§ 15.705

(k) Operating channel. An available channel used by a TVBD for transmission and/or reception.

(1) *Personal/portable device*. A TVBD that transmits and/or receives radiocommunication signals while in motion or at unspecified locations that may change.

(m) *Receive site*. The location where the signal of a full service station is received for rebroadcast by a television translator or low power TV, including Class A TV, station.

(n) *Spectrum sensing*. A process whereby a TVBD monitors a television channel to detect whether the channel is occupied by a radio signal.

(o) Television band device (TVBD). Intentional radiators operating on available channels in the broadcast television frequency bands at 54-60 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz and 614-698 MHz.

(p) *TV* bands database. A database of authorized services in the TV frequency bands that is used to determine the available channels at a given location for use by TVBDs.

§15.705 Cross reference.

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

(b) The requirements of subpart H apply only to the radio transmitter contained in the TVBD. Other aspects of the operation of a TVBD may be subject to requirements contained elsewhere in this chapter. In particular, a TVBD that includes a receiver that tunes within the frequency range specified in \$15.101(b) 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) For TV band device, the instructions furnished the user shall include the following or similar 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 TV band devices, pursuant to part 15 of the FCC rules. These rules are designed to provide reasonable protection against harmful interference.

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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. However, there is no guarantee that interference will not occur in a particular installation. 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) All TVBDs are permitted to operate in the frequency bands 512-608 MHz and 614-698 MHz, except that in the 13 metropolitan areas listed §90.303(a) of this chapter and nearby areas where private land mobile services and commercial land mobile services are authorized by waiver, operation of TVBDs is prohibited on the first channel on each side of TV channel 37 (608-614 MHz) that is available at all locations within the protection range of the coordinates of each such area as set forth in §15.712(d). These channels will be listed in the TV bands database.

(b) Operation in the bands 54-60 MHz, 76-88 MHz, 174-216 MHz, and 470-512 MHz is permitted only for fixed TVBDs that communicate only with other fixed TVBDs.

(c) Fixed and Mode II TVBDs shall only operate on available channels as determined by the TV bands database and in accordance with the interference avoidance mechanisms of \$15.711.

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(d) Mode I TVBDs shall only operate on available channels provided to it from a Fixed or Mode II TVBD.

§15.709 General technical requirements.

(a) Power limits for TVBDs are as follows: (1) For fixed TVBDs, the maximum conducted output power over the TV channel of operation shall not exceed one watt. Transmitter power will be measured at the antenna input to account for any cable losses between the transmitter and the antenna. 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) For personal/portable TVBDs, the maximum conducted output power over the TV channel of operation shall not exceed 100 milliwatts; except that for personal/portable TVBDs that do not meet the adjacent channel separation requirements in \$15.712(a), the maximum conducted output power shall not exceed 40 milliwatts. If transmitting antennas of directional gain greater than 0 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 0 dBi.

(3) TVBDs shall incorporate transmit power control to limit their operating power to the minimum necessary for successful communication. Applicants for certification shall include a description of a device's transmit power control feature mechanism.

(4) Maximum conducted output power is the total transmit power in the entire emission 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 control 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.

(b) Antenna requirements. (1) For personal/portable TVBDs, the antenna shall be permanently attached.

(2) The receive antenna used with fixed devices shall be located outdoors at least 10 meters above the ground. The antenna system shall be capable of receiving signals of protected services equally in all directions. The transmit antenna used with fixed devices may not be more than 30 meters above the ground.

(3) For both fixed and personal/portable TVBDs, the provisions of §15.204(c)(4) do not apply to an antenna used for transmission and reception/ spectrum sensing.

(4) For both fixed and personal/portable TVBDs with a separate sensing antenna, compliance testing shall be performed using the lowest gain antenna for each type of antenna to be certified.

(c) Undesirable emission limits for TVBDs are as follows:

(1) In the 6 MHz channels adjacent to the operating channel, emissions from TVBD devices shall be at least 55 dB below the highest average power in the band in which the device is operating.

(2) The above emission measurements 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.

(3) At frequencies beyond 6 MHz from the edge of the operating channel, radiated emissions from TVBD devices shall meet the requirements of §15.209.

(4) Emissions in the band 602–620 MHz must also comply with the following field strength limits at a distance of one meter.

Frequency	Field strength
(MHz)	dBµV/meter/120 kHz
602–607	120–5[F(MHz)–602]
607–608	95
608–614	30
614–615	95
615–620	120–5[620–F(MHz)]

(5) TVBDs connected to the AC power line are required to comply with the conducted limits set forth in §15.207.