

number and/or visit a Web site for details. The duration must be at least five (5) seconds.

(iii) *Graphic and audio display.* Option #1 or option #2 with an added audio component. The duration must be at least five (5) seconds.

(iv) *Longer form reminders.* Stations can choose from a variety of longer form options to communicate the countdown message. Examples might include an “Ask the Expert” segment where viewers can call in to a phone bank and ask knowledgeable people their questions about the transition. The duration must be at least two (2) minutes. (Some stations may also choose to include during newscasts DTV “experts” who may be asked questions by the anchor or reporter about the impending transition deadline.)

(e) *Consumer Education Campaign Option Three:*

(1) Only a licensee or permittee of a noncommercial television station may elect this option. Under this option, from March 27, 2008, through April 30, 2008, a noncommercial broadcaster must, at a minimum, air 60 seconds per day of transition-related education (PSAs), in variable timeslots, including at least 7.5 minutes per month between 6 p.m. and 12 a.m. From May 1, 2008, through October 31, 2008, a broadcaster must, at a minimum, air 120 seconds per day of transition-related education (PSAs), in variable timeslots, including at least 15 minutes per month between 6 p.m. and 12 a.m. From November 1, 2008, through the station’s termination of analog service, or, for stations subject to the provisions of paragraph (b)(4) of this section, until the station completes construction of its full, authorized post-transition digital facility, a broadcaster must, at a minimum, air 180 seconds per day of transition-related education (PSAs), in variable timeslots, including at least 22.5 minutes per month between 6 p.m. and 12 a.m.

(2) Noncommercial stations must air a 30-minute informational program on the digital television (DTV) transition between 8 a.m.–11:35 p.m. on at least one day after April 1, 2009, and prior to the station’s termination of analog service. The program must contain at least the following information:

(i) The fact that Congress has changed the deadline for the national DTV transition to June 12, 2009;

(ii) The date and approximate time of day when the station airing the informational video is terminating analog service;

(iii) The date and approximate time of day when all other full-power stations in the same market are terminating analog service;

(iv) For stations covered by paragraph (b)(5) of this section, the same service loss information required by paragraph (b)(5) of this section.

[74 FR 11315, Mar. 17, 2009]

#### § 73.681 Definitions.

*Amplitude modulation (AM).* A system of modulation in which the envelope of the transmitted wave contains a component similar to the wave form of the signal to be transmitted.

*Antenna electrical beam tilt.* The shaping of the radiation pattern in the vertical plane of a transmitting antenna by electrical means so that maximum radiation occurs at an angle below the horizontal plane.

*Antenna height above average terrain.* The average of the antenna heights above the terrain from approximately 3.2 (2 miles) to 16.1 kilometers (10 miles) from the antenna for the eight directions spaced evenly for each 45 degrees of azimuth starting with True North. (In general, a different antenna height will be determined in each direction from the antenna. The average of these various heights is considered the antenna height above the average terrain. In some cases less than 8 directions may be used. See § 73.684(d)). Where circular or elliptical polarization is employed, the antenna height above average terrain shall be based upon the height of the radiation center of the antenna which transmits the horizontal component of radiation.

*Antenna mechanical beam tilt.* The intentional installation of a transmitting antenna so that its axis is not vertical, in order to change the normal angle of maximum radiation in the vertical plane.

*Antenna power gain.* The square of the ratio of the root-mean-square free space field strength produced at 1 kilometer in the horizontal plane, in

millivolts per meter for one kW antenna input power to 221.4 mV/m. This ratio should be expressed in decibels (dB). (If specified for a particular direction, antenna power gain is based on the field strength in that direction only.)

*Aspect ratio.* The ratio of picture width to picture height as transmitted.

*Aural center frequency.* (1) The average frequency of the emitted wave when modulated by a sinusoidal signal; (2) the frequency of the emitted wave without modulation.

*Aural transmitter.* The radio equipment for the transmission of the aural signal only.

*Auxiliary facility.* An auxiliary facility is an antenna separate from the main facility's antenna, permanently installed on the same tower or at a different location, from which a station may broadcast for short periods without prior Commission authorization or notice to the Commission while the main facility is not in operation (e.g., where tower work necessitates turning off the main antenna or where lightning has caused damage to the main antenna or transmission system) (See § 73.1675).

*BTSC.* Broadcast Television systems committee recommendation for multi-channel television sound transmission and audio processing as defined in FCC Bulletin OET 60.

*Baseband.* Aural transmitter input signals between 0 and 120 kHz.

*Blanking level.* The level of the signal during the blanking interval, except the interval during the scanning synchronizing pulse and the chrominance subcarrier synchronizing burst.

*Chrominance.* The colorimetric difference between any color and a reference color of equal luminance, the reference color having a specific chromaticity.

*Chrominance subcarrier.* The carrier which is modulated by the chrominance information.

*Color transmission.* The transmission of color television signals which can be reproduced with different values of hue, saturation, and luminance.

*Effective radiated power.* The product of the antenna input power and the antenna power gain. This product should be expressed in kW and in dB above 1

kW (dBk). (If specified for a particular direction, effective radiated power is based on the antenna power gain in that direction only. The licensed effective radiated power is based on the maximum antenna power gain. When a station is authorized to use a directional antenna or an antenna beam tilt, the direction of the maximum effective radiated power will be specified.) Where circular or elliptical polarization is employed, the term effective radiated power is applied separately to the horizontally and vertically polarized components of radiation. For assignment purposes, only the effective radiated power authorized for the horizontally polarized component will be considered.

*Equivalent isotropically radiated power (EIRP).* The term "equivalent isotropically radiated power" (also known as "effective radiated power above isotropic") means the product of the antenna input power and the antenna gain in a given direction relative to an isotropic antenna.

*Field.* Scanning through the picture area once in the chosen scanning pattern. In the line interlaced scanning pattern of two to one, the scanning of the alternate lines of the picture area once.

*Frame.* Scanning all of the picture area once. In the line interlaced scanning pattern of two to one, a frame consists of two fields.

*Free space field strength.* The field strength that would exist at a point in the absence of waves reflected from the earth or other reflecting objects.

*Frequency departure.* The amount of variation of a carrier frequency or center frequency from its assigned value.

*Frequency deviation.* The peak difference between the instantaneous frequency of the modulated wave and the carrier frequency.

*Frequency modulation (FM).* A system of modulation where the instantaneous radio frequency varies in proportion to the instantaneous amplitude of the modulating signal (amplitude of modulating signal to be measured after pre-emphasis, if used) and the instantaneous radio frequency is independent of the frequency of the modulating signal.

*Frequency swing.* The peak difference between the maximum and the minimum values of the instantaneous frequency of the carrier wave during modulation.

*Interlaced scanning.* A scanning process in which successively scanned lines are spaced an integral number of line widths, and in which the adjacent lines are scanned during successive cycles of the field frequency.

*IRE standard scale.* A linear scale for measuring, in IRE units, the relative amplitudes of the components of a television signal from a zero reference at blanking level, with picture information falling in the positive, and synchronizing information in the negative domain.

NOTE: When a carrier is amplitude modulated by a television signal in accordance with § 73.682, the relationship of the IRE standard scale to the conventional measure of modulation is as follows:

Level	IRE standard scale (units)	Modulation percentage
Zero carrier .....	120	0
Reference white .....	100	12.5
Blanking .....	0	75
Synchronizing peaks (maximum carrier level) .....	-40	100

*Luminance.* Luminous flux emitted, reflected, or transmitted per unit solid angle per unit projected area of the source.

*Main channel.* The band of frequencies from 50 to 15,000 Hertz which frequency modulate the main aural carrier.

*Monochrome transmission.* The transmission of television signals which can be reproduced in gradations of a single color only.

*Multichannel Television Sound (MTS).* Any system of aural transmission that utilizes aural baseband operation between 15 kHz and 120 kHz to convey information or that encodes digital information in the video portion of the television signal that is intended to be decoded as audio information.

*Multiplex Transmission (Aural).* A subchannel added to the regular aural carrier of a television broadcast station by means of frequency modulated subcarriers.

*Negative transmission.* Where a decrease in initial light intensity causes an increase in the transmitted power.

*Peak power.* The power over a radio frequency cycle corresponding in amplitude to synchronizing peaks.

*Percentage modulation.* As applied to frequency modulation, the ratio of the actual frequency deviation to the frequency deviation defined as 100% modulation expressed in percentage. For the aural transmitter of TV broadcast stations, a frequency deviation of  $\pm 25$  kHz is defined as 100% modulation.

*Pilot subcarrier.* A subcarrier used in the reception of TV stereophonic aural or other subchannel broadcasts.

*Polarization.* The direction of the electric field as radiated from the transmitting antenna.

*Program related data signal.* A signal, consisting of a series of pulses representing data, which is transmitted simultaneously with and directly related to the accompanying television program.

*Reference black level.* The level corresponding to the specified maximum excursion of the luminance signal in the black direction.

*Reference white level of the luminance signal.* The level corresponding to the specified maximum excursion of the luminance signal in the white direction.

*Scanning.* The process of analyzing successively, according to a predetermined method, the light values of picture elements constituting the total picture area.

*Scanning line.* A single continuous narrow strip of the picture area containing highlights, shadows, and half-tones, determined by the process of scanning.

*Standard television signal.* A signal which conforms to the television transmission standards.

*Synchronization.* The maintenance of one operation in step with another.

*Television broadcast band.* The frequencies in the band extending from 54 to 806 megahertz which are assignable to television broadcast stations. These frequencies are 54 to 72 megahertz (channels 2 through 4), 76 to 88 megahertz (channels 5 and 6), 174 to 216 megahertz (channels 7 through 13), and 470 to 806 megahertz (channels 14 through 69).

*Television broadcast station.* A station in the television broadcast band transmitting simultaneous visual and aural signals intended to be received by the general public.

*Television channel.* A band of frequencies 6 MHz wide in the television broadcast band and designated either by number or by the extreme lower and upper frequencies.

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

*Television transmitter.* The radio transmitter or transmitters for the transmission of both visual and aural signals.

*Vestigial sideband transmission.* A system of transmission wherein one of the generated sidebands is partially attenuated at the transmitter and radiated only in part.

*Visual carrier frequency.* The frequency of the carrier which is modulated by the picture information.

*Visual transmitter.* The radio equipment for the transmission of the visual signal only.

*Visual transmitter power.* The peak power output when transmitting a standard television signal.

[28 FR 13660, Dec. 14, 1963]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 73.681, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at [www.fdsys.gov](http://www.fdsys.gov).

#### § 73.682 TV transmission standards.

(a) *Transmission standards.* (1) The width of the television broadcast channel shall be 6 MHz.

(2) The visual carrier frequency shall be nominally 1.25 MHz above the lower boundary of the channel.

(3) The aural center frequency shall be 4.5 MHz higher than the visual carrier frequency.

(4) The visual transmission amplitude characteristic shall be in accordance with the chart designated as Figure 5 of § 73.699: *Provided, however,* That for stations operating on Channel 15 through 69 and employing a transmitter with maximum peak visual power output of 1 kW or less the visual transmission amplitude characteristic

may be in accordance with the chart designated as Figure 5a of § 73.699.

(5) The chrominance subcarrier frequency is 63/88 times precisely 5 MHz (3.57954545 . . . MHz). The tolerance is  $\pm 10$  Hz and the rate of frequency drift must not exceed 0.1 Hz per second (cycles per second squared).

(6) For monochrome and color transmissions the number of scanning lines per frame shall be 525, interlaced two to one in successive fields. The horizontal scanning frequency shall be 2/455 times the chrominance subcarrier frequency; this corresponds nominally to 15,750 Hz with an actual value of 15,734.264  $\pm 0.044$  Hz). The vertical scanning frequency is 2/525 times the horizontal scanning frequency; this corresponds nominally to 60 Hz (the actual value is 59.94 Hz). For monochrome transmissions only, the nominal values of line and field frequencies may be used.

(7) The aspect ratio of the transmitted television picture shall be 4 units horizontally to 3 units vertically.

(8) During active scanning intervals, the scene shall be scanned from left to right horizontally and from top to bottom vertically, at uniform velocities.

(9) A carrier shall be modulated within a single television channel for both picture and synchronizing signals. The two signals comprise different modulation ranges in amplitude in accordance with the following:

(i) Monochrome transmissions shall comply with synchronizing waveform specifications in Figure 7 of § 73.699.

(ii) Color transmissions shall comply with the synchronizing waveform specifications in Figure 6 of § 73.699.

(iii) All stations operating on Channels 2 through 14 and those stations operating on Channels 15 through 69 licensed for a peak visual transmitter output power greater than one kW shall comply with the picture transmission amplitude characteristics shown in Figure 5 of § 73.699.

(iv) Stations operating on Channels 15 through 69 licensed for a peak visual transmitter output power of one kW or less shall comply with the picture transmission amplitude characteristic shown in Figure 5 or 5a of § 73.699.