403–406 MHz

1. Band Introduction

The federal operations in the 403-406 MHz band primarily consist of meteorological systems associated with airborne radiosonde transmitters and tracking ground based receive stations.

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)
403-406 METEOROLOGICAL AIDS (radiosonde) US70 US345 G6	403-406 METEOROLOGICAL AIDS (radiosonde) US70 US345	MEDRadio (95I)

2b. Additional Allocation Table Information

G6 Military tactical fixed and mobile operations may be conducted nationally on a secondary basis: (a) to the meteorological aids service in the band 403-406 MHz; and (b) to the radio astronomy service in the band 406.1-410 MHz. Such fixed and mobile operations are subject to local coordination to ensure that harmful interference will not be caused to the services to which the bands are allocated.

US70 The meteorological aids service allocation in the band 400.15-406.0 MHz does not preclude the operation therein of associated ground transmitters.

US345 In the band 402-405 MHz, the mobile, except aeronautical mobile, service is allocated on a secondary basis and is limited to, with the exception of military tactical mobile stations, Medical Implant Communications Service (MICS) operations. MICS stations are authorized by rule on the conditions that harmful interference is not caused to stations in the meteorological aids, meteorological-satellite, and Earth exploration-satellite services, and that MICS stations accept interference from stations in the meteorological aids, meteorological-satellite, and Earth exploration-satellite services.

3. Federal Agency Use

3a. Federal Agency Frequency Assignments Table

The following table identifies the frequency band, type(s) of allocation(s), types of application, and the number of frequency assignments by agency.

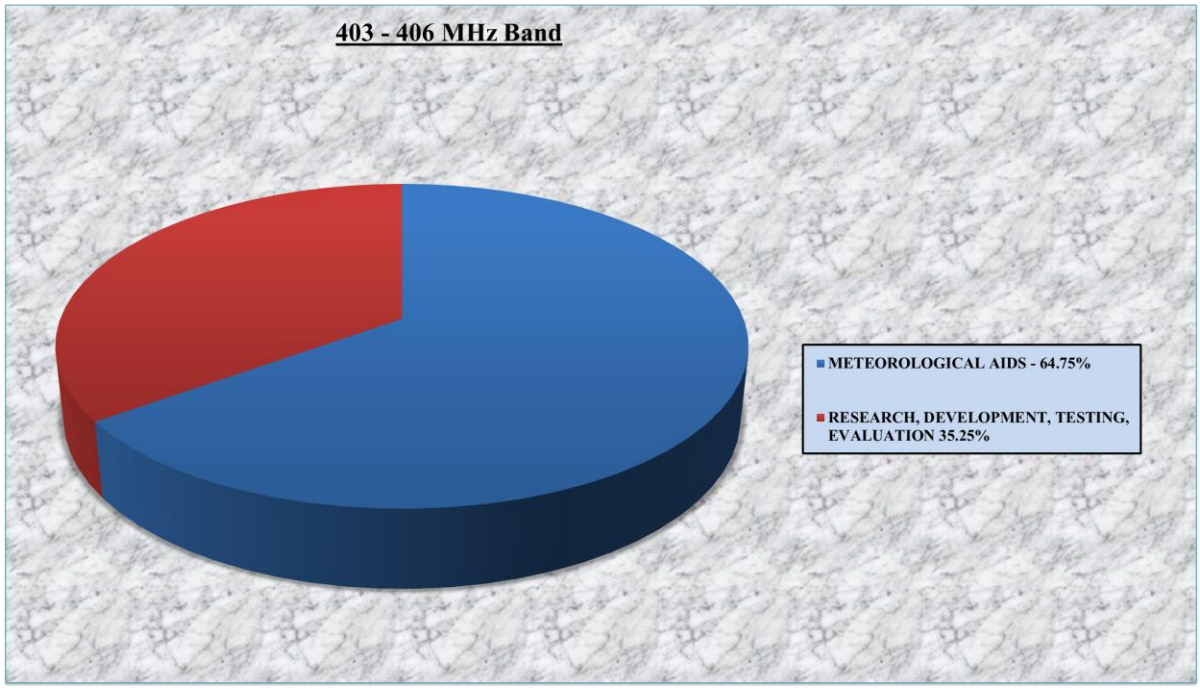
Federal Frequency Assignment Table

403-406 MHz Band				
SHARED BAND				
	METEOROLOGICAL AIDS (radiosonde)			
	TYPE OF APPLICATION			
AGENCY	METEOROLOGICAL AIDS		RESEARCH, DEVELOPMENT, TESTING, EVALUATION	TOTAL
AF	15		14	29
AR	20			20
DOC			28	28
DOE	13			13
N	29		1	30
NASA	2			2
TOTAL	79		43	122

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 403-406 MHz.



4. Frequency Band Analysis By Application

Meteorological Aids

The Department of Defense (DOD), the Department of Energy (DOE) and the National Aeronautics and Space Administration (NASA) use this band for collection of meteorological data using radiosondes. Radiosondes are buoys and free-floating balloons equipped with transmitters and antennas that provide a capability to collect and deliver near real-time environmental data. Many Federal agencies use this data obtained via radiosonde operations to provide warnings and forecasts of weather events such as tornados and tropical cyclones.
The radiosonde systems use the band 403-406 MHz to transmit signals from the radiosondes to the supporting ground tracking stations. Radiosonde systems perform measurements of the atmospheric pressure, temperature, and relative humidity. The wind speed and direction is determined using radio frequency direction finding measuring the azimuth and elevation angle of the radiosonde with respect to the receiving antenna. Meteorologists use radiosonde data, which includes measurements of atmospheric temperature, humidity, wind speed, and wind direction

for weather forecasting. Figures 1 through 3 show the locations of the Federal radiosonde receive stations.

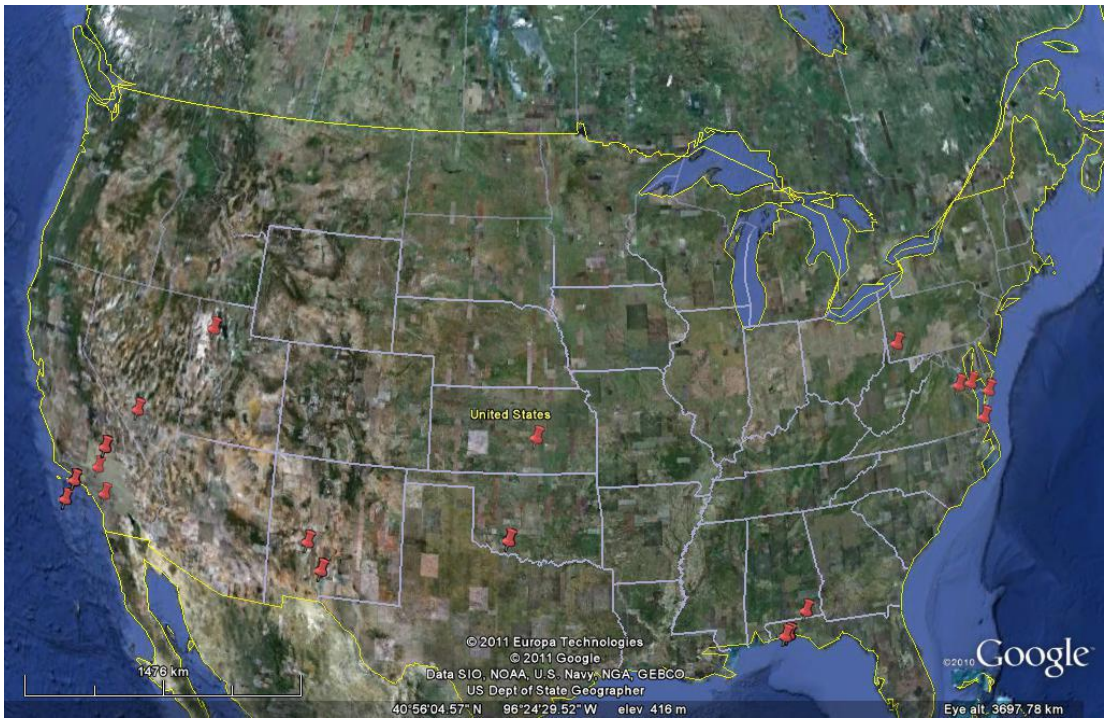


Figure 1. Radiosonde Receive Stations Operating in the 403-406 MHz Band-Continental U.S.

Figure 2. Radiosonde Receive Stations Operating in the 403-406 MHz Band -Alaska

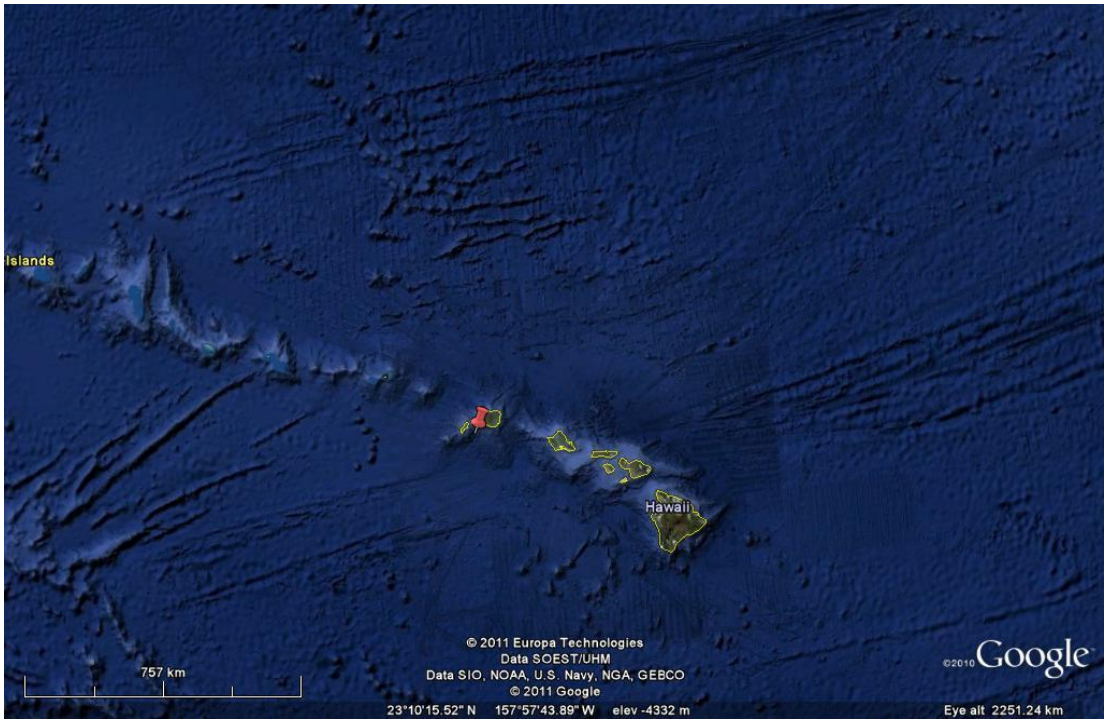


Figure 3. Radiosonde Receive Stations Operating in the 403-406 MHz Band - Hawaii

5. Planned Use

The Federal agencies will continue to operate radiosonde systems in the band 403-406 MHz for the foreseeable future.