CERTIFICATION TEST REPORT

Report Number. : 12354639-E2V1

Applicant	:	RED ROVER TECHNOLOGIES, INC. 237 A ST #15467 SAN DIEGO, CA 92101-4003, U.S.A
Model	:	CID1014
FCC ID	:	2AP8W-CID1014
IC	:	24027- CID1014
EUT Description	:	WIRELESS HEADPHONE
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C ISED RSS-247 ISSUE 2 ISED RSS-GEN ISSUE 5

Date Of Issue:
August 15, 2018

Prepared by:
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NVLAP TESTING

NVLAP Lab code: 200065-0

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	08/09/2018	Initial Issue	
V2	08/15/2018	Added statement to Section 9.2	Steven Tran

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: RED ROVER TECHNOLOGIES, INC.
237 A ST #15467
SAN DIEGO, CA 92101-4003, U.S.A

EUT DESCRIPTION: WIRELESS HEADPHONE

MODEL: CID1014

SERIAL NUMBER: SA1632

DATE TESTED: July 09 to 18, 2018

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Complies
ISED RSS-247 Issue 2	Complies
ISED RSS-GEN Issue 5	Complies

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 the U.S. government.

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, RSS-GEN Issue 5, and RSS-247 Issue 2.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, and 47658 Kato Road, 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	47658 Kato Rd
☐ Chamber A (ISED:2324B-1)	☐ Chamber D (ISED:22541-1)	☐ Chamber K (ISED:2324A-1)
☒ Chamber B (ISED:2324B-2)	☐ Chamber E (ISED:22541-2)	☐ Chamber L (ISED:2324A-3)
☐ Chamber C (ISED:2324B-3)	☐ Chamber F (ISED:22541-3)	
	☐ Chamber G (ISED:22541-4)	
	☐ Chamber H (ISED:22541-5)	

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers A through C are covered under ISED company address code 2324B with site numbers 2324B -1 through 2324B-3, respectively. Chambers D through H are covered under ISED company address code 22541 with site numbers 22541 -1 through 22541-5, respectively. Chambers K and L are covered under ISED company address code 2324A with site numbers 2324A-1 and 2324A-3, respectively.

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

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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:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.84 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.65 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	3.15 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	5.36 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.32 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.45 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.24 dB

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

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5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is a Wireless Headphone.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	Basic GFSK	1.73	1.49
2402 - 2480	Enhanced 8PSK	2.08	1.61

Note: GFSK, DQPSK, 8PSK average Power are all investigated, The GFSK & 8PSK Power are the worst case. Testing is based on these modes to showing compliance. For average power data please refer to section 4.7.

5.1. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a FPCB antenna, with a maximum gain of 2.2 dBi.

5.2. SOFTWARE AND FIRMWARE

The test utility software used during testing was 0.3.30.100025

5.3. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1GHz, above 18GHz, and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle and high channels.

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

Worst-case data rates as provided by the client were:

GFSK mode: DH5
8PSK mode: 3-DH5

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5.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Ipad Bluetooth Source	Apple	A1489	F9FNF0FXFCM9	BCBGA1489
AC Wall Adapter	Keyu	KA1517-0501500USU	N/A	N/A
Charging Dock	Dolby Laboratorie	CID1015	N/A	N/A
USB Cable	Dolby Laboratorie	N/A	N/A	N/A

I/O CABLES

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
31	USB	1	Micro USB to USB A	USB	2	None

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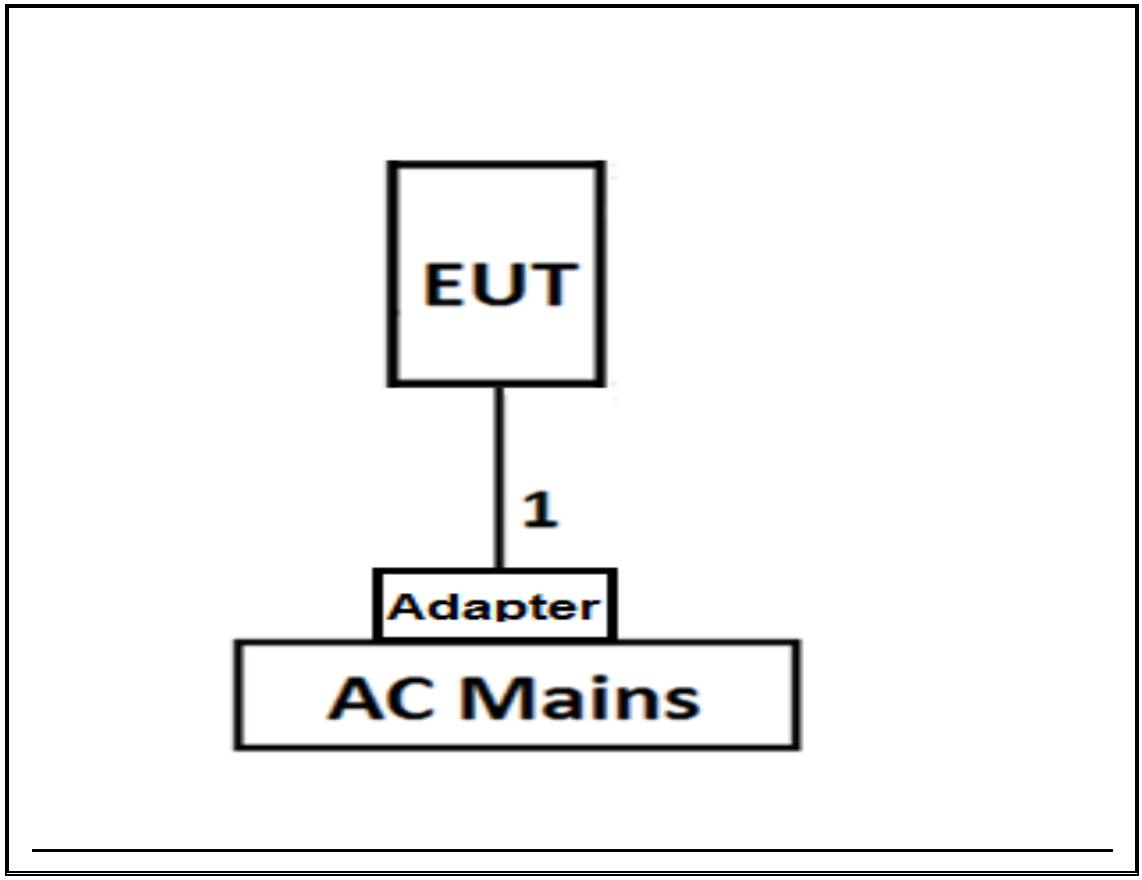
SETUP DIAGRAMS

RADIATED AND AC LINE CONDUCTED EMISSIONS SETUP DIAGRAM



TEST SETUP

For conducted tests: the EUT was connected to a host laptop via an USB cable for parameter setting purpose such as channel, output power...etc. The test software exercises the radio.

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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**	**ID Number**	**Cal Due**	**Last Cal**
Amplifier, 10KHz to 1GHz, 32dB	Agilent (Keysight) Technologies	8447D	T10	02/14/2019	02/14/2018
Amplifier, 1 - 18GHz	MITEQ	AFS42-00101800-25-S-42	T931	09/20/2018	09/20/2017
RF Preamplifier, 1 - 26GHz	Agilent	8449B	T404	07/23/2018	07/23/2017
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences Corp.	JB3	T407	05/10/2019	05/10/2018
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T863	06/21/2019	06/21/2018
Antenna, Horn 18-26.5GHz	ARA	MWH-1826	T89	01/18/2019	01/18/2018
Antenna, Active Loop 9kHz-30MHz	Com-Power Corp.	AL-130R	T1866	10/10/2018	10/10/2017
Power Meter, P-series single channel	Agilent (Keysight) Technologies	N1911A	T1268	06/25/2019	06/25/2018
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Agilent (Keysight) Technologies	N1921A	T413	06/27/2019	06/27/2018
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1454	01/08/2019	01/08/2018
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1113	12/21/2018	12/21/2017
Test Receiver, EMI, 10Hz-7GHz	Rhode & Schwarz	ESR	T1436	01/06/2019	01/06/2018
LISN	FISCHER	FCC-LISN-50/250-25-2-01	T1310	01/17/2019	01/17/2018

Test Software List			
Description	**Manufacturer**	**Model**	**Version**
Radiated Software	UL	UL EMC	Ver 9.5, December 1, 2016
Antenna Port Software	UL	UL RF	Ver 9.1, January 25, 2018

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7. MEASUREMENT METHODS

On Time and Duty Cycle: ANSI C63.10-2013 Section 11.6

Occupied BW (20dB): ANSI C63.10-2013 Section 6.9.2

Occupied BW (99%): ANSI C63.10-2013 Section 6.9.3

Carrier Frequency Separation: ANSI C63.10-2013 Section 7.8.2

Number of Hopping Frequencies: ANSI C63.10-2013 Section 7.8.3

Time of Occupancy (Dwell Time): ANSI C63.10-2013 Section 7.8.4

Peak Output Power: ANSI C63.10-2013 Section 7.8.5

Conducted Spurious Emissions: ANSI C63.10-2013 Section 7.8.8

Conducted Band-Edge: ANSI C63.10-2013 Section 6.10.4

Radiated Spurious Emissions 30-1000MHz: ANSI C63.10-2013 Section 6.3 and 6.5

Radiated Spurious Emissions above 1GHz: ANSI C63.10-2013 Section 6.3 and 6.6

Radiated Band-edge: ANSI C63.10-2013 Section 6.10.5

AC Power-line conducted emissions: ANSI C63.10-2013, Section 6.2.

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8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

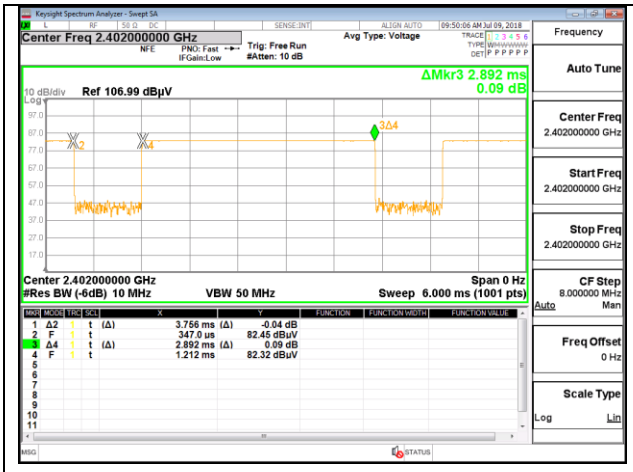
PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
Bluetooth GFSK	2.89	3.76	0.770	77.0%	1.14	0.346
Bluetooth 8PSK	2.90	3.75	0.773	77.3%	1.12	0.345

DUTY CYCLE PLOTS



BLUETOOTH GFSK

BLUETOOTH 8PSK

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8.2. 20 dB AND 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to ≥ 1% of the 20 dB bandwidth. The VBW is set to ≥ RBW. The sweep time is coupled.

RESULTS

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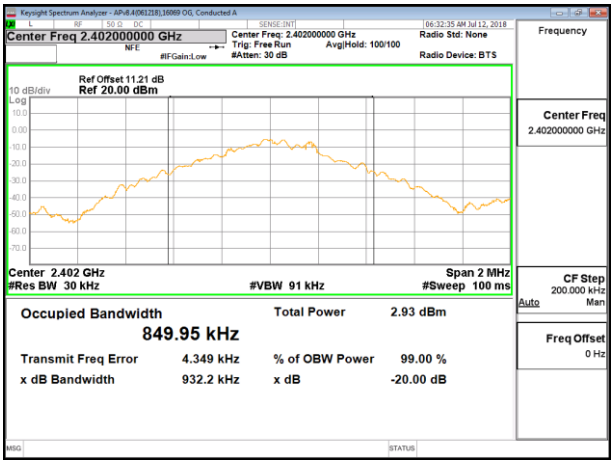
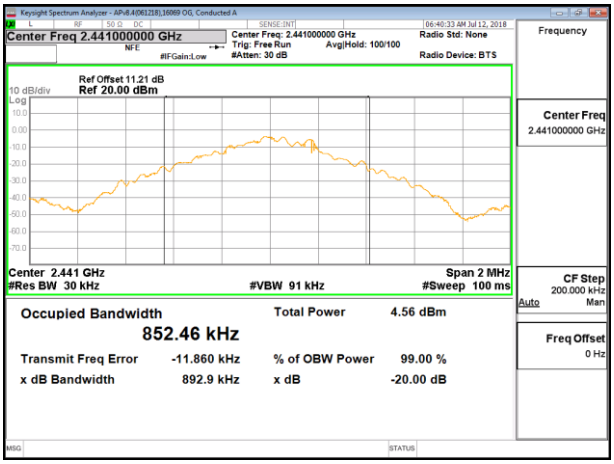
8.2.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

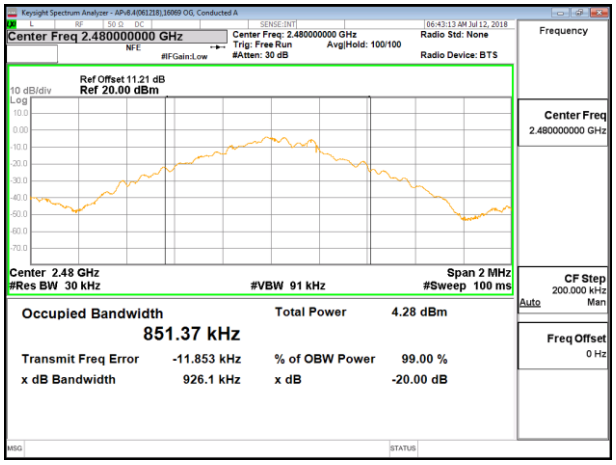
Channel	Frequency (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	0.932	0.850
Mid	2441	0.893	0.853
High	2480	0.926	0.851



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

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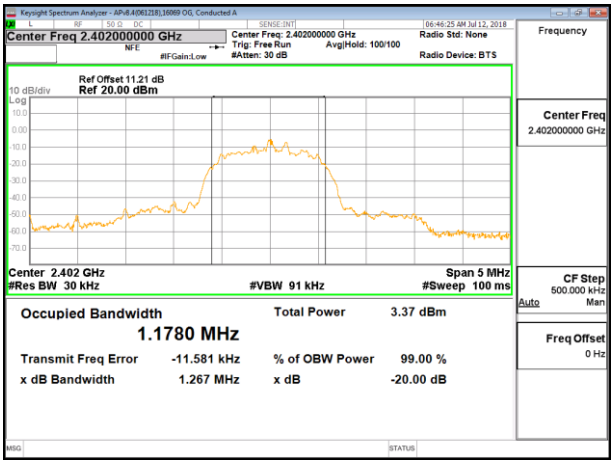
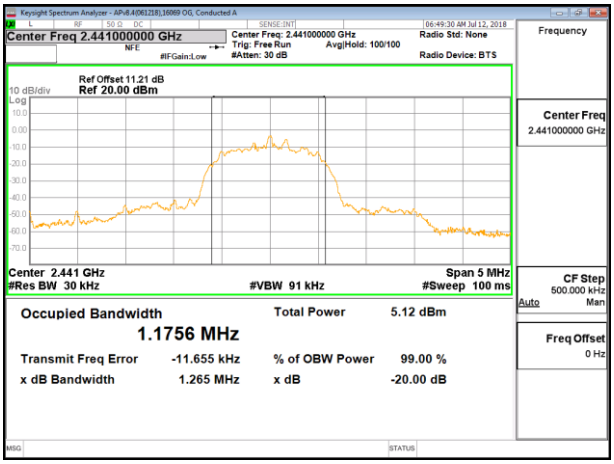
8.2.2. BLUETOOTH ENCHANCED DATA RATE 8PSK MODULATION

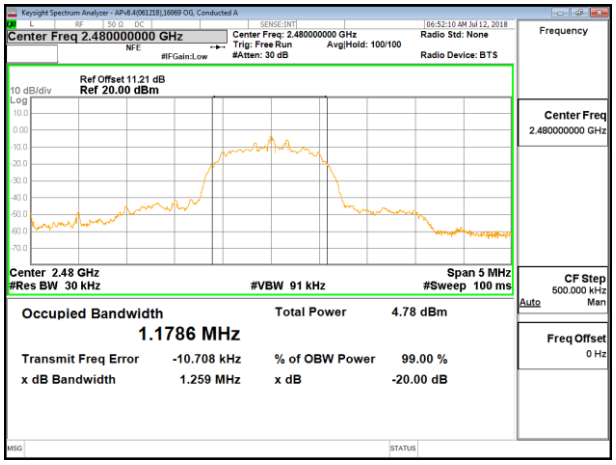
Channel	Frequency (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.267	1.178
Mid	2441	1.265	1.176
High	2480	1.259	1.179



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

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8.3. HOPPING FREQUENCY SEPARATION

LIMITS

FCC §15.247 (a) (1)

RSS-247 (5.1) (b)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hoping channel, whichever is greater.

Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 300 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

RESULTS

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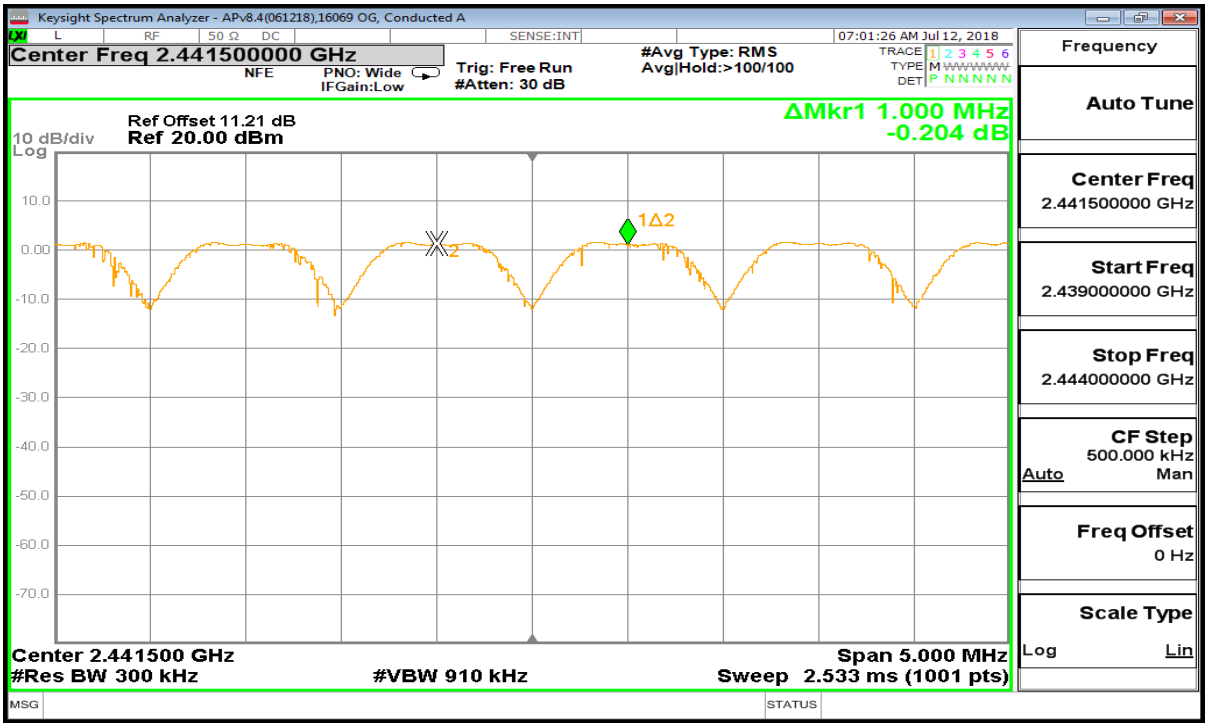
8.3.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION



HOPPING FREQUENCY SEPARATION PLOT

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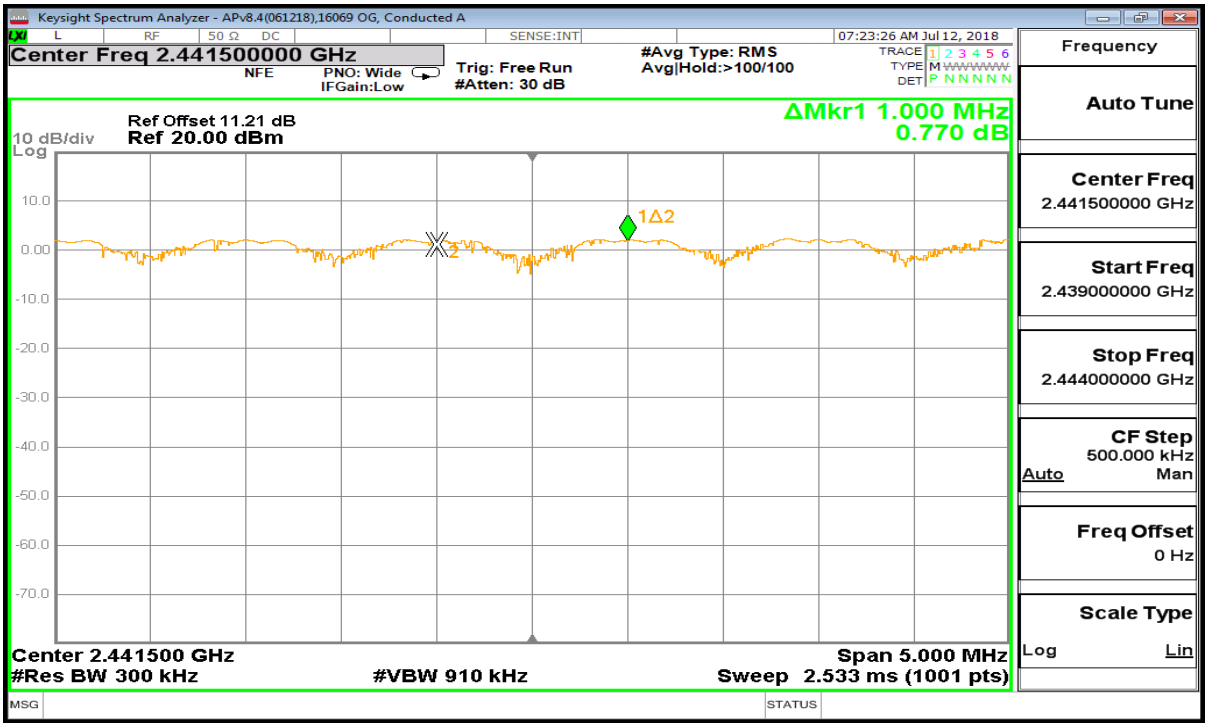
8.3.2. BLUETOOTH ENCHANCED DATA RATE 8PSK MODULATION



HOPPING FREQUENCY SEPARATION PLOT

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8.4. NUMBER OF HOPPING CHANNELS

LIMITS

FCC §15.247 (a) (1) (iii)

RSS-247 (5.1) (d)

Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

RESULTS

Normal Mode: XX Channels Observed

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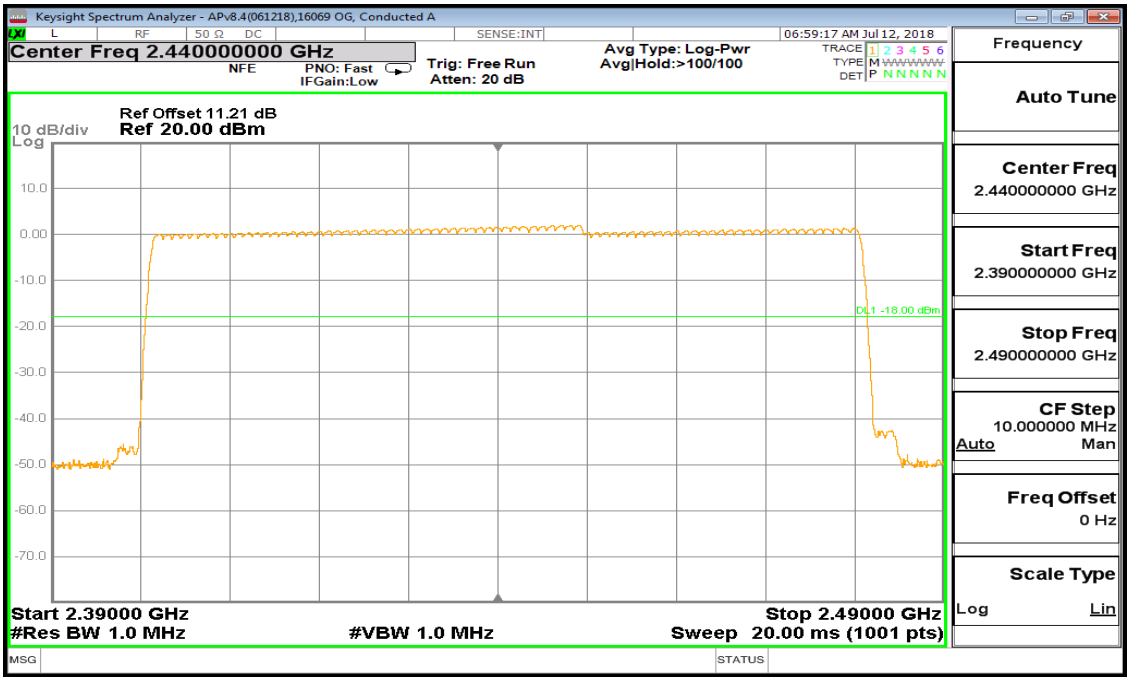
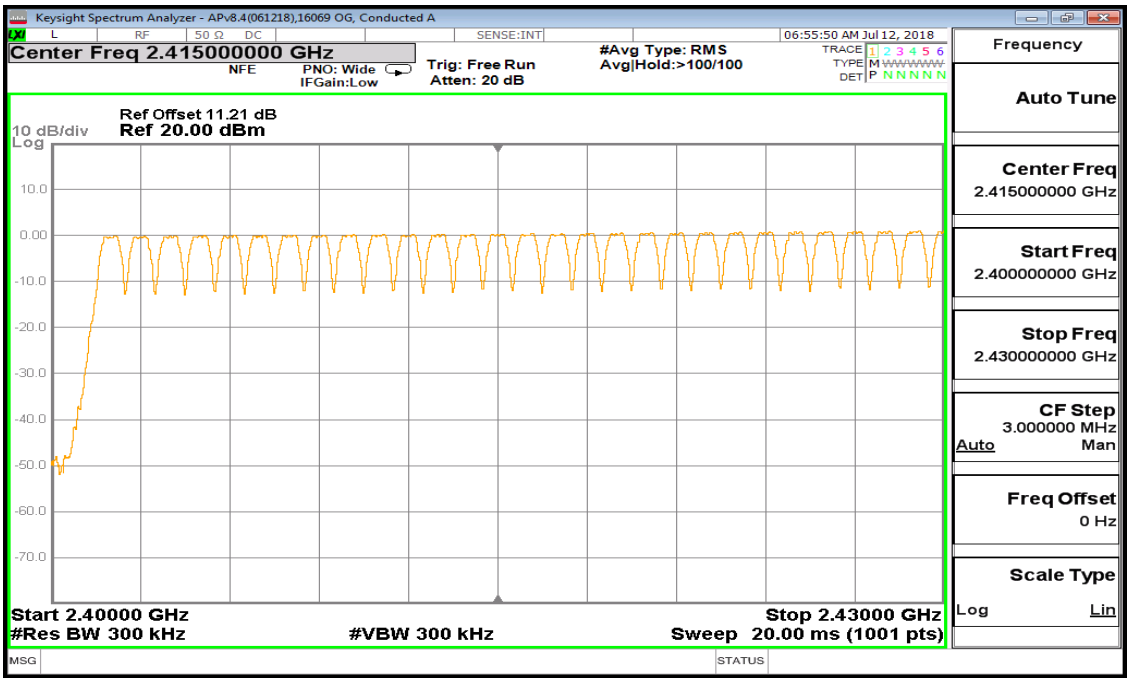
8.4.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION



100MHz SPAN



30MHz SPAN, SEGMENT 1 OF 3

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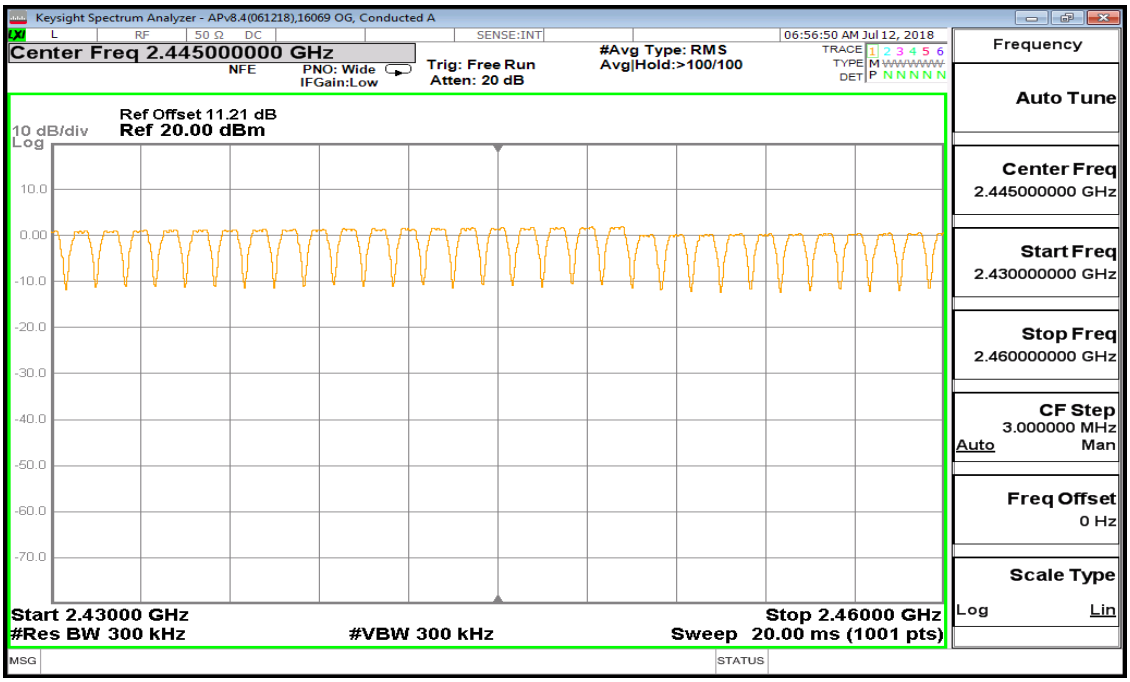
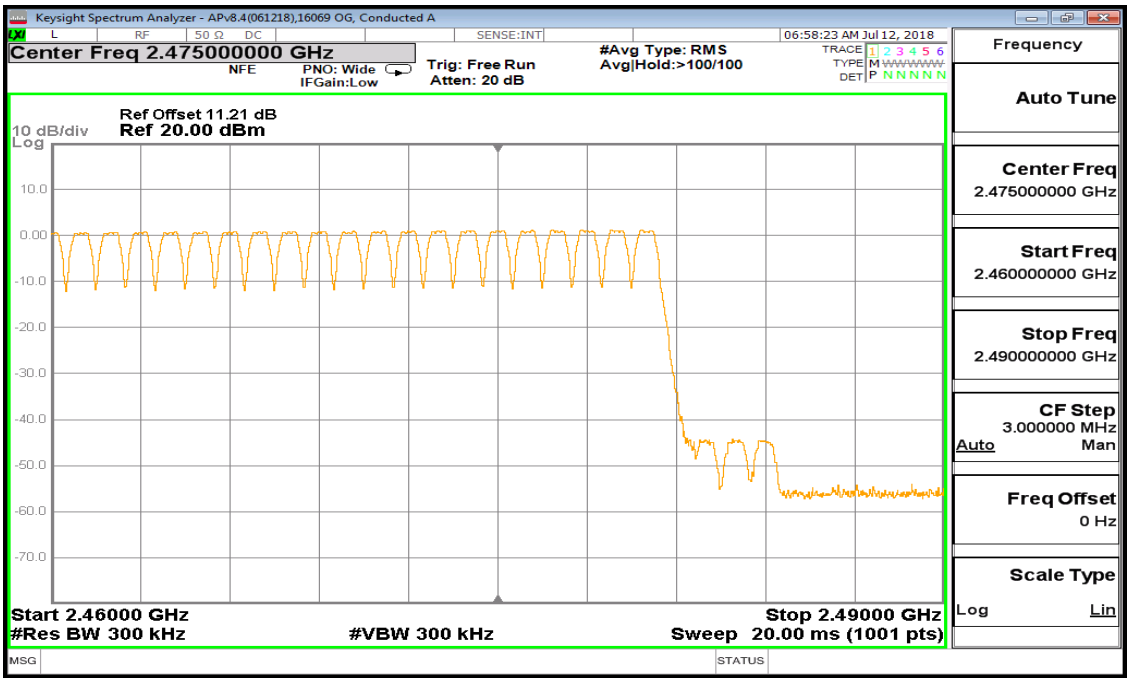


30MHz SPAN, SEGMENT 2 OF 3



30MHz SPAN, SEGMENT 3 OF 3

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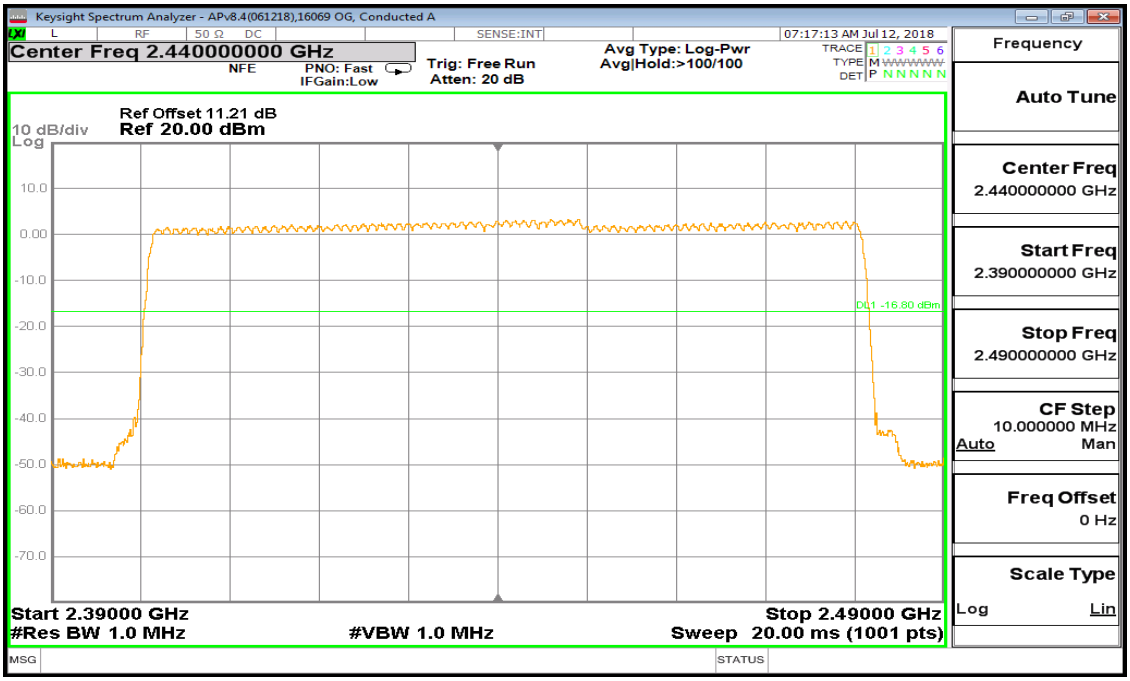
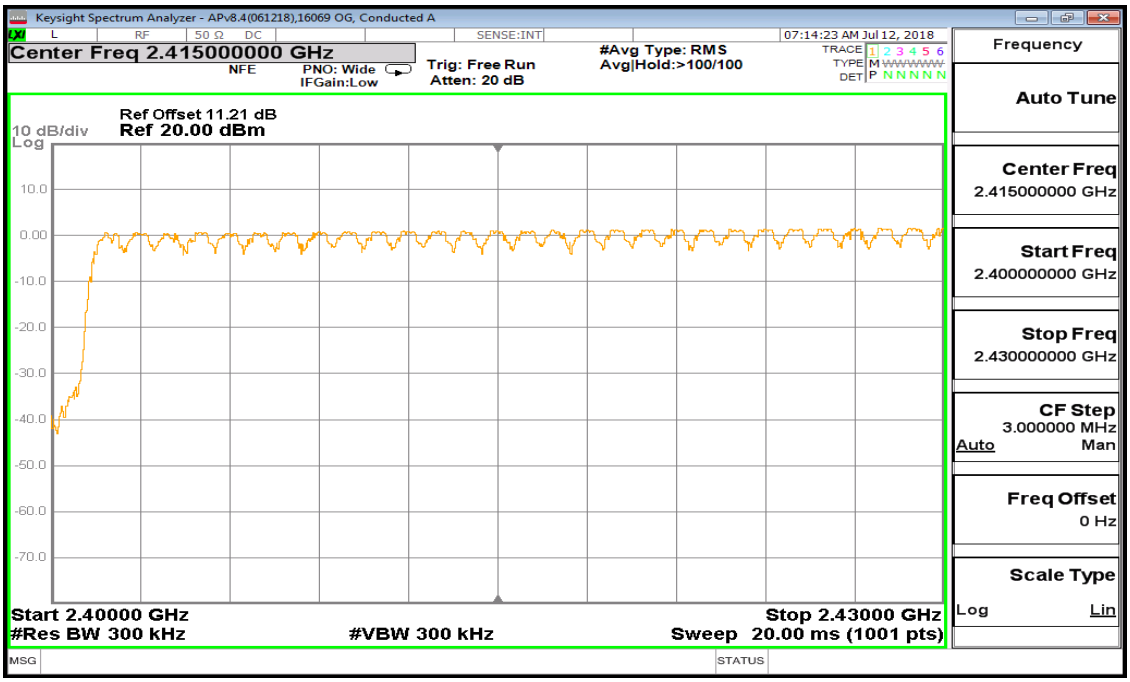
8.4.2. BLUETOOTH ENCHANCED DATA RATE 8PSK MODULATION



100MHz SPAN



30MHz SPAN, SEGMENT 1 OF 3

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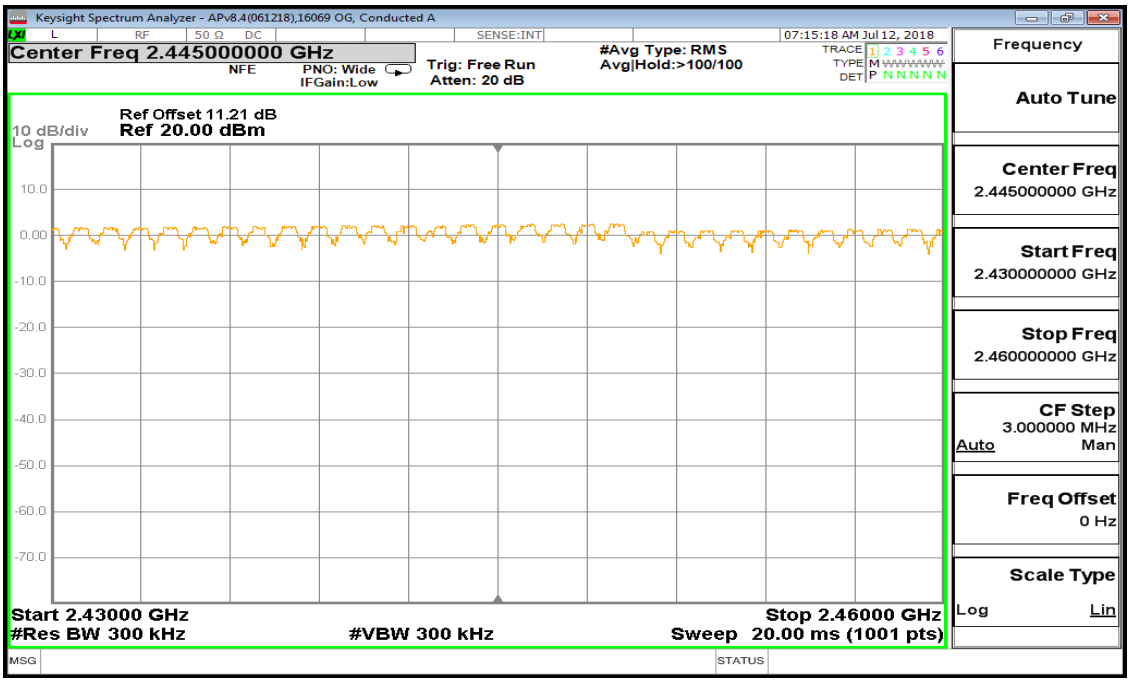
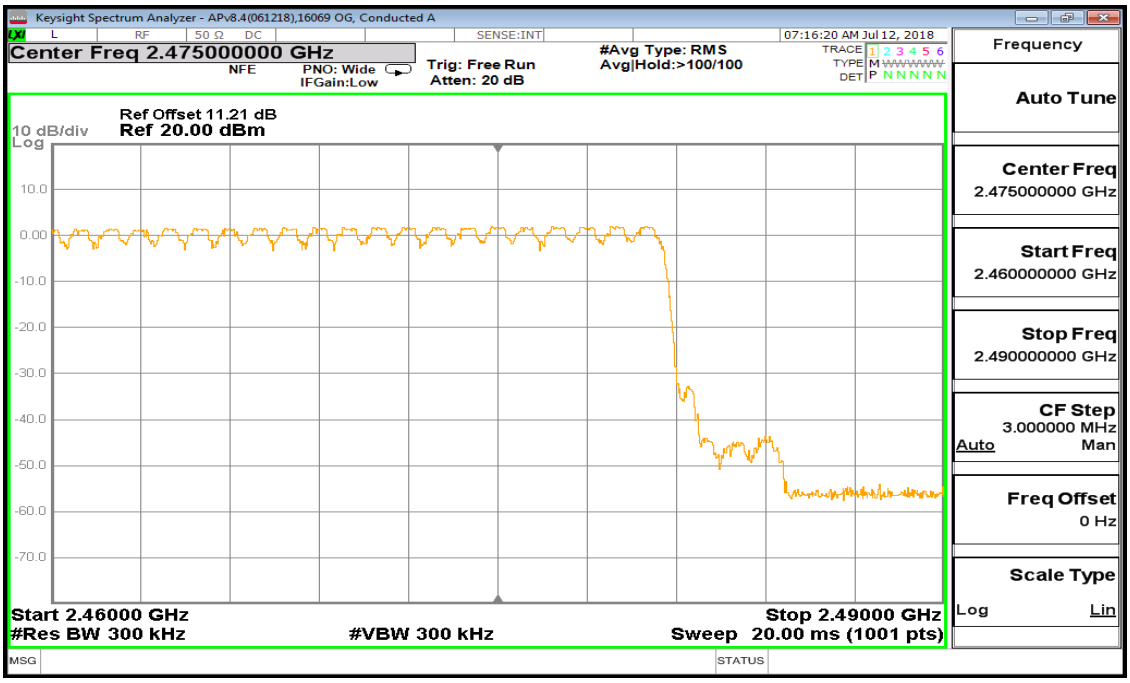


30MHz SPAN, SEGMENT 2 OF 3



30MHz SPAN, SEGMENT 3 OF 3

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8.5. AVERAGE TIME OF OCCUPANCY

LIMITS

FCC §15.247 (a) (1) (iii)

RSS-247 (5.1) (d)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centered on a single, selected hopping channel. The width of a single pulse is measured in a fast scan. The number of pulses is measured in a 3.16 second scan, to enable resolution of each occurrence.

The average time of occupancy in the specified 3.16 second period (79 channels * 0.4 s) is equal to 10 * (# of pulses in 3.16 s) * pulse width.

For AFH mode, the average time of occupancy in the specified 8 second period (20 channels * 0.4 seconds) is equal to 10 * (# of pulses in 0.8 s) * pulse width.

RESULTS

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8.5.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK Normal Mode					
DH1	0.401	32	0.1283	0.4	-0.2717
DH3	1.657	16	0.2651	0.4	-0.1349
DH5	2.905	11	0.3196	0.4	-0.0805
DH Packet	Pulse Width (sec)	Number of Pulses in 0.8 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK AFH Mode					
DH1	0.401	8	0.03208	0.4	-0.3679
DH3	1.657	4	0.06628	0.4	-0.3337
DH5	2.905	2.75	0.07989	0.4	-0.3201

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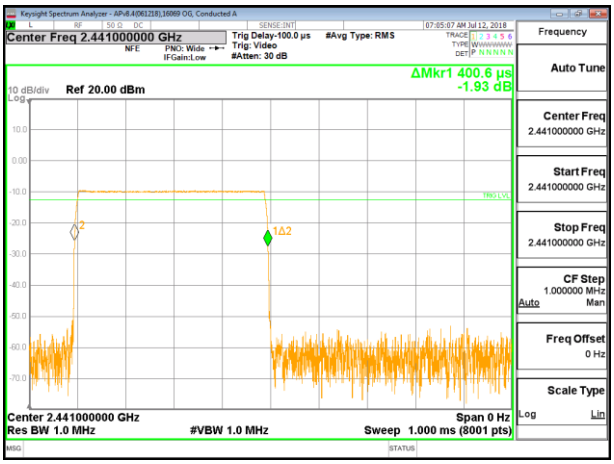
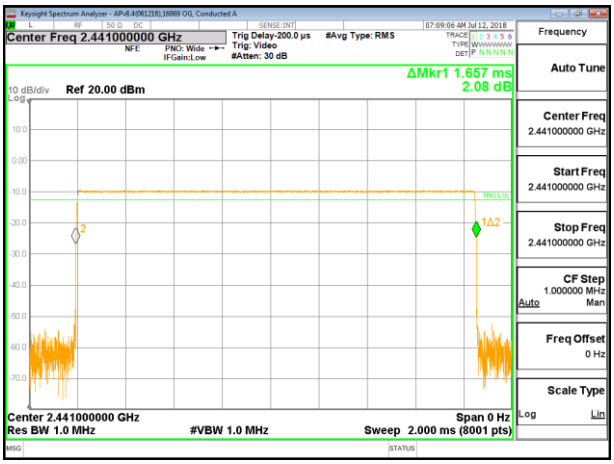
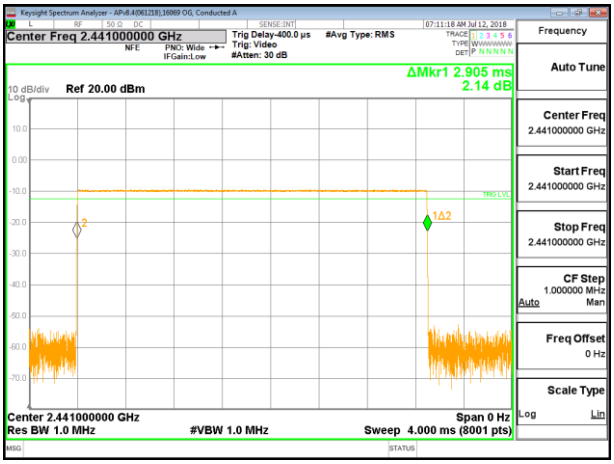


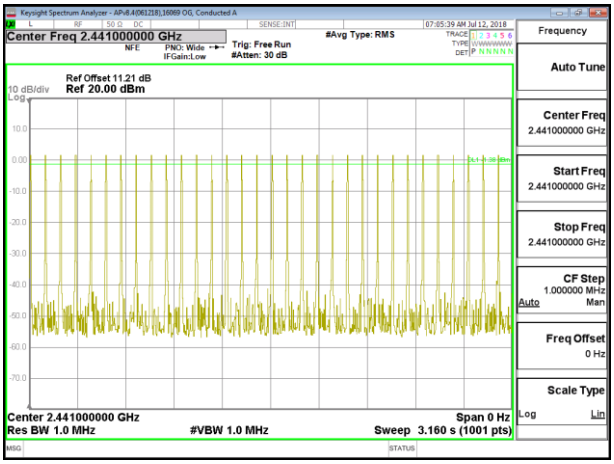
PULSE WIDTH – DH1



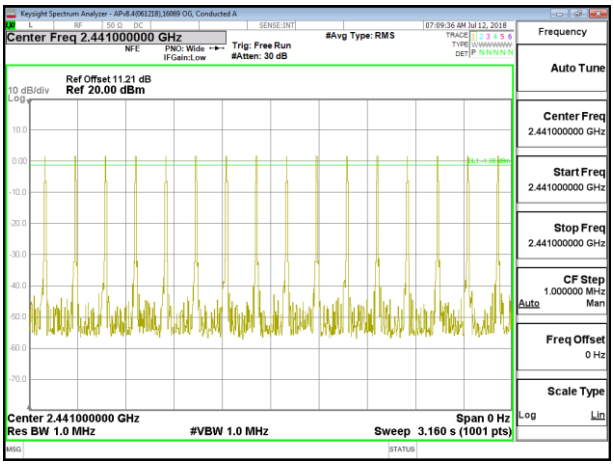
PULSE WIDTH – DH3



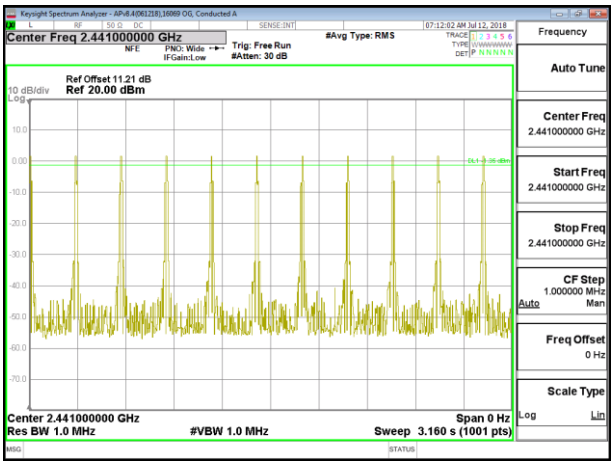
PULSE WIDTH – DH5



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5

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8.5.2. BLUETOOTH ENCHANCED DATA RATE 8PSK MODULATION

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
8PSK Normal Mode					
DH1	0.408	32	0.13056	0.4	-0.26944
DH3	1.663	16	0.26608	0.4	-0.13392
DH5	2.914	11	0.32054	0.4	-0.07946

Note: for AFH(8PSK) mode, please refer to the results of AFH(GFSK) mode; the channel selection and hopping rate are the same for both EDR and Basic Rate operation, data for Basic Rate in section 4.5.1 demonstrates compliance with channel occupancy when AFH is employed.

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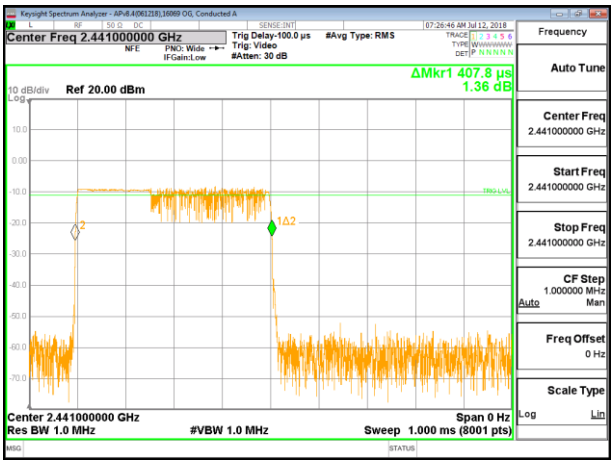
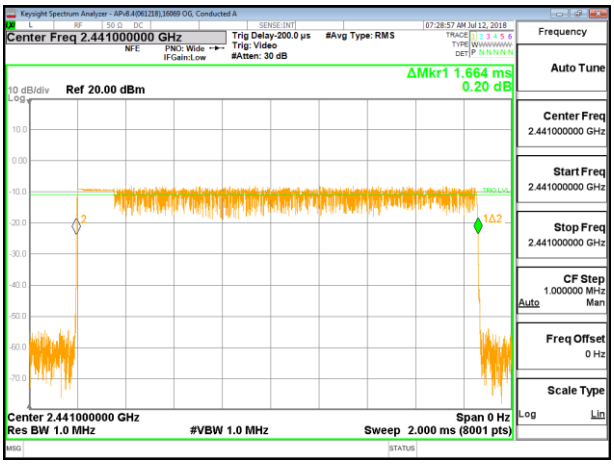
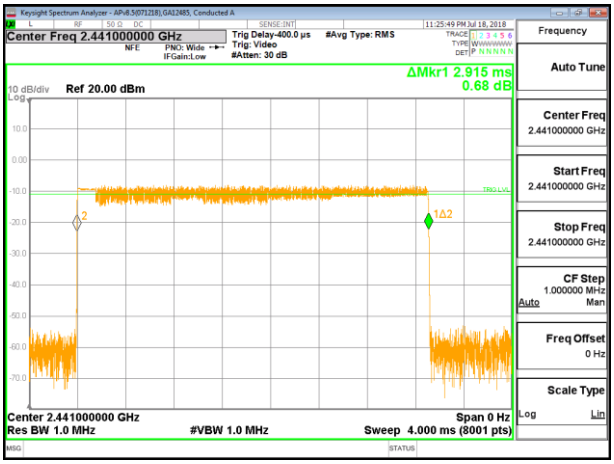


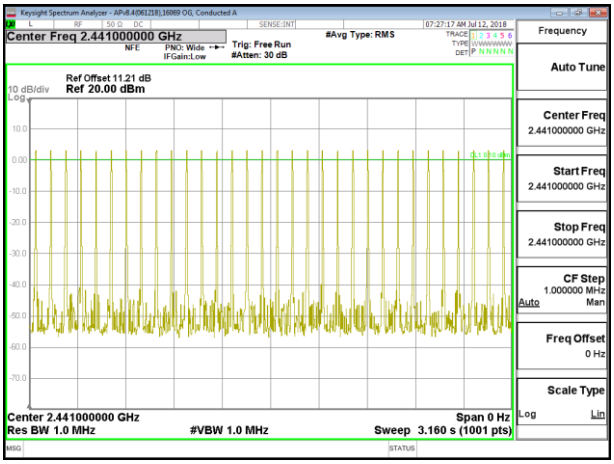
PULSE WIDTH – DH1



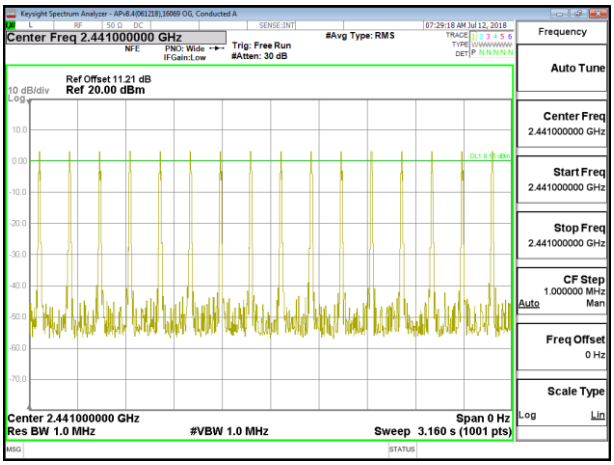
PULSE WIDTH – DH3



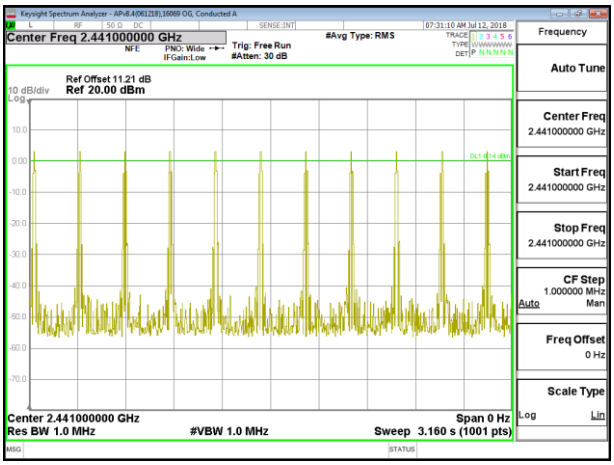
PULSE WIDTH – DH5



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5

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8.6. OUTPUT POWER

LIMITS

§15.247 (b) (1)

RSS-247 (5.4) (b)

The maximum antenna gain is less than 6 dBi, therefore the limit is 30 dBm. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

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8.6.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

Tested By:	16069 OG
Date:	7/10/2018

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	0.10	30	-29.9
Middle	2441	1.73	30	-28.27
High	2480	1.38	30	-28.62

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8.6.2. BLUETOOTH ENCHANCED DATA RATE 8PSK MODULATION

Tested By:	16069 OG
Date:	7/10/2018

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	0.66	21	-20.34
Middle	2441	2.08	21	-18.92
High	2480	1.89	21	-19.11

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8.7. AVERAGE POWER

LIMITS

None; for reporting purposes only

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

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8.7.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

Tested By:	16069 OG
Date	7/10/2018

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	-0.47
Middle	2441	1.20
High	2480	0.88

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8.7.2. BLUETOOTH ENCHANCED DATA RATE 8PSK MODULATION

Tested By:	16069 OG
Date	7/10/2018

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	-0.40
Middle	2441	1.57
High	2480	1.28

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8.8. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

RSS-247 5.5

Limit = -20 dBc

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

RESULTS

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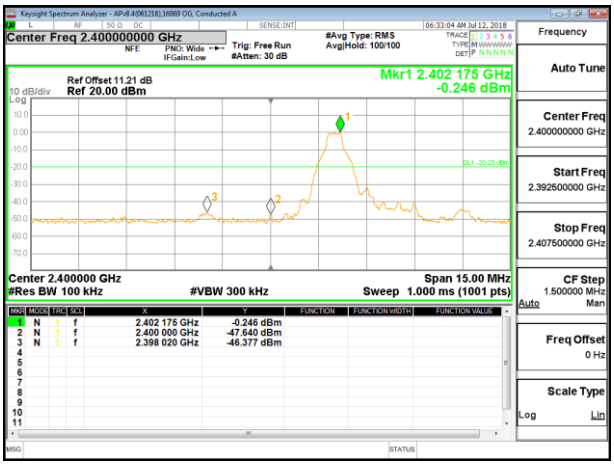
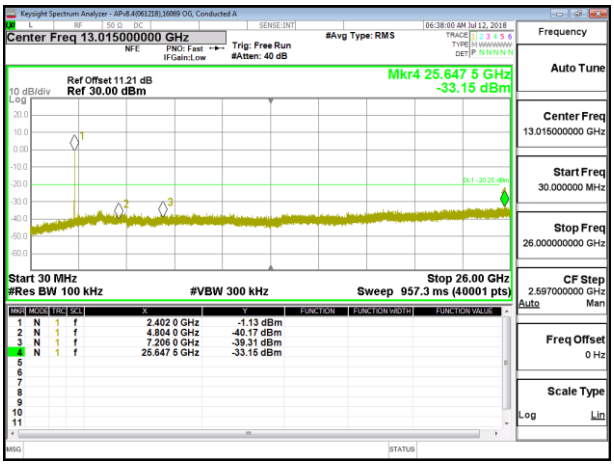
8.8.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

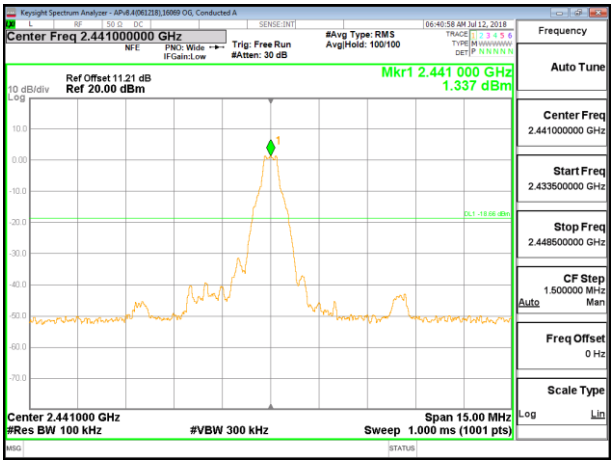
Antenna 1 SPURIOUS EMISSIONS, NON-HOPPING



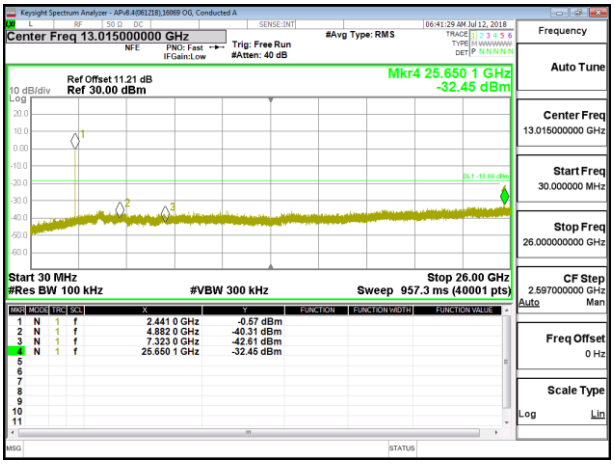
LOW CHANNEL BANDEDGE



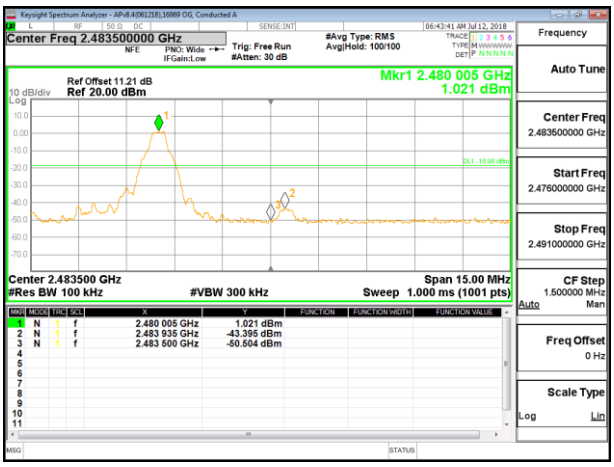
OUT-OF-BAND LOW CHANNEL



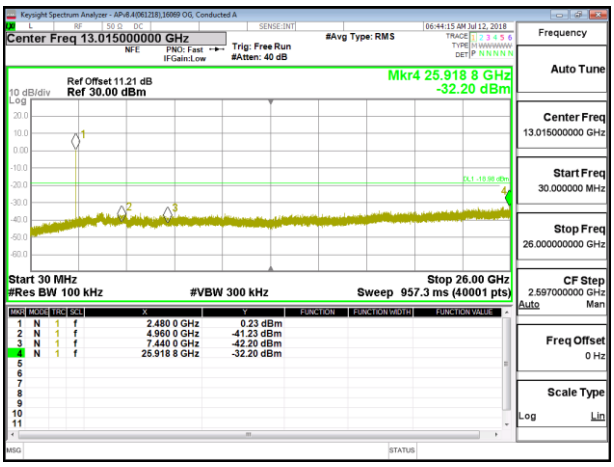
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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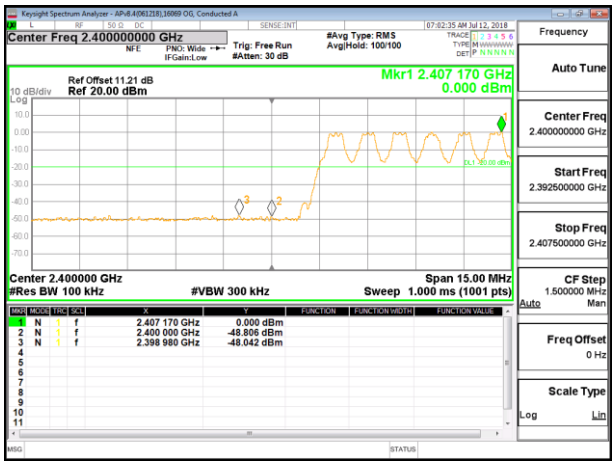
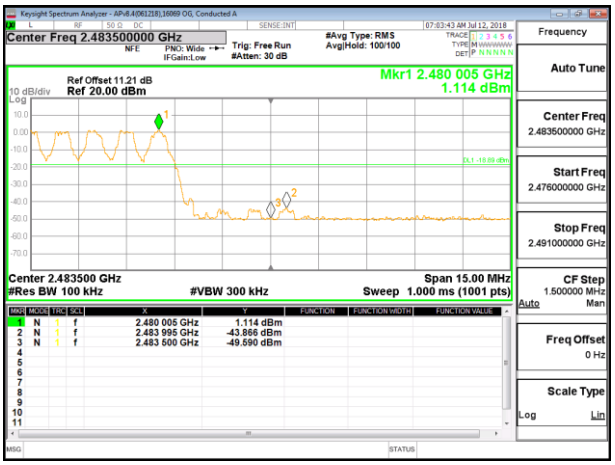
Antenna 1 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



LOW BANDEDGE



HIGH BANDEDGE

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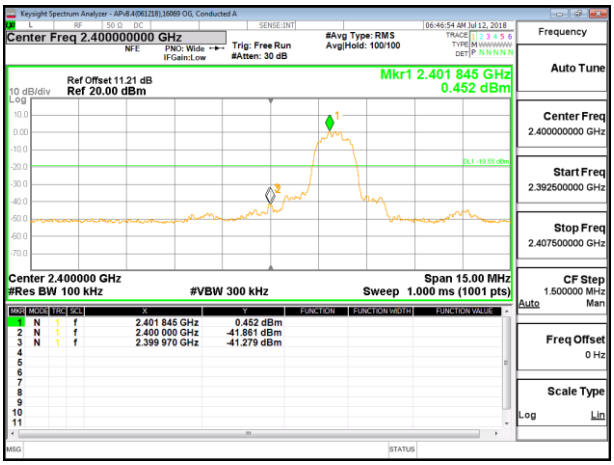
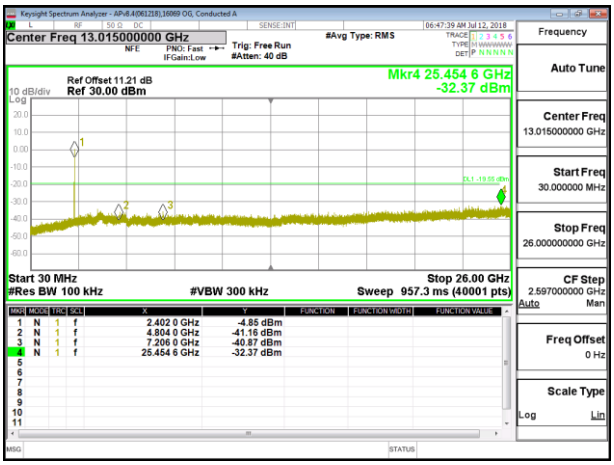
8.8.2. BLUETOOTH ENCHANCED DATA RATE 8PSK MODULATION

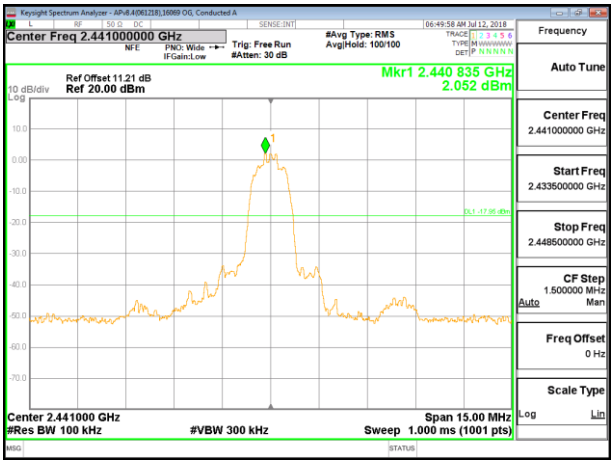
Antenna 1 SPURIOUS EMISSIONS, NON-HOPPING



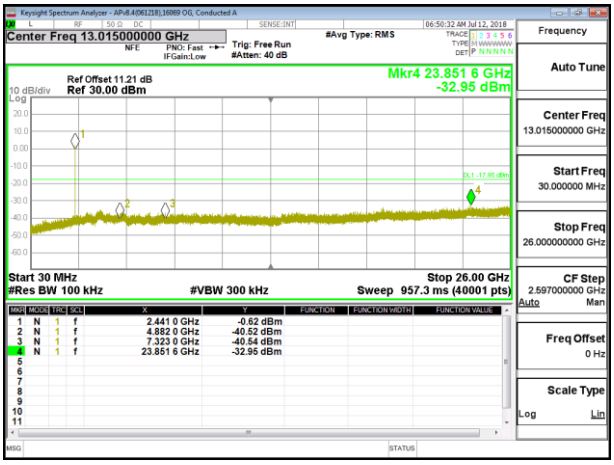
LOW CHANNEL BANDEDGE



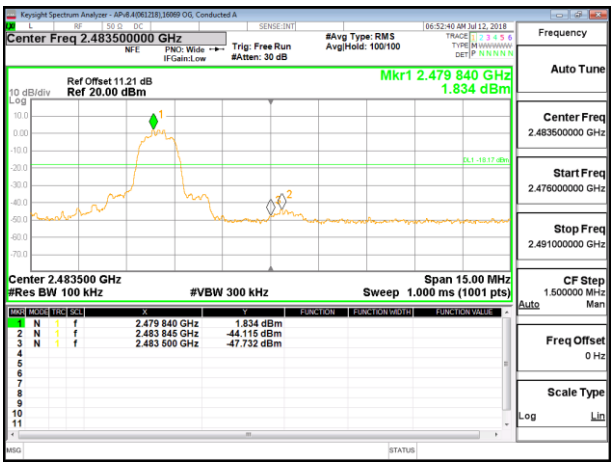
OUT-OF-BAND LOW CHANNEL



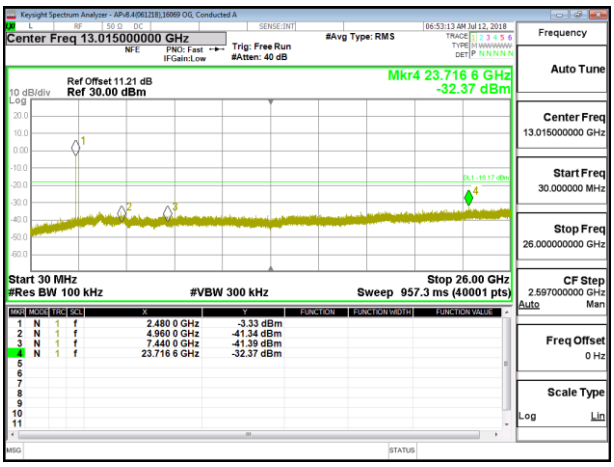
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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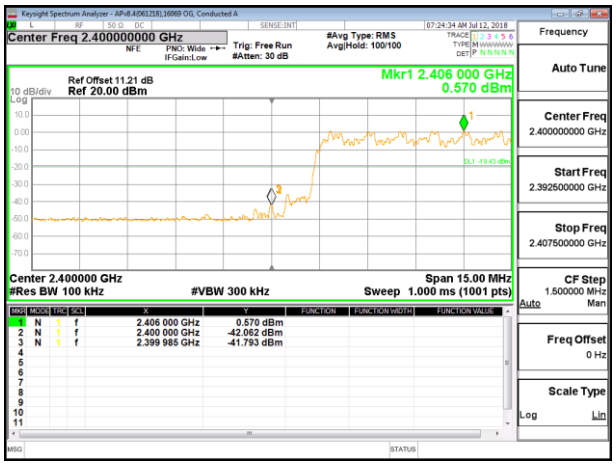
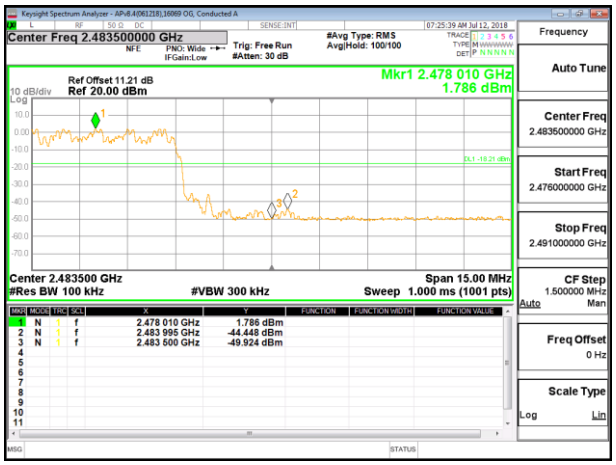
Antenna 1 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



LOW BANDEDGE



HIGH BANDEDGE

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9. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209

RSS-GEN, Section 8.9 and 8.10.

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
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 measurement below 1GHz; 1.5 m above the ground plane for measurement 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 pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

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.

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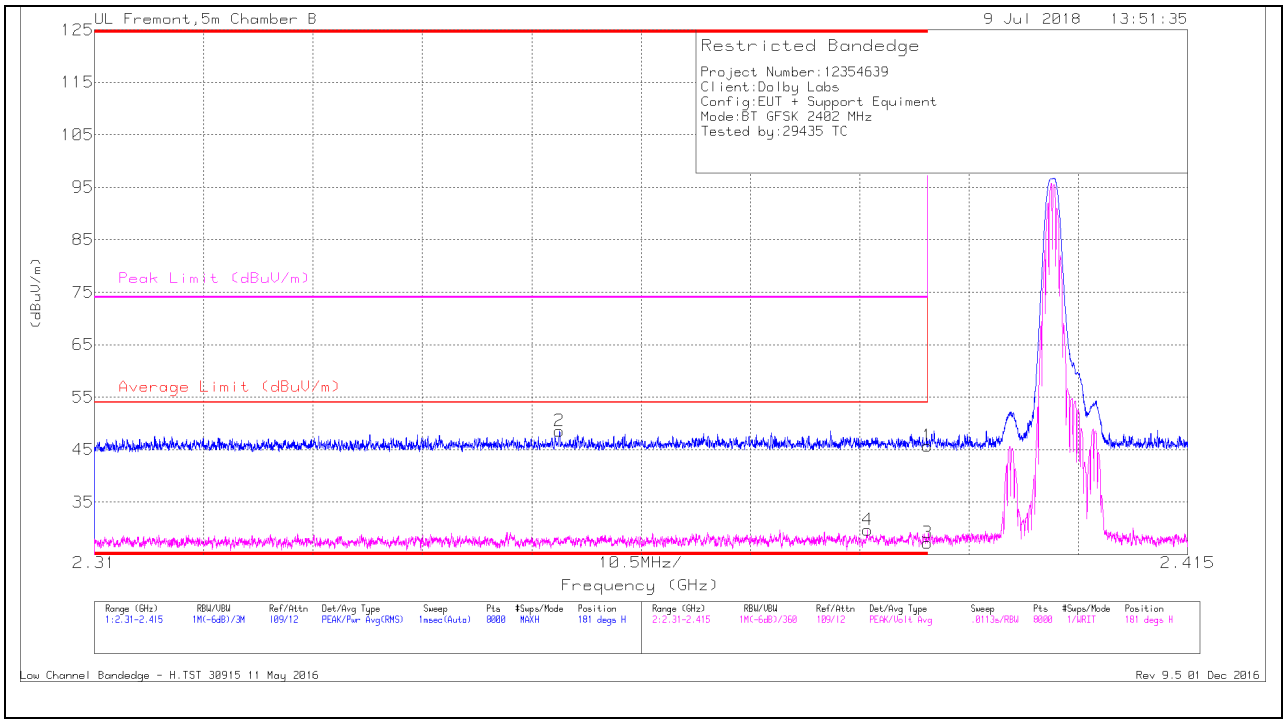
9.1. TRANSMITTER ABOVE 1 GHz

9.1.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/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	34.9	Pk	32.3	-21.5	45.7	-	-	74	-28.3	181	135	H
2	* 2.355	37.9	Pk	32.2	-21.5	48.6	-	-	74	-25.4	181	135	H
3	* 2.39	16.41	VA1T	32.3	-21.5	27.21	54	-26.79	-	-	181	135	H
4	* 2.384	18.79	VA1T	32.3	-21.4	29.69	54	-24.31	-	-	181	135	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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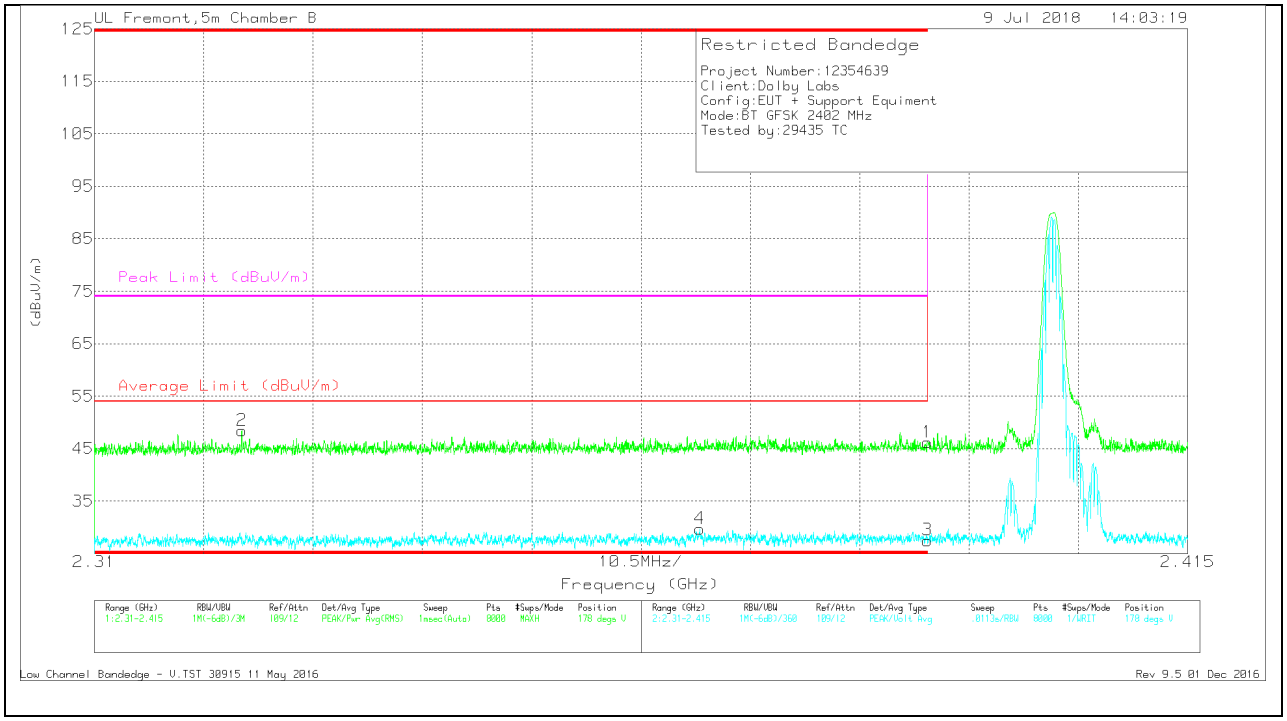
VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.324	37.91	Pk	32.1	-21.6	48.41	-	-	74	-25.59	178	136	V
4	* 2.368	18.84	VA1T	32.3	-21.4	29.74	54	-24.26	-	-	178	136	V
1	* 2.39	35.39	Pk	32.3	-21.5	46.19	-	-	74	-27.81	178	136	V
3	* 2.39	16.71	VA1T	32.3	-21.5	27.51	54	-26.49	-	-	178	136	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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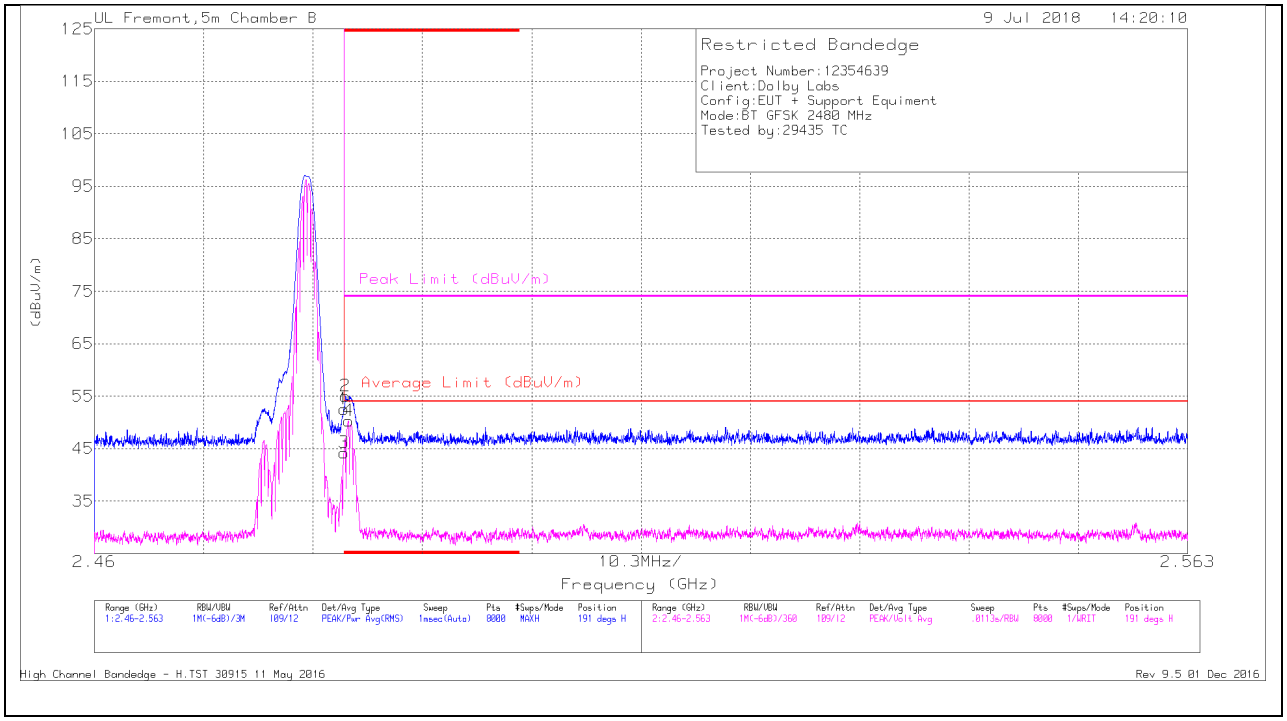
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/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	41.44	Pk	32.6	-21.5	52.54	-	-	74	-21.46	191	117	H
2	* 2.484	43.88	Pk	32.6	-21.5	54.98	-	-	74	-19.02	191	117	H
3	* 2.484	33.14	VA1T	32.6	-21.5	44.24	54	-9.76	-	-	191	117	H
4	* 2.484	39.18	VA1T	32.6	-21.5	50.28	54	-3.72	-	-	191	117	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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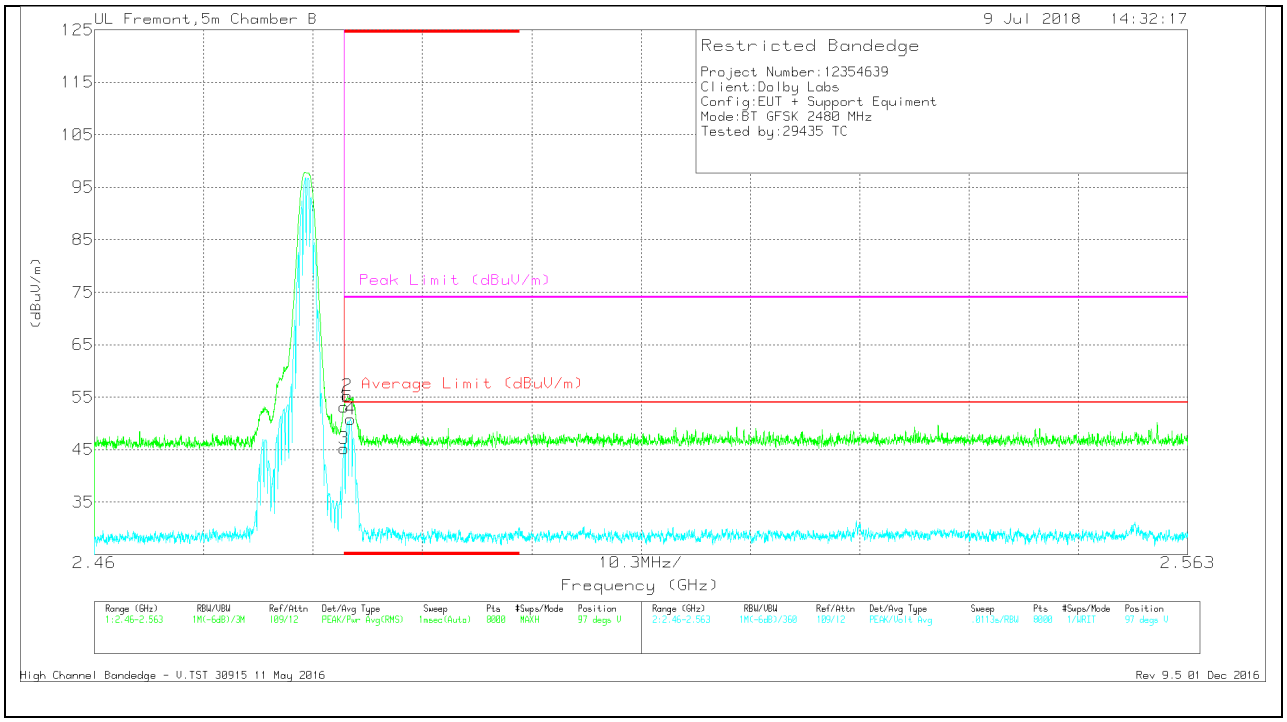
VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/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	42.05	Pk	32.6	-21.5	53.15	-	-	74	-20.85	97	108	V
2	* 2.484	44.2	Pk	32.6	-21.5	55.3	-	-	74	-18.7	97	108	V
3	* 2.484	34.06	VA1T	32.6	-21.5	45.16	54	-8.84	-	-	97	108	V
4	* 2.484	39.68	VA1T	32.6	-21.5	50.78	54	-3.22	-	-	97	108	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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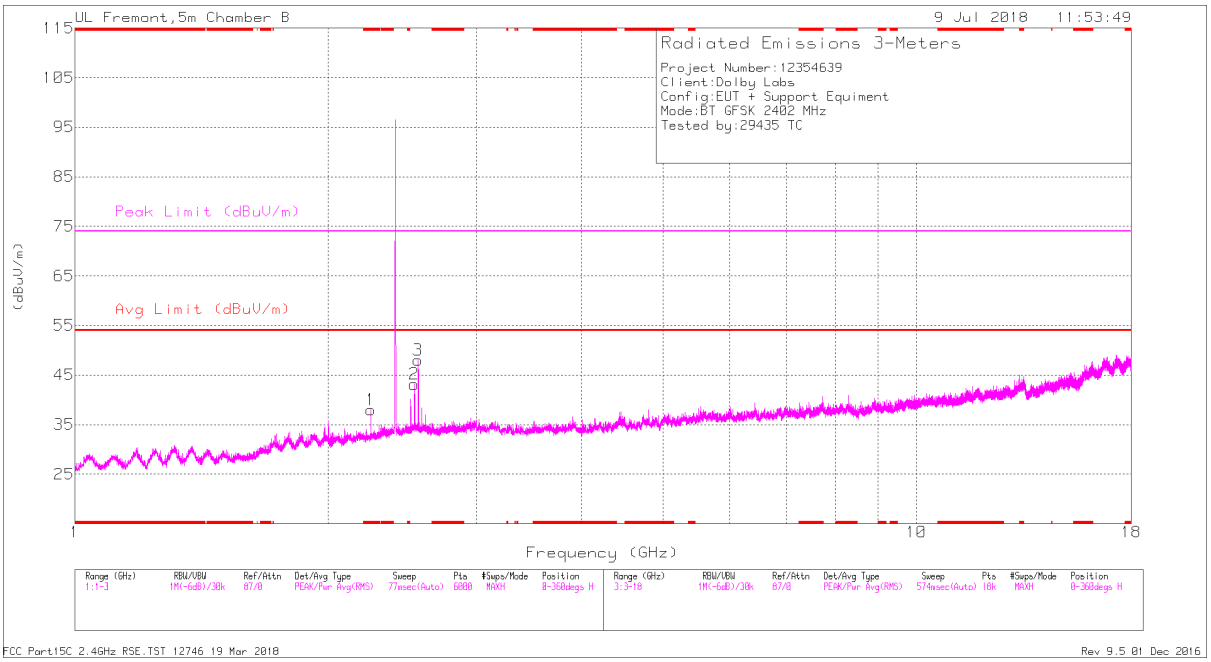
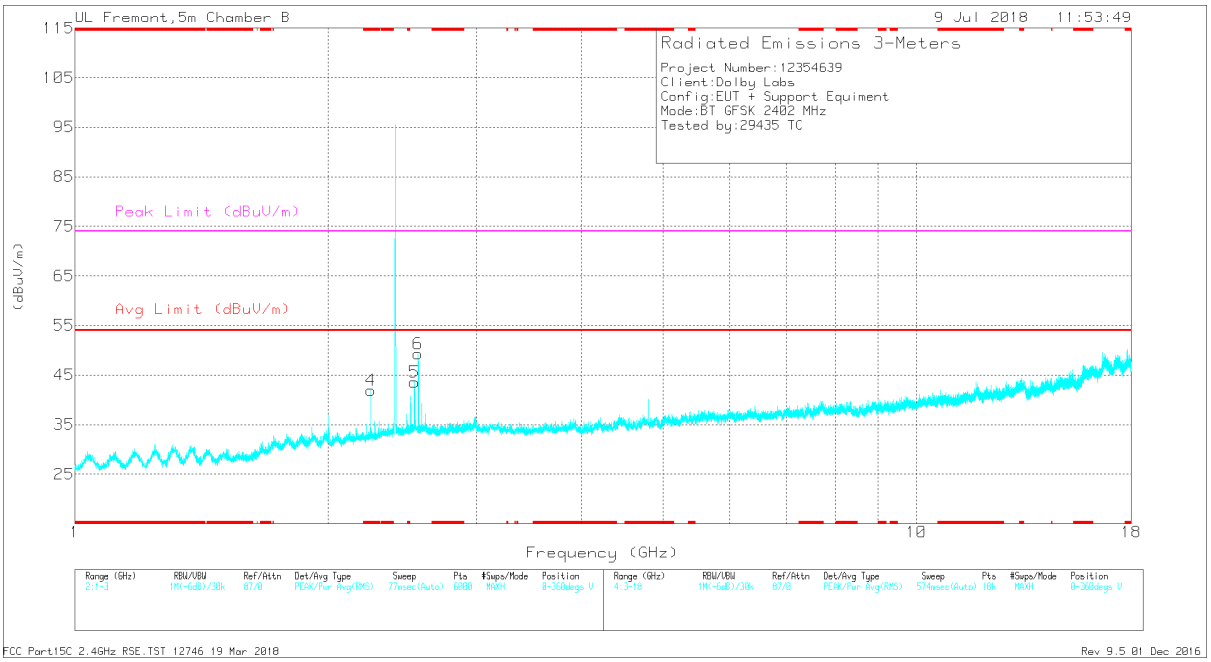
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZTONAL



VERTICAL

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RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.246	32.19	PKFH	31.7	-21.8	42.09	-	-	74	-31.91	221	161	H
* 2.246	27.09	VA1T	31.7	-21.8	36.99	54	-17.01	-	-	221	161	H
* 2.246	35.18	PKFH	31.7	-21.8	45.08	-	-	74	-28.92	304	202	V
* 2.246	31.27	VA1T	31.7	-21.8	41.17	54	-12.83	-	-	304	202	V
2.532	34.89	PKFH	32.7	-21.4	46.19	-	-	-	-	185	125	H
2.532	30.2	VA1T	32.7	-21.4	41.5	-	-	-	-	185	125	H
2.532	35.59	PKFH	32.7	-21.4	46.89	-	-	-	-	118	149	V
2.532	31.55	VA1T	32.7	-21.4	42.85	-	-	-	-	118	149	V
2.558	38.48	PKFH	32.7	-21.3	49.88	-	-	-	-	187	110	H
2.558	35.99	VA1T	32.7	-21.3	47.39	-	-	-	-	187	110	H
2.558	40.06	PKFH	32.7	-21.3	51.46	-	-	-	-	117	131	V
2.558	37.21	VA1T	32.7	-21.3	48.61	-	-	-	-	117	131	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-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

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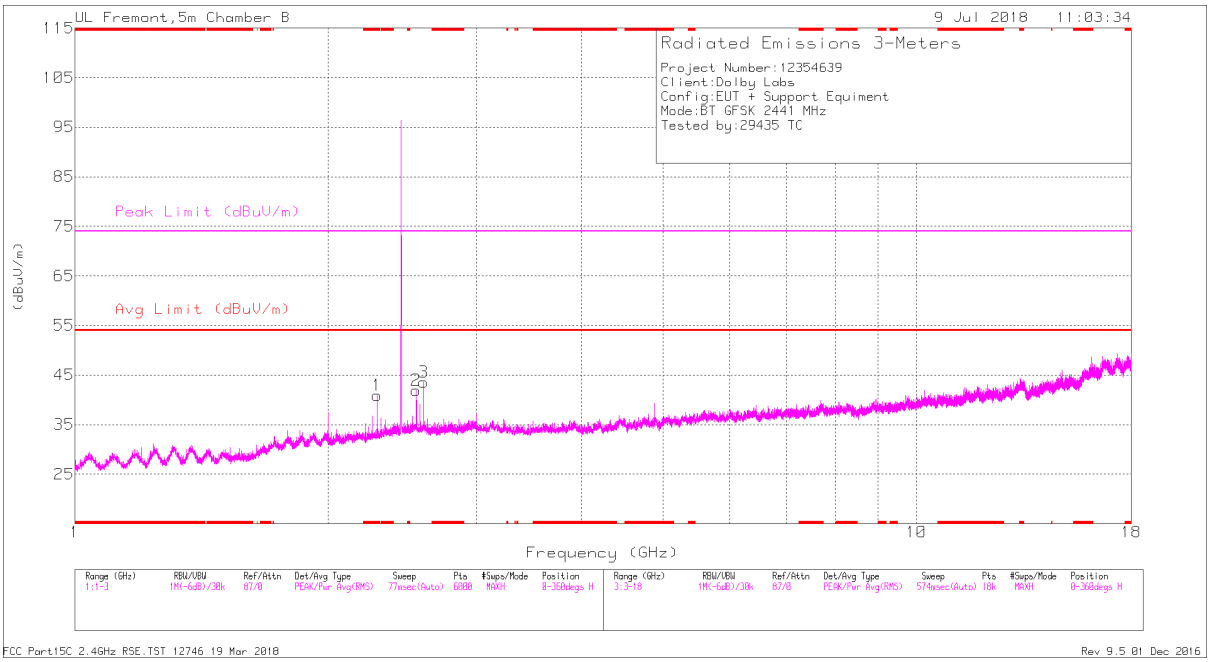
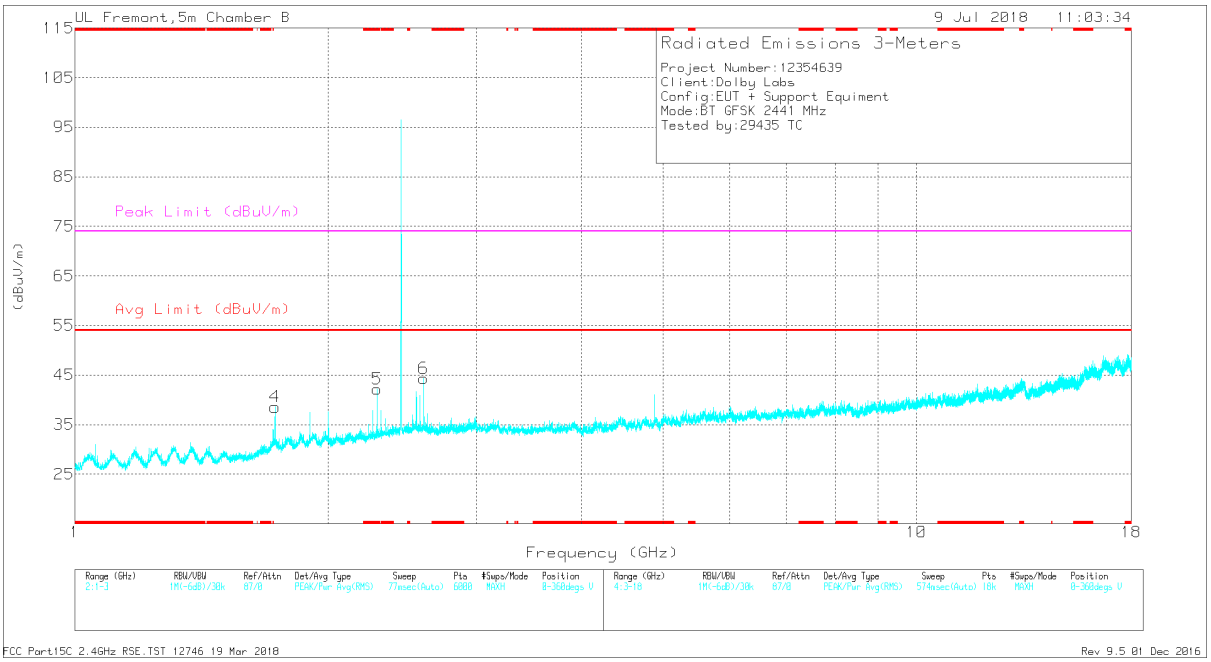
MID CHANNEL RESULTS



HORIZTONAL



VERTICAL

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RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.285	33.45	PKFH	31.9	-21.8	43.55	-	-	74	-30.45	176	105	H
* 2.285	28.66	VA1T	31.9	-21.8	38.76	54	-15.24	-	-	176	105	H
* 2.285	33.99	PKFH	31.9	-21.8	44.09	-	-	74	-29.91	322	199	V
* 2.285	29.86	VA1T	31.9	-21.8	39.96	54	-14.04	-	-	322	199	V
1.728	29.25	PKFH	29.9	-21.4	37.75	-	-	-	-	174	171	V
1.729	16.86	VA1T	29.9	-21.4	25.36	-	-	-	-	174	171	V
2.545	34.16	PKFH	32.7	-21.4	45.46	-	-	-	-	188	149	H
2.545	28.65	VA1T	32.7	-21.4	39.95	-	-	-	-	188	149	H
2.597	34.57	PKFH	32.7	-21.2	46.07	-	-	-	-	181	158	H
2.597	30.56	VA1T	32.7	-21.2	42.06	-	-	-	-	181	158	H
2.597	36.1	PKFH	32.7	-21.2	47.6	-	-	-	-	102	140	V
2.597	32.38	VA1T	32.7	-21.2	43.88	-	-	-	-	102	140	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-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

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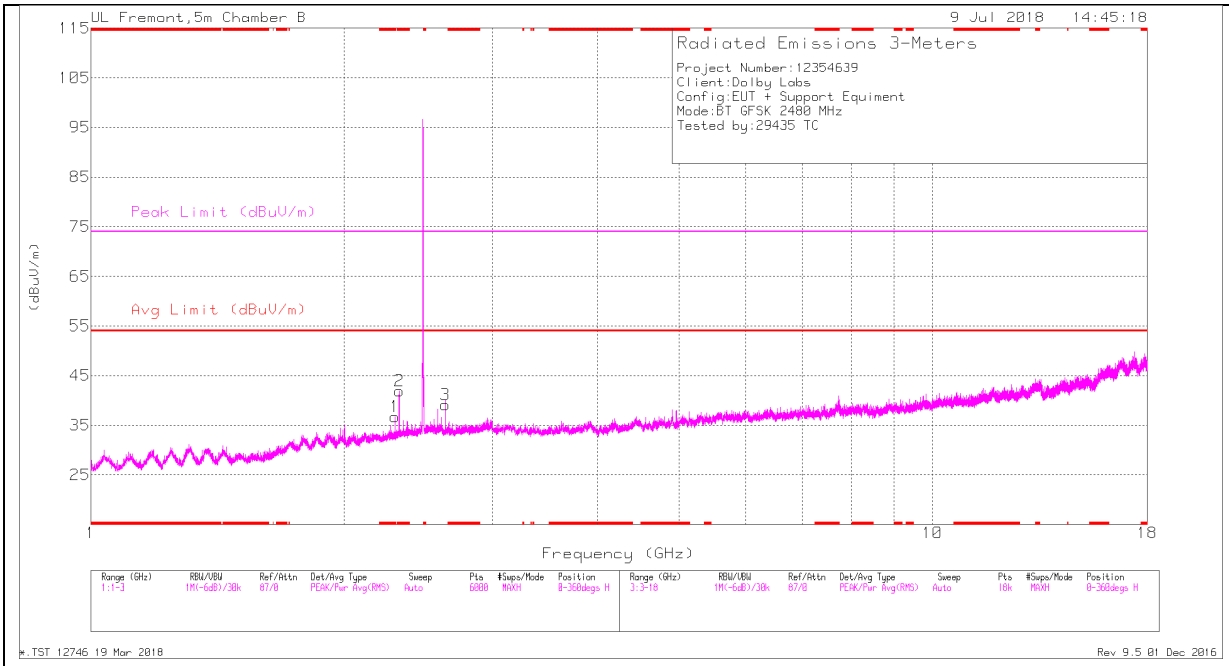
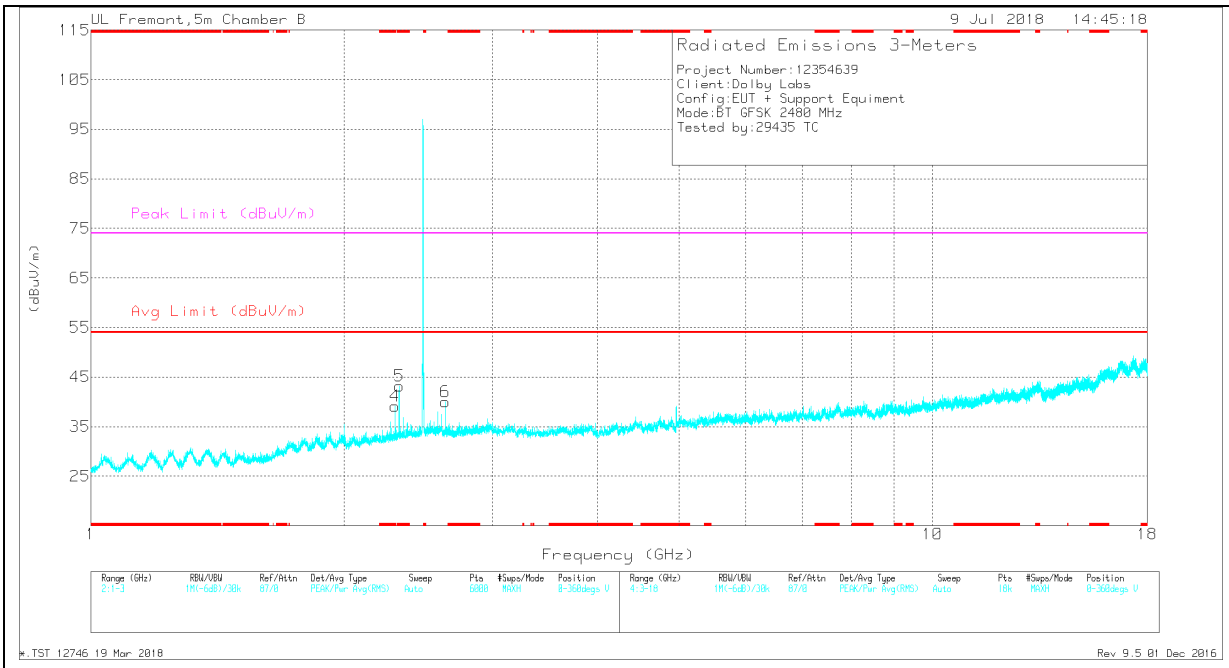
HIGH CHANNEL RESULTS



HORIZTONAL



VERTICAL

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RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.298	31.01	PKFH	32	-21.7	41.31	-	-	74	-32.69	221	134	H
* 2.298	23.56	VA1T	32	-21.7	33.86	54	-20.14	-	-	221	134	H
* 2.324	34.22	PKFH	32.1	-21.6	44.72	-	-	74	-29.28	176	203	H
* 2.324	29.74	VA1T	32.1	-21.6	40.24	54	-13.76	-	-	176	203	H
* 2.298	32.8	PKFH	32	-21.7	43.1	-	-	74	-30.9	309	279	V
* 2.298	27.25	VA1T	32	-21.7	37.55	54	-16.45	-	-	309	279	V
* 2.324	36.72	PKFH	32.1	-21.6	47.22	-	-	74	-26.78	297	277	V
* 2.324	33.38	VA1T	32.1	-21.6	43.88	54	-10.12	-	-	297	277	V
2.636	32.47	PKFH	32.5	-21.4	43.57	-	-	-	-	185	109	H
2.636	26.05	VA1T	32.5	-21.4	37.15	-	-	-	-	185	109	H
2.636	33.05	PKFH	32.5	-21.4	44.15	-	-	-	-	124	105	V
2.636	27.4	VA1T	32.5	-21.4	38.5	-	-	-	-	124	105	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-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

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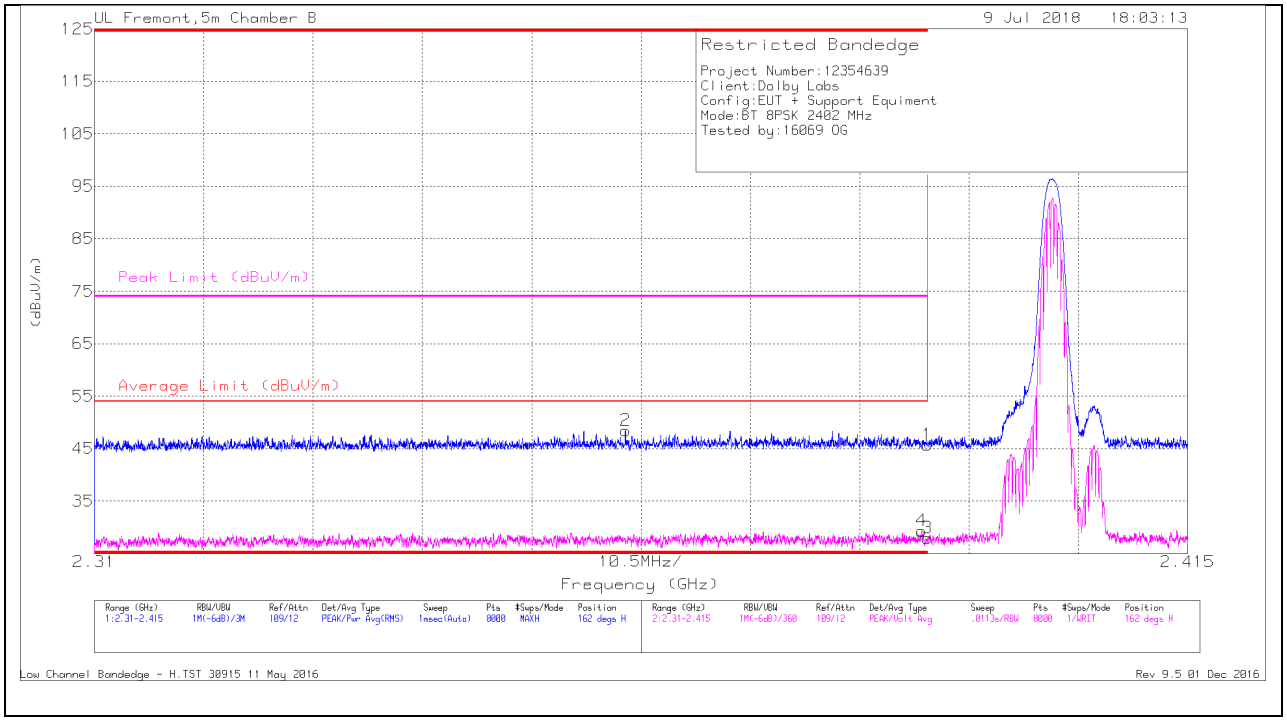
9.1.2. BLUETOOTH ENCHANCED DATA RATE 8PSK MODULATION

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/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	34.93	Pk	32.3	-21.5	45.73	-	-	74	-28.27	162	105	H
2	* 2.361	37.76	Pk	32.2	-21.5	48.46	-	-	74	-25.54	162	105	H
3	* 2.39	17.19	VA1T	32.3	-21.5	27.99	54	-26.01	-	-	162	105	H
4	* 2.389	18.48	VA1T	32.3	-21.5	29.28	54	-24.72	-	-	162	105	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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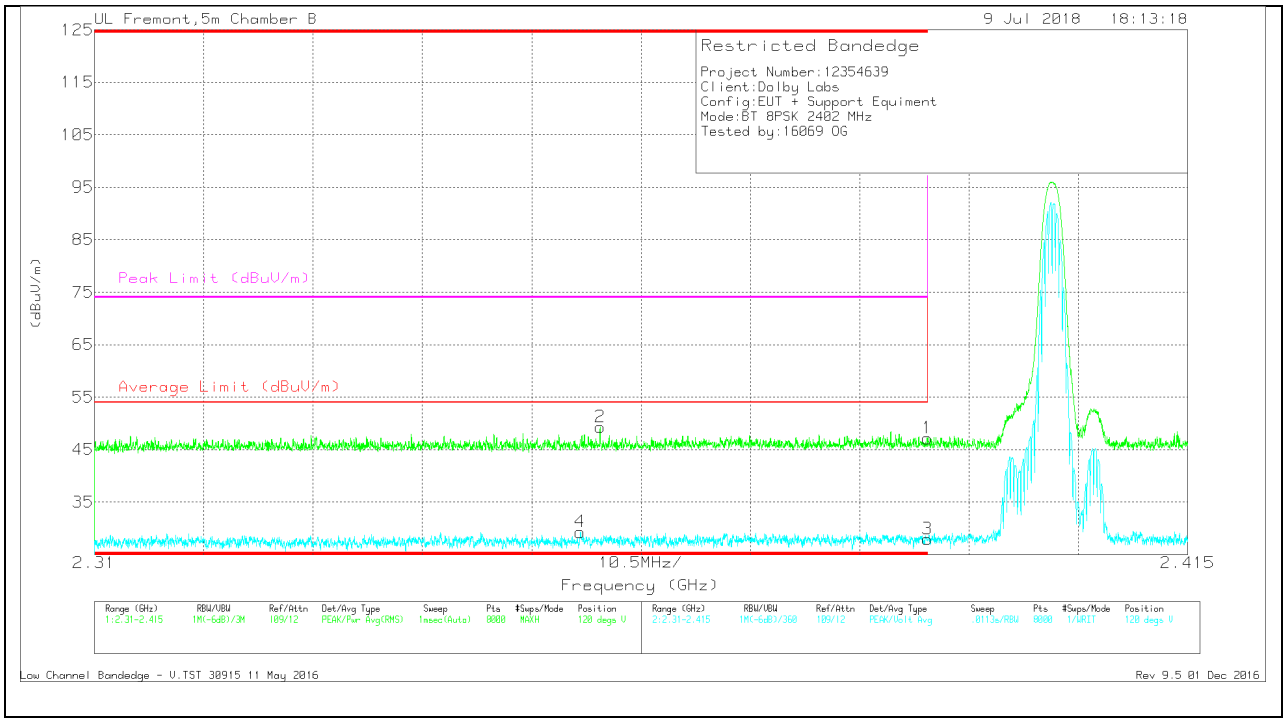
VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 2.357	18.55	VA1T	32.2	-21.5	29.25	54	-24.75	-	-	120	251	V
2	* 2.359	38.64	Pk	32.2	-21.5	49.34	-	-	74	-24.66	120	251	V
1	* 2.39	36.33	Pk	32.3	-21.5	47.13	-	-	74	-26.87	120	251	V
3	* 2.39	17.11	VA1T	32.3	-21.5	27.91	54	-26.09	-	-	120	251	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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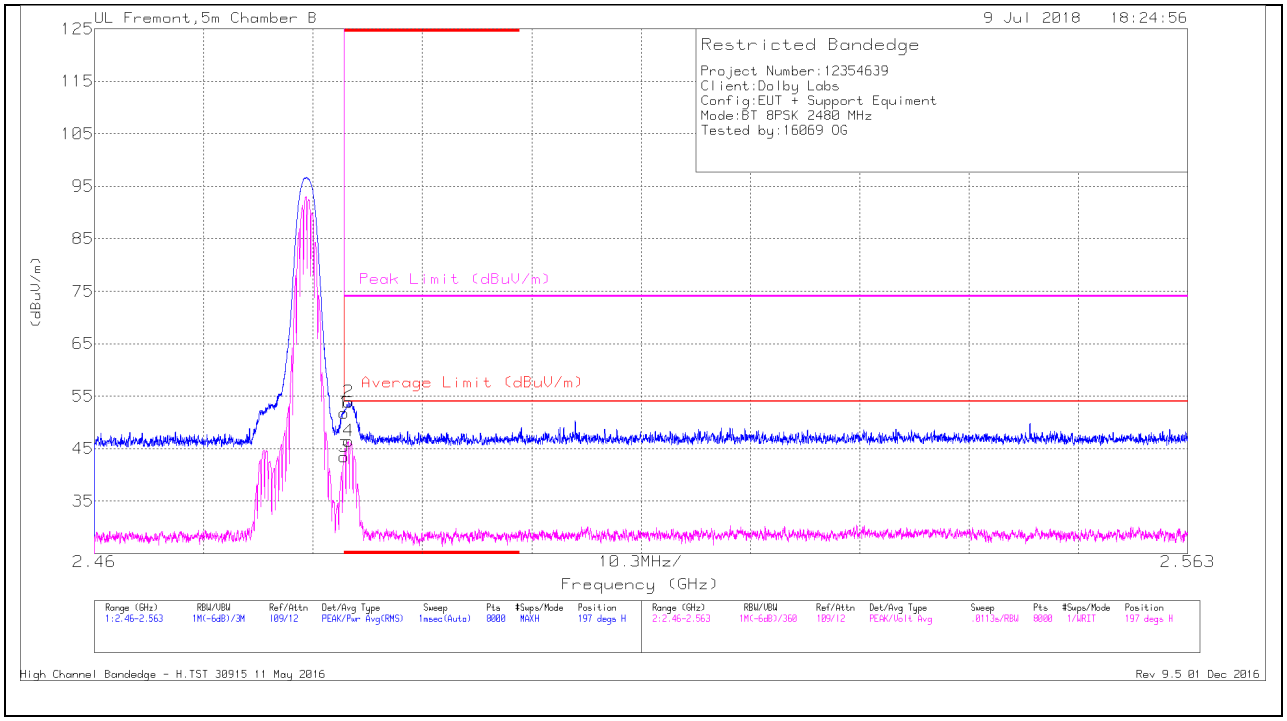
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/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	40.69	Pk	32.6	-21.5	51.79	-	-	74	-22.21	197	134	H
2	* 2.484	42.79	Pk	32.6	-21.5	53.89	-	-	74	-20.11	197	134	H
3	* 2.484	32.34	VA1T	32.6	-21.5	43.44	54	-10.56	-	-	197	134	H
4	* 2.484	35.33	VA1T	32.6	-21.5	46.43	54	-7.57	-	-	197	134	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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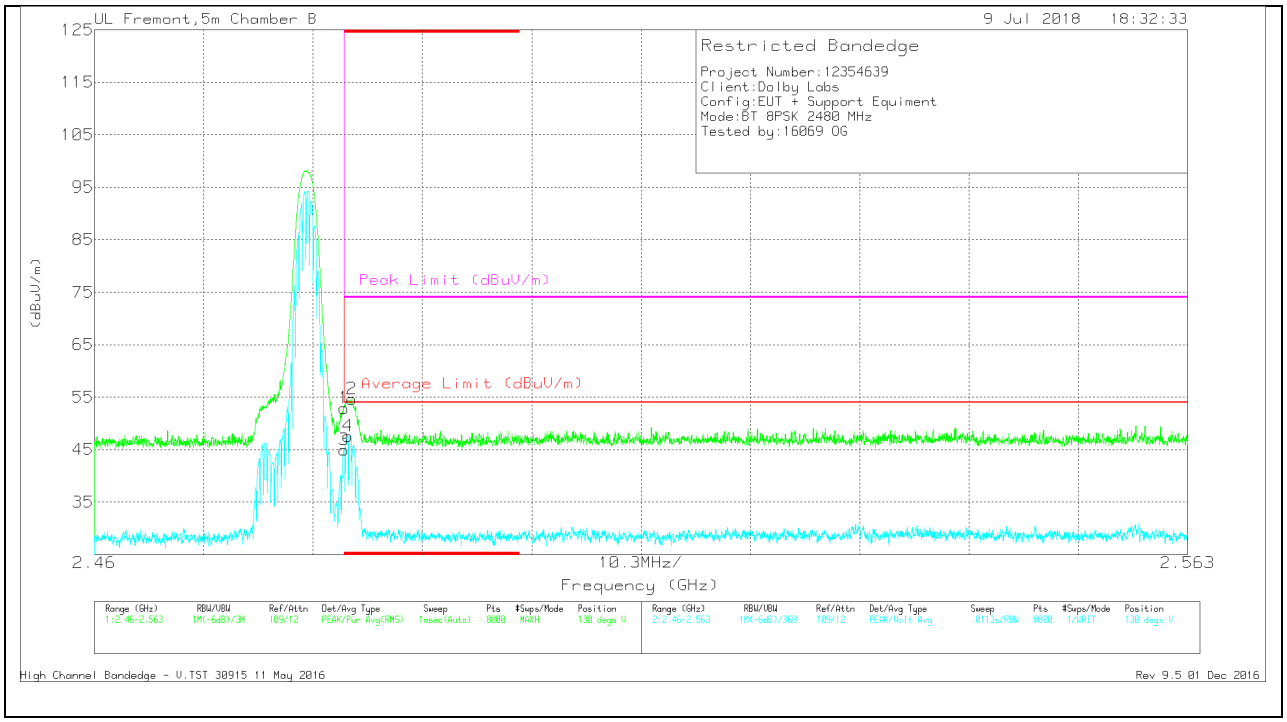
VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/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	41.77	Pk	32.6	-21.5	52.87	-	-	74	-21.13	130	105	V
2	* 2.484	43.52	Pk	32.6	-21.5	54.62	-	-	74	-19.38	130	105	V
3	* 2.484	33.88	VA1T	32.6	-21.5	44.98	54	-9.02	-	-	130	105	V
4	* 2.484	36.47	VA1T	32.6	-21.5	47.57	54	-6.43	-	-	130	105	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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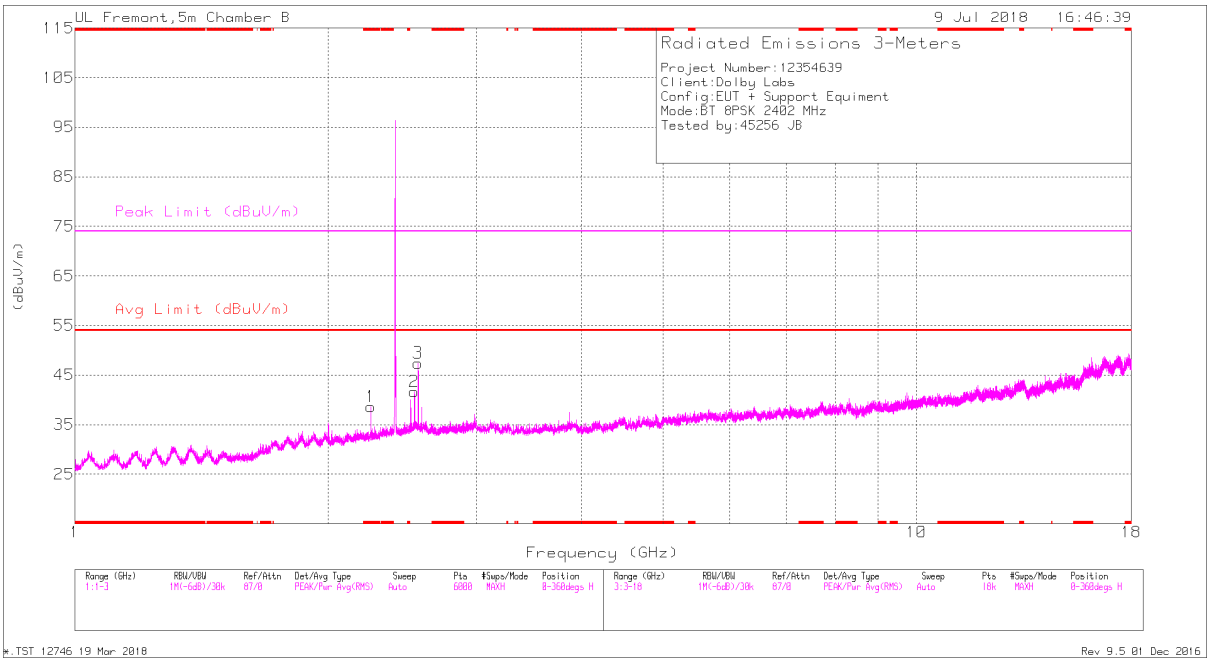
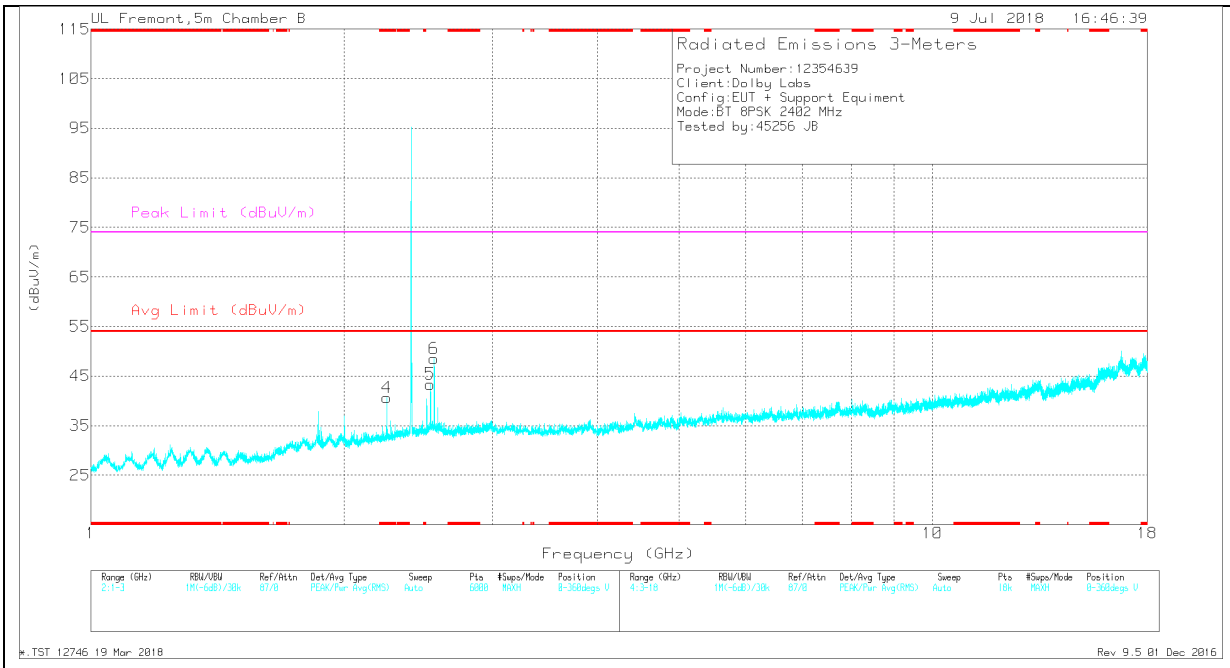
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZTONAL



VERTICAL

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RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.246	31.89	PKFH	31.7	-21.8	41.79	-	-	74	-32.21	180	115	H
* 2.246	24.28	VA1T	31.7	-21.8	34.18	54	-19.82	-	-	180	115	H
* 2.246	34.76	PKFH	31.7	-21.8	44.66	-	-	74	-29.34	296	204	V
* 2.246	27.99	VA1T	31.7	-21.8	37.89	54	-16.11	-	-	296	204	V
2.532	34.7	PKFH	32.7	-21.4	46	-	-	-	-	193	104	H
2.532	27.19	VA1T	32.7	-21.4	38.49	-	-	-	-	193	104	H
2.532	34.45	PKFH	32.7	-21.4	45.75	-	-	-	-	126	116	V
2.532	27.87	VA1T	32.7	-21.4	39.17	-	-	-	-	126	116	V
2.558	36.01	PKFH	32.7	-21.3	47.41	-	-	-	-	17	102	H
2.558	30.49	VA1T	32.7	-21.3	41.89	-	-	-	-	17	102	H
2.558	38.87	PKFH	32.7	-21.3	50.27	-	-	-	-	162	104	V
2.558	33.17	VA1T	32.7	-21.3	44.57	-	-	-	-	162	104	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-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

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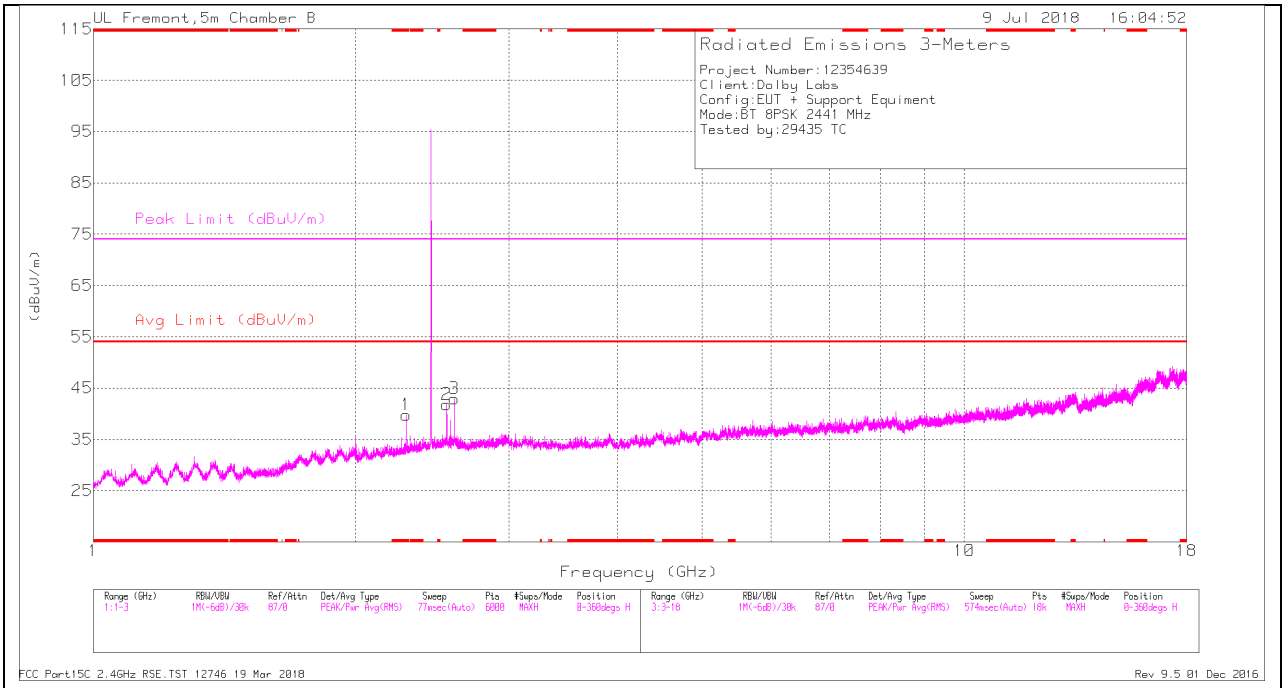
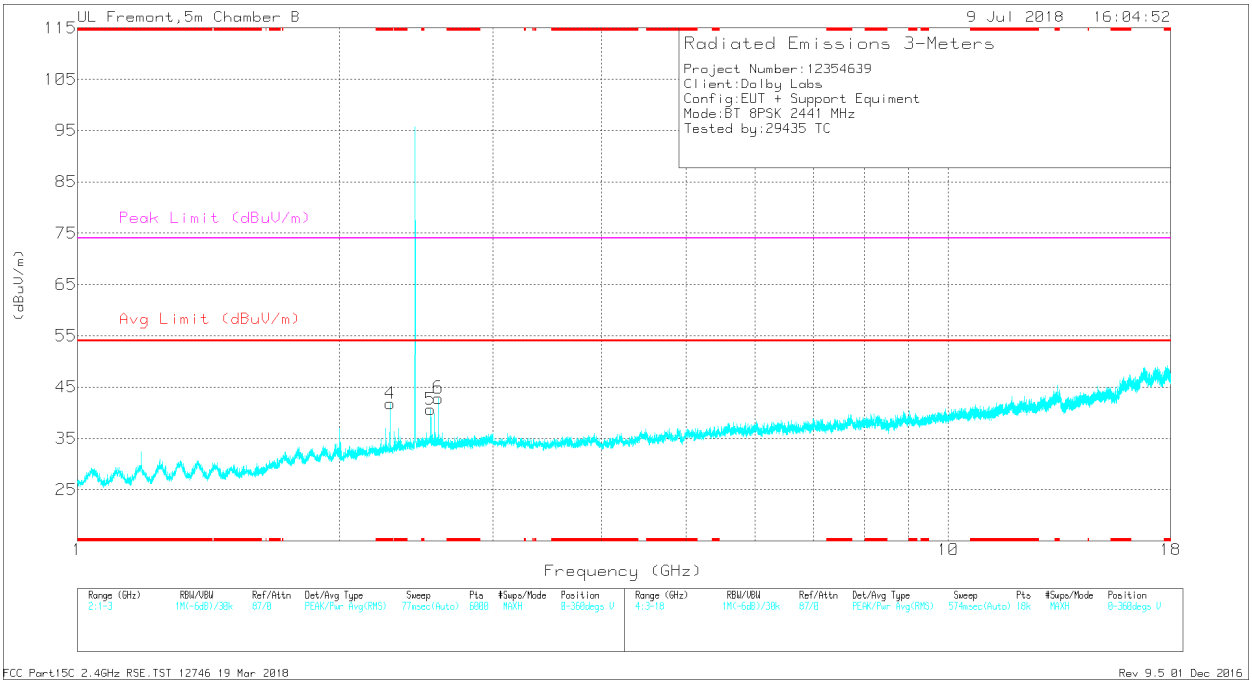
MID CHANNEL RESULTS



HORIZTONAL



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RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.285	33.03	PKFH	31.9	-21.8	43.13	-	-	74	-30.87	181	117	H
* 2.285	25.68	VA1T	31.9	-21.8	35.78	54	-18.22	-	-	181	117	H
* 2.285	33.94	PKFH	31.9	-21.8	44.04	-	-	74	-29.96	98	141	V
* 2.285	27.38	VA1T	31.9	-21.8	37.48	54	-16.52	-	-	98	141	V
2.545	32.82	PKFH	32.7	-21.4	44.12	-	-	-	-	188	157	H
2.545	25.99	VA1T	32.7	-21.4	37.29	-	-	-	-	188	157	H
2.545	32.66	PKFH	32.7	-21.4	43.96	-	-	-	-	96	251	V
2.545	26.11	VA1T	32.7	-21.4	37.41	-	-	-	-	96	251	V
2.597	34.52	PKFH	32.7	-21.2	46.02	-	-	-	-	194	123	H
2.597	27.84	VA1T	32.7	-21.2	39.34	-	-	-	-	194	123	H
2.597	34.34	PKFH	32.7	-21.3	45.74	-	-	-	-	121	236	V
2.597	28.31	VA1T	32.7	-21.2	39.81	-	-	-	-	121	236	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-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

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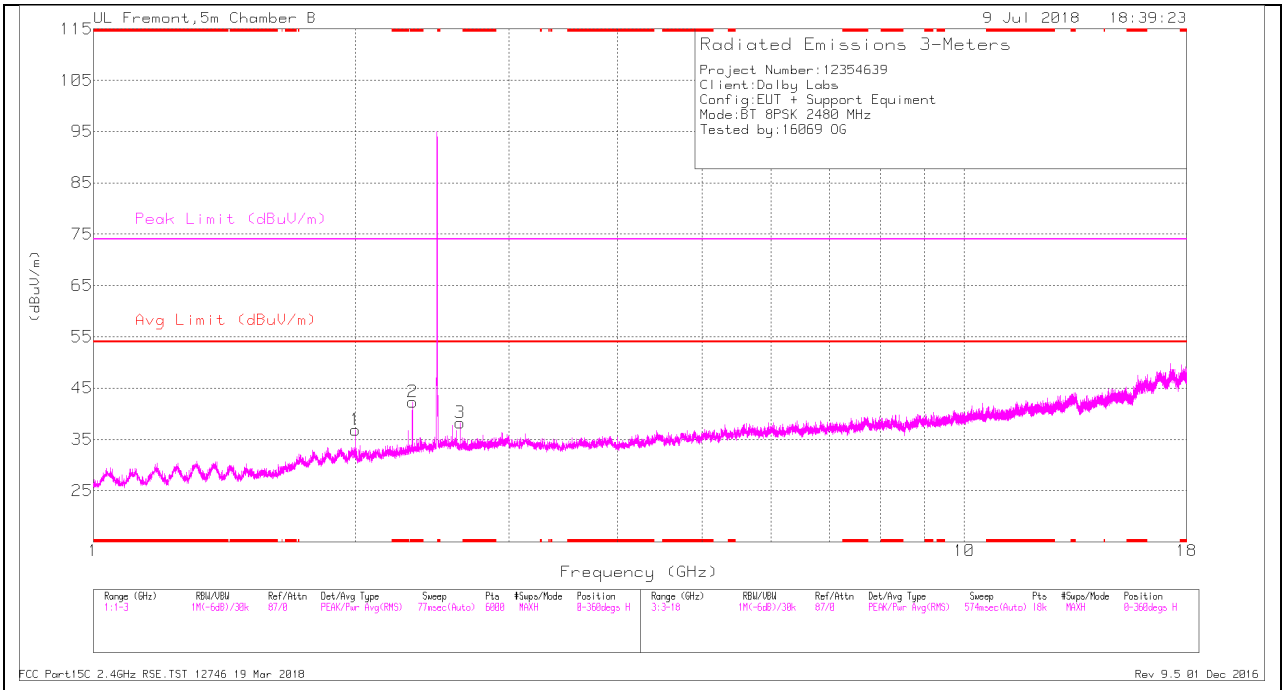
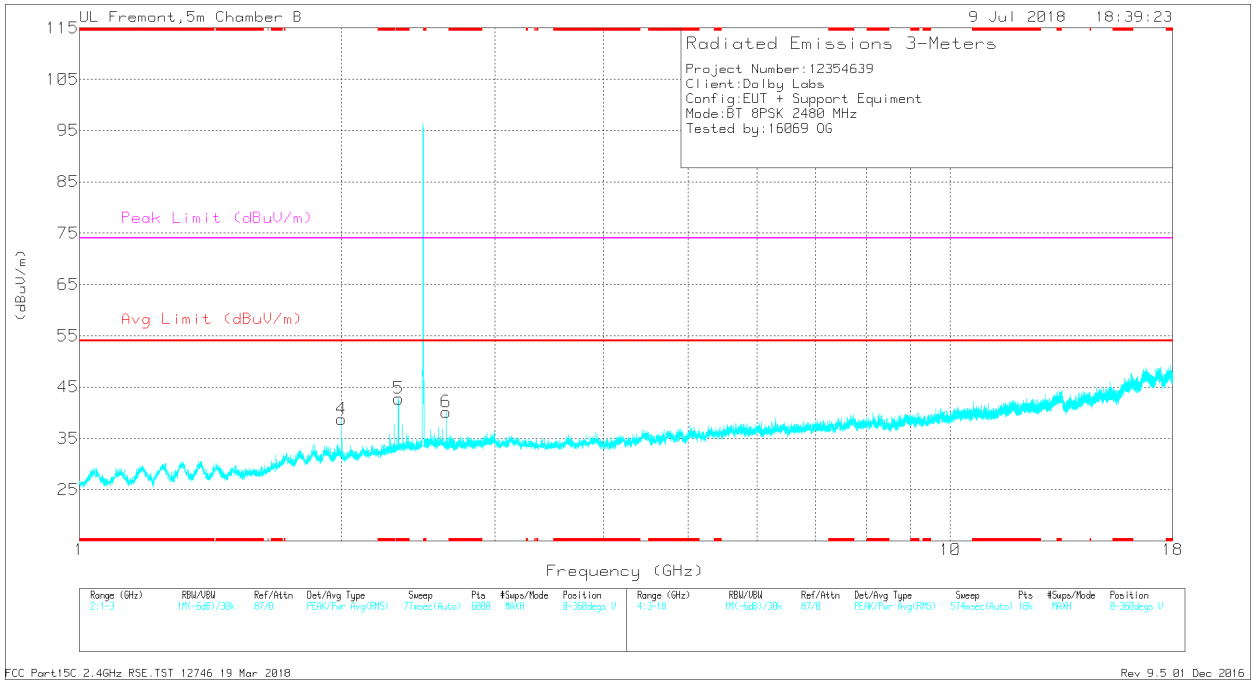
HIGH CHANNEL RESULTS



HORIZTONAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/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	* 2.324	34.18	PKFH	32.1	-21.6	44.68	-	-	74	-29.32	178	180	H
2	* 2.324	27.97	VA1T	32.1	-21.6	38.47	54	-15.53	-	-	178	180	H
5	* 2.324	36.13	PKFH	32.1	-21.6	46.63	-	-	74	-27.37	263	198	V
5	* 2.324	29.28	VA1T	32.1	-21.6	39.78	54	-14.22	-	-	263	198	V
4	1.998	16.09	VA1T	30.9	-21.5	25.49	-	-	-	-	75	168	V
1	1.999	16.88	VA1T	30.9	-21.4	26.38	-	-	-	-	180	306	H
1	2	30.34	PKFH	30.9	-21.4	39.84	-	-	-	-	180	306	H
4	2	32.42	PKFH	30.9	-21.4	41.92	-	-	-	-	75	168	V
3	2.636	30.74	PKFH	32.5	-21.4	41.84	-	-	-	-	102	145	H
3	2.636	24.25	VA1T	32.5	-21.4	35.35	-	-	-	-	102	145	H
6	2.636	32.96	PKFH	32.5	-21.4	44.06	-	-	-	-	134	107	V
6	2.636	24.66	VA1T	32.5	-21.4	35.76	-	-	-	-	134	107	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-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

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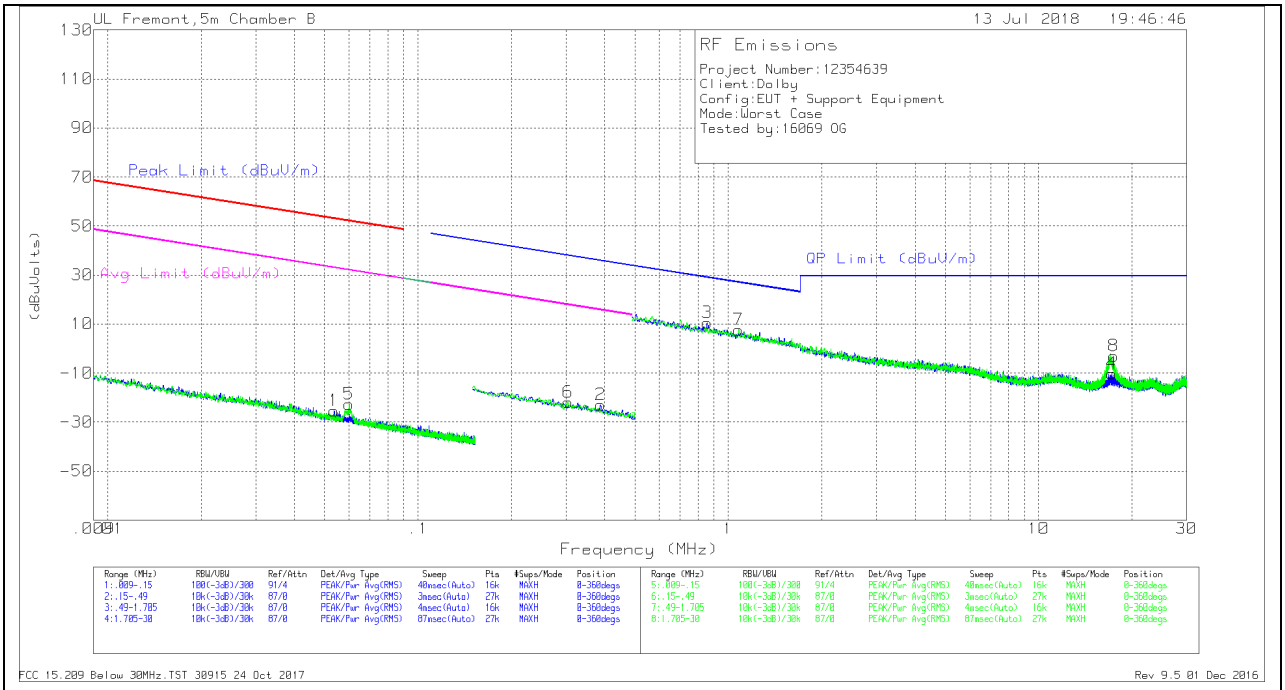
9.2. Worst Case Below 30 MHz

SPURIOUS EMISSIONS 9 kHz TO 30 MHz (WORST-CASE CONFIGURATION)



HORIZTONAL AND VERTICAL PLOT

NOTE: KDB 414788 OATS and Chamber Correlation Justification

- Based on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.
- OATs and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

Below 30 MHz Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.05367	38.85	Pk	14.4	1.4	-80	-25.35	52.99	-78.34	32.99	-58.34	-	-	-	-	0-360
5	.06005	41.45	Pk	14.5	1.4	-80	-22.65	52.01	-74.66	32.01	-54.66	-	-	-	-	0-360
6	.30398	42.82	Pk	13.8	1.5	-80	-21.88	-	-	-	-	37.95	-59.83	17.95	-39.83	0-360
2	.38763	41.68	Pk	13.8	1.5	-80	-23.02	-	-	-	-	35.84	-58.86	15.84	-38.86	0-360

Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
3	.85518	34.82	Pk	14.1	1.5	-40	10.42	28.98	-18.56	0-360
7	1.0787	31.78	Pk	14.3	1.5	-40	7.58	26.97	-19.39	0-360
4	17.18344	13.62	Pk	14.5	1.6	-40	-10.28	29.5	-39.78	0-360
8	17.45487	20.79	Pk	14.5	1.6	-40	-3.11	29.5	-32.61	0-360

Pk - Peak detector

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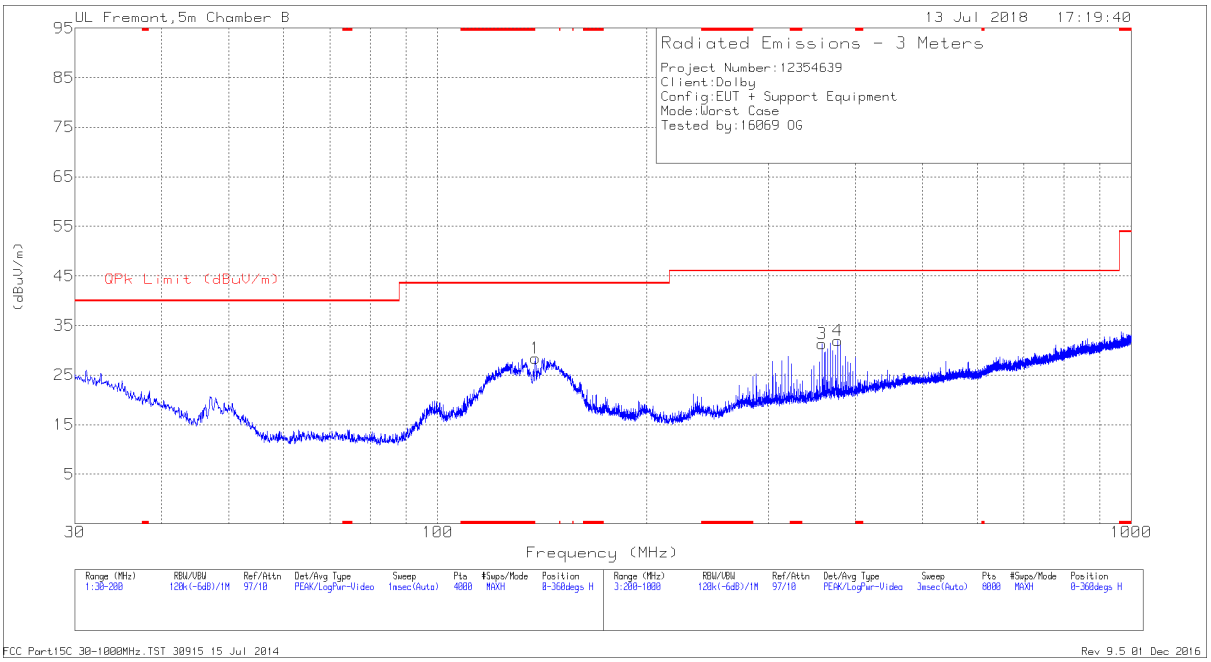
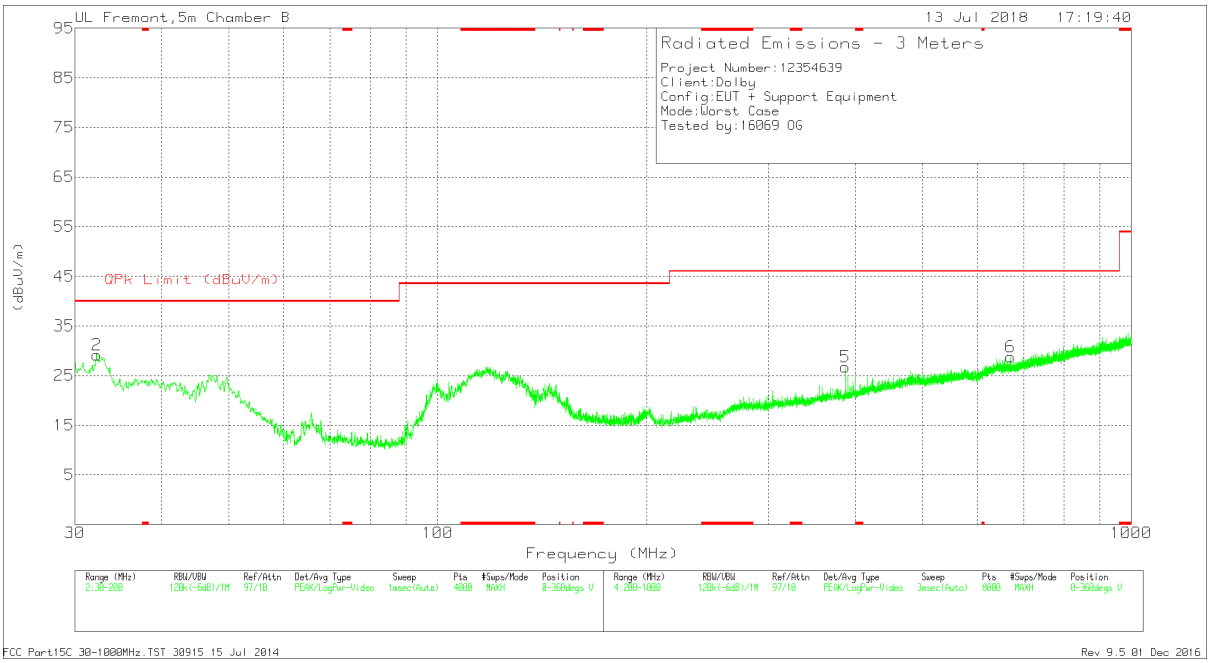
9.3. Worst Case Below 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)



HORIZTONAL



VERTICAL

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Below 1GHz Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T407 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	32.2531	34.46	Pk	23.5	-28.8	29.16	40	-10.84	0-360	100	V
1	138.4031	38.8	Pk	17.1	-27.5	28.4	43.52	-15.12	0-360	200	H
3	358.4206	38.56	Pk	18.7	-25.9	31.36	46.02	-14.66	0-360	100	H
4	377.6231	38.88	Pk	19	-25.9	31.98	46.02	-14.04	0-360	100	H
5	387.2243	33.62	Pk	19.1	-26	26.72	46.02	-19.3	0-360	100	V
6	669.461	30.12	Pk	23.9	-25.2	28.82	46.02	-17.2	0-360	300	V

Pk - Peak detector

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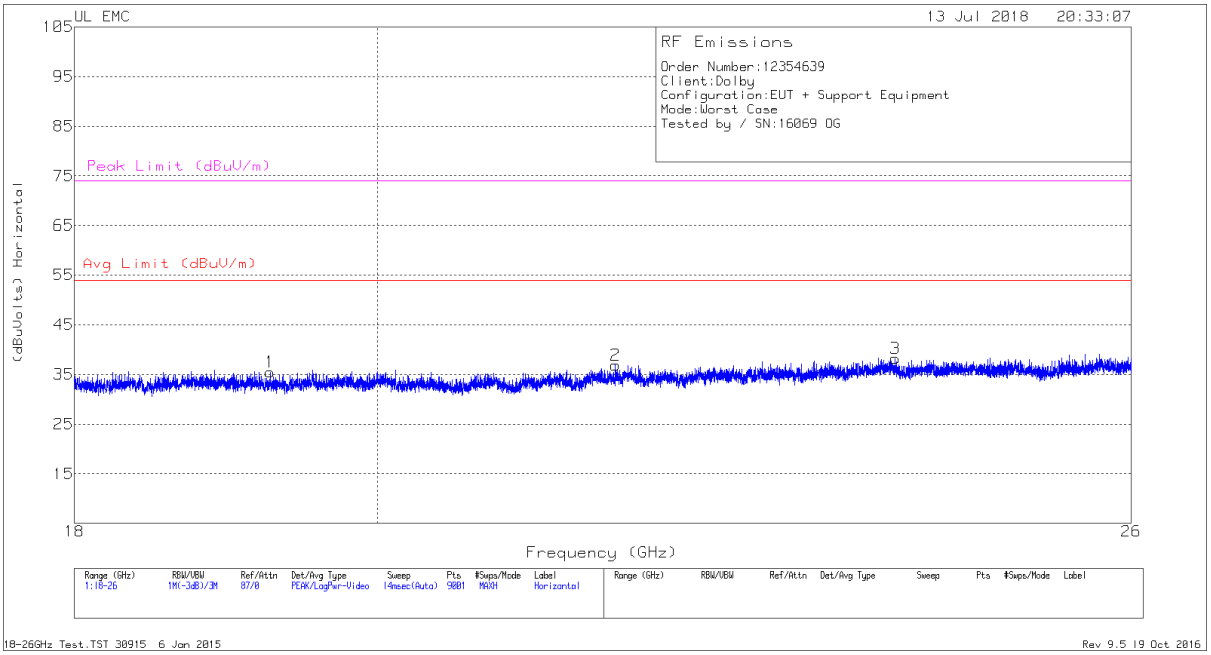
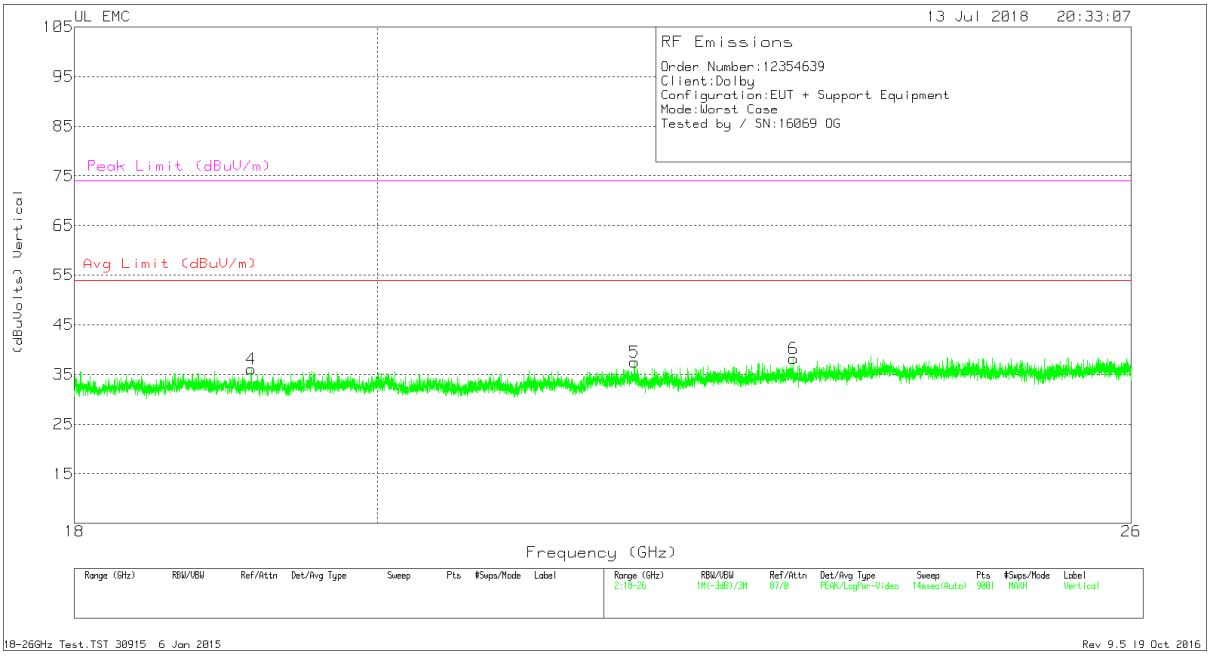
9.4. Worst Case 18-26 GHz

SPURIOUS EMISSIONS 18-26 GHz (WORST-CASE CONFIGURATION)



HORIZTONAL



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18 – 26GHz DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T89 AF (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	19.268	37.66	Pk	32.3	-25	-9.5	35.46	54	-18.54	74	-38.54
2	21.727	37.91	Pk	33.3	-24.8	-9.5	36.91	54	-17.09	74	-37.09
3	23.949	38.7	Pk	33.3	-24.3	-9.5	38.2	54	-15.8	74	-35.8
4	19.141	38.05	Pk	32.2	-24.7	-9.5	36.05	54	-17.95	74	-37.95
5	21.873	38.5	Pk	33.3	-24.8	-9.5	37.5	54	-16.5	74	-36.5
6	23.116	39.48	Pk	33.6	-25.4	-9.5	38.18	54	-15.82	74	-35.82

Pk - Peak detector

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10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

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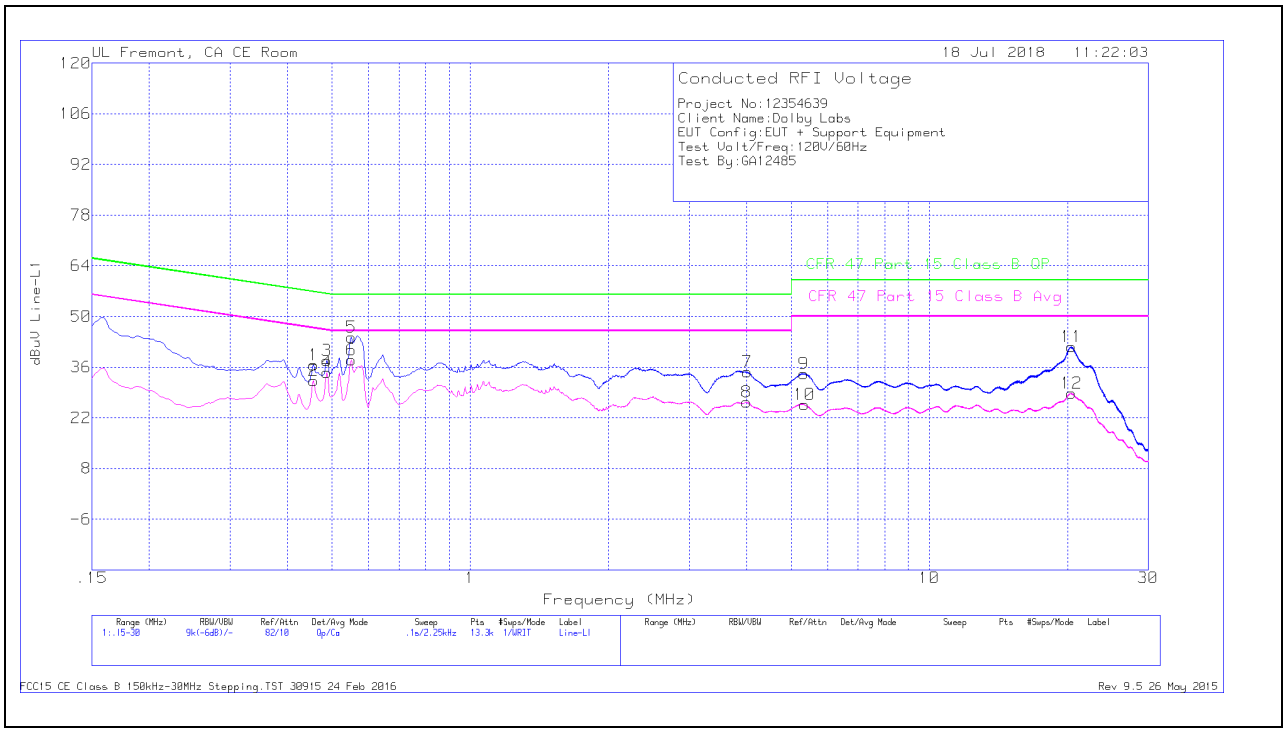
10.1.1. AC Power Line Norm

LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L1	LC Cables C1&C3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
1	.456	26.57	Qp	0	0	10.1	36.67	56.77	-20.1	-	-
2	.456	22.1	Ca	0	0	10.1	32.2	-	-	46.77	-14.57
3	.4875	27.78	Qp	0	0	10.1	37.88	56.21	-18.33	-	-
4	.4875	24.37	Ca	0	0	10.1	34.47	-	-	46.21	-11.74
5	.5505	34.1	Qp	0	0	10.1	44.2	56	-11.8	-	-
6	.5505	27.97	Ca	0	0	10.1	38.07	-	-	46	-7.93
7	4.00875	24.51	Qp	0	.1	10.1	34.71	56	-21.29	-	-
8	4.0065	16.09	Ca	0	.1	10.1	26.29	-	-	46	-19.71
9	5.3385	23.97	Qp	0	.1	10.1	34.17	60	-25.83	-	-
10	5.3475	15.48	Ca	0	.1	10.1	25.68	-	-	50	-24.32
11	20.4045	30.89	Qp	.1	.3	10.3	41.59	60	-18.41	-	-
12	20.4045	18.02	Ca	.1	.3	10.3	28.72	-	-	50	-21.28

Qp - Quasi-Peak detector

Ca - CISPR average detection

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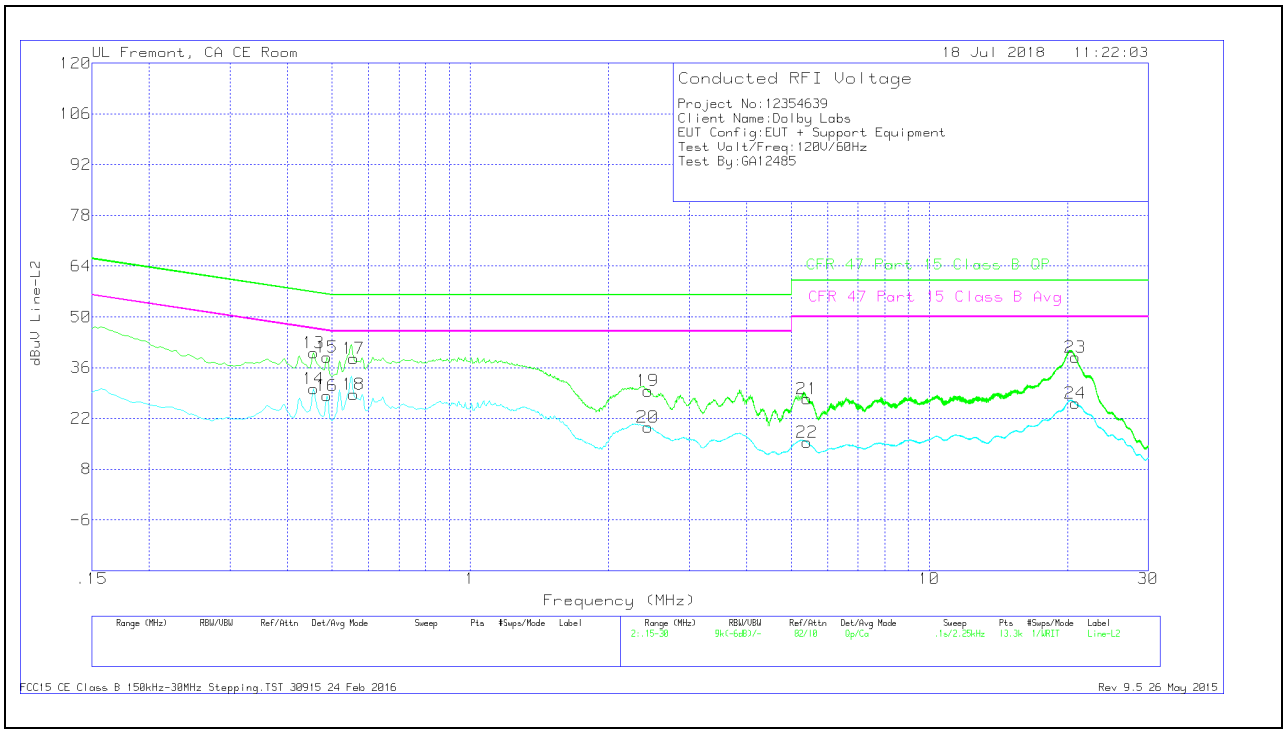
LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L2	LC Cables C2&C3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
13	.456	30.02	Qp	0	0	10.1	40.12	56.77	-16.65	-	-
14	.456	20.02	Ca	0	0	10.1	30.12	-	-	46.77	-16.65
15	.4875	28.83	Qp	0	0	10.1	38.93	56.21	-17.28	-	-
16	.4875	18.13	Ca	0	0	10.1	28.23	-	-	46.21	-17.98
17	.55725	28.46	Qp	0	0	10.1	38.56	56	-17.44	-	-
18	.55725	18.45	Ca	0	0	10.1	28.55	-	-	46	-17.45
19	2.436	19.38	Qp	0	.1	10.1	29.58	56	-26.42	-	-
20	2.436	9.43	Ca	0	.1	10.1	19.63	-	-	46	-26.37
21	5.42175	17.26	Qp	0	.1	10.1	27.46	60	-32.54	-	-
22	5.42175	5.17	Ca	0	.1	10.1	15.37	-	-	50	-34.63
23	20.80725	28.11	Qp	.1	.3	10.4	38.91	60	-21.09	-	-
24	20.8095	15.39	Ca	.1	.3	10.4	26.19	-	-	50	-23.81

Qp - Quasi-Peak detector

Ca - CISPR average detection

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