



TELEVISION  
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FREQUENCY  
MODULATION

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*Facsimile*

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*Developmental Broadcasting*

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TELEVISION  
IS IMPORTANT  
IN THE WAR EFFORT

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ITS COMING  
POSSIBILITIES  
ARE TREMENDOUS

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FOR TELEVISION  
DEVELOPMENTS  
READ  
RADIO DAILY  
REGULARLY

# TELEVISION AFTER THE WAR

By Orrin E. Dunlap, Jr.

*Author of "The Future of Television"*

TELEVISION is one of the main factors in planning a post-war formula for the radio industry. There is every indication, based upon television's pre-war scientific development and program service, that the new art will qualify to give the radio industry added impetus after the war.

Those who watched television before war brought on the dim-out, and who now couple their appreciation of its performance with imagination of what wartime research will do to improve it, are highly confident of its great future.

## Science and Industry

To see how science and industry can become allied in a new service to the public, it is only necessary to go back to the end of World War I. It was then that the radiophone, made possible by the electron tube and development of associated devices such as the microphone, revealed that speech on the air was as practical as dots and dashes. Science in wartime had equipped wireless with a tongue. It began to talk and sing. When the war was over, and radio was mustered out of service, ways and means were sought for the radiophone to perform useful service in peace. Broadcasting to the public resulted, and out of it grew a great post-war industry, both in manufacturing and programming. In 1920, America was ready for such a service as broadcasting, and by its preliminary performances radio proved it was ready to serve and to fit with the demands and tempo of the times.

Radio men dreamed of the radiophone, at least as far back as 1910, when DeForest took his radiophone transmitter backstage at the Metropolitan Opera House and put on a broadcast by Caruso and others. In 1916, David Sarnoff envisaged public broadcasting. He suggested development of a "Radio Music Box," and outlined the possibility of its becoming a household utility. Marconi, in 1914, predicted transatlantic telephony would soon be possible across a "talk-bridge" invisibly spanning the Atlantic. Similarly, radio men have dreamed of television, fully aware that sight was the next logical step, as speech was to wireless telegraphy.

The wireless key, the microphone, and now the Iconoscope as the radio "eye," follow in logical sequence. Each step has been more intricate. To combine

sound and sight introduced a complexity that challenged the ingenuity of man. Pre-war television disclosed that success had been achieved through such scientists as Dr. V. K. Zworykin of RCA Laboratories, who invented the Iconoscope as the "eye" of the radio camera and developed the Kinescope as the "eye" of the receiving set.

Television awaits post-war economics. Today both science and economics are engaged in the all-out effort to help win the war. Until victory is won, science and business cannot meet in conference with the showmen to roll up the curtain on what promises to become one of the greatest shows on earth. But let there be no doubt that television will be on the post-war starting mark as a new industry, in much the same way that broadcasting was in 1920. With its electronic "eyes" sharpened in sensitivity by wartime research, radio will enable the broadcasters to offer the public an entirely new post-war show—one of double appeal for the ear and for the eye. Television will do for sound broadcasting what sound did for the silent film.

## Logical Development

When radio manufacturing of broadcast receivers for civilian use ended in the Spring of 1942, it concluded an era in radio. It ended a cycle in American life when people were content to be entertained by radio sound, while the eye as "the window to the brain" was neglected. Television promises to change that situation.

A backward glance at American industrial history suggests a number of parallels. How could the horse and buggy days have been considered so lively when the horseless carriage was beginning to sputter? How could the kerosene lamp have seemed so bright when the convenient electric lamp was but a faint glow? How could the telegraph and cable have seemed so miraculous and fast with wireless in the offing.

How could broadcasting go on forever without sight with television ready to put optics on the radio? The answer is it couldn't go on and on without progressing to the next logical step—sight. The bugles that sound the end of World War II will sound the rise of the curtain on a new and spectacular show in radio—TELEVISION.

# TELEVISION

## BROADCASTING STATIONS

*As of January 1, 1943*

*The term "television broadcast station" means a station licensed for the transmission of transient visual images of moving or fixed objects for simultaneous reception and reproduction by the general public.*

### COMMERCIAL

<i>Licensee and Location</i>	<i>Call Letters</i>	<i>Frequency (kc)</i>	<i>ESR (Effective Signal Radiated)</i>	
Balaban & Katz Corp. Chicago, Ill. ....	WBKB	60000-66000	800	(CP only)
Columbia Broadcasting System, Inc. New York, N. Y. ....	WCBW	60000-66000	1000 2400	(CP only)
Don Lee Broadcasting System Hollywood, Calif. ....	KTSL	50000-56000	5600	(CP only)
Allen B. DuMont Laboratories, Inc. New York, N. Y. ....	WABD	78000-84000	950	(CP only)
General Electric Co. Schenectady, N. Y. .... Transmitter: New Scotland, N. Y.	WRGB	66000-72000	3100	
The Journal Co. Milwaukee, Wisc. ....	WMJT	66000-72000	1200	(CP only)
National Broadcasting Co. New York, N. Y. ....	WNBT	50000-56000	1800	
Philco Radio & Television Corp. Philadelphia, Pa. ....	WPTZ	66000-72000	1000	(CP only; but operating by special authority)
Zenith Radio Corp. Chicago, Ill. ....	WTZR	50000-56000	1270	(CP only)

### Pending Commercial Applications

<i>Applicant and Location</i>	<i>Call Letters</i>	<i>Frequency (kc)</i>	<i>ESR (Effective Signal Radiated)</i>	
Hughes Production Division of Hughes Tool Co. San Francisco, Calif. ....	----	60000-66000	740	
Hughes Productions Division of Hughes Tool Co. Los Angeles, Calif. ....	----	60000-66000	500	
WCAU Broadcasting Co. Philadelphia, Pa. ....	----	84000-90000	1128	

# TELEVISION STATIONS

## EXPERIMENTAL

Licensee and Location	Call Letters	Frequency (kc)	POWER	
			Visual	Aural
Balaban & Katz Corp. Chicago, Ill. ....	W9XBK	60000-66000	1000 w	1000 w (CP only)
Balaban & Katz Corp. Portable-area of Chicago, Ill. ....	W9XBT	204000-216000 (Television Relay Station with W9XBK)	40 w	
Balaban & Katz Corp. Portable-area of Chicago, Ill. ....	W9XBB	384000-396000 television relay station with W9XBK)	10 w	(CP only,
Balaban & Katz Corp. Chicago, Ill. ....	W9XPR	384000-396000	10 w	
Columbia Broadcasting System New York, N. Y. ....	W2XAB	60000-66000	7500 w	7500 w
Columbia Broadcasting System, Inc. Portable-area of New York, N. Y. ....	W2XCB	346000-358000 television relay station with W2XAB)	25 w (peak)	(CP only
The Crosley Corp. Cincinnati, Ohio ....	W8XCT	50000-56000	1000 w	1000 w (CP only)
Allen B. DuMont Laboratories, Inc. Passaic, N. J. ....	W2XVT	78000-84000	50 w	50 w
Allen B. DuMont Laboratories, Inc. New York, N. Y. ....	W2XWV	78000-84000	1000 w	1000 w
Allen B. DuMont Laboratories, Inc. Portable-area of New York, N. Y. ....	W10XKT	258000-270000 (Television relay station with W2XVT)	50 w	
Allen B. DuMont Laboratories, Inc. Washington, D. C. ....	W3XWT	50000-56000	1000 w	1000 w (CP only)
General Electric Co. New Scotland, N. Y. ....	W2XI	162000-168000 (Television relay station with WRGB)	50 w	
General Electric Co. Schenectady, N. Y. ....	W2XGE	162000-168000 (CP only, television relay station with	60 w	50 w
Kansas State College of Agriculture and Applied Science Manhattan, Kans. ....	W9XAK	50000-56000	100 w	100 w (CP only)
Metropolitan Television, Inc. New York, N. Y. ....	W2MT	162000-168000	250 w	250 w (CP only)
Don Lee Broadcasting System Los Angeles, Calif. ....	W6XAO	50000-56000	1000 w	150 w
Don Lee Broadcasting System Portable-area of Los Angeles, Calif. ....	W6XDU	318000-330000 (CP 50 w, special television relay sta- tion with W6XAO)	6.5 w	

# • • • TELEVISION STATIONS • • •

Licensee and Location	Call Letters	Frequency (kc)	POWER	
			Visual	Aural
National Broadcasting Co., Inc. Portable—Camden, N. J. and New York, N. Y. ....	W2XBT	162000-168000 (Television relay station with WNBT)	400 w	
National Broadcasting Co., Inc. Portable—area of New York. ....	W2XBU	282000-294000 (Television relay station with WNBT)	15 w	
Philco Radio & Television Corp. Philadelphia, Pa. ....	W3XE	66000-72000	10000 w	10000 w
Philco Radio & Television Corp. Philadelphia, Pa. ....	W3XP	230000-242000 (Television relay station with WPTZ)	15 w (CP 125 Watts)	
Philco Radio & Television Corp. Portable—area of Philadelphia, Pa. ....	W3XPR	230000-242000 Television relay station with WPTZ	60 w (peak)	
Philco Radio & Television Corp. Portable—Mobile Area of Philadelphia, Pa. ....	W3XPA	230000-242000 (CP only, television relay station with WPTZ)	15 w	
Philco Radio & Television Corp. Philadelphia ....	W3XPC	230000-242000 (CP only, television relay station with WPTZ)	15 w	
Purdue University West Lafayette, Ind. ....	W9XG	66000-72000	750 w	750 w (CP only)
RCA Mfg. Co., Inc. (Portable) Bldg. No. 8 of Camden Plant, Camden, N. J. ....	W3XAD	321000-327000	500 w	500 w
RCA Mfg. Co., Inc. Camden, N. J. ....	W3XEP	84000-90000	30000 w	30000 w
State University of Iowa Iowa City, Iowa ....	W9XUI	50000-56000 210000-216000	100 w	
Television Productions, Inc. Los Angeles, Calif. ....	W6XLA	204000-216000 (CP only, television relay station with W6XYZ)	800 w	
Television Productions, Inc. Los Angeles, Calif. ....	W6XYZ	78000-84000	1000 w	1000 w (CP only)
Zenith Radio Corp. Chicago, Ill. ....	W9XZV	50000-56000	1000 w	1000 w

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# FCC REGULATIONS REGARDING BROADCAST STATIONS FOR TELEVISION AND FACSIMILE

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*As of January 1, 1943*

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*The term "visual broadcast service" means a service rendered by stations broadcasting images for general public reception. There are two classes of stations recognized in the visual broadcast service, namely: Television broadcast stations and Facsimile broadcast stations.*

## COMMERCIAL TELEVISION BROADCAST STATIONS

### Definitions

"Television broadcast station" means a station licensed for the transmission of transient visual images of moving or fixed objects for simultaneous reception and reproduction by the general public<sup>1</sup>.

"Television broadcast band" means the bands of frequencies allocated for television broadcast stations.

"Television channel" means a band of frequencies 6,000 kilocycles wide and which may be designated by channel numbers as in section on channel assignments in these rules or by the extreme lower and upper frequencies.

"Television transmission standards" means the standards which determine the characteristics of the television signal as radiated by a television broadcast station.

"Standard television signal" means a television signal conforming with the television transmission standards set forth in the Standards of Good Engineering Practice for television stations.

"Television transmitter" means the radio transmitter or transmitters for the transmission of both visual and aural signals.

"Visual transmitter" means the radio equipment for the transmission of the visual signal only.

"Aural transmitter" means the radio equipment for the transmission of the aural signal only.

"Visual transmitter power" means the peak power output when transmitting a standard television signal.

"Service area" means the area in which the signal is not subject to objectionable interference or objectionable

fading. (Television broadcast stations are considered to have only one service area; for determination of such area see *Standards of Good Engineering Practice for Television Broadcast Stations*.)

"Main studio" as to any television broadcast station means the studio from which the majority of the local programs originate, or from which a majority of the station identification announcements are made.

### Allocation of Facilities

*Basis for license.*—Television broadcast stations will be licensed on the basis of the effective signal radiated (ESR) from the visual transmitter in accordance with the following:

ESR is equal to the square root of the power times the antenna field gain times the height of the antenna above the surrounding area. The power is measured in kilowatts, the gain in voltage ratio, the antenna height in feet above surrounding area.

*Time of operation.*—Television broadcast stations will be licensed only for unlimited time operation.

*Showing required.*—Authorization for a new television broadcast station or increase in facilities of an existing station will be issued only after a satisfactory showing has been made in regard to the following matters:

(a) That the service area and population which the applicant proposes to serve are computed in accordance with the Standards of Good Engineering Practice for Television Broadcast Stations. (The service area shall be consistent with and serve adequately the city or community proposed to serve in keeping with technical feasibility of coverage. The application shall be accomplished by an analysis of the computation of the

<sup>1</sup>The transmission of synchronized sound (aural broadcast) is considered to be an essential phase of television broadcast and one license will authorize both visual and aural broadcasts.

service area as set forth in the application. No application for construction permit for a new station or change in service area of an existing station will be accepted unless a definite site, details of proposed antenna and other data required by the application form are supplied.)

(b) That objectionable interference will not be caused to existing stations or that if interference will be caused the need for the proposed service outweighs the need for the service which will be lost by reason of such interference.

(c) That the proposed station will not suffer interference to such an extent that its service would be reduced to an unsatisfactory degree. (For determining objectionable interference, see *Standards of Good Engineering Practice for Television Broadcast Stations*.)

(d) That the technical equipment proposed, the location of the transmitter, and other technical phases of operation comply with the regulations governing the same, and the requirements of good engineering practice. (See technical regulations herein and *Standards of Good Engineering Practice for Television Broadcast Stations*.)

(e) That the applicant is financially qualified to construct and operate the proposed station.

(f) That the applicant has available adequate sources of program material for the rendition of satisfactory television broadcast service.

(g) That the proposed assignment will tend to effect a fair, efficient, and equitable distribution of radio service among the several states and communities.

(h) That the applicant is legally qualified, is of good character, and possesses other qualifications sufficient to provide a satisfactory public service.

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

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

**Channel assignments.**—The channels or frequency bands set forth below are available for assignment to television broadcast stations.

(a) Channel

No.	
1	50,000- 56,000 kc
2	60,000- 66,000 kc
3	66,000- 72,000 kc
4	78,000- 84,000 kc
5	84,000- 90,000 kc
6	96,000-102,000 kc
7	102,000-108,000 kc

8	162,000-168,000 kc
9	180,000-186,000 kc
10	186,000-192,000 kc
11	204,000-210,000 kc
12	210,000-216,000 kc
13	230,000-236,000 kc
14	236,000-242,000 kc
15	258,000-264,000 kc
16	264,000-270,000 kc
17	282,000-288,000 kc
18	288,000-294,000 kc

(b) Stations serving the same area will not be assigned channels adjacent in frequency.

(c) One channel only will be assigned to a television broadcast station.

**Experimental operation.**—Television broadcast stations may conduct technical experimentation directed to the improvement of technical phases of operation and for such purposes may utilize a signal other than the standard television signal subject to the following conditions:

(a) That the licensee complies with the provisions of these rules with regard to the minimum number of hours of transmission with a standard television signal.

(b) That no transmissions are radiated outside of the authorized channel and subject to the condition that no interference is caused to the transmissions of a standard television signal by other television broadcast stations.

(c) If objectionable interference would result from the simultaneous operation of a television broadcast station operating experimentally and an experimental broadcast station, the licensees shall make arrangements for operation to avoid interference.

(d) No charges either direct or indirect shall be made by the licensee of a television broadcast station for the production or transmission of programs when conducting technical experimentation.

**Multiple ownership.**—No person (including all persons under common control)<sup>2</sup> shall, directly or indirectly, own, operate, or control more than one television broadcast station, except upon a showing (1) that such ownership, operation, or control would foster competition among television broadcast stations or provide a television broadcast service distinct and separate from existing services, and (2) that such ownership, operation or control would not result in the concentration of control of television broadcasting facilities in a manner inconsistent with public interest, convenience, or necessity; *Provided, however*, That no person (including all persons under common control), shall directly or indirectly, own, operate, or control more

<sup>2</sup> The word "control," as used herein, is not limited to majority stock ownership, but includes actual working control in whatever manner exercised.



than one television broadcast station that would serve substantially the same service area; and *provided, further*, That the Commission will regard the ownership, operation, or control of more than three television broadcast stations as constituting a concentration of control of television broadcasting facilities in a manner inconsistent with public interest, convenience, or necessity.

**Normal license period.**—All television broadcast station licenses shall be issued so as to expire at the hour of 3 a.m., Eastern Standard Time, and will be issued for a normal license period of one year, expiring February 1.

### Equipment

**Maximum rated power; how determined.**—(a) The maximum rated carrier power of standard television transmitters shall be the same as the manufacturer's rating of the equipment.

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

**Maximum power rating and operating power.**—The Commission will authorize the installation of a television transmitter having maximum power rating equal to the operating output power in accordance with the table set out in the section of these rules titled "Basis for License."

**Monitors.**—The licensee of each television broadcast station shall operate at the transmitter:

(a) A frequency monitor independent of the frequency control of the transmitter. The monitor shall meet the requirements set forth in the Standards of Good Engineering Practice for Television Broadcast Stations;

(b) A modulation monitor to determine that the radiated television signal complies with the television transmission standards set forth in the Standards of Good Engineering Practice for Television Broadcast Stations.

**Required transmitter performance.**—The external performance of television broadcast transmitters shall be capable of radiating a standard television signal meeting the minimum requirements prescribed by the Commission contained in the Standards of Good Engineering Practice. The transmitters shall be wired and shielded in accordance with the 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.

**Indicating instruments.**—The operating output power of television broadcast stations shall be measured by instruments having an acceptable accuracy.

**Auxiliary and duplicate transmitters.**—The provisions of the rules governing standard and high frequency broadcast stations shall also govern the use of auxiliary and duplicate transmitters for television broadcast stations

**Changes in equipment and antenna system.**—(a) No changes in equipment shall be made.

(1) That would result in emission of signals outside of the authorized television channel.

(2) That would result in the external performance of the transmitter being in disagreement with that prescribed by the Commission in the Standards of Good Engineering Practice provided that for experimental transmissions equipment changes may be made which would not render the transmitters incapable of radiating a standard television signal for the required minimum number of hours. (See section titled "Minimum Operating Schedule.")

(b) Specific authority<sup>3</sup> is required for a change in any of the following:

(1) Increase in the maximum power rating of the transmitter.

(2) Replacement of the transmitter as a whole.

(3) Location of the transmitter antenna.

(4) Antenna system, including transmission line, which would result in a measurable change in service area 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) Relocation of main studio if new location is outside of the borders of the city, state, District of Columbia, territory, or possession.

(6) Operating output power delivered to the antenna.

(c) Specific authority,<sup>4</sup> upon filing informal request therefor, is required for the following change in equipment and antenna:

(1) Indicating instruments installed to measure the antenna current or transmission line, except by an instrument of the

<sup>3</sup> Formal application required. See Standards of Good Engineering practice for Television Broadcast Stations for specific application form.

<sup>4</sup> Informal application by letter may be made.

same type, maximum scale reading and accuracy.

(2) Minor changes in the antenna system 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 subsection (b) (5).

(d) Other changes, except as above provided for in this section or in Standards of Good Engineering Practice for Television 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.

*Operating output power; how determined.*—The operating output power, and the requirements for maintenance thereof, of each television broadcast station shall be determined by the Standards of Good Engineering Practice for Television Broadcast Stations.

## Operation

*Minimum operating schedule.*—(a) The licensee of each television broadcast station shall maintain a regular program operating schedule transmitting a standard television signal for a total of 4 hours per week.

(b) The aural transmitter of a television broadcast station shall not be operated separately from the visual transmitter except for experimental or test purposes, and for purposes incidental to or connected with the operation of the visual transmitter.

*Station identification.*—(a) A licensee of a television broadcast station shall make station identification announcement, aurally and visually, (call letters and location), at the beginning and ending of each time of operation and during operation on the hour.

(b) Identification announcements during operation need not be made when to make such announcement would interrupt a single consecutive speech, play, or any type of production. In such cases the identification announcement shall be made at the first interruption of the entertainment continuity and at the conclusion thereof.

*Motion picture film.*—All motion picture film employed in the broadcasts of a television broadcast station must be briefly described as such either at the beginning of the program in which such film is used, or immediately prior to the broadcast of the film. Where the film broadcast is of more than 15 minutes

duration, it shall also be briefly described as such either at the end of the program or immediately following the broadcast of the film.

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

(a) Program log.

(1) Entry of the time each station identification is made.

(2) Entry briefly describing each program broadcast under the heading 'outside pickup,' 'studio production,' and motion picture film,' or combination thereof.

(3) Entry showing that each sponsored program has been announced as sponsored, paid for or furnished by the sponsor.

(4) Entry showing name of each sponsor and commodity advertised.

(b) Operating log (when transmitting a standard television signal).

(1) Entry of the time the station begins to supply power to the antenna and the time it stops.

(2) Entry of the time the program begins and ends.

(3) Entry of each interruption to the carrier waves, cause and duration.

(4) Entry of the following each thirty minutes:

i) Operating constants of the last radio stages.

ii) Frequency monitor readings.

(c) Log of experimental operation when transmitting other than a standard television signal.

(1) Entry of the time the station begins to supply power to the antenna and the time it stops.

(2) Short description of the broadcast made and its technical purpose.

*Logs; retention of.*—Logs of a television broadcast station shall be retained by the licensee for a period of 2 years, except when required to be retained for a longer period in accordance with the provisions of section 2.51 (FCC General Rules and Regulations; in this volume see Rules and Regulations regarding production by Radio Broadcast stations).

## Broadcasts by Candidates for Public Office

The provisions of sections on political broadcasts of the Rules and Regulations Governing Standard and High Frequency Broadcast Stations shall also govern television broadcast stations.

## EXPERIMENTAL TELEVISION BROADCAST STATIONS

The term "experimental television broadcast station" means a station licensed for experimental transmission of transient visual images of moving or fixed objects for simultaneous reception and reproduction by the general public. The transmission of the synchronized sound (aural broadcast) is considered an essential phase of television broadcasting and one license will authorize both visual and aural broadcast as herein set forth.

Under these rules for experimental television broadcast stations, the Commission will authorize experimental television relay broadcast stations for transmitting from points where suitable wire facilities are not available, programs for broadcast by one or more television broadcast stations. Such authorization will be granted only to the licensee of a television broadcast station.

A license for an experimental television broadcast station will be issued for the purpose of carrying on research and experimentation for the advancement of television broadcasting which may include tests of equipment, training of personnel, and experimental programs as are necessary for the experimentation.

### Licensing Requirements

A license for a television broadcast station will be issued only after a satisfactory showing has been made in regard to the following:

1. That the applicant has a definite program of research and experimentation in the technical phases of television broadcasting, which indicates reasonable promise of substantial contributions to the developments of the television art.

2. That upon the authorization of the proposed station the applicant can and will proceed immediately with its program of research and experimentation.

3. That the transmission of signals by radio is essential to the proposed program of research and experimentation.

4. That the program of research and experimentation will be conducted by qualified personnel.

5. That the applicant is legally, financially, technically, and otherwise qualified to carry forward the program.

6. That the public interest, convenience or necessity will be served through the operation of the proposed station.

### Charges

No charges either direct or indirect shall be made by the licensee of an ex-

perimental television station for the production or transmission of either aural or visual programs transmitted by such station except that this section shall not apply to the transmission of commercial programs by an experimental television relay broadcast station for retransmission by a television broadcast station.

### Announcements

A licensee of a television broadcast station shall make station identification announcement aurally and visually (call letters and location) at the beginning and ending of each time of operation and during operation on the hour.

At the time station identification announcements are made, there shall be added the following:

*This is a special television broadcast made by authority of the Federal Communications Commission for experimental purposes.*

### Operating Requirements

Each licensee of a television broadcast station shall diligently prosecute its program of research from the time its station is authorized.

Each licensee of a television station will from time to time make such changes in its operation as may be directed by the Commission for the purpose of promoting worthwhile experimentation and improvement in the art of television broadcasting.

### Frequency Assignment

(a) The following groups of channels are available for assignment to television broadcast stations licensed experimentally:

Group A		Group B	
Channel		Channel	
No. 1	50,000-56,000 kc	No. 8	162,000-168,000 kc
2	60,000-66,000	9	180,000-186,000
3	66,000-72,000	10	186,000-192,000
4	78,000-84,000	11	204,000-210,000
5	84,000-90,000	12	210,000-216,000
6	96,000-102,000	13	230,000-236,000
7	102,000-108,000	14	236,000-242,000
Group C		15	258,000-264,000
Any 6000 kc band		16	264,000-270,000
above 300,000 kc		17	282,000-288,000
excluding band		18	288,000-294,000
400,000-401,000 kc.			

No experimental television broadcast station will be authorized to use more than one channel in Group A except for good cause shown. Both aural and visual carriers with side bands for modulation

are authorized but no emission shall result outside the authorized channel.

No persons (including all persons under common control) shall control directly or indirectly, two or more experimental television broadcast stations (other than television relay broadcast stations) unless a showing is made that the character of the programs of research require a licensing of two or more separate stations.

A license for an experimental television broadcast station will be issued only on the condition that no objectionable interference will result from the transmissions of the station to the regular program transmissions of television broadcast stations. It shall at all times be the duty of the licensee of an experimental television broadcast station to ascertain that no interference will result from the transmissions of its station. With regard to interference with the transmissions of an experimental television broadcast station or the experimental or test transmissions of a television broadcast station, the licensees shall make arrangements for operations to avoid interference.

Channels in Groups B and C may be assigned to experimental television stations to serve auxiliary purposes such as television relay stations. No mobile or portable station will be licensed for the purpose of transmitting television programs to the public directly.

### **Power**

The operating power of a television station shall be adequate for but not in

excess of that necessary to carry forward the program of research and in no case in excess of the power specified in its license.

### **Reports**

A report shall be filed with each application for renewal of station license which shall include a statement of each of the following:

1. Number of hours operated.
2. Full data on research and experimentation conducted including the type of transmitting and studio equipment used and their mode of operation.
3. Data on expense of research and operation during the period covered.
4. Power employed, field intensity measurements and visual and aural observations and the types of instruments and receivers utilized to determine the service area of the station and the efficiency of respective types of transmissions.
5. Estimated degree of public participation in reception, and the results of public observation as to the effectiveness of types of transmission.
6. Conclusions, tentative and final.
7. Program for further developments in television broadcasting.
8. All developments and major changes in equipment.
9. Any other pertinent developments.

Special or progress reports shall be submitted from time to time as the Commission shall direct.

## **— FACSIMILE BROADCAST STATIONS —**

The term "facsimile broadcast station" means a station licensed to transmit images of still objects for record reception by the general public.

A license for a facsimile broadcast station will be issued only after a satisfactory showing has been made in regard to the following, among others:

1. That the applicant has a program of research and experimentation which indicates reasonable promise of substantial contribution to the development of the facsimile broadcast service.
2. That sufficient facsimile recorders will be distributed to accomplish the experimental program proposed.
3. That the program of research and experimentation will be conducted by qualified engineers.
4. That the applicant is legally and financially qualified and possesses ade-

quate technical facilities to carry forward the program.

5. That the public interest, convenience and/or necessity will be served through the operation of the proposed station.

### **Conditions of Licensing**

(a) A licensee of a facsimile broadcast station shall not make any charge, directly or indirectly, for the transmission of programs.

(b) No licensee of any standard broadcast station or network shall make any additional charge, directly or indirectly, for the transmission of some phase of the programs by a facsimile broadcast station, nor shall commercial accounts be solicited by any licensee of a standard broadcast station or network, or others acting in their behalf, upon representa-

tion that images concerning that commercial program will be transmitted by a facsimile station.

### Frequencies Allotted

a. The following groups of frequencies are allocated for assignment to facsimile broadcast stations which will be licensed experimentally only:

<i>Group A</i>	<i>Group B</i>	<i>Group C</i>
25,025 kc	43,540 kc	Any frequency above 300,000 kc excluding band 401,000 kc.
25,050	43,580	
25,075	43,620	
25,100	43,660	
25,125	43,700	
25,150	43,740	
25,175	43,780	
25,200	43,820	
25,225	43,860	
25,250	43,900	
	43,940	

b. Other broadcast or experimental frequencies may be assigned for the operation of facsimile broadcast stations on an experimental basis provided a sufficient need therefor is shown and no interference will be caused to established radio stations.

c. One frequency only will be assigned to a facsimile station from the Groups in subsection (a) of these rules. More than one frequency may be assigned under provisions of subsections (b) of these rules if a need therefor is shown.

d. Each applicant shall specify the maximum modulating frequencies proposed to be employed.

e. The operating frequency of a facsimile broadcast station shall be main-

tained in accordance with the frequency tolerance of 0.05 per cent or less as required, provided, however, where a lesser tolerance is necessary to prevent interference, the Commission will specify the tolerance.

f. A facsimile broadcast station authorized to operate on frequencies regularly allocated to other stations or services shall be required to abide by all rules governing the stations regularly operating thereon, which are applicable to facsimile broadcast stations and are not in conflict with other FCC rules which apply to all stations generally.

### Power Limitations

The operating power of a facsimile broadcast station shall not be in excess of that necessary to carry forward the program of research, provided, however, not more than 1000 watts will be authorized on a frequency in Group A. The operating power may be maintained at the maximum rating or less, as the conditions of operation may require.

A supplemental report shall be filed with and made a part of each application for renewal of license and shall include statements of the following:

1. Number of hours operated for transmission of facsimile programs.
2. Comprehensive report of research and experimentation conducted.
3. Conclusions and program for further developments of the facsimile broadcast service.
4. All developments and major changes in equipment.
5. Any other pertinent developments.

# FACSIMILE BROADCAST STATIONS

<i>Licensee and Location</i>	<i>Call Letters</i>	<i>Frequency Kilocycles</i>	<i>Power Watts</i>	<i>Emission</i>
Courier-Journal & Louisville Times Co. N. E. of Eastwood, Ky.....	W9XWT	25250	500	A3 & A4
WBNS, Inc. Columbus, Ohio .....	W8XUM	25200	100	A4
WOKO, Inc. Albany, N. Y.....	W2XWE	25050	500	A3 & A4