Submitted by Joel Thorsheim on behalf of Insitu
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Frequency Management Services
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**Why an Experimental License is Necessary:**
An experimental license is required to test and operate a Merlin-Harrier RADAR system. This radar will be used as a surveillance radar.

**Operation Description:**
The request for license approval is based on the need to test UAS ground based detection system radars, ADS-B, and Mode-C sensors packages that will provide air picture awareness only inside the Ground Control Station. This technology will be added as one of many layers of safety for applications to conduct UAS BVLOS operations. The radar operates in the S frequency band. ADS-B and Mode C sensor packages are receive only.

Table 1 lists the equipment specifications and table 2 shows the location data.

| **Frequency Data** | |
|---|---|
| Transmit Frequency Bands | S-Band: 2.93 to 3.07 GHz +/- 15 kHz |
| **Transmitter Data** | |
| Transmitter Model | Merlin-Harrier Avian |
| Transmitter Manufacturer | Detect |
| Transmitter Power Output | 170 Watts Peak |
| **Antenna Data** | |
| Antenna Gain | ≥ 28 dB |
| Power Output ERP | 66,200 Watts |
| **Emission Data** | |
| Emission Designator | S-Band: 29M8P0N and 42M5Q8N |

**Table 1– Merlin-Harrier RADAR**

| City | State | Latitude | Longitude | Radius (KM) | Station Type |
|---|---|---|---|---|---|
| Bingen | WA | 045° 42' 20" N | 121° 27' 30" W | 100 | Ground Mobile |
| Arlington | OR | 045° 43' 01" N | 120° 10' 22" W | 100 | Ground Mobile |
| Boardman | OR | 045° 44' 54" N | 119° 48' 13" W | 100 | Ground Mobile |
| Pendleton | OR | 045° 41' 43" N | 118° 50' 30" W | 100 | Ground Mobile |

**Table 2 – Location Data**

**Stop Buzzer POC:**
Stop Buzzer for this operation is Insitu Operations Action Center at 509-637-4691.