5 July 2011

VIA ELECTRONIC FILING

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

Re: Notice of Ex Parte Presentation in LightSquared Subsidiary LLC Request for Modification of its Authority for an Ancillary Terrestrial Component, IBFS File No. SAT-MOD-20101118-00239

Dear Ms. Dortch:

Deere & Company ("Deere") hereby updates the Commission on our ongoing evaluation, analysis and conclusions concerning the nature and extent of harmful interference that LightSquared's proposed terrestrial network in the 1525-1559 MHz band will cause to high-precision Global Positioning System ("GPS") receivers. After months of exhaustive testing and analysis, Deere has determined that the operation of LightSquared terrestrial base stations in the 1525-1559 MHz band, even with placement in the lower portion of the band and/or reduced power, will create immitigable interference for high-precision GPS receivers. Accordingly, Deere joins the recommendations made by the National Space-Based Positioning, Navigation, and Timing Systems Engineering Forum ("NPEF") and others, and asks the Commission to honor its commitment to prevent interference to GPS users and rescinding LightSquared's waiver authorizing conditional operation of its terrestrial network. ¹

1. Deere Participated In Cooperative Efforts with LightSquared

Deere has devoted thousands of hours and substantial engineering resources to examining the impact of LightSquared's proposed operations on high-precision GPS operations. That effort includes Deere's intensive participation in the Technical Working Group ("TWG") convened as a condition of the Commission's January 26, 2011 order waiving certain requirements to permit LightSquared to deploy its planned terrestrial network and service, as well as active participation in independent interference impact studies. Deere has worked tirelessly with LightSquared engineers during the past four months evaluating the extent to which terrestrial base station operations in the 1525-1559 MHz band affect GPS receivers. The close level of cooperation between Deere and LightSquared involved meaningful and productive interactions between engineers and executives from both companies, including:

Deere led the high-precision sub-team of LightSquared’s TWG, interacted on an almost daily basis with LightSquared engineers during TWG planning and testing, and actively participated in LightSquared’s open-air testing in Las Vegas.

At the request of LightSquared, senior Deere and LightSquared executives met in Washington, D.C., and engaged in a follow-up discussion by conference call.

To further facilitate technical detail interaction between the two companies, Deere and LightSquared entered into a mutual Non-Disclosure Agreement.

Deere provided to LightSquared, at LightSquared’s request, detailed technical information about Deere’s GPS technology, including its proprietary requirements;

Deere had discussions with LightSquared about interference mitigation for Deere’s FCC licensed StarFire Mobile Satellite Service (“MSS”) system. (Deere currently leases L-band spectrum from LightSquared’s MSS competitor, Inmarsat.) No acceptable mitigation solution has been identified.

Going forward, Deere remains open to further discussions with LightSquared on an engineering- and fact-based level. To date, however, LightSquared has provided no basis to believe that proposed network reconfigurations or the development of filtering technology are viable solutions for the large base of currently-installed GPS receivers and equipment. If such filtering technology is feasible for future receivers and equipment -- which at this stage remains a big “if” -- we know from our extensive experience in this field that it will take years of development and testing to ensure that comparable performance to current technology can be achieved.

2. Deere’s Independent Testing Confirms Harmful Interference

Deere previously reported to the Commission that recent tests conducted at government facilities in Holloman and White Sands, New Mexico clearly demonstrated that LightSquared’s proposed network would cause substantial harmful interference to the high-precision systems upon which Deere and others in the agriculture, construction and surveying sectors rely.\(^2\) At that time, Deere confirmed that independent tests had borne out what Deere had previously advised the Commission: *LightSquared’s original and revised proposed deployment will seriously impact high precision GPS systems and cause direct harm to U.S. farming, construction and surveying operations.*

Deere further confirmed that no interference mitigation plan has yet been proposed or studied that would eliminate the interference to high-precision GPS users. Specifically, the Holloman and White Sands tests clearly showed that repositioning LightSquared’s operating frequencies in the lower portion of the 1525-1559 MHz band, modestly reducing transmitter power, or making other potential adjustments to LightSquared’s planned deployment in the L-Band do not avoid or substantially mitigate damaging interference to high-precision systems.

Although several groups continue to analyze and debate the likely impact of LightSquared’s operations on GPS, to date no proposal has been submitted that alters Deere’s conclusions with respect to the substantial and unacceptable interference that LightSquared’s planned network will cause to high-precision and other GPS users. In fact, all engineering studies and analysis to date, with the sole exception of LightSquared’s own internal analysis, confirm that any permutation of LightSquared’s proposed terrestrial base station network in the 1525-1559 MHz band will create interference for all classes of GPS receivers.

3. NPEF’s Study Concludes LightSquared Creates Harmful Interference

Since Deere provided this information to the Commission, another respected government organization, the NPEF, completed an independent assessment of the impact of LightSquared’s planned deployment (“Report”). A copy of that Report is attached.

The NPEF’s Report examined a series of laboratory and field tests to evaluate the impact of LightSquared’s proposed network on GPS applications. The NPEF evaluated several different LightSquared network configurations, including scenarios limiting LightSquared transmissions to the lower portion of the 1525-1559 MHz band. The NPEF concluded that planned LightSquared deployments would have “significant detrimental impacts to all GPS applications assessed . . . both US Government and commercial GPS applications.” According to the report, such impacts range “from a few kilometers to several hundred kilometers.” The NPEF also concluded that “[p]ossible mitigations for GPS applications were identified and evaluated but were deemed impractical as they would require significant modifications or complete redesign or replacement of currently fielded GPS equipment.” Further, in connection with the feasibility of mitigation approaches involving redesign and replacement of installed GPS receivers, the report states that “[t]he timeline to field new GPS receivers for some applications . . . can take 10-15 years . . . and for certain applications even with modification or a complete redesign would still not be able to perform their current mission” in the presence of the LightSquared network.

The NPEF Report makes the following three recommendations:

- The FCC should rescind the January 26, 2011 conditional waiver authorizing terrestrial only Ancillary Terrestrial Component (“ATC”) operations in the 1525-1559 MHz Band.

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4 NPEF Report at p. 12.

5 Id. at p. 4.

6 Id. at p. 12.

7 Id.
The U.S. Government should conduct more thorough studies on the operations, economic and safety impacts of operating the LightSquared network to include additional ATC signal configurations not currently in LightSquared’s planned spectrum phases, effects on timing receivers, as well as transmissions from LightSquared handsets.

Based on testing representative ATC equipment which became available for the first time during the NPEF evaluation, the FCC should revisit and readdress the effects of the 2003-2010 ATC authorizations within the MSS-L Band spectrum on GPS applications.8

4. Respected TWG Members Agree With the NPEF

Respected members of the TWG, including Deere and other prominent manufacturers of different GPS receiver classes, have reached the same conclusion that the NPEF arrived at -- the introduction of LightSquared base station signals in the 1525-1559 MHz band create harmful interference that degrades or completely disrupts GPS receivers. These TWG members also agree that reducing power and isolating LightSquared’s base station transmissions to the lower portion of the 1525-1559 MHz band does not resolve the interference problem. General Location/Navigation receivers, Aviation receivers and Space-Based receivers all experience harmful interference in the presence of LightSquared signals that are limited to the lower portion of the 1525-1559 MHz band and reduced to one-tenth the power authorized under LightSquared's current FCC authority. Given the large cross-section of GPS receivers that experience harmful interference even when LightSquared reduces power and moves its signal toward the lower portion of the band, LightSquared’s proposed use of L-band frequencies appears fundamentally flawed and incompatible with current spectrum uses of the L-band and adjacent frequencies, and LightSquared’s assertion that it can protect 99.5% of existing GPS users appears completely untenable.

These TWG members, along with Deere, also concur with the conclusions regarding filtering technology. While the incorporation of new filters in GPS receivers might merit consideration for future receiver designs, no such filters are presently available, the vast majority of equipment in the field generally cannot, as a practical matter, be retrofitted, and significant research, development and testing needs to occur before any definitive conclusion on how alternative filter technology impacts the performance of GPS receivers can be reached.

5. Public Policy Interests

Deere and its many customers nationwide rely on an extensive high-precision GPS system, including L-band augmentation signals that Deere operates pursuant to licensed FCC authority, to support precision farming and construction operations.

Deere believes that the expanded use of GPS is the largest single technological advancement for American farm equipment in the past 20 years. Today, precision GPS is a critical part of all modern farming in the United States as well as in many other countries. With precision GPS, growers significantly benefit from far greater accuracy in

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planning, fertilizing and applying pesticides, as well as the ability to collect data that supports planning needed to significantly increase crop yields. Deere estimates that the degradation of high-precision GPS signals could result in a negative impact to U.S. farmers of $14 billion to $30 billion annually, would lead to increases in consumer food prices, would hamper U.S. competitiveness in the agricultural sector, and would impede the efforts of U.S. growers to respond to worldwide demand for increased food production.

Deere shares the Commission’s desire to foster expanded wireless broadband services, particularly in rural areas, but not if such efforts compromise critical and irreplaceable GPS and/or space-to-earth MSS services essential to the nation’s agricultural and construction communities.

6. Conclusion

Based on extensive testing and analysis, both by Deere and others, and given the absence of any feasible short-term, or even intermediate-term, solutions, we agree with the NPEF’s conclusions, and endorse the NPEF’s recommendation that LightSquared’s conditional waiver should be rescinded. All of the tests and analysis have confirmed to all participants – with the sole exception of LightSquared -- Deere’s preliminary concerns voiced earlier to the Commission: Terrestrial base station operations in the 1525-1559 MHz will interfere with existing high-precision GPS receivers, and no solution exists to mitigate this problem. Should the Commission decide to continue pursuing a new use of L-Band spectrum as a long-term option, the Commission should do so in a rulemaking proceedings allowing for full public input, technical examination, and sufficient time for necessary research, testing and technology development. Given the critical importance of the L-Band interference to Deere’s agricultural, construction and other customers, Deere would expect to participate in such proceedings. Absent a full and open rulemaking to consider the complex L-band spectrum issues affecting many government and commercial industry segments, the Commission will not have a complete and accurate picture of existing L-band and adjacent frequency uses, and will risk adopting policies that lead to significant interference harm to important existing spectrum uses and a troubled roll out of new terrestrial services. Such a result would not serve the public interest.

Very truly yours,

Barry Schaffter
Senior Vice President, Intelligent Solutions
Group and Chief Information Officer
Deere & Company

Enclosure