

APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

APPLICANT INFORMATION Enter a description of this application to identify it on the main menu:
STA to Test ESIM Terminal

1. Applicant

Name:	ISAT US Inc.	Phone Number:	202-572-0686
DBA Name:		Fax Number:	202-248-5177
Street:	1101 Connecticut Avenue NW Suite 1200	E-Mail:	Ethan.Lucarelli@immarsat.com
City:	Washington	State:	DC
Country:	USA	Zipcode:	20036
Attention:	M. Ethan Lucarelli		

90 days "With conditions"

File # SES-STA-20190402-00419

Call Sign N1A Grant Date 06/11/2019
(or other identifier)

Term Dates
From: 06/11/2019 To: 09/09/2019

Approved: [Signature]



2. Contact	
Name: M. Ethan Lucarelli	Phone Number: 202-572-0686
Company: ISAT US Inc.	Fax Number: 202-248-5177
Street: 1101 Connecticut Avenue NW Suite 1200	E-Mail: Ethan.Lucarelli@inmarsat.com
City: Washington	State: DC
Country: USA	Zipcode: 20036
Attention:	Relationship: Same
(If your application is related to an application filed with the Commission, enter either the file number or the IB Submission ID of the related application. Please enter only one.)	
3. Reference File Number or Submission ID	
4a. Is a fee submitted with this application?	
<input checked="" type="radio"/> If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114).	
<input type="radio"/> Governmental Entity <input type="radio"/> Noncommercial educational licensee	
<input type="radio"/> Other (please explain):	
4b. Fee Classification CGB – Mobile Satellite Earth Stations	
5. Type Request	
<input type="radio"/> Use Prior to Grant <input type="radio"/> Change Station Location <input checked="" type="radio"/> Other	
6. Requested Use Prior Date 05/01/2019	
7. City	
8. Latitude (dd mm ss.s h) 0 0 0.0	

9. State	10. Longitude (dd mm ss.s h) 0 0 0.0
11. Please supply any need attachments. Attachment 1: Exhibit A	Attachment 2: Attachment 3:
12. Description. (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)	ISAT US seeks 90 day STA to test single unit of new land ESIM terminal. See Exhibit A.
13. By checking Yes, the undersigned certifies that neither applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. See 47 CFR 1.2002(b) for the meaning of "party to the application"; for these purposes.	Yes <input checked="" type="radio"/> No <input type="radio"/>
14. Name of Person Signing M. Ethan Lucarelli	15. Title of Person Signing Director, Regulatory and Public Policy
WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT (U.S. Code, Title 18, Section 1001), AND/OR REVOCATION OF ANY STATION AUTHORIZATION (U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).	

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THE FOREGOING NOTICE IS REQUIRED BY THE PAPERWORK REDUCTION ACT OF 1995, PUBLIC LAW 104-13, OCTOBER 1, 1995, 44 U.S.C. SECTION 3507.



File # SES-STA-20190402-00718
Call Sign N/A Grant Date 06/11/2019
(or other identifier)
Term Dates
From: 06/11/2019 To: 09/09/2019
Approved: [Signature]

Applicant: ISAT US, Inc.
Call Sign: N/A
File No.: SES-STA-20190402-00419

ISAT US, Inc. (ISAT) is granted special temporary authority for 90 days beginning June 11, 2019 to operate one Taipan 48, 0.48 meter flat panel antenna that is mounted on a vehicle in the Inmarsat facility in Reston, VA, and at fixed locations in: Washington, DC, Atlanta, GA, and New York, NY metropolitan areas. Operations are authorized only with the Inmarsat 5F2 satellite at the 55° W.L. orbital location in the 19.7-20.2 GHz (space-to-Earth) and 29.5-30 (Earth-to-space) frequency bands. under the following conditions:

1. Operations may not exceed the technical limits for the "EM Cobra" terminal authorized for Call sign E140029, must not exceeded the off-axis EIRP masks submitted in Exhibit B of IBFS File No. SES-STA-20190402-00419
2. Operations under this grant of special temporary authority are on an unprotected, non-harmful interference basis, i.e., while operating under this temporary authority ISAT must not cause harmful interference to, and must not claim protection from interference caused to it by, any other lawfully operating radiocommunication system. ISAT must cease operations immediately upon notification of such interference and must immediately inform the Commission, in writing, of such an event.
3. ISAT US, Inc. must take all necessary measures to ensure that the antenna does not create potential exposure of humans to radio frequency radiation in excess of the FCC exposure limits defined in 47 CFR §§ 1.1307(b) and 1.1310 wherever such exposures might occur. Measures must be taken to ensure compliance with limits for both occupational controlled exposure and for general population/uncontrolled exposure, as defined in these rule sections. Requirements for restrictions can be determined by predictions based on calculations, modeling or by field measurements. The FCC's OET Bulletin 65 (available on-line at www.fcc.gov/oet/rfsafety) provides information on predicting exposure levels and on methods for ensuring compliance, including the use of warning and alerting signs and protective equipment for workers. The licensee shall ensure installation of terminals will be by qualified installers who have an understanding of the antenna's radiation environment and the measures best suited to maximize protection of the general public and persons operating the aircraft and equipment. A terminal exhibiting radiation exposure levels exceeding 1.0 mW/cm² in accessible areas, such as at the exterior surface of the radome, shall have a label attached to the surface of the terminal warning about the radiation hazard and shall include thereon a diagram showing the regions around the terminal where the radiation levels could exceed 1.0 mW/cm².
4. The remote control point at Lino Lakes, MN (808-469-7104) must maintain be available 24 hours per day, seven days per week, with the authority and ability to terminate operations authorized, for discussing interference concerns with other licensees and U.S. Government agencies.
5. Antenna elevation for all operations must be at least 5 degrees above the geographic horizon while the aircraft is on the ground.
6. Grant of this authorization is without prejudice to any determination that the Commission may make regarding pending applications or future requests for special temporary authority.
7. Any action taken or expense incurred as a result of operations pursuant to this special temporary authority is solely at ISA T US, Inc.'s risk.

This action is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective immediately.

Exhibit A

Land ESIM STA Application

ISAT US Inc. (“ISAT US”) seeks Special Temporary Authority (“STA”), pursuant to Section 25.120(b)(3) for a period of 90 days, beginning May 1, 2019, to test and demonstrate a single unit of a new land earth station in motion (“ESIM”) terminal, which if licensed could provide mobile communications services over Inmarsat’s Ka-band Global Xpress satellite system. ISAT US already holds blanket license authority for ESIM that provide broadband communications on maritime and aeronautical platforms¹ (“GX Terminals”) with the Inmarsat 5F2 and Inmarsat 5F3 satellite networks. These current licenses cover operations in the 29.5-30.0 GHz (Earth-to-space) and 19.7-20.2 GHz (space-to-Earth) frequency bands, which are the same frequencies requested in this application. If these tests and demonstrations are successful, ISAT may apply for a license to add the terminal for regular operations and at that time seek any waivers of FCC technical rules that may be necessary.

Land ESIM Terminal Description

This application seeks a 90 day STA for testing and demonstration of a single unit of the Taipan 48 terminal (“Land ESIM terminal”) manufactured by EM Solutions for operation on land vehicles. The testing and demonstrations will take place in a controlled manner at the Inmarsat Government facility in Reston, VA, as well as fixed locations in Washington, DC, Atlanta, GA, and New York, NY metropolitan areas. While the STA is requested for a 90 day period, the terminal will not be operated continuously throughout that timeframe. Instead, testing and demonstration will be conducted on individual days throughout the STA period, for approximately one day every two weeks. The terminal, which employs a 0.48 meter antenna, will operate on the same frequencies as the GX Terminals already licensed by the Commission:

¹ See Call Signs E140114 and E140029.

19.7-20.2 GHz (space-to-Earth) and 29.5-30.0 GHz (Earth-to-space). Operations in the frequency bands requested in the application are subject to the U.S. Table of Frequency Allocations in Section 2.106 of the Commission's rules ("U.S. Table") and the Ka-band plan adopted by the Commission. The FCC's Ka-band plan designates the 19.7-20.2 GHz band and the 29.5-30.0 GHz band to GSO FSS on a primary basis. The Commission recently adopted rules for ESIM use of the Ka-band FSS frequency bands requested in this application,² but the rules are not yet effective because they have not yet been published in the Federal Register.

The technical data required in the Form 312 for the proposed earth station is provided in Exhibit B. This terminal type employs a 0.48 meter flat panel antenna and the half-power beamwidth required in Section 25.130(f) is 1.5 degrees. For blanket licensing of transmitting Earth stations in the 29.5-30.0 GHz band, the Commission adopted off-axis EIRP spectral density levels contained in Section 25.138(a). As illustrated in the off-axis EIRP spectral density plots in Exhibit B, the proposed terminal type meets the limits specified in Section 25.138(a) or falls within the 3 dB exceedance allowance of 25.138(a)(3). Although multiple NGSOs have been licensed this year for the Ka-band, all of them have been granted subject to not causing interference to or claiming protection from GSO FSS, and given that no licensed NGSO system actually will be operating in the 29.5-30.0 GHz band during the proposed limited duration STA period, any incidental exceedance of the levels would not cause any potential interference to other users of the band.

² *Amendment of Parts 2 and 25 of the Commission's Rules to Facilitate the Use of Earth Stations in Motion Communicating with Geostationary Orbit Space Stations in Frequency Bands Allocated to the Fixed Satellite Service*, Report and Order and Further Notice of Proposed Rulemaking, FCC 18-138 (rel. Sept. 27, 2018).

EXHIBIT B

Taipan Off-Axis EIRP Masks

Fig. 1.1. Co-Pol EIRP density in the Plane Tangent to the GSO Arc 29.5 GHz

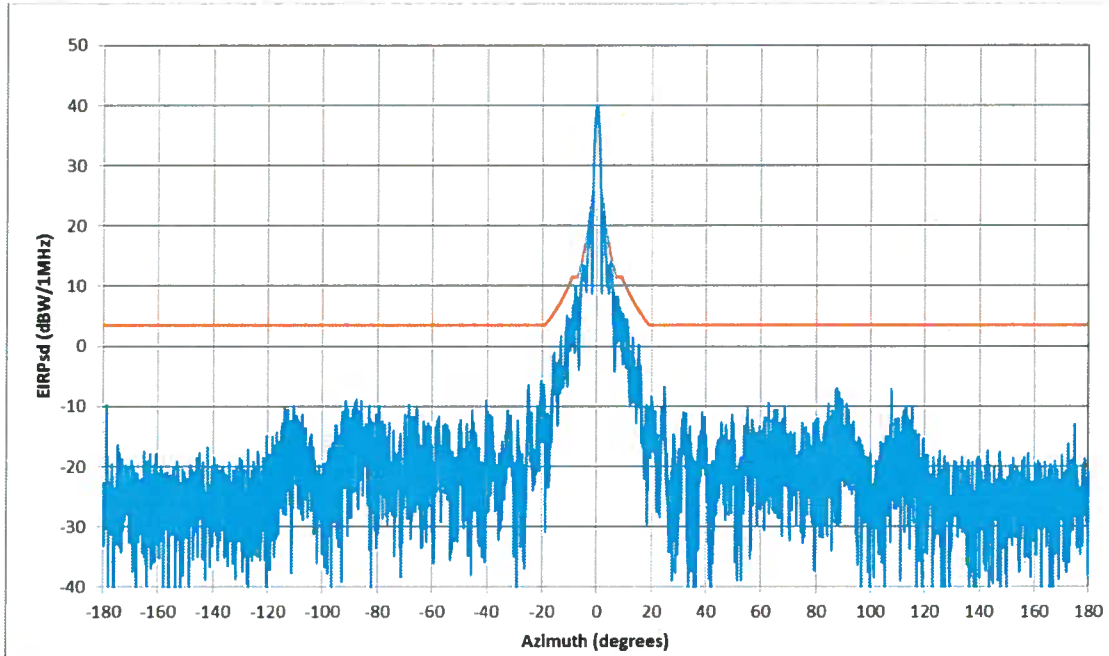


Fig. 1.2. Co-Pol EIRP density in the Plane Tangent to the GSO Arc 30.0 GHz

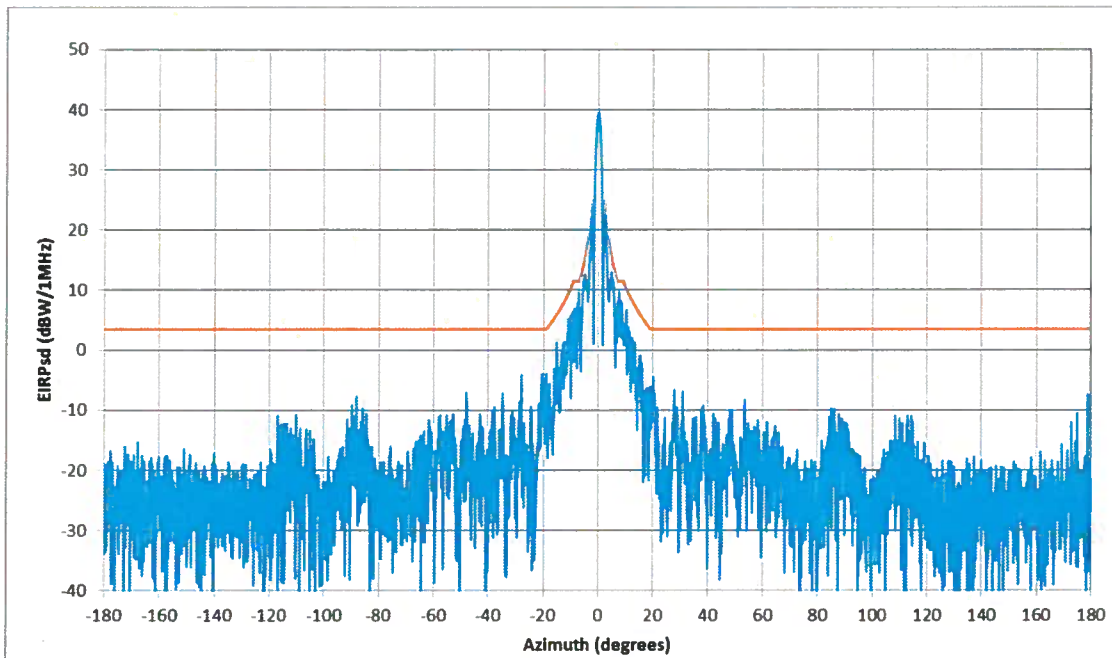


Fig. 2.1. Co-Pol EIRP density in the Plane Tangent to the GSO Arc 29.5 GHz (-10 to +10 degrees)

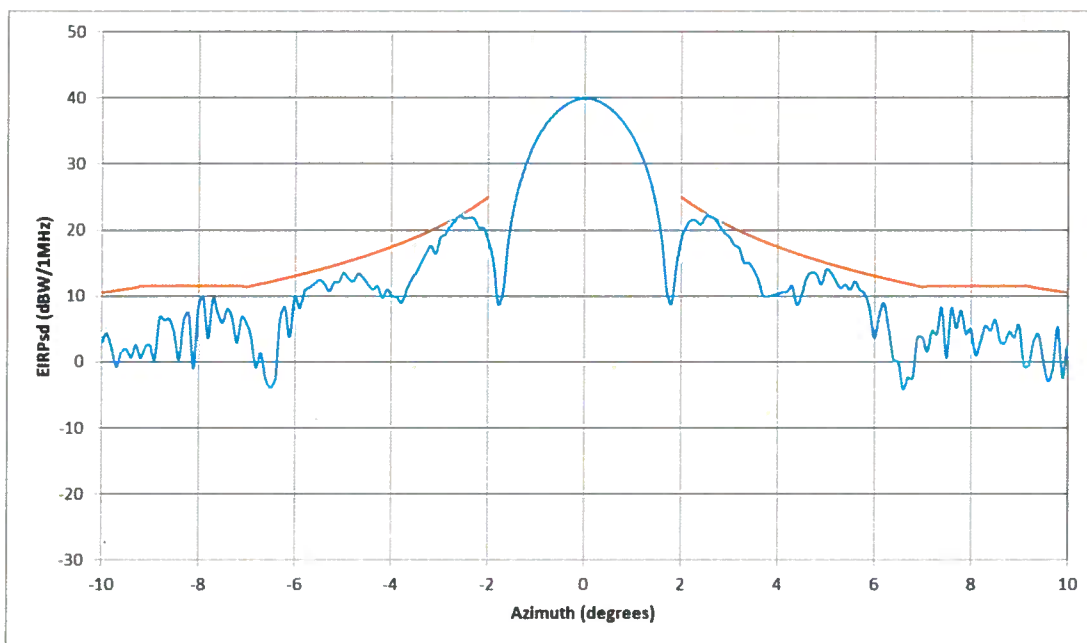


Fig. 2.2. Co-Pol EIRP density in the Plane Tangent to the GSO Arc 30.0 GHz (-10 to +10 degrees)

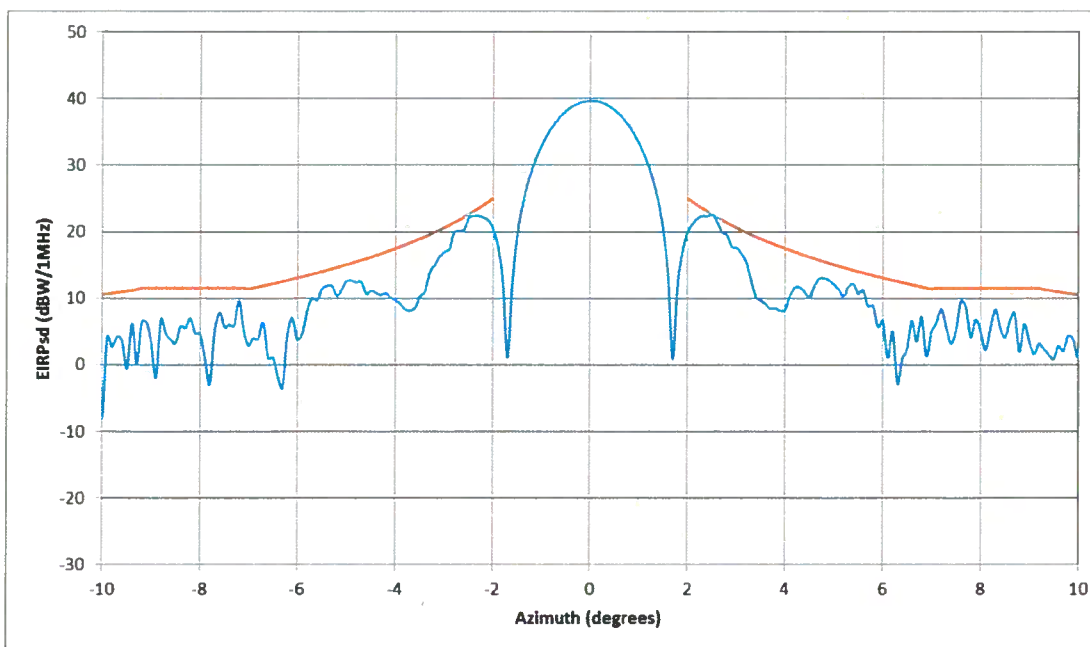


Fig. 3.1. Co-Pol EIRP density in the Perpendicular to the GSO Arc 29.5 GHz (0 to +30 degrees)

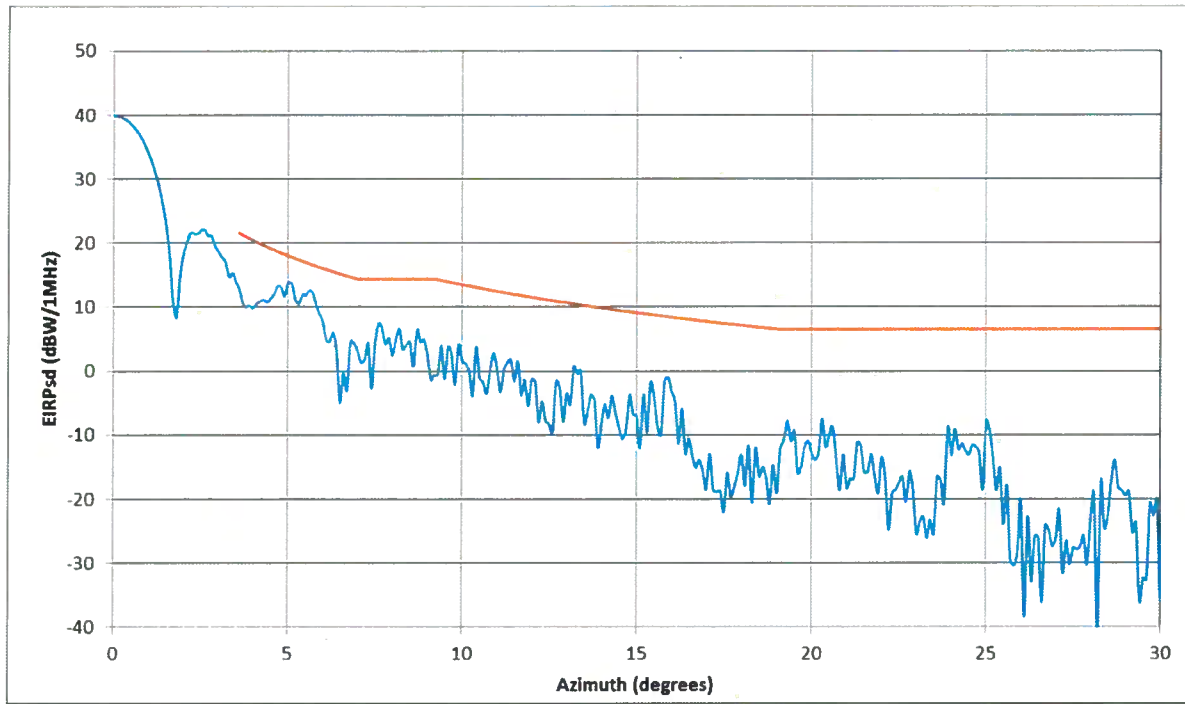


Fig. 3.2. Co-Pol EIRP density in the Perpendicular to the GSO Arc 30.0 GHz (0 to +30 degrees)

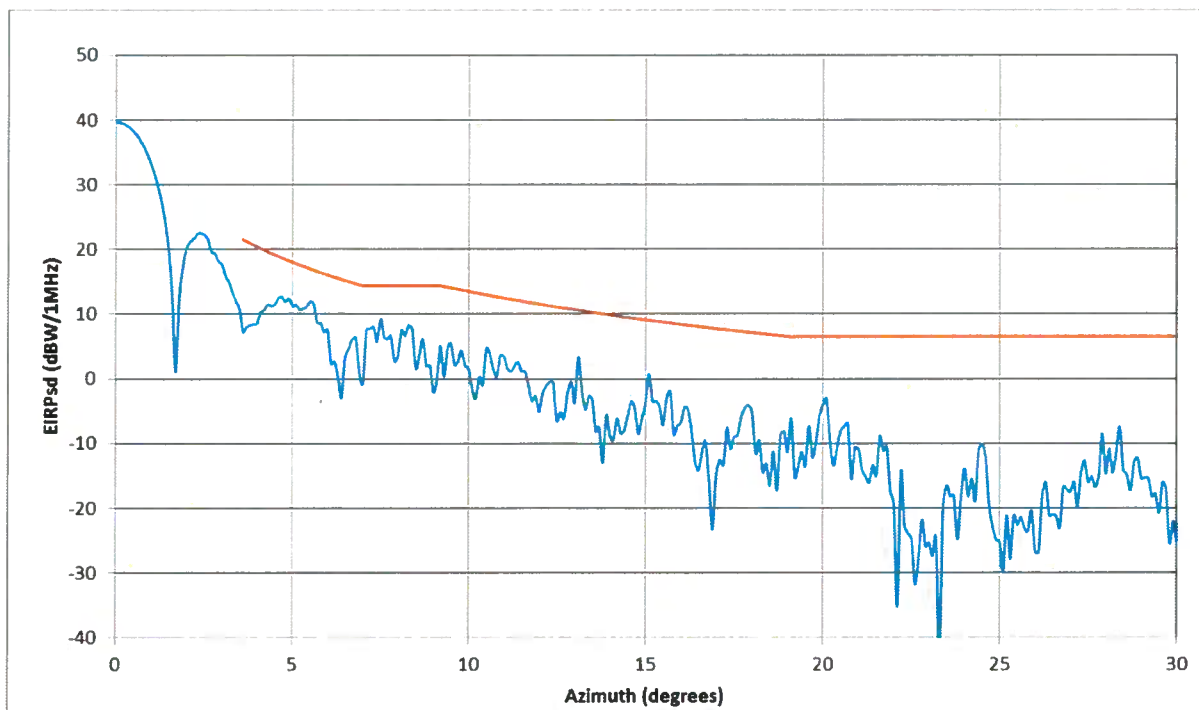


Fig. 4.1. X-Pol EIRP density in the plane tangent to the GSO Arc 29.5 GHZ (-7 to +7 degrees)

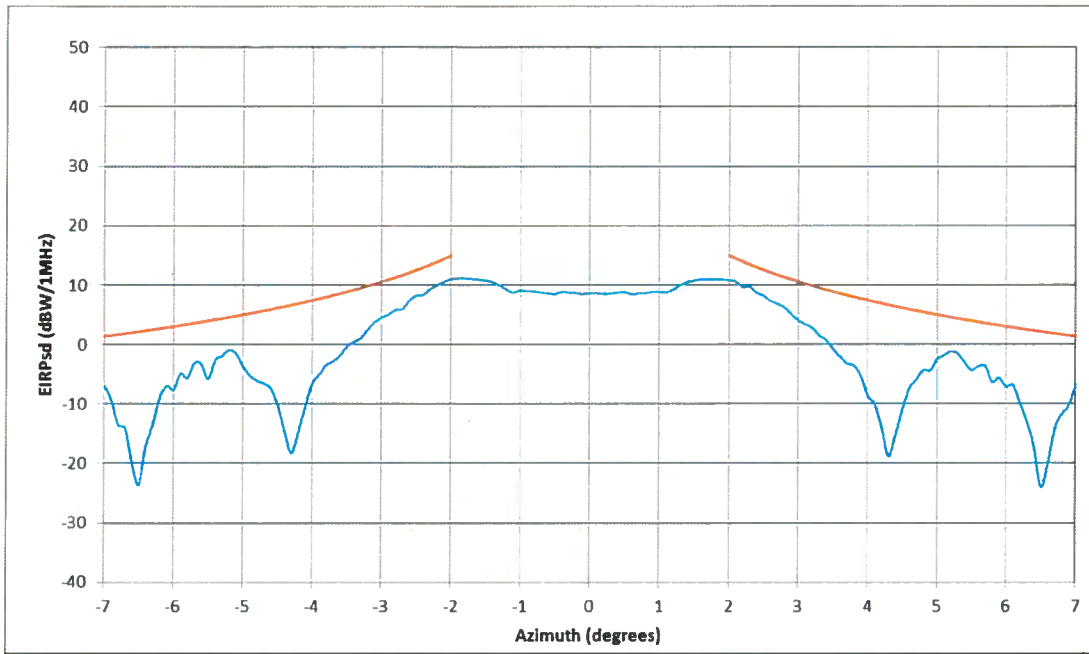


Fig. 4.2. X-Pol EIRP density in the plane tangent to the GSO Arc 30 GHz (-7 to +7 degrees)

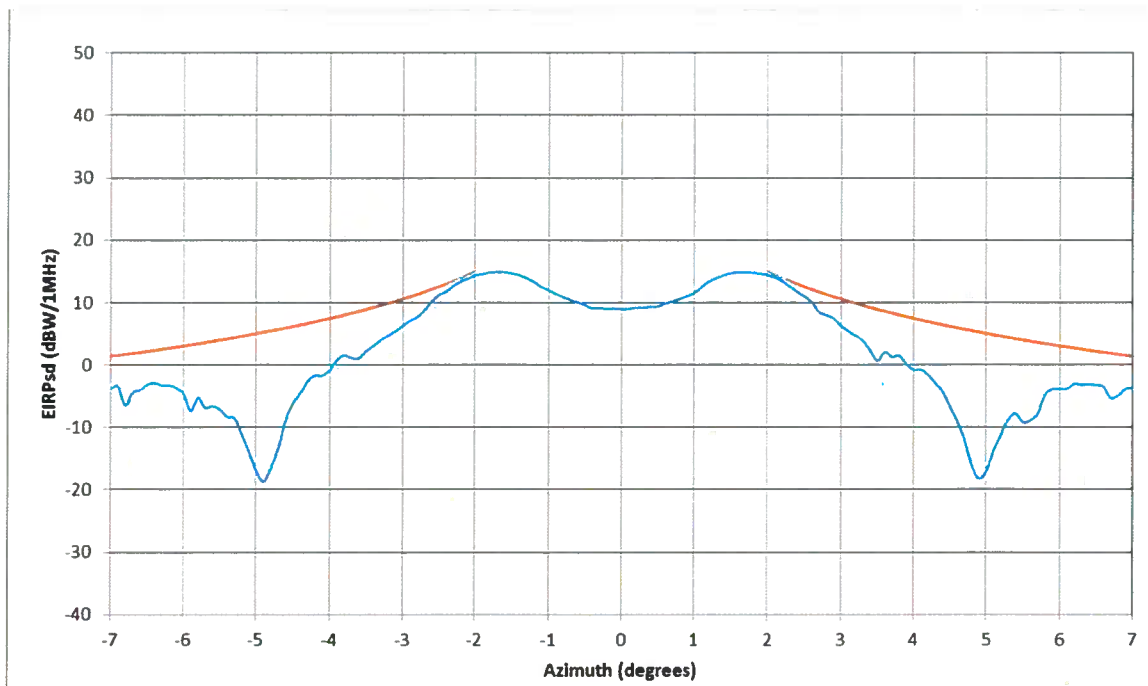


Fig. 5.1. X-Pol EIRP density in the plane perpendicular to the GSO Arc 29.5 GHz (-7 to +7 degrees)

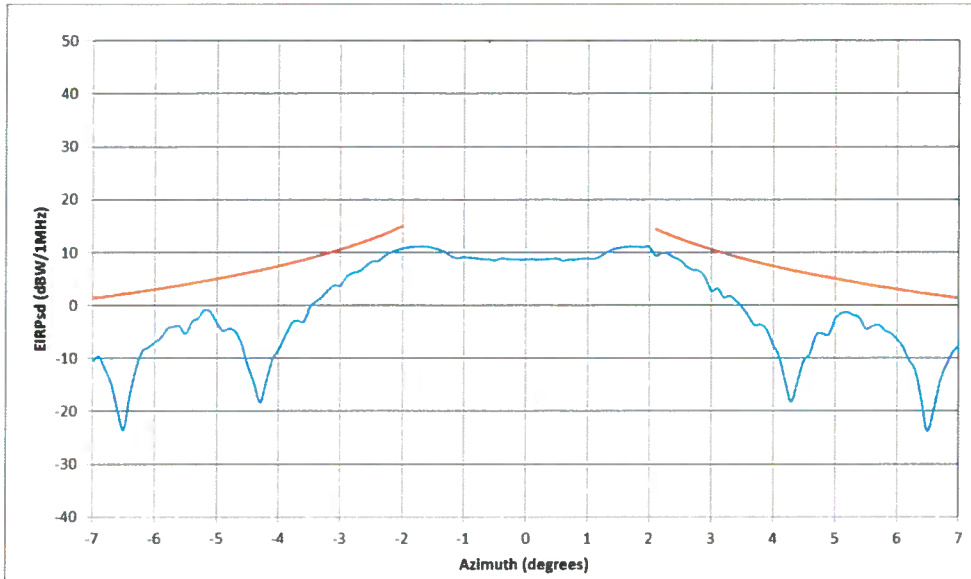
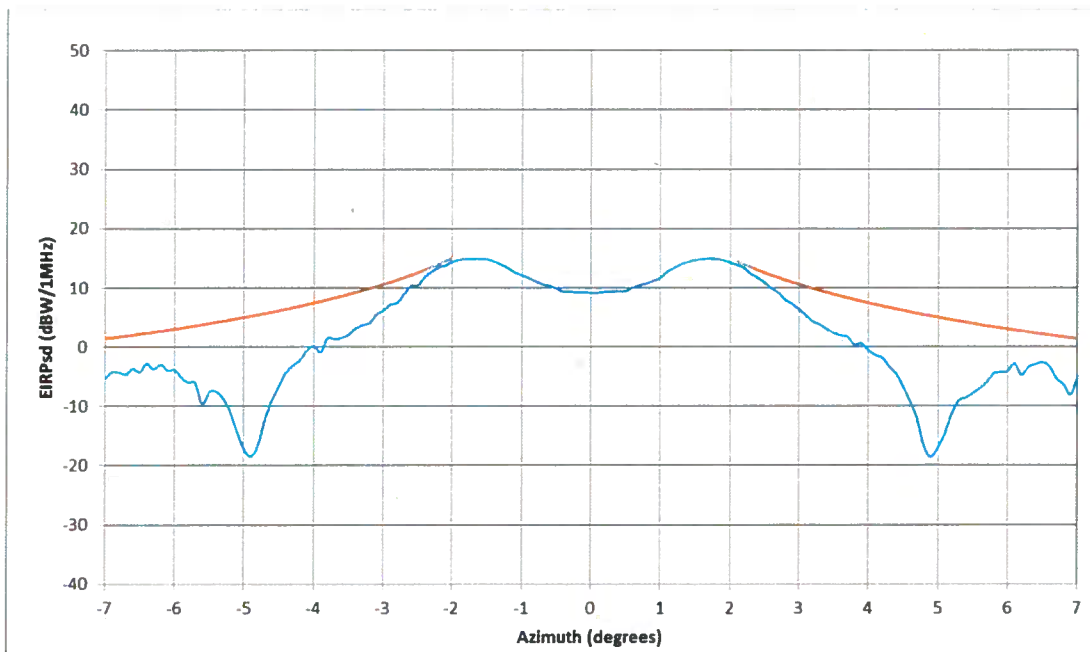


Fig. 5.2. X-Pol EIRP density in the plane perpendicular to the GSO Arc 30 GHz (-7 to +7 degrees)



FORM 312 INFORMATION

Site ID	E28 Antenna ID	E29 Quantity	E30 Manufacturer	E31 Model	E32. Antenna Size	E41/42. Antenna Gain Transmit and or Receive
	Taipan	1	E.M. Solutions	Taipan	0.48	38.34 dBi at 19.7
					0.48	38.95 dBi at 19.95
					0.48	38.57 dBi at 20.2
					0.48	39.86 dBi at 29.5
					0.48	39.64 dBi at 30.0

E33/34 Diameter Minor/Major (meters)	E35	E36	E37	E38 Total Input Power at antenna flange (watts)	E39	E40 Total EIRP for all carriers dBW
0.48	0.0	0.0	0.0	16		50.6
E43/44	E45 T/R Mode	E46 Antenna Polarization	E47 Emission Designator	E48. Maximum EIRP per Carrier (dBW)	E.49 Maximum EIRP Density per Carrier (dBW/4kHz)	
19700 20200	R	LHC	32M0G7W	0.0	0.0	
29500 30000	T	RHC	460KG7W	50.6	29.99	
29500 30000	T	RHC	5M00G1W	50.6	19.63	

	E52/53. Frequency Limits(MHz)	E54/55.Range of Satellite Arc Eastern/ Western Limit	E56. Earth Station Azimuth Angle Eastern Limit	E57. Antenna Elevation Angle Eastern Limit	E58. Earth Station Azimuth Angle Western Limit	E59. Antenna Elevation Angle Western Limit	E60. Maximum EIRP density toward the Horizon (dBW/4kHz)
	19700 20200	0.0/360.0	0.0	5.0	0.0	5.0	0.0
	29500 30000	0.0/360.0	0.0	5.0	0.0	5.0	-9.0