separate calibration chart.

It should be noted that the impedance measured by the bridge is the impedance of the antenna at the frequency at which the grid-dip meter or signal generator is set. It is important, therefore, that the signal source operate at the antenna's resonant frequency.

Also, the bridge will react to harmonics generated by the signal source. This is generally apparent when more than one null is noted as R1 is rotated across its range. In most cases, this can be minimized by decoupling the signal source slightly.

MATERIALS LIST—ANTENNA IMPEDANCE BRIDGE

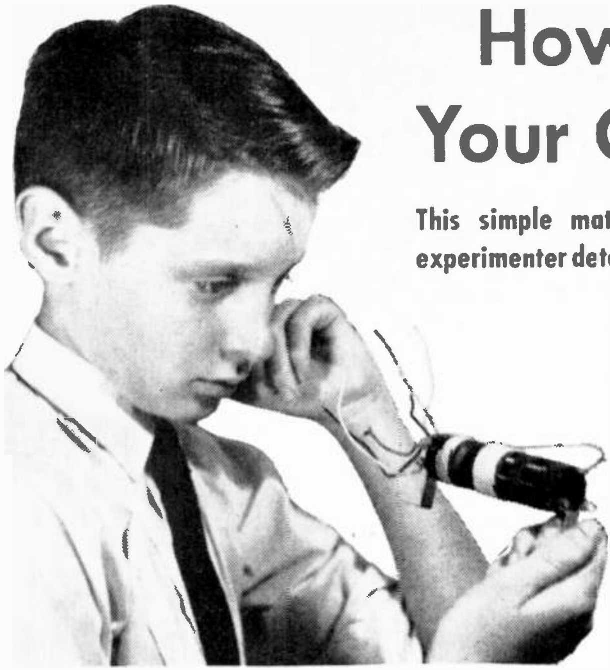
Desig.	Description
C1	330 mmfd 5% silver mica capacitor
C2	330 mmfd 5% silver mica capacitor
C3	.005 mmfd 600-volt ceramic disk capacitor
CR1	1N34A diode, or equivalent
J1, J2, J3, J4	screw-type binding posts
M	0-1 Milliamp meter (Calrad CMO 38-2) or equivalent
R1	0-1000 ohm control, linear taper (Centralab B-5) or equivalent
R2	0-5000 ohm control (Centralab B-10) or equivalent
RFC	2.5 millihenry choke (National R-100 2.5) or equivalent
Cabinet	3 x 4 x 5" (Bud CU-2105) Minibox, or equivalent
Misc.	1/16 x 3 x 5" aluminum sheet, screws, hookup wire

The overall accuracy of the bridge depends upon the calibration. With care it should be accurate to 7%, or less, at frequencies up to about 30 *mc.* Useful readings are possible up to about 100 *mc.* Accuracy can be improved by using a 500 ohm control in place of R1, but will reduce the maximum range of the bridge to about 700 ohms.

If desired, the bridge sensitivity can be improved by use of a 0-500 microammeter in place of the 0-1 milliammeter shown. The latter meter however, is more than ample for use with most signal sources. In fact, sensitivity is such that the bridge can be made to double as a simple field strength meter by shorting across the output terminals and attaching a tuned circuit across the input.

How to Design Your Own RF Coils

This simple mathematical method will also help the experimenter determine inductance of salvaged, unlabeled surplus units



Youthful experimenter's dilemma over use of this unidentified radio frequency coil can be resolved quickly by simple formula.

TABLE I

ENAMELED MAGNET WIRE

Gauge No.	Dia. (In.)
14	.0659
16	.0524
18	.0418
20	.0334
22	.0266
24	.0213
26	.0169
28	.0135
30	.0108

By FORREST H. FRANTZ Sr.

RADIO experimenters who want to build custom electronic gadgets that operate in various frequency ranges frequently need to design their own coils. However, those who salvage unlabeled radio frequency coils from discarded or surplus equipment may find they have suitable stock on hand if they can determine inductance.

The problem reduces to this: For operation at a given frequency, what size coil form, wire and winding length are required, and how many turns should the coil have?

Design of an air core coil of given inductance is relatively easy. And if you know the frequency range to be covered and the tuning capacitor to be used, determining the required inductance is easier yet. The simple calculations that follow are not intended to cover the fine points of RF coil design. Resulting designs may not necessarily be optimum, but they will be adequate for experimental purposes. While they are oriented toward coil design, the procedure need only be reversed to determine characteristics of coils that already exist.

Determining Inductance. Suppose you want to design a coil for the broadcast band. Assume you're using a 365 mmfd. tuning capacitor and the lowest frequency that you want to tune to is 540 *kc*.

The inductance L of the coil in microhenrys is bound by using the formula $L = 25400/(f^2C)$ where C represents micro-microfarads and f, megacycles.

In this problem C equals 365 and f equals .54. Then $L = 25400/(.54^2 \times 365) = 25400/(.291 \times 365) = 25400/106$, or 239 microhenrys.

Note that the low frequency end of the band was used in this computation. To determine the high frequency end of the band that you can expect the 239-microhenry coil to cover, assume the minimum capacitance of the tuning capacitor and stray circuit capacitance to be 30 mmfd. The applicable formula is $f = 159/\sqrt{LC}$. In this case, $f = 159/\sqrt{239 \times 30} = 1880$ *kc*. Thus, this combination readily covers the broadcast band and the low frequency limit can be extended to assure adequate coverage.

The assumption that maximum circuit capacitance equals maximum capacity of the tuning capacitor is not entirely correct since stray and circuit capacitance is in parallel with the capacitor. But neglecting stray and circuit capacitance for the low-frequency limit merely extends the limit to a lower frequency. This extension is trivial for a 365-mmfd. capacitor.

A Simplified Formula for RF coil design, accurate to about 1 or 2%, is

$$n = (l/r)\sqrt{L(9r + 10l)}$$

where L is inductance in microhenrys, n is the number of turns on the coil, r is the radius of the coil in inches, and l is the length of the winding in inches (Fig. 2). If a 1-in. dia. (r = ½ in.) is used, the formula simplifies further to

$$n = 2\sqrt{L(4.5 + 10l)}$$

Now, let's round off the required inductance for the broadcast band (with the 365 mmfd. capacitor) to 240 microhenrys and assume a 1-in.-dia. coil form. We must also assume a winding length so try 1½ in. Number of turns then required are

$$n = 2\sqrt{240(4.5 + 10 \times 1.5)}$$

Thus,

$$n = 2\sqrt{240 \times 19.5}, \text{ or } n = 2\sqrt{4680},$$

which is 137 turns.

The wire size used in winding the coil is optional as long as the diameter is sufficiently small to allow 137 turns to fit in 1.5 in. of coil form length. Winding is easiest, of course, if the turns fit one against the other across this coil length. Diameter of the wire which will meet this requirement is l/n or 1.5/137, which is .0109 in. In Table I, which shows the diameter of various gauges of enameled magnet wire, note that #30 has a .0108-in. dia. and is closest to the diameter computed. Therefore, the coil can be close-wound with 137 turns of #30 enameled wire.

Counting of turns can be bypassed for all practical purposes when wire size is determined for close winding. You need only mark the winding length off on the form and wind till this length is filled.

Another Coil Design Example: Assume C is 100 mmfd max, and 5 mmfd min., circuit capacitance is 10 mmfd and range of frequencies to be covered about 1.8 to 6 *mc*. An available coil form has a ¾-in. dia. Design the coil.

At this point, I'd like to introduce the method for determining one frequency extreme if the other is known. If minimum and maximum capacities cannot be set, you can't arbitrarily assume that a given tuning capacitor will cover a given range.

In this problem the maximum capacity is 110 mmfd and the minimum is 15 mmfd, if you take circuit and stray capacitance into account. The ratio of high to low frequency is the square root of C maximum divided by the square root of C minimum, or $\sqrt{110}/\sqrt{15}$, or about 2.7. Clearly the frequency range cited in the problem cannot be covered since the ratio is 6/1.8 or about 3.3.

There is a choice of using a tuning capacitor with a higher maximum capacity or of settling for a narrower range. We'll settle for a narrower range and use a low frequency limit of 2 mc. The high frequency limit then becomes 5.4 mc. Then

$$L = 25400/(2^2 \times 110)$$

which reduces to 57.8 microhenrys. If you solve for the high frequency end of the range using 5.4 *mc* and 15 mmfd you'll get the same result.

Now, computing the number of turns required for the coil, let's assume the winding length to be 1 in. Then

$$n = (l/r)\sqrt{L(9r + 10l)}$$

Since r is 3/8 and l/r is 8/3 this becomes

$$n = (8/3)\sqrt{57.8(9 \times 3/8 + 10)}.$$

The result is 74 turns rounded off to the nearest turn.

The wire diameter that will permit close winding is 1/74 or .0135 inches. Table I indicates that #28 enameled wire will fill the bill.

Limitations and Considerations. The formulae presented apply to single-layer air core coils at radio frequency. At radio frequencies above 30 *mc*, capacitance becomes very critical and inductance very small. The difficulty of getting accurate capacitance estimates above 30 *mc* increases. Skin effect—the tendency for RF currents to flow along the outside of a conductor—becomes more pronounced, too. Thus, calculated results tend to become less accurate portraits of practical circuits.

Litz wire, frequently used for coils at broadcast and lower frequencies, contains several conductors insulated from each other. It provides more "skin" surface to carry RF currents. Consequently, coils wound with Litz wire have higher "Q" than coils wound with solid wire. Insertion of a ferrite core increases inductance of a coil.

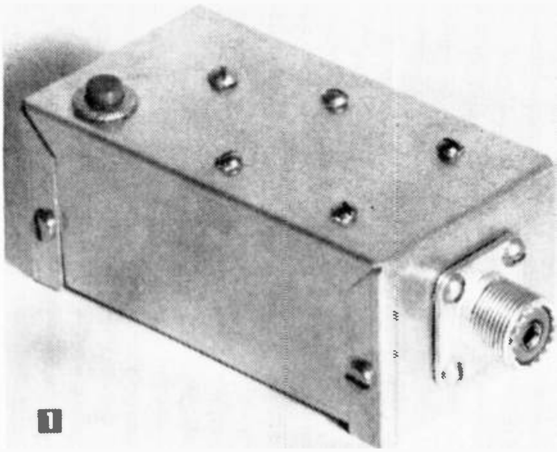
Coils with these variations require changes from the techniques described above.

Inductance of coils wound on ferrite cores is difficult to estimate. Positioning of the winding on the ferrite core, core dimensions, shape, and composition all contribute. The only recourse is to resort to a measurement. A Q meter or a grid-dip meter will do this accurately. The instruction manual of either instrument will outline the procedure.

You could also use an RF signal generator and a VTVM with an RF probe. Connect a 20K carbon potentiometer in series with the coil, then connect this combination to the RF signal generator as in Fig. 3. Set the frequency to 1 *mc*.

Now adjust the potentiometer till you measure equal voltages across the coil and the potentiometer. Disconnect the potentiometer. Then switch the VTVM to the ohmmeter function and measure the potentiometer resistance across the terminals which were connected in the previous circuit. Coil inductance is approximately .159 times the measured resistance.

The signal generator setting of 1 *mc* was chosen on the assumption that the coil was a broadcast or an IF coil. If it is obviously a higher frequency coil, set the signal generator to 10 *mc* for the measurement. The resistance multiplier factor then is .0159.



1

A Handy Oscillator

Ham Band Marker for Alignments and Calibrations

By EDWARD SUMMER

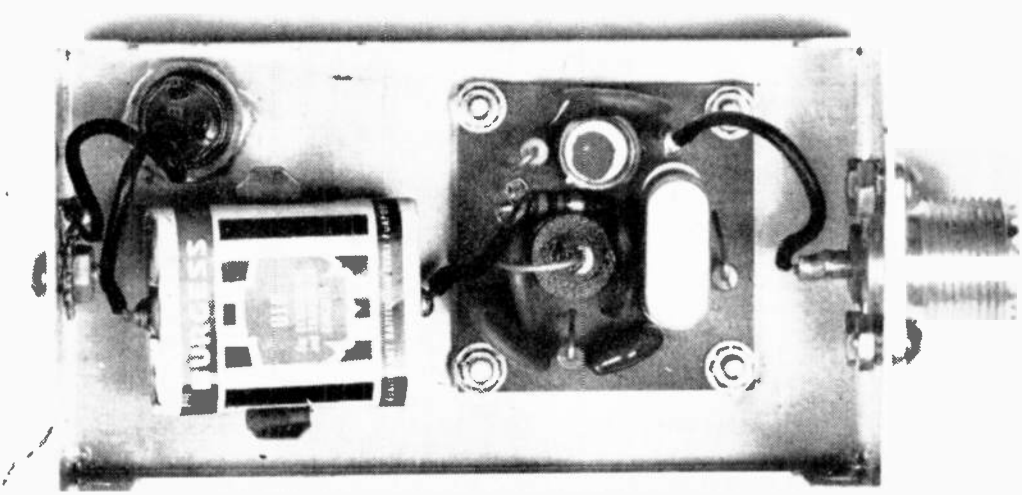
IS YOUR receiver accurate near band edges and other important frequencies? How much does it drift? These are just a few of the many questions answered by the ham band marker in Fig. 1. Easy to build and compact in size, it costs less than $10. The marker has no known commercial counterpart.

The Heart of the Marker is a printed circuit module sold by International Crystal Mfg. Co. As a 1-transistor crystal oscillator, the module performs with high stability. It costs only $4—approximately the same as its component parts. Crystals do not come with the module, but have to be ordered separately.

If you purchase a 3.5-mc crystal for the marker, you will get strong, usable harmonics up to the 6-meter ham band (50-54 mc). By touching the marker to a TV antenna, you can observe cross hatching on the TV screen, which will occur up to channel 13. This cross hatching is evidence of output in the UHF region. The high harmonic output can be traced to the design of the printed circuit oscillator. The output is developed across a resistor, which is not frequency sensitive.

Begin Construction by drilling four holes in a 4 x 2⅛ x 1⅝-in. Bud Minibox (M1) to accommodate the four 6-32 mounting screws furnished with the printed circuit (Fig. 3). Use four 6-32 nuts as stand-off spacers between the printed circuit and minibox to prevent the oscillator from shorting out to the case. Next, drill the holes to accommodate the pushbutton switch S1, coaxial jack J1, and battery holder BH1.

Mount parts as in Fig. 2 and wire them as in Fig. 4. If desired, you can wire a slide



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Underview shows printed circuit module and battery.

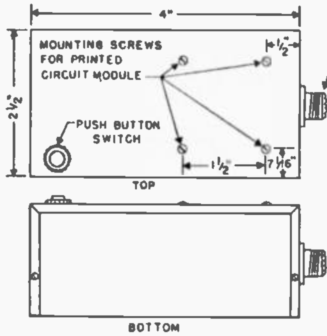
MATERIALS LIST—HAM BAND MARKER

No. Req.	Description
1	B1 battery (Burgess type U10. 15 volts)
1	J1 standard coaxial jack (Amphenol type 83-1R)
1	S-1 pushbutton or slide switch (see text)
1	M1 natural aluminum Minibox (Bud type CU-3002A)
1	BH1 battery holder (Keystone type 166)
Misc.	hardware, grounding lug

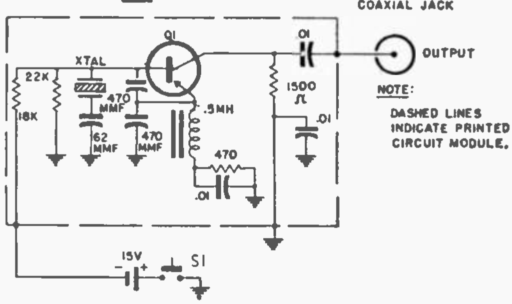
Above parts can be obtained from Allied Radio Corp., 100 N. Western Ave., Chicago 80, Ill.

1	PCM1 printed circuit module/oscillator (International Crystal type TRO-2)
1	3500-kc crystal (International Crystal type FA-5)

Last two parts can be obtained from International Crystal Manufacturing Co., 18 N. Lee, Oklahoma City, Okla.



3 MOUNTING DIMENSIONS



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switch in parallel with the pushbutton switch S1 for continuous operation. Make all connections to the printed circuit board with the clips included with the board. The coaxial jack facilitates the use of both banana plugs and microphone connectors. Place a 15-volt battery B1, in the holder, and you are ready for operation.

Many Uses Are Claimed, the most obvious being the alignment and calibration of receivers, signal generators, wavemeters, and grid dip oscillators. People who own general coverage calibrated bandspread receivers will find almost constant use for the ham band marker. When changing from band to band, the usual procedure is to set the main tuning to a "set" or calibration point.

The bandspread dial is supposed to be accurate. In most cases, however, it may be off as much as 100 kc. Use of the marker puts a stop to such inaccuracy.

Set the bandspread dial to a harmonic of 3.5 mc (3.5, 7.0, 14.0, 21.0, 28.0, or 52.5 mc). Then, with the marker on, tune the main tuning dial until the signal is heard. Your receiver is now "on the nose," accuracy being within a kilocycle or so.

Accuracy and Stability. Accuracy is best at the lowest frequency. At 3.5 mc, the marker is accurate to within 350 cycles; at 7.0 mc, it is ± 700 cycles; and, at the 10-meter band, it is accurate to within 2800 cycles. This excellent stability is due in part to the battery supply and use of a plated crystal at a low drive level.

Because of its high stability, the marker can be used to measure frequency drift in VFOs and receivers. The procedure is simple: Adjust the receiver for CW reception, and tune in to the marker frequency (3.5, 7.0, . . .). After about a half an hour, tune back to the marker frequency and note how much you moved the dial. This indicates the amount of drift of your receiver.

In almost the same manner, VFO drift can be measured. With the VFO turned on (leave the rest of the transmitter off), "zero-beat" the marker. After waiting awhile, tune the VFO back to zero-beat with the marker, and note how much the dial is moved.

Note: When checking VFO drift, turn the beat frequency oscillator (BFO) off. Its use is not necessary.

The above methods are ideally suited for checking warm-up drift. In most cases the marker can also be used for VFO calibration. If exceptionally accurate calibration is desired, a 100-kc secondary frequency standard should be used in conjunction with WWV or WWVH.

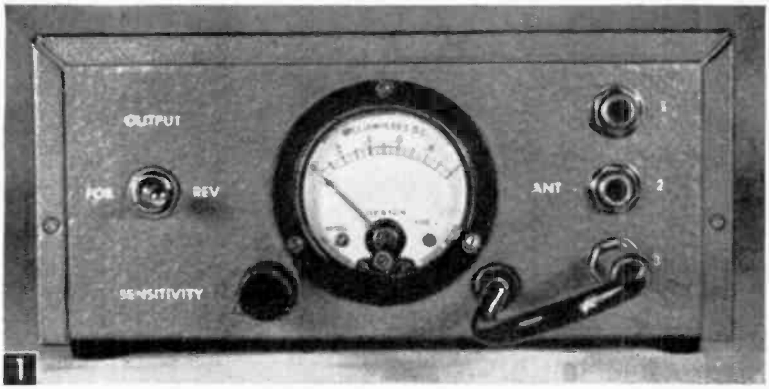
You will doubtlessly find many new applications for your ham band marker; and it will probably be in as constant use as mine is in my ham shack.

Aluminum Windows Serve as Antennas

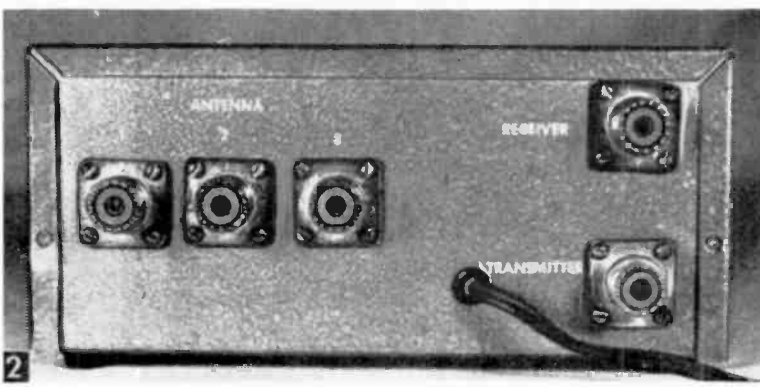
• An aluminum combination window makes a good antenna for boosting the range of broadcast receivers, table-top radios, and short-wave receivers, since the metal covers a fairly large area. Just clip a length of wire to the aluminum frame and connect the other end to the antenna terminal on the radio, using alligator clips. If you prefer a permanent connection, fasten the end of the wire lead under one of the screwheads on the window frame. If your radio is an ac-dc table model, or any other type which works off the power lines but uses no power transformer or isolation transformer, connect a .01 *mfd* 600-volt fixed capacitor between the antenna terminal and the aluminum window frame to isolate the frame from the radio and prevent shocks.—ARTHUR TRAUFFER.

Handy Gear for Hams The 3-N-1 Antenna Box

By JOE A. ROLF, K5JOK



This convenient unit selects antennas, measures efficiency, and switches the antenna from receiver to transmitter.



Coax jacks 1, 2, and 3 accommodate three different antennas. The two jacks on the right connect with coax cables from receiver and transmitter antenna terminals.

TIRED of fishing through a jungle of coax everytime you want to hook a different antenna to your transmitter? Do you ever wonder just how efficient your antenna system is? Do you still use an old fashioned knife-switch for antenna change-over? If so, this antenna box will solve your problem.

It permits instant selection of any one of three different antennas by means of a convenient coaxial jack system. The antennas are plugged into three coax jacks on the rear of the box (Fig. 2). You can patch the particular one you want into the circuit simply by plugging the phone on the front panel into the corresponding jack as in Fig. 1.

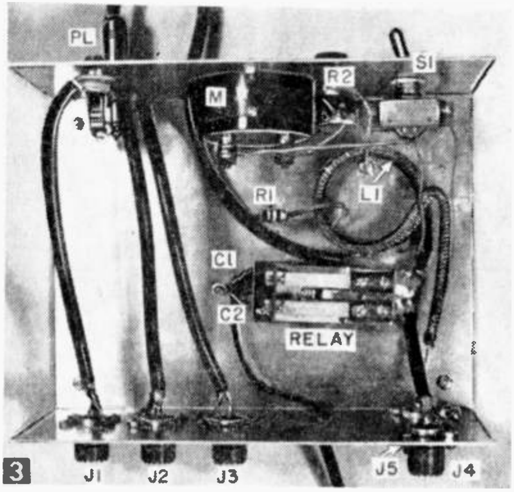
In addition to antenna selection, the unit has a change-over relay controlled by the transmitter which switches the antenna from receiver to transmitter. Also, an SWR (standing wave ratio) bridge measures antenna efficiency.

Layout and Construction are fairly simple (Fig. 3), so they should pose no serious problems, even for the novice. The unit is housed in a 3½ x 6 x 8-in. Minibox. If you wish to modify the layout to accommodate different-sized components than those used by the author, there is ample room, but keep the leads short and direct to minimize losses.

All leads in the antenna line are RG 59/U coax cable, since the circuit is designed to be used with coax-fed antennas having 72-ohm impedances. For 52-ohm coax-fed antennas, substitute RG 58/U cable and use a 36-ohm resistor at R1, instead of the 47-ohm resistor specified in the Materials List. Actually, no difficulty will be encountered in connecting a 52-ohm antenna to the 72-ohm circuit other than error in the SWR reading.

The bridge pickup, L1 (coiled coax in Fig. 3), is a 28-in. piece of RG 59/U with a length of insulated hookup wire inserted between the shield and center conductor. Strip the outside rubber covering from the coax and bunch the copper shield together from the ends so that the insulated center conductor slips out.

With the center conductor removed, insert a 26-in. piece of small-diameter hookup wire into a hole punched about ½ in. from one end. Feed the hookup wire through the shield and



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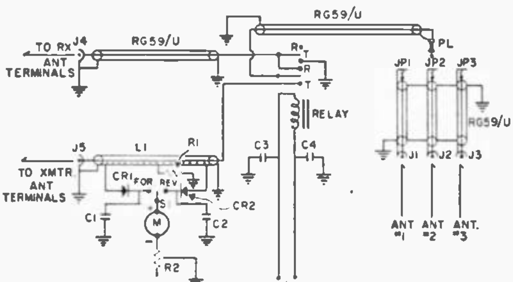
Cabinet is small, yet adequate for easy installation of components. Note short, direct two-conductor wire leads between phone jacks on front panel (top left) and coaxial jacks on back panel.



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out a similar hole punched in the other end of the shield. Insert the insulated center conductor and spread the shield tight again. Wrap the shield ends with bare wire and solder to hold it in place. At midpoint from where the hookup wire enters and leaves the coax, spread the shield and pull a couple of inches of hookup wire out for connection of R1.

Now wind L1 into a 2-in. coil, solder together at several points, and solder it to chassis-fastened lugs at the bottom of the cabinet between the relay and SWR bridge switch (Fig. 3). Secure the coil to the chassis to prevent possible shorting with other components.

Since most amateur transmitters are designed to activate an external antenna relay, connect the leads of the relay coil to the appropriate terminals of the transmitter with a short length of 2-conductor cable. Consult your transmitter manual for these connections. If your transmitter is not designed to activate an external relay, you can mount an

MATERIALS LIST—3-N-1 ANTENNA BOX

Desig.	Description
C1, C2, C3, C4	.001 mfd., 100-volt ceramic disk capacitors
CR1, CR2	1N34 diodes, or equivalent
J1, J2, J3, J4, J5	chassis-type coaxial jacks
JP1, JP2, JP3	standard phone jacks
L1	28" of RG 59/U coaxial cable (see text)
M	0-1 milliampere dc meter
PL	standard phone plug
R1	47-ohm, ½-watt resistor
R2	25K, ¼-watt volume control, C1 taper
Relay	DPDT relay, 110 volt ac coil
S1	SPDT toggle switch
chassis	Minibox, (Bud CU-2109)
Misc.	36" of small-dia. hookup wire, line cord and plug, 2-conductor cable

additional switch in the antenna box for this purpose.

Check for Antenna Efficiency. With the antenna box connected to receiver, transmitter, and antenna, as in Fig 4, throw the SWR bridge switch (S1) to "Forward" and tune the transmitter as usual. As the transmitter is loaded, the antenna box meter will indicate output. The meter reading will be proportional to the frequency; that is, it will take about 75 watts to give a full meter deflection on 80 meters, and much less for full deflection on 10 meters. Bridge sensitivity is controlled by R2.

In the "Forward" position, the meter indicates power being fed into the antenna, and can be used as a simple output indicator to aid in tuning.

In the "Reverse" position, the SWR bridge measures the reflected power, or standing waves, present in the antenna feedline. Reflected power, stated simply, is power which is not fed into the antenna and radiated as signal. The greater the reflected power, or SWR, the more inefficient the antenna.

To find the actual standing wave ratio of an antenna, note the "Forward" and "Reverse" meter readings and use the following formula:

$$\text{SWR} = \frac{\text{Forward Current} + \text{Reverse Current}}{\text{Forward Current} - \text{Reverse Current}}$$

Ideally, the resulting ratio derived should be 1:1; however, this is not possible even with the best antennas.

Any efficient antenna system will closely approach an SWR of 1:1. An antenna with a high SWR indicates that the feedline is not matched properly to the antenna, or the antenna is not resonant to the operating frequency. This can be remedied with the aid of the SWR bridge.

The bridge is more sensitive on the higher amateur bands. Also, it will give larger readings with higher power, though it will operate satisfactorily with transmitters having power inputs as low as 30 to 50 watts. The unit should not be used with transmitters having an input of over 300 watts.

Black Light for Fluorescent Experiments

ULTRA violet, black light is used "to see the invisible" in a *Magic Glo* kit offered by Edmund Scientific Co.

A fascinating device for those interested in the science of fluorescence, the kit produces only long-wave black light—completely harmless to the eyes—but causes fluorescence in more than 3000 substances. It is suitable for many experiments, for studying fluorescent rock collections, and for fun-filled science stunts.

The set includes a *Magic Glo* lamp, stand, invisible water paints, ink, fluorescent crayon, trace powder, pen, brushes, and fluorescent rock specimens. Instructions tell how to perform over 40 experiments and explains the facts about black light.

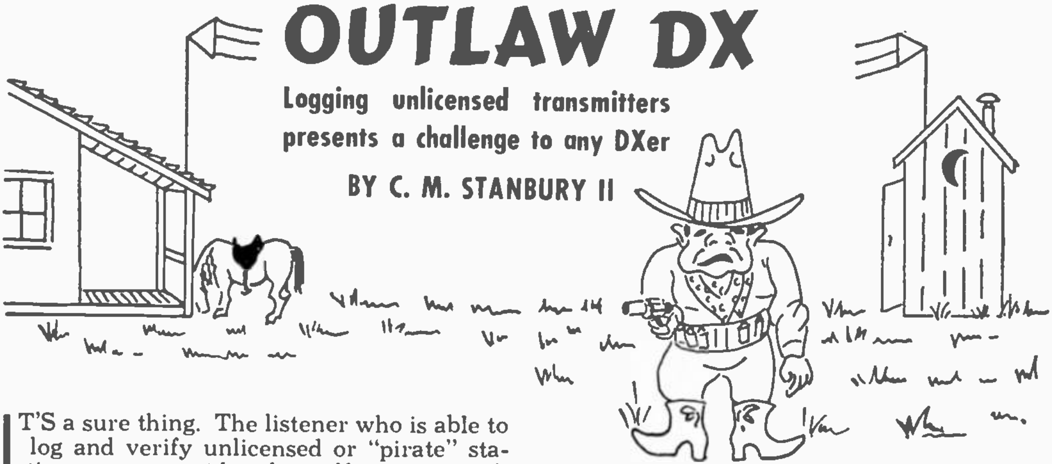
Priced at $10.95 postpaid, the *Magic Glo* kit is available from Edmund Scientific Co., Dept. RTE, Barrington, N. J.

"Hold it! I forgot to load the satellite's recorder."

OUTLAW DX

Logging unlicensed transmitters presents a challenge to any DXer

BY C. M. STANBURY II



IT'S a sure thing. The listener who is able to log and verify unlicensed or "pirate" stations can consider himself a top rank DXer. In fact, just to hear one of these elusive fish is an accomplishment. What does it take?—know-how, patience, and luck. The first we'll give you here: the other two you'll have to acquire on your own.

Pirate transmitters fall into three categories. First, there are those operated simply for the fun of it. This type is the oldest, dating back to the "roaring '20s"—the pioneer days of radio. According to legend, one unlicensed station in the Ohio valley has been on the air for over 30 years. If the story is true, this crafty veteran is an exception. Most such outlets stay on the air only a few months: either the FCC catches them, or the operators lose their interest, or their nerve. Transmitting without a license is, of course, a federal offense.

How Do You Hear Them? Constantly check clear broadcast band channels, especially during daylight hours. As very low power is used (seldom more than 10 watts), no interference can be bucked. In the Northeast 1200 kc is a popular spot; in the Pacific Northwest, it might be 670 kc. Another stunt is to move just above the BCB, 1610 through 1620 kc, easily tuned on most AM receivers. Also watch for harmonics, which are never suppressed, often almost as strong as the fundamental frequency.

Not every "joy broadcaster" follows such rules. WCBJ in Gilberts, Ill. (Fig. 1), for example, estimated its power at 50 watts and transmitted on 1555 kc. It was heard at least 300 miles away. Fortunately, there are other ways to spot unlicensed broadcasters. Announcing sounds unprofessional, and commercials are rare, although sometimes they are made up or borrowed—one young man went so far as to tape record a USAF recruiting program. The final test is modulation, frequently distorted; some such stations are best heard when tuned slightly to one side of the carrier frequency.

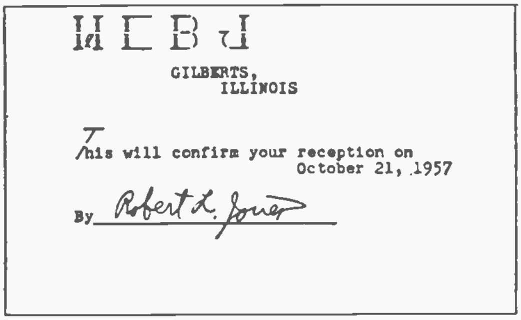
Now, will they verify? Very often, if you can come up with the correct address and include a prepared QSL card which merely has to be signed and mailed back to you, they will (despite a possible $5000 fine, if caught). That address is the hard part. It requires careful listening for names, streets, or any other possible clue. In connection with such detective work, a telephone directory and street map of the city or town involved will be most helpful.

Not a Game. Here in the U. S., joy broadcasters are the only outlaw type found, but in many other parts of the world secret radio stations are a deadly serious proposition. This second category is represented by rebel voices operating from the back of a truck, aboard ship, or secretly from a neighboring country. On such a "wanted" list we would find the Red-backed Radio España Independente, a station

TABLE A—UNLICENSED SHORT WAVE TRANSMITTERS

KC/S	STATION	NOTES
6000	Radio Swan	Unlicensed but not clandestine, jammed
6340	FLN	Interfere with each other deliberately
	Algerian Renaissance Radio	
6430	FLN	
	Algerian Renaissance Radio	
6960	Radio España Independente	Jammed
11260	Radio España Independente	Jammed
11835	Algerian Renaissance Radio	After government Radio Alger signs off
12160	Radio España Independente	Jammed

All frequencies, except that of Radio Swan, are subject to variation, and other channels may also be used.


WCBJ
GILBERTS,
ILLINOIS

This will confirm your reception on
October 21, 1957

By Robert L. Jones

The author's prepared QSL from outlaw WCBJ. This card was signed and mailed a few hours before the FCC closed the station.

of the FLN (Arab nationalist movement in Algeria), and Algerian Renaissance Radio (extreme right wing enemy of the FLN), plus many less permanent SW fixtures. These are all categorized as "clandestine," thus excluding such stations as Radio Swan, which has no license but is completely out in the open.

While clandestine transmitters seldom have power comparable to Radio Moscow or the Voice of America, they do have enough watts to carry them around the world when conditions are right. Rebel stations usually choose frequencies outside those bands allocated for SW broadcasting (some licensed stations do the same), which greatly reduces interference and makes them easier for the DXer to spot. Typical programming consists of long-winded emotional speeches interspersed occasionally with band music. As with our first group of pirates, modulation is often not perfect, but here distortion takes the form of a hum. Occasionally such a station may be jammed.

It is virtually impossible to verify reception of clandestine short wave broadcasts.

For Profit. Outlaws in our third category present exactly the opposite situation: they are difficult to hear, but QSL readily. These commercial stations operate on shipboard in international waters off Western Europe for the purpose of breaking state radio monopolies enjoyed by every European government except those of Greece, West Germany, Portugal, and Spain. Broadcasting from on board ship is prohibited by the International Telecommunications Union, and it is this fact which distinguishes these outlets from similar but more powerful stations transmitting from tiny Andorra, Luxembourg, and Monaco for precisely the same purpose.

This device is certainly not new. The world's first radio pirate ship was RXKR, operating off the California coast in 1933 under Panamanian registry. However, its purpose was not quite so worthy. RXKR operated as a floating casino, and broadcasts were designed to sell gambling.

Although the modern commercial pirates serve legitimate interests, many groups oppose them, and while such broadcasters will probably increase in number, there are at present only three of them. Radio Veronica (sometimes using the call VRON) transmits on 1563 kc off the Netherlands coast. Radio Nord—not far from Stockholm, Sweden—uses 602 kc 24 hours a day.

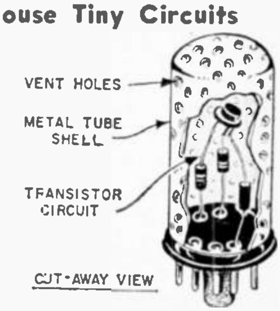
While reception of these two is difficult, it is certainly not impossible. With a dropping sunspot count and better medium wave reception, BCB DXers using communications receivers (especially listeners in the East and Midwest) stand a good chance of bagging them. The third station, Radio Mercur, operates on FM (88 mc), and is therefore an almost impossible catch.

Reports for Radio Veronica go to P.O. Box 244, Hilversum, Netherlands, and those for Radio Nord to Report Control, Radio Nord, Stockholm 3, Sweden.

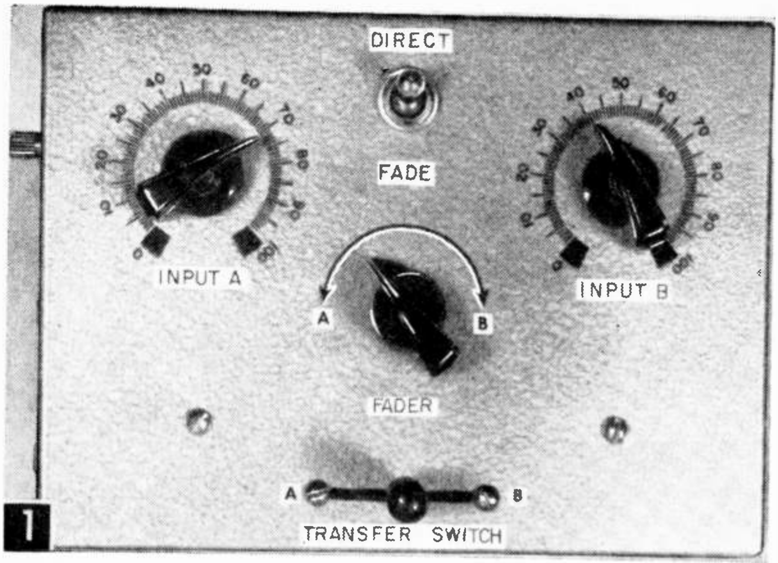
Aluminum Windows Serve as Antennas

• An aluminum combination window makes a good antenna for boosting the range of broadcast receivers, table-top radios and short wave receivers, since the metal covers a fairly large area. Just clip a length of wire to the aluminum frame and connect the other end to the antenna terminal on the radio, using alligator clips. If you prefer a permanent connection, fasten the end of the wire lead under one of the screwheads on the window frame. If your radio is an *ac-dc* table model, or any other type which works off the power lines but uses no power transformer or isolation transformer, connect a .01 *mfd* 600-volt fixed capacitor between the antenna terminal and the aluminum window frame to isolate the frame from the radio and prevent shocks.—ARTHUR TRAUFFER.

Tube Shells House Tiny Circuits



• Discarded metal vacuum tube shells make neat shielded housings for plug-in relays, transistors, and diode circuits. Pry the base from the tube and discard the innards. Solder in your transistor circuit making connections to the base pins, and you have a plug-in device that fits tube sockets. If components such as resistors radiate heat, then drill enough vent holes to provide an adequate air circulation.—JOHN A. COMSTOCK.



Front-panel view of two-channel mixer well-suited for use with high-fidelity equipment—and inexpensive!

HIGH-EFFICIENCY Two-Channel Mixer

By W. F. GEPHART

A MIXER to superimpose voice on recorded music, operate one amplifier from two microphones, etc., should have the following characteristics:

1) The input impedance should match the impedances of the devices feeding it and the output should be suitable for high-gain amplifier inputs.

2) The input and output impedance should not vary as the mixer's controls are varied.

3) The variation in gain for each channel should be smooth from zero to maximum.

4) There should be no interaction between controls.

5) The mixer should not affect frequency response of the input signals and should not introduce any hum or noise into the signal being fed into the amplifier.

6) The mixer should be versatile enough to permit either fading or direct switching or a combination of both.

Many mixers do not have all of these characteristics and when used with high-fidelity equipment the results are disappointing. Those that do work well usually have expensive, balanced, pad-type controls—too expensive for most non-professionals. The mixer described in this article, however, can be assembled of inexpensive parts, possesses all of the characteristics mentioned as necessary, and is well-suited for high-fidelity use.

Figure 2, a schematic diagram of the mixer's circuit, shows that the input circuits are designed for high-impedance inputs such as crystal microphones, phono pick-ups, tuners, etc. The two inputs are fed into separate jacks (J1 and J2), through separate "Level" controls (R1 and R2) and into separate amplifiers (V1A and V1B).

Amplified, the signals are then fed through separate sides of the Transfer Switch (SW1), through separate sides of the Function Switch (SW2), and into separate sides of the Fader Control (R7). The signals, still separated, each go to a grid of a dual cathode-follower stage (V2), whose plates and cathodes are common. Here, mixing occurs. The output is fairly low impedance, permitting up to 100 ft. of microphone cable between the mixer and main amplifier.

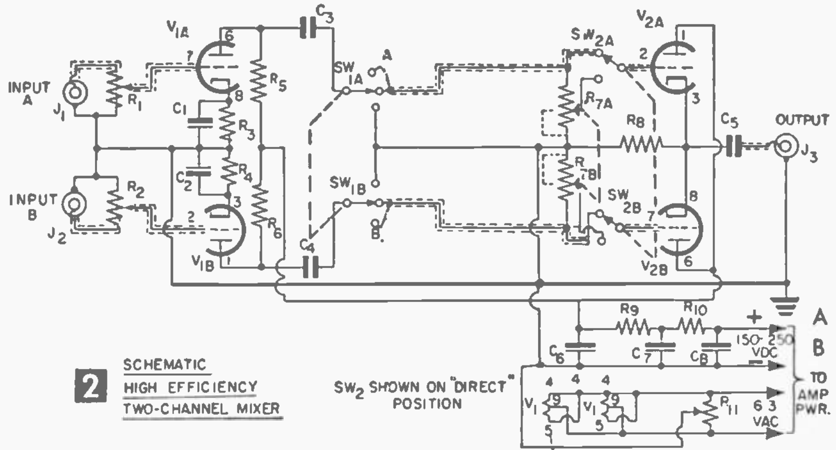
The function of the Level controls (R1 and R2) is to equalize the levels of the two incoming signals, so that no gain adjustment will be required when switching from one signal to another.

The Transfer Switch (SW1) is used to switch directly from one signal to another without fading. When in the center position, both signals are passed. Moving the switch to either side permits only the signal selected to go through, grounds out the other.

The Function Switch (SW2) determines whether the signals are to be switched directly by the Transfer Switch or faded into each other by the Fader Control (R7). When in the "Direct" position (as in Fig. 2), the signals go directly to the grids of V2, bypassing the Fader Control.

The Fader Control (R7) is a dual potentiometer, wired so that the gain of one signal is increased as the other is decreased. It must be a linear taper potentiometer connected so that as the shaft turns, resistance increases in one element as it decreases in the other. As shown in Fig. 2 (ignoring the small dotted lines), a standard dual potentiometer may be used and, at midpoint, an equal amount of each signal will pass. The fading action is therefore (turning clockwise) from full signal A to half signal A plus half signal B to full signal B. If it is desired to have no signal at midpoint (with fading action from full signal A to zero to full signal B), the potentiometer must be modified. This modification will be explained later.

Figure 2 assumes that external power for the mixer can be secured from the main amplifier. Power requirements are 6.3 volts *ac* at .7 *amps* and between 150 and 250 v. *dc* at 5 *ma*. This power may be brought in by a four-conductor cord wired directly into the mixer or through a power plug.

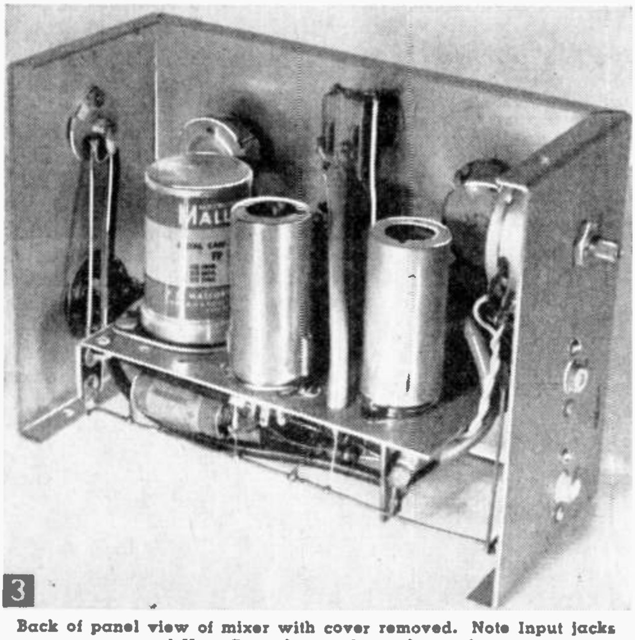


2 SCHEMATIC HIGH EFFICIENCY TWO-CHANNEL MIXER

If power from the main amplifier is not available, a built-in power supply, such as that shown in Fig. 6, can be included. Note that the power line is isolated from the chassis and ground by the two filament transformers. This is necessary not only from a standpoint of safety, but also to prevent interaction between the mixer and main amplifier.

To minimize *ac* hum, a filament balancing control (R11 in Figs. 2 and 6) is provided. If power is secured from a main amplifier with either side of its filament circuit grounded to the chassis, however, this control should not be included. This control should be set after the mixer is connected to the main amplifier and the inputs are plugged in. With no signal (this may require holding your hand over microphone), both Level controls at full gain, and the main amplifier gain turned up until a hum is heard, adjust the Hum Control for minimum hum in the speaker.

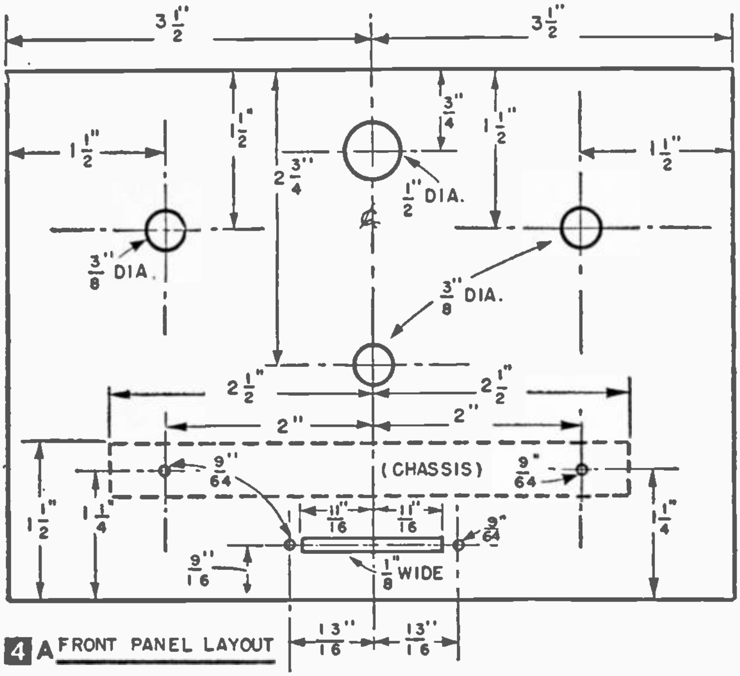
Figure 4 gives the panel and chassis layout for the unit without the power supply. No dimensions are indicated for the mounting of the two Input jacks and Hum Control in one end of the case and the Output jack and power plug at the other end; these can be placed where most convenient. If a power supply is to be built in, a larger box (3½ x 6 x 10 in.) should be used. The same size chassis piece can be used, but it should be mounted to one side, leaving clearance at one end of the box for the two transformers and selenium rectifier. The pilot light and power switch could be placed symmetrically on either side of the Fader Control, on the panel under the Level controls. The Hum Control and both Input and Output jacks would then be on the other end of the case.



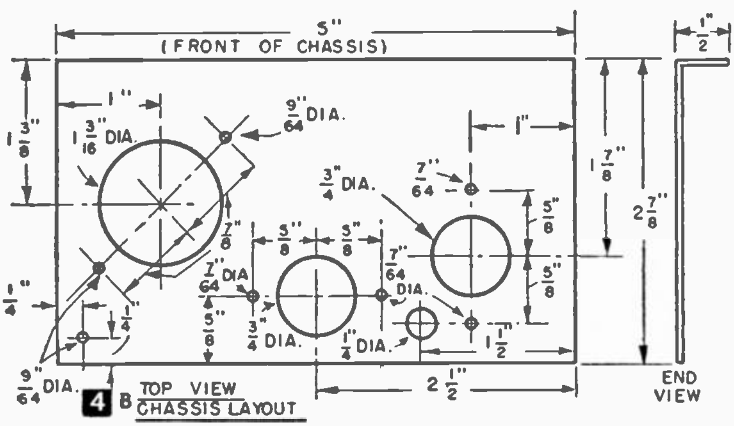
3 Back of panel view of mixer with cover removed. Note Input jacks and Hum Control on end panel at right.

Figure 3, a back view of the mixer, and Figs. 7 and 8 show wiring arrangements. Notice that SW1 (shown in Fig. 8), is mounted with ⅜-in. spacers. This particular switch (Mallory 6243) has a very long arm which tends to protrude too far from the mixer's front panel unless mounted in this manner. Also notice that shielded sockets and tube shields are used to reduce hum and interference.

Run the filament leads first, twisting the wires together and keeping them close to the chassis (chassis is made of scrap aluminum, with a ½-in. bend along one side; a convenient source is the side panel of an old 3-in. deep chassis). Be sure to use shielded wire where shown in the schematic and elsewhere if long (over 2 in.) signal leads are used. Generally, it will be best to use plastic-covered shielded wire to prevent the grounded shielding from shorting out against other wiring. Within reason, the larger the diameter of the shielding, the better, since small-diameter shielding has a higher



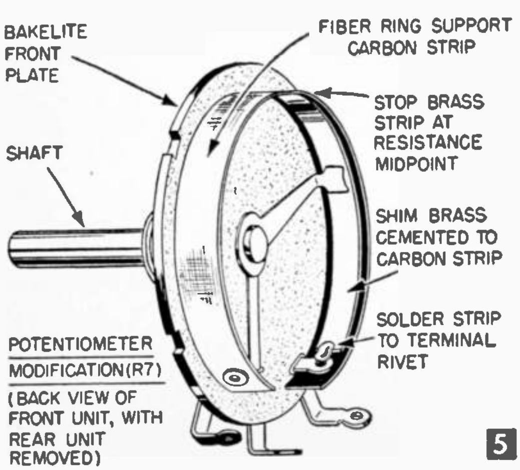
4A FRONT PANEL LAYOUT



4B TOP VIEW CHASSIS LAYOUT

capacity which reduces high-frequency response. In some cases, as can be seen in Figs. 7 and 8, two-conductor shielded wire can be used to good advantage. To minimize stray chassis currents, a common ground bus is used and all ground connections are made to it. This bus is grounded to the chassis at the Input and Output jacks.

Modification of Fader Control. The ideal way to provide zero gain on both signals (instead of half-gain) at midpoint would be to have a dual, linear-taper, center-tapped potentiometer of 1 or 2 megohms. But such pots are not normally available. An untapped potentiometer can be "shorted out" as shown in Fig. 5 if it has a removable back, and if the front and rear sections can be separated. The clockwise half of one potentiometer and the counter-clockwise half of the other is shorted out with a small piece of shim brass which results in the potentiometer arms being shorted to ground (see small dotted lines on R7 in Fig. 2) at midpoint. Turning the shaft one way moves one arm toward the grid (with decreasing resistance and therefore increasing signal), while the other arm stays on the shorted-to-ground section. This results in fading action from full signal A to zero to full signal B.



POTENTIOMETER MODIFICATION (R7)
(BACK VIEW OF FRONT UNIT, WITH REAR UNIT REMOVED)

5

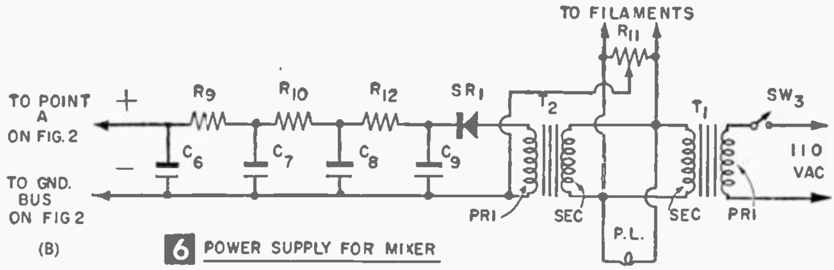
To modify the potentiometer (use a 2-meg. pot.), cut a strip of shim brass (as thin as is available) the width of the potentiometer carbon strip. Using an accurate ohmmeter, adjust pot's arm to the exact midpoint, and mark it carefully. Cut the brass strip to a length slightly in excess of the circumferential distance from the midpoint of the carbon strip to the end terminal, and cement it (using contact cement) to the inner side of the strip (as shown in Fig. 5). Solder one end to the lug rivet at the end of the strip. Do the same to the other half of the dual potentiometer, using the opposite segment of the carbon strip. While every effort should be made to have the unsoldered end of the brass strips at the same point when the potentiometer is re-assembled, a little variation won't hurt since the midpoint is the point of lowest gain.

To use the mixer, connect the input and output cables and balance the hum. Then set both Level controls to midpoint and adjust the main amplifier gain to a satisfactory level for the weaker of the two input signals. The Function Switch should be on "Direct" and the two inputs can be switched with the Transfer Switch to determine which is the weaker signal. After the main amplifier gain has been adjusted, adjust the Level Control for the weaker signal to bring it up to the level of the other signal, switching with the Transfer Switch for comparison. Inputs to the mixer are now balanced.

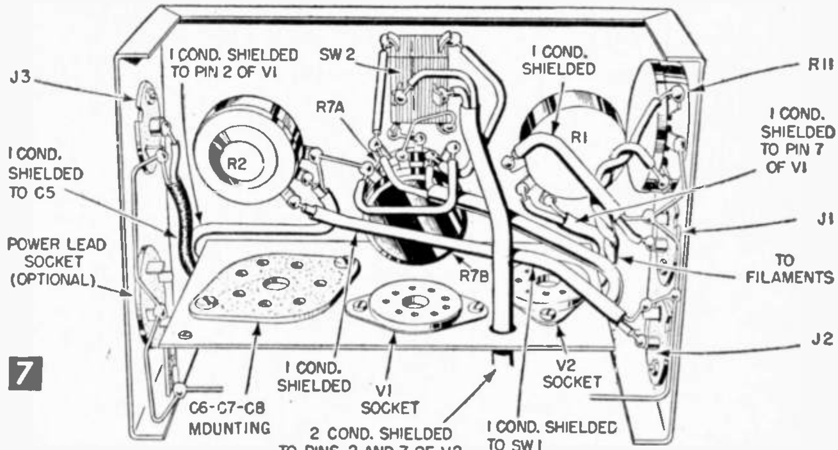
If direct switching is desired, leave the Function Switch on "Direct" and use the Transfer Switch to select either or both inputs as desired.

If fading from one signal to another is desired, leave the Transfer Switch in the center position and switch the Function Switch to "Fade." With the Fader Control at midpoint, both signals (at half volume) will be heard, and turning the control either way will diminish one signal and and increase the other.

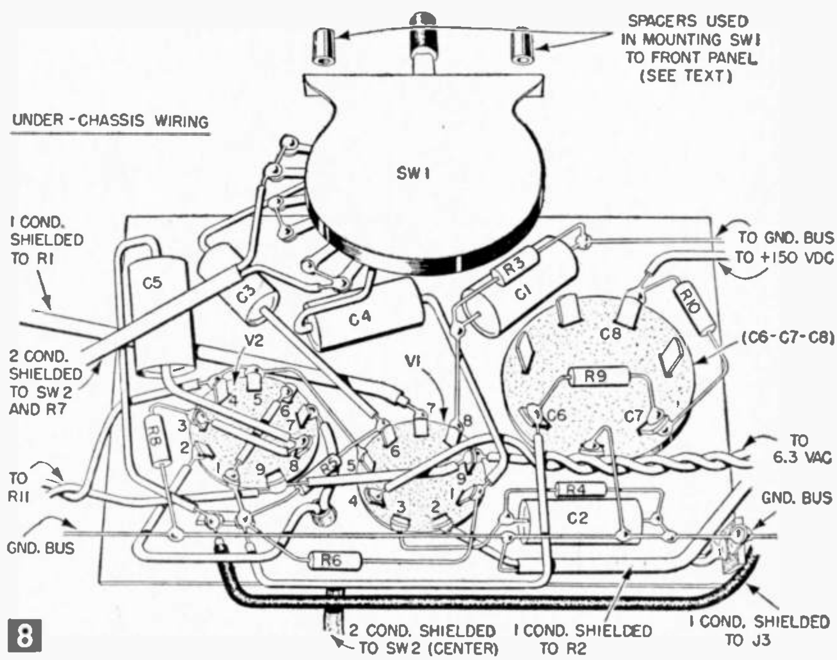
If, after a period of direct switching, it is desired to fade out the last signal instead of making a direct cut-off, first turn the Fader Control to maximum gain for the signal being heard. Leave the Transfer Switch in the proper signal (the one being heard) position, and switch the Function Switch to "Fade." The second signal will still be grounded by the Transfer Switch and the first signal will still be connected directly to the grid of V2—but through the Fader Control at zero resistance. When desired, turn the Fader



6 POWER SUPPLY FOR MIXER



7 BACK OF PANEL WIRING
(TUBES AND SHIELDS REMOVED FOR CLARITY)



8

MATERIALS LIST—TWO-CHANNEL MIXER

R1, R2—.5 meg. potentiometers*
R3, R4—1500 ohm, ½ watt
R5, R6—.1 meg. ½ watt
R7—Dual 1 meg. potentiometers* (See text)
R8—47000 ohm, ½ watt
R9—15000 ohm, 1 watt, wire-wound
R10—10000 ohm, 1 watt, wire-wound
R11—200 ohm, 2 watt potentiometer (Mallory C200P or M200PK)
C1, C2—10 mfd, 25 volt
C3, C4—.05 mfd, 300 volt
C5—.2 mfd, 300 volt
C6, C7—20 mfd, 250 volt electrolytic } Mallory FP-320, Sprague TVL 3540
C8—40 mfd, 250 volt electrolytic }
SW1—DP 3 pos. Lever Switch (Mallory 6243 or Switchcraft 3036L)
SW2—DPDT toggle switch
J1, J2, J3—Phono Jacks #
V1—12AX7
V2—12AU7
Case—Bud Minibox 3 x 5 x 7"
Tube sockets and shields, knobs, shielded wire, etc.

Additional and Substitute Parts Required If Power Supply Is To Be Included. (See Fig. 6)

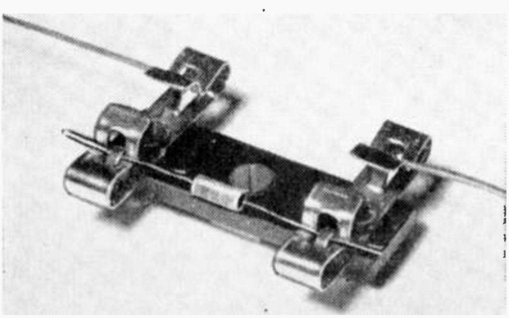
T1—Filament Transformer: Secondary 6.3 volts @ 1 amp
T2—Filament Transformer: Secondary 6.3 volts @ .5 amp
SR1—20 ma. selenium rectifier
R12—5000-ohm, 1-watt, wire-wound
C9—40 mfd, 150-volt, electrolytic
SW3—SPST toggle switch
PL—6.3-volt pilot light and jeweled socket
If power supply is used, larger, low-voltage quadruple condenser unit can be used to act as C6, C7, C8 & C9; such as Mallory FP 312 (100-80-60-40 mfd @ 150 volts).
* All potentiometers must be linear taper
# Jacks may be varied to suit needs; however, adapters made by Switchcraft can be used to adapt various microphone plugs to phono jacks.

Control toward the center position, fading out the signal. The other signal will not fade in since it is grounded out at the Transfer Switch. The same operation could be performed with the Level controls but this would unbalance the input levels.

Germanium Crystal Diode Connector for Experimenters

• With the increasing popularity of germanium crystal diodes, radio experimenters and crystal set builders are continually changing these crystals around from one circuit to another. The wire leads become shorter and shorter from continual nicking, bending, or soldering, and sometimes the leads break off at the body of the crystal.

To avoid these troubles, make a connector consisting of a pair of twin Fahnestock clips mounted on a strip of Bakelite (see photo). Insert the crystal diode in one side of the clips and make connections to the diode on the other side of the clips as shown. This device also allows two crystals to be connected in parallel, as is sometimes done to increase the current-carrying capacity of germanium diodes. If you do not have a pair of twin clips, simply fasten four clips to a Bakelite or wood base. To insert a crystal into the clips, simply press both clips at once and slip the leads into the clips one at a time. This method makes it unnecessary to bend the leads at all.

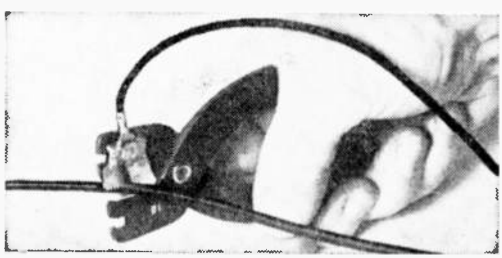


Fuse Holder Eases Testing

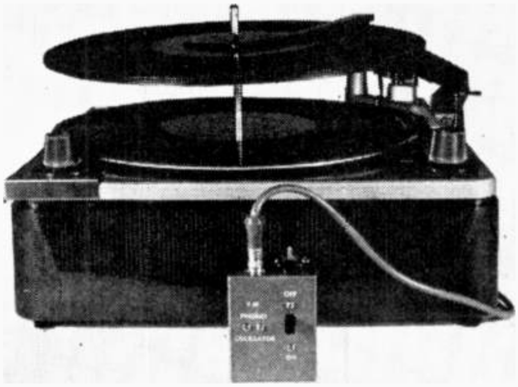
• Ever wish there were some way you could hang on to both of your test prods with one hand while the other works the meter knob? Take one of those fuse holders used when you replace a pigtail fuse with an ordinary fuse and snap the barrels of your test prods into it. You can often touch the red prod to a hot terminal and the other to a chassis ground point nearby. If the two test points are located farther apart, take the barrel of each prod out of the clips at the lower end of the holder and this will put the prod tips farther apart. You can even use the fuse holder to keep pairs of test leads from becoming separated when many are stored together.

Insulated-Wire Tester

• Convert your Christmas tree lamp tester for insulated-wire testing. Solder an insulated wire lead directly to toothed electrode so temporary connections can be made to insulated wires in radio and electrical test work. Sharp teeth on the tester cut through the insulation and contact



the wire without damaging the insulation. Connect 2 of these testers to an *ac* voltmeter for electrical work, or, to a volt-ohm-milliammeter for radio service work and experimental work. Testers have fiber handles which make them safe for use on high voltages.—Arthur Trauffer.



1

Oscillator permits FM reproduction through FM or TV receiver with any record changer.

A Compact FM Phono Oscillator

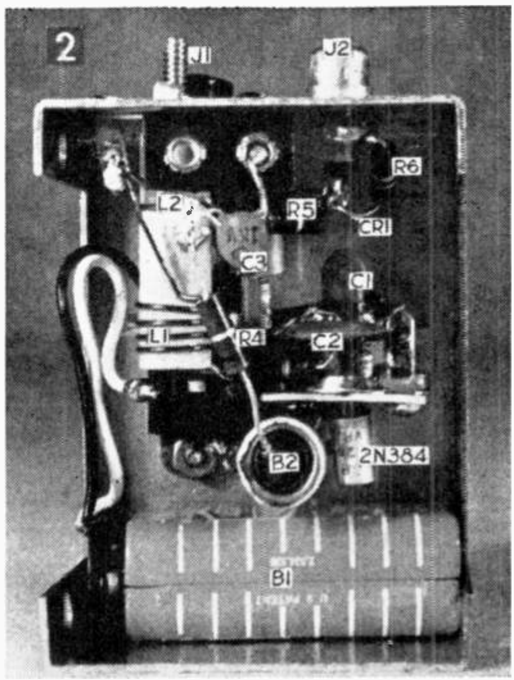
BY JOE A. ROLF, K5JOK

STANDARD phono oscillators have been used for years to reproduce records through AM and FM radio systems. As for quality reproduction, they have left much to be desired; but the versatile, transistorized unit in Fig. 1, which can be built for $10 or less, will satisfy even the most discriminating listener.

This phono oscillator presents many other uses. With a crystal or ceramic microphone it can be handled as a remote wireless mike, provided one of the resistors (R6) is omitted to improve modulation. It can also serve as a "baby sitter." In any case, you will find it capable of surprising reliability and fidelity.

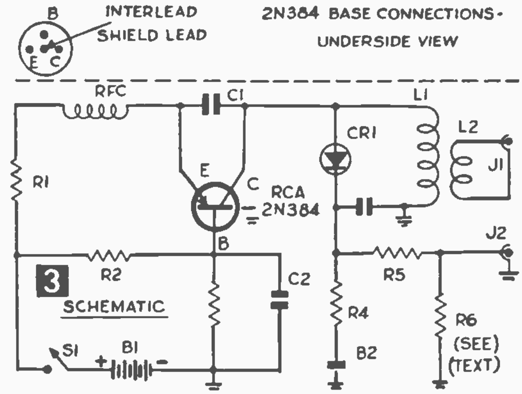
The unit overcomes the frequency response shortcomings of the typical AM oscillator. It is designed for use with FM systems and TV receivers which are capable of greater fidelity than AM systems. This is true even with the majority of low cost FM table models.

The usual disadvantage of FM-type oscillators is one of modulation. Past units have required either a makeshift cartridge modulator or a complicated reactance type, which meant modification of the record changer, erratic performance, and added construction costs. This is avoided by the use of a unique diode modulator which is easily adjusted.

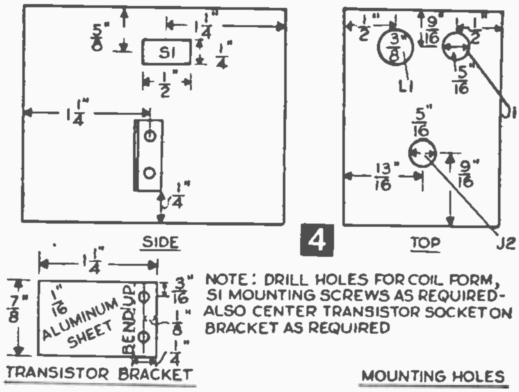


Interior view showing parts layout.

The Oscillator Circuit, shown in Fig. 3 is a common-base configuration using an RCA 2N384 transistor powered by the 9-volt battery, B1. The circuit is conventional with the exception of the diode modulator which consists of components CR-1, R4, R5, and B2. The diode, CR-1, is a 500-milliamp replacement-type silicon rectifier. One of its characteristics is that its shunt capacity varies with reverse bias voltage. By varying this reverse bias, the shunt capacity can be changed as much as 20 mmfd and the rectifier can be used as a small electrically controlled variable capacitor. The function of battery B2 is to furnish the required bias of 1.5 volts. R4 provides a high resistance between the diode and ground.



3 SCHEMATIC



4 MOUNTING HOLES

MATERIALS LIST—FM PHONO OSCILLATOR

Desig.	Description
B1	9-volt transistor battery (Eveready type 216)
B2	1.5-volt pen-lite cell (Eveready type 90V)
C1	5 mmfd mica or disk ceramic capacitor
C2	.01 mfd disk ceramic capacitor
C3	5 mmfd mica or disk ceramic capacitor
CR-1	500 milliamp silicon rectifier, replacement type (International Rectifier type SD-500 BU)
J1	pin jack socket
J2	phono jack, input type
L1	4 turns #18 enameled wire spaced 3/8 in. over 3/8-in. dia. slug tuned form (National type XR-91)
L2	1 turn #18 enameled wire wound near L1
R1	1000 ohm 1/2-watt resistor
R2	2200 ohm 1/2-watt resistor
R3	15K ohm 1/2-watt resistor
R4	1 megohm 1/2-watt resistor
R5	1 megohm 1/2-watt resistor
R6	82K ohm 1/2-watt resistor for changers having .5-volt output (see text for other values)
RFC	.8 mh RF choke (Miller type 6175 peaking coil)
S1	SPST slide switch
1	RCA 2N384 transistor
1	minibox (Bud type CU 2100A)
1	4-pin transistor socket
1	1/16 x 7/8 x 1 1/4" aluminum sheet
Misc.	screws, wire, battery connector for B1

The audio voltage from the changer cartridge connected at J2 raises and lowers the bias voltage so that the diode shunt capacity change is proportional to the audio signal. CR-1 is connected in series with C3 across the oscillator coil so that the oscillator frequency changes with modulation. R5, like R4, is an isolating resistor.

R6 is not part of the actual modulator circuit, but limits the amount of audio reaching the diode to control modulation. As will be explained later, this resistor must be chosen experimentally for proper frequency deviation. Since only a minute amount of current flows through CR-1 and associated resistors, B2 can be left permanently in the circuit.

Compact Construction is an advantage of the transistorized design. The unit shown in Fig. 2 was constructed in a 2¾ x 2⅛ x 1⅝-in. minibox (Bud CU-2100A). If desired, it can be built into the record changer. Be sure to keep all leads short and direct, particularly those associated with the modulator and tuned circuit. Make them as rigid as possible for stability.

After drilling all holes in the box as in Fig. 4, mount the coil form (with L1 and L2), input and output jacks (J2 and J1) at one end of the box. Attach the 1/16-in. aluminum transistor socket mounting bracket and "on-off" switch (S1) at the bottom center. Mount B2 vertically next to the transistor and B1 will then fit snugly into the remaining space (Fig. 2).

After completing the wiring, clip the leads of the 2N384 transistor to ¼ in. and carefully insert the transistor into its socket. Be sure that the socket wiring is correct. It is not necessary to ground the transistor inter-lead shield. Connect B1 and the output of your changer to J1 and turn S1 to the "on" position. Tune your FM tuner or radio to the low end of the band (about 90 mc) and adjust the coil slug until the oscillator carrier is heard.

Once the carrier is tuned in, modulate the oscillator with the changer and retune your FM receiver for best reception. If insufficient modulation is apparent, it is an indication that R6 is too small for the cartridge in your changer. If overmodulation is present, such as distortion on peaks, R6 is too large. In either case, change R6 to a value of about 100K or 50K, respectively, until best audio quality is obtained. The value of R6 given in the parts list is the best suited for cartridges having .5-volt output.

Tuning Range and Antenna. With the coils shown, the oscillator will tune from about 95 mc down through TV channel 4. This permits the oscillator to be used with a television receiver tuned to either channel 4 or 5. Excellent results will be obtained with older TV sets, but some sacrifice in fidelity will be noted with the newer, intercarrier type. Careful tuning, however, will permit reasonably good quality.

When used within 5 ft. of a receiver, no antenna is required for good quieting. For distances up to 50 ft., a short length of wire, 2 ft. or less, should be connected to J1. Greater range is possible, but should not be attempted due to restrictions governing this type of equipment.

What's Your

Radio-TV Theory Quotient?

By JOHN A. COMSTOCK

Think you know your radio and television theory fairly well? Or are you a bit rusty on some points? Here's a test designed to reveal how much you really *do* know of the theory behind radio and TV. If you score 18 or more correct, your TQ is excellent; 15 to 18 correct it's good; 12 to 15, fair; 12 or less—you need to brush up on theory!

1. A_______and_______make up a resonant circuit (fill in the blanks).
2. A resonant circuit is said to be tuned when:
   a) The inductive reactance equals the capacitive reactance
   b) The inductive reactance is greater than the capacitive reactance
   c) When total resistance is zero
   d) None of the answers given above
3. When a resistor of 10 ohms is placed in parallel with another resistance of _____ ohms, the total resistance in such a circuit is 5 ohms.
4. A resistor of 10 ohms, 10 watts, is in parallel with another of the same resistance and wattage rating. What amount of power can be dissipated by the two?
5. The unit of measurement of impedance is the:
   a) Farad
   b) Ohm
   c) Rel
   d) Henry
6. Disregarding losses, the amount of power in the secondary of a transformer is the same as that in the primary winding.
   a) True
   b) False
7. When a _______ of 15 microfarads is placed in parallel with one of the 10 microfarads, the total _________ equals:
   a) 25 microfarads
   b) 15 microfarads
   c) 30 microhenries
   d) 25 microhenries
8. The device used to convert sound energy into electrical energy is a:
   a) Loudspeaker
   b) Microphone
   c) Antenna
   d) Picture tube
9. A transducer is a:
   a) Microphone
   b) Loudspeaker
   c) Light bulb
   d) All of these devices
10. The _______ element in a transistor serves the same purpose as a cathode in a vacuum tube.
11. The n-p-n and p-n-p transistors are:
    a) Junction type
    b) Point-contact type
12. In television, interlaced scanning is used to:
    a) Widen channel
    b) Reduce flicker
    c) Increase frame rate
    d) _____________
13. At what frequency does the horizontal scanning generator operate in a TV speaker?
    a) 30 *cps*
    b) 60 *cps*
    c) 6 Mc
    d) 15,750 *cps*
14. The sound transmitter at a TV station employs ___________ modulation.
15. S_________ signals are sent in the composite video signal to maintain the correct beam scanning pattern on the receiver screen as at the camera pick-up tube.
16. In the United States, a) negative, b) positive, picture tube phase transmission is used.
17. What is an intercarrier type TV receiver?
18. The blanking signals are transmitted to ___________ the electron beam in the picture tube during __________.
19. In color TV, what signal corresponds to the video signal in a black and white system?
20. The video transmitter at a color TV station employs amplitude modulation.
    a) True
    b) False

▶ Answers ◀

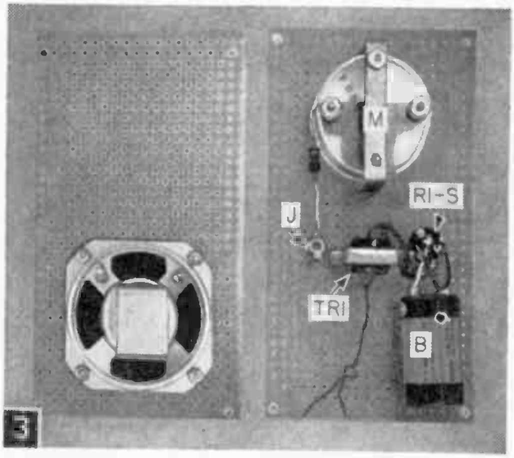
1. Capacitor (or capacitance); inductance (or coil).
2. a) The inductive reactance equals the capacitive reactance.
3. 10 ohms $\frac{(R_1 \times R_2)}{(R_1 + R_2)}$
4. The total of the wattage ratings, 20 watts.
5. b) Ohm.
6. True (the law of conservation of energy).
7. Capacitor; capacitance; a) 25 microfarads.
8. b) Microphone.
9. d) All of the devices.
10. Emitter.
11. a) Junction type.
12. b) Reduce flicker.
13. d) 15,750 *cps*.
14. Frequency.
15. Sync. (or synchronization).
16. a) Negative phase transmission—white maximum signal, black minimum signal.
17. A TV receiver that uses a common I.F. for amplifying both picture and sound.
18. Blank out; retrace.
19. The "Y" or luminosity signal, a combination of the three colors.
20. a) True.

Applause Meter

This inexpensive and compact applause and sound level meter has plenty of reserve gain and a headphone output. It can double as a hearing aid or remote "listener"

Small, inexpensive and tops in performance for price, that's this sound-level, applause meter.

By FORREST H. FRANTZ, SR.



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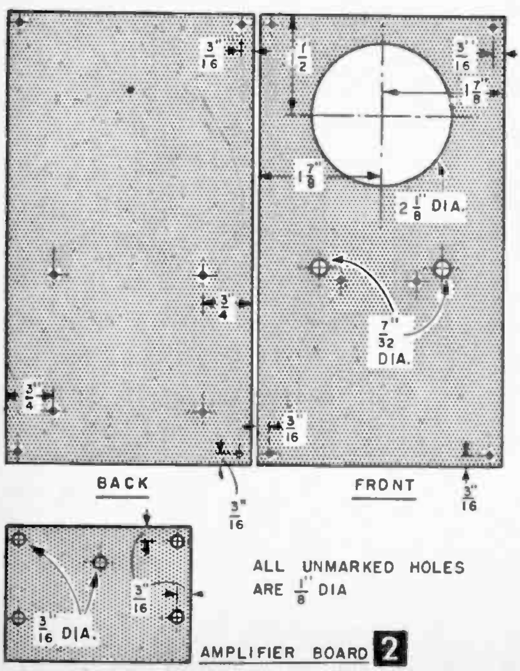
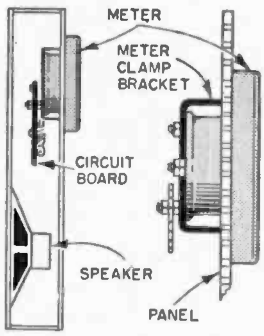
A COMBINATION applause and sound level meter is a device that is both useful and entertaining. If you should be looking for a nice quiet location for your new home, for instance, this instrument will help you do the job scientifically. More probable jobs would be locating rattles in cars, vibrations in machinery, and even termites in woodwork.



AMPLIFIER BOARD 2



THE METER IS HELD IN PLACE ON THE PANEL BY THE METER CLAMP BRACKET

4

And when those amateur contests are held, here's your scoring device. We'll say no more about what it can do; as soon as you've constructed it, you'll start to find uses to which to put it.

High - precision sound level meters cost several hundred dollars. They're made out of the highest quality components and they have high caliber circuitry wired into them. As an experimenter, you don't need—and probably can't afford—such precision. This meter can be built for about $14 less headphones and battery.

To achieve a slim package you'll need wood strips of the type used for garden trellises. These strips are 5/16 x 1 1/8 in. You need two of them 6 3/4 in. long, and two 3 in. long. Glue and brad them together to form a frame on which the 3 11/16 x 6 3/4 in. perforated Bakelite front and back panels will fit. I enameled my frame gray, but almost any color goes nicely with the perforated boards.

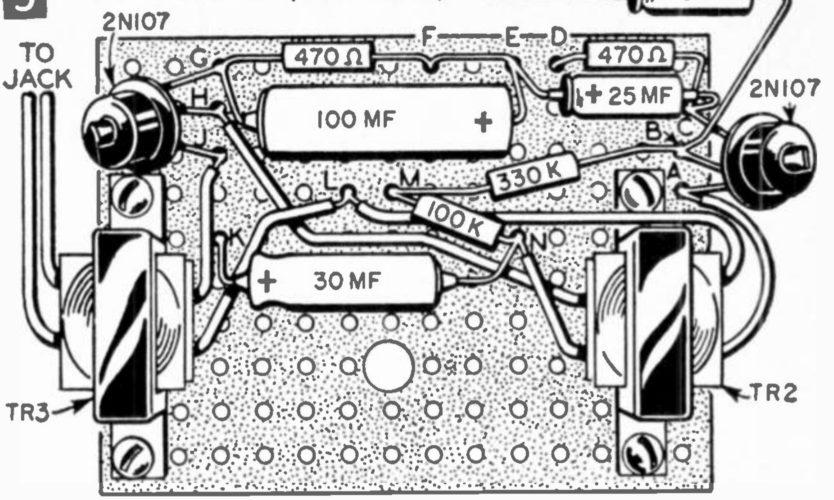
Drill the front and back panels as shown in Fig. 2. I used a fly cutter to cut the 2⅛-in. meter hole. A coping saw will do just as well if you take some time to trim your work with a file. When you drill or saw the boards, back them with wood to prevent splitting. The holes at the corners are used to fasten the boards to the wooden frame.

The small perforated board is the wiring board. It's cut with a hack saw from the small sheet of perforated Bakelite board listed in the Materials List and is mounted on the meter in the final assembly. The only work required on the back panel is the mounting of the loudspeaker, which will serve as a microphone. (A loudspeaker is used in preference to a microphone because it is less directional and more sensitive.) When it is mounted, saw off the long meter mounting screws (*not* its terminal screws) to a length of ½ in. from the back of the meter. Fasten the end of the screw to be discarded in a vise to do the sawing, and support the meter gently with your hand. Then shorten the volume control (R1-S) shaft to a length of ⅝ in. from the front of the bushing. Again, the end to be discarded is the end you should fasten in the vise.

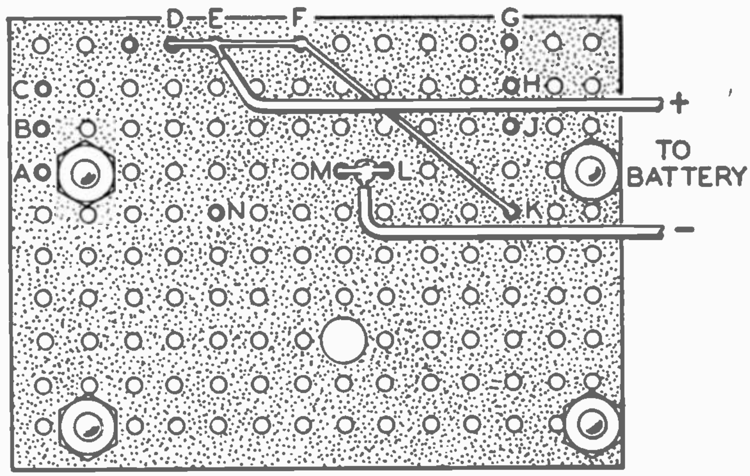
Now, secure the meter M, the jack J, the transformer TR-1, and the 10K volume control to the front panel. The meter is fastened to the panel as shown in Fig. 4. Connect the diode D and the battery as shown in Fig. 3 and complete the wiring for the transformer winding marked "P." You can use six penlite cells (#7) in series to obtain 9 *v.*, three cells in the location occupied by the battery in my model, three on the other side of the board. If you place the front and back panels on the frame, you'll be able to place these batteries more easily. Be sure that they don't short-circuit. You'll want to do some insulating with tape after you complete the entire construction job.

Now you're ready to wire the circuit board. Figures 5 and 6 will help you in mounting the components, the circuit itself is shown in Fig. 7. Connections are made by forcing the component pigtail leads through the perforations and soldering. Excess lead length is clipped off on the side of the board shown in Fig. 6. Note that the plus lead of C3 is used to form a common return, or

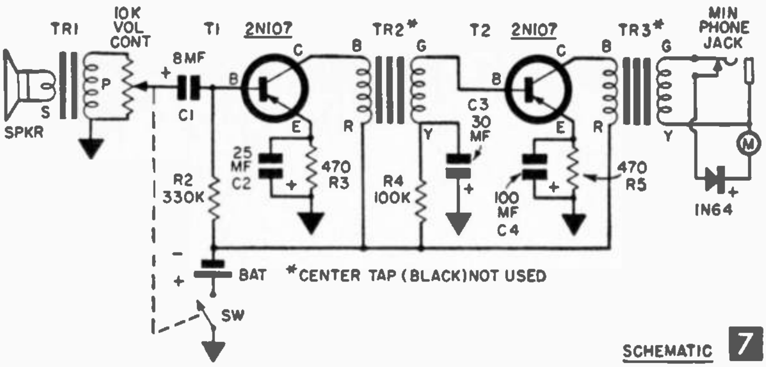
5 PICTORIAL (TOP VIEW)



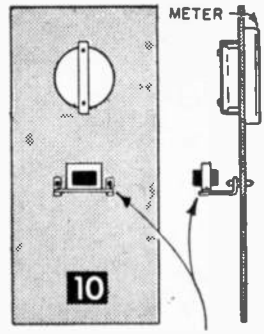
LETTERS DESIGNATE HOLE INSERTIONS



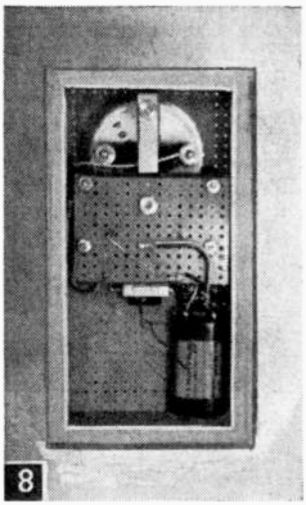
6 PICTORIAL (BOTTOM VIEW)



SCHEMATIC 7



IF YOU EXPERIENCE FEEDBACK, MOUNT TRANSFORMER (TR1) PARALLEL TO THE PANEL, ON BRACKETS, INSTEAD OF DIRECTLY ON THE PANEL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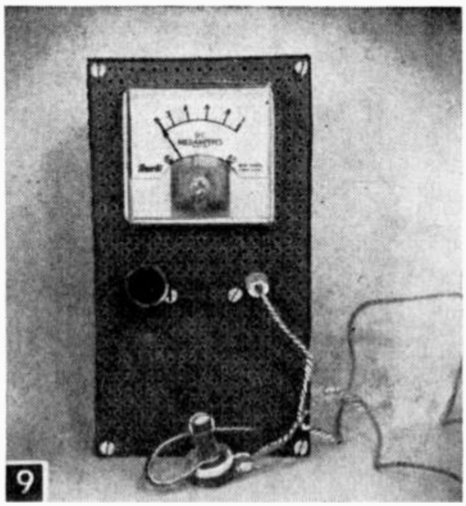
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"ground," for the battery through the switch.

Use rosin-core solder for all connections and use a hot, clean soldering iron. Grasp the pigtails of the transistors between the transistor body and the point at which heat is applied, thus shunting heat away from the transistor during soldering. Tape up (or clip off) the center tap leads on TR2 and TR3; you won't be using them.

After you've completed the construction of the amplifier, you're ready to assemble the three sub-assemblies you've prepared. First, fasten the front panel to the wooden frame with wood-screws. Then place the amplifier within the case and solder the leads from the secondary of TR3 to the phone jack. Connect a lead from the phone jack to the negative terminal of M, connect C1 to the center lead of the volume control, and fasten a lead from the ground bus on the amplifier to the switch.

Now place the amplifier on the back of the meter and fasten the lower nut (which holds the meter clamp bracket against the meter panel) to hold the circuit board in place. Finally, fasten the negative return from the amplifier to the battery. The back of the completed instrument, with the exception of the speaker-mike, is shown in Fig. 8. Solder the leads on the side of the transformer marked "S" to the loudspeaker terminals, and fasten the back to the wooden frame with wood screws.

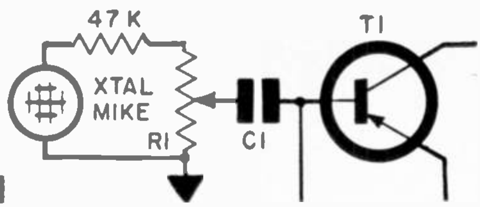
The front of the completed instrument is shown in Fig. 9. To test it, turn the switch *On* and advance the volume control. Whistle or make some other noise. You should get deflection before you turn the gain all the way up because this is a very sensitive instrument. Listening with the earphone will be helpful. Note that the meter is disconnected

MATERIALS LIST—APPLAUSE METER

½ watt carbon resistors, 10% tolerance

R3, R5	470 ohms
R4	100K
R2	330K
R1-S	10K miniature volume control & switch (Lafayette VC-28)
C1	8 mfd, 6v ultra-miniature electrolytic capacitor (Lafayette P6-8)
C3	30 mfd, 6v miniature electrolytic capacitor (Lafayette CF-104)
C2	25 mfd, 6v ultra-miniature electrolytic capacitor (Lafayette P6-25)
C4	100 mfd, 6v miniature electrolytic capacitor (Lafayette CF-106)
MIKE	2½" PM loudspeaker, 10-ohm voice coil
TR1	2K/10 ohm output transformer (Lafayette TR-93)
TR2, TR3	10K/2K driver transformer (Lafayette TR-96)
T1, T2	2N107 transistor (General Electric)
D	1N64 diode (General Electric)
J	subminiature phone jack (Lafayette MS-282)
M	0-1 ma meter (Shurite 8300Z)
B	battery (Mallory TR146F) (See text for less expensive alternates)
1	sheet of miniature perforated Bakelite board (Lafayette MS-304)
2	3^11/16 x 6¾" miniature perforated Bakelite boards (Lafayette MS-305)
1	3K headphone (Lafayette AR-46; the jack is supplied with the headphone and does not have to be obtained separately if the headphone is obtained from Lafayette)
1	miniature knob (Lafayette MS-185)

All circuit components can be obtained from Lafayette Radio, 111 Jericho Tpke., Syosset, N. Y.



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when the earphone is plugged in. If you don't hear anything, or if you don't get a deflection of the meter when the earphone is disconnected, turn the amplifier off and check your wiring.

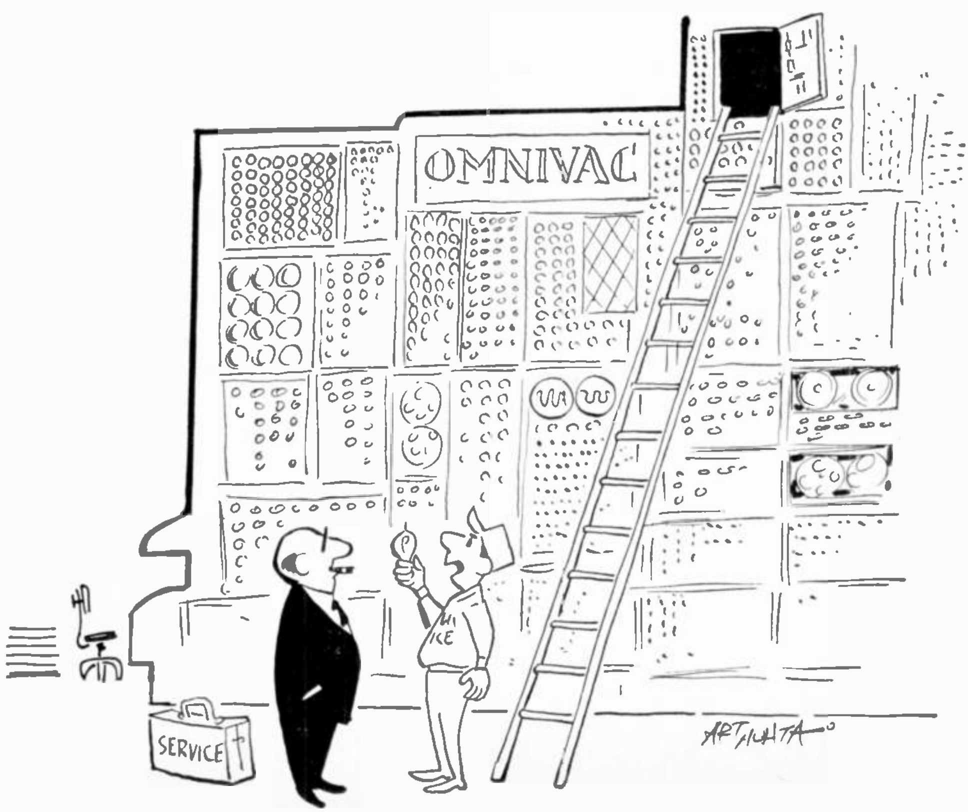
If you get a squeal on the phone, or a constant full-scale deflection of the meter without having an input noise, you're having feedback trouble and you may have to shorten some of the input and output leads or turn TR-1 sideways and mount it on a bracket as shown in Fig. 10 to eliminate magnetic coupling.

Since both sides of the instrument case are perforated, the speaker-mike is sensitive to sound from front or back, a decided advantage. In order to be able to make comparisons of readings, provide the volume control with a scale marked in India ink on the front panel or fasten a paper scale on the panel with Carter's Rubber Cement. Place an index mark on the knob with a triangular file and fill it with white India ink to make it stand out. My model doesn't have this feature, but it's worth adding. Then, if the sound level or applause hits peaks that require a reduction in the volume control setting, you can readily interpret levels without loss of reference by using the control setting in conjunction with the meter reading.

There are some modifications to the sound level-applause meter that you may wish to incorporate. One, meter response is fast; if you want to slow it down so that it will tend to hold peaks, connect an electrolytic capacitor across the terminals of the meter. Use from 10 to 100 *mfd* depending on how "slow" you want to make the meter; a 6 ν capacitor is adequate.

If you want to use a crystal microphone instead of the loudspeaker, eliminate TR1 and connect the mike as in Fig. 11.

There it is—an inexpensive sound level meter that can be used for many measurements. It has a microphone to convert sound to electrical energy; and attenuator (the volume control) to choose a range; an amplifier to get the signal up to strength to drive a meter through the rectifier; and a phone jack to listen in if you wish. These are the features that you find on an expensive instrument. If you're wondering how a two-transistor instrument can be so sensitive, the answer lies in the transformer coupling which provides better match between the transistors and enables us to work them more efficiently.



"Some wise guy put in a 40-watt bulb in place of a 6CL6 power tube."

Deluxe Transistor Tester

for an Economy Price

Versatile checker provides complete flexibility in both input and collector voltage tests, plus ac measurements

By W. F. GEPHART

1

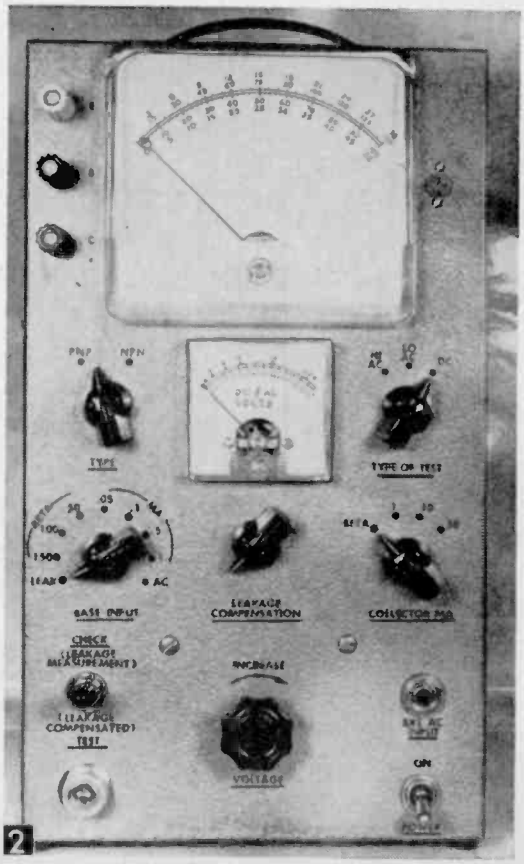
Determining leakage current at various collector voltages. Transistor under test is in socket at right of large meter.

HERE'S a valuable addition for the experimenter's lab which will perform more transistor checks than any commercial unit we have yet seen in the under-$100 class. You can build it for $30 to $65, depending on how you buy the parts.

Most economy-priced transistor testers indicate only the overall current gain, with a fixed input signal at a fixed supply voltage. The checker in Figs. 1 and 2 will, in addition, measure actual dc leakage current, net current gain and ac voltage gain at low inputs.

If you live in a metropolitan area, you can buy nearly everything except the two audio transformers in surplus stores for an overall cost of $30 to $35. Value of all new parts, as listed in the mail order catalogs, is slightly under $65—still a substantial saving. Using surplus meters, as I did, will reduce the cost about $14. Substituting 5% resistors for 1% resistors could cut out another $5.

This checker makes dc measurements with both a varying signal input and a variable supply voltage; checks ac measurements only with a variable supply voltage. All these tests are made under the generally used, common emitter circuit. In this circuit, the signal is placed between the base and emitter, and the output taken from between the collector and emitter as in Fig. 3A. Current gain, or beta, is the ratio of the input and output currents. All schematics in Figs. 3 and 8 show polarities for PNP transistors, but the unit



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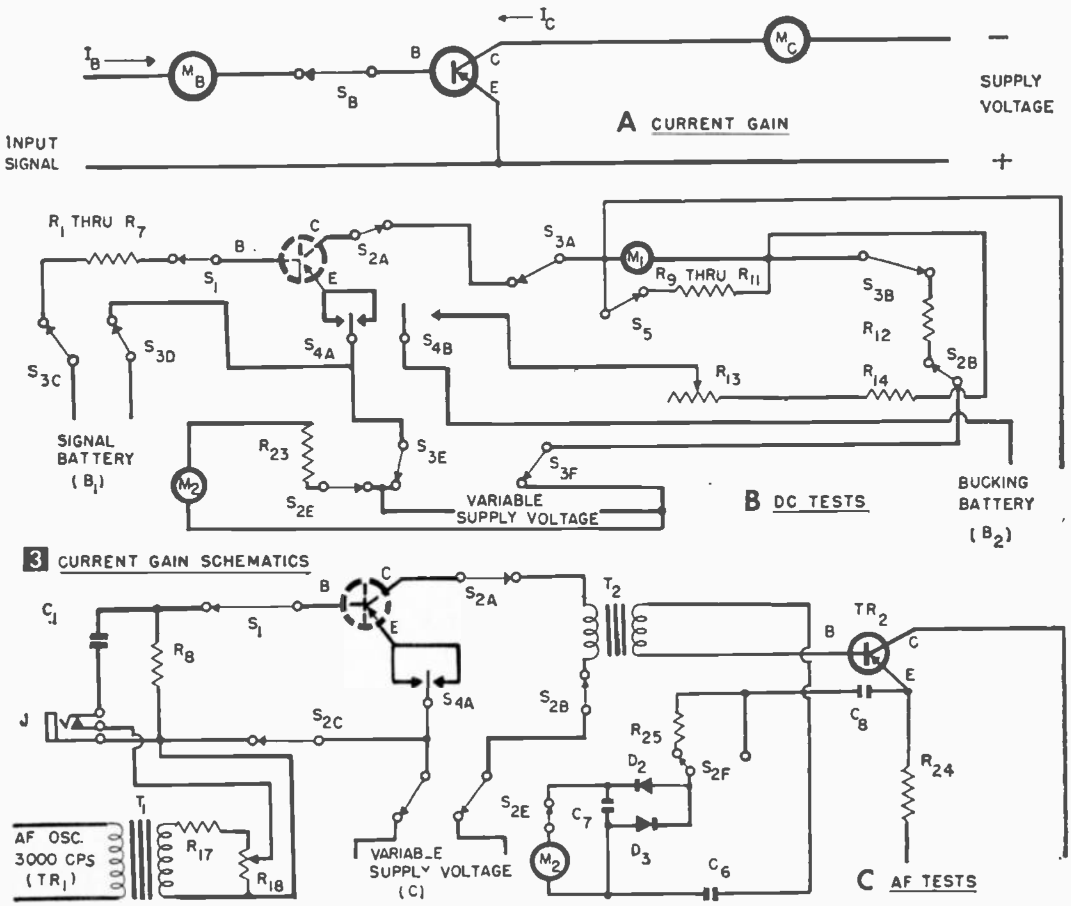
Panel view.



3 CURRENT GAIN SCHEMATICS

also reverses polarity, so that both PNP and NPN transistors can be tested.

All transistors have some leakage, which is collector-emitter current, that flows even without any signal current flow in the base-emitter circuit. If switch SB in Fig. 3A were opened, this leakage current would be read on meter MC. Net current gain for the transistor would then be the ratio of the difference (total current minus leakage current) in collector current to the input (or base) current.

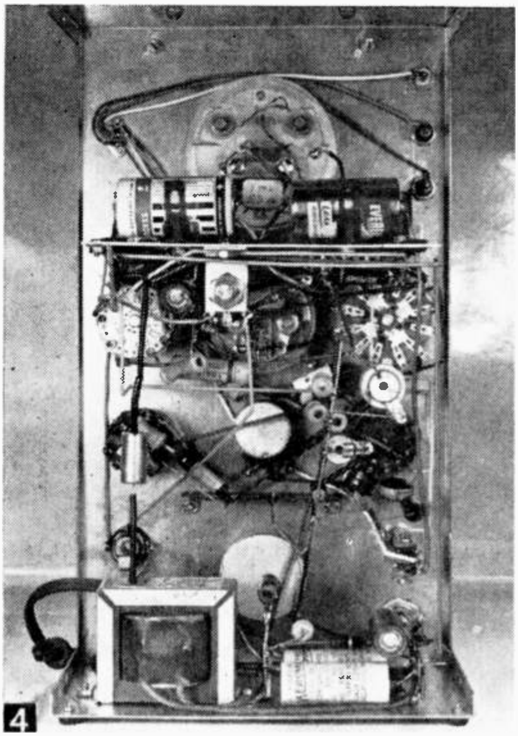
Figure 3B shows how dc tests are made with this unit. The base (or signal) current, set by one of several resistors (R1 through R7), flows from the signal battery (B1) through base and emitter. Collector current flows from the variable supply voltage through M1 and from collector to emitter. If the base current is known, the current gain can be determined by reading meter M1.

In the complete circuit, there are a number of refinements. Since B1 is a mercury-type signal battery with voltage reasonably constant throughout its life, definite signal voltages can be set up without a monitoring meter. Resistors R1 through R7 provide fixed input currents from 10 micro-amps to 1 milliamp. Meter M2 has several shunts, giving it full-scale deflection from 1 to 30 ma; and resistor R14 provides a reasonable load for the transistor under test.

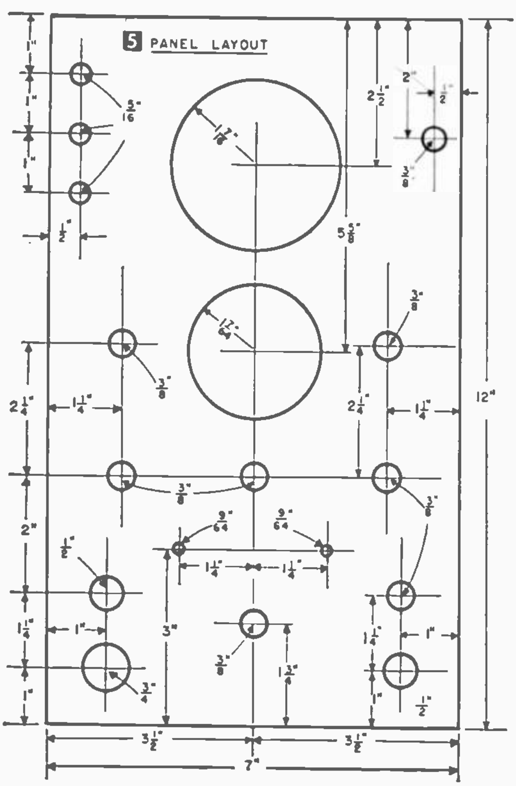
For Measuring Current Gain, the meter reads 1.5 ma full scale (in beta position of S5), and there are three current inputs. For transistors with high gains, the input current is 10 micro-amps, and the meter is calibrated 0-150 (10 micro-amps times a current gain of 150 equals 1.5 ma). For medium gain units (betas of 0-100), the input signal is 15 micro-amps and the meter is calibrated from 0-100. For low gain units, the input signal is 30 micro-amps and the meter is calibrated from 0-50.

All of these inputs can be classified as low signal inputs and will indicate gains in line with manufacturers' specifications. The input signals and meter M2 range can be further increased (S1 and S5) to measure current gains at large input signals.

These measurements include leakage currents which can be checked and offset for testing the net current gain. Disconnect the base by setting S1 (base input) on "leakage,"



4 Interior view. Internal transistors are located on small chassis behind batteries.



move test switch S4 to the left and read the leakage current on meter M1. Then move the test switch to the right, and adjust R13 (leakage compensation) to zero the meter, by placing a "bucking voltage" (from battery B2) across the meter.

This compensates for the leakage current reading. After setting S1 to the desired beta range, move the test switch to the left to indicate the total current; to the right for net current, or net beta. The total current is important as a measure of battery life in a transistorized device, while net current gain is important as a measure of performance.

Other refinements are switch S3 (type) which changes the polarity of both the supply and signal voltage for PNP and NPN transistors, and meter M2, which sets the supply voltage to the desired level.

Measurements at audio frequencies are made by comparing output with input. In this case, voltage measurement is more common than that of current (Fig. 3C). Place the audio voltage from a 3000-cycle oscillator between the base and emitter on R8. Measure output voltage across the primary of T2 in the collector circuit to determine voltage gain.

To minimize loading on the transistor under test, take the voltage from the secondary of T2 and feed it through an emitter-follower (TR2) before reaching the power-consuming M2. Calibrate this meter in accordance with voltage appearing across the primary of T2 rather than the actual voltage across it.

Two ranges are used, switched by S2 (type of test), to give adequate readings with both high and low gain transistors. Since the AF input voltage is set at .1 volt by R17 and R18, the voltage gain is the reading on meter M2 multiplied by 10. In actual practice, true voltage gain depends somewhat on frequency and loading. Check gain at other frequencies by plugging a .1 volt-source into jack J, which is insulated from the cabinet.

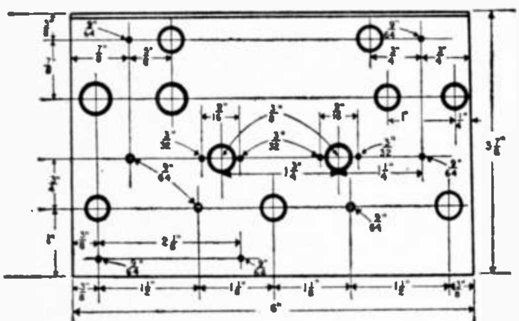
Construction and Wiring Sequence. The unit is built in a vertical cabinet, as in Figs. 2 and 4, with a small aluminum chassis held in place by the lower mounting screw of meter M1. Drill the panel and chassis as in Figs. 5 & 6. Install rubber feet at the corners of the cabinet bottom.

Now begin the wiring (Fig. 7) with the power supply, which should give about 0-30 volts dc output, and about 15 volts at the junction of R21 and R22. Wire the oscillator and emitter-follower circuits next. The remaining sequence is not important, though resistors R1 through R7 should be wired in toward the last because of the space they occupy. Connect the batteries last to minimize the chance of shorting or drain.

Calibration. Four scales are shown on meter M1 (Fig. 2) (0-30, 0-50, 0-100, and 0-150), which are calibrated lineally. The 0-100

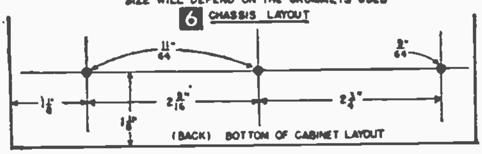
MATERIALS LIST—TRANSISTOR CHECKER

Desig.	Description	Desig.	Description	Desig.	Description
R1	4K 1% resistor	R17	82K ½-watt resistor	T1	driver transformer (Triad A-81X)
R2	8K 1% (4K + 4K) resistor	R18	10K potentiometer		
R3	40K 1% resistor	R19	100 ohms 1-watt WW resistor	T2	26 volt filament transformer (Merit P-2962)
R4	80K 1% (40K + 40K resistor	R20	400-ohm 4-watt potentiometer		
R5	135K 1% (120K + 15K) resistor	R21, R22	820-ohm ½-watt resistor	T3	modulation transformer 10K primary 1:1 turns ratio (Merit A-3007)
		R23	25K 1% resistor		
R6	270K 1% resistor	R24	470-ohm ½-watt resistor		
R7	400K 1% resistor	R25	1500-ohm 1% resistor	TR1	2N107 transistor
R8	5K ½-watt resistor	D1	IN536 Silicon rectifier	TR2	2N308 transistor
R9	100-ohm 1% resistor	D2, D3	IN34, IN6	J	closed circuit jack
R10	5.55-ohm 1% resistor	S1	1-pole, 9-position rotary switch (Mallory 32112J)	M1	4" 0-1 ma meter
R11	1.72-ohm 1% resistor			M2	2" 0-1 ma meter
R12	1K 1-watt resistor	S2, S3	6-pole, 3-position rotary switch (Mallory 3263J)	NE	NE-51 bulb and holder
R13	25K potentiometer			C1	.1 mfd. 200-volt capacitor
R14	2K ½-watt resistor	S4	DPDT spring-return lever switch, (Switchcraft 3037)	C2	500 mmfd. capacitor
R15	.27 meg. ½-watt resistor			C3	.005 mfd. 200-volt capacitor
R16	.1 meg. ½-watt (Not required if neon bulb socket includes dropping resistor; use only if standard bayonet base socket is used.)	S5	1-pole, 4-position rotary switch (Mallory 3215J)	C4, C5	100 mfd. 50-volt capacitor
				C6, C8	10 mfd. 25-volt capacitor
		S6	DPST toggle switch	C7	25 mfd. 25-volt capacitor
Misc.	4x7x12" Minibox (Bud CU-2111A), 3 transistor sockets (Elco 3309), 6 knobs, 3 binding posts, tie points, rubber feet, hardware				



HOLES WITHOUT DIMENSIONS SHOWN ARE GROMMET HOLES, SIZE WILL DEPEND ON THE GROMMETS USED

6 CHASSIS LAYOUT



(BACK) BOTTOM OF CABINET LAYOUT

scale is used for reading the 0-1 ma and 0-10 ma ranges. Shunts for this meter (R9, R10, and R11) and the multipliers for meter M2 (R23 and R24) are based on 0-1 ma movements with internal resistances of 50 ohms.

After wiring is completed, R18 must be set and the scales on meter M2 calibrated. Both operations require use of an ac-dc vacuum-tube voltmeter.

To set R18, connect the VTVM across R8, turn the unit on, and adjust R18 until the meter reads .1 volt ac. A test transistor need not be in the test socket at this time, but switch S2 must be on one of the ac positions.

To calibrate the dc scales on meter M2, connect the VTVM between the bottom side and arm of R20, set S2 on "DC," and mark the points on the M2 scale where the VTVM reads 1.5, 3, 6, 9, 15, and 22½ volts dc.

Calibrating the ac scales is somewhat more difficult, and requires either an audio oscillator or high gain test transistor, such as a 2N138 or 2N265.

If an audio oscillator is available, set it for 3000 cycles and connect it and the VTVM across the primary of T2. Turn the transistor tester "off," but set S2 (type of test) on "LO AC." Gradually increase the output of the audio oscillator, marking reference points for various voltages (as read on the VTVM) on the meter M2 scale. When full-scale deflection is reached, switch S2 to "HI AC," and make a second set of marks for the second scale.

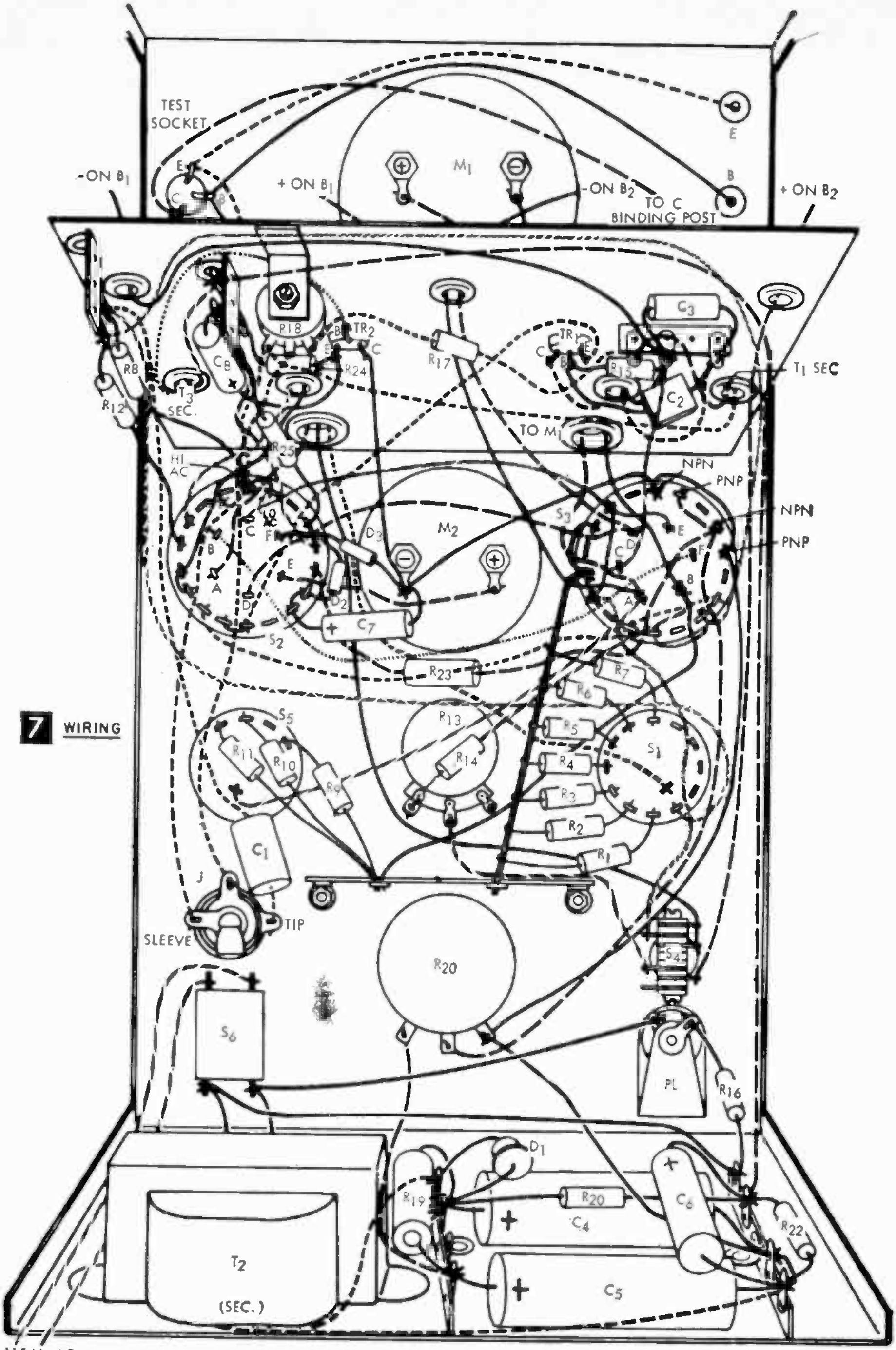
If an oscillator is not available, turn the unit on with a high gain transistor in the test socket. Connect the VTVM across T2 primary, and set S2 on "LO AC." Gradually increase the supply voltage by turning R20 clockwise and mark reference points on the meter scale, based on the VTVM readings. When full scale is reached, switch S2 to "HI AC" and repeat. Due to the loading effect of D2 and D3, these scales will not be linear. Also, there may be a small standing current that requires the calibration of start part way up the meter scale.

The small transistor socket, upper right on the panel, accommodates over 90% of standard transistors for testing. For other types use the three binding posts located on the left side of the panel, marked E (emitter), B (base) and C (collector).

Testing Procedures. When using the unit, turn the "Leakage Compensation" control and "Voltage" control fully counter-clockwise before starting any test.

Leakage.

1. Set type dial to "PNP" or "NPN" as appropriate.
2. Set type of test dial to "DC."
3. Set base input dial to "leak."
4. Set collector ma dial to "beta."
5. Turn voltage knob to desired value as read on small meter (M2).
6. Move test switch to "check" and read leakage on large meter (M1). (Read on 0-150 scale, where 150 equals 1.5 ma. If



7 WIRING

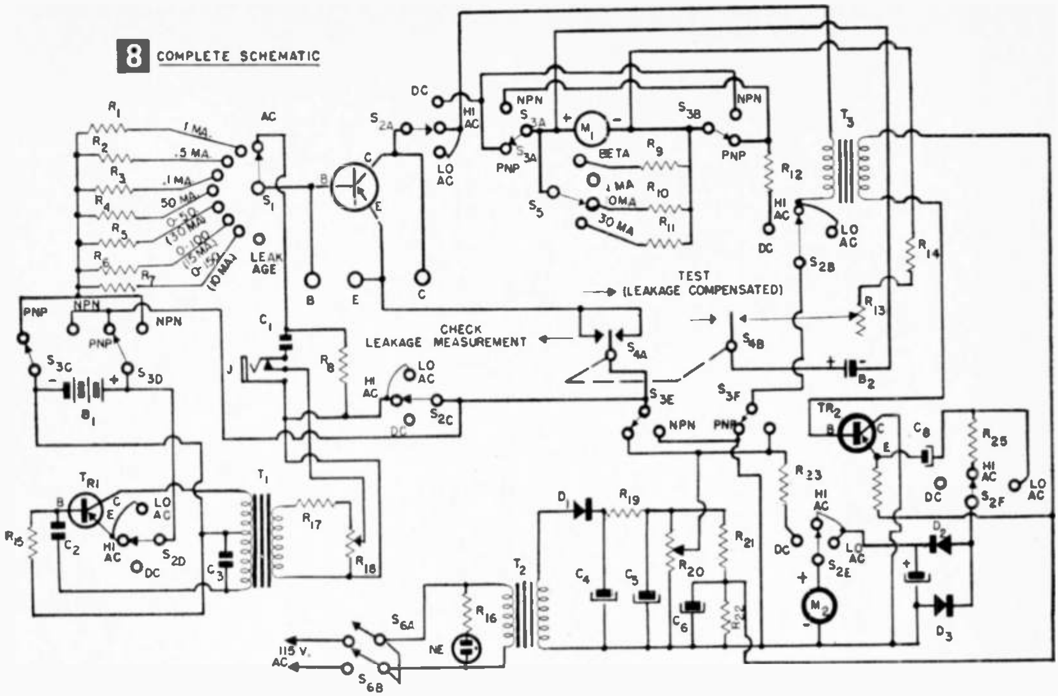
meter goes off scale, switch collector ma dial to higher range).

Beta Check without Leakage Compensation.

1. Follow steps 1, 2, 4, and 5 above.
2. Set base input dial to estimated beta range.
3. Move test switch to "check" and read beta on appropriate scale of large meter.

Beta Check with Leakage Compensation.

1. Follow steps 1-6 for leakage test.
2. Hold test switch on "test," and adjust "leakage compensation" to zero meter M1.
3. Set base input dial to est. beta range.



8 COMPLETE SCHEMATIC

4. Move test switch to "test" and read net beta on appropriate scale of meter M1.

DC Current Gain Check at Various Input Signals.

1. Set type dial to "PNP" or "NPN" as appropriate, set type of test to "DC," and "voltage" as desired.
2. Set base input dial for input current.
3. Set collector ma dial to estimated out range. (If unknown, set for 30 ma range and switch downward.)
4. Move test switch to "check" and read output current on M1. To get current gain, divide input current (on base input switch setting) into meter reading. (This type of test can also be made with leakage compensated, as outlined above.)

AF Gain Check.

1. Set type dial to "PNP" or "NPN" as appropriate, and set voltage to desired supply voltage, shown on M2.
2. Set base input dial to "AC," and type of test to "HI AC."
3. Move test switch to "check" and read output voltage on "HI AC" scale of M2. If reading is low, move type of test to "LO AC" for better reading. (Since input signal is .1 volt, AF voltage gain will be the meter reading multiplied by 10.)

Caution. Whenever turning the unit off, do not leave the type of test switch on either ac position, since the internal oscillator is drawing current from the mercury battery in this position.

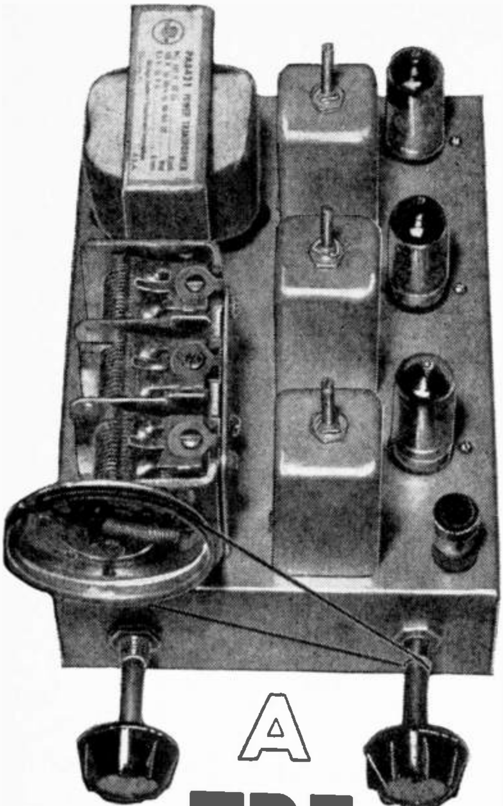
Clothespin Switch

A plastic, spring-loaded clothespin makes a nifty emergency switch for *low voltage* circuits. It offers something more sophisticated than a pair of wires which you touch together when you don't have a switch. And it has some merit and application even when the situation isn't an emergency. Furthermore, you are offered a choice of several modes of operation.

The clothespin switch is a momentary contact, normally open switch. You depress the contact or handle end to close the circuit. The pin I used had the necessary holes in the handles. Simply fasten the stripped wire ends under nuts serving as terminals with small machine-screw heads serving as switch contacts. Fasten electrical tape over the nuts for insulation, and heed this safe rule: Don't use this switch in circuits with more than 20 volts or 1 ampere.

To make a normally closed momentary contact switch, attach the machine screws and nuts at the other end of the pin.

To convert the normally closed momentary contact switch to a regular on-off switch, simply stick a piece of bakelite or thick cardboard between the contacts to effect turn-off.
—F. H. FRANTZ.



Top-front view of T.R.F. tuner. Knob on left is bias control. Use of a cord drive mechanism with knob on right is optional (see text).

A TRF TUNER

This tuned-radio-frequency receiver gives AM stations many of the high fidelity qualities of FM

By THOMAS A. BLANCHARD

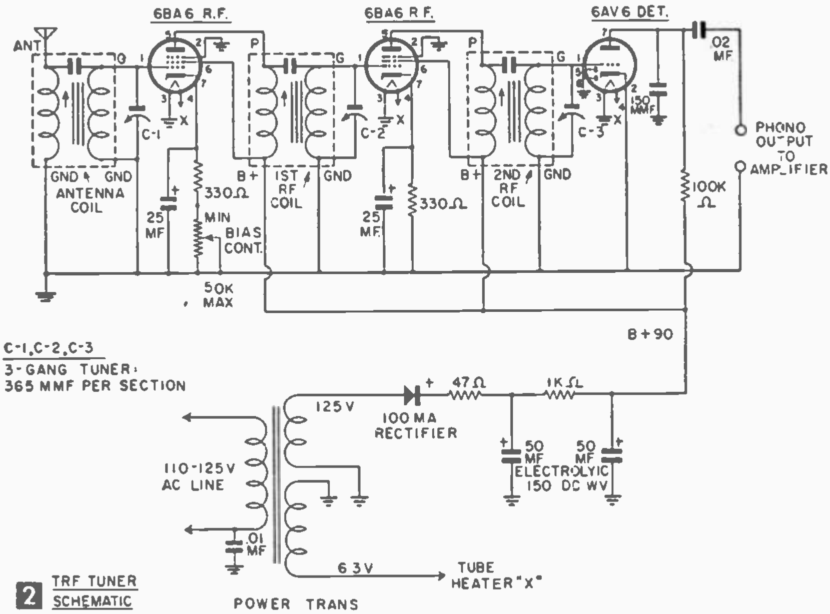
WHEN the saga of radio is finally, fully documented by historians, too much emphasis cannot be placed on the Tuned Radio Frequency circuit. From its very beginnings in the "catwhisker" crystal detector, followed by Lee De Forest's vacuum tube detector, radio was guided through its golden days by the T.R.F. circuit. (And they were golden days, in spite of Lee De Forest's half-joking reference to the industry which he made possible through his invention of the triode as "De Forest's prime evil.")

The first T.R.F. receivers appeared with as many as four tuning dials on the console panel. Tuning in a station was something like opening a safe; each stage had to be tuned individually. After a few years, someone struck upon the idea of connecting the various tuning capacitors to a common dial and individual tuning capacitors were spaced across the full width of the chassis and connected together with belts and pulleys. No one had thought of the ganged tuning capacitor as we know it today.

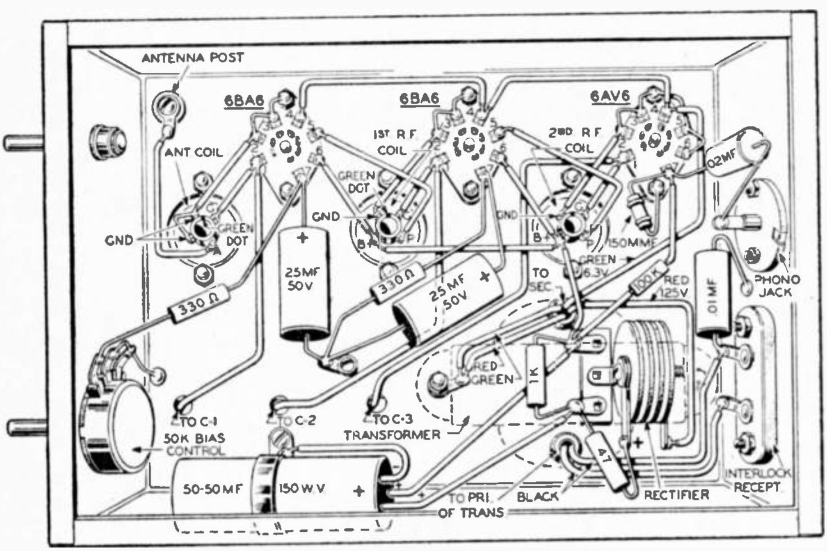
Before long, however, the development of the superheterodyne receiver began to steal some of the T.R.F.'s thunder. The superhet was both highly sensitive and selective; the T.R.F. was not. Moreover, the superhet could operate on an indoor loop antenna while the T.R.F. required a rooftop hookup. By the early 30's, practically all radio manufacturers had abandoned T.R.F. circuits in favor of the superheterodyne. And until the comparatively recent coming of Hi-Fi, few persons stopped to notice that modern sets do not have that sharp, clear quality that T.R.F. sets, back in the "good old days," had.

Since the T.R.F. amplifies the incoming signal through a series of R.F. stages without introducing "foreign signals" to obtain reception, the quality of its reception is naturally superior to that of the superhet where the incoming radio signal is mixed with a signal of another frequency generated by the set's local oscillator, then amplified through a series of I.F. stages. The background "purr and swish" present in the reception of a superhet cannot be fully realized until a comparison is made with a T.R.F. set tuned to the same station. With a T.R.F. set, you can actually hear every little nuance in a record as clearly as if you were listening to your own record player. With a superhet, this is not possible. Thus, many Hi-Fi fans are turning to binaural tapes, recordings and radio reception. With a binaural system, records are provided with two sound tracks with separate amplifiers and speakers for each track. Binaural radio reception is obtained by receiving a simulcast station's FM signal with an FM tuner and its AM signal with a T.R.F. tuner, a T.R.F. tuner like that in Fig. 1. With speakers in opposite corners of the room, you are surrounded by sound, stereophonic-like sound.

Since T.R.F. sets breathed their last commercially popular breath, many great improvements have been made in radio components, particularly in tubes and in coil efficiency. The circuit employed in the tuner described here is basically the same as the circuits of 30 years ago, but in place of the old, pear-shaped O1-A, 26 and 27 triodes, there are modern, miniature multi-element tubes. Similarly, the old, large, low-efficiency, air-wound coils have been superseded by precision-wound, high-Q ferrite-tuned units of extremely small dimensions. (Then too, we cannot overlook the development of the dry electrolytic capacitor. Today, many a 100 *mfd.* unit is smaller than the early ¼ *mfd.* paper capacitors.)



2 TRF TUNER SCHEMATIC



3 T.R.F. TUNER-PICTORIAL

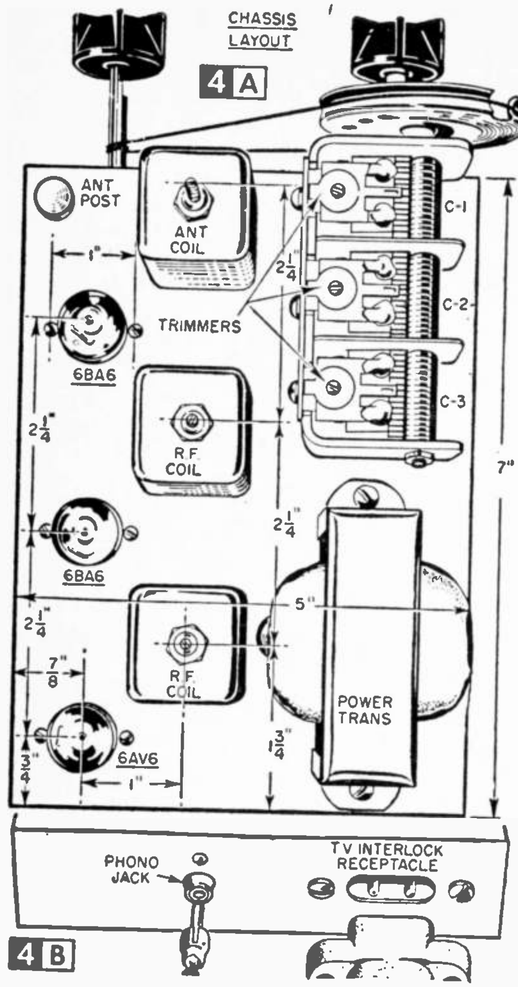
Construct your T.R.F. tuner on a stock-size, 2 x 5 x 7 in. blank chassis. Figure 2A shows the general arrangement of parts and their positioning. All components should be assembled first from the Materials List and their individual mounting dimensions used as a final guide to the correct location for drilling and punching chassis holes.

Tube socket openings are made with a ¾-in. chassis punch. The mounting holes for the 7-pin miniature wafer sockets are drilled to clear 3-48 x ⅜-in. *rh* machine screws. Sockets mount on 1-in. centers. The R.F. coils are mounted in aluminum shield cans to which are attached 6-32 mounting screws on 1⅛-in. centers. The mounting holes for shield cans are drilled first, then the 1-in. chassis holes which provide access to the R.F. coil lugs.

Drill a ⅜-in. hole in the front panel of the chassis for mounting the 50K potentiometer bias control. An additional ⅜-in. hole will be required for the panel shaft bearing-dial cord drive if this type of tuning mechanism is used. (Ordinarily, 3-gang tuners are furnished with a ¼-in. shaft to which a tuning knob or dial may be attached directly. A Croname slide-rule dial also engages a tuner with a ¼-in. shaft.)

The rear panel of the chassis has a ⅜-in. hole for mounting the phono jack flanked by two mounting holes on 1 1/16-in. centers to clear 3-48 x ⅜ in. *rh* machine screws. Drill two ⅜-in. holes ½ in. apart for the interlock receptacle and elongate with a flat file after snipping out the metal separating the two holes. Drill one ⅜-in. hole on the top of the chassis for the antenna binding post and two for the power transformer leads and insert rubber grommets in the power transformer holes. Finally drill ¼-in. holes under each section of the tuning capacitor for the leads which terminate on their stator lugs. The rotors of the tuner are automatically grounded when the 3-gang unit is bolted to the chassis.

Because tuners vary in design, mounting hole locations and screw sizes vary. Locate these chassis holes after obtaining the tuner. Note, too, that the capacitor in our model is mounted vertically.



MATERIALS LIST—T.R.F. TUNER

No.	Description
1	2 x 5 x 7" standard chassis base (Bud #CB-629, zinc plated #22 ga. steel)
3	7-pin miniature wafer sockets (1-in. mounting holes)
1	TV power cord and connector
1	phono jack
2	phono plugs and length of single conductor cable with shield braid
1	antenna binding post
3	J. W. Miller #S-32 shield cans (1⅛ sq. x 2⅛" high)
8	3-48 x ⅜" *rh* machine screws and nuts
8	6-32 x ⅜" *rh* machine screws and nuts
2	⅜" rubber grommets
2	#6 soldering lugs
1	2-lug terminal strip
2	⅜" fiber or bakelite washers
1	100 *ma.* selenium half-wave rectifier
	Capacitors
1	3-gang tuner with trimmers (365 mmf. per section)
2	25 *mf.*, 50 *v.* electrolytic (Cornell-Dubilier "Beaver")
1	50-50 *mf.*, 150 *v.* electrolytic (Cornell-Dubilier type BBRD)
1	.01 *mf* molded (Cornell-Dubilier #4S1 Cub)
1	.02 *mf.* molded (Cornell-Dubilier #4S2 Cub)
1	150 *mmf.* ceramic (Cornell-Dubilier .00015)
	Resistors
2	330 ohm, 1 w. (IRC)
1	100,000 ohm (100K), ½ w. (IRC)
1	47 ohm, 1 w. (IRC)
1	1K (1,000 ohms), 1 w. (IRC)
1	50K potentiometer (50,000 ohms; IRC control #13-123)
	Coils-Transformers
1	Stancor power transformer (PA-8421) Primary: 117 *v.*, 60 CPS., secondary: 125 *v.*, 50 *ma.* and 6.3 *v.*, 2 *amps*
1	High-"Q" broadcast coil (J. W. Miller #A-5495-A)
2	High-"Q" broadcast R. F. coil (J. W. Miller #A-5495-RF)

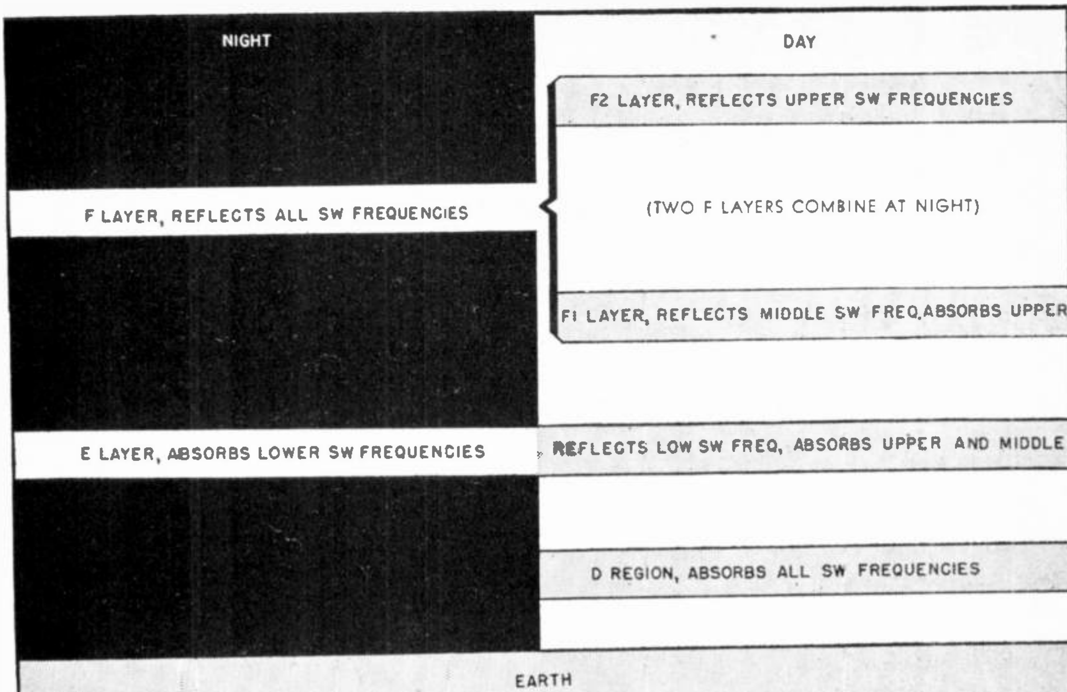
Your capacitor may be designed for horizontal operation. There is ample room on the chassis for either mounting.

Before the stationary components are mounted to the chassis, install the coils in the aluminum shield cans. All coils are J. W. Miller, high-Q, unshielded. Each is provided with a ¼-in. threaded bushing for universal mounting. When ordering coils, obtain the Miller S-32 shield cans also. A ¼-in. hole is drilled in the top center of each can and the coils are mounted in them. (If you have three discarded I.F. transformer cans 1⅛ x 2⅛ in., you can mount the coils in them.) Place a fiber or bakelite washer on each side of the chassis when mounting the antenna binding post, and make certain that the mounting screw is in the center of the ⅜-in. clearance hole. If this binding post is accidentally grounded to chassis the tuner will not work. Wire the tuner as in Figs. 3 and 4.

The unit employs its own isolated power supply; to use, connect to power source and plug its phono output into the "phono" jacks of any radio or TV set or amplifier. A single conductor shielded cable connects the tuner output to the amplifier. The inner lead of this cable is soldered at each end to a "phono" plug, the outer metallic braid is soldered at each end to the plug shell. Use care when making this connection to see that no stray strand contacts the inner conductor.

With wiring completed, tubes in sockets, output connected to amplifier, and power on, the set is ready for alignment. (For an antenna, a length of wire 4 or 5 ft. long is usually ample.) With the bias control turned to maximum resistance, rotate the tuning capacitor until a local station is heard. Starting with the screw adjustment on the antenna coil, turn in or out for the strongest signal. Next, adjust the screw on the 1st R.F. coil for further improvement in the signal. Turn down the volume control on the amplifier as the signal, through coil adjustment on the T.R.F. tuner, becomes louder. Finally, adjust the ferrite slug screw on the 2nd R.F. coil, and, with a plastic handled screwdriver, make further sensitivity adjustments on the trimmers, starting with C-1.

Unlike its ancestors, this T.R.F. tuner will have almost the sensitivity and selectivity of a superheterodyne. Moreover, it is unlikely that you will ever require more than 12 ft. of indoor antenna—even in a remote location. The variable bias control should not be confused with a volume control. Its function is to allow as much signal to reach the tuner as it can handle without overloading the input. On distant stations, the resistance in the cathode circuit will be at minimum (330 ohms). On more powerful and on local stations, rotating the 50K potentiometer will increase the cathode resistance to the point where the signal is free from distortion. Once you become familiar with this control's function, you can replace the round knob with a pointer and set the bias control at predetermined points.



1 THE IONOSPHERE AT A GLANCE—NEITHER ABSORPTION NOR REFLECTION IS NECESSARILY COMPLETE.

Short Wave Guideposts

By C. M. STANBURY II

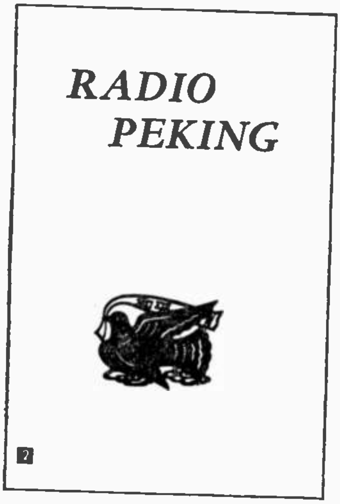
How to select the markers you need to make your SW listening more interesting — and more comfortable

WHETHER your SW interest is accurate time signals, standard frequencies to check calibration equipment, international news, or any other listening that falls into the non-DX category, you want to turn on your set, tune the appropriate frequency, and just listen—as you would with an AM radio or TV set. Unfortunately, this is not always possible. Short wave provides distant reception, all right, but it tends to be unstable. A station which is loud and clear one night may be almost inaudible the next. On a given evening, Latin American stations may be found throughout the 25-meter broadcast band, with Europe top dog a week later.

Happily, SW stations have come up with an effective method for coping with this situation: most use more than one band. If the upper frequency has "skipped," then the lower channel will probably be strong: if the basement spot is absorbed, then the high one should get through. After a little experience (and with our listing in Table A) you'll know exactly where to tune for what. With "Short Wave Guideposts," plus a few moments of checking, listeners will know what to expect for at least the next 24 hours.

Short Wave Theory. Reception is dependent upon reflection around the curvature of the earth by the ionosphere—a region of ionized gases extending in four belts (two at night) from 50 to 200 miles up (Fig. 1). Ionospheric density varies from day to day, causing the erratic reception we have described. Oversimplifying, the upper layers reflect higher SW frequencies—while lower layers absorb basement channels. For reception, frequency must be low enough for reflection but sufficiently high to escape absorption. The result is a narrow band of optimum frequencies, always higher during the day than at night, and seldom the same from one week to the next.

Describing the above as an oversimplification is a gross understatement. To name only a few complications: one of the lower layers is capable of reflection even under normal conditions; the two upper layers combine at night; during ionospheric disturbances (magnetic storms) the ionosphere's reflecting capacities are impaired, while absorption is increased (such a paralysis is usually limited to upper and middle latitudes) . . . and so on, until the SWL is lost in a maze of theory.



RADIO PEKING

Peking, China

Dec. 16 1958

Dear Mr. Stanbury,

We are glad to confirm your reception report on our programme transmitted on 19 m.b. kc/s dated Nov. 7, 1958 We thank you for writing and hope you will continue to do so.

Sincerely yours,
Radio Peking

QSL card and folder from Radio Peking. Not the most accurate SW broadcaster informationwise, Radio Peking does serve as a technical guide post for other Asiatic stations.

An Empirical Approach is needed: which brings us to that term, "skip." Originally it meant a signal had passed through the ionosphere without being reflected—the signal had "skipped." While this usage is still valid, "skip" now also refers to reception conditions from a specific area, such as good Asiatic skip, or no African skip. And skip provides the solution to our problem.

When a transmitter which is usually weak or covered by interference puts in a strong signal, there is good skip from this area and other stations from it will be coming through on nearby frequencies. For example, if in the afternoon Radio Brazzaville on 11725 kc is easily readable, it means that absorption is down and listeners can look for other Africans here on the 25-meter bands. In other words, Radio Brazzaville serves as a short wave guidepost.

Such guideposts should indicate the absorption level (how low you may comfortably listen) and the maximum usable frequency. As an absolute minimum you will need at least two sets of markers, one for the tropics and another for upper and middle latitude stations. The system can be as complicated as you desire, but Table A will adequately serve the needs of most. Included are indicators for reflection on each of the high bands during daylight hours and on the low bands at night (with a dropping sunspot count even these will skip, especially after midnight), and six stations to measure absorption. For the casual listener who concentrates primarily on upper frequency bands, reflection is the key

TABLE A—SHORT WAVE GUIDEPOSTS

BAND	KC/S	STATION	COUNTRY	TIMES	INDICATES
13M	21675	BBC	England	Daylight	Band open, U/M
	21535	ELWA	Liberia	Daylight	Band open, tropics
16M	17890	HCJB	Ecuador	Daylight	Band open, tropics
	17885	Radio Japan	Japan	1930-2030 EST	Band open, Asia
	17705	Voice of America	Morocco	Daylight	Band open, U/M
19M	15375	BBC	England	Night	Band open, U/M
	15185	Voice of America	Philippines	1800-2100 EST	Band open, Asia
	15115	HCJB	Ecuador	Night	Band open, tropics
25M	12010	Radio Peking	China	Early evening	Polar absorption
	11930	BBC	England	After Midnight	Band open, U/M
	11915	HCJB	Ecuador	After Midnight	Band open, tropics
	11725	Radio Brazzaville	French Congo	Afternoon	Tropic absorption
31M	9745	HCJB	Ecuador	After midnight	Band open, tropics
	9673	Circuito CMQ	Cuba	Daylight	Tropic absorption
	9009	Kol Israel	Israel	Daylight	U/M absorption
49M	6150	Voice of America/BBC	England	Afternoon	U/M absorption
	6050	HCJB	Ecuador	After midnight	Band open, tropics
	6025	Radio Nederland	Netherlands	2030-2250 EST	U/M absorption

Note: U/M refers to upper/middle latitudes; band open refers to reflection.

issue; but if you are interested in expanding your range, absorption becomes vital.

Using The Table. Suppose you note Tel Aviv on 9009 kc putting in a strong signal: you will have no trouble picking up numerous European and North African stations on 31 meters (9500 through 9775). You should also check the Voice of America relay in England on 6150. If this one comes through at all, there will be good European reception on 49 meters (5950-6200) and even lower, with Asia showing up after midnight.

This brings us to a gray short wave area, channels below 49 meters. Because of static (a spring and summer problem), and only erratic distance reception, most non-DXing SWLs simply never bother tuning down here. However, under the conditions described above, listening could be as comfortable as on the more conventional bands. We leave it to each individual reader to compile his own set of "basement" guideposts. With reflection possible at several different levels, and the resulting intricate patterns of skip and absorption, such a listing is beyond the scope of this article.

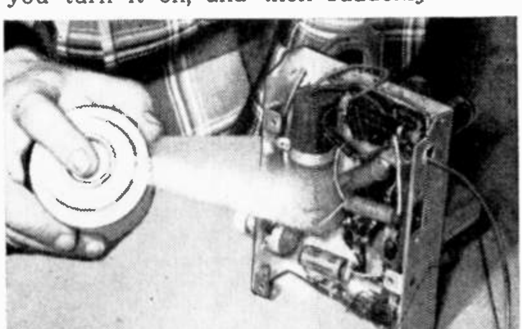
Rare Skip. On April 7, 1961, an east coast listener noted Springbok Radio in South Africa with loud readable signals on 2350 kc at 8 p.m. EST. He promptly tuned down to 1286 (on the broadcast band) and within minutes picked up a 10-*kw* Johannesburg transmitter carrying the same all-night program.

This admittedly is an extreme example, actually falling into the category of DX. It does illustrate an important point, however, even for the casual SWL: short wave is never a pat proposition. On a one-shot basis, the most unusual and interesting transmissions can be heard with only a little effort, providing the listener is alert.

Look at it another way. Assume you have a special interest, let's say news and commentary from Asia. In the eastern U.S., only English language broadcasts from Japan and Red China are consistently received with good signals. But suppose in the early evening Peking has an exceptionally strong signal on 12010 kc. You should then look for Delhi (11900) with English for Burma at 7:30 p.m. EST, and HSQ Thailand (11910) at 12:20 a.m., beamed to our west coast. These broadcasts, especially from Delhi, might not be heard at your location more than once or twice a year, but that is certainly better than not at all. With the aid of a good reference list such as WHITE'S RADIO LOG (p. 151), possibilities are endless. To make full use of short wave guideposts, consistent listening and patience are required.

Fire Extinguisher Chases Radio Bugs

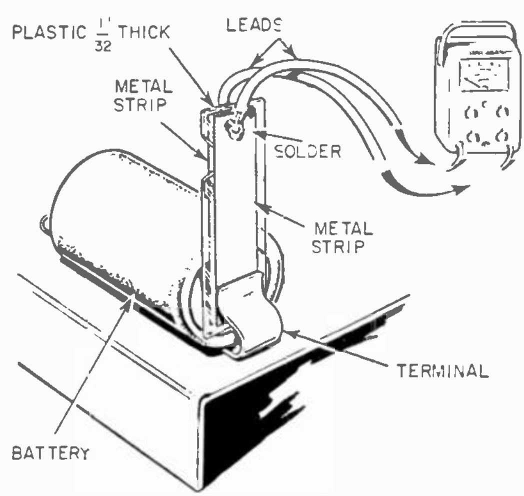
• The chilling effect of a carbon dioxide fire extinguisher will help you locate a defective part in a radio circuit that plays erratically. Often a set works fine for a few minutes after you turn it on, and then suddenly misbehaves or goes dead. The trouble may be a part that expands with heat after current has been flowing through for a few moments. Spray suspicious parts with CO_2 gas one at a time. The intense cold will contract a defective component so it can work normally.



You can also use Charg-A-Can Freon #12 with a suitable adapter (sold by refrigeration supply houses). However do not use carbon tetrachloride fire extinguishers since the fumes are highly toxic.—T. A. BLANCHARD.

Read Battery Drain Quickly

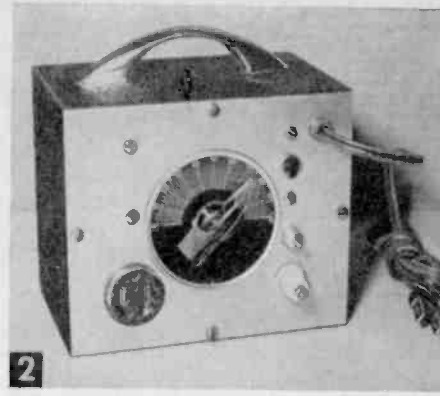
• To measure the battery drain in radios and experimental electrical circuits, use this special test lead. Cement a thin brass or aluminum strip to each side of a piece of plastic.



Then solder leads to each metal strip and connect them to your VOM. Insert the lead between the batteries and terminals to make quick current-draw readings.—G. A. WESENFELD.

1

Hand approaching metal plate causes the lamp plugged into control receptacle to light up. Bells, motors, etc. may be plugged into the 110-120 v outlet.



2

Capacity control is housed in a stock radio chassis cabinet. Outlet is at left, insulated control terminal is at right of dial on front panel of control unit.

Experimenting With a

Capacity Control

No phototubes or light beams are required with this simple electronic unit which turns lights on or off with a mere wave of the hand

By THOMAS A. BLANCHARD

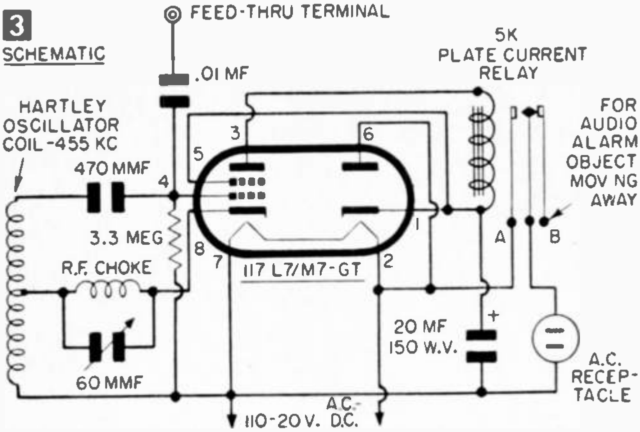
THIS capacity control is simply another application of the versatile oscillator. In respect to the jobs it can do, it is similar to the photo-electric control. No light beams or phototubes are required to trigger it, however, only the presence of a human being near it.

The circuit can be wired for sensitive or for ultra-stable operation. For sensitive operation, for example, a metal plate could be attached inside a store window. A shopper standing outside, then, placing his hand near or on the window glass would cause a display in the window to light up. When he moved away from the "sensitive" area, the lights would go out. (By substituting a length of insulated wire for the metal plate, a larger area of the window could be made sensitive to the approach of a shopper. There would never be actual contact between the window-shopper and the control because of the plate-glass barrier.)

It works like this: A small R.F. choke and tuning capacitor is inserted in series with the circuit's oscillator coil's cathode lead (see Fig. 3). Varying the capacity across the R.F. choke provides the sensitivity control so that the point at which the plate current relay picks up can be accurately determined.

Omitting the choke and tuning capacitor, gives a much more stable effect. The control then requires actual physical contact for triggering. Thus, if the control wire is attached to a metal door knob, for instance, you have to touch the knob before the circuit will operate. The control lead can be attached to any ungrounded metal object. When touched at any point it will cause the control relay to close. There is no danger of shock.

Suppose you have water seepage in the basement of your home. Mount the control lead ¼ in. off the basement floor and if the water rises ¼ in. it contacts the control lead, causing an alarm to ring. Applications of a capacity control are almost limitless—not to mention its amusement (and educational) value. For example, you can cut a piece of aluminum foil



3 SCHEMATIC

MATERIALS LIST—CAPACITY CONTROL

1 metal radio chassis cabinet, 4 x 5 x 6"
1 octal wafer socket
1¾" lead-in or feed-thru insulated bushing
1 amphenol female receptacle #61-F1
1 10,000-ohm plate current relay: Sigma 4F or P&B LS-5
1 Hartley oscillator coil, 6/12SA7 type (Stanwyck 225 or 212; Miller 5481-C)
1 R.F. choke approx. 100 uh (see text)
1 midget variable capacitor, 60 to 1000 (max.) mmf.
1 20 mfd., 150 w.v. electrolytic capacitor, tubular pigtail type
1 .005 or .01 mfd. paper capacitor, 150 w.v. or higher
1 500 or 470 mmf. mica or ceramic fixed capacitor
1 3.3 megohm, ½-watt resistor
⅜" rubber or plastic grommet
6' line cord and plug
1 117L7/M7GT vacuum tube
miscellaneous hook-up wire, ⅝ x 2¼" metal spacers, bar knob and dial plate

about 1 ft. square, attach the control lead to one corner and conceal it under a carpet. Your "victim" will jump when he walks over the "hot spot" and rings a bell or causes a table lamp to light up.

The unit (Fig. 2) is constructed in a standard 4 x 5 x 6-in. radio chassis cabinet (4 in. deep). Lay out the panel as shown in Fig. 4 and mount the components (see Fig. 5). Mount the wafer-type octal socket on ¼ x ⅝ in. long metal spacers secured to the control panel with 6-32 machine screws.

The oscillator circuit is a Hartley electron-coupled type using a 117L7/M7 combined pentode and half-wave rectifier. The heater of this tube operates directly off the power line. No step-down transformer is needed.

The oscillator coil is an ordinary 455 kc. radio type of the simple Hartley 3-terminal design (sometimes called a 6SA7 or 12SA7 coil). This coil, depending upon make, may be mounted with a screw and nut, or snapped into a suitable hole drilled in the control panel.

The outside end of the oscillator coil (the ground side) goes to pin #7 of the octal wafer tube socket, line cord, etc. The tap or center coil lug attaches to the cathode (pin #8) through the R.F. choke and midget tuning capacitor *for sensitive operation*. For stable operation, run the tap directly to pin #8. The remaining oscillator coil lug connects the grid of the 117L7/M7 through the 500 *mmf* fixed capacitor.

The plate circuit relay I used was a Sigma Type 4F with a 10,000-ohm coil. The less expensive Potter and Brumfield Type LS-5 with 10,000-ohm coil can be substituted for it and is readily available from most electronics parts suppliers.

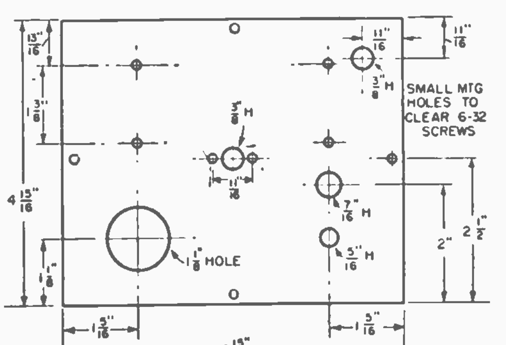
A small porcelain feed-through insulator brings the sensitive grid actuating lead out through the panel. A capacitor is inserted between this insulated terminal and the #4 grid pin on the tube socket. This value was originally .01 *mfd* in the miniature size. If the midget size isn't available, use .005 *mfd* since it is also physically smaller than a standard size .01 *mfd* unit and affords ample coupling capacity in this circuit.

Bring the line cord through a ⅜-in. plastic or rubber insulating grommet inserted in the hole located adjacent to the tube socket. Line-cord leads terminate on socket pins #2, 6 and 7 as shown in Fig. 5. Connect one lead to socket pin #2 and one terminal of the female *ac* receptacle mounted on the panel, another from the receptacle and through the relay contacts to pin #6 and #7, thus providing a 110-120-*v* control circuit which is switched on or off by the magnetic action of the relay coil.

Note that the relay is provided with single pole, double throw contacts. When wired as shown in Figs. 3 and 5, no current reaches the receptacle so long as there is no contact with the porcelain feed-through terminal. Touching this screw, or approaching a metal plate attached to it, however, causes the relay to energize and completes the circuit to the *a.c.* outlet receptacle.

Now, if the reverse action is desired—causing a light to go out when the control is approached, say—you need only move the receptacle lead from relay contact B to A. The moving contact connection of the relay (the armature connection) is not disturbed.

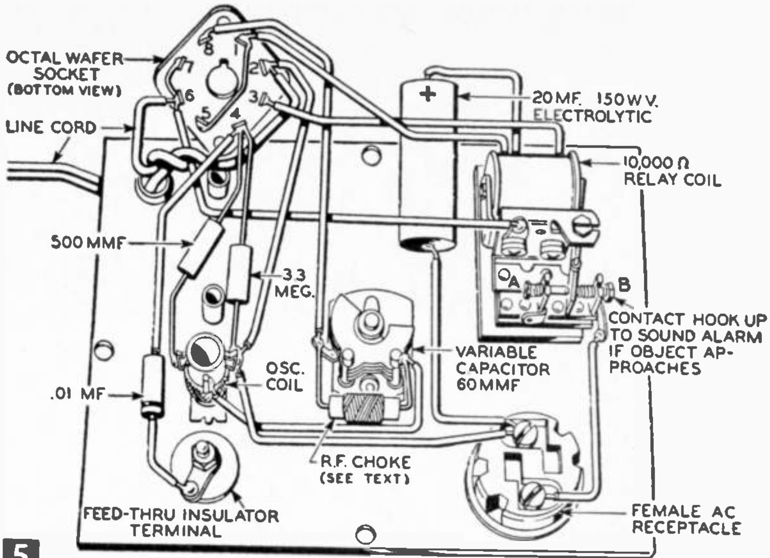
To test, connect a short piece of hook-up wire across the midget variable capacitor where



4 PANEL LAYOUT FOR CAPACITY CONTROL #16 STEEL OR ALUMINUM

the R.F. choke will eventually be located. (In fact, even the capacitor itself isn't needed at this point.) With power applied, the relay should close when the insulated terminal screw is touched. The control can be used for non-sensitive applications in this form.

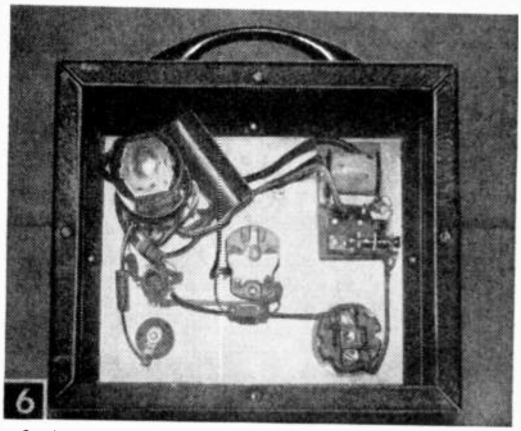
For sensitive control, the variable capacitor can be any midget type between 60 and 100 *mmf.* A less expensive compression-type trimmer can be substituted here if more readily available. The R.F. choke may require some experimental work in order to obtain maximum sensitivity from the circuit. For the choke, we used a TV "peaking coil" of approximately 100 microhenries. Both peaking coils and R.F. chokes of the miniature type are wound on Bakelite pigtail forms that resemble 1-watt resistors. When connected across the stator and rotor lugs of the tuning capacitor with plates wide open, the control relay should pull in. Now, slowly closing the plates, you should reach a point where the relay drops out.



5 PICTORIAL

When this action is obtained, the choke will be of suitable inductance. However, if the relay remains energized with the plates of the tuner fully meshed, the inductance is excessive, and turns will have to be taken off.

You may find it more convenient to make your own choke. All you will need is fine enameled magnet wire (size #34 to #40). Measure off about 12 ft. and scramble-wind the wire on a 1-watt insulated resistor having a high resistance (22 megohms or more.) Carefully scrape off insulation from the leads and solder one to each pigtail.



6 Looking into rear of control box with cover removed. Front panel and chassis are one, making for simplified construction.

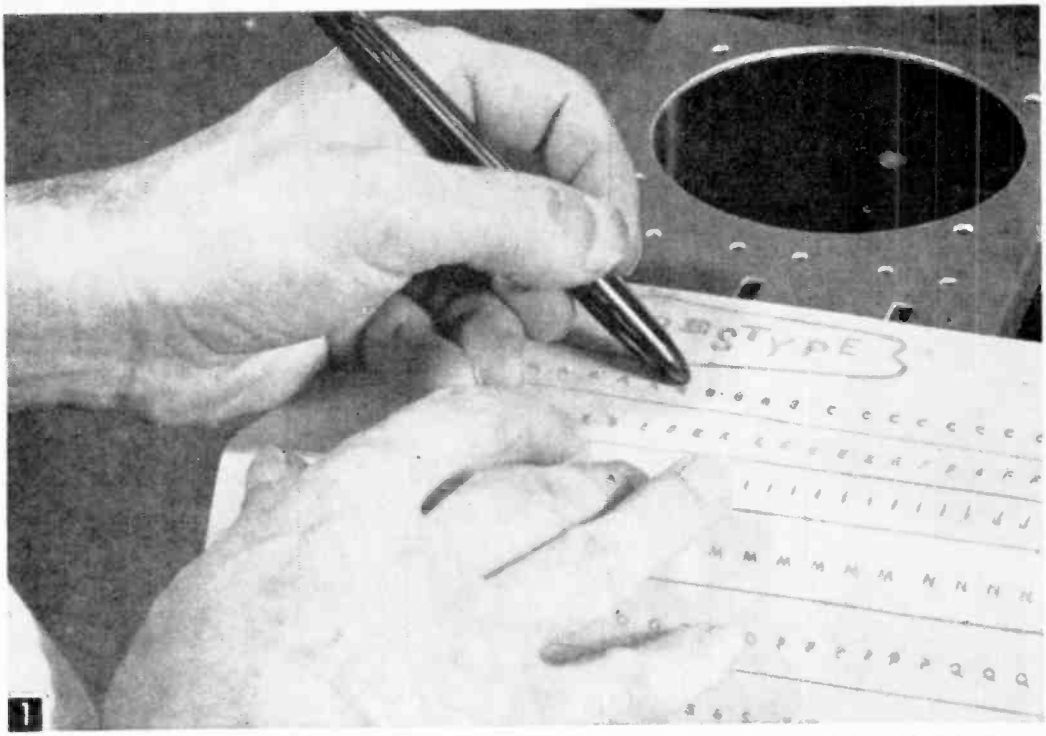
Add or subtract turns until the relay will release when the variable capacitor plates are about at the half-closed position. Install in the chassis cabinet with a suitable dial plate and bar knob to adjust the tuning capacitor and attach a short lead and metal plate to the control's insulated terminal. Plug a light bulb into the receptacle and rotate the capacitor knob until the light comes on.

Now back off the sensitivity control until the light just goes out. Leave the control alone now, and bring your hand toward the metal plate. At a point ranging from 6 inches to one foot, body capacity will cause the control to turn on the light. Withdrawing your hand will turn off the light.

If the length of the lead and/or size of the metal plate is changed, the control must be readjusted. Note, too, that if too much fixed capacity is attached to the control, the relay will remain locked-in. If this happens, use a smaller metal object, or shorter connecting line from control to plate.

Since the capacity control employs the popular *ac-dc* hook-up, you will find that it operates best when its ground circuit plugs into the ground side of the power line. (Reverse the line plug to determine the best operating position.)

Attach a metal drawer pull to the chassis cabinet for carrying convenience. To provide ventilation for the tube, punch two rows of holes in the back panel of chassis cabinet or use perforated Reynolds do-it-yourself aluminum for the box cover. (You can cut this material with a kitchen shears.)



Transfer letters are applied by laying the sheet on the panel and rubbing the back of the desired letter.

Simplified Panel Lettering

In most cases, transfer letters offer the greatest advantages

By W. F. GEPHART

PROVIDING panel lettering for custom-made equipment can be a problem for the experimenter. The usual devices are typewritten strips, custom-made etched plastic plates, or decals. Typewritten strips usually look amateurish, and etched plastic plates are expensive, so decals are most commonly used.

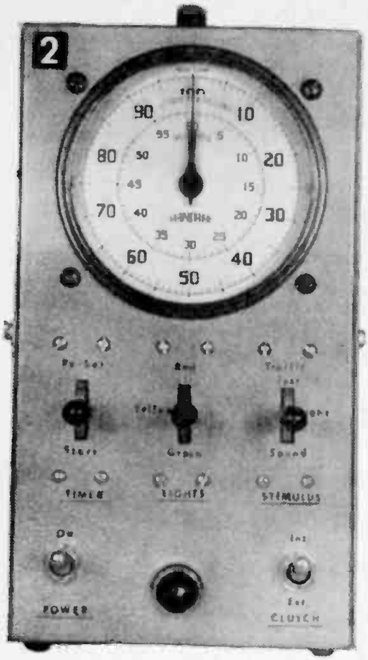
There are disadvantages in the use of decals, however. Complete words are available only in limited colors, and in one type face and size. Making up words that are not included in the package is quite a job, due to the skill required in handling the small individual letters.

Using Transfer Letters, available in art supply houses, overcomes these difficulties. These letters and numbers, on a large sheet, can be transferred individually to another surface by rubbing the area over and around the letter (Fig. 1). The pressure of the rubbing and the heat generated by the friction combine to transfer the letter to the panel.

The Letter-On Co. has complete alphabet and number sets in nine varied styles of type, 11 sizes, and five colors. A set includes capital and lower case letters, numerals, and punctuation marks, all on a large translucent sheet. The sheet is laid on the panel and the letter positioned, and then the letter is transferred to the panel by rubbing it with a burnishing tool. (The rounded end of a fountain pen works very well.)

After the panel is completely lettered, the excess wax adhesive is cleaned off with a cloth dampened with benzol or rubber cement thinner. It is best to spray the panel with a couple of light coats of varnish to protect the letters against scratches. Do not use plastic spray with an acetate base, as this will damage the letters. Ordinary spray varnish, or the spray varnish used in retouching oil paintings, such as "Spray-Var," will give excellent results.

Decals Are Easier to Use and may be applied more quickly; if complete words are



Employing transfer letters makes possible the use of unusual words, with both capital and lower case letters.

available (and one size and color is sufficient), you will probably prefer to use them. But if words must be made up from individual letters, or you want a variety of type sizes and/or colors, transfer letters are better. One transfer lettering set is available in a size and style that matches the decal letters usually sold in radio parts houses. This is "12-point Airport," available in "Prestype," which can be secured from local dealers or from the Letter-On Co., 9605 Bulls Run Parkway, Bethesda, Md. This matches the type used in the "Tekni-Cals" decals. When these are employed, decals can be used for complete words and transfer type to make up words.

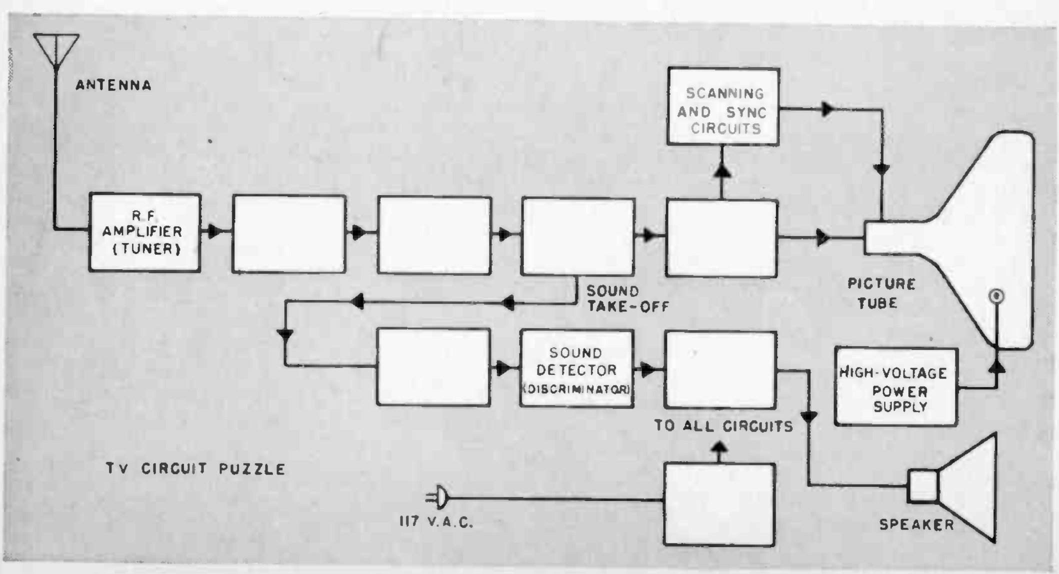
For the panel shown in Fig. 2, most of the words were not available in decals. Also, the use of capital letters for the names of the controls and lower case for the functions minimized confusion.

Transfer letters work best on smooth surfaces, such as natural or gray hammertone panels, but they will stick to most surfaces. They are excellent for re-lettering meter faces. For best adhesion, the surface should be slightly warm, and it helps to put a 25-watt bulb under the panel during lettering.

TV Circuit Puzzle

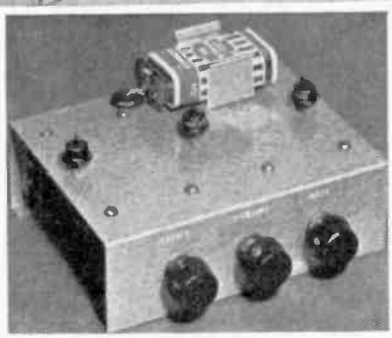
By JOHN A. COMSTOCK

Here's a unique electronics puzzle. The object is to fill in the empty blocks with the names of the circuits found in a typical television set. By referring to the boxes already labeled and using your knowledge of black-and-white TV circuitry, see if you can supply all the right names. The solution is on page 138.



Transistorized Hi-Fi Preamplifier

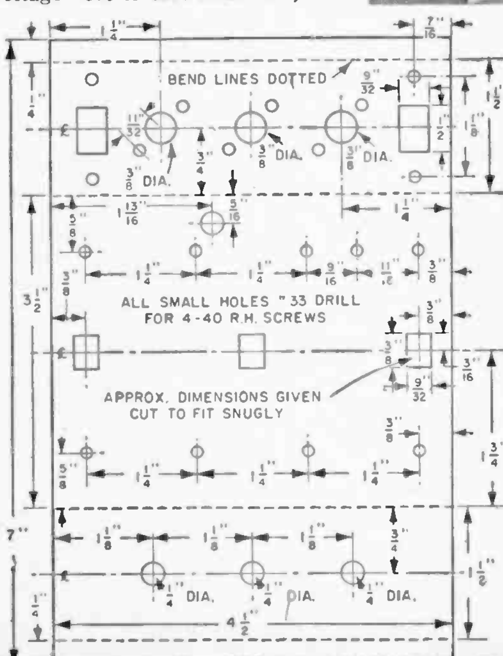
By HAROLD P. STRAND



The transistorized preamp under test with a mike and power amplifier shows considerable gain over direct input from mike to power amplifier. Control side of chassis (inset) has three controls: treble and bass tone controls (left and right) and volume control combined with On-Off switch (center).

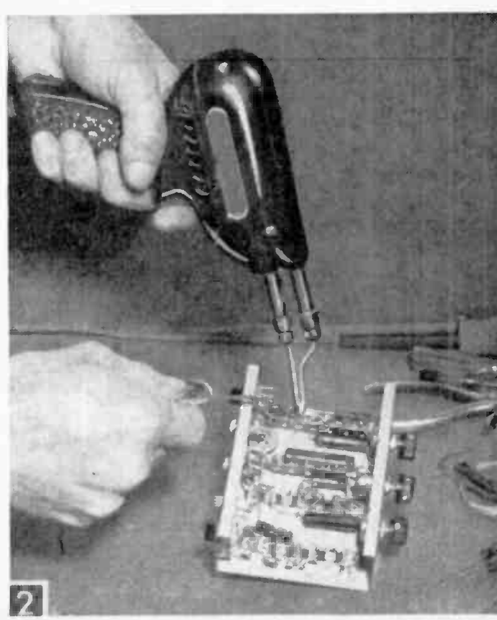
MAGNETIC or variable reluctance phonograph cartridges usually require a boost of their output voltage—5 to 30 millivolts—in order to obtain satisfactory operation from a standard power amplifier. (Crystal cartridges, on the other hand, usually deliver sufficient output voltage—600 to 4000 millivolts, depending on make and type—for such operation.) Because of the low output of magnetic cartridges, a device known as a preamplifier is usually employed with them to effect the desired boost. The preamplifier is connected between the cartridge and the power amplifier in a simple plug-in circuit.

For many years, vacuum-tube preamplifiers have been used for this purpose, but transistorized preamps, such as the unit described in this article, have several advantages over vacuum-tube preamps, including those of zero hum, without the microphonics usually associated with vacuum tubes, a frequency response of from 20 to 20,000 *cps*, 40 *db* gain (or better than 52 *db* below 2 millivolts) for low impedance cartridges, three phono in-



CHASSIS LAYOUT

1



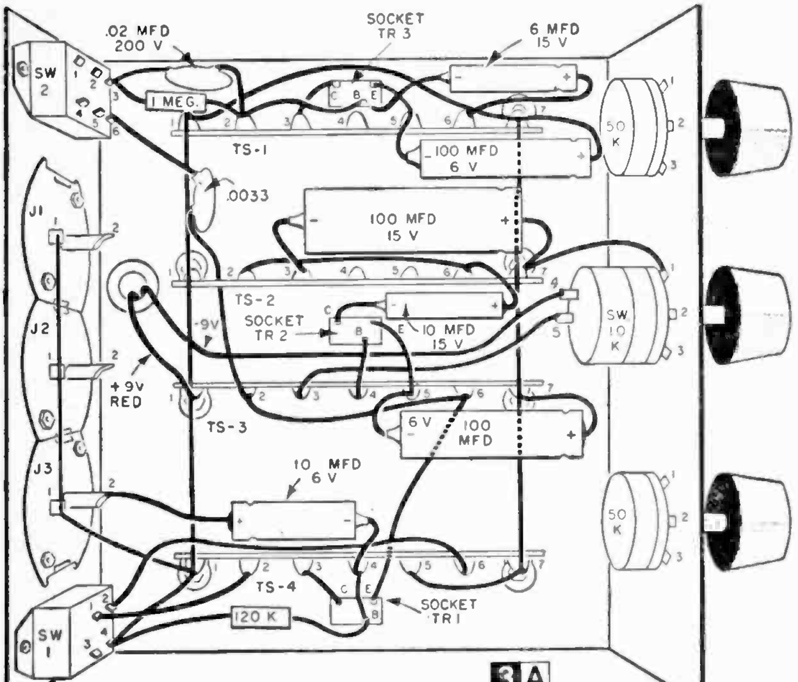
2

When soldering at terminals, apply sufficient heat for the solder to flow completely around leads.

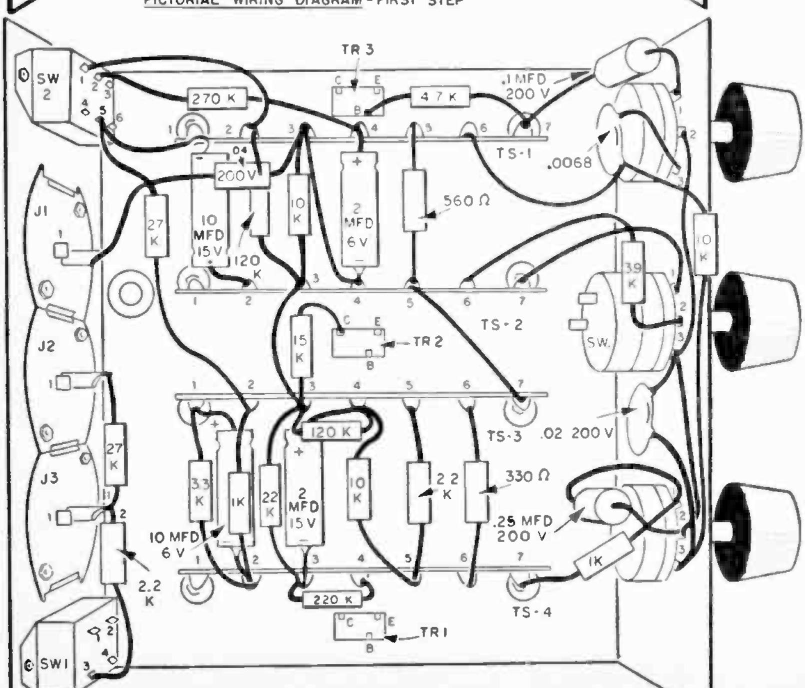
puts and also a microphone input, bass and treble control, as well as a volume control with switch. Since a small self-contained battery is used with this unit, no outside power connections are required and the unit can be placed up to 175 ft. away from its associated equipment if desired.

The transistorized preamplifier can be built from a kit supplied by Lafayette Radio or you can build it entirely from the group of standard parts given in the Materials List. The chassis, however, is not a standard size, so it is bent up from sheet aluminum to the dimensions given in Fig. 1. It can be bent up in a vise over a hardwood block, but a bending brake will make a better job of it. If you don't have a brake, perhaps your local sheet metal shop will do this for you on theirs.

Lay out the rectangular socket holes on the metal and then drill a number of holes within the rectangular area. Break out the metal between the drilled holes and dress to size and shape with a file. Fix the sockets in their openings on the chassis, positioning them so that the terminal with the widest spacing (collector) will be located with respect to the other components as shown in Fig. 3. (A locking ring is forced down on the lower end of each socket, securing them in place.) Now install the jacks and controls, as well as the long terminal strips. Be sure to place as indicated, with the volume control and On-Off switch in the center. Secure the slide switches in their openings, attach the battery holder to the top of the chassis—using for this purpose one of the bolts securing a terminal

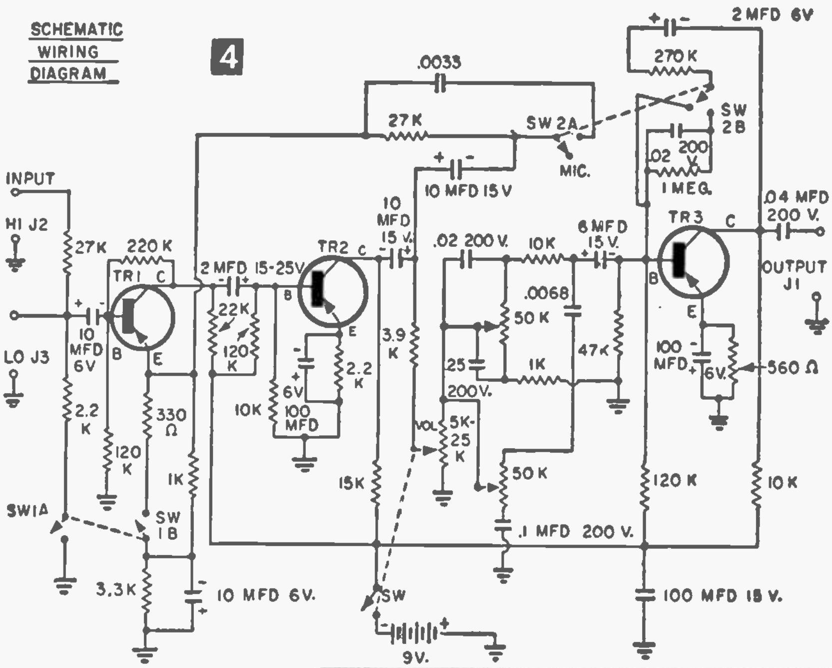


PICTORIAL WIRING DIAGRAM - FIRST STEP 3A

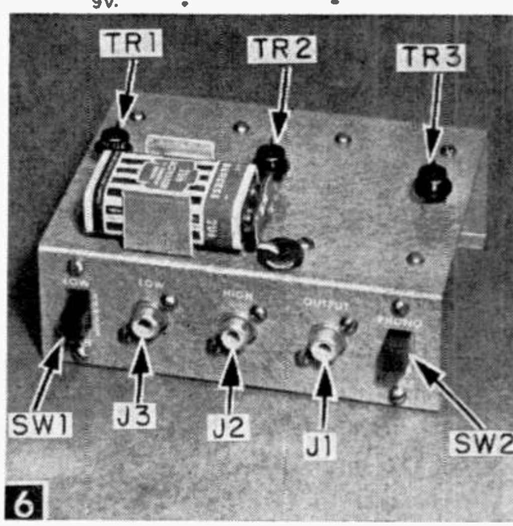


B PICTORIAL WIRING DIAGRAM - SECOND STEP strip, one in a drilled hole 9/16 in. away—and press the rubber grommet in its hole. Cut off the shafts on all three controls to about ½ in. before installing them unless the extra length of shaft is required for mounting in a cabinet.

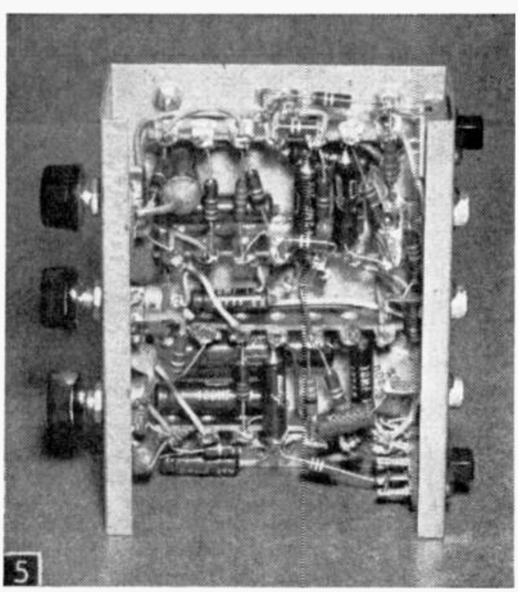
Although a relatively large number of parts must go on the chassis, good layout and the number of terminals or tie points provided makes a neat job possible.



The pictorial and schematic wiring diagrams shown in Figs. 3 and 4 show the wiring. Electrolytic capacitors will be marked plus and minus at their ends and care should be taken to place them in the circuit correctly with respect to polarity. Carry leads to terminals and allow enough extra to bend them over at the terminals when you cut them off. Separate the transistor socket terminals slightly when making connections (see Fig. 7A) to avoid any possibility of shorts. Where more than one lead goes to a terminal, make all of them up and then solder as a group. A Weller soldering gun will be found useful, or a 60 watt iron can be used. At points where bare leads may cross, use small spaghetti tubing on them to avoid shorts—except of course where they go to the same terminal.

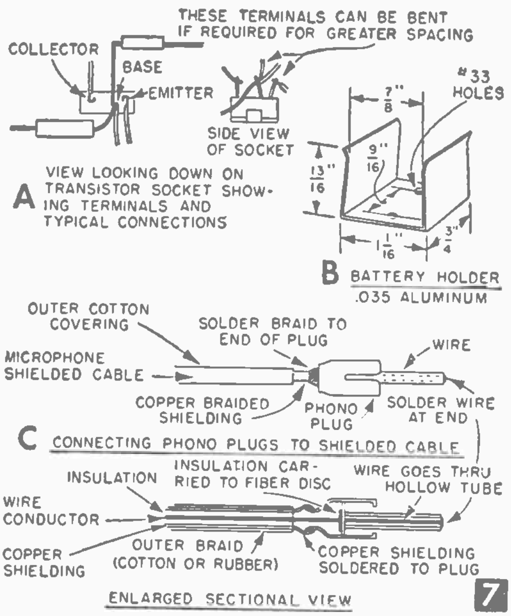


The designations TR1, TR2 and TR3 indicate the transistors; SW1 is the low or high level switch; J3 is the low impedance input; J2, the high; J1, the output; and SW2 is the phono or mike switch.



Completely wired chassis, bottom view.

Figure 5 shows the completely wired unit in an underside view where the neat and compact placement of parts and wiring is evident. Check all connections against the diagrams and then install the battery and 2N190 transistors. A battery holder can be made as shown in Fig. 7B; a top view of the unit, ready to be used, is shown in Fig. 6, above.



MATERIALS LIST—TRANSISTORIZED HI-FI PREAMPLIFIER

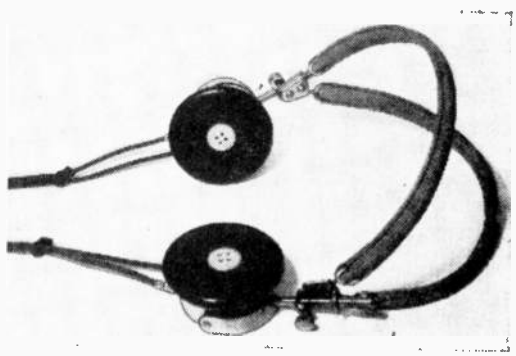
No. Reqd.	Description
3	transistor sockets MS-275
3	G.E. 2N190 transistors
1	9 volt Burgess 2U6 battery
1	male and 1 female battery snap-on clip or snap-on, two-terminal insert
1	D.P.D.T. slide switch (SW17)
1	D.P.S.T. slide switch (SW16)
3	RCA type phono jacks and plugs
1	10-K ohm volume control with switch (K = 1000), miniature type VC-28
2	50-K ohm controls (no switch), miniature type VC-36
3	miniature knobs for 1/8" shaft MS-185
4	solder lug terminal strips each with 2 ground lugs, 5 insulated lugs
	(7 total) Cinch-Jones 55-A
1	22-K ohm 1/2 watt resistor
2	27-K ohm 1/2 watt resistors
3	10-K ohm 1/2 watt resistors
2	2200 ohm 1/2 watt resistors
1	15-K ohm 1/2 watt resistor
3	120-K ohm 1/2 watt resistors
1	3900 ohm 1/2 watt resistor
1	220-K ohm 1/2 watt resistor
1	4700 ohm 1/2 watt resistor
1	330 ohm 1/2 watt resistor
1	270-K ohm 1/2 watt resistor
1	3300 ohm 1/2 watt resistor
1	1 meg. 1/2 watt resistor
2	1000 ohm 1/2 watt resistors
1	560 ohm 1/2 watt resistor
2	10 mfd. 6 volt Argonne capacitors (electrolytic)
1	2 mfd. 25 volt Argonne capacitor (electrolytic)
2	100 mfd. 6 volt Argonne capacitors (electrolytic)
2	10 mfd. 15 volt Argonne capacitors (electrolytic)
1	100 mfd. 15 volt Argonne capacitor (electrolytic)
1	6 mfd. 15 volt Argonne capacitor (electrolytic)
1	2 mfd. 6 volt Argonne capacitor (electrolytic)
2	.02 mfd. disc ceramic capacitors
1	.25 mfd. 200 volt capacitor (Aerovax Aerolite P82Z)
1	.0033 mfd. disc ceramic capacitor
1	.1 mfd. 200 volt capacitor
1	.0068 mfd. disc ceramic capacitor
1	.04 mfd. 200 volt capacitor (Aerovax micro-miniature P83Z)
1	rubber grommet for 1/4" hole.
1 pc	half-hard alloy sheet aluminum about .040" x 7" x 4 1/2" (bend to make chassis)
1 pc	half-hard alloy sheet aluminum about .030-.035 x 3" x 3/4" (bend to make battery clip)
18	round head 4-40 machine screws 1/4" long
18	4-40 hex nuts
	plastic covered hook-up wire about 24 gage (stranded); small spaghetti tubing

Kit #KT117 for building the Hi-Fi Preamplifier can be obtained from Lafayette Radio, 165-08 Liberty Ave., Jamaica 33, N. Y., for $18.45.

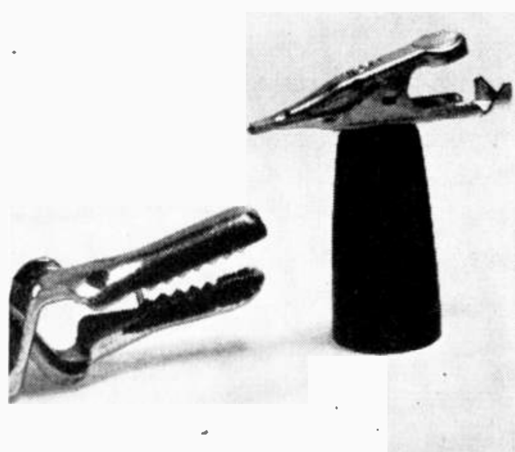
A good first test can be made with a microphone and amplifier, together with a speaker. The unit shows excellent gain over results obtained by plugging the mike directly into the amplifier. For phonograph use, simply plug a magnetic cartridge into the input jack instead of the mike. A selection of either high or low impedance jacks with a high-low switch allows the best matching conditions. Connections between the mike or phono cartridge as well as between the preamplifier and the power amplifier should be made with shielded cable to avoid picking up hum. The method of installing these phono plugs to cable is shown in Fig. 7C.

Buttoning Up Earphones

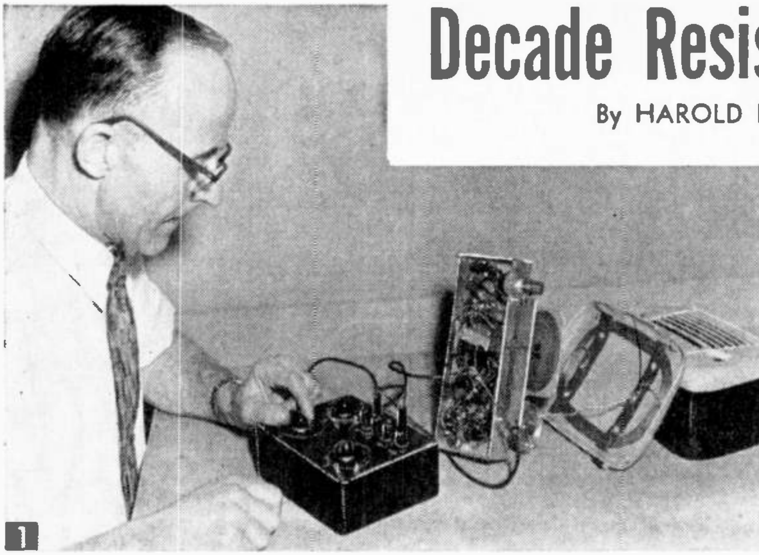
• In order to protect the thin metal diaphragm inside an earphone which has a single large opening in the cap, cement a button over the opening with *Duco* cement. Sound waves readily pass through the small openings in the button but



the diaphragm is protected from damage by sharp objects when phones are stored or transported. The button also provides a better ear-seal between the cap opening and the eardrum. —A. TRAUFFER.



"Junior! Come down from there this very minute!"



Decade resistance box in use in radio servicing job. Various values of resistance are being applied across terminals where a defective resistor was formerly soldered, and which is now unidentifiable due to extreme heating.

Decade Resistance Box

By HAROLD P. STRAND

Ten ohms to ten megohms instantly available for test or experimental work with this handy, portable unit

PROVIDING 51 different standard 1-watt resistors for instant circuit insertion by means of three 17-point rotary switches and plug-in leads, this decade resistance box is ideal for substitution use in the case of defective or suspect resistors in existing circuits, or as a test selection of values for new circuits. Its application in radio and television service work is obvious, and for experimental work—especially with transistor circuits where the amount of resistance used is often critical—its use is almost a necessity.

The 51 resistors in the unit described in this article range from 10 to 470 ohms, 560 to 12,000 ohms, and from 15,000 ohms to 10 megohms; all of 10% tolerance. Resistors of other values can be used to make up a different set of ranges if desired, and 5% or 1% tolerance resistors can be used where greater accuracy is demanded (and cost is no concern), but the values indicated here will usually be found to encompass all those needed for ordinary servicing or experimenting.

The red plug-in jack on the top panel of the Bakelite case housing the unit is common; the other three jacks (A, B, C in Fig. 2) tap off from the individual switches. With the leads plugged in the common and A, you can use all the resistors in the first group (10 to 470 ohms); changing the second lead to the B jack, you get the second group, 560 to 12,000 ohms; to the C jack, 15,000 ohms to 10 megohms.

Dial plates numbered from 1 to 17 are provided at each switch and a chart cemented to the bottom of the case identifies each resistor value. (The bottom is the only location on the case where a space large enough for the chart is available. If desired, a second chart can be typed up and placed in a transparent plastic envelope for more convenient use at the bench.)

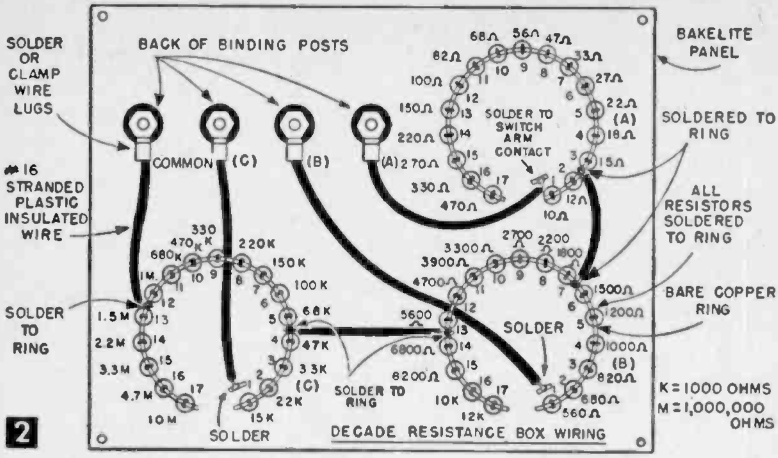
Resistor leads are formed around two nails driven in a piece of wood, thus assuring uniform looped ends and length (see Fig. 3A). Place the nails (6d finish) 1 in. apart on the board and then cut off their heads. Indicate center spacing of the resistor bodies with pencil marks on the board. After bending the leads, cut them off to leave short loops suitable for placing in the switch terminals at one end, for fitting around the bare wire circular common terminal at the other. (Ohmite or Allen Bradley 1-watt resistors should be used because of their comparatively short length. Some other makes are much longer and their use may result in a fitting problem within the case.)

Pass the looped ends of the resistors through the switch terminal holes from the back side so that the loops at the other ends will be turned out. Press them down tightly with pliers and

DECADE RESISTANCE BOX CHART

(A)		(B)		(C)	
1	10	1	560	1	15K
2	12	2	680	2	22K
3	15	3	820	3	33K
4	18	4	1000	4	47K
5	22	5	1200	5	68K
6	27	6	1500	6	100K
7	33	7	1800	7	150K
8	47	8	2200	8	220K
9	56	9	2700	9	330K
10	68	10	3300	10	470K
11	82	11	3900	11	680K
12	100	12	4700	12	1.0M
13	150	13	5600	13	1.5M
14	220	14	6800	14	2.2M
15	270	15	8200	15	3.3M
16	330	16	10K	16	4.7M
17	470	17	12K	17	10M

K = 1000 ohms M = megohms

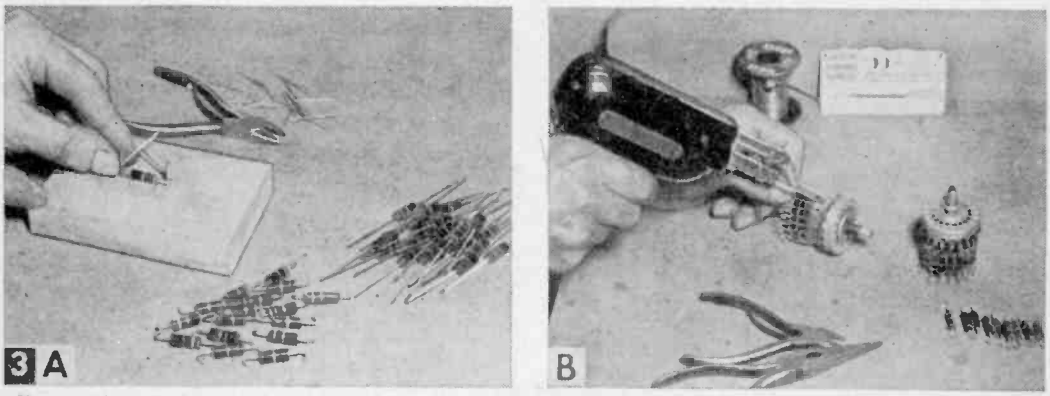


ohmmeter before installing it to make sure that the marked value is accurate to within plus or minus 10% of its markings. When, as occasionally will happen, a resistor is found that is inaccurately marked, substitute another. (If 5% or 1% resistors are used, testing is not necessary. If you are unfamiliar with resistor color coding, an IRC *Resist-O-Guide* can be obtained for 15¢ from any electronics supply store.)

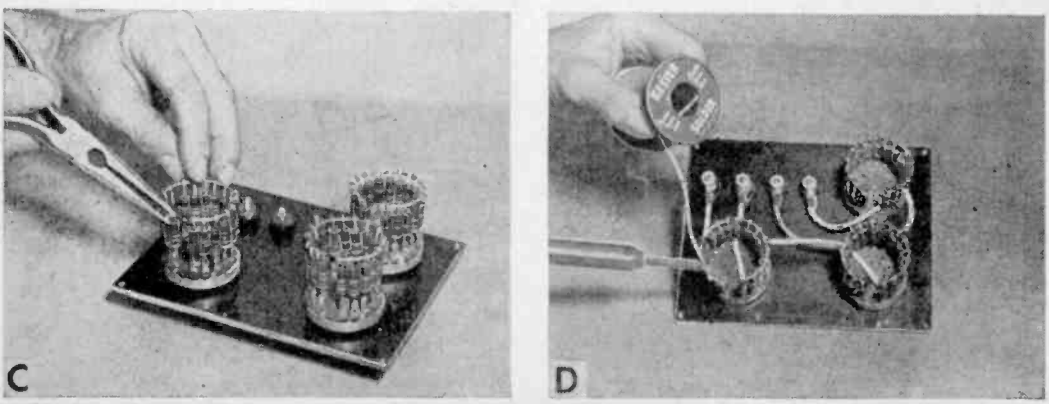
With all resistors soldered to the switches, prepare the Bakelite top panel. (Fig. 4)). This piece of black Bakelite can be a part of an old 1/8-in. radio panel or you can send to Forest Products Co., 131 Portland Street, Cambridge, Mass., which will supply one cut approximately to size for $1.15 post-paid (send money order or check). Corner holes are

solder (Fig. 3B). As shown in Fig. 2, the #1 terminal is at the right side of the wide spacing on the switch contacts.

The lowest value resistor for each group of resistors goes to the #1 terminal, values advance counter-clockwise (as viewed from the back). Measure each resistor with a reliable



Shape resistor leads around two nails driven in a block of wood to get them of uniform length and with uniform loops (A); then, starting with terminal #1 on each switch with the lowest value resistor, position looped ends of resistors and solder at each terminal (B).



With the resistor-equipped switches attached to the panel, attach formed rings of bare copper wire to free loops, bending them down uniformly over the ring (C); and after the three rings have been placed and leads connected as shown, solder all points of contact to the rings (D).

DECADE RESISTANCE BOX—MATERIALS LIST

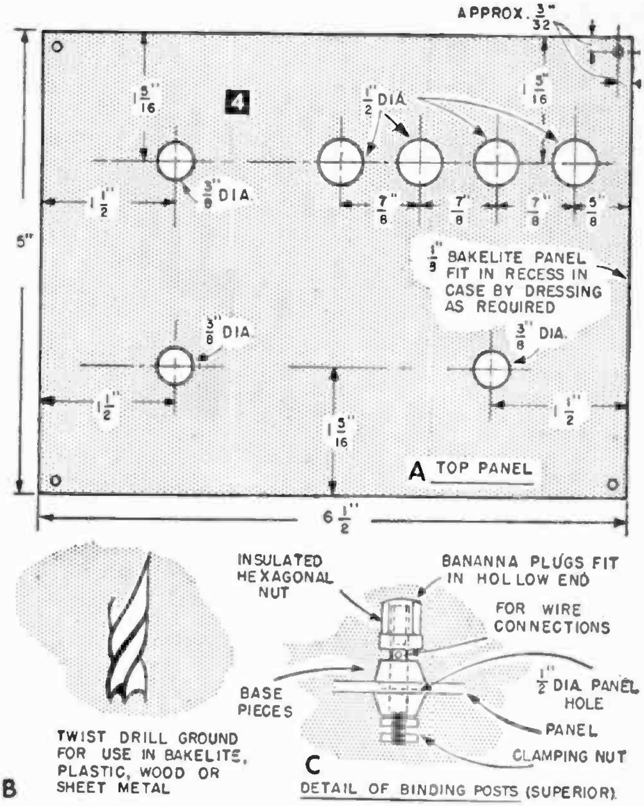
1 Bakelite case 2¼ x 5¼ x 6¾ (MS 218)
4' #18 test lead wire
3 17-position switches (Mallory 31117J)
2 banana plugs (MS 209-black)
3 dial plates (Mallory #467, marked 1-17)
2 insulated alligator test clips (black)
3 binding posts (Superior DF30BC-black)
1 binding post (Superior DF30RC-red)
1-watt carbon resistor, 10% tolerance, Ohmite or Allen Bradley—

One of each of the following

10 ohms	560 ohms	15,000 ohms
12 ohms	680 ohms	22,000 ohms
15 ohms	820 ohms	33,000 ohms
18 ohms	1000 ohms	47,000 ohms
22 ohms	1200 ohms	68,000 ohms
27 ohms	1500 ohms	100,000 ohms
33 ohms	1800 ohms	150,000 ohms
47 ohms	2200 ohms	220,000 ohms
56 ohms	2700 ohms	330,000 ohms
68 ohms	3300 ohms	470,000 ohms
82 ohms	3900 ohms	680,000 ohms
100 ohms	4700 ohms	1.0 megohm
150 ohms	5600 ohms	1.5 megohms
220 ohms	6800 ohms	2.2 megohms
270 ohms	8200 ohms	3.3 megohms
330 ohms	10,000 ohms	4.7 megohms
470 ohms	12,000 ohms	10 megohms

All of the above material can be obtained from Lafayette Radio, 165-08 Liberty Avenue, Jamaica 33, N. Y. or in New England from their branch at 110 Federal Street, Boston, Mass.

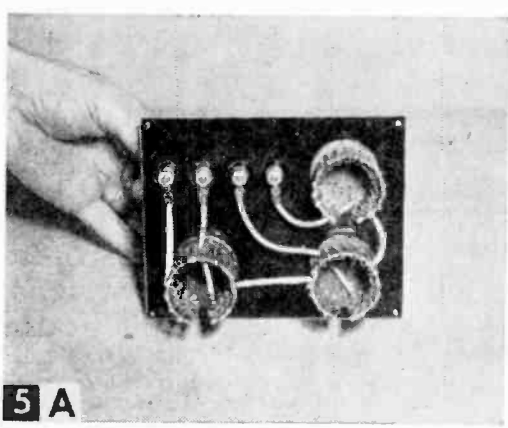
1 piece Bakelite ⅛ x 5 x 6½"
2' of #16 plastic insulated stranded hook-up wire; 15" of bare #14 copper wire; four 4-40 machine screws ⅜" long, binder head plated screws preferred



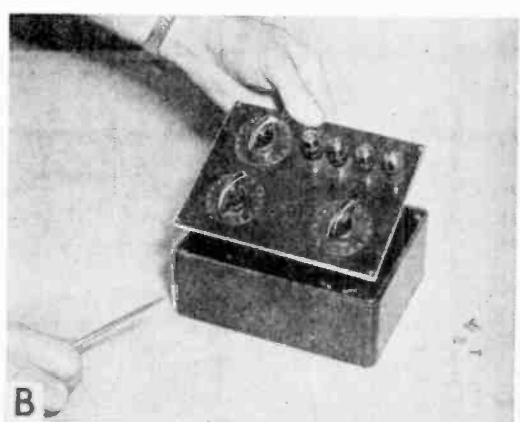
for 4-40 machine screws; the four Superior combination binding posts require ½-in. dia. holes; the switches, ⅜-in. dia. holes. Holes should be made with a twist drill ground as shown in Fig. 4B; regular ground twist drills have a tendency to tear such Bakelite.

Switches come equipped with a round plate having a pin that may be used as a stop. Since all 17 switch contacts are needed for this unit, discard this stop. Cut off the shaft at the first marked point and install, using a washer on each side of the panel, applying cement (such as coil dope) to the lower washer to keep the switch from turning and to keep the dial plate, top washer and nut clamp assembly tight. Then install knobs.

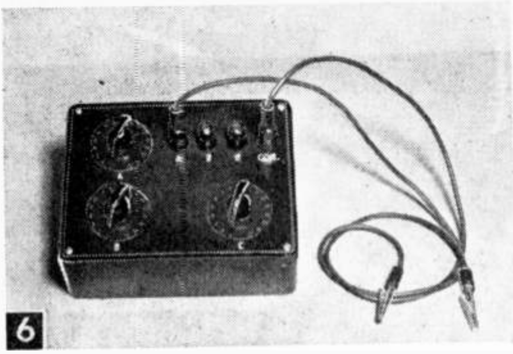
The next step is fitting wire rings to the looped ends of the resistor leads and bending them over tightly with pliers (Fig. 3C). Form the rings from bare copper wire (about #14



Back of the completely wired unit is shown in A. Use #16 insulated wire from the binding posts and also between the ring terminals.



Attach the completed panel to the Bakelite meter case, using 4-40 screws at the four corner holes (B). It fits flush in recess of case.

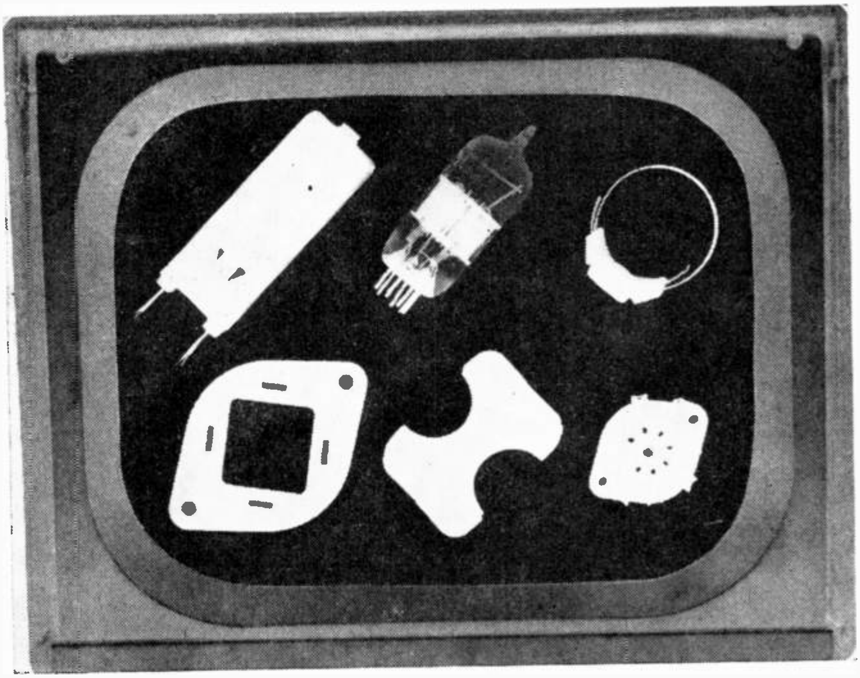


Completed job shows the lettering that was put on with decals sold for the purpose. After decals have thoroughly dried, apply a thin coat of clear plastic with a small brush to make them permanent. Banana plugs and clips soldered to short flexible leads make connections quick and easy.

gage), leaving open ends at the wide-spaced switch contacts. Then connect flexible insulated leads from ring to ring to join them as a common terminal for all resistors and run a lead from one of the rings to the red binding post. Use #16 wire (negligible resistance itself) for these connections (see Fig. 3D). Finally, run a length of #16 wire from each black binding post to the arm contact of the switch it is controlled by (see Fig. 5A).

Banana plugs and alligator clips soldered to short lengths of rubber-insulated, extra-flexible, #18 test lead wire make convenient connections between the binding post jacks and the points on the circuit under test. Switches are marked A, B and C, and the binding posts to which each switch is connected are similarly marked for quick identification. You can do this with a fine brush and white paint or use decals as supplied by electronic stores for such work.

The decade resistance box can also be used with the leads plugged into either A and B jacks or B and C, putting the banks of resistors in the two groups used in series for special test cases. Where standard RETMA values only are of interest, however, the leads are used with one in the common and the other shifted to either A, B or C post jack.



TV PIX-O-GRAM

Do you have a moment to spare? Try your luck working this puzzle. Identify the objects shown on the screen and write their names in the spaces provided below. Time yourself, and see if you can work this one in three minutes or less. Answers on p. 142.

I.F. Can.

Elec. Con. Wafer

pigtail Fuse holder

Tube Sockets

tube

Transistorized Pocket Superhet

Here's a challenging and rewarding project for the experimenter who has passed the beginner's stage

By HAROLD P. STRAND

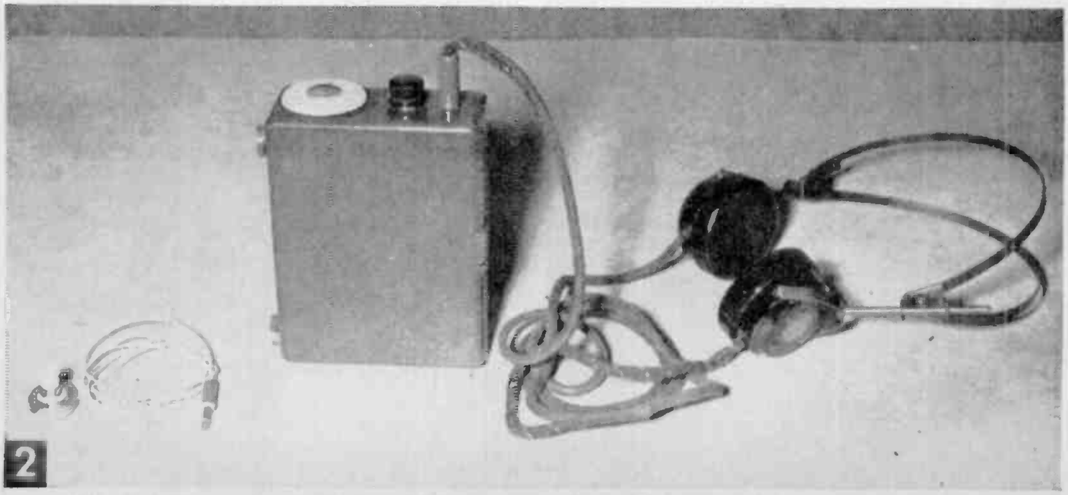
Powerful unit fits the coat pocket as easily as it separates local stations clearly when plugged into earpiece, phones or speaker.

ONCE you have built and enjoyed a true superheterodyne radio such as that in Figs. 1 and 2 you will never be satisfied with any other AM type. Tops in sensitivity and selectivity, it is no wonder that this circuit is used in practically all commercial radios.

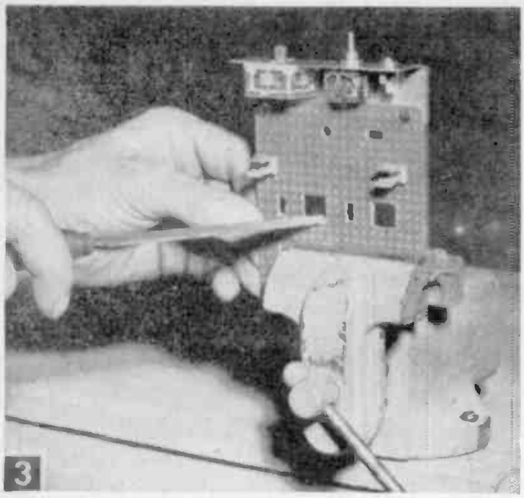
Superhets are generally considered complex, so if you are a beginner it may be wise to gain some electronic experience by building one or more of the simpler tuned radio frequency receivers featured in this and previous issues of RADIO-TV EXPERIMENTER. You will thus become familiar with basic circuit and parts layout which will help you construct a receiver of greater complexity and higher performance.

One advantage of the superhet is that all incoming signals are changed into a single fixed frequency and amplified at this new frequency. This aids uniform amplification and selectivity over a broad range of frequencies. Also, there is less danger of feedback troubles at the lower frequency, which allows greater amplification with high stability.

Four transistors and a diode are used in the circuit (Fig. 6), which is about as simple as you can expect in a superhet. A resistance/capacity-coupled audio amplifier provides more than adequate earphone volume or will



Side of plastic case is actually top of the set, where all controls are located for convenient operation.



Held firmly in a bench vise, the perforated Bakelite board is easily drilled and cut to shape desired.

operate a speaker on strong local stations. A 9-volt battery powers the set. Parts needed will cost about $23.

Begin Construction by cutting the perforated Bakelite board down to size 3⁹⁄₁₆ x 4 in. so it will fit loosely in the box. Bend up a 2⅛ x 3⁹⁄₁₆-in. piece of aluminum sheet into a support bracket as in Fig. 5. Attach it to the board as in Figs. 4A and 5, using two #4-40 screws and nuts with #10 nuts in between as spacers.

Mark openings for the transistor sockets and the IF transformers with a sharp scriber, then drill some small holes within the areas. Break out the holes with small diagonal pliers, then dress the sides square with a small flat file for a snug fit as in Fig. 3.

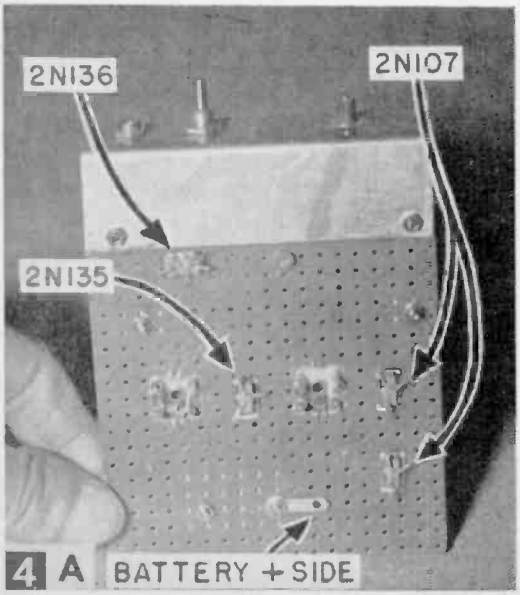
Shafts on the tuning condenser and volume control must be cut before mounting. Clamp the end of the condenser shaft in a vise and make a square cut with a fine-tooth hacksaw at a point ⁹⁄₃₂ in. from the raised bushing of the condenser's plastic case. Dress the end with a file and slightly ream the center hole so the screw retainer will start easily. Cut the volume control shaft at a point ⅜ in. from the end of the threaded nose.

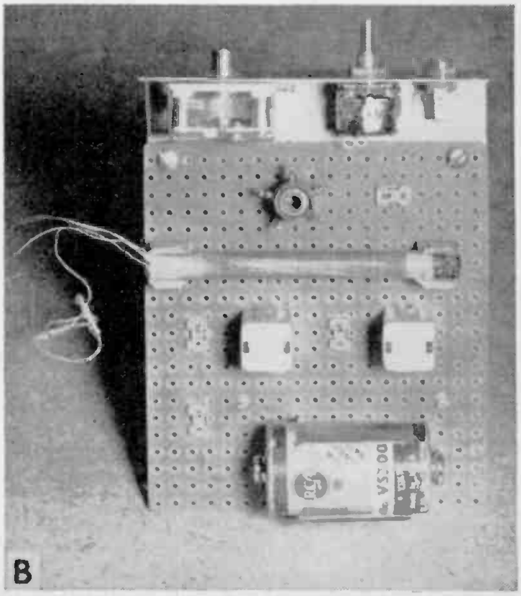
You can now mount these units and the phone jack on the bracket as in Fig. 3. Also mount two fuse clips (see Materials List) on the board for the antenna coil as in Fig. 3. Straighten out ends of the clips, originally intended to be stops, so that a curved surface is provided along their entire length to clamp the coil at the extreme ends.

Press the IF transformers in their openings as in Fig. 4B. Bend the tabs provided over sharply at the other side, taking care to avoid distorting the terminals. They should be placed so that the brown dot seen at the underside is away from end with the bracket.

Make the battery holder as in Fig. 8A. Snap-on terminals on this battery make it impossible to get a wrong polarity when changing it.

Figure 4A shows where to place a terminal lug on top of the board under one of the battery clip retaining nuts. This will be used for the positive side of the battery circuit. It also shows how to locate the transistor sockets and bend over the terminals to lessen the space





Left, underside of board showing socket and IF transformer terminals prior to wiring. Right, major components mounted on top of board. Spring clip holds battery; fuse clips the antenna coil.

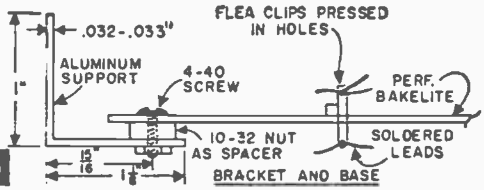
they occupy, as well as to simplify connections. Bore a hole through the board just below the aluminum bracket (Fig. 4A) and ream it out for a tight fit with the end of the oscillator coil. Turn this coil so that the green dot terminal is located as in Fig. 7.

Install flea clip terminals as needed in holes located from the pictorial diagram. They serve as tie points and can go anywhere on the board where wire or lead grouping indicates a terminal. Press them tightly in holes with long-nose pliers which rest against side stops to gain sufficient pressure. Don't over-squeeze.

Start the Wiring, after all parts are in place, as in Figs. 6 and 7. Reduce length of antenna coil leads somewhat for neater connections to their respective points. After cutting these stranded wires, remove enough enamel coating at cut ends by rubbing with fine sandpaper to prepare them for soldering. Twist the fine wires together to form a cable. Solder to terminals indicated.

The oscillator coil is marked from 1 to 5, with the green dot being #1. Tie points are provided at the left of the coil for a 27K resistor, .01-mfd capacitor, and the 100K resistor used around the coil. Make sure each connection is at the correct numbered terminal and use only rosin core solder. Connect tuning capacitor, volume control, and jack.

Place a terminal clip under the #5 oscillator terminal (D in Fig. 7) and connect a short wire to this clip. The part of the clip projecting underneath the board is a common negative point for connections of other wires and leads. To receive this negative link, connect a 2-mfd, 15-volt capacitor from the middle terminal of the volume control to another terminal clip located just under the 27K resistor (B in Fig. 7). Then, on the underside of the board, link terminals B and D with a 220K resistor.



5

If you find it difficult to solder many wires at one point, add another flea clip nearby and hook it up with a short jumper.

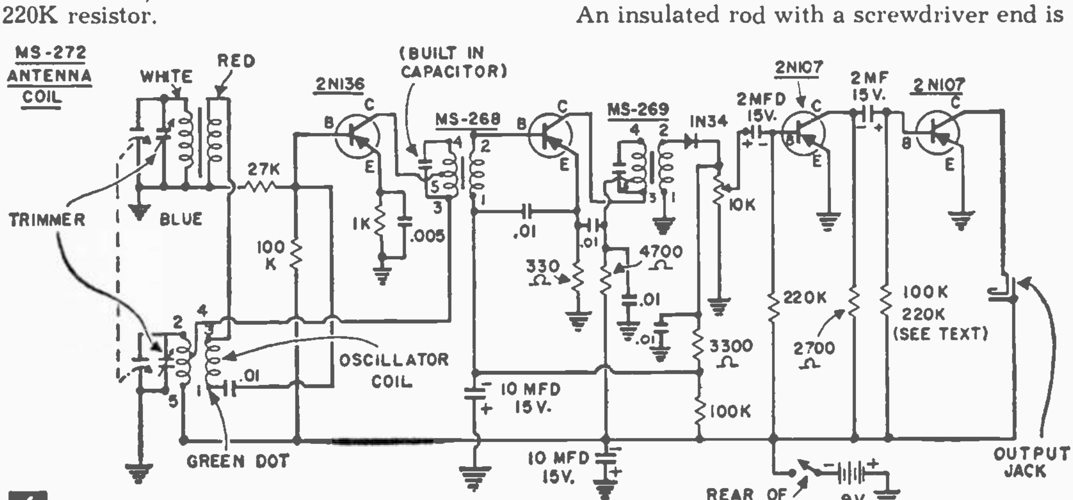
Keep underside wiring neat and parts flat against the board as in Fig. 9A to conserve space. Use #24 or #26 plastic-covered, tinned, solid hookup wire. Observe polarity on all electrolytic capacitors as in Figs. 7 and 8.

Use stranded wire at the battery connections for flexibility at the snap-on terminals, being sure to get the plus and minus sides right. Use a piece of bare solid wire (hookup wire with insulation removed will do) as a common positive line (Fig. 7). Soldering leads for the plus side of the circuit to this wire helps to keep the wiring compact. Also solder this wire to the two IF cans at their turned-over tabs to ground them. Note that one terminal at each IF transformer is not used.

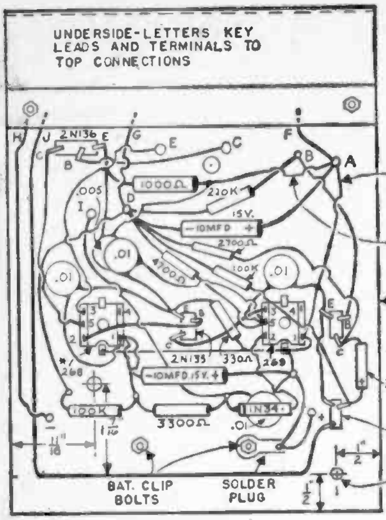
Now prepare the transistors by cutting off their leads to about 7/16 in. and install them in sockets as in Fig. 7.

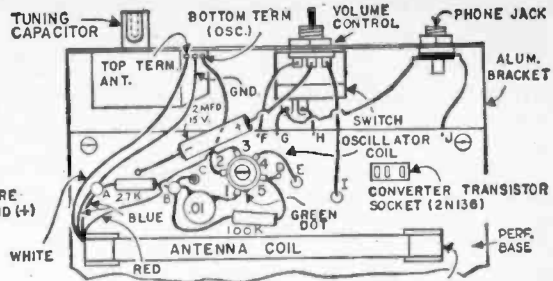
How to Align the Receiver. The lining-up process (Fig. 10) is necessary in all superheterodynes. First, adjust the slug in the oscillator coil until it is about 4½ turns inside the bottom of the coil form. Adjust trimmer marked OSC at the back of the tuning capacitor until half of its rotor is meshed with the stator or stationary plate. Adjust antenna trimmer (marked ANT) until three-fourths of its rotor meshes with the stator.

An insulated rod with a screwdriver end is

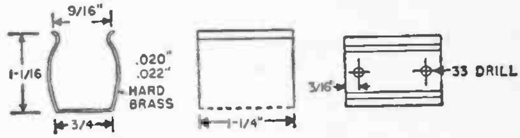


6

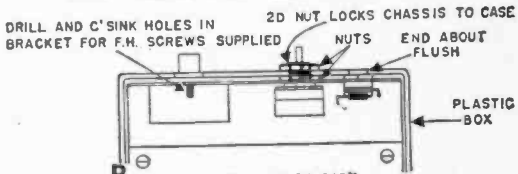




7 PICTORIAL DIAGRAM TOP VIEW



8 A SHAPING THE BATTERY HOLDER



B HOW PARTS FIT TOP OF CASE

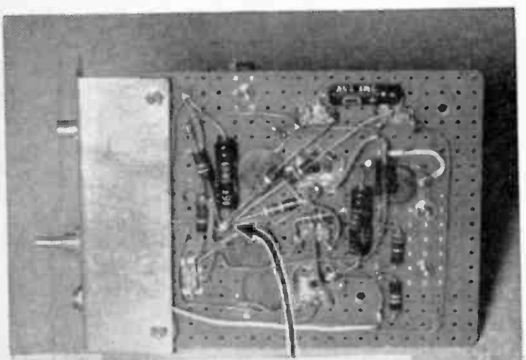
a good tool for these adjustments. You can make one out of *Bakelite* rod, or other stiff plastic, about 3/32-in. dia. File the screw-driver edge in one end.

Plug in the phones, turn on the switch, and advance the volume control about three-quarters of the way. Set the tuning dial around 1600 *kc* (160) and turn slowly until you pick up a station near this top end of the dial. Identify the station from the announcer or a newspaper listing and note if it comes in approximately at the correct dial position. If not, set the station number correctly on the dial and then adjust the oscillator trimmer (slug) of the tuning capacitor until you get maximum volume and clarity. Then adjust the antenna trimmer for best reception.

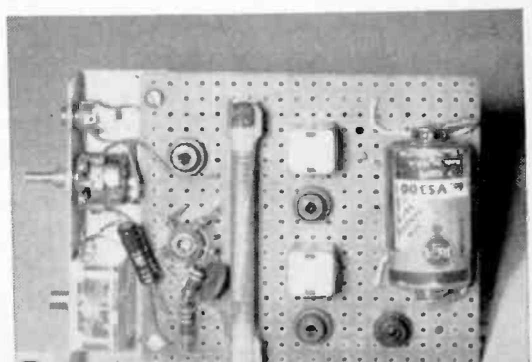
Try a station at the opposite end of the dial (around 55) and repeat the adjusting process up to the antenna trimmer stage. Should the stations come in correctly, simply adjust the antenna trimmer for maximum volume for a station at the high frequency end and the oscillator slug for a station at the low end.

Now tune in the weakest station at the high frequency end and again adjust the antenna trimmer for maximum volume. A slight adjustment may be required at the IF transformers, using the same tool through a small opening to turn the slug. These transformers come factory-set for 455 *kc*, so it is well to avoid a change unless necessary. Move the slugs slightly in either direction if peaking seems advisable. The various adjustments described have an effect on one another, so it is sometimes necessary to go over the steps a second time.

You'll find the antenna coil is somewhat directional. For maximum volume and clarity, move the unit to a position in which the coil points toward the station. Try this for each



9 A COMMON-TIE POINT



B

For a good wiring job, keep capacitors and resistors close to board and use spaghetti tubing on leads crossing bare leads or terminals to avoid shorts. Right, transistors shown in sockets on top of board where wiring is limited.

MATERIALS LIST—POCKET SUPERHET

No. Req.	Size and Description
1	2000-ohm headset (Cannon-Ball AM-15-2) or earpiece (Lafayette MS-260)
1	1-5/8 x 3-11/16 x 5" clear plastic case
1	1/16 x 3-21/32 x 6-3/4" perforated Bakelite unclad board (Lafayette MS-305) (cut down to 3-9/16 x 4")
1 pc.	.032 x 2-1/8 x 3-9/16" aluminum sheet (support bracket)
1 pc.	.020 x 1-1/4 x 4" hard brass (battery holder)
1	midget 2-gang tuning capacitor (Lafayette MS-270)
1	broadcast band tuning dial (Lafayette KN-24)
1	10,000-ohm subminiature volume control with SPST switch (Lafayette VC-28)
1	miniature knob to fit 1/8" shaft (Lafayette MS-185)
1	subminiature plug (Lafayette MS-281)
1	subminiature jack (Lafayette MS-282)
1	transistor superhet loop antenna (Lafayette MS-272)
1	transistor oscillator coil (Lafayette MS-265)
4	transistor sockets (Lafayette type A MS-275)
1	transistor IF transformer (Lafayette MS-268)
1	transistor IF transformer (Lafayette MS-269)
1	9-volt battery (RCA VS300)
2	2N107 germanium transistors (GE)
1	2N135 germanium transistor (GE)
1	2N136 germanium transistor (GE)
1 doz.	flea clips (Lafayette MS-263)
2	9/32" dia. beryllium copper fuse clips for antenna coil (Littelfuse #123002)
2	10-mfd 15-volt electrolytic condensers (Lafayette CF-122)
2	2-mfd 15-volt electrolytic condensers (Lafayette CF-120)
5	.01-mfd disk ceramic capacitors (about 9/16" dia.)
1	.005-mfd disk ceramic capacitor (about 9/16" dia.)
2	220K 1/2-watt resistors
2	100K 1/2-watt resistors
1	27K 1/2-watt resistor
1	4700-ohm 1/2-watt resistor
1	3300-ohm 1/2 watt resistor
1	2700-ohm 1/2-watt resistor
1	1000-ohm 1/2-watt resistor
1	330-ohm 1/2 watt resistor
2	snap-on battery connectors for VS300 battery (1 male, 1 female)
1	1N34 diode (or 1N64)
1	soldering lug for #6 hole (General Cement or similar)
Misc.	#24 or #26 plastic-covered hookup wire, stranded hookup wire, rosin core solder, maroon enamel, flat black paint, screws, nuts, pipe spacers
	PARTS FOR SPEAKER—OPTIONAL
1	enclosure for 5-6" speaker (wall baffle shown in Fig. 12)
1	5" or 6" PM speaker
1	subminiature plug (Lafayette MS-281)
1	transistor output transformer (Argonne AR-138)
6 ft.	#24 plastic-covered stranded wire

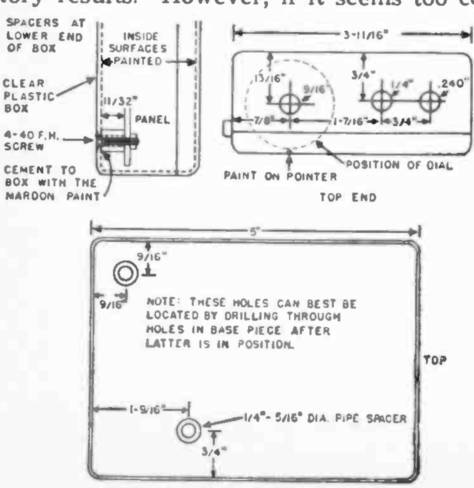
Electronic parts above can be obtained from Lafayette Radio, 111 Jericho Turnpike, Syosset, N. Y.

station check while aligning.

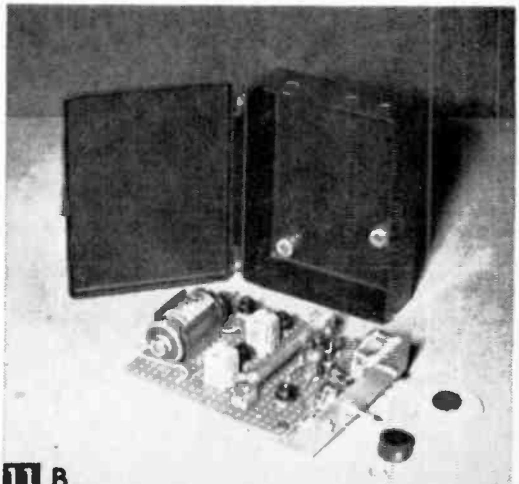
With a little patience, you should carry out this alignment procedure with quite satisfactory results. However, if it seems too complicated, a radio technician will align it for you with a signal generator.

Listening in on an antenna trimmer adjustment, one of several steps in aligning the set.

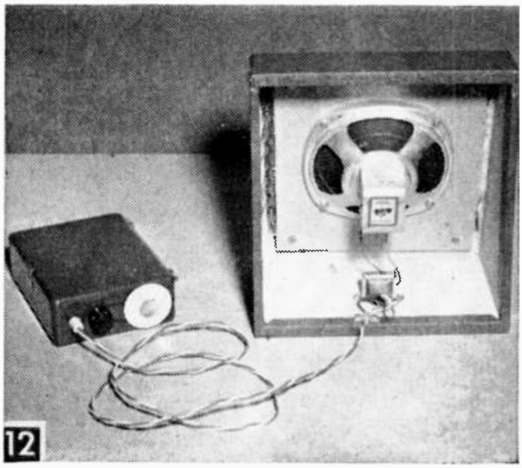
If No Signals Can Be Heard, carefully recheck the parts against the diagrams and photos. You may discover a missed or wrong connection. While unlikely, one of the coils may be open. The diode or a transistor may be inserted wrong or be defective. Substitute another diode as a test, if necessary, noting how the end with the straight bar (cathode) connects in the circuit. To check transistors, a tester is required. One like that described in this issue (p. 106) should be part of every transistor experimenter's lab.



11A DRILLING DIMENSIONS



Two spacers cut from pipe are cemented to back of case to hold board in proper position.



Optional speaker requires output transformer for correct impedance match to the 3.2-ohm voice coil.

Preparing the Case. Once the chassis is adjusted, the next step is to finish the clear plastic case. We applied two coats of a dark maroon enamel to the inside surface only, using a small brush and smooth, even strokes.

After the enamel dries, add a coat of flat black paint to the inside surface. When dry, this will give a more suitable inside finish, while the maroon will show through to the outside to give a professional, Bakelite-type appearance.

When the finish is complete, locate and mark holes for the tuning capacitor volume control, and jack at one end of the case as in Fig. 11A. Also locate two countersunk holes in back for screws to hold the chassis. To avoid cracking the material, drill small holes carefully and then hand-ream them to size.

To hold the board at proper level in the case, cut two spacers about 11/32 in. long from any small pipe or similar hollow material. Install them over the holes in the back of the case as in Fig. 11A and B, using a dab of paint to "cement" them in place.

Insert the tuning capacitor and volume control in their drilled holes as in Fig. 8B, using a second nut on the latter to lock the chassis to the case end. The jack will just protrude through its hole. Attach volume control knob and tuning dial to their shafts, then secure lower end of the chassis to the spacers through holes at the back, using #4-40 *fh* screws and nuts.

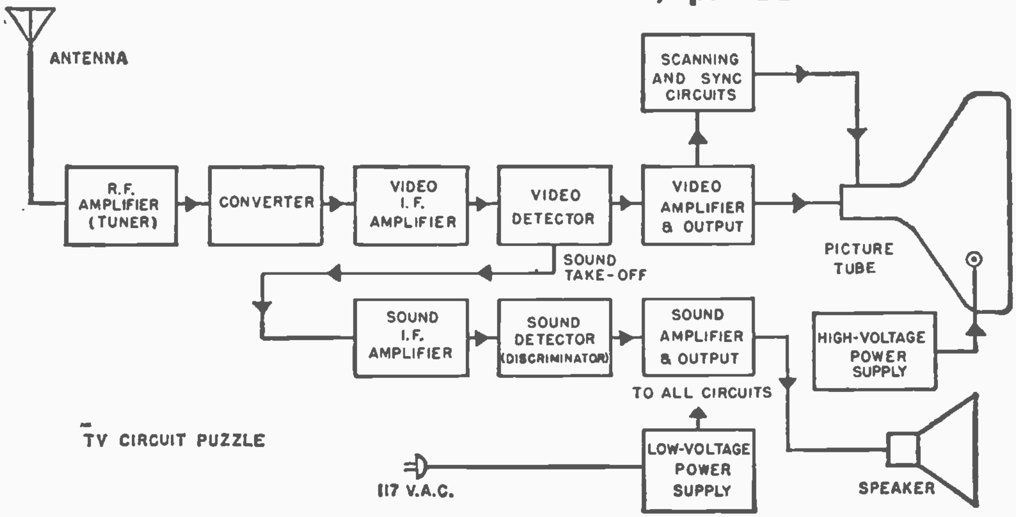
Operating Tips. You can use a 2000-ohm headset or a single earpiece having about the same resistance value, as in Fig. 2. Crystal earphones are not satisfactory.

Figure 12 shows how to use a speaker for local reception of most strong stations. Mount a 5-in. PM speaker on a piece of composition board and fit the board in an enclosure known as a wall. We found reception surprisingly good for a radio designed primarily for earphones.

Behind the speaker in Fig. 12 is a matching transformer (Argonne AR-138) serving as the output transformer. Connect long leads equipped with a plug to the jack of the radio unit, the shorter pair of leads to the speaker terminals. Don't use the red lead center tap.

Transistorized circuits sometimes have a distortion problem, especially at high volume. In this particular circuit, experimenting with the value of the resistor at the base of the output transistor (Fig. 6) may help eliminate the trouble. Resistance between 100K and 220K will probably be best. Distortion may also be due to a defective transistor, or to position of the set. Move it to align the antenna coil with the station.

Solution to TV Circuit Puzzle, p. 122



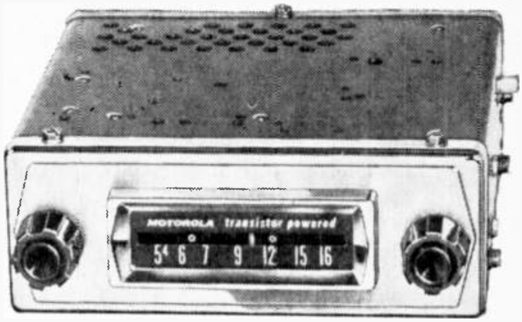
LOOKING OVER NEW PRODUCTS

New AM Car Radio Under $30

A transistor-powered AM car radio retailing at only $29.95 comprises the basic model in the 1962 *Motorola* line. Known as Model 250-X, it is available with choice of two face plates to fit in almost any domestic automobile with minimum installation difficulty. The set includes three tubes, two transistors, 4-in. speaker with automatic volume control, noise interference rejection and 3 microvolts of sensitivity.

All other AM car radios in the new line have a fully-transistorized chassis, beginning with a manual model 320T featuring tone control, reverse polarity, chrome knobs and distinctive dial treatment for $39.95.

A deluxe manual set, model 2MT has a separate tone control, 5 x 7-in. speaker, adjustable shaft centers for a custom installation, and a 6-transistor push-pull chassis delivering 12 watts of instantaneous peak power which is said to be three times above average. Priced at $51.95 including installation kit.—Available through Motorola dealers.

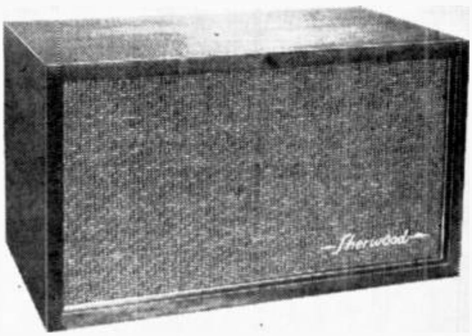


Hi-Fi Speaker System

Unusually smooth response within ±2 db from 45 to 17,500 cycles per second is reported from the three-speaker *Ravinia* system. The unit comprises a 12-in. compliance woofer, an 8-in. cone midrange speaker with sealed fiber glass-fill backplate, and a 2½-in. ring radiator supertweeter with a similar backplate.

Cross over points are 600 and 3,500 *cps* with db/octave attenuation. Level controls are provided for optimum midrange and tweeter balance under all room conditions.

Contemporary cabinet is 26¼ in. wide, 13¼ in. deep and 15 in. high. Model SR 3-W in hand-rubbed walnut is priced at $139.50; model SR 3-B in unfinished hardwood ready for stain or paint, $129.50, and model SR 3-U in utility finish, $119.50.—Sherwood Electronic Laboratories, Inc., 4300 N. California Ave., Chicago 18, Ill.



Stereo Multiplex Adapter

For an economical way to receive the new FM stereo broadcasts, the *Realistic* line has introduced a multiplex adapter designed to match with its present monaural FM tuners simply by connecting one wire to the multiplex jack and two wires to the amplifier.

A selector switch and stereo balance control connected with two pilot lights indicate when power is on and when station being received is broadcasting stereo. Adapter has frequency response of 3 db in range of 50 to 15,000 cycles per second; hum and noise, 60 db; crosstalk, 20 db at 1 *kc*. Unit measures 7¾ x 4⅜ x 6 in. and sells at $39.95 completely wired or $29.95 in kit form.—Radio Shack Corp., 730 Commonwealth Ave., Boston 17, Mass.

LOOKING OVER NEW PRODUCTS

Low-Cost FM Stereo Adapter Kit

Owners of stereo music systems may receive the new stereo broadcasts economically with the new Knight-Kit Adapter KS-10 which can be used with any FM or AM-FM tuner equipped with a multiplex output.

The power cord of the adapter unit is plugged into the switched ac outlet on amplifier or tuner, so that it will turn on and off automatically. It has its own on/off switch, noise filter, and separation controls. The unit, measuring 3⅞ x 8½ x 4 in., may be installed out of sight.

Priced at $19.95, the multiplex adapter kit includes three 36-in. cables for input and output hookup, metal case, tubes, all necessary parts, precut wire, solder, and step-by-step assembly instructions.—Allied Radio Corp., 100 N. Western Ave., Chicago 80, Ill.

FM Multiplex Tuner

Drift-free performance without AFC and complete elimination of inter-station noise are credited to the *Realistic* TM-214 tuner for stereo FM multiplex reception, now available in kit or wired form. Tuner contains 11 tubes plus rectifier and matched germanium diode detectors, has two audio and two tape outputs, three IF and three limiting stages to provide constant output and high-gain bandwidth control without distortion.

From a cold start, drift is held to .02%; calibration accuracy is rated at .2%. Signal-to-noise ratio is 70 *db* monaural or 50 *db* stereo; AM suppression is 30 *db* with 2.8 *uv* into 3000 ohm antenna. Price of the kit is $149.95; wired, $189.95.—Radio Shack Corp., 730 Commonwealth Ave., Boston 17, Mass.

Low-Cost VTVM Kit

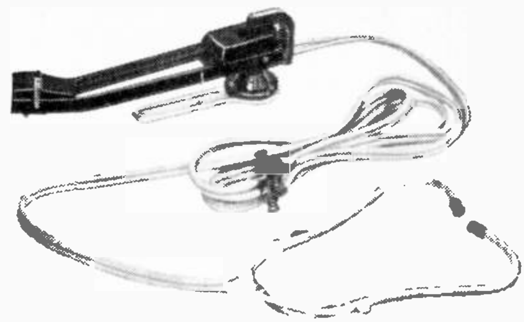
Printed circuitry makes possible a new, economy-type vacuum-tube voltmeter kit called the KT-202 which is equipped with a 6-in. 400-*ua* meter having two-color scales.

In a 7½ x 6½ x 5-in. case, the instrument features 11-megohm input impedance, ac and dc voltmeter with up to 1500 volts, and ac peak-to-peak up to 2000 volts on any wave form from 30 cycles to above 5 mc without use of an accessory probe. Measures direct resistance on ohm scale from 0.2 ohms to 1000 megohms and offers decibel scale range from −10 to +15, plus readings up to +58 *db* with a zero center scale.

The unit includes three probes (common, ACV-ohms, and shielded dc), power transformer operating at 110-120 volts ac, and 1½-volt battery for ohmmeter circuit. KT-202 kit is priced at $29.95 and optional carrying case (KT-203) sells for $2.95.—Lafayette Radio Electronics, 111 Jericho Turnpike, Syosset, N. Y.

LOOKING OVER NEW PRODUCTS

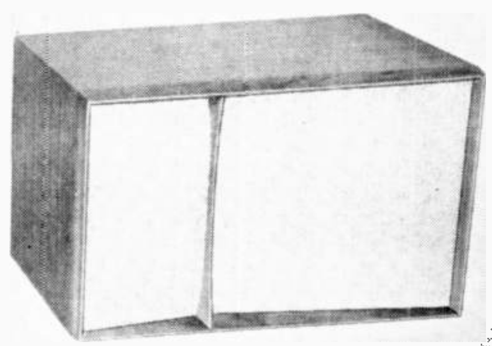
Earphone Stereo



A self-contained stereo system designed for one to four persons using earphones is called the Pioneer Stereoscope Model SH-100. A simple air-pressure system activated by minute movements of the tone arm stylus creates the balanced stereophonic sound through earphone pipes connected directly to the tone arm, which may be attached to any current record player or turntable.

The system features a needle guard, tone arm rest, adjustable stylus pressure, and easily replaced needle. Use of additional pipes and adapters allow up to four persons to listen simultaneously. Complete system sells for $29.50 and includes tone arm, cartridge, adapter, one set of earphones, two plastic tubes, suction cup base with metal hook, extension rubber tube reinforcements, controller, and screws.—Lafayette Radio Electronics, 111 Jericho Turnpike, Syosset, N. Y.

Twin Speaker Cabinet



An 8-in. woofer with a long-throw, high-compliance cone and a *Spericon* supertweeter mounted semi-coaxially with it and ½ in. off center to assure smooth speaker performance and wide high frequency dispersion make up the new *Realistic* "Solo 9" speaker system.

The unit has a frequency response range of 35 to 45,000 cycles per second, is offered with hand-rubbed, oiled walnut finish cabinet for $109.95.—Radio Shack Corp., 730 Commonwealth Ave., Boston 17, Mass.

Grid Dip Meter

Compact design of the Model TE-18 grid dip meter, with on-off and oscillator-diode switches on the front panel, permits its operation as a one-handed troubleshooter. In addition to acting as a grid dip oscillator to determine resonant frequencies of tuned circuits, it will also serve as a signal generator, absorption wave meter, field strength meter or oscillating detector.

It covers frequencies of 360 *kc* to 220 *mc* in eight calibrated ranges. Coils are letter-coded and marked in megacycles by frequency range.

The unit has planetary drive tuning mechanism with 4:1 reduction gears, grid current meter with 500-*ua* movement, uses a 6AF4A tube, and measures 2 x 2¾ x 7¼ in. It is priced at $24.95.—Lafayette Radio Electronics, 111 Jericho Turnpike, Syosset, N. Y.

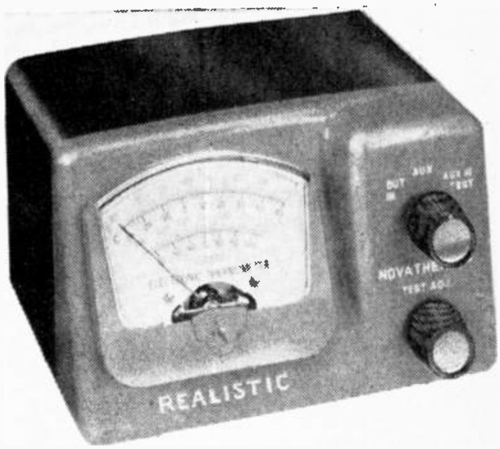
LOOKING OVER NEW PRODUCTS

Electronic Thermometer

An instant reading thermometer with an accuracy of ½° at distances up to 1000 ft. away, if extra wire is used, is the new *Realistic Novatherm* model. The meter is designed to provide continuous readings, take readings of two different temperatures in two different locations, and traverse the extremes of dry ice to boiling in one second. Front switch selects either external or internal probe.

The 3¾ x 4½ x 6¼-in. unit is equipped with 1% resistors and four adjustment potentiometers for accuracy in calibration. It is available as a kit for $19.95, or completely wired for $29.95.

The thermometer can be used in darkrooms, children's rooms, refrigerators, freezers, tropical fish aquariums and cooking applications. It can also "take" children's temperatures and monitor the temperature in radio equipment.—Radio Shack Corp., 730 Commonwealth Ave., Boston 17, Mass.



Sound-Powered Phones

The call-to-answer problem which has plagued sound-powered telephones since they were introduced early in World War II has been eliminated. New models have a transistor-powered 1,000-cycle oscillator connected across the two communicating wires.

Press of a pushbutton switch sends a clear, 1,000-cycle note on both wires without harming the phones, which are capable of handling speech for distances up to 25 miles without battery power.—Distributed by Blan the Radio Man Inc., 64 Dey St., New York 7, N. Y.

FM Car Radio Tuner

Designed for use with AM car radios featuring push-pull high fidelity output, the Model FMC-62 FM car radio tuner can be easily removed from one car and installed in another, to amortize its cost over several automobiles. Compact in size, the tuner has a front panel of simulated black leather framed in bright chrome.

Equipped with seven tubes, two limiters with its own RF stage, automatic gain control, and automatic frequency control, the set retails for $69.95 at Motorola dealers.

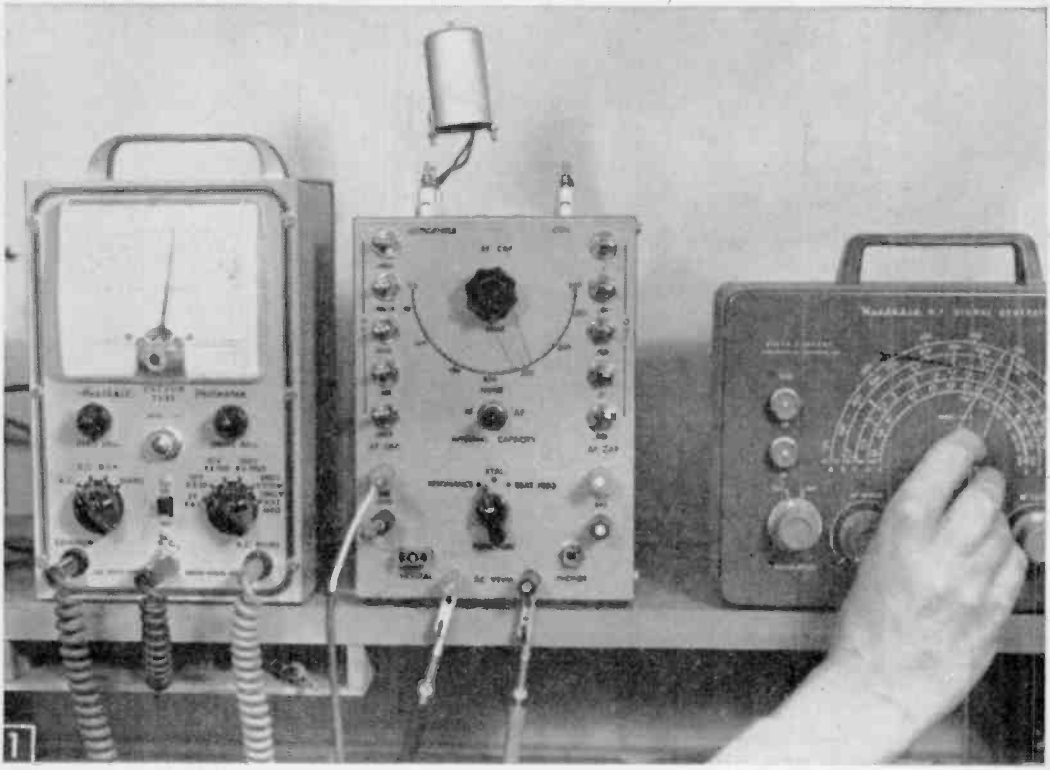
Answers to TV Pix-O-Gram on page 130

Top left, IF transformer.
Top center, miniature tube.
Top right, mast clamp.

Bottom left, capacitor mount.
Bottom center, fuse holder.
Bottom right, miniature tube socket.

RF-AF Resonance-Frequency Meter

A simple test accessory to increase the usefulness of your signal generator, VTVM, and oscilloscope



Determining resonant frequency of coil-condenser combination with VTVM at left and signal generator at right. Coil-condenser combinations may be connected to either set of terminals.

By W. F. GEPHART

SOME instruments are available for determining the frequency of resonant circuits, values required for resonance, and "Q" factor. Others determine the frequency of AF or RF signals, but few are versatile enough to fulfill all of these requirements. Most of these instruments are expensive and have greater accuracy than is necessary for typical experimenting.

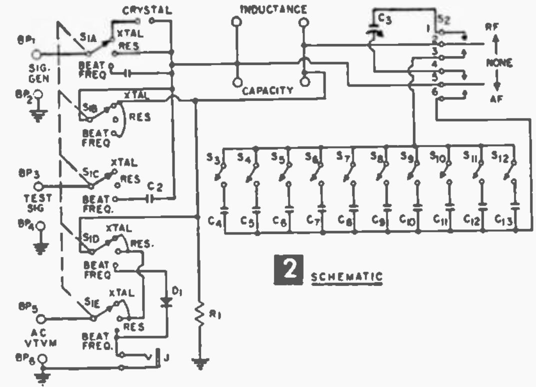
The unit shown in Fig. 1 is easily constructed and costs $15 or less, depending on whether you use new or surplus parts. When operated in conjunction with a signal generator and VTVM (or oscilloscope) as in Fig. 1, the meter will:

1. Determine the resonant frequency of coil and condenser combinations at either AF or RF.
2. Indicate selectivity and peaking of a resonant circuit.
3. Measure crystal frequencies and give an indication of activity.

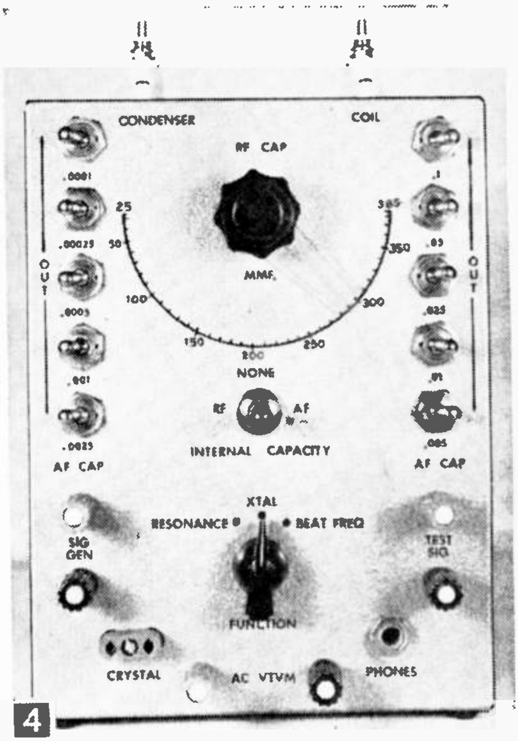
Accuracy of the unit will depend on the accuracy of the signal generator used with it, and on the care taken in making the tests. Its range will depend on components used and care taken in parts placement and wiring.

Variations Are Easy in both construction and components used, depending on the features you desire. The author enclosed his model in a 3½ x 6 x 8-in. Minibox in which he fastened the variable capacitor to the top with ceramic insulators as in Fig. 5. However, if a vernier dial is wanted, you may find it more practical to use a regular cabinet and separate chassis.

The unit in Figs. 4 and 5 was designed primarily for audio and low radio frequen-



2 SCHEMATIC



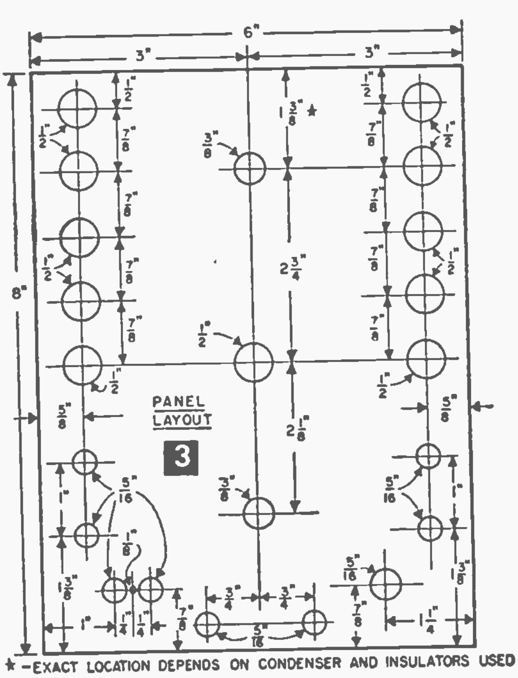
4

Calibration for variable capacitor is lettered on cabinet with India ink.

cies. At high radio frequencies, the internal capacity of the unit becomes important because of the low capacities. In such case, a smaller variable capacitor (100 or 140 mmfd) should be used. In addition, you would have to minimize internal capacity by placing parts and controlling lead length in a more careful manner.

In the unit shown, internal capacity is about 38 mmfd when the three-position DPDT toggle switch (S2) is set at "None." This is too great for high radio frequencies. Much of this is due to the rotary switch (S1). For high frequencies, it might be better to eliminate this switch or substitute a ganged-type ceramic rotary switch with wide spacing.

Drill the front panel of the miniature cabinet as in Fig. 3, modifying where necessary to accommodate any changes in components you propose to make.



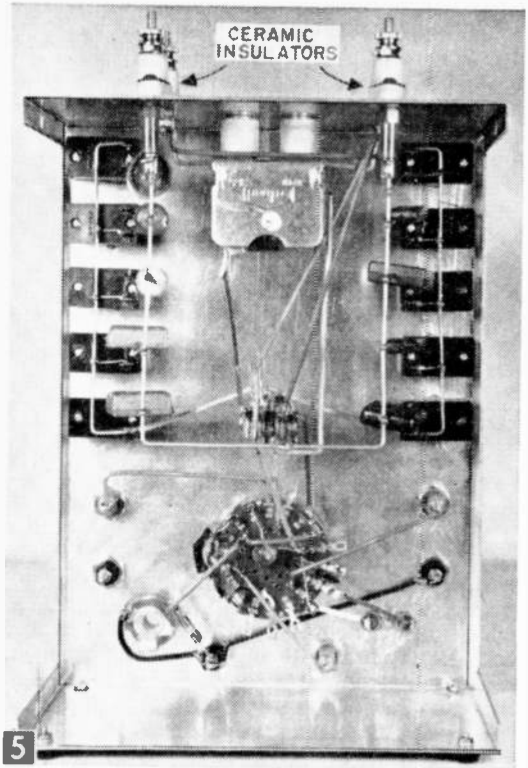
3

★ -EXACT LOCATION DEPENDS ON CONDENSER AND INSULATORS USED

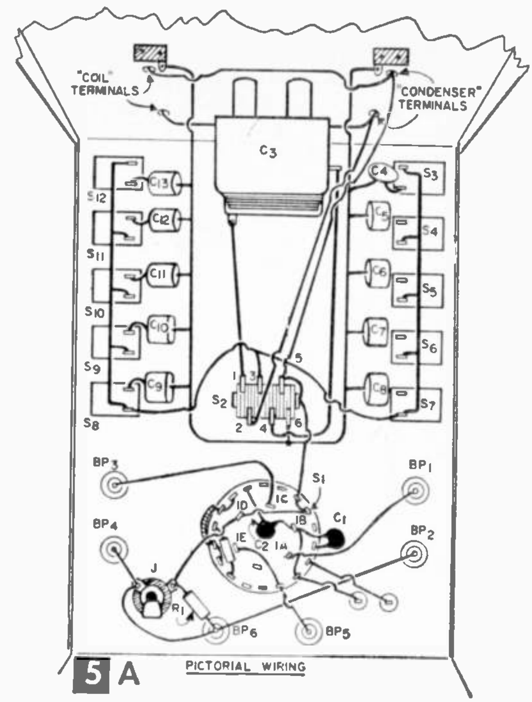
Four Important Steps to remember in any case, *before* drilling, let alone mounting the parts, are:

1. Ceramic-type stand-off or feed-through insulators should be used for the capacitor and inductance terminals.
2. Switch S2 must be a low-capacity lever type.
3. Capacitor and conductance terminals, variable capacitor, and lever switch must all be placed close together to minimize lead length.
4. The variable capacitor must be insulated from the cabinet and should be of the "mid-line" type, in which capacity varies directly with rotation. This simplifies calibration if you mark off the 180° scale in equal segments between the minimum and maximum capacity of the unit.

Minimum capacity in Step 4 is 25 mmfd, and the maximum, 385 mmfd; the difference being 360 mmfd. Dividing this by 180° means that each scale degree equals 2 mmfd. Since there are 5° segments on the scale, each segment equals 10 mmfd. For more precise tuning, a vernier dial such as National MCN can be used.



Neat parts assembly is important to the success of the project. Keep wiring short and direct.



The Determining Circuit used for resonant frequency is shown in simplified form in Fig. 6A. Capacitance and inductance are connected in parallel and this combination is connected in series with a load resistor (R1).

Now connect a signal generator across the resonant circuit-load resistor combination and a VTVM across the load resistor alone. Output of the generator, fed through this generator, is monitored by the VTVM.

At the resonant frequency of the coil-condenser combination, the high impedance of the parallel LC circuit causes a drop in the voltage across the load resistor, which is shown on the meter. Amount of voltage drop is an indication of the "Q" of the circuit. The frequency range over which there is *some* voltage drop indicates the selectivity of the circuit.

By using an audio oscillator (instead of a signal generator) and iron-core inductances, resonant audio frequencies can also be determined.

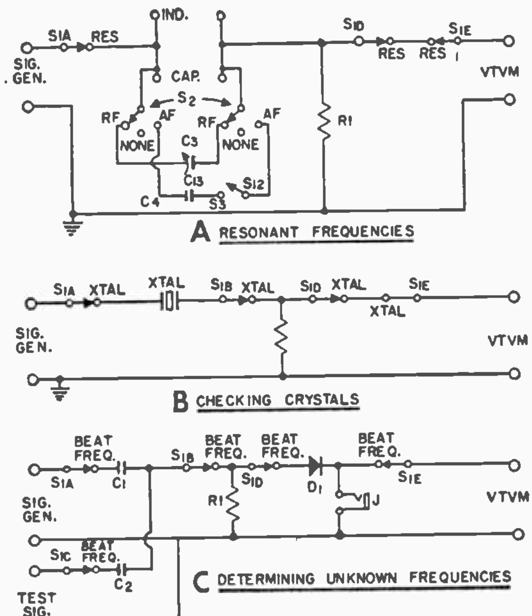
Where an external coil and condenser are involved, make these tests with switch S2 turned to the "None" designation. If you have a coil and want to know what capacitance is required for resonance at a given frequency, set this switch at RF or AF, and set the signal generator for the desired frequency, with only the coil connected to the terminals.

Now, with S2 on RF, tune the calibrated variable capacitor (C3) until the VTVM reading drops, indicating resonance. You can then read the capacity required on the C3 scale. If C3 does not have sufficient capacitance, connect additional fixed capacitors from the capacitor terminals to "pad" C3. The value required would be the sum of the external capacitor and the indicated reading on the C3 dial.

After turning switch S2 to AF, you can cut into the circuit any one or combination of the internal fixed condensers by switches S3 through S12. Start with high capacities and work down. By switching in the capacitors one by one and tuning the audio oscillator on both sides of the desired frequency, you can determine an approximate internal capacity.

In this procedure, if the resonant frequency (with a specific internal capacity in the circuit) is below the desired frequency, too much capacity is involved; if the frequency is too high, too little capacity is being used. After making an approximation, you can determine the exact value by adding small amounts of capacitance externally to the capacitor terminals.

To Test Crystals, try the simple circuit shown in Fig. 6B. In this the crystal is substituted for the resonant circuit but, due to its low impedance at resonance, the VTVM reading suddenly increases at the resonant



6 TEST CIRCUITS

MATERIALS LIST—RF-AF METER

Desig.	Description
R1	.5 meg. ½-watt resistor
C1, C2	.005 mfd, 50-volt capacitors
C3	25-385 mmfd variable capacitor with mid-line plates (see text)
C4	.0001 mmfd (100 mmfd) mica or disk capacitor
C5	.0025 mmfd (250 mmfd) mica or disk capacitor
C6	.0005 mmfd (500 mmfd) mica or disk capacitor
C7	.001 mmfd (1000 mmfd) mica or disk capacitor
C8	.0025 mmfd (2500 mmfd) mica or disk capacitor
C9	.005 mmfd (500 mmfd) mica or disk capacitor
C10	.01 mmfd mica disk or ceramic capacitor
C11	.025 mmfd ceramic capacitor
C12	.05 mmfd ceramic capacitor
C13	.1 mmfd ceramic capacitor
D1	1N34, 1N48, etc., diode
J	Open circuit jack
S1	5-pole 3 position rotary switch (Mallory 3263J: see text)
S2	DPDT 3-position lever (Switchcraft 3037L: see text)
S3-S12	SPST toggle switch
Misc.	Six binding posts, four ceramic stand-off or feed-through insulators, crystal socket, knobs, hookup wire

frequency. The amount of rise in voltage gives an indication as to the activity of the crystal. Its harmonic content can also be checked by tuning the signal generator to the crystal's harmonic frequencies.

Tuning required in the crystal test is extremely sharp. It is virtually impossible to determine the frequency of an unknown crystal. Even when the frequency is known, it is easy to pass the peak unless care is taken in tuning the signal generator.

Unknown Frequencies are determined by "beating" them against a known frequency, as in Fig. 6C. Connect both the test signal and signal generator across the load resistor, then tune the signal generator through its range.

With RF signals, when the generator frequency equals that of the test signal, the two will lock in phase, reinforce each other, and the output will increase sharply.

With AF signals, the VTVM needle will start quivering, then oscillate, just before the two signals reach the same frequency. The oscillations will slow down and stop when the two frequencies are exactly equal, only to start again as the exact frequency is passed.

In the Case of RF Signals, an oscilloscope is a better indicator than a VTVM because of the locking of the two signals. Connect the vertical input to the VTVM terminals of the unit, and a complex wave pattern will be shown when off-frequency. When the two frequencies are equal, a good sine wave pattern will result (if both inputs are sine waves) and the amplitude will be about twice that of the complex wave.

With AF signals (using an audio oscillator), the needle oscillation of the VTVM will be more pronounced. Phones may be used for an audible check of the zero-beat note.

Due to the lack of a buffer amplifier in the unit, the two frequencies will tend to lock together as the generator frequency approaches that of the test signal. At audio frequencies, this effect is slight, but it does limit the exactness that can be achieved at radio frequencies.

In all three tests, you must be sure that indications are received at the fundamental frequency rather than a harmonic. If the approximate frequency involved is known, this is no problem. If not, you can determine it by working out this formula:

$$\text{Fundamental Frequency} = \frac{F1 \times F2}{F2 - F1}$$

First make a test for the *lowest* frequency which gives an indication (meter dip on resonance test, peak on crystal test, beat-note on frequency comparison test). The lowest frequency will be F1.

Gradually increase the frequency of the generator until a second indication is noted, taking care not to pass the *next* frequency that gives an indication. That will be F2.

Charged Plastic Dusts Platter

• If the grooves of your hi-fi phonograph records are filled with dust, here's how to remove it the harmless electrostatic way; Take a piece of Saran plastic wrap and crumple it in your fingers while holding it about an inch above the surface of the revolving platter. The static electricity produced by crumpling the plastic will attract the dust particles and hold them. If you watch very closely, you'll actually be able to see them jump from the platter to the charged wad of plastic.—J.A.C.

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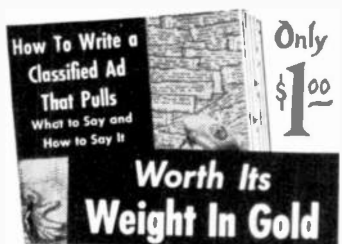

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AM, FM, TV and Short Wave Stations

Vol. 39 No. 1

QUICK REFERENCE INDEX

U. S. and Canadian AM Stations by Frequency

U.S. stations listed alphabetically by states within groups, Canadian stations precede U.S.

Abbreviations: Kc., frequency in kilocycles; W.P., watt power; d—operates daytime only. Wave length is given in meters

Kc. Wave Length W.P.

540—555.5

CBT Grand Falls, N.F.	1000
CBK Regina, Sask.	50000
KVIP Redding, Calif.	5000d
KFMB San Diego, Calif.	5000
WGTO Cypress Gardens, Florida	50000d
WDAK Columbus, Ga.	5000
KBRV Soda Springs, Idaho	500d
KWMT Ft. Dodge, Iowa	5000d
WDMV Pocomoke City, Md.	500d
WBIC Islip, N.Y.	250d
WETC Wendell-Zebulon, N.C.	250d
WERO Canonsburg, Pa.	250d
WYNN Florence, S.C.	250d
WDXN Clarksville, Tenn.	1000d
WRIC Richlands, Va.	1000d

550—545.1

CFNB Fredericton, N.B.	50000
CFBR Sudbury, Ont.	1000d
CHLN Three Rivers, Que.	10000
CKPG Prince George, B.C.	250
KENI Anchorage, Alaska	5000
KOY Phoenix, Ariz.	5000
KAFY Bakersfield, Calif.	1000
KRAI Craig, Colo.	1000
WAYR Orange Park, Fla.	1000d
WGGA Gainesville, Ga.	5000
KMVI Wailuku, Hawaii	1000
KFRM Concordia, Kansas	5000d
WCBI Columbus, Miss.	1000
KSD St. Louis, Mo.	5000
KOPR Butte, Mont.	1000
WGR Buffalo, N.Y.	5000
WDBM Statesville, N.C.	500d
KFYR Bismarck, N.Dak.	5000
WKRC Cincinnati, Ohio	5000
KOAC Corvallis, Oreg.	5000
WHLM Bloomsburg, Pa.	1000
WPAB Ponce, P.R.	5000
WXTR Pawtucket, R.I.	1000
KCRS Midland, Tex.	5000
KTSA San Antonio, Tex.	5000
WDEV Waterbury, Vt.	5000
WSVA Harrisonburg, Va.	5000
KARI Blaine, Wash.	500d
WSAU Wausau, Wis.	5000

560—535.4

CJDC Dawson Creek, B.C.	1000
CJKL Kirkland Lake, Ont.	5000
CFOS Owen Sound, Ont.	1000
WOOF Dothan, Ala.	5000d
KYUM Yuma, Ariz.	1000
KSFO San Fran., Calif.	5000
KLZ Denver, Colo.	5000
WQAM Miami, Fla.	5000
WIND Chicago, Ill.	5000
WMIK Middlesboro, Ky.	500d
WGAN Portland, Maine	5000
WHYN Springfield, Mass.	1000
WQTE Monroe, Mich.	500d
WEBC Duluth, Minn.	5000
KWTO Springfield, Mo.	5000
KMON Great Falls, Mont.	5000
WGAI Elizabeth City, N.C.	1000
WFIL Philadelphia, Pa.	5000
WIS Columbia, S.C.	5000
WHBQ Memphis, Tenn.	5000
KFDM Beaumont, Tex.	5000
KPQ Wenatchee, Wash.	5000
WJLS Beckley, W.Va.	5000

570—526.0

CKEK Cranbrook, B.C.	1000
CKCQ Quesnel, B.C.	1000
CFCB Corner Brook, N.F.	1000
CJEM Edmundston, N.B.	1000
WAAX Gadsden, Ala.	5000
KCNO Alturas, Calif.	1000
KLAC Los Angeles, Calif.	5000
WGMS Washington, D.C.	5000
WACL Waycross, Ga.	5000
WKYB Paducah, Ky.	1000
WVMI Biloxi, Miss.	1000d
KGRT Las Cruces, N.Mex.	5000d
WMCA New York, N.Y.	5000
WSYR Syracuse, N.Y.	5000
WWNC Asheville, N.C.	5000
WSHE Raleigh, N.C.	500d
WKBN Youngstown, Ohio	5000
WNAX Yankton, S.Dak.	5000
WFAA Dallas, Tex.	5000
WBAP Ft. Worth, Tex.	5000
KLUB Salt Lake City, Utah	5000
KVI Seattle, Wash.	5000
WMAM Marinette, Wis.	5000

580—516.9

CJFX Antigonish, N.S.	5000
CFRA Ottawa, Ont.	50000
CKEY Toronto, Ont.	5000
CKPR Ft. William, Ont.	5000
CKUA Edmonton, Alta.	10000
CKY Winnipeg, Man.	50000
WABT Tuskegee, Ala.	500d
KTAN Tucson, Ariz.	5000
KMJ Fresno, Calif.	5000
KUBC Montrose, Colo.	5000
WDBO Orlando, Fla.	5000
WGAC Augusta, Ga.	5000
KFXD Nampa, Idaho	5000
WILL Urbana, Ill.	5000d
KSAC Manhattan, Kans.	5000
WIBW Topeka, Kans.	5000
KALB Alexandria, La.	5000
WTAG Worcester, Mass.	5000
WELO Tupelo, Miss.	1000
WAGR Lumberton, N.C.	500
KWIN Ashland, Oreg.	1000
WHP Harrisburg, Pa.	5000
WKAQ San Juan, P.R.	5000
KOBH Hot Springs, S.Dak.	500d
WRKH Rockwood, Tenn.	1000d
KDAV Lubbock, Tex.	500d
WLES Lawrenceville, Va.	500d
WCHS Charleston, W.Va.	5000
WKTY LaCrosse, Wis.	5000

590—508.2

KHAR Anchorage, Alaska	5000
CFAR FlinFlon, Man.	1000
CKAR Huntsville, Ont.	1000
CKRS Jonquiere, Que.	1000
VOCM St. Johns, N.F.	10000
WRAG Carrollton, Ala.	1000d
KBHS Hot Springs, Ark.	5000d
KFXM San Bernardino, Cal.	1000
KCSJ Pueblo, Colo.	1000
WDLP Panama City, Fla.	1000
WPLO Atlanta, Ga.	5000
KGMB Honolulu, Hawaii	5000
KID Idaho Falls, Idaho	5000
WBBT Wood River, Ill.	500d
WVLK Lexington, Ky.	5000
WEEI Boston, Mass.	5000
WKZO Kalamazoo, Mich.	5000
WOW Omaha, Nebr.	5000
WROW Albany, N.Y.	5000
WGTM Wilson, N.C.	5000
KUGN Eugene, Oreg.	5000
WARM Scranton, Pa.	5000
WMBS Uniontown, Pa.	1000
KTBC Austin, Tex.	5000
KSUB Cedar City, Utah	1000
WLVA Lynchburg, Va.	1000
KHQ Spokane, Wash.	5000

600—499.7

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CJOR Vancouver, B.C.	10000
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KCLS Flagstaff, Ariz.	5000
KVCV Redding, Calif.	1000
KOGO San Diego, Calif.	5000
KZIX Ft. Collins, Colo.	1000d
WICC Bridgeport, Conn.	5000
WPDQ Jacksonville, Fla.	5000
WMT Cedar Rapids, Iowa	5000
WWOM New Orleans, La.	1000d
WFST Caribou, Maine	5000d
WCAO Baltimore, Md.	5000
WLST Escanaba, Mich.	1000d
WTAC Flint, Mich.	1000
KGEZ Kalispell, Mont.	2000
WCVP Murphy, N.C.	1000d
WSJS Winston-Salem, N.C.	5000
KSJB Jamestown, N.D.	5000
WFRM Coudersport, Pa.	1000d
WAEL Mayaguez, P.R.	1000
WREC Memphis, Tenn.	5000
KROD El Paso, Tex.	5000
KERB Kermit, Tex.	1000d
KTBB Tyler, Tex.	1000

610—491.5

CHNC New Carlisle, Que.	5000
CJAT Trail, B.C.	1000
CKKL Thompson, Man.	1000
CKTB St. Catharines, Ont.	10000
WSGN Birmingham, Ala.	5000
KAVL Lancaster, Calif.	1000
KFRC San Francisco, Calif.	5000
WCKR Miami, Fla.	5000
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WGIR Manchester, N.H.	5000
KGGM Albuquerque, N.Mex.	5000
WAYS Charlotte, N.C.	5000
WTVN Columbus, Ohio	5000
WIP Philadelphia, Pa.	5000
KILT Houston, Tex.	5000
KVNU Logan, Utah	5000
WSLS Roanoke, Va.	5000
WHPL Winchester, Va.	500d
KEPR Kennewick, Wash.	5000

620—483.6

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CKCK Regina, Sask.	5000
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KNGS Hanford, Calif.	1000
KWSD Mt. Shasta, Calif.	1000d
KSTR Grand Junction, Colo.	5000d
WSUN St. Petersburg, Fla.	5000
WTRP LaGrange, Ga.	1000d
KWAL Wallace, Idaho	1000
KMNS Sioux City, Iowa	1000
WTMT Louisville, Ky.	500d
WLBZ Bangor, Maine	5000
WJDX Jackson, Miss.	5000
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WDNC Durham, N.C.	5000
KGW Portland, Oreg.	5000
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WCAX Burlington, Vt.	5000
WWNR Beckley, W.Va.	1000
WTMJ Milwaukee, Wis.	5000

630—475.9

CFCO Chatham, Ont.	1000
CHLT Sherbrooke, Que.	5000
CFCY Charlottetown, P.E.I.	5000
CJET Smith Falls, Ont.	1000
CKRC Winnipeg, Man.	5000
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CKYL Peace River, Alta.	1000
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690—434.5

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KIRO	Seattle, Wash.	50000
WDSM	Superior, Wis.	5000

720—416.4

WGN	Chicago, Ill.	50000

730—410.7

CJNR	Blind River, Ont.	1000
CKAC	Montreal, Que.	50000
CKDM	Dauphin, Man.	10000
CKLG	No. Vancouver, B.C.	10000
KFQD	Anchorage, Alaska	10000
WJMW	Athens, Ala.	1000d
KSUD	W. Memphis, Ark.	250
WKTG	Thomasville, Ga.	1000d
KLOE	Goodland, Kans.	1000d
WFMW	Madisonville, Ky.	250d
WMTC	Van Cleve, Ky.	1000d
KTRY	Bastrop, La.	250d
WARB	Covington, La.	250d
WMMS	Bath, Maine	1000d
WACE	Chicopee, Mass.	1000d
KWRE	Warrenton, Mo.	1000
KWOA	Worthington, Minn.	1000d
KURL	Billings, Mont.	500d
KMGM	Albuquerque, N.Mex.	1000d
WDOS	Oneonta, N.Y.	1000d
WFMC	Goldsboro, N.C.	1000d
WOHS	Shelby, N.C.	1000d
WMGS	Bowling Green, Ohio	1000d
KBOY	Medford, Oreg.	1000d
WNAK	Nanticoke, Pa.	1000d
WPIT	Pittsburgh, Pa.	1000d
WPAL	Charleston, S.C.	1000d
WLIL	Lenoir, Tenn.	1000d
KRZY	Grand Prairie, Tex.	500d
KSVN	Ogden, Utah	1000d
WPIK	Alexandria, Va.	1000d
WMNA	Gretna, Va.	1000d
KULE	Ephrata, Wash.	1000d
WXMT	Merrill, Wis.	1000d

740—405.2

CBXA	Edmonton, Alta.	250
CBL	Toronto, Ont.	50000
WBAM	Montgomery, Ala.	50000d
KUEQ	Phoenix, Ariz.	1000d
KBIG	Avalon, Calif.	10000d
KCBS	San Francisco, Calif.	50000
KSSS	Colo. Springs, Colo.	1000
KVFC	Cortez, Colo.	1000d
WKIS	Orlando, Fla.	5000
KYME	Boise, Idaho	500d
WVLN	Olney, Ill.	250d
KBOE	Oskaloosa, Iowa	250d
WNOP	Newport, Ky.	1000d
WFRB	Frostburg, Md.	250d
WTAO	Cambridge, Mass.	250d
KPBM	Carlsbad, N.Mex.	1000d
WGSM	Huntington, N.Y.	1000d
WMBL	Morehead City, N.C.	1000d
WPAQ	Mount Airy, N.C.	10000d
KRMG	Tulsa, Okla.	50000
WVCH	Chester, Pa.	1000d
WIAC	San Juan, P.Rico	10000
WBAW	Barnwell, S.C.	1000d
WIRJ	Humbolt, Tenn.	250d
WJIG	Tullahoma, Tenn.	250d
KTRH	Houston, Tex.	50000
KCMC	Texarkana, Tex.	1000
WBCI	Williamsburg, Va.	500d

750—399.8

WSB	Atlanta, Ga.	50000
WBMD	Baltimore, Md.	1000d
KMMJ	Grand Island, Neb.	10000d
WHEB	Portsmouth, N.H.	1000d
KSEO	Durant, Okla.	250d
KXL	Portland, Oreg.	50000
WPDX	Clarksburg, W.Va.	1000d

760—394.5

KGU	Honolulu, Hawaii	10000
WJR	Detroit, Mich.	50000
WCPS	Tarboro, N.C.	1000d

770—389.4

KUOM	Minneapolis, Minn.	5000d
WCAL	Northfield, Minn.	5000d
WEW	St. Louis, Mo.	1000d
KOB	Albuquerque, N.Mex.	50000
WABC	New York, N.Y.	50000
KXA	Seattle, Wash.	1000d

780—384.4

WBBM	Chicago, Ill.	50000
WJAG	Norfolk, Neb.	1000d
WCKB	Dunn, N.C.	1000d
WBBO	Forest City, N.C.	1000d
KSPI	Stillwater, Okla.	250d
WAVA	Arlington, Va.	1000d

790—379.5

CFCW	Camrose, Alta.	10000
CKMR	Newcastle, N.B.	1000
CHB	Halifax, N.S.	10000
CKSO	Sudbury, Ont.	10000
WTUG	Tuscaloosa, Ala.	500d
KCEE	Tucson, Ariz.	5000d
KOSY	Texarkana, Ark.	1000
KDAN	Eureka, Calif.	5000d
KABC	Los Angeles, Calif.	5000
WLBE	Leesburg, Fla.	5000
WFUN	Miami Beach, Fla.	5000
WPFA	Pensacola, Fla.	1000d
WQXI	Atlanta, Ga.	5000
WGRA	Cairo, Ga.	1000d
KEST	Boise, Idaho	1000d
WRMS	Beardstown, Ill.	500d
KXXX	Colby, Kans.	5000d
WAKY	Louisville, Ky.	5000
WRUM	Rumford, Me.	1000d
WSGW	Saginaw, Mich.	5000
WSJC	Magee, Miss.	1000d
KGHL	Billings, Mont.	5000
WWNY	Watertown, N.Y.	1000
WLSV	Wellsville, N.Y.	1000d
WTNC	Thomasville, N.C.	1000d
KXGO	Fargo, N.Dak.	5000
KWIL	Albany, Oreg.	1000
WAEB	Allentown, Pa.	500
WPIC	Sharon, Pa.	1000d
WEAN	Providence, R.I.	5000
WWBD	Bamberg, S.C.	1000d
WETB	Johnson City, Tenn.	1000d
WMC	Memphis, Tenn.	5000
KTHT	Houston, Tex.	5000
KFYO	Lubbock, Tex.	5000
KUTA	Blanding, Utah	1000d
WSIG	Mount Jackson, Va.	1000d
WTAR	Norfolk, Va.	5000
KGMI	Bellingham, Wash.	5000
KNEW	Spokane, Wash.	5000
WEAQ	Eau Claire, Wis.	5000

800—374.8

CHAB	Moose Jaw, Sask.	10000
CKOK	Penticton, B.C.	10000
CFOB	Ft. Frances, Ont.	1000
CJLX	Ft. William, Ont.	5000
CJBQ	Belleville, Ont.	1000
CKLW	Windsor, Ont.	50000
CHRC	Quebec, Que.	10000
CJAD	Montreal, Que.	10000
VOWR	St. Johns, N.F.	1000
WHOS	Decatur, Ala.	1000d
WMGY	Montgomery, Ala.	1000d
KINY	Juneau, Alaska	5000
KAGH	Crossett, Ark.	250d
KVOM	Morrilton, Ark.	250d
KUZZ	Bakersfield, Calif.	250d
KOAD	Weed, Calif.	1000d
KBRN	Brighton, Colo.	500d
WLAD	Danbury, Conn.	250d
WSUZ	Palatka, Fla.	1000d
WJAT	Swainsboro, Ga.	1000d
KXIC	Iowa City, Iowa	1000d
WBOK	New Orleans, La.	1000d
WCCM	Lawrence, Mass.	1000d
KREI	Farmington, Mo.	1000d
KDBM	Dillon, Mont.	1000d
WKDN	Camden, N.J.	1000d
KJEM	Okla City, Okla.	250d
KPDQ	Portland, Oreg.	1000d
WCHA	Chambersburg, Pa.	1000d
WDSC	Dillon, S.C.	1000d
WEAB	Greer, S.C.	250d
WDEH	Sweetwater, Tenn.	1000d
KDDD	Dumas, Tex.	250d
KBUH	Brigham City, Utah	250d
WSVS	Crewe, Va.	5000d
WKEE	Huntington, W.Va.	1000d
WDUX	Waupaca, Wis.	1000d

810—370.2

CFAX	Victoria, B.C.	1000d
KGO	San Francisco, Calif.	50000
WABW	Annapolis, Md.	250d
KCMO	Kansas City, Mo.	50000
WGY	Schenectady, N.Y.	50000
WKBC	N.Wilkesboro, N.C.	1000d
WCEC	Rocky Mount, N.C.	1000d
WEDO	McKeesport, Pa.	1000d
WKVM	San Juan, P.R.	25000

820—365.6

WAIT	Chicago, Ill.	5000d
WIKY	Evansville, Ind.	250d
WOSU	Columbus, Ohio	5000d
WFAA	Dallas, Tex.	50000
WBAP	Ft. Worth, Tex.	50000

830—361.2

KIKI	Honolulu, Hawaii	250
WCCO	Minneapolis, Minn.	50000
KBOA	Kennett, Mo.	1000d
WNYC	New York, N.Y.	1000

840—356.9

WKAB	Mobile, Ala.	1000d
WKNB	New Britain, Conn.	1000d
WHAS	Louisville, Ky.	50000
WVPO	Stroudsburg, Pa.	250d

850—352.7

CKVL	Verdun, Que.	50000
CKRD	Red Deer, Alta.	10000
WYDE	Birmingham, Ala.	10000
KICY	Nome, Alaska	5000
KOA	Denver, Colo.	50000
WRUF	Gainesville, Fla.	5000
WEAT	W. Palm Beach, Fla.	1000
KIMO	Hilo, Hawaii	1000
WHDH	Boston, Mass.	50000
WKBZ	Muskegon, Mich.	1000
KFUO	St. Louis, Mo.	5000d
WKIX	Raleigh, N.C.	10000
WJW	Cleveland, Ohio	10000
WEEU	Reading, Pa.	1000
WABA	Aquadilla, P.R.	500
WRAP	Norfolk, Va.	5000
KTAC	Tacoma, Wash.	1000

860—348.6

CHAK	Inuvik, N.W.T.	1000
CJBC	Toronto, Ont.	50000
WHRT	Hartselle, Ala.	250d
WAMI	Opp, Ala.	1000d
KIFN	Phoenix, Ariz.	1000d
KOSE	Osceola, Ark.	1000d
KWRF	Warren, Ark.	250d
KTRB	Modesto, Calif.	10000
WOWW	Naugatuck, Conn.	250d
WAZE	Clearwater, Fla.	500d
WKKO	Cocoa, Fla.	1000d
WERD	Atlanta, Ga.	1000
WDMG	Douglas, Ga.	5000d
WMRI	Marion, Ind.	250d
KWPC	Muscatine, Iowa	250d
KOAM	Pittsburg, Kans.	10000
WSON	Henderson, Ky.	500d
WAYE	Dundalk, Md.	500d
WSBS	Gt. Barrington, Mass.	250d
KNUJ	New Ulm, Minn.	1000d
WMAG	Forest, Miss.	500d
KARS	Belen, N. Mex.	250d
WFMO	Fairmont, N.C.	1000d
KMFR	Medford, Oreg.	1000d
WAMO	Pittsburgh, Pa.	1000d
WTEL	Philadelphia, Pa.	250d
WLBG	Laurens, S.C.	1000d
WIVK	Knoxville, Tenn.	1000d
WMTS	Murfreesboro, Tenn.	250d
KFST	Ft. Stockton, Tex.	250d
KPAN	Hereford, Tex.	250d
KSFA	Nacogdoches, Tex.	1000d
KONO	San Antonio, Tex.	5000
KWHO	Salt Lake City, Utah	1000d
WEVA	Emporia, Va.	1000d
WOAY	Oak Hill, W.Va.	10000d
WFOX	Milwaukee, Wis.	250d

870—344.6

KIEV	Glendale, Calif.	250d
KAIM	Kaimuki, Hawaii	1000
WWL	New Orleans, La.	50000
WKAR	E. Lansing, Mich.	5000d
WHCU	Ithaca, N.Y.	1000d
WGTL	Kannapolis, N.C.	1000d
WHOA	San Juan, P.R.	5000
KJIM	Ft. Worth, Tex.	250d
WFLO	Farmville, Va.	1000d

880—340.7

WCBS	New York, N.Y.	50000
WRRZ	Clinton, N.C.	1000d
WRFD	Worthington, Ohio	5000d

890—336.9

WLS	Chicago, Ill.	50000
WHNC	Henderson, N.C.	1000d
KBYE	Okla. City, Okla.	1000d

900—333.1

CKTS	Sherbrooke, Que.	1000
CHML	Hamilton, Ont.	5000
CHNO	Sudbury, Ont.	10000
CJBR	Rimouski, Que.	10000
CKJL	St. Jerome, Que.	1000
CJVI	Victoria, B.C.	10000
CKBI	Prince Albert, Sask.	10000
WATV	Birmingham, Ala.	1000d
WGOK	Mobile, Ala.	1000d
WOZK	Ozark, Ala.	1000d
KPRB	Fairbanks, Alaska	10000
KHOZ	Harrison, Ark.	1000d
KBIF	Fresno, Calif.	1000d
KGRB	West Covina, Calif.	250d
WJWL	Georgetown, Del.	1000d
WSWN	Belle Glade, Fla.	1000d
WMOP	Ocala, Fla.	1000d
WCGA	Calhoun, Ga.	1000d
WCRY	Macon, Ga.	250d
WEAS	Savannah, Ga.	5000d
KTEE	Idaho Falls, Ida.	1000d
KSIR	Wichita, Kan.	250d
WKYW	Louisville, Ky.	1000d
WLSI	Pikeville, Ky.	5000d
KREH	Oakdale, La.	250d
WCME	Brunswick, Maine	1000d
WATC	Gaylord, Mich.	1000d
KTIS	Minneapolis, Minn.	1000d
WDDT	Greenville, Miss.	1000d
KFAL	Fulton, Mo.	1000d
KJSK	Columbus, Nebr.	1000d
WOTW	Nashau, N.H.	1000d
WBRV	Boonville, N.Y.	1000d
WSPN	Saratoga Sprgs., N.Y.	250d
WAYN	Rockingham, N.C.	1000d
WIAM	Williamston, N.C.	1000d
KFNW	Fargo, N.Dak.	1000d
WCNS	Canton, Ohio	500d
WFRO	Fremont, Ohio	500d

Kc. Wave Length W.P.

WCPA	Clearfield, Pa.	1000d
WFLN	Philadelphia, Pa.	1000d
WKXV	Knoxville, Tenn.	1000d
WCOR	Lebanon, Tenn.	500d
KALT	Atlanta, Tex.	1000d
KMCO	Conroe, Tex.	500d
KFLD	Floydada, Tex.	250d
KCLW	Hamilton, Tex.	250d
WODY	Bassett, Va.	500d
WAFC	Staunton, Va.	1000d
KUEN	Wenatchee, Wash.	1000d
WATK	Antigo, Wis.	250d

910—329.5

CJDV	Drumheller, Alta.	10000
CKLY	Lindsay, Ont.	1000
CBO	Ottawa, Ont.	5000
CFJC	Kamloops, B.C.	10000
CHRL	Roberval, Que.	1000
WDVC	Dadeville, Ala.	500d
KPHO	Phoenix, Ariz.	5000
KLCN	Blytheville, Ark.	5000d
KAMD	Camden, Ark.	1000
KDEO	El Cajon, Calif.	1000
KEWB	Oakland, Calif.	5000
KOXR	Oxnard, Calif.	1000d
KPOF	nr. Denver, Colo.	5000
WHAY	New Britain, Conn.	5000
WPLA	Plant City, Fla.	1000d
WGAF	Valdosta, Ga.	5000
KBGN	Caldwell, Ida.	1000d
WAKO	Lawrenceville, Ill.	500d
WSUI	Iowa City, Iowa	5000
WLCS	Baton Rouge, La.	1000
WABI	Bangor, Maine	5000
WFDF	Flint, Mich.	5000
WCOC	Meridian, Miss.	5000
KOYN	Billings, Mont.	1000d
KYSS	Missoula, Mont.	1000d
KBIM	Roswell, N.Mex.	5000d
WLAS	Jacksonville, N.C.	5000d
KCJB	Minot, N.Dak.	1000
WPFB	Middletown, Ohio	1000
KGLC	Miami, Okla.	1000
KURY	Brookings, Oreg.	1000d
WAVL	Apollo, Pa.	1000d
WGBI	Scranton, Pa.	1000
WSPO	Smethport, Pa.	1000d
WSBA	York, Pa.	1000
WPRP	Ponce, P.R.	5000
WNCG	North Charleston, S.C.	500d
WORD	Spartanburg, S.C.	5000d
WJCW	Johnson City, Tenn.	5000
WEPG	S. Pittsburgh, Tenn.	500d
KNAF	Fredericksburg, Tex.	1000d
KRIO	McAllen, Tex.	1000d
KRRV	Sherman, Tex.	1000
KALL	Salt Lake City, Utah	5000
WWRJ	White River Junction, Vermont	1000d
WRNL	Richmond, Va.	5000
WHYE	Roanoke, Va.	1000d
KORD	Pasco, Wash.	1000d
KIXI	Renton, Wash.	1000
KISN	Vancouver, Wash.	1000
WHSM	Hayward, Wis.	1000d
WDOR	Sturgeon Bay, Wis.	1000d

920—325.9

CJCH	Halifax, N.S.	10000
CJCJ	Woodstock, N.B.	1000
CKCY	Sault St. Marie, Ont.	10000
CKNX	Wingham, Ont.	2500
WCTA	Adalusia, Ala.	5000
WWWR	Russellville, Ala.	1000d
KARK	Little Rock, Ark.	5000
KDES	Palm Springs, Calif.	1000d
KVEC	San Luis Obispo, Cal.	1000
KREX	Grd. Junction, Colo.	5000
KLMR	Lamar, Colo.	1000
WMEG	Eau Gallie, Fla.	1000d
WGST	Atlanta, Ga.	5000
KAHU	Waiphau, Hawaii	1000
WGNU	Granite City, Ill.	500d
WMOK	Metropolis, Ill.	1000d
WBAA	W. Lafayette, Ind.	5000
KFNF	Shenandoah, Iowa	1000
WTCW	Whitesburg, Ky.	1000d
WBOX	Bogalusa, La.	1000d
KTOC	Jonesboro, La.	1000d
WPTX	Lexington Pk., Md.	500d
WMPL	Hancock, Mich.	1000d
KDHL	Faribault, Minn.	1000
KWAD	Wadena, Minn.	1000
KRAM	Las Vegas, Nev.	1000
KOLO	Reno, Nev.	1000
KQEO	Albuquerque, N.Mex.	1000
WTTM	Trenton, N.J.	1000
WKRT	Cortland, N.Y.	1000
WGHQ	Kingston, N.Y.	5000d
WBBB	Burlington, N.C.	5000d
WMNI	Columbus, Ohio	500
KGAL	Lebanon, Oreg.	1000
WKVA	Lewistown, Pa.	1000d
WJAR	Providence, R.I.	5000
WTND	Orangeburg, S.C.	1000d
KEZU	Rapid City, S.Dak.	1000d
WLIV	Livingston, Tenn.	1000d
KELP	El Paso, Tex.	1000
KECK	Odessa, Tex.	1000
KTLW	Texas City, Tex.	1000d
KITN	Olympia, Wash.	1000d
KXLY	Spokane, Wash.	5000
WMMN	Fairmont, W.Va.	5000
WOKY	Milwaukee, Wis.	1000

930—322.4

CFBC	Saint John, N.B.	10000
CJCA	Edmonton, Alta.	10000
CJON	St. John's, N.F.	10000
WETO	Gadsden, Ala.	1000d
KTKN	Ketchikan, Alaska	1000
KAPR	Douglas, Ariz.	1000d
KHJ	Los Angeles, Calif.	5000
KMET	Paradise, Calif.	500d
KIUP	Durango, Colo.	5000
WKSB	Milford, Del.	500d
WHAN	Haines City, Fla.	1000
WJAX	Jacksonville, Fla.	5000
WKXY	Sarasota, Fla.	1000
WMGR	Bainbridge, Ga.	5000
KSEI	Pocatello, Idaho	5000
WTAD	Quincy, Ill.	5000
WKCT	Bowling Green, Ky.	1000
WFMD	Frederick, Md.	5000
WREB	Holyoke, Mass.	500d
WBCK	Battle Creek, Mich.	5000
KKIN	Aitkin, Minn.	1000d
WSLI	Jackson, Miss.	5000
KWOC	Poplar Bluff, Mo.	1000
KOFI	Kalispell, Mont.	5000d
KOGA	Ogallala, Nebr.	500d
WWNH	Rochester, N.H.	5000d
WPAT	Paterson, N.J.	5000
WBEN	Buffalo, N.Y.	5000
WIZR	Johnstown, N.Y.	1000d
WSOC	Charlotte, N.C.	5000
WRRF	Washington, N.C.	5000
WEOL	Elyria, Ohio	1000
WKY	Oklahoma City, Okla.	5000
KAGI	Grants Pass, Oreg.	5000
WCNR	Bloomsburg, Pa.	1000d
KSDN	Aberdeen, S.D.	1000
WSEV	Sevierville, Tenn.	5000d
KDET	Center, Tex.	1000d
KITE	San Antonio, Tex.	5000
KENY	Bellingham-Ferndale Wash.	1000d
WSAZ	Huntington, W.Va.	5000
KROE	Sheridan, Wyo.	1000d
WLBL	Auburndale, Wis.	5000d

940—319.0

CBM	Montreal, Que.	50000
CJGX	Yorkton, Sask.	10000
CJIB	Vernon, B.C.	1000
KOBY	Tucson, Ariz.	250
KFRE	Fresno, Calif.	50000
WINZ	Miami, Fla.	50000
WMAZ	Macon, Ga.	50000
WMIX	Mt. Vernon, Ill.	5000d
KIOA	Des Moines, Iowa	10000
WYLD	New Orleans, La.	1000
WMEW	Baltimore, Md.	1000d
KISH	Valentine, Nebr.	5000d
WFNC	Fayetteville, N.C.	10000
KGRL	Bend, Oreg.	1000d
WESA	Charleroi, Pa.	250d
WGRP	Greenville, Pa.	1000d
WIPR	San Juan, P.R.	10000
KIXZ	Amarillo, Tex.	5000
KTON	Belton, Tex.	1000d
KATQ	Texarkana, Tex.	1000d

950—315.6

CKNB	Campbellton, N.B.	1000
CKBB	Barrie, Ont.	10000
WRMA	Montgomery, Ala.	1000d
KXJK	Forrest City, Ark.	5000d
KFSA	Ft. Smith, Ark.	1000
KAHI	Auburn, Calif.	1000d
KIMN	Denver, Colo.	5000
WNUE	Ft. Walton Bch., Fla.	1000d
WLOF	Orlando, Fla.	5000
WGTA	Summerville, Ga.	5000d
WGOV	Valdosta, Ga.	5000
KBOI	Boise, Idaho	5000
KLER	Orofino, Idaho	1000d
WAAF	Chicago, Ill.	1000d
WXLW	Indianapolis, Ind.	5000d
KOEL	Oelwein, Iowa	1000
KJRG	Newton, Kans.	500d
WBVL	Barbourville, Ky.	1000d
WAGM	Presque Isle, Maine	5000
WORL	Boston, Mass.	5000d
WWJ	Detroit, Mich.	5000
KRSI	St. Louis Park, Minn.	1000d
WBKH	Hattiesburg, Miss.	5000d
KLIK	Jefferson City, Mo.	5000d
KLHS	Lordsburg, N. Mex.	1000d
WBBF	Rochester, N.Y.	1000
WIBX	Utica, N.Y.	5000
WPET	Greensboro, N.C.	5000d
KYES	Roseburg, Oreg.	1000d
WNCC	Barnesboro, Pa.	500d
WPEN	Philadelphia, Pa.	5000
WSPA	Spartanburg, S.C.	5000
KWAT	Watertown, S.Dak.	1000
WAGG	Franklin, Tenn.	1000d
KDSX	Denison, Tex.	500
KPRC	Houston, Tex.	50000
KSEL	Lubbock, Tex.	5000
WXGI	Richmond, Va.	1000d
KJR	Seattle, Wash.	5000
WERL	Eagle River, Wis.	1000d
WKAZ	Charleston, W.Va.	5000
WKTS	Sheboygan, Wis.	500d

960—312.3

CFAC	Calgary, Alta.	10000
CHNS	Halifax, N.S.	10000
CKWS	Kingston, Ont.	5000
WBRC	Birmingham, Ala.	5000
WMOZ	Mobile, Ala.	1000
WCVQ	Kodiak, Alaska	250
KOOL	Phoenix, Ariz.	5000
KAVR	Apple Valley, Calif.	5000d
KNEZ	Lompoc, Calif.	500d
KABL	Oakland, Calif.	1000
WELI	New Haven, Conn.	5000
WGRO	Lake City, Fla.	500d
WJCM	Sebring, Fla.	1000d
WJAZ	Albany, Ga.	5000d
WRFC	Athens, Ga.	5000
KSRA	Salmon, Idaho	1000d
WDLM	E. Moline, Ill.	1000d
WSBT	South Bend, Ind.	5000
KMA	Shenandoah, Iowa	5000
WPRT	Prestonsburg, Ky.	5000d
KROF	Abbeville, La.	1000d
WBOC	Salisbury, Md.	5000
WFGM	Fitchburg, Mass.	1000
WHAK	Rogers City, Mich.	5000d
KLTF	Little Falls, Minn.	500d
WABG	Greenwood, Miss.	1000
KFVS	Cape Girardeau, Mo.	5000
KNEB	Scottsbluff, Nebr.	1000
KWYK	Farmington, N.Mex.	1000d
WEAV	Plattsburg, N.Y.	5000
WCFT	Dallas, N.C.	1000d
WFTC	Kinston, N.C.	5000
WWST	Wooster, Ohio	1000d
KGWA	Enid, Okla.	1000
KLAD	Klamath Falls, Oreg.	5000d
WHYL	Carlisle, Pa.	5000d
WADP	Kane, Pa.	1000d
WATS	Sayre, Pa.	1000d
WBEU	Beaufort, S.C.	1000d
WBMC	McMinnville, Tenn.	500d
KIMP	Mt. Pleasant, Tex.	1000d
KGKL	San Angelo, Tex.	5000
KOVO	Provo, Utah	5000
WDBJ	Roanoke, Va.	5000
KALE	Richland, Wash.	1000
WTCH	Shawano, Wis.	1000

970—309.1

CKCH	Hull, Que.	5000
WERH	Hamilton, Ala.	5000d
WTBF	Troy, Ala.	5000
KNEA	Jonesboro, Ark.	1000d
KBIS	Bakersfield, Calif.	1000
KCHV	Coachella, Calif.	1000d
KBEE	Modesto, Calif.	1000
KFEL	Pueblo, Colo.	1000d
WFLA	Tampa, Fla.	5000
WIIN	Atlanta, Ga.	5000d
WVOP	Vidalia, Ga.	5000d
KHBC	Hilo, Hawaii	1000
KAYT	Rupert, Idaho	1000d
WMAY	Springfield, Ill.	1000
WAVE	Louisville, Ky.	5000
KSYL	Alexandria, La.	1000
WCSH	Portland, Maine	5000
WAMD	Aberdeen, Md.	500
WESO	Southbridge, Mass.	1000d
WJAN	Ishpeming, Mich.	5000d
WKHM	Jackson, Mich.	1000
KQAQ	Austin, Minn.	5000d
KOOK	Billings, Mont.	5000
KJLT	No. Platte, Nebr.	5000d
KVEG	Las Vegas, Nev.	500d
WNTA	Newark, N.J.	5000
WEBR	Buffalo, N.Y.	5000
WCHN	Norwich, N.Y.	500d
WRCS	Ahoskie, N.C.	1000d
WWIT	Canton, N.C.	1000d
WDAY	Fargo, N.Dak.	5000
WREO	Ashtabula, Ohio	5000
WATH	Athens, Ohio	1000d
KAKC	Tulsa, Okla.	1000
KOIN	Portland, Oreg.	5000
WWSW	Pittsburgh, Pa.	5000
WJMX	Florence, S.C.	5000
KASE	Austin, Tex.	1000d
KNOK	Ft. Worth, Tex.	1000d
WIVI	Christiansted, V.I.	1000
WDTI	Danville, Va.	1000d
WRWV	Waynesboro, Va.	500d
KREM	Spokane, Wash.	5000
WWYO	Pineville, W.Va.	1000d
WHA	Madison, Wis.	5000d
WIGL	Superior, Wis.	500d

980—305.9

CKNW	New Westminster, Brit. Columbia	10000
CFPL	London, Ont.	10000
CKGM	Montreal, Que.	10000
CBV	Quebec, Que.	5000
CHEX	Peterboro, Ont.	5000
CKRM	Regina, Sask.	10000
WKLF	Clanton, Ala.	1000d
WXLL	Big Delta, Alaska	100
KINS	Eureka, Calif.	5000
KEAP	Fresno, Calif.	500d
KFWB	Los Angeles, Calif.	5000
KGLN	GlenwoodSprgs., Colo.	1000d
WSUB	Groton, Conn.	1000d
WRC	Washington, D.C.	5000
WDVH	Gainesville, Fla.	5000d
WTOT	Marianna, Fla.	1000d
WBOP	Pensacola, Fla	1000d
WLOD	Pompano Beach, Fla.	1000d
WKLY	Hartwell, Ga.	1000d
WPGA	Perry, Ga.	500d
WRIP	Rossville, Ga.	500d
KUPI	Idaho Falls, Idaho	1000d
KSGM	Chester, Ill.	500
WITY	Danville, Ill.	1000
KOKA	Shreveport, La.	5000d
WCAP	Lowell, Mass.	1000d
WPBC	Minneapolis, Minn.	1000d
WAPF	McComb, Miss.	1000d
KMBC	Kansas City, Mo.	5000
KLYQ	Hamilton, Mont.	1000d
KVLV	Fallon, Nev.	5000d
KVER	Clovis, N.Mex.	1000
KMIN	Grants, N. Mex.	1000d
WTRY	Troy, N.Y.	5000
WKLM	Wilmington, N.C.	5000d
WAAA	Win.-Salem, N.C.	1000d
WONE	Dayton, Ohio	5000
WILK	Wilkes-Barre, Pa.	5000
KDSJ	Deadwood, S.Dak.	1000
WSIX	Nashville, Tenn.	5000
KFRD	Rosenberg, Tex.	1000d
KSVC	Richfield, Utah	5000
WFHG	Bristol, Va.	5000
WMEK	Chase City, Va.	500d
KUTI	Yakima, Wash.	5000d
WHAW	Weston, W.Va.	1000d
WCUB	Manitowoc, Wis.	1000d
WPRE	Prairie du Chien, Wis.	1000

990—302.8

CBW	Winnipeg, Man.	50000
CBY	Corner Brook, Nfld.	1000
WEIS	Center, Ala.	250
WWWF	Fayette, Ala.	1000d
WTCB	Flomaton, Ala.	500d
KTKT	Tucson, Ariz.	10000
KKIS	Pittsburg, Calif.	5000
KGUO	Santa Barbara, Calif.	1000d
KLIR	Denver, Colo.	1000d
WBZY	Torrington, Conn.	1000d
WFAB	Miami, Fla.	5000
WHOO	Orlando, Fla.	10000
WDWD	Dawson, Ga.	1000d
WGML	Hinesville, Ga.	250d
KOOD	Honolulu, Hawaii	5000
WCAZ	Carthage, Ill.	1000d
WITZ	Jasper, Ind.	1000d
KAYL	Storm Lake, Iowa	250d
KRSL	Russell, Kans.	250d
WJMR	New Orleans, La.	250d
KRIH	Rayville, La.	250d
WCRM	Clare, Mich.	250d
WABO	Waynesboro, Miss.	250d
KRMO	Monett, Mo.	250d
KSVP	Artesia, N.Mex.	1000
WEEB	Southern Pines, N.C.	5000d
WJEH	Gallipolis, Ohio	1000d
WTIG	Massillon, Ohio	250d
KABY	Albany, Oreg.	250d
WIBG	Philadelphia, Pa.	50000
WVSC	Somerset, Pa.	250d
WPRA	Mayaguez, P.R.	10000
WLKW	Providence, R.I.	50000
WAKN	Aiken, S.C.	1000d
WNOX	Knoxville, Tenn.	10000
KWAM	Memphis, Tenn.	1000d
KTRM	Beaumont, Tex.	1000
KAML	Kenedy, Tex.	250d
KNIN	Wichita Falls, Tex.	10000
KDYL	Tooele, Utah	1000d
WNRV	Narrows, Va.	1000d
WANT	Richmond, Va.	1000d
WKLJ	Sparta, Wis.	250

1000—299.8

CKBW	Bridgewater, N.S.	1000
WCFL	Chicago, Ill.	50000
KTOK	Okla. City, Okla.	5000
KSTA	Coleman, Tex.	250d
KGRI	Henderson, Tex.	250d
WHWB	Rutland, Vt.	1000d
KOMO	Seattle, Wash.	50000

1010—296.9

CBX	Edmonton, Alta.	50000
CFRB	Toronto, Ont.	50000
KCAC	Phoenix, Ariz.	500d
KVNC	Winslow, Ariz.	1000
KLRA	Little Rock, Ark.	10000
KCHJ	Delano, Calif.	5000
KCMJ	Palm Sprgs., Calif.	1000
KSAY	San Fran., Calif.	10000d
WCNU	Crestview, Fla.	1000d
WZRO	Jacksonville Beach, Florida	2500d
WINQ	Tampa, Fla.	50000d
WGUN	Decatur, Ga.	50000d
KATN	Boise, Idaho	1000d
WCSI	Columbus, Ind.	500d
KSMN	Mason City, Iowa	1000d
KIND	Independence, Kans.	250d
KDLA	DeRidder, La.	1000d
WSID	Baltimore, Md.	1000d
WMRT	Lansing, Mich.	500d
WMOX	Meridian, Miss.	10000
KCHI	Chillicothe, Mo.	250d
KXEN	Festus, Mo.	50000d
KRVN	Lexington, Nebr.	25000d
WCNL	Newport, N.H.	250d
WINS	New York, N.Y.	50000
WABZ	Albemarle, N.C.	1000d
WELS	Kinston, N.C.	1000d
WIOI	New Boston, Ohio	1000d
KBEV	Portland, Oreg.	1000d

Kc. Wave Length W.P.

WITT Lewisburg, Pa. 250d
WHIN Gallatin, Tenn. 1000d
WORM Savannah, Tenn. 250d
KBUY Amarillo, Tex. 5000
KODA Houston, Tex. 1000d
KAWA Marlin, Tex. 250d
WELK Charlottesville, Va. 1000d
WMEV Marion, Va. 1000d
WPMH Portsmouth, Va. 5000d
WCST Berkeley Sprgs., W.Va. 250d
WSPT Stevens Pt., Wis. 1000d

1020—293.9

KGBS Los Angeles, Calif. 50000
WCIL Carbondale, Ill. 1000d
WPEO Peoria, Ill. 1000d
KDKA Pittsburgh, Pa. 50000

1030—291.1

WBZ Boston, Mass. 50000
WBZA Springfield, Mass. 1000
KCTA Corpus Christi, Tex. 50000d

1040—288.3

KHVH Honolulu, Hawaii 5000
WHO Des Moines, Iowa 50000
KIXL Dallas, Tex. 1000d

1050—285.5

CFGP Grande Prairie, Alta. 10000
CKSB St. Boniface, Man. 10000
CJIC Sault Ste. Marie, Ont. 10000
CHUM Toronto, Ont. 5000
WRFS Alexander City, Ala. 1000d
WCRI Scottsboro, Ala. 250d
KVWM Show Low, Ariz. 250d
KVLC Little Rock, Ark. 1000d
KOFY San Mateo, Calif. 1000d
KWSO Wasco, Calif. 1000d
KLMO Longmont, Colo. 250d
WSUG Clewiston, Fla. 250d
WJSB Crestview, Fla. 1000d
WIVY Jacksonville, Fla. 1000d
WHBO Tampa, Fla. 250d
WRMF Titusville, Fla. 500d
WAUG Augusta, Ga. 1000d
WBIE Marietta, Ga. 500d
WMNZ Montezuma, Ga. 250d
KZIN Coeur D'Alene, Idaho 250d
WDZ Decatur, Ill. 1000d
KNCO Garden City, Kans. 1000d
WNES Central City, Ky. 500d
WZIP Cincinnati, Ohio 1050
KLPL Lake Providence, La. 250d
KCIJ Shreveport, La. 250d
KVPI Villa Platte, La. 250d
WQMR Silver Sprg., Md. 1000d
WPAG Ann Arbor, Mich. 1000d
KLOH Pipestone, Minn. 1000d
WACR Columbus, Miss. 1000d
KMIS Portageville, Mo. 250d
KSIS Sedalia, Mo. 1000d
KRBO Las Vegas, Nev. 500d
WBNC Conway, N.H. 1000d
WSEN Baldwinsville, N.Y. 250d
WSTS Massena, N.Y. 1000d
WMGM New York, N.Y. 50000
WBTL Farmville, N.C. 250d
WFSC Franklin, N.C. 1000d
WLON Lincolnton, N.C. 1000d
WWGP Sanford, N.C. 1000d
KCCO Lawton, Okla. 250d
KFMJ Tulsa, Okla. 1000d
KUBE Pendleton, Oreg. 1000d
KEED Springfield, Oreg. 1000d
WBUT Butler, Pa. 250d
WLYC Williamsport, Pa. 1000d
WSMT Sparta, Tenn. 1000d
KLEN Killeen, Tex. 250d
KWLO Liberty, Tex. 250d
KPLA Plainview, Tex. 1000d
KCAS Slaton, Tex. 250d
WGAT Gate City, Va. 250d
WBRG Lynchburg, Va. 1000d
WCMS Norfolk, Va. 1000d
KNBX Kirkland, Wash. 1000d
WCEF Parkersburg, W.Va. 1000d
WECL Eau Claire, Wis. 1000d
WLIP Kenosha, Wis. 250d
KWIV Douglas, Wyo. 250d

1060—282.8

CFCN Calgary, Alta. 10000
CJLR Quebec, Que. 10000
KUPO Tempe, Ariz. 500
KPAY Chico, Calif. 10000
WNOE New Orleans, La. 50000
WHFB Benton Harbor, Mich. 1000d
WMAP Monroe, N.C. 250d
WHOF Canton, Ohio 1000d
WRCV Philadelphia, Pa. 50000
WRJS San German, P.R. 250

1070—280.2

CBA Sackville, N.B. 50000
CHOK Sarnia, Ont. 5000
WAPI Birmingham, Ala. 50000
KNX Los Angeles, Calif. 50000
WVCG Coral Gables, Fla. 1000d

Kc. Wave Length W.P.

WIBC Indianapolis, Ind. 50000
KIRL Wichita, Kans. 10000
KHMO Hannibal, Mo. 5000
WHPE High Point, N.C. 1000d
WMIA Arecibo, P.R. 500
WFLI Lookout Mtn., Tenn. 10000
WDIA Memphis, Tenn. 50000
KOPY Alice, Tex. 1000
WKOW Madison, Wis. 10000

1080—277.6

CHED Edmonton, Alta. 10000
KSCO Santa Cruz, Calif. 1000
WTIC Hartford, Conn. 50000
WKLO Louisville, Ky. 5000
WOAP Owosso, Mich. 250d
WYSL Kenmore, N.Y. 1000d
WEWO Laurinburg, N.C. 1000d
KWJJ Portland, Oreg. 10000
WYRE Pittsburgh, Pa. 1000d
KRLD Dallas, Tex. 50000

1090—275.1

CHEC Lethbridge, Alta. 5000
CHIC Brampton, Ont. 250
CHRS St. Jean, Que. 1000
KTHS Little Rock, Ark. 50000
WCRA Effingham, Ill. 250d
KHAI Honolulu, Hawaii 5000
KNWS Waterloo, Iowa 1000d
WBAL Baltimore, Md. 50000
WILD Boston, Mass. 1000d
WMUS Muskegon, Mich. 1000d
KING Seattle, Wash. 50000

1100—272.6

KFAX San Francisco, Calif. 50000
WLBB Carrollton, Ga. 250d
WHLI Hempstead, N.Y. 10000d
KYW Cleveland, Ohio 50000
WGPA Bethlehem, Pa. 250d

1110—270.1

CFML Cornwall, Ont. 1000
CFTJ Galt, Ont. 250
KRLA Pasadena, Calif. 50000
WALT Tampa, Fla. 50000d
KIPA Hilo, Hawaii 1000
WMBI Chicago, Ill. 5000d
KFAB Omaha, Nebr. 50000
WBT Charlotte, N.C. 50000
KBND Bend, Oreg. 5000
WNAR Norristown, Pa. 500d
WVJP Caguas, P.R. 250
WHIM Providence, R.I. 1000d

1120—267.7

WUST Bethesda, Md. 250d
KMOX St. Louis, Mo. 50000
WWOL Buffalo, N.Y. 1000d
KCLE Cleburne, Tex. 250d

1130—265.3

CKWX Vancouver, B.C. 50000
KRDV Dinuba, Calif. 1000
KSDO San Diego, Calif. 5000
KEKO Kailua, Hawaii 1000
KWKH Shreveport, La. 50000
WCAR Detroit, Mich. 50000
WDGY Minneapolis, Minn. 50000
WNEW New York, N.Y. 50000

1140—263.0

CFTK Terrace, B.C. 1000
CKXL Calgary, Alta. 10000
CBI Sydney, N.S. 5000
KRAK Sacramento, Calif. 50000
WMIE Miami, Fla. 10000
KGEM Boise, Idaho 10000
WSIV Pekin, Ill. 1000d
KLPR Oklahoma City, Okla. 1000d
WITA San Juan, P.R. 500
KSOO Sioux Falls, S.Dak. 10000
KORC Mineral Wells, Tex. 250d
WRVA Richmond, Va. 50000

1150—260.7

CKSA Lloydminster, Alta. 1000
CHSJ Saint John, N.B. 10000
CKOC Hamilton, Ont. 10000
CKX Brandon, Man. 10000
CKTR Three Rivers, Que. 10000
WBCA Bay Minette, Ala. 1000d
WGEA Geneva, Ala. 1000d
WJRD Tuscaloosa, Ala. 5000
KCKY Coolidge, Ariz. 1000
KXLR No. Little Rock, Ark. 5000
KFSG Los Angeles, Calif. 2500
KRKD Los Angeles, Calif. 5000
KJAX Santa Rosa, Calif. 5000
KGMC Englewood, Colo. 1000d
WCNX Middletown, Conn. 500d
WDEL Wilmington, Del. 5000
WNDB Daytona Bch., Fla. 1000
WTMP Tampa, Fla. 5000d
WFPM Fort Valley, Ga. 1000d
WJEM Valdosta, Ga. 1000d
WGGH Marion, Ill. 5000d
WJRL Rockford, Ill. 500d
KWKY Des Moines, Iowa 1000
KSAL Salina, Kans. 5000
WMST Mt. Sterling, Ky. 500d
WLOC Mumfordville, Ky. 1000d
WJBO Baton Rouge, La. 5000

Kc. Wave Length W.P.

WGHM Skowhegan, Maine 5000d
WHMC Gaithersburg, Md. 1000
WCOP Boston, Mass. 5000
WCEN Mt. Pleasant, Mich. 1000
KASM Albany, Minn. 1000d
WXTN Lexington, Miss. 500d
KRMS Osage Beach, Mo. 1000d
KSEN Shelby, Mont. 1000
KDEF Albuquerque, N.Mex. 1000
WRUN Utica, N.Y. 5000
WBAG Burlington, N.C. 1000d
WGBR Goldsboro, N.C. 5000
WCUE Cuyahoga Falls, Ohio 1000d
WIMA Lima, Ohio 1000
KNED McAlester, Okla. 1000
KAGO Klamath Falls, Oreg. 5000
WHUN Huntingdon, Pa. 5000d
WYNS Lehighton, Pa. 1000d
WKPA New Kensington, Pa. 1000d
WORA Mayaquez, P.R. 1000
WDIX Orangeburg, S.C. 5000
WTYC Rock Hill, S.C. 1000d
WSNW Seneca Township, South Carolina 1000d
KIMM Rapid City, S.Dak. 5000d
WAPO Chattanooga, Tenn. 5000
WCRK Morristown, Tenn. 1000
WTAW Bryan, Tex. 1000d
KCCT Corpus Christi, Tex. 1000d
KIZZ El Paso, Tex. 1000d
KVIL Highland Park, Tex. 1000d
KJBC Midland, Tex. 1000d
KPNG Port Neches, Tex. 500d
KOLJ Quanah, Tex. 500d
KBER San Antonio, Tex. 1000d
KOFE Pullman, Wash. 1000d
KAYO Seattle, Wash. 5000
KKEY Vancouver, Wash. 1000d
WELC Welch, W.Va. 1000d
WAXX Chippewa Falls, Wis. 5000d
WISN Milwaukee, Wis. 5000

1160—258.5

WJJD Chicago, Ill. 50000
KSL Salt Lake City, Utah 50000

1170—256.3

CFNS Saskatoon, Sask. 1000
WCOV Montgomery, Ala. 10000
KCBQ San Diego, Calif 50000
KLOK San Jose, Calif. 10000
KOHO Honolulu, Hawaii 1000
WLBH Mattoon, Ill. 250d
KSTT Davenport, Iowa 1000
KVOO Tulsa, Okla. 50000
WLEO Ponce, P.R. 250
KPUG Bellingham, Wash. 1000
WWVA Wheeling, W.Va. 50000

1180—254.1

WLDS Jacksonville, Ill. 1000d
WHAM Rochester, N.Y. 50000

1190—252.0

KZON Tolleson, Ariz. 250
KEZY Anaheim, Calif. 1000
KNBA Vallejo, Calif. 250d
WOWO Ft. Wayne, Ind. 50000
WANN Annapolis, Md. 10000d
WKOX Fram'gham, Mass. 1000d
WLIB New York, N.Y. 1000d
KEX Portland, Oreg. 50000
KLIF Dallas, Tex. 50000

1200—249.9

WOAI San Antonio, Tex. 50000

1210—247.8

WCNT Centralia, Ill. 1000d
WKNX Saginaw, Mich. 10000d
WADE Wadesboro, N.C. 1000d
WAVI Dayton, Ohio 250d
WCAU Philadelphia, Pa. 50000

1220—245.8

CJOC Lethbridge, Alta. 10000
CKDA Victoria, B.C. 10000
CJRL Kenora, Ont. 1000
CKCW Moncton, N.B. 10000
CJSS Cornwall, Ont. 10000
CKSM Shawinigan, Quebec 1000
WEZB Birmingham, Ala. 1000d
WPRN Butler, Ala. 1000d
WABF Fairhope, Ala. 1000
KVSA McGehee, Ark. 1000d
KLIP Fowler, Calif. 250d
KIBE Palo Alto, Calif. 1000d
KKAR Pomona, Calif. 250d
KFSC Denver, Colo. 1000d
WDEE Hamden, Conn. 1000d
WQTY Arlington, Fla. 1000d
WKBX Kissimmee, Fla. 1000d
WMBM Miami, Fla. 250d
WSAF Sarasota, Fla. 1000d
WCLB Camilla, Ga. 1000d
WPLK Rockmart, Ga. 500d
WSFT Thomaston, Ga. 250d
WLPO LaSalle, Ill. 1000d
WKRS Waukegan, Ill. 1000d
WSLM Salem, Ind. 1000d
KJAN Atlantic, Iowa 250d
KOUR Independence, Iowa 250d
KOFO Ottawa, Kans. 250d
WFKN Franklin, Ky. 250d
KBCL Shreveport, La. 250d

Kc. Wave Length W.P.

WLBI Denham Springs, La. 250d
WSME Sanford, Maine 1000d
WBCH Hastings, Mich. 250d
WAVN Stillwater, Minn. 1000d
WMDC Hazlehurst, Miss. 250d
KBHM Branson, Mo. 1000d
KLPW Union, Mo. 1000d
WKBK Keene, N.H. 1000d
WGNY Newburgh, N.Y. 5000d
WSOQ N. Syracuse, N.Y. 1000d
WKMT Kings Mtn., N.C. 1000d
WREV Reidsville, N.C. 1000d
WENC Whiteville, N.C. 1000d
KEYD Oakes, N.Dak. 1000d
WGAR Cleveland, Ohio 50000
WERT Van Wert, Ohio 250d
KGYN Guymon, Okla. 1000d
KBLY Goldbeach, Oreg. 1000d
WJUN Mexico, Pa. 1000d
WRIB Providence, R.I. 1000d
WALD Walterboro, S.C. 1000d
WFWL Camden, Tenn. 250d
WCPH Etowah, Tenn. 1000d
WHEY Millington, Tenn. 250d
KVLL Livingston, Tex. 250d
KZEE Weatherford, Tex. 250d
WLSD Big Stone Gap, Va. 1000d
WFAX Falls Church, Va. 5000d
KASY Auburn, Wash. 250d
KOZI Chelan, Wash. 1000d
WRNE Wis. Rapids, Wis. 500d

1230—243.8

CHFC Churchill, Man. 250
CFKL Schefferville, Que. 250
CFGR Gravelbourg, Sask. 250
CFHR Hay River, Nwt. 100
CFYT Dawson City, Yukon T. 100
CFPA Port Arthur, Ont. 1000
CKLD Thetford Mines, Que. 250
CKMP Midland, Ont. 250
VOAR St. John's, Nfld. 100
CKVD Val D'Or, Que. 1000
WAUD Auburn, Ala. 1000
WJBB Haleyville, Ala. 1000
WBHP Huntsville, Ala. 1000
WNUZ Talladega, Ala. 250
WTBC Tuscaloosa, Ala. 250
KIFW Sitka, Alaska 250
KSUN Bisbee, Ariz. 250
KAAA Kingman, Ariz. 250
KRIZ Phoenix, Ariz. 250
KATO Safford, Ariz. 250
KCON Conway, Ark. 250
KFPW Ft. Smith, Ark. 1000
KBTM Jonesboro, Ark. 250
KGEE Bakersfield, Calif. 500
KWTC Barstow, Calif. 1000
KIBS Bishop, Calif. 1000
KXO El Centro, Calif. 250
KDAC Ft. Bragg, Calif. 250
KGFJ Los Angeles, Calif. 250
KPRL Paso Robles, Calif. 1000
KRDG Redding, Calif. 250
KWG Stockton, Calif. 250
KEXO Grand Junc., Colo. 250
KBRR Leadville, Colo. 250
KDZA Pueblo, Colo. 250
KGEK Sterling, Colo. 250
WINF Manchester, Conn. 1000
WGGG Gainesville, Fla. 250
WONN Lakeland, Fla. 250
WMAF Madison, Fla. 1000
WSBB New Smyrna Bch., Florida 1000
WNVY Pensacola, Fla. 250
WCNH Quincy, Fla. 1000
WJNO W. Palm Beach, Fla. 250
WBIA Augusta, Ga. 250
WBLJ Dalton, Ga. 1000
WXLI Dublin, Ga. 250d
WFOM Marietta, Ga. 1000
WSOK Savannah, Ga. 250
WAYX Waycross, Ga. 250
KBAR Burley, Idaho 250
KORT Grangeville, Idaho 250
KRXK Rexburg, Idaho 1000
WJBC Bloomington, Ill. 1000
WQUA Moline, Ill. 1000
WHCO Sparta, Ill. 250
WJOB Hammond, Ind. 250
WSAL Logansport, Ind. 250
WTCJ Tell City, Ind. 250
WBOW Terre Haute, Ind. 250
KFJB Marshalltown, Iowa 1000
WHIR Danville, Ky. 250
WHOP Hopkinsville, Ky. 1000
WMLF Pineville, Ky. 250
KLIC Monroe, La. 250
WJBW New Orleans, La. 1000
KSLO Opelousas, La. 250
WQDY Calais, Maine 250
WITH Baltimore, Md. 1000
WCUM Cumberland, Md. 1000
WMNB No. Adams, Mass. 250
WESX Salem, Mass. 1000
WNEB Worcester, Mass. 1000
WJEF Grand Rapids, Mich. 1000d
WIKB Iron River, Mich. 1000
WMPC Lapeer, Mich. 250
WSOO Slt. Ste. Marie, Mich. 1000
WSTR Sturgis, Mich. 250
WKLK Cloquet, Minn. 1000
KGHS Internat'l Falls, Minn. 100
KYSM Mankato, Minn. 250
KTRF Thief Riv. Flls., Minn. 250
KWNO Winona, Minn. 1000
WCMA Corinth, Miss. 1000

Kc.	Wave Length	W.P.
WHSY	Hattiesburg, Miss.	1000
WSSO	Starkville, Miss.	250
WAZF	Yazoo City, Miss.	250
KODE	Joplin, Mo.	1000
KLWT	Lebanon, Mo.	250
KNCM	Moberly, Mo.	1000
KANA	Anaconda, Mont.	250
KBMN	Bozeman, Mont.	250
KXLO	Lewiston, Mont.	1000
KLCB	Libby, Mont.	250
KTNC	Falls City, Nebr.	100
KHAS	Hastings, Nebr.	250
KELY	Ely, Nev.	250
KLAS	Las Vegas, Nev.	250
KDOT	Reno, Nev.	250
WMOU	Berlin, N.H.	250
WTSV	Claremont, N.H.	1000
WCMC	Wildwood, N.J.	100
KALG	Alamogordo, N.Mex.	250
KOTS	Deming, N.Mex.	250
KYVA	Gallup, N.Mex.	250
KFUN	Las Vegas, N.Mex.	250
KRSY	Roswell, N.Mex.	250
WNIA	Cheektowaga, N.Y.	500
WENY	Elmira, N.Y.	1000
WHUC	Hudson, N.Y.	250
WLFH	Little Falls, N.Y.	250
WFAS	White Plains, N.Y.	250
WSKY	Asheville, N.C.	1000
WFAI	Fayetteville, N.C.	250
WMFR	High Point, N.C.	1000
WISP	Kinston, N.C.	250
WNNC	Newton, N.C.	250
WCBT	Roanoke Rap., N.C.	250
KDIX	Dickinson, N.Dak.	250
WCPO	Cincinnati, Ohio	250
WCOL	Columbus, Ohio	250
WIRO	Ironton, Ohio	250
WTOL	Toledo, Ohio	250
KADA	N. of Ada, Okla.	250
WBBZ	Ponca City, Okla.	250
KIAL	Astoria, Oreg.	250
KRNS	Burns, Oreg.	250
KOOS	Coos Bay, Oreg.	250
KGRO	Gresham, Oreg.	250
KYJC	Medford, Oreg.	1000
KQIK	Lakeview, Oreg.	250
KTDO	Toledo, Oreg.	250
WBVP	Beaver Falls, Pa.	1000
WEEX	Easton, Pa.	250
WKBO	Harrisburg, Pa.	1000
WCRO	Johnstown, Pa.	1000
WBPZ	Lock Haven, Pa.	250
WNIK	Arecibo, P.R.	250
WERI	Westerly, R.I.	1000
WAIM	Anderson, S.C.	1000
WNOK	Columbia, S.C.	250
WOLS	Florence, S.C.	250
KISD	Sioux Falls, S.Dak.	250
WMMT	McMinnville, Tenn.	1000
KSIX	Corpus Christi, Tex.	250
KDLK	Del Rio, Tex.	250
KNUZ	Houston, Tex.	1000
KERV	Kerrville, Tex.	250
KLVT	Levelland, Tex.	250
KEEE	Nacogdoches, Tex.	250
KOSA	Odessa, Tex.	250
KHHH	Pampa, Tex.	250
KSEY	Seymour, Tex.	1000
KSST	Sulphur Sprgs., Tex.	250
KWTX	Waco, Tex.	250
KMUR	Murray, Utah	250
KOAL	Price, Utah	250
WJOY	Burlington, Vt.	1000
WBBI	Abingdon, Va.	250
WCFV	Clifton Forge, Va.	1000
WFVA	Fredericksburg, Va.	1000
WNOR	Norfolk, Va.	1000
KQTY	Everett, Wash.	1000
KLYK	Spokane, Wash.	250
KREW	Sunnyside, Wash.	1000
WLOG	Logan, W.Va.	1000
WTAP	Parkersburg, W.Va.	1000
WHBY	Appleton, Wis.	250
WCLO	Janesville, Wis.	1000
WHVF	Wausau, Wis.	250
KVOC	Casper, Wyo.	1000

1240—241.8

CFLM	La Tuque, Que.	1000
CFNW	Norman Wells, Northwest Terr.	100
CFPR	Prince Rupert, B.C.	250
CFWH	Whitehorse, Y.T.	250
CJAV	Port Alberni, B.C.	250
CJCS	Stratford, Ont.	1000
CJRW	Summerside, P.E.I.	250
CKBS	St. Hyacinthe, Que.	250
CKCQ-1	Williams Lake, B.C.	250
CKLS	LaSarre, Que.	250
WEBJ	Brewton, Ala.	250
WULA	Eufaula, Ala.	250
WOWL	Florence, Ala.	1000
WARF	Jasper, Ala.	1000
KZOW	So. of Globe, Ariz.	1000
KOFA	Yuma, Ariz.	250
KVRC	Arkadelphia, Ark.	250
KWAK	Stuttgart, Ark.	250
KPLY	Crescent City, Calif.	250
KMBY	Monterey, Calif.	250
KPPC	Pasadena, Calif.	100
KLOA	Ridgecrest, Calif.	250
KROY	Sacramento, Calif.	1000
KRNO	San Bernardino, Calif.	250
KSON	San Diego, Calif.	250
KSMA	Santa Maria, Calif.	250
KSUE	Susanville, Calif.	1000
KRDD	Colo. Sprgs., Colo.	250
KDGO	Durango, Colo.	250
KSLV	Monte Vista, Colo.	250
KCRT	Trinidad, Colo.	250
WWCO	Waterbury, Conn.	1000
WBGC	Chipley, Fla.	250
WLCO	Eustis, Fla.	250
WINK	Fort Myers, Fla.	250
WMMB	Melbourne, Fla.	1000
WFOY	St. Augustine, Fla.	1000
WBHB	Fitzgerald, Ga.	250
WDUN	Gainesville, Ga.	1000
WLAG	LaGrange, Ga.	1000
WBML	Macon, Ga.	250
WWNS	Statesboro, Ga.	1000
WPAX	Thomasville, Ga.	250
WTWA	Thomson, Ga.	250
KLEI	Kailua, Hawaii	250
KVNI	Coeur d'Alene, Idaho	250
KFLT	Mountain Home, Idaho	250
KWIK	Pocatello, Idaho	250
WCRW	Chicago, Ill.	1000
WEDC	Chicago, Ill.	250
WSBC	Chicago, Ill.	1000
WEBQ	Harrisburg, Ill.	250
WTAX	Springfield, Ill.	1000
WSDR	Sterling, Ill.	100
WHBU	Anderson, Ind.	250
KDEC	Decorah, Iowa	250
KWLC	Decorah, Iowa	250
KBIZ	Ottumwa, Iowa	1000
KICD	Spencer, Iowa	1000
KIUL	Garden City, Kans.	1000
KAKE	Wichita, Kans.	250
WINN	Louisville, Ky.	250
WFTM	Maysville, Ky.	250
WPKE	Pikeville, Ky.	250
WSFC	Somerset, Ky.	250
KASO	Minden, La.	250
KANE	New Iberia, La.	250
WCOU	Lewiston, Maine	1000
WCEM	Cambridge, Md.	250
WJEJ	Hagerstown, Md.	1000
WHAI	Greenfield, Mass.	250
WOCB	W. Yarmouth, Mass.	1000
WATT	Cadillac, Mich.	250
WCBY	Cheboygan, Mich.	250
WJPD	Ishpeming, Mich.	1000
WJIM	Lansing, Mich.	250
WMFG	Hibbing, Minn.	1000
WJON	St. Cloud, Minn.	1000
WMPA	Aberdeen, Miss.	250
WGRM	Greenwood, Miss.	250
WGCM	Gulfport, Miss.	250
WMIS	Natchez, Miss.	250
KFMO	Flat River, Mo.	250
KWOS	Jefferson City, Mo.	250
KNEM	Nevada, Mo.	250
KBMY	Billings, Mont.	1000
KLTZ	Glasgow, Mont.	250
KBLL	Helena, Mont.	250
KFOR	Lincoln, Nebr.	1000
KODY	North Platte, Nebr.	1000
KELK	Elko, Nev.	1000
WSNJ	Bridgeton, N.J.	250
KAVE	Carlsbad, N.Mex.	250
KCLV	Clovis, N.Mex.	1000
WGBB	Freeport, N.Y.	250
WGVA	Geneva, N.Y.	250
WJTN	Jamestown, N.Y.	1000
WVOS	Liberty, N.Y.	250
WNBZ	Saranac Lake, N.Y.	1000
WSNY	Schenectady, N.Y.	1000d
WATN	Watertown, N.Y.	250
WPNF	Brevard, N.C.	250
WIST	Charlotte, N.C.	250
WCNC	Elizabeth City, N.C.	250
WJNC	Jacksonville, N.C.	250
WRAL	Raleigh, N.C.	1000
KDLR	Devils Lake, N.Dak.	250
WBBW	Youngstown, Ohio	1000
WHIZ	Zanesville, Ohio	250
KVSO	Ardmore, Okla.	250
KBEK	Elk City, Okla.	250
KBEL	Idabel, Okla.	250
KOKL	Okmulgee, Okla.	250
KFLY	Corvallis, Oreg.	1000d
KKID	Pendleton, Oreg.	1000
KPRB	Redmond, Oreg.	250
KQEN	Roseburg, Oreg.	1000
WRTA	Altoona, Pa.	1000
WHUM	Reading, Pa.	250
WKOK	Sunbury, Pa.	250
WBAX	Wilkes-Barre, Pa.	250
WALO	Humacao, P.R.	250
WWON	Woonsocket, R.I.	1000
WKDK	Newberry, S.C.	250
WDXY	Sumter, S.C.	250
WBEJ	Elizabethton, Tenn.	1000
WEKR	Fayetteville, Tenn.	1000
WBIR	Knoxville, Tenn.	1000
WKDA	Nashville, Tenn.	250
WENK	Union City, Tenn.	1000
KVLF	Alpine, Tex.	1000
KEAN	Brownwood, Tex.	100
KORA	Bryan, Tex.	250
KOCA	Kilgore, Tex.	250
KSOX	Raymondville, Tex.	250
KCKG	Snora, Tex.	250
KXOX	Sweetwater, Tex.	250
WSKI	Montpelier, Vt.	1000
WSSV	Petersburg, Va.	1000
WROV	Roanoke, Va.	250
WTON	Staunton, Va.	1000
KXLE	Ellensburgh, Wash.	250
KGY	Olympia, Wash.	1000
WKOY	Bluefield, W.Va.	250
WTIP	Charleston, W.Va.	1000
WDNE	Elkins, W.Va.	1000
WOMT	Manitowoc, Wis.	250
WIBU	Poynette, Wis.	250
WOBT	Rhinelander, Wis.	1000
WJMC	Rice Lake, Wis.	1000
KFBC	Cheyenne, Wyo.	1000
KLUK	Evanston, Wyo.	1000
KASL	Newcastle, Wyo.	250
KRAL	Rawlins, Wyo.	1000
KTHE	Thermopolis, Wyo.	1000

1250—239.9

CHWO	Oakville, Ont.	1000
CKBL	Matane, Que.	5000
CKOM	Saskatoon, Sask.	10000
WZOB	Ft. Payne, Ala.	1000d
WETU	Wetumpka, Ala.	5000d
KAKA	Wickenburg, Ariz.	500d
KWCX	Willcox, Ariz.	1000d
KFAY	Fayetteville, Ark.	1000d
KAJI	Little Rock, Ark.	1000
KHOT	Madera, Calif.	500d
KTMS	Santa Barbara, Calif.	1000
KOHI	Twenty-Nine Palms, California	1000d
KMSL	Ukiah, Calif.	500d
KTWL	Golden, Colo.	1000d
WNER	Live Oak, Fla.	1000d
WRIM	Pahokee, Fla.	500d
WDAE	Tampa, Fla.	5000
WYTH	Madison, Ga.	1000d
WIZZ	Streator, Ill.	500d
WGL	Ft. Wayne, Ind.	1000
WRAY	Princeton, Ind.	1000d
KCFI	Cedar Falls, Iowa	500d
KFKU	Lawrence, Kans.	5000
WREN	Topeka, Kans.	5000
WLCK	Scottsville, Ky.	500d
WGUY	Bangor, Maine	5000d
WARE	Ware, Mass.	1000
WWBC	Bay City, Mich.	1000d
KOTE	Fergus Falls, Minn.	1000
KCUE	Red Wing, Minn.	1000d
WHNY	McComb, Miss.	5000
WKBR	Manchester, N.H.	5000
WMTR	Morristown, N.J.	5000d
WIPS	Ticonderoga, N.Y.	1000d
WFAG	Farmville, N.C.	500d
WBRM	Marion, N.C.	1000d
WCHO	Washington Court House, Ohio	500d
KQEN	Roseburg, Oreg.	5000d
WLEM	Emporium, Pa.	1000d
WPEL	Montrose, Pa.	1000d
WRYT	Pittsburgh, Pa.	5000
WNOW	York, Pa.	1000d
WTMA	Charleston, S.C.	5000
WCKM	Winnsboro, S.C.	500d
WKBL	Covington, Tenn.	1000d
WNTT	Tazewell, Tenn.	500d
KFTV	Paris, Tex.	500d
KPAC	Port Arthur, Tex.	5000
KUKA	San Antonio, Tex.	500d
KTFO	Seminole, Tex.	1000d
KANN	Ogden, Utah	1000d
KVEL	Vernal, Utah	5000d
WDVA	Danville, Va.	5000
WYSR	Franklin, Va.	1000d
WNRG	Grundy, Va.	1000d
KWSC	Pullman, Wash.	5000
KTW	Seattle, Wash.	1000
WEMP	Milwaukee, Wis.	5000

1260—238.0

CFRN	Edmonton, Alta.	50000
DYBU	Cebu, P.I.	1000
WCRT	Birmingham, Ala.	5000d
KPIN	Casa Grande, Ariz.	1000d
KCCB	Corning, Ark.	500d
KBHC	Nashville, Ark.	500d
KGIL	San Fernando, Calif.	5000
KYA	San Francisco, Calif.	5000
WMMM	Westport, Conn.	1000d
WNRK	Newark, Del.	500d
WWDC	Washington, D.C.	5000
WFTW	Fort Walton Beach, Florida	1000d
WMMA	Miami, Fla.	5000d
WWPF	Palatka, Fla.	1000
WHAB	Baxley, Ga.	5000d
WBBK	Blakely, Ga.	1000d
WTJH	East Point, Ga.	5000d
KIFI	Idaho Falls, Idaho	5000
KWEI	Weiser, Ida.	1000d
WIBV	Belleville, Ill.	1000d
WFBM	Indianapolis, Ind.	5000
KFGQ	Boone, Iowa	250d
KWHK	Hutchinson, Kans.	1000
WXOK	Baton Rouge, La.	1000d
WEZE	Boston, Mass.	5000
WALM	Albion, Mich.	1000
WJBL	Holland, Mich.	5000d
KROX	Crookston, Minn.	1000
KDUZ	Hutchinson, Minn.	1000d
WGVM	Greenville, Miss.	5000d
WNSL	Laurel, Miss.	5000d
KGBX	Springfield, Mo.	5000
KIMB	Kimball, Nebr.	1000d
WBUD	Trenton, N.J.	5000
KVSF	Santa Fe, N.Mex.	1000
WBNR	Beacon, N.Y.	1000d
WNDR	Syracuse, N.Y.	5000
WGWR	Asheboro, N.C.	1000d
WCDJ	Edenton, N.C.	1000d
WDOK	Cleveland, Ohio	5000
WNXT	Portsmouth, Ohio	5000
KWSH	Wewoka-Seminole, Oklahoma	1000
KMCM	McMinnville, Oreg.	1000
WWYN	Erie, Pa.	5000
WPHB	Philipsburg, Pa.	5000d
WISO	Ponce, P.R.	1000
WMUU	Greenville, S.C.	5000d
WJOT	Lake City, S.C.	1000d
KWYR	Winner, S.Dak.	5000d
WNOO	Chattanooga, Tenn.	1000d
WMCH	Church Hill, Tenn.	1000d
WDKN	Dickson, Tenn.	1000d
WCLC	Jamestown, Tenn.	1000d
KSPL	Diboll, Tex.	1000d
KPSO	Falfurrias, Tex.	500d
KWFR	San Angelo, Tex.	1000d
KTUE	Tulia, Tex.	1000d
KTAE	Taylor, Tex.	1000d
WCHV	Charlottesville, Va.	5000
WBCR	Christiansburg, Va.	1000d
KWIQ	Moses Lake, Wash.	1000d
WVVW	Grafton, W.Va.	500d
WWIS	Black River Falls, Wis.	1000d
WEKZ	Monroe, Wis.	1000d
KPOW	Powell, Wyo.	5000

1270—236.1

CHAT	Medicine Hat, Alta.	1000
CHWK	Chilliwack, B.C.	10000
CJCB	Sydney, N.S.	5000
CFGT	St. Joseph d'Alma, Quebec	1000
WGSV	Guntersville, Ala.	1000d
WAIP	Prichard, Ala.	1000d
KSYR	Anchorage, Alaska	1000
KOJI	Holbrook, Ariz.	1000d
KADL	Pine Bluff, Ark.	5000d
KAHR	Redding, Calif.	1000d
KCOK	Tulare, Calif.	1000
WNOG	Naples, Fla.	500d
WHIY	Orlando, Fla.	5000d
WTAL	Tallahassee, Fla.	5000
WKRW	Cartersville, Ga.	500d
WGBA	Columbus, Ga.	5000d
WJJC	Commerce, Ga.	1000d
KNDI	Honolulu, Hawaii	5000
KTFI	Twin Falls, Idaho	5000
WEIC	Charleston, Ill.	1000d
WHBF	Rock Island, Ill.	5000
WCMR	Elkhart, Ind.	5000
WWCA	Gary, Ind.	1000
WORX	Madison, Ind.	1000d
KSCB	Liberal, Kans.	1000
WAIN	Columbia, Ky.	1000d
WFUL	Fulton, Ky.	1000d
KVCL	Winnfield, La.	1000d
WSPR	Springfield, Mass.	5000
WXYZ	Detroit, Mich.	5000
KWEB	Rochester, Minn.	500d
WVOM	Ioka, Miss.	1000d
WLSM	Louisville, Miss.	1000d
KUSN	St. Joseph, Mo.	1000d
KBUB	Sparks, Nev.	1000d
WTSN	Dover, N.H.	5000
WDVL	Vineland, N.J.	500d
KRAC	Alamogordo, N.Mex.	1000d
WHLD	Niagara Falls, N.Y.	5000d
WDLA	Walton, N.Y.	1000d
WCGC	Belmont, N.C.	1000
WMPM	Smithfield, N.C.	5000d
KBOM	Mandan, N.Dak.	1000
WILE	Cambridge, Ohio	1000d
KWPR	Claremore, Okla.	500d
KAJO	Grants Pass, Oreg.	5000d
WLBR	Lebanon, Pa.	1000
WBHC	Hampton, S.C.	1000d
KNWC	Sioux Falls, S.Dak.	1000
WLIK	Newport, Tenn.	5000d
KIDX	Bay City, Tex.	1000
KHEM	Big Spring, Tex.	1000d
KEPS	Eagle Pass, Tex.	1000d
KFJZ	Fort Worth, Tex.	5000
WTID	Newport News, Va.	1000d
WHEO	Stuart, Va.	1000d
KCVL	Colville, Wash.	1000d
KBAM	Longview, Wash.	5000d
WKYR	Keyser, W.Va.	5000d
WRJC	Mauston, Wis.	500d

1280—234.2

CHIQ	Hamilton, Ont.	5000
CJMS	Montreal, Que.	10000
CKCV	Quebec, Que.	10000
CJSL	Estevan, Sask.	1000
WPID	Piedmont, Ala.	1000d
WNPT	Tuscaloosa, Ala.	5000
KHEP	Phoenix, Ariz.	1000d
KNBY	Newport, Ark.	1000d
KFOX	Long Beach, Calif.	1000
KCJH	San Luis Obispo, Cal.	500d
KJOY	Stockton, Calif.	1000
KTLN	Denver, Colo.	5000
WSUX	Seaford, Del.	1000d
WDSP	DeFuniak Springs, Florida	5000d
WQIK	Jacksonville, Fla.	5000d
WIPC	Lake Wales, Fla.	1000d
WYND	Sarasota, Fla.	500d
WIBB	Macon, Ga.	5000d
WMRO	Aurora, Ill.	1000d
WGBF	Evansville, Ind.	5000
KCOB	Newton, Iowa	1000d
KSOK	Arkansas City, Kans.	1000
WCPM	Cumberland, Ky.	1000d
WDSU	New Orleans, La.	5000

Kc.	Wave Length	W.P.
KWCL	Oak Grove, La.	500d
WEIM	Fitchburg, Mass.	5000
WFYC	Alma, Mich.	1000d
WTCN	Minneapolis, Minn.	5000
KVOX	Moorhead, Minn.	1000
KDKD	Clinton, Mo.	1000d
KYRO	Potosi, Mo.	500d
KCNI	Broken Bow, Nebr.	1000d
KTOO	Henderson, Nev.	5000d
WHBI	Newark, N.J.	2500
KRZE	Farmington, N.Mex.	5000d
WADO	New York, N.Y.	5000
WROC	Rochester, N.Y.	5000d
WRSA	Saratoga Sprgs., N.Y.	1000
WSAT	Salisbury, N.C.	1000
WYAL	Scotland Neck, N.C.	5000d
WONW	Defiance, Ohio	1000
WLMJ	Jackson, Ohio	1000d
KLCO	Poteau, Okla.	1000d
KERG	Eugene, Oreg.	5000
WBRX	Berwick, Pa.	500d
WHVR	Hanover, Pa.	5000
WKST	New Castle, Pa.	1000
WCMN	Arecibo, P.R.	1000
WANS	Anderson, S.C.	1000
WJAY	Mullins, S.C.	1000d
WMCP	Columbia, Tenn.	1000d
WDNT	Dayton, Tenn.	1000d
KNIT	Abilene, Tex.	500d
KWHI	Brenham, Tex.	1000d
KLUE	Longview, Tex.	1000d
KRAN	Morton, Tex.	500
KNAK	Salt Lake City, Utah	5000
WYVE	Wytheville, Va.	1000d
KQDF	Spokane, Wash.	500d
KIT	Yakima, Wash.	5000
WVAR	Richwood, W.Va.	1000d
WNAM	Neenah, Wis.	1000

1290—232.4

CFAM	Altona, Man.	10000
CKSL	London, Ont.	5000
WTHG	Jackson, Ala.	1000d
WSHF	Sheffield, Ala.	1000d
WMLS	Sylacauga, Ala.	1000d
KEOS	Flagstaff, Ariz.	1000
KCUB	Tucson, Ariz.	1000
KDMS	El Dorado, Ark.	5000d
KUOA	Siloam Sprgs., Ark.	5000d
KHSL	Chico, Calif.	5000
KPER	Gilroy, Calif.	5000d
KITO	San Bernardino, Calif.	5000
KACL	Santa Barbara, Calif.	5000d
WCCC	Hartford, Conn.	500d
WTUX	Wilmington, Del.	1000d
WTMC	Ocala, Fla.	5000
WSCM	Panama City Beach, Florida	500d
WIRK	W. Palm Bch., Fla.	5000
WDEC	Americus, Ga.	1000d
WCHK	Canton, Ga.	1000d
WTOC	Savannah, Ga.	5000
KYTE	Pocatello, Idaho	1000d
WIRL	Peoria, Ill.	5000
WCBL	Benton, Ky.	5000d
KJEF	Jennings, La.	1000d
WHGR	Houghton Lake, Mich.	5000
WNIL	Niles, Mich.	500d
WOIA	Saline, Mich.	500d
KBMO	Benson, Minn.	500d
WBLE	Batesville, Miss.	1000d
KALM	Thayer, Mo.	1000d
KGVO	Missoula, Mont.	5000
KOIL	Omaha, Nebr.	5000
WKNE	Keene, N.H.	5000
KSRC	Socorro, N.M.	1000d
WGLI	Babylon, N.Y.	1000
WNBF	Binghamton, N.Y.	5000
WHKY	Hickory, N.C.	5000
WEYE	Sanford, N.C.	1000d
WOMP	Bellaire, Ohio	1000d
WHIO	Dayton, Ohio	5000
KUMA	Pendleton, Oreg.	5000
KLIQ	Portland, Oreg.	5000d
WFBG	Altoona, Pa.	5000
WTIV	Titusville, Pa.	500d
WICE	Providence, R.I.	5000
WFIG	Sumter, S.C.	1000
WATO	Oak Ridge, Tenn.	1000
KBLT	Big Lake, Tex.	1000d
KIVY	Crockett, Tex.	500d
KRGV	Weslaco, Tex.	5000
KTRN	Wichita Falls, Tex.	5000
WPVA	Colonial Hgts., Va.	5000d
WAGE	Leesburg, Va.	1000d
WKWS	Rocky Mount, Va.	1000d
WVOW	Logan, W.Va.	5000
KAPY	Port Angeles, Wash.	1000d
WMIL	Milwaukee, Wis.	1000d
WCOW	Sparta, Wis.	5000d

1300—230.6

CBAF	Moncton, N.B.	5000
CJME	Regina, Sask.	1000
WAVC	Boaz, Ala.	500d
WTLS	Tallassee, Ala.	1000d
KWCB	Searcy, Ark.	1000d
KROP	Brawley, Calif.	1000
KYNO	Fresno, Calif.	5000
KWKW	Pasadena, Calif.	1000
KKCN	Ukiah, Calif.	5000d
KVOR	Colo. Sprgs., Colo.	1000
WAVZ	New Haven, Conn.	1000
WRKT	Cocoa Beach, Fla.	500d
WFFG	Marathon, Fla.	500d
WSOL	Tampa, Fla.	5000d
WMTM	Moultrie, Ga.	5000d
WIMO	Winder, Ga.	1000d
KOZE	Lewiston, Idaho	5000
WTAQ	LaGrange, Ill.	1000
WFRX	W. Frankfort, Ill.	1000d
WHLT	Huntington, Ind.	500d
WMFT	Terre Haute, Ind.	500d
KGLO	Mason City, Iowa	5000
WBLG	Lexington, Ky.	1000
WIBR	Baton Rouge, La.	1000
KANB	Shreveport, La.	1000d
WFBR	Baltimore, Md.	5000
WJDA	Quincy, Mass.	1000d
WOOD	Grand Rapids, Mich.	5000
WRBC	Jackson, Miss.	5000
KMMO	Marshall, Mo.	1000d
KBRL	McCook, Nebr.	1000d
KPTL	Carson City, Nev.	5000
WAAT	Trenton, N.J.	250d
WOSC	Fulton, N.Y.	1000d
WEEE	Rensselaer, N.Y.	5000d
WGOL	Goldsboro, N.C.	1000d
WLNC	Laurensburg, N.C.	500
WSYD	Mt. Airy, N.C.	5000
WERE	Cleveland, Ohio	5000
WMVO	Mt. Vernon, Ohio	500
KOME	Tulsa, Okla.	5000
KDOV	Medford, Oreg.	5000d
KACI	The Dalles, Oreg.	1000d
WWCH	Clarion, Pa.	500d
WTHT	Hazleton, Pa.	1000d
WTIL	Mayaguez, P.R.	1000
WCKI	Greer, S.C.	1000d
WKSC	Kershaw, S.C.	500d
KOLY	Mobridge, S.Dak.	1000d
WMTN	Morristown, Tenn.	5000d
WMAK	Nashville, Tenn.	5000
KVET	Austin, Tex.	1000
KTFY	Brownfield, Tex.	1000d
KGNS	Laredo, Tex.	500d
KKAS	Silsbee, Tex.	500d
KOL	Seattle, Wash.	5000
WCLG	Morgantown, W.Va.	1000d
WKLC	St. Albans, W.Va.	1000d

1310—228.9

CKOY	Ottawa, Ont.	5000
CFGM	Richmond Hill, Ont.	10000
WHEP	Foley, Ala.	1000d
WJAM	Marion, Ala.	5000d
KBUZ	Mesa, Ariz.	5000
KBOK	Malvern, Ark.	1000d
KIOT	Barstow, Calif.	500d
KPOD	Crescent City, Calif.	1000d
KDIA	Oakland, Calif.	1000
KTKR	Taft, Calif.	500d
KFKA	Greeley, Colo.	1000
WICH	Norwich, Conn.	5000
WOOO	Deland, Fla.	5000d
WAUC	Wauchula, Fla.	500d
WBRD	Waynesboro, Ga.	1000d
WBMK	West Point, Ga.	1000d
KLIX	Twin Falls, Idaho	5000
WISH	Indianapolis, Ind.	5000
KOLS	Perry, Iowa	500d
KOKX	Keokuk, Iowa	1000
WTTL	Madisonville, Ky.	500d
WDOC	Prestonsburg, Ky.	5000d
KIKS	Sulphur, La.	500d
KUZN	W. Monroe, La.	1000d
WLOB	Portland, Maine	1000d
WORC	Worcester, Mass.	5000
WKMH	Dearborn, Mich.	5000
WCCW	Traverse City, Mich.	1000d
KRBI	St. Peter, Minn.	1000d
WXXX	Hattiesburg, Miss.	1000d
KFSB	Joplin, Mo.	5000
KFBB	Great Falls, Mont.	5000
KGMT	Fairbury, Nebr.	500d
WJLK	Asbury Park, N.J.	250
WCAM	Camden, N.J.	250
KARA	Albuquerque, N.M.	1000d
WVIP	Mt. Kisco, N.Y.	5000d
WTLB	Utica, N.Y.	1000
WISE	Asheville, N.C.	5000
WKTC	Charlotte, N.C.	1000
WTIK	Durham, N.C.	1000
KNOX	Grand Forks, N.Dak.	5000
WFAH	Alliance, Ohio	1000d
KNPT	Newport, Oreg.	5000
WBFD	Bedford, Pa.	5000d
WGSA	Ephrata, Pa.	5000d
WNAE	Warren, Pa.	5000d
WDKD	Kingstree, S.C.	5000d
WDOD	Chattanooga, Tenn.	5000
WDXI	Jackson, Tenn.	5000
WBNT	Oneida, Tenn.	1000d
KZIP	Amarillo, Tex.	1000d
WRR	Dallas, Tex.	5000
KOYL	Odessa, Tex.	1000d
KUBO	San Antonio, Tex.	5000d
WEEL	Fairfax, Va.	1000
WGH	Newport News, Va.	5000
KARY	Prosser, Wash.	1000d
WIBA	Madison, Wis.	5000

1320—227.1

CHQM	Vancouver, B.C.	10000
CKEC	New Glasgow, N.S.	5000
CJSO	Sorel, P.Q.	1000
CKKW	Kitchener, Ont.	1000
WAGF	Dothan, Ala.	1000
WENN	Birmingham, Ala.	5000d
KBLU	Yuma, Ariz.	500d
KWHN	Fort Smith, Ark.	5000
KRLW	Walnut Ridge, Ark.	1000d
KHSJ	Hemet, Calif.	500d
KLAN	Lemoore, Calif.	1000d
KUDE	Oceanside, Calif.	500
KCRA	Sacramento, Calif.	5000
KAVI	Rocky Ford, Colo.	1000d
WATR	Waterbury, Conn.	5000
WGMA	Hollywood, Fla.	1000d
WZOK	Jacksonville, Fla.	5000
WAMR	Venice, Fla.	500d
WHIE	Griffin, Ga.	5000d
WKAN	Kankakee, Ill.	1000
KNIA	Knoxville, Iowa	500d
KMAQ	Maquoketa, Iowa	500d
KLWN	Lawrence, Kans.	500d
WBRT	Bardstown, Ky.	1000d
WNGO	Mayfield, Ky.	1000d
KHAL	Homer, La.	1000d
WICO	Salisbury, Md.	1000d
WARA	Attleboro, Mass.	1000
WILS	Lansing, Mich.	5000
WOMJ	Marquette, Mich.	1000
WRJW	Picayune, Miss.	5000d
KXLW	Clayton, Mo.	1000d
KOLT	Scottsbluff, Nebr.	5000
WWHG	Hornell, N.Y.	5000d
WQSR	Solvay, N.Y.	1320
WAGY	Forest City, N.C.	1000
WCOG	Greensboro, N.C.	5000
WEEW	Washington, N.C.	500d
KQDY	Minot, N.Dak.	1000d
WHOK	Lancaster, Ohio	1000d
KWOE	Clinton, Okla.	1000d
WKAP	Allentown, Pa.	5000
WGET	Gettysburg, Pa.	1000
WJAS	Pittsburgh, Pa.	5000
WSCR	Scranton, Pa.	1000
WRIO	Rio Piedras, P.R.	5000
WMSC	Columbia, S.C.	1000
KELO	Sioux Falls, S.Dak.	5000
WKIN	Kingsport, Tenn.	5000d
WMSR	Manchester, Tenn.	1000d
KVMC	Colo. City, Tex.	1000d
KXYZ	Houston, Tex.	5000
KCPX	Salt Lake City, Utah	5000
WEET	Richmond, Va.	1000d
KXRD	Aberdeen, Wash.	1000
KHIT	Walla Walla, Wash.	1000d
WQMN	Superior, Wis.	1000d
WFHR	Wisconsin Rapids, Wis.	5000

1330—225.4

WROS	Scottsboro, Ala.	1000d
KMOP	Tucson, Ariz.	500d
KUEE	Conway, Ark.	500d
KFAC	Los Angeles, Calif.	5000
KLBS	Los Banos, Calif.	500d
WARN	Ft. Pierce, Fla.	1000
WYSE	Lakeland, Fla.	1000d
WEBY	Milton, Fla.	5000d
WMEN	Tallahassee, Fla.	5000d
WMLT	Dublin, Ga.	5000d
WEAW	Evanston, Ill.	1000d
WRAM	Monmouth, Ill.	1000d
WRRR	Rockford, Ill.	1000d
WJPS	Evansville, Ind.	5000
KWWL	Waterloo, Iowa	5000
KFH	Wichita, Kans.	5000
WYGO	Corbin, Ky.	5000d
WMOR	Morehead, Ky.	1000d
KVOL	Lafayette, La.	1000
WASA	Harve deGrace, Md.	1000d
WCRB	Waltham, Mass.	5000
WTRX	Flint, Mich.	5000
WLOL	Minneapolis, Minn.	5000
WJPR	Greenville, Miss.	1000
WDAL	Meridian, Miss.	1000d
KUKU	Willow Springs, Mo.	1000d
KGAK	Gallup, N.Mex.	5000
WEVD	New York, N.Y.	5000
WPOW	New York, N.Y.	5000
WEBO	Owego, N.Y.	1000d
WHAZ	Troy, N.Y.	1000
WFIN	Findlay, Ohio	1000d
WKOV	Wellston, Ohio	500d
KPOJ	Portland, Oreg.	5000
WBLF	Bellefonte, Pa.	500
WICU	Erie, Pa.	5000
WLAT	Conway, S.C.	5000d
WFBC	Greenville, S.C.	5000
WAEW	Crossville, Tenn.	1000d
WTRO	Dyersburg, Tenn.	500d
KMIL	Cameron, Tex.	500d
KSWA	Graham, Tex.	500d
KINE	Kingsville, Tex.	1000d
KVKM	Monahans, Tex.	5000
KDOK	Tyler, Tex.	1000d
WBTM	Danville, Va.	5000
WRAA	Luray, Va.	1000d
WESR	Tasley, Va.	1000d
KFKF	Bellevue, Wash.	5000d
KCFA	Spokane, Wash.	5000d
WETZ	New Martinsville, W.Va.	1000d
WHBL	Sheboygan, Wis.	1000
KOVE	Lander, Wyo.	1000

1340—223.7

CFGB	Goose Bay, Nfld.	1000
CJAF	Cabano, Que.	250
CFSL	Weyburn, Sask.	1000
CFYK	Yellow Knife, N.W.T.	250
CHAD	Amos, Que.	250
CJLS	Yarmouth, N.S.	250
CHRD	Drummondville, Que.	250
CJQC	Quebec, Que.	250
CKAR-1	Parry Sound, Ont.	250
CKOX	Woodstock, Ont.	250
WKUL	Cullman, Ala.	250
WJOI	Florence, Ala.	250
WGWC	Selma, Ala.	250
WFEB	Sylacauga, Ala.	250
KIBH	Seward, Alaska	250
KIKO	Miami, Ariz.	250
KNOG	Nogales, Ariz.	250
KPGE	Page, Ariz.	250
KENT	Prescott, Ariz.	250
KBTA	Batesville, Ark.	1000
KBRS	Springdale, Ark.	250
KENL	Arcata, Calif.	250
KMAK	Fresno, Calif.	250
KDOL	Mojave, Calif.	100
KSFE	Needles, Calif.	250
KATY	San Luis Obispo, Calif.	250
KIST	Santa Barbara, Calif.	250
KOMY	Watsonville, Calif.	250
KDEN	Denver, Colo.	250
KWSL	Grand Junction, Colo.	250
KVRH	Salida, Colo.	250
WNHC	New Haven, Conn.	1000
WOOK	Washington, D.C.	250
WSLG	Clermont, Fla.	250
WTAN	Clearwater, Fla.	250
WROD	Daytona Bch., Fla.	250
WDSR	Lake City, Fla.	1000
WTYS	Marianna, Fla.	1000
WQXT	Palm Beach, Fla.	250
WSEB	Sebring, Fla.	250
WNSM	Valparaiso-Niceville, Fla.	250
WAKE	Atlanta, Ga.	250
WGAU	Athens, Ga.	1000
WBBQ	Augusta, Ga.	250
WGAA	Cedartown, Ga.	1000
WOKS	Columbus, Ga.	1000
WBBT	Lyons, Ga.	250
WTIF	Tifton, Ga.	1000
KWLW	Wampa, Idaho	1000
KPST	Preston, Idaho	250
KSKI	Sun Valley, Idaho	1000
WSOY	Decatur, Ill.	250
WJPF	Herrin, Ill.	250
WJOL	Joliet, Ill.	250
WBIW	Bedford, Ind.	1000
WTRC	Elkhart, Ind.	1000
WLBC	Muncie, Ind.	1000
KROS	Clinton, Iowa	250
KLIL	Estherville, Iowa	100
KCKN	Kansas City, Kans.	250
KSEK	Pittsburg, Kans.	250
WCMI	Ashland, Ky.	250
WBGN	Bowling Green, Ky.	250
WNBS	Murray, Ky.	250
WEKY	Richmond, Ky.	250
KVOB	Bastrop, La.	250
KRMD	Shreveport, La.	250
WFAU	Augusta, Maine	1000
WHOU	Houlton, Maine	1000
WGAW	Gardner, Mass.	1000
WNBH	New Bedford, Mass.	1000
WBRK	Pittsfield, Mass.	1000
WLEW	Bad Axe, Mich.	250
WLAV	Grand Rap., Mich.	1000d
WCSR	Hillsdale, Mich.	500
WMTE	Manistee, Mich.	1000
WAGN	Menominee, Mich.	250
WMBN	Petoskey, Mich.	1000
WEXL	Royal Oak, Mich.	250
KDLM	Detroit Lakes, Minn.	1000
WEVE	Eveleth, Minn.	1000
KROC	Rochester, Minn.	1000
KWLM	Willmar, Minn.	1000
WJMB	Brookhaven, Miss.	250
WAML	Laurel, Miss.	250
KXEO	Mexico, Mo.	250
KLID	Poplar Bluff, Mo.	250
KSMO	Salem, Mo.	250
KICK	Springfield, Mo.	250
KCAP	Helena, Mont.	250
KPRK	Livingston, Mont.	250
KATL	Miles City, Mont.	1000
KQTE	Missoula, Mont.	250
KHUB	Fremont, Nebr.	100
KGFW	Kearney, Nebr.	1000
KSID	Sidney, Nebr.	1000
KDRK	Las Vegas, Nev.	250
KBET	Reno, Nev.	1000
WDCR	Hanover, N.H.	1000
WMID	Atlantic City, N.J.	1000
KNDE	Aztec, N.Mex.	1000
KRRR	Ruidoso, N.Mex.	250
KKIT	Taos, N.Mex.	250
KSIL	Silver City, N.Mex.	1000
WMBO	Auburn, N.Y.	1000
WENT	Gloversville, N.Y.	1000
WXYG	Jamestown, N.Y.	250
WUSJ	Lockport, N.Y.	250
WMSA	Massena, N.Y.	1000
WALL	Middletown, N.Y.	1000
WIRY	Plattsburgh, N.Y.	1000
WJRI	Lenoir, N.C.	1000
WTSB	Lumberton, N.C.	1000
WOXF	Oxford, N.C.	1000
WOOW	Greenville, N.C.	1000
WGNI	Wilmington, N.C.	1000
WAIR	Winston-Salem, N.C.	250
KGPC	Grafton, N.Dak.	1000
WNCO	Ashland, Ohio	250
WOUB	Athens, Ohio	250
WIZE	Springfield, Ohio	250
WSTV	Steubenville, Ohio	250
KIHN	Hugo, Okla.	250
KOCY	Okla. City, Okla.	250

Kc. Wave Length W.P.

KTOW Sand Spring, Okla. 100
KWVR Enterprise, Oreg. 250
KIHR Hood River, Oreg. 250
KFIR North Bend, Oreg. 1000
WCVI Connellsville, Pa. 250
WSAJ Grove City, Pa. 100
WKRZ Oil City, Pa. 1000
WHAT Philadelphia, Pa. 1000
WRAW Reading, Pa. 1000
WTRN Tyrone, Pa. 250
WBRE Wilkes-Barre, Pa. 1000
WWPA Williamsport, Pa. 250
WGRF Aguadilla, P.R. 250
WOKE Charleston, S.C. 1000
WRHI Rock Hill, S.C. 1000
WSSC Sumter, S.C. 1000
KIJV Huron, S.D. 250
KRSD Rapid City, S.Dak. 1000
WBAC Cleveland, Tenn. 250
WKRM Columbia, Tenn. 250
WGRV Greeneville, Tenn. 250
WKGN Knoxville, Tenn. 1000
WHHM Memphis, Tenn. 250
WCDT Winchester, Tenn. 250
KWKC Abilene, Tex. 250
KTSL Burnett, Tex. 250
KAND Corsicana, Tex. 250
KSET El Paso, Tex. 250
KOUB Lubbock, Tex. 250
KRBA Lufkin, Tex. 250
KPDN Pampa, Tex. 250
KOLE Port Arthur, Tex. 250
KTXL San Angelo, Tex. 250
KVIC N. of Victoria, Tex. 250
WTWN St. Johnsbury, Vt. 1000
WSTA Charlotte Amalie, V.I. 250
WKEY Covington, Va. 1000
WHAP Hopewell, Va. 1000
WJMA Orange, Va. 1000
KAGT Anacortes, Wash. 250
KPKW Pasco, Wash. 250
KAPA Raymond, Wash. 250
KMEL Wenatchee, Wash. 250
WHAR Clarksburg, W.Va. 250
WEPM Martinsburg, W.Va. 250
WMON Montgomery, W.Va. 250
WOVE Welch, W.Va. 1000
WLDY Ladysmith, Wis. 1000
WRIT Milwaukee, Wis. 250
KYCN Wheatland, Wyo. 250
KWOR Worland, Wyo. 250

1350—222.1

CHOV Pembroke, Ont. 1000
CJLM Joliette, Que. 1000
CHGB St. Anne de la Pocatiere, Que. 5000
CKLB Oshawa, Ont. 10000
CKEN Kentville, N.S. 1000
WELB Elba, Ala. 1000d
WGAD Gadsden, Ala. 5000
KAAB Hot Springs, Ark. 1000
KLYD Bakersfield, Calif. 1000d
KCKC San Bernardino, Calif. 500
KSRO Santa Rosa, Calif. 1000
KGHF Pueblo, Colo. 5000
WNLK Norwalk, Conn. 500
WINY Putnam, Conn. 1000d
WEZY Cocoa, Fla. 1000
WDCF Dade City, Fla. 1000d
WBSG Blackshear, Ga. 500d
WRWH Cleveland, Ga. 1000d
WRPB Warner Robins, Ga. 5000d
KRLC Lewiston, Idaho 5000
WAAP Peoria, Ill. 1000
WJBD Salem, Ill. 500d
WIOU Kokomo, Ind. 5000
KRNT Des Moines, Iowa 5000
KMAN Manhattan, Kans. 500d
WLOU Louisville, Ky. 5000d
WSMB New Orleans, La. 5000
WDEA Ellsworth, Me. 1000d
WHMI Howell, Mich. 500
KDIO Ortonville, Minn. 1000d
WCMP Pine City, Minn. 1000d
WKOZ Kosciusko, Miss. 5000d
KCHR Charleston, Mo. 1000d
KBRX O'Neill, Nebr. 1000d
WLNH Laconia, N.H. 5000d
KABQ Albuquerque, N.M. 5000
WCBA Corning, N.Y. 1000d
WRNY Rome, N.Y. 500d
WBMT Black Mountain, N.C. 500d
WHIP Mooresville, N.C. 1000d
WLLY Wilson, N.C. 1000d
KQDI Bismarck, N.D. 500d
WADC Akron, Ohio 5000
WCHI Chillicothe, Ohio 500d
KRHD Duncan, Okla. 250
KTLQ Tahlequah, Okla. 1000d
KRVC Ashland, Oreg. 1000d
KLDO Corvallis, Oreg. 1000d
WORK York, Pa. 5000
WDAR Darlington, S.C. 1000d
WGSW Greenwood, S.C. 1000d
WRKM Carthage, Tenn. 500d
KCAR Clarksville, Tex. 500d
KTXJ Jasper, Tex. 1000d
KCOR San Antonio, Tex. 5000
WBLT Bedford, Va. 1000d
WFLS Fredericksburg, Va. 500d
WNVA Norton, Va. 5000d
WAVY Portsmouth, Va. 5000
WPDR Portage, Wis. 1000d

1360—220.4

WWWB Jasper, Ala. 1000d
WLIQ Mobile, Ala. 5000d

Kc. Wave Length W.P.

WMFC Monroeville, Ala. 1000d
WELR Roanoke, Ala. 1000d
KRUX Glendale, Ariz. 5000
KLYR Clarksville, Ark. 500d
KFFA Helena, Ark. 1000
KFIV Modesto, Calif. 1000
KRCK Ridgecrest, Calif. 1000d
KGB San Diego, Calif. 5000
WDRC Hartford, Conn. 5000
WOBS Jacksonville, Fla. 5000d
WKAT Miami Beach, Fla. 5000
WSFR Sanford, Fla. 500d
WINT Winter Haven, Fla. 1000d
WAZA Bainbridge, Ga. 1000d
WLAW Lawrenceville, Ga. 1000d
WMAC Metter, Ga. 500d
WLBK DeKalb, Ill. 1000d
WVMC Mt. Carmel, Ill. 500d
WGFA Watseka, Ill. 1000d
KHAK Cedar Rapids, Iowa 1000d
KXGI Ft. Madison, Iowa 1000d
KSCJ Sioux City, Iowa 5000
KBTO El Dorado, Kans. 500d
WFLW Monticello, Ky. 1000d
KDBC Mansfield, La. 1000d
KVIM New Iberia, La. 1000d
KTLD Tallulah, La. 500d
WEBB Dundalk, Md. 5000d
WLYN Lynn, Mass. 1000d
WKMI Kalamazoo, Mich. 5000
KLRS Mountain Grove, Mo. 1000d
KWRV McCook, Nebr. 1000d
WNNJ Newton, N.J. 1000d
WWBZ Vineland, N.J. 1000
WKOP Binghamton, N.Y. 5000
WMNS Olean, N.Y. 1000d
WCHL Chapel Hill, N.C. 1000d
KEYZ Williston, N.D. 5000
WSAI Cincinnati, Ohio 5000
WWOW Conneaut, Ohio 500d
KUIK Hillsboro, Oreg. 1000d
WPQR McKeesport, Pa. 5000
WPPA Pottsville, Pa. 1000
WELP Easley, S.C. 1000d
WLCM Lancaster, S.C. 1000d
WNAH Nashville, Tenn. 1000d
KRAY Amarillo, Tex. 500d
KACT Andrews, Tex. 1000d
KWBA Baytown, Tex. 1000
KRYS Corpus Christi, Tex. 1000
KXOL Ft. Worth, Tex. 5000
WBOB Galax, Va. 1000d
WHBG Harrisonburg, Va. 5000d
KFDR Grand Coulee, Wash. 1000d
KMO Tacoma, Wash. 5000
WHJC Matewan, W.Va. 1000d
WMOV Ravenswood, W.Va. 1000d
WBAY Green Bay, Wis. 5000
WISV Viroqua, Wis. 500d
WMNE Menomonie, Wis. 1000d
KVRS Rock Springs, Wyo. 1000

1370—218.8

WBYE Calera, Ala. 1000d
KTPA Prescott, Ark. 500d
KBUC Corona, Calif. 1000
KEEN San Jose, Calif. 5000
KGEN Tulare, Calif. 1000d
WKMK Blountstown, Fla. 500d
WKOS Ocala, Fla. 1000d
WCOA Pensacola, Fla. 5000
WAXE Vero Beach, Fla. 1000d
WBGR Jesup, Ga. 5000
WFDR Manchester, Ga. 1000d
WKLE Washington, Ga. 1000d
WPRC Lincoln, Ill. 1000d
WTTS Bloomington, Ind. 5000
WGRY Gary, Ind. 1000d
KDTH Dubuque, Iowa 5000
KGNO Dodge City, Kans. 5000
KALN Iola, Kans. 500d
WGOH Grayson, Ky. 5000d
WTKY Tompkinsville, Ky. 1000d
KAPB Marksville, La. 1000d
WMHI Braddocks Hts., Md. 500d
WKIK Leonardtown, Md. 1000d
WGHN Grand Haven, Mich. 500d
KSUM Fairmont, Minn. 1000
WDOB Canton, Miss. 1000d
KWRT Boonville, Mo. 1000d
KCRV Caruthersville, Mo. 1000d
KXLF Butte, Mont. 5000
KAWL York, Nebr. 500d
WFEA Manchester, N.H. 5000
WALK Patchogue, N.Y. 500d
WSAY Rochester, N.Y. 5000
WLTC Gastonia, N.C. 1000d
WTAB Tabor City, N.C. 5000d
KFJM Grand Forks, N.D. 1000d
WSPD Toledo, Ohio 5000
KAST Astoria, Oreg. 1000
WOTR Corry, Pa. 1000
WPAZ Pottstown, Pa. 1000d
WKMC Roaring Sprgs., Pa. 1000d
WIVV Vieques, P.R. 1000
WKFD Wickford, R.I. 500d
WDEF Chattanooga, Tenn. 5000
WDXE Lawrenceburg, Tenn. 1000d
WRGS Rogersville, Tenn. 1000d
KOKE Austin, Tex. 1000d
KFRO Longview, Tex. 1000
KUKO Post, Tex. 500d
KSOP Salt Lake City, Utah 1000d
WBTN Bennington, Vt. 1000d
WHEE Martinsville, Va. 5000d
WJWS South Hill, Va. 5000d

Kc. Wave Length W.P.

KPOR Quincy, Wash. 1000d
WMOD Moundsville, W.Va. 1000d
WCCN Neillsville, Wis. 5000d
KVWO Cheyenne, Wyo. 1000

1380—217.3

CFDA Victoriaville, Que. 1000
CKPC Brantford, Ont. 10000
CKLC Kingston, Ont. 5000
WRAB Arab, Ala. 1000d
WGYV Greenville, Ala. 1000d
KDXE N. Little Rock, Ark. 1000d
KBVM Lancaster, Calif. 1000d
KGMS Sacramento, Calif. 1000
KSBW Salinas, Calif. 5000
KFLJ Walsenburg, Colo. 1000d
WAMS Wilmington, Del. 5000
WLIZ Lake Worth, Fla. 500d
WQXQ Ormond Bch., Fla. 1000d
WLCY St. Petersburg, Fla. 5000
WAOK Atlanta, Ga. 5000
WSIZ Ocilla, Ga. 5000d
KPOI Honolulu, Hawaii 5000
WBEL South Beloit, Ill. 5000
WITE Brazil, Ind. 500d
WKJG Ft. Wayne, Ind. 5000
KCIM Carroll, Iowa 1000
KCII Washington, Iowa 500d
WMTA Central City, Ky. 500d
WWKY Winchester, Ky. 1000d
WYNK Baton Rouge, La. 500d
WKTJ Farmington, Me. 1000d
WTTH Port Huron, Mich. 1000
WPLB Greenville, Mich. 500d
KLIZ Brainerd, Minn. 1000d
KAGE Winona, Minn. 1000
WDLT Indianola, Miss. 500d
KUDL Kansas City, Mo. 1000d
KWK St. Louis, Mo. 5000
KUVR Holdredge, Nebr. 500
WBBX Portsmouth, N.H. 1000
WAWZ Zarephath, N.J. 5000
WBNX New York, N.Y. 5000
WLOS Asheville, N.C. 5000
WTOB Winston-Salem, N.C. 5000
WWIZ Lorain, Ohio 500d
WPKO Waverly, Ohio 1000d
KSWO Lawton, Okla. 1000
KMUS Muskogee, Okla. 1000
KBCH Ocean Lake, Oreg. 1000d
KSRV Ontario, Oreg. 5000
WACB Kittanning, Pa. 1000d
WMLP Milton, Pa. 1000d
WAYZ Waynesboro, Pa. 1000d
WNRI Woonsocket, R.I. 1000d
WAGS Bishopville, S.C. 1000d
WGUS N. Augusta, S.C. 1000d
KOTA Rapid City, S.Dak. 5000
KJET Beaumont, Tex. 1000d
WYSH Clinton, Tenn. 1000d
WGMM Millington, Tenn. 500d
KBWD Brownwood, Tex. 1000
KCRM Crane, Tex. 1000d
KTSM El Paso, Tex. 1000
KMUL Muleshoe, Tex. 1000d
KBOP Pleasanton, Tex. 1000d
WSYB Rutland, Vt. 5000
WMBG Richmond, Va. 5000
KRKO Everett, Wash. 5000
KPEG Spokane, Wash. 5000d
WBEL Beloit, Wis. 5000

1390—215.7

CKLN Nelson, B.C. 1000
WHMA Anniston, Ala. 5000
KDQN DeQueen, Ark. 500d
KAMO Rogers, Ark. 1000d
KGER Long Beach, Calif. 5000
KTUR Turlock, Calif. 5000
KFML Denver, Colo. 1000d
WAVP Avon Park, Fla. 1000d
WPUP Gainesville, Fla. 5000d
WGES Chicago, Ill. 5000
WFIW Fairfield, Ill. 1000
WJCD Seymour, Ind. 1000d
KCLN Clinton, Iowa 1000d
KCBC Des Moines, Iowa 1000
KNCK Concordia, Kans. 500d
WANY Albany, Ky. 1000d
WKIC Hazard, Ky. 5000d
KFRA Franklin, La. 500d
KNOE Monroe, La. 5000
WEGP Presque Isle, Me. 5000d
WCAT Orange, Mass. 1000d
WPLM Plymouth, Mass. 5000
WCER Charlotte, Mich. 1000d
KRFO Owatonna, Minn. 500d
WROA Gulfport, Miss. 1000d
WQIC Meridian, Miss. 5000d
KSPW Waynesville, Mo. 1000d
KENN Farmington, N.Mex. 5000
KHOB Hobbs, N.Mex. 5000d
WEOK Poughkeepsie, N.Y. 5000d
WRIV Riverhead, N.Y. 1000d
WFBL Syracuse, N.Y. 5000
WKRK Murphy, N.C. 1000d
WEED Rocky Mount, N.C. 5000
WADA Shelby, N.C. 500d
WJRM Troy, N.C. 500d
KLPM Minot, N.Dak. 5000
WOHP Bellefontaine, Ohio 500d
WMPO Middleport-Pomroy, Ohio 1000d
WFMJ Youngstown, Ohio 5000
KCRC Enid, Okla. 1000
KSLM Salem, Oreg. 5000
WLAN Lancaster, Pa. 1000

Kc. Wave Length W.P.

WRSC State College, Pa. 500d
WISA Isabella, P.R. 1000
WHPB Belton, S.C. 500d
WCSC Charleston, S.C. 5000
KJAM Madison, S.D. 5000d
WTJS Jackson, Tenn. 5000
KULP El Campo, Tex. 500d
KBEC Waxahachie, Tex. 500d
KLGN Logan, Utah 1000
WEAM Arlington, Va. 5000
WWOD Lynchburg, Va. 5000
KLOQ Yakima, Wash. 1000

1400—214.2

CKBC Bathurst, N.B. 250
CKDH Amherst, N.S. 250
CJFP Riviere-du-Loup, Que. 1000
CKRN Rouyn, Que. 250
CKSW Swift Current, Sask. 250
WMSL Decatur, Ala. 250
WXAL Demopolis, Ala. 250
WFPA Ft. Payne, Ala. 250
WJLD Homewood, Ala. 1000
WJHO Opelika, Ala. 1000
KSEW Sitka, Alaska 250
KCLF Clifton, Ariz. 250
KXIV Phoenix, Ariz. 250
KTUC Tucson, Ariz. 250
KVOY Yuma, Ariz. 250
KELD El Dorado, Ark. 1000
KCLA Pine Bluff, Ark. 1000
KWYN Wynne, Ark. 1000
KRE Berkeley, Calif. 250
KREO Indio, Calif. 250
KQMS Redding, Calif. 250
KSLY San Luis Obispo, Cal. 250
KSPA Santa Paula, Calif. 250
KHOE Truckee, Calif. 1000
KUKI Ukiah, Calif. 1000
KONG Visalia, Calif. 250
KRLN Canon City, Colo. 250
KDTA Delta, Colo. 250
KFTM Ft. Morgan, Colo. 250
KBZZ La Junta, Colo. 250
WSTC Stamford, Conn. 250
WILI Willimantic, Conn. 1000
WFTL Ft. Lauderdale, Fla. 250
WIRA Ft. Pierce, Fla. 250
WRHC Jacksonville, Fla. 250
WPRY Perry, Fla. 250
WTRR Sanford, Fla. 1000
WZRH Zephyr Hills, Fla. 250
WCQS Alma, Ga. 1000
WSGC Elberton, Ga. 1000
WNEX Macon, Ga. 1000
WMGA Moultrie, Ga. 1000
WCOH Newnan, Ga. 1000
WGSA Savannah, Ga. 1000
KCYN Idaho Falls, Idaho 250
KART Jerome, Idaho 250
KRPL Moscow, Idaho 250
KSPT Sandpoint, Idaho 250
WDWS Champaign, Ill. 1000
WGIL Galesburg, Ill. 1000
WROZ Evansville, Ind. 250
WBAT Marion, Ind. 500
KCOG Centerville, Iowa 100
KVFD Fort Dodge, Iowa 250
KVOE Emporia, Kans. 250
KAYS Hays, Kans. 250
WCYN Cynthiana, Ky. 250
WIEL Elizabethtown, Ky. 250
WFTG London, Ky. 250
WFPR Hammond, La. 250
KAOK Lake Charles, La. 250
WRDO Augusta, Maine 250
WIDE Biddeford, Maine 1000
WWIN Baltimore, Md. 250
WALE Fall River, Mass. 1000
WLLH Lowell, Mass. 500
WHMP Northampton, Mass. 1000
WELL Battle Creek, Mich. 250
WJLB Detroit, Mich. 250
WHDF Houghton, Mich. 250
WMAB Munising, Mich. 250
WSAM Saginaw, Mich. 250
WSJM St. Joseph, Mich. 250
WTCM Traverse City, Mich. 250
KEYL Long Prairie, Minn. 250
KMHL Marshall, Minn. 250
WMIN Mpls.-St. Paul, Minn. 250
WHLB Virginia, Minn. 1000
WBIP Booneville, Miss. 250
WNAG Grenada, Miss. 250
WFOR Hattiesburg, Miss. 250
WJQS Jackson, Miss. 250
WMBC Macon, Miss. 250
KFRU Columbia, Mo. 1000
KJCF Festus, Mo. 250
KSIM Sikeston, Mo. 250
KTTS Springfield, Mo. 1000
KXGN Glendive, Mont. 250
KARR Great Falls, Mont. 1000
KCOW Alliance, Nebr. 250
KLIN Lincoln, Nebr. 250
KBMI Henderson, Nev. 250
KWNA Winnemucca, Nev. 1000
WTSL Hanover, N.H. 1000
KTRC Santa Fe, N.Mex. 250
KCHS Truth or Consequences, New Mexico 250
KTNM Tucumcari, N.Mex. 250
WONO Pleasantville, N.J. 1000
WABY Albany, N.Y. 1000
WBNY Buffalo, N.Y. 250
WSLB Ogdensburg, N.Y. 1000

Kc. Wave Length W.P.

WBMA	Beaufort, N.C.	250
WGBG	Greensboro, N.C.	1000
WSIC	Statesville, N.C.	1000
WLSE	Wallace, N.C.	250
WHCC	Waynesville, N.C.	1000
WCNF	Weldon, N.C.	250
KEYJ	Jamestown, N.Dak.	1000
WMAN	Mansfield, Ohio	250
WPAY	Portsmouth, Ohio	1000
KWON	Bartlesville, Okla.	250
KTMC	McAlester, Okla.	250
KNOR	Norman, Okla.	250
KNND	Cottage Grove, Oreg.	250
WEST	Easton, Pa.	250
WJET	Erie, Pa.	250
WHGB	Harrisburg, Pa.	250
WJAC	Johnstown, Pa.	250
WKBI	St. Marys, Pa.	1000
WICK	Scranton, Pa.	250
WRAK	Williamsport, Pa.	250
WCOS	Columbia, S.C.	1000
WGTN	Georgetown, S.C.	250
WTHE	Spartanburg, S.C.	250
WJZM	Clarksville, Tenn.	1000
WHUB	Cookeville, Tenn.	1000
WLSB	Copper Hill, Tenn.	250
WGAP	Maryville, Tenn.	1000
WHAL	Shelbyville, Tenn.	1000
KRUN	Ballinger, Tex.	250
KBYG	Big Spring, Tex.	250
KUNO	Corpus Christi, Tex.	250
KILE	nr. Galveston, Tex.	250
KGVL	Greenville, Tex.	250
KEBE	Jacksonville, Tex.	250
KIUN	Pecos, Tex.	250
KEYE	Perryton, Tex.	250
KVOP	Plainview, Tex.	250
KDWT	Stamford, Tex.	250
KTEM	Temple, Tex.	250
KTFS	Texarkana, Tex.	250
KVOU	Uvalde, Tex.	250
KIXX	Provo, Utah	250
WDOT	Burlington, Vt.	250
WINA	Charlottesville, Va.	1000
WHHV	Hillsville, Va.	250
WHIH	Portsmouth, Va.	250
WHLF	So. Boston, Va.	1000
WINC	Winchester, Va.	1000
KEDO	Longview, Wash.	250
KRSC	Othello, Wash.	250
KTNT	Tacoma, Wash.	1000
WBOY	Clarkesburg, W.Va.	250
WRON	Ronceverte, W.Va.	1000
WSPZ	Spencer, W.Va.	250
WKWK	Wheeling, W.Va.	250
WBTH	Williamson, W.Va.	1000
WATW	Ashland, Wis.	1000
WBIZ	Eau Claire, Wis.	1000
WDUZ	Green Bay, Wis.	250
WRJN	Racine, Wis.	250
WRDB	Reedsburg, Wis.	250
WRIG	Wausau, Wis.	250
KATI	Casper, Wyo.	250
KODI	Cody, Wyo.	1000

1410—212.6

CFUN	Vancouver, B.C.	10000
CHLP	Montreal, Que.	10000
WALA	Mobile, Ala.	5000
WCHP	Tuscumbia, Ala.	500d
KTCS	Fort Smith, Ark.	1000
KERN	Bakersfield, Calif.	1000
KRML	Carmel, Calif.	500d
KKOK	Lompoc, Calif.	500d
KMYC	Marysville, Calif.	5000
KCAL	Redlands, Calif.	1000d
KCOL	Ft. Collins, Colo.	1000
WPOP	Hartford, Conn.	5000
WDOV	Dover, Del.	5000d
WMYR	Fort Myers, Fla.	5000
WBIL	Leesburg, Fla.	1000d
WRIX	Griffin, Ga.	1000d
WSNE	Cummings, Ga.	1000d
WDAX	McRae, Ga.	1000d
WLAQ	Rome, Ga.	1000
WRMN	Elgin, Ill.	500d
WTIM	Taylorville, Ill.	1000d
WAZY	Lafayette, Ind.	1000d
KGRN	Grinnell, Iowa	500d
KLEM	LeMars, Iowa	1000d
KCLO	Leavenworth, Kans.	5000d
KWBB	Wichita, Kans.	5000
WLBJ	Bowling Green, Ky.	5000
WHLN	Harlan, Ky.	5000d
KDBS	Alexandria, La.	1000d
WGRD	Grand Rap., Mich.	1000d
KLFD	Litchfield, Minn.	500d
WDSK	Cleveland, Miss.	1000d
WBKN	Newton, Miss.	500d
WHTG	Eatontown, N.J.	500d
WDOE	Dunkirk, N.Y.	500
WELM	Elmira, N.Y.	1000
WSET	Glen Falls, N.Y.	1000d
WOTT	Watertown, N.Y.	5000
WEGO	Concord, N.C.	1000d
WSRC	Durham, N.C.	1000d
WING	Dayton, Ohio	5000
KPAM	Portland, Oreg.	5000d
WLSH	Lansford, Pa.	5000d
KQV	Pittsburgh, Pa.	5000
WPCC	Clinton, S.C.	1000d
WYMB	Manning, S.C.	1000d
WCMT	Martin, Tenn.	1000d
KBUD	Athens, Tex.	1000d
KBAN	Bowie, Tex.	500d

KVLB	Cleveland, Tex.	500
KXIT	Dalhart, Tex.	500d
KADO	Marshall, Tex.	500
KRIG	Odessa, Tex.	1000
KBAL	San Saba, Tex.	500d
KNAL	Victoria, Tex.	500
WRIS	Roanoke, Va.	5000d
WKBH	LaCrosse, Wis.	5000
KWYO	Sheridan, Wyo.	1000

1420—211.1

CKPT	Peterborough, Ont.	1000
CJMT	Chicoutimi, Que.	1000
WACT	Tuscaloosa, Ala.	5000d
KHFH	Sierra Vista, Ariz.	1000d
KPOC	Pocahontas, Ark.	1000d
KSTN	Stockton, Calif.	5000
WLIS	Old Saybrook, Conn.	500d
WBRD	Bradenton, Fla.	1000
WDBF	Delray Beach, Fla.	5000d
WSTN	St. Augustine, Fla.	1000d
WRFB	Tallahassee, Fla.	5000d
WAVO	Avondale Estates, Ga.	1000d
WRBL	Columbus, Ga.	5000
WPEH	Louisville, Ga.	1000d
WLET	Toccoa, Ga.	5000d
WINI	Murphysboro, Ill.	500d
WIMS	Michigan City, Ind.	5000d
WOC	Davenport, Iowa	5000
KJCK	Junction City, Kans.	1000d
WTCR	Ashland, Ky.	5000d
WHBN	Harrodsburg, Ky.	1000d
WVJS	Owensboro, Ky.	1000
KPEL	Lafayette, La.	1000
WOKW	Brockton, Mass.	1000d
WBSM	New Bedford, Mass.	5000
WBEC	Pittsfield, Mass.	1000
WAMM	Flint, Mich.	1000d
WKPR	Kalamazoo, Mich.	1000d
KTOE	Mankato, Minn.	5000
WSUH	Oxford, Miss.	1000d
WQBC	Vicksburg, Miss.	1000
KBTN	Neosho, Mo.	500d
KOOO	Omaha, Nebr.	1000d
KSYX	Santa Rosa, N.Mex.	1000d
WALY	Herkimer, N.Y.	1000d
WACK	Newark, N.Y.	500
WLNA	Peekskill, N.Y.	1000d
WMYN	Mayodan, N.C.	500
WGAS	S. Gastonia, N.C.	500d
WVOT	Wilson, N.C.	1000
WHK	Cleveland, Ohio	5000
KTJS	Hobart, Okla.	1000d
KYNG	Coos Bay, Oreg.	1000d
WCOJ	Coatesville, Pa.	5000
WCED	DuBois, Pa.	5000
WEUC	Ponce, P.R.	1000
WCRE	Cheraw, S.C.	1000d
KABR	Aberdeen, S.D.	1000d
WEMB	Erwin, Tenn.	5000d
WKSR	Pulaski, Tenn.	1000
KFYN	Bonham, Tex.	250d
KTRE	Lufkin, Tex.	1000
KGNB	New Braunfels, Tex.	1000d
KPEP	San Angelo, Tex.	1000d
WWSR	St. Albans, Vt.	1000d
WDDY	Gloucester, Va.	1000d
WKCW	Warrenton, Va.	5000d
KITI	Chehalis, Wash.	1000d
KUJ	Walla Walla, Wash.	5000
WPLY	Plymouth, Wis.	500d

1430—209.7

CKFH	Toronto, Ont.	10000
WFHK	Pell City, Ala.	1000d
KHBM	Monticello, Ark.	1000d
KAMP	El Centro, Calif.	1000d
KARM	Fresno, Calif.	5000
KALI	Pasadena, Calif.	5000
KDSI	Aurora, Colo.	5000
WSDB	Homestead, Fla.	500d
WLAK	Lakeland, Fla.	5000
WPCF	Panama City, Fla.	5000
WGFS	Covington, Ga.	1000d
WRCD	Dalton, Ga.	1000d
WWGS	Tifton, Ga.	5000
WCMY	Ottawa, Ill.	500d
WIRE	Indianapolis, Ind.	5000
KASI	Ames, Iowa	1000d
KMRC	Morgan City, La.	500d
WNAV	Annapolis, Md.	5000
WHIL	Medford, Mass.	5000d
WION	Ionia, Mich.	5000d
WBRB	Mt. Clemens, Mich.	500d
WLAU	Laurel, Miss.	5000d
KAOL	Carrollton, Mo.	500d
WIL	St. Louis, Mo.	5000
KRGI	Grand Island, Nebr.	1000
WNJR	Newark, N.J.	5000
KGFL	Roswell, N.M.	5000d
WENE	Endicott, N.Y.	5000
WMNC	Morganton, N.C.	5000d
WDJS	Mt. Olive, N.C.	1000d
WRXO	Roxboro, N.C.	1000d
WFOB	Fostoria, Ohio	1000
WCLT	Newark, Ohio	500d
KALV	Alva, Okla.	500
KTUL	Tulsa, Okla.	5000
KGAY	Salem, Oreg.	5000d
WVAM	Altoona, Pa.	1000
WFRA	Franklin, Pa.	500d
WNEL	Caguas, P.R.	1000
WBLR	Batesburg, S.C.	5000d
WATP	Marion, S.C.	1000d
KBRK	Brookings, S. Dak.	1000d
WFCT	Fountain City, Tenn.	1000d

WENO	Madison, Tenn.	5000d
WHER	Memphis, Tenn.	1000
KSTB	Breckenridge, Tex.	1000d
KEES	Gladewater, Tex.	1000d
KCOH	Houston, Tex.	1000d
KLO	Ogden, Utah	5000
WDYL	Ashland, Va.	1000d
WDIC	Clincho, Va.	1000d
KBRC	Mt. Vernon, Wash.	5000
WEIR	Weirton, W.Va.	1000
WBEV	Beaver Dam, Wis.	1000d

1440—208.2

CFCP	Courtenay, B.C.	1000
WHHY	Montgomery, Ala.	5000
KWBY	Scottsdale, Ariz.	5000d
KHOG	Fayetteville, Ark.	1000d
KOKY	Little Rock, Ark.	5000d
KVON	Napa, Calif.	500
KPRO	Riverside, Calif.	1000
KCOY	Santa Maria, Calif.	1000
WBIS	Bristol, Conn.	500d
WABR	Winter Park, Fla.	5000
WWCC	Bremen, Ga.	1000d
WGIG	Brunswick, Ga.	5000
WRAJ	Anna, Ill.	500d
WPRS	Paris, Ill.	1000d
WGEM	Quincy, Ill.	1000
WROK	Rockford, Ill.	1000
WPGW	Portland, Ind.	500d
KCHE	Cherokee, Iowa	500d
KJAY	Topeka, Kans.	5000
WKLX	Paris, Ky.	1000d
WEZJ	Williamsburg, Ky.	1000d
KMLB	Monroe, La.	5000
WJAB	Westbrook, Me.	5000d
WAAB	Worcester, Mass.	5000
WBCM	Bay City, Mich.	1000
WDOW	Dowagiac, Mich.	500d
WCHB	Inkster, Mich.	1000d
KEVE	Golden Valley, Minn.	5000
WHHT	Lucedale, Miss.	1000d
WMVB	Millville, N.J.	1000d
WBAB	Babylon, N.Y.	1000d
WJJL	Niagara Falls, N.Y.	1000d
WSGO	Oswego, N.Y.	1000d
WBLA	Elizabethtown, N.C.	1000d
WBUY	Lexington, N.C.	5000d
KILO	Grand Forks, N.D.	1000
WHHH	Warren, Ohio	5000
KMED	Medford, Oreg.	5000
KODL	The Dalles, Oreg.	1000
WCDL	Carbondale, Pa.	5000d
WNPV	Lansdale, Pa.	500d
WGCB	Red Lion, Pa.	1000d
WQOK	Greenville, S.C.	5000
WZYX	Cowan, Tenn.	1000d
WHDM	McKenzie, Tenn.	500d
KFDA	Amarillo, Tex.	5000
KEYS	Corpus Christi, Tex.	1000
KDNT	Denton, Tex.	5000
KETX	Livingston, Tex.	5000d
WKLV	Blackstone, Va.	5000d
WHIS	Bluefield, W.Va.	5000
WAJR	Morgantown, W.Va.	5000
WJPG	Green Bay, Wis.	5000

1450—206.8

CFBM	Brochet, Man.	100
CBG	Gander, Nfld.	250
CFAB	Windsor, N.S.	250
CFJR	Brockville, Ont.	1000
CHEF	Granby, P.Q.	1000
WDNG	Anniston, Ala.	1000
WYAM	Bessemer, Ala.	1000
WOIG	Dothan, Ala.	1000
WFIX	Huntsville, Ala.	250
WLAY	Muscle Shoals City, Alabama	1000
KLAM	Cordova, Alaska	250
KAWT	Douglas, Ariz.	250
KNOT	Prescott, Ariz.	250
KOLD	Tucson, Ariz.	250
KENA	Mena, Ark.	250
KYOR	Blythe, Calif.	250
KOWN	Escondido, Calif.	250
KPAL	Palm Springs, Calif.	250
KTIP	Porterville, Calif.	250
KSAN	San Francisco, Calif.	250
KVML	Sonora, Calif.	250
KVEN	Ventura, Calif.	1000
KAGR	Yuba City, Calif.	100
KGIW	Alamosa, Colo.	250
KYOU	Greeley, Colo.	1000
WNAB	Bridgeport, Conn.	250
WILM	Wilmington, Del.	250
WOL	Washington, D.C.	250
WWJB	Brooksville, Fla.	250
WMFJ	Daytona Beach, Fla.	1000
WSKP	Miami, Fla.	250
WBSR	Pensacola, Fla.	250
WSPB	Sarasota, Fla.	1000
WSTU	Stuart, Fla.	250
WTNT	Tallahassee, Fla.	1000
WGPC	Albany, Ga.	250
WBHF	Cartersville, Ga.	250
WCON	Cornelia, Ga.	250
WKEU	Griffin, Ga.	1000
WMVG	Milledgeville, Ga.	1000
WBYG	Savannah, Ga.	1000
WVLD	Valdosta, Ga.	250
KEOK	Payette, Idaho	250
KEEP	Twin Falls, Idaho	250
WHFC	Cicero, Ill.	1000
WKEI	Kewanee, Ill.	100
WCVS	Springfield, Ill.	250
WANE	Ft. Wayne, Ind.	250

WXVW	Jeffersonville, Ind.	250
WASK	Lafayette, Ind.	250
WAOV	Vincennes, Ind.	250
KPIG	Cedar Rapids, Iowa	250
KWBW	Hutchinson, Kans.	250
WTCO	Campbellsville, Ky.	250
WWXL	Manchester, Ky.	250
WPAD	Paducah, Ky.	250
KSIG	Crowley, La.	1000
KNDC	Natchitoches, La.	1000
WNPS	New Orleans, La.	250
WRKD	Rockland, Maine	250
WKTQ	South Paris, Maine	250
WTBO	Cumberland, Md.	250
WMAS	Springfield, Mass.	1000
WATZ	Alpena Township, Mich.	250
WHTC	Holland, Mich.	1000
WMIQ	Iron Mtn., Mich.	250
WIBM	Jackson, Mich.	250
WKLA	Ludington, Mich.	250
WHLS	Port Huron, Mich.	250
KATE	Albert Lea, Minn.	250
KBUN	Bemidji, Minn.	1000
KBMW	Breckenridge, Minn.	250
WELY	Ely, Minn.	1000
KFAM	St. Cloud, Minn.	1000
WROX	Clarksdale, Miss.	250
WCJU	Columbia, Miss.	250
WJXN	Jackson, Miss.	250
WOKK	Meridian, Miss.	1000
WNAT	Natchez, Miss.	250
WROB	West Point, Miss.	250
WMBH	Joplin, Mo.	250
KIRX	Kirksville, Mo.	250
KOKO	Warrensburg, Mo.	250
KWPM	West Plains, Mo.	1000
KXXL	Bozeman, Mont.	1000
KUDI	Great Falls, Mont.	1000
KXLL	Missoula, Mont.	250
KRBN	Red Lodge, Mont.	250
KVCK	Wolf Point, Mont.	1000
KWBE	Beatrice, Nebr.	250
KCSR	Chadron, Nebr.	250
KONE	Reno, Nev.	250
WKXL	Concord, N.H.	1000
WFPG	Atlantic City, N.J.	1000
WCTC	New Brunswick, N.J.	250
KLOS	Albuquerque, N.Mex.	250
KLMX	Clayton, N.Mex.	250
KOBE	Las Cruces, N.Mex.	250
KENM	Portales, N.Mex.	250
WCLI	Corning, N.Y.	1000
WWSC	Glen Falls, N.Y.	1000
WHDL	Olean, N.Y.	1000
WKIP	Poughkeepsie, N.Y.	250
WKAL	Rome, N.Y.	250
WATA	Boone, N.C.	250
WGNC	Gastonia, N.C.	1000
WHVH	Henderson, N.C.	1000
WHKP	Hendersonville, N.C.	1000
WHIT	New Bern, N.C.	250
KGCA	Rugby, N.Dak.	250
WJER	Dover, Ohio	250
WMOH	Hamilton, Ohio	250
WLEC	Sandusky, Ohio	250
KWHW	Altus, Okla.	250
KGFF	Shawnee, Okla.	250
KSIW	Woodward, Okla.	250
KORE	Eugene, Oreg.	1000
KFLW	Klamath Falls, Oreg.	250
KLBM	La Grande, Oreg.	250
KBPS	Portland, Oreg.	250
WLEU	Erie, Pa.	250
WDAD	Indiana, Pa.	250
WPAM	Pottsville, Pa.	250
WMPT	So. Williamsport, Pa.	250
WMAJ	State College, Pa.	250
WJPA	Washington, Pa.	250
WWRI	W. Warwick, R.I.	1000
WQSN	Charleston, S.C.	1000
WCRS	Greenwood, S.C.	1000
WMYB	Myrtle Beach, S.C.	1000
WHSC	Hartsville, S.C.	1000
KBFS	Belle Fourche, S.Dak.	250
KYNT	Yankton, S.Dak.	250
WLAR	Athens, Tenn.	250
WMDC	Chattanooga, Tenn.	250
WDSG	Dyersburg, Tenn.	250
WSMG	Greeneville, Tenn.	250
WLAF	LaFollette, Tenn.	100
WGNS	Murfreesboro, Tenn.	1000
KRIC	Beaumont, Tex.	250
KBEN	Carrizo Sprgs., Tex.	250
KCTI	Gonzales, Tex.	250
KMBL	Junction, Tex.	250
KCYL	Lampasas, Tex.	250
KMHT	Marshall, Tex.	1000
KAMY	McCamey, Tex.	250
KNET	Palestine, Tex.	250
KSNY	Snyder, Tex.	250
KURA	Moab, Utah	250
KEYY	Provo, Utah	250
KDXU	St. George, Utah	250
WSNO	Barre, Vt.	1000
WTSA	Brattleboro, Vt.	1000
WFTR	Front Royal, Va.	250
WENZ	Highland Springs, Va.	250
WREL	Lexington, Va.	250
WMVA	Martinsville, Va.	1000
KBKW	Aberdeen, Wash.	1000
KCLX	Colfax, Wash.	1000
KONP	Port Angeles, Wash.	250
KAYE	Puyallup, Wash.	1000
WPAR	Parkersburg, W.Va.	250
KFIZ	Fond du Lac, Wis.	250
WDLB	Marshfield, Wis.	1000
WPFP	Park Falls, Wis.	1000
WRCO	Richland Center, Wis.	1000

Kc.	Wave Length	W.P.
KBBS	Buffalo, Wyo.	250
KVOW	Riverton, Wyo.	250

1460—205.4

Kc.	Wave Length	W.P.
CJOY	Guelph, Ont.	10000
CKRB	Ville St. Georges, Quebec	10000
CJNB	N. Battleford, Sask.	10000
WFMH	Cullman, Ala.	5000d
WPNX	Phenix City, Ala.	5000
KZOT	Marianna, Ark.	500
KCCL	Paris, Ark.	500d
KTYM	Inglewood, Calif.	5000d
KOON	Salinas, Calif.	5000
KVRE	Santa Rosa, Calif.	1000d
KYSN	Colo. Sprgs., Colo.	1000
WBAR	Bartow, Fla.	1000d
WZEP	DeFuniak Springs, Florida	1000d
WMBR	Jacksonville, Fla.	5000
WOMF	Buford, Ga.	1000d
WROY	Carmi, Ill.	1000d
WIXN	Dixon, Ill.	1000d
WKAM	Goshen, Ind.	1000d
WOCH	North Vernon, Ind.	1000d
KSO	Des Moines, Iowa	5000
KCRB	Chanute, Kans.	1000d
WRVK	Mt. Vernon, Ky.	500d
WAIL	Baton Rouge, La.	5000
KBSF	Springhill, La.	1000d
WEMD	Easton, Md.	500d
WBET	Brockton, Mass.	5000
WBRN	Big Rapids, Mich.	1000d
WPON	Pontiac, Mich.	1000
KDMA	Montevideo, Minn.	1000
WELZ	Belzoni, Miss.	1000d
KADY	St. Charles, Mo.	5000d
KRNY	Kearney, Nebr.	5000d
KENO	Las Vegas, Nev.	1000
WOKO	Albany, N.Y.	5000
WVOX	New Rochelle, N.Y.	500d
WHEC	Rochester, N.Y.	5000
WFVG	Fuquay Sprgs., N.C.	1000d
WRKB	Kannapolis, N.C.	500d
WMMH	Marshall, N.C.	500d
WBNS	Columbus, Ohio	5000
WPVL	Painesville, Ohio	500d
KPLK	Dallas, Oreg.	1000d
WMBA	Ambridge, Pa.	500d
WCMB	Harrisburg, Pa.	5000
WBCU	Union, S.C.	1000
WGOG	Walhalla, S.C.	500d
WJAK	Jackson, Tenn.	5000d
WEEN	Lafayette, Tenn.	1000d
KBRZ	Freeport, Tex.	500d
KLLL	Lubbock, Tex.	1000d
WACO	Waco, Tex.	1000
WPRW	Manassas, Va.	500d
WRAD	Radford, Va.	5000
WLPM	Suffolk, Va.	1000
KCDI	Kirkland, Wash.	5000d
KIMA	Yakima, Wash.	5000
WBUC	Buckhannon, W.Va.	1000d
WRAC	Racine, Wis.	500d
WTMB	Tomah, Wis.	1000d

1470—204.0

Kc.	Wave Length	W.P.
CHOW	Welland, Ontario	1000
CFOX	Pointe Claire, Que.	5000
WBLO	Evergreen, Ala.	1000d
KZNG	Hot Springs, Ark.	1000d
KBMX	Coalinga, Calif.	500d
KUTY	Palmdale, Calif.	5000
KXOA	Sacramento, Calif.	5000
WMMW	Meriden, Conn.	1000d
WPOM	Pompano Beach, Fla.	5000
WRBB	Tarpon Sprgs., Fla.	5000d
WAAG	Adel, Ga.	1000d
WDOL	Athens, Ga.	1000d
WCLA	Claxton, Ga.	1000
WRGA	Rome, Ga.	5000
WMPP	Chicago Heights, Ill.	1000d
WMBD	Peoria, Ill.	5000
WHUT	Anderson, Ind.	1000d
KTRI	Sioux City, Iowa	5000
KWVY	Waverly, Iowa	1000d
KARE	Atchison, Kans.	1000
KLIB	Liberal, Kans.	500d
WSAC	Fort Knox, Ky.	1000d
KPLC	Lake Charles, La.	5000
WLAM	Lewiston, Maine	5000
WJDY	Salisbury, Md.	5000d
WTTR	Westminster, Md.	1000d
WSRO	Marlborough, Mass.	1000d
WNBP	Newburyport, Mass.	500d
WKMF	Flint, Mich.	5000
WKLZ	Kalamazoo, Mich.	500d
KAND	Anoka, Minn.	1000d
WCHJ	Brookhaven, Miss.	1000d
WNAU	New Albany, Miss.	500d
KGHM	Brookfield, Mo.	500d
KTCB	Malden, Mo.	1000d
WTKO	Ithaca, N.Y.	1000d
WPDM	Potsdam, N.Y.	1000d
WBIG	Greensboro, N.C.	5000
WPNC	Plymouth, N.C.	1000d
WTOE	Spruce Pine, N.C.	1000d
WOHO	Toledo, Ohio	1000
KVLH	Pauls Valley, Okla.	250d
KVIN	Vinita, Okla.	500d
KRAF	Reedsport, Oreg.	5000d
WSAN	Allentown, Pa.	5000
WFAR	Farrell, Pa.	1000d
WWML	Portage, Pa.	500d
WOIC	Columbia, S.C.	5000d
WEAG	Alcoa, Tenn.	1000d
WVOL	Berry Hill, Tenn.	5000
KRBC	Abilene, Tex.	5000
KWRD	Henderson, Tex.	500d
KCNY	San Marcos, Tex.	250d
KELA	Centralia, Wash.	5000
KSEM	Moses Lake, Wash.	5000
WWHY	Huntington, W.Va.	5000d
WJBT	Wheeling, W.Va.	500d
WBKV	West Bend, Wis.	1000d
KTWO	Casper, Wyo.	5000

1480—202.6

Kc.	Wave Length	W.P.
WARI	Abbeville, Ala.	1000
WBTS	Bridgeport, Ala.	1000d
WIXI	Irondale, Ala.	5000d
WABB	Mobile, Ala.	5000
KHAT	Phoenix, Ariz.	500
KGLU	Safford, Ariz.	1000
KTCN	Berryville, Ark.	1000
KWUN	Concord, Calif.	500d
KREO	Eureka, Calif.	5000
KYOS	Merced, Calif.	5000
KWIZ	Santa Ana, Calif.	1000
KSEE	Santa Maria, Calif.	1000
KTUX	Pueblo, Colo.	1000d
WSOR	Windsor, Conn.	500d
WAPG	Arcadia, Fla.	1000d
WREA	E. Palatka, Fla.	500d
WTHR	Panama Beach, Fla.	500d
WXIV	Windemere, Fla.	1000d
WYZE	Atlanta, Ga.	5000d
WRDW	Augusta, Ga.	5000
WGSB	Geneva, Ill.	1000
WJBM	Jerseyville, Ill.	500d
WTHI	Terre Haute, Ind.	1000
WRSW	Warsaw, Ind.	500
KLEE	Ottumwa, Iowa	500d
KBEA	Mission, Kans.	1000d
KLEO	Wichita, Kans.	5000
WKOA	Hopkinsville, Ky.	1000d
WNKY	Neon, Ky.	1000d
WTLO	Somerset, Ky.	1000d
KANV	Jonesville, La.	500d
KJOE	Shreveport, La.	1000d
WSAR	Fall River, Mass.	5000
WMAX	Grand Rapids, Michigan	1000d
WIOS	Tawas City, Mich.	1000d
KAUS	Austin, Minn.	1000
KGCX	Sidney, Mont.	5000
KLMS	Lincoln, Nebr.	1000
KWEW	Hobbs, N. Mex.	5000
WLEA	Hornell, N.Y.	1000d
WHOM	New York, N.Y.	5000
WREM	Remsen, N.Y.	1000d
WWOK	Charlotte, N.C.	1000d
WYRN	Louisburg, N.C.	500d
WMSJ	Sylva, N.C.	5000d
WHBC	Canton, Ohio	5000
WCIN	Cincinnati, Ohio	5000
WTRA	Latrobe, Pa.	500d
WDAS	Philadelphia, Pa.	5000
WISL	Shamokin, Pa.	1000
WSHP	Shippensburg, Pa.	500d
KSDR	Watertown, S.D.	1000d
WLOK	Memphis, Tenn.	5000d
KBOX	Dallas, Tex.	5000
KLVL	Pasadena, Tex.	1000
KAPE	San Antonio, Tex.	500d
KONI	Spanish Fork, Utah	1000d
WCFR	Springfield, Vt.	1000d
WBBL	Richmond, Va.	5000
WLEE	Richmond, Va.	5000
WBLU	Salem, Va.	5000d
KFHA	Lakewood, Wash.	1000d
KVAN	Vancouver, Wash.	1000d
WISM	Madison, Wis.	5000
KRAE	Cheyenne, Wyo.	1000d

1490—201.2

Kc.	Wave Length	W.P.
CFRC	Kingston, Ont.	100
CKCR	Kitchener, Ont.	250
CKBM	Montmagny, Que.	250
WANA	Anniston, Ala.	250
WAJF	Decatur, Ala.	1000
WRLD	Lanett, Ala.	250
WHBB	Selma, Ala.	250
KYCA	Prescott, Ariz.	1000
KAIR	Tucson, Ariz.	250
KXAR	Hope, Ark.	250
KTLO	Mtn. Home, Ark.	250
KDRS	Paragould, Ark.	250
KOTN	Pine Bluff, Ark.	250
KXRJ	Russellville, Ark.	250
KWAC	Bakersfield, Calif.	250
KPAS	Banning, Calif.	250
KICO	Calexico, Calif.	250
KOWL	Lake Tahoe, Calif.	250
KTOB	Petaluma, Calif.	250
KBLF	Red Bluff, Calif.	1000
KDB	Santa Barbara, Calif.	250
KSYC	Yreka, Calif.	250
KBOL	Boulder, Colo.	1000
KGUC	Gunnison, Colo.	250
KCMS	Manitou Sprgs., Colo.	100
KOLR	Sterling, Colo.	250
WTOR	Torrington, Conn.	250
WTRL	Bradenton, Fla.	250
WJBS	DeLand, Fla.	250
WMET	Miami Beach, Fla.	250
WSRA	Milton, Fla.	250
WRGR	Starke, Fla.	250
WTTB	Vero Beach, Fla.	250
WSIR	Winter Haven, Fla.	250
WMOG	Brunswick, Ga.	250
WMJM	Cordele, Ga.	250
WMRE	Monroe, Ga.	250
WSFB	Quitman, Ga.	250
WSNT	Sandersville, Ga.	250
WSYL	Sylvania, Ga.	250
KTOH	Lihue, Hawaii	250
KCID	Caldwell, Idaho	1000
WKRO	Cairo, Ill.	250
WDAN	Danville, Ill.	1000
WBBR	East St. Louis, Ill.	500
WOPA	Oak Park, Ill.	1000
WKBV	Richmond, Ind.	1000
WNDU	South Bend, Ind.	250
KBUR	Burlington, Iowa	250
WOBQ	Dubuque, Iowa	250
KRIB	Mason City, Iowa	250
KKAN	Phillipsburg, Kans.	250
KTOP	Topeka, Kans.	250
WFKY	Frankfort, Ky.	250
WKAY	Glasgow, Ky.	250
WOMI	Owensboro, Ky.	1000
WSIP	Paintsville, Ky.	1000
WIKC	Bogalusa, La.	1000
KEUN	Eunice, La.	250
KCIL	Houma, La.	1000
KRUS	Ruston, La.	250
WPOR	Portland, Maine	250
WTVL	Waterville, Maine	1000
WARK	Hagerstown, Md.	1000
WHAV	Haverhill, Mass.	250
WMRC	Milford, Mass.	250
WTXL	W. Springfield, Mass.	1000
WABJ	Adrian, Mich.	1000
WBFC	Fremont, Mich.	250
WMDN	Midland, Mich.	250
WCBQ	Whitehall, Mich.	1000
KXRA	Alexandria, Minn.	250
KOZY	Grand Rapids, Minn.	250
KLGR	Redwd. Falls, Minn.	250
WLOX	Biloxi, Miss.	1000
WCLD	Cleveland, Miss.	250
WHOC	Philadelphia, Miss.	250
WTUP	Tupelo, Miss.	250
WVIM	Vicksburg, Miss.	250
KDMO	Carthage, Mo.	250
KTTR	Rolla, Mo.	1000
KDRO	Sedalia, Mo.	250
KBOW	Butte, Mont.	1000
KBON	Omaha, Nebr.	250
WEMJ	Laconia, N.H.	1000
WLDB	Atlantic City, N.J.	250
KRSN	Los Alamos, N.Mex.	250
KRTN	Raton, N.Mex.	250
WCSS	Amsterdam, N.Y.	250
WBTA	Batavia, N.Y.	250
WKNY	Kingston, N.Y.	250
WICY	Malone, N.Y.	1000
WDLC	Port Jervis, N.Y.	250
WOLF	Syracuse, N.Y.	250
WSSB	Durham, N.C.	250
WFLB	Fayetteville, N.C.	250
WLOE	Leaksville, N.C.	250
WRNB	New Bern, N.C.	1000
WRMT	Rocky Mount, N.C.	250
WSTP	Salisbury, N.C.	250
WSVM	Valdese, N.C.	250
KNDC	Hettinger, N.Dak.	250
KOVC	Valley City, N.Dak.	250
WBEX	Chillicothe, Ohio	250
WJMO	Cleveland Hghts., Ohio	250
WOHI	E. Liverpool, Ohio	250
WMOA	Marietta, Ohio	1000
WMRN	Marion, Ohio	1000
KWRW	Guthrie, Okla.	100
KBIX	Muskogee, Okla.	250
KBKR	Baker, Oreg.	250
KRNR	Roseburg, Oreg.	250
KBZY	Salem, Oreg.	1000
WESB	Bradford, Pa.	250
WAZL	Hazleton, Pa.	250
WARD	Johnstown, Pa.	250
WGAL	Lancaster, Pa.	250
WBCB	Levittown, Pa.	1000
WMRF	Lewiston, Pa.	1000
WMGW	Meadville, Pa.	250
WNBT	Wellsboro, Pa.	250
WMDD	Fajardo, P.R.	250
WGCD	Chester, S.C.	250
WMRB	Greenville, S.C.	1000
KORN	Mitchell, S.Dak.	250
WDPI	Bristol, Tenn.	1000
WDXB	Chattanooga, Tenn.	1000
WROL	Fountain City, Tenn.	250
WJJM	Lewisburg, Tenn.	1000
WDXL	Lexington, Tenn.	1000
KNOW	Austin, Tex.	250
KIBL	Beeville, Tex.	250
KBST	Big Spring, Tex.	250
KHUZ	Borger, Tex.	250
KNEL	Brady, Tex.	250
KSAM	Huntsville, Tex.	250
KVOZ	Laredo, Tex.	250
KZZN	Littlefield, Tex.	250
KPLT	Paris, Tex.	250
KGKB	Tyler, Tex.	250
KVWC	Vernon, Tex.	250
KVOG	Ogden, Utah	1000
WKVT	Brattleboro, Vt.	250
WIKE	Newport, Vt.	1000
WCVA	Culpeper, Va.	250
WVEC	Hampton, Va.	250
WAYB	Waynesboro, Va.	250
KBRD	Bremerton, Wash.	250
KLOG	Kelso, Wash.	250
KENE	Toppenish, Wash.	250
KTEL	Walla Walla, Wash.	250
WTGR	Charleston, W.Va.	250
WTCS	Fairmont, W.Va.	250
WLOH	Princeton, W.Va.	250
WGEZ	Beloit, Wis.	250
WLCX	LaCrosse, Wis.	1000
WIGM	Medford, Wis.	1000
WOSH	Oshkosh, Wis.	250
KIML	Gillette, Wyo.	250
KBBZ	Laramie, Wyo.	100
KRTR	Thermopolis, Wyo.	250
KGOS	Torrington, Wyo.	1000

1500—199.9

Kc.	Wave Length	W.P.
CHUC	Port Hope, Ont.	1000
KBLA	Burbank, Calif.	10000
KXRX	San Jose, Calif.	5000
WTOP	Washington, D.C.	50000
WKIZ	Key West, Fla.	250
WJBK	Detroit, Mich.	10000
KSTP	St. Paul, Minn.	50000
WMNT	Manati, P.R.	250
KTXO	Sherman, Tex.	250
KANI	Wharton, Tex.	500
KPIR	Eugene, Wash.	10000d

1510—199.1

Kc.	Wave Length	W.P.
CKOT	Tillsonburg, Ont.	1000d
KASK	Ontario, Calif.	1000
KTIM	San Rafael, Calif.	1000d
KMOR	Littleton, Colo.	1000
WNLC	New London, Conn.	5000
WKAI	Macomb, Ill.	250d
WMEX	Boston, Mass.	5000
KANS	Independence, Mo.	1000d
WRAN	Dover, N.J.	1000
WLAC	Nashville, Tenn.	50000
KCTX	Childress, Tex.	250d
KSTV	Stephenville, Tex.	250d
KGA	Spokane, Wash.	50000
WAUX	Waukesha, Wis.	10000d

1520—197.4

Kc.	Wave Length	W.P.
KACY	Port Hueneme, Calif.	250
WHOW	Clinton, Ill.	5000d
WSVL	Shelbyville, Ind.	250
KSIB	Creston, Iowa	1000d
WRSL	Stanford, Ky.	500d
KVKW	Lafayette, La.	500
WKBW	Buffalo, N.Y.	50000
WFYI	Mineola, N.Y.	10000d
KOMA	Okla. City, Okla.	50000
KGON	Oregon City, Oreg.	10000
WWWW	Rio Piedras, P.R.	250

1530—196.1

Kc.	Wave Length	W.P.
KFBK	Sacramento, Calif.	50000
WCKY	Cincinnati, Ohio	50000
KGBT	Harlingen, Tex.	50000

1540—195.0

Kc.	Wave Length	W.P.
ZNS	Nassau, B.W.I.	10000
KPOL	Los Angeles, Calif.	10000
WSMI	Litchfield, Ill.	1000d
WBNL	Boonville, Ind.	250d
WLOI	LaPorte, Ind.	250d
KXEL	Waterloo, Iowa	50000
KNEX	McPherson, Kans.	250d
KLKC	Parsons, Kans.	250d
WDON	Wheaton, Md.	1000
WPTR	Albany, N.Y.	50000
WIFM	Elkin, N.C.	250d
WABQ	Cleveland, Ohio	1000d
WJMJ	Philadelphia, Pa.	50000d
WPTS	Pittston, Pa.	1000d
WPME	Punxsutawney, Pa.	1000d
WADK	Newport, R.I.	1000d
KCUL	Ft. Worth, Tex.	50000d
KGBC	Galveston, Tex.	1000
KBVW	Bellevue, Wash.	1000
WTKM	Hartford, Wis.	500d

1550—193.5

Kc.	Wave Length	W.P.
CBE	Windsor, Ont.	10000
WBHM	Birmingham, Ala.	50000d
WAAY	Huntsville, Ala.	5000
WEDR	Mobile, Ala.	50000d
KFIF	Tucson, Ariz.	50000d
KKHI	San Fran., Calif.	10000
KDAB	Arvada, Colo.	10000d
WRIZ	Coral Gables, Fla.	10000d
WORT	New Smyrna Bch., Fla.	250
WZST	Tampa, Fla.	10000d
WSMA	Smyrna, Ga.	10000d
WJIL	Jacksonville, Ill.	1000d
WCTW	New Castle, Ind.	250
KEDD	Dodge City, Kans.	1000d
WIRV	Irvine, Ky.	1000d
WMSK	Morganfield, Ky.	250d
WUNL	Baton Rouge, La.	5000d
KREB	Shreveport, La.	10000
KGMO	Cape Girardeau, Mo.	5000d
KKJO	St. Joseph, Mo.	5000
WBAZ	Kingston, N.Y.	500d
WTYN	Tryon, N.C.	1000d
WPEG	Winston-Salem, N.C.	1000d
KUTT	Fargo, N.D.	5000d
WDLE	Delaware, Ohio	500d
KMAD	Madill, Okla.	250
WLOA	Braddock, Pa.	1000d
WTTC	Towanda, Pa.	500d
WKFE	Yauco, P.R.	250
WBSC	Bennetsville, S.C.	10000
WTHB	N. Augusta, S.C.	1000d
KWBC	Navasota, Tex.	250d
WTPI	Cookville, Tenn.	250d
WKPT	Kingsport, Tenn.	10000d
WKBA	Vinton, Va.	1000d

Kc.	Wave Length	W.P.
WBOF	Virginia Beach, Va.	5000d
KOQT	Bellingham, Wash.	1000d

1560—192.3

Kc.	Wave Length	W.P.
CFRS	Simcoe, Ont.	250d
KPMC	Bakersfield, Calif.	10000
KIQS	Willows, Calif.	250d
WBYS	Canton, Ill.	250d
KSWI	Council Bluffs, Iowa	1000d
WDXR	Paducah, Ky.	1000
WQXR	New York, N.Y.	50000
WTNS	Coshocton, Ohio	1000d
WTOD	Toledo, Ohio	5000d
KWCO	Chickasha, Okla.	1000
WRSJ	Bayamon, P.R.	250
KCAD	Abilene, Tex.	500d
KHBR	Hillsboro, Tex.	250d
KGUL	Port Lavaca, Tex.	500d

1570—191.1

Kc.	Wave Length	W.P.
CHUB	Nanaimo, B.C.	10000
CFRY	Portage la Prairie, Manitoba	250d
CFOR	Orillia, Ont.	10000
WCRL	Oneonta, Ala.	250d
WRWJ	Selma, Ala.	1000d
KBRI	Brinkley, Ark.	250d
KBJT	Fordyce, Ark.	250d
KRKC	King City, Calif.	250d
KCVR	Lodi, Calif.	1000d
KACE	Riverside, Calif.	1000d
KLOV	Loveland, Colo.	250d
WTWB	Auburndale, Fla.	5000d
WPAP	Fernandina Beach, Florida	1000d
WJOE	Ward Ridge, Fla.	250
WMES	Ashburn, Ga.	1000d
WGHC	Clayton, Ga.	1000d
WEAD	College Park, Ga.	1000d
WGSR	Millen, Ga.	250d
WOKZ	Alton, Ill.	1000d
WFRL	Freeport, Ill.	5000d
WBEE	Harvey, Ill.	1000d
WTAY	Robinson, Ill.	250d
WILD	Frankfort, Ind.	250d
WAWK	Kendallville, Ind.	250d
WOWI	New Albany, Ind.	1000d
KMCD	Fairfield, Iowa	250d
KJFJ	Webster City, Iowa	250d
KNDY	Marysville, Kans.	250d
KWSK	Pratt, Kans.	250d
WKKS	Vanceburg, Ky.	250d
WABL	Amite, La.	500d
KLLA	Leesville, La.	1000
KMAR	Winnsboro, La.	1000
WAQE	Towson, Md.	1000d
WPEP	Taunton, Mass.	1000d
WMLO	Beverly, Mass.	500d
WDEW	Westfield, Mass.	1000d
WMRP	Flint, Mich.	1000d
WFUR	Grand Rapids, Michigan	1000d
KUXL	Golden Valley, Minn.	500d
KMRS	Morris, Minn.	1000d
WONA	Winona, Miss.	1000d
KLEX	Lexington, Mo.	250d
WAFS	Amsterdam, N.Y.	1000
WFLR	Dundee, N.Y.	1000d
WBUZ	Fredonia, N.Y.	250d
WAPC	Riverhead, N.Y.	1000d
WNCA	Siler City, N.C.	1000d
WHOT	Campbell, Ohio	1000d
WCLW	Mansfield, Ohio	1000
WPTW	Piqua, Ohio	250d
KTAT	Frederick, Okla.	250d
KOLS	Pryor, Okla.	1000d
KGGG	Forest Grove, Oreg.	1000d
KOHU	Hermiston, Oreg.	1000d
WBUX	Doylestown, Pa.	1000d
WSHH	Latrobe, Pa.	1000d
WFGN	Gaffney, S.C.	250d
WJES	Johnston, S.C.	250
WLSC	Loris, S.C.	1000d
WHLP	Centerville, Tenn.	1000d
WCLE	Cleveland, Tenn.	1000d
WTRB	Ripley, Tenn.	1000d
KZOL	Farwell, Tex.	250d
KVLG	La Grange, Tex.	250d
KTER	Terrell, Tex.	250d
KWIC	Salt Lake City, Utah	5000
WSWV	Pennington Gap, Va.	1000d
WYTI	Rocky Mount, Va.	1000d
WEER	Warrenton, W.Va.	500d
WAPL	Appleton, Wis.	1000d

1580—189.2

Kc.	Wave Length	W.P.
CBJ	Chicoutimi, Que.	10000
WJHB	Talladega, Ala.	1000d
KYND	Tempe, Ariz.	10000d
KPCA	Marked Tree, Ark.	250d
KFDF	Van Buren, Ark.	1000d
KPON	Anderson, Calif.	1000d
KWIP	Merced, Calif.	500d
KDAY	Santa Monica, Cal.	50000d
KHUM	Santa Rosa, Calif.	500d
KPIK	Colorado Sprgs., Colo.	5000d
WWIL	Ft. Lauderdale, Fla.	10000
WGRC	Green Cove Springs, Florida	500d
WMDF	Mount Dora, Fla.	1000d
WCCF	Punta Gorda, Fla.	1000d
WCLS	Columbus, Ga.	1000d
WPFE	Eastman, Ga.	500d
WLBA	Gainesville, Ga.	5000d
WKIG	Glenville, Ga.	1000d
WKKD	Aurora, Ill.	250d
WDQN	DuQuoin, Ill.	250d
WBBA	Pittsfield, Ill.	250d
WKID	Urbana, Ill.	250d
WCNB	Connersville, Ind.	250d
WJVA	South Bend, Ind.	1000d
WAMW	Washington, Ind.	250d
KCHA	Charles City, Iowa	500d
KWNT	Davenport, Iowa	500d
KDSN	Denison, Iowa	500d
WAXU	Georgetown, Ky.	10000d
WMTL	Leitchfield, Ky.	250d
WPKY	Princeton, Ky.	250d
KLUV	Haynesville, La.	250d
KLOU	Lake Charles, La.	1000
WPGC	Bradbury Hgts., Md.	10000
WOWE	Allegan, Mich.	250d
WJUD	St. Johns, Mich.	1000d
KDOM	Windom, Minn.	250d
WAMY	Amory, Miss.	5000d
WGLC	Centreville, Miss.	250d
WESY	Leland, Miss.	1000
WPMP	Pascagoula-Moss Point, Mississippi	1000d
KCGM	Columbia, Mo.	250d
KESM	Eldorado Springs, Mo.	250d
KNIM	Maryville, Mo.	250d
WNJH	Hammonton, N.J.	250d
WCRV	Washington, N.J.	500d
KRAZ	Albuquerque, N.Mex.	1000d
WPAC	Patchogue, N.Y.	10000d
WZKY	Albemarle, N.C.	250d
WPYB	Benson, N.C.	500d
WVKO	Columbus, Ohio	1000d
KLTR	Blackwell, Okla.	250d
WCOY	Columbia, Pa.	500d
WEND	Ebensburg, Pa.	1000d
WANB	Waynesburg, Pa.	250d
WORG	Orangeburg, S.C.	1000d
WYCL	York, S.C.	250d
WSKT	Colonial Village, Tenn.	250d
WLIJ	Shelbyville, Tenn.	1000d
WSKT	South Knoxville, Tenn.	250
KGAF	Gainesville, Tex.	250d
KIRT	Mission, Tex.	1000d
KTLU	Rusk, Tex.	500d
KWED	Seguin, Tex.	1000d
KBYP	Shamrock, Tex.	250d
WILA	Danville, Va.	1000d
WPUV	Pulaski, Va.	5000d
WTTN	Watertown, Wis.	1000d

1590—188.7

Kc.	Wave Length	W.P.
WATM	Atmore, Ala.	5000d
WVNA	Tuscumbia, Ala.	5000d
KPBA	Pine Bluff, Ark.	1000d
KLIV	San Jose, Calif.	5000
KUOU	Ventura, Calif.	1000
KCIN	Victorville, Calif.	500d
WBRY	Waterbury, Conn.	5000
WOWY	Clewiston, Fla.	500d
WILZ	St. Petersburg Beach, Florida	1000d
WELE	S. Daytona Bch., Fla.	1000d
WALG	Albany, Ga.	1000
WLFA	Lafayette, Ga.	5000d
WTGA	Thomaston, Ga.	500d
WNMP	Evanston, Ill.	1000d
WAIK	Galesburg, Ill.	5000d
WGEE	Indianapolis, Ind.	5000d
WPCO	Mt. Vernon, Ind.	500d
KWBG	Boone, Iowa	1000
KVGB	Great Bend, Kans.	5000
WLBN	Lebanon, Ky.	1000d
KEVL	White Castle, La.	1000d
WETT	Ocean City, Md.	1000
WTVB	Coldwater, Mich.	5000
WDOG	Marine City, Mich.	1000d
WMIC	St. Helen, Mich.	500d
KRAD	E. Grand Forks, Minn.	1000d
WOKJ	Jackson, Miss.	5000d
KDEX	Dexter, Mo.	1000d
KPRS	Kansas City, Mo.	1000d
KCLU	Rolla, Mo.	1000d
WSMN	Nashua, N.H.	5000
WERA	Plainfield, N.J.	500d
WAUB	Auburn, N.Y.	500d
WEHH	Elmira Heights-Horseheads, N.Y.	500d
WGGO	Salamanca, N.Y.	5000d
WGTC	Greenville, N.C.	5000d
WNOS	High Point, N.C.	1000d
WAKR	Akron, Ohio	5000
WSRW	Hillsboro, Ohio	500d
KHEN	Henryetta, Okla.	500d
KTIL	Tillamook, Oreg.	1000
WZUM	Carnegie, Pa.	1000d
WCBG	Chambersburg, Pa.	5000d
WEEZ	Chester, Pa.	1000
WXRF	Guayama, P.R.	1000
WYNG	Warwick, R.I.	1000d
WABV	Abbeville, S.C.	1000d
WACA	Camden, S.C.	1000d
KCCR	Pierre, S.Dak.	1000d
WJSO	Jonesboro, Tenn.	5000d
WDBL	Springfield, Tenn.	1000d
KGAS	Carthage, Tex.	1000d
KERC	Eastland, Tex.	500d
KINT	El Paso, Tex.	1000d
KYOK	Houston, Tex.	5000
KCBD	Lubbock, Tex.	1000
KBUS	Mexia, Tex.	500d
KTOD	Sinton, Tex.	1000
WRLA	Luray, Va.	500d
WEZL	Richmond, Va.	5000d
KTIX	Seattle, Wash.	5000d
WIXK	New Richmond, Wis.	5000d
WSWW	Platteville, Wis.	5000
WTRW	Two Rivers, Wis.	1000d
WAWA	West Allis, Wis.	1000d
KCHY	Cheyenne, Wyo.	1000d

1600—187.5

Kc.	Wave Length	W.P.
CHVC	Niagara Falls, Ont.	10000
WEUP	Huntsville, Ala.	5000d
WAPX	Montgomery, Ala.	1000
KGST	Fresno, Calif.	1000d
KWDW	Pomona, Calif.	1000
KUBA	Yuba City, Calif.	5000
KLAK	Lakewood, Colo.	5000
WKEN	Dover, Del.	500d
WKTX	Atlantic Beach, Fla.	1000d
WKWF	Key West, Fla.	500
WHEW	Riviera Beach, Fla.	1000
WOKB	Winter Garden, Fla.	1000d
WGKA	Atlanta, Ga.	1000d
WNGA	Nashville, Ga.	1000d
WCGO	Chicago Hgts., Ill.	1000d
WMCW	Harvard, Ill.	500d
WBTO	Linton, Ind.	500d
WARU	Peru, Ind.	1000d
KLGA	Algona, Iowa	5000d
KCRG	Cedar Rapids, Iowa	5000
KMDO	Ft. Scott, Kans.	500d
WSTL	Eminence, Ky.	500d
KFNV	Ferriday, La.	1000d
KLFT	Golden Meadow, La.	1000d
KLVI	Vivian, La.	500d
WINX	Rockville, Md.	1000
WBOS	Brookline, Mass.	5000
WTYM	East Longmeadow, Mass.	5000d
WHRV	Ann Arbor, Mich.	1000
WTRU	Muskegon, Mich.	5000
WKDL	Clarksdale, Miss.	1000d
WFFF	Columbia, Miss.	500d
KATZ	St. Louis, Mo.	5000
KTTN	Trenton, Mo.	500d
KNCY	Nebraska City, Nebr.	500d
KRFS	Superior, Nebr.	500d
WMCR	Oneida, N.Y.	1000d
WXKW	Troy, N.Y.	500d
WWRL	Woodside, N.Y.	50000
WGIV	Charlotte, N.C.	1000
WIDU	Fayetteville, N.C.	1000d
WFRC	Reidsville, N.C.	1000
WKSK	W. Jefferson, N.C.	1000d
KDAK	Carrington, N.Dak.	500d
WBLY	Springfield, Ohio	1000d
WTTF	Tiffin, Ohio	500d
KUSH	Cushing, Okla.	1000d
KASH	Eugene, Oreg.	1000
KSTH	St. Helens, Oreg.	1000d
WHOL	Allentown, Pa.	500d
WEZN	Elizabethtown, Pa.	500d
WFIS	Fountain Inn, S.C.	1000d
WHBT	Harriman, Tenn.	5000d
WKBJ	Milan, Tenn.	1000d
KBBB	Borger, Tex.	500d
KBOR	Brownsville, Tex.	1000
KWEL	Midland, Tex.	1000
KCFH	Cuero, Tex.	500d
KMAE	McKinney, Tex.	1000d
KOGT	Orange, Tex.	1000
KBBC	Centerville, Utah	1000d
WHLL	Wheeling, W.Va.	5000d
WCWC	Ripon, Wis.	5000d

U. S. and Canadian AM Stations by Location

Abbreviations: C.L., call letters; Kc., frequency in kilocycles; N.A., network affiliation—A: American Broadcasting Co.; C: Columbia Broadcasting System, Inc.; M: Mutual Broadcasting System; N: National Broadcasting Co., Inc.

Location	C.L.	Kc.	N.A.
Abbeville, Ala.	WARI		
Abbeville, La.	KROF	960	
Abbeville, S.C.	WABV	1590	
Aberdeen, Md.	WAMD	970	
Aberdeen, Miss.	WMPA	1240	
Aberdeen, S.Dak.	KABR	1420	
	KSDN	930	A
Aberdeen, Wash.	KBKW	1450	
	KXRO	1320	
Abilene, Tex.	KRBC	1470	A
Abilene, Tex.	KCAD	1560	
	KNIT	1280	
	KWKC	1340	M
Abingdon, Va.	WBBI	1230	
Ada, Okla.	KADA	1230	A
Adel, Ga.	WAAG	1470	
Adrian, Mich.	WABJ	1490	A
Aguadilla, P.R.	WABA	850	
	WGRF	1340	
Ahoskie, N.C.	WRCS	970	
Aiken, S.C.	WAKN	990	
Aitkin, Minn.	KKIN	1000	D
Akron, Ohio	WAKR	1590	A
	WADC	1350	C
	WCUE	1150	
	WHLO	640	M
Alamogordo, N.M.	KALG	1230	M
	KRAC	1270	
Alamosa, Colo.	KGIW	1450	M
Albany, Ga.	WALG	1590	A
	WGPC	1450	C
	WJAZ	960	
Albany, Ky.	WANY	1390	
Albany, Minn.	KASM	1150	
Albany, N.Y.	WABY	1400	
	WOKO	1460	M
	WPTR	1540	A
	WROW	590	C
Albany, Oreg.	KWIL	790	M
	KABY	990	
Albemarle, N.C.	WABZ	1010	
	WZKY	1580	
Albert Lea, Minn.	KATE	1450	A
Albertville, Ala.	WAVU	630	
Albion, Mich.	WALM	1260	
Albuquerque, N.M.	KABQ	1350	
	KDEF	1150	
	KGGM	610	C
	KOB	770	N
	KQEO	920	M
	KARA	1310	
	KMGM	730	
	KLOS	1450	
	KRAZ	1580	A
Alcoa, Tenn.	WEAG	1470	
Alexander City, Ala.	WRFS	1050	
Alexandria, La.	KALB	580	A
	KDBS	1410	
	KSYL	970	N
Alexandria, Minn.	KXRA	1490	A
Alexandria, Va.	WPIK	730	M
Algona, Iowa	KLGA	1600	
Alice, Tex.	KOPY	1070	
Allegan, Mich.	WOWE	1580	
Allentown, Pa.	WHOL	1600	
	WAEB	790	
	WKAP	1320	
	WSAN	1470	C
Alliance, Nebr.	KCOW	1400	
Alliance, Ohio	WFAH	1310	
Alma, Ga.	WCQS	1400	
Alma, Mich.	WFYC	1280	
Alpena Township, Mich.	WATZ	1450	
Alpine, Tex.	KVLF	1240	M
Alton, Ill.	WOKZ	1570	
Altona, Man.	CFAM	1290	
Altoona, Pa.	WFBG	1290	N
	WRTA	1240	A
	WVAM	1430	C
Alturas, Calif.	KCNO	570	
Altus, Okla.	KWHW	1450	
Alva, Okla.	KALV	1430	
Amarillo, Tex.	KBUY	1010	M
	KFDA	1440	A
	KGNC	710	N
	KIXZ	940	C
	KRAY	1360	
	KZIP	1310	
Ambridge, Pa.	WMBA	1460	
Americus, Ga.	WDEC	1290	
Ames, Iowa	KSAI	1430	
	WOI	640	
Amherst, N.S.	CKDH	1400	
Amite, La.	WABL	1570	
Amory, Miss.	WAMY	1580	
Amos, Que.	CHAD	1340	
Amsterdam, N.Y.	WAFS	1570	
Amsterdam, N.Y.	WCSS	1490	
Anaconda, Mont.	KANA	1230	
Anacortes, Wash.	KAGT	1340	
Anaheim, Calif.	KEZY	1190	
Anchorage, Alaska	KBYR	1270	
	KFQD	730	C-A
Anchorage, Alaska	KHAR	590	
	KENI	550	A-M-N
Andalusia, Ala.	WCTA	920	
Anderson, Calif.	KPON	1580	
Anderson, Ind.	WHUT	1470	M
	WHBU	1240	C
Anderson, S.C.	WAIM	1230	C
	WANS	1280	M
Andrews, Tex.	KACT	1380	
Annapolis, Md.	WANN	1190	
	WABW	810	
	WNAV	1430	

Location	C.L.	Kc.	N.A.
Ann Arbor, Mich.	WHRV	1600	A
	WPAG	1050	
Anna, Ill.	WRAJ	1440	
Anniston, Ala.	WANA	1490	
	WDNG	1450	A
	WHMA	1390	
Anoka, Minn.	KAND	1470	
Ansonia, Conn.	WADS	690	
Antigo, Wis.	WATK	900	
Antigonish, N.S.	CJFX	580	
Apollo, Pa.	WAVL	910	
Apple Valley, Cal.	KAVR	960	
Appleton, Wis.	WAPL	1570	
	WHBY	1230	M
Arab, Ala.	WRAB	1380	
Arcadia, Fla.	WAPG	1480	
Arcata, Calif.	KENL	1340	
Ardmore, Okla.	KVSO	1240	A
Arecibo, P.R.	WCMN	1280	
	WMIA	1070	
	WNIK	1230	
Arkadelphia, Ark.	KVRC	1240	M
Arkan. City, Kans.	KSOK	1280	
Arlington, Fla.	WQTY	1220	
Arlington, Va.	WAVA	780	
	WEAM	1390	
Artesia, N.M.	KSVP	990	M
Arvada, Colo.	KDAB	1550	
Ashburn, Ga.	WMES	1570	
Asbury Park, N.J.	WJLK	1310	
Asheboro, N.C.	WGWR	1260	
Asheville, N.C.	WISE	1310	
	WLDS	1380	N-M-A
	WSKY	1230	
	WWNC	570	C
Ashland, Ky.	WCMI	1340	C
	WTCR	1420	
Ashland, Ohio	WNCO	1340	
Ashland, Oreg.	KWIN	1400	M
	KRVC	1350	
Ashland, Va.	WDYL	1430	
Ashland, Wis.	WATW	1400	
Ashtabula, Ohio	WRED	970	
Astoria, Oreg.	KAST	1370	M
	KIAL	1230	
Atchison, Kans.	KARE	1470	
Athens, Ala.	WJMW	730	
Athens, Ga.	WGAU	1340	C
	WDOL	1470	
	WRFC	960	
Athens, Ohio	WATH	970	
	WOUB	1340	
Athens, Tenn.	WLAR	1450	M
Athens, Tex.	KBUD	1410	
Atlanta, Ga.	WPLD	590	C
	WAKE	1340	
	WAOK	1380	
	WERD	860	
	WGKA	1600	
	WGST	920	A
	WIIN	970	
	WQXI	790	
	WSB	750	N
	WYZE	1480	M
Atlanta, Tex.	KALT	900	
Atlantic, Iowa	KJAN	1220	
Atlantic Beach, Fla.	WKTX	1600	
Atlantic City, N.J.	WFPG	1450	C
	WLDB	1490	M
	WMID	1340	A
Atmore, Ala.	WATM	1590	
Attleboro, Mass.	WARA	1320	
Auburn, Ala.	WAUD	1230	A
Auburn, Calif.	KAHI	950	
Auburn, N.Y.	WMBO	1340	M
	WAUB	1590	
Auburn, Wash.	KASY	1220	
Auburndale, Fla.	WTWB	1570	
Auburndale, Wis.	WLBL	930	
Augusta, Ga.	WAUG	1050	
	WBBQ	1340	M
	WBIA	1230	N
	WGAC	580	A
	WRDW	1480	C
Augusta, Maine	WRDO	1400	N
	WFAU	1340	M
Aurora, Colo.	KOSI	1430	M
Aurora, Ill.	WMRO	1280	
	WKKD	1580	
Austin, Minn.	KAUS	1480	M
	KQAQ	970	
Austin, Tex.	KNOW	1490	A
	KASE	970	
	KTBC	590	C
	KOKE	1370	
	KVET	1300	M
Avalon, Calif.	KBIG	740	
Avon Park, Fla.	WAVP	1390	
Avondale Estates, Ga.	WAVD	1420	
Aztec, N. Mex.	KNDE	1340	
Babylon, N.Y.	WBAB	1440	
	WGLI	1290	
Bad Axe, Mich.	WLEW	1340	
Bainbridge, Ga.	WMGR	930	
	WAZA	1360	
Baker, Oreg.	KBKR	1490	
Bakersfield, Calif.	KAFY	550	M
	KBIS	970	
	KERN	1410	C
	KGEE	1230	
	KUZZ	800	
	KLYD	1350	
	KWAC	1490	
	KPMC	1560	A
Bellingham, Wash.	KPUG	1170	M
Baldwinsville, N.Y.	WSEN	1050	
Ballinger, Tex.	KRUN	1400	
Baltimore, Md.	WBAL	1090	N
Baltimore, Md.	WMEW	940	

Location	C.L.	Kc.	N.A.
	WBMD	750	
	WCAO	600	
	WCBM	680	C
	WFBR	1300	
	WITH	1230	
	WSID	1010	
	WWIN	1400	A-M
Bamberg, S.C.	WWBD	790	
Bangor, Maine	WABI	910	A-M
	WGUY	1250	C
	WLBZ	620	N
Banning, Calif.	KPAS	1490	
Barbourville, Ky.	WBVL	950	
Bardstown, Ky.	WBRT	1320	
Barnesboro, Pa.	WNCC	950	
Barnwell, S.C.	WBAW	740	
Barre, Vt.	WSNO	1450	
Barrie, Ont.	CKBB	950	
Barstow, Calif.	KWTC	1230	A
	KIOT	1310	
Bartlesville, Okla.	KWON	1400	M
Bartow, Fla.	WBAR	1460	
Bassett, Va.	WODY	900	
Bastrop, La.	KTRY	730	
	KVOB	1340	
Batavia, N.Y.	WBTA	1490	M
Batesburg, S.C.	WBLR	1430	
Batesville, Ark.	KBTA	1340	
Batesville, Miss.	WBLE	1290	
Bath, Maine	WMMS	730	
Bathurst, N.B.	CKBC	1400	
Baton Rouge, La.	WAIL	1460	M
Baton Rouge, La.	WUNE	1550	
	WYNK	1380	
	WIBR	1300	
	WJBO	1150	N
	WLCS	910	
	WXOK	1260	
Battle Creek, Mich.	WBCK	930	
	WELL	1400	A
Baxley, Ga.	WHAB	1260	
Bay City, Mich.	WBCM	1440	A
	WWBC	1250	
Bay City, Tex.	KIOX	1270	M
Bay Minette, Ala.	WBCA	1150	
Bayamon, P.R.	WRSJ	1560	
Baytown, Tex.	KWBA	1360	
Beacon, N.Y.	WBNR	1260	
Beardstown, Ill.	WRMS	790	
Beatrice, Nebr.	KWBE	1450	
Beaufort, N.C.	WBMA	1400	
Beaufort, S.C.	WBEU	960	
Beaumont, Tex.	KFDM	560	A
	KJET	1380	
	KRIC	1450	
	KTRM	990	
Beaver Dam, Wis.	WBEV	1430	
Beaver Falls, Pa.	WBVP	1230	
Beckley, W. Va.	WJLS	560	C
	WWNR	620	
Bedford, Ind.	WBIW	1340	
Bedford, Pa.	WBFD	1310	
Bedford, Va.	WBLT	1350	
Beeville, Tex.	KIBL	1490	
Belen, N.Mex.	KARS	860	
Belgrade, Mont.	KGVW	630	
Bellaire, Ohio	WOMP	1290	M
Bellefontaine, Ohio	WOHP	1390	
Bellefonte, Pa.	WBLF	1330	
Bell Fourche, S.Dak.	KBFS	1450	
Belle Glade, Fla.	WSWN	900	
Belleville, Ont.	CJBQ	800	
Belleville, Ill.	WIBV	1260	
Bellevue, Wash.	KFKF	1330	
Bellevue, Wash.	KBVU	1540	
Bellingham, Wash.	KPUG	1170	M
	KGMI	790	A
	KOQT	1550	
Bellingham-Ferndale, Wash.			
	KENY	930	
Belmont, N.C.	WCGC	1270	M-A
Beloit, Wis.	WGEZ	1490	M
Belton, S.C.	WHPB	1390	
Belton, Tex.	KTON	940	
Belzoni, Miss.	WELZ	1460	
Bemidji, Minn.	KBUN	1450	M
Bend, Oreg.	KBND	1110	A
	KGRL	940	
Bennetsville, S.C.	WBSC	1550	M
Bennington, Vt.	WBTN	1370	
Benson, Minn.	KBMD	1290	
Benson, N.C.	WPYB	1580	
Benton, Ark.	KBBA	690	
Benton, Ky.	WCBL	1290	
Benton Harbor, Mich.	WHFB	1060	
Berkeley, Calif.	KRE	1400	
Berkeley Springs, W.Va.			
	WCST	1010	
Berlin, N.H.	WMOU	1230	
Berry Hill, Tenn.	WVDL	1470	
Berryville, Ark.	KTCN	1480	
Berwick, Pa.	WBRX	1280	
Bessemer, Ala.	WYAM	1450	
Bethesda, Md.	WUST	1120	
Bethlehem, Pa.	WGPA	1100	
Beverly, Mass.	WMLD	1570	
Biddeford, Maine	WIDE	1400	M
Big Delta, Alaska	WXLL	980	
Big Lake, Tex.	KBLT	1290	
Big Rapids, Mich.	WBRN	1460	
Big Sprg., Tex.	KBST	1490	A
	KHEM	1270	
	KBYG	1400	M
Big Stone Gap, Va.	WLSD	1220	
Biloxi, Miss.	WLOX	1490	M
	WVMI	570	
Billings, Mont.	KBMY	1240	M
	KGHL	790	N

Location	C.L.	Kc.	N.A.
	KOOK	970	C
	KOYN	910	
	KURL	730	
Binghamton, N.Y.	WINR	680	N
	WKOP	1360	M
	WNBF	1290	C
Birmingham, Ala.	WAPI	1070	N
Birmingham, Ala.	WBHM	1550	
	WBRC	960	A
	WCRT	1260	A
	WEZB	1220	
	WENN	1320	M
	WATV	900	
	WSGN	610	
	WYDE	850	
	WVOK	690	
Bisbee, Ariz.	KSUN	1230	A
Bishop, Calif.	KIBS	1230	A
Bishopville, S.C.	WAGS	1380	
Bismarck, N.Dak.	KFYR	550	N
	KQDI	1350	
Bismarck-Mandan, N.Dak.			
	KBOM	1270	
Black Mountain, N.C.			
	WBMT	1350	
Black River Falls, Wis.			
	WWIS	1260	
Blackfoot, Idaho	KBLI	690	
Blackshear, Ga.	WBSG	1350	
Blackstone, Va.	WKLV	1440	
Blackwell, Okla.	KLTR	1580	
Blaine, Wash.	KARI	550	
Blakely, Ga.	WBBK	1260	
Blanding, Utah	KUTA	790	
Blind River, Ont.	CJNR	730	
Bloomington, Ill.	WJBC	1230	A
Bloomington, Ind.	WTTS	1370	A
Bloomsburg, Pa.	WCNR	930	
	WHLM	550	
Blountstown, Fla.	WKMK	1370	
Bluefield, W.Va.	WHIS	1440	N
	WKOY	1240	M
Blythe, Calif.	KYOR	1450	A
Blytheville, Ark.	KLCN	910	
Boaz, Ala.	WAVC	1300	
Bogalusa, La.	WIKC	1490	N
	WBOX	920	
Boise, Idaho	KATN	1010	
Boise, Idaho	KBOI	950	C
	KEST	790	
	KGEM	1140	M
	KIDO	630	N
	KYME	740	
Bonham, Tex.	KFYN	1420	
Boone, Iowa	KFGQ	1260	
	KWBG	1590	
Boone, N.C.	WATA	1450	
Boonville, Ind.	WBNL	1540	
Boonville, Mo.	KWRT	1370	
Booneville, Miss.	WBIP	1400	A
Boonville, N.Y.	WBRV	900	
Borger, Tex.	KHUZ	1490	M
	KBBB	1600	
Boston, Mass.	WBZ	1030	
	WCOP	1150	
	WILD	1090	
	WNAC	680	
	WEZE	1260	N
	WEEI	590	C
	WHDH	850	
	WMEX	1510	
	WORL	950	M
Boulder, Colo.	KBOL	1490	
Bowie, Tex.	KBAN	1410	
Bowling Green, Ky.	WKCT	930	A
	WBGN	1340	
	WLBJ	1410	M
Bowl. Green, Ohio	WMGS	730	
Bozeman, Mont.	KXXL	1450	N
	KBMN	1230	
Bradbury Hgts., Md.	WPGC	1580	
Braddock, Pa.	WLOA	1550	
Braddocks Heights, Md.			
	WMHI	1370	
Bradenton, Fla.	WTRL	1490	
	WBRD	1420	
Bradford, Pa.	WESB	1490	M
Brady, Tex.	KNEL	1490	
Brainerd, Minn.	KLIZ	1380	
Brampton, Ont.	CHIC	1090	
Brandon, Man.	CKX	1150	
Branson, Mo.	KBHM	1220	
Brantford, Ont.	CKPC	1380	
Brattleboro, Vt.	WTSA	1450	N
	WKVT	1490	
Brawley, Calif.	KROP	1300	A
Brazil, Ind.	WITE	1380	
Breckenridge, Minn.	KBMW	1450	
Breckenridge, Tex.	KSTB	1430	
Bremen, Ga.	WWCC	1440	
Bremerton, Wash.	KBRD	1490	
Brenham, Tex.	KWHI	1280	
Brevard, N.C.	WPNF	1240	M-N
Brewton, Ala.	WEBJ	1240	M
Bridgeport, Ala.	WBTS	1480	
Bridgeport, Conn.	WICC	600	M
	WNAB	1450	A
Bridgeton, N.J.	WSNJ	1240	
Bridgewater, N.S.	CKBW	1000	
Brigham City, Utah	KBUH	800	
Brighton, Colo.	KBRN	800	
Brinkley, Ark.	KBRI	1570	
Bristol, Conn.	WBIS	1440	
Bristol, Tenn.	WOPI	1490	N
Bristol, Va.	WCYB	690	A
	WFHG	980	M
Brockton, Mass.	WBET	1460	
Brockton, Mass.	WDKW	1410	
Brockville, Ont.	CFJR	1450	

Location	C.L.	Kc.	N.A.
Broken Bow, Nebr.	KCNI	1280	
Brookfield, Mo.	KGHM	1470	
Brookhaven, Miss.	WCHJ	1470	
	WJMB	1340	M
Brookings, Oreg.	KURY	910	
Brookings, S.Dak.	KBRK	1430	
Brookline, Mass.	WBOS	1600	
Brooksville, Fla.	WWJB	1450	
Brownfield, Tex.	KTFY	1300	
Brownsville, Tex.	KBOR	1600	A
Brownwood, Tex.	KBWD	1380	M
	KEAN	1240	
Brunswick, Ga.	WGIG	1440	A
	WMOG	1490	
Brunswick, Maine	WCME	900	
Bryan, Tex.	KORA	1240	M
	WTAW	1150	
Buckhannon, W.Va.	WBUC	1460	
Buffalo, N.Y.	WBEN	930	C
	WBNY	1400	
	WEBR	970	M
	WGR	550	
	WKBW	1520	N
	WWOL	1120	A
Buffalo, Wyo.	KBBS	1450	
Buford, Ga.	WDMF	1460	
Burbank, Calif.	KBLA	1500	
Burley, Idaho	KBAR	1230	A-M
Burlington, Iowa	KBUR	1490	A
Burlington, N.C.	WBBB	920	M
	WBAG	1150	
Burlington, Vt.	WCAX	620	N
	WDOT	1400	
	WJOY	1230	A
Burnett, Tex.	KTSL	1340	
Burns, Oreg.	KRNS	1230	
Butler, Ala.	WPRN	1220	
Butler, Pa.	WBUT	1050	
	WISR	680	
Butte, Mont.	KBOW	1490	C
	KOPR	550	M
	KXLF	1370	N
Cabano, Que.	CJAF	1340	
Cadillac, Mich.	WATT	1240	M
Caguas, P.R.	WNEL	1430	
	WVJP	1110	
Cairo, Ga.	WGRA	790	
Cairo, Ill.	WKRO	1490	
Calais, Maine	WQDY	1230	N
Caldwell, Idaho	KCID	1490	
	KBGN	910	
Calera, Ala.	WBYE	1370	
Calexico, Calif.	KICD	1490	A
Calgary, Alta.	CFAC	960	
	CFCN	1060	
	CKXL	1140	
Calhoun, Ga.	WCGA	900	
Cambridge, Md.	WCEM	1240	
Cambridge, Mass.	WTAO	740	A
Cambridge, Ohio	WILE	1270	
Camden, Ark.	KAMD	910	
Camden, N.J.	WCAM	1310	
	WKDN	800	
Camden, S. C.	WACA	1590	
Camden, Tenn.	WFWL	1220	
Cameron, Tex.	KMIL	1330	
Camilla, Ga.	WCLB	1220	
Campbell, Ohio	WHOT	1570	
Campbellsville, Ky.	WTCD	1450	
Campbellton, N.B.	CKNB	950	
Camrose, Alta.	CFCW	790	
Canon City, Colo.	KRLN	1400	M
Canonsburg, Pa.	WARO	540	
Canton, Ga.	WCHK	1290	
Canton, Ill.	WBYS	1560	
Canton, Miss.	WDOB	1370	
Canton, N.C.	WWIT	970	
Canton, Ohio	WCNS	900	
	WHOF	1060	
	WHBC	1480	A
Cape Girardeau, Mo.	KFVS	960	
	KGMO	1550	
Carbondale, Ill.	WCIL	1020	
Carbondale, Pa.	WCDL	1440	
Caribou, Maine	WFST	600	
Carlisle, Pa.	WHYL	960	
Carlsbad, N.Mex.	KAVE	1240	C
	KPBM	740	
Carmel, Calif.	KRML	1410	
Carmi, Ill.	WROY	1460	
Carnegie, Pa.	WZUM	1590	
Carrington, N.Dak.	KDAK	1600	
Carrizo Springs, Tex.	KBEN	1450	
Carroll, Iowa	KCIM	1380	
Carrollton, Ala.	WRAG	590	
Carrollton, Ga.	WLBB	1100	
Carrollton, Mo.	KAOL	1430	
Carson City, Nev.	KPTL	1300	
Cartersville, Ga.	WBHF	1450	M
Cartersville, Ga.	WKRW	1270	
Carthage, Ill.	WCAZ	990	
Carthage, Mo.	KDMO	1490	
Carthage, Tenn.	WRKM	1350	
Carthage, Tex.	KGAS	1590	
Caruthersville, Mo.	KCRV	1370	
Casa Grande, Ariz.	KPIN	1260	
Casper, Wyo.	KTWO	1470	C
	KATI	1400	
	KVOC	1230	A-M
Cayce, S.C.	WCAY	620	
Cedar City, Utah	KSUB	590	C
Cedar Falls, Iowa	KCFI	1250	
Cedar Rapids, Iowa	KCRG	1600	M
	KHAK	1360	
	KPIG	1450	
	WMT	600	C

Location	C.L.	Kc.	N.A.
Cedartown, Ga.	WGAA	1340	
Center, Ala.	WEIS	990	
Center, Tex.	KDET	930	
Centerville, Iowa	KCOG	1400	
Centerville, Tenn.	WHLP	1570	
Centerville, Utah	KBBC	1600	
Central City, Ky.	WNES	1050	
	WMTA	1380	
Centralia, Ill.	WCNT	1210	
Centralia & Chehalis, Wash.	KELA	1470	
Centreville, Miss.	WGLC	1580	
Chadron, Nebr.	KCSR	1450	
Chambersburg, Pa.	WCHA	800	
	WCBG	1590	
Champaign, Ill.	WDWS	1400	C
Chanute, Kans.	KCRB	1460	
Chapel Hill, N.C.	WCHL	1360	
Charleroi, Pa.	WESA	940	
Charles City, Iowa	KCHA	1580	
Charleston, Ill.	WEIC	1270	
Charleston, Mo.	KCHR	1350	
Charleston, S.C.	WCSC	1390	C
	WOKE	1340	A-M
	WPAL	730	
	WQSN	1450	
	WTMA	1250	N
Charleston, W.Va.	WCAW	680	
	WCHS	580	C
	WTGR	1490	A
	WKAZ	950	N
	WTIP	1240	M
Charlotte, Mich.	WCER	1390	
Charlotte, N.C.	WBT	1110	C
	WAYS	610	A
	WGIV	1600	
	WKTC	1310	
	WSOC	930	M
	WIST	1240	N
	WWOK	1480	
Charlotte Amalie, V.I.	WSTA	1340	
Charlottesville, Va.	WCHV	1260	A
	WELK	1010	
	WINA	1400	M
Charlottetown, P.E.I.	CFCY	630	
Chase City, Va.	WMEK	980	
Chatham, Ont.	CFCO	630	
Chattanooga, Tenn.	WMOC	1450	M
	WAPO	1150	A
	WDEF	1370	N
	WDOD	1310	C
	WDXB	1490	
	WNOO	1260	
Cheboygan, Mich.	WCBY	1240	
Cheektowaga, N.Y.	WNIA	1230	
Chehalis, Wash.	KITI	1420	
Chelan, Wash.	KOZI	1220	
Cheraw, S.C.	WCRE	1420	
Cherokee, Iowa	KCHE	1440	
Chester, Ill.	KSGM	980	
Chester, Pa.	WEEZ	1590	
	WVCH	740	
Chester, S.C.	WGCD	1490	
Cheyenne, Wyo.	KFBC	1240	A
	KCHY	1590	
	KRAE	1480	
	KVWO	1370	M
Chicago, Ill.	WAAF	950	
	WAIT	820	
	WBBM	780	C
	WCFL	1000	
	WCRW	1240	
	WEDC	1240	
	WGES	1390	
	WGN	720	M
	WIND	560	
	WJJD	1160	
	WLS	890	A
	WMAQ	670	N
	WMBI	1110	
	WSBC	1240	
Chicago Hgts., Ill.	WMPP	1470	
	WCGO	1600	
Chickasha, Okla.	KWCO	1560	
Chico, Calif.	KHSL	1290	C
	KPAY	1060	
Chicopee, Mass.	WACE	730	
Chicoutimi, Que.	CBJ	1580	
	CJMT	1420	
Childress, Tex.	KCTX	1510	
Chillicothe, Mo.	KCHI	1010	
Chillicothe, Ohio	WBEX	1490	A
	WCHI	1350	
Chilliwack, B.C.	CHWK	1270	
Chipley, Fla.	WBGC	1240	
Chippewa Falls, Wis.	WAXX	1150	
Christiansburg, Va.	WBCR	1260	
Christiansted, V.I.	WIVI	970	
Church Hill, Tenn.	WMCH	1260	
Churchill, Man.	CHFC	1230	
Cicero, Ill.	WHFC	1450	
Cincinnati, Ohio	WCKY	1530	
	WCIN	1480	
	WCPO	1230	
	WKRC	550	C
	WLW	700	N-A
	WSAI	1360	
	WZIP	1050	
Clanton, Ala.	WKLF	980	
Clare, Mich.	WCRM	990	
Claremont, N.H.	WTSV	1230	
Claremore, Okla.	KWPR	1270	
Clarion, Pa.	WWCH	1300	
Clarksburg, W.Va.	WBOY	1400	N
	WHAR	1340	M
	WPOX	750	
Clarksdale, Miss.	WROX	1450	M
	WKDL	1600	
Clarksville, Ark.	KLYR	1360	
Clarksville, Tenn.	WJZM	1400	M
	WDXN	540	
Clarksville, Tex.	KCAR	1350	
Claxton, Ga.	WCLA	1470	
Clayton, Ga.	WGHC	1570	
Clayton, Mo.	KXLW	1320	
	KFUO	850	
Clayton, N.Mex.	KLMX	1450	
Clearfield, Pa.	WCPA	900	
Clearwater, Fla.	WTAN	1340	
	WAZE	860	
Cleburne, Tex.	KCLE	1120	
Clermont, Fla.	WSLG	1340	
Cleveland, Ga.	WRWH	1350	
Cleveland, Miss.	WCLD	1490	
	WOSK	1410	
Cleveland, Ohio	KYW	1100	
	WDOK	1260	M
	WERE	1300	
	WGAR	1220	C
	WHK	1420	
	WABQ	1540	
	WJW	850	N
Cleveland, Tenn.	WBAC	1340	M
	WCLE	1570	
Cleveland, Tex.	KVLB	1410	
Cleve. Hgts., Ohio	WJMO	1490	A
Clewiston, Fla.	WSUG	1050	
	WOWY	1590	
Clifton, Ariz.	KCLF	1400	A
Clifton Forge, Va.	WCFV	1230	
Clincho, Va.	WDIC	1430	
Clinton, Ill.	WHOW	1520	
Clinton, Iowa	KCLN	1390	
	KROS	1340	M
Clinton, Mo.	KDKD	1280	
Clinton, N.C.	WRRZ	880	A
Clinton, Okla.	KWOE	1320	
Clinton, S.C.	WPCC	1410	
Clinton, Tenn.	WYSH	1380	
Cloquet, Minn.	WKLK	1230	
Clovis, N.Mex.	KCLV	1240	
	KVER	980	
Coachella, Calif.	KCHV	970	
Coalinga, Calif.	KBMX	1470	
Coatesville, Pa.	WCOJ	1420	
Cocoa, Fla.	WKKO	860	
	WEZY	1350	
Cocoa Beach, Fla.	WRKT	1300	
Cody, Wyo.	KODI	1400	A
Coeur d'Alene, Ida.	KVNI	1240	M
	KZIN	1050	
Coffeyville, Kans.	KGGF	690	A
Colby, Kans.	KXXX	790	
Coldwater, Mich.	WTVB	1590	
Coleman, Tex.	KSTA	1000	
Colfax, Wash.	KCLX	1450	
College Park, Ga.	WEAD	1570	
Colonial Heights, Va.	WPVA	1290	
Colonial Village, Tenn.	WSKT	1580	
Colorado City, Tex.	KVMC	1320	
Colo. Sprgs., Colo.	KRDO	1240	
	KPIK	1580	
	KVOR	1300	C
	KSSS	740	
	KYSN	1460	M
Columbia, Ky.	WAIN	1270	
Columbia, Miss.	WCJU	1450	M
Columbia, Mo.	KFRU	1400	A
	KCGM	1580	
Columbia, Pa.	WCOY	1580	
Columbia, S.C.	WCOS	1400	A
	WIS	560	N
	WMSC	1320	C
	WNOK	1230	
	WOIC	1470	
Columbia, Tenn.	WMCP	1280	
	WKRM	1340	
Columbus, Ga.	WDAK	540	N
	WRBL	1420	C
	WGBA	1270	M
	WCLS	1580	
	WOKS	1340	
Columbus, Ind.	WCSI	1010	
Columbus, Miss.	WACR	1050	
	WCBI	550	M
Columbus, Nebr.	KJSK	900	
Columbus, Ohio	WBNS	1460	C
	WCOL	1230	A
	WMNI	920	A
	WOSU	820	
	WTVN	610	
	WVKO	1580	
Colville, Wash.	KCVL	1270	
Commerce, Ga.	WJJC	1270	
Concord, Calif.	KWUN	1480	
Concord, N.H.	WKXL	1450	C
Concord, N.C.	WEGO	1410	
Concordia, Kans.	KNCK	1390	
	KFRM	550	A
Conneaut, Ohio	WWOW	1360	
Connellsville, Pa.	WCVI	1340	
Connersville, Ind.	WCNB	1580	
Conroe, Tex.	KMCO	900	
Conway, Ark.	KCON	1230	
	KVEE	1330	
Conway, N.H.	WBNC	1050	
Conway, S.C.	WLAT	1330	M
Cookeville, Tenn.	WHUB	1400	C
	WTPI	1550	
Coolidge, Ariz.	KCKY	1150	C
Coos Bay, Oreg.	KOOS	1230	M
	KYNG	1420	
Copper Hill, Tenn.	WLSB	1400	
Coquille, Oreg.	KWRO	630	
Coral Gables, Fla.	WRIZ	1550	
	WVCG	1070	
Corbin, Ky.	WCTT	680	M
	WYGO	1330	
Cordele, Ga.	WMJM	1490	M
Cordova, Alaska	KLAM	1450	
Corinth, Miss.	WCMA	1230	
Cornelia, Ga.	WCON	1450	
Corner Brook, Nfld.	CBY	790	
	CFCB	570	
Corning, Ark.	KCCB	1260	
Corning, N.Y.	WCBA	1350	
	WCLI	1450	A
Cornwall, Ont.	CJSS	1220	
	CFML	1110	
Corona, Calif.	KBUC	1370	
Corpus Christi, Tex.	KCTA	1030	M
	KCCT	1150	
	KEYS	1440	
	KRYS	1360	N
	KSIX	1230	A-C
	KUNO	1400	
Corry, Pa.	WOTR	1370	
Corsicana, Tex.	KAND	1340	
Cortez, Colo.	KVFC	740	
Cortland, N.Y.	WKRT	920	
Corvallis, Oreg.	KOAC	550	
	KFLY	1240	
	KLOO	1350	
Coshocton, Ohio	WTNS	1560	
Cottage Grove, Ore.	KNND	1400	
Coudersport, Pa.	WFRM	600	
Council Bluffs, Iowa	KSWI	1560	M-A
Courtenay, B.C.	CFCP	1440	
Covington, Ga.	WGFS	1430	
Covington, La.	WARB	730	
Covington, Tenn.	WKBL	1250	
Covington, Va.	WKEY	1340	A
Cowan, Tenn.	WZYX	1440	
Craig, Colo.	KRAI	550	
Cranbrook, B.C.	CKEK	570	
Crane, Tex.	KCRR	1380	
Crescent City, Calif.	KPLY	1240	
	KPOD	1310	
Creston, Iowa	KSIB	1520	
Crestview, Fla.	WCNU	1010	
	WJSB	1050	
Crewe, Va.	WSVS	800	
Crockett, Tex.	KIVY	1290	
Crookston, Minn.	KROX	1260	
Crossett, Ark.	KAGH	800	
Crossville, Tenn.	WAEW	1330	
Crowley, La.	KSIG	1450	M
Cuero, Tex.	KCFH	1600	
Cullman, Ala.	WFMH	1460	
	WKUL	1340	
Culpeper, Va.	WCVA	1490	M
Cumberland, Ky.	WCPM	1280	
Cumberland, Md.	WCUM	1230	C
	WTBO	1450	
Cummings, Ga.	WSNE	1410	
Cushing, Okla.	KUSH	1600	
Cuyahoga Falls, Ohio	WCVE	1150	
Cypress Gardens, Fla.	WGTO	540	
Cynthiana, Ky.	WCYN	1400	
Dade City, Fla.	WDCF	1350	
Dadeville, Ala.	WDVC	910	
Dalhart, Tex.	KXIT	1410	
Dallas, N.C.	WCFT	960	
Dallas, Oreg.	KPLK	1460	
Dallas, Tex.	KRLD	1080	C
	KIXL	1040	
	KSKY	660	
	KLIF	1190	
	WFAA	570	A
	WFAA	820	N
	KBOX	1480	
	WRR	1310	M
The Dalles, Oreg.	KACI	1300	
	KODL	1440	A
Dalton, Ga.	WBLJ	1230	M
	WRCD	1430	
Danbury, Conn.	WLAD	800	
Danville, Ill.	WDAN	1490	C
	WITY	980	
Danville, Ky.	WHIR	1230	M
Danville, Va.	WBTM	1330	A
	WOTI	970	
	WDVA	1250	M
	WILA	1580	
Darlington, S.C.	WDAR	1350	
Dauphin, Man.	CKDM	730	
Davenport, Iowa	WOC	1420	N
	KWNT	1580	
	KSTT	1170	M
Dawson, Ga.	WDWD	990	
Dawson, Yukon T.	CFYT	1230	
Dawson Creek, B.C.	CJDC	560	
Dayton, Ohio	WHIO	1290	C
	WING	1410	
	WONE	980	
	WAVI	1210	
Dayton, Tenn.	WDNT	1280	
Daytona Beach, Fla.	WNDB	1150	M-A
	WMFJ	1450	
	WROD	1340	
Deadwood, S.Dak.	KDSJ	980	
Dearborn, Mich.	WKMH	1310	
Decatur, Ala.	WHOS	800	
	WAJF	1490	
	WMSL	1400	M
Decatur, Ga.	WGUN	1010	
Decatur, Ill.	WDZ	1050	
	WSOY	1340	C
Decorah, Iowa	KDEC	1240	
	KWLC	1240	
Defiance, Ohio	WONW	1280	
De Funiak Springs, Fla.	WDSP	1280	
	WZEP	1460	
De Kalb, Ill.	WLBK	1360	
De Land, Fla.	WJBS	1490	
	WOOO	1310	
Delano, Calif.	KCHJ	1010	
Delaware, Ohio	WDLE	1550	
Delray, Bch., Fla.	WDBF	1420	
Del Rio, Tex.	KDLK	1230	
Delta, Colo.	KDTA	1400	
Deming, N.Mex.	KOTS	1230	
Demopolis, Ala.	WXAL	1400	M
Denham Sprgs., La.	WLBI	1220	
Denison, Iowa	KDSN	1580	
Denison, Tex.	KDSX	950	
Denton, Tex.	KDNT	1440	
Denver, Colo.	KDEN	1340	
	KFML	1390	
	KHOW	630	A
	KIMN	950	M
	KLIR	990	
	KLZ	560	C
	KBTR	710	
	KOA	850	N
	KPOF	910	
	KFSC	1220	
	KTLN	1280	
De Queen, Ark.	KDQN	1390	
DeRidder, La.	KDLA	1010	
Des Moines, Iowa	KCBC	1390	A
	KIOA	940	
	KRNT	1350	C
	KSO	1460	
	KWKY	1150	M
	WHO	1040	N
Detroit, Mich.	WCAR	1130	
	WJBK	1500	
	WJLB	1400	
	WJR	760	
	WWJ	950	N
	WXYZ	1270	A
Detroit Lakes, Minn.	KDLM	1340	
Devils Lake, N.Dak.	KDLR	1240	M
Dexter, Mo.	KDEX	1590	
Diboll, Tex.	KSPL	1260	
Dickinson, N.Dak.	KDIX	1230	
Dickson, Tenn.	WDKN	1260	
Dillon, Mont.	KDBM	800	
Dillon, S.C.	WDSC	800	A
Dinuba, Calif.	KRDU	1130	
Dixon, Ill.	WIXN	1460	
Dodge City, Kans.	KGNO	1370	M
	KEDD	1550	
Dothan, Ala.	WAGF	1320	
	WDIG	1450	M
	WOOF	560	
Douglas, Ariz.	KAWT	1450	M
	KAPR	930	
Douglas, Ga.	WDMG	860	
Douglas, Wyo.	KWIV	1050	
Dover, Del.	WDOV	1410	
	WKEN	1600	
Dover, N.H.	WTSN	1270	
Dover, N.J.	WRAN	1510	
Dover, Ohio	WJER	1450	
Dowagiac, Mich.	WDOW	1440	
Doylestown, Pa.	WBUX	1570	
Drumheller, Alta.	CJDV	910	
Drummondville, Que.	CHRD	1340	
Dublin, Ga.	WMLT	1330	
	WXLI	1230	
Du Bois, Pa.	WCED	1420	C
Dubuque, Iowa	KDTH	1370	A
	WDBQ	1490	M
Duluth, Minn.	KDAL	610	C
	WEBC	560	
Dumas, Tex.	KDDD	800	
Duncan, Okla.	KRHD	1350	M
Dundalk, Md.	WAYE	860	
	WEBB	1360	
Dundee, N.Y.	WFLR	1570	
Dunkirk, N.Y.	WDOE	1410	
Dunn, N.C.	WCKB	780	
Du Quoin, Ill.	WDQN	1580	
Durango, Colo.	KIUP	930	
	KDGO	1240	
Durant, Okla.	KSFO	750	
Durham, N.C.	WDNC	620	C
	WSRC	1410	
	WSSB	1490	
	WTIK	1310	A
Dyersburg, Tenn.	WOSG	1450	
	WTRO	1330	
Eagle Pass, Tex.	KEPS	1270	
Eagle River, Wis.	WERL	950	
Easley, S.C.	WELP	1360	
E. Grand Forks, Minn.	KRAD	1590	
Eastland, Tex.	KERC	1590	
E. Lansing, Mich.	WKAR	870	
E. Liverpool, Ohio	WOHI	1490	A
East Longmeadow, Mass.	WTYM	1600	
Eastman, Ga.	WPFE	1580	
E. Moline, Ill.	WDLM	960	
E. Palatka, Fla.	WREA	1480	A
E. Point, Ga.	WTJH	1260	
E. St. Louis, Ill.	WBBR	1490	A
Easton, Md.	WEMD	1460	
Easton, Pa.	WEEX	1230	
	WEST	1400	N

Location	C.L.	Kc.	N.A.
Eatontown, N.J.	WHTG	1410	
Eau Claire, Wis.	WEAQ	790	N
	WBIZ	1400	M
	WECL	1050	
Eau Gallie, Fla.	WMEG	920	
Ebensburg, Pa.	WEND	1580	
Edenton, N.C.	WCDJ	1260	
Edinburg, Tex.	KURV	710	
Edmonds, Wash.	KGDN	630	
Edmonton, Alta.	CBX	1010	
	CBXA	740	
	CFRN	1260	
	CHED	1080	
	CHFA	680	
	CJCA	930	
	CKUA	580	
Edmundston, N.C.	CJEM	570	
Effingham, Ill.	WCRA	1090	
Elba, Ala.	WELB	1350	
Elberton, Ga.	WSGC	1400	
El Cajon, Calif.	KDEO	910	A
El Campo, Tex.	KULP	1390	
El Centro, Calif.	KXO	1230	M
	KAMP	1430	
El Dorado, Ark.	KDMS	1290	
	KELD	1400	A
Eldorado, Kans.	KBTO	1360	
Eldorado Springs, Mo.	KESM	1580	
Elgin, Ill.	WRMN	1410	
Elizabeth City, N.C.	WCNC	1240	
	WGAI	560	
Elizabethton, Tenn.	WBEJ	1240	
Elizabethtown, Ky.	WIEL	1400	
Elizabethtown, N.C.	WBLA	1440	
Elizabethtown, Pa.	WEZN	1600	
Elk City, Okla.	KBEK	1240	A
Elkhart, Ind.	WTRC	1340	N
	WCMR	1270	
Elkin, N.C.	WIFM	1540	
Elkins, W.Va.	WDNE	1240	
Elko, Nev.	KELK	1240	M
Ellensburg, Wash.	KXLE	1240	
Ellsworth, Me.	WDEA	1350	
Elmira, N.Y.	WELM	1410	A-C
	WENY	1230	N
Elmira Heights-Horseheads, N.Y.	WEHH	1590	M
El Paso, Tex.	KROD	600	C
	KELP	920	
	KHEY	690	
	KINT	1590	
	KIZZ	1150	
	KSET	1340	M
	KTSM	1380	N
Ely, Minn.	WELY	1450	M
Ely, Nev.	KELY	1230	
Elyria, Ohio	WEOL	930	
Eminence, Ky.	WSTL	1600	
Emporia, Kans.	KVOE	1400	
Emporia, Va.	WEVA	860	
Emporium, Pa.	WLEM	1250	
Endicott, N.Y.	WENE	1430	A
Englewood, Colo.	KGMC	1150	
Enid, Okla.	KCRC	1390	A
	KGWA	960	M
Enterprise, Ala.	WIRB	600	
Enterprise, Oreg.	KWVR	1340	
Ephrata, Pa.	WGSA	1310	
Ephrata, Wash.	KULE	730	
Erie, Pa.	WWYN	1260	A
	WICU	1330	N
	WJET	1400	
	WLEU	1450	
Erwin, Tenn.	WEMB	1420	
Escanaba, Mich.	WDBC	680	M
	WLST	600	A
Escondido, Calif.	KOWN	1450	
Estevan, Sask.	CJSL	1280	
Estherville, Iowa	KLIL	1340	
Etowah, Tenn.	WCPH	1220	
Eufaula, Ala.	WULA	1240	M
Eugene, Oreg.	KORE	1450	M
	KASH	1600	A
	KERG	1280	C
	KUGN	590	N
Eugene, Wash.	KPIR	1500	
Eunice, La.	KEUN	1490	M
Eureka, Calif.	KINS	980	C
	KDAN	790	
	KRED	1480	M
Eustis, Fla.	WLCO	1240	
Evanston, Ill.	WEAW	1330	
	WNMP	1590	
Evanston, Wyo.	KLUK	1240	
Evansville, Ind.	WROZ	1400	C
	WGBF	1280	N
	WIKY	820	
	WJPS	1330	A
Eveleth, Minn.	WEVE	1340	M
Everett, Wash.	KRKO	1380	
	KQTY	1230	
Evergreen, Ala.	WBLO	1470	
Fairbanks, Alaska	KFAR	660	A-M-N
	KFRB	900	C-A
Fairbury, Nebr.	KGMT	1310	
Fairfax, Va.	WEEL	1310	
Fairfield, Ill.	WFIW	1390	
Fairfield, Iowa	KMCD	1570	
Fairhope, Ala.	WABF	1220	
Fairmont, Minn.	KSUM	1370	M
Fairmont, N.C.	WFMO	860	
Fairmont, W.Va.	WMMN	920	C
	WTCS	1490	A
Fajardo, P.R.	WMDD	1490	
Falfurrias, Tex.	KPSO	1260	
Fallon, Nev.	KULV	1250	
Fall River, Mass.	WALE	1400	M
	WSAR	1480	A
Falls Church, Va.	WFAX	1220	
Falls City, Nebr.	KTNC	1230	
Fargo, N.Dak.	WDAY	970	N
	KFNW	900	
	KUTT	1550	
	KXGO	790	A
Faribault, Minn.	KDHL	920	
Farmington, Me.	WKTJ	1380	
Farmington, Mo.	KREI	800	
Farmington, N.M.	KENN	1390	
	KWYK	960	
	KRZE	1280	
Farmville, N.C.	WBTL	1050	
	WFAG	1250	
Farmville, Va.	WFLO	870	
Farrell, Pa.	WFAR	1470	
Farwell, Tex.	KZDL	1570	
Fayette, Ala.	WWWF	990	
Fayetteville, Ark.	KHOG	1440	
	KFAY	1250	M
Fayetteville, N.C.	WFAI	1230	C
	WFNC	940	M
	WFLB	1490	A
	WIDU	1600	
Fayetteville, Tenn.	WEKR	1240	M
Fergus Falls, Minn.	KOTE	1250	M
Fernandina Beach, Fla.	WPAP	1570	
Ferriday, La.	KFNV	1600	
Festus, Mo.	KJCF	1400	
	KXEN	1010	
Findlay, Ohio	WFIN	1330	
Fisher, W.Va.	WELD	690	A
Fitchburg, Mass.	WEIM	1280	M
	WFGM	960	
Fitzgerald, Ga.	WBHB	1240	M
Flagstaff, Ariz.	KCLS	600	N
	KVNA	690	A
	KEOS	1290	
Flat River, Mo.	KFMO	1240	M
Flin Flon, Man.	CFAR	590	
Flint, Mich.	WFDF	910	N
	WTRX	1330	A
	WAMM	1420	
	WMRP	1570	
	WKMF	1470	
	WTAC	600	A
Flomaton, Ala.	WTCB	990	
Florence, Ala.	WJOI	1340	M
	WOWL	1240	A
Florence, S.C.	WJMX	970	A
	WOLS	1230	
	WYNN	540	
Floydada, Tex.	KFLD	900	
Foley, Ala.	WHEP	1310	
Fond du Lac, Wis.	KFIZ	1450	M
Fordyce, Ark.	KBJT	1570	
Forest, Miss.	WMAG	860	
Forest City, N.C.	WBBO	780	
	WAGY	1320	
Forest Grove, Oreg.	KGGG	1570	
Forrest City, Ark.	KXJK	950	
Ft. Bragg, Calif.	KDAC	1230	
Ft. Collins, Colo.	KCOL	1410	A
	KZIX	600	
Ft. Dodge, Iowa	KVFD	1400	M
	KWMT	540	A
Ft. Frances, Ont.	CFOB	800	
Ft. Knox, Ky.	WSAC	1470	
Ft. Lauderdale, Fla.	WFTL	1400	
	WWIL	1580	
Ft. Madison, Iowa	KXGI	1360	
Ft. Morgan, Colo.	KFTM	1400	
Ft. Myers, Fla.	WINK	1240	C
	WMYR	1410	
Ft. Payne, Ala.	WFPA	1400	
	WZOB	1250	
Ft. Pierce, Fla.	WARN	1330	
	WIRA	1400	
Ft. Scott, Kans.	KMDO	1600	
Ft. Smith, Ark.	KFPW	1230	C
	KFSA	950	A
	KTCS	1410	M
	KWHN	1320	
Ft. Stockton, Tex.	KFST	860	
Ft. Valley, Ga.	WFPM	1150	
Ft. Walton Beach, Fla.	WNUE	950	
	WFTW	1260	
Ft. Wayne, Ind.	WGL	1250	A
	WOWO	1190	
	WANE	1450	C
	WKJG	1380	N
Ft. William, Ont.	CKPR	580	
	CJLX	800	
Ft. Worth, Tex.	KJIM	870	
	KCUL	1540	
	KFJZ	1270	
	KNOK	970	
	WBAP	570	A
	WBAP	820	N
	KXOL	1360	
Fostoria, Ohio	WFOB	1430	
Fountain City, Tenn.	WFCT	1430	
	WROL	1490	
Fountain Inn, S.C.	WFIS	1600	
Fowler, Calif.	KLIP	1220	
Framingham, Mass.	WKOX	1190	
Frankfort, Ind.	WILO	1570	
Frankfort, Ky.	WFKY	1490	M
Franklin, Ky.	WFKN	1220	
Franklin, La.	KFRA	1390	
Franklin, N.C.	WFSC	1050	
Franklin, Pa.	WFRA	1430	
Franklin, Tenn.	WAGG	950	
Franklin, Va.	WYSR	1250	
Frederick, Md.	WFMD	930	C
Frederick, Okla.	KTAT	1570	
Fredericksburg, Tex.	KNAF	910	M
Fredericksburg, Va.	WFVA	1230	A
	WFLS	1350	
Fredericton, N.B.	CFNB	550	
Fredonia, N.Y.	WBUZ	1570	
Freeport, Ill.	WFRL	1570	
Freeport, N.Y.	WGBB	1240	
Freeport, Tex.	KBRZ	1460	
Fremont, Mich.	WBFC	1490	
Fremont, Nebr.	KHUB	1340	
Fremont, Ohio	WFRO	900	
Fresno, Calif.	KARM	1430	A
	KBIF	900	
	KEAP	980	
	KFRE	940	C
	KGST	1600	
	KMAK	1340	
	KMJ	580	N
	KYNO	1300	
Front Royal, Va.	WFTR	1450	M
Frostburg, Md.	WFRB	740	
Fulton, Ky.	WFUL	1270	
Fulton, Mo.	KFAL	900	
Fulton, N.Y.	WOSC	1300	
Fuquay Sprgs., N.C.	WFVG	1460	
Gadsden, Ala.	WGAD	1350	A
	WETO	930	M
	WAAX	570	
Gaffney, S.C.	WFGN	1570	
Gainesville, Fla.	WDVH	980	
	WGGG	1230	A
	WRUF	850	M
Gainesville, Ga.	WGGA	550	M
	WDUN	1240	
	WLBA	1580	
Gainesville, Tex.	KGAF	1580	
Gaithersburg, Md.	WHMC	1150	
Galax, Va.	WBOB	1360	M
Galesburg, Ill.	WGIL	1400	
	WAIK	1590	
Gallatin, Tenn.	WHIN	1010	
Gallipolis, Ohio	WJEH	990	
Gallup, N. Mex.	KGAK	1330	A
	KYVA	1230	
Galt, Ont.	CKGR	1110	
Galveston, Tex.	KILE	1400	
	KGBC	1540	
Gander, Nfld.	CBG	1450	
Garden City, Kans.	KNCO	1050	
	KIUL	1240	M
Gardner, Mass.	WGAW	1340	
Gary, Ind.	WWCA	1270	
	WGRY	1370	
Gastonia, N.C.	WGNC	1450	A
	WLTC	1370	
Gate City, Va.	WGAT	1050	
Gaylord, Mich.	WATC	900	
Geneva, Ala.	WGEA	1150	
Geneva, Ill.	WGSB	1480	
Geneva, N.Y.	WGVA	1240	A
Georgetown, Del.	WJWL	900	
Georgetown, Ky.	WAXU	1580	
Georgetown, S.C.	WGTN	1400	M
Gettysburg, Pa.	WGET	1320	
Gillette, Wyo.	KIML	1490	
Gilroy, Calif.	KPER	1290	
Gladewater, Tex.	KEES	1430	
Glasgow, Ky.	WKAY	1490	
Glasgow, Mont.	KLTZ	1240	
Glendale, Ariz.	KRUX	1360	
Glendale, Calif.	KIEV	870	
Glendive, Mont.	KXGN	1400	
Glen Falls, N.Y.	WSET	1410	
	WWSC	1450	A
Glenville, Ga.	WKIG	1580	
Glenwood Sprgs., Colo.	KGLN	980	M
Globe Ariz.	KZOW	1240	A
Gloucester, Va.	WDDY	1420	
Gloversville-Johnston, N.Y.	WENT	1340	C
Gold Beach, Oreg.	KBLY	1220	
Golden, Colo.	KTWL	1250	
Golden Meadow, La.	KLFT	1600	
Golden Valley, Minn.	KEVE	1440	M
	KUXL	1570	
Goldsboro, N.C.	WFMC	730	
	WGBR	1150	A
	WGOL	1300	
Gonzales, Tex.	KCTI	1450	
Goodland, Kans.	KLOE	730	M
Goose Bay, Nfld.	CFGB	1340	
Goshen, Ind.	WKAM	1460	
Grafton, N.D.	KGPC	1340	
Grafton, W.Va.	WVVW	1260	
Graham, Tex.	KSWA	1330	
Granby, Que.	CHEF	1450	
Grand Coulee, Wash.	KFDR	1360	
Grande Prairie, Alta.	CFGP	1050	
Grand Falls, Nfld.	CBT	540	
Grand Forks, N.D.	KFJM	1370	
	KILO	1440	C
	KNOX	1310	M
Grand Haven, Mich.	WGHN	1370	
Grand Island, Nebr.	KMMJ	750	A
	KRGI	1430	
Grand Junction, Colo.	KREX	920	M
	KEXO	1230	A
	KSTR	620	
	KWSL	1340	
Grand Prairie, Tex.	KRZY	730	
Grand Rapids, Mich.	WJEF	1230	C
	WFUR	1570	
	WGRD	1410	
	WLAV	1340	A
	WMAX	1480	M
	WOOD	1300	N
Grand Rapids, Minn.	KOZY	1490	M
Grangeville, Idaho	KORT	1230	
Granite City, Ill.	WGNU	920	
Grants, N.Mex.	KMIN	980	
Grants Pass, Oreg.	KAGI	930	M
	KAJO	1270	
Gravelbourg, Sask.	CFGR	1230	
	CFRG	710	
Grayson, Ky.	WGOH	1370	
Gt. Barrington, Mass.	WSBS	860	
Gt. Bend, Kans.	KVGB	1590	N
Gt. Falls, Mont.	KFBB	1310	C
	KUDI	1450	
	KMON	560	M
	KARR	1400	N
Greeley, Colo.	KFKA	1310	
	KYOU	1450	
Green Bay, Wis.	WBAY	1360	C
	WJPG	1440	M
	WDUZ	1400	A
Green Cove Springs, Fla.	WGRC	1580	
Greeneville, Tenn.	WGRV	1340	
	WSMG	1450	
Greenfield, Mass.	WHAI	1240	M
Greensboro, N.C.	WBIG	1470	C
	WCOG	1320	
	WGBG	1400	A
	WPET	950	
Greensburg, Pa.	WHJB	620	
Greenville, Ala.	WGYV	1380	
Greenville, Mich.	WPLB	1380	
Greenville, Miss.	WJPR	1330	
	WDDT	900	
	WGVM	1260	
Greenville, Pa.	WGRP	940	
Greenville, N.C.	WGTC	1590	M
	WOOW	1340	
Greenville, S.C.	WESC	660	
	WFBC	1330	N
	WMRB	1490	A-M
	WMUU	1260	
	WQOK	1440	C
Greenville, Tex.	KGVL	1400	
Greenwood, Miss.	WABG	960	A
	WGRM	1240	N
Greenwood, S.C.	WCRS	1450	N
	WGSW	1350	
Greer, S.C.	WEAB	800	
	WCKI	1300	A
Grenada, Miss.	WNAG	1400	M
Gresham, Oreg.	KGRO	1230	
Gretna, Va.	WMNA	730	
Griffin, Ga.	WKEU	1450	M
	WHIE	1320	
	WRIX	1410	
Grinnell, Iowa	KGRN	1410	
Groton, Conn.	WSUB	980	
Grove City, Pa.	WSAJ	1340	
Grundy, Va.	WNRG	1250	
Guayama, P.R.	WXRF	1590	
Guelph, Ont.	CJOY	1460	
Gulfport, Miss.	WROA	1390	
	WGCM	1240	A
Gunnison, Colo.	KGUC	1490	
Guntersville, Ala.	WGSV	1270	
Guthrie, Okla.	KWRW	1490	
Guymon, Okla.	KGYN	1220	
Hagerstown, Md.	WARK	1490	C
	WJEJ	1240	A-M
Haines City, Fla.	WHAN	930	
Haleyville, Ala.	WJBB	1230	M
Halifax, N.S.	CBH	790	
	CHNS	960	
	CJCH	920	
Hamden, Conn.	WDEE	1220	
Hamilton, Ala.	WERH	970	
Hamilton, Mont.	KYLQ	980	
Hamilton, Ohio	WMOH	1450	
Hamilton, Ont.	CHIQ	1280	
	CHML	900	
	CKOC	1150	
Hamilton, Tex.	KCLW	900	
Hamlet, N.C.	WKDX	1400	
Hammond, Ind.	WJOB	1230	
Hammond, La.	WFPR	1400	
Hammonton, N.J.	WNJH	1580	
Hampton, S.C.	WBHC	1270	
Hampton, Va.	WVEC	1490	
Hancock, Mich.	WMPL	920	
Hanford, Calif.	KNGS	620	
Hannibal, Mo.	KHMO	1070	
Hanover, N.H.	WTSL	1400	
	WDCR	1340	
Hanover, Pa.	WHVR	1280	
Harlan, Ky.	WHLN	1410	
Harlingen, Tex.	KGBT	1530	
Harriman, Tenn.	WHBT	1600	
Harrisburg, Ill.	WEBQ	1240	
Harrisburg, Pa.	WHGB	1400	A
	WCMB	1460	M
	WHP	580	C
	WKBO	1230	N

Location	C.L.	Kc.	N.A.
Harrison, Ark.	KHOZ	900	
Harrisonburg, Va.	WHBG	1360	
	WSVA	550	N
Harrodsburg, Ky.	WHBN	1420	
Hartford, Conn.	WDRC	1360	C
	WCCC	1290	
	WPOP	1410	M-A
	WTIC	1080	N
Hartford, Wis.	WTKM	1540	
Hartselle, Ala.	WHRT	860	
Hartsville, S.C.	WHSC	1450	M
Hartwell, Ga.	WKLY	980	
Harvard, Ill.	WMCW	1600	
Harvey, Ill.	WBEE	1570	
Hastings, Mich.	WBCH	1220	
Hastings, Nebr.	KHAS	1230	
Hattiesburg, Miss.	WBKH	950	
	WFOR	1400	N
	WHSY	1230	A
	WXXX	1310	
Haverhill, Mass.	WHAV	1490	
Havre, Mont.	KOJM	610	M
Havre de Grace, Md.	WASA	1330	
Hawkinsville, Ga.	WCEH	610	
Haynesville, La.	KLUV	1580	
Hays, Kans.	KAYS	1400	
Hayward, Wis.	WHSM	910	
Hazard, Ky.	WKIC	1390	M
Hazlehurst, Miss.	WMDC	1220	
Hazleton, Pa.	WAZL	1490	N-M
	WTHT	1300	
Helena, Ark.	KFFA	1360	M
Helena, Mont.	KCAP	1340	M
	KBLL	1240	N
Hemet, Calif.	KHSJ	1320	
Hempstead, N.Y.	WHLI	1100	
Henderson, Ky.	WSON	860	
Henderson, Nev.	KBMI	1400	
	KTOO	1280	
Henderson, N.C.	WHNC	890	M
	WHVH	1450	
Henderson, Tex.	KGRI	1000	
	KWRD	1470	
Hendersonville, N.C.	WHKP	1450	A
Henryetta, Okla.	KHEN	1590	
Hereford, Tex.	KPAN	860	
Herkimer, N.Y.	WALY	1420	
Hermiston, Oreg.	KOHU	1570	
Herrin, Ill.	WJPF	1340	M
Hettinger, N.Dak.	KNDC	1490	
Hibbing, Minn.	WMFG	1240	N
Hickory, N.C.	WHKY	1290	A
	WIRC	630	
Highland Park, Tex.	KVIL	1150	
Highland Springs, Va.	WENZ	1450	
High Point, N.C.	WMFR	1230	A
	WNOS	1590	
	WHPE	1070	
Hillsboro, Ohio	WSRW	1590	
Hillsboro, Oreg.	KUIK	1360	
Hillsboro, Tex.	KHBR	1560	
Hillsdale, Mich.	WCSR	1340	
Hillsville, Va.	WHHV	1400	
Hilo, Hawaii	KHBC	970	C
	KIPA	1110	
	KIMO	850	M
Hinesville, Ga.	KGML	990	
Hobart, Okla.	KTJS	1420	
Hobbs, N.Mex.	KWEW	1480	M
	KHOB	1390	
Holbrook, Ariz.	KDJI	1270	
Holdredge, Nebr.	KUVR	1380	
Holland, Mich.	WHTC	1450	
	WJBL	1260	
Hollywood, Fla.	WGMA	1320	
Holyoke, Mass.	WREB	930	
Homer, La.	KHAL	1320	
Homestead, Fla.	WSDB	1430	
Homewood, Ala.	WJLD	1400	
Honolulu, Hawaii	KGMB	590	C
	KHAI	1090	
	KPOI	1380	
	KIKI	830	
	KGU	760	N
	KHVH	1040	
	KORL	650	M
	KNDI	1270	
	KOHO	1170	
	KOOD	990	
	KULA	690	A
Hood River, Oreg.	KIHR	1340	
Hope, Ark.	KXAR	1490	
Hopewell, Va.	WHAP	1340	
Hopkinsville, Ky.	WHOP	1230	C
	WKOA	1480	
Hoquiam, Wash.	KHOK	1560	
Hornell, N.Y.	WWHG	1320	
	WLEA	1480	M
Hot Springs, Ark.	KAAB	1350	A
	KBHS	590	
	KZNG	1470	M
Hot Springs, S. Dak.	KOBH	580	
Houghton, Mich.	WHDF	1400	
Houghton Lake, Mich.	WHGR	1290	
Houlton, Maine	WHOU	1340	
Houma, La.	KCIL	1490	N
Houston, Miss.	WCPC	1320	
Houston, Tex.	KCOH	1430	
	KILT	610	
	KNUZ	1230	
	KODA	1010	
	KPRC	950	N
	KTHT	790	
	KTRH	740	C
	KXYZ	1320	A
	KYOK	1590	
Howell, Mich.	WHMI	1350	
Hudson, N.Y.	WHUC	1230	
Hugo, Okla.	KIHN	1340	
Hull, Que.	CKCH	970	
Humacao, P.R.	WALO	1240	
Humboldt, Tenn.	WIRJ	740	
Huntingdon, Pa.	WHUN	1150	
Huntington, Ind.	WHLT	1300	
Huntington, N.Y.	WGSM	740	
Huntington, W.Va.	WKEE	800	M-A
	WSAZ	930	N
	WWHY	1470	M
Huntsville, Ala.	WBHP	1230	M
	WEUP	1600	
	WFIX	1450	
	WAAY	1550	A
Huntsville, Ont.	CKAR	590	
Huntsville, Tex.	KSAM	1490	
Huron, S.Dak.	KIJV	1340	
Hutchinson, Kans.	KWBW	1450	N
	KWHK	1260	
Hutchinson, Minn.	KDUZ	1260	
Idabel, Okla.	KBEL	1240	
Idaho Falls, Idaho	KID	590	C
	KCYN	1400	
	KIFI	1260	A-M
	KTEE	900	
Independence, Ia.	KUPI	980	
	KOUR	1220	
Independence, Kans.	KIND	1010	M
Independence, Mo.	KANS	1510	
Indiana, Pa.	WDAD	1450	C
Indianapolis, Ind.	WFBM	1260	A
	WGEE	1590	
	WIBC	1070	
	WIRE	1430	N
	WISH	1310	C
	WXLW	950	M
Indianola, Miss.	WDLT	1380	
Indio, Calif.	KREO	1400	A
Inglewood, Calif.	KTYM	1460	
Inkster, Mich.	WCHB	1440	
International Falls, Minn.	KGHS	1230	
Invrik, N.W.T.		860	
Iola, Kansas	KALN	1370	
Ionia, Mich.	WION	1430	
Iowa City, Iowa	KXIC	800	
	WSUI	910	
Iron Mtn., Mich.	WMIQ	1450	A
Iron River, Mich.	WIKB	1230	M
Irondale, Ala.	WIXI	1480	
Ironton, Ohio	WIRO	1230	M
Ironwood, Mich.	WJMS	630	M
Irvine, Ky.	WIRV	1550	
Isabella, P.R.	WISA	1390	
Ishpeming, Mich.	WJPD	1240	
	WJAN	970	
Islip, N.Y.	WBIC	540	
Ithaca, N.Y.	WHCU	870	C
	WTKO	1470	A
Iuka, Miss.	WVOM	1270	
Jackson, Ala.	WTHG	1290	M
Jackson, Mich.	WIBM	1450	A
	WKHM	970	M
Jackson, Miss.	WJDX	620	N
	WJQS	1400	C
	WJXN	1450	
	WOKJ	1590	
	WRBC	1300	M
	WSLI	930	
Jackson, Ohio	WLMJ	1280	
Jackson, Tenn.	WDXI	1310	
	WJAK	1460	
	WTJS	1390	A
Jacksonville, Fla.	WJAX	930	
	WAPE	690	
	WZOK	1320	A
	WIVY	1050	
	WMBR	1460	C
	WOBS	1360	
	WPDQ	600	
	WQIK	1280	
	WRHC	1400	
Jacksonville, Ill.	WJIL	1550	
	WLDS	1180	
Jacksonville, N.C.	WJNC	1240	M
	WLAS	910	
Jacksonville, Tex.	KEBE	1400	
Jacksonville Bch., Fla.	WZRO	1010	
Jamestown, N.Dak.	KEYJ	1400	M
	KSJB	600	C
Jamestown, N.Y.	WJTN	1240	A
	WXYJ	1340	M
Jamestown, Tenn.	WCLC	1260	
Janesville, Wis.	WCLO	1230	M
Jasper, Ala.	WWWB	1360	
	WARF	1240	
Jasper, Ind.	WITZ	990	
Jasper, Tex.	KTXJ	1350	
Jefferson City, Mo.	KLIK	950	
	KWOS	1240	M
Jeffersonville, Ind.	WXVW	250	
Jennings, La.	KJEF	1290	
Jerome, Idaho	KART	1400	
Jerseyville, Ill.	WJBM	1480	
Jesup, Ga.	WBGR	1370	
Johnson City, Tenn.	WJCW	910	C
	WETB	790	M
Johnston, S.C.	WJES	250	
Johnstown, N.Y.	WIZR	930	
Johnstown, Pa.	WJAC	1400	N
	WARD	1490	C
	WCRO	1230	M
Joliet, Ill.	WJOL	1340	
Joliette, Que.	CJLM	1350	
Jonesboro, Ark.	KBTM	1230	M
	KNEA	970	
Jonesboro, La.	KTOC	920	
Jonesboro, Tenn.	WJSO	1590	
Jonesville, La.	KANV	1480	
Jonquiere, Que.	CKRS	590	
Joplin, Mo.	WMBH	1450	M
	KFSB	1310	
	KODE	1230	C
Junction, Tex.	KMBL	1450	
June. City, Kans.	KJCK	1420	
Juneau, Alaska	KINY	800	C-A
	KJNO	630	A-M-N
Kailua, Hawaii	KLEI	1240	
Kalmuki, Hawaii	KAIM	870	
Kalamazoo, Mich.	WKPR	1420	
	WKZO	590	C
	WKLZ	1470	M
	WKMI	1360	
Kalispell, Mont.	KGEZ	600	M
	KOFI	930	
Kamloops, B.C.	CFJC	910	
Kane, Pa.	WADP	960	
Kankakee, Ill.	WKAN	1320	
Kannapolis, N.C.	WGTL	870	
	WRKB	1460	
Kans. City, Kans.	KCKN	1340	
Kansas City, Mo.	KCMO	810	C
	KMBC	980	A
	KPRS	1590	
	KUDL	1380	
	WDAF	610	N
	WHB	710	
Kearney, Nebr.	KGFW	1340	M
	KRNY	1460	
Keene, N.H.	WKNE	1290	N
	WKBK	1220	
Kelowna, B.C.	CKOV	630	
Kelso, Wash.	KLOG	1490	
Kendallville, Ind.	WAWK	1570	
Kenedy, Tex.	KAML	990	
Kenmore, N.Y.	WYSL	1080	
Kennett, Mo.	KBOA	830	
Kennewick-Pasco-Richland, Wash.	KEPR	610	C
Kenora, Ont.	CJRL	1220	
Kenosha, Wis.	WLIP	1050	
Kentville, N.S.	CKEN	1350	
Keokuk, Iowa	KOKX	1310	
Kermit, Tex.	KERB	600	
Kerrville, Tex.	KERV	1230	
Kershaw, S.C.	WKSC	1300	
Ketchikan, Alaska	KTKN	930	C-A
Kewanee, Ill.	WKEI	1450	
Keyser, W.Va.	WKYR	1270	
Key West, Fla.	WKWF	1600	M
	WKIZ	1500	
Kilgore, Tex.	KOCA	1240	
Killeen, Tex.	KLEN	1050	M
Kimball, Nebr.	KIMB	1260	
King City, Calif.	KRKC	1570	
Kingman, Ariz.	KAAA	1230	A
Kings Mountain, N.C.	WKMT	1220	
Kingsport, Tenn.	WKIN	1320	
	WKPT	1550	N
Kingston, N.Y.	WBAZ	1550	
	WGHQ	920	
	WKNY	1490	M
Kingston, Ont.	CFRC	1490	
	CKLC	1380	
	CKWS	960	
Kingstree, S.C.	WDKD	1310	
Kingsville, Tex.	KINE	1330	
Kinston, N.C.	WELS	1010	
	WFTC	960	A
	WISP	1230	M
Kirkland, Wash.	KCDI	1460	
	KNBX	1050	
Kirkland Lake, Ont.	CJKL	560	
Kirksville, Mo.	KIRX	1450	A
Kissimmee, Fla.	WKBX	1220	
Kitchener, Ont.	CKCR	1490	
	CKKW	1320	
Kittanning, Pa.	WACB	1380	
Klamath Falls, Oreg.	KAGO	1150	M
	KFLW	1450	A-C
	KLAD	960	
Knoxville, Iowa	KNIA	1320	
Knoxville, Tenn.	WBIR	1240	A
	WIVK	860	
	WATE	620	N
	WKGN	1340	M
	WKXV	900	
	WNOX	990	C
Kodiak, Alaska	WCVQ	960	
Kokomo, Ind.	WIOU	1350	C
Kosciusko, Miss.	WKOZ	1350	A
Laconia, N.H.	WLNH	1350	
	WEMJ	1490	
LaCrosse, Wis.	WKBH	1410	N
	WLCX	1490	
	WKTY	580	A
Ladysmith, Wis.	WLDY	1340	
Lafayette, Ga.	WLFA	1590	
Lafayette, Ind.	WASK	1450	M
	WAZY	1410	
	WBAA	920	
Lafayette, La.	KPEL	1420	A
	KVOL	1330	N
	KXKW	1520	
Lafayette, Tenn.	WEEN	1460	
LaFollette, Tenn.	WLAF	1450	
LaGrande, Oreg.	KLBM	1450	
LaGrange, Ga.	WLAG	1240	M
	WTRP	620	
LaGrange, Ill.	WTAQ	1300	
LaGrange, Tex.	KVLG	1570	
LaJunta, Colo.	KBZZ	1400	M
Lake Charles, La.	KLOU	1580	
	KPLC	1470	N
	KAOK	1400	M
Lake City, Fla.	WDSR	1340	
	WGRO	960	
Lake City, S.C.	WJOT	1260	
Lakeland, Fla.	WLAK	1430	N
	WONN	1230	M
	WYSE	1330	
Lake Providence, La.	KLPL	1050	
Lake Tahoe, Calif.	KOWL	1490	
Lakeview, Oreg.	KQIK	1230	
Lake Wales, Fla.	WIPC	1280	
Lakewood, Colo.	KLAK	1600	
Lakewood, Wash.	KFHA	1480	
Lake Worth, Fla.	WLIZ	1380	
Lamar, Colo.	KLMR	920	M
Lamesa, Tex.	KPET	690	
Lampasas, Tex.	KCYL	1450	
Lancaster, Calif.	KAVL	610	
	KBVM	1380	
Lancaster, Ohio	WHOK	1320	
Lancaster, Pa.	WGAL	1490	N
	WLAN	1390	A-M
Lancaster, S.C.	WLCM	1360	
Lander, Wyo.	KOVE	1330	M
Lanett, Ala.	WRLD	1490	A
Lansdale, Pa.	WNPV	1440	
Lansford, Pa.	WLSH	1410	
Lansing, Mich.	WILS	1320	
	WJIM	1240	A-N
	WMRT	1010	
Lapeer, Mich.	WMPC	1230	
LaPorte, Ind.	WLOI	1540	
Laramie, Wyo.	KBBZ	1490	
	KOWB	1280	M
Laredo, Tex.	KGNS	1300	
	KVOZ	1490	M
LaSalle, Ill.	WLPO	1220	
LaSarre, Que.	CKLS	1240	
LasCruces, N.Mex.	KOBE	1450	
	KGRT	570	
Las Vegas, Nev.	KENO	1460	A
	KLAS	1230	C
	KORK	1340	M
	KRAM	920	
	KRBO	1050	
	KUEG	970	
Las Vegas, N.Mex.	KFUN	1230	A
Latrobe, Pa.	WSHH	1570	M
	WTRA	1480	
LaTuque, Que.	CFLM	1240	
Laurel, Miss.	WAML	1340	N
	WLAU	1600	A
	WNSL	1260	
Laurens, S.C.	WLBG	860	
Laurinburg, N.C.	WEWO	1080	
	WLCW	1300	
Lawrence, Kans.	KFKU	1250	
	KLWN	1320	
Lawrence, Mass.	WCCM	800	M
Lawrenceburg, Tenn.	WDXE	1370	
Lawrenceville, Ga.	WLAW	1360	
Lawrenceville, Ill.	WAKO	910	
Lawrenceville, Va.	WLES	580	
Lawton, Okla.	KSWO	1380	A
	KCCO	1050	
Leadville, Colo.	KBRR	1230	
Leaksville, N.C.	WLOE	1490	M
Leamington, Ont.	CJSP	710	
Leavenworth, Kans.	KCLO	1410	
Lebanon, Ky.	WLBN	1590	
Lebanon, Mo.	KLWT	1230	
Lebanon, Oreg.	KGAL	920	
Lebanon, Pa.	WLBR	1270	
Lebanon, Tenn.	WCOR	900	
Leesburg, Fla.	WLBE	790	M
	WBIL	1410	
Leesburg, Va.	WAGE	1290	
Leesville, La.	KLLA	1570	
Lehighton, Pa.	WYNS	1150	
Leitchfield, Ky.	WMTL	1580	
Leland, Miss.	WESY	1580	
LeMars, Iowa	KLEM	1410	
Lemoore, Calif.	KLAN	1320	
Lenoir, N.C.	WJRI	1340	M
Lenoir, Tenn.	WLIL	730	
Leonardtown, Md.	WKIK	1370	
Lethbridge, Alta.	CJOC	1220	
	CHEC	1090	
Levelland, Tex.	KLVT	1230	
Levittown, Pa.	WBCB	1490	
Lewisburg, Pa.	WITT	1010	
Lewisburg, Tenn.	WJJM	1490	M
Lewiston, Idaho	KRLC	1350	M
	KOZE	1300	
Lewiston, Maine	WCOU	1240	M
	WLAM	1470	A
Lewistown, Mont.	KXLO	1230	M
Lewistown, Pa.	WKVA	920	A
	WMRF	1490	N
Lexington, Ky.	WLAP	630	
	WBLG	1300	A
	WVLK	590	M
Lexington, Miss.	WXTN	1150	
Lexington, Mo.	KLEX	1570	
Lexington, Nebr.	KRVN	1010	
Lexington, N.C.	WBUY	1440	
Lexington, Tenn.	WDXL	1490	
Lexington, Va.	WREL	1450	N

Location	C.L.	Kc.	N.A.
Lexington Pk., Md.	WPTX	920	
Libby, Mont.	KLCB	1230	M
	KLIB	1470	
Liberal, Kans.	KSCB	1270	
Liberty, N.Y.	WVOS	1240	
Liberty, Tex.	KWLD	1050	
Lihue, Hawaii	KTOH	1490	
Lima, Ohio	WIMA	1150	A
Lincoln, Ill.	WPRC	1370	
Lincoln, Nebr.	KFOR	1240	A
	KLIN	1400	
	KLMS	1480	
Lincolnton, N.C.	WLON	1050	
Lindsay, Ont.	CKLY	910	
Linton, Ind.	WBTO	1600	
Litchfield, Ill.	WSMI	1540	
Litchfield, Minn.	KLFD	1410	
Little Falls, Minn.	KLTF	960	
Little Falls, N.Y.	WLFH	1230	
Littlefield, Tex.	KZZN	1490	
Little Rock, Ark.	KARK	920	N
	KAJI	1250	M
	KLRA	1010	A
	KOKY	1440	
	KTHS	1090	C
	KVLC	1050	
Littleton, Colo.	KMOR	1510	
Live Oak, Fla.	WNER	1250	
Livingston, Mont.	KPRK	1340	M
Livingston, Tenn.	WLIV	920	
Livingston, Tex.	KETX	1440	
	KVLL	1220	
Lloydminster, Alta.	CKSA	1150	
Lock Haven, Pa.	WBPZ	1230	M
Lockport, N.Y.	WUSJ	1340	
Lodi, Calif.	KCVR	1570	
Logan, Utah	KVNU	610	M
	KLGN	1390	
Logan, W.Va.	WLOG	1230	M
	WVOW	1290	
Logansport, Ind.	WSAL	1230	M
Lompoc, Calif.	KKOK	1410	
	KNEZ	960	
London, Ky.	WFTG	1400	
London, Ont.	CFPL	980	
	CKSL	1290	
Long Beach, Calif.	KFOX	1280	
	KGER	1390	
Longmont, Colo.	KLMO	1050	
Long Prairie, Minn.	KEYL	1400	
Longview, Tex.	KFRO	1370	A
	KLUE	1280	
Longview, Wash.	KEDO	1400	A
	KBAM	1270	
Lookout Mtn., Tenn.	WFLI	1070	
Lorain, Ohio	WWIZ	1380	A
Lordsburg, N.Mex.	KLHS	950	
Loris, S.C.	WLSC	1570	
Los Alamos, N.Mex.	KRSN	1490	A
Los Angeles, Calif.	KABC	790	A
	KFI	640	N
	KHJ	930	M
	KFSG	1150	
	KFWB	980	
	KGFJ	1230	
	KFAC	1330	
	KLAC	570	
	KMPC	710	
	KNX	1070	C
	KPOL	1540	
	KGBS	1020	
	XETRA	690	
	KRKD	1150	
Los Banos, Calif.	KLBS	1330	
Louisburg, N.C.	WYRN	1480	
Louisville, Ga.	WPEH	1420	
Louisville, Ky.	WAVE	970	N
	WAKY	790	M
	WHAS	840	C
	WKLO	1080	A
	WINN	1240	
	WKYW	900	
	WLOU	1350	
	WTMT	620	
Louisville, Miss.	WLSM	1270	
Loveland, Colo.	KLOV	1570	
Lovington, N.Mex.	KLEA	630	
Lowell, Mass.	WCAP	980	
	WLLH	1400	
Lubbock, Tex.	KCBD	1590	M-N
	KOAV	580	
	KOUB	1340	
	KFYO	790	C
	KLLL	1460	M
	KSEL	950	A
Lucedale, Miss.	WHHT	1440	
Ludington, Mich.	WKLA	1450	A
Lufkin, Tex.	KRBA	1340	A
	KTRE	1420	M
Lumberton, N.C.	WAGR	580	
	WTSB	1340	M
Luray, Va.	WRLA	1590	
	WRAA	1330	
Lynchburg, Va.	WLVA	590	A
	WWOD	1390	M-N
	WBRG	1050	
Lynn, Mass.	WLYN	1360	
Lyons, Ga.	WBBT	1340	
Macomb, Ill.	WKAI	1510	
Macon, Ga.	WBML	1240	
	WCRY	900	
	WIBB	1280	
	WMAZ	940	C
	WNEX	1400	A-M
Macon, Miss.	WMBC	1400	
Madera, Calif.	KHOT	1250	
Madill, Okla.	KMAD	1550	

Location	C.L.	Kc.	N.A.
Madison, Fla.	WMAF	1230	
Madison, Ga.	WYTH	1250	
Madison, Ind.	WORX	1270	
Madison, S.D.	KJAM	1390	
Madison, Tenn.	WENO	1430	
Madison, Wis.	WHA	970	
	WIBA	1310	N
	WISM	1480	A-M
	WKOW	1070	C
Madisonville, Ky.	WFMW	730	
	WTTL	1310	
Magee, Miss.	WSJC	790	
Magnolia, Ark.	KVMA	630	M
Malden, Mo.	KTCB	1470	
Malone, N.Y.	WICY	1490	M
Malvern, Ark.	KBOK	1310	
Manassas, Va.	WPRW	1460	
Manati, P.R.	WMNT	1500	
Manchester, Conn.	WINF	1230	C
Manchester, Ga.	WFOR	1370	
Manchester, Ky.	WWXL	1450	
Manchester, N.H.	WFEA	1370	
	WGIR	610	C
	WKBR	1250	
Manchester, Tenn.	WMSR	1320	
Manhattan, Kans.	KSAC	580	
	KMAN	1350	
Manistee, Mich.	WMTE	1340	
Manitou Springs, Colo.	KCMS	1490	
Manitowoc, Wis.	WCUB	980	
	WOMT	1240	M
Mankato, Minn.	KYSM	1230	N
	KTOE	1420	A
Manning, S.C.	WYMB	1410	
Mansfield, La.	KDBC	1360	
Mansfield, Ohio	WMAN	1400	A
	WCLW	1570	
Maquoketa, Iowa	KMAQ	1320	
Marathon, Fla.	WEFG	1300	
Marianna, Ark.	KZOT	1460	
Marianna, Fla.	WTYS	1340	M
	WTOT	980	
Marietta, Ga.	WFOM	1230	
	WBIE	1050	
Marietta, Ohio	WMOA	1490	M
Marine City, Mich.	WDOG	1590	
Marinette, Wis.	WMAM	570	N
Marion, Ala.	WJAM	1310	
Marion, Ill.	WGGH	1150	
Marion, Ind.	WBAT	1400	A
	WMRI	860	
Marion, N.C.	WBRM	1250	
Marion, Ohio	WMRN	1490	A
Marion, S.C.	WATP	1430	
Marion, Va.	WMEV	1010	A
Marked Tree, Ark.	KPCA	1580	
Marksville, La.	KAPB	1370	
Marlborough, Mass.	WSRO	1470	
Marlin, Tex.	KAWA	1010	
Marquette, Mich.	WDMJ	1320	M
Marshall, Minn.	KMHL	1400	A
Marshall, Mo.	KMMO	1300	
Marshall, N.C.	WMMH	1460	
Marshall, Tex.	KMHT	1450	
	KADO	1410	
Marshalltown, Iowa	KFJB	1230	
Marshfield, Wis.	WDLB	1450	
Martin, Tenn.	WCMT	1410	
Martinsburg, W.Va.	WEPM	1340	
Martinsville, Va.	WHEE	1370	
	WMVA	1450	N
Marysville, Calif.	KMYC	1410	M
Marysville, Kans.	KNDY	1570	
Maryville, Mo.	KNIM	1580	
Maryville, Tenn.	WGAP	1400	
Mason City, Iowa	KGLO	1300	C
	KRIB	1490	
	KSMN	1010	
Massena, N.Y.	WMSA	1340	A
	WSTS	1050	
Massillon, Ohio	WTIG	990	
Matane, Que.	CKBL	1250	
Matawan, W.Va.	WHJC	1360	
Mattoon, Ill.	WLBH	1170	
Mauston, Wis.	WRJC	1270	
Mayaguez, P.R.	WAEL	600	
	WKJB	710	
	WORA	1150	
	WPRA	990	
	WTIL	1300	
Mayfield, Ky.	WNGO	1320	
Mayodan, N.C.	WMYN	1420	
Maysville, Ky.	WFTM	1240	M
McAlester, Okla.	KTMC	1400	
	KNED	1150	
McAllen, Tex.	KRIO	910	M
McCamey, Tex.	KAMY	1450	
McComb, Miss.	WHNY	1250	A
	WAPF	980	
McCook, Nebr.	KBRL	1300	M
	KWRV	1360	
McGehee, Ark.	KVSA	1220	
McKeesport, Pa.	WEDO	810	C
	WPQR	1360	
McKenzie, Tenn.	WHDM	1440	
McKinney, Tex.	KMAE	1600	
McMinnville, Oreg.	KMCM	1260	
McMinnville, Tenn.	WBMC	960	
	WMMT	1230	M
McPherson, Kans.	KNEX	1540	
McRae, Ga.	WDAX	1410	
Meadville, Pa.	WMGW	1490	
Medford, Mass.	WHIL	1430	
Medford, Oreg.	KMED	1440	A
	KMFR	860	
	KDOV	1300	
	KBOY	730	

Location	C.L.	Kc.	N.A.
	KYJC	1230	A-C
Medford, Wis.	WIGM	1490	M
Medicine Hat, Alta.	CHAT	1270	
Melbourne, Fla.	WMMB	1240	M
Memphis, Tenn.	WHBQ	560	M
	WHER	1430	
	WMC	790	N
	WDIA	1070	
	WMPS	680	
	WHHM	1340	A
	WLOK	1480	
	WREC	600	C
	KWAM	990	
Mena, Ark.	KENA	1450	
Menominee, Mich.	WAGN	1340	A
Menomonie, Wis.	WMNE	1360	
Merced, Calif.	KYOS	1480	M
	KWIP	1580	
Meriden, Conn.	WMMW	1470	
Meridian, Miss.	WCOC	910	C
	WDAL	1330	
	WMOX	1010	
	WOKK	1450	A
	WQIC	1390	
Merrill, Wis.	WXMT	730	
Mesa, Ariz.	KBUZ	1310	
Metropolis, Ill.	WMOK	920	
Metter, Ga.	WMAC	1360	
Mexia, Tex.	KBUS	1590	
Mexico, Mo.	KXEO	1340	M
Mexico, Pa.	WJUN	1220	
Miami, Ariz.	KIKO	1340	
Miami, Fla.	WGBS	710	C
	WCKR	610	N
	WFAB	990	
	WMBM	1220	
	WAME	1260	A
	WMIE	1140	
	WQAM	560	
	WSKP	1450	
	WINZ	940	
Miami, Okla.	KGLC	910	
Miami Beach, Fla.	WMET	1490	
	WKAT	1360	M-A-C
	WFUN	790	
Michigan City, Ind.	WIMS	1420	
Middleport-Pomroy, Ohio	WMPO	1390	
Middlesboro, Ky.	WMIK	560	
Middletown, Conn.	WCNX	1150	
Middletown, N.Y.	WALL	1340	
Middletown, Ohio	WPFB	910	
Midland, Mich.	WMDN	1490	
Midland, Ont.	CKMP	1230	
Midland, Tex.	KCRS	550	A
	KJBC	1150	
	KWEL	1600	
Milan, Tenn.	WKBJ	1600	
Miles City, Mont.	KATL	1340	M
Milford, Del.	WKSB	930	
Milford, Mass.	WMRC	1490	
Milledgeville, Ga.	WMVG	1450	M
Millen, Ga.	WGSR	1570	
Millington, Tenn.	WHEY	1220	
	WGMM	1380	
Millville, N.J.	WMVB	1440	
Milton, Fla.	WEBY	1330	M
	WSRA	1490	
Milton, Pa.	WMLP	1570	
	WARC	1380	
Milwaukee, Wis.	WEMP	1250	
	WFOX	860	M
	WRIT	1340	
	WISN	1150	A
	WMIL	1290	
	WOKY	920	
	WTMJ	620	N
Minden, La.	KASO	1240	
Mineral Wells, Tex.	KORC	1140	
Mineola, N.Y.	WFYI	1520	
Minneapolis, Minn.	WCCO	830	C
	WLOL	1330	
	WMIN	1400	
	WDGY	1130	
	WPBC	980	
	WTCN	1280	A
	KTCR	690	
	KTIS	900	
	KUOM	770	
Minot, N.Dak.	KLPM	1390	M
	KQDY	1320	
	KCJB	910	C
Mission, Kans.	KBEA	1480	
Mission, Tex.	KIRT	1580	
Missoula, Mont.	KGVO	1290	C
	KXLL	1450	N
	KQTE	1340	M
	KYSS	910	
Mitchell, S.Dak.	KORN	1490	M
Moab, Utah	KURA	1450	
Moberly, Mo.	KNCM	1230	
Mobile, Ala.	WALA	1410	N
	WEDR	1550	
	WABB	1480	A
	WGOK	900	
	WKAB	840	
	WKRG	710	C
	WLIQ	1360	
	WMOZ	960	
Mobridge, S.Dak.	KOLY	1300	
Modesto, Calif.	KTRB	860	
	KBEE	970	
	KFIV	1360	A
Mojave, Calif.	KDDL	1340	
Moline, Ill.	WQUA	1230	A
Monahans, Tex.	KVKM	1330	M
Moncton, N. B.	CBAF	1330	
	CKCW	1220	
Monett, Mo.	KRMO	990	

Location	C.L.	Kc.	N.A.
Monmouth, Ill.	WRAM	1330	
Monroe, Ga.	WMRE	1490	
Monroe, La.	KMLB	1440	A-N
	KLIC	1230	M
	KNOE	1390	
Monroe, Mich.	WQTE	560	
Monroe, N.C.	WMAP	1060	
Monroe, Wis.	WEKZ	1260	
Monroeville, Ala.	WMFC	1360	
Monterey, Calif.	KIDD	630	
	KMBY	1240	C
Montevideo, Minn.	KDMA	1460	A
Monte Vista, Colo.	KSLV	1240	
Montezuma, Ga.	WMNZ	1050	
Montgomery, Ala.	WBAM	740	
	WCOV	1170	C
	WAPX	1600	A
	WHHY	1440	N
	WMGY	800	
	WRMA	950	
Montgomery, W.Va.	WMON	1340	M
Monticello, Ark.	KHBM	1430	
Monticello, Ky.	WFLW	1360	
Montmagny, Que.	CKBM	1490	
Montpelier-Barre, Vt.	WSKI	1240	A
Montreal, Que.	CBF	690	
	CBM	940	N
	CFCF	600	A
	CHLP	1410	
	CJAD	800	
	CJMS	1280	
	CKAC	730	C
	CKGM	980	
Montrose, Colo.	KUBC	580	
Montrose, Pa.	WPEL	1250	
Mooresville, N.C.	WHIP	1350	
Moorhead, Minn.	KVOX	1280	M
Moosejaw, Sask.	CHAB	800	
Morehead, Ky.	WMOR	1330	
Morehead City, N.C.	WMBL	740	
Morgan City, La.	KMRC	1430	M
Morganfield, Ky.	WMSK	1550	
Morganton, N.C.	WMNC	1430	
Morgantown, W.Va.	WAJR	1440	N
	WCLG	1300	
Morrilton, Ark.	KVOM	800	
Morris, Minn.	KMRS	1570	
Morristown, N.J.	WMTR	1250	
Morristown, Tenn.	WCRK	1150	M
	WMTN	1300	
Morton, Tex.	KRAN	1280	
Moscow, Idaho	KRPL	1400	
Moses Lake, Wash.	KSEM	1470	
	KWIQ	1260	
Moultrie, Ga.	WMGA	1400	A
	WMTM	1300	
Moundsville, W.Va.	WMOD	1370	
Mountain Grove, Mo.	KLRS	1360	
Mountain Home, Ark.	KTLO	1490	
Mt. Airy, N.C.	WPAQ	740	
	WSYD	1300	M
Mt. Carmel, Ill.	WVMC	1360	
Mt. Clemens, Mich.	WBRB	1430	
Mt. Dora, Fla.	WMDF	1580	
Mt. Jackson, Va.	WSIG	790	
Mt. Kisco, N.Y.	WVIP	1310	
Mt. Olive, N.C.	WOJS	1430	
Mt. Pleasant, Mich.	WCEN	1150	
Mt. Pleasant, Tex.	KIMP	960	
Mt. Shasta, Calif.	KWSD	620	
Mt. Sterling, Ky.	WMST	1150	
Mt. Vernon, Ill.	WMIX	940	
Mt. Vernon, Ind.	WPCO	1590	
Mt. Vernon, Ky.	WRVK	1460	
Mt. Vernon, Ohio	WMVO	1300	
Mt. Vernon, Wash.	KBRC	1430	
Muleshoe, Tex.	KMUL	1380	
Mullins, S.C.	WJAY	1280	
Muncie, Ind.	WLBC	1340	C
Munfordville, Ky.	WLOC	1150	
Munising, Mich.	WMAB	1400	
Murfreesboro, Tenn.	WGNS	1450	
	WMTS	860	
Murphy, N.C.	WCVP	600	
	WKRK	1390	
Murphysboro, Ill.	WINI	1420	
Murray, Ky.	WNBS	1340	
Murray, Utah	KMUR	1230	
Muscatine, Iowa	KWPC	860	
Muscle Shoals City, Alabama	WLAY	1450	
Muskegon, Mich.	WKBZ	850	A
	WTRU	1600	
	WMUS	1090	
Muskogee, Okla.	KBIX	1490	A
	KMUS	1380	
Myrtle Beach, S.C.	WMYB	1450	
Nacogdochos, Tex.	KEEE	1230	A
	KSFA	860	
Nampa, Idaho	KFXD	580	
	KWLW	1340	
Nanaimo, B.C.	CHUB	1570	
Nanticoke, Pa.	WNAK	730	
Napa, Calif.	KVON	1440	
Naples, Fla.	WNOG	1270	
Narrows, Va.	WNRV	990	
Nashua, N.H.	WOTW	900	
	WSMN	1590	
Nashville, Ark.	KBHC	1260	
Nashville, Ga.	WNGA	1600	
Nashville, Tenn.	WKOA	1240	
	WLAC	1510	C
	WMAK	1300	

Location	C.L.	Kc.	N.A.
	WNAH	1360	M
	WSIX	980	A
	WSM	650	N
Natchez, Miss.	WMIS	1240	N
	WNAT	1450	M
Natchitoches, La.	KNOC	1450	M
Naugatuck, Conn.	WOWW	860	
Navasota, Tex.	KWBC	1550	
Nebraska City, Nebr.	KNCY	1600	
Needles, Calif.	KSFE	1340	
Neenah, Wis.	WNAM	1280	
Neillsville, Wis.	WCCN	1370	
Nelson, B.C.	CKLN	1390	
Neon, Ky.	WNKY	1480	
Neosho, Mo.	KBTN	1420	
Nevada, Mo.	KNEM	1240	
New Albany, Ind.	WOWI	1570	
New Albany, Miss.	WNAU	1470	
Newark, Del.	WWRK	1260	
Newark, N.J.	WNTA	970	
	WHBI	1280	
	WNJR	1430	
	WVNJ	620	
Newark, N.Y.	WACK	1420	
Newark, Ohio	WCLT	1430	
New Bedford, Mass.	WBSM	1420	
	WNBH	1340	M
New Bern, N.C.	WHIT	1450	M
	WRNB	1490	
Newberry, S.C.	WKDK	1240	
New Boston, Ohio	WIOI	1010	
New Braunfels, Tex.	KGNB	1420	
New Britain, Conn.	WHAY	910	A
	WKNB	840	
New Brunswick, N.J.	WCTC	1450	
Newburgh, N.Y.	WGNY	1220	
Newburyport, Mass.	WNBP	1470	
New Carlisle, Que.	CHNC	610	
New Castle, Ind.	WCTW	1550	
Newcastle, N.B.	CKMR	790	
New Castle, Pa.	WKST	1280	M
Newcastle, Wyo.	KASL	1240	
New Glasgow, N.S.	CKEC	1320	
New Haven, Conn.	WAVZ	1300	
	WELI	960	
	WNHC	1340	A
New Iberia, La.	KANE	1240	
	KVIM	1360	
New Kensington, Pa.	WKPA	1150	
New London, Conn.	WNLC	1510	M
New Martinsville, W. Va.	WETZ	1330	M
Newnan, Ga.	WCOH	1400	M
New Orleans, La.	WDSU	1280	N
	WJBW	1230	
	WJMR	990	
	WBOK	800	
	WNOE	1060	
	WSMB	1350	A
	WNPS	1450	
	WTIX	690	
	WWL	870	C
	WWOM	600	
	WYLD	940	M
Newport, Ark.	KNBY	1280	
Newport, Ky.	WNOP	740	
Newport, N.H.	WCNL	1010	
Newport, Oreg.	KNPT	1310	
Newport, R.I.	WADK	1540	
Newport, Tenn.	WLIK	1270	
Newport, Vt.	WIKE	1490	
Newport News, Va.	WGH	1310	A
	WTID	1270	
New Richmond, Wis.	WIXK	1590	
New Rochelle, N.Y.	WVOX	1460	
New Smyrna Beach, Fla.	WSBB	1230	M
	WORT	1550	
Newton, Iowa	KCOB	1280	
Newton, Kans.	KJRG	950	
Newton, Miss.	WBKN	1410	
Newton, N.J.	WNNJ	1360	
Newton, N.C.	WNNC	1230	
New Ulm, Minn.	KNUJ	860	
New Westminster, B.C.	CKNW	980	
New York, N.Y.	WABC	770	A
	WBNX	1380	
	WCBS	880	C
	WEVD	1330	
	WHOM	1480	
	WINS	1010	
	WLIB	1190	
	WMCA	570	
	WMGM	1050	
	WNEW	1130	
	WNYC	830	
	WOR	710	M
	WADO	1280	
	WPOW	1330	
	WQXR	1560	
	WNBC	660	N
Niagara Falls, N.Y.	WHLD	1270	
	WJJL	1440	
Niagara Falls, Ont.	CHVC	1600	
Niles, Mich.	WNIL	1290	
Nogales, Ariz.	KNOG	1340	A
Nome, Alaska	KICY	850	
Norfolk, Nebr.	WJAG	780	
Norfolk, Va.	WTAR	790	C
	WCMS	1050	
	WNOR	1230	
	WRAP	850	
Norman, Okla.	WNAO	640	
	KNOR	1400	
Norman Wells, Northwest Territory	CFNW	1240	
Norristown, Pa.	WNAR	1110	
N. Adams, Mass.	WMNB	1230	
N. Augusta, S.C.	WGUS	1380	
	WTHB	1550	
N. Battleford, Sask.	CJNB	1460	
North Bay, Ont.	CFCH	600	
North Bend, Oreg.	KFIR	1340	C
North Charleston, S.C.	WNCG	910	
Northfield, Minn.	WCAL	770	
Northampton, Mass.	WHMP	1400	M
N. Little Rock, Ark.	KDXE	1380	A
	KXLR	1150	
North Platte, Nebr.	KJLT	970	
	KDDY	1240	N
No. Syracuse, N.Y.	WSOQ	1220	M
No. Vancouver, B.C.	CKLG	730	
N. Vernon, Ind.	WOCH	1460	
No. Wilkesboro, N.C.	WKBC	810	
Norton, Va.	WNVA	1350	M
Norwalk, Conn.	WNLK	1350	
Norwich, Conn.	WICH	1310	
Norwich, N.Y.	WCHN	970	
Oakdale, La.	KREH	900	
Oakes, N.Dak.	KEYO	1220	
Oak Grove, La.	KWCL	1280	
Oak Hill, W.Va.	WOAY	860	
Oakland, Calif.	KEWB	910	
	KABL	960	
	KOIA	1310	
Oak Park, Ill.	WOPA	1490	
Oak Ridge, Tenn.	WATO	1290	
Oakville, Ont.	CHWO	1250	
Ocala, Fla.	WMOP	900	
	WTMC	1290	N
	WKOS	1370	
Ocean City, Md.	WETT	1590	
Oceanlake, Oreg.	KBCH	1380	
Oceanside, Calif.	KUOE	1320	
Ocilla, Ga.	WSIZ	1380	
Odessa, Tex.	KECK	920	
	KOSA	1230	C
	KOYL	1310	
	KRIG	1410	M
Oelwein, Iowa	KOEL	950	
Ogallala, Nebr.	KOGA	930	
Ogden, Utah	KLO	1430	M
	KANN	1250	
	KSVN	730	
	KVOG	1490	
Ogdensburg, N.Y.	WSLB	1400	M
Oil City, Pa.	WKRZ	1340	
Okla. City, Okla.	KBYE	890	A
	KLPR	1140	
	KOCY	1340	
	KOMA	1520	
	KTOK	1000	M
	KJEM	800	
	WKY	930	
Okmulgee, Okla.	KOKL	1240	
Old Saybrook, Conn.	WLIS	1420	
Olean, N.Y.	WMNS	1360	
	WHDL	1450	A
Olney, Ill.	WVLN	740	
Olympia, Wash.	KGY	1240	M
	KITN	920	
Omaha, Nebr.	KBON	1490	
	KFAB	1110	N
	KOIL	1290	
	KOOO	1420	
	KMEO	660	
	WOW	590	C
Omak, Wash.	KOMW	680	
Oneida, N.Y.	WMCR	1600	
Oneida, Tenn.	WBNT	1310	
O'Neill, Nebr.	KBRX	1350	
Oneonta, Ala.	WCRL	1570	
Oneonta, N.Y.	WDOS	730	
Ontario, Calif.	KASK	1510	
Ontario, Oreg.	KSRV	1380	
Opelika, Ala.	WPHO	1400	M
Opelousas, La.	KSLO	1230	A
Opp, Ala.	WAMI	860	
Opportunity, Wash.	KZUN	630	
Orange, Mass.	WCAT	1390	
Orange, Tex.	KOGT	1600	
Orange, Va.	WJMA	1340	
Orangeburg, S.C.	WOIX	1150	A
	WORG	1580	
	WTNO	920	
Orange Park, Fla.	WAYR	550	
Oregon City, Oreg.	KGON	1520	M
Orillia, Ont.	CFOR	1570	
Orlando, Fla.	WOBO	580	C
	WHOO	990	M
	WHIY	1270	
	WLOF	950	
	WKIS	740	N
Ormond Bch., Fla.	WQXQ	1380	
Orofino, Idaho	KLER	950	
Ortonville, Minn.	KOIO	1350	
Osage Bch., Mo.	KRMS	1150	
Osceola, Ark.	KOSE	860	
Oshawa, Ont.	CKLB	1350	
Oshkosh, Wis.	WOSH	1490	A
Oskaloosa, Iowa	KBOE	740	
Oswego, N.Y.	WSGO	1440	
Othello, Wash.	KRSC	1400	
Ottawa, Ill.	WCMY	1430	
Ottawa, Kans.	KOFO	1220	
Ottawa, Ont.	CBO	910	
	CFRA	580	
	CKOY	1310	
Ottumwa, Iowa	KBIZ	1240	A
	KLEE	1480	
Owatonna, Minn.	KRFO	1390	
Owego, N.Y.	WEBO	1330	
Owensboro, Ky.	WOMI	1490	M
	WVJS	1420	A
Owen Sound, Ont.	CFOS	560	
Owosso, Mich.	WOAP	1080	
Oxford, Miss.	WSUH	1420	
Oxford, N.C.	WOXF	1340	
Oxnard, Calif.	KOXR	910	
Ozark, Ala.	WOZK	900	
Paducah, Ky.	WKYB	570	N-M
	WDXR	1560	
	WPAD	1450	C
Page, Ariz.	KPGE	1340	
Pahokee, Fla.	WRIM	1250	
Painesville, Ohio	WPVL	1460	
Paintsville, Ky.	WSIP	1490	M
Palatka, Fla.	WWPF	1260	
	WSUZ	800	
Palestine, Tex.	KNET	1450	
Palm Bch., Fla.	WQXT	1340	A
Palm Sprgs., Calif.	KCMJ	1010	C
	KDES	920	
	KPAL	1450	
Palmdale, Calif.	KUTY	1470	
Palo Alto, Calif.	KIBE	1220	
Pampa, Tex.	KPDN	1340	M
	KHHH	1230	
Panama City, Fla.	WOLP	590	
	WPCF	1430	M
Panama City Beach, Fla.	WTHR	1480	
	WSCM	1290	
Paradise, Calif.	KMET	930	
Paragould, Ark.	KDRS	1490	
Paris, Ark.	KCCL	1460	
Paris, Ill.	WPRS	1440	
Paris, Ky.	WKLX	1440	
Paris, Tenn.	WTPR	710	
Paris, Tex.	KPLT	1490	A
	KFTV	1250	
Parkersburg, W.Va.	WCEF	1050	
	WPAR	1450	C
	WTAP	1230	A
Park Falls, Wis.	WPFP	1450	
Parry Sound, Ont.	CKAR-1	1340	
Parsons, Kans.	KLKC	1540	
Pasadena, Calif.	KALI	1430	
	KPPC	1240	
	KRLA	1110	
	KWKW	1300	
Pasadena, Tex.	KLVL	1480	
	KIKK	650	
Pascagoula-Moss Point, Miss.	WPMP	1580	A
Pasco, Wash.	KORO	910	
	KPKW	1340	
Paso Robles, Calif.	KPRL	1230	M
Patchogue, L.I., N.Y.	WALK	1370	
	WPAC	1580	
Paterson, N.J.	WPAT	930	
Pauls Valley, Okla.	KVLH	1470	
Pawtucket, R.I.	WXTR	550	A
Payette, Idaho	KEOK	1450	
Peace River, Alta.	CKYL	630	
Pecos, Tex.	KIUN	1400	M
Peekskill, N.Y.	WLNA	1420	
Pekin, Ill.	WSIV	1140	
Pell City, Ala.	WFHK	1430	
Pembroke, Ont.	CHOV	1350	
Pendleton, Oreg.	KKID	1240	A
	KUBE	1050	
	KUMA	1290	A
Pennington Gap, Va.	WSWV	1570	
Pensacola, Fla.	WBOP	980	
	WOEB	610	C
	WBSR	1450	
	WNVY	1230	A
	WCOA	1370	N
	WPFA	790	
Penticton, B.C.	CKOK	800	
Peoria, Ill.	WAAP	1350	N
	WMBD	1470	C
	WIRL	1290	
	WPEO	1020	M
Perry, Fla.	WPRY	1400	
Perry, Ga.	WPGA	980	
Perry, Iowa	KOLS	1310	
Perryton, Tex.	KEYE	1400	M
Peru, Ind.	WARU	1600	
Petaluma, Calif.	KTOB	1490	
Peterborough, Ont.	CHEX	980	
	CKPT	1420	
Petersburg, Va.	WSSV	1240	M
Petoskey, Mich.	WMBN	1340	
Phenix City, Ala.	WPNX	1460	A
Philadelphia, Miss.	WHOC	1490	
Philadelphia, Pa.	WCAU	1210	C
	WDAS	1480	
	WFIL	560	A
	WFLN	900	
	WHAT	1340	
	WIBG	990	
	WIP	610	
	WJMJ	1540	
	WPEN	950	
	WRCV	1060	N
	WTEL	860	
Philipsburg, Pa.	WPHB	1260	
Phillipsburg, Kans.	KKAN	1490	
Phoenix, Ariz.	KIFN	860	
	KXIV	1400	
	KHAT	1480	
	KHEP	1280	
	KCAC	1010	
	KOY	550	A
	KOOL	960	C
	KPHO	910	A
	KUEQ	740	
	KRIZ	1230	
	KTAR	620	N
Picayune, Miss.	WRJW	1320	
Piedmont, Ala.	WPID	1280	
Pierre, S.Dak.	KGFX	630	
	KCCR	1590	
Pikeville, Ky.	WLSI	900	
	WPKE	1240	M
Pine Bluff, Ark.	KCLA	1400	
	KADL	1270	
	KOTN	1490	M
	KPBA	1590	
Pine City, Minn.	WCMP	1350	
Pineville, Ky.	WMLF	1230	
Pineville, W.Va.	WWYO	970	
Pipestone, Minn.	KLOH	1050	
Piqua, Ohio	WPTW	1570	
Pittsburg, Calif.	KKIS	990	
Pittsburg, Kans.	KOAM	860	N
	KSEK	1340	
Pittsburgh, Pa.	KDKA	1020	
	KQV	1410	C
	WAMO	860	
	WJAS	1320	N
	WPIT	730	
	WRYT	1250	
	WYRE	1080	
	WWSW	970	
Pittsfield, Ill.	WBBA	1580	
Pittsfield, Mass.	WBEC	1420	A
	WBRK	1340	M
Pittston, Pa.	WPTS	1540	
Plainfield, N.J.	WERA	1590	
Plainview, Tex.	KVOP	1400	M
	KPLA	1050	
Plant City, Fla.	WPLA	910	
Platteville, Wis.	WSWW	1590	
Plattsburg, N.Y.	WEAV	960	A-N
	WIRY	1340	M
Pleasanton, Tex.	KBOP	1380	
Pleasantville, N.J.	WOND	1400	
Plymouth, Mass.	WPLM	1390	
Plymouth, N.C.	WPNC	1470	
Plymouth, Wis.	WPLY	1420	
Pocahontas, Ark.	KPOC	1420	
Pocatello, Idaho	KSEI	930	N
	KWIK	1240	M
	KYTE	1290	
Pocomoke City, Md.	WDMV	540	
Pointe Claire, Que.	CFOX	1470	
Pomona, Calif.	KWOW	1600	
	KKAR	1220	
Pompano Beach, Fla.	WLOD	980	
	WPOM	1470	A
Ponca City, Okla.	WBBZ	1230	M
Ponce, P.R.	WPRP	910	
	WEUC	1420	
	WPAB	550	
	WLEO	1170	
	WISO	1260	
Pontiac, Mich.	WPON	1460	
Poplar Bluff, Mo.	KWOC	930	
	KLID	1340	
Portage, Pa.	WWML	1470	
Portage, Wis.	WPDR	1350	
Portage la Prairie, Man.	CFRY	1570	
Portageville, Mo.	KMIS	1050	
Port Alberni, B.C.	CJAV	1240	
Portales, N.Mex.	KENM	1450	
Port Angeles, Wash.	KAPY	1000	D
	KONP	1450	
Port Arthur, Ont.	CFPA	1230	
Port Arthur, Tex.	KOLE	1340	
	KPAC	1250	M
Porterville, Calif.	KTIP	1450	A
Port Hope, Ont.	CHUC	1500	
Port Hueneme, Calif.	KACY	1520	
Port Huron, Mich.	WHLS	1450	
	WTTH	1380	A
Port Jervis, N.Y.	WOLC	1490	
Port Lavaca, Tex.	KGUL	1560	
Portland, Ind.	WPGW	1440	
Portland, Maine	WCSH	970	N
	WGAN	560	C
	WLOB	1310	
	WPOR	1490	A-M
Portland, Oreg.	KBPS	1450	
	KBEV	1010	
	KLIQ	1290	
	KEX	1190	
	KGW	620	N
	KOIN	970	C
	KPAM	1410	
	KPDQ	800	
	KPOJ	1330	
	KWJJ	1080	A
	KXL	750	
Port Neches, Tex.	KPNG	1150	
Portsmouth, N.H.	WBBX	1380	
	WHEB	750	
Portsmouth, Ohio	WPAY	1400	C
	WNXT	1260	A
Portsmouth, Va.	WHIH	1400	A
	WPMH	1010	
	WAVY	1350	N
Post, Tex.	KUKO	1370	
Poteau, Okla.	KLCO	1280	
Potosi, Mo.	KYRO	1280	
Potsdam, N.Y.	WPDM	1470	

Location	C.L.	Kc.	N.A.
Pottstown, Pa.	WPAZ	1370	
Pottsville, Pa.	WPAM	1450	
	WPPA	1360	M
Poughkeepsie, N.Y.	WEOK	1390	
	WKIP	1450	A
Powell, Wyo.	KPOW	1260	M
Poynette, Wis.	WIBU	1240	
Prairie du Chien, Wis.	WPRE	980	
Pratt, Kans.	KWSK	1570	
Prescott, Ariz.	KYCA	1490	N
	KENT	1340	
	KNOT	1450	A
Prescott, Ark.	KTPA	1370	
Presque Isle, Me.	WAGM	950	
	WEGP	1390	
Preston, Idaho	KPST	1340	
Prestonsburg, Ky.	WPRT	960	
	WDOC	1310	
Price, Utah	KOAL	1230	M
Prichard, Ala.	WAIP	1270	
Prince Albert, Sask.	CKBI	900	
Prince George, B.C.	CKPG	550	
Prince Rupert, B.C.	CFPR	1240	
Princeton, Ind.	WRAY	1250	
Princeton, Ky.	WPKY	1580	
Princeton, W.Va.	WLOH	1490	A
Prineville, Oreg.	KRCO	690	
Prosser, Wash.	KARY	1310	
Providence, R.I.	WEAN	790	C
	WHIM	1110	
	WICE	1290	
	WJAR	920	N
	WLKW	990	
	WPRO	630	
	WRIB	1220	M
Provo, Utah	KIXX	1400	A
	KEYY	1450	
	KOVO	960	M
Pryor, Okla.	KOLS	1570	
Pueblo, Colo.	KDZA	1230	
	KAPI	690	
	KFEL	970	
	KGHF	1350	A-M
	KCSJ	590	
	KTUX	1480	
Pulaski, Tenn.	WKSR	1420	A
Pulaski, Va.	WPUV	1580	
Pullman, Wash.	KWSC	1250	
	KOFE	1150	
Punta Gorda, Fla.	WCCF	1580	
Punxsutawney, Pa.	WPME	1540	
Putnam, Conn.	WINY	1350	
Puyallup, Wash.	KAYE	1450	
Quanah, Tex.	KOLJ	1150	
Quebec, Que.	CBV	980	
	CHRC	800	
	CJLR	1060	
	CJQC	1340	
	CKCV	1280	
Quesnel, B.C.	CKCQ	570	
Quincy, Fla.	WCNH	1230	M
Quincy, Ill.	WGEM	1440	A
	WTAD	930	C
Quincy, Mass.	WJDA	1300	
Quincy, Wash.	KPOR	1370	
Quitman, Ga.	WSFB	1490	
Racine, Wis.	WRAC	1460	
	WRJN	1400	A
Radford, Va.	WRAD	1460	
Raleigh, N.C.	WKIX	850	A
	WPTF	680	N
	WSHE	570	
	WRAL	1240	
Rapid City, S.Dak.	KOTA	1380	C
	KIMM	1150	
	KRSD	1340	
	KEZU	920	
Raton, N.Mex.	KRTN	1490	A
Ravenswood, W.Va.	WMOV	1360	
Rawlins, Wyo.	KRAL	1240	M
Raymond, Wash.	KAPA	1340	
Raymondville, Tex.	KSOX	1240	
Rayville, La.	KRIH	990	
Reading, Pa.	WEEU	850	A
	WHUM	1240	C
	WRAW	1340	N
Redding, Calif.	KRDG	1230	M
	KAHR	1270	
	KQMS	1400	
	KVCV	600	C
	KVIP	540	
Red Bluff, Calif.	KBLF	1490	
Red Deer, Alta.	CKRD	850	
Redlands, Calif.	KCAL	1410	
Red Lion, Pa.	WGCB	1440	
Red Lodge, Mont.	KRBN	1450	
Redmond, Oreg.	KPRB	1240	
Red Wing, Minn.	KCUE	1250	
Redwood Falls, Minn.	KLGR	1490	
Reedsburg, Wis.	WRDB	1400	
Reedsport, Oreg.	KRAF	1470	
Regina, Sask.	CBK	540	
	CJME	1300	
	CKCK	620	
	CKRM	980	
Reidsville, N.C.	WFRC	1600	A
	WREV	1220	
Remsen, N.Y.	WREM	1480	
Reno, Nev.	KOH	630	N
	KBET	1340	M
	KOLO	920	C
	KONE	1450	
	KDOT	1290	
Rensselaer, N.Y.	WEEE	1300	
Renton, Wash.	KIXI	910	
Rexburg, Idaho	KRXK	1230	
Rhinelander, Wis.	WOBT	1240	
Rice Lake, Wis.	WJMC	1240	
Richfield, Utah	KSVC	980	
Richland, Wash.	KALE	960	
Richland, Wis.	WRCO	1450	
Richlands, Va.	WRIC	540	
Richmond, Ind.	WKBV	1490	A
Richmond, Ky.	WEKY	1340	M
Richmond, Va.	WANT	990	
	WBBL	1480	
	WEZL	1590	
	WLEE	1480	N
	WEET	1320	
	WMBG	1380	A
	WRNL	910	M
	WRVA	1140	N
	WXGI	950	
Richmond Hill, Ont.	CJRH	1310	
Richwood, W.Va.	WVAR	1280	
Ridgecrest, Calif.	KRCK	1360	
	KLOA	1240	
Rimouski, Que.	CJBR	900	
Rio Piedras, P.R.	WRIO	1320	
	WWWW	1520	
Ripley, Tenn.	WTRB	1570	
Ripon, Wis.	WCWC	1600	
Riverhead, N.Y.	WRIV	1390	
	WAPC	1570	
Riverside, Calif.	KPRO	1440	
	KACE	1570	
Riverton, Wyo.	KVOW	1450	M
Riviera Beach, Fla.	WHEW	1600	
Riviere du Loup, Que.	CJFP	1400	
Roanoke, Ala.	WELR	1360	
Roanoke, Va.	WDBJ	960	C
	WRIS	1410	M
	WHYE	910	
	WROV	1240	A
	WSLS	610	N
Roanoke Rapids, N.C.	WCBT	1230	M
Roaring Sprgs., Pa.	WKMC	1370	
Roberval, Que.	CHRL	910	
Robinson, Ill.	WTAY	1570	
Rochester, Minn.	KROC	1340	N
	KWEB	1270	
Rochester, N.H.	WWNH	930	
Rochester, N.Y.	WBBF	950	M
	WHAM	1180	N
	WHEC	1460	C
	WRVM	680	
	WSAY	1370	
	WROC	1280	A
Rockford, Ill.	WROK	1440	A
	WJRL	1150	
	WRRR	1330	
Rock Hill, S.C.	WRHI	1340	M
	WTYC	1150	
Rockingham, N.C.	WAYN	900	
Rock Island, Ill.	WHBF	1270	C
Rockland, Maine	WRKD	1450	A
Rockmart, Ga.	WPLK	1220	
Rock Springs, Wyo.	KVRS	1360	M
Rockville, Md.	WINX	1600	
Rockwood, Tenn.	WRKH	580	
Rocky Ford, Colo.	KAVI	1320	
Rocky Mount, N.C.	WCEC	810	
	WEED	1390	A
	WRMT	1490	
	WKWS	1290	
Rocky Mount, Va.	WYTI	1570	
Rogers, Ark.	KAMO	1390	
Rogers City, Mich.	WHAK	960	
Rogersville, Tenn.	WRGS	1370	
Rolla, Mo.	KCLU	1590	
	KTTR	1490	
Rome, Ga.	WLAQ	1410	A
	WRGA	1470	M
	WROM	710	
Rome, N.Y.	WKAL	1450	A
	WRNY	1350	
Ronceverte, W.Va.	WRON	1400	
Roseburg, Oreg.	KRNR	1490	C
	KRXL	1250	
	KQEN	1240	A
	KYES	950	
Rosenberg, Tex.	KFRD	980	
Rossville, Ga.	WRIP	980	
Roswell, N.Mex.	KRSY	1230	
	KGFL	1430	M
	KBIM	910	
Rouyn, Que.	CKRN	1400	
Roxboro, N.C.	WRXO	1430	
Royal Oak, Mich.	WEXL	1340	
Rugby, N. Dak.	KGCA	1450	
Ruidoso, N.Mex.	KRRR	1340	
Rumford, Me.	WRUM	790	
Rupert, Idaho	KAYT	970	
Rushton, La.	KRUS	1490	
Rusk, Texas	KTLU	1580	
Russell, Kans.	KRSL	990	
Russellville, Ala.	WWWR	920	
Russellville, Ark.	KXRJ	1490	
Russellville, Ky.	WRUS	610	
Rutland, Vt.	WHWB	1000	
	WSYB	1380	M
Sackville, N.B.	CBA	1070	
Sacramento, Calif.	KCRA	1320	N
	KFBK	1530	A
	KGMS	1380	M
	KRAK	1140	
	KROY	1240	C
	KXOA	1470	
Safford, Ariz.	KGLU	1480	A
	KATO	1230	
Saginaw, Mich.	WKNX	1210	
	WSAM	1400	N
	WSGW	790	M
St. Albans, Vt.	WWSR	1420	
St. Albans, W.Va.	WKLC	1300	
St. Augustine, Fla.	WFOY	1240	C
	WSTN	1420	
St. Boniface, Man.	CKSB	1050	
St. Catherines, Ont.	CKTB	610	
St. Charles, Mo.	KADY	1460	
St. Cloud, Minn.	KFAM	1450	N
	WJON	1240	
Ste. Anne de la Pocatiere, Que.	CHGB	1350	
St. George, Utah	KDXU	1450	
St. Helen, Mich.	WMIC	1590	
St. Helens, Oreg.	KOHI	1600	
St. Hyacinthe, Que.	CKBS	1240	
St. Jean, Que.	CHRS	1090	
St. Jerome, Que.	CKJL	900	
Saint John, N.B.	CFBC	930	
	CHSJ	1150	
St. Johns, Mich.	WJUD	1580	
St. John's, Nfld.	CBN	640	
	CJON	930	
	VOAR	1230	
	VOCM	590	
	VOWR	800	
St. Johnsbury, Vt.	WTWN	1340	
St. Joseph, Mich.	WSJM	1400	
St. Joseph, Mo.	KFEQ	680	
	KKJO	1550	M
	KUSN	1270	
St. Joseph d'Alma, Que.	CFGT	1270	
St. Louis, Mo.	KATZ	1600	
	KFUO	850	
	KMOX	1120	C
	KSD	550	N
	KSTL	690	
	KWK	1380	
	KXOK	630	
	WEW	770	M
	WIL	1430	A
St. Louis Park, Minn.	KRSI	950	
St. Mary's, Pa.	WKBI	1400	
St. Paul, Minn.	KSTP	1500	N
	KDWB	630	M
St. Peter, Minn.	KRBI	1310	
St. Petersburg, Fla.	WPIN	680	
	WSUN	620	A
	WLCY	1380	M
St. Petersburg Beach, Fla.	WILZ	1590	
St. Thomas, Ont.	CHLO	680	
Salamanca, N.Y.	WGGO	1590	
Salem, Ill.	WJBD	1350	
Salem, Ind.	WSLM	1220	
Salem, Mass.	WESX	1230	M
Salem, Me.	KSMO	1340	
Salem, Oreg.	KSLM	1390	A
	KBZY	1490	N
	KGAY	1430	
Salem, Va.	WBLU	1480	
Salida, Colo.	KVRH	1340	M
Salina, Kans.	KSAL	1150	M
Salinas, Calif.	KDON	1460	
	KSBW	1380	M
Saline, Mich.	WOIA	1290	
Salisbury, Md.	WBOC	960	
	WICO	1320	A
	WJDY	1470	
Salisbury, N.C.	WSTP	1490	M
	WSAT	1280	A
Salmon, Idaho	KSRA	960	
Salt Lake City, Utah	KALL	910	M
	KCPX	1320	N
	KLUB	570	A
	KNAK	1280	
	KSL	1160	C
	KSOP	1370	
	KSXX	630	
	KWHO	860	
	KWIC	1570	
San Angelo, Tex.	KTXL	1340	
	KGKL	960	A
	KPEP	1420	
	KWFR	1260	
San Antonio, Tex.	KAPE	1480	
	KCOR	1350	
	KENS	680	C
	KBER	1150	
	KITE	930	
	KUKA	1250	
	KUBO	1310	
	KMAC	630	A
	KONO	860	
	KTSA	550	
	WOAI	1200	
San Bernardino, Calif.	KCKC	1350	
	KFXM	590	
	KRNO	1240	
	KITO	1290	M
Sandersville, Ga.	WSNT	1490	
San Diego, Calif.	KCBQ	1170	
	KFMB	540	C
	KOGO	600	N
	KGB	1360	A
	KSON	1240	
	KSDO	1130	
Sandpoint, Idaho	KSPT	1400	
Sand Spring, Okla.	KTOW	1340	
Sandusky, Ohio	WLEC	1450	M
San Fernando, Calif.	KGIL	1260	
Sanford, Fla.	WTRR	1400	
	WSFR	1360	
Sanford, Me.	WSME	1220	
Sanford, N.C.	WEYE	1290	
	WWGP	1050	
San Francisco, Calif.	KFRC	610	M
	KCBS	740	C
	KFAX	1100	
	KGO	810	
	KNBC	680	N
	KKHI	1550	M
	KSAY	1010	
	KSAN	1450	
	KSFO	560	
	KYA	1260	
San German, P.R.	WRJS	1060	
San Jose, Calif.	KLOK	1170	
	KLIV	1590	
	KEEN	1370	
	KXRX	1500	
San Juan, P.R.	WAPA	680	M
	WHOA	870	
	WIAC	740	
	WIPR	940	
	WKAQ	580	C
	WKVM	1230	
	WKYN	630	
	WITA	1140	
San Luis Obispo, Calif.	KATY	1340	
	KCJH	1280	
	KSLY	1400	
	KVEC	920	M
San Marcos, Tex.	KCNY	1470	
San Mateo, Calif.	KOFY	1050	
San Rafael, Calif.	KTIM	1510	
San Saba, Tex.	KBAL	1410	
Santa Ana, Calif.	KWIZ	1480	
Santa Barbara, Cal.	KDB	1490	
	KGUD	990	
	KIST	1340	N
	KTMS	1250	A-M
	KACL	1290	
Santa Cruz, Calif.	KSCO	1080	
Santa Fe, N.Mex.	KTRC	1400	A
	KVSF	1260	C
Santa Maria, Cal.	KCOY	1400	
	KSMA	1240	
	KSEE	1480	
Santa Monica, Cal.	KDAY	1580	
Santa Paula, Calif.	KSPA	1400	
Santa Rosa, Calif.	KSRO	1350	
	KHUM	1580	
	KVRE	1460	
	KJAX	1150	
Santa Rosa, N.Mex.	KSYX	1420	
Saranac Lake, N.Y.	WNBZ	1240	A
Sarasota, Fla.	WKXY	930	
	WSAF	1220	
	WSPB	1450	C
	WYND	1280	
Saratoga Springs, N.Y.	WSPN	900	
	WRSA	1280	
Sarnia, Ont.	CHOK	1070	
Saskatoon, Sask.	CFQC	600	
	CFNS	1170	
	CKOM	1250	
Sault Ste. Marie, Michigan	WSOO	1230	
Sault Ste. Marie, Ontario	CJIC	1050	
	CKCY	920	
Savannah, Ga.	WBYG	1450	M
	WEAS	900	
	WSAV	630	N
	WSGA	1400	
	WTOC	1290	C
	WSOK	1230	A
Savannah, Tenn.	WORM	1010	
Sayre, Pa.	WATS	960	
Schefferville, Que.	CFKL	1230	
Schenectady, N.Y.	WGY	810	N
	WSNY	1240	
Scotland Neck, N.C.	WYAL	1280	
Scottsbluff, Nebr.	KNEB	960	M
	KOLT	1320	C
Scottsboro, Ala.	WCRI	1050	
	WROS	1330	
Scottsdale, Ariz.	KWBY	1440	
Scottsville, Ky.	WLCK	1250	
Scranton, Pa.	WARM	590	A
	WEJL	630	
	WGBI	910	C
	WICK	1400	
	WSCR	1320	N
Seaford, Del.	WSUX	1280	
Searcy, Ark.	KWCB	1300	
Seaside, Oreg.	KSRG	730	
Seattle, Wash.	KAYO	1150	
	KING	1090	A
	KIRO	710	C
	KJR	950	
	KOL	1300	
	KOMO	1000	N
	KTIX	1590	
	KTW	1250	
	KVI	570	
	KXA	770	
Sebring, Fla.	WJCM	960	
	WSEB	1340	
Sedalia, Mo.	KDRO	1490	
	KSIS	1050	
Seguin, Tex.	KWED	1580	
Selma, Ala.	WGWC	1340	C
	WHBB	1490	
	WRWJ	1570	
Seminole, Tex.	KTFO	1250	
Seneca Township, S.C.	WSNW	1150	
Sevierville, Tenn.	WSEV	930	
Seward, Alaska	KIBH	1340	C-A

Location	C.L.	Kc.	N.A.
Seymour, Ind.	WJCD	1390	
Seymour, Tex.	KSEY	1230	
Shamokin, Pa.	WISL	1480	
Shamrock, Tex.	KBYP	1580	
Sharon, Pa.	WPIC	790	
Shawano, Wis.	WTCH	960	
Shawinigan, Que.	CKSM	1220	
Shawnee, Okla.	KGFF	1450	M
Sheboygan, Wis.	WHBL	1330	A
	WKTS	950	
Sheffield, Ala.	WSHF	1290	
Shelby, Mont.	KSEN	1150	M
Shelby, N.C.	WOHS	730	M
	WADA	1390	
Shelbyville, Ind.	WSVL	1520	
Shelbyville, Tenn.	WHAL	1400	
	WLIJ	1580	
Shenandoah, Iowa	KFNF	920	
	KMA	960	A
Sherbrooke, Que.	CHLT	630	
	CKTS	900	
Sheridan, Wyo.	KWYO	1410	M
	KROE	930	
Sherman, Tex.	KRRV	910	M
	KTXO	1500	
Shippensburg, Pa.	WSHP	1480	
Show Low, Ariz.	KVWM	1050	
Shreveport, La.	KANB	1300	
	KBCL	1220	
	KCIJ	1050	C
	KEEL	710	
	KREB	1550	M
	KJOE	1480	
	KOKA	980	
	KRMD	1340	A
	KWKH	1130	C
Sidney, Mont.	KGCX	1480	M
Sidney, Nebr.	KSID	1340	A
Sierra Vista, Ariz.	KHFH	1420	A
Sikeston, Mo.	KSIM	1400	
Siler City, N.C.	WNCA	1570	
Siloam Sprgs., Ark.	KUOA	1290	M
Silsbee, Tex.	KKAS	1300	
Silver City, N.Mex.	KSIL	1340	C
Silver Sprgs., Md.	WQMR	1050	
Simcoe, Ont.	CFRS	1560	
Sinton, Tex.	KTOD	1590	
Sioux City, Iowa	KSCJ	1360	A
	KMNS	620	
	KTRI	1470	
Sioux Falls, S.Dak.	KISD	1230	
	KELO	1320	
	KNWC	1270	
	KSOO	1140	A
Sitka, Alaska	KIFW	1230	C-A
	KSEW	1400	
Skowhegan, Maine	WGHM	1150	
Slaton, Tex.	KCAS	1050	
Smethport, Pa.	WSPO	910	
Smithfield, N.C.	WMPM	1270	
Smiths Falls, Ont.	CJET	630	
Smyrna, Ga.	WSMA	1550	
Snyder, Tex.	KSNY	1450	M
Socorro, N.Mex.	KSRC	1290	
Soda Sprgs., Idaho	KBRV	540	
Solvay, N.Y.	WQSR	1320	
Somerset, Ky.	WSFC	1240	M
	WTLO	1480	
Somerset, Pa.	WVSC	990	
Sonora, Calif.	KVML	1450	
Sonora, Tex.	KCKG	1240	
Sorel, P.Q.	CJSO	1320	
South Beloit, Ill.	WBEL	1380	
So. Bend, Ind.	WNDU	1490	A
	WJVA	1580	M
	WSBT	960	C
Southbridge, Mass.	WESO	970	
So. Boston, Va.	WHLF	1400	A
Southern Pines, N.C.	WEEB	990	
South Daytona Beach, Florida	WELE	1590	
So. Gastonia, N.C.	WGAS	1420	
So. Knoxville, Tenn.	WSKT	1580	
So. Paris, Me.	WKTQ	1450	
So. Pittsburg, Tenn.	WEPG	910	
So. St. Paul, Minn.	WISK	630	M
So. Williamsport, Pa.	WMPT	1450	
Spanish Fork, Utah	KONI	1480	
Sparks, Nev.	KBUB	1270	
Sparta, Ill.	WHCO	1230	
Sparta, Tenn.	WSMT	1050	
Sparta, Wis.	WKLJ	990	
	WCOW	1290	
Spartanburg, S.C.	WTHE	1400	M
	WORD	910	N
	WSPA	950	C
Spencer, Iowa	KICD	1240	
Spencer, W.Va.	WSPZ	1400	
Spokane, Wash.	KGA	1510	A
	KLYK	1230	
	KPEG	1380	
	KHQ	590	N
	KNEW	790	M
	KREM	970	
	KXLY	920	C
	KCFA	1330	
Springdale, Ark.	KBRS	1340	A
Springfield, Ill.	WCVS	1450	A-M
	WMAY	970	N
	WTAX	1240	C
Springfield, Mass.	WBZA	1030	
	WHYN	560	C
	WMAS	1450	M
	WSPR	1270	
Springfield, Mo.	KGBX	1260	N
	KICK	1340	
	KTTS	1400	C
	KWTO	560	A
Springfield, Ohio	WIZE	1340	A
	WBLY	1600	
Springfield, Oreg.	KEED	1050	
Springfield, Tenn.	WDBL	1590	
Springfield, Vt.	WCFR	1480	
Springhill, La.	KBSF	1460	
Spruce Pine, N.C.	WTOE	1470	
Stamford, Conn.	WSTC	1400	A
Stamford, Tex.	KDWT	1400	
Stanford, Ky.	WRSL	1520	
Starke, Fla.	WRGR	1490	
Starkville, Miss.	WSSO	1230	
State College, Pa.	WMAJ	1450	M
	WRSC	1390	
Statesboro, Ga.	WWNS	1240	
Statesville, N.C.	WSIC	1400	
	WDBM	550	
Staunton, Va.	WTON	1240	A
	WAFC	900	
Stephenville, Tex.	KSTV	1510	
Sterling, Colo.	KGEK	1230	
	KOLR	1490	
Sterling, Ill.	WSDR	1240	
Steubenville, Ohio	WSTV	1340	M
Stevens Point, Wis.	WSPT	1010	
Stillwater, Minn.	WAVN	1220	
Stillwater, Okla.	KSPI	780	
Stockton, Calif.	KJOY	1280	
	KSTN	1420	
	KWG	1230	A-M
Storm Lake, Iowa	KAYL	990	
Stratford, Ont.	CJCS	1240	
Streator, Ill.	WIZZ	1250	
Stroudsburg, Pa.	WVPO	840	
Stuart, Fla.	WSTU	1450	M
Stuart, Va.	WHEO	1270	
Sturgeon Bay, Wis.	WDOR	910	
Sturgis, Mich.	WSTR	1230	
Stuttgart, Ark.	KWAK	1240	M
Sudbury, Ont.	CKSO	790	
	CFBR	550	
	CHNO	900	
Suffolk, Va.	WLPM	1460	A
Sulphur, La.	KIKS	1310	
Sulphur Sprgs., Tex.	KSST	1230	
Summerside, P.E.I.	CJRW	1240	
Summerville, Ga.	WGTA	950	
Sumter, S.C.	WFIG	1290	M
	WDXY	1240	
	WSSC	1340	A
Sunbury, Pa.	WKOK	1240	C
Sunnyside, Wash.	KREW	1230	
Sun Valley, Ida.	KSKI	1340	
Superior, Nebr.	KRFS	1600	
Superior, Wis.	WDSM	710	N
	WIGL	970	
	WQMN	1320	
Susanville, Calif.	KSUE	1240	
Swainsboro, Ga.	WJAT	800	
Sweetwater, Tenn.	WDEH	800	
Sweetwater, Tex.	KXOX	1240	
Swift Current, Sask.	CKSW	1400	
Sydney, N.S.	CBI	1140	
	CJCB	1270	
Sylacauga, Ala.	WFEB	1340	M
	WMLS	1290	
Sylva, N.C.	WMSJ	1480	
Sylvania, Ga.	WSYL	1490	
Syracuse, N.Y.	WHEN	620	C
	WFBL	1390	
	WNDR	1260	
	WOLF	1490	A
	WSYR	570	N
Tabor City, N.C.	WTAB	1370	
Tacoma, Wash.	KMO	1360	
	KTAC	850	
	KTNT	1400	
	KVI	570	M
Taft, Calif.	KTKR	1310	
Tahlequah, Okla.	KTLQ	1350	
Talladega, Ala.	WJHB	1580	
	WNUZ	1230	M
Tallahassee, Fla.	WMEN	1330	
	WRFB	1410	
	WTAL	1270	
	WTNT	1450	A-M-C
Tallassee, Ala.	WTLS	1300	
Tallulah, La.	KTLD	1360	
Tampa, Fla.	WALT	1110	
	WDAE	1250	C
	WZST	1550	
	WFLA	970	N
	WHBO	1050	
	WINQ	1010	
	WTMP	1150	
	WSOL	1300	
Taos, N. Mex.	KKIT	1340	
Tarboro, N.C.	WCPS	760	
Tarpon Sprgs., Fla.	WRBB	1470	
Tasley, Va.	WESR	1330	
Taunton, Mass.	WPEP	1570	
Tawas City, Mich.	WIOS	1480	
Taylor, Tex.	KTAE	1260	
Taylorville, Ill.	WTIM	1410	
Tazewell, Tenn.	WNTT	1250	
Tell City, Ind.	WTCJ	1230	
Tempe, Ariz.	KUPD	1060	
	KYND	1580	
Temple, Tex.	KTEM	1400	
Terrace, B.C.	CFTK	1140	
Terre Haute, Ind.	WBOW	1230	N
	WMFT	1300	
	WTHI	1480	C
Terrell, Tex.	KTER	1570	
Terrytown, Nebr.	KTCI	690	
Texarkana, Ark.	KOSY	790	M
Texarkana, Tex.	KCMC	740	A
	KATQ	940	
	KTFS	1400	
Texas City, Tex.	KTLW	920	
Thayer, Mo.	KALM	1290	
The Dalles, Oreg.	KOOL	1440	
	KRMW	1300	
Thermopolis, Wyo.	KRTR	1490	M
	KTHE	1240	
Thief River Falls, Minn.	KTRF	1230	
Thetford Mines, Que.	CKLD	1230	
Thibodaux, La.	KTIB	630	
Thomaston, Ga.	WSFT	1220	
	WTGA	1590	
Thomasville, Ala.	WJDB	630	
Thomasville, Ga.	WPAX	1240	
	WKTG	730	
Thomasville, N.C.	WTNC	790	
Thomson, Ga.	WTWA	1240	M
Three Rivers, Que.	CHLN	550	
	CKTR	1150	
Ticonderoga, N.Y.	WIPS	1250	
Tiffin, Ohio	WTTF	1600	
Tifton, Ga.	WTIF	1340	
	WWGS	1430	
Tillamook, Oreg.	KTIL	1590	
Tillsonburg, Ont.	CKDT	1510	
Timmins, Ont.	CFCL	620	
	CKGB	680	
Titusville, Fla.	WRMF	1050	
Titusville, Pa.	WTIV	1290	
Toccoa, Ga.	WLET	1420	M
	WNES	630	
Toledo, Ohio	WOHO	1470	M
	WSPD	1370	N
	WTOD	1560	C
	WTOL	1230	A
Toledo, Oreg.	KTDO	1230	
Tolleson, Ariz.	KZON	1190	
Tomah, Wis.	WTMB	1460	
Tompkinsville, Ky.	WTKY	1370	
Tooele, Utah	KDYL	990	
Topeka, Kans.	WIBW	580	C
	KJAY	1440	
	WREN	1250	A
	KTOP	1490	M
Toppenish, Wash.	KENE	1490	
Toronto, Ont.	CBL	740	N
	CFRB	1010	C
	CHUM	1050	
	CJBC	860	
	CKEY	580	M
	CKFH	1430	
Torrington, Conn.	WBZY	990	
	WTOR	1490	M
Torrington, Wyo.	KGOS	1490	
Towanda, Pa.	WTTC	1550	
Towson, Md.	WAQE	1570	
Trail, B.C.	CJAT	610	
Traverse City, Mich.	WTCM	1400	
	WCOW	1310	
	WCCW	1310	
Trenton, Mo.	KTTN	1600	
Trenton, N.J.	WAAT	1300	
	WBUD	1260	
	WTTM	920	N
Trinidad, Colo.	KCRT	1240	M
Troy, Ala.	WTBF	970	M
Troy, N.Y.	WHAZ	1330	
	WTRY	980	
Troy, N.C.	WXKW	1000	
	WJRM	1390	
Truckee, Calif.	KHOE	1400	
Truro, N.S.	CKCL	600	
Truth or Consequences, New Mexico	KCHS	1400	
Tryon, N.C.	WTYN	1550	M
Tucson, Ariz.	KTUC	1400	A
	KAIR	1490	
	KCEE	790	
	KTAN	580	A
	KCUB	1290	N
	KEVT	690	
	KOBY	940	
	KMOP	1330	
	KFIF	1550	
	KTKT	990	
	KOLD	1450	C
Tucumcari, N.Mex.	KTNM	1400	M
Tulare, Calif.	KCOK	1270	M
	KGEN	1370	
Tulia, Tex.	KTUE	1260	
Tullahoma, Tenn.	WJIG	740	
Tulsa, Okla.	KAKC	970	
	KOME	1300	
	KRMG	740	
	KTUL	1430	C
	KVOO	1170	N
	KFMJ	1050	
Tupelo, Miss.	WELO	580	M
	WTUP	1490	A
Turlock, Calif.	KTUR	1390	
Tuscaloosa, Ala.	WJRD	1150	
	WACT	1420	
	WNPT	1280	A
	WTUG	790	
	WTBC	1230	M
Tuscumbia, Ala.	WVNA	1590	
	WCHP	1410	
Tuskegee, Ala.	WABT	580	
Twenty-Nine Palms, Calif.	KDHI	1250	
Twin Falls, Idaho	KTFI	1270	N
	KLIX	1310	M
	KEEP	1450	
Two Rivers, Wis.	WTRW	1590	
Tyler, Tex.	KDOK	1330	
	KGJB	1490	M
	KTBB	600	A
	KZEY	690	
Tyrone, Pa.	WTRN	1340	
Ukiah, Calif.	KUKI	1400	
	KMSL	1250	
	KKCN	1300	
Union, Mo.	KLPW	1220	
Union, S.C.	WBCU	1460	
Union City, Tenn.	WENK	1240	
Uniontown, Pa.	WMBS	590	C
Urbana, Ill.	WILL	580	
	WKID	1580	
Utica, N.Y.	WIBX	950	C
	WRUN	1150	
	WTLB	1310	A
Uvalde, Tex.	KVOU	1400	
Val D'Or, Que.	CKVD	1230	
Valdese, N.C.	WSUM	1490	
Valdosta, Ga.	WGOV	950	M
	WGAF	910	A
	WJEM	1150	
	WVLD	1450	
Valentine, Nebr.	KVSH	940	
Vallejo, Calif.	KNBA	1190	
Valley City, N.Dak.	KOVC	1490	M
Valparaiso-Niceville, Fla.	WNSM	1340	
Van Buren, Ark.	KFDF	1580	
Van Cleve, Ky.	WMTC	730	
Van Wert, Ohio	WERT	1220	
Vanceburg, Ky.	WKKS	1570	
Vancouver, B.C.	CBU	690	
	CFUN	1410	
	CHQM	1320	
	CJOR	600	
	CKWX	1130	M
Vancouver, Wash.	KKEY	1150	
	KVAN	1480	
	KISN	910	
Venice, Fla.	WAMR	1320	
Ventura, Calif.	KVEN	1450	M
	KUDU	1590	
Verdun, Que.	CKVL	850	
Vermillion, S.Dak.	KUSD	690	
Vernal, Utah	KVEL	1250	
Vernon, B.C.	CJIB	940	
Vernon, Tex.	KVWC	1490	
Vero Beach, Fla.	WAXE	1370	
	WTTB	1490	A
Vicksburg, Miss.	WQBC	1420	M
	WVIM	1490	
Victoria, B.C.	CJVI	900	
	CFAX	810	
	CKDA	1220	
Victoria, Tex.	KNAL	1410	
	KVIC	1340	M
Victoriaville, Que.	CFDA	1380	
Victorville, Calif.	KCIN	1590	
Vidalia, Ga.	WVOP	970	
Vieques, P.R.	WIVV	1370	
Ville Marie, Que.	CKVM	710	
Ville Platte, La.	KVPI	1050	
Ville St. Georges, Que.	CKRB	1460	
Vincennes, Ind.	WAOV	1450	M
Vineland, N.J.	WWBZ	1360	
	WDVL	1270	
Vinita, Okla.	KVIN	1470	
Vinton, Va.	WKBA	1550	
Virginia, Minn.	WHLB	1400	N
Virginia Bch., Va.	WBOF	1550	
Viroqua, Wis.	WISV	1360	
Visalia, Calif.	KONG	1400	
Vivian, La.	KLVI	1600	
Waco, Tex.	WACO	1460	A
	KWTX	1230	M
Wadena, Minn.	KWAD	920	M
Wadesboro, N.C.	WADE	1210	
Wailuku, Hawaii	KMVI	550	N
Waipahu, Hawaii	KAHU	920	
Walhalla, S.C.	WGOG	1460	
Wallace, Idaho	KWAL	620	M
Wallace, N.C.	WLSE	1400	
Walla Walla, Wash.	KHIT	1320	
	KUJ	1420	M
	KTEL	1490	A
Walnut Ridge, Ark.	KRLW	1320	
Walsenburg, Colo.	KFLJ	1380	
Walterboro, S.C.	WALD	1220	A
Waltham, Mass.	WCRB	1330	
Walton, N.Y.	WDLA	1270	
Ward Ridge, Fla.	WJOE	1570	
Ware, Mass.	WARE	1250	M
Warner Robbins, Ga.	WRPB	1350	
Warren, Ark.	KWRF	860	
Warren, Ohio	WHHH	1440	
Warren, Pa.	WNAE	1310	
Warrensburg, Mo.	KOKO	1450	
Warrenton, Mo.	KWRE	730	
Warrenton, Va.	WEER	1570	
	WKCW	1420	
Warsaw, Ind.	WRSW	1480	
Warsaw, Va.	WNNT	690	
Warwick-E.Greenwich, R.I.	WYNG	1590	
Wasco, Calif.	KWSO	1050	
Washington, D.C.	WGMS	570	
	WMAL	630	A
	WOL	1450	M
	WOOK	1340	
	WWDC	1260	
	WRC	980	N
	WTOP	1500	C
Washington, Ga.	WKLE	1370	
Washington, Ind.	WAMW	1580	

Location	C.L.	Kc.	N.A.
Washington, Iowa	KCII	1380	
Washington, N.J.	WCRV	1580	
	WRRF	930	A
Washington, N.C.	WEEW	1320	
Washington, Pa.	WJPA	1450	M
Washington Court House, Ohio	WCHO	1250	
Waterbury, Conn.	WATR	1320	A
	WBRY	1590	C
	WWCO	1240	M
Waterbury, Vt.	WDEV	550	M
Waterloo, Iowa	KXEL	1540	A
	KNWS	1090	
	KWWL	1330	M
Watertown, N.Y.	WATN	1240	
	WOTT	1410	
	WWNY	790	C
Watertown, S.Dak.	KSDR	1480	
	KWAT	950	M
Watertown, Wis.	WTTN	1580	
Waterville, Me.	WTVL	1490	A
Watseka, Ill.	WGFA	1360	
Watsonville, Calif.	KOMY	1340	
Wauchula, Fla.	WAUC	1310	
Waukegan, Ill.	WKRS	1220	
Waukesha, Wis.	WAUX	1510	
Waupaca, Wis.	WDUX	800	A
Wausau, Wis.	WRIG	1400	N
	WSAU	550	A
	WHVF	1230	
Waverly, Iowa	KWVY	1470	
Waverly, Ohio	WPKO	1380	
Waxahachie, Tex.	KBEC	1390	
Waycross, Ga.	WACL	570	
	WAYX	1230	M
Waynesboro, Ga.	WBRO	1310	
Waynesboro, Miss.	WABO	990	
Waynesboro, Pa.	WAYZ	1380	
Waynesboro, Va.	WAYB	1490	M
	WRWV	970	
Waynesburg, Pa.	WANB	1580	
Waynesville, Mo.	KJPW	1390	
Waynesville, N.C.	WHCC	1400	
Weatherford, Tex.	KZEE	1220	
Webster City, Iowa	KJFJ	1570	
Weed, Calif.	KDAD	800	
Weirton, W.Va.	WEIR	1430	
Weiser, Idaho	KWEI	1260	
Welch, W.Va.	WELC	1150	
	WOVE	1340	M
Weldon, N.C.	WCNF	1400	
Welland, Ontario	CHOW	1470	
Wellsboro, Pa.	WNBT	1490	M
Wellston, Ohio	WKOV	1330	
Wellsville, N.Y.	WLSV	790	
Wenatchee, Wash.	KPQ	560	A
	KUEN	900	
	KMEL	1340	M

Location	C.L.	Kc.	N.A.
Wendell-Zebulon, N.C.	WETC	540	
Weslaco, Tex.	KRGV	1290	N
West Allis, Wis.	WAWA	1590	
W. Bend, Wis.	WBKV	1470	
Westbrook, Me.	WJAB	1440	
West Covina, Calif.	KGRB	900	
W. Frankfort, Ill.	WFRX	1300	
West Jefferson, N.C.	WKSK	1600	
W. Memphis, Ark.	KSUD	730	
W. Monroe, La.	KUZN	1310	
W. Palm Beach, Fla.	WEAT	850	N
	WJNO	1230	C
	WIRK	1290	M
West Plains, Mo.	KWPM	1450	
West Point, Ga.	WBMK	1310	
West Point, Miss.	WROB	1450	M
Westport, Conn.	WMMM	1260	
W. Springfield, Mass.	WTXL	1490	A
W. Yarmouth, Mass.	WOCB	1240	M
Westerly, R.I.	WERI	1230	M
Westfield, Mass.	WDEW	1570	
Westminster, Md.	WTTR	1470	
Weston, W.Va.	WHAW	980	M
W. Warwick, R.I.	WWRI	1450	
Wetumpka, Ala.	WETU	1250	
Wewoka-Seminole, Okla.	KWSH	1260	A
Weyburn, Sask.	CFSL	1340	
Wharton, Tex.	KANI	1500	
Wheatland, Wyo.	KYCN	1340	
Wheaton, Md.	WDON	1540	
Wheeling, W.Va.	WHLL	1600	
	WJBT	1470	
	WKWK	1400	A
	WWVA	1170	C
White Castle, La.	KEVL	1590	
White Plains, N.Y.	WFAS	1230	
White River Junc., Vt.	WWRJ	910	
Whitehall, Mich.	WCBP	1490	
Whitehorse, Y.T.	CFWH	1240	
Whitesburg, Ky.	WTCW	920	
Whiteville, N.C.	WENC	1220	
Wichita, Kans.	KAKE	1240	M
	KLEO	1480	
	KIRL	1070	N
	KFH	1330	C
	KSIR	900	
	KWBB	1410	
Wichita Falls, Tex.	KNIN	990	M
	KTRN	1290	
	KWFT	620	C
Wickenburg, Ariz.	KAKA	1250	
Wickford, R.I.	WKFD	1370	

Location	C.L.	Kc.	N.A.
Wildwood, N.J.	WCMC	1230	
Wilkes-Barre, Pa.	WBAX	1240	M
	WBRE	1340	N
	WILK	980	A
Willcox, Ariz.	KWCX	1250	
Williamsburg, Ky.	WEZJ	1440	
Williamsburg, Va.	WBCI	740	
Williams Lake, B.C.	CKCQ-1	1240	
Williamson, W.Va.	WBTH	1400	M
Williamsport, Pa.	WLYC	1050	
	WRAK	1400	N
	WWPA	1340	C
Williamston, N.C.	WIAM	900	
Willimantic, Conn,	WILI	1400	
Williston, N.D.	KEYZ	1360	
Willmar, Minn.	KWLM	1340	A
Willow Springs, Mo,	KUKU	1330	
Willows, Calif.	KIQS	1560	
Wilmington, Del.	WAMS	1380	M
	WDEL	1150	N
	WILM	1450	A
	WTUX	1290	
Wilmington, N.C.	WMFD	630	A
	WKLM	980	
	WGNI	1340	M
Wilson, N.C.	WGTM	590	C
	WLLY	1350	
	WVOT	1420	M
Winchester, Ky.	WWKY	1380	
Winchester, Tenn.	WCDT	1340	
Winchester, Va.	WINC	1400	A
	WHPL	610	
Windemere, Fla.	WXIV	1480	
Winder, Ga.	WIMO	1300	
Windom, Minn.	KDOM	1580	
Windsor, Conn.	WSOR	1480	
Windsor, N.S.	CFAB	1450	
Windsor, Ont.	CBE	1550	
	CKLW	800	M
Wingham, Ont.	CKNX	920	
Winnemucca, Nev.	KWNA	1400	
Winnfield, La.	KVCL	1270	
Winner, S.Dak.	KWYR	1260	
Winnipeg, Man.	CBW	990	
	CKRC	630	
	CKY	580	
	CJOB	680	
Winnsboro, La.	KMAR	1570	
Winnsboro, S.C.	WCKM	1250	
Winona, Minn.	KWNO	1230	A
	KAGE	1380	
Winona, Miss.	WONA	1570	
Winslow, Ariz.	KVNC	1010	A
Winston-Salem, N.C.	WAAA	980	
	WAIR	1340	
	WPEG	1550	

Location	C.L.	Kc.	N.A.
	WSJS	600	N
	WTOB	1380	M-C
Winter Garden, Fla.	WOKB	1600	
Winter Haven, Fla.	WSIR	1490	M
	WINT	1360	
Winter Park, Fla.	WABR	1440	M
Wisconsin Rapids, Wis.	WFHR	1320	M
	WRNE	1220	
Wolf Pt., Mont.	KVCK	1450	M
Wood River, Ill.	WBBY	590	
Woodside, N.Y.	WWRL	1600	
Woodstock, N.B.	CJCJ	920	
Woodstock, Ont.	CKOX	1340	
Woodward, Okla.	KSIW	1450	
Woonsocket, R.I.	WNRI	1380	
	WWON	1240	
Wooster, Ohio	WWST	960	
Worcester, Mass.	WAAB	1440	M-N-A
	WNEB	1230	
	WORC	1310	
	WTAG	580	C
Worland, Wyo.	KWOR	1340	M
Worthington, Minn.	KWOA	730	
Worthington, Ohio	WRFD	880	
Wynne, Ark.	KWYN	1400	
Wytheville, Va.	WYVE	1280	
Yakima, Wash.	KIT	1280	
	KIMA	1460	C
	KUTI	980	
	KYAK	1390	M
Yankton, S.D.	KYNT	1450	
	WNAX	570	C
Yarmouth, N.S.	CJLS	1340	
Yauco, P.R.	WKFE	1550	
Yazoo City, Miss.	WAZF	1230	
Yellowknife, N.W.T.	CFYK	1340	
York, Nebr.	KAWL	1370	
York, Pa.	WNOW	1250	
	WORK	1350	N
	WSBA	910	A-M
York, S.C.	WYCL	1580	
Yorkton, Sask.	CJGX	940	
Youngstown, Ohio	WBBW	1240	A
	WFMJ	1390	N
	WKBN	570	C
Yreka, Calif.	KSYC	1490	
Yuba City, Calif.	KUBA	1600	
	KAGR	1450	
Yuma, Ariz.	KOFA	1240	
	KBLU	1320	
	KVOY	1400	A
	KYUM	560	N
Zanesville, Ohio	WHIZ	1240	N
Zarephath, N.J.	WAWZ	1380	
Zephyr Hills, Fla.	WZRH	1400	

U. S. AM Stations by Call Letters

C.L.	Location	Kc.
KAAA	Kingman, Ariz.	1230
KAAB	Hot Springs, Ark.	1350
KABC	Los Angeles, Calif.	790
KABL	Oakland, Calif.	960
KABQ	Albuquerque, N.M.	1350
KABR	Aberdeen, S.Dak.	1420
KABY	Albany, Oreg.	990
KACE	Riverside, Calif.	1570
KACI	The Dalles, Oreg.	1300
KACT	Andrews, Tex.	1360
KACY	Port Hueneme, Calif.	1520
KADA	Ada, Okla.	1230
KADL	Pine Bluff, Ark.	1270
KADO	Marshall, Tex.	1410
KADY	St. Charles, Mo.	1460
KAFP	Petaluma, Calif.	1490
KAFY	Bakersfield, Calif.	550
KAGE	Winona, Minn.	1380
KAGH	Crossett, Ark.	800
KAGI	Grants Pass, Oreg.	930
KAGO	Klamath Falls, Oreg.	1150
KAGR	Yuba City, Calif.	1450
KAGT	Anacortes, Wash.	1340
KAHI	Auburn, Calif.	950
KAHU	Waipahu, Hawaii	920
KAHR	Redding, Calif.	1270
KAIM	Kaimuki, Hawaii	870
KAIR	Tucson, Ariz.	1490
KAJI	Little Rock, Ark.	1250
KAJO	Grants Pass, Oreg.	1270
KAKA	Wickenburg, Ariz.	1250
KAKC	Tulsa, Okla.	970
KAKE	Wichita, Kan.	1240
KALB	Alexandria, La.	580
KALE	Richland, Wash.	960
KALG	Alamogordo, N.Mex.	1230
KALI	Pasadena, Calif.	1430
KALL	Salt Lake City, Utah	910
KALM	Thayer, Mo.	1290
KALN	Iola, Kan.	1370
KALT	Atlanta, Tex.	900
KALV	Alva, Okla.	1430
KAMD	Camden, Ark.	910
KAML	Kenedy, Tex.	990
KAMO	Rogers, Ark.	1390
KAMP	El Centro, Calif.	1430
KAMY	McCamey, Tex.	1450
KANA	Anaconda, Mont.	1230
KANB	Shreveport, La.	1300
KAND	Corsicana, Tex.	1340
KANE	New Iberia, La.	1240
KANI	Wharton, Tex.	1500
KANN	Ogden, Utah	1250

C.L.	Location	Kc.
KANO	Anoka, Minn.	1470
KANS	Independence, Mo.	1510
KAOK	Lake Charles, La.	1400
KAOL	Carrollton, Mo.	1430
KAPA	Raymond, Wash.	1340
KAPB	Marksville, La.	1370
KAPE	San Antonio, Tex.	1480
KAPI	Pueblo, Colo.	690
KAPR	Douglas, Ariz.	930
KAPY	Port Angeles, Wash.	1290
KARA	Albuquerque, N.M.	1310
KARE	Atchison, Kan.	1470
KARI	Blaine, Wash.	550
KARK	Little Rock, Ark.	920
KARM	Fresno, Calif.	1430
KARR	Great Falls, Mont.	1400
KARS	Belen, N.M.	860
KART	Jerome, Idaho	1400
KARY	Prosser, Wash.	1310
KASE	Austin, Tex.	970
KASH	Eugene, Ore.	1600
KASI	Ames, Iowa	1430
KASK	Ontario, Calif.	1510
KASL	Newcastle, Wyo.	1240
KASM	Albany, Minn.	1150
KASO	Minden, La.	1240
KAST	Astoria, Ore.	1370
KASY	Auburn, Wash.	1220
KATE	Albert Lea, Minn.	1450
KATI	Casper, Wyo.	1400
KATL	Miles City, Mont.	1340
KATN	Boise, Idaho	1010
KATO	Safford, Ariz.	1230
KATQ	Texarkana, Tex.	940
KATY	San Luis Obispo, Cal.	1340
KATZ	St. Louis, Mo.	1600
KAUS	Austin, Minn.	1480
KAVE	Carlsbad, N.Mex.	1240
KAVI	Rocky Ford, Colo.	1320
KAVL	Lancaster, Calif.	610
KAVR	Apple Valley, Calif.	960
KAWA	Marlin, Tex.	1010
KAWL	York, Neb.	1370
KAWT	Douglas, Ariz.	1450
KAYE	Puyallup, Wash.	1450
KAYG	Lakewood, Wash.	1480
KAYL	Storm Lake, Iowa	990
KAYO	Seattle, Wash.	1150
KAYS	Hays, Kans.	1400
KAYT	Rupert, Idaho	970
KBAL	San Saba, Tex.	1410
KBAM	Longview, Wash.	1270
KBAN	Bowie, Tex.	1410

C.L.	Location	Kc.
KBAR	Burley, Idaho	1230
KBBA	Benton, Ark.	690
KBBB	Borger, Tex.	1600
KBBC	Centerville, Utah	1600
KBBR	North Bend, Oreg.	1340
KBBS	Buffalo, Wyo.	1450
KBBZ	Laramie, Wyo.	1490
KBCH	Oceanlake, Oreg.	1380
KBCL	Shreveport, La.	1220
KBEA	Mission, Kans.	1480
KBEC	Waxahachie, Tex.	1390
KBEE	Modesto, Calif.	970
KBEK	Elk City, Okla.	1240
KBEL	Idabel, Okla.	1240
KBEN	Carrizo Sprgs., Tex.	1450
KBER	San Antonio, Tex.	1150
KBET	Reno, Nev.	1340
KBEV	Portland, Oreg.	1010
KBFS	Belle Fourche, S.Dak.	1450
KBGN	Caldwell, Idaho	910
KBHC	Nashville, Ark.	1260
KBHM	Branson, Mo.	1220
KBHS	Hot Springs, Ark.	590
KBIF	Fresno, Calif.	900
KBIG	Avalon, Calif.	740
KBIM	Roswell, N.Mex.	910
KBIS	Bakersfield, Calif.	970
KBIX	Muskogee, Okla.	1490
KBIZ	Ottumwa, Iowa	1240
KBJT	Fordyce, Ark.	1570
KBKR	Baker, Oreg.	1490
KBKW	Aberdeen, Wash.	1450
KBLA	Burbank, Calif.	1490
KBLF	Red Bluff, Calif.	1490
KBLI	Blackfoot, Idaho	690
KBLT	Big Lake, Tex.	1290
KBLU	Yuma, Ariz.	1320
KBLY	Gold Beach, Oreg.	1220
KBMI	Henderson, Nev.	1400
KBMN	Bozeman, Mont.	1230
KBMO	Benson, Minn.	1290
KBMW	Breckinrdg., Minn.	1450
KBMX	Coalinga, Calif.	1470
KBMY	Billings, Mont.	1240
KBND	Bend, Oreg.	1110
KBOA	Kennett, Mo.	830
KBDE	Oskaloosa, Iowa	740
KBOI	Boise, Idaho	950
KBOK	Malvern, Ark.	1310
KBOL	Boulder, Colo.	1490
KBOM	Bismark-Mandan, N. Dak.	1270
KBON	Omaha, Nebr.	1490

C.L.	Location	Kc.
KBOP	Pleasanton, Tex.	1380
KBOR	Brownsville, Tex.	1600
KBOW	Butte, Mont.	1490
KBOX	Dallas, Tex.	1480
KBOY	Medford, Oreg.	730
KBPS	Portland, Oreg.	1450
KBRC	Mt. Vernon, Wash.	1430
KBRI	Brinkley, Ark.	1570
KBRK	Brookings, S.Dak.	1430
KBRL	McCook, Nebr.	1300
KBRN	Brighton, Colo.	800
KBRO	Bremerton, Wash.	1490
KBRR	Leadville, Colo.	1230
KBRS	Springdale, Ark.	1340
KBRV	Soda Sprgs., Ida.	540
KBRX	O'Neill, Nebr.	1350
KBRZ	Freeport, Texas	1460
KBSF	Springhill, La.	1460
KBST	Big Spring, Tex.	1490
KBTA	Batesville, Ark.	1340
KBTM	Jonesboro, Ark.	1230
KBTN	Neosho, Mo.	1420
KBTO	El Dorado, Kans.	1360
KBTR	Denver, Colo.	710
KBUC	Corona, Calif.	1370
KBUD	Athens, Tex.	1410
KBUH	Brigham City, Utah	800
KBUN	Bemidji, Minn.	1450
KBUR	Burlington, Iowa	1490
KBUS	Mexia, Tex.	1590
KBUY	Amarillo, Tex.	1010
KBUZ	Mesa, Ariz.	1310
KBVM	Lancaster, Calif.	1380
KBVU	Bellevue, Wash.	1540
KBWD	Brownwood, Tex.	1380
KBYE	Okla. City, Okla.	890
KBYG	Big Spring, Tex.	1400
KBYP	Shamrock, Tex.	1580
KBYR	Anchorage, Alaska	1270
KBZY	Salem, Oreg.	1490
KBZZ	LaJunta, Colo.	1400
KCAC	Phoenix, Ariz.	1010
KCAD	Abilene, Tex.	1560
KCAL	Redlands, Calif.	1410
KCAP	Helena, Mont.	1340
KCAR	Clarksville, Tex.	1350
KCAS	Slaton, Tex.	1050
KCBC	Des Moines, Iowa	1390
KCBD	Lubbock, Tex.	1590
KCBQ	San Diego, Calif.	1170

C.L.	Location	Kc.
KCBS	San Fran., Calif.	740
KCCL	Paris, Ark.	1460
KCCO	Lawton, Okla.	1050
KCCR	Pierre, S.Dak.	1590
KCCT	Corpus Christi, Tex.	1150
KCDI	Kirkland, Wash	
KCEE	Tucson, Ariz.	790
KCFA	Spokane, Wash.	1330
KCFH	Cuero, Tex.	1600
KCFI	Cedar Falls, Iowa	1250
KCGM	Columbia, Mo.	1580
KCHA	Charles City, Iowa	1580
KCHE	Cherokee, Iowa	1440
KCHI	Chillicothe, Mo.	1010
KCHJ	Delano, Calif.	1010
KCHR	Charleston, Mo.	1350
KCHS	Truth or Consequences, New Mexico	1400
KCHV	Coachella, Calif.	970
KCHY	Cheyenne, Wyo.	1590
KCID	Caldwell, Idaho	1490
KCII	Washington, Iowa	1380
KCIJ	Shreveport, La.	1050
KCIL	Houma, La.	1490
KCIM	Carroll, Iowa	1380
KCIN	Victorville, Calif.	1590
KCJB	Minot, N.Dak.	910
KCJH	San Luis Obispo, Cal.	1280
KCKC	San Bernardino, Cal.	1350
KCKG	Sonora, Tex	1240
KCKN	Kansas City, Kans.	1340
KCKY	Coolidge, Ariz.	1150
KCLA	Pine Bluff, Ark.	1400
KCLE	Cleburne, Tex.	1120
KCLF	Clifton, Ariz.	1400
KCLN	Clinton, Iowa	1390
KCLO	Leavenworth, Kans.	1410
KCLS	Flagstaff, Ariz.	600
KCLU	Rolla, Mo.	1590
KCLV	Clovis, N.Mex.	1240
KCLW	Hamilton, Tex.	900
KCLX	Colfax, Wash.	1450
KCMC	Texarkana, Tex.	1230
KCMJ	Palm Sprgs., Calif.	1010
KCMO	Kansas City, Mo.	810
KCMS	Manitou Sprgs., Colo.	1490
KCNI	Broken Bow, Nebr.	1280
KCNO	Alturas, Calif.	570
KCNY	San Marcos, Tex.	1470
KCOB	Newton, Iowa	1280
KCOG	Centerville, Iowa	1400
KCOH	Houston, Tex.	1430
KCOK	Tulare, Calif.	1270
KCOL	Ft. Collins, Colo.	1410
KCON	Conway, Ark.	1230
KCOR	San Antonio, Tex.	1350
KCOW	Alliance, Nebr.	1400
KCOY	Santa Maria, Calif.	1400
KCPX	Salt Lake City, Utah	1320
KCRA	Sacramento, Calif.	1320
KCRB	Chanute, Kans.	1460
KCRC	Enid, Okla.	1390
KCRG	Cedar Rapids, Iowa	1600
KCRM	Crane, Tex.	1380
KCRS	Midland, Tex.	550
KCRT	Trinidad, Colo.	1240
KCRV	Caruthersville, Mo.	1370
KCSJ	Pueblo, Colo.	590
KCSR	Chadron, Nebr.	1450
KCTA	Corpus Christi, Tex.	1030
KCTI	Gonzales, Tex.	1450
KCTX	Childress, Tex.	1510
KCUB	Tucson, Ariz.	1290
KCUE	Red Wing, Minn.	1250
KCUL	Fort Worth, Tex.	1540
KCVL	Colville, Wash.	1270
KCVR	Lodi, Calif.	1570
KCYL	Lampasas, Tex.	1450
KDAB	Arvada, Colo.	1550
KDAC	Ft. Bragg, Calif.	1230
KDAD	Weed, Calif.	800
KDAK	Carrington, N.D.	1600
KDAL	Duluth, Minn.	610
KDAN	Eureka, Calif.	790
KDAV	Lubbock, Tex.	580
KDAY	Santa Monica, Calif.	1580
KDB	Santa Barbara, Calif.	1490
KDBC	Mansfield, La.	1360
KDBM	Dillon, Mont.	800
KDBS	Alexandria, La.	1410
KDDD	Dumas, Tex.	800
KDEC	Decorah, Iowa	1240
KDEF	Albuquerque, N.Mex.	1150
KDEN	Denver, Colo.	1340
KDEO	El Cajon, Calif.	910
KDES	Palm Sprgs., Calif.	920
KDET	Center, Tex.	930
KDEX	Dexter, Mo.	1590
KDGO	Durango, Colo.	1240
KDHI	Twenty-nine Palms, California	1250
KDHL	Faribault, Minn.	920
KDIA	Oakland, Calif.	1310
KDIO	Ortonville, Minn.	1350
KDIX	Dickinson, N.Dak.	1230
KDJI	Holbrook, Ariz.	1270
KDKA	Pittsburgh, Pa.	1020
KDKD	Clinton, Mo.	1280
KDLA	DeRidder, La.	1010
KDLK	Del Rio, Tex.	1230
KDLM	Detroit Lakes, Minn.	1340
KDLR	Devils Lake, N.Dak.	1240
KDLS	Perry, Iowa	1310
KDMA	Montevideo, Minn.	1450
KDMO	Carthage, Mo.	1490
KDMS	El Dorado, Ark.	1290
KDNT	Denton, Tex.	1440
KDOK	Tyler, Tex.	1330
KDOL	Mojave, Calif.	1340
KDOM	Windom, Minn.	1580
KDON	Salinas, Calif.	1460
KDOT	Reno, Nev.	1230
KDOV	Medford, Oreg.	1300
KDQN	DeQueen, Ark.	1390
KDRO	Sedalia, Mo.	1490
KDRS	Paragould, Ark.	1490
KDSJ	Deadwood, S.Dak.	980
KDSN	Denison, Iowa	1580
KDSX	Denison, Tex.	950
KDTA	Delta, Colo.	1400
KDTH	Dubuque, Iowa	1370
KDUB	Lubbock, Tex.	1340
KDUZ	Hutchinson, Minn.	1260
KDWB	St. Paul, Minn.	630
KDWT	Stamford, Tex.	1200
KDXE	No. Little Rock, Ark.	1380
KDXU	St. George, Utah	1450
KDYL	Tooele, Utah	990
KDZA	Pueblo, Colo.	1230
KEAN	Brownwood, Tex.	1240
KEAP	Fresno, Calif.	980
KEBE	Jacksonville, Tex.	1400
KECK	Odessa, Tex.	920
KEDD	Dodge City, Kans.	1550
KEDO	Longview, Wash.	1400
KEED	Springfield, Oreg.	1050
KEEE	Nacogdoches, Tex.	1230
KEEL	Shreveport, La.	710
KEEN	San Jose, Calif.	1370
KEEP	Twin Falls, Idaho	1450
KEES	Gladewater, Tex.	1430
KEKO	Kailua, Hawaii	1130
KELA	Centralia, Wash.	1470
KELD	El Dorado, Ark.	1400
KELK	Elko, Nev.	1240
KELO	Sioux Falls, S.Dak.	1320
KELP	El Paso, Tex.	920
KELY	Ely, Nev.	1230
KENA	Mena, Ark.	1450
KENE	Toppenish, Wash.	1490
KENI	Anchorage, Alaska	550
KENL	Arcata, Calif.	1340
KENM	Portales, N.Mex.	1450
KENN	Farmington, N.M.	1390
KENO	Las Vegas, Nev.	1460
KENS	San Antonio, Tex.	680
KENY	Bellingham-Ferndale, Wash.	930
KEOK	Payette, Idaho	1450
KEOS	Flagstaff, Ariz.	1290
KEPR	Kennewick, Wash.	610
KEPS	Eagle Pass, Tex.	1270
KERB	Kermit, Tex.	600
KERC	Eastland, Tex.	1590
KERG	Eugene, Oreg.	1280
KERN	Bakersfield, Calif.	1410
KERV	Kerrville, Tex.	1230
KESM	Eldorado Springs, Mo.	1580
KEST	Boise, Idaho	790
KETX	Livingston, Tex.	1440
KEUN	Eunice, La.	1490
KEVE	Minneapolis, Minn.	1440
KEVL	White Castle, La.	1590
KEVT	Tucson, Ariz.	690
KEWB	Oakland, Calif.	910
KEX	Portland, Oreg.	1190
KEXO	Grand Junc., Colo.	1230
KEYD	Oakes, N.Dak.	1220
KEYE	Perryton, Tex.	1400
KEYJ	Jamestown, N.Dak.	1400
KEYL	Long Prairie, Minn.	1400
KEYS	Corpus Christi, Tex.	1440
KEYY	Provo, Utah	1450
KEYZ	Williston, N.Dak.	1360
KEZU	Rapid City, S.Dak.	920
KEZY	Anaheim, Calif.	1190
KFAB	Omaha, Nebr.	1110
KFAC	Los Angeles, Calif.	1330
KFAL	Fulton, Mo.	900
KFAM	St. Cloud, Minn.	1450
KFAR	Fairbanks, Alaska	660
KFAX	San Francisco, Calif.	1100
KFAY	Fayetteville, Ark.	1250
KFBB	Great Falls, Mont.	1310
KFBC	Cheyenne, Wyo.	1240
KFBK	Sacramento, Calif.	1530
KFDA	Amarillo, Tex.	1440
KFDF	Van Buren, Ark.	1580
KFDM	Beaumont, Tex.	560
KFDR	Grand Coulee, Wash.	1360
KFEL	Pueblo, Colo.	970
KFEQ	St. Joseph, Mo.	680
KFFA	Helena, Ark.	1360
KFGQ	Boone, Iowa	1260
KFH	Wichita, Kans.	1330
KFI	Los Angeles, Calif.	640
KFIF	Tucson, Ariz.	1550
KFIV	Modesto, Calif.	1360
KFIZ	Fond du Lac, Wis.	1450
KFJB	Marshalltown, Iowa	1230
KFJM	Grand Forks, N.Dak	1370
KFJZ	Ft. Worth, Tex.	1270
KFKA	Greeley, Colo.	1310
KFKF	Bellevue, Wash.	1330
KFKU	Lawrence, Kans.	1250
KFLD	Floydada, Tex.	900
KFLJ	Walsenburg, Colo.	1380
KFLT	Mountain Home, Ida.	1240
KFLW	Klamath Falls, Oreg.	1450
KFLY	Corvallis, Oreg.	1240
KFMB	San Diego, Calif.	540
KFMJ	Tulsa, Okla.	1050
KFML	Denver, Colo.	1390
KFMO	Flat River, Mo.	1240
KFNF	Shenandoah, Iowa	920
KFNV	Ferriday, La.	1600
KFNW	Fargo, N.Dak.	900
KFOR	Lincoln, Nebr.	1240
KFOX	Long Beach, Calif.	1280
KFPW	Ft. Smith, Ark.	1230
KFQD	Anchorage, Alaska	730
KFRA	Franklin, La.	1390
KFRB	Fairbanks, Alaska	900
KFRC	San Francisco, Calif.	610
KFRD	Rosenberg, Tex.	980
KFRE	Fresno, Calif.	940
KFRM	Kansas City, Mo.	550
KFRO	Longview, Tex.	1370
KFRU	Columbia, Mo.	1400
KFSA	Ft. Smith, Ark.	950
KFSB	Joplin, Mo.	1310
KFSC	Denver, Colo.	1220
KFSD	San Diego, Calif.	600
KFSG	Los Angeles, Calif.	1150
KFST	Ft. Stockton, Tex.	860
KFTM	Ft. Morgan, Colo.	1400
KFTV	Paris, Tex.	1250
KFUN	Las Vegas, N.Mex.	1230
KFUO	St. Louis, Mo.	850
KFVS	Cape Girardeau, Mo.	960
KFWB	Los Angeles, Calif.	980
KFXD	Nampa, Idaho	580
KFXM	San Bernardino, Calif.	590
KFYN	Bonham, Tex.	1420
KFYO	Lubbock, Tex.	790
KFYR	Bismarck, N.Dak.	550
KGA	Spokane, Wash.	1510
KGAF	Gainesville, Tex.	1580
KGAK	Gallup, N.Mex.	1330
KGAL	Lebanon, Oreg.	920
KGAS	Carthage, Tex.	1590
KGAY	Salem, Oreg.	1430
KGB	San Diego, Calif.	1360
KGBC	Galveston, Tex.	1540
KGBS	Los Angeles, Calif.	1020
KGBT	Harlingen, Tex.	1530
KGBX	Springfield, Mo.	1260
KGCA	Rugby, N.D.	1450
KGCX	Sidney, Mont.	1480
KGDN	Edmonds, Wash.	630
KGEE	Bakersfield, Calif.	1230
KGEK	Sterling, Colo.	1230
KGEM	Boise, Idaho	1140
KGEN	Tulare, Calif.	1370
KGER	Long Beach, Calif.	1390
KGEZ	Kalispell, Mont.	600
KGFF	Shawnee, Okla.	1450
KGFJ	Los Angeles, Calif.	1230
KGFL	Roswell, N.Mex.	1400
KGFW	Kearney, Nebr.	1340
KGFX	Pierre, S.Dak.	630
KGGF	Coffeyville, Kans.	690
KGGG	Forest Grove, Oreg.	1570
KGGM	Albuquerque, N.Mex.	610
KGHF	Pueblo, Colo.	1350
KGHL	Billings, Mont.	790
KGHM	Brookfield, Mo.	1470
KGHS	International Falls, Minn.	1230
KGIL	San Fernando, Calif.	1260
KGIW	Alamosa, Colo.	1450
KGKB	Tyler, Tex.	1490
KGKL	San Angelo, Tex.	960
KGLC	Miami, Okla.	910
KGLN	Glenwood Sprgs., Colo.	980
KGLO	Mason City, Iowa	1300
KGLU	Safford, Ariz.	1480
KGMB	Honolulu, Hawaii	590
KGMC	Englewood, Colo.	1150
KGMI	Bellingham, Wash.	790
KGMO	Cape Girardeau, Mo.	1220
KGMS	Sacramento, Calif.	1380
KGMT	Fairbury, Nebr.	1310
KGNB	New Braunfels, Tex.	1420
KGNC	Amarillo, Tex.	710
KGNO	Dodge City, Kans.	1370
KGNS	Laredo, Tex.	1390
KGO	San Francisco, Calif.	810
KGON	Oregon City, Oreg.	1520
KGOS	Torrington, Wyo.	1490
KGPC	Grafton, N.Dak.	1340
KGRI	Henderson, Tex.	1000
KGRL	Bend, Oreg.	940
KGRN	Grinnell, Iowa	1410
KGRO	Gresham, Oreg.	1230
KGRT	Las Cruces, N.Mex.	570
KGST	Fresno, Calif.	1600
KGU	Honolulu, Hawaii	760
KGUC	Gunnison, Colo.	1490
KGUD	Santa Barbara, Calif.	990
KGUL	Port Lavaca, Tex.	1560
KGVL	Greenville, Tex.	1400
KGVO	Missoula, Mont.	1290
KGVW	Belgrade, Mont.	630
KGW	Portland, Oreg.	620
KGWA	Enid, Okla.	960
KGY	Olympia, Wash.	1240
KGYN	Guymon, Okla.	1220
KAHI	Honolulu, Hawaii	1090
KHAK	Cedar Rapids, Iowa	1360
KHAL	Homer, La.	1300
KHAR	Anchorage, Alaska	590
KHAS	Hastings, Nebr.	1230
KHAT	Phoenix, Ariz.	1480
KHBC	Hilo, Hawaii	970
KHBM	Monticello, Ark.	1430
KHBR	Hillsboro, Tex.	1560
KHEM	Big Springs, Tex.	1270
KHEN	Henryetta, Okla.	1590
KHEP	Phoenix, Ariz.	1280
KHEY	El Paso, Tex.	690
KHFH	Fry, Ariz.	1420
KHHH	Pampa, Tex.	1230
KHIT	Walla Walla, Wash.	1320
KHJ	Los Angeles, Calif.	930
KHMO	Hannibal, Mo.	1070
KHOB	Hobbs, N.Mex.	1390
KHOE	Truckee, Calif.	1400
KHOG	Fayetteville, Ark.	1440
KHOK	Hoquiam, Wash.	1560
KHOT	Madera, Calif.	1250
KHOW	Denver, Colo.	630
KHOZ	Harrison, Ark.	900
KHQ	Spokane, Wash.	590
KHSJ	Hemet, Calif.	1320
KHSL	Chico, Calif.	1290
KHUB	Fremont, Nebr.	1340
KHUM	Santa Rosa, Calif.	1580
KHUZ	Borger, Tex.	1490
KHVH	Honolulu, Hawaii	1040
KIAL	Astoria, Ore.	1230
KIBE	Palo Alto, Calif.	1220
KIBH	Seward, Alaska	1340
KIBL	Beeville, Tex.	1490
KIBS	Bishop, Calif.	1230
KICD	Spencer, Iowa	1240
KICK	Springfield, Mo.	1340
KICO	Calexico, Calif.	1490
KICY	Nome, Alaska	850
KID	Idaho Falls, Idaho	590
KIDD	Monterey, Calif.	630
KIDO	Boise, Idaho	630
KIEV	Glendale, Calif.	870
KIFI	Idaho Falls, Idaho	1260
KIFN	Phoenix, Ariz.	860
KIFW	Sitka, Alaska	1230
KIHN	Hugo, Okla.	1340
KIHR	Hood River, Oreg.	1340
KIJV	Huron, S.Dak.	1340
KIKI	Honolulu, Hawaii	830
KIKK	Pasadena, Tex.	650
KIKO	Miami, Ariz.	1340
KIKS	Sulphur, La.	1310
KILE	Galveston, Tex.	1400
KILO	Grand Forks, S.Dak.	1440
KILT	Houston, Tex.	610
KIMA	Yakima, Wash.	1460
KIMB	Kimball, Nebr.	1260
KIMM	Rapid City, S.D.	1150
KIML	Gillette, Wyo.	1490
KIMN	Denver, Colo.	950
KIMO	Hilo, Hawaii	850
KIMP	Mt. Pleasant, Tex.	960
KIND	Independence, Kans.	1010
KINE	Kingsville, Tex.	1330
KING	Seattle, Wash.	1090
KINS	Eureka, Calif.	980
KINT	El Paso, Tex.	1590
KINY	Juneau, Alaska	800
KIOA	Des Moines, Iowa	940
KIOT	Barstow, Calif.	1310
KIOX	Bay City, Tex.	1270
KIPA	Hilo, Hawaii	1110
KIQS	Willows, Calif.	1560
KIRL	Wichita, Kans.	1070
KIRO	Seattle, Wash.	710
KIRT	Mission, Tex.	1580
KIRX	Kirksville, Mo.	1450
KISD	Sioux Falls, S.Dak.	1230
KISN	Vancouver, Wash.	910
KIST	Santa Barbara, Calif.	1340
KIT	Yakima, Wash.	1280
KITE	San Antonio, Tex.	930
KITI	Chehalis, Wash.	1420
KITN	Olympia, Wash.	920
KITO	San Bernardino, Calif.	1290
KIUL	Garden City, Kans.	1240
KIUN	Pecos, Tex.	1400
KIUP	Durango, Colo.	930
KIVY	Crockett, Tex.	1290
KIXI	Renton, Wash.	910
KIXL	Dallas, Tex.	1040
KIXX	Provo, Utah	1400
KIXZ	Amarillo, Tex.	940
KIZZ	El Paso, Tex.	1150
KJAM	Madison, S.Dak.	1390
KJAN	Atlantic, Iowa	1220
KJAX	Santa Rosa, Calif.	1150
KJAY	Topeka, Kans.	1440
KJBC	Midland, Tex.	1150
KJCF	Festus, Mo.	1400
KJCK	Junction City, Kans.	1420
KJEF	Jennings, La.	1290
KJEM	Oklahoma City, Okla.	800
KJET	Beaumont, Tex.	1380
KJFJ	Webster City, Iowa	1570
KJIM	Ft. Worth, Tex.	870
KJLT	North Platte, Nebr.	970
KJNO	Juneau, Alaska	630
KJOE	Shreveport, La.	1480
KJOY	Stockton, Calif.	1280
KJPW	Waynesville, Mo.	1390
KJR	Seattle, Wash.	950
KJRG	Newton, Kans.	950
KJSK	Columbus, Nebr.	900
KKAN	Phillipsburg, Kans.	1490
KKAR	Pomona, Calif.	1220
KKAS	Silsbee, Tex.	1300
KKCN	Ukiah, Calif.	1300
KKEY	Vancouver, Wash.	1150
KKHI	San Francisco, Calif.	1550
KKID	Pendleton, Oreg.	1240
KKIN	Aitkin, Minn.	930
KKIS	Pittsburg, Calif.	990
KKIT	Taos, N.Mex.	1340
KKJO	St. Joseph, Mo.	1550
KKOK	Lompoc, Calif.	1410
KLAC	Los Angeles, Calif.	570
KLAD	Klamath Falls, Oreg.	960

C.L.	Location	Kc.
KLAK	Lakewood, Colo.	1600
KLAM	Cordova, Alaska	1450
KLAN	Lemoore, Calif.	1320
KLAS	Las Vegas, Nev.	1230
KLBM	La Grande, Oreg.	1450
KLBS	Los Banos, Calif.	1330
KLCB	Libby, Mont.	1230
KLCN	Blytheville, Ark.	910
KLCO	Poteau, Okla.	1280
KLEA	Lovington, N.Mex.	630
KLEE	Ottumwa, Iowa	1480
KLEI	Kailua, Hawaii	1240
KLEM	LeMars, Iowa	1410
KLEN	Killeen, Tex.	1050
KLEO	Wichita, Kans.	1480
KLER	Orofino, Idaho	950
KLEX	Lexington, Mo.	1570
KLFD	Litchfield, Minn.	1410
KLFT	Golden Meadow, La.	1600
KLGA	Algona, Iowa	1600
KLGN	Logan, Utah	1390
KLGR	Redwood Falls, Minn.	1490
KLHS	Lordsburg, N.M.	950
KLIB	Liberal, Kans.	1470
KLIC	Monroe, La.	1230
KLID	Poplar Bluff, Mo.	1340
KLIF	Dallas, Tex.	1190
KLIK	Jefferson City, Mo.	950
KLIL	Estherville, Iowa	1340
KLIN	Lincoln, Nebr.	1400
KLIP	Fowler, Calif.	1220
KLIQ	Portland, Oreg.	1290
KLIR	Denver, Colo.	990
KLIX	Twin Falls, Idaho	1310
KLIZ	Brainerd, Minn.	1380
KLKC	Parsons, Kans.	1540
KLLA	Leesville, La.	1570
KLLL	Lubbock, Tex.	1460
KLMO	Longmont, Colo.	1050
KLMR	Lamar, Colo.	920
KLMS	Lincoln, Nebr.	1480
KLMX	Clayton, N.Mex.	1450
KLO	Ogden, Utah	1430
KLOA	Ridgecrest, Calif	1240
KLOE	Goodland, Kans.	730
KLOG	Kelso, Wash.	1490
KLOH	Pipestone, Minn.	1050
KLOK	San Jose, Calif.	1170
KLOO	Corvallis, Oreg.	1350
KLOQ	Yakima, Wash.	1390
KLOS	Albuquerque, N.Mex.	1450
KLOU	Lake Charles, La.	1580
KLOW	Loveland, Colo.	1570
KLPL	Lake Providence, La.	1050
KLPM	Minot, N.Dak.	1390
KLPR	Okla. City, Okla.	1140
KLPW	Union, Mo.	1220
KLRA	Little Rock, Ark.	1010
KLRS	Mountain Grove, Mo.	1360
KLTF	Little Falls, Minn.	960
KLTR	Blackwell, Okla.	1580
KLTZ	Glasgow, Mont.	1240
KLUB	Salt Lake City, Utah	570
KLUE	Longview, Tex.	1280
KLUK	Evanston, Wyo.	1240
KLUV	Haynesville, La.	1580
KLVL	Pasadena, Tex.	1480
KLVT	Levelland, Tex.	1230
KLWN	Lawrence, Kans.	1320
KLWT	Lebanon, Mo.	1230
KLYD	Bakersfield, Calif.	1350
KLYQ	Hamilton, Mont.	980
KLYK	Spokane, Wash.	1230
KLYR	Clarksville, Ark.	1360
KLZ	Denver, Colo.	560
KMA	Shenandoah, Iowa	960
KMAC	San Antonio, Tex.	630
KMAD	Madill, Okla.	1550
KMAE	McKinney, Tex.	1600
KMAK	Fresno, Calif.	1340
KMAN	Manhattan, Kans.	1350
KMAQ	Maquoketa, Iowa	1320
KMAR	Winnsboro, La.	1570
KMBC	Kansas City, Mo.	980
KMBL	Junction, Tex.	1450
KMBO	Tucson, Ariz.	940
KMBY	Monterey, Calif.	1240
KMCD	Fairfield, Iowa	1570
KMCM	McMinnville, Oreg.	1260
KMCO	Conroe, Tex.	900
KMDO	Ft. Scott, Kans.	1600
KMED	Medford, Oreg.	1440
KMEO	Omaha, Nebr.	660
KMET	Paradise, Calif.	930
KMFR	Medford, Ore.	860
KMGM	Albuquerque, N.Mex.	730
KMHT	Marshall, Tex.	1450
KMIL	Cameron, Tex.	1330
KMIN	Grants, N.M.	980
KMIS	Portageville, Mo.	1050
KMJ	Fresno, Calif.	580
KMLB	Monroe, La.	1440
KMMJ	Grand Island, Nebr.	750
KMNS	Sioux City, Iowa	620
KMO	Tacoma, Wash.	1360
KMON	Great Falls, Mont.	560
KMOP	Tucson, Ariz.	1330
KMOR	Littleton, Colo.	1510
KMOX	St. Louis, Mo.	1120
KMPC	Los Angeles, Calif.	710
KMRC	Morgan City, La.	1430
KMRS	Morris, Minn.	1570
KMSL	Ukiah, Calif.	1250
KMUL	Muleshoe, Tex.	1380
KMUR	Murray, Utah	1230
KMUS	Muskogee, Okla.	1380
KMVI	Wailuku, Hawaii	550

C.L.	Location	Kc.
KMYC	Marysville, Calif.	1410
KMYT	Clayton, Mo.	1320
KNAF	Fredericksburg, Tex.	910
KNAK	Salt Lake City, Utah	1280
KNAL	Victoria, Tex.	1410
KNBA	Vallejo, Calif.	1190
KNBC	San Francisco, Calif.	680
KNBE	Kanab, Utah	1240
KNBX	Kirkland, Wash.	1050
KNBY	Newport, Ark.	1280
KNCK	Concordia, Kans.	1390
KNCM	Moberly, Mo.	1230
KNCO	Garden City, Kans.	1050
KNCY	Nebraska City, Nebr.	1600
KNDC	Hettinger, N.Dak.	1490
KNDE	Aztec, N.Mex.	1340
KNDI	Honolulu, Hawaii	1270
KNDY	Marysville, Kans.	1570
KNEA	Jonesboro, Ark.	970
KNEB	Scottsbluff, Nebr.	960
KNED	McAlester, Okla.	1150
KNEL	Brady, Tex.	1490
KNEM	Nevada, Mo.	1240
KNET	Palestine, Tex.	1450
KNEW	Spokane, Wash.	790
KNEX	McPherson, Kans.	1540
KNEZ	Lompoc, Calif.	960
KNGS	Hanford, Calif.	620
KNIA	Knoxville, Iowa	1320
KNIM	Maryville, Mo.	1580
KNIN	Wichita Falls, Tex.	990
KNIT	Abilene, Tex.	1280
KNND	Cottage Grove, Oreg.	1400
KNOC	Natchitoches, La.	1450
KNOE	Monroe, La.	1390
KNOG	Nogales, Ariz.	1340
KNOK	Ft. Worth, Tex.	970
KNOR	Norman, Okla	1400
KNOT	Prescott, Ariz.	1450
KNOW	Austin, Tex.	1490
KNOX	Grand Forks, N.Dak.	1310
KNPT	Newport, Ore.	1310
KNUJ	New Ulm, Minn.	860
KNUZ	Houston, Tex	1230
KNWC	Sioux Falls, S.D.	1270
KNWS	Waterloo, Iowa	1090
KNX	Los Angeles, Calif.	1070
KOA	Denver, Colo.	850
KOAC	Corvallis, Oreg.	550
KOAL	Price, Utah	1230
KOAM	Pittsburg, Kans.	860
KOB	Albuquerque, N.Mex.	770
KOBE	Las Cruces, N.Mex.	1450
KOBH	Hot Springs, S.Dak.	580
KOCA	Kilgore, Tex.	1240
KOCY	Oklahoma City, Okla.	1340
KODA	Houston, Tex.	1010
KODE	Joplin, Mo.	1230
KODI	Cody, Wyo.	1400
KODL	The Dalles, Oreg.	1440
KODY	North Platte, Nebr.	1240
KOEL	Oelwein, Iowa	950
KOFA	Yuma, Ariz.	1240
KOFE	Pullman, Wash.	1150
KOFI	Kalispell, Mont.	930
KOFO	Ottawa, Kans.	1220
KOFY	San Mateo, Calif.	1050
KOGA	Ogallala, Nebr.	930
KOGT	Orange, Tex.	1600
KOH	Reno, Nev.	630
KOHO	Honolulu, Hawaii	1170
KOHU	Hermiston, Oreg.	1570
KOIL	Omaha, Nebr.	1290
KOIN	Portland, Oreg.	970
KOJM	Havre, Mont.	610
KOKA	Shreveport, La.	980
KOKE	Austin, Tex.	1370
KOKL	Okmulgee, Okla.	1240
KOKO	Warrensburg, Mo.	1450
KOKX	Keokuk, Iowa	1310
KOKY	Little Rock, Ark.	1440
KOL	Seattle, Wash.	1300
KOLD	Tucson, Ariz.	1450
KOLE	Port Arthur, Tex.	1340
KOLJ	Quanah, Tex.	1150
KOLO	Reno, Nev.	920
KOLR	Sterling, Colo.	1490
KOLS	Pryor, Okla.	1570
KOLT	Scottsbluff, Nebr.	1320
KOLY	Mobridge, S.Dak.	1300
KOMA	Okla. City, Okla.	1520
KOME	Tulsa, Okla.	1300
KOMO	Seattle, Wash.	1000
KOMW	Omak, Wash.	680
KOMY	Watsonville, Calif.	1340
KONE	Reno, Nev.	1450
KONG	Visalia, Calif.	1400
KONI	Spanish Fork, Utah	1480
KONO	San Antonio, Tex.	860
KONP	Port Angeles, Wash.	1450
KOOD	Honolulu, Hawaii	990
KOOK	Billings, Mont.	970
KOOL	Phoenix, Ariz.	960
KOOO	Omaha, Nebr.	1420
KOOS	Coos Bay, Oreg.	1230
KOPR	Butte, Mont.	550
KOPY	Alice, Tex.	1070
KOQT	Bellingham, Wash.	1550
KORA	Bryan, Tex.	1240
KORC	Mineral Wells, Tex.	1140
KORD	Pasco, Wash.	910
KORE	Eugene, Oreg.	1450
KORK	Las Vegas, Nev.	1340
KORL	Honolulu, Hawaii	650
KORN	Mitchell, S.Dak.	1490
KORT	Grangeville, Idaho	1230
KOSA	Odessa, Tex.	1230

C.L.	Location	Kc.
KOSE	Osceola, Ark.	860
KOSI	Aurora, Colo.	1430
KOSY	Texarkana, Ark.	790
KOTA	Rapid City, S.Dak.	1380
KOTE	Fergus Falls, Minn.	1250
KOTN	Pine Bluff, Ark.	1490
KOTS	Deming, N.M.	1230
KOUR	Independence, Iowa	1220
KOVC	Valley City, N.Dak.	1490
KOVE	Lander, Wyo.	1330
KOVO	Provo, Utah	960
KOWB	Laramie, Wyo.	1290
KOWL	Bijou, Calif.	1490
KOWN	Escondido, Calif.	1450
KOXR	Oxnard, Calif.	910
KOY	Phoenix, Ariz.	550
KOYL	Odessa, Tex.	1310
KOYN	Billings, Mont.	910
KOZE	Lewiston, Idaho	1300
KOZI	Chelan, Wash.	1220
KOZY	Grand Rapids, Minn.	1490
KPAC	Port Arthur, Tex.	1250
KPAK	Minden, La.	1240
KPAL	Palm Springs, Calif.	1450
KPAM	Portland, Oreg.	1410
KPAN	Hereford, Tex.	860
KPAP	Redding, Calif.	1270
KPAS	Banning, Calif.	1490
KPAY	Chico, Calif.	1060
KPBA	Pine Bluff, Ark.	1590
KPBM	Carlsbad, N.Mex.	740
KPCA	Marked Tree, Ark.	1580
KPDN	Pampa, Tex.	1340
KPDQ	Portland, Oreg.	800
KPEG	Spokane, Wash.	1380
KPEL	Lafayette, La.	1420
KPEP	San Angelo, Tex.	1420
KPER	Gilroy, Calif.	1290
KPET	Lamesa, Tex.	690
KPGE	Page, Ariz.	1340
KPHO	Phoenix, Ariz.	910
KPIG	Cedar Rapids, Iowa	1450
KPIK	Colorado Sprgs., Colo.	1580
KPIN	Casa Grande, Ariz.	1260
KPIR	Eugene, Wash.	1500
KPKW	Pasco, Wash.	1340
KPLA	Plainview, Tex.	1050
KPLC	Lake Charles, La.	1470
KPLK	Dallas, Oreg.	1460
KPLT	Paris, Tex.	1490
KPLW	Union, Mo.	1220
KPLY	Crescent City, Calif.	1240
KPMC	Bakersfield, Calif.	1560
KPNG	Port Neches, Tex.	1150
KPOC	Pocahontas, Ark.	1420
KPOD	Crescent City, Calif.	1310
KPOF	Denver, Colo.	910
KPOI	Honolulu, Hawaii	1380
KPOJ	Portland, Oreg.	1330
KPOK	Scottsdale, Ariz.	1440
KPOL	Los Angeles, Calif.	1540
KPON	Anderson, Calif.	1580
KPOR	Quincy, Wash.	1370
KPOW	Powell, Wyo.	1260
KPPC	Pasadena, Calif.	1240
KPQ	Wenatchee, Wash.	560
KPRB	Redmond, Oreg.	1240
KPRC	Houston, Tex.	950
KPRK	Livingston, Mont.	1340
KPRL	Paso Robles, Calif.	1230
KPRO	Riverside, Calif.	1440
KPRS	Kansas City, Mo.	1590
KPSO	Falfurrias, Tex.	1260
KPST	Preston, Idaho	1340
KPTL	Carson City, Nev.	1300
KPUG	Bellingham, Wash.	1170
KQAQ	Austin, Minn.	970
KQDF	Spokane, Wash.	1280
KQDI	Bismarck, N.D.	1350
KQDY	Minot, N.Dak.	1320
KQEN	Roseburg, Oreg.	1250
KQEO	Albuquerque, N.Mex.	920
KQIK	Lakeview, Oreg.	1230
KQMS	Redding, Calif.	1400
KQTE	Missoula, Mont.	1340
KQTY	Everett, Wash.	1230
KQV	Pittsburgh, Pa.	1410
KRAC	Alamogordo, N.M.	1270
KRAD	E. Grand Forks, Minn.	1590
KRAE	Cheyenne, Wyo.	1480
KRAI	Craig, Colo.	550
KRAK	Stockton, Calif.	1140
KRAL	Rawlins, Wyo.	1240
KRAM	Las Vegas, Nev.	920
KRAN	Morton, Tex.	1280
KRAY	Amarillo, Tex.	1360
KRAZ	Albuquerque, N.Mex.	1580
KRBA	Lufkin, Tex.	1340
KRBC	Abilene, Tex.	1470
KRBI	St. Peter, Minn.	1310
KRBN	Red Lodge, Mont.	1450
KRBO	Las Vegas, Nev.	1050
KRCK	Ridgecrest, Calif.	1360
KRCO	Prineville, Oreg.	690
KRDG	Redding, Calif.	1230
KRDO	Colo. Springs, Colo.	1240
KRDP	Reedsport, Oreg.	1470
KRDU	Dinuba, Calif.	1240
KRE	Berkeley, Calif.	1400
KREB	Shreveport, La.	1550
KRED	Eureka, Calif.	1480
KREH	Oakdale, La.	900
KREI	Farmington, Mo.	800
KREM	Spokane, Wash.	970
KREO	Indio, Calif.	1400
KREW	Sunnyside, Wash.	1230
KREX	Grand Junc., Colo.	920

C.L.	Location	Kc.
KRFO	Owatonna, Minn.	1390
KRFS	Superior, Nebr.	1600
KRGI	Grand Island, Neb.	1430
KRGV	Weslaco, Tex.	1290
KRHD	Duncan, Okla.	1350
KRIB	Mason City, Iowa	1490
KRIC	Beaumont, Tex.	1450
KRIG	Odessa, Tex.	1410
KRIH	Rayville, La.	990
KRIO	McAllen, Tex.	910
KRIZ	Phoenix, Ariz.	1230
KRKC	King City, Calif.	1570
KRKD	Los Angeles, Calif.	1150
KRKO	Everett, Wash.	1380
KRLA	Pasadena, Calif.	1110
KRLC	Lewiston, Idaho	1350
KRLD	Dallas, Tex.	1080
KRLN	Canon City, Colo.	1400
KRLW	Walnut Ridge, Ark.	1320
KRMD	Shreveport, La.	1340
KRMG	Tulsa, Okla.	740
KRML	Carmel, Calif.	1410
KRMO	Monett, Mo.	990
KRMS	Osage Beach, Mo.	1150
KRNO	San Bernardino, Calif.	1240
KRNR	Roseburg, Oreg.	1490
KRNS	Burns, Oreg.	1230
KRNT	Des Moines, Iowa	1350
KRNY	Kearney, Nebr.	1460
KROC	Rochester, Minn.	1340
KROD	El Paso, Tex.	600
KROE	Sheridan, Wyo.	930
KROF	Abbeville, La.	960
KROP	Brawley, Calif.	1300
KROS	Clinton, Iowa	1340
KROX	Crookston, Minn.	1260
KROY	Sacramento, Calif.	1240
KRPL	Moscow, Idaho	1400
KRRR	Ruidoso, N.Mex.	1340
KRRV	Sherman, Tex.	910
KRSC	Othello, Wash.	1400
KRSD	Rapid City, S.Dak.	1340
KRSI	St. Louis Park, Minn.	950
KRSL	Russell, Kans.	990
KRSN	Los Alamos, N.Mex.	1490
KRSY	Roswell, N.Mex.	1230
KRTN	Raton, N.Mex.	1490
KRTR	Thermopolis, Wyo.	1490
KRUN	Ballinger, Tex.	1400
KRUS	Ruston, La.	1490
KRUX	Glendale, Ariz.	1360
KRVC	Ashland, Oreg.	1350
KRVN	Lexington, Nebr.	1010
KRXK	Rexburg, Idaho	1230
KRYS	Corpus Christi, Tex.	1360
KRZE	Farmington, N.M.	1280
KRZY	Grand Prairie, Tex.	730
KSAC	Manhattan, Kans.	580
KSAL	Salina, Kans.	1150
KSAM	Huntsville, Tex.	1490
KSAN	San Francisco, Calif.	1450
KSAY	San Francisco, Calif.	1010
KSBW	Salinas, Calif.	1380
KSCB	Liberal, Kans.	600
KSCJ	Sioux City, Iowa	1360
KSCO	Santa Cruz, Calif.	1080
KSD	St. Louis, Mo.	550
KSDN	Aberdeen, S.Dak.	930
KSDO	San Diego, Calif.	1130
KSDR	Watertown, S.Dak.	1480
KSEE	Santa Maria, Calif.	1480
KSEI	Pocatello, Idaho	930
KSEK	Pittsburg, Kans.	1340
KSEL	Lubbock, Tex.	950
KSEM	Moses Lake, Wash.	1470
KSEN	Shelby, Mont.	1150
KSEO	Durant, Okla.	750
KSET	El Paso, Tex.	1340
KSEW	Sitka, Alaska	1400
KSEY	Seymour, Tex.	1230
KSFA	Nacogdoches, Tex.	860
KSFE	Needles, Calif.	1340
KSFO	San Francisco, Calif.	560
KSGM	Chester, Ill.	980
KSIB	Creston, Iowa	1520
KSID	Sidney, Nebr.	1340
KSIG	Crowley, La.	1450
KSIL	Silver City, N.Mex.	1340
KSIM	Sikeston, Mo.	1400
KSIR	Wichita, Kans.	900
KSIS	Sedalia, Mo.	1050
KSIW	Woodward, Okla.	1450
KSIX	Corpus Christi, Tex.	1230
KSJB	Jamestown, N.Dak.	600
KSKI	Sun Valley, Idaho	1340
KSKY	Dallas, Tex.	660
KSL	Salt Lake City, Utah	1160
KSLM	Salem, Oreg.	1390
KSLO	Opelousas, La.	1230
KSLV	Monte Vista, Colo.	1240
KSMA	Santa Maria, Calif.	1240
KSMN	Mason City, Iowa	1010
KSMO	Salem, Mo.	1340
KSNB	Santa Barbara, Calif.	1290
KSNY	Snyder, Tex.	1450
KSO	Des Moines, Iowa	1460
KSOK	Arkansas City, Kans.	1280
KSON	San Diego, Calif.	1240
KSOO	Sioux Falls, S.Dak.	1140
KSOP	Salt Lake City, Utah	1370
KSOX	Raymondville, Tex.	1240
KSPA	Santa Paula, Calif.	1400
KSPI	Stillwater, Okla.	780
KSPL	Diboll, Tex.	1260

C.L.	Location	Kc.
KSPT	Sandpoint, Idaho	1400
KSRA	Salmon, Idaho	960
KSRC	Socorro, N.Mex.	1290
KSRO	Santa Rosa, Calif.	1350
KSRV	Ontario, Oreg.	1380
KSSS	Colorado Springs, Colo.	740
KSST	Sulphur Springs, Tex.	1230
KSTA	Coleman, Tex.	1000
KSTB	Breckenridge, Tex.	1430
KSTL	St. Louis, Mo.	690
KSTH	St. Helen's, Oreg.	1600
KSTN	Stockton, Calif.	1420
KSTP	St. Paul, Minn.	1500
KSTR	Grand Junction, Colo.	620
KSTT	Davenport, Iowa	1170
KSTV	Stephenville, Tex.	1510
KSUB	Cedar City, Utah	590
KSUD	W. Memphis, Ark.	730
KSUE	Susanville, Calif.	1240
KSUM	Fairmont, Minn.	1370
KSUN	Bisbee, Ariz.	1230
KSVC	Richfield, Utah	980
KSVN	Ogden, Utah	730
KSVP	Artesia, N.Mex.	990
KSWA	Graham, Tex.	1330
KSWC	Tucson, Ariz.	1550
KSWI	Council Bluffs, Iowa	1560
KSWO	Lawton, Okla.	1380
KSXX	Salt Lake City, Utah	630
KSYC	Yreka, Calif.	1490
KSYL	Alexandria, La.	970
KSYX	Santa Rosa, N.Mex.	1420
KTAC	Tacoma, Wash.	850
KTAE	Taylor, Tex.	1260
KTAN	Tucson, Ariz.	580
KTAR	Phoenix, Ariz.	620
KTAT	Frederick, Okla.	1570
KTBB	Tyler, Tex.	600
KTBC	Austin, Tex.	590
KTCB	Malden, Mo.	1470
KTCI	Terrytown, Nebr.	690
KTCN	Berryville, Ark.	1480
KTCR	Minneapolis, Minn.	690
KTCS	Fort Smith, Ark.	1410
KTDO	Toledo, Oreg.	1230
KTEE	Idaho Falls, Idaho	900
KTEL	Walla Walla, Wash.	1490
KTEM	Temple, Tex.	1400
KTER	Terrell, Tex.	1570
KTFI	Twin Falls, Idaho	1270
KTFO	Seminole, Tenn.	1250
KTFS	Texarkana, Tex.	1400
KTFY	Brownfield, Tex.	1300
KTHE	Thermopolis, Wyo.	1240
KTHS	Little Rock, Ark.	1090
KTHT	Houston, Tex.	790
KTIB	Thibodaux, La.	630
KTIL	Tillamook, Oreg.	1590
KTIM	San Rafael, Calif.	1510
KTIP	Porterville, Calif.	1450
KTIS	Minneapolis, Minn.	900
KTIX	Seattle, Wash.	1590
KTJS	Hobart, Okla.	1420
KTKN	Ketchikan, Alaska	930
KTKR	Taft, Calif.	1310
KTKT	Tucson, Ariz.	990
KTLD	Tullulah, La.	1360
KTLN	Denver, Colo.	1280
KTLO	Mtn. Home, Ark.	1490
KTLQ	Tahlequah, Okla.	1350
KTLU	Rusk, Tex.	1580
KTLW	Texas City, Tex.	920
KTMC	McAlester, Okla.	1400
KTMS	Santa Barbara, Calif.	1250
KTNC	Falls City, Nebr.	1230
KTNM	Tucumcari, N.Mex.	1400
KTNT	Tacoma, Wash.	1400
KTOC	Jonesboro, La.	920
KTOD	Sinton, Tex.	1590
KTOE	Mankato, Minn.	1420
KTOH	Lihue, Hawaii	1490
KTOK	Oklahoma City, Okla.	1000
KTON	Belton, Tex.	940
KTOO	Henderson, Nev.	1280
KTOP	Topeka, Kans.	1490
KTOW	Sand Spring, Okla.	1340
KTPA	Prescott, Ark.	1370
KTRB	Modesto, Calif.	860
KTRC	Santa Fe, N.Mex.	1400
KTRE	Lufkin, Tex.	1420
KTRF	Thief River Falls, Minn.	1230
KTRH	Houston, Tex.	740
KTRI	Sioux City, Iowa	1470
KTRM	Beaumont, Tex.	990
KTRN	Wichita Falls, Tex.	1290
KTRY	Bastrop, La.	730
KTSA	San Antonio, Tex.	550
KTSL	Burnett, Tex.	1340
KTSM	El Paso, Tex.	1380
KTTN	Trenton, Mo.	1600
KTTR	Rolla, Mo.	1490
KTTS	Springfield, Mo.	1400
KTUC	Tucson, Ariz.	1400
KTUE	Tulia, Tex.	1280
KTUL	Tulsa, Okla.	1430
KTUR	Turlock, Calif.	1390
KTUX	Pueblo, Colo.	1480
KTW	Seattle, Wash.	1250
KTWL	Golden, Colo	1250
KTWO	Casper, Wyo.	1470
KTXJ	Jasper, Tex.	1350
KTXL	San Angelo, Tex.	1340
KTXO	Sherman, Tex.	1500
KTYM	Inglewood, Calif.	1460
KUAM	Agana, Guam	610
KUBA	Yuba City, Calif.	1600
KUBC	Montrose, Colo.	580
KUBE	Pendleton, Oreg.	1050
KUDE	Oceanside, Calif.	1320
KUDI	Great Falls, Mont.	1450
KUDL	Kansas City, Mo.	1380
KUDU	Ventura, Calif.	1590
KUEN	Wenatchee, Wash.	900
KUEQ	Phoenix, Ariz.	740
KUGN	Eugene, Oreg.	590
KUIK	Hillsboro, Oreg.	1360
KUJ	Walla Walla, Wash.	1420
KUKA	San Antonio, Tex.	1250
KUKI	Ukiah, Calif.	1400
KUKO	Post, Tex.	1370
KUKU	Willow Springs, Mo.	1330
KULA	Honolulu, Hawaii	690
KULE	Ephrata, Wash.	730
KULP	El Campo, Tex.	1390
KUMA	Pendleton, Oreg.	1290
KUNO	Corpus Christi, Tex.	1400
KUOA	Siloam Springs, Ark.	1290
KUOM	Minneapolis, Minn.	770
KUPD	Tempe, Ariz.	1060
KUPI	Idaho Falls, Idaho	980
KURA	Moab, Utah	1450
KURL	Billings, Mont.	730
KURV	Edinburg, Tex.	710
KURY	Brookings, Oreg.	910
KUSD	Vermillion, S.Dak.	690
KUSH	Cushing, Okla.	1600
KUSN	St. Joseph, Mo.	1270
KUTA	Blanding, Utah	790
KUTI	Yakima, Wash.	980
KUTT	Fargo, N.Dak.	1550
KUTY	Palmdale, Calif.	1470
KUVR	Holdredge, Nebr.	1380
KUXL	Golden Valley, Minn.	
KUZN	W. Monroe, La.	1310
KUZZ	Bakersfield, Calif.	800
KVAN	Vancouver, Wash.	1480
KVCK	Wolf Point, Nebr.	1450
KVCL	Winnfield, La.	1270
KVCV	Redding, Calif.	600
KVEC	San Luis Obispo, Calif.	920
KVEE	Conway, Ark.	1330
KVEG	Las Vegas, Nev.	970
KVEL	Vernal, Utah	1250
KVEN	Ventura, Calif.	1450
KVER	Clovis, N.Mex.	980
KVET	Austin, Tex.	1300
KVFC	Cortez, Colo.	740
KVFD	Ft. Dodge, Iowa	1400
KVGB	Great Bend, Kans.	1590
KVI	Seattle, Wash.	570
KVIC	Victoria, Tex.	1340
KVIL	Highland Park, Tex.	1150
KVIM	New Iberia, La.	1360
KVIN	Vinita, Okla.	1470
KVIP	Redding, Calif.	540
KVKM	Monahans, Tex.	1330
KVLB	Cleveland, Tex.	1410
KVLC	Little Rock, Ark.	1050
KVLF	Alpine, Tex.	1240
KVLG	LaGrange, Tex.	1570
KVLH	Pauls Valley, Okla.	1470
KVLL	Livingston, Tex.	1220
KVLV	Fallon, Nev.	1250
KVMA	Magnolia, Ark.	630
KVMC	Colorado City, Tex.	1320
KVML	Sonora, Calif.	1450
KVNA	Flagstaff, Ariz.	690
KVNC	Winslow, Ariz.	1010
KVNI	Coeur d'Alene, Idaho	1240
KVNU	Logan, Utah	610
KVOB	Bastrop, La.	1340
KVOC	Casper, Wyo.	1230
KVOE	Emporia, Kans.	1400
KVOG	Ogden, Utah	1490
KVOL	Lafayette, La.	1330
KVOM	Morrilton, Ark.	800
KVON	Napa, Calif.	1440
KVOO	Tulsa, Okla.	1170
KVOP	Plainview, Tex.	1400
KVOR	Colo. Springs, Colo.	1300
KVOU	Uvalde, Tex.	1400
KVOW	Riverton, Wyo.	1450
KVOX	Moorhead, Minn.	1280
KVOY	Yuma, Ariz.	1400
KVOZ	Laredo, Tex.	1490
KVPI	Ville Platte, La.	1050
KVRC	Arkadelphia, Ark.	1240
KVRE	Santa Rosa, Calif.	1460
KVRH	Salida, Colo.	1340
KVRS	Rock Springs, Wyo.	1360
KVSA	McGehee, Ark.	1220
KVSF	Santa Fe, N.Mex.	1260
KVSH	Valentine, Nebr.	940
KVSO	Ardmore, Okla.	1240
KVWC	Vernon, Tex.	1490
KVWM	Show Low, Ariz.	1050
KVWO	Cheyenne, Wyo.	1370
KWAC	Bakersfield, Calif.	1490
KWAD	Wadena, Minn.	920
KWAK	Stuttgart, Ark.	1240
KWAL	Wallace, Idaho	620
KWAM	Memphis, Tenn.	990
KWAT	Watertown, S.Dak.	950
KWBA	Baytown, Tex.	1360
KWBR	Wichita, Kans.	1410
KWBC	Navasota, Tex.	1550
KWBE	Beatrice, Nebr.	1450
KWBG	Boone, Iowa	1590
KWBW	Hutchinson, Kans.	1450
KWCB	Searcy, Ark.	1300
KWCL	Oak Grove, La.	1280
KWCO	Chickasha, Okla.	1560
KWEB	Rochester, Minn.	1270
KWED	Seguin, Tex.	1580
KWEI	Weiser, Idaho	1260
KWEL	Midland, Tex.	1600
KWEW	Hobbs, N.Mex.	1480
KWFR	San Angelo, Tex.	1260
KWFT	Wichita Falls, Tex.	620
KWG	Stockton, Calif.	1230
KWHI	Brenham, Tex.	1280
KWHK	Hutchinson, Kans.	1260
KWHN	Fort Smith, Ark.	1320
KWHO	Salt Lake City, Utah	860
KWHW	Altus, Okla.	1450
KWIC	Salt Lake City, Utah	1570
KWIK	Pocatello, Idaho	1240
KWIL	Albany, Oreg.	790
KWIN	Ashland, Oreg.	580
KWIP	Merced, Calif.	1580
KWIQ	Moses Lake, Wash.	1260
KWIV	Douglas, Wyo.	1050
KWIZ	Santa Ana, Calif.	1480
KWJJ	Portland, Oreg.	1080
KWK	St. Louis, Mo.	1380
KWKC	Abilene, Tex.	1340
KWKH	Shreveport, La.	1130
KWKW	Pasadena, Calif.	1300
KWKY	Des Moines, Iowa	1150
KWLC	Decorah, Iowa	1240
KWLD	Liberty, Tex.	1050
KWLM	Willmar, Minn.	1340
KWLW	Nampa, Idaho	1340
KWMT	Ft. Dodge, Iowa	540
KWNA	Winnemucca, Nev.	1400
KWNO	Winona, Minn.	1230
KWNT	Davenport, Iowa	1580
KWOA	Worthington, Minn.	730
KWOC	Poplar Bluff, Mo.	930
KWOE	Clinton, Okla.	1320
KWON	Bartlesville, Okla.	1400
KWOR	Worland, Wyo.	1340
KWOS	Jefferson City, Mo.	1240
KWOW	Pomona, Calif.	1600
KWPC	Muscatine, Iowa	860
KWPM	West Plains, Mo.	1450
KWPR	Claremore, Okla.	1270
KWRA	Idaho Falls, Idaho	1400
KWRD	Henderson, Tex.	1470
KWRE	Warrenton, Mo.	730
KWRF	Warren, Ark.	860
KWRO	Coquille, Oreg.	630
KWRT	Boonville, Mo.	1370
KWRV	McCook, Nebr.	1360
KWRW	Guthrie, Okla.	1490
KWSC	Pullman, Wash.	1250
KWSD	Mt. Shasta, Calif.	620
KWSH	Wewoka-Seminole, Oklahoma	1260
KWSK	Pratt, Kans.	1570
KWSL	Grand Junction, Colo.	1340
KWSO	Wasco, Calif.	1050
KWTC	Barstow, Calif.	1230
KWTO	Springfield, Mo.	560
KWTX	Waco, Tex.	1230
KWVN	Concord, Calif.	1480
KWVR	Enterprise, Oreg.	1340
KWVY	Waverly, Iowa	1470
KWWL	Waterloo, Iowa	1330
KWYK	Farmington, N.Mex.	960
KWYN	Wynne, Ark.	1400
KWYO	Sheridan, Wyo.	1410
KWYR	Winner, S.Dak.	1260
KXA	Seattle, Wash.	770
KXAR	Hope, Ark.	1490
KXEL	Waterloo, Iowa	1540
KXEN	St. Louis, Mo.	1010
KXEO	Mexico, Mo.	1340
KXGI	Ft. Madison, Iowa	1360
KXGN	Glendive, Mont.	1400
KXGO	Fargo, N.D.	790
KXIC	Iowa City, Iowa	800
KXIT	Dalhart, Tex.	1410
KXIV	Phoenix, Ariz.	1400
KXJK	Forrest City, Ark.	950
KXL	Portland, Oreg.	750
KXLE	Ellensburg, Wash.	1240
KXLF	Butte, Mont.	1370
KXLJ	Helena, Mont.	1240
KXLL	Missoula, Mont.	1450
KXLO	Lewiston, Mont.	1230
KXLR	Little Rock, Ark.	1150
KXLW	Clayton, Mo.	1320
KXLY	Spokane, Wash.	920
KXO	El Centro, Calif.	1230
KXOA	Sacramento, Calif.	1470
KXOK	St. Louis, Mo.	630
KXOL	Ft. Worth, Tex.	1360
KXOX	Sweetwater, Tex.	1240
KXRA	Alexandria, Minn.	1490
KXRJ	Russellville, Ark.	1490
KXRO	Aberdeen, Wash.	1320
KXRX	San Jose, Calif.	1500
KXXL	Bozeman, Mont.	1450
KXXX	Colby, Kans.	790
KXYZ	Houston, Tex.	1320
KYA	San Francisco, Calif.	1260
KYCA	Prescott, Ariz.	1490
KYCN	Wheatland, Wyo.	1340
KYES	Roseburg, Oreg.	950
KYJC	Medford, Oreg.	1230
KYME	Boise, Idaho	740
KYND	Tempe, Ariz.	1580
KYNG	Coos Bay, Oreg.	1420
KYNO	Fresno, Calif.	1300
KYNT	Yankton, S.Dak.	1450
KYOK	Houston, Tex.	1590
KYOR	Blythe, Calif.	1450
KYOS	Merced, Calif.	1480
KYOU	Greeley, Colo.	1450
KYRO	Potosi, Mo.	1280
KYSM	Mankato, Minn.	1230
KYSN	Colorado Sprgs., Colo.	1460
KYSS	Missoula, Mont.	910
KYTE	Pocatello, Idaho	1290
KYUM	Yuma, Ariz.	560
KYVA	Gallup, N.Mex.	1230
KYW	Cleveland, Ohio	1100
KZEE	Weatherford, Tex.	1220
KZEY	Tyler, Tex.	690
KZIN	Coeur d'Alene, Idaho	1050
KZIP	Amarillo, Tex.	1310
KZIX	Fort Collins, Colo.	600
KZNG	Hot Springs, Ark.	1470
KZOK	Prescott, Ariz.	1340
KZOL	Farwell, Tex.	1570
KZON	Tolleson, Ariz.	1190
KZOT	Marianna, Ark.	1460
KZOW	Globe, Ariz.	1240
KZUN	Opportunity, Wash.	630
KZZN	Littlefield, Tex.	1490
WAAA	Winston-Salem, N.C.	980
WAAB	Worcester, Mass.	1440
WAAF	Chicago, Ill.	950
WAAG	Adel, Ga.	1470
WAAP	Peoria, Ill.	1350
WAAT	Trenton, N.J.	1300
WAAX	Gadsden, Ala.	570
WAAY	Huntsville, Ala.	1550
WABA	Aguadilla, P.Rico	850
WABB	Mobile, Ala.	1480
WABC	New York, N.Y.	770
WABF	Fairhope, Ala.	1220
WABG	Greenwood, Miss.	960
WABI	Bangor, Maine	910
WABJ	Adrian, Mich.	1490
WABL	Amite, La.	1570
WABO	Waynesboro, Miss.	990
WABQ	Cleveland, Ohio	1540
WABR	Winter Park, Fla.	1440
WABT	Tuskegee, Ala.	580
WABV	Abbeville, S.C.	1590
WABW	Annapolis, Md.	810
WABY	Albany, N.Y.	1400
WABZ	Albemarle, N.C.	1010
WACA	Camden, S.C.	1590
WACB	Kittanning, Pa.	1380
WACE	Chicopee, Mass.	730
WACK	Newark, N.Y.	1420
WACL	Waycross, Ga.	570
WACO	Waco, Tex.	1460
WACR	Columbus, Miss.	1050
WACT	Tuscaloosa, Ala.	1420
WADA	Shelby, N.C.	1390
WADC	Akron, Ohio	1350
WADE	Wadesboro, N.C.	1210
WADK	Newport, R.I.	1540
WADO	New York, N.Y.	1280
WADP	Kane, Pa.	960
WADS	Ansonia, Conn.	690
WAEB	Allentown, Pa.	790
WAEL	Mayaguez, P.Rico	600
WAFC	Staunton, Va.	900
WAFS	Amsterdam, N.Y.	1570
WAGE	Leesburg, Va.	1290
WAGF	Dothan, Ala.	1320
WAGG	Franklin, Tenn.	950
WAGM	Presque Isle, Maine	950
WAGN	Menominee, Mich.	1340
WAGR	Lumberton, N.C.	580
WAGS	Bishopville, S.C.	1380
WAGY	Forest City, N.C.	1320
WAIK	Galesburg, Ill.	1590
WAIL	Baton Rouge, La.	1460
WAIM	Anderson, S.C.	1230
WAIN	Columbia, Ky.	1270
WAIP	Prichard, Ala.	1270
WAIR	Winston-Salem, N.C.	1340
WAIT	Chicago, Ill.	820
WAJF	Decatur, Ala.	1490
WAJR	Morgantown, W.Va.	1440
WAKE	Atlanta, Ga.	1340
WAKN	Aiken, S.C.	990
WAKO	Lawrenceville, Ill.	910
WAKR	Akron, Ohio	1590
WAKY	Louisville, Ky.	790
WALA	Mobile, Ala.	1410
WALD	Walterboro, S.C.	1220
WALE	Fall River, Mass.	1400
WALG	Albany, Ga.	1590
WALK	Patchogue, N.Y.	1370
WALL	Middletown, N.Y.	1340
WALM	Albion, Mich.	1260
WALO	Humacao, P.R.	1240
WALT	Tampa, Fla.	1110
WALY	Herkimer, N.Y.	1420
WAMD	Aberdeen, Md.	970
WAME	Miami, Fla.	1260
WAMI	Opp, Ala.	860
WAML	Laurel, Miss.	1340
WAMM	Flint, Mich.	1420
WAMO	Homestead, Pa.	860
WAMR	Venice, Fla.	1320
WAMS	Wilmington, Del.	1380
WAMW	Washington, Ind.	1580
WAMY	Amory, Miss.	1580
WANA	Anniston, Ala.	1490
WANB	Waynesburg, Pa.	1580
WAND	Canton, Ohio	900
WANE	Ft. Wayne, Ind.	1450
WANN	Annapolis, Md.	1190
WANS	Anderson, S.C.	1280
WANT	Richmond, Va.	990
WANY	Albany, Ky.	1390
WAOK	Atlanta, Ga.	1380
WAOV	Vincennes, Ind.	1450
WAPA	San Juan, P.R.	680

C.L.	Location	Kc.
WAPC	Riverhead, N.Y.	1570
WAPE	Jacksonville, Fla.	690
WAPF	McComb, Miss.	980
WAPG	Arcadia, Fla.	1480
WAPI	Birmingham, Ala.	1070
WAPL	Appleton, Wis.	1570
WAPO	Chattanooga, Tenn.	1150
WAPX	Montgomery, Ala.	1600
WAQE	Towson, Md.	1570
WARA	Attleboro, Mass.	1320
WARB	Covington, La.	730
WARD	Johnstown, Pa.	1490
WARE	Ware, Mass.	1250
WARF	Jasper, Ala.	1240
WARI	Abbeville, Ala.	1480
WARK	Hagerstown, Md.	1490
WARL	Arlington, Va.	780
WARM	Scranton, Pa.	590
WARN	Ft. Pierce, Fla.	1330
WARU	Peru, Ind.	1600
WASA	Havre de Grace, Md.	1330
WASK	Lafayette, Ind.	1450
WATA	Boone, N.C.	1450
WATC	Gaylord, Mich.	900
WATE	Knoxville, Tenn.	620
WATH	Athens, Ohio	970
WATK	Antigo, Wis.	900
WATM	Atmore, Ala.	1590
WATN	Watertown, N.Y.	1240
WATO	Oak Ridge, Tenn.	1290
WATP	Marion, S.C.	1430
WATR	Waterbury, Conn.	1320
WATS	Sayre, Pa.	960
WATT	Cadillac, Mich.	1240
WATV	Birmingham, Ala.	900
WATW	Ashland, Wis.	1400
WATZ	Alpena, Mich.	1450
WAUB	Auburn, N.Y.	1590
WAUC	Wauchula, Fla.	1310
WAUD	Auburn, Ala.	1230
WAUG	Augusta, Ga.	1050
WAUX	Waukesha, Wis.	1510
WAVC	Boaz, Ala.	1300
WAVE	Louisville, Ky.	970
WAVI	Dayton, Ohio	1210
WAVL	Apollo, Pa.	910
WAVN	Stillwater, Minn.	1220
WAVO	Avondale Estates, Ga.	1420
WAVP	Avon Park, Fla.	1390
WAVU	Albertville, Ala.	630
WAVY	Portsmouth, Va.	1350
WAVZ	New Haven, Conn.	1300
WAWA	West Allis, Wis.	1590
WAWK	Kendallville, Ind.	1570
WAWZ	Zarephath, N.J.	1380
WAXE	Vero Beach, Fla.	1370
WAXU	Georgetown, Ky.	1580
WAXX	Chippewa Falls, Wis.	1150
WAYB	Waynesboro, Va.	1490
WAYE	Dundalk, Md.	860
WAYN	Rockingham, N.C.	900
WAYR	Orange Park, Fla.	550
WAYS	Charlotte, N.C.	610
WAYX	Waycross, Ga.	1230
WAYZ	Waynesboro, Pa.	1380
WAZA	Bainbridge, Ga.	1360
WAZE	Clearwater, Fla.	860
WAZF	Yazoo City, Miss.	1230
WAZL	Hazelton, Pa.	1490
WAZY	Lafayette, Ind.	1410
WBAA	West Lafayette, Ind.	920
WBAB	Babylon, N.Y.	1440
WBAC	Cleveland, Tenn.	1340
WBAG	Burlington, N.C.	1150
WBAL	Baltimore, Md.	1090
WBAM	Montgomery, Ala.	740
WBAP	Ft. Worth, Tex.	570, 820
WBAR	Bartow, Fla.	1460
WBAT	Marion, Ind.	1400
WBAW	Barnwell, S.C.	740
WBAX	Wilkes-Barre, Pa.	1240
WBAY	Green Bay, Wis.	1360
WBAZ	Kingston, N.Y.	1550
WBBA	Pittsfield, Ill.	1580
WBBB	Burlington, N.C.	920
WBBF	Rochester, N.Y.	950
WBBI	Abingdon, Va.	1230
WBBK	Blakely, Ga.	1260
WBBL	Richmond, Va.	1480
WBBM	Chicago, Ill.	780
WBBO	Forest City, N.C.	780
WBBQ	Augusta, Ga.	1340
WBBR	E. St. Louis, Ill.	1490
WBBT	Lyons, Ga.	1340
WBBW	Youngstown, Ohio	1240
WBBX	Portsmouth, N.H.	1380
WBBY	Wood River, Ill.	590
WBBZ	Ponca City, Okla.	1230
WBCA	Bay Minette, Ala.	1150
WBCB	Levittown, Pa.	1490
WBCH	Hastings, Mich.	1220
WBCI	Williamsburg, Va.	740
WBCK	Battle Creek, Mich.	930
WBCM	Bay City, Mich.	1440
WBCR	Christiansburg, Va.	1260
WBCU	Union, S.C.	1460
WBEC	Pittsfield, Mass.	1420
WBEE	Harvey, Ill.	1570
WBEJ	Elizabethton, Tenn.	1240
WBEL	South Beloit, Ill.	1380
WBEN	Buffalo, N.Y.	930
WBET	Brockton, Mass.	1460
WBEU	Beaufort, S.C.	960
WBEV	Beaver Dam, Wis.	1430
WBEX	Chillicothe, Ohio	1490
WBFC	Fremont, Mich.	1490
WBFD	Bedford, Pa.	1310
WBGC	Chipley, Fla.	1240
WBGN	Bowling Green, Ky.	1340
WBGR	Jesup, Ga.	1370
WBHB	Fitzgerald, Ga.	1240
WBHC	Hampton, S.C.	1270
WBHF	Cartersville, Ga.	1450
WBHM	Birmingham, Ala.	1550
WBHP	Huntsville, Ala.	1230
WBIA	Augusta, Ga.	1230
WBIC	Islip, N.Y.	540
WBIE	Marietta, Ga.	1050
WBIG	Greensboro, N.C.	1470
WBIL	Leesburg, Fla.	1410
WBIP	Booneville, Miss.	1400
WBIR	Knoxville, Tenn.	1240
WBIS	Bristol, Conn.	1440
WBIW	Bedford, Ind.	1340
WBIZ	Eau Claire, Wis.	1400
WBKH	Hattiesburg, Miss.	950
WBKN	Newton, Miss.	1410
WBKV	West Bend, Wis.	1470
WBLA	Elizabethtown, N.C.	1440
WBLE	Batesville, Miss.	1290
WBLF	Bellefonte, Pa.	1330
WBLG	Lexington, Ky.	1300
WBLJ	Dalton, Ga.	1230
WBLO	Evergreen, Ala.	1470
WBLR	Batesburg, S.C.	1430
WBLT	Bedford, Va.	1350
WBLU	Salem, Va.	1480
WBLY	Springfield, Ohio	1600
WBMA	Beaufort, N.C.	1400
WBMC	McMinnville, Tenn.	960
WBMD	Baltimore, Md.	750
WBMK	West Point, Ga.	1310
WBML	Macon, Ga.	1240
WBMT	Black Mountain, N.C.	1350
WBNC	Conway, N.H.	1050
WBNL	Boonville, Ind.	1540
WBNR	Beacon, N.Y.	1260
WBNS	Columbus, Ohio	1460
WBNT	Oneida, Tenn.	1310
WBNX	New York, N.Y.	1380
WBNY	Buffalo, N.Y.	1400
WBOB	Galax, Va.	1360
WBOC	Salisbury, Md.	960
WBOF	Virginia Beach, Va.	1550
WBOK	New Orleans, La.	800
WBOP	Pensacola, Fla.	980
WBOS	Brookline, Mass.	1600
WBOW	Terre Haute, Ind.	1230
WBOY	Clarksburg, W.Va.	1400
WBPZ	Lock Haven, Pa.	1230
WBRB	Mt. Clemens, Mich.	1430
WBRC	Birmingham, Ala.	960
WBRD	Bradenton, Fla.	1420
WBRE	Wilkes-Barre, Pa.	1340
WBRG	Lynchburg, Va.	1050
WBRK	Pittsfield, Mass.	1340
WBRM	Marion, N.C.	1250
WBRN	Big Rapids, Mich.	1460
WBRO	Waynesboro, Ga.	1310
WBRT	Bardstown, Ky.	1320
WBRV	Boonville, N.Y.	900
WBRX	Berwick, Pa.	1280
WBRY	Waterbury, Conn.	1590
WBSC	Bennetsville, S.C.	1550
WBSG	Blackshear, Ga.	1350
WBSM	New Bedford, Mass.	1420
WBT	Charlotte, N.C.	1110
WBTA	Batavia, N.Y.	1490
WBTH	Williamson, W.Va.	1400
WBTL	Farmville, N.C.	1050
WBTM	Danville, Va.	1330
WBTN	Bennington, Vt.	1370
WBTO	Linton, Ind.	1600
WBTS	Bridgeport, Ala.	1480
WBUC	Buckhannon, W.Va.	1460
WBUD	Trenton, N.J.	1260
WBUT	Butler, Pa.	1050
WBUX	Doylestown, Pa.	1570
WBUY	Lexington, N.C.	1440
WBUZ	Fredonia, N.Y.	1570
WBVL	Barbourville, Ky.	950
WBVP	Beaver Falls, Pa.	1230
WBYE	Calera, Ala.	1370
WBYG	Savannah, Ga.	1450
WBYS	Canton, Ill.	1560
WBZ	Boston, Mass.	1030
WBZA	Springfield, Mass.	1030
WBZY	Torrington, Conn.	990
WCAL	Northfield, Minn.	770
WCAM	Camden, N.J.	1310
WCAO	Baltimore, Md.	600
WCAP	Lowell, Mass.	980
WCAR	Detroit, Mich.	1130
WCAT	Orange, Mass.	1390
WCAU	Philadelphia, Pa.	1210
WCAW	Charleston, W.Va.	680
WCAX	Burlington, Vt.	620
WCAY	Cayce, S.C.	620
WCAZ	Carthage, Ill.	990
WCBA	Corning, N.Y.	1350
WCBG	Chambersburg, Pa.	1590
WCBI	Columbus, Miss.	550
WCBL	Benton, Ky.	1290
WCBM	Baltimore, Md.	680
WCBS	New York, N.Y.	880
WCBT	Roanoke Rapids, N.C.	1230
WCBY	Cheboygan, Mich.	1240
WCCC	Hartford, Conn.	1290
WCCF	Punta Gorda, Fla.	1580
WCCM	Lawrence, Mass.	800
WCCN	Neillsville, Wis.	1370
WCCO	Minneapolis, Minn.	830
WCCW	Traverse City, Mich.	1310
WCDL	Carbondale, Pa.	1440
WCDJ	Edenton, N.C.	1260
WCDT	Winchester, Tenn.	1340
WCEC	Rocky Mount, N.C.	810
WCED	DuBois, Pa.	1420
WCEF	Parksburg, W.Va.	1050
WCEH	Hawkinsville, Ga.	610
WCEM	Cambridge, Md.	1240
WCEN	Mt. Pleasant, Mich.	1150
WCER	Charlotte, Mich.	1390
WCFL	Chicago, Ill.	1000
WCFR	Springfield, Vt.	1480
WCFT	Dallas, N.C.	960
WCFV	Clifton Forge, Va.	1230
WCGA	Calhoun, Ga.	900
WCGC	Belmont, N.C.	1270
WCGO	Chicago Hghts., Ill.	1600
WCHA	Chambersburg, Pa.	800
WCHB	Inkster, Mich.	1440
WCHI	Chillicothe, Ohio	1350
WCHJ	Brookhaven, Miss.	1470
WCHK	Canton, Ga.	1290
WCHO	Washington Court House, Ohio	1250
WCHL	Chapel Hill, N.C.	1360
WCHN	Norwich, N.Y.	970
WCHP	Tuscumbia, Ala.	1410
WCHS	Charleston, W.Va.	580
WCHV	Charlottesville, Va.	1260
WCIL	Carbondale, Ill.	1020
WCIN	Cincinnati, Ohio	1480
WCJU	Columbia, Miss.	1450
WCKB	Dunn, N.C.	780
WCKI	Greer, S.C.	1300
WCKM	Winnsboro, S.C.	1250
WCKR	Miami, Fla.	610
WCKY	Cincinnati, Ohio	1530
WCLA	Claxton, Ga.	1470
WCLB	Camilla, Ga.	1220
WCLC	Jamestown, Tenn.	1260
WCLD	Cleveland, Miss.	1490
WCLE	Cleveland, Tenn.	1570
WCLG	Morgantown, W.Va.	1300
WCLI	Corning, N.Y.	1450
WCLO	Janesville, Wis.	1230
WCLS	Columbus, Ga.	1580
WCLT	Newark, Ohio	1430
WCLW	Mansfield, Ohio	1570
WCMA	Corinth, Miss.	1230
WCMB	Harrisburg, Pa.	1460
WCMC	Wildwood, N.J.	1230
WCME	Brunswick, Maine	900
WCMI	Ashland, Ky.	1340
WCMN	Arecibo, P.R.	1280
WCMP	Pine City, Minn.	1350
WCMR	Elkhart, Ind.	1270
WCMS	Norfolk, Va.	1050
WCMT	Martin, Tenn.	1410
WCMY	Ottawa, Ill.	1430
WCNB	Connersville, Ind.	1580
WCNC	Elizabeth City, N.C.	1240
WCNF	Weldon, N.C.	1400
WCNH	Quincy, Fla.	1230
WCNL	Newport, N. H.	1010
WCNR	Bloomsburg, Pa.	930
WCNT	Centralia, Ill.	1210
WCNU	Crestview, Fla.	1010
WCNX	Middletown, Conn.	1150
WCOA	Pensacola, Fla.	1370
WCOC	Meridian, Miss.	910
WCOG	Greensboro, N.C.	1320
WCOH	Newnan, Ga.	1400
WCOJ	Coatesville, Pa.	1420
WCOL	Columbus, Ohio	1230
WCON	Cornelia, Ga.	1450
WCOP	Boston, Mass.	1150
WCOR	Lebanon, Tenn.	900
WCOS	Columbia, S.C.	1400
WCOU	Lewiston, Maine	1240
WCOV	Montgomery, Ala.	1170
WCOW	Sparta, Wis.	1290
WCOY	Columbia, Pa.	1580
WCPA	Clearfield, Pa.	900
WCPC	Houston, Miss.	1320
WCPH	Etowah, Tenn.	1220
WCPM	Cumberland, Ky.	1280
WCPO	Cincinnati, Ohio	1230
WCPS	Tarboro, N.C.	760
WCQS	Alma, Ga.	1400
WCRA	Effingham, Ill.	1090
WCRB	Waltham, Mass.	1330
WCRE	Cheraw, S.C.	1420
WCRI	Scottsboro, Ala.	1050
WCRK	Morristown, Tenn.	1150
WCRL	Oneonta, Ala.	1570
WCRM	Clare, Mich.	990
WCRO	Johnstown, Pa.	1230
WCRR	Corinth, Miss.	1330
WCRS	Greenwood, S.C.	1450
WCRT	Birmingham, Ala.	1260
WCRV	Washington, N.J.	1580
WCRW	Chicago, Ill.	1240
WCRY	Macon, Ga.	900
WCSC	Charleston, S.C.	1390
WCSH	Portland, Maine	970
WCSI	Columbus, Ind.	1010
WCSR	Hillsdale, Mich.	1340
WCSS	Amsterdam, N.Y.	1490
WCST	Berkeley Springs, W.Va.	1010
WCTA	Andalusia, Ala.	920
WCTC	New Brunswick, N.J.	1450
WCTT	Corbin, Ky.	680
WCTW	New Castle, Ind.	1550
WCUB	Manitowoc, Wis.	980
WCUE	Cuyahoga Falls, Ohio	1150
WCUM	Cumberland, Md.	1230
WCVA	Culpeper, Va.	1490
WCVI	Connellsville, Pa.	1340
WCVP	Murphy, N.C.	600
WCVQ	Kodiak, Alaska	960
WCVS	Springfield, Ill.	1450
WCWC	Ripon, Wis.	1600
WCYB	Bristol, Va.	690
WCYN	Cynthiana, Ky.	1400
WDAD	Indiana, Pa.	1450
WDAE	Tampa, Fla.	1250
WDAF	Kansas City, Mo.	610
WDAK	Columbus, Ga.	540
WDAL	Meridian, Miss.	1330
WDAN	Danville, Ill.	1490
WDAR	Darlington, S.C.	1350
WDAS	Philadelphia, Pa.	1480
WDAX	McRae, Ga.	1410
WDAY	Fargo, N. Dak.	970
WDBC	Escanaba, Mich.	680
WDBF	Delray Beach, Fla.	1420
WDBJ	Roanoke, Va.	960
WDBL	Springfield, Tenn.	1590
WDBM	Statesville, N.C.	550
WDBO	Orlando, Fla.	580
WDBQ	Dubuque, Iowa	1490
WDCF	Dade City, Fla.	1350
WDCR	Hanover, N.H.	1340
WDDT	Greenville, Miss.	900
WDDY	Gloucester, Va.	1420
WDEA	Ellsworth, Me.	1350
WDEB	Pensacola, Fla.	610
WDEC	Americus, Ga.	1290
WDEE	Hamden, Conn.	1220
WDEF	Chattanooga, Tenn.	1370
WDEH	Sweetwater, Tenn.	800
WDEL	Wilmington, Del.	1150
WDEV	Waterbury, Vt.	550
WDEW	Westfield, Mass.	1570
WDGY	Minneapolis, Minn.	1130
WDIA	Memphis, Tenn.	1070
WDIG	Dothan, Ala.	1450
WDIX	Orangeburg, S.C.	1150
WDJS	Mt. Olive, N.C.	1430
WDKD	Kingstree, S.C.	1310
WDKN	Dickson, Tenn.	1260
WDLA	Walton, N.Y.	1270
WDLB	Marshfield, Wis.	1450
WDLC	Port Jervis, N.Y.	1490
WDLE	Delaware, Ohio	1550
WDLM	E. Moline, Ill.	960
WDLT	Indianola, Miss.	1380
WDLP	Panama City, Fla.	590
WDMF	Buford, Ga.	1460
WDMG	Douglas, Ga.	860
WDMJ	Marquette, Mich.	1320
WDMV	Pocomoke City, Md.	540
WDNC	Durham, N.C.	620
WDNE	Elkins, W.Va.	1240
WDNG	Anniston, Ala.	1450
WDNT	Dayton, Tenn.	1280
WDOB	Canton, Miss.	1370
WDOC	Prestonsburg, Ky.	1310
WDOD	Chattanooga, Tenn.	1310
WDOE	Dunkirk, N.Y.	1410
WDOG	Marine City, Mich.	1590
WDOK	Cleveland, Ohio	1260
WDOL	Athens, Ga.	1470
WDON	Wheaton, Md.	1540
WDOR	Sturgeon Bay, Wis.	910
WDOS	Oneonta, N.Y.	730
WDOT	Burlington, Va.	1400
WDOV	Dover, Del.	1410
WDOW	Dowagiac, Mich.	1440
WDQN	DuQuoin, Ill.	1580
WDRC	Hartford, Conn.	1360
WDSC	Dillon, S.C.	800
WDSG	Dyersburg, Tenn.	1450
WDSK	Cleveland, Miss.	1410
WDSM	Superior, Wis.	710
WDSP	DeFuniak Springs, Florida	1280
WDSR	Lake City, Fla.	1340
WDSU	New Orleans, La.	1280
WDTI	Danville, Va.	970
WDUN	Gainesville, Ga.	1240
WDUX	Waupaca, Wis.	800
WDUZ	Green Bay, Wis.	1400
WDVA	Danville, Va.	1250
WDVH	Gainesville, Fla.	980
WDVL	Vineland, N.J.	1270
WDWD	Dawson, Ga.	990
WDWS	Champaign, Ill.	1400
WDXB	Chattanooga, Tenn.	1490
WDXE	Lawrenceburg, Tenn.	1370
WDXI	Jackson, Tenn.	1310
WDXL	Lexington, Tenn.	1490
WDXN	Clarksville, Tenn.	540
WDXR	Paducah, Ky.	1560
WDXY	Sumter, S.C.	1240
WDYL	Ashland, Va.	1430
WDZ	Decatur, Ill.	1050
WEAB	Greer, S.C.	800
WEAG	Alcoa, Tenn.	1470
WEAM	Arlington, Va.	1390
WEAN	Providence, R.I.	790
WEAQ	Eau Claire, Wis.	790
WEAS	College Park, Ga.	1570
WEAT	W. Palm Beach, Fla.	850
WEAV	Plattsburg, N.Y.	960
WEAW	Evanston, Ill.	1330
WEBB	Baltimore, Md.	1360
WEBC	Duluth, Minn.	560
WEBJ	Brewton, Ala.	1240
WEBO	Owego, N.Y.	1330
WEBQ	Harrisburg, Ill.	1240
WEBR	Buffalo, N.Y.	970
WEBY	Milton, Fla.	1330
WECL	Eau Claire, Wis.	1050
WEDC	Chicago, Ill.	1240
WEDO	McKeesport, Pa.	810

C.L.	Location	Kc.
WEDR	Mobile, Ala.	1550
WEEB	Southern Pines, N.C.	990
WEED	Rocky Mount, N.C.	1390
WEEE	Rensselaer, N.Y.	1300
WEEI	Boston, Mass.	590
WEEL	Fairfax, Va.	1310
WEEN	Lafayette, Tenn.	1460
WEER	Warrenton, Va.	1570
WEET	Richmond, Va.	1320
WEEU	Reading, Pa.	850
WEEW	Washington, N.C.	1320
WEEX	Easton, Pa.	1230
WEEZ	Chester, Pa.	1590
WEGO	Concord, N.C.	1410
WEGP	Presque Isle, Maine	1390
WEHH	Elmira Heights-Horseheads, N. Y.	1590
WEIC	Charleston, Ill.	1270
WEIM	Fitchburg, Mass.	1280
WEIR	Weirton, W.Va.	1430
WEIS	Center, Ala.	990
WEJL	Scranton, Pa.	630
WEKR	Fayetteville, Tenn.	1240
WEKY	Richmond, Ky.	1340
WEKZ	Monroe, Wis.	1260
WELB	Elba, Ala.	1350
WELC	Welch, W.Va.	1150
WELD	Fisher, W.Va.	690
WELE	S. Daytona, Fla.	1590
WELI	New Haven, Conn.	960
WELK	Charlottesville, Va.	1010
WELL	Battle Creek, Mich.	1400
WELM	Elmira, N.Y.	1410
WELO	Tupelo, Miss.	580
WELP	Easley, S.C.	1360
WELR	Roanoke, Ala.	1360
WELS	Kinston, N.C.	1010
WELY	Ely, Minn.	1450
WELZ	Belzoni, Miss.	1460
WEMB	Erwin, Tenn.	1420
WEMD	Easton, Md.	1460
WEMJ	Laconia, N.H.	1490
WEMP	Milwaukee, Wis.	1250
WENA	Bayamon, P.R.	1560
WENC	Whiteville, N.C.	1220
WEND	Edensburg, Pa.	1580
WENE	Endicott, N.Y.	1430
WENK	Union City, Tenn.	1240
WENN	Birmingham, Ala.	1320
WENO	Madison, Tenn.	1430
WENT	Gloversville, N.Y.	1340
WENY	Elmira, N.Y.	1230
WEOK	Poughkeepsie, N.Y.	1390
WEOL	Elyria, Ohio	930
WEPG	S. Pittsburgh, Tenn.	910
WEPM	Martinsburg, W.Va.	1340
WERA	Plainfield, N.J.	1590
WERD	Atlanta, Ga.	860
WERE	Cleveland, Ohio	1300
WERH	Hamilton, Ala.	970
WERI	Westerly, R.I.	1230
WERL	Eagle River, Wis.	950
WERO	Canonsburg, Pa.	540
WERT	Van Wert, Ohio	1220
WESA	Charleroi, Pa.	940
WESB	Bradford, Pa.	1490
WESC	Greenville, S.C.	660
WESN	N. Augusta, S.C.	1550
WESO	Southbridge, Mass.	970
WESR	Tasley, Va.	1330
WEST	Easton, Pa.	1400
WESX	Salem, Mass.	1230
WESY	Leland, Miss.	1580
WETB	Johnson City, Tenn.	790
WETC	Wendell-Zebulon, N.C.	540
WETO	Gadsden, Ala.	930
WETT	Ocean City, Md.	1590
WETU	Wetumpka, Ala.	1250
WETZ	New Martinsville, West Virginia	1330
WEUC	Ponce, P.R.	1420
WEUP	Huntsville, Ala.	1600
WEVA	Emporia, Va.	860
WEVD	New York, N.Y.	1330
WEVE	Eveleth, Minn.	1340
WEW	St. Louis, Mo.	770
WEWO	Laurinburg, N.C.	1080
WEXL	Royal Oak, Mich.	1340
WEYE	Sanford, N.C.	1290
WEZB	Birmingham, Ala.	1220
WEZE	Boston, Mass.	1260
WEZJ	Williamsburg, Ky.	1440
WEZL	Richmond, Va.	1590
WEZN	Elizabethtown, Pa.	1600
WEZY	Cocoa, Fla.	1350
WFAA	Dallas, Tex.	570, 820
WFAB	Miami, Fla.	990
WFAG	Farmville, N.C.	1250
WFAH	Alliance, Ohio	1310
WFAI	Fayetteville, N.C.	1230
WFAR	Farrell, Pa.	1470
WFAS	White Plains, N.Y.	1230
WFAU	Augusta, Me.	1340
WFAX	Falls Church, Va.	1220
WFBC	Greenville, S.C.	1330
WFBG	Altoona, Pa.	1290
WFBL	Syracuse, N.Y.	1390
WFBM	Indianapolis, Ind.	1260
WFBR	Baltimore, Md.	1300
WFCT	Fountain City, Tenn.	1430
WFDF	Flint, Mich.	910
WFDR	Manchester, Ga.	1370
WFEA	Manchester, N.Y.	1370
WFEB	Sylacauga, Ala.	1340
WFEC	Miami, Fla.	1220
WFFF	Columbia, Miss.	1600
WFFG	Marathon, Fla.	1300
WFGM	Fitchburg, Mass.	960
WFGN	Gaffney, S.C.	1570
WFHG	Bristol, Va.	980
WFHK	Pell City, Ala.	1430
WFHR	Wis. Rapids, Wis.	1320
WFIG	Sumter, S.C.	1290
WFIL	Philadelphia, Pa.	560
WFIN	Findlay, Ohio	1330
WFIS	Fountain Inn, S.C.	1600
WFIW	Fairfield, Ill.	1390
WFKN	Franklin, Ky.	1220
WFKY	Frankfort, Ky.	1490
WFLA	Tampa, Fla.	970
WFLB	Fayetteville, N.C.	1490
WFLI	Lookout Mtn., Tenn.	1070
WFLN	Philadelphia, Pa.	900
WFLO	Farmville, Va.	870
WFLR	Dundee, N.Y.	1570
WFLS	Fredericksburg, Va.	1350
WFLW	Monticello, Ky.	1360
WFMC	Goldsboro, N.C.	730
WFMD	Frederick, Md.	930
WFMH	Cullman, Ala.	1460
WFMJ	Youngstown, Ohio	1390
WFMO	Fairmont, N.C.	860
WFMW	Madisonville, Ky.	730
WFNC	Fayetteville, N.C.	1390
WFOB	Fostoria, Ohio	1430
WFOM	Marietta, Ga.	1230
WFOR	Hattiesburg, Miss.	1400
WFOX	Milwaukee, Wis.	860
WFOY	St. Augustine, Fla.	1240
WFPA	Fort Payne, Ala.	1400
WFPG	Atlantic City, N.J.	1450
WFPM	Fort Valley, Ga.	1150
WFPR	Hammond, La.	1400
WFRA	Franklin, Pa.	1430
WFRB	Frostburg, Md.	740
WFRC	Reidsville, N.C.	1600
WFRL	Freeport, Ill.	1570
WFRM	Coudersport, Pa.	600
WFRO	Fremont, Ohio	900
WFRX	West Frankfort, Ill.	1300
WFSC	Franklin, N.C.	1050
WFST	Caribou, Maine	600
WFTC	Kinston, N.C.	960
WFTG	London, Ky.	1400
WFTL	Ft. Lauderdale, Fla.	1400
WFTM	Maysville, Ky.	1240
WFTR	Front Royal, Va.	1450
WFTW	Ft. Walton Beach, Florida	1260
WFUL	Fulton, Ky.	1270
WFUN	Huntsville, Ala.	1450
WFUR	Grand Rapids, Mich.	1570
WFVA	Fredericksburg, Va.	1230
WFVG	Fuquay Sprgs., N.C.	1460
WFWL	Camden, Tenn.	1220
WFYC	Alma, Mich.	1280
WFYI	Mineola, N.Y.	1520
WGAA	Cedartown, Ga.	1340
WGAC	Augusta, Ga.	580
WGAD	Gadsden, Ala.	1350
WGAF	Valdosta, Ga.	910
WGAI	Elizabeth City, N.C.	560
WGAL	Lancaster, Pa.	1490
WGAN	Portland, Maine	560
WGAP	Maryville, Tenn.	1400
WGAR	Cleveland, Ohio	1220
WGAS	S. Gastonia, N.C.	1420
WGAT	Gate City, Va.	1050
WGAU	Athens, Ga.	1340
WGAW	Gardner, Mass.	1340
WGBA	Columbus, Ga.	1270
WGBB	Freeport, N.Y.	1240
WGBF	Evansville, Ind.	1280
WGBG	Greensboro, N.C.	1400
WGBI	Scranton, Pa.	910
WGBR	Goldsboro, N. C.	1150
WGBS	Miami, Fla.	710
WGCB	Red Lion, Pa.	1440
WGCD	Chester, S.C.	1490
WGCM	Gulfport, Miss.	1240
WGEA	Geneva, Ala.	1150
WGEE	Indianapolis, Ind.	1590
WGEM	Quincy, Ill.	1440
WGES	Chicago, Ill.	1390
WGET	Gettysburg, Pa.	1320
WGEZ	Beloit, Wis.	1490
WGFA	Watseka, Ill.	1360
WGFS	Covington, Ga.	1430
WGGA	Gainesville, Ga.	550
WGGG	Gainesville, Fla.	1230
WGGH	Marion, Ill.	1150
WGGO	Salamanca, N.Y.	1590
WGH	Newport News, Va.	1310
WGHC	Clayton, Ga.	1570
WGHM	Skowegan, Maine	1150
WGHN	Grd. Haven, Mich.	1370
WGHO	Kingston, N.Y.	920
WGIG	Brunswick, Ga.	1440
WGIL	Galesburg, Ill.	1400
WGIR	Manchester, N.H.	610
WGIV	Charlotte, N.C.	1600
WGKA	Atlanta, Ga.	1600
WGL	Fort Wayne, Ind.	1250
WGLC	Centreville, Miss.	1580
WGLI	Babylon, N.Y.	1290
WGMA	Hollywood, Fla.	1320
WGML	Hinesville, Ga.	990
WGMM	Millington, Tenn.	1380
WGMS	Washington, D.C.	570
WGN	Chicago, Ill.	720
WGNC	Gastonia, N.C.	1450
WGNI	Wilmington, N.C.	1450
WGNS	Murfreesboro, Tenn.	1450
WGNO	Granite City, Ill.	920
WGNY	Newburgh, N.Y.	1220
WGOG	Walhalla, S.C.	1460
WGOH	Grayson, Ky.	1370
WGOK	Mobile, Ala.	900
WGOL	Goldsboro, N.C.	1300
WGOV	Valdosta, Ga.	950
WGPA	Bethlehem, Pa.	1100
WGPC	Albany, Ga.	1450
WGR	Buffalo, N.Y.	550
WGRA	Cairo, Ga.	790
WGRC	Green Cove Springs, Florida	1580
WGRD	Grand Rapids, Mich.	1410
WGRF	Aguadeilla, P.R.	1340
WGRM	Greenwood, Miss.	1240
WGRO	Lake City, Fla.	960
WGRP	Greenville, Pa.	940
WGRV	Greeneville, Tenn.	1340
WGRY	Gary, Ind.	1370
WGSA	Ephrata, Pa.	1310
WGSB	Geneva, Ill.	1480
WGSM	Huntington, N.Y.	740
WGSR	Millen, Ga.	1570
WGST	Atlanta, Ga.	920
WGSV	Guntersville, Ala.	1270
WGSW	Greenwood, S.C.	1350
WGTA	Summerville, Ga.	950
WGTC	Greenville, N.C.	1590
WGTL	Kannapolis, N.C.	870
WGTM	Wilson, N.C.	590
WGTN	Georgetown, S.C.	1400
WGTO	Cypress Gardens, Fla.	540
WGUN	Decatur, Ga.	1010
WGUS	North Augusta, S.C.	1380
WGUY	Bangor, Maine	1250
WGVA	Geneva, N.Y.	1240
WGVM	Greenville, Miss.	1260
WGWC	Selma, Ala.	1340
WGWR	Asheboro, N.C.	1260
WGY	Schenectady, N.Y.	810
WGYV	Greenville, Ala.	1380
WHA	Madison, Wis.	970
WHAB	Baxley, Ga.	1260
WHAI	Greenfield, Mass.	1240
WHAK	Rogers City, Mich.	960
WHAL	Shelbyville, Tenn.	1400
WHAM	Rochester, N.Y.	1180
WHAN	Haines City, Fla.	930
WHAP	Hopewell, Va.	1340
WHAR	Clarksburg, W.Va.	1340
WHAS	Louisville, Ky.	840
WHAT	Philadelphia, Pa.	1340
WHAV	Haverhill, Mass.	1490
WHAW	Weston, W.Va.	980
WHAY	New Britain, Conn.	910
WHAZ	Troy, N.Y.	1330
WHB	Kansas City, Mo.	710
WHBB	Selma, Ala.	1490
WHBC	Canton, Ohio	1480
WHBF	Rock Island, Ill.	1270
WHBG	Harrisonburg, Va.	1360
WHBI	Newark, N.J.	1280
WHBL	Sheboygan, Wis.	1330
WHBN	Harrodsburg, Ky.	1420
WHBO	Tampa, Fla.	1050
WHBQ	Memphis, Tenn.	560
WHBT	Harriman, Tenn.	1600
WHBU	Anderson, Ind.	1240
WHBY	Appleton, Wis.	1230
WHCC	Waynesville, N.C.	1400
WHCO	Sparta, Ill.	1230
WHCU	Ithaca, N.Y.	870
WHDF	Houghton, Mich.	1400
WHDH	Boston, Mass.	850
WHDL	Olean, N.Y.	1450
WHDM	McKenzie, Tenn.	1440
WHEB	Portsmouth, N.H.	750
WHEC	Rochester, N.Y.	1460
WHEE	Martinsville, Va.	1370
WHEN	Syracuse, N.Y.	620
WHEO	Stuart, Va.	1270
WHEP	Foley, Ala.	1310
WHER	Memphis, Tenn.	1430
WHEW	Riviera Beach, Fla.	1600
WHEY	Millington, Tenn.	1220
WHFB	Benton Harbor, Mich.	1060
WHFC	Cicero, Ill.	1450
WHGB	Harrisburg, Pa.	1400
WHGR	Houghton L., Mich.	1290
WHHH	Warren, Ohio	1440
WHHT	Lucedale, Miss.	1440
WHHV	Hillsville, Va.	1400
WHHY	Montgomery, Ala.	1440
WHHM	Memphis, Tenn.	1340
WHIE	Griffin, Ga.	1320
WHIH	Portsmouth, Va.	1400
WHIL	Medford, Mass.	1430
WHIM	E. Providence, R.I.	1110
WHIN	Gallatin, Tenn.	1010
WHIO	Dayton, Ohio	1290
WHIP	Mooresville, N.C.	1350
WHIR	Danville, Ky.	1230
WHIS	Bluefield, W.Va.	1440
WHIT	New Bern, N.C.	1450
WHIY	Orlando, Fla.	1270
WHIZ	Zanesville, Ohio	1240
WHJB	Greensburg, Pa.	620
WHJC	Matawan, W.Va.	1360
WHK	Cleveland, Ohio	1420
WHKP	Hendersonville, N.C.	1450
WHKY	Hickory, N.C.	1290
WHLB	Virginia, Minn.	1400
WHLD	Niagara Falls, N.Y.	1270
WHLF	South Boston, Va.	1400
WHLI	Hempstead, N.Y.	1100
WHLL	Wheeling, W.Va.	1600
WHLM	Bloomsburg, Pa.	550
WHLN	Harlan, Ky.	1410
WHLO	Akron, Ohio	640
WHLP	Centerville, Tenn.	1570
WHLS	Port Huron, Mich.	1450
WHLT	Huntington, Ind.	1300
WHMA	Anniston, Ala.	1390
WHMC	Gaithersburg, Md.	1150
WHMI	Howell, Mich.	1350
WHMP	Northampton, Mass.	1400
WHNC	Henderson, N.C.	890
WHNY	McComb, Miss.	1250
WHO	Des Moines, Iowa	1040
WHOA	San Juan, P.R.	870
WHOC	Philadelphia, Miss.	1490
WHOF	Canton, Ohio	1060
WHOK	Lancaster, Ohio	1320
WHOL	Allentown, Pa.	600
WHOM	New York, N.Y.	1480
WHOO	Orlando, Fla.	990
WHOP	Hopkinsville, Ky.	1230
WHOS	Decatur, Ala.	800
WHOT	Campbell, Ohio	1570
WHOU	Houlton, Maine	1340
WHOW	Clinton, Ill.	1520
WHP	Harrisburg, Pa.	580
WHPB	Belton, S.C.	1390
WHPE	High Point, N.C.	1070
WHRT	Hartselle, Ala.	860
WHRV	Ann Arbor, Mich.	1600
WHSC	Hartsville, S.C.	1450
WHSM	Hayward, Wis.	910
WHSY	Hattiesburg, Miss.	1230
WHTC	Holland, Mich.	1450
WHTG	Eatontown, N.J.	1410
WHUB	Cookeville, Tenn.	1400
WHUC	Hudson, N.Y.	1230
WHUM	Reading, Pa.	1240
WHUN	Huntington, Pa.	1150
WHUT	Anderson, Ind.	1470
WHVF	Wausau, Wis.	1230
WHVH	Henderson, N.C.	1450
WHVR	Hanover, Pa.	1280
WHWB	Rutland, Vt.	1000
WHYE	Roanoke, Va.	910
WHYL	Carlisle, Pa.	960
WHYN	Springfield, Mass.	560
WIAC	San Juan, P.R.	740
WIAM	Williamston, N.C.	900
WIBA	Madison, Wis.	1310
WIBB	Macon, Ga.	1280
WIBC	Indianapolis, Ind.	1070
WIBG	Philadelphia, Pa.	990
WIBM	Jackson, Mich.	1450
WIBR	Baton Rouge, La.	1300
WIBU	Poynette, Wis.	1240
WIBV	Belleville, Ill.	1260
WIBW	Topeka, Kans.	580
WIBX	Utica, N.Y.	950
WICC	Bridgeport, Conn.	600
WICE	Providence, R.I.	1290
WICH	Norwich, Conn.	1310
WICK	Scranton, Pa.	1400
WICO	Salisbury, Md.	1320
WICU	Erie, Pa.	1330
WICY	Malone, N.Y.	1490
WIDE	Biddeford, Maine	1400
WIDU	Fayetteville, N.C.	1600
WIEL	Elizabethtown, Ky.	1400
WIFM	Elkin, N.C.	1540
WIGL	Superior, Wis.	970
WIGM	Medford, Wis.	1490
WIIN	Atlanta, Ga.	970
WIKB	Iron River, Mich.	1230
WIKC	Bogalusa, La.	1490
WIKE	Newport, Vt.	1490
WIKY	Evansville, Ind.	820
WIL	St. Louis, Mo.	1430
WILA	Danville, Va.	1580
WILD	Boston, Mass.	1090
WILE	Cambridge, Ohio	1270
WILI	Willimantic, Conn.	1400
WILK	Wilkes-Barre, Pa.	980
WILL	Urbana, Ill.	580
WILM	Wilmington, Del.	1450
WILO	Frankfort, Ind.	1570
WILS	Lansing, Mich.	1320
WILZ	St. Petersburg Beach, Florida	1590
WIMA	Lima, Ohio	1150
WIMO	Winder, Ga.	1300
WIMS	Michigan City, Ind.	1420
WINA	Charlottesville, Va.	1400
WINC	Winchester, Va.	1400
WIND	Chicago, Ill.	560
WINF	Manchester, Conn.	1230
WING	Dayton, Ohio	1410
WINI	Murphysboro, Ill.	1420
WINK	Fort Myers, Fla.	1240
WINN	Louisville, Ky.	1240
WINQ	Tampa, Fla.	1010
WINR	Binghamton, N.Y.	680
WINS	New York, N.Y.	1010
WINT	Winter Haven, Fla.	1360
WINX	Rockville, Md.	1600
WINY	Putnam, Conn.	1350
WINZ	Miami, Fla.	940
WIOI	New Boston, Ohio	1010
WION	Ionia, Mich.	1430
WIOS	Tawas City, Mich.	1480
WIOU	Kokomo, Ind.	1350
WIP	Philadelphia, Pa.	610
WIPC	Lake Wales, Fla.	1280
WIPR	San Juan, P.R.	940
WIPS	Ticonderoga, N.Y.	1250
WIRA	Fort Pierce, Fla.	1400
WIRB	Enterprise, Ala.	600
WIRC	Hickory, N.C.	630
WIRE	Indianapolis, Ind.	1430
WIRJ	Humboldt, Tenn.	740

C.L.	Location	Kc.
WIRK	W. Palm Beach, Fla.	1290
WIRL	Peoria, Ill.	1290
WIRO	Ironton, Ohio	1230
WIRV	Irvine, Ky.	1550
WIRY	Plattsburg, N.Y.	1340
WIS	Columbia, S.C.	560
WISA	Isabella, P.R.	1390
WISE	Asheville, N.C.	1310
WISH	Indianapolis, Ind.	1310
WISL	Shamokin, Pa.	1480
WISM	Madison, Wis.	1480
WISN	Milwaukee, Wis.	1150
WISO	Ponce, P.R.	1260
WISP	Kinston, N.C.	1230
WISR	Butler, Pa.	680
WIST	Charlotte, N.C.	1240
WISV	Virouqua, Wis.	1360
WITA	San Juan, P.R.	1140
WITE	Brazil, Ind.	1380
WITH	Baltimore, Md.	1230
WITT	Lewisburg, Pa.	1010
WITY	Danville, Ill.	980
WITZ	Jasper, Ind.	990
WIVI	Christiansted, V.I.	970
WIVK	Knoxville, Tenn.	860
WIVV	Vieques, P.R.	1370
WIVY	Jacksonville, Fla.	1050
WIXK	New Richmond, Wis.	1590
WIXN	Dixon, Ill.	1460
WIZE	Springfield, Ohio	1340
WIZR	Johnstown, N.Y.	930
WIZZ	Streator, Ill.	1250
WJAB	Westbrook, Me.	1440
WJAC	Johnstown, Pa.	1400
WJAG	Norfolk, Nebr.	780
WJAK	Jackson, Tenn.	1460
WJAM	Marion, Ala.	1310
WJAN	Ishpeming, Mich.	970
WJAR	Providence, R.I.	920
WJAS	Pittsburgh, Pa.	1320
WJAT	Swainsboro, Ga.	800
WJAX	Jacksonville, Fla.	930
WJAY	Mullins, S.C.	1280
WJAZ	Albany, Ga.	960
WJBB	Haleyville, Ala.	1230
WJBC	Bloomington, Ill.	1230
WJBD	Salem, Ill.	1350
WJBK	Detroit, Mich.	1500
WJBL	Holland, Mich.	1260
WJBM	Jerseyville, Ill.	1480
WJBO	Baton Rouge, La.	1150
WJBS	DeLand, Fla.	1490
WJBT	Wheeling, W.Va.	1470
WJBW	New Orleans, La.	1230
WJCO	Seymour, Ind.	1390
WJCM	Sebring, Fla.	960
WJCW	Johnson City, Tenn.	910
WJDA	Quincy, Mass.	1300
WJDB	Thomasville, Ala.	630
WJDX	Jackson, Miss.	620
WJDY	Salisbury, Md.	1470
WJEF	Grand Rapids, Mich.	1230
WJEH	Gallipolis, Ohio	990
WJEJ	Hagerstown, Md.	1240
WJEM	Valdosta, Ga.	1150
WJER	Dover, Ohio	1450
WJES	Johnston, S.C.	1570
WJET	Erie, Pa.	1400
WJHB	Talladega, Ala.	1580
WJHO	Opelika, Ala.	1400
WJIG	Tullahoma, Tenn.	740
WJIL	Jacksonville, Ill.	1550
WJIM	Lansing, Mich.	1240
WJIV	Savannah, Ga.	900
WJJC	Commerce, Ga.	1270
WJJD	Chicago, Ill.	1160
WJJL	Niagara Falls, N.Y.	1440
WJJM	Lewisburg, Tenn.	1490
WJLB	Detroit, Mich.	1400
WJLD	Homewood, Ala.	1400
WJLK	Asbury Park, N.J.	1310
WJLS	Beckley, W.Va.	560
WJMA	Orange, Va.	1340
WJMB	Brookhaven, Miss.	1340
WJMC	Rice Lake, Wis.	1240
WJMJ	Philadelphia, Pa.	1540
WJMO	Cleveland Hgts., Ohio	1490
WJMR	New Orleans, La.	990
WJMS	Ironwood, Mich.	630
WJMW	Athens, Ala.	730
WJMX	Florence, S.C.	970
WJNC	Jacksonville, N.C.	1240
WJNO	W. Palm Beach, Fla.	1230
WJOB	Hammond, Ind.	1230
WJOE	Ward Ridge, Fla.	1570
WJOI	Florence, Ala.	1340
WJOL	Joliet, Ill.	1340
WJON	St. Cloud, Minn.	1240
WJOT	Lake City, S.C.	1260
WJOY	Burlington, Vt.	1230
WJPA	Washington, Pa.	1450
WJPD	Ishpeming, Mich.	1240
WJPF	Herrin, Ill.	1340
WJPG	Green Bay, Wis.	1440
WJPR	Greenville, Miss.	1330
WJPS	Evansville, Ind.	1330
WJQS	Jackson, Miss.	1400
WJR	Detroit, Mich.	760
WJRD	Tuscaloosa, Ala.	1150
WJRI	Lenoir, N.C.	1340
WJRL	Rockford, Ill.	1150
WJRM	Troy, N.C.	1390
WJSB	Crestview, Fla.	1050
WJSO	Jonesboro, Tenn.	1590
WJTN	Jamestown, N.Y.	1240
WJUD	St. Johns, Mich.	1580
WJUN	Mexico, Pa.	1220
WJVA	South Bend, Ind.	1580
WJW	Cleveland, Ohio	850
WJWL	Georgetown, Del.	900
WJWS	South Hill, Va.	1370
WJXN	Jackson, Miss.	1450
WJZM	Clarksville, Tenn.	1400
WKAB	Mobile, Ala.	840
WKAI	Macomb, Ill.	1510
WKAL	Rome, N.Y.	1450
WKAM	Goshen, Ind.	1460
WKAN	Kankakee, Ill.	1320
WKAP	Allentown, Pa.	1320
WKAQ	San Juan, P.R.	580
WKAR	East Lansing, Mich.	870
WKAT	Miami Beach, Fla.	1360
WKAY	Glasgow, Ky.	1490
WKAZ	Charleston, W.Va.	950
WKBC	N. Wilkesboro, N.C.	810
WKBH	La Crosse, Wis.	1410
WKBI	St. Mary's, Pa.	1400
WKBJ	Milan, Tenn.	1600
WKBK	Keene, N.H.	1220
WKBL	Covington, Tenn.	1250
WKBN	Youngstown, Ohio	570
WKBO	Harrisburg, Pa.	1230
WKBR	Manchester, N.H.	1250
WKBV	Richmond, Ind.	1490
WKBW	Buffalo, N.Y.	1520
WKBX	Kissimmee, Fla.	1220
WKBZ	Muskegon, Mich.	850
WKCT	Bowling Green, Ky.	930
WKCW	Warrenton, Va.	1420
WKDA	Nashville, Tenn.	1240
WKDK	Newberry, S.C.	1240
WKDL	Clarksdale, Miss.	1600
WKDN	Camden, N.J.	800
WKDX	Hamlet, N.C.	1400
WKEE	Huntington, W. Va.	800
WKEI	Kewanee, Ill.	1450
WKEN	Dover, Del.	1600
WKEU	Griffin, Ga.	1450
WKEY	Covington, Va.	1340
WKFD	Wickford, R.I.	1370
WKGN	Knoxville, Tenn.	1340
WKHM	Jackson, Mich.	970
WKIC	Hazard, Ky.	1390
WKID	Urbana, Ill.	1580
WKIG	Glenville, Ga.	1580
WKIK	Leonardtown, Md.	1370
WKIN	Kingsport, Tenn.	1320
WKIP	Poughkeepsie, N.Y.	1450
WKIS	Orlando, Fla.	740
WKIX	Raleigh, N.C.	850
WKIZ	Key West, Fla.	1500
WKJB	Mayaguez, P.R.	710
WKJG	Fort Wayne, Ind.	1380
WKKD	Aurora, Ill.	1580
WKKO	Cocoa, Fla.	860
WKKS	Vanceburg, Ky.	1570
WKLA	Ludington, Mich.	1450
WKLC	St. Albans, W.Va.	1300
WKLE	Washington, Ga.	1370
WKLF	Clanton, Ala.	980
WKLJ	Sparta, Wis.	990
WKLK	Cloquet, Minn.	1230
WKLM	Wilmington, N.C.	980
WKLO	Louisville, Ky.	1080
WKLV	Blackstone, Va.	1440
WKLX	Paris, Ky.	1440
WKLY	Hartwell, Ga.	980
WKLZ	Kalamazoo, Mich.	1470
WKMC	Roaring Sprgs., Pa.	1370
WKMF	Flint, Mich.	1470
WKMH	Dearborn, Mich.	1310
WKMI	Kalamazoo, Mich.	1360
WKMK	Blountstown, Fla.	1370
WKMT	Kings Mtn., N.C.	1220
WKNB	New Britain, Conn.	840
WKNE	Keene, N.H.	1290
WKNX	Saginaw, Mich.	1210
WKNY	Kingston, N.Y.	1490
WKOA	Hopkinsville, Ky.	1480
WKOK	Sunbury, Pa.	1240
WKOP	Binghamton, N.Y.	1360
WKOS	Ocala, Fla.	1370
WKOV	Wellston, Ohio	1330
WKOW	Madison, Wis.	1070
WKOX	Framingham, Mass.	1190
WKOY	Bluefield, W.Va.	1240
WKOZ	Kosciusko, Miss.	1350
WKPA	New Kensington, Pa.	1150
WKPR	Kalamazoo, Mich.	1420
WKPT	Kingsport, Tenn.	1400
WKRC	Cincinnati, Ohio	550
WKRG	Mobile, Ala.	710
WKRK	Murphy, N.C.	1390
WKRM	Columbia, Tenn.	1340
WKRO	Cairo, Ill.	1490
WKRS	Waukegan, Ill.	1220
WKRT	Cortland, N.Y.	920
WKRW	Cartersville, Ga.	
WKRZ	Oil City, Pa.	1340
WKSB	Milford, Del.	930
WKSC	Kershaw, S.C.	1300
WKSK	W. Jefferson, N.C.	1600
WKSR	Pulaski, Tenn.	1420
WKST	New Castle, Pa.	1280
WKTC	Charlotte, N.C.	1310
WKTG	Thomasville, Ga.	730
WKTJ	Farmington, Maine	1380
WKTL	Sheboygan, Wis.	950
WKTQ	South Paris, Maine	1450
WKTX	Atlantic Beach, Fla.	1600
WKTY	LaCrosse, Wis.	580
WKUL	Cullman, Ala.	1340
WKVA	Lewistown, Pa.	920
WKVM	San Juan, P.R.	810
WKVT	Brattleboro, Vt.	1490
WKWF	Key West, Fla.	1600
WKWK	Wheeling, W.Va.	1400
WKWS	Rocky Mount, Va.	1290
WKXL	Concord, N.H.	1450
WKXV	Knoxville, Tenn.	900
WKXY	Sarasota, Fla.	930
WKY	Oklahoma City, Okla.	930
WKYB	Paducah, Ky.	570
WKYN	Rio Piedras, P.R.	630
WKYR	Keyser, W.Va.	1270
WKYW	Louisville, Ky.	900
WKZO	Kalamazoo, Mich.	590
WLAC	Nashville, Tenn.	1510
WLAD	Danbury, Conn.	800
WLAF	LaFollette, Tenn.	1450
WLAG	La Grange, Ga.	1240
WLAK	Lakeland, Fla.	1430
WLAM	Lewiston, Maine	1470
WLAN	Lancaster, Pa.	1390
WLAP	Lexington, Ky.	630
WLAQ	Rome, Ga.	1410
WLAR	Athens, Tenn.	1450
WLAS	Jacksonville, N.C.	910
WLAT	Conway, S.C.	1330
WLAU	Laurel, Miss.	1600
WLAV	Grand Rapids, Mich.	1340
WLAW	Lawrenceville, Ga.	1360
WLAY	Muscle Shoals, Ala.	1450
WLBA	Gainesville, Ga.	1580
WLBB	Carrollton, Ga.	1100
WLBC	Muncie, Ind.	1340
WLBE	Leesburg, Fla.	790
WLBG	Laurens, S.C.	860
WLBH	Mattoon, Ill.	1170
WLBI	Denham Springs, La.	1220
WLBJ	Bowling Green, Ky.	1410
WLBK	DeKalb, Ill.	1360
WLBL	Stevens Point, Wis.	930
WLBN	Lebanon, Ky.	1590
WLBR	Lebanon, Pa.	1270
WLBZ	Bangor, Maine	620
WLCK	Scottsville, Ky.	1250
WLCM	Lancaster, S.C.	1360
WLCN	Laurensburg, N.C.	1300
WLCO	Eustis, Fla.	1240
WLCS	Baton Rouge, La.	910
WLCX	LaCrosse, Wis.	1490
WLCY	St. Petersburg, Fla.	1380
WLDB	Atlantic City, N.J.	1490
WLDS	Jacksonville, Ill.	1180
WLDY	Ladysmith, Wis.	1340
WLEA	Hornell, N.Y.	1480
WLEC	Sandusky, Ohio	1450
WLEE	Richmond, Va.	1480
WLEM	Emporium, Pa.	1240
WLEO	Ponce, P.R.	1170
WLGS	Lawrenceville, Va.	580
WLET	Toccoa, Ga.	1420
WLEU	Erie, Pa.	1450
WLEW	Bad Axe, Mich.	1340
WLFA	Lafayette, Ga.	1590
WLFH	Little Falls, N.Y.	1230
WLIB	New York, N.Y.	1190
WLIJ	Shelbyville, Tenn.	1580
WLIK	Newport, Tenn.	1270
WLIL	Lenoir, Tenn.	730
WLIP	Kenosha, Wis.	1050
WLIQ	Mobile, Ala.	1360
WLIS	Old Saybrook, Conn.	1420
WLIV	Livingston, Tenn.	920
WLIZ	Lake Worth, Fla.	1380
WLKW	Providence, R.I.	990
WLLH	Lowell, Mass.	1400
WLLY	Wilson, N.C.	1350
WLMJ	Jackson, Ohio	1280
WLNA	Peekskill, N.Y.	1420
WLNH	Laconia, N.H.	1350
WLOA	Braddock, Pa.	1550
WLOB	Portland, Maine	1310
WLOC	Munfordville, Ky.	1150
WLOD	Pompano Beach, Fla.	980
WLOE	Leaksville, N.C.	1490
WLOF	Orlando, Fla.	950
WLOG	Logan, W.Va.	1230
WLOH	Princeton, W.Va.	1490
WLOI	LaPorte, Ind.	1540
WLOK	Memphis, Tenn.	1480
WLOL	Minneapolis, Minn.	1330
WLON	Lincolnton, N.C.	1050
WLOS	Asheville, N.C.	1380
WLOU	Louisville, Ky.	1350
WLOX	Biloxi, Miss.	1490
WLPM	Suffolk, Va.	1460
WLPO	LaSalle, Ill.	1220
WLPS	Lehighton, Pa.	1150
WLS	Chicago, Ill.	890
WLSB	Copper Hill, Tenn.	1400
WLSC	Loris, S.C.	1570
WLSD	Big Stone Gap, Va.	1220
WLSE	Wallace, N.C.	1400
WLSH	Lansford, Pa.	1410
WLSI	Pikeville, Ky.	900
WLSM	Louisville, Miss.	1270
WLST	Escanaba, Mich.	600
WLSV	Wellsville, N.Y.	790
WLTC	Gastonia, N.C.	1370
WLVA	Lynchburg, Va.	590
WLW	Cincinnati, Ohio	700
WLYC	Williamsport, Pa.	1050
WLYN	Lynn, Mass.	1360
WMAB	Munising, Mich.	1400
WMAC	Netter, Ga.	1360
WMAF	Madison, Fla.	1230
WMAG	Forest, Miss.	860
WMAJ	State College, Pa.	1450
WMAK	Nashville, Tenn.	1300
WMAL	Washington, D.C.	630
WMAM	Marinette, Wis.	570
WMAN	Mansfield, Ohio	1400
WMAP	Monroe, N.C.	1060
WMAQ	Chicago, Ill.	670
WMAS	Springfield, Mass.	1450
WMAX	Grand Rapids, Mich.	1480
WMAY	Springfield, Ill.	970
WMAZ	Macon, Ga.	940
WMBA	Ambridge, Pa.	1460
WMBC	Macon, Miss.	1400
WMBD	Peoria, Ill.	1470
WMBG	Richmond, Va.	1380
WMBH	Joplin, Mo.	1450
WMBI	Chicago, Ill.	1110
WMBL	Morehead City, N.C.	740
WMBM	Miami Beach, Fla.	790
WMBN	Petoskey, Mich.	1340
WMBO	Auburn, N.Y.	1340
WMBR	Jacksonville, Fla.	1460
WMBS	Uniontown, Pa.	590
WMC	Memphis, Tenn.	790
WMCA	New York, N.Y.	570
WMCH	Church Hill, Tenn.	1260
WMCP	Columbia, Tenn.	1280
WMCR	Oneida, N.Y.	1600
WMCW	Harvard, Ill.	1600
WMDC	Hazlehurst, Miss.	1220
WMDD	Fajardo, P.R.	1490
WMDF	Mount Dora, Fla.	1580
WMDN	Midland, Mich.	1490
WMEG	Eau Gallie, Fla.	920
WMEK	Chase City, Va.	980
WMEN	Tallahassee, Fla.	1330
WMET	Miami Beach, Fla.	1490
WMEV	Marion, Va.	1010
WMEW	Baltimore, Md.	940
WMEX	Boston, Mass.	1510
WMFC	Monroeville, Ala.	1360
WMFD	Wilmington, N.C.	630
WMFG	Hibbing, Minn.	1240
WMFJ	Daytona Beach, Fla.	1450
WMFR	High Point, N.C.	1230
WMFT	Terre Haute, Ind.	1300
WMGA	Moultrie, Ga.	1400
WMGM	New York, N.Y.	1050
WMGR	Bainbridge, Ga.	930
WMGS	Bowling Green, Ohio	730
WMGW	Meadville, Pa.	1490
WMGY	Montgomery, Ala.	800
WMID	Atlantic City, N.J.	1340
WMIE	Miami, Fla.	1140
WMIK	Middlesboro, Ky.	560
WMIL	Milwaukee, Wis.	1290
WMIN	Mpls.-St. Paul, Minn.	1400
WMIQ	Iron Mountain, Mich.	1450
WMIS	Natchez, Miss.	1240
WMIX	Mt. Vernon, Ill.	940
WMJM	Cordele, Ga.	1490
WMLF	Pineville, Ky.	1230
WMLO	Beverly, Mass.	1570
WMLS	Sylacauga, Ala.	1290
WMLT	Dublin, Ga.	1330
WMMB	Melbourne, Fla.	1240
WMMH	Marshall, N.C.	1460
WMMM	Westport, Conn.	1260
WMMN	Fairmont, W.Va.	920
WMMS	Bath, Maine	730
WMMT	McMinnville, Tenn.	1230
WMMW	Meriden, Conn.	1470
WMNA	Gretna, Va.	730
WMNB	No. Adams, Mass.	1230
WMNC	Morganton, N.C.	1430
WMNE	Menomonie, Wis.	1360
WMNI	Columbus, Ohio	920
WMNS	Olean, N.Y.	1360
WMNT	Manati, P.R.	1500
WMNZ	Montezuma, Ga.	1050
WMOA	Marietta, Ohio	1490
WMOC	Chattanooga, Tenn.	1450
WMOD	Moundsville, W.Va.	1370
WMOG	Brunswick, Ga.	1490
WMOH	Hamilton, Ohio	1450
WMOK	Metropolis, Ill.	920
WMON	Montgomery, W.Va.	1340
WMOP	Ocala, Fla.	900
WMOR	Morehead, Ky.	1330
WMOU	Berlin, N.H.	1230
WMOV	Ravenswood, W.Va.	1360
WMOX	Meridian, Miss.	1240
WMJH	Hammonton, N.J.	1580
WMOZ	Mobile, Ala.	960
WMPA	Aberdeen, Miss.	1240
WMPC	Lapeer, Mich.	1230
WMPL	Hancock, Mich.	920
WMPM	Smithfield, N.C.	1270
WMPO	Middleport-Pomroy, Ohio	1390
WMPP	Chicago Heights, Ill.	1470
WMPS	Memphis, Tenn.	680
WMPT	So. Williamsport, Pa.	1450
WMRB	Greenville, S.C.	1490
WMRC	Milford, Mass.	1490
WMRE	Monroe, Ga.	1490
WMRF	Lewistown, Pa.	1490
WMRI	Marion, Ind.	860
WMRN	Marion, Ohio	1490
WMRO	Aurora, Ill.	1280
WMRP	Flint, Mich.	1570
WMAT	Lansing, Mich.	1010
WMSA	Massena, N.Y.	1340
WMSC	Columbia, S.C.	1320
WMSJ	Sylva, N.C.	1480
WMSK	Morganfield, Ky.	1550
WMSL	Decatur, Ala.	1400
WMSR	Manchester, Tenn.	1320
WMST	Mt. Sterling, Ky.	1150
WMT	Cedar Rapids, Iowa	600

C.L.	Location	Kc.
WMTA	Central City, Ky.	1380
WMTC	Vancleve, Ky.	730
WMTE	Manistee, Mich.	1340
WMTL	Leitchfield, Ky.	1580
WMTM	Moultrie, Ga.	1300
WMTN	Morristown, Tenn.	1300
WMTR	Morristown, N.J.	1250
WMTS	Murfreesboro, Tenn.	860
WMUS	Muskegon, Mich.	1090
WMUU	Greenville, S.C.	1260
WMVA	Martinsville, Va.	1450
WMVB	Millville, N.J.	1440
WMVG	Milledgeville, Ga.	1450
WMVO	Mt. Vernon, Ohio	1300
WMYB	Myrtle Beach, S.C.	1450
WMYN	Mayodan, N.C.	1420
WMYR	Ft. Myers, Fla.	1410
WNAB	Bridgeport, Conn.	1450
WNAC	Boston, Mass.	680
WNAD	Norman, Okla.	640
WNAE	Warren, Pa.	1310
WNAG	Grenada, Miss.	1400
WNAH	Nashville, Tenn.	1360
WNAK	Nanticoke, Pa.	730
WNAM	Neenah, Wis.	1280
WNAR	Norristown, Pa.	1110
WNAT	Natchez, Miss.	1450
WNAU	New Albany, Miss.	1470
WNAV	Annapolis, Md.	1430
WNAX	Yankton, S.Dak.	570
WNBC	New York, N.Y.	660
WNBF	Binghamton, N.Y.	1290
WNBH	New Bedford, Mass.	1340
WNBP	Newburyport, Mass.	1470
WNBS	Murray, Ky.	1340
WNBT	Wellsboro, Pa.	1490
WNBZ	Saranac Lake, N.Y.	1240
WNCA	Siler City, N.C.	1570
WNCC	Barnesboro, Pa.	950
WNCG	N. Charleston, S.C.	910
WNCO	Ashland, Ohio	1340
WNDB	Daytona Beach, Fla.	1150
WNDR	Syracuse, N.Y.	1260
WNOU	South Bend, Ind.	1490
WNEB	Worcester, Mass.	1230
WNEG	Taccoa, Ga.	630
WNER	Live Oak, Fla.	1250
WNES	Central City, Ky.	1050
WNEW	New York, N.Y.	1130
WNEX	Macon, Ga.	1400
WNGA	Nashville, Ga.	1600
WNGO	Mayfield, Ky.	1320
WNHC	New Haven, Conn.	1340
WNIA	Cheektowaga, N.Y.	1230
WNIK	Arecibo, P.R.	1230
WNIL	Niles, Mich.	1290
WNJR	Newark, N.J.	1430
WNKY	Neon, Ky.	1480
WNLC	New London, Conn.	1510
WNLK	Norwalk, Conn.	1350
WNMP	Evanston, Ill.	1590
WNNC	Newton, N.C.	1230
WNNJ	Newton, N.J.	1360
WNNT	Warsaw, Va.	690
WNOE	New Orleans, La.	1060
WNOG	Naples, Fla.	1270
WNOK	Columbia, S.C.	1230
WNOO	Chattanooga, Tenn.	1260
WNOP	Newport, Ky.	740
WNOR	Norfolk, Va.	1230
WNOS	High Point, N.C.	1590
WNOW	York, Pa.	1250
WNOX	Knoxville, Tenn.	990
WNPS	New Orleans, La.	1450
WNPT	Tuscaloosa, Ala.	1280
WNPV	Lansdale, Pa.	1440
WNRG	Grundy, Va.	1250
WNRK	Newark, Del.	1260
WNRI	Woonsocket, R.I.	1380
WNRV	Narrows, Va.	990
WNSL	Laurel, Miss.	1260
WNSM	Valparaiso-Niceville, Florida	1340
WNTA	Newark, N.J.	970
WNTT	Tazewell, Tenn.	1250
WNUE	Ft. Walton Beach, Fla.	950
WNUZ	Talladega, Ala.	1230
WNVA	Norton, Va.	1350
WNVY	Pensacola, Fla.	1230
WNXT	Portsmouth, Ohio	1260
WNYC	New York, N.Y.	830
WOAI	San Antonio, Tex.	1200
WOAP	Owosso, Mich.	1080
WOAY	Oak Hill, W.Va.	860
WOBS	Jacksonville, Fla.	1360
WOBT	Rhinelander, Wis.	1240
WOC	Davenport, Iowa	1420
WOCB	W. Yarmouth, Mass.	1240
WOCH	North Vernon, Ind.	1460
WODY	Bassett, Va.	900
WOHI	E. Liverpool, Ohio	1490
WOHO	Toledo, Ohio	1470
WOHP	Bellefontaine, Ohio	1390
WOHS	Shelby, N.C.	730
WOI	Ames, Iowa	640
WOIA	Saline, Mich.	1290
WOIC	Columbia, S.C.	1470
WOKB	Winter Garden, Fla	1600
WOKE	Charleston, S.C.	1340
WOKK	Meridian, Miss.	1450
WOKJ	Jackson, Miss.	1590
WOKO	Albany, N.Y.	1460
WOKS	Columbus, Ga.	1340
WOKW	Brockton, Mass.	1410
WOKY	Milwaukee, Wis.	920
WOKZ	Alton, Ill.	1570
WOL	Washington, D.C.	1450
WOLF	Syracuse, N.Y.	1490
WOLS	Florence, S.C.	1230
WOMI	Owensboro, Ky.	1490
WOMP	Bellaire, Ohio	1290
WOMT	Manitowoc, Wis.	1240
WONA	Winona, Miss.	1570
WOND	Pleasantville, N.J.	1400
WONE	Dayton, Ohio	980
WONN	Lakeland, Fla.	1230
WONW	Defiance, Ohio	1280
WOOD	Grand Rapids, Mich.	1300
WOOF	Dothan, Ala.	560
WOOK	Washington, D.C.	1340
WOOO	Deland, Fla.	1310
WOOW	Greenville, N.C.	1340
WOPA	Oak Park, Ill.	1490
WOPI	Bristol, Tenn.	1490
WOR	New York, N.Y.	710
WORA	Mayaguez, P.R.	760
WORC	Worcester, Mass.	1310
WORD	Spartanburg, S.C.	910
WORG	Orangeburg, S.C.	1580
WORK	York, Pa.	1350
WORL	Boston, Mass.	950
WORM	Savannah, Tenn.	1010
WORT	New Smyrna Beach, Florida	1550
WORX	Madison, Ind.	1270
WOSC	Fulton, N.Y.	1300
WOSH	Oshkosh, Wis.	1490
WOSU	Columbus, Ohio	820
WOTR	Corry, Pa.	1370
WOTT	Watertown, N.Y.	1410
WOTW	Nashua, N.H.	900
WOUB	Athens, Ohio	1340
WOVE	Welch, W.Va.	1340
WOW	Omaha, Nebr.	590
WOWE	Allegan, Mich.	1580
WOWI	New Albany, Ind.	1570
WOWL	Florence, Ala.	1240
WOWO	Ft. Wayne, Ind.	1190
WOWW	Naugatuck, Conn.	860
WOWY	Clowiston, Fla.	500d
WOXF	Oxford, N.C.	1340
WOZK	Ozark, Ala.	900
WPAB	Ponce, P.R.	550
WPAC	Patchogue, N.Y.	1580
WPAD	Paducah, Ky.	1450
WPAG	Ann Arbor, Mich.	1050
WPAL	Charleston, S.C.	730
WPAM	Pottsville, Pa.	1450
WPAP	Fernandina Beach, Florida	1570
WPAQ	Mount Airy, N.C.	740
WPAR	Parkersburg, W.Va.	1450
WPAT	Paterson, N.J.	930
WPAX	Thomasville, Ga.	1240
WPAY	Portsmouth, Ohio	1400
WPAZ	Pottstown, Pa.	1370
WPBC	Minneapolis, Minn.	980
WPCC	Clinton, S.C.	1400
WPCF	Panama City, Fla.	1430
WPCO	Mt. Vernon, Ind.	1590
WPDM	Potsdam, N.Y.	1470
WPDQ	Jacksonville, Fla.	600
WPDR	Portage, Wis.	1350
WPDX	Clarksburg, W.Va.	750
WPEG	Winston-Salem, N.C.	1550
WPEH	Louisville, Ga.	1420
WPEL	Montrose, Pa.	1250
WPEN	Philadelphia, Pa.	950
WPEO	Peoria, Ill.	1020
WPEP	Taunton, Mass.	1570
WPET	Greensboro, N.C.	950
WPFA	Pensacola, Fla.	790
WPFB	Middletown, Ohio	910
WPFE	Eastman, Ga.	1580
WPFP	Park Falls, Wis.	1450
WPGA	Perry, Ga.	980
WPGC	Bradbury Hghts., Md.	1580
WPGW	Portland, Ind.	1440
WPHB	Philipsburg, Pa.	1260
WPIC	Sharon, Pa.	790
WPID	Piedmont, Ala.	1280
WPIK	Alexandria, Va.	730
WPIN	St. Petersburg, Fla.	680
WPIT	Pittsburgh, Pa.	730
WPKE	Pikeville, Ky.	1240
WPKO	Waverly, Ohio	1380
WPKY	Princeton, Ky.	1580
WPLA	Plant City, Fla.	910
WPLB	Greenville, Mich.	1380
WPLK	Rockmart, Ga.	1220
WPLM	Plymouth, Mass.	1390
WPLO	Atlanta, Ga.	590
WPLY	Plymouth, Wis.	1420
WPME	Punxsutawney, Pa.	1540
WPMH	Portsmouth, Va.	1010
WPMP	Pascagoula, Miss.	1580
WPNC	Plymouth, N.C.	1470
WPNF	Brevard, N.C.	1240
WPNX	Phenix City, Ala.	1460
WPOM	Pompano Beach, Fla.	1470
WPON	Pontiac, Mich.	1460
WPOP	Hartford, Conn.	1410
WPOR	Portland, Maine	1490
WPOW	New York, N.Y.	1330
WPPA	Pottsville, Pa.	1360
WPQR	McKeesport, Pa.	1360
WPRA	Mayaguez, P.R.	990
WPRC	Lincoln, Ill.	1370
WPRE	Prairie Du Chien, Wis.	980
WPRN	Butler, Ala.	1220
WPRO	Providence, R.I.	630
WPRP	Ponce, P.R.	910
WPRS	Paris, Ill.	1440
WPRT	Prestonsburg, Ky.	960
WPRW	Manassas, Va.	1460
WPRY	Perry, Fla.	1400
WPTF	Raleigh, N.C.	680
WPTR	Albany, N.Y.	1540
WPTS	Pittston, Pa.	1540
WPTW	Piqua, Ohio	1570
WPTX	Lexington Pk., Md.	920
WPUP	Gainesville, Fla.	1390
WPUV	Pulaski, Va.	1580
WPVA	Colonial Hghts., Va.	1290
WPVL	Painesville, Ohio	1460
WPYB	Benson, N.C.	1580
WQAM	Miami, Fla.	560
WQBC	Vicksburg, Miss.	1420
WQOY	Calais, Maine	1230
WQIC	Meridian, Miss.	1390
WQIK	Jacksonville, Fla.	1280
WQMN	Superior, Wis.	1320
WQMR	Silver Spring, Md.	1050
WQOK	Greenville, S.C.	1440
WQSN	Charleston, S.C.	1450
WQSR	Solvay, N.Y.	1320
WQTE	Monroe, Mich.	560
WQTY	Arlington, Fla.	1220
WQUA	Moline, Ill.	1230
WQXI	Atlanta, Ga.	790
WQXQ	Ormond Bch., Fla.	1380
WQXR	New York, N.Y.	1560
WQXT	Palm Beach, Fla.	1340
WRAA	Luray, Va.	1330
WRAB	Arab, Ala.	1380
WRAC	Racine, Wis.	1460
WRAD	Radford, Va.	1460
WRAG	Carrollton, Ala.	590
WRAJ	Anna, Ill.	1440
WRAK	Williamsport, Pa.	1400
WRAL	Raleigh, N.C.	1240
WRAM	Monmouth, Ill.	1330
WRAN	Dover, N.J.	1510
WRAP	Norfolk, Va.	850
WRAW	Reading, Pa.	1340
WRAY	Princeton, Ind.	1250
WRBB	Tarpon Springs, Fla.	1470
WRBC	Jackson, Miss.	1300
WRBL	Columbus, Ga.	1420
WRC	Washington, D.C.	980
WRCD	Dalton, Ga.	1430
WRCO	Richland, Wis.	1450
WRCS	Ahoskie, N.C.	970
WRCV	Philadelphia, Pa.	1060
WRDB	Reedsburg, Wis.	1400
WRDO	Augusta, Maine	1400
WRDW	Augusta, Ga.	1480
WREA	E. Palatka, Fla.	1480
WREB	Holyoke, Mass.	930
WREC	Memphis, Tenn.	600
WREL	Lexington, Va.	1450
WREM	Remsen, N.Y.	1480
WREN	Topeka, Kans.	1250
WREO	Ashtabula, Ohio	970
WREV	Reidsville, N.C.	1220
WRFB	Tallahassee, Fla.	1410
WRFC	Athens, Ga.	960
WRFD	Worthington, Ohio	880
WRFS	Alexander City, Ala.	1050
WRGA	Rome, Ga.	1470
WRGR	Starke, Fla.	1490
WRGS	Rogersville, Tenn.	1370
WRHC	Jacksonville, Fla.	1400
WRHI	Rock Hill, S.C.	1340
WRIB	Providence, R.I.	1220
WRIC	Richlands, Va.	540
WRIG	Wausau, Wis.	1400
WRIM	Pahokee, Fla.	1250
WRIO	Rio Piedras, P.R.	1320
WRIP	Rossville, Ga.	980
WRIS	Roanoke, Va.	1410
WRIT	Milwaukee, Wis.	1340
WRIV	Riverhead, N.Y.	1390
WRIX	Griffin, Ga.	1410
WRIZ	Coral Gables, Fla.	1550
WRJC	Mauston, Wis.	1270
WRJN	Racine, Wis.	1400
WRJS	San German, P.R.	1060
WRJW	Picayune, Miss.	1320
WRKB	Kannapolis, N.C.	1460
WRKD	Rockland, Maine	1450
WRKH	Rockwood, Tenn.	580
WRKM	Carthage, Tenn.	1350
WRKT	Cocoa Beach, Fla.	1300
WRLA	Luray, Va.	1590
WRLD	Lanitt, Ala.	1490
WRMA	Montgomery, Ala.	950
WRMF	Titusville, Fla.	1050
WRMN	Elgin, Ill.	1410
WRMS	Beardstown, Ill.	790
WRMT	Rocky Mount, N.C.	1490
WRNB	New Bern, N.C.	1490
WRNE	Wis. Rapids, Wis.	1220
WRNL	Richmond, Va.	910
WRNY	Rome, N.Y.	1350
WROA	Gulfport, Miss.	1390
WROB	West Point, Miss.	1450
WROC	Rochester, N.Y.	1280
WROD	Daytona Beach, Fla.	1340
WROK	Rockford, Ill.	1440
WROL	Fountain City, Tenn.	1490
WROM	Rome, Ga.	710
WRON	Ronceverte, W.Va.	1400
WROS	Scottsboro, Ala.	1330
WROV	Roanoke, Va.	1240
WROW	Albany, N.Y.	590
WROX	Clarksdale, Miss.	1450
WROY	Carmi, Ill.	1460
WROZ	Evansville, Ind.	1400
WRPB	Warner Robbins, Ga.	1350
WRR	Dallas, Tex.	1310
WRRF	Washington, N.C.	930
WRRR	Rockford, Ill.	1330
WRRZ	Clinton, N.C.	880
WRSA	Saratoga Sprgs., N.Y.	1280
WRSC	State College, Pa.	1390
WRSL	Stanford, Ky.	1520
WRSW	Warsaw, Ind.	1480
WRTA	Altoona, Pa.	1240
WRUF	Gainesville, Fla.	850
WRUM	Rumford, Maine	790
WRUN	Utica, N.Y.	1150
WRUS	Russellville, Ky.	610
WRVA	Richmond, Va.	1140
WRVK	Mt. Vernon, Ky.	1460
WRVM	Rochester, N.Y.	680
WRWD	Augusta, Ga.	1480
WRWH	Cleveland, Ga.	1380
WRWJ	Selma, Ala.	1570
WRWV	Waynesboro, Va.	970
WRXO	Roxboro, N.C.	1430
WRYT	Pittsburgh, Pa.	1250
WSAC	Fort Knox, Ky.	1470
WSAF	Sarasota, Fla.	1220
WSAI	Cincinnati, Ohio	1360
WSAJ	Grove City, Pa.	1340
WSAL	Logansport, Ind.	1230
WSAM	Saginaw, Mich.	1400
WSAN	Allentown, Pa.	1470
WSAR	Fall River, Mass.	1480
WSAT	nr. Salisbury, N.C.	1280
WSAU	Wausau, Wis.	550
WSAV	Savannah, Ga.	630
WSAY	Rochester, N.Y.	1370
WSAZ	Huntington, W.Va.	930
WSB	Atlanta, Ga.	750
WSBA	York, Pa.	910
WSBB	New Smyrna Beach, Florida	1230
WSBC	Chicago, Ill.	1240
WSBS	Gt. Barrington, Mass.	860
WSBT	South Bend, Ind.	960
WSCM	Panama City Beach, Florida	1290
WSCR	Scranton, Pa.	1320
WSOB	Homestead, Fla.	1430
WSDR	Sterling, Ill.	1240
WSEB	Sebring, Fla.	1340
WSEN	Baldwinsville, N.Y.	1050
WSET	Glen Falls, N.Y.	1410
WSEV	Sevierville, Tenn.	930
WSFB	Quitman, Ga.	1490
WSFC	Somerset, Ky.	1240
WSFR	Sanford, Fla.	1360
WSFT	Thomaston, Ga.	1220
WSGA	Savannah, Ga.	1400
WSGC	Elberton, Ga.	1400
WSGN	Birmingham, Ala.	610
WSGO	Oswego, N.Y.	1440
WSGW	Saginaw, Mich.	790
WSHE	Raleigh, N.C.	570
WSHF	Sheffield, Ala.	1290
WSHH	Latrobe, Pa.	1570
WSHP	Shippenburg, Pa.	1480
WSIC	Statesville, N.C.	1400
WSID	Baltimore, Md.	1010
WSIG	Mount Jackson, Va.	790
WSIP	Paintsville, Ky.	1490
WSIR	Winter Haven, Fla.	1490
WSIV	Pekin, Ill.	1140
WSIX	Nashville, Tenn.	980
WSJC	Magee, Miss.	1280
WSJM	St. Joseph, Mich.	1400
WSJS	Winston-Salem, N.C.	600
WSKI	Montpelier-Barre, Vt.	1240
WSKP	Miami, Fla.	1450
WSKT	Colonial Village, Tennessee	1580
WSKY	Asheville, N.C.	1230
WSLB	Ogdensburg, N.Y.	1400
WSLG	Clermont, Fla.	1340
WSLI	Jackson, Miss.	930
WSLM	Salem, Ind.	1220
WSLS	Roanoke, Va.	610
WSM	Nashville, Tenn.	650
WSMA	Smyrna, Ga.	1550
WSMB	New Orleans, La.	1350
WSME	Sanford, Maine	1220
WSMG	Greenville, Tenn.	1450
WSMI	Litchfield, Ill.	1540
WSMN	Nashua, N.H.	1590
WSMT	Sparta, Tenn.	1050
WSNE	Cummings, Ga.	1410
WSNJ	nr. Bridgeton, N.J.	1240
WSNO	Barre, Vt.	1450
WSNT	Sandersville, Ga.	1490
WSNW	Seneca Twnshp., S.C.	1150
WSNY	Schenectady, N.Y.	1240
WSOC	Charlotte, N.C.	930
WSOK	Savannah, Ga.	1230
WSOL	Tampa, Fla.	1300
WSON	Henderson, Ky.	860
WSOO	Slt. Ste. Marie, Mich.	1230
WSOQ	No. Syracuse, N.Y.	1220
WSOR	Windsor, Conn.	1480
WSOY	Decatur, Ill.	1340
WSPA	Spartanburg, S.C.	950
WSPB	Sarasota, Fla.	1450
WSPD	Toledo, Ohio	1370
WSPN	Saratoga Sprgs., N.Y.	900
WSPO	Smethport, Pa.	910
WSPR	Springfield, Mass.	1270
WSPT	Stevens Pt., Wis.	1010
WSPZ	Spencer, W.Va.	1400
WSRA	Milton, Fla.	1490
WSRC	Durham, N.C.	1410
WSRO	Marlborough, Mass.	1470
WSRW	Hillsboro, Ohio	1590
WSSB	Durham, N.C.	1490
WSSC	Sumter, S.C.	1340

C.L.	Location	Kc.
WSSO	Starkville, Miss.	1230
WSSV	Petersburg, Va.	1240
WSTC	Stamford, Conn.	1400
WSTK	Woodstock, Va.	1230
WSTL	Eminence, Ky.	1600
WSTN	St. Augustine, Fla.	1420
WSTP	Salisbury, N.C.	1490
WSTR	Sturgis, Mich.	1230
WSTS	Massena, N.Y.	1050
WSTU	Suart, Fla.	1450
WSTV	Steubenville, Ohio	1340
WSUB	Groton, Conn.	980
WSUG	Clewiston, Fla.	1050
WSUH	Oxford, Miss.	1420
WSUI	Iowa City, Iowa	910
WSUN	St. Petersburg, Fla.	620
WSUX	Seaford, Del.	1280
WSUZ	Palatka, Fla.	800
WSVA	Harrisonburg, Va.	550
WSVL	Shelbyville, Ind.	1520
WSVN	Valdese, N.C.	1490
WSVS	Crewe, Va.	800
WSWN	Belle Glade, Fla.	900
WSWV	Pennington Gap, Va.	1570
WSWW	Platteville, Wis.	1590
WSYB	Rutland, Vt.	1380
WSYD	Mt. Airy, N.C.	1300
WSYL	Sylvania, Ga.	1490
WSYR	Syracuse, N.Y.	570
WTAB	Tabor City, N.C.	1370
WTAC	Flint, Mich.	600
WTAD	Quincy, Ill.	930
WTAG	Worcester, Mass.	580
WTAL	Tallahassee, Fla.	1270
WTAN	Clearwater, Fla.	1340
WTAO	Cambridge, Mass.	740
WTAP	Parkersburg, W.Va.	1230
WTAQ	LaGrange, Ill.	1300
WTAR	Norfolk, Va.	790
WTAW	Bryan, Tex.	1150
WTAX	Springfield, Ill.	1240
WTAY	Robinson, Ill.	1570
WTBC	Tuscaloosa, Ala.	1230
WTBF	Troy, Ala.	970
WTBO	Cumberland, Md.	1450
WTCB	Flomaton, Ala.	990
WTCH	Shawano, Wis.	960
WTCJ	Tell City, Ind.	1230
WTCM	Traverse City, Mich.	1400
WTCN	Minneapolis, Minn.	1280
WTCO	Campbellsville, Ky.	1450
WTCR	Ashland, Ky.	1420
WTCS	Fairmont, W.Va.	1490
WTCW	Whitesburg, Ky.	920
WTGA	Thomaston, Ga.	1590
WTEL	Philadelphia, Pa.	860
WTGR	Charleston, W.Va.	1490
WTHE	Spartanburg, S.C.	1400
WTHG	Jackson, Ala.	1290
WTHI	Terre Haute, Ind.	1480
WTHR	Panama City, Fla.	1480
WTHT	Hazleton, Pa.	1300
WTIC	Hartford, Conn.	1080
WTID	Newport News, Va.	1270
WTIF	Tifton, Ga.	1340
WTIG	Massillon, Ohio	900
WTIK	Durham, N.C.	1310
WTIL	Mayaguez, P.R.	1300
WTIM	Taylorville, Ill.	1410
WTIP	Charleston, W.Va.	1240
WTIX	New Orleans, La.	690
WTJH	East Point, Ga.	1260
WTJS	Jackson, Tenn.	1390
WTKM	Hartford, Wis.	1540
WTKO	Ithaca, N.Y.	1470
WTKY	Tompkinsville, Ky.	1370
WTLB	Utica, N.Y.	1310
WTLO	Somerset, Ky.	1480
WTLS	Tallasee, Ala.	1300
WTMA	Charleston, S.C.	1250
WTMB	Tomah, Wis.	1390
WTMC	Ocala, Fla.	1290
WTMJ	Milwaukee, Wis.	620
WTMP	Tampa, Fla.	1150
WTMT	Louisville, Ky.	620
WTNC	Thomasville, N.C.	790
WTND	Orangeburg, S.C.	920
WTNS	Coshocton, Ohio	1560
WTNT	Tallahassee, Fla.	1450
WTOB	Winston-Salem, N.C.	1380
WTOC	Savannah, Ga.	1290
WTOD	Toledo, Ohio	1560
WTOE	Spruce Pine, N.C.	1470
WTOJ	Tomah, Wis.	1460
WTOL	Toledo, Ohio	1230
WTON	Staunton, Va.	1240
WTOP	Washington, D.C.	1500
WTOR	Torrington, Conn.	1490
WTOT	Marianna, Fla.	980
WTPI	Cookville, Tenn.	1550
WTPR	Paris, Tenn.	710
WTRA	Latrobe, Pa.	1480
WTRB	Ripley, Tenn.	1570
WTRC	Elkhart, Ind.	1340
WTRL	Bradenton, Fla.	1490
WTRN	Tyrone, Pa.	1340
WTRO	Dyersburg, Tenn.	1330
WTRP	LaGrange, Ga.	620
WTRR	Sanford, Fla.	1400
WTRU	Muskegon, Mich.	1600
WTRW	Two Rivers, Wis.	1590
WTRX	Flint, Mich.	1330
WTRY	Troy, N.Y.	980
WTSA	Brattleboro, Vt.	1450
WTSB	Lumberton, N.C.	1340
WTSL	Hanover-Lebanon, New Hampshire	1400
WTSN	Dover, N.H.	1270
WTSV	Claremont, N.H.	1230
WTTB	Vero Beach, Fla.	1490
WTTC	Towanda, Pa.	1550
WTTF	Tiffin, Ohio	1600
WTTH	Port Huron, Mich.	1380
WTTL	Madisonville, Ky.	1310
WTTM	Trenton, N.J.	920
WTTN	Watertown, Wis.	1580
WTTR	Westminster, Md.	1470
WTTS	Bloomington, Ind.	1370
WTUG	Tuscaloosa, Ala.	790
WTUP	Tupelo, Miss.	1490
WTUX	Wilmington, Del.	1290
WTVB	Coldwater, Mich.	1590
WTVL	Waterville, Maine	1490
WTVN	Columbus, Ohio	610
WTWA	Thomson, Ga.	1240
WTWB	Auburndale, Fla.	1570
WTWN	St. Johnsbury, Vt.	1340
WTXL	W. Spgfd., Mass.	1490
WTYC	Rock Hill, S.C.	1150
WTYM	East Longmeadow, Mass.	1600
WTYN	Tryon, N.C.	1550
WTYS	Marianna, Fla.	1340
WULA	Eufaula, Ala.	1240
WUNE	Baton Rouge, La.	1550
WUSJ	Lockport, N.Y.	1340
WUST	Bethesda, Md.	1120
WVAM	Altoona, Pa.	1430
WVAR	Richwood, W.Va.	1280
WVCG	Coral Gables, Fla.	1070
WVCH	Chester, Pa.	740
WVEC	Hampton, Va.	1490
WVIM	Vicksburg, Miss.	1490
WVIP	Mt. Kisco, N.Y.	1310
WVJP	Caguas, P.R.	1110
WVJS	Owensboro, Ky.	1420
WVKO	Columbus, Ohio	1580
WVLO	Valdosta, Ga.	1450
WVLK	Lexington, Ky.	590
WVLN	Olney, Ill.	740
WVMC	Mt. Carmel, Ill.	1360
WVMI	Biloxi, Miss.	570
WVNA	Tuscumbia, Ala.	1590
WVNJ	Newark, N.J.	620
WVOK	Birmingham, Ala.	690
WVOL	Berry Hill, Tenn.	1470
WVOM	Iuka, Miss.	1270
WVOP	Vidalia, Ga.	970
WVOS	Liberty, N.Y.	1240
WVOT	Wilson, N.C.	1420
WVOX	New Rochelle, N.Y.	1460
WVPO	Stroudsburg, Pa.	840
WVSC	Somerset, Pa.	990
WVVW	Grafton, W.Va.	1260
WWBC	Bay City, Mich.	1250
WWBD	Bamberg, S.C.	790
WWBZ	Vineland, N.J.	1360
WWCA	Gary, Ind.	1270
WWCC	Bremen, Ga.	1440
WWCH	Clarion, Pa.	1300
WWCO	Waterbury, Conn.	1240
WWDC	Washington, D.C.	1260
WWGP	Sanford, N.C.	1050
WWGS	Tifton, Ga.	1430
WWHG	Hornell, N.Y.	1320
WWHY	Huntington, W.Va.	1470
WWIL	Ft. Lauderdale, Fla.	1580
WWIN	Baltimore, Md.	1400
WWIS	Black River Falls, Wis.	1260
WWIT	Canton, N.C.	970
WWIZ	Lorain, Ohio	1380
WWJ	Detroit, Mich.	950
WWJB	Brooksville, Fla.	1450
WWKY	Winchester, Ky.	1380
WWL	New Orleans, La.	870
WWML	Portage, Wis.	1470
WWNC	Asheville, N.C.	570
WWNH	Rochester, N.H.	930
WWNR	Beckley, W.Va.	620
WWNS	Statesboro, Ga.	1240
WWNY	Watertown, N.Y.	790
WWOD	Lynchburg, Va.	1390
WWOK	Charlotte, N.C.	1480
WWOL	Buffalo, N.Y.	1120
WWOM	New Orleans, La.	600
WWON	Woonsocket, R.I.	1240
WWOW	Conneaut, Ohio	1360
WWPA	Williamsport, Pa.	1340
WWPF	Palatka, Fla.	1260
WWRI	W. Warwick, R.I.	1450
WWRJ	White River Junc., Vt.	910
WWRL	Woodside, N.Y.	1600
WWSC	Glens Falls, N.Y.	1450
WWSR	St. Albans, Vt.	1420
WWST	Wooster, Ohio	960
WWSW	Pittsburgh, Pa.	970
WWVA	Wheeling, W.Va.	1170
WWWB	Jasper, Ala.	1360
WWWF	Fayette, Ala.	990
WWWR	Russellville, Ala.	920
WWWW	Rio Piedras, P.R.	1520
WWXL	Manchester, Ky.	1450
WWYN	Erie, Pa.	1260
WWYO	Pineville, W.Va.	970
WXAL	Demopolis, Ala.	1400
WXGI	Richmond, Va.	950
WXIG	Windemere, Fla.	1480
WXLI	Dublin, Ga.	1230
WXLL	Big Delta, Alaska	980
WXLW	Indianapolis, Ind.	950
WXMT	Merrill, Wis.	730
WXOK	Baton Rouge, La.	1260
WXRF	Guayama, P.R.	1590
WXTN	Lexington, Miss.	1150
WXTR	Pawtucket, R.I.	550
WXVW	Jeffersonville, Ind.	1450
WXXX	Hattiesburg, Miss.	1310
WXYJ	Jamestown, N.Y.	1340
WXYZ	Detroit, Mich.	1270
WYAL	Scotland Neck, N.C.	1280
WYAM	Bessemer, Ala.	1450
WYCL	York, S.C.	1580
WYDE	Birmingham, Ala.	850
WYGO	Corbin, Ky.	1330
WYLD	New Orleans, La.	940
WYMB	Manning, S.C.	1410
WYND	Sarasota, Fla.	1280
WYNG	Warwick-East Greenwich, R.I.	1590
WYNK	Baton Rouge, La.	1380
WYNN	Florence, S.C.	540
WYRE	Pittsburgh, Pa.	1080
WYRN	Louisburg, N.C.	1480
WYSE	Lakeland, Fla.	1330
WYSH	Clinton, Tenn.	1380
WYSL	Kenmore, N.Y.	1080
WYSR	Franklin, Va.	1250
WYTH	Madison, Ga.	1250
WYTI	Rocky Mount, Va.	1570
WYVE	Wytheville, Va.	1280
WYZE	Atlanta, Ga.	1480
WZEP	DeFuniak Sprgs., Fla.	1460
WZKY	Albemarle, N.C.	1580
WZOB	Ft. Payne, Ala.	1250
WZOK	Jacksonville, Fla.	1320
WZRH	Zephyr Hills, Fla.	1400
WZRO	Jacksonville Beach, Florida	1010
WZST	Tampa, Fla.	1550
WZYX	Cowan, Tenn.	1440
XETRA	Los Angeles, Calif.	690

Mexican and Cuban AM Stations

Mexican stations audible in the Southwest; the more powerful Cuban stations

Mexico

BAJA CALIFORNIA

Location	C.L.	Kc.	W.P.
Cuervos	XEDY	1460	1000
El Saugal	XEDX	1010	500
Ensenada	XEPF	1400	250
	XEXK	920	250
Mexicali	XED	1050	5000
	XEAA	1340	250
	XEAO	910	250
	XECL	990	5000
	XEGE	1150	1000
Tijuana	XEC	1310	250
	XETRA	690	50000
	XEAU	1470	5000
	XEAZ	1270	500
	XEBG	1550	1000
	XEGM	950	2500
	XEMO	860	5000
	XEXX	1420	2000

CHIHUAHUA

Location	C.L.	Kc.	W.P.
Chihuahua	XEM	1390	500
	XEBU	620	1000
	XEBW	1280	1000
	XEFI	580	1000
	XERA	1490	250
Ciudad Camargo	XEHA	580	1000
Ciudad Delicias	XEBN	1240	250
	XEJK	1340	250
Ciudad Juarez	XEF	1420	250
	XEJ	970	5000
	XEP	1300	500
	XEFV	1240	250
	XELO	800	150000
	XEWG	1490	250
	XEYC	1460	1000
Hidalgo	XEJS	1150	500
N. Casas Grandes	XETX	1010	250

COAHUILA

Location	C.L.	Kc.	W.P.
Ciudad Acuna	XEKD	1010	1000
Monclova	XEMF	1260	250
Piedras Negras	XEMJ	920	1000
	XEMU	580	5000
Sabinas	XEBX	610	5000
Saltillo	XESJ	1250	500
	XESG	1510	1000
Torreon	XEBP	1310	5000
Villa Acuna	XEDH	1340	250
	XERF	1570	250000

DISTRITO FEDERAL

Location	C.L.	Kc.	W.P.
Mexico City	XEL	1260	5000
	XEN	690	20000
	XEQ	940	150000
	XEW	900	250000
	XEX	730	500000
	XEFR	1530	5000
	XEJP	1150	10000
	XELA	830	10000
	XELZ	1440	5000
	XEMX	1380	5000
	XENK	620	5000
	XEOY	1000	50000
	XEPH	590	5000
	XEQK	1350	1000
	XEQR	1030	10000
	XERC	790	1000
	XERCN	1110	50000
	XERH	1500	50000
	XERPM	660	10000
	XESM	1470	10000
	XEUN	860	5000

DURANGO

Location	C.L.	Kc.	W.P.
Durango	XEDU	860	1000

NUEVO LEON

Location	C.L.	Kc.	W.P.
Linares	XER	1260	250
Monterrey	XEG	1050	150000
	XEH	1420	1000
	XET	990	5000
	XEAR	1480	1000
	XEAW	1280	1000
	XEFB	630	5000
	XEMR	1370	500
	XEOK	920	500

SAN LUIS POTOSI

Location	C.L.	Kc.	W.P.
San Luis Potosi	XEWA	540	150000

SONORA

Location	C.L.	Kc.	W.P.
Agua Prieta	XEAQ	1490	250
	XEFH	1310	1000
Cananea	XEFQ	980	500
Ciudad Obregon	XEOX	1430	1000
Hermosillo	XEBH	920	5000
	XEDL	1250	500
	XEDM	1580	50000
	XEHQ	590	500
Magdalena	XEDJ	1450	100
Naco	XETM	1350	1000
Nogales	XEHF	1370	5000
San Luis	XECB	1450	250
Santa Ana	XEAB	1400	250

TAMAULIPAS

Location	C.L.	Kc.	W.P.
Matamoros	XEO	970	1000
	XEAM	1310	250
	XEMT	1340	250
Nuevo Laredo	XEAS	1410	250
	XEBK	1340	100
	XEDF	790	1000
	XEFE	790	1000
	XERG	1090	2500
	XEXO	1370	50000
Reynosa	XEOR	1390	1000
	XERT	590	5000
Rio Bravo	XEFD	1170	1000
Tampico	XEFW	810	50000

Cuba

Location	C.L.	Kc.	W.P.
Camaguey	CMJB	880	1000
	CMJL	920	5000
	CMJN	960	1000
	CMJE	680	1000
	CMFA	1110	1000
	CMJR	1030	1000
	CMJC	1000	1000
	CMJF	1340	1000
Camajuani	CMHD	890	1000
Ciego de Avila	CMJY	760	1000
	CMJT	700	1000
	CMSS	800	1000
	CMJV	900	1000
Cienfuegos	CMHN	680	1000
Consulacion Del Sur		880	1000
Cruces	CMAK	1210	1000
Guantanamo	CMKS	1070	1000
Habana	CMW	590	2500
	CMCY	550	15000
	CMQ	630	25000
	CMCU	660	1000
	CMBC	690	50000
	CMCD	760	10000
	CMCH	790	10000
	CMBZ	830	5000
	CMBL	860	15000
	CMCF	910	10000
	CMBF	950	5000
	CMCK	980	5000

Location	C.L.	Kc.	W.P.
	CMBQ	1010	5000
	CMCX	1060	10000
	CMCA	730	10000
	CMCB	1330	1000
Holguin	CMKJ	730	5000
	CMKP	670	1000
Holguin Orte	CMKM	560	5000
	CMKV	600	1000
	CMKD	970	1000
	CMDC	770	1000
Marianao	CMZ	1560	5000
Neuvitas	CMJO	1300	1000
Pinar del Rio	CMAB	740	5000
	CMAF	680	1000
	CMAN	840	1000
	CMAQ	920	1000
Sagua La Grande			
	CMHA	1280	1000
Santa Clara	CMHI	570	10000
	CMHG	670	1000
	CMHC	1410	1000
	CMHQ	640	15000
	CMHW	810	1000
	CMHO	1310	1000
	CMHM	1130	1000
Sancti Spiritus			
	CMHT	990	1000
Santiago	CMDA	1320	1000
	CMKC	770	1000
	CMDB	680	1000
	CMKL	800	2000
	CMKW	1000	2000
	CMKR	1090	1000
	CMKU	630	2000
	CMDL	1150	1000
	CMKN	930	1000
	CMKB	1170	1000
Victoria de las Tunas			
	CMDQ	840	1000
	CMKT	1520	1000

U. S. FM Stations by States

Abbreviations: Mc., megacycles; asterisk (*) indicates educational station

ALABAMA

Location	C.L.	Mc.
Albertville	WAVU-FM	105.1
Alexander City	WRFS-FM	106.1
Andalusia	WCTA-FM	98.1
Anniston	WHMA-FM	100.5
Athens	WJOF	104.3
Birmingham	WAPI-FM	99.5
	WBRC-FM	106.9
	WSFM	93.7
Clanton	WKLF-FM	100.9
Cullman	WFMH-FM	101.1
Decatur	WHOS-FM	102.1
Homewood	WJLN	104.7
Huntsville	WAHR	99.1
	WNDA	92.9
Mobile	WKRG-FM	99.9
Montgomery	WAJM	103.3
	WFMI	98.9
Sylacauga	WMLS-FM	98.3
Tuscaloosa	WTBO-FM	95.7
	WUOA	*91.7

ALASKA

Location	C.L.	Mc.
Anchorage	KNIK	105.5
	KBYR-FM	102.1

ARIZONA

Location	C.L.	Mc.
Globe	KWJB-FM	100.3
Mesa	KBUZ-FM	104.7
Phoenix	KELE	95.5
	KFCA	*88.5
	KOOL-FM	94.5
	KITH	101.3
	KOY-FM	92.5
	KPHO-FM	96.9
	KTAR-FM	98.7
	KYEW	93.3
Tempe	KUPD-FM	97.9
Tucson	KFMM	99.5

ARKANSAS

Location	C.L.	Mc.
Blytheville	KLCN-FM	96.1
Ft. Smith	KFPW-FM	94.9
Jonesboro	KBTM-FM	101.9
	KASU	91.9
Little Rock	KARK	103.7
Mammoth Springs	KAMS	103.9
Osceola	KOSE-FM	98.1
Pine Bluff	KOTN-FM	92.3
Siloam Springs	KUOA-FM	105.7

CALIFORNIA

Location	C.L.	Mc.
Alameda	KJAZ	92.7
Anaheim	KEZY-FM	95.9
Arcata	KTOO	*90.5
Atherton	KPEN	101.3
Avalon	KBIQ	104.3
Bakersfield	KERN-FM	94.1
	KQXR	101.5
Berkeley	KPFA	94.1
	KPFB	*89.3
	KRE-FM	102.9
Bijou	KHUR	99.9
Claremont	KSPC	*88.9
Coachella	KCHV-FM	93.7
El Cajon	KUFM	93.3
Eureka	KIEM	96.3
Fresno	KARM-FM	101.9
	KMJ-FM	97.9
	KRFM	93.7
	KXQR	102.7
Garden Grove	KGGK	94.3
Glendale	KFMU	97.1
	KUTE	101.9
Hayward	KBBM	101.7
Inglewood	KTYM-FM	103.9
LaSierra	KNFP	*89.7
Lodi	KCVR-FM	97.7
Long Beach	KFOX-FM	102.3
	KLON	*88.1
	KNOB	97.9
Los Altos	KPGM	97.7
Los Angeles	KABC-FM	95.5
	KBBI	107.5
	KBCA	105.1
	KBMS	105.9
	KCBH	98.7
	KFAC-FM	92.3
	KFMU	
	KGLA	*103.5
	KHJ	101.1
	KMLA	100.3
	KNX-FM	93.1
	KPFK	*90.7
	KPOL-FM	93.9
	KRHM	94.7
	KRKD-FM	96.3
	KLAC-FM	102.7
	KUSC	*91.5
	KXLU	*88.7
	KHOF	99.5
Marysville	KMYC-FM	99.9
Modesto	KBEE-FM	103.3
	KTRB-FM	104.1
Mountain View	KFJC	*88.5
Newport Beach	KNBB	103.1
Oakland	KAFE	98.1
Ontario	KASK-FM	93.5
Oxnard	KAAR	104.7
Palm Springs	KPSR	92.1
Pasadena	KPCS	89.3
Redondo Beach	KAPP	93.5
Redlands	KCHL FM	96.7
Ridgecrest	KLOA-FM	105.5
Riverside	KPLI	99.1
	KACE-FM	92.7
	KDUO	97.5
Sacramento	KCRA-FM	96.1
	KFBK-FM	96.9
	KEBR	100.5
	KHIQ	105.1
	KJML	95.3
	KRAK-FM	92.9
	KSFM	96.9
	KXRQ	98.5
	KCNW-FM	107.9
Salinas	KSBW-FM	102.5
San Bernardino	KVCR	*91.9
	KFMW	99.9
	KEBS	*89.5
San Diego	KOGO-FM	94.1
	KFMB-FM	100.7
	KFMX-FM	96.5
	KGB-FM	101.5
	KITT	105.3
	KJLM	98.1
	KLRO	94.9
	KPRI	106.5
	KSDS	*88.3
San Fernando	KVFM	94.3
San Francisco	KALW	*91.7
	KBAY-FM	104.5
	KBCO	105.3
	KCBS-FM	98.9
	KDFC	102.1
	KEAR	97.3
	KFRC-FM	106.1
	KGO-FM	103.7
	KNBC-FM	99.7
	KHIP	106.9
	KRON-FM	96.5
	KSFR	94.9
	KQBY-FM	95.7
	KYA-FM	93.3
San Jose	KSJO-FM	92.3
	KRPM	98.5
San Luis Obispo	KATY-FM	96.1
San Rafael	KTIM	100.9
San Mateo	KCSM	*90.9
Santa Ana	KWIZ-FM	96.7
	KFIL	106.3
Santa Barbara	KRCW	97.5
	KDB-FM	93.7
	KMUZ	103.3
Santa Clara	KSCU	*90.1
Santa Maria	KEYM	99.1
	KSMA-FM	102.5
Santa Monica	KCRW	*89.9
	KSRF	103.1
Sierra Madre	KMAX	107.1
Stockton	KCVN	*91.3
	KSTN-FM	107.3
	KWG-FM	105.7
Turlock	KHOM	92.9
Ventura-Oxnard	KVEN-FM	100.7
Walnut Creek	KWME-FM	92.1
West Covina	KDWC	98.3
Woodland	KATT	95.3

COLORADO

Location	C.L.	Mc.
Boulder	KRNW	97.3
Colorado Springs	KRCC	*91.3
	KFMH	96.5
	KSHS	*90.5
	KVOR-FM	92.9
Cortez	KZFM	94.1
Denver	KFML-FM	98.5
	KDEN-FM	99.5
	KLIR-FM	100.3
	KOA-FM	103.5
	KTGM	105.1
Grand Junction	KREX-FM	92.3
Manitou Springs	KCMS-FM	102.7

CONNECTICUT

Location	C.L.	Mc.
Bridgeport	WJZZ	99.9
Brookfield	WGHF	95.1
Danbury	WLAD-FM	98.3
Hartford	WHCN	105.9
	WDRC-FM	102.9
	WCCC-FM	106.9
	WFNQ	93.7
	WRTC-FM	*89.3
	WTIC-FM	96.5
Manchester	WINF-FM	107.9
Meriden	WBMI	95.7
Middletown	WESU	88.1
New Haven	WNHC-FM	99.1
	WYBC-FM	94.3
Stamford	WSTC-FM	96.7
Storrs	WHUS	*90.5
Waterbury	WATR-FM	92.5

DELAWARE

Location	C.L.	Mc.
Dover	WDOV-FM	94.7
WHmington	WDEL-FM	93.7
	WJBR	99.5

D. C.

Location	C.L.	Mc.
Washington	WASH-FM	97.1
	WFAN	100.3
	WGAY	99.5
	WGMS-FM	103.5
	WGTB	*90.1
	WMAL-FM	107.3
	WOL-FM	98.7
	WRC-FM	93.9
	WTOP-FM	96.3
	WWDC-FM	101.1

FLORIDA

Location	C.L.	Mc.
Coral Gables	WVCG-FM	105.1
Daytona Beach	WNDB-FM	94.5
Fort Lauderdale	WWIL-FM	103.5
	WFLM	105.9
	WMFP	100.7
Fort Pierce	WARN	98.7
Gainesville	WRUF-FM	*104.1
Jacksonville	WJAX-FM	95.1
	WZOK-FM	96.9
	WMBR-FM	96.1
Miami	WKAT-FM	93.3
	WCKR-FM	97.3
	WGBS-FM	96.3
	WTHS	*91.7
	WWPB-FM	101.5
Miami Beach	WKAT-FM	93.1
	WMET-FM	93.9
Ocala	WMOP-FM	93.7
Orlando	WDBO-FM	92.3
	WHOO-FM	96.5
	WKIS-FM	100.3
Palm Beach	WQXT-FM	97.9
Pensacola	WPEX-FM	94.1
St. Petersburg	WGNB	101.5
	WTCX	99.5
Sarasota	WYAK	102.5
Tallahassee	WFSU-FM	*91.5
Tampa	WDAE-FM	100.7
	WFLA-FM	93.3
	WPKM	104.7
	WTUN	*88.9
Winter Park	WPRK	*91.5

GEORGIA

Location	C.L.	Mc.
Athens	WGAU-FM	102.5
Atlanta	WABE	*90.1
	WPLO-FM	103.3
	WGKA-FM	92.9
	WSB-FM	98.5
Augusta	WAUG-FM	105.7
	WBBQ-FM	103.7
Columbus	WRBL-FM	93.3
Gainesville	WDUN-FM	103.9
Lagrange	WLAG-FM	104.1
Macon	WMAZ-FM	99.1
Marietta	WBIE-FM	101.5
	WKLS	96.1
Newnan	WCOH-FM	96.7
Savannah	WTOC-FM	97.3
Swainsboro	WJAT-FM	101.7
Toccoa	WLET-FM	106.1

HAWAII

Location	C.L.	Mc.
Honolulu	KAIM-FM	95.5
	KVOK	*88.1
	KUOH	*90.5

IDAHO

Location	C.L.	Mc.
Boise	KBOI-FM	97.9
Lewiston	KOZE-FM	96.7

ILLINOIS

Location	C.L.	Mc.
Anna	WRAJ-FM	92.7
Arlington Heights	WNWC	92.7
Aurora	WKKD-FM	95.9
Bloomington	WJBC-FM	101.5
Carbondale	WSIU	*91.9
Carmi	WROY-FM	97.3
Champaign	WDWS-FM	97.5
Chicago	WBBM-FM	96.3
	WBEZ	*91.5
	WCLM	101.9
	WDHF	95.5
	WEBH	93.9
	WEFM	99.5
	WEHS	97.9
	WENR-FM	94.7
	WFMF	100.3
	WFMQ	107.5
	WFMT	98.7
	WKFM	103.5
	WMAQ-FM	101.1
	WMBI-FM	*90.1
	WNIB	97.1
	WSBC-FM	93.1
	WJJD-FM	104.3
Decatur	WSOY-FM	102.9
DeKalb	WNIC	*91.1
E. St. Louis	WBBR	101.1
Effingham	WSEI	95.7
	WELG	103.9
	WRMN-FM	94.3
Elgin	WEPS	*88.1
Elmwood Park	WXFM	105.9
Evanston	WEAW	105.1
	WNUR	*89.3
Harrisburg	WEBQ-FM	99.9
Highland Park	WNSH-FM	103.1
Jacksonville	WLDS-FM	100.5
	WAJP	93.5
Joliet	WJOL-FM	96.7
Kewanee	WKSO	*91.9
Litchfield	WSMI-FM	106.1
Macomb	WWKS	*91.3
Mattoon	WLBH-FM	96.9
Mt. Carmel	WSAB	94.9
	WVMC-FM	101.1
Mt. Vernon	WMIX-FM	94.1
Oak Park	WOPA-FM	102.7
Olney	WVLN-FM	92.9
Paris	WPRS-FM	98.3
Park Forest	WRHS	*88.1
Park Ridge	WMTH	*88.5
Peoria	WMBD-FM	92.5
Quincy	WGEM-FM	105.1
	WTAD-FM	99.5
Rockford	WROK-FM	97.5
Rock Island	WHBF-FM	98.9
Springfield	WTAX-FM	103.7
Taylorville	WGGM	95.0
Urbana	WILL-FM	*90.9
Winnetka	WNTH	*88.1

INDIANA

Location	C.L.	Mc.
Anderson	WAFM	97.9
Bloomington	WFIU	*103.7
	WTTV-FM	92.3
Columbus	WCSI-FM	98.3
Connersville	WCNB-FM	100.3
Crawfordsville	WBBS-FM	106.3
Elkhart	WCMR-FM	95.1
	WTRC-FM	100.7
Evansville	WIKY-FM	104.1
	WEVC	*91.5
	WPSR	90.7
Franklin	WFCI	*89.3
Fort Wayne	WPTH	95.1
Gary	WGVE	*88.1
Goshen	WGCS	91.1
Greencastle	WGRE	*91.7
Hammond	WYCA	92.3
Hartford City	WHCI	*91.9
Huntington	WVSH	*91.9
Indianapolis	WAJC	*104.5
	WAIV	105.7
	WFBM-FM	94.7
	WFMS	95.5
	WIAN	*90.1
	WIBC-FM	93.1
Jasper	WITZ-FM	104.7
Madison	WORX-FM	96.7
Marion	WMRI-FM	106.9
	WBST	*90.7
Muncie	WMUN	104.1
	WWHI	*91.5
New Albany	WNAS	*88.1
New Castle	WCTW-FM	102.5
	WYSN	*91.1
Princeton	WRAY-FM	98.1
Richmond	WGLM	96.1

Location	C.L.	Mc.
Salem	WSLM-FM	98.9
Seymour	WJOD	93.7
South Bend	WETL	*91.9
Terre Haute	WTHI-FM	99.9
	WVTS	100.7
Wabash	WSKS	*91.3
Warsaw	WRSW-FM	107.3
Washington	WFML	106.5
West Lafayette	WBAA-FM	99.1

IOWA

Location	C.L.	Mc.
Ames	WOI-FM	*90.1
Boone	KFGQ	*99.3
Cedar Falls	KTCF	*88.1
Clinton	KROS-FM	96.1
Davenport	WOC-FM	103.7
Des Moines	KDPS	*88.1
	KDMI	97.3
	KSO	98.5
	WHO-FM	100.3
Iowa City	KSUI	*91.7
Muscatine	KWPC-FM	99.7
Sioux City	KDVR	97.9
Storm Lake	KAYL-FM	101.5
Waverly	KWAR	89.1

KANSAS

Location	C.L.	Mc.
Emporia	KSTE	*88.7
Kansas City	KCJC	98.1
Lawrence	KANU	*91.5
Manhattan	KSDB-FM	*88.1
Newton	KJRG-FM	92.1
Ottawa	KTJO-FM	*88.1
Parsons	KPPS-FM	*91.1
Salina	KAFM	99.9
Topeka	KTOP-FM	100.3
Wichita	KFH-FM	100.3
	KMUW	*89.1
	KCBM-FM	107.3

KENTUCKY

Location	C.L.	Mc.
Ashland	WCMI-FM	93.7
Central City	WNES-FM	101.9
Fulton	WFUL-FM	104.9
Glasgow	WGGC	95.1
Hazard	WKIC-FM	96.5
Henderson	WSON-FM	99.5
Hopkinsville	WRLX	98.7
	WKOF	100.3
Lexington	WBKY	*91.3
	WLAP-FM	94.5
Louisville	WFPK	*91.9
	WFPL	*89.3
Madisonville	WFMW-FM	93.9
	WNGO-FM	94.7
Owensboro	WOMI-FM	92.5
	WVJS-FM	96.1
Paducah	WPAD-FM	96.9
	WKYB-FM	93.3

LOUISIANA

Location	C.L.	Mc.
Alexandria	KALB-FM	98.9
Baton Rouge	WJBO-FM	98.1
Monroe	KMLB-FM	104.1
New Orleans	WBEH	89.3
	WDSU-FM	105.3
	WRCM	97.1
	WMMT	95.7
Shreveport	KRMD-FM	101.1
	KBCL-FM	96.5
	KWKH-FM	94.5

MAINE

Location	C.L.	Mc.
Augusta	WFAU-FM	101.3
Bangor	WABI-FM	97.1
Brunswick	WBOR	*91.1
Caribou	WFST-FM	97.7
Lewiston	WCOU-FM	93.9
	WRJR	91.5
Poland Springs	WMTW-FM	94.9
Portland	WLOB-FM	97.9

MARYLAND

Location	C.L.	Mc.
Annapolis	WNAV-FM	99.1
	WANN-FM	107.9
	WXTC	107.9
	WAQE-FM	101.9
Baltimore	WBJC	*88.1
	WCAO-FM	102.7
	WCBM-FM	106.5
	WFMM-FM	93.1
	WRBS	95.1
	WSID	92.3
	WBAL-FM	97.9
	WITH-FM	104.3
	WSID-FM	92.3
Bethesda	WJMD	106.3
Bradbury Heights	WPGC	95.5
Cumberland	WCUM-FM	102.9
Frederick	WFMD-FM	99.9
Hagerstown	WJEJ-FM	104.7
	WARK-FM	106.9
Havre de Grace	WASA-FM	103.7
Oakland	WBUZ	95.5
Tacoma Park	WGTS-FM	*91.9
Waldorf	WSMD	104.1
Westminster	WTTR-FM	100.7

MASSACHUSETTS

Location	C.L.	Mc.
Amherst	WAMF	*88.1
	WFCR	*88.5
	WMUA	*91.1
Boston	WBUR	*90.9
	WBCN	104.1
	WBZ-FM	106.7
	WCOP-FM	100.7
	WEEI-FM	103.3
	WERS	*88.9
	WHDH-FM	94.5
	WRKO-FM	98.5
	WXHR	96.9
Brockton	WBET-FM	97.7
Brookline	WBOS-FM	92.9
Cambridge	WGBH-FM	*89.7
	WHRB-FM	95.3
	WTBS	88.1
Fitchburg	WFGM-FM	104.7
Framingham	WKOX-FM	105.7
Greenfield	WHAI-FM	98.3
Haverhill	WHAV-FM	92.5
Lawrence	WGHJ	93.7
Lowell	WLLH-FM	99.5
Lynn	WUPY-FM	105.3
Medford	WISK	107.9
New Bedford	WBSM-FM	97.3
	WNBH-FM	98.1
Plymouth	WPLM-FM	99.1
S. Hadley	WMHC	*88.5
Springfield	WHYN-FM	93.1
	WEDK	*91.7
	WSCB	*88.9
	WMAS-FM	94.7
Waltham	WCRB-FM	102.5
W. Yarmouth	WOCB-FM	94.3
Williamstown	WCFM	*90.1
Winchester	WHSR-FM	*91.9
Worcester	WAAB	107.3
	WTAG-FM	96.1

MICHIGAN

Location	C.L.	Mc.
Ann Arbor	WUOM	*91.7
Bay City	WBCM-FM	96.1
Benton Hrbr.	WHFB-FM	99.9
Birmingham	WHFI	94.7
Coldwater	WTVB-FM	98.3
Dearborn	WKMH-FM	100.3
Detroit	WDET-FM	*101.9
	WCHD	105.9
	WDTM	106.7
	WABX	99.5
	WDTR	*90.9
	WGPM	107.5
	WJBK-FM	93.1
	WMUZ	103.5
	WMZK	97.9
	WJR-FM	96.3
	WOMC-FM	104.3
	WQRS-FM	105.1
	WRMK-FM	98.7
	WWJ-FM	97.1
	WXYZ-FM	101.1
E. Lansing	WKAR-FM	*90.5
	WSWM	99.1
Flint	WFBE	*95.1
Grand Rapids	WFUR-FM	102.9
	WJEF-FM	93.7
	WLAV-FM	96.9
Highland Pk.	WHPR	*88.1
Holland	WJBL-FM	94.5
Houghton Lake	WJGG	98.5
Interlochen	WGYA	*103.1
Jackson	WBBC	94.1
Kalamazoo	WMCR	*102.1
Lansing	WJIM-FM	97.5
	WMRT-FM	100.7
Mount Clemens	WBRB-FM	102.7
Oak Park	WLDM	95.5
Royal Oak	WOAK	*89.3
	WOMC	104.3
Saginaw	WSAM-FM	98.1
Sturgis	WSTR-FM	103.1

MINNESOTA

Location	C.L.	Mc.
Brainerd	KLIZ-FM	95.7
Mankato	KYSM-FM	103.5
Minneapolis	KTIS-FM	*98.5
	KWFM	97.1
	WLOL-FM	99.5
	WPBC-FM	101.3
	WAYL	96.1
St. Cloud	KFAM-FM	104.7
St. Paul	KNOF	95.3
Worthington	KWOA-FM	94.9

MISSISSIPPI

Location	C.L.	Mc.
Jackson	WJDX-FM	102.9
Laurel	WNSL-FM	100.3
Meridian	WMMI	*88.1

MISSOURI

Location	C.L.	Mc.
Clayton	KFUO-FM	99.1
Joplin	WMBH-FM	96.1
	KSYN	92.5
Kansas City	KCMO-FM	94.9
	KBEY	104.3
	KTSR	*90.1
	KDAF-FM	102.1
	KCMK	93.3
	KCUR-FM	89.3
	KXTR	96.5
Kennett	KBOA-FM	98.9
Poplar Bluff	KWOC-FM	94.5
St. Louis	KCFM	93.7
	KADI	96.5
	WAMV-FM	101.1
	WIL-FM	92.3
	KSLH	*91.5
	KSTL-FM	98.1
	KWIX	102.5
	KRFD	106.9
Springfield	KTTS-FM	94.7
West Plains	KWPM-FM	93.9

NEBRASKA

Location	C.L.	Mc.
Kearney-Holdrege	KHOL-FM	98.9
Lincoln	KFMQ	95.3
Omaha	KQAL-FM	94.3
	KFAB-FM	99.9
	WOW-FM	92.3
	KICN	96.1
Scottsbluff	KNEW-FM	94.1

NEVADA

Location	C.L.	Mc.
Reno	KNEV	95.5

NEW HAMPSHIRE

Location	C.L.	Mc.
Berlin	WMOU-FM	103.7
Claremont	WTSV-FM	106.1
Manchester	WKBR-FM	95.7
Mt. Washington	WMTW-FM	94.9
Nashua	WOTW-FM	106.3

NEW JERSEY

Location	C.L.	Mc.
Asbury Park	WJLK-FM	94.3
Bridgeton	WSNJ-FM	107.7
Camden	WKDN-FM	106.9
Dover	WOHA-FM	105.5
E. Orange	WFMU	*91.1
Hackettstown	WNTI	*91.9
Long Branch	WRLB	107.1
Newark	WNTA-FM	94.7
	WBGO	*88.3
New Brunswk.	WCTC-FM	98.3
Paterson	WPAT-FM	93.1
Princeton	WPRB	103.9
Red Bank	WFHA-FM	106.3
South Orange	WSOU	*89.5
Trenton	WTOA	97.5
Wildwood	WCMC-FM	100.7
Zarephath	WAWZ-FM	99.1

NEW MEXICO

Location	C.L.	Mc.
Albuquerque	KANW	*89.1
	KHFM	96.3
Aztec	KNDE-FM	94.9
Los Alamos	KRSN-FM	98.5
Mountain Park	KMFM	97.9
Roswell	KBIM-FM	97.1

NEW YORK

Location	C.L.	Mc.
Albany	WAMC	*90.3
Auburn	WMBO-FM	96.1
Babylon	WTFM	103.5
	WBAB-FM	102.3
Binghamton	WNBF-FM	98.1
	WKOP-FM	95.3
Brooklyn	WNYE	*91.5
Buffalo	WBEN-FM	106.5
	WBFO	*88.7
	WEBR	94.5
	WGR-FM	96.9
	WBUF	92.9
	KWOL-FM	104.1
Central Square	WCSQ	*89.3
Cherry Valley	WJIV	101.9
Corning	WCLI-FM	106.1
Cortland	WKRT-FM	99.9
DeRuyter	WOIV	105.1
Elmira	WECW	*88.1
Floral Park	WSHS	*90.3
Garden City	WLIR	92.7
Hempstead	WHLI-FM	98.3
	WVHC	*88.7
Hornell	WWHG-FM	105.3
Ithaca	WHCU-FM	97.3
	WICB	*91.7
	WEIV	103.7
	WVBR-FM	101.7
Jamestown	WJTN-FM	93.3
Kenmore	WYSL-FM	103.3
Mt. Kisco	WRNW	107.1
New Rochelle	WVOX-FM	93.5
New York	WABC-FM	95.5
	WBAI	99.5
	WBFM	101.9
	WCBS-FM	101.1
	WEVD-FM	97.9
	WFUV	*90.7
	WHOM-FM	92.3
	WKCR-FM	*89.9
	WNCN	104.3
	WNEW-FM	102.7
	WNYC-FM	93.9
	WNYE	91.5
	WOR-FM	98.7
	WQXR-FM	96.3
	WNBC-FM	97.1
	WRFM	105.1
	WRVR	106.7
Niagara Falls	WHLD-FM	98.5
Olean	WHDL-FM	95.7
Plattsburgh	WEAV-FM	99.9
Patchogue	WALK-FM	97.5
	WPAC-FM	106.1
Peekskill	WLNA-FM	100.7
Poughkeepsie	WKIP-FM	104.7
Rochester	WHFM	98.9
	WBBF-FM	100.1
	WCMF	96.5
	WIRQ	*90.9
	WROC-FM	97.9
Schenectady	WGFM	99.5
South Bristol	WMIV	95.1
Springville	WSPE	*88.1
Syracuse	WAER	*88.1
	WDDS-FM	93.1
	WONO	100.9
	WSYR-FM	94.5
Troy	WFLY	92.3
	WRPI	*91.5
Utica	WRUN-FM	105.7
Wethersfield	WBIV	105.7
White Plains	WFAS-FM	103.9

NORTH CAROLINA

Location	C.L.	Mc.
Albemarle	WABZ-FM	100.9
Asheboro	WGWR-FM	92.3
Asheville	WLOS-FM	104.3
Burlington	WBBB-FM	101.1
	WFNS-FM	93.9
Burlington-Graham	WBAG-FM	92.9
Chapel Hill	WUNC	*91.5
Charlotte	WSOC-FM	103.5
	WYFM	104.7
Clingman's Pk.	WMIT	106.9
Durham	WDNC-FM	105.1
Elkin	WIFM-FM	100.9
Fayetteville	WFNC-FM	98.1
Forest City	WBBO-FM	93.3
	WAGY-FM	105.3
Gastonia	WGNC-FM	101.9
Goldsboro	WEQR	96.9
Greensboro	WMDE	98.7
Greenville	WWWS	*91.3
Henderson	WHNC-FM	92.5
	WHKP-FM	102.5
Hendersonville	WHKP-FM	102.5
Hickory	WHKY-FM	102.9
High Point	WHPE-FM	95.5
	WHPS	*89.3
	WMFR-FM	99.5
	WNOS-FM	100.3
Laurinburg	WEWO-FM	96.5
Leaksville	WLOE-FM	94.5
Lexington	WBUY-FM	94.3
Lumberton	WTSB-FM	95.7
Raleigh	WKIX-FM	96.1
	WPTF-FM	94.7
	WRAL-FM	101.5
Reidsville	WREV-FM	102.1
Rocky Mount	WEED-FM	92.1
	WFMA	100.7
Roxboro	WRXO-FM	96.7
Salisbury	WSTP-FM	106.5
Sanford	WWGP-FM	105.5
Shelby	WOHS-FM	96.1
Statesville	WFMX	105.7
Tarboro	WCPS-FM	104.3
Thomasville	WTNC-FM	98.3
Wilmington	WPRV	99.9
Wilson	WVOT-FM	106.1
Winston-Salem	WAIR-FM	93.1
	WYFS	107.5
	WFDD-FM	*88.1
	WSJS-FM	104.1

OHIO

Location	C.L.	Mc.
Akron	WAKR-FM	97.5
	WAPS	*89.1
	WCUE-FM	96.5
Alliance	WFAH-FM	101.7
Ashland	WNCO-FM	101.3
Ashtabula	WREO-FM	103.7
Athens	WOUB-FM	*91.5
Barberton	WDBN	94.9
Bellaire	WOMP-FM	100.5
Berea	WBWC	*88.3
Bowling Green	WBGU	*88.1
Canton	WHBC-FM	94.1
	WANO	106.9
	WCNO	106.9
Celina	WMER-FM	94.3
Chillicothe	WBEX-FM	93.3
Cincinnati	WCPO-FM	105.1
	WAEF-FM	104.3
	WGUC	*90.9
	WKRC-FM	101.9
	WSAI-FM	102.7
Cleveland	KYW-FM	105.7
	WXEN-FM	106.6
	WBOE	*90.3
	WCRF	103.3
	WDGO	95.5
	WDOK-FM	102.1
	WERE-FM	98.5
	WGAR-FM	99.5
	WHK-FM	100.7
	WJW-FM	104.1
	WNOB	107.9
Cleveland Hts.	WCUY-FM	92.5
Columbus	WCBE	*90.5
	WBNS-FM	97.1
	WCOL-FM	92.3
	WOSU-FM	*89.7
	WTVN-FM	96.3
	WVKO	94.7
Dayton	WHIO-FM	99.1
	WIFE	104.7
Delaware	WSLN	*91.1
East Liverpool	WOHI-FM	104.3
Eaton	WCTM	92.9
Elyria	WEOL-FM	107.3
Findlay	WFIN-FM	100.5
Fostoria	WFOB	96.7
Fremont	WFRO-FM	99.3
Hamilton	WQMS	96.7

Location	C.L.	Mc.
	WHOH	103.5
Kent	WKSU-FM	*88.1
Lancaster	WHOK-FM	95.5
Lima	WIMA-FM	102.1
Marietta	WCMO	*89.3
Marion	WMRN-FM	106.9
Miamisburg	WFCJ	93.9
Middletown	WPFB-FM	105.9
Mt. Vernon	WMVO-FM	93.7
New Concord	WMCO-FM	*91.9
Newark	WCLT-FM	100.3
Oxford	WMUB	*88.5
	WOXR	97.7
Piqua	WPTW-FM	95.7
Portsmouth	WPAY-FM	104.1
Salem	WSOM-FM	105.1
Sandusky	WLEC-FM	102.7
Springfield	WBLY-FM	103.9
Steubenville	WSTV-FM	103.5
Toledo	WSPD-FM	101.5
	WMHE	92.5
	WTDS	*91.3
	WTOL-FM	104.7
	WTRT	99.9
Westerville	WOBN	*91.5
Wooster	WWST-FM	104.5
Yellow Springs	WYSO	*91.5
Youngstown	WKBN-FM	98.9
	WBBW-FM	93.3
	WRED	101.1

OKLAHOMA

Location	C.L.	Mc.
Durant	KSEO-FM	107.3
Norman	WNAD-FM	*90.9
Oklahoma City	KOKH	*88.9
	KIOO	100.5
	KEFM	94.7
	KYFM	98.9
Shawnee	KBGC	*89.9
Stillwater	KOSU-FM	*91.7
	KSPI-FM	93.9
Tulsa	KWGS	*90.5
	KIHI	95.5
	KOCW	97.5
	KOGM-FM	92.9

OREGON

Location	C.L.	Mc.
Eugene	KRVM	*91.9
	KEED-FM	93.1
	KFMY	97.9
	KUGN-FM	99.1
	KWAX	*91.1
Grants Pass	KGPO	96.9
Medford	KBOY-FM	95.3
Oretech	KTEC	*88.1
Portland	KEX-FM	92.3
	KGMG	95.5
	KOIN-FM	101.1
	KPFM	97.1
	KPOJ-FM	98.7
	KQFM	100.3
	KRRC	*89.3

PENNSYLVANIA

Location	C.L.	Mc.
Allentown	WFMZ	100.7
	WAEB-FM	104.1
Altoona	WVAM-FM	100.1
	WFBG-FM	98.1
Beaver Falls	WBVP-FM	106.7
Bethlehem	WGPA-FM	95.1
Bloomsburg	WHLM-FM	106.5
Boyertown	WBYC-FM	107.5
Braddock	WLOA-FM	96.9
Butler	WBUT-FM	97.7
Carlisle	WHYL-FM	102.3
Chambersburg	WCHA-FM	95.1
Dubois	WCED-FM	102.1
Easton	WEST-FM	107.9
	WEEX-FM	99.9
Erie	WWYN-FM	99.9
Glenside	WIFI	92.5
Harrisburg	WHP-FM	97.3
Havertown	WHHS	*89.3
Hazleton	WAZL-FM	97.9
Jenkintown	WIBF	103.9
Johnstown	WARD-FM	92.1
	WJAC-FM	95.5
Lancaster	WGAL-FM	101.3
	WDAC	94.5
	WLAN-FM	96.9
Lebanon	WLBR-FM	100.1
Meadville	WMGW-FM	100.3
Montrose	WPEL-FM	96.5
Oil City	WDJR	98.5
Palmyra	WJWR	92.1
Philadelphia	WCAU-FM	98.1
	WDAS-FM	105.3
	WFIL-FM	102.1
	WFLN	95.7
	WHAT-FM	96.5
	WHYY	*90.9
	WIFI	92.5
	WIBG-FM	94.1
	WIP-FM	93.3
	WPEN-FM	102.9
	WPWT	*91.7
	WQAL	106.1
	WRTI-FM	*90.1
	WXPN	*88.9
Pittsburgh	KDKA-FM	92.9
	WAZZ	105.9
	WCAE-FM	96.1
	WDUQ	*91.5
	WINE	107.9
	WILY	105.9
	WJAS-FM	99.7
	WKJF	93.7
	WPIT-FM	101.5
	WWSW-FM	94.5
Pottsville	WPPA-FM	101.9
Red Lion	WGCB-FM	96.1
Scranton	WGBI-FM	101.3
	WUSV	*88.9
Sharon	WPIC-FM	102.9
State College	WDFM	*91.1
Sunbury	WKOK-FM	94.1
Towanda	WTTC-FM	92.7
Warren	WRRN	92.3
Washington	WJPA-FM	104.3
Waynesboro	WAYZ-FM	101.5
Wilkes-Barre	WBRE-FM	98.5
	WYZZ	103.3
Williamsport	WLYC-FM	105.1
	WRAK-FM	100.3
York	WNOW-FM	105.7

RHODE ISLAND

Location	C.L.	Mc.
Cranston	WLOV	99.9
Providence	WPJB-FM	105.1
	WICE-FM	107.7
	WPFM	95.5
	WPRO-FM	92.3
	WXCN	101.5
Woonsocket	WWON-FM	106.3

SOUTH CAROLINA

Location	C.L.	Mc.
Anderson	WCAC	101.1
Charleston	WCSC-FM	96.9
	WTMA-FM	95.1
Clemson	WSBF-FM	*88.1
Columbia	WCOS-FM	97.9
	WNOK-FM	104.7
	WUSC-FM	*89.9
Dillon	WDSC-FM	92.9
Greenville	WESC-FM	92.5
	WFBC-FM	93.7
	WMVU-FM	94.5
Laurens-Clinton	WLBG-FM	100.5
Rock Hill	WRHI-FM	98.3
Seneca	WSNW-FM	98.1
Spartanburg	WSPA-FM	98.9

TENNESSEE

Location	C.L.	Mc.
Bristol	WOPI-FM	96.9
Chattanooga	WDOD-FM	96.5
	WLON	106.5
Collegedale	WSMC-FM	*88.1
Gallatin	WFMG	104.5
Greeneville	WGRV-FM	94.9
Jackson	WTJS-FM	104.1
Johnson City	WJCW-FM	100.7
Kingsport	WKPT-FM	98.5
Knoxville	WBIR-FM	93.3
	WKCS	*91.1
	WUOT	*91.9
Memphis	WMC-FM	99.7
	WMPS-FM	97.1
	WDIA-FM	102.7
Nashville	WFMB	105.9
	WSIX-FM	97.5
Sevierville	WSEV-FM	102.1

TEXAS

Location	C.L.	Mc.
Abilene	KACC-FM	*91.1
	KFMN	99.3
Amarillo	KGNC-FM	93.1
Austin	KHFI	98.3
	KAZZ	95.5
	KTBC-FM	93.7
	KUT-FM	*90.7
Beaumont	KHCB-FM	105.7
	KRIC-FM	97.5
Brownwood	KHPC	88.1
Cleburne	KCLE-FM	94.9
Corpus Christi	KMFM	95.5
Dallas	KIXL-FM	104.5
	KNER	*88.1
	KRLD-FM	92.5
	KROW-FM	98.7
	WFAA-FM	97.9
	WRR-FM	101.1
	KVTT	*91.7
	KQRO	102.9
Denton	KDNT-FM	106.3
Diboll	KSPL-FM	95.5
Dumas	KDDD-FM	95.3
El Paso	KVOF-FM	*88.5
	KHMS	94.7
Ft. Worth	WBAP-FM	96.3
	KXFM	99.5
	KFJZ-FM	97.1
Gainesville	KGAF-FM	94.5
Harlingen	KELT	94.5
Highland Pk.	KUIL-FM	103.7
Hillsboro	KHBR-FM	102.3
Houston	KHGM	102.9
	KHUL	95.7
	KFMK	97.9
	KARO	94.5
	KOST	100.3
	KQUE	102.9
	KRBE	104.1
	KTRH-FM	101.1
	KUHF	*91.3
Lubbock	KRKH-FM	93.7
	KBFM	96.3
	KTXT-FM	*91.9
Marshall	KMHT-FM	97.3
Midland	KNFM	92.3
Mt. Pleasant	KIMP-FM	96.1
Odessa	KQIP	96.7
	KWMO	99.1
Pampa	KBMF-FM	100.3
Plainview	KHBL	*88.1
Port Arthur	KFMP	93.3
San Antonio	KISS	99.5
	KEEZ	97.3
	KAKI-FM	98.1
	KITY	92.9
Sinton	KTOD-FM	101.3
Texarkana	KTAL-FM	98.1
Tyler	KSLT	93.1
Waco	KEFC	95.5
Waxahachie	KBEC-FM	93.5

UTAH

Location	C.L.	Mc.
Ephraim	KEPH	*88.9
Logan	KUSU-FM	*88.1
Provo	KBYU-FM	*88.9
Salt Lake City	KCPX-FM	98.7
	KLUB-FM	97.1
	KSL-FM	100.3

VIRGINIA

Location	C.L.	Mc.
Arlington	WAVA-FM	105.1
	WCCV-FM	97.5
Charlottesville	WINA-FM	95.3
	WTJU	91.3
Crewe	WSVS-FM	104.7
Farmville	WFLO-FM	95.7
Fredericksburg	WFVA-FM	101.5
Gretna	WMNA-FM	103.3
Harrisonburg	WEMC	*91.7
	WSVA-FM	100.7
Lynchburg	WWOD-FM	100.1
Manassas	WPRW-FM	106.7
Marion	WMEV-FM	93.9
Martinsville	WMVA-FM	96.3
Newport News	WGH-FM	97.3
Norfolk	WMTI	*91.5
	WRVC	102.5
	WTAR-FM	95.7
	WYFI-FM	99.7
Portsmouth	WAVY-FM	96.9
Richmond	WCOD	98.1
	WRFK	91.1
	WRVA-FM	94.5
	WRNL-FM	102.1
Roanoke	WDBJ-FM	94.9
	WLRJ	92.3
	WROV-FM	103.7
	WSLS-FM	99.1
South Boston	WHLF-FM	97.5
South Norfolk	WFOS	*90.5
Staunton	WSGM-FM	93.5
Williamsburg	WCWM	89.1
Winchester	WRFL	92.5
Woodbridge	WXRA	105.9

WASHINGTON

Location	C.L.	Mc.
Bellingham	KGMI-FM	92.9
Cheney	KEWC-FM	*89.9
Edmonds	KGFM	105.3
Lynden	KLYN-FM	106.5
Opportunity	KZUN-FM	96.1
Seattle	KING-FM	98.1
	KETO-FM	101.5
	KGMJ	95.7
	KIRO-FM	100.7
	KISW	99.9
	KLSN	96.5
	KMCS	98.9
	KOL-FM	94.1
	KUOW	94.9
Spokane	KREM-FM	92.9
	KXLY-FM	99.9
	KHQ-FM	98.1
Tacoma	KCPS	90.9
	• KLAY-FM	106.3
	KTNT-FM	97.3
	KTOY	*91.7
	KTWR	103.9
Yakima	KNDX-FM	106.3

WEST VIRGINIA

Location	C.L.	Mc.
Beckley	WBKW	99.5
Charleston	WKAZ-FM	97.5
	WKNA	98.5
Huntington	WKEE-FM	100.5
Martinsburg	WEPM-FM	94.3
Morgantown	WAJR-FM	99.3
Oak Hill	WOAY-FM	94.1
Wheeling	WKWK-FM	97.3
	WWVA-FM	98.7

WISCONSIN

Location	C.L.	Mc.
Appleton	WLFM	*91.1
Chilton	WHKW	*89.3
Colfax	WHWC	*88.3
Delafield	WHAD	*90.7
Eau Claire	WIAL	94.1
Fort Atkinson	WFAW	107.3
Green Bay	WBAY-FM	101.1
Greenfield Twp.	WWCF	94.9
Highland	WHHI	91.3
Highland Twp.	WHSA	*89.9
Janesville	WCLO-FM	99.9
La Crosse	WHLA	*90.3
Madison	WHA-FM	*88.7
	WIBA-FM	101.5
	WISM-FM	98.1
	WMFM	104.1
	WRVB-FM	102.5
Merrill	WLIN	100.7
Milwaukee	WFMR	96.5
	WMIL-FM	95.7
	WISN-FM	97.3
	WRIT-FM	102.9
	WMKE	102.1
	WQFM	93.3
	WTMJ-FM	94.1
Monroe	WEKZ-FM	93.7
Racine	WRJN-FM	100.7
Rice Lake	WJMC-FM	96.3
Sparta	WCOW-FM	97.1
Watertown	WTTN-FM	104.7
Waukesha	WAUX-FM	106.1
Wausau	WHRM	*91.9
Wauwatosa	WTOS	103.7
West Bend	WBKV-FM	92.5
Wisc. Rapids	WFHR-FM	103.3

WYOMING

Location	C.L.	Mc.
Cheyenne	KVOW-FM	106.3

U. S. FM Stations by Call Letters

Abbreviation: (s)—broadcasts stereo

C.L.	Location
KAAR	Oxnard, Calif.
KABC-FM	Los Angeles, Calif.
KACE-FM	Riverside, Calif.
KAOI	St. Louis, Mo.
KAFE	Oakland, Calif.
KAFI	Auburn, Calif.
KAFM	Salina, Kans.
KAIM-FM	Honolulu, Hawaii
KAJS	Newport Beach, Calif.
KAKC	Tulsa, Okla.
KAKI	San Antonio, Tex.
KALB-FM	Alexandria, La.
KALH	Denver, Colo.
KALW	San Francisco, Calif.
KAMS	Mammoth Spring, Ark.
KANG	St. Louis, Mo.
KANT-FM	Lancaster, Calif.
KANU	Lawrence, Kans.
KANW	Albuquerque, N.Mex.
KAPP	Redondo Beach, Calif.
KARK	Little Rock, Ark.
KARM-FM	Fresno, Calif.
KARO	Houston, Tex.
KASK-FM	Ontario, Calif.
KASU	Jonesboro, Ark.
KATT	Woodland, Calif.
KATY-FM	San Luis Obispo, Calif.
KAZZ	Austin, Tex.
KBAY	San Francisco, Calif.
KBBI	Los Angeles, Calif.
KBBL	Wichita, Kans.
KBBM	Hayward, Calif.
KBBW	San Diego, Calif.
KBCA	Los Angeles, Calif.
KBCL-FM	Shreveport, La.
KBCO	San Francisco, Calif.
KBEC-FM	Waxahachie, Tex.
KBEE-FM	Modesto, Calif.
KBEY	Kansas City, Mo.
KBFI	Boise, Idaho
KBFM	Lubbock, Tex.
KBIM-FM	Roswell, N.Mex.
KBIQ	Los Angeles, Calif.
KBMF	Pampa, Tex.
KBMS	Los Angeles, Calif.
KBOA-FM	Kennett, Mo.
KBOI-FM	Boise, Idaho
KBOY-FM	Medford, Oreg.
KBTM-FM	Jonesboro, Ark.
KBUZ-FM	Mesa, Ariz.
KBYR-FM	Anchorage, Alaska
KBYU-FM	Provo, Utah
KCAL-FM	Redlands, Calif.
KCBH	Beverly Hills, Calif.
KCBS-FM	San Francisco, Calif.
KCFM	St. Louis, Mo. (s)
KCHV-FM	Coachella, Calif.
KCJC	Kansas City, Kans.
KCLE-FM	Cleburne, Tex.
KCMB-FM	Wichita, Kans.
KCMI	Los Angeles, Calif.
KCMK	Kansas City, Mo.
KCMO-FM	Kansas City, Mo. (s)
KCMS-FM	Manitou Springs, Colo.
KCNW	Sacramento, Calif.

C.L.	Location
KCOM	Omaha, Nebr.
KCPA-FM	Dallas, Tex.
KCPS	Tacoma, Wash.
KCPX-FM	Salt Lake City, Utah
KCRA-FM	Sacramento, Calif.
KCRW	Santa Monica, Calif.
KCSM	San Mateo, Calif.
KCUF	Redwood City, Calif.
KCUI	Pella, Ia.
KCUR-FM	Kansas City, Mo.
KCVN	Stockton, Calif.
KCVR-FM	Lodi, Calif.
KDB-FM	Santa Barbara, Calif.
KDDD-FM	Dumas, Tex.
KDEF-FM	Albuquerque, N.Mex.
KDEN-FM	Denver, Colo.
KDFC	San Francisco, Calif.
KDKA-FM	Pittsburgh, Pa.
KDMC	Corpus Christi, Tex.
KDMI	Des Moines, Iowa
KDNT-FM	Denton, Tex.
KDPS	Des Moines, Iowa
KDUO	Riverside, Calif.
KDVR	Sioux City, Ia.
KDWC	West Covina, Calif.
KEAR	San Francisco, Calif.
KEAX	National City, Calif.
KEBJ	Phoenix, Ariz.
KEBR	Sacramento, Calif.
KEBS	San Diego, Calif.
KEED-FM	Springfield-Eugene, Oregon
KEEN-FM	San Jose, Calif.
KEEZ	San Antonio, Tex.
KEFC	Waco, Tex.
KEFM	Oklahoma City, Okla.
KEFW	Honolulu, Hawaii
KELE	Phoenix, Ariz.
KELT	Harlingen, Tex.
KEMO	St. Louis, Mo.
KERN-FM	Bakersfield, Calif.
KETO-FM	Seattle, Wash.
KEX-FM	Portland, Oreg.
KEYM	Santa Maria, Calif.
KEZE	Anaheim, Calif.
KFAB-FM	Omaha, Nebr.
KFAC-FM	Los Angeles, Calif.
KFAM-FM	St. Cloud, Minn
KFBK-FM	Sacramento, Calif.
KFCA	Phoenix, Ariz.
KFGQ-FM	Boone, Iowa
KFH-FM	Wichita, Kans.
KFIL	Santa Ana, Calif.
KFJC	Mountainview, Calif.
KFJZ	Fort Worth, Tex.
KFMB-FM	San Diego, Calif.
KFMC	Portland, Oreg.
KFMH	Colorado Springs, Colo.
KFMK	Houston, Tex. (s)
KFML-FM	Denver, Colo.
KFMM	Tucson, Ariz.
KFMN	Abilene, Tex.
KFMP	Port Arthur, Tex.
KFMQ	Lincoln, Nebr.
KFMU	Los Angeles, Calif. (s)
KFMV	Minneapolis, Minn
KFMW	San Bernardino, Calif.
KFMX	San Diego, Calif.
KFMY	Eugene, Oreg. (s)
KFNB	Oklahoma City, Okla.
KFOX-FM	Long Beach, Calif.
KFRC-FM	San Francisco, Calif.
KFUO-FM	Clayton, Mo.
KGAF-FM	Gainesville, Tex.
KGB-FM	San Diego, Calif.
KGBN-FM	Caldwell, Idaho
KGFM	Edmonds, Wash.
KGGK	Garden Grove, Calif.
KGLA	Los Angeles, Calif.
KGMG	Portland, Oreg.
KGMI	Bellingham, Wash.
KGNC-FM	Amarillo, Tex.
KGO-FM	San Francisco, Calif.
KGPO	Grants Pass, Oreg.
KGUD-FM	Santa Barbara, Calif.
KHBL	Plainview, Tex.
KHBR-FM	Hillsboro, Tex.
KHCB	Houston, Tex.
KHFI	Austin, Tex.
KHFM	Albuquerque, N.Mex.
KHGM	Houston, Tex.
KHIP	San Francisco, Calif.
KHIQ	Sacramento, Calif.
KHJ-FM	Los Angeles, Calif.
KHMS	El Paso, Tex.
KHOF	Los Angeles, Calif.
KHOL-FM	Kearney-Holdredge, Nebraska
KHOM-FM	Turlock, Calif.
KHPC	Brownwood, Tex.
KHQ-FM	Spokane, Wash.
KHSC	Arcata, Calif.
KHUL	Houston, Tex.
KHVR	Bijou, Calif.
KHYI	Fremont, Calif.
KICN	Omaha, Nebr.
KIEM	Eureka, Calif.
KIHI	Tulsa, Okla.
KIMP-FM	Mt. Pleasant, Tex.
KING-FM	Seattle, Wash.
KIOO	Oklahoma, Okla.
KIRO-FM	Seattle, Wash.
KISA	Kansas City, Mo.
KISS	San Antonio, Tex.
KISW	Seattle, Wash.
KITH	Phoenix, Ariz.
KITT	San Diego, Calif.
KITY	San Antonio, Tex.
KIXL-FM	Dallas, Tex. (s)
KJAZ	Alameda, Calif.
KJEM-FM	Okla. City, Okla.
KJLM	San Diego, Calif.
KJML	Sacramento, Calif.
KJPO	Fresno, Calif.
KJRG	Newton, Kans.
KJSB	Houston, Tex.
KLAC-FM	Los Angeles, Calif.
KLAY-FM	Tacoma, Wash.
KLCN-FM	Blytheville, Ark.
KLFM	Beverly Hills, Calif.
KLIR-FM	Denver, Colo.
KLIZ-FM	Brainerd, Minn.
KLOA-FM	Ridgecrest, Calif.
KLON	Long Beach, Calif.
KLRO	San Diego, Calif.
KLSN	Seattle, Wash. (s)
KLUB-FM	Salt Lake City, Utah
KLYD-FM	Bakersfield, Calif.
KLYN-FM	Lynden, Wash.
KMAK-FM	Fresno, Calif.
KMAX	Sierra Madre, Calif.
KMCP	Portland, Oreg.
KMCS	Seattle, Wash.
KMER	Fresno, Calif.
KMFM	Tularosa, N. Mex.
KMHT	Marshall, Tex.
KMJ-FM	Fresno, Calif.
KMLA	Los Angeles, Calif. (s)
KMLB-FM	Monroe, La.
KMMK	Little Rock, Ark.
KMOX-FM	St. Louis, Mo.
KMUW	Wichita, Kans.
KMYC-FM	Marysville, Calif.
KMUZ	Santa Barbara, Calif. (s)
KNBC-FM	San Francisco, Calif.
KNDE-FM	Aztec, N.Mex.
KNDX	Yakima, Wash.
KNEB-FM	Scottsbluff, Nebr.
KNER	Dallas, Tex.
KNEV	Reno, Nev.
KNEW-FM	Scottsbluff, Nebr.
KNFM	Midland, Tex.
KNFP	LaSierra, Calif.
KNIK-FM	Anchorage, Alaska
KNOB	Long Beach, Calif.
KNOF	St. Paul, Minn.
KNX-FM	Los Angeles, Calif.
KOA-FM	Denver, Colo
KOCW	Tulsa, Okla.
KOGM-FM	Tulsa, Okla.
KOGO	San Diego, Calif.
KOIN-FM	Portland, Oreg.
KOKH	Oklahoma City, Okla.
KOL-FM	Seattle, Wash.
KONG-FM	Visalia, Calif. (s)
KOOL-FM	Phoenix, Ariz.
KOSE-FM	Osceola, Ark.
KOST	Dallas, Tex.
KOSU-FM	Stillwater, Okla.
KOTN-FM	Pine Bluff, Ark.
KOY-FM	Phoenix, Ariz.
KOZE-FM	Lewiston, Idaho
KPAT	Albuquerque, N.Mex.
KPCS	Pasadena, Calif.
KPEN	Atherton, Calif. (s)
KPFA	Berkeley, Calif.
KPFB	Berkeley, Calif.
KPFK	Los Angeles, Calif.
KPFM	Portland, Oreg. (s)
KPGM	Los Altos, Calif.
KPLR-FM	St. Louis, Mo.
KPOI-FM	Honolulu, Hawaii
KPOJ-FM	Portland, Oreg.
KPOL-FM	Los Angeles, Calif.
KPPS-FM	Parsons, Kans.
KPRI	San Diego, Calif. (s)
KPRN	Seattle, Wash.
KPSD	Dallas, Tex.
KPSR	Palm Springs, Calif.
KQAL-FM	Omaha, Nebr. (s)
KQBY-FM	San Francisco, Calif.
KQFM	Portland, Oreg.
KQIP	Odessa, Tex.
KQRO	Dallas, Tex.
KQUE	Houston, Tex.
KQXR	Bakersfield, Calif.
KRAK-FM	Stockton, Calif.
KRAM-FM	Las Vegas, Nev.
KRBE	Houston, Tex.
KRCC	Colorado Springs, Colo.
KRCW	Santa Barbara, Calif.
KRE-FM	Berkeley, Calif.
KREM-FM	Spokane, Wash.
KREX-FM	Grand Junction, Colo.
KRFM	Fresno, Calif.
KRHM	Los Angeles, Calif.
KRIC-FM	Beaumont, Tex.
KRKD-FM	Los Angeles, Calif.
KRKH-FM	Lubbock, Tex.
KRKY	Denver, Colo.
KRLD-FM	Dallas, Tex.
KRMD-FM	Shreveport, La.
KRNW	Boulder, Colo.
KRON-FM	San Francisco, Calif.
KROS-FM	Clinton, Iowa
KROW	Santa Barbara, Calif.
KROY-FM	Sacramento, Calif.
KRPM	San Jose, Calif.
KRRC	San Jose, Calif.
KRSN-FM	Los Alamos, N.Mex.
KRVM	Eugene, Oreg.
KSBW-FM	Salinas, Calif.
KSDB-FM	Manhattan, Kans.
KSDS	San Diego, Calif.
KSEA	San Diego, Calif.
KSEO-FM	Durant, Okla.
KSFM	Dallas, Tex. (s)
KSFR	San Francisco, Calif.
KSFV	San Fernando, Calif.
KSFX	San Francisco, Calif.
KSHE	Crestwood, Mo.
KSHS	Colorado Springs, Colo.
KSJO-FM	San Jose, Calif. (s)
KSL-FM	Salt Lake City, Utah
KSLA	Seattle, Wash. (s)
KSLH	St. Louis, Mo.
KSLT	Tyler, Tex.
KSMA-FM	Santa Maria, Calif.
KSO-FM	Des Moines, Iowa
KSPC	Claremont, Calif.
KSPI-FM	Stillwater, Okla.
KSPL-FM	Diboll, Tex.
KSRF	Santa Monica, Calif.
KSTE	Emporia, Kans.
KSTL-FM	St. Louis, Mo.
KSTN-FM	Stockton, Calif.
KSUI	Iowa City, Iowa
KSWI-FM	Omaha, Nebr.
KSYN	Joplin, Mo.
KTAL	Texarkana, Tex.
KTAP	Tucson, Ariz.
KTAR-FM	Phoenix, Ariz.
KTBC-FM	Austin, Tex.
KTCF	Cedar Falls, Iowa
KTEC	Oretech, Oreg.
KTGM	Denver, Colo.
KTIM	San Rafael, Calif.
KTIS-FM	Minneapolis, Minn.
KTJO-FM	Ottawa, Kans.
KTNT-FM	Tacoma, Wash.
KTOD	Mt. Pleasant, Tex.
KTOP-FM	Topeka, Kans.
KTOY	Tacoma, Wash.
KTRB-FM	Modesto, Calif.
KTRH-FM	Houston, Tex.
KTSR	Kansas City, Mo.
KTTS-FM	Springfield, Mo.
KTWR	Tacoma, Wash.
KTXT-FM	Lubbock, Tex.
KTYM-FM	Inglewood, Calif.
KUDE-FM	Oceanside, Calif.
KUDU-FM	Ventura-Oxnard, Calif.
KUER	Salt Lake City, Utah
KUFM	El Cajon, Calif.
KUGN-FM	Eugene, Oreg.
KUHF	Houston, Tex.
KUMO-FM	Duluth, Minn.
KUOA-FM	Siloam Springs, Ark.
KUOH	Honolulu, Hawaii
KUOW	Seattle, Wash.
KUPD-FM	Tempe, Ariz.
KUSC	Los Angeles, Calif.
KUT-FM	Austin, Tex.
KUTE	Glendale, Calif.
KVCR	San Bernardino, Calif.
KVEC-FM	San Luis Obispo, Calif.
KVEN-FM	Ventura, Calif.
KVFM	San Hernando, Calif.
KVIL	Highland Pk., Tex.
KVOF-FM	El Paso, Tex.
KVOK	Honolulu, Hawaii
KVOP-FM	Plainview, Tex.
KVOR-FM	Colorado Springs, Colo.
KVSC	Logan, Utah
KVTT	Dallas, Tex.
KWAR	Waverly, Iowa
KWAX	Eugene, Oreg.
KWFM	Minneapolis, Minn.
KWG-FM	Stockton, Calif.
KWGS	Tulsa, Okla.
KWIX	St. Louis, Mo.
KWIZ-FM	Santa Ana, Calif.
KWJB-FM	Globe, Ariz.
KWKH-FM	Shreveport, La.
KWME	Walnut Creek, Calif.
KWMO	Odessa, Tex.
KWOA-FM	Worthington, Minn.
KWOC-FM	Poplar Bluff, Mo.
KWPC-FM	Muscatine, Iowa
KWPM-FM	West Plains, Mo.
KXFM	Fort Worth, Tex.
KXJK-FM	Forrest City, Ark.
KXLU	Los Angeles, Calif.
KXQR	Fresno, Calif.
KXRQ	Sacramento, Calif.
KXTR	Kansas City, Mo.
KXYZ-FM	Houston, Tex.
KYA-FM	San Francisco, Calif.
KYEW	Phoenix, Ariz.
KYFM	Oklahoma City, Okla.
KYSM-FM	Mankato, Minn.
KYW-FM	Cleveland, Ohio
KZAM	Seattle, Wash.
KZFM	Cortez, Colo.
KZOM	Oklahoma City, Okla.
KZUN-FM	Opportunity, Wash
WAAB-FM	Worcester, Mass.
WAAM-FM	Parkersburg, W.Va.
WABC-FM	New York, N.Y.
WABE	Atlanta, Ga.
WABI-FM	Bangor, Maine
WABQ	Cleveland, Ohio
WABX	Detroit, Mich.
WABZ-FM	Albemarle, N.C.
WAEB-FM	Cincinnati, Ohio
WAEF	Syracuse, N.Y.
WAER	Syracuse, N.Y.
WAHR-FM	Miami Beach, Fla.
WAIC	San Juan, P.R.
WAIR-FM	Winston-Salem, N.C.
WAIV	Indianapolis, Ind.
WAJC	Indianapolis, Ind.
WAJM	Montgomery, Ala.
WAJP	Joliet, Ill.
WAJR-FM	Morgantown, W.Va.
WAKR-FM	Akron, Ohio
WALK-FM	Patchogue, N.Y.
WAMC	Albany, N.Y.
WAMF	Amherst, Mass.
WAMU-FM	Washington, D.C.
WAPI-FM	Birmingham, Ala.
WAPS	Akron, Ohio
WAQE-FM	Towson, Md. (s)
WARD-FM	Johnstown, Pa.
WARK-FM	Hagerstown, Md.
WARL-FM	Arlington, Va.
WARN-FM	Fort Pierce, Fla.
WASA-FM	Havre De Grace, Md.
WASH	Washington, D.C.
WATR-FM	Waterbury, Conn.
WAUG-FM	Augusta, Ga.
WAUX-FM	Waukesha, Wis.
WAVI-FM	Dayton, Ohio
WAVQ	Atlanta, Ga.
WAVU-FM	Albertville, Ala.
WAVY-FM	Portsmouth, Va.
WAWZ-FM	Zarephath, N.J.
WAYL	Minneapolis, Minn. (s)
WAYZ-FM	Waynesboro, Pa.
WAZL-FM	Hazelton, Pa.
WAZZ	Pittsburgh, Pa.
WBAA-FM	W. Lafayette, Ind.
WBAB-FM	Babylon, N.Y.
WBAI	New York, N.Y.
WBAP-FM	Ft. Worth, Tex.
WBAY-FM	Green Bay, Wis.
WBBB-FM	Burlington, N.C.
WBBC	Jackson, Mich.
WBBF-FM	Rochester, N.Y.
WBBM-FM	Chicago, Ill.
WBBO-FM	Forest City, N.C.
WBBQ-FM	Augusta, Ga.
WBBR-FM	E. St. Louis, Ill.
WBBS	Crawfordsville, Ind.
WBBW-FM	Youngstown, Ohio
WBCB-FM	Levittown-Fairless Hills, Pa.
WBCI-FM	Williamsburg, Va.
WBCM-FM	Bay City, Mich.
WBCN	Boston, Mass.
WBEN-FM	Buffalo, N.Y.
WBET-FM	Brockton, Mass.
WBEX-FM	Chillicothe, Ohio
WBEZ	Chicago, Ill.
WBFM	New York, N.Y.
WBFO	Buffalo, N.Y.
WBGD	Newark, N.J.
WBGU	Bowling Green, Ohio
WBIE-FM	Marietta, Ga.
WBIR-FM	Knoxville, Tenn.
WBIV	Wethersfield, N.Y.
WBJC	Baltimore, Md.
WBKV-FM	West Bend, Wis.
WBKW	Beckley, W.Va.
WBKY	Lexington, Ky.
WBLY-FM	Springfield, Ohio
WBMI	Meridan, Conn.
WBNS-FM	Columbus, Ohio (s)
WBOE	Cleveland, Ohio
WBOR	Brunswick, Maine
WBOS-FM	Brookline, Mass.
WBRB-FM	Mt. Clements, Mich.
WBRC	Birmingham, Ala.
WBRE-FM	Wilkes-Barre, Pa.
WBSM-FM	New Bedford, Mass.
WBST	Muncie, Ind.
WBUF	Buffalo, N.Y.
WBUR	Boston, Mass.
WBUT-FM	Butler, Pa.
WBUY-FM	Lexington, N.C.
WBVA	Woodbridge, Va.
WBVP-FM	Beaver Falls, Pa.
WBWC	Berea, Ohio
WBZ-FM	Boston, Mass.
WCAC	Anderson, S.C.
WCAE-FM	Pittsburgh, Pa.
WCAO-FM	Baltimore, Md.
WCAU-FM	Philadelphia, Pa.
WCBC-FM	Anderson, Ind.
WCBE	Columbus, Ohio
WCBM-FM	Baltimore, Md.
WCBS-FM	New York, N.Y.
WCCC-FM	Hartford, Conn.
WCCV-FM	Charlottesville, Va.
WCED-FM	Dubois, Pa.
WCFM	Williamstown, Mass.
WCHA-FM	Chambersburg, Pa.
WCHD	Detroit, Mich.
WCKR-FM	Miami, Fla.
WCLI-FM	Corning, N.Y.
WCLM	Chicago, Ill.
WCLO-FM	Janesville, Wis.
WCLT-FM	Newark, Ohio
WCMC-FM	Wildwood, N.J.
WCME-FM	Brunswick, Maine
WCMF-FM	Rochester, N.Y.
WCMI-FM	Ashland, Ky.
WCMO	Marietta, Ohio
WCMR-FM	Elkhart, Ind.
WCNB-FM	Connersville, Ind.
WCNO	Canton, Ohio
WCOD	Richmond, Va.
WCOH-FM	Newnan, Ga.
WCOL-FM	Columbus, Ohio
WCOP-FM	Boston, Mass.
WCOS-FM	Columbia, S.C.
WCOU-FM	Lewiston, Maine
WCOW-FM	Sparta, Wis.
WCPO-FM	Cincinnati, Ohio
WCPS-FM	Tarbor, N.C.
WCRB-FM	Waltham, Mass. (s)
WCRF-FM	Cleveland, Ohio
WCRT-FM	Birmingham, Ala.

C.L.	Location
WCSC-FM	Charleston, S.C.
WCSI-FM	Columbus, Ind.
WCSQ	Central Square, N.Y.
WCTA-FM	Andalusia, Ala.
WCTC-FM	New Brunswick, N.J.
WCTM	Eaton, Ohio
WCTW-FM	New Castle, Ind.
WCUE-FM	Akron, Ohio
WCUM-FM	Cumberland, Md.
WCUY-FM	Cleveland Hts., Ohio
WCWM	Williamsburg, Va.
WDAC	Lancaster, Pa.
WDAE-FM	Tampa, Fla.
WDAS-FM	Philadelphia, Pa.
WDBJ-FM	Roanoke, Va.
WDBO-FM	Orlando, Fla.
WDBQ-FM	Dubuque, Iowa
WDDE	Hamden, Conn.
WDDS-FM	Syracuse, N.Y.
WDEL-FM	Wilmington, Del.
WDET-FM	Detroit, Mich.
WDFM	State College, Pa.
WDGO	Cleveland, Ohio
WDHA-FM	Dover, N.J.(s)
WDHF	Chicago, Ill.
WDIA-FM	Memphis, Tenn.
WDJK	Atlanta, Ga.
WDJR	Oil City, Pa.
WDMB-FM	Statesville, N.C.
WDNC-FM	Durham, N.C.
WDOC-FM	Prestonsburg, Ky.
WDOD-FM	Chattanooga, Tenn.
WDOK-FM	Cleveland, Ohio
WDOV-FM	Dover, Del.
WDRC-FM	Hartford, Conn.
WDSC-FM	Dillon, S.C.
WDSU-FM	New Orleans, La.
WDTM	Detroit, Mich.(s)
WDTR	Detroit, Mich.
WDUB	Granville, Ohio
WDUN-FM	Gainesville, Ga.
WDUQ	Pittsburgh, Pa.
WDUZ-FM	Green Bay, Wis.
WDWS-FM	Champaign, Ill.
WEAV-FM	Plattsburgh, N.Y.
WEAW-FM	Evanston, Ill.
WEBH	Chicago, Ill.
WEBQ-FM	Harrisburg, Ill.
WEBR-FM	Buffalo, N.Y.
WECW	Elmira, N.Y.
WEDK	Springfield, Mass.
WEED-FM	Rocky Mount, N.C.
WEEI-FM	Boston, Mass.
WEEP-FM	Pittsburgh, Pa.
WEEX-FM	Easton, Pa.
WEFA	Waukegan, Ill.
WEFM	Chicago, Ill.(s)
WEGO-FM	Concord, N.C.
WEHS	Chicago, Ill.
WEIV	Ithaca, N.Y.
WEKZ-FM	Monroe, Wis.
WELF	Glen Ellyn, Ill.
WELG	Elgin, Ill.
WEMC	Harrisonburg, Va.
WEMP-FM	Milwaukee, Wis.
WENR-FM	Chicago, Ill.
WEOL-FM	Elyria, Ohio
WEPM-FM	Martinsburg, W.Va.
WEPS	Elgin, Ill.
WEQR	Goldsboro, N.C.
WERC-FM	Erie, Pa.
WERE-FM	Cleveland, Ohio
WERI-FM	Westerly, R.I.
WERS	Boston, Mass.
WESC-FM	Greenville, S.C.
WEST-FM	Easton, Pa.
WETL	South Bend, Ind.
WEVC	Evansville, Ind
WEVD-FM	New York, N.Y.
WEWO-FM	Laurinburg, N.C.
WFAA-FM	Dallas, Tex.
WFAH-FM	Alliance, Ohio
WFAN	Washington, D.C.
WFAS-FM	White Plains, N.Y.
WFAU-FM	Augusta, Maine
WFAW	Fort Atkinson, Wis.
WFBC-FM	Greenville, S.C.
WFBE	Flint, Mich.
WFBG-FM	Altoona, Pa.
WFBM-FM	Indianapolis, Ind.
WFBS-FM	Winston-Salem, N.C.
WFCI	Franklin, Ind.
WFCJ	Miamisburg, Ohio
WFCR	Amherst, Mass.
WFDS-FM	Baltimore, Md.
WFFM	Cincinnati, Ohio
WFGM-FM	Fitchburg, Mass.
WFHA-FM	Red Bank, N.J.
WFHR-FM	Wisconsin Rapids, Wis.
WFID	Rio Piedras, P.R.
WFIL-FM	Philadelphia, Pa.
WFIN-FM	Findlay, Ohio
WFIU	Bloomington, Ind.
WFLA-FM	Tampa, Fla.
WFLM	Ft. Lauderdale, Fla.
WFLN-FM	Philadelphia, Pa.(s)
WFLO	Farmville, Va.
WFLY	Troy, N.Y.
WFMA	Rocky Mount, N.C.
WFMB	Nashville, Tenn.
WFMD-FM	Frederick, Md.
WFME	Detroit, Mich.
WFMF	Chicago, Ill.
WFMG	Gallatin, Tenn.
WFMF-FM	Cullman, Ala.
WFMI	Montgomery, Ala.
WFML	Washington, Ind.
WFMM-FM	Baltimore, Md.
WFMQ	Chicago, Ill.
WFMS	Indianapolis, Ind.
WFMT	Chicago, Ill.
WFMU	East Orange, N.J.
WFMW-FM	Madisonville, Ky.
WFMX	Statesville, N.C.
WFMZ	Allentown, Pa.
WFNC-FM	Fayetteville, N.C.
WFNQ	Hartford, Conn.
WFNS-FM	Burlington, N.C.
WFOB-FM	Fostoria, Ohio
WFOL	Hamilton, Ohio
WFOS	South Norfolk, Va.
WFPK	Louisville, Ky.
WFPL	Louisville, Ky.
WFQM	San Juan, P.R.
WFRO-FM	Fremont, Ohio
WFST-FM	Caribou, Maine
WFSU-FM	Tallahassee, Fla.
WFUL-FM	Fulton, Ky.
WFUR-FM	Grand Rapids, Mich.
WFUV	New York, N.Y.
WFVA-FM	Fredericksburg, Va.
WGAL-FM	Lancaster, Pa.
WGAR-FM	Cleveland, Ohio
WGAU-FM	Athens, Ga.
WGAY	Silver Spring, Md.
WGBH-FM	Cambridge, Mass.
WGBI-FM	Scranton, Pa.
WGBS-FM	Miami, Fla.
WGCB-FM	Red Lion, Pa.
WGCS	Goshen, Ind.
WGEM-FM	Quincy, Ill.
WGFM	Schenectady, N.Y. (s)
WGGC	Glasgow, Ky.
WGGM	Taylorville, Ill.
WGH-FM	Newport News, Va.
WGHF	Newton, Conn.
WGHJ	Lawrence, Mass.
WGKA-FM	Atlanta, Ga.
WGLM	Richmond, Ind.
WGMS-FM	Washington, D.C.
WGNB	St. Petersburg, Fla.
WGNC-FM	Gastonia, N.C.
WGPA-FM	Bethlehem, Ga.
WGPM	Detroit, Mich.
WGPS	Greensboro, N.C.
WGR-FM	Buffalo, N.Y.
WGRE	Greencastle, Ind.
WGRV-FM	Greenville, Tenn.
WGTB-FM	Washington, D.C.
WGTS-FM	Takoma Park, Md.
WGUC	Cincinnati, Ohio
WGVE	Gary, Ind.
WGWR-FM	Asheboro, N.C.
WGYA	Interlochen, Mich.
WHA-FM	Madison, Wis.
WHAD	Delafield, Wis.
WHAI-FM	Greenfield, Mass.
WHAT-FM	Philadelphia, Pa.
WHAV-FM	Haverhill, Mass.
WHBC-FM	Canton, Ohio
WHBF-FM	Rock Island, Ill.
WHCI	Hartford City, Ind.
WHCN	Hartford, Conn.
WHCU-FM	Ithaca, N.Y.
WHDH-FM	Boston, Mass.
WHDL-FM	Allegheny, N.Y.
WHEN-FM	Syracuse, N.Y.
WHFB-FM	Benton Harbor, Mich.
WHFI	West Paterson, N.J.
WHFM	Rochester, N.Y.
WHFS	Bethesda, Md.(s)
WHHI	Highland, Wis.
WHHS	Havertown, Pa.
WHIM-FM	Providence, R.I.
WHIO-FM	Dayton, Ohio
WHK-FM	Cleveland, Ohio
WHKP-FM	Hendersonville, N.C.
WHKW	Chilton, Wis.
WHKY-FM	Hickory, N.C.
WHLA	Holmen, Wis.
WHLD-FM	Niagara Falls, N.Y.
WHLI-FM	Hempstead, N.Y.
WHLM-FM	Bloomsburg, Pa.
WHMA-FM	Anniston, Ala.
WHNC-FM	Henderson, N.C.
WHO-FM	Des Moines, Iowa
WHOH	Hamilton, Ohio
WHOK-FM	Lancaster, Ohio
WHOM-FM	New York, N.Y.
WHOO-FM	Orlando, Fla.
WHOS-FM	Decatur, Ala.
WHP-FM	Harrisburg, Pa.
WHPE-FM	High Point, N.C.
WHPR	Highland Park, Mich.
WHPS	High Point, N.C.
WHRB-FM	Cambridge, Mass.
WHRM	Wausau, Wis.
WHSA	Highland Twp., Wis.
WHSR-FM	Winchester, Mass.
WHTG-FM	Eatontown, N.J.
WHUS	Storrs, Conn.
WHWC	Colfax, Wis.
WHYL-FM	Carlisle, Pa.
WHYN-FM	Springfield, Mass.
WHYY	Philadelphia, Pa.
WIAL	Eau Claire, Wis.
WIAN	Indianapolis, Ind.
WIBA-FM	Madison, Wis.
WIBC-FM	Indianapolis, Ind.
WIBG-FM	Philadelphia, Pa.
WICB	Ithaca, N.Y.
WIFI	Glenside, Pa.
WIFM-FM	Elkin, N.C.
WIKY-FM	Evansville, Ind.
WIL-FM	St. Louis, Mo.
WILL-FM	Urbana, Ill.
WIMA-FM	Lima, Ohio
WINA-FM	Charlottesville, Va.
WINE-FM	Kenmore, N.Y.
WINF-FM	Manchester, Conn.
WINZ-FM	Miami, Fla.
WIP-FM	Philadelphia, Pa.
WIPR-FM	San Juan, P.R.
WIRA-FM	Ft. Pierce, Fla.
WIRQ	Rochester, N.Y.
WISH-FM	Indianapolis, Ind.
WISK	Medford, Mass.
WISN-FM	Milwaukee, Wis.
WISZ-FM	Madison, Wis.
WITA-FM	San Juan, P.R.
WITH-FM	Baltimore, Md.
WITZ-FM	Jasper, Ind.
WIUS	Christiansted, V.I.
WJAC-FM	Johnstown, Pa.
WJAS-FM	Pittsburgh, Pa.
WJAX-FM	Jacksonville, Fla.
WJBC-FM	Bloomington, Ill.
WJBK-FM	Detroit, Mich.
WJBL-FM	Holland, Mich.
WJBO-FM	Baton Rouge, La.
WJBR	Wilmington, Del.(s)
WJCD-FM	Seymour, Ind.
WJDX-FM	Jackson, Miss.
WJEF-FM	Grand Rapids, Mich.
WJEJ-FM	Hagerstown, Md.
WJGG	Houghton, Mich.
WJHL-FM	Johnson City, Tenn.
WJIM-FM	Lansing, Mich.
WJIV	Cherry Valley, N.Y.
WJJD-FM	Chicago, Ill.
WJLK-FM	Asbury Park, N.J.
WJLN	Birmingham, Ala.
WJMC-FM	Rice Lake, Wis.
WJOF	Athens, Ala.
WJOL-FM	Joliet, Ill.
WJR-FM	Detroit, Mich.
WJTN-FM	Jamestown, N.K.
WJW-FM	Cleveland, Ohio
WJWR	Palmyra, Pa.
WJZZ	Bridgeport, Conn.
WKAQ-FM	San Juan, P.R.
WKAR-FM	E. Lansing, Mich.
WKAT-FM	Miami, Fla.
WKAY-FM	Glasgow, Ky.
WKAZ-FM	Charleston, W.Va.
WKBC-FM	Winston-Salem, N.C.
WKBN-FM	Youngstown, Ohio
WKBR-FM	Manchester, N.H.
WKBV-FM	Richmond, Ind.
WKCQ	Berlin, N.H.
WKCR-FM	New York, N.Y.
WKCS	Knoxville, Tenn.
WKDN-FM	Camden, N.J.
WKEE-FM	Huntington, W.Va.
WKFM	Chicago, Ill.(s)
WKIC-FM	Hazard, Ky.
WKIP-FM	Poughkeepsie, N.Y.
WKIS-FM	Orlando, Fla.
WKIX-FM	Raleigh, N.C.
WKJP	Pittsburgh, Pa.
WKLF-FM	Clanton, Ala.
WKLS	Marietta, Ga.
WKMH-FM	Dearborn, Mich.
WKNA	Charleston, W.Va.
WKOF	Hopkinsville, Ky.
WKOK-FM	Sunbury, Pa.
WKOP-FM	Binghamton, N.Y.
WKOX-FM	Framingham, Mass.
WKPT-FM	Kingsport, Tenn
WKRC-FM	Cincinnati, Ohio
WKRG-FM	Mobile, Ala.
WKRT-FM	Cortland, N.Y.
WKSD	Kewanee, Ill.
WKSU-FM	Kent, Ohio
WKTM-FM	Mayfield, Ky.
WKWK-FM	Wheeling, W.Va.
WKYB-FM	Paducah, Ky.
WLAD-FM	Danbury, Conn.
WLAG-FM	LaGrange, Ga.
WLAN-FM	Lancaster, Pa.
WLAP-FM	Lexington, Ky.
WLAV-FM	Grand Rapids, Mich.
WLBG-FM	Laurens-Clinton, S.C.
WLBH-FM	Mattoon, Ill.
WLBR-FM	Lebanon, Pa.
WLDM	Oak Park, Mich.
WLDS-FM	Jacksonville, Ill.
WLEC-FM	Sandusky, Ohio
WLET-FM	Toccoa, Ga.
WLFM	Appleton, Wis.
WLIN	Merrill, Wis.
WLIR	Hicksville, N.Y.(s)
WLLH-FM	Lowell, Mass.
WLNA-FM	Peekskill, N.Y.
WLOA-FM	Braddock, Pa.
WLOB-FM	Portland, Maine
WLOE-FM	Leaksville, N.C.
WLOL-FM	Minneapolis, Minn.
WLOM	Chattanooga, Tenn.
WLOS-FM	Asheville, N.C.
WLOV	Cranston, R.I.
WLRJ	Roanoke, Va.
WLVL	Louisville, Ky.
WLYC-FM	Williamsport, Pa.
WMAL-FM	Washington, D.C.
WMAM-FM	Marinette, Wis.
WMAQ-FM	Chicago, Ill.
WMAS-FM	Springfield, Mass.
WMAX-FM	Grand Rapids, Mich.
WMAZ-FM	Macon, Ga.
WMBD-FM	Peoria, Ill.
WMBI-FM	Chicago, Ill.
WMBO-FM	Auburn, N.Y.
WMBR-FM	Jacksonville, Fla.
WMCF	Memphis, Tenn.
WMCO	New Concord, Ohio
WMCR	Kalamazoo, Mich.
WMDE	Greensboro, N.C.
WMER	Celina, Ohio
WMET-FM	Miami, Fla.
WMEV-FM	Marion, Va.
WMFM	Madison, Wis.
WMFP	Ft. Lauderdale, Fla.
WMFR-FM	High Point, N.C.
WMGW-FM	Meadville, Pa.
WMHC	South Hadley, Mass.
WMHE	Toledo, Ohio
WMIL-FM	Milwaukee, Wis.
WMIT	Marion, N.C.
WMIV	S. Bristol, N.Y.
WMIX-FM	Mt. Vernon, Ill.
WMLS-FM	Sylacauga, Ala.
WMLW	Milwaukee, Wis.
WMNA-FM	Gretna, Va.
WMPS-FM	Memphis, Tenn.
WMRI-FM	Marion, Ind.
WMRN-FM	Marion, Ohio
WMRO-FM	Aurora, Ill.
WMRT	Lansing, Mich.
WMTH	Park Ridge, Ill.
WMTI	Norfolk, Va.
WMTW-FM	Mt. Washington, N.H.
WMUA	Amherst, Mass.
WMUB	Oxford, Ohio
WMUN	Muncie, Ind.
WMUU-FM	Greenville, S.C.
WMUZ	Detroit, Mich.
WMVA-FM	Martinsville, Va.
WMVO-FM	Mount Vernon, Ohio
WMZK	Detroit, Mich.
WNAD-FM	Norman, Okla.
WNAS	New Albany, Ind.
WNAV-FM	Annapolis, Md
WNBC-FM	New York, N.Y.
WNBF-FM	Binghamton, N.Y.
WNBH-FM	New Bedford, Mass.
WNCN	New York, N.Y.
WNCO-FM	Ashland, Ohio
WNDA	Huntsville, Ala.
WNBD-FM	Daytona Beach, Fla.
WNEM-FM	Bay City, Mich.
WNES-FM	Central City, Ky.
WNEW-FM	New York, N.Y.
WNEX-FM	Macon, Ga.
WNGO-FM	Mayfield, Ky.
WNHC-FM	New Haven, Conn.
WNIB	Chicago, Ill.
WNIC	DeKalb, Ill.
WNNJ-FM	Newton, N.J.
WNOB	Cleveland, Ohio (s)
WNOK-FM	High Point, N.C.
WNOS-FM	High Point, N.C.
WNOW-FM	York, Pa.
WNSH	Highland Park, Ill.
WNSL-FM	Laurel, Miss.
WNTA-FM	Newark, N.J.
WMTH	Winnetka, Ill.
WNTI	Hackettstown, N.J.
WNUR	Evanston, Ill.
WNWC-FM	Arlington Hts., Ill.
WNYC-FM	New York, N.Y.
WNYE	New York, N.Y.
WOAK	Royal Oak, Mich.
WOAY-FM	Oak Hill, W.Va.
WOBN	Westerville, Ohio
WOC-FM	Davenport, Iowa
WOCB-FM	W. Yarmouth, Mass.
WOHS-FM	Shelby, N.C.
WOI-FM	Ames, Iowa
WOIO	Cincinnati, Ohio
WOIV	De Ruyter, N.Y.
WOL-FM	Washington, D.C.
WOMC	Royal Oak, Mich.
WOMI-FM	Owensboro, Ky.
WOMP-FM	Bellaire, Ohio
WONO	Syracuse, N.Y.
WOPA-FM	Oak Park, Ill.
WOPI-FM	Bristol, Tenn.
WOR-FM	New York, N.Y.
WORA-FM	Mayaguez, P.R.
WORX-FM	Madison, Ind.
WOSC-FM	Fulton, N.Y.
WOSJ-FM	Atlantic City, N.J.
WOSU-FM	Columbus, Ohio
WOTW-FM	Nashua, N.H.
WOUB-FM	Athens, Ohio
WOW-FM	Omaha, Nebr.
WOXR	Oxford, Ohio
WPAC-FM	Patchogue, N.Y.
WPAD-FM	Paducah, Ky.
WPAT-FM	Paterson, N.J.
WPAY-FM	Portsmouth, Ohio
WPBC-FM	Minneapolis, Minn.
WPBS	Philadelphia, Pa.
WPCA-FM	Philadelphia, Pa.
WPEL-FM	Montrose, Pa.
WPEN-FM	Philadelphia, Pa.
WPEX-FM	Pensacola, Fla.
WPFB-FM	Middletown, Ohio (s)
WPFM	Providence, R.I.
WPGO-FM	Bradbury Hts., Md.
WPGI	Pittsburgh, Pa.
WPIC-FM	Sharon, Pa.
WPIT-FM	Pittsburgh, Pa.
WPJB-FM	Providence, R.I.
WPKM	Tampa, Fla.
WPLM-FM	Plymouth, Mass.
WPLO-FM	Atlanta, Ga.
WPPA-FM	Pottsville, Pa.
WPRB	Princeton, N.J.
WPRK	Winter Park, Fla.
WPRM	San Juan, P.R.
WPRO-FM	Providence, R.I.

C.L.	Location
WPRS-FM	Paris, Ill.
WPRW-FM	Manassas, Va.
WPSR	Evansville, Ind.
WPTF-FM	Raleigh, N.C.
WPTH	Fort Wayne, Ind.
WPTW-FM	Piqua, Ohio
WPWT	Philadelphia, Pa.
WQAL	Philadelphia, Pa.
WQFM	Milwaukee, Wis.
WQMS	Hamilton, Ohio
WQRS-FM	Detroit, Mich.
WQXI-FM	Atlanta, Ga.
WQXR-FM	New York, N.Y.(s)
WQXT-FM	Palm Beach, Fla.
WRAJ-FM	Anna, Ill.
WRAK-FM	Williamsport, Pa.
WRAL-FM	Raleigh, N.C.
WRAY-FM	Princeton, Ind.
WRBL-FM	Columbus, Ga.
WRBS	Baltimore, Md.
WRC-FM	Washington, D.C.
WRCM	New Orleans, La.
WRED	Youngstown, Ohio
WREO-FM	Ashtabula, Ohio
WREV-FM	Reidsville, N.C.
WRFD-FM	Worthington-Columbus, Ohio
WRFK	Richmond, Va.
WRFL	Winchester, Va.
WRFM	Woodside, N.Y.
WRFS-FM	Alexander City, Ala.
WRHS	Park Forest, Ill.
WRIT-FM	Milwaukee, Wis.
WRJN-FM	Racine, Wis.
WRJR	Lewiston, Maine
WRKO-FM	Boston, Mass.
WRLB	Long Branch, N.J.(s)
WRLX	Hopkinsville, Ky.
WRLD-FM	Lanett, Ala.
WRMP	Detroit, Mich.
WRNJ	Atlantic City, N.J.
WRNL-FM	Richmond, Va.
WRNW	Mount Kisco, N.Y.
WROC-FM	Rochester, N.Y.
WROK-FM	Rockford, Ill.
WROW-FM	Albany, N.Y.
WROY-FM	Carmi, Ill.
WRPI	Troy, N.Y.
WRPN-FM	Ripon, Wis.
WRR-FM	Dallas, Tex.
WRRN	Warren, Pa.
WRSW-FM	Warsaw, Ind.
WRTC-FM	Hartford, Conn.
WRTI-FM	Philadelphia, Pa.
WRUF-FM	Gainesville, Fla.
WRUN-FM	Utica, N.Y.
WRVA-FM	Richmond, Va.
WRVB-FM	Madison, Wis.
WRVC	Norfolk, Va.
WRVP	New York, N.Y.
WRXO-FM	Roxboro, N.C.
WSAB	Mt. Carmel, Ill.
WSAI-FM	Cincinnati, Ohio
WSAM-FM	Saginaw, Mich.
WSB-FM	Atlanta, Ga.
WSBC-FM	Chicago Ill.
WSBF-FM	Clemson, S.C.
WSCB	Springfield, Mass.
WSEI	Effingham, Ill.
WSEV-FM	Sevierville, Tenn.
WSFM	Birmingham, Ala.
WSHS	Floral Park, N.Y.
WSID	Baltimore, Md.
WSIU	Carbondale, Ill.
WSJG	Hallandale, Fla.
WSJS-FM	Winston-Salem, N.C.
WSKS	Wabash, Ind.
WSIX-FM	Nashville, Tenn.
WSLM-FM	Salem, Ind.
WSLN	Delaware, Ohio
WSLS-FM	Roanoke, Va.
WSMC-FM	Collegedale, Tenn.
WSMD-FM	Waldorf, Md.
WSMI-FM	Litchfield, Ill.
WSNJ-FM	Brigeton, N.J.
WSNW-FM	Seneca S.C.
WSOC-FM	Charlotte, N.C.
WSOM	Salem, Ohio
WSON-FM	Henderson, Ky
WSOU	S. Orange, N.J.
WSOY-FM	Decatur, Ill.
WSPA-FM	Spartanburg, S.C.(s)
WSPD-FM	Toledo, Ohio
WSPE	Springville, N.Y.
WSPT-FM	Stevens Point, Wis.
WSRW-FM	Hillsboro, Ohio
WSTC-FM	Stamford, Conn.
WSTP-FM	Salisbury, N.C.
WSTR-FM	Sturgis Mich.
WSTV-FM	Steubenville, Ohio
WSVA-FM	Harrisonburg, Va.
WSVS-FM	Crewe, Va.
WSWM	East Lansing, Mich.
WSYR-FM	Syracuse, N.Y.(s)
WTAD-FM	Quincey, Ill.
WTAG-FM	Worcester, Mass.
WTAR	Norfolk, Va.
WTAX-FM	Springfield, Ill.
WTBC-FM	Tuscaloosa, Ala.
WTBO-FM	Cumberland, Md.
WTBS	Cambridge, Mass.
WTCX	St. Petersburg, Fla.
WTDS	Toledo, Ohio
WTFM	Babylon, N.Y.
WTHI-FM	Terre Haute, Ind.
WTHS	Miami, Fla.
WTIC-FM	Hartford, Conn.
WTJS-FM	Jackson, Tenn.
WTJU	Charlottesville, Va.
WTMA-FM	Charleston, S.C.
WTMJ-FM	Milwaukee, Wis.
WTNC-FM	Thomasville, N.C.
WTOA	Trenton, N.J.
WTOC-FM	Savannah, Ga.
WTOL-FM	Toledo, Ohio
WTOP-FM	Washington, D.C.
WTOS	Wauwatosa, Wis.
WTRC-FM	Elkhart, Ind.
WTRT	Toledo, Ohio
WTSB-FM	Lumberton, N.C.
WTSV-FM	Claremont, N.H.
WTTC-FM	Towanda, Pa.
WTTR-FM	Westminster, Md.
WTTV-FM	Bloomington, Ind.
WTUN	Tampa, Fla.
WTVB-FM	Coldwater, Mich.
WTVN-FM	Columbus, Ohio
WUCB-FM	Chicago, Ill.
WULX-FM	Richmond, Ind.
WUNC	Chapel Hill, N.C.
WUOA	Tuscaloosa, Ala.
WUOM	Ann Arbor, Mich.
WUOT	Knoxville, Tenn.
WUPY	Lynn, Mass.(s)
WUSC-FM	Columbia, S.C.
WUST-FM	Bethesda, Md.
WUSV	Scranton, Pa.
WVAM-FM	Altoona, Pa.
WVBR-FM	Ithaca, N.Y.
WVCG-FM	Coral Gables, Fla.
WVEC-FM	Hampton, Va.
WVHC	Hempstead, N.Y.
WVJS-FM	Owensboro, Ky.
WVKO-FM	Columbus, Ohio
WVLN-FM	Olney, Ill.
WVMC-FM	Mt. Carmel, Ill.
WVNJ-FM	Newark, N.J.
WVOT-FM	Wilson, N.C.
WVOX-FM	New Rochelle, N.Y.
WVSH	Huntington, Ind.
WVST	St. Petersburg, Fla.
WVTS	Terre Haute, Ind.
WWCF	Greenfield, Wis.
WWCO-FM	Waterbury, Conn.
WWDC-FM	Washington, D.C.
WWGP-FM	Sanford, N.C.
WWHG-FM	Hornell, N.Y.
WWHI	Muncie, Ind.
WWIL-FM	Ft. Lauderdale, Fla.
WWJ-FM	Detroit, Mich.
WWKS	Macomb, Ill.
WWMT	New Orleans, La.
WWOO-FM	Lynchburg, Va.
WWOL-FM	Buffalo, N.Y.
WWON-FM	Woonsocket, R.I.
WWPB	Miami, Fla.
WWST-FM	Wooster, Ohio
WWSW-FM	Pittsburgh, Pa.
WWTV-FM	Cadillac, Mich.
WWVA-FM	Wheeling, W.Va.
WWWS	Greenville, N.C.
WWYN	Erie, Pa.
WXCN	Providence, R.I.
WXFM	Elmwood Park, Ill.
WXHR	Cambridge, Mass.
WXPN	Philadelphia, Pa.
WXTC	Annapolis, Md.
WXUR-FM	Media, Pa.
WXYZ-FM	Detroit, Mich.
WYAK	Sarasota, Fla.
WYBC-FM	New Haven, Conn.
WYCA	Hammond, Ind.
WYCE	Warwick, R.I.
WYCR	York-Hanover, Pa.
WYFI	Norfolk, Va.
WYFM	Charlotte, N.C.
WYFS	Winston-Salem, N.C.
WYSO	Yellow Springs, Ohio
WYZZ	Wilkes-Barre, Pa.
WZFM	Jacksonville, Fla.
WZIP-FM	Cincinnati, Ohio

Canadian FM Stations by Location

Location	C.L.	Mc.
Brampton, Ont.	CHIC-FM	102.1
Brantford, Ont.	CKPC-FM	92.1
Cornwall, Ont.	CJSS-FM	104.5
Edmonton, Alta.	CFRN-FM	100.3
	CJCA-FM	99.5
	CKUA-FM	98.1
Ft. William, Ont.	CKPR-FM	94.3
Halifax, N.S.	CHNS-FM	96.1
Kingston, Ont.	CFRC-FM	91.9
	CKLC-FM	99.5
	CKWS-FM	96.3
Kitchener, Ont.	CKCR-FM	96.7
Lethbridge, Alta.	CHEC-FM	100.9
London, Ont.	CFPL-FM	95.9
Montreal, Que.	CBF-FM	95.1
	CBM-FM	100.7
	CFCF-FM	106.5
Oshawa, Ont.	CKLB-FM	93.5
Ottawa, Ont.	CBO-FM	103.3
	CFRA-FM	93.9
Quebec, Que.	CHRC-FM	98.1
Rimouski, Que.	CJBR-FM	101.5
St. Catharines, Ont.	CKTB-FM	97.7
Sherbrooke, Que.	CHLT-FM	102.7
Timmins, Ont.	CKGB-FM	94.5
Toronto, Ont.	CBC-FM	99.1
	CFRB-FM	99.9
	CHFI-FM	98.1
	CJRT-FM	91.1
Vancouver, B.C.	CBU-FM	105.7
	CHQM-FM	103.5
Verdun, Que.	CKVL-FM	96.9
Victoria, B.C.	CKDA-FM	98.5
Windsor, Ont.	CKLW-FM	93.9
Winnipeg, Man.	CJOB-FM	97.5

U. S. Television Stations

Territories and possessions follow states. Chan., channel number; asterisk (*) indicates educational station.

Location	C.L.	Chan.
ALABAMA		
Andalusia	WDIQ	*2
Birmingham	WAPI-TV	13
	WBIQ	*10
	WBRC-TV	6
Decatur	WMSL-TV	23
Dothan	WTVY	4
Florence	WOWL	15
Huntsville	WAFG-TV	31
Mobile	WALA-TV	10
	WKRG-TV	5
Montgomery	WCOV-TV	20
	WSFA-TV	12
Munford	WCIQ	*7
Selma	WSLA	8
ALASKA		
Anchorage	KENI-TV	2
	KTVA	11
Fairbanks	KFAR-TV	2
	KTVF	11
Juneau	KINY-TV	8
ARIZONA		
Douglas	KCDA	3
Phoenix	KOOL-TV	10
	KAET	*8
	KPHO-TV	5
	KTVK	3
	KTAR-TV	12
Tucson	KGUN-TV	9
	KOLD-TV	13
	KVOA-TV	4
	KUAT	*6
Yuma	KIVA	11
ARKANSAS		
El Dorado	KTVE	10
Ft. Smith	KFSA-TV	5
Hot Springs	KFOY-TV	9
Little Rock	KARK-TV	4
	KTHV	11
	KATV	7
Texarkana	KCMC-TV	6
CALIFORNIA		
Bakersfield	KBAK-TV	29
	KERO-TV	10
	KLYD-TV	17
Chico	KHSL-TV	12
El Centro	XEM-TV	3
Eureka	KIEM-TV	3
	KVIQ-TV	6
Fresno	KFRE-TV	30
	KAIL	53
	KJEO	47
	KMJ-TV	24
Los Angeles	KABC-TV	7
	KCOP	13
	KHJ-TV	9
	KNXT	2
	KRCA	4
	KTLA	5
	KTTV	11
Oakland	KTVU	2
Redding	KVIP-TV	7
Sacramento	KXTV	10
	KCRA-TV	3
	KVUE	40
	KVIE	*6
Salinas	KSBW-TV	8
San Diego	KFMB-TV	8
	KOGO-TV	10
(Tijuana, Mex.)	XETV	6
San Francisco	KGO-TV	7
	KPIX	5
	KQED	*9
	KRON-TV	4
	KEZE-TV	20
San Jose	KNTV	11
San Luis Obispo	KSBY-TV	6
Santa Barbara	KEY-T	3
Stockton	KOVR	13
COLORADO		
Colorado Springs	KKTV	11
	KRDO-TV	13
Denver	KBTV	9
	KLZ-TV	7
	KOA-TV	4
	KRMA-TV	*6
	KTVR	2
Grand Junction	KREX-TV	5
Montrose	KREY-TV	10
Pueblo	KCSJ-TV	5
Bridgeport	WICC-TV	43
Hartford	WTIC-TV	3
	WHCT	18
CONNECTICUT		
New Britain	WHNB-TV	30
New Haven	WNHC-TV	8
Waterbury	WATR-TV	53
DIST. OF COLUMBIA		
Washington	WETA-TV	26
	WMAL-TV	7
	WRC-TV	4
	WTOP-TV	9
	WTTG	5
FLORIDA		
Daytona Beach	WESH-TV	2
Fort Pierce-Vero Beach	WTVI	19
Fort Myers	WINK-TV	11
Gainesville	WUFT	*5
Jacksonville	WFGA-TV	12
	WJCT	*7
	WJXT	4
Miami	WCKT	7
	WLBW-TV	10
	WPST-TV	10
	WTHS-TV	*2
	WTVJ	4
Orlando	WDBO-TV	6
	WLOF-TV	9
Palm Beach	WPTV	5
Panama City	WJDM-TV	7
Pensacola	WEAR-TV	3
St. Petersburg	WSUN-TV	38
Tallahassee	WFSU-TV	*11
Tampa	WFLA-TV	8
	WEDU	*3
	WTVT	13
W. Palm Beach	WEAT-TV	12
GEORGIA		
Albany	WALB-TV	10
Athens	WGTV	*8
Atlanta	WAGA-TV	5
	WSB-TV	2
	WETV	*30
	WLW-A	11
Augusta	WJBF	6
	WRDW-TV	12
Columbus	WRBL-TV	3
	WTVM	9
Macon	WMAZ-TV	13
Savannah	WSAV-TV	3
	WEGA-TV	*9
	WTOC-TV	11
Thomasville	WCTV	6
Waycross	WEGS-TV	*8
HAWAII		
Hilo	KHBC-TV	9
	KHJK	13
Honolulu	KGMB-TV	9
	KONA	2
	KHVH-TV	4
Wailuku	KMAU	3
	KALA	7
	KMVI-TV	12
IDAHO		
Boise	KBOI-TV	2
	KTVB	7
Idaho Falls	KID-TV	3
	KIFI-TV	8

Location	C.L.	Chan.
Lewiston	KLEW-TV	3
Nampa	KCIX-TV	6
Twin Falls	KLIX-TV	11

ILLINOIS

Location	C.L.	Chan.
Carbondale	WSIU-TV	*8
Champaign	WCIA	3
	WCHU	33
Chicago	WBBM-TV	2
	WBKB	7
	WGN-TV	9
	WNBQ	5
	WTTW	*11
Danville	WICD	24
Decatur	WTVP	17
Harrisburg	WSIL-TV	3
La Salle	WEEQ-TV	35
Peoria	WEEK-TV	43
	WMBD	31
	WTVH	19
Quincy	WGEM-TV	10
Rockford	WREX-TV	13
	WTVO	39
Rock Island	WHBF-TV	4
Springfield	WICS	20
Urbana	WILL-TV	*12

INDIANA

Location	C.L.	Chan.
Bloomington	WTTV	4
Elkhart	WSJV-TV	28
Evansville	WFIE-TV	14
	WEHT	50
	WTVW	7
Ft. Wayne	WANE-TV	15
	WKJG-TV	33
	WPTA	21
Indianapolis	WFBM-TV	6
	WLWI	13
	WISH-TV	8
Lafayette	WFAM-TV	18
Muncie	WLBC-TV	49
South Bend	WNDU-TV	16
	WSBT-TV	22
Terre Haute	WTHI-TV	10

IOWA

Location	C.L.	Chan.
Ames	WOI-TV	5
Cedar Rapids	KCRG-TV	9
	WMT-TV	2
Davenport	WOC-TV	6
Des Moines	KRNT-TV	8
	KDPS-TV	*11
	WHO-TV	13
Fort Dodge	KQTV	21
Mason City	KGLO-TV	3
Ottumwa	KTVO	3
Sioux City	KTIV	4
	KVTV	9
Waterloo	KWWL-TV	7

KANSAS

Location	C.L.	Chan.
Ensign	KTVC	6
Garden City	KGLO	11
Goodland	KWHT-TV	10
Great Bend	KCKT	2
Hays	KAYS-TV	7
Hutchinson	KTVH	12
Pittsburg	KOAM-TV	7
Topeka	WIBW-TV	13
Wichita	KAKE-TV	10
	KARD-TV	3

KENTUCKY

Location	C.L.	Chan.
Lexington	WLEX-TV	18
	WKYT	27
Louisville	WAVE-TV	3
	WFPK-TV	*15
	WHAS-TV	11
	WQXL-TV	41
Paducah	WPSO-TV	6

LOUISIANA

Location	C.L.	Chan.
Alexandria	KALB-TV	5
Baton Rouge	WAFB-TV	28
	WBRZ	2
Lafayette	KLFY-TV	10
Lake Charles	KPLC-TV	7
	KTAG-TV	25
Monroe	KNOE-TV	8
	KLSE	*13
New Orleans	WDSU-TV	6
	WVUE	13
	WWL-TV	4
	WYES	*8
Shreveport	KSLA-TV	12
	KTBS-TV	3

MAINE

Location	C.L.	Chan.
Augusta	WCBB	10
Bangor	WABI-TV	5
	WLBZ-TV	2
Poland Spring	WMTW-TV	8
Portland	WCSH-TV	6
	WGAN-TV	13
Presque Isle	WAGM-TV	8

MARYLAND

Location	C.L.	Chan.
Baltimore	WJZ-TV	13
	WBAL-TV	11
	WMAR-TV	2
Salisbury	WBOC-TV	16

MASSACHUSETTS

Location	C.L.	Chan.
Adams	WCDC	19
Boston	WBZ-TV	4
	WGBH-TV	*2
	WHDH-TV	5
	WNAC-TV	7
Greenfield	WRLP	32
Springfield	WHYN-TV	40
	WWLP	22
Worcester	WWOR-TV	14

MICHIGAN

Location	C.L.	Chan.
Bay City	WNEM-TV	5
Cadillac	WWTV	13
Cheboygan	WTOM-TV	4
Detroit	WJBK-TV	2
	WTVS	*56
	WWJ-TV	4
	WXYZ-TV	7
(Windsor, Ont.)	CKLW-TV	9
Flint	WJRT	12
Grand Rapids	WOOD-TV	8
Kalamazoo	WKZO-TV	3
Lansing	WJIM-TV	6
Marquette	WLUC-TV	6
Onondaga	WILX-TV/WMSB	10
Saginaw	WKNX-TV	57
Traverse City	WPBN-TV	7

MINNESOTA

Location	C.L.	Chan.
Alexandria	KCMT	7
Austin	KMMT	6
Duluth	KDAL-TV	3
	WDSM-TV	6
Mankato	KEYC-TV	12
Minneapolis	KMSP	9
	WCCO-TV	4
	WTCN-TV	11
Rochester	KROC-TV	10
St. Paul	KSTP-TV	5
	KTCA-TV	*2

MISSISSIPPI

Location	C.L.	Chan.
Columbus	WCBI-TV	4
Greenwood	WABG-TV	6
Jackson	WJTV	12
	WLBT	3
Laurel	WOAM-TV	7
Meridian	WTOK-TV	11
	WCOC-TV	30
Tupelo	WTWV	9

MISSOURI

Location	C.L.	Chan.
Cape Girardeau	KFVS-TV	12
Columbia	KOMU-TV	8
Hannibal	KHQA-TV	7
Jefferson City	KRCG-TV	13
Joplin	KODE-TV	12
Kansas City	KCMO-TV	5
	KCSO-TV	*19
	KMBC-TV	9
	WOAF-TV	4
Kirksville	KTVO	3
Poplar Bluff, Mo.	KPOB-TV	15
St. Joseph	KFEQ-TV	2
St. Louis	KETC	*9
	KMOX-TV	4
	KSO-TV	5
	KTVI	2
	KPLR-TV	11
Sedalia	KMOS-TV	6
Springfield	KTTS-TV	10
	KYTV	3

MONTANA

Location	C.L.	Chan.
Billings	KOOK-TV	2
	KGHL-TV	8
Butte	KXLF-TV	4
Glendive	KXGN-TV	5
Great Falls	KFBB-TV	5
	KRTV	3
Helena	KBLL-TV	12
Kalispell	KULR	9
Missoula	KMSO-TV	13

NEBRASKA

Location	C.L.	Chan.
Grand Island	KGIN-TV	11
Hastings	KHAS-TV	5
Hay Springs	KDUH-TV	4
Hayes Center	KHPL-TV	6
Kearney	KHOL-TV	13
Lincoln	KOLN-TV	10
	KUON-TV	*12
McCook	KOMC	8
North Platte	KNOP	2
Omaha	KMTV	3
	KETV	7
	WOW-TV	6
Scottsbluff	KSTF	10

NEVADA

Location	C.L.	Chan.
Henderson	KLRJ-TV	2
Las Vegas	KLAS-TV	8
	KSHO-TV	13
Reno	KOLO-TV	8

NEW HAMPSHIRE

Location	C.L.	Chan.
Durham	WENH-TV	*11
Manchester	WMUR-TV	9

NEW JERSEY

Location	C.L.	Chan.
Newark	WNTA-TV	13

NEW MEXICO

Location	C.L.	Chan.
Albuquerque	KGGM-TV	13
	KNME-TV	*5
	KOAT-TV	7
	KOB-TV	4
Carlsbad	KAVE-TV	6
Clovis	KVER-TV	12
Roswell	KSWS-TV	8

NEW YORK

Location	C.L.	Chan.
Albany	WTEN	10
	WAST	13
	WTRI	35
	WCDA	41
Binghamton	WINR-TV	40
	WNBF-TV	12
Buffalo	WBEN-TV	4
	WNED-TV	*17
	WGR-TV	2
	WKBW-TV	7
Carthage	WCNY-TV	7
Elmira	WSYE-TV	18
New York	WABC-TV	7
	WNEW-TV	5
	WCBS-TV	2
	WOR-TV	9
	WPIX	11
	WNBC-TV	4
Plattsburg	WPTZ-TV	5
Rochester	WHEC-TV	10
	WROC-TV	5
	WVET-TV	10
Schenectady	WRGB	6
Syracuse	WHEN-TV	8
	WSYR-TV	3
Utica	WKTV	2

NORTH CAROLINA

Location	C.L.	Chan.
Asheville	WISE-TV	62
	WLOS-TV	13
Chapel Hill	WUNC-TV	*4
Charlotte	WBTV	3
	WSOC-TV	9
Durham	WTVD	11
Greensboro	WFMY-TV	2
Greenville	WNCT	9
Raleigh	WRAL-TV	5
Washington	WITN	7
Wilmington	WECT	6
Winston-Salem	WSJS-TV	12

NORTH DAKOTA

Location	C.L.	Chan.
Bismarck	KXMB-TV	12
	KFYR-TV	5
Dickinson	KDIX-TV	2
Fargo	WDAY-TV	6
	KXGO-TV	11
Grand Forks	KNOX-TV	10
Minot	KXMC-TV	13
	KMOT	10
Pembina, N.D.	KCND-TV	12
Valley City	KXJB-TV	4
Williston	KUMV-TV	8

OHIO

Location	C.L.	Chan.
Akron	WAKR-TV	49
Cincinnati	WCET	*48
	WCPO-TV	9
	WKRC-TV	12
	WLW-T	5
	WCIN-TV	54
Cleveland	KYW-TV	3
	WEWS	5
	WJW-TV	8
Columbus	WBNS-TV	10
	WLW-C	4
	WOSU-TV	*34
	WTVN-TV	6
Dayton	WHIO-TV	7
	WLW-D	2
Lima	WIMA-TV	35
Oxford	WMUB-TV	14
Steubenville	WSTV-TV	9
Toledo	WSPD-TV	13
	WGTE-TV	*30
	WTOL-TV	11
Youngstown	WFMJ-TV	21
	WKBN-TV	27
	WKST-TV	33
	WXTV	45
Zanesville	WHIZ-TV	18

OKLAHOMA

Location	C.L.	Chan.
Ada	KTEN	10
Ardmore	KXII	12
Enid	KOCO-TV	5
Lawton	KSWO-TV	7
Oklahoma City	KETA	*13
	KOKH-TV	25
	KWTV	9
	WKY-TV	4
Tulsa	KOTV	6
	KOED-TV	*11
	KTUL-TV	8
	KVOO-TV	2

OREGON

Location	C.L.	Chan.
Coos Bay	KCBY-TV	11
Corvallis	KOAC-TV	*7
Eugene	KVAL-TV	13
	KEZI-TV	9
	KOAP-TV	*10
Klamath	KOTI	2
Medford	KBES-TV	5
Medford	KMED-TV	10
Portland	KGW-TV	8
	KHTV	27
	KOIN-TV	6
	KPTV	12
Roseburg	KPIC	4

PENNSYLVANIA

Location	C.L.	Chan.
Altoona	WFBG-TV	10
Erie	WICU	12
	WSEE-TV	35
Harrisburg	WHP-TV	55
	WTPA	27
Johnstown	WARD-TV	56
	WJAC-TV	6
Lancaster	WGAL-TV	8
Lebanon	WLVH-TV	15
Lockhaven	WBPZ-TV	32
New Castle	WKST-TV	45
Philadelphia	WCAU-TV	10
	WFIL-TV	6
	WHYY-TV	*35
	WPCA-TV	17
	WRCV-TV	3
Pittsburgh	KDKA-TV	2
	WIIC	11
	WQED	*13
	WQEX	*16
	WTAE	4
Scranton	WNEP-TV	16
	WDAU-TV	22
Wilkes-Barre	WBRE-TV	28
York	WSBA-TV	43

RHODE ISLAND

Location	C.L.	Chan.
Providence	WJAR-TV	10
	WPRO-TV	12

SOUTH CAROLINA

Location	C.L.	Chan.
Anderson	WAIM-TV	40
Charleston	WCSC-TV	5
	WUSN-TV	2
Clemson	WSBF-FM	*88.1
Columbia	WIS-TV	10
	WCCA-TV	25
	WNOK-TV	67
Florence	WBTW	8
Greenville	WFBC-TV	4
Spartanburg	WSPA-TV	7

SOUTH DAKOTA

Location	C.L.	Chan.
Aberdeen	KXAB-TV	9
Deadwood	KDSJ-TV	5
Florence	KDLO-TV	3
Mitchell	KORN-TV	5
Rapid City	KOTA-TV	3
	KRSD-TV	7
Reliance	KPLO-TV	6
Sioux Falls	KELO-TV	11
	KSOO-TV	13
Vermilion	KUSO-TV	*2

TENNESSEE

Location	C.L.	Chan.
Chattanooga	WOEF-TV	12
	WRGP-TV	3
	WTVC	9
Jackson	WDXI-TV	7
Johnson City	WJHL-TV	11
Knoxville	WATE-TV	6
	WBIR-TV	10
	WTVK	26
Memphis	WHBQ-TV	13
	WKNO	*10
	WMCT	5
	WREC-TV	3
Nashville	WLAC-TV	5
	WSIX-TV	8
	WSM-TV	4

TEXAS

Location	C.L.	Chan.
Abilene	KRBC-TV	9
Alpine	KULF-TV	12
Amarillo	KFDA-TV	10
	KGNC-TV	4
	KVII	7
Austin	KTBC-TV	7
Beaumont	KFOM-TV	6
Big Spring	KEDY-TV	4
Bryan	KBTX-TV	3
Corpus Christi	KRIS-TV	6
	KZTV	10
Dallas	KRLD-TV	4
	KERA-TV	*13
	WFAA-TV	8
El Paso	KELP-TV	13
	KROD-TV	4
	KTSM-TV	9
(Ciudad Juarez, Mex.)	XEJ-TV	5
Ft. Worth	KTVT	11
	WBAP-TV	5
Harlingen	KGBT-TV	4
Houston	KPRC-TV	2
	KHOU-TV	11
	KTRK-TV	13
	KUHT	*8
Laredo	KGNS-TV	8
Lubbock	KCBD-TV	11
	KDUB-TV	13
Lufkin	KTRE-TV	9
Midland	KMID-TV	2
Monahans	KVKM-TV	9
Odessa	KOSA-TV	7
Port Arthur-Beaumont	KPAC-TV	4

Location	C.L.	Chan.
Richardson	KRET-TV	*23
San Angelo	KCTV	8
San Antonio	KUAL-TV	41
	KENS-TV	5
	KLRN	*9
	KONO-TV	12
	WOAI-TV	4
Sweetwater	KPAR-TV	12
Temple	KCEN-TV	6
Texarkana	KTAL-TV	6
Tyler	KLTV	7
Waco	KWTX-TV	10
Weslaco	KRGV-TV	5
Wichita Falls	KFDX-TV	3
	KSYD-TV	6

UTAH

Location	C.L.	Chan.
Ogden	KVOG-TV	9
	KWCS-TV	*18
Provo	KLOR-TV	11
Salt Lake City	KSL-TV	5
	KCPX-TV	4
	KUED	*7
	KUTV	2

VERMONT

Location	C.L.	Chan.
Burlington	WCAX-TV	3

VIRGINIA

Location	C.L.	Chan.
Bristol	WCYB-TV	5
Hampton	WVEC-TV	13
Harrisonburg	WSVA-TV	3
Lynchburg	WLVA-TV	13
Norfolk	WHRO-TV	15
	WTAR-TV	3
Petersburg	WXEX-TV	8
Portsmouth	WAVY-TV	10
Richmond	WRVA-TV	12
	WTVR	6
Roanoke	WDBJ-TV	7
	WSLS-TV	10

WASHINGTON

Location	C.L.	Chan.
Bellingham	KVOS-TV	12
Pasco	KEPR-TV	19
Richland	KNDD-TV	25
Seattle	KCTS-TV	*9
	KING-TV	5
	KIRO-TV	7
	KOMO-TV	4
Spokane	KHQ-TV	6
	KREM-TV	2
	KXLY-TV	4
Tacoma	KTNT-TV	11
	KPEC-TV	*56
	KTPS	*62
	KTVW	13
Yakima	KIMA-TV	29
	KNDO-TV	23

WEST VIRGINIA

Location	C.L.	Chan.
Bluefield	WHIS-TV	6
Charleston	WCHS-TV	8
Clarksburg	WBOY-TV	12
Fairmont	WJPB-TV	5
Huntington	WHTN-TV	13
	WSAZ-TV	3
Oak Hill	WOAY-TV	4
Parkersburg	WTAP-TV	15
Wheeling	WTRF-TV	7

WISCONSIN

Location	C.L.	Chan.
Eau Claire	WEAU-TV	13
Green Bay	WBAY-TV	2
	WFRV	5
	WLUK-TV	11
La Crosse	WKBT	8
Madison	WHA-TV	*21
	WISC-TV	3
	WKOW-TV	27
	WMTV	33
Marinette	WMBV-TV	11
Milwaukee	WISN-TV	12
	WITI-TV	6
	WMVS-TV	*10
	WTMJ-TV	4
	WXIX	18
Wausau	WSAU-TV	7

WYOMING

Location	C.L.	Chan.
Casper	KTWO-TV	2
Cheyenne	KFBC-TV	5
Riverton	KWRB-TV	10

PUERTO RICO

Location	C.L.	Chan.
Aguadilla	WOLE-TV	12
Caguas	WKBM-TV	11
Mayaguez	WORA-TV	5
	WIPM-TV	*3
Ponce	WRIK-TV	7
	WSUR-TV	9
San Juan	WAPA-TV	4
	WIPR-TV	6
	WKAQ-TV	2

Canadian Television Stations

ALBERTA

Location	C.L.	Chan.
Calgary	CHCT-TV	2
	CFCN-TV	4
Edmonton	CFRN-TV	3
Lethbridge	CJLH-TV	7
Lloydminster	CHSA-TV	2
Medicine Hat	CHAT-TV	6
Pivot	CHAT-TV	4
Red Deer	CHCA-TV	6
	CHCA-TV-2	10

BRITISH COLUMBIA

Location	C.L.	Chan.
Burnaby	CHAN-TV	8
Crescent Valley	CHMS-TV	5
Dawson Creek	CJDC-TV	5
Kamloops	CFCR-TV	4
Kelowna	CHBC-TV	5
	CHGP-TV-1	72
Lumby	CHIO-TV	5
Nelson	CBUAT-1	9
Oliver	CHBC-TV-3	8
Penticton	CHBC-TV	13
Prince George	CKPG-TV	3
Saddle Mountain	CHHC-TV-1	4
Salmon Arm	CHBC-TV	5
Trail	CBUAT	11
Vancouver	CBUT	2
Vernon	CHBC-TV	7
Victoria	CHEK-TV	6

LABRADOR

Location	C.L.	Chan.
Goose Bay	CFLA-TV	8

MANITOBA

Location	C.L.	Chan.
Baldy Mountain	CKOS-TV-1	8
Brandon	CKX-TV	5
Winnipeg	CBWT	3
	CBWFT	6
	CJAY-TV	7

NEW BRUNSWICK

Location	C.L.	Chan.
Campbellton	CKAM-TV	12
	CRCD-TV	7
Moncton	CKCW-TV	2
	CBAFT	11
Saint John	CHSJ-TV	4
Upsalquitch Lake	CKAM	12

NEWFOUNDLAND

Location	C.L.	Chan.
Argentia	CJOX-TV	10
Corner Brook	CBYT	5
	CHEK-TV	6
Grand Falls	CJCN-TV	4
St. John's	CJON-TV	6
Stephenville	CFSN-TV	8

NOVA SCOTIA

Location	C.L.	Chan.
Antigonish	CFXU-TV	9
Halifax	CBHT	3
	CJCH-TV	5
Inverness	CJCB-TV-1	6
Liverpool	CBHT-1	12
New Glasgow	CFCY-TV-1	7
Shelburne	CBHT-2	8
Sydney	CJCB-TV	4
Yarmouth	CBHT-3	11

ONTARIO

Location	C.L.	Chan.
Barrie	CKVR-TV	3
Cornwall	CJSS-TV	8
Elk Lake	CFCL-TV-2	2
Elliot Lake	CKSO-TV-1	3
Hamilton	CHCH-TV	11
Kapuskasing	CFCL-TV-1	3
Kenora	CBWAT	8
Kingston	CKWS-TV	11
Kitchener	CKCO-TV	13
London	CFPL-TV	10
North Bay	CKGN-TV	10
Pembroke	CHOU-TV	5
Peterborough	CHEX-TV	12
Ottawa	CBOFT	9
	CBOT	4
	CJOH-TV	13
Port Arthur	CFCJ-TV	2
Sault Ste. Marie	CJIC-TV	2
Sioux Lookout	CHSL-TV	9
Sturgeon Falls	CBFST	7
Sudbury	CKSO-TV	5
Timmins	CFCL-TV	6
Toronto	CBLT	6
	CFTO-TV	9
Windsor	CKLW-TV	9
Wingham	CKNX-TV	8

PRINCE EDWARD ISLAND

Location	C.L.	Chan.
Charlottetown	CFCY-TV	13

QUEBEC

Location	C.L.	Chan.
Carleton	CHAU-TV	5
	CJAO-TV-1	80
	CHSM-TV	7
Clermont	CFCV-TV-1	75
Estcourt	CJES-TV-1	70
Jonquiere	CKRS-TV	12
Matane	CKBL-TV	9
Montreal	CBFT	2
	CFCF-TV	12
	CFTM-TV	10
	CBMT	6
New Carlisle	CHAU-TV	5
Quebec	CFCM-TV	4
	CKMI-TV	5
Rimouski	CJBR-TV	3
Rouyn	CKRN-TV	4
Sherbrooke	CHLT-TV	7
Three Rivers	CKTM-TV	13

SASKATCHEWAN

Location	C.L.	Chan.
East End	CJFB-TV	2
Moose Jaw	CHAB-TV	4
Prince Albert	CKBI-TV-1	10
Regina	CKCK-TV	2
Saskatoon	CFQC-TV	8
Swift Current	CFJB-TV	5
Val Marie	CJFB	2
Wanganui	CKBI-TV-2	7
Yorkton	CKOS-TV	3

World-Wide Short-Wave Stations

Most international broadcasting is done within frequency limits agreed upon at international conventions. These frequency ranges are listed here, at the right, expressed both in frequency and by meter bands (wave-length).

Reception in the various bands varies according to the time of day and season of the year. Reception in the 60, 49 and 41 meter bands is best at night during the winter months. Reception in the 31 and 25 M. bands is best at night, but all year. Reception in the 19, 16, 13 and 11 M. bands is best during the day, also at night during the summer in the 16 and 19 M. bands.

Abbr.: AIR—All India Radio; RAI—Radiotelevisione Italiana; RTF—Radiodiffusion Television Francaise; VOA—Voice of America; RFE—Radio Free Europe. • denotes stations beaming evening (U.S. time) broadcasts to the U.S., † morning or afternoon broadcasts.

METER BANDS

4750 to 5060 kc/s (60 meter band)
5950 to 6200 kc/s (49 meter band)
7100 to 7300 kc/s (41 meter band)
9500 to 9775 kc/s (31 meter band)
11700 to 11975 kc/s (25 meter band)
15100 to 15450 kc/s (19 meter band)
17700 to 17900 kc/s (16 meter band)
21450 to 21750 kc/s (13 meter band)
25600 to 26100 kc/s (11 meter band)

Kcs.	Call and Location
4630	HCGBI, Quito, Ecua.
4765	HJEF, Cali, Col.
4770	ELWA, Monrovia, Lib.
4770	YVMW, Punto Fiji, Ven.
4775	Libreville, Gabon Rep.
4780	YVLA, Valencia, Ven.
4790	YVQN, Puerto La Cruz, Ven.
4795	Rangoon, Burma
4805	ZYS8, Manaus, Braz.
4810	YVMG, Maracaibo, Ven.
4830	YVOA, San Cristobal, Ven.
4835	HJKE, Bogota, Col.
4840	Lourenco Marques, Moz.
4840	YVOI, Valera, Ven.
4845	HJGF, Bucaramanga, Col.
4850	YVMS, Barquisimeto, Ven.
4870	Cotonou, Dahomey Rep.
4880	YVKF, Caracas, Ven.
4893	Dakar, Mali Fed.
4895	PRF6, Manaus, Braz.
4898	HJAG, Barranquilla, Col.
4900	YVKP, Caracas, Ven.
4905	HRQN, Puerto Cortes, Hon.
4910	HCIMI, Quito, Ecua.
4910	Conakry, Guinea
4915	Accra, Ghana
4920	VLM4, Brisbane, Aus.
4920	YVKR, Caracas, Ven.
4930	HCIRC, Quito, Ecua.
4935	HJLF, Ibague, Col.
4940	Abidjan, Ivory Coast
4940	YVMO, Barquisimeto, Ven.
4945	HJCW, Bogota, Col.
4945	Paradys, So. Afr.
4950	Dakar, Mali Fed.
4950	YVMM, Coro, Ven.
4955	CR6RZ, Luanda, Ang.
4960	YVQA, Cumana, Ven.
4970	YVLK, Caracas, Ven.
4975	Yaounde, Cameroun
4990	Lagos, Nigeria
4990	YVMQ, Barquisimeto, Ven.
5010	HCRCX, Quito, Ecua.
5010	St. George, Grenada, B.W.I.
5020	HJFW, Manizales, Col.
5020	Niamey, Niger Rep.
5030	YVKM, Caracas, Ven.
5040	YVMA, Maracaibo, Ven.
5045	Lome, Togo
5050	YVKD, Caracas, Ven.
5075	HJGC, Bogota, Col.
5878	HRN, Tegucigalpa, Hond.
5940	Moscow, U.S.S.R.
5952	TGNA, Guatemala, Guat.
5954	TIQ, Puerto Limon, C. R.
5960	HJCF, Bogota, Col.
5965	YNWW, Granada, Nic.
5980	TGAR, Guatemala, Guat.
5981	Georgetown, Br. Guiana
5982	4VB, Port-au-Prince, Haiti
5990	Anderra, Andorra
5990	TGJA, Guatemala, Guat.
5995	Fort-de-France, Mart.
6002	4VEC, Cap Haitien, Haiti
6005	RIAS, Berlin, Ger.
6006	TIHBG, San Jose, C. R.
6010	XECL, Mexico City, Mexico
6015	PRA8, Recife, Braz.
6020	Amman, Jordan
6020	Kiev, Ukrainian S.S.R.
6025	Kuala Lumpur, Malaya
6025	Hilversum, Neth.
6030	Baghdad, Iraq
6035	Rangoon, Burma
6035	HRTL, Tegucigalpa, Hond.
6037	TIFC, San Jose, C. R.
6037	Monte Carlo, Mon.
6040	HJLB, Ibague, Col.
6045	YDF, Djakarta, Indon.
6045	HOU31, David, Pan.
6050	HCJB, Quito, Ecua.
6050	BBC, London, Eng.
6055	HJEX, Cali, Col.
6055	JOZ2, Tokyo, Japan
6060	RAI, Caltanissetta, It.
6065	XEXG, Leon, Mex.
6065	Horby, Sweden
6070	Sofia, Bulgaria
6070	BBC, London, Eng.
6075	Norden, Ger.
6080	ZL7, Wellington, N.Z.
6082	OAX4Z, Lima, Peru
6085	Munich, Ger.
6090	VL16, Sydney, Aus.
6090	Luxembourg, Lux.

Kcs.	Call and Location
6090	XECMT, C. El Mante, Mex.
6095	ZYB7, Sao Paulo, Braz.
6100	VOA, Munich, Ger.
6100	Belgrade, Yugo.
6103	Peking, China
6105	XEQM, Merida, Mex.
6105	Tunis, Tunisia
6110	BBC, London, Eng.
6115	ZYC7, Rio de Jan., Braz.
6115	Khabarovsk, U.S.S.R.
6120	LRX1, Buenos Aires
6120	BBC, Limassol, Cyprus
6130	Port Moresby, New Guinea
6130	Madrid/ Spain ●
6135	HRMF, La Ceiba, Hond.
6135	Papeete, Tahiti
6135	Singapore, Sing.
6140	HCOV5, Azogues, Ecua.
6140	VLW6, Perth, Aus.
6145	Algiers, Algeria
6147	PRL9, Rio de Jan., Braz.
6150	VLR6, Melbourne, Aus.
6150	BBC, London, Eng.
6155	4VWA, Cap Haitien, Haiti
6155	VOA, Salonika, Greece
6160	HJKJ, Bogota, Col.
6160	FEN, Tokyo, Japan
6165	HER3, Bern, Switz. ●
6165	XEWW, Mexico City, Mex.
6165	Saigon, Vietnam
6170	BBC, Limassol, Cyprus
6170	Cayenne, Fr. Guiana
6175	RTF, Paris, France
6180	BBC, London, England
6185	HJCT, Bogota, Col.
6190	VOA, Munich, Ger.
6190	HVJ, Vatican City
6195	HJEZ, Cali, Col.
6195	HRD2, La Ceiba, Hond.
6195	Pyongyang, N. Korea
6200	HI2LR, C. Trujillo, D.R.
6200	4VHW, Port-au-Prince, Haiti
6208	TGHC, Guatemala, Guat.
6215	Pyongyang, N. Korea
6225	Peking, China
6305	Andorra, Andorra
6327	COCF, Havana, Cuba
6345	Ulan Bator, Mong.
6373	Lisbon, Port.
6790	BBC, Limassol, Cyprus
7105	Madrid, Spain
7110	VOA, Colombo, Ceylon
7110	BBC, London, England
7115	Rabat, Morocco
7115	RFE, Germ.
7120	BBC, London, England
7120	BBC, Singapore
7125	Warsaw, Poland
7140	Monte Carlo, Monaco
7145	RFE, Ger.
7150	Khabarovsk, U.S.S.R.
7160	RTF, Paris, France
7160	VOA, Tangier, Mor.
7165	RFE, Germ.
7170	Algiers, Alg.
7180	Baghdad, Iraq
7185	BBC, London, Eng.
7200	BBC, London, Eng.
7200	R. Malaya, Sing.
7200	Omdurman, Sudan
7205	VOA, Salonika, Gr.
7210	BBC, London, Eng.
7210	Dakar, Mali Fed.
7210	Khabarovsk, U.S.S.R.
7220	VLD7, Melbourne, Aus.
7220	Budapest, Hung.
7230	BBC, London, Eng.
7235	Taipei, Taiwan, China
7235	VOA, Munich, Ger.
7240	RTF, Paris, France
7250	BBC, London, Eng.
7255	Sofia, Bulg.
7260	Saigon, Vietnam
7270	Motola, Sweden
7270	Magadan, U.S.S.R.
7275	RAI, Rome, It.
7280	Teheran, Iran
7280	HVJ, Vat. City
7285	Ankara, Turk.
7290	RAI, Rome, It.
7295	Makassar, Celebes
7295	RFE, Ger.
7320	BBC, London, Eng.
7398	Damascus, U.A.R.
7505	Peking, China
7650	YNMS, Leon, Nic.
7670	Sofia, Bulg.
7850	Tirana, Alb.
8002	Beirut, Leb.
8900	HCJC3, Zaruma, Ecua.
9009	Tel Aviv, Israel
9026	COBZ, Havana, Cuba
9065	Peking, China
9210	Leopoldville, Congo
9360	Madrid, Spain ●
9363	COBC, Havana, Cuba
9380	Alma Ata, Kazakh S.S.R.
9385	Leopoldville, Congo
9410	BBC, London, Eng.
9440	CP38, La Paz, Bol.
9458	Peking, China
9500	XEWW, Mexico City, Mex.
9500	Magadan, U.S.S.R.
9500	Moscow, U.S.S.R.
9505	PRB22, Sao Paulo, Braz.
9505	Rabat, Mor.
9505	HOLA, Colon, Pan.
9510	Peking, China
9510	VOA, Tangier, Mor.
9515	RAI, Caltanissetta, It.
9515	Ankara, Turkey ●
9520	Colombo, Ceylon
9520	Copenhagen, Den. ●
9520	VOA, Salonika, Gr.
9520	OAX8E, Iquitos, Peru
9523	Paradys, S. Afr.
9525	BBC, London, Eng.
9525	JOB9, Tokyo, Japan
9525	Warsaw, Poland
9530	COCO, Havana, Cuba
9530	VOA, Munich, Ger.
9530	AIR, Delhi, India
9530	VOA, Courier, Rhodes
9530	YVMZ, Maracaibo, Ven.
9535	Lagos, Nigeria
9535	VOA, Manila, P.I.
9535	HER4, Bern, Switz. ●
9540	ZL2, Wellington, N.Z.
9540	Warsaw, Poland
9540	Omdurman, Sudan
9545	ZYS43, Curitiba, Braz.
9545	HED5, Bern, Switz.
9950	Prague, Czecho. ●
9550	AIR, Bombay, India
9550	OAX1Z, Tumbes, Peru
9555	CP6, La Paz, Bol.
9555	BBC, London, Eng.
9555	XETT, Mexico City, Mex.
9560	RTF, Paris, France
9560	Tokyo, Japan
9563	OAX4R, Lima, Peru
9565	ZYK3, Recife, Braz.
9565	Radio Liberty, Ger.
9565	Khabarovsk, U.S.S.R.
9570	Bucharest, Rom. ●
9575	ZYZ27, Rio de Jan., Braz.
9575	Taipei, Formosa
9575	RAI, Rome, Italy ●
9580	VLA9, Melbourne, Aus.
9580	BBC, London, Eng.
9585	ZYR56, Sao Paulo, Braz.
9585	RTF, Paris, France
9588	Peking, China
9590	Djakarta, Indon.
9590	Hilversum, Neth.
9590	Bucharest, Rom. ●
9595	JOZ3, Tokyo, Japan
9598	CE960, Santiago, Chile
9600	BBC, London, Eng.
9605	Cologne, Ger.
9607	Athens, Greece
9610	VLX9, Perth, Aus.
9610	ZYC8, Rio de Jan., Braz.
9610	Oslo, Norway ●
9610	OAX8C, Iquitos, Peru
9615	VOA, Tangier, Morocco
9620	ZYR98, Sao Paulo, Braz.
9620	Peking, China
9620	VOA, Tangier, Mor.
9620	Saigon, Vietnam
9625	Brazzaville, Equat. Un.
9625	BBC, London, Eng.
9625	OAX8K, Iquitos, Peru
9625	Moscow, U.S.S.R.
9630	CR6RL, Luanda, Ang.
9630	VLG9, Melbourne, Aus.
9630	RAI, Rome, Italy
9630	Komsomolsk, U.S.S.R.
9635	ZYR83, Aparecida, Braz.
9635	VOA, Munich, Ger.
9635	Lisbon, Portugal ●
9640	BBC, London, Eng.
9640	Cologne, Germany ●
9640	Accra, Ghana
9640	HLK5, Seoul, Korea
9640	Moscow, U.S.S.R.
9645	TIFC, San Jose, C.R.
9645	HVJ, Vatican City
9650	BBC, Limassol, Cyprus
9655	Radio Free Europe, Ger.
9660	LRX, Buenos Aires, Arg.
9660	VLQ9, Brisbane, Aus.
9660	Radio Liberty, Ger.
9660	Teheran, Iran
9660	Komsomolsk, U.S.S.R.
9665	Moscow, U.S.S.R.
9667	Hargeisa, Somalia
9667	TGNA, Guatemala, Guat. ●
9670	COCQ, Havana, Cuba
9670	Prague, Czecho.
9675	BBC, London, Eng.
9675	RTF, Paris, France
9675	JOB9, Tokyo, Japan
9675	Warsaw, Poland ●
9680	VLH9, Melbourne, Aus.
9680	XEQQ, Mexico City, Mex.
9680	VOA, Tangier, Mor.
9680	Paradys, S. Afr.
9685	Algiers, Algeria
9690	LRA, Buenos Aires, Arg. ●
9690	BBC, London, Eng.
9690	BBC, Singapore
9700	Sofia, Bulgaria ●
9700	Rabat, Morocco
9705	Kabul, Afghan.
9705	Brussels, Belg.
9705	AIR, Delhi, India
9705	Radio Free Europe, Port.
9710	BBC, London, Eng.
9710	RAI, Rome, It.
9715	Hilversum, Neth. ●
9715	Radio Free Europe, Ger.
9720	Paradys, S. Afr.
9725	Tel Aviv, Israel
9725	RFE, Port.
9725	BBC, Singapore
9730	Brazzaville, Equat. Un.
9730	Leipzig, E. Ger.
9730	DZH7, Manila, P.I.
9735	Peking, China
9735	BBC, London, Eng.
9735	Cologne, Germany
9735	AIR, Madras, India
9740	VOA, Tangier, Mor.
9742	LRS1, Buenos Aires, Arg.
9745	Brussels, Belg.
9745	HCJB, Quito, Ecua. ●
9745	Ankara, Turk.
9745	Moscow, U.S.S.R.
9750	BBC, London, Eng.
9750	Radio Free Europe, Port.
9750	Khabarovsk, U.S.S.R.
9755	ZYW23, Goiania, Braz.
9755	RTF, Paris, France
9755	Saigon, Vietnam
9760	BBC, London, Eng.
9762	Hanoi, N. Vietnam
9765	Moscow, U.S.S.R.
9770	Brazzaville, Equat. Un.
9770	BBC, London, Eng.
9775	Moscow, U.S.S.R.
9795	Cairo, U.A.R. ●
9800	Peking, China
9800	Moscow, U.S.S.R.
9805	Cairo, U.A.R.
9825	BBC, London, Eng. ●
9833	Budapest, Hung. ●
9840	Hanoi, N. Vietnam
9850	AIR, Delhi, India
9860	Peking, China
9870	Djakarta, Indon.
9895	Bengazi, Libya
9915	BBC, London, Eng.
9973	Peking, China
10335	Ulan Bator, Mong.
10530	Alma Ata, Kazakh S.S.R.
11290	Peking, China
11570	Moscow, U.S.S.R.
11600	Peking, China
11630	Moscow, U.S.S.R.
11650	Peking, China
11665	Cairo, U.A.R.
11675	Peking, China
11675	Karachi, Pak.
11680	BBC, London, Eng.
11685	HVJ, Vat. City
11690	Moscow, U.S.S.R. ●
11700	RTF, Paris, France
11705	JOA11, Tokyo, Japan
11705	Horby, Sweden
11705	Moscow, U.S.S.R.
11710	VLB11, Melbourne, Aus. †
11710	AIR, Delhi, India
11710	WBOU, New York, N.Y.
11715	VOA, Munich, Ger.
11715	Moscow, U.S.S.R.
11717	Athens, Greece
11720	Brazilia, Brazil
11720	BBC, Limassol, Cyprus
11725	Brazzaville, Equat. Un.
11725	Prague, Czecho.
11725	BBC, Singapore
11730	Hilversum, Neth. ●
11735	Rabat, Morocco
11735	Moscow, U.S.S.R. ●
11740	VLC11, Melbourne, Aus.
11740	CE1174, Santiago, Chile
11740	Peking, China
11740	VOA, Tangier, Mor.
11745	RFE, Germ.
11750	BBC, London, Eng.
11750	FEN, Tokyo, Japan
11755	RFE, Port.
11755	Hilversum, Neth. ●
11755	Komsomolsk, U.S.S.R.
11760	VLB11, Melbourne, Aus.
11760	VOA, Munich, Ger.
11760	VOA, Tangier, Mor.
11760	Lourenco Marques, Moz.
11760	Hanoi, N. Vietnam
11765	ZYB8, Sao Paulo, Braz.
11765	Berlin, E. Germany
11770	Colombo, Ceylon
11770	BBC, London, Eng.
11775	ZYZ28, Rio de Jan., Braz.
11775	Moscow, U.S.S.R.
11780	BBC, London, Eng. ●
11785	Djakarta, Indon.
11785	VOA, Tangier, Morocco
11790	BBC, London, Eng.
11790	VOA, Manila, P.I.
11790	Moscow, U.S.S.R.
11795	Cologne, Ger. ●
11795	Djakarta, Indon.
11800	BBC, London, Eng.
11802	Warsaw, Poland ●
11805	RAI, Rome, It.
11805	VOA, Courier, Rhodes
11810	VLB11, Melbourne, Aus. †
11810	RAI, Rome, It.
11810	Amman, Jordan
11810	Bucharest, Rom. ●
11810	Horby, Sweden ●
11815	Madrid, Spain
11820	Peking, China
11820	BBC, London, Eng.
11820	XEBR, Hermosillo, Mex.
11825	ELWA, Monrovia, Lib.
11830	WRUL, Boston, U.S.A.
11830	Moscow, U.S.S.R.
11835	Algiers, Alg.
11835	VOA, Colombo, Ceylon
11835	CXA19, Montevideo, Urug.
11840	Prague, Czecho.
11840	VOA, Tangier, Mor.
11840	Lisbon, Port. ●
11840	Khabarovsk, U.S.S.R.
11840	Hanoi, N. Vietnam
11845	RTF, Paris, France
11845	Karachi, Pak.
11850	Sofia, Bulg.
11850	AIR, Bombay, India
11850	Oslo, Norway ●
11855	Brussels, Belg. ●
11855	Radio Free Europe, Ger.
11855	DZH8, Manila, P.I.
11860	Peking, China
11860	BBC, London, Eng.
11860	Moscow, U.S.S.R.
11865	PRA8, Recife, Braz.
11865	VOA, Tangier, Mor.
11865	HER5, Bern, Switz. ●
11865	Tunis, Tun.
11870	Moscow, U.S.S.R.
11875	ZYN32, Salvador, Braz.
11875	VOA, Colombo, Ceylon
11875	VOA, Tangier, Mor.
11880	BBC, London, Eng.
11880	XEHH, Mexico City, Mex.
11885	Peking, China
11885	Karachi, Pak.
11885	Radio Free Europe, Ger.
11890	Moscow, U.S.S.R.
11895	Dakar, Mali Fed.
11895	VOA, Tangier, Mor.
11895	VOA, Manila, P.I.
11900	Bucharest, Rumania ●
11900	CXA10, Montevideo, Ur.
11900	Moscow, U.S.S.R.
11905	RAI, Rome, Italy ●
11905	WDSI, New York, U.S.A.
11910	BBC, London, Eng.
11910	Budapest, Hung. ●
11910	Bangkok, Thai.
11915	HCJB, Quito Ecua. ●
11915	Hilversum, Neth.
11920	RAI, Paris, France
11920	DXF2, Manila, P.I.
11920	WLWO, Cincinnati, U.S.A.
11925	ZYR78, Sao Paulo, Braz.
11925	HLK6, Seoul, Korea †
11925	Warsaw, Pol.
11925	Moscow, U.S.S.R.
11930	BBC, London, Eng.
11930	BBC, Singapore
11935	Radio Liberty, Ger.
11940	CE1190, Valparaiso, Chile
11940	JOB11, Tokyo, Japan
11945	Peking, China
11945	BBC, London, Eng.
11945	Cologne, Germany ●
11950	Warsaw, Poland
11950	Jidda, Saudi Arab.
11950	Moscow, U.S.S.R.
11955	BBC, London, Eng.
11955	BBC, Singapore
11960	CE1196, Santiago, Ch.
11960	Moscow, U.S.S.R. ●
11965	Radio Liberty, Ger.
11970	Caracas, Ven.
11972	Brazzaville, Equat. Un. ●
11975	Peking, China
11975	Moscow, U.S.S.R. ●
11985	Moscow, U.S.S.R.
11986	ELWA, Monrovia, Lib. ●
11990	Prague, Czecho.
12000	Moscow, U.S.S.R.
12010	Hanoi, Vietnam
12020	AIR, Delhi, India
12020	Moscow, U.S.S.R.
12040	BBC, London, Eng.
12050	Cairo, U.A.R.
12095	BBC, London, Eng.
15020	Hanoi, N. Vietnam
15030	Peking, China
15060	Peking, China
15070	BBC, London, Eng.
15085	Grenada, Windward Is., BWI
15095	Peking, China
15100	Lisbon, Port.
15100	Moscow, USSR
15105	ZYZ32, Rio de Jan., Braz.
15105	AIR, Delhi, India
15110	BBC, London, Eng.
15110	Moscow, USSR ●
15115	HCJB, Quito, Ecuador ●
15115	Peking, China
15120	Colombo, Ceylon
15120	RAI, Rome, Italy
15120	Warsaw, Poland †
15120	HVJ, Vatican City
15125	ZYN31, Salvador, Brazil
15125	Prague, Czecho.
15125	Seoul, Korea ●
15125	VOA, Manila, P.I.
15125	Lisbon, Portugal ●
15130	RTF, Paris, France

Kcs.	Call and Location
15130	VOA, Manila, P.I.
15130	KCBR, Delano, Calif.
15130	WBOU, New York, USA
15130	Moscow, USSR
15135	PRB23, Sao Paulo, Braz.
15135	JOB15, Tokyo, Japan
15135	Radio Free Europe, Port.
15140	Peking, China
15140	BBC, London, Eng.
15140	AIR, Delhi, India
15140	Komsomolsk, USSR
15145	ZYK33, Recife, Brazil
15145	Radio Free Europe, Port.
15148	CE1515, Santiago, Chile
15150	Djakarta, Indonesia
15150	Lourenco Marques, Moz.
15150	Lisbon, Portugal
15150	Moscow, USSR ●
15153	OAX4T, Lima, Peru
15155	ZYB9, Sao Paulo, Brazil
15155	Karachi, Pakistan
15155	VOA, Manila, P.I.
15155	WBOU, New York, USA
15155	Moscow, USSR
15160	VLA15, Melbourne, Aus.
15160	RTF, Paris, France
15160	XEWW, Mexico City, Mex.
15160	Ankara, Turkey
15160	Moscow, USSR
15165	ZYN7, Fortaleza, Braz.
15165	Copenhagen, Denmark
15165	Damascus, UAR
15170	Tromso, Norway
15170	OBX4C, Lima, Peru
15170	Radio Free Europe, Port.
15175	Peking, China
15175	Oslo, Norway ●
15180	BBC, London, Eng.
15180	AIR, Delhi, India
15180	Moscow, USSR
15185	VOA, Manila, P.I.
15185	Radio Free Europe, Port.
15185	WDSI, New York, USA
15190	Brazzaville, Congo Rep.
15190	Helsinki, Finland †
15190	Komsomolsk, USSR
15190	Moscow, USSR
15195	Prague, Czecho.
15195	Radio Free Europe, Ger.
15195	Ankara, Turkey
15200	Paradys, South Africa
15200	WDSI, New York, USA
15200	Moscow, USSR
15205	XESC, Mexico City, Mex.
15205	WOSI, New York, USA
15210	VLG15, Melbourne, Aus.
15210	VOA, Manila, P.I.
15210	KCBR, Delano, Cal., USA
15210	Moscow, USSR
15215	Radio Free Europe, Port.
15215	VOA, Okinawa, Ryukyu Is.
15220	Hilversum, Neth. †
15225	Taipei, Taiwan, China
15225	Radio Liberty, Germany
15225	Moscow, USSR
15230	VLH15, Melbourne, Aus.
15230	VOA, Colombo, Ceylon
15230	BBC, London, Eng.
15235	JOB15, Tokyo, Japan
15235	VOA, Tangier, Morocco
15235	Komsomolsk, USSR
15240	VLA15, Melbourne, Aus.
15240	Horby, Sweden
15240	Moscow, USSR
15240	Belgrade, Yugoslavia
15245	ZYE21, Belem, Brazil
15250	VOA, Manila, P.I.
15250	Bucharest, Rumania ●
15250	WLWO, Cincinnati, USA
15255	Radio Free Europe, Port.
15257	FEN, Tokyo, Japan
15260	BBC, London, England
15265	Colombo, Ceylon
15265	Moscow, USSR
15270	Peking, China ●
15270	AIR, Bombay, India
15270	VOA, Tangier, Morocco
15270	WBOU, New York, (VOA)
15270	WDSI, New York, USA
15275	Cologne, Germany
15275	Karachi, Pakistan
15275	VOA, Manila, P.I.
15275	Warsaw, Poland ● †
15280	ZL4, Wellington, N.Z.
15280	Moscow, USSR
15285	Brussels, Belgium
15285	Prague, Czecho.
15285	AIR, Bombay, India
15285	WBOU, New York, USA

Kcs.	Call and Location
15290	LRU, Buenos Aires, Arg.
15290	Peking, China
15290	KCBR, Delano, Cal., USA
15290	WLWO, Cincinnati, USA
15295	Rio de Janeiro, Brazil
15295	RTF, Paris, France
15295	VOA, Tangier, Morocco
15295	Moscow, USSR ●
15300	BBC, London, Eng. †
15300	DZH9, Manila, P.I.
15305	Dacca, Pakistan
15305	Moscow, USSR
15310	BBC, London, England ●
15310	BBC, Singapore
15310	KCBR, Delano, Cal., USA
15315	VLC15, Melbourne, Aus.
15315	Peking, China
15315	HEU6, Bern, Switz. ●
15315	Moscow, USSR
15320	VLC15, Melbourne, Aus.
15320	AIR, Delhi, India
15320	VOA, Tangier, Morocco
15325	ZYR228, Sao Paulo, Braz.
15325	RAI, Rome, Italy
15325	JOB15, Tokyo, Japan ●
15330	VOA, Munich, Germany
15330	VOC, Salonika, Greece
15330	WBOU, New York, USA
15330	WGEO, Schenectady, USA
15335	Brussels, Belgium †
15335	ZYU68, Porto Alegre, Braz.
15335	Karachi, Pakistan
15335	VOA, Manila, P.I.
15335	Komsomolsk, USSR
15340	Radio Liberty, Germany
15340	Moscow, USSR
15345	LRA, Buenos Aires, Arg.
15345	Taipei, Taiwan, China
15345	Athens, Greece
15345	Rabat, Morocco
15350	RTF, Paris, France
15350	WLWO, Cincinnati, USA
15355	Radio Free Europe, Port.
15360	BBC, London, England
15360	Moscow, USSR
15365	WLWO, Cincinnati, Ohio
15370	ZYC9, Rio de Jan., Braz.
15370	Radio Liberty, Germany
15375	BBC, London, Eng.
15375	Cologne, Germany †
15380	VOA, Tangier, Morocco
15380	VOA, Okinawa, Ryukyu Is.
15380	WRUL, Boston, USA
15385	DZF3, Manila, P.I.
15385	CXA60, Montevideo, Urug.
15385	Moscow, USSR
15390	BBC, London, Eng.
15390	Moscow, USSR
15395	Radio Liberty, Germany
15400	RTF, Paris, France
15400	RAI, Rome, Italy
15405	Cologne, Germany
15405	Moscow, USSR
15407	Paramaribo, Surinam
15410	Prague, Czecho. ●
15410	Radio Liberty, Germany
15410	VOA, Tangier, Morocco
15415	AFRS, Munich, Germany
15415	Budapest, Hungary ●
15417	Peking, China
15417	BBC, London, Eng.
15420	Brazzaville, Congo Rep.
15420	Madrid, Spain
15420	Moscow, USSR
15425	VLX15, Perth, Aus.
15425	Hilversum, Neth.
15430	Peking, China ●
15430	Cairo, UAR
15430	Moscow, USSR
15435	BBC, London, Eng.
15435	BBC, Singapore
15440	VOA, Munich, Germany
15440	Moscow, USSR
15445	Brazzaville, Congo Rep.
15445	Hilversum, Neth.
15447	BBC, London, Eng.
15450	Komsomolsk, USSR
15465	Paramaribo, Surinam
15470	Moscow, USSR
15475	Cairo, UAR
15480	Peking, China
15480	AIR, Delhi, India
15520	Peking, China
15555	Peking, China
15610	Peking, China
17605	Peking, China
17675	Peking, China
17690	Cairo, UAR
17695	BBC, London, Eng.

Kcs.	Call and Location
17700	BBC, London, Eng.
17700	Moscow, USSR
17705	AIR, Delhi, India
17705	VOA, Tangier, Morocco
17710	VLG17, Melbourne, Aus.
17710	WLWO, Cincinnati, USA
17710	Moscow, USSR
17715	BBC, London, Eng. ●
17715	VOA, Colombo, Ceylon
17720	Peking, China ●
17720	Brazzaville, Congo Rep.
17720	Radio Liberty, Germany
17720	Moscow, USSR
17722	San Jose dos Campos, Braz.
17725	Radio Free Europe, Port.
17725	AIR, Delhi, India
17730	BBC, London, Eng.
17730	Radio Liberty, Germany
17735	Radio Free Europe, Port.
17735	KCBR, Delano, Calif.
17735	HVJ, Vatican City
17740	WLWO, Cincinnati, USA
17740	BBC, London, Eng.
17740	Moscow, USSR
17745	BBC, London, Eng.
17745	Karachi, Pakistan
17745	VOA, Manila, P.I.
17747	Peking, China ●
17750	WRUL, Boston, USA
17750	VOA, Tangier, Morocco
17750	Moscow, USSR
17755	Prague, Czecho.
17755	BBC, Singapore
17760	WGEO, Schenectady, USA
17760	AIR, Delhi, India
17760	Moscow, USSR
17765	RTF, Paris, France
17765	Peking, China ●
17770	RAI, Rome, Italy
17770	Radio Free Europe, Port.
17770	KCBR, Delano, Cal., USA
17773	Athens, Greece
17775	Hilversum, Neth.
17780	WBOU, New York, USA
17780	VOA, Manila, P.I.
17780	Moscow, USSR
17785	HER7, Berne, Switz.
17785	AIR, Delhi, India
17788	Taipei, Formosa, China
17790	BBC, London, Eng.
17790	Prague, Czecho.
17790	AIR, Delhi, India
17795	KGEI, San Fran., USA
17795	WLWO, Cincinnati, USA
17795	Moscow, USSR
17795	CR6RZ, Luanda, Angola
17800	Helsinki, Finland †
17800	RAI, Rome, Italy
17800	Warsaw, Poland †
17805	Radio Free Europe, Port.
17805	DZ16, Manila, P.I.
17810	BBC, London, Eng. †
17810	AIR, Delhi, India
17810	Hilversum, Neth.
17810	Moscow, USSR
17815	Prague, Czecho.
17815	Cologne, Germany
17815	KCBR, Delano, Calif.
17815	Moscow, USSR †
17820	ZL14, Wellington, N.Z.
17823	Ankara, Turkey
17825	JOA17, Tokyo, Japan ●
17825	Oslo, Norway
17825	Moscow, USSR
17830	AIR, Delhi, India
17830	WDSI, New York (VOA)
17830	WLWO, Cincinnati, USA
17835	Radio Free Europe, Port.
17840	VLB17, Melbourne, Aus.
17840	Horby, Sweden †
17840	Moscow, USSR
17840	HVJ, Vatican City
17845	Brussels, Belgium
17845	Cologne, Germany
17845	WRUL, Boston, USA
17850	RTF, Paris, France
17850	Moscow, USSR
17855	VOA, Tangier, Morocco
17855	JOA17, Tokyo, Japan ●
17855	Radio Free Europe, Port.
17860	Brussels, Belgium
17860	BBC, London, Eng.
17860	Damascus, UAR
17865	Radio Liberty, Germany
17870	BBC, London, Eng.
17870	WLWO, Cincinnati, USA
17875	PRL2, Rio de Jan., Braz.
17875	Cologne, Germany

Kcs.	Call and Location
17875	Radio Free Europe, Port.
17880	Lisbon, Portugal
17880	Tunis, Tunisia
17880	Komsomolsk, USSR ●
17880	Moscow, USSR
17885	Radio Free Europe, Port.
17888	Taipei, Formosa, China
17890	HCJB, Quito, Ecuador
17890	BBC, London, Eng.
17890	HLK42, Seoul, Korea ●
17892	Voice of Free Africa
17895	Lisbon, Port.
17895	Moscow, USSR
17900	Peking, China
17920	Cairo, UAR
18080	BBC, London, Eng.
21450	Prague, Czecho.
21455	VOA, Tangier, Morocco
21460	KCBR, Delano, Calif.
21460	WRUL, Boston, USA
21470	BBC, London, Eng.
21480	Hilversum, Neth.
21485	Radio Free Europe, Port.
21485	WLWO, Cincinnati, USA
21490	BBC, London, Eng.
21490	Cologne, Germany
21495	Lisbon, Port.
21495	DZ18, Manila, P.I.
21500	Brazzaville, Congo Rep.
21505	WDSI, New York, USA
21505	Moscow, USSR
21510	Brussels, Belgium
21515	HVJ, Vatican City
21520	HER8, Berne, Switz.
21525	Moscow, USSR
21530	BBC, London, Eng.
21535	ELWA, Monrovia, Liberia ●
21540	VLD21, Melbourne, Aus.
21540	WBOU, New York, USA
21550	BBC, London, Eng.
21550	Moscow, USSA
21560	RAI, Rome, Italy
21565	Hilversum, Neth.
21570	WBOU New York (VOA)
21575	Moscow, USSR
21580	RTF, Paris, France
21590	Karachi, Pakistan
21590	WGEO, Schenectady, USA
21600	VLG21, Melbourne, Aus.
21600	Radio Free Europe, Port.
21605	AIR, Delhi, India
21605	HE19, Berne, Switz.
21610	WLWO Cincinnati (VOA)
21615	BBC, London, Eng.
21620	RTF, Paris, France
21620	AIR, Delhi, India
21620	JOB21, Tokyo, Japan
21625	Moscow, USSR
21630	BBC, London, Eng.
21640	BBC, London, Eng.
21650	Cologne, Germany
21650	AIR, Delhi, India
21650	WDSI, New York, USA
21655	VOA, Manila, P.I.
21660	BBC, London, Eng.
21665	Radio Free Europe, Port.
21670	Oslo, Norway
21675	BBC, London, Eng.
21680	VLC21, Melbourne, Aus.
21685	Dacca, Pakistan
21690	WDSI, New York, USA
21700	AIR, Delhi, India
21700	Lisbon, Port.
21705	VOA, Tangier, Morocco
21710	BBC, London, Eng.
21720	Radio Free Europe, Port.
21730	Brussels, Belgium
21735	Cologne, Germany
21735	WLWO, Cincinnati, USA
21740	BBC, London, Eng.
21740	KCBR, Delano, Cal., USA
21745	Radio Free Europe, Port.
25610	Hilversum, Neth.
25630	KCBR, Delano, Cal., USA
25650	BBC, London, Eng.
25670	BBC, London, Eng.
25720	BBC, London, Eng.
25735	VLY25, Melbourne, Aus.
25750	BBC, London, Eng.
25800	Paradys, S. Afr.
25840	BBC, London, Eng.
25880	VOA, Tangier, Morocco
25900	Oslo, Norway
25920	BBC, London, Eng.
26040	WBOU, New York, USA
25950	WBOU, New York, USA
26080	BBC, London, Eng.

Canadian Short-Wave—Domestic and International

*Transmitter at Sackville, New Brunswick

Kc.	C.L.	Location
5970	CBNX	St. John's, Nfld.
5970	CKNA	Montreal, Que.*
5990	CHAY	Montreal, Que.*
6005	CFCX	Montreal, Que.
6010	CJCX	Sydney, N.S.
6030	CFVP	Calgary, Alta.
6060	CKRZ	Montreal, Que.*
6070	CFRX	Toronto, Ont.
6080	CKFX	Vancouver, B.C.
6090	CBFW	Montreal, Que.
6090	CKOB	Montreal, Que.*

Kc.	C.L.	Location
6130	CHNX	Halifax, N.S.
6160	CBUX	Vancouver, B.C.
6160	CHAC	Montreal, Que.*
9520	CBFR	Montreal, Que.
9585	CKLP	Montreal, Que.*
9610	CBFX	Montreal, Que.
9610	CHLS	Montreal, Que.*
9630	CBFO	Montreal, Que.
9630	CKLO	Montreal, Que.*
9710	CHLR	Montreal, Que.*
9740	CHFO	Montreal, Que.*

Kc.	C.L.	Location
11705	CBFY	Montreal, Que.
11705	CKXA	Montreal, Que.*
11720	CBFL	Montreal, Que.
11720	CHOL	Montreal, Que.*
11760	CBFA	Montreal, Que.
11760	CKRA	Montreal, Que.*
11900	CKEX	Montreal, Que.*
11945	CKEX	Montreal, Que.*
15090	CKLX	Montreal, Que.*
15105	CKUS	Montreal, Que.*
15190	CBFZ	Montreal, Que.
15190	CKCX	Montreal, Que.*

Kc.	C.L.	Location
15255	CKSR	Montreal, Que.*
15275	CKBR	Montreal, Que.*
15320	CKCS	Montreal, Que.*
17710	CHSB	Montreal, Que.*
17735	CHRX	Montreal, Que.*
17820	CKNC	Montreal, Que.*
17865	CHYS	Montreal, Que.*
21600	CKRP	Montreal, Que.*
21710	CHLA	Montreal, Que.*

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