

Raytheon Missile Systems
Experimental License Modification Application
Call Sign: WG2XEK
File No: 0082-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, using additional spectrum bands 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.

Description of Experiment:

Currently, Raytheon is working on a new product that uses high bandwidth solid state W-band (71-76 GHz and 81-86 GHz and 92-94 GHz) technology, making it possible to deliver compact, secure communications systems with orders of magnitude reductions in size, weight and power. This modification application seeks to add an emission designator, 800MF2D, to Raytheon's existing license.

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.

At this point, Raytheon needs to extend its experimentation by exploring performance characteristics when the radios are operating from 1 to 10 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 distances of up to 1 kilometer 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. This expanded testing will include measuring the

performance of prototype 1 Gbps, high frequency (71-76, 81-86, and 92-94 GHz), static communication links at a separation of 1 km between the transmitters. The test will take place at the IIT Loop Canyon Antenna Test facility. The new emission designator should allow for testing of a higher throughput on the radio system, which is intended to deliver greater reliable performance.

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Conclusion and contact info:

The proposed modification would add an emission designator allowing the program to use very broadband transmissions to experiment with higher data throughput. This should advance the development of the radio system more quickly.

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.