

Firstname Lastname  
P.O. Box 1234  
City, State 12345

Date

Elected representative / official / administrator / first-responder organization / whatever  
- who seems to believe LightSquared's promise of bringing high-speed internet access to rural areas  
Street address  
City, State ZIP

Re: Proposal before FCC to allow LightSquared Subsidiary LLC to use MSS L-Band spectrum for a  
terrestrial wireless-broadband network  
Comments on rural-coverage issue

Greetings and salutations:

Thank you very much for your response to my [letter, e-mail, telephone call, whatever] in which I expressed concern about the devastating interference with GPS that will result if the terrestrial wireless-broadband network in the MSS L-Band proposed by LightSquared Subsidiary LLC ("LightSquared") is allowed to proceed.

I completely agree with you that bringing high-speed, reliable, and economical internet access to the rural areas of our country should be one of America's highest priorities.

Unfortunately, if we look beyond LightSquared's press releases and public-relations materials and instead examine LightSquared's official filings with the FCC, it appears that serving the rural areas of the United States with anything that can reasonably be characterized as "broadband" internet access is not one of LightSquared's priorities.

As detailed in the following pages (with hyperlinks to source documents), LightSquared states that its terrestrial deployment plan for the next several years will cover "only 12 percent of the U.S. land mass" and that it will be "many years" before their wireless-broadband network reaches into much of rural America. LightSquared will serve the vast majority of the country's land area with minimal satellite-internet service that falls far short of being internet-access service capable of adequately supporting 21st-century citizens, governments, and businesses.

Many knowledgeable observers of the communications industry have commented that the FCC and the administration are doing everything possible to save LightSquared and its hedge-fund backers, who failed to perform their due diligence and do their engineering homework before risking billions of investor dollars by plunging into an effort to launch a wireless-broadband network that is completely incompatible with the extremely valuable and irreplaceable satellite-based position, navigation, and timing systems in the adjacent frequency-spectrum band. It is not the place of the FCC or the government to rescue reckless speculators from decisions they made at their sole risk and contrary to long-standing FCC rules and policies.

It is my opinion that the interests of the American people and hundreds of millions of GPS users around the world will be best served if the FCC rescinds the conditional waiver granted LightSquared to build and operate a terrestrially based wireless-broadband network in the MSS L-Band. Other frequency bands are available where a terrestrial wireless-broadband network will not cause significant interference issues.

Thank you for your kind consideration. Please let me know if you would like to discuss this matter or need any information to balance your information base on other claims made in LightSquared's promotional materials.

Sincerely,

/s/Registered Voter

## LIGHTSQUARED AND RURAL COVERAGE

The overwhelming interference with GPS that will result from LightSquared's proposed terrestrial wireless-broadband network in the Mobile Satellite Service ("MSS") L-Band is documented in the Technical Working Group ("TWG") [Report](#) submitted to the FCC on 30 June 2011. (That document contains 318 pages and the download is about 8 MB.)

The Report was the end product of a rigorous and comprehensive testing program mandated by the FCC on 26 January 2011 when it granted a [conditional waiver](#) to LightSquared. The TWG was co-chaired by LightSquared and the United States GPS Industry Council ("USGIC"). The actual Report represents the results of many thousands of hours of collaborative effort by LightSquared and the many various organizations involved with GPS who participated in the TWG.

The FCC had originally stipulated the Report was due on 15 June 2011. On that date LightSquared [requested](#) and was granted an extension of time until 01 July 2011 to file the Report, stating that the TWG had been unable to produce a complete report on time. On the same 15 June 2011 date and in response to LightSquared's request the USGIC submitted a [comment](#) with the FCC in which the USGIC said the Report was indeed ready and should be submitted immediately.

During the extension period LightSquared unilaterally prepared its [Recommendation](#) document which contains only LightSquared's views on the GPS-interference problem and presented a proposed solution justified largely by radically changing in LightSquared's favor a key test parameter used to define harmful interference that had previously been agreed to by the entire TWG.

The Recommendation also presents LightSquared's version of the procedural history of past FCC rulemaking and licensing proceedings and boldly casts negative aspersions about the technical integrity of all manufacturers of GPS receivers and associated equipment, including those who participated in the TWG. In its Recommendation LightSquared attempts to distract attention from the GPS-interference problems documented in the actual Report by hiding behind the cloak of national broadband policy.

On 30 June 2011 LightSquared submitted to the FCC both the Report and its Recommendation, which may lead an unsuspecting observer to believe that the Recommendation is the result of the efforts of the entire TWG as is the actual Report. No TWG member other than LightSquared contributed to or participated in the preparation of the Recommendation.

On 07 July 2011 LightSquared announced its "Empower Rural America Initiative", whose advisory board includes former U.S. Senator Byron Dorgan from North Dakota and former U.S. Representatives George Nethercutt of Washington and Charlie Stenholm of Texas. This entity was formed to attract support for the LightSquared proposal from rural residents and their elected representatives and officials. After four weeks since its inception we can find no web site or other contact information for this organization.

It appears that LightSquared's Empower Rural America Initiative has been hard at work behind the scenes. As evidenced by the [comments](#) submitted to the FCC (International Bureau Docket No. 11-109) it is obvious that LightSquared has been contacting elected officials around the country and promising to bring wireless-broadband service to rural America in an attempt to garner support from those officials.

LightSquared's promise of obliterating the "digital divide", specifically the lack of access to high-speed, reliable, and economical internet service that is identified as an obstacle to economic development in those unserved rural areas of the United States, certainly sounds appealing. But the record indicates that LightSquared will not deliver on that promise for many years, if ever. LightSquared's own statements in filings submitted to the FCC clearly show that LightSquared's deployment plans for its wireless-broadband network over the next several years will not bring high-speed internet to rural America.

In LightSquared's Recommendation at 32 LightSquared is explaining why its terrestrial network will not pose significant problems for precision GPS receivers (bold emphases below were added by this writer) –

" . . . a substantial percentage of precision GPS receivers are used in applications such as precision farming and precision mining that are highly unlikely to be near a LightSquared base station and certainly not in the next several years given the expected rollout of LightSquared's network over time. **LightSquared's terrestrial deployment plans necessarily focus initially on population centers and only gradually begin to cover less densely populated areas** where most precision agriculture and precision mining are practiced. Indeed, LightSquared's terrestrial deployment plans project coverage of almost 270 million Americans or 86 percent of the U.S. population by the end of 2014, but this population would be located in densely populated areas that cover **only 12 percent of the U.S. land mass.**"

If LightSquared is planning to leave the less-densely-populated 88% of the country's land area unserved by its initial terrestrial wireless-broadband network rollout there will not be much coverage in rural America for a long time.

In its the same Recommendation at 35 LightSquared gives us an idea (albeit very general) of just how long a time it may be before its wireless-broadband reaches America's rural areas -

"As an initial matter, as noted above, a substantial percentage of legacy precision receivers are used for applications such as agriculture and mining and tend to operate in rural and other remote areas. Given LightSquared build-out plans discussed above, in which initial deployment will focus on densely-populated urban and suburban areas, these receivers will be unaffected by LightSquared's deployment for **many years.**"

It is not likely that the public-relations materials LightSquared is sending to potential allies in rural regions of the country include the "only 12 percent of the U.S. land mass" and "many years" details that do appear in LightSquared's official filings with the FCC.

The established wireless-broadband providers like Verizon and AT&T are already covering the population centers where LightSquared says its initial deployment will occur. LightSquared will construct its system in the population centers first because that is where the customers and the assured immediate profits are.

The other wireless-broadband providers have not found it profitable to extend their wireless-broadband networks to the low-density, high-cost-to-serve rural reaches of America. Why would one expect LightSquared, an investor-owned entity whose primary mission is to generate profits, to make the huge capital investment required to provide broadband internet service to the remaining 88% of the nation's land mass (containing only 14% of the nation's population), especially to those areas with populations so small that the limited revenue potential will never amortize the cost to provide service to the area?

Of course, LightSquared's predecessor companies were MSS providers (which is why LightSquared now holds FCC licenses for frequencies that have always been reserved for low-power space-to-earth transmissions), and LightSquared does actually have two satellites in orbit and in service now. These satellites are what LightSquared will use for "many years" to serve the 88% remainder of the U.S. land mass.

It is a severe stretch of the concept of modern internet-access service to consider slow and latency-plagued satellite internet as broadband. The Rural Mobile & Broadband Alliance (RuMBA) does not, as explained in this [White Paper](#).

In the [Letter Narrative](#) LightSquared submitted to the FCC on 18 November 2010 (which was essentially a request for a waiver of the FCC's integrated-service requirement that stipulates that any terrestrial system in the MSS L-Band be integrated with and ancillary to the satellite system) at 6 LightSquared outlines its pricing strategy –

"The company will have both a satellite-only and an integrated rate. When a LightSquared customer pays the integrated rate, the customer will have access to both the terrestrial and satellite networks for that single rate. **For each GB of terrestrial usage, the customer will receive 500 kb of satellite usage**, with a competitively-priced, **usage-sensitive charge** for satellite usage above this amount."

Granting the benefit of a doubt and assuming LightSquared meant "500 kB" (kilobytes) instead of the "500 kb" (kilobits) written, that difference is a ratio of 2,000 to 1 - going from a somewhat more than a full CD of data via terrestrial to about the amount of data it takes to check e-mail once via satellite. The "usage-sensitive charge" phrase means that the service will be limited by usage caps along with overage charges and possibly throttling. Such usage restrictions and extra charges are among the biggest complaints of satellite-internet users.

As detailed in the RuMBA document hyperlinked above, it is completely impractical to attempt to operate any real business enterprise over satellite internet – this service is only suited for minimal e-mail service and casual web browsing.

Finally, in the same Letter Narrative at 7 in footnote 7 LightSquared states -

"LightSquared estimates that the capacity of its fully deployed terrestrial network across all base stations will be **tens of thousands of times the capacity** of either of the SkyTerra satellites."

Again being generous and figuring that the terrestrial-network capacity at the end of 2014 will be only one "tens of thousands of times the capacity" of one of their satellites, and the terrestrial network is designed, constructed, and backhauled to provide broadband-class service to a population base of 270 million people, then it would follow that each satellite could (maybe, if you ignore latency and all the other problems that beset satellite internet) provide broadband-class service to a population base of 27,000 people (not all of whom would actually be subscribers) for total coverage of only 54,000 people. That's a pretty small portion (about 0.14%) of the more than 40 million people living in the 88% of the American land mass that will not be served by LightSquared's terrestrial wireless-broadband network for "many years".

While we are discussing LightSquared's satellites, on 15 September 2010 LightSquared [requested](#) from the FCC a waiver to the ground-spare-satellite requirement generally imposed on MSS licensees. Since it can take years to obtain a replacement satellite, this does not assure me LightSquared is serious about demand growth or service continuity on the satellite side. If LightSquared was actually anticipating periodic satellite launches to meet growing demand for satellite internet it would be a fairly minor issue to have a ground spare satellite on hand, or at least a satellite in the manufacturing process they could plausibly claim was their spare.

LightSquared's business plan is focused almost entirely on its terrestrial wireless-broadband network and the primary function of the satellite system is to allow LightSquared to gain a foothold in the MSS L-Band and exploit a loophole in the FCC regulations.

At the LTE World Summit held in Amsterdam during May 2011, Mr. Martin Harriman, LightSquared's Executive Vice President of Ecosystem Development and Satellite Business, explained LightSquared's hope

that people would use its satellite coverage as a last resort [saying](#), "We've likened satellite coverage to gym membership. We want everyone to have it, but we don't want people to go!"

One could make the observation that since LightSquared's terrestrial wireless-broadband network will not be arriving in rural areas of the country for some time there is no immediate problem for us few Americans out here in the wide-open spaces. But we do not exist in a vacuum and any unprecedented disruption such as the LightSquared proposal will greatly affect the future viability of the GPS system itself, as well as the entire industry that develops and manufactures GPS products.

GPS is a valuable and irreplaceable national treasure that must not be jeopardized by a reckless speculative effort to repurpose a critical band of broadcast spectrum previously reserved for low-power space-to-earth transmissions to high-power terrestrial broadcasts.

In terms of spectral efficiency, GPS serves hundreds of millions of users around the world every day; some knowledgeable commentators [estimate](#) the number of GPS users as high as a billion people. Very few if any other systems utilizing electromagnetic-frequency spectrum can boast such a multitude of users per MHz of spectrum bandwidth.

One of the stated goals of the National Broadband plan is to make underutilized MSS spectrum available for wireless broadband. LightSquared's spectrum stake in the MSS L-Band is certainly not the only option for achieving that goal. As the result of recent acquisitions the DISH Network/EchoStar combine now has 40 MHz of MSS 2.0-GHz spectrum that [could be repurposed](#) for terrestrially based wireless broadband without any risk to GPS or the other satellite-based position, navigation, and timing systems being used or planned around the world.

If you would like to pursue some more facets of the broader LightSquared issue, Mr. Tom Stansell of Stansell Consulting, a longtime consultant to the GPS industry, provided an excellent [comment letter](#) to the FCC in which he provided valuable information on several topics, including –

- The fundamental differences in how GPS positioning, navigation, and timing systems use spectrum bandwidth as compared with communication. This explains why LightSquared's "filtering" solution is not applicable to the GPS-interference problem and will not work.
- The fact that LightSquared handsets (which do not exist yet and therefore have not been tested) are likely to interfere more with GPS than the base transmitters that were tested by the TWG.
- The U.S. military's ongoing development of the wideband M-code, which will be the primary military GPS code in the near future. This code will be more affected by LightSquared's proposal than the GPS signals that were tested by the TWG.
- U.S. treaty obligations to protect signals of Galileo, a global-navigation satellite system currently being developed and launched by the European Union. Portions of the Galileo signal actually extend into the MSS L-Band spectrum.

Another item of particular interest is the July 2011 FAA [document](#) recording the agency's most-recent internal analysis. This study estimated LightSquared's revised plan as presented in the Recommendation will still result in significant interference with GPS which will cause an economic loss of nearly \$70 billion along with the loss of almost 800 lives.

*Note on hyperlinks – It was not possible to reliably link to the FCC filings hosted on FCC servers from a PDF document. We will provide a separate web page that will link directly to the filings hosted on FCC servers.*