

where  $A(\text{dB})$  is the measured or calculated attenuation value for the reference 500 kHz bandwidth, and  $A_{\text{alternate}}$  is the measured or calculated attenuation for a bandwidth  $BW_{\text{alternate}}$ . Emissions include sidebands, spurious emissions and radio harmonics. Attenuation is to be measured at the output terminals of the transmitter (including any filters that may be employed). In the event of interference caused to any service by out-of-channel emissions, greater attenuation may be required.

(b) In addition to meeting the emission attenuation requirements of the simple or stringent mask (including attenuation of radio frequency harmonics), digital low power TV and TV translator stations authorized to operate on TV channels 22–24, (518–536 MHz), 32–36 (578–608 MHz), 38 (614–620 MHz), and 65–69 (776–806 MHz) must provide specific “out of band” protection to Radio Navigation Satellite Services in the bands: L5 (1164–1215 MHz); L2 (1215–1240 MHz) and L1 (1559–1610 MHz).

(1) An FCC-certificated transmitter specifically certified for use on one or more of the above channels must include filtering with an attenuation of not less than 85 dB in the GPS bands, which will have the effect of reducing harmonics in the GPS bands from what is produced by the digital transmitter, and this attenuation must be demonstrated as part of the certification application to the Commission.

(2) For an installation on one of the above channels with a digital transmitter not specifically FCC-certificated for the channel, a low pass filter or equivalent device rated by its manufacturer to have an attenuation of at least 85 dB in the GPS bands, which will have the effect of reducing harmonics in the GPS bands from what is produced by the digital transmitter, and must be installed in a manner that will prevent the harmonic emission content from reaching the antenna. A description of the low pass filter or equivalent device with the manufacturer’s rating or a report of measurements by a qualified individual shall be retained with the station license. Field measurements of the second or third

harmonic output of a transmitter so equipped are not required.

[69 FR 69336, Nov. 29, 2004, as amended at 76 FR 44828, July 27, 2011]

**§ 74.795 Digital low power TV and TV translator transmission system facilities.**

(a) A digital low power TV or TV translator station shall operate with a transmitter that is either certificated for licensing based on the following provisions or has been modified for digital operation pursuant to § 74.796.

(b) The following requirements must be met before digital low power TV and TV translator transmitter will be certificated by the FCC:

(1) The transmitter shall be designed to produce digital television signals that can be satisfactorily viewed on consumer receiving equipment based on the digital broadcast television transmission standard in § 73.682(d) of this chapter;

(2) Emissions on frequencies outside the authorized channel, measured at the output terminals of the transmitter (including any filters that may be employed), shall meet the requirements of § 74.794, as applicable;

(3) The transmitter shall be equipped to display the digital power output (*i.e.*, average power over a 6 MHz channel) and shall be designed to prevent the power output from exceeding the maximum rated power output under any condition;

(4) When subjected to variations in ambient temperature between 0 and 40 degrees Centigrade and variations in power main voltage between 85% and 115% of the rated power supply voltage, the frequency stability of the local oscillator in the RF channel upconverter shall be maintained within 10 kHz of the nominal value; and

(5) The transmitter shall be equipped with suitable meters and jacks so that appropriate voltage and current measurements may be made while the transmitter is in operation.

(c) The following additional requirements apply to digital heterodyne translators:

(1) The maximum rated power output (digital average power over a 6 MHz channel) shall not exceed 30 watts for transmitters operating on channels 14–

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69 and 3 watts for transmitters operating on channels 2-13; and

(2) The transmitter shall contain circuits which will maintain the digital average power output constant within 1 dB when the strength of the input signal is varied over a range of 30 dB.

(d) Certification will be granted only upon a satisfactory showing that the transmitter is capable of meeting the requirements of paragraph (b) of this section, pursuant to the procedures described in § 74.750(e).

[69 FR 69336, Nov. 29, 2004]

### **§ 74.796 Modification of digital transmission systems and analog transmission systems for digital operation.**

(a) The provisions of § 74.751 shall apply to the modification of digital low power TV and TV translator transmission systems and the modification of existing analog transmission systems for digital operation.

(b) The following additional provisions shall apply to the modification of existing analog transmissions systems for digital operation, including installation of manufacturers' certificated equipment ("field modification kits") and custom modifications.

(1) The modifications and related performance-testing shall be undertaken by a person or persons qualified to perform such work.

(2) The final amplifier stage of an analog transmitter modified for digital operation shall not have an "average digital power" output greater than 25 percent of its previous NTSC peak sync power output, unless the amplifier has been specifically refitted or replaced to operate at a higher power.

(3) Analog heterodyne translators, when modified for digital operation, will produce a power output (digital average power over the 6 MHz channel) not exceeding 30 watts for transmitters operating on channels 14-69 and 3 watts for transmitters operating on channels 2-13.

(4) After completion of the modification, suitable tests and measurements shall be made to demonstrate compliance with the applicable requirements in this section including those in § 74.795. Upon installation of a field modification kit, the transmitter shall

be performance-tested in accordance with the manufacturer's instructions.

(5) The station licensee shall notify the Commission upon completion of the transmitter modifications. In the case of custom modifications (those not related to installation of manufacturer-supplied and FCC-certificated equipment), the licensee shall certify compliance with all applicable transmission system requirements.

(6) The licensee shall maintain with the station's records for a period of not less than two years the following information and make this information to the Commission upon request:

(i) A description of the modifications performed and performance tests or, in the case of installation of a manufacturer-supplied modification kit, a description of the nature of the modifications, installation and test instructions and other material provided by the manufacturer;

(ii) Results of performance-tests and measurements on the modified transmitter; and

(iii) Copies of related correspondence with the Commission.

(c) In connection with the on-channel conversion of existing analog transmitters for digital operation, a limited allowance is made for transmitters with final amplifiers that do not meet the attenuation of the Simple emission mask at the channel edges. Station licensees may obtain equivalent compliance with this attenuation requirement in the following manner:

(1) Measure the level of attenuation of emissions below the average digital power output at the channel edges in a 500 kHz bandwidth; measurements made over a different measurement bandwidth should be corrected to the equivalent attenuation level for a 500 kHz bandwidth using the formula given in § 74.794;

(2) Calculate the difference in dB between the 46 dB channel-edge attenuation requirement of the Simple mask;

(3) Subtract the value determined in the previous step from the authorized effective radiated power ("ERP") of the analog station being converted to digital operation. Then subtract an additional 6 dB to account for the approximate difference between analog peak and digital average power. For this