## 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.

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

## 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 |