



July 27, 2011

FILED ELECTRONICALLY

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

**Re: Reply to Clearwire Corporation
Call Sign S2358
LightSquared Application for Modification
FCC File No. SAT-MOD-20101118-00239
IB Docket No. 11-109**

Dear Ms. Dortch:

On July 14, 2011, Clearwire Corporation ("Clearwire") submitted a filing in the above-referenced proceedings relating to the "live sky" testing engaged in by LightSquared in Las Vegas over an 11-day period in May. The tests were conducted under the auspices of the Working Group (also "Technical Working Group" or "TWG") co-chaired by LightSquared and the United States GPS Industry Council.¹

It is notable that in a twenty-page filing, Clearwire fails to make a single claim regarding interference that would occur under the operations proposed by LightSquared in its Recommendation filed on June 30, 2011 following the testing and analysis conducted by the TWG. Clearwire identifies a single instance of overload² at a GPS timing receiver at one of its base stations co-located with a LightSquared base station, but this overload occurred during test operations on the upper frequencies that are not part of the lower L-band frequencies on which LightSquared has proposed commencing operations.

¹ See Public Notice, "Comment Deadlines Established Regarding The Lightsquared Technical Working Group Report," DA 11-1133 (June 30, 2011).

² Overload can occur when GPS receivers are not capable of rejecting signals from transmissions in bands other than the GPS band.

Accordingly, this instance of overload has no bearing on the operations LightSquared is proposing. Moreover, the overload ceased as soon as Clearwire installed a PCTel filtered GPS antenna, as Clearwire itself acknowledged. Similarly, two major carriers informed LightSquared that they had used an antenna with filtering capabilities during the testing and that their GPS timing receivers performed capably while LightSquared was transmitting. In short, Clearwire is complaining about an issue that already has been identified and resolved.

Clearwire goes on to express concern about the potential for overload of other types of GPS receivers — such as precision and aviation GPS receivers — that are not part of Clearwire's network and as to which Clearwire has no interest or expertise.³ There is no legitimate reason, however, for Clearwire to raise these matters. One is left with the impression, therefore, that Clearwire is driven by anti-competitive motives designed to forestall entry of another wireless broadband competitor — and the only competitor that, like Clearwire, is looking to operate a nationwide wholesale network — into the market.

LightSquared discusses these issues in greater detail below. LightSquared also shows that under Commission precedents Clearwire, not LightSquared, should be responsible for the cost of installing antennas with filters needed to mitigate overload interference to GPS timing receivers used in Clearwire's network and that Clearwire's criticisms of the working group's test methodology are untimely and unwarranted.⁴

BACKGROUND

LightSquared has been working over an extended period with the operators of commercial wireless networks that rely on GPS for timing purposes. LightSquared has sought to make the operators aware of the potential for receiver overload and of the means for mitigating this interference potential. In August 2010, LightSquared sent formal notices to these commercial operators, including Clearwire, to apprise them of the frequencies LightSquared is authorized to use terrestrially and of LightSquared's plans at the time to commence operations in certain markets. The notices brought to the operators' attention the availability of inexpensive antennas with filters that provide rejection capability in order to protect timing devices.

³ LightSquared has addressed the potential for overload of these types of receivers, and any necessary mitigation measures, in its Recommendation.

⁴ Clearwire also attempts to draw significance from the fact that the Las Vegas test did not occur in the vicinity of airports or waterways, where LightSquared is subject to more stringent PFD limits. See Clearwire filing at 12. The special PFD limits for airports and waterways, however, are irrelevant to GPS, and in any event have been reviewed and approved by the Commission.

Prior to the live sky testing in Las Vegas in May 2011, conducted between midnight and 6 a.m., LightSquared sent notices to potentially-affected commercial operators. Apart from raising a question about the coordinates for the area in which the testing would be performed, Clearwire did not respond to the notice.

GPS LINK LOSS

Clearwire's base station lost its GPS link while LightSquared was transmitting in the top half of the upper 10 MHz of its band.⁵ Under the GPS mitigation solution that LightSquared proposed in its recommendations filed on June 30, however, LightSquared would commence operations only on the *lower* 10 MHz of the band.⁶ Accordingly, Clearwire's link loss has no bearing on the proposal that is before the Commission.

Clearwire's filing, moreover, supports LightSquared's position that using appropriate filters resolves the GPS link issue for virtually all GPS receivers.⁷ Clearwire experienced no GPS link loss during the test period once it installed an antenna that filtered out transmissions from LightSquared's band. As Clearwire acknowledges, given that its GPS timing receivers use a narrowband GPS signal at fixed base station locations, any potential for Clearwire's receivers or the GPS timing receivers of similar operators to experience overload is easily mitigated.⁸

⁵ LightSquared was transmitting on the 1550.2-1555.2 MHz channel that is the top half of LightSquared's upper 10 MHz of terrestrial downlink channels at 1545.2-1555.2 MHz.

⁶ Clearwire makes no claim of link loss during the times LightSquared transmitted in a 5 MHz segment of the lower 10 MHz channel that LightSquared, in its Recommendation, is proposing to use.

⁷ See Recommendation of LightSquared Subsidiary LLC, File No. SAT-MOD-20101118-00239 (June 30, 2011) at 10 ("[O]f the approximately 400 million GPS devices in use today in the United States, well over 99 percent, including 100 percent of GPS-enabled mobile phones and general location and navigation devices, can be expected to experience no meaningful interference from LightSquared operations in the lower 10 MHz channel.").

⁸ See Clearwire filing at 11.

FINANCIAL RESPONSIBILITY FOR FILTERED ANTENNAS

Clearwire's non-technical arguments focus principally on whether LightSquared or Clearwire should bear the cost of installing replacement antennas that have filtering capability.⁹ Clearwire, relying on Section 25.255 of the Commission's rules,¹⁰ asserts that this expense should be picked up by LightSquared.

Clearwire's approach is inconsistent with that taken by other carriers which have, with no financial contribution from LightSquared, installed antennas that have filters. In any event, Clearwire is incorrect as a matter of law and equity.

Clearwire has erred as a legal matter because Section 25.255 is inapplicable in these circumstances. The Commission's precedents establish that commercial GPS manufacturers and service providers, not ATC licensees, are responsible for designing and deploying receivers that can reject signals transmitted on non-GPS frequencies. Section 25.255 does not serve as a blank check to operators to deploy inefficient technology.¹¹

Clearwire also has erred as an equitable matter because the company has been on notice for years that ATC base stations would operate in an adjacent band,¹² but it chose not to install antennas with sufficient filtering to avoid harmful susceptibility to transmissions from the adjacent band. Had Clearwire specified and procured appropriately-filtered antennas when its cell sites were constructed, moreover, the impact on Clearwire's budget would have been nominal. It is LightSquared's understanding that the cost of Clearwire's base stations are on the order of \$35,000 each, and that the total cost for constructing a Clearwire cell site, including the cost of a base station, is on the order of \$135,000. The retail cost of a single PCTel antenna, with no volume discount, is approximately \$235.

⁹ Clearwire also speculated that there may be base station configurations in which it is not physically possible to substitute a filtered GPS antenna. See Clearwire filing at 11, ¶ 5. Clearwire's claim lacks credibility, however, given that Clearwire failed to identify even one site where this would be the case and that the entire PC board hosting the PCTel receiver (including all components) is only 1.5 inches x 1.5 inches.

¹⁰ 47 C.F.R. § 25.255.

¹¹ LightSquared will elaborate on these precedents in a future filing responsive to the petitions for reconsideration of the Commission's April 6 MSS Flexibility Order (ET Docket No. 10-142) filed by CTIA and the US GPS Industry Council.

¹² The Commission first adopted ATC rules in 2003, and it authorized LightSquared to operate an ATC system in 2004.

TEST METHODOLOGY

Clearwire also questions whether the live-sky test methodology LightSquared employed was appropriate. That methodology, however, was developed by LightSquared and the Working Group based on input from an array of stakeholders with considerable expertise in this field.

The Working Group was co-chaired by LightSquared and the U.S. GPS Industry Council and was comprised of 37 individuals representing a full range of GPS receiver categories, installed user groups, and other interested parties. The Working Group also relied on advisors representing a full range of stakeholders including manufacturers, user groups and individual experts in the GPS field.

The Working Group accepted all timely requests for participation by interested parties. Clearwire, however, did not attempt to join the Working Group until June 8, 2011,¹³ after the test design had been developed and the Las Vegas testing had concluded, and one week before the final Working Group report was initially due to be filed. Clearwire did not submit its filing, moreover, until over a month after that. It is too late in the game for Clearwire to be taking issue with the Working Group's test methodology.

In any event, Clearwire's methodology-related objections are without merit. Clearwire suggests that LightSquared will operate in practice at a power level above what was used in the Las Vegas test,¹⁴ but in fact the maximum Las Vegas power level and the maximum level proposed in LightSquared's recommendations are identical. Clearwire's complaint as to the ATC base station site density employed in the Las Vegas test¹⁵ has no basis, because whether timing receivers such as Clearwire's experience overload from ATC operations chiefly is a function of transmissions emanating from the nearest (typically collocated or co-sited) ATC base station. And Clearwire's reliance on the fact that no MIMO transmitter was used during the Las Vegas test is misplaced, because LightSquared has proposed to keep within the same EIRP envelope without regard to whether MIMO is employed.

¹³ See Clearwire filing at n. 3.

¹⁴ See Clearwire filing at 8.

¹⁵ See, e.g., Clearwire filing at 1 (paragraph 4).

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Clearwire also ignores the fact that most of the TWG testing and analysis, and the bulk of the TWG Final Report, relied on laboratory analysis that was favored by most GPS industry members of the TWG. LightSquared has already commented on the extensive testing and analysis that comprise the TWG Final Report, and has explained that LightSquared's proposed operations in the lower 10 MHz of the MSS L-band frequencies in which it is authorized are compatible with all but less than one percent of legacy GPS receivers.

CONCLUSION

For the reasons stated above, Clearwire's filing provides no basis for departing from the recommendations LightSquared has made in the above-referenced proceedings.

Respectfully submitted,

/s/Jeffrey Carlisle

Executive Vice President

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DECLARATION OF SANTANU DUTTA

1. I am the SVP Radio Access Technologies & Chief Engineer of LightSquared.
2. I am providing this declaration in support of LightSquared's response (the "Response") to the filing submitted by Clearwire Corporation on July 14, 2011, in IB Docket No. 11-109 and FCC File No. SAT-MOD-20101118-00239.
3. I declare under penalty of perjury that the statements in the Response relating to technical matters are true and correct to the best of my knowledge.

Santanu Dutta
/s/ Santanu Dutta