



FCC / ISED Test Report

FOR:

Xirgo Technologies, LLC.

Model Name:

XT4975A

Product Description:

Energy Harvesting Smart Trailer Solution

FCC ID: GKM-XT4975A

IC ID: 10281A-XT4975A

Applied Rules and Standards:

47 CFR Part 15.247 (DTS)

RSS-247 Issue 2 (DTSs) & RSS-Gen Issue 4

REPORT #: EMC_XIRGO-122-17001_15.247_DTS

DATE: 2018-04-18



A2LA Accredited

IC recognized #
3462B-2

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CETECOM Inc. is a Delaware Corporation with Corporation number: 2905571

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1 Assessment

The objective of the measurements done by CETECOM Inc. was to assess the compliance of the EUT to the relevant requirements specified in FCC rules Part 15.247 of Title 47 of the Code of Federal Regulations and Radio Standard Specification RSS-247 of ISED Canada.

The EUT meets all the above requirements.

A technical evaluation of the forerunner product XT6350 has been carried out by CETECOM. This evaluation shows that XT4975A contains a technically identical implementation of BT 4.0 radio to the forerunner product (FCC ID: GKM-XT6350, IC ID: 10281A-XT6350) based on TI's CC2564 chipset in terms of circuit diagram and parts used as well as relevant settings on the chip. Thus all measurements performed on the 50 Ohm interface of XT6350 remain valid for the XT4975A. The relevant report is "Intertek 101978620LEX-002"

Compliance with the radiated emission requirement is covered in this report.

Company	Description	Model #
Xirgo Technologies, LLC.	Energy Harvesting Smart Trailer Solution	XT4975A

Responsible for Testing Laboratory:

2018-04-18	Compliance	James Donnellan (Lab Manager)	
Date	Section	Name	Signature

Responsible for the Report:

2018-04-18	Compliance	Elijah Garcia (EMC Engineer)	
Date	Section	Name	Signature

The test results of this test report relate exclusively to the test item specified in Section 3.

CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
Street Address:	411 Dixon Landing Road
City/Zip Code	Milpitas, CA 95035
Country	USA
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
Lab Manager:	James Donnellan
Responsible Project Leader:	Elijah Garcia

2.2 Identification of the Client

Applicant's Name:	Xirgo Technologies, LLC
Street Address:	188 Camino Ruiz
City/Zip Code	Camarillo, CA 93012
Country	USA

2.3 Identification of the Manufacturer

Manufacturer's Name:	Same as Applicant
Manufacturers Address:	-----
City/Zip Code	-----
Country	-----

3 Equipment Under Test (EUT)

3.1 EUT Specifications

Model No:	XT4975A
HW Version :	XT4975A-001
SW Version :	XT4975A-01
FCC-ID :	GKM-XT4975A
IC-ID:	10281A-XT4975A
PMN:	XT4975A
Product Description:	Energy Harvesting Smart Trailer Solution
Frequency Range / number of channels:	Nominal band: 2400 MHz – 2483.5 MHz; Center to center: 2402 MHz (Ch. 0) – 2480 MHz (Ch. 39), 40 channels
Type(s) of Modulation:	Bluetooth version 4.1, Low Energy, using Dynamic Sequence Spread Spectrum with GFSK modulation.
Modes of Operation:	Bluetooth LE in both advertising and connected mode of operation
Antenna Information as declared:	max gain 0.5 dBi
Power Supply/ Rated Operating Voltage Range:	Dedicated Battery Pack Vmin: 8.0 VDC/ Vnom: 12 VDC / Vmax: 24 VDC
Operating Temperature Range	-40 °C to 70 °C
Other Radios included in the device:	uBlox TOBY-R200 FCC ID: XPY TOBYL200; IC ID: 8595A-TOBYL200
Sample Revision	<input type="checkbox"/> Prototype Unit; <input checked="" type="checkbox"/> Production Unit; <input type="checkbox"/> Pre-Production

3.2 EUT Sample details

EUT #	Serial Number	HW Version	SW Version	Notes/Comments
1	2	XT4975A-001	XT4975A-01	Radiated Emissions

3.3 Accessory Equipment (AE) details

AE #	Type	Model	Manufacturer	Serial Number
1	-	-	-	-

3.4 Test Sample Configuration

EUT Set-up #	Combination of AE used for test set up	Comments
1	NA	The radio of the EUT was configured to a fixed channel transmission with highest possible duty cycle using software that is not available to the end user. The internal antenna was connected.

3.5 Justification for Worst Case Mode of Operation

During the testing process, the EUT was tested with transmitter sets on low, mid and high channels, and highest possible duty cycle of 95%. For radiated measurements, all data in this report shows the worst case between horizontal and vertical antenna polarizations and for all orientations of the EUT.

5 Measurement Results Summary

Test Specification	Test Case	Temperature and Voltage Conditions	Mode	Pass	NA	NP	Result
§15.247(a)(1) RSS-247 5.2(1)	Emission Bandwidth	Nominal	BTLE	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	See note 2
§15.247(e) RSS-247 5.2(2)	Power Spectral Density	Nominal	BTLE	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	See note 2
§15.247(b)(1) RSS-247 5.4(4)	Maximum Conducted Output Power and EIRP	Nominal	BTLE	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	See note 2
§15.247(d) RSS-247 5.5	Band edge compliance Unrestricted Band Edges	Nominal	BTLE	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	See note 2
§15.247; 15.209; 15.205 RSS-Gen 8.9; 8.10	Band edge compliance Restricted Band Edges	Nominal	BTLE	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	See note 2
§15.247(d); §15.209 RSS-Gen 6.13	TX Spurious emissions-Radiated	Nominal	BTLE	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complies
§15.207(a) RSS Gen 8.8	AC Conducted Emissions	Nominal	BTLE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-

Note: NA= Not Applicable; NP= Not Performed.

Note 2: Leveraged from previous report; Intertek 101978620LEX-002 BT-LE

6 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus, with 95% confidence interval (in dB delta to result), based on a coverage factor k=1.

Radiated measurement

9 kHz to 30 MHz	±2.5 dB (Magnetic Loop Antenna)
30 MHz to 1000 MHz	±2.0 dB (Biconilog Antenna)
1 GHz to 40 GHz	±2.3 dB (Horn Antenna)

Conducted measurement

150 kHz to 30 MHz ±0.7 dB (LISN)

RF conducted measurement ±0.5 dB

According to TR 102 273 a multiplicative propagation of error is assumed for RF measurement systems. For this reason the RMS method is applied to dB values and not to linear values as appropriate for additive propagation of error. The above calculated uncertainties apply to direct application of the Substitution method. The Substitution method is always used when the EUT comes closer than 3 dB to the limit.

6.1 Environmental Conditions During Testing:

The following environmental conditions were maintained during the course of testing:

- Ambient Temperature: 20-25° C
- Relative humidity: 40-60%

6.2 Dates of Testing:

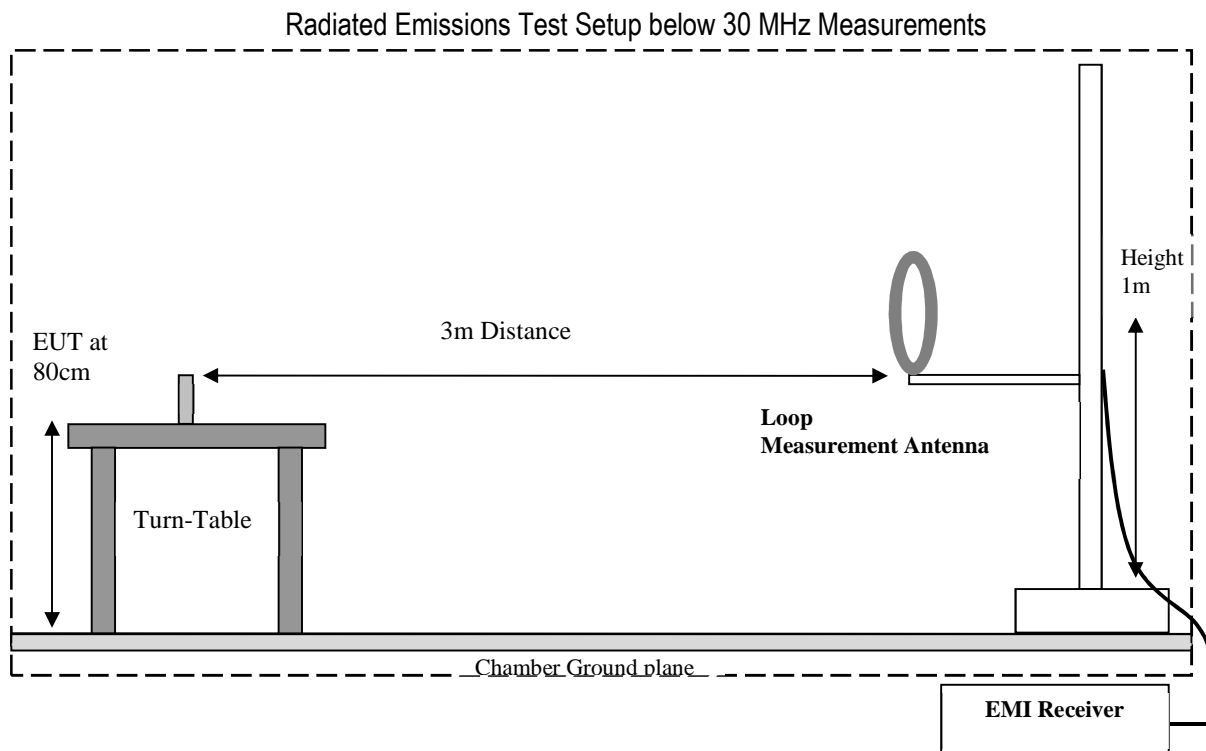
11/14/2017 - 03/08/2018

7 Measurement Procedures

7.1 Radiated Measurement

The radiated measurement is performed according to ANSI C63.10 (2013)

- The exploratory measurement is accomplished by running a matrix of 16 sweeps over the required frequency range with R&S Test-SW EMC32 for 4 positions of the turntable, two orthogonal positions of the EUT and both antenna polarizations. This procedure exceeds the requirement of the above standards to cover the 3 orthogonal axis of the EUT. A max peak detector is utilized during the exploratory measurement. The Test-SW creates an overall maximum trace for all 12 sweeps and saves the settings for each point of this trace. The maximum trace is part of the test report.
- The 10 highest emissions are selected with an automatic algorithm of EMC32 searching for peaks in the noise floor and ensuring that broadband signals are not selected multiple times.
- The maxima are then put through the final measurement and again maximized in a 90deg range of the turntable, fine search in frequency domain and height scan between 1m and 4m.
- The above procedure is repeated for all possible ways of power supply to EUT and for all supported modulations.
- In case there are no emissions above noise floor level only the maximum trace is reported as described above.
- The results are split up into up to 4 frequency ranges due to antenna bandwidth restrictions. A magnetic loop is used from 9 kHz to 30 MHz, a Biconilog antenna is used from 30 MHz to 1 GHz, and two different horn antennas are used to cover frequencies up to 40 GHz.





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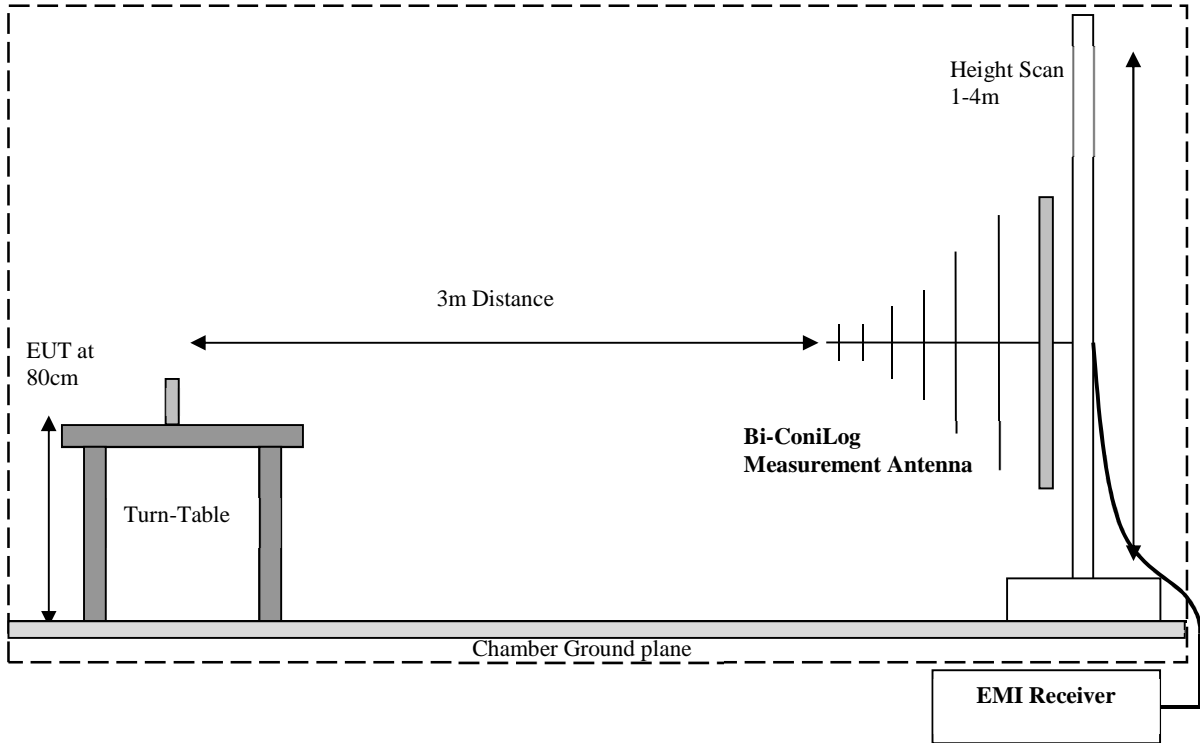
FCC ID: GKM-XT4975A

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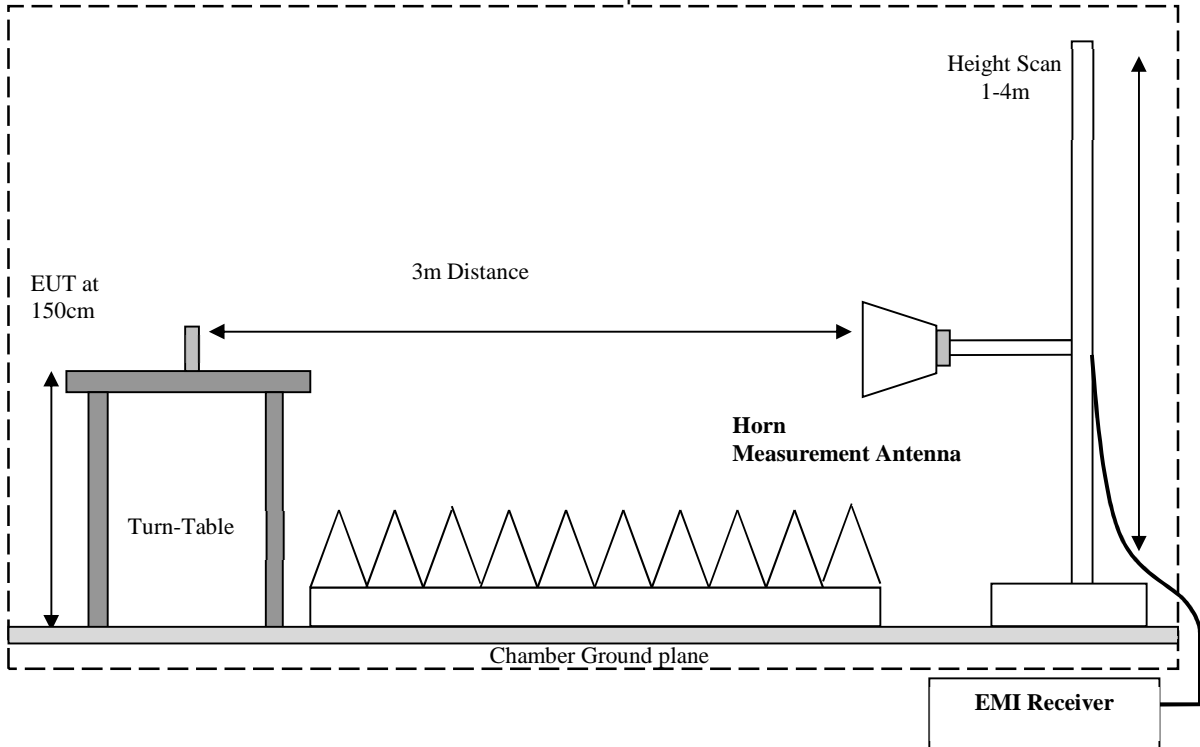
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Radiated Emissions Test Setup 30 MHz-1 GHz Measurements



Radiated Emissions Test Setup above 1 GHz Measurements



7.1.1 Sample Calculations for Field Strength Measurements

Field Strength is calculated from the Spectrum Analyzer/Receiver readings, taking into account the following parameters:

1. Measured reading in dB μ V
2. Cable Loss between the receiving antenna and SA in dB and
3. Antenna Factor in dB/m

All radiated measurement plots in this report are taken from a test SW that calculates the Field Strength based on the following equation:

$$FS \text{ (dB}\mu\text{V/m)} = \text{Measured Value on SA (dB}\mu\text{V)} - \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$$

Example:

Frequency (MHz)	Measured SA (dB μ V)	Cable Loss (dB)	Antenna Factor Correction (dB/m)	Field Strength Result (dB μ V/m)
1000	80.5	3.5	14	98.0

8 Test Result Data

8.1 Radiated Transmitter Spurious Emissions and Restricted Bands

8.1.1 Measurement according to ANSI C63.10 (2013)

Spectrum Analyzer Settings:

- Frequency = 9 kHz – 30 MHz
- RBW = 9 kHz
- Detector: Peak

- Frequency = 30 MHz – 1 GHz
- Detector = Peak / Quasi-Peak
- RBW= 120 kHz (<1 GHz)

- Frequency > 1 GHz
- Detector = Peak / Average
- RBW = 1 MHz

- Radiated spurious emissions shall be measured for the transmit frequencies, transmit power, and data rate for the lowest, middle and highest channel in each frequency band of operation and for the highest gain antenna for each antenna type, and using the appropriate parameters and test requirements.
- The highest (or worst-case) data rate shall be recorded for each measurement.
- For testing at distance other than the specified in the standard, the limit conversion is calculated by using 40 dB/decade extrapolation factor as follow: Conversion factor (CF) = $40 \log (D/d) = 40 \log (300\text{m} / 3\text{m}) = 80\text{dB}$

8.1.2 Limits:

FCC §15.247

- 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)).



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FCC §15.209 & RSS-Gen 8.9

- Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency of emission (MHz)	Field strength (µV/m)	Measurement Distance (m)	Field strength @ 3m (dBµV/m)
0.009–0.490	2400/F(kHz) / -----	300	-
0.490–1.705	24000/F(kHz) / -----	30	-
1.705–30.0	30 / (29.5)	30	-
30–88	100	3	40 dBµV/m
88–216	150	3	43.5 dBµV/m
216–960	200	3	46 dBµV/m
Above 960	500	3	54 dBµV/m

FCC §15.205 & RSS-Gen 8.10

- Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	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			

- 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)).

*PEAK LIMIT= 74 dBµV/m

*AVG. LIMIT= 54 dBµV/m

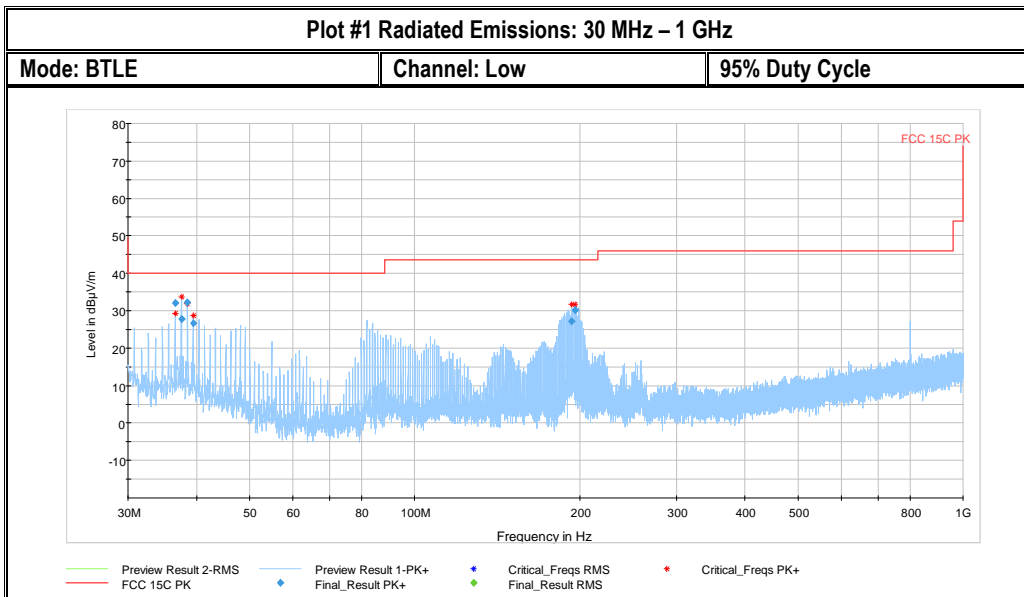
8.1.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input
22° C	1	BTLE continuous fixed channel	12 VDC

8.1.4 Measurement result:

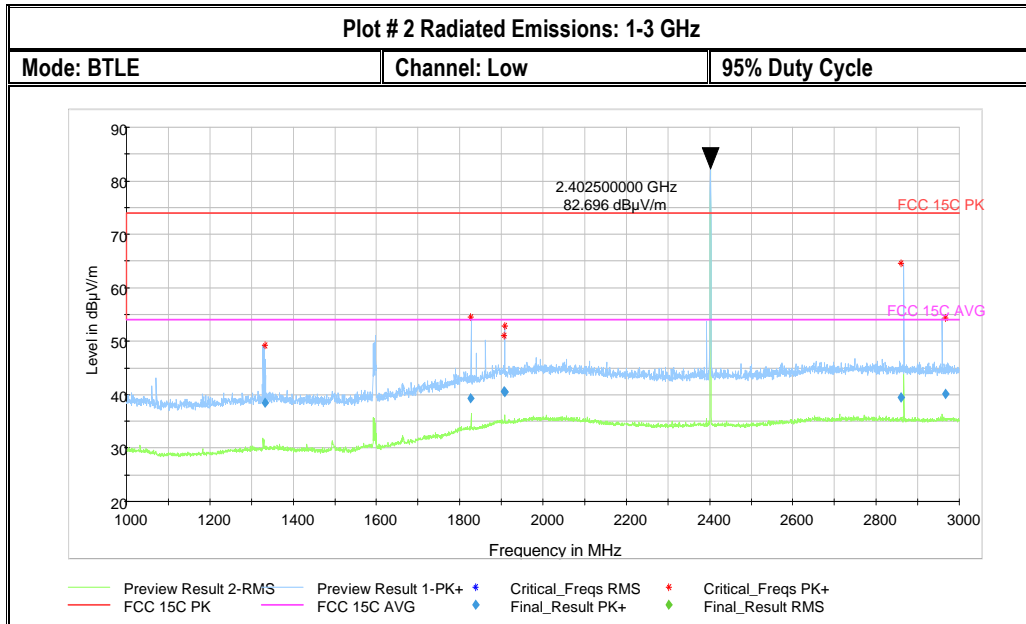
Plot #	Channel #	Scan Frequency	Limit	Result
1-3	Low	30 MHz – 18 GHz	See section 8.1.2	Pass
4-8	Mid	9 kHz – 26 GHz	See section 8.1.2	Pass
9-11	High	30 MHz – 18 GHz	See section 8.1.2	Pass

8.1.5 Measurement Plots:



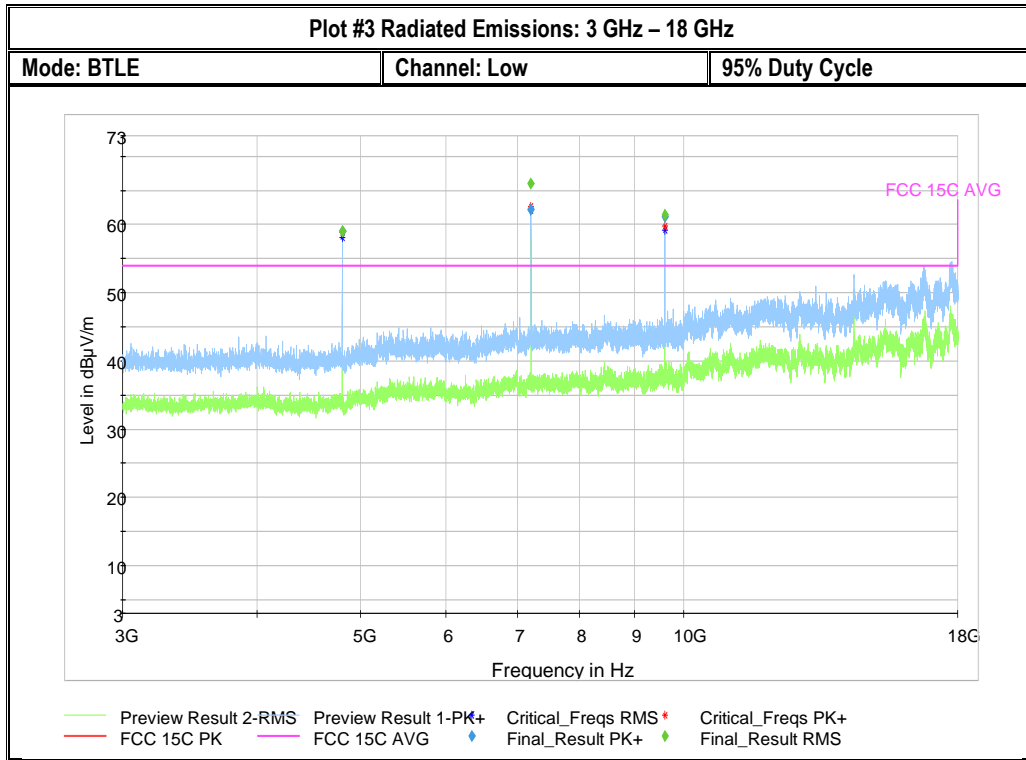
Note: Intentional Transmission occurring on Bluetooth low channel: 2402 MHz

Frequency (MHz)	Max Peak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol.	Azimuth (deg)
36.552017	31.96	---	40.00	8.04	100.0	120.000	100.0	V	136.0
37.525104	27.76	---	40.00	12.24	100.0	120.000	100.0	V	275.0
38.485008	32.21	---	40.00	7.79	100.0	120.000	108.0	V	80.0
39.470622	26.71	---	40.00	13.29	100.0	120.000	100.0	V	187.0
193.432890	27.26	---	43.50	16.24	100.0	120.000	100.0	V	279.0
196.280698	30.20	---	43.50	13.30	100.0	120.000	108.0	V	0.0



Note: Intentional Transmission occurring on Bluetooth low channel: 2402 MHz

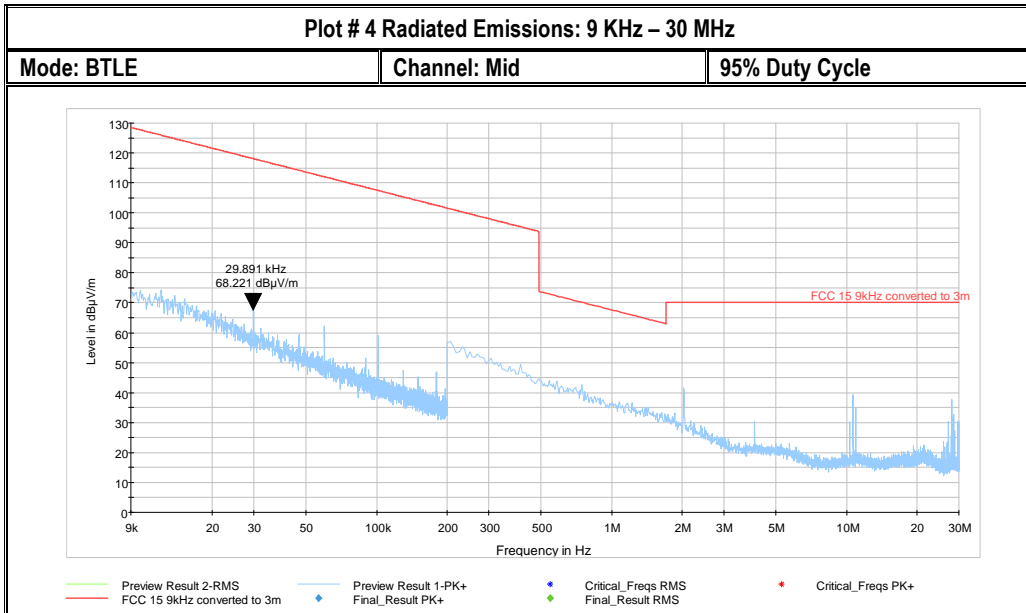
Frequency (MHz)	Max Peak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol.	Azimuth (deg)
1331.850000	38.46	---	74.00	35.54	10.0	1000.000	180.0	H	81.0
1827.190000	39.38	---	74.00	34.62	10.0	1000.000	170.0	V	117.0
1906.535000	40.63	---	74.00	33.36	10.0	1000.000	183.0	V	49.0
1908.895000	40.50	---	74.00	33.50	10.0	1000.000	210.0	V	147.0
2860.275000	39.48	---	73.99	34.51	10.0	1000.000	177.0	V	123.0
2967.090000	40.11	---	73.99	33.89	10.0	1000.000	180.0	V	156.0

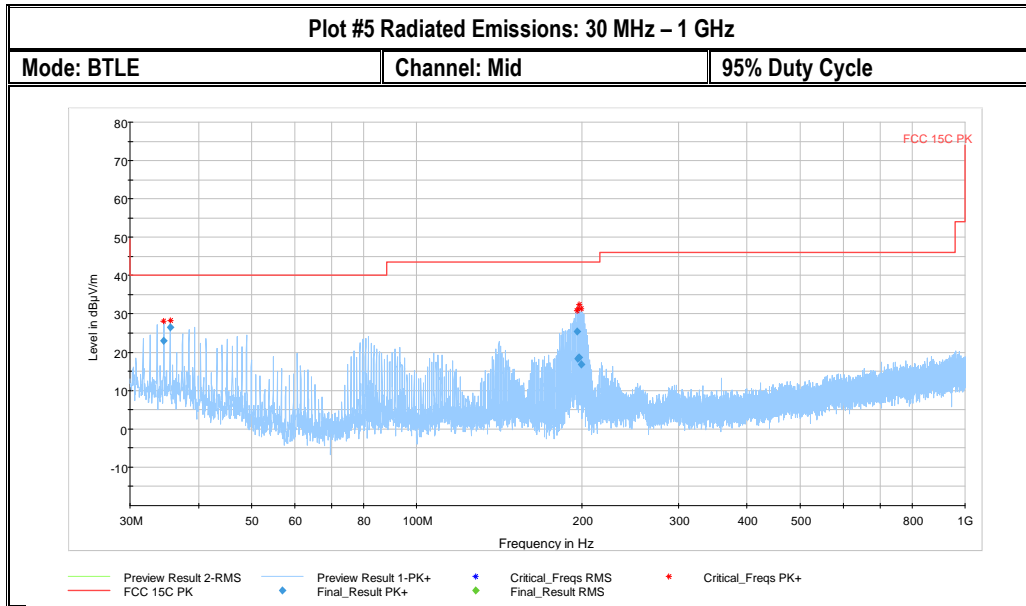


Frequency (MHz)	Max Peak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg.)
4804.578567	58.99	---	73.99	15.00	200.0	1000.000	125.0	H	240.0
7206.705667	62.24	---	73.99	11.74	200.0	1000.000	238.0	V	215.0
9608.994633	61.06	---	73.98	12.92	200.0	1000.000	217.0	H	-75.0

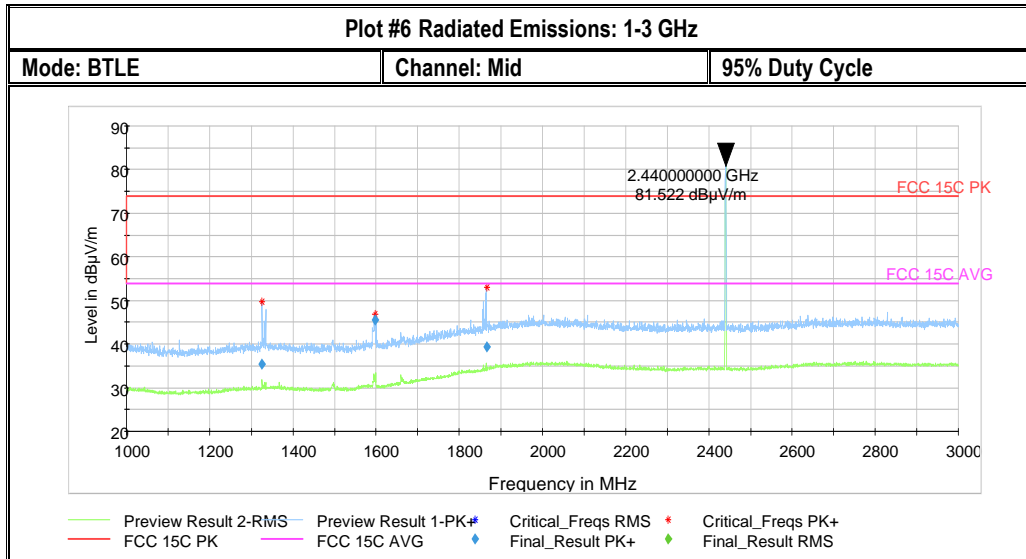
Frequency (MHz)	Max Peak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg.)	Note
4804.578567	---	38.99	54	15.01	200.0	1000.000	125.0	H	240.0	1
7206.705667	---	42.24	54	11.76	200.0	1000.000	238.0	V	215.0	1
9608.994633	---	41.06	54	12.94	200.0	1000.000	217.0	H	-75.0	1

Note 1: In order to correctly account for the real BTLE RMS level a declarations/confirmation from the customer is forthcoming, that allows us to correct for pulsed transmissions according to FCC15.35. Based on this and using a worst case 6 packets per connection and 20 bytes per packet the duty cycle will be ~0.1. Applying the correction factor of $20 \log(dc) \approx -20 \text{ dB}$ to the peak measured emissions we obtain the actual RMS emissions and margin as shown above.



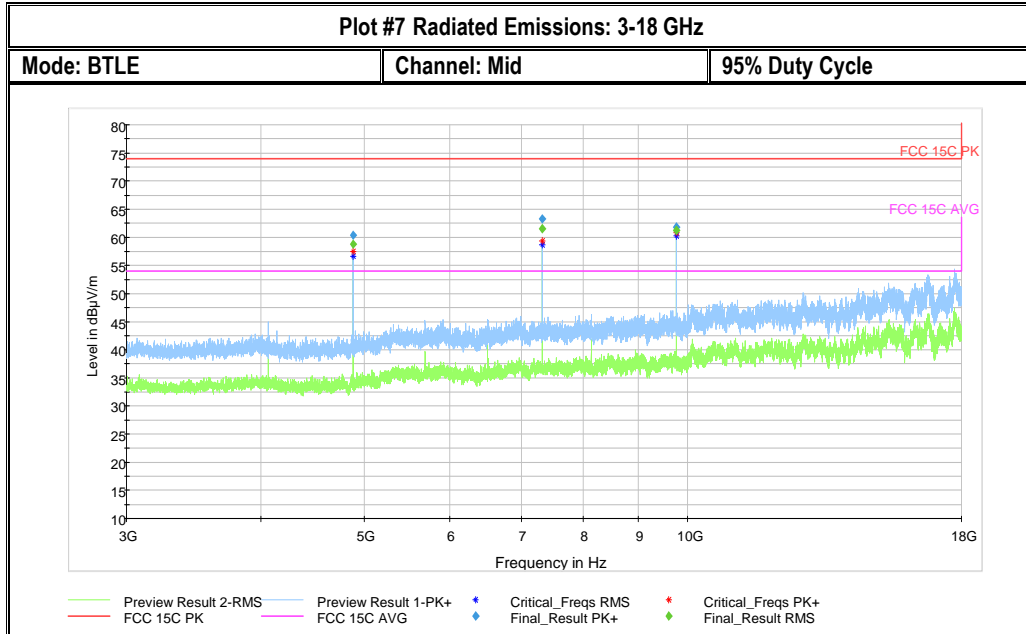


Frequency (MHz)	Max Peak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol.	Azimuth (deg)
34.561536	22.99	---	40.00	17.01	100.0	120.000	158.0	V	189.0
35.512828	26.37	---	40.00	13.63	100.0	120.000	108.0	V	7.0
195.969981	25.30	---	43.50	18.20	100.0	120.000	124.0	H	265.0
196.931875	18.21	---	43.50	25.29	100.0	120.000	100.0	H	189.0
197.874673	18.65	---	43.50	24.85	100.0	120.000	152.0	H	291.0
199.780636	16.84	---	43.50	26.66	100.0	120.000	100.0	H	256.0



Note: Intentional Transmission occurring on Bluetooth mid channel: 2440 MHz

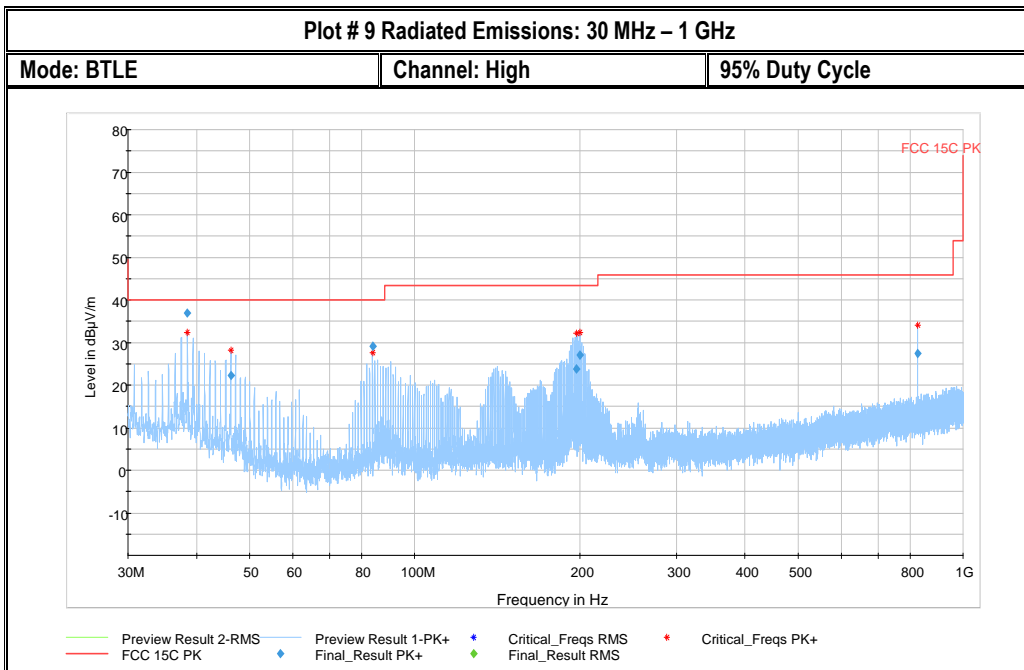
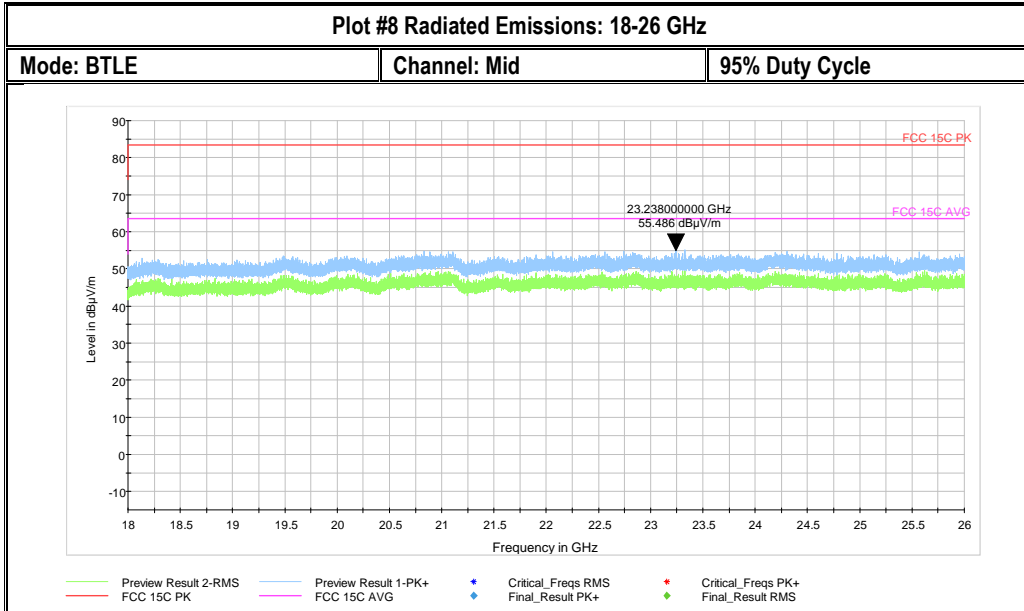
Frequency (MHz)	Max Peak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol.	Azimuth (deg)
1325.850000	35.34	---	74.00	38.66	10.0	1000.000	210.0	H	69.0
1597.240000	45.63	---	74.00	28.36	10.0	1000.000	195.0	H	225.0
1866.865000	39.40	---	74.00	34.60	10.0	1000.000	198.0	V	187.0



Frequency (MHz)	Max Peak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol.	Azimuth (deg)
4880.452167	60.32	---	73.99	13.67	200.0	1000.000	262.0	V	260.0
7320.740667	63.19	---	73.99	10.79	200.0	1000.000	157.0	V	100.0
9760.857167	61.87	---	73.98	12.12	200.0	1000.000	237.0	H	357.0

Frequency (MHz)	Max Peak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol.	Azimuth (deg)	Note
4880.452167	---	40.32	54	13.68	200.0	1000.000	262.0	V	260.0	1
7320.740667	---	43.19	54	10.80	200.0	1000.000	157.0	V	100.0	1
9760.857167	---	41.87	54	12.13	200.0	1000.000	237.0	H	357.0	1

Note 1: In order to correctly account for the real BTLE RMS level a declarations/confirmation from the customer is forthcoming, that allows us to correct for pulsed transmissions according to FCC15.35. Based on this and using a worst case 6 packets per connection and 20 bytes per packet the duty cycle will be ~0.1. Applying the correction factor of $20 \log(dc) \approx -20 \text{ dB}$ to the peak measured emissions we obtain the actual RMS emissions and margin as shown above.



Frequency (MHz)	Max Peak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol.	Azimuth (deg)
38.488192	36.96	---	40.00	3.04	100.0	120.000	100.0	V	-49.0
46.165971	22.29	---	40.00	17.71	100.0	120.000	100.0	V	16.0
83.720673	29.17	---	40.00	10.83	100.0	120.000	100.0	V	199.0
197.246808	23.84	---	43.50	19.66	100.0	120.000	153.0	V	270.0
200.135056	27.13	---	43.50	16.37	100.0	120.000	100.0	V	270.0



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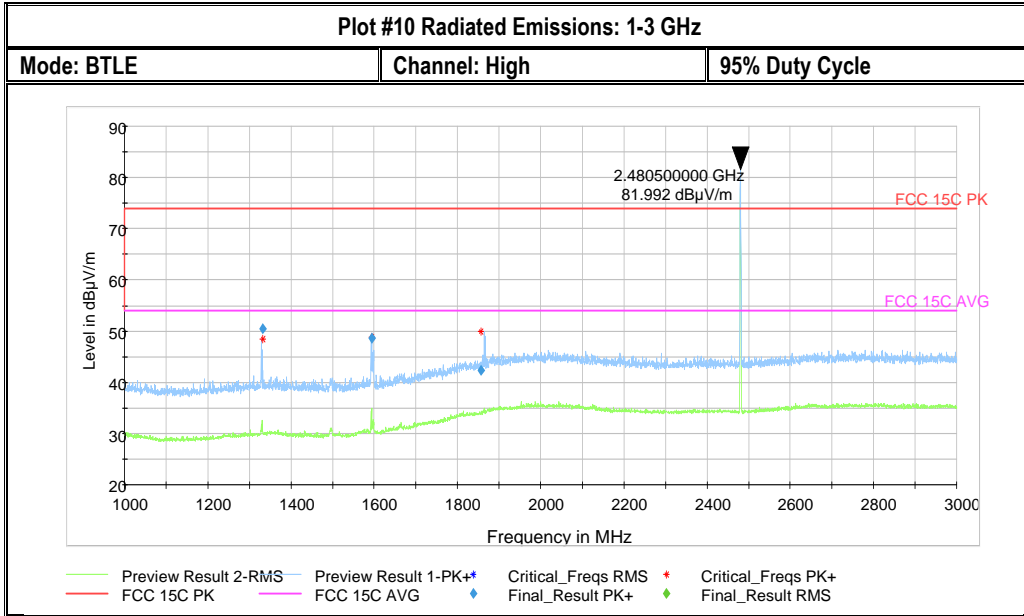
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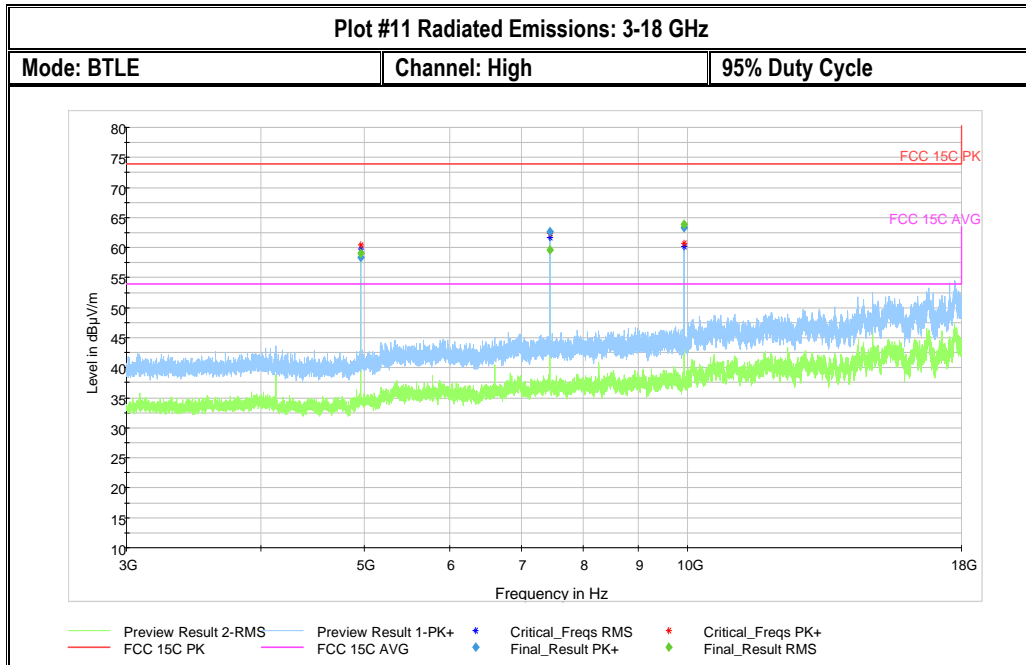
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826.749236	27.45	--	46.00	18.55	100.0	120.000	100.0	H	224.0
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Note: Intentional Transmission occurring on Bluetooth mid channel: 2480 MHz

Frequency (MHz)	Max Peak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol.	Azimuth (deg)
1332.445000	50.48	---	74.00	23.52	10.0	1000.000	141.0	H	84.0
1594.140000	48.62	---	74.00	25.37	10.0	1000.000	204.0	V	33.0
1857.045000	42.33	---	74.00	31.66	10.0	1000.000	108.0	V	42.0



Frequency (MHz)	Max Peak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol.	Azimuth (deg)
4960.078433	58.36	---	73.99	15.63	200.0	1000.000	213.0	H	234.0
7440.696533	62.64	---	73.99	11.35	200.0	1000.000	182.0	V	101.0
9920.915867	63.33	---	73.98	10.66	200.0	1000.000	228.0	H	246.0

Frequency (MHz)	Max Peak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol.	Azimuth (deg)	Note
4960.078433	---	38.36	54	15.64	200.0	1000.000	213.0	H	234.0	1
7440.696533	---	42.64	54	11.36	200.0	1000.000	182.0	V	101.0	1
9920.915867	---	43.33	54	10.67	200.0	1000.000	228.0	H	246.0	1

Note 1: In order to correctly account for the real BTLE RMS level a declarations/confirmation from the customer is forthcoming, that allows us to correct for pulsed transmissions according to FCC15.35. Based on this and using a worst case 6 packets per connection and 20 bytes per packet the duty cycle will be ~0.1. Applying the correction factor of $20 \log(dc) \approx -20 \text{ dB}$ to the peak measured emissions we obtain the actual RMS emissions and margin as shown above.

9 Test setup photos

Setup photos are included in supporting file name: "EMC_XIRGO-122-17001_15.247_DTS_Setup_Photos.pdf"

10 Test Equipment And Ancillaries Used For Testing

Item Name	Equipment Type	Manufacturer	Model	Serial #	Calibration Cycle	Last Calibration Date
Antenna Biconilog 3142E	BiConiLog Antenna	EMCO	3142E	166067	3 years	6/27/2017
Magnetic Loop Antenna	Loop Antenna	ETS Lindgren	6512	49838	3 years	7/28/2017
Antenna Horn 3115	Horn Antenna	EMCO	3115	35111	3 years	7/24/2015
Antenna Horn 3116	Horn Antenna	ETS Lindgren	3116	00169535	3 years	9/24/2017
Digital Barometer	Compact Digital Barometer	Control Company	35519-055	91119547	2 years	6/8/2017
EMI Test Receiver ESU 40	EMI Test Receiver	R&S	ESU 40	110251	3 years	1/31/2018
Power Supply	DC Power Supply	Protek	3003B	-	Verification prior to use	Verification prior to use

Note:

1. Equipment used meets the measurement uncertainty requirements as required per applicable standards for 95% confidence levels. Calibration due dates, unless defined specifically, falls on the last day of the month. Items indicated "N/A" for cal status either do not specifically require calibration or is internally characterized before use.



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11 History

Date	Report Name	Changes to report	Report prepared by
2018-04-18	EMC_XIRGO-122-17001_15.247_DTS	Initial Version	Elijah Garcia