5 250 - 5 255 MHz

1. Band Introduction

The military uses this band for important land-based tactical radar systems. Additionally the military agencies use the band to provide prime coverage for range safety purposes.

The National Aeronautics and Space Administration (NASA), under joint missions with the French space agency, Centre National d'Etudes Spatiales (CNES) and the European Organization for the Exploitation of Meteorological Satellites (Eumetsat), uses this band for space-based observations and measurements using synthetic aperture radar (SAR) systems. NASA also uses this band for radio astronomy research via active earth observations providing multi-spectral images obtained by space-based microwave sensors.

NASA and the National Oceanic and Atmospheric Administration (NOAA), under joint missions with the French space agency, Centre National d'Etudes Spatiales (CNES) and the European Organization for the Exploitation of Meteorological Satellites (Eumetsat), operate altimeters, radiometers and SAR systems for measurements of climate studies to support weather and water, climate variability, and other mission goals, including monitoring global mean sea level.

2. Allocations

2a. Allocation Table

The frequency allocation table shown below is extracted from the NTIA Manual of Regulations and 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)
5 250 - 5 255 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G59 SPACE RESEARCH (active) 5.447D 5.448A	5 250 - 5 255 Earth exploration-satellite (active) Radiolocation Space research	RF Devices (15) Private Land Mobile (90)

2b. Additional Allocation Table Information

5.447D The allocation of the band 5 250 - 5 255 MHz to the space research service on a primary basis is limited to active spaceborne sensors. Other uses of the band by the space research service are on a secondary basis.

5.448A The Earth exploration-satellite (active) and space research (active) services in the frequency band 5 250 - 5 350 MHz shall not claim protection from the radiolocation service. No. 5.43A does not apply.

G59 In the bands 902 - 928 MHz, 3 100 - 3 300 MHz, 3 500 - 3 650 MHz, 5 250 - 5 350 MHz, 8 500 - 9 000 MHz, 9 200 - 9 300 MHz, 13.4 - 14.0 GHz, 15.7 - 17.7 GHz and 24.05 - 24.25 GHz, all Federal non-military radiolocation shall be secondary to military radiolocation, except in the sub-band 15.7-16.2 GHz airport surface detection equipment (ASDE) is permitted on a co-equal basis subject to coordination with the military departments.

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.

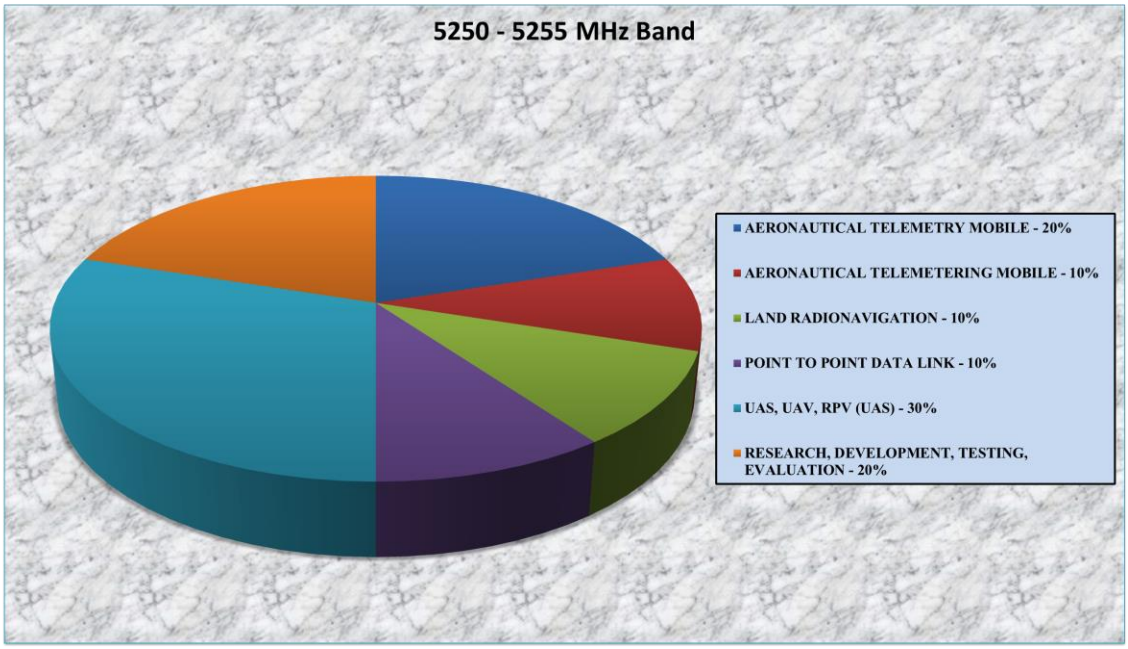
Federal Agency Assignment Table

5250 - 5255 MHz Band							
SHARED BAND							
	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active)						
AGENCY	AERONAUTICAL MOBILE	AERONAUTICAL TELEMETERING MOBILE	LAND RADIOLOCATION	POINT TO POINT DATA LINK	UAS, UAV, RPV	RESEARCH DEVELOPMENT TESTING EVALUATION	TOTAL
AF					1		1
AR	2		1	1	2		6
N						1	1
DHS		1				1	2
TOTAL	2	1	1	1	3	2	10

The number of actual systems, or number of equipments, may exceed and sometimes, far exceed, the number of frequency assignments in a band. Also, a 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 from the Government Master File for the applications operating in the band 5 250 - 5 350 MHz.



4. Frequency Band Analysis by Application

4a. Data Link

The Army uses the 5 250 - 5 255 MHz band for data link testing. A variety of systems are utilized to test operational capabilities.

4b. Radiolocation

The radar systems operating in the 5 250 - 5 255 MHz band are primarily used by the military. These military radars have the operational capability to tune across the entire 5 250 - 5 725 MHz frequency range. The military radars that operate in this band include both target search and tracking radars that can use a single frequency or can employ frequency hopping techniques across the entire band. In the past, these radars have been limited to operating on or near military installations. However, there may be situations where the military uses these radars in support of homeland security.

4c. Earth Exploration-Satellite Service (EESS)

Since 1992, NASA and NOAA have been tracking global ocean surface topography with joint ocean altimeter satellite and spacecraft missions from an orbit 1 336 km above the ocean surface utilizing SAR.[1] NASA and NOAA collaborate jointly with the French space agency, Centre National d'Etudes Spatiales (CNES) and the European Organization for the Exploitation of Meteorological Satellites (Eumetsat) on operations in this band. The satellite/spacecraft radar altimeters measure the precise distance between the platform and sea surface.[2] The round-trip travel time of microwave pulses bounced from the spacecraft to the sea surface and back to the platform provides data indicating sea surface height and the topography of the ocean surface. The precise altitude of the platform is determined by a sophisticated estimation procedure based on instrument systems onboard the platform and a network of ground receivers across the globe.

Ocean altimeter missions monitor large-scale features like Rossby and Kelvin waves, track El Niño's like the large event of 1997-1998 and the subsequent La Niña events, and explores long-term changes such as the Pacific Decadal Oscillation.

The high accuracy of these measurements has made satellite/spacecraft altimetry an efficient method for monitoring the variation of global mean sea level in relation to global climate change. TOPEX/Poseidon was joined in 2001, and later replaced after the conclusion of a Tandem Mission, by Jason-1, which continues to build the database. The two GRACE (the Gravity Recovery and Climate Experiment) spacecrafts, which launched March 2002, are refining global measurements, increasing the utility of all previous altimetry data. The Ocean Surface Topography Mission or Jason-2 (OSTM/Jason-2), launched in June 2008, is taking ocean surface topography measurements into an operational mode for continued climate forecasting research as well as scientific and industrial applications.

A next generation satellite (Jason-3) is currently under development and is expected to deploy a similar sensor suite to those currently utilized (Jason-2). Jason-3 is proposed to take over and continue the missions of Topex/Poseidon, Jason-1 and 2, in the framework of cooperation between CNES, NASA, Eumetsat and NOAA. It should carry the same kind of payload as its three predecessors for a high-precision altimetry mission - a Poseidon-class altimeter, a radiometer and three location systems.[3] Jason-3 will ensure continuity with Jason-2 and with a launch date in mid-2013, which should allow at least a 6-month overlap with Jason-2[4].

4d. Low Power Devices

Responding to industry requests for spectrum in which to operate unlicensed devices, e.g., primarily wireless LANS and WiFi, in June 2006, the Federal Communications

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[1] http://sealevel.jpl.nasa.gov/, last visited on March 29, 2011.
[2] The details of the shape of the returned radar pulses also give information on wind speed and the wave height.
[3] http://earth.eo.esa.int/brat/html/missions/jason3/welcome_en.html. Last visited April 01, 2011.
[4] http://www.aviso.oceanobs.com/en/missions/future-missions/jason-3/index.html. Last visited April 01, 2011.

Commission (FCC) adopted rules allowing commercial users to employ opportunistic sharing techniques to share 355 MHz of radio spectrum[5]. Using Dynamic Frequency Selection (DFS) detect-and-avoid algorithms, commercial interests are now able to operate Wireless Access Systems (WAS) in the 5 250 - 5 350 MHz and 5 470 - 5 725 MHz bands. In addition, sharing is allowed with low power WAS devices without DFS in the 5 150 - 5 250 MHz and 5 725 - 5 825 MHz bands. Federal agencies operate unlicensed devices that are authorized for use under the FCC Part 15 Rules or Annex K of the NTIA Manual.

5. Planned Use

The use of the 5 250 - 5 255 MHz band for data link testing will continue for the foreseeable future.

The use of the 5 250 - 5 255 MHz band for military radar systems will also continue for the foreseeable future. One of the areas of concern in assessing interference to military radars involves future radar deployments and the expanding role of military radars in support of homeland defense. This expanded role could result in a requirement to deploy military radars in cities and metropolitan areas. The Navy is also considering this band for its next generation major shipborne radar.

NASA and NOAA will continue to collaborate with CNES and Eumetsat on their operation of altimeters, radiometers and SAR location systems in this band for monitoring global climate for the foreseeable future. The next generation satellite for these measurements is expected to be deployed in 2013.

[5] *See, Revision of Parts 2 and 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) devices in the 5 GHz band*, ET Docket 03-122, Report And Order, 18 FCC Rcd. 24484 (November 18, 2003) , *available at* http://fjallfoss.fcc.gov/edocs_public/attachmatch/FCC-03-287A1.pdf; *Revision of Parts 2 and 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) devices in the 5 GHz band*, ET Docket 03-122, Memorandum Opinion and Order, 21 FCC Rcd. 7672 (June 30, 2006), *available at* http://fjallfoss.fcc.gov/edocs_public/attachmatch/FCC-06-96A1.pdf . In earlier decisions the Commission designated 3 spectrum bands for sharing. See *Amendment of the Commission's Rules to Provide for Operation of Unlicensed NII Devices in the 5 GHz Frequency Range*, ET Docket 96-102, Report and Order, 12 FCC Rcd. 1576 (January 9, 1997), *available at* http://www.fcc.gov/Bureaus/Engineering_Technology/Orders/1997/fcc97005.txt ; *Amendment of the Commission's Rules to Provide for Operation of Unlicensed NII Devices in the 5 GHz Frequency Range*, ET Docket No. 96-102, Memorandum Opinion and Order, 13 FCC Rcd 14355 (June 24, 1998), *available at* http://www.fcc.gov/Bureaus/Engineering_Technology/Orders/1998/fcc98121.txt.