

From: Carl Guerreri

To: Nimesh Sangani

Date: October 02, 2020

Subject: Additional Information Request

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Message:

With reference to the above correspondence Electronic Warfare Associates, Inc. (EWA) requested permission to experiment with its Counter UAS Radar at both the manufacturing facility in Mt. Laurel, NJ and at the Springfield-Beckley Airport (KSGH) in Springfield, OH. The airport was specifically chosen because the airport and surrounding airspace has been designated an Beyond Visual Line of Sight UAS Test Area.

The background surrounding our project is that in response to our adversaries employing a wide variety of UAVs/UASs EWA has developed an X Band Radar designed to detect and track multiple small Radar Cross Section (RCS) UAVs out to a range of 10km. Our experimenting at the manufacturing facility in NJ will not be extensive and will be limited to detecting and tracking targets of opportunity in the airspace surrounding our facility. The extensive testing/experimenting will occur at KSGH. At that location, EWA plans to have various commercially available UAVs flown within the performance envelope of the radar to test the radar's ability to acquire and track the various UAVs both individually and in groups or swarms. Since the 9000-9200 MHz band is designated for FAA use, and given the fact that the radar is capable of selecting any frequency in the 9100-9600 MHz to operate in, the purposes of EWA's planned experiments the radar will only be operated between the frequencies of 9250 MHz and 9600MHz. The original Form 442 has been modified to reflect this change and therefore FAA coordination is no longer required.

As stated earlier, the extensive experimentation with this radar will occur at KSGH. details of the planned experiments follow:

- a. Random targets of opportunity will be acquired and tracked to verify the general operation of the initial set up.
- b. A single UAV with a known Radar Cross Section (RCS) will be flown from the radar radially outbound to determine the maximum detection range and to enable comparison of actual performance vs theoretical performance
- c. A single UAV with a known RCS will be flown inbound on random flight paths to evaluate the radar's ability to detect and track inbound targets
- d. UAVs will be flown in crossing patterns through the radar's detection envelope to evaluate the radar's track while scan capabilities
- e. Multiple UAVs will be flown simultaneously to verify the radar's ability to track multiple targets. It will start with 2 UAVs and UAVs will be added to the flights until at least 20 UAVs are in the air at the same time.
- f. There will be multiple UAV flights involving multiple UAVs to test and verify the range and angle resolution capabilities of the radar.
- g. UAVs will be flown at multiple ranges, altitudes and speeds to verify the radar's performance envelope.

While the above list of experiments is not all inclusive it represents a majority of the initially planned testing.

The above sequence of tests will be repeated at multiple frequencies across the 9250-9600 MHz band. In addition, each of the tests at each of the frequencies will incorporate multiple emissions outlined in the Form 442 so that the radar's performance can be fully evaluated and optimum operating modes can be determined.

If you need additional details with regard to the planned experiments please contact me and let me know what additional information you require.

Carl N Guerreri