

Chapter 7

Authorized Frequency Usage

7.1 GENERAL

1. Within the jurisdiction of the United States, use of the radio frequency spectrum for telecommunication and for other purposes shall be made by United States Government stations and radio frequency devices only as authorized by the Assistant Secretary of Commerce for Communications and Information (Assistant Secretary) or the National Telecommunications and Information Administration (NTIA).

2. The frequency assignments mentioned in Section 7.2 result from the submission of applications by federal agencies (see Chapter 9 of this Manual). The other parts of this chapter contain authority for the use of certain frequencies, services, and radio frequency devices under specified conditions, criteria, standards, or specifications, and the submission of applications therefore is not required. The use of any such assignments, frequencies, or devices may also be subject to applicable policy, guidance, or regulations issued by their users' agency.

7.1.1 Lasers and Other Systems That Operate Above 3000 GHz

1. No authorization is required for the use of frequencies above 3000 GHz. As a matter of information, agencies may inform the IRAC of such usage, but no record of it shall be kept in the Government Master File (GMF), the list of Frequency Assignments to Government Radio Stations.

2. Under the Communications Act of 1934, as amended, NTIA has the authority to license stations that operate above 3000 GHz, including lasers, but at this time does not choose to do so

7.2 USE OF FREQUENCIES CONTAINED IN THE LIST OF FREQUENCY ASSIGNMENTS TO FEDERAL GOVERNMENT RADIO STATIONS

1. The frequency assignments contained in the Government Master File (GMF) may be used by federal agencies in accordance with the particulars of those assignments.

2. The complete listing of Federal Government frequency assignments, the GMF is also an important tool for spectrum management activities. Accordingly, data requirements for the particulars of frequency assignments in the GMF may be revised, updated, and expanded as needed to meet changing spectrum management requirements.

7.3 (RESERVED. See Chapter 12.)

7.4 USE OF FREQUENCIES BY FIXED AND LAND STATIONS

When it is indispensable to do so, and on the condition that the characteristics of the stations continue to conform to those in the GMF, a fixed station may, on a secondary basis, transmit on its assigned frequencies to mobile stations, and a land station may, on a secondary basis, transmit on its assigned frequencies to fixed stations or other land stations in the same category.

7.5 USE OF FREQUENCIES BY MOBILE STATIONS

7.5.1 Frequencies Assigned to Federal Stations in the Mobile Service and Mobile Earth Stations

A mobile station may transmit on a frequency assigned to a federal station in the mobile service a) when directed to do so by the latter for the specific purpose of communicating with the station issuing the directive or with other stations in the same net or b) by directive from the agency operating the stations to which the frequency is assigned.

7.5.2 Frequencies Authorized by the FCC for Ship Stations

Frequencies authorized by the Federal Communications Commission for ship stations may be used by federal mobile stations to communicate with non-federal stations in the maritime mobile service.

7.5.3 (Reserved. See Chapter 12.)

7.5.4 (Reserved. See Chapter 12.)

7.5.5 Coast Station Frequencies

A mobile station may transmit on the same frequency as the coast station with which it is communicating, provided that a) the emission satisfies the frequency tolerance applicable to the coast station, b) the coast station requests the transmission, and c) no harmful interference is caused to other stations.

7.5.6 (Reserved)

7.5.7 Ship Station Frequencies in the Bands 4000-4063 and 8100-8195 kHz

Ship stations may transmit (emission: 2K80J3E), with power not exceeding 1.5 kW Peak Envelop Power (PEP), on frequencies designated for radiotelephony in the channeling plans of Section 4.3.13 for inter-ship and ship-shore radiotelephony communications, provided no harmful interference is caused to other authorized users.

7.5.8 (Reserved. See Sec. 7.23.)

7.5.9 (Reserved. See Sec. 7.23.)

7.6 USE OF FREQUENCIES BY AIRCRAFT STATIONS

1. Aircraft stations of any federal agency may use any aeronautical mobile (R) band frequency below 30 MHz for communication only with aeronautical stations regularly serving the routes or areas to which those frequencies are specifically allotted by international agreement. Further, any high frequency authorized by the Federal Communications Commission for aircraft stations may be employed by aircraft stations of any federal agency when communicating for safety purposes with aeronautical stations to which such frequencies are assigned, after arrangements have been made with the licensee of the non-federal aeronautical stations for this use.

2. Since military aircraft will use UHF in lieu of VHF to the maximum extent practicable, aircraft stations of any federal agency may use any frequency in the bands 117.975-123.0875, 123.5875-128.8125, and 132.0125-137.000 MHz for air traffic control, ground control, aeronautical advisory, aeronautical multicom, and flight service communication, as appropriate, only with aeronautical stations regularly serving the routes or areas to which those frequencies are authorized specifically. All operations by federal aircraft stations under the provisions of this paragraph shall be restricted to the purpose for which the particular frequency is allotted and authorized to the federal or non-federal aeronautical station.

3. All operations by federal aircraft stations under the provisions of the two preceding paragraphs shall comply with the appropriate provisions of Part 87 of the FCC Rules. Such provisions include, but are not limited to, those pertaining to power, type of emission, scope of service, permissible communications, and frequencies available, noting that the FCC does not issue type acceptance for equipment used aboard federal-owned and operated aircraft.

4. The frequency 122.925 MHz may be used with 6K00A3E emission by aircraft when coordinating natural resources programs of federal or state natural resources agencies, including forestry management and fire suppression, fish and game management and protection, and environmental monitoring and protection.

5. Radionavigation mobile stations aboard aircraft of any federal agency may utilize frequencies in the 1025-1150 MHz band to operate with directly associated ground-based facilities in Tactical Air Navigation (TACAN)/Distance Measurement Equipment (DME) and Air Traffic Control Radio Beacon (ATCRB) systems, and frequencies in the 4200-4400 MHz band to operate radio altimeters.

7.7 USE OF FREQUENCIES BY MANNED SPACECRAFT

1. Stations aboard manned spacecraft may use the emergency, distress, survival craft, and search and rescue frequencies (2182 kHz, 3023 kHz, 5680 kHz, 8364 kHz, 121.5 MHz, 156.8 MHz and 243 MHz) of the aeronautical mobile and maritime mobile services for these purposes under the same rules and restrictions applicable to those services.

2. Article V of the United Nations Treaty on principles governing the activities of states in the exploration and use of outer space, including the Moon and other celestial bodies, provides that, “In carrying on activities in outer space and on celestial bodies, the astronauts of one State Party shall render all possible assistance to the astronauts of other State Parties”. In furtherance of this obligation, Recommendation ITU-R SA.1863 has been adopted by the ITU. This Recommendation states that:

a. A manned spacecraft experiencing an emergency situation should use the 2290-2300 MHz band, excluding the 2293-2297 MHz sub band, to transmit to the Earth, directly and/or through a data relay satellite (DRS).

b. Transmissions to a manned spacecraft experiencing an emergency situation, either directly or through a DRS, should use the band 2025-2110 MHz or 2110-2120 MHz or both bands.

c. Unwanted emissions in the 2293-2297 MHz band from manned spacecraft emergency transmitters should meet the applicable deep space protection criteria stated in Recommendation ITU-R SA.1157.

7.8 PURCHASE AND USE OF NON-LICENSED DEVICES

1. Federal Government agencies may, without further authority from the Assistant Secretary, purchase “off-the-shelf” non-licensed devices that conform to the applicable edition of Part 15 of the Federal Communication Commission's (FCC) Rules and Regulations (47 CFR, Part 15) or non-licensed devices for which the FCC has granted a waiver of specific requirements of Part 15. NTIA maintains the authority to forbid the operation of specific non-licensed devices for which the FCC has granted a waiver of Part 15 if NTIA deems the waiver to be inappropriate for the Federal Government. NTIA will identify in this section any such cases. The authorization stated in this section in no way abrogates the authority of any federal agency to forbid the operation of any non-licensed device by any user under its authority.

2. Non-licensed devices subject to FCC certification, notification or verification shall bear the appropriate FCC statement of limitations to operations. Agencies purchasing or using non-licensed devices for which the FCC has granted a waiver of specific requirements of Part 15, shall operate these devices in such a way as to meet all the conditions of the waiver.

3. The agency operating a non-licensed device that causes interference to an authorized radio station shall promptly take steps to eliminate the interference. Upon notification by cognizant spectrum management personnel that the device is causing interference, the operator of the non-licensed device shall cease all radiations from the device. Operations shall not resume until the condition causing the interference has been corrected.

4. Agencies operating a purchased non-licensed device have no vested or recognized right to continued use of the device in any part of the radio frequency spectrum. Non-licensed device operations must accept any interference from any federal or non-federal authorized radio station, other non-licensed device, or industrial, scientific and medical (ISM) equipment.

5. Non-licensed devices, since they operate on a non-interference basis, may not provide sufficient reliability for critical radio communications functions affecting human life or property. Non-licensed devices, however, may provide valuable and unique supplemental or expendable radio communications services where needed. To ensure adequate regulatory protection, federal entities should rely only on devices with frequency assignments in the Government Master File as principal radiocommunication systems for safeguarding human life or property.

7.9 DEVELOPMENT AND USE OF NON-LICENSED DEVICES

1. Annex K is based on Part 15 of the FCC's Rules and Regulations (47 CFR, Part 15) which governs non-federal use of radio frequency devices that do not require an individual license to operate (i.e., “non-licensed devices”). Federal Government telecommunication operations do not require an FCC license or authorization. The term “non-licensed device” used in this Part refers only to federal devices - and operations of such devices - that conform to the technical criteria in Annex K.

2. Agencies may develop and operate devices that conform to the technical criteria in Annex K without further

authority from the Assistant Secretary. Additionally, any operational capability that conforms to the technical criteria in Annex K may be incorporated into otherwise authorized telecommunication systems without further authority from the Assistant Secretary.³ The agency operating a device developed under the technical criteria of Annex K that causes interference to any authorized station shall promptly take steps to eliminate the interference. Upon notification by cognizant spectrum management personnel that the device is causing interference, the operator of the non-licensed device shall cease all radiations from the device. Operation shall not resume until the condition causing the interference has been corrected.

3. Agencies operating a device developed under the technical criteria of Annex K, have no vested or recognized right to continued use of the device in any part of the radio frequency spectrum. These devices must accept any interference from any authorized federal or non-federal radio system, other non-licensed device, or ISM equipment.

4. Non-licensed devices, since they operate on a non-interference basis, may not provide sufficient reliability for critical radio communications functions affecting human life or property. Non-licensed devices, however may provide valuable and unique supplemental or expendable radio communications services where needed. To ensure adequate regulatory protection, federal entities should rely only on devices with frequency assignments in the Government Master File as principal radiocommunication systems for safeguarding human life or property.

7.10 USE OF FREQUENCIES BY ISM EQUIPMENT

Without further authority from the Assistant Secretary, ISM equipment may be operated under the conditions specified in this part for particular categories of equipment or types of operations.

7.10.1 Operation on Particular Frequencies Designated for ISM Equipment

1. The following frequencies are designated for use by ISM equipment, the emissions of which shall be confined within the frequency limits associated with each frequency:

6780 kHz	± 15.0 kHz	5800 MHz	± 75.0 MHz
13560 kHz	± 17.0 kHz	24.125 GHz	± 125.0 MHz
27120 kHz	± 163.0 kHz	61.25 GHz	± 250.0 MHz
40.68 MHz	± 20.0 kHz	122.5 GHz	± 500.0 MHz
915 MHz	± 13.0 MHz	245 GHz	± 1.0 GHz
2450 MHz	± 50.0 MHz		

2. In the event that harmful interference is caused by ISM operation to any authorized radio service outside the frequency limits specified, the operator of the ISM equipment shall promptly take necessary steps to eliminate such interference, except in those cases where the interference is due to direct intermediate frequency pickup by a receiver of the fundamental frequency emissions of ISM equipment operating on an ISM frequency, and the operator otherwise complies with this section.

3. ISM equipment, other than industrial heating equipment, that is operated on the frequencies 915, 2450, 5800 MHz, and 24.125 GHz, is subject to the following conditions:

- a. The energy radiated and the bandwidth of emission shall be reduced to the maximum extent practicable.
- b. In the event that harmful interference is caused to authorized radio services from spurious or harmonic radiation from ISM equipment, the operation of the ISM equipment shall be discontinued until necessary measures have been taken to eliminate such interference.

4. Medical diathermy equipment may be operated on the designated ISM frequencies without regard to the type or power of emissions being radiated, except as specified above. However, any harmonic or other spurious radiation outside the frequency limits specified in this section shall be suppressed so as not to exceed a strength of 25 $\mu\text{V}/\text{m}$ at a distance of 300 meters. Measurements to determine field intensity shall be made in accordance with standard engineering procedures.

5. Industrial heating equipment and RF stabilized arc welders may be operated with unlimited radiation on any designated ISM frequency, but shall be adjusted to operate as close to that ISM frequency as practicable. Filtering between the industrial heating equipment and power lines must be provided to the extent necessary to prevent the radiation of energy from power lines on frequencies other than those designated for ISM, with a field strength in excess of 10 $\mu\text{V}/\text{m}$ at a distance of 1600 meters from the industrial heating equipment, and at a distance of 15 meters

from the power line.6. Miscellaneous ISM equipment may be operated on the designated ISM frequencies without regard to the type or power of emissions being radiated, provided any harmonic or other spurious radiation outside the frequency limits specified in this section is suppressed so as to not exceed:

- a. 25 uV/m at a distance of 300 meters or,
- b. For equipment generating more than 500 watts of RF power on the fundamental frequency, 25 uV/m times the square root of $P/500$ (where P is the actual RF power generated), but not to exceed 10 uV/m at 1600 meters, provided this increase is not permitted for equipment located in a predominantly residential area and operating on a frequency below 1000 MHz.

7.10.2 Operation on Frequencies Other than Those Designated for ISM Equipment

1. Operation of ISM equipment within the following safety, search and rescue frequency bands is prohibited: 490-510 kHz, 2170-2194 kHz, 8354-8374 kHz, 121.4-121.6 MHz, 156.7-156.9 MHz, and 242.8-243.2 MHz.

2. In the event harmful interference is caused to any authorized radio service outside the frequency limits specified in Section 7.10.1, by ISM operation conducted pursuant to this section, the operator of the ISM equipment shall promptly take the necessary steps to eliminate the interference.

3. Medical diathermy equipment shall be provided with a rectified and filtered plate power supply, powerline filters, and shall be constructed so that any radiated radio frequency energy (including harmonic or other spurious emissions) on a frequency outside the frequency limits specified in Section 7.10.1 does not exceed a strength of 15 $\mu\text{V}/\text{m}$ at a distance of 300 meters. Measurements to determine field intensity shall be made in accordance with standard engineering procedures.

4. Industrial heating equipment and RF stabilized arc welders may be operated provided all of the following conditions are met:

- a. Radiation on the fundamental carrier frequency, as well as spurious and harmonic radiations resulting from any source frequency, and falling outside the frequency limits specified in Section 7.10.1, shall be suppressed so that:

- (1) below 5725 MHz the field strength does not exceed 10 $\mu\text{V}/\text{m}$ at a distance of 1600 meters and;
- (2) above 5725 MHz it is reduced to the greatest extent practicable.

- b. Filtering between the industrial heating equipment and power lines shall be provided to the extent necessary to prevent the radiation of energy from power lines on frequencies other than the designated ISM frequencies, with a field strength in excess of 10 $\mu\text{V}/\text{m}$ at a distance of 1600 meters from the industrial heating equipment and at a distance of 15 meters from the power line.

5. Miscellaneous ISM equipment may be operated on frequencies other than those designated for ISM equipment provided all of the following conditions are met:

- a. The equipment shall be provided with a rectified and filtered plate power supply and power line filters.
- b. Any radiated radio frequency energy outside the frequency limits specified in Section 7.10.1 (including harmonic or other spurious emissions) shall not exceed:

- (1) 15 $\mu\text{V}/\text{m}$ at a distance of 300 meters; or,
- (2) for equipment generating more than 500 watts of RF power on the fundamental frequency, 15 uV/m times the square root of $P/500$ (where P is the actual RF power generated), but not to exceed 10 $\mu\text{V}/\text{m}$ at 1600 meters, provided this increase is not permitted for equipment located in a predominantly residential area and operating on a frequency below 1000 MHz.

6. Operation of ultrasonic equipment shall not result in radiation exceeding the following limits:

- a. Below 490 kHz
2400 $\mu\text{V}/\text{m}$ at 300 meters/Frequency (in kHz)
- b. Between 490 and 1600 kHz
2400 $\mu\text{V}/\text{m}$ at 30 meters/Frequency (in kHz)
- c. Over 1600 kHz (excluding frequencies within the limits specified in Section 7.10.1)
15 uV/m at 30 meters
- d. For equipment operating below 490 kHz and generating more than 500 watts of RF power on the fundamental frequency.

2400 $\mu\text{V}/\text{m}$ at 300 meters "Frequency (in kHz) times the square root of $P/500$ (where P is the actual RF power generated), but not to exceed 10 $\mu\text{V}/\text{m}$ at 1600 meters", provided this increase is not permitted for equipment located in a predominantly residential area.

e. On any frequency 490 kHz and above, the radio frequency voltage appearing on each power line shall not exceed 200 μV ; below 490 kHz it shall not exceed 1000 μV .

7.11 USE OF FREQUENCIES BY CERTAIN FEDERAL EXPERIMENTAL STATIONS

7.11.1 General

1. Subject to the provisions of subsections 7.11.2 and 7.11.3, certain federal experimental stations at the operating areas listed in subsection 7.11.3 are authorized to use any radio frequencies under a blanket assignment for station class EX without prior authorization through individual frequency assignments or Special Temporary Authorizations provided that:

- a. the nature or duration of the stations' operations are such that the assignment or authorization of specific frequencies is impracticable;
- b. all reasonable measures are taken before such frequencies are used to ensure that harmful interference will not be caused to authorized services, and, in this regard, consideration should be given to the propagation characteristics of the frequencies to be utilized and to the operational nature of the services normally operating on such frequencies;
- c. frequency use for the performance of electronic attack or countermeasures testing, training, and exercises is not authorized under this section (see Sections 7.14 and 7.25 of this Manual);
- d. operations comply with the conditions, and are confined to the sites, specified in subsection 7.11.3; and
- e. such testing and experiments are limited to stations belonging to and operated by the federal agency identified in subsection 7.11.3.

2. The authority provided under this section is limited to radio frequency usage which is an integral part of an experimental operation and shall not be construed as authorizing frequency usage for administrative or operational use related thereto. No priority rights shall derive from the use of a specific frequency for an operation conducted pursuant to this authority nor shall any specific frequency usage constitute a bar to the authorization of other uses.

3. Experimental operations conducted pursuant to this section shall be terminated immediately upon receipt of notice that harmful interference is being caused to an authorized service. To that end, the listings of the authorized sites in subsection 7.11.3 include sufficient point-of-contact information to permit the prompt delivery at all times of notices of harmful interference. Any agency, or the FCC on behalf of non-federal entities, may present to the Frequency Assignment Subcommittee (FAS) a report containing as much of the information as practicable (see paragraph 4 of section 8.2.30 of this Manual) when harmful interference is caused by an experimental radio station operating under this authority. Based on persistent documented reports of harmful interference, the FAS may recommend that NTIA suspend, amend, modify or revoke such authority.

7.11.2 Excluded Frequency Bands

1. The following frequency bands are specifically excluded from this authority:

kHz	MHz	GHz	
495.0-510.0	73.0-74.6	10.68-10.70	114.25-116.00
2173.5-2190.5	121.4-121.6	15.35-15.40	148.5-151.5
8354.0-8374.0	156.7-156.9	23.60-24.00	164.00-167.00
21850.0-21870.0	242.8-243.2	31.30-31.80	182.00-185.00
	608.0-614	50.2-50.4	190.00-191.80
	1400.0-1427.0	52.6-54.25	200.00-209.00
	1559.0-1610.0	86.00-92.00	226.00-231.5
	1660.5-1668.4	100.00-102.00	230.00-240.00
	2690.0-2700.0	109.5-111.8	250.00-252.00
	4990.0-5000.0		

2. Paragraph 1 shall not be construed as precluding the measurement of antenna characteristics in these excluded bands, provided that the power delivered to the antenna under test shall be for the sole purpose of

carrying out the desired measurements and shall be no greater than is required by the measurement technique being utilized.

7.11.3 Authorized Sites for Experimental Operations

1. In Annex C of this Manual is a list of authorized sites authorized for federal agencies to use for experimental radio stations provided that:

a. The point of contact identified in Annex C, or a responsible designated agency official, maintains a log (which shall be available to NTIA upon request) of experimental operations performed under this section and such log shall include, at a minimum; the dates, transmission start and end times, and frequencies used and;

b. At least 24 hours prior to planned experimental operations, notification is provided by electronic means (i.e., e-mail, phone call, or facsimile transmission) that includes the onsite Stop Buzzer contact name and phone number, frequencies to be used, and planned duration of use, to the FAA National Operations Control Center (NOCC) and the applicable DOD Area Frequency Coordinator (AFC) under the following conditions:

(1) to the FAA NOCC, NOCC@FAA.GOV if experimental operations will occur in or overlap with the following frequencies or frequency bands:

<u>kHz</u>	<u>MHz</u>
190-285	74.800-75.200
325-405	108.000-121.9375
415-435	123.0125-128.8125
510-535	132.0125-136.000
	328.600-335.400
	978-1020
	1030
	1031-1087
	1090
	1104-1146
	1157-1213
	1215-1390
	2700-2900
	5000-5250
	9000-9200

(2) to the applicable DOD AFC listed in Annex D, Table 3 of this Manual if experimental operations will occur in or overlap with the following bands: 1435-1525 MHz, 2310-2320 MHz and 2345-2390 MHz.

7.12 USE OF FREQUENCIES AUTHORIZED TO NON-FEDERAL STATIONS UNDER PART 90 OF THE FCC RULES

1. A federal radio station may utilize any frequency authorized to a non-federal radio station under 47 CFR, Part 90 of the rules of the Federal Communications Commission (FCC) where such utilization is necessary for intercommunication with non-federal stations or required for coordination with non-federal activities, provided that a) the frequency is associated with a non-federal National Interoperability Channel and the federal entity controlling the station has received approval from the FCC licensee involved, or b) in the cases of frequencies other than the non-federal National Interoperability Channels, a mutually approved arrangement has been concluded between the federal agency concerned, the FCC, and the non-federal licensee involved. All operations by federal stations under these provisions a) shall be conducted in essentially the same geographical area as those of the non-federal licensee, b) shall be restricted to the purpose for which the particular frequency is authorized to non-federal stations, c) shall be in accordance with the FCC rules and regulations, d) shall be subject to immediate termination if harmful interference is caused to the service rendered by non-federal stations, and e) shall not bar in any way the expansion of non-federal services for which the frequencies are allocated. The procedure for concluding a mutually-approved arrangement required by this provision is given in Section 8.3.3.

2. FCC regulations provide that non-federal stations holding a license for any public safety frequency pursuant to Part 90 of the Commission's rules are authorized the use of the federal interoperability channels in accordance

with Section 4.3.16. In addition, non-federal stations licensed by the FCC may be authorized the use of other frequencies assigned to federal radio stations upon appropriate showing by the applicant that such assignment is necessary for intercommunication with federal stations or required for coordination with activities of the Federal Government. Such provision is subject to determination by the FCC, after consultation with the appropriate federal agency or agencies, that the assignment is necessary.

7.13 MILITARY COMMUNICATIONS UNDER APPENDIX 13 (Part A2), INTERNATIONAL TELECOMMUNICATION CONVENTION

1. Stations in the mobile service (including portable-type operations) of the U.S. Air Force, Army, Coast Guard, and Navy, when engaged in exercises or tactical operations, may employ any frequencies, in accordance with Appendix 13 (Part A2) of the International Telecommunication Convention provided they cause no interference with the authorized services operating on the frequencies selected.

2. When required by military necessity and in consonance with the provisions set forth in Appendix 13 (Part A2) of the International Telecommunication Convention, minimum performance requirements applicable to the use of Communications-Electronics equipment as prescribed in this Manual¹ may not be met.

3. Where under normal peacetime conditions harmful interference arises to (or from) other operations, performed in accordance with applicable regulatory provisions, as a result of such minimum performance requirements not being met, the military service(s) involved shall to the extent practicable take all reasonable measures to mitigate the harmful interference.

7.14 PERFORMANCE OF ELECTRONIC ATTACK FOR TESTS, TRAINING, AND EXERCISES

1. Frequency use for the performance of electronic attack for tests, training, and exercises is governed by the most recent versions (and any supplements thereto) of the Chairman, Joint Chiefs of Staff (CJCS) Manuals entitled “Performing Electronic Attack in the United States and Canada for Tests, Training, and Exercises” and “Performing Tests, Training, and Exercises Impacting the Global Positioning System (GPS).” Compliance with these CJCS manuals is mandatory for all Department of Defense (DOD) components and contractors performing electronic attack tests, training, and exercises.

2. These CJCS manuals contain details concerning authorized frequency bands, geographical restrictions and frequency clearance procedures for conducting electronic attack tests, training, and exercises in the U.S. and its Territories and Possessions and in Canada. Release of these manuals is limited to DOD components (including the Combatant Commands) and other Federal agencies. Copies are available through controlled Internet access (limited to .mil and .gov users) from the CJCS Directives Electronic Library (<https://www.jcs.mil/library/>), from Joint Staff SIPRNET Directives Electronic Library, or from NTIA.

7.15 MILITARY COMMUNICATIONS FOR TACTICAL AND TRAINING OPERATIONS

7.15.1 Military Communications in the Bands 3500-4000, 20010-22000, and 22855-24990 kHz for Tactical and Training Operations

1. To meet local military peacetime tactical and training requirements within the U.S. and Possessions (US&P), the military services may employ frequencies in the bands 3500-4000, 20010-22000, and 22855-24990 kHz on a secondary basis to the services of stations authorized on frequencies within these bands provided that:

- a. Operations shall be with field-type portable and mobile equipment.
- b. Minimum antenna power shall be used commensurate with the actual communication requirement but not in excess of 50 watts.
- c. The bandwidth of emission shall not exceed 6 kHz for the lower band or 36 kHz for the upper bands.
- d. Prior to transmission, responsible military personnel shall ascertain that services being performed in the

¹ Necessary bandwidths as prescribed in Section 6.3.2. Frequency tolerance as prescribed in Section 5.1. Other minimum performance requirements as prescribed in Sections 5.5 and 5.6.

local area will not be disrupted or suffer harmful interference as a result of such military use of frequencies within the local area.

e. The use of any frequency authorized herein shall be terminated immediately upon notification that harmful interference is being caused.

7.15.2 Military Communications in the Broadcast Bands between 4 and 27 MHz, the Maritime Mobile Band between 4.005 and 4.063 MHz, and Specified Frequencies between 2 and 27 MHz for Tactical and Training Operations

1. The military services may employ frequencies in the bands as indicated in paragraph 1 below and specified frequencies in paragraph 2 below in order to meet local peacetime tactical and training requirements within the US&P (or as indicated below). Such use of frequencies shall be on a secondary basis and subject to the avoidance of harmful interference a) to all operations established in accordance with the international allocations applicable to those bands and b) to all other operations regularly authorized within the US&P on specific frequencies within those bands or on the specified frequencies.

2. The use of frequencies within the following bands will be conducted as indicated in subparagraphs a) and b) and with minimum antenna power commensurate with the actual communication requirement, but not to exceed the power for specific types of emission as indicated:

kHz	kHz
4005 – 4063	5950 - 6200
13600 - 13800	15100 – 15600
9500 - 9900	21450 - 21850
	25670 - 26100

a. For field portable and mobile equipment the following parameters apply:

1K10F1B	100 watts mean
100HA1A	200 watts peak
3K00J3E	250 watts peak
2K00A2B	300 watts peak
3K00J7B, 4K00J7B	400 watts peak
3K00J9W, 4K00J9W, 6K00J9W	600 watts peak
6K00B9W	800 watts peak

b. For shipboard mobile equipment the following parameters apply:

100HA1A	500 watts peak
100HJ2A	500 watts peak
3K00J3E, 2K80J3E	500 watts peak
3K00J7B	1000 watts peak
6K00B9W	2000 watts peak

3. The use of the following frequencies, as indicated below, will be controlled by and coordinated between the Military Departments Frequency Management Offices for operations conducted a) normally between transportable and fixed facilities engaged in long haul HF operations and b) with minimum antenna power commensurate with the actual communication requirement, but not to exceed 10 KW, and with 6K00B9W, 9K00B9W and 12K00B9W emissions only (**all in kHz**).

2001.0	6897.5 ⁽¹⁾	9958.0	13545.0	17500.0	20763.0
2582.0*	6905.0	9970.0 ⁽⁴⁾	13610.0 ⁽⁴⁾⁽¹⁰⁾	17519.0 ⁽³⁾	20950.0 ⁽⁵⁾
2618.0 ⁽⁹⁾	6912.5	10586.0 ⁽²⁾	13680.0 ^{(10)*}	18036.0 ⁽¹⁾	21856.0 ⁽⁶⁾

2664.0 ⁽¹²⁾	6989.0	10690.0	14375.0	18060.0	21886.0 ⁽⁶⁾
2797.0*	7362.5 ⁽⁵⁾	10720.0 ⁽⁵⁾	14385.0	18162.5 ⁽¹¹⁾	21918.0 ⁽⁶⁾
3373.0	7469.0 ⁽¹⁾	10730.0	14646.0	19005.0	23180.0
4445.0	7690.0 ⁽¹⁾	11410.0 ⁽⁶⁾	14667.0 ⁽⁶⁾	19047.0	23500.0
4505.0 ⁽⁴⁾	7935.0	11422.5 ⁽⁵⁾	14867.5	19160.0	23600.0
4528.0	8000.0 ⁽⁵⁾	11482.5	15595.0 ⁽¹⁾⁽¹⁰⁾	19510.0 ⁽⁴⁾	23690.0
4562.5	8041.0	11513.5 ⁽⁴⁾	15895.0	20035.0	23700.0
4595.0 ⁽⁶⁾	8060.0	11535.0	16090.0	20050.0	24120.0
4985.0 ⁽⁴⁾	8064.0	11995.0 ⁽¹⁰⁾	16100.0	20075.0	24510.0
5370.0 ⁽⁴⁾	8162.0 ⁽¹⁰⁾	12045.0 ⁽²⁾⁽¹⁰⁾	16170.0	20124.0	25360.0
5400.0 ⁽³⁾	8170.0 ⁽¹⁰⁾	12060.0	16225.0 ⁽⁵⁾	20171.0	25425.0
5434.0	9145.0	12090.0	16340.0	20350.0 ⁽⁸⁾	25516.0
5817.5 ⁽²⁾	9190.0 ⁽³⁾⁽⁹⁾	12105.0	16422.5 ⁽⁶⁾⁽¹⁰⁾	20400.0	26575.0 ⁽⁹⁾
5820.0 ⁽²⁾	9259.0 ⁽⁷⁾	12240.0 ⁽¹⁰⁾	17410.0 ⁽¹⁾⁽⁸⁾⁽¹⁰⁾	20425.0	26650.0 ⁽⁵⁾
5835.0*	9320.0 ⁽⁴⁾	12255.0 ⁽²⁾⁽¹⁰⁾	17460.0	20438.0 ⁽⁵⁾	26750.0
6830.0	9417.5	12324.0 ⁽⁴⁾⁽¹⁰⁾	17480.0	20550.0	26850.0

* 6KB9W and 9KB9W only

¹ Transmit east of 100° west only

² Transmit west of 100° west only

³ Transmit east of 117° west only

⁴ Transmit west of 117° west only

⁵ NAVCOMMSTA Stockton transmit only

⁶ USA to USA only

⁷ Not to be used to/from Norfolk, VA

⁸ Military services to coordinate with Justice before use

⁹ 6KB9W only

¹⁰ This frequency is available until implementation procedures and schedules are determined by future conferences of the International Telecommunication Union (ITU) for Broadcasting or Maritime Mobile Services.

¹¹ This frequency is available until re-accommodation actions of the International Telecommunication Union (ITU) are completed or until July 1, 1989, whichever is earlier.

¹² For use within central U.S. Coordinate with Coast Guard prior to use near Coast Guard/Coastal areas.

7.15.3 Military Communications in Non-Federal Bands Above 25 MHz for Tactical and Training Operations

4. The military services may employ frequencies in certain non-federal bands above 25 MHz, after coordination between the FCC's FAS Liaison representative and military field personnel, for tactical and training operations in the US&P. The military use of non-federal frequencies under the procedures stipulated will not be a bar to the present or future assignment, through the normal IRAC/FCC process, of non-federal frequencies to non-military federal agencies, and, in such military use of non-federal frequencies, protection shall be afforded to federal operations authorized on specific frequencies within the non-federal frequency bands concerned.

5. In order to provide for military tactical and training assignments in the US&P, military field personnel are authorized to coordinate such assignments with the FCC's FAS Liaison representative without referring these matters to Washington headquarters.

6. Military agencies have agreed that prior to coordinating tactical and training frequency assignments with the FCC's FAS liaison representative, military field representatives will first establish that proposed assignments have a good chance of being compatible with non-federal assignments. Consequently, the FCC is not expected to "engineer" such assignments for the military.

7. The following procedures will apply to the use of the non-federal bands between 25 and 2400 MHz specified herein:

a. The military will not request the use of frequencies allocated to non-federal services whenever the tactical and training requirements can be met through the use of federal bands.

b. Military tactical and training assignments shall cause no harmful interference to non-federal assignments

and military operations shall be terminated immediately upon notification that harmful interference has occurred.

c. Military tactical and training assignments must accept such interference as may be caused by non-federal spectrum use.

d. Tactical and training assignments shall be temporary for a period of no longer than 1 year and the military representatives shall re-coordinate if continued use is desired. The military field representatives shall maintain a current list of such assignments and furnish the list to the FCC's FAS liaison representative if requested.

8. The following shall be used as a guide for the coordination of military tactical and training assignments when it has been determined that the use of non-federal bands is necessary:

a. Bands allocated to the broadcasting service for domestic use.

(1) The following are the bands between 25 and 2400 MHz that are allocated for this purpose:

MHz	MHz
54-72	174-216
76-100 (ex. Alaska)	470-608
100-108	614-698

(2) The FCC will not permit military tactical and training assignments on TV or FM channels in the areas where the public is receiving service. In many instances such service is received far beyond the normal service ranges of broadcasting stations. However, reception in such areas shall be protected regardless of the quality of such reception

b. Bands used for auxiliary broadcast purposes.

(1) The following are the bands between 25 and 2400 MHz that are allocated for this use:

MHz	Use
25.85-26.48	Remote Pickup
152.86-153.35	Remote Pickup
160.86-161.40	Remote Pickup (Puerto Rico and Virgin Islands only)
161.625-161.775	Remote Pickup (except in Puerto Rico and Virgin Islands)
450-451	Remote Pickup
455-456	Remote Pickup
942-952	STL
2025-2110	TV Pickup, TV-STL

(2) Frequencies in bands used by remote pickup, studio transmitter links and other broadcast auxiliaries may be used for military tactical and training purposes providing FCC engineers coordinate such use with the appropriate broadcast station licensees. For example, there is no objection to a military tactical and training assignment co-channel to a remote pickup assignment in the same area provided the broadcast licensee is cognizant of such arrangements and can be assured that in the event a remote broadcast pickup is necessary, any military operations that may be on the air will shut down immediately upon notification.

As an additional example, frequencies which are assigned to studio transmitter links may be utilized by military tactical and training assignments, providing these assignments are coordinated by the FCC with the broadcast licensees involved and the tactical and training assignments so arranged as to cause no harmful interference to an STL. In all cases where a tactical and training assignment is made on an auxiliary broadcast service frequency within interference range of a co-channel FCC licensee, the licensee should be given the name of the military representative to contact in the event interference is caused.

c. Public Safety, Citizens Radio, Industrial, Land Transportation and Maritime Mobile Bands.

(1) The following bands between 25 and 2400 MHz are allocated for this purpose:

MHz	MHz	MHz
25.01-25.33	39.00-40.00	156.675-156.725
26.96-27.54	42.00-43.20	156.875-157.025
29.70-29.80	43.68-46.601	157.45-157.74
30.56-32.00	47.00-49.60	158.10-158.46
33.00-34.00	150.80-152.00	158.70-161.775

35.00-35.20	152.24-152.48	173.20-173.40
35.68-36.00	152.84-156.25	451.00-454.00
37.00-38.00	156.325-156.625	456.00-459.00
		460.00-470.00

(2) Frequencies in bands allocated to these services for land mobile use may be authorized for military tactical and training assignments provided the assignments are coordinated between FCC field engineers and military field representatives. Consequently, personnel in the field will need to take into consideration such factors as local terrain. For example, an obstruction such as a hill or a mountain range might lower considerably the distance between a non-federal and a military tactical and training assignment. On the other hand, there are certain locations where better than average radio propagation conditions exist, and it will be necessary for FCC engineers and military representatives to take this into account. If doubt exists as to the practicability of a proposed tactical and training assignment, tests should be conducted.

d. Bands allocated to non-federal fixed service (excluding common carriers).

(1) The following are the bands between 25 and 2400 MHz that are allocated for this purpose:

MHz	MHz
72.0-73.0	1850-2000
75.4-76.0	2020-2200
76.0-100 (In Alaska)	
952-960	

(2) In bands allocated to the non-federal fixed service (excluding common carrier), military tactical and training assignments may be authorized after coordination with the FCC's FAS Liaison representative. It is not possible to develop typical standards for the coordination of such assignments in fixed bands due to the fact that, in general, highly directive antennas are used and problems of interference protection will vary greatly. Since many military tactical and training operations involve the use of highly directive antennas, it may sometimes be possible to coordinate such assignments, although they may be in the same area as non-federal assignments, by taking into account directive antenna features of the installations involved. In coordinating such assignments FCC engineers may coordinate proposed military tactical and training assignments with FCC licensees whenever there is a doubt as to the compatibility of the proposed military assignments. Tests should be conducted if necessary.

e. Bands allocated to international fixed public services.

(1) The following bands between 25 and 2400 MHz are allocated for this purpose:

MHz
26.95-26.96
29.80-29.89
29.91-30.00

(2) In the above bands, military tactical and training assignments may be authorized after coordination with the FCC's FAS Liaison representative provided that the military use is limited to those periods when propagation conditions would not normally support long distance communication, and therefore could be expected to confine to the local area the potential of interference to non-federal services.

f. Amateur Bands

(1) The following are the bands between 25 and 2400 MHz that are allocated for this purpose:

MHz	MHz
28-29.7	420-450
50-54	902-928
144-148	1240-1300
219-220	2300-2310
222-225	2390-2400 (This band extends to 2450 MHz.)

(2) The following provisions are applicable in the use of the above bands for communication purposes

(i.e. for other than radiolocation purposes).

(a) Subject to the provisions of the rules adopted by the Federal Communications Commission, amateur stations generally are operated freely on any frequency within the established amateur bands. Therefore, great care needs to be taken in the coordination and in the use of such frequencies by the military.

(b) The following conditions shall be observed in the military use of amateur frequency bands between 25 and 2400 MHz for routine day to day tactical and training purposes:

i. Operations on such frequencies will be confined normally to the hours of 0600-1800 local civil time.

ii. Prior to transmission on specific frequencies, military personnel should ascertain that such frequencies are not in actual use by amateur stations within the local area in a manner which is likely to suffer harmful interference if the frequencies were used for military operation.

iii. In recognition of the primary status of amateur stations as against the secondary status of military frequency use in such bands in peacetime, military personnel have responsibility in the event of, evidence of, or actual complaints of interference, to take effective remedial action without undue delay².

iv. Insofar as practical, consideration should be given in planning the use of such frequencies to their employment in a manner or at transmitter locations well removed from areas of civilian population where amateur use is likely. Appropriate measures should be adopted to minimize interference as by the use of minimum radiated power and intermittent transmissions of short duration.

v. It should be recognized that long distance propagation characteristics of the 28 MHz and 50 MHz bands, especially in the case of the former, require that good judgment be exercised in military use of these bands. Only when sky-wave propagation is not present is it practicable to use these bands for anything except extremely low power

7.15.4 Military Communications in the Federal Bands Between 30 and 50 MHz for Tactical and Training Operations

To meet local military peacetime tactical and training requirements within the US&P, the military services may employ frequencies in the bands 30.00 to 30.56, 32.00 to 33.00, 34.00 to 35.00, 36.00 to 37.00, 38.00 to 39.00, 40.00 to 42.00, 46.60 to 47.00, and 49.60 to 50.00 MHz on a secondary basis to the services of other federal stations authorized on frequencies within these bands provided that:

a. Operations shall be with field-type portable and mobile equipment.

b. Minimum antenna power shall be used commensurate with the actual communication requirement but not in excess of 50 watts.

c. The bandwidth of emission shall not exceed 6 kHz with type A3E emission or 36 kHz with type F3E emission.

d. Prior to transmission, responsible military personnel shall ascertain that services being performed by other federal agencies in the local area will not be disrupted or suffer harmful interference as a result of such military use of frequencies within the local area.

e. The use of any frequency authorized herein shall be terminated immediately upon notification that harmful interference is being caused.

7.16 (RESERVED)

7.17 MILITARY COMMUNICATIONS AT TEST RANGES IN NON-FEDERAL BANDS ABOVE 25 MHz

The military departments may employ frequencies in certain non-federal bands above 25 MHz at specified military test ranges after coordination between FCC field personnel and military field personnel.

² This refers to military use for communication purposes and not to military radio location uses which have priority status in the amateur bands above 222 MHz.

7.17.1 Locations

The military test ranges and the Geographical Areas of Cognizance are as follows:

Activity	Geographical Area of Cognizance	Service Responsibility
Weapons and Tactics Center, Nellis AFB, Nevada	Entire State of Nevada plus Utah west of 111° W and Idaho South of 44°N.	Air Force
Air Force Eastern Test Range, Patrick AFB, Florida	Area bounded by 24°N, 31°30'N, 77°W, and 83°W.	Air Force
DOD Gulf Area Coordinator, Eglin AFB, Florida	Area bounded by 24°N, 33°30'N, 83°W and 90°W.	Air Force

Activity	Geographical Area of Cognizance	Service Responsibility
Pacific Missile Test Center, Pt. Mugu, California	Area enclosed within 322 kilometer radius of Headquarters Building, PMR, and the area of California that lies south of 37°30'N.	Navy
Army Electronic Proving Ground, Ft. Huachuca, Arizona	Entire State of Arizona	Army
Military Ranges within the State of Hawaii	Area enclosed by 322 kilometer radius of Honolulu, Hawaii	CINCPAC
White Sands Missile Range, Las Cruces, New Mexico	Entire State of New Mexico and other U.S. territory enclosed with a 240 kilometer radius of the Headquarters Building, WSMR, plus the area of the States of Utah and Colorado that lies south of 41°N and between 108°W and 111°W.	Army
Military Ranges within the State of Alaska	Entire State of Alaska	USPACOM

7.17.2 Frequency Bands

Frequencies in the following bands may be used in these geographical areas in support of the mission of these ranges, subject to the conditions and procedures specified in this part (**all in MHz**):

25.01-25.33	35.00-36.00	144.0-148.0	450.0-608.0
25.85-26.48	37.00-38.00	150.8-156.25	614.0-890.0
26.95-27.54	39.00-40.00	156.35-156.7	942.0-960.0
28.00-29.89	42.00-46.60	156.9-157.0375	1850-2110
29.91-30.00	47.00-49.60	157.1875	2450-2690
30.56-32.00	50.00-73.00	162.0125	6425-7125
33.00-34.00	75.40-108.00	174.0-216.0	10550-10680
			11700-13250

Frequency bands above 13250 MHz are under consideration and will be designated later.

7.17.3 Conditions

1. Non-federal allocated bands will not be used if the frequency requirements can be satisfied in federal allocated bands.

2. Proposed operations on non-federal frequencies should normally be limited to those of a highly intermittent nature which can be suspended or adjusted immediately upon notice that interference is being caused to a non-federal service. Care should be exercised in the selection of frequencies for proposed operations to avoid the likelihood of harmful interference to known non-federal operations. Where practicable, provision shall be made for identification of the transmissions of the military station either by the transmission of a call sign or periodic interruption of the

transmissions in accordance with a prearranged schedule.

3. Military users of any frequency assigned pursuant to this procedure shall accept any interference that may be caused by non-federal services, shall not cause interference to any non-federal service, and shall not preclude new non-federal assignments on such a frequency.

4. This procedure does not apply to the development of military systems or concepts which may require changes in the National Table of Frequency Allocations. Any such development must be coordinated through appropriate Washington channels.

7.17.4 Coordination

1. Proposed federal operations on non-federal frequencies which come within the purview of this procedure shall be coordinated with the FCC's Office of Engineering and Technology, Chief of Spectrum Coordination Branch, prior to the commencement of such operation. No operation on non-federal frequencies shall be conducted without prior concurrence by the FCC Chief of Spectrum Coordination Branch. If the FCC Chief of Spectrum Coordination Branch is unable to concur in a proposed operation and circumstances appear to warrant further consideration by higher authority, the request may be referred to military headquarters.

2. Requests for coordination submitted to the FCC Chief of Spectrum Coordination Branch shall include the following information:

- a. Security classification, if any.
 - b. Frequency or frequencies proposed to be used.
 - c. Transmitter location or area of proposed operation. (If the transmitter is at a fixed location, give the geographic coordinates to the nearest minute as well as the nearest identifiable community. If the operation is portable or mobile, describe the area of proposed operation. If the transmitter is airborne, so specify and describe the general range of operations.)
 - d. Emission and bandwidth. (If pulsed emissions are used, give the approximate risetime and repetition rate.)
 - e. Power. (Output power of transmitter.)
 - f. Antenna. (Give type of antenna (whip, dipole, yagi, parabolic, etc.) approximate height of antenna above ground, power gain if any, and direction of main radiation lobe if a directive transmitting antenna is employed.)
 - g. Time of operation. (To the extent practicable, indicate whether the proposed operation will take place at specified hours or during certain periods of the day, whether the transmissions during operation will be continuous or intermittent with some indication as to the degree of intermittence, and whether the contemplated use will occur frequently or only upon special occasions. Such information will assist the Chief of Spectrum Coordination Branch in properly evaluating potential interference.)
 - h. Call signs. (Call sign information should be supplied, if appropriate. If identification is to be accomplished through periodic interruptions of the transmissions in accordance with a prearranged schedule, supply such a schedule.)
 - i. Expected duration of the proposed operation.
 - j. Remarks. (Any additional information which will be helpful in assessing potential interference.)
3. Military frequency coordinators shall not coordinate proposed frequencies with the FCC until it has been ascertained, to the coordinator's satisfaction, that the terms of this document can be met.

7.17.5 Frequency Assignment Lists

On an annual basis the military frequency coordinators will furnish in duplicate to the appropriate FCC Chief of Spectrum Coordination Branch a list of current assignments made pursuant to these arrangements.

7.18 MILITARY TELEMETERING AND TERRESTRIAL TELECOMMAND IN RADIOLOCATION BANDS

In order to transmit command signals to airborne vehicles being tracked and to receive status information from the vehicles, military telemetering and terrestrial telecommand operations are authorized in the bands 3100-3650, 5250-5925, 8500-10,000 MHz, 13.4-14.0 and 15.7-17.3 GHz when conducted as an integral part of the operation of authorized stations in the radiolocation service. Such telemetering and terrestrial telecommand operations shall be

on a secondary basis to authorized stations operating in accordance with the National Table of Frequency Allocations.

7.19 (RESERVED)

7.20 USE OF NON-FEDERAL FREQUENCIES BY THE FCC ENFORCEMENT BUREAU

The FCC Enforcement Bureau is authorized to transmit on any frequency that is allocated or authorized for non-federal use under FCC Rule Parts 2, 15, 18, 22, 24, 25, 27, 30, 73, 74, 76, 78, 80, 87, 90, 95, 96, 97 and 101 for the purpose of enforcement and/or interference resolution.

7.21 TEMPEST ZONE TESTING OF PHYSICAL FACILITIES

1. Federal stations are authorized to transmit necessary emissions for TEMPEST zone testing in the frequency range 10 to 1000 MHz on a non-interference basis to other operations in this band. These TEMPEST zone tests shall be conducted with the following restrictions:

a. The frequency range 10-1000 MHz will be broken into 4 bands for testing: 10-110 MHz, 100-200 MHz, 200-500 MHz and 500-1000 MHz. A bi-conical antenna will be used for 10-200 MHz. A log periodic antenna will be used above 200 MHz.

b. Testing will be done with a signal generator which produces a continuously swept sine wave. Sweep durations will not exceed two seconds for bands 10-110 and 100-200 MHz; or 5 seconds for the band 200-500 MHz; or 10 seconds for the band 500-1000 MHz.

c. The transmitting antenna will always be inside a building, and power will not exceed 3.5 watts input to the antenna.

2. Prior to conducting a test, coordination by the test agency's FAS representative shall be effected with FAS representatives of all federal agencies and the FCC whenever such tests could affect their radio stations or FCC licensees.

3. Non--federal stations conducting TEMPEST zone testing under contract should apply for license under Part 5 (Experimental Radio Services) of the FCC Rules. These operations shall be coordinated with the contracting agency and other federal agencies by the FCC FAS representative, as appropriate.

7.22 USE OF FREQUENCIES 10.525 GHz AND 24.150 GHz OR THE BAND 33.4-36.0 GHz FOR RADIOLOCATION DEVICES

Federal agencies may operate radio units for the purpose of determining distance, direction, speed or position by means of a radiolocation device on the frequencies 10.525 GHz and 24.150 GHz or in the band 33.4-36.0 GHz, provided FCC type-accepted equipment or equipment developed with identical standards or specifications is used.

7.23 FEDERAL GOVERNMENT AGENCIES AS END USERS OR CUSTOMERS OF FCC-LICENSED SERVICES

1. Federal Government entities may, without further authority from the Assistant Secretary or NTIA, use the radio frequency spectrum for telecommunication as end users or customers of any FCC-licensed system or service so long as the operation of the federal entities' radio frequency devices and equipment is under the control of the FCC licensee; does not require an individual FCC license; and such devices, equipment, and uses are in accordance with applicable FCC rules and regulations.

2. In addition, Federal Government entities may, without further authority from the Assistant Secretary or NTIA, use the radio frequency spectrum for telecommunication as end users or customers in any FCC service that is licensed by rule so long as the federal entities' radio frequency devices, equipment, and uses are in accordance with applicable FCC rules and regulations.

3. The blanket authority addressed by this section covers licensed services, including those licensed by rule, contained in Title 47 of the Code of Federal Regulations.

4. Federal end users and customers covered by this section may be accorded the same privileges and are subject to the same obligations as non-federal end users and customers.

5. For services that, under applicable rules, provide no customer or end-user protection from harmful interference caused by another authorized user, federal entities may not use such services to support operations that safeguard human life or property.

6. This section does not relieve federal users from any applicable policy, guidance, or regulations issued by their agencies governing the use of such devices, equipment, or services.

7.24 (RESERVED. SEE CHAPTER 12.)

7.25 USE OF ELECTRONIC ATTACK AND ELECTRONIC COUNTERMEASURES

7.25.1 General; Coordination; Definitions

1. The use of stations or devices designed or intended to cause harmful interference to electromagnetic communications is prohibited unless specifically authorized by law and such use is in accordance with this section, Section 7.14 of this Manual, or a separate authorization from the National Telecommunications and Information Administration (NTIA).

2. To the extent such stations or devices are so authorized and used by a federal agency, close coordination with NTIA, the Federal Communications Commission (FCC), the Federal Aviation Administration (FAA), and any other potentially affected federal agencies is required to facilitate safe and effective use of these stations and devices and to minimize collateral risk of interference to other authorized users of the radio frequency spectrum. For purposes of such coordination, the authorized agency shall provide all required or requested information to at least the following:

- a. NTIA, Office of Spectrum Management, Frequency Assignment Branch (FAB):
FAB@ntia.gov (unclassified only)
FAB@doc.sgov.gov (SIPRNET)
Confirm receipt at 202-482-1132
- b. FCC Operations Center (24/7):
FCCOPS@fcc.gov (unclassified only)
FCCOPS@saber.pentagon.smil.mil (SIPRNET)
Confirm receipt at 202-418-1122
- c. FCC Office of Engineering and Technology, Spectrum Coordination Branch:
OET-SCB@fcc.gov (unclassified only)
Confirm receipt at 202-418-2470
- d. FAA
FAA-DOD-LIAISON@faa.gov (unclassified only)
FAA-DOD_Liaison@faa.sgov.gov (SIPRNET)
Confirm receipt with Military Team Lead at 202-595-4624 or 202-267-8584 or with Military Liaison at 202-603-4965 or 202-267-5981

3. For purposes of this section, the terms “electronic attack” (EA) and “electronic countermeasures” (ECM) have the meanings given those terms in the documents referenced below. However, in the absence of definitions in those documents, these terms mean the operational deployment of devices, equipment, or techniques with the objective of intentionally disrupting the operation, operational effectiveness, or performance of electronics and electrical equipment through the use of jamming, electromagnetic energy, or directed energy to cause harmful interference.

7.25.2 Use of EA and ECM by the Department of Justice in Response to Radio-Controlled Improvised Explosive Devices

1. The Department of Justice (DOJ) is authorized to conduct EA and ECM operations in accordance with the most recent version of the DOJ document entitled “Authorization of Radio Transmission and the Control of Interference Applicable to the Department of Justice Program for Applying Electronic Countermeasures in the United States in Response to Threats of Radio-Controlled Improvised Explosive Devices.”

2. This document contains details of a Federal Bureau of Investigation (FBI) sponsored ECM program

designed to address the requirements of bomb squads in response to radio-controlled improvised explosive devices. The DOJ document describes required training and certification procedures for program participants, identifies the type of equipment to be used (along with requirements for tracking, replacement, and retirement of such equipment), and summarizes the general program limits and safeguards such as coordination and reporting requirements for frequency management and interference mitigation and control.

3. This document is only approved for limited release to the program's sponsors and contractors, to trained and certified program participants, and to other federal agencies in connection with the program. Copies are available to approved entities only through a controlled distribution by the FBI or from NTIA. DOJ will review this document annually and provide updates to NTIA accordingly.

7.25.3 Use of EA and ECM by the Military Departments in Response to Threats Posed by Unmanned Aircraft Systems and Unmanned Aircraft to Covered Facilities and Assets

1. The military departments are authorized to conduct EA and ECM operations against Unmanned Aircraft Systems (UAS) and Unmanned Aircraft (UA) in accordance with Section 130i of Title 10, United States Code, as amended, and applicable regulations and guidance documents issued thereunder.

2. Such guidance documents and other applicable directives and policies set forth, among other things, detailed requirements and procedures that govern the use of EA and ECM against UAS/UA, including measures to prevent and mitigate collateral impacts and unintended harmful interference. These measures include coordination and notification requirements and procedures for obtaining specific frequency clearances. These documents also outline operator training, equipment tracking and control, and "stop buzzer" notification requirements.

3. Release of the aforementioned documents is limited to the military departments, other Department of Defense (DOD) components (including the Combatant Commands) and other federal agencies. Copies are available only through a controlled distribution by DOD or by NTIA pursuant to its document distribution procedures.

7.25.4 Use of EA and ECM by the Department of Energy in Response to Threats Posed by UAS and UA to Covered Nuclear Facilities and Assets

1. The Department of Energy (DOE) is authorized to conduct EA and ECM operations against UAS and UA in accordance with Section 2661 of Title 50, United States Code, and applicable regulations and guidance documents issued thereunder.

2. Such guidance documents and other applicable directives and policies set forth, among other things, detailed requirements and procedures that govern the use of EA and ECM against UAS/UA, including measures to prevent and mitigate collateral impacts and unintended harmful interference. These measures include coordination and notification requirements and procedures for obtaining specific frequency clearances. These documents also outline operator training, equipment tracking and control, and "stop buzzer" notification requirements.

3. Release of the aforementioned documents is limited to DOE and other federal agencies. Copies are available only through a controlled distribution by DOE or by NTIA pursuant to its document distribution procedures.

7.25.5 Use of EA and ECM by the Departments of Justice and Homeland Security in Response to Threats Posed by UAS and UA to Covered Facilities and Assets

1. The Department of Justice (DOJ) and the Department of Homeland Security (DHS) are authorized to conduct EA and ECM operations against UAS and UA in accordance with Section 124n of Title 6, United States Code, and applicable regulations and guidance documents issued thereunder.

2. Such guidance documents and other applicable directives and policies set forth, among other things, detailed requirements and procedures that govern the use of EA and ECM against UAS/UA, including measures to prevent and mitigate collateral impacts and unintended harmful interference. These measures include coordination and notification requirements and procedures for obtaining specific frequency clearances. These documents also outline operator training, equipment tracking and control, and "stop buzzer" notification requirements.

3. Release of the aforementioned documents is limited to DOJ, DHS, and other federal agencies. Copies are available only through a controlled distribution by DOJ, DHS, or NTIA pursuant to their document distribution procedures.

7.25.6 Use of EA and ECM for Testing and Evaluation of EA and ECM Equipment

1. Unless otherwise authorized by Section 7.14 of this Manual or any of the above provisions of this section, federal agencies engaged in research, development, testing, and evaluation of technologies and equipment for purposes of EA or ECM must conduct all over-the-air testing and evaluation of such technologies and equipment in accordance with the following provisions under a pre-coordinated special temporary authorization (STA) obtained from NTIA pursuant to Section 8.3.31 of this Manual.

2. Notwithstanding the provisions of Section 8.3.31 and to facilitate close coordination with NTIA, FCC, FAA, and other agencies, the following additional requirements (with reference to the corresponding paragraph in Section 8.3.31) shall apply to any federal agency STA request for testing and evaluation of EA and ECM equipment:

a. Timing (per para. 3 of Sec. 8.3.31). NTIA may provide, at its discretion, more than five (5) business days to circulate such requests among impacted users to ensure adequate interagency review and coordination. No “emergency” STA requests for EA and ECM testing and evaluation operations will be accepted. It is strongly recommended that such requests be:

(1) Submitted to NTIA at least sixty (60) days prior to the requested start date of the proposed operation, if possible, but no such requests shall be submitted later than thirty (30) days before the proposed start date;

(2) Pre-coordinated (per para. 7(a) of Sec. 8.3.31) directly with the FAA contacts in para. 2(d) of Section 7.25.1 above and any other affected federal agencies if the requested bands (or in the case of significant emissions outside of such bands) overlap those in which the FAA and other affected agencies have potential victim assignment(s) (e.g., frequency bands listed under the Aeronautical Advisory Group in Section 1.3.2 and in Section 8.3.16 of this Manual);

(3) Pre-coordinated (per para. 7(b) of Sec. 8.3.31) directly with the FCC contacts in para. 2(b)-(c) of Section 7.25.1 above if the requested bands overlap any non-Federal allocation listed in the National Table of Frequency Allocations under Part 2 of the FCC’s rules (including bands used for unlicensed devices, such as ISM bands at 902-928 MHz, 2.4 GHz, and 5 GHz) or non-Federal authorized use listed in the Table; and

(4) Pre-coordinated (per para. 7(b) of Sec. 8.3.31) directly with potentially affected FCC licensees especially when proposed testing will occur near populated areas.

b. Stop Buzzer Information (per para. 4 of Sec. 8.3.31). Stop buzzer contact information shall be included in the STA request, updated as necessary, and provided to the NTIA, FCC, and FAA contacts in para. 2 of Section 7.25.1 above (and to other potentially affected federal agencies). Such information shall include primary and backup phone numbers and e-mail addresses of on-site federal agency personnel who have authority and ability to shut down testing and evaluation operations in the event of reported interference.

c. Use of Assets Already in the Government Master File (GMF) (per para. 5 of Sec. 8.3.31). Upon request, NTIA may waive this requirement.

d. Additional Data Requirements (per para. 6 of Section 8.3.31). NTIA, at its discretion or upon request from the FCC, FAA or other potentially impacted agencies, may require additional data from the requesting agency, including but not limited to: specific data on emissions outside of the requested bands, frequency agility, power reductions, site location, terrain, direction of transmissions; identification of known population centers that could be affected by the testing; a copy of the test plan; and applicable federal contract or cooperative agreement numbers and contracting officer’s point of contact information.

7.26 AUTHORIZATION TO UTILIZE SPECTRUM BY FEDERAL SURFACE DEFECT TESTING SYSTEMS FOR LOW OBSERVABLE AIRCRAFT

Military departments desiring to deploy Surface Defect Testing Systems (SDTS) and associated components in a controlled environment for testing of surface defects on low-observable (LO) aircraft shall submit requests for equipment spectrum certification and frequency assignments to the Spectrum Planning Subcommittee (SPS) and FAS, respectively, in accordance with the requirements and procedures established in Chapters 8 and 10 of this Manual.

7.26.1 SPS Process

1. The SPS will generally apply the analysis method outlined in Chapter 8 to evaluate the compatibility of the proposed surface defect testing system that fall within the bounds of DSO-CR-13-114 “Assessment of Compatibility between Low Observable (LO) Diagnostic Measurement Systems and Selected Systems” (LO Report)³. During the SPS review and preliminary assessment of the system, the coordination trigger-distance tables from the LO Report will be used.

a. If the proposed location and frequency band or bands fall within a coordination trigger-distance, the SPS will request the submitting agency to coordinate with the affected agency or agencies to further assess the potential impact and come up with agreeable interference mitigating techniques or procedures. Techniques might include such actions as reducing power and/or locking out certain frequency bands of concern prior to approving SPS certification. The affected agency or agencies may require the requesting agency to provide more detailed analyses or perform additional measurements. The measurements or analyses may consider additional technical factors of the system and site characteristics. When tests on systems of concern are not feasible, it is possible that a surrogate system may be used.

b. If the proposed location and frequency bands fall outside the coordination trigger-distance, the SPS will certify the equipment without further analyses or measurements.

c. Any additional measurements or analyses used to evaluate or establish compatibility or Trigger Distance table during the SPS review or assessment process will become a resource to be considered for frequency application as well as supporting future spectrum certification requests of new and similar SDTS.

2. If the RF characteristics of an LO system fall outside of the bounds of the characteristics used in the LO Report the submitting agency is required to provide new electromagnetic compatibility reports, coordination trigger-distance tables and/or additional measurements to include supporting test data to the SPS for consideration and approval.

7.26.2 FAS Process

The FAS will use the NTIA certification and the referenced SPS assessment to evaluate the frequency assignment applications for SDTS. The agencies will have a final opportunity to refine any mitigation that might be necessary during the FAS review.

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³ A copy of this report is located at <http://www.ntia.doc.gov/technical-reports>.