Raytheon Company Experimental
License Application
File Number:0382-EX-CN-
2024

Explanation of Experiment

Overview

Raytheon Company develops a number of missile systems for the US government. Those systems incorporate a number of highly developed systems including radio technology that improves the function and performance and precision of Raytheon's technologies.

This application is for the use of standard radar altimeter while incorporated into some of Raytheon's systems. This application seeks authorization for operations in the vicinity of the Sierra Nevada mountain range, CA, with a 500Km radius. The testing is conducted to comply with the provisions of DOD Contract Number 700C050017000.

Testing is not constant. The program conducts only occasional testing in the area of operations and is willing to continue to adhere to all coordination requirements deemed necessary by regional frequency management offices and the FCC.

Technical Synopsis

- Spectrum requested: 4200-4400 MHz
- Power level low: output power is only 1 W, 9.02 W ERP
- Emission: 100MF3N
- Antenna Gain: 10.8 dBi, Planar slotted antenna
- Airborne operations: 500-5000 feet AGL
- Limited time of use: proposed operations will only use the spectrum for four hours at a time

Description of Operations

Raytheon is proposing to use low-flying aircraft to test the performance of radar altimeter technology that is embedded into some of its missile systems. The goal of the testing is to determine if the algorithms in the radar altimeter work to deliver the same terrain imaging that already exists on established terrain maps.

The radar altimeter is built into several of Raytheon's missiles. One or more will be installed below an aircraft and flown over known terrain. The imagery returned from the radar altimeter systems will be compared to the existing maps to determine the effectiveness of the radar altimeter system and highlight areas for technological improvement.

The proposed areas of operations are on or close to operational bases of the DoD customers. The POC is Jeff Breed phone number 1-520-240-3719.

The radios in use are typical radar altimeter systems. Because of the test configuration, they do not fall under other provisions of the FCC's regulations, so Raytheon is seeking an experimental authorization for the operations. The systems perform exactly as a normal radar altimeter system would.

Areas of Operations

This application seeks authorization for operations within the radius shown in red in *Figure 1* below. Operations in those areas will start with system configuration and testing, followed by customer demonstrations of the technology in operation.

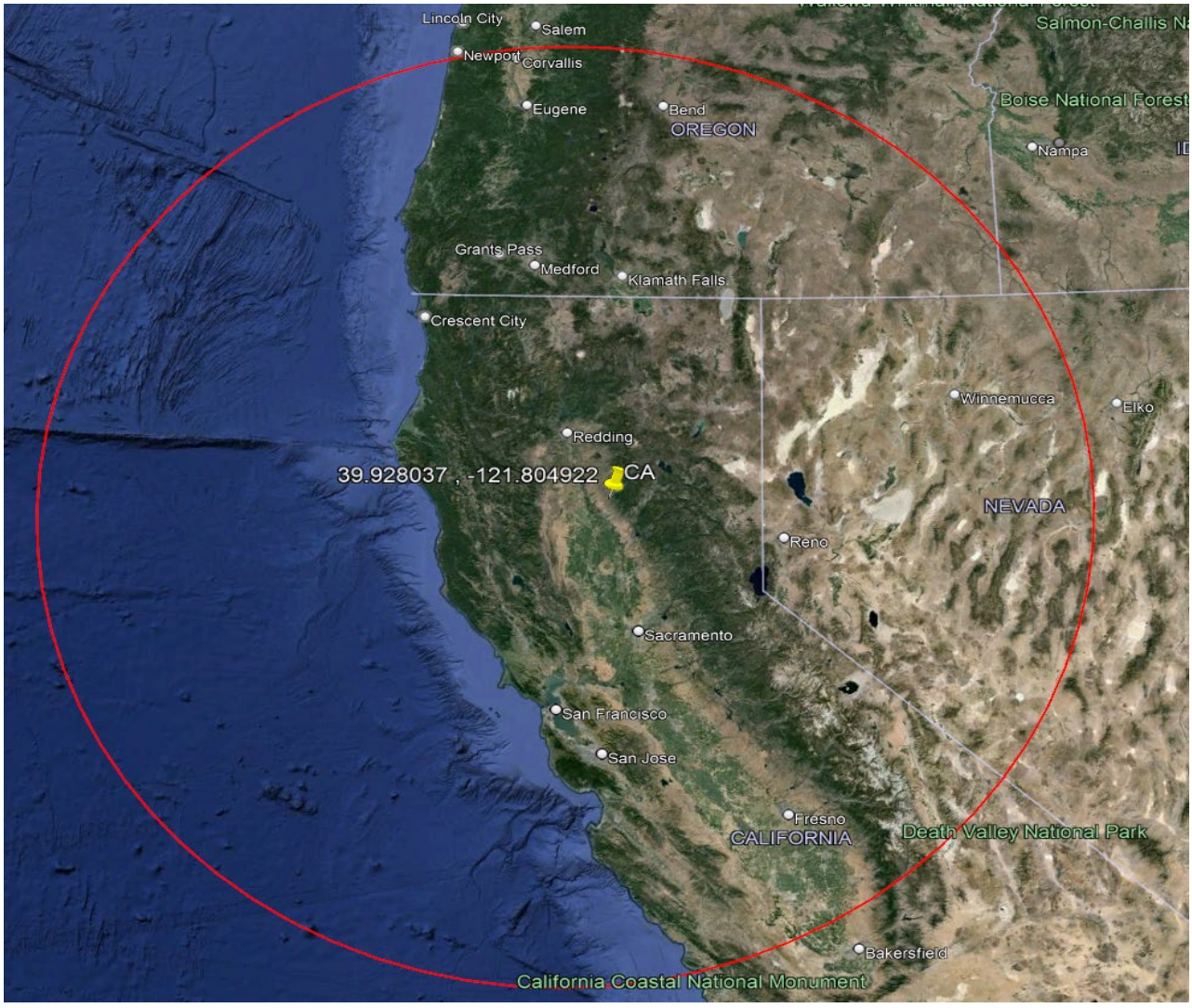

Figure 1. Requested Area of Operations – 500 km circle in red above

The purpose of the flights is to carefully examine terrain and compare the altimeter results to known information about the terrain.

When the aircraft is over specific terrain features, it will vary its altitude from as much as 5000 AAT to as low as 500 ft AAT, to test the altimeter's algorithms against known terrain maps.

Time of Use

It is estimated that Raytheon will only fly for four hours per flight. Those flights will take place only occasionally. This is a limited amount of spectrum use. The operations require pilots and aircraft that are difficult to schedule, so the time of use is limited to their availability.

This application builds on testing that Raytheon has been conducting in other parts of the country with no reporting impacts to other users.

Stop Buzzer Points of Contact

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Conclusion

Raytheon is seeking operations of its radar altimeter testing centered in Utah. There are proposed periodic test flights planned for the next several months, which require scheduled use of aircraft, and it is a challenge to get that time. So, this application seeks authority to operate in transit to maximize its ability to complete the testing and demonstrations required by its customers. The testing is conducted subject to a federal contract: 700C050017000.