

Raytheon Company (Missiles & Defense – M)
Experimental STA Application
File Number: 0585-EX-ST-2021

Exhibit: Explanation of Experiment and Need for STA

Raytheon Company (Missiles & Defense – M) “Raytheon” builds a variety of products for the US government, including for the US military. This application requests renewed authorization for the use of radios that will be used in a developing line of UASs that will deliver advanced functionality to the Department of Defense.

In March 2021, Raytheon sought an STA for operations of one of its UAV platforms on and over the Atlantic Ocean adjacent to the Dam Neck Naval Base in Virginia. This amendment seeks to extend the area of operations over the Atlantic Ocean.

This application is filed to increase the water area authorized for these operations under 0404-EX-ST-2021 call sign: WR9XWV. Because the area of operations is off the coast, the FAA will NOT coordinate, based on the geographic location.

Need for an STA

Raytheon is seeking authorization for demonstrations and testing that is scheduled to start on May 1, 2021 extending through the end of September 2021. Because this is a limited amount of time, an STA is appropriate.

Technical Synopsis:

Spectrum required: 1362 MHz, 1372 MHz, 1382 MHz

Emission designators: 20M0D1D and 20M0G1D

Time of use: six hours per day but only four of the weeks that the STA will cover

Elevation of UAV flights: only 3 UAVs in flight, at elevations from 10-3000 ft AMSL

Area of operation: W50 water area adjacent to Dam Neck Naval Base

Description of Operations:

Raytheon is taking its Coyote platform to the naval base at Dam Neck Virginia for testing and demonstration for its customer to show the way that the Coyote UAV platform can be used to operate as a swarm.

Three of the UAVs will be in flight over the W50 area of the Atlantic Ocean. There will be two control stations on vessels also on the ocean, and a number of radios will be deployed on the shoreline at the naval base to show how the radios interact with one another. The network of radios will be operated simultaneously, to demonstrate the interoperability of the units as a group. The radios will share the spectrum requested in this application.

Area of Operations

Control (Ground) Stations: These will be placed on water craft that will be operating in the W50 area off the coast of Virginia. Raytheon's program has specified that it needs to operation across the entire W50(A)(B) and (C) areas of operation. *Figure 1* below shows the entire W50 operational area. for a diagram of the area of operations. The control stations operate generally using low power, but they are capable of operating using the full ERP of 49 W, which is requested here. The full power is only in use if there is loss of link to a UAV in flight. The control stations are mobile. The radius of operations is 16 km from the center point, with operations concentrated in the area outlined in purple in Figure 1.



*Figure 2. Area of Operations Including All of W50
The Center of Operations over the water is: 36-44-41 N, 75-40-41 W, with a 16 km radius*

Airborne Operations: For the testing and demonstration required, there will be three Coyote UAVs in flight. Those will be in contact with the control stations mounted on water craft. The UAVs will fly over the designated area of ocean, at elevations from 10 to 3000 feet. The radius of operations is 16 km from the center point of the W50 area of operations. Only a limited portion of the area will be in use at a time, and operations will be limited to the parameters of W50. Because the FCC filing system is structured for center-radius data entry, this exhibit shows the actual area of operation, while the application will specify the center point and radius, which actually includes areas which will not be in use.

Time of Use:

The testing and demonstrations are scheduled for May 2021 and September 2021. All other times, the program will not be using these radios at this location.

The UAVs will be tested for four to six hours per day. The time of use is limited.

No Likelihood of Interference:

The radios used for these tests and demonstrations are listen-before-transmit radios. Therefore, they will move to a different frequency if they perceive other operations on the same spectrum.

The UAVs and beach radios only operate with an ERP of 6 W. The control stations have the ability to transmit up to 49 W ERP, yet as noted above, most operations will be a much lower power.

The focus of these operations is over water, and there are not expected to be other operations in the area when these tests and demonstrations are conducted, further reducing the prospect of any harmful interference.

Stop Buzzer Point of Contact:

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Conclusion:

Raytheon is seeking an STA for testing and demonstrations to be conducted off-shore near the Dam Neck naval base over the W50 operational area. The tests and demonstrations are of a swarming UAV technology that requires the use of three UAVs flying over the ocean and two ground stations mounted on water craft. These operations will be limited to May and September. When the program will be at the Dam Neck Naval Base, operations will take place for approximately 6 hours per day.

If there are any questions about this application, please contact Anne Cortez, Counsel, 520-360-0925 or alc@conspecinternational.com.