

Raytheon Company (Missiles and Defense – M)
Experimental Application
File Number: 0811-EX-CN-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.

Need for experimental license:

Raytheon has a contract with DARPA to deliver advanced UAV systems. Raytheon's customer is requesting intermittent demonstrations at Ft. Benning, Georgia.

Technical Synopsis:

- Spectrum Needed: 1362, 1377, 1387 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 to government customer.

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.

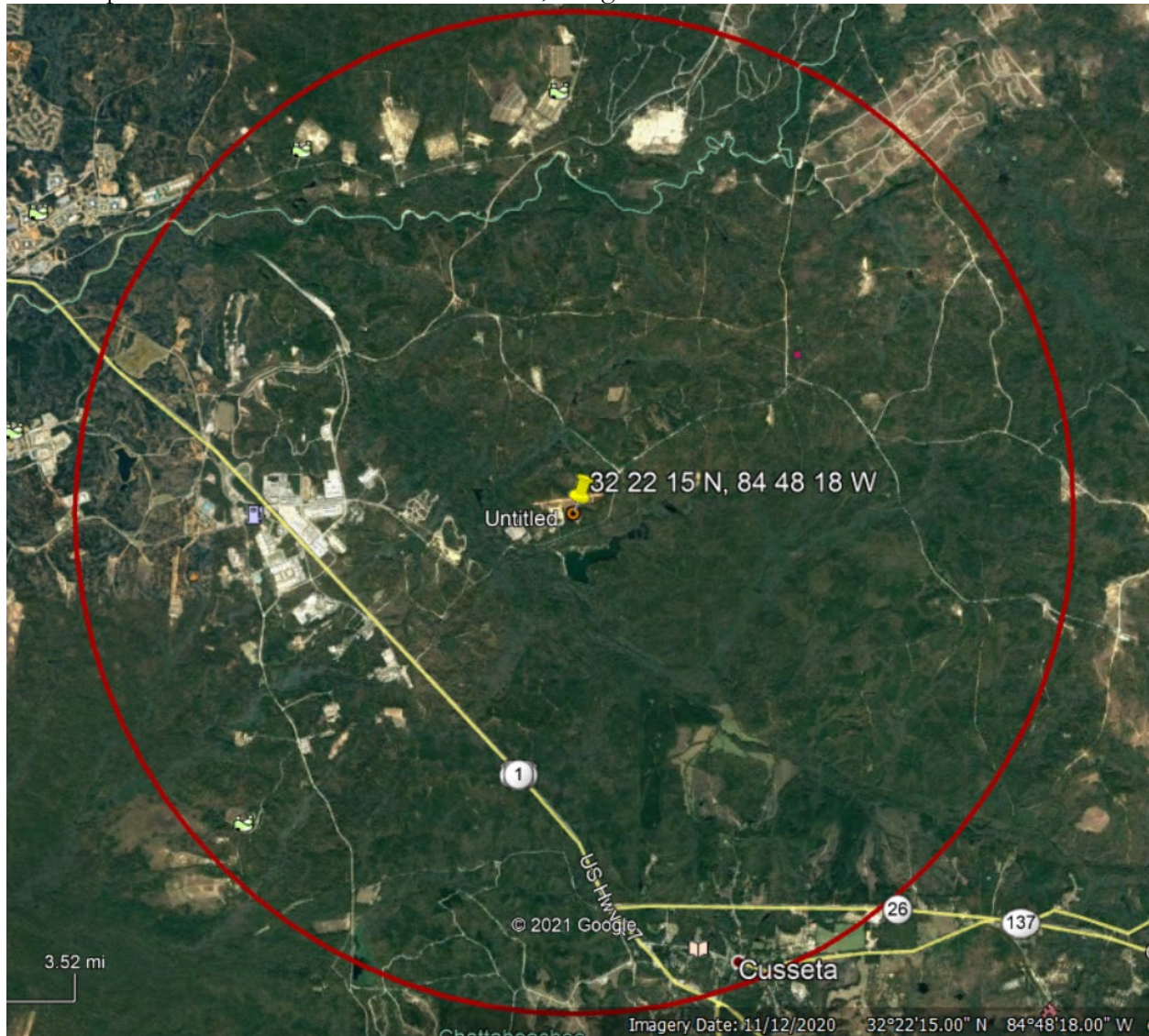
Limited Time of Use:

The UAVs are tested using batteries. The battery life lasts 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 proposed demonstrations are short term, expected to last only a few days at a time with a handful of demonstrations occurring over the next 1-2 years. So, the spectrum use is expected to be quite limited.

Locations of Testing:

The testing will be conducted at Ft. Benning, within an 8 km radius of the center point. See below for the operational area. Latitude: 32-22-15 N, Longitude: 84-48-18 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 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.

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 experimental license for future 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.