Text of Rules Governing FM

(Adopted by the FCC, June 22, 1940. Amended Oct. 3, 1940.)

SUBPART E. RULES GOVERNING HIGH FREQUENCY BROADCAST STATIONS

DEFINITIONS

Sec. 3.201 High-frequency broadcast station. A broadcast station" means a station licensed primarily for the transmission of radio signals in the high-frequency broadcast band.

Sec. 3.202 High-frequency broadcast band. The term "high-frequency broadcast band" means the band of frequencies extending from 300 to 300,000 kc, inclusive.

Sec. 3.203 Frequency modulation. The term "frequency modulation" means the modulation of the frequency of the carrier wave by a signal in accordance with the signal to be transmitted without any change in the amplitude of the carrier wave.

Sec. 3.204 Center frequency. The term "center frequency" means the frequency of the carrier wave with no modulation.

Sec. 3.205 Instantaneous operating frequency. The term "instantaneous operating frequency" means the operating frequency at any one instant of time and is read from the carrier wave with no modulation.

Sec. 3.206 Service area. The term "service area" of a high-frequency broadcast station means the area within which the broadcast station can be heard, except in units of one mile or less, in the normal course of events, to the point of reception in which it can be heard.

Sec. 3.207 Antenna field gain. The term "antenna field gain" means the ratio of the effective isotropic radiated power of a wave to the power input to the antenna at one mile in the horizontal plane expressed in decibels relative to a power input to an antenna of 1 kw.

Sec. 3.208 Free space field intensity. The term "free space field intensity" means the intensity of the wave that would exist at a point in the absence of waves reflected from the earth or other reflecting objects.

Sec. 3.209 Frequency swing. The term "frequency swing" is used only with respect to frequency modulation and refers to the instantaneous departure of the actual operating frequency from the assigned frequency resulting from modulation.

Sec. 3.210 Multiplex transmission. The term "multiplex transmission" means the simultaneous transmission of two or more programs on a common carrier wave or carrier carrier wave used to simultaneously transmit programs assigned to two or more stations.

Sec. 3.211 Percentage modulation. The term "percentage modulation" with respect to frequency modulation means the ratio of the actual frequency swing to the frequency swing required for 100 percent modulation expressed in percentage. (For high-frequency broadcast stations, a frequency swing of 75 kc is standard for 100 percent modulation.)

Sec. 3.212 Experimental period. The term "experimental period" means the time period of six months from the date of granting a license to any frequency broadcast station.

SEC. 3.220 ALLOCATION OF FACILITIES

(a) Stations located in or near high-frequency broadcast areas.

(b) Stations located in areas not served by high-frequency broadcast stations.

(c) Stations serving a part of the same service area of other stations serving the same service area.

(d) All high-frequency broadcast stations shall be licensed for unbroadcast service.

Sec. 3.225 High-frequency broadcast stations. High-frequency broadcast stations shall be classified as to their relative importance under the following headings.

(a) "Principal" stations shall be those stations essential to the public service.

(b) "Secondary" stations shall be those stations of lesser importance.

(c) "Trunk" stations shall be those stations serving trunk lines.

Sec. 3.226 High-frequency broadcast stations shall be assigned to the following categories of serviceareas.

(a) Stations serving principal service areas.

(b) Stations serving secondary service areas.

(c) Stations serving trunk service areas.

Sec. 3.227 Special provisions concerning assignments. The allocation of frequency broadcast facilities shall be made in such a way as to avoid interference to the greatest extent possible.

Sec. 3.228 Special provisions concerning assignments. The allocation of high-frequency broadcast facilities shall be made in such a way as to avoid interference to the greatest extent possible.

(b) High-frequency broadcast stations shall be assigned to the following categories of service areas.

(c) Stations serving a part of the same service area of other stations serving the same service area.

Sec. 3.229 High-frequency broadcast stations shall be assigned to the following categories of service areas.

(a) Stations serving principal service areas.

(b) Stations serving secondary service areas.

(c) Stations serving trunk service areas.

Sec. 3.230 High-frequency broadcast stations shall be assigned to the following categories of service areas.

(a) Stations serving principal service areas.

(b) Stations serving secondary service areas.

(c) Stations serving trunk service areas.

Sec. 3.231 Special provisions concerning assignments. The allocation of high-frequency broadcast facilities shall be made in such a way as to avoid interference to the greatest extent possible.

(b) High-frequency broadcast stations shall be assigned to the following categories of service areas.

(c) Stations serving a part of the same service area of other stations serving the same service area.

Sec. 3.232 High-frequency broadcast stations shall be assigned to the following categories of service areas.

(a) Stations serving principal service areas.

(b) Stations serving secondary service areas.

(c) Stations serving trunk service areas.

Sec. 3.233 Special provisions concerning assignments. The allocation of high-frequency broadcast facilities shall be made in such a way as to avoid interference to the greatest extent possible.

(b) High-frequency broadcast stations shall be assigned to the following categories of service areas.

(c) Stations serving a part of the same service area of other stations serving the same service area.

Sec. 3.234 High-frequency broadcast stations shall be assigned to the following categories of service areas.

(a) Stations serving principal service areas.

(b) Stations serving secondary service areas.

(c) Stations serving trunk service areas.

Sec. 3.235 Special provisions concerning assignments. The allocation of high-frequency broadcast facilities shall be made in such a way as to avoid interference to the greatest extent possible.

(b) High-frequency broadcast stations shall be assigned to the following categories of service areas.

(c) Stations serving a part of the same service area of other stations serving the same service area.

Sec. 3.236 Special provisions concerning assignments. The allocation of high-frequency broadcast facilities shall be made in such a way as to avoid interference to the greatest extent possible.

(b) High-frequency broadcast stations shall be assigned to the following categories of service areas.

(c) Stations serving a part of the same service area of other stations serving the same service area.

Sec. 3.237 Special provisions concerning assignments. The allocation of high-frequency broadcast facilities shall be made in such a way as to avoid interference to the greatest extent possible.

(b) High-frequency broadcast stations shall be assigned to the following categories of service areas.

(c) Stations serving a part of the same service area of other stations serving the same service area.
Text of Rules Governing FM
(Continued from page 374)

45000, 46700, 45900, 46100, 46300, and 46500, May 1.
(e) For stations operating on the frequencies 46700, 46900, 47100, 47300, 47500,
47700, 47900, 48100, 48300, 48500, 48700, and 48900, June 1.
(d) For stations operating on the frequencies 43100, 43300, 43500, 43700, 43900, 44100,
and 44300, July 1.

EQUIPMENT

Sec. 3.241 Maximum power rating. The Commission will not authorize the installation of a transmitter having a maximum rated power more than twice the operating power of the station.

Sec. 3.242 Maximum rated carrier power: how determined. (a) The maximum rated carrier power of a standard transmitter shall be determined by the manufacturer's rating of the equipment.

(b) The maximum rated carrier power of a composite transmitter shall be determined by the sum of the applicable commercial ratings of the vacuum tubes employed in the last radio stage.

Sec. 3.243 Frequency monitor. The licensee of each high-frequency broadcast station shall have in operation at the transmitter a frequency monitor independent of the frequency control of the transmitter. It shall have a stability of 90 parts per million. For detailed requirements thereof see Standards of Good Engineering Practice for High-frequency Broadcast Stations.

Sec. 3.244 Modulation monitor. The licensees of each high-frequency broadcast station shall have in operation at the transmitter an approved modulation monitor. For detailed requirements thereof see Standards of Good Engineering Practice for High-frequency Broadcast Stations.

Sec. 3.245 Required transmitter performance. (a) The authorization to operate of high-frequency broadcast transmitters shall be within the minimum requirements prescribed by the Commission contained in the Standards of Good Engineering Practice for High-frequency Broadcast Stations.

(b) The transmitter center frequency shall be controlled directly by automatic means which do not depend on inductances and capacity for inherent stability.

(c) The transmitter shall be wired and shielded in accordance with good engineering practice and shall be provided with safety features in accordance with the specifications of article 810 of the current National Electrical Code as approved by the American Standards Association.

Sec. 3.246 Indicating instruments. The direct plate circuit current and voltage shall be measured by instruments having an acceptable accuracy. (See Standards of Good Engineering Practice for High-frequency Broadcast Stations.)

Sec. 3.247 Auxiliaries and duplicate transmitters. See Sections 3.65 and 3.64 for provisions governing the use of auxiliary and duplicate transmitters at high-frequency broadcast stations.

Sec. 3.248 Changes in equipment and antenna system. Licensees of high-frequency broadcast stations shall observe the following provisions with regard to change in equipment and antenna system:

(a) No changes in equipment shall be made:
1. That would result in the omission of signals outside of the authorized channel.

2. That would result in the external performance of the transmitter being in explicit agreement with that prescribed in the Standards of Good Engineering Practice for High-frequency Broadcast Stations.

(b) Specific authority, upon filing formal application, is required for:
1. Change in service area for or any of the following changes:
   (a) Changes involving an increase in the maximum power rating of the transmitter.
   (b) A replacement of the transmitter as a whole.
   (c) Changes in the location of the transmitter.

4) Change in antenna system, including transmission line, which would result in a measurable change in reception or which would affect the determination of the operating power by the direct method. If any change is made in the antenna system or any change made which may affect the antenna system, the method of determining operating power shall be changed immediately to the indirect method.

5) Changes in location of main studio to outside of the city, state, district, territory, or possession.

6) Changes in the power delivered to the antenna.

(c) Specific authority, upon filing informal request, is required for the following change in equipment and antenna system:

1) Change in the indicating instruments installed to measure the antenna current or transmission line current, voltage and the direct current of the last radio stage, except by instruments of the same type, maximum scale reading and accuracy.

2) Minor changes in the antenna system and/or transmission line which would not result in an increase of service area.

3) Changes in the location of the main studio except as provided for in subparagraph (b) 6.

(d) Other changes, except as above provided for in this section or in Standards of Good Engineering Practice for High-frequency Broadcast Stations prescribed by the Commission may be made at any time without the authority of the Commission provided that the Commission shall be promptly notified thereof, and such changes shall be shown in the next application for renewal of license.

TECHNICAL OPERATION

Sec. 3.251 Operating power: how determined. The operating power, and the requirements for maintenance thereof, of each high-frequency broadcast station shall be determined by the Standards of Good Engineering Practice for High-frequency Broadcast Stations.

Sec. 3.252 Modulation. (a) The percentage of modulation of all stations shall be maintained as high as possible consistent with good quality of transmission and good broadcast practice and in no case less than 85 per cent on peaks of frequent recurrence during any selection which normally is transmitted to the highest practical level of the program under consideration.

Sec. 3.253 Frequency tolerance. The operating frequency, with modulation of each broadcast station shall be maintained within 2000 cycles of the assigned center frequency.

OPERATION

Sec. 3.261 Maximum operating schedule: service. (a) Except Sundays, the licensees of each high-frequency broadcast station shall maintain a regular daily operating schedule which shall consist of at least three hours of operation during the period 6 a.m. to 6 p.m., local standard time and three hours of operation during the period 6 p.m. to midnight, local standard time. In an emergency, however, when due to causes beyond the control of the licensee, it becomes impossible to continue operating, the station may cease operation for a period, not to exceed ten days, provided that the Commission and the inspector in charge of the station are informed by the station is located 1 shall be notified in writing immediately after the emergency develops.

(b) Such stations shall devote a minimum of one hour each day during the period 6 a.m. to 6 p.m. and one hour each day during the period 6 p.m. to midnight, to programs of duplicate and/or supplementary primary service in the same area by any standard broadcast station by any high-frequency broadcast station. During said one hour each day, a station utilizing the full facility capability of the system, as set forth in the Standards of Good Engineering Practice for High-frequency Broadcast Stations, shall be rendered. However, the Commission may, upon proper application on a showing of reasons therefor, grant exemption from the requirements, in whole or in part, for periods not in excess of three months.

(c) In addition to the foregoing minimum requirements, the Commission will consider, in determining, whether, public interest, convenience, and necessity has been or will be served by the operation of the station, the extent to which the station has made or will make use of the facility to develop a distinct and separate service from that otherwise available in the service area.

1 See Standards of Good Engineering Practice for High-frequency Broadcast Stations for specific application form required.

2 See Appendix No. 3, Part I.

THANKS to FMI!

Radio continues to be the world’s most dynamic industry. NAB•Lang-Worth, with FM’s improved reception, combines to render brilliant entertainment—so sponsorable because:

Lang-Worth’s new Distortion-free recordings are high in signal to noise ratio, and assure optimum reception when reproduced on equipment of complimentary characteristics.

Name artists plus High Fidelity Recordings give NAB•Lang-Worth’s programs audience appeal. FM stations call them “program highspots”.

You will, too.

IMPORTANT ANNOUNCEMENT: Page 195

Lang-Worth Feature Programs

Producers of NAB•Lang-Worth Music Service

420 MADISON AVE. NEW YORK CITY

BROADCASTING • Broadcast Advertising
Standards of Good Engineering Practice
Governing High Frequency (FM) Broadcast Stations: 43-50 Mc

(Adopted by the FCC, June 28, 1940)


(a) Section 3.225 prescribes three groups of channels for the use of high frequency broadcast stations. The use of these channels shall be limited to the group within each group of channels have a special purpose. The purpose of the channels in the first group shall be to provide a service to a particular area of the community. The purpose of the channels in the second group shall be to provide a service to a particular type of program. The purpose of the channels in the third group shall be to provide a service to a particular class of program.

(b) For the purpose of this section, the term "high frequency broadcast station" shall mean a radio broadcasting station whose operating frequency is between 43 and 50 megacycles.

2. Objective Intelligibility.

(a) Section 3.225 (f) provides for the determination of the maximum permissible signal for high frequency broadcast stations. The maximum permissible signal shall be determined by the following equation:

\[ P_{\text{max}} = \frac{S}{\text{range}^2} \]

where

- \( P_{\text{max}} \) is the maximum permissible power in watts
- \( S \) is the signal strength in millivolts per meter
- \( \text{range} \) is the distance in kilometers

(b) Table I, channel separation and ratio of distance to the primary service area of the station at least 7, 10, 15, and 20 kHz, the primary service area of the station at least 7, 10, 15, and 20 kHz. The primary service area of the station shall be determined by the following equation:

\[ \text{primary service area} = \frac{S}{P_{\text{max}}} \]

where

- \( S \) is the signal strength in millivolts per meter
- \( P_{\text{max}} \) is the maximum permissible power in watts

3. Transmitter Location.

(a) The transmitter location shall be selected so as to provide service to the area of the primary service area of the station at least 7, 10, 15, and 20 kHz. The primary service area of the station shall be determined by the following equation:

\[ \text{primary service area} = \frac{S}{P_{\text{max}}} \]

where

- \( S \) is the signal strength in millivolts per meter
- \( P_{\text{max}} \) is the maximum permissible power in watts

(b) Table II, channel separation and ratio of distance to the primary service area of the station at least 7, 10, 15, and 20 kHz. The primary service area of the station shall be determined by the following equation:

\[ \text{primary service area} = \frac{S}{P_{\text{max}}} \]

where

- \( S \) is the signal strength in millivolts per meter
- \( P_{\text{max}} \) is the maximum permissible power in watts

4. Operating Power; Determination and Maintenance.

(a) Section 3.215 requires that the operating power of any high frequency broadcast station shall be determined in accordance with the Standards of Good Engineering Practice. The operating power shall be determined by the following equation:

\[ P_{\text{op}} = \frac{S}{\text{range}^2} \]

where

- \( P_{\text{op}} \) is the operating power in watts
- \( S \) is the signal strength in millivolts per meter
- \( \text{range} \) is the distance in kilometers

(b) Table II, channel separation and ratio of distance to the primary service area of the station at least 7, 10, 15, and 20 kHz. The primary service area of the station shall be determined by the following equation:

\[ \text{primary service area} = \frac{S}{P_{\text{max}}} \]

where

- \( S \) is the signal strength in millivolts per meter
- \( P_{\text{max}} \) is the maximum permissible power in watts

5. Technical Equipment Pursuant to Section 3.245.

(a) Design. The equipment shall be designed to provide a service to a particular area of the community. The design shall be such as to provide service to a particular type of program. The design shall be such as to provide service to a particular class of program.

(b) Test equipment. Test equipment shall be designed to provide a service to a particular area of the community. The test equipment shall be such as to provide service to a particular type of program. The test equipment shall be such as to provide service to a particular class of program.

(c) Operation. In addition to specific requirements concerning high frequency broadcast stations, the following shall be specified:

- Section 3.245 (d) provides for the determination of the maximum permissible power for high frequency broadcast stations.

- Section 3.245 (e) provides for the determination of the maximum permissible power for high frequency broadcast stations.

- Section 3.245 (f) provides for the determination of the maximum permissible power for high frequency broadcast stations.

6. Technical Equipment Pursuant to Section 3.245.

(a) Design. The equipment shall be designed to provide a service to a particular area of the community. The design shall be such as to provide service to a particular type of program. The design shall be such as to provide service to a particular class of program.

(b) Test equipment. Test equipment shall be designed to provide a service to a particular area of the community. The test equipment shall be such as to provide service to a particular type of program. The test equipment shall be such as to provide service to a particular class of program.

(c) Operation. In addition to specific requirements concerning high frequency broadcast stations, the following shall be specified:

- Section 3.245 (d) provides for the determination of the maximum permissible power for high frequency broadcast stations.

- Section 3.245 (e) provides for the determination of the maximum permissible power for high frequency broadcast stations.

- Section 3.245 (f) provides for the determination of the maximum permissible power for high frequency broadcast stations.
SIGNAL RANGE FOR HIGH FREQUENCY BROADCAST STATIONS

(The range is based on theoretical considerations of the propagation of 46Mc over land with a conductivity $\sigma = 5 \times 10^{-7}$ mhos, and a dielectric constant $\varepsilon = 15$ and a receiving antenna height of 30 feet—calculated for a spherical earth.)
tive to the design and acoustical treatment of studios; however, the design of studios, both workrooms and control rooms, should be consistent with the required performance characteristics of high frequency broadcast stations.

7. Indicating Instruments.
Section 3.23T requires that each high-frequency broadcast station have suitable indicating instruments for determining the plate circuit currents and voltages at the final stage of the transmitter. In addition, high frequency broadcast stations are required to provide a suitable radio frequency ammeter to measure the antenna or transmission line current.

The requirements and specifications contained in the Standards of Good Engineering Practice Concerning Standard Broadcast Stations, Section 15, sub-sections A, B, (except a and b), D, E, G, and H shall apply to indicating instruments used by high frequency broadcast stations in compliance with these rules.

8. Requirements for Approval of Towers.
Sections 3.224, 3.231, 3.245 and 3.246 concerning the design, construction, and technical operation of high-frequency broadcast equipment. In order to facilitate the issuance of construction permits specifying equipment subject to the following conditions and in compliance with the following requirements shall be subject to the following conditions and in compliance with the following requirements:

(a) Approval of equipment by the Commission is only to the extent that interferer as can be determined from the data supplied the equipment complies with the operating characteristics of good engineering practice and the technical rules and regulations of the Commission may be withdrawn upon subsequent inspection, or operation showing noncompliance is not as represented or does not comply with the operating characteristics and regulations of the Commission and the requirements of good engineering practice.

(b) Such approval shall not be construed to mean that the Commission has approved as can be determined from the data supplied the equipment complies with the operating characteristics of good engineering practice and the technical rules and regulations of the Commission and the requirements of good engineering practice.

(c) Applicability.
Applicability of Section 3.224, 3.231, 3.245 and 3.246 concerning the design, construction, and technical operation of high-frequency broadcast stations. In order to facilitate the issuance of construction permits specifying equipment as can be determined from the data supplied the equipment complies with the operating characteristics of good engineering practice and the technical rules and regulations of the Commission and the requirements of good engineering practice.

(d) Pass on equipment, no consideration is given by the Commission to patent rights.

(e) High frequency broadcast stations, manufacturers shall submit to the Commission a description of the equipment with respect to all pertinent sections and the data set forth below, each of which shall be accompanied by the data shown on the topographic map included with the application for construction permit.

(f) Photograph or drawings, or any evidence that the equipment is in compliance with the requirements of good engineering practice.

(g) Data and curves showing overall audio frequency response from 50 to 12,000 cycles for approximate 25, 50, and 100% modulation for the fundamental frequencies of 50, 100, 400, 1,000, 3,000, 10,000 and 15,000 cycles.

(h) The standard for the measurement of the important characteristics of high frequency broadcast stations shall be made along road which parallels as nearly as possible the road shown on the topographic map submitted with the application for construction permit.

(i) Locations shall be noted on the map to determine the location of the car in order to determine the location of the car in order to define the boundaries of the earth power in watts, between the measured field intensity and the location.

Where measurements are made to determine the propagation characteristics of the frequency broadcast stations, they shall be age from 85 to 115 per cent normal.

9. Requirements for Approval of Frequency Monitors.
Section 3.245 requires that the license of all high frequency broadcast stations shall have in operation at the transmitter a frequency monitor independently of the antenna system of the frequency control of the transmitter. The

11. Approved Equipment.
(To be supplied.)

12. High-Frequency Broadcast Application Forms.
The Communications Act of 1934, as amended, provides that the regulations of the Commission require that an application be made to the Commission for various authorizations. In order to be of aid to applicants and to ensure that the correct forms are to be submitted in making application for various authorizations applicable to high frequency broadcast stations. In general, these forms shall be complete, accurate, and in the correct order. The only exception is in the technical section of the application form which has been approved by type number under the applicant, or type number under the approved equipment may be stated, or should be noted "no change" in each respective section. All applications involving actual operation, such as license to cover construction permit renewal of line of transmission shall be completed in full regardless of whether such information has been previously filed with the Commission.

FCC Form 219—Application for high-frequency broadcast station construction permit or modification thereof shall be used for all applications for authority:

(1) To erect a new high-frequency broadcast station.

(2) Any change in assignment involving construction of a new tower shall be filed with the Commission.

(3) To install new transmitter.

(4) To make any change affecting the maximum radiation carried by power or type number of equipment.

(5) The location of the existing transmitter.

(6) For the purpose of operating a new antenna system or make substantial change in an existing antenna system which may result in decrease in service.

(7) The location of any outstanding construction permit which has not been covered by an application for license.

FCC Form 230—Application for High-Frequency Broadcast License shall be used for all applications for license:

(1) To cover construction permit.

(2) To make any change affecting the maximum radiation carried by power or type number of equipment.

(3) The location of the existing transmitter.

(4) The location of any outstanding construction permit which has not been covered by an application for license.

FCC Form 322—Application for Modification of High-Frequency Broadcast Station License shall be used for all applications for modification of any term of an existing regular license of a high-frequency broadcast station where a construction permit is not required:

(1) The location of the existing transmitter.

(2) Change of coverage where the equipment at present installed is capable of satisfactory operation at the proposed coverage.

(3) Change of location of the station.

(4) Change of location of the station.

FCC Form 322—Application for Renewal of High-Frequency Broadcast Station License shall be used for all applications for renewal of any term of an existing regular license of all high-frequency broadcast stations.

APPENDIX I
Description of Chart to be Used for Determining the Range of High-Frequency Broadcast Stations

(Continued from page 379)

THE CHART (on opposite page) may be used in the following way for determining the range for a 35-foot receiving antenna the distance to the 50 microvolts per meter contour for a high-frequency station operating in the 32 to 50 mc. band. This distance is determined by the values of the transmitting antenna height, the antenna power and the antenna field gain. The method of using the chart is as follows:

(a) With the transmitting antenna height equal to 60 feet, the positions on the left side corresponding to the values shown in the following example are selected. From the example which is shown as a dashed line the number of microseconds per meter (600 microvolts per meter) can be read. The value of the transmitting antenna height is 75 feet; the altitude of the receiving antenna is 35 feet; the receiving antenna field gain is 2. The effective power to be used in connection with the chart is determined by multiplying the antenna power by the factor 2.5 and by the antenna field gain. For the example the effective power would be 5 x 2 x 2 x 2,000 watts or 2 kw. To determine the distance to the 50 microvolts per meter contour in the example given follow the 750-foot horizontal line over to the 45° line marked 2 kw. and proceed vertically downward to the 50 microvolts per meter contour marked 1,000 feet and 500 feet: finally proceed horizontally again to the left to find that the expected range is 54.6 miles. By reversing the above procedure the chart can, of course, be used for determining the power required for a given antenna height in order to cover a certain distance. Additional power scales have been placed on the chart so that the distance to the 1,000 microvolts per meter contours may be easily determined. In general, by using the scale marked @ at the bottom of the chart, the distance to any desired contour may be determined.

where @ = h x F x S x 500

h = transmitting antenna height expressed in feet
F = power of station expressed in kw
S = scale marked @ at the bottom of the chart, the distance to any desired contour may be determined.

APPENDIX II
Field Intensity Measurements of High-frequency Broadcast Stations

WHERE REQUIRED by the Standards of Good Engineering Practice Concerning High-Frequency Broadcast Stations, the field intensity measurements shall be made with suitable measuring equipment purchased or constructed therewith a continuous recording device or other device arranged to identify and identifying marks may be used to indicate the exact location of the car in order to determine the exact location of the car in order to define the boundaries of the earth power in watts, between the measured field intensity and the location.

Measurements made to determine the propagation characteristics of high frequency broadcast stations shall be made along road which parallels as nearly as possible to the road shown on the topographic map submitted with the application for construction permit.

Locations shall be noted on the map to determine the location of the car in order to define the boundaries of the earth power in watts, between the measured field intensity and the location.

Measurements made to determine the propagation characteristics of high frequency broadcast stations shall be made along road which parallels as nearly as possible to the road shown on the topographic map submitted with the application for construction permit.

Locations shall be noted on the map to determine the location of the car in order to define the boundaries of the earth power in watts, between the measured field intensity and the location.

Measurements made to determine the propagation characteristics of high frequency broadcast stations shall be made along road which parallels as nearly as possible to the road shown on the topographic map submitted with the application for construction permit.

Locations shall be noted on the map to determine the location of the car in order to define the boundaries of the earth power in watts, between the measured field intensity and the location.
**FCC Rules Governing Television**

**Effective June 20, 1940**

### TELEVISION BROADCAST STATIONS

4.41 Defined.—The term "television broadcast station" means a station licensed for the transmission of television images of moving or fixed objects, or both, to provide visual reception and reproduction by the public.

4.42 Assignment of television broadcast stations. — Television broadcast stations shall be assigned and operated only to those persons or companies who, in the opinion of the Commission, are fit for the use of such frequencies and allocations.

4.43 Operating requirements. — All television broadcast stations shall operate only under license issued by the Commission and shall conform to such rules and regulations as the Commission may from time to time prescribe.

4.44 Frequency assignments. — All television broadcast stations shall operate upon the frequencies assigned by the Commission.

### NATIONAL TELEVISION SYSTEMS COMMITTEE

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Director, Engineering Dept., Radio Manufacturers Assn.</td>
<td></td>
</tr>
</tbody>
</table>

### MEMBERSHIP

| Columbia Broadcasting System, 485 Madison Ave., New York City | Adrian Murphy, executive director of television; Dr. Peter C. Goldmark, alternate. |
| Bell Telephone Laboratories, 465 West St., New York City | Television Productions, 1501 Broadway, New York City — Paul C. Rainburn. |

### CHANNEL ASSIGNMENTS

<table>
<thead>
<tr>
<th>Channel</th>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>8</td>
<td>50,000-56,000 ke</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>56,000-60,000 ke</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>60,000-64,000 ke</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>64,000-68,000 ke</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>68,000-72,000 ke</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>72,000-76,000 ke</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>76,000-80,000 ke</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>80,000-84,000 ke</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>84,000-88,000 ke</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>88,000-92,000 ke</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>92,000-96,000 ke</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>96,000-100,000 ke</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>100,000-105,000 ke</td>
</tr>
</tbody>
</table>

### REPORTS

4.70 Reports. — (a) A report shall be filed with each application for renewal of license to which it shall be attached. (b) Full data on research and experimentation conducted during the operation of television broadcast stations shall be submitted to the Commission.

### PANELS

Panel No. 1 — Peter C. Goldmark, CBS, chairman; System Analysis: The analysis of television and proposed American television systems.

Panel No. 2 — Dr. A. N. Goldsmith, New York state channel; Subjective Aspects: The influence of physiological and psychological factors on the determination of system characteristics.

Panel No. 3 — J. E. Brown, Zenith Radio Corp.; Television Spectra: Consideration of sound and picture channel widths and placements.

Panel No. 4 — E. F. Engstrom, RCA Mfg. Co., chairman; Transmit Power: The consideration of transmitter modulating and carrier power requirements and the relation between power requirements of picture and sound channels.

Panel No. 5 — B. Ray Cummins, Farnsworth Television and Radio Co., chairman. Transmission Characteristics: Consideration of essential system characteristics that affect transmission fidelity (signal polarity, black level, etc.).

Panel No. 6 — I. J. Kaar, General Electric Co., chairman. Transmitter-Receiver Coordination: Consideration of the basic requirements for coordination in the design of receivers and transmitters (side-band distribution, etc.).

Panel No. 7 — D. E. Hartnett, Hazeltine Service Corp., chairman. Picture Restoration: Consideration of the factors influencing picture detail (aspect ratio, frame frequency, interlace, etc.).


Panel No. 9 — David B. Smith, Philco Corp., chairman. Operational Problems: Consideration of the factors influencing the choice of the polarizing means of the radiating wave.
3.15 Combined audio harmonics. The term "combined audio harmonics" means the sum of the fundamental and the sum of the odd harmonics of the components. Root sum square harmonic readings may be accepted under conditions prescribed by the Commission.

3.16 Effective field. The term "effective field" or "effective field intensity" is the root-mean-square (RMS) value of the inverse distance fields at a distance of 1 mile from the antenna in all directions in the horizontal plane.

ALLOCATION OF FACILITIES

3.22 Classes and power of standard broadcast stations.

(a) Class I station. A "class I station" is a dominant station or stations whose primary service area is a location on any such channel may be limited, as a consequence of interference, to a given field intensity contour.

(b) RegionaI channel. A "regional channel" is one on which several stations may operate with powers not in excess of 5 kilowatts. The primary service area of a station on any such channel may be limited, as a consequence of interference, to a given field intensity contour.

(c) Local channel. A "local channel" is one on which several stations may operate with powers not in excess of 250 watts. The primary service area of a station on any such channel may be limited, as a consequence of interference, to a given field intensity contour.

3.22 Classes and power of standard broadcast stations.

(a) Class I station. A "class I station" is a dominant station on a clear channel and designed to render primary and secondary service over an area of 1000 miles in an area of not more than 1 million in population. Its primary service area is free from objectionable interference from other stations on the same and adjacent channels. The station's secondary service area free from interference, except from stations on the adjacent channel, and from stations on the same channel in accordance with the channel designation in section 3.23 or in accordance with the regulations of the Commission. The power of Class I stations shall be not less than 10 kilowatts nor more than 50 kilowatts. (Also see section 3.23.)

(b) Class II station. A "class II station" is a secondary station which operates on a clear channel (section 3.23) and is designed to render service over a service area which is limited by and subject to such interference as may be received from Class I stations. A station of this class shall operate with power not less than 0.25 kilowatts nor more than 50 kilowatts. When necessary, a class II station may use a distant antenna or other means to avoid interference with class I stations and with other class II stations.

(c) Class III station. A "class III station" is a station which operates on a regional channel and is designed to render service primarily to a metropolitan area or the rural area contiguous thereto. Class III stations are subdivided into two classes:

(1) Class III-A station. A "class III-A station" is a station which operates with power not less than 1 kilowatt nor more than 5 kilowatts, and the service area of which is subject to interference in accordance with the Engineering Standards of Allocation.

(2) Class III-B station. A "class III-B station" is a station which operates with power not less than 0.3 kilowatt nor more than 0.5 kilowatt, and the service area of which is subject to interference in accordance with the Engineering Standards of Allocation.

3.23 Time of operation of the several classes of stations. The several classes of stations whose broadcast stations may be licensed to operate in accordance with the following:

(a) "Unlimited time" permits operation without a maximum limit as to time.

(b) "Limited time" is applicable to Class II (secondary stations) operating on a clear channel only. It permits operation of the secondary station during daytime, and at the discretion of the Commission, at night. It permits operation of the station during a division of time with one or more other stations using the same frequency.

(c) "Daytime" permits operation during the hours between average monthly local sunrise and average monthly local sunset. (For exact time of sunset at any location, see "Average and Sunset Times.")

(d) "Sharing time" permits operation during the hours which are so restricted by the station's interference as to make it impossible to operate a station and to divide a day's time with one or more other stations using the same frequency.

3.24 Broadcast facilities: licensing required. An authorization for a new station may not be issued until after a satisfactory showing has been made in regard to the following, among others:

3.24 Broadcast facilities: licensing required. An authorization for a new station may not be issued until after a satisfactory showing has been made in regard to the following, among others:

(a) The term "metropolitan district" as used in this subsection is not limited in accordance with the census given by the Bureau of the Census but includes any principal center of population in any area.

(b) Formal application required for change in time of operation of existing broadcast station.

(c) Standards of Good Engineering Practice for form number.

(d) Standards of Good Engineering Practice for form number.

3.24 Broadcast facilities: licensing required. An authorization for a new station may not be issued until after a satisfactory showing has been made in regard to the following, among others:

(a) The term "metropolitan district" as used in this subsection is not limited in accordance with the census given by the Bureau of the Census but includes any principal center of population in any area.

(b) Formal application required for change in time of operation of existing broadcast station.

(c) Standards of Good Engineering Practice for form number.

(d) Standards of Good Engineering Practice for form number.

3.24 Broadcast facilities: licensing required. An authorization for a new station may not be issued until after a satisfactory showing has been made in regard to the following, among others:

(a) The term "metropolitan district" as used in this subsection is not limited in accordance with the census given by the Bureau of the Census but includes any principal center of population in any area.

(b) Formal application required for change in time of operation of existing broadcast station.

(c) Standards of Good Engineering Practice for form number.

(d) Standards of Good Engineering Practice for form number.
(a) That the proposed assignment will tend to effect a fair, efficient, and equitable distribution of radio service among the several states and communities.

(b) That objectionable interference will not be caused to existing stations or that if it shall be caused the applicant or the licensee shall bear the entire burden of such interference, and its suppression will not be less than 50%.

(c) That the proposed assignment will not cause an increase in the cost of service already chargeable to the public.

(d) That the interference to existing stations will not be increased by more than 50%.

(e) That no station will be authorized to originate programming that is not within the public interest.

(f) That the facilities sought are subject to assignment as requested under existing international agreements and the Rules and Regulations of the Commission.

(g) That the public interest, convenience, and necessity will be served through the operation under the proposed assignment.

FREQUENCY ALLOCATIONS BY CLASSES OF STATIONS

3.25 Clear channels: classes I and II. The frequencies in the following table shall be assigned as clear channels and assigned for use by the classes of stations as given:

(a) To each of the channels below there will be assigned one class I station and there may be assigned one or more class II stations operating limited time or daytime only: 460, 470, 480, 490, 500, 510, 520, 530, 540, 550, 560, 570, 580, 590, 600, 610, 620, 630, 640, 650, 660, 670, 680, 690, 700, 710, 720, 730, 740, 750, 760, 770, 780, 790, 800, 810, 820, 830, 840, 850, 860, 870, 880, 890, 900, 910, 920, 930, 940, 950, 960, 970, 980, 990, 1000, 1010, 1020, 1040, 1050, 1060, 1070, 1080, 1090, 1100, 1110, 1120, 1130, 1140, 1150, 1160, 1170, 1180, 1190, 1200, 1210, 1220, 1230, 1240, 1250, 1260, 1270, 1280, 1290, 1300, 1310, 1320, 1330, 1340, 1350, 1360, 1370, 1380, 1390, 1400, 1410, 1420, 1430, 1440, 1450, 1460, and 1470 kilocycles.

(b) For stations operating on the frequencies 490, 500, 510, 520, 530, 540, 550, 560, 570, 580, 590, 600, 610, 620, 630, 640, 650, 660, 670, 680, 690, 700, 710, 720, 730, 740, 750, 760, 770, 780, 790, 800, 810, 820, 830, 840, 850, 860, 870, 880, 890, 900, 910, 920, 930, 940, 950, 960, 970, 980, 990, 1000, 1010, 1020, 1040, 1050, 1060, 1070, 1080, 1090, 1100, 1110, 1120, 1130, 1140, 1150, 1160, 1170, 1180, 1190, 1200, 1210, 1220, 1230, 1240, 1250, 1260, 1270, 1280, 1290, 1300, 1310, 1320, 1330, 1340, 1350, 1360, 1370, 1380, 1390, 1400, 1410, 1420, 1430, 1440, 1450, 1460, and 1470 kilocycles.

3.26 Local channels: class IV. The following frequencies are designated as local channels and are assigned for use by class IV stations: 1200, 1210, 1220, 1230, and 1240 kilocycles.

3.27 Assignment of stations to channels. The individual assignments of stations to channels shall be made according to the standards of good engineering practice, and published from time to time by the Commission for the respective classes of stations involved. (For determining objectionable interference, see Engineering Standards of Allocation and Field Intensity Measurements in Allocation, section C.)

3.29 Assignment of class IV stations to regional channels. On condition that interference will not be caused to any class III station, and that the channel shall be used adequately and properly for class III stations and subject to such interference as may be received from class III stations, class IV stations may be assigned to regional channels.

3.30 Station location. (a) Each standard broadcast station shall be considered located in the State, district, or territory in which it is located.

(b) The transmitting antenna of a standard broadcast station shall be so located that primary service is delivered to the city in which the station is located, and that the service from the standard broadcast station will be adequate for the community so located, in accordance with the Standards of Good Engineering Practice prescribed by the Commission.

3.31 Authority to move main studio. The licensee of a standard broadcast station shall be authorized to move the main studio to the borders of the city, State, district, or territory in which it is located, without obtaining the approval of the Commission.

3.32 Special experimental authorizations. (a) Special experimental authorizations may be issued to the licensee of a standard broadcast station in addition to the regular license upon written application therefor and satisfactory showing in regard to the following, among others:

1. That the applicant has a program of research and experimentation which indicates reasonable promise of contribution to the development of the art of radio transmission and advancement of the work that can be accomplished under its regular license.

2. That the experimental operation and experimentation will be under the supervision of a qualified engineer and that the apparatus and facilities will be in accord and in accordance with the Standards of Good Engineering Practice prescribed by the Commission.

3. That the public interest, convenience, and necessity will be served by granting the authorization requested.

(b) In case a special experimental authorization permits additional hours or transmission, the license shall grant any additional time of operation and no additional charge shall be made by reason of transmission with such facilities.

3.33 Directional antennas: Shading required. No station may be assigned a directional antenna without the written consent of the Commission. A directional antenna will be accepted unless a definite site and full details of the design of the directional antenna are given with the application. See Data Required with Applications Invoking Directional Antennas, section C.

3.34 Normal license period. All standard broadcast stations shall be licensed for a period of 1 year, expiring at the end of a year, unless extended by the Commission.

3.36 Normal license period. All standard broadcast stations shall be licensed for a period of 1 year, expiring at the end of a year, unless extended by the Commission.

3.41 Maximum rated carrier power: tolerances. The maximum rated carrier power of a standard broadcast transmitter shall not be less than the authorized power nor shall it be greater than the value specified in the following table:

<table>
<thead>
<tr>
<th>Class of station</th>
<th>Maximum power authorized to station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class IV</td>
<td>100 or 250 watts</td>
</tr>
<tr>
<td>Class III</td>
<td>500 or 1000 watts</td>
</tr>
<tr>
<td>Class II</td>
<td>500 watts</td>
</tr>
<tr>
<td>Class I</td>
<td>5000 watts</td>
</tr>
<tr>
<td>Class X</td>
<td>50,000 watts</td>
</tr>
</tbody>
</table>

1 The maximum rated carrier power must be distinguished from the operating power. See Data Required with Applications, section C.

3.42 Maximum rated carrier power: how determined. The maximum rated carrier power of a standard broadcast transmitter shall be determined as the sum of the applicable power ratings of the vacuum tubes employed in the last radio stage as follows:

(a) The power rating of vacuum tubes shall apply to transmitters employing the different classes of operation or systems of modulation as specified in Power Rating of Vacuum Tubes prescribed by the Commission.

(b) If the maximum rated carrier power of a broadcast transmitter, as determined by paragraph (a) of this section, does not give an exact rating as required, the Commission's plan of allocation, the nearest rating thereto shall apply to such transmitter.

(c) Authority will not be granted to employ, in the last radio stage of a broadcast transmitter, any vacuum tubes the power rating of which is not listed in the manufacturer's rating tables for the class of operation or system of modulation as specified in Power Rating of Vacuum Tubes prescribed by the Commission.

(d) Any power rating of which is not listed in the manufacturer's rating tables for the class of operation or system of modulation as specified in Power Rating of Vacuum Tubes prescribed by the Commission.

(e) Any power rating of which is not listed in the manufacturer's rating tables for the class of operation or system of modulation as specified in Power Rating of Vacuum Tubes prescribed by the Commission.

3.43 Changes in equipment: authority for. No licensee shall change, in the last radio stage, the number of vacuum tubes to vacuum tubes of different power rating or class of operation, nor shall it change system of modulation without the authority of the Commission.

3.44 Other changes in equipment. Other changes except as provided for in these regulations may be made in connection with the power standards of Good Engineering Practice prescribed by the Commission, which do not affect the maximum power rating or operating power of the station or the operation or precision of the frequency control equipment may be made at any time without authority of the Commission, but it is the duty of the licensee to publish the next succeeding application for renewal of license such changes which affect the information already on file in the records of the Commission.

(Continued on page 328)
3.45 Radiating system.
(a) All individuals, for new, additional, or different broadcast facilities and all licensees requesting authority to move the transmitter of an existing station shall specify a radiating system efficient of which complies with the requirements of good engineering practice for the class and power of the station. (Also see Use of Common Antenna by Standard Broadcast Stations or Another Radio Station.)
(b) The Commission will publish from time to time specifications deemed necessary to meet the requirements of good engineering practice. (See Minimum Antenna System Requirements and Field Intensity Measurements in Allocation, section A.)
(c) No broadcast station licensee shall change the physical height of the transmitting antenna, or supporting structures, or make any changes in the radiating system, which may cause the radiation patterns to differ from the current patterns, except upon written application to and authority from the Commission.
(d) The antenna and/or supporting structure shall be painted and illuminated in accordance with the specifications supplied by the Commission pursuant to section 393 (g) of the Communications Act of 1934, as amended. (See Standard Paints and Lights.)
(e) The simultaneous use of a common antenna or antenna structure by two standard broadcast stations or by a standard broadcast station and a station of any other class or service will not be authorized unless both stations are licensed to the same license. (See Use of Common Antenna by Standard Broadcast Stations or Another Radio Station.)

3.46 Transmitter.
(a) The transmitter proper and associated transmitting equipment of each broadcast station shall be designed, constructed, and operated in accordance with the requirements of good engineering practice in all phases not otherwise specifically included in these regulations.
(b) The transmitter shall be wired in such a manner as to be provided with safety features in accordance with the instructions issued by the National Electrical Code as approved by the American Standards Association.
(c) The station equipment shall be so operated, tuned, and adjusted that emissions are not outside the authorized limits which cause or are capable of causing interference to the communications of other stations. The spurious emissions, including radio frequency harmonics and audio frequency harmonics, shall be maintained at as low level as required by good engineering practice. The audio distortion, audio frequency range, carrier burr, and other essential phases of the operation which control the external effects shall at all times conform to the requirements of good engineering practice.
(d) Whenever, in this section, the term "good engineering practice" is used, the specifications deemed necessary to meet the requirements thereof will be published from time to time. (See Construction, General Operation and Safety of Life Requirements.)

TECHNICAL OPERATIONS

3.51 Operating power: how determined. The operating power of each standard broadcast station shall be determined by:

(1) Each new standard broadcast station.

(2) Each existing standard broadcast station after June 1, 1941.

(b) Indirect measurement by means of the plate input power to the last radio stage on a temporary basis in accordance with sections 3.52 and 3.53.

(2) In the case of existing standard broadcast stations and pending compliance with paragraph (a) (2) of this section.

3.52 Operating power: indirect measurement. The operating power determined by this measurement from the plate input power of the last radio stage is the product of the plate voltage (E)p, the total plate current of the last radio stage (I)p and the proper factor (F)p given in the following tables:

<table>
<thead>
<tr>
<th>Type of tube in the last radio stage</th>
<th>Table C1</th>
<th>Table D1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class A</td>
<td>0.35</td>
<td>0.35</td>
</tr>
<tr>
<td>Class B</td>
<td>0.35</td>
<td>0.35</td>
</tr>
<tr>
<td>Class C</td>
<td>0.35</td>
<td>0.35</td>
</tr>
</tbody>
</table>

1. The maximum rated carrier power must be distinguished from the operating power.

(See section 3.18 and 3.19.)

3.53 Application of efficiency factors. In computing operating power by indirect measurement the above factors shall apply in all cases, and no distinction will be made to the operating power being less than the maximum rated carrier power. (See Plate Efficiency of Last Radio Stage.)

3.54 Operating power: direct measurement. The antenna input power of the antenna input power of the last radio stage shall be determined by the method of power determination. The antenna input power to be used in computing the operating power of the station shall be the value measured by the method of power determination.

3.55 Modulation.
(a) A licensee of a broadcast station will not be authorized to operate a transmission service unless it is capable of being modulated at least 85 percent of maximum amplitude at all times in no case less than 85 percent, or 75 percent on peaks of frequent recurrence during any selection which is normally transmitted at the highest level of the program service.

(b) The Commission will, from time to time, publish the specifications, requirements for approval, and a list of approved modulation monitors. (See Application and Modification Monitors and also Requirements for Approval of Modulation Monitors.)

3.56 Modulation: data required. A licensee of a broadcast station shall meet the requirement of Section 3.55 of this part. A report of the results of a month's measurements can be submitted for each station provided that the data shall be submittal for each station provided that the data shall be an indication of average audio power, and that the data shall be taken at no less than 85 percent of the minimum operating power, and that the data shall be taken at no less than 85 percent of the minimum operating power.

3.57 Operating power: maintenance of. The licensees of a broadcast station shall maintain the operating power of the station within the prescribed limits of 85 percent of maximum. For each month in which due to causes beyond the control of the licensee, it becomes impossible to operate with the full licensed power, the station may be operated at reduced power for a period of not to exceed 10 days, provided that the Commission and the Inspector in Charge shall be notified in writing immediately after the emergency develops. (See Operating Power Tolerance.)

3.58 Indicating Instruments. Each broadcast station shall be equipped with suitable indicating instruments of accepted accuracy to measure the antenna current, direct plate circuit current, and the direct plate circuit current of the last radio stage. These indicating instruments shall not be changed or replaced.

3.59 Frequency tolerance. The operating frequency of each broadcast station shall be maintained within 50 cycles of the assigned frequency until January 1, 1947, and thereafter within 20 cycles of the assigned frequency. Frequency. The operating frequency of each broadcast station where a new transmitter is installed shall be maintained within 20 cycles of the assigned frequency after January 1, 1947, the frequency of all stations shall be maintained within 20 cycles of the assigned frequency. (See Field Office of the Commission, without authority of the Commission, except by instruments of the same type. See Indicating Instruments Pursuant to section 3.58.)
3.66 Frequency monitor. The licensee of each standard broadcast station shall have in control at the transmitter a frequency monitor independent of the frequency control of the transmitter. The frequency monitor shall be approved by the Commission and in the frequency control of an existing transmitter only in accordance with the prescribed limits and accuracy of at least 0 parts per million. (See Approved Frequency Monitors and also Requirements for Approval of Frequency Monitors.)

3.67 New Equipment; Changes. The Commission will authorize the installation of a frequency control equipment in a broadcast station or changes in the frequency control of an existing transmitter only in accordance with the prescribed limits and accuracy of at least 0 parts per million. (See Approved Frequency Monitors and also Requirements for Approval of Frequency Monitors.)

AUXILIARY TRANSMITTERS

3.68 Automatic frequency control equipment; authorization required. New auxiliary transmitters and control equipment that may effect the precision of frequency control or the operation of the transmitter shall be installed only upon authorization by the Commission. (See Approved Equipment.)

3.69 Auxiliary transmitter. Upon showing that a need exists for the use of an auxiliary transmitter in addition to the regular transmitter of a broadcast station, a license for the use thereof may be issued by the Commission, subject to such conditions as it shall prescribe. Such auxiliary transmitters may be either of the same location as the main transmitter or at a different location. A licensed operator shall be in control whenever an auxiliary transmitter is placed in operation. The auxiliary transmitter shall be maintained so that it may be put into immediate operation any time for the following purposes:

(1) The transmission of the regular programs upon the failure of the main transmitter.

(2) The transmission of regular programs during maintenance or modification work on the main transmitter, necessitating discontinuance of its operation for a period not to exceed five days.

(3) Upon request by a duly authorized representative of the Commission.

(4) The auxiliary transmitter shall be tested at least once each week to determine that it is in proper operating condition and that it is adjusted to the proper frequency, except that in case of operation, it is excluded from subparagraph (c). A record shall be kept of the time and result of the test for each week. (See Approved Equipment.)

(5) The auxiliary transmitter shall be equipped with satisfactory control equipment which will enable the maintenance of the frequency emitted by the station within the limits prescribed by the Commission.

(6) An auxiliary transmitter which is licensed at a geographical location different from that of the main transmitter shall be equipped with a frequency control which will automatically hold the frequency within the limits prescribed by the Commission and shall be subject to the same provisions governing any manual adjustment during operation or when it is being put into operation.

(7) The operating power of an auxiliary transmitter may be less than the authorized operating power on the main transmitter, but not less than such power.

3.74 Sharing time. If the licensees of stations authorized to share time do not have in control at the transmitter a frequency monitor independent of the frequency control of the transmitter, frequency monitor shall be approved by the Commission for use in the frequency control of an existing transmitter only in accordance with the prescribed limits and accuracy of at least 0 parts per million. (See Approved Frequency Monitors and also Requirements for Approval of Frequency Monitors.)

3.75 Sharing time; equivalency of time and night hours. For the purpose of sharing time, equivalency of time and night hours for stations sharing time stations 1 night hour shall be considered the equivalent of 2 day hours.

3.76 Sharing time; experimental period. If the licensees of stations authorized to share time does not have in control at the transmitter a frequency monitor independent of the frequency control of an existing transmitter only in accordance with the prescribed limits and accuracy of at least 0 parts per minute, the experimental sharing time shall be considered the equivalent of 2 day hours. (See Approved Equipment.)

3.77 Sharing time; departure from regular schedule. A departure from the regular operating schedule set forth in the time-sharing agreement shall be permitted only upon written request of the licensees of the stations affected thereby and filed in triplicate with the Commission. Each request must be accompanied by a written statement that such departure does not violate the terms and conditions of the time-sharing agreement. The departure from the regular operating schedule set forth in the time-sharing agreement shall be considered the equivalent of 2 day hours. (See Approved Equipment.)

3.78 License to specify sunrise and sunset hours. If the licensees of a broadcast station are required to commence or cease operation at the time of sunrise or sunset, the licensees shall be authorized to specify the time of sunrise and sunset hour during each month of the license period when operation of such station will commence or cease. (See Average Sunrises and Sunsets.)

3.80 Secondary station; filing of operating schedule. The licensee of a secondary station authorized to operate to the time of sunrise or sunset shall be required to submit to the Commission an approved operating schedule based on sunrise and sunset hours as observed at the station designated by the Commission for the purpose. (See Approved Equipment.)

3.81 Secondary station; failure to reach agreement. If the licensee of a secondary station authorized to operate to the time of sunrise or sunset fails to reach agreement with the Commission concerning the time of sunrise or sunset hour, the licensee shall be required to transmit programming in accordance with the schedule set forth in sections 3.7.7 and 3.7.1.

3.82 Departure from schedule; material violation. In all cases where a station licensee is required to prepare and file an operating schedule, any deviation from the schedule shall be considered as a violation of a material term of the license.

3.83 Local standard time. All references herein to standard time or local standard time as determined and fixed by the Federal Government shall be understood to refer to daylight saving time, and not standard time, as long as daylight saving time is in effect. (See Approved Equipment.)

3.84 Daylight saving time. If local time is changed from standard time to daylight saving time at the location of all stations sharing time on the same channel, the hours of operation of all stations shall be changed to reflect the time of daylight saving time. (See Approved Equipment.)

3.85 Changes in time; agreement between licensees. Where the local time is not changed from standard time to daylight saving time at the location of all stations sharing time on the same channel, the hours of operation of all stations shall be changed to reflect the time of daylight saving time at the location of some of these stations. (See Approved Equipment.)

3.86 Local standard time, specific provisions. The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to standard time unless otherwise stated in the schedule or other document from which the schedule shall be effective only while daylight saving time is observed at the location of some of these stations.

3.87 Local standard time, specific provisions. The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to standard time unless otherwise stated in the schedule or other document from which the schedule shall be effective only while daylight saving time is observed at the location of some of these stations.

3.88 Local standard time, specific provisions. The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to standard time unless otherwise stated in the schedule or other document from which the schedule shall be effective only while daylight saving time is observed at the location of some of these stations.

3.89 Local standard time, specific provisions. The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to standard time unless otherwise stated in the schedule or other document from which the schedule shall be effective only while daylight saving time is observed at the location of some of these stations.

3.90 Local standard time, specific provisions. The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to standard time unless otherwise stated in the schedule or other document from which the schedule shall be effective only while daylight saving time is observed at the location of some of these stations.

3.91 Local standard time, specific provisions. The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to standard time unless otherwise stated in the schedule or other document from which the schedule shall be effective only while daylight saving time is observed at the location of some of these stations.

3.92 Local standard time, specific provisions. The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to standard time unless otherwise stated in the schedule or other document from which the schedule shall be effective only while daylight saving time is observed at the location of some of these stations.

3.93 Local standard time, specific provisions. The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to standard time unless otherwise stated in the schedule or other document from which the schedule shall be effective only while daylight saving time is observed at the location of some of these stations.

3.94 Local standard time, specific provisions. The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to standard time unless otherwise stated in the schedule or other document from which the schedule shall be effective only while daylight saving time is observed at the location of some of these stations.

3.95 Local standard time, specific provisions. The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to standard time unless otherwise stated in the schedule or other document from which the schedule shall be effective only while daylight saving time is observed at the location of some of these stations.

3.96 Local standard time, specific provisions. The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to standard time unless otherwise stated in the schedule or other document from which the schedule shall be effective only while daylight saving time is observed at the location of some of these stations.

3.97 Local standard time, specific provisions. The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to standard time unless otherwise stated in the schedule or other document from which the schedule shall be effective only while daylight saving time is observed at the location of some of these stations.

3.98 Local standard time, specific provisions. The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to standard time unless otherwise stated in the schedule or other document from which the schedule shall be effective only while daylight saving time is observed at the location of some of these stations.

3.99 Local standard time, specific provisions. The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to standard time unless otherwise stated in the schedule or other document from which the schedule shall be effective only while daylight saving time is observed at the location of some of these stations.

3.100 Local standard time, specific provisions. The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to standard time unless otherwise stated in the schedule or other document from which the schedule shall be effective only while daylight saving time is observed at the location of some of these stations.

3.101 Local standard time, specific provisions. The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to standard time unless otherwise stated in the schedule or other document from which the schedule shall be effective only while daylight saving time is observed at the location of some of these stations.

3.102 Local standard time, specific provisions. The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to standard time unless otherwise stated in the schedule or other document from which the schedule shall be effective only while daylight saving time is observed at the location of some of these stations.

3.103 Local standard time, specific provisions. The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to standard time unless otherwise stated in the schedule or other document from which the schedule shall be effective only while daylight saving time is observed at the location of some of these stations.

3.104 Local standard time, specific provisions. The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to standard time unless otherwise stated in the schedule or other document from which the schedule shall be effective only while daylight saving time is observed at the location of some of these stations.
FCC Regulations Governing Broadcast Services

SUBPART C—General Rules Applicable to Both Standard and High-Frequency Broadcast Stations

(For Rules 3.201-3.261 Governing High-Frequency Broadcast Stations, see page 374.)

3.401 Station license; posting the license and any other instrument of authorization or individual order concerning construction of the equipment or the manner of operation of the station shall be posted in a conspicuous place in the room in which the station is maintained in such manner that all terms thereof are visible and the license of the station operator shall be posted in the same manner. (See secs. 2.51 and 2.52.)

3.402 Licensed operator; other duties. The licensees each shall have a licensed operator of the grade specified by the Commission on duty during the hours of operation of the station, or each licensee shall make the necessary arrangements with the operator of another radio station or stations in accordance with the class of operator’s license which he holds and by the rules and regulations governing such other stations: Provided, however, That such duties shall in no wise interfere with the power to operate the station.

3.404 Logs. The licensee of each broadcast station shall maintain program and operating logs and shall require entries to be made as follows:

(a) An entry of the time each station identification announcement (call letters and location) is made.

(b) An entry of the time the program begins and ends.

(c) An entry of the time the station begins to supply power to the antenna, and the time it stops.

(d) An entry of each interruption to the carrier wave, its cause, and duration.

(e) An entry of the following each 30 minutes:

(i) Operating constants of last radio stage (total plate current and plate voltage).

(ii) Antenna current.

(iii) Frequency monitor readings.

(iv) Temperature of crystal control chamber if thermometer is used.

(f) Log of experimental operation during experimental period. (If regular operation is maintained during this period, the above logs shall be kept.)

(g) A log must be kept of all operation during the experimental period. If the entries required above are not applicable thereto, then the entries shall be made as so to fully describe the operation, and the time and place thereof.

3.405 Logs; retention of. Logs of standard broadcast stations shall be retained by the licensee for a period of 2 years, except when required to be retained for the periods in accordance with the provisions of section 2.94.

3.406 Station identification.

(a) A licensee of a standard broadcast station shall make station identification announcements each hour or 15 minutes thereof; nonstandard broadcast stations shall make such announcements at the beginning and ending of each hour or 15 minutes thereof and during operation on the hour and half hour as provided by section 3.406 of these rules.

(b) Such identification announcement during operation need not be made when to make such announcement would interrupt a single consecutive free period, playing of live material, editorial material, or program of longer duration than 30 minutes. In such cases the identification announcement shall be made either at the beginning or the conclusion of the program.

(c) In case of variety show programs, baseball game broadcasts, or similar programs of longer duration than 30 minutes, the identification announcement shall be made within 5 minutes of the hour and half hour.

(d) In case of all other programs (except as provided in paragraphs (b) and (c) of this section) the identification announcement shall be made within 2 minutes of the hour and half hour.

(e) In making the identification announcement the call letters shall be given only on the channel of the station identified thereby.

3.407 Mechanical records. Each broadcast program consisting of a mechanical record or a series thereof, of longer duration than 30 minutes, shall be identified by an appropriate announcement at the beginning of the program, at each 30 minute interval, and at the conclusion of the program. Provided, however, That the identifying announcement at each 30 minute interval is not required in case of a mechanical record consisting of a single, continuous, uninterrupted speech, play, religious service, symphony concert or musical program or similar form of entertainment, but such record shall be identified by an appropriate announcement at the beginning and the end of the program.

(f) A single mechanical record of a duration not in excess of 5 minutes shall be identified by appropriate announcement immediately preceding the use thereof.

(g) In case a mechanical record is used for background music, sound effects, dramatic reading, or similar programing, the program proper, or an identification of the sponsorship of the program proper, no announcement of the mechanical record is required.

3.408 Reproduction.

(a) The term "reproduction" means reception by radio of the program 1 of another radio station or by means thereof, without transmitted or instantaneous or subsequent retransmission of such program by a broadcast station.2

(b) The licensee of a standard or high-frequency broadcast station may, without further authority proper, reproduce the program of a United States standard or high frequency broadcast station, provided the Commission has not otherwise restricted such reproduction and the license of the station reproducing the program contains a license certificate that express authority has been received from the licensee of the station originating the program.

(c) The licensee of a standard or high-frequency broadcast station may, without further authority of the Commission, retransmit on a noncommercial basis the program of an international broadcast station, provided the license certificate of the station reproducing the program contains a license certificate that expresses authority has been received from the licensee of the station originating the program.

3.421 General requirements. No station license is required to permit the use of its facilities by any legally qualified candidate for public office, but if any licensee shall permit any such candidate to use its facilities, it shall afford such candidate equal time and facilities for qualification to make any persuasion or discussion of any candidate or political party or deliver a political message to the public, so far as such radio station is maintained within the United States, wholly or partially, by reason of the provision of article 3584 of the statute of 1912, and the public interest would thereby be served.

3.422 Definitions. The following definitions shall apply for the purposes of section 3.421:

(a) A "legally qualified candidate" means any person who has met all the requirements prescribed by local, state, or federal authority as a candidate for the office which he seeks, whether it be municipal, county, state, or national, as determined according to the applicable local laws.

(b) "Other candidates for that office" means all other legally qualified candidates for the office in question.

3.423 Rates and practices. The rates, if any, charged all such candidates for the same office shall be uniform and shall not be rebated by any means, direct or indirect, whether for one candidate or all candidates for whom services are rendered or whether for one candidate or all candidates for whom services are rendered for the same office.

3.424 Records; inspection. Every licensee shall keep and permit public inspection of a complete record of all requests for broadcast time made by or on behalf of the candidates for public office, together with an appropriate notation showing the disposition made by the licensee of such requests, and the charges made, if any, if request is granted.

The following Rule is quoted for the Information of Licensees and Permits of all Classes of Broadcast Stations:

45.1 Information as to ownership, operation, interests therein, contracts, etc. Licensees, and permittees of all classes of broadcast stations shall file reports as follows:

(a) Within 30 days after becoming licensees or permittees all such licensees or permittees shall file with the Commission original reports containing the information required in accordance with the forms adopted and furnished by the Commission and the instructions in such forms.

(b) Thereafter, and within 30 days of the occurrence of any event which (Continued on page 397)