



FCC / ISSED Test Report

FOR: Keep Truckin.

Model Name: LBB-3.5CA

Product Description:

Uses BT to synchronize log data to companion app running on smartphone or tablet.
Can use LTE to sync with cloud directly when companion device is not connected.

FCC ID: 2AQM7-35

IC ID: 24516-35

Applied Rules and Standards:

47 CFR Part 15.247 (DSS)
RSS-247 Issue 2 (FHSs) & RSS-Gen Issue 5

REPORT #: EMC_KPTRK_006_18001_FCC_15.247_ISSED_BT_DSS

DATE: 03/15/2019



A2LA Accredited

IC recognized #
3462B-2

CETECOM Inc.

411 Dixon Landing Road ♦ Milpitas, CA 95035 ♦ U.S.A.

Phone: + 1 (408) 586 6200 ♦ Fax: + 1 (408) 586 6299 ♦ E-mail: info@cetecom.com ♦ <http://www.cetecom.com>
CETECOM Inc. is a Delaware Corporation with Corporation number: 2905571

TABLE OF CONTENTS

1	ASSESSMENT	3
2	ADMINISTRATIVE DATA.....	4
2.1	IDENTIFICATION OF THE TESTING LABORATORY ISSUING THE EMC TEST REPORT	4
2.2	IDENTIFICATION OF THE CLIENT	4
2.3	IDENTIFICATION OF THE MANUFACTURER.....	4
3	EQUIPMENT UNDER TEST (EUT).....	5
3.1	EUT SPECIFICATIONS	5
3.2	EUT SAMPLE DETAILS.....	6
3.3	ACCESSORY EQUIPMENT (AE) DETAILS.....	6
3.4	TEST SAMPLE CONFIGURATION	6
3.5	MODE OF OPERATION DETAILS.....	7
3.6	JUSTIFICATION FOR WORST CASE MODE OF OPERATION	7
4	SUBJECT OF INVESTIGATION.....	8
5	MEASUREMENT RESULTS SUMMARY	9
6	MEASUREMENT UNCERTAINTY	10
6.1	ENVIRONMENTAL CONDITIONS DURING TESTING:.....	10
6.2	DATES OF TESTING:.....	10
7	MEASUREMENT PROCEDURES.....	11
7.1	RADIATED MEASUREMENT	11
8	TEST RESULT DATA	14
8.1	TRANSMITTER SPURIOUS EMISSIONS AND RESTRICTED BANDS.....	14
9	TEST SETUP PHOTOS.....	28
10	TEST EQUIPMENT AND ANCILLARIES USED FOR TESTING	28
11	REVISION HISTORY	28

1 Assessment

The following device as further described in section 3 of this report was evaluated for radiated spurious emissions for unlicensed radio according to criteria specified in FCC rules 15.247 of Title 47 of the Code of Federal Regulations and the relevant ISED Canada standard RSS-GEN and RSS-247.

No deviations were ascertained.

According to section 5 of this report, the overall result is PASS.

Company	Description	Model #
Keep Truckin	Uses BT to synchronize log data to companion app running on smartphone or tablet. Can use LTE to sync with cloud directly when companion device is not connected. There are IOS and Android versions of the app.	LBB-3.5CA

Responsible for Testing Laboratory:

03/15/2019	Compliance	Cindy Li (Lab Manager)	
Date	Section	Name	Signature

Responsible for the Report:

03/15/2019	Compliance	Issa Ghanma (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:	Cindy Li
Responsible Project Leader:	Trina Noor

2.2 Identification of the Client

Applicant's Name:	Keep Truckin
Street Address:	370 Townsend St.
City/Zip Code	San Francisco, CA 94107
Country	USA

2.3 Identification of the Manufacturer

Manufacturer's Name:	Same as client.
Manufacturers Address:	
City/Zip Code	
Country	

3 Equipment Under Test (EUT)

3.1 EUT Specifications

Firmware Version Identification Number (FVIN):	HL75xx.A.2.13
Hardware Version Identification Number (HVIN):	1
Product Marketing Name (PMN):	LBB-3.5CA
Frequency Range / number of channels:	Nominal band: 2400 MHz – 2483.5 MHz Center to center: 2402 MHz (ch 0) – 2480 MHz (ch 78), 79 Channels
Type(s) of Modulation:	Bluetooth Basic/EDR 2.1: GFSK, $\pi/4$ DQPSK, 8DPSK
Modes of Operation:	Hopping
Antenna Information as declared:	2.45 GHz SMD Antenna, EIA 1210, Detuning resilient, Edge Mount Design General Specifications: • Part Number: 2450AT18D0100 • Frequency (GHz): 2.4 – 2.48 • Peak Gain (dBi): 1.5
Max. declared output Powers form modular grant:	0.0078 Watts
Power Supply/ Rated Operating Voltage Range:	Low 6 VDC, Nominal 14 VDC, High 30 VDC
Operating Temperature Range:	Low -40° C, Nominal 20° C, High 115° C
Sample Revision:	☐ Prototype Unit; ☐ Production Unit; ☒ Pre-Production
EUT Dimensions [cm]:	11.1 x 9.7 x 2.5
Weight:	250
EUT Diameter:	☒ < 60 cm ☐ Other _____
Bluetooth Module Information	
Module Name:	LSR Sterling-LWB
Model number:	LSR 450-0152
FCC ID:	TFB-1003
IC ID:	5969A-1003

Other Radios included in the device:	❖ Cellular: • Sierra Wireless HL7588 • FCC ID: N7NHL7588 • IC ID: 2417C-HL7588 • Bands: WCDMA II, VLTE 2, 4, 5, 13, 17 ❖ Wi-Fi: • Sterling-LWB • FCC ID: TFB-1003 • IC ID: 5969A-1003 • 802.11b/g/n ❖ GPS: • Module name: Ublox • Model number: NEO-M8u-0-10
---	---

3.2 EUT Sample details

EUT #	Serial Number	HW Version	SW Version	Notes / Comments
1	01117221	3.5	62040	Radiated Emissions

3.3 Accessory Equipment (AE) details

AE #	Comments
-	-

3.4 Test Sample Configuration

EUT Set-up #	Combination of AE used for test set up	Comments
1	EUT#1	-

3.5 Mode of Operation details

Mode of Operation	Description of Operating modes	Additional Information
Op. 1	BLE GFSK	Putty terminal tool and special commands provided by the customer used to configure Bluetooth radio and enable test mode connection. CBT. Bluetooth Tester used for connection and control: • Modulated TX carrier. • Low, Mid, High channel. • Max power. • Max duty cycle. The commands will not be available to the end user. For Radiated measurements: The internal antenna was connected.

3.6 Justification for Worst Case Mode of Operation

During the testing process the EUT was tested with transmitter sets on low, mid and high channels, the highest duty cycle, maximum output power and worst case of modulations supported based on the maximum conducted output power in modular grant and reports.

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.

4 Subject of Investigation

The objective of the measurements done by CETECOM Inc. was to assess the performance of the EUT according to the relevant requirements specified in FCC rules 15.247 of Title 47 of the Code of Federal Regulations and Radio Standard Specification RSS-247 Issue 2 and RSS-GEN Issue 5 of ISED Canada.

This test report is to support a request for new equipment authorization under the:

- FCC ID: 2AQM7-35
- IC ID: 24516-35

Testing procedures are based on 558074 D01 DTS Meas Guidance v04 – “GUIDANCE FOR PERFORMING COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEMS (DTS) OPERATING UNDER SECTION 15.247” - April 5, 2017, by the Federal Communications Commission, Office of Engineering and Technology, Laboratory Division.

5 Measurement Results Summary

Test Specification	Test Case	Temperature and Voltage Conditions	Mode	Pass	NA	NP	Result
§15.247(b)(1) RSS-247 5.4(b)	Maximum Peak Conducted Output Power	Nominal	-	☐	☐	■	Note 1 Note 3 Complies
§15.247(d) RSS-247 5.5 RSS-Gen 8.10	Band Edge Compliance	Nominal	-	☐	☐	■	Note 1 Note 3 Complies
§15.247(a)(1) RSS-247 5.1(b)	Spectrum Bandwidth	Nominal	-	☐	☐	■	Note 1 Note 3 Complies
§15.247(a)(1) RSS-247 5.1(b)	Carrier Frequency Separation	Nominal	-	☐	☐	■	Note 1 Note 3 Complies
§15.247(a)(1) RSS-247 5.1(d)	Number of Hopping Channels	Nominal	-	☐	☐	■	Note 1 Note 3 Complies
§15.247(a)(1)(iii) RSS-247 5.1(d)	Time of occupancy	Nominal	-	☐	☐	■	Note 1 Note 3 Complies
§15.247(d) §15.209 (a) RSS-Gen 6.13	TX Spurious emissions-Radiated	Nominal	GFSK	■	☐	☐	Complies
§15.207(a) RSS-Gen 8.8	AC Conducted Emissions	-	-	☐	■	☐	Note 1 Note 2

Note 1: NA= Not Applicable; NP= Not Performed.

Note 2: Device does not connect to an AC main power.

Note 3: Leveraged from module certification LSR Sterling-LWB, FCC ID: TFB-1003/ IC ID: 5969A-1003

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)

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. Also used: <http://physics.nist.gov/cuu/Uncertainty/typeb.html>. 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:

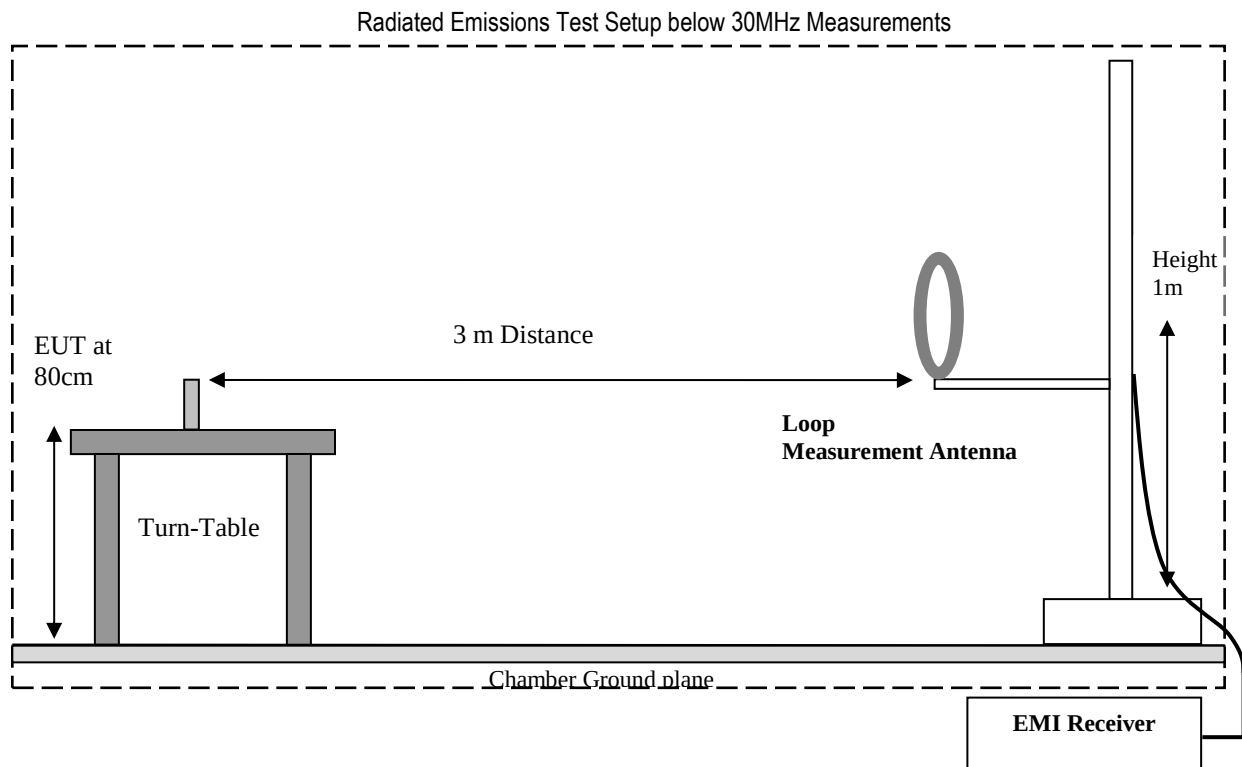
01/17/2019 – 01/21/2019

7 Measurement Procedures

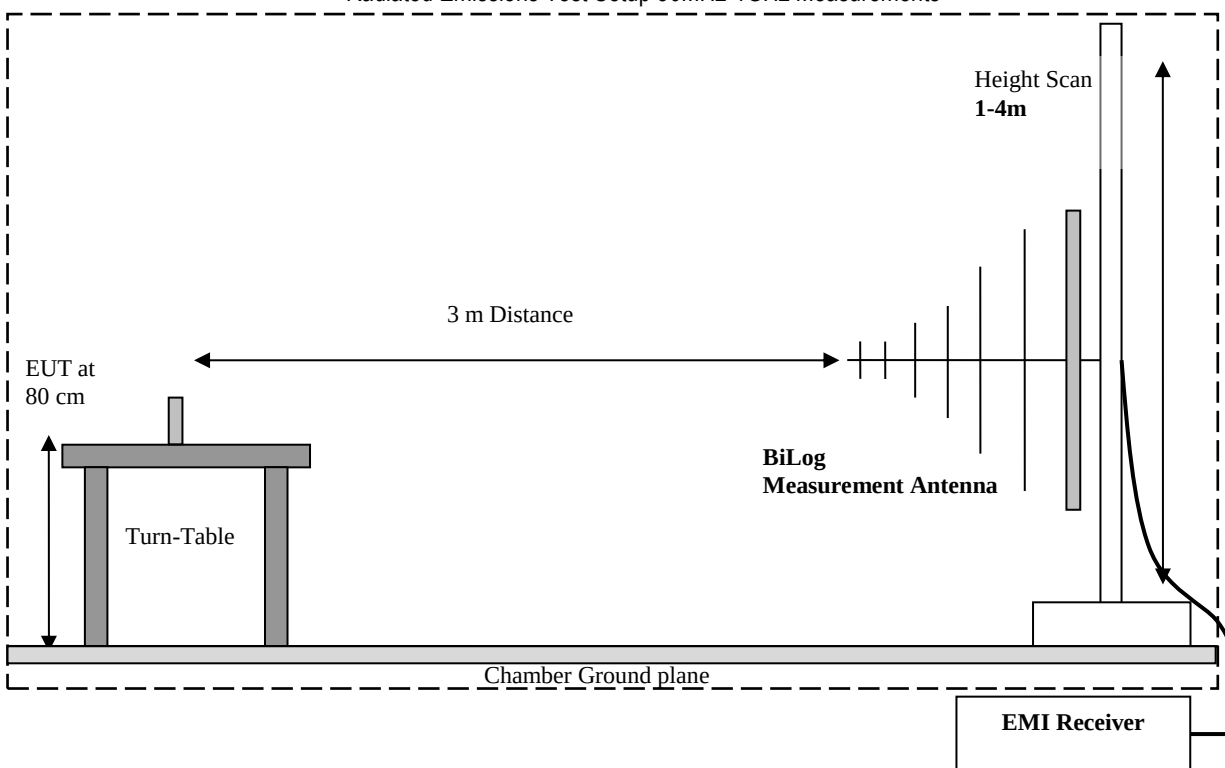
7.1 Radiated Measurement

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

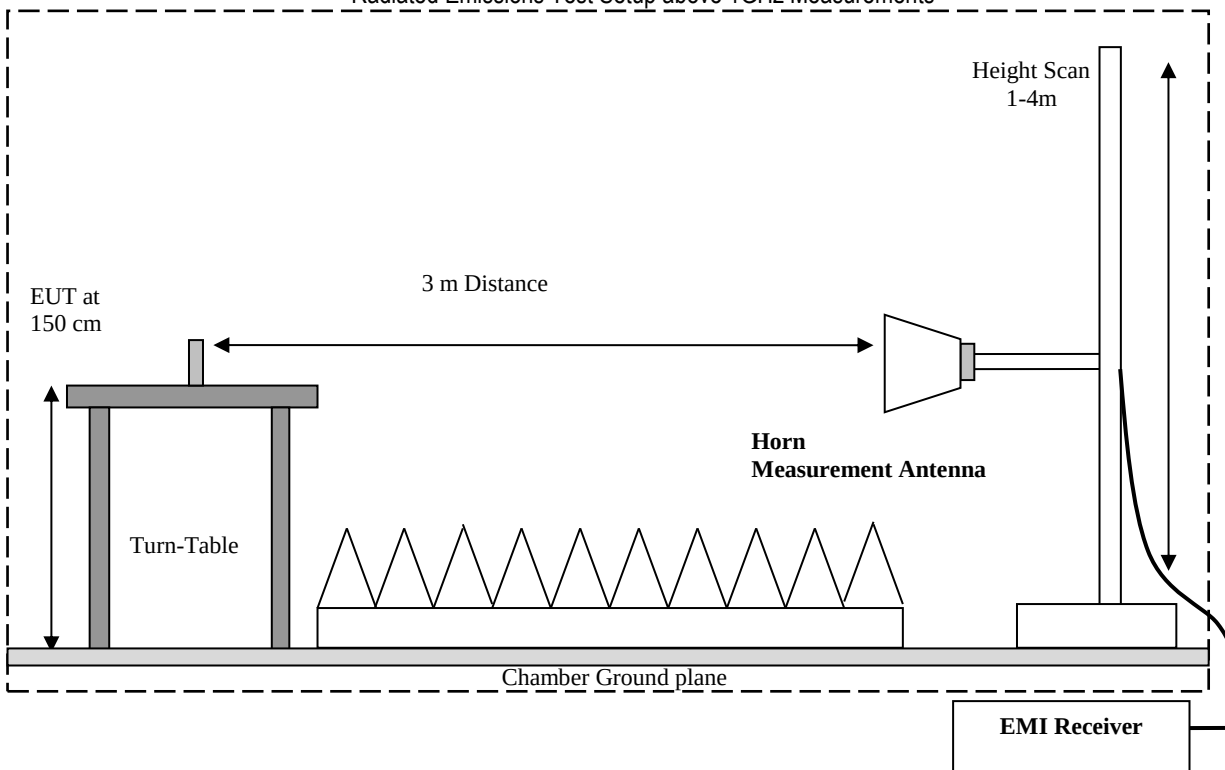
- The exploratory measurement is accomplished by running a matrix of 16 sweeps over the required frequency range with R&S Test-SW EMC32 for 4 positions of the turntable, two orthogonal positions of the EUT and both antenna polarizations. This procedure exceeds the requirement of the above standards to 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.



Radiated Emissions Test Setup 30MHz-1GHz Measurements



Radiated Emissions Test Setup above 1GHz 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 dBμV
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 (dBμV)	Cable Loss (dB)	Antenna Factor Correction (dB)	Field Strength Result (dBμV/m)
1000	80.5	3.5	14	98.0

8 Test Result Data

8.1 Transmitter Spurious Emissions and Restricted Bands

8.1.1 Measurement according to ANSI C63.10

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 = 1MHz

Plots reported here represent the worst case emissions for horizontal and vertical antenna polarizations and for three orientations of the EUT. Unless mentioned otherwise, the emissions outside the limit lines in the plots are from the transmit signal.

8.1.2 Limits: FCC 15.247(d)/15.209(a) /RSS-Gen 6.13

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= 74dB μ V/m
- AVG. LIMIT= 54dB μ V/m
- Except as shown in CFR 47 Part 15.205 paragraph (d), only spurious emissions are permitted in any of the frequency bands listed below

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

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 described in 5.4.

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 as follow:

Conversion factor (CF) = $40 \log (D/d) = 40 \log (300 \text{ m} / 3 \text{ m}) = 80 \text{ dB}$

8.1.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input
22° C	3	Op.1	12 VDC

8.1.4 Measurement result:

Plot #	Channel #	Scan Frequency	Critical Frequency [MHz]	Emission level [dBμV/m]	Detector	Limit	Result
1 – 3	Low	30 MHz – 18 GHz	53.853	32.82	Peak	See section 8.1.2	Pass
4 – 8	Mid	9 kHz – 40 GHz	52.861	34.38	Peak	See section 8.1.2	Pass
9 – 11	High	30 MHz – 18 GHz	52.841	34.74	Peak	See section 8.1.2	Pass

8.1.5 Measurement Plots:

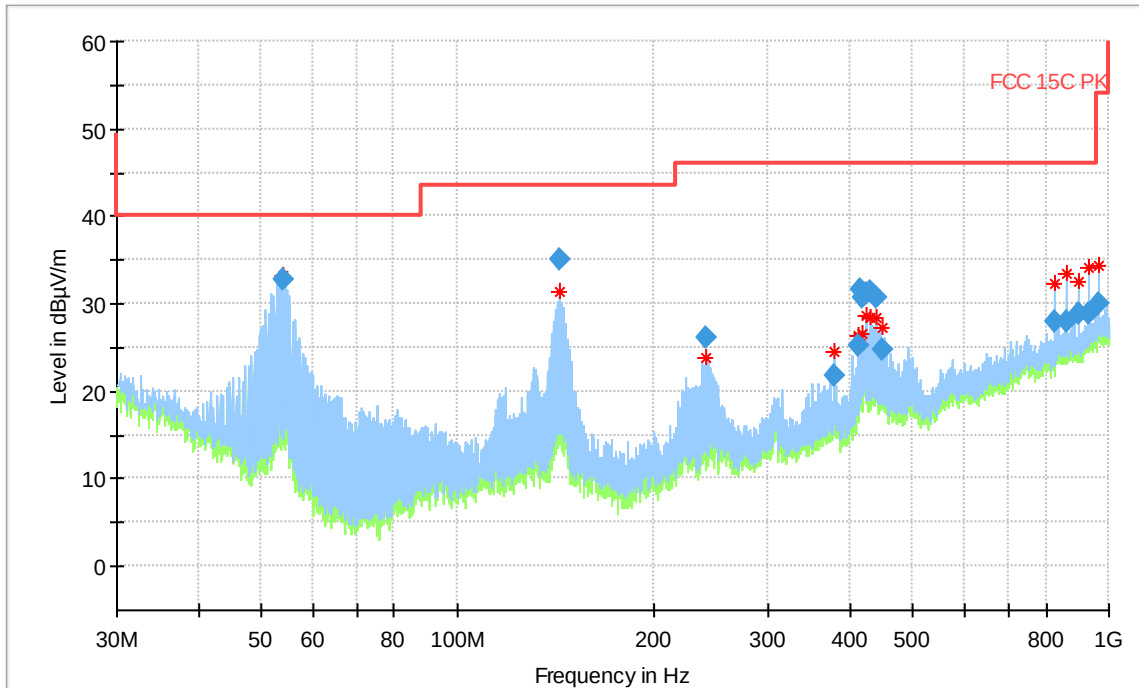
Plot # 1 Radiated Emissions: 30MHz – 1GHz

Modulation: GFSK

Channel: Low

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
53.853	32.82	40.00	7.18	100.0	100.0	123.0	V	31.0	-20	7:31:45 PM - 1/17/2019
143.455	35.12	43.50	8.38	100.0	100.0	217.0	H	89.0	-19	7:34:23 PM - 1/17/2019
240.066	26.03	46.00	19.97	100.0	100.0	195.0	H	279.0	-19	7:37:14 PM - 1/17/2019
378.300	21.83	46.00	24.17	100.0	100.0	100.0	H	112.0	-15	7:40:06 PM - 1/17/2019
413.292	25.16	46.00	20.84	100.0	100.0	100.0	H	230.0	-14	7:42:48 PM - 1/17/2019
415.046	31.51	46.00	14.49	100.0	100.0	100.0	H	254.0	-14	7:45:20 PM - 1/17/2019
416.955	30.81	46.00	15.19	100.0	100.0	100.0	H	246.0	-14	7:47:52 PM - 1/17/2019
424.348	31.24	46.00	14.76	100.0	100.0	108.0	H	234.0	-14	7:50:16 PM - 1/17/2019
429.297	31.35	46.00	14.65	100.0	100.0	108.0	H	238.0	-14	7:52:50 PM - 1/17/2019
439.189	30.65	46.00	15.35	100.0	100.0	152.0	V	182.0	-15	7:55:35 PM - 1/17/2019
447.669	24.83	46.00	21.17	100.0	100.0	117.0	H	223.0	-14	7:58:25 PM - 1/17/2019
826.247	28.06	46.00	17.94	100.0	100.0	165.0	H	31.0	-20	7:31:45 PM - 1/17/2019
863.425	27.94	46.00	18.06	100.0	100.0	281.0	H	89.0	-19	7:34:23 PM - 1/17/2019
898.219	28.92	46.00	17.08	100.0	100.0	100.0	H	279.0	-19	7:37:14 PM - 1/17/2019
931.749	28.87	46.00	17.13	100.0	100.0	139.0	H	112.0	-15	7:40:06 PM - 1/17/2019
966.996	29.93	54.00	24.07	100.0	100.0	187.0	H	230.0	-14	7:42:48 PM - 1/17/2019



— RMS_MAXH — PK+_MAXH ◆ Critical_Freqs RMS
* Critical_Freqs PK+ — FCC 15C PK ◆ Final_Result PK+
◆ Final_Result RMS

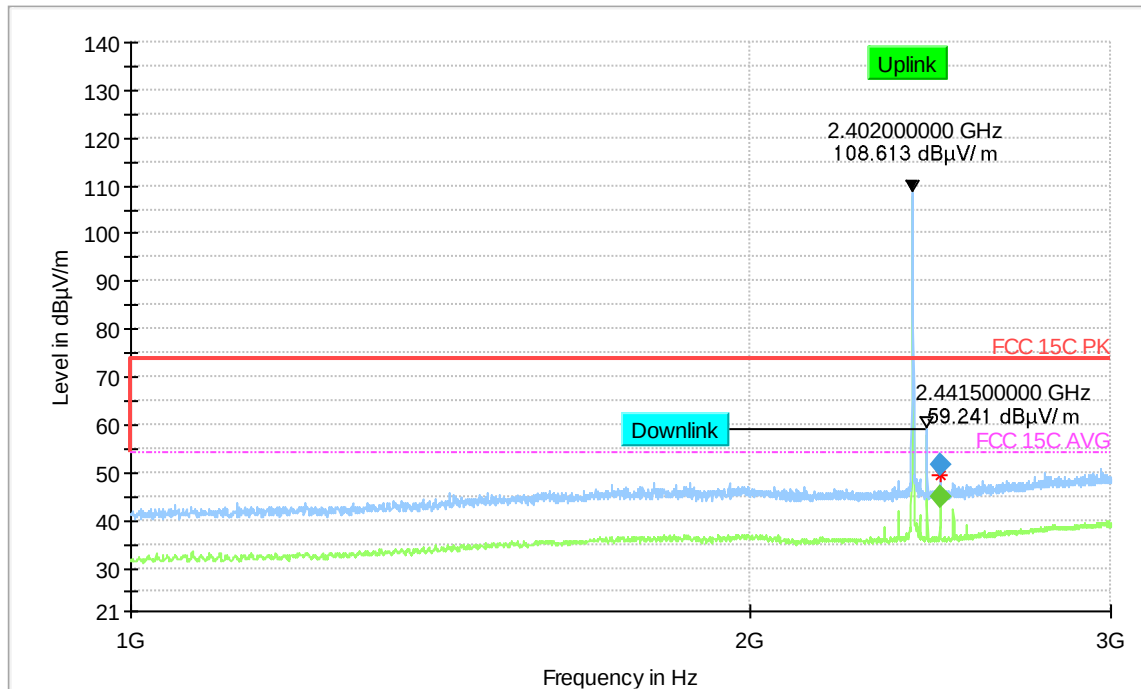
Plot # 2 Radiated Emissions: 1 – 3GHz

Modulation: GFSK

Channel: Low

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	RMS (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height	Pol	Azi mut	Cor r.	Sig Pat	Pre am	Trd Cor	Ra w	Co mm
2476.715	---	44.94	53.98	9.04	300.0	1000.0	115.0	H	17.0	8	-22	0	30	37	3:17
2477.025	51.59	---	73.99	22.41	300.0	1000.0	122.0	H	21.0	8	-22	0	30	43	3:15



Preview Result 2-RMS
Critical_Freqs PK+
Final_Result PK+

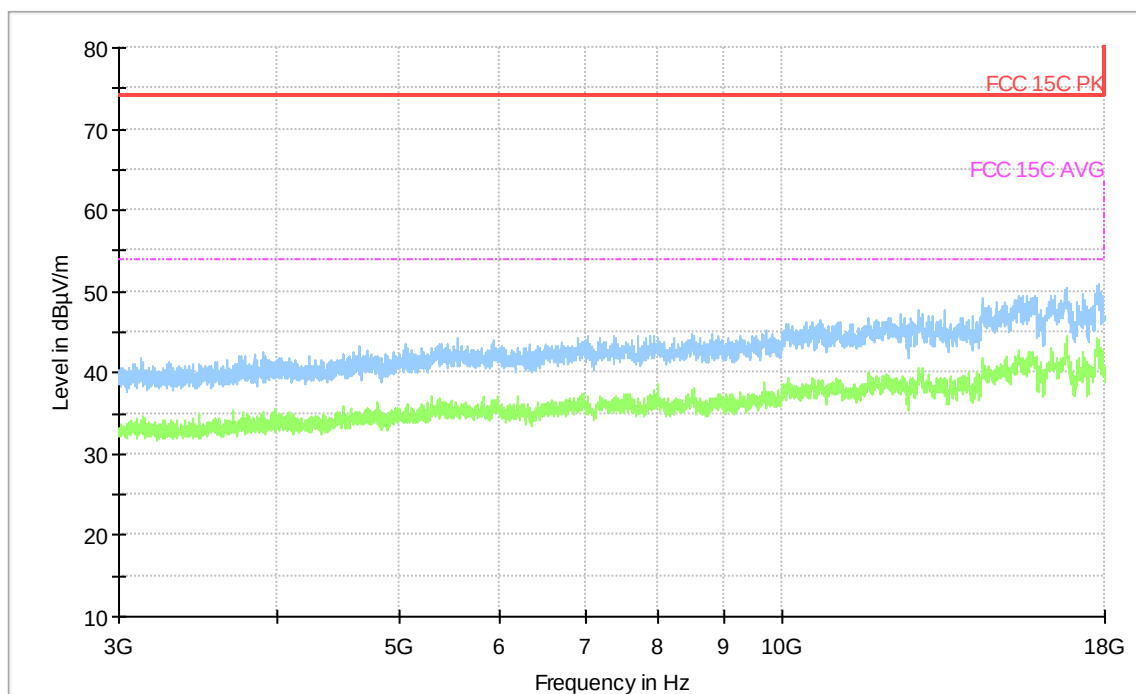
Preview Result 1-PK+
FCC 15C PK
Final_Result RMS

Critical_Freqs RMS
FCC 15C AVG

Plot # 3 Radiated Emissions: 3 – 18GHz

Modulation: GFSK

Channel: Low

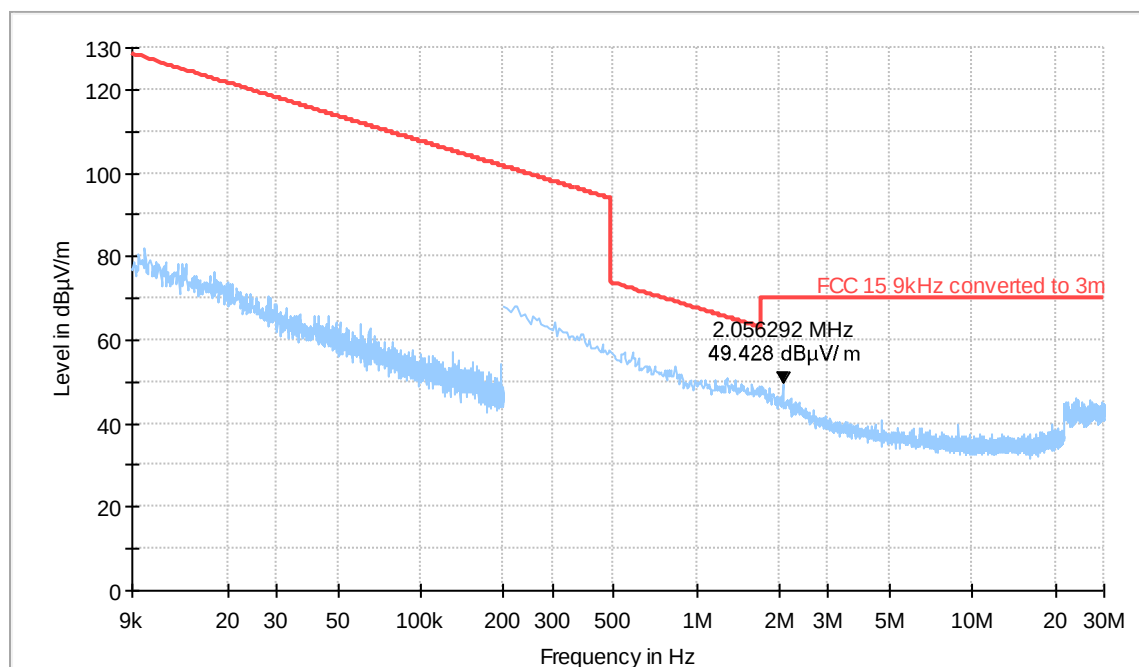


—	RMS_MAXH	—	PK+ MAXH	*	Critical_Freqs RMS
*	Critical_Freqs PK+	—	FCC 15C PK	*	FCC 15C AVG
◆	Final_Result PK+	◆	Final_Result RMS		

Plot # 4 Radiated Emissions: 9KHz – 30MHz

Modulation: GFSK

Channel: Mid



- | | |
|--|--|
| — Preview Result 2-RMS | — Preview Result 1-PK+ |
| * Critical_Freqs RMS | * Critical_Freqs PK+ |
| — FCC 15 9kHz converted to 3m | ◆ Final_Result PK+ |
| ◆ Final_Result RMS | |

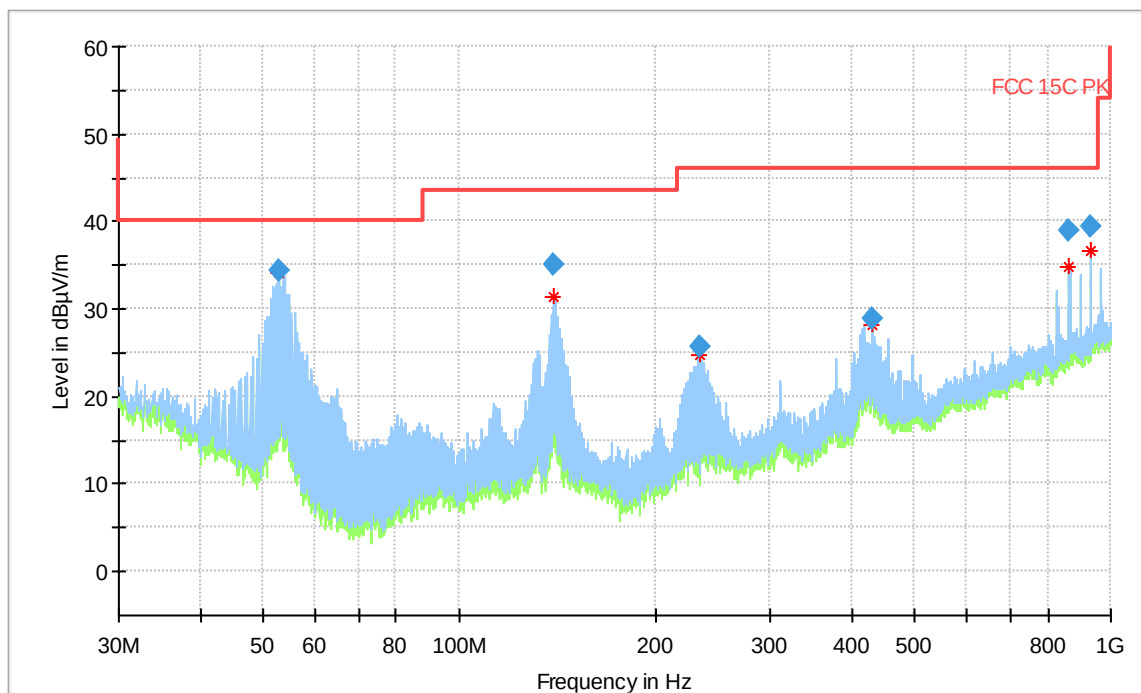
Plot # 5 Radiated Emissions: 30MHz – 1GHz

Modulation: GFSK

Channel: Mid

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
52.861	34.38	40.00	5.62	100.0	100.0	108.0	V	20.0	-20	11:56:47 AM - 1/18/2019
139.958	35.06	43.50	8.44	100.0	100.0	209.0	H	257.0	-19	11:59:39 AM - 1/18/2019
234.036	25.70	46.00	20.30	100.0	100.0	108.0	H	113.0	-19	12:02:27 PM - 1/18/2019
431.646	28.80	46.00	17.20	100.0	100.0	100.0	H	240.0	-14	12:05:09 PM - 1/18/2019
864.737	39.05	46.00	6.95	100.0	100.0	108.0	H	243.0	-6	12:07:33 PM - 1/18/2019
933.814	39.44	46.00	6.56	100.0	100.0	195.0	H	240.0	-6	12:09:52 PM - 1/18/2019



— RMS_MAXH — PK+ MAXH * Critical_Freqs RMS
* Critical_Freqs PK+ — FCC 15C PK ♦ Final_Result PK+
♦ Final_Result RMS

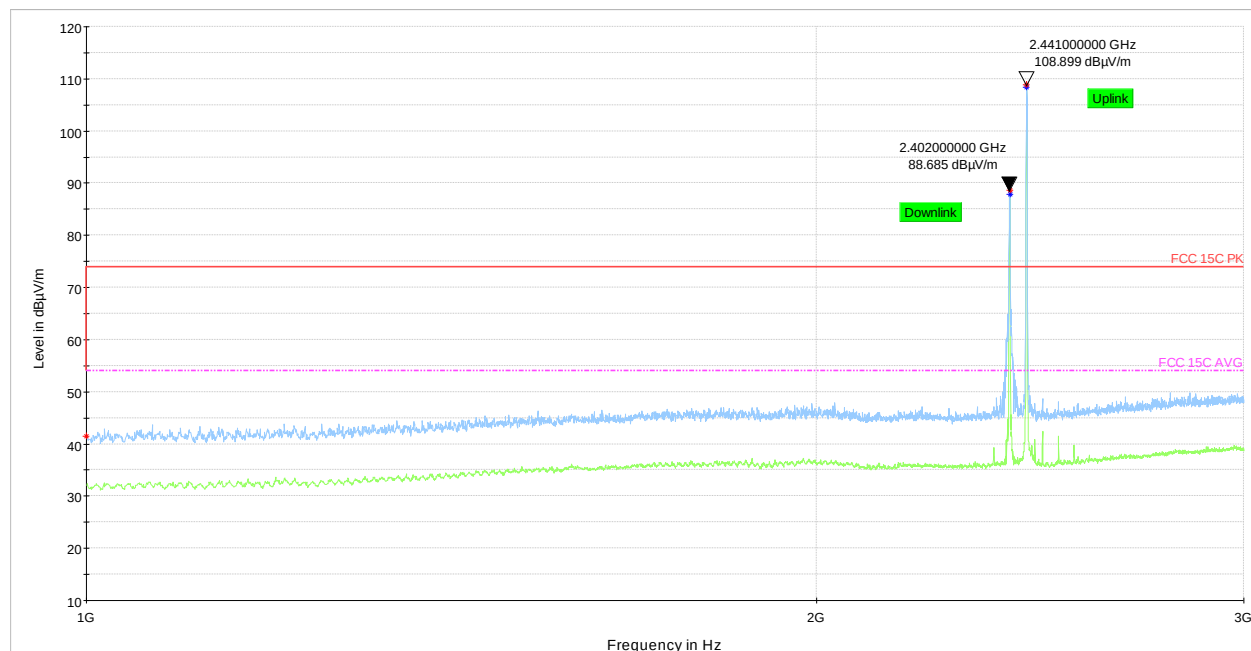
Plot # 6 Radiated Emissions: 1 – 3GHz

Modulation: GFSK

Channel: Mid

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	RMS (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
2476.715	---	44.94	53.98	9.04	300.0	1000.0	115.0	H	17.0	8	3:17:59 PM - 1/18/2019
2477.025	51.59	---	73.99	22.41	300.0	1000.0	122.0	H	21.0	8	3:15:05 PM - 1/18/2019



Preview Result 2-RMS
FCC 15C PK

Preview Result 1-PK+
FCC 15C AVG

Critical_Freqs RMS
Final_Result PK+

Critical_Freqs PK+
Final_Result RMS

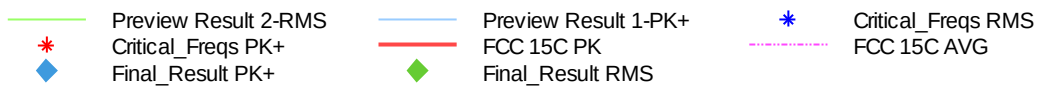
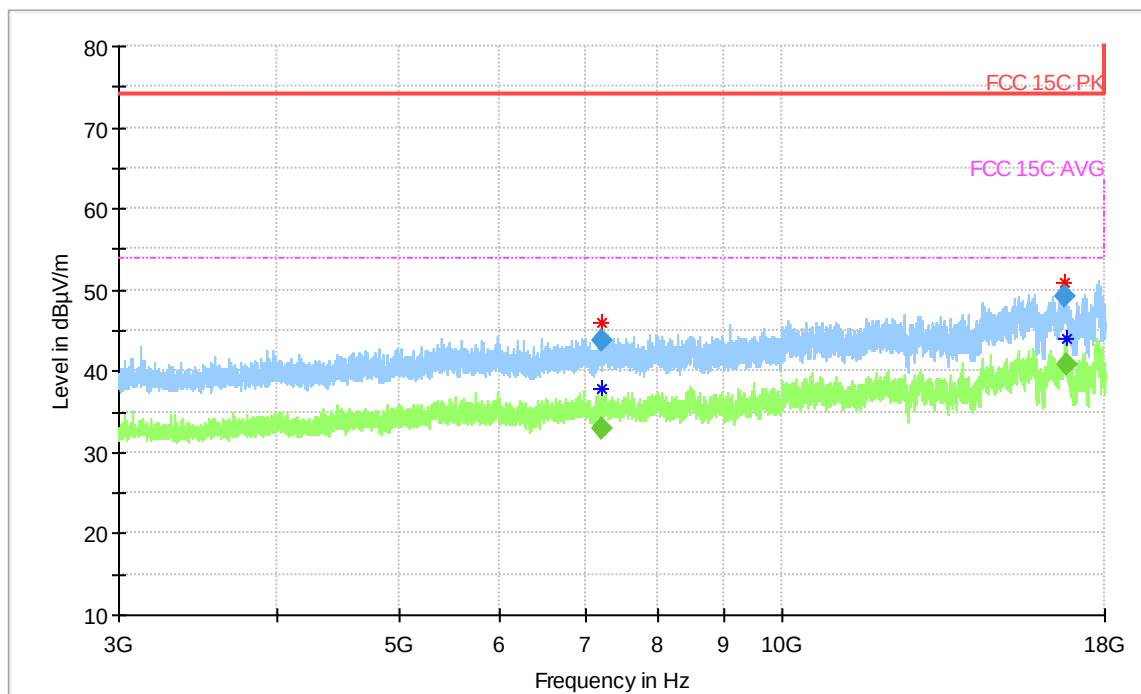
Plot # 7 Radiated Emissions: 3 – 18GHz

Modulation: GFSK

Channel: Mid

Final_Result

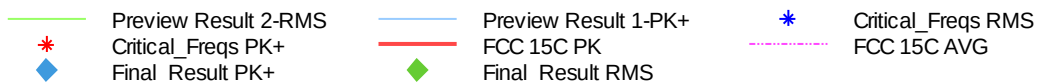
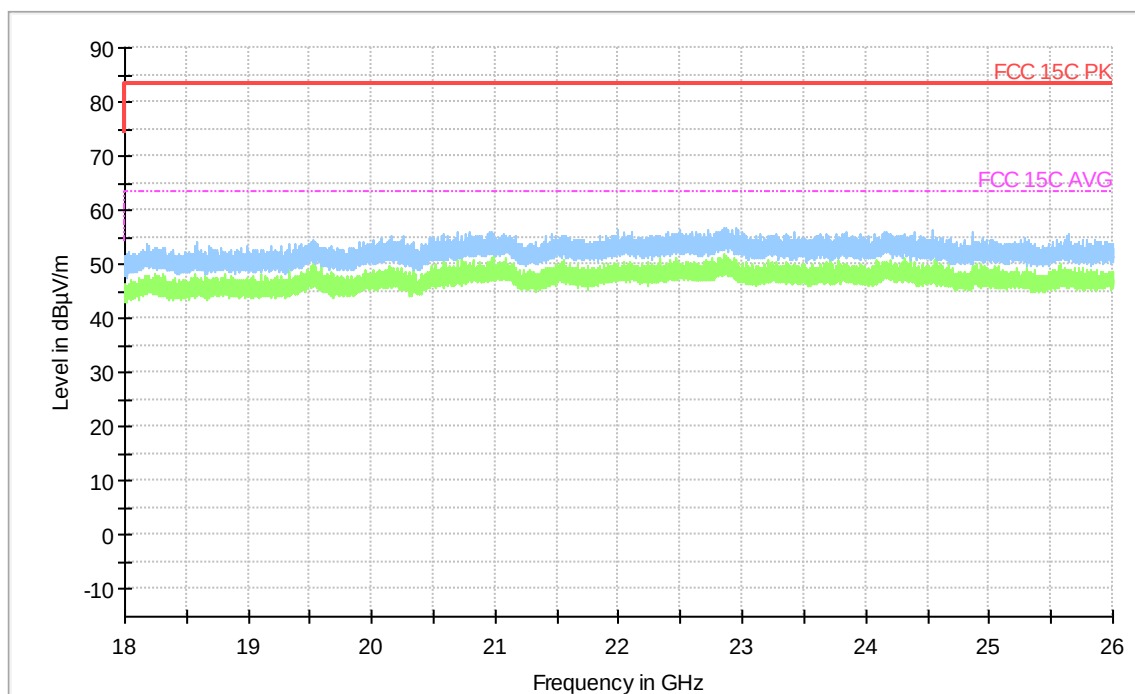
Frequency (MHz)	MaxPeak (dBμV/m)	RMS (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
7205.684	---	32.96	53.98	21.02	200.0	1000.0	311.0	V	-2.0	-30	4:03:14 PM - 1/18/2019
7206.461	43.88	---	73.99	30.10	200.0	1000.0	206.0	V	-17.0	-30	4:00:10 PM - 1/18/2019
16761.298	49.29	---	73.98	24.69	10.0	1000.0	293.0	H	318.0	-15	3:56:25 PM - 1/18/2019
16781.665	---	40.89	53.98	13.09	10.0	1000.0	320.0	V	203.0	-15	4:06:28 PM - 1/18/2019



Plot # 8 Radiated Emissions: 18 – 26GHz

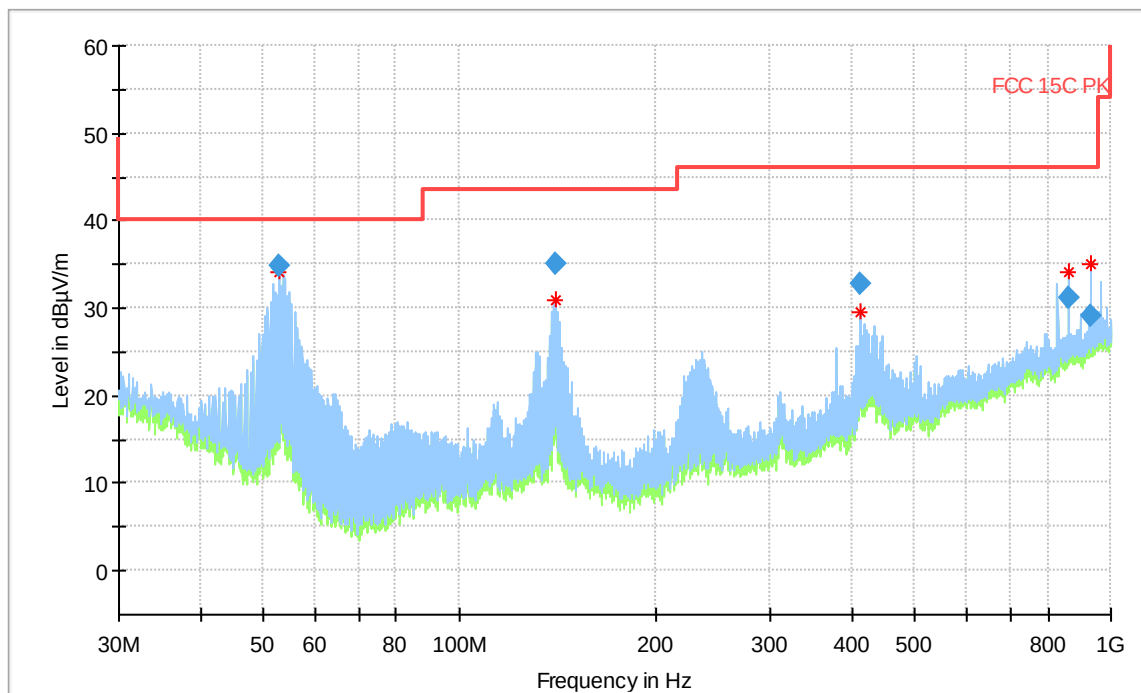
Modulation: GFSK

Channel: Mid



Plot # 9 Radiated Emissions: 30MHz – 1GHz**Modulation: GFSK****Channel: High****Final_Result**

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
52.841	34.74	40.00	5.26	100.0	100.0	100.0	V	32.0	-20	11:35:12 AM - 1/18/2019
140.429	35.11	43.50	8.39	100.0	100.0	186.0	H	92.0	-19	11:37:49 AM - 1/18/2019
413.271	32.79	46.00	13.21	100.0	100.0	100.0	H	252.0	-14	11:40:39 AM - 1/18/2019
861.084	31.27	46.00	14.73	100.0	100.0	117.0	H	238.0	-6	11:43:03 AM - 1/18/2019
931.726	29.03	46.00	16.97	100.0	100.0	300.0	H	57.0	-6	11:45:33 AM - 1/18/2019

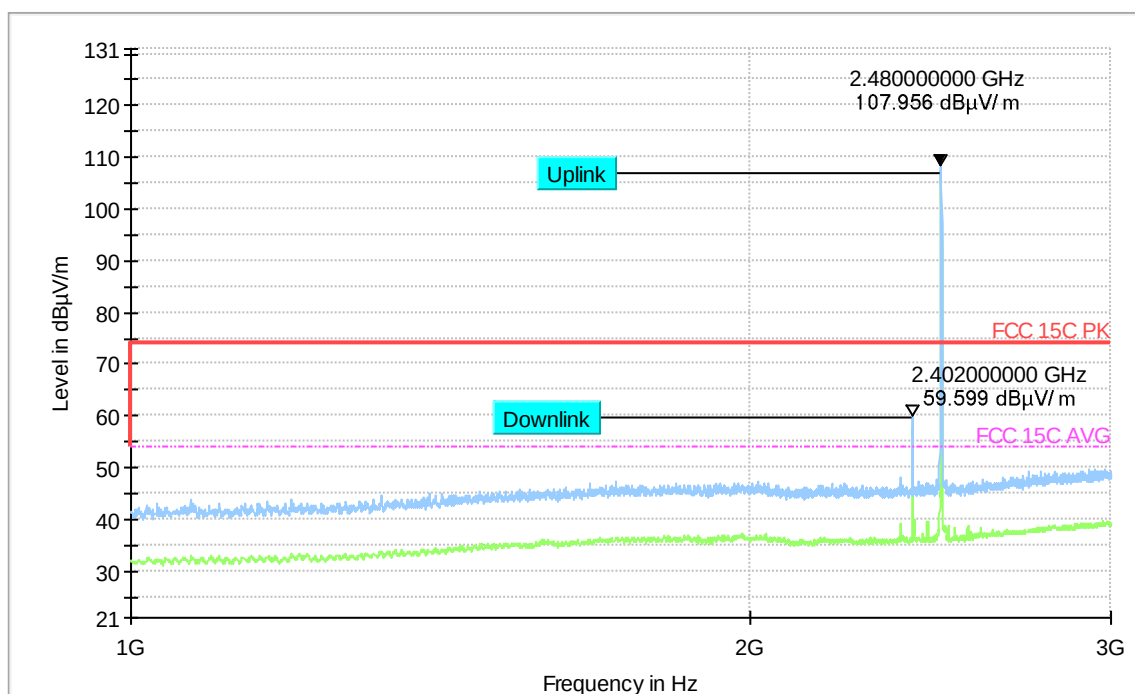


— RMS_MAXH — PK+_MAXH * Critical_Freqs RMS
* Critical_Freqs PK+ — FCC 15C PK ◆ Final_Result PK+
◆ Final_Result RMS

Plot # 10 Radiated Emissions: 1 – 3GHz

Modulation: BT GFSK

Channel: High



- | | | |
|---|--|--|
| — Preview Result 2-RMS | — Preview Result 1-PK+ | * Critical_Freqs RMS |
| * Critical_Freqs PK+ | — FCC 15C PK | - - - FCC 15C AVG |
| ◆ Final_Result PK+ | ◆ Final_Result RMS | |

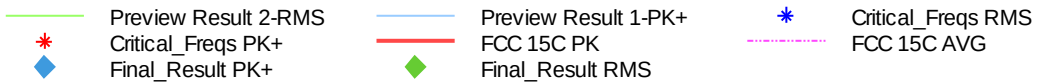
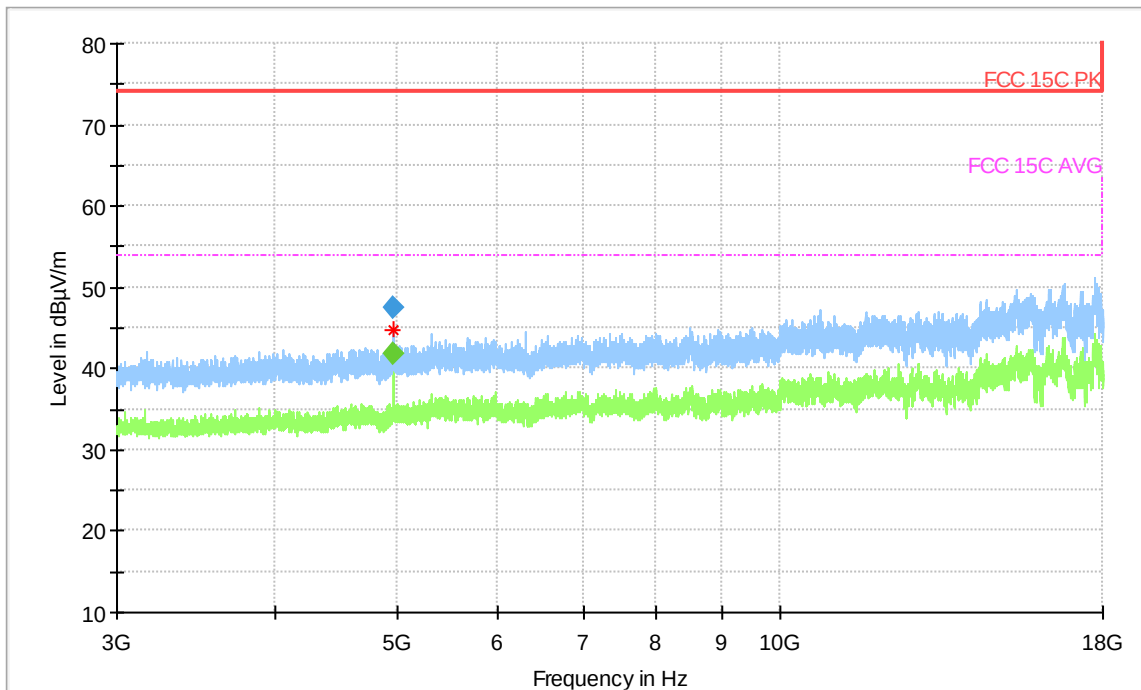
Plot # 11 Radiated Emissions: 3 – 18GHz

Modulation: BT GFSK

Channel: High

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	RMS (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
4959.796	47.48	---	73.99	26.51	200.0	1000.0	114.0	H	139.0	-33	3:41:38 PM - 1/18/2019
4959.964	---	41.79	53.98	12.19	200.0	1000.0	100.0	H	130.0	-33	3:44:42 PM - 1/18/2019



9 Test setup photos

Setup photos are included in supporting file name: "EMC_KPTRK_006_18001_FCC_ISED_Setup_Photos.pdf"

10 Test Equipment And Ancillaries Used For Testing

Equipment Type	Manufacturer	Model	Serial #	Calibration Cycle	Last Calibration Date
PASSIVE LOOP	ETS.LINDGREN	6512	00164698	3 YEARS	08/08/2017
BILOG ANTENNA	TESEO	CBL 6141B	41106	3 YEARS	11/01/2017
HORN ANTENNA	ETS.LINDGREN	3115	00035114	3 YEARS	07/31/2017
HORN ANTENNA	ETS.LINDGREN	3117	0167061	3 YEARS	08/08/2017
HORN ANTENNA	ETS.LINDGREN	3116C	00166821	3 YEARS	09/24/2017
SIGNAL ANALYZER	R&S	FSV 40	101022	3 YEARS	07/05/2017
BLUETOOTH TESTER	R&S	CBT	100212	2 YEARS	07/09/2017
COMPACT DIGITAL BAROMETER	CONTROL COMPANY	35519-055	91119547	2 YEARS	06/20/2017
THRMOMETER HUMIDIY	DICKSON	TM320	16253639	3 YEARS	11/02/2017

Note: 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.

11 Revision History

Date	Report Name	Changes to report	Report prepared by
03/15/2019	EMC_KPTRK_006_18001_FCC_15.247_ISED_BT_DSS	Initial Version	Issa Ghanma