

BlueHalo
Experimental License Application
Call Sign: WM2XGI
File Number: 0763-EX-CR-2023

Explanation of Experiment

Overview:

BlueHalo is a technology firm based in Albuquerque, New Mexico. Its engineering team develops technology for US government customers, including customers in the Department of Defense.

BlueHalo is filing this experimental license renewal application to permit ongoing use of advanced radar system in conjunction with a laser targeting system. BlueHalo's initial testing has proven very effective, and the program of experimentation and development needs to continue.

Technical Synopsis:

- Spectrum Requested: 3300-3400 MHz
- Emission Designators: 21M5M1N, 43M0M1N, 4M40M1N, 7M30M1N, 8M80M1N, 3M70M1N, 5M50M1N
- Half Power Beamwidth: 15 degrees
- Limited Time of Use: system will only be in use one week per month

Explanation of Experiment:

BlueHalo is testing integration of a RADA phased array radar system into a High Energy Laser (HEL). The installation uses the four panel RADA system, each with a 90 degree look angle, to give 360- degree coverage of an area under surveillance. The radar performance allows the system to identify UASs that are entering the area.

System configurations:

In the first configuration, the four-panel radar system will be place on top of a tripod which is between 60 and 80 inches above the ground. The total height of the system is below 8 feet AGL.

The second configuration will put the four-panel radar system on top of a mast that ranges in height from 7 to 16 feet, with an overall height of about 18 feet AGL maximum.

These system configurations were chosen because they are similar to the heights of typical fencing surrounding secure facilities, which the system would be used to protect.

Temporary fixed operations:

The radar system is installed outdoors. The system is portable, and it will be temporarily installed at one of the license locations for testing and demonstrations. The system will be moved to other

locations for different aspects of the testing to demonstrate various aspects of the system performance. Only one location will be in use at a time.

Areas of Operations:

BlueHalo is requesting authorization for temporary installations at the following locations:

EMERTC Test Range:

1	3K North Pad	34° 04' 40.64" N, 107° 00' 11.51" W
2	3K North Overlook	34° 05' 11.74" N, 107° 00' 13.84" W
3	1200 M Site	34° 01' 40.92" N, 106° 58' 49.45" W
4	1200 M Valley Floor	34° 01' 58.42" N, 106° 58' 49.73" W
5	Laser Site	34° 05' 41.83" N, 107° 00' 11.20" W

Moriarty Test Area:

6	Moriarty Airport 36S	34° 57' 52.80" N, 105° 59' 41.90" W
7	Moriarty Sundance E	34° 59' 01.20" N, 106° 00' 04.30" W

BlueHalo Headquarters:

8	BlueHalo Lot	35° 03' 27.50" N, 106° 31' 42.90" W
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Maloof Airport Test Area:

9	Maloof Airpark	35° 08' 59.20" N, 106° 43' 51.30" W
10	Maloof Airpark 100m	35° 09' 28.80" N, 106° 43' 46.00" W

Images of each of the four test areas are below.



Figure 1. EMERTC Test Range: Operations are estimated to be in the red oval above.



Figure 2. Moriarty Airport: Operations at top and bottom of red circled area



Figure 3. BlueHalo Headquarters



Figure 4. Maloof Airpark Operational Sites

Antenna Directionality and Duty Cycle:

The antennas used in the radar system are highly directional. The nominal ERP seems high. However, the duty cycle is only 18%. When the duty cycle is taken into consideration, the average ERP drops from a peak of 64.98 kW to an average ERP of 11.73 kW with a half power beamwidth

of only 15 degrees. Given this configuration, the energy is concentrated in the area needed for system performance, without the RF signal propagating in all directions. This ought to minimize the chances of any interference to other users.

Coordination with other users:

The spectrum used by this radar system is primarily allocated to federal use for radiolocation. The experimental operations are consistent with that allocation. The non-federal allocation of this shared band is for amateur radio operations and radiolocation operations. Again, the operations are consistent with that allocation.

BlueHalo can coordinate its operations with other users in the area, as necessary.

Stop Buzzer Point of Contact:

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Conclusion:

BlueHalo is seeking to renew its experimental license to continue testing a radar system that is integrated with a high energy laser. The system is portable and is used at various locations for the testing.

If there are any questions about this application, please contact Anne Cortez, Counsel to BlueHalo, anne@washingtonfederalstrategies.com or 520-360-0925.