FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-247 ISSUE 1

C2PC CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/LTE PHONE + BLUETOOTH, DTS/UNII a/b/g/n/ac & NFC

MODEL NUMBER: LG-H791, LGH791, H791, LG-H791F, LGH791F, H791F

FCC ID: ZNFH791

REPORT NUMBER: 15I21552-E4V1

ISSUE DATE: SEPTEMBER 28, 2015

Prepared for
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--	09/28/15	Initial Issue	C.S.OOI

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: LG ELECTRONICS MOBILECOMM U.S.A., INC

EUT DESCRIPTION: GSM/WCDMA/LTE PHONE + BLUETOOTH, DTS/UNII a/b/g/n/ac & NFC

MODEL (S): LG-H791, LGH791, H791, LG-H791F, LGH791F, H791F

SERIAL NUMBER: Conducted(21YFY), Radiated(21YG3)

DATE TESTED: August 17-27, 2015

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-247 ISSUE 1	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.

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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 v03r03, ANSI C63.10-2009 for FCC.

ANSI C63.10-2009 Deviation
Radiated spurious emission above 1GHz was performed with the EUT elevated at 1.5m instead of 0.8m. 1.5m is the required height in ANSI C63.10:2013 as referenced by RSS GEN issue 4.

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: 2324B-4)
☐ Chamber B(IC: 2324B-2)	☐ Chamber E(IC: 2324B-5)
☒ Chamber C(IC: 2324B-3)	☐ Chamber F(IC: 2324B-6)
	☐ Chamber G(IC: 2324B-7)
	☐ Chamber H(IC: 2324B-8)

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.

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
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 18000 MHz	4.94 dB

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

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

This EUT is a GSM/WCDMA/LTE PHONE + BLUETOOTH, DTS/UNII a/b/g/n/ac & NFC

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2462	802.11b	20.74	118.58
2412 - 2462	802.11g	18.40	69.18
2412 - 2462	802.11n HT20	18.46	70.15

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna. Please refer to directional antenna gain on section 9.4 for maximum antenna gain.

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5.4. WORST-CASE CONFIGURATION AND MODE

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

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

Based on the baseline scan, the worst-case data rates were:

802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11n HT20mode: MCS0

802.11ac-mode is covered by 802.11n mode test result because they have same target power.

List of test reduction and modes

2400 - 2483.5 MHz Authorized Frequency Band (Antenna Port & Radiated Testing)		
Frequency Range (MHz)	**Mode**	**Covered by**
2412 - 2472	802.11b Legacy 1TX	802.11b CDD 2TX
2412 - 2472	802.11g Legacy 1TX	802.11g CDD 2TX
2412 - 2472	802.11n 1TX	802.11n HT20 CDD 2TX
2412 - 2472	802.11n SDM 2TX	802.11n HT20 CDD 2TX
2412 - 2472	802.11n HT40 1TX	802.11n HT40 CDD 2TX
2412 - 2472	802.11n HT40 SDM 2TX	802.11n HT40 CDD 2TX

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5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
AC Adapter	LG	MCS-N04WP	XIYMXXXXXXX	DoC
Earphone	LG	-	-	-

I/O CABLES

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

TEST SETUP

The EUT is a stand-alone unit during the tests. Test software exercised the radio card.

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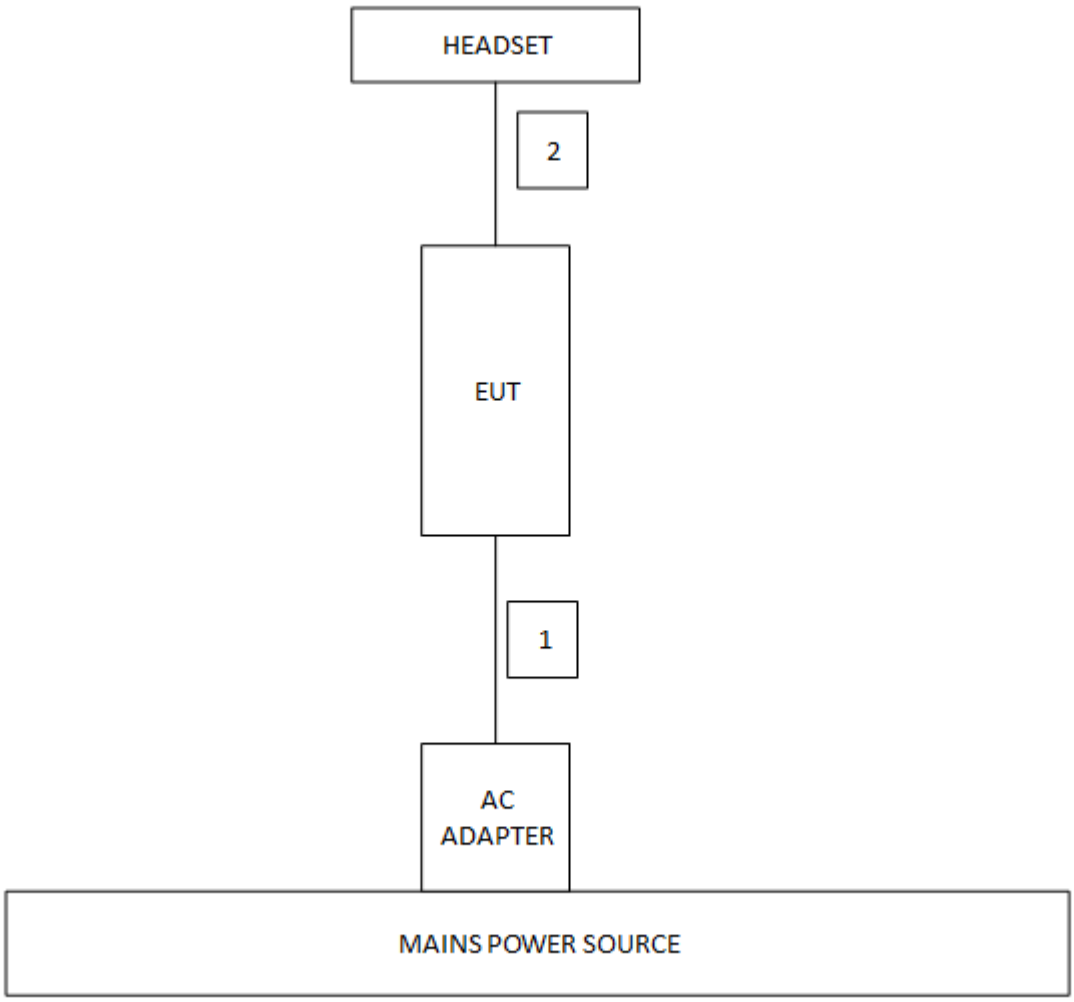
SETUP DIAGRAM FOR TESTS



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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**
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/20/15
Spectrum Analyzer,9KHz-40GHz	HP	8564E	C00986	04/01/16
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	1000741	08/13/16
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/18/16
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/15
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/15
Antenna, Horn, 1-18 GHz	ETS	3117	C01022	02/21/16
Antenna, Horn,18- 26 GHz	ARA	MWH-1826/B	C00946	11/12/15
Antenna, Horn, 26-40 GHz	ARA	MWH-2640	C00891	06/28/16
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	T243	03/06/16
RF Preamplifier, 100KHz -> 1300MHz	HP	TBD	C00825	06/01/16
RF Preamplifier, 1GHz - 18GHz	Miteq	NSP4000-SP2	924343	03/23/16
RF Preamplifier, 1GHz - 26.5GHz	HP	8449B	T404	06/29/16
AC Power Supply, 2,500VA 45-500Hz	Elgar-Ametek	CW2501M	F00013	CNR
RF Preamplifier, 1GHz - 40GHz	Miteq	NSP4000-SP2	C00990	08/20/16
Attenuator / Switch driver	HP	11713A	F00204	CNR
Low Pass Filter 3GHz	Micro-Tronics	LPS17541	F00219	05/23/16
High Pass Filter 5GHz	Micro-Tronics	HPS17542	F00222	05/22/16
High Pass Filter 6GHz	Micro-Tronics	HPM17543	F00224	05/22/16
Radiated Software	UL	UL EMC	Ver 9.5, June 24, 2015	
Conducted Software	UL	UL EMC	Ver 9.5, May 17 2012	
CLT Software	UL	UL RF	Ver 1.0, Feb 2 2015	
Antenna Port Software	UL	UL RF	Ver 2.1.1.1, Jan 20 2015	

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7. MEASUREMENT METHODS

KDB 558074 D01 DTS Meas Guidance v03r03: Measurement Procedure AVGPM-G is used for power and AVGPSD-3 is used for power spectral density.

Unwanted emissions within Restricted Bands are measured using traditional radiated procedures.

Band edge emissions within Restricted Bands are measured using RMS with duty cycle factor offset method.

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8. SUMMARY TABLE

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Worst Case
15.247 (a)(2)	RSS-247 5.2.1	Occupied Band width (6dB)	>500KHz	Conducted	Pass	7.560MHz
2.1051, 15.247 (d)	RSS-247 5.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-28.99dBm
15.247	RSS-247 5.4.4	TX conducted output power	<30dBm		Pass	17.84
15.247	RSS-247 5.2.2	PSD	<8dBm		Pass	-3.220dBm
15.207 (a)	RSS-GEN 8.8	AC Power Line conducted emissions	Section 10	Radiated	Pass	N/A
15.205, 15.209	RSS-GEN 8.9/7	Radiated Spurious Emission	< 54dBuV/m		Pass	45.27dBuV/m

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9. ANTENNA PORT TEST RESULTS

9.1. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

9.1.1. 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)
2.4GHz Band						
802.11b CDD	8.623	8.646	0.997	99.73%	0.00	0.010
802.11g CDD	2.796	2.821	0.991	99.11%	0.00	0.010
802.11n HT20 CDD	5.120	5.148	0.995	99.46%	0.00	0.010

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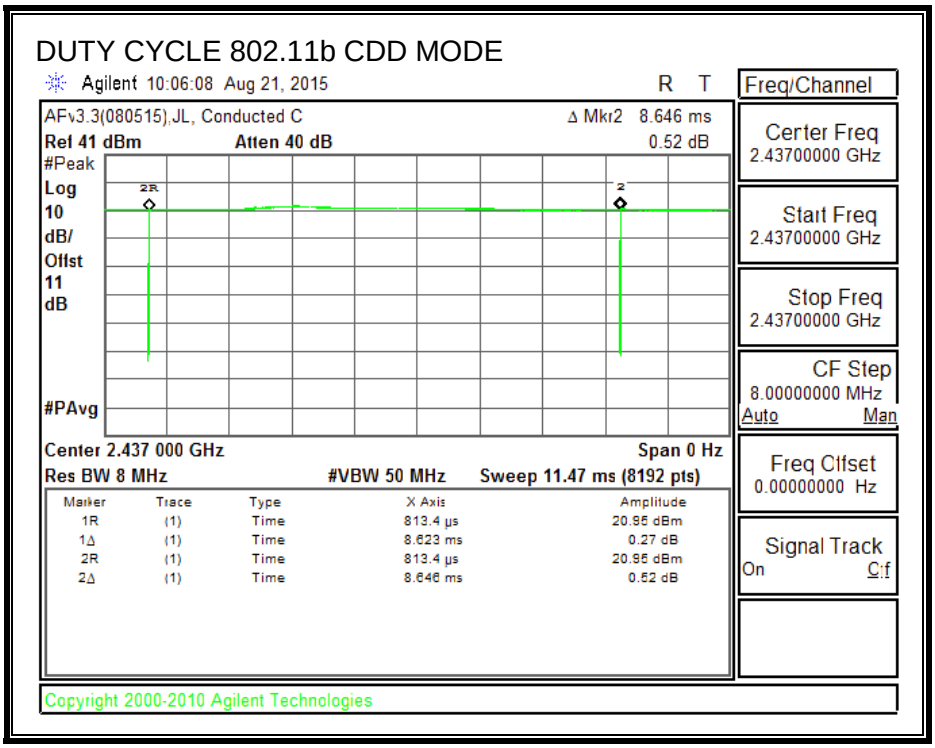
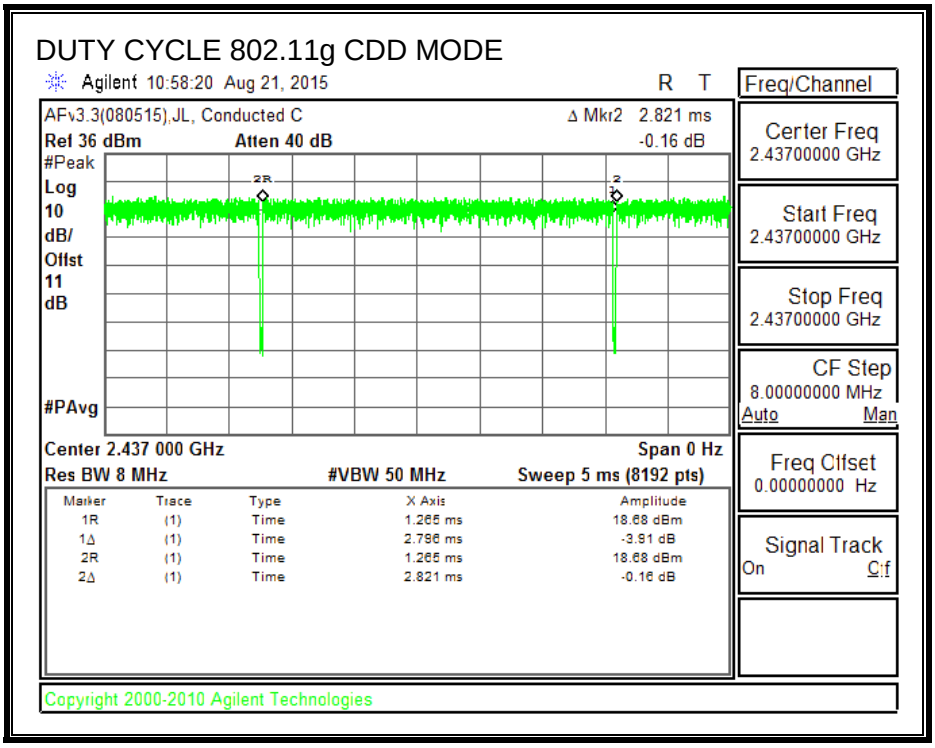
9.1.2. DUTY CYCLE PLOTS

2.4 GHz BAND





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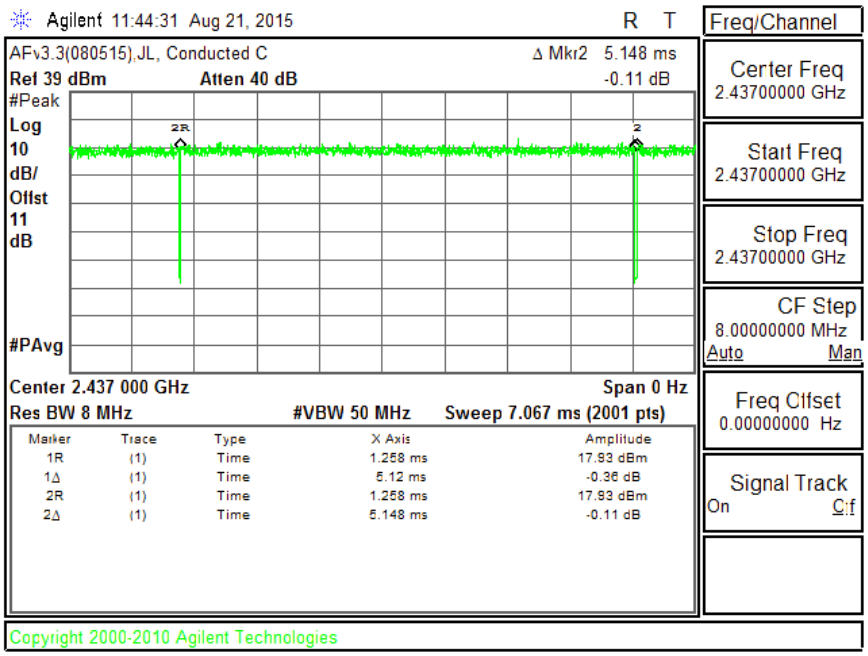
DUTY CYCLE 802.11n HT20 MODE



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9.2. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-247 5.2.1

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

TEST PROCEDURE

Reference to KDB 558074 D01 DTS Meas Guidance v03r03: The transmitter output is connected to a spectrum analyzer with the RBW set to100KHz, the VBW >= 3 x RBW, peak detector and max hold.

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RESULTS

9.2.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth CHAIN 0(MHz)	6 dB Bandwidth CHAIN 1(MHz)	Minimum Limit (MHz)
Low	2412	8.008	8.073	0.5
Mid	2437	7.560	8.086	0.5
High	2462	8.060	8.073	0.5
Worst		7.560	8.073	

9.2.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth CHAIN 0(MHz)	6 dB Bandwidth CHAIN 1(MHz)	Minimum Limit (MHz)
Low	2412	15.272	14.432	0.5
Mid	2437	14.674	15.088	0.5
High	2462	15.008	15.111	0.5
Worst		14.674	14.432	

9.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth CHAIN 0(MHz)	6 dB Bandwidth CHAIN 1(MHz)	Minimum Limit (MHz)
Low	2412	15.624	15.065	0.5
Mid	2437	15.432	15.249	0.5
High	2462	15.042	17.212	0.5
Worst		15.042	15.065	

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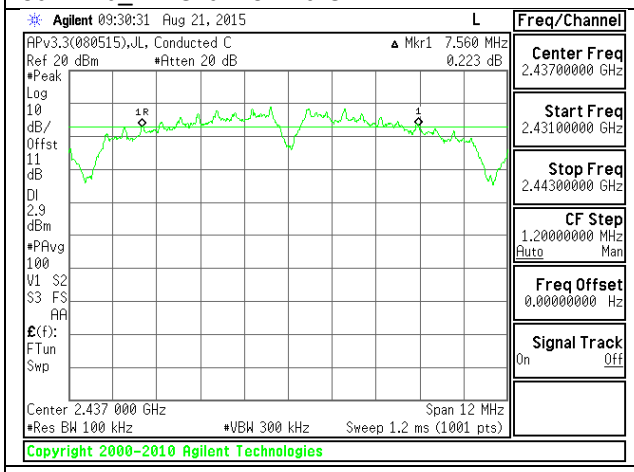
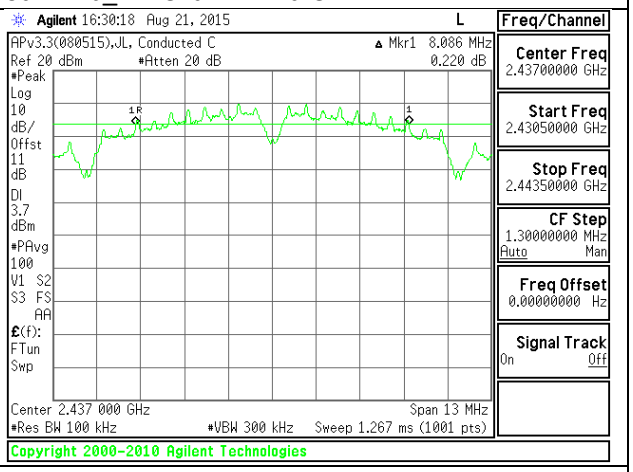
9.2.4. 6 dB BANDWIDTH MID CH PLOTS

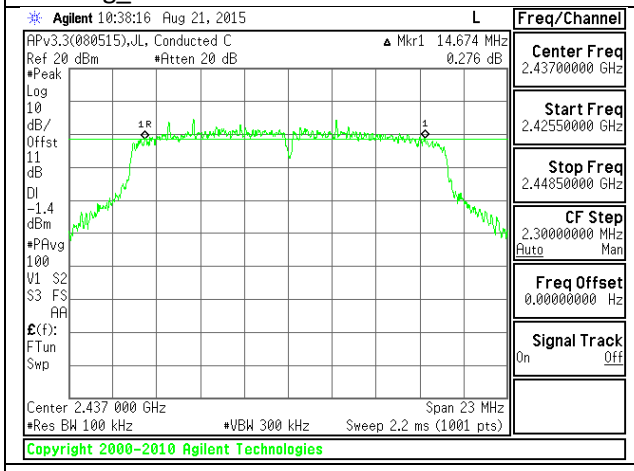
6dB 11b_2.4 Chain 0 Mid Ch



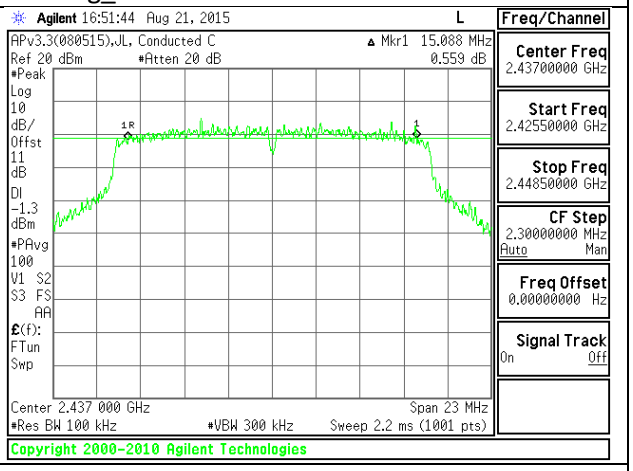
6dB 11b_2.4 Chain 1 Mid Ch



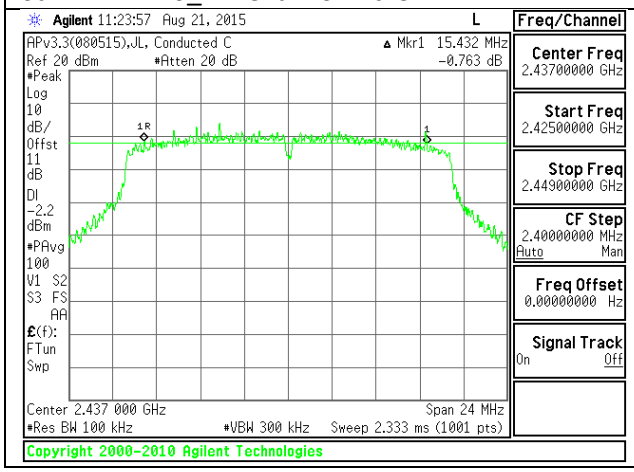
6dB 11g_2.4 Chain 0 Mid Ch



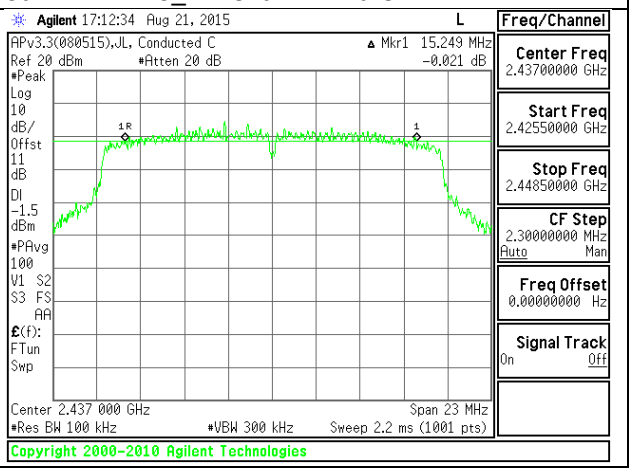
6dB 11g_2.4 Chain 1 Mid Ch



6dB 11n HT20_2.4 Chain 0 Mid Ch



6dB 11n HT20_2.4 Chain 1 Mid Ch



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9.3. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

9.3.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth CHAIN 0(MHz)	99% Bandwidth CHAIN 1(MHz)
Low	2412	13.2417	13.3468
Mid	2437	14.5907	13.2365
High	2462	12.9512	13.1700
Worst		14.5907	13.3468

9.3.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth CHAIN 0(MHz)	99% Bandwidth CHAIN 1(MHz)
Low	2412	16.3648	16.3359
Mid	2437	16.3337	16.3468
High	2462	16.3074	16.3193
Worst		16.3648	16.3468

9.3.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth CHAIN 0(MHz)	99% Bandwidth CHAIN 1(MHz)
Low	2412	17.4899	17.4903
Mid	2437	17.4846	17.5131
High	2462	17.4425	17.4611
Worst		17.4899	17.5131

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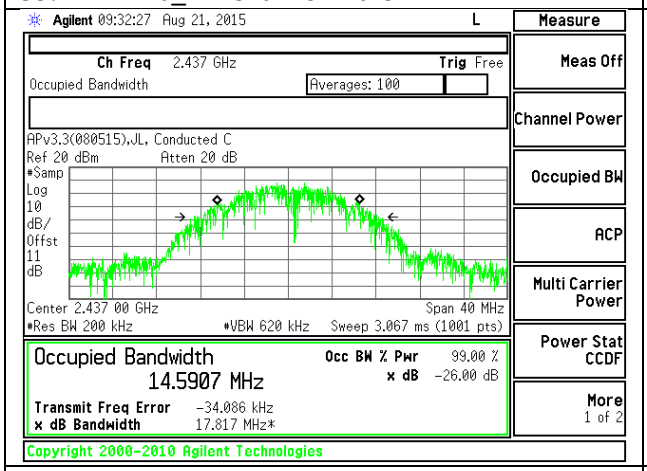
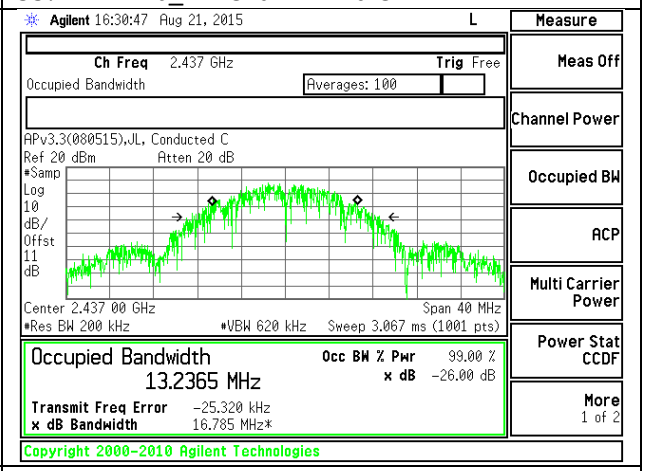
9.3.4. 99% BANDWIDTH MID CH PLOTS

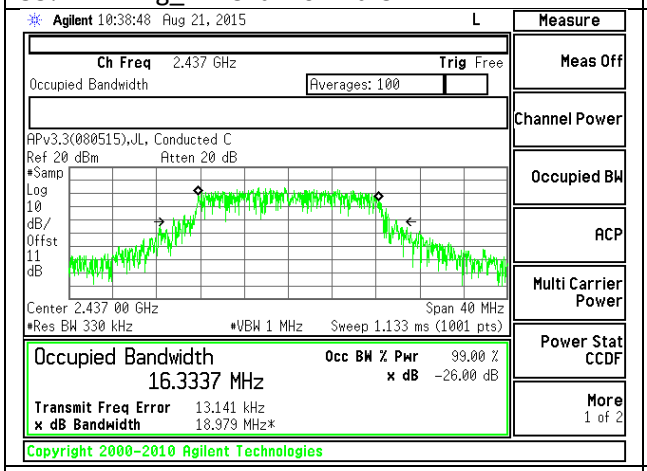
99% BW 11b_2.4 Chain 0 Mid Ch



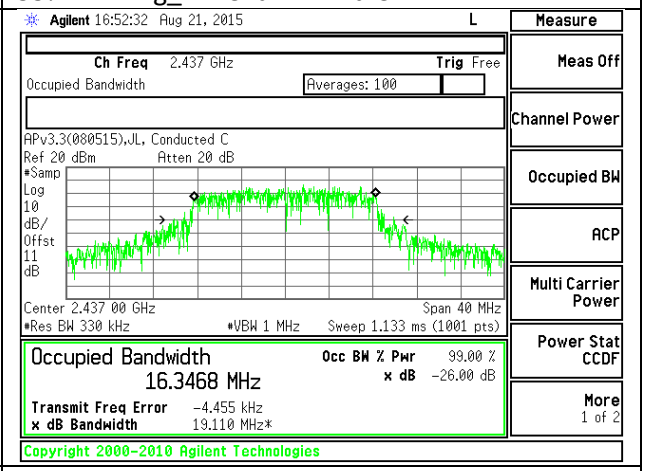
99% BW 11b_2.4 Chain 1 Mid Ch



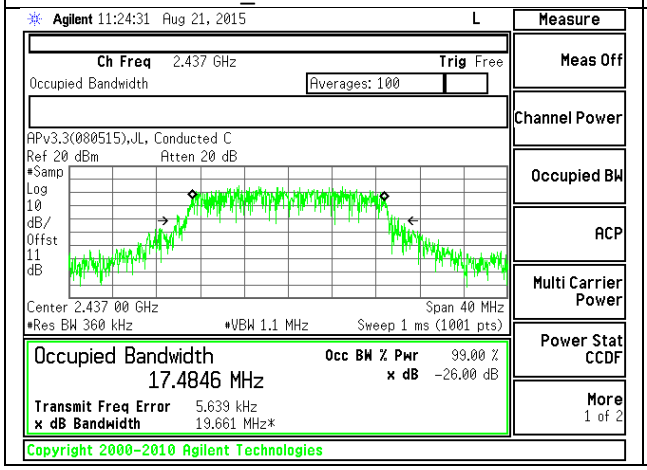
99% BW 11g_2.4 Chain 0 Mid Ch



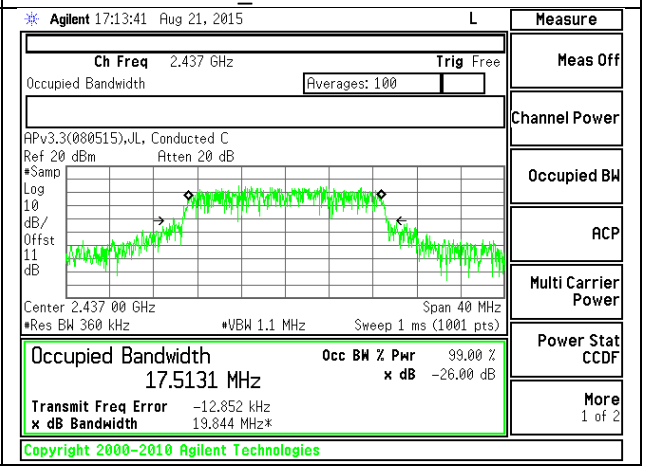
99% BW 11g_2.4 Chain 1 Mid Ch



99% BW 11n HT20_2.4 Chain 0 Mid Ch



99% BW 11n HT20_2.4 Chain 1 Mid Ch



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9.4. OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-247 5.4.4

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
-1.71	-3.30	-2.43

The TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
-1.71	-3.30	0.54

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47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
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RESULTS

9.4.1. 802.11b MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-2.43	30.00	30	36	30.00
Mid	2437	-2.43	30.00	30	36	30.00
High	2462	-2.43	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
Low	2412	17.84	17.62	20.74	30.00	-9.26
Mid	2437	17.41	17.41	20.42	30.00	-9.58
High	2462	17.26	17.55	20.42	30.00	-9.58
Worst				20.74		

Note: the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

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9.4.2. 802.11g MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-2.43	30.00	30	36	30.00
Mid	2437	-2.43	30.00	30	36	30.00
High	2462	-2.43	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
Low	2412	14.60	14.50	17.56	30.00	-12.44
Mid	2437	15.40	15.40	18.41	30.00	-11.59
High	2462	14.20	14.50	17.36	30.00	-12.64
Worst				18.41		

Note: the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

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9.4.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-2.43	30.00	30	36	30.00
Mid	2437	-2.43	30.00	30	36	30.00
High	2462	-2.43	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
Low	2412	14.40	14.30	17.36	30.00	-12.64
Mid	2437	15.50	15.40	18.46	30.00	-11.54
High	2462	13.90	14.20	17.06	30.00	-12.94
Worst				18.46		

Note: the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

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9.5. PSD

LIMITS

FCC §15.247

IC RSS-247 5.2.2

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.

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RESULTS

9.5.1. 802.11b MODE IN THE 2.4 GHz BAND

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-4.085	-3.220	-0.62	8.0	-8.6
Mid	2437	-4.595	-3.901	-1.22	8.0	-9.2
High	2462	-4.364	-3.593	-0.95	8.0	-9.0
Worst				-0.62		

9.5.2. 802.11g MODE IN THE 2.4 GHz BAND

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-10.094	-9.559	-6.81	8.0	-14.8
Mid	2437	-9.416	-8.917	-6.15	8.0	-14.1
High	2462	-10.367	-9.704	-7.01	8.0	-15.0
Worst				-6.15		

9.5.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-10.485	-9.916	-7.18	8.0	-15.2
Mid	2437	-10.258	-9.587	-6.90	8.0	-14.9
High	2462	-11.431	-9.963	-7.62	8.0	-15.6
Worst				-6.90		

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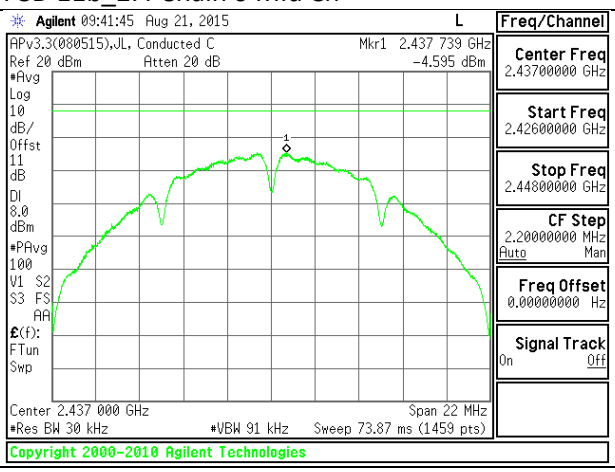
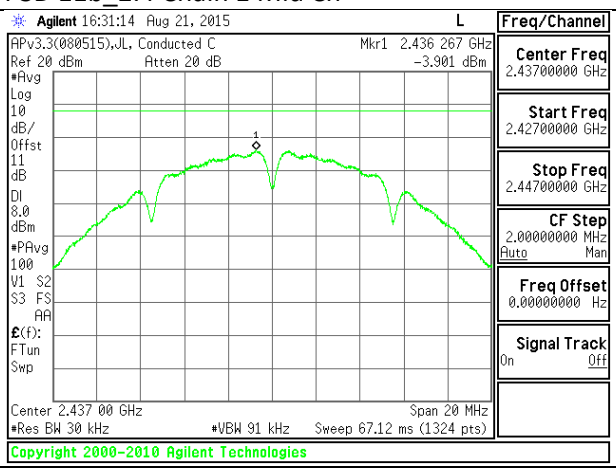
9.5.4. PSD MID CH PLOTS

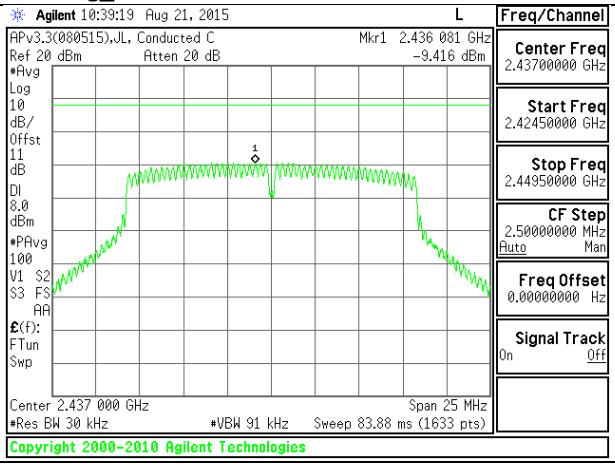
PSD 11b_2.4 Chain 0 Mid Ch



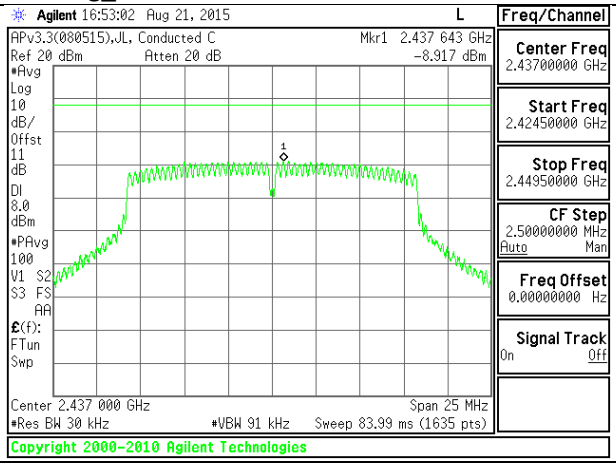
PSD 11b_2.4 Chain 1 Mid Ch



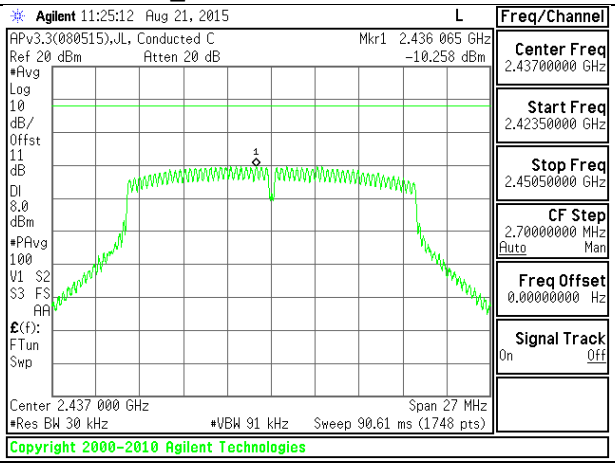
PSD 11g_2.4 Chain 0 Mid Ch



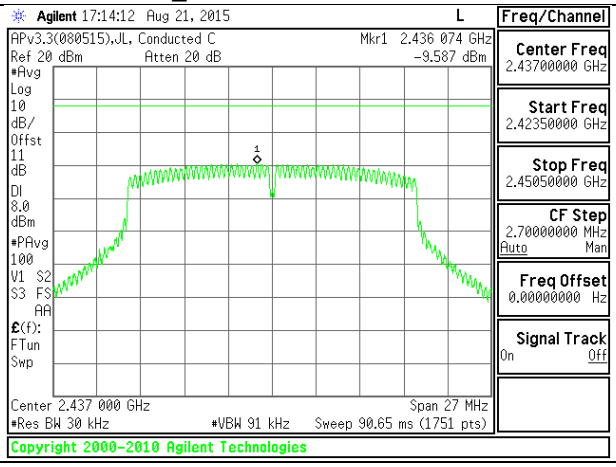
PSD 11g_2.4 Chain 1 Mid Ch



PSD 11n HT20_2.4 Chain 0 Mid Ch



PSD 11n HT20_2.4 Chain 1 Mid Ch



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9.6. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-247 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

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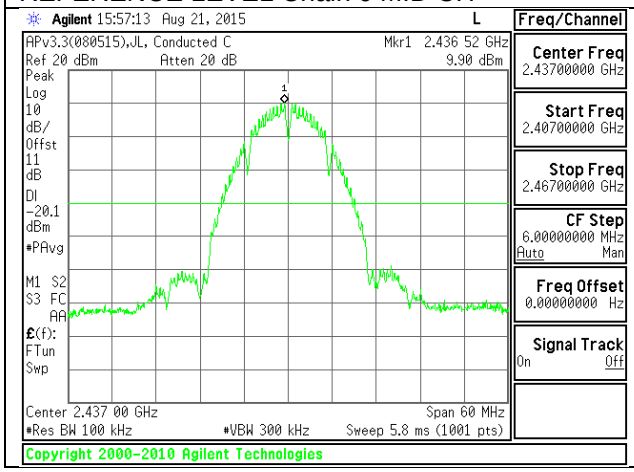
RESULTS

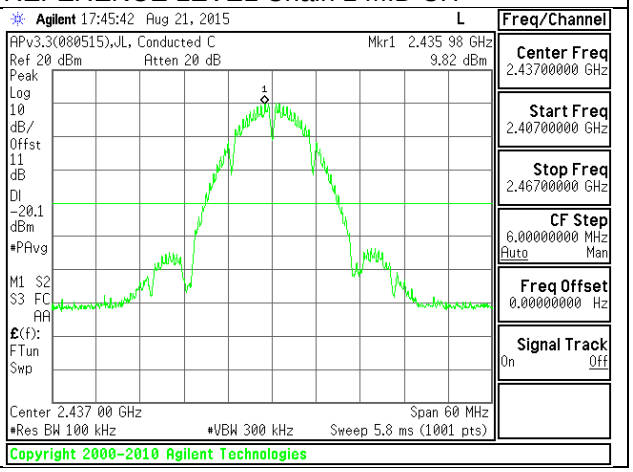
9.6.1. 802.11b MODE IN THE 2.4 GHz BAND

IN-BAND REFERENCE LEVEL

REFERENCE LEVEL Chain 0 MID CH

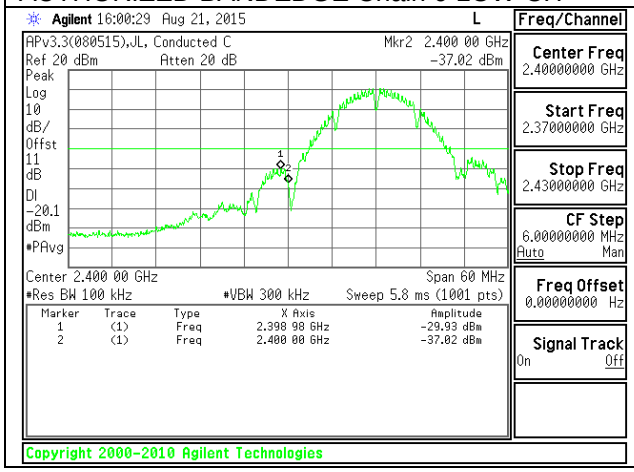


REFERENCE LEVEL Chain 1 MID CH

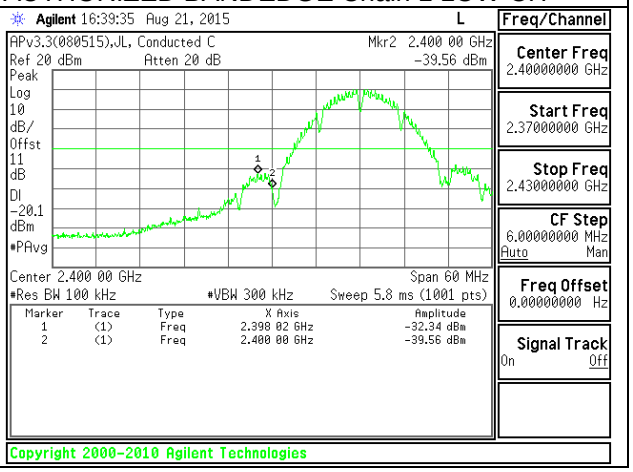


LOW CHANNEL BAND EDGE

AUTHORIZED BANDEDGE Chain 0 LOW CH



AUTHORIZED BANDEDGE Chain 1 LOW CH



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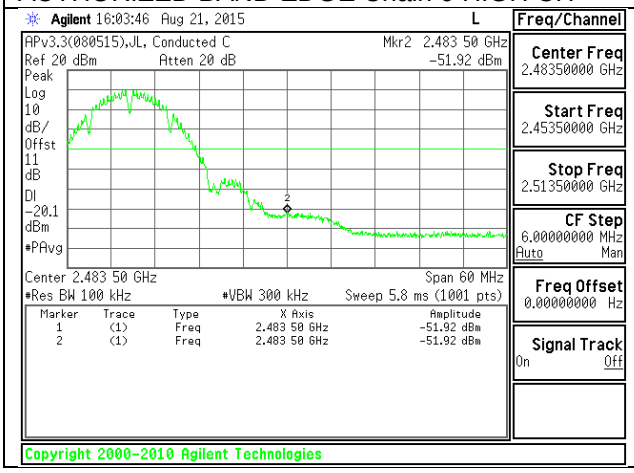
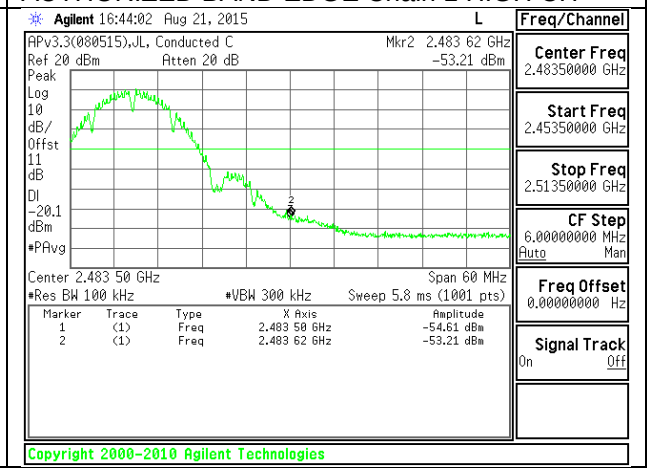
HIGH CHANNEL BAND EDGE

AUTHORIZED BAND EDGE Chain 0 HIGH CH

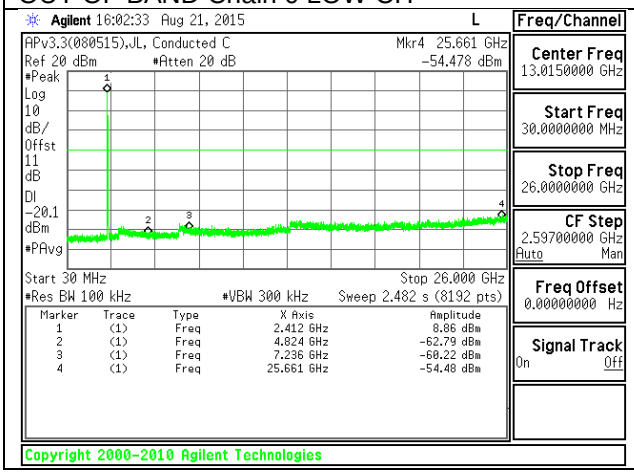


AUTHORIZED BAND EDGE Chain 1 HIGH CH

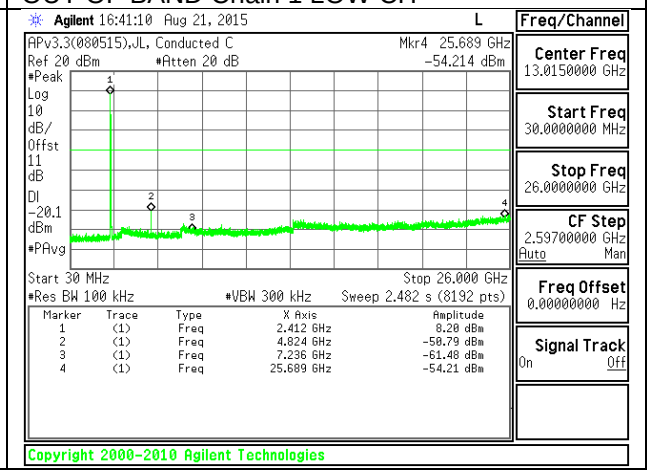


OUT-OF-BAND EMISSIONS

OUT OF BAND Chain 0 LOW CH



OUT OF BAND Chain 1 LOW CH



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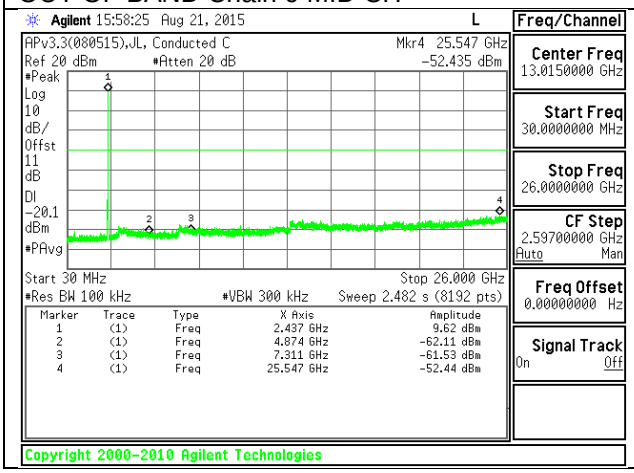
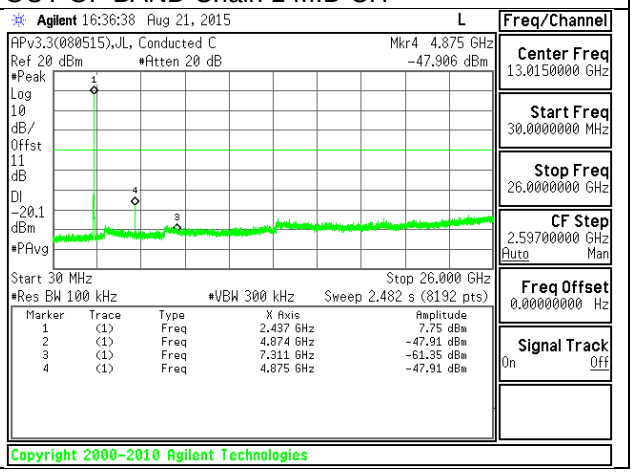
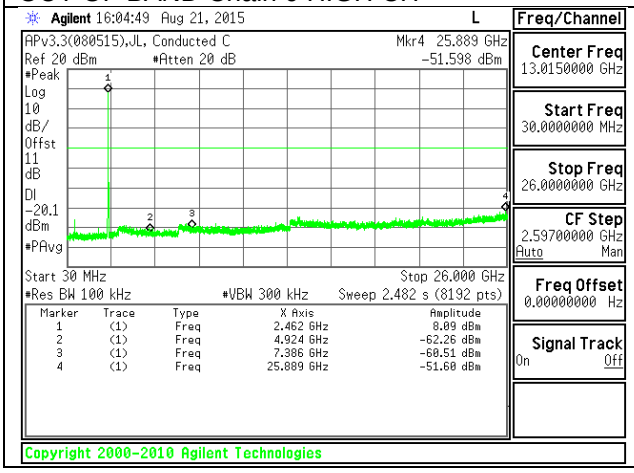
OUT OF BAND Chain 0 MID CH



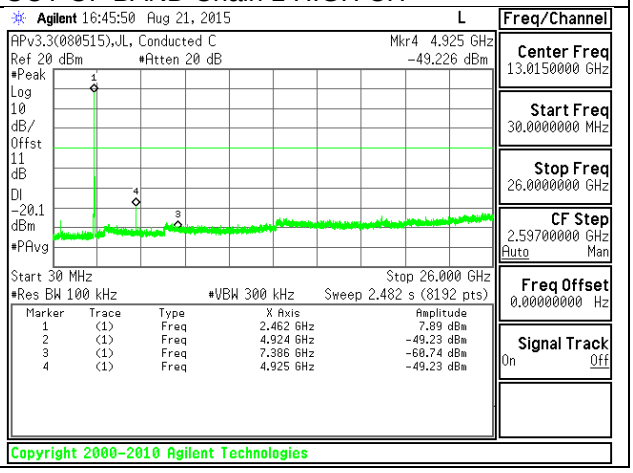
OUT OF BAND Chain 1 MID CH



OUT OF BAND Chain 0 HIGH CH



OUT OF BAND Chain 1 HIGH CH



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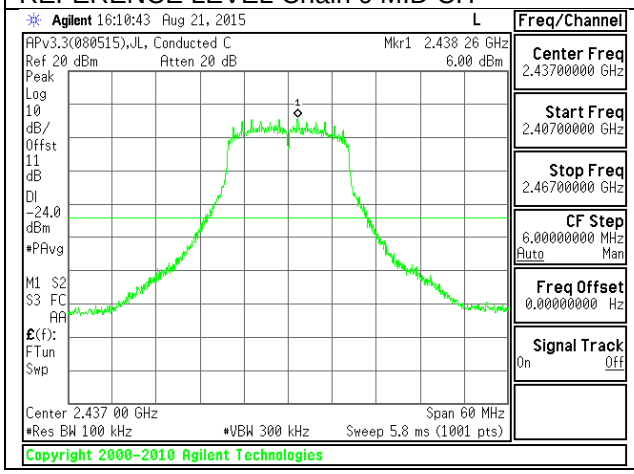
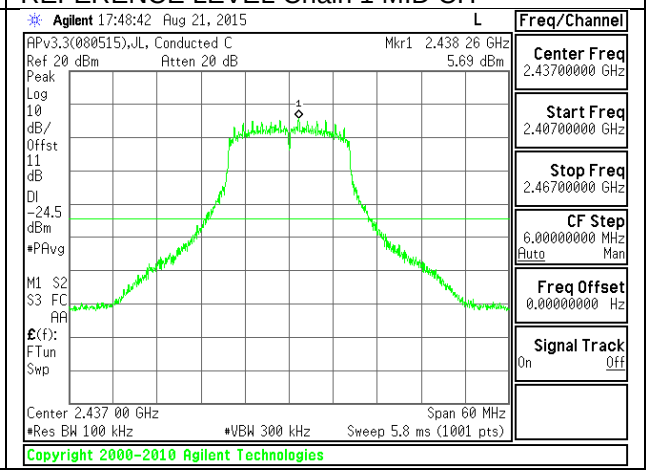
9.6.2. 802.11g MODE IN THE 2.4 GHz BAND

IN-BAND REFERENCE LEVEL

REFERENCE LEVEL Chain 0 MID CH

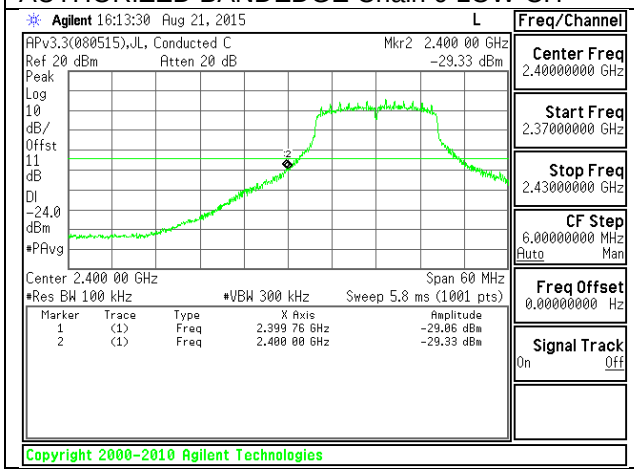


REFERENCE LEVEL Chain 1 MID CH

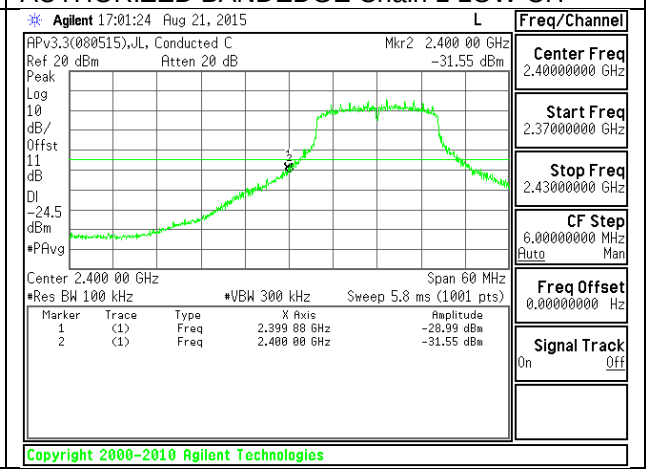


LOW CHANNEL BAND EDGE

AUTHORIZED BANDEDGE Chain 0 LOW CH



AUTHORIZED BANDEDGE Chain 1 LOW CH



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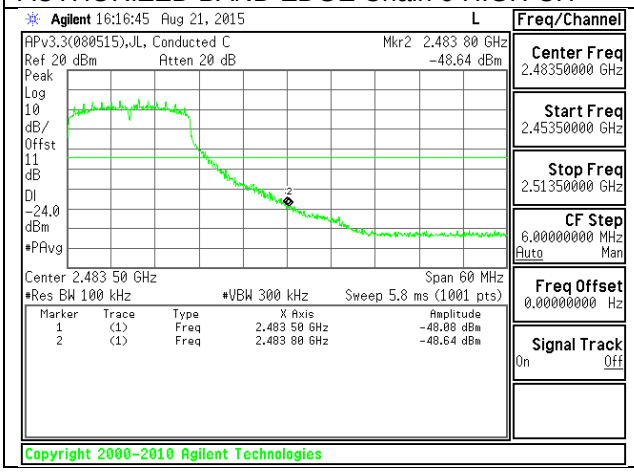
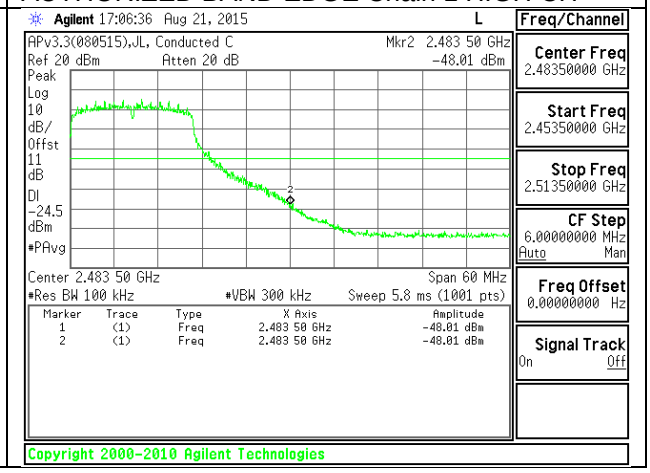
HIGH CHANNEL BAND EDGE

AUTHORIZED BAND EDGE Chain 0 HIGH CH

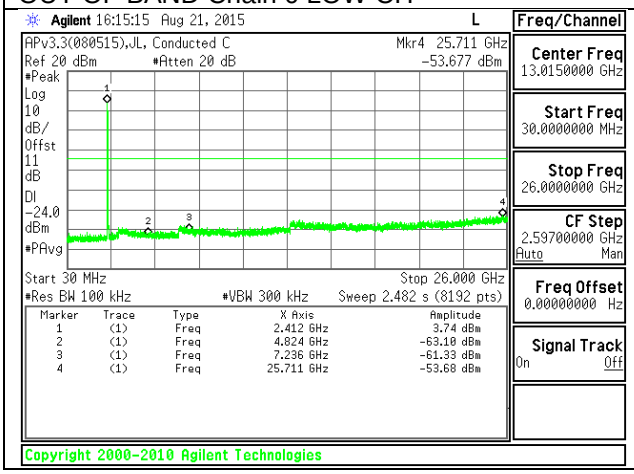


AUTHORIZED BAND EDGE Chain 1 HIGH CH

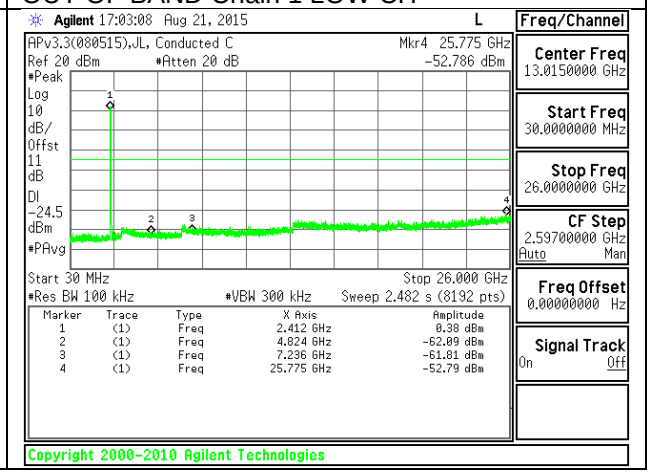


OUT-OF-BAND EMISSIONS

OUT OF BAND Chain 0 LOW CH



OUT OF BAND Chain 1 LOW CH



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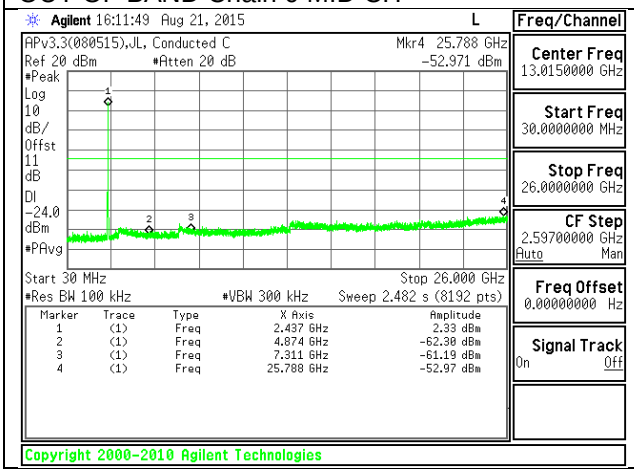
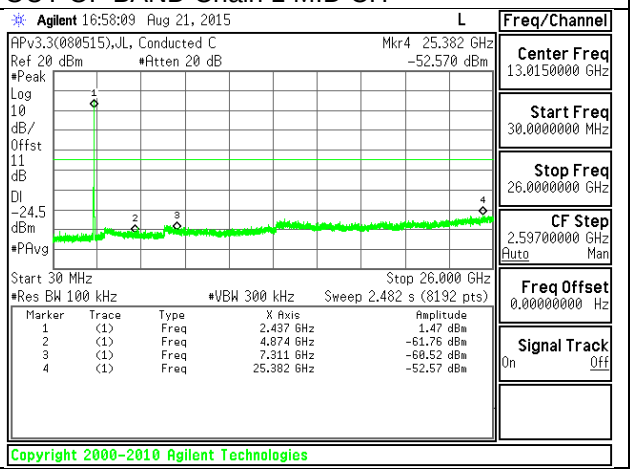
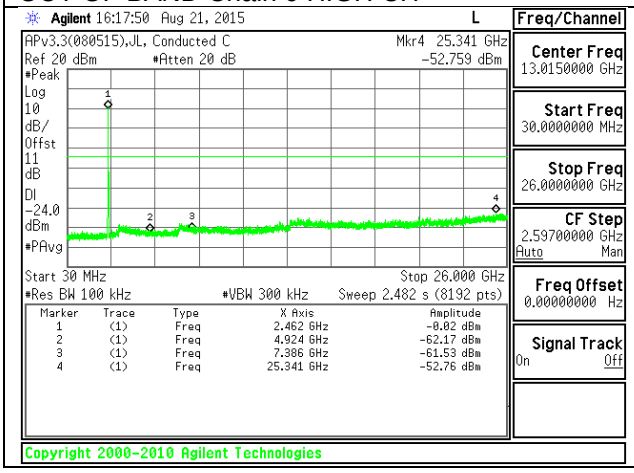
OUT OF BAND Chain 0 MID CH



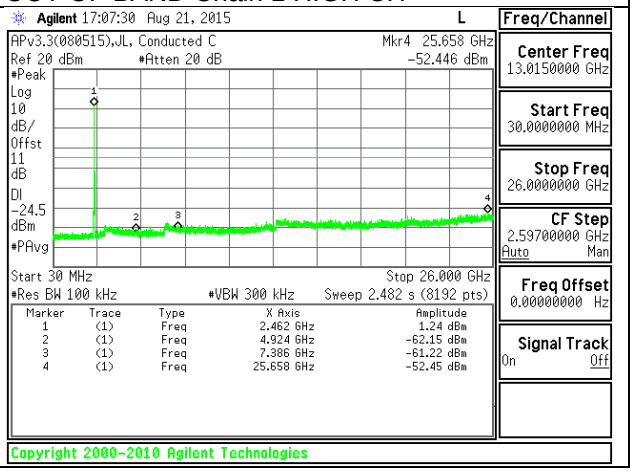
OUT OF BAND Chain 1 MID CH



OUT OF BAND Chain 0 HIGH CH



OUT OF BAND Chain 1 HIGH CH



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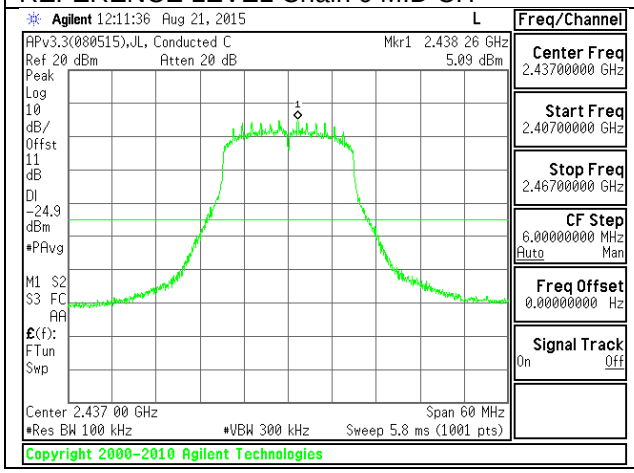
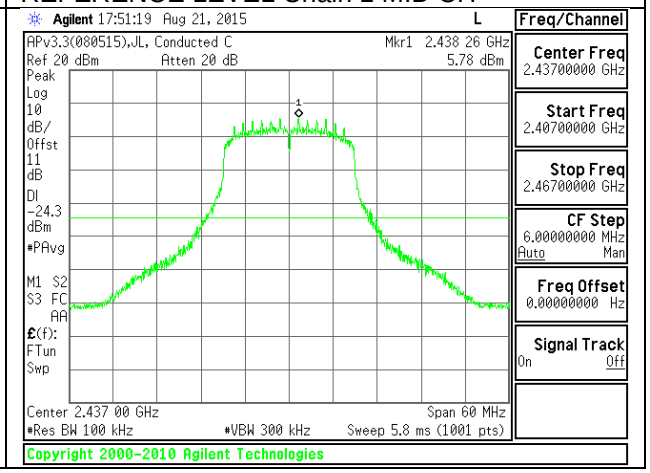
9.6.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

IN-BAND REFERENCE LEVEL

REFERENCE LEVEL Chain 0 MID CH

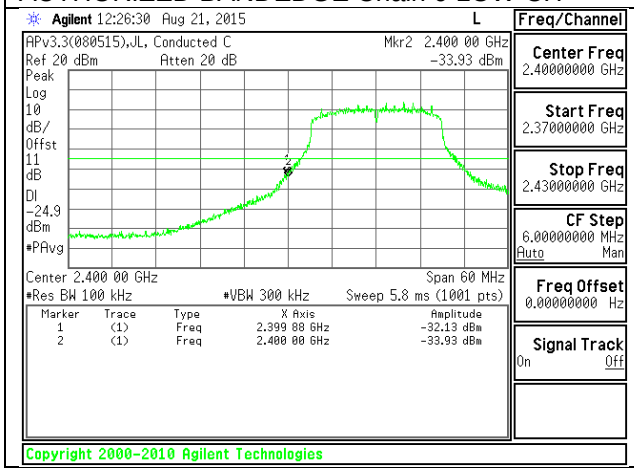


REFERENCE LEVEL Chain 1 MID CH

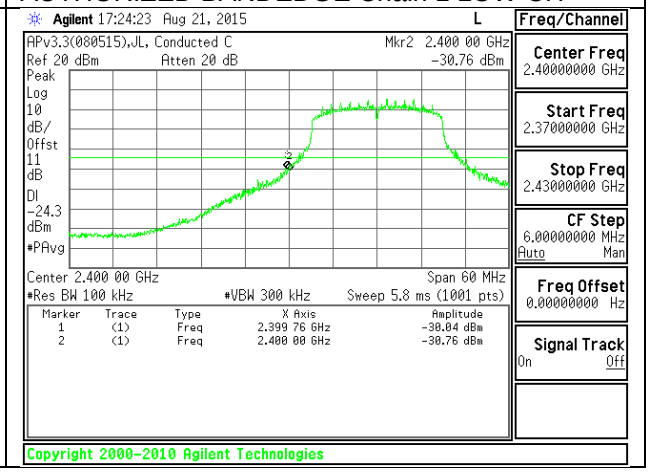


LOW CHANNEL BAND EDGE

AUTHORIZED BANDEDGE Chain 0 LOW CH



AUTHORIZED BANDEDGE Chain 1 LOW CH



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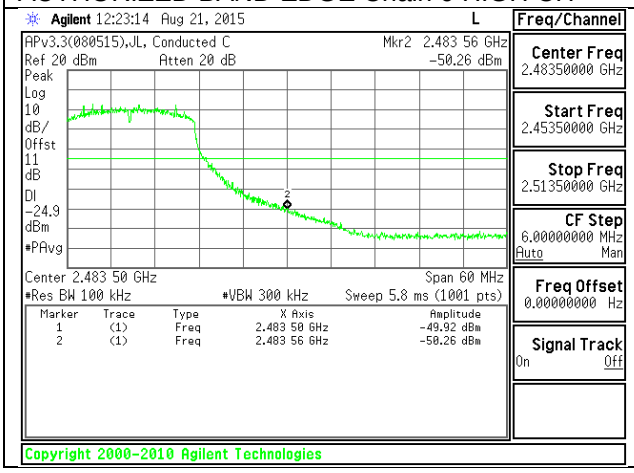
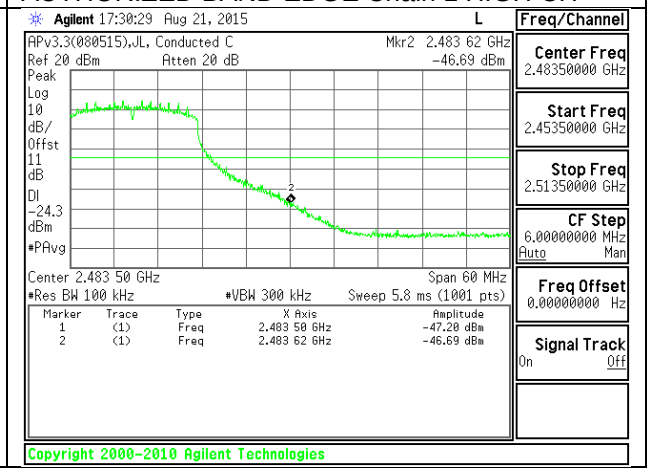
HIGH CHANNEL BAND EDGE

AUTHORIZED BAND EDGE Chain 0 HIGH CH

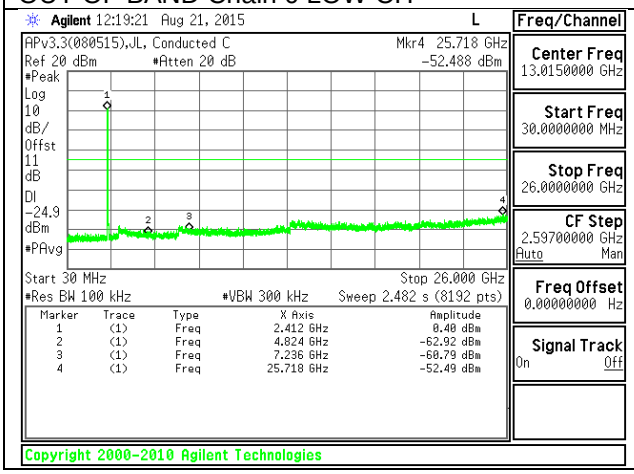


AUTHORIZED BAND EDGE Chain 1 HIGH CH

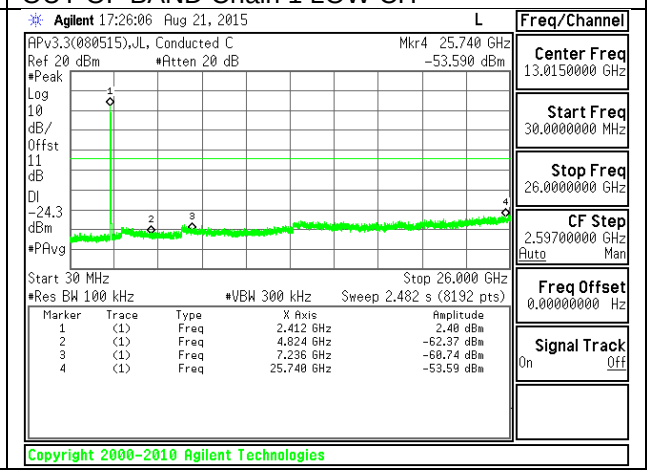


OUT-OF-BAND EMISSIONS

OUT OF BAND Chain 0 LOW CH



OUT OF BAND Chain 1 LOW CH



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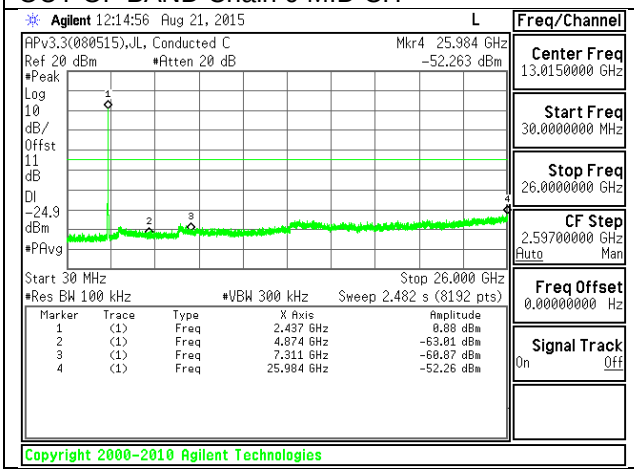
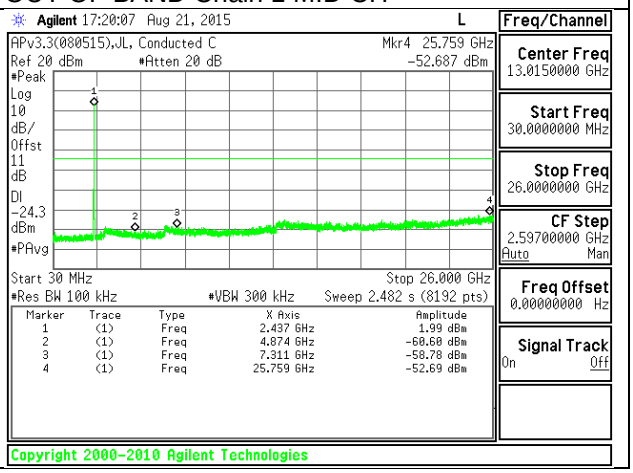
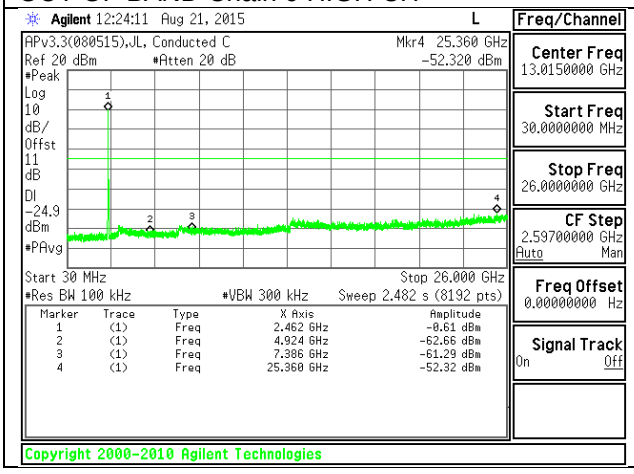
OUT OF BAND Chain 0 MID CH



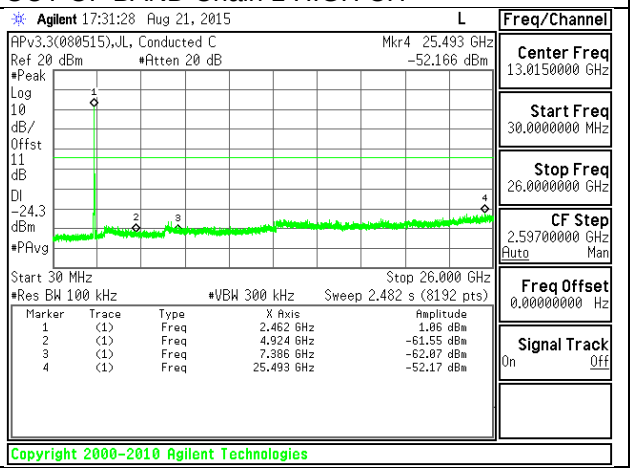
OUT OF BAND Chain 1 MID CH



OUT OF BAND Chain 0 HIGH CH



OUT OF BAND Chain 1 HIGH CH



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10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-GEN Clause 8.9 (Transmitter)

IC RSS-GEN Clause 7 (Receiver)

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

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150cm for above 1GHz. The antenna to EUT distance is 3 meters.

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 measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements. Duty cycle factor= 10log (1/x) For this sample B mode, G mode, and HT20 mode, the duty cycle factor is 0dB (duty cycle >98%).

The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

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

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Note: Band edge and radiated spurious emission test data are from MIMO mode.

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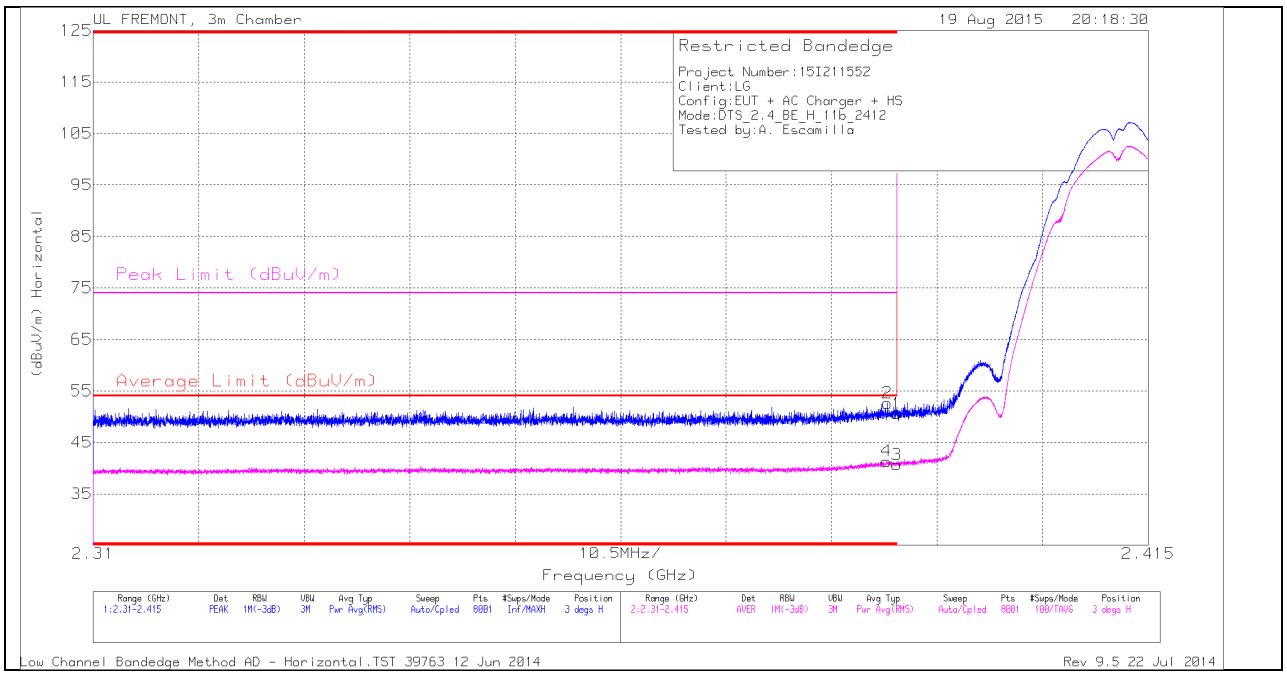
10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.389	43.01	PK	32	-22.4	0	52.61	-	-	74	-21.39	3	213	H
4	* 2.389	31.75	RMS	32	-22.4	0	41.35	54	-12.65	-	-	3	213	H
1	* 2.39	40.96	PK	32	-22.4	0	50.56	-	-	74	-23.44	3	213	H
3	* 2.39	31.05	RMS	32	-22.4	0	40.65	54	-13.35	-	-	3	213	H

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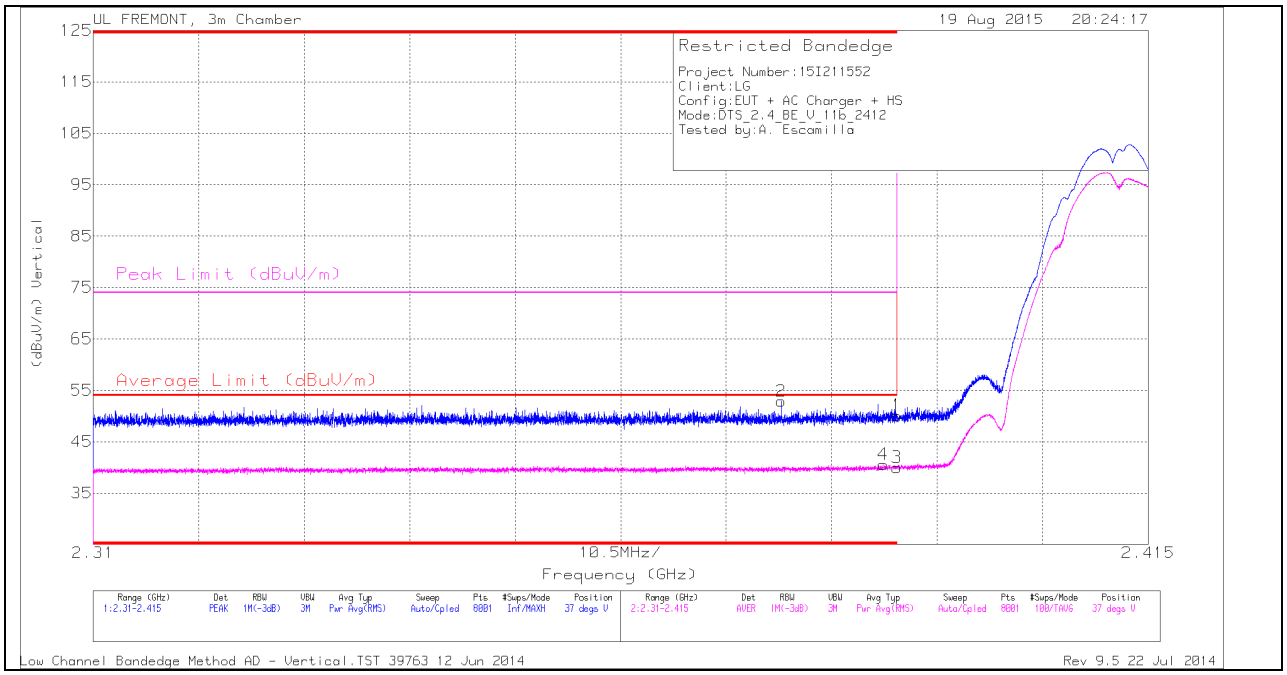
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.378	43.38	PK	31.9	-22.4	0	52.88	-	-	74	-21.12	37	285	V
4	* 2.389	30.97	RMS	32	-22.4	0	40.57	54	-13.43	-	-	37	285	V
1	* 2.39	40.53	PK	32	-22.4	0	50.13	-	-	74	-23.87	37	285	V
3	* 2.39	30.38	RMS	32	-22.4	0	39.98	54	-14.02	-	-	37	285	V

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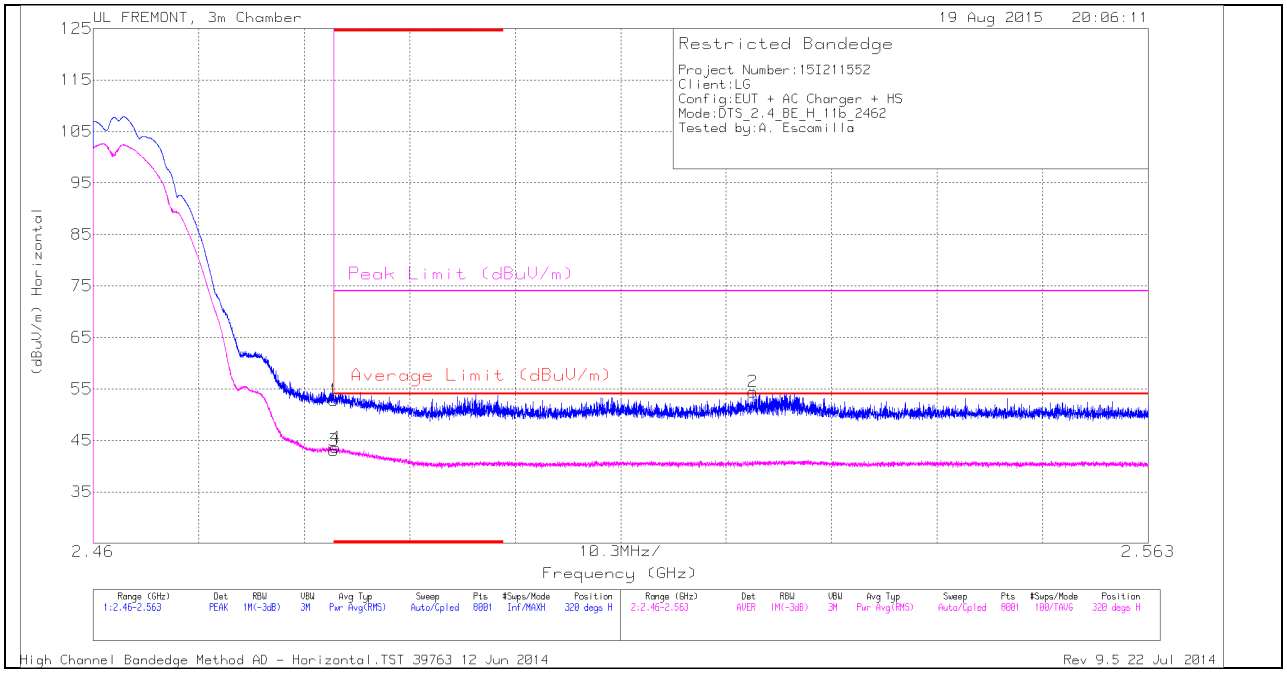
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (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	42.59	PK	32.3	-22.1	0	52.79	-	-	74	-21.21	320	357	H
3	* 2.484	32.84	RMS	32.3	-22.1	0	43.04	54	-10.96	-	-	320	357	H
4	* 2.484	33.42	RMS	32.3	-22.1	0	43.62	54	-10.38	-	-	320	357	H
2	2.524	44.04	PK	32.4	-22	0	54.44	-	-	74	-19.56	320	357	H

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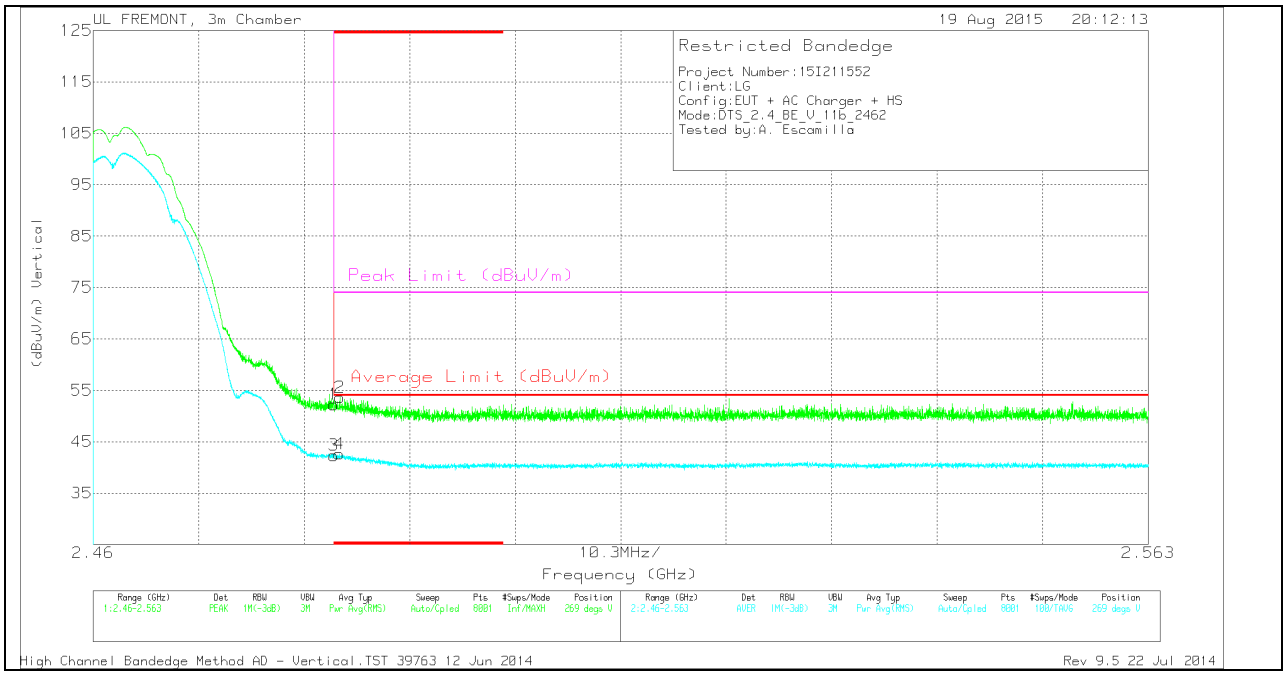
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (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	42.03	PK	32.3	-22.1	0	52.23	-	-	74	-21.77	269	359	V
2	* 2.484	43.41	PK	32.3	-22.1	0	53.61	-	-	74	-20.39	269	359	V
3	* 2.484	32.13	RMS	32.3	-22.1	0	42.33	54	-11.67	-	-	269	359	V
4	* 2.484	32.4	RMS	32.3	-22.1	0	42.6	54	-11.4	-	-	269	359	V

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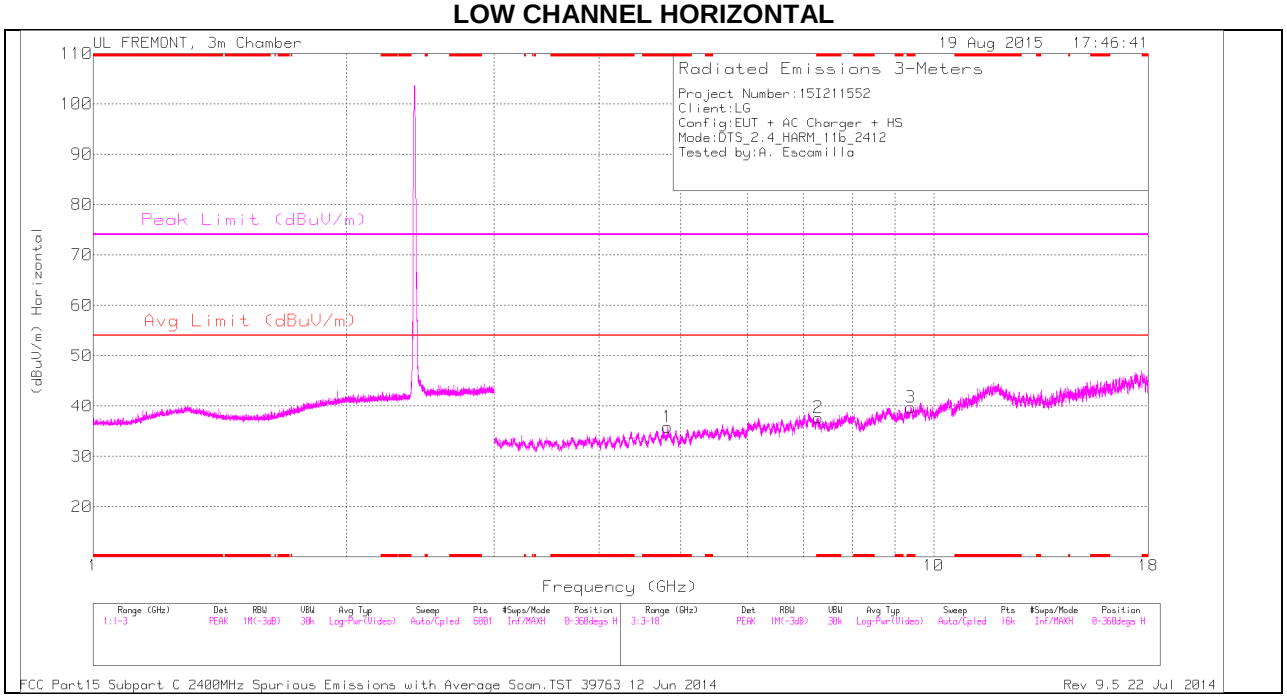
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



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

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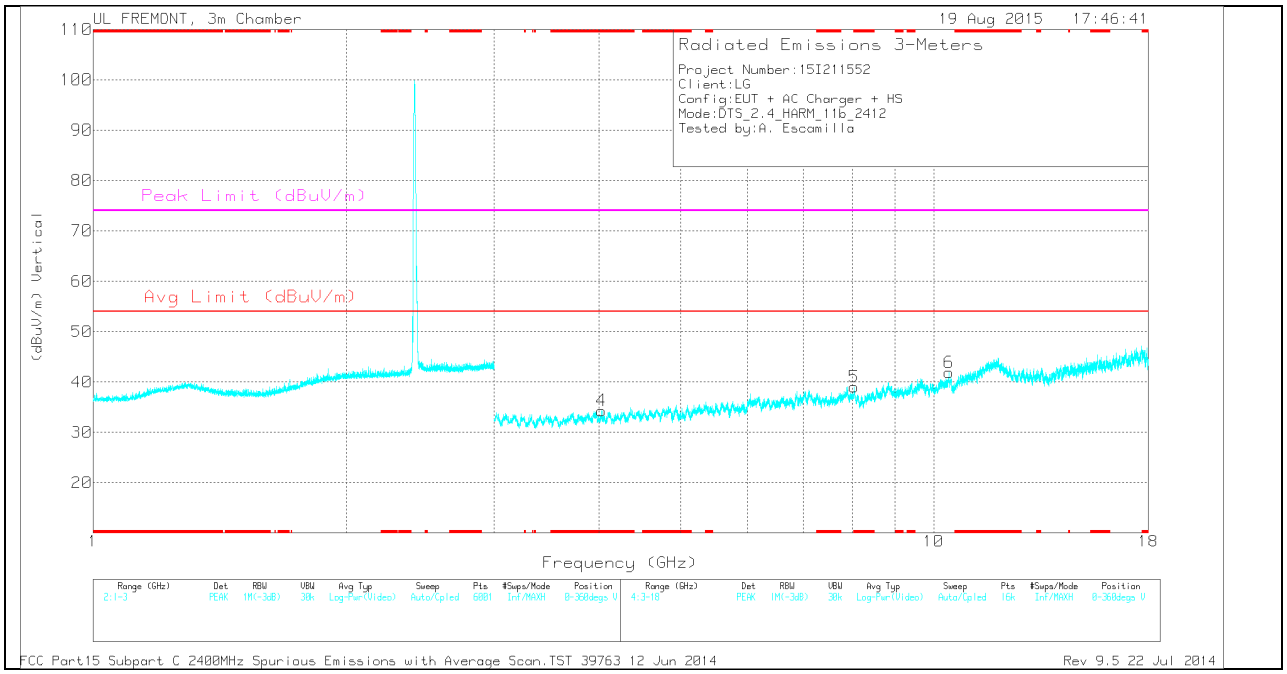
LOW CHANNEL VERTICAL



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

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LOW CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.824	31.26	PK	34	-29.4	0	35.86	-	-	74	-38.14	0-360	100	H
2	* 7.29	30.19	PK	35.6	-28.1	0	37.69	-	-	74	-36.31	0-360	200	H
3	* 9.391	27.43	PK	36.4	-24.1	0	39.73	-	-	74	-34.27	0-360	100	H
4	* 4.028	31.91	PK	33.2	-30.8	0	34.31	-	-	74	-39.69	0-360	200	V
5	* 8.044	30.04	PK	35.7	-26.7	0	39.04	-	-	74	-34.96	0-360	200	V
6	10.432	28.19	PK	37.3	-23.6	0	41.89	-	-	-	-	0-360	100	V

PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.823	39.93	PK2	34	-29.4	0	44.53	-	-	74	-29.47	347	154	H
* 4.824	28.6	MAv1	34	-29.4	0	33.2	54	-20.8	-	-	347	154	H
* 7.289	39.35	PK2	35.6	-28.2	0	46.75	-	-	74	-27.25	312	172	H
* 7.291	27.66	MAv1	35.6	-28.1	0	35.16	54	-18.84	-	-	312	172	H
* 9.393	36.71	PK2	36.4	-24.1	0	49.01	-	-	74	-24.99	182	200	H
* 9.39	25.26	MAv1	36.4	-24.1	0	37.56	54	-16.44	-	-	182	200	H
* 4.03	40.61	PK2	33.2	-30.8	0	43.01	-	-	74	-30.99	167	218	V
* 4.029	29.31	MAv1	33.2	-30.8	0	31.71	54	-22.29	-	-	167	218	V
* 8.045	39.26	PK2	35.7	-26.7	0	48.26	-	-	74	-25.74	21	150	V
* 8.046	27.4	MAv1	35.7	-26.7	0	36.4	54	-17.6	-	-	21	150	V
10.433	24.6	MAv1	37.3	-23.6	0	38.3		-	-	-	35	121	V
10.434	35.73	PK2	37.3	-23.7	0	49.33	-	-			35	121	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

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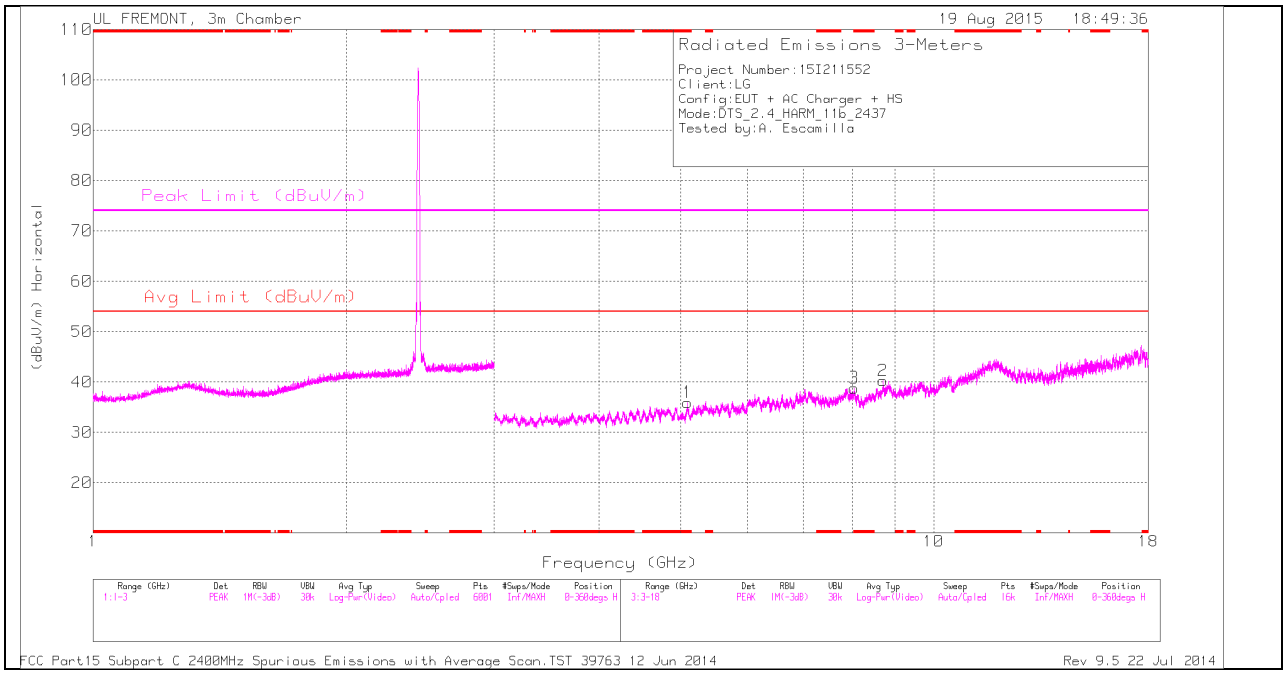
MID CHANNEL HORIZONTAL



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

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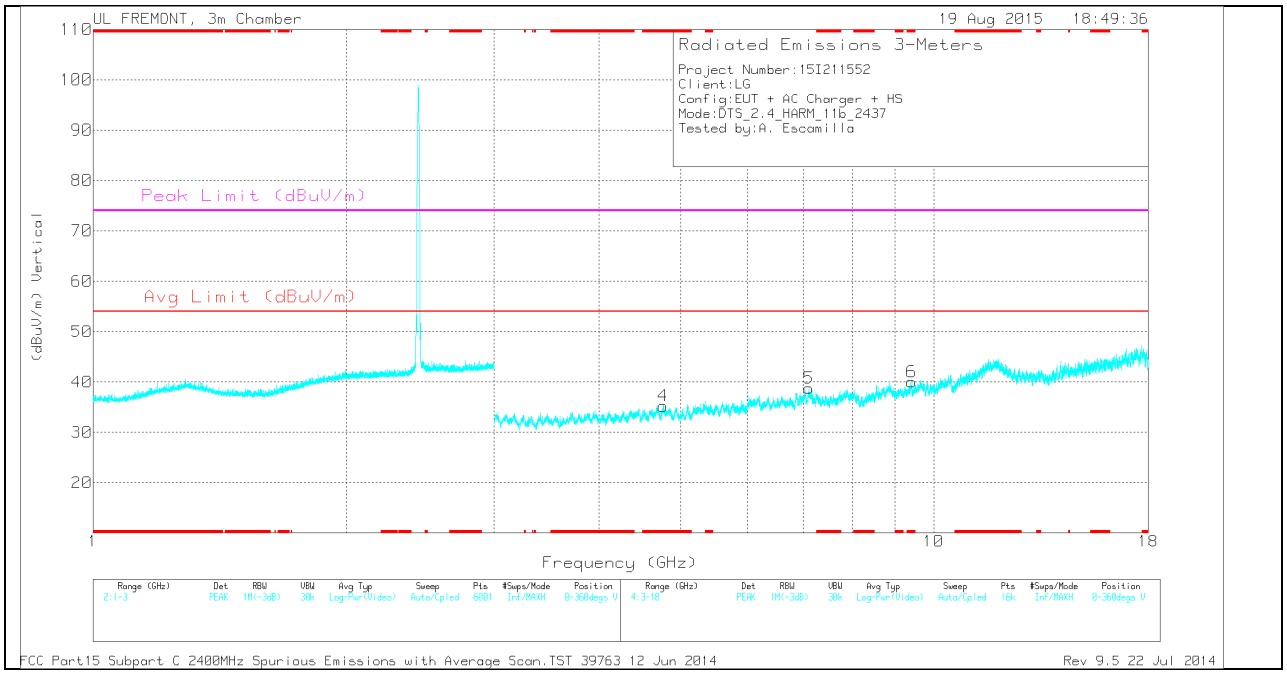
MID CHANNEL VERTICAL



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

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MID CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.096	30.92	PK	34.1	-29.1	0	35.92	-	-	74	-38.08	0-360	100	H
3	* 8.041	30	PK	35.7	-26.9	0	38.8	-	-	74	-35.2	0-360	200	H
4	* 4.767	31.33	PK	34	-30.1	0	35.23	-	-	74	-38.77	0-360	200	V
6	* 9.414	27.84	PK	36.4	-24.2	0	40.04	-	-	74	-33.96	0-360	200	V
5	7.101	30.05	PK	35.6	-26.9	0	38.75	-	-	-	-	0-360	200	V
2	8.706	30.66	PK	35.9	-26.3	0	40.26	-	-	-	-	0-360	200	H

PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 5.095	39.99	PK2	34.1	-29.1	0	44.99	-	-	74	-29.01	3	155	H
* 5.096	28.66	MAv1	34.1	-29.1	0	33.66	54	-20.34	-	-	3	155	H
* 4.765	40.77	PK2	34	-30.1	0	44.67	-	-	74	-29.33	10	216	V
* 4.765	29.14	MAv1	34	-30.1	0	33.04	54	-20.96	-	-	10	216	V
* 9.416	37.09	PK2	36.4	-24.3	0	49.19	-	-	74	-24.81	184	190	V
* 9.413	25.33	MAv1	36.4	-24.2	0	37.53	54	-16.47	-	-	184	190	V
7.103	38.41	PK2	35.6	-26.9	0	47.11	-	-		-	123	172	V
7.103	27.3	MAv1	35.6	-26.9	0	36	-	-	-	-	123	172	V
8.706	37.64	PK2	35.9	-26.3	0	47.24	-	-	-	-	35	195	H
8.708	26.49	MAv1	35.9	-26.3	0	36.09	-	-	-	-	35	195	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

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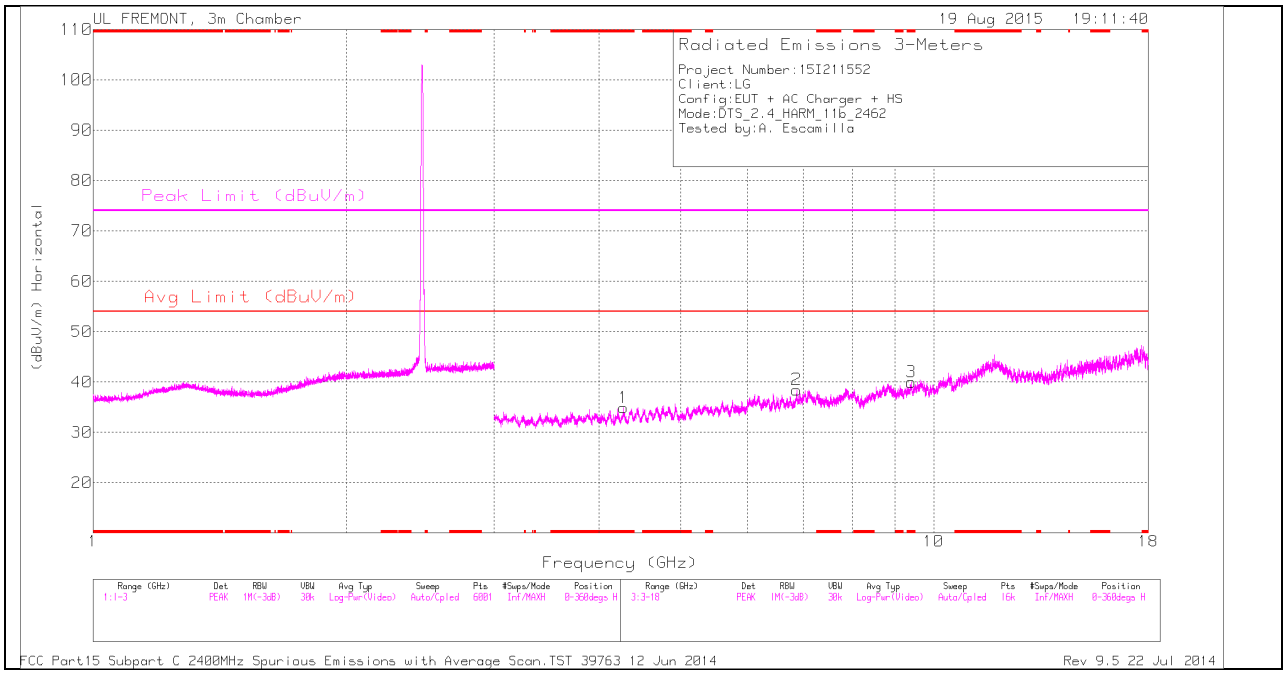
HIGH CHANNEL HORIZONTAL



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

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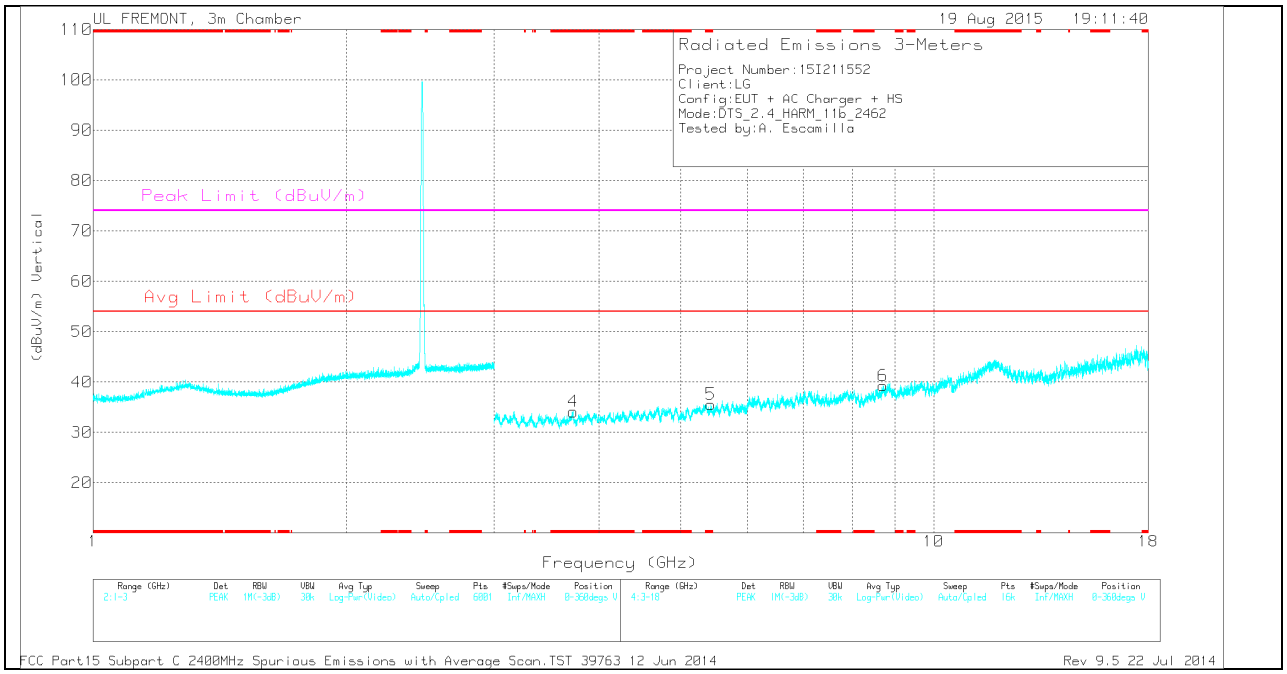
HIGH CHANNEL VERTICAL



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

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HIGH CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.278	31.9	PK	33.5	-30.5	0	34.9	-	-	74	-39.1	0-360	200	H
3	* 9.406	27.68	PK	36.4	-24.1	0	39.98	-	-	74	-34.02	0-360	200	H
4	* 3.726	31.11	PK	33	-30	0	34.11	-	-	74	-39.89	0-360	100	V
5	* 5.432	31.05	PK	34.6	-30.1	0	35.55	-	-	74	-38.45	0-360	200	V
2	6.87	30.17	PK	35.6	-27.3	0	38.47	-	-	-	-	0-360	200	H
6	8.708	29.67	PK	35.9	-26.3	0	39.27	-	-	-	-	0-360	200	V

PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.279	41.58	PK2	33.5	-30.5	0	44.58	-	-	74	-29.42	336	166	H
* 4.277	29.59	MAv1	33.5	-30.5	0	32.59	54	-21.41	-	-	336	166	H
* 9.407	37.29	PK2	36.4	-24.1	0	49.59	-	-	74	-24.41	192	200	H
* 9.407	25.51	MAv1	36.4	-24.1	0	37.81	54	-16.19	-	-	192	200	H
* 3.725	40.12	PK2	33	-29.9	0	43.22	-	-	74	-30.78	192	171	V
* 3.727	28.48	MAv1	33	-30	0	31.48	54	-22.52	-	-	192	171	V
* 5.434	40.78	PK2	34.6	-30.1	0	45.28	-	-	74	-28.72	179	200	V
* 5.431	28.72	MAv1	34.6	-30.1	0	33.22	54	-20.78	-	-	179	200	V
6.868	27.4	MAv1	35.6	-27.3	0	35.7	-	-	-	-	348	184	H
6.869	38.69	PK2	35.6	-27.3	0	46.99	-	-	-	-	348	184	H
8.707	38.25	PK2	35.9	-26.3	0	47.85	-	-	-	-	1	214	V
8.71	26.69	MAv1	35.9	-26.4	0	36.19	-	-	-	-	1	214	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

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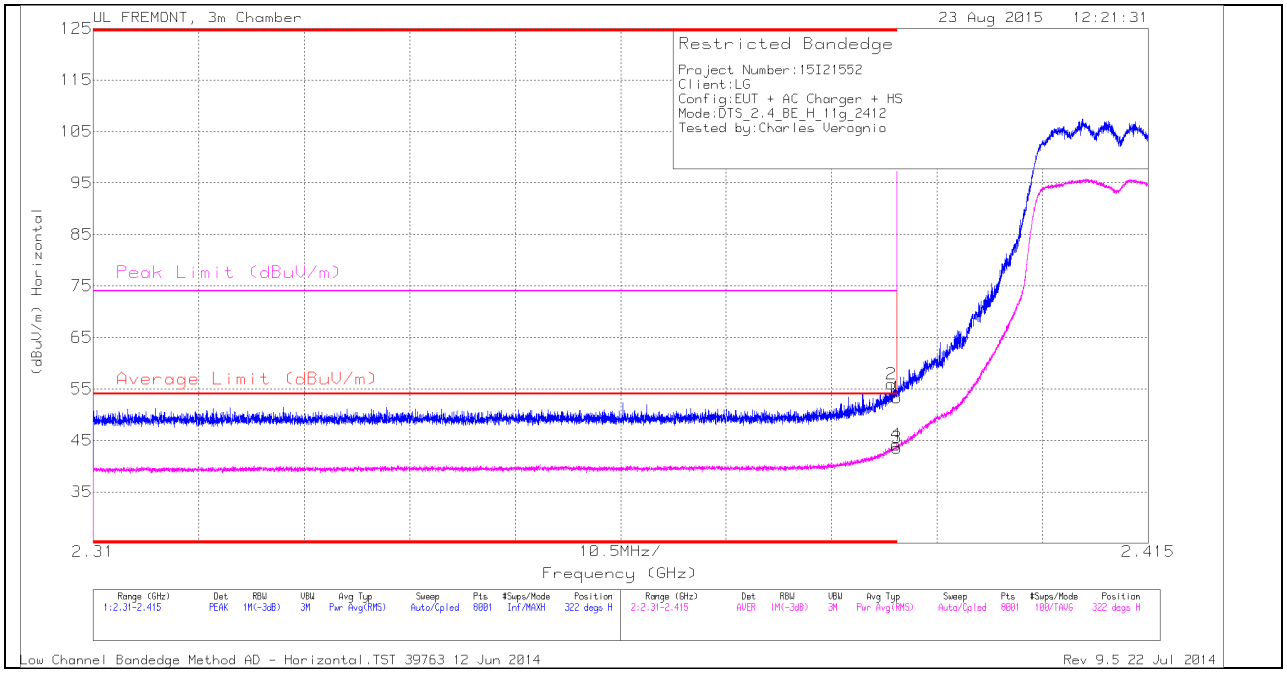
10.2.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	* 2.389	46.33	PK	32	-22.4	55.93	-	-	74	-18.07	322	368	H
1	* 2.39	43.73	PK	32	-22.4	53.33	-	-	74	-20.67	322	368	H
3	* 2.39	33.96	RMS	32	-22.4	43.56	54	-10.44	-	-	322	368	H
4	* 2.39	34.58	RMS	32	-22.4	44.18	54	-9.82	-	-	322	368	H

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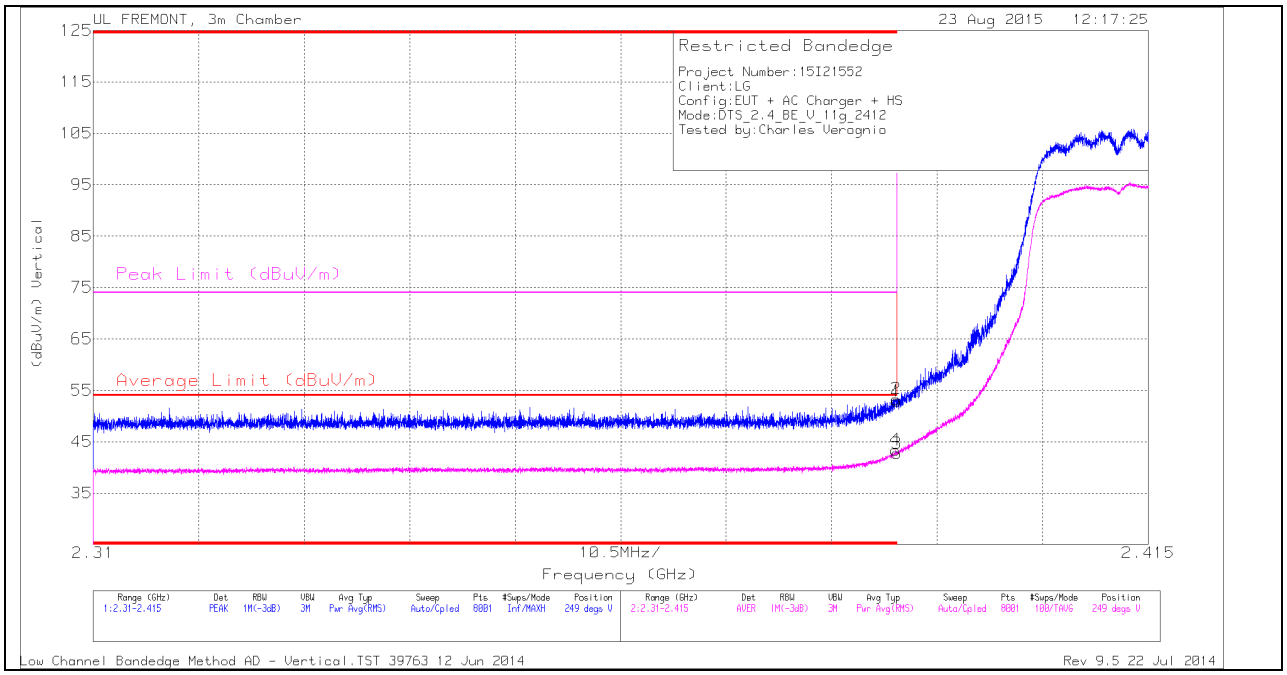
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	43.31	PK	32	-22.4	52.91	-	-	74	-21.09	249	366	V
2	* 2.39	43.72	PK	32	-22.4	53.32	-	-	74	-20.68	249	366	V
3	* 2.39	33.15	RMS	32	-22.4	42.75	54	-11.25	-	-	249	366	V
4	* 2.39	33.8	RMS	32	-22.4	43.4	54	-10.6	-	-	249	366	V

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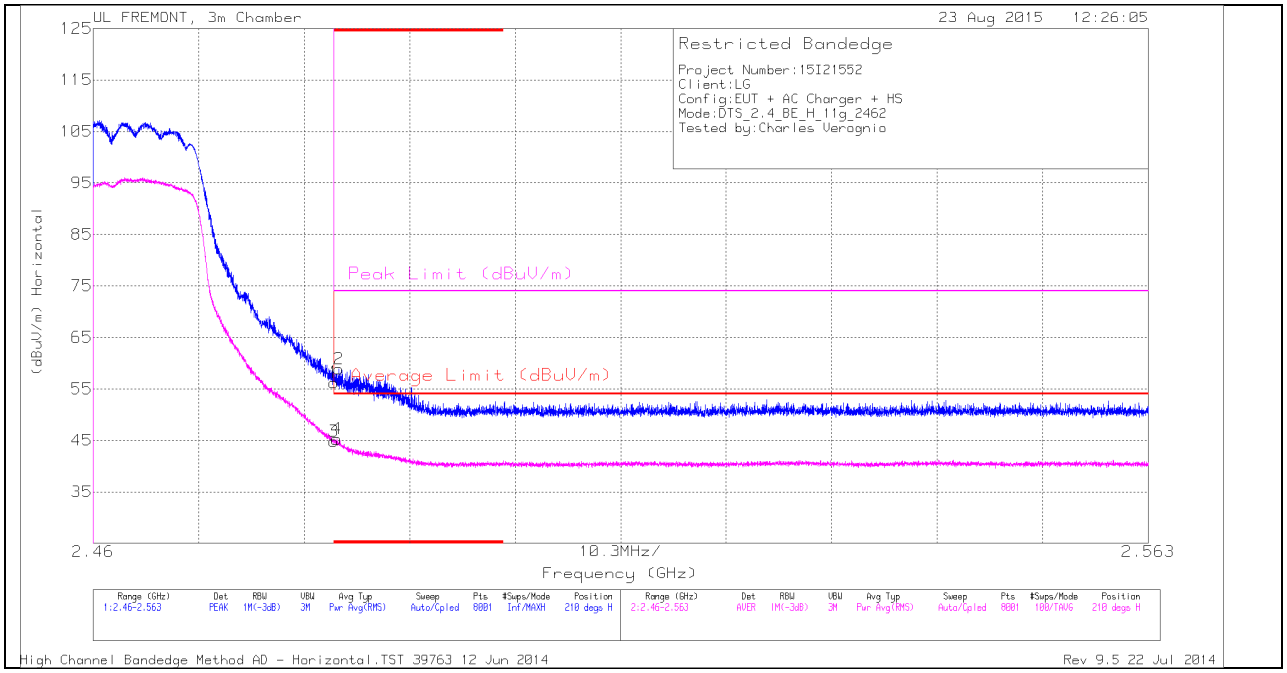
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	46.04	PK	32.3	-22.1	56.24	-	-	74	-17.76	210	314	H
2	* 2.484	48.68	PK	32.3	-22.1	58.88	-	-	74	-15.12	210	314	H
3	* 2.484	34.64	RMS	32.3	-22.1	44.84	54	-9.16	-	-	210	314	H
4	* 2.484	35.07	RMS	32.3	-22.1	45.27	54	-8.73	-	-	210	314	H

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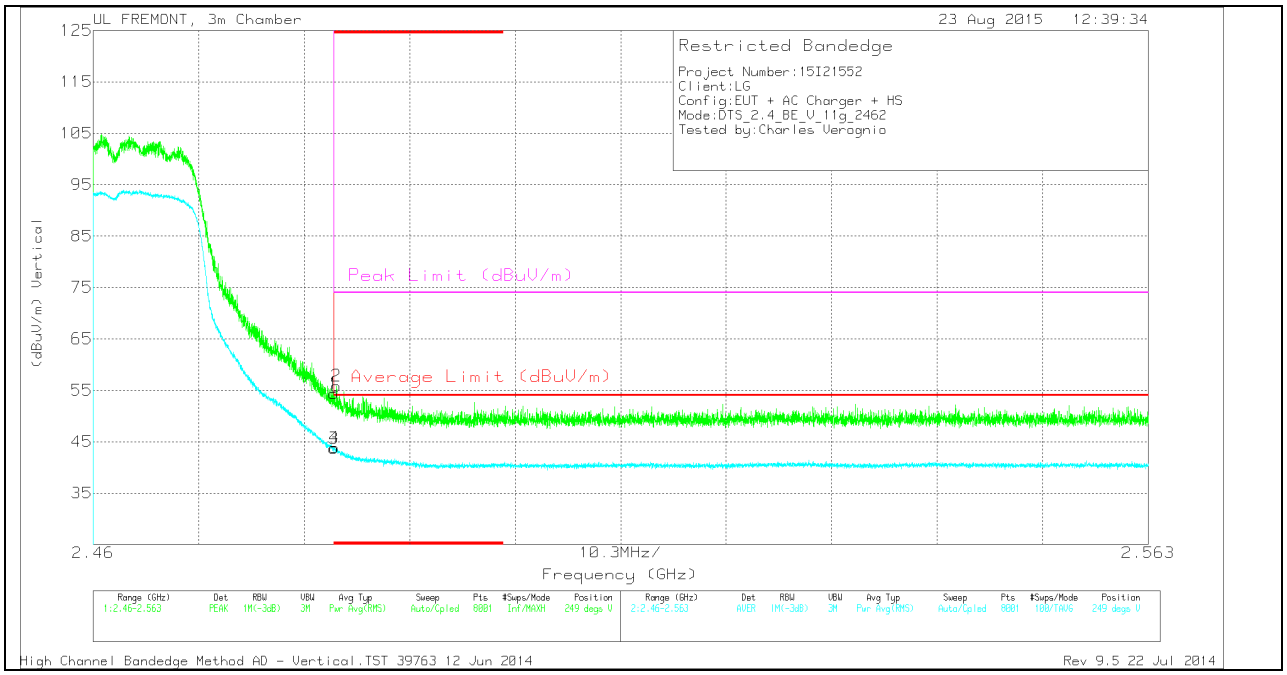
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	44.21	PK	32.3	-22.1	54.41	-	-	74	-19.59	249	314	V
2	* 2.484	45.64	PK	32.3	-22.1	55.84	-	-	74	-18.16	249	314	V
3	* 2.484	33.52	RMS	32.3	-22.1	43.72	54	-10.28	-	-	249	314	V
4	* 2.484	33.65	RMS	32.3	-22.1	43.85	54	-10.15	-	-	249	314	V

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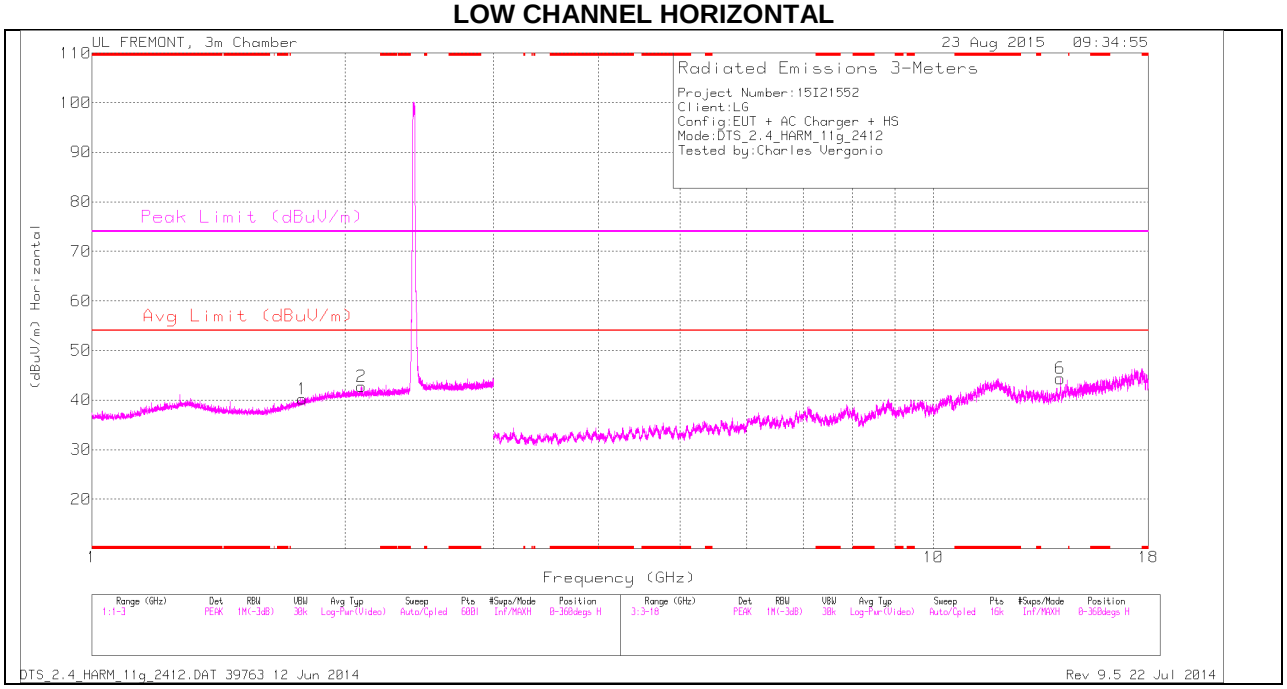
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



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

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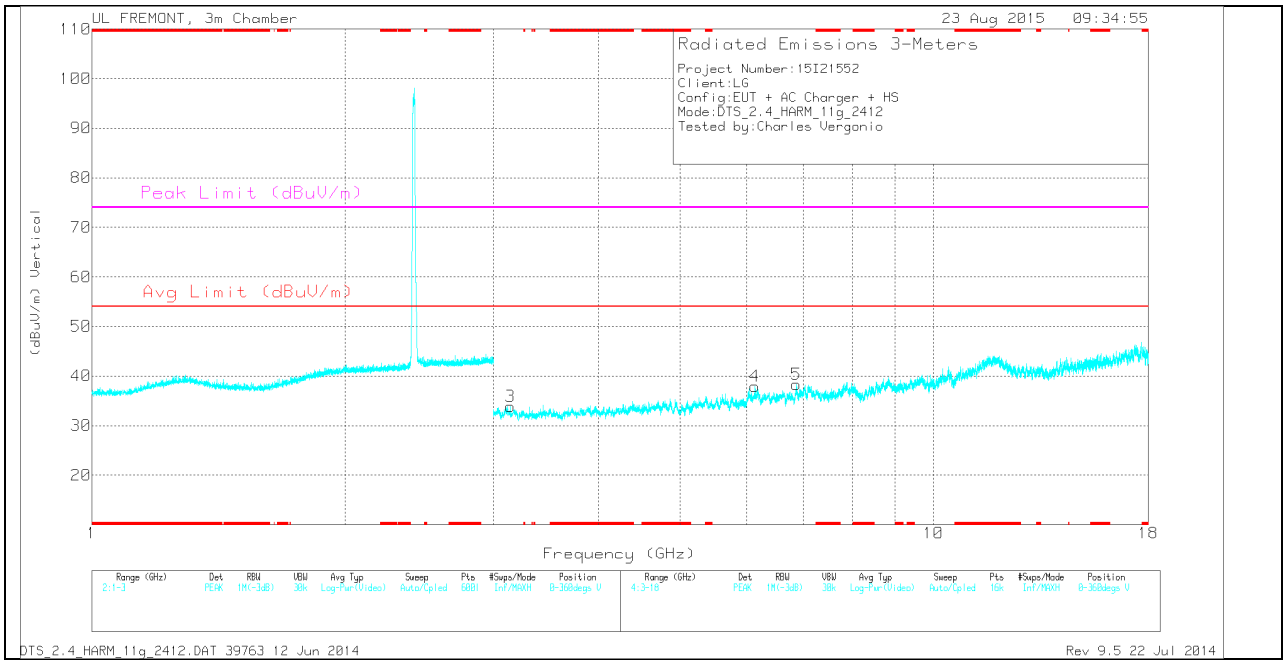
LOW CHANNEL VERTICAL



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

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LOW CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	1.78	32.87	PK	30	-22.7	40.17	-	-	-	-	0-360	200	H
2	2.09	33.67	PK	31.5	-22.4	42.77	-	-	-	-	0-360	100	H
3	3.14	31.62	PK	32.7	-30.4	33.92	-	-	-	-	0-360	100	V
4	6.13	31.23	PK	35.2	-28.5	37.93	-	-	-	-	0-360	200	V
5	6.875	29.91	PK	35.6	-27.2	38.31	-	-	-	-	0-360	200	V
6	14.145	31.85	PK	39	-26.5	44.35	-	-	-	-	0-360	100	H

PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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
1.78	30.84	MAv1	30	-22.7	38.14	-	-	-	-	0	200	H
1.781	42.32	PK2	30	-22.7	49.62	-	-	-	-	0	200	H
2.088	42.23	PK2	31.5	-22.4	51.33	-	-	-	-	0	100	H
2.09	30.68	MAv1	31.5	-22.4	39.78	-	-	-	-	0	100	H
3.138	28.85	MAv1	32.7	-30.4	31.15	-	-	-	-	0	100	V
3.141	40.33	PK2	32.7	-30.4	42.63	-	-	-	-	0	100	V
6.131	39.47	PK2	35.2	-28.5	46.17	-	-	-	-	0	200	V
6.132	27.77	MAv1	35.2	-28.5	34.47	-	-	-	-	0	200	V
6.876	39.06	PK2	35.6	-27.2	47.46	-	-	-	-	0	200	V
6.876	27.85	MAv1	35.6	-27.2	36.25	-	-	-	-	0	200	V
14.145	39.87	PK2	39	-26.5	52.37	-	-	-	-	0	100	H
14.145	28.34	MAv1	39	-26.5	40.84	-	-	-	-	0	100	H

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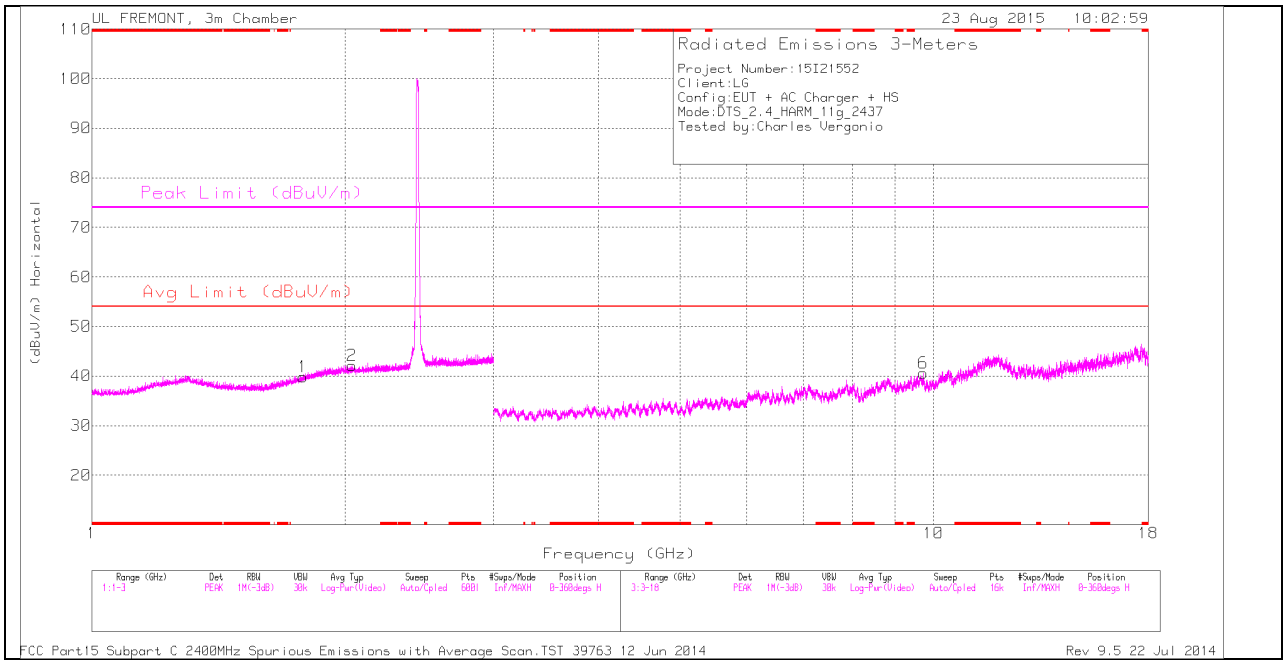
MID CHANNEL HORIZONTAL



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

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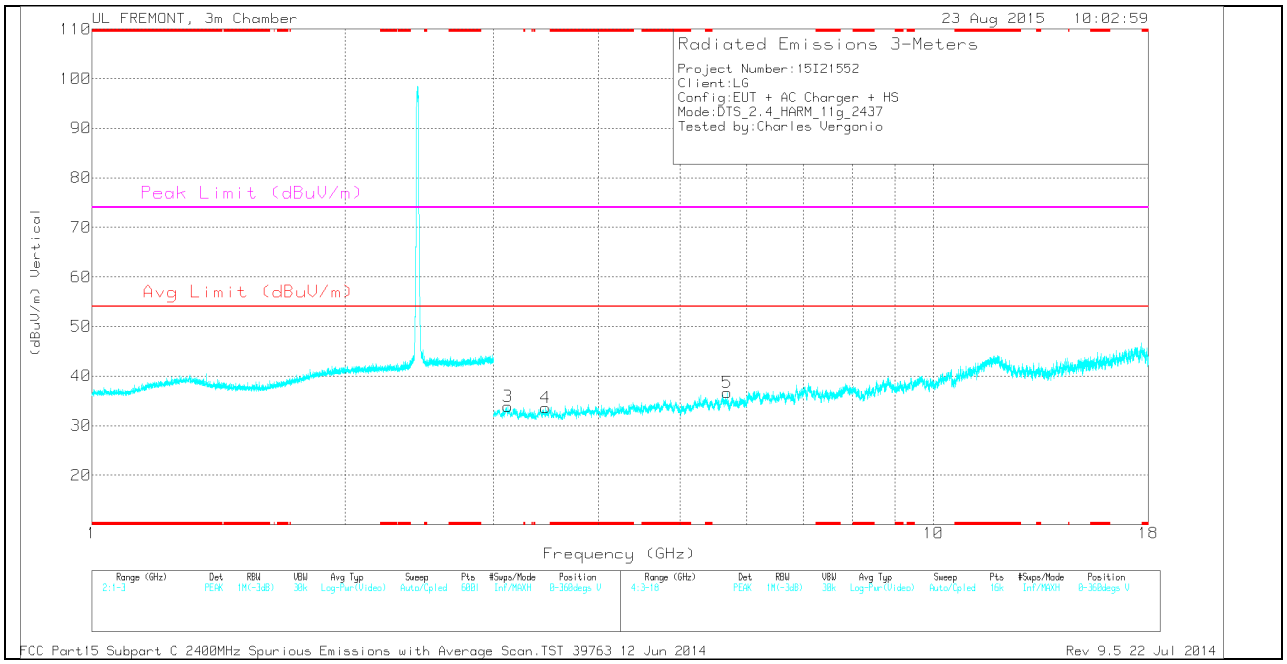
MID CHANNEL VERTICAL



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

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MID CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	1.783	32.52	PK	30	-22.7	39.82	-	-	-	-	0-360	100	H
2	2.039	33.04	PK	31.5	-22.4	42.14	-	-	-	-	0-360	100	H
3	3.122	31.63	PK	32.7	-30.5	33.83	-	-	-	-	0-360	200	V
4	3.461	31.31	PK	32.8	-30.5	33.61	-	-	-	-	0-360	100	V
5	5.686	31.42	PK	34.7	-29.5	36.62	-	-	-	-	0-360	200	V
6	9.728	27.95	PK	36.9	-24.3	40.55	-	-	-	-	0-360	100	H

PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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
1.782	42.24	PK2	30	-22.7	49.54	-	-	-	-	0	100	H
1.783	30.9	MAv1	30	-22.7	38.2	-	-	-	-	0	100	H
2.039	42.67	PK2	31.5	-22.4	51.77	-	-	-	-	0	100	H
2.041	30.71	MAv1	31.5	-22.4	39.81	-	-	-	-	0	100	H
3.121	29.33	MAv1	32.7	-30.5	31.53	-	-	-	-	0	200	V
3.123	40.31	PK2	32.7	-30.5	42.51	-	-	-	-	0	200	V
3.463	39.99	PK2	32.8	-30.5	42.29	-	-	-	-	0	100	V
3.463	28.86	MAv1	32.8	-30.5	31.16	-	-	-	-	0	100	V
5.685	41.07	PK2	34.7	-29.5	46.27	-	-	-	-	0	200	V
5.687	28.81	MAv1	34.7	-29.6	33.91	-	-	-	-	0	200	V
9.729	36.31	PK2	36.9	-24.3	48.91	-	-	-	-	0	100	H
9.73	24.97	MAv1	36.9	-24.3	37.57	-	-	-	-	0	100	H

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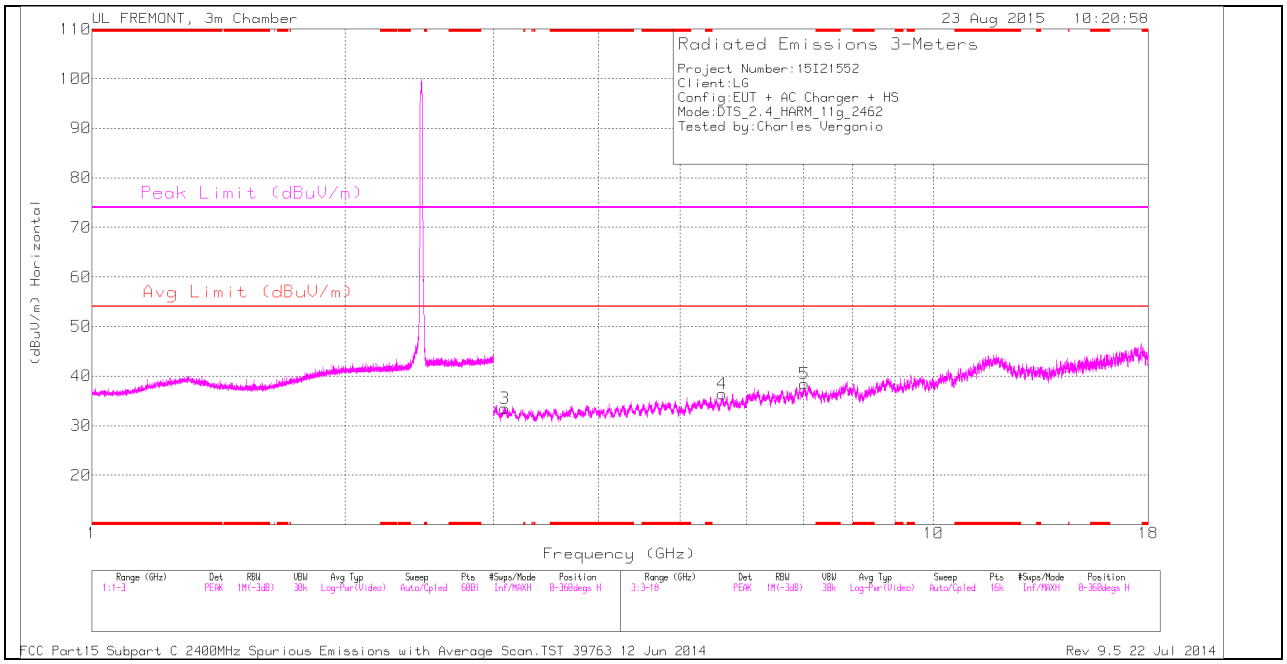
HIGH CHANNEL HORIZONTAL



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

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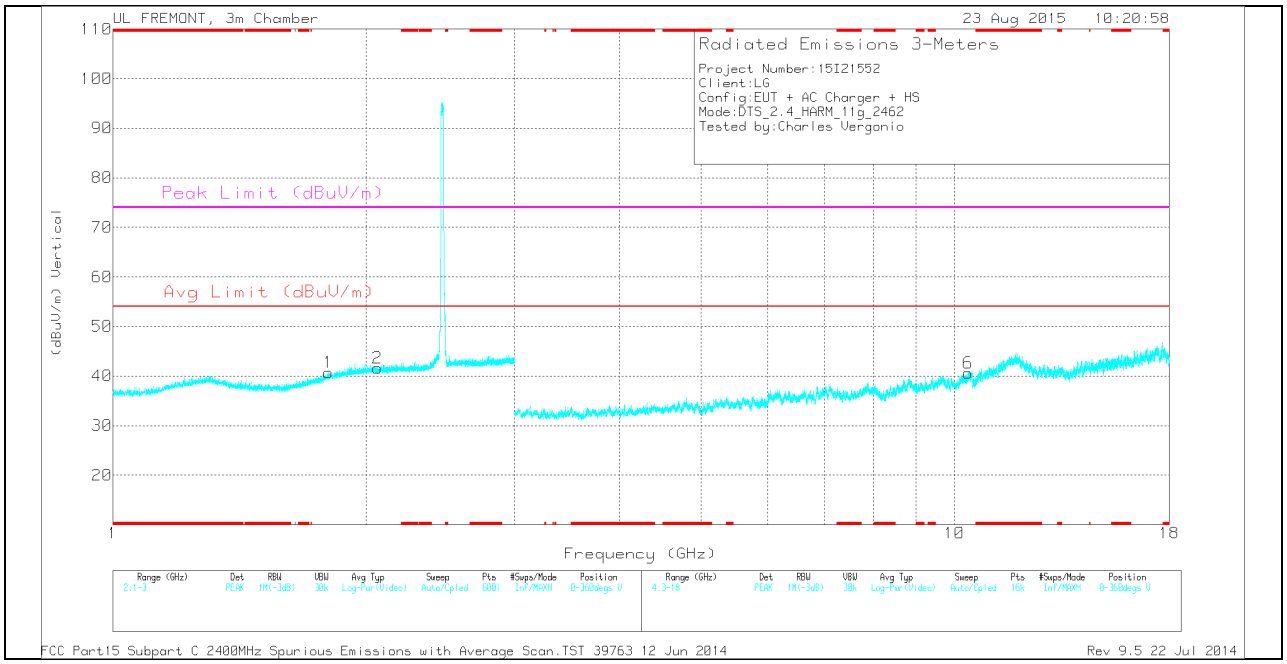
HIGH CHANNEL VERTICAL



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

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HIGH CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	1.804	33.07	PK	30.3	-22.7	40.67	-	-	-	-	0-360	100	V
2	2.064	32.65	PK	31.5	-22.5	41.65	-	-	-	-	0-360	100	V
3	3.094	31.57	PK	32.8	-30.9	33.47	-	-	-	-	0-360	100	H
4	5.605	30.1	PK	34.6	-28.3	36.4	-	-	-	-	0-360	200	H
5	7.026	30.7	PK	35.6	-27.8	38.5	-	-	-	-	0-360	100	H
6	10.388	27.7	PK	37.2	-24.3	40.6	-	-	-	-	0-360	200	V

PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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
1.803	42.68	PK2	30.2	-22.7	50.18	-	-	-	-	0	100	V
1.806	30.77	MAv1	30.3	-22.6	38.47	-	-	-	-	0	100	V
2.062	42.63	PK2	31.5	-22.5	51.63	-	-	-	-	0	100	V
2.065	30.62	MAv1	31.5	-22.4	39.72	-	-	-	-	0	100	V
3.092	29.64	MAv1	32.8	-30.9	31.54	-	-	-	-	0	100	H
3.093	41.24	PK2	32.8	-30.9	43.14	-	-	-	-	0	100	H
5.606	27.96	MAv1	34.6	-28.2	34.36	-	-	-	-	0	200	H
5.607	39.4	PK2	34.6	-28.3	45.7	-	-	-	-	0	200	H
7.026	39.18	PK2	35.6	-27.8	46.98	-	-	-	-	0	100	H
7.026	27.9	MAv1	35.6	-27.9	35.6	-	-	-	-	0	100	H
10.389	35.46	PK2	37.2	-24.2	48.46	-	-	-	-	0	200	V
10.39	24.55	MAv1	37.2	-24.2	37.55	-	-	-	-	0	200	V

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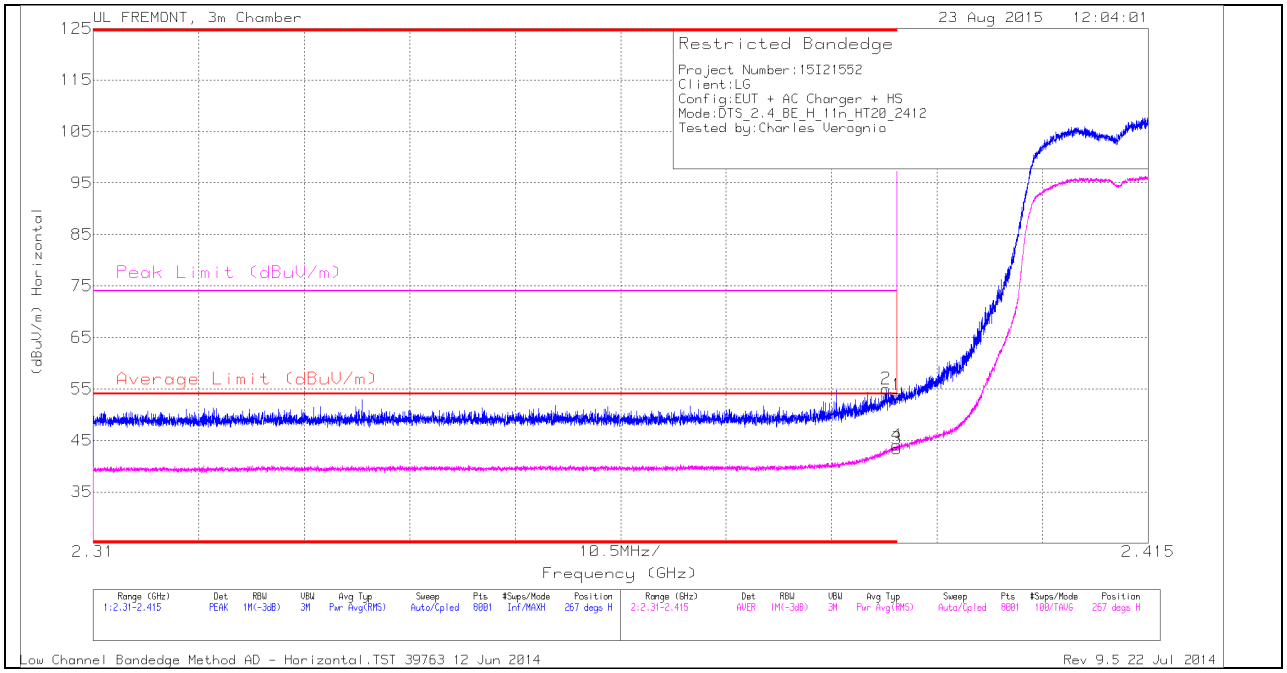
10.2.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	* 2.389	45.42	PK	32	-22.4	55.02	-	-	74	-18.98	267	129	H
1	* 2.39	44.27	PK	32	-22.4	53.87	-	-	74	-20.13	267	129	H
3	* 2.39	33.78	RMS	32	-22.4	43.38	54	-10.62	-	-	267	129	H
4	* 2.39	34.49	RMS	32	-22.4	44.09	54	-9.91	-	-	267	129	H

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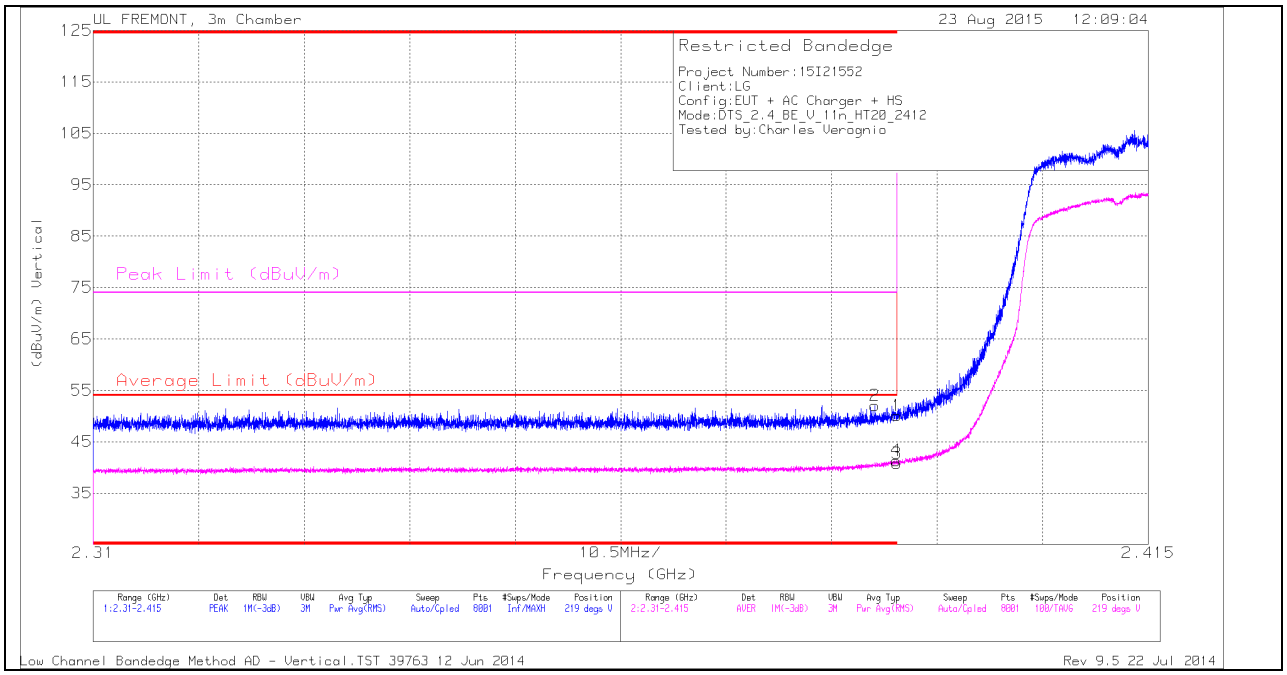
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	* 2.388	42.44	PK	32	-22.4	52.04	-	-	74	-21.96	219	109	V
1	* 2.39	40.48	PK	32	-22.4	50.08	-	-	74	-23.92	219	109	V
3	* 2.39	31.19	RMS	32	-22.4	40.79	54	-13.21	-	-	219	109	V
4	* 2.39	31.73	RMS	32	-22.4	41.33	54	-12.67	-	-	219	109	V

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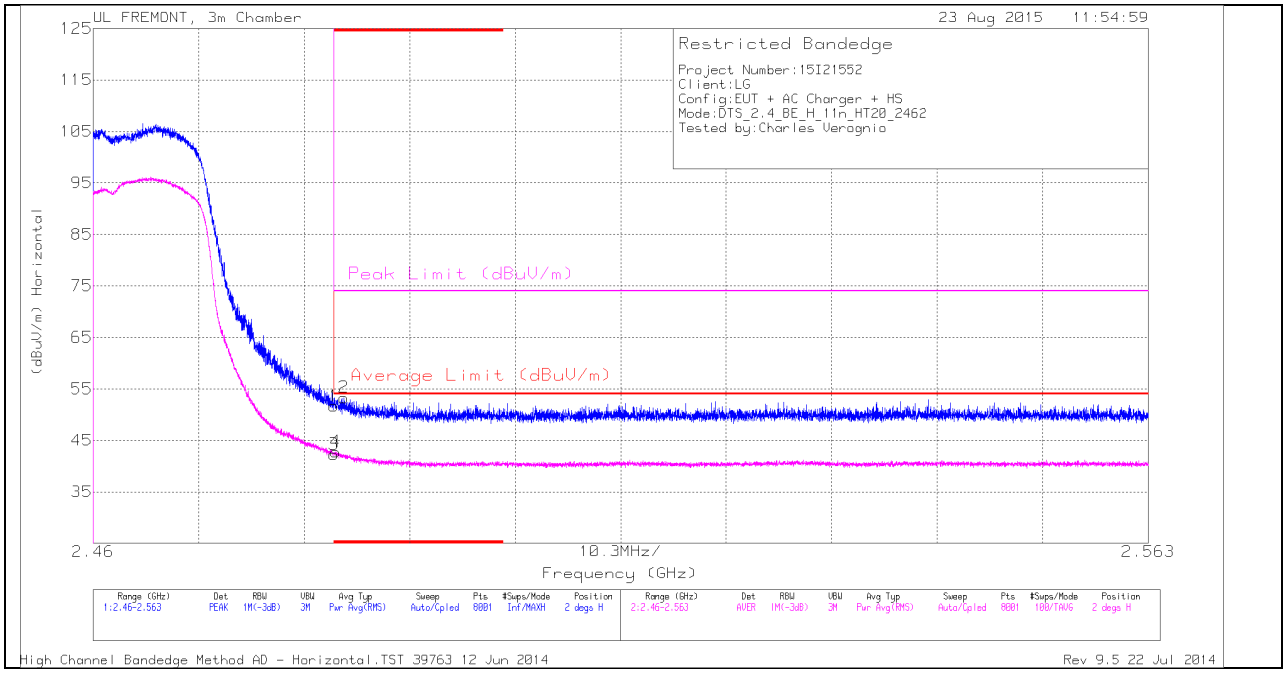
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	41.47	PK	32.3	-22.1	51.67	-	-	74	-22.33	2	102	H
2	* 2.485	43.12	PK	32.3	-22.1	53.32	-	-	74	-20.68	2	102	H
3	* 2.484	32.08	RMS	32.3	-22.1	42.28	54	-11.72	-	-	2	102	H
4	* 2.484	32.57	RMS	32.3	-22.1	42.77	54	-11.23	-	-	2	102	H

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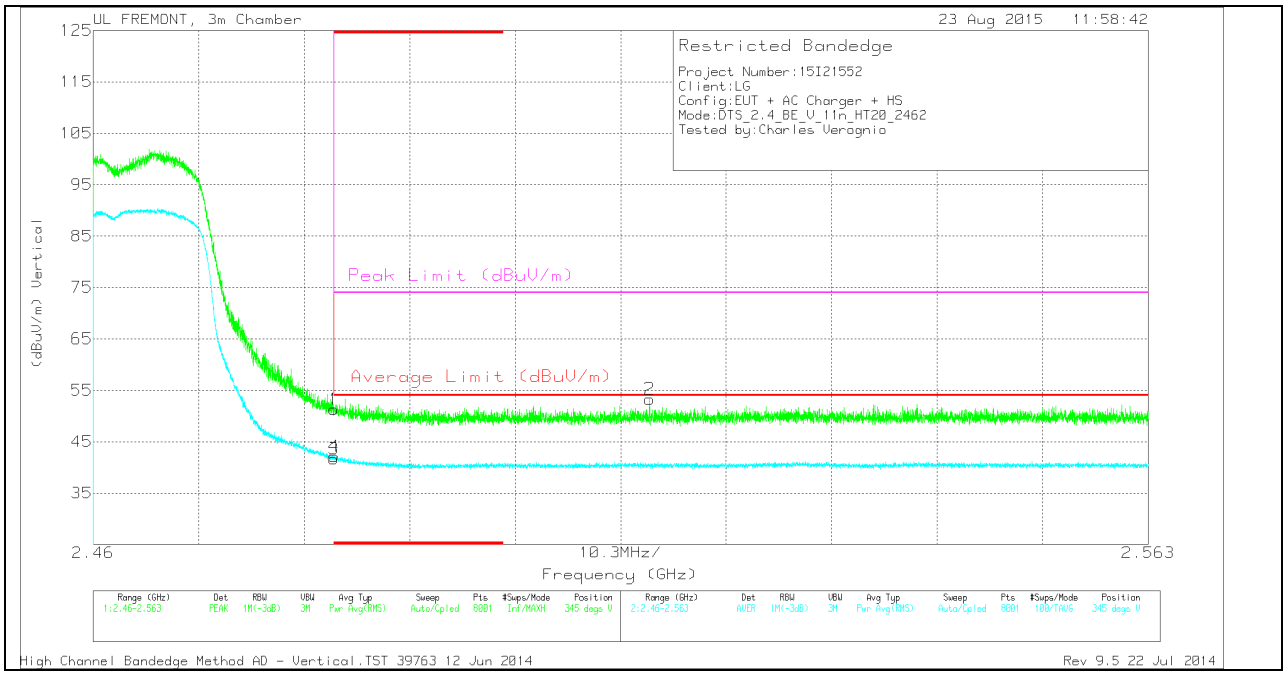
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	41.09	PK	32.3	-22.1	51.29	-	-	74	-22.71	345	102	V
3	* 2.484	31.46	RMS	32.3	-22.1	41.66	54	-12.34	-	-	345	102	V
4	* 2.484	31.91	RMS	32.3	-22.1	42.11	54	-11.89	-	-	345	102	V
2	2.514	42.98	PK	32.3	-22	53.28	-	-	74	-20.72	345	102	V

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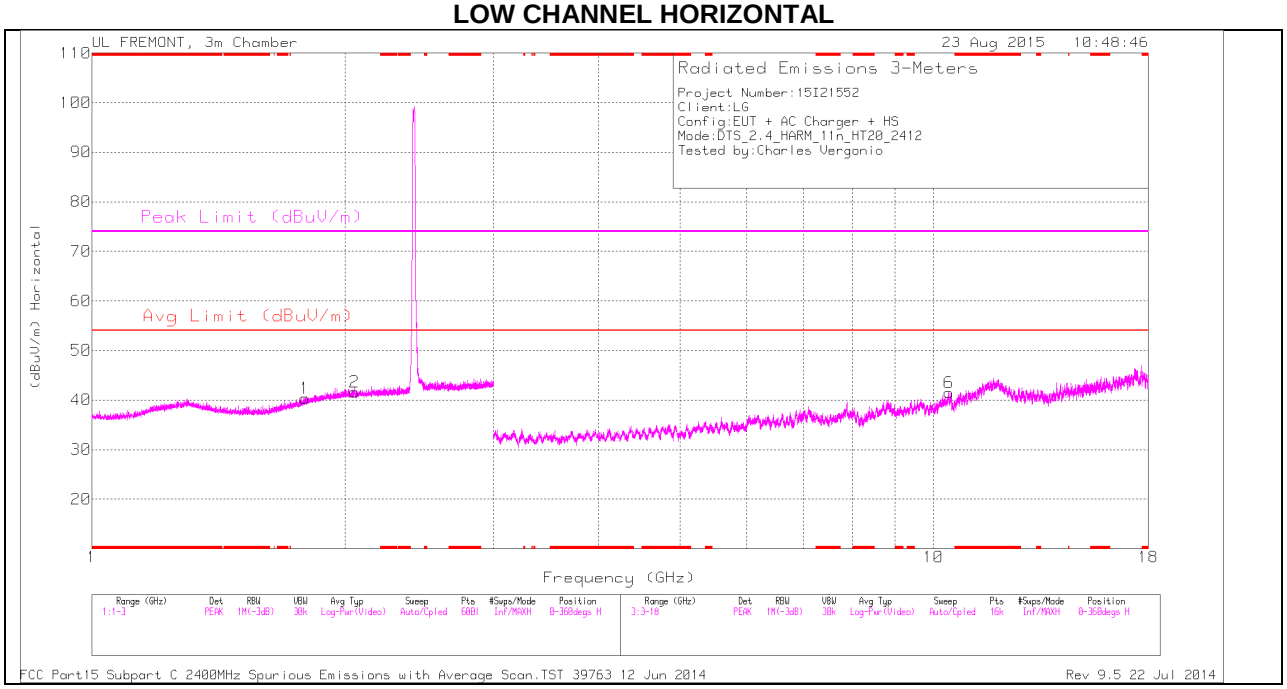
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



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

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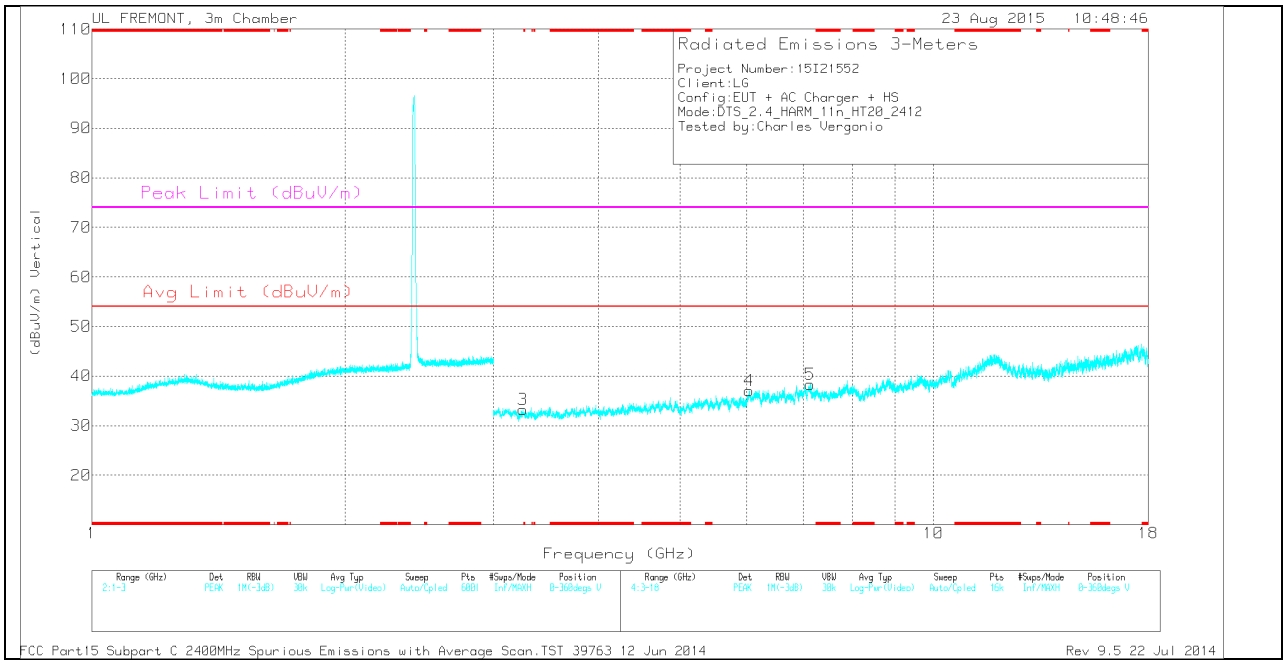
LOW CHANNEL VERTICAL



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

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LOW CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	1.791	32.94	PK	30.1	-22.7	40.34	-	-	-	-	0-360	100	H
2	2.053	32.54	PK	31.5	-22.4	41.64	-	-	-	-	0-360	100	H
3	3.251	31.58	PK	32.6	-30.9	33.28	-	-	-	-	0-360	100	V
4	6.039	30.5	PK	35.2	-28.7	37	-	-	-	-	0-360	100	V
5	7.13	29.98	PK	35.6	-27.3	38.28	-	-	-	-	0-360	200	V
6	10.426	27.6	PK	37.3	-23.4	41.5	-	-	-	-	0-360	200	H

PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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
1.789	30.91	MAv1	30.1	-22.7	38.31	-	-	-	-	3	100	H
1.79	42.37	PK2	30.1	-22.7	49.77	-	-	-	-	3	100	H
2.052	30.65	MAv1	31.5	-22.4	39.75	-	-	-	-	3	100	H
2.053	42.46	PK2	31.5	-22.4	51.56	-	-	-	-	3	100	H
3.25	40.85	PK2	32.6	-30.9	42.55	-	-	-	-	3	100	V
3.252	29.43	MAv1	32.6	-30.9	31.13	-	-	-	-	3	100	V
6.038	39.92	PK2	35.2	-28.7	46.42	-	-	-	-	3	100	V
6.041	28.23	MAv1	35.2	-28.6	34.83	-	-	-	-	3	100	V
7.132	38.49	PK2	35.6	-27.3	46.79	-	-	-	-	3	200	V
7.132	27.07	MAv1	35.6	-27.3	35.37	-	-	-	-	3	200	V
10.427	35.85	PK2	37.3	-23.5	49.65	-	-	-	-	3	200	H
10.428	24.43	MAv1	37.3	-23.5	38.23	-	-	-	-	3	200	H

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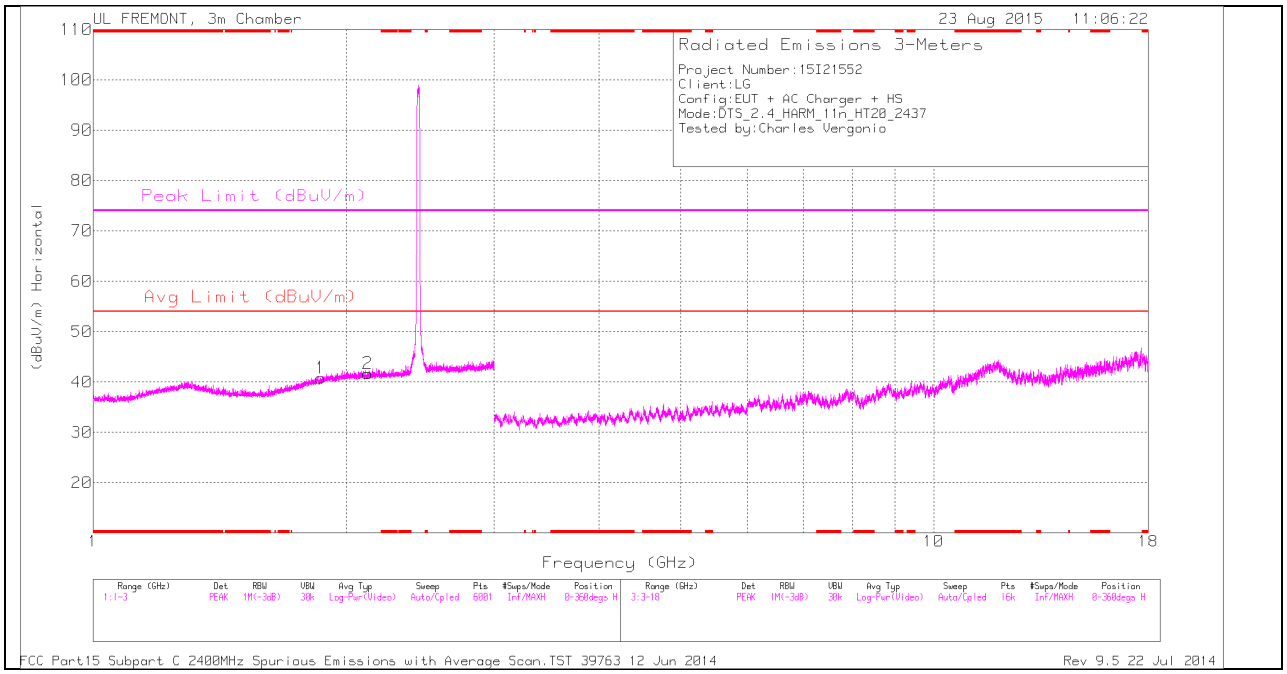
MID CHANNEL HORIZONTAL



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

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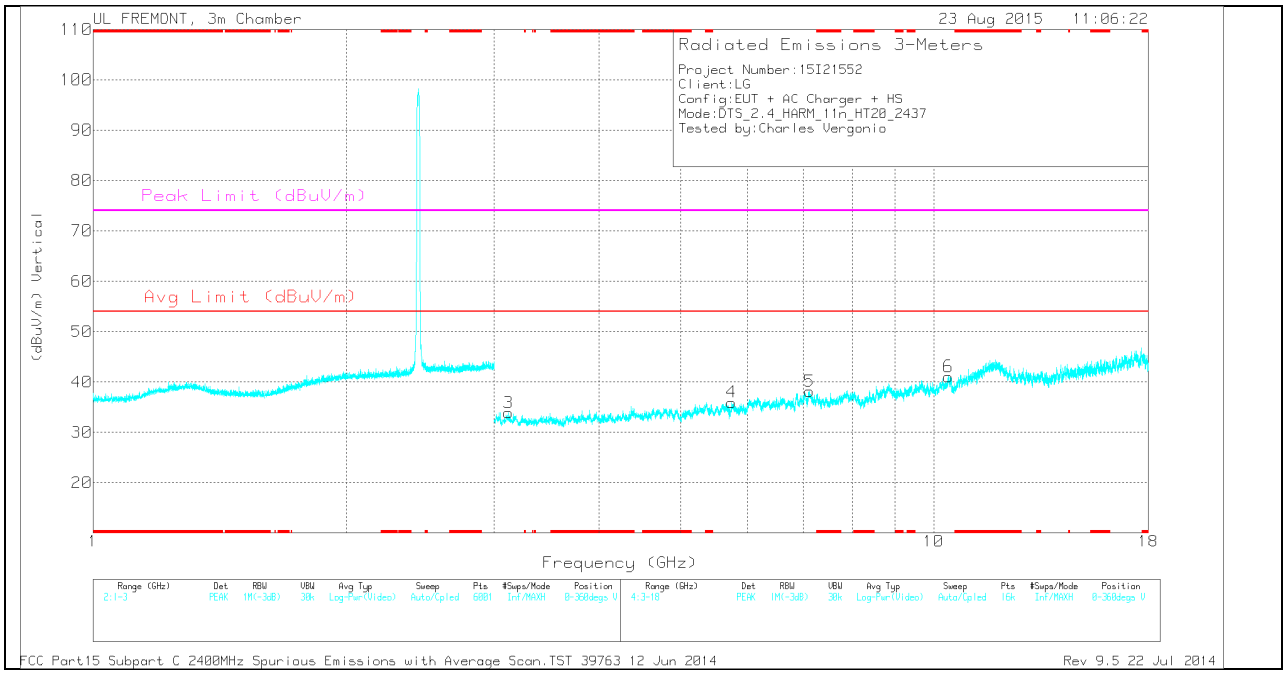
MID CHANNEL VERTICAL



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

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MID CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	1.866	32.59	PK	30.8	-22.6	40.79	-	-	-	-	0-360	200	H
2	2.123	32.49	PK	31.5	-22.3	41.69	-	-	-	-	0-360	200	H
3	3.119	31.81	PK	32.7	-30.6	33.91	-	-	-	-	0-360	200	V
4	5.75	30.97	PK	34.8	-29.8	35.97	-	-	-	-	0-360	200	V
5	7.113	29.83	PK	35.6	-27.3	38.13	-	-	-	-	0-360	200	V
6	10.406	27.44	PK	37.3	-23.7	41.04	-	-	-	-	0-360	200	V

PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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
1.866	42.68	PK2	30.8	-22.6	50.88	-	-	-	-	0	200	H
1.867	30.66	MAv1	30.8	-22.6	38.86	-	-	-	-	0	200	H
2.122	30.67	MAv1	31.5	-22.3	39.87	-	-	-	-	0	200	H
2.123	43.1	PK2	31.5	-22.3	52.3	-	-	-	-	0	200	H
3.119	29.19	MAv1	32.7	-30.6	31.29	-	-	-	-	0	200	V
3.12	40.91	PK2	32.7	-30.5	43.11	-	-	-	-	0	200	V
5.748	29.04	MAv1	34.8	-29.8	34.04	-	-	-	-	0	200	V
5.749	40.45	PK2	34.8	-29.8	45.45	-	-	-	-	0	200	V
7.114	38.39	PK2	35.6	-27.4	46.59	-	-	-	-	0	200	V
7.114	27.48	MAv1	35.6	-27.4	35.68	-	-	-	-	0	200	V
10.406	36.43	PK2	37.3	-23.7	50.03	-	-	-	-	0	200	V
10.407	24.72	MAv1	37.3	-23.7	38.32	-	-	-	-	0	200	V

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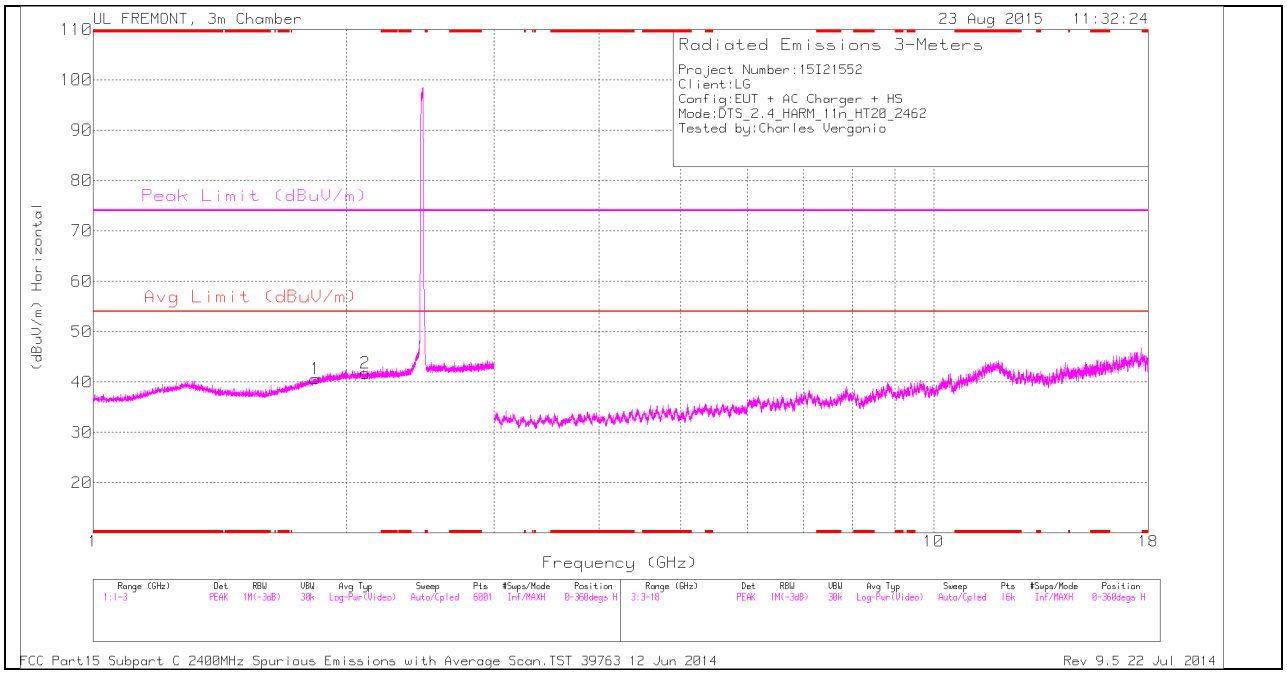
HIGH CHANNEL HORIZONTAL



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

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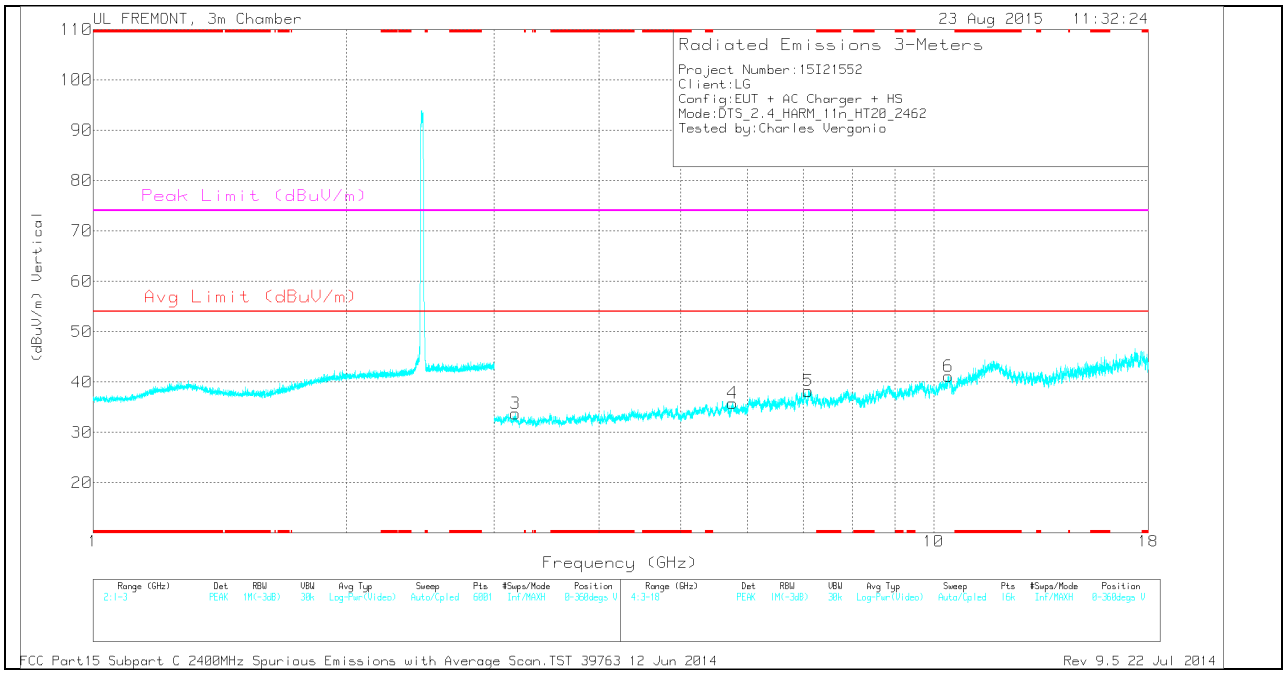
HIGH CHANNEL VERTICAL



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

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HIGH CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	1.838	32.62	PK	30.6	-22.6	40.62	-	-	-	-	0-360	200	H
2	2.106	32.53	PK	31.5	-22.3	41.73	-	-	-	-	0-360	200	H
3	3.178	31.43	PK	32.6	-30.3	33.73	-	-	-	-	0-360	200	V
4	5.765	30.51	PK	34.8	-29.5	35.81	-	-	-	-	0-360	200	V
5	7.094	29.44	PK	35.6	-26.8	38.24	-	-	-	-	0-360	100	V
6	10.416	27.25	PK	37.3	-23.4	41.15	-	-	-	-	0-360	200	V

PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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
1.838	30.74	MAv1	30.5	-22.6	38.64	-	-	-	-	0	200	H
1.839	43.08	PK2	30.6	-22.6	51.08	-	-	-	-	0	200	H
2.105	30.63	MAv1	31.5	-22.3	39.83	-	-	-	-	0	200	H
2.108	42.83	PK2	31.5	-22.3	52.03	-	-	-	-	0	200	H
3.178	29.24	MAv1	32.6	-30.3	31.54	-	-	-	-	0	200	V
3.179	40.63	PK2	32.6	-30.3	42.93	-	-	-	-	0	200	V
5.763	29.29	MAv1	34.8	-29.6	34.49	-	-	-	-	0	200	V
5.766	41	PK2	34.8	-29.5	46.3	-	-	-	-	0	200	V
7.095	38.06	PK2	35.6	-26.8	46.86	-	-	-	-	0	100	V
7.095	27.03	MAv1	35.6	-26.8	35.83	-	-	-	-	0	100	V
10.414	36.18	PK2	37.3	-23.4	50.08	-	-	-	-	0	200	V
10.418	24.69	MAv1	37.3	-23.4	38.59	-	-	-	-	0	200	V

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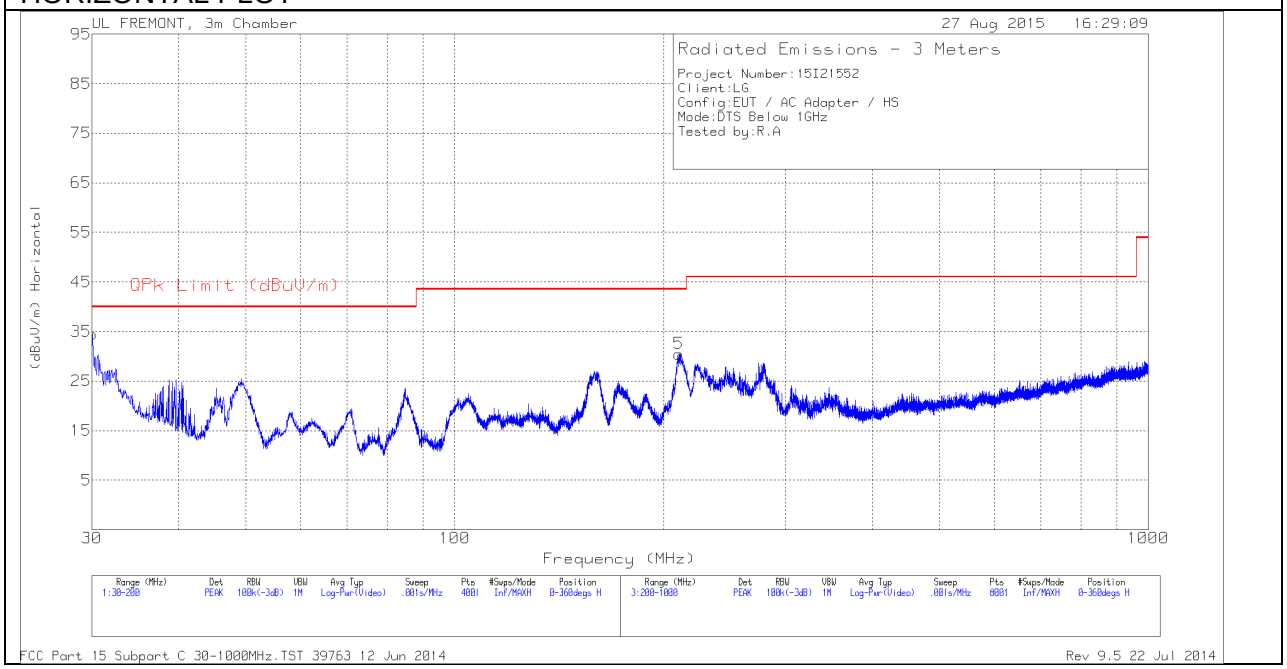
10.3. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



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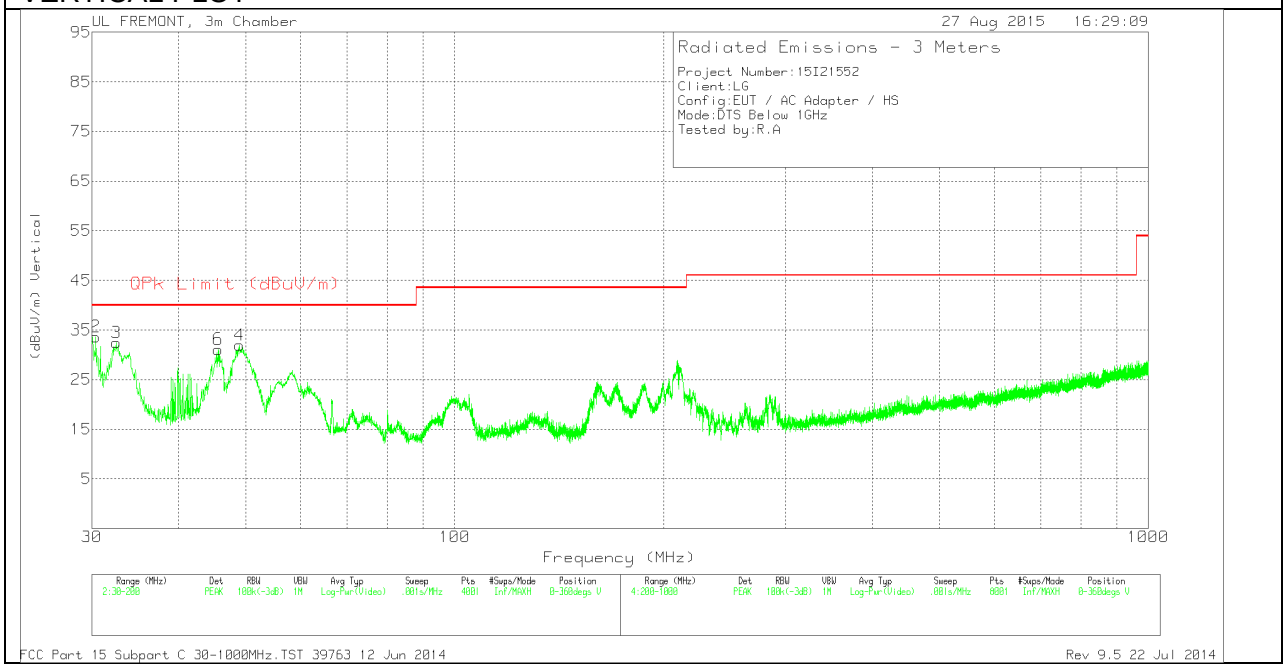
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT



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Below 1G Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T185 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	30.0425	39.97	PK	21.8	-27.3	34.47	40	-5.53	0-360	100	H
2	30.3825	39.36	PK	21.5	-27.2	33.66	40	-6.34	0-360	100	V
3	32.5075	39.62	PK	19.9	-27.1	32.42	40	-7.58	0-360	100	V
6	45.64	47.82	PK	10.3	-27	31.12	40	-8.88	0-360	100	V
4	48.955	50.24	PK	8.6	-26.9	31.94	40	-8.06	0-360	100	V
5	210.6	45.29	PK	10.3	-25.1	30.49	43.52	-13.03	0-360	100	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

FCC Part 15 Subpart C 30-1000MHz.TST 39763 12 Jun 2014

Rev 9.5 22 Jul 2014

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
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