Raytheon Missile Systems
Experimental License Modification Application
Call Sign: WG2XEK
File No: 0099-EX-ML-2013

Explanation of Experiment

Raytheon Missile Systems (Raytheon) is a US defense contractor that develops innovative technologies that can be used by the military. Currently, Raytheon's innovation labs in Rancho Cucamonga, California have been working on the development of a new broadband technology. This application proposes to continue the experimentation to explore how to optimize operations based on spectrum characteristics, because the early research has shown significant results in improving data flow over the new solid-state technology using high frequencies. Recent modifications to the license have increased the pace of technology development, and the program has determined that it can further improve dataflow, if it has the opportunity to increase the power of the transmitter, which is the reason for this latest request to modify the license.

Description of Experiment:

Currently, Raytheon is working on a new product that uses high bandwidth solid state W-band (71-76, 81-86 and 92-94 GHz) technology, making it possible to deliver compact, secure communications systems with orders of magnitude reductions in size, weight and power.

Reducing the size, weight and power needed by broadband data links is essential when working in harsh climates. Traditional point to point technologies operating in this frequency band use large antennas that are buffeted by wind. The buffeting causes a significant drop in data rates, which leads to inefficient communications, lowering of available bandwidth, slowing of vital communications, and wasted power by the transmitters. The technology under development offers significant advances in power consumption, rapid deployment, and effective high-speed data transmissions under all conditions.

In recent months, Raytheon has added frequencies to its experimentation and expanded the bandwidth of emissions. In doing so, it has reached significant advances in the development of the solid state transmissions. The advances have allowed for the use of greater power, without diminishing the performance or decreasing the mobility of the system. To utilize the available power, and explore how to increase the throughput of this quickly deployable broadband technology, Raytheon needs to extend its experimentation by exploring performance characteristics when the radios are operating using 30 W output power. This will allow it continue advancing the experimental technology on its radio test range to improve the way that it works at distance in each of the spectrum bands.

The purpose of the experimentation is to continue the development of Raytheon's advanced, high-power, solid state W-band technology for communications applications. The advanced development will enhance the feasibility of using the technology for robust communications systems that are portable and rapidly deployable.

The test will take place at the ITT Loop Canyon Antenna Test facility.

If there are any questions about this application or the proposed use of the spectrum, please contact Thomas J. Fagan, Spectrum Manager, Raytheon Missile Systems, 520-794-0227 or tjfagan@raytheon.com, or Anne Linton Cortez, Washington Federal Strategies, 520-360-0925 or alc@conspecinternational.com.