

CAR RADIOS FOR
DXing

It's a well known fact that among consumer radios, car rx's tend to be of much higher quality than are radios designed to be used in the home. For this reason, many beginning DXers who cannot afford expensive communications rx's select car radios and many of these units yield excellent results. The purpose of this article is to provide some helpful hints to those who are contemplating the purchase of a car radio. I'll also provide some tips on how to achieve optimum enjoyment from your car radio once you obtain it.

There are three basic kinds of car radios: Having tested out many portable and car radios, I would warn against just going down to your local Olson store and buying the cheapest car radio you can find. In testing out several types and price ranges of car radios, they seem to fall into three categories. First, the \$12 to \$20 new radios which are made in Japan. Electronically, these are usually little more than metal-cased 5 to 6 transistor pocket radios and they perform about as well as a pocket radio. Audio output on these units is usually low, and audio distortion is high. These radios employ 455kc pocket radio IF cans and they generally lack good AGC and AVC action. Also, they pick up car ignition noise easily.

The second type of car radios are generally made in USA. These are designed as inexpensive substitutes or replacements for original factory equipment. These radios come in hundreds of models that match the mounting face of the original models. They are made by major companies such as Tenna and Automatic Radio. These are the radios sold by Olson for \$19 or so. They have the more selective 262kc IF stages. Audio output is more than adequate for car use. Sometimes the parts layout and circuits are exactly the same as the factory installed radios, however, the actual components used in the circuit are generally cheaper than those used in the factory-installed units. Frequently less precision IF cans are used, i.e., 80c cans instead of \$2 cans. These radios are fine for hi-fi listening and they have pretty good selectivity and sensitivity. Because AVC and AGC are quite active, weak signals sound almost as good as strong ones. The newer VW model Ranger brand car radios are pretty good.

The third type of car radio is the kind installed by the auto manufacturer at the factory. These are virtually always the best for purposes of DXing. They feature high-quality IF cans and are generally more ruggedly constructed. The only disadvantage of the factory radios is their tendency to have poor high frequency audio response, this because of the shaper IFs. This never has bothered the HQ-1E0 owner!

To summarize then, whether you are looking for an indoor DX radio or a radio that will fit into an existing car, the best thing to do is visit your local junkyards and pick up a factory installed unit. The best junkyards are those which specialize in wrecked late-model cars. Large cities generally have such a yard. Consult your yellow pages. Prices for a used factory-installed car radio generally range from \$15 to about \$35. When you figure what you're getting over an Olson or Tenna radio, it's well worth the extra few dollars. The factory-installed radio cost \$65 or more originally.

Before making your purchase, be sure to look for the label on the outside or inside of the radio to determine that it was in fact made by a major manufacturer such as Bendix (for Chrysler) or Delco (for GM) rather than Tenna, etc. Note that radios installed by dealers are usually of the Tenna replacement part type, i.e., Mopar brand radios for Chrysler Corp.

After your purchase: Remember that car radios are designed for short runs of coax fed to short whip antennas. If the ant. or coax is too long, the radio's ant. trimmer capacitor will not be able to peak the antenna properly. The solution is to change the value of the trimmer so as to bring the larger ant. into the trimmer's range. Better still, stick with the short whip. With a sensitive radio, it will be overloading anyway with anything larger than a standard auto setup.

Be certain to align your car radio every couple years. Bouncing in the car takes its toll. When you buy a new radio, align it. You will almost notice that it wasn't peaked exactly for maximum sensitivity. On a poor radio the max. sens. point will make a stn sidebands unsymmetrical. With good transformers (IF cans) and correctly designed radios, the max. sens. point will also not symmetrical sidebands.

As final touches to your car radio, you can add a signal strength meter. This is simply a VOM or milliammeter with a .05 or .06 milliamper movement connected to the radio's AVC line, i.e., volume control. Use two conductor shielded wiring to the meter for static suppression. The signal strength will appear somewhat logarithmic, depending on the AVC action of your radio. Note that one should not try to read the meter while you're driving the car. You'll no doubt run into a Chev. pick-up if you do—I know from experience!

Other add-ons to your car radio can include a diode noise limiter with on and off switch and a small scope run off an AC inverter to read the true modulation of strong stations. For diode noise limiter plans, consult PE and EI for plans designed for CB type units and adapt them for ECB use. The scope should be connected to the IF stage before the diode detector.

I might note that my experience has been mostly with post-1966 transistor radios. I've found Philco (Ford) radios lacking in hi-fi quality along with sens. and selectivity. GM radios vary widely in their performance. Radios in Chev's seem to be very lacking in selectivity. Tempest radios are top notch. Chrysler Corp. radios made by Bendix are consistently very sens. and selective. This is especially true of Bendix models with labels indicating that at least some of the radio was made in Canada. Remember though that within any one model of radio, performance will vary somewhat. This is mainly caused by differences in transistor gains, etc. Remember car radios only use one IF stage, so component values and such are extremely critical.

The older type "hybrid" radios are very good, but have to be evaluated on a radio by radio basis since so many different designs were used. The '55-'57 Chev. tube radios were pretty good. If possible, buy the radio and take it right home; then compare it with existing radios. If no improvement is noted, try to get your money back. This is the only way you can evaluate car radios inasmuch as manufacturers provide no specs on them. After a couple months, the stores in your area will know you pretty well!

—Would like to hear members' experiences with different types of car rx's.
by—Bill Lips, PO Box 325, El Cajon, CA 92022

Modifying Car Radios for ECB DXing
by Tom Garcia, P. O. Box 15144, Tucson, AZ 85708

Have you ever wondered why your auto radio seems to be a better DX receiver than most home sets? Is it because your auto radio is away from most sources of interference? No, the true reason is that it is probably a more expensive and better designed piece of equipment than the average home radio. They are designed to work under more adverse conditions than the average home radio. They often have an RF stage (unheard of in most table radios) plus more rugged design. If you have an auto radio handy, you might consider converting it to ECB DX use in your home.

If you don't have such a radio already, you must go out and get one. The most obvious source is the local auto junkyard. A radio from an expensive car such as Cadillac or Lincoln will usually be a fine item. The older tube types will do just as well as the later transistor types, but they may need special power supplies. The 'hybrid' types (circa 1962) combine both tubes and transistors and operate with only slightly more power than the totally solid-state models. Try not to pay more than \$10 for the radio. If you tell the junkyard operator what you want the radio for, he will probably help you find a suitable receiver. He probably has an old Edsel radio around somewhere that no one will ever want...and J10 is better than nothing!

If you can't find what you want locally, there are several mail order firms that have such receivers for sale. The current OLSON catalog lists a manual-tuning "universal" car radio for \$12.99 plus postage. It is solid-state and complete with speakers! John Dehna, 19 Allerton St., Lynn, Mass. 01904, had new pushbutton sets listed in his April flyer for \$16.50 postpaid with speaker. He also had a lower priced model without speaker for \$9.50. His current catalog is 25¢; it is well worth the price to the serious experimenter and builder. You will find other useful items for ECB DX in here.

After you have obtained the radio, you must rig up some suitable power supply. I have been told that an auto battery charger will work, but I can't help but wonder if the filtering would be adequate. Allied has a Zener-regulated supply in their Spring 1970 catalog for \$10.95. They also have a deluxe AC to DC converter made for testing and displaying car radios and tape players that retails for \$19.95. You can also find plans for suitable converters in ARRL's Radio Amateur's Handbook.

As a final touch, you could add the International Crystal Model BA-1 Broadband Amplifier (\$3.75) to provide 6 to 30 db gain. Good luck and have fun!
(Publisher's note: The BA-1 mentioned above is the same item of which two units were donated by Ed Kocsan as door prizes at the SoCal Memorial Day meeting and two more were donated by Ed to the 1970 Vancouver Convention Auction. DEE)

THE OLD RADIO SHOP
Car radios - a compromise

The typical car radio is a magnificent piece of junk. The total expenditure for parts is believed to be in the vicinity of \$5-10. They are sold for several times that.

Typically, they consist of a stage of tuned RF, a converter, one stage of 262KC IF amplification, and a two stage audio circuit. From the factory, they are as broad as the proverbial barn door, although sensitivity is adequate.

With so little to work with, and generally poor construction techniques used by the manufacturer to begin with, there isn't a whole lot you can do to make improvements. It is possible to make it more selective with a compromise on overall audio gain and quality.

I don't recommend doing much more than the following modifications to a car radio, as the end result would not warrant the effort/cost. It is possible to increase the selectivity of these sets (provided you don't have the miniature Jap IF transformers) by taking both IF cans apart, and moving the coils $\frac{1}{2}$ " further apart each. This decreases coupling, and increases selectivity (quite noticeably) Be careful not to break the leads on the coils! The end result is a sharper response curve, less audio, less "highs", and obviously, less IF gain. It's not anywhere near a decent communications receiver, but much better than the factory job.

This article came about by yours truly wanting to listen to KWIZ, 1480 next to local XEBBC 1470, (one of the super splasers) and not wanting to spend a lot of time ripping up the car rx. The results were gratifying as far as KWIZ goes, plus I noticed both TGJ 880, and WLS 890 in nicely last night, heretofore inaudible next to XENH 860, and KDEO 910 sidebands.

Grant Manning