

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
SkyTerra Subsidiary LLC)	File No. SAT-MOD-20090813-00088
)	File No. SAT-MOD-20090813-00089
Application for Modification of Space Station and)	File No. SES-MOD-20090813-00997
Ancillary Terrestrial Component Authority)	Call Signs: S2358, E980179

ORDER AND AUTHORIZATION

Adopted: March 1, 2010

Released: March 1, 2010

By the Chief, Satellite Division, International Bureau:

I. INTRODUCTION

1. In this Order, we grant an application by SkyTerra Subsidiary LLC (SkyTerra) for license modifications for its next-generation SkyTerra-1 Mobile-Satellite Service (MSS) satellite to permit SkyTerra to use certain additional L-Band spectrum¹ for MSS and Ancillary Terrestrial Component (ATC)² operations. The grant of additional authority will significantly facilitate implementation of SkyTerra's plan to offer affordable two-way mobile broadband communication services to users throughout the United States.³ The grant is subject to a condition prohibiting harmful interference to the

¹ "L-Band" is a general designation for the entire frequency range in the 1-2 GHz band. In this Order, however, the term "L-Band" more specifically denotes the so-called "upper L-Band" (1545-1559 MHz space-to-Earth and 1646.5-1660.5 MHz Earth-to-space) and "lower L-Band" (1525-1544 MHz space-to-Earth and 1626.5-1645.5 MHz Earth-to-space), which are internationally and domestically allocated for MSS. See Table of Frequency Allocations in 47 C.F.R. § 2.106.

² An ATC system consists of terrestrial base stations and mobile terminals licensed to the operator of an MSS system, re-using frequencies assigned for the licensee's MSS operations. The Commission has concluded that ATC operation can serve the public interest by facilitating increased network capacity, more efficient use of spectrum, extension of coverage for handset operation to places where MSS operators have previously been unable to offer reliable service, improved emergency communications, enhanced competition, and economies of scale in manufacturing user transceivers. *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; Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz Bands, Report and Order and Notice of Proposed Rulemaking*, 18 FCC Rcd 1962 (2003) (*ATC Report and Order*), modified by *Order on Reconsideration*, 18 FCC Rcd 13590 (2003), reconsidered in part in *Mem. Opinion and Order and Second Order on Reconsideration*, 20 FCC Rcd 4616 (2005). The L-Band is domestically allocated for ATC transmission. 47 C.F.R. § 2.106, Footnote US380.

³ Two of the captioned applications appear to have been filed out of an abundance of caution. While SkyTerra's modification request concerns operations of and with SkyTerra-1, the two applications seek modifications with respect to 1) the space station license for SkyTerra's first-generation satellite, MSAT-2 (File No. SAT-MOD-20090813-00088), and 2) a SkyTerra blanket license for operation of mobile terminals, which does not specify
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operation of the Mexican-licensed Solidaridad-2 satellite.

II. BACKGROUND

2. Under licenses granted by the Commission, SkyTerra provides L-Band MSS in the United States via two geostationary satellites: MSAT-2, located at 101.3° W.L. and MSAT-1, located at 106.5° W.L.⁴ SkyTerra was granted authority to operate ATC base stations and mobile terminals in the United States in the L-Band spectrum that it uses for MSS operation via MSAT-2 and MSAT-1.⁵ In addition, SkyTerra has a license to launch and operate a next-generation L-Band MSS satellite, SkyTerra-1, also to be located at 101.3° W.L.⁶ SkyTerra-1 is scheduled for launch this year and will eventually replace MSAT-2. SkyTerra has a pending modification request, which will be addressed separately, that would expand its ATC authority to permit operation with additional air interface protocols and higher base station power.

3. L-Band satellite operations in North America are subject to an international agreement signed by the United States, Canada, Mexico, Russia, and the intergovernmental organization Inmarsat in Mexico City in 1996 (Mexico City MOU).⁷ Under the MOU, L-Band spectrum for operation via certain specifically-identified satellites and replacement satellites was to be dynamically assigned pursuant to successive annual arrangements among the respective satellite operators licensed by the signatory Administrations. Subsequently, the operators negotiated several such arrangements.⁸ The most recent annual arrangement expired at the end of 1999, after which, the system operators continued to operate consistently with the expired arrangement, except as otherwise allowed by subsequent ad hoc arrangements between the operators.⁹

4. SkyTerra's authorizations currently allow it to conduct MSS and ATC operations in L-Band spectrum that was assigned for MSS operation via MSAT-1 and MSAT-2 under operator-to-operator

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SkyTerra-1 as a point of communication (File No. SES-MOD-20090813-00997). Thus, these applications are dismissed.

⁴ SkyTerra's authority for MSS operation via MSAT-2 derives from a decision issued twenty years ago. *Memorandum Opinion, 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, Memorandum Opinion and Order*, 8 FCC Rcd 4040 (1993). Authority for MSS operation in the United States via MSAT-1 was originally granted to predecessors in interest in *SatCom Systems, Inc. and TMI Communications and Company, L.P., Order and Authorization*, 14 FCC Rcd 20798 (1999).

⁵ See *Mobile Satellite Ventures Subsidiary LLC, Order and Authorization*, 19 FCC Rcd 22144 (Int'l Bur. 2004) (*MSV ATC Order*). SkyTerra acquired the licenses for U.S. MSS operation and the corresponding authorization for ATC operation through a transfer of control approved in *Motient Corporation and Subsidiaries, Transferors, and SkyTerra Communications, Inc., Transferee, Memorandum Opinion and Order and Declaratory Ruling*, 21 FCC Rcd 10198 (Int'l Bur., Wireline Comp. Bur., and OET 2006). The authorized ATC has not been deployed.

⁶ See *Mobile Satellite Ventures Subsidiary LLC, Order and Authorization*, 20 FCC Rcd 9752 (Int'l Bur. 2005).

⁷ The UK Administration replaced Inmarsat as a party to the MOU when Inmarsat was privatized.

⁸ The MOU prohibits the signatories from publicly disclosing the details of such frequency assignments. See *MSV ATC Order*, 19 FCC Rcd at 22146 n.8.

⁹ In December 2007, Inmarsat, SkyTerra, and SkyTerra's Canadian affiliate concluded a coordination arrangement concerning the spectrum assigned for MSS operation via MSAT-2, MSAT-1, and Inmarsat satellites. The coordination arrangement also specifies mutually-acceptable technical requirements for the parties' operations. Pending applications seeking rule waivers in connection with this arrangement will be addressed separately. See IBFS File Nos. SAT-MOD-20090429-00046, SAT-MOD-20090429-00047, and SES-MOD-20090429-00536.

arrangements pursuant to the Mexico City MOU. In the captioned applications, which were filed on August 13, 2009, SkyTerra requests modification of its MSS and ATC authorizations for SkyTerra-1 to allow it to operate using certain frequencies in the United States currently assigned internationally to two Mexican-licensed satellites, Solidaridad-1 and Solidaridad-2, subject to the condition that SkyTerra's frequency reuse not cause harmful interference to the provision of service in Mexico from the Solidaridad satellites. The applications were placed on public notice on September 18 and 23, 2009.¹⁰ Inmarsat and the Secretariat of Communications and Transportation of Mexico (SCT) filed comments.¹¹ SkyTerra replied.¹²

III. DISCUSSION

5. SkyTerra requests authority to re-use the spectrum assigned to the Solidaridad satellites, on a non-interference, unprotected basis, for U.S. MSS and ATC operation via the second-generation SkyTerra-1 satellite. SkyTerra indicates that it is seeking to improve the efficiency of L-Band use. The arrangements under the Mexico City MOU involve significant interleaving of spectrum assignments, whereby systems are assigned relatively narrow segments scattered across the L-Band.¹³ SkyTerra has concluded arrangements with Inmarsat and the operators of the Russian and Canadian satellite systems with the objective of securing contiguous spectrum blocks with which to provide more coherent nationwide broadband services. According to SkyTerra, attainment of that objective has been frustrated by lack of a similar arrangement with the Mexican operator, despite protracted negotiations.¹⁴ SkyTerra maintains, however, that, as an interim measure to enhance the availability of contiguous spectrum blocks, its next-generation MSS-ATC system can operate in the spectrum assigned for the Solidaridad satellites without causing harmful interference to Mexican MSS operation. SkyTerra contends that its proposed operation in the spectrum formerly used by Solidaridad-1 would entail no interference risk, because Solidaridad-1 has been inoperable for nearly ten years and Solidaridad-2 is technically incapable of operating in the Solidaridad-1 frequencies.¹⁵ Further, SkyTerra contends that it can re-use the L-Band frequencies assigned to Solidaridad-2 within certain technical limits, without causing harmful interference. Specifically, SkyTerra proposes to limit aggregate power spectral density (PSD) from MSS and ATC terminal operation in uplink frequencies shared with Solidaridad-2 to -42.3 dBW/Hz or less at "treetop level."¹⁶ SkyTerra also proposes to limit aggregate PSD from operations in the Solidaridad-2 downlink frequencies to -40 dBW/Hz or less toward Mexican territory. SkyTerra maintains that operation within these limits would not increase noise beyond the levels Solidaridad-2 and its associated earth stations were designed to tolerate, and therefore would not impair quality of service. SkyTerra also

¹⁰ Satellite Space Stations Accepted for Filing, Report No. SAT-00633 (September 18, 2009). Satellite Radio Applications Accepted for Filing, Report No. SES-01176 (September 23, 2009).

¹¹ Final Corrected Comments of Inmarsat PLC, filed Oct. 19, 2009; letter dated Oct. 15, 2009 to Roderick Porter, Deputy Chief, FCC International Bureau, from Héctor Olavarría Tapia, Director General, Dirección General de Comunicaciones y Transportes, Subsecretaría de Comunicaciones, SCT (October 15 SCT Letter)(English translation available in IBFS File No. SAT-MOD-20090813-00089); letter with attachment dated Oct. 30 to Roderick Porter from Luz Ma. Gabriela Hernández Cardoso, Subsecretaría de Comunicaciones, SCT (October 30 SCT Letter)(English translation of the technical attachment to this letter available in an attachment to the Reply of SkyTerra, filed Nov. 4, 2009).

¹² Reply of SkyTerra, filed Nov. 4, 2009 (SkyTerra Reply).

¹³ See Narrative Attachment to SkyTerra Application (Narrative Attachment) at 6.

¹⁴ *Id.* at 5-7.

¹⁵ *Id.*

¹⁶ This term is undefined in SkyTerra's application, but appears to refer to aggregate PSD in the direction of Solidaridad-2, taking into account expected attenuation of the signals of some transmitters due to obstructions, such as trees, terrain features, and man-made structures.

maintains that the Mexican operator can, by relatively simple means, independently monitor aggregate co-channel emissions from SkyTerra's operations to verify compliance with the proposed PSD limits. SkyTerra indicates that the request relates only to SkyTerra-1 operations during the period before any new Mexican L-Band satellite begins operations. SkyTerra indicates that it will attempt to coordinate with the Mexican operator concerning any such new satellite when design work for the satellite is completed and SkyTerra is informed of the actual technical parameters to be protected.

6. SkyTerra maintains that there is ample Commission precedent for authorizing uncoordinated satellite-system operation on a non-interference, unprotected basis.¹⁷ SkyTerra acknowledges, however, that ATC operation in the Solidaridad spectrum would be inconsistent with Commission rules that bar ATC operations in segments of the 1525-1559/1626.5-1660.5 MHz bands not assigned to the operator's MSS system under an international coordination agreement.¹⁸ SkyTerra therefore requests waiver of these provisions. SkyTerra states that the objectives of these provisions are "[t]o ensure maximum gains in spectrum efficiency, minimal potential for interference and limited regulatory intrusion."¹⁹ According to SkyTerra, grant of the requested waivers would serve these objectives, by enabling it to make efficient use of spectrum that would otherwise lie fallow in the United States, without causing harmful interference to the Mexican satellites. Inmarsat expresses support for SkyTerra's proposal.²⁰

7. SCT, on behalf of the Mexican Administration, expresses concern regarding potential interference. SCT reports that the Solidaridad-2 satellite is expected to remain in service until the end of 2013.²¹ SCT states that there is a possibility that SkyTerra's proposed re-use of Solidaridad-2 spectrum could harmfully interfere with Solidaridad-2 operations and, conversely, that operations via Solidaridad-2 could interfere with any co-channel SkyTerra ATC operation.²² SCT submits a report concerning tests that Telecomunicaciones de Mexico (Telecom Mexico), the operator of Solidaridad-2, conducted to simulate aggregate interference from SkyTerra operation at various power spectral density levels in Solidaridad-2's uplink band, and to gauge the effects on the quality of Solidaridad-2 voice communications.²³ SCT indicates that it is planning implementation of a new L-Band system, the "MEXSAT" network. SCT states that preliminary calculations indicate that SkyTerra's operations with a "treetop" PSD of -42.3 dBW/Hz could cause harmful interference with MEXSAT operations.²⁴ SCT further states that SkyTerra ATC operation can only be authorized as a secondary service and should not be allowed to cause harmful interference with either existing or future Mexican L-Band MSS operation. SCT also maintains that SkyTerra cannot claim any right to protection of its ATC against interference

¹⁷ Narrative Attachment at 12-14, citing, *inter alia*, *Establishment of Policies and Service Rules for the Mobile Satellite Service Providers in the 2 GHz Band, Report and Order*, 15 FCC Rcd 16127, 16193 ¶ 151 (2000); *Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Mobile Satellite Service in the 1610-1626.5/2483.5-2500 MHz Frequency Bands, Report and Order*, 9 FCC Rcd 5936, 6018 ¶ 211 (1994); *AMSC Subsidiary Corp.*, 8 FCC Rcd 4040, 4043 ¶¶ 15 and 17 (1993); *Amendment of the Commission's Space Station Licensing Rules and Policies*, 18 FCC Rcd 10760, 10799 ¶ 96, 10870 ¶¶ 295-96 (2003); *Outerlink, Inc.*, 17 FCC Rcd 12757 (Int'l Bur. 2002); *DIRECTV Enterprises, LLC*, 21 FCC Rcd 8028, 8032 ¶ 7, 8040 ¶ 32 (Int'l Bur. 2006); and *Telesat Canada*, 17 FCC Rcd 25287 (Int'l Bur. 2002).

¹⁸ 47 C.F.R. §§ 25.149(a)(2)(ii), 25.149(b)(5)(iii), and 25.253(a)(4).

¹⁹ Narrative Attachment at 12, citing *ATC Report and Order* at ¶ 93.

²⁰ Final Corrected Comments of Inmarsat PLC, filed Oct. 19, 2009.

²¹ October 15 SCT Letter at 1 (English translation at 2).

²² *Id.*

²³ Attachment to October 30 SCT Letter, "ATC Interference Tests on Solidaridad-2."

²⁴ October 15 SCT Letter at 1 (English translation at 2).

from Mexican MSS operation.²⁵

8. In reply, SkyTerra contends that the tests conducted by Telecom Mexico regarding potential impact on the Solidaridad-2 system failed to take into account antenna-gain roll-off. Furthermore, SkyTerra maintains that, despite the failure to take gain roll-off into account, the test results show no degradation of Solidaridad-2 signal quality when the power spectral density of an interfering transmission toward Solidaridad-2 is set at the level that SkyTerra is proposing (-42.3 dBW/Hz).²⁶ SkyTerra also contends that any concern regarding interference with MEXSAT operation is misplaced, as SkyTerra is not requesting authority to share spectrum with a next-generation Mexican system on an uncoordinated basis.²⁷

9. We fully recognize and support Mexico's right to use L-Band spectrum assigned to it via the MOU, without receiving harmful interference from SkyTerra's satellites. In this regard, potential interference from any SkyTerra satellite to operation of Mexico's planned next-generation system (MEXSAT) is not at issue here, as SkyTerra is not requesting, nor do we grant here, any authority to share spectrum with such a system in the absence of coordination. Thus, this order does not authorize SkyTerra to reuse spectrum assigned to Solidaridad-1 or 2 after MEXSAT becomes operational. Moreover, the record indicates that Solidaridad-1 is inoperative. In addition, SkyTerra is not requesting, nor do we grant here any authority for reuse of the spectrum at issue for operation via MSAT-1 or 2. Accordingly, the only issue to be resolved is whether SkyTerra should be granted reuse authority for operations involving the SkyTerra-1 satellite as it may impact Mexico's right to use MOU assigned frequencies for Solidaridad-2 operation.

10. With regard to SkyTerra-1, SCT's study found that a signal at a PSD level corresponding to the limit proposed by SkyTerra (-42.3 dBW/Hz on aggregate "treetop" PSD) had no effect on the voice quality of Solidaridad-2 communications.²⁸ We also agree with SkyTerra's contention that Telecom Mexico should be able, without undue difficulty, to monitor aggregate PSD from SkyTerra operations in Solidaridad-2's uplink and downlink bands. Furthermore, we are confident that Telecomm Mexico could readily detect harmful interference with communications via Solidaridad-2 resulting from co-channel operation of SkyTerra MSS and/or ATC transmitters and present credible evidence of such interference, in the event such interference were to occur.

11. Under these circumstances, we conclude there is good cause to grant the waivers that SkyTerra requests. Accordingly, we grant the request for authority for SkyTerra-1 to operate²⁹ on a non-interference, unprotected basis in spectrum segments that are, or have been, used by the Solidaridad systems under the Mexico City MOU.³⁰

12. As a final matter, we recognize the ongoing efforts of the Mexican, U.S., Canadian and UK

²⁵ October 15 SCT Letter at 2 (English translation at 2).

²⁶ SkyTerra Reply at 8.

²⁷ SkyTerra Reply at 3.

²⁸ Attachment to October 30 SCT Letter at 5.

²⁹ SkyTerra has not yet filed an application for operating authority for mobile earth stations that would be used for dual mode MSS/ATC communications using SkyTerra-1. Accordingly, commencement of ATC operations will require action on future applications.

³⁰ Industry Canada recently granted a similar application by SkyTerra Canada for authority to use the spectrum assigned to the Solidaridad satellites under the 1999 operators' arrangement for MSS and ATC operation in Canada. See letter dated Jan. 29, 2010 to Bahman Azarbar, SkyTerra (Canada) Inc. Vice-President for Regulatory Affairs, from Chantal Beaumier, Director, Space Services, Industry Canada.

Administrations and their operators to achieve a successful coordination understanding on SkyTerra and SkyTerra Canada's permanent use of the frequencies at issue here vis-à-vis Solidaridad-1 and 2. Upon implementation of such a coordination agreement, the reuse authority granted here shall become null and void. In this regard, we note that Mexico has extended an invitation to SkyTerra for a further coordination meeting. SkyTerra is hereby directed to inform the Commission within five days of the release of this Order that it has agreed to the coordination meeting. At this coordination meeting, it is our expectation that SkyTerra will negotiate in good faith with respect to sharing the subject L-Band spectrum as it may impact Solidaridad-1 or 2 and, after appropriate technical parameters are provided for Mexico's next generation satellite system, negotiate in good faith as to Mexico's next generation satellite system. We further direct SkyTerra to inform the Commission in writing within ten days after completion of the coordination meeting and any such subsequent coordination meetings of the progress made in achieving an understanding.³¹

IV. CONCLUSION

13. We find that granting the subject application will serve the public interest by facilitating more efficient spectrum use and provision of advanced broadband services, without engendering a significant risk of consequent harmful interference. This grant of authority will enable SkyTerra to operate in wider contiguous spectrum bands, thereby facilitating provision of high-speed broadband services to users in the United States.

V. ORDERING CLAUSES

14. Accordingly, pursuant to Section 309 of the Communications Act, 47 U.S.C. § 309, and Section 0.261 of the Commission's rules, 47 C.F.R. § 0.261, IT IS ORDERED that Application File No. SAT-MOD-20090813-00089 IS GRANTED in accordance with the terms and technical specifications set forth therein, except as otherwise provided herein, and in compliance with the Commission's rules,³² except insofar as expressly waived herein.

15. This authorization is subject to the representations and limiting specifications in the application for modification; the previously-established terms and conditions for operation of the SkyTerra-1 satellite³³ and associated ATC facilities, except as modified herein; the Commission's applicable rules and regulations, except as explicitly waived herein; and the following reservations and conditions.

- (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 via Solidaridad-2, pending coordination of such operation with the Mexican Administration

³¹ Significantly, SkyTerra-1 is not scheduled to be launched until August 2010, at the earliest, and would not commence commercial operation for some time thereafter. See Quarterly Report of SkyTerra Communications, Inc. for the period ended Sept. 30, 2009 filed with the Securities and Exchange Commission on Form 10-Q, at p.26. Thus, there is time for the coordination process to be completed before the reuse authority granted herein is actually used by SkyTerra.

³² See, e.g., 47 C.F.R. § 25.253(f) (requirements for coordination of ATC base stations with SARSAT earth stations and MAT receive sites), and § 25.253(g)(2) (requiring all practicable steps to be taken to avoid causing interference with radio astronomy observation in the 1660-1660.5 MHz band).

³³ Thus, this Order does not alter or eliminate the previously-imposed bandwidth limits on L-Band operation via SkyTerra-1. See *Mobile Satellite Ventures Subsidiary LLC, Order and Authorization*, 20 FCC Rcd 9752, 9757 ¶ 14, 9773 ¶ 56 (Int'l Bur. 2005).

and/or the Solidaridad-2 system operator. 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.

(b) No authority is granted herein for the MSAT-1, 2 or SkyTerra-1 satellites 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. Further, no authority is granted herein for MSAT-1 or 2 to share the spectrum in question with Solidaridad-1 or 2.

(c) Before commencing operation pursuant to this authorization, SkyTerra 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 in the additional frequencies in question.

(d) The notifications prescribed in Paragraph 12 above must be filed with the Commission's secretary, referencing SAT-MOD-20090813-00089, and copies must be sent by email to IB-SATFO@fcc.gov.

16. IT IS FURTHER ORDERED that the applications designated by File Nos. SAT-MOD-20090813-00088 and SES-MOD-20090813-00997 ARE DISMISSED.

17. This Order is effective upon release. Petitions for reconsideration under 47 C.F.R. § 1.106 or applications for review under 47 C.F.R. § 1.115 may be filed within thirty days of the release date. See 47 C.F.R. § 1.4(b)(2).

FEDERAL COMMUNICATIONS COMMISSION



Robert G. Nelson
Chief, Satellite Division
International Bureau