

# 1535-1559 MHz

## 1. Band Introduction

The primary Federal use of the band 1535-1559 MHz is for earth stations in the space-to-Earth direction in conjunction with commercial mobile-satellite service (MSS) systems. The band 1525-1559 MHz is paired with the band 1626.5-1660.5 MHz which is used for Earth-to-space communications. The commercial satellite service providers include the London-based INMARSAT and the U.S.-based LightSquared. The Coast Guard and the Federal Aviation Administration (FAA) operate mobile earth terminals in the band in support of maritime and aeronautical emergency communications, respectively, via the INMARSAT commercial satellites. In addition to emergency communications, the Federal agencies operate mobile earth terminals, including aeronautical, land, and maritime, using commercial satellite systems.

The Department of Commerce National Oceanic and Atmospheric Administration (NOAA) operates the Local User Terminal (LUT) ground stations in the 1544-1545 MHz portion of the band. The LUT ground stations receive information from polar orbiting and geostationary satellites that carry the Search and Rescue Satellite-Aided Tracking (SARSAT) payloads providing distress alert and locations information from Emergency Position-Indicating Radio Beacon (EPIRB) and Emergency Locator Transmitter (ELT) to public safety rescue authorities for maritime, aviation, and land users in distress.<sup>1</sup>

## 2. Allocations

### 2a. Allocation Table

The frequency allocation table shown below is extracted from the Manual of Regulations & Procedures for Federal Radio Frequency Management, Chapter 4 – Allocations, Allotments and Plans.

*Table of Frequency Allocations*

*United States Table*

| Federal Table  | Non-Federal Table | FCC Rule Part(s)  |
|--|-------------------|---|
| 1535-1559<br>MOBILE-SATELLITE (space-to-Earth) US308 US309<br>US315 US380<br>5.341 5.351 5.356 |                   | Satellite Communications (25)<br>Maritime (80)<br>Aviation (87) |

<sup>1</sup> SARSAT is a part of the COSPAS-SARSAT system. COSPAS is the acronym for Cosmitscheskaja Sistema Poiska Awarinitsch Sudow (Russian for space system for search of vessels in distress). COSPAS and SARSAT were combined to form an international cooperative search and rescue program.

## 2b. Additional Allocation Table Information

**US308** In the bands 1549.5-1558.5 MHz and 1651-1660 MHz, those requirements of the aeronautical mobile-satellite (R) service that cannot be accommodated in the bands 1545-1549.5 MHz, 1558.5-1559 MHz, 1646.5-1651 MHz and 1660-1660.5 MHz shall have priority access with real-time preemptive capability for communications in the mobile-satellite service. Systems not interoperable with the aeronautical mobile-satellite (R) service shall operate on a secondary basis. Account shall be taken of the priority of safety-related communications in the mobile-satellite service.

**US309** In the bands 1545-1559 MHz, transmissions from terrestrial aeronautical stations directly to aircraft stations, or between aircraft stations, in the aeronautical mobile (R) service are also authorized with such transmissions are used to extend or supplement the satellite-to-aircraft links. In the band 1646.5-1660.5 MHz, transmissions from aircraft stations in the aeronautical mobile (R) service directly to terrestrial aeronautical stations, or between aircraft stations, are also authorized when such transmissions are used to extend or supplement the aircraft-to-satellite links.

**US315** In the bands 1530-1544 MHz and 1626.5-1645.5 MHz, maritime mobile-satellite distress and safety communications, *e.g.*, GMDSS, shall have priority access with real-time preemptive capability in the mobile-satellite service. Communications of mobile-satellite system stations not participating in the GMDSS shall operate on a secondary basis to distress and safety communications of stations operating in the GMDSS. Account shall be taken of the priority of safety-related communications in the mobile-satellite service.

**US380** In the bands 1525-1544 MHz, 1545-1559 MHz, 1610-1645.5 MHz, 1646.5-1660.5 MHz, 2000-2020 MHz, 2180-2200 MHz, and 2483.5-2500 MHz, a non-Federal licensee in the mobile-satellite service (MSS) may also operate an ancillary terrestrial component in conjunction with its MSS network, subject to the Commission's rules for ancillary terrestrial components and subject to all applicable conditions and provisions of its MSS authorization.

**5.341** In the bands 1 400-1 727 MHz, 101-120 GHz and 197-220 GHz, passive research is being conducted by some countries in a programme for the search for intentional emissions of extraterrestrial origin.

**5.351** The bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 626.5-1 645.5 MHz and 1 646.5- 1 660.5 MHz shall not be used for feeder links of any service. In exceptional circumstances, however, an earth station at a specified fixed point in any of the mobile-satellite services may be authorized by an administration to communicate via space stations using these bands.

5.356 The use of the band 1544-1545 MHz by the mobile-satellite service (space-to-Earth) is limited to distress and safety communications (see Article 31).

### 3. Federal Agency Use

#### 3a. Federal Agency Frequency Assignments Table

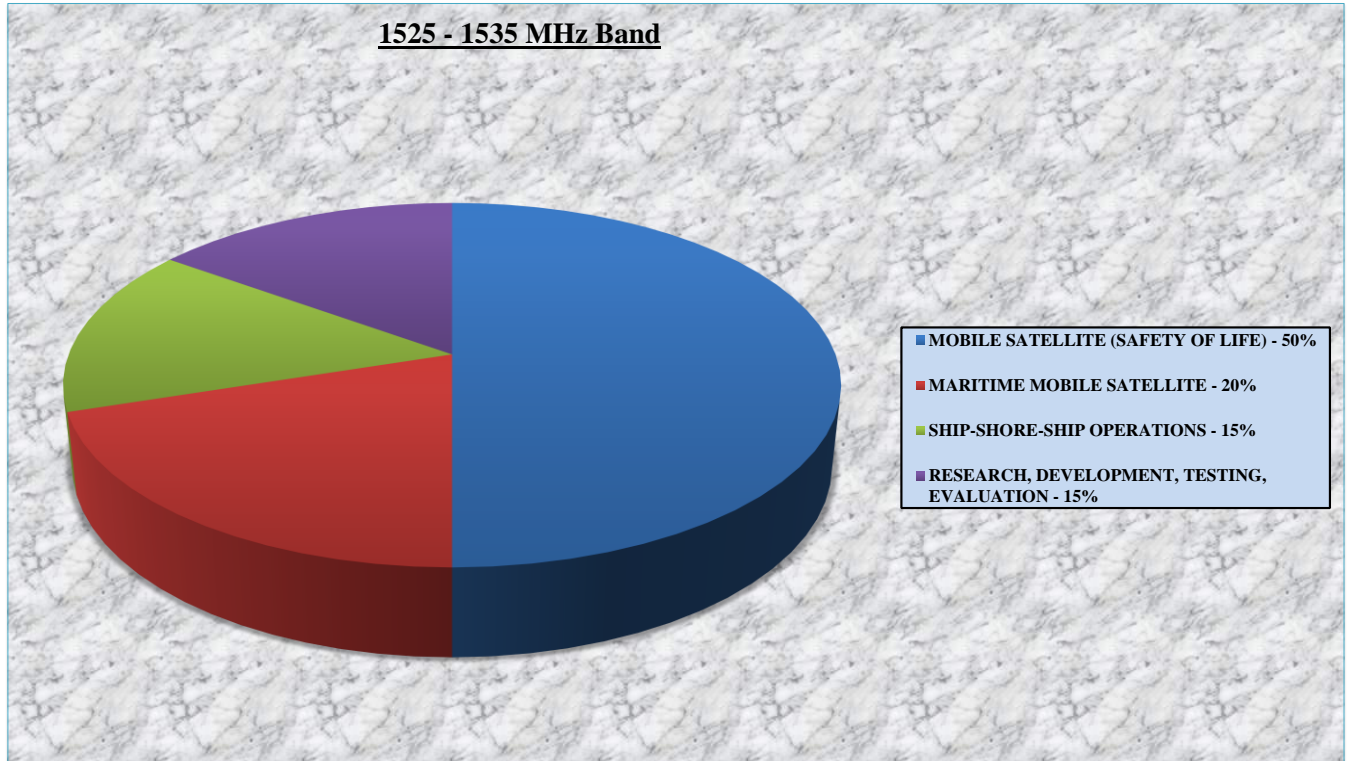
The following table identifies the frequency band, types of allocations, types of applications, and the number of frequency assignments by agency.

*Federal Frequency Assignment Table*

| 1535-1559 MHz Band   |                                   |                           |                            |   |       |           |
|--|-----------------------------------|---------------------------|----------------------------|---|-------|-----------|
| SHARED BAND  |                                   |                           |                            |   |       |           |
| AGENCY   | MOBILE-SATELLITE (space-to-Earth) |                           |                            |   |       |           |
|  | TYPE OF APPLICATION               |                           |                            |   |       |           |
|  | MOBILE SATELLITE (SAFETY OF LIFE) | MARITIME MOBILE SATELLITE | SHIP SHORE SHIP OPERATIONS | RESEARCH DEVELOPMENT TESTING EVALUATION | TOTAL |           |
| AF   |                                   |                           |                            | 1                                       |       | 1         |
| DOC  | 5                                 |                           |                            |   |       | 5         |
| N  |                                   | 2                         | 2                          |   |       | 4         |
| <b>TOTAL</b>   | <b>5</b>                          | <b>2</b>                  | <b>2</b>                   | <b>1</b>                                |       | <b>10</b> |
| The number of actual systems, or number of equipments, may exceed and sometimes far exceed, the number of frequency assignments in a band. Also, all frequency assignment may represent, a local, state, regional or nationwide authorization. Therefore, care must be taken in evaluating bands strictly on the basis of assignment counts or percentages of assignments. |                                   |                           |                            |   |       |           |

### 3b. Percentage of Frequency Assignments Chart

The following chart displays the percentage of frequency assignments in the Government Master File for the systems operating in the chart legend below for the frequency band 1535.0 – 1559.0 MHz.



### 4. Frequency Assignments By Application

The majority of the Federal use of commercial mobile-satellite service systems in this band is covered by FCC licenses therefore the Government Master File (GMF) is not good indicator of Federal usage.<sup>2</sup> Communications within the band often support the operation of mobile earth terminals anywhere in the United States and its Possessions (US&P), as well as in international air space and waters, to include support for emergency communications. Operation of mobile terminal satellite systems offers service to locations out of reach of terrestrial commercial services and provides critical support during disasters or other emergencies.

The Coast Guard operates mobile earth terminals in the 1525-1544 MHz portion of this band for maritime emergency communications via the INMARSAT commercial satellites. These

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<sup>2</sup> See NTIA Manual Part 7.23, FEDERAL GOVERNMENT AGENCIES AS END USERS OF FCC LICENSED COMMERCIAL SERVICES. In this band, agencies normally do not request GMF MSS assignments for receiving earth stations.

operations fall within the Global Maritime Distress and Safety System (GMDSS) of the International Maritime Organization (IMO) which includes carriage of emergency beacons onboard various types of ships and vessels.<sup>3</sup> The Federal Aviation Administration (FAA) operates mobile earth terminals in the 1545-1559 MHz portion of this band for aeronautical emergency communications via the INMARSAT commercial satellites in the aeronautical mobile-satellite (R) service (AMS(R)S) during en-route oceanic flights as specified by the International Civil Aviation Organization (ICAO).<sup>4</sup> GMDSS and AMS(R)S have priority access with real-time preemptive capability for communications in the mobile-satellite service.

In addition to the GMDSS and AMS(R)S operations, the Federal agencies operate mobile earth terminals in the aeronautical, land mobile, and maritime mobile-satellite services using the Inmarsat and LightSquared commercial satellite systems. These operations are normally for locations out-of-reach of terrestrial commercial services and in many cases provide critical support during disasters or other emergencies.

The Department of Commerce National Oceanic and Atmospheric Administration (NOAA) operates the LUT ground stations in the 1544-1545 MHz portion of the band that are part of the international COSPAS-SARSAT.<sup>5</sup> The LUT ground stations receive information from U.S. and foreign polar orbiting and geostationary satellites that carry the Search and Rescue Satellite-Aided Tracking (SARSAT) payloads providing distress alert and locations information from Emergency Position-Indicating Radio Beacon (EPIRB) and Emergency Locator Transmitter (ELT) to public safety rescue authorities for maritime, aviation, and land users in distress almost anywhere in the world at anytime and in almost any condition. When an EPIRB or ELT is activated in the band 406-406.1 MHz, the signal is received by satellite and relayed to the nearest LUT earth station in the band 1544-1545 MHz. This information is sent to the U.S. Mission Control Center (USMCC) in Suitland, MD. The USMCC processes the distress signal and alerts the appropriate search and rescue authorities in the vicinity of the victim. NOAA has 14 local user terminals at the locations shown in Table 1.

**Table 1.**

| <b>LUT Location</b>       | <b>Coordinates</b>   |
|---------------------------|----------------------|
| Anderson AFB, Guam        | 13.5784°N 144.9390°E |
| Vandenberg AFB, CA        | 34.6624°N 120.5514°W |
| Sabana Seca USN, PR**     | 18.4317°N 066.1922°W |
| USCG Station, Wahiawa, HI | 21.5260°N 157.9964°W |
| NASA JSC, Houston, TX**   | 29.5605°N 095.0925°W |
| Fairbanks, AK             | 64.9933°N 147.5237°E |

<sup>3</sup> IMO is the United Nations agency concerned with international maritime activities.

<sup>4</sup> ICAO is the United Nations agency concerned with civil aviation.

<sup>5</sup> COSPAS-SARSAT consists of a network of satellites, ground stations, mission control centers, and rescue coordination centers.

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|   |                      |
|---|----------------------|
| Suitland, MD  | 38.9955°N 076.8513°W |
| NASA GSFC, MD   | 38.8510°N 076.9310°W |
| Florida, TBD*   | TBD                  |
| * Denotes a future SARSAT LUT site.<br>** Denotes a SARSAT LUT site to be decommissioned. |                      |

### 5. Planned Use

The Coast Guard requirements for access to band to support GMDSS maritime emergency communications will continue for the foreseeable future.

The FAA requirements for access to the band to support AMS(R)S aeronautical emergency communications will continue for the foreseeable future.

The Federal agencies will continue to operate mobile earth terminals using commercial satellite systems to support civilian and military communication requirements, including emergencies, for the foreseeable future.

Commerce will continue to support both satellite and earth stations SARSAT requirements for the foreseeable future.