



Background

aXion is a small business working on advancing radar processing technology. The product being tested is a processing system that enhances the performance of commercially available radar systems. It connects to a data feed provided by an off-the-shelf radar transceiver and provides enhanced detection and tracking capabilities, allowing low-cost navigation radars to be used for critical surveillance and security applications, including border and maritime security.

aXion's radar product will dramatically improve on radar processing techniques used by the US Department of Defense and the Department of Homeland Security. Extensive test data is required to further develop this technology, which has the potential to provide great enhancements to border and maritime security and surveillance.

Experiment Setup and Objectives

Our test system is processing data output by a Kelvin Hughes Mk11 turning unit (Figure 1), which operates in the frequency range of 9.21 to 9.49 GHz, with a maximum peak output power of 300 watts and a maximum duty cycle of 13%.



Figure 1 - Kelvin Hughes Mk11 Turning Unit and Antenna

This system will be operated periodically to test system performance and collect data for further offline analysis. We will be testing our ability to detect and track a variety of targets, including persons, road vehicles, aircraft, and drones. Specific performance indicators we will be observing during this testing include:

- Minimum detection range – how far away from the sensor can our processing system detect different types of targets
- Track completeness – percentage of time that a visible target was tracked by the system
- False alarm rate – number of false detections generated by the system in a certain time window

Significant operation time under diverse operating conditions is required to validate system performance. We will test using both instrumented targets, which carry a GPS receiver to record reference data, and targets of opportunity.

We will attempt this experiment multiple times as we improve on our processing algorithms and execute different test scenarios. Our need is for a STA license for a 2 month period.

Emergency Contact

While we expect there to be no harmful interference caused by the operation of this system, aXion is providing a 24x7 point of contact to terminate transmission if required. The contact information is:

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Your approval for our license request will help us dramatically in our pursuit of advancing radar processing technology and improving the safety and security of our coastline, borders, ports and harbors, and critical infrastructure.

Best regards,

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