Raytheon Company (Missiles and Defense – M)
Experimental STA Application
File Number: 1880-EX-ST-2021

Explanation of Experiment and Need for an STA

Overview:

Raytheon Company (Missile and Defense – M) (Raytheon) is the primary missile manufacturer in the US, supplying ordinance ready to operate to the US military. Raytheon's experience with missiles has led its customers to seek UAV technology based on some of its existing platforms and knowledge. This has led Raytheon into the development of advanced UAV technology as well. This application seeks authorization for the use of a radio that is used in the development and testing of its advanced UAVs. The radios incorporated into the UAVs support the mission of the UAV testing.

Need for an STA:

Raytheon has a contract with the US Navy for the advanced development of the UAV systems. Raytheon's customers are requesting a demonstration at 29 Palms, California starting on January 31, 2021. Additional time was requested on the license should the demonstration be postponed for any reason, however the actual operational timeline for the demonstration will not exceed 2 weeks. Raytheon agrees to coordination with the WAFC and installation spectrum manager as required. This limited time makes an STA appropriate.

Technical Synopsis:

Spectrum Needed: 1362, 1377 MHz, emission is 20 MHz wide
Limited Time of Use: only occasional testing at this location
Limited time of use: 1-2 hours per day of radio use
Limited area of operations: maximum 3000 feet elevation
Power levels are low for airborne operations: L band 5.5 W, only 6 W ERP
Ground control maximum ERP: 49 W

Description of Operations:

Raytheon needs to demonstrate performance characteristics of its Coyote UAV system. This UAV platform has been designed to perform a range of tasks. They include surveillance and monitoring. Those tasks require the UAV to carry a range of radio links to ensure its proper performance. This application is for a dedicated datalink that is essential to the performance of this UAV platform.

Limited Time of Use:

The UAVs are tested using batteries. The battery life lasts up to two hours. Because the program will need to process test results, they normally only schedule one test per day to take advantage of overnight recharging for the batteries.

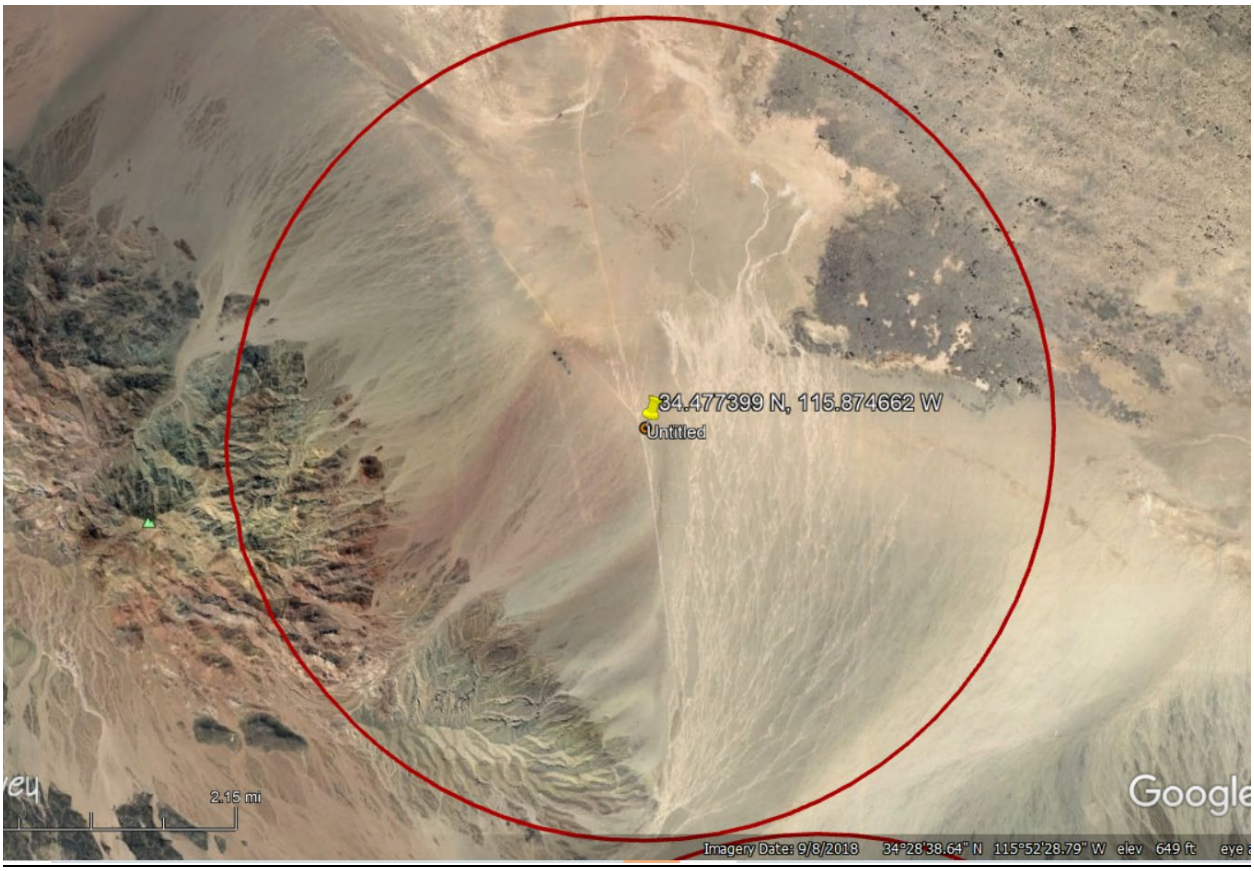
The demonstrations will only take place occasionally, as the program will be testing in other locations around the country. So, the spectrum use will be very limited at this location.

Locations of Testing:

The center of testing will be at 29 Palms, California. See below images of the two operational areas. Each location has a center point and 5 km radius of operations.

Site 1: 34 -32-16 N, 115-51-07 W

Site 2: 34-28-39 N, 115-52-29 W



Spectrum Use:

L band frequencies: These frequencies are used as datalinks to transmit data while the UAVs are in flight. These radios use a specifically configured frequency within the band. Most of the spectrum will be unused. The radios are programmed for the flights.

The airborne radio operates at 5.5 W, with 6 W ERP. The ground control radio operates from a low power of 7.1 W ERP to a higher power of 49 W ERP – which is only in use as a back-up if there is a loss of communication with the UAV.

Local deconfliction: the program will work with local spectrum managers prior to any flight operations to deconflict radio operations that are local to the area.

Stop Buzzer Point of Contact:

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Conclusion:

Raytheon is seeking an STA for temporary, demonstration operations. The demonstrations are to show the development of the Coyote UAV system. The proposed testing will be limited in nature. The radio use will be limited, because the systems will not be tested in all locations at the same time. Furthermore, only selected parts of the frequency bands requested will be in use at any time. The bands were requested to expedite local spectrum coordination.