



October 3, 2011

Julius Genachowski
Chairman
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: *Standards for GPS Receiver Design;*
Call Sign S2358
LightSquared Application for Modification
FCC File No. SAT-MOD-20101118-00239
IB Docket No. 11-109

Dear Chairman Genachowski:

LightSquared hereby responds to a recent letter in which questions have been raised as to whether there is a legal basis for statements by LightSquared “that GPS manufacturers have ignored government standards in the development of receivers.”

In light of that question, we felt it necessary to shine a light on the facts. Although no law mandates how GPS receivers are built, there are established standards governing whether and under what circumstances interference protection may be sought for GPS receivers. The GPS manufacturers’ interference claims are inconsistent with these standards.

The U.S. government sources for this legal framework are: (i) GPS performance standards developed by the U.S. Department of Defense (“DoD”); and (ii) the rules, regulations, and published policies of the FCC. Similar statements have been made by the International Telecommunication Union (“ITU”), an organization operated under the auspices of the United Nations whose members include the United States. We write to correct the record on these points.

(i) DoD Performance Standards.

As LightSquared showed previously in this proceeding,¹ DoD has established performance standards for GPS receivers to ensure GPS performance. DoD has made clear that the receiver standards set forth in its Global Positioning System Standard Positioning Service Performance Standard (“SPS”) comprise “Minimum Usage Assumptions” that “are necessary

¹ Letter from Jeffrey Carlisle to Marlene H. Dortch, Secretary, FCC (Aug. 11, 2011).

attributes to achieve the SPS performance described” therein,² *i.e.*, GPS performance is “conditioned upon ... [these] assumptions.”³

One of the standards in the SPS specifies the use of a “sharp-cutoff filter” for GPS receivers.⁴ Cut-off filters are used to block reception of transmissions from adjacent bands, including the adjacent L-band frequencies used by LightSquared. DoD put GPS manufacturers on notice, therefore, that unless they employed sharp cut-off filters their devices might not function properly in the presence of transmissions in LightSquared’s band. Notwithstanding this notice, the manufacturers chose to make GPS devices that do not employ sharp cut-off filters.

It is unclear whether the manufacturers have given notice they are selling GPS receivers to DoD that do not meet SPS specifications. It is difficult to imagine how DoD could make an informed procurement decision without this information, given that the use of a sharp cut-off filter is one of DoD’s “Minimum Usage Assumptions.”⁵ One also would think DoD would need this information in light of the deep concerns that have been expressed about the vulnerability of GPS receivers to jamming.⁶

(ii) FCC Rules and Policies.

Under the FCC’s rules, GPS receivers operate as “unintentional radiators” that are subject to Part 15 of the Commission’s rules.⁷ Under Part 15, an unintentional radiator “is subject to the conditions that no harmful interference is caused and that interference must be accepted that may be caused by the operation of an authorized radio station.”⁸

GPS manuals and publications reflect these limitations. The installation manual for Garmin’s GNC 250, GNC 250XL, and GPS 150XL products, for example, states that “this device must accept any interference received, including interference that may cause undesired operation.”⁹ Similarly, the owner’s manual and reference guide for Garmin’s GPS 72 personal

² U.S. Department of Defense, Global Positioning System Standard Positioning Service Performance Standard (“SPS Performance Standard”) (4th edition, Sept. 2008), available at <http://www.pnt.gov/public/docs/2008/spsp2008.pdf> (“SPS”), at 7.

³ *Id.* at 13.

⁴ *Id.* at 13.

⁵ By Presidential Directive in 1996, followed by Congressional legislation in 1998, U.S. Government agencies may “purchase commercially available GPS products and services” only if they “meet U.S. Government requirements.” Presidential Decision Directive NSTC-6 (Mar 28, 1996); Committee on Armed Services, Authorizing Appropriations for Fiscal Year 1998 for Military Activities of the Department of Defense, for Military Construction, and for Defense Activities of the Department of Energy, to Prescribe Personnel Strengths for Such Fiscal Year for the Armed Forces, and for Other Purposes, S. Rep. No. 105-29 (1997) (“Senate Armed Services Committee Report”), accompanying S.294 (105th Congress), National Defense Authorization Act for Fiscal Year 1998, incorporated into and passed under H.R. 1119, Public Law No. 105-85 (Nov. 18, 1997).

⁶ See Defense Science Board Task Force on: The Future of the Global Positioning System, Office of the Secretary of Defense Acquisition and Technology and Logistics (Oct. 2005), Section 3.4.

⁷ See 47 C.F.R. § 15.101(b), which is entitled “[e]quipment authorization of unintentional radiators,” and which states that “[r]eceptors operating above 960 MHz ... are subject to § 15.5.”

⁸ 47 C.F.R. § 15.5.

⁹ See http://www.motionaero.com/files/250XL_InstallationManual.pdf, p. 8.

navigator states that the devices “comply with Part 15 of the FCC rules” and that they “must accept any interference received, including interference that may cause undesired operation.”¹⁰

The FCC’s clear and unequivocal policy in this regard is that: “incumbent users ... must use receivers that reasonably discriminate against reception of signals outside their allocated spectrum.”¹¹ That policy is reflected in the Commission’s Part 15 rules summarized above and in an underlying principle, articulated by the FCC in its 2005 ATC rulemaking order, that it “rel[ies] on the marketplace – manufacturers and service providers – to decide how much susceptibility to interference will be acceptable to consumers.”¹²

Notwithstanding their unlicensed status, and in recognition of the importance of GPS, the FCC has elected to give GPS receivers protection from ATC out-of-band emissions (“OOBE”) based on concerns raised by GPS interests in the ATC rulemaking.¹³ In further recognition of GPS’s importance, LightSquared entered into an agreement with USGIC under which it must observe OOBE limits that are tighter than those in the ATC rules.¹⁴ However, the GPS industry did not seek, and the FCC therefore did not adopt, any limits relating to the possibility of GPS receiver overload. In the case of overload, therefore, Part 15 principles apply, and GPS receivers, as unintentional radiators, must accept interference.¹⁵

(iii) ITU Standards.

The ITU has cautioned manufacturers since 2000 that “a more stringent pre-correlator filter may be needed to protect [GPS] receiver operations from adjacent band RF emissions.”¹⁶ The ITU’s statements are consistent with the DoD’s sharp cut-off filter performance specification for GPS receivers. As in the case of the DoD performance specification, it is undisputed that manufacturers have made GPS devices that lack more stringent pre-correlator filters.

¹⁰ See <http://ec1.images-amazon.com/media/i3d/01/A/man-migrate/MANUAL000012197.pdf>, p. 3.

¹¹ *Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5-1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz*, __FCC Rcd ____ (2011), ¶28.

¹² *Flexibility for Delivery of Communications by Mobile Satellite Service Providers, Memorandum Opinion and Order and Second Order on Reconsideration*, 20 FCC Rcd 4616 (2005), ¶ 56.

¹³ See *Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2GHz Band, the L-Band, and the 1.6/2.4 GHz Band*, 01-185, Report and Order and Notice of Proposed Rulemaking, 18 FCC Rcd 1962 (2003) at ¶ 183.

¹⁴ See *Letter from Bruce D. Jacobs, Counsel for Mobile Satellite Ventures L.P., and Raul R. Rodriguez, Counsel for the U.S. GPS Industry Council to Marlene H. Dortch, Secretary, Federal Communications Commission*, IB Docket 01-185 (July 17, 2002).

¹⁵ LightSquared previously has shown that Section 25.255 of the FCC’s rules, which to the extent applicable requires that cases of harmful interference caused by ATC stations be resolved by the ATC licensee, is inapplicable in the case of receivers governed by Part 15. See *Opposition of LightSquared Subsidiary LLC*, ET Docket No. 10-142 (Aug. 25, 2011) at 7-9.

¹⁶ ITU Recommendation, ITU-R-M.1477 (May 2000), at 5, Table 2, n.1.

As shown above, and contrary to the view reflected in the recent letter, GPS manufacturers have, in fact, ignored government standards in the development of receivers.

Respectfully submitted,

/s/Jeffrey Carlisle
Executive Vice President
Regulatory Affairs & Public Policy

703-390-2001 (office)
571-296-7780 (mobile)
jeff.carlisle@lightsquared.com

cc: IB-SATFO@fcc.gov