Raytheon Company (Missiles and Defense – M)
Experimental STA Application
File Number: 1016-EX-ST-2021

Explanation of Experiment

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.

Raytheon has a contract with the US Army for the advanced development of the UAV systems. The contract number is: HQ 0727-18-F-1632. Raytheon needs to add a location near its facilities in Tucson for additional work.

Need for an STA:

Raytheon is seeking an STA for work that is scheduled to start in August and expected to last until February 2022. Because the time specified for the testing is only six months, an STA is appropriate.

Technical Synopsis:

- Spectrum Needed: 1357, 1367, 1377 MHz, emission is 20 MHz wide
- Limited Time of Use: only occasional testing at this location
- Limited time of use: up to 4 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 test and develop performance characteristics of its Coyote UAV system adjacent to a general aviation regional airport near Tucson, AZ.

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. Each link is described in more detail below.

Limited Time of Use:

The UAVs are tested using batteries. The battery life lasts enough to allow for daily testing up to four hours. Because the program will need to process test results, they normally schedule just those hours of testing in one day, allowing the system to recharge the batteries thoroughly overnight.

Location of Testing:

The testing will be conducted adjacent to the Marana Airport, which is a general aviation regional airport. See below for the operational area.

The area of operations, as shown above, will be concentrated over the open desert. The radius is approximately 5 km from the launch site, east and west, with much more limited operations north and south.

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. The radios are programmed for the flights. The radio has an ability to move from one channel to another if it experiences interference. The wider bandwidth requested gives more spread, allowing better data throughput. Having three channels allows the radio more agility to achieve the data throughput required by the customer.

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. The higher power 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 license for testing and demonstrations of its UAV platform. The testing will be limited in nature. The radio use will be limited. The area of operation has been selected to allow for testing over open desert.

If there are any questions about this proposed operation, please contact Anne E. Cortez, counsel, Washington Federal Strategies, at 520-360-0925 or alc@conspecinternational.com.