

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

FILED/ACCEPTED

In the Matter of)
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LightSquared Subsidiary LLC) RM-
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Petition for Rulemaking to Revise)
the Commission's Technical Rules)
)

SEP 28 2017
Federal Communications Commission
Office of the Secretary

PETITION FOR RULEMAKING

LightSquared Subsidiary LLC ("LightSquared"), pursuant to Section 1.401 of the Commission's rules, hereby requests that the Commission initiate a rulemaking proceeding to develop operating parameters for terrestrial use of the 1526-1536 MHz portion of the L-Band that would then be reflected in revised technical rules. Such rules would, for a transitional period, allow terrestrial use of the lower 10 MHz of LightSquared's L-Band downlink spectrum at 1526-36 MHz in a manner to ensure further compatibility with GPS receivers. The rules would also establish a timetable that, based explicitly on the record in this proceeding, would ultimately permit LightSquared robust commercial terrestrial use of this band.¹

¹ LightSquared is also filing contemporaneously herewith a Modification Application ("Modification Application") in order to implement a comprehensive solution that would permit LightSquared to operate its terrestrial broadband network, while simultaneously enhancing compatibility with GPS receivers, and that also would eliminate the terrestrial use of the upper 10 MHz of LightSquared's L-Band downlink spectrum at 1545-1555 MHz. In an additional separate filing, LightSquared has also requested that the Commission confirm that all of the milestones in the Commission's Order approving the transfer of control of SkyTerra to Harbinger are now mooted and that it establish new milestones at a future date. *See* LightSquared *Ex Parte* Communication and Request for Action, IB Docket Nos. 08-184, 11-109; ET Docket No. 10-142; IBFS File no. SAT-MOD-2010118-00239 (filed Sept. 24, 2012); *see also In re SkyTerra Communications, Inc.*, Memorandum Opinion and Order and Declaratory Ruling, 25 FCC Rcd 3059, 3098-3100 (Chiefs IB, OET, and WTB 2010).

I. INTRODUCTION AND SUMMARY

A. Rule Changes Would Serve the Public Interest

On February 15, 2012, the International Bureau issued a Public Notice² seeking comment on a letter dated a day earlier from Assistant Secretary Lawrence Strickling of NTIA to Chairman Genachowski.³ In its letter, NTIA reported its assessment of tests of the performance of existing GPS receivers in the presence of LightSquared's proposed wireless broadband network. NTIA concluded that the proposed network "will impact GPS services and that there is no practical way to mitigate the potential interference at this time."⁴ Given NTIA's assessment of existing GPS receivers, the Bureau proposed vacating the conditional waiver granted to LightSquared in 2011 and indefinitely suspending LightSquared's ancillary terrestrial component ("ATC") authorization, first granted in 2004.⁵

The Bureau, however, did not fully address the impact of its proposed actions on the public interest and the broader implications with respect to sound spectrum management and the need to accommodate the use of MSS spectrum for terrestrial broadband services. As discussed below, since the February 15, 2012 Public Notice, groups of independent experts and others have addressed these broader issues and have raised questions about the wisdom of NTIA's and the Commission's actions. They have also questioned a result that consigns valuable L-Band spectrum to inefficient use at a time when demand is quickly outpacing supply and that undercuts the National Broadband Plan's goal of making available an additional 500 MHz of spectrum for mobile broadband by effectively removing a large segment of spectrum from consideration.

² International Bureau Invites Comment on NTIA Letter Regarding LightSquared Conditional Waiver, Public Notice, DA 12-214 (rel. Feb. 15, 2012) ("February 15, 2012 Public Notice").

³ Letter from Lawrence E. Strickling, Assistant Secretary for Communications and Information, U.S. Dept. of Commerce, to Julius Genachowski, Chairman, FCC (dated Feb. 14, 2012), available at <http://apps.fcc.gov/ecfs/document/view?id=7021860324> ("NTIA Letter").

⁴ NTIA Letter at 1.

⁵ February 15, 2012 Public Notice at 4.

LightSquared's comprehensive proposal in this petition for rulemaking and its Modification Application present the Commission with an alternative beyond the zero sum formula the Commission has faced to date. Favorable action on LightSquared's proposals would allow both the terrestrial development of L-Band spectrum for wireless broadband services, while simultaneously ensuring the compatibility of GPS receivers.

In order to serve the national goal of expanding broadband wireless resources and foster the development of terrestrial services in the L-Band, the Commission can constructively modify LightSquared's existing authority and, by holding the rulemaking proposed in this Petition, change its technical rules to provide for an appropriate transition period during which LightSquared could use terrestrially its licensed 1526-36 MHz band in a manner that is compatible with GPS receivers, until conditions are appropriate for more robust terrestrial operations in this spectrum.

B. Relationship Between Petition for Rulemaking and Modification Application

In its Modification Application, LightSquared proposes to implement a series of inter-related changes through which LightSquared would permanently relinquish all terrestrial authority to use its upper 10 MHz of L-Band downlink spectrum at 1545-1555 MHz, which is the downlink spectrum closest to the GPS band. If LightSquared forgoes its right to make terrestrial use of these upper 10 MHz downlink frequencies pursuant to grant of the Modification Application, GPS receivers would enjoy the benefit of a guardband from terrestrial services. That action, in turn, would pave the way for transitional rules for terrestrial use of the lower 10 MHz of L-Band downlink spectrum, which would lead to the eventual robust commercial use that lower 10 MHz of spectrum. With this goal in mind, in the Modification Application, LightSquared has offered to unilaterally defer any terrestrial deployment on its lower 10 MHz while the Commission is actively pursuing, through this proposed rulemaking, revised rules regarding terrestrial operations in that lower 10 MHz downlink band.

Grant of the Modification Application would permit LightSquared to continue with its plan to build and operate a competitive, state-of-the-art mobile broadband network. Without that

grant, LightSquared would not be able to deploy its network; therefore, LightSquared's request in this Petition depends upon the grant of the Modification Application. Given that context, the timing, terms, and conditions of LightSquared's use of its lower 10 MHz of downlink spectrum at 1526-36 MHz is of substantial public interest.⁶

C. Requested Rule Changes

The record generated at the Commission regarding LightSquared includes a wide diversity of views as to the extent and nature of the overload experienced by many GPS receivers. Unfortunately, an impasse has resulted, which threatens to impede the substantial public interest that could be gained by unlocking the potential of the lower 10 MHz of LightSquared's L-Band downlink spectrum.

LightSquared proposes that the Commission adopt a set of transitional rules in order to permit the terrestrial use of LightSquared's lower 10 MHz downlink spectrum, at 1526-1536 MHz, in a manner that is fully compatible with GPS receivers until such time as LightSquared is permitted robust terrestrial use of that spectrum. LightSquared believes that the initiation of such a rulemaking process would create an inclusive and transparent public forum, in which federal agencies, the GPS industry, LightSquared, user groups, scientists, and spectrum management experts from all fields can address all relevant issues and determine a way forward that satisfies dual public interest goals of fostering broadband while ensuring the compatibility of GPS receivers.

It is important to reiterate that, while the Commission is actively pursuing, through this proposed rulemaking, revised rules regarding terrestrial operations in the lower 10 MHz

⁶ LightSquared thus has requested prompt grant of the Modification Application while the Commission proceeds to open this proceeding. The outcome of the requested rulemaking proceeding ultimately will dictate the commercial utility to LightSquared of integrating its downlink spectrum at 1526-36 MHz into its medium and long term terrestrial network capacity plans, as well as affect the timing and scope of LightSquared's future spectrum needs.

downlink band, LightSquared, pursuant to its proposal in the Modification Application, would not use terrestrially its lower 10 MHz downlink L-Band spectrum at 1526-36 MHz.

Although the final substance of the rules ultimately adopted by the Commission would be responsive to the concerns raised – and solutions offered – in the rulemaking process, for a yet to be determined period of years, LightSquared would be amenable to rules which would incorporate some or all of the following elements:

- **Deferred timetable.** Assuming that LightSquared obtains access to 1670-1680 MHz for use as downlink spectrum, and the rights it needs for use of its two uplink bands at 1627-1637.5 MHz and 1646.7-1656.7 MHz, LightSquared would not need to operate on its L-Band downlink spectrum at 1526-36 MHz at all for a period of time, as it would have sufficient coverage and capacity.
- **Transitional Parameters.** At the time the lower 10 MHz downlink is made available to LightSquared for operational deployment, pursuant to this rulemaking proceeding, it could initially be made available for use with certain transitional operating parameters, such as:
 - **Power reduction.** LightSquared could agree to a rule that its operation in its L-Band downlink spectrum at 1526-36 MHz would not exceed 52 dBm per sector EIRP.
 - **Geographical separation.** LightSquared is willing further to coordinate use of its lower 10MHz downlink spectrum with operators of fixed WAAS and CORS reference stations to determine whether any further restrictions on placement and power levels of LightSquared transmitters are required in proximity to these locations.

In sum, the benefit of unlocking the potential of the lower 10 MHz of LightSquared's L-Band downlink spectrum at 1526-36 MHz is substantial; the means for unlocking this potential is at hand; and facilitating this outcome is strongly in the public interest. Therefore, LightSquared urges the Commission to initiate a rulemaking proceeding, along the lines outlined in this petition, as soon as possible.

II. THE PUBLIC INTEREST CONSIDERATIONS UNDERLYING LIGHTSQUARED'S PETITION ARE SUBSTANTIAL

A. Impact Upon Spectrum Management Policies and Efficient Use of the Spectrum

Since February's *Public Notice*, Presidential advisory groups, independent experts, lawmakers, and others have questioned the public policy outcome of NTIA's and the Commission's actions, which consign valuable L-Band spectrum to inefficient use at a time when spectrum demand is quickly outpacing supply and when the National Broadband Plan's goal of making available an additional 500 MHz of spectrum for mobile broadband may be in jeopardy.

The Report by the President's Council of Advisors on Science and Technology ("PCAST"), released on July 20, 2012, underscored the point that LightSquared designed its network following authorizations granted to it from 2003-2005,⁷ and the problem of overload interference to GPS receivers is caused by the inability of those receivers to reject signals operating outside the GPS band.⁸ PCAST explained how the lack of transparency regarding GPS receiver susceptibility to overload interference meant that even though LightSquared designed and built its network in accordance with technical rules established in 2003-2005, concerns about GPS receivers' susceptibility to overload interference did not emerge until after it had invested billions of dollars in its network.⁹

⁷ Report to the President: Realizing the Full Potential of Government-Held Spectrum to Spur Economic Growth, Executive Office of the President (Jul. 2012), available at http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast_spectrum_report_final_july_20_2012.pdf. ("The LightSquared network was designed following FCC rule-makings in 2003, 2004 and 2005 that incorporated extensive input from the public and Federal agencies. In particular, the FCC adopted recommendations from the GPS Industry Council and NTIA to protect against harmful emissions from Mobile Satellite Service/Ancillary Terrestrial Components operations intruding into other bands, including the GPS frequency bands.") ("PCAST Report").

⁸ PCAST Report at 38 ("'Overload interference' occurs when signals from a transmitter disrupt a receiver susceptible to those signals. In this case, the potentially interfering signals were outside the GPS bands but still detectable by GPS receivers.").

⁹ PCAST Report at 38. As explained in the PCAST Report:

Moreover, a recent White Paper by the Information Technology and Innovation Foundation (“ITIF”), a Washington, D.C.-based think tank, focused on innovation strategy, technology policy, and economic growth, and discussed the broader failure of spectrum policymaking to date in the context of the LightSquared/GPS dispute.¹⁰ ITIF pointed out that the GPS receiver overload interference issue arose because of design choices made by GPS receiver manufacturers, and further noted that the fact that a quarter or so of the GPS receivers that were tested were not affected by LightSquared’s proposed transmissions drove home the related fact that the overload interference issue resulted from GPS receiver design rather than LightSquared’s planned network.

ITIF concluded that “[a] correct resolution of the LS/GPS controversy would have shared the responsibilities for sharing a general spectrum neighborhood between the two parties and improved them both.” The proposed recommendations made in the FCC’s February 15, 2012 PN without offering any such resolution, “simply pushed LS into bankruptcy and left the *status*

The de facto emission requirement for the LightSquared network was . . . set by the level of overload interference that pre-existing GPS receivers could tolerate. Unfortunately, the extent to which GPS devices were expected to withstand interference from the LightSquared system was not specified before LightSquared began to design and build its network. Thus LightSquared was unable to determine the complete technical specifications—and therefore the true cost—of its network prior to launch. . . . If actual GPS receiver capabilities, including susceptibility to overload interference, had been specified in advance, LightSquared could have either designed a network that would not cause interference or else determined that such a design was not feasible or cost effective. Instead, LightSquared discovered the magnitude of the GPS receiver issues only after it had spent billions of dollars.

Id.

¹⁰ Richard Bennett, *Powering the Mobile Revolution: Principles of Spectrum Allocation*, The Information Technology & Innovation Foundation, at 39-41 (Jul. 2012), available at <http://www2.itif.org/2012-powering-mobile-revolution.pdf> (“ITIF White Paper”).

quo intact.”¹¹ ITIF also noted that “[d]isputes such as this can only be resolved by setting long term goals and sticking to them.”¹²

A grant of this Petition for Rulemaking would serve the important spectrum management purpose identified by these parties of finding common ground between facilitating terrestrial use of the L-Band and ensuring the compatibility of GPS receivers.

B. The Need for Additional Spectrum for Wireless Broadband Remains as Acute as Ever

As shown in the Modification Application, an urgent existing and fast-growing need exists for additional spectrum to be made available to support mobile broadband services. Recognition of that need is broadly acknowledged both in the public and private sectors, including the Commission, CTIA, the President’s Council of Economic Advisors, lawmakers in the House and the Senate, and the President. The economic promise for expanded spectrum is enormous, and the public interest benefits of making expanded spectrum available for wireless broadband are beyond question.

C. Solutions Allowing for the Fully Efficient Use of Valuable Spectrum Resources Are Required.

While efforts are underway to clear additional spectrum to meet broadband demand, those efforts appear at best long term, with little present relief in sight. As recently stated by Commissioner McDowell: “It looks like we’re at a point where we have little or no federal spectrum going to auction in the near term” so that “[i]n the meantime it’s very appropriate for us to talk about imaginative ways to squeeze more efficien[cy] out of the airwaves.”¹³ Both the need for more spectrum and for creative means to support broadband technology echoes the views of Assistant Secretary of Commerce, Lawrence E. Strickling:

¹¹ ITIF White Paper at 41.

¹² *Id.*

¹³ COMMUNICATIONS DAILY at 5 (July 20, 2012).

[G]iven the speed at which the demand for spectrum is growing, there will be a continuing national need to find spectrum for broadband services, even after we reallocate the 500 megahertz as directed by the President. . .

[T]he old method of clearing spectrum of federal users and then making it available for the exclusive use of commercial providers is not sustainable. We have moved the easy systems. To continue the old method of spectrum reallocation costs too much money and takes too long. The industry and their customers, as well as our economy, cannot afford the cost and delay.¹⁴

This philosophy of searching out more creative ways to use valuable spectrum, including spectrum sharing, was most recently reflected by an Office of Management and Budget Circular which requires agencies, among other factors, to consider in system procurement “[w]hether the system will share spectrum with other Federal or non-Federal existing systems/operations and, if so, the nature and extent of the sharing relationship.”¹⁵

In short, the need for additional spectrum for mobile broadband services remains as vital today as ever. In this regard, the Commission and NTIA, as the principal agencies charged with spectrum management, have an obligation to (i) explore every possible solution to the terrestrial mobile broadband-GPS problem, (ii) maximize use of the L-Band for terrestrial wireless service, and (iii) seek to realize the public interest benefits of LightSquared’s mobile broadband network, which the FCC both recognized and sought to facilitate in approving the acquisition of LightSquared’s predecessor, SkyTerra.¹⁶

¹⁴ Remarks by Lawrence E. Strickling, Assistant Secretary of Commerce for Communications and Information at the Release of the Report “Realizing the Full Potential of Government-Held Spectrum to Spur Economic Growth” by the President’s Council of Advisors on Science and Technology (Jul. 20, 2012). *See also* ITIF White Paper at 4-5 (noting that the critical shortage of spectrum for mobile networks calls for rethinking spectrum allocation and assignment policy, including a greater emphasis on spectrum sharing and flexibility).

¹⁵ OMB Circular No. A-11 (2012), §31-12(a) at 8.

¹⁶ *SkyTerra Communications, Inc.*, ¶¶ 55-62.

III. ALL INTERESTED PARTIES SHOULD WORK TOGETHER IN A PROCEEDING TO DEVELOP RULES TO ALLOW TERRESTRIAL USE OF LIGHTSQUARED'S LOWER 10 MHZ AT 1526-36 MHZ IN A MANNER COMPATIBLE WITH GPS RECEIVERS.

To date, the LightSquared/GPS debate has focused on the potential for overload of GPS receivers that are already in the field. Scant consideration has been given to solutions over time that would take advantage of mitigation techniques and operating parameters that would permit compatible operations on LightSquared's 1526-1536 MHz band for a transitional period. In recognition of this deficiency, a number of government officials and GPS industry representatives, even while opposing the immediate introduction of terrestrial broadband operations in the lower 10 MHz of LightSquared's L-Band downlink spectrum, have acknowledged that the LightSquared/GPS compatibility issue is soluble if enough time is allowed for transition and implementation.¹⁷

LightSquared's proposed rulemaking proceeding would provide a both a forum and a means for vetting such techniques. LightSquared would not make terrestrial use of 1526-36

¹⁷ The "lower 10 MHz" tests that have been conducted have been based on GPS receivers that are already in the field. For that reason, conclusions associated with the testing have focused on the near term. *See, e.g.*, Letter from Ashton B. Carter, EXCOM Co-Chair, Deputy Secretary of Defense and John D. Porcari, EXCOM Co-Chair, Deputy Secretary of Transportation, to Lawrence E. Strickling, Assistant Secretary for Communications and Information (Jan. 13, 2012) ("[T]here appear to be no practical solutions or mitigations that would permit the LightSquared broadband service, as proposed, to operate *in the next few months or years* without significantly interfering with GPS.") (emphasis added); *Follow-on Assessment of LightSquared Ancillary Terrestrial Component Effects on GPS Receivers*, Memorandum for Administrator, NTIA, National Space-Based Positioning, Navigation, and Timing Systems Engineering Forum, at 36 (Jan. 18, 2012) ("Although '10L' mitigations have been proposed, they have not been tested and verified to have no impact on GPS receiver performance and the Position, Velocity, and Timing (PVT) applications for which they are used. If and when mitigations are available, a long term transition and implementation plan would be necessary to protect existing GPS services and users."); Letter from Michael P. Huerta, Acting Administrator, Federal Aviation Administration, to Lawrence E. Strickling, Assistant Secretary for Communications and Information (Jan. 27, 2012) ("[C]onsistent with the letter from the Space-Based PNT EXCOM co-chairs to you, dated January 13, 2012, FAA has concluded there appears to be no practical solutions or mitigations that would permit the LightSquared broadband service, as proposed, to operate in the next few months or years").

MHz during the pendency of the rulemaking and, during its pendency, would work cooperatively with all relevant U.S. agencies and of the GPS industry to find ways to use these techniques to resolve the overload issue and allow the deployment of terrestrial wireless broadband services in the lower 10 MHz. LightSquared is confident that, once the pressures arising from the prospect of introducing terrestrial wireless broadband services at 1526-36 MHz in the immediate term have been removed and, through grant of LightSquared's Modification Application, broadband operations can commence, engineering solutions reasonably can be found to accommodate all stakeholders.

There is ample Commission precedent for employing mitigation techniques to address concerns over potential interference to existing operations, even in cases involving public safety services, to allow valuable new services to be introduced. The Commission's establishment of technical standards and operating restrictions allowing for the introduction of ultra-wideband devices, over the objection of some commercial interests, but based upon standards developed in connection with that proceeding by NTIA for protecting vital federal government operations,¹⁸ provides a good example of how such a rulemaking proceeding can be used to consider and adopt such standards.

While there has been much debate about the effectiveness *vis-a-vis* GPS receivers of the standards developed by the Commission in the ATC rulemaking proceeding, there is no dispute that the Commission had the right goal when it attempted to fashion technical rules that would give proper regard to nearby spectrum users while making possible the development of terrestrial services in the L-Band.¹⁹ The rule changes LightSquared now is seeking would advance this goal.

¹⁸ See *In the matter of Revision of Part 15 of the Commission's Rules Regarding Ultra-wideband Transmission Systems*, 17 FCC Rcd. 7435, 7436 (2002).

¹⁹ See *In the Matter of Flexible Delivery of Communication by Mobile Satellite Service Providers in the 2 GHz 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*, 18 FCC Rcd 1962, 2017 (2003) ("We adopt technical parameters for ATC

The proposed rulemaking would establish a timetable for LightSquared's eventual commercially-viable use of 1526-36 MHz and would lay out a path for getting there by adopting technical rules permitting terrestrial use of the band on modified terms for that transitional period. As the Commission has shown in so many other contexts, even with most ubiquitous of consumer devices such as analog television, transitions work.

It should be emphasized that the transitional rules to be developed in the requested rulemaking would apply only as to permit terrestrial wireless broadband operations in the lower 10 MHz of LightSquared's downlink L-Band at 1526-36 MHz. Assuming grant of the Modification Application, the upper 10 MHz of that band at 1545-55 MHz would not be used terrestrially and, therefore, would serve GPS receivers as an added guard band from terrestrial services. From LightSquared's perspective, grant of the Modification Application also would initially allow it sufficient downlink spectrum for its contemplated terrestrial network, thereby allowing time for the development of transitional rules in the rulemaking proceeding.

IV. CONCLUSION

This rulemaking proposal, coupled with LightSquared's proposed license modification and its related commitment on the lower 10 MHz of L-Band downlink spectrum, offers a constructive and comprehensive means of achieving the Commission's vision of providing competitive wireless broadband to all Americans. Commencing this proposed rulemaking would advance the public interest by (i) facilitating the construction and operation of a new, competitive, nationwide 4G LTE mobile broadband network, (ii) helping to resolve the concerns raised by the GPS industry, and (iii) increasing the utility of the nation's scarce spectrum resources. Stated another way, the proposed rulemaking is an important element in facilitating the deployment of a new broadband network that would bring much-needed competition, choice and access to hundreds of millions of Americans. LightSquared plans to expand on its existing

operations in each of the bands at issue designed to protect adjacent and in-band operations from interference from ATC").

multi-billion dollar investment in that network, and it is poised to build that network more quickly than any other potential new wireless network operator. LightSquared therefore urges the Commission to promptly commence the proposed rulemaking.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read 'J. Carlisle', written in a cursive style.

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