

and reflector combination meets or exceeds the antenna standards of this section. This provision similarly applies to passive repeaters employed to redirect or repeat the signal from a station's directional antenna system.

(3) The choice of receiving antennas is left to the discretion of the licensee. However, licensees will not be protected from interference which results from the use of antennas with poorer performance than defined in paragraph (a) of this section.

(4) Pickup stations are not subject to the performance standards herein stated. The provisions of this paragraph are effective for all new applications accepted for filing after October 1, 1981.

(b) Any fixed station licensed pursuant to an application accepted for filing prior to October 1, 1981, may continue to use its existing antenna system, subject to periodic renewal until April 1, 1992. After April 1, 1992, all licensees are to use antenna systems in conformance with the standards of this section. TV auxiliary broadcast stations are considered to be located in an area subject to frequency congestion and must employ a Category A antenna when:

(1) A showing by an applicant of a new CAR service or TV auxiliary broadcast, which shares the 12.7-13.20 GHz band with CARS, indicates that use of a category B antenna limits a proposed project because of interference, and

(2) That use of a category A antenna will remedy the interference thus allowing the project to be realized.

(c) As an exception to the provisions of this section, the FCC may approve requests for use of periscope antenna systems where a persuasive showing is made that no frequency conflicts exist in the area of proposed use. Such approvals shall be conditioned to require conversion to a standard antenna as required in paragraph (a) of this section when an applicant of a new TV auxiliary broadcast or Cable Television Relay station indicates that the use of the existing antenna system will cause interference and the use of a category A or B antenna will remedy the interference.

(d) As a further exception to the provision of paragraph (a) of this section

the Commission may approve antenna systems not conforming to the technical standards where a persuasive showing is made that:

(1) Indicates in detail why an antenna system complying with the requirements of paragraph (a) of this section cannot be installed, and

(2) Includes a statement indicating that frequency coordination as required in § 78.18a was accomplished.

[45 FR 78694, Nov. 26, 1980, as amended at 49 FR 37779, Sept. 26, 1984; 50 FR 7343, Feb. 22, 1985; 51 FR 19841, June 3, 1986; 56 FR 50664, Oct. 8, 1991; 62 FR 4923, Feb. 3, 1997; 68 FR 12776, Mar. 17, 2003]

#### § 78.106 Interference to geostationary-satellites.

Applicants and licensees must comply with § 101.145 of this chapter to minimize the potential of interference to geostationary-satellites.

[68 FR 12776, Mar. 17, 2003]

#### § 78.107 Equipment and installation.

(a) Applications for new cable television relay stations, other than fixed stations, will not be accepted unless the equipment specified therein has been certificated. In the case of fixed stations, the equipment must be authorized under the verification procedure for use pursuant to the provisions of this subpart. Transmitters designed for use in the 31.0 to 31.3 GHz band shall be authorized under the verification procedure.

(1) All transmitters first licensed or marketed shall comply with technical standards of this subpart. This paragraph (b)(1) of this section is effective October 1, 1981.

(2) Neither certification nor verification is required for the following transmitters:

(i) Those which have an output power not greater than 250 mW and which are used in a CARS pickup station operating in the 12.7-13.2 GHz band; and

(ii) Those used under a developmental authorization.

(b) Cable television relay station transmitting equipment authorized to be used pursuant to an application accepted for filing prior to October 1, 1981, may continue to be used, provided, that if operation of such equipment causes harmful interference due

to its failure to comply with the technical standards set forth in this subpart the Commission may, at its discretion, require the licensee to take such corrective action as is necessary to eliminate the interference.

(c) The installation of a CARS station shall be made by or under the immediate supervision of a qualified engineer. Any tests or adjustments requiring the radiation of signals and which could result in improper operation shall be conducted by or under the immediate supervision of a person with required knowledge and skill to perform such tasks.

(d) Simple repairs such as the replacement of tubes, fuses, or other plug-in components which require no particular skill may be made by an unskilled person. Repairs requiring replacement of attached components or the adjustment of critical circuits or corroborative measurements shall be made only by a person with required knowledge and skill to perform such tasks.

[37 FR 3292, Feb. 12, 1972, as amended at 45 FR 78695, Nov. 26, 1980; 49 FR 4001, Feb. 1, 1984; 49 FR 20672, May 16, 1984; 50 FR 7343, Feb. 22, 1985; 63 FR 36606, July 7, 1998; 63 FR 49870, Sept. 18, 1998]

**§ 78.108 Minimum path lengths for fixed links.**

(a) The distance between end points of a fixed link must equal or exceed the value set forth in the table below or the EIRP must be reduced in accordance with the equation set forth below.

Frequency band (MHz)	Minimum path length (km)
12,200 to 13,250 .....	5
Above 17,700 .....	N/A

(b) For paths shorter than those specified in the Table, the EIRP shall not exceed the value derived from the following equation.

$$\text{EIRP} = \text{MAXEIRP} - 40 \log(A/B) \text{ dBW}$$

Where:

EIRP = The new maximum EIRP (equivalent isotropically radiated power) in dBW.

MAXEIRP = Maximum EIRP as set forth in the Table in § 74.636 of this part.

A = Minimum path length from the Table above for the frequency band in kilometers.

B = The actual path length in kilometers.

NOTE TO PARAGRAPH (b): For transmitters using Automatic Transmitter Power Control, EIRP corresponds to the maximum transmitter power available, not the coordinated transmit power or the nominal transmit power.

(c) Upon an appropriate technical showing, applicants and licensees unable to meet the minimum path length requirement may be granted an exception to these requirements.

NOTE: Links authorized prior to April 1, 1987, are excluded from this requirement, except that, effective April 1, 1992, the Commission will require compliance with the criteria where an existing link would otherwise preclude establishment of a new link.

[52 FR 7145, Mar. 9, 1987, as amended at 68 FR 12776, Mar. 17, 2003]

**§ 78.109 Major and minor modifications to stations.**

(a) Amendments to applications and modifications to stations are classified as major or minor. A major modification requires a formal application. A major amendment to an application is treated as a new application.

(b) Major modifications to a station or amendments to an application include, but are not limited to:

- (1) Any increase in bandwidth;
- (2) Any change in the transmitting antenna system of a station, other than a CARS pickup station, including the direction of the main radiation lobe, directive pattern, antenna gain or transmission line, antenna height or location;
- (3) Any change in the type of modulation;
- (4) Any change in the location of a station transmitter, other than a CARS pickup station transmitter, except a move within the same building or upon the tower or mast or a change in the area of operation of a CARS pickup station;

(5) Any change in frequency assignment, including polarization;

(6) Any increase in authorized operating power;

(7) Any substantial change in ownership or control;

(8) Any addition or change in frequency, excluding removing a frequency;

(9) Any modification or amendment requiring an environmental assessment (as governed by §§ 1.1301 through 1319 of