§ 76.611 Cable television basic signal leakage performance criteria.

(a) No cable television system shall commence or provide service in the frequency bands 108–137 and 225–400 MHz unless such systems is in compliance with one of the following cable television basic signal leakage performance criteria:

(1) Prior to carriage of signals in the aeronautical radio bands and at least once each calendar year, with no more than 12 months between successive tests thereafter, based on a sampling of at least 75% of the cable strand, and including any portion of the cable system which are known to have or can reasonably be expected to have less leakage integrity than the average of the system, the cable operator demonstrates compliance with the cumulative signal leakage index by showing that either (i) $10 \log I_{3000}$ is equal to or less than $-7$ or (ii) $10 \log I_{100}$ is equal to or less than $-64$, using one of the following formula:

$$I_{3000} = \frac{1}{n} \sum_{i=1}^{n} \frac{E_i^2}{R_i},$$

where $E_i$ is the field strength of the signal leakage and $R_i$ is the resistance of the cable strand.

The provisions of §§76.605(a)(12), 76.611, 76.612, 76.613, 76.614, 76.616, 76.617, 76.1803 and 76.1804 are applicable to all MVPDs (cable and non-cable) transmitting carriers or other signal components carried at an average power level equal to or greater than $10^{-4}$ watts across a 25 kHz bandwidth in any 160 microsecond period, at any point in the cable distribution system in the frequency bands 108–137 and 225–400 MHz for any purpose. Exception: Non-cable MVPDs serving less than 1000 subscribers and less than 1000 units do not have to comply with §76.1803.

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\[ I = \frac{1}{\theta} \sum_{i=1}^{n} E_i^2, \]

where:

\[ R_i^2 = r_i^2 + (3000)^2 \]

\( r_i \) is the distance (in meters) between the leakage source and the center of the cable television system;

\( \theta \) is the fraction of the system cable length actually examined for leakage sources and is equal to the total kilometers (strands) of plant tested divided by the total strand kilometers (strands) in the plant;

\( R_i \) is the slant height distance (in meters) from leakage source \( i \) to a point 3000 meters above the center of the cable television system;

\( E_i \) is the electric field strength in microvolts per meter (\( \mu \text{V/m} \)) measured pursuant to §76.609(h) 3 meters from the leak \( i \); and

\( n \) is the number of leaks found of field strength equal to or greater than 50 \( \mu \text{V/m} \) pursuant to Section 76.609(h).

The sum is carried over all leaks detected in the cable examined; or

(2) Prior to carriage of signals in the aeronautical radio bands and at least once each calendar year, with no more than 12 months between successive tests thereafter, the cable operator demonstrates by measurement in the airspace that at no point does the field strength generated by the cable system exceed 10 microvolts per meter (\( \mu \text{V/m} \)) RMS at an altitude of 450 meters above the average terrain of the cable system. The measurement system (including the receiving antenna) shall be calibrated against a known field of 10 \( \mu \text{V/m} \) RMS produced by a well characterized antenna consisting of orthogonal resonant dipoles, both parallel to and one quarter wavelength above the ground plane of a diameter of two meters or more at ground level. The dipoles shall have centers collocated and be excited 90 degrees apart. The half-power bandwidth of the detector shall be 25 kHz. If an aeronautical receiver is used for this purpose it shall meet the standards of the Radio Technical Commission for Aeronautics (RTCA) for aeronautical communications receivers. The aircraft antenna shall be horizontally polarized. Calibration shall be made in the community unit or, if more than one, in any of the community units of the physical system within a reasonable time period to performing the measurements. If data is recorded digitally the 90th percentile level of points recorded over the cable system shall not exceed 10 \( \mu \text{V/m} \) RMS; if analog recordings is used the peak values of the curves, when smoothed according to good engineering practices, shall not exceed 10 \( \mu \text{V/m} \) RMS.

(b) In paragraphs (a)(1) and (a)(2) of this section the unmodulated test signal used on the cable plant shall: (1) Be within the VHF aeronautical band 108–137 MHz or any other frequency in which the results can be correlated to the VHF aeronautical band and (2) have an average power level equal to the average power level of the strongest cable television carrier on the system.

(c) In paragraph (a)(1) and (2) of this section, if a modulated test signal is used, the test signal and detector technique must, when considered together, yield the same result as though an unmodulated test signal were used in conjunction with a detection technique which would yield the RMS value of said unmodulated carrier.

(d) If a sampling of at least 75% of the cable strand (and including any portions of the cable system which are known to have or can reasonably be expected to have less leakage integrity than the average of the system) as described in paragraph (a)(1) cannot be obtained by the cable operator or is otherwise not reasonably feasible, the cable operator shall perform the airspace measurements described in paragraph (a)(2).

(e) Prior to providing service to any subscriber on a new section of cable plant, the operator shall show compliance with either: (1) The basic signal leakage criteria in accordance with paragraph (a)(1) or (a)(2) of this section for the entire plant in operation or (2) a showing shall be made indicating that no individual leak in the new section of the plant exceeds 20 \( \mu \text{V/m} \) at 3 meters in accordance with §76.609 for the Rules.

(f) Notwithstanding paragraph (a) of this section, a cable operator shall be permitted to operate on any frequency which is offset pursuant to §76.612 in
§ 76.613 Interference from a multi-channel video programming distributor (MVPD).

(a) Harmful interference is any emission, radiation or induction which endangers the functioning of a radio-navigation service or of other safety services or seriously degrades, obstructs or repeatedly interrupts a radiocommunication service operating in accordance with this chapter.

(b) An MVPD that causes harmful interference shall promptly take appropriate measures to eliminate the harmful interference.

(c) If harmful interference to radio communications involving the safety of life and protection of property cannot be promptly eliminated by the application of suitable techniques, operation of the offending MVPD or appropriate elements thereof shall immediately be suspended upon notification by the District Director and/or Resident Agent of the Commission’s local field office, and shall not be resumed until the interference has been eliminated to the satisfaction of the District Director and/or Resident Agent. When authorized by the District Director and/or Resident Agent, short test operations may be made during the period of suspended operation to check the efficacy of remedial measures.

(d) The MVPD may be required by the District Director and/or Resident Agent to prepare and submit a report regarding the cause(s) of the interference, corrective measures planned.