

§ 78.108

(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.

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

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 1.1319 of this chapter, including changes affecting historic preservation under § 1.1307(a)(4) of this chapter and 16 U.S.C. 470 (National Historic Preservation Act));

(10) Any request requiring frequency coordination; or

(11) Any modification or amendment requiring notification to the Federal Aviation Administration as defined in 47 CFR 17, subpart B.

(c) Minor changes may be made at the discretion of the licensee, provided proper notice is given to the Commission within 30 days of implementing the change and provided further, that the changes are appropriately reflected in the next application for renewal of the license for the station.

(d) For applications and modifications, the following changes are considered minor:

(1) Any name change not involving change in ownership or control of the license;

(2) Any change to administrative information, e.g., address, telephone number, or contact person;

(3) Any change in ownership that does not affect the identity or controlling interest of the licensee;

(4) Lowering power;

(5) Removing one or more channels; or

(6) Deleting a path.

[68 FR 27004, May 19, 2003]

§ 78.111 Frequency tolerance.

Stations in this service shall maintain the carrier frequency of each authorized transmitter to within the following percentage of the assigned frequency.

Frequency band (MHz)	Frequency tolerance	
	Fixed (percent)	Mobile (percent)
1,990 to 2,110	0.005
6,425 to 6,525	0.005
6,875 to 7,125	0.005
12,700 to 13,250 ¹	0.005	0.005
17,700 to 18,820	0.003
18,820 to 18,920	0.001
18,920 to 19,700	0.003

¹ Stations that employing vestigial sideband AM transmissions shall maintain their operating frequency within 0.0005% the visual carrier, and the aural carrier shall be 4.5 MHz± 1 kHz above the visual carrier frequency.

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

§ 78.113 Frequency monitors and measurements.

(a) The licensee of each CARS station shall employ a suitable procedure to

determine that the carrier frequency of each transmitter is maintained within the tolerance prescribed in § 78.111 at all times. The determination shall be made, and the results thereof entered in the station records: when a transmitter is initially installed; when any change is made in a transmitter which may affect the carrier frequency or the stability thereof; or in any case at intervals not exceeding one year.

(b) The choice of apparatus to measure the operating frequency is left to the discretion of the licensee. However, failure of the apparatus to detect departures of the operating frequency in excess of the prescribed tolerance will not be deemed an acceptable excuse for the violation.

[37 FR 3292, Feb. 12, 1972, as amended at 41 FR 29696, July 19, 1976; 50 FR 23422, June 4, 1985]

§ 78.115 Modulation limits.

(a) If amplitude modulation is employed, negative modulation peaks shall not exceed 100 percent modulation.

[37 FR 3292, Feb. 12, 1972, as amended at 45 FR 78696, Nov. 26, 1980]

ALPHABETICAL INDEX—PART 78

A

Antenna systems	78.105
Applications—	
Acceptance of; public notice	78.20
Amendments of	78.17
Contents of	78.15
Dismissal of	78.21
Objections to	78.22
Signing of	78.16
Assignment or transfer of control	78.35
Authority, Temporary	78.33
Authorized bandwidth	78.104

B

Bandwidth authorized	78.104
----------------------------	--------

C

Certificated equipment	78.107
Changes in equipment	78.109
Conditions for license	78.27
Coordination, frequencies	78.36
Cross reference to other rules	78.3

D

Definitions	78.5
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E

Eligibility for license	78.13
Emission designator	78.104
Emissions; emission limitations	78.103
Equal employment opportunities	78.75
Equipment changes	78.109
Equipment installation	78.107
Equipment tests	78.23
Extension of license, Temporary	78.31