Raytheon Missile Systems
Experimental License Application
File No: 0160-EX-PL-2014

Explanation of Experiment

Overview:

Raytheon Missile Systems (Raytheon) designs and builds missiles that it sells to the US Department of Defense and other agencies of the federal government. Raytheon has been working recently on a series of advances to its Seeker systems.

This application is being filed to continue operations under a special temporary authorization WG9XXW which would otherwise expire March 13, 2014. As Raytheon described before, the program received a contract award, contract number DOTC-12-05-INIT004, in the fall of 2012. Immediately thereafter, the program began developing its research and testing plan. Since that initial test plan, the Seeker program has expanded its research to cover a number of additional tests, which will speed up advances in the radar development. Raytheon sought temporary authorization to include independent research and development testing with other experimental operations that were ongoing.

The low-powered radar operations authorized under WG9XXW acts as a simulated reflected radar signal from a distant object, but controlled at the Raytheon plant site. The early use of this system showed great promise and ongoing operation is essential to testing Raytheon has scheduled to more fully explore the operation of its radar and radar processing.

Synopsis:

- Spectrum needed: 15.71-17.10 GHz
- Signal level: maximum power is 0.1 Watts, with an ERP of 6 W, antenna gain 20 dBi
- Location: Raytheon Missile Systems facilities in Tucson, AZ, azimuth of operations: 0 ° horn transmitter with 15 ° beamwidth will point north to a receiver on a test range in the center of the Raytheon plant site, with buildings north, south and east of the proposed operations
- Proposed operations will pulse on for a minute at a time, then turn off. Only for a few hours per day.
- Emission Designator: 35M0P0N

Nature of the Experimentation:

Raytheon is working on advanced development of its Seeker technology. The nature of this particular program is that the missile has a passive radar system incorporated into the missile. The passive radar system is receive-only, which means that it calculates the speed, trajectory, and location of incoming ordinance based on the radar and other signals reflected by the incoming threat.

This application seeks authorization to add a low powered location to Seeker testing authorized under WG2XMV. The testing allows for low power simulation of radar return signals. This test minimizes use of the spectrum, avoids lengthy flights, and helps to speed the advanced development of the overall radar system.

Location:

Testing is conducted on the Raytheon plant site, with Raytheon buildings shielding the test area to the north, south, and east.

The operations would use a transmitter with a beamwidth of 15 degrees, aimed at azimuth 0 – due north.

Time of Use:

The testing uses this radar system only sporadically. The transmitter is pulsed on, then off. Testing takes place for only a few hours a day during the normal work week.

Power Level:

The transmit power is merely 0.1 W with an ERP of 6 W. With buildings shielding all nearby areas, the signals do not propagate beyond the designated test site at Raytheon's facilities in Tucson. Raytheon has confirmed that signal levels off the designated test site are below 10 mW.

Stop Buzzer Point of Contact:

Thomas J. Fagan, Spectrum Manager
Raytheon Missile Systems
tjfagan@raytheon.com
520-794-0227 (office)
520-465-7087 (cell)

Conclusion:

The operations requested under this application will give Raytheon ongoing authority to use low powered signals from this location to its Seeker testing for advancement of a radar system, , azimuth 0 degrees, to simulate a far-off radar reflection. The test area is surrounded by buildings, and the spectrum use is already authorized at nearby sites on the Raytheon plant site for associated experimentation. This additional experimentation will allow for significant advancements, operating at a much lower power, because the operations will be in the near field.

If there are any questions about the proposed operations, please contact Tom Fagan, Spectrum Manager, Raytheon Missile Systems, or Anne Linton Cortez, WFS, 520-360-0925 or alc@conspecinternational.com.