

BEFORE THE
Federal Communications Commission
WASHINGTON, D.C. 20554

In the Matter of)	
)	
LightSquared Subsidiary LLC)	IB Docket No. 11-109
)	
Technical Working Group Report)	
)	
In re the Application of)	
)	
LightSquared Subsidiary LLC)	File No. SAT-MOD-20101118-00239
)	
Request for Modification of its Authority for an)	
Ancillary Terrestrial Component)	

REPLY COMMENTS OF THE U.S. GPS INDUSTRY COUNCIL

U.S. GPS INDUSTRY COUNCIL

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Summary

In response to the International Bureau's *Public Notice* proposing: (1) to vacate the *Conditional Waiver Order*, and (2) to suspend indefinitely LightSquared's underlying MSS ATC authority, LightSquared has filed voluminous Comments largely rehashing arguments it has previously made, which have been previously debunked by the Council and others. In contrast, there is broad support among the vast majority of other commenters for the two actions proposed in the *Public Notice*.

The legal and policy arguments detailed in LightSquared's pleading rely upon the fundamentally false premise that LightSquared has had since 2004 the right and the fully disclosed objective to deploy a standalone, ubiquitous terrestrial mobile broadband offering in conjunction with its licensed MSS system. LightSquared is incorrect to describe MSS ATC as an allocated service. "ATC" is authorized only as a component of the MSS allocation under strict rules prescribed by the Commission. Because LightSquared's proposal would de-couple terrestrial use from the primary allocated MSS service, it is not "ATC" at all, but a standalone ubiquitous, terrestrial mobile broadband offering. Deployment of such a service would eviscerate the MSS allocation in the 1525-1559 MHz band and replace it with operations of a wholly different character for which there is no spectrum allocation, and which are fundamentally incompatible with both co-frequency and adjacent frequency primary services. The remainder of LightSquared's argument collapses once this faulty foundation crumbles.

LightSquared also incorrectly dismisses GPS receiving equipment as "unlicensed" and "unprotected." These assertions not only ignore the clear protections afforded the primary RNSS and MSS services under the Commission's rules and policies, but also disregard entirely the breadth and importance of widely-deployed GPS applications to broad swaths of the U.S.

economy – including defense, agriculture, aviation, surface transportation, law enforcement, public safety, wireless communication, manufacturing, retail, construction, travel and recreation. The FCC has consistently recognized the importance of the need to protect critical GPS functions.

The worthy policy goal of identifying additional spectrum for broadband use is not paramount in this proceeding. The only issue that matters is whether LightSquared’s plan is suitable for implementation in the L-band spectrum for which LightSquared is licensed to provide MSS. Like implementing an industrial use in a residential neighborhood – or releasing a pig in a parlor, as the Supreme Court has famously analogized in the context of zoning – LightSquared’s plans are fundamentally at odds with the spectrum “neighborhood” in which it seeks to operate and with the existing allocated services that are already well-established there. This is the reality that LightSquared persistently refuses to recognize.

Because there is no allocation for the terrestrial mobile broadband offering that LightSquared seeks to provide, it can only be implemented as a non-conforming use on a strictly non-harmful-interference basis. This requirement is the premise of the *Conditional Waiver Order*. LightSquared refutes its own claims when it accurately states: “When the Commission grants a waiver to allow a non-conforming use [such as the *Conditional Waiver Order* to allow LightSquared to operate a standalone terrestrial mobile broadband offering on a non-ancillary, non-integrated basis], that use must proceed on an unprotected basis with respect to all other services.”

In contrast to LightSquared’s plainly non-conforming proposal to use MSS spectrum to provide a non-ancillary, non-integrated terrestrial mobile broadband offering, GPS receivers make conforming use, on a receive-only basis, of the low-power transmissions from RNSS

satellites, or from both RNSS and MSS satellites which operate pursuant to the primary service allocations in the 1559-1610 MHz and 1525-1559 MHz bands. Both spectrum uses are required to be protected from co-frequency and adjacent band terrestrial operations, whether integrated with the MSS or not, that operate on a non-conforming basis.

To the extent that LightSquared claims that overload/desensitization interference is “not cognizable,” these claims have been debunked previously in response to LightSquared’s Petition for Declaratory Ruling. GPS users have the right to continue operating in a manner consistent with the current spectrum allocation structure. This structure provides an L-band environment conducive to compatible, complementary satellite services, and GPS receivers are optimized to operate in this environment. Section 25.255 of the FCC’s Rules further imposes an absolute obligation on the MSS/ATC operator to resolve any harmful interference to other services. The Commission has made clear that “overload” or desensitization interference is among the types of harmful interference that ATC must take into account under this rule.

LightSquared has simply failed to meet the conditions imposed upon it under the *Conditional Waiver Order*, which requires it to resolve the overload/desensitization interference issues affecting GPS receivers. The process can only be complete if the Commission, after consultation with NTIA, concludes that the harmful interference concerns have been “resolved.” NTIA has specifically stated that there is currently no practical way to mitigate potential LightSquared interference to GPS. The GPS Industry concurs with NTIA’s findings. And the Bureau has correctly observed that “it is highly unlikely that LightSquared will, in any reasonable period of time, be able to satisfy the requirements of the *Conditional Waiver Order*.” Accordingly, because the concerns regarding harmful interference to GPS have

not been resolved, it is clear that LightSquared has failed to meet the critical condition of the *Conditional Waiver Order*, and its conditional authority should be rescinded.

LightSquared's claims of deficiencies in the agency testing process are without merit. LightSquared sees as flaws the use of any criteria that do not make the most favorable interference assumptions with respect to its terrestrial operations. LightSquared's effort to push the envelope on interference protection criteria is unrealistic and dangerously irresponsible in the context of a service that is used for critical safety applications at all times, all day and every day. The mere fact that LightSquared is challenging these test results provides confirmation that they show LightSquared's proposed terrestrial network would cause harmful interference to GPS devices and applications.

In light of the foregoing discussion, there is no need for the Commission to consider LightSquared's arguments concerning its alleged expectation of an ability to deploy standalone terrestrial broadband facilities in the L-band. Nonetheless, LightSquared's principal claims of economic injury do not withstand even the most meager scrutiny. The terrestrial build-out requirements imposed in the *Harbinger Transfer Order*, at Harbinger/LightSquared's request, have proved to be incompatible with the Commission's ATC rules for reasons that LightSquared could and should have identified before it invested. LightSquared currently operates no terrestrial facilities at all. Its claims of prejudice are nothing more than creative accounting of an ill-conceived business plan gone bad, and are entitled to no weight whatsoever in the Commission's decision making process.

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REPLY COMMENTS OF THE U.S. GPS INDUSTRY COUNCIL

The U.S. GPS Industry Council (the “Council”), by its attorneys and consistent with the *Public Notice* released February 15, 2012,¹ hereby replies to initial comments filed concerning the February 14, 2012 National Telecommunications and Information Administration (“NTIA”) letter² in the above-captioned proceedings relating to the LightSquared Subsidiary LLC (“LightSquared”) *Conditional Waiver Order*³ issued January 26, 2011. In the *Public*

¹ See FCC Public Notice, “International Bureau Invited Comment on NTIA Letter Regarding LightSquared Conditional Waiver,” DA 12-214, IB Docket No. 11-109, released February 15, 2012 (“*Public Notice*”). See also *LightSquared Technical Working Group Report*, DA 12-320, slip op. (IB, released Feb. 29, 2012) (extending Comment deadline until March 16, 2012 and Reply Comment deadline until today, March 30, 2012).

² See 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) (“*NTIA Letter*”).

³ See *LightSquared Subsidiary LLC*, 26 FCC Rcd 566 (Int’l Bur. 2011) (“*Conditional Waiver Order*”).

Notice, the International Bureau (the “Bureau”) proposed two actions based on the *NTIA Letter* and the explicit terms of the *Conditional Waiver Order*. First, the Bureau proposed to vacate the portion of the *Conditional Waiver Order* that provisionally allowed LightSquared to initiate L-band terrestrial mobile broadband service at 1525-1559 MHz, provided that it was first able to demonstrate that no harmful interference would be caused to GPS receivers operating in the neighboring radionavigation-satellite service (“RNSS”) band at 1559-1610 MHz. Second, the Bureau proposed to modify LightSquared’s license to suspend indefinitely LightSquared’s underlying Mobile-Satellite Service (“MSS”) Ancillary Terrestrial Component (“ATC”) authorization “to an extent consistent with the *NTIA Letter*.”

There is broad support among the commenters for the two actions proposed in the *Public Notice*. Of the approximately two dozen parties commenting in this proceeding that specifically address the *Public Notice*, more than three quarters of them support the Bureau’s proposed actions.⁴ The principal opponent of these actions is LightSquared, which submitted a voluminous filing largely rehashing arguments it has previously made, and that have been previously debunked by the Council and others.⁵ LightSquared does include some additional

⁴ See Comments filed by the following entities on March 16, 2012, except where noted: Aerospace Industry Ass’n; Aircraft Owners and Pilots Ass’n and the General Aviation Manufacturers Ass’n (Feb. 29, 2012); Air Line Pilots Ass’n Int’l (Feb. 24, 2012); Alarm Industry Communications Committee (March 1, 2012); American Congress on Surveying and Mapping and National Society of Professional Surveyors (March 12, 2012); American Farm Bureau Federation *et al.* (March 14, 2012); American Soybean Ass’n (March 14, 2012); Aviation Spectrum Resources; Boat Owners Ass’n of the U.S. (March 14, 2012); California Farm Bureau Federation (Feb. 27, 2012); The Coalition to Save Our GPS; Deere & Company; Illinois Farm Bureau; Lockheed Martin Corporation; National Ass’n of Manufacturers (March 12, 2012); National Ass’n of Railroad Passengers (March 1, 2012); National Marine Manufacturers Ass’n (March 1, 2012); South Dakota Corn Growers Ass’n (Feb. 24, 2012); Transportation Construction Coalition (March 1, 2012); USGIC; and Vehicle Infrastructure Integration Consortium (Feb. 27, 2012).

⁵ See Comments in Opposition of LightSquared Inc., IB Docket No. 11-109, filed March 16, 2012 (“LightSquared Comments”).

material relating to its interactions with the Commission. The Council cannot speak to the factual accuracy of these assertions (though they hardly seem credible), but there is nothing in them that changes or is even relevant to the undeniable truth that the condition requiring LightSquared to protect GPS from harmful interference caused by terrestrial mobile broadband operations in the MSS bands licensed to LightSquared has not been satisfied and cannot be satisfied within any foreseeable timeframe.⁶ For the reasons detailed in the Council's initial Comments and further amplified in these Reply Comments, the Commission should be undeterred by LightSquared's posturing and proceed with implementing the course outlined in the *Public Notice*.

I. LightSquared's Lengthy Argument Is Based on the Fundamentally False Premise That it Has Unfettered Authority To Operate an L-Band Terrestrial Mobile Service.

While LightSquared has sought to lay out in exacting detail what it claims are its rights with respect to the use of the 1525-1559 MHz and 1626.5-1660.6 MHz bands, its Comments present a fictionalized account of its circumstances. The many legal arguments detailed in LightSquared's pleading, as well as the parade of policy consequences it enumerates with respect to loss of wireless broadband capacity, stranded investment, market distortion, and regulatory uncertainty, arise from a fundamentally false premise – the notion that LightSquared has had since 2004 the right and the fully disclosed objective to deploy a standalone, ubiquitous terrestrial mobile broadband offering in conjunction with its licensed MSS system.

Throughout its Comments, LightSquared refers to itself as an MSS/ATC licensee, and asserts, for example, that “the MSS/ATC Band is allocated for MSS/ATC use.”⁷ This is

⁶ In this respect, the Council is compelled to offer observations regarding LightSquared's claims of economic injury to assure that the record is complete.

⁷ LightSquared Comments at 11.

incorrect. The only primary allocation in the 1525-1559 MHz band is for MSS, and in more than two-thirds of the band there is no allocation at all for terrestrially-based service.⁸

LightSquared has simply invented the notion that “MSS/ATC” is an allocated service that it is licensed to provide in the 1525-1559 MHz band. It is MSS that LightSquared is actually permitted to offer. As an adjunct to that primary service only, it is also permitted by footnote US380 and its authorization to deploy additional ATC facilities as a means of augmenting its coverage in those areas that satellite signals do not reach.⁹ This ancillary capability is strictly limited by the Commission’s rules, and the overall requirement that it maintain satellite signal coverage.¹⁰ Specifically, under the rules, LightSquared may only offer terrestrial mobile service that is fully integrated with the allocated MSS offering.¹¹

LightSquared has no unconditioned authority to offer “ATC” service standing alone, independent of MSS, or to offer ATC that in any way precludes or supplants LightSquared’s own MSS offering in the same geographic area. Nonetheless, LightSquared no longer proposes to offer an integrated MSS/ATC service, or to offer ATC that would not preclude MSS reception in the ATC coverage area. Instead of providing a ubiquitous satellite service with a “fill in” terrestrial element, as originally approved,¹² LightSquared now proposes to

⁸ See 47 C.F.R. § 2.106 (1525-1559 MHz allocated to the MSS in the space-to-Earth direction on a global basis; 1525-1535 MHz band allocated to Mobile service on a secondary basis).

⁹ 47 C.F.R. § 2.106, US380.

¹⁰ See, e.g., *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*, Report and Order and Notice of Proposed Rulemaking, 18 FCC Rcd 1962 n.5 (2003) (“*MSS ATC Order*”) (“As we have repeatedly indicated, we intend to authorize ATC only as an ancillary service to the provision of the principal service, MSS”)

¹¹ 47 C.F.R. § 25.149(b)(4).

¹² Notably, in its initial proposal LightSquared’s predecessor-in-interest indicated that “[t]he satellite path would be the preferred communications link, but if the user’s satellite path is blocked, the communications link would be sustained via the fill-in base stations.” *Flexibility*

offer a ubiquitous terrestrial broadband service with a necessarily limited satellite component. LightSquared's proposed terrestrial mobile broadband facilities would also effectively negate satellite coverage over the vast majority of that satellite network's coverage area. This service model is antithetical to the spectrum allocation reflected in the U.S. Table of Frequency Allocations and the rules for MSS and MSS ATC. It is not MSS. It is not even ATC as that adjunct to MSS is defined in the Commission's rules. It is something else entirely.

When LightSquared's predecessor-in-interest originally sought an MSS ATC authorization, it promised to provide data rates for "basic voice and data wireless services up to 9.6 kbps and packet data wireless services up to 165.5 kbps."¹³ It did not purport to be proposing a "broadband" service, and the rates specified did not qualify as broadband even at that time, when the term was generally applied to "services and facilities with an upstream (customer-to-provider) and downstream (provider-to-customer) transmission speed of more than 200 kilobits per second (kbps)."¹⁴ Despite the limited and decidedly non-broadband nature of the ancillary service it was originally authorized to provide, LightSquared now proclaims its intention to deploy a "4G LTE Broadband Network" providing "significantly higher data rates than many current technologies."¹⁵ Though the LightSquared Comments do not reference specific data rates, Verizon Wireless has indicated that its average 4G LTE data

for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Band, Notice of Proposed Rulemaking, 16 FCC Rcd 15532, 15541 (¶ 15) (2001) ("MSS ATC NPRM")

¹³ MSS ATC NPRM, 16 FCC Rcd at 15541 (¶ 16).

¹⁴ *Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, Fifth Report, 23 FCC Rcd 9615, 9616 (¶ 2) (2008), citing *Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, Third Report, 17 FCC Rcd 2844, 2850 (¶ 9) (2002).

¹⁵ LightSquared Comments at 4.

rates range between 5-12 Mbps on the downlink and 2-5 Mbps on the uplink.¹⁶ The service LightSquared now proposes is thus many orders of magnitude different from what was originally approved.

LightSquared's proposal would, in fact, de-couple terrestrial use entirely from the primary allocated MSS service, allowing LightSquared to sell capacity on a wholesale basis for terrestrial-only use as standalone mobile broadband offering. This was precisely the type of spectrum use that the Commission concluded was unworkable when it established the MSS ATC rules, and that it expressly prohibited.¹⁷ Any reversal of this policy to permit such a service would require, in the first instance, a change in the allocation table and service rules governing the band.¹⁸

Because the proposed LightSquared service is not consistent with the spectrum allocation or LightSquared's license, it cannot claim in any respect to be operating pursuant to the Table of Frequency Allocations or the Commission's ATC Rules generally. Despite this fact, the entirety of LightSquared's argument is premised on the patently false notion that its plan comports fully with the Allocation Table and existing Commission rules and policies.

From this follows the further assertion that it is endowed with protected status and "the right to

¹⁶ See, e.g., Verizon Press Release, "Verizon Wireless Further Boosts Its 4G LTE Network In The New York Metro Area With 70 Additional Cell Site Activations," dated March 15, 2012 (highlighting that "Average 4G LTE data rates are 5-12 Mbps on the downlink and 2-5 Mbps on the uplink").

¹⁷ See, e.g., *MSS ATC Order*, 18 FCC Rcd at 1999 (¶ 65) ("The record demonstrates that sharing between MSS and terrestrial mobile services is neither advisable, nor practical"). Less than ten days ago, the Commission expressly reaffirmed this judgment. See *Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands*, WT Dkt. 12-70, FCC 12-32, slip op. at 5 (¶ 6)(released March 21, 2012) ("2 GHz AWS NPRM").

¹⁸ See, e.g., Comments of The U.S. GPS Industry Council, File No. SAT-MOD-20101118-00239, at 2-6 (filed December 2, 2010) (arguing that the relief that LightSquared was seeking was, in essence, a petition for rulemaking to reallocate the L-band MSS spectrum for terrestrial mobile use).

use [its] licensed spectrum on a priority basis vis-à-vis all other spectrum users (including GPS/RNSS).”¹⁹ LightSquared’s keystone assumption is wrong, and is fundamentally contrary to the explicit command of the Communications Act that no “license shall be construed to create any right, beyond the terms, conditions, and periods of the license.”²⁰ LightSquared’s argument therefore crumbles completely once its faulty underpinnings are exposed and removed.

II. LightSquared Ignores Entirely Both the Scope and Importance of the Widely-Deployed GPS Applications with Which It Proposes To Interfere.

LightSquared’s liberties with the truth do not end with the relentless inflation of its own regulatory status. They also extend to its characterization of the status and importance of the critical RNSS applications with which its revised service proposal would interfere.

LightSquared blithely and incorrectly dismisses GPS receiving equipment as “unlicensed” and “unprotected.”²¹ These assertions not only ignore the clear protections afforded the primary RNSS and MSS services under the Commission’s rules and policies, but also disregard entirely the breadth and importance of GPS applications across broad swaths of the U.S. economy and infrastructure.

The L-band space services frequency bands – both the RNSS band and the upper and lower adjacent MSS bands – are uniquely suited to a range of critical, specialized functions, including many public safety and safety-of-life applications. Since the first civilian GPS products were introduced over three decades ago, an increasingly expansive variety of

¹⁹ LightSquared Comments at 13.

²⁰ 47 U.S.C. § 301. *See also* 47 U.S.C. § 304 (applicants for any FCC license must waive “any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States”).

²¹ *See, e.g.*, LightSquared Comments at 20 & 46.

applications and devices have been developed for both government and non-government use, with the result that a 1996 Presidential Decision Directive declared that GPS was “rapidly becoming an integral component of the emerging Global Information Infrastructure.”²² Since the United States ended the deliberate degradation of accuracy for non-military signals, commercial and civil GPS applications have continued to multiply rapidly and their importance has increased significantly. As of 2004, the development of GPS was such that the President’s PNT Policy declared it “a global utility whose multi-use services are integral to U.S. national security, economic growth, transportation safety, and homeland security and are an essential element of the worldwide economic infrastructure.”²³ The President’s 2010 National Space Policy cited GPS and declared that “the United States must maintain its leadership in the service, provision, and use of global navigation satellite systems (GNSS).”²⁴

Today, GPS has hundreds of millions of users worldwide that benefit from a remarkable variety of applications and user-driven GPS innovation. These users depend on GPS technology for critical day-to-day safety, navigation, positioning, timing and monitoring functions across a broad range of industry and government endeavors: public safety, including first responders (E911 systems, vehicle tracking and other functions); defense and other military (troop movement, unmanned aerial vehicles, counterterrorism); commercial, business, and general aviation (navigation, terrain avoidance, aircraft surveillance (automatic dependent surveillance-broadcast or ADS-B)); electric power and utilities (remote monitoring);

²² Fact Sheet, U.S. Global Positioning System Policy, Office of Science and Technology Policy, National Security Council (released March 29, 1996).

²³ NSPD-39: U.S. Space-Based Position, Navigation, and Timing Policy, released December 15, 2004.

²⁴ National Space Policy of the United States of America at 5 (June 28, 2010), available at http://www.whitehouse.gov/sites/default/files/national_space_policy_6-28-10.pdf.

engineering and construction (facility inventory and maintenance, status monitoring); environmental protection; law enforcement (tracking); maritime and waterways (vessel tracking, search and rescue, port management); surface transportation (fleet management, intelligent vehicle-highway system operations, train control and collision avoidance); agriculture (planting, irrigation, and crop protection); surveying, mapping, and land management; weather, scientific, and space (earthquake and atmospheric monitoring, geographic information systems); wireless communication (timing and radiolocation); manufacturing (inventory tracking); retail; travel (individual navigation); and recreation (boating, hiking, geocaching).

The Commission has long recognized and consistently stated both in this proceeding and in other contexts the importance of protecting GPS from harmful interference.²⁵ Any degradation of GPS signal reception through the removal of interference protection would return many of the industries using GPS, and the critical services they rely upon, to an era where improvements in efficiency and accuracy made possible by GPS and its augmentations did not exist. The injuriousness of this outcome would be compounded by the fact that many of the less efficient and reduced-accuracy systems that predate the general availability of GPS have now been fully superseded by the vastly superior accuracy and proven overall success of GPS equipment, and therefore are no longer available in any form.

²⁵ See, e.g., *MSS ATC NPRM*, 16 FCC Rcd at 15559 (¶ 68) (“The L-band MSS satellite transmitters operate [in] the lower adjacent band to the Global Positioning System (“GPS”) and other Radio Navigation Satellite Services. Unwanted emissions from terrestrial stations in the MSS will have to be carefully controlled in order to avoid interfering with GPS receivers.”); *Revision of Part 15 of the Commission’s Rules Regarding Ultra-Wideband Transmission Systems*, First Report and Order, 17 FCC Rcd 7435, 7450 (¶ 33) (2002) (stating “the need to protect from interference the vitally important and critical safety systems operating in the restricted frequency bands, including GPS operations”).

III. LightSquared's Policy Arguments Based on the Need for and Value of Additional Mobile Broadband Spectrum Are Misplaced.

To the extent that LightSquared has received limited support from other parties in this proceeding, the principal basis for such support is a desire by these parties to have access to additional terrestrial mobile broadband spectrum.²⁶ This desire is entirely understandable and well-founded, and its premises are not in question in this proceeding. It does not follow from this worthy policy goal, however, that any specific spectrum must be targeted for conversion to terrestrial wireless use, or that GPS should be vilified for “blocking” new technology or competition. Even apart from the critical spectrum management and interference issues at the center of this proceeding, the MSS L-band frequencies licensed to LightSquared do not otherwise offer unique suitability or opportunity for terrestrial use.²⁷ The Council understands that there is a need for additional mobile broadband spectrum in the United States. The fact remains, however, that the only issue before the International Bureau now is the NTIA's determination that such offerings cannot be made in the LightSquared MSS bands without causing harmful interference to GPS devices and applications.

This critical issue is whether, based on the currently authorized use of the 1525-1559 MHz band and the compatible uses that are well-established in the adjacent frequency bands,

²⁶ See Comments filed on March 16, 2012 by Leap Wireless International, Inc. and Cricket Communications, Inc.; Computer & Communications Industry Ass'n; and RCA – The Competitive Carriers Ass'n. Although it did not disclose its pecuniary interest, the only other party filing in support of LightSquared, CENX, Inc. (Comments filed March 1, 2012), is a contractor for LightSquared. See “CENX wins a seat at LightSquared's 4G wireless backhaul table, FierceTelecom, dated August 10, 2011 (available at <http://www.fiercetelecom.com/print/node/34233>).

²⁷ For example, just last week the Commission issued a comprehensive *Notice of Proposed Rulemaking and Notice of Inquiry* with the objective of facilitating the provision of terrestrial broadband services in the 2 GHz MSS band. See *2 GHz AWS NPRM*, FCC 12-32, *slip op.* at 3 (¶ 2).

this spectrum is suitable at all for implementation of the ubiquitous terrestrial mobile broadband service that LightSquared now proposes. The NTIA and the vast majority of commenters participating in this proceeding have answered this inquiry resoundingly: No.

The Supreme Court stated in one of the seminal cases upholding the right of municipal authorities to restrict land use by private property owners through appropriately defined zoning restrictions that a "nuisance may be merely a right thing in a wrong place like a pig in the parlor instead of the barnyard."²⁸ The Table of Frequency Allocations operates much like a zoning regime, seeking to group like uses together, and to separate from each other services that are mutually incompatible due to the likelihood of one service or the other interfering with the proper operation and optimal functioning of the neighboring service. Properly viewed in these terms, LightSquared's proposed terrestrial mobile broadband offering may be a "right thing" in the abstract policy sense, but LightSquared seeks to implement its plan in decidedly the wrong place from a technical and regulatory standpoint, as its operation in the manner proposed would not only be contrary to the Commission's painstakingly-developed and long-established rules and spectrum management policies, but would also be affirmatively damaging to the services that already exist and thrive in the harmonized L-band spectrum allocations. Like implementing an industrial use in a residential area or releasing a pig in a parlor, LightSquared's plans are fundamentally at odds with the spectrum "neighborhood" in which it seeks to operate and with the existing services that are already well-established there, a reality which LightSquared persistently refuses to acknowledge.

²⁸ See *Village of Euclid v. Ambler Realty Co.*, 272 U.S. 365, 388 (1926).

IV. As a Non-Conforming Spectrum Use, LightSquared’s New Standalone Ubiquitous Terrestrial Mobile Broadband Offering Can Only Be Offered on a Non-Protected, Non-Harmful Interference Basis.

Because there is no allocation for the terrestrial mobile broadband offering that LightSquared seeks to provide, it can only be implemented as a non-conforming use on a strictly non-harmful-interference basis. The specific out-of-band emissions limitations that apply to MSS ATC were crafted based on specific operating assumptions, including licensee compliance with the limitations set forth in the Commission’s rules. Specifically, the rules governing MSS ATC require that those MSS providers licensed to provide MSS ATC “shall offer an integrated service of MSS and MSS ATC” with the principal means of affirmatively demonstrating the satisfaction of this requirement being “use of a dual-mode handset that can communicate with both the MSS network and the MSS ATC component to provide the proposed MSS ATC service.”²⁹

In the *Conditional Waiver Order*, the Bureau stated plainly that LightSquared’s substantially revised service proposal was non-compliant with the strict regulatory limitations established for MSS ATC because the integrated service rule prohibits ATC-only subscriptions, and the LightSquared proposal contemplates that its wholesale customers would be permitted to offer ATC-only subscriptions to consumers.³⁰ As this finding necessarily prevented LightSquared from providing service based on the already limited provision for MSS ATC service,³¹ the Commission treated LightSquared’s proposal as a non-conforming use, requiring it to demonstrate affirmatively, prior to commencing operations, that it could

²⁹ 47 C.F.R. § 25.149(b)(4).

³⁰ See *Conditional Waiver Order*, 26 FCC Rcd at 579 (¶ 24).

³¹ See *Conditional Waiver Order*, 26 FCC Rcd at 579 (¶ 24) (we “find that LightSquared’s wholesale customers cannot offer terrestrial-only service to subscribers without violating LightSquared’s obligations under the rules”).

provide such service only upon a conclusion that harmful interference concerns with respect to GPS have been resolved.³² Any other approach would have required the Commission to conduct an on-the-record rulemaking proceeding, an essential step prior to making substantial frequency allocation and rule changes impacting its overall spectrum management priorities for L-band services.

Thus when LightSquared accurately states in its Comments that the Commission's grant of a waiver to allow a non-conforming use requires that such "use must proceed on an unprotected basis with respect to all other services," LightSquared is neatly and effectively torpedoing its own broad argument, which it has based on the erroneous assertion that its own use is consistent with the Table of Frequency Allocations. It is definitively that case, as LightSquared itself explains, that:

[w]hen the Commission grants a waiver to allow a non-conforming use [such as the *Conditional Waiver Order* to allow LightSquared to operate a standalone terrestrial mobile broadband offering on a non-ancillary, non-integrated basis], that use must proceed on an unprotected basis with respect to all other services. ***In other words, non-conforming uses enjoy no allocation status, and, like Part 15 uses, are treated as effectively tertiary in all analyses of relative spectrum rights.***³³

As plainly stated in the Commission's rules, even those non-conforming uses that are specifically permitted under the Table of Allocations are nonetheless subject to the requirement "that the service which is subject to not claiming protection shall not cause harmful interference to the other service or other station in the same service."³⁴

³² See *Conditional Waiver Order*, 26 FCC Rcd at 586-87 (¶¶ 41-43).

³³ LightSquared Comments at 51.

³⁴ 47 C.F.R. § 2.104(g)(2).

Deployment of the standalone terrestrial mobile broadband service that LightSquared envisions would effectively eviscerate the MSS allocation in the 1525-1559 MHz band in any area where the mobile broadband offering is made, and replace it with operations of a wholly different character for which there is no spectrum allocation and which are fundamentally incompatible with both co-frequency and adjacent frequency primary services. This is a deployment that is absolutely prohibited under long-established principles of spectrum management.

V. LightSquared’s Claims That “Overload” or Desensitization Interference Is “Not Cognizable” Have Already Been Debunked in This Proceeding.

In contrast to LightSquared’s plainly non-conforming proposal to use MSS spectrum to provide a non-ancillary, non-integrated terrestrial mobile broadband offering, all GPS receivers make conforming use, on a receive-only basis, of the low-power transmissions from RNSS satellites, or use signals from both RNSS and MSS satellites which operate pursuant to the primary service allocations in the adjacent 1559-1610 MHz and 1525-1559 MHz bands. Both spectrum uses are required to be protected from co-frequency and adjacent band terrestrial operations, whether integrated with MSS or not, that operate on a non-conforming basis.

1. GPS Users Have The Right To Continue Operating in a Manner Consistent with the Current Harmonized L-band Spectrum Allocation Structure.

To the extent that LightSquared continues to assert its claim that “overload,” or desensitization, interference is “not cognizable” as harmful interference, and thus lies outside the scope of the protections afforded to RNSS and MSS users,³⁵ these claims have been thoroughly debunked in this proceeding on several previous occasions, including in the Council’s Comments in response to LightSquared’s Petition for Declaratory Ruling regarding

³⁵ See LightSquared Comments at 46 *et seq.*

interference protection.³⁶ LightSquared's characterization ignores entirely the well-settled allocation plan for the L-band spectrum neighborhood where MSS and GPS and other space-based services co-exist, which encourages compatible and complementary service offerings that enhance the overall efficiency of spectrum use.³⁷ The current arrangement of allocations in the L-band, which includes no terrestrial allocation at all between 1535-1660.5 MHz, represents just such an "optimum clustering of services"³⁸ – i.e., one which promotes the availability of GPS consumer devices and the capability of augmenting GPS performance using MSS signals.

LightSquared's problem is not, as it has repeatedly claimed, the design of GPS receivers,³⁹ but the fact that the dramatic changes in L-band spectrum use it first proposed less than eighteen months ago are ill-suited to the long-standing operating environment in the L-band in which GPS receivers have been designed to operate.⁴⁰ LightSquared's baseless assertions of "poor" design all stem from the same premise (shown above to be false) that the specifically-conditioned MSS authority it holds would nevertheless permit it to employ the licensed MSS spectrum with its ATC component to offer a radically different terrestrial mobile

³⁶ See USGIC Opposition to LightSquared Petition for Declaratory Ruling. IB Dkt. No. 11-109, at 10-15 (filed February 27, 2012).

³⁷ See "Interference and Dynamic Spectrum Access Subcommittee Final Report," Commerce Spectrum Management Advisory Committee, at 58 (November 8, 2010) ("CSMAC Interference Report") ("Harmonization should remain a principal consideration as spectrum managers consider how to address multiple demands on the spectrum resource" as it yields "multiple benefits for end users, including lower device costs, service interoperability, and cost-effective international roaming possibilities").

³⁸ CSMAC Interference Report at 58.

³⁹ See, e.g., LightSquared Comments at 34 n.93.

⁴⁰ See also Comments of the U.S. GPS Industry Council on the Technical Working Group Final Report, IB Dkt. 11-109, at 51-52 (filed August 1, 2011) ("USGIC Comments on the TWG Final Report").

broadband service that supplants the MSS wherever it is offered, heedless of the impact that such an intensive non-conforming use would have on GPS and other users (*e.g.*, users of L-band MSS).

When manufacturers and service providers make decisions regarding receiver design, they do so in reliance on established Commission service rules and domestic and international spectrum allocations. Current spectrum allocations provide an L-band environment that is conducive to compatible and complementary satellite services. During the last three decades, GPS receivers have rationally been designed to optimize spectrum use and efficiency in frequency bands where low intensity satellite spectrum use is predominant and terrestrial use has been strictly limited.⁴¹ The out-of-band emission limitations in the MSS/ATC authorizations the Commission has granted to date were designed for ATC offerings that are in keeping with the character of the spectrum neighborhood. LightSquared's implicit assertion that users operating in a primary service should be required to alter their well-established operations after thirty years of increasingly sophisticated receiver deployments to accommodate new, non-conforming uses in adjacent bands is inconsistent with the Commission's rules, every single principle of sound spectrum policy and management, and the entirety of its precedent in this area.⁴²

⁴¹ For example, high precision receivers that make use of MSS-augmented GPS are required to receive in the entire 1525-1610 MHz band for the augmented signal to be effective, and to meet contractual obligations for MSS access that are imposed by LightSquared and other MSS operators.

⁴² In another context, LightSquared's position that end user receivers operating in allocated services are generally unprotected from harmful interference would allow a protected service provider operating outside the scope of the allocation tables to interfere with wireless, broadcast or satellite reception simply because the device actually suffering the interference – a TV receiver or DBS antenna, for example – may not itself be licensed.

In particular, the use by some GPS receivers of compatible MSS signals from the adjacent 1525-1559 MHz spectrum band does not constitute a “non-conforming use,” as LightSquared persistently alleges.⁴³ These GPS receivers are making use of the *primary* MSS signal in the band, and the fact that the signal is being received by RNSS devices does not convert these transmissions into an unallocated, non-conforming use. LightSquared’s non-interference obligation applies equally to devices making use of either the RNSS or the MSS primary allocations, and to devices making use of the RNSS and the MSS primary allocations. Critically, LightSquared’s planned introduction of high-powered terrestrial mobile service into the MSS band is not compatible with its own ubiquitous satellite coverage and would effectively eviscerate the MSS allocation to the detriment of existing users that rely on these signals, while at the same time causing harmful interference to GPS devices that operate primarily in the adjacent band.

2. LightSquared Is Incorrect Concerning the Degree of Interference Protection Afforded GPS Receivers.

LightSquared also persists in its erroneous claim that because GPS receivers are not individually licensed facilities, they are not entitled to interference protection.⁴⁴ The Council has demonstrated that GPS receivers are not unprotected devices, but receive-only Earth stations that operate under Part 25 of the Commission’s rules in conjunction with the U.S. RNSS satellite system.⁴⁵ GPS functionality requires that individual receivers be able to utilize the entire RNSS band to access low power GPS signals from multiple satellites. This is the

⁴³ See, e.g., LightSquared Comments at 95.

⁴⁴ See LightSquared Comments at 18 *et seq.*

⁴⁵ See, e.g., USGIC Opposition to LightSquared Petition for Declaratory Ruling, IB Dkt. 11-109, at 10-15 (filed February 27, 2012); USGIC Consolidated Reply to Oppositions, ET Dkt. 10-142, at 7-10 (filed September 6, 2011).

essence of the service, allowing individual users to take advantage of the navigation, location, tracking and timing information that reception of these multiple signals reveals.

LightSquared nonetheless continues to assert that “interference protection of satellite receive-only facilities is provided, as a general matter, only to the extent the earth station is licensed (or registered) and only to the extent the antenna meets certain performance requirements.”⁴⁶ As the Council has previously demonstrated, however, LightSquared’s reliance for this assertion on the *1979 Receive-Only Earth Station Order* is entirely misplaced, and the conclusions that it draws therefrom are wholly incorrect. The *1979 Receive-Only Earth Station Order* deals solely with the impact of optional antenna registration on the rights, vis à vis new co-frequency, co-primary terrestrial facilities, of C-band receive-only operators that *choose* to remain unregistered. In particular, the *1979 Receive-Only Earth Station Order* addressed the circumstance in which a C-band Earth station operator declines to register a facility “where the interference protection afforded by coordination and licensing is not desired or needed” and is later faced with harmful interference from subsequently-constructed, co-primary C-band terrestrial facilities.⁴⁷ The result is that only by obtaining an FCC registration can these operators ensure that they are protected against harmful interference from facilities proposed in subsequently filed applications – but the choice lies entirely with the prospective registrant, which is only unprotected from interference if it decides not to make use of the antenna registration regime.⁴⁸ These are the circumstances that prevail in shared bands with more than one co-primary service.

⁴⁶ LightSquared Comments at 23.

⁴⁷ *Reregulation of Domestic Receive-Only Satellite Earth Stations*, 74 F.C.C.2d 205, 214 (¶ 27) (1979) (“*1979 Receive-Only Earth Station Order*”).

⁴⁸ *See 1979 Receive-Only Earth Station Order*, 74 F.C.C.2d at 215 (¶ 27) (“[A]n optional licensing program would enable those who need and/or wish to have protection to obtain an

Coordination and registration are not relevant for RNSS band users, where GPS and other radionavigation applications are the only allocated spectrum uses, and prior coordination is not required to achieve interference protection. The regulatory considerations affecting the RNSS band are similar to the Ku-band fixed-satellite service (“FSS”) allocation, which is an exclusive primary allocation in which receive-only antennas are not subject to registration, but nonetheless enjoy the full interference protection to which FSS is entitled. Indeed, on occasions where applicants have attempted to obtain FCC receive-only antenna registration in the Ku-band, these applications have been routinely dismissed as unnecessary.⁴⁹ Like Ku-band FSS receive-only earth stations, L-band RNSS receive-only earth stations are part of the only primary service in their frequency band and therefore require no licensing or registration in order to be “protected against interference from the operations of any other communications service.”⁵⁰ LightSquared, without distinguishing the circumstances concerning the RNSS band, chooses simply to dismiss this precedent as “irrelevant.”⁵¹

3. Section 25.255 of the Commission’s Rules Mandates the Protection of All Other Services from MSS ATC Operations.

Moreover, Section 25.255 of the Commission’s Rules specifically mandates that “[i]f harmful interference is caused to *other services* by ancillary MSS ATC operations, either from ATC base stations or mobile terminals, *the MSS ATC operator must resolve any such*

enforceable right to a particular level of interference free reception through the prior coordination process”).

⁴⁹ See, e.g., *Letter to David H. Pawlik, Counsel to NW Communications of Phoenix, from Kathryn Medley, Chief, Satellite Engineering Branch, FCC*, 24 FCC Rcd 14074 (Sat. Eng. Br. 2009) (“*Pawlik Letter*”) (“Because the FSS is the only primary allocation in this band, operations to the FSS receive-only Ku-band earth stations are *protected against interference from the operations of any other communications service*. As such, licensing or registering these earth stations is unnecessary.”) (emphasis added).

⁵⁰ See *Pawlik Letter*, 24 FCC Rcd at 14074.

⁵¹ See LightSquared Comments at 23.

interference.”⁵² GPS end users are availing themselves of devices and applications provided for their use in spectrum allocated to RNSS, which is specifically defined in the Commission’s rules⁵³ and operates on a primary basis subject to the Commission’s Table of Allocations.⁵⁴ Thus, in 2008, the Commission stated that Section 25.255 imposes “an *absolute obligation* on the MSS/ATC operator to resolve any harmful interference to other services,” and went on to state in response to concerns regarding interference to Broadband Radio Service base station receivers that “receiver overload interference ... is among the problems that ATC must take into account in avoiding harmful interference to other services.”⁵⁵ For these reasons, GPS implementation of RNSS unquestionably qualifies as “other service” and GPS receiver desensitization is plainly cognizable “harmful interference” of the type prohibited by Section 25.255.⁵⁶

The record of the proceedings in which Section 25.255 was adopted also makes abundantly clear that the requirement was adopted specifically to protect RNSS and other services operating in frequency bands adjacent to MSS bands where MSS ATC was conditionally authorized. LightSquared is the only U.S. space-segment licensee in the only

⁵² 47 C.F.R. § 25.255 (emphases added).

⁵³ See 47 C.F.R. § 2.1 (*Radionavigation-Satellite Service*. A radiodetermination-satellite service used for the purpose of radionavigation. This service may also include feeder links necessary for its operation.)

⁵⁴ See 47 C.F.R. § 2.106 (Table of Allocations) (RNSS and ARNS identified as co-primary services in the 1559-1610 MHz band).

⁵⁵ *Spectrum and Service Rules for Ancillary Terrestrial Components in the 1.6/2.4 GHz Big LEO Bands*, 23 FCC Rcd 7210, 7223 (¶ 35) & n.118 (emphasis added) and 7224 (¶ 36) & n.119 (2008) (“2008 Big LEO MSS ATC R&O”).

⁵⁶ As discussed further below, this is also consistent with the Commission’s statement in the *Conditional Waiver Order* that the critical undertaking of the LightSquared technical working group was “to fully study the potential for overload interference to GPS devices and to identify any measures necessary to prevent harmful interference to GPS.” *Conditional Waiver Order*, 26 FCC Rcd at 586 (¶ 41).

service allocated in the 1525-1559 MHz band within the United States. The rule does not refer to other “systems.”⁵⁷ If the provisions of 25.255 have any meaning, they must then be read to protect “other services” not in the same frequency band in which the L-band MSS licensee operates, but services in other bands, just as receive-only antennas operating in the exclusive Ku-band FSS primary allocation are protected from “any other communications service.”⁵⁸ The purpose of the interference protection rules contained in Section 25.255 was, from the outset, the shielding of adjacent-band GPS receivers from harmful interference.⁵⁹ These protections vis à vis MSS ATC apply even more strongly with respect to LightSquared’s proposed non-conforming terrestrial mobile broadband offering. None of LightSquared’s efforts to argue around its clearly stated obligations, which are once again grounded on its erroneous assumptions concerning its spectrum use rights, is remotely supportive of its conclusion that it need not protect GPS receivers from harmful desensitization.⁶⁰

VI. LightSquared Has Failed To Meet the Conditions Imposed Upon It Under the *Conditional Waiver Order*.

Despite its continuing efforts outlined above to portray itself as operating in accordance with the Commission’s rules and spectrum allocations, the fact is that LightSquared cannot provide high capacity standalone terrestrial broadband services under the Commission’s rules. The only basis for such operation is the waiver of the integrated service requirement granted in

⁵⁷ Inmarsat plc, licensed by the United Kingdom, also provides MSS in this band within the United States.

⁵⁸ See page 16 and n.42, *infra*.

⁵⁹ See *MSS ATC NPRM*, 16 FCC Rcd at 15559 (¶ 68) (“The L-band MSS satellite transmitters operate [in] the lower adjacent band to the Global Positioning System (“GPS”) and other Radio Navigation Satellite Services. ***Unwanted emissions from terrestrial stations in the MSS will have to be carefully controlled in order to avoid interfering with GPS receivers.***”) (emphases added).

⁶⁰ Compare LightSquared Comments at 63-69.

the *Conditional Waiver Order*, which is specifically conditioned on resolving overload/desensitization interference issues affecting GPS receivers.

In the *Conditional Waiver Order*, the International Bureau explained that LightSquared had proposed and agreed to accept the condition requiring it to demonstrate that its dramatically expanded terrestrial service would not interfere with GPS receivers.⁶¹ In that context, the Commission emphasized LightSquared's assurance that it "takes the concerns raised by the GPS community about possible overload of GPS devices by LightSquared's stations very seriously."⁶² Accordingly, LightSquared was required under the *Conditional Waiver Order* to address GPS interference concerns and demonstrate its ability to implement "measures necessary to prevent harmful interference to GPS."⁶³

The process set forth in the *Conditional Waiver Order* would only be complete "once the Commission, after consultation with NTIA, concludes that the harmful interference concerns have been *resolved* ..." ⁶⁴ Although the Order did not set forth a particular procedure for these consultations, it can nonetheless be inferred from the succinct language used that this condition required that both the Commission and the NTIA concur that the interference concerns were fully and indisputably resolved, thereby settling these issues with respect to the thousands of deployed U.S. government GPS receivers that depend on an interference-free RNSS spectrum environment.

As stated in its February 14, 2012 Letter, the NTIA has specifically concluded that these issues are anything but resolved and, indeed, that "LightSquared's proposed mobile

⁶¹ *Conditional Waiver Order*, 26 FCC Rcd at 585-86 (¶ 40).

⁶² *Conditional Waiver Order*, 26 FCC Rcd at 585 (¶ 40).

⁶³ *Conditional Waiver Order*, 26 FCC Rcd at 586 (¶ 41).

⁶⁴ *Conditional Waiver Order*, 26 FCC Rcd at 587 (¶ 43).

broadband network will impact GPS services and that there is no practical way to mitigate potential interference at this time.”⁶⁵ A wide range of GPS users, manufacturers and other interested and affected parties strongly concur with and support NTIA’s technical findings, which demonstrate conclusively that the threat of potentially catastrophic interference from LightSquared’s proposed standalone terrestrial mobile broadband service precludes introduction of such service at this time and for any reasonably foreseeable time to come.

In light of these findings, the Bureau correctly observed in the *Public Notice* that “it is highly unlikely that LightSquared will, in any reasonable period of time, be able to satisfy the requirements of the *Conditional Waiver Order*.”⁶⁶ This observation is only strengthened and confirmed by the overwhelming support provided by commenters for the actions proposed in the *Public Notice*. Because the concerns regarding harmful interference to GPS have not been resolved to the satisfaction of anyone other than LightSquared, its business partners and a few supporters of LightSquared’s general wholesale service model, it is apparent that LightSquared has failed to meet the critical condition of the *Conditional Waiver Order*, and its conditional authority must be rescinded.

VII. LightSquared’s Claims of Deficiencies in the Agency Testing Process Are Without Merit.

LightSquared engages in a quixotic attempt to argue that the recent round of testing by federal agencies was flawed and not entitled to credit.⁶⁷ At the outset, the Council observes

⁶⁵ *NTIA Letter* at 1.

⁶⁶ *Public Notice* at 4.

⁶⁷ See LightSquared Comments at 74-86. The testing referred to in the *NTIA Letter* includes a study from the National Space-Based Positioning, Navigation, and Timing Systems Engineering Forum (“NPEF”) entitled, “Follow-on Assessment of LightSquared Ancillary Terrestrial Component Effects on GPS Receivers” (Public Version, released January 18, 2012) (“*NPEF Study*” or “*NPEF Report*”), and a report from the U.S. Department of Transportation,

that the mere fact that LightSquared is challenging the test results provides confirmation that the results show there will be harmful interference to GPS devices and applications. In other words, because the NPEF and FAA independently confirmed the presence of harmful interference to GPS from LightSquared terrestrial mobile broadband transmissions – even those LightSquared transmissions that were confined to the lower 10 MHz of the 1525-1559 MHz MSS downlink band – there is at least a *prima facie* basis for the Commission’s proposal to vacate the *Conditional Waiver Order*. As the Council shows below, LightSquared’s attacks on the reliability of the findings reported in the various testing efforts are both unjustified and unavailing.

Through an extended series of attachments and declarations, LightSquared levels a barrage of criticisms against the NPEF and FAA studies. It attacks test methodologies, evaluation criteria, propagation models, assumptions about LightSquared’s deployment projections, assumptions about how GPS devices and applications are operated, and more. It amalgamates its position into the tautological yet fundamentally insufficient conclusion that LightSquared should have been permitted to proceed because only some of the GPS devices and applications that formed the basis of the test results referenced in the *NTIA Letter* would actually suffer harmful interference.⁶⁸

FAA, entitled “Status Report: Assessment of Compatibility of Planned LightSquared Ancillary Terrestrial Component Transmissions in the 1526-1536 MHz Band with Certified Aviation GPS Receivers” (Public Version, released January 25, 2012) (“*FAA Report*”). See *NTIA Letter* at 2 n.9.

⁶⁸ See, e.g., LightSquared Comments at 38 (“Had NTIA given proper consideration to LightSquared current plan, it would have concluded that more than 80 percent of personal general navigation devices tested in fact passed even the unreasonable 1 dB C/N0 test that NTIA imposed, and if other flaws were corrected, all of the devices would have ‘passed.’”). The fact that LightSquared considers a “mere” 20 percent failure rate for general location/navigation devices to be acceptable collateral damage is quite disturbing.

The Council emphasizes, as it did last summer in connection with the comments on the Technical Working Group Final Report,⁶⁹ that LightSquared sees as flaws any test results that reflect the use of criteria that do not make interference assumptions that are the most favorable assumptions possible with respect to LightSquared's terrestrial mobile broadband operations. GPS is not cellular telephone service, where standards are based at least in part on a level of acceptable degradation in service and assumptions that some calls/information will be dropped. It is a radionavigation service with vastly different performance criteria and metrics that is used potentially in every location on the planet at any time for critical safety applications; inaccuracies, whether caused by receiver overload or increases in the noise floor that reduce the number of GPS satellite signals available for measurement, are absolutely intolerable. LightSquared's noxious effort to push the envelope on interference protection criteria is contravened by the international technical literature and experts and would, if accepted, irresponsibly and dangerously jeopardize both lives and property.

The Council and its member companies have addressed previously in this docket each of the notions LightSquared relies upon – from filtering possibilities and their tradeoffs to the “power on the ground” approach, to permissible degradation levels and propagation considerations – in comments and detailed *ex parte* submissions dating back to the conclusion of the TWG in June 2011.⁷⁰ Moreover, given that the NPEF and FAA testing processes have been conducted with LightSquared participation and take direct account of many of the

⁶⁹ See USGIC Comments on the TWG Final Report at 22-25.

⁷⁰ See, e.g., USGIC Comments on the TWG Final Report at 11-26; *Ex Parte* Letter from F. Michael Swiek, Executive Director, USGIC, to Marlene H. Dortch, Secretary, FCC, IB Docket No. 11-109, filed November 9, 2011; *Ex Parte* Letter from M. Anne Swanson, Counsel to Garmin International, Inc., to Marlene H. Dortch, Secretary, FCC, IB Docket No. 11-109, filed October 28, 2011, Attachment, Garmin Response to LightSquared's September 27, 2011 *Ex Parte* Filing Regarding Its “Power On the Ground” Proposal.

criticisms LightSquared repeats in its Comments,⁷¹ there is little to be gained by such an exercise at this juncture.

Nevertheless, a few points must be highlighted here. First, LightSquared's continued effort to oppose the use of a harmful interference metric of a 1 dB degradation in the C/N₀ criterion is unreasonable. The GPS community has already demonstrated the fact that this criterion is accepted in the international technical literature (including longstanding International Telecommunication Union recommendations on protection of RNSS from non-RNSS interference in the 1559-1610 MHz band).⁷² LightSquared's attempts to disregard or alter this internationally-accepted metric with claims that individual receivers have "plenty of margin" or can easily handle 1 dB of interference⁷³ are irresponsible, ignoring the fact that the criterion is based on many factors. What LightSquared fails to mention is that part of the margin they attribute to GPS receivers is required to receive satellites at different elevation angles in the sky, which is necessary to compute positions. An even more significant omission is the effect of interference on coverage in the presence of foliage and other obstructions – a common situation for GPS operations in which every dB is significant. When LightSquared attempted to demonstrate using real world data collected for the TWG Report that an interference criterion other than 1dB should be used, it proved otherwise, providing visual

⁷¹ See *FAA Report* at §§ 4 & 5 at 66-68.

⁷² See Recommendation ITU-R M.1477, *Technical and performance characteristics of current and planned radionavigation-satellite service (space-to-Earth) and aeronautical radionavigation service receivers to be considered in interference studies in the band 1 559-1 610 MHz* (2000). This recommendation was replaced in September 2011 by Recommendation ITU-R M.1903, *Characteristics and protection criteria for receiving earth stations in the radionavigation-satellite service (space-to-Earth) and receivers in the aeronautical radionavigation service operating in the band 1 559-1 610 MHz* (2011).

⁷³ LightSquared Comments, Technical Appendix A at A-41-A-42.

evidence of adverse coverage and accuracy impact, as the Council has pointed out.⁷⁴ NTIA most certainly did not err in accepting conclusions from NPEF and FAA that are based on the 1 dB degradation in the C/N_0 criterion.

LightSquared also continues to attempt to minimize, or even disregard outright, the fact that its terrestrial mobile broadband offering would cause harmful interference to tens or even hundreds of millions of existing GPS devices and applications. In the latest filing, it attempts to exclude “discontinued” GPS devices from the analysis.⁷⁵ There is, of course, no basis for excluding “discontinued” devices from the test results. Though such devices may no longer be in active production, such devices nonetheless represent a significant portion of the installed user base. Ignoring the installed base in order to avoid a finding of harmful interference – even without regard to such other flawed criticisms on items such as propagation models and interference criteria – provides no basis for rejecting the NPEF studies that contributed to the assessment in the *NTIA Letter*.

NPEF conducted a thorough test that showed massive interference to GPS devices and applications. The test setup, execution, analysis, and results were peer reviewed by both the Idaho National Labs and the Lincoln Labs of the Massachusetts Institute of Technology, and no discrepancies or problems were reported.⁷⁶ The Commission should reject LightSquared’s subjective and irresponsible attempts to undermine the conclusions on which NTIA relied; the NPEF results survive scientific scrutiny and must be credited in full.

The FAA test results also pass scientific muster and easily survive the attacks leveled by LightSquared. To advance its criticisms, LightSquared had to renege upon its agreement

⁷⁴ USGIC Comments on the TWG Final Report at 25.

⁷⁵ *Id.* at A-52 to A-54.

⁷⁶ *See* NPEF Report at 3.

with aviation participants in the TWG and related efforts that the FAA minimum performance standards are the appropriate reference for evaluating LightSquared compatibility with aviation uses of GPS.⁷⁷ It also had to ignore repeated demonstrations from the TWG exercise and the FAA's own reports that retrofitting installed devices that incorporate or rely upon GPS is impracticable on any kind of time table shorter than 10 or 15 years, and downplay or disregard the FAA's conclusions about LightSquared's incompatibility with GPS receivers certified for use in aviation.⁷⁸ Finally, LightSquared had to ignore critical scenarios in its consideration of the impact of LightSquared transmitters on the Terrain Awareness and Warning System ("TAWS") for fixed-wing aircraft,⁷⁹ and was unable to address adequately the unique requirements for helicopter TAWS ("HTAWS").⁸⁰ LightSquared seems to dismiss the possibility that loss of TAWS is a problem, and asserts that once a GPS signal loss occurs while a TAWS alert is in progress, "the pilot would ensure adequate terrain clearance by

⁷⁷ Compare LightSquared Comments, Technical Appendix at B-4 (arguing against reliance on the FAA technical standards) with the TWG Final Report, Section 3.1.11, p. 50 (accepting that the FAA minimum performance standards are the appropriate evaluation metric). Given that the FAA provides minimum performance standards, it is no surprise that some or even most equipment will be found to meet and exceed those standards.

⁷⁸ LightSquared's limited testing of filter "solutions" for timing and selected high-precision GPS receivers is insufficient to support any kind of reliable conclusion that the filters can be applied to safety-critical applications that need to be demonstrated across a wide range of environmental conditions – none of which have been tested by LightSquared.

⁷⁹ LightSquared's material is based on a descending flight scenario and does not consider level flight, takeoff/departure, or approach descent scenarios where a LightSquared transmitter would cause loss of GPS and there is hazardous terrain or obstacles that would require TAWS alerts to be generated for the pilot to operate safely.

⁸⁰ HTAWS equipment has different operating requirements and a lower alerting floor than fixed-wing TAWS. In particular, helicopters may operate in the "very low altitude zone" for an entire flight. The FAA Report considers these HTAWS requirements to be the most difficult to meet in the presence of interference from LightSquared's proposed deployment plans.

immediately climbing to a higher altitude.”⁸¹ This woefully inadequate response attempts to diminish the undeniable value of GPS to air navigation, would lead to disruptions and inefficiencies in flights, and ignores the fact that the remedial steps the pilot is forced to take on the loss of GPS during a TAWS alert do not compensate for the reduction in safety and operational capability when GPS positioning is lost or made erroneous due to harmful interference.

In short, there is no defect in the testing that formed the basis of the determination in the *NTIA Letter* that there is no path forward for LightSquared’s operation of a terrestrial mobile broadband system in the MSS bands licensed to LightSquared, under either the *Conditional Waiver Order* or its existing ATC authority. LightSquared’s critiques of the NPEF and FAA studies disregard the installed base, discount established internationally-valid criteria for assessing the harmfulness of interference, and ignore relevant scenarios. The *NTIA Letter* presented the correct, supported recommendation, and the Commission should follow that recommendation as it proposed to do in the *Public Notice*.

VIII. LightSquared’s Claims of Economic Injury Are Dubious and Internally Contradictory.

In light of the foregoing discussion – and particularly the unambiguous statutory, regulatory and policy limitations that have always existed with respect to implementation of an L-band MSS ATC offering – there is no need for the Commission to consider at any length the arguments that LightSquared raises with respect to its expectation of an ability to deploy standalone terrestrial broadband facilities in the 1525-1559 MHz band. Nonetheless, it bears noting that LightSquared’s principal claims of economic injury do not withstand the most meager scrutiny.

⁸¹ LightSquared Comments, Appendix B, at B-6.

For example, the chief expenses that LightSquared cites in its brief and sketchy accounting of its “four billion dollars” of investment in MSS ATC⁸² are for the construction and deployment of two satellites, one launched in 2010 which was largely constructed prior to the investment of the current LightSquared ownership group.⁸³ While these are the most significant costs that LightSquared asserts were made in reliance on the ability to implement MSS ATC, it is these very investments – in the facilities necessary to implement ubiquitous satellite coverage – that would be dissipated and left largely idle by the proposed changes in LightSquared’s operations to effect a primarily terrestrial scheme for provision of service.

At the same time, the chief basis that it cites for reliance damages is the Commission’s March 2010 transfer of control order allowing the acquisition of SkyTerra Communications, Inc. (LightSquared’s predecessor-in-interest) by funds controlled by Harbinger Capital Partners (“Harbinger”), the order which imposed substantial terrestrial build-out terms on LightSquared at Harbinger’s request.⁸⁴ The requirements imposed in the *Harbinger Transfer Order* have proved to be incompatible with the Commission’s ATC rules for reasons that LightSquared could and should have identified before it made initial or later investments. That reality is what necessitated the further action that was taken in the *Conditional Waiver Order*.

⁸² See LightSquared Comments at 8 & n.15.

⁸³ See LightSquared Comments at 8 (“\$1.1 billion to construct and launch two next-generation satellites”).

⁸⁴ See *SkyTerra Communications, Inc. (Transferor) and Harbinger Capital Partners Funds, Transferee*, 25 FCC Rcd 3059, 3085 (¶ 56) & 3088-89 (¶ 72) (IB/OET/WTB 2010). This proceeding, at the outset limited to the transfer of control of SkyTerra, was restricted, and no non-governmental parties participated at any time. The critical documents relied upon by the FCC with respect to LightSquared’s terrestrial business plans were submitted long after the public notice period elapsed and pursuant to broad requests for confidential treatment. Indeed, the first public submission detailing LightSquared’s business plan, and containing its formal commitment to an aggressive build-out schedule, was filed on March 26, 2010, the same day the transfer of control was granted. See *Harbinger Transfer Order*, 25 FCC Rcd at 3093-3100, Appendix B, “Harbinger Business Plan Letter of March 26, 2010.”

Of particular relevance here is the fact that the *Harbinger Transfer Order* predated by less than eight months the general alarms that were raised once LightSquared augmented with a specific technical proposal the general commitments acknowledged and accepted in that order. LightSquared's November 2010 plan laid bare publicly for the first time the complete nature of the dramatic paradigm shift it was proposing. And LightSquared has no remotely colorable argument that any investments made after January 2011 constituted reasonable reliance, as the *Conditional Waiver Order* itself put LightSquared on clear notice that it would not be permitted to proceed with its terrestrial-only business plan unless it could demonstrate non-interference to GPS, which it has proven incapable of doing. LightSquared currently operates no terrestrial facilities, a fact which it has recently affirmed to the Commission on multiple occasions.⁸⁵ LightSquared's claims of prejudice are nothing more than creative accounting of an ill-conceived business plan gone bad, and are entitled to no weight whatsoever in the Commission's decision making process.

IX. Conclusion

For all of the foregoing reasons, the Council respectfully urges the Bureau to accept the *NTIA Letter's* soundly supported conclusions with respect to predicted interference from LightSquared's proposed terrestrial mobile broadband operations. Consistent with these findings, the Bureau should vacate the *Conditional Waiver Order* granted to LightSquared because LightSquared has failed to satisfy the GPS non-interference condition imposed therein. The Commission should also adopt its proposal to suspend indefinitely LightSquared's

⁸⁵ See, e.g., LightSquared Motion for Extension of Time, IB Dkt. No. 11-109 and File No. SAT-MOD-20101118-00239, at 5 (filed February 23, 2012) (arguing that "no party will be prejudiced by the requested extension [of time to comment on the *Public Notice*] in this proceeding because LightSquared's terrestrial operations remain non-operational").

underlying L-band MSS ATC authorization to the extent consistent with the *NTIA Letter*, and should take such further action as may be necessary to implement this proposal.

Respectfully submitted,

U.S. GPS INDUSTRY COUNCIL

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March 30, 2012

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CERTIFICATE OF SERVICE

I, Sharon A. Krantzman, hereby certify that on this 30th day of March, 2012, a copy of the foregoing "Reply Comments of The U.S. GPS Industry Council" is being sent via first class, U.S. Mail, postage prepaid, to the following:

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Sharon A. Krantzman