


S2358 SAT-STA-20101025-00224 IB2010003309
LightSquared Subsidiary LLC
SkyTerra-1

Date & Time Filed: Oct 25 2010 5:53:35:060PM
File Number: SAT-STA-20101025-00224
Callsign:



GRANTED
International Bureau
* With conditions

File # SAT-STA-20101025-00224
Call Sign S2358 **Grant Date** 12/03/10
(or other identifier)
Term Dates Period of
From 12/03/10 **To:** 30 days
Approved: Stephen J. Duall
Stephen J. Duall
Chief, Satellite Policy Branch

Approved by OMB
3060-0678

FEDERAL COMMUNICATIONS COMMISSION
APPLICATION FOR SPACE STATION SPECIAL TEMPORARY AUTHORITY

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APPLICANT INFORMATION
Enter a description of this application to identify it on the main menu:
Application for certain IOT authority (SkyTerra I)


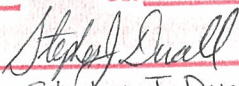
1. Applicant

Name:	LightSquared Subsidiary LLC	Phone Number:	703-390-2001
DBA Name:		Fax Number:	703-390-2770
Street:	10802 Parkridge Blvd	E-Mail:	jeff.carlisle@lightsquared.com
City:	Reston	State:	VA
Country:	USA	Zipcode:	20191 -
Attention:	Mr Jeffrey J. Carlisle		

Attachment to Grant
IBFS File No. SAT-STA-20101025-00224
Call Signs: S2358
December 3, 2010

The request of LightSquared Subsidiary LLC (LightSquared) for special temporary authority (STA), File No. SAT-STA-20101025-00224, is granted. Accordingly, LightSquared is authorized, for a period of 30 days, to operate with parameters not previously authorized in the 1525-1544/1545-1559 MHz, 10.7-10.95 GHz, and 11.2-11.45 GHz bands (space-to-Earth) and 1626.5-1645.5/1646.5-1660.5 MHz (Earth-to-space) frequency bands for in-orbit testing (IOT) of the SkyTerra-1 space station (Call Sign S2358) at the 101.3° W.L. orbital location. For purposes of this temporary authorization, the power flux density limits in Section 25.208(b) of the Commission's rules, 47 C.F.R. §25.208(b), ARE WAIVED. This authorization is granted in accordance with the terms and technical specifications in the STA application, the Federal Communication Commission's rules not explicitly waived herein, and the following conditions.

1. All operations shall be on an unprotected and non-harmful interference basis, *i.e.*, Lightsquared shall not cause harmful interference to, and shall not claim protection from interference caused by, any other lawfully operating radiocommunication system.
2. In the event any harmful interference results from operation pursuant to this STA, LightSquared shall cease the interfering operation(s) immediately upon notification of such interference and shall immediately inform the Commission, in writing, of the event.
3. LightSquared's operations pursuant to this STA shall be limited to in-orbit testing and shall not include provision of commercial services.
4. LightSquared shall coordinate its IOT operations pursuant to this STA with the operators of potentially-affected geostationary satellites to ensure that no unacceptable interference results from such operation.
5. This action is taken pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective immediately. Petitions for reconsideration under Section 1.106 or applications for review under Section 1.115 of the Commission's rules, 47 C.F.R. §§ 1.106, 1.115, may be filed within 30 days of the date of the public notice indicating that this action was taken.

 GRANTED * International Bureau *with conditions	File #	SAT-STA-20101025-00224		
	Call Sign	S2358	Grant Date	12/03/10
	(or other identifier)		Term Dates	period of
	From	12/03/10	To:	30 days
	Approved:	 Stephen J. Duall Chief, Satellite Policy Branch		

2. Contact	
Name: Bruce D. Jacobs	Phone Number: 202-663-8000
Company: Pillsbury Winthrop Shaw Pittman LLP	Fax Number: 202-663-8007
Street: 2300 N Street NW	E-Mail: bruce.jacobs@pillsburylaw.com
City: Washington	State: DC
Country: USA	Zipcode: 20037
Attention:	Relationship: Legal Counsel
(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 CRY - Space Station (Geostationary)	
5. Type Request	
<input type="radio"/> Change Station Location	<input type="radio"/> Extend Expiration Date
	<input checked="" type="radio"/> Other
6. Temporary Orbit Location	
	7. Requested Extended Expiration Date

8. 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.)

Applicant seeks authority to conduct certain in-orbit testing of SkyTerra 1.

9. 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 No

10. Name of Person Signing
Jeffrey J. Carlisle

11. Title of Person Signing
Executive Vice President, Regulatory Affairs

12. Please supply any need attachments.

Attachment 1: Application for STA

Attachment 2:

Attachment 3:

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).

FCC NOTICE REQUIRED BY THE PAPERWORK REDUCTION ACT

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**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554**

In the Matter of)
)
LightSquared Subsidiary LLC) File No. _____
)
Application for Special Temporary Authority)

APPLICATION

By this Application, LightSquared Subsidiary LLC (“LightSquared”) seeks Special Temporary Authority (“STA”) beginning November 28, 2010 and continuing for 30 days (i.e. until December 28, 2010) to conduct certain in-orbit testing (“IOT”) of the SkyTerra 1 satellite, as explained below. Given the imminent launch of the satellite in less than one month, LightSquared requests that the Commission act expeditiously in granting this application.¹

I. BACKGROUND

LightSquared is authorized to launch and operate the SkyTerra 1 satellite at the 101.3°W.L. location.² The satellite is authorized to operate its service links on the L-band frequencies (i.e. 1525-1544/1545-1559 MHz (space-to-Earth) and 1626.5-1645.5/1646.5-1660.5 MHz (Earth-to-space)) coordinated internationally by the United States and its feeder links on the Appendix 30B Ku-band frequencies (i.e. 10.70-10.95 & 11.20-11.45 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-Space)). On November 14, 2010, SkyTerra 1 is scheduled to be

¹ Because LightSquared seeks to conduct the tests specified in this application for no more than 30 days, no public notice of this application is necessary. *See* 47 C.F.R. § 25.120(b)(4).

² *In the Matter of Mobile Satellite Ventures Subsidiary LLC*, 20 FCC Rcd 9752 (Int’l Bur. 2005); *see also* File Nos. SAT-MOD-20100405-00064 (filed April 5, 2010) and SAT-AMD-20100908-00191 (filed September 8, 2010) (seeking an extension of the launch and operate milestone for SkyTerra 1). The MSAT-2 satellite presently operates at 101.3°W.L., and LightSquared has a pending application to relocate that satellite to 103.3°W.L. *See* File Nos. SAT-MOD-20100412-00075, SAT-AMD-20100514-00101, and SAT-AMD-20100527-00112.

launched from Kazakhstan by ILS International Launch Services, Inc. Beginning November 28, 2010, LightSquared plans to perform certain testing of its communications payload, including associated telemetry, tracking, and command systems, as discussed below.³ The IOT will be performed by employees of LightSquared's satellite contractor, Boeing Satellite Systems Inc. ("Boeing"), under LightSquared's direction and supervision.⁴

The IOT will be performed using LightSquared's FCC authorized gateway earth stations at Napa, CA (E080030) and Cedar Hill, TX (E080031), as well as gateway earth stations in Saskatoon, Saskatchewan and Ottawa, Ontario, which are authorized by Industry Canada to communicate with SkyTerra 1. The IOT will consist of a number of sequentially performed tests. Initially, the satellite's bus systems and communication payload will be tested, and basic functionality will be confirmed. Subsequently, the performance of the components related to beam-forming will be tested as will the combined payload and Ground-Based Beam Forming ("GBBF") network to confirm that various L-band beams are being formed as specified.

A portion of the IOT will be performed using signals within the limits permitted under LightSquared's satellite and earth station authorizations. However, for the tests specified below, LightSquared will exceed its authorized limits and, accordingly, seeks STA to conduct such tests. The proposed testing of SkyTerra 1 is not expected to cause harmful interference to any other satellite operator, and as discussed below, LightSquared either has coordinated or expects to

³ The communications payload of the SkyTerra 1 satellite consists of two repeater subsystems: one associated with the forward channel and another one associated with the return channel. The forward channel refers to the Ku-to-L band signal path that originates from any of LightSquared's Ku-band gateway facility to the satellite, and is transmitted to an L-band terminal. The return channel refers to the link from an L-band terminal to the satellite and then to the Ku-band gateway.

⁴ Boeing is also responsible for obtaining any necessary authorizations for launch and early orbit phase ("LEOP") operations.

complete coordination with all potentially affected satellite operators prior to the launch of SkyTerra 1.

II. TEST DESCRIPTIONS

A. L-Band Power Ramp-up

The power output of the L-band forward payload will be gradually increased to the Nominal Operating Point which corresponds to the maximum L-band power that will be used in operation. The objective of the test is to gradually increase the temperature of coaxial cables to vent out air and organic gases trapped inside. Table 1 shows the characteristics of the downlink L-band carrier used during power ramp-up. STA is required for this carrier because its power and power flux spectral density (“PFSD”) exceeds that of any carrier type authorized for SkyTerra 1. For this test, as well as those discussed below involving the L-band frequencies, LightSquared has coordinated use of the IOT frequencies and power levels with Inmarsat, the only potentially affected L-band operator.⁵ LightSquared will be in continuous contact with Inmarsat prior to and during IOT; Inmarsat will be aware of the test schedule and will be able to alert LightSquared if any harmful interference is detected during testing.

B. L-Band Forward Payload Health Check

The objective of this test is to characterize the health of the L-band forward and return element paths. Signal paths through each solid-state power amplifier will be checked sequentially, and the total test duration will be 120 minutes. Table 1 shows the characteristics of

⁵ Some of the IOT involve L-band frequencies assigned internationally to Solidaridad-1, which is no longer in operations. Accordingly, there can be no harmful interference to that satellite from any of the proposed testing. SkyTerra 1 is also authorized to use the Solidaridad-1 frequencies. *See also In the Matter of SkyTerra Subsidiary LLC*, DA 10-356 (Int’l Bur. March 1, 2010). With respect to all tests, LightSquared will coordinate internally and with its joint venture partner, SkyTerra (Canada) Inc., to prevent harmful interference to MSAT-2 at 103.3°W.L. and MSAT-1 at 106.5°W.L., respectively.

the downlink L-band carrier used during the forward payload health check. STA is required for this carrier because its PFSD exceeds that of any carrier type authorized for SkyTerra 1.

C. L-Band Forward and Return Antenna Mapping

Antenna mapping will be performed to confirm the gain and gain roll-off of the forward L-band beams. Table 1 shows the characteristics of the downlink L-band carriers used during forward L-Band antenna mapping. These carriers will be received and measured at the gateway earth stations while the satellite attitude is slewed in elevation and azimuth. STA is required for this carrier because its PFSD exceeds that of any carrier type authorized for SkyTerra 1. Further, during portions of the slews, the SkyTerra-1 beams will be aimed beyond authorized boundaries.

For return L-band antenna mapping, LightSquared will uplink CW carriers from its gateway earth stations. These carriers will be received at the satellite as its attitude is slewed in elevation and azimuth. STA is required because the carrier will have an EIRP of 15 dBW while the gateway earth stations are authorized for a maximum carrier EIRP of 9 dBW.

D. L-Band G/T Check

A 24-hour G/T check will be conducted over a range of the L-band frequencies by transmitting test carriers from a beam originating from the Napa, CA gateway earth station. All test carriers will be within bandwidth limits authorized for use by LightSquared. STA is required because the carriers will have an EIRP of 15 dBW, which exceeds the maximum carrier EIRP of 9 dBW authorized to the Napa gateway earth station.

E. Ku-Band Forward and Return Antenna Mapping and Forward EIRP Test

Antenna mapping will be performed to confirm the gain and gain roll-off of the four forward and return Ku-band beams. For the forward mapping, a CW carrier within the authorized frequency parameters will be transmitted from the satellite Ku-band beam under test. The carriers will be received and measured at the Napa, CA gateway earth station while the

satellite attitude is slewed in elevation and azimuth. The forward EIRP test is similar, except that the satellite attitude will be fixed for each beam measurement with the beam under test centered on the Napa, CA gateway and four different frequencies will be used. For the return beam mapping, a CW carrier within authorized power and frequency parameters will be transmitted from the Napa, CA gateway earth station, and the level measured at the satellite will be transmitted back to the Napa, CA station via the telemetry channel. For the forward beam mapping, four CW carriers within the authorized frequency parameters will be transmitted from the satellite and will be measured at Napa, CA gateway earth station. STA is required for this carrier because during portions of the slews, the SkyTerra 1 beams will be aimed beyond authorized boundaries toward the north and west, and the downlink PFSD will exceed the limits of 47 C.F.R. § 25.208, as shown in Table 4 below.

This test is not expected to cause harmful interference. The nearest co-frequency satellite is TerreStar-1 at 111.0 °W,⁶ and at this minimum 9.8° of minimum separation, the lowest amount of sidelobe discrimination (for a 2.7m antenna, which is the minimum size for an ITU compliant AP-30B antenna) is 45 dB. *See* ITU RR AP-30B Annex 1, paragraph 1.6. Additionally, the test carriers are widely spaced, and therefore, the average density over the band is low. LightSquared expects to complete coordination with Terrestrial prior to the launch of SkyTerra 1. There are no other Appendix 30B networks operating within the affected region.

⁶ *See supra* note 5 (discussing coordination with MSAT-1 and MSAT-2).

Table 1- Forward L-Band Payload Tests

	L-band EIRP (dBW)	Bandwidth	L-band PFSD (dBW/m ² -Hz)	Expected Duration
L-Band Power Ramp-up	67.9	312.5 kHz	-114	6 hours
Payload Health Check - CW	52	CW	-111	2 hours
L-Band Antenna Mapping	53	CW	-110	15 minutes/cut x 60 cuts

Note: Corresponding Ku-band carriers will be spread across the authorized band and will be within authorized levels.

Table 2- Return L-Band Payload Tests

	L-band EIRP (dBW)	Bandwidth	Expected Duration
Feed Element Gain Check	15	CW	90 minutes
Payload Health Check - CW	15	CW	2 hours
L-Band Antenna Mapping	15	CW	15 minutes/cut x 60 cuts
L-Band G/T Check	15	CW	24 hours

Note: Corresponding Ku-band carriers will be spread across the authorized band and will be within authorized levels.

Table 3- Forward Ku-Band Antenna Mapping and EIRP Test

	Satellite Ku-band EIRP (dBW)	Bandwidth	EIRP Density (dBW/4 kHz)	Expected Duration
Ku-Band Antenna Mapping	32.2	CW	-3.8	40 hours

Note: The test will comprise a number of cuts over 40 hours, but the carriers will not be active continuously throughout that period.

Table 4 – Downlink PFSD

Maximum PFD Limit (dB(W/m ² /4 kHz))	Elevation Angle (degrees)	SkyTerra 1 Maximum Power Flux Density (dB(W/m ² /4 kHz))	Margin (dB)
-150	0	-131.2	-18.8
-150	5	-131.1	-18.9
-140	25	-130.6	-9.4
-140	90	-129.9	-10.1

For the foregoing reasons, LightSquared requests that the FCC grant this application expeditiously.

Respectfully submitted,

LightSquared Subsidiary LLC

/s/

Name: Jeffrey J. Carlisle

Title: Executive Vice President, Regulatory
Affairs and Public Policy of
LightSquared LP
LightSquared Subsidiary LLC

Bruce D. Jacobs
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(202) 663-8000
Counsel for LightSquared Subsidiary LLC

October 25, 2010

Technical Certification

I, Richard Evans, hereby certify under penalty of perjury that:

I am the technically qualified person responsible for preparation of the engineering information contained in this application, that I am familiar with Part 25 of the Commission's rules, that I have either prepared or reviewed the engineering information submitted in this application, and that it is complete and accurate to the best of my knowledge.

/s/
Richard Evans
Principal Engineer
LightSquared Subsidiary LLC

October 25, 2010

Certification of Jeffrey J. Carlisle

I, Jeffrey J. Carlisle, hereby certify under penalty of perjury that:

1. I am Executive Vice President, Regulatory Affairs and Public Policy of LightSquared LP, the managing member of LightSquared Subsidiary LLC, and have authority to file this application;
2. The statements made in this application are true, complete, and correct to the best of my knowledge and belief; and
3. No party to the application is subject to a denial of federal benefits pursuant to Section 5301 of the Anti Drug Abuse Act of 1988, 21 U.S.C. §853a.

/s/

Jeffrey J. Carlisle
Executive Vice President, Regulatory
Affairs and Public Policy of
LightSquared LP
LightSquared Subsidiary LLC

October 25, 2010