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

In the Matter of	)	
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LIGHTSQUARED SUBSIDIARY LLC	)	File No. _____
	)	
Application for Authority to Provide Mobile Satellite Service, including an Ancillary Terrestrial Component, in the United States Using SkyTerra 2, a Canadian-Authorized Satellite to be Located at the 107.3° W.L. Orbital Location	)	

APPLICATION

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APPLICATION

By this modification application to its earth station license, LightSquared Subsidiary LLC ("LightSquared") (formerly "SkyTerra Subsidiary LLC") seeks authority to access SkyTerra 2, a Canadian-authorized satellite to be operated by LightSquared's joint venture partner, SkyTerra (Canada) Inc. ("SkyTerra Canada"), in order to provide Mobile Satellite Service ("MSS"), including an Ancillary Terrestrial Component ("ATC"). The hybrid satellite-terrestrial system will be the foundation for a new nationwide facilities-based 4G mobile broadband network intended to provide coverage to over 260 million people by December 31, 2015. SkyTerra 2 will 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 Canada 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)) assigned internationally to Canada. LightSquared seeks only such authority consistent with its previously-granted authorizations for MSS/ATC operations in connection with SkyTerra 1. Given the

expected launch of SkyTerra 2 in the first half of 2011, LightSquared requests that the Commission act expeditiously in granting this application.

I. BACKGROUND

Current MSS System. LightSquared is a pioneering provider of MSS, receiving its license from the Commission in 1989 and launching its first satellite, MSAT-2 (a.k.a. AMSC-1), in 1995.[1] In 1999, the FCC authorized access from terminals in the United States to Canadian-authorized MSAT-1, a technically identical satellite to MSAT-2.[2] In 2001, the FCC in the context of a license assignment proceeding authorized the respective operators to combine resources and jointly operate a Canadian-American MSS system using MSAT-1 and MSAT-2.[3] The combined MSS operations, which are still in effect today, provide satellite redundancy, increased capacity, and enhanced coverage to the benefit of customers of LightSquared and SkyTerra Canada.

The current system provides critical mobile communications in rural and remote areas and to government agencies and emergency service providers and provides service to over 300,000 terminals. Specifically, LightSquared provides two-way radio and mobile data services to federal, state and local agencies involved in public safety and emergency response operations,

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[1] *Amendment of Parts 2, 22 and 25 of the Commission's Rules to Allocate Spectrum for and to Establish Other Rules and Policies Pertaining to the Use of Radio Frequencies in a Land Mobile Satellite Service for the Provision of Various Common Carrier Services*, Order and Authorization, 4 FCC Rcd 6041 (1989); *remanded by Aeronautical Radio, Inc. v. FCC*, 928 F.2d 428 (D.C. Cir. 1991); Final Decision on Remand, 7 FCC Rcd 266 (1992); *aff'd, Aeronautical Radio, Inc. v. FCC*, 983 F.2d 275 (D.C. Cir. 1993); *see also AMSC Subsidiary Corporation*, 8 FCC Rcd 4040 (1993).

[2] *In the Matter of Applications of SatCom Systems, Inc. et al*., 14 FCC Rcd 20798 (1999). MSAT-1 launched in 1996.

[3] *In the Matter of Motient Services Inc. and TMI Communications and Company, LP, Assignors, and Mobile Satellite Ventures Subsidiary LLC, Assignee*, 16 FCC Rcd 20469 (2001).

including organizations such as the Federal Emergency Management Agency, the Coast Guard, and local fire and police departments. These public safety entities and first responders depend on the MSS system for redundant and ubiquitous wireless services during daily operations and in the case of emergencies. LightSquared also provides fleet management and other services to the transportation and natural resources industries.

Next-Generation MSS/ATC System. LightSquared's tradition of vision and innovation continues with the next-generation system. The system will combine two of the largest and most powerful communications satellites ever launched with a terrestrial component to provide an affordable, two-way 4G mobile broadband system providing service throughout North America. The satellites will have the power to provide flexible, spot-beam coverage of North America to small handsets, no bigger than today's mobile handsets.

One satellite is licensed to LightSquared by the FCC,[4] and the other satellite is licensed to SkyTerra Canada by Industry Canada. Like the current-generation system, the two satellites are technically identical and will serve as in-orbit spares for one another.[5]

The satellite manufacturer, Boeing Satellite Systems, Inc. ("Boeing"), essentially has completed construction of SkyTerra 1, and that satellite is expected to launch by January 2011.[6]

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[4] *In the Matter of Mobile Satellite Ventures Subsidiary LLC, Application for Authority to Launch and Operate an L-band Mobile-Satellite Service Satellite at 101° W.L.*, 20 FCC Rcd 9752 (2005) ("*SkyTerra 1 Licensing Order*").

[5] Operation of the satellites as in-orbit spares is a license requirement resulting from the Commission's grant of a requested waiver of the ATC gating requirement to maintain an on-ground spare for SkyTerra 1. *See In the Matter of Mobile Satellite Ventures Subsidiary LLC*, 22 FCC Rcd 20548 (2007).

[6] *See* File No. 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).

Boeing is expected to complete construction of SkyTerra 2 by October 2010, and the satellite is expected to be launched in the first half of 2011.

In addition to the progress with the two satellites, the companies are also making significant headway on other elements of the next-generation system. In September 2008, the companies, through an affiliated operating company, signed an agreement with Qualcomm pursuant to which Qualcomm will integrate the satellite protocol into tens of millions of its chipsets for a wide variety of 3G and 4G devices.[7] The companies also signed agreements with Hughes Network Systems, LLC and Infineon, a leading semiconductor manufacturer, for the development of a software-defined radio MSS/ATC chipset,[8] and with Alcatel-Lucent, for development of ATC base station technology.[9] The companies recently completed construction of four gateway facilities, two in the United States and two in Canada – each facility costing in excess of ten million dollars.[10]

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[7] *See* Press Release, SkyTerra's Mobile Satellite Ventures, ICO Global Communications, and Qualcomm Sign Groundbreaking Technology Agreement Enabling First-Ever Integration of Satellite Communications into Mass Market Cellular Handsets and Devices (September 22, 2008), *available at* http://www.SkyTerra.com/media/press-releases-view.cfm?id=187&yr=2008 (last visited June 1, 2010).

[8] *See* Press Release, Infineon, SkyTerra and TerreStar Announce Agreement to Develop the World's First Satellite-Cellular Mobile Platform Based on SDR Technology (April 1, 2009), *available at* http://www.SkyTerra.com/media/press-releases-view.cfm?id=204&yr=2009 (last visited June 1, 2010); Hughes Press Release, (April 2, 2009), *available at* http://www.hughes.com/HNS%20Library%20Press%20Release/04-02-09_Hughes_Announces_Agreement_with_LightSquared_and_TerreStar_to_Implement_GMR1-3G_Satellite_Air_Interface.htm (last visited June 1, 2010).

[9] *See* Press Release, Alcatel-Lucent to Develop Satellite Base Station Sub-Systems for LightSquared and TerreStar to Support 3G Satellite Communications (April 1, 2009), *available at* http://www.SkyTerra.com/media/press-releases-view.cfm?id=205&yr=2009 (last visited June 1, 2010).

[10] *See* Call Signs E080030 (Napa, California), E080031 (Cedar Hill, Texas).

LightSquared intends to deploy an ATC network as part of its next-generation system and has authority to do so in conjunction with its operations of SkyTerra 1.[11] Indeed, LightSquared has committed and is required, as conditions to its MSS/ATC authorizations, to construct a terrestrial network to provide coverage to at least 100 million people in the United States by December 31, 2012, 145 million people by December 31, 2013, and 260 million people by December 31, 2015.[12] In two recent orders, the Commission expanded LightSquared's ATC authority to permit greater operating flexibility and reuse of certain uncoordinated L-band spectrum.[13] LightSquared has commenced network design and site acquisition in a number of markets and recently notified the Commission regarding its pre-operational build-out and testing of its authorized ATC facilities.[14] In July 2010, LightSquared signed an eight-year agreement with Nokia Siemens Networks ("Nokia") worth $7 billion, under which Nokia will deploy, install, operate, and maintain LightSquared's 4G network.[15]

The hybrid MSS/ATC system will offer enormous benefits in terms of improving broadband availability in rural areas and for public safety communications, increasing spectrum

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[11] *See In the Matter of Mobile Satellite Ventures Subsidiary LLC*, 19 FCC Rcd 22144 (2004).

[12] *See In the Matter of SkyTerra Communications, Inc., Transferor, and Harbinger Capital Partners Funds, Transferee, Applications for Consent to Transfer of Control of SkyTerra Subsidiary, LLC*, DA 10-535, at ¶ 72 and Appendix B (March 26, 2010).

[13] *See In the Matter of SkyTerra Subsidiary LLC*, DA 10-356 (March 1, 2010)("*Mexico Reuse Order*"); *In the Matter of SkyTerra Subsidiary LLC*, DA 10-534 (March 26, 2010); *see also* Sections III and IV.

[14] *See* Letter to Marlene H. Dortch from Bruce D. Jacobs and Tony Lin, File Nos. SAT-MOD-20090429-00047, SAT-MOD-20090429-00046, SES-MOD-20090429-00536, SAT-MOD-20031118-00333, SAT-AMD-20031118-00332, SES-MOD-20031118-01879 (filed June 16, 2010).

[15] *See, e.g.*, "Nokia Siemens wins $7 billion U.S. deal," *available at* http://www.reuters.com/article/idUSTRE66J2ZT20100720 (last visited August 25, 2010).

efficiency and wireless competition, and stimulating innovation and economic development.[16] The integration of the satellite and terrestrial components will provide a mobile broadband network that is available everywhere and virtually immune to local disasters. The intense reuse of the L-band resource and the urban coverage afforded by the ATC network will give the next-generation network the economies of scale required to produce affordable consumer-priced devices and the capability to serve hundreds of millions of users.

II. AUTHORITY TO ACCESS SKYTERRA 2

A. *DISCO II* Showing

Consistent with the commitments of the United States to the World Trade Organization ("WTO") Agreement on Basic Telecommunications Services and the Commission's *DISCO II* order implementing those commitments, the Commission considers the following in determining whether to grant an application for access to a foreign-licensed satellite: the effect on competition in the United States; spectrum availability; eligibility requirements; technical requirements; and national security, law enforcement, foreign policy and trade concerns.[17] As explained below, all of these factors weigh in favor of grant of this application.

1. Effect of Competition in the United States

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[16] *See Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands*, 18 FCC Rcd 1962, at ¶¶ 1-32 (2003); *see also* Connecting America: The National Broadband Plan, at 87-89 ("The FCC should accelerate terrestrial deployment in 90 megahertz of Mobile Satellite Spectrum (MSS)."), *available at* http://www.broadband.gov/plan/ (last visited May 6, 2010).

[17] *Amendment of the Commission's Regulatory Policies to Allow Non-U.S. Licensed Satellites Providing Domestic and International Service in the United States*, 12 FCC Rcd 24094, at ¶¶ 29-192 (1997) ("*DISCO II*"); *see also, e.g., Telesat Canada, Petition for Declaratory Ruling for Inclusion of Anik F2 on the Permitted Space Station List, Petition for Declaratory Ruling to Serve the U.S. market Using Ka-band Capacity on Anik F2*, 17 FCC Rcd 25287, at ¶ 6 (2002) ("*ANIK F2 Order*").

In *DISCO II*, the Commission established a rebuttable presumption that entry by foreign satellites authorized by WTO Members to provide services covered by United States commitments under the WTO Basic Telecommunications Agreement will further competition in the United States.[18] SkyTerra Canada will operate SkyTerra 2 under authority of the Canadian government, which is a Member of the WTO.[19] MSS is a service covered by the WTO Basic Telecommunications Agreement.[20] Accordingly, the presumption in favor of entry applies to SkyTerra 2.[21] Moreover, LightSquared notes that SkyTerra 2 will replace MSAT-1, which has provided authorized service in the United States for nearly 11 years.

2. Spectrum Availability

The application proposes access to the United States market from SkyTerra 2 at the 107.3° W.L. orbital location using service-link frequencies assigned and internationally coordinated for SkyTerra 2 by Canada and feeder-link frequencies internationally assigned to Canada. Accordingly, the application does not raise any concern regarding spectrum availability.[22]

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[18] *DISCO II*, at ¶ 39; *see also* 47 C.F.R. § 25.137(a)(2).

[19] Attached in Appendix A is a copy of the most current version of SkyTerra Canada's Approval in Principle to construct and operate SkyTerra 2. Consistent with Industry Canada practice, once SkyTerra 2 is launched, SkyTerra Canada will receive a radio station license for the satellite and a spectrum license for the L-band spectrum that will be used in conjunction with the satellite. Consistent with FCC precedent concerning Canadian-authorized satellites, Industry Canada's Approval in Principle should be treated like a license for purposes of this application. *See, e.g.*, *ANIK F2 Order*, at ¶ 4 n.14 (2002).

[20] *DISCO II*, at ¶ 30.

[21] The Commission consistently has granted access to the U.S. market for foreign-licensed MSS satellites, concluding that such entry would not cause competitive harm. *See, e.g., In the Matter of Applications of SatCom Systems, Inc. et al.*, 14 FCC Rcd 20798, at ¶ 18 (1999); *In the Matter of TMI Communications and Company, LP, Letter of Intent to Provide Mobile-Satellite Service in the 2 GHz Bands*, 16 FCC Rcd 13808 (2001).

[22] *DISCO II*, at ¶¶ 146-150.

3. Legal Qualifications

LightSquared's legal qualifications are set forth in this application and in the associated Form 312, including attachments. In addition, the application and Form 312 provide all information required for space station applicants under Section 25.114 of the Commission's rules, 47 C.F.R. § 25.114.[23]

4. Technical Qualifications

A complete Technical Appendix and Schedule S for SkyTerra 2 are provided as part of this application. The Technical Appendix includes the orbital debris mitigation showing required under Section 25.114(d)(14) of the Commission's rules.[24]

5. National Security, Law Enforcement, and Public Safety Matters

In *DISCO II*, the Commission identified law enforcement, national security and public safety concerns as part of the public interest analysis for determining whether a foreign satellite should be permitted to provide service in the United States.[25] In 2001, LightSquared's corporate predecessor executed an agreement with the Department of Justice, Federal Bureau of Investigations, and Department of Homeland Security (collectively "Team Telecom") to ensure compliance with Communications Assistance for Law Enforcement Act ("CALEA").[26] The Implementation Plan associated with that agreement was subsequently updated in October 2008

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[23] *See* Attachment E.

[24] 47 C.F.R. § 25.114(d)(14); *see also infra* Section II.B.6 (requesting partial waiver of the orbital debris mitigation requirement).

[25] *DISCO II*, at ¶¶ 179-182.

[26] *In the Matter of Motient Services Inc. and TMI Communications and Company, LP, Assignors, and Mobile Satellite Ventures Subsidiary LLC, Assignee*, 16 FCC Rcd 20469 (2001). The full text of that agreement is attached to the order as an appendix. The agreement has been amended subsequently. *See, e.g.*, *Motient Corporation and Subsidiaries and SkyTerra Communications Inc*., 21 FCC Rcd 10198 (2006).

to take into account the next-generation operations of SkyTerra 1, SkyTerra 2, and the new gateway earth stations. More recently, in 2009, the Harbinger Capital Partners Funds ("Harbinger"), which now controls LightSquared, agreed to abide by the terms of the existing CALEA agreement.[27] Accordingly, this application raises no national security, law enforcement, or public safety issues.

B. Other Requirements

1. Milestones and Bond Requirement

The construction of SkyTerra 2 is nearly complete and the satellite is expected to launch in the first half of 2011. Accordingly, LightSquared submits that no bond is necessary and requests waiver of this requirement in the event this application is granted prior to the launch of the satellite.[28]

In the alternative, LightSquared requests that any bond the Commission imposes be reduced from $3,000,000 to $750,000 to reflect the completion of the first three of four geostationary satellite orbit ("GSO") milestones (i.e. execution of a binding non-contingent satellite construction contract, completion of critical design review, and commencement of physical construction).[29] Further, consistent with Commission precedent, the remaining launch

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[27] *See In the Matter of SkyTerra Communications, Inc., Transferor, and Harbinger Capital Partners Funds, Transferee, Applications for Consent to Transfer of Control of SkyTerra Subsidiary, LLC*, DA 10-535, at ¶ 9 (March 26, 2010).

[28] *See In the Matter of DIRECTV Enterprises, LLC*, 21 FCC Rcd 8028, at ¶ 8 (2006) (no bond required if satellite is launched prior to 30 days after license grant); *see also Loral Skynet do Brasil*, 18 FCC Rcd 26751, at ¶ 14 (2003) (no bond required if satellite launched prior to 30 days after license grant).

[29] *See* 47 C.F.R. §§ 25.137(d), 25.165(d). The Commission treats GSO MSS licensees as subject to the $3 million GSO bond requirement, rather than the $5 million non-geostationary satellite orbit bond requirement. *See Amendment of the Commission's Space Station Licensing Rules and Policies*, 19 FCC Rcd 12637, at ¶ 46 (2004).

and operate milestone should expire no sooner than twenty-four months after grant of this application, which corresponds to the full period granted to a licensee that has satisfied the commence construction milestone.[30] In support of this request, LightSquared submits the following information:

- In 2006, LightSquared and SkyTerra Canada, through their affiliated operating company, LightSquared LP, jointly procured SkyTerra 1 and SkyTerra 2 from Boeing. LightSquared submitted a confidential copy of the binding, non-contingent satellite construction contract to the Commission on January 11, 2006 in connection with the demonstration of milestone compliance for SkyTerra 1.[31] That filing is incorporated herein by reference. Separately, Industry Canada has determined that SkyTerra Canada has satisfied the contract milestone requirement specified in the SkyTerra 2 Approval in Principle.[32]
- Attached as Appendix B is a signed letter from Boeing regarding the status of construction of SkyTerra 2 and attesting to completion of the execute contract milestone, critical design review milestone and the commencement of physical construction milestone. The letter states that construction of SkyTerra 2 is over

[30] *See, e.g.*, *Loral Skynet do Brasil*, 18 FCC Rcd 26751, at ¶ 16 (2003) (applicants for satellites in advance stages of construction are permitted the full period from the last milestone for which compliance has been demonstrated to meet any remaining milestones).

[31] *See* Letter from Jennifer A. Manner to Cassandra Thomas, Call Signs S2358 and S2487 (January 11, 2006). The original contract called for the construction of three satellites, SkyTerra 1 (then MSV-1), SkyTerra 2 (then MSV-2), and MSV-SA. LightSquared subsequently surrendered its authorization for MSV-SA and cancelled its plans to deploy that satellite. *See* Letter from Jennifer A. Manner to Marlene H. Dortch, Call Sign S2487 (June 12, 2006).

[32] *See* Letter from Bahman Azarbar, Vice President, Regulatory Affairs, Mobile Satellite Ventures (Canada) Inc., from Chantal Beaumier, Director, Space and International Regulatory Activities, Industry Canada (October 28, 2008), attached in Appendix A.

90% complete, and Boeing anticipates completion of construction in October 2010. Additionally, Boeing acknowledges in the letter that over 80% of the contract price attributable to SkyTerra 2 has been paid.

- Attached as Appendix C is a letter from International Launch Services, Inc. verifying that LightSquared has executed a launch contract for SkyTerra 2 and the contract is in full force and effect.
- Attached as Appendix D is a signed declaration from Elizabeth Creary, Vice President, Corporate Counsel and Secretary for SkyTerra Canada, attesting to the expected completion of construction of the satellite by October 2010 and launch and operation of the satellite in the first half of 2011.

2. Reporting Requirements

LightSquared will comply with all applicable reporting requirements for SkyTerra 2. 47 C.F.R. § 25.137(d)(2).

3. Processing Round

This application is exempt from processing round procedures.[33] SkyTerra 2 will replace MSAT-1, and LightSquared is seeking authority to use the same service link frequencies, *i.e.*, the L-band spectrum coordinated by Canada, that the Commission previously authorized when it granted U.S. "landing rights" for MSAT-1.[34] Processing round procedures are inapplicable to replacement frequencies. With respect to the Appendix 30B Ku-band feeder-link frequencies,

[33] *See* 47 C.F.R. §§ 25.137(c), 25.157.

[34] *See, e.g., Applications of SatCom Systems, Inc. et al.*, 14 FCC Rcd 20798, at ¶ 63 (1999) (authorizing use in the United States of the upper L-band spectrum coordinated by Canada for MSAT-1); *Infosat Communications, Inc.*, 17 FCC Rcd 1610, at ¶¶ 14-15 (2002) (authorizing use in the United States of the lower L-band spectrum coordinated by Canada for MSAT-1).

which are treated as GSO-like (i.e. on a first-come, first-served basis),[35] there are no prior requests to use these frequencies at the 107.3° W.L. orbital location, and thus, they are available for use by SkyTerra 2.[36]

4. Application and Unbuilt Satellite Limits

SkyTerra 2 is a replacement satellite for MSAT-1, and accordingly, the Commission's rules, placing a limit on the number of pending applications and licensed-but-unbuilt satellites an applicant and any attributable party may have in any particular frequency band,[37] are inapplicable to this application.[38]

5. Ownership Information

Ownership information for the applicant, LightSquared Subsidiary LLC, is provided in Exhibit B to the FCC Form 312. SkyTerra Canada, the operator of SkyTerra 2, is indirectly majority-owned and operated by BCE Inc., which is a publicly-traded Canadian company. LightSquared Inc. through LightSquared LP holds an indirect, minority interest in SkyTerra Canada.

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[35] *See MSV-SA Licensing Order*, at ¶ 9 (processing feeder links for MSS system on a first-come, first-serve basis); *SkyTerra 1 Licensing Order*, at ¶¶ 14-16 (same).

[36] Indeed, the Appendix 30B Ku-band frequencies at the 107.3° W.L. orbital location are internationally assigned to Canada, as part of an international planned band, and thus, there can be no use of these frequencies without prior coordination with SkyTerra 2.

[37] 47 C.F.R. §§ 25.137(d)(5), 25.159.

[38] *See In the Matter of Amendment of the Commission's Space Station Licensing Rules and Policies*, 18 FCC Rcd 10760, at ¶ 233 (2003) ("These [application] limits do not apply to applications for replacement satellites, renewals of NGSO-like constellation licenses, modifications, transfers of control, or any other satellite-related application."). To the extent the Commission separately treats SkyTerra 2 as GSO-like with respect to the feeder-link frequencies, LightSquared submits that neither it nor any attributable entity individually or combined has five licensed-but-unbuilt space stations or pending new satellite applications for use of the Appendix 30B Ku-band frequencies. 47 C.F.R. § 25.159(a).

Following is a list of officers and directors for SkyTerra Canada, all of whom may be reached c/o SkyTerra (Canada) Inc., 1601 Telesat Court, Ottawa, ON K1B 1B9:

Directors:
Peter A. Jenson
Mirko Bibic
Barry Chapman
Martin Cosette
Curtis Millen

Officers:

Mirko Bibic	President and Chairman
Elizabeth Creary	Vice President, Corporate Counsel and Secretary
Bahman Azarbar	Vice President, Regulatory Affairs
Jim Wiseman	Vice President, Finance

6. Orbital Debris Mitigation

Section 25.283(c) of the Commission's rules specifies that satellites must discharge all stored energy sources at end-of-life of the space station, including "by venting excess propellant, . . . relieving pressure vessels, and other appropriate measures." 47 C.F.R. § 25.283(c). SkyTerra 2 is a Boeing Model 702 satellite, which is not designed to allow for the discharge of all pressurant upon satellite end-of-life. Rather, consistent with Boeing's practice with respect to a number of its spacecraft buses, the helium tanks are isolated at the end of transfer orbit and the amount of the remaining gas and the low pressurization in the tanks result in minimal potential for accidental explosions during and after completion of mission.[39]

As stated in the Technical Appendix, the SkyTerra 2 orbital debris mitigation plan is as follows:[40]

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[39] LightSquared recently requested a waiver of the Commission's orbital mitigation debris rules with respect to SkyTerra 1, which has the same design. *See* Application, SAT-MOD-20100405-00064 (April 5, 2010).

[40] *See* Section P of the Technical Appendix.

SkyTerra Canada has assessed and will limit the probability of accidental explosions during and after completion of mission operations. The SkyTerra 2 satellite is designed to minimize the potential for accidental explosions through propellant leakage and fuel and oxidizer mixing or other means. Propellant tanks and thrusters are isolated using redundant values, and electrical power systems are shielded in accordance with standard industry practices. During the mission, batteries and various critical areas of the propulsion subsystem will be monitored to avoid conditions that could result in explosion. After SkyTerra 2 reaches its final disposal orbit, all on-board sources of stored energy will be removed, with the exception of the pressurized vessels discussed below, by depleting all propellant tanks, venting all pressurized systems, discharging batteries, and turning off all active units. SkyTerra 2 uses a Boeing 702 spacecraft bus that has a liquid propulsion system design that includes two helium (pressurant) tanks plus two pairs of fuel and oxidizer tanks. Venting of the excess propellant in the fuel and oxidizer tanks is performed as part of the end-of-life shutdown operations. The helium tanks provide proper propellant tank pressurization for apogee engine firings during transfer orbit. Both helium tanks are isolated at the end of transfer orbit by firing pyrotechnic valves, and there is no venting provision for these helium tanks at the satellite end-of-life. SkyTerra Canada has estimated that approximately 719 grams of Helium will be sealed in each tank when they are isolated resulting in a final pressure of 860 psi, which is extremely low relative to the design burst pressure of 5,249 psi. Due to the low blanket pressure in the Helium tanks at the satellite end-of-life, an explosive event is unlikely, even in the event of a tank rupture (e.g. a meteorite strike). Accordingly, the satellite design results in minimal potential for the release of orbital debris.

Additionally, after the Liquid Propulsion Subsystem ("LPS") is fully integrated (i.e. all the components and interconnections are welded), the manufacturer conducts subsystem acceptance testing, which verifies the integrity of all the components and interconnections of the LPS, including the pyrotechnic valves, filter, and dual series redundant regulator, at pressures of over 4,000 psi, which is more than four times higher than the expected operating condition after isolation. The LPS is also subjected to leakage and functional testing during Final Integrated System Tests (FIST) for post-vibration verification and again at the launch site prior to loading of the bi-propellant and Helium pressurant. Further, the Helium tank, which is considered the weakest link in the subsystem, has a design life of more than four times mission life (i.e. 60+ years) based on fatigue life analysis, which takes into consideration the on orbit operating environment (e.g. launch loads, pressure profile over life, thermal cycles, and radiation dosage). The Helium tank also is designed to leak before burst, further minimizing the potential for orbital debris.

As a preliminary matter, the debris mitigation plans for SkyTerra 2 are subject to direct and effective regulatory oversight by Industry Canada, and compliance with Industry Canada orbital debris mitigation requirements is an explicit condition of the SkyTerra 2 Approval in

Principle.[41] Accordingly, under the Commission's orbital debris mitigation requirements, no further showing is required in this application.[42]

In any event, waiver of the Commission's venting requirement as applied to the helium tanks is appropriate in this case because grant would not undermine the purpose of the rule, to reduce the risk of accidental explosion, and is supported on hardship grounds.[43] The amount of the remaining gas in the helium tanks and the low blanket pressure in those tanks at the satellite end-of-life result in minimal potential for accidental explosions during and after completion of mission, consistent with the FCC's rules. Indeed, the Boeing 702 spacecraft bus (and other spacecraft buses with similar designs)[44] has been in commercial service for more than 10 years without incidents involving accidental explosions.

Additionally, construction of the SkyTerra 2 satellite is nearly complete and launch is expected soon.[45] Accordingly, any design change cannot be accomplished at this time without

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[41] *See* Attachment 1 to the Letter from Chantal Beaumier, Director, Space Services, Industry Canada, to Bahman Azarbar, Vice President, Regulatory Affairs, SkyTerra Canada (January 29, 2010), attached in Appendix A ("The satellite, at the end of its life, shall be removed from the geostationary satellite orbit region in the manner consistent with Recommendation ITU-R S.1003 Environmental Protection of the Geostationary Satellite Orbit.").

[42] *See In the Matter of Mitigation of Orbital Debris*, 19 FCC Rcd 11567, at ¶ 95 (2004) ("[T]he disclosure can be satisfied by showing that the satellite system's debris mitigation plans are subject to direct and effective regulatory oversight by the satellite system's national licensing authority.").

[43] Under Section 1.3 of the Commission's rules, 47 C.F.R. § 1.3, the Commission has authority to waive its rules for good cause. Good cause exists if "special circumstances warrant a deviation from the general rule and such deviation will serve the public interest." *Northeast Cellular Telephone Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990). In determining whether a waiver is appropriate, the Commission should "take into account considerations of hardship, equity, or more effective implementation of overall policy." *WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969), *cert. denied*, 409 U.S. 1027 (1972).

[44] *See infra* note 46.

[45] *See supra* Part I.

extraordinary cost and without jeopardizing the satellite's projected launch date and ITU priority. Under similar circumstances, the Bureau has held that waivers are warranted, and consistent with that precedent, it should grant a waiver of the venting requirement with respect to the helium tanks on SkyTerra 2.[46]

C. Waiver Pursuant to Section 304 of the Act

In accordance with Section 304 of the Communications Act of 1934, as amended, 47 U.S.C. §304, LightSquared hereby waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise.

III. AUTHORITY TO REUSE L-BAND FREQUENCIES ASSIGNED INTERNATIONALLY TO SOLIDARIDAD-1 AND SOLIDARIDAD-2

On March 1, 2010, in the *Mexico Reuse Order* the Commission granted an application by LightSquared permitting it to reuse, for MSS on SkyTerra 1 and ATC operations on a non-interference and unprotected basis, certain additional L-band spectrum that is assigned internationally to the Solidaridad satellites.[47] Similarly, Industry Canada authorized the use of

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[46] *See* Stamp Grant, File No. SAT-LOA-20090807-00085 (December 15, 2009) (granting waiver of venting requirement for DIRECTV 12/RB2-A, a Boeing 702 satellite, given its imminent launch); *see also* Stamp Grant, File No. SAT-LOA-20071221-00183 (March 12, 2008) (granting a waiver of venting requirement for AMC-14, a Lockheed A2100 satellite, in light of late stage of satellite construction); Stamp Grant, File Nos. SAT-MOD-20070628-00090, SAT-AMD-20070731-00108 (November 30, 2007) (granting waiver of venting requirement for Horizons 2, an Orbital Sciences Star satellite, in light of late stage of satellite construction); Stamp Grant, File Nos. SAT-MOD-20070207-00027, SAT-AMD-20070716-00102 (October 4, 2007) (granting waiver of venting requirement for INTELSAT-11, an Orbital Sciences Star-2 satellite, in light of late stage of satellite construction); Stamp Grant, File Nos. SAT-PPL-20091208-00142, SAT-APL-20100219-00034 (granted June 4, 2010) (declining to address SES WORLD SKIES' contingent request for waiver of the venting requirement for NSS-5).

[47] *See generally Mexico Reuse Order*. To the extent necessary, LightSquared incorporates by reference its filings in that proceeding.

the same frequencies for operations by SkyTerra 2 (and SkyTerra 1) in Canada.[48] For the same reasons and under the same conditions specified in the *Mexico Reuse Order*, LightSquared requests that it be permitted to use the additional L-band frequencies authorized in the *Mexico Reuse Order* for MSS/ATC operations with SkyTerra 2.[49] Such operations would not increase potential harmful interference to any L-band operator and would further the efficiencies associated with the combined MSS/ATC operations of LightSquared and SkyTerra Canada.

IV. AUTHORITY TO OPERATE ATC WITH SKYTERRA 2

Under the Commission's ATC rules, applicants may seek authority for ATC operations in connection with a foreign-licensed satellite via, *inter alia*, an application to modify an existing Title III earth station authorization.[50] LightSquared seeks such authority for ATC operations in

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[48] *See* Letter from Chantal Beaumier, Director, Space Services, Industry Canada to Bahman Azarbar, Vice President, Regulatory Affairs, SkyTerra Canada, (January 29, 2010), attached in Appendix A.

[49] Specifically, those applicable conditions are: (a) use of frequencies assigned for operation of the Solidaridad satellites under the 1999 operators' arrangement shall be on a non-interference, unprotected basis with respect to operation of Solidaridad-2, pending coordination of such operation with the Mexican Administration and/or the Solidaridad-2 system operator; (b) any complaint of interference from the Mexican Administration or the authorized operator of Solidaridad-2 pertaining to ATC operation shall be resolved in accordance with 47 C.F.R. 25.255; (c) no authority is granted for SkyTerra 2 to share the spectrum in question with a next-generation Mexican MSS system in the absence of a coordination agreement for such a sharing arrangement; and (d) before commencing operation on SkyTerra 2 using the relevant frequencies, LightSquared shall notify the authorized operators of all L-band MSS satellites subject to the Mexico City MOU of its intention to operate on a non-interference basis. *See Mexico Reuse Order*, at ¶ 15.

[50] *See In the Matter of Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands et al*., 18 FCC Rcd 1962, at ¶¶ 242-45 (2003). Specifically, the order provides: "The application for ATC authority will be addressed either in conjunction with an application for Title III earth station authorization, or if such an authorization has already been granted, it may be filed as a minor modification to the earth station authorization under the same procedures described above for modification of U.S.-based MSS licensee's authorization." *Id*. at ¶ 245. Here, LightSquared seeks to modify its gateway earth station authorization both to add SkyTerra 2 as a point of communications and to operate ATC with SkyTerra 2. Prior to the provision of service, LightSquared will submit an

connection with SkyTerra 2 consistent with its previously granted authorizations for MSS/ATC operations in connection with SkyTerra 1, including the greater operating flexibility and spectrum reuse recently authorized by the Commission.[51] Because LightSquared is operating only a single MSS/ATC system and will continue to operate that system as previously authorized and conditioned, all of its prior certifications and demonstrations regarding its ATC network also apply to this application.[52] Accordingly, LightSquared submits that no further demonstrations or information are required in this application.[53]

V. MODIFICATION OF EARTH STATION AUTHORITY

LightSquared seeks modification of its earth station license to add SkyTerra 2 as a point of communications. The earth station will communicate with SkyTerra 2 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

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application for mobile earth terminals ("MET") to communicate with SkyTerra 2. In an abundance of caution, LightSquared seeks waiver of any requirement that it submit its instant request for authorization in the form of a MET application. *See In the Matter of Satellite Ventures Subsidiary LLC, Application for Minor Modification of Space Station License for AMSC-1, Minor Amendment to Application for Authority to Launch and Operate a Next-Generation Replacement MSS Satellite, Application for Minor Modification of Blanket License for Authority to Operate Mobile Earth Terminals with MSAT-1*, 19 FCC Rcd 22144, at ¶ 3 (2004) (stating in dicta "blanket authority for operation of ATC base stations in the United States . . . via a foreign-licensed satellite may be requested in an application for modification of an FCC reservation of spectrum or blanket license for U.S. operation of mobile earth stations."). LightSquared has submitted all the relevant information or incorporated such information by reference in this application, and no real purpose would be served by requiring that the requested authority be submitted in the form of a MET application rather than a fixed earth station application.

[51] *See supra* note 13.

[52] The only significant difference between SkyTerra 1 and 2 is the location of the satellites, 101.3° W.L. vs. 107.3° W.L., respectively. However, this difference is immaterial in terms of compliance with the ATC gating requirements.

[53] To the extent necessary, LightSquared incorporates by reference its submissions in the prior ATC application proceedings. *See supra* note 11 and 13.

GHz (Earth-to-Space))[54] for feeder-link operations and 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)) for space operations functions.[55] No other changes are requested to the earth station license, and LightSquared will continue to operate the facility as conditioned.

LightSquared submits that no waiver of footnote NG104 of Section 2.106 of the Commission's rules (restricting use of the feeder link bands to "international" systems) is required.[56] The Commission has already granted waiver of this requirement in authorizing this earth station to communicate with SkyTerra 1 on the same feeder-link frequencies.[57]

Consistent with the commitments made with respect to SkyTerra 1 in order to protect radio astronomy services,[58] SkyTerra 2 will be equipped with a transmitter output filter to limit emissions in the 10.6-10.7 GHz band to -160 dBW/m^2 or lower.[59] Further, no additional coordination with terrestrial operations is required for feeder-link operations with SkyTerra 2.

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[54] The earth station will use only those Appendix 30B frequencies that have been authorized already for use by the station. *See* Exhibit A.

[55] The L-band antennas at the gateway earth station will be used to transmit and receive a relatively low-power beacon signal that the GBBF system will use for precision spacecraft pointing corrections and will not provide any end-user communications functionality.

[56] The footnote permits use of the 10.7-11.7 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-Space) frequencies for FSS but restricts their use to "international" satellite systems. 47 C.F.R. § 2.106, NG104; *see also* 47 C.F.R. § 25.202(a)(1) n.2 (restating the restriction).

[57] To the extent necessary, LightSquared incorporates by reference its justifications for waiver of 47 C.F.R. §2.106, NG104, submitted in its initial application for earth station authority. *See* Applications, File Nos. SES-LIC-20080206-00131 (February 6, 2008). Additionally, as explained in that application, the earth station protects the space research service facilities at Goldstone, California (47 C.F.R. § 2.106 US251) and complies with the Commission's requirement to protect BAS/CARS in the top 100 television markets (47 C.F.R. § 2.106 NG53).

[58] 47 C.F.R. § 2.106 US211.

[59] *See SkyTerra 1 Licensing Order*, at ¶ 43 (2005).

The satellite is within the orbital arc (101°W to 107.3°W) previously coordinated and authorized for this earth station, as reflected in the license.

The chart below provides additional information reflecting the operation of SkyTerra 2 in an inclined orbit, which is not otherwise captured by the application:[60]

Table 1 - Earth Station Pointing Box for SkyTerra 2

Earth Station	Nominal Elevation	Nominal Azimuth	Minimum Elevation	Minimum Azimuth	Maximum Elevation	Maximum Azimuth
Napa	43.00°	156.62°	36.61°	153.62°	49.42°	158.99°

[60] Similar information was provided for SkyTerra 1 in the initial earth station application. *See* Applications, File Nos. SES-LIC-20080206-00131 (February 6, 2008).

VI. CONCLUSION

For the foregoing reasons, LightSquared submits that grant of this application to provide MSS/ATC service to the United States using the Canadian-licensed SkyTerra 2 satellite will serve the public interest, convenience and necessity.

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
Tony Lin
Pillsbury Winthrop Shaw Pittman LLP
2300 N Street, NW
Washington, DC 20037-1128
(202) 663-8000
Counsel for LightSquared Subsidiary LLC

Dated: October 15, 2010

Technical Certification

I, Jeff Snyder, 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/
Jeff Snyder
Senior Vice President, Satellite Engineering and Operations of LightSquared LP
LightSquared Subsidiary LLC

October 15, 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 15, 2010

Appendix A

Industry Canada Licensing Information

Industry Canada Industrie Canada

300 Slater Street
Ottawa, Ontario
K1A 0C8

Our File: 46215-1 (183846 PL)

JAN 29 2010

Mr. Bahman Azarbar
Vice-President, Regulatory Affairs
SkyTerra (Canada) Inc.
1601 Telesat Court
Gloucester, ON K1B 5P4

Dear Mr. Azarbar:

I refer to your letter dated October 8, 2009 seeking approval for SkyTerra Canada Inc. (SkyTerra) to reuse L-band mobile satellite service (MSS) spectrum currently assigned to two Mexican satellites operated by Telecomm de Mexico for use by the MSV-2 and MSV-1 satellites, including the associated ancillary terrestrial component (ATC). The Mexican spectrum was assigned under the 1996 Mexico City Memorandum of Understanding (MOU) and the associated Spectrum Sharing Arrangements.

In reviewing your application, the Department has noted that SkyTerra's new satellites and their use of re-configurable spot beam technology will enable it to the reuse the Mexican spectrum without increasing the interference potential to existing Mexican MSS operations. We have reviewed the technical analysis provided to demonstrate that SkyTerra can operate its next-generation system, including its ATC operations, within interference levels acceptable to Telecomm de Mexico and we concur with your findings. We also note that the reuse of the Mexican spectrum will provide more efficient use of the L-band spectrum and enable the deployment of more advanced mobile satellite services. Furthermore, we recognize that, despite SkyTerra's efforts to conclude coordination of its new satellite network with the existing Mexican satellite, current delays in the coordination process are beyond your control.

In light of the above, based on the results of our technical analysis and the supporting information provided in your application, we have concluded that it would be in the public interest to support this request. Accordingly, I am pleased to grant revised approvals in principle to SkyTerra for the reuse of the assigned L-band Mexican spectrum on the MSV-2 and MSV-1 satellites to

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provide service in Canada. With respect to the reuse of the Mexican spectrum for ATC, this approval is granted without prejudice to the Department's consideration of SkyTerra's ATC licence application. These approvals in principle are also granted subject to SkyTerra Canada Inc.'s written acceptance, within 30 days from the date of this letter, of the conditions noted in the attachments.

I wish to remind you that future authorization of ATC operations is dependent upon resolution of a few regulatory issues. As you are aware technical specifications and authorization procedures for the deployment of ATC services in Canada have not been published yet, nor has the Department initiated any public consultation for the establishment of an appropriate spectrum fee for the service. The required consultation on a spectrum fee will only be initiated once an application by SkyTerra, or any other MSS operators wishing to provide ATC in Canada, is submitted to the Department. Due to the lengthy period for conducting public consultations and adopting a new spectrum fee, we urge SkyTerra to submit an application as soon as possible.

In accordance with our commitment to fair, open and transparent licensing processes, Industry Canada will make this letter and the attached conditions available to the public. Should you have any questions regarding this letter, please contact me at (613) 998-3819 or Paul Lajoie at (613) 998-3775.

Yours sincerely,

C. Beaumier

Chantal Beaumier
Director, Space Services

Attachments (2)

Attachment 1

SkyTerra Canada Inc.
Conditions of Licence to Provide Mobile Satellite Services
in Canada via the MSV-2 Satellite

1. Eligibility

SkyTerra Canada Inc. (SkyTerra Canada) shall conform with eligibility criteria as set out for a radiocommunication carrier in section 10(2)(d) of the *Radiocommunication Regulations*.

2. Licence Transferability

This spectrum licence may not be transferred or assigned without a full review of the application by the Department and authorization of the Minister. For clarification, and without limiting the generality of the foregoing, "transfer" includes any leasing, sub-leasing or other disposition of the rights and obligations of the licences and, also includes any change which would have a material effect on the ownership or control in fact of SkyTerra Canada.

3. Laws, Regulations, and Other Obligations

a) SkyTerra Canada is subject to and must comply with the ITU *Radio Regulations,* the Canadian *Radiocommunication Act* and the *Radiocommunication Regulations*, and Canada's spectrum policies pertaining to its authorized radio frequency bands and satellite orbital position.

b) The operation of the facilities and services being provided shall be in conformity with relevant Canadian laws and regulations.

c) SkyTerra Canada shall operate the satellite as a Canadian radiocommunication carrier and shall offer directly or through re-sellers the satellite services or capacity on a non-discriminatory basis.

4. Service to all Regions of Canada

SkyTerra Canada shall make fair and reasonable efforts to provide mobile satellite services to all regions of Canada within the coverage contour and service availability of the MSV-2 satellite.

5. Research and Development

SkyTerra Canada shall invest a minimum of 2 percent of their adjusted gross revenues resulting from the provision of mobile satellite services via the MSV-2 satellite on satellite-related

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research and development activities. This investment may be averaged over a 5 year period, with the first averaging period beginning with the commencement of service provision in Canada. Eligible research and development is that which meets the definition adopted by the Canada Customs and Revenue Agency. Adjusted gross revenues are defined as total service revenues less intercarrier payments, bad debts, third party commissions and provincial and goods and services taxes collected.

Licensees with less than $5 million in annual gross operating revenues are exempt from research and development expenditure requirements, except where they have affiliations with licensees that hold other licences with the research and development condition of licence and where the total annual gross revenues of the affiliated licensees are greater than $5 million.

6. Implementation Milestones

SkyTerra Canada shall meet the following implementation milestones by the respective dates set out in the following table:

	Milestone	Date
1	Submission of final design specifications to Department for approval	December 15, 2006
2	Signature of contracts for the construction and launch of the satellite	March 15, 2007
3	Placement of the satellite into its assigned orbital position	April 23, 2011

7. Lawful Interception

a) SkyTerra Canada shall provide and maintain lawful interception capabilities as authorized by law. The requirements for lawful interception capabilities are provided in the publication entitled *Solicitor General's Enforcement Standards for Lawful Interception of Telecommunications*. These standards may be periodically amended following consultation with the Minister of Public Safety Canada and the licensees.

b) SkyTerra Canada may request the Minister to forbear from enforcing certain assistance capability requirements for a limited period. The Minister, following consultation with the Minister of Public Safety Canada, may exercise his power to forbear from enforcing a requirement or requirements where in the opinion of the Minister, the requirement(s) is (are) not

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reasonably achievable. Forbearance requests must include specific details and dates when compliance to requirement(s) can be expected.

8. Operational Frequency Requirements

a) Service link operations shall be restricted to those band segments allotted to SkyTerra by means of:

- the *1999 Operating Agreement for Geostationary Mobile-Satellite Systems Operating in the Bands 1525-1544/1545-1559 and 1626.5-1645.5/1646.5-1660.5 MHz,* originally established at Mexico City, Mexico, in June 1996, or any subsequent amendments to this operating agreement, and

- the *2008 Understanding between the Department of Industry (Canada), the Federal Communications Commission (USA) and the Office of Communications (UK) for the Coordination of Satellite Networks Operating in the L Frequency Band.*

b) In accordance with No. 5.357A of the ITU Radio Regulations, in the bands 1545-1555 MHz and 1646.5-1656.5 MHz, stations of mobile satellite systems shall give priority to accommodating the spectrum requirements of the aeronautical mobile-satellite (R) service providing transmissions of messages with priorities 1 to 6 as described in Article 44.

c) In accordance with No. 5.353A of the ITU Radio Regulations, in the bands 1530-1544 MHz and 1626.5-1645.5 MHz, maritime mobile-satellite distress, urgency and safety communications shall have priority access and immediate availability over all other mobile-satellite communications. Communications with stations not participating in the global maritime distress and safety system (GMDSS) shall not cause unacceptable interference to, or claim interference from, distress, urgency and safety communications of the GMDSS.

d) Notwithstanding condition a) and until the conclusion of a bilateral coordination agreement, SkyTerra Canada can also operate service links using Mexican spectrum assigned to Telecomm de Mexico on a no-protection non-interference basis.

e) The aggregate e.i.r.p. density of uplink emissions from either satellite or ATC operations (or both) toward the Mexican satellite shall not exceed -42.3 dBW/Hz (treetop). SkyTerra Canada shall estimate on a continual basis, by emulation or estimation, the aggregate eirp density of the emissions from the SkyTerra system toward the Mexican satellite. Once the estimated eirp density reaches -45.3 dB/Hz, SkyTerra will be required to verify the eirp density level by actual measurements carried out every six (6) months. For the purpose of this condition, the SkyTerra system includes both the American and Canadian satellite and ATC operations.

f) The aggregate downlink emissions received at any point within the Mexican satellite service area from either satellite or ATC operations (or both) shall not exceed an aggregate effective

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power flux spectral density (pfsd) of -202.5 dBW/m^2 Hz (equivalent to an e.i.r.p. density emission level of -40 dBW/Hz at a point of origination at a geostationary satellite position). The Mexican satellite service area shall include any point in Mexico and its Exclusive Economic Zone.

9. Use of Feeder Link and Telemetry, Telecommand and Control Spectrum

Feeder link earth stations shall be coordinated with terrestrial fixed services and be implemented in accordance with the *Canadian Table of Frequency Allocations*. Use of the feeder link spectrum shall be implemented in accordance with the provisions of Appendix 30B of the ITU *Radio Regulations* for the 107.3°W orbital position. The operation of feeder link earth stations shall not cause harmful interference to the radio astronomy service operating in the adjacent frequency band of 10.68-10.7 GHz.

SkyTerra Canada shall coordinate the use of spectrum for its feeder link and telemetry, telecommand and control (TT&C) operations with TerreStar Networks (Canada) Inc.

10. International Coordination of Satellite

The satellite shall be coordinated internationally prior to commencement of operation, and be notified to the ITU. To this end, SkyTerra Canada shall, at its own expense:

- participate with the Department to successfully complete the procedures of Appendix 30B of the ITU *Radio Regulations* to incorporate the characteristics of the allotment Ku frequency assignments of the satellite network in the Appendix 30B List;

- participate with the Department to successfully complete the procedures of Articles 9 and 11 of the ITU *Radio Regulations* to coordinate and notify the L-band band frequency assignments of the satellite network; and

- provide the Department, in a form acceptable to the ITU, with any required information,

- and be responsible for the payment of all ITU processing charges related to the submission of this information.

SkyTerra Canada shall fulfill all commitments made by Canada pursuant to all international coordination arrangements and agreements for the operation of its mobile satellite network in the 107.3°W orbital position.

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11. Orbital Debris Mitigation

The satellite, at the end of its life, shall be removed from the geostationary satellite orbit region in a manner consistent with Recommendation ITU-R S.1003 *Environmental Protection of the Geostationary Satellite Orbit*.

12. Subscriber Earth Stations

a) Subscriber earth stations are authorized to operate in Canada only. Any roaming into other countries shall respect the licensing regimes of those countries. To ensure compliance, SkyTerra Canada shall provide its subscribers with a copy of this condition.

b) Subscriber earth stations shall meet all applicable Canadian radio equipment standards and be type-approved for use in Canada.

c) The operation of subscriber earth stations shall not cause harmful interference to the radio astronomy service operating in the same or adjacent frequency bands.

d) Subscriber earth stations shall comply with Health Canada's *Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz - Safety Code 6*.

13. Requirement to Hold Licences

Prior to commencement of operation of the satellite and the provision of mobile satellite service in Canada, SkyTerra Canada shall obtain all necessary radio authorizations from the Department.

To this end, SkyTerra Canada shall submit the administrative licensing information, set out in Annex B of Client Procedures Circular 2-6-02 (CPC-2-6-02), *Licensing of Space Stations in Services other than the Amateur Satellite Service and the Broadcasting Satellite Service in Planned Bands*, at least 90 days in advance of the anticipated launch date of the satellite. Additionally, all feeder link and telemetry, telecommand and control earth stations communicating with the satellite must be licensed prior to operation pursuant to Client Procedures Circular 2-6-01 (CPC- 2-6-01), *Procedure for the Submission of Applications to License Fixed Earth Stations and to Approve the Use of Foreign Fixed-Satellite Service (FSS) Satellites in Canada.*

Authorization of any future operation of terrestrial mobile services (ATC) will be subject to Industry Canada's spectrum and licensing policy (RP-023), noting further technical standards will need to be developed. Also, as indicated in RP-023, the spectrum fees for ATC mobile services will be established in a future public consultation.

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14. Annual Reports Prior to Satellite Launch

SkyTerra Canada shall submit a detailed annual report to Industry Canada. This annual report must include:

- an update indicating progress made in all areas respecting this licence;
- an update indicating continued compliance with all licence conditions;
- an update on any coordination negotiations undertaken pursuant to conditions 9, and 10;
- copies of any existing annual report for SkyTerra Canada's fiscal year with respect to this authorization; and
- a current listing of all satellite capacity being made available through this approval and consequent authorizations, the capacity assigned to Canadian service providers and others, including the parties to which it is assigned, and any unused capacity including the terms of its availability.

These annual reports shall be augmented with semi-annual interim reports providing an update on all aspects of the design, procurement, construction, coordination and launch of the satellite until the satellite has been put into service. The next interim report will be due September 30, 2010, and the next annual report will be due March 31, 2010. These reports must be submitted, in writing, to the Director, Space Services.

15. Annual Reports After Satellite Launch

SkyTerra Canada shall submit an annual report for each year of operation indicating continued compliance with these conditions, including:

- an update on the status of the mobile satellite service, including the relative growth of the services provided, and the numbers of fixed and mobile subscriber stations operating within Canada;

- a statement of gross operating revenues and, where applicable, under condition 5 above a statement of adjusted gross revenues, and an audited statement of research and development expenditures;

- further to conditions 8 (a) and (d) above, an update on the spectrum being used to provide services in Canada; and

- a copy of any existing corporate annual report for your fiscal year with respect to this authorization.

These reports are to be submitted in writing within 120 days of your fiscal year end to the Director, Space Services.

.../7

16. Traffic Reports

SkyTerra Canada shall submit a traffic report for the satellite at the commencement of operations and every three months thereafter, indicating the channel capacity of each assigned feeder link transmit and receive frequency in terms of the number of telephone channels carried on each frequency, or telephone channel equivalencies as determined by application of section 58 of the *Radiocommunication Regulations* including all supporting information used to make this determination. These reports will be submitted, in writing, to the Manager, Authorization Policy, Space Services Directorate.

17. Payment of Licence Fees

SkyTerra Canada shall pay the applicable annual radio authorization fees within 15 days of acceptance in orbit of the satellite from the manufacturer, and on or before March 31 of each year thereafter.[1]

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[1] Such fees are established as appropriate by application of the *Radiocommunication Regulations* and the Minister of Industry's fee order, *Notice No. DGRB-009-99 -- Radio Authorization Fees for Mobile Satellite Services Using Radio Spectrum Above 1 GHz.*

Industry Canada Industrie Canada

300 Slater Street
Ottawa, Ontario
K1A 0C8

Our File: 46215 - 1 (160295 PL)

OCT 28 2008

Mr. Bahman Azarbar
Vice-President, Regulatory Affairs
Mobile Satellite Ventures (Canada) Inc.
1601 Telesat Court
Gloucester, ON K1B 5P4

Dear Mr. Azarbar:

Thank you for your letters of February 23, 2007 and October 9, 2008 requesting Industry Canada's approval of the construction and launch contract and the amendment to that contract for the MSV-2 satellite.

The Department has reviewed the contract and amendment between Mobile Satellite Ventures (Canada) Inc. (MSV Canada) and Mobile Satellite Ventures LP for the procurement and the construction for the MSV-2 satellite. I am pleased to advise that MSV Canada has met the requirements of milestone 2 of condition 6 as set out in Industry Canada's approval in principle of April 5, 2005.

Should you have any questions regarding this letter, please contact Paul Lajoie at (613) 998-3775.

Yours sincerely,

C. Beaumier

Chantal Beaumier
Director, Space and International
Regulatory Activities

Canada

Appendix B

Boeing Letter Supporting Milestone Compliance Demonstration

Boeing Satellite Systems, Inc.
P.O. Box 92919
Los Angeles, CA 90009-2919

8 October 2010

Reference: 10(T9)94420

LightSquared
10802 Parkridge Boulevard
Reston, VA 20191-5416

Attention: Mr. Michael S. Cannice
Director, Contracts Administration

Subject: Contract MSV-ATC-01 - FCC Milestone Certifications for SkyTerra 2

Dear Mr. Cannice:

Pursuant to the SkyTerra (formerly "MSV") L-band Space-Based Network Contract, as executed on January 9, 2006 (the "Contract"), Boeing Satellite Systems, Inc. ("BSS") is submitting this declaration to confirm the completion of the following milestones for the spacecraft known as SkyTerra 2 (formerly "MSV-2"): execution of a binding non-contingent satellite construction contract, completion of critical design review, and commencement of physical construction. BSS anticipates completion of construction of the spacecraft in October 2010, followed by a LightSquared-furnished launch in early 2011. Construction of SkyTerra 2 is over 90% complete, and over 80% of the contract price attributable to SkyTerra 2 has been paid. Further, the Contract is currently in full force and effect, and BSS has either billed or received all of the payments due and owing under the Contract.

In accordance with Section 1.16 of the rules of the Federal Communications Commission, 47 C.F.R. § 1.16, I, the undersigned, acting on behalf of Boeing Satellite Systems, Inc. hereby declare under penalty of perjury that to the best of my information and belief, the foregoing is true and correct.

Executed on 8 October 2010.

Very truly yours,

Dennis R. Beeson

Dennis R. Beeson
Sr. Contracts Manager
Boeing Satellite Systems, Inc.

Appendix C

ILS Letter Regarding Launch Contract for SkyTerra 2

ILS
International Launch Services

ILSB-1010-4875
13 October 2010

Mr. Michael S. Cannice
Director, Contracts
LightSquared
10802 Parkridge Boulevard
Reston, VA 20191

Subject: ILS Letter Regarding SkyTerra 2 Launch Services Contract

Reference: a) Contract for Launch Services between ILS International Launch Services, Inc. and LightSquared LP (formerly known as SkyTerra LP), dated 11 May 2007, as amended (the "Contract")

Dear Mr. Cannice:

ILS International Launch Services, Inc. ("ILS") hereby confirms that it has executed the reference a) Contract between LightSquared LP and ILS for the launch of SkyTerra 2. The reference a) Contract is in full force and effect.

If you have any questions regarding this letter, please contact Jim Karmer at (571) 633-7493 or the undersigned at (571) 633-7453.

Sincerely,

Erin A Weber

Erin Weber
Contracts Administrator

Appendix D

SkyTerra Canada Letter Regarding Status of Satellite Construction

Declaration of Elizabeth Creary
Construction Status of SkyTerra 2

I, Elizabeth Creary, hereby declare under penalty of perjury that to the best of my knowledge, information and belief the following statements are true and correct:

1. I am the Vice President, Corporate Counsel and Secretary for SkyTerra (Canada) Inc., which has an Approval in Principle from Industry Canada to operate the SkyTerra 2 spacecraft.

2. Construction of SkyTerra 2 is nearly complete and is expected to be finished in October 2010, and launch of the satellite is expected in the first half of 2011.

Executed on October 13, 2010

Elizabeth Creary
Vice President, Corporate Counsel and Secretary
SkyTerra (Canada) Inc.

SkyTerra Corp.
1601 Telesat Court, Ottawa, ON K1B 1B9
T: +1 613 742 0000
www.skyterra.com

Appendix E

Table Referencing FCC Rules

Part No.	Sub-part	Information Requested	Narrative/ Technical Appendix	Form 312 Reference
25.114(c)	(1)	Name, Address and Telephone Number of Applicant	Narrative, title	Form 312, Main Form
25.114(c)	(2)	Name, Address, and Telephone Number of Contacts	Narrative, title	Form 312, Main Form
24.114(c)	(3)	Type of Authorizations Requested	Narrative, Sec. I Tech. App. Sec. A	Form 312, Main Form
25.114 (c)	(4)(i)	Radio frequencies and polarization plan, center frequency and polarization of transponders.	Narrative, Sec. I and II Tech. App. Sec. B.2	Form 312, Schedule S, Sections S2, S9, and Ex. A
25.114 (c)	(4)(ii)	Emission designators and allocated bandwidth of emission.	Tech. App. Sec. Q.2.a B.1 Table 1	Form 312, Schedule S, Sections S11.b, S11.c
25.114 (c)	(4)(ii)	Final amplifier output power, net losses between output of final amplifier and input of antenna and maximum EIRP for each antenna beam.		Form 312, Schedule S, Section S7
25.114(c)	(4)(iii)	Identification of which antenna beams are connected or switchable to each transponder and TT&C function.	Tech. App. Sec. Q.2.b	Form 312, Schedule S, Section S10
25.114(c)	(4)(iv)	Receiving system noise temperature	Tech. App. Sec. Q.2.a B.1 Table 1	Form 312, Schedule S, Section S7
25.114 (c)	(4)(v)	The relationship between satellite receive antenna gain pattern and gain-to-temperature ratio and saturation flux density for each antenna beam.	Tech. App. Sec. Q.2.c	Form 312, Schedule S, Section S7
25.114 (c)	(4)(vi)	The gain of each transponder channel including any adjustable gain step capabilities.	Tech. App. Sec. Q.2.d	Form 312, Schedule S, Section S7
25.114 (c)	(4)(vii)	Predicted receiver and transmitter channel filter Response characteristics.	Tech. App. Sec. B.5	Not applicable
25.114(c)	(5)(i)	Orbital location	Tech. App. Sec. C	Form 312, Schedule S, Section S3
25.114 (c)	(5)(ii)	Factors supporting proposed orbital assignment.	Narrative, Sec. II.A.2 and II.B.3 Tech. App. Sec. C	Form 312, Schedule S, Section S3
25.114 (c)	(5)(iii)	Longitudinal tolerance or east-west station-keeping capability	Tech. App. Sec. C	Form 312, Schedule S, Section S3
25.114 (c)	(5)(iv)	Inclination incursion or north-south station-keeping capability.	Tech. App. Sec. C	Form 312, Schedule S, Section S3
25.114(c)	(6)	Information required for NGSO satellites	Not applicable	Not applicable

Part No.	Sub-part	Information Requested	Narrative/ Technical Appendix	Form 312 Reference
25.114 (c)	(7)	The accuracy with which the orbital inclination, the antenna axis attitude, and longitudinal drift will be maintained.	Tech. App. Sec. D	Form 312, Schedule S, Section S3
25.114 (c)	(8)	Calculation of power flux density levels within each coverage area and of the energy dispersal, if any, needed for compliance with §25.208, for angles of arrival of 5°, 10°, 15°, 20°, and 25° above the horizontal.	Tech. App. Sec. E	Form 312, Schedule S, Section S8, S13
25.114 (c)	(9)	Arrangement for tracking, telemetry, and control.	Tech. App. Sec. F	Form 312, Schedule S, Section S14
25.114 (c)	(10)	Physical characteristics of the space station including weight and dimensions of spacecraft, detailed mass and power budgets, and estimated operational lifetime and reliability of the space station and the basis for that estimate.	Tech. App. Sec. G	Form 312, Schedule S, Sections S15, S16
25.114 (c)	(11)	A clear and detailed statement of whether the space station is to be operated on a common carrier basis, or whether non-common carrier transactions are proposed.	Tech. App. Sec. H	Form 312, Schedule S, Section S1
25.114 (c)	(12)	Dates by which construction will be commenced and completed, launch date, and estimated date of placement into service.	Narrative, Sec. II.B.1	Form 312, Schedule S, Section S1
25.114 (c)	(13)	Polarization	Tech. App. Sec.I	Form 312, Schedule S, Sections S2 and S9
25.114 (d)	(1)	General description of overall system facilities, operations and services.	Tech. App. Sec. J	Not applicable
25.114 (d)	(2)	The feeder link frequencies requested for the satellite.	Tech. App. Sec. K	Form 312, Schedule S, Section S2
25.114 (d)	(3)	Predicted space station antenna gain contours for each transmit and each receive antenna beam in gxt format.	Tech. App. Sec. L	Form 312, Schedule S, Section S8
25.114 (d)	(4)	Description of the types of services to be provided, and the areas to be served, including a description of the transmission characteristics and performance objectives for each type of proposed service, details of the link noise budget, typical or baseline earth station parameters, modulation parameters, and overall link performance analysis (including an analysis of the effects of each contributing noise and interference source).	Tech. App. Sec. M	Form 312, Schedule S, Sections S6, S11, S13
25.114 (d)	(5)	Calculation of power flux density levels within each coverage area and of the energy dispersal, if any, needed for compliance with §25.208; Calculation of power flux density levels within each coverage area and of the energy dispersal, if any, needed for compliance with §25.208, for angles of arrival other than 5°, 10°, 15°, 20°, and 25° above the horizontal.	Tech. App. Sec. E	Form 312, Schedule S, Section S8, S13

Part No.	Sub-part	Information Requested	Narrative/ Technical Appendix	Form 312 Reference
25.114(d)	(6)	Public interest considerations.	Narrative, Sec. II	Not applicable
25.114(d)	(7)	Requirements for domestic FSS applicants.	Tech. App. Sec. N	Not applicable
25.114(d)	(8)	Priority and Preemptive Access Requirements for L-band MSS applicants.	Tech. App. Sec. O	Not applicable
25.114(d)	(9)	Requirements for NVNG MSS applicants.	Not applicable	Not applicable
25.114(d)	(10)	Requirements for 2 GHz MSS applicants.	Not applicable	Not applicable
25.114(d)	(11)	Requirements for DBS applicants.	Not applicable	Not applicable
25.114(d)	(12)	Requirements for NGSO FSS applicants.	Not applicable	Not applicable
25.114(d)	(13)	Requirement for DBS applicants.	Not applicable	Not applicable
25.114 (d)	(14)	A description of the design and operational strategies that will be used to mitigate orbital debris.	Tech. App. Sec. P	Not applicable
25.114 (d)	(14)(i)	A statement that the space station operator has assessed and limited the amount of debris released in a planned manner during normal operations, and has assessed and limited the probability of the space station becoming a source of debris by collisions with small debris or meteoroids that could cause loss of control and prevent post -mission disposal.	Tech. App. Sec. P.1	Not applicable
25.114 (d)	(14)(ii)	A statement that the space station operator has assessed and limited the probability of accidental explosions during and after completion of mission operations. This statement must include a demonstration that debris generation will not result from the conversion of energy sources on board the spacecraft into energy that fragments the spacecraft. Energy sources include chemical, pressure, and kinetic energy. This demonstration should address whether stored energy will be removed at the spacecraft's end of life, by depleting residual fuel and leaving all fuel line valves open, venting any pressurized system, leaving all batteries in a permanent discharge state, and removing any remaining source of stored energy, or through other equivalent procedures specifically disclosed in the application.	Narrative, Sec. II.B.6 Tech. App. Sec. P.2	Not applicable
25.114(d)	(14)(iii)	A statement that the space station operator has assessed and limited the probability of the space station becoming a source of debris by collisions with large debris or other operational space stations.	Tech. App. Sec. P.3	Not applicable
25.114(d)	(14)(iv)	A statement detailing the post-mission disposal plans for the space station at end of life, including the quantity of fuel—if any—that will be reserved or post-mission disposal maneuvers.	Tech. App. Sec. P.4	Not applicable
25.137		Application requirements for earth stations operating with non-U.S. licensed space stations.	Narrative, Sec. II.A.	

Part No.	Sub-part	Information Requested	Narrative/ Technical Appendix	Form 312 Reference
25.140(b)	(2)	An interference analysis to demonstrate the compatibility of its proposed system 2 degrees from an authorized space station.	Tech. App. Sec. N	Not applicable
25.202(e)		Space station frequency tolerance.		Form 312, Schedule S, Section S17
25.202(f)	(1),(2) &(3)	Emission limitations.	Tech. App. Sec. B.5	Form 312, Schedule S, Section S17
25.207		Cessation of emissions.	Tech. App. Sec. B.6	Not applicable
25.210(c)		Minimum capability of changing transponder saturating flux densities by ground command in 4 dB steps over a range of 12 dB.		Form 312, Schedule S, Section S7
25.210(f)		All space stations in the FSS in certain specified frequencies shall employ state-of-the-art full frequency reuse of orthogonal polarizations with the same beam and/or the use of spatially independent beams	Tech. App. Sec. B, I, K, M	
25.210(i)		FSS space station antennas must be designed to provide a cross-polarization isolation such that the ratio of the on-axis co-polar gain to the cross-polar gain of the antenna shall be at least 30 dB within its ,primary coverage area.	Tech. App. Sec. Q.1	Form 312, Schedule S, Section S7
25.210(j)		Space stations operated in the geostationary satellite orbit must be maintained within 0.05° of their assigned orbital longitude in the east/west direction.	Tech. App. Sec. C	Form 312, Schedule S, Section S3
25.283(a)		End-of-life disposal	Tech. App. Sec. P.4	Not applicable
25.283(c)		Upon completion of any relocation authorized by paragraph (b) of this section, or any relocation at end-of-life specified in an authorization, or upon a spacecraft otherwise completing its authorized mission, a space station licensee shall ensure, unless prevented by technical failures beyond its control, at all stored energy sources on board the satellite discharged, by venting excess propellant, discharging batteries, relieving pressure vessels, and other appropriate measures.	Tech. App. Sec. P	Not applicable

Technical Appendix