

Request for Experimental Authorization

Iridium Satellite LLC ("Iridium") herein requests experimental authority to demonstrate and test earth station facilities in connection with Iridium's non-geostationary satellite orbit space station constellation (Call Sign S2110) in the manner described below. Iridium seeks authority for a period of twenty-four (24) months.

The thirty (30) earth station terminals are experimental proto-type terminals that will be divided into ten (10) units, fixed to the building, at each location. They are low-gain omni-directional antennas with a hemispheric coverage of +3 dBi.

Necessary Bandwidth Description

The necessary bandwidth is determined by the frequency channelization that Iridium uses and is filed with other Iridium licenses. The frequency of a center of an Iridium channel can be calculated by this equation. There are 270 channels numbered 1 to 270 for transmit and 7 more that are receive only.

$$chan_{frequency} = 1616 \times 10^6 + \left((41.6666 \times 10^3) \times ((chan_{number} - 1) + 0.5) \right) MHz$$

Ground station locations:

- (1) SNOC
(39° 05' 19" N 077° 30' 43" W)
44330 Woodridge Parkway
Leesburg, Loudoun, VA
Elevation MSL(m): 91.75
Elevation AGL(m): 9.75
- (2) HQ
(38° 55' 26.2" N 077° 13' 22.1" W)
1750 Tysons Blvd
McLean, Fairfax, VA
Elevation MSL(m): 168.44
Elevation AGL(m): 93.44
- (3) TSC
(33° 16' 44.5" N 111° 53' 26.9" W)
1800 South Price Road
Chandler, Maricopa, AZ
Elevation MSL(m): 366.73
Elevation AGL(m): 9.73

Table 1: Particulars of Operation

Lower Freq MHz	Upper Freq MHz	Input Power (watts) ¹	ERP (watts) ²	Mean/ Peak	Freq. Tolerance (%)	Station Class
1618.725	1626.0	1.8	4.8	M	0.0021	FX
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1618.725	1626.0	6.0	9.0	M	0.0021	FX

¹ **NOTE:** defined as the nominal mean power input from the 9770 into the antenna

² **NOTE:** ERP(dBW) = EIRP(dBW) – 2.15 dB.

Table 2: Emission Data

Emission Designator	Modulating Signal	Necessary Bandwidth (KHz)
41K7Q7W	25,000	41.7
41K7Q7W	30,000	41.7
83K0Q7W	60,000	83.0
333KQ7W	175,000	333.33

Table 3: Waveforms and types of antennas used as well as the number of carriers

Waveform	Modulation Scheme	Antenna Type	Number of Carriers
B1 (Block 1)	DEQPSK	LGA	1
C1 (NEXT)	QPSK	LGA	1
C2 (NEXT)	QPSK	LGA	1
1XC8 (NEXT)	QPSK	LGA	1

Table 4: Beamwidth and Antenna Gain

	3dB Beamwidth (degrees)	Gain (dBi)
Transmit	Hemisphere omni	3.0
Receive	Hemisphere omni	3.0