FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac & NFC

FCC ID: PY7-PM0941

REPORT NUMBER: 16J22997-E4V3

ISSUE DATE: 4/4/2016

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Revision History

Rev.	Issue Date	Revisions	Revised By
V1	3/18/2016	Initial Issue	C. OOI
V2	4/4/2016	Revised Information on Section 5.6 and Section 8	C. OOI

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SONY MOBILE COMMUNICATIONS, INC.

EUT DESCRIPTION: GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac & NFC

SERIAL NUMBER: CB5129YWFF, CB5129YWGW, CB5129YNPZ, CB5129YNZZ

DATE TESTED: March 7 - 17, 2016

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

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

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

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2. TEST METHODOLOGY

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

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)

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

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

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

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

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

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

This EUT is a GSM/WCDMA/LTE Phone with BT, 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 - 2472	802.11b	11.40	13.80
2412 - 2472	802.11g	13.46	22.18
2412 - 2472	802.11n HT20	13.46	22.18

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes integrated antenna, with a maximum as below:

Frequency (MHz)	Antenna Gain (dBi)	
	Core0(Main)	Core1 (Sub)
2.402	-7.0	-3.7
2.441	-6.2	-4.4
2.480	-6.9	-4.9

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5.4. SOFTWARE AND FIRMWARE

The firmware/SW installed in the EUT during testing was SONY, s_atp_xxxx_1_600_7_9

The hardware version was A

The test utility software used during testing was Tera Term, rev 4.8.3(SVN#5602)

5.5. 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	802.11g Legacy 1TX	802.11g CDD 2TX
2412 - 2472	802.11n 1TX	802.11n HT20 CDD 2TX
2412 - 2472	802.11n STBC 1TX	802.11n HT20 CDD 2TX
2412 - 2472	802.11n STBC 2TX	802.11n HT20 CDD 2TX

5.6. WORST-CASE CONFIGURATION AND MODE

Radiated emission below 1GHz 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 Z orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

802.11g/n SISO mode share same power per chain as 802.11g/n MIMO mode; therefore only MIMO mode was tested.

802.11b only support SISO mode.

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

802.11b mode: 1 Mbps
802.11g MIMO mode: 6 Mbps
802.11n HT20 MIMO mode: MCS8

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5.7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	SONY	UCH 20 1295-70821	N/A	N/A
Earphone	SONY	N/A	N/A	N/A
DC Power Supplier	Sorensen	XHR60-18	130A01935	N/A
Laptop	Lenovo	T450	PC-04ACGP	N/A
Laptop AC Adapter	Lenovo	ADLX65NLC2A	11S45N025971Z9751KU2U	N/A

I/O CABLES

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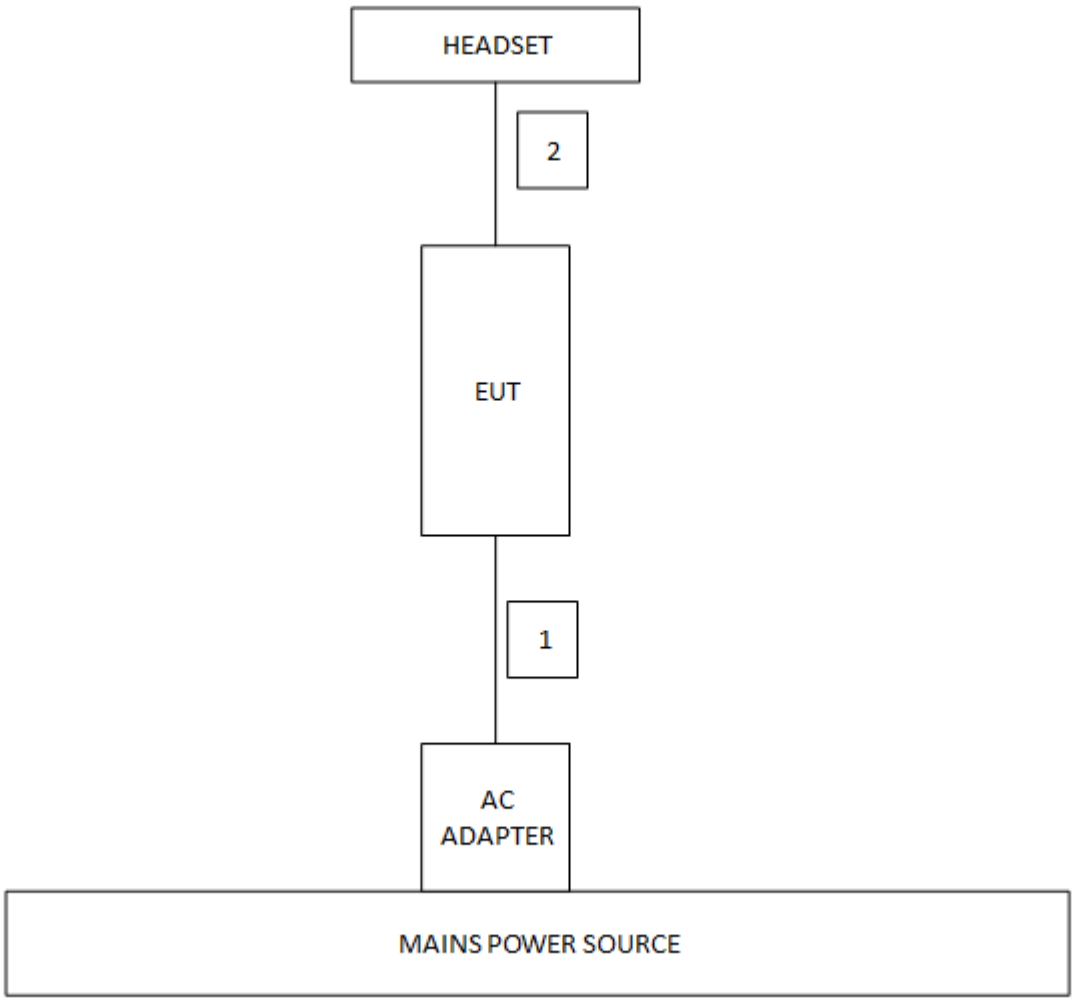
SETUP DIAGRAM FOR TESTS



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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**	**T Number**	**Cal Due**
Amplifier, 1-18GHz	Miteq	AFS42-00101800-25-S-42	493	03/09/17
Amplifier, 1-18GHz	Miteq	AFS42-00101800-25-S-42	1165	07/20/16
Amplifier, 1-8GHz, 35 dB	Miteq	AMF-4D-01000800-30-29P	1156	03/09/17
Amplifier, 1-8GHz, 35 dB	Miteq	AMF-4D-01000800-30-29P	1172	07/20/16
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB1	122	01/29/17
Antenna, Horn, 18GHz	ETS Lindgren	3117	344	02/22/17
Antenna, Horn, 18GHz	ETS Lindgren	3117	345	02/22/17
Antenna, Horn, 18GHz	ETS Lindgren	3117	346	02/22/17
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	447	05/12/16
ESR7 EMI Test Receiver 7GHz	Rohde & Schwarz	ESR	1436	12/19/16
High Pass Filter 3GHz	Micro-Tronics	HPS17543	485	03/09/17
High Pass Filter 3GHz	Micro-Tronics	HPS17543	486	07/20/16
High Pass Filter 6GHz	Micro-Tronics	HPS17542	483	03/09/17
High Pass Filter 6GHz	Micro-Tronics	HPS17542	484	07/20/16
LISN, 30 MHz	FCC	FCC-LISN-50/250-25-2	24	2/9/2017
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	482	03/09/17
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	481	07/20/16
Peak / Average Power Sensor	Keysight	N1921A	750	09/17/16
Peak Power Meter	Agilent / HP	N1911A	1268	07/06/17
RF Preamplifier, 1GHz - 18GHz	Miteq	NSP4000-SP2	88	04/07/16
RF Preamplifier, 1GHz - 26.5GHz	HP	8449B	404	06/29/16
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	99	06/10/16
Spectrum Analyzer, PXA, 3 Hz to 44 GHz	Keysight	N9030A	PRE0126762	03/09/17
Spectrum Analyzer, PXA, 3 Hz to 44 GHz	Keysight	N9030A	PRE0126777	12/21/16
Spectrum Analyzer, PXA, 3 Hz to 44 GHz	Keysight	N9030A	907	01/06/17
Spectrum Analyzer, PXA, 3 Hz to 44 GHz	Keysight	N9030A	1210	01/07/17

Test Software List			
Description	**Manufacturer**	**Model**	**Version**
Radiated Software	UL	UL EMC	Ver 9.5, June 24, 2015
Conducted Software	UL	UL EMC	Ver 9.5, May 26, 2015
Antenna Port Software	UL	UL RF	Ver 4.2, Mar 7, 2016

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7. MEASUREMENT METHODS

KDB 558074 D01 DTS Meas Guidance v03r04: 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
15.247 (a)(2)	RSS-247 5.2.1	Occupied Band width (6dB)	>500KHz	Conducted	Pass
2.1051, 15.247 (d)	RSS-247 5.5	Band Edge / Conducted Spurious Emission	-30dBc		Pass
15.247	RSS-247 5.4.4	TX conducted output power	<30dBm		Pass
15.247	RSS-247 5.2.2	PSD	<8dBm		Pass
15.207 (a)	RSS-GEN 8.8	AC Power Line conducted emissions	Section 10	Radiated	Pass
15.205, 15.209, 15.247(d)	RSS-GEN 8.9/7	Radiated Spurious Emission	< 54dBuV/m		Pass

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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 58074 D01 v03r04 Section 6 (b)

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	4.410	4.430	0.995	99.55%	0.00	0.010
802.11g CDD	3.121	3.150	0.991	99.08%	0.00	0.010
802.11n HT20 CDD	2.905	2.938	0.989	98.88%	0.00	0.010

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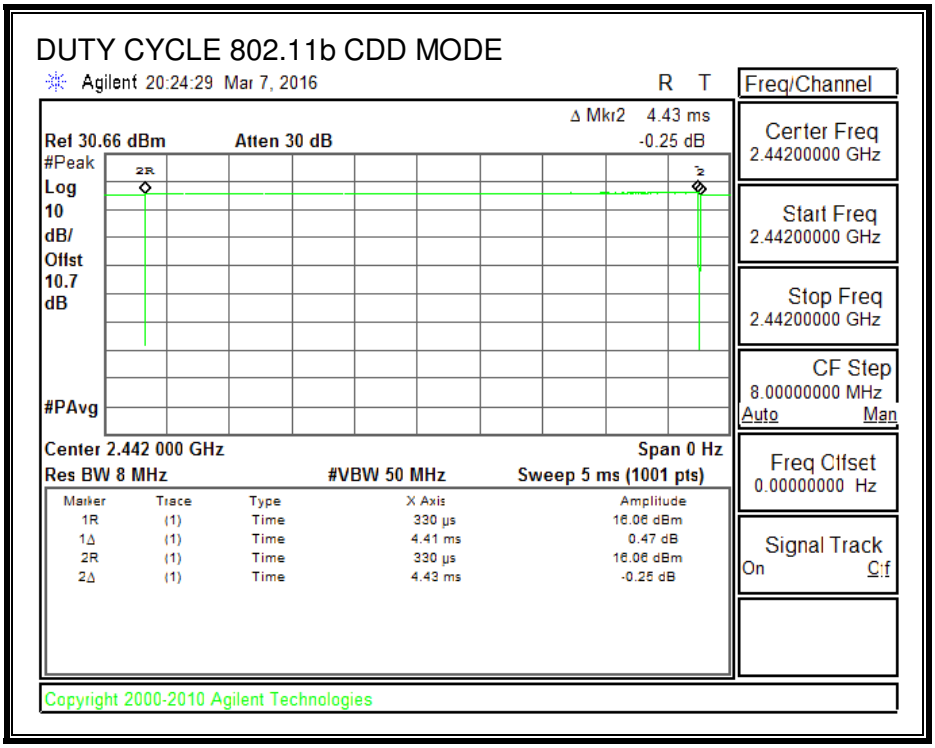
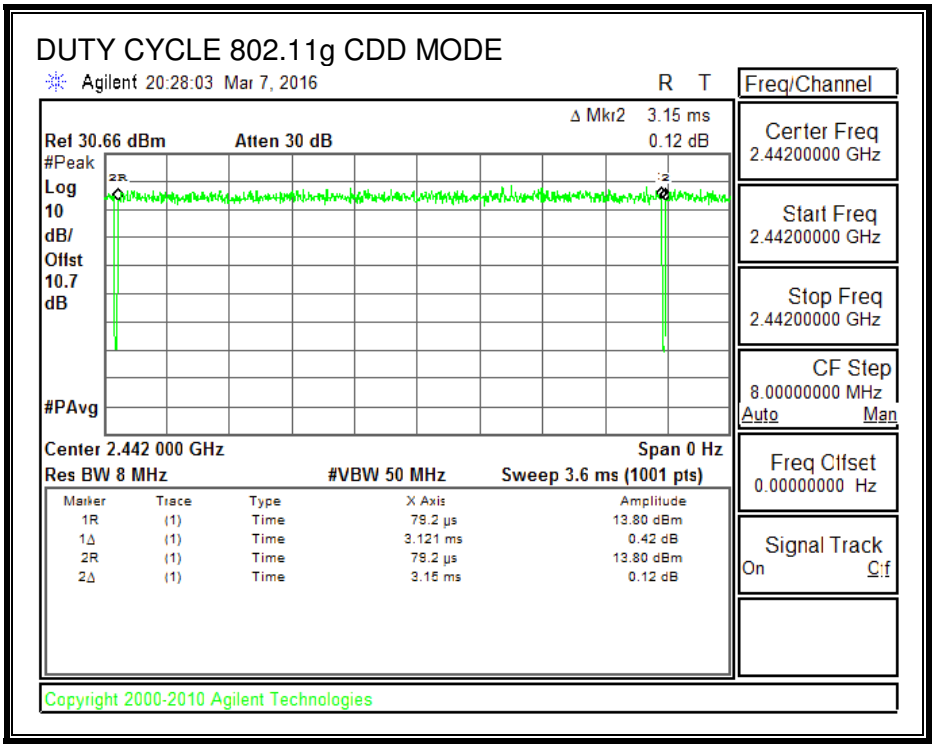
9.1.2. DUTY CYCLE PLOTS

2.4 GHz BAND





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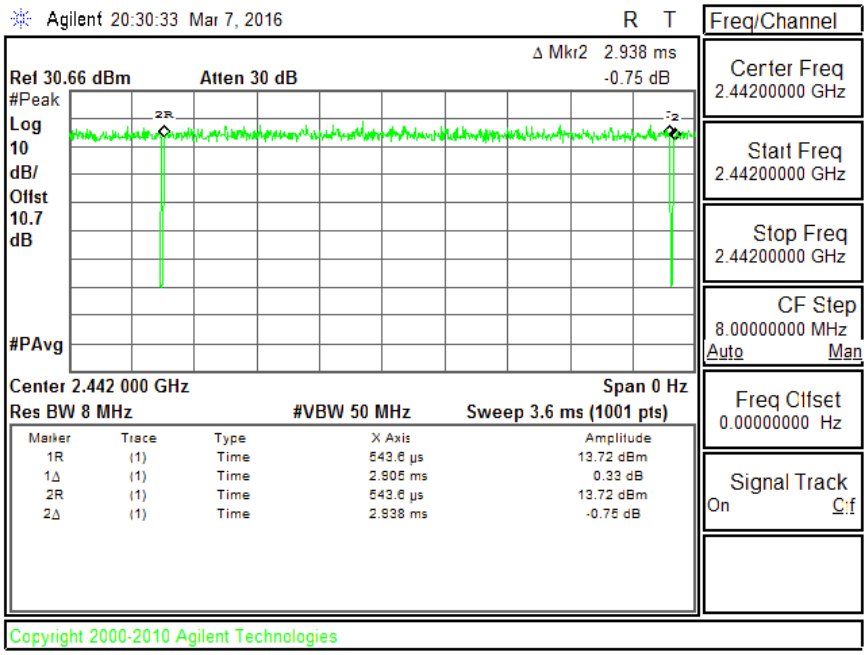
DUTY CYCLE 802.11n HT20 MODE



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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

KDB 58074 D01 v03r04 Section 8.1

RESULTS

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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	7.536	7.095	0.5
Mid	2437	7.073	7.073	0.5
High	2462	7.073	7.512	0.5

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	16.375	16.400	0.5
Mid	2437	16.400	16.425	0.5
High	2462	16.077	16.320	0.5

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	17.442	17.658	0.5
Mid	2437	17.631	17.658	0.5
High	2462	17.200	17.264	0.5

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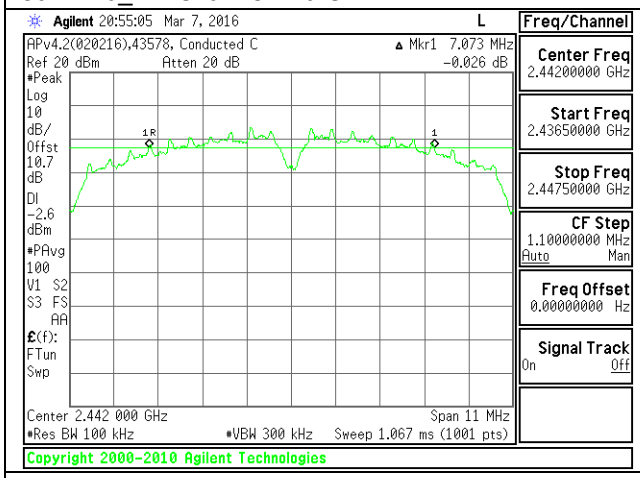
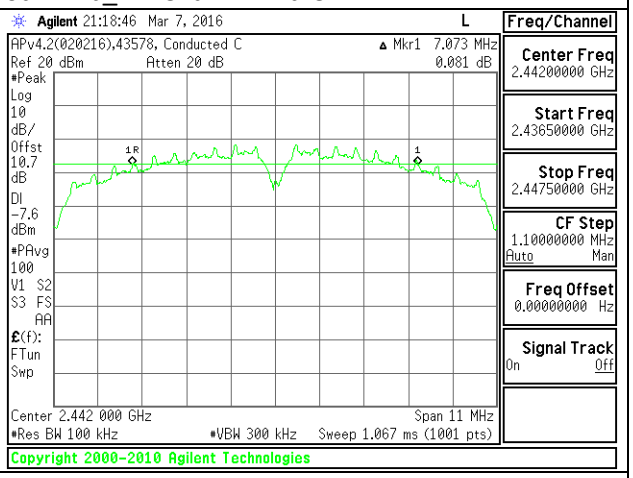
9.2.4. 6 dB BANDWIDTH MID CH PLOTS

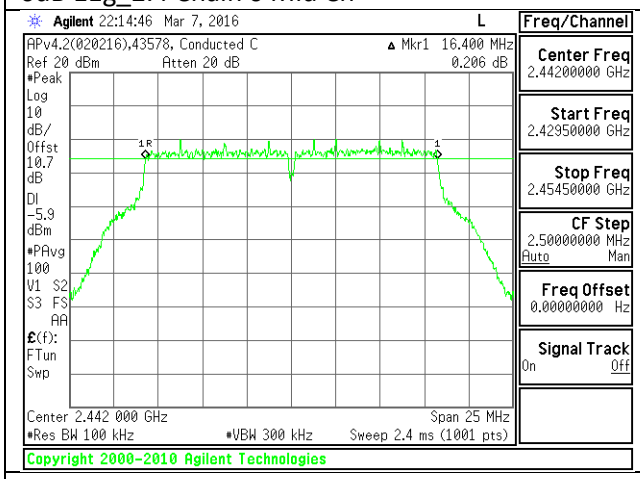
6dB 11b_2.4 Chain 0 Mid Ch



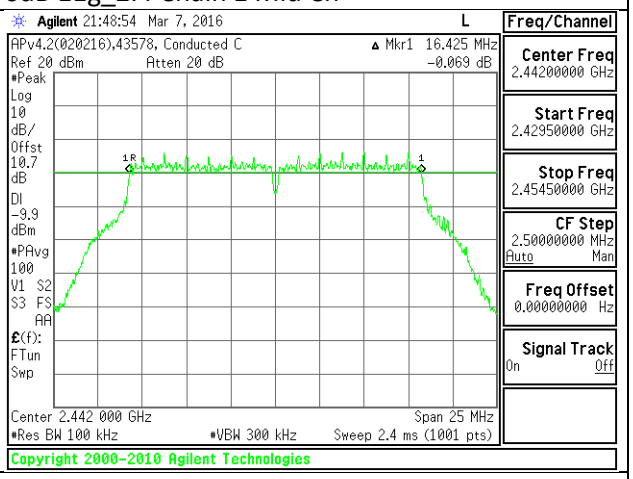
6dB 11b_2.4 Chain 1 Mid Ch



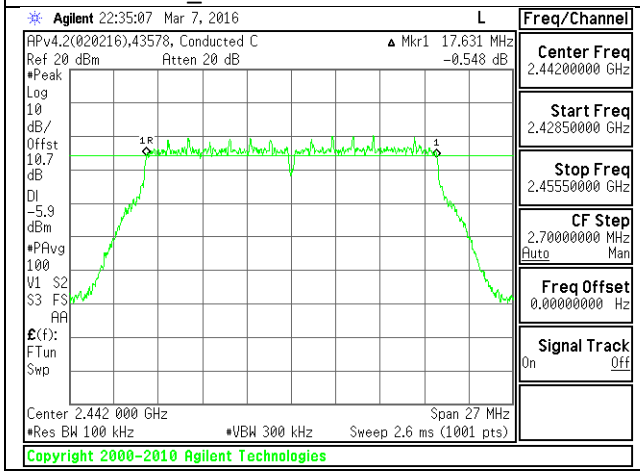
6dB 11g_2.4 Chain 0 Mid Ch



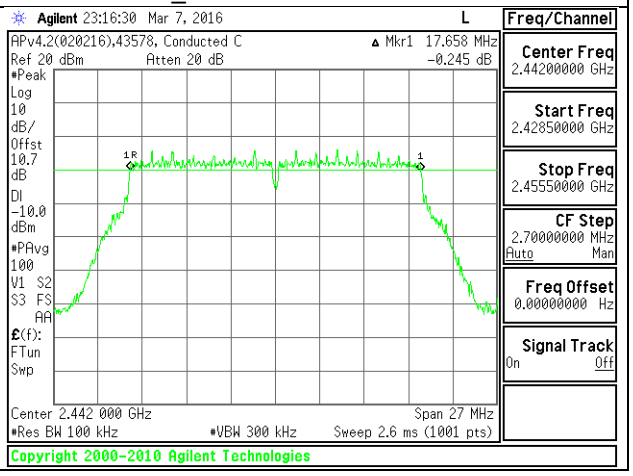
6dB 11g_2.4 Chain 1 Mid Ch



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.

TEST PROCEDURE

ANSI C63.10: 2013 Section 6.9.3

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	10.3520	10.3550
Mid	2442	10.2880	10.2771
High	2472	10.1059	10.2197

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	16.5489	16.5565
Mid	2442	16.5623	16.5676
High	2472	16.5048	16.5038

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	17.7677	17.7746
Mid	2442	17.7847	17.7851
High	2472	17.7116	17.7115

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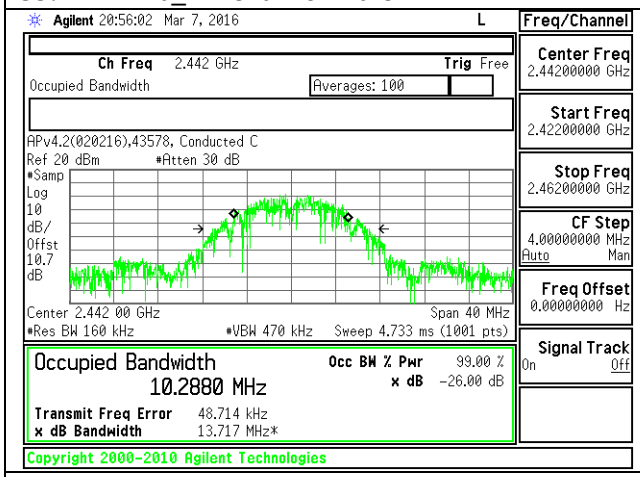
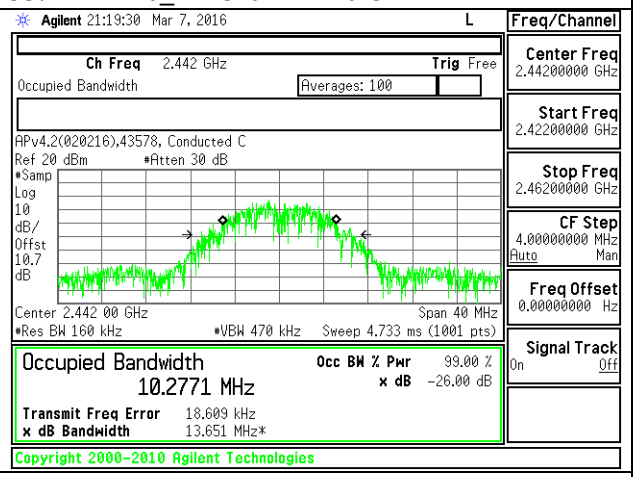
9.3.4. 99% BANDWIDTH MID CH PLOTS

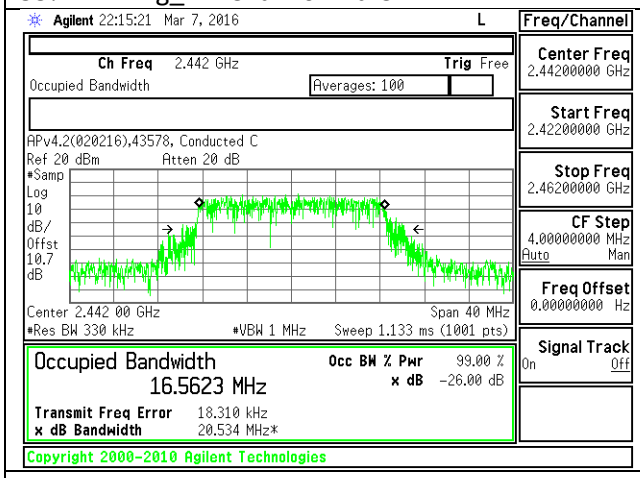
99% BW 11b_2.4 Chain 0 Mid Ch



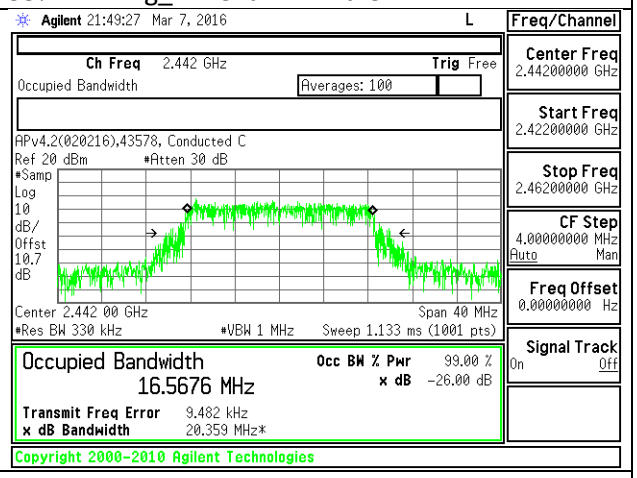
99% BW 11b_2.4 Chain 1 Mid Ch



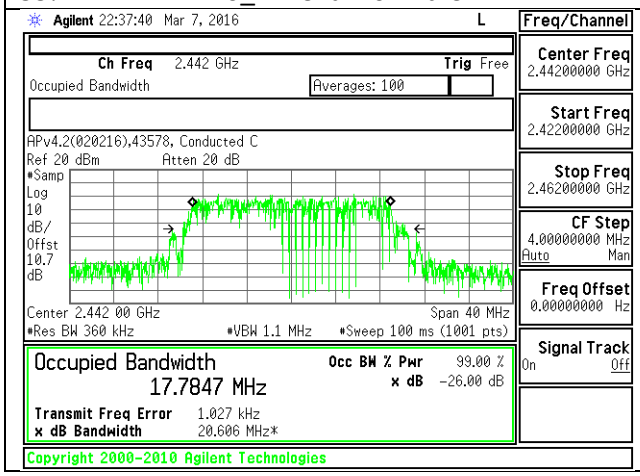
99% BW 11g_2.4 Chain 0 Mid Ch



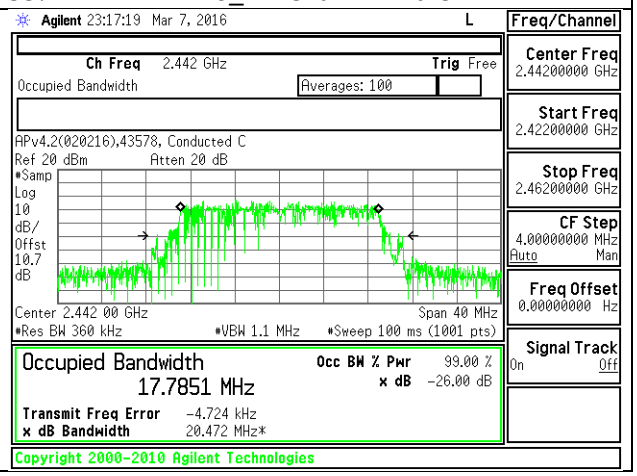
99% BW 11g_2.4 Chain 1 Mid Ch



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)
-6.20	-3.70	-4.77

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)
-6.20	-3.70	-1.85

TEST PROCEDURE

KDB 58074 D01 v03r04 Section 9.2.3.2

RESULTS

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9.4.1. 802.11b MODE IN THE 2.4 GHz BAND

Chain 0

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-6.20	30.00	30	36	30.00
Mid	2442	-6.20	30.00	30	36	30.00
11	2462	-6.20	30.00	30	36	30.00
12	2467	-6.20	30.00	30	36	30.00
High	2472	-6.20	30.00	30	36	30.00

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

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	11.40	11.40	30.00	-18.60
Mid	2442	11.30	11.30	30.00	-18.70
11	2462	11.30	11.30	30.00	-18.70
12	2467	11.30	11.30	30.00	-18.70
High	2472	11.40	11.40	30.00	-18.60

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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Chain 1

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-3.70	30.00	30	36	30.00
Mid	2442	-3.70	30.00	30	36	30.00
11	2462	-3.70	30.00	30	36	30.00
12	2467	-3.70	30.00	30	36	30.00
High	2472	-3.70	30.00	30	36	30.00

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

Results

Channel	Frequency (MHz)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	6.70	6.70	30.00	-23.30
Mid	2442	7.00	7.00	30.00	-23.00
11	2462	7.40	7.40	30.00	-22.60
12	2467	6.90	6.90	30.00	-23.10
High	2472	7.00	7.00	30.00	-23.00

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

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-4.77	30.00	30	36	30.00
Mid	2442	-4.77	30.00	30	36	30.00
11	2462	-4.77	30.00	30	36	30.00
12	2467	-4.77	30.00	30	36	30.00
High	2472	-4.77	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)	Margin (dB)
Low	2412	12.00	7.90	13.43	30.00	-16.57
Mid	2442	11.90	7.80	13.33	30.00	-16.67
11	2462	12.00	8.00	13.46	30.00	-16.54
12	2467	9.50	5.90	11.07	30.00	-18.93
High	2472	2.90	-0.80	4.44	30.00	-25.56

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

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-4.77	30.00	30	36	30.00
Mid	2442	-4.77	30.00	30	36	30.00
11	2462	-4.77	30.00	30	36	30.00
12	2467	-4.77	30.00	30	36	30.00
High	2472	-4.77	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)	Margin (dB)
Low	2412	11.80	8.00	13.31	30.00	-16.69
Mid	2442	11.90	7.70	13.30	30.00	-16.70
11	2462	12.00	8.00	13.46	30.00	-16.54
12	2467	7.70	4.30	9.33	30.00	-20.67
High	2472	1.80	-1.60	3.43	30.00	-26.57

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.

TEST PROCEDURE

KDB 58074 D01 v03r04 Section 10.5 (Option: Method AVGPSD-2)

RESULTS

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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)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-9.448	-9.45	8.0	-17.4
Mid	2442	-10.187	-10.19	8.0	-18.2
High	2472	-10.099	-10.10	8.0	-18.1

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

PSD Results

Channel	Frequency (MHz)	Chain 1 Meas (dBm)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-14.600	-14.60	8.0	-22.6
Mid	2442	-15.077	-15.08	8.0	-23.1
High	2472	-14.854	-14.85	8.0	-22.9

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	-12.814	-17.128	-11.45	8.0	-19.4
Mid	2442	-13.103	-17.153	-11.66	8.0	-19.7
High	2472	-21.498	-25.421	-20.02	8.0	-28.0

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	-13.113	-17.362	-11.73	8.0	-19.7
Mid	2442	-13.785	-17.892	-12.36	8.0	-20.4
High	2472	-23.000	-26.603	-21.43	8.0	-29.4

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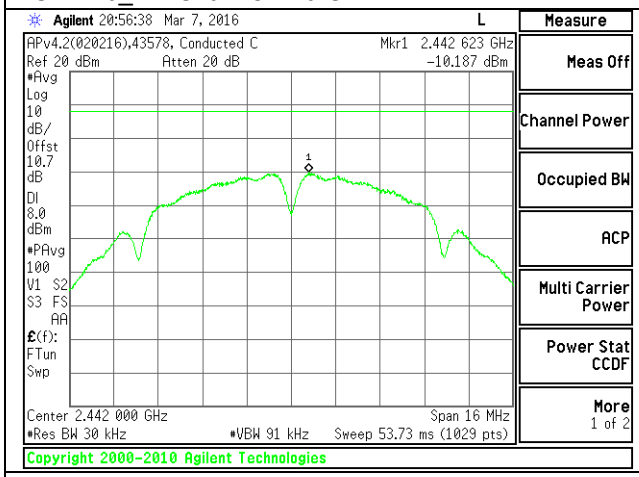
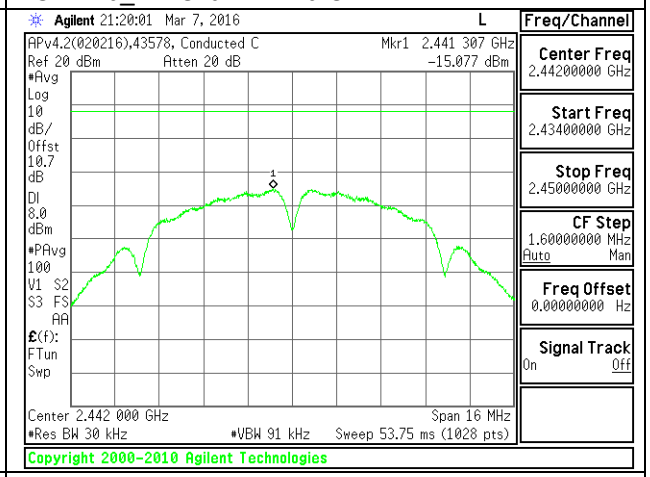
9.5.4. PSD MID CH PLOTS

PSD 11b_2.4 Chain 0 Mid Ch



PSD 11b_2.4 Chain 1 Mid Ch



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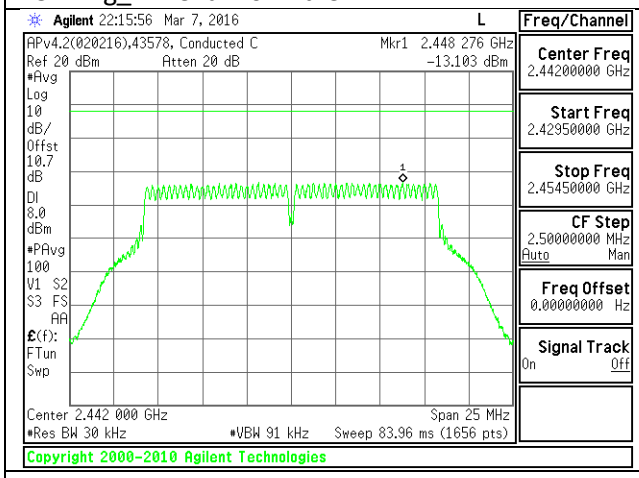
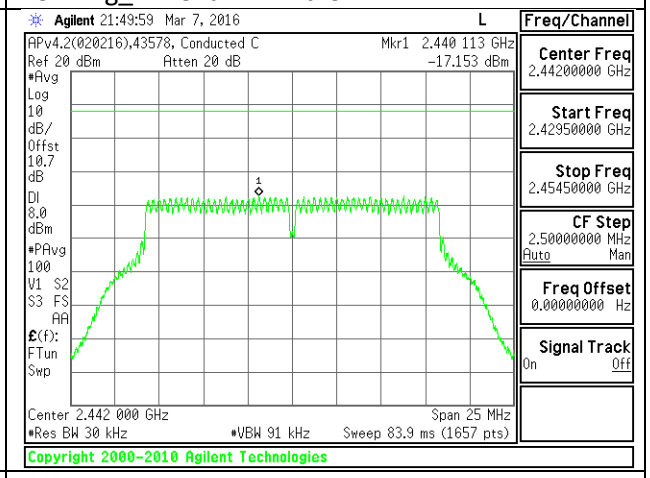


PSD 11g_2.4 Chain 1 Mid Ch



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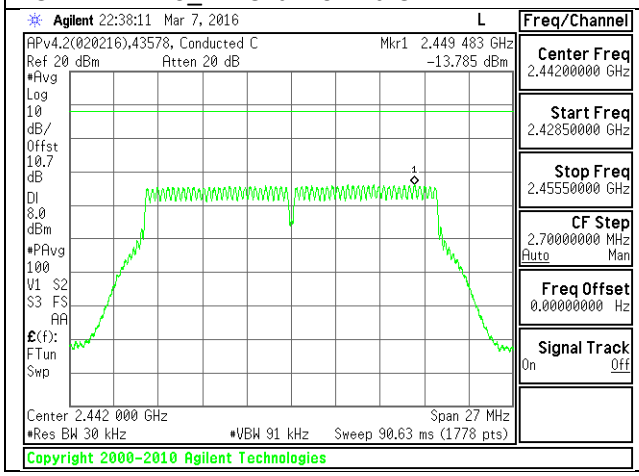
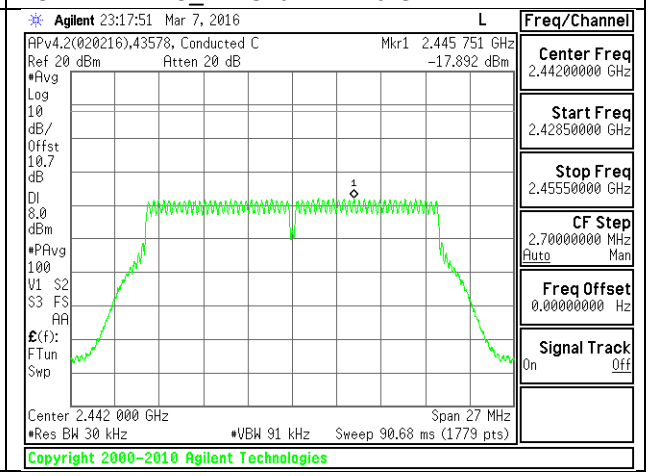


PSD 11n HT20_2.4 Chain 1 Mid Ch



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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

KDB 58074 D01 v03r04 Section 11

RESULTS

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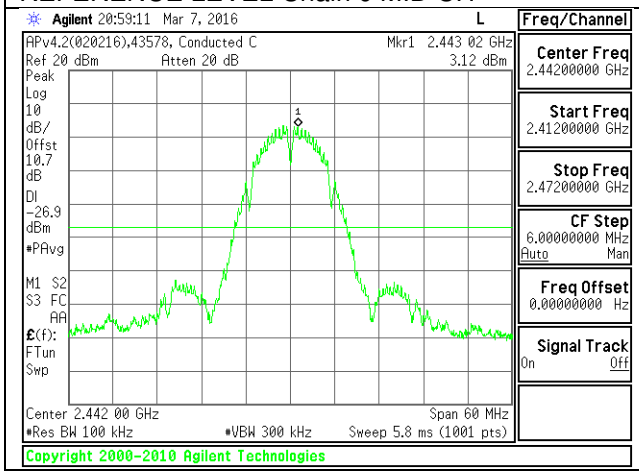
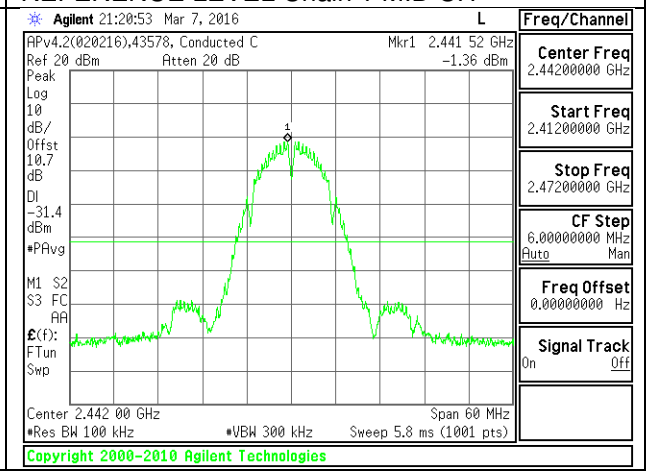
9.6.1. 802.11b MODE IN THE 2.4 GHz BAND

IN-BAND REFERENCE LEVEL

REFERENCE LEVEL Chain 0 MID CH

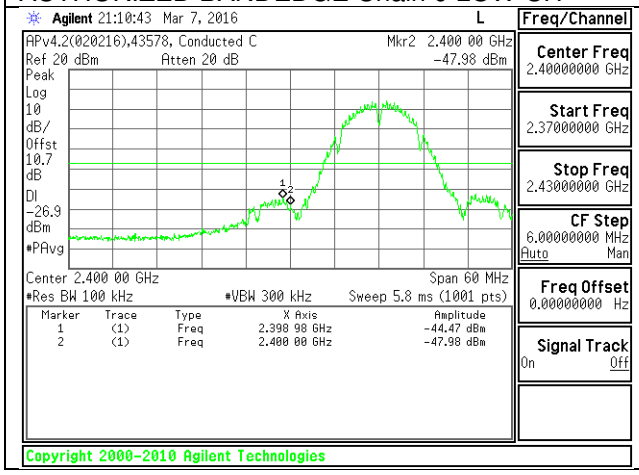


REFERENCE LEVEL Chain 1 MID CH

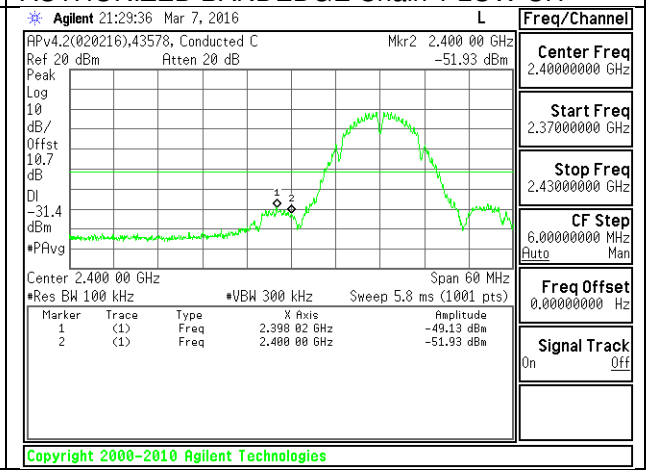


LOW CHANNEL BAND EDGE

AUTHORIZED BANDEDGE Chain 0 LOW CH



AUTHORIZED BANDEDGE Chain 1 LOW CH



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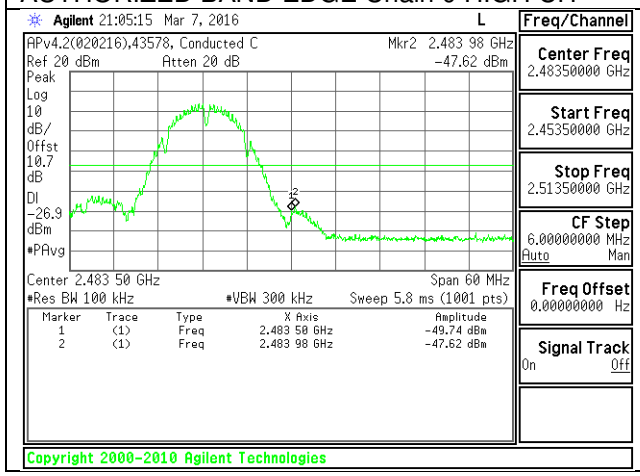
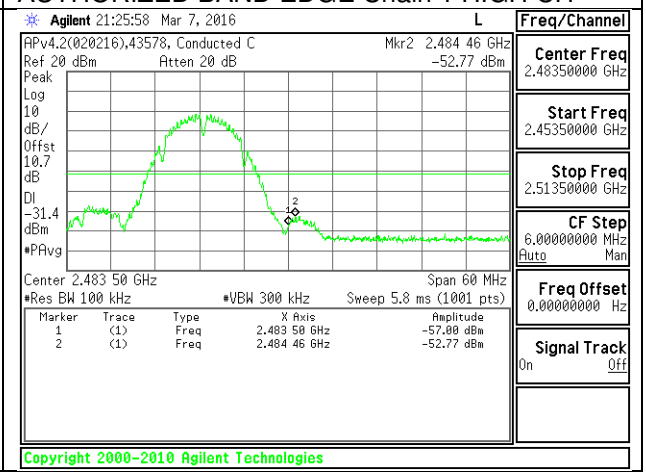
HIGH CHANNEL BAND EDGE

AUTHORIZED BAND EDGE Chain 0 HIGH CH

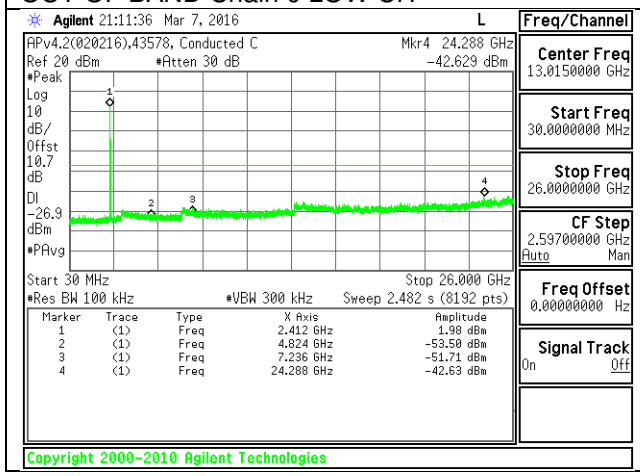


AUTHORIZED BAND EDGE Chain 1 HIGH CH

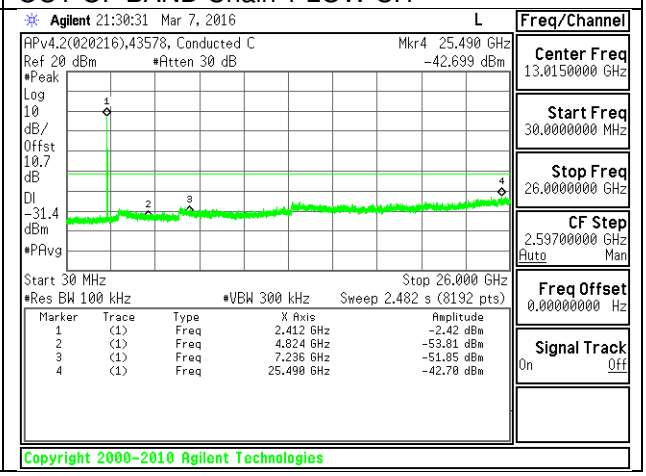


OUT-OF-BAND EMISSIONS

OUT OF BAND Chain 0 LOW CH



OUT OF BAND Chain 1 LOW CH



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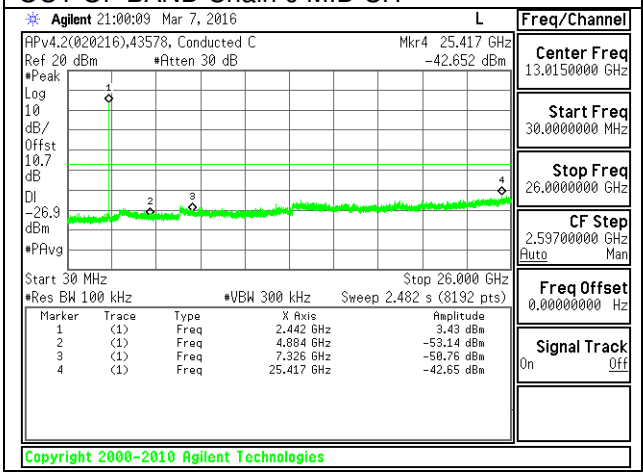
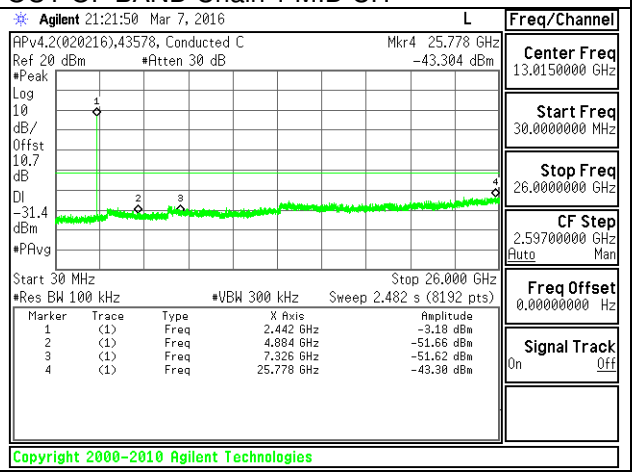
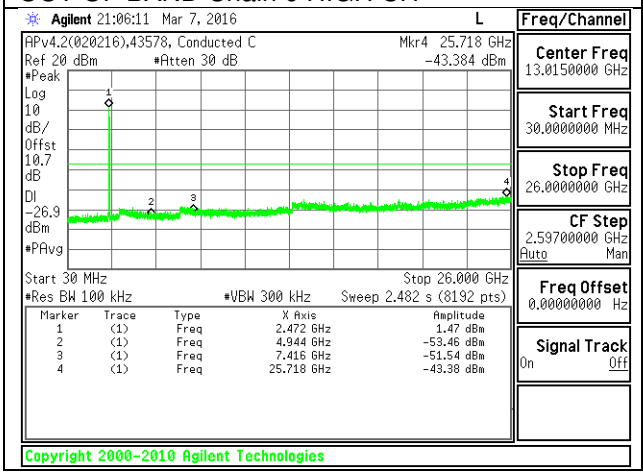
OUT OF BAND Chain 0 MID CH



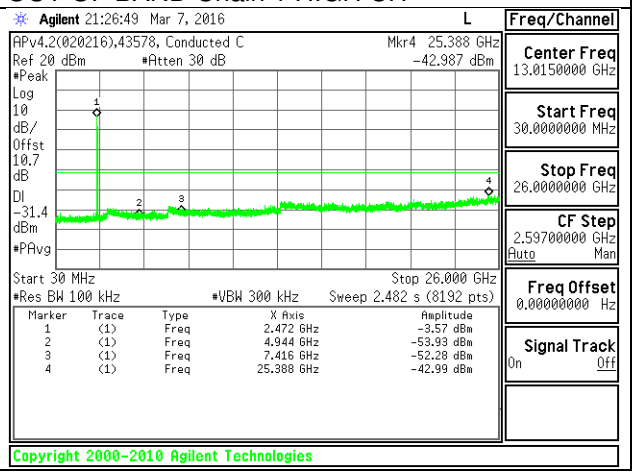
OUT OF BAND Chain 1 MID CH



OUT OF BAND Chain 0 HIGH CH



OUT OF BAND Chain 1 HIGH CH



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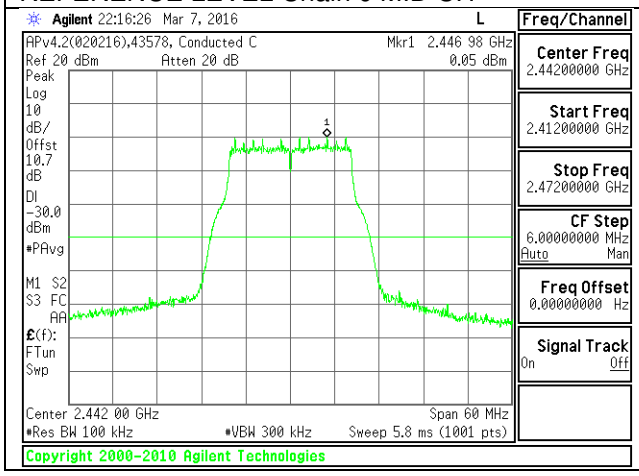
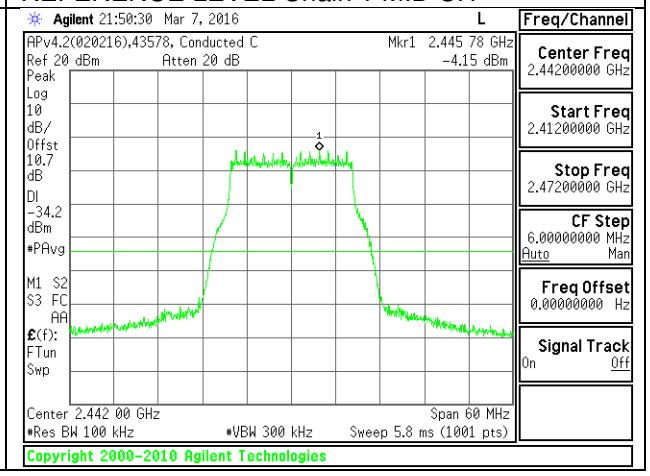
9.6.2. 802.11g MODE IN THE 2.4 GHz BAND

IN-BAND REFERENCE LEVEL

REFERENCE LEVEL Chain 0 MID CH

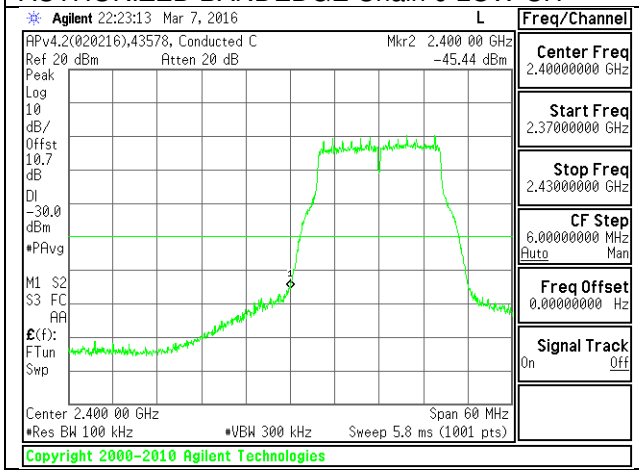


REFERENCE LEVEL Chain 1 MID CH

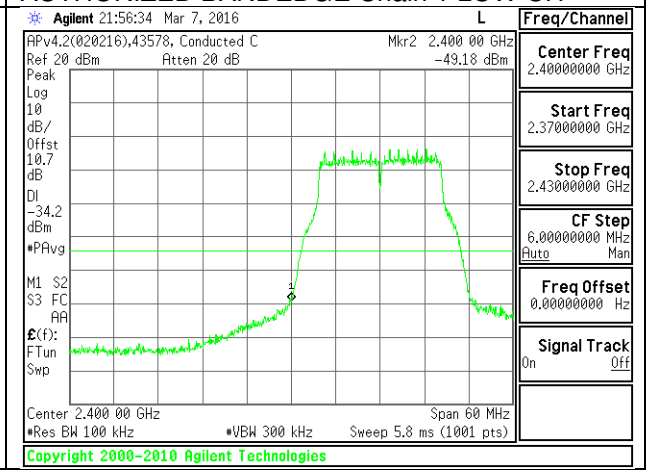


LOW CHANNEL BAND EDGE

AUTHORIZED BANDEDGE Chain 0 LOW CH



AUTHORIZED BANDEDGE Chain 1 LOW CH



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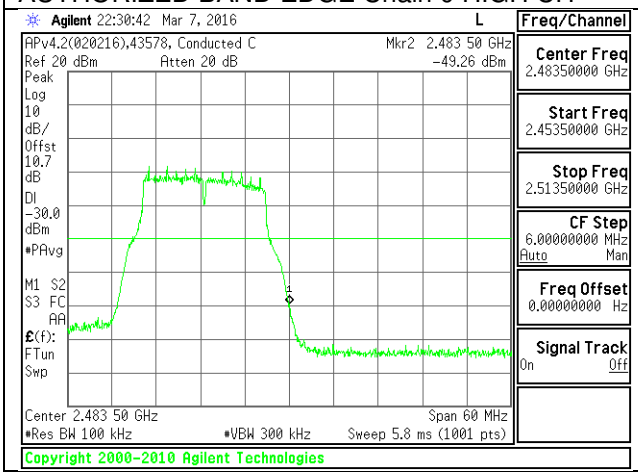
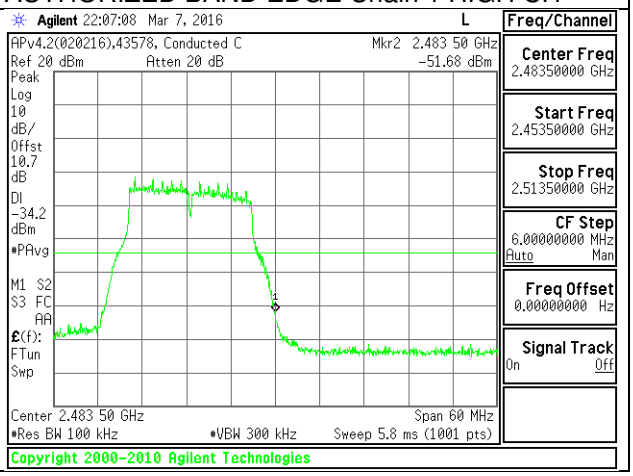
HIGH CHANNEL BAND EDGE

AUTHORIZED BAND EDGE Chain 0 HIGH CH

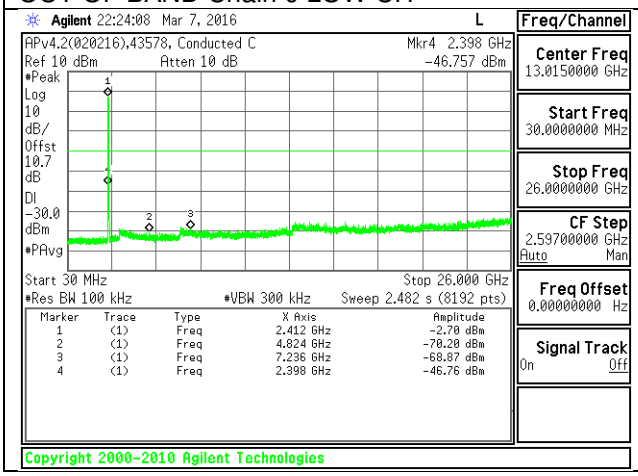


AUTHORIZED BAND EDGE Chain 1 HIGH CH

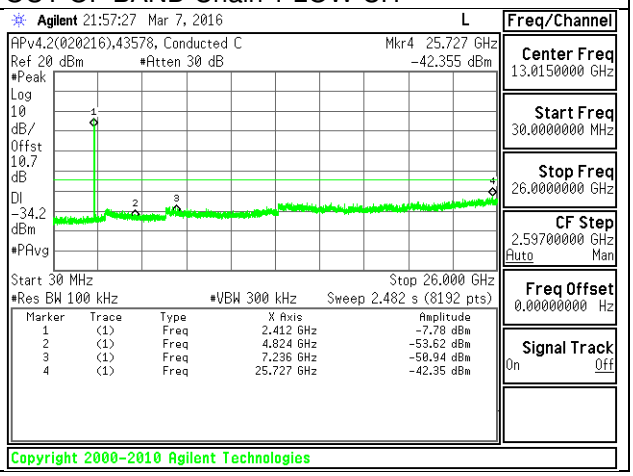


OUT-OF-BAND EMISSIONS

OUT OF BAND Chain 0 LOW CH



OUT OF BAND Chain 1 LOW CH



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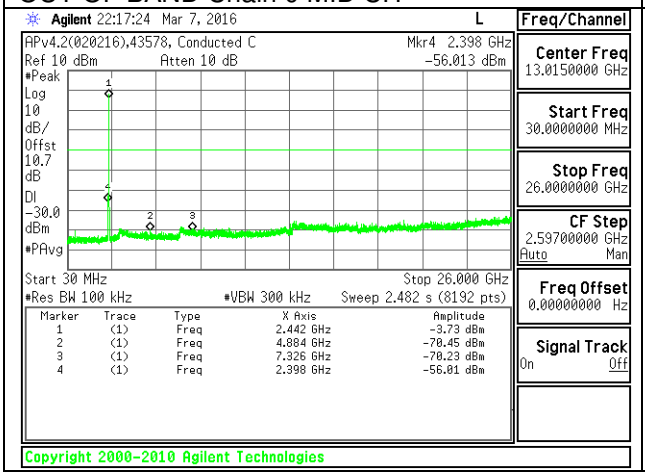
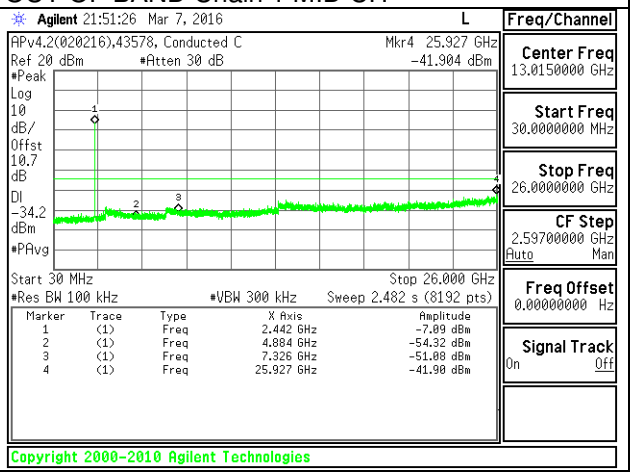
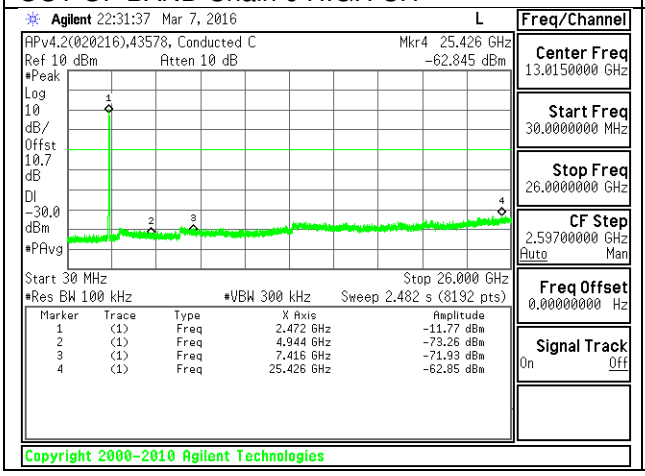
OUT OF BAND Chain 0 MID CH



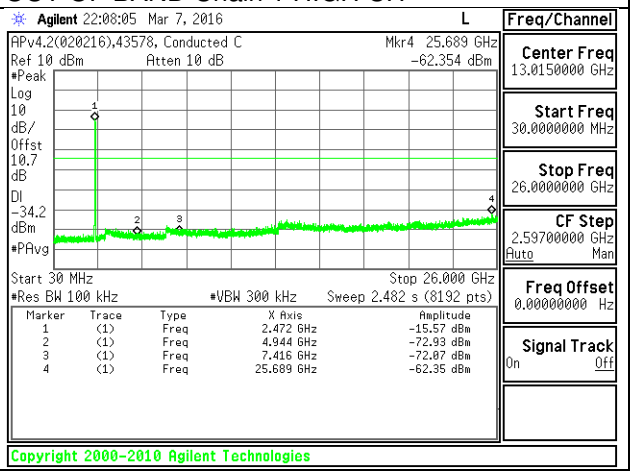
OUT OF BAND Chain 1 MID CH



OUT OF BAND Chain 0 HIGH CH



OUT OF BAND Chain 1 HIGH CH



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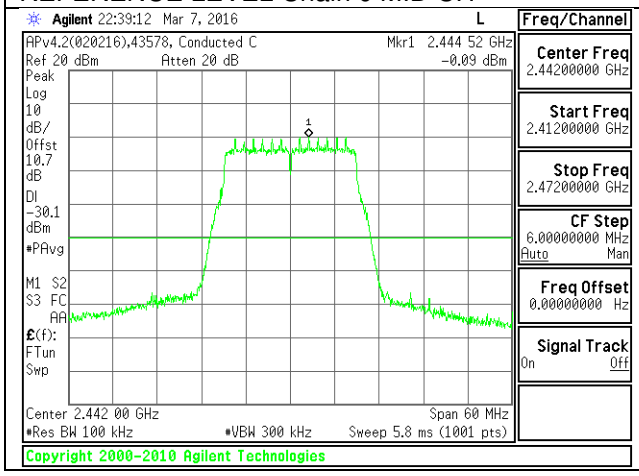
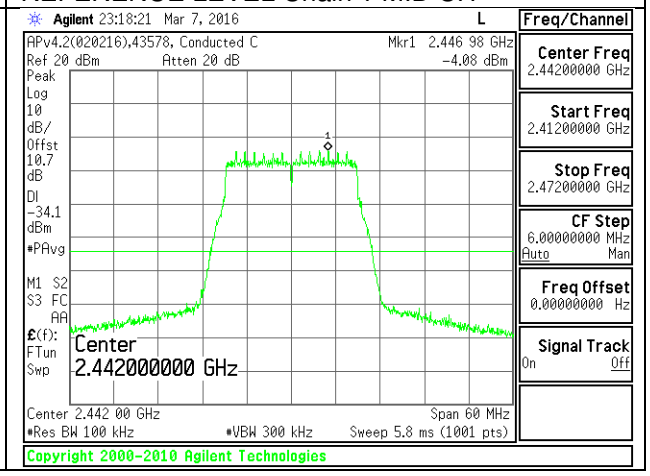
9.6.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

IN-BAND REFERENCE LEVEL

REFERENCE LEVEL Chain 0 MID CH

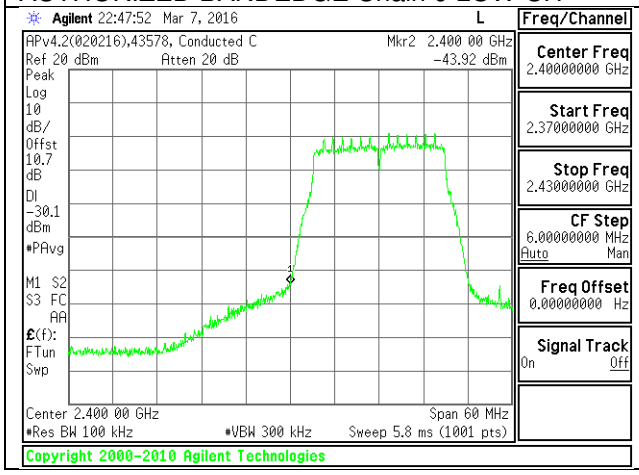


REFERENCE LEVEL Chain 1 MID CH

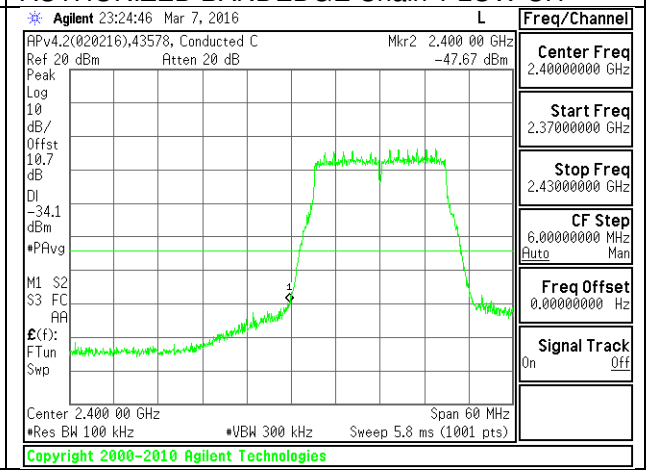


LOW CHANNEL BAND EDGE

AUTHORIZED BANDEDGE Chain 0 LOW CH



AUTHORIZED BANDEDGE Chain 1 LOW CH



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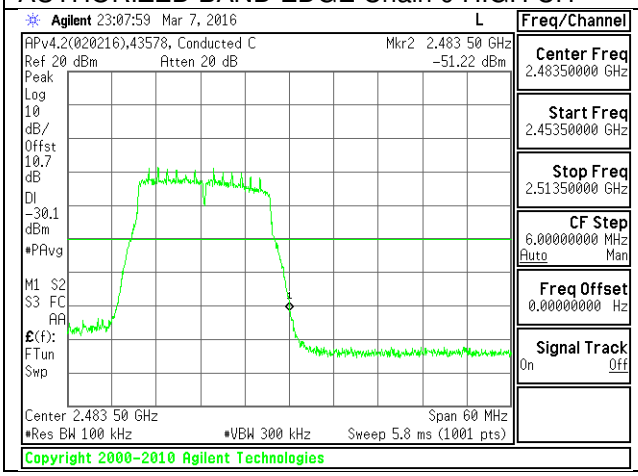
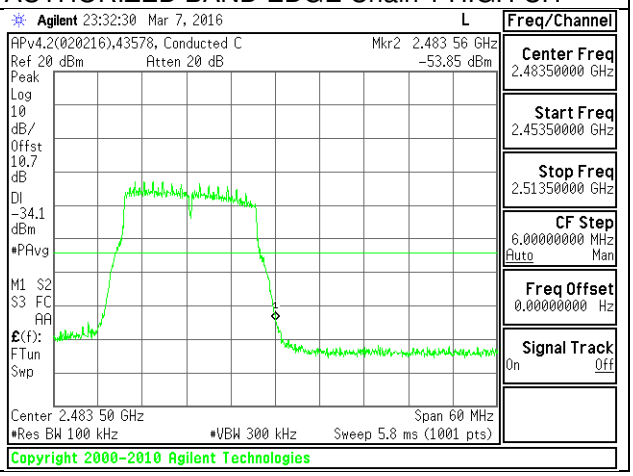
HIGH CHANNEL BAND EDGE

AUTHORIZED BAND EDGE Chain 0 HIGH CH

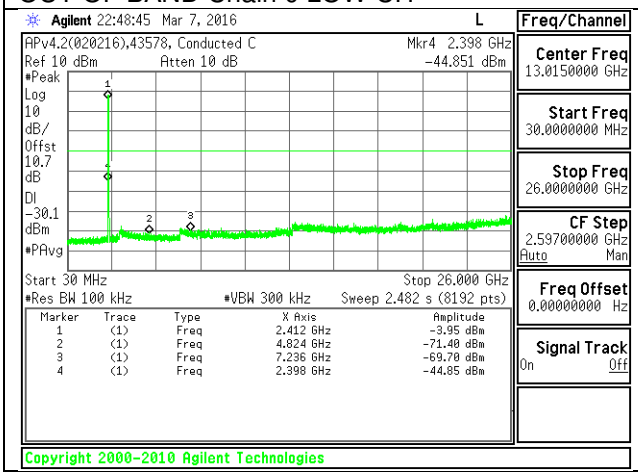


AUTHORIZED BAND EDGE Chain 1 HIGH CH

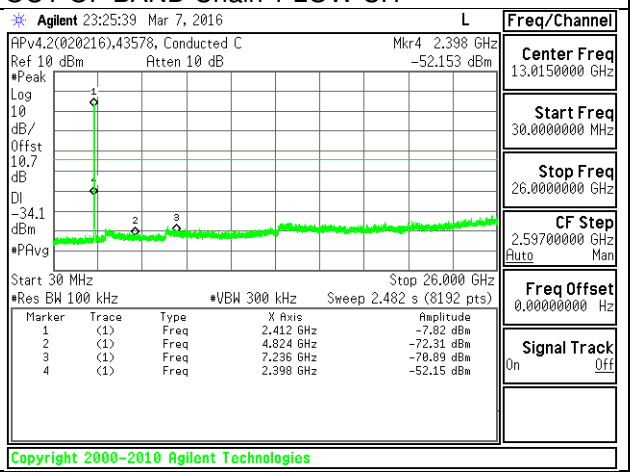


OUT-OF-BAND EMISSIONS

OUT OF BAND Chain 0 LOW CH



OUT OF BAND Chain 1 LOW CH



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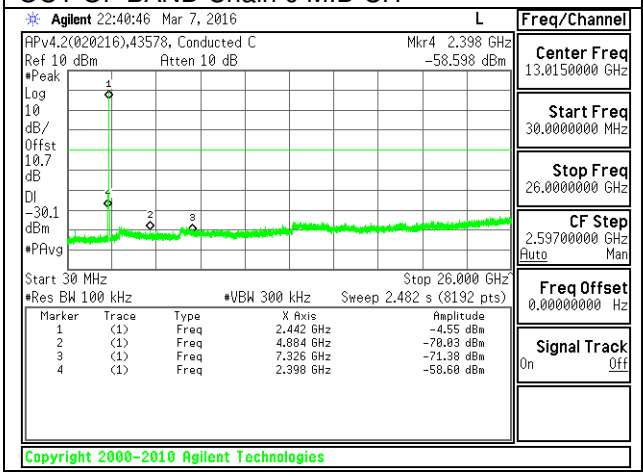
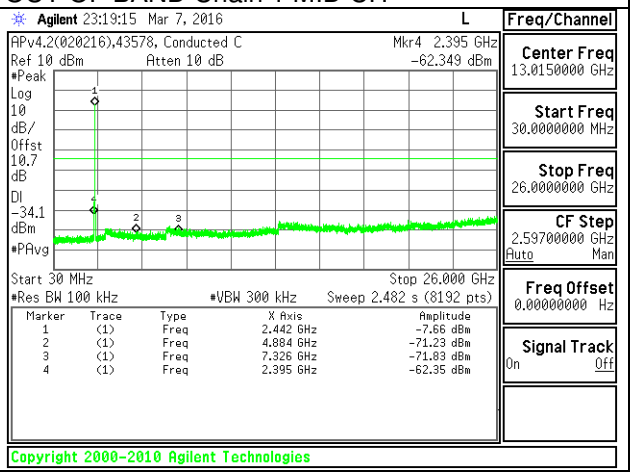
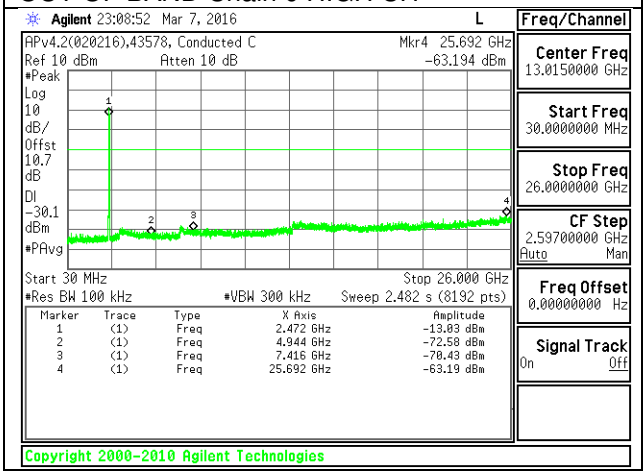
OUT OF BAND Chain 0 MID CH



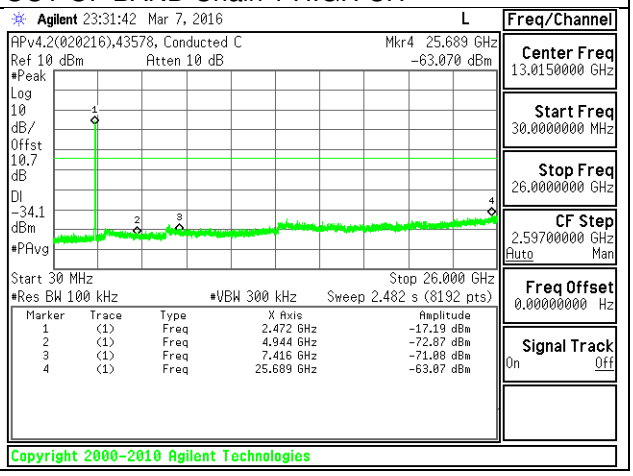
OUT OF BAND Chain 1 MID CH



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)

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 150 cm 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. Please refer to test report section 9.1.1 for duty cycle factor information.

The spectrum from 30 MHz to 26 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.

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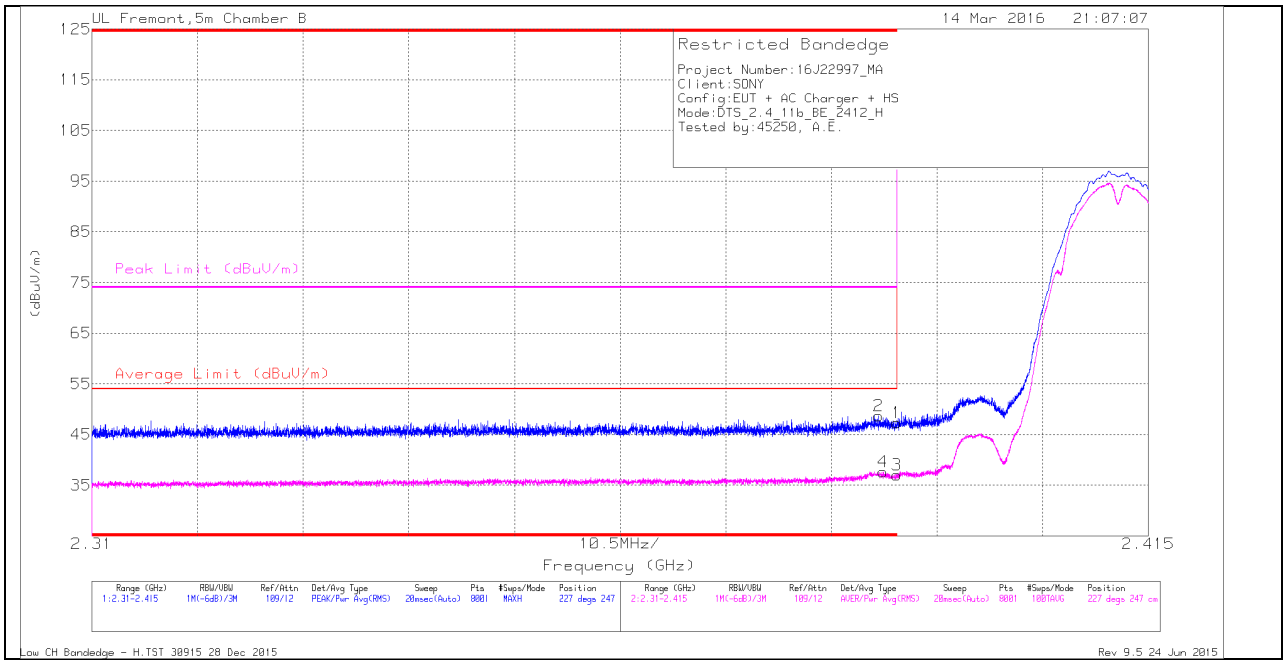
10.2. TRANSMITTER ABOVE 1 GHz

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 T344 (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	* 2.388	39.01	Pk	32.1	-22.4	0	48.71	-	-	74	-25.29	227	247	H
4	* 2.389	27.84	RMS	32.1	-22.3	0	37.64	54	-16.36	-	-	227	247	H
1	* 2.39	37.55	Pk	32.1	-22.3	0	47.35	-	-	74	-26.65	227	247	H
3	* 2.39	27.19	RMS	32.1	-22.3	0	36.99	54	-17.01	-	-	227	247	H

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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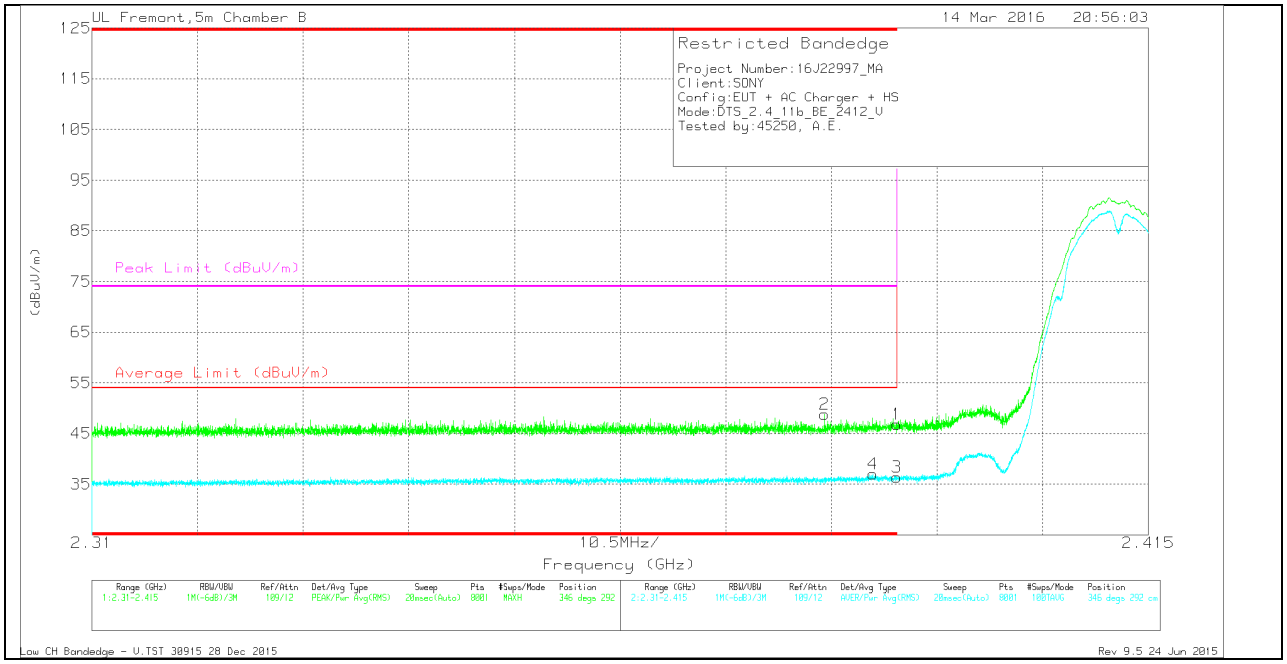
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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	* 2.383	39.15	Pk	32.1	-22.4	0	48.85	-	-	74	-25.15	346	292	V
4	* 2.388	27.3	RMS	32.1	-22.4	0	37	54	-17	-	-	346	292	V
1	* 2.39	37.01	Pk	32.1	-22.3	0	46.81	-	-	74	-27.19	346	292	V
3	* 2.39	26.61	RMS	32.1	-22.3	0	36.41	54	-17.59	-	-	346	292	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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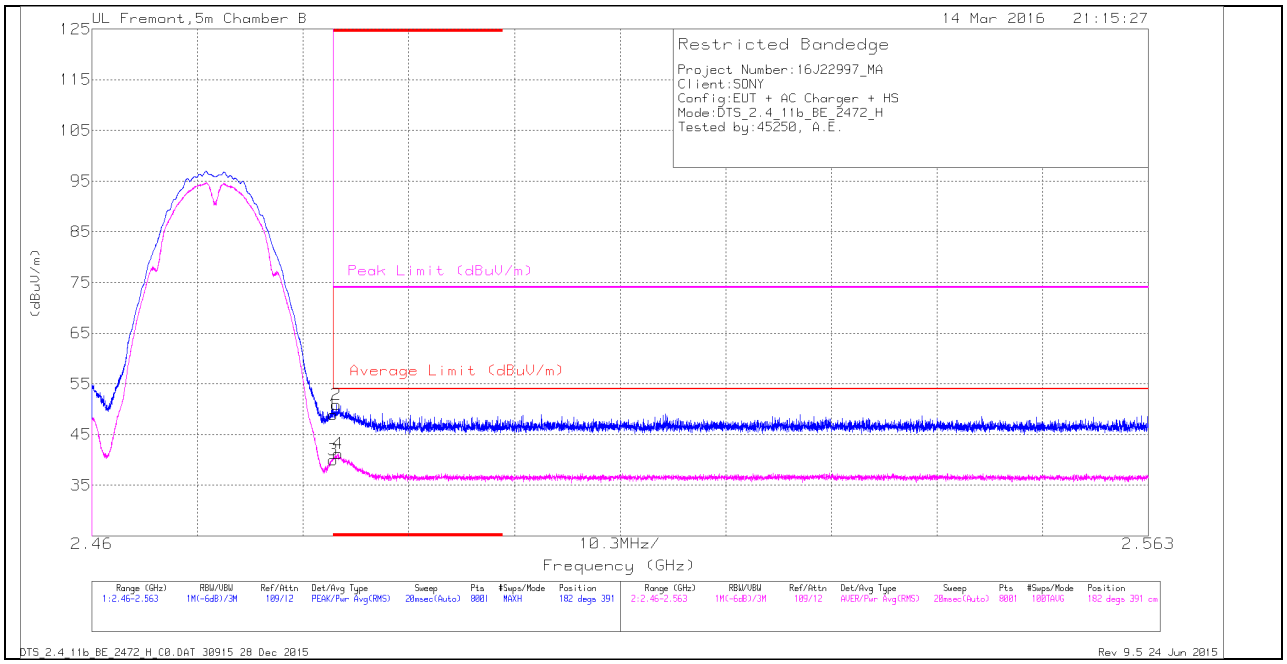
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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
1	* 2.484	38.98	Pk	32.3	-22.3	0	48.98	-	-	74	-25.02	182	391	H
2	* 2.484	40.9	Pk	32.3	-22.3	0	50.9	-	-	74	-23.1	182	391	H
3	* 2.484	29.95	RMS	32.3	-22.3	0	39.95	54	-14.05	-	-	182	391	H
4	* 2.484	31.21	RMS	32.3	-22.3	0	41.21	54	-12.79	-	-	182	391	H

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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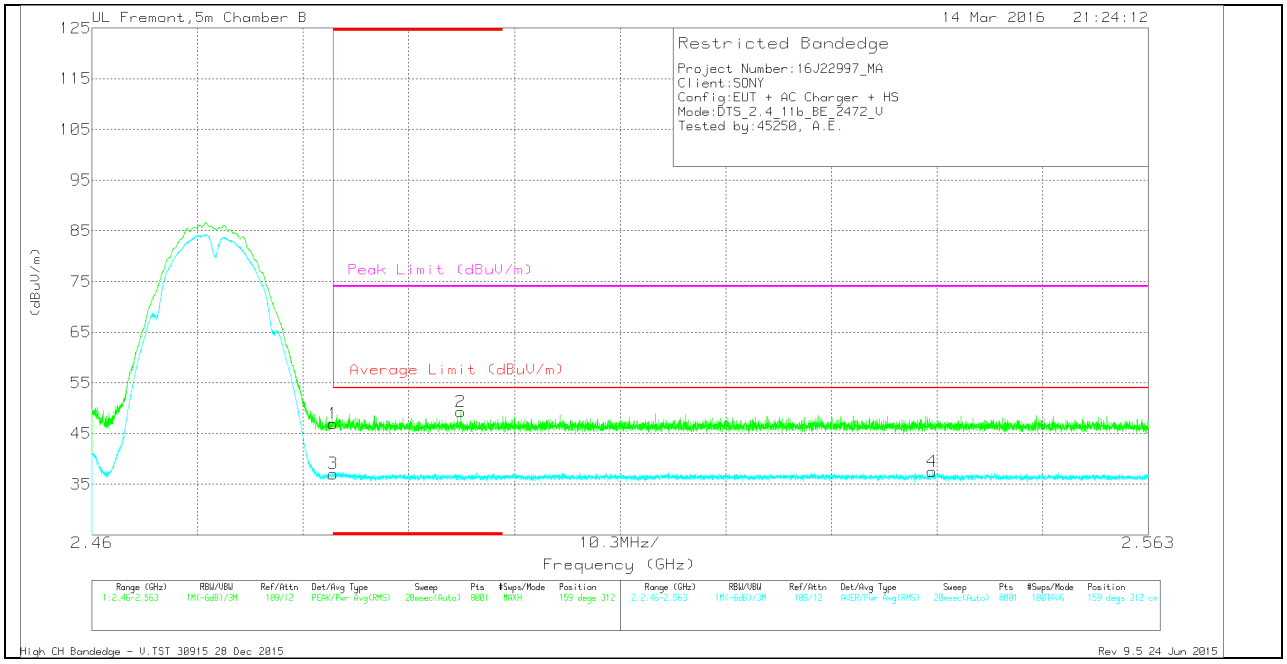
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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	36.93	Pk	32.3	-22.3	0	46.93	-	-	74	-27.07	159	312	V
3	* 2.484	27.07	RMS	32.3	-22.3	0	37.07	54	-16.93	-	-	159	312	V
2	* 2.496	39.26	Pk	32.3	-22.3	0	49.26	-	-	74	-24.74	159	312	V
4	2.542	27.39	RMS	32.2	-22.1	0	37.49	54	-16.51	-	-	159	312	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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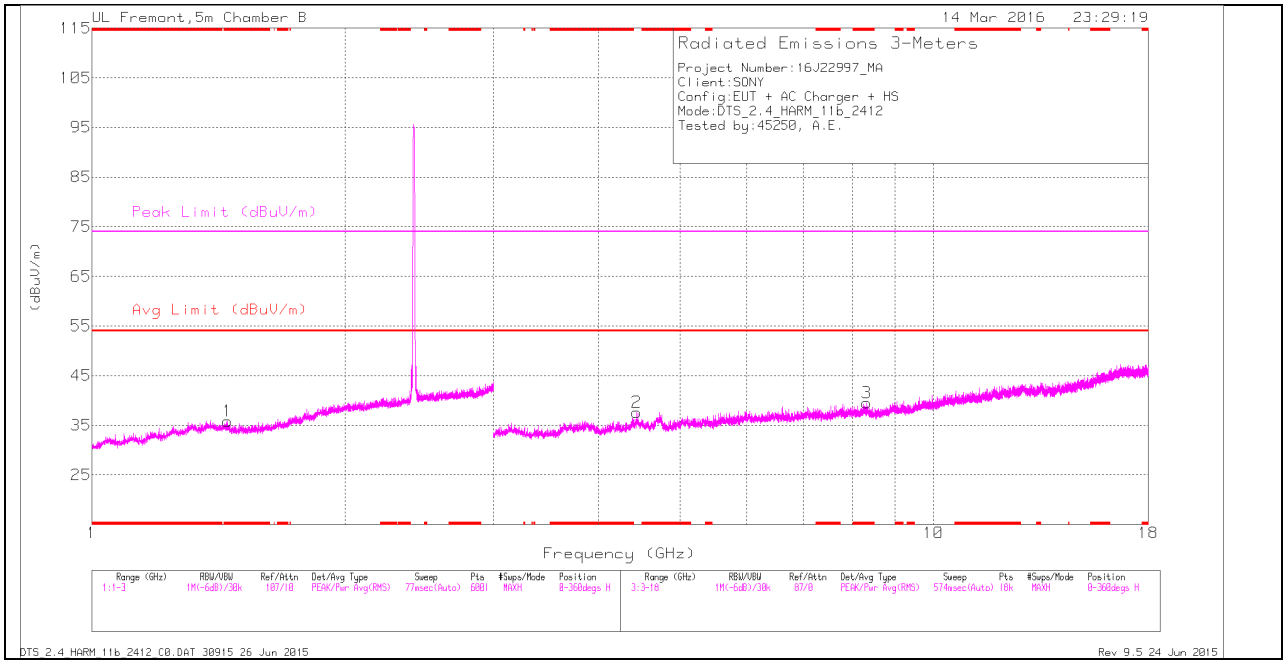
HARMONICS AND SPURIOUS EMISSIONS

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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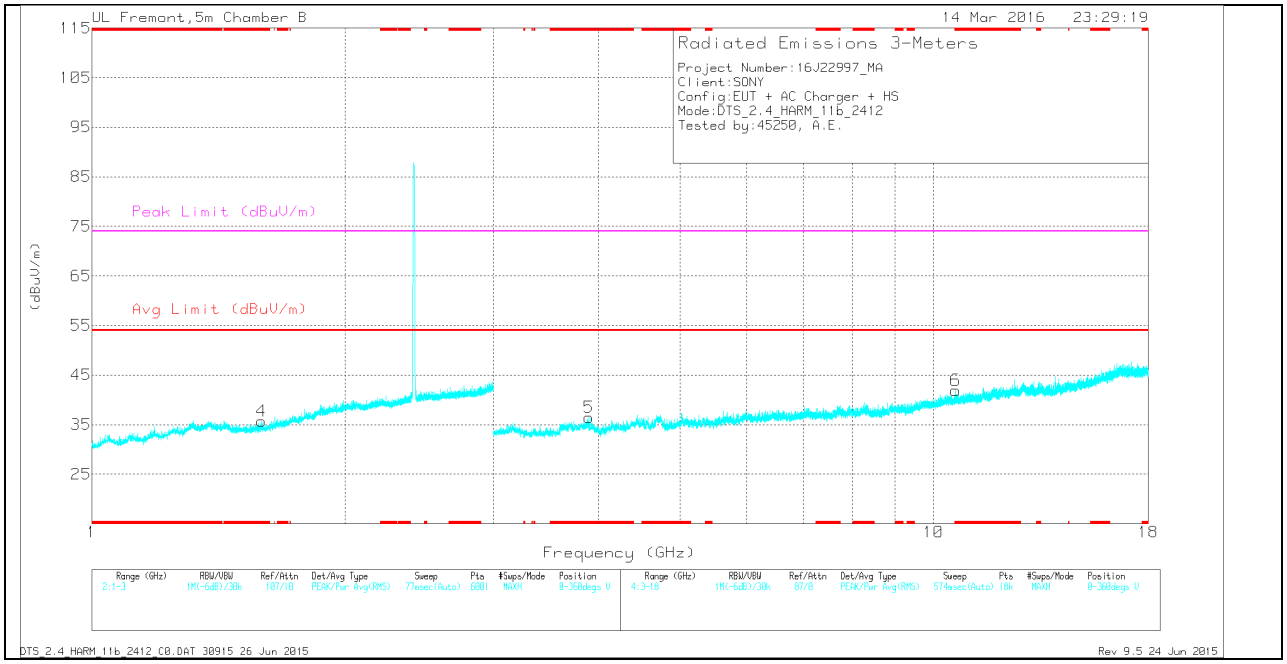
LOW CHANNEL VERTICAL



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 T344 (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	* 1.448	29.6	Pk	28.7	-22.5	0	35.8	-	-	74	-38.2	0-360	200	H
4	* 1.591	29.94	Pk	28.1	-22.3	0	35.74	-	-	74	-38.26	0-360	200	V
3	* 8.336	31.55	Pk	35.7	-27.7	0	39.55	-	-	74	-34.45	0-360	200	H
5	* 3.893	34.61	Pk	33.5	-31.7	0	36.41	-	-	74	-37.59	0-360	102	V
6	* 10.624	29.59	Pk	37.6	-25.3	0	41.89	-	-	74	-32.11	0-360	200	V
2	4.439	34.44	Pk	34	-30.8	0	37.64	-	-	-	-	0-360	101	H

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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
* 1.45	36.98	PK2	28.6	-22.6	0	42.98	-	-	74	-31.02	113	229	H
* 1.448	25.4	MAv1	28.7	-22.5	0	31.6	54	-22.4	-	-	113	229	H
* 1.592	36.72	PK2	28.1	-22.3	0	42.52	-	-	74	-31.48	148	188	V
* 1.591	25.24	MAv1	28.1	-22.3	0	31.04	54	-22.96	-	-	148	188	V
* 8.337	38.52	PK2	35.7	-27.7	0	46.52	-	-	74	-27.48	275	188	H
* 8.336	27.68	MAv1	35.7	-27.7	0	35.68	54	-18.32	-	-	275	188	H
* 3.892	41.63	PK2	33.5	-31.7	0	43.43	-	-	74	-30.57	331	128	V
* 3.892	30.58	MAv1	33.5	-31.7	0	32.38	54	-21.62	-	-	331	128	V
* 10.624	36.67	PK2	37.6	-25.3	0	48.97	-	-	74	-25.03	305	250	V
* 10.624	25.46	MAv1	37.6	-25.3	0	37.76	54	-16.24	-	-	305	250	V
4.44	41.48	PK2	34	-30.8	0	44.68	-	-	74	-29.32	116	174	H

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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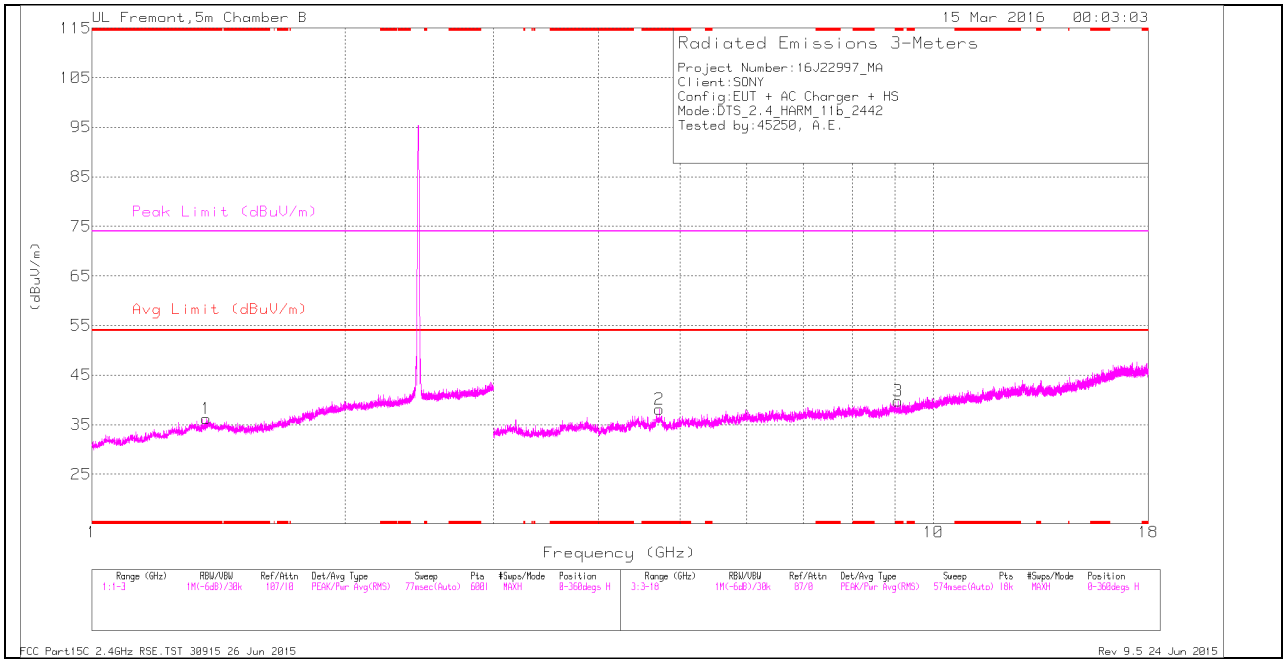
MID CHANNEL HORIZONTAL



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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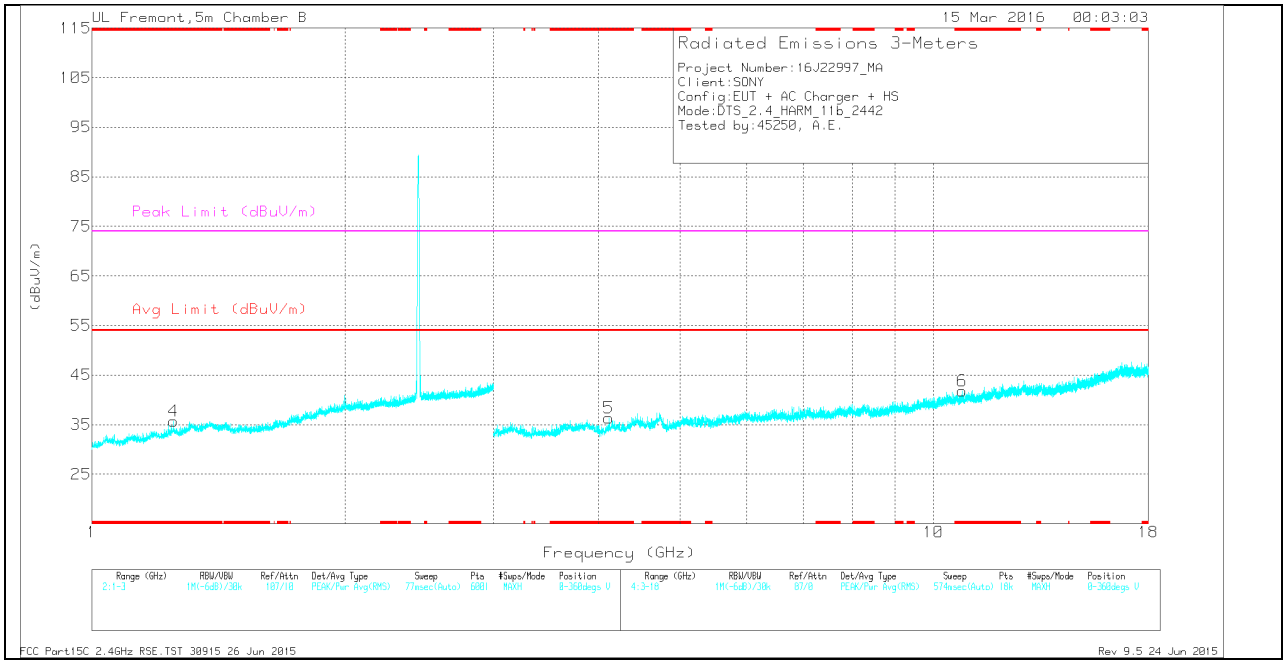
MID CHANNEL VERTICAL



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 T344 (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	* 1.366	29.81	Pk	29.2	-22.8	0	36.21	-	-	74	-37.79	0-360	199	H
4	* 1.251	30.32	Pk	28.6	-23.2	0	35.72	-	-	74	-38.28	0-360	101	V
2	* 4.723	35.16	Pk	34.1	-31.2	0	38.06	-	-	74	-35.94	0-360	199	H
3	* 9.084	31.33	Pk	36.1	-27.7	0	39.73	-	-	74	-34.27	0-360	101	H
5	* 4.112	35.39	Pk	33.6	-32.6	0	36.39	-	-	74	-37.61	0-360	199	V
6	* 10.814	29.43	Pk	37.8	-25.4	0	41.83	-	-	74	-32.17	0-360	101	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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
* 1.367	37.05	PK2	29.2	-22.8	0	43.45	-	-	74	-30.55	306	177	H
* 1.367	25.49	MAv1	29.2	-22.8	0	31.89	54	-22.11	-	-	306	177	H
* 1.25	37.18	PK2	28.6	-23.2	0	42.58	-	-	74	-31.42	151	137	V
* 1.25	25.72	MAv1	28.6	-23.2	0	31.12	54	-22.88	-	-	151	137	V
* 4.722	42.6	PK2	34.1	-31.2	0	45.5	-	-	74	-28.5	122	233	H
* 4.725	31.23	MAv1	34.1	-31.2	0	34.13	54	-19.87	-	-	122	233	H
* 9.083	38.91	PK2	36.1	-27.7	0	47.31	-	-	74	-26.69	101	162	H
* 9.086	27.51	MAv1	36.1	-27.7	0	35.91	54	-18.09	-	-	101	162	H
* 4.111	42	PK2	33.6	-32.6	0	43	-	-	74	-31	43	319	V
* 4.111	30.98	MAv1	33.6	-32.6	0	31.98	54	-22.02	-	-	43	319	V
* 10.812	36.19	PK2	37.8	-25.4	0	48.59	-	-	74	-25.41	6	111	V
* 10.813	25.57	MAv1	37.8	-25.4	0	37.97	54	-16.03	-	-	6	111	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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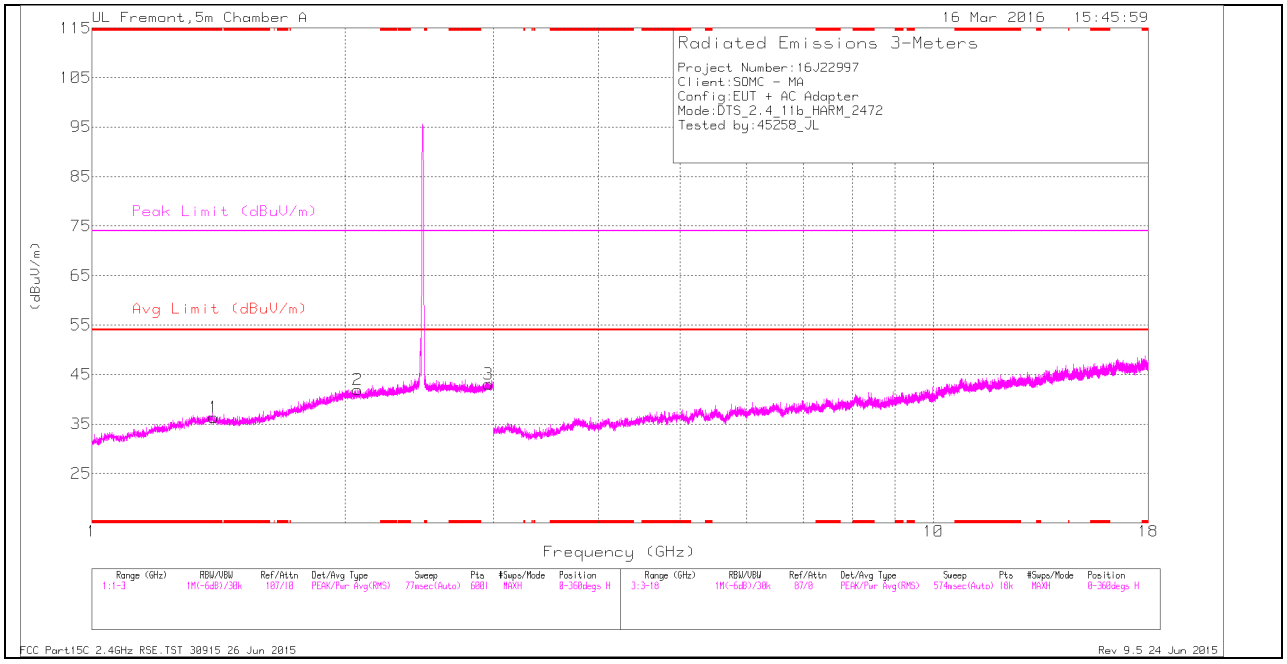
HIGH CHANNEL HORIZONTAL



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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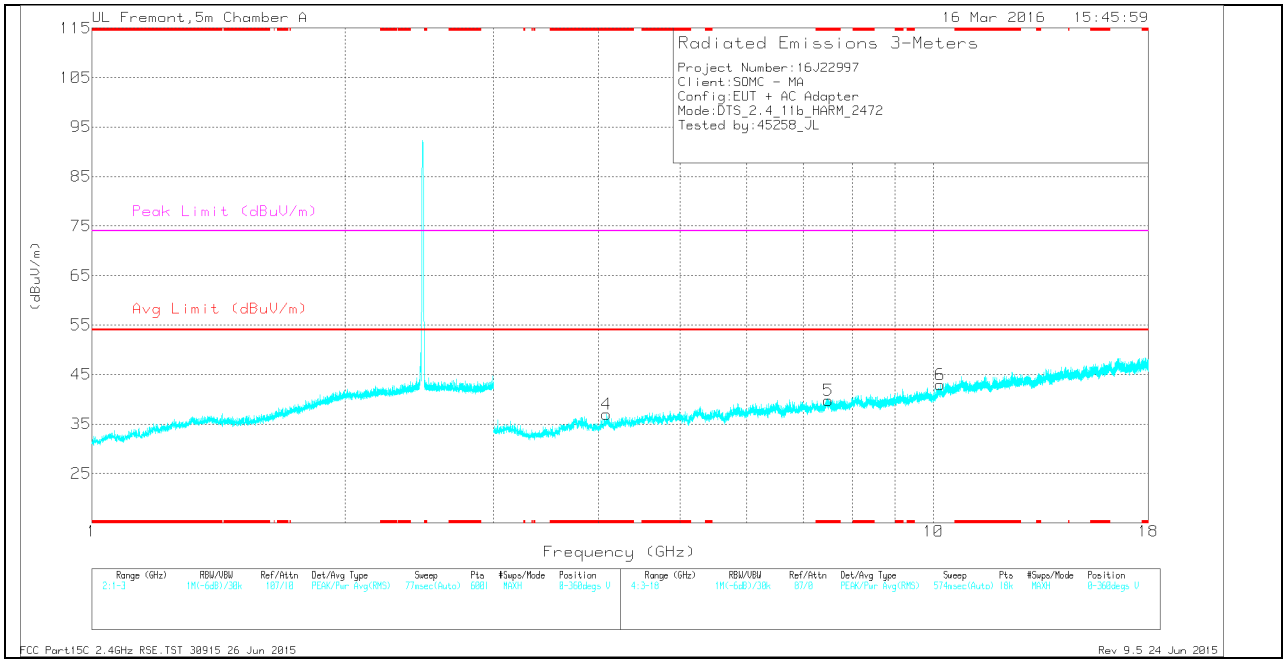
HIGH CHANNEL VERTICAL



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 T346 (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	* 1.397	28.14	Pk	29	-20.8	0	36.34	-	-	74	-37.66	0-360	201	H
4	* 4.088	34.8	Pk	33.6	-31.4	0	37	-	-	74	-37	0-360	100	V
5	* 7.5	28.99	Pk	35.8	-25	0	39.79	-	-	74	-34.21	0-360	100	V
2	2.069	29.88	Pk	31.5	-19.5	0	41.88	-	-	-	-	0-360	201	H
3	2.96	30.71	Pk	32.8	-20.5	0	43.01	-	-	-	-	0-360	201	H
6	10.181	27.98	Pk	37.2	-22.3	0	42.88	-	-	-	-	0-360	100	V

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

Pk - Peak detector

PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
* 1.397	36.18	PK2	29	-20.8	0	44.38	-	-	74	-29.62	17	137	H
* 1.396	24.76	MAv1	29	-20.8	0	32.96	54	-21.04	-	-	17	137	H
* 4.087	42.11	PK2	33.6	-31.4	0	44.31	-	-	74	-29.69	312	242	V
* 4.09	30.88	MAv1	33.6	-31.4	0	33.08	54	-20.92	-	-	312	242	V
* 7.5	36.77	PK2	35.8	-25	0	47.57	-	-	74	-26.43	171	156	V
* 7.498	25.27	MAv1	35.8	-25	0	36.07	54	-17.93	-	-	171	156	V
2.068	37.6	PK2	31.5	-19.5	0	49.6	-	-	74	-24.4	55	213	H
2.962	38.98	PK2	32.8	-20.5	0	51.28	-	-	74	-22.72	101	187	H
10.182	34.3	PK2	37.2	-22.3	0	49.2	-	-	74	-24.8	149	253	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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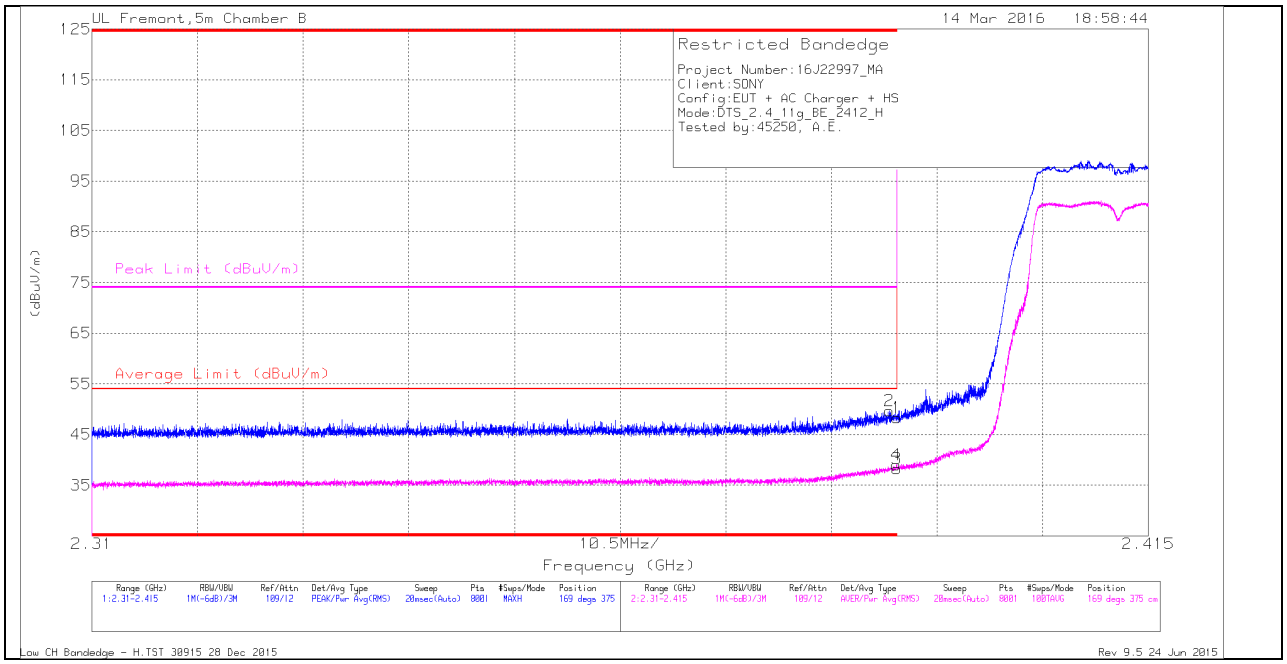
10.2.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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	39.82	Pk	32.1	-22.3	0	49.62	-	-	74	-24.38	169	375	H
1	* 2.39	38.47	Pk	32.1	-22.3	0	48.27	-	-	74	-25.73	169	375	H
3	* 2.39	28.46	RMS	32.1	-22.3	0	38.26	54	-15.74	-	-	169	375	H
4	* 2.39	29.16	RMS	32.1	-22.3	0	38.96	54	-15.04	-	-	169	375	H

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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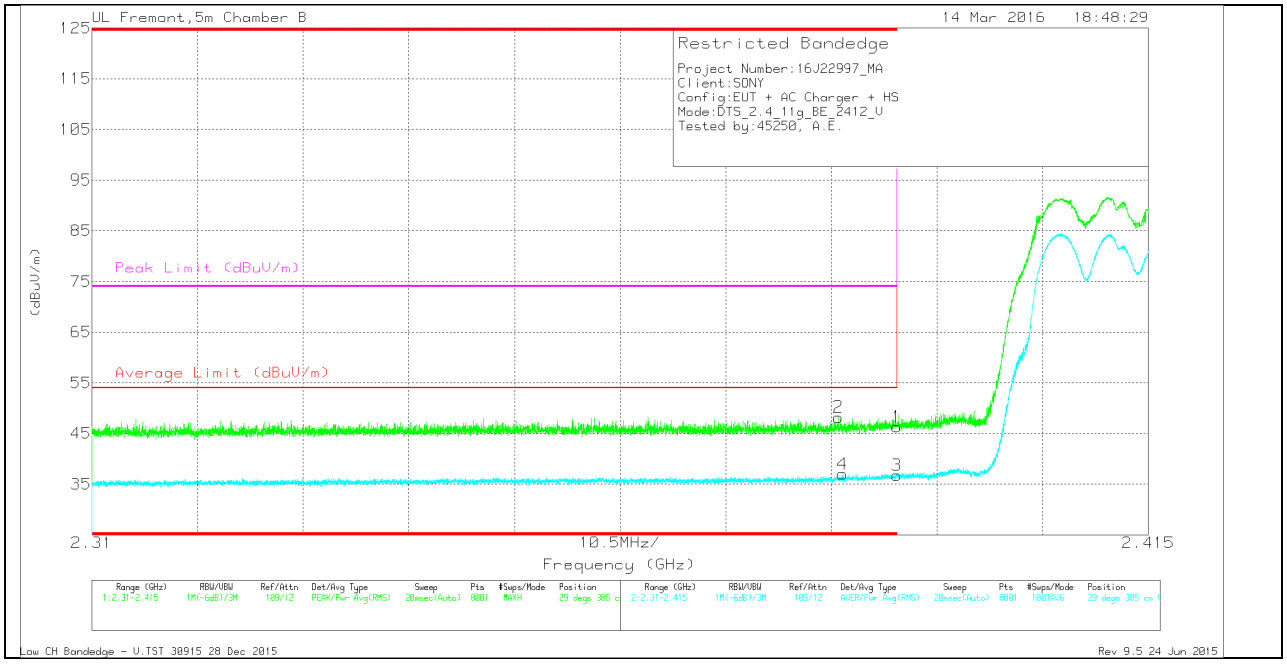
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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	* 2.39	36.51	Pk	32.1	-22.3	0	46.31	-	-	74	-27.69	29	385	V
2	* 2.384	38.44	Pk	32.1	-22.3	0	48.24	-	-	74	-25.76	29	385	V
3	* 2.39	26.94	RMS	32.1	-22.3	0	36.74	54	-17.26	-	-	29	385	V
4	* 2.385	27.09	RMS	32.1	-22.2	0	36.99	54	-17.01	-	-	29	385	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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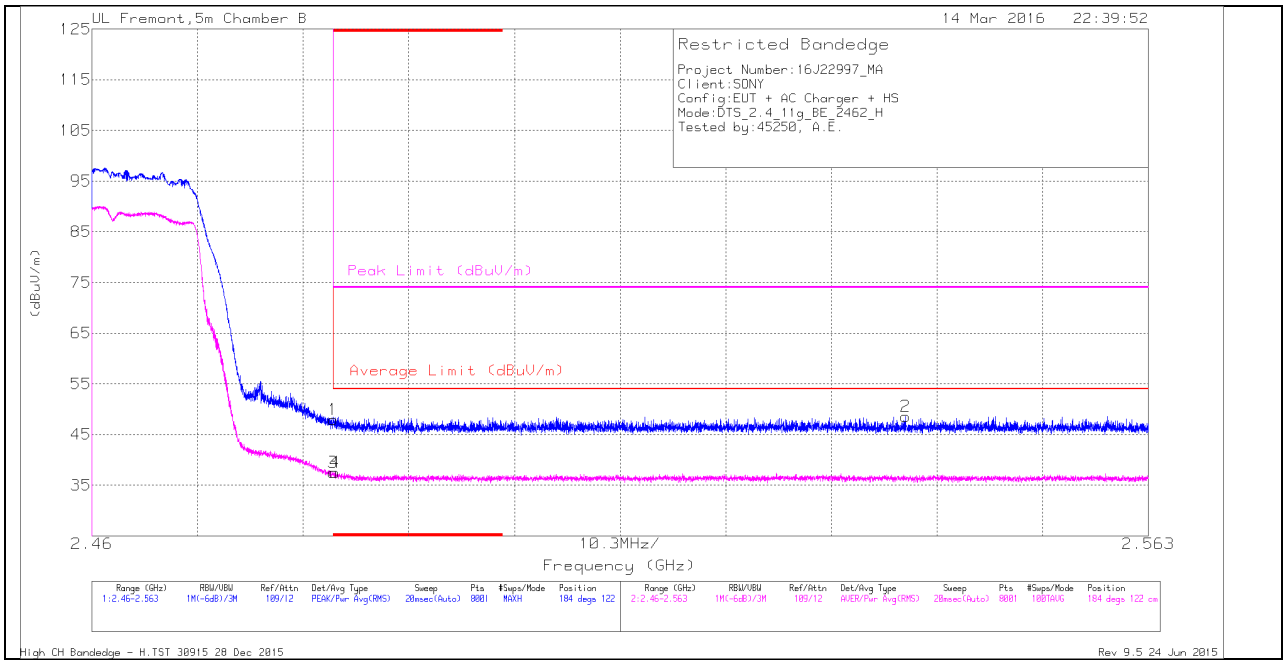
AUTHORIZED BANDEDGE (CHANNEL 11)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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	37.95	Pk	32.3	-22.3	0	47.95	-	-	74	-26.05	184	122	H
3	* 2.484	27.51	RMS	32.3	-22.3	0	37.51	54	-16.49	-	-	184	122	H
4	* 2.484	27.48	RMS	32.3	-22.3	0	37.48	54	-16.52	-	-	184	122	H
2	2.539	38.55	Pk	32.2	-22.2	0	48.55	-	-	74	-25.45	184	122	H

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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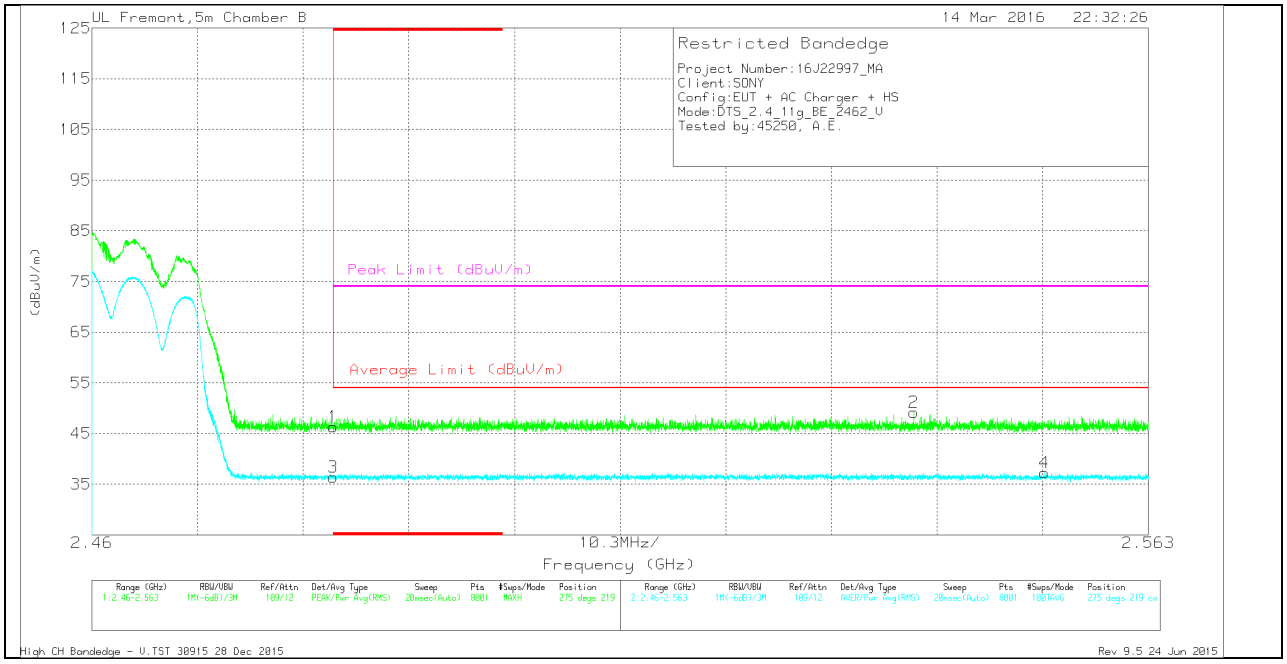
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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	36.34	Pk	32.3	-22.3	0	46.34	-	-	74	-27.66	275	219	V
3	* 2.484	26.36	RMS	32.3	-22.3	0	36.36	54	-17.64	-	-	275	219	V
2	2.54	39.23	Pk	32.2	-22.3	0	49.13	-	-	74	-24.87	275	219	V
4	2.553	27.1	RMS	32.2	-22.1	0	37.2	54	-16.8	-	-	275	219	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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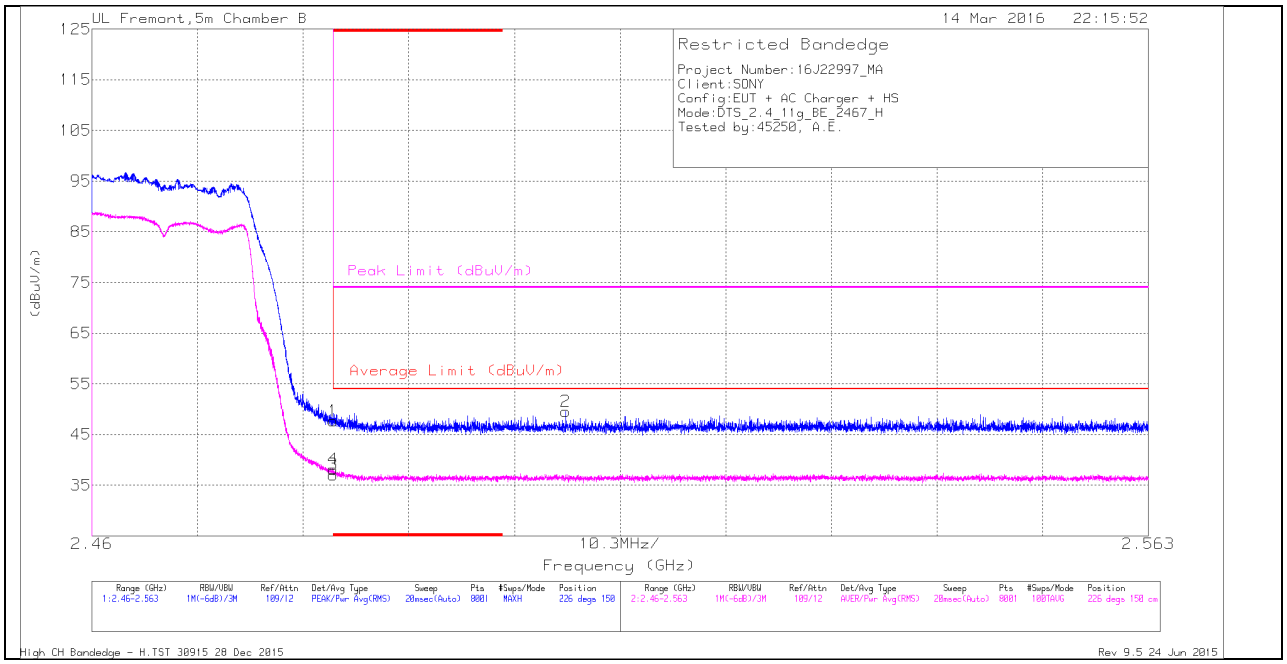
AUTHORIZED BANDEDGE (CHANNEL 12)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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
1	* 2.484	37.67	Pk	32.3	-22.3	0	47.67	-	-	74	-26.33	226	150	H
3	* 2.484	27.07	RMS	32.3	-22.3	0	37.07	54	-16.93	-	-	226	150	H
4	* 2.484	28.07	RMS	32.3	-22.3	0	38.07	54	-15.93	-	-	226	150	H
2	2.506	39.42	Pk	32.3	-22.2	0	49.52	-	-	74	-24.48	226	150	H

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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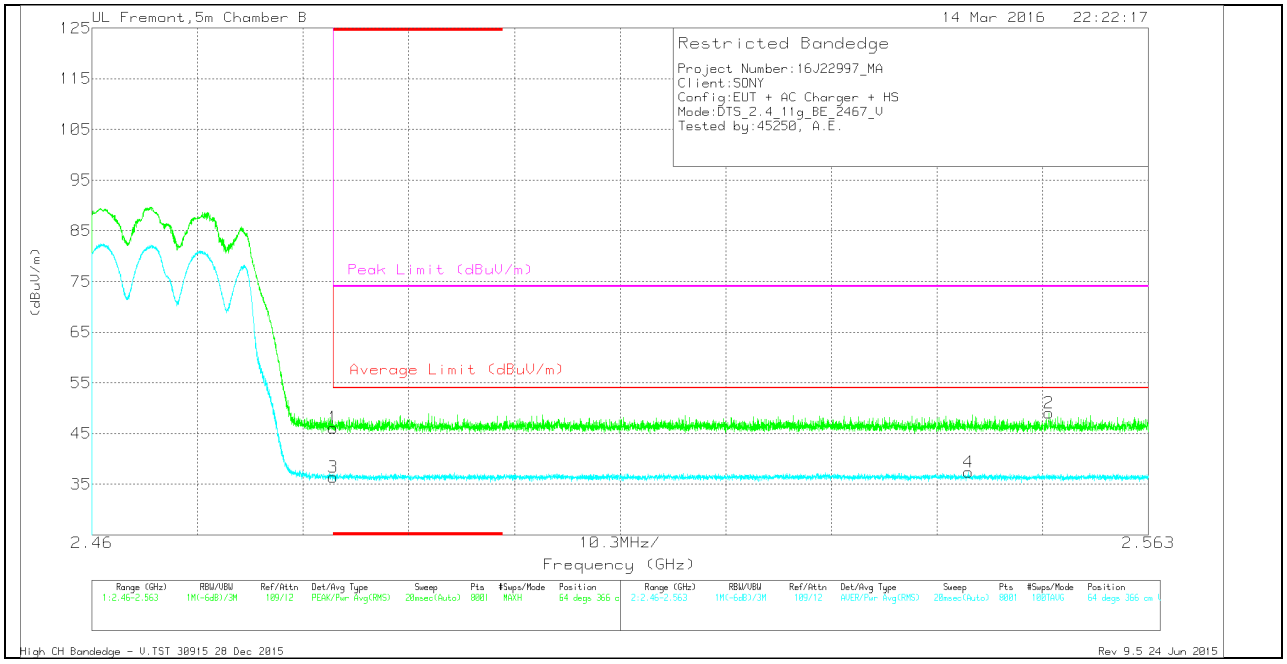
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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	36.13	Pk	32.3	-22.3	0	46.13	-	-	74	-27.87	64	366	V
3	* 2.484	26.37	RMS	32.3	-22.3	0	36.37	54	-17.63	-	-	64	366	V
4	2.545	27.34	RMS	32.2	-22.2	0	37.34	54	-16.66	-	-	64	366	V
2	2.553	38.94	Pk	32.2	-22.1	0	49.04	-	-	74	-24.96	64	366	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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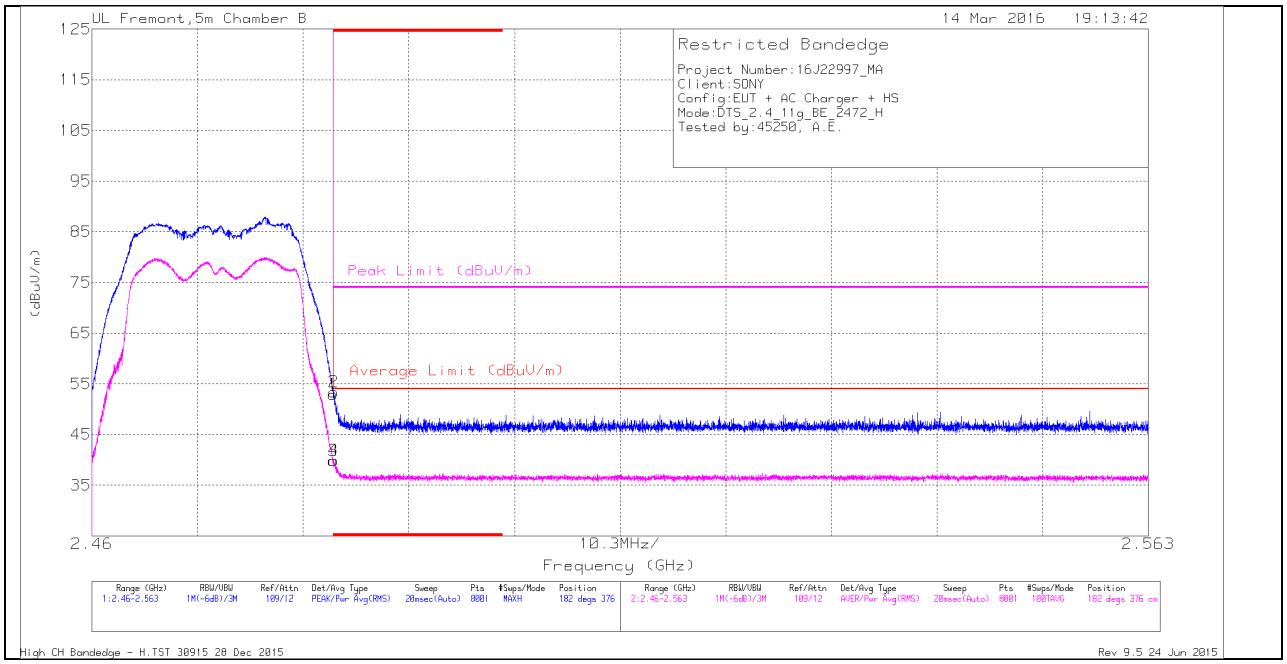
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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	42.86	Pk	32.3	-22.3	0	52.86	-	-	74	-21.14	182	376	H
2	* 2.484	43.4	Pk	32.3	-22.3	0	53.4	-	-	74	-20.6	182	376	H
3	* 2.484	29.87	RMS	32.3	-22.3	0	39.87	54	-14.13	-	-	182	376	H
4	* 2.484	29.87	RMS	32.3	-22.3	0	39.87	54	-14.13	-	-	182	376	H

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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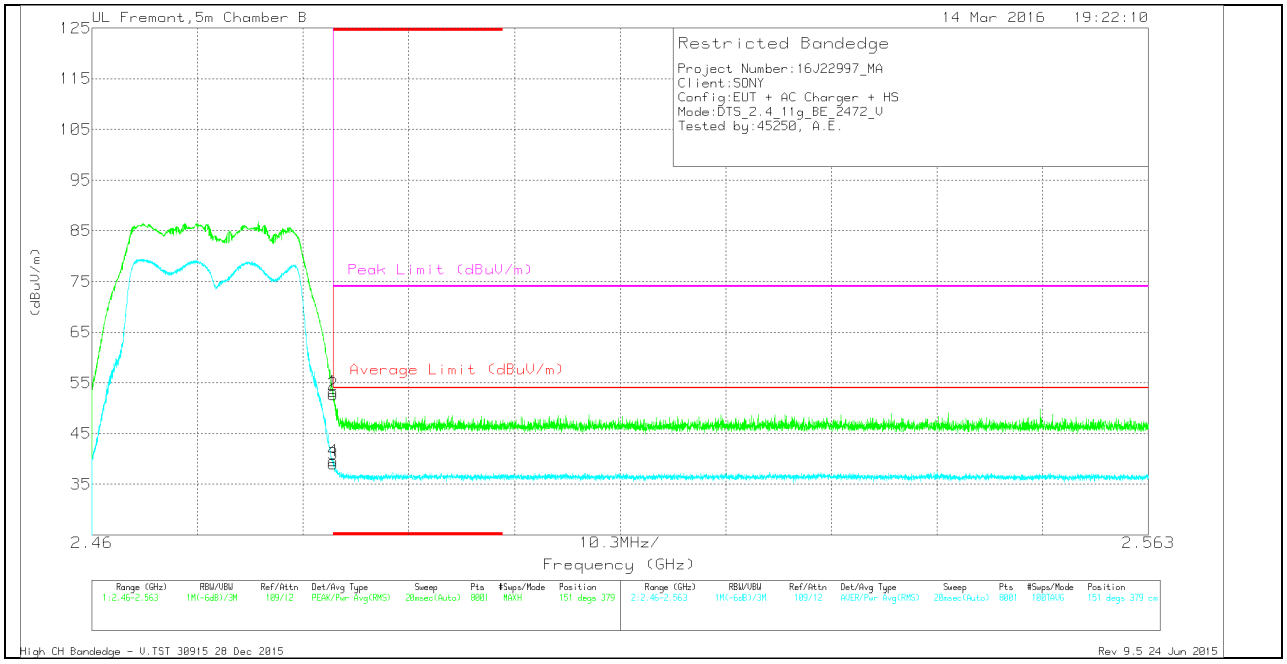
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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	43.31	Pk	32.3	-22.3	0	53.31	-	-	74	-20.69	151	379	V
2	* 2.484	42.71	Pk	32.3	-22.3	0	52.71	-	-	74	-21.29	151	379	V
3	* 2.484	29.05	RMS	32.3	-22.3	0	39.05	54	-14.95	-	-	151	379	V
4	* 2.484	29.56	RMS	32.3	-22.3	0	39.56	54	-14.44	-	-	151	379	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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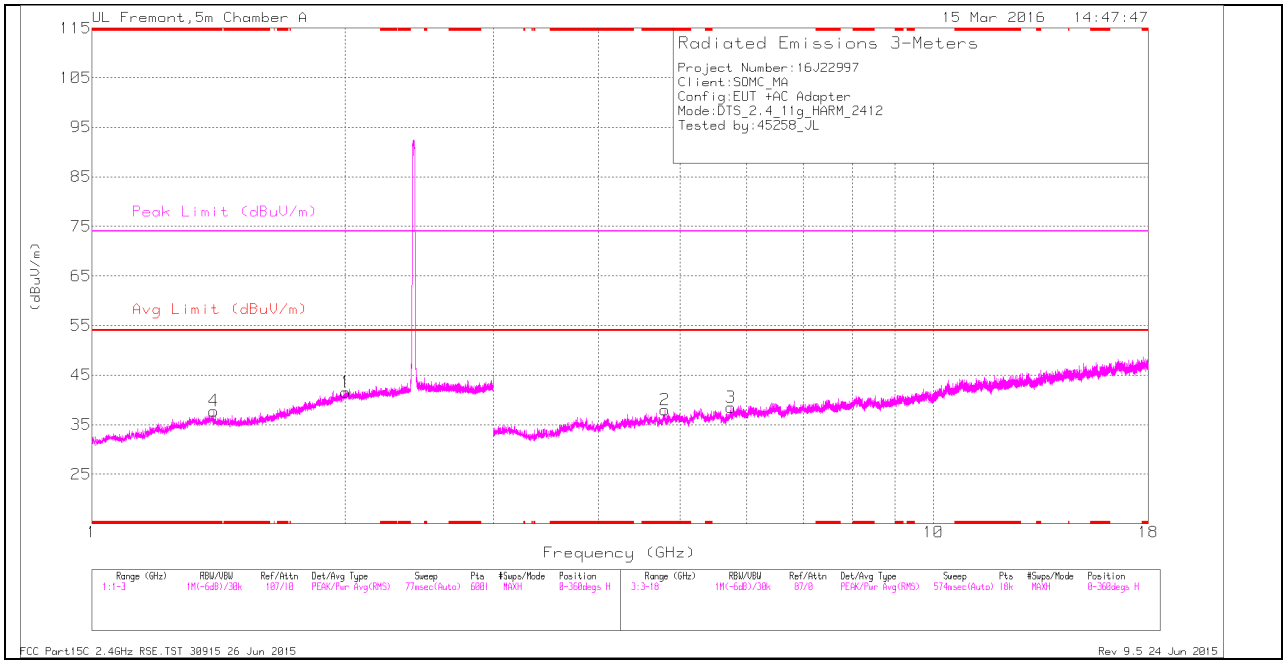
HARMONICS AND SPURIOUS EMISSIONS

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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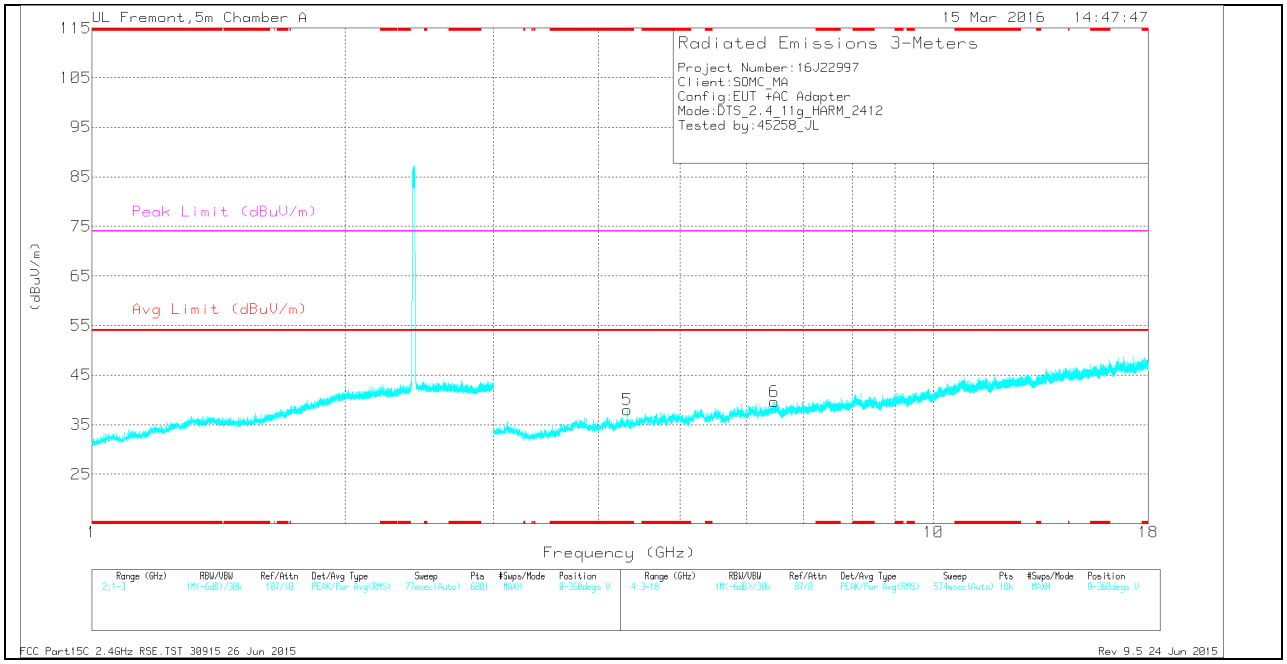
LOW CHANNEL VERTICAL



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 T346 (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	* 1.395	29.59	Pk	29	-20.8	0	37.79	-	-	74	-36.21	0-360	201	H
2	* 4.797	33.43	Pk	34.3	-29.8	0	37.93	-	-	74	-36.07	0-360	201	H
5	* 4.327	35.14	Pk	33.8	-31	0	37.94	-	-	74	-36.06	0-360	200	V
1	2.004	29.2	Pk	31.7	-19.4	0	41.5	-	-	-	-	0-360	100	H
3	5.742	32.23	Pk	34.9	-28.6	0	38.53	-	-	-	-	0-360	201	H
6	6.468	30.68	Pk	35.6	-26.7	0	39.58	-	-	-	-	0-360	100	V

PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
* 1.395	36.45	PK2	29	-20.8	0	44.65	-	-	74	-29.35	358	182	H
* 1.394	24.26	MAv1	29	-20.8	0	32.46	54	-21.54	-	-	358	182	H
* 4.797	41.76	PK2	34.3	-29.9	0	46.16	-	-	74	-27.84	148	312	H
* 4.797	29.86	MAv1	34.3	-29.9	0	34.26	54	-19.74	-	-	148	312	H
* 4.327	42.61	PK2	33.8	-31	0	45.41	-	-	74	-28.59	13	221	V
* 4.327	30.29	MAv1	33.8	-31	0	33.09	54	-20.91	-	-	13	221	V
2.003	37.26	PK2	31.7	-19.4	0	49.56	-	-	74	-24.44	135	201	H
5.742	40.51	PK2	34.9	-28.6	0	46.81	-	-	74	-27.19	59	128	H
6.469	38.79	PK2	35.6	-26.7	0	47.69	-	-	74	-26.31	90	202	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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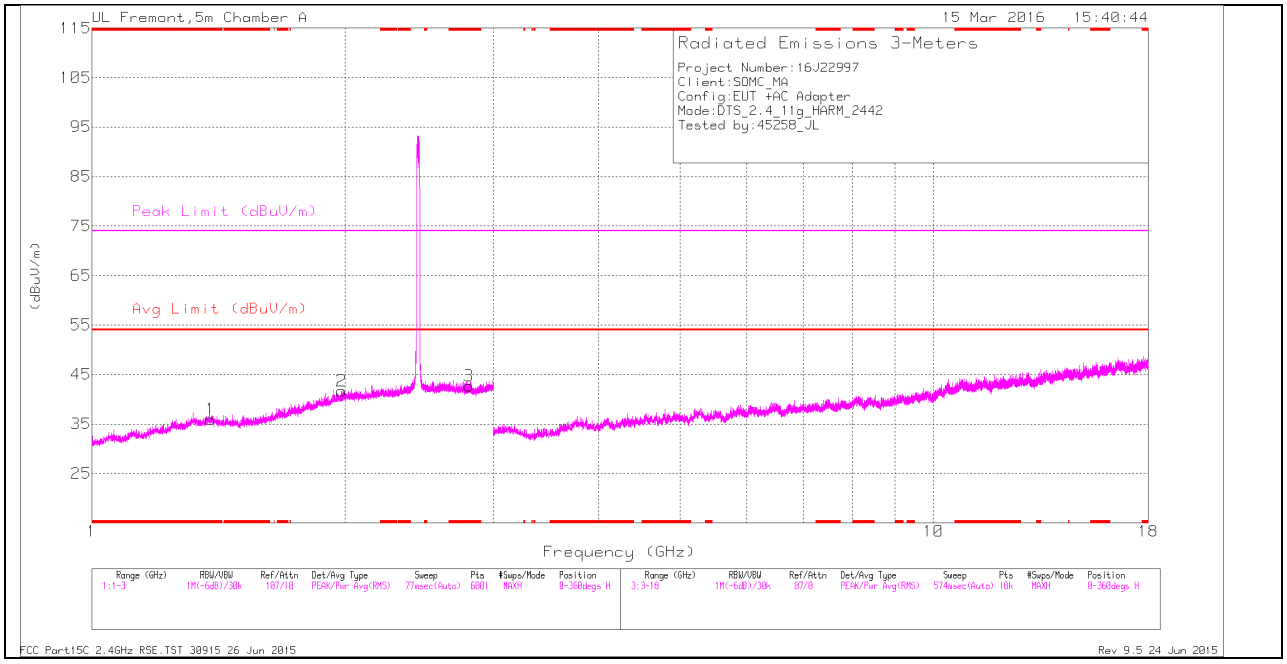
MID CHANNEL HORIZONTAL



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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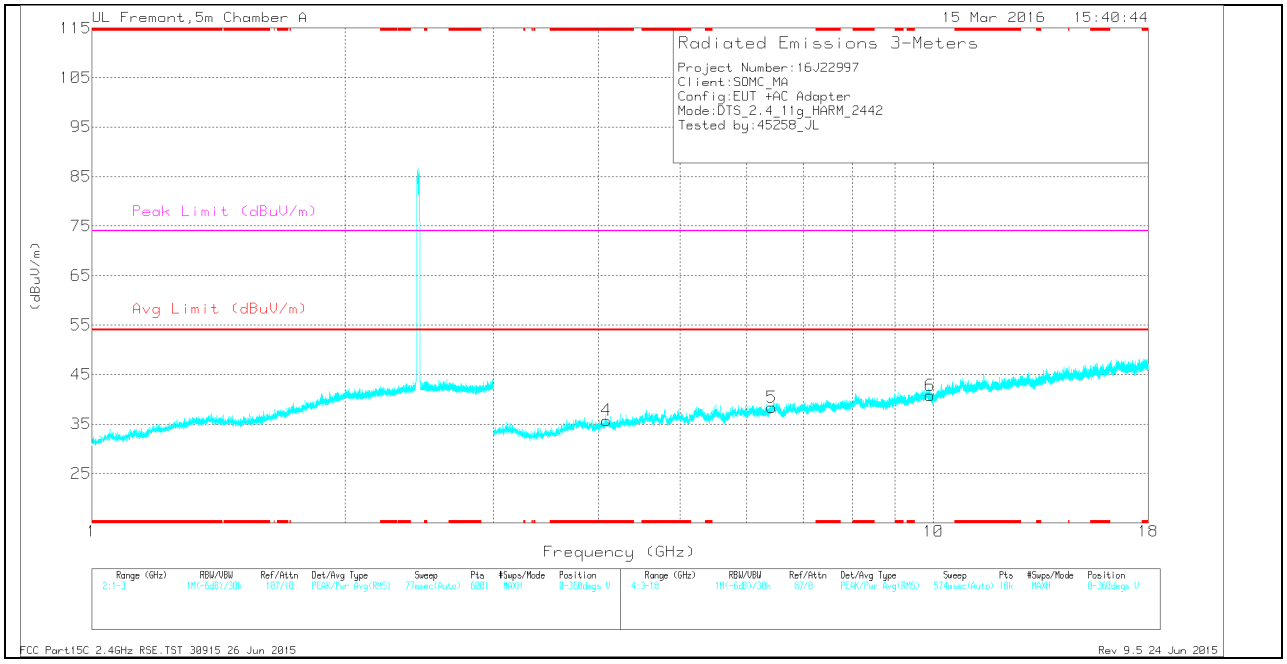
MID CHANNEL VERTICAL



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 T346 (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	* 1.383	27.76	Pk	29	-20.8	0	35.96	-	-	74	-38.04	0-360	201	H
3	* 2.805	30.58	Pk	32.6	-20.5	0	42.68	-	-	74	-31.32	0-360	201	H
4	* 4.087	33.56	Pk	33.6	-31.4	0	35.76	-	-	74	-38.24	0-360	201	V
2	1.98	29.61	Pk	31.6	-19.6	0	41.61	-	-	-	-	0-360	201	H
5	6.428	29.98	Pk	35.6	-27.2	0	38.38	-	-	-	-	0-360	201	V
6	9.913	27.06	Pk	36.9	-23.2	0	40.76	-	-	-	-	0-360	201	V

PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
* 1.385	36.32	PK2	29	-20.8	0	44.52	-	-	74	-29.48	295	199	H
* 1.386	24.92	MAv1	29	-20.8	0	33.12	54	-20.88	-	-	295	199	H
* 2.804	38.07	PK2	32.6	-20.5	0	50.17	-	-	74	-23.83	312	225	H
* 2.806	26.64	MAv1	32.6	-20.5	0	38.74	54	-15.26	-	-	312	225	H
* 4.086	42.3	PK2	33.6	-31.4	0	44.5	-	-	74	-29.5	112	201	V
* 4.086	31.03	MAv1	33.6	-31.4	0	33.23	54	-20.77	-	-	112	201	V
1.981	37.61	PK2	31.6	-19.6	0	49.61	-	-	74	-24.39	153	197	H
6.429	38.17	PK2	35.6	-27.2	0	46.57	-	-	74	-27.43	91	151	V
9.914	35.91	PK2	36.9	-23.3	0	49.51	-	-	74	-24.49	63	178	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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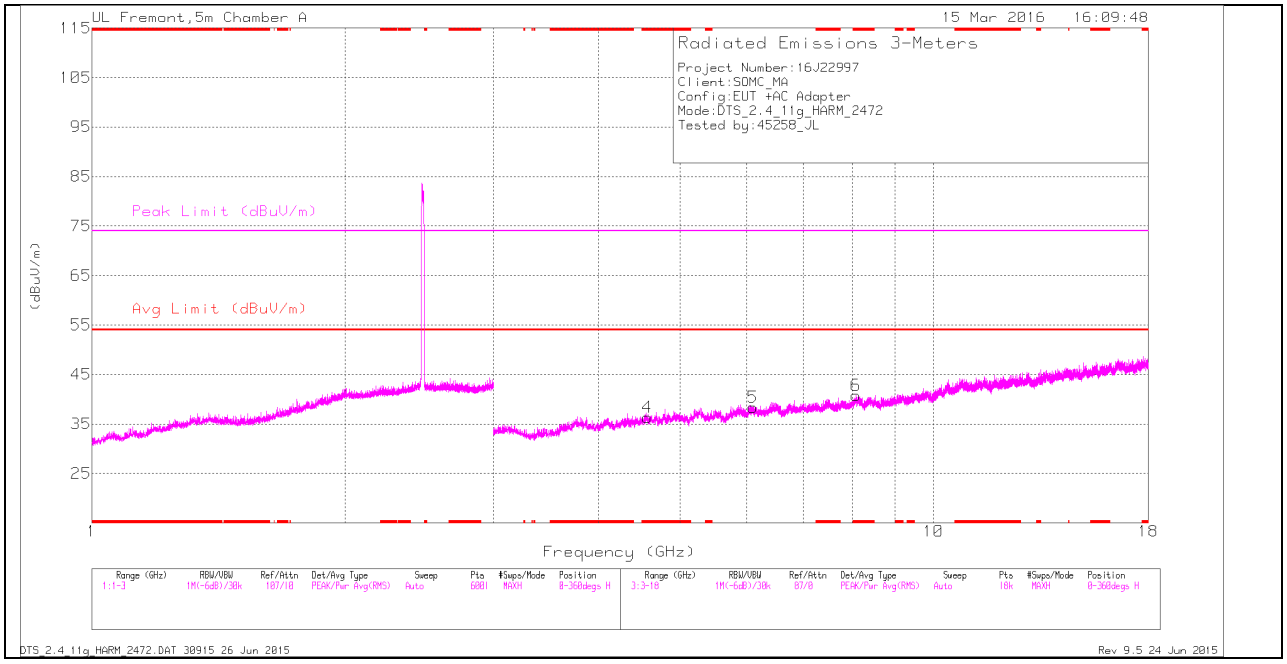
HIGH CHANNEL HORIZONTAL



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

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
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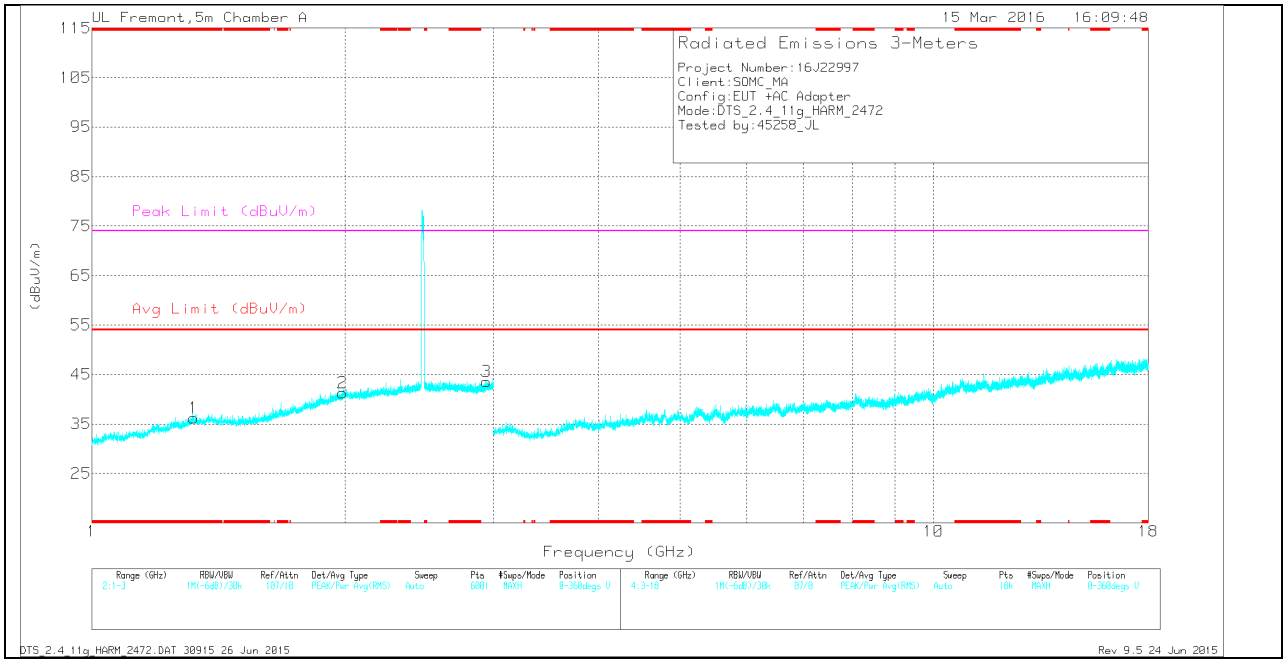
HIGH CHANNEL VERTICAL



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 T346 (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	* 1.322	28.16	Pk	29	-21	0	36.16	-	-	74	-37.84	0-360	200	V
4	* 4.567	32.18	Pk	34.4	-30.2	0	36.38	-	-	74	-37.62	0-360	201	H
6	* 8.092	28.93	Pk	35.9	-24	0	40.83	-	-	74	-33.17	0-360	101	H
2	1.986	29.23	Pk	31.6	-19.5	0	41.33	-	-	-	-	0-360	200	V
3	2.942	31.37	Pk	32.7	-20.5	0	43.57	-	-	-	-	0-360	200	V
5	6.101	31.07	Pk	35.4	-28.1	0	38.37	-	-	-	-	0-360	101	H

PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
* 1.32	36.18	PK2	29	-21	0	44.18	-	-	74	-29.82	26	121	V
* 1.321	24.96	MAv1	29	-21	0	32.96	54	-21.04	-	-	26	121	V
* 4.568	40.98	PK2	34.4	-30.2	0	45.18	-	-	74	-28.82	121	155	H
* 4.566	30.13	MAv1	34.4	-30.2	0	34.33	54	-19.67	-	-	121	155	H
* 8.092	36.72	PK2	35.9	-24.1	0	48.52	-	-	74	-25.48	210	197	H
* 8.093	25.68	MAv1	35.9	-24.1	0	37.48	54	-16.52	-	-	210	197	H
1.985	36.71	PK2	31.6	-19.5	0	48.81	-	-	74	-	232	211	V
2.943	38.76	PK2	32.7	-20.5	0	50.96	-	-	74	-	262	165	V
6.1	39.05	PK2	35.4	-28.1	0	46.35	-	-	74	-	153	129	H

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
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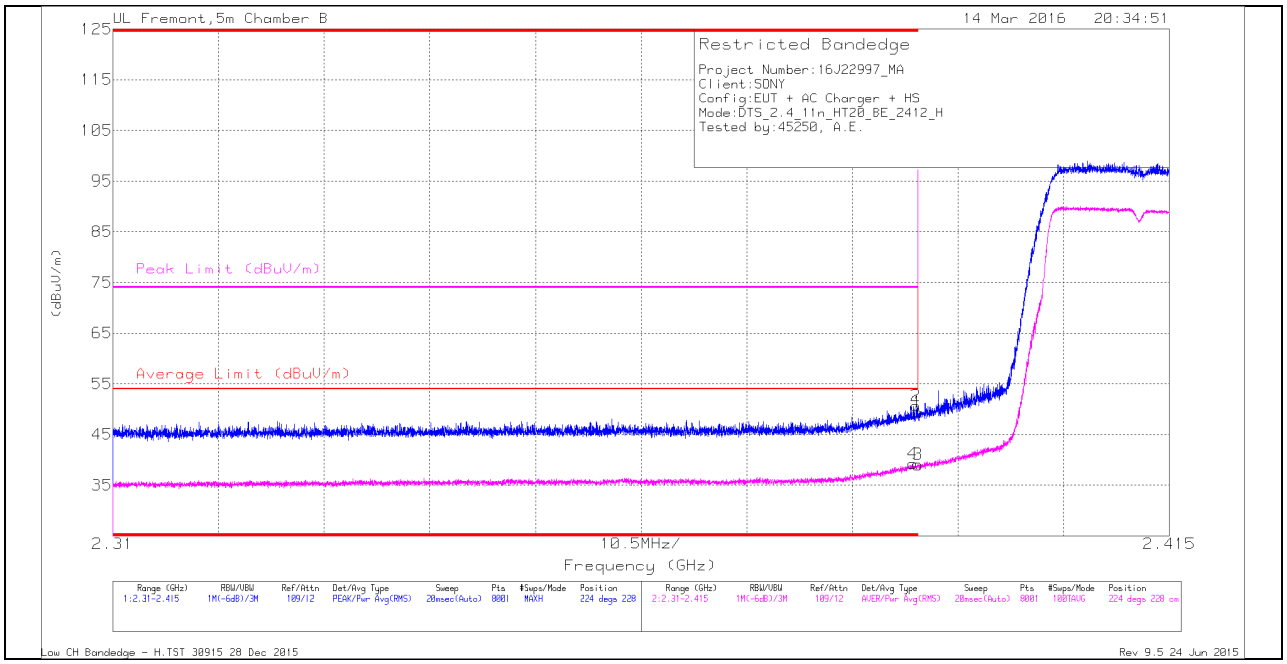
10.2.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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
4	* 2.389	29.39	RMS	32.1	-22.3	0	39.19	54	-14.81	-	-	224	228	H
1	* 2.39	39.57	Pk	32.1	-22.3	0	49.37	-	-	74	-24.63	224	228	H
2	* 2.39	40.92	Pk	32.1	-22.3	0	50.72	-	-	74	-23.28	224	228	H
3	* 2.39	29.26	RMS	32.1	-22.3	0	39.06	54	-14.94	-	-	224	228	H

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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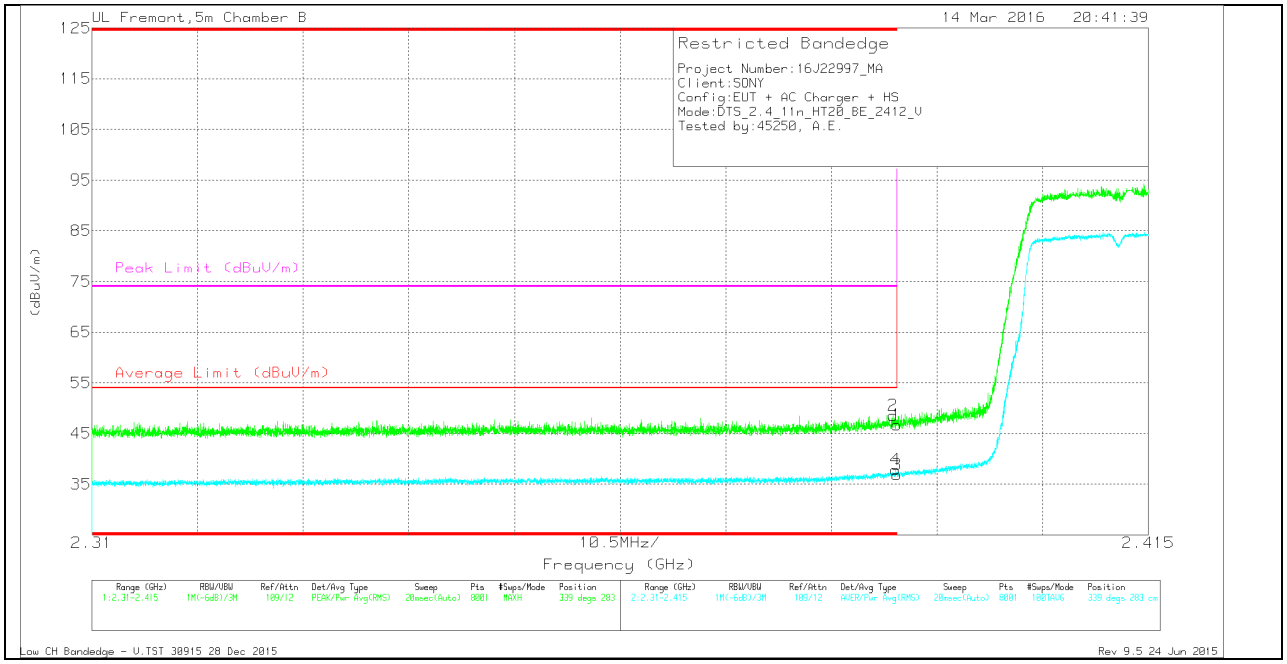
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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
1	* 2.39	36.9	Pk	32.1	-22.3	0	46.7	-	-	74	-27.3	339	283	V
2	* 2.39	38.73	Pk	32.1	-22.3	0	48.53	-	-	74	-25.47	339	283	V
3	* 2.39	27.05	RMS	32.1	-22.3	0	36.85	54	-17.15	-	-	339	283	V
4	* 2.39	28.02	RMS	32.1	-22.3	0	37.82	54	-16.18	-	-	339	283	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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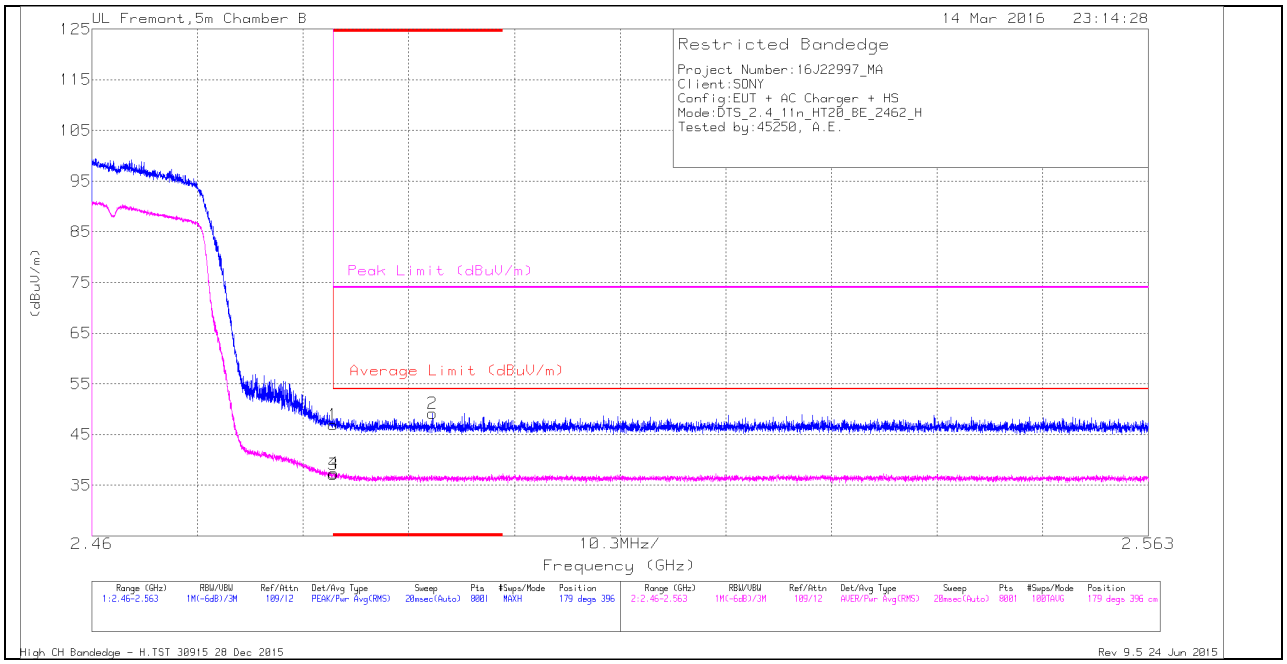
AUTHORIZED BANDEDGE (CHANNEL 11)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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
1	* 2.484	36.99	Pk	32.3	-22.3	0	46.99	-	-	74	-27.01	179	396	H
3	* 2.484	27.11	RMS	32.3	-22.3	0	37.11	54	-16.89	-	-	179	396	H
4	* 2.484	27.38	RMS	32.3	-22.3	0	37.38	54	-16.62	-	-	179	396	H
2	* 2.493	39.22	Pk	32.3	-22.3	0	49.22	-	-	74	-24.78	179	396	H

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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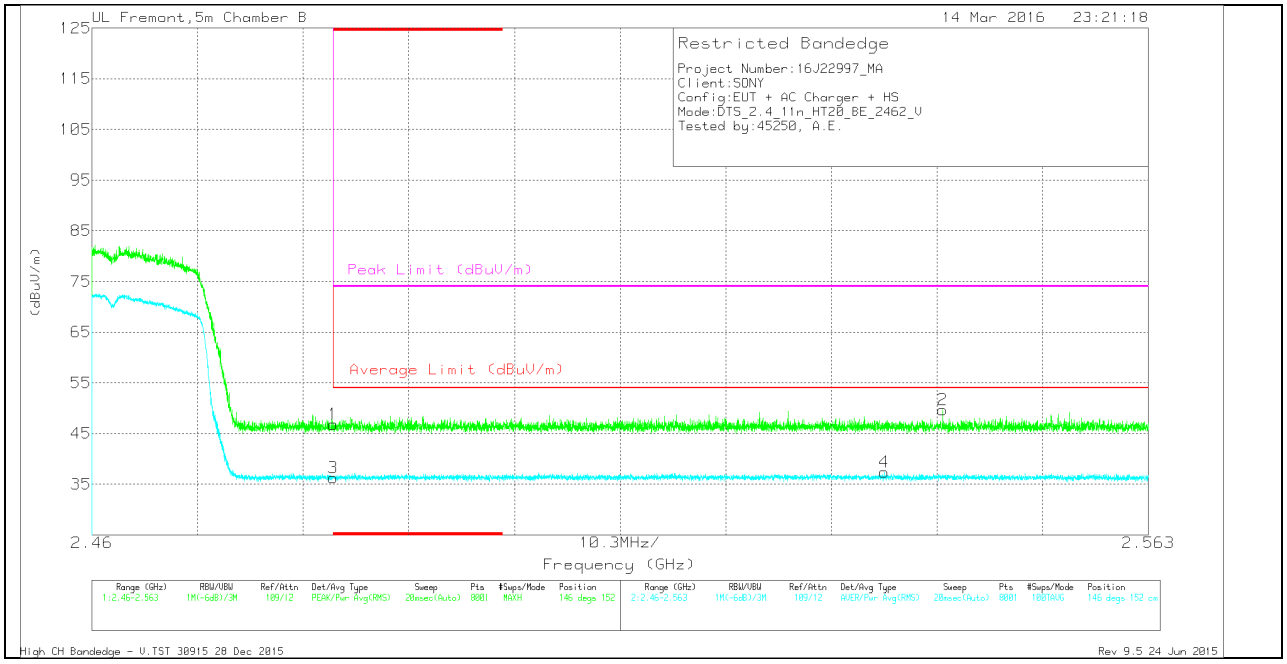
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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	36.82	Pk	32.3	-22.3	0	46.82	-	-	74	-27.18	146	152	V
3	* 2.484	26.29	RMS	32.3	-22.3	0	36.29	54	-17.71	-	-	146	152	V
4	2.537	27.33	RMS	32.2	-22.2	0	37.33	54	-16.67	-	-	146	152	V
2	2.543	39.62	Pk	32.2	-22.1	0	49.72	-	-	74	-24.28	146	152	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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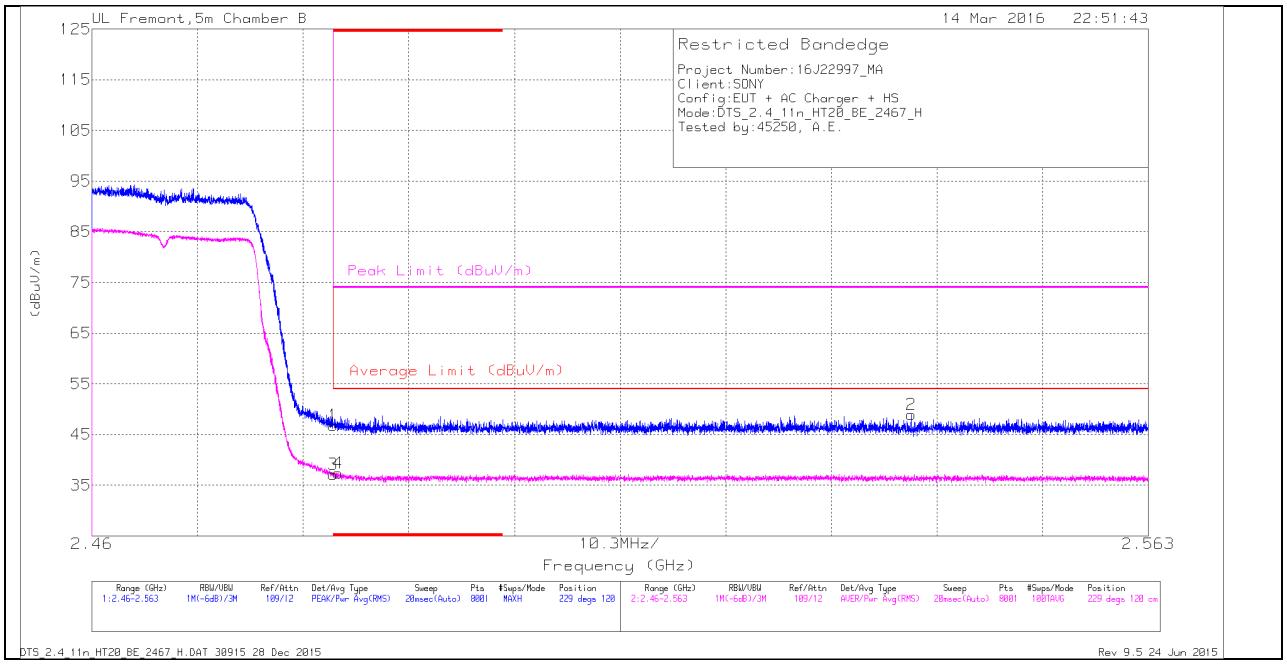
AUTHORIZED BANDEDGE (CHANNEL 12)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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
1	* 2.484	36.78	Pk	32.3	-22.3	0	46.78	-	-	74	-27.22	229	120	H
3	* 2.484	27.18	RMS	32.3	-22.3	0	37.18	54	-16.82	-	-	229	120	H
4	* 2.484	27.4	RMS	32.3	-22.3	0	37.4	54	-16.6	-	-	229	120	H
2	2.54	39.06	Pk	32.2	-22.3	0	48.96	-	-	74	-25.04	229	120	H

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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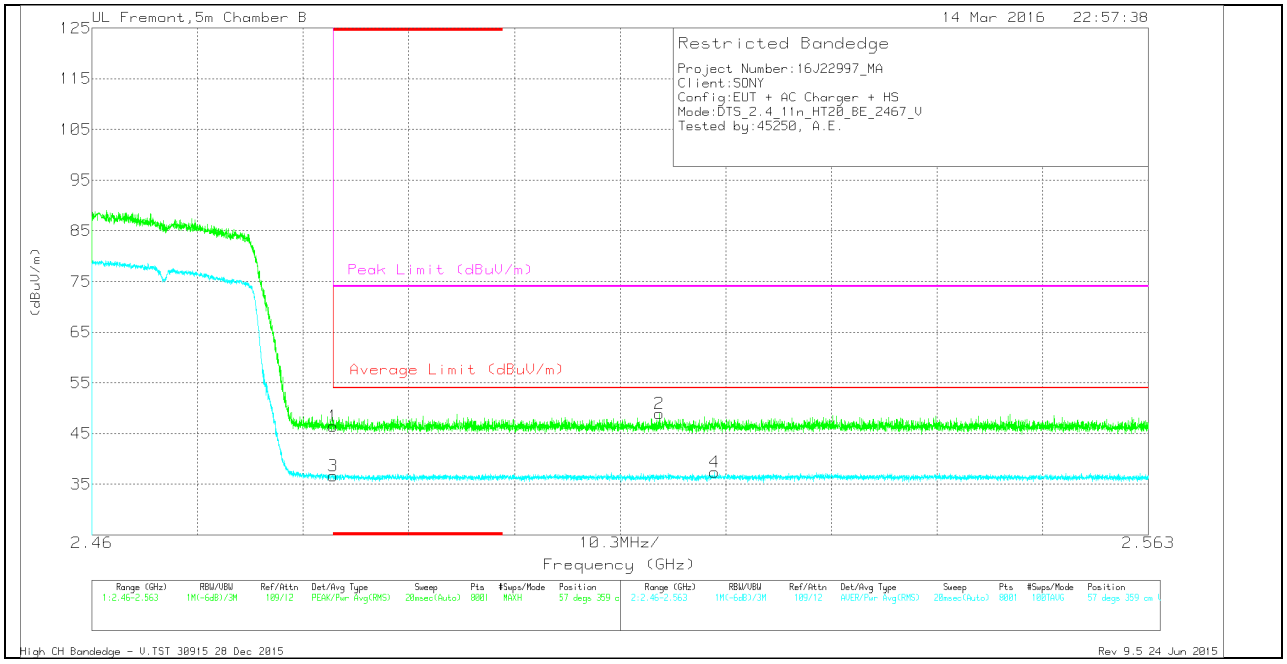
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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	36.46	Pk	32.3	-22.3	0	46.46	-	-	74	-27.54	57	359	V
3	* 2.484	26.68	RMS	32.3	-22.3	0	36.68	54	-17.32	-	-	57	359	V
2	2.515	38.79	Pk	32.3	-22.2	0	48.89	-	-	74	-25.11	57	359	V
4	2.521	27.29	RMS	32.3	-22.2	0	37.39	54	-16.61	-	-	57	359	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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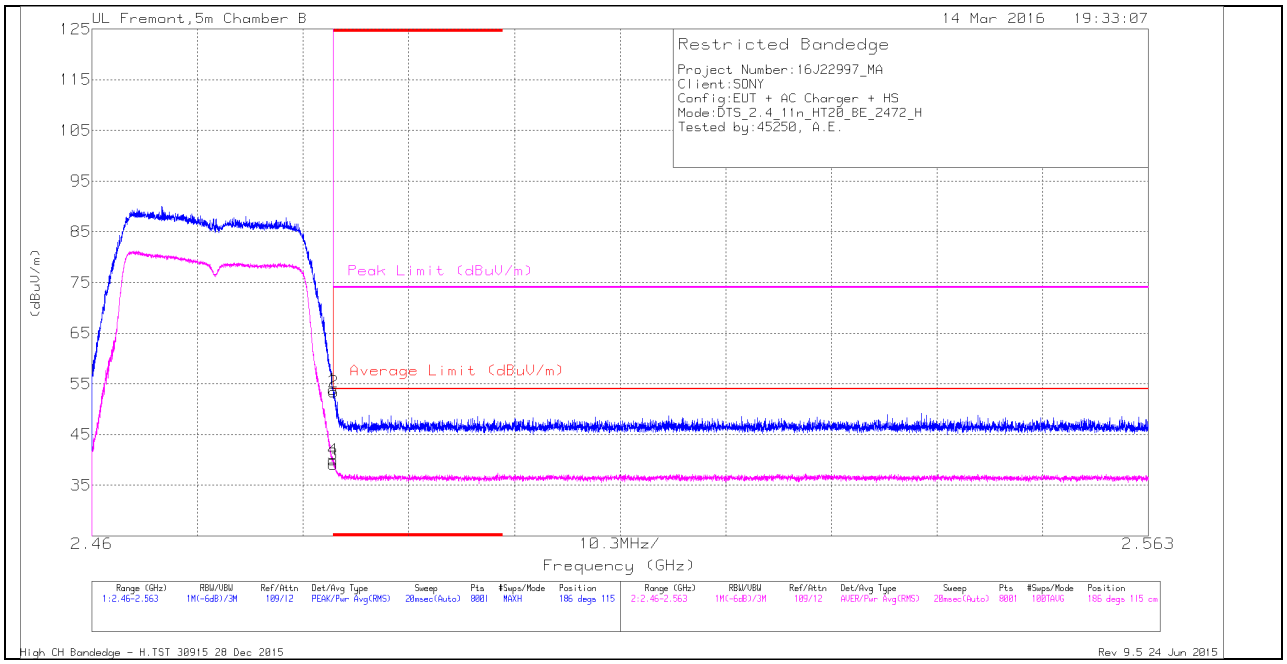
AUTHORIZED BANDEDGE (CHANNEL 13)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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
1	* 2.484	43.88	Pk	32.3	-22.3	0	53.88	-	-	74	-20.12	186	115	H
2	* 2.484	43.45	Pk	32.3	-22.3	0	53.45	-	-	74	-20.55	186	115	H
3	* 2.484	29.08	RMS	32.3	-22.3	0	39.08	54	-14.92	-	-	186	115	H
4	* 2.484	29.94	RMS	32.3	-22.3	0	39.94	54	-14.06	-	-	186	115	H

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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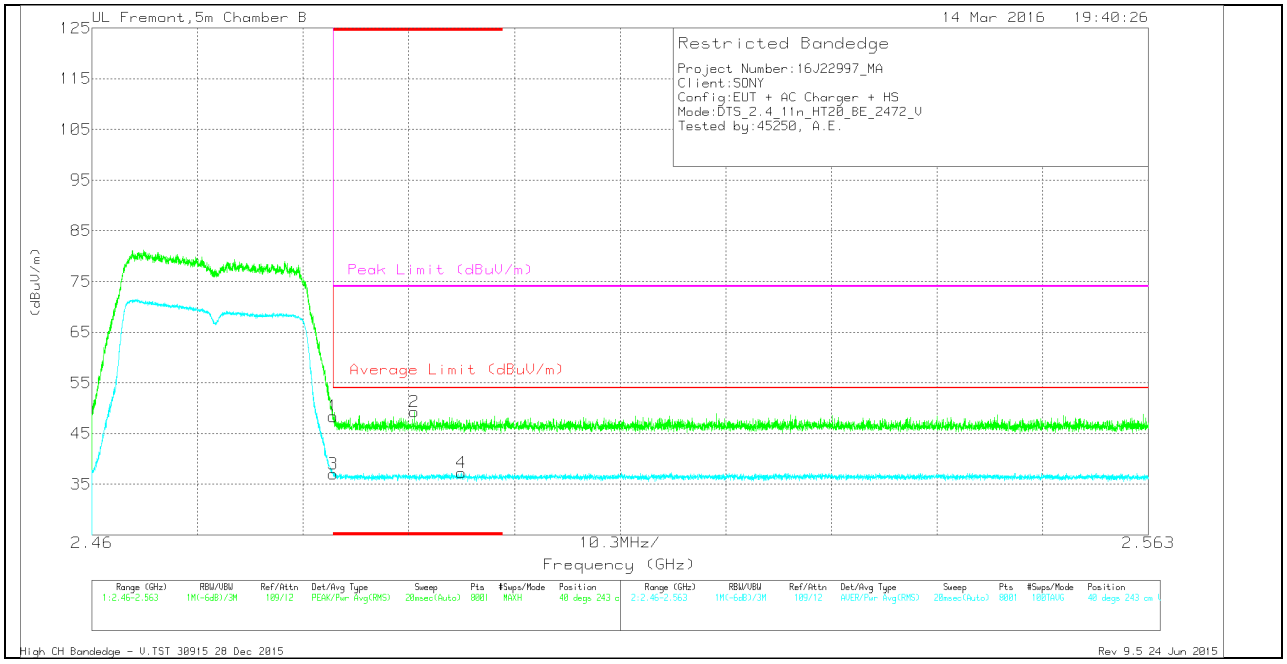
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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	38.37	Pk	32.3	-22.3	0	48.37	-	-	74	-25.63	40	243	V
3	* 2.484	27.04	RMS	32.3	-22.3	0	37.04	54	-16.96	-	-	40	243	V
2	* 2.491	39.32	Pk	32.3	-22.3	0	49.32	-	-	74	-24.68	40	243	V
4	* 2.496	27.28	RMS	32.3	-22.3	0	37.28	54	-16.72	-	-	40	243	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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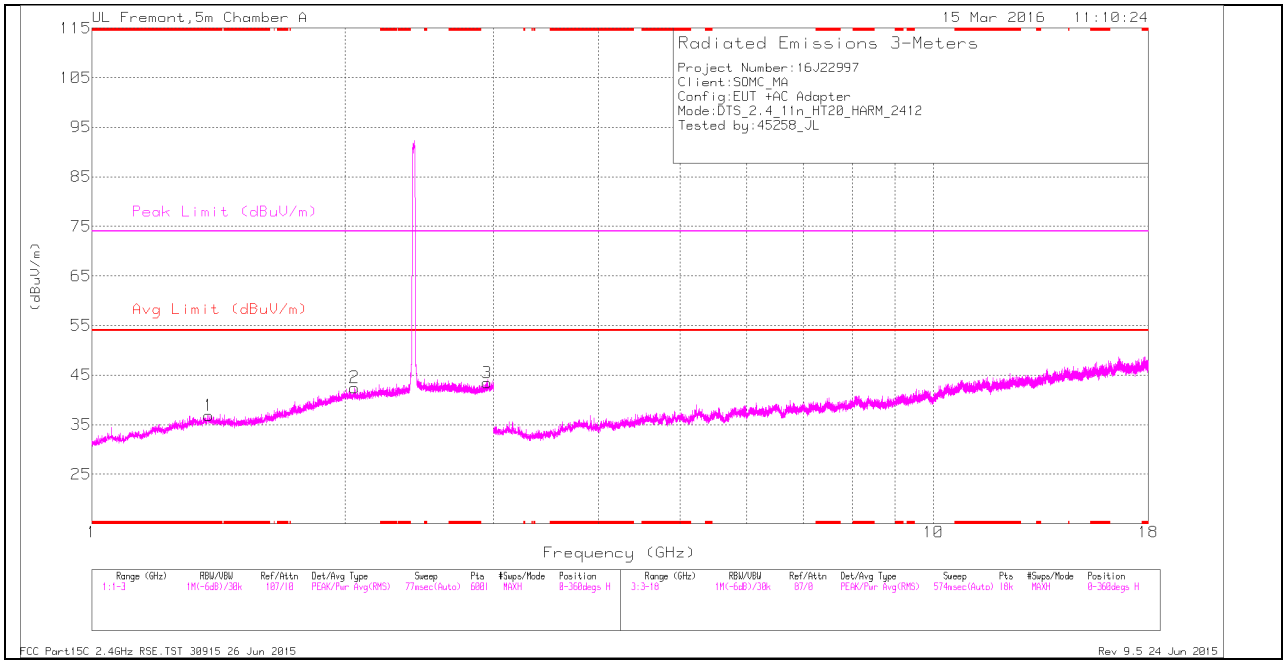
HARMONICS AND SPURIOUS EMISSIONS

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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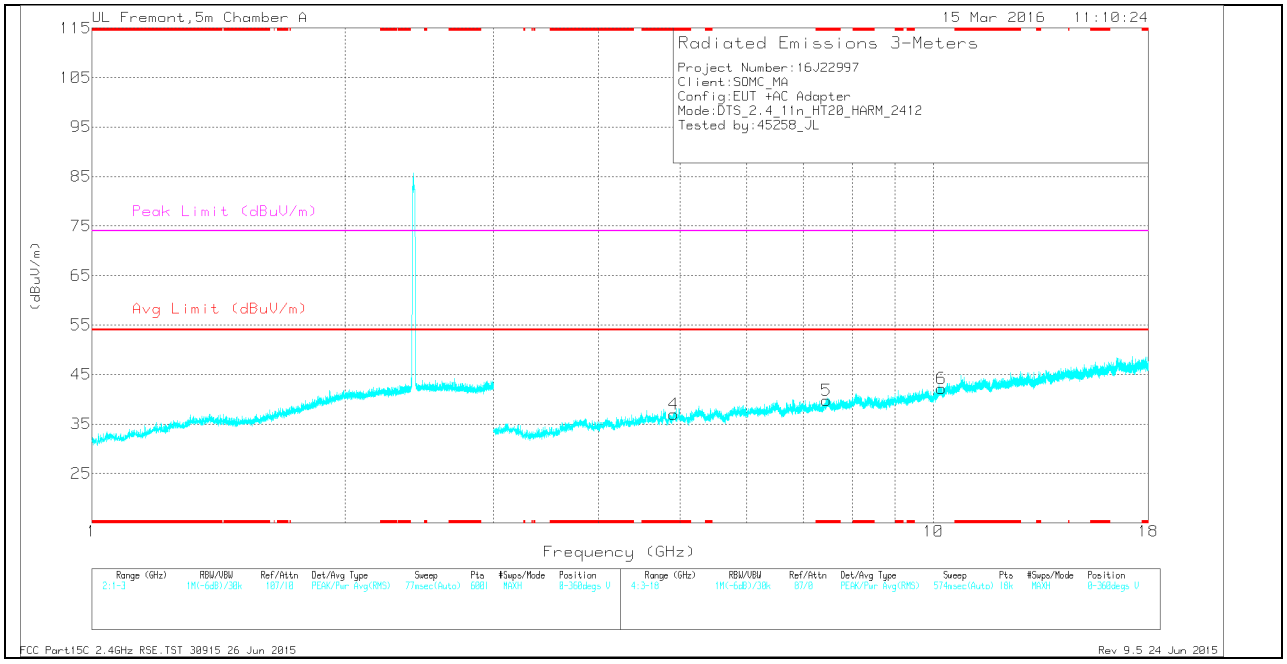
LOW CHANNEL VERTICAL



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 T346 (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	* 1.378	28.8	Pk	29	-20.9	0	36.9	-	-	74	-37.1	0-360	100	H
4	* 4.917	31.85	Pk	34.3	-29.2	0	36.95	-	-	74	-37.05	0-360	100	V
5	* 7.463	28.74	Pk	35.8	-24.8	0	39.74	-	-	74	-34.26	0-360	200	V
2	2.05	30.59	Pk	31.5	-19.6	0	42.49	-	-	-	-	0-360	100	H
3	2.948	31.28	Pk	32.7	-20.5	0	43.48	-	-	-	-	0-360	201	H
6	10.22	27.32	Pk	37.2	-22.4	0	42.12	-	-	-	-	0-360	200	V

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

PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
* 1.379	36.34	PK2	29	-20.9	0	44.44	-	-	74	-29.56	112	371	H
* 1.377	24.54	MAv1	29	-20.9	0	32.64	54	-21.36	-	-	112	371	H
* 4.915	40.05	PK2	34.3	-29.2	0	45.15	-	-	74	-28.85	152	298	V
* 4.917	28.91	MAv1	34.3	-29.2	0	34.01	54	-19.99	-	-	152	298	V
* 7.464	37.08	PK2	35.8	-24.8	0	48.08	-	-	74	-25.92	256	169	V
* 7.464	25.67	MAv1	35.8	-24.8	0	36.67	54	-17.33	-	-	256	169	V
2.049	37.5	PK2	31.5	-19.6	0	49.4	-	-	74	-24.6	221	155	H
2.95	38.65	PK2	32.7	-20.5	0	50.85	-	-	74	-23.15	331	270	H
10.221	34.79	PK2	37.2	-22.4	0	49.59	-	-	74	-24.41	323	200	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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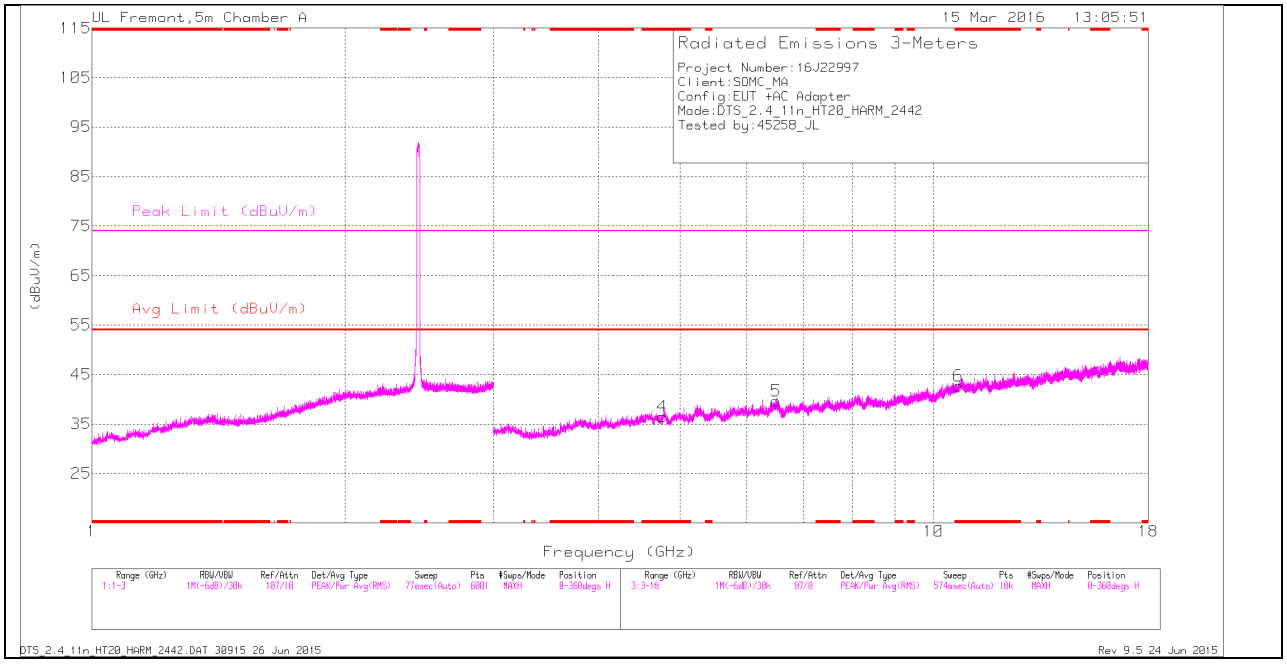
MID CHANNEL HORIZONTAL



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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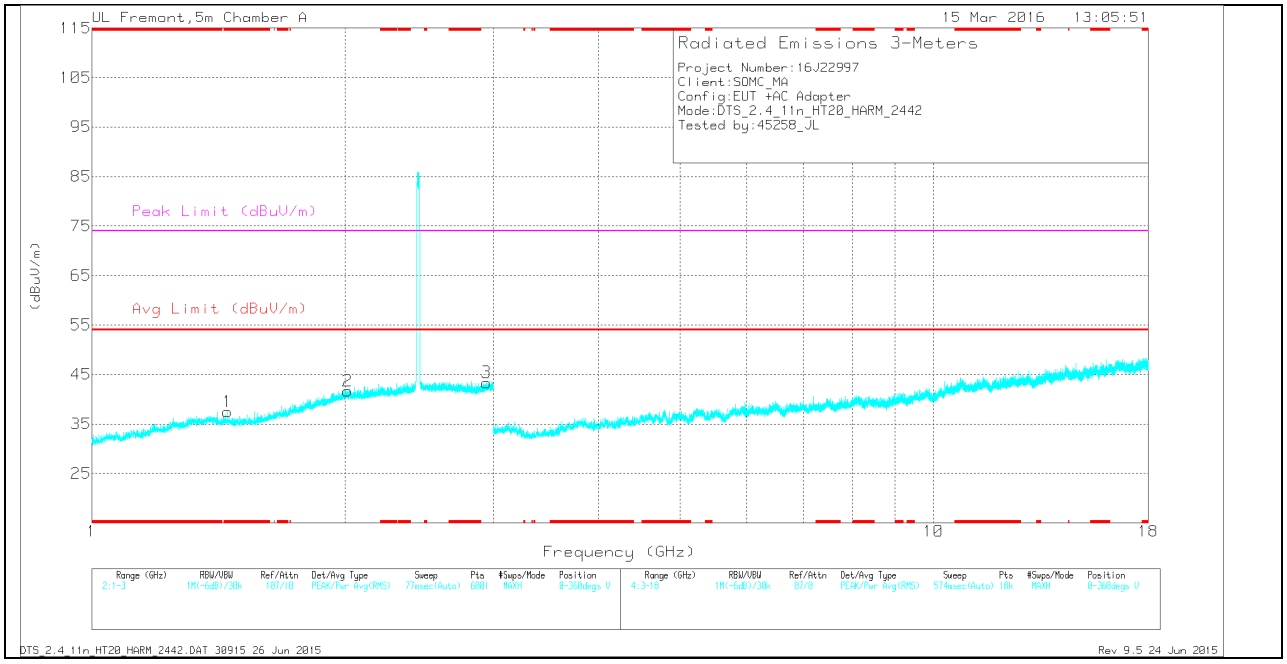
MID CHANNEL VERTICAL



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 T346 (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	* 1.45	29.63	Pk	28.5	-20.6	0	37.53	-	-	74	-36.47	0-360	201	V
4	* 4.76	32.58	Pk	34.3	-30.4	0	36.48	-	-	74	-37.52	0-360	100	H
6	* 10.705	27.63	Pk	37.7	-22.6	0	42.73	-	-	74	-31.27	0-360	100	H
2	2.013	29.44	Pk	31.6	-19.4	0	41.64	-	-	-	-	0-360	100	V
3	2.943	31.18	Pk	32.7	-20.5	0	43.38	-	-	-	-	0-360	201	V
5	6.506	30.96	Pk	35.6	-26.9	0	39.66	-	-	-	-	0-360	201	H

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

Pk - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
* 1.45	36.44	PK2	28.5	-20.6	0	44.34	-	-	74	-29.66	324	326	V
* 1.451	24.77	MAv1	28.5	-20.6	0	32.67	54	-21.33	-	-	324	326	V
* 4.758	40.08	PK2	34.3	-30.4	0	43.98	-	-	74	-30.02	110	244	H
* 4.76	29.33	MAv1	34.3	-30.4	0	33.23	54	-20.77	-	-	110	244	H
* 10.705	35.91	PK2	37.7	-22.6	0	51.01	-	-	74	-22.99	83	304	H
* 10.705	24.19	MAv1	37.7	-22.6	0	39.29	54	-14.71	-	-	83	304	H
2.011	37.69	PK2	31.6	-19.4	0	49.89	-	-	74	-24.11	356	201	V
2.945	38.79	PK2	32.7	-20.5	0	50.99	-	-	74	-23.01	229	164	V
6.506	38.89	PK2	35.6	-26.9	0	47.59	-	-	74	-26.41	272	326	H

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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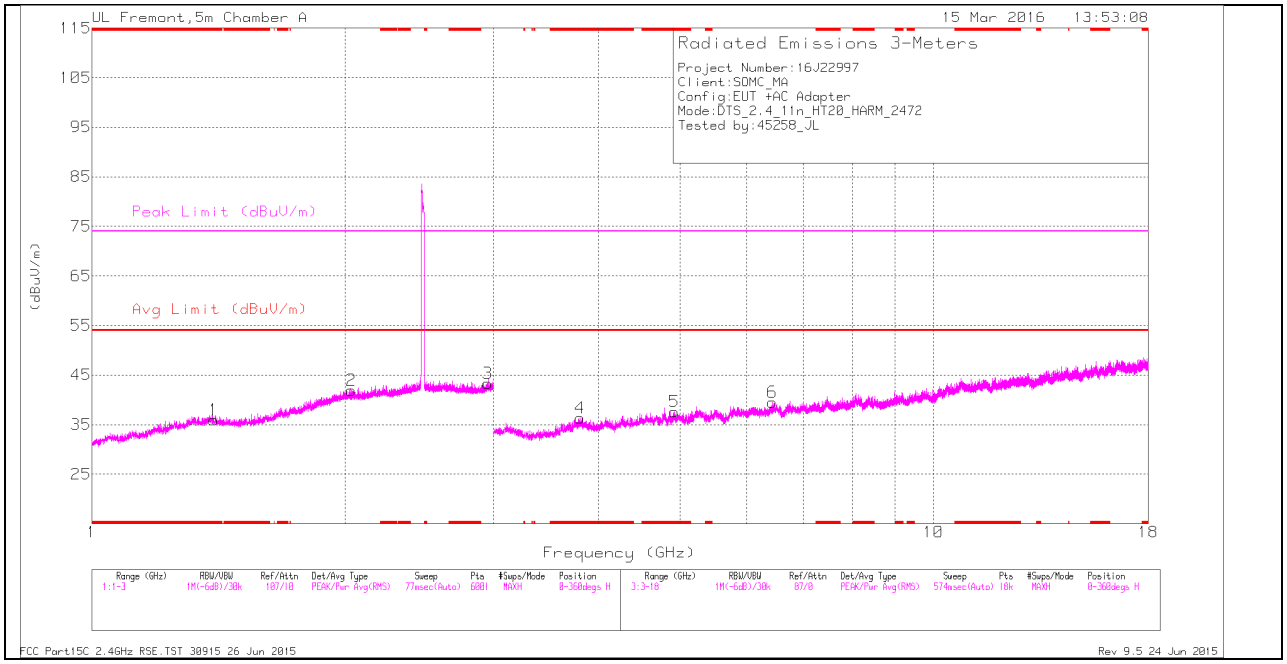
HIGH CHANNEL HORIZONTAL



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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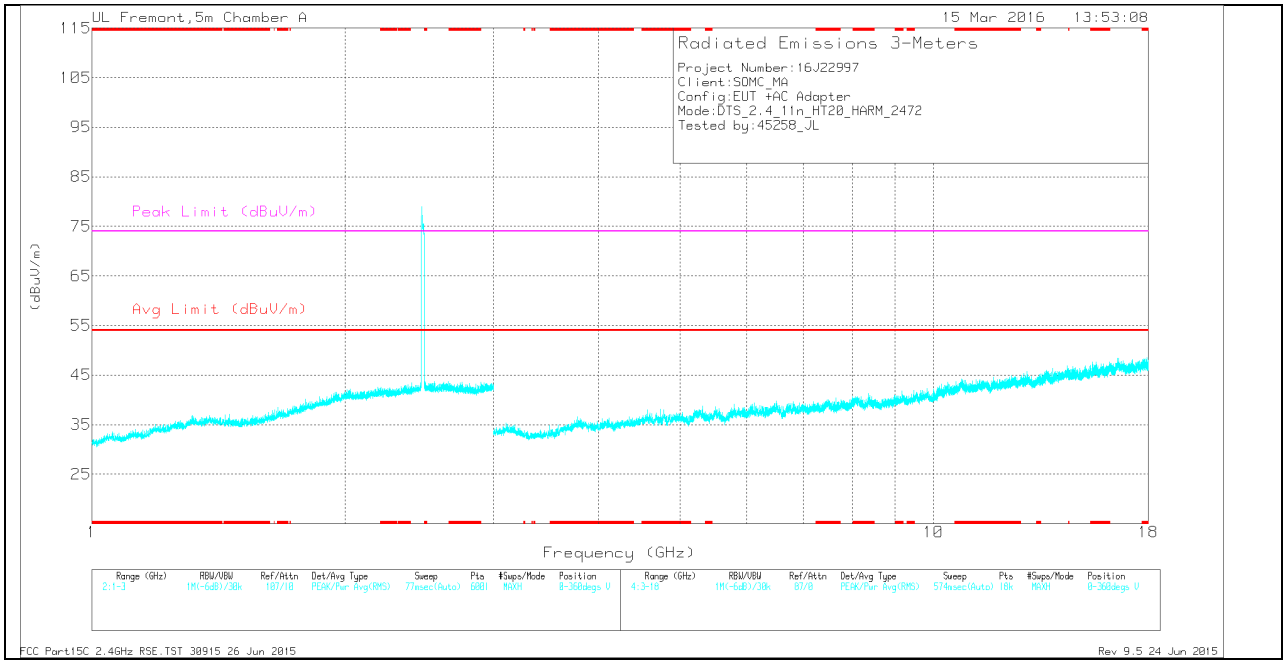
HIGH CHANNEL VERTICAL



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 T346 (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	* 1.396	27.77	Pk	29	-20.8	0	35.97	-	-	74	-38.03	0-360	100	H
4	* 3.801	34.53	Pk	33.6	-31.8	0	36.33	-	-	74	-37.67	0-360	201	H
5	* 4.918	32.56	Pk	34.3	-29.2	0	37.66	-	-	74	-36.34	0-360	201	H
2	2.034	29.9	Pk	31.6	-19.6	0	41.9	-	-	-	-	0-360	201	H
3	2.954	30.99	Pk	32.8	-20.5	0	43.29	-	-	-	-	0-360	100	H
6	6.433	31.16	Pk	35.6	-27.2	0	39.56	-	-	-	-	0-360	100	H

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

Pk - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
* 1.396	36	PK2	29	-20.8	0	44.2	-	-	74	-29.8	303	153	H
* 1.398	24.73	MAv1	29	-20.8	0	32.93	54	-21.07	-	-	303	153	H
* 3.801	42.08	PK2	33.6	-31.8	0	43.88	-	-	74	-30.12	355	122	H
* 3.799	31.24	MAv1	33.6	-31.8	0	33.04	54	-20.96	-	-	355	122	H
* 4.92	40.01	PK2	34.3	-29.2	0	45.11	-	-	74	-28.89	209	202	H
* 4.916	28.41	MAv1	34.3	-29.2	0	33.51	54	-20.49	-	-	209	202	H
2.035	37.63	PK2	31.6	-19.6	0	49.63	-	-	74	-24.37	155	134	H
2.952	38.58	PK2	32.7	-20.5	0	50.78	-	-	74	-23.22	211	200	H
6.431	38.6	PK2	35.6	-27.2	0	47	-	-	74	-27	70	166	H

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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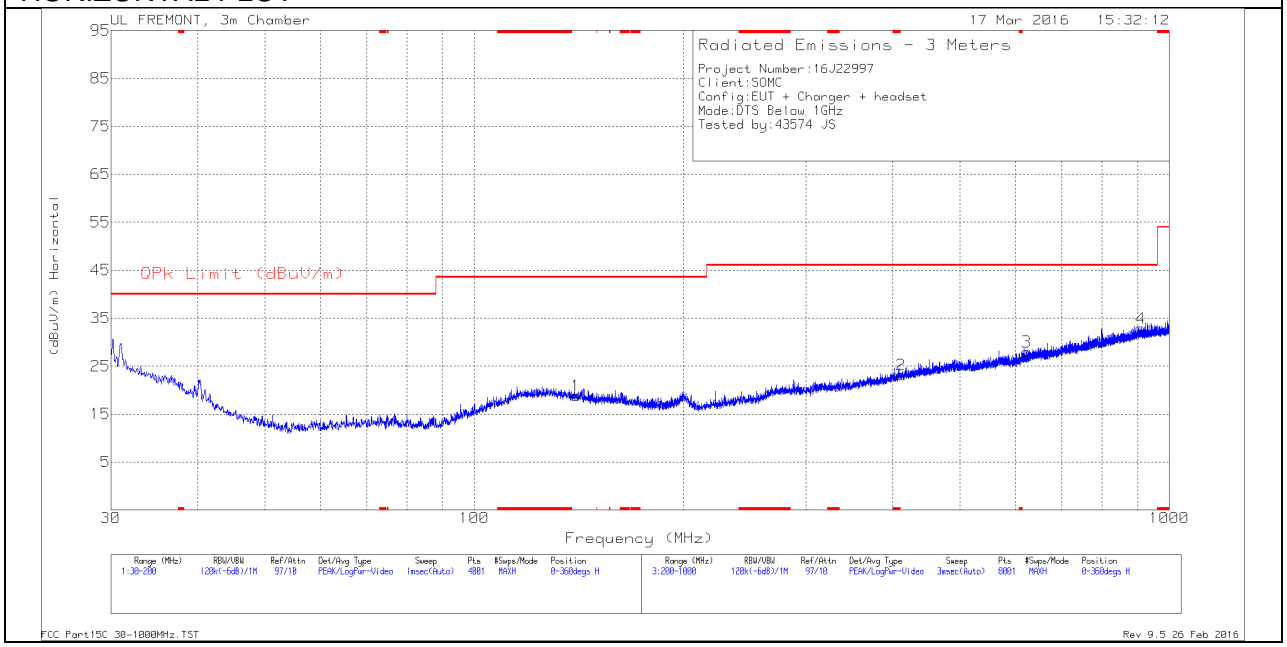
10.3. WORST-CASE BELOW 1 GHz

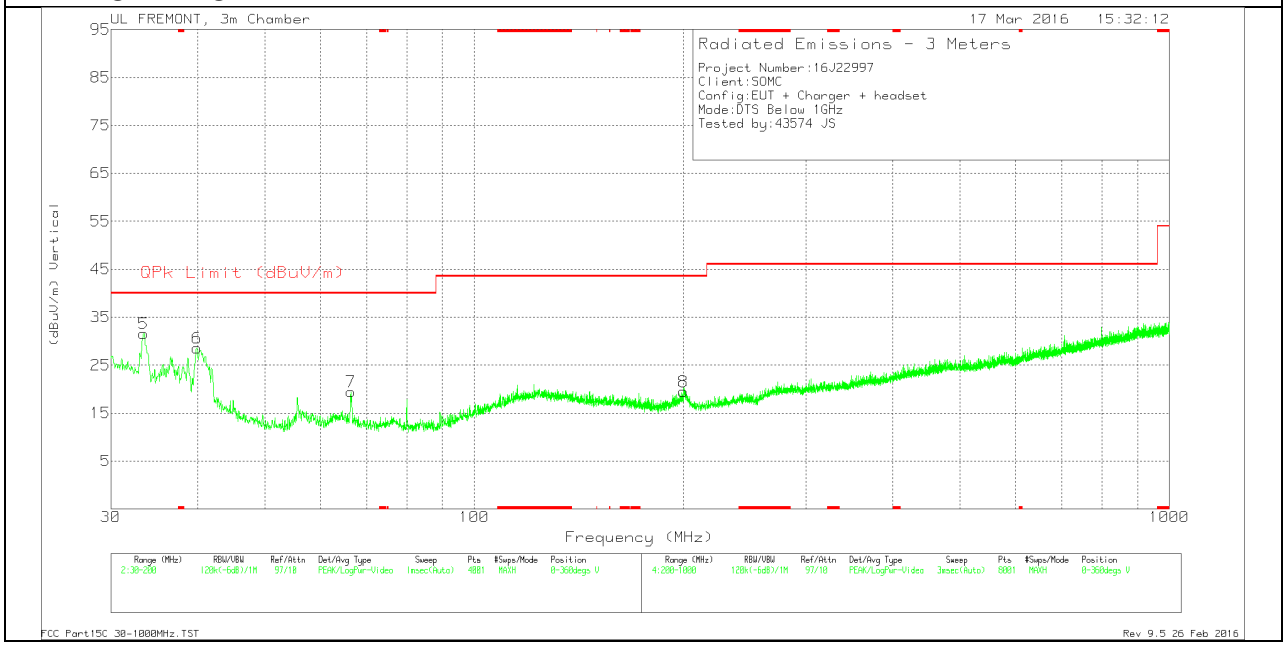
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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 T122 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	33.4425	35.97	Pk	22.7	-27.1	31.57	40	-8.43	0-360	100	V
6	39.9025	37.79	Pk	17.9	-27.1	28.59	40	-11.41	0-360	100	V
7	66.465	34.35	Pk	11.8	-26.7	19.45	40	-20.55	0-360	100	V
1	140.1175	27.64	Pk	17.1	-25.9	18.84	43.52	-24.68	0-360	400	H
8	199.8725	28.18	Pk	16.5	-25.2	19.48	43.52	-24.04	0-360	100	V
2	411.4	28.09	Pk	20	-24.9	23.19	46.02	-22.83	0-360	100	H
3	623	29.38	Pk	23.2	-24.6	27.98	46.02	-18.04	0-360	400	H
4	910.4	28.97	Pk	26.5	-22.6	32.87	46.02	-13.15	0-360	400	H

Pk - Peak detector

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
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11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

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

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

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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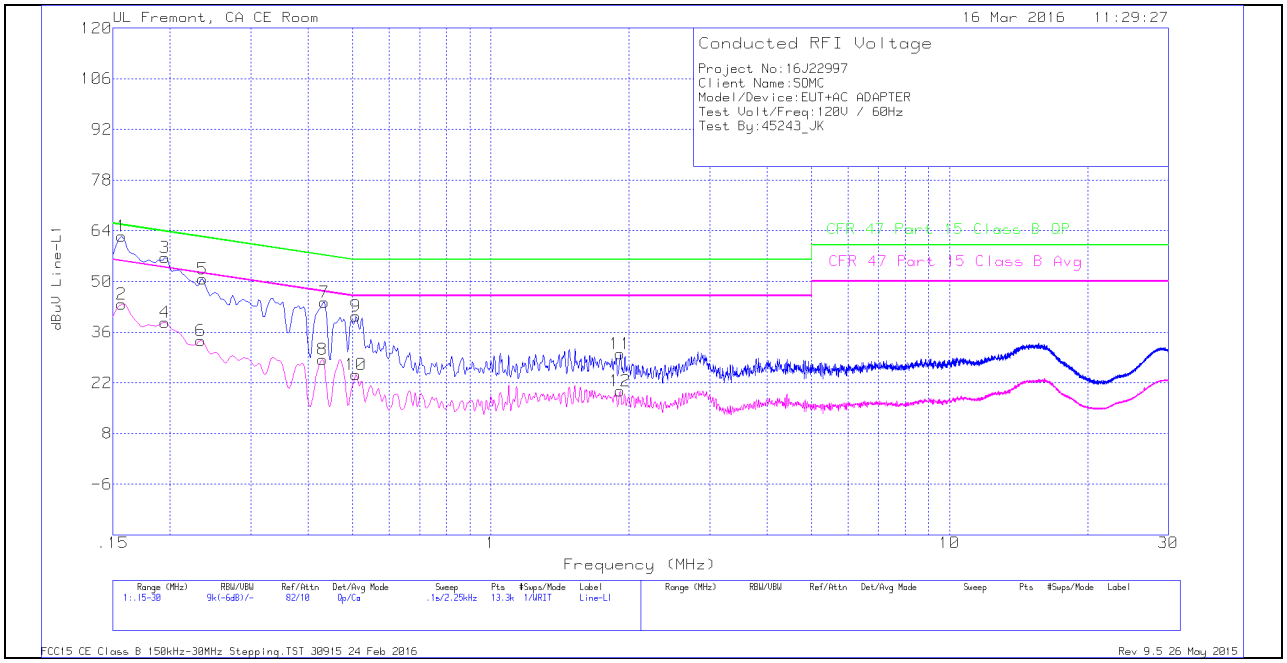
6 WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

Range 1: Line-L1 .15 - 30MHz										
Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	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)
.15675	51.06	Qp	1.3	0	10.1	62.46	65.63	-3.17	-	-
.15675	32.39	Ca	1.3	0	10.1	43.79	-	-	55.63	-11.84
.195	45.55	Qp	1	0	10.1	56.65	63.82	-7.17	-	-
.195	27.58	Ca	1	0	10.1	38.68	-	-	53.82	-15.14
.2355	39.8	Qp	.8	0	10.1	50.7	62.25	-11.55	-	-
.23325	22.83	Ca	.8	0	10.1	33.73	-	-	52.33	-18.6
.4335	33.82	Qp	.4	0	10.1	44.32	57.19	-12.87	-	-
.429	17.92	Ca	.4	0	10.1	28.42	-	-	47.27	-18.85
.50775	29.99	Qp	.3	0	10.1	40.39	56	-15.61	-	-
.50775	13.94	Ca	.3	0	10.1	24.34	-	-	46	-21.66
1.91625	19.59	Qp	.2	.1	10.1	29.99	56	-26.01	-	-
1.91625	9.41	Ca	.2	.1	10.1	19.81	-	-	46	-26.19

Qp - Quasi-Peak detector

Ca - CISPR average detection

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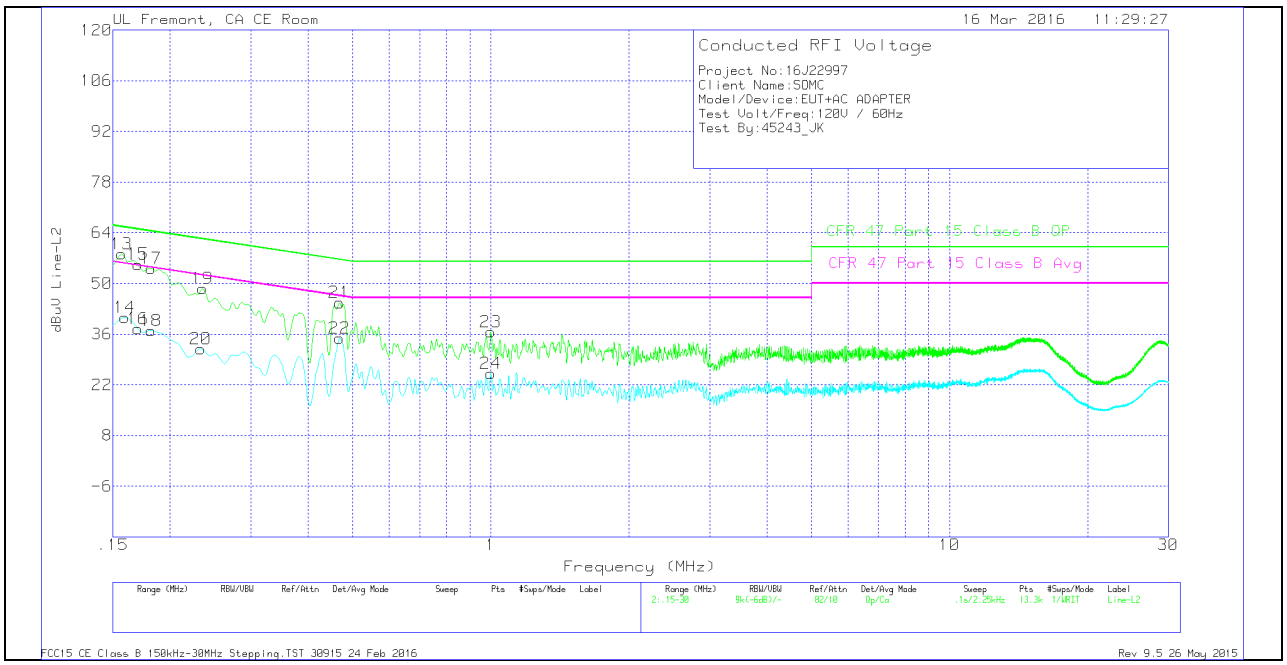
LINE 2 PLOT



LINE 2 RESULTS

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	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	.15675	46.6	Qp	1.4	0	10.1	58.1	65.63	-7.53	-	-
14	.159	29.18	Ca	1.4	0	10.1	40.68	-	-	55.52	-14.84
15	.17025	44	Qp	1.2	0	10.1	55.3	64.95	-9.65	-	-
16	.17025	26.22	Ca	1.2	0	10.1	37.52	-	-	54.95	-17.43
17	.1815	42.85	Qp	1.2	0	10.1	54.15	64.42	-10.27	-	-
18	.1815	25.73	Ca	1.2	0	10.1	37.03	-	-	54.42	-17.39
19	.2355	37.63	Qp	.8	0	10.1	48.53	62.25	-13.72	-	-
20	.23325	21.09	Ca	.8	0	10.1	31.99	-	-	52.33	-20.34
21	.46725	34.2	Qp	.4	0	10.1	44.7	56.56	-11.86	-	-
22	.46725	24.36	Ca	.4	0	10.1	34.86	-	-	46.56	-11.7
23	1.0005	26.27	Qp	.2	0	10.1	36.57	56	-19.43	-	-
24	1.0005	14.79	Ca	.2	0	10.1	25.09	-	-	46	-20.91

Qp - Quasi-Peak detector

Ca - CISPR average detection

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