

MODE II PERSONAL/PORTABLE WHITE SPACE DEVICES

	Required adjacent channel separation distances in meters from WMTS sites	
	16 dBm (40 mW)	20 dBm (100 mW)
Communicating with Mode II or Fixed device	8	13
Communicating with Mode I device	16	26

FIXED WHITE SPACE DEVICES

Required adjacent channel separation distances in meters from WMTS sites*					
16 dBm (40 mW)	20 dBm (100 mW)	24 dBm (250 mW)	28 dBm (625 mW)	32 dBm (1600 mW)	36 dBm (4 watts)
8	13	20	32	50	71

*When communicating with Mode I personal/portable white space devices, the required separation distances must be increased beyond the specified distances by 8 meters if the Mode I device operates at power levels no more than 40 mW EIRP, or 13 meters if the Mode I device operates at power levels above 40 mW EIRP.

(k) *488–494 MHz band in Hawaii.* White space devices are not permitted to operate in the 488–494 MHz band in Hawaii.

[80 FR 73070, Nov. 23, 2015, as amended at 81 FR 4974, Jan. 29, 2016]

§ 15.713 White space database.

(a) *Purpose.* The white space database serves the following functions:

(1) To determine and provide to a white space device, upon request, the available channels at the white space device's location in the TV bands, the 600 MHz guard bands, the 600 MHz duplex gap, the 600 MHz service band, and channel 37. Available channels are determined based on the interference protection requirements in § 15.712. A database must provide fixed and Mode II personal portable white space devices with channel availability information that includes scheduled changes in channel availability over the course of the 48 hour period beginning at the time the white space devices make a re-check contact. In making lists of available channels available to a white space device, the white space database shall ensure that all communications and interactions between the white space database and the white space device include adequate security measures such that unauthorized parties cannot access or alter the white space database or the list of available channels sent to white space devices or otherwise affect the database system or white space devices in performing their intended functions or in providing adequate

interference protections to authorized services operating in the TV bands. In addition, a white space database must also verify that the FCC identifier (FCC ID) of a device seeking access to its services is valid; under this requirement the white space database must also verify that the FCC ID of a Mode I device provided by a fixed or Mode II device is valid. A list of devices with valid FCC IDs and the FCC IDs of those devices is to be obtained from the Commission's Equipment Authorization System.

(2) To determine and provide to an unlicensed wireless microphone user, upon request, the available channels at the microphone user's location in the 600 MHz guard bands, the 600 MHz duplex gap, and the 600 MHz service band. Available channels are determined based on the interference protection requirements in § 15.236.

(3) To register the identification information and location of fixed white space devices and unlicensed wireless microphone users.

(4) To register protected locations and channels as specified in paragraph (b)(2) of this section, that are not otherwise recorded in Commission licensing databases.

(b) *Information in the white space database.* (1) Facilities already recorded in Commission databases. Identifying and location information will come from the official Commission database. These services include:

- (i) Digital television stations.
- (ii) Class A television stations.

- (iii) Low power television stations.
- (iv) Television translator and booster stations.
- (v) Broadcast Auxiliary Service stations (including receive only sites), except low power auxiliary stations.
- (vi) Private land mobile radio service stations.
- (vii) Commercial mobile radio service stations.
- (viii) Offshore radiotelephone service stations.
- (ix) Class A television station receive sites.
- (x) Low power television station receive sites.
- (xi) Television translator station receive sites.
- (2) Facilities that are not recorded in Commission databases. Identifying and location information will be entered into the white space database in accordance with the procedures established by the white space database administrator(s). These include:
 - (i) MVPD receive sites.
 - (ii) Sites where low power auxiliary stations, including wireless microphones and wireless assist video devices, are used and their schedule for operation.
 - (iii) Fixed white space device registrations.
 - (iv) 600 MHz service band operations in areas where the part 27 600 MHz service licensee has commenced operations, as defined in § 27.4 of this chapter.
 - (v) Locations of health care facilities that use WMTS equipment operating on channel 37 (608–614 MHz).
- (c) *Restrictions on registration.* (1) Television translator, low power TV and Class A station receive sites within the protected contour of the station being received are not eligible for registration in the database.
- (2) MVPD receive sites within the protected contour or more than 80 kilometers from the nearest edge of the protected contour of a television station being received are not eligible to register that station's channel in the database.
- (d) *Determination of available channels.* The white space database will determine the available channels at a location using the interference protection requirements of § 15.712, the location information supplied by a white space

device, and the data for protected stations/locations in the database.

(e) *White space device initialization.* (1) Fixed and Mode II white space devices must provide their location and required identifying information to the white space database in accordance with the provisions of this subpart.

(2) Fixed and Mode II white space devices shall not transmit unless they receive, from the white space database, a list of available channels and may only transmit on the available channels on the list provided by the database.

(3) Fixed white space devices register and receive a list of available channels from the database by connecting to the Internet, either directly or through another fixed white space device that has a direct connection to the Internet.

(4) Mode II white space devices receive a list of available channels from the database by connecting to the Internet, either directly or through a fixed or Mode II white space device that has a direct connection to the Internet.

(5) A fixed or Mode II white space device that provides a list of available channels to a Mode I device shall notify the database of the FCC identifier of such Mode I device and receive verification that that FCC identifier is valid before providing the list of available channels to the Mode I device.

(6) A fixed device with an antenna height above ground that exceeds 30 meters or an antenna height above average terrain (HAAT) that exceeds 250 meters shall not be provided a list of available channels. The HAAT is to be calculated using computational software employing the methodology in § 73.684(d) of this chapter.

(f) *Unlicensed wireless microphone database access.* Unlicensed wireless microphone users in the 600 MHz band may register with and access the database manually via a separate Internet connection. Wireless microphone users must register with and check a white space database to determine available channels prior to beginning operation at a given location. A user must recheck the database for available channels if it moves to another location.

(g) *Fixed white space device registration.* (1) Prior to operating for the first time or after changing location, a fixed

white space device must register with the white space database by providing the information listed in paragraph (g)(3) of this section.

(2) The party responsible for a fixed white space device must ensure that the white space device registration database has the most current, up-to-date information for that device.

(3) The white space device registration database shall contain the following information for fixed white space devices:

- (i) FCC identifier (FCC ID) of the device;
- (ii) Manufacturer's serial number of the device;
- (iii) Device's geographic coordinates (latitude and longitude (NAD 83));
- (iv) Device's antenna height above ground level (meters);
- (v) Name of the individual or business that owns the device;
- (vi) Name of a contact person responsible for the device's operation;
- (vii) Address for the contact person;
- (viii) Email address for the contact person;
- (ix) Phone number for the contact person.

(h) *Mode II personal/portable device information to database.* A personal/portable device operating in Mode II shall provide the database its FCC Identifier (as required by §2.926 of this chapter), serial number as assigned by the manufacturer, and the device's geographic coordinates (latitude and longitude (NAD 83)).

(i) *Unlicensed wireless microphone registration.* Unlicensed wireless microphone users in the 600 MHz band shall register with the database prior to operation and include the following information:

- (1) Name of the individual or business that owns the unlicensed wireless microphone
 - (2) Address for the contact person
 - (3) Email address for the contact person
 - (4) Phone number for the contact person; and
 - (5) Coordinates where the device will be used (latitude and longitude in NAD 83).
- (j) *White space database information.* The white space database shall contain

the listed information for each of the following:

(1) Digital television stations, digital and analog Class A, low power, translator and booster stations, including stations in Canada and Mexico that are within the border coordination areas as specified in §73.1650 of this chapter (a white space database is to include only TV station information from station license or license application records. In cases where a station has records for both a license application and a license, a white space database should include the information from the license application rather than the license. In cases where there are multiple license application records or license records for the same station, the database is to include the most recent records, and again with license applications taking precedence over licenses.):

- (i) Transmitter coordinates (latitude and longitude in NAD 83);
- (ii) radiated power (ERP);
- (iii) Height above average terrain of the transmitting antenna (HAAT);
- (iv) Horizontal transmit antenna pattern (if the antenna is directional);
- (v) Amount of electrical and mechanical beam tilt (degrees depression below horizontal) and orientation of mechanical beam tilt (degrees azimuth clockwise from true north);
- (vi) Channel number; and
- (vii) Station call sign.

(2) Broadcast Auxiliary Service.

- (i) Transmitter coordinates (latitude and longitude in NAD 83).
 - (ii) Receiver coordinates (latitude and longitude in NAD 83).
 - (iii) Channel number.
 - (iv) Call sign.
- (3) Metropolitan areas listed in §90.303(a) of this chapter.
- (i) Region name.
 - (ii) Channel(s) reserved for use in the region.
 - (iii) Geographic center of the region (latitude and longitude in NAD 83).
 - (iv) Call sign.
- (4) PLMRS/CMRS base station operations located more than 80 km from the geographic centers of the 13 metropolitan areas defined in §90.303(a) of this chapter (e.g., in accordance with a waiver).

(i) Transmitter location (latitude and longitude in NAD 83) or geographic area of operations.

(ii) TV channel of operation.

(iii) Call sign.

(5) Offshore Radiotelephone Service: For each of the four regions where the Offshore Radiotelephone Service operates.

(i) Geographic boundaries of the region (latitude and longitude in NAD 83 for each point defining the boundary of the region).

(ii) Channel(s) used by the service in that region.

(6) MVPD receive sites: Registration for receive sites is limited to channels that are received over-the-air and are used as part of the MVPD service.

(i) Name and address of MVPD company;

(ii) Location of the MVPD receive site (latitude and longitude in NAD 83, accurate to ± 50 m);

(iii) Channel number of each television channel received, subject to the following condition: channels for which the MVPD receive site is located within the protected contour of that channel's transmitting station are not eligible for registration in the database;

(iv) Call sign of each television channel received and eligible for registration;

(v) Location (latitude and longitude) of the transmitter of each television channel received;

(7) Television translator, low power TV and Class A TV station receive sites: Registration for television translator, low power TV and Class A receive sites is limited to channels that are received over-the-air and are used as part of the station's service.

(i) Call sign of the TV translator station;

(ii) Location of the TV translator receive site (latitude and longitude in NAD 83, accurate to ± 50 m);

(iii) Channel number of the re-transmitted television station, subject to the following condition: a channel for which the television translator receive site is located within the protected contour of that channel's transmitting station is not eligible for registration in the database;

(iv) Call sign of the retransmitted television station; and

(v) Location (latitude and longitude) of the transmitter of the retransmitted television station.

(8) Licensed low power auxiliary stations, including wireless microphones and wireless assist video devices: Use of licensed low power auxiliary stations at well-defined times and locations may be registered in the database. Multiple registrations that specify more than one point in the facility may be entered for very large sites. Registrations will be valid for no more than one year, after which they may be renewed. Registrations must include the following information:

(i) Name of the individual or business responsible for the low power auxiliary device(s);

(ii) An address for the contact person;

(iii) An email address for the contact person (optional);

(iv) A phone number for the contact person;

(v) Coordinates where the device(s) are used (latitude and longitude in NAD 83, accurate to ± 50 m);

(vi) Channels used by the low power auxiliary devices operated at the site;

(vii) Specific months, weeks, days of the week and times when the device(s) are used (on dates when microphones are not used the site will not be protected); and

(viii) The stations call sign.

(9) Unlicensed wireless microphones at venues of events and productions/shows that use large numbers of wireless microphones that cannot be accommodated in the two reserved channels and other channels that are not available for use by white space devices at that location. Prior to June 23, 2017, but no later than release of the Channel Reassignment Public Notice upon completion of the broadcast television spectrum incentive auction, as defined in § 73.3700(a) of this chapter, sites of large events and productions/shows with significant unlicensed wireless microphone use at well-defined times and locations may be registered in the database. Entities responsible for eligible event venues registering their site with a TV bands data base are required to first make use of the two reserved channels and other channels that are

not available for use by white space devices at that location. As a benchmark, at least 6-8 wireless microphones should be operating in each channel used at such venues (both licensed and unlicensed wireless microphones used at the event may be counted to comply with this benchmark). Multiple registrations that specify more than one point in the facility may be entered for very large sites. Sites of eligible event venues using unlicensed wireless microphones must be registered with the Commission at least 30 days in advance and the Commission will provide this information to the data base managers. Parties responsible for eligible event venues filing registration requests must certify that they are making use of all TV channels not available to white space devices and on which wireless microphones can practicably be used, including channels 7-51 (except channel 37). The Commission will make requests for registration of sites that use unlicensed wireless microphones public and will provide an opportunity for public comment or objections. Registrations will be valid for one year, after which they may be renewed. The Commission will take actions against parties that file inaccurate or incomplete information, such as denial of registration in the database, removal of information from the database pursuant to paragraph (i) of this section, or other sanctions as appropriate to ensure compliance with the rules. Registrations must include the following information:

- (i) Name of the individual or business that owns the unlicensed wireless microphones;
- (ii) An address for the contact person;
- (iii) An email address for the contact person (optional);
- (iv) A phone number for the contact person;
- (v) Coordinates where the device(s) are used (latitude and longitude in NAD 83, accurate to ± 50 m);
- (vi) Channels used by the wireless microphones operated at the site and the number of wireless microphones used in each channel. As a benchmark, least 6-8 wireless microphones must be used in each channel. Registration requests that do not meet this criteria

will not be registered in the TV bands data bases;

- (vii) Specific months, weeks, days of the week and times when the device(s) are used (on dates when microphones are not used the site will not be protected); and

- (viii) The name of the venue.

(10) 600 MHz service in areas where the part 27 600 MHz band licensee has commenced operations, as defined in § 27.4 of this chapter:

- (i) Name of 600 MHz band licensee;
- (ii) Name and address of the contact person;
- (iii) An email address for the contact person (optional);
- (iv) A phone number for the contact person;
- (v) Area within a part 27 600 MHz band licensee's Partial Economic Areas (PEA), as defined in § 27.6 of this chapter, where it has commenced operation. This area must be delineated by at minimum of eight and a maximum of 120 geographic coordinates (latitude and longitude in NAD 83, accurate to ± 50 m);
- (vi) Date of commencement of operations;
- (vii) Identification of the frequencies on which the part 27 600 MHz band licensee has commenced operations;
- (viii) Call sign.

(11) Location of health care facilities operating WMTS networks on channel 37 (608-614 MHz):

- (i) Name and address of the health care facility;
- (ii) Name and address of a contact person;
- (iii) Phone number of a contact person;
- (iv) Email address of a contact person;
- (v) Latitude and longitude coordinates referenced to North American Datum 1983 (NAD 83) that define the perimeter of each facility. If several health care facilities using 608-614 MHz wireless medical telemetry equipment are located in close proximity, it is permissible to register a perimeter to protect all facilities in that cluster.

(k) *Commission requests for data.* (1) A white space database administrator must provide to the Commission, upon request, any information contained in the database.

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(2) A white space database administrator must remove information from the database, upon direction, in writing, by the Commission.

(1) *Security.* The white space database shall employ protocols and procedures to ensure that all communications and interactions between the white space database and white space devices are accurate and secure and that unauthorized parties cannot access or alter the database or the list of available channels sent to a white space device.

(1) Communications between white space devices and white space databases, and between different white space databases, shall be secure to prevent corruption or unauthorized interception of data. A white space database shall be protected from unauthorized data input or alteration of stored data.

(2) A white space database shall verify that the FCC identification number supplied by a fixed or personal/portable white space device is for a certified device and may not provide service to an uncertified device.

(3) A white space database must not provide lists of available channels to uncertified white space devices for purposes of operation (it is acceptable for a white space database to distribute lists of available channels by means other than contact with white space devices to provide list of channels for operation). To implement this provision, a white space database administrator shall obtain a list of certified white space devices from the FCC Equipment Authorization System.

[80 FR 73070, Nov. 23, 2015, as amended at 81 FR 4974, Jan. 29, 2016]

EFFECTIVE DATE NOTE: At 81 FR 4974, Jan. 29, 2016, § 15.713(b)(2)(iv) and § (j)(10) introductory text were revised. These paragraphs contain information collection and record-keeping requirements and will not become effective until approval has been given by the Office of Management and Budget.

§ 15.714 White space database administration fees.

(a) A white space database administrator may charge a fee for provision of lists of available channels to fixed and personal/portable devices and for registering fixed devices. This provision applies to devices that operate in the TV bands, 600 MHz service band, and

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the 600 MHz guard bands and duplex gap.

(b) A white space database administrator may charge a fee for provision of lists of available channels to wireless microphone users.

(c) The Commission, upon request, will review the fees and can require changes in those fees if they are found to be excessive.

§ 15.715 White space database administrator.

The Commission will designate one or more entities to administer the white space database(s). The Commission may, at its discretion, permit the functions of a white space database, such as a data repository, registration, and query services, to be divided among multiple entities; however, it will designate specific entities to be a database administrator responsible for coordination of the overall functioning of a database and providing services to white space devices. Each database administrator designated by the Commission shall:

(a) Maintain a database that contains the information described in § 15.713.

(b) Establish a process for acquiring and storing in the database necessary and appropriate information from the Commission's databases and synchronizing the database with the current Commission databases at least once a week to include newly licensed facilities or any changes to licensed facilities.

(c) Establish a process for registering fixed white space devices and registering and including in the database facilities entitled to protection but not contained in a Commission database, including MVPD receive sites.

(d) Establish a process for registering facilities where part 74 low power auxiliary stations are used on a regular basis.

(e) Provide accurate lists of available channels and the corresponding maximum permitted power for each available channel to fixed and personal/portable white space devices that submit to it the information required under § 15.713(e), (g), and (h) based on their geographic location and provide accurate lists of available channels and the corresponding maximum permitted power