

Explanation of Experiment and Need for STA

Overview:

Raytheon Missile Systems designs and builds a number of technologies for the Department of Defense and federally approved other purchasers. There are a number of technologies that develop advanced radar systems that are embedded in Raytheon's products.

Need for an STA

Raytheon is seeking temporary authorization because it needs to advance its radar signal processing capabilities to deliver products to its customers in early 2019, and this testing will provide advanced training to accelerate the product development.

Technical Synopsis

- Power level: 10 mW
- Emission: 330MN0N
- Localized operations: only on a very limited portion of the RMS plant site.
- Limited time of use: a test lasts only 15-20 seconds, and then the program works in the lab
- Duty cycle is low: frequencies are swept through in 40 msec, time on any frequency is low

Description of Testing

The purpose of this testing is to advance radar signal processing capabilities within Raytheon. We have developed a small fully assembled radar kit used specifically for testing purposes. This device is used by the members in the Signal Processing group to rapidly become familiar with the principals of radar technology. It is a hands-on tool which allows team members to get up to speed and apply different techniques to the relevant principals of radar system design. The system will be in use sporadically, as the signal processing group needs to have actual test data to work on radar advances. The radios will be used to detect people or objects in rapid sweeps. The signal processing will be compared to the real circumstances in a way that will lead to advances in signal processing techniques.

Location of Testing

The test bed has been set up on a deserted portion of the RMS plant site, which is nearly 1000 feet from the nearest buildings or roads.



Figure 1. location of testing

Test Time Information:

The system will sweep through the frequencies, starting at 2.235 GHz and sweeping up to 2.565 GHz, then sweeping back down through the frequencies. The time for a sweep is only 40 milliseconds. The time that the system is on is limited to 15-20 seconds, after which the system will be off, and the program will work on signal processing.

Direction of operations

The signal will be used to track individuals in the path of the radar beam. The signals are sufficiently low that there are no RF safety concerns. The transmitter will operate at 0 degrees vertically. The signal is expected to attenuate quickly, based on the targeting, terrain, and foliage.

Conclusion

RMS is conducting expedited radar signal processing training to advance the development of its signal processing to deliver products to its customers. This testing is situated on a remote part of the RMS plant site. The time of use is very short, and the signals will sweep through the spectrum quickly, reducing the duty cycle of the operations.

If there are any questions about the proposed operations, please contact Anne E. Cortez, WFS, at 520-360-0925 or alc@conspecinternational.com.