

Explanation of Experiment and Need for STA

Overview:

Raytheon Missile Systems (Raytheon) develops, tests, and builds a number of advanced technology systems that are sold to the US government and selected foreign governments. This application seeks authorization for the demonstration of a system for customers on June 12, 2019.

Need for an STA:

The program working on this COTS/optics integration has been asked to conduct a demonstration on June 12, 2019. This STA requests authorization for operations from June 11 to June 13, to allow for set up of the system and the possibility of delay of the demonstration. Because the operational period is just 3 days, an STA is appropriate.

Technical Synopsis:

Spectrum Requested: 10175-10500 MHz
Time of use: less than 4 hours per day, for no more than 3 days
Power: 80 W, with 27 dBi gain
Operations: outdoors, on the ground

Description of Operations:

Raytheon is seeking to demonstrate its integrated airport radar with an optical tracking system to government customers.

The radar system has three operating modes:

Mode one: is a 1 kHz wide signal that is used for TX F1 CW. This mode help to send out TX transmit frequency. It will be in use off and on throughout the entire day.

Mode two: is a 4 MHz wide signal that is used for TX F2 CW. This mode helps to send out TX transmit frequency (along with the 1 kHz simultaneously). It will be in use off and on throughout the entire day.

Mode three: is a 300 MHz wide signal that is used for TX FM-CW modulation. This mode helps as the alternate from mode two proving a FM-CW modulation. It will be in use off and on throughout the entire day.

The goal of the demonstration is to show how the integrated COTS radar system with an optical scanning system can detect threats at airports.

The radar system will have its directional antenna oriented down. Operation will be conducted with the installation on a trailer on the ground.

Power Levels, no interference likely:

The nominal power level is 80 W with an ERP of 24.4 kW. The beamwidth of the antenna is approximately 7 degrees.

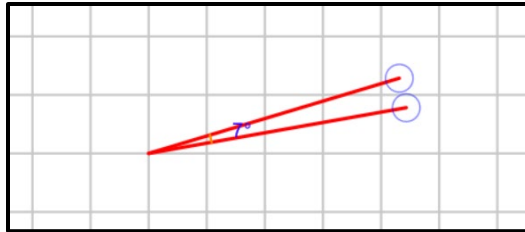


Figure 1. Approximate beamwidth of antenna

This is a highly directionalized antenna which operates above 10 GHz with the antenna directed downward. Because signals at this high frequency are subject to significant attenuation, it is unlikely that any of the proposed operations would cause harmful interference to any other operations. The energy will be absorbed by the earth, since the antenna will be directed downward. Any other RF energy will be attenuated by the surrounding buildings.

Area of Operations:

The area of operations is the land just adjacent to the Raytheon building on Innovation Parkway.

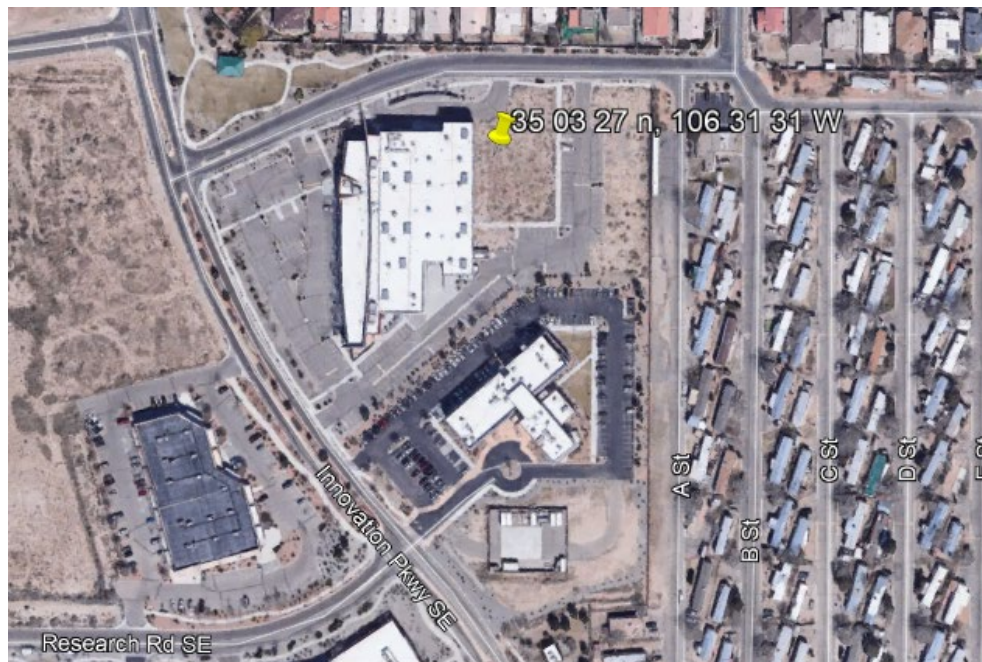


Figure 2. Location of proposed demonstration – adjacent to Raytheon's facilities

New Mexico has very mountainous terrain. The Santa Fe Mountains, to the north and rising to over 8000 feet, will prevent signal propagation that direction. While the area to the east has the Sandia mountains protecting any other users in that direction.

The time of use is limited. The proposed operations will be conducted for approximately 4 hours per day across no more than 3 days. In preparing this application, Raytheon has submitted this exhibit to the DOD-AFC for New Mexico. A separate statement will be included once they have provided a response to Raytheon's coordination request.

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Raytheon is seeking authority to test the installation and operation of a commercial off-the-shelf radar system with an optical tracking system for threat detection. The operations will be limited to ground-based trailers placed on the open area next to the Raytheon building. The time of use of the radios is limited. Should there be any questions about the proposed operations, please contact Anne E. Cortez, 520-360-0925 or alc@conspecinternational.com.