

(d) *Intermodulation Immunity.* The receiver shall meet the requirements specified in paragraph (a) of this section in the presence of interference from two-signal, third order intermodulation products of two VHF-FM broadcast signals having levels in accordance with the following:

(1) $2N_1 + N_2 + 72 \leq 0$ for VHF-FM sound broadcasting signals in the range 107.7–108 MHz; and

(2) $2N_1 + N_2 + 3(24 - 20 \log \Delta f) \leq 0$ for VHF-FM sound broadcasting signals below 107.7 MHz, where the frequencies of the two VHF-FM sound broadcasting signals produce, within the receiver, a two signal, third-order intermodulation product on the desired VDB frequency.

(3) In the formulas in paragraphs (d)(1) and (d)(2) of this section, N_1 and N_2 are the levels (dBm) of the two VHF FM sound broadcasting signals at the VHF data broadcast (VDB) receiver input. Neither level shall exceed the desensitization criteria set forth in paragraph (c) of this section. $\Delta f = 108.1 - f_i$, where f_i is the frequency of N_1 , the VHF FM sound broadcasting signal closer to 108.1 MHz.

[69 FR 32881, June 14, 2004]

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 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.

[69 FR 32882, June 14, 2004]

§ 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
 DGP—Differential GPS
 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
 GCO—Ground Communication Outlet
 MA—Aircraft (Air carrier and Private)
 MA1—Air carrier aircraft only
 MA2—Private aircraft only
 MOU—Aeronautical utility mobile
 MRT—ELT test
 RCO—Remote Communications Outlet
 RL—Radionavigation land (unspecified)
 RLA—Marker beacon
 RLB—Radiobeacon
 RLD—RADAR/TEST
 RLG—Glide path
 RLL—Localizer
 RLO—VHF omni-range
 RLS—Surveillance radar
 RLT—Radionavigation land test
 RLW—Microwave landing system
 RNV—Radio Navigation Land/DME
 RPC—Ramp Control
 TJ—Aircraft earth station in the Aeronautical Mobile-Satellite Service
 UAT—Universal Access Transceiver

[53 FR 28940, Aug. 1, 1988, as amended at 57 FR 45750, Oct. 5, 1992; 64 FR 27475, May 20, 1999; 69 FR 32882, June 14, 2004; 71 FR 70676, Dec. 6, 2006]

§ 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 United States. |
| 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. |
| 510–535 kHz | Q | RLB | Radiobeacons. |
| 2182.0 kHz | F | MA | International distress and calling. |
| 2648.0 kHz | I | AX | Alaska station. |
| 2850.0–3025.0 kHz | I | MA, FAE | International HF. |
| 2851.0 kHz | I, J | MA, FAE, FAT | International HF; Flight Test. |
| 2866.0 kHz | I | MA, FAE | Domestic HF; (Alaska). |
| 2875.0 kHz | I | MA, FAE | Domestic HF. |
| 2878.0 kHz | I | MA1, FAE | Domestic HF; International HF. |
| 2911.0 kHz | I | MA, FAE | Domestic HF. |
| 2956.0 kHz | I | MA, FAE | Domestic HF. |
| 3004.0 kHz | I, J | MA, FAE, FAT | International HF; Flight Test. |
| 3019.0 kHz | I | MA1, FAE | Domestic HF; International HF. |
| 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. |
| 3400.0–3500.0 kHz | I | MA, FAE | International HF. |
| 3434.0 kHz | I | MA1, FAE | Domestic HF. |
| 3443.0 kHz | J | MA, FAT | Flight Test. |
| 3449.0 kHz | I | MA, FAE | Domestic HF. |
| 3470.0 kHz | I | MA, FAE | Domestic HF; International HF. |
| 4125.0 kHz | F | MA | Distress and safety with ships and coast stations. |
| 4550.0 kHz | I | AX | Gulf of Mexico. |
| 4645.0 kHz | I | AX | Alaska. |
| 4650.0–4700.0 kHz | I | MA, FAE | International HF. |
| 4672.0 kHz | I | MA1, FAE | Domestic HF. |
| 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. |
| 5450.0–5680.0 kHz | I | MA, FAE | International HF. |
| 5451.0 kHz | J | MA, FAT | Flight Test. |
| 5463.0 kHz | I | MA1, FAE | Domestic HF. |
| 5469.0 kHz | J | MA, FAT | Flight Test. |
| 5472.0 kHz | I | MA, FAE | Domestic HF. |
| 5484.0 kHz | I | MA, FAE | Domestic HF. |
| 5490.0 kHz | I | MA, FAE | Domestic HF. |
| 5496.0 kHz | I | MA, FAE | Domestic HF. |
| 5508.0 kHz | I | MA1, FAE | Domestic HF. |
| 5571.0 kHz | J | MA, FAT | Flight Test. |

| | | | |
|---------------------|---------------------|--|---|
| 5631.0 kHz | I | MA, FAE | Domestic HF. |
| 5680.0 kHz | F, M, O | MA1, FAC, FAR | Search and rescue communications. |
| 5887.5 kHz | I | AX | Alaska. |
| 6525.0–6685.0 kHz | I | MA, FAE | International HF. |
| 6550.0 kHz | J | MA, FAT | Flight Test. |
| 6580.0 kHz | I | MA, FAE | Domestic HF. |
| 6604.0 kHz | I | MA, FAE | Domestic HF. |
| 8015.0 kHz | AX | | Alaska. |
| 8364.0 kHz | F | MA | Search and rescue communications. |
| 8815.0–8965.0 kHz | I | MA, FAE | International HF. |
| 8822.0 kHz | J | MA, FAT | Flight Test. |
| 8855.0 kHz | I | MA, FAE | Domestic HF; international HF. |
| 8876.0 kHz | I | MA, FAE | Domestic HF. |
| 10005.0–10100.0 kHz | I | MA, FAE | International HF. |
| 10045.0 kHz | J | MA, FAT | Flight Test. |
| 10066.0 kHz | I | MA, FAE | Domestic HF; international HF. |
| 11275.0–11400.0 kHz | I | MA, FAE | International HF. |
| 11288.0 kHz | J | MA, FAT | Flight Test. |
| 11306.0 kHz | J | MA, FAT | Flight Test. |
| 11357.0 kHz | I | MA, FAE | Domestic HF. |
| 11363.0 kHz | I | MA, FAE | Domestic HF. |
| 13260.0–13360.0 kHz | I | MA, FAE | International HF. |
| 13312.0 kHz | I, J | MA, FAE, FAT | International HF; Flight Test. |
| 17900.0–17970.0 kHz | I | MA, FAE | International HF. |
| 17964.0 kHz | J | MA, FAT | Flight Test. |
| 21924.0–22000.0 kHz | J | MA, FAE | International HF. |
| 21931.0 kHz | J | MA, FAT | Flight Test. |
| 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. |
| 108.000–117.975 MHz | Q | DGP | Differential GPS. |
| 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, GCO, RCO, RPC. | 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, GCO, RCO, RPC. | 25 kHz channel spacing. |
| 121.950 MHz | K | FAS | |
| 121.975 MHz | F | MA2, FAW, FAC, MOU | Air traffic control operations. |
| 122.000 MHz | F | MA, FAC, MOU | Air carrier and private aircraft enroute flight advisory service provided by FAA. |
| 122.025 MHz | F | MA2, FAW, FAC, MOU | Air traffic control operations. |
| 122.050 MHz | F | MA, FAC, MOU | Air traffic control operations. |
| 122.075 MHz | F | MA2, FAW, FAC, MOU | Air traffic control operations. |
| 122.100 MHz | F, O | MA, FAC, MOU | Air traffic control operations. |
| 122.125–122.675 MHz | F | MA2, FAC, MOU | Air traffic control operations; 25 kHz spacing. |

| Frequency or frequency band | Subpart | Class of station | Remarks |
|-----------------------------|------------|-----------------------------|--|
| 122.700 MHz | G, L | MA, FAU, MOU | Unicom at airports with no control tower; Aeronautical utility stations. |
| 122.725 MHz | G, L | MA, 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. |
| 122.900 MHz | F, H, L, M | MA, FAR, FAM, MOU | |
| 122.925 MHz | H | MA2, FAM | |
| 122.950 MHz | G, L | MA, FAU, MOU | Unicom at airports with control tower; Aeronautical utility stations. |
| 122.975 MHz | G, L | MA, 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 | MA, FAU, MOU | Unicom at airports with no control tower; Aeronautical utility stations. |
| 123.075 MHz | G, L | MA, 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 | |
| 123.6–128.8 MHz | O | MA, FAC, FAW, GCO, RCO, RPC | 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, GCO, RCO, RPC | 25 kHz channel spacing. |
| 136.000–136.400 MHz | O, S | MA, FAC, FAW, GCO, RCO, RPC | Air traffic control operations; 25 kHz channel spacing. |
| 136.425 MHz | O, S | MA, FAC, FAW, GCO, RCO, RPC | Air traffic control operations. |
| 136.450 MHz | O, S | MA, FAC, FAW, GCO, RCO, RPC | Air traffic control operations. |

| | | | |
|---------------------------|------------------------------|---|---|
| 136.475 MHz | O, S | MA, FAC, FAW, GCO, RCO, RPC | Air traffic control operations. |
| 136.500–136.875 MHz | I | MA, FAE | Domestic VHF; 25 kHz channel spacing. |
| 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. |
| 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 Orleans Vessel traffic service area. |
| 156.400 MHz | F | MA | For communications with ship stations under specific conditions. |
| 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 | |
| 406.0–406.1 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, RNV | Electronic aids to air navigation. |
| 978.000 MHz | F, L, Q | MA, MOU, UAT | Universal Access Transceivers. |
| | UAT | . | |
| 979.000 MHz | Q | RLT | |
| 1030.000 MHz | Q | RLT | |
| 1104.000 MHz | Q | RLT | |
| 1300–1350 MHz | F, Q | MA, RLS | Surveillance radars and transponders. |
| 1435–1525 MHz | F, J | MA, FAT | Aeronautical telemetry and telecommand operations. |
| 1559–1610 MHz | Q | DGP | Differential GPS. |
| 1559–1626.5 MHz | F, Q | MA, RL | Aeronautical radionavigation. |
| 1646.5–1660.5 MHz | F | TJ | Aeronautical Mobile-Satellite (R). |
| 2310–2320 MHz | J | MA, FAT | Aeronautical telemetry and telecommand operations. |
| 2345–2395 MHz | J | MA, FAT | Aeronautical telemetry and telecommand operations. |
| 2700–2900 MHz | Q | RLS, RLD | Airport surveillance and weather radar. |
| 4200–4400 MHz | F | MA | Radio altimeters. |
| 5000–5250 MHz | Q | MA, RLW | Microwave landing systems. |
| 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, RLD | Land-based radar. |
| 9300–9500 MHz | F, Q | MA | Airborne radars and associated airborne beacons. |
| 13250–13400 MHz | F | MA | Airborne doppler radar. |
| 15400–15700 MHz | Q | RL | Aeronautical radionavigation. |

| Frequency or frequency band | Subpart | Class of station | Remarks |
|-----------------------------|------------|------------------|-------------------------------|
| 24750–25050 MHz | F, Q | MA, RL | Aeronautical radionavigation. |
| 32300–33400 MHz | F, Q | MA, RL | Aeronautical radionavigation. |

§ 87.173

47 CFR Ch. I (10-1-07 Edition)

[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; 64 FR 27475, May 20, 1999; 65 FR 59357, Oct. 5, 2000; 65 FR 60112, Oct. 10, 2000; 66 FR 26799, May 15, 2001; 67 FR 17300, Apr. 10, 2002; 67 FR 41858, June 20, 2002; 69 FR 32882, June 14, 2004; 69 FR 77950, Dec. 29, 2004; 71 FR 70677, Dec. 6, 2006]

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 service 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 search 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.