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RADIO TEST REPORT

Report ID
REP101862

Project ID
PRJ0081916

Type of assessment:
Transmitters co-location

Applicant:
Geotab Inc.

Product:
Asset Tracker

Model:
GATAA1

FCC ID:
2AV57GATAA1

ISED Certification number :
11140A-GATAA1

Including Original FCC ID:
2AAGMGC02SA

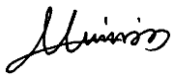
Including original ISED Certification number:
12732A-GC02SA

Specifications:

- FCC 47 CFR Part 15, Subpart C, §15.247
- FCC 47 CFR Part 27, Subpart C
- RSS-247 Issue 3, August 2023, Section 5
- RSS-139 Issue 4, October 2022

Date of issue: July 28, 2025

Alvin Liu, EMC/RF Specialist
Tested by


Signature

David Duchesne, EMC/RF Lab Manager
Reviewed by


Signature

Lab locations

Company name	Nemko Canada Inc.		
Facilities	*Ottawa site:* 303 River Road Ottawa, Ontario Canada K1V 1H2 Tel: +1 613 737 9680 Fax: +1 613 737 9691	*Montréal site:* 292 Labrosse Avenue Pointe-Claire, Québec Canada H9R 5L8 Tel: +1 514 694 2684 Fax: +1 514 694 3528	*Cambridge site:* 1-130 Saltsman Drive Cambridge, Ontario Canada N3E 0B2 Tel: +1 519 650 4811
Test site identifier	– CA2040 (Ottawa) – CA2041 (Montreal) – CA0101 (Cambridge)		
Website	www.nemko.com		

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.
This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contained in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

Copyright notification

Table of Contents

Section 1 Report summary

1.1 Test specifications

FCC 47 CFR Part 15, Subpart C, 15.247	Operation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz
FCC 47 CFR Part 27, Subpart C	Miscellaneous wireless communications services
RSS-247, Issue 3, August 2023, Section 5	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
RSS-139 Issue 4, October 2022	Advanced Wireless Services (AWS) Equipment Operating in the Bands 1710-1780 MHz and 2110-2200 MHz

1.2 Test methods

KDB 996369 D04 Module Integration Guide v02	MODULAR TRANSMITTER INTEGRATION GUIDE GUIDANCE FOR HOST PRODUCT MANUFACTURERS
558074 D01 15.247 Meas Guidance v05r02 (April 2, 2019)	Guidance for compliance measurements on digital transmission system, frequency hopping spread spectrum system, and hybrid system devices operating under section 15.247 of the FCC rules.
ANSI C63.10 v2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

1.3 Exclusions

Partial testing was performed on the product with the transmitter operating to confirm that the host product meets the FCC and ISED requirements. This investigation of the final product was done by spot checking emissions from the device while operating the host as a composite system. This testing was performed with the host product configured in typical operational modes to check the spurious emissions for compliance with all the applicable rules.

1.4 Statement of compliance

In the configuration tested, the EUT was found compliant.

Testing was performed against all relevant requirements of the test standard except as noted in section 1.3 above. Results obtained indicate that the product under test complies In full with the requirements tested. The test results relate only to the items tested.

See "Summary of test results" for full details.

1.5 Test report revision history

Table 1.5-1: *Test report revision history*

Revision #	Date of issue	Details of changes made to test report
REP101862	July 28, 2025	Original report issued

Section 2 Engineering considerations

2.1 Modifications incorporated in the EUT for compliance

There were no modifications performed to the EUT during this assessment.

2.2 Technical judgment

The EUT contains an LTE module (GC02S1-NA2, FCC ID: 2AAGMGC02SA, IC: 12732A-GC02SA) and a BLE solution which is a chip down design. The testing was performed with the host product configured in simultaneous transmitter operational modes to check spurious emissions for compliance with all the applicable rules.

For investigation of transmitter co-location, the LTE transmit parameters (frequencies, channel bandwidth, and power levels) used during these tests were configured in accordance with the specifications provided in the module's original certification documentation. Based on the maximum transmitting output power and associated antenna gain, the representative scenario was selected for transmitting test at BLE Low/Mid/High channel and LTE band 66.

The evaluation was done to ensure there are no additional radiated spurious emissions generated due to simultaneous-transmission operations compared to single transmitter operations testing, and to ensure compliance with the applicable FCC/ISED rules for the transmitters operating individually and simultaneously. This includes compliance for the summation of all emissions from all outputs occupying the same or overlapping frequency ranges, as defined by the applicable rules. All other requirements are excluded from the scope of this report.

2.3 Model variant declaration

There were no model variants declared by the applicant.

2.4 Deviations from laboratory tests procedures

No deviations were made from laboratory procedures.

Section 3 Test conditions

3.1 Atmospheric conditions

Temperature	15 °C – 35 °C
Relative humidity	20 % – 75 %
Air pressure	86 kPa (860 mbar) – 106 kPa (1060 mbar)

When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.

3.2 Power supply range

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages ±5 %, for which the equipment was designed.

Section 4 Information provided by the applicant

4.1 Disclaimer

This section contains information provided by the applicant and has been utilized to support the test plan. Inaccurate information provided by the applicant can affect the validity of the results contained within this test report. Nemko accepts no responsibility for the information contained within this section and the impact it may have on the test plan and resulting measurements.

4.2 Applicant/Manufacturer

Name	Geotab Inc.
Address	2440 Winston Park Drive, Oakville, Ontario, Canada, L6H 7V2

4.3 EUT information

Product description	Asset Tracker
Model / HVIN	GATAA1
Serial number	None
Power supply requirements	12–24 V_{DC}, or Internal Battery: 3.6 V_{DC}
Product description and theory of operation	The GO Anywhere 2 asset tracker (model GATAA1) is an advanced asset tracker specifically engineered for tractor-trailers, non-powered equipment (trolleys, roll-off bins), and powered equipment (generators, yellow iron) within the transportation sector. This device offers robust global connectivity and detailed track-and-trace capabilities, superseding its predecessor with an expanded feature set. It provides critical insights into asset utilization, location, and potential misuse through features like impact and tamper detection, aiming for high reliability and cost-effectiveness in high-volume deployments. The product also continues to serve existing GO Anywhere markets such as construction, agriculture, and stolen vehicle recovery.

4.4 Transmitter/Receiver info,

Cellular

Wireless technology	LTE
Frequency band	Bands supported: 2, 4, 5, 12, 13, 14, 17, 25, 66
Manufacturer	Sequans Communications
Model	GC02S1-NA2
Modulation	QPSK, 16-QAM
Antenna information	Manufacturer: Kyocera, Part No. 1005981 and 1005992, Type: LDS antenna, Peak Gain: 1.9 dBi (698–900 MHz), 4.0 dBi (1710–2200 MHz)

Bluetooth

Wireless classification	Data transmission systems operating in the 2.4 GHz ISM band and using wide band modulation techniques
Wireless technology	BLE
Frequency band	2400–2483.5 MHz
Modulation	GFSK
Antenna information	Manufacturer: Kyocera, Part No. 1005981 and 1005992, Type: LDS antenna, Peak Gain: 2.7 dBi

4.5 EUT setup details

4.5.1 Radio exercise details

Operating conditions	– EUT was powered up using DC power supply. – EUT was set to LTE and BLE simultaneously transmitting mode. – EUT was commanded by the RealTerm on Laptop to transmit a Bluetooth signal at the designated channel. – EUT was in cellular link mode via callbox.
Transmitter state	For LTE, transmitter set into continuous mode at Band 66. For BLE, transmitter set into continuous mode at Low/Mid/High channel.

4.5.2 EUT setup configuration

Table 4.5-1: *Support equipment*

Description	Brand name	Serial number, Part number, Model, Revision level
Laptop	DELL	MN: LATITUDE E6440, FA003070
DC power supply	GWINSTEK	GRP-3060D
Wideband Radio Communication Tester	Rohde & Schwarz	SN: 107499, MN: CMW500, FA003156

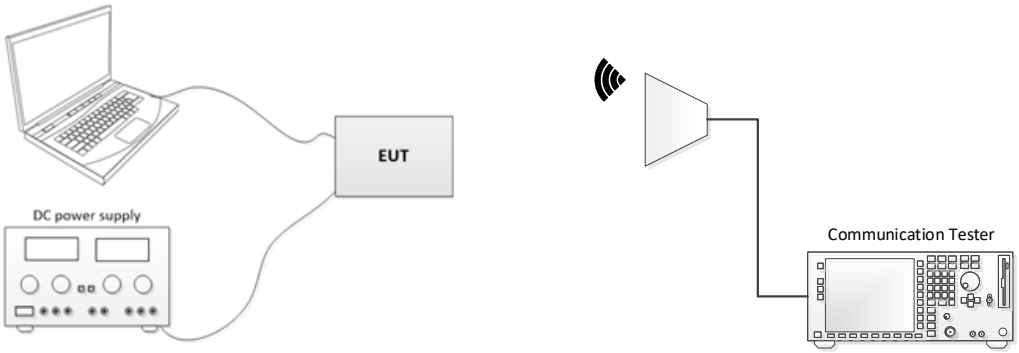


Figure 4.5-1: *Radiated testing block diagram*

Section 5 Summary of test results

5.1 Testing period

Test start date	June 11, 2025	Test end date	July 9, 2025

5.2 Sample information

Receipt date	June 9, 2025	Nemko sample ID number	PRJ00819160001, PRJ00819160009

5.3 Test results

Table 5.3-1: *FCC Test results*

Part	Test description	Verdict
§15.247(d)	Spurious emissions	Pass
§27.53	Radiated spurious emissions	Pass

Notes: As per scope of this report, only radiated emissions were evaluated.

Table 5.3-2: *ISED Test results*

Part	Test description	Verdict
RSS-247, 5.5	Transmitter Unwanted Emissions	Pass
RSS-139, 5.6	Unwanted emission limits	Pass

Notes: As per scope of this report, only radiated emissions were evaluated.

Section 6 Test equipment

6.1 Test equipment list

Table 6.1-1: *Equipment list*

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
3 m EMI test chamber	TDK	SAC-3	FA003012	1 year	March 9, 2026
Flush mount turntable	SUNAR	FM2022	FA003006	—	NCR
Controller	SUNAR	SC110V	FA002976	—	NCR
Antenna mast	SUNAR	TLT2	FA003007	—	NCR
Receiver/spectrum analyzer	Rohde & Schwarz	ESR26	101833	2 years	December 19, 2025
Bilog antenna (30–2000 MHz)	Sunol	JB3	FA002108	1 year	April 8, 2026
Horn antenna (1–18 GHz)	EMCO	3115	FA000649	1 year	April 16, 2026
Preamp (1–18 GHz)	ETS Lindgren	124334	FA002956	1 year	April 11, 2026
Receiver/spectrum analyzer	Rohde & Schwarz	ESR26	FA002969	1 year	May 28, 2026
Horn antenna (1–18 GHz)	ETS-Lindgren	3117	FA002911	1 year	June 2, 2026
High pass filter (1.2-12 GHz)	Microwave circuits	H1G212G1	FA003031	—	NCR
Notch filter (2.4–2.4835 GHz)	Microwave circuits	N0324413	FA003027	—	NCR
High pass filter (3-18 GHz)	Microwave circuits	H3G020G8	FA003026	—	NCR
50 Ω coax cable	Huber + Suhner	None	FA003047	1 year	July 29, 2025
50 Ω coax cable	Huber + Suhner	None	FA003402	1 year	July 29, 2025
50 Ω SMA coax cable	Huber + Suhner	None	FA003056	1 year	July 29, 2025

Notes: NCR - no calibration required

All equipment related to the contribution of measurement has been included in this list. Such items include, but are not limited to, cables, attenuators, directional couplers, and pre-amps.

Table 6.1-2: *Automation software details*

Test description	Manufacturer of Software	Details
EMC/Radio test software	Rohde & Schwarz	EMC32, Software for EMC Measurements, Version 10.60.00

Table 6.1-3: *Measurement uncertainty calculations based on equipment list*

Measurement	Measurement uncertainty, ±dB
Radiated spurious emissions (30 MHz to 1 GHz)	4.27
Radiated spurious emissions (1 GHz to 6 GHz)	4.74
Radiated spurious emissions (6 GHz to 18 GHz)	5.04

Notes: UKAS Lab 34, TIA-603 and ETSI TR 100 028-1&2 have been used as guidance for measurement uncertainty reasonable estimations with regards to previous experience and validation of data. Nemko Canada Inc. follows these test methods in order to satisfy ISO/IEC 17025 requirements for estimation of uncertainty of measurement for wireless products. Measurement uncertainty calculations assume a coverage factor of K = 2 with 95% certainty.

Section 7 Testing data

7.1 Radiated spurious (unwanted) emissions

7.1.1 References, definitions and limits

FCC §15.247:

(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

FCC §27.53:

(h) AWS emission limits

(1) General protection levels. Except as otherwise specified below, for operations in the 1695–1710 MHz, 1710–1755 MHz, 1755–1780 MHz, 1915–1920 MHz, 1995–2000 MHz, 2000–2020 MHz, 2110–2155 MHz, 2155–2180 MHz, and 2180–2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

RSS-139, Clause 6.6:

For all equipment, the TRP or total conducted power (sum of conducted power across all antenna connectors) of the unwanted emissions outside the frequency block or frequency block group shall not exceed the limits shown in table below.

Table: *Unwanted emission limits*

Offset from the edge of the frequency block group (MHz)	Unwanted emission limit
≤ 1	-13 dBm/(1% of OBW)
> 1	-13 dBm/MHz

RSS-247, Clause 5.5:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

RSS-Gen:

8.9 Except where otherwise indicated in the applicable RSS, radiated emissions shall comply with the field strength limits shown in table below.

8.10 Restricted frequency bands are designated primarily for safety-of-life services (distress calling and certain aeronautical activities), certain satellite downlinks, radio astronomy and some government uses. The following conditions related to the restricted frequency bands apply:

a The transmit frequency, including fundamental components of modulation, of licence-exempt radio apparatus shall not fall within the restricted frequency bands.

b Unwanted emissions that fall into restricted frequency bands listed in table 7 shall comply with the limits specified in table below.

c Unwanted emissions that do not fall within the restricted frequency bands shall comply either with the limits specified in the applicable RSS or with those specified in table below.

References, definitions and limits, continued

Table 7.1-1: *ISED restricted frequency bands*

MHz	MHz	MHz	GHz
0.090–0.110	12.57675–12.57725	399.9–410	7.25–7.75
0.495–0.505	13.36–13.41	608–614	8.025–8.5
2.1735–2.1905	16.42–16.423	960–1427	9.0–9.2
3.020–3.026	16.69475–16.69525	1435–1626.5	9.3–9.5
4.125–4.128	16.80425–16.80475	1645.5–1646.5	10.6–12.7
4.17725–4.17775	25.5–25.67	1660–1710	13.25–13.4
4.20725–4.20775	37.5–38.25	1718.8–1722.2	14.47–14.5
5.677–5.683	73–74.6	2200–2300	15.35–16.2
6.215–6.218	74.8–75.2	2310–2390	17.7–21.4
6.26775–6.26825	108–138	2483.5–2500	22.01–23.12
6.31175–6.31225	149.9–150.05	2655–2900	23.6–24.0
8.291–8.294	156.52475–156.52525	3260–3267	31.2–31.8
8.362–8.366	156.7–156.9	3332–3339	36.43–36.5
8.37625–8.38675	162.0125–167.17	3345.8–3358	Above 38.6
8.41425–8.41475	167.72–173.2	3500–4400	
12.29–12.293	240–285	4500–5150	
12.51975–12.52025	322–335.4	5350–5460	

Note: Certain frequency bands listed in Table 7.1-1 and above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

Table 7.1-2: *FCC restricted frequency bands*

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
0.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2690–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725	322–335.4	3600–4400	Above 38.6
13.36–13.41			

References, definitions and limits, continued

Table 7.1-3: *FCC §15.209 and RSS-Gen – Radiated emission limits*

	Field strength of emissions		
Frequency, MHz	**µV/m**	**dBµV/m**	**Measurement distance, m**
0.009–0.490	2400/F	$67.6 - 20 \times \log_{10}(F)$	300
0.490–1.705	24000/F	$87.6 - 20 \times \log_{10}(F)$	30
1.705–30.0	30	29.5	30
30–88	100	40.0	3
88–216	150	43.5	3
216–960	200	46.0	3
above 960	500	54.0	3

Notes: In the emission table above, the tighter limit applies at the band edges.
For frequencies above 1 GHz the limit on peak RF emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

7.1.2 Test summary

Verdict	Pass		
Test date	June 11, 2025, June 13, 2025, July 9, 2025	Temperature	24 °C
Tested by	Alvin Liu	Air pressure	980–985 mbar
Test location	Cambridge	Relative humidity	44–48 %

7.1.3 Observations, settings and special notes

- As part of the current assessment, the test range of 9 kHz to 5th harmonic has been fully considered and compared to the actual frequencies utilized within the EUT. Since the EUT contains a transmitter in the GHz range, the EUT has been deemed compliant without formal testing in the 9 kHz to 30 MHz test range, therefore formal test results (tabular data and/or plots) are not provided within this test report.
- All measurements were performed as per ANSI C63.26 and ANSI C63.10.
- All measurements were performed at the distance of 3 m.
- As requested by the applicant, the spot check testing was performed with EUT transmitting at LTE Band 66 and BLE low channel to check how spurious emissions shift due to the hardware changes below,
  - Deleted Redundant Buried 2-7 Ground Via Near (27, 28.6mm)
  - Corrected D8, D10 Silkscreen Marking
  - Adjusted RF Via Isolation Ring Sizes
  - Added Keepout Near GNSS Antenna
  - Corrected Copper Geometries Near GNSS
  - Corrected MCU GPIO P9 IO Voltage Supply Via

Spectrum analyser settings

Resolution bandwidth:	Measurements below 1 GHz: 100 kHz Peak **or** 120 kHz Q-Peak, Measurements above 1 GHz: 1 MHz
Video bandwidth:	Measurements below 1 GHz: 300 kHz, Measurements above 1 GHz: 3 MHz
Detector mode:	Peak **or** Q-Peak
Trace mode:	Max Hold

Spectrum analyser settings (Average measurements above 1 GHz)

Resolution bandwidth:	1 MHz
Video bandwidth:	3 MHz
Detector mode:	RMS
Trace mode:	Average

7.1.4 Test data

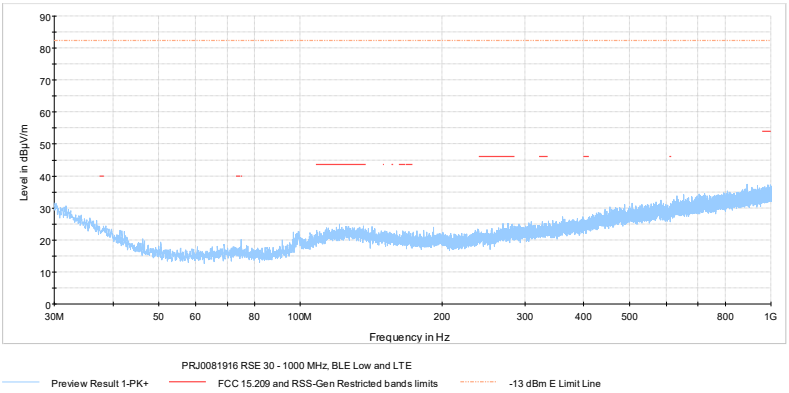


Figure 7.1-1: *Radiated spurious emissions 30 – 1000 MHz, LTE Band 66 and BLE low channel*

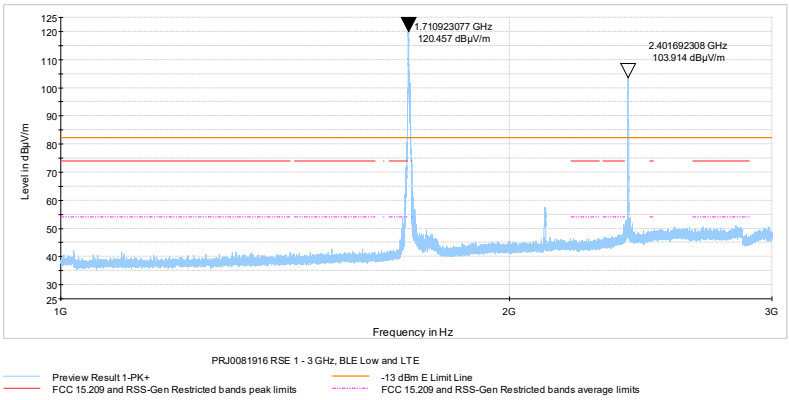


Figure 7.1-2: *Radiated spurious emissions 1 – 3 GHz, LTE Band 66 and BLE low channel*

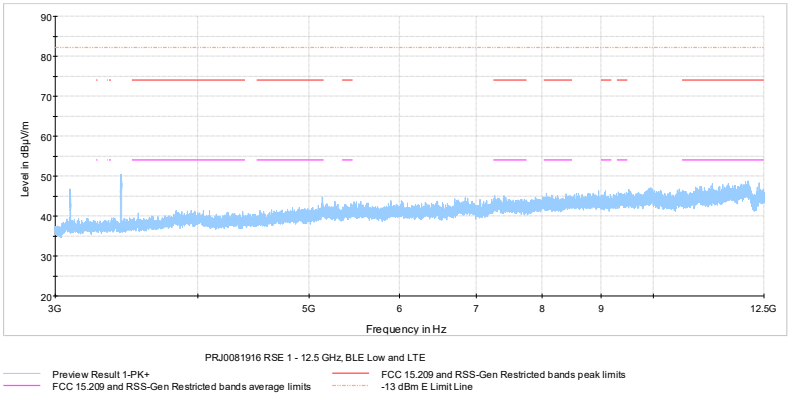


Figure 7.1-3: *Radiated spurious emissions 3 – 12.5 GHz, LTE Band 66 and BLE low channel*

Test data, continued

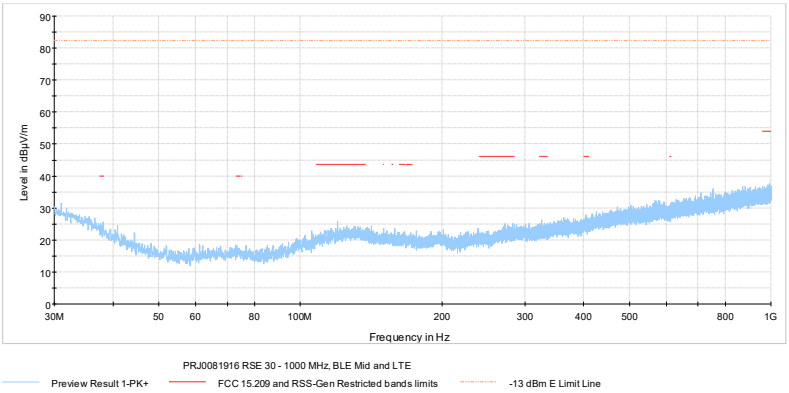


Figure 7.1-4: *Radiated spurious emissions 30 – 1000 MHz, LTE Band 66 and BLE mid channel*

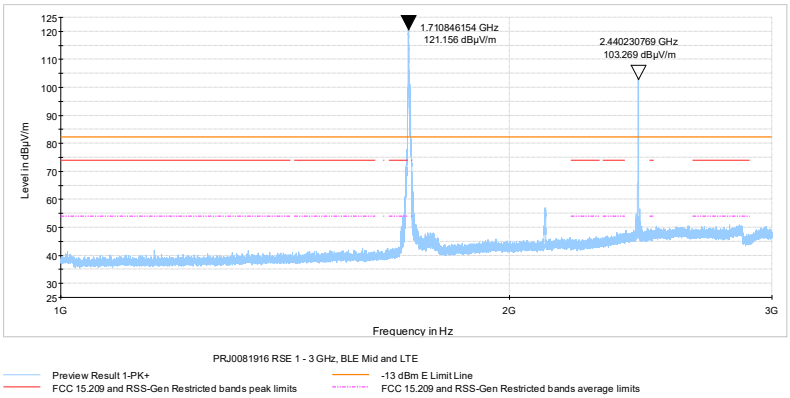


Figure 7.1-5: *Radiated spurious emissions 1 – 3 GHz, LTE Band 66 and BLE mid channel*

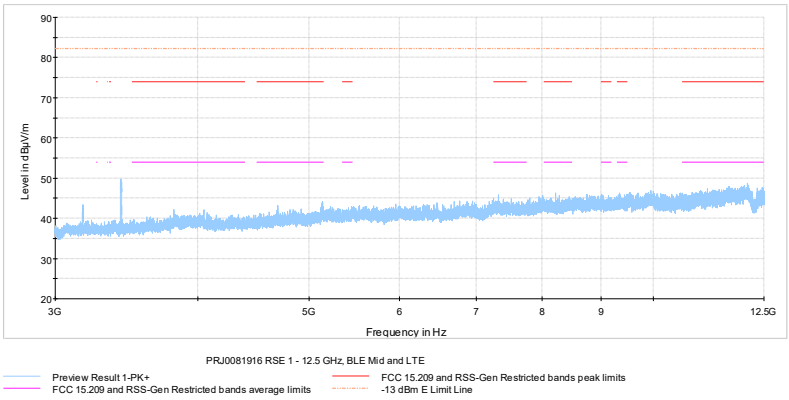


Figure 7.1-6: *Radiated spurious emissions 3 – 12.5 GHz, LTE Band 66 and BLE mid channel*

Test data, continued

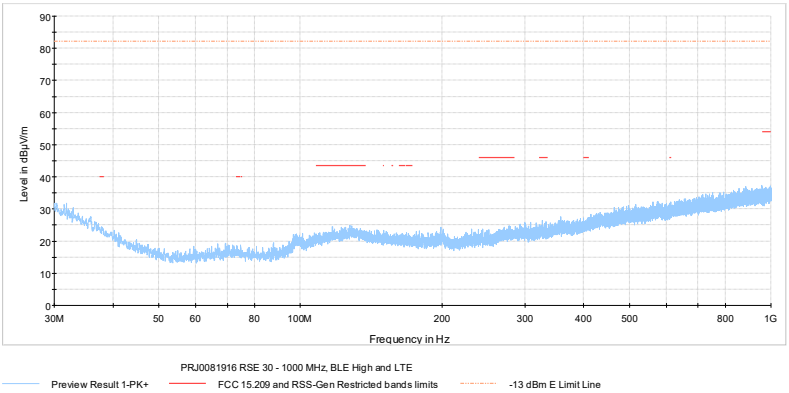


Figure 7.1-7: *Radiated spurious emissions 30 – 1000 MHz, LTE Band 66 and BLE high channel*

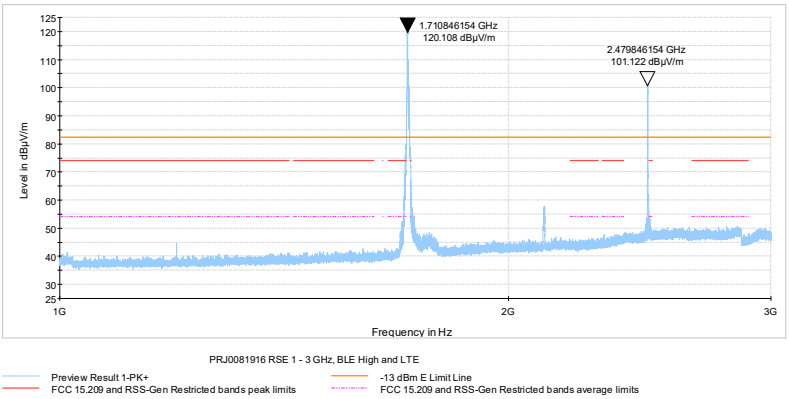


Figure 7.1-8: *Radiated spurious emissions 1 – 3 GHz, LTE Band 66 and BLE high channel*

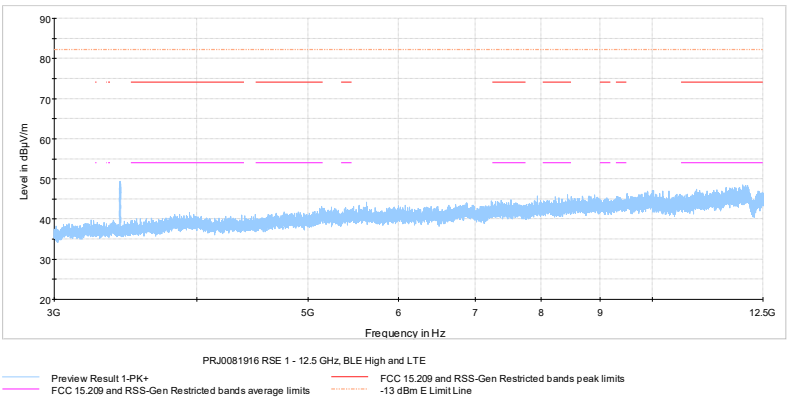


Figure 7.1-9: *Radiated spurious emissions 3 – 12.5 GHz, LTE Band 66 and BLE high channel*

Test data, continued

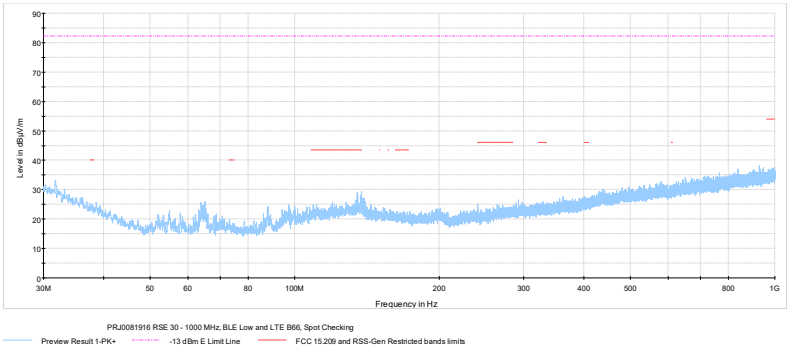


Figure 7.1-10: *Spot checking, Radiated spurious emissions 30 – 1000 MHz, LTE Band 66 and BLE low channel*

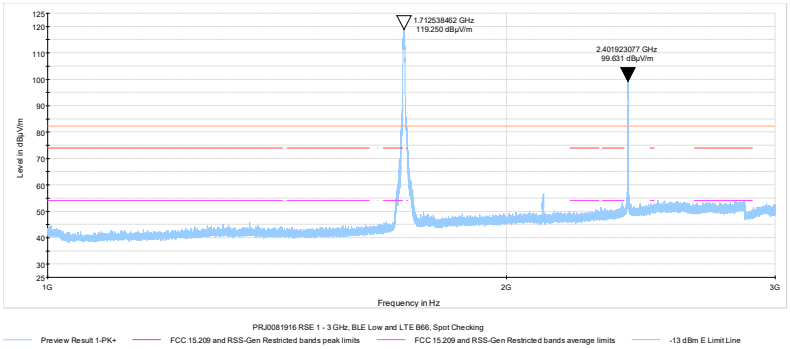


Figure 7.1-11: *Spot checking, Radiated spurious emissions 1 – 3 GHz, LTE Band 66 and BLE low channel*

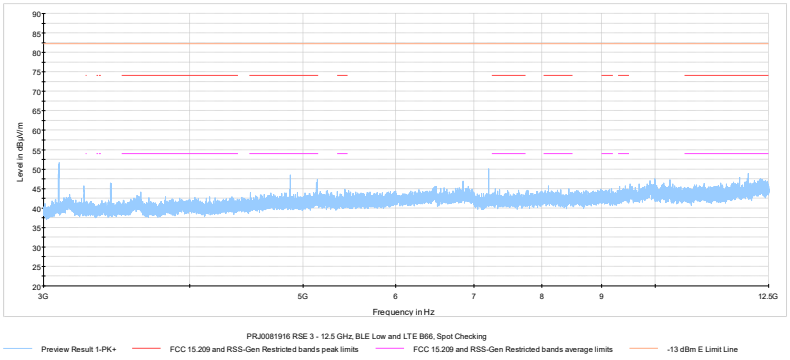


Figure 7.1-12: *Spot checking, Radiated spurious emissions 3 – 12.5 GHz, LTE Band 66 and BLE low channel*

End of the test report