the ship aboard which the ship earth station is to be installed and operated.

(b) A station license for a portable ship earth station may be issued to the owner or operator of portable earth station equipment proposing to furnish satellite communication services on board more than one ship or fixed offshore platform located in the marine environment.

[52 FR 27003, July 17, 1987, as amended at 54 FR 49995, Dec. 4, 1989]

§ 80.1187 Scope of communication.

Ship earth stations must be used for telecommunications related to the business or operation of ships and for public correspondence of persons on board. Portable ship earth stations are authorized to meet the business, operational and public correspondence telecommunication needs of fixed offshore platforms located in the marine environment as well as ships. The types of emission are determined by the INMARSAT organization.

[52 FR 27003, July 17, 1987]

§ 80.1189 Portable ship earth stations.

(a) Portable ship earth stations are authorized to operate on board more than one ship. Portable ship earth stations are also authorized to be operated on board fixed offshore platforms located in international or United States domestic waters.

(b) Portable ship earth stations must meet the rule requirements of ship earth stations with the exeception of eligibility.

(c) Where the license of the portable ship earth station is not the owner of the ship or fixed platform on which the station is located, the station must be operated with the permission of the owner or operator of the ship or fixed platform.

[52 FR 27003, July 17, 1987]

RADIODETERMINATION

§ 80.1201 Special provisions for cable-repair ship stations.

(a) A ship station may be authorized to use radio channels in the 285–315 kHz band in Region 1 and 285–325 kHz in any other region for cable repair radiodetermination purposes under the following conditions:

(1) The radio transmitting equipment attached to the cable-marker buoy associated with the ship station must be described in the station application;

(2) The call sign used for the transmitter operating under the provisions of this section is the call sign of the ship station followed by the letters ''BT'' and the identifying number of the buoy.

(3) The buoy transmitter must be continuously monitored by a licensed radiotelegraph operator on board the cable repair ship station; and

(4) The transmitter must operate under the provisions in §80.375(b).

PART 87—AVIATION SERVICES

Subpart A—General Information

Subpart B—Applications and Licenses

Subpart C—Operating Requirements and Procedures

OPERATING REQUIREMENTS

Subpart Q—Stations in the Radiodetermination Service

Subpart R—Civil Air Patrol Stations

Subpart S—Automatic Weather Observation Stations

AUTHORITY: 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303, 307(e) unless otherwise noted. Interpret or apply 48 Stat. 1064–1068, 1081–1105, as amended; 47 U.S.C. 151–156, 301–609.

SOURCE: 53 FR 28940, Aug. 1, 1988, unless otherwise noted.

Subpart A—General Information

§87.1 Basis and purpose.

This section contains the statutory basis and provides the purpose for which this part is issued.

(a) *Basis.* The rules for the aviation services in this part are promulgated under the provisions of the Communications Act of 1934, as amended, which vests authority in the Federal Communications Commission (Commission) to regulate radio transmission and to issue licenses for radio stations. These rules conform with applicable statutes and international treaties, agreements and recommendations to which the United States is a party. The most significant of these documents are listed with the short title appearing in parentheses:

(1) Communications Act of 1934, as amended—(Communications Act).

(2) International Telecommunication Union Radio Regulations, in force for the United States—(Radio Regulations).

(3) The Convention on International Civil Aviation—(ICAO Convention).

(b) *Purpose.* This part states the conditions under which radio stations may be licensed and used in the aviation services. These rules do not govern U.S. Government radio stations.

§87.3 Other applicable rule parts.

Other applicable CFR title 47 parts include:

(a) Part 0 contains the Commission's organizations and delegations of authority. Part 0 also lists Commission publications, standards and procedures for access to Commission records and location of Commission monitoring stations.

(b) Part 1 contains rules of practice and procedure for license applications, adjudicatory proceedings, rule making proceedings, procedures for reconsideration and review of the Commission's actions, provisions concerning violation notices and forfeiture proceedings, and the requirements for environmetal impact statements.

(c) Part 2 contains the Table of Frequency Allocations and special requirements in international regulations, recommendations, agreements, and treaties. This part also contains standards and procedures concerning marketing of radio frequency devices, and for obtaining equipment authorization.

(d) Part 13 contains information and rules for the licensing of commercial radio operators.

(e) Part 17 contains requirements for construction, marking and lighting of antenna towers.

(f) Part 80 contains rules for the maritime services. Certain maritime frequencies are available for use by aircraft stations for distress and safety, public correspondence and operational communications.

§87.5 Definitions.

Aeronautical advisory station (unicom). An aeronautical station used for advisory and civil defense communications primarily with private aircraft stations.

Aeronautical enroute station. An aeronautical station which communicates with aircraft stations in flight status or with other aeronautical enroute stations.

Aeronautical fixed service. A radiocommunication service between

specified fixed points provided primarily for the safety of air navigation and for the regular, efficient and economical operation of air transport. A station in this service is an aeronautical fixed station.

Aeronautical Mobile Off-Route (OR) Service. An aeronautical mobile service intended for communications, including those relating to flight coordination, primarily outside national or international civil air routes.(RR)

Aeronautical Mobile Route (R) Service. An aeronautical mobile service reserved for communications relating to safety and regularity of flight, primarily along national or international civil air routes.(RR)

Aeronautical Mobile-Satellite Off-Route (OR) Service. An aeronautical mobile-satellite service intended for communications, including those relating to flight coordination, primarily outside national and international civil air routes.(RR)

Aeronautical Mobile-Satellite Route (R) Service. An aeronautical mobile-satellite service reserved for communications relating to safety and regularity of flights, primarily along national or international civil air routes.(RR)

Aeronautical Mobile-Satellite Service. A mobile-satellite service in which mobile earth stations are located on board aircraft.

Aeronautical mobile service. A mobile service between aeronautical stations and aircraft stations, or between aircraft stations, in which survival craft stations may also participate; emergency position-indicating radiobeacon stations may also participate in this service on designated distress and emergency frequencies.

Aeronautical multicom station. An aeronautical station used to provide communications to conduct the activities being performed by, or directed from, private aircraft.

Aeronautical radionavigation service. A radionavigation service intended for the benefit and for the safe operation of aircraft.

Aeronautical search and rescue station. An aeronautical station for communication with aircraft and other aeronautical search and rescue stations pertaining to search and rescue activities with aircraft.

Aeronautical station. A land station in the aeronautical mobile service. In certain instances an aeronautical station may be located, for example, on board ship or on a platform at sea.

Aeronautical utility mobile station. A mobile station used on airports for communications relating to vehicular ground traffic.

Air carrier aircraft station. A mobile station on board an aircraft which is engaged in, or essential to, the transportation of passengers or cargo for hire.

Aircraft earth station (AES). A mobile earth station in the aeronautical mobile-satellite service located on board an aircraft.

Aircraft station. A mobile station in the aeronautical mobile service other than a survival craft station, located on board an aircraft.

Airport. An area of land or water that is used or intended to be used for the landing and takeoff of aircraft, and includes its buildings and facilities, if any.

Airport control tower (control tower) station. An aeronautical station providing communication between a control tower and aircraft.

Automatic weather observation station. A land station located at an airport and used to automatically transmit weather information to aircraft.

Aviation service organization. Any business firm which maintains facilities at an airport for the purposes of one or more of the following general aviation activities: (a) Aircraft fueling; (b) aircraft services (e.g. parking, storage, tie-downs); (c) aircraft maintenance or sales; (d) electronics equipment maintenance or sales; (e) aircraft rental, air taxi service or flight instructions; and (f) baggage and cargo handling, and other passenger or freight services.

Aviation services. Radio-communication services for the operation of aircraft. These services include aeronautical fixed service, aeronautical mobile service, aeronautical radiodetermination service, and secondarily, the handling of public correspondence on frequencies in the maritime mobile and maritime mobile satellite services to and from aircraft.

Aviation support station. An aeronautical station used to coordinate aviation services with aircraft and to communicate with aircraft engaged in unique or specialized activities. (See subpart K)

Civil Air Patrol station. A station used exclusively for communications of the Civil Air Patrol.

Emergency locator transmitter (ELT). A transmitter of an aircraft or a survival craft actuated manually or automatically that is used as an alerting and locating aid for survival purposes.

Emergency locator transmitter (ELT) test station. A land station used for testing ELTs or for training in the use of ELTs.

Expendable Launch Vehicle (ELV). A booster rocket that can be used only once to launch a payload, such as a missile or space vehicle.

Flight test aircraft station. An aircraft station used in the testing of aircraft or their major components.

Flight test land station. An aeronautical station used in the testing of aircraft or their major components.

Glide path station. A radionavigation land station which provides vertical guidance to aircraft during approach to landing.

Instrument landing system (ILS). A radionavigation system which provides aircraft with horizontal and vertical guidance just before and during landing and, at certain fixed points, indicates the distance to the reference point of landing.

Instrument landing system glide path. A system of vertical guidance embodied in the instrument landing system which indicates the vertical deviation of the aircraft from its optimum path of descent.

Instrument landing system localizer. A system of horizontal guidance embodied in the instrument landing system which indicates the horizontal deviation of the aircraft from its optimum path of descent along the axis of the runway or along some other path when used as an offset.

Land station. A station in the mobile service not intended to be used while in motion.

Localizer station. A radionavigation land station which provides horizontal guidance to aircraft with respect to a runway center line.

Marker beacon station. A radionavigation land station in the aeronautical radionavigation service which employs a marker beacon. A marker beacon is a transmitter which radiates vertically a distinctive pattern for providing position information to aircraft.

Mean power (of a radio transmitter). The average power supplied to the antenna transmission line by a transmitter during an interval of time sufficiently long compared with the lowest frequency encountered in the modulation taken under normal operating conditions.

Microwave landing system. An instrument landing system operating in the microwave spectrum that provides lateral and vertical guidance to aircraft having compatible avionics equipment.

Mobile service. A radiocommunication service between mobile and land stations, or between mobile stations. A mobile station is intended to be used while in motion or during halts at unspecified points.

Operational fixed station. A fixed station, not open to public correspondence, operated by and for the sole use of persons operating their own radiocommunication facilities in the public safety, industrial, land transportation, marine, or aviation services.

Peak envelope power (of a radio transmitter). The average power supplied to the antenna transmission line by a transmitter during one radio frequency cycle at the crest of the modulation envelope taken under normal operating conditions.

Private aircraft station. A mobile station on board an aircraft not operated as an air carrier. A station on board an air carrier aircraft weighing less than 12,500 pounds maximum certified takeoff gross weight may be licensed as a private aircraft station.

Racon station. A radionavigation land station which employs a racon. A racon (radar beacon) is a transmitter-receiver associated with a fixed navigational mark, which when triggered by a radar, automatically returns a distinctive signal which can appear on the display of the triggering radar, providing range, bearing and identification information.

Radar. A radiodetermination system based upon the comparison of reference signals with radio signals reflected, or re-transmitted, from the position to be determined.

Radio altimeter. Radionavigation equipment, on board an aircraft or spacecraft, used to determine the height of the aircraft or spacecraft above the Earth's surface or another surface.

Radiobeacon station. A station in the radionavigation service the emissions of which are intended to enable a mobile station to determine its bearing or direction in relation to the radiobeacon station.

Radiodetermination service. A radiocommuncation service which uses radiodetermination. Radiodetermination is the determination of the position, velocity and/or other characteristics of an object, or the obtaining of information relating to these parameters, by means of the propagation of radio waves. A station in this service is called a radiodetermination station.

Radiolocation service. A radiodetermination service for the purpose of radiolocation. Radiolocation is the use of radiodetermination for purposes other than those of radionavigation.

Radionavigation land test stations. A radionavigation land station which is used to transmit information essential to the testing and calibration of aircraft navigational aids, receiving equipment, and interrogators at predetermined surface locations. The Maintenance Test Facility (MTF) is used primarily to permit maintenance testing by aircraft radio service personnel. The Operational Test Facility (OTF) is used primarily to permit the pilot to check a radionavigation system aboard the aircraft prior to takeoff.

Radionavigation service. A radiodetermination service for the purpose of radionavigation. Radionavigation is the use of radiodetermination for the purpose of navigation, including obstruction warning.

Re-usable launch vehicle (RLV). A booster rocket that can be recovered after launch, refurbished and relaunched.

Surveillance radar station. A radionavigation land station in the aeronautical radionavigation service employing radar to display the presence of aircraft within its range.

Survival craft station. A mobile station in the maritime or aeronautical mobile service intended solely for survival purposes and located on any lifeboat, life raft or other survival equipment.

VHF Omni directional range station (VOR). A radionavigation land station in the aeronautical radionavigation service providing direct indication of the bearing (omni-bearing) of that station from an aircraft.

[53 FR 28940, Aug. 1, 1988, as amended at 54 FR 11719, Mar. 22, 1989; 54 FR 49995, Dec. 4, 1989; 55 FR 4175, Feb. 7, 1990; 57 FR 45749, Oct. 5, 1992]

Subpart B—Applications and Licenses

§ 87.17 Scope.

This subpart contains the procedures and requirements for the filing of applications for radio station licenses in the aviation services. Part 1 of the Commission's rules contains the general rules of practice and procedure applicable to proceedings before the Commission.

§ 87.18 Station license required.

(a) Except as noted in paragraph (b) of this section, stations in the aviation service must be licensed by the FCC either individually or by fleet.

(b) An aircraft station is licensed by rule and does not need an individual license issued by the FCC if the aircraft station is not required by statute, treaty, or agreement to which the United States is signatory to carry a radio, and the aircraft station does not make international flights or communications. Even though an individual license is not required, an aircraft station licensed by rule must be operated in accordance with all applicable operating requirements, procedures, and technical specifications found in this part.

[61 FR 58011, Nov. 12, 1996]

§87.19 Basic eligibility.

(a) *General.* Foreign governments or their representatives cannot hold station licenses.

(b) *Aeronautical enroute and aeronautical fixed stations.* The following persons cannot hold an aeronautical enroute or an aeronautical fixed station license.

(1) Any alien or the representative of any alien;

(2) Any corporation organized under the laws of any foreign government;

(3) Any corporation of which more than one-fifth of the capital stock is owned of record or voted by aliens or their representatives or by a foreign government or its representative, or by a corporation organized under the laws of a foreign country; or

(4) Any corporation directly or indirectly controlled by any other corporation of which more than one-fourth of the capital stock is owned of record or voted by aliens, their representatives, or by a foreign government or its representatives, or by any corporation organized under the laws of a foreign country, if the Commission finds that the public interest will be served by the refusal or revocation of such license.

[53 FR 28940, Aug. 1, 1988, as amended at 61 FR 55581, Oct. 28, 1996]

§87.21 Standard forms to be used.

(a) Applications must be submitted on prescribed forms which may be obtained from the Commission in Washington, DC 20554 or from any of its field offices.

(b) The following table indicates the correct standard form or other means to be used when submitting an application:

Class of station	Application for—	Use—
Aircraft	New license	FCC Form 404.
	Fleet license (new) ..	FCC Form 404.
	Modification of license.	FCC Form 404.
	Renewal of license with modification.	FCC Form 404.
	Renewal of license without modification.	FCC Form 405–B.
	Temporary operating authority in conjunction with application for a new license or modification of license.	FCC Form 404–A.
	Transfer of control of corporation.	FCC Form 703.
	Special Temporary authority.	Letter/Telegram.
	Name or address change.	Letter.
Ground	New license	FCC Form 406.
	Modification of license.	FCC Form 406.
	Renewal of license with modification.	FCC Form 406.
	Renewal of license without modification.	FCC Form 452–R.
	Assignment of license.	FCC Form 1046 and 406.
	Transfer of control of corporation.	FCC Form 703.
	Special Temporary Authority.	Letter/Telegram.
Civil Air Patrol.	New license	FCC Form 480.
	Modification of license.	FCC Form 480.
	Renewal of license ..	FCC Form 480.

[53 FR 28940, Aug. 1, 1988, as amended at 56 FR 64715, Dec. 12, 1991]

§87.23 Supplemental information required.

(a) To minimize harmful interference at the National Radio Astronomy Observatory site at Green Bank, Pocahontas County, WV, and at the Naval Radio Research Observatory site at Sugar Grove, Pendleton County, WV, an applicant for a new station license (other than mobile, temporary base, temporary fixed or Civil Air Patrol), or for modification of an existing license to change the frequency, power, antenna location, height or directivity within the area bounded by 39′15′ N. on the north, 78′30′ W. on the east, 37′30′ N on the south and 80′30′ W on the west, must first notify the Director, National Radio Astronomy Observatory, Attn: Interference Office, Post Office Box No. 2, Green Bank, WV 24944, in writing, of the geographical coordinates of the antenna, antenna height, antenna directivity, frequency, emission and power. The application to the Commission must show the date notification was made to the Observatory. The Commission will allow twenty (20) days after receipt of its copy of the notification for comments or objections. If a timely response is received, the Commission will consider the comments or objections.

(b) Geographical coordinates of Commission facilities which require protection are listed in § 0.121(c). Applications for stations (except mobile stations) which will be located within 80 km (50 miles) of the referenced coordinates are examined to determine extent of possible interference. A clause protecting the monitoring station may be added to the station license.

(c) Each application for a station license to operate in the vicinity of Boulder County, CO, under this part must give due consideration, prior to filing applications, to the need to protect the Table Mountain Radio Receiving Zone from harmful interference. These are the Research Laboratories of the Department of Commerce, Boulder County, CO. To prevent degradation of the present ambient radio signal level at the site, the Department of Commerce seeks to ensure that field strength at 40°07′50″ N latitude, 105° 14′40″ W longitude, resulting from new assignments (other than mobile stations) or from the modification or relocation of the existing facilities do not exceed the following values:

Frequency range	Field strength (mV/m) in authorized bandwidth of service	Power flux density [1] (dBW/m^2) in authorized bandwidth of service
Below 540 kHz	10	−65.8
540 to 1600 kHz	20	−59.8
1.6 to 470 MHz	10	[2] −65.8
470 to 890 MHz	30	[2] −56.2
Above 890 MHz	1	[2] −85.8

[1] Equivalent values of power flux density are calculated assuming a free-space characteristic impedence of 376.7 (approximately 120 pi) ohms.

[2] Space stations shall conform to the power flux density limits at the earth's surface specified in appropriate parts of the Commission's rules, but in no case should exceed the above levels in any 4 kHz band for all angles of arrival.

(d) Each applicant is responsible for determining whether proposals for a new or modified station require envionmental information. Applicants should refer to § 1.1307 to identify those actions for which environmental information must be submitted.

[53 FR 28940, Aug. 1, 1988, as amended at 54 FR 11719, Mar. 22, 1989]

§ 87.25 Filing of applications.

Rules about the filing of applications for radio station licenses are contained in this section.

(a) Each application must specify an address in the United States to be used by the Commission in serving documents or directing correspondence to the licensee. Otherwise the address contained in the licensee's most recent notification will be used for this purpose. Failure to answer Commission correspondence can result in revocation of the license.

(b) An original of each application must be filed with the Commission, Gettysburg, PA 17326, unless otherwise noted on the application form. Applications requiring fees as set forth at part 1, subpart G of this chapter must be filed in accordance with § 0.401(b) of the rules.

(c) One application may be submitted for the total number of aircraft stations in the fleet (fleet license).

(d) One application for aeronautical land station license may be submitted for the total number of stations in the fleet.

(e) One application for modification or transfer of control may be submitted for two or more stations when the individual stations are clearly identified and the following elements are the same for all existing or requested station licenses involved:

(1) Applicant;

(2) Specific details of request;

(3) Rule part.

(f) One application must be submitted for each Civil Air Patrol wing. The application must show the total number of transmitters to be authorized. The wing need not notify the Commission each time the number of transmitters is altered. Upon renewal, the wing must notify the Commission of any change in the total number of transmitters.

[53 FR 28940, Aug. 1, 1988, as amended at 56 FR 64715, Dec. 12, 1991]

§ 87.27 License term.

(a) Licenses for aircraft stations will normally be issued for a term of ten years from the date of original issuance, major modification or renewal. Licensees may apply for renewal of the

station license up to ninety (90) days after the date the license expires.

(b) Licenses other than aircraft stations in the aviation services will normally be issued for a term of five years from the date of original issuance, major modification, or renewal. Licensees, other than Aeronautical Advisory (unicom) stations licensed under §87.215(b), Aeronautical Fixed, Aeronautical Enroute, and Airport Control Tower stations, may apply for renewal of the station license up to ninety (90) days after the date the license expires.

(c) Licenses for developmental stations will be issued for a period not to exceed one year and are subject to change or to cancellation by the Commission at any time, upon reasonable notice but without a hearing.

[53 FR 28940, Aug. 1, 1988, as amended at 58 FR 68062, Dec. 23, 1993; 62 FR 40308, July 28, 1997]

§87.29 Partial grant of application.

Whenever the Commission, without a hearing, grants an application in part or with any privileges, terms, or conditions other than those requested, the action will be considered as a grant of the application unless the applicant, within 30 days from the date on which such grant is made, or from its effective date if a later day is specified, files with the Commission a written protest, rejecting the grant as made. Upon receipt of such protest, the Commission will vacate its original action upon the application and, if necessary, set the application for hearing.

§87.31 Changes during license term.

The following table indicates the required action for changes made during the license term:

Type of change	Required action
Mailing address	Written notice to FCC. Gettysburg, PA 17326.
Name of licensee (without change in ownership, control or corporate structure).	Written notice to FCC. Gettysburg, PA 17326.
Transfer of control of a corporation.	Use FCC Form 703.
Assignment of a radio station license (except aircraft station license).	Use FCC Form 1046 and 406.
Addition of transmitting equipment on a frequency, frequency band or with emission types not authorized on present license.	Use FCC Form 404 (aircraft). Use FCC Form 406 (land). Use FCC Form 480 (C.A.P.).
Addition or replacement of transmitting equipment on a frequency or frequency band with emission types authorized on present license.	None.
Addition of survival craft station.	None

§87.33 Transfer of aircraft station license prohibited.

An aircraft station license cannot be assigned. If the aircraft ownership is transferred, the previous license must be returned to the Commission. The new owner must file for a new license.

§87.35 Cancellation of license.

When a station permanently discontinues operation, the license must be returned to the Commission, Gettysburg, PA 17326.

§87.37 Developmental license.

This section contains rules about the licensing of developmental operations subject to this part.

(a) *Showing required.* Each application for a developmental license must be accompanied by a letter showing that:

(1) The applicant has an organized plan of development leading to a specific objective;

(2) A point has been reached in the program where actual transmission by radio is essential;

(3) The program has reasonable promise of substantial contribution to the use of radio;

(4) The program will be conducted by qualified personnel;

(5) The applicant is legally qualified and possesses technical facilities for conduct of the program as proposed;

(6) The public interest, convenience and necessity will be served by the proposed operation.

(b) *Signature and statement of understanding.* The showing must be signed by the applicant.

(c) *Assignable frequencies.* Developmental stations may be authorized to use frequencies available for the service and class of station proposed. The number of frequencies assigned will depend upon the specific requirements of the developmental program and the number of frequencies available.

(d) *Developmental program.* (1) The developmental program as described by the applicant must be substantially followed.

(2) Where some phases of the developmental program are not covered by the general rules of the Commission and the rules in this part, the Commission may specify supplemental or additional requirements or conditions as considered necessary in the public interest, convenience or necessity.

(3) The Commission may, from time to time, require a station engaged in developmental work to conduct special tests which are reasonable and desirable to the authorized developmental program.

(e) *Use of developmental stations.* (1) Developmental stations must conform to all applicable technical and operating requirements contained in this part, unless a waiver is specifically provided in the station license.

(2) Communication with any station of a country other than the United States is prohibited unless specifically provided in the station license.

(3) The operation of a developmental station must not cause harmful interference to stations regularly authorized to use the frequency.

(f) *Report of operation required.* A report on the results of the developmental program must be filed within 60 days of the expiration of the license. A report must accompany a request for renewal of the license. Matters which the applicant does not wish to disclose publicly may be so labeled; they will be used solely for the Commission's information. However, public disclosure is governed by §0.467 of the Commission's rules. The report must include the following:

(1) Results of operation to date.

(2) Analysis of the results obtained.

(3) Copies of any published reports.

(4) Need for continuation of the program.

(5) Number of hours of operation on each authorized frequency during the term of the license to the date of the report.

[53 FR 28940, Aug. 1, 1988, as amended at 54 FR 11719, Mar. 22, 1989]

§87.39 Equipment acceptable for licensing.

Transmitters listed in this part must be type accepted for a particular use by the Commission based upon technical requirements contained in subpart D of this part.

§87.41 Frequencies.

(a) *Applicant responsibilities.* The applicant must propose frequencies to be used by the station consistent with the applicant's eligibility, the proposed operation and the frequencies available for assignment. Applicants must cooperate in the selection and use of frequencies in order to minimize interference and obtain the most effective use of stations. See subpart E and the appropriate subpart applicable to the class of station being considered.

(b) *Licensing limitations.* Frequencies are available for assignment to stations on a shared basis only and will not be assigned for the exclusive use of any licensee. The use of any assigned frequency may be restricted to one or more geographical areas.

(c) *Government frequencies.* Frequencies allocated exclusively to federal government radio stations may be licensed. The applicant for a government frequency must provide a satisfactory showing that such assignment is required for inter-communication with government stations or required for coordination with activities of the federal government. The Commission will coordinate with the appropriate government agency before a government frequency is assigned.

(d) *Assigned frequency.* The frequency coinciding with the center of an authorized bandwidth of emission must be specified as the assigned frequency. For single sideband emission, the carrier frequency must also be specified.

§87.43 Operation during emergency.

A station may be used for emergency communications in a manner other than that specified in the station license or in the operating rules when normal communication facilities are disrupted. The Commission may order the discontinuance of any such emergency service.

§87.45 Time in which station is placed in operation.

This section applies to unicom stations and radionavigation land stations, excluding radionavigation land test stations. In those cases in which a new or modified license is issued, if the station or modifications authorized have not been placed in operation within eight months from the date of the grant, the license becomes invalid and must be returned to the Commission unless the licensee shows good cause why notification was not made. The licensee must notify the Commission in writing when the station is placed in operation.

§87.47 Application for a portable aircraft station license.

A person may apply for a portable aircraft radio station license if the need exists to operate the same station on more than one U.S. aircraft.

§87.51 Aircraft earth station commissioning.

(a) Aircraft earth stations which require commissioning to use a privately owned satellite system must submit FCC Form 404 to the Commission before transmitting on any satellite frequency bands allocated for aeronautical mobile-satellite communications.

(b) Aircraft earth stations authorized to operate in the Inmarsat space segment must display the Commission license together with the commissioning certificate issued by Inmarsat. Notwithstanding the requirements of this paragraph, aircraft earth stations may operate in the Inmarsat space segment without an Inmarsat-issued commissioning certificate if written approval is obtained from Inmarsat in addition to the license from the Commission.

[57 FR 45749, Oct. 5, 1992]

Subpart C—Operating Requirements and Procedures

OPERATING REQUIREMENTS

§87.69 Maintenance tests.

The licensee may make routine maintenance tests on equipment other than emergency locator transmitters if there is no interference with the communications of any other station. Procedures for conducting tests on emergency locator transmitters are contained in subpart F.

§87.71 Frequency measurements.

A licensed operator must measure the operating frequencies of all land-based transmitters at the following times:

(a) When the transmitter is originally installed;

(b) When any change or adjustment is made in the transmitter which may affect an operating frequency; or

(c) When an operating frequency has shifted beyond tolerance.

§87.73 Transmitter adjustments and tests.

A general radiotelephone operator must directly supervise and be responsible for all transmitter adjustments or tests during installation, servicing or maintenance of a radio station. A general radiotelephone operator must be responsible for the proper functioning of the station equipment.

§87.75 Maintenance of antenna structure marking and control equipment.

The owner of each antenna structure required to be painted and/or illuminated under the provisions of Section 303(q) of the Communications Act of 1934, as amended, shall operate and maintain the antenna structure painting and lighting in accordance with part 17 of this chapter. In the event of default by the owner, each licensee or permittee shall be individually responsible for conforming to the requirements pertaining to antenna structure painting and lighting.

[61 FR 4368, Feb. 6, 1996]

§87.77 Availability for inspections.

The licensee must make the station and its records available for inspection upon request.

§87.79 Answer to notice of violation.

(a) Any person who receives an official notice of violation of the Communications Act, any legislative act, executive order, treaty to which the U.S. is a party, terms of a station or operator license, or the Commission's rules

must send a written answer, in duplicate, to the office which originated the notice, within 10 days of receipt. If the licensee cannot acknowledge within the allotted period due to unavoidable circumstances, an answer must be given at the earliest practicable date with a satisfactory explanation of the delay.

(b) The answer to each notice must be complete in itself. The answer must contain a full expalantion of the incident involved and must give the action taken to prevent a recurrence of the violation. If the notice relates to operator errors, the answer must give the name and license number of the operator on duty.

RADIO OPERATOR REQUIREMENTS

§ 87.87 Classification of operator licenses and endorsements.

(a) Commercial radio operator licenses issued by the Commission are classified in accordance with the Radio Regulations of the International Telecommunication Union.

(b) The following licenses are issued by the Commission. International classification, if different from the license name, is given in parentheses. The licenses and their alphanumeric designator are listed in descending order.

(1) T–1 First Class Radiotelegraph Operator's Certificate

(2) T–2 Second Class Radiotelegraph Operator's Certificate

(3) G General Radiotelephone Operator Licenes (radiotelephone operator's general certificate)

(4) T–3 Third Class Radiotelegraph Operator's Certificate (radiotelegraph operator's special certificate)

(5) MP Marine Radio Operator Permit (radiotelephone operator's restricted certificate)

(6) RP Restricted Radiotelephone Operator Permit (radiotelephone operator's restricted certificate)

§ 87.89 Minimum operator requirements.

(a) A station operator must hold a commercial radio operator license or permit, except as listed in paragraph (d).

(b) The minimum operator license or permit required for operation of each specific classification is:

MINIMUM OPERATOR LICENSE OR PERMIT

Land stations, all classes

—All frequencies except VHF telephony transmitters providing domestic service ..... RP

Aircraft stations, all classes

—Frequencies below 30 MHz allocated exclusively to aeronautical mobile services ..... RP
—Frequencies below 30 MHz not allocated exclusively to aeronautical mobile services ..... MP or higher
—Frequencies above 30 MHz not allocated exclusively to aeronautical mobile services and assigned for international use ..... MP or higher
—Frequencies above 30 MHz not assigned for international use ..... none
—Frequencies not used solely for telephone or exceeding 250 watts carrier power or 1000 watts peak envelope power ..... G or higher

(c) The operator of a telephony station must directly supervise and be responsible for any other person who transmits from the station, and must ensure that such communications are in accordance with the station license.

(d) No operator license is required to:

(1) Operate an aircraft radar set, radio altimeter, transponder or other aircraft automatic radionavigation transmitter by flight personnel;

(2) Test an emergency locator transmitter or a survival craft station used solely for survival purposes;

(3) Operate an aeronautical enroute station which automatically transmits digital communications to aircraft stations;

(4) Operate a VHF telephony transmitter providing domestic service or used on domestic flights.

§ 87.91 Operation of transmitter controls.

The holder of a marine radio operator permit or a restricted radiotelephone operator permit must perform only transmitter operations which are controlled by external switches. These operators must not perform any internal adjustment of transmitter frequency determining elements. Further, the stability of the transmitter frequencies at a station operated by these operators must be maintained by the transmitter itself. When using an aircraft

radio station on maritime mobile service frequencies the carrier power of the transmitter must not exceed 250 watts (emission A3E) or 1000 watts (emission R3E, H3E, or J3E).

OPERATING PROCEDURES

§87.103 Posting station license.

(a) *Stations at fixed locations.* The license or a photocopy must be posted or retained in the station's permanent records.

(b) *Aircraft radio stations.* The license must be either posted in the aircraft or kept with the aircraft registration certificate. If a single authorization covers a fleet of aircraft, a copy of the license must be either posted in each aircraft or kept with each aircraft registration certificate.

(c) *Aeronautical mobile stations.* The license must be retained as a permanent part of the station records.

[53 FR 28940, Aug. 1, 1988, as amended at 54 FR 11720, Mar. 22, 1989]

§87.105 Availability of operator permit or license.

All operator permits or licenses must be readily available for inspection.

§87.107 Station identification.

(a) *Aircraft station.* Identify by one of the following means:

(1) Aircraft radio station call sign.

(2) Assigned FCC control number (assigned to ultralight aircraft).

(3) The type of aircraft followed by the characters of the registration marking (''N'' number) of the aircraft, omitting the prefix letter ''N''. When communication is initiated by a ground station, an aircraft station may use the type of aircraft followed by the last three characters of the registration marking.

(4) The FAA assigned radiotelephony designator of the aircraft operating organization followed by the flight identification number.

(5) An aircraft identification approved by the FAA for use by aircraft stations participating in an organized flying activity of short duration.

(b) *Land and fixed stations.* Identify by means of radio station call sign, its location, its assigned FAA identifier, the name of the city area or airport which it serves, or any additional identification required. An aeronautical enroute station which is part of a multistation network may also be identified by the location of its control point.

(c) *Survival craft station.* Identify by transmitting a reference to its parent aircraft. No identification is required when distress signals are transmitted automatically. Transmissions other than distress or emergency signals, such as equipment testing or adjustment, must be identified by the call sign or by the registration marking of the parent aircraft followed by a single digit other than 0 or 1.

(d) *Exempted station.* The following types of stations are exempted from the use of a call sign: Airborne weather radar, radio altimeter, air traffic control transponder, distance measuring equipment, collision avoidance equipment, racon, radio relay, radionavigation land test station (MTF), and automatically controlled aeronautical enroute stations.

§87.109 Station logs.

A station at a fixed location in the international aeronautical mobile service must maintain a written or automatic log in accordance with Paragraph 3.5, Volume II, Annex 10 of the ICAO Convention.

§87.111 Suspension or discontinuance of operation.

The licensee of any airport control tower station or radionavigation land station must notify the nearest FAA regional office upon the temporary suspension or permanent discontinuance of the station. The FAA center must be notified again when service resumes.

[54 FR 11720, Mar. 22, 1989]

Subpart D—Technical Requirements

§87.131 Power and emissions.

The following table lists authorized emissions and maximum power. Power must be determined by direct measurement.

Class of station	Frequency band/ frequency	Authorized emission(s)[9]	Maximum power[1]
Aeronautical advisory	VHF	A3E	10 watts.
Aeronautical multicom	VHF	A3E	10 watts.
Aeronautical enroute and aeronautical fixed.	HF	R3E, H3E, J3E, J7B, H2B	6 kw.
	HF	A1A, F1B, J2A, J2B	1.5 kw.
	VHF	A3E, A9W	200 watts.[2]
Aeronautical search and rescue	VHF	A3E	10 watts.
	HF	R3E, H3E, J3E	100 watts.
Operational fixed	VHF	G3E, F2D	30 watts.
Flight test land	VHF	A3E	200 watts.
	UHF	F2D, F9D, F7D	25 watts.[3]
	HF	H2B, J3E, J7D, J9W	6.0 kw.
Aviation support	VHF	A3E	50 watts.
Airport control tower	VHF	A3E	50 watts.
	Below 400 kHz	A3E	15 watts.
Aeronautical utility mobile	VHF	A3E	10 watts.
Radionavigation land test	108.150 MHz	A9W	1 milliwatt.
	334.550 MHz	A1N	1 milliwatt.
	Other VHF	M1A, XXA, A1A, A1N, A2A, A2D, A9W	1 watt.
	Other UHF	M1A, XXA, A1A, A1N, A2A, A2D, A9W	1 watt.
	5031.0 MHz	F7D	1 watt.
Radionavigation land	Various[4]	Various[4]	Various.[4]
	Aeronautical Frequencies		
Aircraft (Communication)	UHF	F2D, F9D, F7D	25 watts.
	VHF	A3E, A9W	55 watts.
	HF	R3E, H3E, J3E, J7B, H2B, J7D, J9W	400 watts.
	HF	A1A, F1B, J2A, J2B	100 watts.
	Marine Frequencies[5]		
	156.300 MHz	G3E	5 watts.
	156.375 MHz	G3E	5 watts.
	156.400 MHz	G3E	5 watts.
	156.425 MHz	G3E	5 watts.
	156.450 MHz	G3E	5 watts.
	156.625 MHz	G3E	5 watts.
	156.800 MHz	G3E	5 watts.
	156.900 MHz	G3E	5 watts.
	157.425 MHz	G3E	5 watts.
	HF[6]	R3E, H3E, J3E, J2B, F1B, A3E	1000 watts.
			250 watts.
	MF[6]	R3E, H3E, J3E, J2B, F1B	1000 watts.
	HF[6]	A3E	250 watts.
(Radionavigation)	Various[7]	Various[7]	Various.[7]
Aircraft earth	UHF	G1D, G1E, G1W	60 watts.[8]

[1] The power is measured at the transmitter output terminals and the type of power is determined according to the emission designator as follows:
(i) Mean power (pY) for amplitude modulated emissions and transmitting both sidebands using unmodulated full carrier.
(ii) Peak envelope power (pX) for all emission designators other than those referred to in paragraph (i) of this note.
[2] Power and antenna height are restricted to the minimum necessary to achieve the required service.
[3] Transmitter power may be increased to overcome line and duplexer losses but must not exceed 25 watts delivered to the antenna.
[4] Frequency, emission, and maximum power will be determined after coordination with appropriate Government agencies.
[5] To be used with airborne marine equipment type accepted for part 80 (ship) and used in accordance with part 87.
[6] Applicable only to marine frequencies used for public correspondence.
[7] Frequency, emission, and maximum power will be determined by appropriate standards during the type acceptance process.
[8] Power may not exceed 60 watts per carrier. The maximum EIRP may not exceed 2000 watts per carrier.
[9] Excludes automatic link establishment.

[54 FR 11720, Mar. 22, 1989, as amended at 57 FR 45749, Oct. 5, 1992; 62 FR 40308, July 28, 1997]

§ 87.133 Frequency stability.

(a) Except as provided in paragraphs (c), (d), and (f) of this section, the carrier frequency of each station must be maintained within these tolerances:

Frequency band (lower limit exclusive, upper limit inclusive), and categories of stations	Tolerance[1]	Tolerance[2]
(1) Band-9 to 535 kHz:		
Aeronautical stations	100	100
Aircraft stations	200	100
Survival craft stations on 500 kHz	5,000	20 Hz[3]

Frequency band (lower limit exclusive, upper limit inclusive), and categories of stations	Tolerance [1]	Tolerance [2]
Radionavigation stations	100	100
(2) Band-1605 to 4000 kHz:		
Aeronautical fixed stations:		
Power 200 W or less	100	100 [8]
Power above 200 W	50	50 [8]
Aeronautical stations:		
Power 200 W or less	100 [7]	100 [7, 8]
Power above 200 W	50 [7]	50 [7, 8]
Aircraft stations	100 [7]	100 [7]
Survival craft stations on 2182 kHz	200	20 Hz [3]
(3) Band-4 to 29.7 MHz:		
Aeronautical fixed stations:		
Power 500 W or less	50	
Power above 500 W	15	
Single-sideband and Independent-sideband emission:		
Power 500 W or less		50 Hz
Power above 500 W		20 Hz
Class F1B emissions		10 Hz
Other classes of emission:		
Power 500 W or less		20
Power above 500 W		10
Aeronautical stations:		
Power 500 W or less	[7] 100	100 [7]
Power above 500 W	[7] 50	50 [7]
Aircraft stations	[7] 100	100 [7]
Survival craft stations on 8364 kHz	200	50 Hz [3]
(4) Band-29.7 to 100 MHz:		
Aeronautical fixed stations:		
Power 200 W or less	50	
Power above 200 W	30	
Power 50 W or less		30
Power above 50 W		20
Operational fixed stations:		
73–74.6 MHz (Power 50 W or less).	50	30
73–74.6 MHz (Power above 50 W).	20	20
72–73.0 MHz and 75.4–76.0 MHz.	5	5
Radionavigation stations	100	50
(5) Band-100 to 137 MHz:		
Aeronautical stations	[4] 50	20
Emergency locator transmitter test stations.	50	50
Survival craft stations on 121.5 MHz.	50	50
Emergency locator stations	50	50
Aircraft and other mobile stations in the Aviation Services.	50 [5]	30 [10]
Radionavigation stations	20	20
(6) Band-137 to 470MHz:		
Aeronautical stations	50	20
Survival craft stations on 243 MHz	50	50
Aircraft stations	50 [5]	30 [10]
Radionavigation stations	50	50
Emergency locator transmitters on 406 MHz.	N/A	5
(7) Band-470 to 2450 MHz:		
Aeronautical stations	100	20
Aircraft stations	100	20
Aircraft earth station		320 Hz [11]
Radionavigation stations:		
470–960 MHz	500	500
960–1215 MHz	20	20
1215–2450 MHz	500	500
(8) Band-2450 to 10500 MHz:		
Radionavigation stations	[6, 9] 1250	1250 [6, 9]
(9) Band-10.5 GHz to 40 GHz:		
Radionavigation stations	5000	5000

[1] This tolerance is the maximum permitted until January 1, 1990, for transmitters installed before January 2, 1985, and used at the same installation. Tolerance is indicated in parts in 10^6 unless shown as Hertz (Hz).

[2] This tolerance is the maximum permitted after January 1, 1985 for new and replacement transmitters and to all transmitters after January 1, 1990. Tolerance is indicated in parts in 10^6 unless shown as Hertz (Hz).

[3] For transmitters first type accepted or type approved after November 30, 1977.

[4] The tolerance for transmitters type accepted between January 1, 1966, and January 1, 1974, is 30 parts in 10^6. The tolerance for transmitters type accepted after January 1, 1974, and stations using offset carrier techniques is 20 parts in 10^6.

[5] The tolerance for transmitters type accepted after January 1, 1974, is 30 parts in 10^6.

[6] In the 5000 to 5250 MHz band, the FAA requires a tolerance of ±10 kHz for Microwave Landing System stations which are to be a part of the National Airspace System (FAR 171).

[7] For single-sideband transmitters operating in the frequency bands 1605–4000 kHz and 4–29.7 MHz which are allocated exclusively to the Aeronautical Mobile (R) Service, the tolerance is: Aeronautical stations, 10 Hz; aircraft stations, 20 Hz.

[8] For single-sideband radiotelephone transmitters the tolerance is: In the bands 1605–4000 kHz and 4–29.7 MHz for peak envelope powers of 200 W or less and 500 W or less, respectively, 50 Hz; in the bands 1605–4000 kHz and 4–29.7 MHz for peak envelope powers above 200 W and 500 W, respectively, 20 Hz.

[9] Where specific frequencies are not assigned to radar stations, the bandwidth occupied by the emissions of such stations must be maintained within the band allocated to the service and the indicated tolerance does not apply.

[10] Until January 1, 1997, the maximum frequency tolerance for transmitters with 50 kHz channel spacing installed before January 2, 1985, is 50 parts in 10^6.

[11] For purposes of type acceptance, a tolerance of 160 Hz applies to the reference oscillator of the AES transmitter. This is a bench test.

(b) The power shown in paragraph (a) of this section is the peak envelope power for single-sideband transmitters and the mean power for all other transmitters.

(c) For single-sideband transmitters, the tolerance is:

(1) All aeronautical stations on land other than Civil Air Patrol.....10 Hz
(2) All aircraft stations other than Civil Air Patrol.....20 Hz
(3) Civil Air Patrol Stations.....50 Hz

(d) For radar transmitters, except non-pulse signal radio altimeters, the frequency at which maximum emission occurs must be within the authorized frequency band and must not be closer than 1.5/T MHz to the upper and lower limits of the authorized bandwidth, where T is the pulse duration in microseconds.

(e) The Commission may authorize tolerances other than those specified in this section upon a satisfactory showing of need.

(f) The carrier frequency tolerance of transmitters operating in the 1435–1535 MHz and 2310–2390 MHz bands manufactured before January 2, 1985, is 0.003 percent. The carrier frequency tolerance of transmitters operating in the 1435–1535 MHz and 2310–2390 MHz bands manufactured after January 1, 1985, is 0.002 percent. After January 1, 1990, the carrier frequency tolerance of all transmitters operating in the 1435–1535 MHz and 2310–2390 MHz bands is 0.002 percent.

[53 FR 28940, Aug. 1, 1988, as amended at 56 FR 38084, Aug. 12, 1991; 57 FR 45749, Oct. 5, 1992; 58 FR 31027, May 26, 1993]

§ 87.135 Bandwidth of emission.

(a) Occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to 0.5 percent of the total mean power of a given emission.

(b) The authorized bandwidth is the maximum occupied bandwidth authorized to be used by a station.

(c) The necessary bandwidth for a given class of emission is the width of the frequency band which is just sufficient to ensure the transmission of information at the rate and with the quality required under specified conditions.

§ 87.137 Types of emission.

(a) The assignable emissions, corresponding emission designators and authorized bandwidths are as follows:

Class of emission	Emission designator	Authorized bandwidth (kilohertz)		
		Below 50 MHz	Above 50 MHz	Frequency deviation
A1A[1]	100HA1A	0.25		
A1N	300HA1N		0.75	
A2A	2K04A2A	2.74	50	
A2D	6K0A2D		50	
A2D[5]	13K0A2D	.....	50	.....
A3E[2]	6K00A3E		[3]50	
A3E	3K20A3E[15]		[15]25	
A3X[4]	3K20A3X		25	
A9W[5]	13K0A9W		25	
F1B[1]	1K70F1B	1.7		
F1B[1]	2K40F1B	2.5		
F2D	5M0F2D		([9])	
F3E[6]	16K0F3E		20	5
F3E[7]	36K0F3E		40	15
F7D[8]	5M0F7D		([9])	
F9D	5M0F9D		([9])	
G1D	16K0G1D		20kHz	
G1D[16]	21K0G1D		25	
G1E[16]	21K0G1E		25	
G1W[16]	21K0G1W		25	
G3E[6]	16K0G3E		20	5
H2B[10 11]	2K80H2B	3.0		
H3E[11 12]	2K80H3E	3.0		
J2A[1]	100HJ2A	0.25		
J2B[1]	1K70J2B	1.7		
	2K40J2B	2.5		
J3E[11 12]	2K80J3E	3.0		
J7B[11]	2K80J7B	3.0		
J7D	5M0J7D		([9])	
J9W[11]	2K80J9W	3.0		
M1A	620HM1A			
NON	NON		None[15]	
PON[13]	([9])		([9])	
R3E[11 12]	2K80R3E	3.0		
XXA[14]	1K12XXA	2.74		

NOTES:

[1] A1A, F1B, J2A and J2B are permitted provided they do not cause harmful interference to H2B, J3E, J7B and J9W.

[2] For use with an authorized bandwidth of 8.0 kilohertz at radiobeacon stations. A3E will not be authorized:

(i) At existing radiobeacon stations that are not authorized to use A3 and at new radiobeacon stations unless specifically recommended by the FAA for safety purposes.

(ii) At existing radiobeacon stations currently authorized to use A3, subsequent to January 1, 1990, unless specifically recommended by the FAA for safety purposes.

[3] In the band 117.975–136 MHz, the authorized bandwidth is 25 kHz for transmitters type accepted after January 1, 1974.

[4] Applicable only to Survival Craft Stations and to the emergency locator transmitters and emergency locator transmitter test stations employing modulation in accordance with that specified in §87.141 of the Rules. The specified bandwidth and modulation requirements shall apply to emergency locator transmitters for which type acceptance is granted after October 21, 1973.

[5] This emission may be authorized for audio frequency shift keying and phase shift keying for digital data links on any frequency listed in §87.263(a)(1), §87.263(a)(3) or §87.263(a)(5). 13K0A2D emission may be authorized on frequencies not used for voice communications. If the channel is used for voice communications, 13K0A9W emission may be authorized, provided the data is multiplexed on the voice carrier without derogating voice communications.

[6] Applicable to operational fixed stations in the bands 72.0–73.0 MHz and 75.4–76.0 MHz and to CAP stations using F3 on 143.900 MHz and 148.150 MHz.

[7] Applicable to operational fixed stations presently authorized in the band 73.0–74.6 MHz.

[8] The authorized bandwidth is equal to the necessary bandwidth for frequency or digitally modulated transmitters used in aeronautical telemetering and associated aeronautical telemetry or telecommand stations operating in the 1435–1535 MHz and 2310–2390 MHz bands. The necessary bandwidth must be computed in accordance with part 2 of this chapter.

[9] To be specified on license.

[10] H2B must be used by stations employing digital selective calling.

[11] For A1A, F1B and single sideband emissions, except H2B, the assigned frequency must be 1400 Hz above the carrier frequency.

[12] R3E, H3E, and J3E will be authorized only below 25000 kHz. Only H2B, J3E, J7B, and J9W are authorized, except that A3E and H3E may be used only on 3023 kHz and 5680 kHz for search and rescue operations.

[13] The letters "K, L, M, Q, V, W, and X" may also be used in place of the letter "P" for pulsed radars.

[14] Authorized for use at radiobeacon stations.

[15] Applicable only to transmitters of survival craft stations, emergency locator transmitter stations and emergency locator transmitter test stations type accepted after October 21, 1973.

[16] Authorized for use by aircraft earth stations. Lower values of necessary and authorized bandwidth are permitted.

(b) For other emissions, an applicant must determine the emission designator by using part 2 of this chapter.

(c) A license to use radiotelephony includes the use of tone signals or signaling devices whose sole function is to establish or maintain voice communications.

(d) Emissions other than, or bandwidths in excess of, those listed in paragraph (b) of this section, will be authorized only upon a satisfactory showing of need. An application requesting this special license must fully describe the emission desired and the required bandwidth, and must state the purpose of the proposed operation.

[53 FR 28940, Aug. 1, 1988, as amended at 55 FR 7333, Mar. 1, 1990; 55 FR 13535, Apr. 11, 1990; 55 FR 28627, July 12, 1990; 56 FR 11518, Mar. 19, 1991; 57 FR 45749, Oct. 5, 1992; 58 FR 30127, May 26, 1993]

§87.139 Emission limitations.

(a) Except for ELTs and when using single sideband (R3E, H3E, J3E), or frequency modulation (F9) or digital modulation (F9Y) for telemetry or telecommand in the frequency bands 1435–1535 MHz and 2310–2390 MHz, the mean power of any emissions must be attenuated below the mean power of the transmitters (pY) as follows:

(1) When the frequency is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth the attenuation must be at least 25 dB;

(2) When the frequency is removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth the attenuation must be at least 35 dB.

(3) When the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth the attenuation for aircraft station transmitters must be at least 40 dB; and the attenuation for aeronautical station transmitters must be at least $43 + 10 \log_{10}$ pY dB.

(b) For aircraft station transmitters and for aeronautical station transmitters first installed before February 1, 1983, and using H2B, H3E, J3E, J7B or J9W, the mean power of any emissions must be attenuated below the mean power of the transmitter (pY) as follows:

(1) When the frequency is removed from the assigned frequency by more than 50 percent up to and including 150 percent of the authorized bandwidth of 4.0 kHz, the attenuation must be at least 25 dB.

(2) When the frequency is removed from the assigned frequency by more than 150 percent up to and including 250 percent of the authorized bandwidth of 4.0 kHz, the attenuation must be at least 35 dB.

(3) When the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth of 4.0 kHz for aircraft station transmitters the attenuation must be at least 40 dB; and for aeronautical station transmitters the attenuation must be at least $43 + 10 \log_{10}$ pY dB.

(c) For aircraft station transmitters first installed after February 1, 1983,

and for aeronautical station transmitters in use after February 1, 1983, and using H2B, H3E, J3E, J7B or J9W, the peak envelope power of any emissions must be attenuated below the peak envelope power of the transmitter (pX) as follows:

(1) When the frequency is removed from the assigned frequency by more than 50 percent up to and including 150 percent of the authorized bandwidth of 3.0 kHz, the attenuation must be at least 30 dB.

(2) When the frequency is removed from the assigned frequency by more than 150 percent up to and including 250 percent of the authorized bandwidth of 3.0 kHz, the attenuation must be at least 38 dB.

(3) When the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth of 3.0 kHz for aircraft transmitters the attenuation must be at least 43 dB. For aeronautical station transmitters with transmitter power up to and including 50 watts the attenuation must be at least $43 + 10 \log_{10}$ pX dB and with transmitter power more than 50 watts the attenuation must be at least 60 dB.

(d) Except for telemetry in the 1435–1535 MHz band, when the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth for aircraft stations above 30 MHz and all ground stations the attenuation must be at least $43+10 \log_{10}$ pY dB.

(e) When using frequency modulation or digital modulation for telemetry or telecommand in the 1435–1535 MHz and 2310–2390 MHz frequency bands with an authorized bandwidth equal to or less than 1 MHz the emissions must be attenuated as follows:

(1) On any frequency removed from the assigned frequency by more than 100 percent of the authorized bandwidth up to and including 100 percent plus 0.5 MHz, the attenuation must be at least 60 dB, when measured in a 3.0 kHz bandwidth. This signal need not be attenuated more than 25 dB below 1 milliwatt.

(2) On any frequency removed from the assigned frequency by more than 100 percent of the authorized bandwidth plus 0.5 MHz, the attenuation must be at least $55 + 10 \log_{10}$ pY dB when measured in a 3.0 kHz bandwidth.

(f) When using frequency modulation or digital modulation for telemetry or telecommand in the 1435–1535 MHz or 2310–2390 MHz frequency bands with an authorized bandwidth greater than 1 MHz, the emissions must be attenuated as follows:

(1) On any frequency removed from the assigned frequency by more than 50 percent of the authorized bandwidth plus 0.5 MHz up to and including 50 percent of the authorized bandwidth plus 1.0 MHz, the attenuation must be 60 dB, when measured in a 3.0 kHz bandwidth. The signal need not be attenuated more than 25 dB below 1 milliwatt.

(2) On any frequency removed from the assigned frequency by more than 50 percent of the authorized bandwidth plus 1.0 MHz, the attenuation must be at least $55 + 10 \log_{10}$ pY dB, when measured in a 3.0 kHz bandwidth.

(g) The requirements of paragraphs (e) and (f) of this section apply to transmitters type accepted after January 1, 1977, and to all transmitters first installed after January 1, 1983.

(h) For ELTs operating on 121.500 MHz, 243.000 MHz and 406.025 MHz the mean power of any emission must be attenuated below the mean power of the transmitter (pY) as follows:

(1) When the frequency is moved from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth the attenuation must be at least 25 dB;

(2) When the frequency is removed from the assigned frequency my more than 100 percent of the authorized bandwidth the attenuation must be at least 30 dB.

(i) In case of conflict with other provisions of § 87.139, the provisions of this paragraph shall govern for aircraft earth stations. When using G1D, G1E, or G1W emissions in the 1646.5–1660.5 MHz frequency band, the emissions must be attenuated as shown below.

(1) At rated output power, while transmitting a modulated single carrier, the composite spurious and noise output shall be attenuated below the mean power of the transmitter, pY, by at least:

Frequency (MHz)	Attenuation (dB)[1]
.005–1559	83 or (65+10 $\log_{10}$ pY), whichever is greater.
1559–18000	55 or (37+10 $\log_{10}$ pY)[2], whichever is greater.

[1] These values are expressed in dB below the carrier referenced to a 4 kHz bandwidth and relative to the maximum emission envelope level.

[2] Excluding the frequency band of +/−35 kHz or +/−4.00 x the symbol rate (SR), about the carrier frequency, whichever is the greater exclusion.

(2) For transmitters rated at 60 watts or less:

When transmitting two unmodulated carriers, each 3 dB below the rated power, the mean power of any intermodulation products must be at least 24 dB below the mean power of either carrier.

(3) The transmitter emission limit is a function of the modulation type and symbol rate (SR). Symbol Rate is expressed in symbols per second.

(4) While transmitting a single modulated signal at the rated output power of the transmitter, the emissions must be attenuated below the maximum emission level by at least:

Frequency Offset (normalized to SR)	Attenuation (dB)
+/−0.75 x SR	0
+/−1.40 x SR	20
+/−2.80 x SR	40
+/−4.00 x SR or +/−35 kHz Whichever is greater.	F_m

Where:

F_m=55 or (37+10$\log_{10}$ pY), whichever is greater
SR=Symbol Rate
SR=1 x channel rate for BPSK
SR=0.5 x channel rate for QPSK

The mask shall be defined by drawing straight lines through the above points.

[53 FR 28940, Aug. 1, 1988, as amended at 56 FR 11518, Mar. 19, 1991; 57 FR 45749, Oct. 5, 1992; 58 FR 30127, May 26, 1993; 58 FR 67695, Dec. 22, 1993; 59 FR 35269, July 11, 1994]

§87.141 Modulation requirements.

(a) When A3E emission is used, the modulation percentage must not exceed 100 percent. This requirement does not apply to emergency locator transmitters or survival craft transmitters.

(b) A double sideband full carrier amplitude modulated radiotelephone transmitter with rated carrier power output exceeding 10 watts must be capable of automatically preventing modulation in excess of 100 percent.

(c) If any licensed radiotelephone transmitter causes harmful interference to any authorized radio service because of excessive modulation, the Commission will require the use of the transmitter to be discontinued until it is rendered capable of automatically preventing modulation in excess of 100 percent.

(d) Single sideband transmitters must be able to operate in the following modes:

Carrier mode	Level N(dB) of the carrier with respect to peak envelope power
Full carrier (H3E)	O>N>–6.
Suppressed carrier (J3E)	Aircraft stations N<–26≧ Aeronautical stations N<–40.

(e) Each frequency modulated transmitter operating in the band 72.0–76.0 MHz must have a modulation limiter.

(f) Each frequency modulated transmitter equipped with a modulation limiter must have a low pass filter between the modulation limiter and the modulated stage. At audio frequencies between 3 kHz and 15 kHz, the filter must have an attenuation greater than the attenuation at 1 kHz by at least 40 $\log_{10}$ (f/3) db where ''f'' is the frequency in kilohertz. Above 15 kHz, the attenuation must be at least 28 db greater than the attenuation at 1 kHz.

(g) Except that symmetric side bands are not required, the modulation characteristics for ELTs must be in accordance with specifications contained in the Federal Aviation Administration (FAA) Technical Standard Order (TSO) Document TSO–C91a titled ''Emergency Locator Transmitter (ELT) Equipment'' dated April 29, 1985. TSO–C91a is incorporated by reference in accordance with 5 U.S.C. 552(a). TSO–C91a may be obtained from the Department of Transportation, Federal Aviation Administration, Office of Airworthiness, 800 Independence Avenue SW., Washington DC 20591.

(h) ELTs must use A3X emission and may use A3E or NON emissions on an optional basis while transmitting. Each transmission of a synthesized or recorded voice message from an ELT must be preceded by the words ''this is a recording''; transmission of A3E or NON emission must not exceed 90 seconds; and any transmission of A3E or

NON emissions must be followed by at least three minutes of A3X emission.

(i) ELTs manufactured on or after October 1, 1988, must have a clearly defined carrier frequency distinct from the modulation sidebands for the mandatory emission, A3X, and, if used, the A3E or NON emissions. On 121.500 MHz at least thirty per cent of the total power emitted during any transmission cycle with or without modulation must be contained within plus or minus 30 Hz of the carrier frequency. On 243.000 MHz at least thirty percent of the total power emitted during any transmission cycle with or without modulation must be contained within plus or minus 60 Hz of the carrier frequency. Additionally, if the type of emission is changed during transmission, the carrier frequency must not shift more than plus or minus 30 Hz on 121.500 MHz and not more than plus or minus 60Hz on 243.000 MHz. The long term stability of the carrier frequency must comply with the requirements in §87.133 of this part.

(j) Transmitters used at Aircraft earth stations must employ BPSK for transmission rates up to and including 2400 bits per second, and QPSK for higher rates.

[53 FR 28940, Aug. 1, 1988, as amended at 54 FR 11721, Mar. 22, 1989; 56 FR 11518, Mar. 19, 1991; 57 FR 45749, Oct. 5, 1992]

§87.143 Transmitter control requirements.

(a) Each transmitter must be installed so that it is not accessible to, or capable of being operated by persons other than those authorized by the licensee.

(b) Each station must be provided with a control point at the location of the transmitting equipment, unless otherwise specifically authorized. Except for aeronautical enroute stations governed by paragraph (e) of this section, a control point is the location at which the radio operator is stationed. It is the position at which the transmitter(s) can immediately be turned off.

(c) Applicants for additional control points at aeronautical advisory (unicom) stations must specify the location of each proposed control point.

(d) Except for aeronautical enroute stations governed by paragraph (f) of this section, the control point must have the following facilities installed:

(1) A device that indicates when the transmitter is radiating or when the transmitter control circuits have been switched on. This requirement does not apply to aircraft stations;

(2) Aurally monitoring of all transmissions originating at dispatch points;

(3) A way to disconnect dispatch points from the transmitter; and

(4) A way to turn off the transmitter.

(e) A dispatch point is an operating position subordinate to the control point. Dispatch points may be installed without authorization from the Commission, and dispatch point operators are not required to be licensed.

(f) In the aeronautical enroute service, the control point for an automatically controlled enroute station is the computer facility which controls the transmitter. Any computer controlled transmitter must be equipped to automatically shut down after 3 minutes of continuous transmission of an unmodulated carrier.

§87.145 Acceptability of transmitters for licensing.

(a) The Commission publishes a list of type approved and type accepted equipment entitled ''Radio Equipment List—Equipment Acceptable for Licensing.'' Copies of this list are available for inspection at any of the Commission's offices.

(b) Each transmitter must be type accepted for use in these services, except as listed in paragraph (d) of this section. However, aircraft stations which transmit on maritime mobile frequencies must use transmitters type accepted for use in ship stations in accordance with part 80 of this chapter. Type acceptance under part 80 is not required for aircraft earth stations transmitting on maritime mobile-satellite frequencies. Such stations must be type accepted under part 87.

(c) Some radio equipment installed on air carrier aircraft must meet the requirements of the Commission and the requirements of the FAA. The FAA requirements may be obtained from the FAA, Aircraft Maintenance Division, 800 Independence Ave., SW., Washington, DC 20591.

(d) The equipment listed below is exempted from type acceptance. The operation of transmitters which have not been type accepted must not result in harmful interference due to the failure of those transmitters to comply with technical standards of this subpart.

(1) Development or Civil Air Patrol transmitters.

(2) Flight test station transmitters for limited periods where justified.

(3) U.S. Government transmitters furnished in the performance of a U.S. Government contract if the use of type accepted equipment would increase the cost of the contract or if the transmitter will be incorporated in the finished product. However, such equipment must meet the technical standards contained in this subpart.

(4) ELTs notified in accordance with §87.147(e).

(5) Signal generators when used as radionavigation land test stations (MTF).

(e) Aircraft earth stations must correct their transmit frequencies for Doppler effect relative to the satellite. The transmitted signal may not deviate more than 335 Hz from the desired transmit frequency. (This is a root sum square error which assumes zero error for the received ground earth station signal and includes the AES transmit/receive frequency reference error and the AES automatic frequency control residual errors.) The applicant must attest that the equipment provides adequate Doppler effect compensation and where applicable, that measurements have been made that demonstrate compliance. Submission of data demonstrating compliance is not required unless requested by the Commission.

[53 FR 28940, Aug. 1, 1988, as amended at 57 FR 45750, Oct. 5, 1992; 58 FR 30127, May 26, 1993; 58 FR 67695, Dec. 22, 1993]

§87.147 Authorization of equipment.

(a) Type acceptance or notification may be requested by following the type acceptance or notification procedures in part 2 of this chapter. Aircraft transmitters must meet the requirements over an ambient temperature range of –20 degreess to +50 degrees Celsius.

(b) ELTs manufactured after October 1, 1988, must meet the output power characteristics contained in §87.141(i) when tested in accordance with the Signal Enhancement Test contained in subpart N, part 2 of this chapter. A report of the measurements must be submitted with each application for type acceptance. ELTs that meet the output power characteristics of the section must have a permanent label prominently displayed on the outer casing state, ''Meets FCC Rule for improved satellite detection.'' This label, however, must not be placed on the equipment without authorization to do so by the Commission. Application for such authorization may be made either by submission of a new application for type acceptance accompanied by the required fee and all information and test data required by parts 2 and 87 of this chapter or, for ELTs type accepted prior to October 1, 1988, a letter requesting such authorization, including appropriate test data and a showing that all units produced under the original type acceptance authorization comply with the requirements of this paragraph without change to the original circuitry.

(c) An applicant for a station license may request type acceptance for an individual transmitter by following the type acceptance procedure in part 2 of this chapter. Such a transmitter will be individually type accepted and so noted on the station license, but will not generally be included in the Commission's ''Radio Equipment List—Equipment Acceptable for Licensing''.

(d) An applicant for type acceptance of equipment intended for transmission in any of the frequency bands listed in paragraph (d)(3) of this section must notify the FAA of the filing of a type acceptance application. The letter of notification must be mailed to: FAA, Spectrum Engineering Division, 800 Independence Ave. SW., Washington, DC 20591 no later than the date of filing of the application with the Commission.

(1) The notification must describe the equipment, give the manufacturer's identification, antenna characteristics, rated output power, emission type and characteristics, the frequency or frequencies of operation, and essential receiver characteristics if protection is required.

(2) The type acceptance application must include a copy of the notification letter to the FAA. The Commission will not act for 21 days after receipt of the application to afford the FAA an opportunity to comment. If the FAA objects to the application for equipment authorization, it should mail its objection with a showing that the equipment is incompatible with the National Airspace System to: Office of Engineering and Technology—Laurel Laboratory, Authorization and Evaluation Division, 7435 Oakland Mills Rd., Columbia, MD 21046. If the Commission receives such an objection, the Commission will consider the FAA showing before taking final action on the application.

(3) The frequency bands are as follows:

74.800 MHz to 75.200 MHz
108.000 MHz to 137.000 MHz
328.600 MHz to 335.400 MHz
960.000 MHz to 1215.000 MHz
1559.000 to 1626.500 MHz
1646.500 MHz to 1660.500 MHz
5000.000 MHz to 5250.000 MHz
14.000 GHz to 14.400 GHz
15.400 GHz to 15.700 GHz
24.250 GHz to 25.250 GHz
31.800 GHz to 33.400 GHz

(e) Application for notification of ELTs capable of operating on the frequency 406.025 MHz must include sufficient documentation to show that the ELT meets the requirements of §87.199(a). A letter notifying the FAA of the filing of an application for a grant of notification must be mailed to: FAA, Spectrum Engineering Division, 800 Independence Avenue SW., Washington, DC 20591 no later than the date of filing of the application with the Commission.

[53 FR 28940, Aug. 1, 1988, as amended at 54 FR 11721, Mar. 22, 1989; 56 FR 11518, Mar. 19, 1991; 57 FR 45750, Oct. 5, 1992; 58 FR 30127, May 26, 1993; 58 FR 67696, Dec. 22, 1993]

§87.149 Special requirements for automatic link establishment (ALE).

Brief signalling for the purposes of measuring the quality of a radio channel and thereafter establishing communication shall be permitted within the 2 MHz–30 MHz band. Public coast stations licensed under part 80 of this chapter providing high seas service are authorized by rule to use such signalling under the following conditions:

(a) The transmitter power shall not exceed 100 W ERP;

(b) Transmissions must sweep linearly in frequency at a rate of at least 60 kHz per second, occupying any 3 kHz bandwidth for less than 50 milliseconds;

(c) The transmitter shall scan the band no more than four times per hour;

(d) Transmissions within 6 kHz of the following protected frequencies and frequency bands must not exceed 10 μW peak ERP:

(1) Protected frequencies (kHz)

2091.0	4188.0	6312.0	12290.0	16420.0
2174.5	4207.5	8257.0	12392.0	16522.0
2182.0	5000.0	8291.0	12520.0	16695.0
2187.5	5167.5	8357.5	12563.0	16750.0
2500.0	5680.0	8364.0	12577.0	16804.5
3023.0	6215.0	8375.0	15000.0	20000.0
4000.0	6268.0	8414.5	16000.0	25000.0
4177.5	6282.0	10000.0		

(2) Protected bands (kHz)

4125.0–4128.0
8376.25–8386.75
13360.0–13410.0
25500.0–25670.0

(e) The instantaneous signal, which refers to the peak power that would be measured with the frequency sweep stopped, along with spurious emissions generated from the sweeping signal, must be attenuated below the peak carrier power (in watts) as follows:

(1) On any frequency more than 5 Hz from the instantaneous carrier frequency, at least 3 dB;

(2) On any frequency more than 250 Hz from the instantaneous carrier frequency, at least 40 dB; and

(3) On any frequency more than 7.5 kHz from the instantaneous carrier frequency, at least $43 + 10\log_{10}$ (peak power in watts) db.

[62 FR 40308, July 28, 1997]

Subpart E—Frequencies

§87.169 Scope.

This subpart contains class of station symbols and a frequency table which lists assignable frequencies. Frequencies in the Aviation Services will transmit communications for the safe, expeditious, and economic operation of aircraft and the protection of life and

property in the air. Each class of land station and Civil Air Patrol station may communicate in accordance with the particular sections of this part which govern these classes. Land stations in the Aviation Services in Alaska may transmit messages concerning sickness, death, weather, ice conditions or other matters relating to safety of life and property if there is no other established means of communications between the points in question and no charge is made for the communications service.

§87.171 Class of station symbols.

The two or three letter symbols for the classes of station in the aviation services are:

Symbol and class of station

AX—Aeronautical fixed
AXO—Aeronautical operational fixed
FA—Aeronautical land (unspecified)
FAU—Aeronautical advisory (unicom)
FAC—Airport control tower
FAE—Aeronautical enroute
FAM—Aeronautical multicom
FAP—Civil Air Patrol
FAR—Aeronautical search and rescue
FAS—Aviation support
FAT—Flight test
FAW—Automatic weather observation
MA—Aircraft (Air carrier and Private)
MA1—Air carrier aircraft only
MA2—Private aircraft only
MOU—Aeronautical utility mobile
MRT—ELT test
RL—Radionavigation land (unspecified)
RLA—Marker beacon
RLB—Radiobeacon
RLG—Glide path
RLL—Localizer
RLO—VHF omni-range
RLS—Surveillance radar
RLT—Radionavigation land test
RLW—Microwave landing system
TJ—Aircraft earth station in the Aeronautical Mobile-Satellite Service

[53 FR 28940, Aug. 1, 1988, as amended at 57 FR 45750, Oct. 5, 1992]

§87.173 Frequencies.

(a) The table in paragraph (b) of this section lists assignable carrier frequencies or frequency bands.

(1) The single letter symbol appearing in the ''Subpart'' column indicates the subpart of this part which contains additional applicable regulations.

(2) The two or three letter symbol appearing in the ''Class of Station'' column indicates the class of station to which the frequency is assignable.

(b) Frequency table:

Frequency or frequency band	Subpart	Class of station	Remarks
90–110 kHz	Q	RL	LORAN''C''.
190–285 kHz	Q	RLB	Radiobeacons.
200–285 kHz	O	FAC	Air traffic control.
325–405 kHz	O	FAC	Air traffic control.
325–435 kHz	Q	RLB	Radiobeacons.
410.0 kHz	F	MA	International direction-finding for use outside of U.S.
457.0 kHz	F	MA	Working frequency for aircraft on over water flights.
500.0 kHz	F	MA	International calling and distress frequency for ships and aircraft on over water flights.
510.525 kHz	Q	RLB	Radiobeacons.
2182.0 kHz	F	MA	International distress and calling.
2371.0 kHz	R	MA, FAP	Civil Air Patrol.
2374.0 kHz	R	MA, FAP	Civil Air Patrol.
2648.0 kHz	I	AX	Alaska station.
2851.0 kHz	I, J	MA, FAE, FAT	International HF (AFI); Flight test.
2854.0 kHz	I	MA, FAE	International HF (SAT).
2866.0 kHz	I	MA, FAE	Domestic HF (Alaska).
2869.0 kHz	I	MA, FAE	International HF (CEP).
2872.0 kHz	I	MA, FAE	International HF (NAT).
2875.0 kHz	I	MA, FAE	Domestic HF.
2878.0 kHz	I	MA1, FAE	Domestic HF; International HF (AFI).
2887.0 kHz	I	MA, FAE	International HF (CAR).
2899.0 kHz	I	MA, FAE	International HF (NAT).
2911.0 kHz	I	MA, FAE	Domestic HF.
2932.0 kHz	I	MA, FAE	International HF (NP).
2935.0 kHz	I	MA, FAE	International HF (SAT).
2944.0 kHz	I	MA, FAE	International HF (SAM and MID).
2956.0 kHz	I	MA, FAE	Domestic HF.
2962.0 kHz	I	MA, FAE	International HF (NAT).
2971.0 kHz	I	MA, FAE	International HF (NAT).
2992.0 kHz	I	MA, FAE	International HF (MID).
2998.0 kHz	I	MA, FAE	International HF (CWP).
3004.0 kHz	I, J	MA, FAE, FAT	International HF (NCA); Flight test.

Frequency or frequency band	Subpart	Class of station	Remarks
3013.0 kHz	I	MA, FAE	Long distance operational control.
3016.0 kHz	I	MA, FAE	International HF (EA, NAT).
3019.0 kHz	I	MA1, FAE	Domestic HF; International HF ((NCA).
3023.0 kHz	F, M, O	MA1, FAR, FAC	Search and rescue communications.
3281.0 kHz	K	MA, FAS	Lighter-than-air craft and aeronautical stations serving lighter-than-air craft.
3413.0 kHz	I	MA, FAE	International HF (CEP).
3419.0 kHz	I	MA, FAE	International HF (AFI).
3425.0 kHz	I	MA, FAE	International HF (AFI).
3434.0 kHz	I	MA1, FAE	Domestic HF.
3443.0 kHz	J	MA, FAT	
3449.0 kHz	I	MA, FAE	Domestic HF.
3452.0 kHz	I	MA, FAE	International HF (SAT).
3455.0 kHz	I	MA, FAE	International HF (CAR, CWP).
3467.0 kHz	I	MA, FAE	International HF (AFI, MID, SP).
3470.0 kHz	I	MA, FAE	Domestic HF and International HF (SEA).
3473.0 kHz	I	MA, FAE	International HF (MID).
3476.0 kHz	I	MA, FAE	International HF (INO, NAT).
3479.0 kHz	I	MA, FAE	International HF (EUR, SAM).
3485.0 kHz	I	MA, FAE	International HF (EA, SEA).
3491.0 kHz	I	MA, FAE	International HF (EA).
3494.0 kHz	I	MA, FAE	Long distance operational control.
4125.0 kHz	F	MA	Distress and safety with ships and coast stations.
4466.0 kHz	R	MA, FAP	Civil Air Patrol.
4469.0 kHz	R	MA, FAP	Civil Air Patrol.
4506.0 kHz	R	MA, FAP	Civil Air Patrol.
4509.0 kHz	R	MA, FAP	Civil Air Patrol.
4550.0 kHz	I	AX	Gulf of Mexico.
4582.0 kHz	R	MA, FAP	Civil Air Patrol.
4585.0 kHz	R	MA, FAP	Civil Air Patrol.
4601.0 kHz	R	MA, FAP	Civil Air Patrol.
4604.0 kHz	R	MA, FAP	Civil Air Patrol.
4627.0 kHz	R	MA, FAP	Civil Air Patrol.
4630.0 kHz	R	MA, FAP	Civil Air Patrol.
4645.0 kHz	I	AX	Alaska.
4657.0 kHz	I	MA, FAE	International HF (AFI, CEP).
4666.0 kHz	I	MA, FAE	International HF (CWP).
4669.0 kHz	I	MA, FAE	International HF (MID, SAM).
4672.0 kHz	I	MA1, FAE	Domestic HF.
4675.0 kHz	I	MA, FAE	International HF (NAT).
4678.0 kHz	I	MA, FAE	International HF (NCA).
4947.5 kHz	I	AX	Alaska.
5036.0 kHz	I	AX	Gulf of Mexico.
5122.5 kHz	I	AX	Alaska.
5167.5 kHz	I	FA	Alaska emergency.
5310.0 kHz	I	AX	Alaska.
5451.0 kHz	J	MA, FAT	
5463.0 kHz	I	MA1, FAE	Domestic HF.
5469.0 kHz	J	MA, FAT	
5427.0 kHz	I	MA, FAE	Domestic HF.
5484.0 kHz	I	MA, FAE	Domestic HF.
5490.0 kHz	I	MA, FAE	Domestic HF.
5493.0 kHz	I	MA, FAE	International HF (AFI).
5496.0 kHz	I	MA, FAE	Domestic HF.
5508.0 kHz	I	MA1, FAE	Domestic HF.
5520.0 kHz	I	MA, FAE	International HF (CAR).
5526.0 kHz	I	MA, FAE	International HF (SAM).
5529.0 kHz	I	MA, FAE	Long distance operational control.
5538.0 kHz	I	MA, FAE	Long distance operational control.
5547.0 kHz	I	MA, FAE	International HF (CEP).
5550.0 kHz	I	MA, FAE	International HF (CAR).
5559.0 kHz	I	MA, FAE	International HF (SP).
5565.0 kHz	I	MA, FAE	International HF (SAT).
5571.0 kHz	J	MA, FAT	
5574.0 kHz	I	MA, FAE	International HF (CEP).
5598.0 kHz	I	MA, FAE	International HF (NAT).
5616.0 kHz	I	MA, FAE	International HF (NAT).
5628.0 kHz	I	MA, FAE	International HF (NP).
5631.0 kHz	I	MA, FAE	Domestic HF.
5634.0 kHz	I	MA, FAE	International HF (INO).
5643.0 kHz	I	MA, FAE	International HF (SP).
5646.0 kHz	I	MA, FAE	International HF (NCA).
5649.0 kHz	I	MA, FAE	International HF (NAT, SEA).
5652.0 kHz	I	MA, FAE	International HF (AFI, CWP).

Frequency or frequency band	Subpart	Class of station	Remarks
5655.0 kHz	I	MA, FAE	International HF (EA, SEA).
5658.0 kHz	I	MA, FAE	International HF (AFI, MID).
5661.0 kHz	I	MA, FAE	International HF (CWP, EUR).
5664.0 kHz	I	MA, FAE	International HF (NCA).
5667.0 kHz	I	MA, FAE	International HF (MID).
5670.0 kHz	I	MA, FAE	International HF (EA).
5680.0 kHz	F, M, O	MA1, FAC, FAR	Search and rescue communications.
5887.5 kHz	I	AX	Alaska.
6532.0 kHz	I	MA, FAE	International HF (CWP).
6535.0 kHz	I	MA, FAE	International HF (SAT).
6550.0 kHz	J	MA, FAT	
6556.0 kHz	I	MA, FAE	International HF (SEA).
6559.0 kHz	I	MA, FAE	International HF (AFI).
6562.0 kHz	I	MA, FAE	International HF (CWP).
6571.0 kHz	I	MA, FAE	International HF (EA).
6574.0 kHz	I	MA, FAE	International HF (AFI).
6577.0 kHz	I	MA, FAE	International HF (CAR).
6580.0 kHz	I	MA, FAE	Domestic HF.
6586.0 kHz	I	MA, FAE	International HF (CAR).
6592.0 kHz	I	MA, FAE	International HF (NCA).
6598.0 kHz	I	MA, FAE	International HF (EUR).
6604.0 kHz	I	MA, FAE	Domestic HF.
6622.0 kHz	I	MA, FAE	International HF (NAT).
6625.0 kHz	I	MA, FAE	International HF (MID).
6628.0 kHz	I	MA, FAE	International HF (NAT).
6631.0 kHz	I	MA, FAE	International HF (MID).
6637.0 kHz	I	MA, FAE	Long distance operational control.
6640.0 kHz	I	MA, FAE	Long distance operational control.
6649.0 kHz	I	MA, FAE	International HF (SAM).
6655.0 kHz	I	MA, FAE	International HF (NP).
6661.0 kHz	I	MA, FAE	International HF (NP).
6673.0 kHz	I	MA, FAE	International HF (AFI, CEP).
8015.0 kHz	I	AX	Alaska.
8364.0 kHz	F	MA,	Search and rescue communications.
8822.0 kHz	J	MA, FAT	
8825.0 kHz	I	MA, FAE	International HF (NAT).
8831.0 kHz	I	MA, FAE	International HF (NAT).
8843.0 kHz	I	MA, FAE	International HF (CEP).
8846.0 kHz	I	MA, FAE	International HF (CAR).
8855.0 kHz	I	MA, FAE	Domestic HF; International HF (SAM).
8861.0 kHz	I	MA, FAE	International HF (SAT).
8864.0 kHz	I	MA, FAE	International HF (NAT).
8867.0 kHz	I	MA, FAE	International HF (SP).
8876.0 kHz	I	MA, FAE	Domestic HF.
8879.0 kHz	I	MA, FAE	International HF (INO, NAT).
8891.0 kHz	I	MA, FAE	International HF (NAT).
8894.0 kHz	I	MA, FAE	International HF (AFI).
8897.0 kHz	I	MA, FAE	International HF (EA).
8903.0 kHz	I	MA, FAE	International HF (AFI, CWP).
8906.0 kHz	I	MA, FAE	International HF (NAT).
8918.0 kHz	I	MA, FAE	International HF (CAR, MID).
8933.0 kHz	I	MA, FAE	Long distance operational control.
8942.0 kHz	I	MA, FAE	International HF (SEA).
8951.0 kHz	I	MA, FAE	International HF (MID).
10018.0 kHz	I	MA, FAE	International HF (MID).
10024.0 kHz	I	MA, FAE	International HF (SAM).
10033.0 kHz	I	MA, FAE	Long distance operational control.
10042.0 kHz	I	MA, FAE	International HF (EA).
10045.0 kHz	J	MA, FAT	
10048.0 kHz	I	MA, FAE	International HF (NP).
10057.0 kHz	I	MA, FAE	International HF (CEP).
10066.0 kHz	I	MA, FAE	Domestic HF; International HF (SEA).
10075.0 kHz	I	MA, FAE	Long distance operational control.
10081.0 kHz	I	MA, FAE	International HF (CWP).
10084.0 kHz	I	MA, FAE	International HF (EUR, SP).
10096.0 kHz	I	MA, FAE	International HF (NCA, SAM).
11279.0 kHz	I	MA, FAE	International HF (NAT).
11282.0 kHz	I	MA, FAE	International HF (CEP).
11288.0 kHz	J	MA, FAT	
11291.0 kHz	I	MA, FAE	International HF (SAT).
11300.0 kHz	I	MA, FAE	International HF (AFI).
11306.0 kHz	J	MA, FAT	
11309.0 kHz	I	MA, FAE	International HF (NAT).
11327.0 kHz	I	MA, FAE	International HF (SP).

Frequency or frequency band	Subpart	Class of station	Remarks
11330.0 kHz	I	MA, FAE	International HF (AFI, NP).
11336.0 kHz	I	MA, FAE	International HF (NAT).
11342.0 kHz	I	MA, FAE	Long distance operational control.
11348.0 kHz	I	MA, FAE	Long distance operational control.
11357.0 kHz	I	MA, FAE	Domestic HF.
11360.0 kHz	I	MA, FAE	International HF (SAM).
11363.0 kHz	I	MA, FAE	Domestic HF.
11375.0 kHz	I	MA, FAE	International HF (MID).
11384.0 kHz	I	MA, FAE	International HF (CWP).
11387.0 kHz	I	MA, FAE	International HF (CAR).
11396.0 kHz	I	MA, FAE	International HF (CAR, EA, SEA).
13273.0 kHz	I	MA, FAE	International HF (AFI).
13288.0 kHz	I	MA, FAE	International HF (AFI, EUR, MID).
13291.0 kHz	I	MA, FAE	International HF (NAT).
13294.0 kHz	I	MA, FAE	International HF (AFI).
13297.0 kHz	I	MA, FAE	International HF (CAR, EA, SAM).
13300.0 kHz	I	MA, FAE	International HF (CEP, CWP, NP, SP).
13303.0 kHz	I	MA, FAE	International HF (EA, NCA).
13306.0 kHz	I	MA, FAE	International HF (INO, NAT).
13309.0 kHz	I	MA, FAE	International HF (EA, SEA).
13312.0 kHz	I, J	MA, FAE, FAT	International HF (MID); Flight test.
13315.0 kHz	I	MA, FAE	International HF (NCA, SAT).
13318.0 kHz	I	MA, FAE	International HF (SEA).
13330.0 kHz	I	MA, FAE	Long distance operational control.
13348.0 kHz	I	MA, FAE	Long distance operational control.
13357.0 kHz	I	MA, FAE	International HF (SAT).
17904.0 kHz	I	MA, FAE	International HF (CEP, CWP, NP, SP).
17907.0 kHz	I	MA, FAE	International HF (CAR, EA, SAM, SEA).
17925.0 kHz	I	MA, FAE	Long distance operational control.
17946.0 kHz	I	MA, FAE	International HF (NAT).
17955.0 kHz	I	MA, FAE	International HF (SAT).
17958.0 kHz	I	MA, FAE	International HF (NCA).
17961.0 kHz	I	MA, FAE	International HF (AFI, EUR, INO, MID).
17964.0 kHz	J	MA, FAT	
21931.0 kHz	J	MA, FAT	
21964.0 kHz	I	MA, FAE	Long distance operational control.
26618.5 kHz	R	MA, FAP	Civil Air Patrol.
26620.0 kHz	R	MA, FAP	Civil Air Patrol.
26621.5 kHz	R	MA, FAP	Civil Air Patrol.
72.020–75.980 MHz	P	FA, AXO	Operational fixed; 20 kHz spacing.
75.000 MHz	Q	RLA	Marker beacon.
108.000 MHz	Q	RLT	
108.000–117.950 MHz	Q	RLO	VHF omni-range.
108.050 MHz	Q	RLT	
108.100–111.950 MHz	Q	RLL	ILS localizer.
108.100 MHz	Q	RLT	
108.150 MHz	Q	RLT	
118.000–121.400 MHz	O	MA, FAC, FAW	25 kHz channel spacing.
121.500 MHz	G, H, I, J, K, M, O	MA, FAU, FAE, FAT, FAS, FAC, FAM, FAP	Emergency and distress.
121.600–121.925 MHz	O, L, Q	MA, FAC, MOU, RLT	25 kHz channel spacing.
121.950 MHz	K	FAS	
121.975 MHz	F	MA2, FAW	Air traffic control operations.
122.000 MHz	F	MA	Air carrier and private aircraft enroute flight advisory service provided by FAA.
122.025 MHz	F	MA2, FAW	Air traffic control operations.
122.050 MHz	F	MA	Air traffic control operations.
122.075 MHz	F	MA2, FAW	Air traffic control operations.
122.100 MHz	F, O	MA, FAC	Air traffic control operations.
122.125–122.675	F	MA2	Air traffic control operations; 25 kHz spacing.
122.700 MHz	G, L	MA, FAU, MOU	Unicom at airports with no control tower; Aeronautical utility stations.
122.725 MHz	G, L	MA2, FAU, MOU	Unicom at airports with no control tower; Aeronautical utility stations.
122.750 MHz	F	MA2	Private fixed wing aircraft air-to-air communications.
122.775 MHz	K	MA, FAS	
122.800 MHz	G, L	MA, FAU, MOU	Unicom at airports with no control tower; Aeronautical utility stations.
122.825 MHz	I	MA, FAE	Domestic VHF
122.850 MHz	H, K,	MA, FAM, FAS	
122.875 MHz	I	MA, FAE	Domestic VHF

Frequency or frequency band	Subpart	Class of station	Remarks
122.900 MHz	F, H, L M	MA, FAR, FAM, MOU	
122.925 MHz	H	MA2, FAM	
122.950 MHz	G, L	MA2, FAU, MOU	Unicom at airports with no control tower; Aeronautical utility stations.
122.975 MHz	G, L	MA2, FAU, MOU	Unicom at airports with no control tower; Aeronautical utility stations.
123.000 MHz	G, L	MA, FAU, MOU	Unicom at airports with no control tower; Aeronautical utility stations.
123.025 MHz	F	MA2	Helicopter air-to-air communications; Air traffic control operations.
123.050 MHz	G, L	MA2, FAU, MOU	Unicom at airports with no control tower; Aeronautical utility stations.
123.075 MHz	G, L	MA2, FAU, MOU	Unicom at airports with no control tower; Aeronautical utility stations.
123.100 MHz	M, O	MA, FAC, FAR	
123.125 MHz	J	MA, FAT	Itinerant.
123.150 MHz	J	MA, FAT	Itinerant.
123.175 MHz	J	MA, FAT	Itinerant.
123.200 MHz	J	MA, FAT	
123.225 MHz	J	MA, FAT	
123.250 MHz	J	MA, FAT	
123.275 MHz	J	MA, FAT	
123.300 MHz	K	MA, FAS	
123.325 MHz	J	MA, FAT	
123.350 MHz	J	MA, FAT	
123.375 MHz	J	MA, FAT	
123.400 MHz	J	MA, FAT	Itinerant.
123.425 MHz	J	MA, FAT	
123.450 MHz	J	MA, FAT	
123.475 MHz	J	MA, FAT	
123.500 MHz	K	MA, FAS	
123.525 MHz	J	MA, FAT	
123.550 MHz	J	MA, FAT	
123.575 MHz	J	MA, FAT	Itinerant.
123.6–128.8 MHz	O	MA, FAC, FAW	25 kHz channel spacing.
128.825–132.000 MHz	I	MA, FAE	Domestic VHF; 25 kHz channel spacing.
132.025–135.975 MHz	O	MA, FAC, FAW	25 kHz channel spacing.
136.000–136.075 MHz	0, S	MA, FAC, FAW	Air traffic control operations.
136.100 MHz			Reserved for future unicom or AWOS.
136.125–136.175 MHz	0, S	MA, FAC, FAW	Air traffic control operations.
136.200 MHz			Reserved for future unicom or AWOS.
136.225–136.250 MHz	0, S	MA, FAC, FAW	Air traffic control operations.
136.275 MHz			Reserved for future unicom or AWOS.
136.300–136.350 MHz	0, S	MA, FAC, FAW	Air traffic control operations.
136.375 MHz			Reserved for future unicom or AWOS.
136.400–136.450 MHz	0, S	MA, FAC, FAW	Air traffic control operations.
136.475 MHz			Reserved for future unicom or AWOS.
136.500–136.600 MHz	I	MA, FAE	Domestic VHF.
136.625 MHz	I	MA, FAE	Domestic VHF.
136.650 MHz	I	MA, FAE	Domestic VHF.
136.675 MHz	I	MA, FAE	Domestic VHF.
136.700 MHz	I	MA, FAE	Domestic VHF.
136.725 MHz	I	MA, FAE	Domestic VHF.
136.750 MHz	I	MA, FAE	Domestic VHF.
136.775 MHz	I	MA, FAE	Domestic VHF.
136.800 MHz	I	MA, FAE	Domestic VHF.
136.825 MHz	I	MA, FAE	Domestic VHF.
136.850 MHz	I	MA, FAE	Domestic VHF.
136.875 MHz	I	MA, FAE	Domestic VHF.
136.900 MHz	I	MA, FAE	International and domestic VHF.
136.925 MHz	I	MA, FAE	International and domestic VHF.
136.950 MHz	I	MA, FAE	International and domestic VHF.
136.975 MHz	I	MA, FAE	International and domestic VHF.
143.75 MHz	R	MA,FAP	Civil Air Patrol.
143.900 MHz	R	MA, FAP	Civil Air Patrol.
148.150 MHz	R	MA, FAP	Civil Air Patrol.
156.300 MHz	F	MA	For communications with ship stations under specific conditions.
156.375 MHz	F	MA	For communications with ship stations under specific conditions; Not authorized in New Oreleans vessel traffic service area.
156.400 MHz	F	MA	For communications with ship stations under specific conditions.

Frequency or frequency band	Subpart	Class of station	Remarks
156.425 MHz	F	MA	For communications with ship stations under specific conditions.
156.450 MHz	F	MA	For communications with ship stations under specific conditions.
156.625 MHz	F	MA	For communications with ship stations under specific conditions.
156.800 MHz	F	MA	Distress, safety and calling frequency; For communications with ship stations under specific conditions.
156.900 MHz	F	MA	For communications with ship stations under specific conditions.
157.425 MHz	F	MA	For communications with commercial fishing vessels under specific conditions except in Great Lakes and St. Lawrence Seaway areas.
243.000 MHz	F	MA	Emergency and distress frequency for use of survival craft and emergency locator transmitters.
328.600–335.400 MHz	Q	RLG	ILS glide path.
334.550 MHz	Q	RLT	
334.700 MHz	Q	RLT	
406.25 MHz	F, G, H, I, J, K, M, O	MA, FAU, FAE, FAT, FAS, FAC, FAM, FAP	Emergency and distress.
960–1215 MHz	F, Q	MA, RL	Electronic aids to air navigation.
978.000 MHz	Q	RLT	
979.000 MHz	Q	RLT	
1030.000 MHz	Q	RLT	
1104.000 MHz	Q	RLT	
979.000 MHz	Q	RLT	
1300–1350 MHz	F, Q	MA, RLS	Surveillance radars and transponders.
1435–1535 MHz	F, J	MA, FAT	Aeronautical telemetry and telecommand operations.
1559–1626.5 MHz	F, Q	MA, RL	Aeronautical radionavigation.
1646.5–1660.5 MHz	F	TJ	Aeronautical Mobile-Satellite (R).
2310–2390 MHz	J	MA, FAT	Aeronautical telemetry and telecommand operations.
2700–2900 MHz	Q	RLS	Airport surveillance and weather radar.
4200–4400 MHz	F	MA	Radio altimeters.
5000–5250 MHz	Q	MA, RLW	Microwave landing system.
5031.000 MHz	Q	RLT	
5350–5470 MHz	F	MA	Airborne radars and associated airborne beacons.
8750–8850 MHz	F	MA	Airborne doppler radar.
9000–9200 MHz	Q	RLS	Land-based radar.
9300–9500 MHz	F, Q	MA	Airborne radars and associated airborne beacons.
13250–13400 MHz	F	MA	Airborne doppler radar.
14000–14400 MHz	F, Q	MA, RL	Aeronautical radionavigation.
15400–15700 MHz	Q	RL	Aeronautical radionavigation.
24250–25250 MHz	F, Q	MA, RL	Aeronautical radionavigation.
31800–33400 MHz	F, Q	MA, RL	Aeronautical radionavigation.

[53 FR 28940, Aug. 1, 1988, as amended at 54 FR 11721, Mar. 22, 1989; 55 FR 7333, Mar. 1, 1990; 55 FR 28628, July 12, 1990; 56 FR 21083, May 7, 1991; 56 FR 51656, Oct. 15, 1991; 57 FR 45750, Oct. 5, 1992; 58 FR 30127, May 26, 1993]

Subpart F—Aircraft Stations

§ 87.185 Scope of service.

(a) Aircraft stations must limit their communications to the necessities of safe, efficient, and economic operation of aircraft and the protection of life and property in the air, except as otherwise specifically provided in this part. Contact with an aeronautical land station must only be attempted when the aircraft is within the serivce area of the land station. however, aircraft stations may transmit advisory information on air traffic control, unicom or aeronautical multicom frequencies for the benefit and use of other stations monitoring these frequencies in accordance with FAA recommended traffic advisory practices.

(b) Aircraft public correspondence service must be made available to all persons without discrimination and on reasonable demand, and must communicate without discrimination with any public coast station or mobile-satellite earth station authorized to provide aircraft public correspondence service.

(c) Aircraft public correspondence service on maritime mobile frequencies

may only be carried by aircraft stations licensed to use maritime mobile frequencies and must follow the rules for public correspondence in part 80.

(d) Aircraft public correspondence service on Aeronautical Mobile-Satellite (R) Service frequencies may only be carried on aircraft earth stations licensed to use Aeronautical Mobile-Satellite (R) frequencies and are subject to the rules for public correspondence in this part. Aircraft public correspondence service on Maritime Mobile-Satellite Service frequencies may only be carried by aircraft earth stations licensed to use Maritime Mobile-Satellite frequencies and are subject to the rules for public correspondence in part 80.

[53 FR 28940, Aug. 1, 1988, as amended at 57 FR 45750, Oct. 5, 1992]

§87.187 Frequencies.

(a) Frequencies used for air-ground Communications are listed in subpart E. Aircraft stations may use frequencies assigned to Government or non-Government aeronautical stations or radionavigation land stations if the communications are within the aeronautical or radionavigation land station scope of service.

(b) 410 kHz is the international direction-finding frequency for use outside the continental United States.

(c) 457 kHz is an authorized working frequency for flights over the high seas.

(d) 500 kHz an international calling and distress frequency for aircraft on flights over the high seas. Except for distress, urgency or safety messages an aircraft station must not transmit on 500 kHz during the silence periods for three minutes twice each hour beginning at x h. 15 and x h.45 Coordinated Universal Time (u.t.c.).

(e) The frequency 2182 khz is an international distress and calling frequency for use by ship, aircraft and survival craft stations. Aircraft stations must use J3E emission when operating on 2182 kHz and communicating with domestic public and private coast stations. The emission H3E may be used when communicating with foreign coast and ship stations.

(f) The frequencies 3023 kHz, 5680 kHz, 122.900 MHz and 123.100 MHz are authorized for use by aircraft engaged in seach and rescue activities in accordance with subpart M. These frequencies may be used for air-air and air-ground communications.

(g) The frequency 4125 kHz may be used for distress and safety communications between aircraft and ship and coast maritime mobile stations.

(h) The frequency 8364.0 kHz is authorized for use of survival craft for search and rescue communications with stations in the maritime mobile service.

(i) The frequencies in the band 121.975–122.675 MHz are authorized for use by private aircraft of air traffic control operations.

(1) The frequencies 122.00 and 122.050 MHz are authorized for use by air carrier and private aircraft stations for enroute flight advisory service (EFAS) provided by the FAA;

(2) The frequency 122.100 MHz is authorized for use by air carrier aircraft stations for air traffic control operations at locations in Alaska where other frequencies are not available for air traffic control.

(j) The frequency 122.750 MHz is authoried for use by private fixed wing aircraft for air-air communications. The frequency 123.025 MHz is authorized for use by helicopters for air-air Communications.

(k) The frequencies 121.500 MHz and 243.000 MHz are emergency and distress frequences available for use by survival craft stations, emergency locator transmitters and equipment used for survival pruposes. Use of 121.500 MHz and 243.00 MHz shall be limited to transmission of signals and communications for survival purposes. Type A2A, A3E or A3N emission may be employed, except in the case of emergency locator transmitters where A3E, A3X and NON are permitted.

(l) The frequencies 156.300, 156.375, 156,400, 156,425, 156.450, 156.625, 156.800 156.900 and 157.425 MHz may be used by aircraft stations to communicate with ship stations in accordance with part 80 and the following conditions:

(1) The altitude of aircraft stations must not exceed 300 meters (1,000 feet), except for reconnaissance aircraft participating in icebreaking operations

where an altitude of 450 meters (1,500 feet) is allowed;

(2) Aircraft station transmitter power must not exceed five watts;

(3) The frequency 156.300 MHz may be used for safety purposes only. The frequency 156.800 MHz may be used for distress, safety and calling purposes only.

(4) Except in the Great Lakes and along the St. Lawrence Seaway the frequency 157.425 MHz is available for communications with commerical fishing vessels.

(5) The frequency 156.375 MHz cannot be used in the New Orleans, LA, VTS protection area. No harmful interference shall be caused to the VTS.

(m) The frequency 406.025 MHz is an emergency and distress frequency available for use by emergency locator transmitters. Use of this frequency must be limited to transmission of distress and safety communications.

(n) The frequency band 960–1215 MHz is for the use of airborne electronic aids to air navigation and directly associated land stations.

(o) The frequency band 1300-1350 MHz is for surveillance radar stations and associated airborne transponders.

(p) The frequency band 1435–1525 MHz is available on a primary basis and the 1525–1535 MHz is available on a secondary basis for telemetry and telecommand associated with the flight testing of aircraft, missiles, or related major components. This includes launching into space, reentry into the earth's atmosphere and incidental orbiting prior to reentry. The following frequencies are shared with flight telemetry mobile stations: 1444.5, 1453.5, 1501.5, 1515.5, 1524.5 and 1525.5 MHz. See § 87.303(d).

NOTE: Aeronautical telemetry operations must protect mobile-satellite operations in the 1525–2535 MHz band and maritime mobile-satellite operations in the 1530–1535 MHz band.

(q) The frequencies in the band 1545.000–1559.000 MHz and 1646.500–1660.500 MHz are authorized for use by the Aeronautical Mobile-Satellite (R) Service. The use of the bands 1544.000–1545.000 MHz (space-to-Earth) and 1645.500–1646.500 MHz (Earth-to-space) by the Mobile-Satellite Service is limited to distress and safety operations. In the frequency bands 1549.500–1558.500 MHz and 1651.000–1660.000 MHz, the Aeronautical Mobile-Satellite (R) requirements that cannot be accommodated in the 1545.000–1549.500 MHz, 1558.500–1559.000 MHz, 1646.500–1651.000 MHz, and 1660.000–1660.500 MHz bands shall have priority access with real-time preemptive capability for communications in the Mobile-Satellite service. Systems not interoperable with the Aeronautical Mobile-Satellite (R) Service shall operate on a secondary basis. Account shall be taken of the priority of safety-related communications in the Mobile-Satellite Service.

(r) The frequency band 1559–1626.5 MHz is available for airborne electronic aids to air navigation and any associated land station.

(s) The frequency band 4200–4400 MHz is reserved exclusively for radio altimeters.

(t) The frequency band 5350–5470 MHz in the aeronautical radionavigation service is limited to airborne radars and associated airborne beacons.

(u) The frequency band 8750–8850 MHz is available for use by airborne doppler radars in the aeronautical radionavigation service only on the condition that they must accept any interference which may be experienced from stations in the radiolocation service in the band 8500–10,000 MHz.

(v) The frequency band 9300–9500 MHz is limited to airborne radars and associated airborne beacons.

(w) The frequency band 13250–13400 MHz available for airborne doppler radar use.

(x) The frequency bands 14000–14400, 24250–25250, 31800–33400 MHz are available for airborne radionavigation devices.

(y) Brief keyed RF signals (keying the transmitter by momentarily depressing the microphone ''push-to-talk'' button) may be transmitted from aircraft for the control of airport lights on the following frequencies:

(1) Any air traffic control frequency listed in § 87.421.

(2) FAA Flight Service Station frequencies 121.975–122.675 MHz.

(3) The unicom frequencies 122.700, 122.725, 122.800, 122.950, 122.975, 123.000, 123.050 and 123.075 MHz.

(4) Aviation support station frequencies listed in § 87.232(b): 121.950,

123.300 and 123.500 MHz if the frequency is assigned to a station at the airport and no harmful interference is caused to voice communications. If no such station is located at the concerned airport, aircraft may use one of the aviation support station frequencies for the control of airport lights.

(5) The frequency 122.9 MHz when it is used as the common traffic advisory frequency at the concerned airport.

(z) Frequencies for public correspondence between ships and public coast stations in the maritime mobile service (except frequencies in the 156–174 MHz band) and coast earth stations in the maritime mobile-satellite service are available for public correspondence between aircraft and public coast stations and coast earth stations, respectively. The transmission of public correspondence from aircraft must not cause interference to maritime communications.

(aa) Frequencies in the 454.675–459.975 MHz band are available in the Public Mobile Radio Service (part 22) for use on board aircraft for communications with land mobile stations which are interconnected to the nationwide public telephone system.

(bb) The frequencies 121.950 MHz, 122.850 MHz and 127.050[1] MHz are authorized for air-to-air use for aircraft up to and including 3 km (10,000 ft) mean sea level in the vicinity of Grand Canyon National Park in Arizona within the area bounded by the following coordinates:

36–28–00 N. Lat; 112–47–00 W. Long.
36–28–00 N. Lat; 112–48–00 W. Long.
35–50–00 N. Lat; 112–48–00 W. Long.
35–43–00 N. Lat; 112–47–00 W. Long.

(cc) The frequency 120.650[1] MHz is authorized for air-to-air use for aircraft up to and including 3 km (10,000 ft) mean sea level within the area bounded by the following coordinates:

35–59–45 N. Lat; 114–51–45 W. Long.
36–09–30 N. Lat; 114–50–00 W. Long.
36–09–30 N. Lat; 114–02–55 W. Long.
35–54–45 N. Lat; 113–48–45 W. Long.
35–54–45 N. Lat; 114–41–45 W. Long.

[1] Until further notice this frequency is available for air-to-air use as described in the Grand Canyon vicinity. Availability is a result of the FAA's assignment of this frequency. If the FAA reassigns this frequency the Commission may require air-to-air use to cease.

[53 FR 28940, Aug. 1, 1988, as amended at 54 FR 23214, May 31, 1989; 54 FR 49995, Dec. 4, 1989; 55 FR 7333, Mar. 1, 1990; 56 FR 11518, Mar. 19, 1991; 56 FR 18525, Apr. 23, 1991; 57 FR 45750, Oct. 5, 1992; 58 FR 30127, May 26, 1993; 58 FR 44954, Aug. 25, 1993; 58 FR 52021, Oct. 6, 1993; 60 FR 37829, July 24, 1995; 60 FR 40227, Aug. 7, 1995]

§87.189 Requirements for public correspondence equipment and operations.

(a) Transmitters used for public correspondence by aircraft stations in the maritime mobile frequency bands must be authorized by the Commission in conformity with part 80 of this chapter.

(b) Transmitters used for public correspondence by aircraft stations in the Aeronautical Mobile-Satellite (R) or Maritime Mobile-Satellite frequencies must be type-accepted by the Commission in conformity with part 87. Aircraft earth stations that are required to be commissioned to use a privately owned satellite system also must meet the provisions of §87.51.

(c) A continuous watch must be maintained on the frequencies used for safety and regularity of flight while public correspondence communications are being handled. For aircraft earth stations, this requirement is satisfied by compliance with the priority and preemptive access requirements of §87.187(p).

(d) All communications in the Aeronautical Mobile Service and the Aeronautical Mobile-Satellite (R) Service have priority over public correspondence.

(e) Transmission of public correspondence must be suspended when such operation will delay or interfere with message pertaining to safety of life and property or regularity of flight, or when ordered by the captain of the aircraft.

[53 FR 28940, Aug. 1, 1988, as amended at 57 FR 45750, Oct. 5, 1992]

§87.191 Foreign aircraft stations.

(a) Aircraft of member States of the International Civil Aviation Organization may carry and operate radio transmitters in the United States airspace only if a license has been issued by the State in which the aircraft is

registered and the flight crew is provided with a radio operator license of the proper class, issued or recognized by the State in which the aircraft is registered. The use of radio transmitters in the United States airspace must comply with these rules and regulations.

(b) Notwithstanding paragraph (a) of this section where an agreement with a foreign government has been entered into with respect to aircraft registered in the United States but operated by an aircraft operator who is subject to regulation by that foreign government, the aircraft radio station license and aircraft radio operator license may be issued by such foreign government.

EMERGENCY LOCATOR TRANSMITTERS

§ 87.193 Scope of service.

Transmissions by emergency locator transmitters (ELTs) are intended to be actuated manually or automatically and operated automatically as part of an aircraft or a survival craft station as a locating aid for survival purposes.

§ 87.195 Frequencies.

(a) ELTs transmit on the frequency 121.500 MHz, using A3E, A3X or NON emission. ELTs that transmit on the frequency 406.025 MHz use G1D emission.

(b) The frequency 243.000 MHz is an emergency and distress frequency available for use by survival craft stations, ELTs and equipment used for survival purposes which are also equipped to transmit on the frequency 121.500 MHz. Use of 243.000 MHz must be limited to transmission of signals and communications for survival purposes. In the case of ELTs use of A3E, A3X or NON emission is permitted.

[53 FR 28940, Aug. 1, 1988, as amended at 56 FR 11518, Mar. 19, 1991; 58 FR 30128, May 26, 1993]

§ 87.197 ELT test procedures.

ELT testing must avoid outside radiation. Bench and ground tests conducted outside of an RF-shielded enclosure must be conducted with the ELT terminated into a dummy load.

§ 87.199 Special requirements for 406.025 MHz ELTs.

(a) Except for the spurious emission limits specified in §87.139(h), 406.025 MHz ELTs must meet all the technical and performance standards contained in the Radio Technical Commission for Aeronautics document titled ''Minimum Operational Performance Standards 406 MHz Emergency Locator Transmitters (ELT)'' Document No RTCA/DO–204 dated September 29, 1989. This RTCA document is incorporated by reference in accordance with 5 U.S.C. 552(a), and 1 CFR part 51. Copies of the document are available and may be obtained from the Radio Technical Commission of Aeronautics, One McPherson Square, 1425 K Street NW., Washington, DC, 20005. The document is available for inspection at Commission headquarters at 1919 M Street NW., Washington, DC 20554. Copies may also be inspected at the Office of the Federal Register, 800 North Capital Street NW., suite 700, Washington, DC.

(b) The 406.025 MHz ELT must contain as an integral part a homing beacon operating only on 121.500 MHz that meets all the requirements described in the RTCA Recommended Standards document described in paragraph (a) of this section. The 121.500 MHz homing beacon must have a continuous duty cycle that may be interrupted during the transmission of the 406.025 MHz signal only.

(c) Prior to submitting a notification application of a 406.025 MHz ELT, the ELT must be certified by a test facility recognized by one of the COSPAS/SARSAT Partners that the equipment satisfies the design characteristics associated with the COSPAS/SARSAT document COSPAS/SARSAT 406 MHz Distress Beacon Type Approval Standard (C/S T.007). Additionally, an independent test facility must certify that the ELT complies with the electrical and environmental standards associated with the RTCA Recommended Standards.

(d) The procedures for obtaining a grant of notification from the Commission are contained in subpart J of part 2 of this chapter.

(e) An identification code, issued by the National Oceanic and Atmospheric Administration (NOAA), the United

States Program Manager for the 406.025 MHz COSPAS/SARSAT satellite system, must be programmed in each ELT unit to establish a unique identification for each ELT station. With each marketable ELT unit the manufacturer or grantee must include a postage prepaid registration card printed with the ELT identification code addressed to: NOAA/NESDIS, SARSAT Operations Division, E/SP3, Federal Building 4, Washington, DC 20233. The registration card must request the owner's name, address, telephone number, type of aircraft, alternate emergency contact and include the following statement: ''WARNING—failure to register this ELT with NOAA before installation could result in a monetary forfeiture being issued to the owner.''

(f) To enhance protection of life and property it is mandatory that each 406.025 MHz ELT must be registered with NOAA before installation and that information be kept up-to-date. In addition to the identification plate or label requirements contained in §§2.925, 2.926 and 2.1003 of this chapter, each 406.025 MHz ELT must be provided on the outside with a clearly discernable permanent plate or label containing the following statement: ''The owner of this 406.025 MHz ELT must register the NOAA identification code contained on this label with the National Oceanic and Atmospheric Administration (NOAA) whose address is: NOAA, NOAA/SARSAT Operations Division, E/SP3, Federal Building 4, Washington, D.C. 20233.'' Aircraft owners shall advise NOAA in writing upon change of aircraft or ELT ownership, or any other change in registration information. Fleet operators must notify NOAA upon transfer of ELT to another aircraft outside of the owners control, or an other change in registration information. NOAA will provide registrants with proof of registration and change of registration postcards.

(g) For 406.025 MHz ELTs whose identification code can be changed after manufacture, the identification code shown on the plant or label must be easily replaceable using commonly available tools.

[58 FR 30128, May 26, 1993, as amended at 59 FR 35269, July 11, 1994]

Subpart G—Aeronautical Advisory Stations (Unicoms)

§87.213 Scope of service.

(a) An aeronautical advisory station (unicom) must provide service to any aircraft station upon request and without discrimination. A unicom must provide impartial information concerning available ground services.

(b)(1) Unicom transmissions must be limited to the necessities of safe and expeditious operation of aircraft such as condition of runways, types of fuel available, wind conditions, weather information, dispatching, or other necessary information. At any airport at which a control tower, control tower remote communications outlet station (RCO) or FAA flight service station is located, unicoms must not transmit information pertaining to the conditions of runways, wind conditions, or weather information during the hours of operation of the control tower, RCO or FAA service station.

(2) On a secondary basis, unicoms may transmit communications which pertain to the efficient portal-to-portal transit of an aircraft, such as requests for ground transportation, food or lodging.

(3) Communications between unicoms and air carrier must be limited to the necessities of safety of life and property.

(4) Unicoms may communicate with aeronautical utility stations and ground vehicles concerning runway conditions and safety hazards on the airport when neither a control tower nor FAA flight service station is in operation.

(c) Unicoms must not be used for air traffic control (ATC) purposes other than to relay ATC information between the pilot and air traffic controller. Relaying of ATC information is limited to the following:

(1) Revisions of proposed departure time;

(2) Takeoff, arrival or flight plan cancellation time;

(3) ATC clearances, provided a letter of agreement is obtained from the FAA by the licensee of the unicom.

[53 FR 28940, Aug. 1, 1988, as amended at 55 FR 30464, July 26, 1990]

§ 87.215 Supplemental eligibility.

(a) A unicom and any associated dispatch or control points must be located on the airport to be served.

(b) Only one unicom will be authorized to operate at an airport which does not have a control tower, RCO or FAA flight service station. At an airport which has a part-time or full-time control tower, RCO or FAA flight service station, the one unicom limitation does not apply and the airport operator and all aviation services organizations may be licensed to operate a unicom on the assigned frequency.

(c) At an airport where only one unicom may be licensed, when the Commission believes that the unicom has been abandoned or has ceased operation, another unicom may be licensed on an interim basis pending final determination of the status of the original unicom. An applicant for an interim license must notify the present licensee and must comply with the notice requirements of paragraph (d) of this section.

(d) An applicant for a unicom license, renewal or modification of frequency assignment at an airport which does not have a control tower, RCO or FAA flight service station must notify in writing the owner of the airport and all aviation service organizations located at the airport. The notice must include the applicant's name and address, the name of the airport and a statement that the applicant intends to file an application with the Commission for a unicom. The notice must be given within the ten days preceding the filing of the application with the Commission. Each applicant must submit a statement that either notice has been given and include the date of notification, or notice is not required because the applicant owns the airport and there are no organizations that should be notified.

[53 FR 28940, Aug. 1, 1988, as amended at 55 FR 30464, July 26, 1990]

§ 87.217 Frequencies.

(a) Only one unicom frequency will be assigned at any one airport. The Commission will assign a frequency based on maximum geographic cochannel separation. However, applicants may request a particular frequency which will be taken into consideration when the assignment is made. The frequencies assignable to unicoms are:

(1) 122.950 MHz at airports which have a full-time control tower or full-time FAA flight service station.

(2) 122.700, 122.725, 122.800, 122.975, 123.000, 123.050 or 123.075 MHz at all other airports.

(b) 121.500 MHz: emergency and distress only.

[53 FR 28940, Aug. 1, 1988, as amended at 55 FR 30464, July 26, 1990; 58 FR 67696, Dec. 22, 1993]

Subpart H—Aeronautical Multicom Stations

§ 87.237 Scope of service.

(a) The communications of an aeronautical multicom station (multicom) must pertain to activities of a temporary, seasonal or emergency nature involving aircraft in flight. Communications are limited to directing or coordinating ground activities from the air or aerial activities from the ground. Air-to-air communications will be authorized if the communications are directly connected with the air-to-ground or ground-to-air activities described above. Multicom communications must not include those air/ground communications provided for elsewhere in this part.

(b) If there is not unicom and an applicant is unable to meet the requirements for a unicom license, the applicant will be eligible for a multicom license.

(1) The multicom license becomes invalid when a unicom is established at the landing area.

(2) Multicoms must not be used for ATC purposes other than the relay of ATC information between the pilot and air traffic controller. Relaying of ATC information is limited to the following:

(i) Revisions of proposed departure time;

(ii) Takeoff, arrival flight plan cancellation time;

(iii) ATC clearances, provided a letter of agreement is obtained from the FAA by the licensee of the multicom.

(3) Communications by a multicom must be limited to the safe and expeditious operation of private aircraft, pertaining to the conditions of runways, types of fuel available, wind conditions, weather information, dispatching or other information. On a secondary basis, multicoms may transmit communictions which pertain to efficient portal-to-portal transit of an aircraft such as requests for ground transportation, food or lodging.

§87.239 Supplemental eligibility.

An application for a multicom must include a showing demonstrating why such a station is necessary, based on the scope of service defined above.

§87.241 Frequencies.

(a) 121.500 MHz: emergency and distress only;
(b) 122.850 or 122.900 MHz;
(c) 122.925 MHz: available for assignment to communicate with aircraft when coordinating foresty management and fire suppression, fish and game management and protection, and environmental monitoring and protection.

Subpart I—Aeronautical Enroute and Aeronautical Fixed Stations

AERONAUTICAL ENROUTE STATIONS

§87.261 Scope of service.

(a) Aeronautical enroute stations provide operational control communications to aircraft along domestic or international air routes. Operational control communications include the safe, efficient and economical operation of aircraft, such as fuel, weather, position reports, aircraft performance, and essential services and supplies. Public correspondence is prohibited.

(b) Service must be provided to any aircraft station licensee who makes cooperative arrangements for the operation, maintenance and liability of the stations which are to furnish enroute service. In emergency or distress situations service must be provided without prior arrangements.

(c) Except in Alaska, only one aeronautical enroute station licensee will be authorized at any one location. In Alaska, only one aeronautical enroute station licensee in the domestic service and one aeronautical enroute station licensee in the international service will be authorized at any one location. (Because enroute stations may provide service over a large area containing a number of air routes or only provide communications in the local area of an airport, location here means the area which can be adequately served by the particular station.)

(d) In Alaska, only stations which serve scheduled air carriers will be licensed to operate aeronautical enroute stations. Applicants must show that the station will provide communications only along routes served by scheduled air carriers.

§87.263 Frequencies.

(a) *Domestic VHF service.* (1) The frequencies in the 128.825–132.000 MHz band and the frequencies 136.500 MHz, 136.525 MHz, 136.550 MHz, 136.575 MHz, 136.625 MHz, 136.600 MHz, 136.625 MHz, 136.650 MHz, 136.675 MHz, 136.700 MHz and 136.725 MHz are available to serve domestic routes. The frequencies 136.900 MHz, 136.925 MHz, 136.950 MHz and 136.975 MHz are available to serve domestic and international routes. The frequencies 136.750 MHz, 136.775 MHz, 136.800 MHz, 136.825 MHz, 136.850 MHz and 136.875 MHz are also available to enroute stations located at least 288 kilometers (180 miles) from the Gulf of Mexico shoreline (outside the Gulf of Mexico Region). Frequency assignments are based on 25 kHz spacing. Use of these frequencies must be compatible with existing operations and must be in accordance with pertinent international treaties and agreements.

(2) A system or network of interconnected enroute stations may employ offset carrier techniques on the frequencies listed in paragraph (a)(1). The carrier frequencies of the individual transmitters must not be offset by more than ±8kHz.

(3) The frequencies 122.825 and 122.875 MHz are available for assignment to enroute stations which provide local area service to aircraft approaching or departing a particular airport. These frequencies will be assigned without regard to the restrictions contained in §87.261 (c) and (d). Only organizations

operating aircraft with a maximum capacity of 56 passengers or 8,200 kg (18,000 lbs) cargo will be authorized use of these enroute frequencies.

(4) In Alaska, the frequencies 131.500, 131.600, 131.800 and 131.900 MHz may be assigned to aeronautical enroute stations without regard to the restrictions contained in § 87.261 (c) and (d).

(5) The frequencies 136.750 MHz, 136.775 MHz, 136.800 MHz, 136.825 MHz, 136.850 MHz and 136.875 MHz are available in the Gulf of Mexico Region to serve domestic routes over the Gulf of Mexico and adjacent coastal areas. Assignment of these six frequencies is reserved until January 1, 1994, for helicopter flight following systems. Applicants must provide a showing of need for all frequencies requested. Assignment of these six frequencies in the Gulf of Mexico Region is not subject to the conditions contained in § 87.261(c) and paragraph (a)(2) of this section. Frequency assignments are based on 25 kHz spacing. Use of these frequencies must be compatible with existing operations and must be in accordance with pertinent international treaties and agreements. For the purpose of this paragraph, the Gulf of Mexico Region is defined as an area bounded on the east, north and west by a line 288 km (180 miles) inland from the Gulf of Mexico shoreline. Inland stations using these frequencies must be located within forty-eight kilometers (30 miles) of the Gulf of Mexico shoreline.

(b) *Domestic HF service.* (1) Regular use of high frequencies for aeronautical enroute or any aeronautical mobile (R) communications in the domestic service within the continental United States (excluding Alaska) will not be authorized.

(2) These frequencies (carrier) are available for assignment to serve aircraft operating in support of offshore drilling operations in open sea areas beyond the range of VHF propagation:

kHz	
2878.0	4672.0
3019.0	5463.0
3434.0	5508.0

(3) Alaska: The following frequencies (carrier) are available for assignment to serve domestic air routes in the Alaska area:

(i) *Throughout Alaska:* Shared with the FAA and assigned where an applicant shows the need for a service not provided by the FAA.

kHz	
2866.0	5631.0

(ii) *Alaska Aleutian chain and feeders.*

kHz	
2911.0	8855.0
2956.0	10066.0
5496.0	11363.0
6580.0	

(iii) *Central and Southeast Alaska and feeders.*

kHz	
2875.0	6580.0
2911.0	6604.0
3470.0	8876.0
5484.0	11357.0

(iv) The following frequencies (carrier) are available to enroute stations in Alaska without regard to the restrictions contained in § 87.261 (c) or (d). These frequencies may also be used for communications between enroute stations concerning matters directly affecting aircraft with which they are engaged. Enroute stations located at an uncontrolled airport shall not transmit information concerning runway, wind or weather conditions during the operating hours of a unicom.

kHz	
3449.0	5472.0
5167.5[1]	5490.0

[1] The frequency 5167.5 kHz is available to any station for emergency communications in Alaska. No airborne operations are permitted. Peak envelope power of stations operating on this frequency must not exceed 150 watts. This frequency may also be used by Alaska private fixed stations for calling purposes, but only for establishing communications.

(c) *International VHF service.* Frequencies in the 128.825–132.000 and 136.000–137.000 MHz bands are available to enroute stations serving international flight operations. Frequency assignments are based on 25 kHz channel spacing. Proposed operations must be compatible with existing operations in the band.

(d) *International HF service.* High frequencies (carrier) available to enroute stations serving international flight

operations on the Major World Air Route Areas (MWARA's), as defined in the international Radio Regulations and the ICAO Assignment Plan, are:

(1) Central East Pacific (CEP):

kHz	
2869.0	8843.0
3413.0	10057.0
4657.0	11282.0
5547.0	13300.0
5574.0	17904.0
6673.0	

(2) Central West Pacific (CWP):

kHz	
2998.0	6562.0
3455.0	8903.0
4666.0	10081.0
5652.0	11384.0
5661.0	13300.0
6532.0	17904.0

(3) North Pacific (NP):

kHz	
2932.0	10048.0
5628.0	11330.0
6655.0	13300.0
6661.0	17904.0

(4) South Pacific (SP):

kHz	
3467.0	10084.0
5559.0	11327.0
5643.0	13300.0
8867.0	17904.0

(5) North Atlantic (NAT):

kHz	
2872.0	8825.0
2899.0	8831.0
2962.0	8864.0
2971.0	8879.0
3016.0	8891.0
3476.0	8906.0
4675.0	11279.0
5598.0	11309.0
5616.0	11336.0
5649.0	13291.0
6622.0	13306.0
6628.0	17946.0

(6) Europe (EUR):

kHz	
3479.0	10084.0
5661.0	13288.0

kHz—Continued

6598.0	17961.0

(7) South America (SAM):

kHz	
2944.0	10024.0
3479.0	10096.0
4669.0	11360.0
5526.0	13297.0
6649.0	17907.0
8855.0	

(8) South Atlantic (SAT):

kHz	
2854.0	8861.0
2935.0	11291.0
3452.0	13315.0
5565.0	13357.0
6535.0	17955.0

(9) Southeast Asia (SEA):

kHz	
3470.0	10066.0
3485.0	11396.0
5649.0	13309.0
5655.0	13318.0
6556.0	17907.0
8942.0	

(10) East Asia (EA):

kHz	
3016.0	10042.0
3485.0	11396.0
3491.0	13297.0
5655.0	13303.0
5670.0	13309.0
6571.0	17907.0
8897.0	

(11) Middle East (MID):

kHz	
2944.0	6631.0
2992.0	8918.0
3467.0	8951.0
3473.0	10018.0
4669.0	11375.0
5658.0	13288.0
5667.0	13312.0
6625.0	17961.0

(12) Africa (AFI):

kHz	
2851.0	6673.0
2878.0	8894.0
3419.0	8903.0

kHz—Continued

3425.0	8894.0
3467.0	11300.0
4657.0	11330.0
5493.0	13273.0
5652.0	13288.0
5658.0	13294.0
6559.0	17961.0
6574.0	

(13) Indian Ocean (INO):

kHz

3476.0	13306.0
5634.0	17961.0
8879.0	

(14) North Central Asia (NCA):

kHz

3004.0	6592.0
3019.0	10096.0
4678.0	13303.0
5646.0	13315.0
5664.0	17958.0

(15) Caribbean (CAR):

kHz

2887.0	8846.0
3455.0	8918.0
5520.0	11387.0
5550.0	11396.0
6577.0	13297.0
6586.0	17907.0

(e) *Long distance operational control.* Long distance operational control frequencies provide communications between aeronautical enroute stations and aircraft stations anywhere in the world for control of the regularity and efficiency of flight and safety of aircraft. World-wide frequencies are not assigned by administrations for MWARA and Regional and Domestic Air Route Area (RDARA).

kHz

3013.0	10075.0
3494.0	11342.0
5529.0	11348.0
5538.0	13330.0
6637.0	13348.0
6640.0	17925.0
8933.0	21964.0
10033.0	

(f) *121.500 MHz:* Emergency and distress only.

[53 FR 28940, Aug. 1, 1988, as amended at 54 FR 11721, Mar. 22, 1989; 55 FR 28628, July 12, 1990; 56 FR 21084, May 7, 1991; 58 FR 44954, Aug. 25, 1993]

§ 87.265 Administrative communications.

Domestic VHF aeronautical enroute stations authorized to use A9W emission on any frequency listed in §87.263(a)(1) or §87.263(a)(3) may transmit digital administrative communications on a secondary basis, in addition to the operational and control communications routinely permitted under §87.261(a) above. Such secondary administrative communications must directly relate to the business of a participating aircraft operator in providing travel and transportation services to the flying public or to the travel, transportation or scheduling activities of the aircraft operator itself. Stations transmitting administrative communications must provide absolute priority for operational control and other safety communications by means of an automatic priority control system.

[54 FR 11721, Mar. 22, 1989]

AERONAUTICAL FIXED STATIONS

§ 87.275 Scope of service.

Aeronautical fixed stations provide non-public point-to-point communications service pertaining to safety, regularity and economy of flight. These stations must transmit, without discrimination, messages from aircraft which have entered into cooperative arrangements governing the operation and maintenance of such stations. Aeronautical fixed station licensees are required to transmit, without charge or discrimination, all emergency communications.

§ 87.277 Supplemental eligibility.

Aeronautical fixed station licenses will only be issued to the licensees of associated aeronautical enroute stations. Aeronautical fixed station licenses will not be issued where adequate land line facilities are available.

§87.279 Frequencies.

(a) *United States (except Alaska).* The applicant must request specific frequencies in accordance with §2.106 of this chapter. The Commission will determine the suitability of the applicant's selection based on the probability of interference to and from existing services assigned on the same or adjacent frequencies. All new assignments of frequencies will be subject to such conditions as may be required to minimize the possibility of harmful interference to existing services.

(b) *Alaska.* (1) Only stations which serve scheduled air carriers will be licensed. Applicants must show that the station will provide communications only along routes served by the scheduled operations of such carriers.

(2) The following frequencies are available in Alaska. These frequencies will only be licensed in conjunction with licenses for use of the aeronautical enroute frequencies specified in §87.263(c).

kHz	
2648.0	5310.0
4645.0	5887.5
4947.5	8015.0
5122.5	

(c) *Gulf of Mexico.* In addition to the provisions of paragraph (a) of this section, the frequencies 4550.0 and 5036.0 kHz are available in the Gulf of Mexico.

Subpart J—Flight Test Stations

§87.299 Scope of service.

The use of flight test stations is restricted to the transmission of necessary information or instructions relating directly to tests of aircraft or components thereof.

§87.301 Supplemental eligibility.

(a) The following entities are eligible for flight test station licenses:

(1) Manufacturers of aircraft or major aircraft components;

(2) A parent corporation or its subsidiary if either corporation is a manufacturer of aircraft or major aircraft components; or

(3) Educational institutions and persons primarily engaged in the design, development, modification, and flight test evaluation of aircraft or major aircraft components.

(b) Each application must be accompanied by a statement containing facts sufficient to establish the applicant's eligibility under the criteria in paragraph (a) of this section.

§87.303 Frequencies.

(a) These frequencies are available for assignment to flight test land and aircraft stations:

3281.0[1]	123.175[2]	123.225[3]	123.400[2]
	123.200[3]	123.375[3]	123.450[3]

(b) These additional frequencies are available for assignment only to flight test stations of aircraft manufacturers:

123.125[2]	123.275[3]	S123.425[3]	123.550[3]
123.150[2]	123.325[3]	S123.475[3]	123.575[2]
123.250[3]	123.350[3]	S123.525[3]	

[1] When R3E, H3E or J3E emission is used, the assigned frequency will be 3282.4 kHz (3281.0 kHz carrier frequency).

[2] This frequency is available only to itinerant stations that have a requirement to be periodically transferred to various locations.

[3] Mobile station operations on these frequencies are limited to an area within 320 km (200 mi) of an associated flight test land station.

(c) These frequencies are available for equipment test, emergency and backup use with aircraft beyond the range of VHF propagation. Either H2B, J3E, J7B or J9W emission may be used.

Frequencies (carrier) available kHz:

kHz	
2851.0	8822.0
3004.0	10045.0
3443.0	11288.0
5451.0	11306.0
5469.0	13312.0
5571.0	17964.0
6550.0	21931.0

(d)(1) Frequencies in the bands 1435–1525 MHz and 2360–2390 MHz are assigned primarily for telemetry and telecommand operations associated with the flight testing of manned or unmanned aircraft and missiles, or their major components. The band 1525–1535 MHz is also available for these purposes on a secondary basis. In the band 2320–2345 MHz, the mobile and radiolocation services are allocated on

a primary basis until a Broadcast-Satellite (sound) service has been brought into use in such a manner as to affect or be affected by the mobile and radiolocation services in those service areas. Permissible uses of these bands include telemetry and telecommand transmissions associated with the launching and reentry into the earth's atmosphere as well as any incidental orbiting prior to reentry of manned or unmanned objects undergoing flight tests. In the 1435–1530 MHz band, the following frequencies are shared with flight telemetry mobile stations: 1444.5, 1453.5, 1501.5, 1515.5, 1524.5 and 1525.5 MHz. In the 2320–2345 MHz and 2360–2390 MHz bands, the following frequencies may be assigned on a co-equal basis for telemetry and associated telecommand operations in fully operational or expendable and re-usable launch vehicles whether or not such operations involve flight testing: 2332.5, 2364.5, 2370.5 and 2382.5 MHz. In the 2360–2390 MHz band, all other telemetry and telecommand uses are secondary to the above stated launch vehicle uses.

(2) The authorized bandwidths for stations operating in the bands 1435.0–1525.0 MHz, 1525.0–1535.0 MHz and 2310.0–2390.0 MHz are normally 1, 3 or 5 MHz. Applications for greater bandwidths will be considered in accordance with the provisions of §87.135. Each assignment will be centered on a frequency between 1435.5 MHz and 1534.5 MHz or between 2310.5 MHz and 2389.5 MHz, with 1 MHz channel spacing.

(e) 121.500 MHz: Emergency and distress only.

[53 FR 28940, Aug. 1, 1988, as amended at 55 FR 4175, Feb. 7, 1990; 58 FR 44954, Aug. 25, 1993; 58 FR 67696, Dec. 22, 1993; 60 FR 37829, July 24, 1995; 62 FR 11107, Mar. 11, 1997]

§87.305 Frequency coordination.

(a)(1) Each application for a new station license, renewal or modification of an existing license concerning flight test frequencies, except as provided in paragraph (b) of this section, must be accompanied by a statement from a frequency advisory committee. The committee must comment on the frequencies requested or the proposed changes in the authorized station and the probable interference to existing stations. The committee must consider all stations operating on the frequencies requested or assigned within 320 km (200 mi) of the proposed area of operation and all prior coordinations and assignments on the proposed frequency(ies). The committee must also recommend frequencies resulting in the minimum interference. The Committee must coordinate in writing all requests for frequencies or proposed operating changes in the 1435–1535 MHz and 2310–2390 MHz bands with the responsible Government Area Frequency Coordinators listed in the NTIA ''Manual of Regulations and Procedures for Federal Radio Frequency Management.'' In addition, committee recommendations may include comments on other technical factors and may contain recommended restrictions which it believes should appear on the license.

(2) The frequency advisory committee must be organized to represent all persons who are eligible for non-Government radio flight test stations. A statement of organization service area and composition of the committee must be submitted to the Commission for approval. The functions of any advisory committee are purely advisory to the applicant and the Commission, and its recommendations are not binding upon either the applicant or the Commission.

(b) These applications need not be accompanied by evidence of frequency coordination:

(1) Any application for modification not involving change in frequency(ies), power, emission, antenna height, antenna location or area of operation.

(2) Any application for 121.5 MHz.

[53 FR 28940, Aug. 1, 1988, as amended at 54 FR 11721, Mar. 22, 1989; 58 FR 44954, Aug. 25, 1993]

§87.307 Cooperative use of facilities.

(a) The Commission will license only one flight test land station per airport, except as provided in paragraph (d) of this section.

(b) Flight test land stations located at an airport are required to provide service without discrimination, on a cooperative maintenance basis, to anyone eligible for a flight test station license.

(c) When the licensee of a flight test land station intends to conduct flight tests at an area served by another flight test land station, which may result in interference, the licensees must coordinate their schedules in advance. If no agreement is reached, the Commission will determine the time division upon request by either licensee.

(d) An application for an additional flight test land station at an airport where such a station is already authorized must be accompanied by a factual showing which must include the following:

(1) Reasons why shared use of the currently licensed flight test land station is not possible; and

(2) Results of coordination with the current licensee of the flight test station at the airport demonstrating that an additional station can be accommodated without significant degradation of the reliability of existing facilities.

Subpart K—Aviation Support Stations

§87.319 Scope of service.

Aviation support stations are used for the following types of operations:

(a) Pilot training;

(b) Coordination of soaring activities between gliders, tow aircraft and land stations;

(c) Coordination of activities between free balloons or lighter-than-air aircraft and ground stations;

(d) Coordination between aircraft and aviation service organizations located on an airport concerning the safe and efficient portal-to-portal transit of the aircraft, such as the types of fuel and ground services available; and

(e) Promotion of safety of life and property.

§87.321 Supplemental eligibility.

Each application must be accompanied by a statement that the applicant is either the operator of a flying school or lighter-than-air aircraft, engaged in soaring or free ballooning activities, or the operator of an airport or an aviation service organization located on an airport.

§87.323 Frequencies.

(a) 121.500 MHz: Emergency and distress only.

(b) The frequencies 121.950, 123.300 and 123.500 MHz are available for assignment to aviation support stations used for pilot training, coordination of lighter-than-air aircraft operations, or coordination of soaring or free ballooning activities. Applicants for 121.950 MHz must coordinate their proposal with the appropriate FAA Regional Spectrum Management Office. A coordination statement must accompany the application. Applicants for aviation support land stations may request frequency(ies) based upon their eligibility although the Commission reserves the right to specify the frequency of assignment. Aviation support mobile stations will be assigned 123.300 and 123.500 MHz. However, aviation support mobile stations must operate only on a noninterference basis to communications between aircraft and aviation support land stations.

(c) The frequency 122.775 MHz and, secondary to aeronautical multicom stations, the frequency 122.850 MHz are available for assignment to aviation support stations. These frequencies may be used for communications between aviation service organizations and aircraft in the airport area. These frequencies must not be used for air traffic control purposes or to transmit information pertaining to runway, wind or weather conditions.

(d) The frequency 3281.0 kHz is available for assignment to aviation support stations used for coordination of lighter-than-air aircraft operations.

Subpart L—Aeronautical Utility Mobile Stations

§87.345 Scope of service.

Aeronautical utility mobile stations provide communications for vehicles operating on an airport movement area. An airport movement area is defined as the runways, taxiways and other areas utilized for taxiing, takeoff and landing of aircraft, exclusive of loading ramp and parking areas.

(a) An aeronautical utility mobile station must monitor its assigned frequency during periods of operation.

(b) At an airport which has a control tower, control tower remote communications outlet station (RCO) or FAA flight service station in operation, communications by an aeronautical utility mobile station are limited to the management of ground vehicular traffic.

(c) Aeronautical utility mobile stations which operate on the airport's unicom frequency or the frequency 122.900 MHz are authorized only to transmit information relating to safety, such as runway conditions and hazards on the airport. These stations are authorized primarily for monitoring communications from and to aircraft approaching or departing the airport.

(d) Transmissions by an aeronautical utility mobile station are subject to the control of the control tower, the FAA flight service station or the unicom, as appropriate. When requested by the control tower, the flight service station or the unicom, an aeronautical utility station must discontinue transmitting immediately.

(e) Communications between aeronautical utility mobile stations are not authorized.

[53 FR 28940, Aug. 1, 1988, as amended at 55 FR 7333, Mar. 1, 1990; 55 FR 30464, July 26, 1990]

§ 87.347 Supplemental eligibility.

(a) Aeronautical utility stations may transmit on unicom frequencies only at airports which have a unicom and a part-time or no control tower, an RCO or an FAA flight service station.

(b) An applicant for an aeronautical utility station operating on a unicom frequency or the frequency 122.900 MHz must:

(1) Demonstrate a need to routinely operate a ground vehicle on the airport movement area;

(2) Identify the vehicle(s) in which the station is to be located; and

(3) Either attach a statement showing that the applicant is the airport owner or operator, or a state or local governmental aeronautical agency; or attach a statement from the airport owner or operator granting permission to operate the vehicle on the airport movement area.

(c) An applicant for an aeronautical utility station requesting authority to transmit on the local control (tower) frequency or on the control tower remote communications outlet (RCO) frequency must attach a copy of a memorandum of agreement between the applicant and the Air Traffic Manager of the airport control tower that approves the requested use of the tower or RCO frequency.

[53 FR 28940, Aug. 1, 1988, as amended at 55 FR 30464, July 26, 1990; 55 FR 30908, July 30, 1990]

§ 87.349 Frequencies.

(a) The frequency assigned to an aeronautical utility station at an airport served by a control tower, RCO or FAA flight service station is the frequency used by the control tower for ground traffic control or by the flight service station for communications with vehicles. In addition to the ground control frequency, an aeronautical utility station at an airport served by a control tower or RCO may be assigned the tower or RCO frequency if the assignment is specifically approved by the FAA as provided for in §87.347(c). The frequencies assigned are normally from the band 121.600–121.925 MHz.

(b) The frequency assigned to the unicom is available to aeronautical utility stations on a noninterference basis at airports which have a part-time control tower, part-time RCO or part-time FAA flight service station and a unicom.

(c) At airports which have a unicom but no control tower, RCO or FAA flight service station, the frequency assigned to the unicom is available to aeronautical utility stations on a noninterference basis. The frequencies available for assignment to unicoms are described in subpart G of this part.

(d) At airports which have no control tower, RCO, flight service station or unicom, the frequency 122.900 MHz is available for assignment to aeronautical utility stations.

[55 FR 30464, July 26, 1990, as amended at 55 FR 30908, July 30, 1990]

§ 87.351 Frequency changes.

When the aeronautical utility frequency is required to be changed because of an action by the FAA or the

Commission (such as a change in the ground control of unicom frequency) the licensee must submit an application for modification to specify the new frequency within 10 days from the date the station begins operation on the new frequency. The licensee has temporary authority to use the new frequency from the date of the change pending receipt of the modified license.

Subpart M—Aeronautical Search and Rescue Stations

§87.371 Scope of service.

Aeronautical search and rescue land and mobile stations must be used only for communications with aircraft and other aeronautical search and rescue stations engaged in search and rescue activities. Aeronautical land search and rescue stations can be moved for temporary periods from a specified location to an area where actual or practice search and rescue operations are being conducted.

§87.373 Supplemental eligibility.

Licenses for aeronautical search and rescue stations will be granted only to governmental entities or private organizations chartered to perform aeronautical search and rescue functions.

§87.375 Frequencies.

(a) The frequency 123.100 MHz is available for assignment to aeronautical search and rescue stations for actual search and rescue missions. Each search and rescue station must be equipped to operate on this frequency.

(b) The frequency 122.900 MHz is available for assignment to aeronautical search and rescue stations for organized search and rescue training and for practice search and rescue missions.

(c) The frequencies 3023.0 kHz and 5680.0 kHz are available for assignment to aircraft and ship stations for search and rescue scene-of-action coordination, including communications with participating land stations. Ship stations communicating with aircraft stations must employ 2K80J3E emission.

(d) 121.500 MHz: Emergency and distress only.

Subpart N—Emergency Communications

§87.393 Scope of service.

This subpart provides the rules governing operation of stations in the Aviation Services during any national or local emergency situation constituting a threat to national security or safety of life and property. This subpart is consistent with the Aeronautical Emergency Communications System Plan for all Aviation Services licensees of the Commission which was developed pursuant to sections 1, 4(o), 301 and 303 of the Communications Act, and Executive Order 11490, as amended. This Plan provides for emergency communications to meet the requirements of the Plan for the Security Control of Air Traffic and Air Navigation Aids (SCATANA), Civil Reserve Air Fleet (CRAF), War Air Service Program (WASP) and, where applicable, State and Regional Disaster Airlift Planning (SARDA).

§87.395 Plan for the Security Control of Air Traffic and Air Navigation Aids (Short Title: SCATANA).

(a) The Plan for the Security Control of Air Traffic and Air Navigation Aids (SCATANA) is promulgated in furtherance of the Federal Aviation Act of 1958, as amended, the Communications Act and Executive Order 11490, as amended. SCATANA defines the responsibilities of the Commission for the security control of non-Federal air navigation aids.

(b) Under the responsibilities defined in SCATANA, an FCC Support Plan for the Security Control of Non-Federal Air Navigation Aids has been developed by the Commission. The FCC Support Plan defines responsibilities, procedures, and instructions in consonance with SCATANA which will effect control of non-Federal air navigation aids when SCATANA is implemented. It permits the use of such navigation aids by aircraft of military and civil agencies when SCATANA is implemented. The FCC Support Plan highlights those parts of SCATANA which deal specifically with non-Federal air navigation aids. SCATANA and the FCC Support Plan apply to radionavigation stations

authorized by the Commission in the following manner:

(1) All licensees are subject to restrictions imposed by appropriate military authorities pursuant to SCATANA and the FCC Support Plan when an Air Defense Emergency or Defense Emergency exists or is imminent. The restrictions will be imposed through FAA Air Route Traffic Control Centers (ARTCCs).

(2) All licensees of aeronautical radionavigation (VOR/DME, ILS, MLS, LF and MF non-directional beacons) stations will comply with SCATANA implementation instructions from FAA ARTCCs as follows:

(i) Shut down the above navigation aids as directed. These instructions will permit time to land or disperse airborne aircraft, and will permit extension of time when the air traffic situation dictates.

(ii) Shut down as soon as possible stations which require more than five minutes control time, unless directed otherwise or unless such stations are essential for the handling of existing air traffic.

(iii) Operate aeronautical radionavigation stations to ensure that required stations, as indicated in flight plans, will be available for authorized aircraft flights.

(3) Licensees of aeronautical radionavigation stations will be notified of the reduction or removal of SCATANA restrictions by FAA ARTCCs when notice of the termination is issued.

(4) Licensees of aeronautical radionavigation stations may voluntarily participate in SCATANA tests as requested by an ARTCC. SCATANA testing must not interrupt the normal service of non-Federal air navigation aids.

§ 87.397 Emergency operations.

(a) The licensee of any land station in the Aviation services, during a local emergency involving the safety of life and property may communicate in a manner other than that specified in the license (See §87.395). Such emergency operations may include operation at other locations or with equipment not specified in the license or by unlicensed personnel provided that:

(1) Such operations are under the control and supervision of the station licensee,

(2) The emergency use is discontinued as soon as practicable upon termination of the emergency,

(3) In no event shall any station transmit on frequencies other than or with power in excess of that specified in the license,

(4) The details of the emergency must be retained with the station license, and

(5) At a controlled airport these communications must be coordinated with the FAA.

(b) The unicom frequencies listed in subpart G may also be used for communications with private aircraft engaged in organized civil defense activities in preparation for, during an enemy attack or immediately after an enemy attack. When used for these purposes, unicoms may be moved from place to place or operated at unspecified locations, except at landing areas served by other unicoms or control towers.

(c) In any case in which a license for unattended operation has been granted, the Commission may at any time, for national defense, modify the license.

Subpart O—Airport Control Tower Stations

§ 87.417 Scope of service.

(a) Airport control tower stations (control towers) and control tower remote communications outlet stations (RCOs) must limit their communications to the necessities of safe and expeditious operations of aircraft operating on or in the vicinity of the airport. Control towers and RCOs provide air traffic control services to aircraft landing, taking off and taxing on the airport as well as aircraft transiting the airport traffic area. Additionally, control towers and RCOs can provide air traffic control services to vehicles operating on airport movement areas (see subpart L of this part). Control towers and RCOs must serve all aircraft without discrimination. An RCO must be remotely operated from a control tower or other FAA control facility located at a nearby airport.

(b) A control tower must maintain a continuous watch on the following frequencies during the hours of operation:

121.500 MHz
3023.0 kHz (Alaska only)
5680.0 kHz (Alaska only)

The Commission may exempt from these watch requirements the licensee of an airport control tower station if a satisfactory showing has been made that such an exemption will not adversely affect life and property in the air.

[53 FR 28940, Aug. 1, 1988, as amended at 54 FR 11721, Mar. 22, 1989; 55 FR 30464, July 26, 1990]

§87.419 Supplemental eligibility.

(a) Only one control tower or RCO will be licensed at an airport.

(b) Each application for an RCO must be accompanied by a written statement from the appropriate FAA Regional Office approving the requested RCO operation.

[55 FR 30464, July 26, 1990]

§87.421 Frequencies.

The Commission will assign VHF frequencies after coordination with the FAA. Frequencies in the following bands are available to control towers and RCOs. Channel spacing is 25 kHz.

118.000–121.400 MHz
121.600–121.925 MHz
123.600–128.800 MHz
132.025–135.975 MHz

(a) The frequency 123.100 MHz is available for use by control towers and RCOs at special aeronautical events on the condition that no harmful interference is caused to search and rescue operations in the locale involved.

(b) Frequencies in the bands 200.0–285.0 and 325.0–405.0 kHz will only be assigned to control towers and RCOs authorized to operate on at least one VHF frequency, unless a showing has been made that elimination of VHF service will not adversely affect life and property in the air.

(c) Frequencies in the band 121.600–121.925 MHz are available to control towers and RCOs for communications with ground vehicles and aircraft on the ground. The antenna heights shall be restricted to the minimum necessary to achieve the required coverage. Channel spacing is 25 kHz.

(d) 121.500 MHz: emergency and distress only.

[53 FR 28940, Aug. 1, 1988, as amended at 55 FR 30464, July 26, 1990]

§87.423 Hours of operation.

The control tower must render a communications service 24 hours a day unless a satisfactory showing has been made that elimination of such service will not adversely affect life and property in the air.

§87.425 Interference.

Control towers and RCOs must not cause harmful interference to control towers or RCOs at adjacent airports. If interference between adjacent control towers or RCOs exists, the Commission will direct the licensees how to eliminate the interference.

[55 FR 30465, July 26, 1990]

Subpart P—Operational Fixed Stations

§87.445 Scope of service.

An operational fixed station provides control, repeater or relay functions for its associated aeronautical station.

§87.447 Supplemental eligibility.

An applicant for an operational fixed station must show that:

(a) The applicant is the licensee of an aeronautical land station in the aeronautical mobile service; and

(b) Common carrier facilities are not available to satisfy the aeronautical station's requirements.

§87.449 Frequencies.

The following frequencies in the 72–76 MHz band are assignable to operational fixed stations using vertical polarization, if no harmful interference is caused to TV reception on Channels 4 and 5. These frequencies are shared with the Land Mobile and the Maritime Mobile Services.

OPERATIONAL FREQUENCIES IN THE 72–76 MHz BAND

Carrier frequency in MHz

72.02	72.80
72.04	72.82
72.06	72.84
72.08	72.86
72.10	72.88
72.12	72.90
72.14	72.92
72.16	72.94
72.18	72.96
72.20	72.98
72.22	75.42
72.24	75.46
72.26	75.50
72.28	75.54
72.30	75.58
72.32	75.62
72.34	75.64
72.36	75.66
72.38	75.68
72.40	75.70
72.42	75.72
72.46	75.74
72.50	75.76
72.54	75.78
72.58	75.80
72.62	75.82
72.64	75.84
72.66	75.86
72.68	75.88
72.70	75.90
72.72	75.92
72.74	75.94
72.76	75.96
72.78	75.98

§ 87.451 Licensing limitations.

Operational fixed stations are subject to the following licensing limitations:

(a) A maximum of four frequencies will be assigned.

(b) Stations will not be authorized when applications indicate less than 16 km (10 miles) separation between a proposed station and a TV transmitter operating on either Channel 4 or 5, or from the post office of a community in which either channel is assigned but not in operation.

(c) Stations located between 16 km (10 miles) and 128 km (80 miles) of a TV transmitter operating on either Channel 4 or 5, or from the post office of a community in which either channel is assigned but not in operation, are secondary to TV operations within the Grade B service contour.[1]

[1] OET Bulletin No. 67, March 1988, entitled ''Potential Interference from Operational Fixed Stations in the 72–76 MHz Band to Television Channels 4 and 5'' describes an analytical model that can be used to calculate the potential interference that might result from a given fixed station operation. Copies of the bulletin may be obtained from the Commission's current duplication contractor. Information concerning the current duplication contractor may be obtained from the Office of Public Affairs, Consumer Assistance and Small Business Division, Telephone (202) 632–5050.

Subpart Q—Stations in the Radiodetermination Service

§ 87.471 Scope of service.

Stations in the aeronautical radiodetermination service provide radionavigation and radiolocation services.

(a) Transmission by radionavigation land stations must be limited to aeronautical navigation, including obstruction warning.

(b) Radionavigation land test stations are used for the testing and calibration of aircraft navigational aids and associated equipment. When used as radionavigation land test stations (MTF) signal generators must be licensed as radionavigation land test stations (MTF). Transmission must be limited to cases when radiation is necessary and there is no alternative.

(c) Transmissions by emergency locator transmitter (ELT) test stations must be limited to necessary testing of ELTs and to training operations related to the use of such transmitters.

[53 FR 28940, Aug. 1, 1988, as amended at 58 FR 67696, Dec. 22, 1993]

§ 87.473 Supplemental eligibility.

(a) Licenses for radionavigation land stations will be granted only to applicants who can justify the need for an aeronautical radionavigation service when the Federal Aviation Administration is not prepared to render this service.

(b) Licenses for radionavigation land test stations (MTF) will be granted only to applicants engaged in the development, manufacture or maintenance of aircraft radionavigation equipment. Licenses for radionavigation land test stations (OTF) will be granted only to applicants who

agree to establish the facility at an airport for the use of the public.

(c) Licenses for ELT test stations will be granted only to applicants to train personnel in the operation and location of ELTs, or for testing related to the manufacture or design of ELTs.

§87.475 Frequencies.

(a) *Frequency coordination.* The Commission will assign frequencies to radionavigation land stations and radionavigation land test stations after coordination with the FAA. The applicant must notify the appropriate Regional Office of the FAA prior to submission to the Commission of an application for a new station or for modification of an existing station to change frequency, power, location or emission. Each application must be accompanied by a statement showing the name of the FAA Regional Office notified and the date of notification.

(b) *Frequencies available for radionavigation land stations.* (1) LORAN–C is a long range navigation system which operates in the 90–110 kHz band.

(2) Radiobeacon stations enable an aircraft station to determine bearing or direction in relation to the radiobeacon station. Radiobeacons operate in the bands 190–285 kHz; 325–435; and 510–525 kHz.

(3) Aeronautical marker beacon stations radiate a vertical distinctive pattern on 75 MHz which provides position information to aircraft.

(4) The following table lists the specific frequencies in the 108.100–111.950 MHz band which are assignable to localizer stations with simultaneous radiotelephone channels and their associated glide path station frequency from the 328.600–335.400 MHz band.

Localizer (MHz)	Glide path (MHz)
108.100	334.700
108.150	334.550
108.300	334.100
108.350	333.950
108.500	329.900
108.550	329.750
108.700	330.500
108.750	330.350
108.900	329.300
108.950	329.150
109.100	331.400
109.150	331.250
109.300	332.000
109.350	331.850
109.500	332.600
109.550	332.450
109.700	333.200
109.750	333.050
109.900	333.800
109.950	333.650
110.100	334.400
110.150	334.250
110.300	335.000
110.350	334.850
110.500	329.600
110.550	329.450
110.700	330.200
110.750	330.050
110.900	330.800
110.950	330.650
111.100	331.700
111.150	331.550
111.300	332.300
111.350	332.150
111.500	332.900
111.550	332.750
111.700	333.500
111.750	333.350
111.900	331.100
111.950	330.950

(5) VHF omni-range (VOR) stations are to be assigned frequencies in the 112.050–117.950 MHz band (50 kHz channel spacing) and the following frequencies in the 108–112 MHz band:

108.200	110.050
108.250	110.200
108.400	110.250
108.450	110.400
108.600	110.450
108.650	110.600
108.800	110.650
108.850	110.800
109.000	110.850
109.050	111.000
109.200	111.050
109.250	111.200
109.400	111.250
109.450	111.400
109.600	111.450
109.650	111.600
109.800	111.650
109.850	111.800
110.000	111.850
	112.000

(6) The band 960–1215 MHz is available for the use of land stations and associated airborne electronic aids to air navigation. When distance measuring equipment (DME) is intended to operate with a single VHF navigation station in the 108–117.975 MHz band, the DME operating channel must be paired with the VHF channel as shown in the following table:

DME CHANNELING AND PAIRING

[MHz]

VHF channel	Airborne interrogating frequency	Ground reply frequency
108.000	1041.000	978.000
108.050	1041.000	1104.000
108.100	1042.000	979.000
108.150	1042.000	1105.000
108.200	1043.000	980.000
108.250	1043.000	1106.000
108.300	1044.000	981.000
108.350	1044.000	1107.000
108.400	1045.000	982.000
108.450	1045.000	1108.000
108.500	1046.000	983.000
108.550	1046.000	1109.000
108.600	1047.000	984.000
108.650	1047.000	1110.000
108.700	1048.000	985.000
108.750	1048.000	1111.000
108.800	1049.000	986.000
108.850	1049.000	1112.000
108.900	1050.000	987.000
108.950	1050.000	1113.000
109.000	1051.000	988.000
109.050	1051.000	1114.000
109.100	1052.000	989.000
109.150	1052.000	1115.000
109.200	1053.000	990.000
109.250	1053.000	1116.000
109.300	1054.000	991.000
109.350	1054.000	1117.000
109.400	1055.000	992.000
109.450	1055.000	1118.000
109.500	1056.000	993.000
109.550	1056.000	1119.000
109.600	1057.000	994.000
109.650	1057.000	1120.000
109.700	1058.000	995.000
109.750	1058.000	1121.000
109.800	1059.000	996.000
109.850	1059.000	1122.000
109.900	1060.000	997.000
109.950	1060.000	1123.000
110.000	1061.000	998.000
110.050	1061.000	1124.000
110.100	1062.000	999.000
110.150	1062.000	1125.000
110.200	1063.000	1000.000
110.250	1063.000	1126.000
110.300	1064.000	1001.000
110.350	1064.000	1127.000
110.400	1065.000	1002.000
110.450	1065.000	1128.000
110.500	1066.000	1003.000
110.550	1066.000	1129.000
110.600	1067.000	1004.000
110.650	1067.000	1130.000
110.700	1068.000	1005.000
110.750	1068.000	1131.000
110.800	1069.000	1006.000
110.850	1069.000	1132.000
110.900	1070.000	1007.000
110.950	1070.000	1133.000
111.000	1071.000	1008.000
111.050	1071.000	1134.000
111.100	1072.000	1009.000
111.150	1072.000	1135.000
111.200	1073.000	1010.000
111.250	1073.000	1136.000
111.300	1074.000	1011.000
111.350	1074.000	1137.000
111.400	1075.000	1012.000
111.450	1075.000	1138.000

DME CHANNELING AND PAIRING—Continued

[MHz]

VHF channel	Airborne interrogating frequency	Ground reply frequency
111.500	1076.000	1013.000
111.550	1076.000	1139.000
111.600	1077.000	1014.000
111.650	1077.000	1140.000
111.700	1078.000	1015.000
111.750	1078.000	1141.000
111.800	1079.000	1016.000
111.850	1079.000	1142.000
111.900	1080.000	1017.000
111.950	1080.000	1143.000
112.000	1081.000	1018.000
112.050	1081.000	1144.000
112.100	1082.000	1019.000
112.150	1082.000	1145.000
112.200	1083.000	1020.000
112.250	1083.000	1146.000
112.300	1094.000	1157.000
112.350	1094.000	1031.000
112.400	1095.000	1158.000
112.450	1095.000	1032.000
112.500	1096.000	1159.000
112.550	1096.000	1033.000
112.600	1097.000	1160.000
112.650	1097.000	1034.000
112.700	1098.000	1161.000
112.750	1098.000	1035.000
112.800	1099.000	1162.000
112.850	1099.000	1036.000
112.900	1100.000	1163.000
112.950	1100.000	1037.000
113.000	1101.000	1164.000
113.050	1101.000	1038.000
113.100	1102.000	1165.000
113.150	1102.000	1039.000
113.200	1103.000	1166.000
113.250	1103.000	1040.000
113.300	1104.000	1167.000
113.350	1104.000	1041.000
113.400	1105.000	1168.000
113.450	1105.000	1042.000
113.500	1106.000	1169.000
113.550	1106.000	1043.000
113.600	1107.000	1170.000
113.650	1107.000	1044.000
113.700	1108.000	1171.000
113.750	1108.000	1045.000
113.800	1109.000	1172.000
113.850	1109.000	1046.000
113.900	1110.000	1173.000
113.950	1110.000	1047.000
114.000	1111.000	1174.000
114.050	1111.000	1048.000
114.100	1112.000	1175.000
114.150	1112.000	1049.000
114.200	1113.000	1176.000
114.250	1113.000	1050.000
114.300	1114.000	1177.000
114.350	1114.000	1051.000
114.400	1115.000	1178.000
114.450	1115.000	1052.000
114.500	1116.000	1179.000
114.550	1116.000	1053.000
114.600	1117.000	1180.000
114.650	1117.000	1054.000
114.700	1118.000	1181.000
114.750	1118.000	1055.000
114.800	1119.000	1182.000
114.850	1119.000	1056.000
114.900	1120.000	1183.000
114.950	1120.000	1057.000

DME CHANNELING AND PAIRING—Continued
[MHz]

VHF channel	Airborne interrogating frequency	Ground reply frequency
115.000	1121.000	1184.000
115.050	1121.000	1058.000
115.100	1122.000	1185.000
115.150	1122.000	1059.000
115.200	1123.000	1186.000
115.250	1123.000	1060.000
115.300	1124.000	1187.000
115.350	1124.000	1061.000
115.400	1125.000	1188.000
115.450	1125.000	1062.000
115.500	1126.000	1189.000
115.550	1126.000	1063.000
115.600	1127.000	1190.000
115.650	1127.000	1064.000
115.700	1128.000	1191.000
115.750	1128.000	1065.000
115.800	1129.000	1192.000
115.850	1129.000	1066.000
115.900	1130.000	1193.000
115.950	1130.000	1067.000
116.000	1131.000	1194.000
116.050	1131.000	1068.000
116.100	1132.000	1195.000
116.150	1132.000	1069.000
116.200	1133.000	1196.000
116.250	1133.000	1070.000
116.300	1134.000	1197.000
116.350	1134.000	1071.000
116.400	1135.000	1198.000
116.450	1135.000	1072.000
116.500	1136.000	1199.000
116.550	1136.000	1073.000
116.600	1137.000	1200.000
116.650	1137.000	1074.000
116.700	1138.000	1201.000
116.750	1138.000	1075.000
116.800	1139.000	1202.000
116.850	1139.000	1076.000
116.900	1140.000	1203.000
116.950	1140.000	1077.000
117.000	1141.000	1204.000
117.050	1141.000	1078.000
117.100	1142.000	1205.000
117.150	1142.000	1079.000
117.200	1143.000	1206.000
117.250	1143.000	1080.000
117.300	1144.000	1207.000
117.350	1144.000	1081.000
117.400	1145.000	1208.000
117.450	1145.000	1082.000
117.500	1146.000	1209.000
117.550	1146.000	1083.000
117.600	1147.000	1210.000
117.650	1147.000	1084.000
117.700	1148.000	1211.000
117.750	1148.000	1085.000
117.800	1149.000	1212.000
117.850	1149.000	1086.000
117.900	1150.000	1213.000
117.950	1150.000	1087.000

(7) 1300–1350 MHz: The use of this band is restricted to surveillance radar stations and associated airborne transponders.

(8) 1559–1626.5 MHz: The use of this band is limited to airborne electronic aids to air navigation and any associated land stations.

(c) *Frequencies available for radionavigation land test stations.* (1) The frequencies set forth in §87.187(c), (e) through (j), (r), and (t) and §87.475(b) (6) through (10), and (12) may be assigned to radionavigation land test stations for the testing of aircraft transmitting equipment that normally operate on these frequencies and for the testing of land-based receiving equipment that operate with airborne radionavigation equipment.

(2) The frequencies available for assignment to radionavigation land test stations for the testing of airborne receiving equipment are 108.000 and 108.050 MHz for VHF omni-range; 108.100 and 108.150 MHz for localizer; 334.550 and 334.700 MHz for glide slope; 978 and 979 MHz (X channel)/1104 MHz (Y channel) for DME; 1030 MHz for ATC radar beacon transponders; and 5031.0 MHz for microwave landing systems. Additionally, the frequencies in paragraph (b) of this section may be assigned to radionavigation land test stations after coordination with the FAA. The following conditions apply:

(i) The maximum power authorized on the frequencies 108.150 and 334.550 MHz is 1 milliwatt. The maximum power authorized on all other frequencies is one watt.

(ii) The pulse repetition rate (PRR) of the 1030 MHz ATC radar beacon test set will be 235 pulses per second (pps) ±5pps.

(iii) The assignment of 108.000 MHz is subject to the condition that no interference will be caused to the reception of FM broadcasting stations and stations using the frequency are not protected against interference from FM broadcasting stations.

(d) *Frequencies available for ELT test stations.* The frequencies available for assignment to ELT test stations are 121.600, 121.650, 121.700, 121.750, 121.800, 121.850, and 121.900 MHz. Licensees must:

(1) Not cause harmful interference to voice communications on these frequencies or any harmonically related frequency.

(2) Coordinate with the appropriate FAA Regional Spectrum Management

Office prior to each activation of the transmitter.

[53 FR 28940, Aug. 1, 1988, as amended at 54 FR 11721, Mar. 22, 1989]

§ 87.477 Condition of grant for radionavigation land stations.

Radionavigation land stations may be designated by the FAA as part of the National Airspace System. Stations so designated will be required to serve the public under IFT conditions. This condition of grant is applicable to all radionavigation land stations.

§ 87.479 Harmful interference to radionavigation land stations.

(a) Military or other Government stations have been authorized to establish wide-band systems using frequency-hopping spread spectrum techniques in the 960–1215 MHz band. Authorization for a Joint Tactical Information Distribution Systems (JTIDS) has been permitted on the basis of noninterference to the established aeronautical radionavigation service in this band. In order to accommodate the requirements for the system within the band, restrictions are imposed. Transmissions will be automatically prevented if:

(1) The frequency-hopping mode fails to distribute the JTIDS spectrum uniformly across the band;

(2) The radiated pulse varies from the specified width of 6.4 microseconds ±5%;

(3) The energy radiated within ±7 MHz of 1030 and 1090 MHz exceeds a level of 60 dB below the peak of the JTIDS spectrum as measured in a 300 kHz bandwidth. The JTIDS will be prohibited from transmitting if the time slot duty factor exceeds a 20 percent duty factor for any single user and a 40 percent composite duty factor for all JTIDS emitters in a geographic area.

(b) If radionavigation systems operating in the 960–1215 MHz band experience interference or unexplained loss of equipment performance, the situation must be reported immediately to the nearest office of the FAA, the National Telecommunications and Information Administration, Washington, DC 20504, or the nearest Federal Communications Commission field office. The following information must be provided to the extent available:

(1) Name, call sign and category of station experiencing the interference;

(2) Date and time of occurrence;

(3) Geographical location at time of occurrence;

(4) Frequency interfered with;

(5) Nature of interference; and

(6) Other particulars.

§ 87.481 Unattended operation of domestic radiobeacon stations.

(a) Radiobeacons may be licensed for unattended operation. An applicant for unattended operations must provide information about the following:

(1) The transmitter is crystal controlled and specifically designed for radiobeacon service and capable of transmitting by self-actuating means;

(2) The emissions of the transmitter must be continuously monitored by a licensed operator, or by a direct positive automatic monitor, supplemented by aural monitoring at suitable intervals;

(3) If as a result of aural monitoring it is determined that a deviation from the terms of the station license has occurred, the transmitters must be disabled immediately by a properly authorized person. If automatic monitoring is used, the monitor must insure that the operation of the transmitter meets the license terms or is disabled;

(4) The time, including travel time, required for a properly authorized person to disable the transmitter;

(5) The equipment must be inspected at least every 180 days. Results of inspections must be kept in the station maintenance records;

(6) The transmitter is not operable by or accessible to, other than authorized persons;

(7) The transmitter is in a remote location.

(b) Authority for unattended operation must be expressly stated in the station license.

Subpart R—Civil Air Patrol Stations

§ 87.501 Scope of service.

Civil Air Patrol land and mobile stations must be used only for training, operational and emergency activities of the Civil Air Patrol.

(a) Civil Air Patrol land and mobile stations may communicate with other land and, mobile stations of the Civil Air Patrol. A Civil Air Patrol land station may be moved from its authorized location for temporary operation in the same general area for short periods of time not to exceed 72 hours.

(b) When engaged in training or on actual missions in support of the U.S. Air Force, Civil Air Patrol stations may communicate with U.S. Air Force stations on the frequencies specified in subpart E.

§87.503 Supplemental eligibility.

Licenses for Civil Air Patrol land and mobile stations will be issued only to Wings or the Headquarters of the Civil Air Patrol. All applications must be submitted to the Commission via Civil Air Patrol Headquarters, Maxwell Air Force Base, AL 36112. A single fleet license will be issued to Civil Air Patrol Headquarters and to each Civil Air Patrol Wing to authorize all Civil Air Patrol Station transmitters operated by the Wing or Headquarters.

[54 FR 11721, Mar. 22, 1989]

§87.505 Frequencies.

The assigned frequencies available for assignment to Civil Air Patrol land and mobile stations are contained in the frequency table in subpart E. The frequency, emission, and maximum power will be determined by Headquarters Civil Air Patrol in accordance with the Civil Air Patrol Communications Plan.

Subpart S—Automatic Weather Observation Stations

§87.525 Scope of service.

Automatic weather observation stations must provide up-to-date weather information including the time of the latest weather sequence, altimeter setting, wind speed and direction, dewpoint, temperature, visibility and other pertinent data needed at airports having neither a full-time control tower nor a full-time FAA Flight Service Station. When a licensee has entered into an agreement with the FAA, an automatic weather observation station may also operate as an automatic terminal information station during the control tower's operating hours.

§87.527 Supplemental eligibility.

(a) Licenses will be granted only upon FAA approval.

(b) Eligibility for an automatic weather observation station or an automatic terminal information station is limited to the owner or operator of an airport or to a person who has entered into a written agreement with the owner or operator for exclusive rights to operate and maintain the station. Where applicable a copy of the agreement between the applicant and owner or operator of the airport must be submitted with an application.

(c) Only one automatic weather observation station or an automatic terminal information station will be licensed at an airport.

§87.529 Frequencies.

Prior to submitting an application, each applicant must notify the nearest appropriate FAA Regional Spectrum Management Office. Each application must be accompanied by a statement showing the name of the FAA Regional Office and date notified. The Commission will assign the frequency. Normally frequencies available for air traffic control operations set forth in subpart E will be assigned to automatic weather observation stations and to automatic terminal information stations. When a licensee has entered into an agreement with the FAA to operate the same station as both an automatic weather observation station and as an automatic terminal information station, the same frequency will be used in both modes of operation.

PART 90—PRIVATE LAND MOBILE RADIO SERVICES

Subpart A—General Information

Sec.

Subpart B—Public Safety Radio Pool