1695-1710 MHz

1. Band Introduction

The Polar Operational Environmental Satellite (POES) series of satellites operate in this band transmitting weather and other meteorological data to earth station receivers for further processing and distribution.

2. Allocations

2a. Allocation Table

The frequency allocation table shown below is extracted from the 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)
1695-1710 METEOROLOGICAL-SATELLITE (space-to-Earth) US88 5.341	1695-1710 FIXED MOBILE except aeronautical mobile 5.341 US88	Wireless Communications(27)

2b. Additional Allocation Table Information

5.341 In the bands 1400-1727 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.

US88 In the bands 1675-1695 MHz and 1695-1710 MHz, the following provisions shall apply:

(a) Non-Federal use of the band 1695-1710 MHz by the fixed and mobile except aeronautical mobile services is restricted to stations in the Advanced Wireless Service (AWS). Base stations that enable AWS mobile and portable stations to operate in the band 1695-1710 MHz must be successfully coordinated prior to operation as follows: (i) all base stations within the 27 protection zones listed in paragraph (b) that enable mobiles to operate at a maximum e.i.r.p. of 20 dBm, and (ii) nationwide for base stations that enable mobiles to operate with a maximum e.i.r.p. greater than 20 dBm, up to a maximum e.i.r.p. of 30 dBm, unless otherwise specified by Commission rule, order, or notice.

(b) Forty-seven Federal earth stations located within the protection zones listed below operate on a co-equal, primary basis with AWS operations. All other Federal earth stations operate on a secondary basis.

(1) Protection zones for Federal earth stations receiving in the band 1695-1710 MHz:

State	Location	Latitude	Longitude	Radius (km)
AK	Barrow ……...	71° 19' 22"	156° 36' 41"	...…..….. 35
AK	Elmendorf AFB …….	61° 14' 08"	149° 55' 31"	…....….. 98
AK	Fairbanks ……...	64° 58' 22"	147° 30' 02"	…….. 20
AZ	Yuma …….	32° 39' 24"	114° 36' 22"	…….. 95
CA	Monterey ……...	36° 35' 34"	121° 51' 20"	…….. 76
CA	Twenty-Nine Palms...	34° 17' 46"	116° 09' 44"	…….. 80
FL	Miami ……	25° 44' 05"	080° 09' 45"	…….. 51
HI	Hickam AFB …….	21° 19' 18"	157° 57' 30"	…….. 28
MD	Suitland …….	38° 51' 07"	076° 56' 12"	…….. 98
MS	Stennis Space Center	30° 21' 23"	089° 36' 41"	…….. 57
SD	Sioux Falls ……	43° 44' 09"	096° 37' 33"	…….. 42
VA	Wallops Island ……..	37° 56' 45"	075° 27' 45"	…….. 30
GU	Andersen AFB ……..	13° 34' 52"	144° 55' 28"	…….. 42

(2) Protection zones for Federal earth stations receiving in the band 1675-1695 MHz:

State	Location	Latitude	Longitude	Radius (km)
CA	Sacramento ……	38° 35' 50"	121° 32' 34"	…….. 55
CO	Boulder ……..	39° 59' 26"	105° 15' 51"	…….. 02
ID	Boise …….	43° 35' 42"	116° 13' 49"	…….. 39
IL	Rock Island ……..…...	41° 31' 04"	090° 33' 46"	…….. 19
MO	Kansas City ……...	39° 16' 40"	094° 39' 44"	…….. 40
MO	St. Louis ……	38° 35' 26"	090° 12' 25"	…….. 34
MS	Columbus Lake …….	33° 32' 04"	088° 30' 06"	…….. 03
MS	Vicksburg ……...…..	32° 20' 47"	090° 50' 10"	…….. 16
NE	Omaha ……..…..….....	41° 20' 56"	095° 57' 34"	…….. 30
OH	Cincinnati …..……...	39° 06' 10"	084° 30' 35"	…….. 32
OK	Norman ……..……	35° 10' 52"	097° 26' 21"	…….. 03
TN	Knoxville ……...	35° 57' 58"	083° 55' 13"	…….. 50
WV	Fairmont ……	39° 26' 02"	080° 11' 33"	…….. 04
PR	Guaynabo ……..	18° 25' 26"	066° 06' 50"	…….. 48

NOTE: The coordinates are specified in the conventional manner (North latitude, West longitude), except that the Guam (GU) entry is specified in terms of East longitude.

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.

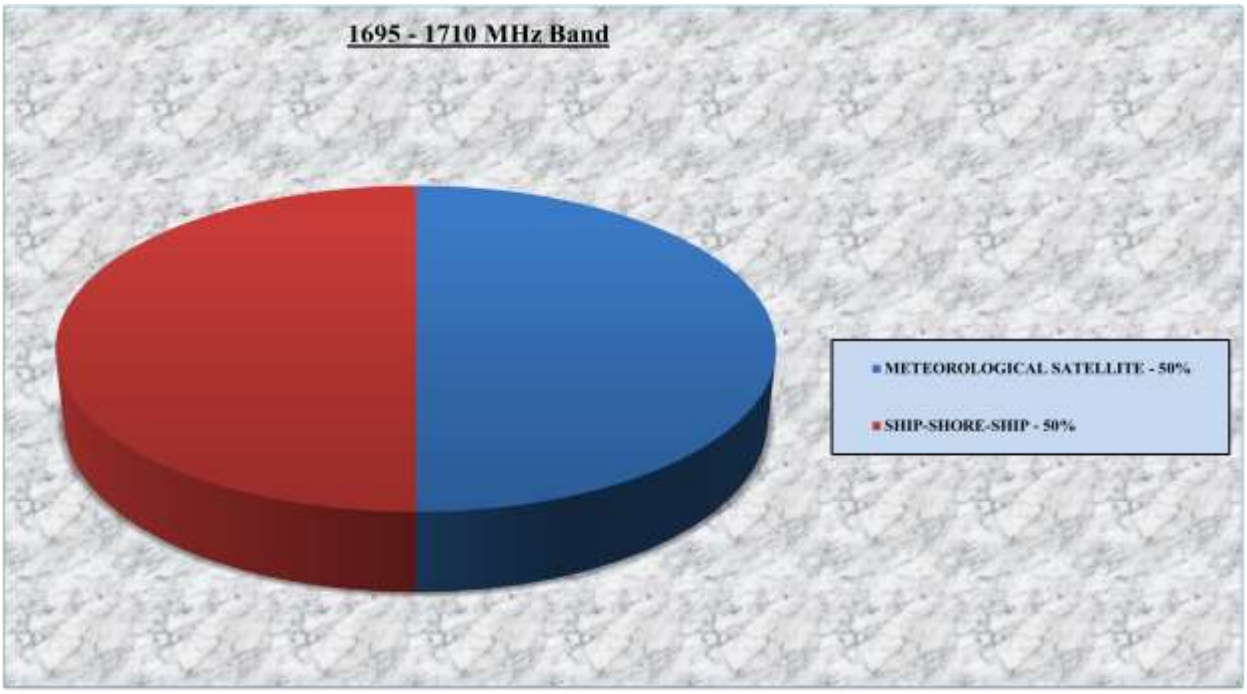
Federal Frequency Assignment Table

1695-1710 MHz					
SHARED BAND					
	FIXED METEOROLOGICAL-SATELLITE (space-to-Earth)				
	TYPE OF APPLICATION				
AGENCY	METEOROLOGICAL-SATELLITE	SHIP-SHORE-SHIP OPERATIONS			TOTAL
DOC	3				3
N		3			3
TOTAL	3	3			6

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 for the systems operating in the frequency band 1695-1710 MHz.



4. Frequency Band Analysis by Application

4a. Meteorological-Satellite Operations

The Commerce's National Oceanic and Atmospheric Administration (NOAA) operates non-geostationary, polar-orbiting meteorological-satellites (POES) to provide environmental research and weather data to NOAA, the Department of Defense (DOD), the National Aeronautics and Space Administration (NASA), and various Federal/non-Federal entities. The raw data from these satellites is transmitted in the space-to-Earth direction to receiving NOAA earth stations in Fairbanks, AK, and Wallops Island, VA. The raw data is processed at the NOAA Satellite Operations Facility (NSOF) in Suitland, MD. The processed data including the High Resolution Picture Transmission (HRPT) is transmitted by these earth stations back to the satellites and broadcast to Federal/non-Federal receiving earth stations. The data is also received directly from the satellite by various Federal/non-Federal entities. The HRPT is used daily in the generation of weather reports that are broadcast over television and radio stations throughout the country. Various military, Federal/non-Federal earth stations also receive raw data from the NOAA

meteorological satellites and process this data for their own weather related uses. The POES operate at the center frequencies of 1698 MHz, 1702.5 MHz and 1707 MHz in the 1700-1710 MHz band.

4b. POES Meteorological Transmission Downlink Signals

High Resolution Picture Transmission

The HRPT data from the NOAA polar-orbiting satellites provides regional data for the assessment of agricultural and forestry vegetation, the determination of sea and land surface temperatures, identification of snow and clouds and aerosol detection. The HRPT data stream also includes non-imagery data from other instruments on board the spacecraft. Due to the higher resolution of the HRPT imagery (1.1 kilometer in visible band), and additional spectral channels of information, direct readout users often prefer this data stream, particularly where quantitative analysis is involved. The HRPT data is critical for volcanic ash detection. The National Hurricane Center uses this service and part of the regional operations when a tropical storm is approaching landfall. The NOAA oceanographic centers rely on the HRPT for critical data about the ocean surface to support marine research.

The HRPT data provides sea surface temperatures vital to the fishing industry and seafarers. The HRPT data is vital for monitoring ice flows or ice sheets. Mariners require this data to navigate ice sheet on the Great Lakes and other navigable water ways. These real-time data are critical to forecasts and warnings, whether on land or at sea. HRPT data also contains satellite telemetry data and is used to track the satellite when it is within sight of the Climate Data Assimilation System (CDAS) sites at Wallops Island, Virginia and Fairbanks, Alaska. Once the CDAS earth station acquires the satellite, the mission science data stored on-board the satellites are downlinked in the 1695-1710 MHz band. The downloaded data includes low-resolution imagery data known as Global Area Coverage (GAC) and high-resolution imagery data known as Local Area Coverage (LAC).[1] The satellite is in view of the earth station for approximately 12 to 15 minutes. The CDAS records the GAC and LAC imagery data and then re-distributes it to the NOAA Satellite Operations Facility (NSOF) post contact. The satellite transmits HRPT data in real-time during its contact with NSOF, because it contains telemetry data which is essential for monitoring and commanding the satellite. The high-resolution HRPT data is available to direct readout users in real-time via their own receive terminals. NOAA

[1] GAC is the 4-kilometer low-resolution data and LAC is the higher 1.1 kilometer resolution data. An entire orbit of GAC (115 minutes) can be stored by a single recorder. Only 11.5 minutes of high-resolution image LAC can be stored on a single recorder.

acquires HRPT data from the earth stations at five protected sites in Wallops Island, Virginia; Fairbanks, Alaska; Suitland, Maryland; Miami, Florida and Kaena Point, Hawaii. Figures 1-4 depict locations for Federal agencies meteorological earth station operations in the 1695-1710 MHz band[2].

Figure 1. Federal Meteorological-Satellite Receiving Earth Stations, With Protection Zones in the Continental United States

[2] There may be multiple earth stations at each location. For detailed information, see Transition Plans and Transition Data for the 1695 –1710 MHz Band. http://www.ntia.doc.gov/other-publication/2014/transition-plans-and-transition-data-1695-1710-mhz-band

Figure 2. Federal Meteorological-Satellite Receiving Earth Stations, With Protection Zones in the State of Alaska

Figure 3. Federal Meteorological-Satellite Receiving Earth Station, With Protection Zone in the State of Hawaii

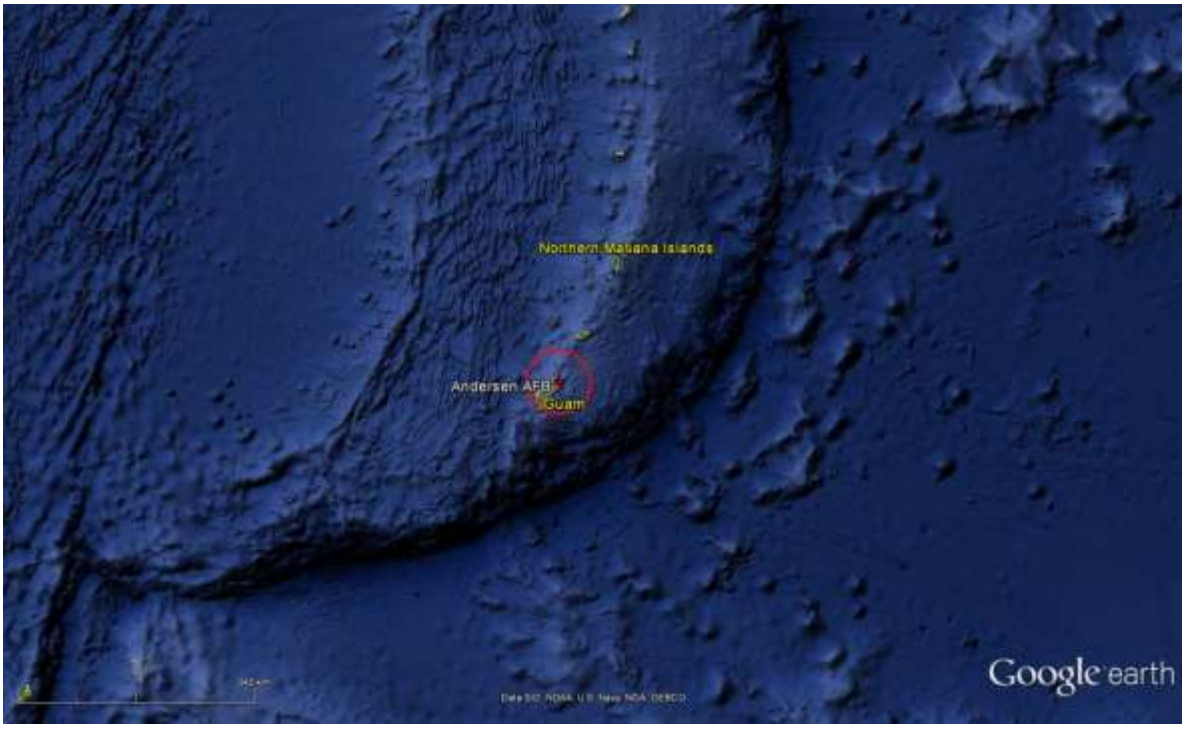


Figure 4. Federal Meteorological-Satellite Receiving Earth Station, With Protection Zone in Guam

4c. Joint Polar Satellite System (JPSS)

The JPSS is NOAA's portion of the restructured National Polar-Orbiting Operational Environmental Satellite System (NPOESS) program as announced on February 1, 2010 by the Executive Office of the President. NOAA is responsible for management and procurement of the satellites and instruments associated with collecting data during the afternoon orbit, which is most critical to analysis of weather and climate. NOAA will contract with NASA to accomplish some of these tasks. The European Organization for the Exploration of Meteorological-Satellites (EUMETSAT) will be responsible for the mid-morning orbit while NOAA will continue to operate in the afternoon orbit. The DOD will be responsible for the morning orbit that is critical to national defense.

The JPSS will continue to satisfy NOAA’s requirements to provide global environmental data used in numerical weather prediction models for forecasts, as well as provide space weather observations, search and rescue detection capabilities, and direct read-out and data collection products and services to Federal and non-Federal users. Data and imagery obtained from the JPSS will increase timeliness, accuracy, and cost-effectiveness of public warnings and forecasts of climate and weather events, thus reducing the potential loss of human life and property and advancing the national economy.

4d. The DOD operates coastal station transmitters at a limited number of locations for testing and calibrating equipment onboard U.S. Navy ships.

5. Planned Use

NOAA will continue to operate the POES meteorological-satellite and the follow-on JPSS systems in the band. Federal agencies will operate fixed and portable meteorological earth station receivers in the 1695-1710 MHz band for the foreseeable future. The Federal Communications Commission has adopted rules to allocate and license the 1695-1710 MHz band for mobile operations on an unpaired shared basis with incumbent Federal meteorological-satellite (MetSat) data users. The auction is scheduled to commence in November, 2014 with initial award of licenses by February, 2015. Protection zones for Federal earth stations receiving in the band 1695-1710 MHz for essential federal metrological satellite users are provided in accordance with conditions specified in footnote US88 to the National Table of Frequency Allocations.