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By ECFS

June 9, 2016

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

Re: Supplement to written *ex parte* presentation in IB Docket No. 11-109; IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, and SAT-MOD-20151231-00091

Dear Ms. Dortch:

Ligado Networks LLC (“Ligado”) submits this letter to provide via ECFS a “readme” file that accompanied the detailed dataset, filed on June 7, 2016,¹ which underlies the testing that Roberson and Associates (RAA) completed with respect to whether deployment of LTE in adjacent bands affects the ability of GPS devices to provide consumers with accurate location information. This readme file was inadvertently omitted from the PDF file that was submitted via ECFS on June 7.

Please direct any questions to the undersigned.

Sincerely,

/s/ Gerard J. Waldron

Gerard J. Waldron
Counsel to Ligado Networks

Attachment

¹ See Letter from Gerard J. Waldron, counsel to Ligado, to Marlene H. Dortch, FCC Secretary, IB Docket No. 11-109 *et al.* (filed June 7, 2016).

GPS and Adjacent Band Compatibility Testing Data
Roberson and Associates, LLC
June 7, 2016

The folders in this directory contain the detailed position error data from the GPS and Adjacent Band Compatibility Testing performed by Roberson and Associates, LLC.

There are two types of files for each combination of device, antenna, and test condition. The first filetype is a csv file of the position errors calculated under the GPS Only condition when no adjacent band signals were present. These files' names end in "GPS." The second filetype is a csv file of the position errors found when adjacent band signals were introduced at levels between -80 dBm and -10 dBm. These files' names end in "LTE."

All files include a column header row with labels for each column.

Device = Name of the manufacturer and model of the device tested.

Antenna = Name of the manufacturer and model of the antenna tested; or, if only the device's internal antenna was tested, "Internal."

Date = Four-digit date on which the test was conducted, where the first two digits represent the month and the last two digits represent the day of the month (e.g., June 6 = 0606). The year is not indicated because all of the testing was conducted in late 2015 or early 2016.

Test = Test procedure used. Test procedures are described in more detail in Appendix A to the Final Report. "StaticOpen" means Open Sky with -130 dBm GPS signal levels. "MotionOpen" means Open Sky with Motion. "MotionImpaired" means Impaired, -142 dBm, GPS Signals with Motion. "LiveSky" means Live Sky.

Frequency = Code identifying the frequency of the LTE signal. "1531" refers to LTE signal in the 1526-1536 MHz band. "1632" refers to LTE signal in the 1627.5-1637.5 MHz band. "1651" refers to LTE signal in the 1646.5-1656.5 MHz band. "1675" refers to LTE signal in the 1670-1680 MHz band.

Dimensions = "3D" means the position error was measured in three-dimensional space. "2D" means the position error was measured in two-dimensional space.

LTE Level = Power level of LTE signal, in dBm. Approximately 3 minutes of data was collected for each LTE power level.

Time = Time of day, measured in seconds from midnight from the \$GPGGA NMEA message.

Position Error = 2D or 3D position error (in meters). Calculation of position error is described in more detail in Section 3.3 of the Final Report.

Satellite Count = Number of satellites in view reported by the device. This value is taken directly from the NMEA \$GPGGA message.

Lock = Lock code reported by the device in the GPS Quality Indicator field of the \$GPGGA NMEA message.

Mean C/N0 = Mean of individual satellite SNR (C/N0) values.

C/N0 1, C/N0 2, C/N0 3, C/N0 4, C/N0 5, C/N0 6, C/N0 7, C/N0 8, C/N0 9, C/N0 10, C/N0 11, C/N0 12 = Individual satellite SNR (C/N0) values, as reported by the device. These values are taken directly from the NMEA \$GPGSV messages. No modification of the NMEA data was made other than not reporting zero (00) values.

NOTES: In some files there are empty columns that are the result of certain devices which did not provide the full set of NMEA outputs. For devices that did not output NMEA data, there are empty columns because the devices provided minimal latitude and longitude information only. In addition, the Motorola APX 7000 reported GPS location using a proprietary format that required special handling not compatible with the processing used to create the dataset files.