



**UNITED STATES OF AMERICA  
FEDERAL COMMUNICATIONS COMMISSION  
RADIO STATION AUTHORIZATION**

Name: Ligado Networks Subsidiary LLC

Call Sign: E930124

Authorization Type: Modification of License

File Number: SES-MFS-20150605-00329

Non Common Carrier

Grant date: 09/16/2015

Expiration Date: 11/04/2019



Nature of Service: Fixed Satellite Service  
 Nature of Service: Mobile Satellite Service  
 Nature of Service: Fixed Satellite Service ORB-88 Allotment Plan  
 Class of Station: Fixed Earth Stations

**A) Site Location(s)**

#	Site ID	Address	Latitude	Longitude	Elevation (Meters)	Special Provisions NAD (Refer to Section H)
1)	1	10802 PARKRIDGE BOULEVARD RESTON, FAIRFAX, VA 20191	38°56'44.0"N	77°19'7.0"W	112.8	83

Licenses certifies antenna(s) comply with gain patterns specified in Section 25.209

*Subject to the provisions of the Communications Act of 1934, The Communications Satellite Act of 1962, subsequent acts and treaties, and all present and future regulations made by this Commission, and further subject to the conditions and requirements set forth in this license, the grantee is authorized to construct, use and operate the radio facilities described below for radio communications for the term beginning November 4, 2004 (3 AM Eastern Standard Time) and ending November 4, 2019 (3 AM Eastern Standard Time). The required date of completion of construction and commencement of operation is September 16, 2016 (3 AM Eastern Standard Time). Grantee must file with the Commission a certification upon completion of construction and commencement of operation.*

**B) Particulars of Operations**

The General Provision 1010 applies to all receiving frequency bands.  
 The General Provision 1900 applies to all transmitting frequency bands.  
 For the text of these provisions, refer to Section H.

#	Frequency (MHz)	Polarization Code	Emission	Tx/Rx Mode	Max EIRP /Carrier (dBW)	Max EIRP Density /Carrier (dBW/4kHz)	Associated Antenna	Special Provisions (Refer to Section H)	Modulation/ Services
1)	14000.5000-14000.5000	H	700KF9D	Tx	81.00	58.60	1		SATELLITE COMMAND CHANNEL
2)	13200.0000-13250.0000	H,V	1K44G7W	Tx	81.50	56.40	1		
3)	13200.0000-13250.0000	H,V	6K40G7W	Tx	81.50	62.40	1		
4)	13000.0000-13150.0000	H,V	1K44G7W	Tx	81.50	56.40	1		
5)	13000.0000-13150.0000	H,V	6K40G7W	Tx	81.50	62.40	1		
6)	11701.0000-11701.0000	V	138KGXD	Rx			1		SATELLITE CHANNEL TELEMETRY
7)	11700.5000-11700.5000	V	138KGXD	Rx			1		SATELLITE CHANNEL TELEMETRY



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8)	1646.5000-1660.5000	H.V	NON	Tx	16.00		1		

**C) Frequency Coordination Limits**

#	Frequency Limits (MHz)	Satellite Arc (Deg. Long.)		Elevation (Degrees)		Azimuth (Degrees)		Max EIRP Density toward Horizon (dBW/4kHz)	Associated Antenna(s)
		East Limit	West Limit	East Limit	West Limit	East Limit	West Limit		
1)	14000.0000-14500.0000	101.0W	107.0W	38.6	35.4	214.9	222.2	-12.8	1
2)	11700.2000-11703.2500	101.0W	107.0W	38.6	35.4	214.9	222.2		1
3)	13000.0000-13250.0000	101.0W	107.0W	38.7	35.5	215.2	222.5	-12.7	1

**D) Points of Communications**

The following stations located in the Satellite orbits consistent with Sections B and C of this Entry:

- 1) 1 to MSAT-2 satellite (AMSC-1) @ 103.3 degrees W.L. satellite (U.S.-licensed)
- 2) 1 to Permitted Space Station List
- 3) 1 to MSAT-1 @ 107.5 degrees W.L. (Canadian Licensed) (Non-U.S.-licensed)

**E) Antenna Facilities**

Site ID	Antenna ID	Units	Diameter (meters)	Manufacturer	Model number	Site Elevation (Meters)	Max Antenna Height (Meters)	Special Provisions (Refer to Section H)
1	1	1	11	VERTEX	11KPK	112.8	11 AGL/ 72.3 AMSL	
Max Gains(s):		61.0 dBi @	12.0000 GHz	62.0 dBi @	14.0000 GHz			
Maximum total input power at antenna flange (Watts) =						89.00		
Maximum aggregate output EIRP for all carriers (dBW) =						81.50		

**G) Antenna Structure marking and lighting requirements:**

None unless otherwise specified under Special and General Provisions



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## H) Special and General Provisions

A) This RADIO STATION AUTHORIZATION is granted subject to the following special provisions and general conditions:

- 1010 --- Applicable to all receiving frequency bands. Emission designator indicates the maximum bandwidth of received signal at associated station(s). Maximum EIRP and maximum EIRP density are not applicable to receive operations.
- 1900 --- Applicable to all transmitting frequency bands. Authority is granted to transmit any number of RF carriers with the specified parameters on any discrete frequencies within associated band in accordance with the other terms and conditions of this authorization, subject to any additional limitations that may be required to avoid unacceptable levels of inter-satellite interference.
- 2010 --- This authorization is issued pursuant to the Commission's Second Report and Order adopted June 16, 1972 (35 FCC 2d 844) and Memorandum, Opinion and Order adopted December 21, 1972 (38 FCC 2d 665) in Docket No. 16495 and is subject to the policies adopted in that proceeding.
- 2916 --- Transmitter(s) must be turned off during antenna maintenance to ensure compliance with the FCC-specified safety guidelines for human exposure to radiofrequency radiation in the region between the antenna feed and the reflector. Appropriate measures must also be taken to restrict access to other regions in which the earth station's power flux density levels exceed the specified guidelines.
- 2938 --- Upon completion of construction, each licensee must file with the Commission a certification including the following information: (1) name of the licensee, (2) file number of the application, (3) call sign of the antenna, (4) date of the license, (5) certification that the facility as authorized has been completed, (6) certification that each antenna facility has been tested and is within 2 dB of the pattern specified in Section 25.209, and (7) certification that the station is operational (including the date of commencement of service) and will remain operational during the license period unless the license is submitted for cancellation.
- 3219 --- All existing transmitting facilities, operations and devices regulated by the Commission must be in compliance with the Commission's radiofrequency (RF) exposure guidelines, pursuant to Section 1.1307(b)(1) through (b)(3) of the Commission's rules, or if not in compliance, file an Environmental Assessment (EA) as specified in Section 1.1311. See 47 CFR § 1.1307 (b) (5).
- 5208 --- The licensee shall take all necessary measures to ensure that the antenna does not create potential exposure of humans to radiofrequency 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. Compliance can be accomplished in most cases by appropriate restrictions, such as fencing. 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](http://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.
- 5216 --- All operations shall be on a non-common carrier basis.



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## H) Special and General Provisions

A) This RADIO STATION AUTHORIZATION is granted subject to the following special provisions and general conditions:

- 90222 --- LightSquared's request for waiver of Section 25.283(c) of the Commission's rules, 47 C.F.R. § 25.283(c), IS GRANTED. Section 25.283(c) requires discharge of all stored energy sources when a space station is retired from service. MSAT-1 is a Boeing 601 model spacecraft, which has a liquid propulsion system that includes two helium pressurant tanks and two pairs of fuel and oxidizer tanks. The fuel and oxidizer tanks will be vented in the end-of-life shutdown procedure. The helium tanks were sealed by firing pyrotechnic valves shortly after launch in 1996, and contain an estimated mass of approximately 130 grams of helium in each tank, with each tank having a volume of 43.42 liters. We waive Section 25.283(c) in light of the fact that the action taken to seal the helium tanks was taken prior to the adoption of this rule, and compliance would require direct retrieval of the spacecraft.
- 90223 --- LightSquared's request for partial waiver of Section 25.114(c) of the Commission's rules, 47 C.F.R. § 25.114(c), IS GRANTED. The information provided satisfies the relevant informational requirements.
- 90224 --- Authorized communications with MSAT-1 are limited to frequencies within the L band (1525-1559 MHz and 1626.5-1660.5 MHz).



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**B) This RADIO STATION AUTHORIZATION is granted subject to the additional conditions specified below:**

This authorization is issued on the grantee's representation that the statements contained in the application are true and that the undertakings described will be carried out in good faith.

This authorization shall not be construed in any manner as a finding by the Commission on the question of marking or lighting of the antenna system should future conditions require. The grantee expressly agrees to install such marking or lighting as the Commission may require under the provisions of Section 303(q) of the Communications Act. 47 U.S.C. § 303(q).

Neither this authorization nor the right granted by this authorization shall be assigned or otherwise transferred to any person, firm, company or corporation without the written consent of the Commission. This authorization is subject to the right of use or control by the government of the United States conferred by Section 706 of the Communications Act. 47 U.S.C. § 706. Operation of this station is governed by Part 25 of the Commission's Rules. 47 C.F.R. Part 25.

This authorization shall not vest in the licensee any right to operate this station nor any right in the use of the designated frequencies beyond the term of this license, nor in any other manner than authorized herein.

This authorization is issued on the grantee's representation that the station is in compliance with environmental requirements set forth in Section 1.1307 of the Commission's Rules. 47 C.F.R. § 1.1307.

This authorization is issued on the grantee's representation that the station is in compliance with the Federal Aviation Administration (FAA) requirements as set forth in Section 17.4 of the Commission's Rules. 47 C.F.R. § 17.4.

The following condition applies when this authorization permits construction of or modifies the construction permit of a radio station.

This authorization shall be automatically forfeited if the station is not ready for operation by the required date of completion of construction unless an application for modification of authorization to request additional time to complete construction is filed by that date, together with a showing that failure to complete construction by the required date was due to factors not under control of the grantee.

Licensees are required to pay annual regulatory fees related to this authorization. The requirement to collect annual regulatory fees from regulatees is contained in Public Law 103-66, "The Omnibus Budget Reconciliation Act of 1993." These regulatory fees, which are likely to change each fiscal year, are used to offset costs associated with the Commission's enforcement, public service, international and policy and rulemaking activities. The Commission issues a Report and Order each year, setting the new regulatory fee rates. Receive only earth stations are exempt from payment of regulatory fees.

