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.

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

Table 2 – Equipment Data Faruno TR079A

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

Table 3 – Equipment Data RADA RPS-82

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

Table 4 – Equipment Data

C-Band C2 Ground Station

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

Table 5 – Equipment Data

C-Band Manned Aircraft (Airborne)

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

Table 6 – Equipment Data VHF

City	State	Latitude	Longitude	Radius (KM)	Station Type
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.