December 22, 2010

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

In Re: File Number SAT-MOD-20101118-00239
Written *Ex Parte* Presentation

Dear Ms. Dortch:

The issue of interference to GPS receivers has been raised in comments responding to the above-referenced application to modify the terms of the mobile satellite service ("MSS") license held by LightSquared Subsidiary LLC ("LightSquared").[1] Some commenters have expressed concern that high density deployment of terrestrial broadband networks on LightSquared's mobile satellite frequencies will increase the risk of interference to GPS receivers used by other communications networks for timing and location reference signals.[2] These commenters urge the Commission to work with affected parties to reduce the threat of GPS interference from LightSquared's terrestrial facilities at the deployment stage.[3]

Motorola, Inc. ("Motorola") manufactures a wide range of wireless communications products for the commercial, public safety and business enterprise markets. While the record in this proceeding already contains discussion on the potential impact of LightSquared's terrestrial deployment on other commercial wireless networks and devices, little attention has been paid to other services and technologies that rely on GPS. To address this lack of information, Motorola Solutions, the business unit of Motorola that manufactures products for public safety, business and government sectors, has begun to conduct a survey of its product portfolio. Motorola Solutions' initial assessment is that there are conditions where GPS receivers will be compromised by LightSquared's terrestrial deployment unless steps are taken at the outset to minimize the risk.

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1 Letter from Jeffrey J. Carlisle, Exec. V.P., Regulatory Affairs and Public Policy, LightSquared Subsidiary LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission (dated Nov. 18, 2010). *See also* FCC Public Notice, Report No. SAT-00738 (rel. Nov. 19, 2010).

2 *See e.g.,* Comments of the U.S. GPS Industry Council, December 2, 1010, at 5; Comments Of CTIA – The Wireless Association, December 2, 2010, at 8, 9; Comments of AT&T Inc., December 2, 2010, at 13.

3 Comments Of CTIA – The Wireless Association, December 2, 2010, at 9.

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At this time, Motorola Solutions' analysis of the potential impact to public safety and enterprise wireless products is preliminary. It is continuing to evaluate these potential issues and methods of mitigation to ensure continued robust operation of all deployed equipment as well as new deployments going forward. We anticipate providing further updates to the Commission as early as January, 2011, after we further investigate specific technologies and use cases. Motorola is committed to working with LightSquared, our customers and the Commission staff to ensure that the various interference scenarios are defined and understood and that any viable options to prevent interference are identified.

The Commission and all interested parties – particularly LightSquared – must be aware that GPS technology is critical to a broad array of mobile systems and not only CMRS networks.[4] Indeed, GPS technology is incorporated into products designed for public safety use (including Project 25 and earlier platforms); the enterprise market segment (including professional/commercial radios such as Motorola's MotoTRBO, Mobile Computing Devices, and private iDEN); and the provision of wide area wireless broadband networks by technologies such as private WiMAX and Motorola's Canopy product line. In each of these product portfolios, there are applications and, in some cases, hardware, that require the availability of GPS signals.

For example, all deployed public safety simulcast sites depend on GPS for critical timing reference signals. Depending upon system configuration, individual sites may become disabled if the reception of GPS-based references is affected by interference. Under extreme conditions, a site may become completely disabled. As another example, all new models of public safety subscriber devices have GPS functionality in order to locate officers in need. There is no redundant network feature available, such as triangulation, for location awareness. If the GPS receiver in a user device is rendered inoperable, the public safety officer's exact current location will be no longer known. Similarly, many enterprise products (professional and commercial radios, mobile computing devices, *etc.*) used by utilities, transportation, airports, etc. also support GPS and have no infrastructure backup if GPS in the device is compromised.

Motorola Solutions is in the process of performing a thorough survey of its product portfolio to assess the potential impact of wide scale disruption to GPS signal availability. Our initial analysis is focusing on the following interference scenarios:

- ***Overload Interference from a LightSquared Base Station Transmitter to a Public Safety or Enterprise Base Station GPS Receiver's Front-End.*** If continuous and repeated, overload interference could sufficiently desensitize the public safety or enterprise GPS receiver and render the associated base station inoperative.

[4] FCC rules provide that deployment of MSS ancillary terrestrial component ("ATC") facilities must be coordinated with CMRS carriers but not any other licensee in other radio services. *See* 47 C.F.R. § 25.253(c)(2). The Commission's rules further provide, however, that interference caused to *any* licensee from an MSS ATC facility must be resolved. *See* 47 C.F.R. § 25.255.

- ***Out-of-Band Transmitter Noise From a LightSquared Base Station into a Public Safety or Enterprise Base Station GPS Receiver.*** Out-of-band emission levels may be sufficiently high to mask the signal received from the GPS constellation; thus rendering reception of the GPS reference signal impossible at affected public safety and enterprise base sites.
- ***Overload Interference from LightSquared Subscriber Units Operating in Close Proximity to Public Safety and Enterprise Subscriber GPS Enabled Devices.*** Mobile-to-mobile interference (or portable-to-portable) could affect GPS functionality to public safety and enterprise subscriber devices. GPS-derived location applications would be affected, but not necessarily voice or other data services.
- ***Overload and Out-of-band Noise from LightSquared Base Transmitters into Public Safety and Enterprise Subscriber GPS Enabled Devices.*** Energy from LightSquared base transmitters could also affect the GPS functionality of public safety and enterprise subscriber devices when in close proximity to the LightSquared base transmitter.

It is Motorola Solutions' preliminary assessment that conditions exist where these scenarios will be encountered as LightSquared proceeds with its terrestrial deployment. Therefore, Motorola believes it prudent that LightSquared must consider these other uses of GPS despite the limitations in the Commission's Rules that require it to only coordinate with potentially affected CMRS licensees. Surely, the protection of public safety and private enterprise base station sites and devices deserve consideration at least equal to that the commercial carriers. Motorola urges the Commission to consider these issues in any further action on LightSquared's modification application. Motorola Solutions looks forward to continuing this dialog with LightSquared, the Commission staff and all affected licensees.

Respectfully Submitted,

*/s/ Barry Lambergman*
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