CERTIFICATION TEST REPORT

Report Number. : 11723997-E2V3

Applicant	:	APPLE, INC. 1 INFINITE LOOP CUPERTINO, CA 95014, U.S.A.
Model	:	A1906
FCC ID	:	BCG-E3171A
IC	:	579C-E3171A
EUT Description	:	SMARTPHONE
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C INDUSTRY CANADA RSS - 247 ISSUE 2

Date Of Issue:
August 23, 2017

Prepared by:
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	7/25/2017	Initial Issue	--
V2	7/28/2017	Updated report to address TCB's questions	Tina Chu
V3	7/31/2017	Updated report to address TCB's questions	Tina Chu

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: APPLE, INC.
1 INFINITE LOOP
CUPERTINO, CA 95014, U.S.A.

EUT DESCRIPTION: SMARTPHONE

MODEL: A1906

SERIAL NUMBER: C7CTW01MJ8TP

DATE TESTED: APRIL 21, 2017 – JULY 13, 2017

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-247 Issue 2	Pass
INDUSTRY CANADA RSS-GEN Issue 4	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.

Approved & Released For
UL Verification Services Inc. By:

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Senior Engineer
UL VERIFICATION SERVICES INC.

Prepared By:

Jingang Li
Lab Engineer
UL VERIFICATION SERVICES INC.

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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, KDB 558074 D01 v04, ANSI C63.10-2013, RSS-GEN Issue 4, 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, 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
☐ Chamber A (IC:2324B-1)	☐ Chamber D (IC: 22541-1)
☐ Chamber B (IC:2324B-2)	☒ Chamber E (IC: 22541-2)
☐ Chamber C (IC:2324B-3)	☐ Chamber F (IC: 22541-3)
	☐ Chamber G (IC: 22541-4)
	☐ Chamber H (IC: 22541-5)

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. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.htm.

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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
Occupied Channel Bandwidth	±0.39 %

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

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The equipment under test is a mobile phone with GSM, GPRS, EGPRS, UMTS, LTE, TD-SCDMA and CDMA technologies. It also supports IEEE 802.11a/b/g/n/ac, Bluetooth, GPS and NFC. The device has a built-in inductive charging receiver which is not user accessible. The rechargeable battery is not user accessible.

5.2. MAXIMUM OUTPUT POWER

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

Antenna	Configuration	Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
UAT 1	Pmax	2402 - 2480	BLE 1M	20.15	103.51
	Plow			10.12	10.28
	Pmax		BLE 2M	19.72	93.76
	Plow			9.65	9.23
LAT 3	Pmax	2402 - 2480	BLE 1M	20.05	101.16
	Plow			10.06	10.14
	Pmax		BLE 2M	19.81	95.72
	Plow			9.76	9.46

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

Frequency Band (GHz)	UAT1 Gain (dBi)	LAT 3 Gain (dBi)
2.4	-2.20	-0.44

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was version 15.1.40.176.

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5.5. WORST-CASE CONFIGURATION AND MODE

Radiated band edge, harmonic, and spurious emissions from 1GHz to 18GHz were performed with the EUT set to transmit at highest power on Low/Middle/High channels.

Radiated emissions below 30MHz, below 1GHz, above 18GHz and power line conducted emissions were performed with the EUT transmits at the channel with the highest output power as worst-case scenario.

The fundamental of the EUT was investigated in three orthogonal orientations, X (Flatbed), Y (Landscape), and Z (Portrait), on both UAT 1 and LAT 3 antennas. In addition, the EUT was also investigated with and without AC/DC charger, headphones & laptop. It was determined that X (Flatbed) orientation was the worst-case orientation for both antennas without AC/DC charger, headphones, or laptop; therefore, all final radiated testing was performed with EUT only in X-orientation for 1 - 18GHz and 18 – 26GHz. And for 30 – 1000MHz, the EUT was tested with AC/DC charger.

Worst-case data rate as provided by the client and baseline scan was:

BLE: 1Mbps

BLE 1M mode has been verified to have the highest power.

There are two vendors of the WiFi/Bluetooth radio modules: variant 1 and variant 2. The Wi-Fi/Bluetooth radio modules have the same mechanical outline (e.g., the same package dimension and pin-out layout), use the same on-board antenna matching circuit, have an identical antenna structure, and are built and tested to conform to the same specifications and to operate within the same tolerances.

Baseline testing was performed on the two variants to determine the worst case on all conducted power and radiated emissions.

For simultaneous transmission of multiple channels from the same antenna LAT 3 in the 2.4GHz BT and 5GHz bands, tests were conducted for various configurations having the highest power. No noticeable new emission was found.

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5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop AC/DC adapter	Liteon Technology	PA-1450-BA1	B123	NA
Laptop AC/DC adapter	DeLL	LA65NSO-00	CN-ODF263-71615-6BG-2981	NA
Laptop	DELL	Latitude 3540	6LN6802	NA
Laptop	Apple	MackBook Air 4	NA	NA
Dongle	N/A	N/A	HDG1409226823	NA

I/O CABLES (CONDUCTED TEST)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Antenna	1	SMA	Un-Shielded	0.2	To spectrum Analyzer
2	USB	1	USB	Shielded	1	N/A
3	AC	1	AC	Un-shielded	3	N/A

I/O CABLES (RADIATED ABOVE 1 GHZ)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
N/A						

I/O CABLES (AC POWER CONDUCTED TEST AND BELOW 1 GHZ)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	AC	Un-shielded	3	N/A

I/O CABLES (AC LINE CONDUCTED: LAPTOP CONFIGUARTION)

I/O Cable List						
Cable No	Port	# of identical	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	AC	Un-shielded	3	N/A
2	USB	1	USB	Shielded	1	N/A

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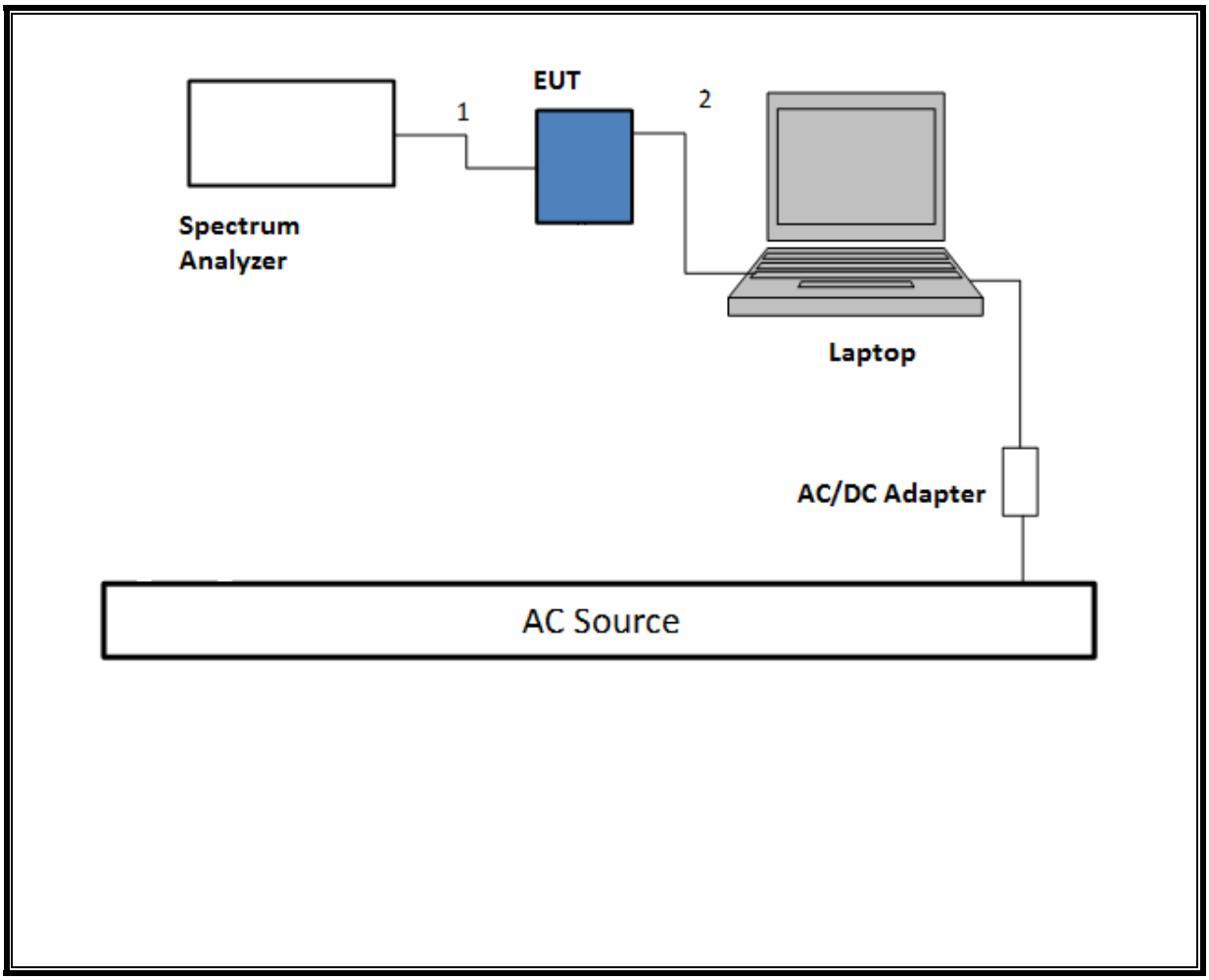
TEST SETUP

The EUT was powered by AC cord. Test software exercised the radio card.

SETUP DIAGRAM



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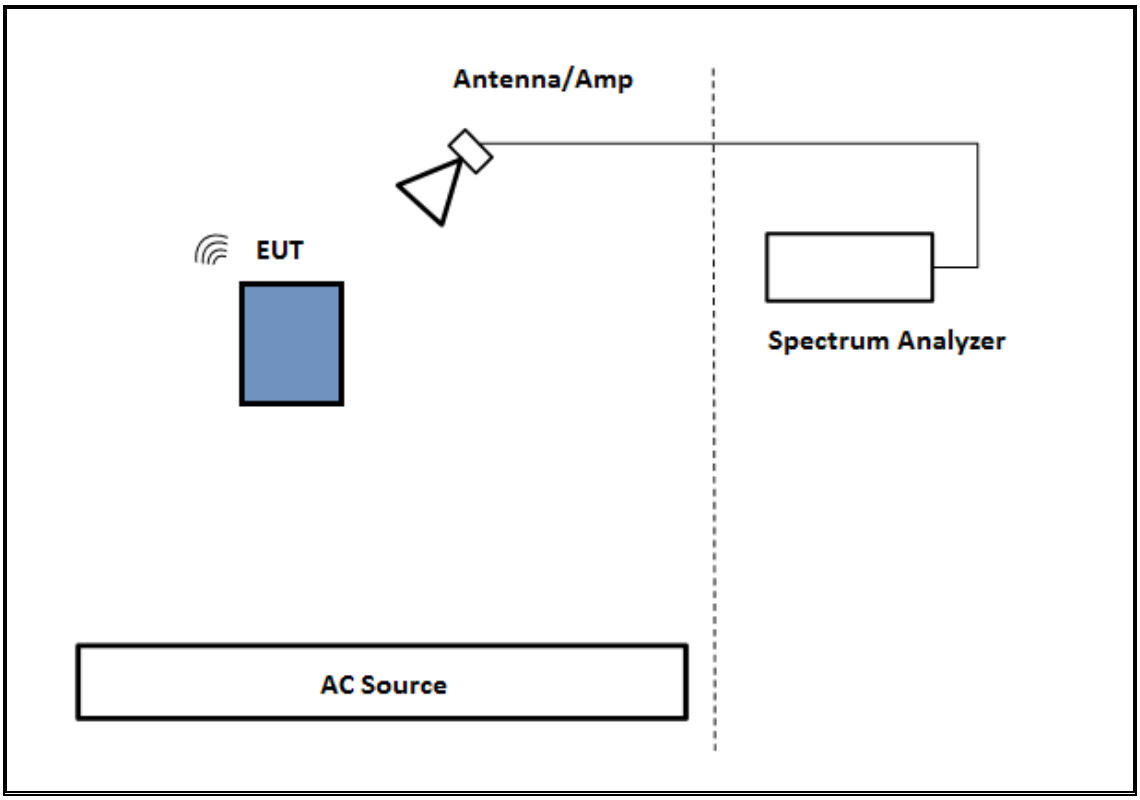
TEST SETUP- RADIATED-ABOVE 1 GHZ

The EUT was powered by Battery. Test software exercised the EUT.

SETUP DIAGRAM



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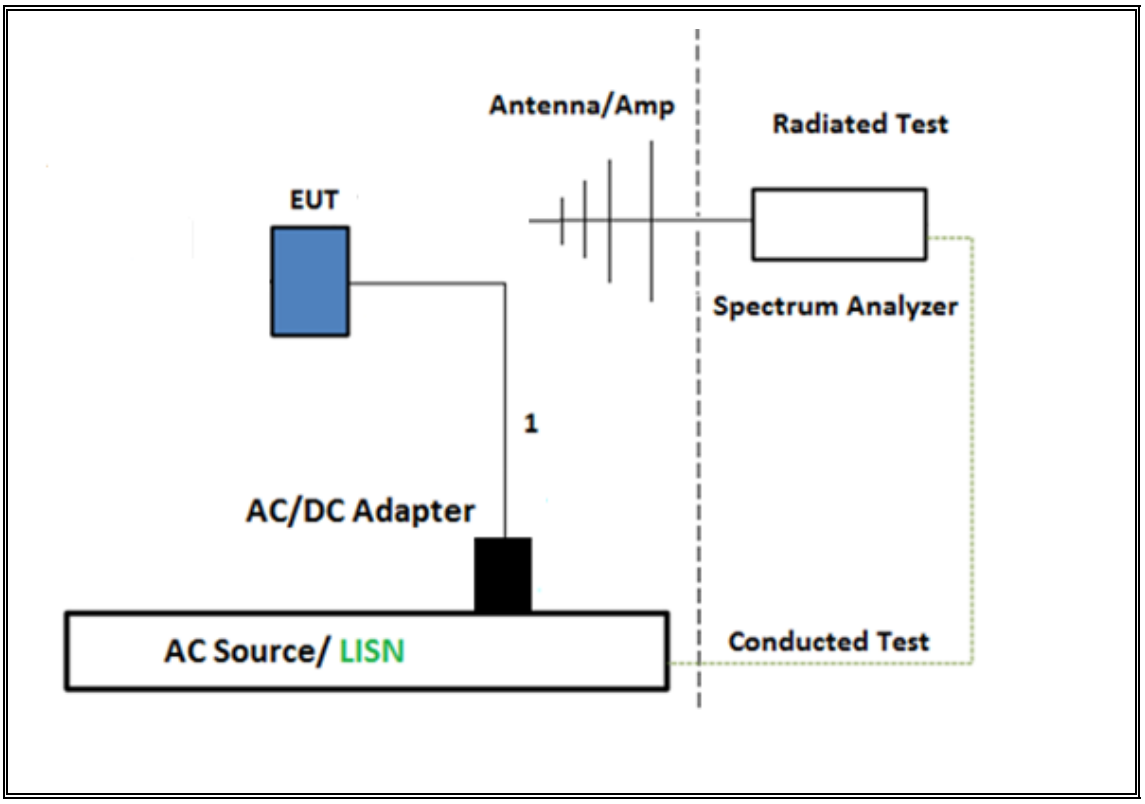
TEST SETUP- BELOW 1GHZ & AC LINE CONDUCTED TESTS

The EUT was powered by AC cord. Test software exercised the EUT.

SETUP DIAGRAM



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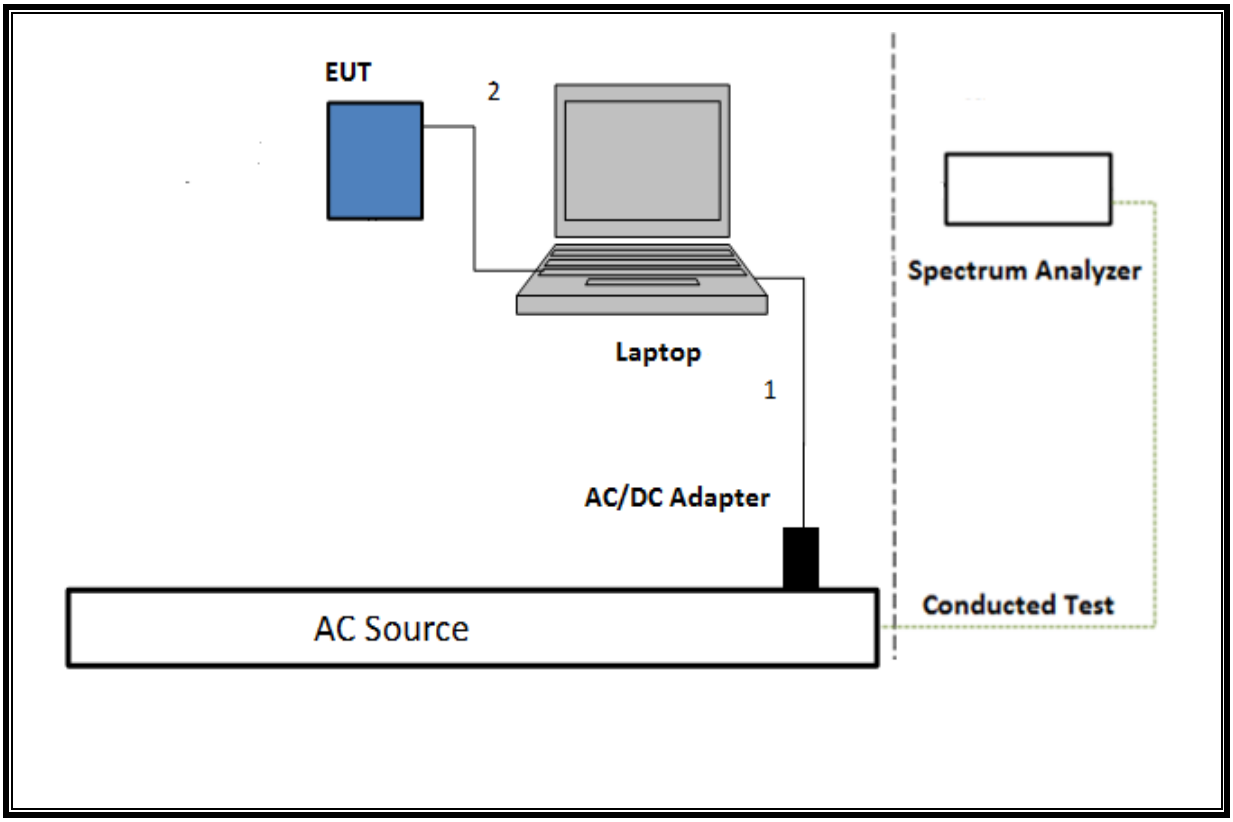
TEST SETUP- AC LINE EUT WITH LAPTOP TESTS

The EUT was tested connected to a host Laptop via USB cable adapter and spectrum analyzer to antenna port. Test software exercised the EUT.

SETUP DIAGRAM



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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**	**Asset**	**Cal Due**
Antenna, Horn 1-18GHz	ETS Lindgren	3117	T119	3/28/2018
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences	JB1	T243	10/11/2017
Amplifier, 1 to 18GHz	Miteq	AFS42-00101800-25-S-42	T741	11/29/2017
*Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310N	T285	6/20/2017
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	T1113	12/20/2017
*Power Meter, P-series single channel	Keysight	N1912A	T1273	07/08/2017
Power Sensor	Keysight	N1921A	T750	10/1/2017
*Antenna Horn, 18 to 26GHz	ARA	MWH-1826	T447	6/16/2017
Spectrum Analyzer, 40GHz	Agilent	8564E	T106	9/7/2017
*Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T459	06/13/2017
*Pre-Amp 18-26GHz	Agilent Technology	8449B	T404	7/5/2017
AC Line Conducted				
EMI Test Receiver 9Khz-7GHz	Rohde & Schwarz	ESCI7	T1436	1/6/2018
*LISN for Conducted Emissions CISPR-16	Fischer	50/250-25-2-01	T1310	06/08/2017
Power Cable, Line Conducted Emissions	UL	PG1	T861	9/1/2017
UL AUTOMATION SOFTWARE				
Radiated Software	UL	UL EMC	Ver 9.5, April 26, 2016	
Conducted Software	UL	UL EMC	Ver 5.4, October 13, 2016	
AC Line Conducted Software	UL	UL EMC	Ver 9.5, May 26, 2015	

NOTE: *testing is completed before equipment calibration expiration date.

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7. ANTENNA PORT TEST RESULTS

7.1. MEASUREMENT METHODS

6 dB BW: KDB 558074 D01 v04, Section 8.1.

Output Power: KDB 558074 D01 v04, Section 9.1.3.

Power Spectral Density: KDB 558074 D01 v04, Section 10.2.

Out-of-band emissions in non-restricted bands: KDB 558074 D01 v04, Section 11.0.

Out-of-band emissions in restricted bands: KDB 558074 D01 v04, Section 12.1.

Band-edge: KDB 558074 D01 v04, Section 12.1.

Conducted line emissions: C63.10, Clause 6.2

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7.2. ON TIME, DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 558074 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/B Minimum VBW (khz)
BLE PLOW	133.1	133.1	1.00	100%	0.00	0.010
BLE PMAX	133.1	133.1	1.00	100%	0.00	0.010

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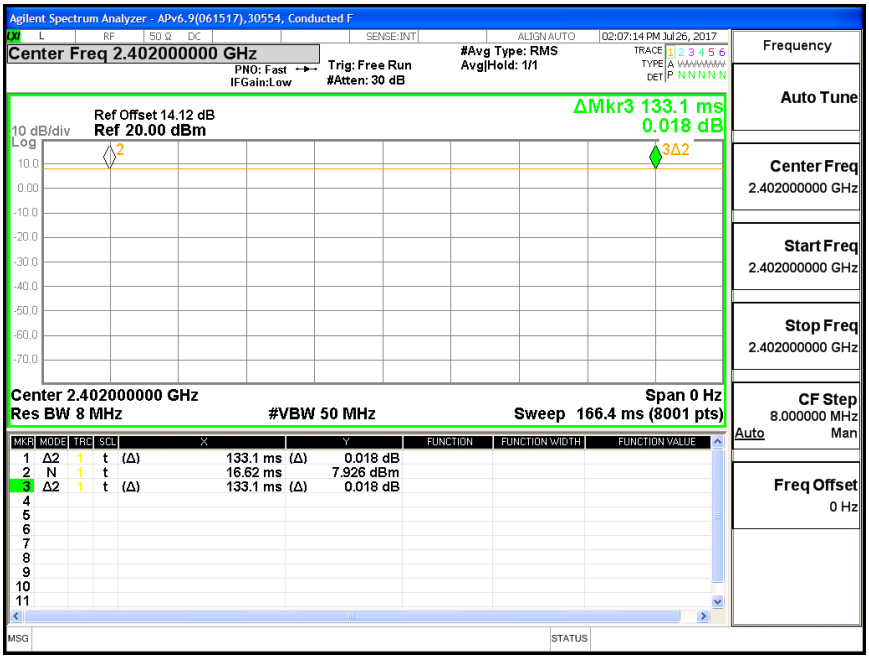
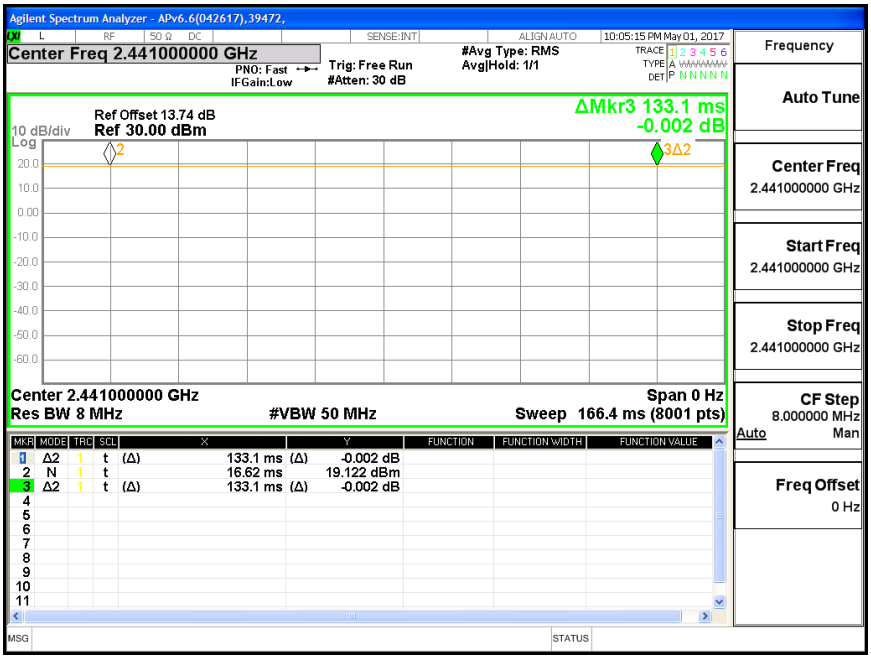
DUTY CYCLE PLOTS

DUTY CYCLE BLE PLOW MODE



DUTY CYCLE BLE PMAX MODE



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7.3. UAT 1 BLE 1M PMAX

7.3.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-247 (5.2) (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

Channel	Frequency	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.664	0.5
Middle	2440	0.694	0.5
High	2480	0.706	0.5

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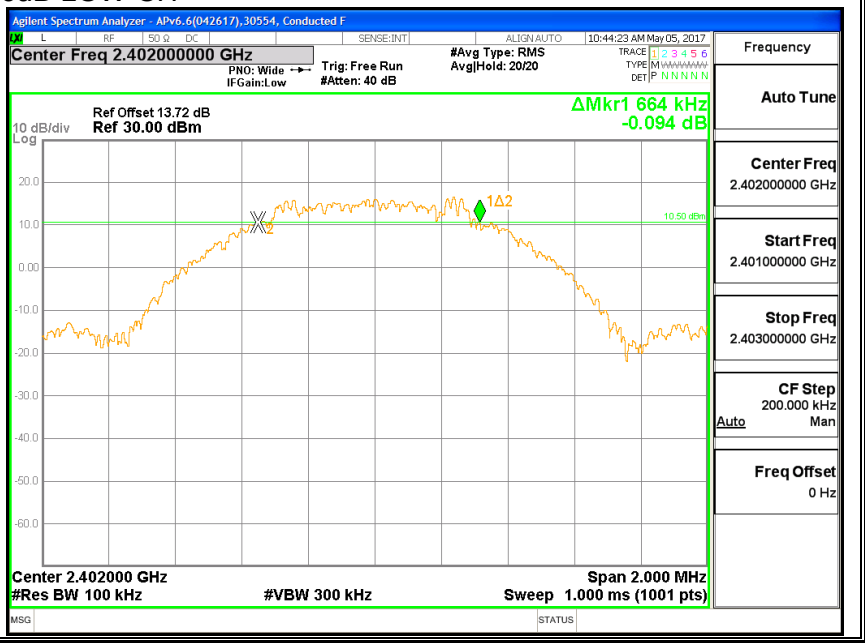
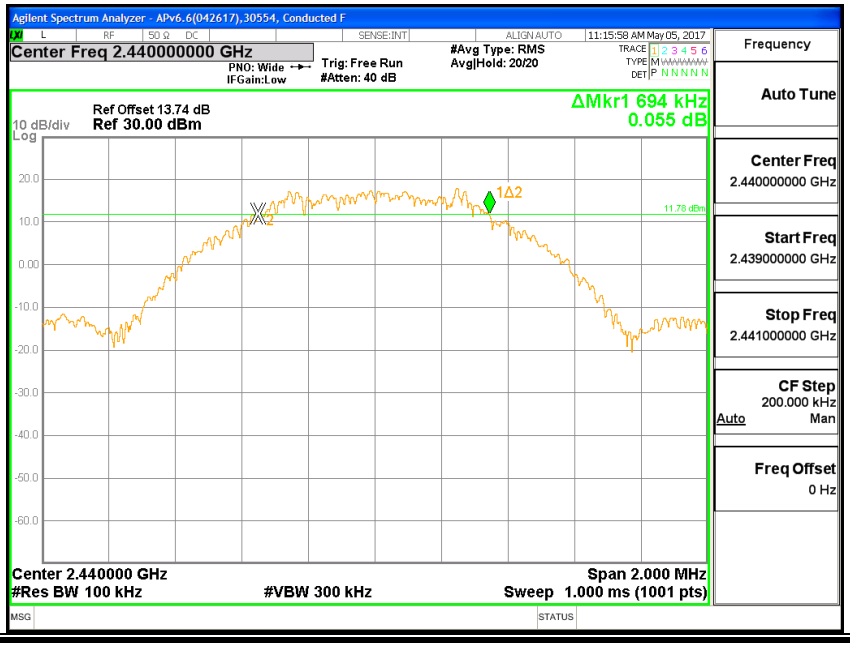
6dB LOW CH



6dB MID CH



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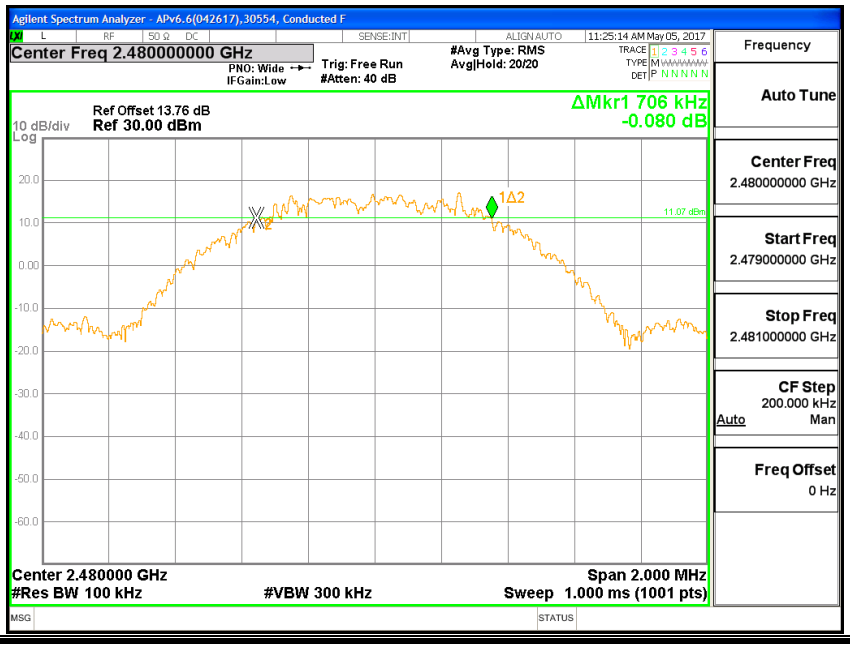
6dB HIGH CH



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7.3.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

Test Procedure

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0563
Middle	2440	1.0581
High	2480	1.0614

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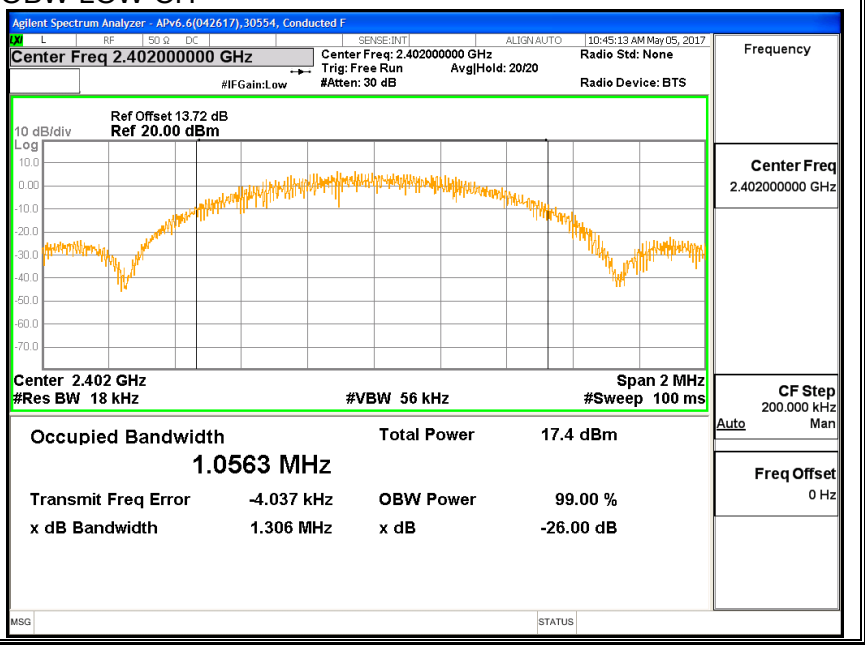
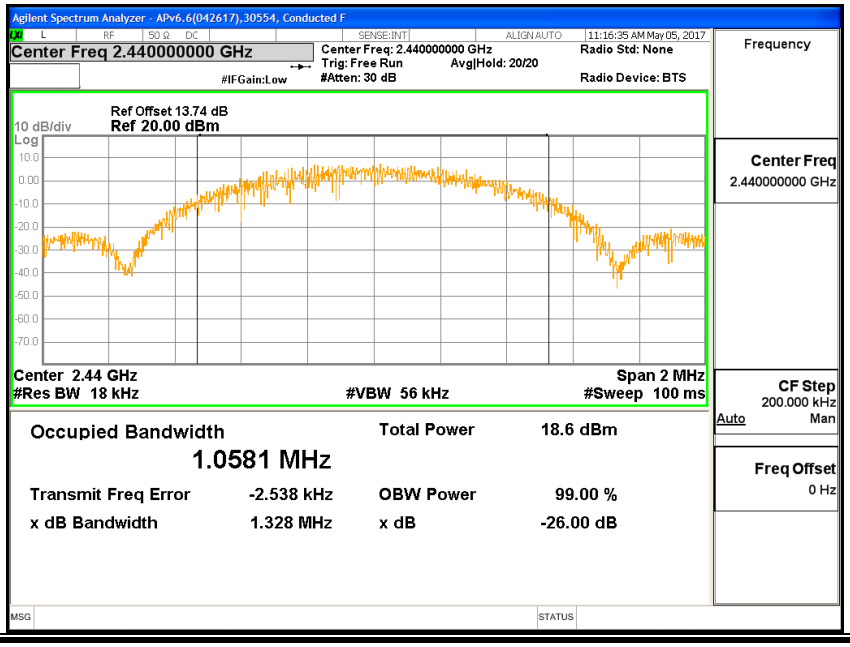
OBW LOW CH



OBW MID CH



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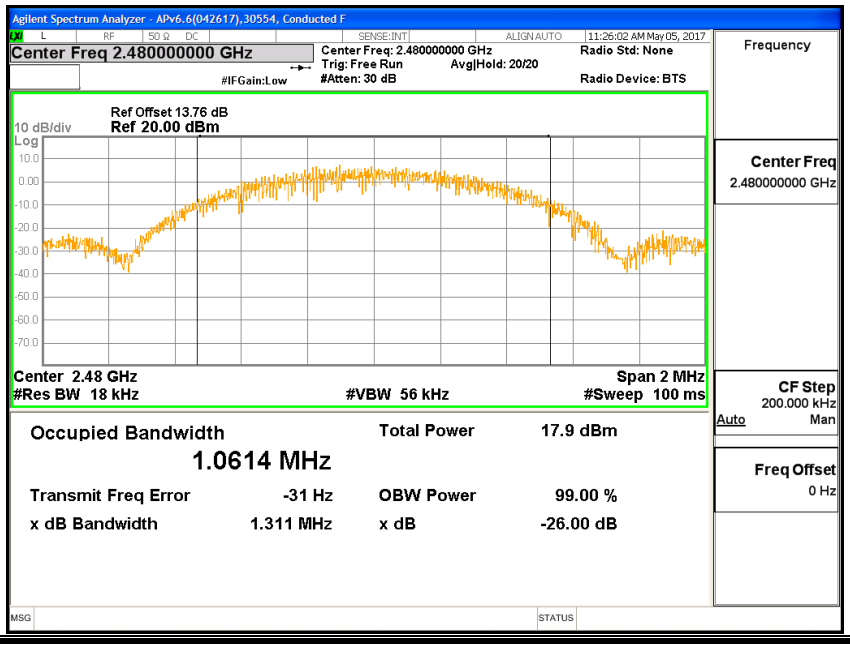
OBW HIGH CH



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7.3.3. AVERAGE POWER

ID:	30554	Date:	7/13/17

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	AV Power (MHz)
Low	2402	19.45
Middle	2440	19.92
High	2480	19.60

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7.3.4. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-247 (5.4) (d)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	19.68	30	-10.32
Middle	2440	20.15	30	-9.85
High	2480	19.84	30	-10.16

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7.3.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

IC RSS-247 (5.2) (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	0.844	8	-7.156
Middle	2440	2.249	8	-5.751
High	2480	1.350	8	-6.650

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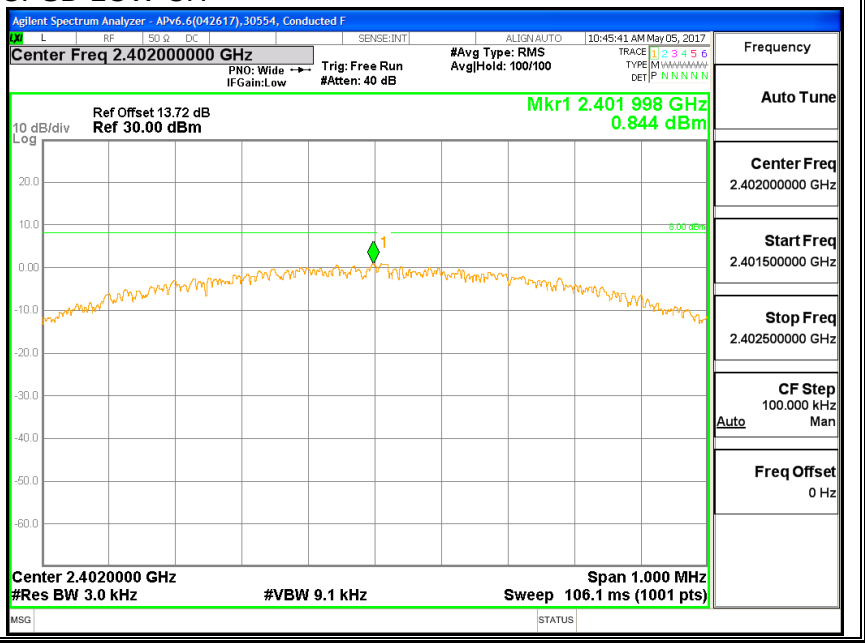
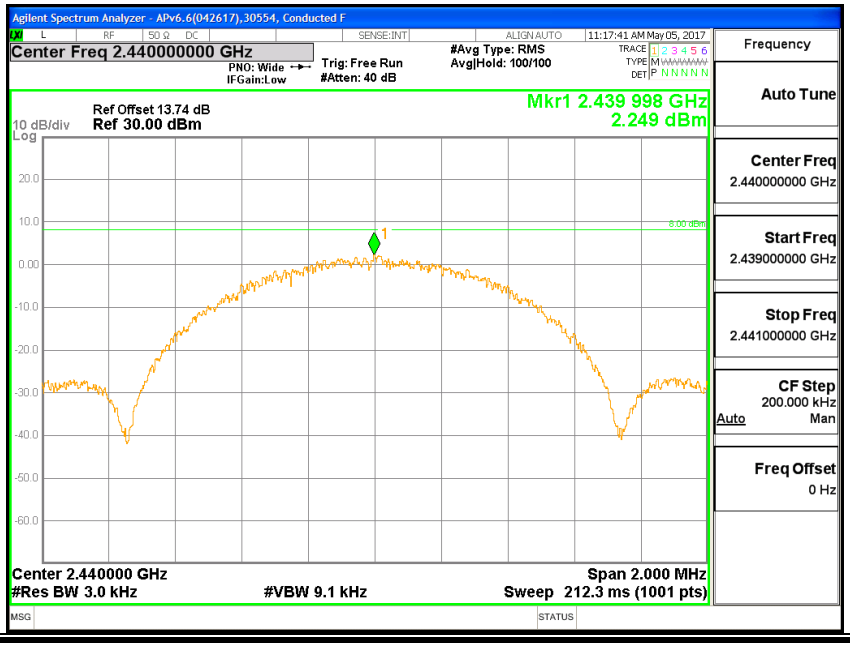
CPSD LOW CH



CPSD MID CH



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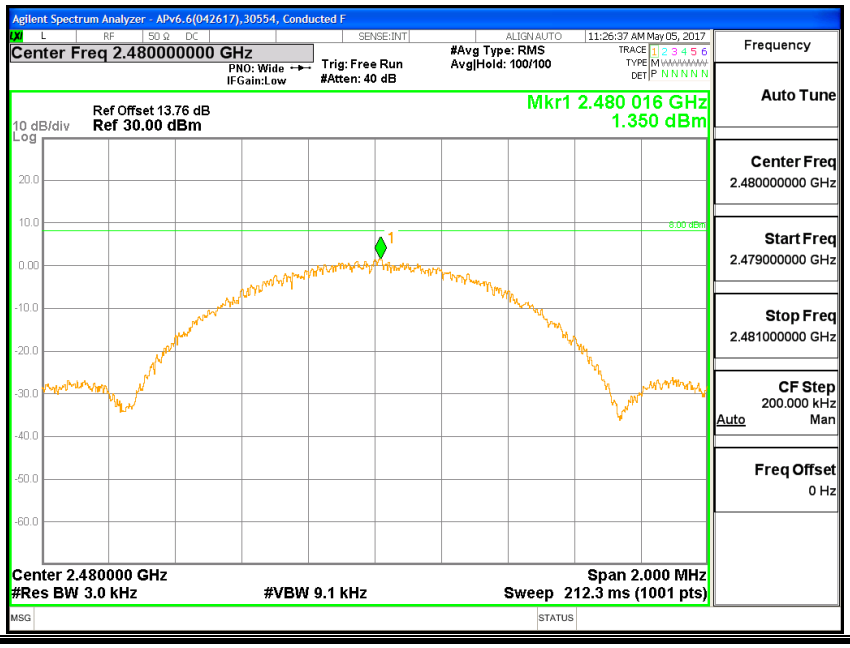
CPSD HIGH CH



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7.3.6. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

LIMITS

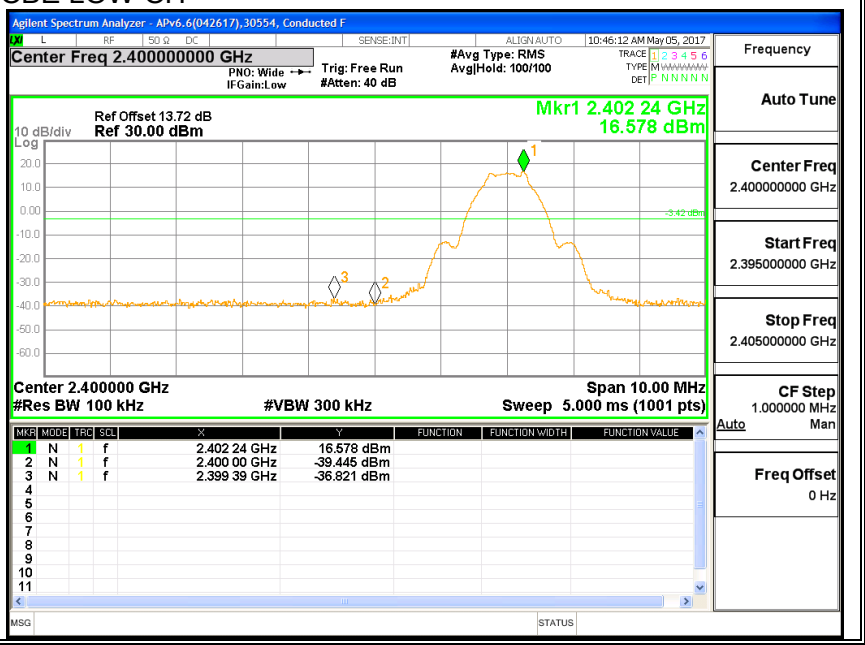
FCC §15.247 (d)

IC RSS-247 (5.5)

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

RESULTS

CBE LOW CH



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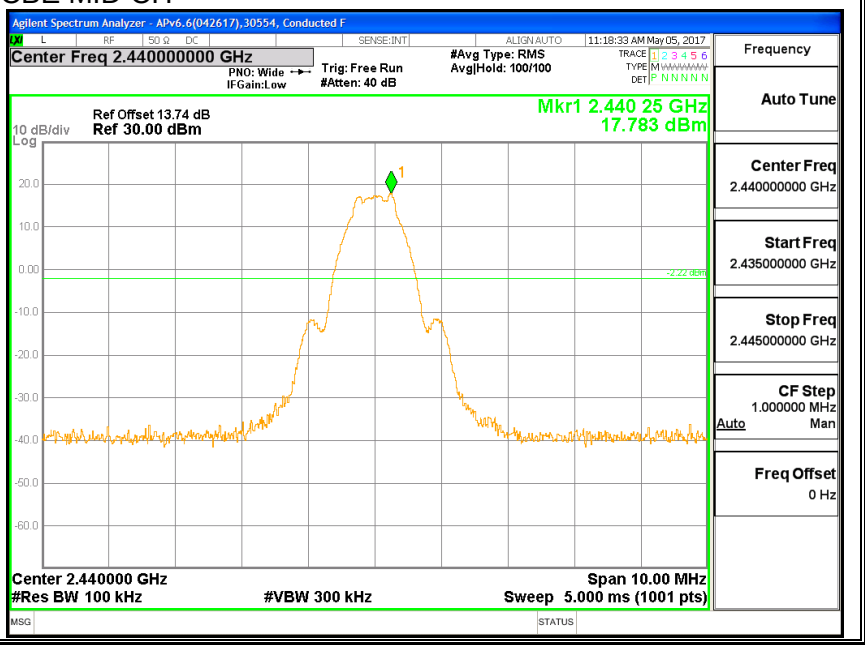
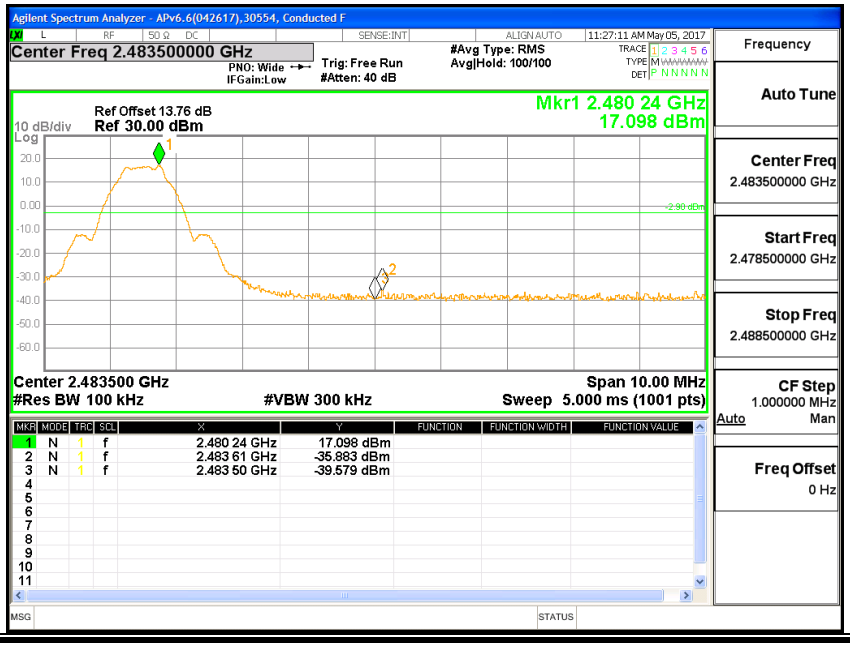
CBE MID CH



CBE HIGH CH



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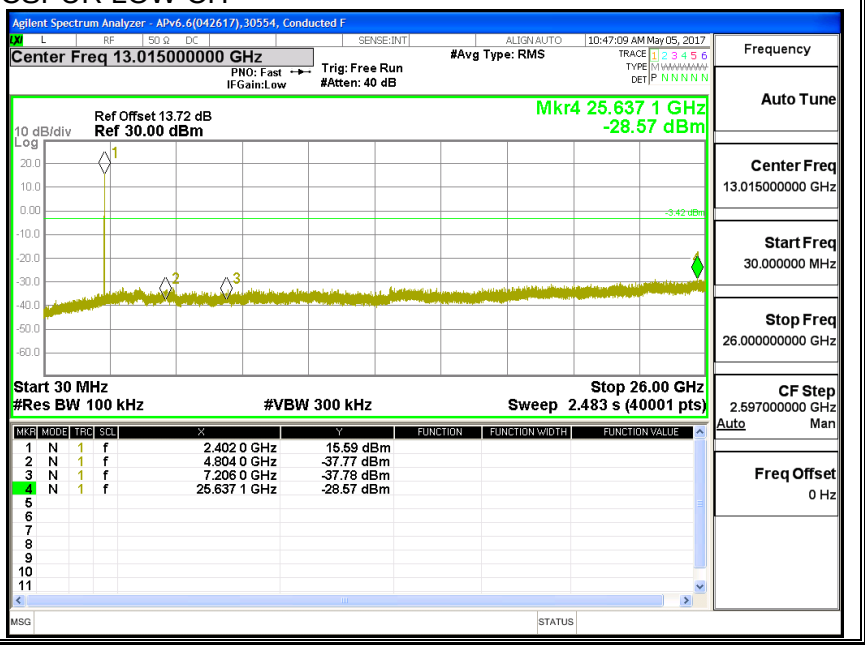
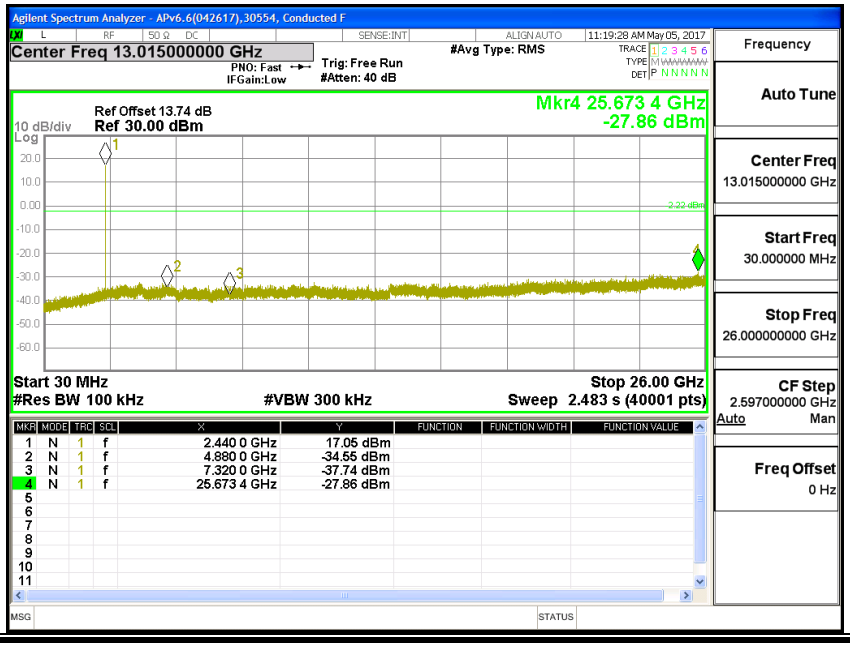
CSPUR LOW CH



CSPUR MID CH



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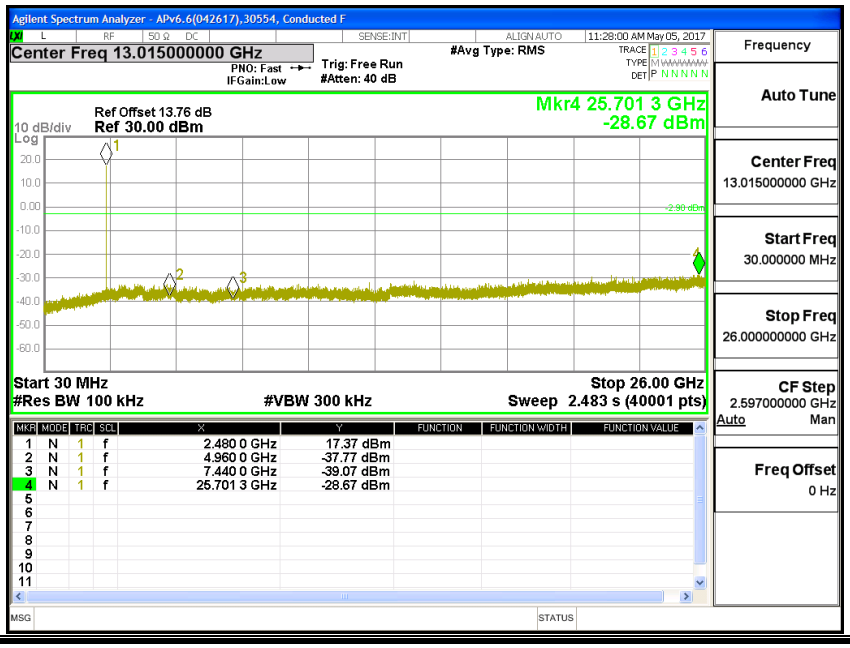
CSPUR HIGH CH



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7.4. UAT 1 BLE 1M PLOW

7.4.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-247 (5.2) (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

Channel	Frequency	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.704	0.5
Middle	2440	0.682	0.5
High	2480	0.668	0.5

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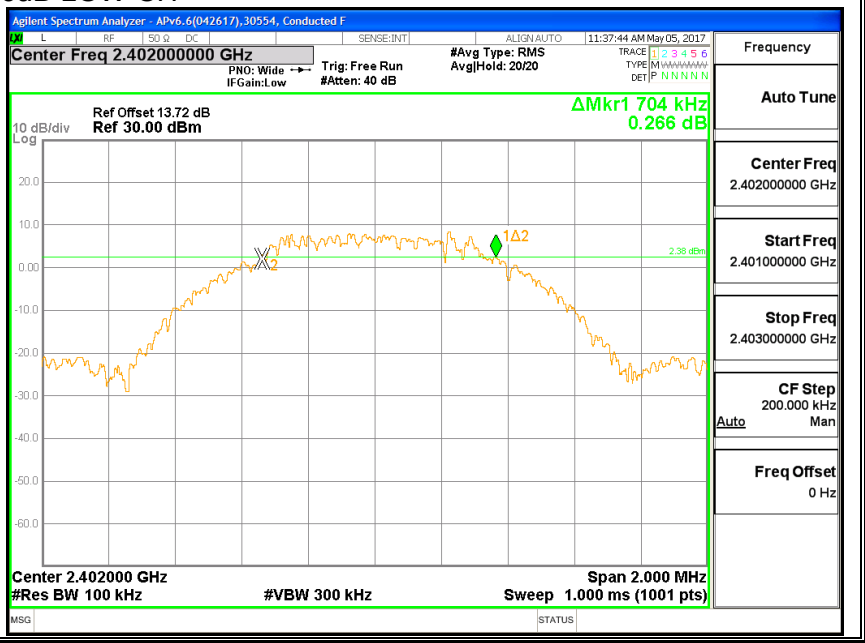
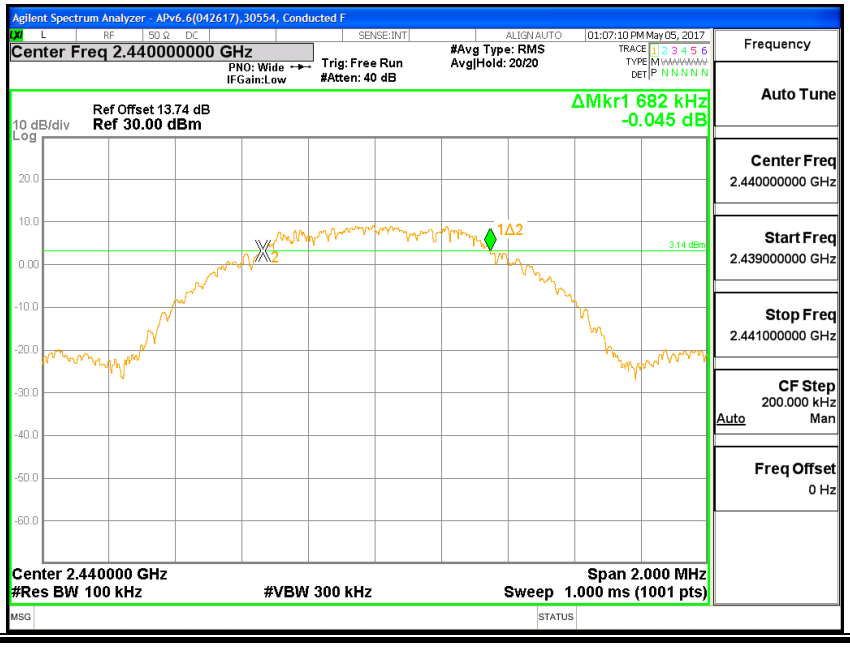
6dB LOW CH



6dB MID CH



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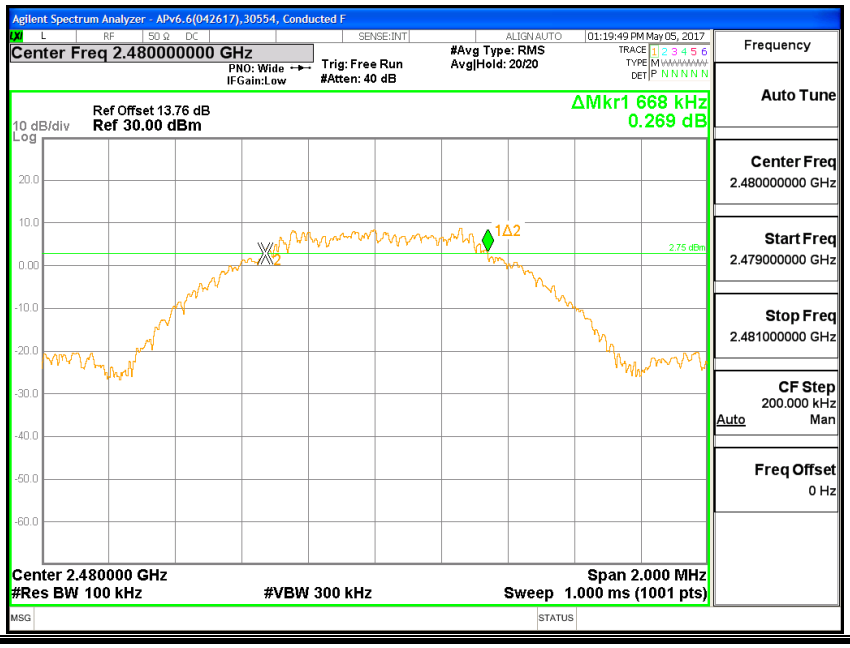
6dB HIGH CH



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7.4.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

Test Procedure

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0617
Middle	2440	1.0552
High	2480	1.0564

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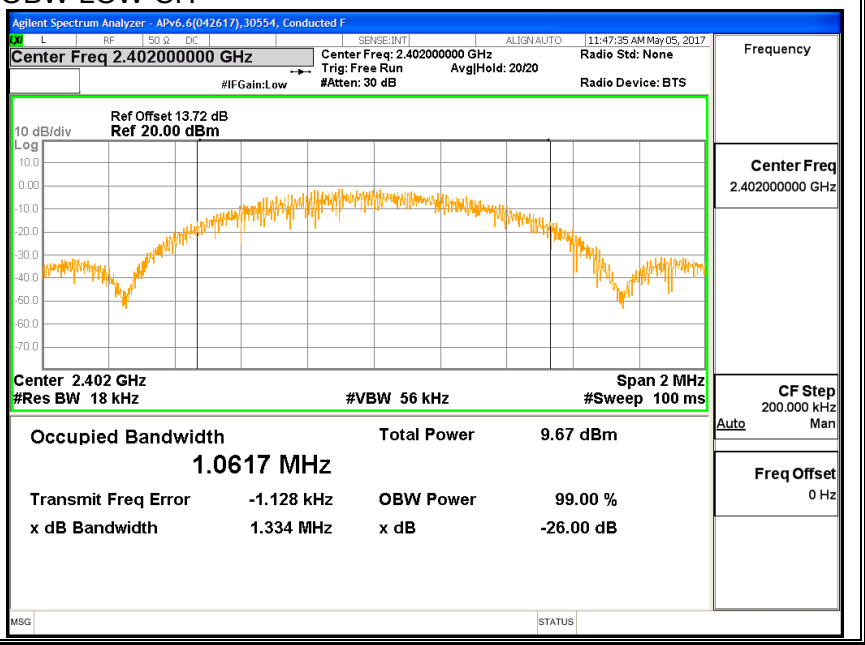
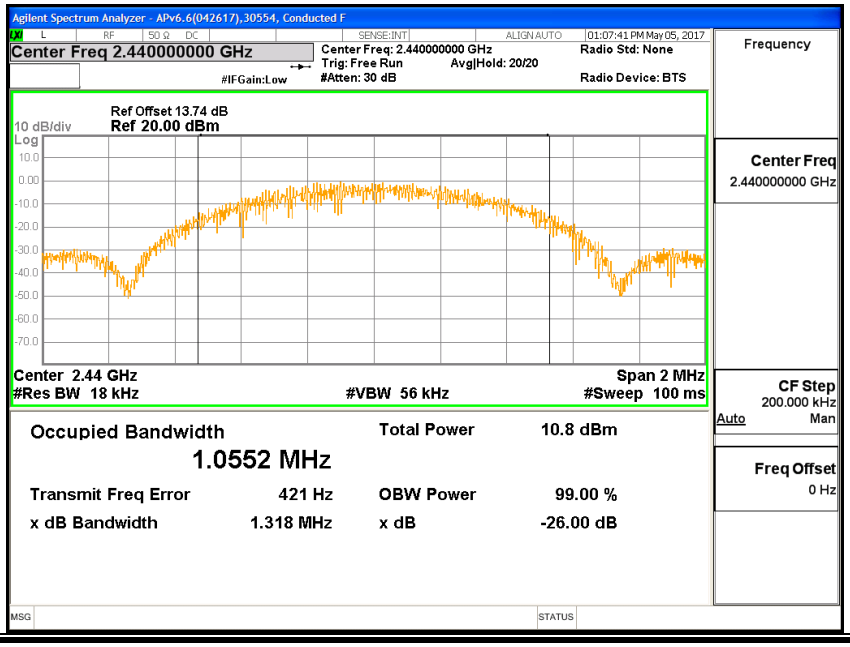
OBW LOW CH



OBW MID CH



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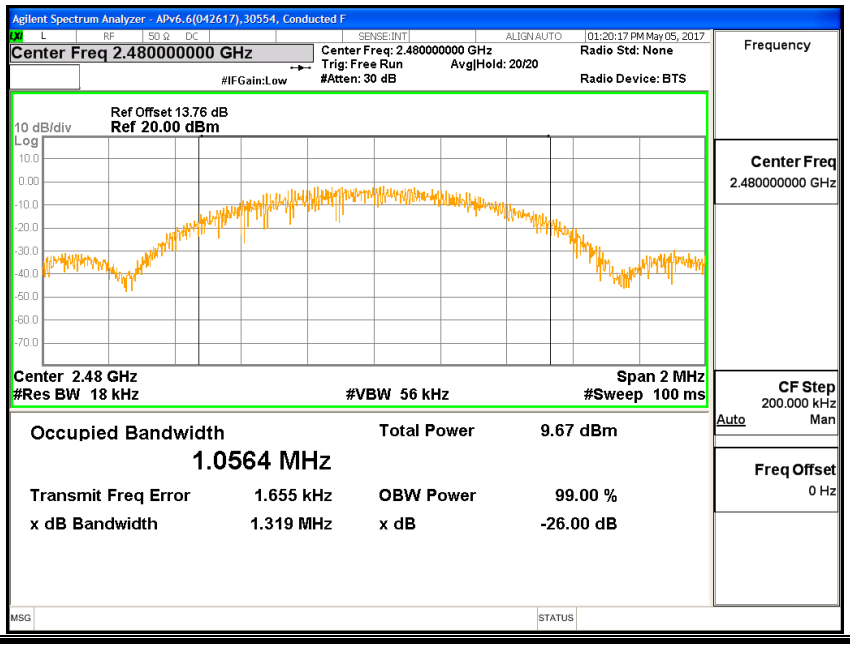
OBW HIGH CH



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7.4.3. AVERAGE POWER

ID:	30554	Date:	7/13/17

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	AV Power (MHz)
Low	2402	9.68
Middle	2440	9.91
High	2480	9.49

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7.4.4. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-247 (5.4) (d)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.85	30	-20.15
Middle	2440	10.12	30	-19.88
High	2480	9.65	30	-20.35

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7.4.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

IC RSS-247 (5.2) (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-6.863	8	-14.863
Middle	2440	-5.717	8	-13.717
High	2480	-6.741	8	-14.741

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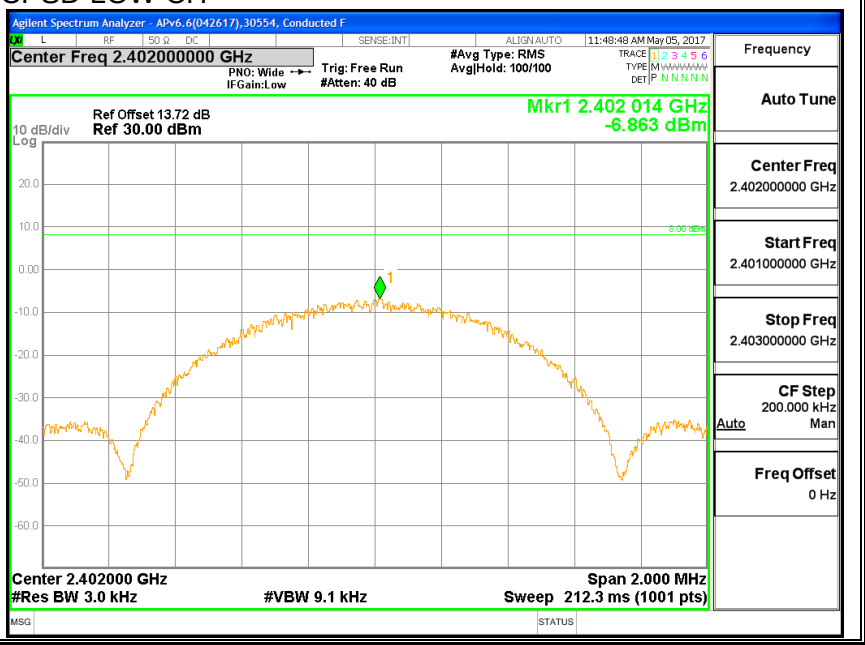
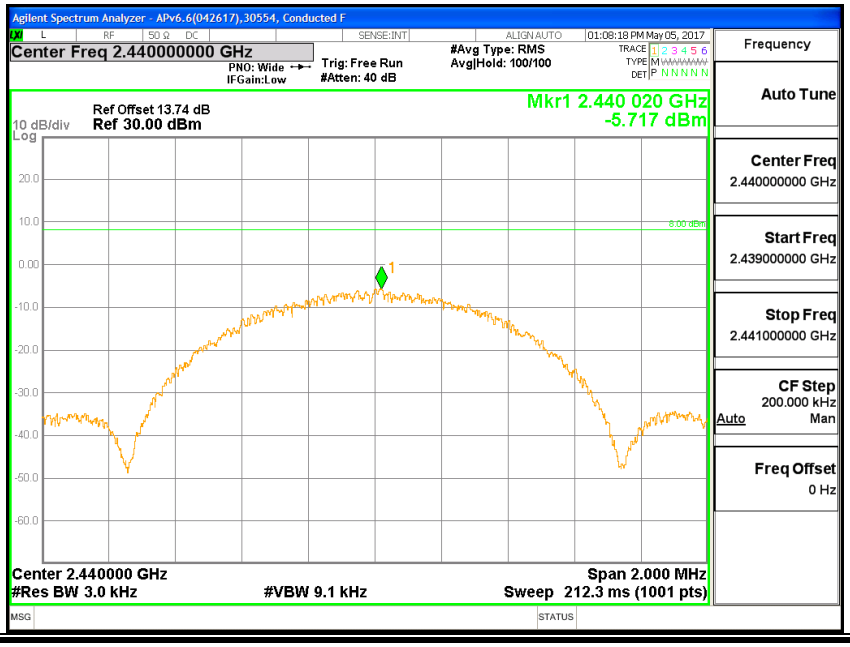
CPSD LOW CH



CPSD MID CH



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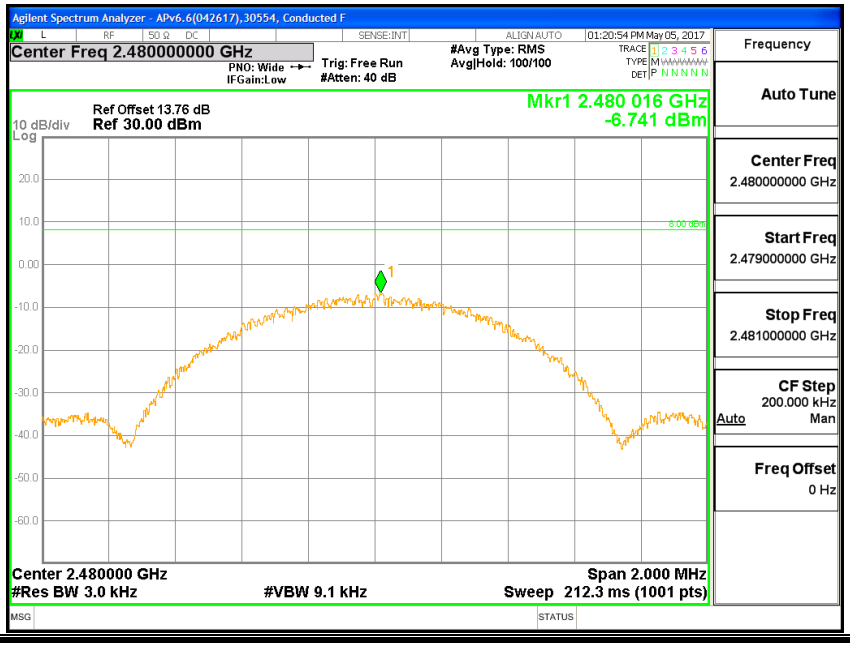
CPSD HIGH CH



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7.4.6. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

LIMITS

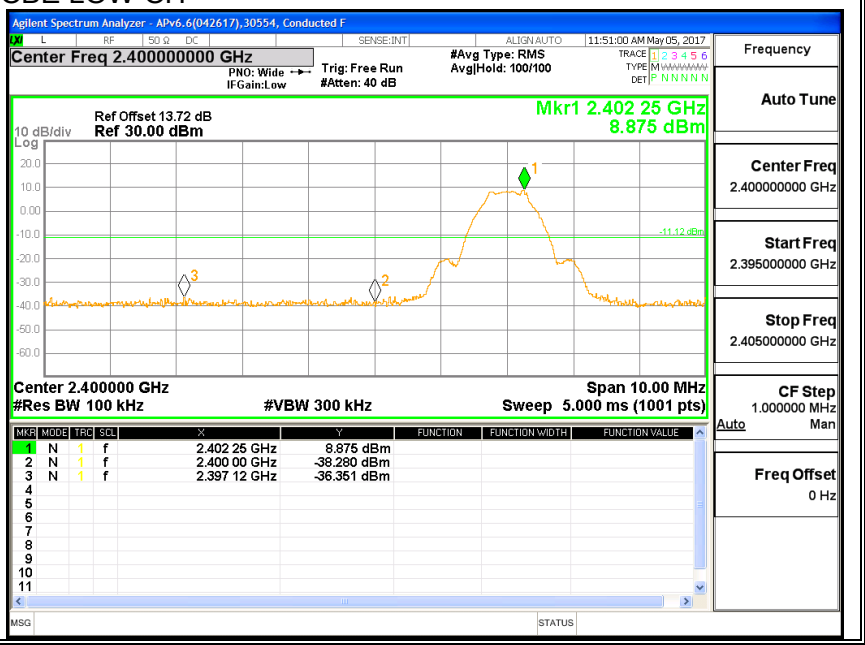
FCC §15.247 (d)

IC RSS-247 (5.5)

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

RESULTS

CBE LOW CH



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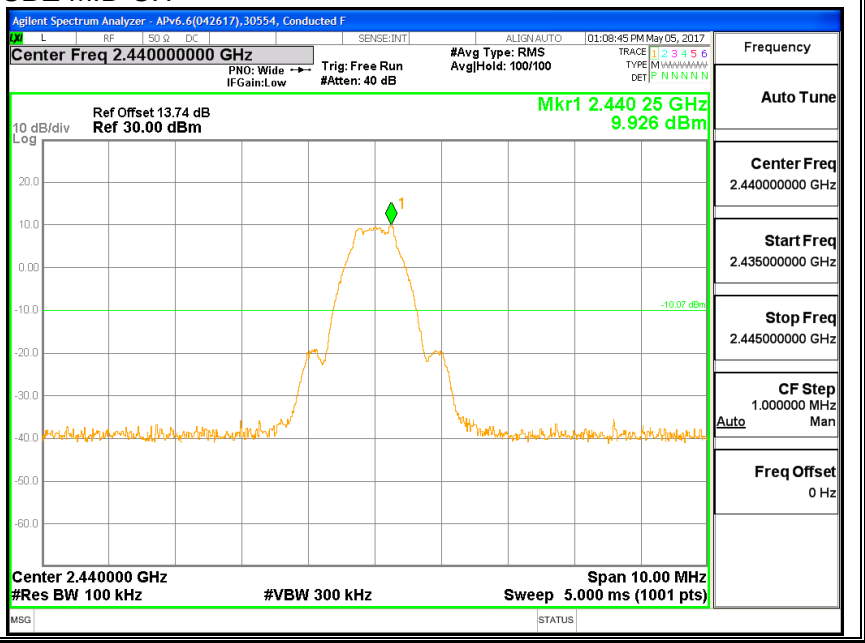
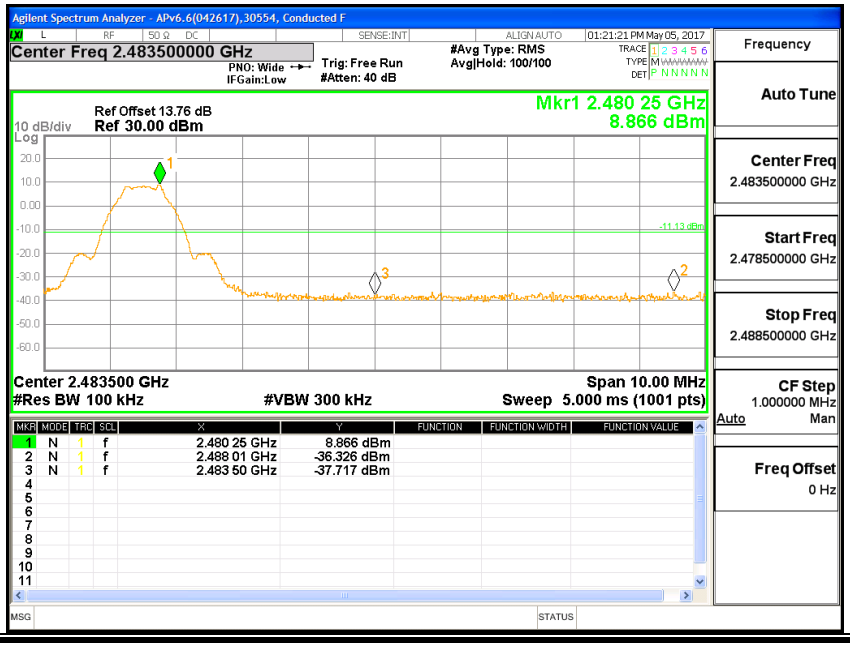
CBE MID CH



CBE HIGH CH



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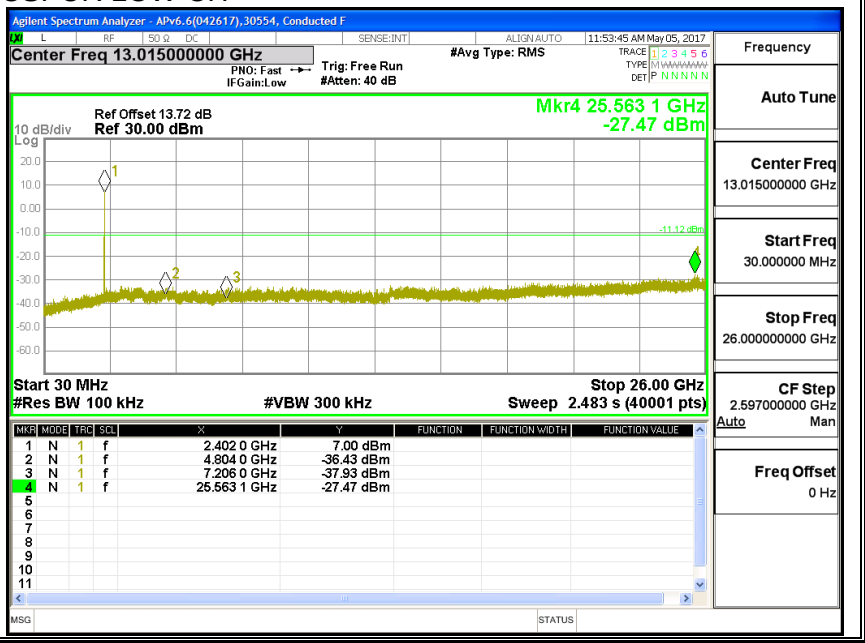
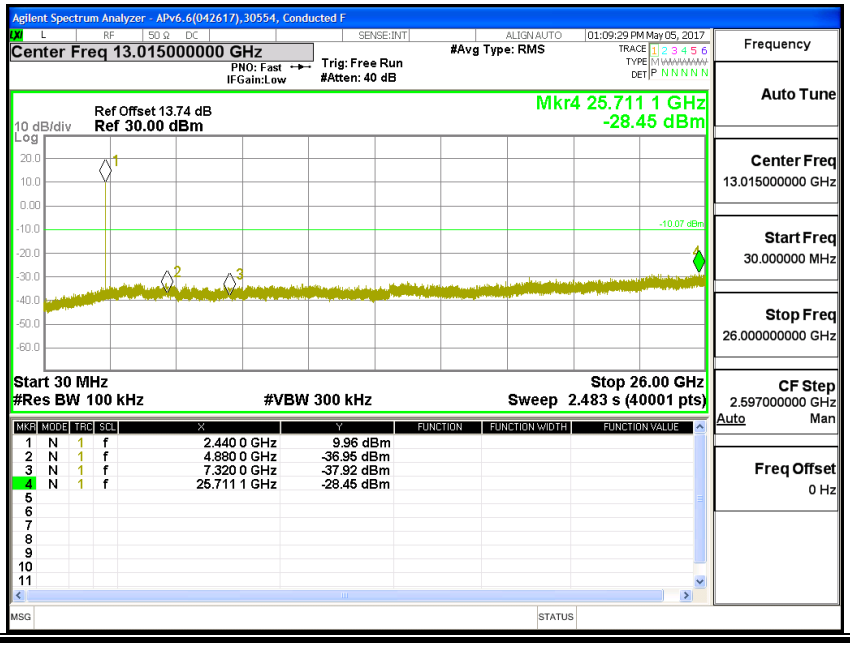
CSPUR LOW CH



CSPUR MID CH



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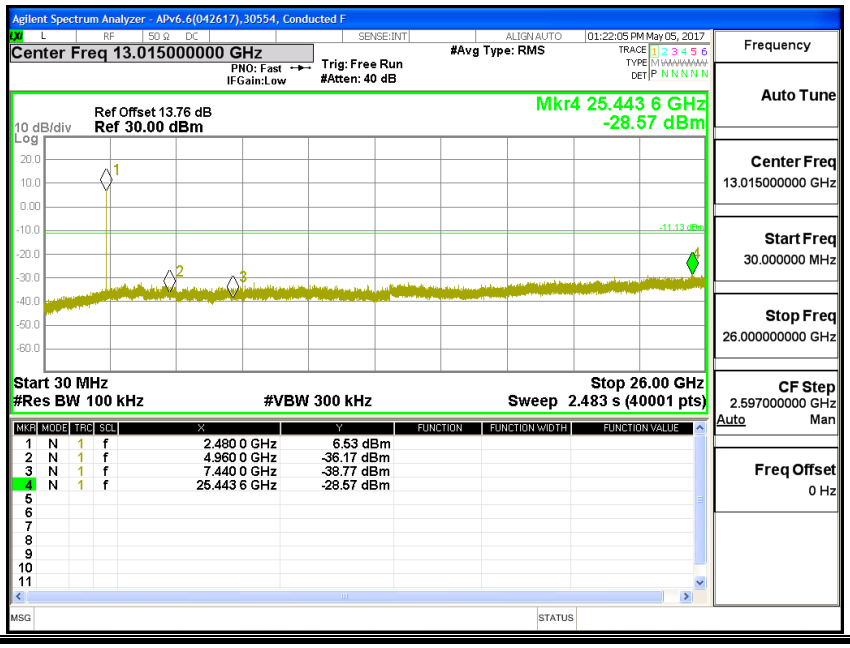
CSPUR HIGH CH



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7.5. UAT1 BLE 2M PMAX

7.5.1. AVERAGE POWER

ID:	39316	Date:	6/27/2017

LIMITS

None; for reporting purposes only.

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	AV Power (MHz)
Low	2402	19.32
Middle	2440	19.55
High	2480	19.40

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7.5.2. OUTPUT POWER

ID:	39316	Date:	6/27/2017

LIMITS

FCC §15.247 (b)

IC RSS-247 (5.4) (d)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

The transmitter output is connected to a broadband Peak/average RF power meter

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	19.51	30	-10.49
Middle	2440	19.72	30	-10.28
High	2480	19.66	30	-10.34

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7.6. UAT1 BLE 2M LOWPOWER

7.6.1. AVERAGE POWER

ID:	39316	Date:	6/27/2017

LIMITS

None; for reporting purposes only.

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	AV Power (MHz)
Low	2402	9.10
Middle	2440	9.30
High	2480	9.45

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7.6.2. OUTPUT POWER

ID:	39316	Date:	6/27/2017

LIMITS

FCC §15.247 (b)

IC RSS-247 (5.4) (d)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

The transmitter output is connected to a broadband Peak/average RF power meter

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.30	30	-20.70
Middle	2440	9.48	30	-20.52
High	2480	9.65	30	-20.35

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7.7. LAT 3 BLE 1M PMAX

7.7.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-247 (5.2) (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

Channel	Frequency	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.682	0.5
Middle	2440	0.692	0.5
High	2480	0.726	0.5

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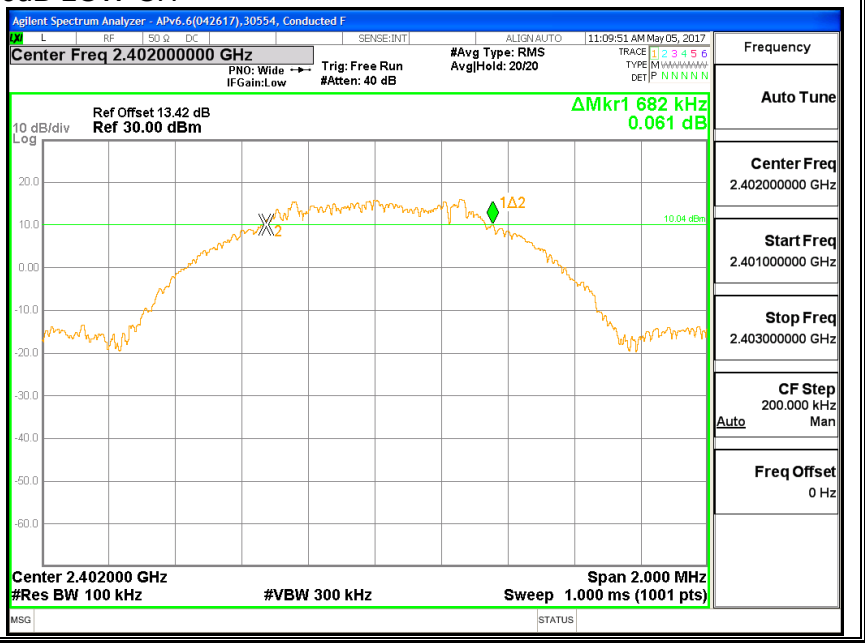
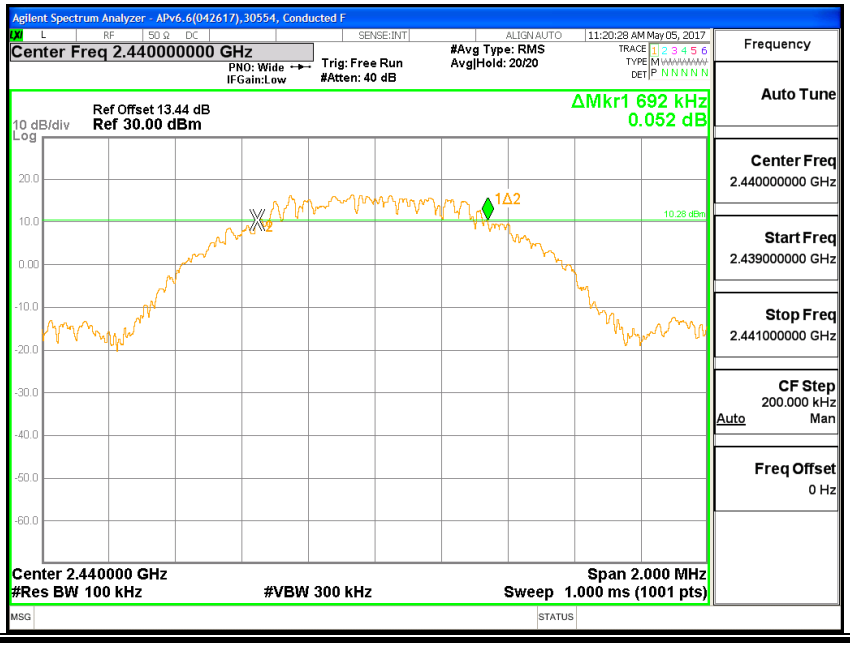
6dB LOW CH



6dB MID CH



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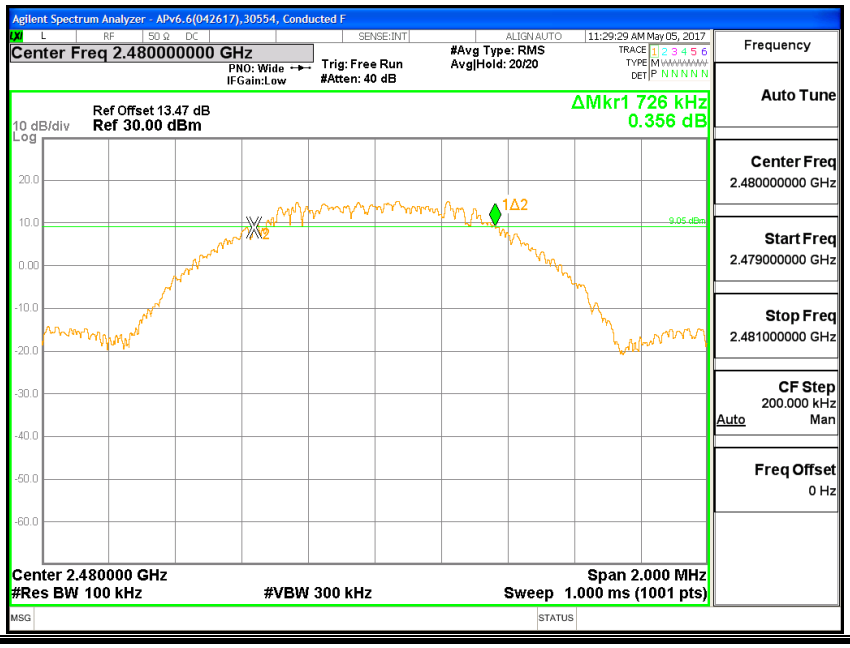
6dB HIGH CH



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7.7.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

Test Procedure

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0552
Middle	2440	1.0555
High	2480	1.0590

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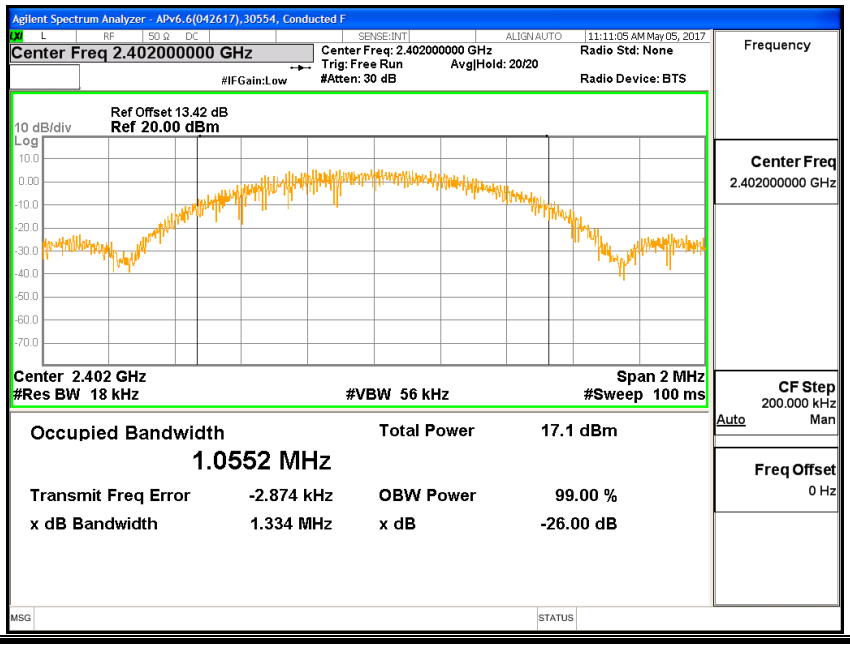
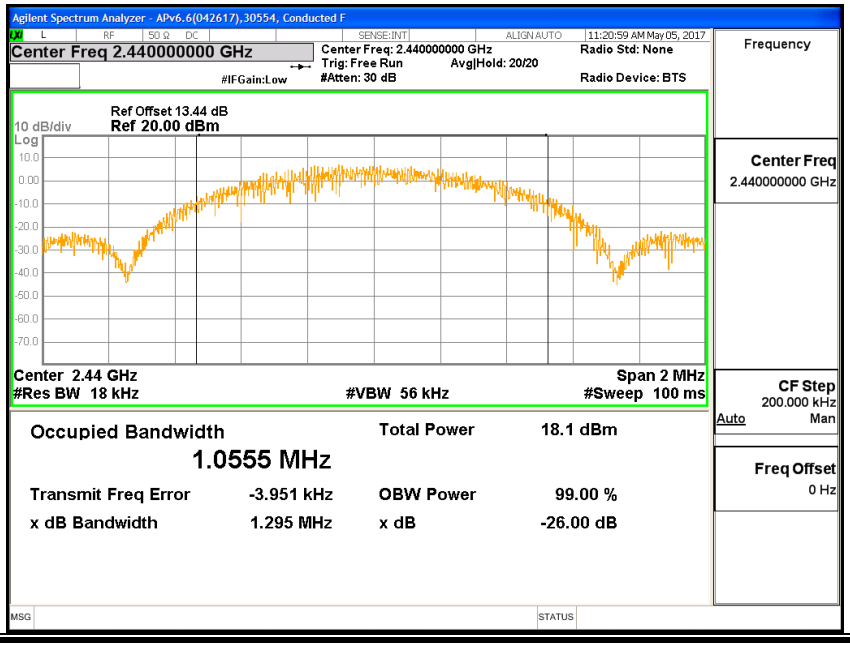
OBW LOW CH



OBW MID CH



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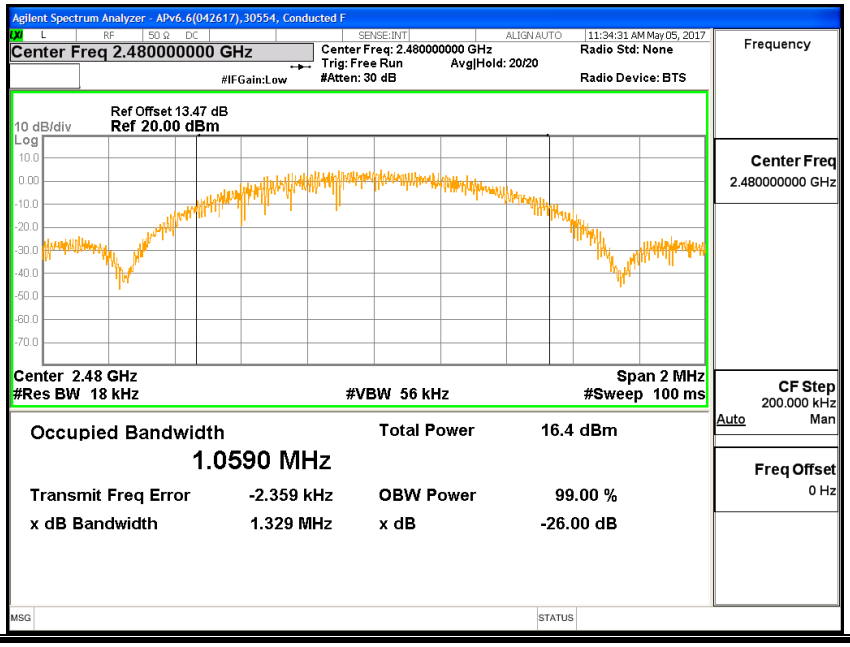
OBW HIGH CH



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7.7.3. AVERAGE POWER

ID:	30554	Date:	7/13/17

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	AV Power (MHz)
Low	2402	19.69
Middle	2440	19.85
High	2480	19.62

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7.7.4. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-247 (5.4) (4)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	19.87	30	-10.13
Middle	2440	20.05	30	-9.95
High	2480	19.9	30	-10.1

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7.7.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

IC RSS-247 (5.2) (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	0.576	8	-7.424
Middle	2440	1.526	8	-6.474
High	2480	-0.113	8	-8.113

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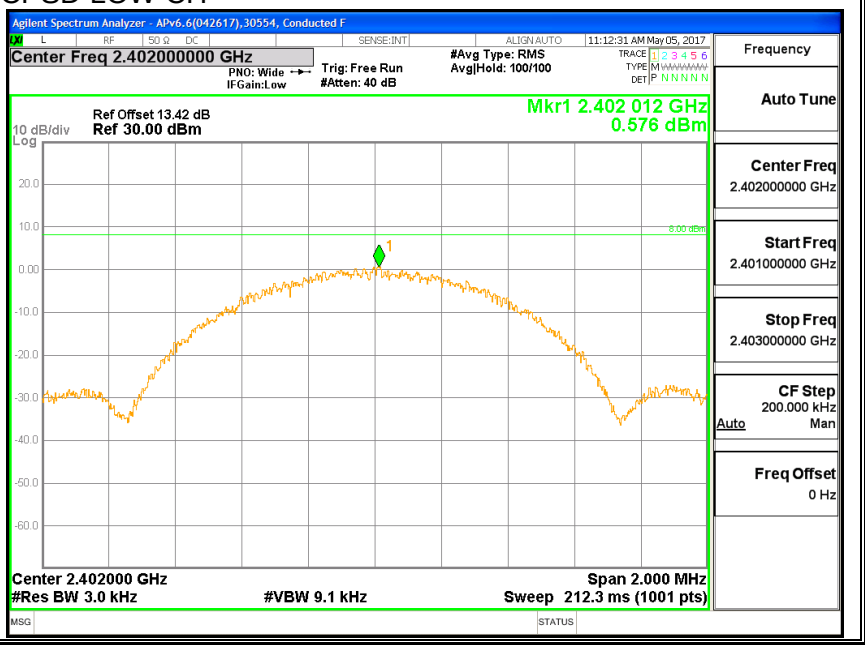
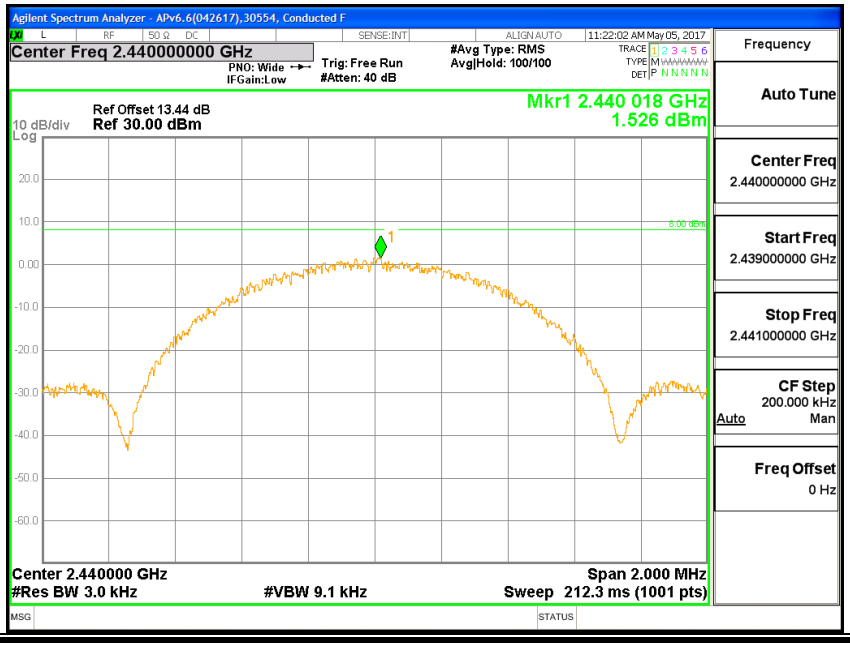
CPSD LOW CH



CPSD MID CH



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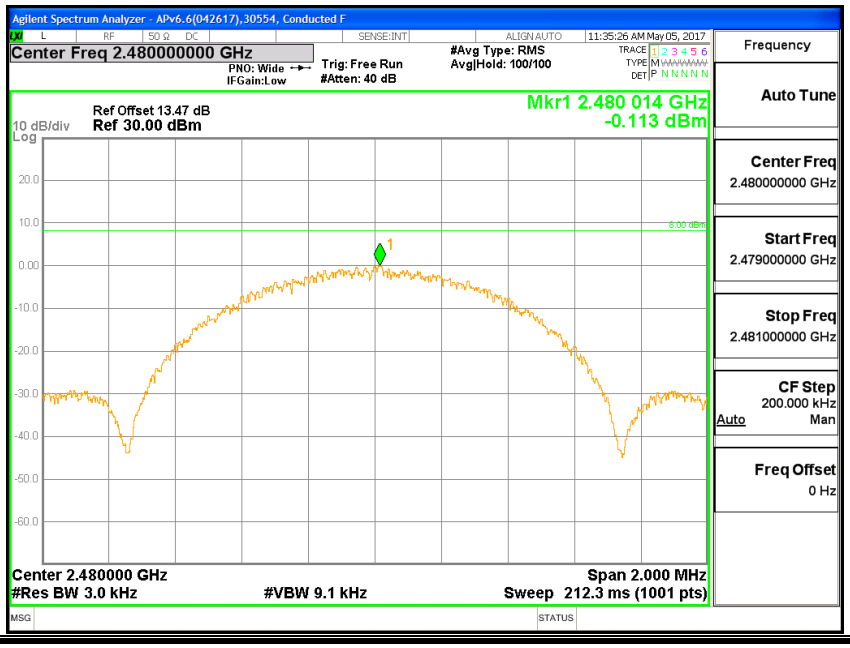
CPSD HIGH CH



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7.7.6. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

LIMITS

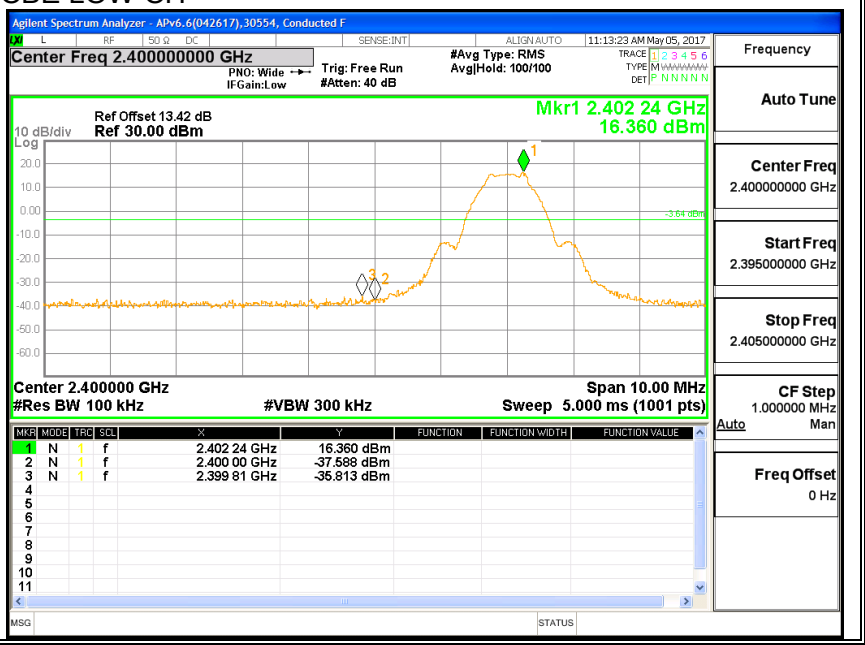
FCC §15.247 (d)

IC RSS-247 (5.5)

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

RESULTS

CBE LOW CH



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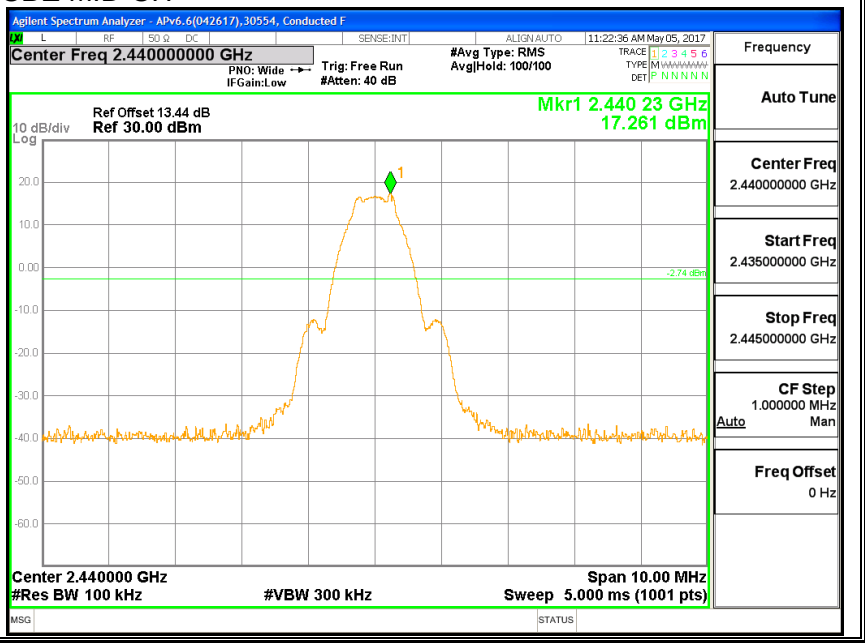
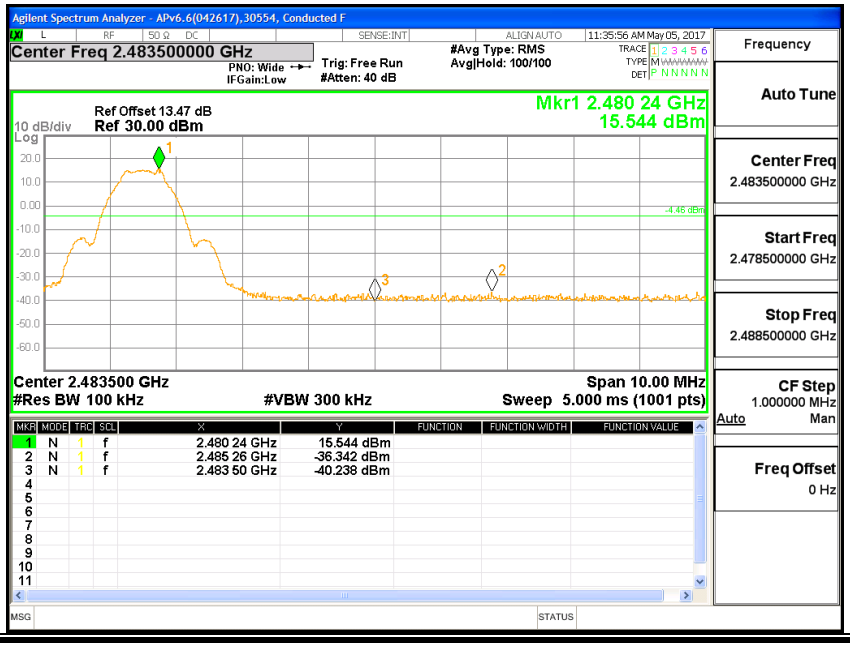
CBE MID CH



CBE HIGH CH



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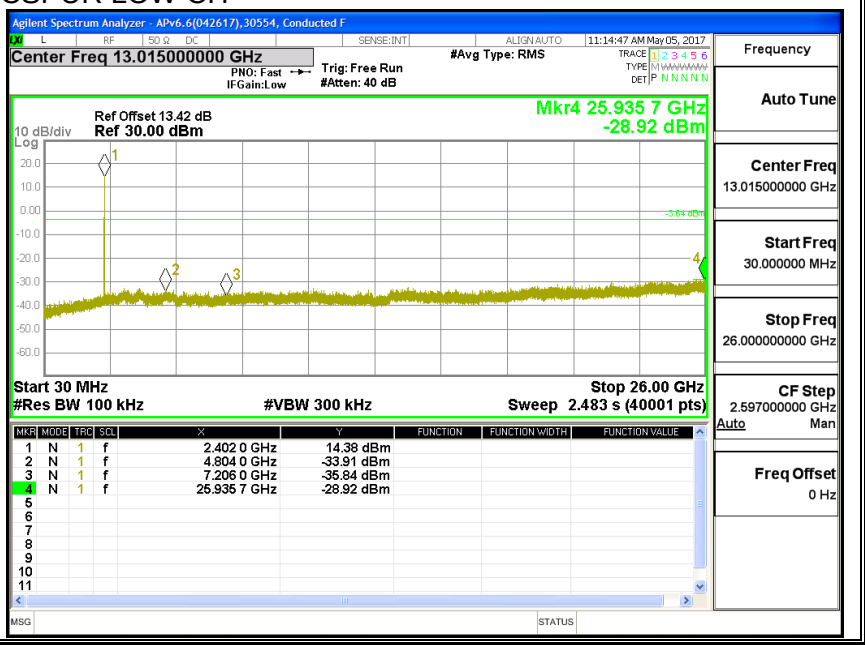
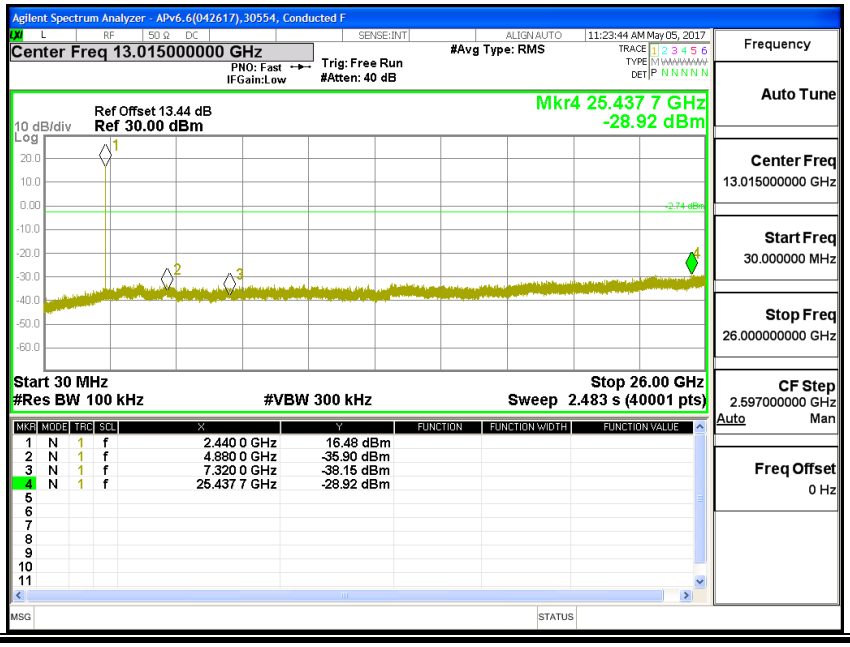
CSPUR LOW CH



CSPUR MID CH



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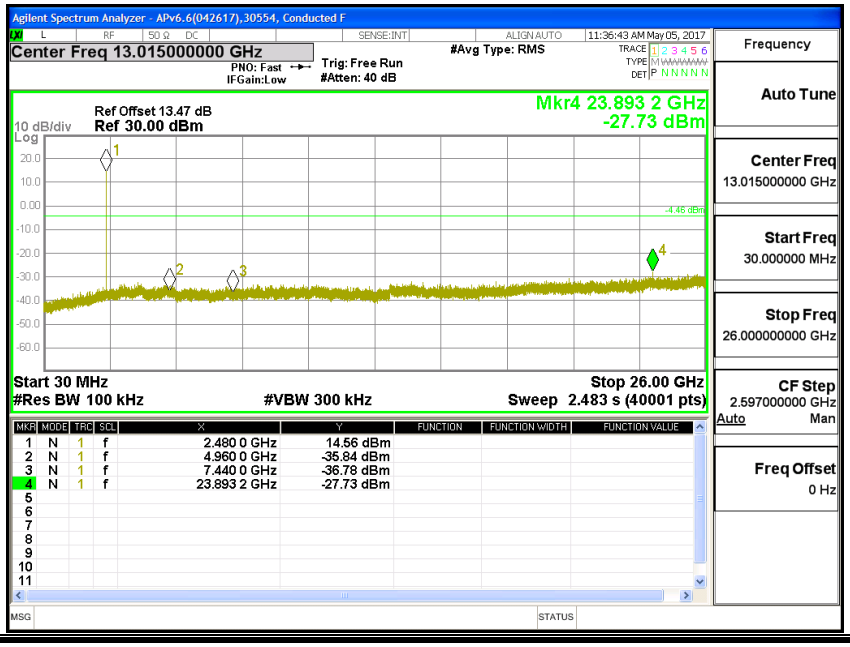
CSPUR HIGH CH



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7.8. LAT 3 BLE 1M PLOW

7.8.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-247 (5.2) (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

Channel	Frequency	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.716	0.5
Middle	2440	0.680	0.5
High	2480	0.744	0.5

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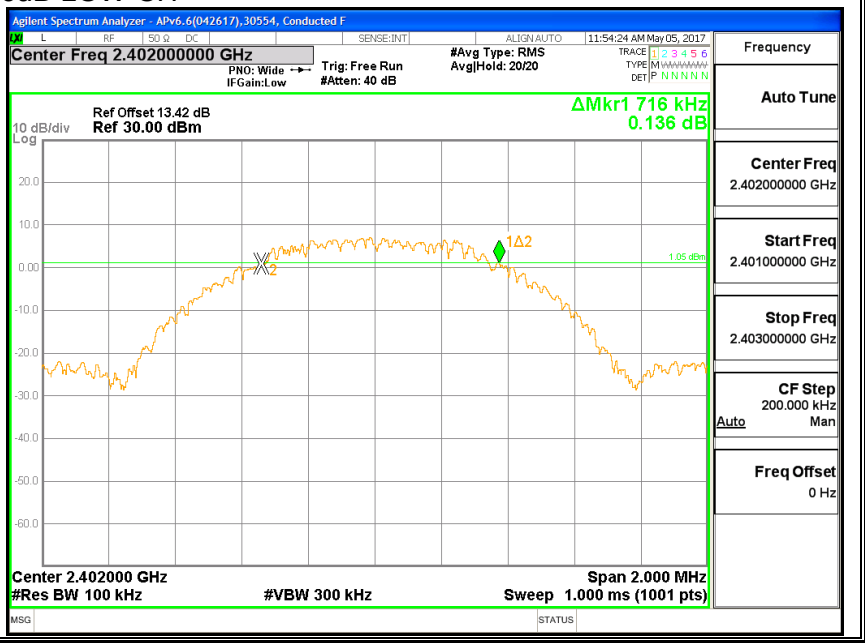
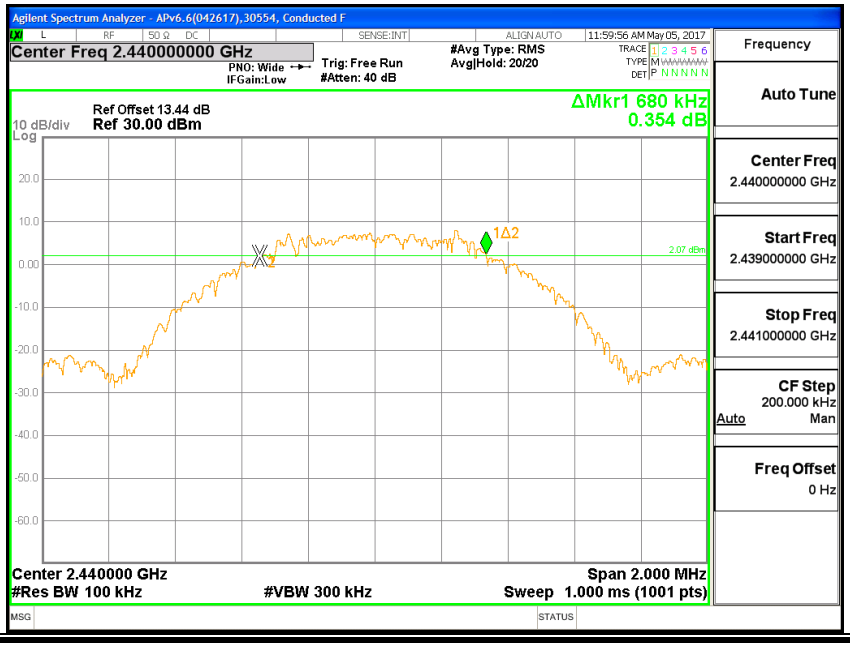
6dB LOW CH



6dB MID CH



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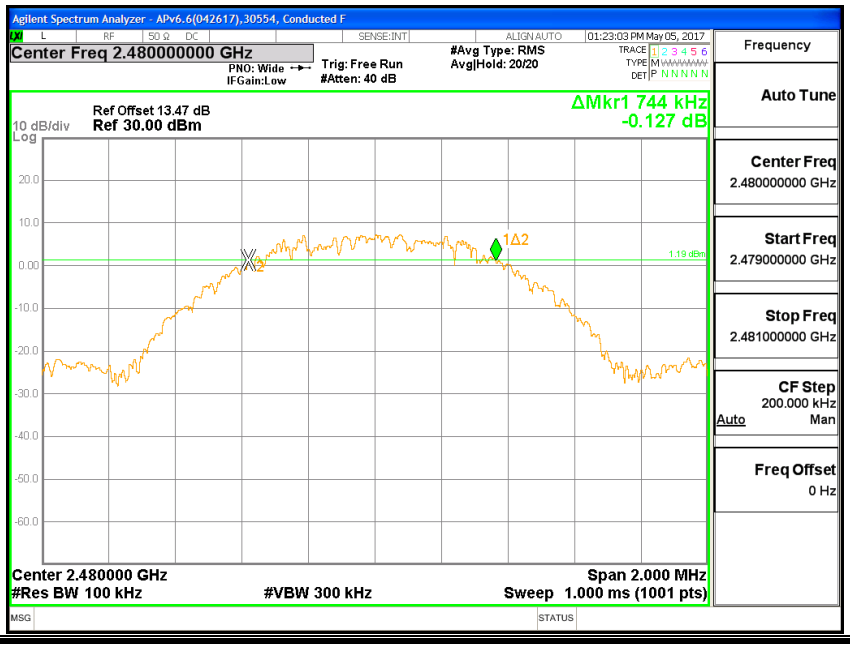
6dB HIGH CH



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7.8.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

Test Procedure

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0605
Middle	2440	1.0570
High	2480	1.0583

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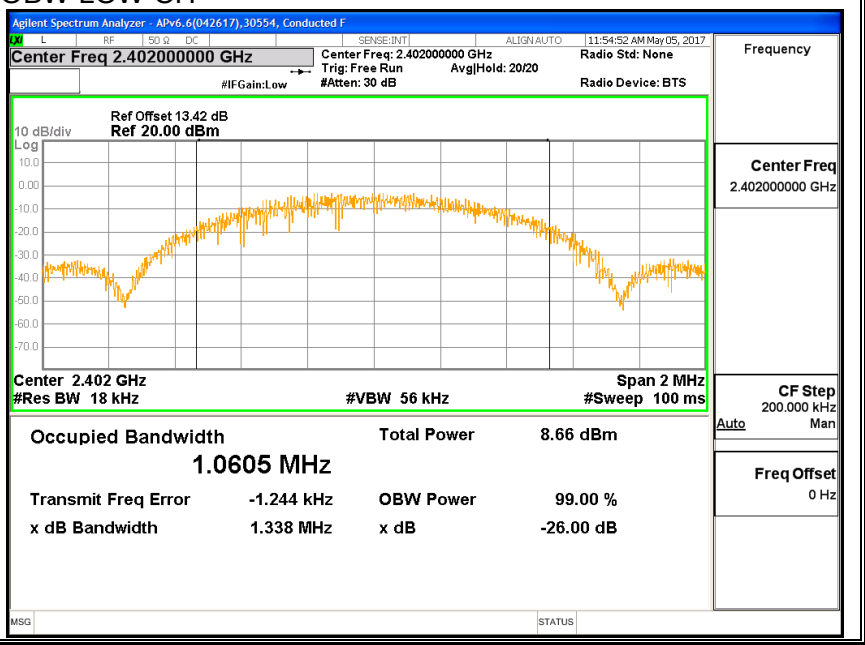
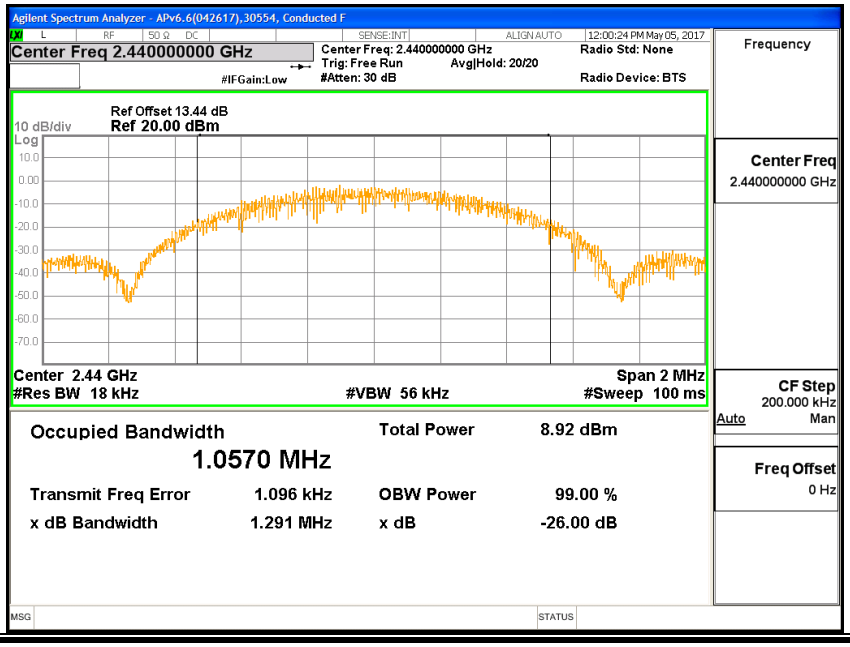
OBW LOW CH



OBW MID CH



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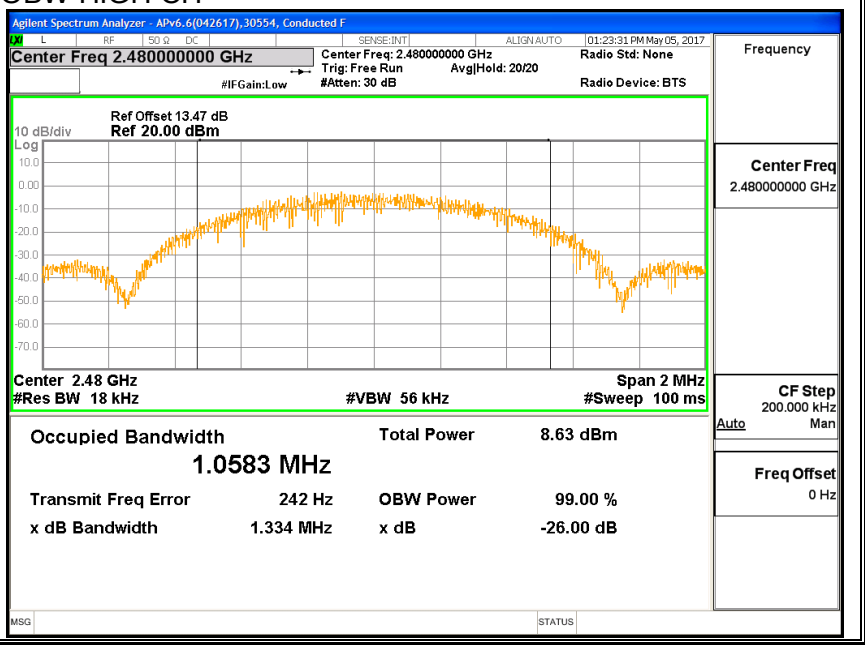
OBW HIGH CH



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7.8.3. AVERAGE POWER

ID:	30554	Date:	7/13/17

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	AV Power (MHz)
Low	2402	9.65
Middle	2440	9.84
High	2480	9.29

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7.8.4. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-247 (5.4) (d)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.85	30	-20.15
Middle	2440	10.06	30	-19.94
High	2480	9.49	30	-20.51

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7.8.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

IC RSS-247 (5.2) (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-7.935	8	-15.935
Middle	2440	-7.476	8	-15.476
High	2480	-7.860	8	-15.860

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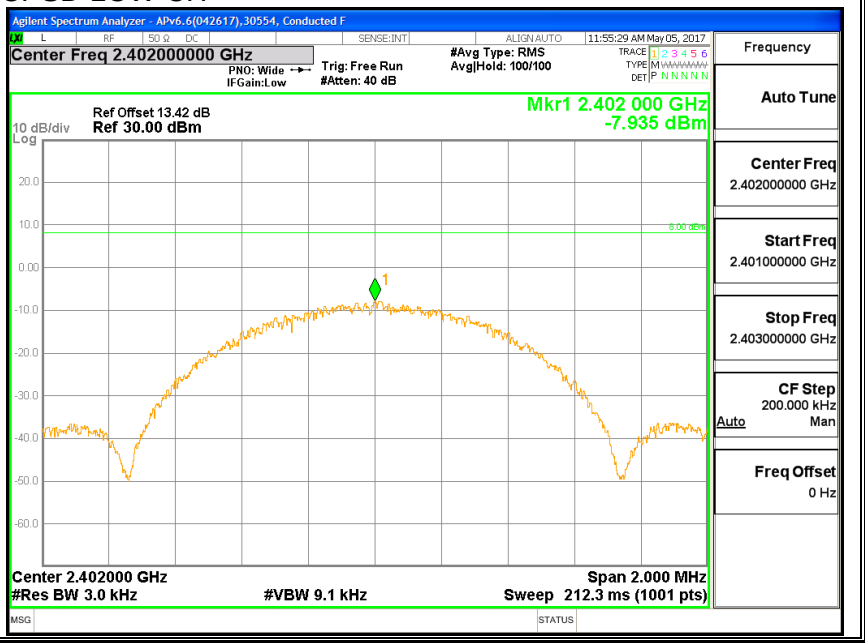
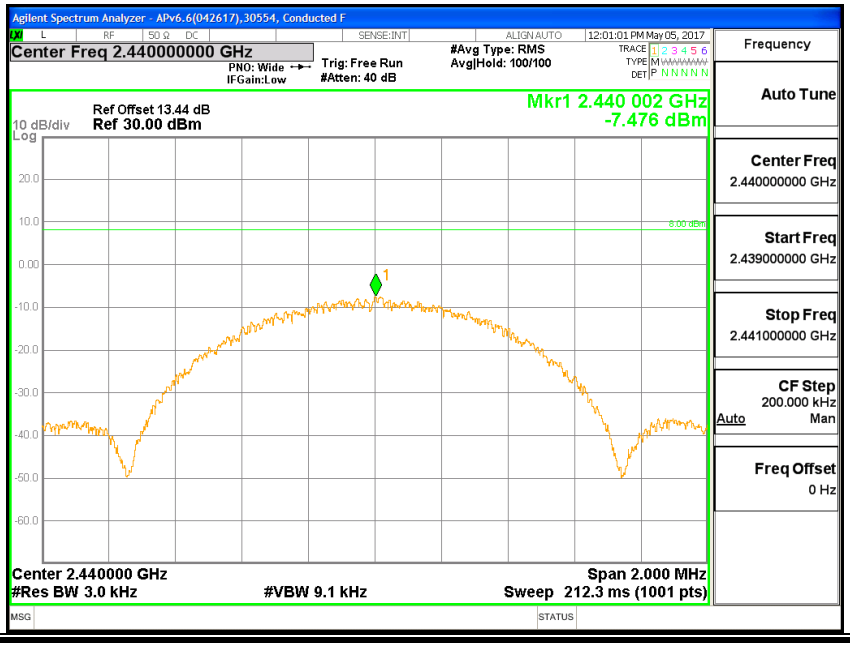
CPSD LOW CH



CPSD MID CH



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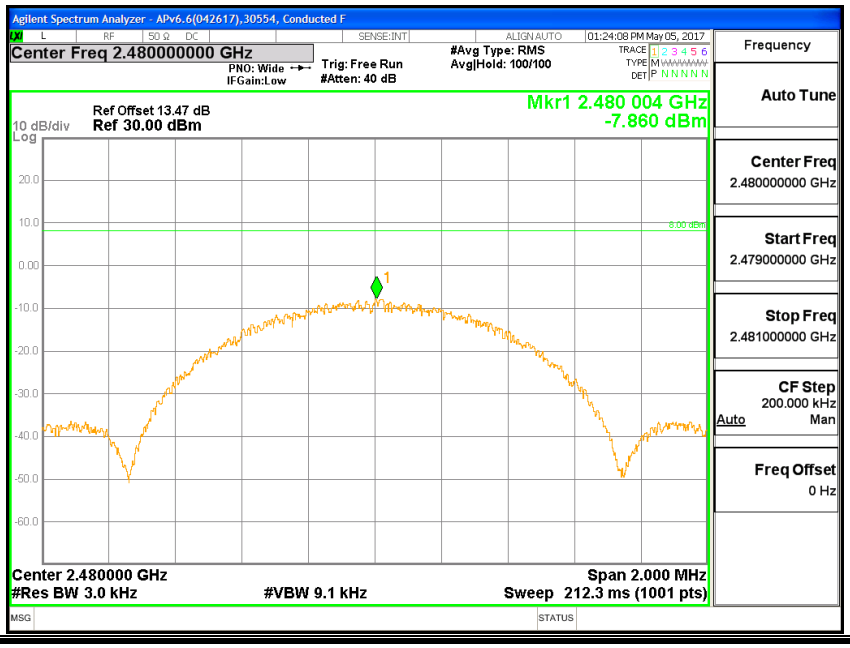
CPSD HIGH CH



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7.8.6. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

LIMITS

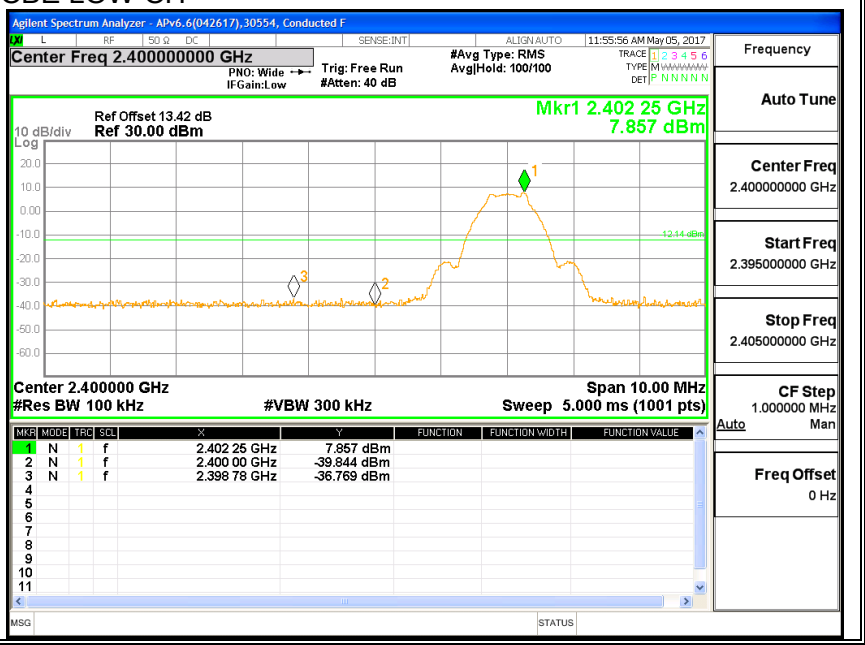
FCC §15.247 (d)

IC RSS-247 (5.5)

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

RESULTS

CBE LOW CH



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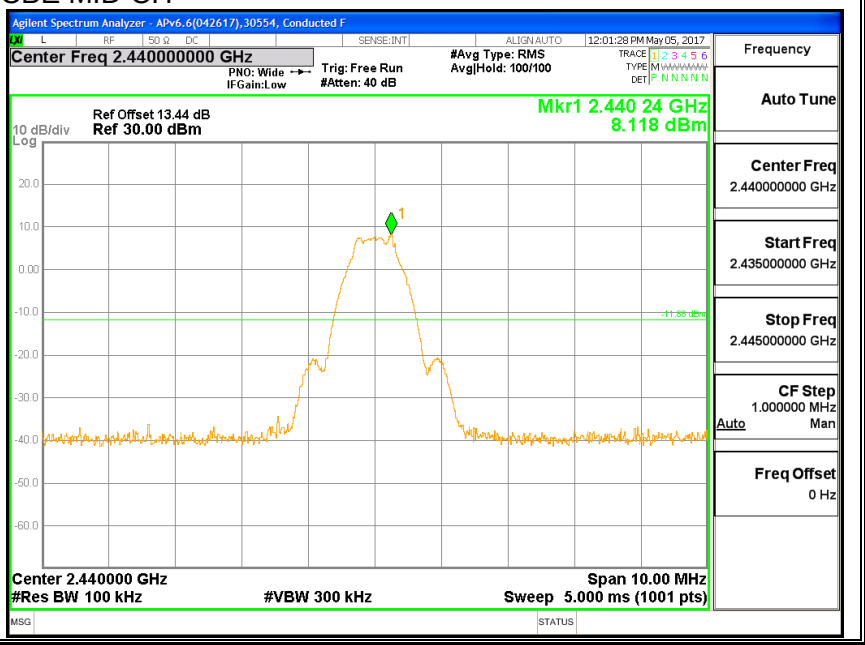
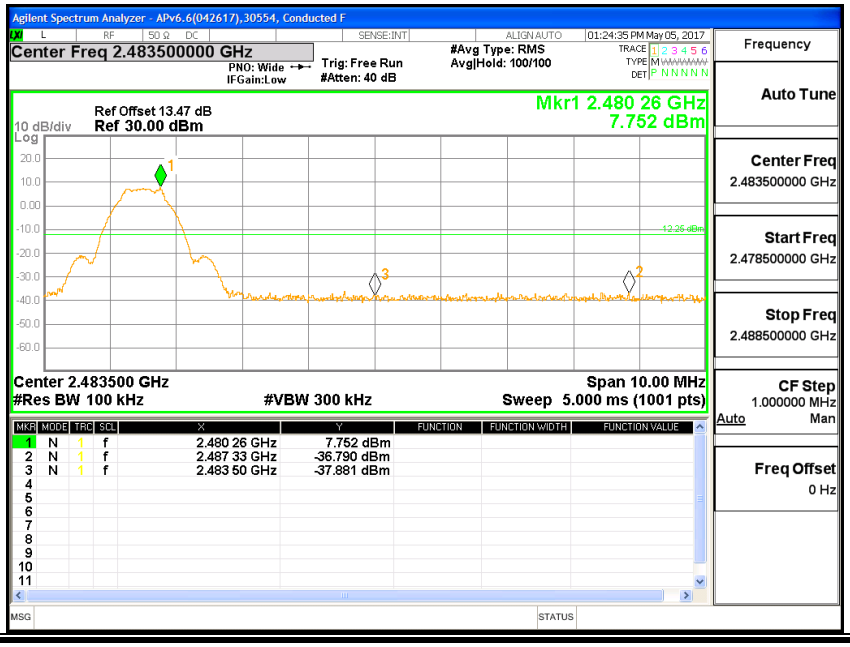
CBE MID CH



CBE HIGH CH



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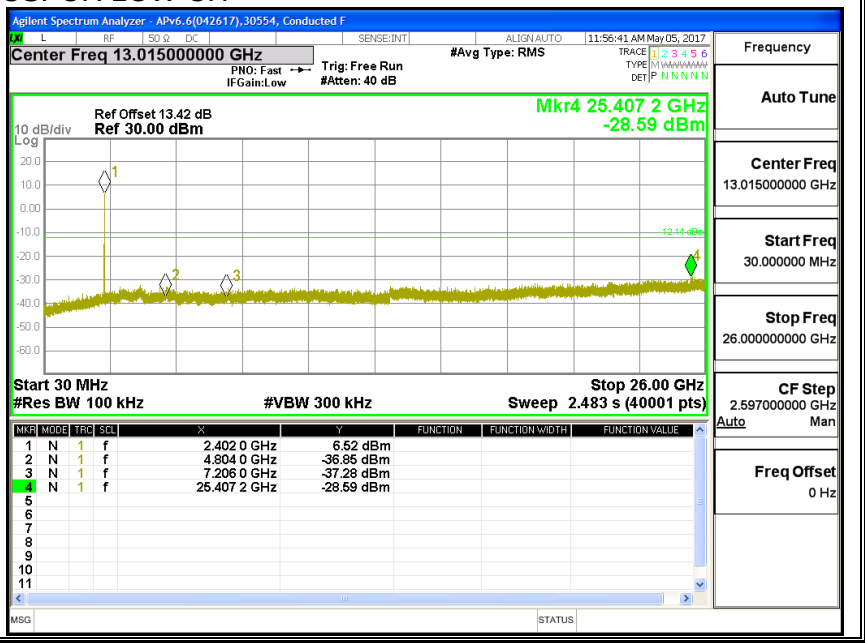
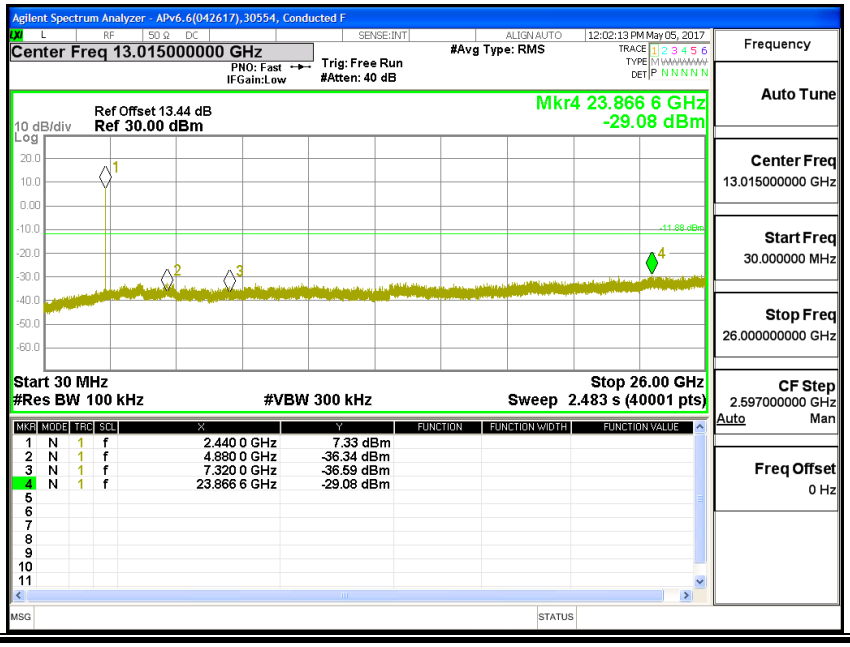
CSPUR LOW CH



CSPUR MID CH



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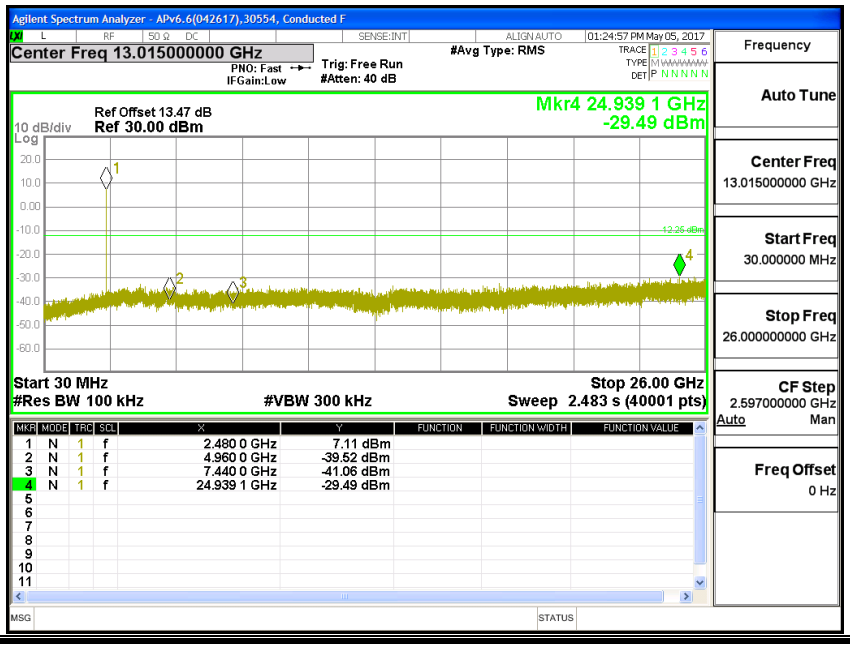
CSPUR HIGH CH



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7.9. LAT3 BLE 2M PMAX

7.9.1. AVERAGE POWER

ID:	39316	Date:	6/27/2017

LIMITS

None; for reporting purposes only.

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	AV Power (MHz)
Low	2402	19.48
Middle	2440	19.45
High	2480	19.45

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7.9.2. OUTPUT POWER

ID:	39316	Date:	6/27/2017

LIMITS

FCC §15.247 (b)

IC RSS-247 (5.4) (d)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

The transmitter output is connected to a broadband Peak/average RF power meter

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	19.75	30	-10.25
Middle	2440	19.81	30	-10.19
High	2480	19.71	30	-10.29

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7.10. LAT3 BLE 2M PLOW

7.10.1. AVERAGE POWER

ID:	39316	Date:	6/27/2017

LIMITS

None; for reporting purposes only.

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	AV Power (MHz)
Low	2402	8.97
Middle	2440	9.34
High	2480	9.12

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7.10.2. OUTPUT POWER

ID:	39316	Date:	6/27/2017

LIMITS

FCC §15.247 (b)

IC RSS-247 (5.4) (d)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

The transmitter output is connected to a broadband Peak/average RF power meter

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.30	30	-20.70
Middle	2440	9.76	30	-20.24
High	2480	9.42	30	-20.58

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8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC 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
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 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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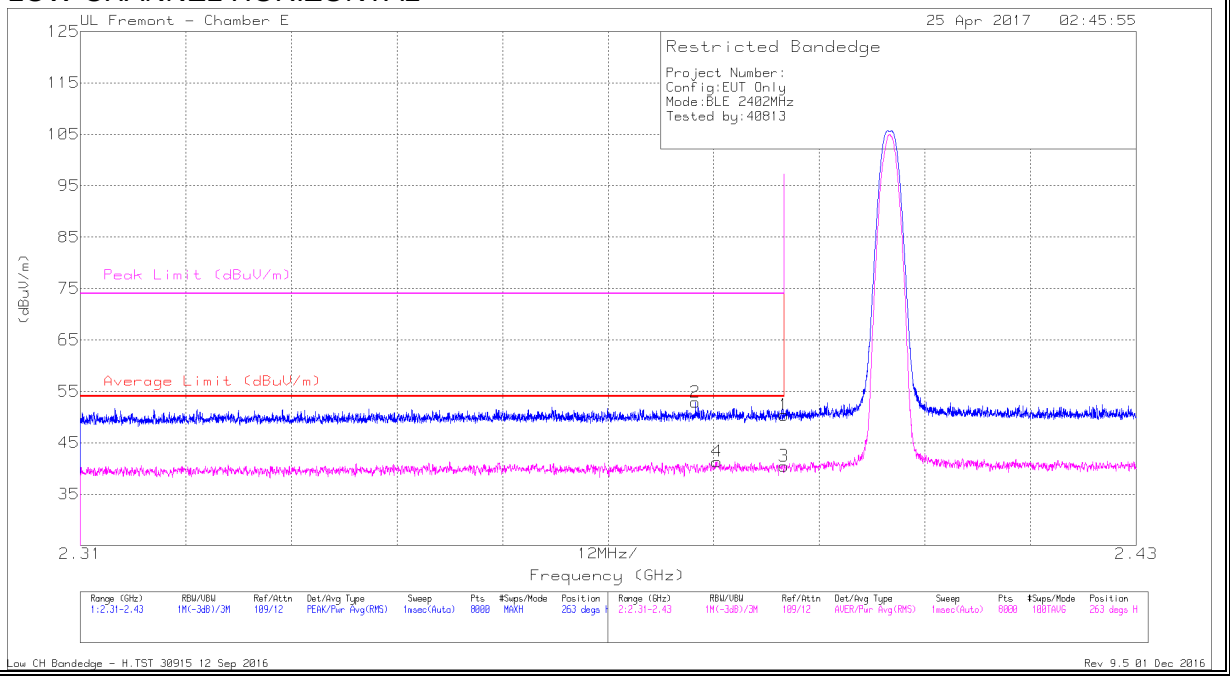
8.3. UAT 1 PMAX

8.3.1. RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL HORIZONTAL



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	38.1	Pk	32	-19.7	50.4	-	-	74	-23.6	263	101	H
2	* 2.38	40.49	Pk	32	-19.6	52.89	-	-	74	-21.11	263	101	H
3	* 2.39	28.15	RMS	32	-19.7	40.45	54	-13.55	-	-	263	101	H
4	* 2.382	28.84	RMS	32	-19.5	41.34	54	-12.66	-	-	263	101	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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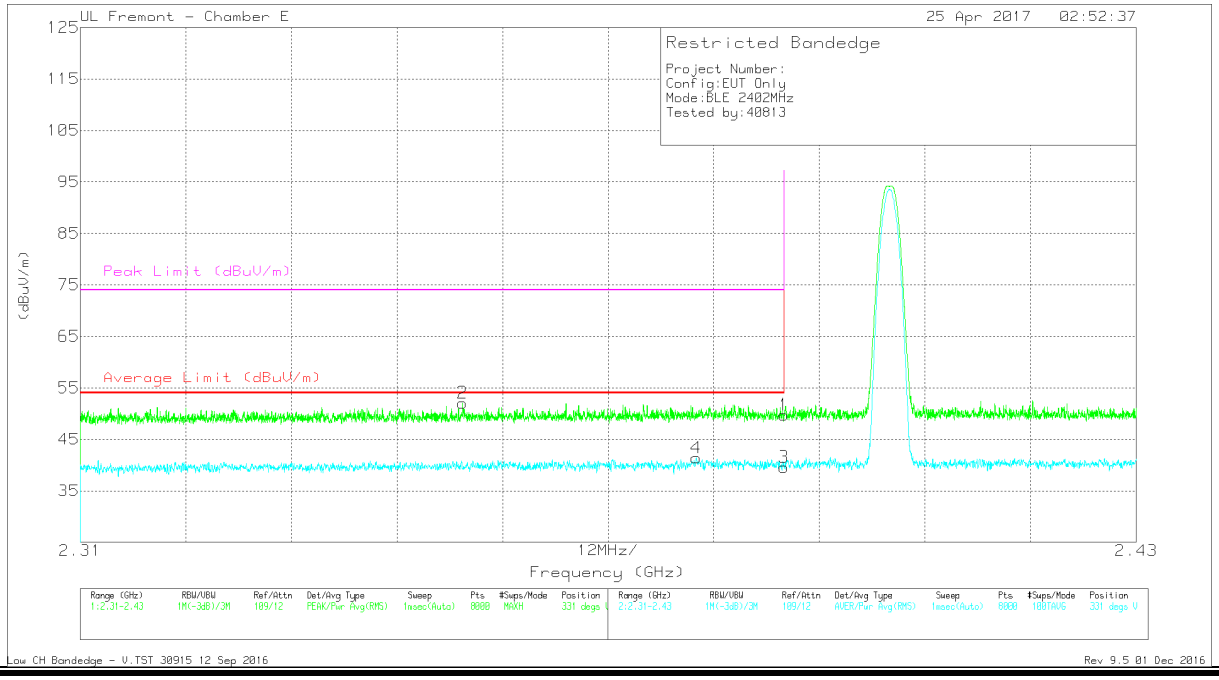
LOW CHANNEL VERTICAL



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	37.43	Pk	32	-19.7	49.73	-	-	74	-24.27	331	106	V
2	* 2.353	39.86	Pk	31.9	-19.7	52.06	-	-	74	-21.94	331	106	V
3	* 2.39	27.3	RMS	32	-19.7	39.6	54	-14.4	-	-	331	106	V
4	* 2.38	28.99	RMS	32	-19.6	41.39	54	-12.61	-	-	331	106	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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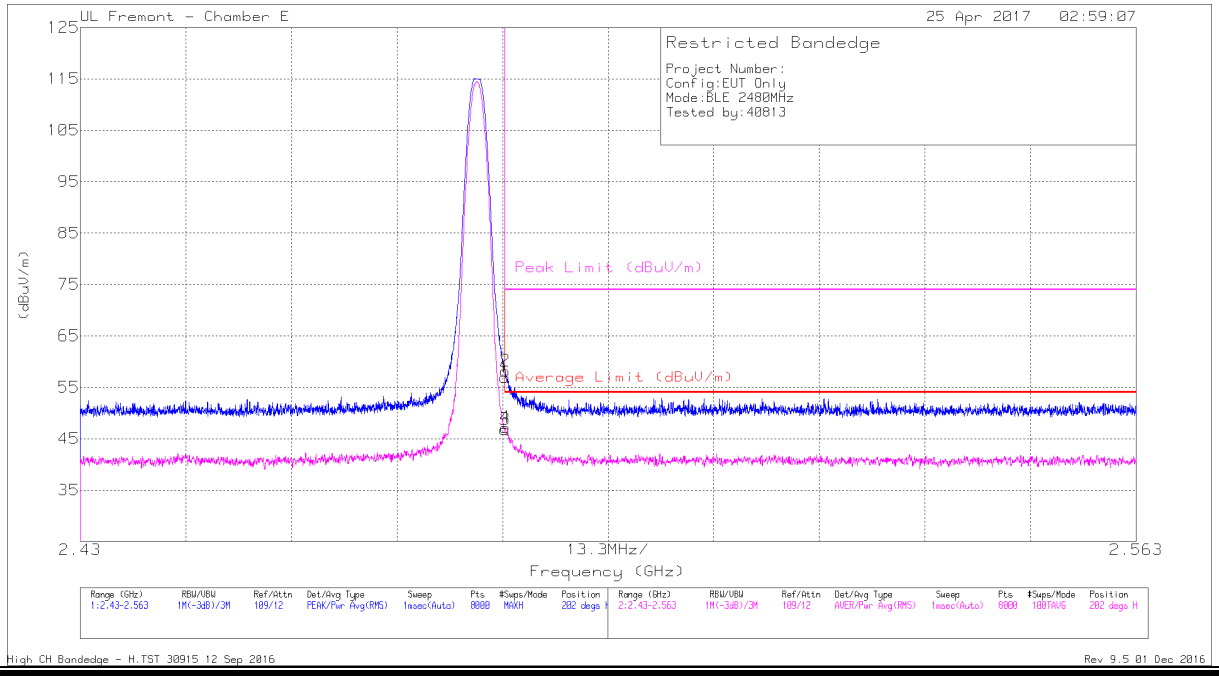
8.3.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL HORIZONTAL



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	44.1	Pk	32.5	-19.7	56.9	-	-	74	-17.1	202	100	H
2	* 2.484	45.38	Pk	32.5	-19.7	58.18	-	-	74	-15.82	202	100	H
3	* 2.484	34.03	RMS	32.5	-19.7	46.83	54	-7.17	-	-	202	100	H
4	* 2.484	34.38	RMS	32.5	-19.7	47.18	54	-6.82	-	-	202	100	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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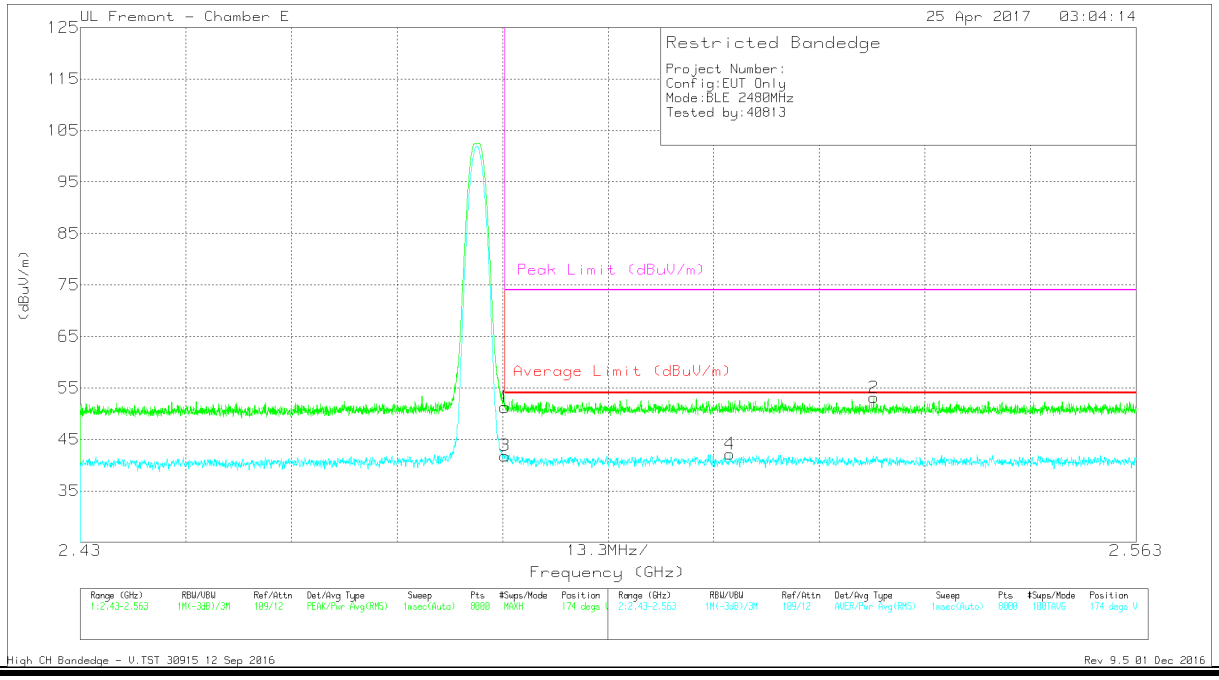
HIGH CHANNEL VERTICAL



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	38.46	Pk	32.5	-19.7	51.26	-	-	74	-22.74	174	392	V
3	* 2.484	29.04	RMS	32.5	-19.7	41.84	54	-12.16	-	-	174	392	V
4	2.512	29.38	RMS	32.6	-19.8	42.18	54	-11.82	-	-	174	392	V
2	2.53	40.44	Pk	32.6	-19.9	53.14	-	-	74	-20.86	174	392	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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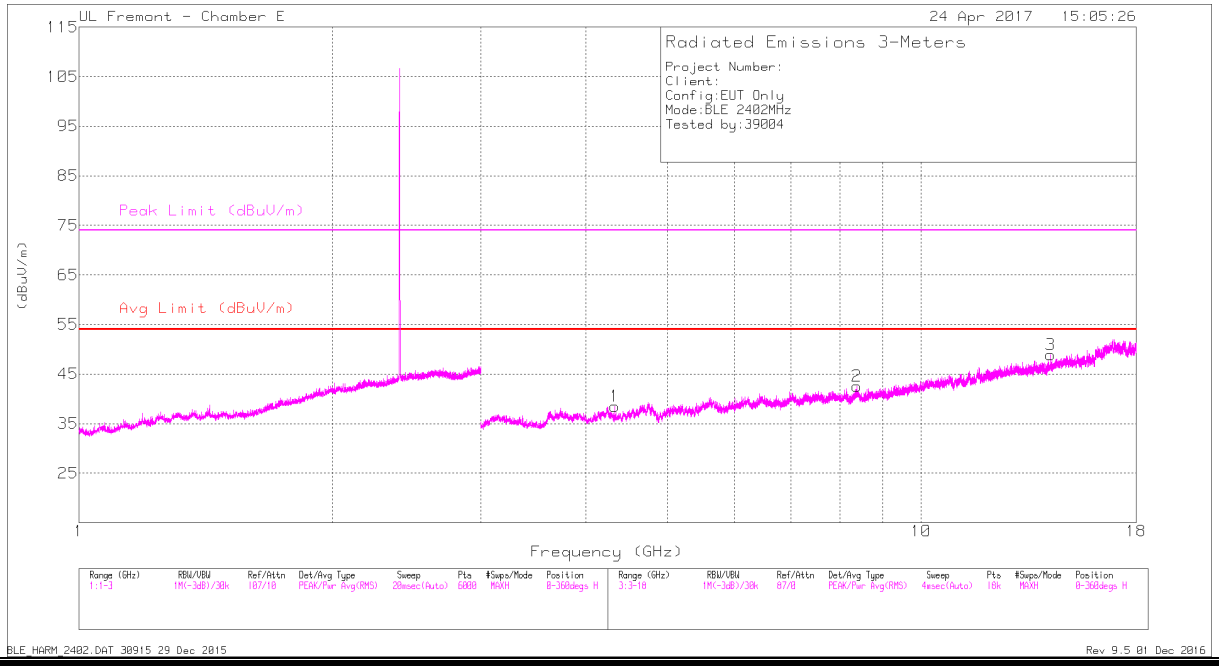
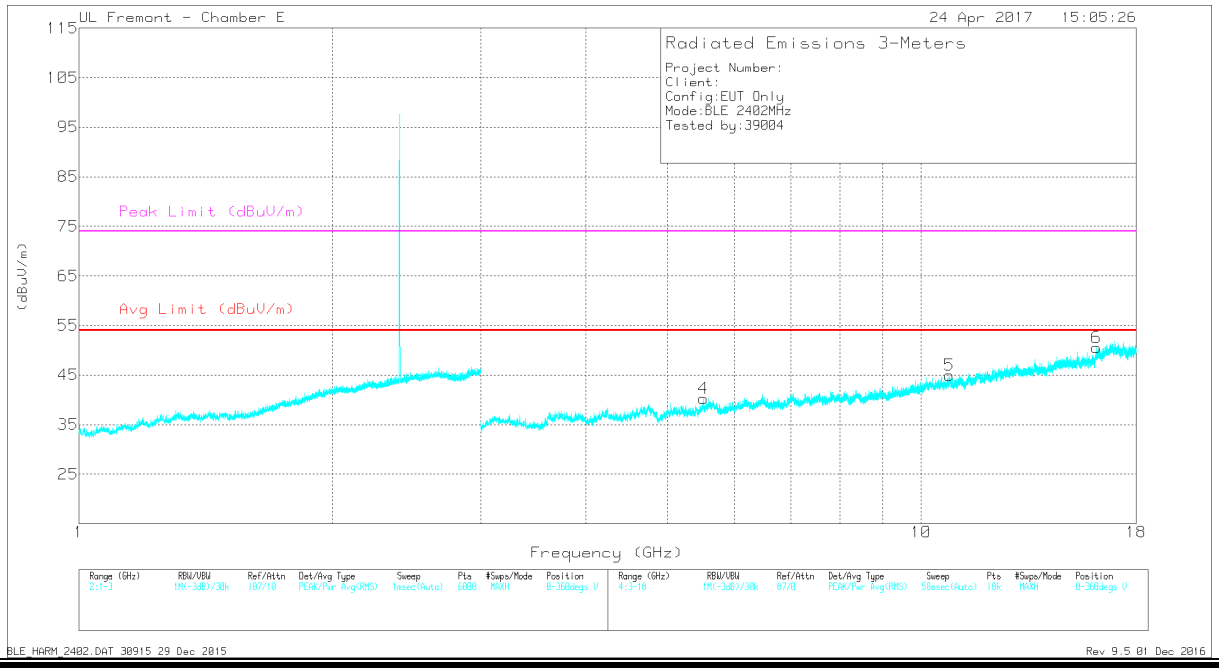
8.3.3. HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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DATA

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
1	* 4.328	40.93	PKFH	33.6	-30.6	43.93	-	-	74	-30.07	157	251	H
	* 4.33	29.34	VA1T	33.6	-30.5	32.44	54	-21.56	-	-	157	251	H
2	* 8.387	37.48	PKFH	36	-25.6	47.88	-	-	74	-26.12	175	234	H
	* 8.39	25.42	VA1T	36	-25.5	35.92	54	-18.08	-	-	175	234	H
5	* 10.8	36.37	PKFH	37.6	-23.1	50.87	-	-	74	-23.13	202	142	V
	* 10.798	24.08	VA1T	37.6	-23.3	38.38	54	-15.62	-	-	202	142	V
6	* 16.135	35.69	PKFH	41.4	-20.9	56.19	-	-	74	-17.81	188	133	V
	* 16.133	23.62	VA1T	41.4	-20.9	44.12	54	-9.88	-	-	188	133	V
4	5.514	39.62	PKFH	35.5	-29.8	45.32	-	-	-	-	117	123	V
3	14.251	37.34	PKFH	39.6	-23.7	53.24	-	-	-	-	154	143	H

* - 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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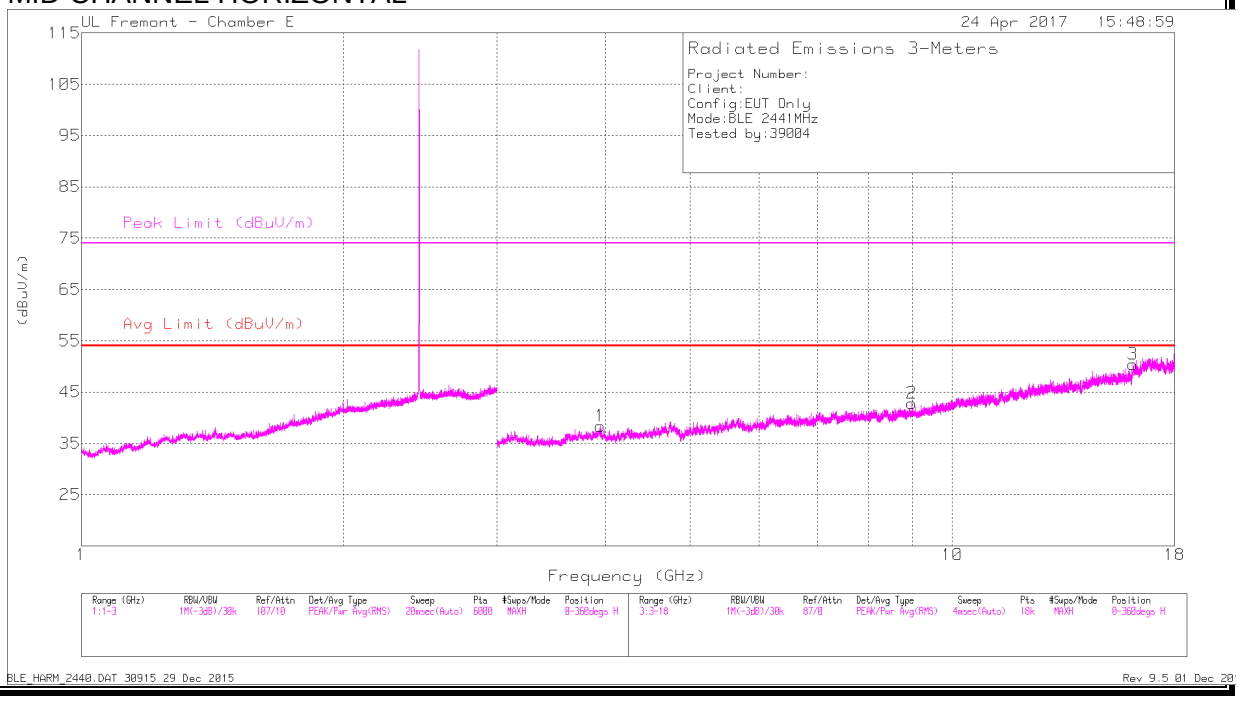
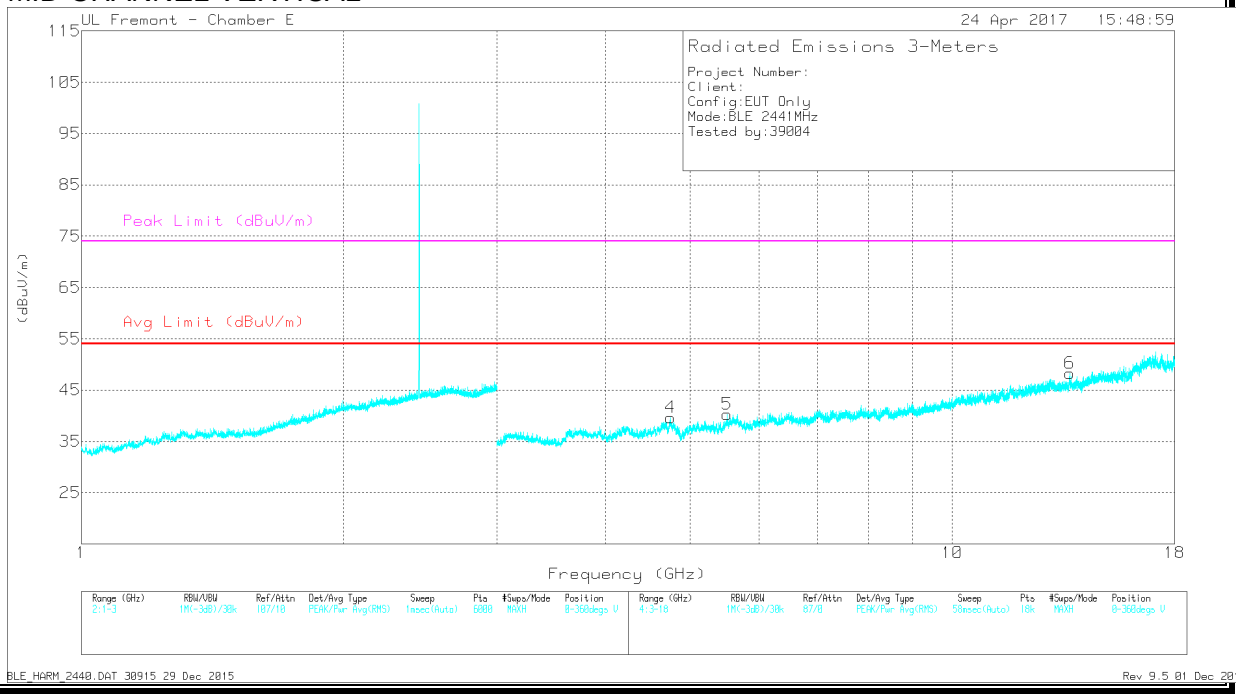
MID CHANNEL HORIZONTAL



MID CHANNEL VERTICAL



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DATA

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
1	* 3.945	39.64	PKFH	33.4	-29.5	43.54	-	-	74	-30.46	325	114	H
	* 3.943	28.08	VA1T	33.4	-29.5	31.98	54	-22.02	-	-	325	114	H
3	* 16.114	35.56	PKFH	41.4	-21.7	55.26	-	-	74	-18.74	302	175	H
	* 16.115	23.87	VA1T	41.4	-21.7	43.57	54	-10.43	-	-	302	175	H
4	* 4.751	39.53	PKFH	34.3	-28.9	44.93	-	-	74	-29.07	277	226	V
	* 4.749	27.95	VA1T	34.3	-28.9	33.35	54	-20.65	-	-	277	226	V
5	5.512	39.92	PKFH	35.5	-29.9	45.52	-	-	-	-	220	128	V
2	8.989	36.47	PKFH	36.2	-25	47.67	-	-	-	-	255	176	H
6	13.636	36.79	PKFH	39.3	-23.3	52.79	-	-	-	-	210	108	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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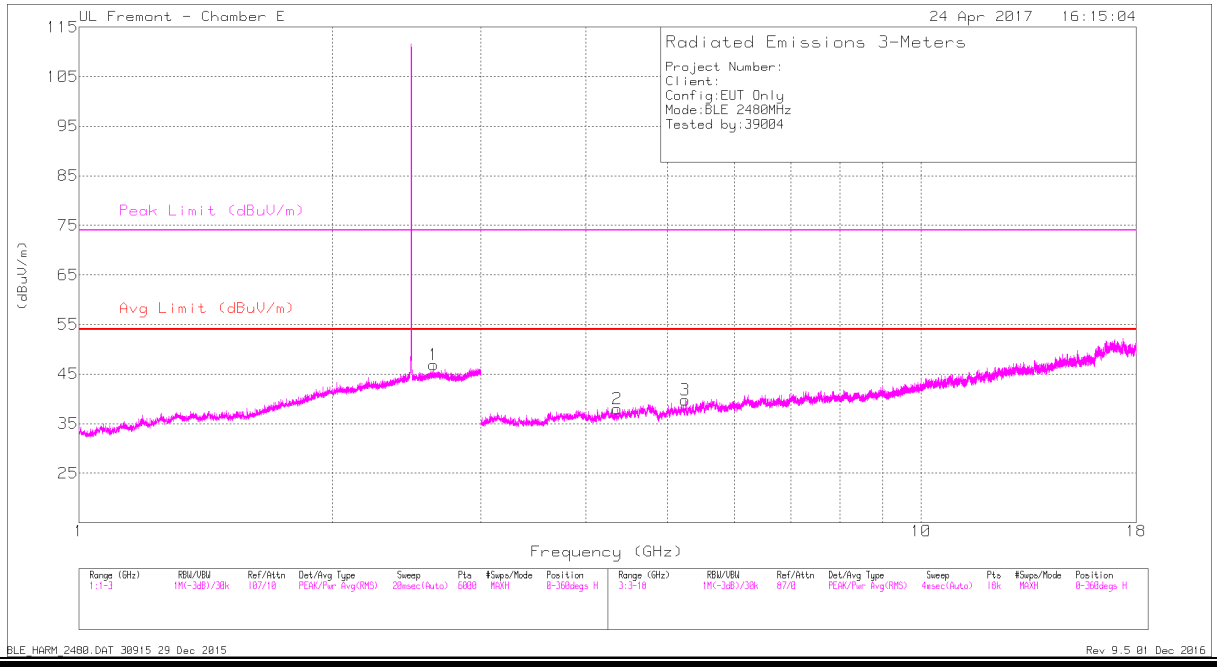
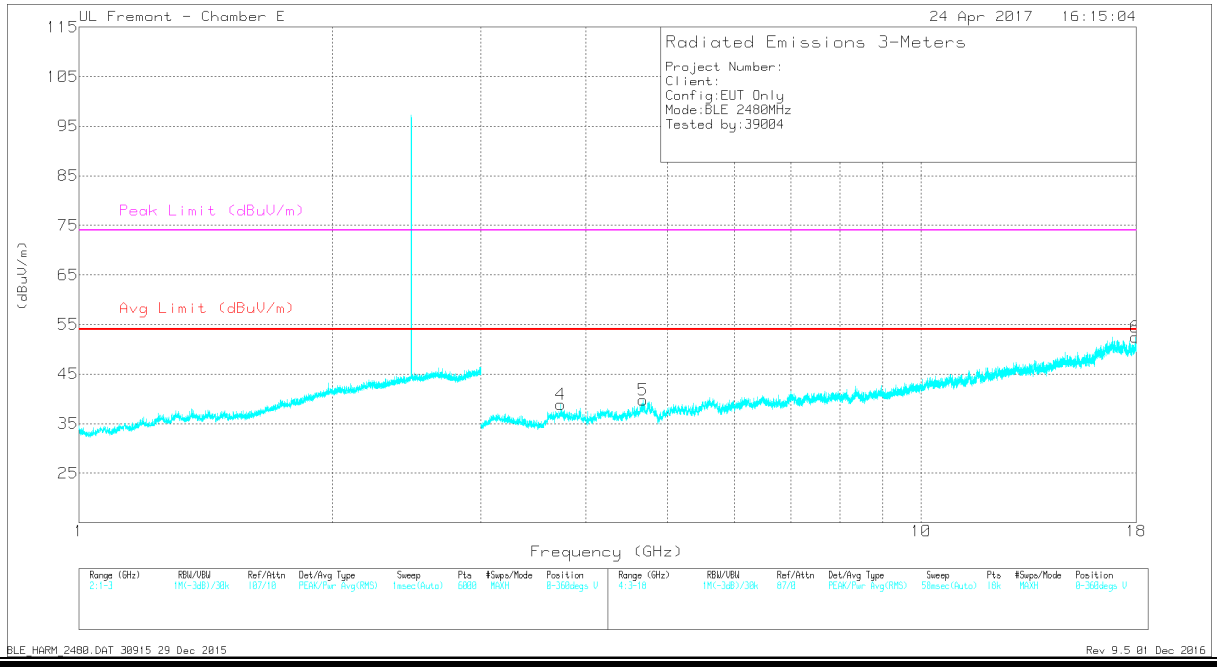
HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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DATA

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	* 4.356	40.93	PKFH	33.6	-30.8	43.73	-	-	74	-30.27	47	247	H
	* 4.359	28.96	VA1T	33.7	-30.8	31.86	54	-22.14	-	-	47	247	H
4	* 3.732	40.96	PKFH	33.4	-29.8	44.56	-	-	74	-29.44	55	115	V
	* 3.734	29.18	VA1T	33.4	-29.7	32.88	54	-21.12	-	-	55	115	V
5	* 4.67	40.81	PKFH	34.3	-30.1	45.01	-	-	74	-28.99	67	144	V
	* 4.671	29.1	VA1T	34.3	-30.1	33.3	54	-20.7	-	-	67	144	V
6	* 17.969	34.39	PKFH	41.4	-18.8	56.99	-	-	74	-17.01	92	188	V
	* 17.969	22.89	VA1T	41.4	-18.8	45.49	54	-8.51	-	-	92	188	V
1	2.637	37.6	PKFH	32.4	-19.4	50.6	-	-	-	-	110	257	H
3	5.243	39.52	PKFH	34.6	-29.6	44.52	-	-	-	-	43	210	H

* - 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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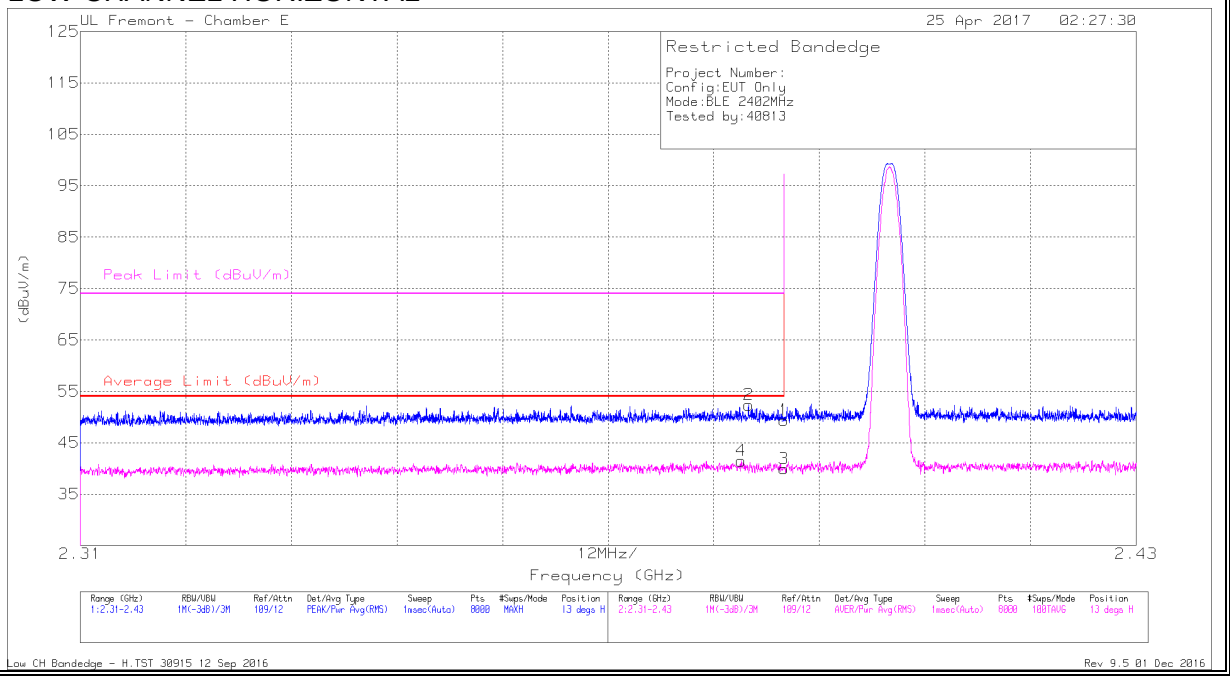
8.4. UAT 1 PLOW

8.4.1. RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL HORIZONTAL



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	37.07	Pk	32	-19.7	49.37	-	-	74	-24.63	13	120	H
2	* 2.386	39.96	Pk	32	-19.6	52.36	-	-	74	-21.64	13	120	H
3	* 2.39	27.62	RMS	32	-19.7	39.92	54	-14.08	-	-	13	120	H
4	* 2.385	29.08	RMS	32	-19.6	41.48	54	-12.52	-	-	13	120	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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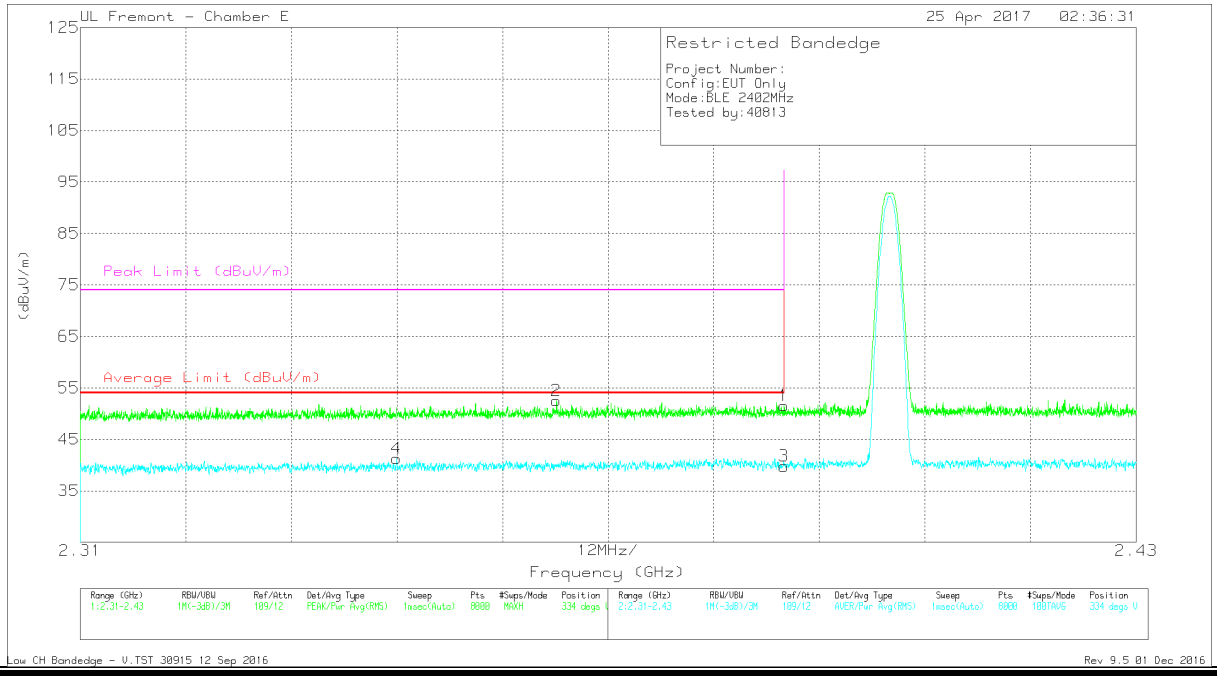
LOW CHANNEL VERTICAL



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	39.23	Pk	32	-19.7	51.53	-	-	74	-22.47	334	381	V
2	* 2.364	40.33	Pk	31.9	-19.7	52.53	-	-	74	-21.47	334	381	V
3	* 2.39	27.48	RMS	32	-19.7	39.78	54	-14.22	-	-	334	381	V
4	* 2.346	29.18	RMS	31.9	-19.8	41.28	54	-12.72	-	-	334	381	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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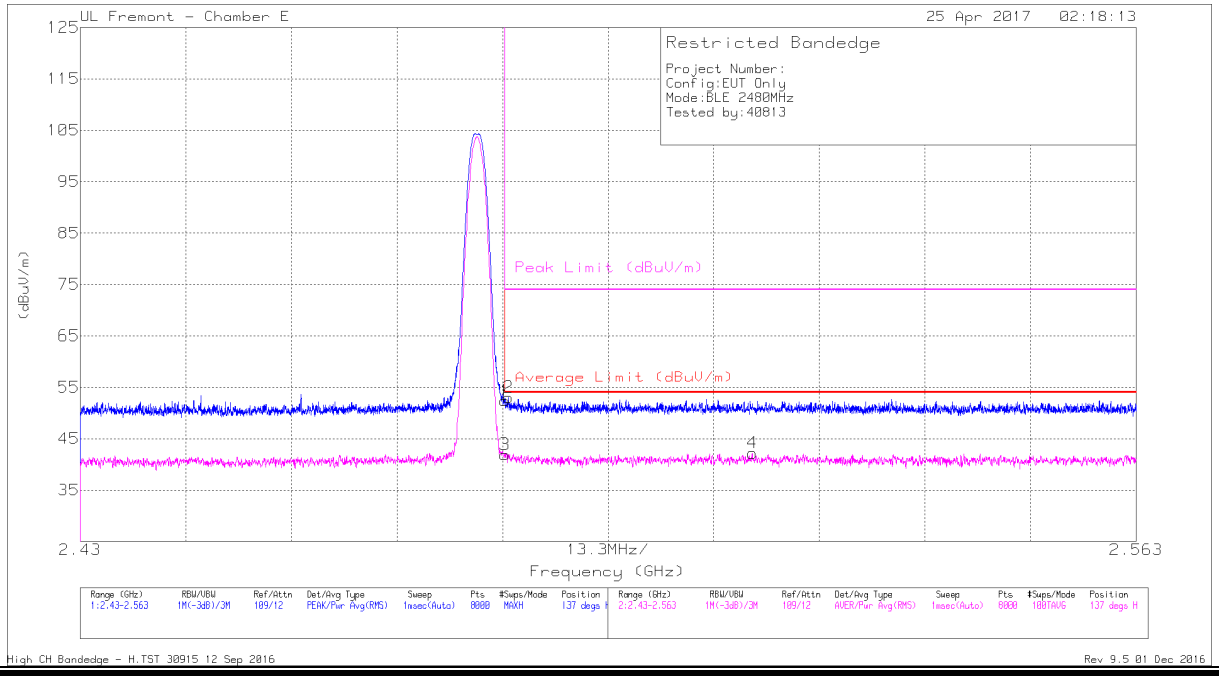
8.4.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL HORIZONTAL



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	39.61	Pk	32.5	-19.7	52.41	-	-	74	-21.59	137	137	H
2	* 2.484	40.23	Pk	32.5	-19.7	53.03	-	-	74	-20.97	137	137	H
3	* 2.484	29.11	RMS	32.5	-19.7	41.91	54	-12.09	-	-	137	137	H
4	2.515	29.41	RMS	32.6	-19.8	42.21	54	-11.79	-	-	137	137	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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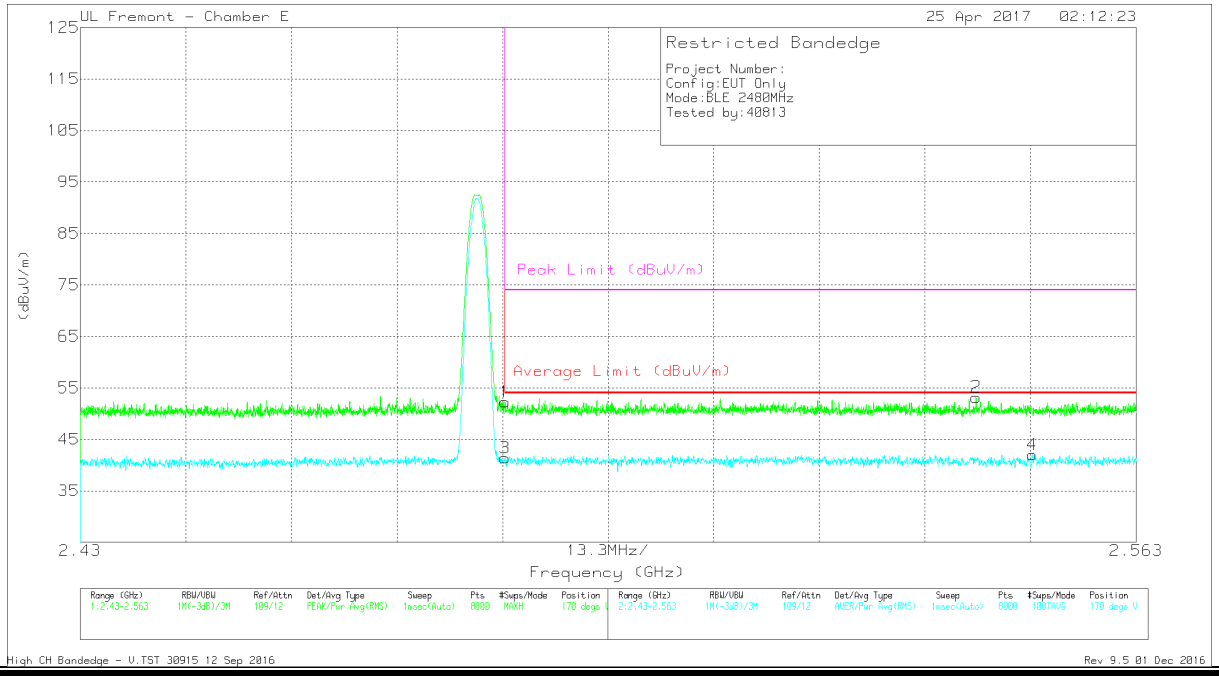
HIGH CHANNEL VERTICAL



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	39.46	Pk	32.5	-19.7	52.26	-	-	74	-21.74	170	391	V
3	* 2.484	28.62	RMS	32.5	-19.7	41.42	54	-12.58	-	-	170	391	V
2	2.543	40.56	Pk	32.5	-19.9	53.16	-	-	74	-20.84	170	391	V
4	2.55	29.41	RMS	32.5	-19.9	42.01	54	-11.99	-	-	170	391	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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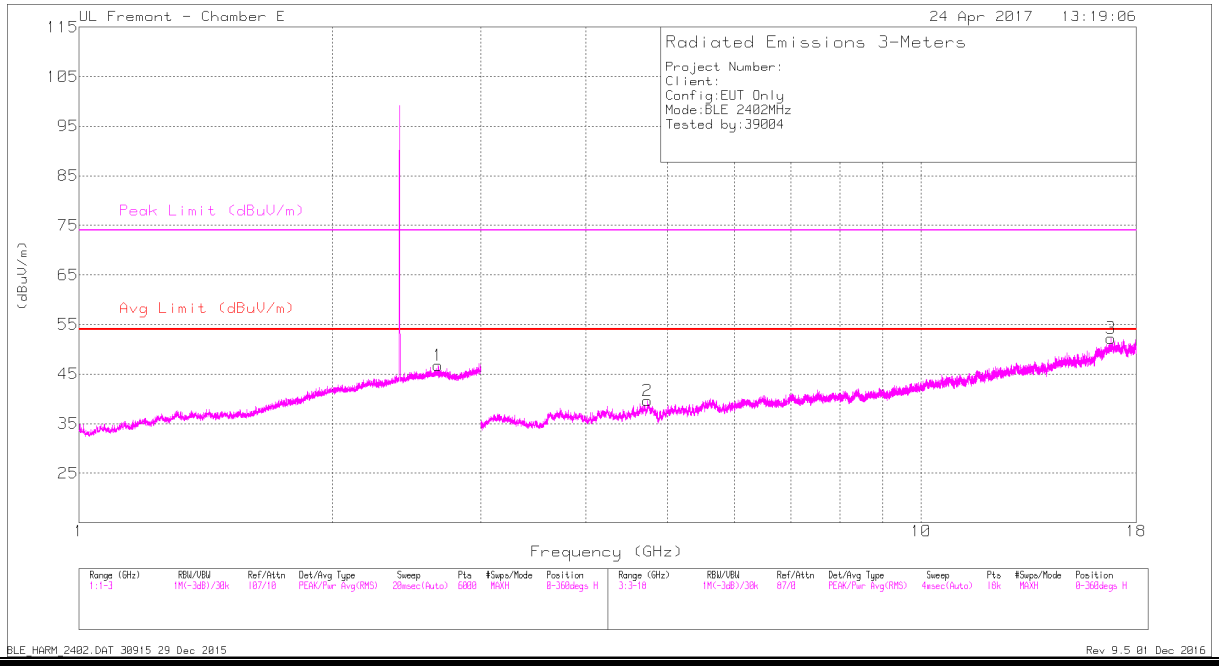
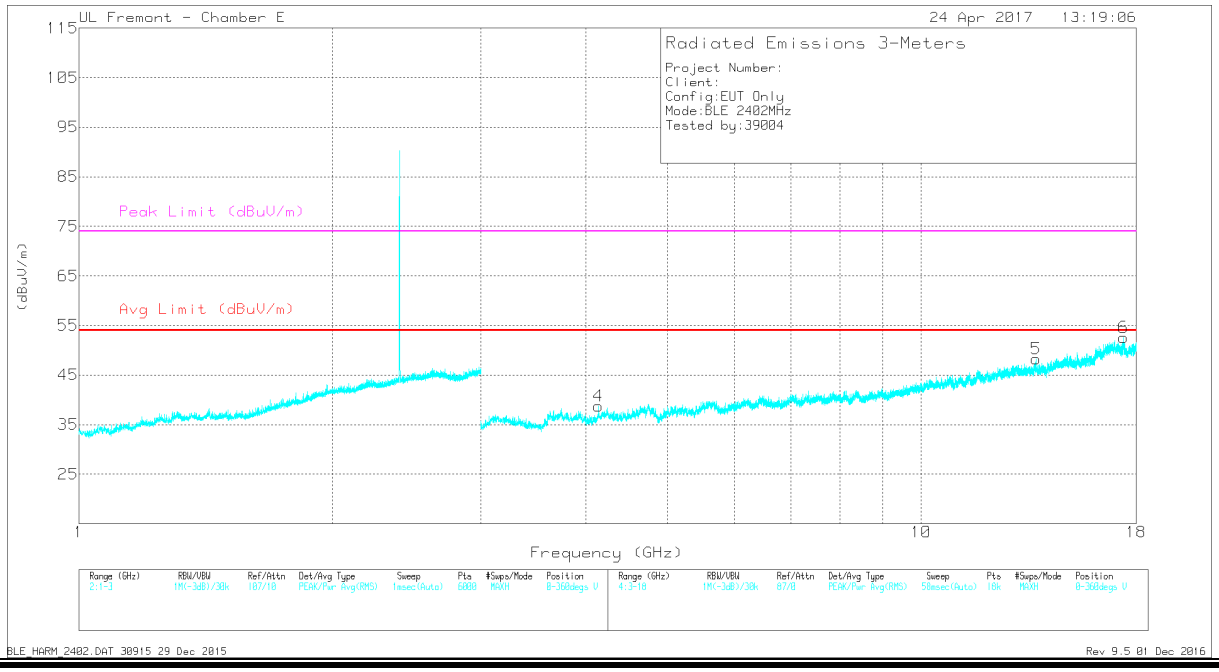
8.4.3. HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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DATA

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
1	* 2.67	37.04	PKFH	32.4	-19.2	50.24	-	-	74	-23.76	252	267	H
	* 2.671	25.46	VA1T	32.4	-19.2	38.66	54	-15.34	-	-	252	267	H
2	* 4.732	40.21	PKFH	34.3	-29	45.51	-	-	74	-28.49	253	123	H
	* 4.735	28.43	VA1T	34.3	-29.1	33.63	54	-20.37	-	-	253	123	H
4	* 4.137	41.15	PKFH	33.5	-30.6	44.05	-	-	74	-29.95	187	196	V
	* 4.139	29.18	VA1T	33.5	-30.6	32.08	54	-21.92	-	-	187	196	V
5	13.694	37.62	PKFH	39.3	-22.9	54.02	-	-	-	-	145	168	V
3	16.808	36.05	PKFH	42.6	-21.2	57.45	-	-	-	-	162	233	H
6	17.373	35.32	PKFH	41.7	-19.7	57.32	-	-	-	-	125	189	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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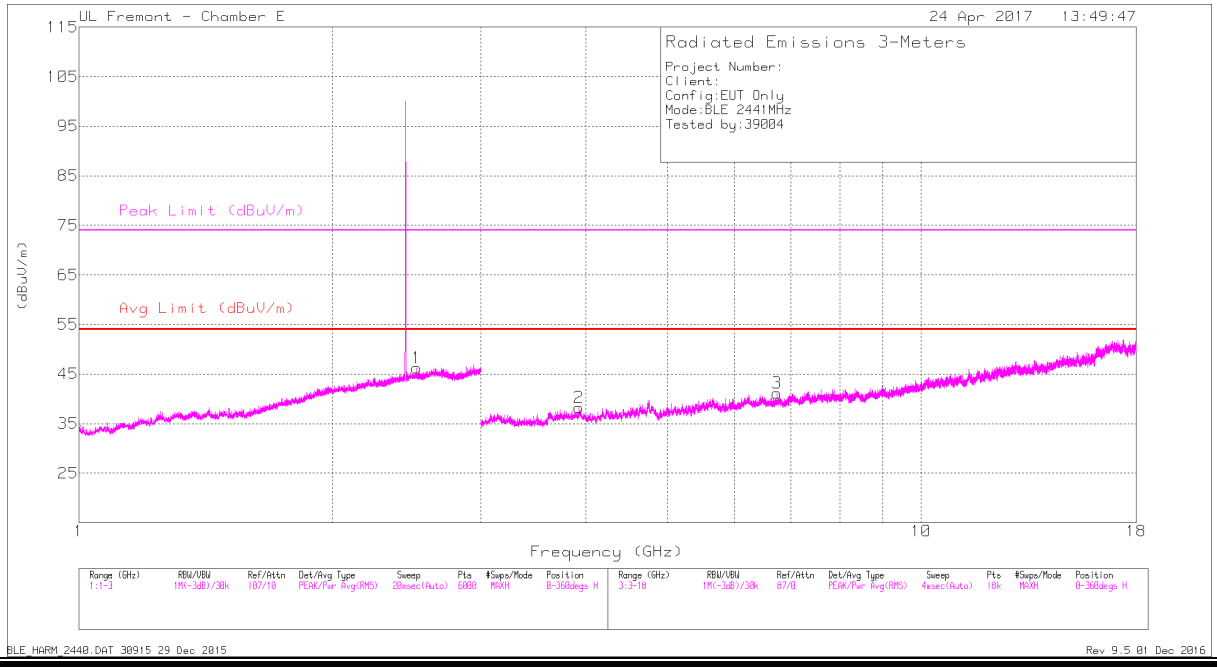
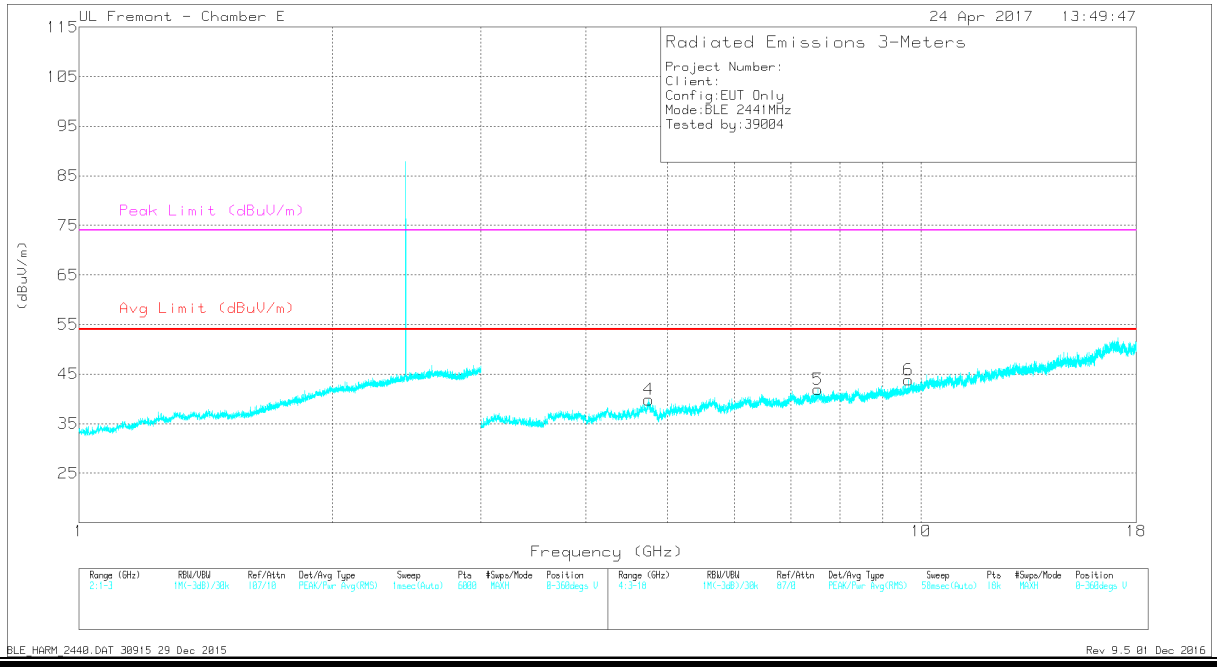
MID CHANNEL HORIZONTAL



MID CHANNEL VERTICAL



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DATA

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	* 3.922	40.14	PKFH	33.4	-29.6	43.94	-	-	74	-30.06	105	369	H
	* 3.923	28.9	VA1T	33.4	-29.6	32.7	54	-21.3	-	-	105	369	H
4	* 4.747	39.32	PKFH	34.3	-29	44.62	-	-	74	-29.38	231	101	V
	* 4.745	28.16	VA1T	34.3	-29.1	33.36	54	-20.64	-	-	231	101	V
5	* 7.54	36.77	PKFH	36.1	-26.1	46.77	-	-	74	-27.23	330	289	V
	* 7.542	25.3	VA1T	36.1	-26	35.4	54	-18.6	-	-	330	289	V
1	2.517	36.97	PKFH	32.6	-19.7	49.87	-	-	-	-	305	223	H
2	6.741	37.32	PKFH	35.6	-26.7	46.22	-	-	-	-	289	152	H
6	9.653	36.85	PKFH	36.7	-25.4	48.15	-	-	-	-	268	119	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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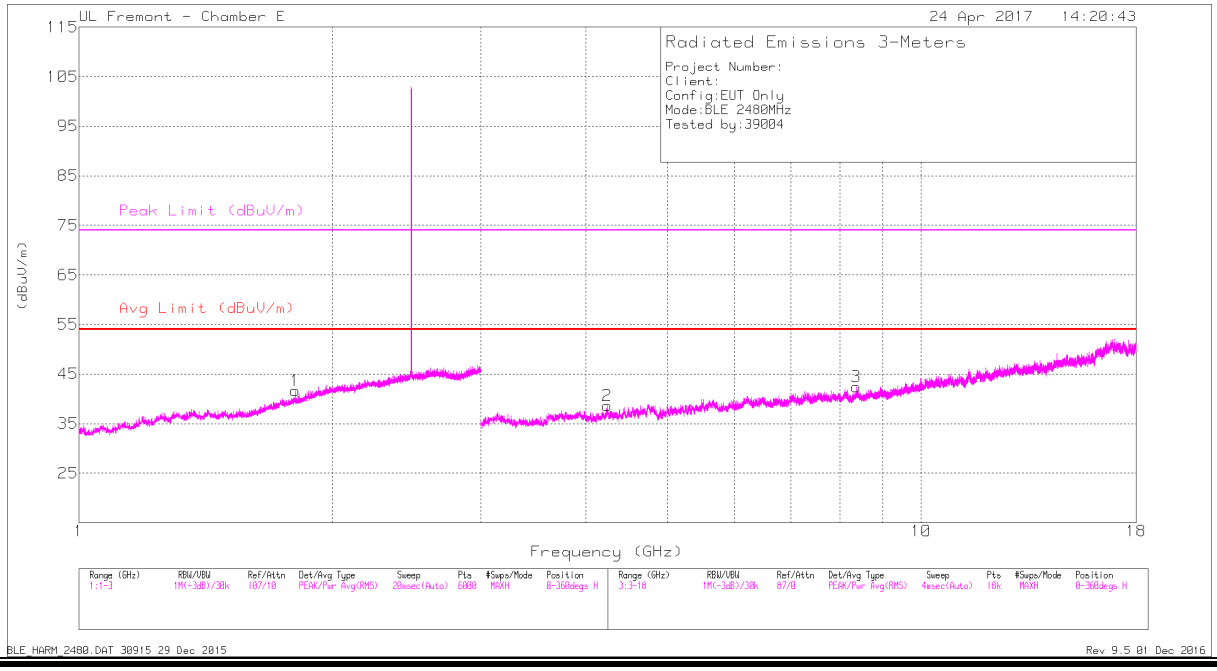
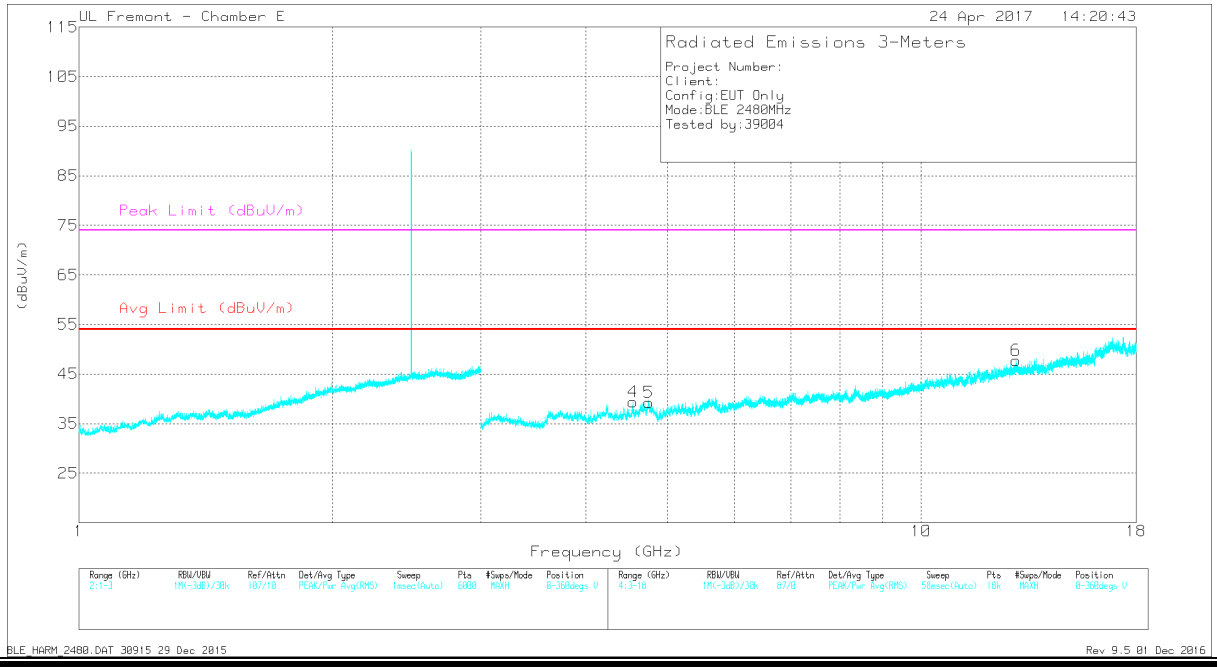
HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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DATA

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	* 4.237	40.68	PKFH	33.5	-28.7	45.48	-	-	74	-28.52	97	220	H
	* 4.237	28.38	VA1T	33.5	-28.7	33.18	54	-20.82	-	-	97	220	H
3	* 8.368	38.55	PKFH	36	-25.5	49.05	-	-	74	-24.95	118	245	H
	* 8.37	25.4	VA1T	36	-25.5	35.9	54	-18.1	-	-	118	245	H
4	* 4.55	40.03	PKFH	34.1	-29.3	44.83	-	-	74	-29.17	222	177	V
	* 4.549	28.15	VA1T	34.1	-29.3	32.95	54	-21.05	-	-	222	177	V
5	* 4.751	39.76	PKFH	34.3	-28.9	45.16	-	-	74	-28.84	246	197	V
	* 4.753	27.79	VA1T	34.3	-29	33.09	54	-20.91	-	-	246	197	V
1	1.806	36.69	PKFH	30.3	-20.5	46.49	-	-	-	-	219	136	H
6	12.963	36.98	PKFH	40	-23.4	53.58	-	-	-	-	185	108	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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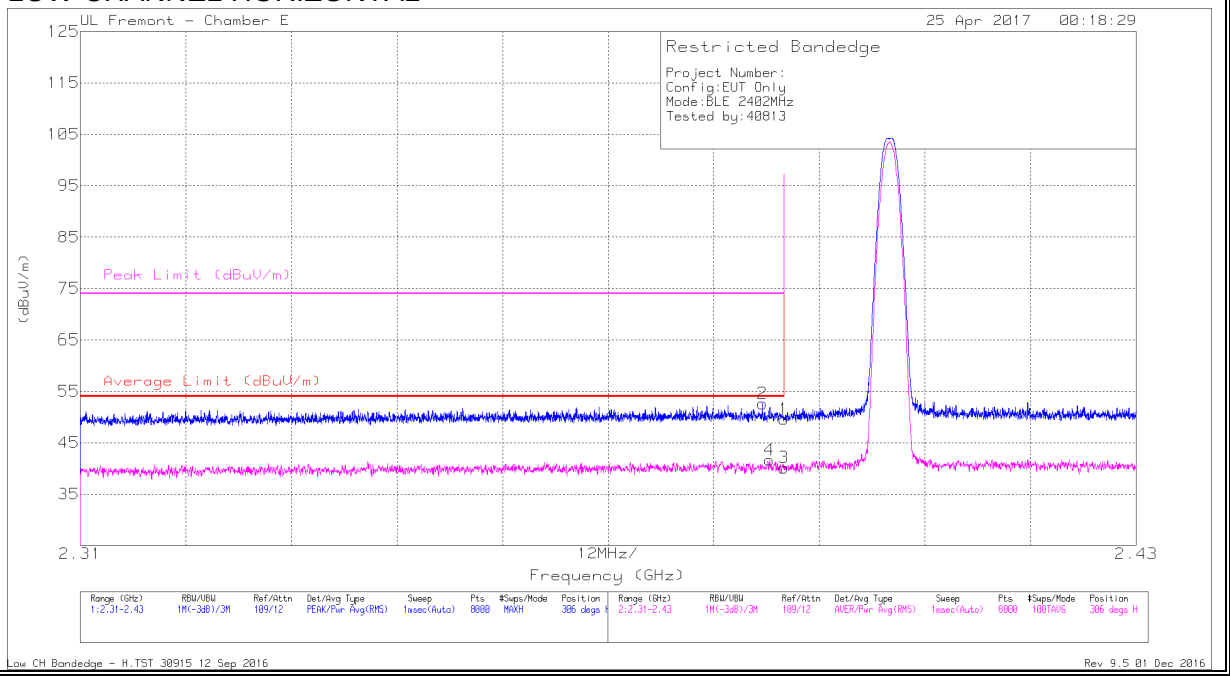
8.5. LAT 3 PMAX

8.5.1. RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL HORIZONTAL



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	37.28	Pk	32	-19.7	49.58	-	-	74	-24.42	306	101	H
2	* 2.388	40.31	Pk	32	-19.7	52.61	-	-	74	-21.39	306	101	H
3	* 2.39	27.85	RMS	32	-19.7	40.15	54	-13.85	-	-	306	101	H
4	* 2.388	29.35	RMS	32	-19.7	41.65	54	-12.35	-	-	306	101	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection
Low CH Bandedge - H.TST 30915 12 Sep 2016
Rev 9.5 01 Dec 2016

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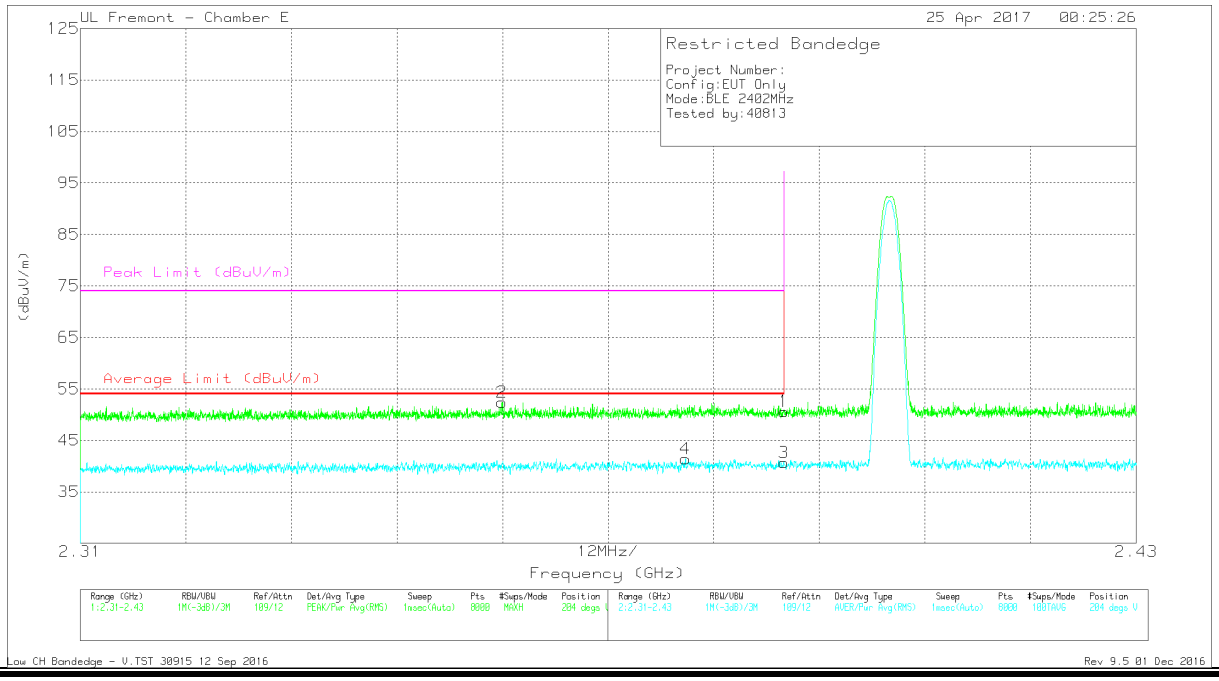
LOW CHANNEL VERTICAL



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	38.32	Pk	32	-19.7	50.62	-	-	74	-23.38	204	104	V
2	* 2.358	40.18	Pk	31.9	-19.7	52.38	-	-	74	-21.62	204	104	V
3	* 2.39	28.36	RMS	32	-19.7	40.66	54	-13.34	-	-	204	104	V
4	* 2.379	29.02	RMS	32	-19.6	41.42	54	-12.58	-	-	204	104	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection
Low CH Bandedge - V.TST 30915 12 Sep 2016
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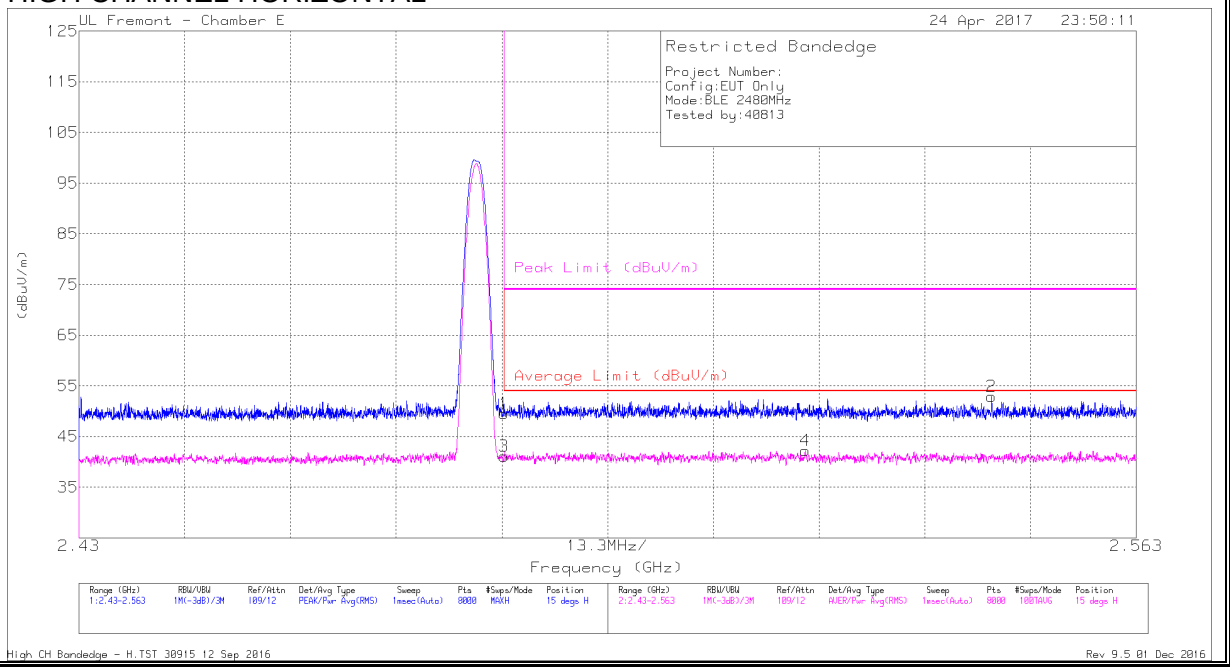
8.5.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL HORIZONTAL



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	36.7	Pk	32.5	-19.7	49.5	-	-	74	-24.5	15	106	H
3	* 2.484	28.35	RMS	32.5	-19.7	41.15	54	-12.85	-	-	15	106	H
4	2.521	29.45	RMS	32.6	-19.8	42.25	54	-11.75	-	-	15	106	H
2	2.545	40.27	Pk	32.5	-19.9	52.87	-	-	74	-21.13	15	106	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection
High CH Bandedge - H.TST 30915 12 Sep 2016
Rev 9.5 01 Dec 2016

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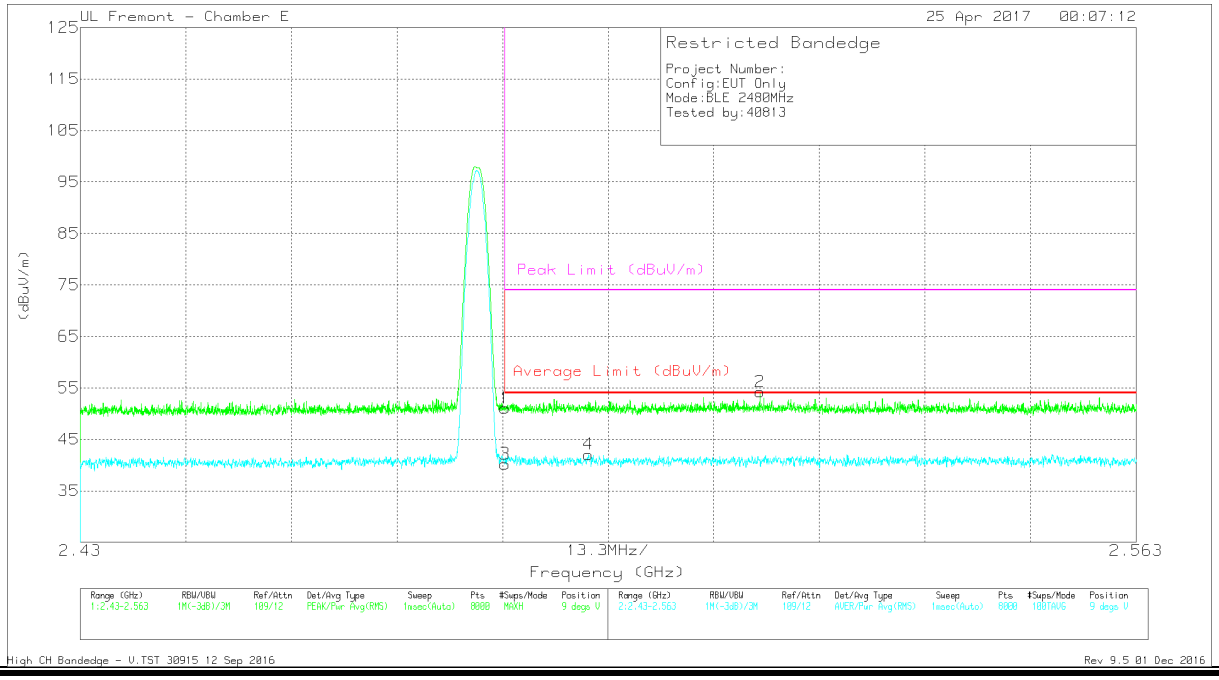
HIGH CHANNEL VERTICAL



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	38.25	Pk	32.5	-19.7	51.05	-	-	74	-22.95	9	106	V
3	* 2.484	27.41	RMS	32.5	-19.7	40.21	54	-13.79	-	-	9	106	V
4	* 2.494	29.28	RMS	32.6	-19.8	42.08	54	-11.92	-	-	9	106	V
2	2.516	41.31	Pk	32.6	-19.7	54.21	-	-	74	-19.79	9	106	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection
High CH Bandedge - V.TST 30915 12 Sep 2016
Rev 9.5 01 Dec 2016

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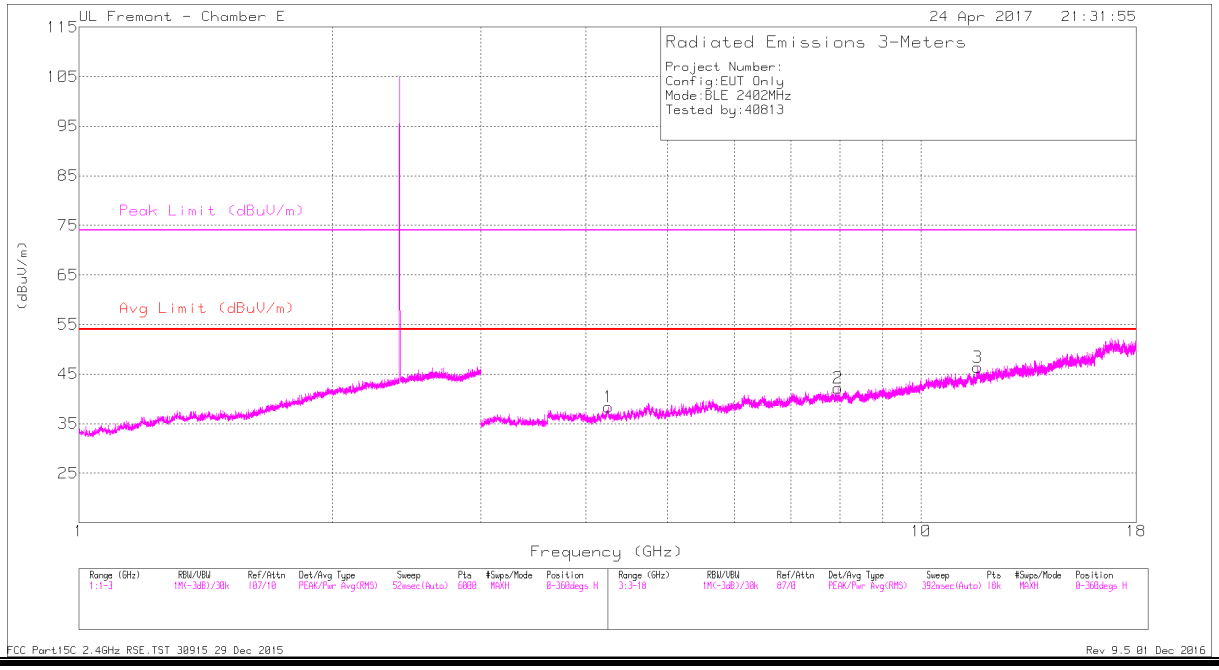
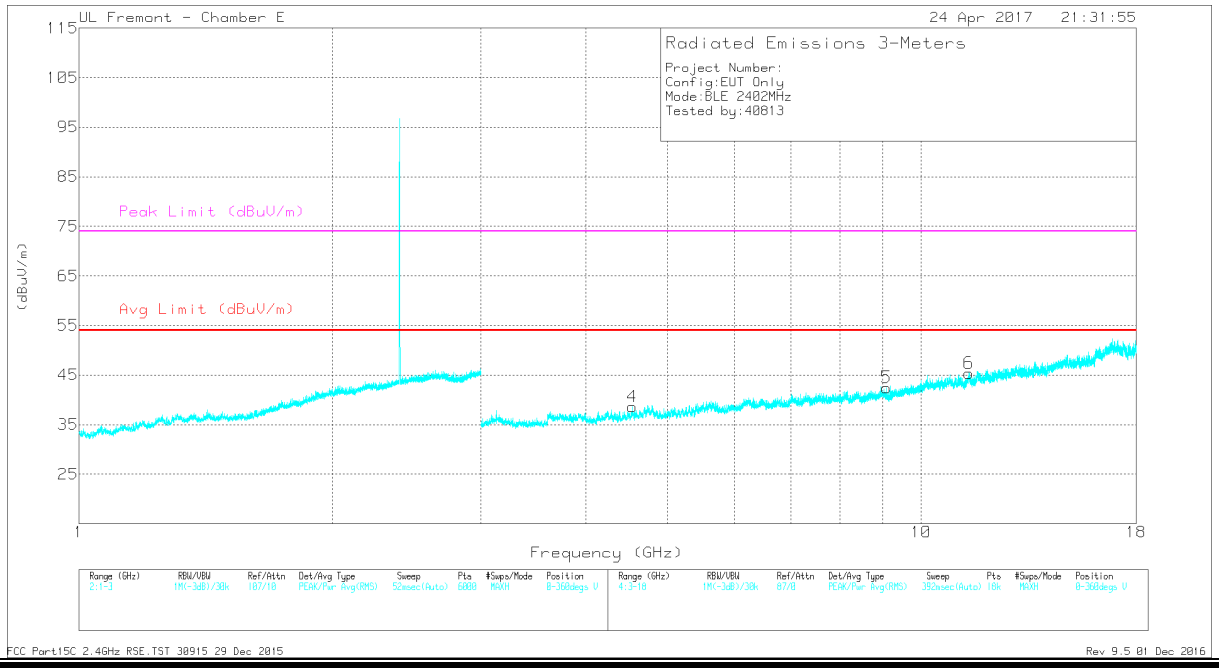
8.5.3. HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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DATA

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
1	* 4.251	40.54	PK2	33.5	-28.9	45.14	-	-	74	-28.86	242	340	H
	* 4.252	28.78	MAv1	33.5	-28.9	33.38	54	-20.62	-	-	242	340	H
3	* 11.669	36.65	PK2	38.3	-22.1	52.85	-	-	74	-21.15	228	116	H
	* 11.668	25.09	MAv1	38.3	-22.1	41.29	54	-12.71	-	-	228	116	H
4	* 4.54	41.26	PK2	34	-29.6	45.66	-	-	74	-28.34	267	222	V
	* 4.54	29.46	MAv1	34	-29.6	33.86	54	-20.14	-	-	267	222	V
5	* 9.087	38.49	PK2	36.3	-26.1	48.69	-	-	74	-25.31	89	109	V
	* 9.09	26.7	MAv1	36.3	-26	37	54	-17	-	-	89	109	V
6	* 11.392	35.95	PK2	38	-21.9	52.05	-	-	74	-21.95	91	131	V
	* 11.391	25.07	MAv1	38	-21.9	41.17	54	-12.83	-	-	91	131	V
2	7.966	39.61	PK2	36	-27.2	48.41	-	-	-	-	37	221	H

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015

Rev 9.5 01 Dec 2016

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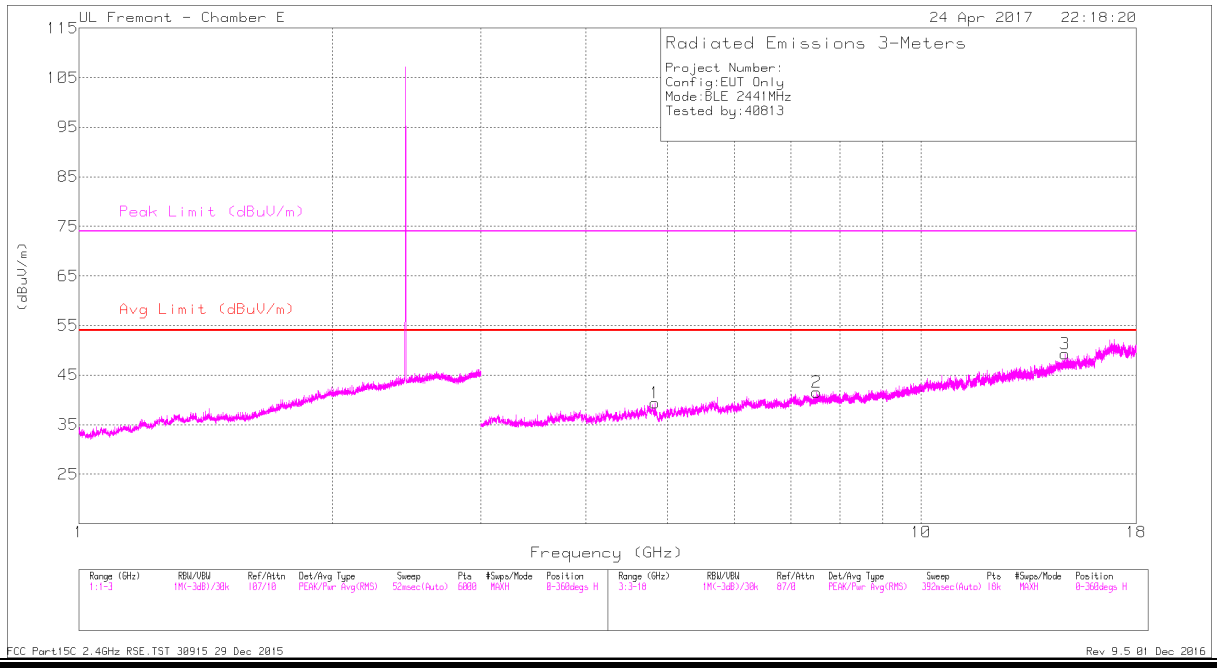
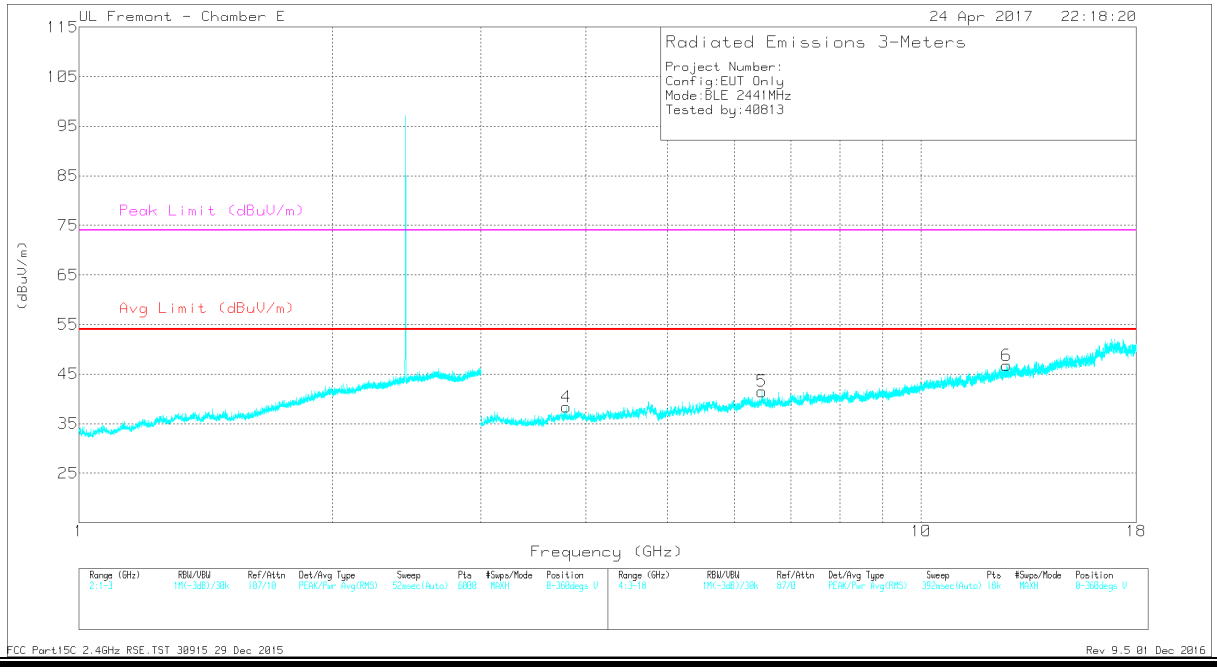
MID CHANNEL HORIZONTAL



MID CHANNEL VERTICAL



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DATA

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
1	* 4.825	41.45	PK2	34.2	-30	45.65	-	-	74	-28.35	290	200	H
	* 4.829	30.07	MAv1	34.2	-30	34.27	54	-19.73	-	-	290	200	H
2	* 7.509	39.67	PK2	36.1	-26.9	48.87	-	-	74	-25.13	128	220	H
	* 7.51	27.14	MAv1	36.1	-26.9	36.34	54	-17.66	-	-	128	220	H
4	* 3.789	42.75	PK2	33.4	-30.4	45.75	-	-	74	-28.25	79	128	V
	* 3.787	31.28	MAv1	33.4	-30.3	34.38	54	-19.62	-	-	79	128	V
6	* 12.634	38.73	PK2	39.6	-24.1	54.23	-	-	74	-19.77	192	137	V
	* 12.634	26.83	MAv1	39.6	-24.1	42.33	54	-11.67	-	-	192	137	V
5	6.476	39.95	PK2	35.7	-27.2	48.45	-	-	-	-	236	223	V
3	14.816	36.42	PK2	40.4	-22.4	54.42	-	-	-	-	44	120	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average
FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015
Rev 9.5 01 Dec 2016

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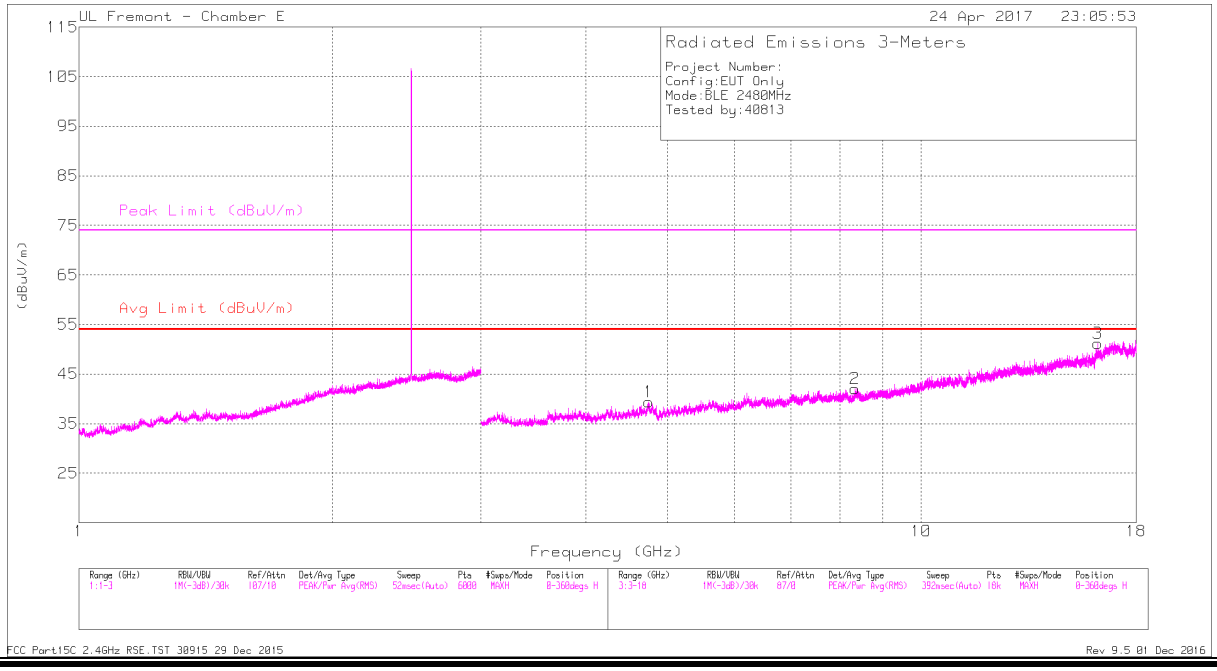
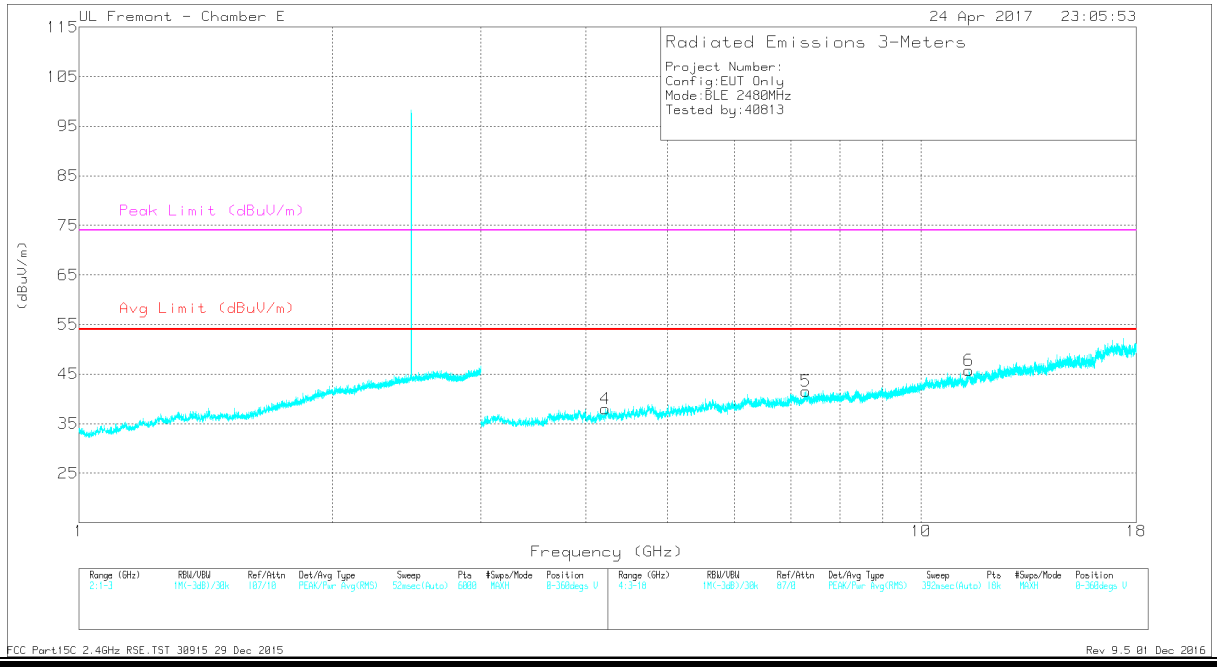
HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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DATA

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
1	* 4.749	40.74	PK2	34.3	-28.9	46.14	-	-	74	-27.86	335	234	H
	* 4.748	29.07	MAv1	34.3	-29	34.37	54	-19.63	-	-	335	234	H
2	* 8.342	39.29	PK2	36.1	-26.3	49.09	-	-	74	-24.91	21	127	H
	* 8.34	27.15	MAv1	36.1	-26.4	36.85	54	-17.15	-	-	21	127	H
3	* 16.195	36.39	PK2	41.4	-21.6	56.19	-	-	74	-17.81	6	243	H
	* 16.195	24.82	MAv1	41.4	-21.6	44.62	54	-9.38	-	-	6	243	H
4	* 4.218	40.76	PK2	33.5	-29.5	44.76	-	-	74	-29.24	356	223	V
	* 4.219	29.31	MAv1	33.5	-29.5	33.31	54	-20.69	-	-	356	223	V
5	* 7.298	38.79	PK2	35.9	-26.2	48.49	-	-	74	-25.51	342	138	V
	* 7.297	27	MAv1	35.9	-26.2	36.7	54	-17.3	-	-	342	138	V
6	* 11.395	36.45	PK2	38	-21.7	52.75	-	-	74	-21.25	356	222	V
	* 11.393	24.39	MAv1	38	-21.8	40.59	54	-13.41	-	-	356	222	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015

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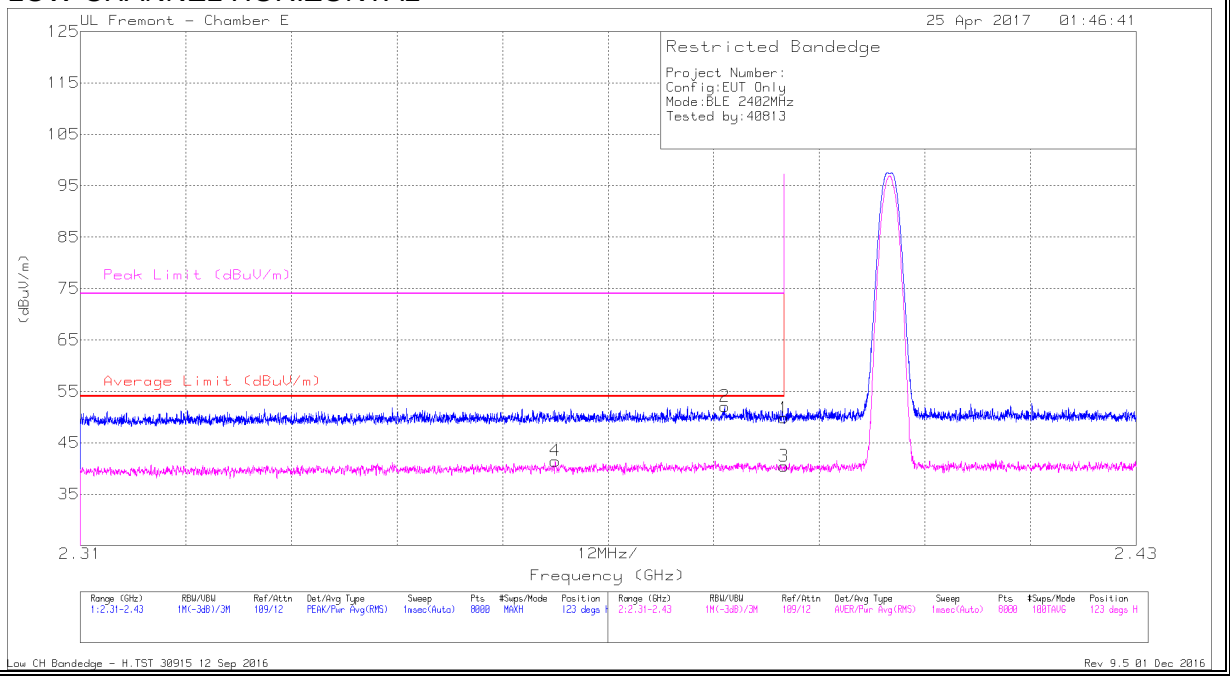
8.6. LAT 3 PLOW

8.6.1. RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL HORIZONTAL



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	37.55	Pk	32	-19.7	49.85	-	-	74	-24.15	123	165	H
2	* 2.383	39.57	Pk	32	-19.5	52.07	-	-	74	-21.93	123	165	H
3	* 2.39	28.15	RMS	32	-19.7	40.45	54	-13.55	-	-	123	165	H
4	* 2.364	29.27	RMS	31.9	-19.7	41.47	54	-12.53	-	-	123	165	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection
Low CH Bandedge - H.TST 30915 12 Sep 2016
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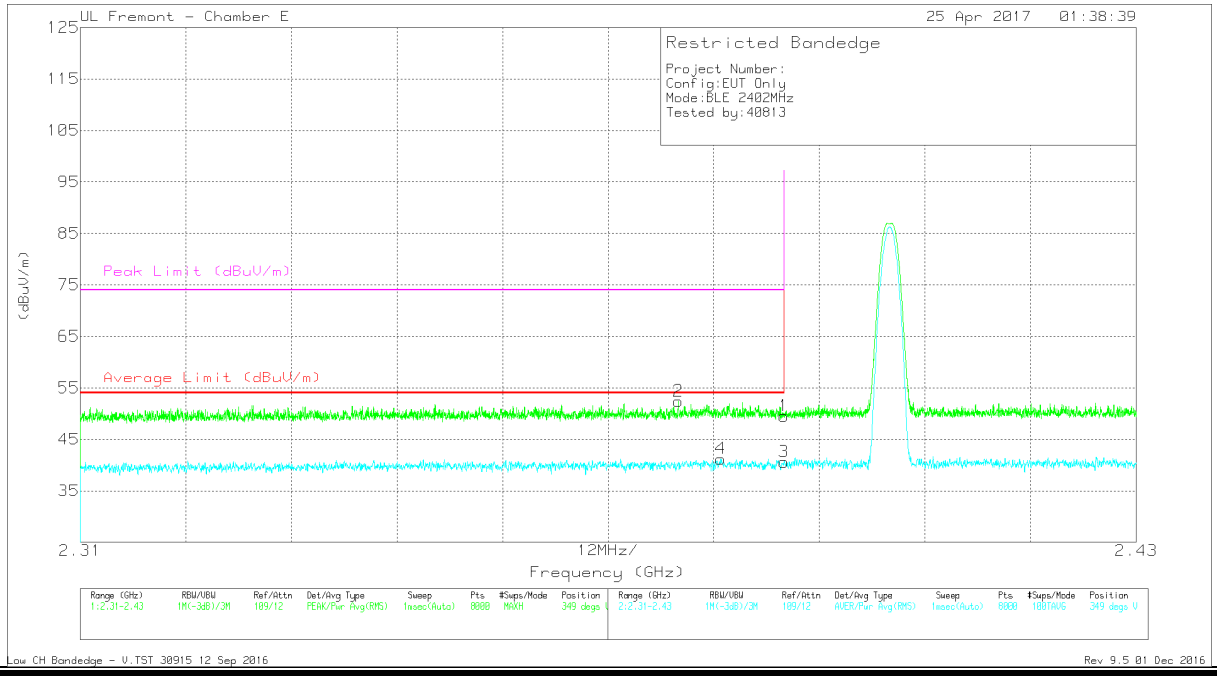
LOW CHANNEL VERTICAL



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	37.24	Pk	32	-19.7	49.54	-	-	74	-24.46	349	101	V
2	* 2.378	40.12	Pk	32	-19.7	52.42	-	-	74	-21.58	349	101	V
3	* 2.39	28.33	RMS	32	-19.7	40.63	54	-13.37	-	-	349	101	V
4	* 2.383	28.72	RMS	32	-19.5	41.22	54	-12.78	-	-	349	101	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection
Low CH Bandedge - V.TST 30915 12 Sep 2016
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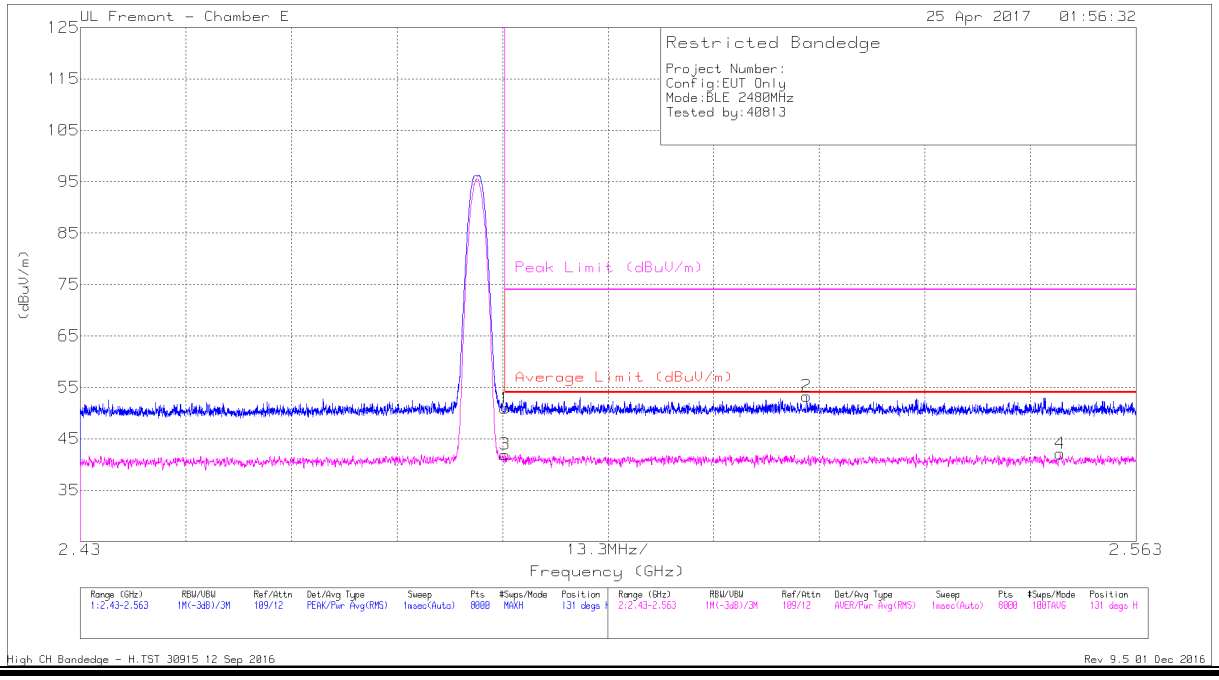
8.6.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL HORIZONTAL



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	38.13	Pk	32.5	-19.7	50.93	-	-	74	-23.07	131	113	H
3	* 2.484	29.16	RMS	32.5	-19.7	41.96	54	-12.04	-	-	131	113	H
2	2.521	40.51	Pk	32.6	-19.8	53.31	-	-	74	-20.69	131	113	H
4	2.553	29.39	RMS	32.5	-19.8	42.09	54	-11.91	-	-	131	113	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection
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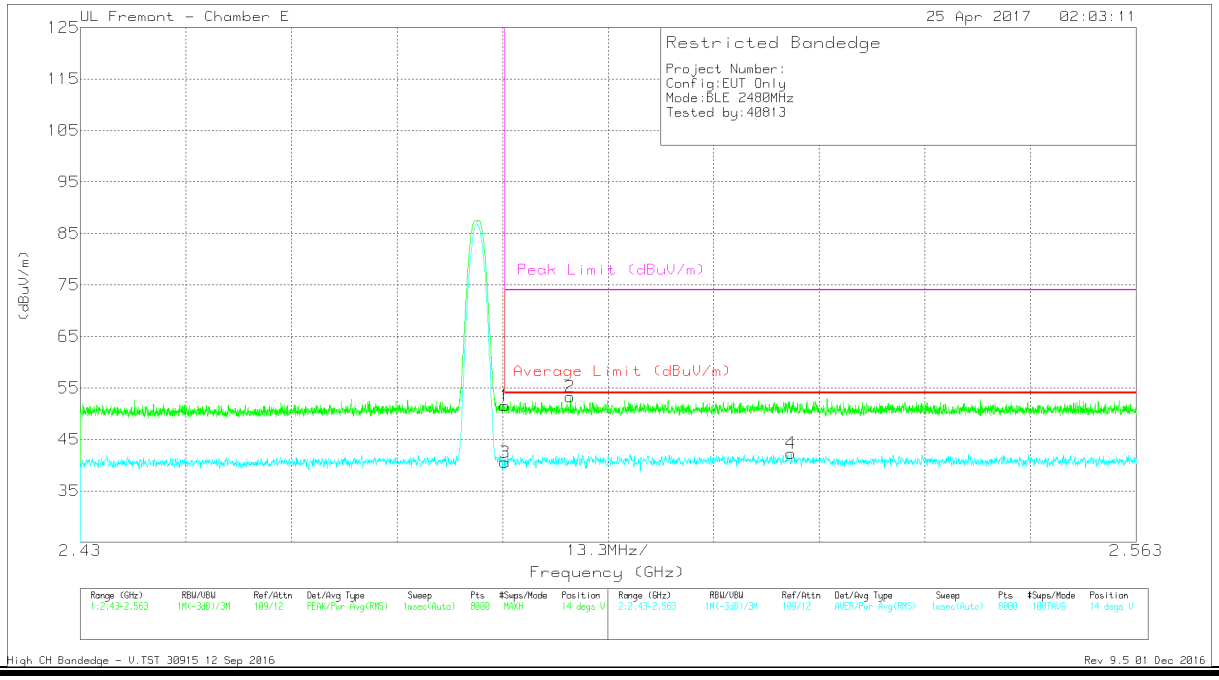
HIGH CHANNEL VERTICAL



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	38.72	Pk	32.5	-19.7	51.52	-	-	74	-22.48	14	104	V
2	* 2.492	40.54	Pk	32.6	-19.9	53.24	-	-	74	-20.76	14	104	V
3	* 2.484	27.73	RMS	32.5	-19.7	40.53	54	-13.47	-	-	14	104	V
4	2.52	29.4	RMS	32.6	-19.7	42.3	54	-11.7	-	-	14	104	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection
High CH Bandedge - V.TST 30915 12 Sep 2016
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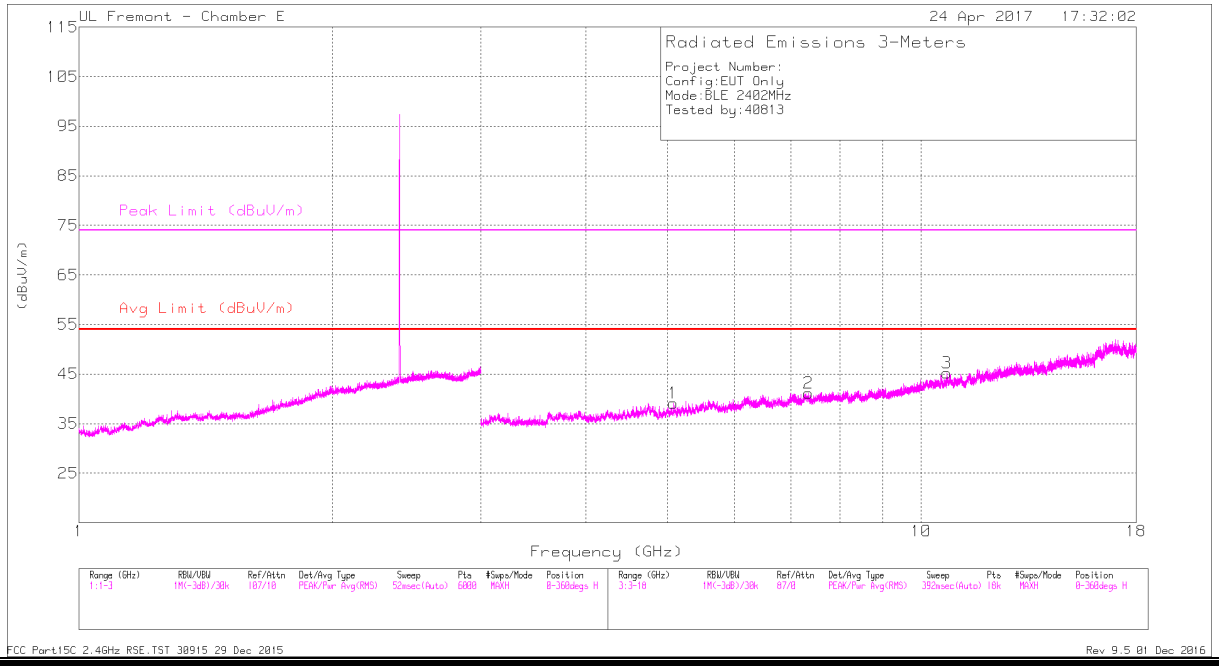
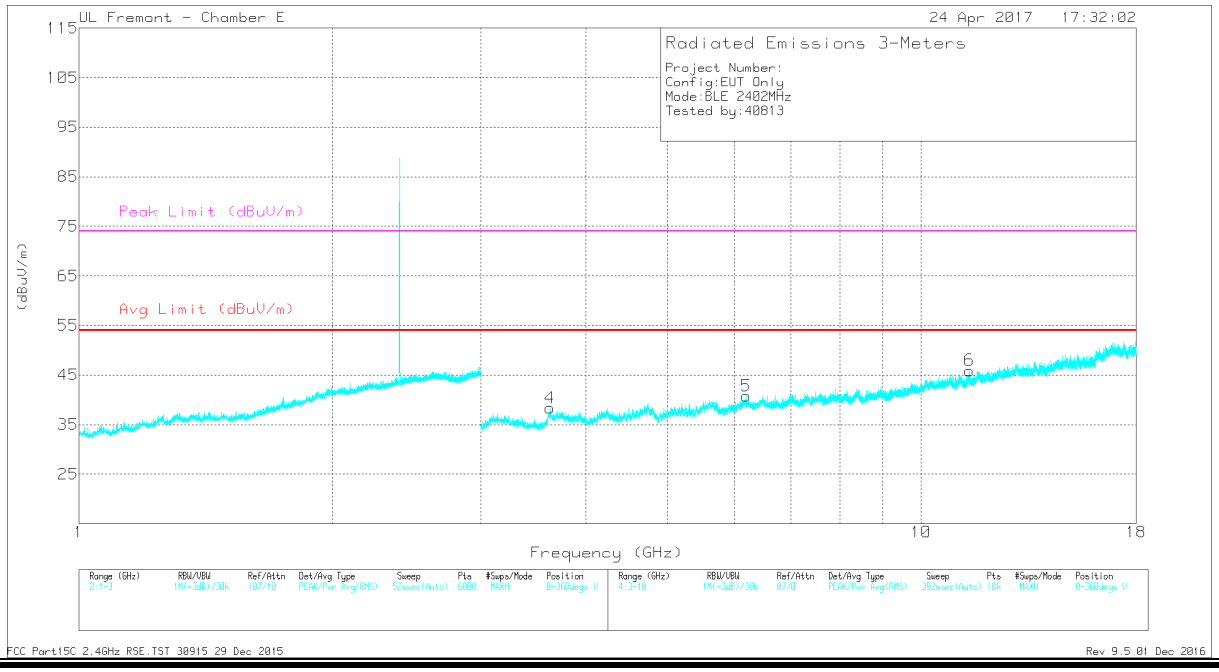
8.6.3. HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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DATA

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
1	* 5.08	41.34	PK2	34.2	-29.6	45.94	-	-	74	-28.06	275	184	H
	* 5.081	29.25	MAv1	34.2	-29.6	33.85	54	-20.15	-	-	275	184	H
2	* 7.345	38.49	PK2	35.9	-26.6	47.79	-	-	74	-26.21	24	147	H
	* 7.348	27.11	MAv1	35.9	-26.7	36.31	54	-17.69	-	-	24	147	H
3	* 10.72	36.76	PK2	37.6	-23.3	51.06	-	-	74	-22.94	208	216	H
	* 10.717	24.7	MAv1	37.6	-23.3	39	54	-15	-	-	208	216	H
4	* 3.626	40.88	PK2	33	-30.2	43.68	-	-	74	-30.32	27	271	V
	* 3.629	29.69	MAv1	33	-30.2	32.49	54	-21.51	-	-	27	271	V
6	* 11.403	35.83	PK2	38	-21.6	52.23	-	-	74	-21.77	336	161	V
	* 11.402	24.52	MAv1	38	-21.7	40.82	54	-13.18	-	-	336	161	V
5	6.193	39.07	PK2	35.7	-27.5	47.27	-	-	-	-	278	137	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015

Rev 9.5 01 Dec 2016

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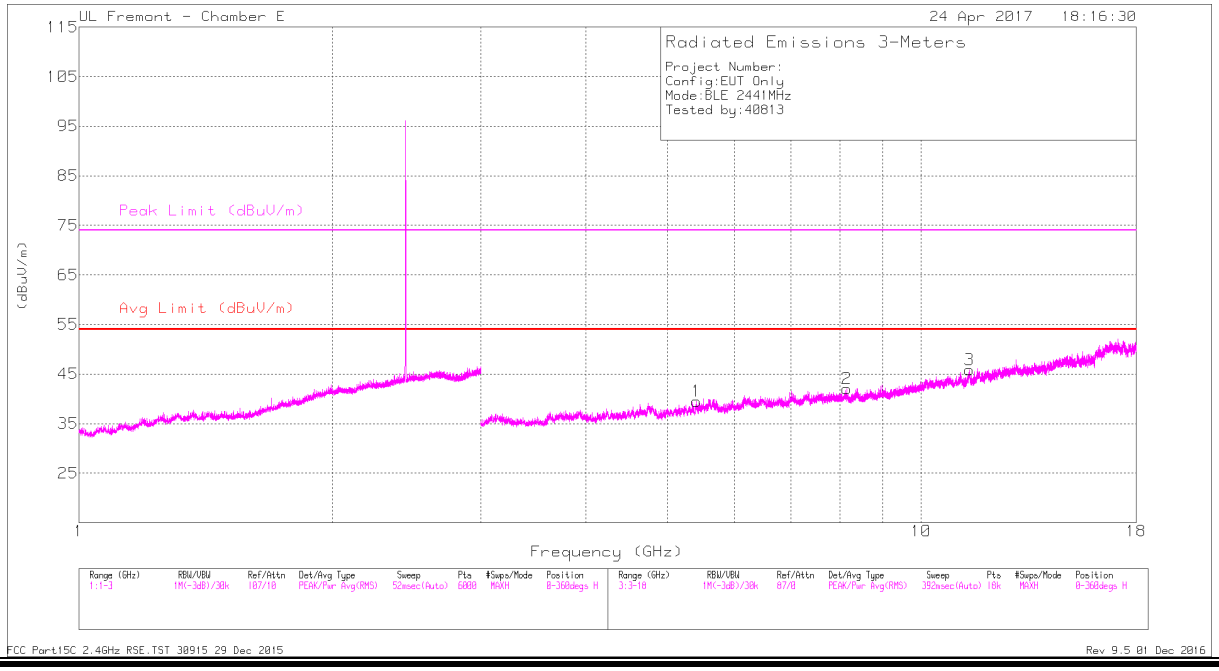
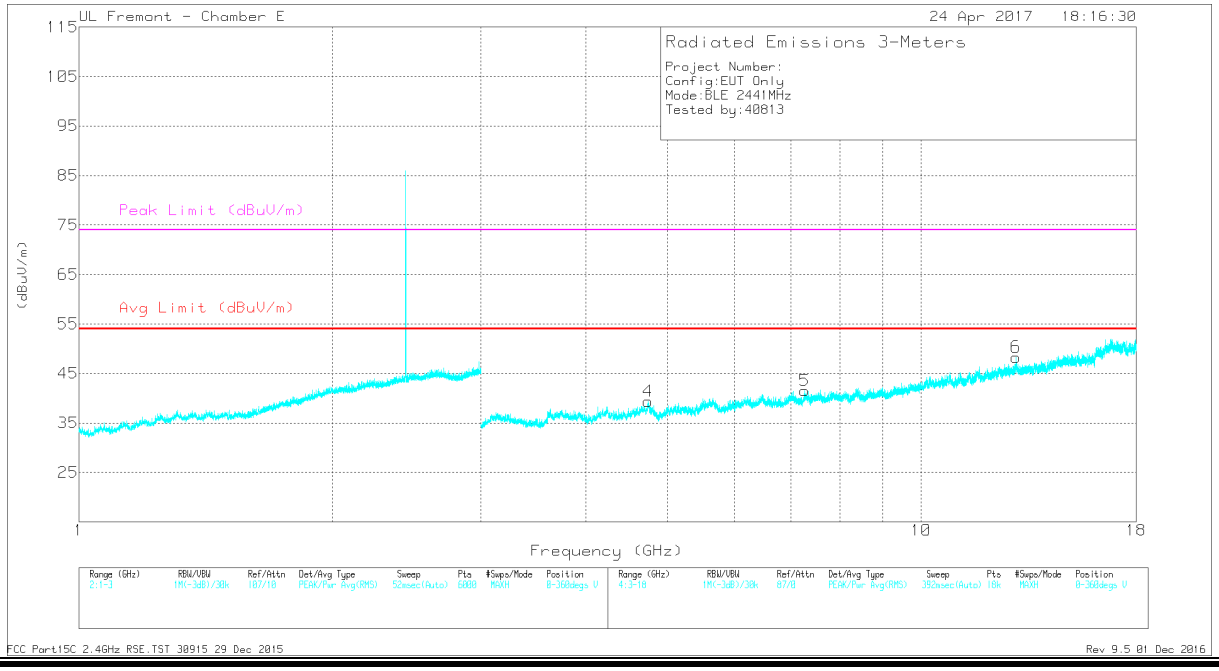
MID CHANNEL HORIZONTAL



MID CHANNEL VERTICAL



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DATA

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
1	* 5.406	40.57	PK2	35	-29.3	46.27	-	-	74	-27.73	320	329	H
	* 5.408	28.86	MAv1	35	-29.3	34.56	54	-19.44	-	-	320	329	H
2	* 8.157	38.14	PK2	36	-25.4	48.74	-	-	74	-25.26	328	313	H
	* 8.155	26.25	MAv1	36	-25.3	36.95	54	-17.05	-	-	328	313	H
3	* 11.414	36.22	PK2	38	-21.9	52.32	-	-	74	-21.68	5	165	H
	* 11.414	24.52	MAv1	38	-21.9	40.62	54	-13.38	-	-	5	165	H
4	* 4.743	41.47	PK2	34.3	-29	46.77	-	-	74	-27.23	89	364	V
	* 4.743	29.34	MAv1	34.3	-29	34.64	54	-19.36	-	-	89	364	V
5	* 7.276	39.01	PK2	35.9	-26.2	48.71	-	-	74	-25.29	200	298	V
	* 7.277	26.8	MAv1	35.9	-26.2	36.5	54	-17.5	-	-	200	298	V
6	12.961	25.67	MAv1	40	-23.5	42.17	-	-	-	-	195	114	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average
FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015
Rev 9.5 01 Dec 2016

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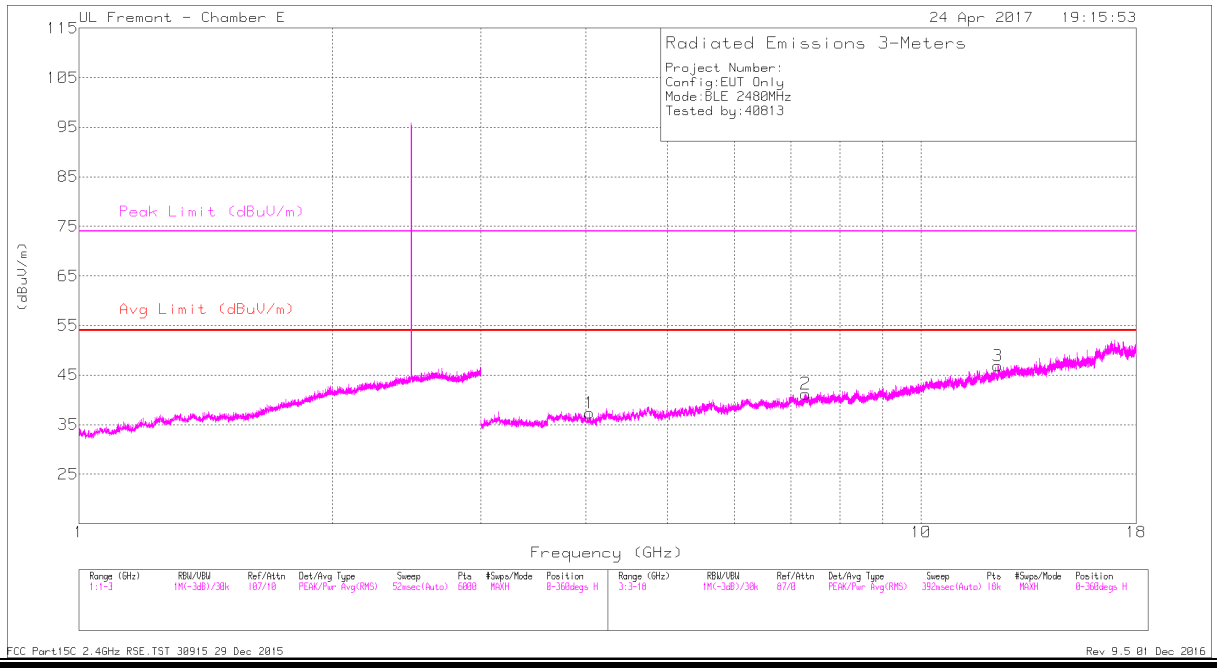
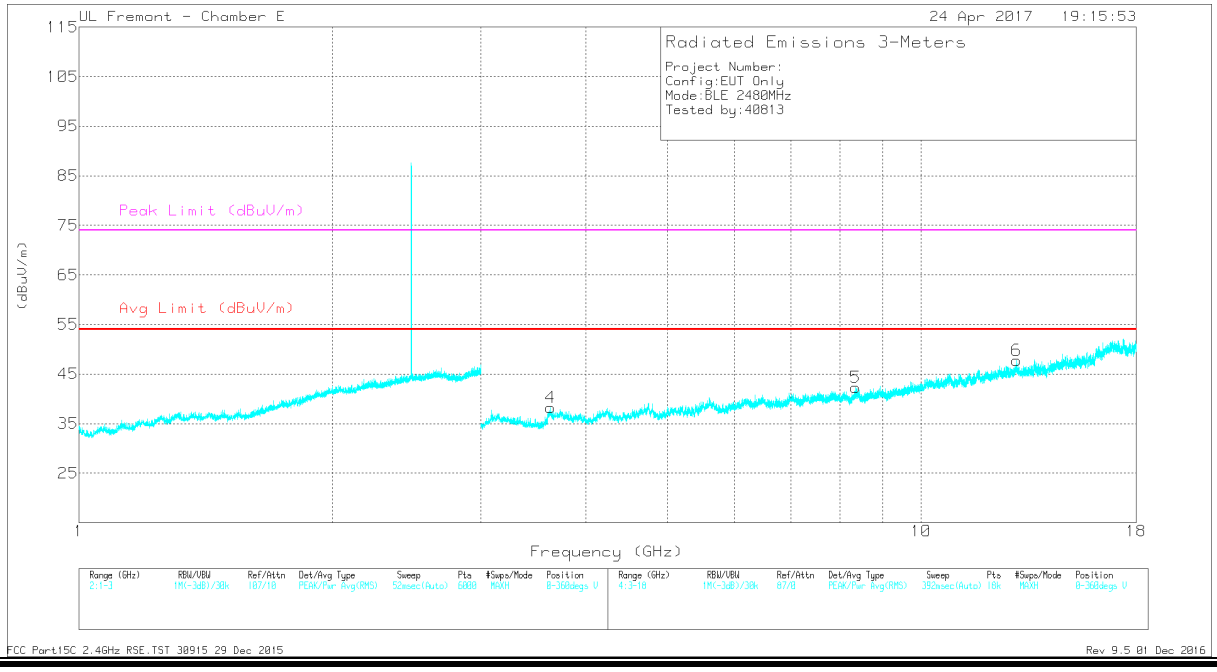
HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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DATA

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
1	* 4.039	40.77	PK2	33.4	-30.3	43.87	-	-	74	-30.13	72	257	H
	* 4.041	29.52	MAv1	33.4	-30.3	32.62	54	-21.38	-	-	72	257	H
2	* 7.289	38.63	PK2	35.9	-26.3	48.23	-	-	74	-25.77	104	231	H
	* 7.291	27.5	MAv1	35.9	-26.3	37.1	54	-16.9	-	-	104	231	H
3	* 12.322	37.9	PK2	39.2	-24.3	52.8	-	-	74	-21.2	76	115	H
	* 12.323	26.65	MAv1	39.2	-24.3	41.55	54	-12.45	-	-	76	115	H
4	* 3.628	40.98	PK2	33	-30.2	43.78	-	-	74	-30.22	145	190	V
	* 3.63	30.26	MAv1	33.1	-30.2	33.16	54	-20.84	-	-	145	190	V
5	* 8.356	38.77	PK2	36.1	-25.8	49.07	-	-	74	-24.93	148	228	V
	* 8.357	26.64	MAv1	36.1	-25.7	37.04	54	-16.96	-	-	148	228	V
6	12.97	36.94	PK2	40	-23.3	53.64	-	-	-	-	167	330	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average
FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015
Rev 9.5 01 Dec 2016

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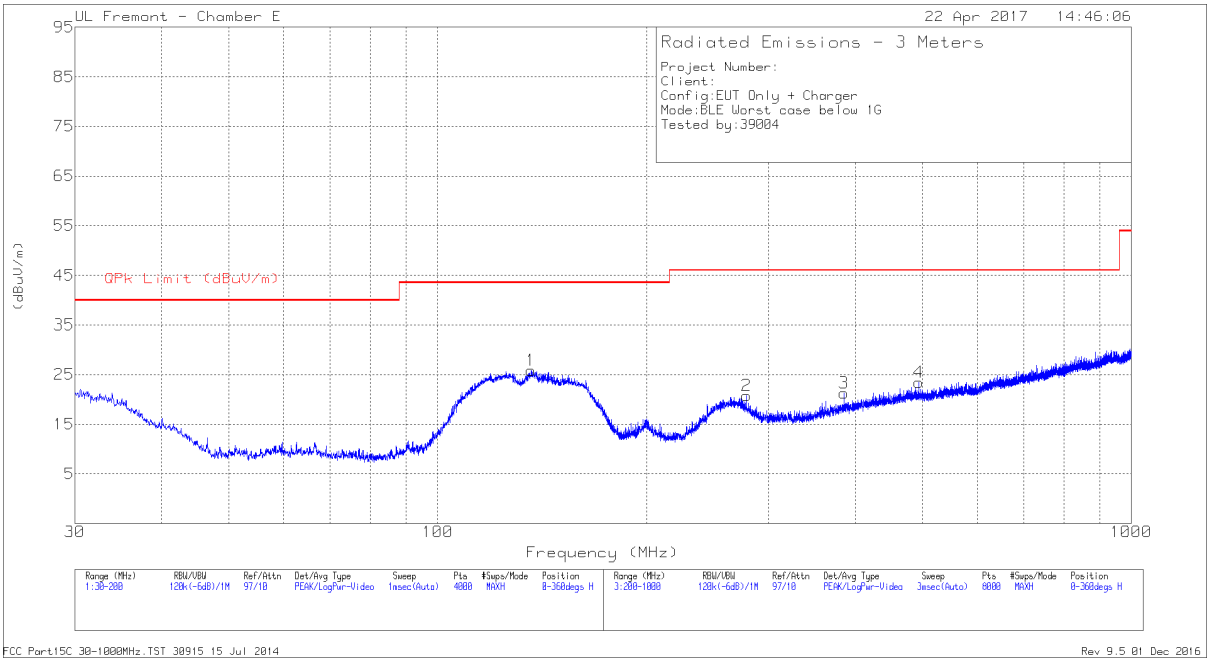
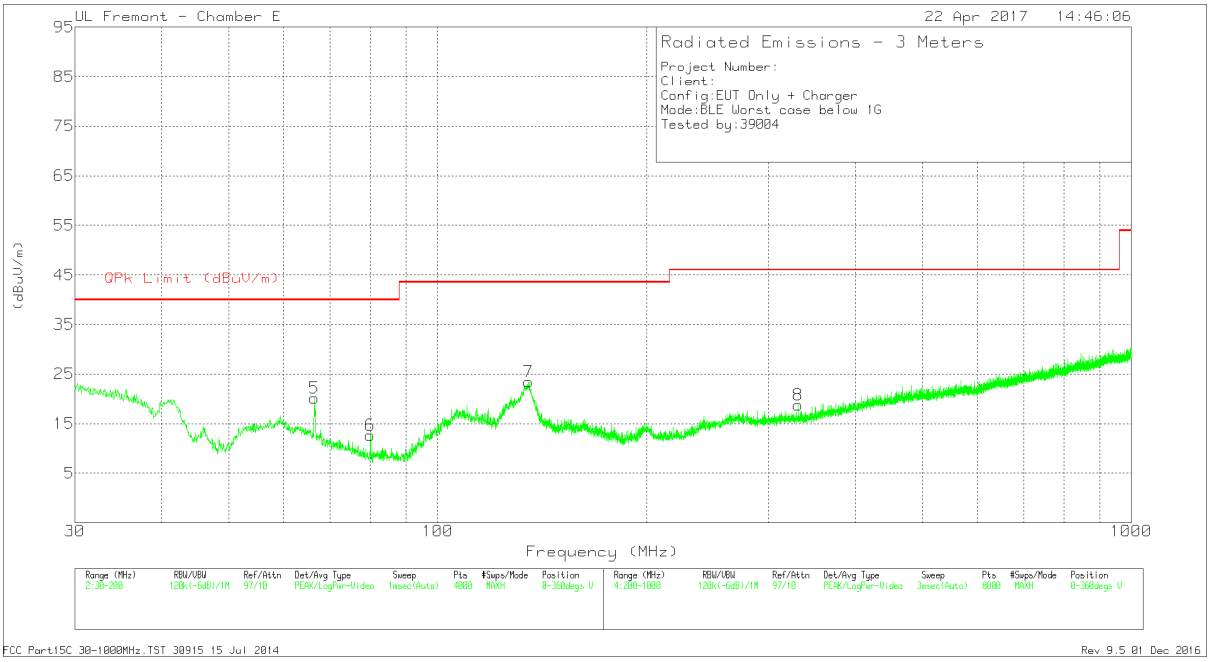
8.7. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



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DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T899 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 136.4901	38.94	Pk	17.4	-30.5	25.84	43.52	-17.68	0-360	199	H
7	* 135.3423	36.44	Pk	17.5	-30.5	23.44	43.52	-20.08	0-360	100	V
2	* 278.7102	32.76	Pk	17.4	-29.4	20.76	46.02	-25.26	0-360	100	H
8	* 331.117	30	Pk	17.9	-29.1	18.8	46.02	-27.22	0-360	300	V
5	66.3894	39.26	Pk	12.1	-31.2	20.16	40	-19.84	0-360	100	V
6	79.9929	32.46	Pk	11.2	-31	12.66	40	-27.34	0-360	100	V
3	385.2241	31	Pk	19.1	-28.8	21.3	46.02	-24.72	0-360	100	H
4	494.0382	30.03	Pk	21.6	-28.2	23.43	46.02	-22.59	0-360	100	H

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

Pk - Peak detector

FCC Part15C 30-1000MHz.TST 30915 15 Jul 2014
Rev 9.5 01 Dec 2016

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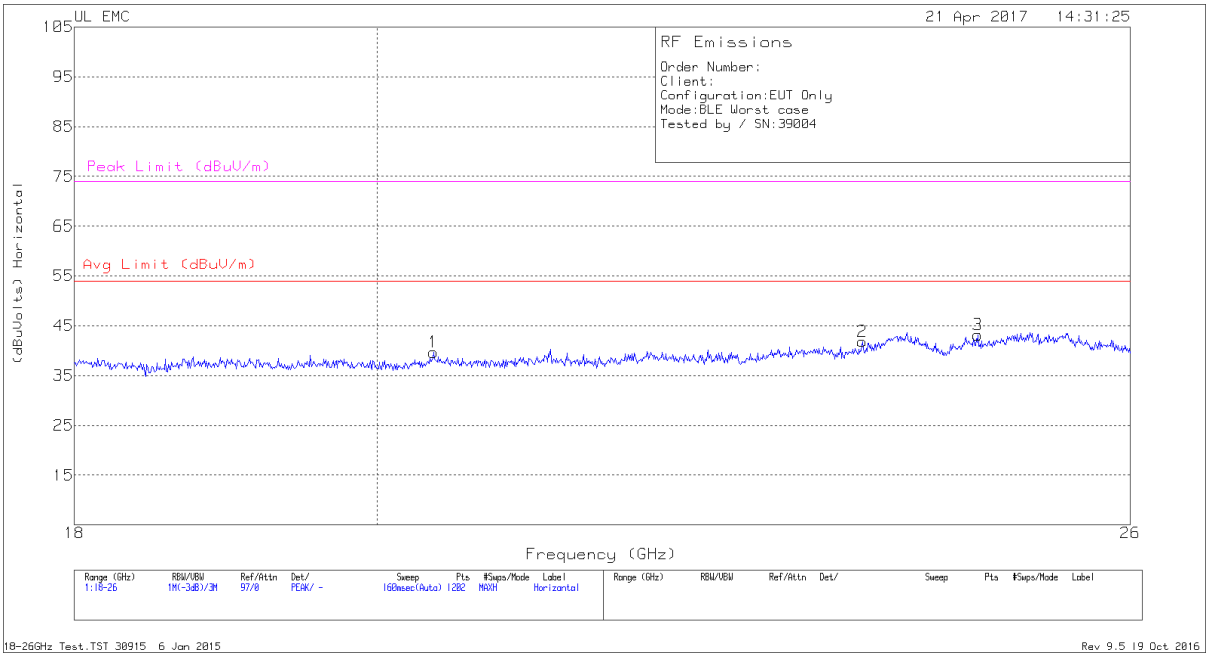
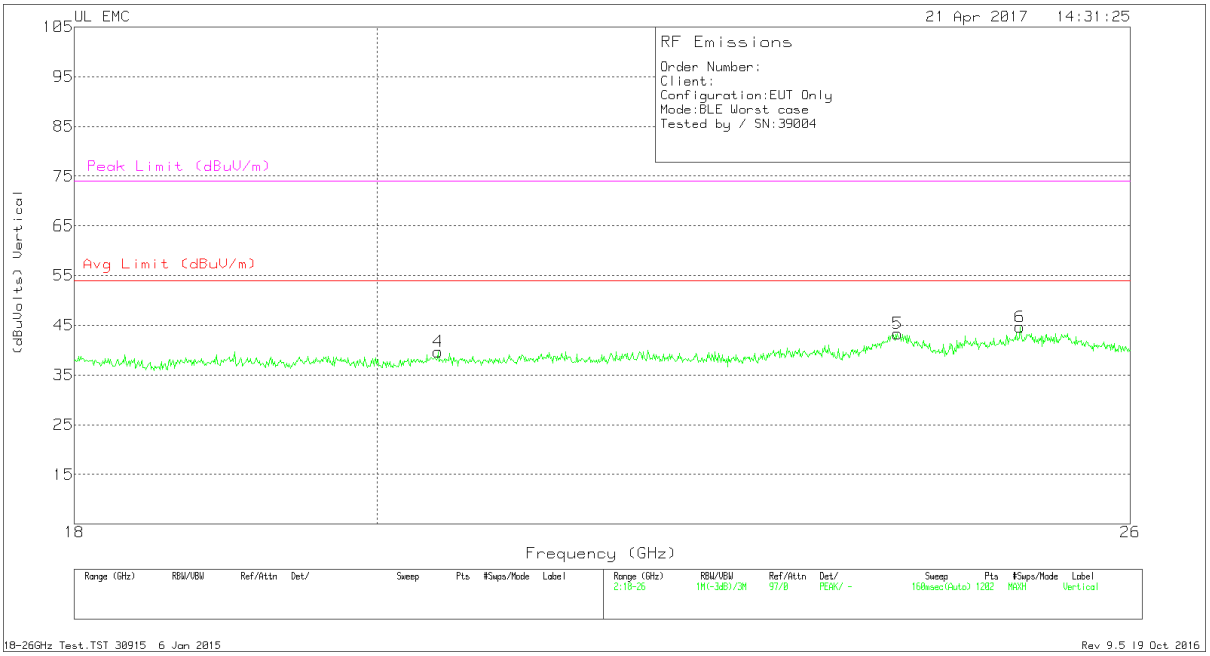
8.8. WORST-CASE ABOVE 18 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



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Data

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T449 (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	20.398	41.37	Pk	32.9	-25.1	-9.5	39.67	54	-14.33	74	-34.33
2	23.682	41.93	Pk	33.8	-24.4	-9.5	41.84	54	-12.16	74	-32.16
3	24.654	43.07	Pk	34.1	-24.5	-9.5	43.17	54	-10.83	74	-30.83
4	20.431	41.47	Pk	32.9	-25.2	-9.5	39.67	54	-14.33	74	-34.33
5	23.975	43.03	Pk	34	-24.2	-9.5	43.34	54	-10.66	74	-30.66
6	25.021	44.37	Pk	34.2	-24.4	-9.5	44.67	54	-9.33	74	-29.33

Pk - Peak detector
18-26GHz Test.TST 30915 6 Jan 2015
Rev 9.5 19 Oct 2016

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8.9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	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 C63.10.

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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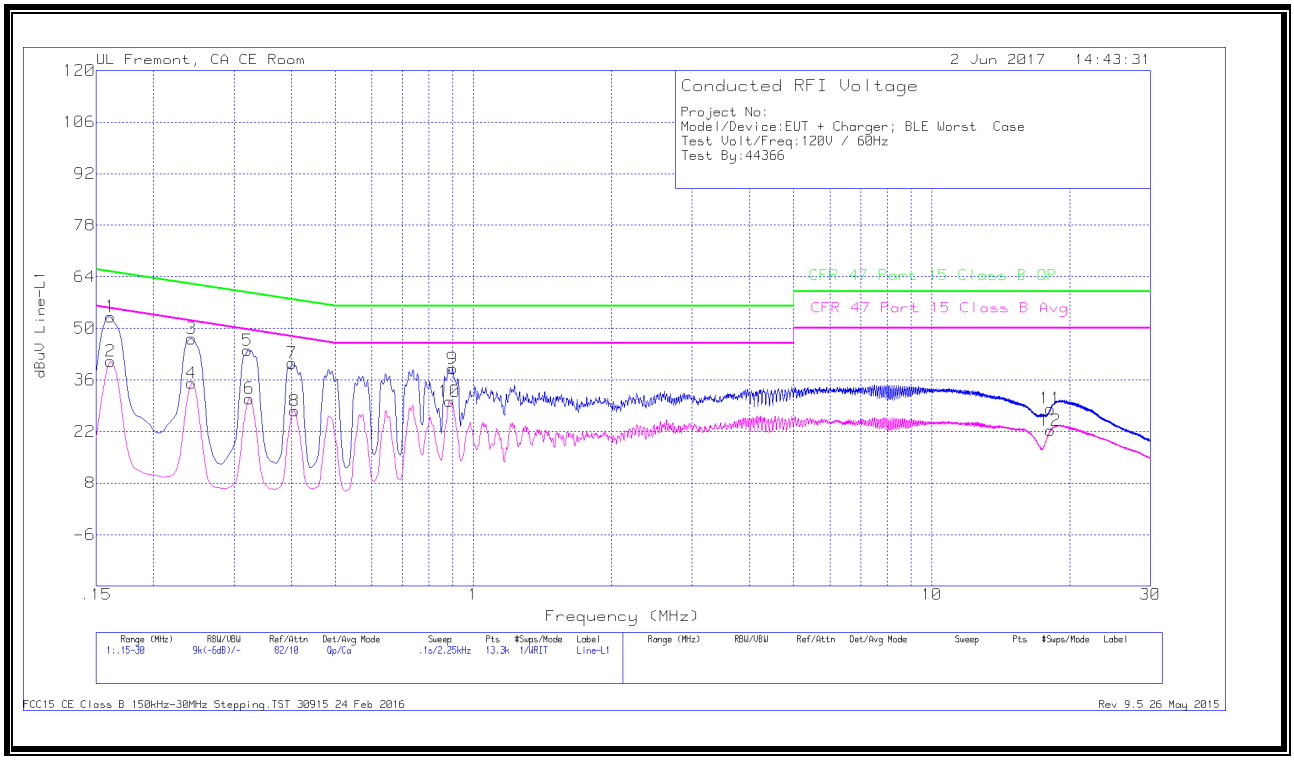
8.10. EUT POWERED BY AC/DC ADAPTER VIA USB CABLE

LINE 1 RESULTS



WORST EMISSIONS

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	.16125	42.94	Qp	0	.1	10.1	53.14	65.4	-12.26	-	-
2	.16125	30.86	Ca	0	.1	10.1	41.06	-	-	55.4	-14.34
3	.24225	37.02	Qp	0	.1	10.1	47.22	62.02	-14.8	-	-
4	.24225	24.93	Ca	0	.1	10.1	35.13	-	-	52.02	-16.89
5	.321	33.82	Qp	0	.1	10.1	44.02	59.68	-15.66	-	-
6	.32437	20.73	Ca	0	.1	10.1	30.93	-	-	49.59	-18.66
7	.402	30.35	Qp	0	.1	10.1	40.55	57.81	-17.26	-	-
8	.4065	17.36	Ca	0	.1	10.1	27.56	-	-	47.72	-20.16
9	.89925	28.82	Qp	0	.1	10.1	39.02	56	-16.98	-	-
10	.88575	19.95	Ca	0	.1	10.1	30.15	-	-	46	-15.85
11	18.1545	17.6	Qp	0	.3	10.3	28.2	60	-31.8	-	-
12	18.168	11.69	Ca	0	.3	10.3	22.29	-	-	50	-27.71

Qp - Quasi-Peak detector

Ca - CISPR average detection

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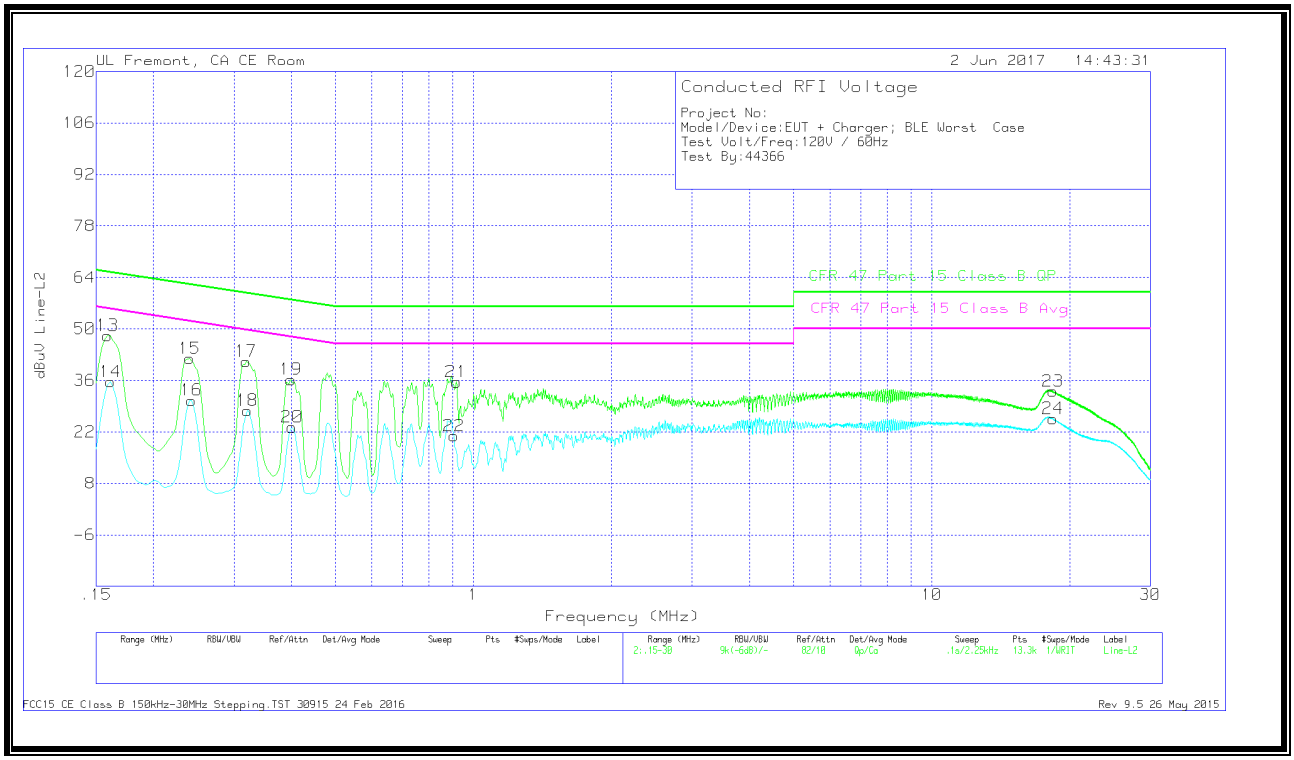
LINE 2 RESULTS



WORST EMISSIONS

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	.159	37.97	Qp	0	.1	10.1	48.17	65.52	-17.35	-	-
14	.16125	25.43	Ca	0	.1	10.1	35.63	-	-	55.4	-19.77
15	.24	31.72	Qp	0	.1	10.1	41.92	62.1	-20.18	-	-
16	.24225	20.39	Ca	0	.1	10.1	30.59	-	-	52.02	-21.43
17	.31875	30.97	Qp	0	.1	10.1	41.17	59.74	-18.57	-	-
18	.321	17.6	Ca	0	.1	10.1	27.8	-	-	49.68	-21.88
19	.39975	26.03	Qp	0	.1	10.1	36.23	57.86	-21.63	-	-
20	.402	13.05	Ca	0	.1	10.1	23.25	-	-	47.81	-24.56
21	.91725	25.37	Qp	0	.1	10.1	35.57	56	-20.43	-	-
22	.906	10.69	Ca	0	.1	10.1	20.89	-	-	46	-25.11
23	18.3885	22.43	Qp	0	.3	10.3	33.03	60	-26.97	-	-
24	18.3885	15.02	Ca	0	.3	10.3	25.62	-	-	50	-24.38

Qp - Quasi-Peak detector

Ca - CISPR average detection

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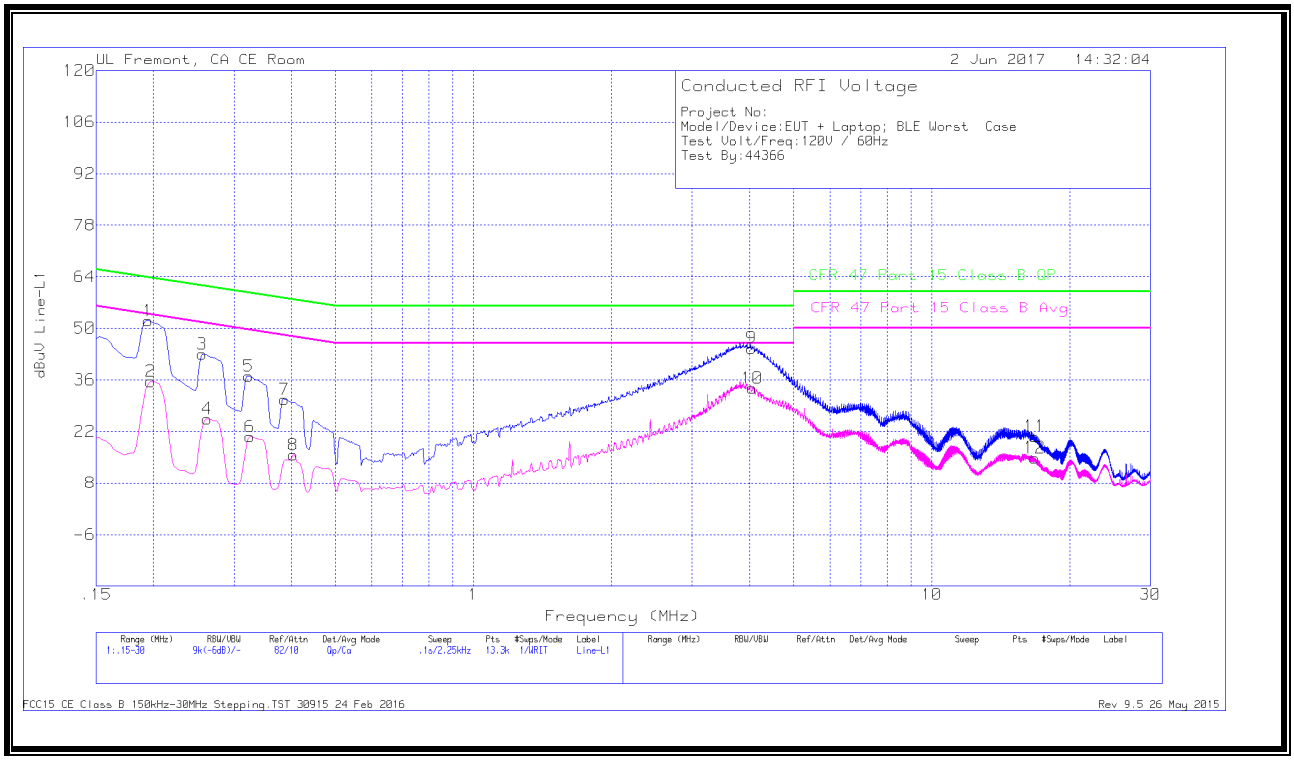
8.11. EUT POWERED BY HOST PC VIA USB CABLE

LINE 1 RESULTS



WORST EMISSIONS

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	.195	41.86	Qp	0	.1	10.1	52.06	63.82	-11.76	-	-
2	.19725	25.38	Ca	0	.1	10.1	35.58	-	-	53.73	-18.15
3	.25575	32.77	Qp	0	.1	10.1	42.97	61.57	-18.6	-	-
4	.2625	15.21	Ca	0	.1	10.1	25.41	-	-	51.35	-25.94
5	.32325	26.79	Qp	0	.1	10.1	36.99	59.62	-22.63	-	-
6	.3255	10.34	Ca	0	.1	10.1	20.54	-	-	49.57	-29.03
7	.38625	20.49	Qp	0	.1	10.1	30.69	58.14	-27.45	-	-
8	.40425	5.41	Ca	0	.1	10.1	15.61	-	-	47.77	-32.16
9	4.0425	34.41	Qp	0	.1	10.1	44.61	56	-11.39	-	-
10	4.05375	23.57	Ca	0	.1	10.1	33.77	-	-	46	-12.23
11	16.7798	10.13	Qp	0	.2	10.3	20.63	60	-39.37	-	-
12	16.7775	4.32	Ca	0	.2	10.3	14.82	-	-	50	-35.18

Qp - Quasi-Peak detector

Ca - CISPR average detection

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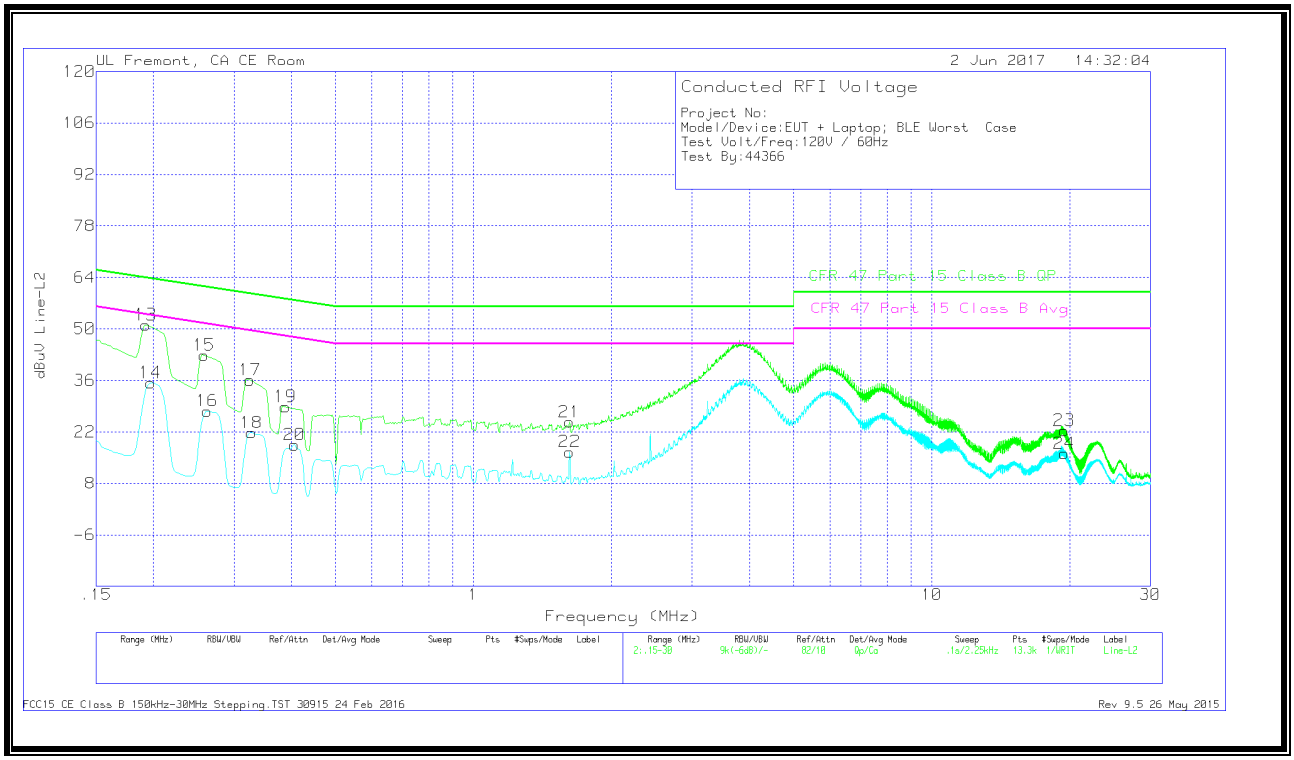
LINE 2 RESULTS



WORST EMISSIONS

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	.19275	40.88	Qp	0	.1	10.1	51.08	63.92	-12.84	-	-
14	.19725	25.14	Ca	0	.1	10.1	35.34	-	-	53.73	-18.39
15	.258	32.65	Qp	0	.1	10.1	42.85	61.5	-18.65	-	-
16	.2625	17.49	Ca	0	.1	10.1	27.69	-	-	51.35	-23.66
17	.3255	25.9	Qp	0	.1	10.1	36.1	59.57	-23.47	-	-
18	.32775	11.59	Ca	0	.1	10.1	21.79	-	-	49.51	-27.72
19	.3885	18.63	Qp	0	.1	10.1	28.83	58.1	-29.27	-	-
20	.4065	8.27	Ca	0	.1	10.1	18.47	-	-	47.72	-29.25
21	1.6215	14.48	Qp	0	.1	10.1	24.68	56	-31.32	-	-
22	1.6215	6.37	Ca	0	.1	10.1	16.57	-	-	46	-29.43
23	19.4753	11.75	Qp	0	.3	10.3	22.35	60	-37.65	-	-
24	19.4753	5.51	Ca	0	.3	10.3	16.11	-	-	50	-33.89

Qp - Quasi-Peak detector

Ca - CISPR average detection

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