(k) *Network initiation*. The process by which a fixed or Mode II white space device sends control signals to one or more fixed white space devices or personal/portable white space devices and allows them to begin communications.

(l) *Operating channel*. An available channel used by a white space device for transmission and/or reception.

(m) *Personal/portable device*. A white space device that transmits and/or receives radiocommunication signals on available channels at unspecified locations that may change.

(n) *Receive site*. The location where the signal of a full service television station is received for rebroadcast by a television translator or low power TV station, including a Class A TV station, or for distribution by a Multiple Video Program Distributor (MVPD) as defined in 47 U.S.C. 602(13).

(o) *Sensing only device*. A personal/portable white space device that uses spectrum sensing to determine a list of available channels. Sensing only devices may transmit on any available channels in the frequency bands 512–608 MHz (TV channels 21–36).

(p) *Spectrum Act*. Title VI of the Middle Class Tax Relief and Job Creation Act of 2012 (Pub. L. 112–96).

(q) *Spectrum sensing*. A process whereby a white space device monitors a television channel to detect whether the channel is occupied by a radio signal or signals from authorized services.

(r) *Television bands*. The broadcast television frequency bands at 54–72 MHz (TV channels 2–4), 76–88 MHz (TV channels 5–6), 174–216 MHz (TV channels 7–13) and 470–608 MHz (channels 14–36).

(s) *White space database*. A database system approved by the Commission that maintains records on authorized services and provides lists of available channels to white space devices and unlicensed wireless microphone users.

[80 FR 73070, Nov. 23, 2015, as amended at 84 FR 34796, July 19, 2019]

§ 15.705 Cross reference.

(a) The provisions of subparts A, B, and C of this part apply to white space devices, except where specific provisions are contained in this subpart.

(b) The requirements of this subpart apply only to the radio transmitter contained in the white space device. Other aspects of the operation of a white space device may be subject to requirements contained elsewhere in this chapter. In particular, a white space device that includes a receiver that tunes within the frequency range specified in §15.101(b) and contains digital circuitry not directly associated with the radio transmitter is also subject to the requirements for unintentional radiators in subpart B.

§ 15.706 Information to the user.

(a) In addition to the labeling requirements contained in §15.19, the instructions furnished to the user of a white space device shall include the following statement, placed in a prominent location in the text of the manual:

This equipment has been tested and found to comply with the rules for white space devices, pursuant to part 15 of the FCC rules. These rules are designed to provide reasonable protection against harmful interference. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

(1) Reorient or relocate the receiving antenna.

(2) Increase the separation between the equipment and receiver.

(3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

(4) Consult the manufacturer, dealer or an experienced radio/TV technician for help.

(b) In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

§ 15.707 Permissible channels of operation.

(a)(1) *470–698 MHz band*. All white space devices are permitted to operate on available channels in the frequency bands 470–698 MHz (TV channels 14–51),

subject to the interference protection requirements in §§ 15.711 and 15.712.

(2) *600 MHz duplex gap.* White space devices may operate in the 657–663 MHz segment of the 600 MHz duplex gap.

(3) *600 MHz service band.* White space devices may operate on frequencies in the bands 617–652 MHz and 663–698 MHz in areas where 600 MHz band licensees have not commenced operations, as defined in § 27.4 of this chapter.

(4) *Channel 37 guard band.* White space devices are not permitted to operate in the band 614–617 MHz.

(b) Only fixed white space devices that communicate only with other fixed white space devices may operate on available channels in the bands 54–72 MHz (TV channels 2–4), 76–88 MHz (TV channels 5 and 6), and 174–216 MHz (TV channels 7–13), subject to the interference protection requirements in §§ 15.711 and 15.712.

[80 FR 73070, Nov. 23, 2015, as amended at 81 FR 4974, Jan. 29, 2016; 84 FR 34796, July 19, 2019]

§ 15.709 General technical requirements.

(a) *Radiated power limits.* The maximum white space device EIRP per 6 MHz shall not exceed the limits of paragraphs (a)(2) through (4) of this section.

(1) *General requirements.* (i) White space devices may be required to operate with less power than the maximum permitted to meet the co-channel and adjacent channel separation requirements of § 15.712 of this part.

(ii) Mode I personal/portable devices are limited to 40 mW, if the white space device that controls it is limited to 40 mW.

(2) *TV bands and 600 MHz service band.* (i) Fixed devices: Up to 4 W (36 dBm) EIRP, and up to 10 W (40 dBm) EIRP in less congested areas in the TV bands and 600 MHz service band at locations where they meet the co-channel and adjacent channel separation distances of §§ 15.712(a)(2) and 15.712(i) of this part, respectively. Operation in the 602–620 MHz band is limited to a maximum of 4 W (36 dBm) EIRP.

(ii) Personal/Portable devices: Up to 100 mW (20 dBm) EIRP.

(3) *608–614 MHz band (channel 37).* Up to 40 mW (16 dBm) EIRP.

(ii) Personal/Portable devices: Up to 100 mW (20 dBm) EIRP.

(4) *600 MHz duplex gap and guard bands.* Up to 40 mW (16 dBm) EIRP.

(b) *Technical limits*—(1) *Fixed white space devices.* (i) Technical limits for fixed white space devices are shown in the table in paragraph (b)(1)(iii) of this section and subject to the requirements of this section.

(ii) For operation at EIRP levels of 36 dBm (4,000 mW) or less, fixed white space devices may operate at EIRP levels between the values shown in the table in paragraph (b)(1)(iii) of this section provided that the conducted power and the conducted power spectral density (PSD) limits are linearly interpolated between the values shown and the adjacent channel emission limit of the higher value shown in the table is met. Operation at EIRP levels above 36 dBm (4,000 mW) shall follow the requirements for 40 dBm (10,000 mW).

(iii) The conducted power spectral density from a fixed white space device shall not be greater than the values shown in the table in this paragraph (b)(1)(iii) when measured in any 100 kHz band during any time interval of continuous transmission.

TABLE 1 TO PARAGRAPH (b)(1)(iii)

EIRP (6 MHz)	Conducted power limit (6 MHz)	Conducted PSD limit (100 kHz) (dBm)	Conducted adjacent channel emission limit (100 kHz) (dBm)
16 dBm (40 mW)	10 dBm (10 mW)	−7.4	−62.8
20 dBm (100 mW)	14 dBm (25 mW)	−3.4	−58.8
24 dBm (250 mW)	18 dBm (63 mW)	0.6	−54.8
28 dBm (625 mW)	22 dBm (158 mW)	4.6	−50.8
32 dBm (1,600 mW)	26 dBm (400 mW)	8.6	−46.8
36 dBm (4,000 mW)	30 dBm (1,000 mW)	12.6	−42.8
40 dBm (10,000 mW)	30 dBm (1,000 mW)	12.6	−42.8

(2) *Personal/portable white space devices.* (i) Technical limits for personal/portable white space devices are shown in the table in paragraph (b)(2)(ii) of this section and subject to the requirements of this section.

(ii) The radiated power spectral density from a personal/portable white space device shall not be greater than the values shown in the table in this paragraph (b)(2)(ii) when measured in any 100 kHz band during any time interval of continuous transmission.

TABLE 2 TO PARAGRAPH (b)(2)(ii)

EIRP (6 MHz)	Radiated PSD limit EIRP (100 kHz) (dBm)	Radiated adjacent channel emission limit EIRP (100 kHz) (dBm)
16 dBm (40 mW)	−1.4	−56.8
20 dBm (100 mW)	2.6	−52.8

(3) *Sensing-only devices.* Sensing-only white space devices are limited to 17 dBm (50 mW) EIRP and are subject to the requirements of this paragraph and of § 15.717 of this part.

(i) Radiated PSD limit: −0.4 dBm EIRP.

(ii) Adjacent channel emission limit: −55.8 dBm EIRP.

(c) *Conducted power limits.* (1) The conducted power, PSD and adjacent channel limits for fixed white space devices operating at up to 36 dBm (4000 milliwatts) EIRP shown in the table in paragraph (b)(1) of this section are based on a maximum transmitting antenna gain of 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) The conducted power, PSD and adjacent channel limits for fixed white space devices operating at greater than 36 dBm (4000 milliwatts) EIRP shown in the table in paragraph (b)(1) of this section are based on a maximum transmitting antenna gain of 10 dBi. If transmitting antennas of directional gain greater than 10 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 10 dBi.

(3) Maximum conducted output power is the total transmit power over the occupied bandwidth delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

(4) White space devices connected to the AC power line are required to comply with the conducted limits set forth in § 15.207.

(d) *Emission limits.* (1) The adjacent channel emission limits shown in the tables in paragraphs (b)(1) and (2) of this section apply in the six megahertz channel immediately adjacent to each white space channel or group of contiguous white space channels in which the white space device is operating.

(2) At frequencies beyond the six megahertz channel immediately adjacent to each white space channel or group of contiguous white space channels in which the white space device is operating the white space device shall meet the requirements of § 15.209.

(3) Emission measurements in the adjacent bands shall be performed using a minimum resolution bandwidth of 100 kHz with an average detector. A narrower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 100 kHz.