

## **UAS RADAR Integration**

Submitted by Joel Thorsheim on behalf of Insitu  
The Boeing Company  
Frequency Management Services  
P.O. Box 3707 MC: 2T-22  
Seattle, WA 98124-2207  
206-544-6066 Office

### **Why an Experimental License is Necessary:**

An experimental license is required to operate various radars to support ongoing National Air Space (NAS) integration tests. This license will replace the operations currently approved under FCC call sign WL9XYG and file numbers 1534-EX-ST-2017 and 1589-EX-ST-2017.

### **Operation Description:**

This test will support 2 radar systems and the command and control system on a manned aircraft using a VHF frequency for discrete flight test communications. Operations at Ackerman, MS will utilize a manned aircraft while operations at Watford ND are unmanned.

Tables (1 through 6) lists the equipment specifications, including frequency band of operation, transmitter output power, emissions, antenna types and gains, as well as maximum ERP.

<b>Frequency Data</b>	
Transmit Frequency Band	9.41 GHz +/- 32.5 MHz
<b>Transmitter Data</b>	
Transmitter Model	TR079A (Far-2127)
Transmitter Manufacturer	Furuno
Transmitter Power Output	25,000 Watts Peak
<b>Antenna Data</b>	
Antenna Type	8' Open Array
Antenna Gain	31 dBi
Power Output ERP	19.2 MW
<b>Emission Data</b>	
Emission Designator	65M6PON

**Table 2 – Equipment Data Faruno TR079A**

<b>Frequency Data</b>	
Transmit Frequency Band	3.3 – 3.4 GHz
<b>Transmitter Data</b>	
Transmitter Model	RPS-82
Transmitter Manufacturer	RADA
Transmitter Power Output	60dBm (Peak) – 1000Watts
<b>Antenna Data</b>	
Antenna Type	Active Electronically Scanned Array (AESA)
Antenna Gain	26.1 dBi
Power Output ERP	248.4 kW
<b>Emission Data</b>	
Emission Designator	26M0F1D

**Table 3 – Equipment Data RADA RPS-82**

<b>Frequency Data</b>	
Transmit Frequency Band	5030-5040 MHz
<b>Transmitter Data</b>	
Transmitter Model	Freewave
Transmitter Manufacturer	Freewave Technologies
Transmitter Power Output	1 Watt
<b>Antenna Data</b>	
Antenna Type	Dipole and 1.2 Meter Parabolic Reflector
Antenna Gain	6 dBi and 33.53 dBi
Power Output ERP	1259 Watts ERP
<b>Emission Data</b>	
Emission Designator	230KF1D

**Table 4 – Equipment Data  
C-Band C2 Ground Station**

<b>Frequency Data</b>	
Transmit Frequency Band	5030-5040 MHz
<b>Transmitter Data</b>	
Transmitter Model	Freewave
Transmitter Manufacturer	Freewave Technologies
Transmitter Power Output	1 Watt
<b>Antenna Data</b>	
Antenna Type	Dipole Omni
Antenna Gain	2 dBi
Power Output ERP	1 Watt ERP
<b>Emission Data</b>	
Emission Designator	230KF1D

**Table 5 – Equipment Data  
C-Band Manned Aircraft (Airborne)**

<b>Frequency Data</b>	
Transmit Frequency Band	123.175 MHz
<b>Transmitter Data</b>	
Transmitter Model	IC-A120E
Transmitter Manufacturer	ICOM
Transmitter Power Output	9 Watts
<b>Antenna Data</b>	
Antenna Type	Dipole Omni
Antenna Gain	0 dBi
Power Output ERP	9 Watt ERP
<b>Emission Data</b>	
Emission Designator	6K80A3E

**Table 6 – Equipment Data VHF**

<b>City</b>	<b>State</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Radius (KM)</b>	<b>Station Type</b>
Ackerman	MS	33-12-06 N	89-13-38 W	100	Manned Aircraft Mobile/Air 5K Flight Level
Watford	ND	47-48-08 N	103-16-59 W	100	Mobile/Air 5K Flight Level

**Table 5 – Location Data**

**Stop Buzzer POC:**

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