VIA ELECTRONIC FILING

December 20, 2011

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: LightSquared Subsidiary LLC, Ex Parte Communication
IB Docket No. 11-109; IBFS File No. SAT-MOD-20101118-00239

Dear Ms. Dortch:

LightSquared Subsidiary LLC and its affiliates (collectively, “LightSquared”)\(^1\) write to oppose the proposals by certain members of the commercial GPS industry that the Commission should summarily terminate LightSquared’s authority to conduct ancillary terrestrial component (“ATC”) operations in the 1545.2-1555.2 MHz band (the “Upper 10 MHz”).\(^2\)

In the application underlying this proceeding, LightSquared sought and obtained a simple modification to its ATC license to facilitate the provision of retail service without the need to deploy “dual-mode” handsets. That modification did not alter the authorized operating parameters of LightSquared’s network. More specifically, the authorized number of base stations and handsets, frequency bands and channel configuration, modulation, power levels, and emissions limits all remained the same.

The commercial GPS industry now asks the Commission to summarily terminate LightSquared’s rights in the Upper 10 MHz—even though this request is entirely unrelated to the limited license modification actually sought by LightSquared and granted by the Commission, even though LightSquared has held authority to operate in the Upper 10 MHz for years, and even though the industry supported grant of that authority and the specific technical limits set forth in LightSquared’s ATC license (prior to the commercial GPS industry’s recent and sudden “about face”).

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\(^1\) LightSquared is the successor-in-interest to SkyTerra, Mobile Satellite Ventures, Motient, and the American Mobile Satellite Corporation. For simplicity, each of these companies is referred to, individually and collectively, as “LightSquared.”

As detailed further below, the commercial GPS industry’s proposal is unsound from both a legal and a policy perspective:

- The commercial GPS industry’s change in position on ATC is barred by the doctrine of judicial estoppel, and the industry’s new proposal is procedurally flawed in any event;
- Nothing that LightSquared has done has altered its own substantive rights vis-à-vis the commercial GPS industry;
- The commercial GPS industry has failed to prepare itself for ATC deployment;
- The proposal to bar ATC operations in the Upper 10 MHz is substantively baseless because commercial GPS receivers are unlicensed and operate on an unprotected, non-interference basis; and
- Far better ways exist to facilitate the commercial deployment of ATC while addressing the concerns of the commercial GPS industry, including ways that build on the positive developments of the past few months.

At bottom, the commercial GPS industry’s proposals are thinly-veiled attempts to shield GPS manufacturers from the financial and operational consequences of their own poor decisions, and from any responsibility to pursue demonstrably achievable technical innovations that would allow GPS receivers to function when LightSquared commences operations in the Upper 10 MHz. While LightSquared has offered to confine its initial operations to only the lower portion of the 1525-1559 MHz band in order minimize any near-term impact on GPS users, the commercial GPS industry has not shown a commensurate willingness to compromise. Instead, the commercial GPS industry asks the Commission to permanently foreclose LightSquared from conducting ATC operations in the Upper 10 MHz, ensuring that valuable spectrum continues to lie fallow at a time when the nation is facing a spectrum crunch, and that hundreds of millions of Americans are denied access to valuable, competitive wireless broadband services. The Commission should not indulge these requests, or allow the commercial GPS industry to escape responsibility for designing technically flawed GPS receivers—despite years of warning—and foisting those receivers on an unsuspecting public.

I. THE COMMERCIAL GPS INDUSTRY’S PROPOSAL TO BAR ATC OPERATIONS IN THE UPPER 10 MHZ IS ESTOPPED AND PROCEDUREALLY FLAWED.

The commercial GPS industry’s proposal to bar LightSquared’s ATC operations in the Upper 10 MHz is procedurally barred for a number of reasons detailed below.

A. The Commercial GPS Industry Is Estopped From Challenging LightSquared’s Right to Operate in the Upper 10 MHz.

The technical parameters that are salient to the coexistence of LightSquared’s ATC network with commercial GPS receivers were established years ago in a series of final
orders that are no longer subject to reconsideration or review. In particular, the number of permitted ATC base stations, and the in-band power levels permitted to be transmitted by those stations, have been fixed for over six years.3 LightSquared recently proposed to conduct operations of its ATC network at those in-band power levels, as specified in the Commission’s rules, and subject to certain additional limitations.4 The parameters contained in the Commission’s rules and in LightSquared’s ATC license were established with the full cooperation and support of the commercial GPS industry. Indeed, LightSquared worked closely with the commercial GPS industry to ensure that GPS receivers would remain compatible with LightSquared’s plans to implement a terrestrial broadband network—and LightSquared entered into a series of negotiated agreements with the commercial GPS industry to resolve the industry’s compatibility concerns.

More specifically, LightSquared’s initial application for ATC authority prompted discussions between LightSquared and the commercial GPS industry that helped to resolve concerns that had been filed in response to that application.5 In fact, the commercial GPS industry drove a settlement in that adjudicatory proceeding that resulted in negotiated technical limits on LightSquared’s ATC operations that were intended to “protect GPS receivers,”6 after taking into account the “increased user density from potentially millions of MSS mobile terminals

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3 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, Memorandum Opinion and Order and Second Order on Reconsideration, 20 FCC Rcd 4616, at ¶ 50 (2005) (“2005 ATC Order”) (eliminating the numerical limit on ATC base stations and increasing permitted base station EIRP to 31.9 dBW per sector).

4 Although the Commission authorized LightSquared to employ higher base station power in 2010, see SkyTerra Subsidiary LLC, 25 FCC Rcd 3043, at ¶¶ 10, 46 (2010) (approving base station EIRP of 42 dBW per sector), LightSquared has proposed to operate its ATC base stations at the lower EIRP approved in 2005, see Recommendation of LightSquared Subsidiary LLC, IB Docket No. 11-109, at 13 n.17, 24-25 (June 30, 2011), and also has offered to limit the “power on the ground” that results from the operation of its base stations in the Lower 10 MHz to no more than -30 dBm until January 1, 2016, and -27 dBm thereafter. See Letter to FCC from LightSquared Subsidiary LLC, IB Docket No. 11-109 (Dec. 12, 2011).

5 See Comments of Deere & Company, IBFS File Nos. SAT-ASG-20010302-00017 et al., at 6 (May 7, 2001) (claiming that power from base stations could be sufficient to overload the “sensitive receiving amplifiers of the GPS terminals”); see also Inmarsat Ventures plc, Partial Petition to Deny, IBFS File No. SAT-ASG-20010302-00017, at 9-10 (Apr. 18, 2001) (expressing concern that power from base stations could “overload” Inmarsat METs and GPS receivers); see also Comments of Inmarsat Ventures plc, IB Docket No. 01-185, at 17-18 and Technical Annex at 8-9 (filed Oct. 22, 2001) (asserting that base station operations could overload Inmarsat METs and GPS receivers).

operating in ATC mode” and “tens of thousands of ATC wireless base stations . . .”7 In light of this settlement, the industry urged the Commission to grant LightSquared’s ATC application, and expressly: (i) explained that the agreed limits would “protect GPS receivers and at the same time allow [LightSquared] to maximize the utility of its ATC service to its users;” (ii) commended LightSquared “for its proposal to use its spectrum in a responsible manner that ensures the continued utility of GPS receivers operating in the vicinity of [LightSquared] ATC stations;” and (iii) observed that grant of that application “would validate [LightSquared’s] adherence to best commercial practices and advance the public and national interests in promoting the responsible use of spectrum.”8

The commercial GPS industry urged the Commission to adopt these negotiated protection criteria more broadly—across the board in its ATC rules. The industry also noted that reliance on such criteria would be consistent with the Commission’s trend away from managing interference by regulating “in-band energy distribution” (i.e., limiting the power level emitted within LightSquared’s licensed band).9 In fact, the industry challenged the protection criteria that were then contained in the Commission’s ATC rules (which are much less stringent than the limits to which LightSquared agreed in obtaining its ATC license) by noting that those protection criteria were developed at a time when the Commission “generally used the emission mask approach to regulate in-band-energy distribution.”10

In asking the Commission to modify the GPS protection criteria in its rules to conform to the limits to which LightSquared had agreed (and that are a condition to its ATC license), the commercial GPS industry explained that those negotiated limits had been developed in order to “protect the GPS service’s present and future operations and to provide a stable environment for the development and operation of [LightSquared’s ATC] system.”11 The GPS industry argued that “[n]othing in the record” supports the adoption of any other technical criteria to protect GPS,12 and that the “careful industry negotiations” that led to that agreement13 “considered all relevant issues concerning potential interference to GPS” and reflected the agreement of “[a]ll relevant stakeholders.”14 The negotiated GPS protection criteria, which are far more stringent than those contained in the Commission’s ATC rules, not only are a condition

9 See USGIC 2003 Reply Comments, at 3-4.
10 Id.
11 Id. at 2 (June 11, 2003) (“USGIC 2003 Petition for Recon”).
12 Id. at 3.
to LightSquared’s ATC authorization, but also have formed the basis for the ATC protection criteria imposed on Globalstar and TerreStar as conditions to their ATC authorizations.\footnote{See Globalstar LLC, 21 FCC Rcd 398, at ¶¶ 23-24 (2006); TerreStar Networks Inc., 25 FCC Rcd 228, at ¶ 28 (2010).}

A similar result followed LightSquared’s 2009 request that the Commission modify LightSquared’s ATC authorization to facilitate the reconfiguration of the L Band and the improvements in the MSS/ATC operating environment that flowed from the LightSquared-Inmarsat Cooperation Agreement. In response to that application, the commercial GPS industry raised certain concerns about whether the planned operation of indoor MSS/ATC “femtocells” would be compatible with GPS operations.\footnote{See Comments of the U.S. GPS Industry Council, IBFS File No. SAT-MOD-20090429-00047 (July 10, 2009).} In doing so, the commercial GPS industry acknowledged that there no longer was any limit on the number of ATC base stations, and also recognized the potential for “unlimited numbers of base stations inside office buildings, college campus buildings, homes and many other indoor or outdoor locations.”\footnote{Id. at 2-3.} Again, the concerns of the commercial GPS industry in that adjudicatory proceeding were resolved through a settlement under which: (i) LightSquared agreed to (additional) GPS protection criteria that were made a condition of its ATC license; and (ii) the commercial GPS industry withdrew its objections because LightSquared’s agreement had addressed the industry’s concerns.\footnote{See Letter to FCC from SkyTerra Subsidiary LLC and the U.S. GPS Industry Council, IBFS File No. SAT-MOD-20090429-00047 (Aug. 13, 2009).} Notably, the industry did not raise any concerns with respect to potential GPS receiver “desensitization” or “overload.”

In short, the commercial GPS industry has: (i) participated actively in the Commission’s MSS/ATC rulemaking and the LightSquared ATC licensing proceedings; (ii) worked with LightSquared to develop mutually-acceptable technical limits, ensure an acceptable level of protection for GPS receivers, and settle any initial incompatibility concerns; and (iii) supported the development of LightSquared’s ATC network and the technical parameters under which it will operate.

In light of this history, the doctrine of judicial estoppel prevents the commercial GPS industry from challenging LightSquared’s right to operate in the Upper 10 MHz at this late stage (or even challenging the adequacy of the commercial GPS protection criteria more broadly). The U.S. Supreme Court has explained that the doctrine of judicial estoppel bars a party from taking one position in an adjudicatory proceeding, prevailing with respect to that position, and then assuming a contrary position—especially if to the detriment of another party that has relied on the initial position taken.\footnote{See New Hampshire v. Maine, 532 U.S. 742, 749 (2001) (judicial estoppel “generally prevents a party from prevailing in one phase of a case on an argument and then relying on a contradictory argument to prevail in another phase”); see also Global NAPS, Inc. v. Verizon New England, Inc., 603 F.3d 71, 91 (1st Cir. 2010) (affirming district court’s rejections on contrary arguments).} In evaluating whether the doctrine applies in a
particular case, relevant factors include: (i) whether a party’s later position is “clearly inconsistent” with its earlier position; (ii) whether the party succeeded in convincing the adjudicator to accept the party’s earlier position; and (iii) whether the party would derive an unfair advantage or impose an unfair detriment on other parties if not estopped.20 The Commission has followed this Supreme Court precedent.21

Even a cursory analysis demonstrates that judicial estoppel applies in this case to bar the commercial GPS industry’s proposal:

First, the commercial GPS industry’s current proposal to preclude LightSquared from operating in the Upper 10 MHz flatly contradicts the industry’s longstanding position that the technical limits negotiated with LightSquared are sufficient to protect GPS operations, and that “[n]othing in the record” supports the adoption of any other technical criteria to protect GPS.22

Second, the inclusion of the limits negotiated by the parties in LightSquared’s ATC license demonstrates that the GPS industry succeeded in convincing the Commission to accept those limits.

Finally, allowing the commercial GPS industry to change its position now would impose a substantial and unfair detriment on LightSquared, as the industry’s proposal would deny LightSquared the ability to implement its ATC network after it: (i) designed its network, at great expense, around the negotiated protection criteria—which superseded the less-restrictive “equivalent [GPS]-protection requirements for ATC transmitters” that otherwise would have applied under the Commission’s rules;23 (ii) invested significant resources to reband the L Band to make it suitable for broadband service (including the Upper 10 MHz), in reliance on the GPS industry’s cooperation and support; and (iii) further relied on the efficacy of the negotiated solution in agreeing to the network build-out requirements that the Commission required when Harbinger acquired control of LightSquared in March 2010.

application of judicial estoppel to hold entity to its “tactical choice” regarding its representation of the facts).


21 See Time Warner Cable, Order on Reconsideration, 21 FCC Rcd 9016, at ¶ 13 & n.25 (2006) (finding that Time Warner Cable was estopped from taking a contrary position to its prior interpretation of the Commission’s rules).

22 For this reason, the commercial GPS industry cannot now seek protection from “intermodulation” effects into GPS receivers—assuming they actually exist. Notably, such effects would not result from any rule violation or exceedance of applicable out-of-band emissions limits, and in any event could be addressed relatively easily through appropriate GPS receiver design. Precedent is clear that the burden of addressing intermodulation effects does not fall entirely on ATC operators, even when licensed spectrum users may be impacted. See 2005 ATC Order ¶ 59.

B. The Commercial GPS Industry’s Proposals Otherwise Are Procedurally Flawed.

Even if the commercial GPS industry were not judicially estopped from challenging LightSquared’s right to operate in the Upper 10 MHz, that challenge still would be procedurally flawed, for a number of reasons.

First, the Commission’s rules limit the bases upon which a party may oppose grant of a modification application. Section 25.154(a)(4) of the Commission’s rules provides that petitions to deny (and, by extension, petitions for reconsideration that must meet the same standards) must establish that “grant of . . . the application would be prima facie inconsistent with the public interest[.]”24 Yet, the commercial GPS industry makes no such showing. As noted above, the commercial GPS industry raises concerns about certain GPS receiver design defects that are wholly unrelated to the flexibility granted to LightSquared in this license modification proceeding (which simply obviated the need to deploy “dual-mode” ATC handsets). Moreover, there is no rational relationship between that flexibility and the draconian relief now requested by the commercial GPS industry. As such, the Commission should reject the industry’s attempts to raise these concerns in this proceeding.

Second, and for similar reasons, the eleventh-hour claims of the commercial GPS industry should be viewed as untimely, de facto petitions for reconsideration of LightSquared’s longstanding ATC license. Because that license is final, it cannot now be challenged. The question of GPS receiver “overload” was expressly raised (and then dropped) in the context of the initial ATC application filed by LightSquared and the Commission’s subsequent rulemaking proceeding over a decade ago.25 If the GPS industry was not happy with the resolution of that application, the proper procedure was to have filed for reconsideration at that time. However, apart from the fact that LightSquared’s licenses are final, the Commission’s rules clearly establish that petitions for reconsideration must be filed within 30 days of the underlying grant—not more than six years later.26

Third, summarily eliminating LightSquared’s rights in the Upper 10 MHz would constitute a regulatory taking. In evaluating whether a given action constitutes such a taking, courts look to: (i) the extent to which the regulation interferes with the affected party’s reasonable investment-backed expectations; (ii) the economic impact on the affected party; and (iii) the character of the government action.27 Eliminating LightSquared’s right to operate in the Upper 10 MHz clearly would: (i) interfere with the expectations of LightSquared’s investors, who have invested billions of dollars to reband the Upper 10 MHz and design and implement an

26 47 C.F.R § 1.106(f).
ATC network to utilize that spectrum—as mandated by Commission merger conditions requiring
that LightSquared deploy the capability to serve 100 million people by 2012, and 260 million by
2015; 28 (ii) have substantial and adverse economic consequences for LightSquared, its investors,
and its customers by significantly decreasing revenue opportunities and spectrum valuation; and
(iii) be akin to physical interference by the government—and thus a taking—since any such
action would effectively bar LightSquared’s terrestrial network from “occupying” the Upper 10
MHz in any manner whatsoever. 29

Finally, any decision to block ATC deployment based on commercial GPS
“overload” issues would be arbitrary and capricious. 30 This is particularly evident given the
overly broad nature of the requested action, which would prevent LightSquared from making any
effective use of the Upper 10 MHz for ATC. In establishing service rules for ATC and licensing
LightSquared and other providers, the Commission has made numerous explicit and implicit
findings that ATC operations will serve the public interest. 31 The Commission’s National
Broadband Plan also reflects this fact. 32 It would be arbitrary and capricious to reverse these
findings at this late stage, after LightSquared has invested billions of dollars in its wireless 4G
LTE network, and after the commercial GPS industry has supported the development of ATC for
years based on negotiated GPS protection criteria—all to protect unlicensed commercial GPS
receivers that simply are not entitled to any interference protection, and that fail to meet

28 See SkyTerra Communications, Inc. and Harbinger Capital Partners Funds, 25 FCC Rcd
3059, Att. 2 Condition 2 (2010).

29 Cf. United States v. Causby, 328 U.S. 256 (1946) (finding a possessory taking where the
government’s regular use of airspace for military flights destroyed use of land as a
chicken farm and requiring just compensation).

30 See 5 U.S.C. § 706(2)(A). See also, e.g., Citizens to Preserve Overton Park, Inc. v.
Volpe, 401 U.S. 402, 416 (1971) (agency action is “arbitrary and capricious” where it is
not based on consideration of all relevant factors or there has been a clear error of
judgment).

31 See, e.g., MSV License Order ¶ 2 (“[I]mplementation of ATC, pursuant to these rules,
would increase network capacity and efficiency of spectrum use, extend coverage for
handset operation in places where MSS operators have previously been unable to offer
reliable service, make possible substantial economies of scale, improve emergency
communications, and enhance competition.”); SkyTerra Subsidiary LLC, 25 FCC Rcd
2022, at ¶ 13 (2010) (“We find that granting the subject application will serve the public
interest by facilitating more efficient spectrum use and provision of advanced broadband
services [and] enable [LightSquared] to operate in wider contiguous spectrum bands,
thereby facilitating provision of high-speed broadband services to users in the United
States.”).

32 See CONNECTING AMERICA: THE NATIONAL BROADBAND PLAN, at 87-88 (2010),
available at http://www.broadband.gov/plan (supporting additional flexibility to facilitate
use of MSS spectrum to support terrestrial broadband services).
reasonable filtering standards, including those identified by the U.S. Government as critical to the proper interfacing of commercial GPS receivers with the U.S. GPS system.  

II. LIGHTSQUARED HAS NOT ALTERED ITS RIGHTS BY ATTEMPTING TO ACCOMMODATE THE CONCERNS OF THE COMMERCIAL GPS INDUSTRY.

The commercial GPS industry correctly notes that LightSquared has attempted to accommodate the industry’s concerns by focusing on solutions that will permit LightSquared to commence ATC base station operations in the 1526-1536 MHz band (the “Lower 10 MHz”) in the near term (and in the Upper 10 MHz in the longer term). LightSquared’s actions are entirely consistent with conditions imposed by the Commission in this proceeding, and are reflective of LightSquared’s willingness to implement its network in phases to facilitate the adaptation of the commercial GPS industry to an operating environment where ATC is present.

Critically, LightSquared has never offered to surrender its spectrum rights in the Upper 10 MHz, has never offered to refrain from operating in the Upper 10 MHz on a permanent basis, and has never suggested that technical solutions would not allow GPS receivers to coexist with adjacent ATC operations in the Upper 10 MHz. Rather, LightSquared simply has offered to temporarily defer use of the Upper 10 MHz in order to expedite the partial implementation of its network, while the parties continue to explore available options with respect to the Upper 10 MHz. This proposal is intended to facilitate LightSquared’s ability to initiate commercial service consistent with Commission-imposed deadlines.

It would be perverse to punish LightSquared for attempting to engage the commercial GPS industry in this fashion. LightSquared has acted in good faith to identify a constructive path forward. In contrast, the commercial GPS industry has stated that it is open to solutions only if they would not require any accommodation on the part of the commercial GPS industry—a position that the Commission has found to be evidence of bad faith in other contexts. Punishing LightSquared for being more reasonable than its status as a licensed user demands would encourage other operators to take a “hard line” in future interference disputes, and undermine any incentive for them to pursue cooperative solutions to such disputes.

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33 See Section III, infra.
37 Cf. 47 C.F.R. § 76.65(b)(1)(iv) (providing that a party violates its duty to negotiate in good faith when it refuses to put forth more than a single, unilateral proposal).
III. THE COMMERCIAL GPS INDUSTRY HAS FAILED TO PREPARE ITSELF FOR ATC DEPLOYMENT.

To the extent that commercial GPS receivers may not be fully compatible with the commercial deployment of LightSquared’s ATC service in the Upper 10 MHz, the commercial GPS industry has only itself to blame. As discussed above, the salient technical parameters of LightSquared’s network were approved in 2005, with the cooperation and support of the commercial GPS industry. In light of the industry’s key role in shaping those parameters, the Commission should not tolerate the commercial GPS industry’s eleventh-hour objection to LightSquared’s planned deployment, in which LightSquared already has invested billions of dollars and years of effort.

Perhaps the best explanation for the commercial GPS industry’s “about face” and its failure to plan for the actual deployment of ATC is that it made a calculated decision years ago that LightSquared would never deploy. Today, however, the commercial GPS industry is faced with two realities: (i) LightSquared’s long-standing ATC plans are coming to fruition; and (ii) the ability of the LightSquared network to support many additional smartphones will increase the speed with which many commercial GPS receivers are becoming obsolete. As the Commission has recognized countless times, its obligation is to protect competition, and not competitors—competition that LightSquared’s 4G LTE wireless network will bring to the wireless marketplace. The Commission therefore should recognize the continued attacks by the commercial GPS industry for what they truly reflect: a lack of commercial foresight, and competitive fears. Giving any credibility to these attacks would encourage similarly reckless behavior by other unlicensed and/or nonconforming spectrum users, and would undermine the certainty and stability necessary for responsible operators like LightSquared to introduce competitive broadband networks as envisioned by the National Broadband Plan.

Particularly glaring is the commercial GPS industry’s failure, over the past decade, to design GPS receivers that appropriately limit their reception to the 1559-1610 MHz band, which is allocated to the radionavigation-satellite service (“RNSS”)—even though the GPS industry has known for a decade about LightSquared’s spectrum rights in and deployment plans for the adjacent MSS band at 1525-1559 MHz. Instead, the commercial GPS industry has built receivers that employ inadequate filtering and frequency discrimination, likely in order to improve profits. This was confirmed in a recent presentation by the National Coordination Office for Space-Based Positioning, Navigation, and Timing (“PNT”), which clearly indicates that “overload” and “desensitization” effects stem from the failure of the commercial GPS industry to design GPS receivers so that they can filter out unwanted MSS/ATC signals in the adjacent 1525-1559 MHz band.

Moreover, it appears that the commercial GPS industry actually has *exacerbated* the incompatibility of GPS receivers with ATC operations by employing less robust filters over time. As Deere explains, newer wideband GPS receivers “have filters that are open to a wider band around each GNSS frequency . . . to capture additional GNSS signal energy . . . .” As a result, “if there are high powered LightSquared signals *in the adjacent MSS band*, more of the unwanted LightSquared energy will also be captured.”

This is illustrated vividly in the following chart, adapted from one included in a presentation made by Deere to Commission staff in August, and which shows how Deere has transitioned to far less robust “modern” filters that allow GPS receivers to “listen” throughout the entire 1525-1559 MHz MSS band (and beyond).


41 See Letter to FCC from Deere & Company, IB Docket No. 11-109, Att. at 6 (Aug. 22, 2011). The potential for “overload” to any augmentation channels in the MSS band can be mitigated by employing separate front ends for the GPS signals and the MSS “augmentation” signals.

42 See Comments of Deere & Company, IBFS File No. SAT-ASG-20010302-00017, at 6 (May 7, 2001) (claiming that power from base stations could be sufficient to overload the “sensitive receiving amplifiers of GPS terminals”).

This is particularly damning in Deere’s case, because the record clearly establishes that Deere has been aware of the need to manage “overload” effects since at least 2001.

Notably, many of the GPS receivers produced by the commercial GPS industry do not meet the standards set forth in relevant U.S. Government specifications for civilian GPS receivers wishing to interface with U.S. Government GPS satellites. Among other things, these
specifications call for GPS reception to be “contained within” 12 MHz of the L1 center frequency at 1575.42 MHz, and for GPS receivers to use sharp filters to limit the reception of signals from adjacent bands that contain unwanted energy, and, thus, manage the potential for “overload.” The U.S. Government has said that these standards, while not “mandatory,” must be met in order for commercial GPS receivers to interface properly with the U.S. GPS system, and for use of the civilian GPS signal to meet expectations for system performance. Having failed to satisfy these standards, the commercial GPS industry cannot credibly complain that its receivers may not function as desired once LightSquared implements its ATC network.

That LightSquared and its partners have been able to develop appropriate GPS receiver filtering technologies in less than six months, starting earlier this year, underscores that the commercial GPS industry could have done the same years ago, but made a deliberate decision not to incorporate robust filtering capabilities into GPS receiver designs. Moreover, the rapid pace of these developments demonstrates that the commercial GPS industry is disingenuous (at best) in asserting that such technologies could not be developed as a matter of physics. To the contrary, there is a proven potential for rapid technological change in commercial GPS receiver design. That possibility is precisely what the Commission mandated

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44 See GPS Interface Specification at § 1.1 (“This Interface Specification (IS) defines the requirements related to the interface between the Space Segment (SS) of the Global Positioning System (GPS) and the navigation User Segment (US) of the GPS for radio frequency (RF) link 1 (L1) and link 2 (L2).”) (emphasis added).

45 Tellingly, the PNT Executive Committee and Advisory Board are exploring the potential need for a GPS device certification process to foreclose such complaints in the future. See, e.g., PNT Advisory Board Agenda, Ninth Meeting (Nov. 9-10, 2011), available at http://www.pnt.gov/advisory/2011/11/.

46 See Press Release: Testing by World-Renowned Independent Laboratory Shows LightSquared is Compatible with High-Precision GPS Devices (announcing that independent laboratory tests had shown that GPS devices can “easily surpass performance standards thanks to . . . newly developed solutions” by Javad GNSS, PCTel, and Partron, and that three additional top-tier, high-precision GPS manufacturers have developed solutions that currently are undergoing lab testing), attached to Letter to FCC from LightSquared, IB Docket No. 11-109 (Dec. 7, 2011).

should occur in order to successfully manage the potential for ATC overload in other contexts.\footnote{See, e.g., \textit{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, at ¶ 120 (2003) ("2003 ATC Order") ("We also believe that [overload] problems that may develop over time as ATC is deployed can be mitigated by future PCS handset design modifications and through a cooperative effort by PCS and MSS ATC licensees to resolve these issues.").}

The Commission should not eliminate incentives for such innovation by foreclosing LightSquared from operating in the Upper 10 MHz on a permanent basis.

\section*{IV. THE COMMERCIAL GPS INDUSTRY’S ATTEMPT TO BAR ATC OPERATIONS IN THE UPPER 10 MHZ IS SUBSTANTIVELY BASELESS BECAUSE COMMERCIAL GPS RECEIVERS ARE UNLICENSED AND OPERATE ON AN UNPROTECTED, NON-INTERFERENCE BASIS.}

\subsection*{A. The Incompatibilities Identified by the Commercial GPS Industry Do Not Constitute Cognizable “Harmful Interference.”}

The commercial GPS industry wrongly assumes that “desensitization” or “overload” of GPS receivers that could result from their “listening” in the adjacent MSS band would constitute “harmful interference.” In order for a user to experience “harmful interference,” that user must hold clear rights to use the spectrum in question that are superior or equal to those of the allegedly interfering party.\footnote{See, e.g., 47 C.F.R. § 2.105(c)(2)(ii) (noting that secondary services “[c]annot claim protection from harmful interference from stations of a primary service . . . .”).} As discussed above, LightSquared has been licensed by the Commission (by final order) to use the 1525-1559 MHz MSS band—including the Upper 10 MHz—to support ATC operations. LightSquared has held such authority for years—and it defined the technical parameters of such operations with the cooperation and support of the commercial GPS industry. In contrast, the commercial GPS industry’s receivers are unlicensed devices that operate on a strict non-interference basis.

As demonstrated in the Petition for Declaratory Ruling also filed today by LightSquared (which LightSquared incorporates by reference):

\begin{itemize}
  \item Manufacturers and users of unlicensed commercial GPS receivers lack standing to file complaints or other pleadings seeking “protection” from allegedly incompatible operations in adjacent MSS bands—including ATC operations—that are permitted by the Commission’s rules and the U. S. Table of Frequency Allocations;
  \item Commercial GPS receivers have no independent right to “protection” from operations in adjacent MSS bands, independent of the license conditions that limit the out-of-band power that may be emitted by MSS band transmitters into the RNSS band, and other than the benefit afforded by the guard band that should
\end{itemize}
separate LightSquared’s terrestrial operations in the MSS band from commercial GPS operations in the RNSS band;

- Commercial GPS devices that receive GPS signals in the MSS band are “nonconforming” and inconsistent with the MSS allocation in that band, and as such are not entitled to any “protection” regardless of whether they are licensed; and

- The costs of ensuring that GPS devices are compatible with adjacent band operations—including any costs necessary to retrofit legacy devices—are the responsibility of GPS manufacturers—or, at a minimum, are not the obligation of MSS/ATC licensees.

That certain commercial GPS manufacturers also provide MSS “augmentation” services—using narrowband channels leased from LightSquared or Inmarsat in the 1525-1559 MHz MSS band—does not give them the right also to conduct GPS operations in that band on a protected basis. The Commission has made clear that GPS applications are distinct from MSS applications, and the commercial GPS industry has acknowledged as much. As such, the GPS operations of such manufacturers remain nonconforming uses of the 1525-1559 MHz MSS band that are inconsistent with the MSS allocation for that band and consequently are not entitled to any interference protection.

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50 Relevant agreements between LightSquared and Trimble provide that GPS users must maintain the ability to “tune” their reception of L-Band augmentation signals in small increments (e.g., 1 kHz)—i.e., maintain relatively narrow front ends—a capability many GPS devices lack.


52 See U.S. GPS Industry Council Letter, at 4 (recognizing that “radionavigation signals are different in kind from radiocommunication signals”).

53 Furthermore, the narrowband capacity used to support MSS “augmentation” services is provided subject to the terms of an international coordination agreement. Under longstanding precedent, an earth station operator cannot claim “harmful interference” from MSS operators that are consistent with the terms of a coordination agreement to which its space segment provider is bound. See generally Petition for Reconsideration of LightSquared, Inc., IBFS File No. SES-RWL-20110908-01047, at 11-17 (Oct. 14, 2011) (petition for reconsideration of the renewal of Deere’s earth station license).
There Is No Reasonable Basis for the Commercial GPS Industry’s Demand that LightSquared Surrender its Rights To Operate in the Upper 10 MHz.

There is no reasonable basis for the commercial GPS industry’s demand that LightSquared surrender its rights to operate in the Upper 10 MHz in order to create a “guard band” between MSS and GPS spectrum. Compelling such action would grant unlicensed, nonconforming commercial GPS operations the same effective status as licensed, conforming operations—contrary to the Communications Act, the Commission’s rules, and the U.S. Table of Frequency Allocations. At the same time, such action would precluded the intended (i.e., allocated) use of the 1525-1559 MHz band for MSS/ATC purposes.

More broadly, protecting unlicensed spectrum users at the expense of a licensed user would call all licensed spectrum rights into question, and undermine the certainty and stability necessary to encourage investment in innovative next-generation broadband communications networks. Simply stated, investors will be unwilling to invest in such networks if their operations can be compromised at any time due to the ostensible need to protect unlicensed, nonconforming operations—especially where, as here, the affected parties have sat on their objections for years only to raise them at the eleventh hour, and have failed to take any steps to mitigate their concerns.

The Commission already has found that excessive “guard band” solutions like that proposed by the commercial GPS industry are inappropriate to protect primary, licensed users in adjacent bands from ATC operations. There is no reason that a different result should apply to unlicensed, nonconforming commercial GPS users. Notably, in establishing its ATC rules, the Commission declined to establish a requested 15-20 MHz guard band to protect primary, licensed PCS operations from ATC operations in the 2 GHz band. In doing so, the Commission emphasized that “PCS carriers similarly were aware of potential interference from MSS systems in adjacent spectrum, and could have taken this into account in the design of their equipment.” Unlicensed, nonconforming GPS operations are entitled to far less protection than those PCS operations—particularly where clear evidence exists that the commercial GPS industry could have taken ATC operations into account in designing GPS receivers over the past decade.

That said, it bears emphasis that an implicit “guard band” already separates LightSquared’s planned operations from GPS operations in the 1559-1610 MHz band. The Upper 10 MHz ends at 1555.2 MHz, and as such is separated by at least 3.8 MHz from the 1559-1610 MHz band. Moreover, as noted above, U.S. Government specifications call for commercial GPS reception to be “contained within” 12 MHz of the L1 center frequency at 1575.42 MHz.

54 47 C.F.R. § 2.106.
55 2003 ATC Order ¶ 118.
56 Id.
57 Id.
58 See GPS Interface Specification at §§ 3.3.1.1, 3.3.1.2 (June 8, 2010); GPS Performance Standard at § 2.4.2 (4th Ed., Sept. 2008).
As a result, the Upper 10 MHz would be separated from commercial GPS operations by more than 8.2 MHz (3.8 MHz + 4.42 MHz)—if the commercial GPS industry had designed its receivers properly. This degree of separation should be more than sufficient to protect such receivers, assuming that they also employ the sharp filters called for by the U.S. Government’s GPS interface specifications.

V. FAR BETTER ALTERNATIVES EXIST THAN PERMANENTLY FORECLOSING ATC USE IN THE UPPER 10 MHZ.

The commercial GPS industry asserts that the Commission should provide “administrative finality” with respect to the Upper 10 MHz because the commercial GPS industry otherwise could be required to retrofit or replace GPS receivers to facilitate LightSquared’s operations in the Lower 10 MHz, only to be required to accommodate operations in the Upper 10 MHz a few years from now.59

As an initial matter, this result is entirely consistent with the unlicensed, nonconforming status of commercial GPS receivers. As the Commission has recognized, such receivers must operate at their own risk, and must bear the cost of adapting to changes in the operating environment—whenever they may occur.60 Indeed, the commercial GPS industry has had years to make its GPS receivers compatible with LightSquared’s network—but has failed to do so. Certainly, the commercial GPS industry has no right to compel licensed MSS/ATC operators to operate in accordance with a single set of immutable technical parameters, or to forgo use of given spectrum permanently merely because such operators are willing to do so on a temporary basis as an accommodation and in the spirit of cooperation.

Indeed, LightSquared has proposed a “two-step” implementation of its network to accommodate the concerns of the commercial GPS industry, and, in particular, minimize any impact on the users of GPS receivers. Yet, the commercial GPS industry seeks to punish LightSquared for its willingness to be reasonable. Doing so not only would harm LightSquared and the greater public interest, but also would encourage other providers to eschew any semblance of cooperation in resolving future interference disputes.

There is absolutely no reason that the consistency sought by the commercial GPS industry should come at the expense of LightSquared’s established spectrum rights—or the interests of hundreds of millions of Americans who would be deprived of new, competitive wireless broadband services provided over LightSquared’s network. To the extent that the commercial GPS industry requires consistent treatment of the Upper 10 MHz and Lower 10 MHz at the outset, as a purely logical matter at least two preferable alternatives exist to the draconian and counterproductive measures that it proposes.

59 Coalition Letter at 2-3.

60 See, e.g., Regulation of Domestic Receive-Only Satellite Earth Stations, First Report and Order, 74 FCC 2d 205, at ¶ 28 (1979) (noting that “there may be significant additional costs associated with modifications necessary [for unlicensed receivers] to accommodate interference problems at a later date” and explicitly finding that these costs “would have to be borne by the unlicensed operator”).
First, such consistency would be readily achievable if the commercial GPS industry were to “harden” existing commercial GPS receivers against ATC operations in both the Lower 10 MHz and Upper 10 MHz in a single step. On this point, it is important to remember that the commercial GPS industry would not face the prospect of a “double retrofit” at all if the commercial GPS industry had planned properly over the past decade, and had manufactured robust GPS receivers capable of functioning alongside ATC operations.

Second, the Commission could provide more formal consistency by granting LightSquared’s Petition for Declaratory Ruling on an expedited basis, and also by adopting receiver standards for commercial GPS devices to ensure that they are sufficiently robust to facilitate a long-term, workable solution for the Upper 10 MHz as well as the Lower 10 MHz.

Adopting either of these alternatives would eliminate much of the uncertainty surrounding commercial GPS operations, which stem from: (i) the commercial GPS industry’s failure to warn its customers that the receivers they have purchased are unlicensed and must operate on a non-interference basis; and (ii) the complete absence of any GPS service rules, including receiver standards.

Another approach, which is consistent with a recent proposal made by LightSquared in a related context,61 would be for the Commission to decide in the near term to permit LightSquared to proceed in implementing its network in the Lower 10 MHz, while deferring resolution of Upper 10 MHz issues to provide more time for the parties to pursue technical solutions. In this respect, LightSquared notes that it has proposed to operate its ATC base stations at the EIRP levels that the Commission adopted generally in the 2005 ATC Order, which are reflected in the Commission’s rules, instead of the higher EIRP levels authorized in LightSquared’s ATC license.62 In addition, LightSquared has offered to limit the “power on the ground” that results from the operation of its base stations in the Lower 10 MHz to no more than -30 dBm until January 1, 2016, and -27 dBm thereafter, which should provide greater certainty to GPS users and manufacturers.63 As LightSquared has demonstrated, testing done by the Technical Working Group (“TWG”) showed that in the presence of a -30 dBm LightSquared signal operating in the Lower 10 MHz, all cellular phones, the vast majority of general location and navigation receivers, and narrowband timing devices performed well, and many high-precision devices that do not use an MSS augmentation signal also performed well.64 LightSquared also has proposed that, subject to LightSquared operating in a manner consistent

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63 See LightSquared December 12 Letter at 2.
with that limit, the Commission should find the condition set forth in the 2011 Waiver Order\textsuperscript{65} satisfied as it applies to the Lower 10 MHz and LightSquared’s entire uplink band (1626.5–1645.5 MHz and 1646.5-1660.5 MHz), while maintaining that condition as it applies to the Upper 10 MHz until the Commission, with the consent of the PNT Executive Committee (through the NTIA), determines to otherwise eliminate that condition.\textsuperscript{66}

Regardless of the approach taken, LightSquared asks that the Commission and NTIA continue working with the parties to explore a full range of options, including engineering, system design, device filtering, and other strategies to enhance the capabilities of LightSquared’s terrestrial network, ensure its timely build-out, improve the performance of GPS receivers, and otherwise serve the public interest.

\* \* \* \* \* \* \*

For the foregoing reasons, the Commission should reject any suggestion by the commercial GPS industry that LightSquared be foreclosed from operating in the Upper 10 MHz in accordance with its existing ATC authority.

Respectfully submitted,

/s/ Jeffrey J. Carlisle
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Attachment

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\textsuperscript{65} \textit{See} 2011 Waiver Order\textsuperscript{¶} 48.

\textsuperscript{66} \textit{See} LightSquared December 12 Letter at 1.
EXHIBIT 1
U.S. Space-Based Positioning, Navigation & Timing (PNT) Policy Update

Col Robert M. Hessin
Deputy Director
National Coordination Office
Illustration of Concerns with LightSquared

Situation before LightSquared

Situation with LightSquared

low power (on Earth) satcom emissions

1525  1559  1575  1610

GLONASS

low power (on Earth) satcom emissions

1525  1559  1575  1610

GLONASS

GNSS receiver filter response

LSQ base station emissions