



**FCC 47 CFR PART 15 SUBPART C  
C2PC CERTIFICATION TEST REPORT  
FOR**

**WALKIE-TALKIE ACCESSORY**

**MODEL NAME: GVC200WTH**

**MODEL NUMBER: LG-VC110, LGVC110, VC110, LG-VC110B, LGVC110B, VC110B**

**FCC ID: ZNFVC110**

**REPORT NUMBER: 16I22628-E2V2**

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**NVLAP LAB CODE 200065-0**

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	1/26/2016	Initial issue	D. CORONIA
V2	2/15/2016	Updated EUT Description	D. CORONIA

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** LG ELECTRONICS MOBILECOMM U.S.A., INC.  
**EUT DESCRIPTION:** WALKIE-TALKIE ACCESSORY  
**MODEL NAME:** GVC200WTH  
**MODEL #:** LG-VC110, LGVC110, VC110, LG-VC110B, LGVC110B, VC110B  
**SERIAL NUMBER:** A1000040E03DCD, A1000040E03DCA, A1000040E03DC9  
**DATE TESTED:** JANUARY 12-15, 2016

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

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## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013 for FCC, FCC CFR 47 Part 2, and FCC CFR 47 Part 15.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street
<input type="checkbox"/> Chamber A	<input type="checkbox"/> Chamber D
<input checked="" type="checkbox"/> Chamber B	<input type="checkbox"/> Chamber E
<input checked="" type="checkbox"/> Chamber C	<input type="checkbox"/> Chamber F
	<input type="checkbox"/> Chamber G
	<input type="checkbox"/> Chamber H

The above test sites and facilities are covered under FCC Test Firm Registration # 208313.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0.

Chambers A through H are covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-8, respectively.

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

### 4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Disturbance, 9KHz to 30 MHz	2.14 dB
Radiated Disturbance, 30 to 1000 MHz	4.98 dB
Radiated Disturbance, 1000 to 6000 MHz	3.86 dB
Radiated Disturbance, 6000 to 18000 MHz	4.23 dB
Radiated Disturbance, 18000 to 26000 MHz	5.30 dB
Radiated Disturbance, 26000 to 40000 MHz	5.23 dB

Uncertainty figures are valid to a confidence level of 95%.

## **5. EQUIPMENT UNDER TEST**

### **5.1. DESCRIPTION OF EUT**

The EUT is a WALKIE-TALKIE ACCESSORY.

### **5.1. MAXIMUM OUTPUT POWER**

See original report for details

### **5.2. DESCRIPTION OF AVAILABLE ANTENNAS**

The radio utilizes an LMA antenna, with a maximum gain of -0.14 dBi.

### **5.3. WORST-CASE CONFIGURATION AND MODE**

Radiated emission and power line conducted emission were performed with the EUT set to transmit on the channel with higher output power as worst-case scenario.

The fundamental of the EUT was investigated in three orthogonal orientations X, Y, Z it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

## 5.4. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	LG	DC1507	EAD62377906	N/A
Laptop	LENOVO	2349CW5	PBB4M4Y	N/A
Laptop AC Adapter	LENOVO	ADLX65NCT2A	36200293	N/A

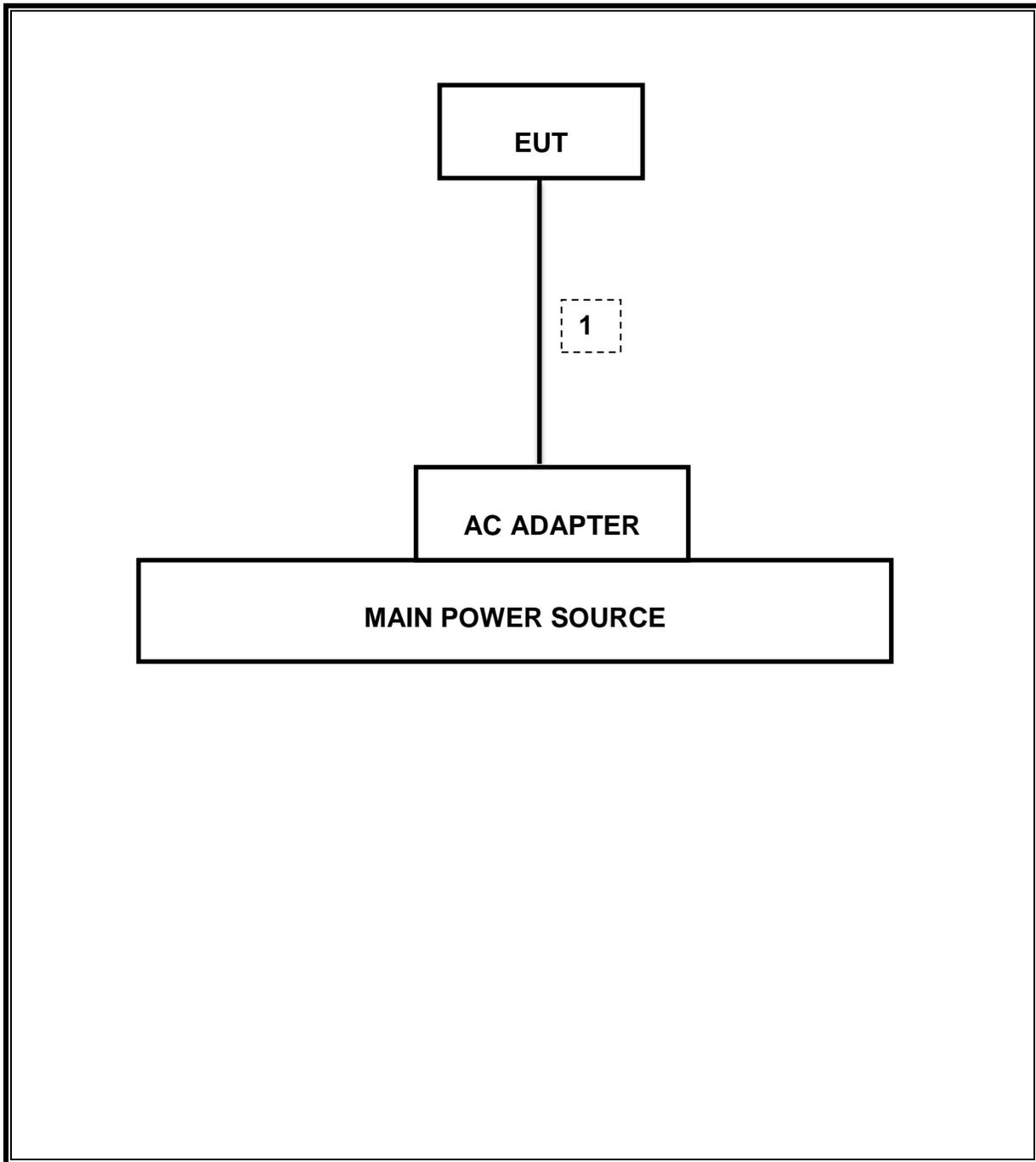
### I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	Mini-USB	Shielded	1.2m	N/A

### TEST SETUP

The EUT is continuously communicating to the Bluetooth tester during the tests. EUT was set in the Hidden menu mode to enable BT communications.

**SETUP DIAGRAM FOR TESTS**



## 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	Manufacturer	Model	T Number	Cal Due
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB1	130	09/01/16
Antenna, Horn, 18GHz	ETS Lindgren	3117	345	03/03/16
Antenna, Horn, 18GHz	ETS Lindgren	3117	119	01/15/16
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	447	05/12/16
RF Preamplifier, 1GHz - 18GHz	Miteq	NSP4000-SP2	88	04/07/16
RF Preamplifier, 1GHz - 26.5GHz	HP	8449B	404	06/29/16
Amplifier, 10KHz to 1 GHz	Keysight	8447D	15	08/14/16
Spectrum Analyzer, PXA, 3 Hz to 44 GHz	Keysight	N9030A	907	01/06/17
Bluetooth Tester	Rohde & Schwarz	CBT	438	04/24/16
Directional Coupler	Mini-Circuits	ZUDC10-183+	1140	CNR
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	417	05/04/16
High Pass Filter 6GHz	Micro-Tronics	HPS17542	893	04/25/16
High Pass Filter 3GHz	Micro-Tronics	HPS17543	898	04/25/16

Test Software List			
Description	Manufacturer	Model	Version
Radiated Software	UL	UL EMC	Ver 9.5, June 24, 2015

## 7. SUMMARY TABLE

2PC Reason: Please see LG-VC110 FCC Class II change description for details.

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result
2.1049	RSS-GEN 6.6	20 dB Occupied Bandwidth & (99%)	N/A	Conducted	See Original
2.1051, 15.247 (d)	RSS-247 5.5	Band Edge / Conducted Spurious Emission	-20dBc		See Original
15.247 (b)(1)	RSS-247 5.4.2	TX conducted output power	<21dBm		See Original
15.247 (a)(1)	RSS-247 5.1.2	Hopping frequency separation	> 25KHz		See Original
15.247 (a)(1)(iii)	RSS-247 5.1.4	Number of Hopping Channels	More than 15 non-overlapping channels		See Original
15.247 (a)(1)(iii)	RSS-247 5.1.4	Avg Time of Occupancy	< 0.4sec		See Original
15.207 (a)	RSS-GEN 8.8	AC Power Line conducted emissions	Section 10	Radiated	See Original
15.205, 15.209	RSS-GEN 8.9/7	Radiated Spurious Emission	< 54dBuV/m		Pass

## 8. ANTENNA PORT TEST RESULTS

### 8.1. ON TIME, DUTY CYCLE

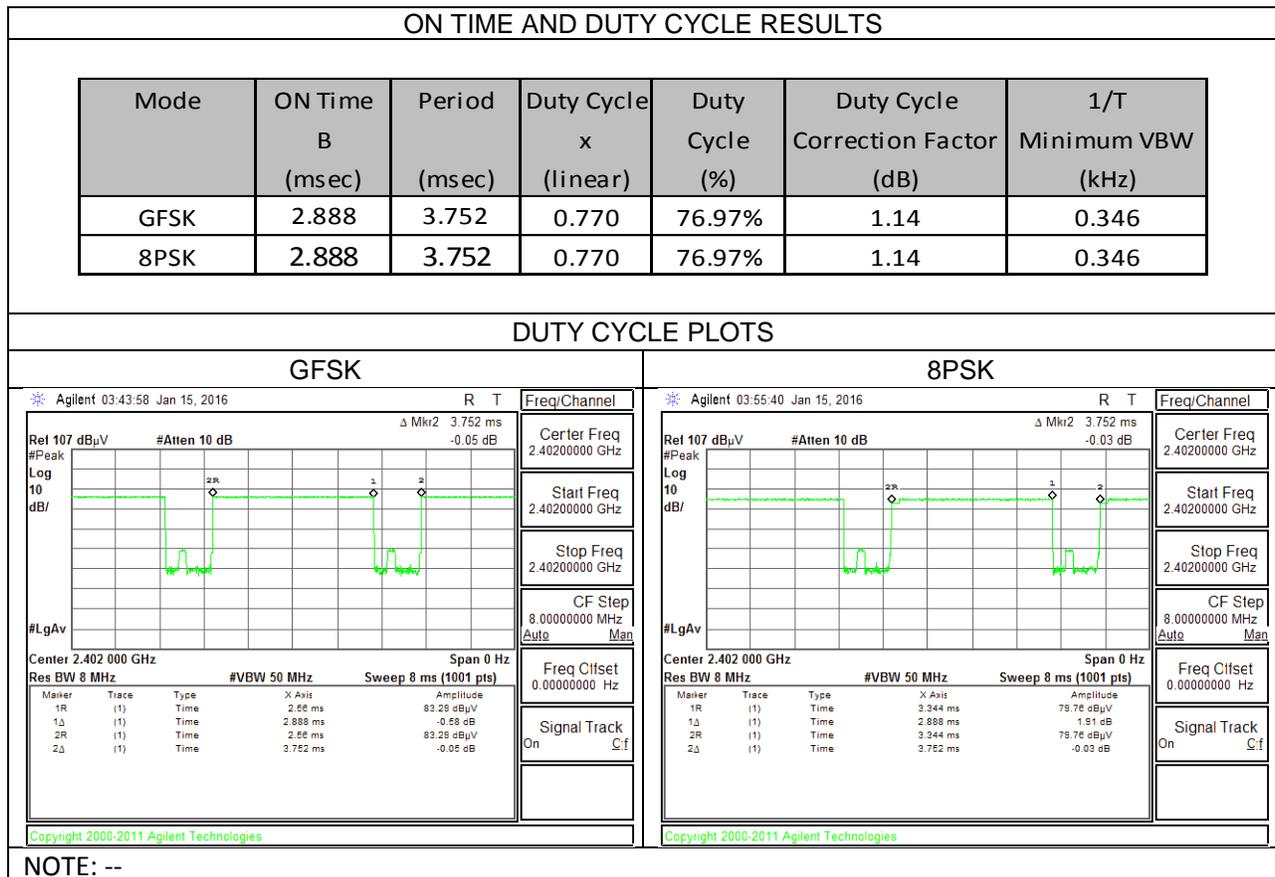
#### LIMITS

None; for reporting purposes only

#### PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method

#### RESULTS



## 9. RADIATED TEST RESULTS

### LIMITS

FCC §15.205 and §15.209

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

### TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150cm for above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For band edge measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 1/T (on time) for average measurement.

$$\text{GFSK} = 1/T = 1 / 0.00288\text{S} = 347\text{Hz}.$$

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

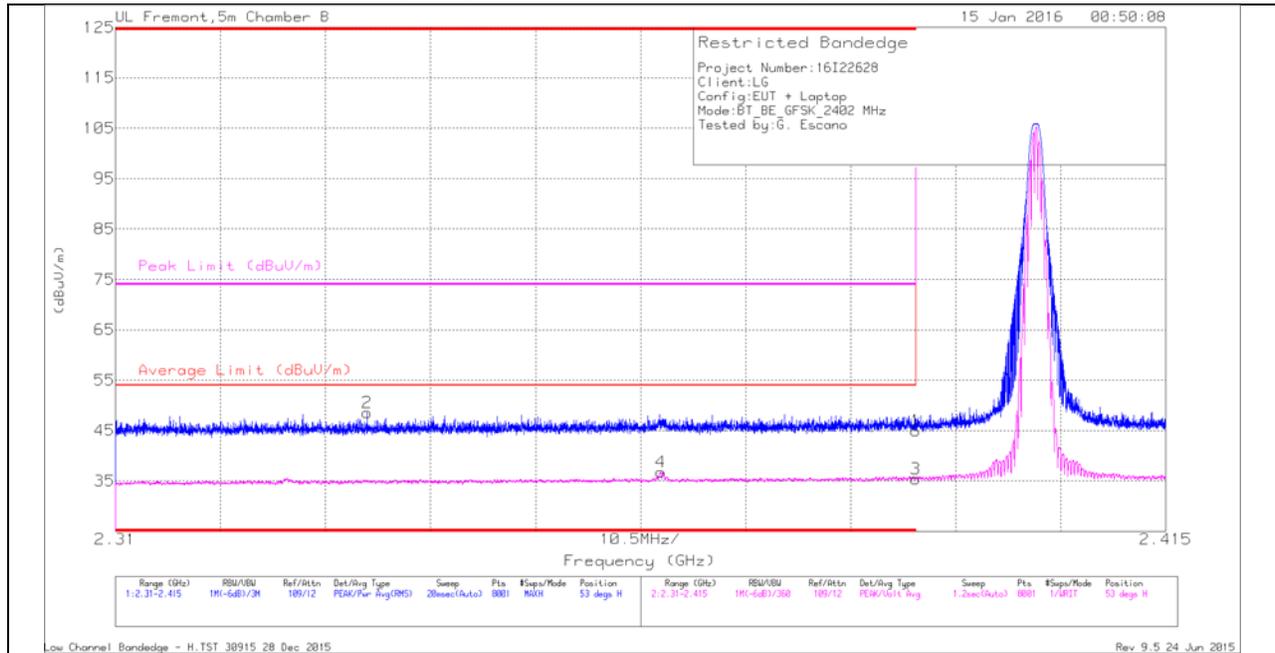
### RESULTS

## 9.1. TRANSMITTER ABOVE 1 GHz

### 9.1.1. GFSK MODULATION

#### RESTRICTED BANDEDGE (LOW CHANNEL)

##### HORIZONTAL PEAK AND AVERAGE PLOT



#### HORIZONTAL DATA

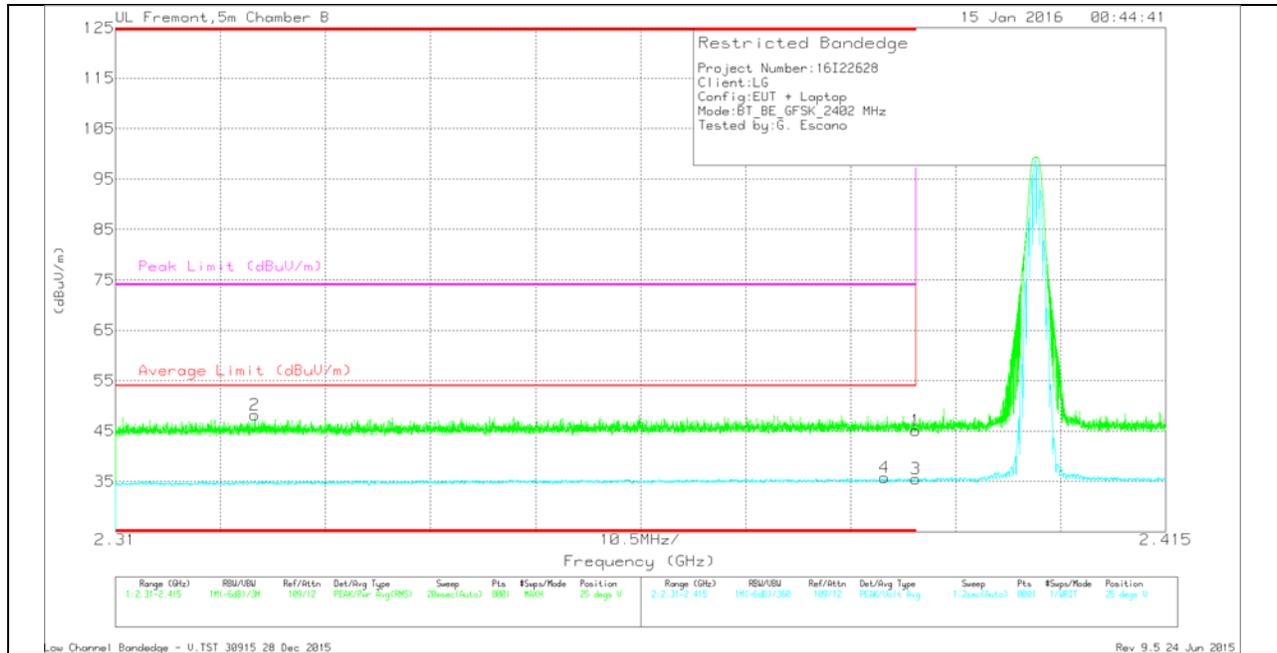
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/ Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	34.82	Pk	32	-21.9	44.92	-	-	74	-29.08	53	268	H
2	* 2.335	38.8	Pk	31.7	-21.9	48.6	-	-	74	-25.4	53	268	H
3	* 2.39	25.29	VA1T	32	-21.9	35.39	54	-18.61	-	-	53	268	H
4	* 2.365	26.8	VA1T	31.9	-21.9	36.8	54	-17.2	-	-	53	268	H

\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B=1/T_{on}$  where:  $T_{on}$  is transmit duration

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	35.03	Pk	32	-21.9	45.13	-	-	74	-28.87	25	393	V
2	* 2.324	38.3	Pk	31.7	-21.8	48.2	-	-	74	-25.8	25	393	V
3	* 2.39	25.43	VA1T	32	-21.9	35.53	54	-18.47	-	-	25	393	V
4	* 2.387	25.61	VA1T	32	-21.9	35.71	54	-18.29	-	-	25	393	V

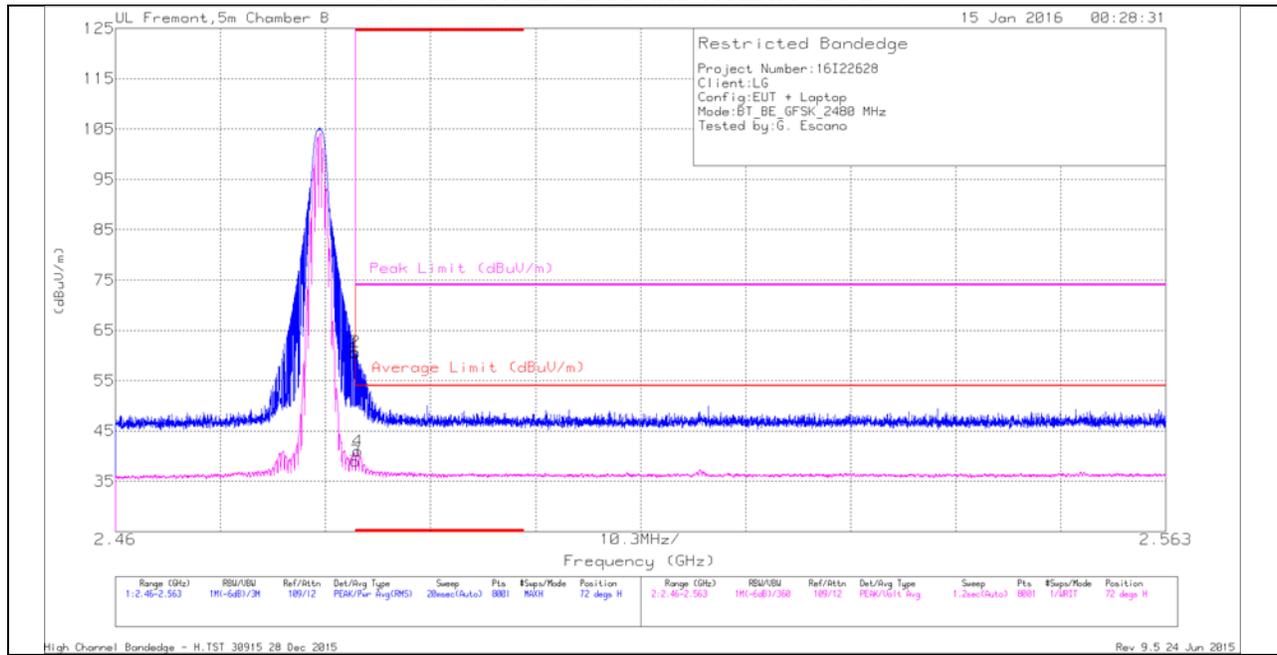
\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B=1/T_{on}$  where:  $T_{on}$  is transmit duration

## AUTHORIZED BANDEDGE (HIGH CHANNEL)

### HORIZONTAL PEAK AND AVERAGE PLOT



### HORIZONTAL DATA

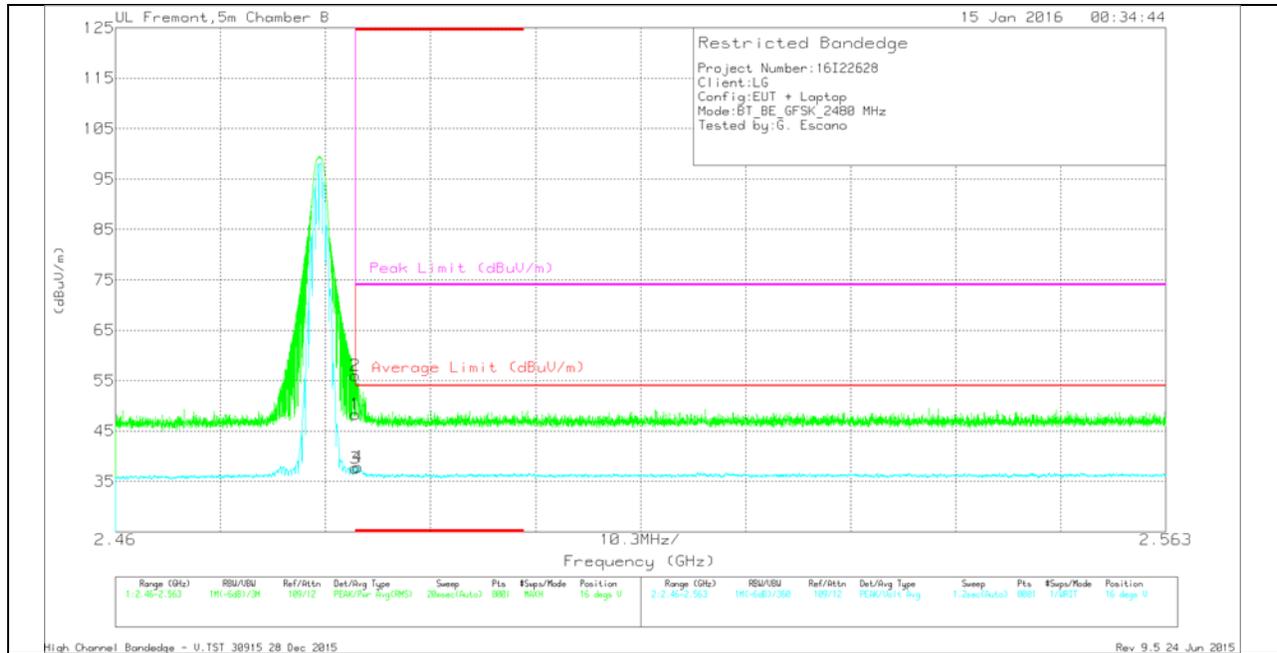
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	49.82	Pk	32.5	-21.8	60.52	-	-	74	-13.48	72	363	H
2	* 2.484	49.98	Pk	32.5	-21.8	60.68	-	-	74	-13.32	72	363	H
3	* 2.484	28.33	VA1T	32.5	-21.8	39.03	54	-14.97	-	-	72	363	H
4	* 2.484	30.31	VA1T	32.5	-21.8	41.01	54	-12.99	-	-	72	363	H

\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B=1/T_{on}$  where:  $T_{on}$  is transmit duration

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	37.65	Pk	32.5	-21.8	48.35	-	-	74	-25.65	16	365	V
2	* 2.484	45.32	Pk	32.5	-21.8	56.02	-	-	74	-17.98	16	365	V
3	* 2.484	26.96	VA1T	32.5	-21.8	37.66	54	-16.34	-	-	16	365	V
4	* 2.484	27.2	VA1T	32.5	-21.8	37.9	54	-16.1	-	-	16	365	V

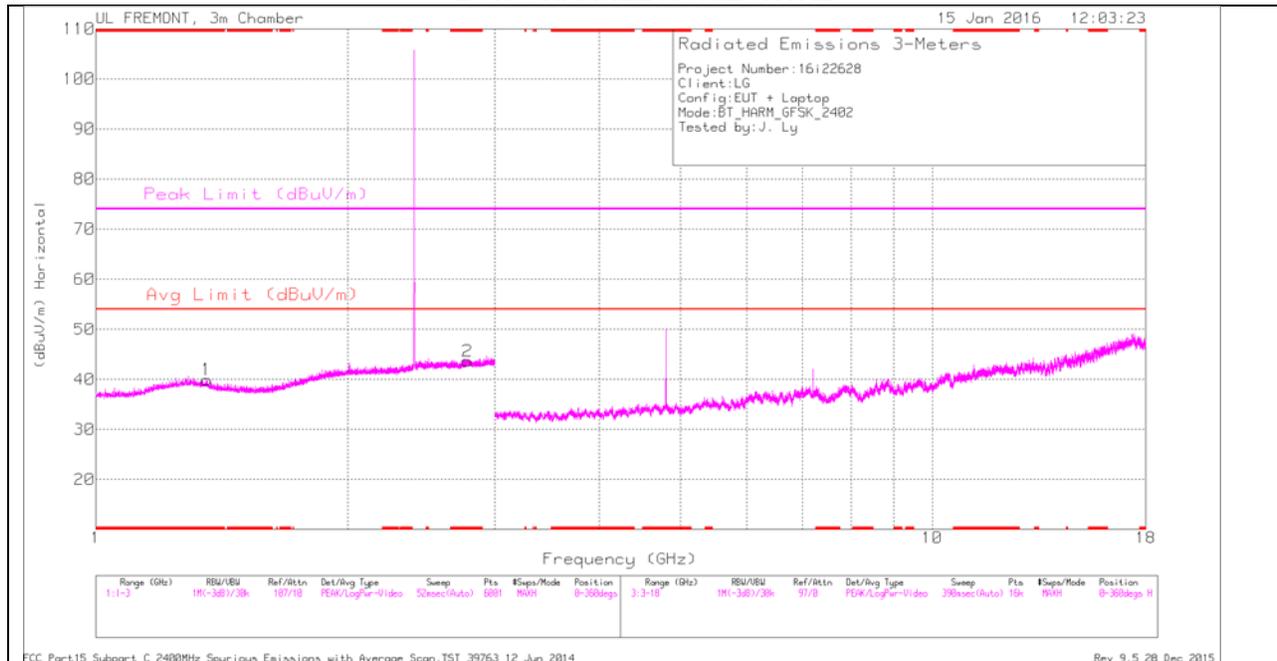
\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B=1/T_{on}$  where:  $T_{on}$  is transmit duration

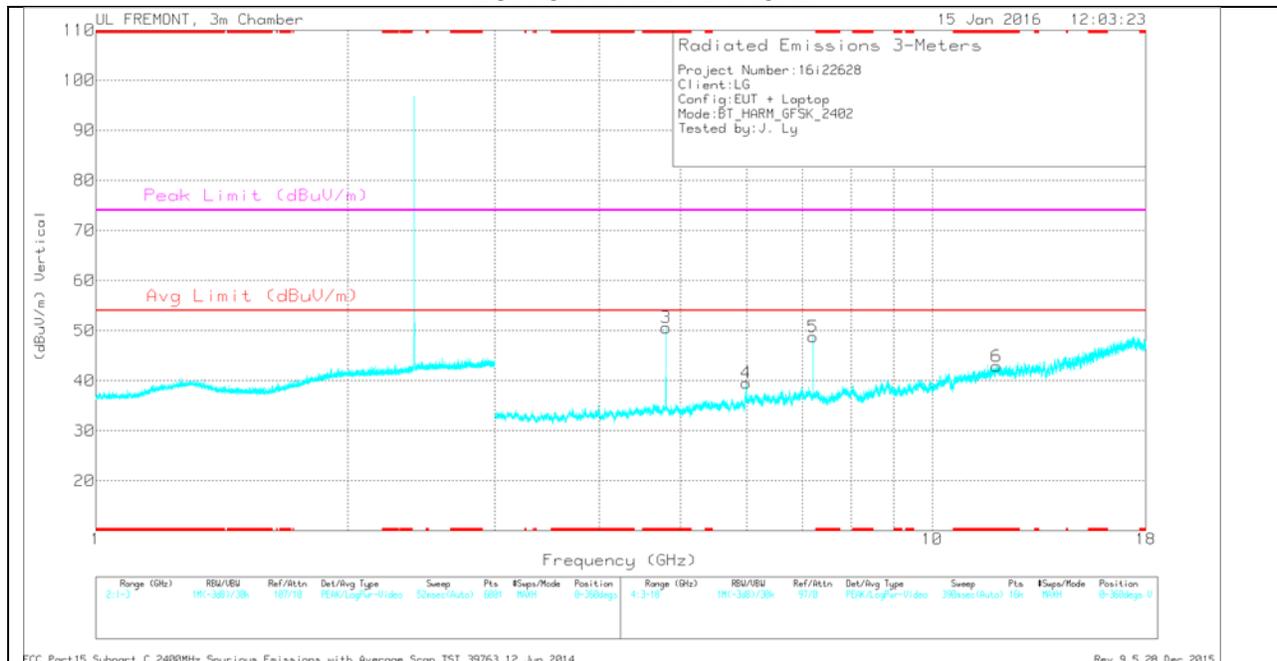
## HARMONICS AND SPURIOUS EMISSIONS

### LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

### LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

**LOW CHANNEL DATA**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.358	33.85	Avg	29.2	-23.1	39.95	54	-14.05	-	-	0-360	200	H
2	* 2.783	32.95	Avg	32.5	-21.8	43.65	54	-10.35	-	-	0-360	100	H
3	* 4.805	45.69	Avg	34	-29.1	50.59	54	-3.41	-	-	0-360	100	V
6	* 11.939	27.51	Avg	39.1	-23.7	42.91	54	-11.09	-	-	0-360	100	V
4	5.991	33.15	Avg	35.2	-28.8	39.55	54	-14.45	-	-	0-360	200	V
5	7.205	41.17	Avg	35.6	-28	48.77	54	-5.23	-	-	0-360	100	V

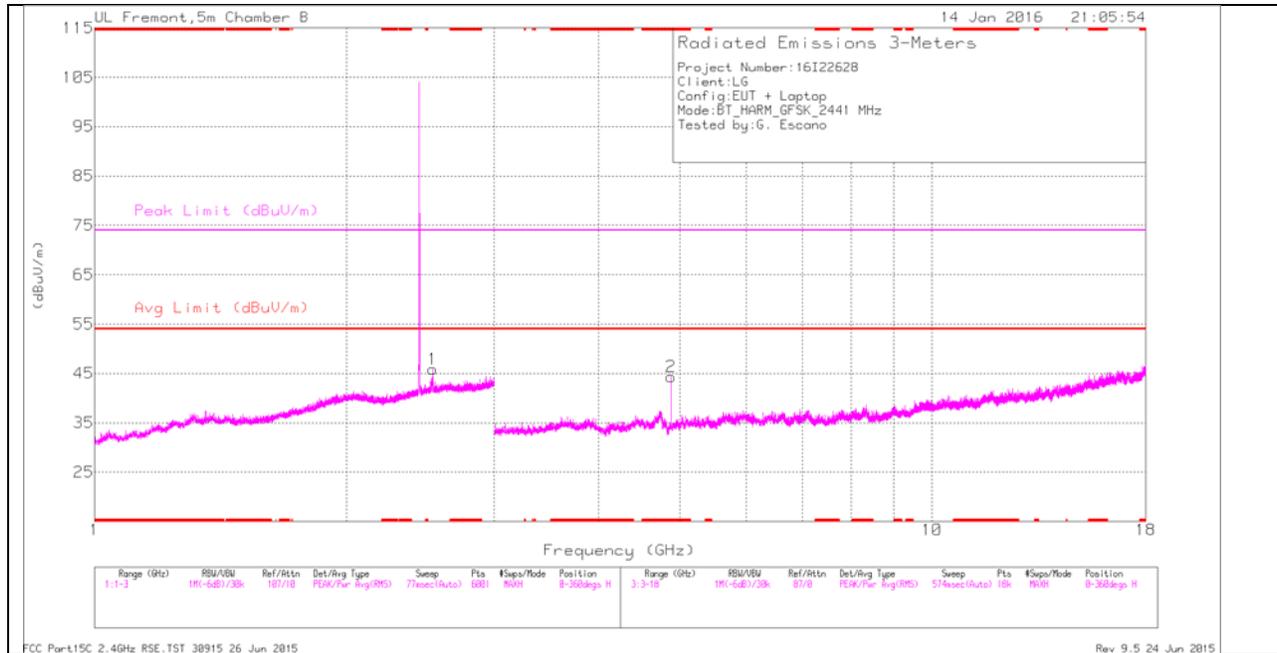
\* - indicates frequency in CFR47 Pt 15 / IC 8.10 Restricted Band  
 Avg - Video bandwidth < Resolution bandwidth

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.356	41.85	PKFH	29.2	-23.1	47.95	-	-	74	-26.05	0	100	H
* 1.357	29.85	VA1T	29.2	-23.1	35.95	54	-18.05	-	-	0	100	H
* 2.782	41.81	PKFH	32.5	-21.8	52.51	-	-	74	-21.49	0	100	H
* 2.782	29.52	VA1T	32.5	-21.8	40.22	54	-13.78	-	-	0	100	H
* 4.804	49.09	PKFH	34	-29.1	53.99	-	-	74	-20.01	61	100	V
* 4.804	45.97	VA1T	34	-29.1	50.87	54	-3.13	-	-	61	100	V
* 11.94	35.96	PKFH	39.1	-23.7	51.36	-	-	74	-22.64	258	114	V
* 11.938	24.3	VA1T	39.1	-23.7	39.7	54	-14.3	-	-	258	114	V
5.992	38.02	PKFH	35.2	-28.8	44.42	-	-	74	-29.58	28	102	V
5.993	26.74	VA1T	35.2	-28.8	33.14	54	-20.86	-	-	28	102	V
7.206	44.12	PKFH	35.6	-28	51.72	-	-	74	-22.28	258	114	V
7.206	38.66	VA1T	35.6	-28	46.26	54	-7.74	-	-	258	114	V

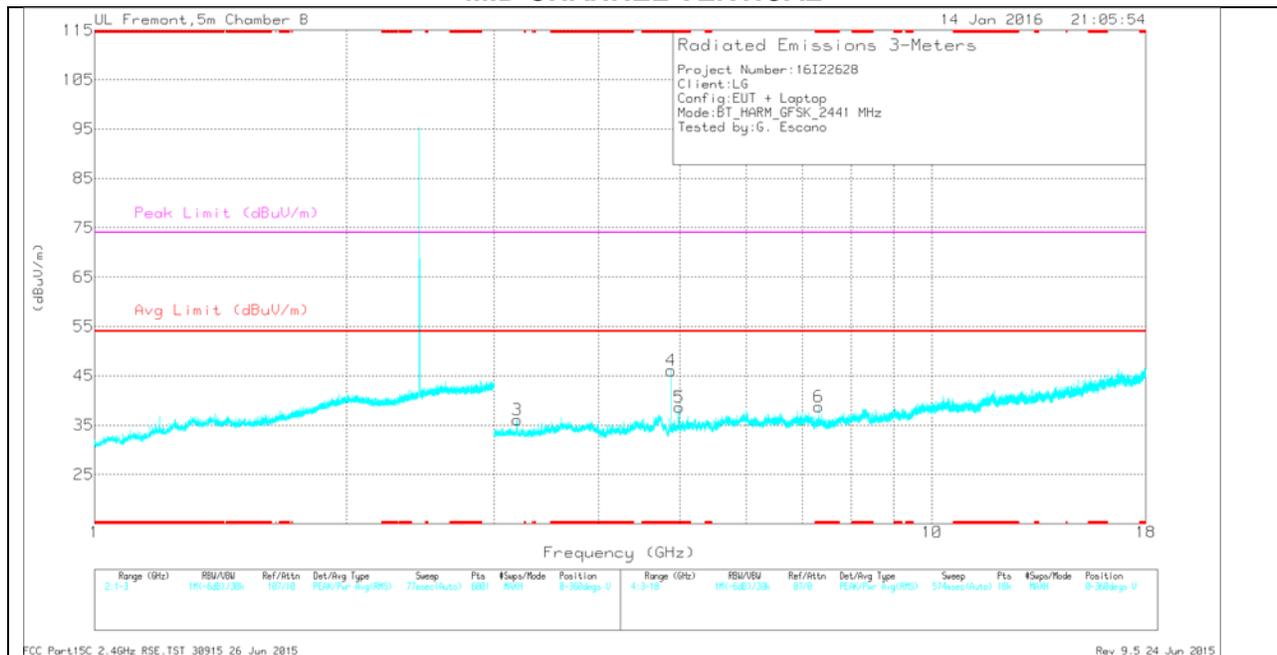
\* - indicates frequency in CFR47 Pt 15 / IC 8.10 Restricted Band  
 PKFH - FHSS: RB=100k/1MHz VB=3 x RB, Peak  
 VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

**MID CHANNEL HORIZONTAL**



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

**MID CHANNEL VERTICAL**



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

**MID CHANNEL DATA**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.882	42.73	Pk	34.2	-32.6	44.33	-	-	74	-29.67	0-360	101	H
4	* 4.882	44.45	Pk	34.2	-32.6	46.05	-	-	74	-27.95	0-360	101	V
5	* 4.987	36.2	Pk	34	-31.6	38.6	-	-	74	-35.4	0-360	101	V
6	* 7.322	33.39	Pk	35.3	-30	38.69	-	-	74	-35.31	0-360	199	V
1	2.535	35.03	Pk	32.6	-21.8	45.83	-	-	-	-	0-360	101	H
3	3.195	35.64	Pk	32.4	-32	36.04	-	-	-	-	0-360	101	V

\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

Radiated Emissions

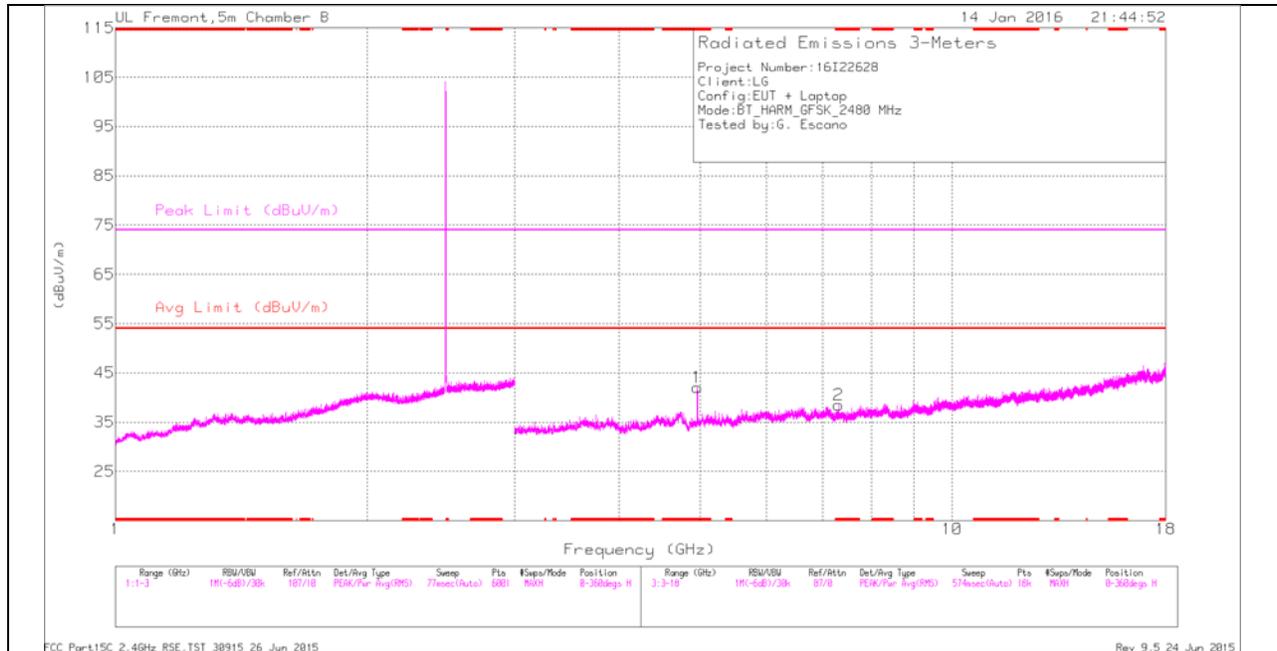
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.882	46.93	PK2	34.2	-32.6	48.53	-	-	74	-25.47	34	103	H
* 4.882	41.23	VA1T	34.2	-32.6	42.83	54	-11.17	-	-	34	103	H
* 4.882	48.45	PK2	34.2	-32.6	50.05	-	-	74	-23.95	223	104	V
* 4.882	43.65	VA1T	34.2	-32.6	45.25	54	-8.75	-	-	223	104	V
* 4.987	41.45	PK2	34	-31.6	43.85	-	-	74	-30.15	130	102	V
* 4.986	28.65	VA1T	34	-31.6	31.05	54	-22.95	-	-	130	102	V
* 7.322	41.86	PK2	35.3	-30	47.16	-	-	74	-26.84	53	188	V
* 7.323	30.73	VA1T	35.3	-30	36.03	54	-17.97	-	-	53	188	V
2.535	44.21	PK2	32.6	-21.8	55.01	-	-	74	-18.99	55	193	H
2.536	26.33	VA1T	32.6	-21.8	37.13	54	-16.87	-	-	55	193	H
3.195	43.9	PK2	32.4	-32	44.3	-	-	74	-29.7	317	112	V
3.196	29.41	VA1T	32.4	-32	29.81	54	-24.19	-	-	317	112	V

\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

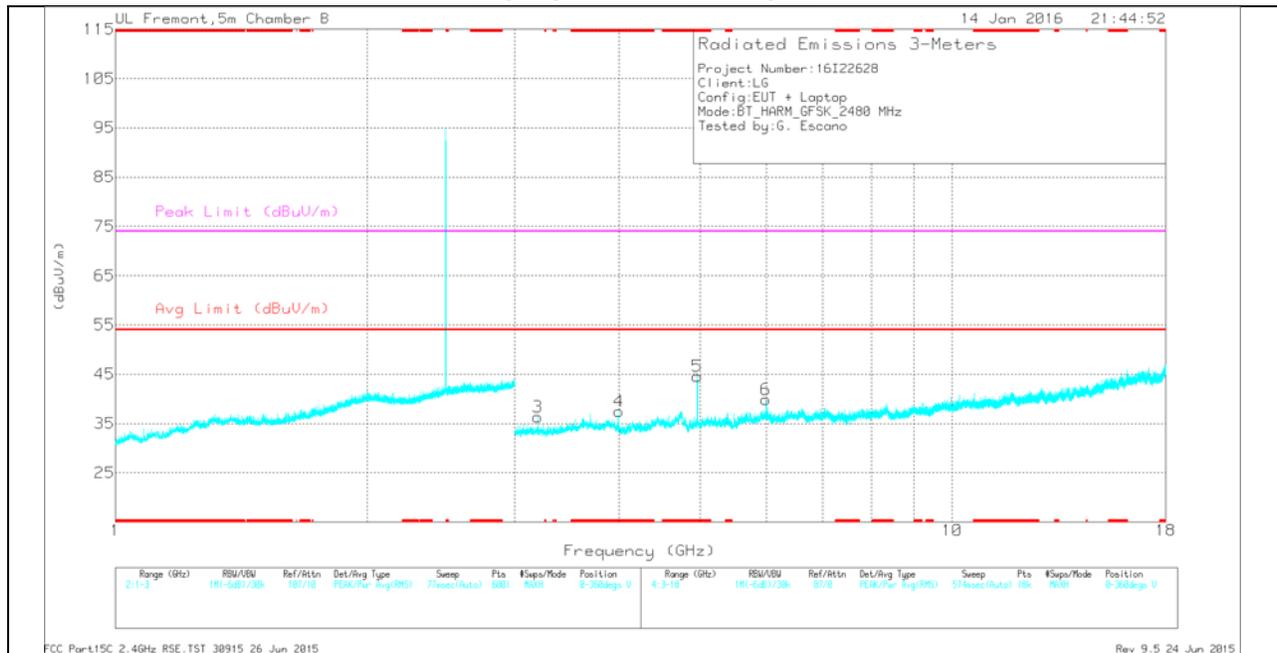
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

### HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

### HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

**HIGH CHANNEL DATA**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.96	39.88	Pk	34.1	-31.9	42.08	-	-	74	-31.92	0-360	200	H
2	* 7.316	33.28	Pk	35.3	-30.1	38.48	-	-	74	-35.52	0-360	200	H
4	* 3.997	36.92	Pk	33.3	-32.7	37.52	-	-	74	-36.48	0-360	101	V
5	* 4.96	42.41	Pk	34.1	-31.9	44.61	-	-	74	-29.39	0-360	101	V
3	3.197	35.95	Pk	32.4	-32	36.35	-	-	-	-	0-360	200	V
6	5.991	35.01	Pk	35.7	-30.8	39.91	-	-	-	-	0-360	200	V

\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.96	48.33	PK2	34.1	-31.9	50.53	-	-	74	-23.47	194	257	H
* 4.96	43.02	VA1T	34.1	-31.9	45.22	54	-8.78	-	-	194	257	H
* 7.316	39.99	PK2	35.3	-30.1	45.19	-	-	74	-28.81	104	189	H
* 7.316	27.09	VA1T	35.3	-30.1	32.29	54	-21.71	-	-	104	189	H
* 3.998	46.37	PK2	33.3	-32.7	46.97	-	-	74	-27.03	7	102	V
* 3.997	29.67	VA1T	33.3	-32.7	30.27	54	-23.73	-	-	7	102	V
* 4.96	48.12	PK2	34.1	-31.9	50.32	-	-	74	-23.68	239	123	V
* 4.96	42.02	VA1T	34.1	-31.9	44.22	54	-9.78	-	-	239	123	V
3.196	29.28	VA1T	32.4	-32	29.68	54	-24.32	-	-	35	122	V
3.197	41.88	PK2	32.4	-32	42.28	-	-	74	-31.72	35	122	V
5.99	40.66	PK2	35.7	-30.8	45.56	-	-	74	-28.44	302	156	V
5.991	27.57	VA1T	35.7	-30.8	32.47	54	-21.53	-	-	302	156	V

\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

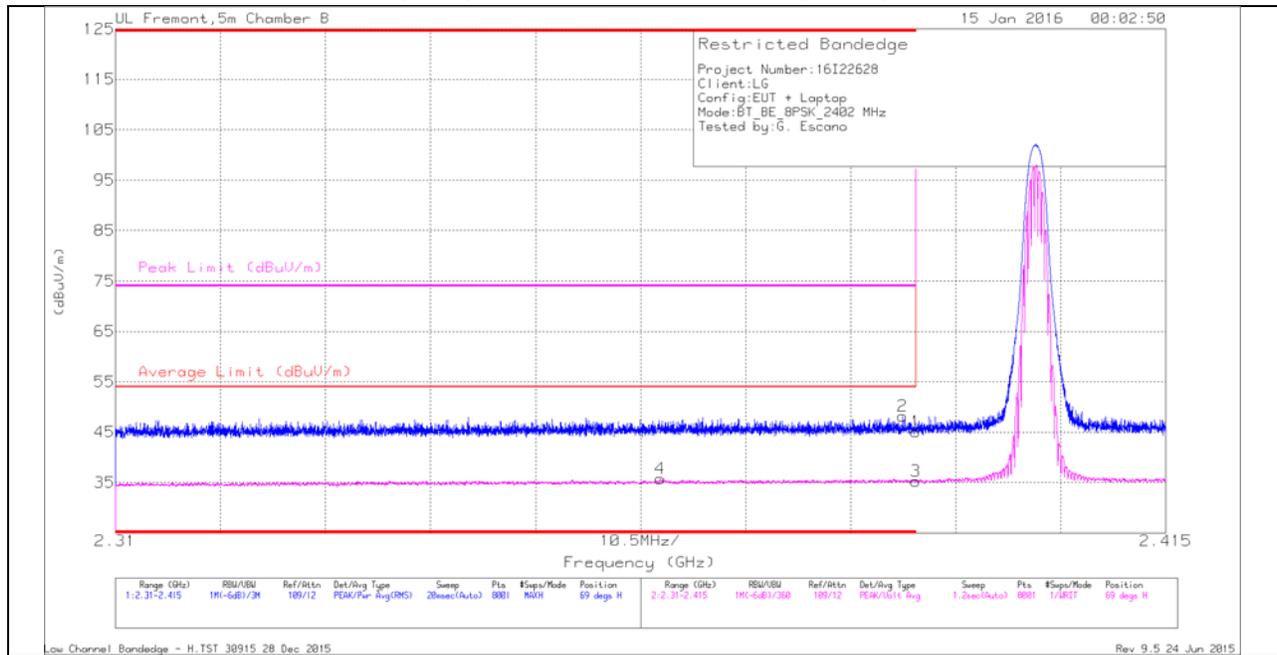
PK2 - KDB558074 Method: Maximum Peak

VA1T - FHSS: Linear Voltage Average  $V_B=1/T_{on}$  where:  $T_{on}$  is transmit duration

### 9.1.2. 8PSK MODULATION

#### RESTRICTED BANDEDGE (LOW CHANNEL)

##### HORIZONTAL PEAK AND AVERAGE PLOT



#### HORIZONTAL DATA

##### Trace Markers

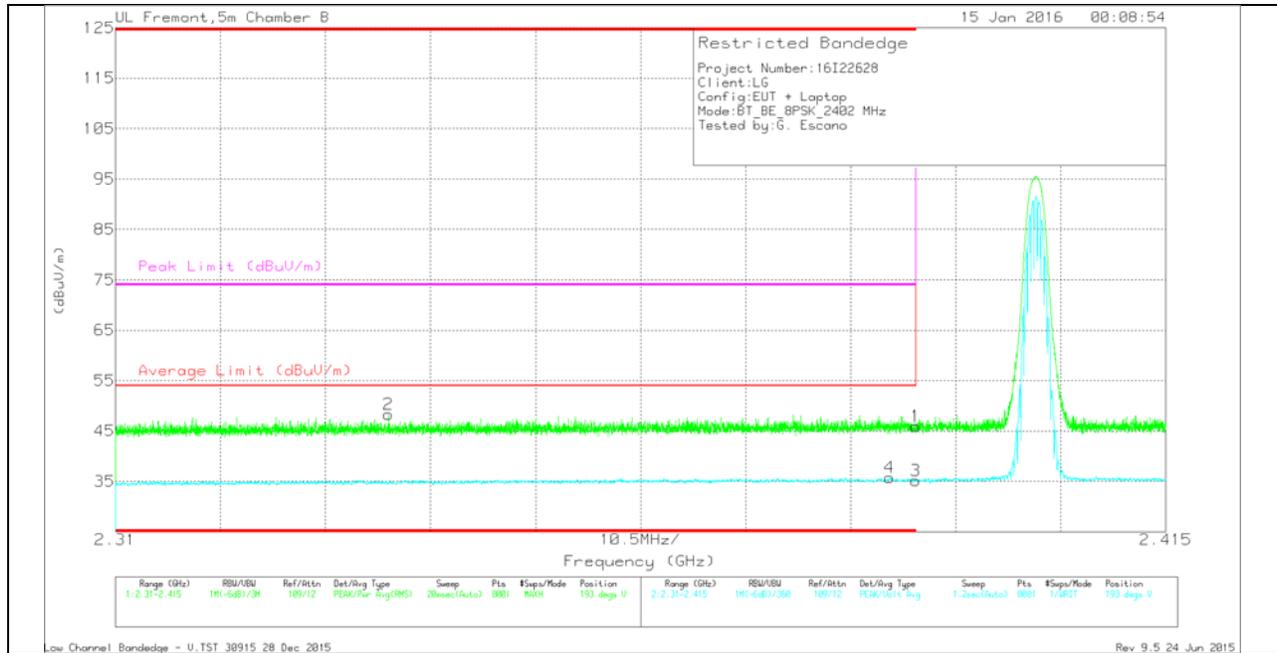
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	35.01	Pk	32	-21.9	45.11	-	-	74	-28.89	69	157	H
2	* 2.389	38.04	Pk	32	-21.9	48.14	-	-	74	-25.86	69	157	H
3	* 2.39	25.12	VA1T	32	-21.9	35.22	54	-18.78	-	-	69	157	H
4	* 2.364	25.73	VA1T	31.9	-21.9	35.73	54	-18.27	-	-	69	157	H

\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/ Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	35.85	Pk	32	-21.9	45.95	-	-	74	-28.05	193	260	V
2	* 2.337	38.51	Pk	31.7	-21.9	48.31	-	-	74	-25.69	193	260	V
3	* 2.39	25.08	VA1T	32	-21.9	35.18	54	-18.82	-	-	193	260	V
4	* 2.387	25.67	VA1T	32	-21.9	35.77	54	-18.23	-	-	193	260	V

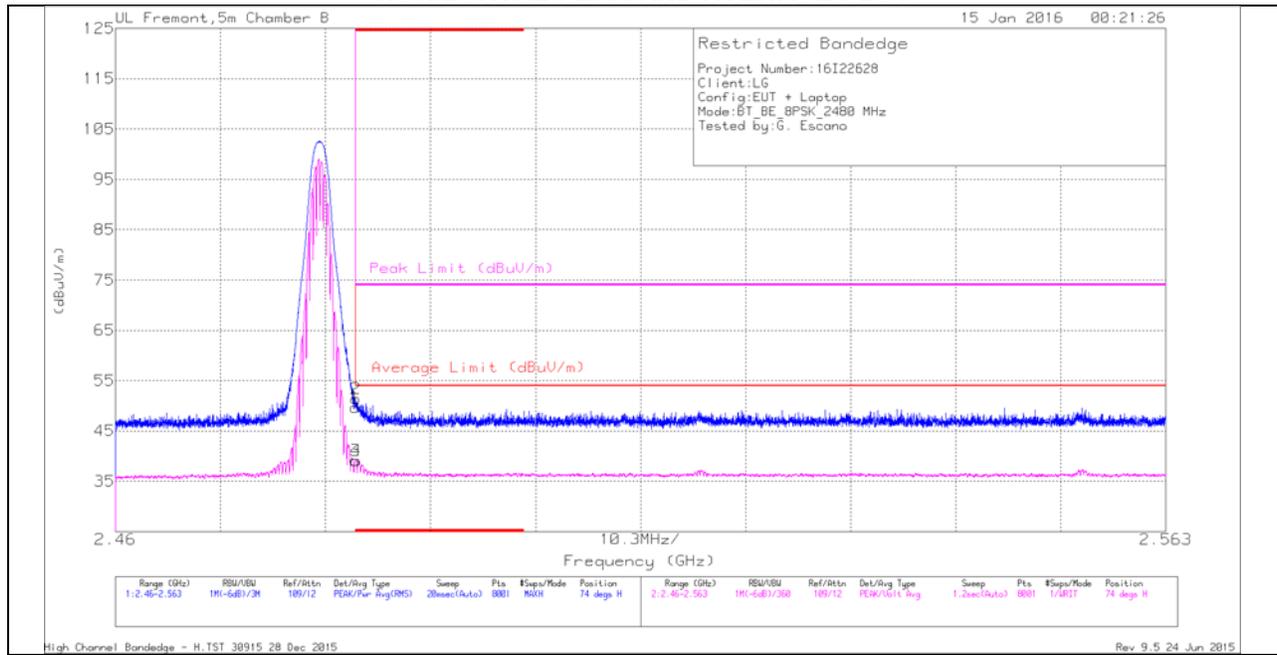
\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B = 1/T_{on}$  where:  $T_{on}$  is transmit duration

## AUTHORIZED BANDEDGE (HIGH CHANNEL)

### HORIZONTAL PEAK AND AVERAGE PLOT



### HORIZONTAL DATA

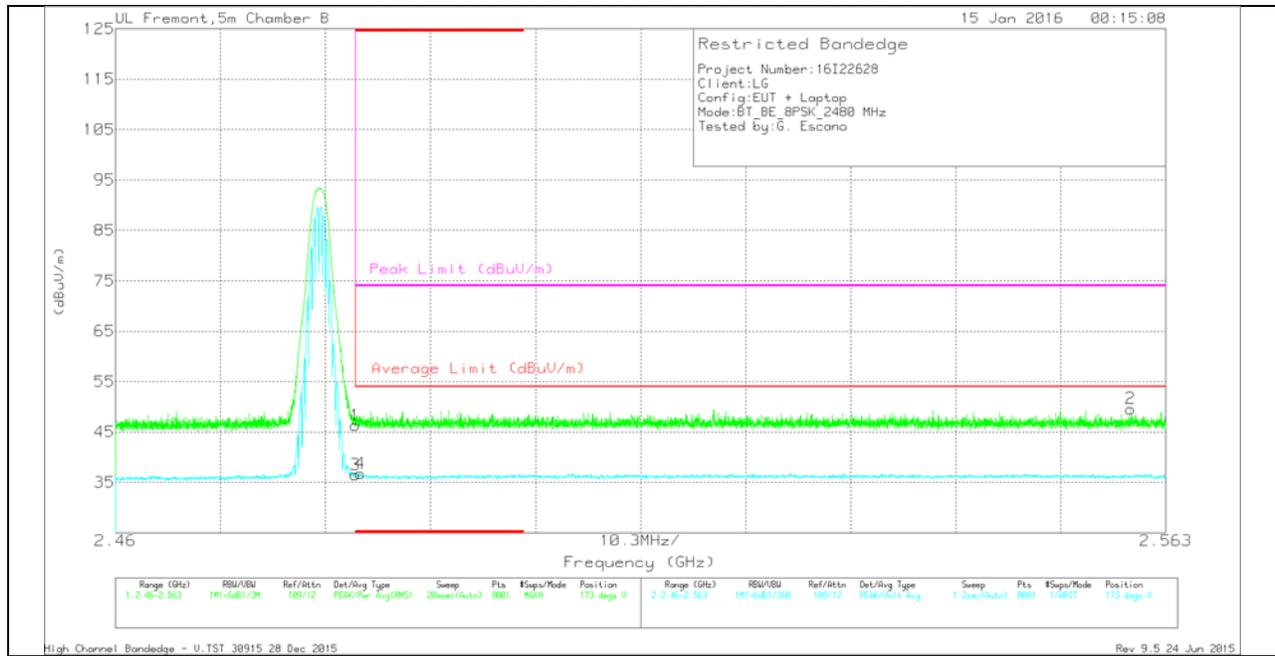
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	38.97	Pk	32.5	-21.8	49.67	-	-	74	-24.33	74	256	H
2	* 2.484	40.76	Pk	32.5	-21.8	51.46	-	-	74	-22.54	74	256	H
3	* 2.484	28.42	VA1T	32.5	-21.8	39.12	54	-14.88	-	-	74	256	H
4	* 2.484	28.44	VA1T	32.5	-21.8	39.14	54	-14.86	-	-	74	256	H

\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $VB=1/Ton$  where:  $Ton$  is transmit duration

### VERTICAL PEAK AND AVERAGE PLOT



### VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/ Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	35.62	Pk	32.5	-21.8	46.32	-	-	74	-27.68	173	257	V
3	* 2.484	25.8	VA1T	32.5	-21.8	36.5	54	-17.5	-	-	173	257	V
4	* 2.484	26.11	VA1T	32.5	-21.8	36.81	54	-17.19	-	-	173	257	V
2	2.56	38.71	Pk	32.7	-21.8	49.61	-	-	74	-24.39	173	257	V

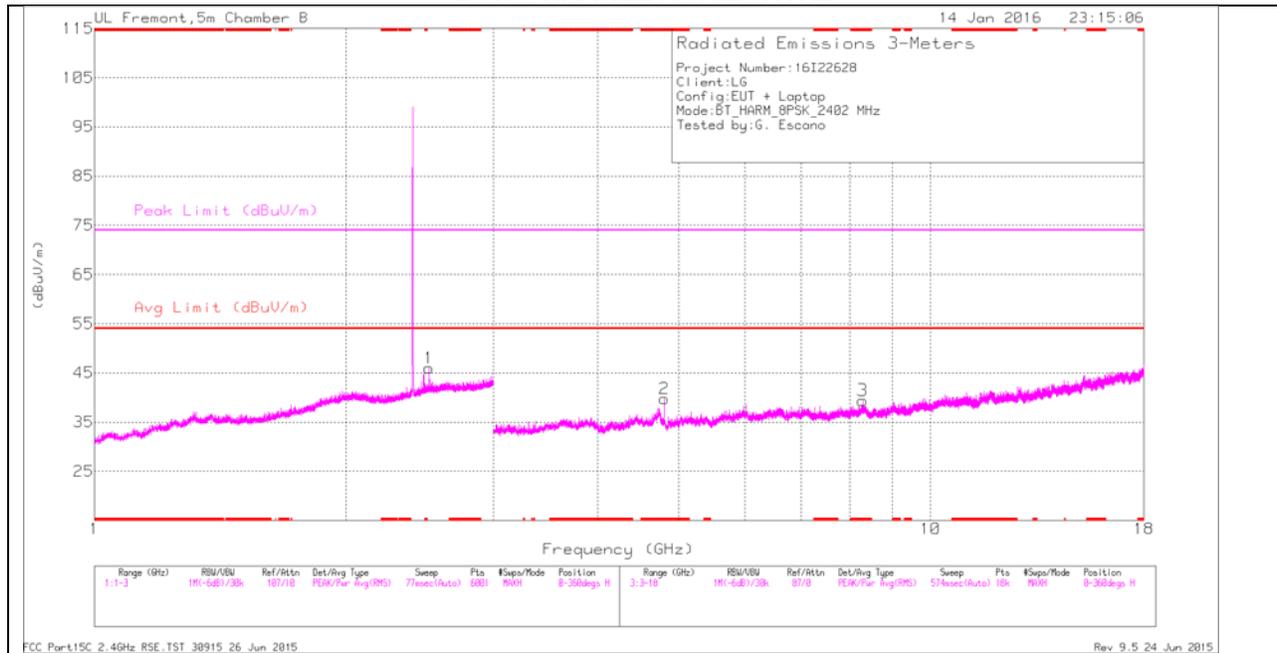
\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B=1/T_{on}$  where:  $T_{on}$  is transmit duration

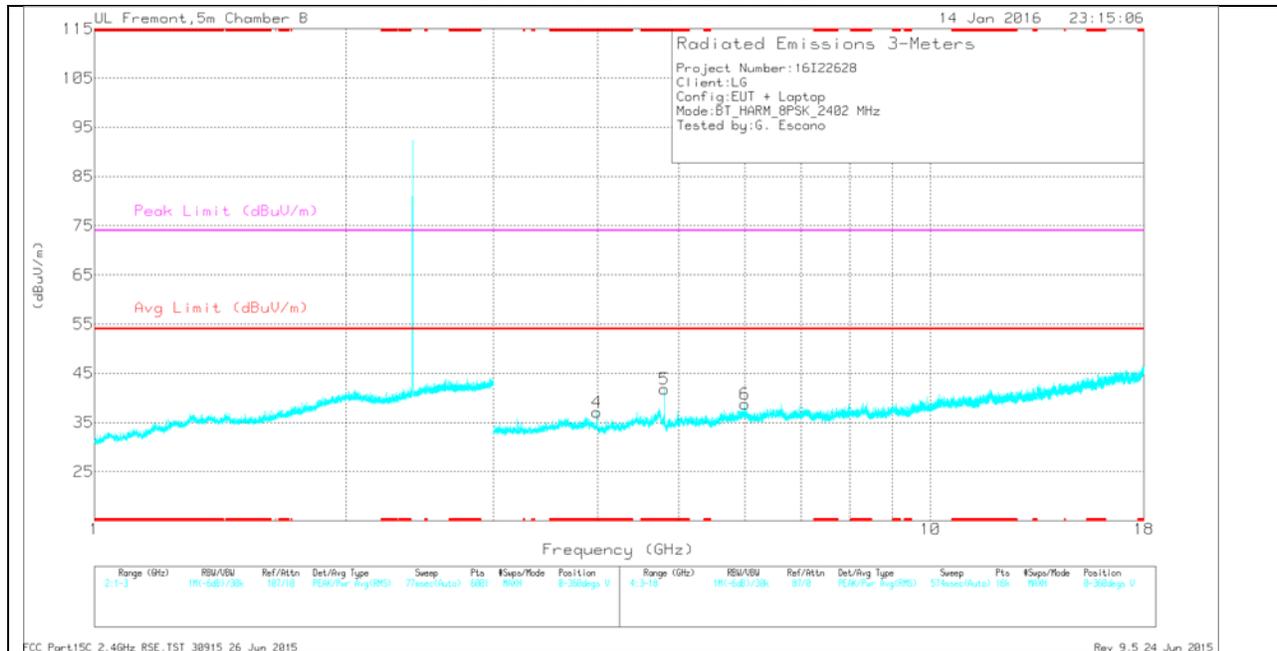
## HARMONICS AND SPURIOUS EMISSIONS

### LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

### LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

**LOW CHANNEL DATA**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.804	36.51	Pk	34.3	-31	39.81	-	-	74	-34.19	0-360	200	H
3	* 8.294	31.34	Pk	35.7	-27.6	39.44	-	-	74	-34.56	0-360	101	H
4	* 3.988	36.39	Pk	33.3	-32.6	37.09	-	-	74	-36.91	0-360	200	V
5	* 4.804	38.55	Pk	34.3	-31	41.85	-	-	74	-32.15	0-360	101	V
1	2.514	35.31	Pk	32.6	-21.9	46.01	-	-	-	-	0-360	101	H
6	5.999	33.97	Pk	35.7	-30.9	38.77	-	-	-	-	0-360	101	V

\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

Radiated Emissions

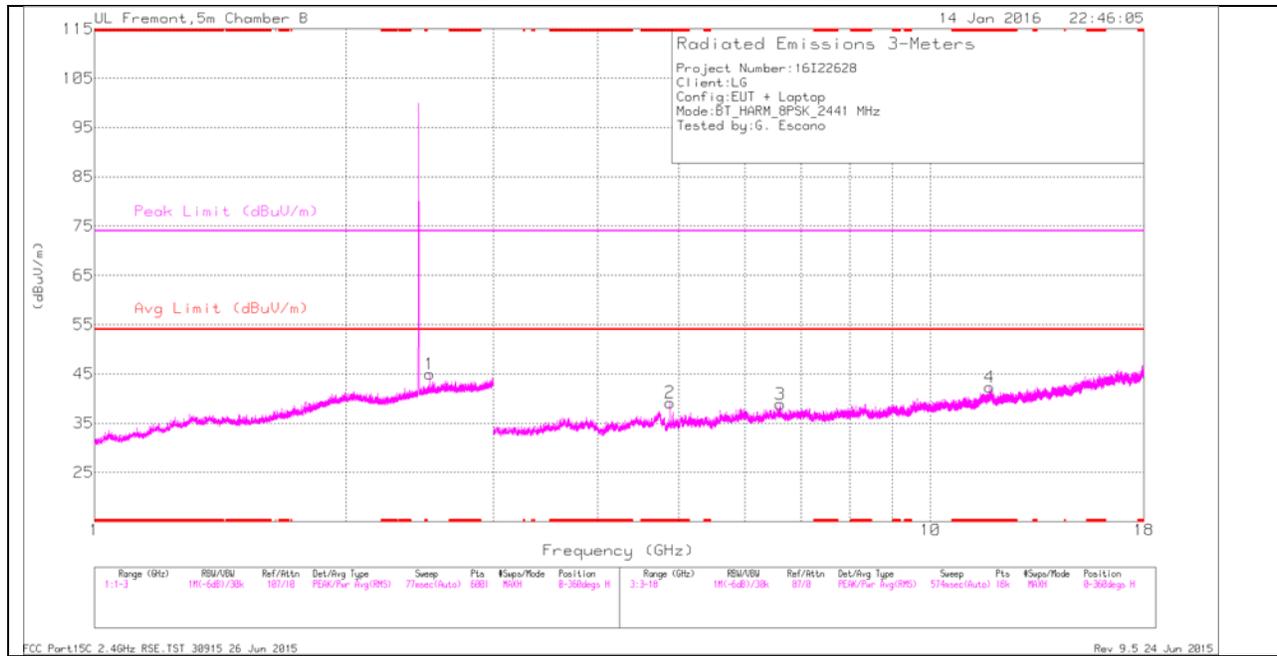
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.804	46.38	PK2	34.3	-31	49.68	-	-	74	-24.32	316	253	H
* 4.804	36.97	VA1T	34.3	-31	40.27	54	-13.73	-	-	316	253	H
* 8.293	38.21	PK2	35.7	-27.6	46.31	-	-	74	-27.69	351	102	H
* 8.292	25.46	VA1T	35.7	-27.6	33.56	54	-20.44	-	-	351	102	H
* 3.988	47.28	PK2	33.3	-32.6	47.98	-	-	74	-26.02	263	199	V
* 3.989	30.13	VA1T	33.3	-32.7	30.73	54	-23.27	-	-	263	199	V
* 4.804	47.44	PK2	34.3	-31	50.74	-	-	74	-23.26	240	109	V
* 4.804	38.17	VA1T	34.3	-31	41.47	54	-12.53	-	-	240	109	V
2.514	41.24	PK2	32.6	-21.9	51.94	-	-	74	-22.06	49	249	H
2.514	31.23	VA1T	32.6	-21.9	41.93	54	-12.07	-	-	49	249	H
5.999	27.99	VA1T	35.7	-30.9	32.79	54	-21.21	-	-	329	103	V
6	40.73	PK2	35.7	-31	45.43	-	-	74	-28.57	329	103	V

\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

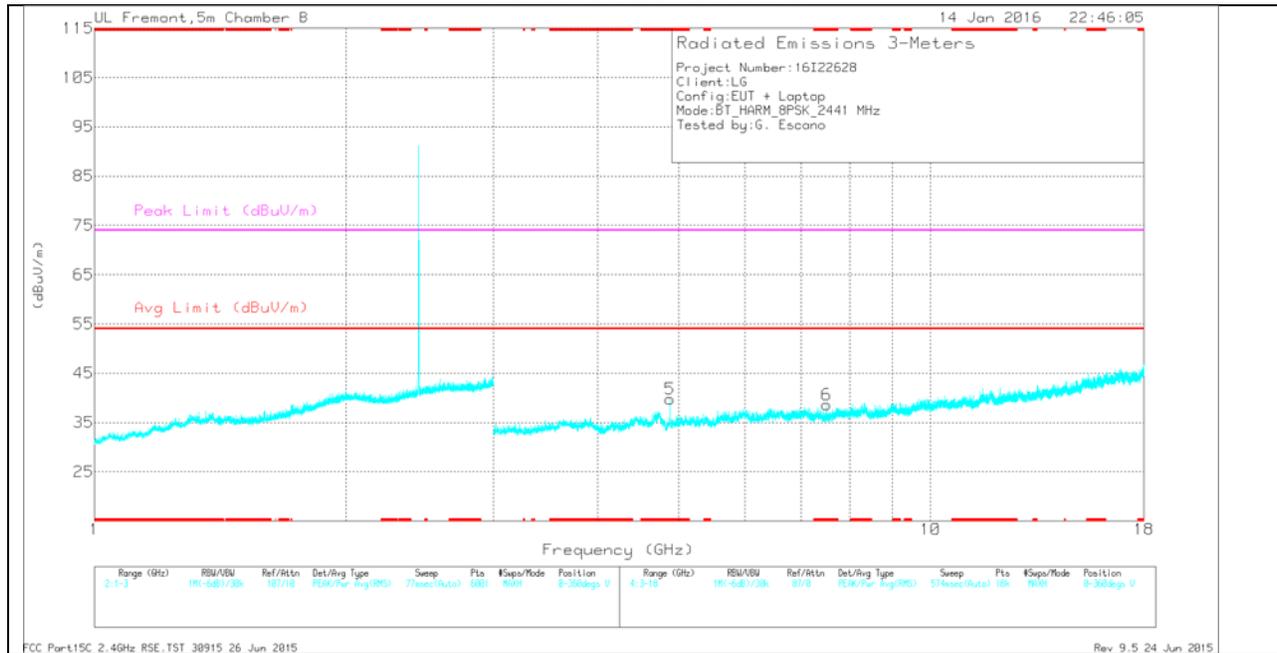
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

### MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

### MID CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

**MID CHANNEL DATA**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.882	37.59	Pk	34.2	-32.6	39.19	-	-	74	-34.81	0-360	101	H
4	* 11.765	28.21	Pk	38.6	-24.5	42.31	-	-	74	-31.69	0-360	101	H
5	* 4.882	38.15	Pk	34.2	-32.6	39.75	-	-	74	-34.25	0-360	101	V
6	* 7.513	32.67	Pk	35.3	-29.4	38.57	-	-	74	-35.43	0-360	199	V
1	2.516	34.18	Pk	32.6	-21.8	44.98	-	-	-	-	0-360	101	H
3	6.61	33.58	Pk	36	-30.7	38.88	-	-	-	-	0-360	199	H

\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

Radiated Emissions

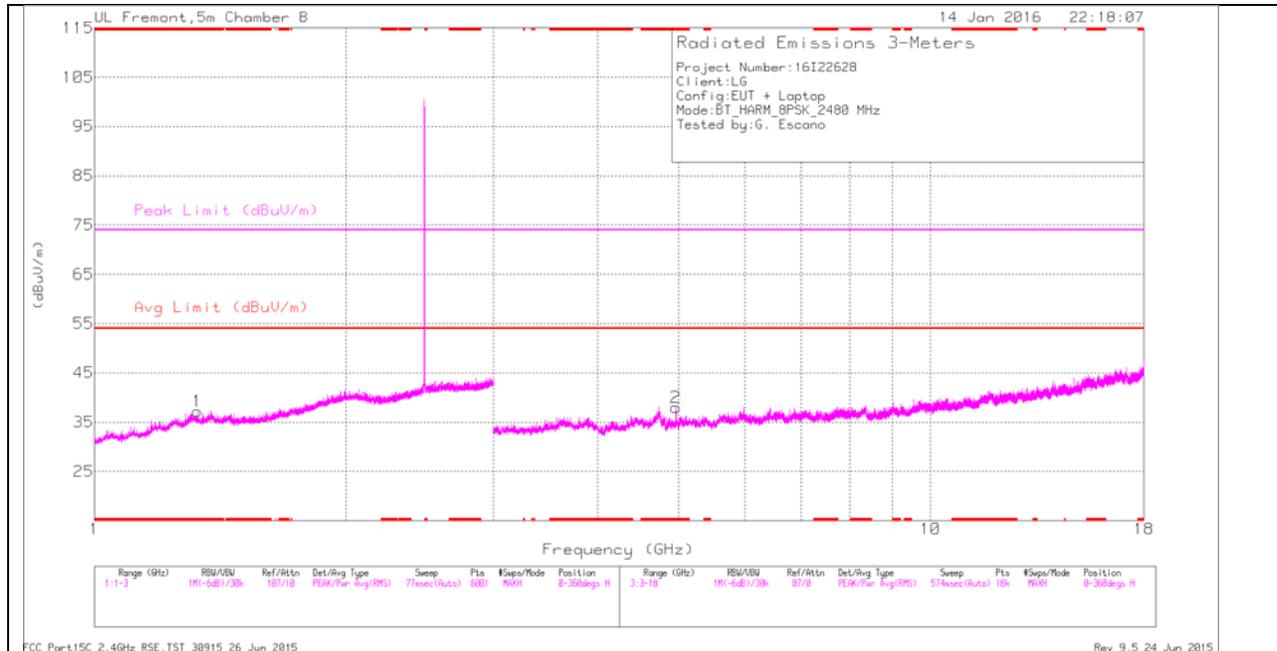
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.882	43.49	PK2	34.2	-32.6	45.09	-	-	74	-28.91	11	103	H
* 4.882	34.18	VA1T	34.2	-32.6	35.78	54	-18.22	-	-	11	103	H
* 11.766	35.04	PK2	38.6	-24.5	49.14	-	-	74	-24.86	7	102	H
* 11.766	21.73	VA1T	38.6	-24.5	35.83	54	-18.17	-	-	7	102	H
* 4.882	45.78	PK2	34.2	-32.6	47.38	-	-	74	-26.62	238	110	V
* 4.882	36.31	VA1T	34.2	-32.6	37.91	54	-16.09	-	-	238	110	V
* 7.513	40.38	PK2	35.3	-29.4	46.28	-	-	74	-27.72	289	198	V
* 7.513	26.96	VA1T	35.3	-29.4	32.86	54	-21.14	-	-	289	198	V
2.516	40.53	PK2	32.6	-21.8	51.33	-	-	74	-22.67	73	220	H
2.516	30.12	VA1T	32.6	-21.8	40.92	54	-13.08	-	-	73	220	H
6.609	27.9	VA1T	36	-30.7	33.2	54	-20.8	-	-	45	199	H
6.612	40.4	PK2	36	-30.7	45.7	-	-	74	-28.3	45	199	H

\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

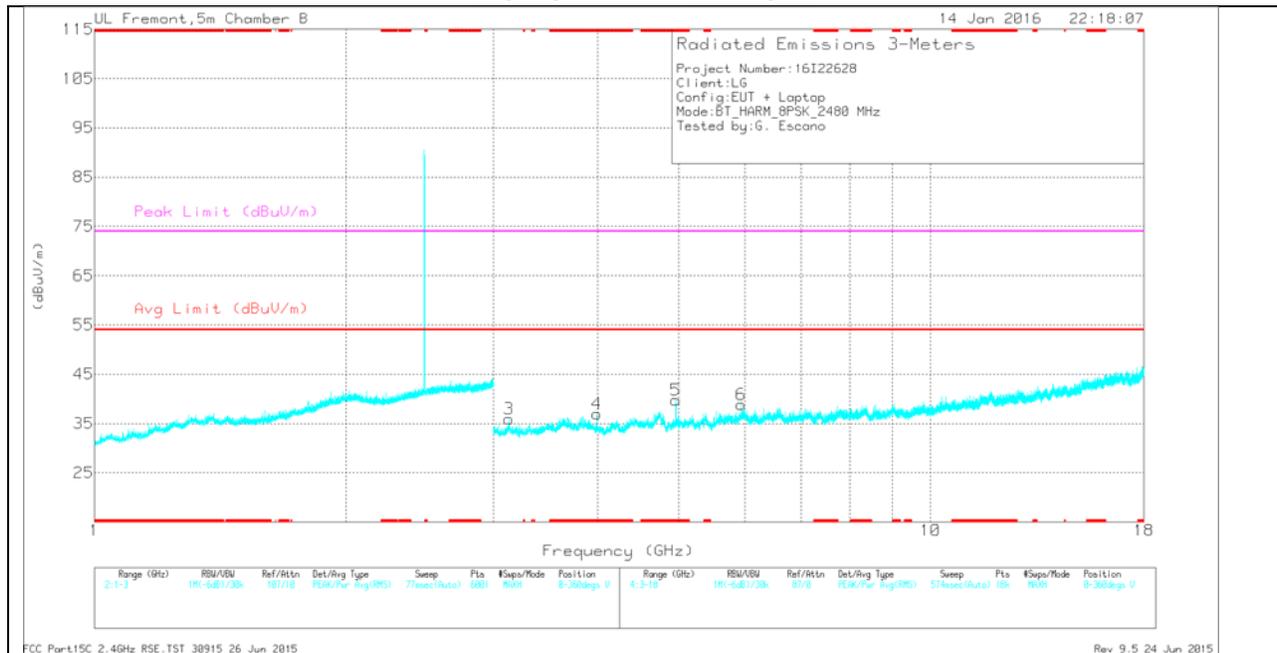
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

**HIGH CHANNEL HORIZONTAL**



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

**HIGH CHANNEL VERTICAL**



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

**HIGH CHANNEL DATA**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.327	30.33	Pk	29.4	-22.5	37.23	-	-	74	-36.77	0-360	199	H
2	* 4.96	35.74	Pk	34.1	-31.9	37.94	-	-	74	-36.06	0-360	199	H
4	* 3.992	36.4	Pk	33.3	-32.7	37	-	-	74	-37	0-360	199	V
5	* 4.96	37.53	Pk	34.1	-31.9	39.73	-	-	74	-34.27	0-360	102	V
3	3.129	35.82	Pk	32.6	-32.5	35.92	-	-	-	-	0-360	199	V
6	5.94	34.17	Pk	35.6	-30.9	38.87	-	-	-	-	0-360	199	V

\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.326	37.09	PK2	29.4	-22.6	43.89	-	-	74	-30.11	335	198	H
* 1.326	24.19	VA1T	29.4	-22.5	31.09	54	-22.91	-	-	335	198	H
* 4.96	46.77	PK2	34.1	-31.9	48.97	-	-	74	-25.03	196	242	H
* 4.96	37.2	VA1T	34.1	-31.9	39.4	54	-14.6	-	-	196	242	H
* 3.991	42.29	PK2	33.3	-32.7	42.89	-	-	74	-31.11	41	120	V
* 3.991	29.68	VA1T	33.3	-32.7	30.28	54	-23.72	-	-	41	120	V
* 4.96	45.95	PK2	34.1	-31.9	48.15	-	-	74	-25.85	236	126	V
* 4.96	36.7	VA1T	34.1	-31.9	38.9	54	-15.1	-	-	236	126	V
3.129	29.91	VA1T	32.6	-32.5	30.01	54	-23.99	-	-	112	190	V
3.13	42.74	PK2	32.6	-32.5	42.84	-	-	74	-31.16	112	190	V
5.94	40.28	PK2	35.6	-30.9	44.98	-	-	74	-29.02	315	198	V
5.94	27.71	VA1T	35.6	-30.9	32.41	54	-21.59	-	-	315	198	V

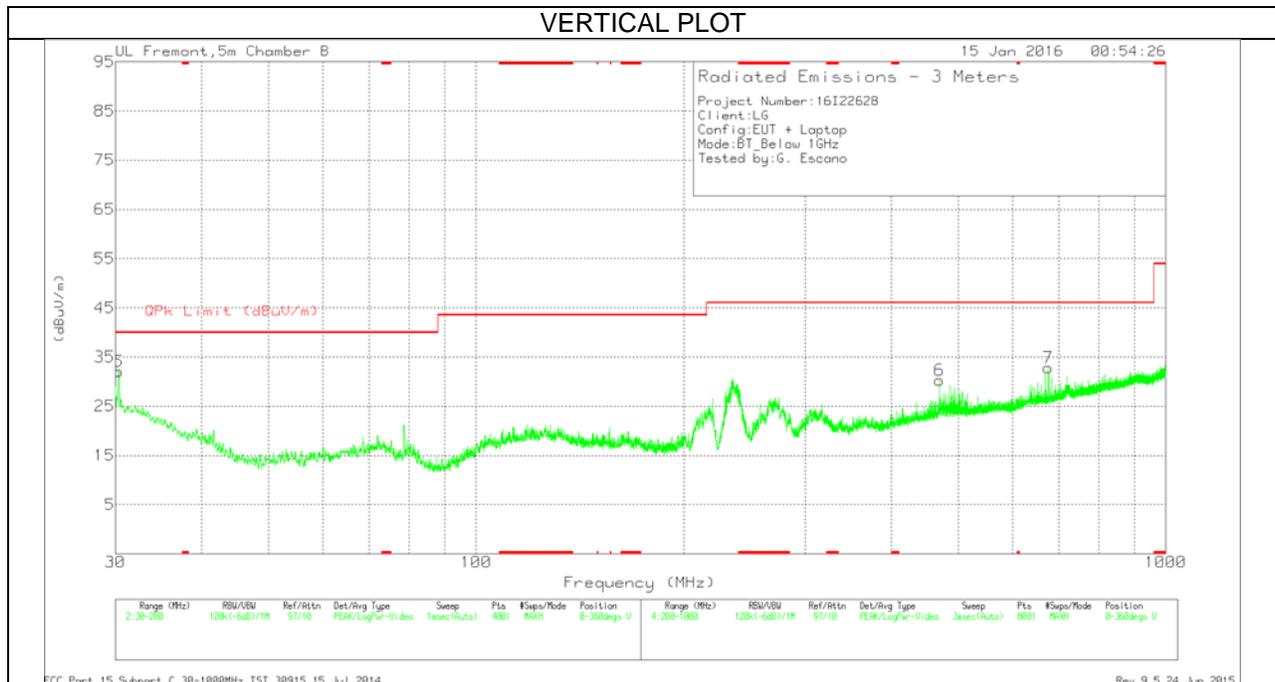
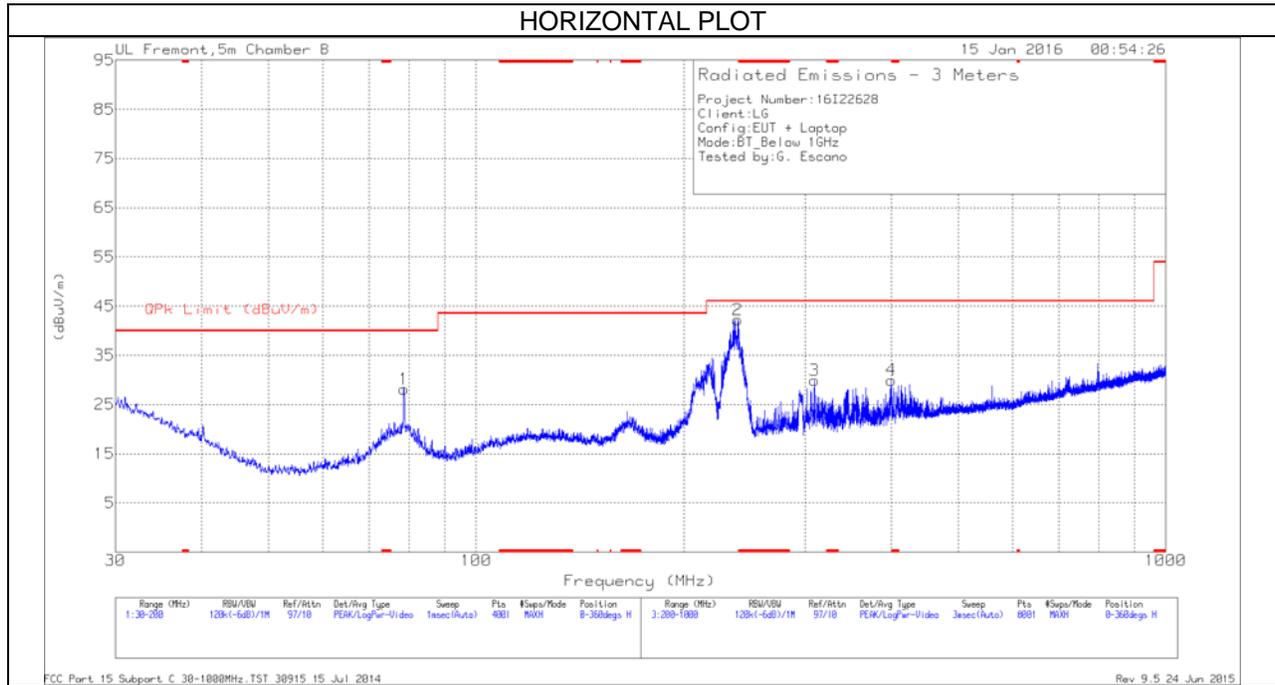
\* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

## 9.2. WORST-CASE BELOW 1 GHz

### GFSK SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



**BELOW 1 GHz TABLE**

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T130 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	30.2975	35.9	Pk	25	-28.8	32.1	40	-7.9	0-360	101	V
1	78.62	45.08	Pk	11.5	-28.4	28.18	40	-11.82	0-360	399	H
2	239.4	53.46	Pk	15.5	-26.7	42.26	46.02	-3.76	0-360	101	H
3	309.3	38.41	Pk	17.7	-26.2	29.91	46.02	-16.11	0-360	101	H
4	399.7	36.78	Pk	19.5	-26.3	29.98	46.02	-16.04	0-360	101	H
6	469.6	35.29	Pk	21.3	-26.3	30.29	46.02	-15.73	0-360	101	V
7	676	34.51	Pk	23.8	-25.5	32.81	46.02	-13.21	0-360	101	V

Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T130 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
239.384	46.68	Qp	15.5	-26.7	35.48	46.02	-10.54	71	109	H

Qp - Quasi-Peak detector