

Special Temporary Authority Request

Exhibit 2: Summary of IOT Earth Station Technical Information

Date submitted: February 24, 2011
Applicant: GUSA Licensee LLC
File Nos.: SES-MFS-20091221-01601
Call Sign: E030266

Purpose of STA:

GUSA Licensee LLC (“GUSA”) is seeking Special Temporary Authority to operate the IOT (“In-Orbit Test”) antenna located at Clifton, TX to perform the transponder testing of the launched satellites to affirm the post-launch health to verify the performance characteristics of the individual Globalstar satellites.

In addition, GUSA is requesting authority to operate at a power higher than that specified in 47 C.F.R § 2.106, footnote 5.364 to support the transponder testing of the launched satellites. One of the primary tests to be performed for the health of the satellites is the determination and verification of spacecraft antenna patterns. Uplink, or spacecraft 1.6 GHz receive, antenna verification requires the use of an unmodulated carrier (CW) at an EIRP greater than that transmitted from a Globalstar handset transceiver. This increased EIRP is required in order to create sufficient dynamic range to provide the ability to measure peak-to-null antenna pattern variations of 30 dB. The performance of these In-Orbit-Tests will be crucial to the successful deployment of the replacement Globalstar spacecraft that are planned for the near future. The attached link budget in the Table 1 indicates the C/N expected with an EIRP of 19 dBW. As shown in the link budget, even with the level of 19 dBW, worst case C/N falls below the required dynamic range for the pattern measurements. This transmit level will be operated for short periods only during testing of the satellites at a fixed ground location at Clifton, TX.

Downlink, or spacecraft 2.4 GHz transmit, antenna verification requires the use of a high gain antenna which is accommodated by the receive function of the subject antenna.

STA term: 60 days (beginning February 16, 2011)
Site Location: Clifton, Texas
Latitude: 31 ° 48 ' 2.1 " N
Longitude: 97 ° 36 ' 46.0 " W
Transmit frequency: 1610 – 1618.725 MHz

Receive frequency: 2483.5-2500 MHz

Polarization: LHCP

Antenna Size: 1.2 m
 Gain: Tx: 23.4 dBi at 1.620 GHz
 Rx: 26.7 dBi at 2.490 GHz

Maximum antenna height: 5 meters above ground level

Necessary Bandwidth: Transmit bandwidth is 8.725 MHz
 Receive bandwidth is 16.5 MHz
 Maximum carrier bandwidth is 50 kHz

Carrier: See table below

<u>Frequency Band (MHz)</u>	<u>T/R Mode & Polarization</u>	<u>Emission Designator</u>	<u>Maximum EIRP (dBW)</u>	<u>Maximum EIRP Density (dBW/4kHz)</u>	<u>Modulation</u>
1610-1618.725	Tx – LHCP	N0N	19	19	Unmodulated CW for testing
2483.5-2500	Rx – RHCP	N0N			Unmodulated CW for testing

Satellite: HIBLEO-X GLOBALSTAR 2.0 (French-licensed Globalstar Big-LEO MSS system)

Orbital Location: NGSO (1414 km altitude, 52 degree inclination)

Elevation Angle (E/W): 5 degrees to 90 degrees

Azimuth (E/W): 0 degrees to 360 degrees

Satellite: S2115 (U.S.-licensed Globalstar Big LEO MSS system)

Orbital Location: NGSO (1414 km altitude, 52 degree inclination)

Elevation Angle (E/W): 5 degrees to 90 degrees

Azimuth (E/W): 0 degrees to 360 degrees

FAA notification is not required as the antenna structure does not exceed Part 17 notice criteria.

Table 1 Link Budget for the IOT Antenna

Return Link: 1.6 GHz up/7 GHz down		
	<u>Outer</u>	
<u>Uplink Analysis</u>		Units
Frequency	1.6	GHz
EIRP per user	19.0	dBW
Altitude	1414	km
User elevation angle	5	deg
Slant Range	3953	km
Path loss	-168.5	dB
Polarization & Tracking loss	-1	dB
S/C Rx Signal Strength	-150.5	dB
Satellite antenna gain	12.60	dBi
Line loss	-2.00	dB
User signal at transponder	-139.9	dBW
System noise temperature	396.64	K
Thermal noise density, No	-202.6	dBW/Hz
IOT measurement bandwidth	34.8	dB-Hz
Uplink C/(N)	27.9	dB
Nominal transponder gain	127.4	dB
<u>Downlink Analysis</u>		
Frequency	6.98	GHz
TX power per user	-8.4	dBW
Transmit line loss	-2.2	dB
Satellite antenna gain	4.00	dBi
EIRP per user	-6.5	dBW
GW elevation angle	5	deg
Range	3953	km
Free space loss (5 deg GW elev)	-181.3	dB
Polarization & tracking loss	-0.1	dB
Pointing loss	-1.0	dB
RX signal/user/satellite	-188.9	dBW
GW antenna gain (incl. line losses)	49.5	dBi
RX signal at antenna output/user/satellite	-139.4	dBW
System noise temperature	127.7	K
Thermal noise density, No	-207.5	dBW/Hz
Downlink C/(N)	33.4	dB
Overall (up&down) C/(N)	26.8	dB
Required Measurement Dynamic Range	30.0	dB
Worstcase Measurement C/N	-3.2	