

Amended and Restated Exhibit A

I. DESCRIPTION OF STA REQUEST

ISAT US Inc. (“ISAT US”) hereby requests special temporary authority (“STA”) to operate a 3.5 meter earth station located at Lino Lakes, Minnesota to facilitate over-the-air site acceptance testing (OSAT) and end-to-end testing of the 30.0-31.0 GHz and 20.2-21.2 GHz payload on the Inmarsat Global Xpress Ka-band network, using the Inmarsat 5 F2 (I5F2) satellite located at 55° W.L. The earth station antenna type is the ASC Signal 3.5 Ka-band Earth Station antenna (“Antenna”), a summary of which is attached as Annex A. All operations would be at a fixed location at the Lino Lakes site, which site has been previously authorized for use with the I5 F2 satellite.¹ This testing would be done in consultation with an element of the U.S. armed forces.

As explained in the application for the Lino Lakes and I5F2 U.S. market access authority, in addition to the “conventional” part of the Ka band, the I5F2 spacecraft also includes the capability of communicating in certain beams in the 30.0-31.0 GHz and 20.2-21.2 GHz bands, which are not allocated for commercial service in the United States and for which U.S. market access authority has not been sought. Operation of this part of the spacecraft will occur under the authority of Norway, pursuant to ITU filings submitted by the Norwegian Administration.² Inmarsat acknowledges that it or one of its authorized military customers would need to obtain separate authority prior to initiating U.S. service in those bands. The I5F2 satellite has been fully coordinated with the relevant parties in the United States Executive Branch for the 55° W.L. orbital location, including for the frequency bands limited to military use (i.e., 30.0-31.0/20.2-21.2 GHz) under the U.S. Table of Frequency Allocations. This additional terminal will be used for the purposes of testing the capabilities of the spacecraft only in the 20.2-21.2 GHz and 30.0-31.0 GHz band segments and is not intended for regular or permanent use in those bands.

ISAT US will be responsible for the operation of the Antenna during the tests. The operations will be closely monitored by the Inmarsat Network Operations Center (NOC) and various engineering teams associated with the OSAT and testing campaign to ensure compliance with the requested testing authority. It is expected that the Antenna will be used starting August 14, 2015 for up to 30 days.

¹ See, Inmarsat Mobile Networks, Inc., Granted March 30, 2015, (Call Sign E120072; IBFS File No. SES-LIC-20120426-00397) (“*Lino Lakes Order*”).

² The Norwegian Administration has submitted on behalf of Inmarsat an ITU filing under the filing name SE-KA-55W, as published by the ITU in IFIC 2717 (CR/C/3054) on 17 April 2012 (date of receipt November 11, 2011).

II. ISAT US SEEKS AUTHORITY TO TEST THE ANTENNA AT 20.2-21.2 GHZ AND 30.0-31.0 GHZ AND, TO THE EXTENT IT APPLIES, GOOD CAUSE EXISTS FOR A WAIVER OF SECTION 2.106

ISAT US seeks authority to test the Antenna on the following frequency bands: 30.0-31.0 GHz (uplink) and 20.2-21.2 GHz (downlink). ISAT US requests this authority on a non-interference and non-protected basis. ISAT US requests a waiver of the U.S. Table of Frequency Allocations, as necessary, to allow the proposed STA operations in the 30.0-31.0 GHz and 20.2-20.2 GHz frequencies.³ Grant of a waiver would serve the public interest because it would allow end-to-end network testing of the portion of the I5F2 spacecraft that uses these band segments and associated Global Xpress network components with the OSAT, facilitating the deployment of satellite broadband services in these band segments to approved military users. As discussed below, grant of the requested waiver would not undermine the policy objective of the rule, as regular or permanent authority for this Antenna is not being sought and the primary operators in these bands under the U.S. Table would be protected from harmful interference.

ISAT US seeks authorization only for limited testing of the 30.0-31.0 GHz and 20.2-21.2 GHz capabilities of I5F2. As noted above, the Commission granted market access for I5F2's other communications capabilities, and, in that context, all of the information required by Sections 25.137 and 25.114 was provided. Below, ISAT US provides the following additional information that it is relevant to the proposed OSAT and end-to-end testing:

Technical Parameters

Station Class: FXO

EARTH-to-SPACE:

Transmit Frequencies: 30.0-31.0 GHz

Transmit Polarization: RHCP or LHCP

Antenna Gain: 58.5 dBi

Maximum Input Power: 11.5 dBW

Maximum Uplink Power Density (main beam): 52 dBW/4KHz

Maximum EIRP: 70 dBW

Emission Designator: 100GG1D

RF Modulation: 64QAM (max)

Minimum Elevation for Transmission: Pointed to I5F2 at 55° W.L. – El = 26 degrees

SPACE-to-EARTH:

Receive Frequencies: 20.2-21.2 GHz

Receive Polarization: LHCP or RHCP

Maximum Spacecraft EIRP: 58dBW

Emission Designator: 100GG1D

³ See 47 C.F.R. § 2.106, footnote G117 (in the bands 7.25-7.75 GHz, 7.9-8.4 GHz, 17.375-17.475 GHz, 17.6-21.2 GHz, 30-31 GHz, 33-36 GHz, 39.5-41 GHz, 43.5-45.5 GHz, and 50.4-51.4 GHz, the Federal fixed-satellite and mobile-satellite services are limited to military systems).

RF Modulation: 64QAM

Azimuth Range: Fixed Pointed to I5F2 at 55° W.L. – Az = 132.2 degrees

The maximum uplink off-axis EIRP density of any single I5F2 carrier in the direction of the geostationary orbital slot of 52.5° W.L. will not exceed -30 dBW/Hz, and the maximum downlink EIRP density of any single I5F2 carrier will not exceed -15.9 dBW/Hz.

Beacon Signal: The signal beacon on I5F2 will operate at a frequency centered at 20.68 GHz with a maximum EIRP of 30 dBW, and the 20.7 GHz beacon will be muted.

Duration of Communications: approximately 30 days

Space Station Coordination

The coordination of communications for the use of the additional frequencies (30.0-31.0 GHz/20.2-21.2 GHz) with the I5F2 spacecraft at the 55° W.L. orbital location with existing spacecraft operators, including the U.S. Government, during the proposed testing is the responsibility of Inmarsat and ISAT US. ISAT US has undertaken coordination of communications for the support of the OSAT and end-to-end testing of I5F2 with other spacecraft operators that may be potentially affected during testing.

All the preparatory activities and contacts for such coordination have been made and all issues have been satisfactorily resolved. ISAT US also has undertaken to review the need for coordination based on any changed circumstances that may occur. In accordance with normal industry practices, communications with other operators will be kept open in the period leading to and throughout the testing activities, to ensure that the testing will be conducted on a non-interference basis. Grant of the proposed STA on a non-interference, non-protected basis would not prejudice any future operations in this band.

* * * * *

Grant of the requested STA will serve the public interest, convenience and necessity because it will enable ISAT US to conduct essential network testing and the I5F2 spacecraft, within technical parameters consistent with the parameters described herein using the identified Antenna, without creating any risk of harmful interference. ISAT US respectfully requests that the Commission grant STA beginning August 14, 2015 for a period of 30 days.

ANNEX A



3.5 Meter Ka-band, K-band Earth Station Antenna

The ASC Signal 3.5 Ka-band earth station antenna provides superior performance and pointing accuracy. The precision one-piece spun aluminum reflector, along with its rugged aluminum and steel construction provide extraordinary strength and precise pointing.

This antenna features a uniquely designed Gregorian sub reflector tracking system which eliminates the need for costly jack drives and large motors.

- Bonded and riveted torsion box for rigidity
- Heavy mounting ring for strength
- Advanced dual reflector Gregorian optics
- Sub reflector closed loop positioning for precise pointing accuracy
- Compliant to ITU 580-5/465-5, FCC 25.209



SPECIFICATIONS

3.5 Meter Ka-band, K-band Earth Station Antenna

Electrical Performance

	Ka-band 4-Port Circular Pol Feed		Ka-band 4-Port Wideband Circular Pol Feed		Ka-band 4-Port Linear Pol Feed		Ka-band 4-Port Linear Pol Feed Eutelsat Frequency		K-band 2-Port Linear Pol Feed		K-band 4-Port Linear Pol Feed	
	Receive	Transmit	Receive	Transmit	Receive	Transmit	Receive	Transmit	Receive	Transmit	Receive	Transmit
Frequency (GHz)	20.200- 21.200	30.000- 31.000	18.300- 20.200	28.300- 30.000	17.700 - 20.200	27.000- 30.050	21.400- 22.000	27.000- 30.050	10.700- 12.750	17.300- 18.100	10.700- 12.750	17.300- 18.400
Antenna Gain at Midband	55.10 dB	58.50 dB	54.70 dB	58.30 dB	54.30 dB	58.00 dB	55.50 dB	58.00 dB	51.10 dB	54.70 dB	50.90 dB	54.50 dB
Antenna Noise Temperature (Midband, Clear Sky Conditions at 68°F (20°C, Water Vapor Density < 7.5 g/m ³)												
10° Elevation	171 K		145 K		130 K		202 K		44 K		58 K	
30° Elevation	137 K		111 K		96 K		168 K		31 K		45 K	
50° Elevation	130 K		104 K		89 K		161 K		29 K		43 K	
Cross Polarization On Axis	N/A	N/A	N/A	N/A	35 dB	35 dB	35 dB	35 dB	35 dB	35 dB	35 dB	35 dB
Within 1 dB Beamwidth	N/A	N/A	N/A	N/A	35 dB	35 dB	35 dB	35 dB	35 dB	35 dB	35 dB	35 dB
Axial Ratio	0.50 dB	0.50 dB	0.50 dB	0.50 dB	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VSWR Performance	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1
Port-to-Port Isolation												
Rx to Rx	18 dB		18 dB		35 dB		35 dB				35 dB	
Tx to Rx	85 dB		85 dB		85 dB		85 dB				85 dB	
Tx to Tx	18 dB		18 dB		35 dB		35 dB		40 dB		35 dB	
Waveguide Interface Flange	WR42	WR28	WR42	WR28	WR42	WR28	WR42	WR28	WR75	WR62	WR75	WR62
Tx Power Capacity	500 W/Port		500 W/Port		500 W/Port		500 W/Port		1 kW		750 W/Port	

Mechanical Performance

Optics Type	Dual Reflector, Gregorian
Reflector Material	Precision Formed Aluminum
Reflector Segments	1
Mount Type	Tubular Post Pedestal
Antenna Pointing Range, Course/(Continuous)	360° Coarse, 30° Steps (±24° Continuous) 0° to 90° Continuous

Environmental Performance

Operational Temperature	-40°C to 50°C (-40°F to 125°F)
Wind Loading, Survival	150 mph Any Position 88 mph with Ice
Rain	102 mm (4 in per hour)
Solar Radiation	360 BTU/h/ft ² (1135 W/m ²)
Relative Humidity	100%
Shack and Vibration	As Encountered by Commercial Air, Rail and Truck
Atmospheric Conditions	As Encountered by Moderately Corrosive Coastal and Industrial Areas



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ASC-ESA2

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