FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

WLAN DTS/UNII a/b/g/n SISO/MIMO Satellite Setup Box

MODEL NUMBER: ID:091

FCC ID: DKN-MJS79

REPORT NUMBER: 15U20962-E1V2

ISSUE DATE: OCTOBER 9, 2015

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	10/2/15	Initial Issue	P. Zhang
V2	10/9/15	Updated Section 14 and Antenna Gain info.	C. Vergonio

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Echostar Technologies LLC

EUT DESCRIPTION: WLAN DTS/UNII a/b/g/n SISO/MIMO Satellite setup box.

MODEL: ID:091

SERIAL NUMBER: P1B51 (Conducted), P1B29 (Radiated)

DATE TESTED: SEPTEMBER 14 – OCTOBER 2, 2015

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, KDB 558074 D01 v03r03, ANSI C63.10-2013 for FCC.

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.

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4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

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

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
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

The EUT is a DTS/UNII a/b/g/n SISO/MIMO Satellite setup box.

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	17	50.12
2412 - 2462	802.11g	16.98	49.89
2412 - 2462	802.11n HT20	20.01	100.23
2422 - 2452	802.11n HT40	12.76	18.88

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes two Printed antennas, with maximum gain of 2.64dBi C0 and 2.83dBi C1.

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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.

For SISO mode, chain 1 was the worst case determined during pre-scan. So all radiated and conducted measurement based on chain 1.

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

802.11n HT40mode: MCS0

Note: N HT40 MIMO mode cover SISO mode since the power setting will be leveraged.

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5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop	HP	EliteBook 740	N/A	N/A

I/O CABLES

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	USB	1	USB	Unshielded	5m	N/A

TEST SETUP

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

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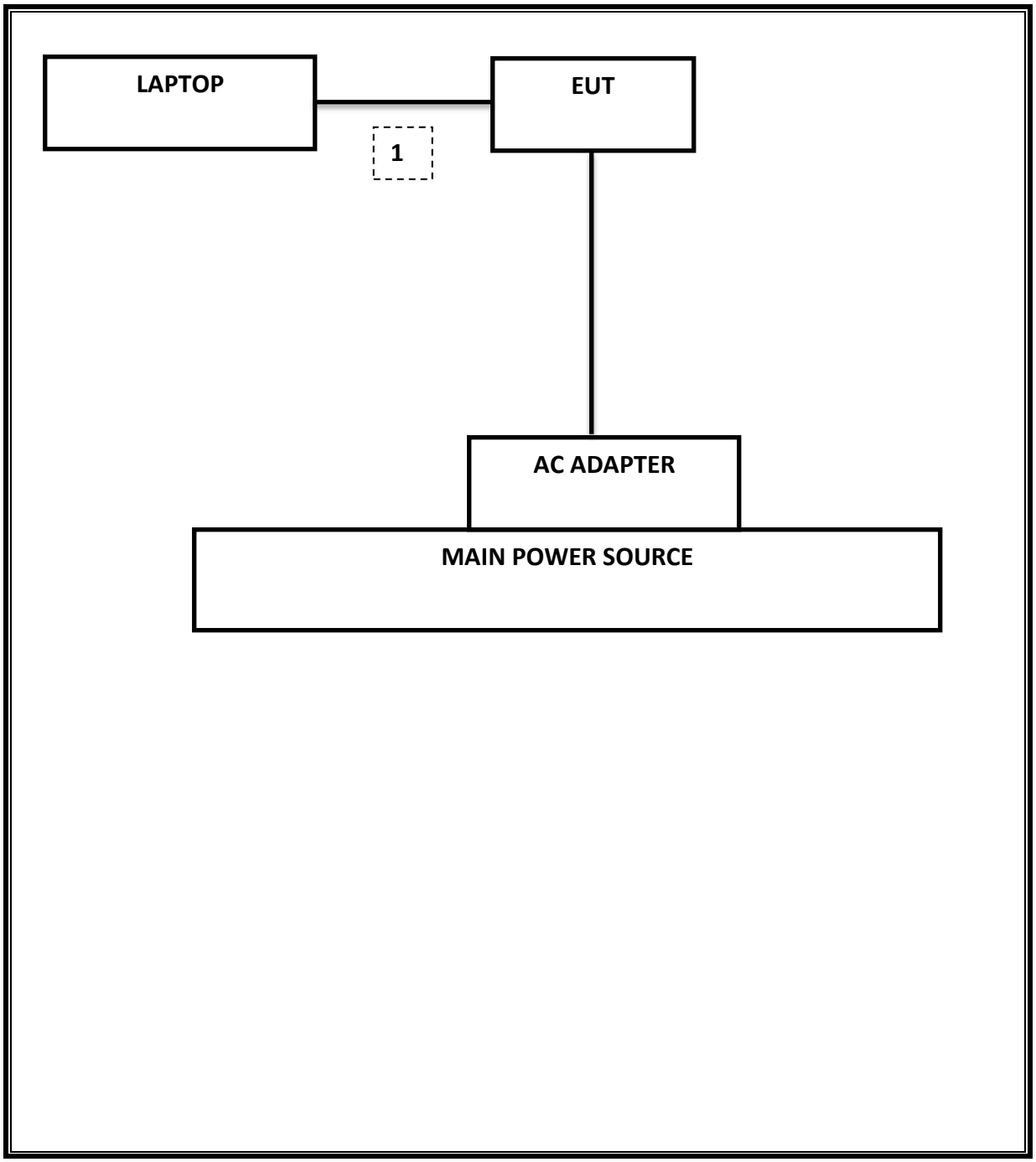
SETUP DIAGRAM FOR TESTS



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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, July 22, 2014	
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	10.03 MHz
2.1051, 15.247 (d)	RSS-247 5.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-26.59 dBm
15.247	RSS-247 5.4.4	TX conducted output power	<30dBm		Pass	20.01dBm
15.247	RSS-247 5.2.2	PSD	<8dBm		Pass	-4.68dBm
15.207 (a)	RSS-GEN 8.8	AC Power Line conducted emissions	Section 10	Radiated	Pass	51.54 dBuV
15.205, 15.209	RSS-GEN 8.9/7	Radiated Spurious Emission	< 54dBuV/m		Pass	53.58 dBuV/m

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ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
802.11b	100.00	100.00	1.000	100.0%	0.00	0.010
802.11g	100.00	100	1.000	100.0%	0.00	0.010
802.11n HT20	100.00	100	1.000	100.0%	0.00	0.010
802.11n HT40	100.00	100	1.000	100.0%	0.00	0.010

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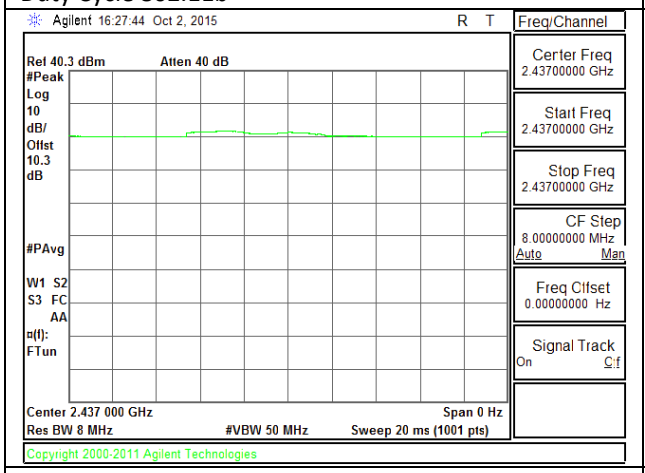
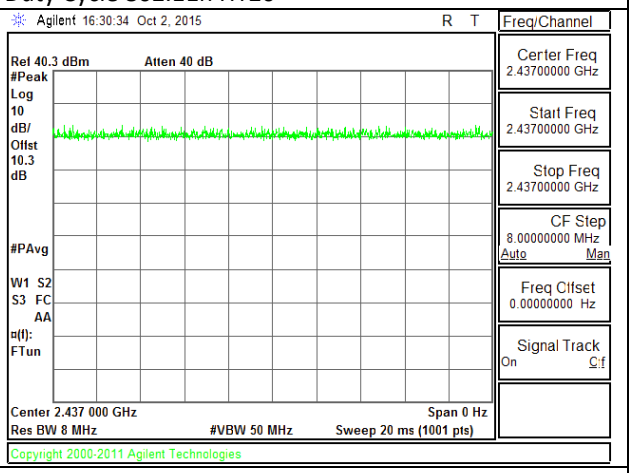
DUTY CYCLE PLOTS

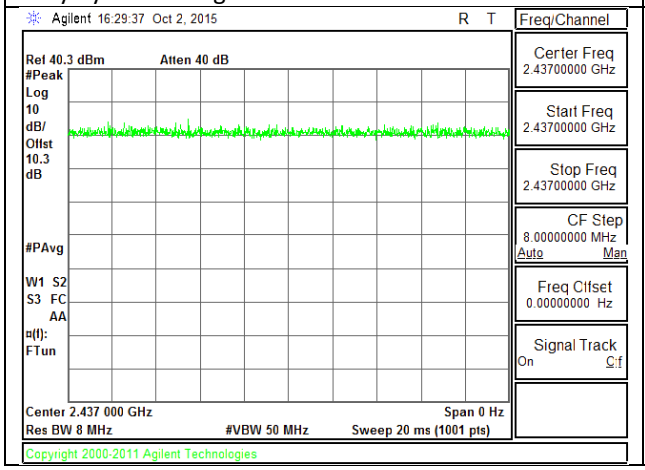
Duty Cycle 802.11b



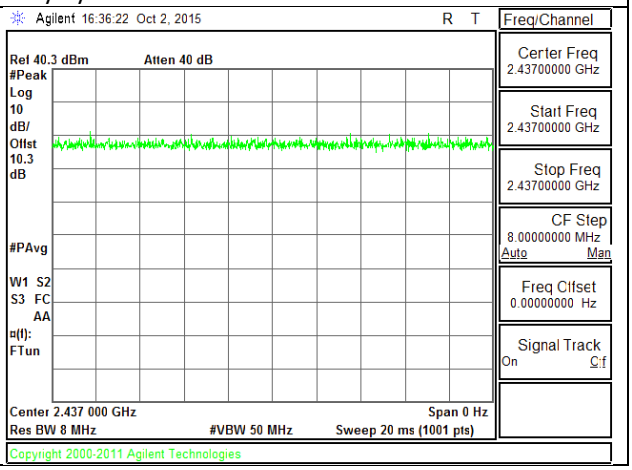
Duty Cycle 802.11n HT20



Duty Cycle 802.11g



Duty Cycle 802.11n HT40



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9. ANTENNA PORT TEST RESULTS SISO Chain 1

9.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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.

RESULTS

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9.1.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	10.03	0.5
Mid	2437	10.10	0.5
High	2462	10.08	0.5
Worst		10.03	

9.1.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.35	0.5
Mid	2437	16.35	0.5
High	2462	16.33	0.5
Worst		16.33	

9.1.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	17.58	0.5
Mid	2437	17.58	0.5
High	2462	17.55	0.5
Worst		17.55	

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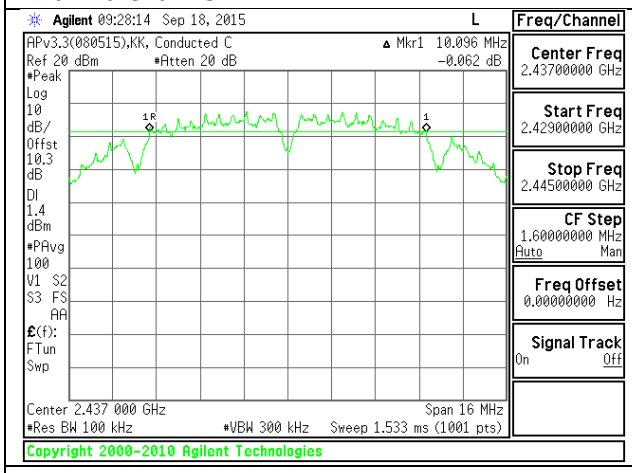
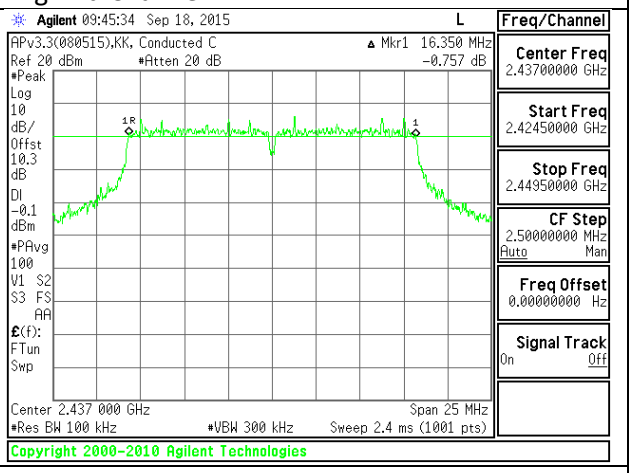
9.1.4. 6 dB BANDWIDTH MID CH PLOTS

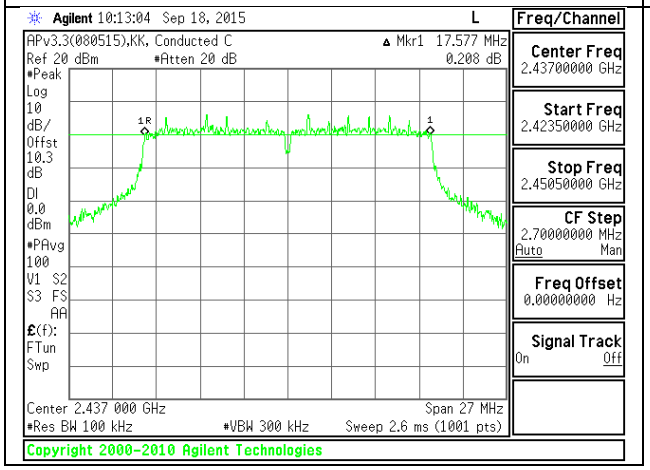
11b Mid Channel



11g Mid Channel



11n HT20 Mid Channel



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9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

9.2.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	13.89
Mid	2437	13.88
High	2462	13.87
Worst		13.89

9.2.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.50
Mid	2437	16.46
High	2462	16.47
Worst		16.47

9.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.69
Mid	2437	17.59
High	2462	17.64
Worst		17.69

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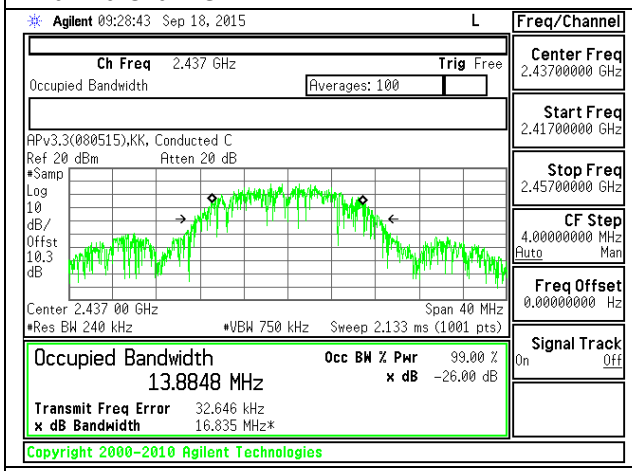
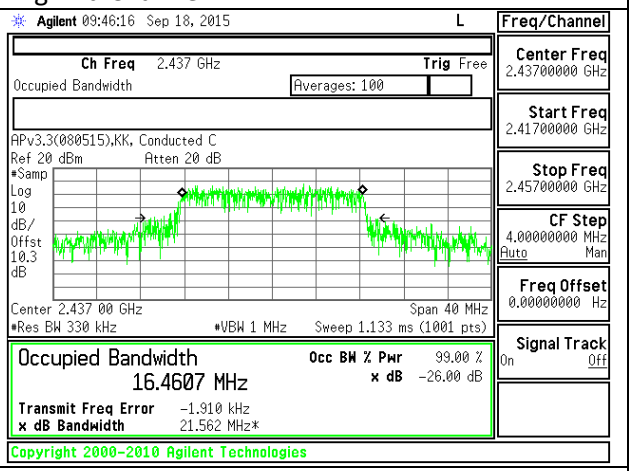
9.2.4. 99% BANDWIDTH MID CH PLOTS

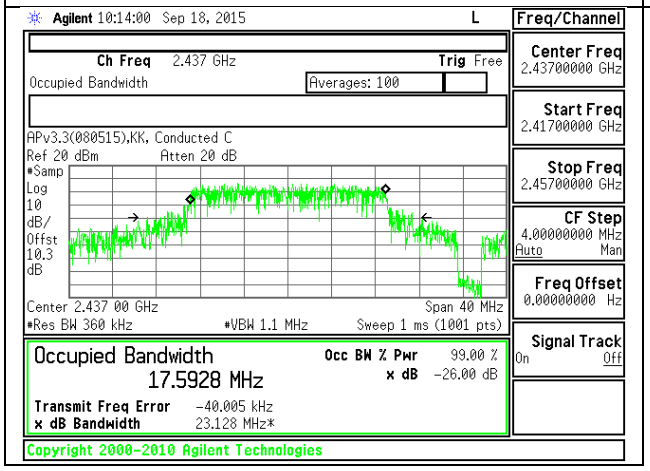
11b Mid Channel



11g Mid Channel



11n HT20 Mid Channel



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9.3. OUTPUT POWER

LIMITS

FCC §15.247

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

SISO

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

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9.3.1. 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	2.83	30.00	30	36	30.00
Mid	2437	2.83	30.00	30	36	30.00
High	2462	2.83	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	16.95	16.95	30.00	-13.05
Mid	2437	17.00	17.00	30.00	-13.00
High	2462	16.85	16.85	30.00	-13.15
Worst			17.00		

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9.3.2. 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	2.83	30.00	30	36	30.00
Mid	2437	2.83	30.00	30	36	30.00
High	2462	2.83	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	13.10	13.10	30.00	-16.90
Mid	2437	16.98	16.98	30.00	-13.02
High	2462	12.41	12.41	30.00	-17.59
Worst			16.98		

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9.3.3. 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	2.83	30.00	30	36	30.00
Mid	2437	2.83	30.00	30	36	30.00
High	2462	2.83	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	13.00	13.00	30.00	-17.00
Mid	2437	17.00	17.00	30.00	-13.00
High	2462	11.40	11.40	30.00	-18.60
Worst			17.00		

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9.4. PSD

LIMITS

FCC §15.247

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

RESULTS

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9.4.1. 802.11b MODE IN THE 2.4 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 1 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-5.95	8.0	-14.0
Mid	2437	-5.83	8.0	-13.8
High	2462	-5.95	8.0	-14.0

9.4.2. 802.11g MODE IN THE 2.4 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 1 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-11.67	8.0	-19.7
Mid	2437	-7.81	8.0	-15.8
High	2462	-11.93	8.0	-19.9

9.4.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 1 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-11.93	8.0	-19.9
Mid	2437	-8.18	8.0	-16.2
High	2462	-13.16	8.0	-21.2

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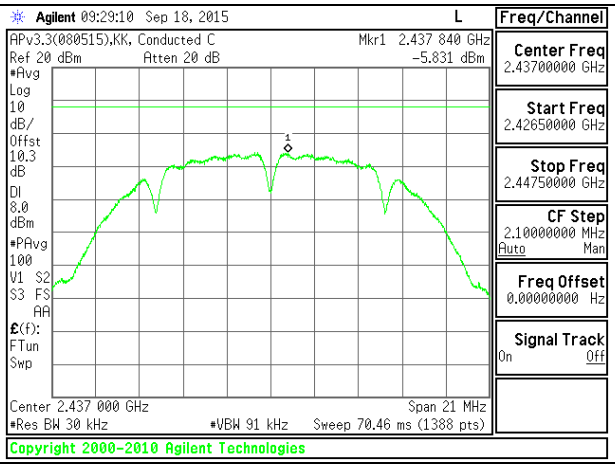
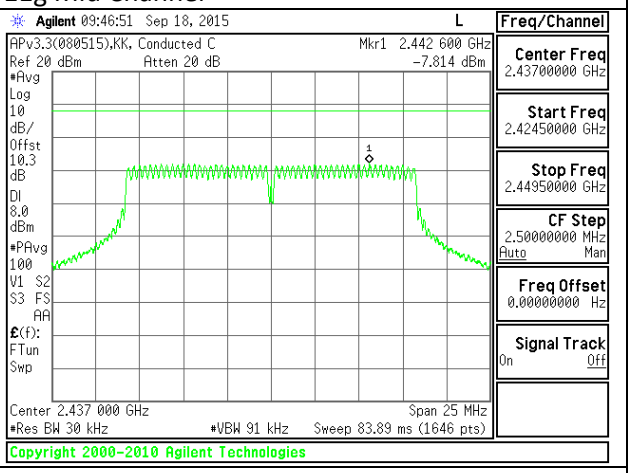
9.4.4. PSD Chain 1 MID CH PLOTS

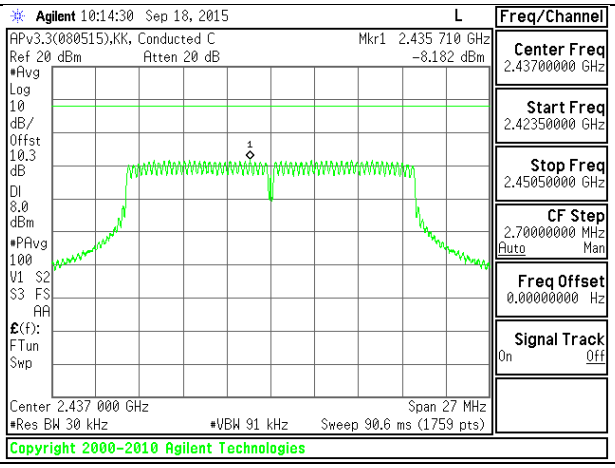
11b Mid Channel



11g Mid Channel



11n HT20 Mid Channel



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9.5. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

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.

RESULTS

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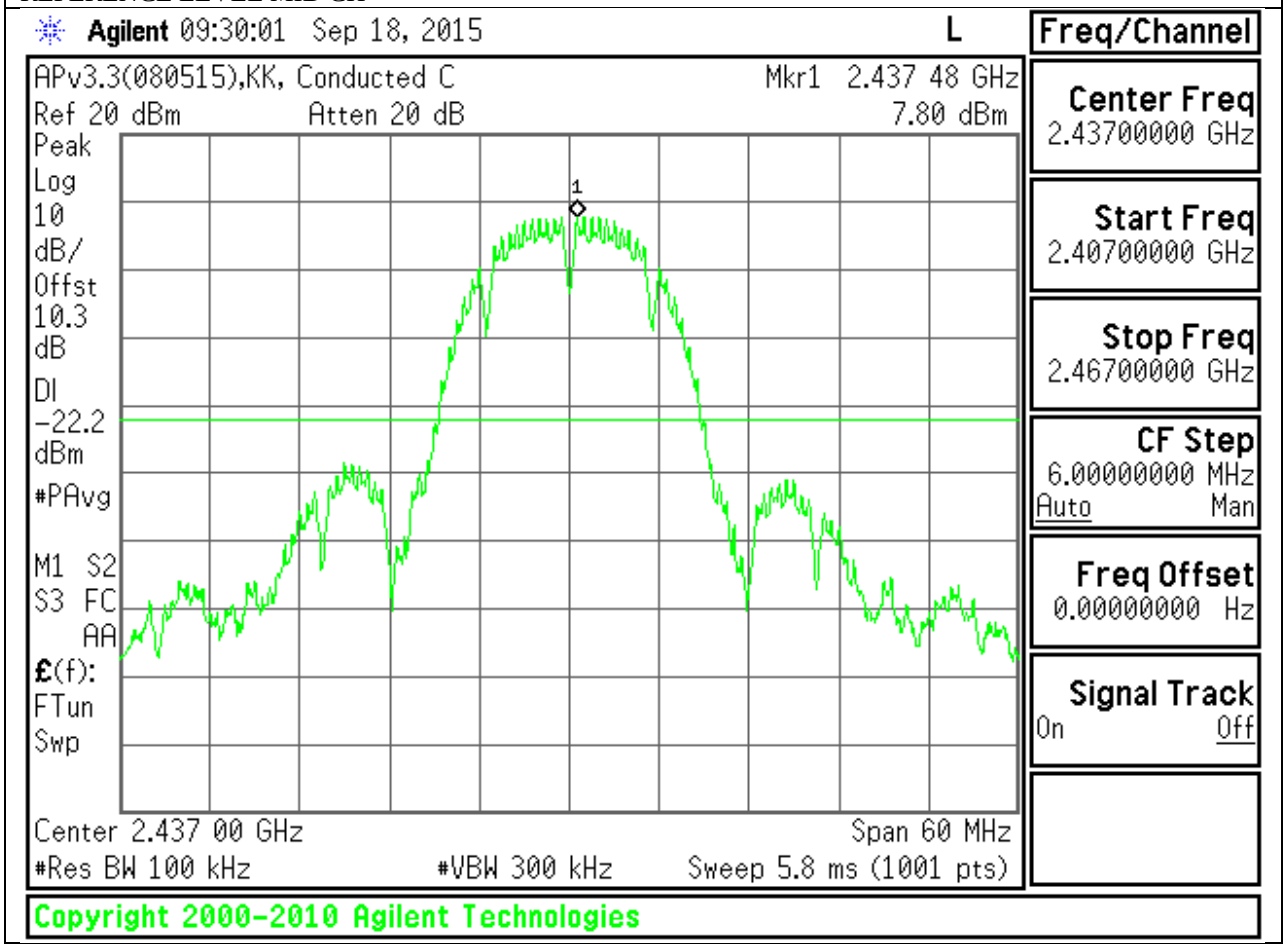
9.5.1. 802.11b MODE IN THE 2.4 GHz BAND

IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



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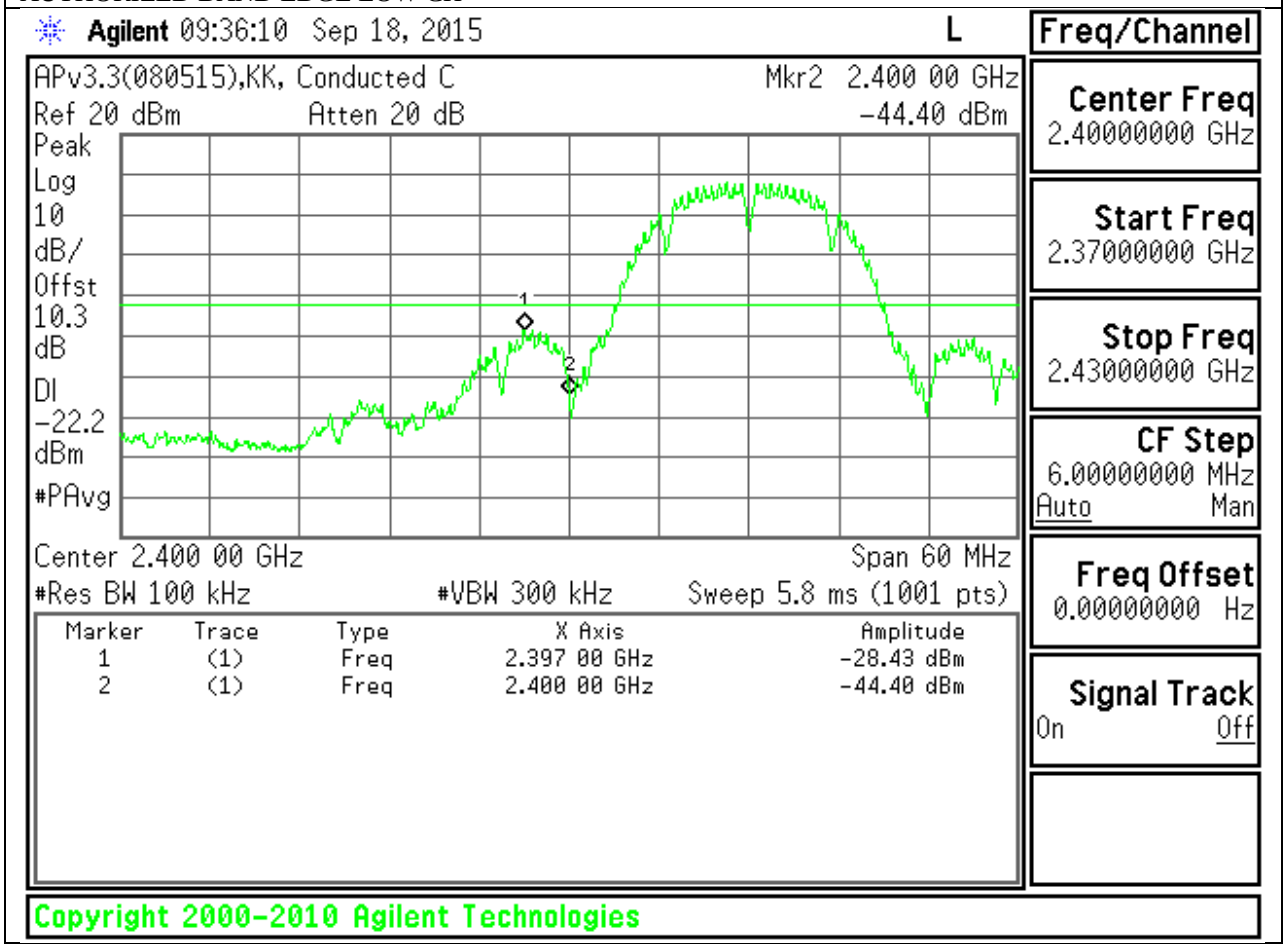
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



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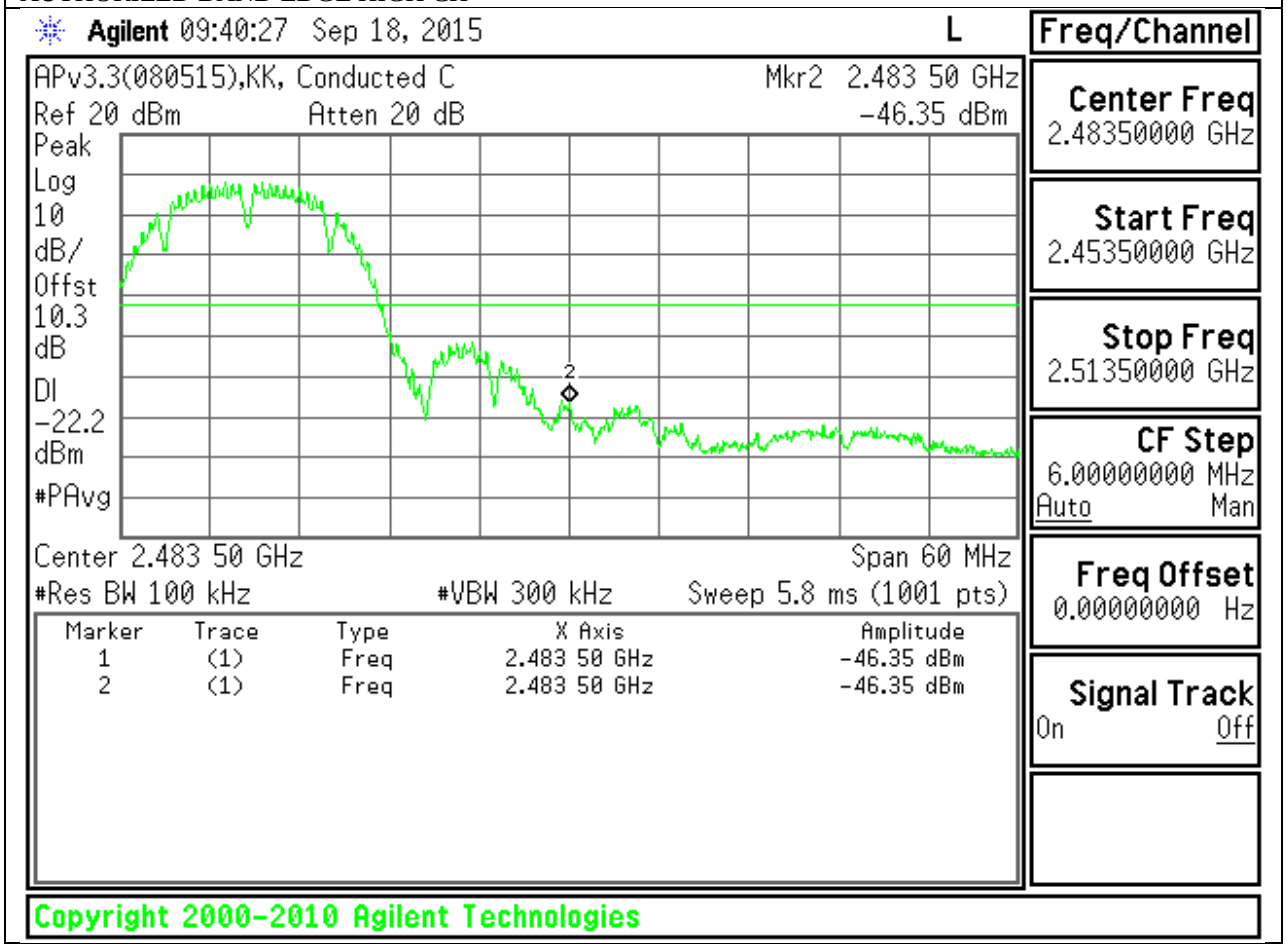
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH



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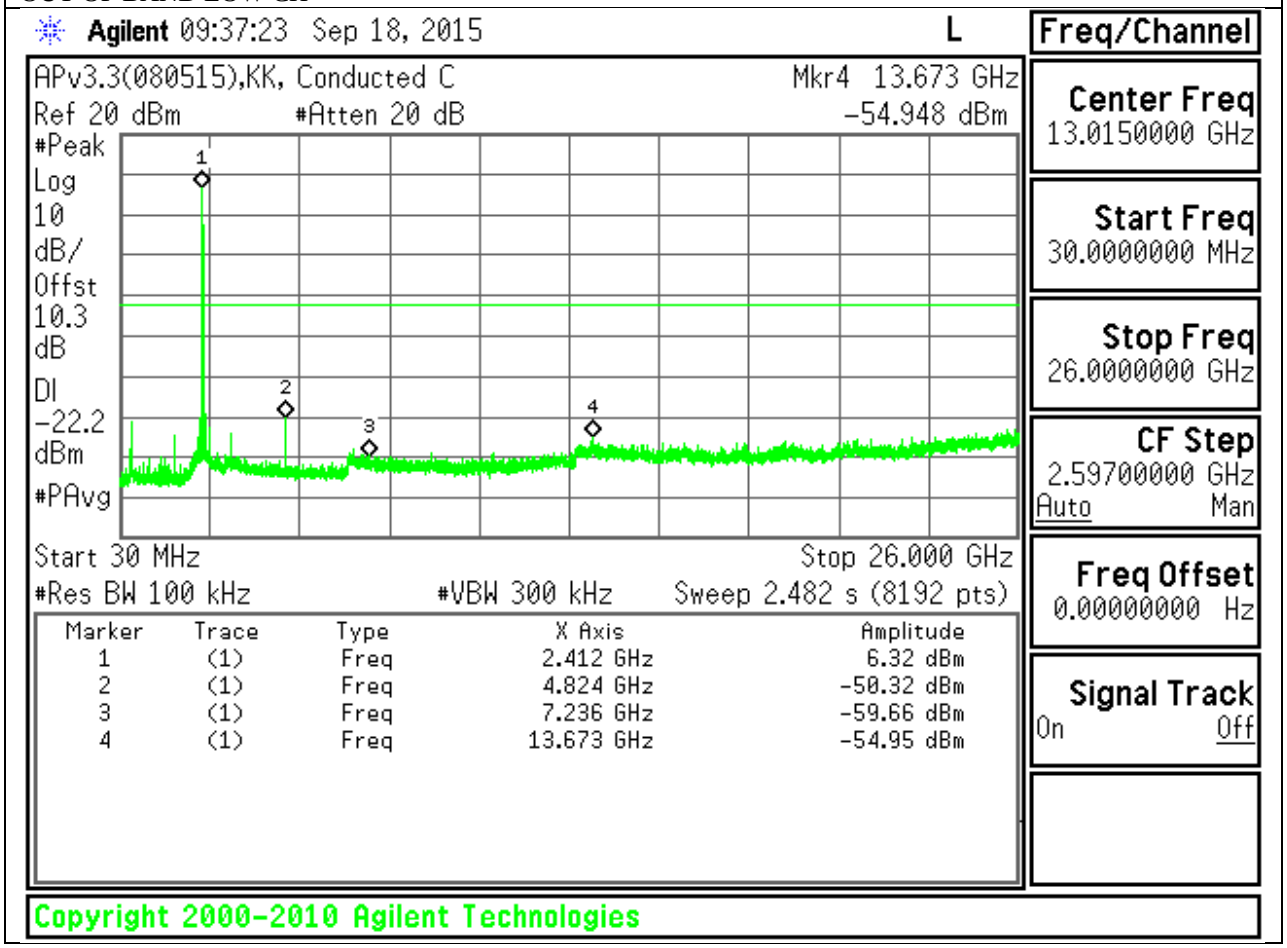
OUT-OF-BAND EMISSIONS

OUT OF BAND LOW CH



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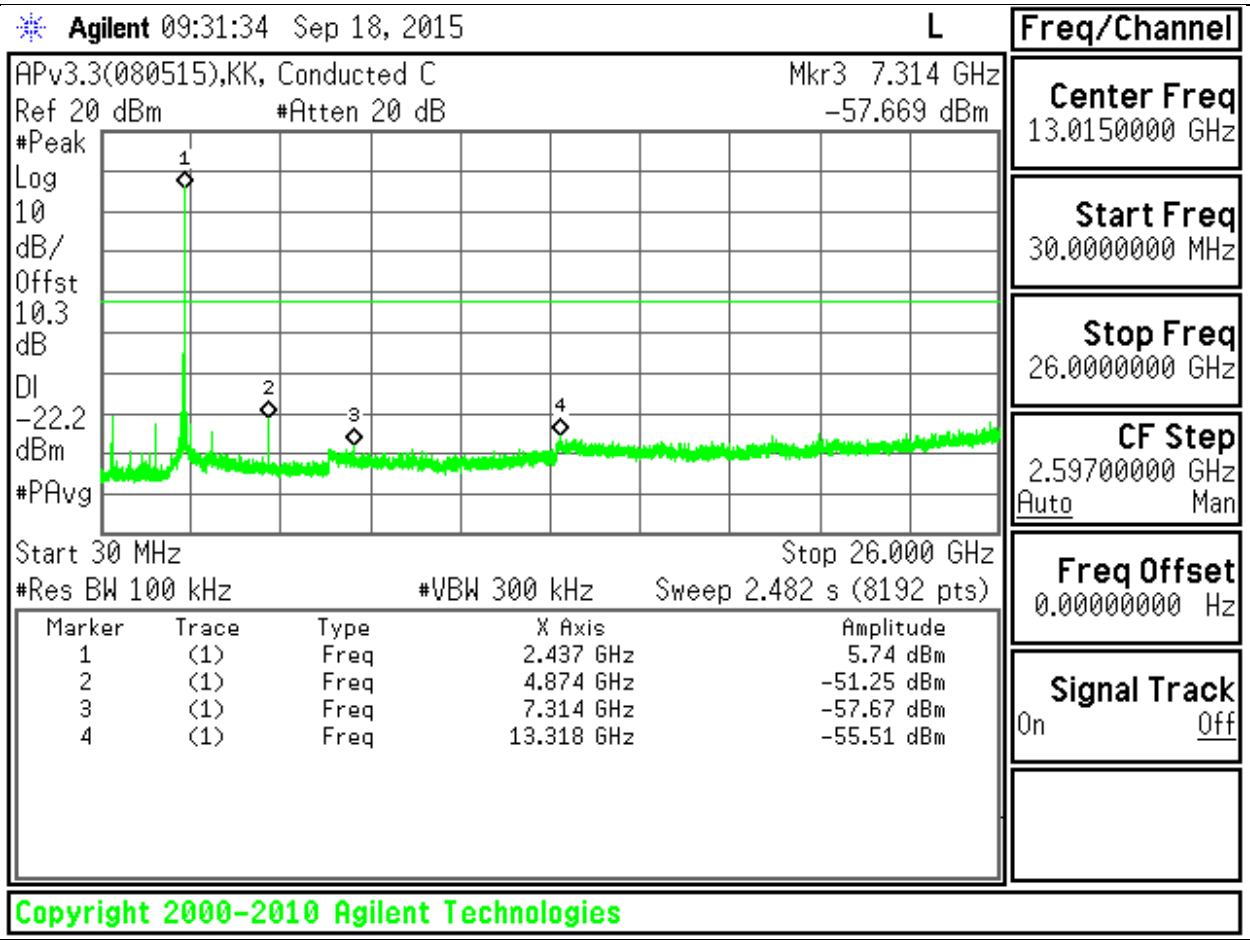
OUT OF BAND MID CH



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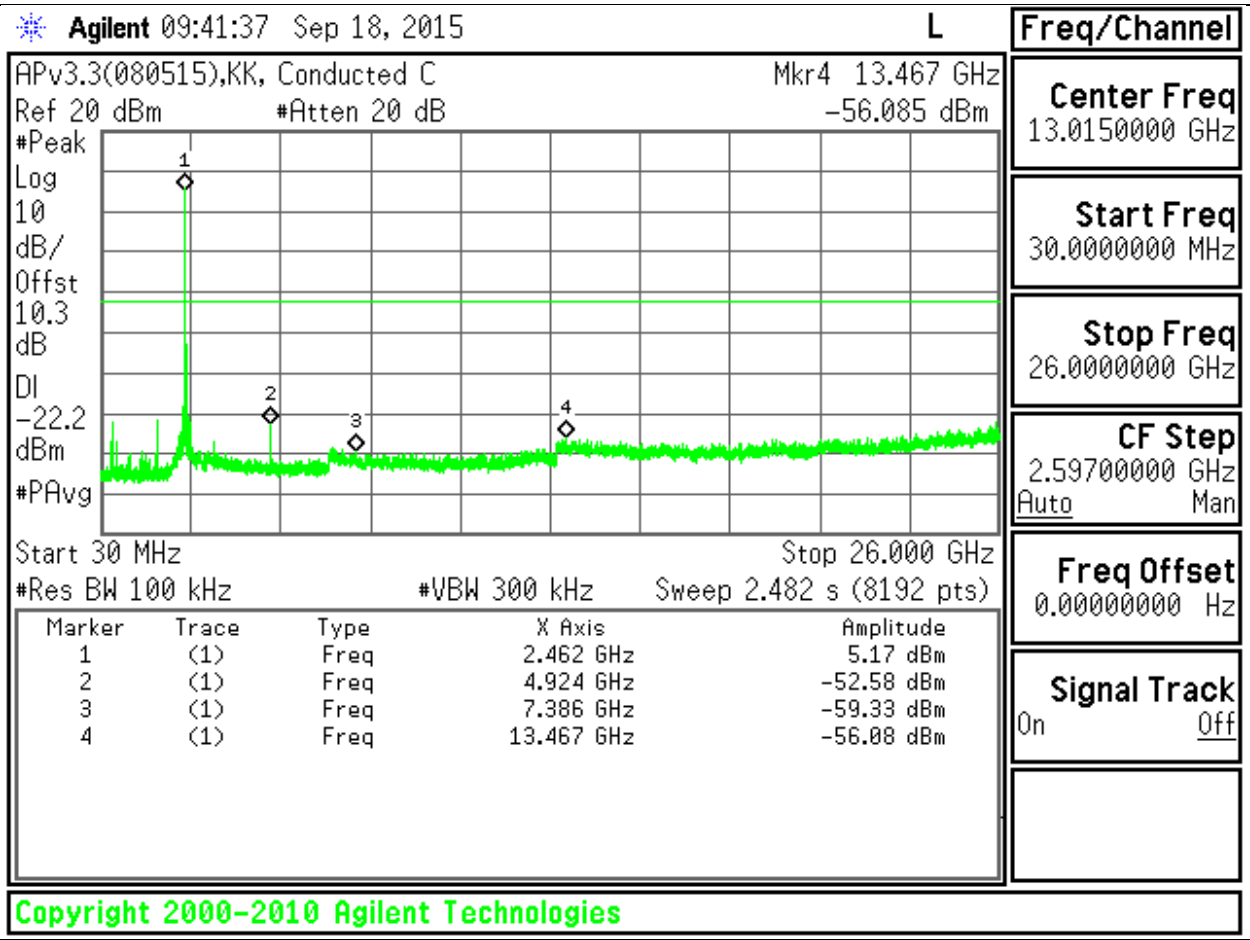
OUT OF BAND HIGH CH



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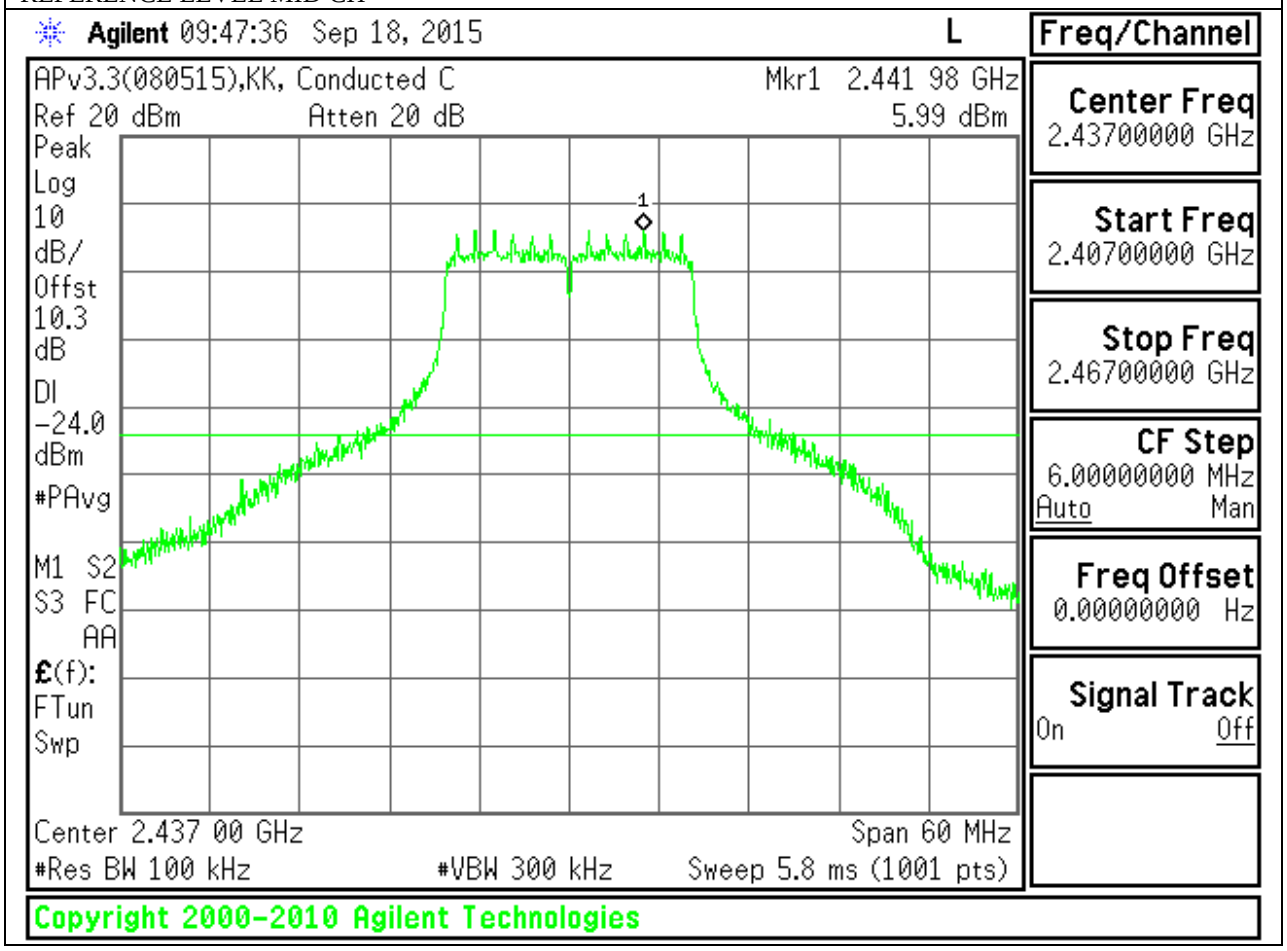
9.5.2. 802.11g MODE IN THE 2.4 GHz BAND

IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



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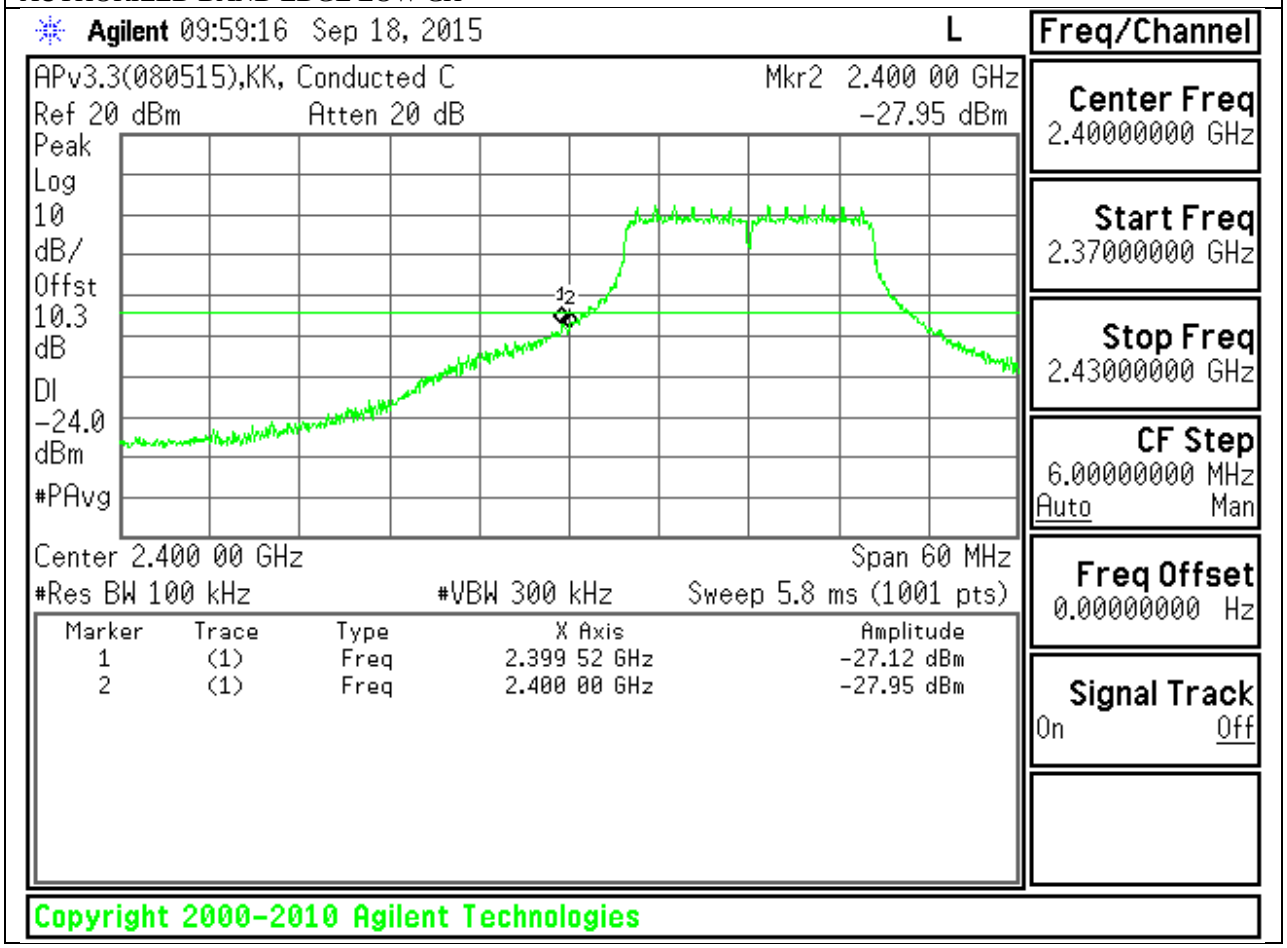
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



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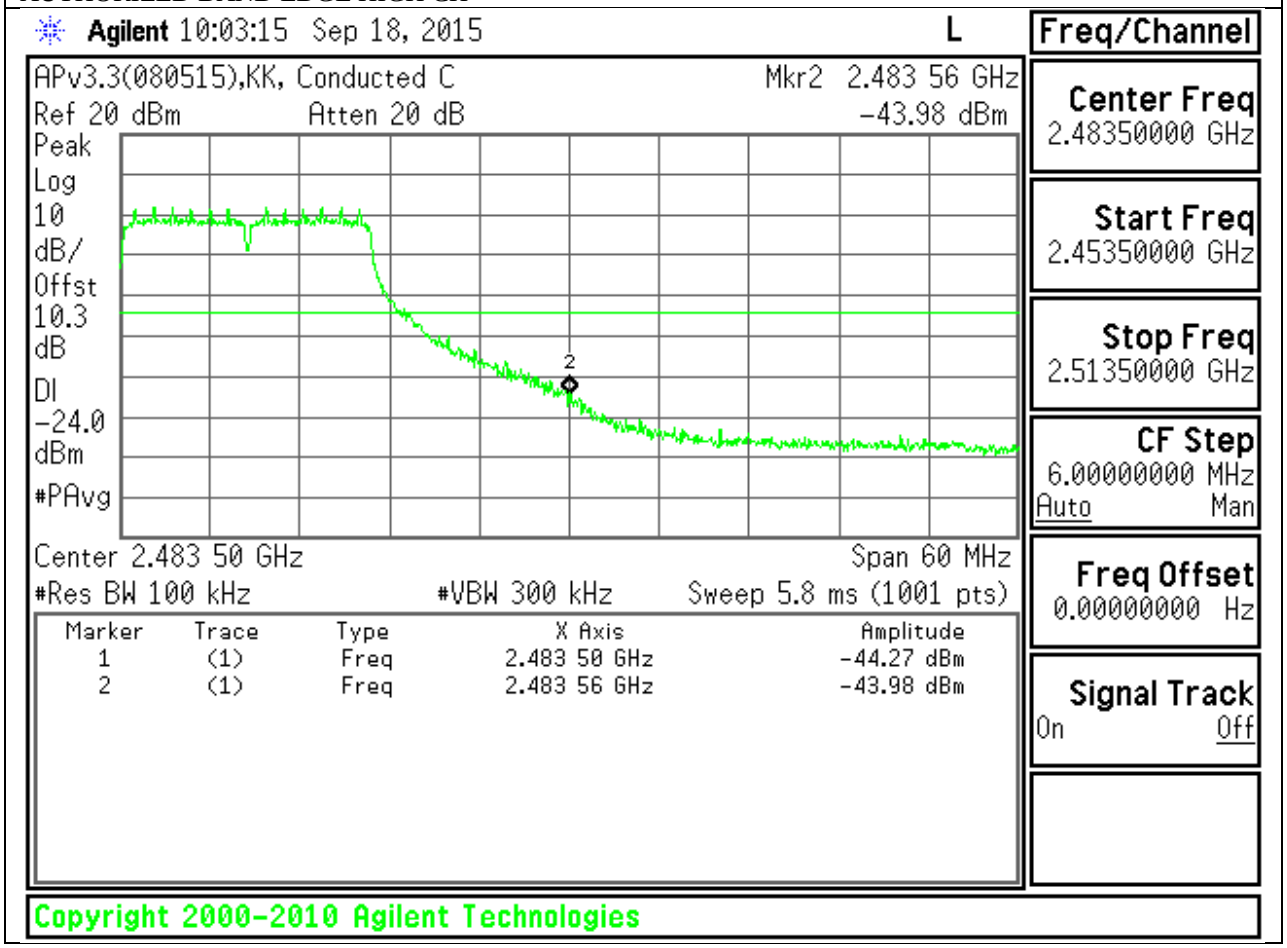
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH



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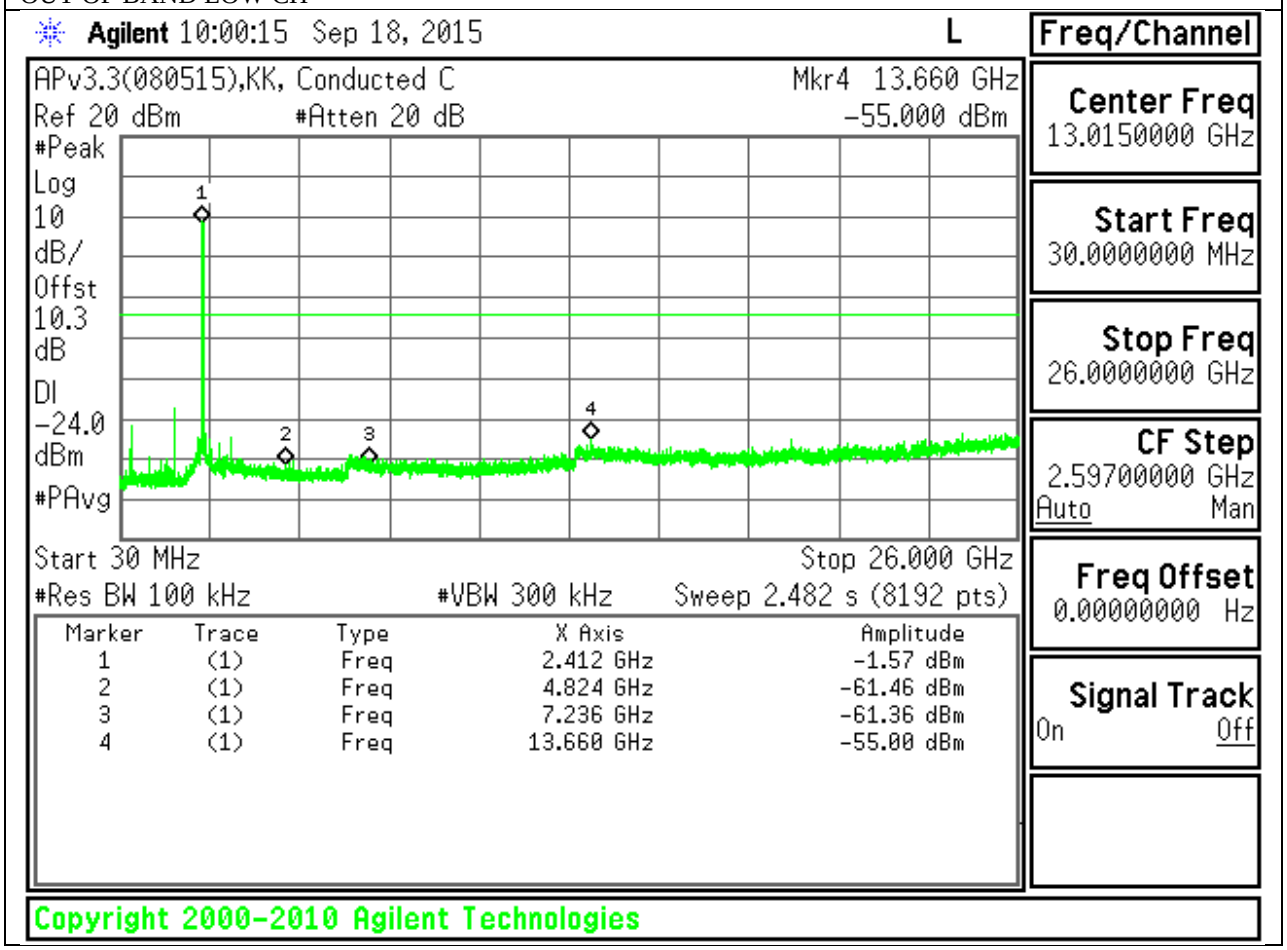
OUT-OF-BAND EMISSIONS

OUT OF BAND LOW CH



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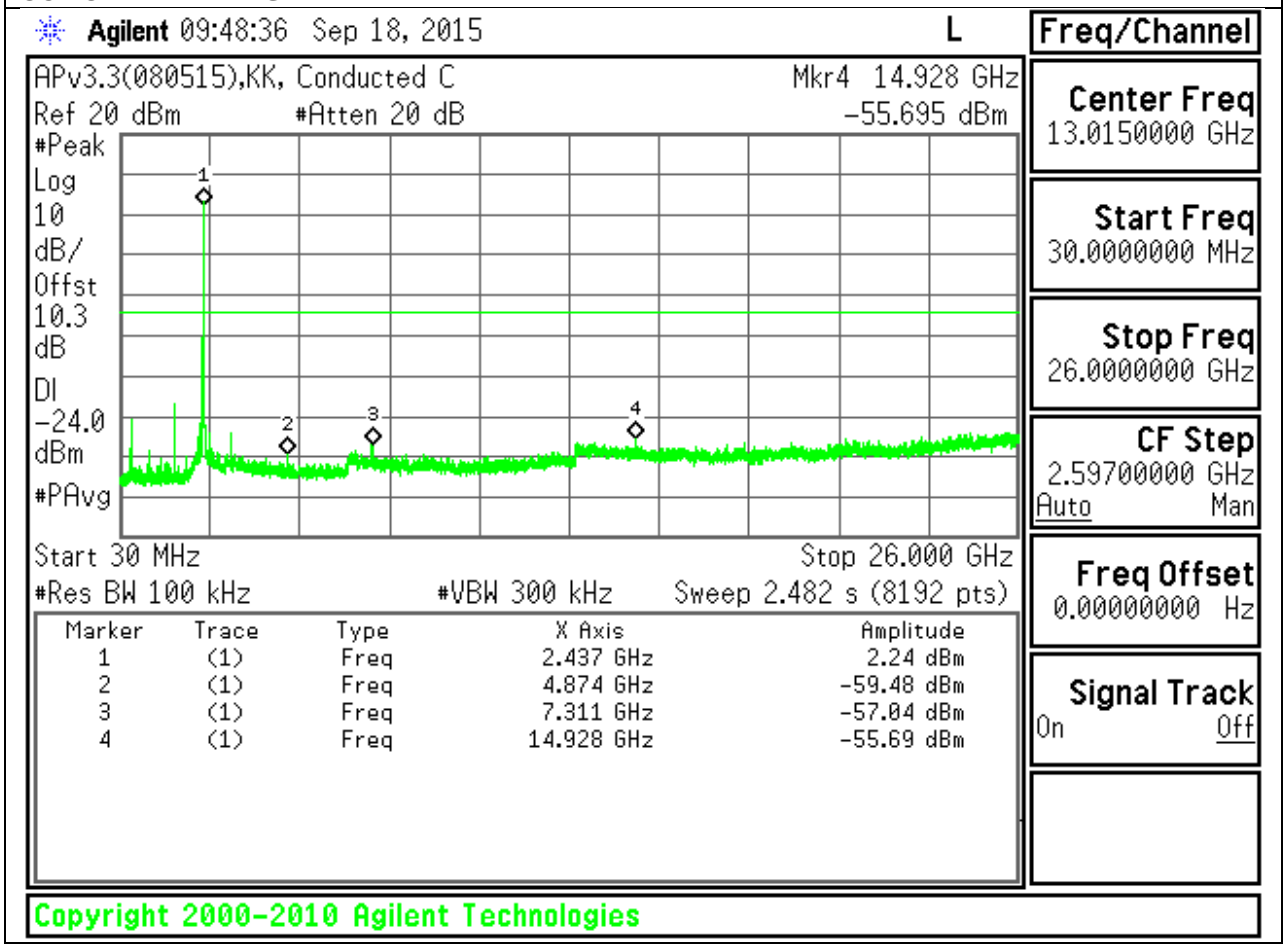
OUT OF BAND MID CH



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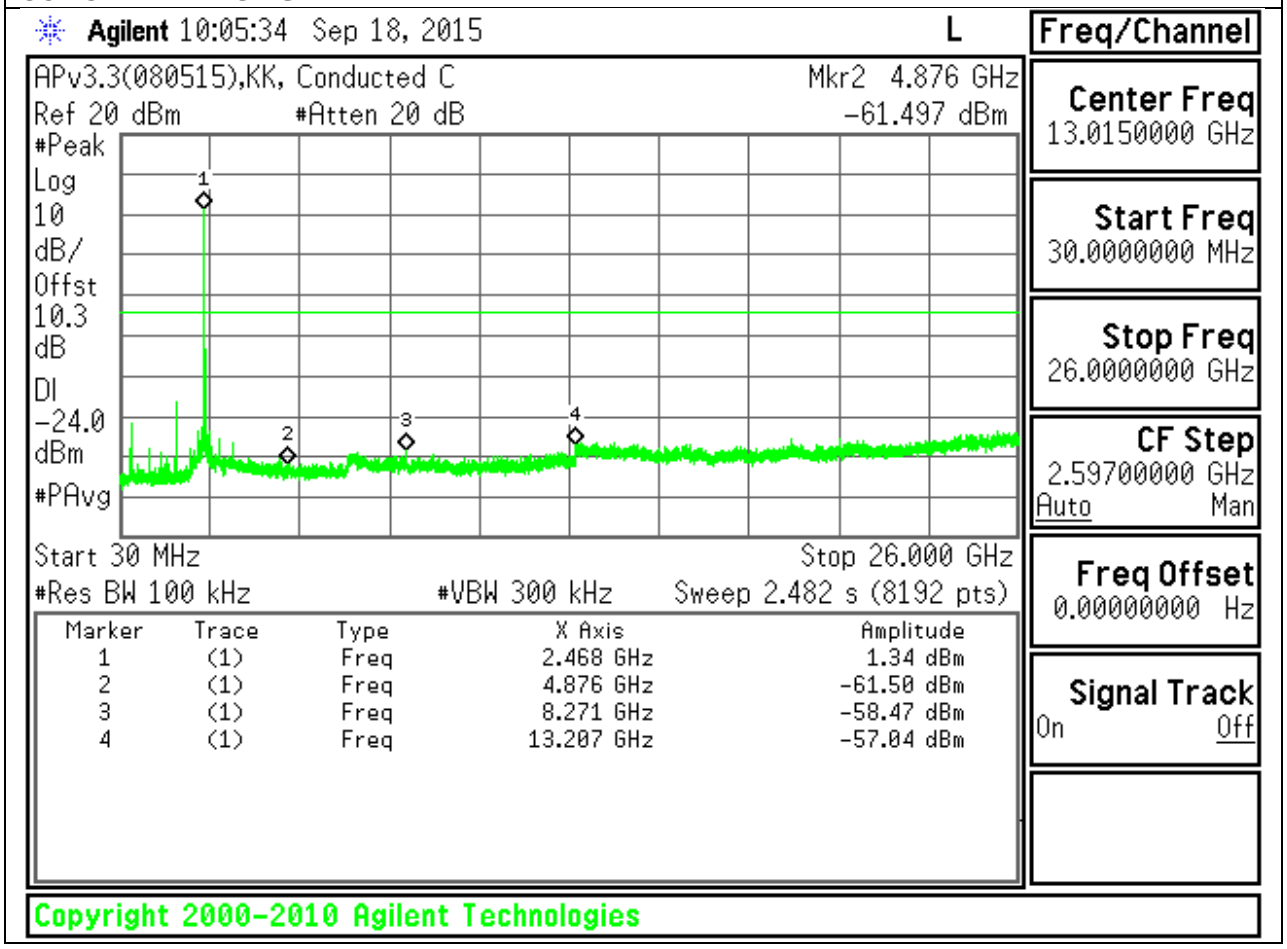
OUT OF BAND HIGH CH



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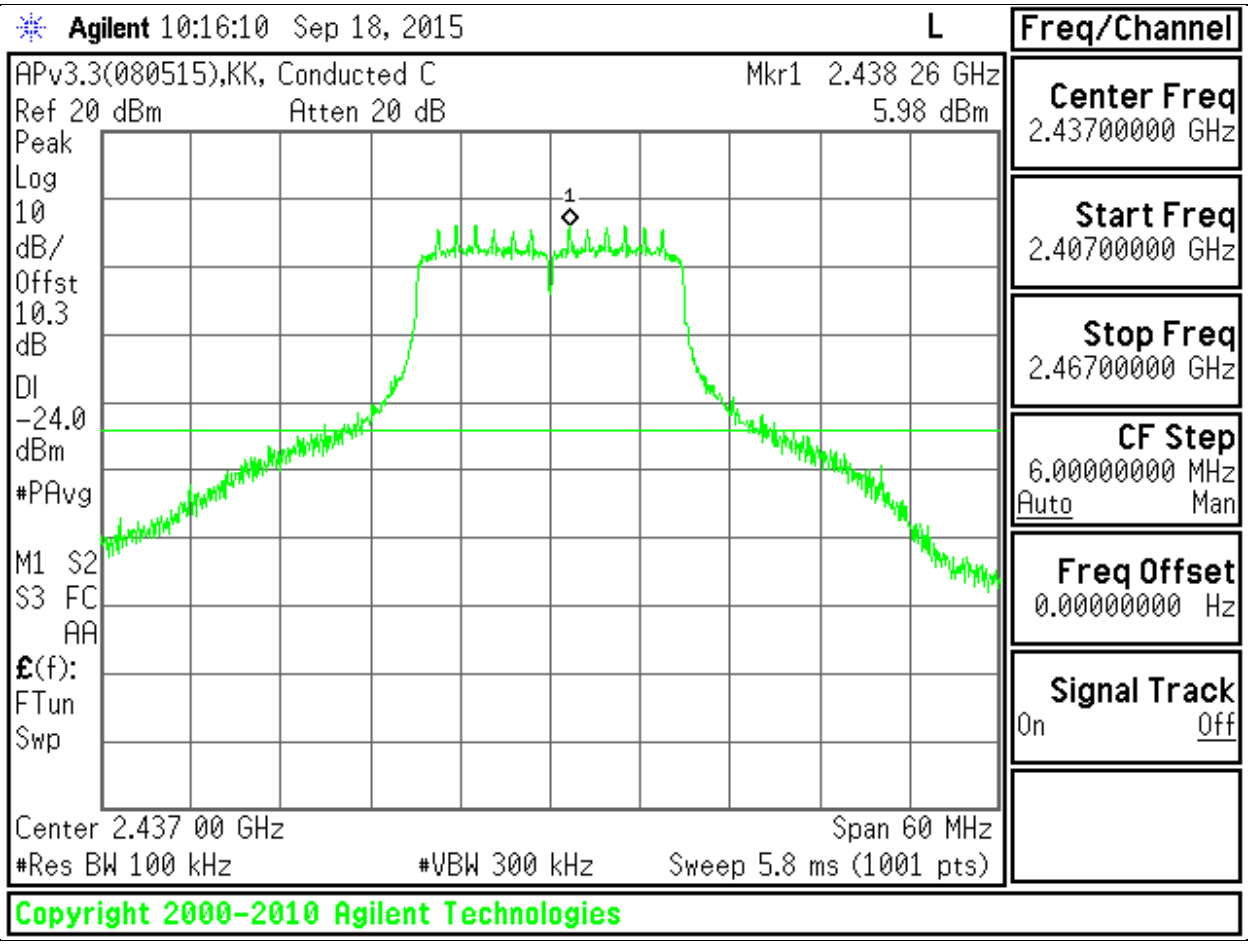
9.5.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND (CHAIN 1)

IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



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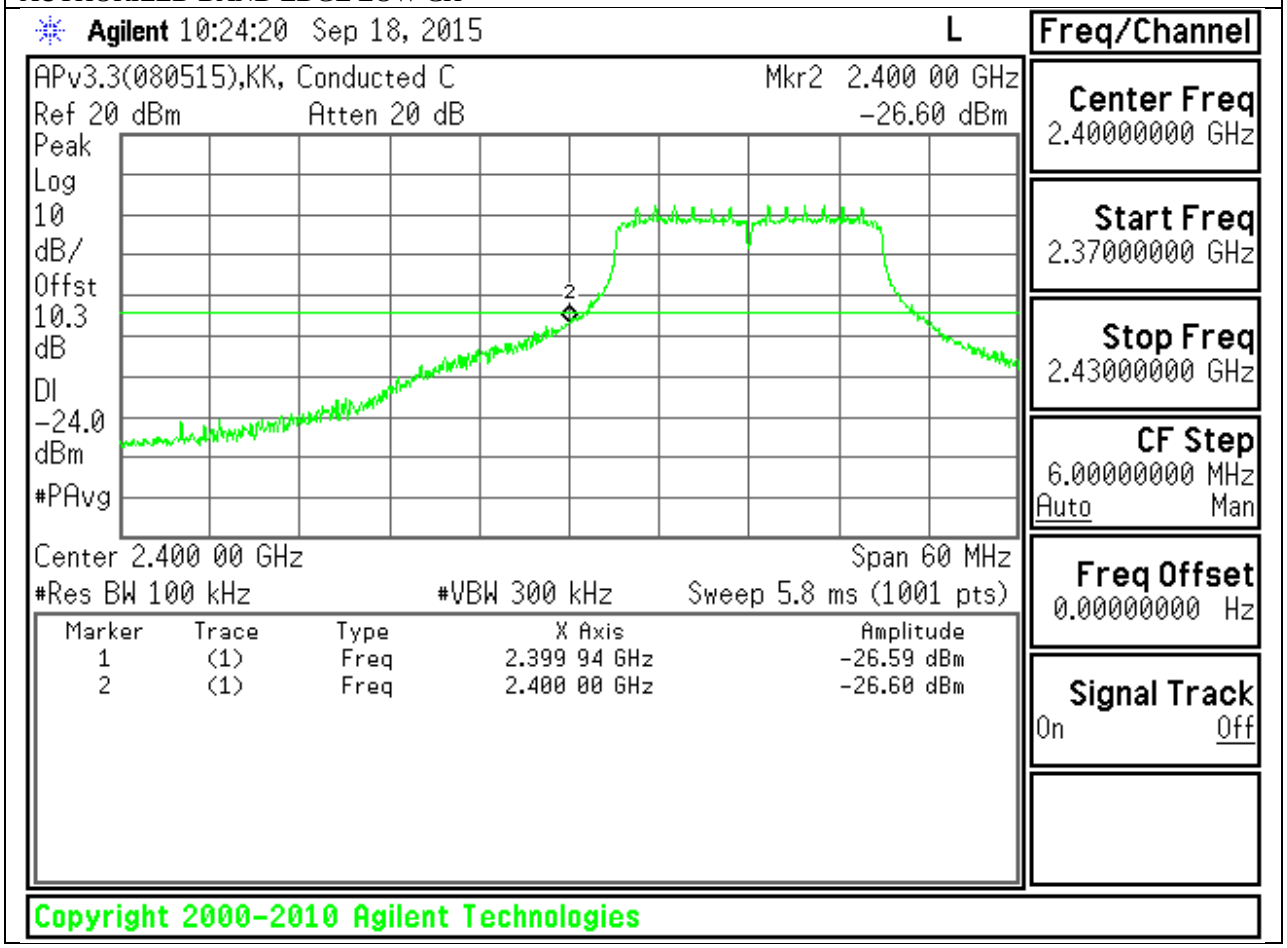
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



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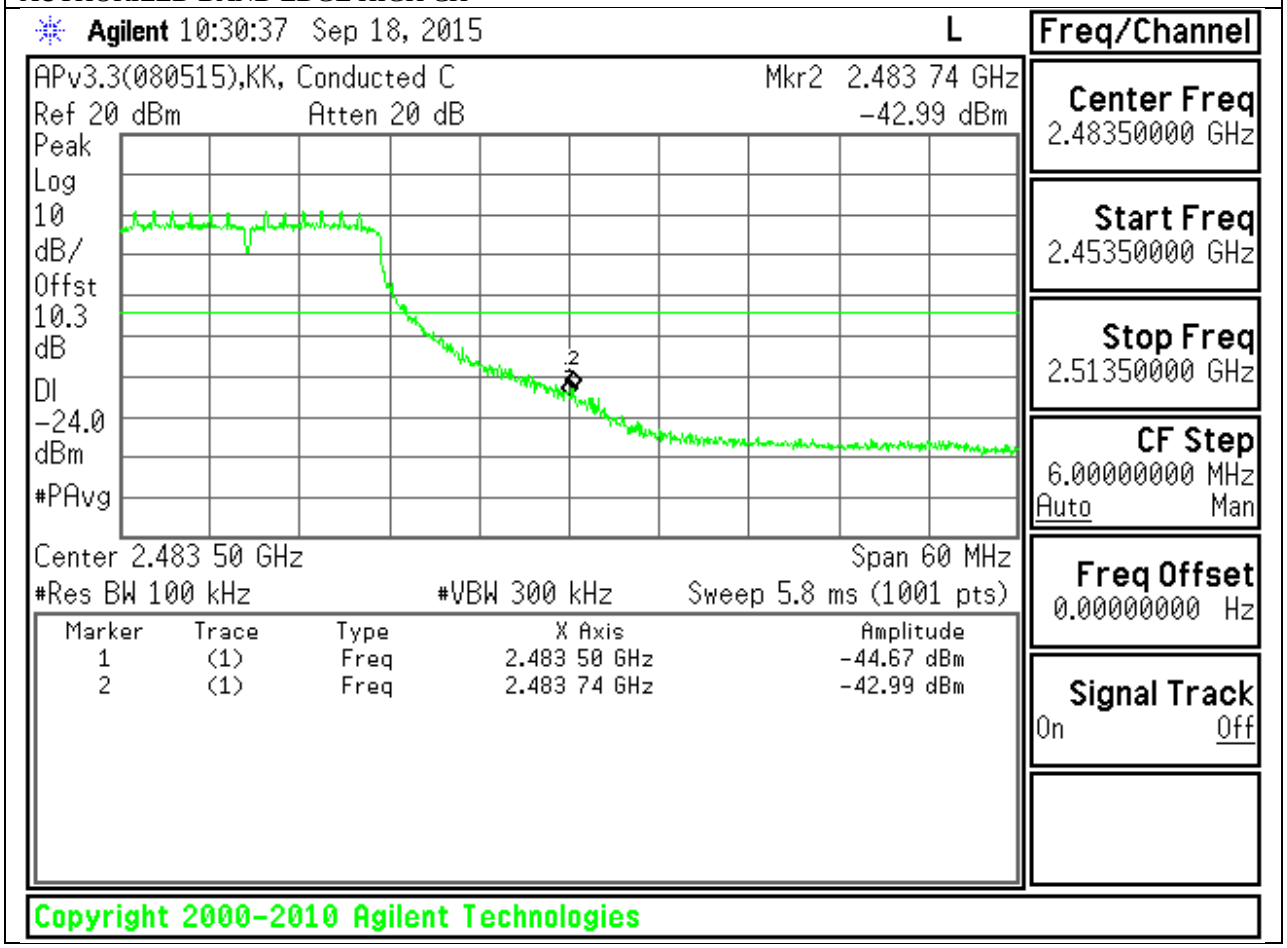
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH



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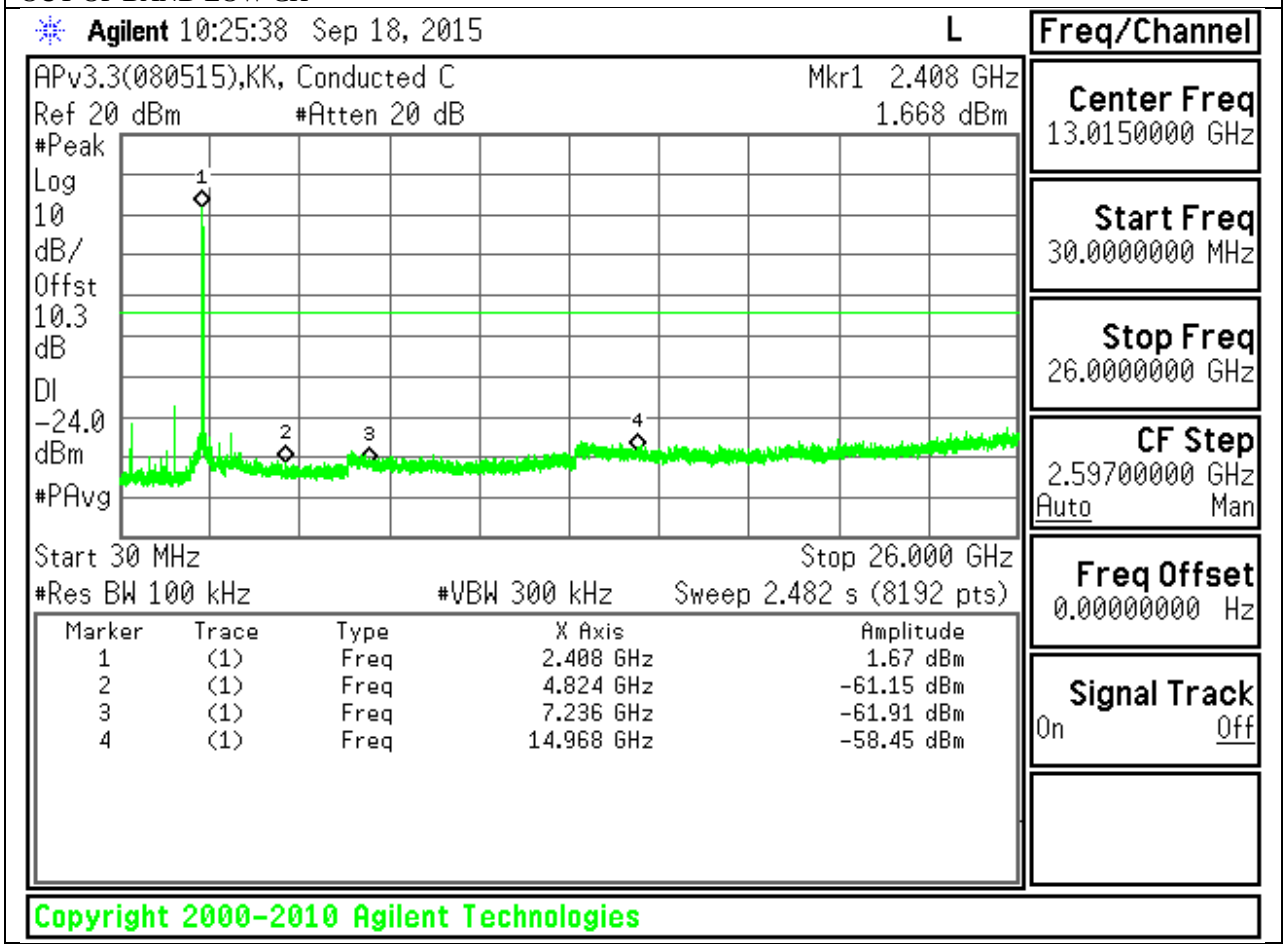
OUT-OF-BAND EMISSIONS

OUT OF BAND LOW CH



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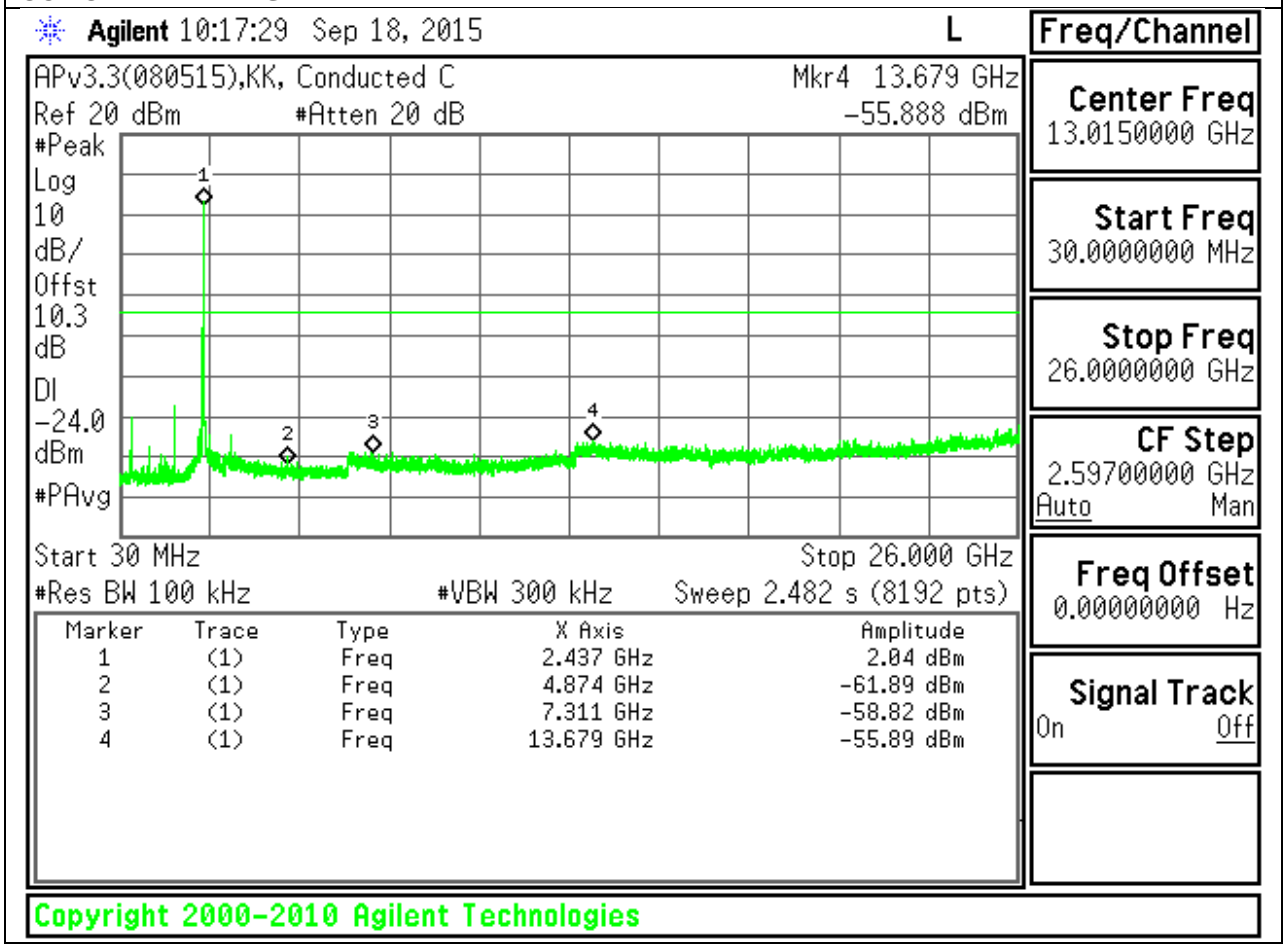
OUT OF BAND MID CH



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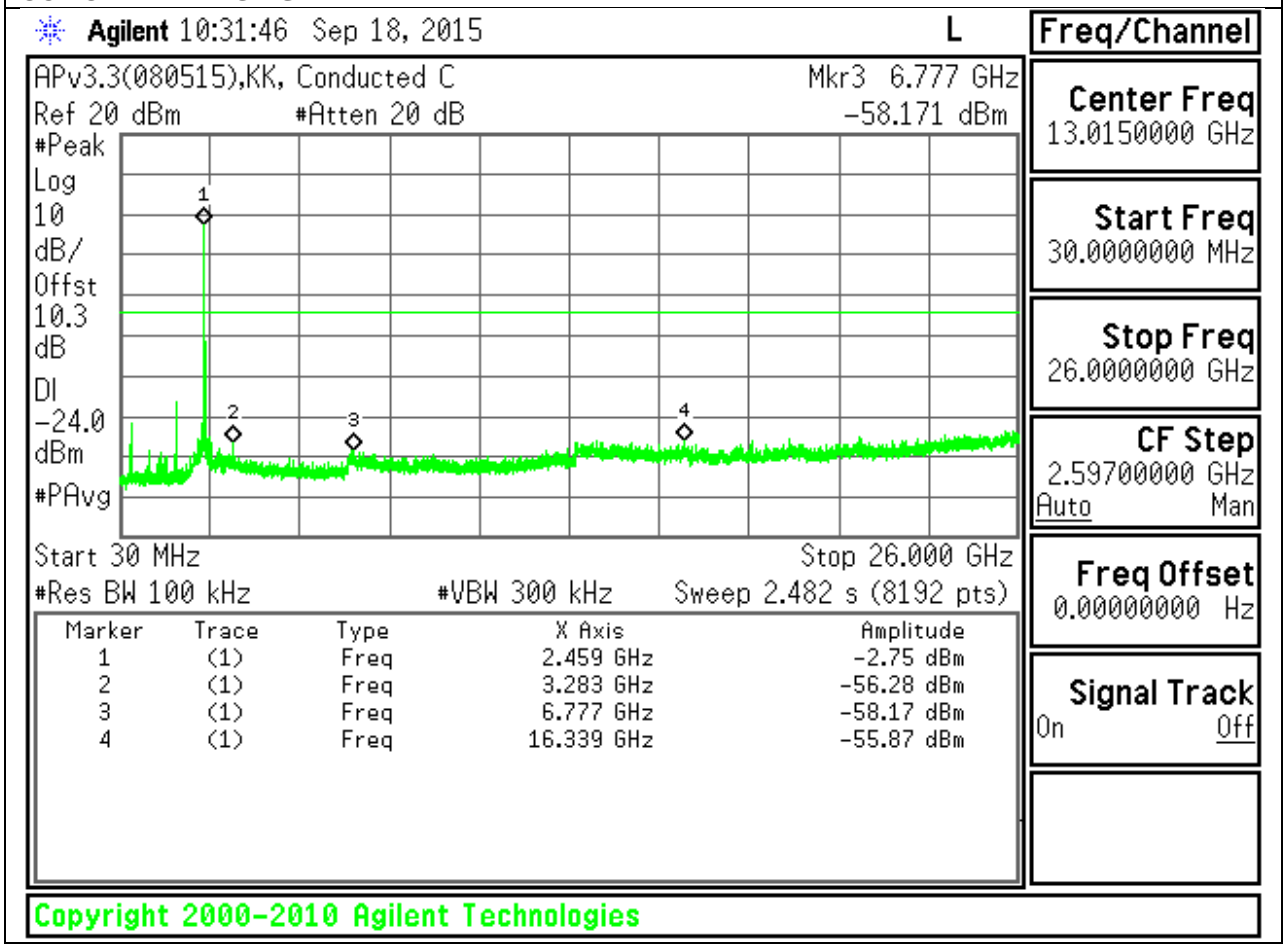
OUT OF BAND HIGH CH



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10. ANTENNA PORT TEST RESULTS MIMO

10.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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.

RESULTS

10.1.1. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz) C0	6 dB Bandwidth (MHz) C1	Minimum Limit (MHz)
Low	2412	17.60	17.60	0.5
Mid	2437	17.33	17.55	0.5
High	2462	17.55	17.58	0.5
Worst		17.33	17.55	

10.1.2. 802.11n HT40 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz) C0	6 dB Bandwidth (MHz) C1	Minimum Limit (MHz)
Low	2422	36.30	36.08	0.5
Mid	2437	35.91	36.30	0.5
High	2452	36.08	36.30	0.5
Worst		35.91	36.08	

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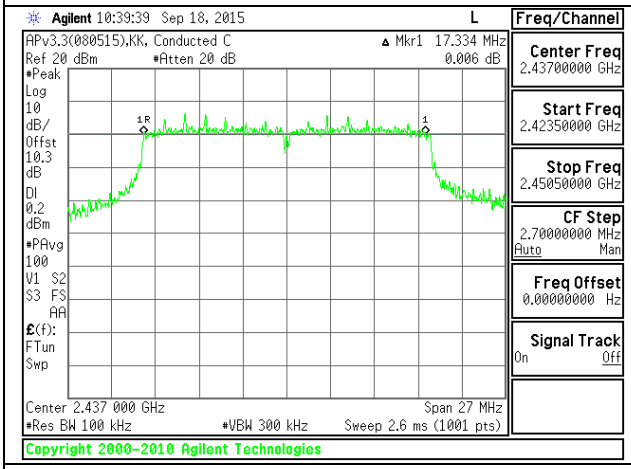
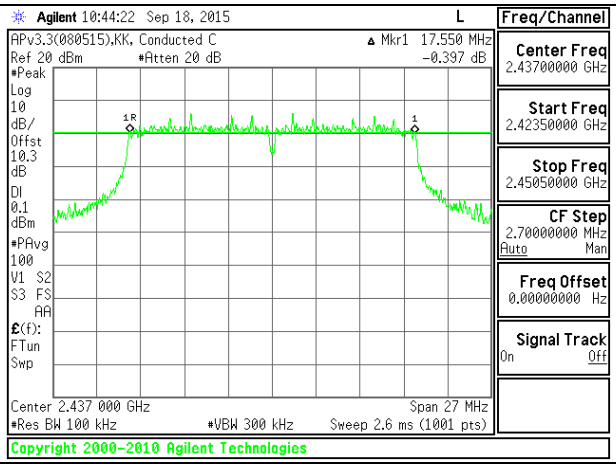
10.1.3. 6 dB BANDWIDTH MID CH PLOTS

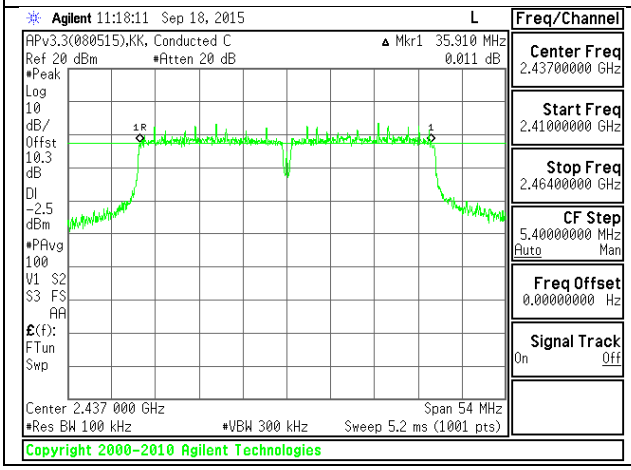
11n HT20 Mid Channel Chain 0



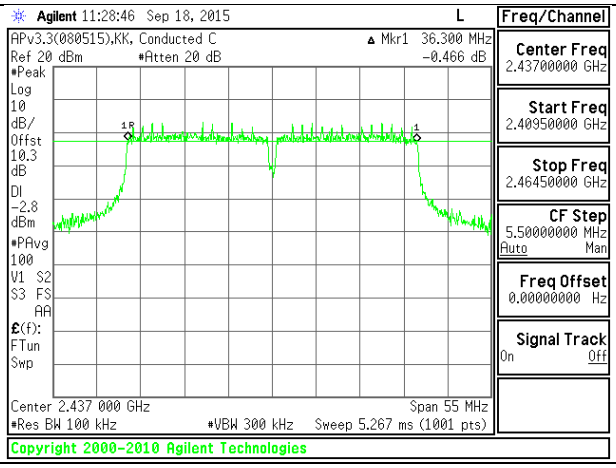
11n Mid Channel HT20 Chain 1



11n HT40 Mid Channel Chain 0



11n Mid Channel HT40 Chain 1



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10.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

10.2.1. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz) C0	99% Bandwidth (MHz) C1
Low	2412	17.59	17.69
Mid	2437	17.73	17.73
High	2462	17.67	17.66
Worst		17.73	17.73

10.2.2. 802.11n HT40 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz) C0	99% Bandwidth (MHz) C1
Low	2422	36.12	36.04
Mid	2437	36.32	36.06
High	2452	36.48	35.98
Worst			

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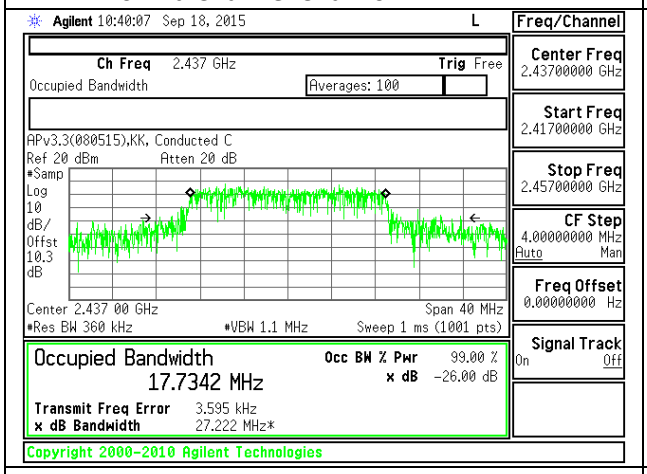
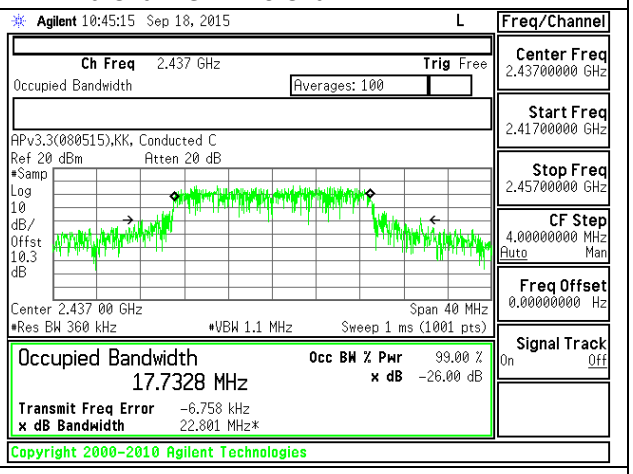
10.2.3. 99% BANDWIDTH MID CH PLOTS

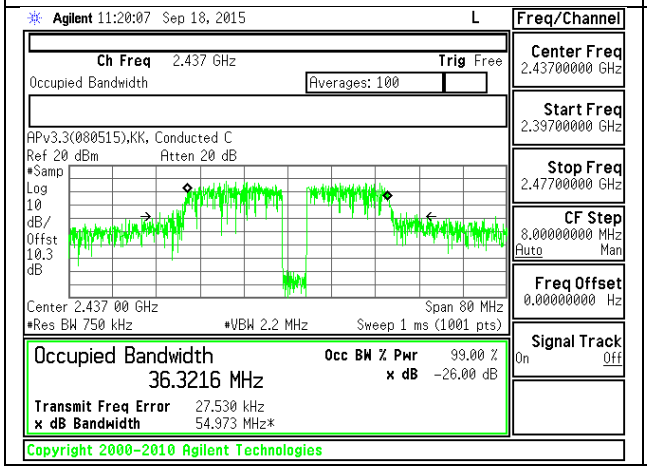
11n HT20 Mid Channel Chain 0



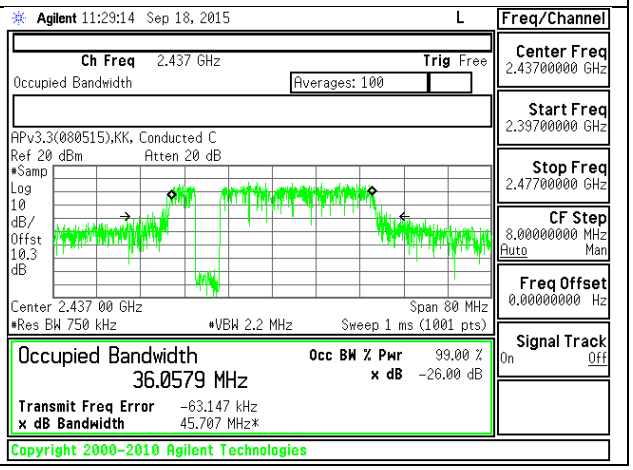
11n Mid Channel HT20 Chain 1



11n HT40 Mid Channel Chain 0



11n Mid Channel HT40 Chain 1



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10.3. OUTPUT POWER

LIMITS

FCC §15.247

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

MIMO

The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
2.64	2.83	2.74

RESULTS

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10.3.1. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	2.74	30.00	36	30.00
Mid	2437	2.74	30.00	36	30.00
High	2462	2.74	30.00	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	9.8	9.8	12.81	30.00	-17.19
Mid	2437	17	17	20.01	30.00	-9.99
High	2462	9.8	9.5	12.66	30.00	-17.34

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10.3.2. 802.11n HT40 MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	2.74	30.00	36	30.00
Mid	2437	2.74	30.00	36	30.00
High	2462	2.74	30.00	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	2422	6.8	6.7	9.76	30.00	-20.24
Mid	2437	9.8	9.7	12.76	30.00	-17.24
High	2452	7.8	7.8	10.81	30.00	-19.19

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10.4. PSD

LIMITS

FCC §15.247

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

RESULTS

10.4.1. 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	-15.38	-15.06	-12.21	8.0	-20.2
Mid	2437	-7.66	-7.72	-4.68	8.0	-12.7
High	2462	-15.00	-15.15	-12.06	8.0	-20.1

10.4.2. 802.11n HT40 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	2422	-20.76	-20.20	-17.46	8.0	-25.5
Mid	2437	-9.36	-10.58	-6.91	8.0	-14.9
High	2452	-19.13	-19.84	-16.46	8.0	-24.5

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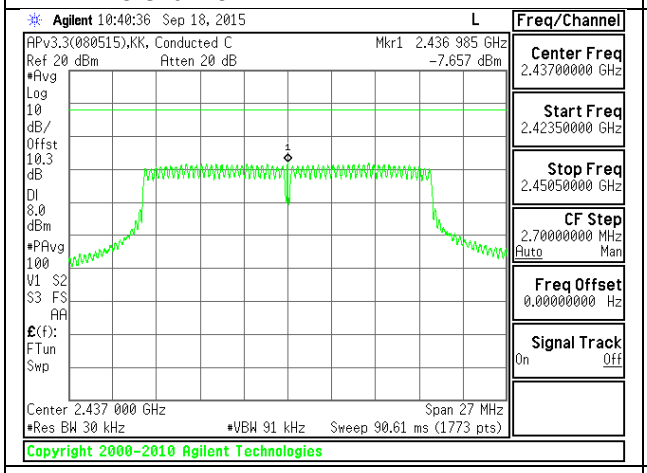
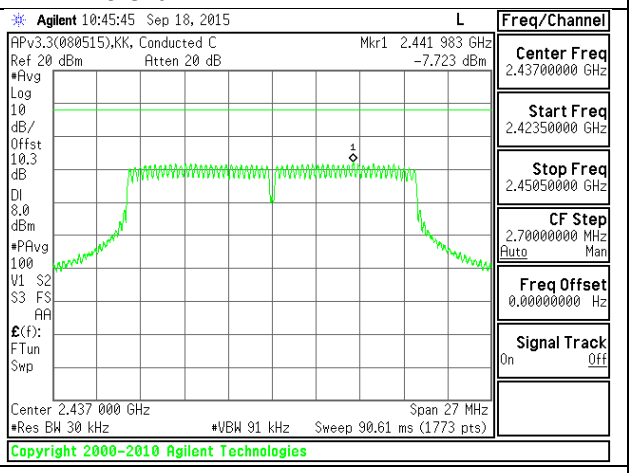
10.4.3. PSD MID CH PLOTS

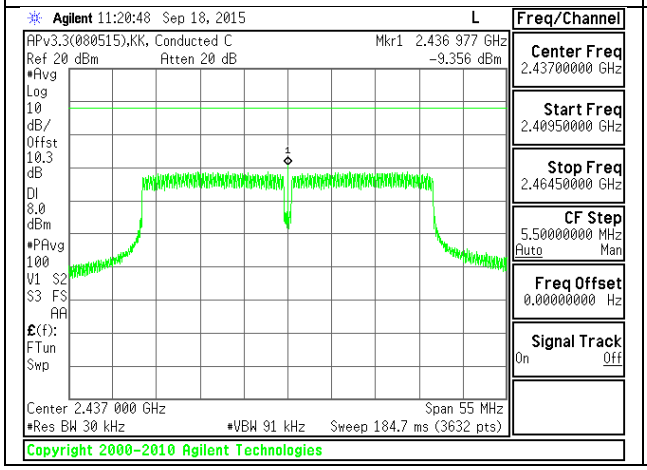
11n HT20 Chain 0



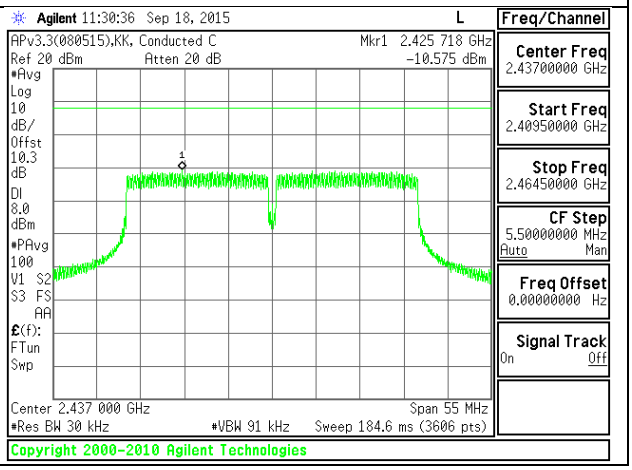
11n HT20 Chain 1



11n HT40 Chain 0



11n HT40 Chain 1



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10.5. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

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.

RESULTS

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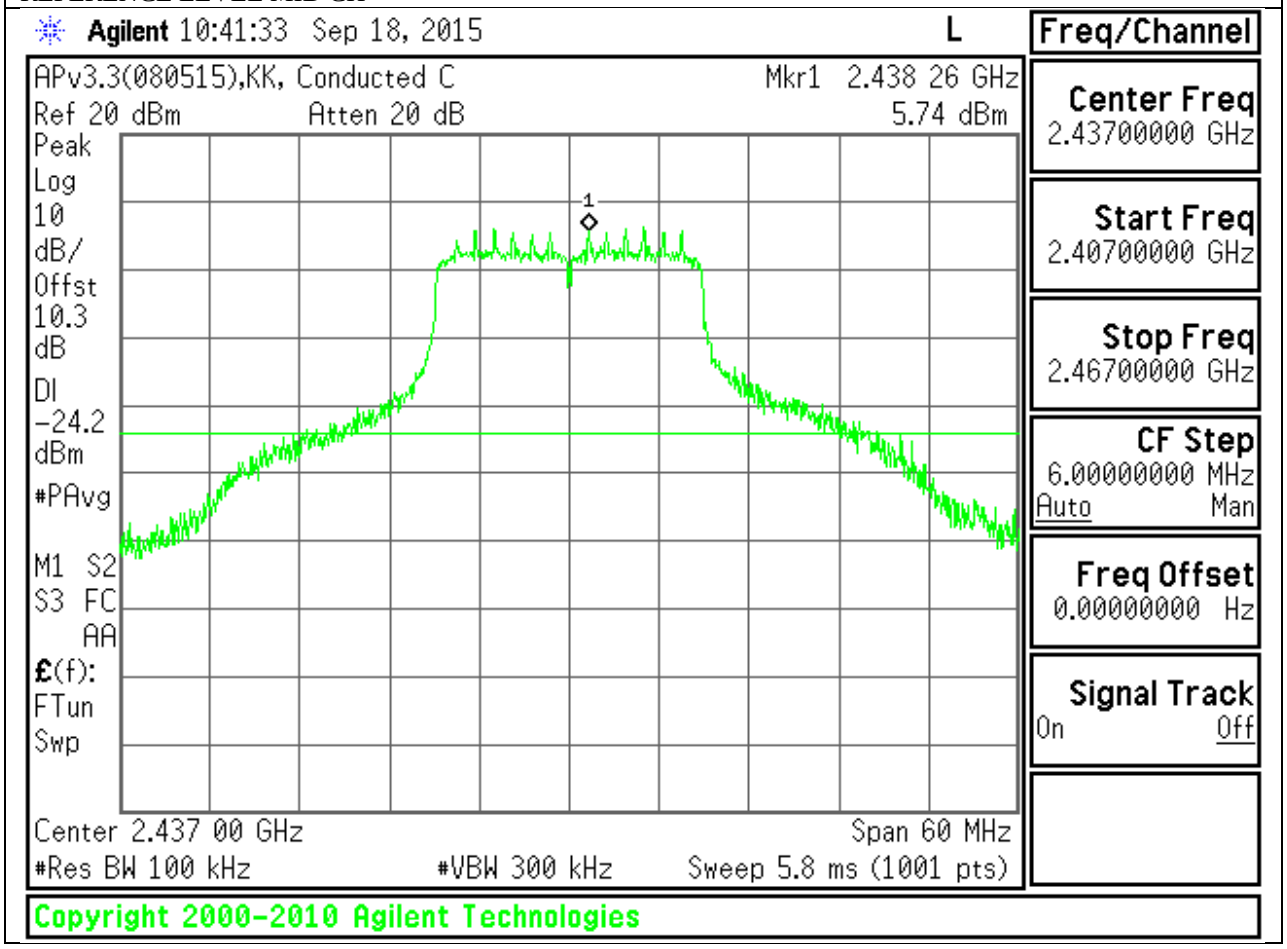
10.5.1. 802.11n HT20 MODE IN THE 2.4 GHz BAND (CHAIN 0)

IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



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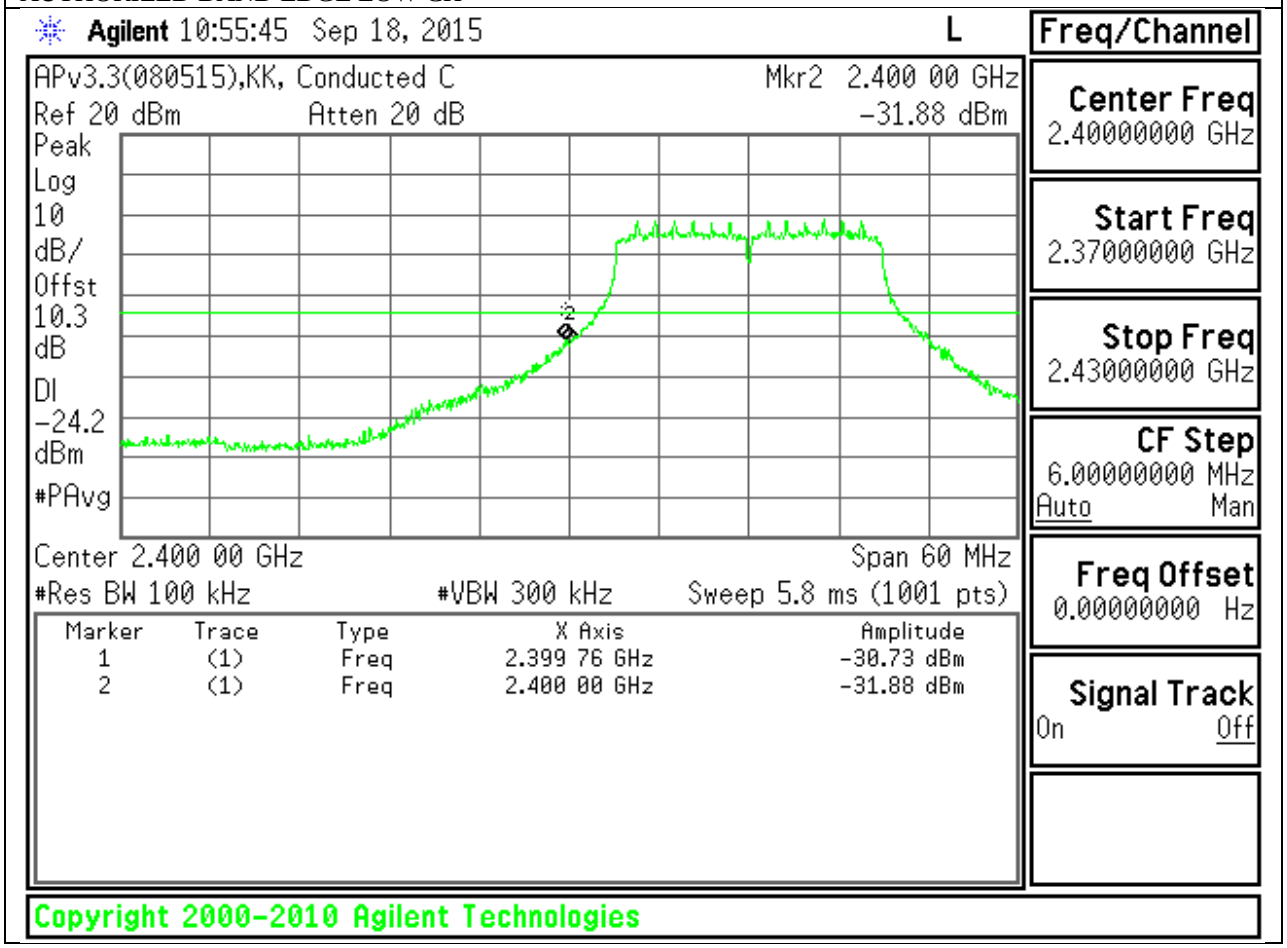
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



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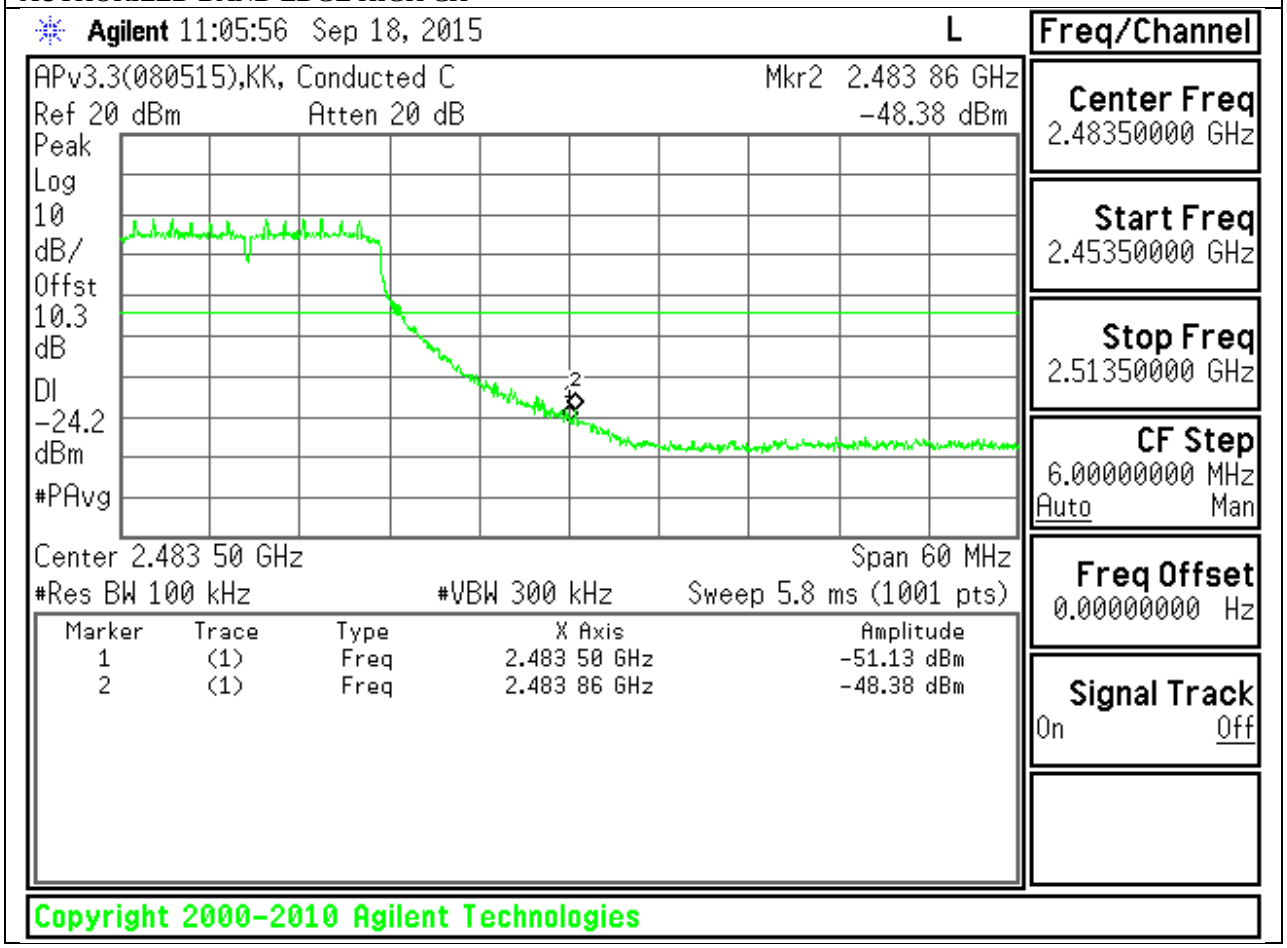
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH



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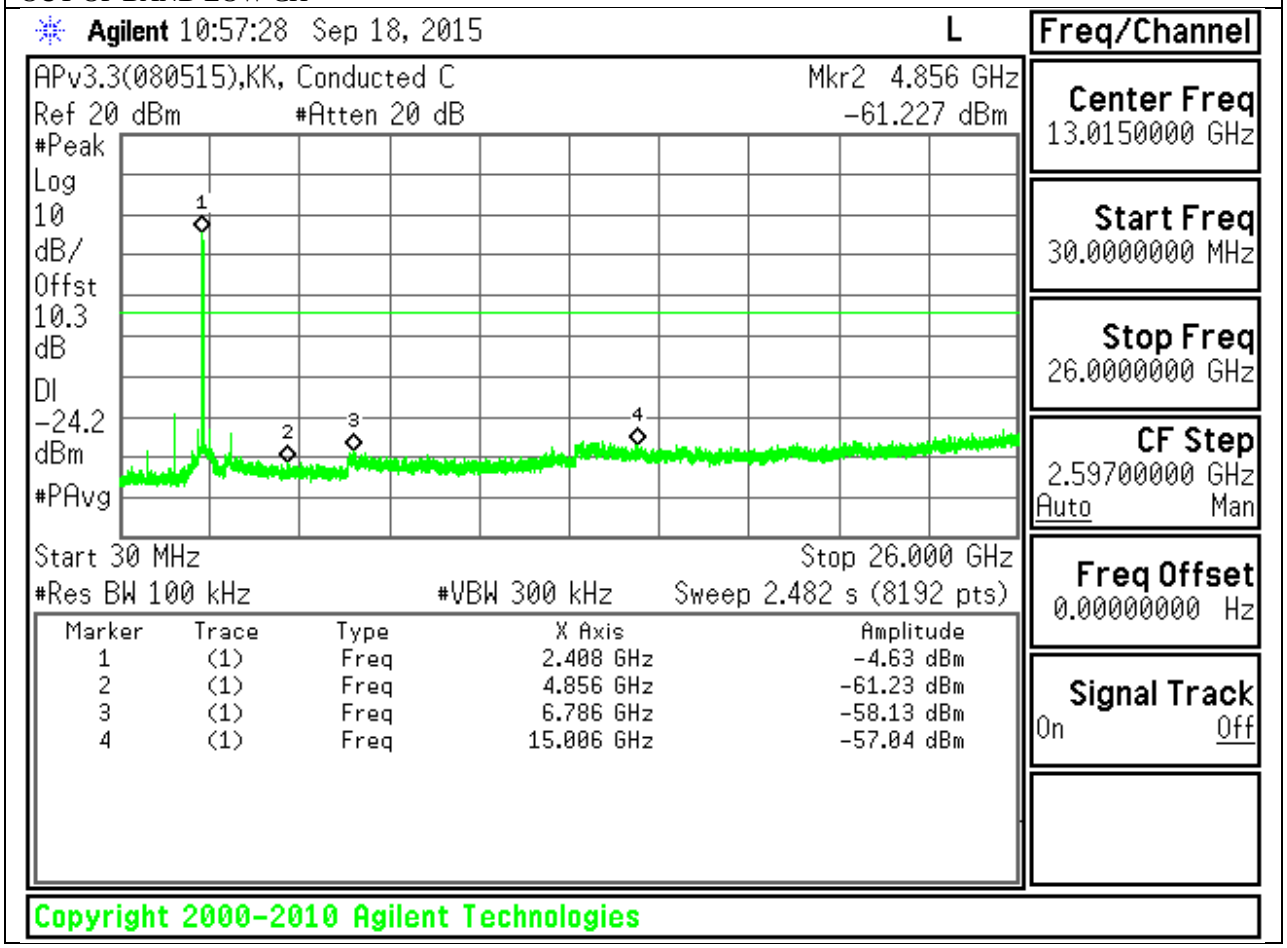
OUT-OF-BAND EMISSIONS

OUT OF BAND LOW CH



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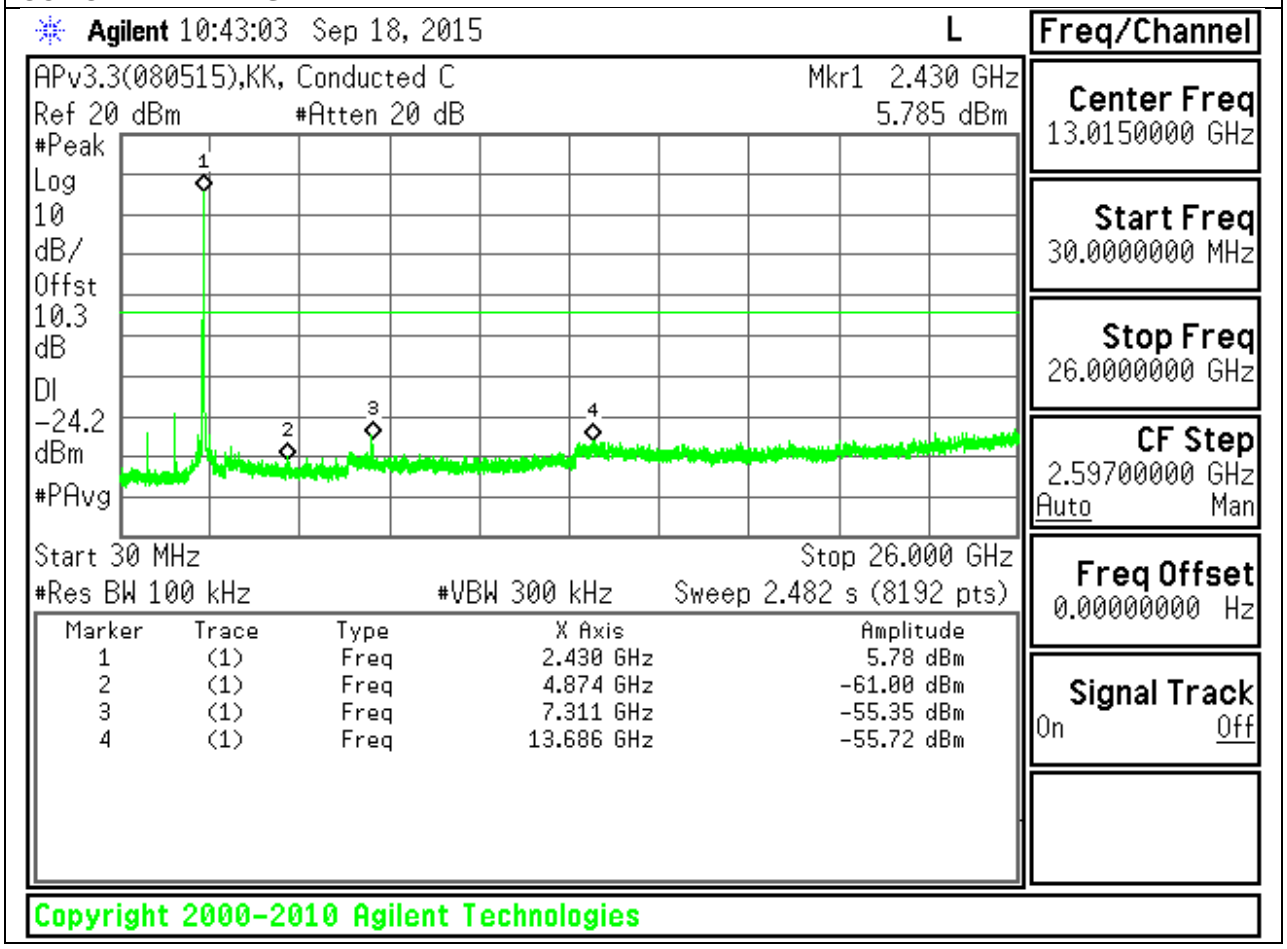
OUT OF BAND MID CH



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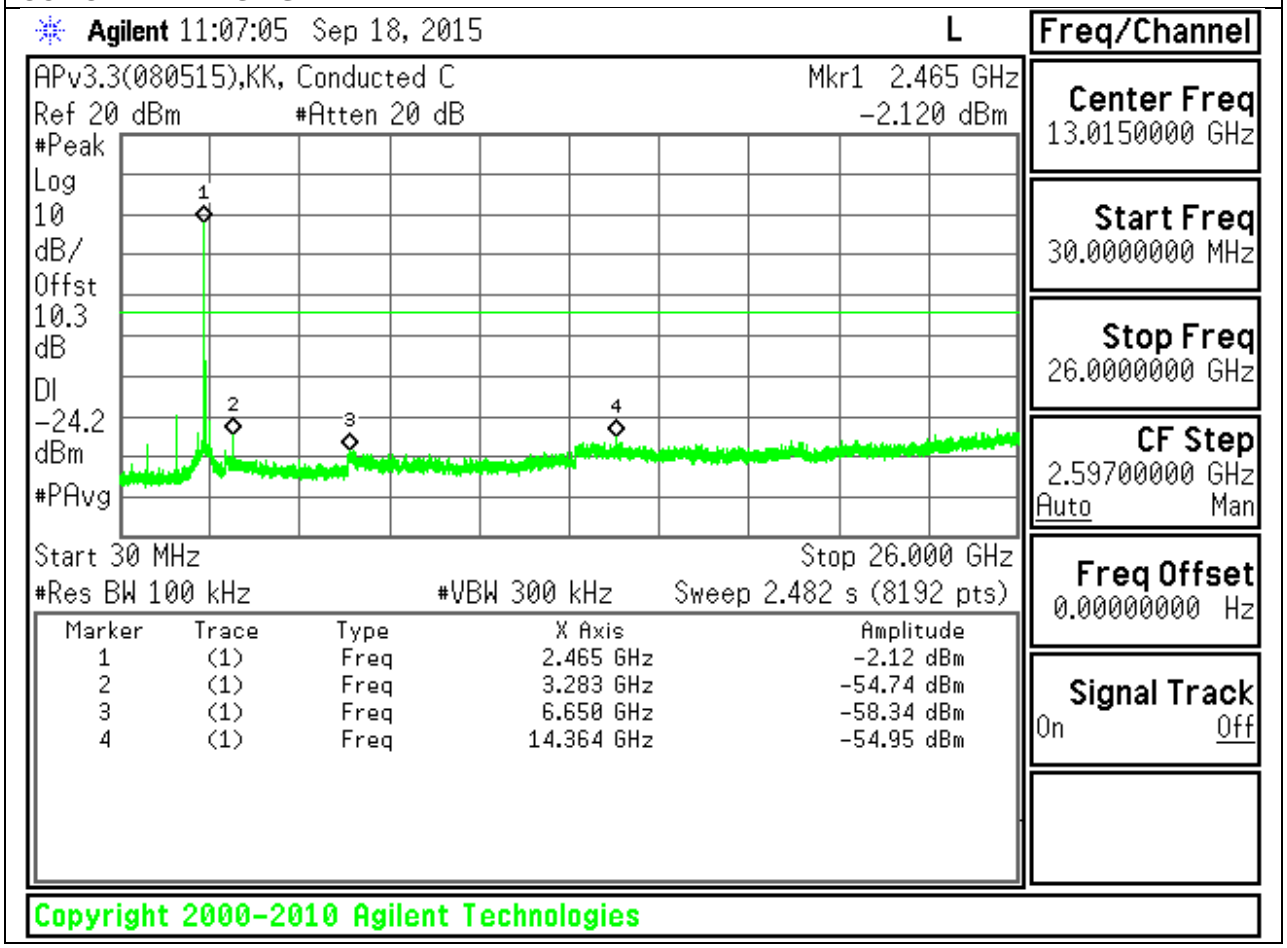
OUT OF BAND HIGH CH



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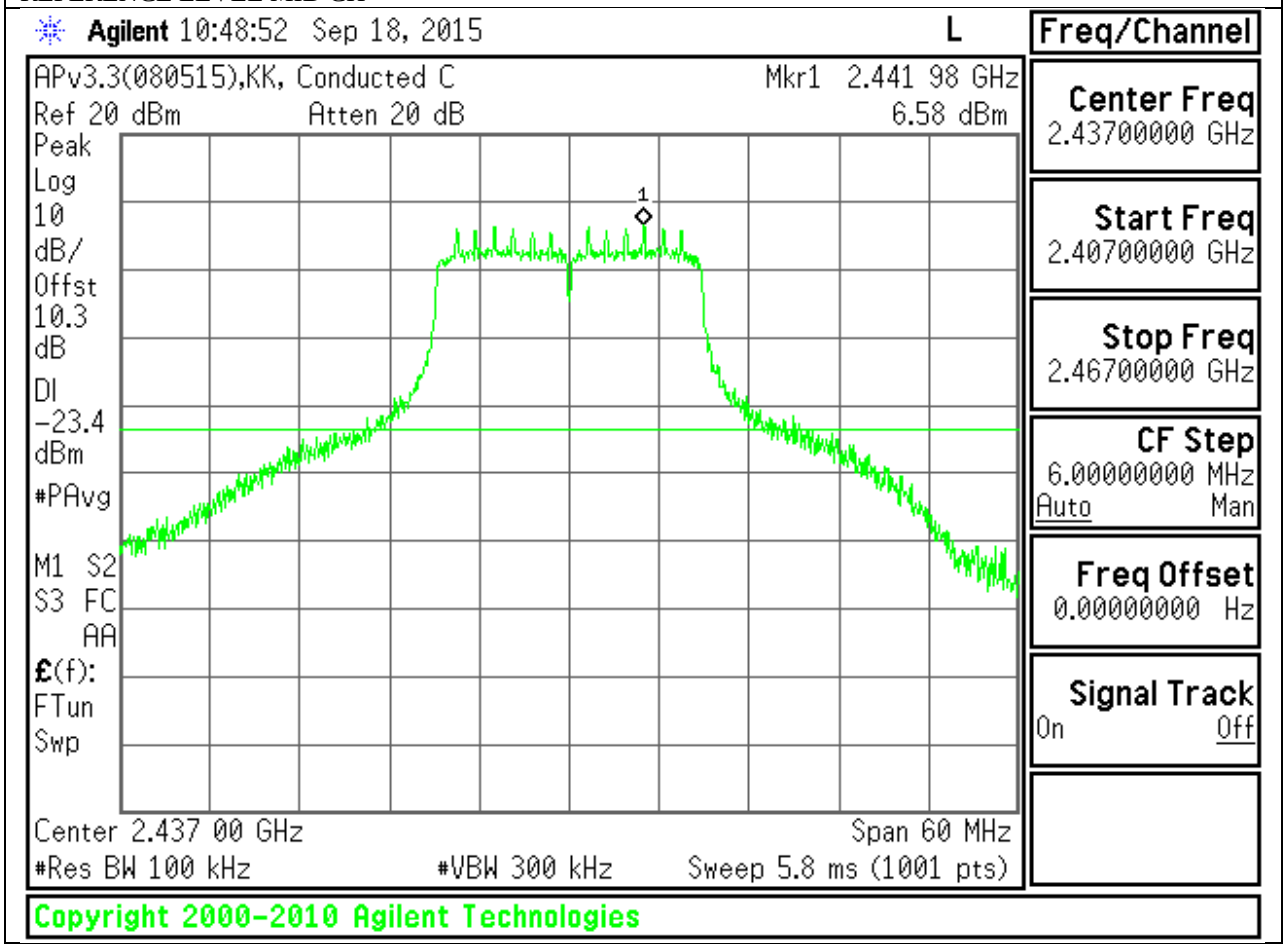
10.5.2. 802.11n HT20 MODE IN THE 2.4 GHz BAND (CHAIN 1)

IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



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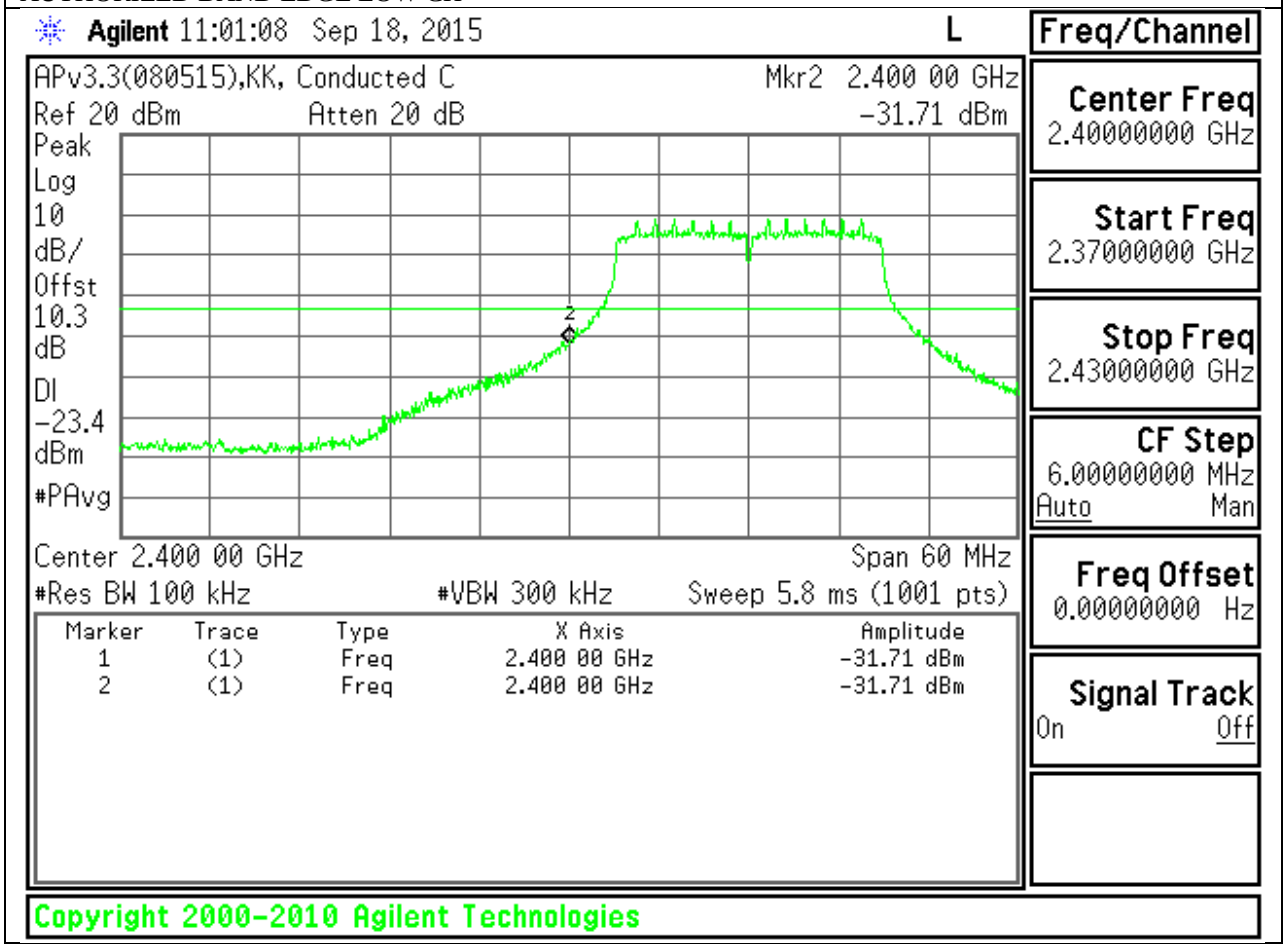
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



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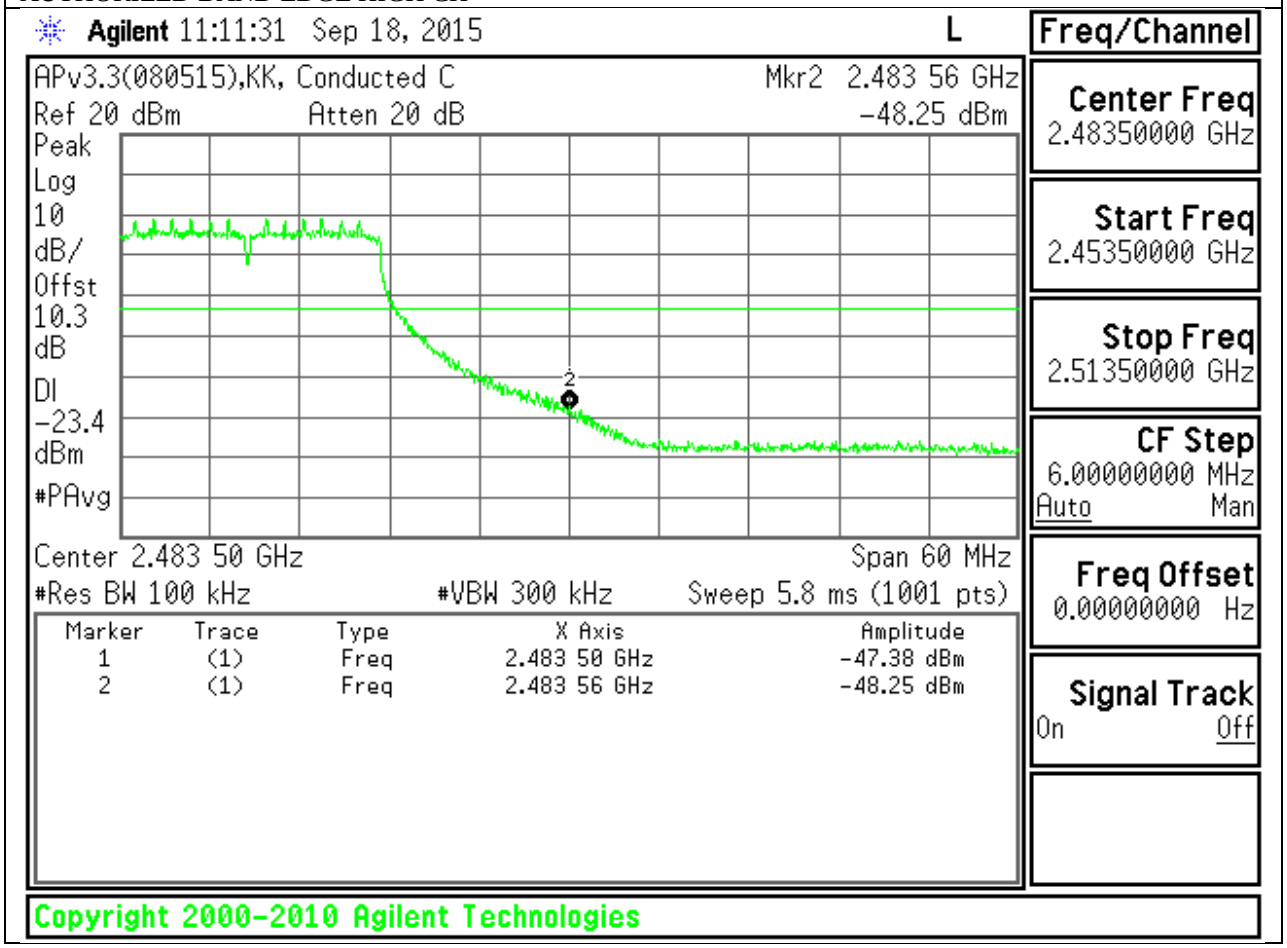
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH



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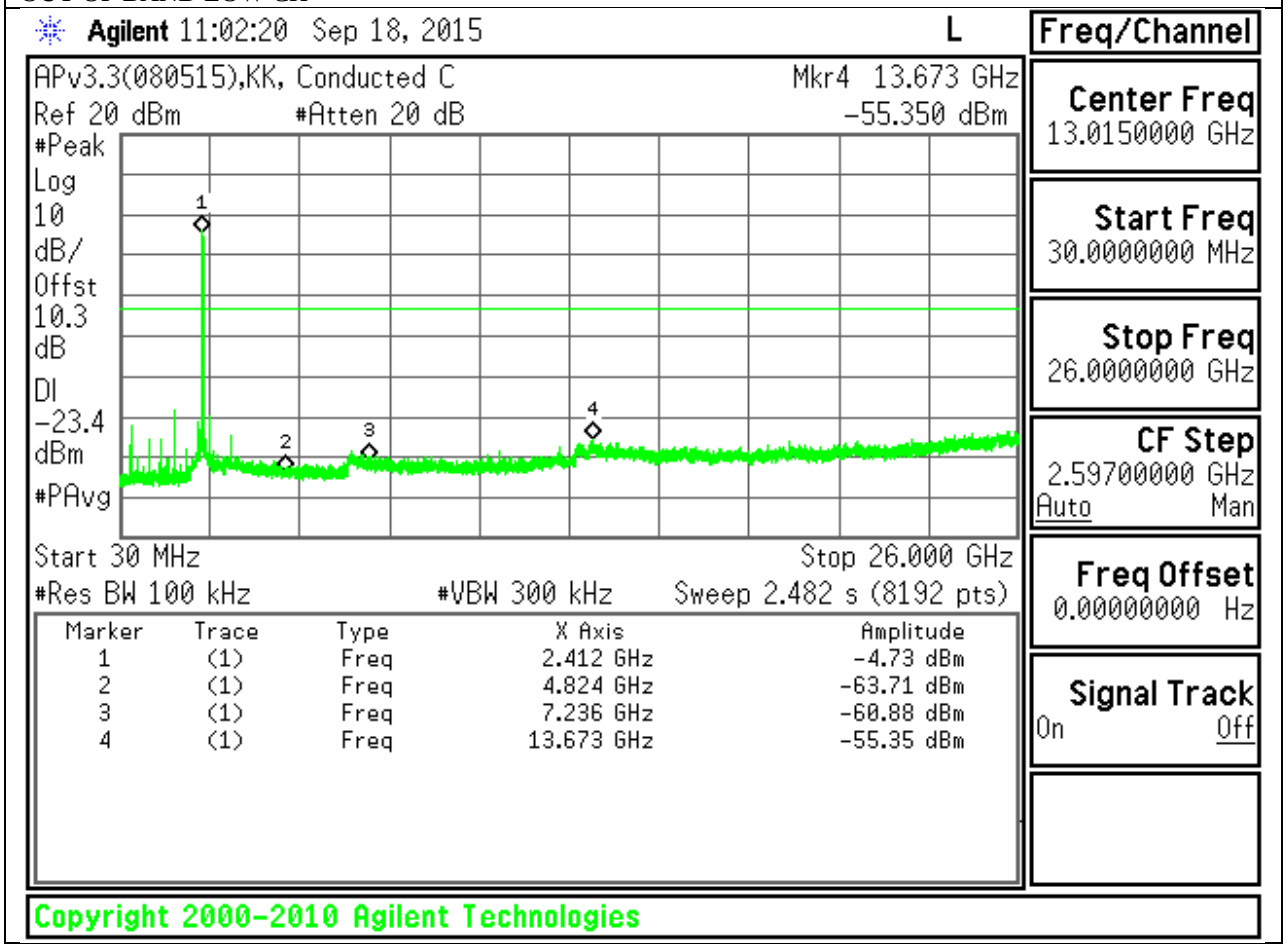
OUT-OF-BAND EMISSIONS

OUT OF BAND LOW CH



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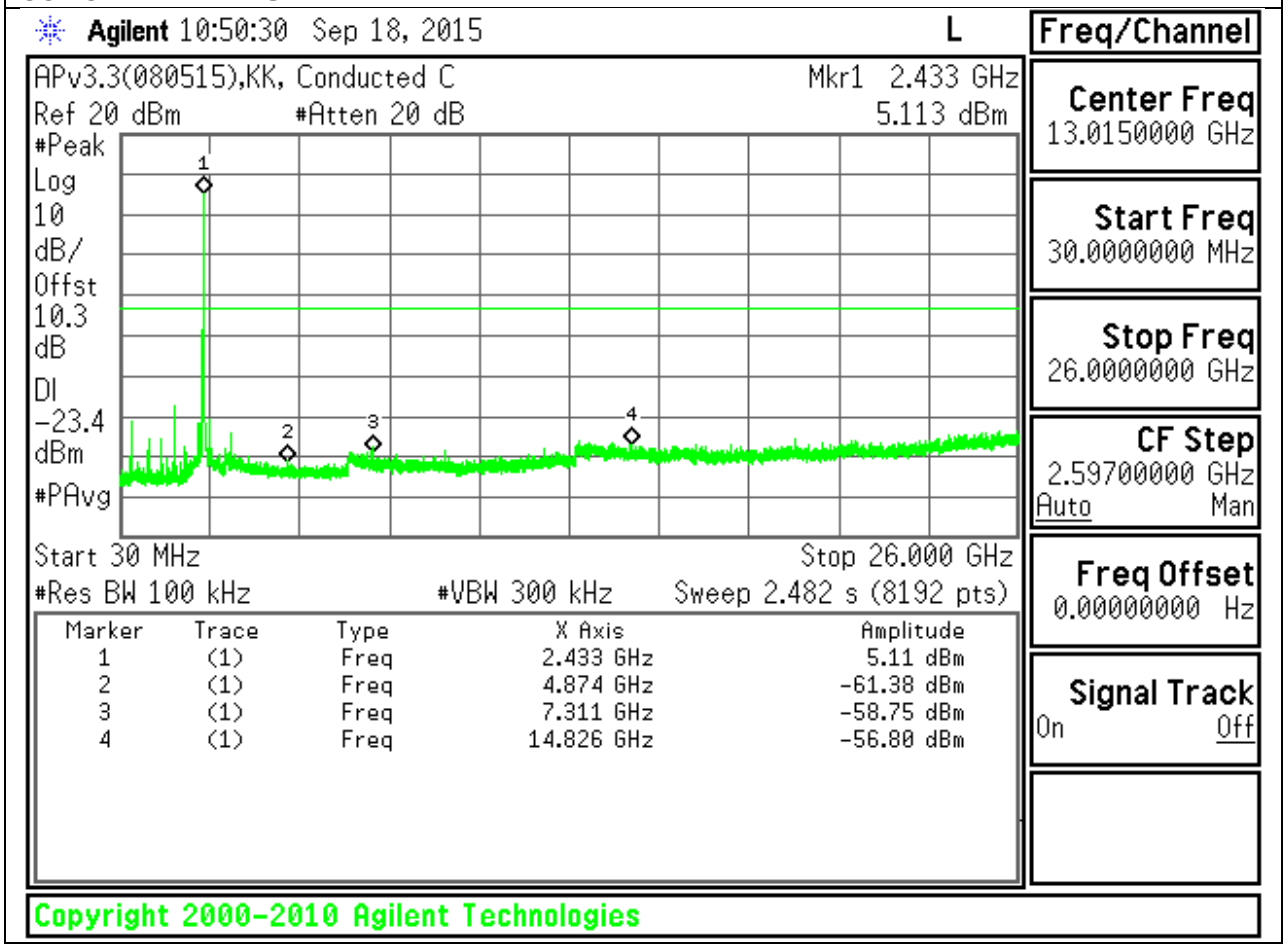
OUT OF BAND MID CH



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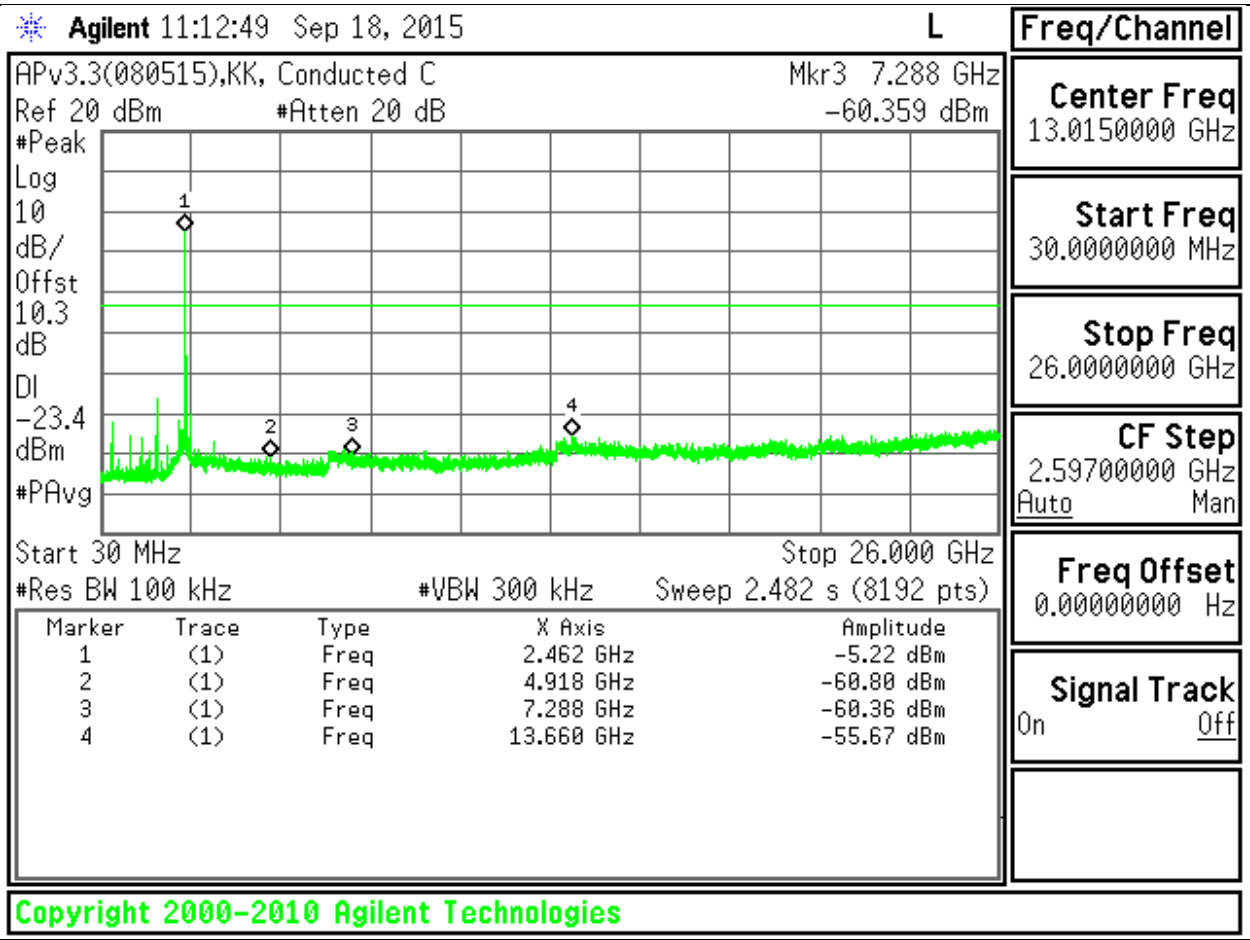
OUT OF BAND HIGH CH



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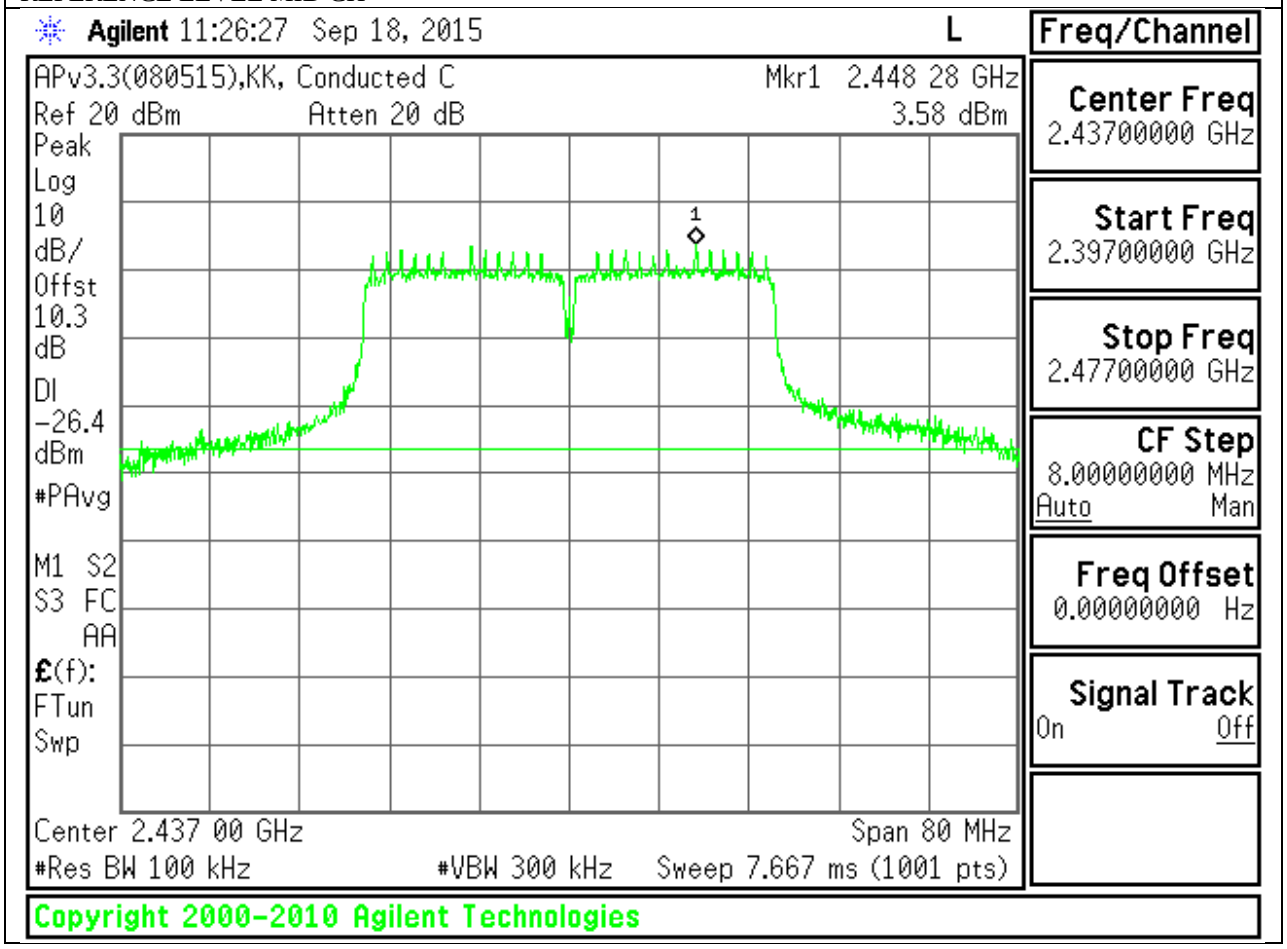
10.5.3. 802.11n HT40 MODE IN THE 2.4 GHz BAND (CHAIN 0)

IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



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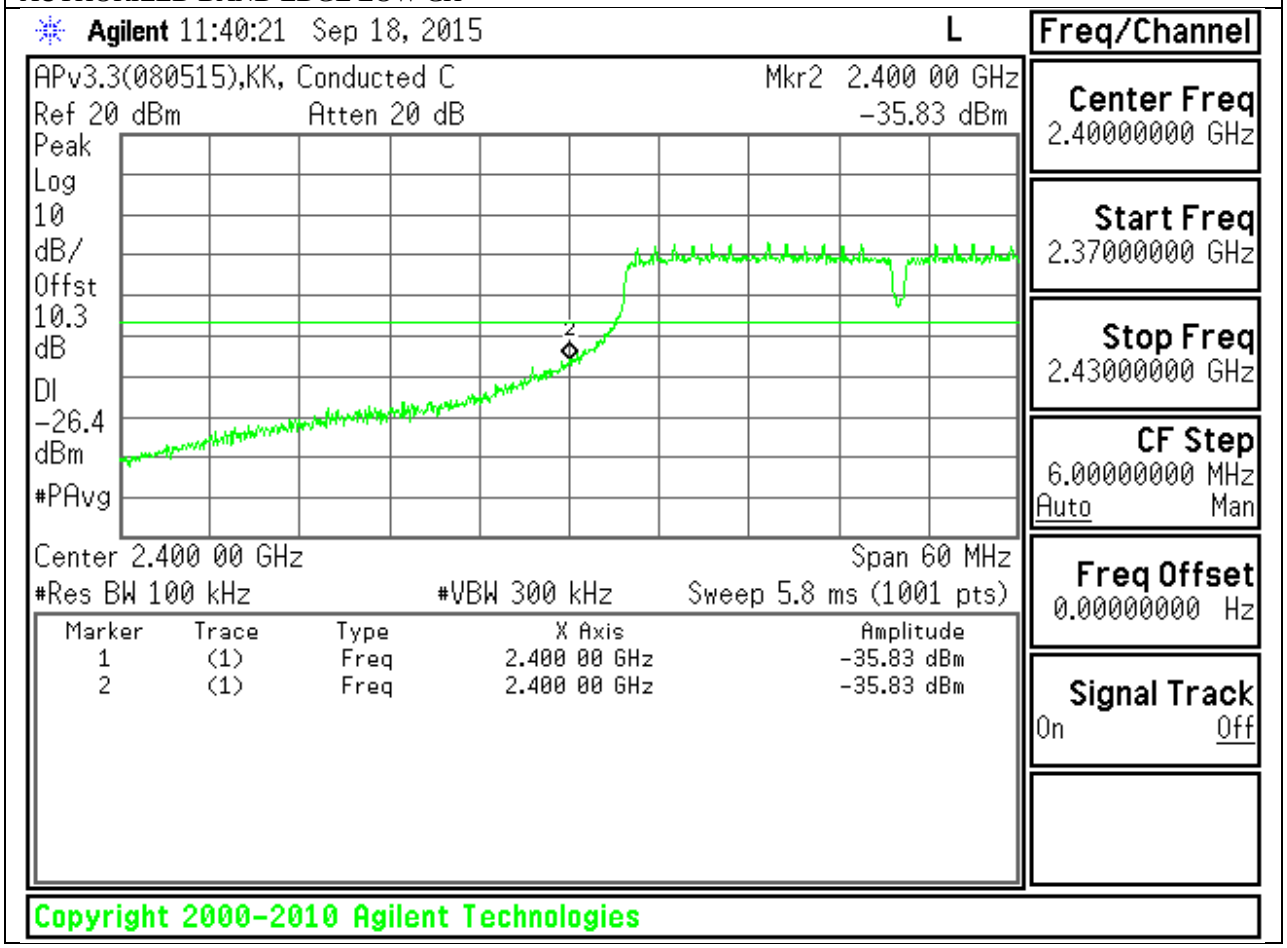
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



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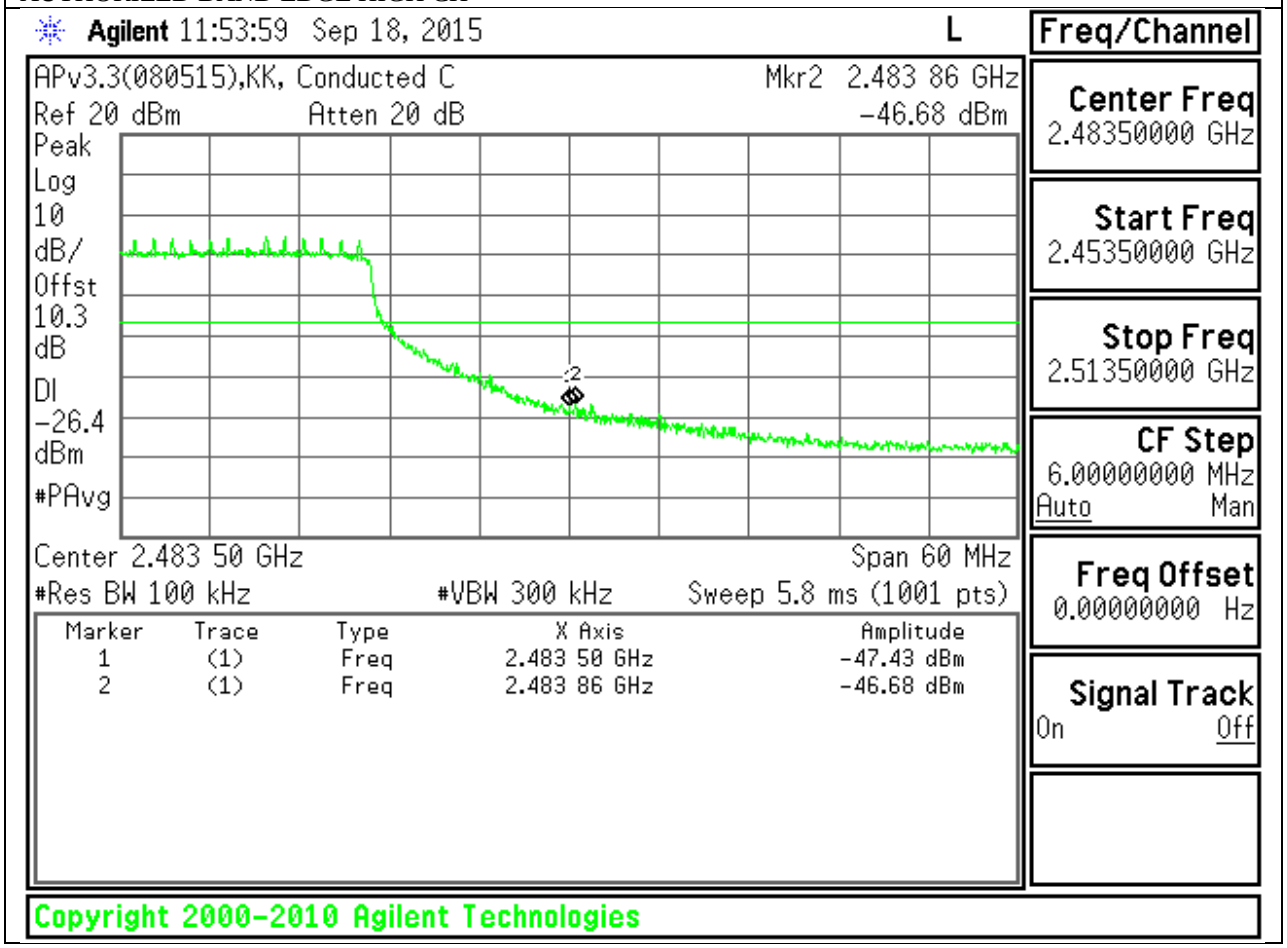
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH



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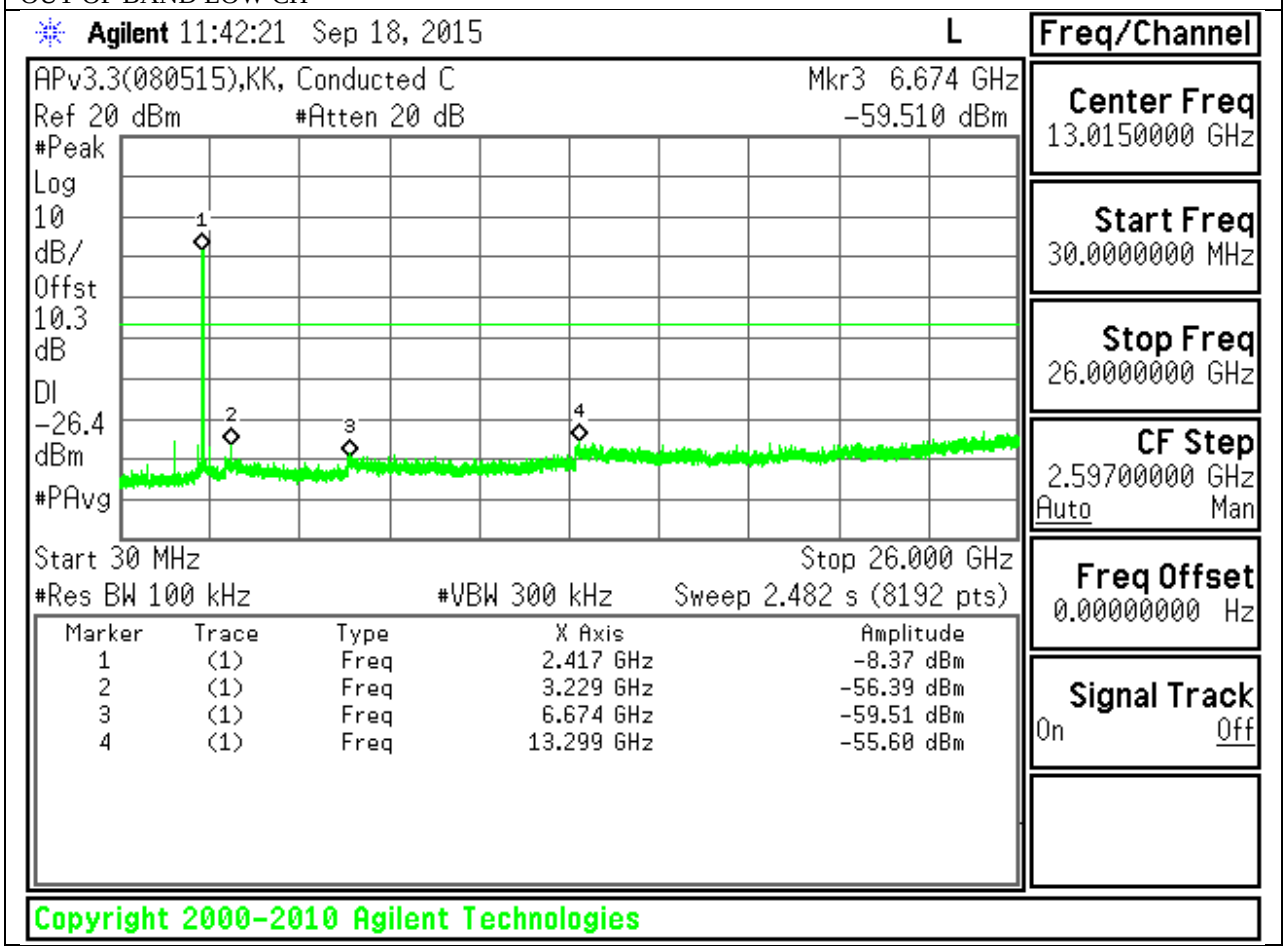
OUT-OF-BAND EMISSIONS

OUT OF BAND LOW CH



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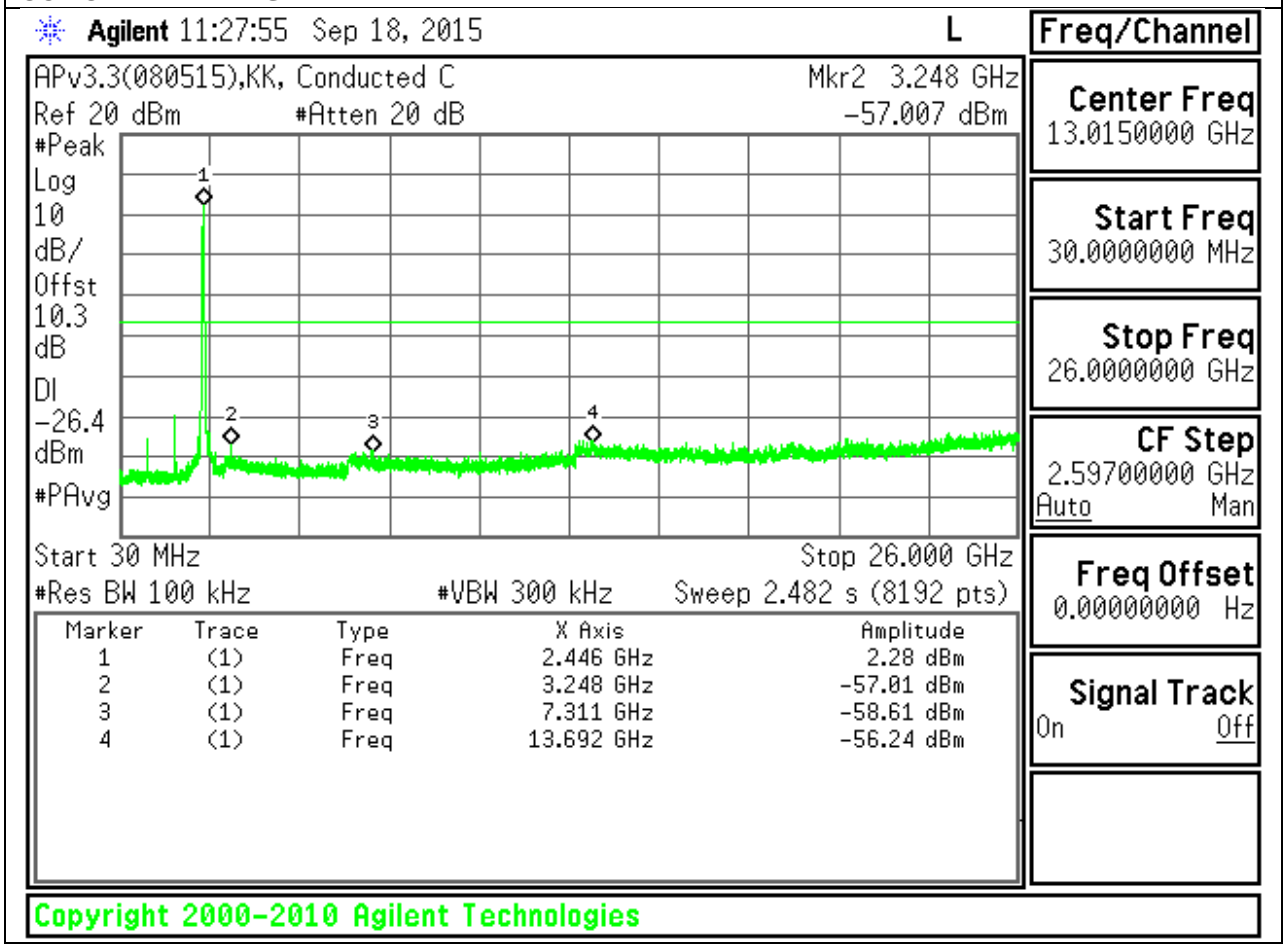
OUT OF BAND MID CH



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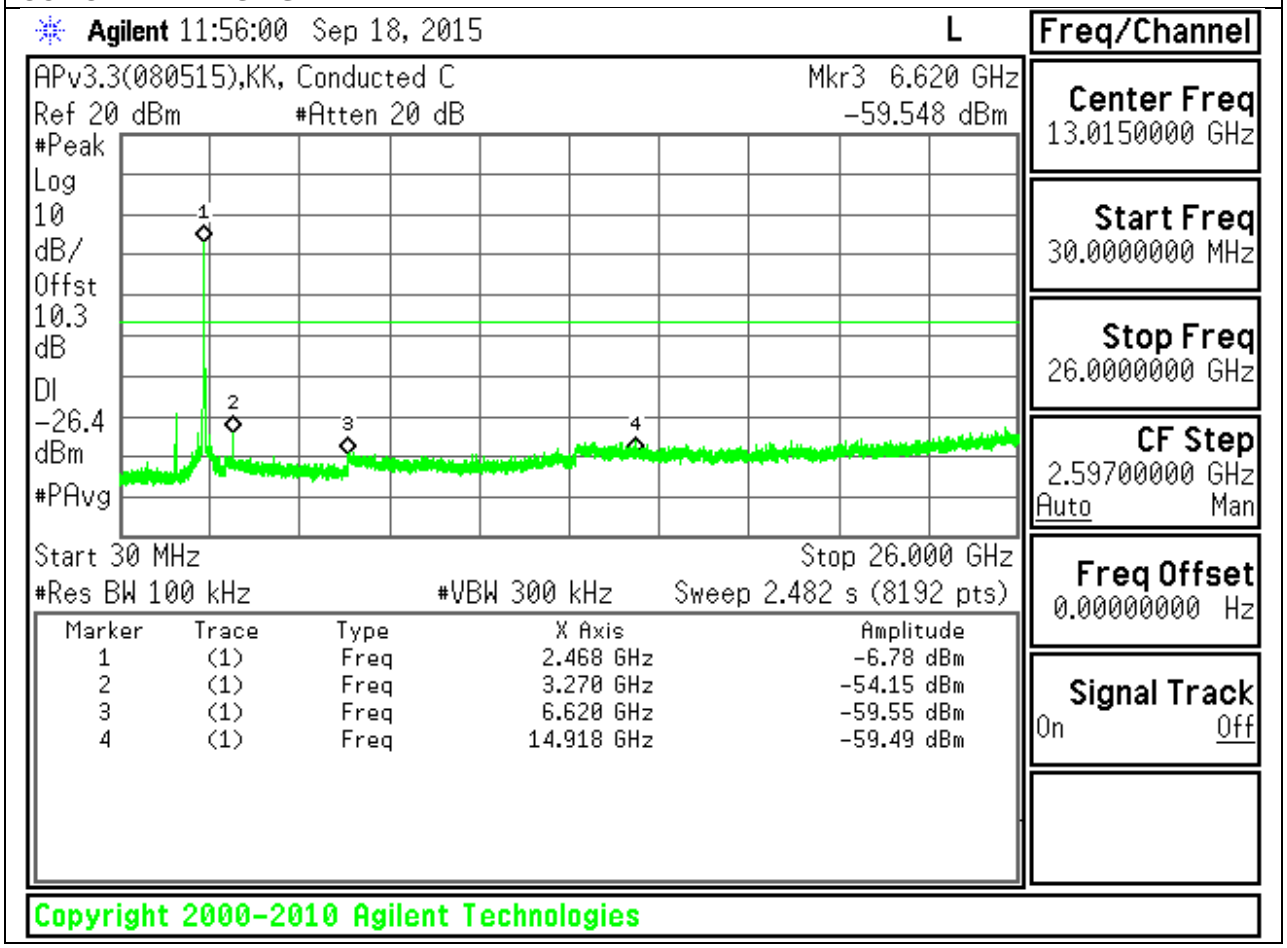
OUT OF BAND HIGH CH



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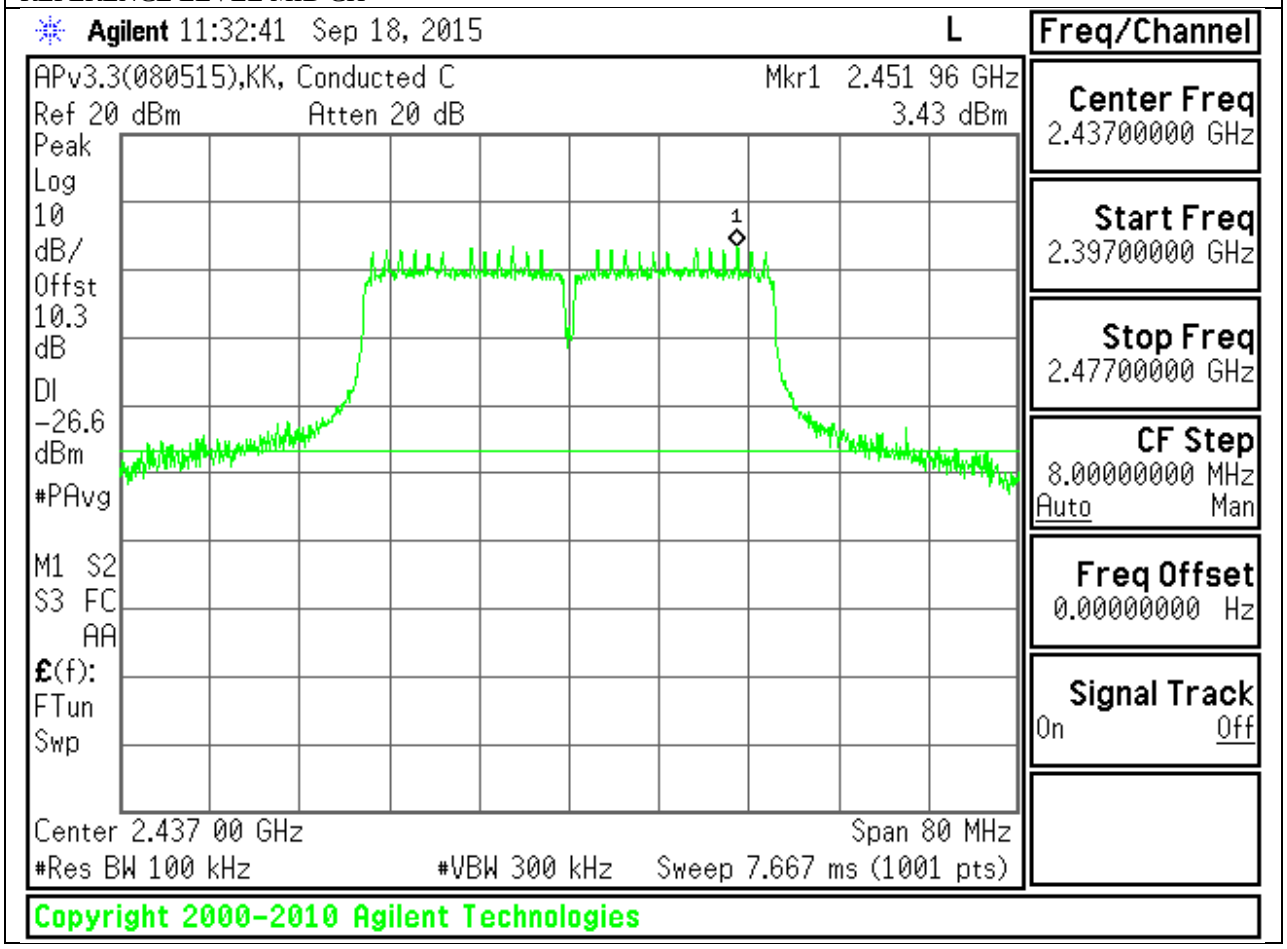
10.5.4. 802.11n HT40 MODE IN THE 2.4 GHz BAND (CHAIN 1)

IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



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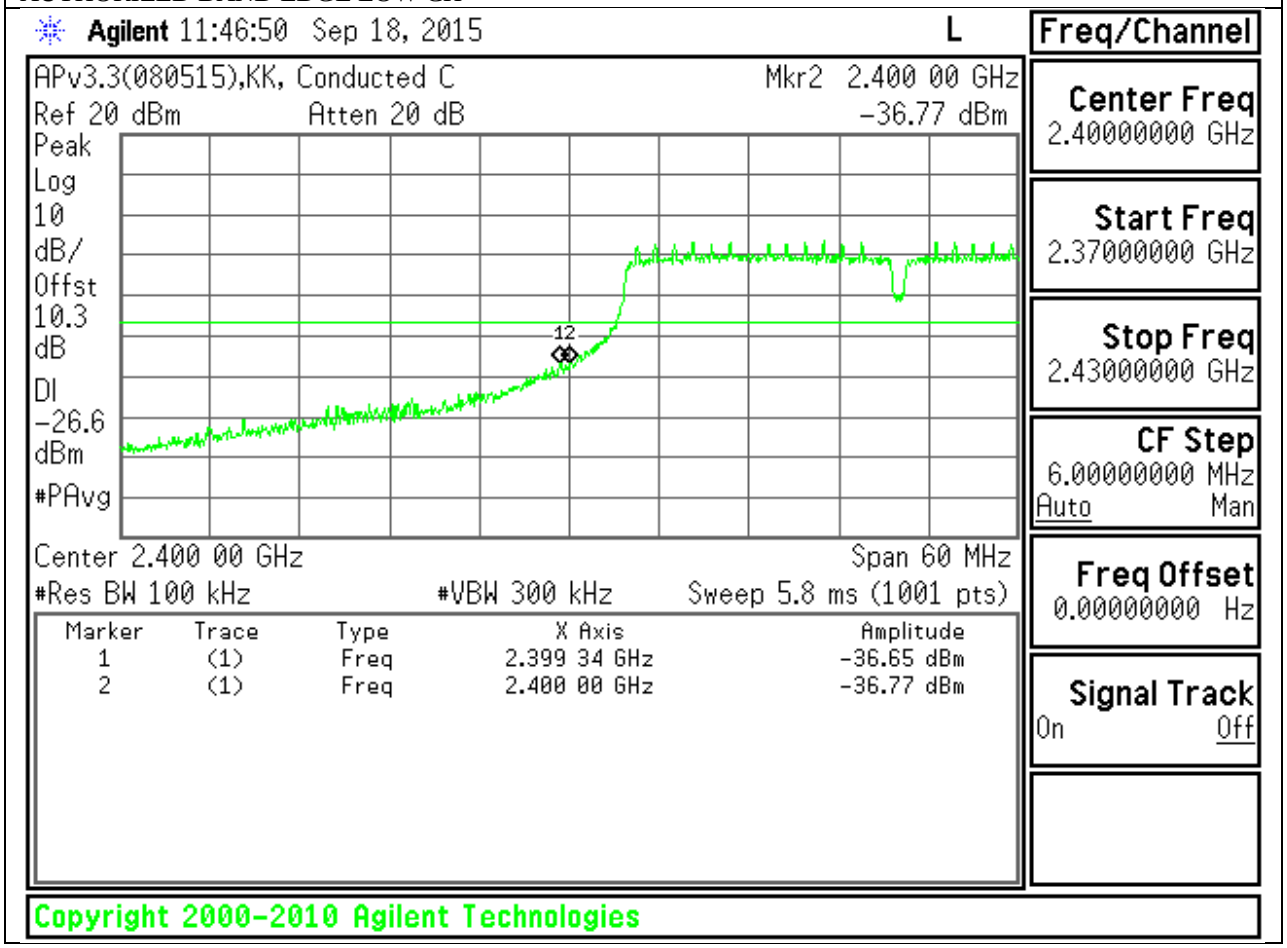
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



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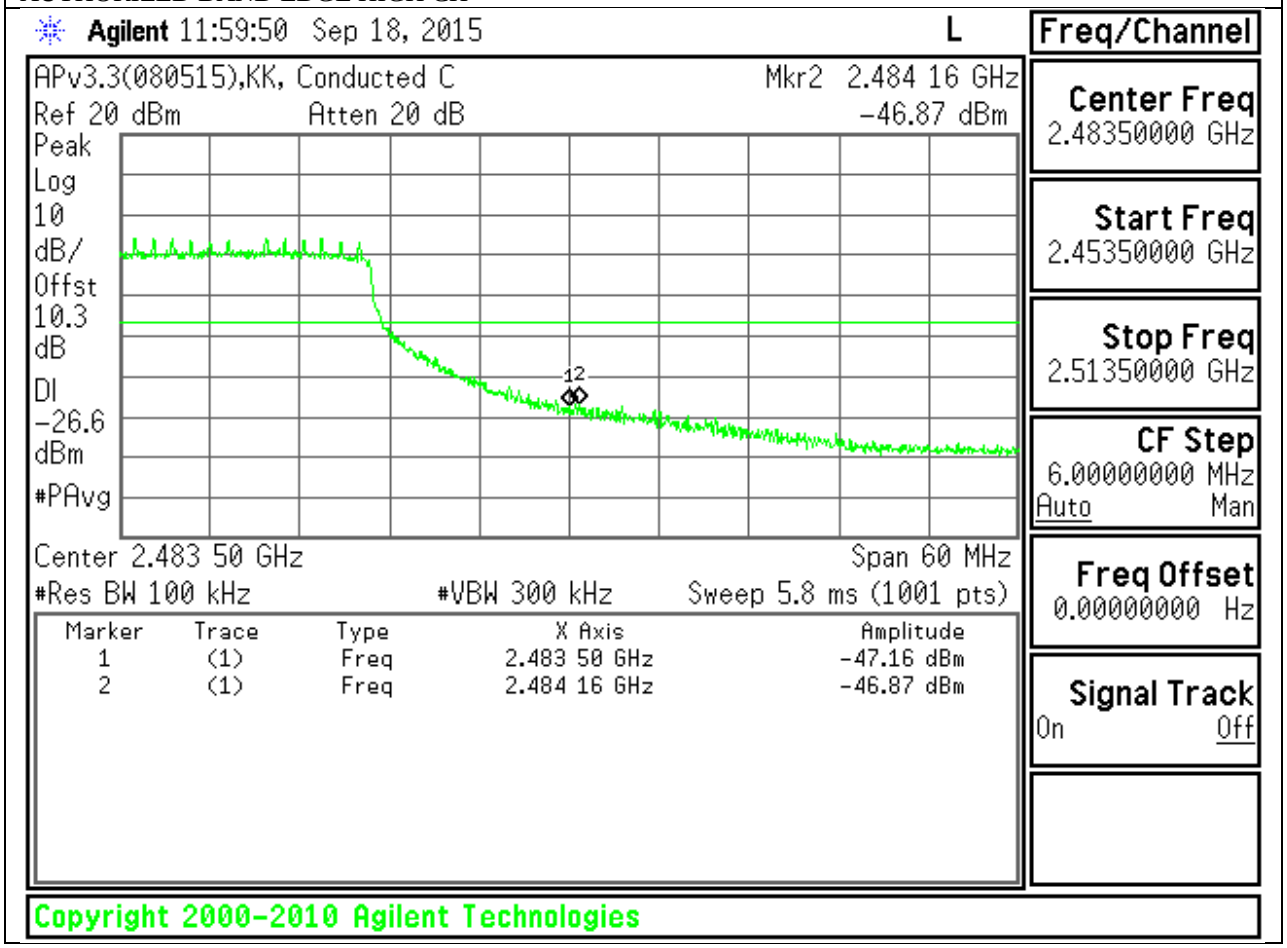
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH



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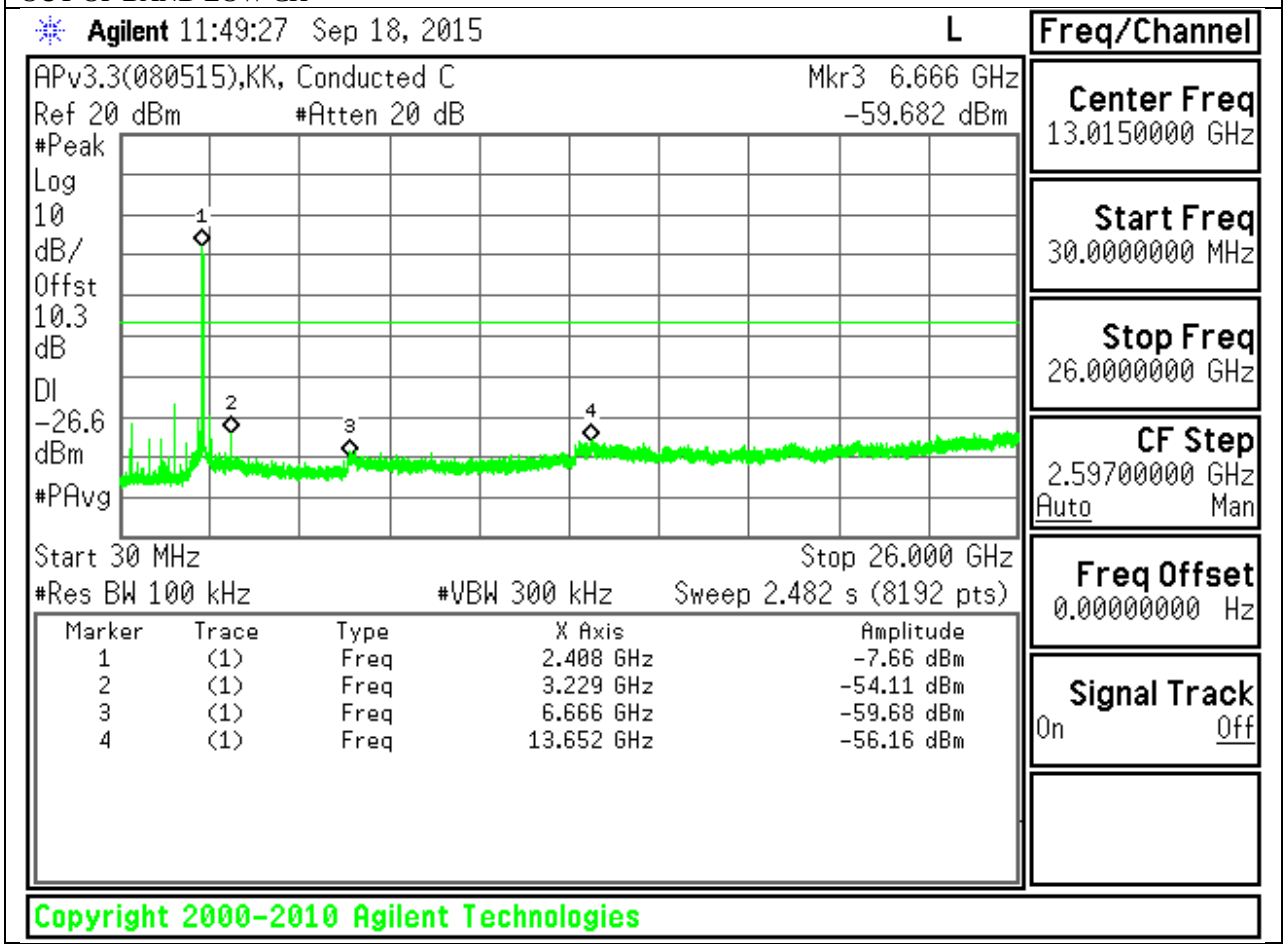
OUT-OF-BAND EMISSIONS

OUT OF BAND LOW CH



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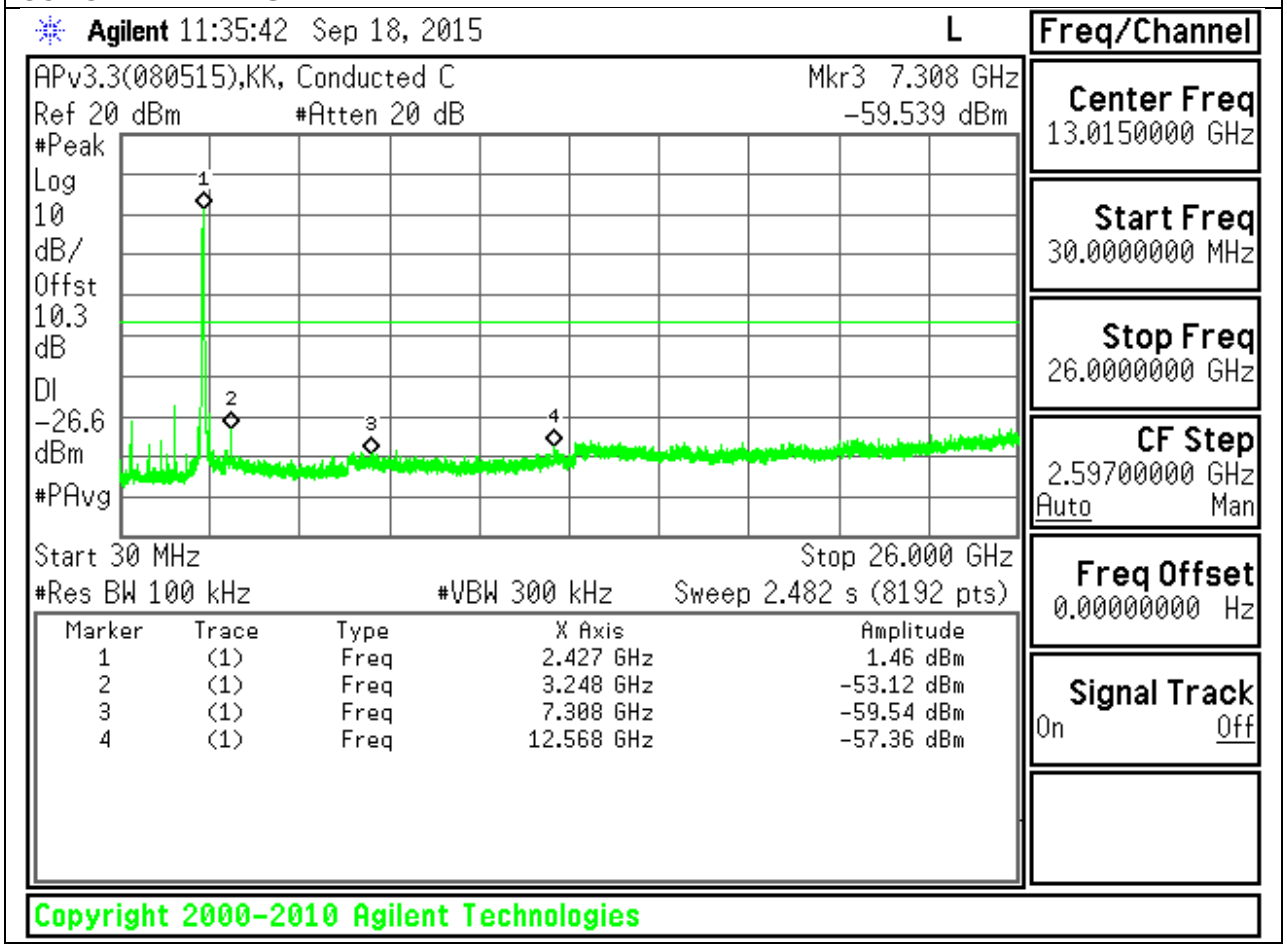
OUT OF BAND MID CH



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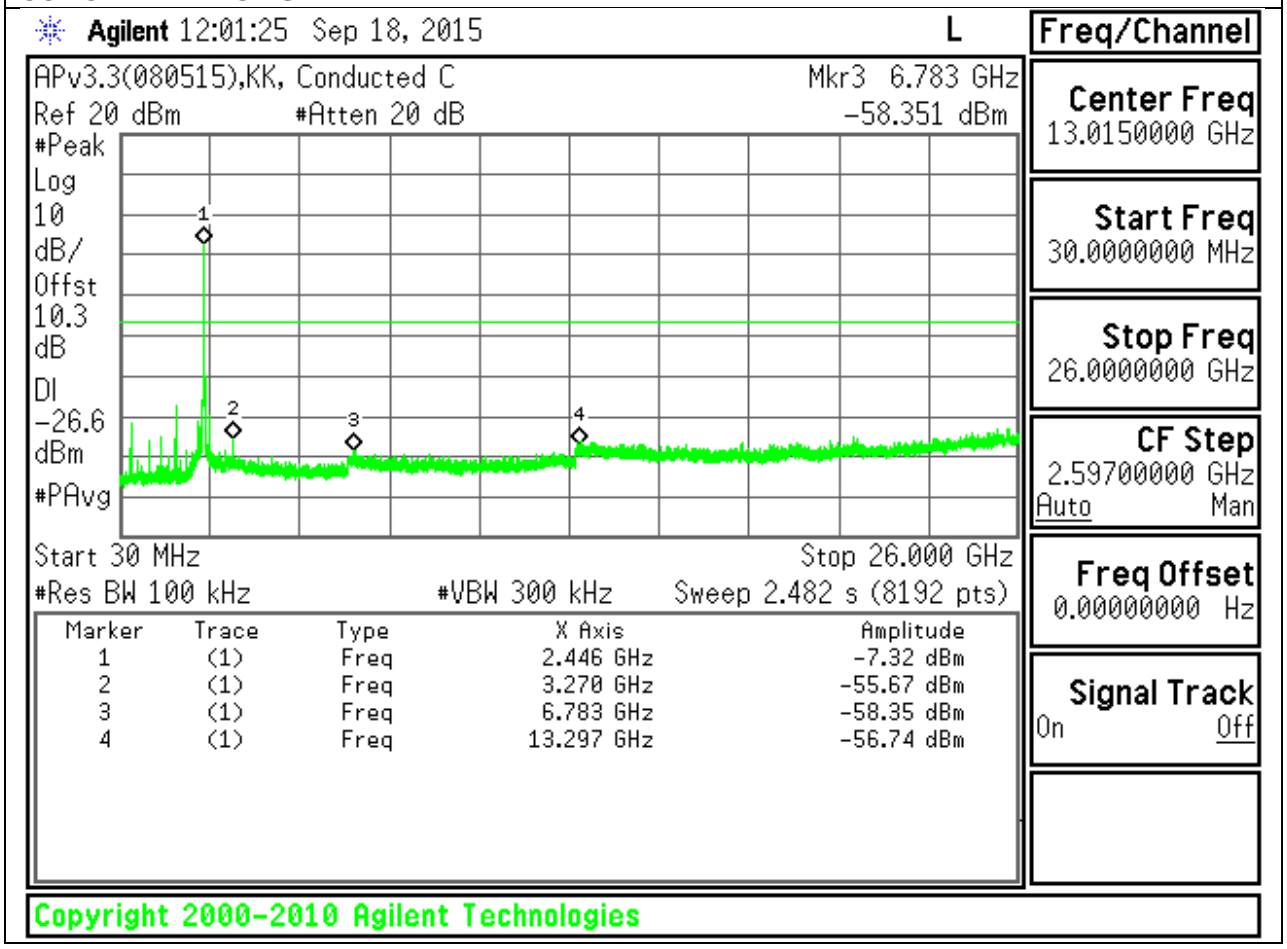
OUT OF BAND HIGH CH



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11. RADIATED TEST RESULTS SISO Chain 1

11.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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

TEST PROCEDURE

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

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 = 0dB (duty cycle >98%); G mode = 0dB(duty cycle >98%); N mode HT20 = 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.

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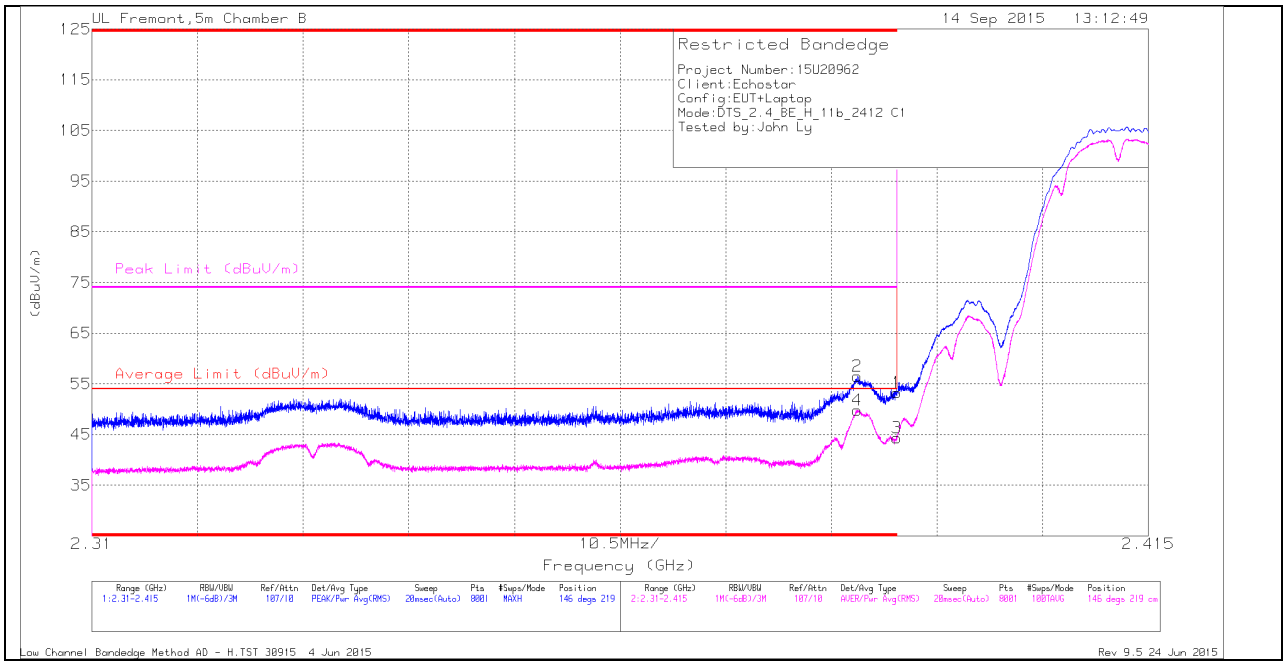
11.2. TRANSMITTER ABOVE 1 GHz

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

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	45.34	Pk	32	-24.1	53.24	-	-	74	-20.76	146	219	H
2	* 2.386	48.6	Pk	32	-24.1	56.5	-	-	74	-17.5	146	219	H
3	* 2.39	36.39	RMS	32	-24.1	44.29	54	-9.71	-	-	146	219	H
4	* 2.386	41.88	RMS	32	-24.1	49.78	54	-4.22	-	-	146	219	H

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

Pk - Peak detector

RMS - RMS detection

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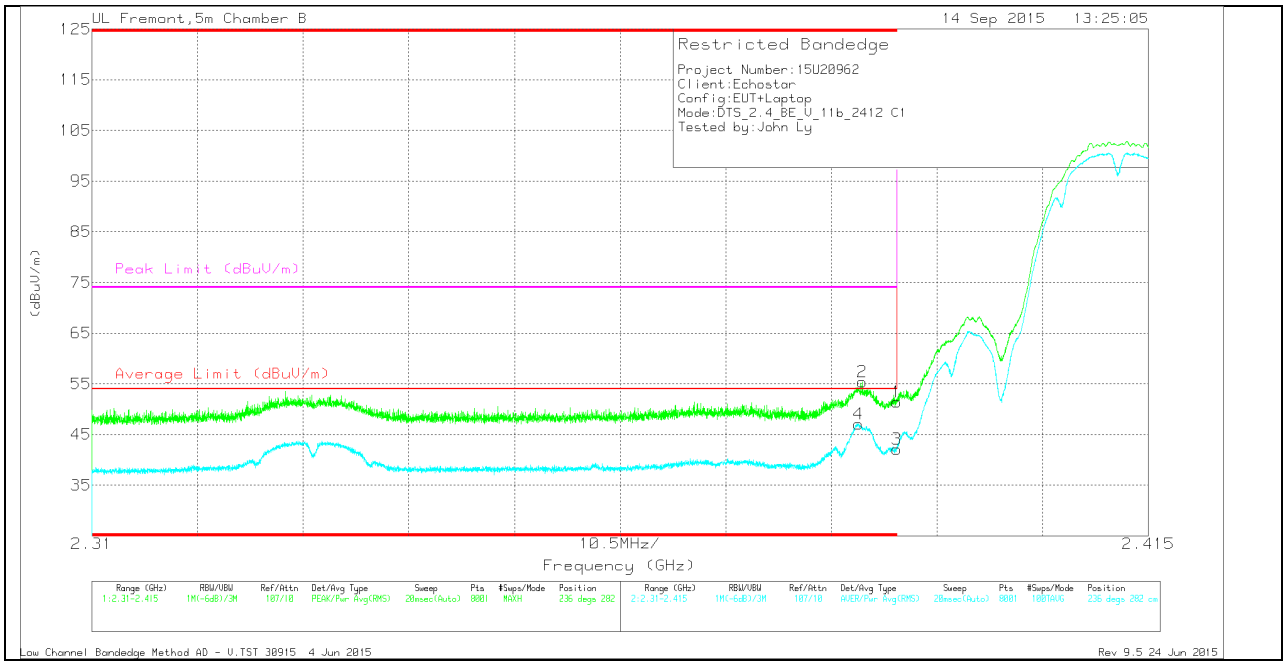
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	43.53	Pk	32	-24.1	51.43	-	-	74	-22.57	236	282	V
2	* 2.387	47.53	Pk	32	-24.1	55.43	-	-	74	-18.57	236	282	V
3	* 2.39	34.23	RMS	32	-24.1	42.13	54	-11.87	-	-	236	282	V
4	* 2.386	39.19	RMS	32	-24.1	47.09	54	-6.91	-	-	236	282	V

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

Pk - Peak detector

RMS - RMS detection

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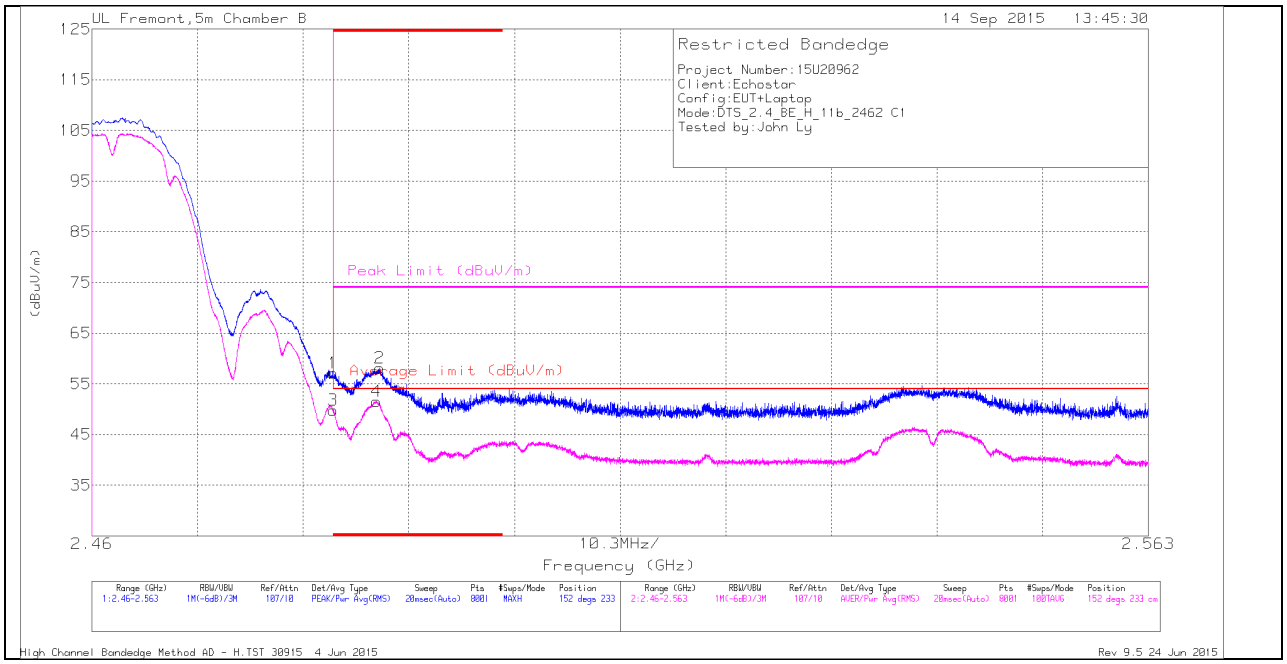
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	48.59	Pk	32.5	-24	57.09	-	-	74	-16.91	152	233	H
2	* 2.488	49.63	Pk	32.5	-24	58.13	-	-	74	-15.87	152	233	H
3	* 2.484	41.29	RMS	32.5	-24	49.79	54	-4.21	-	-	152	233	H
4	* 2.488	43.07	RMS	32.5	-24	51.57	54	-2.43	-	-	152	233	H

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

Pk - Peak detector

RMS - RMS detection

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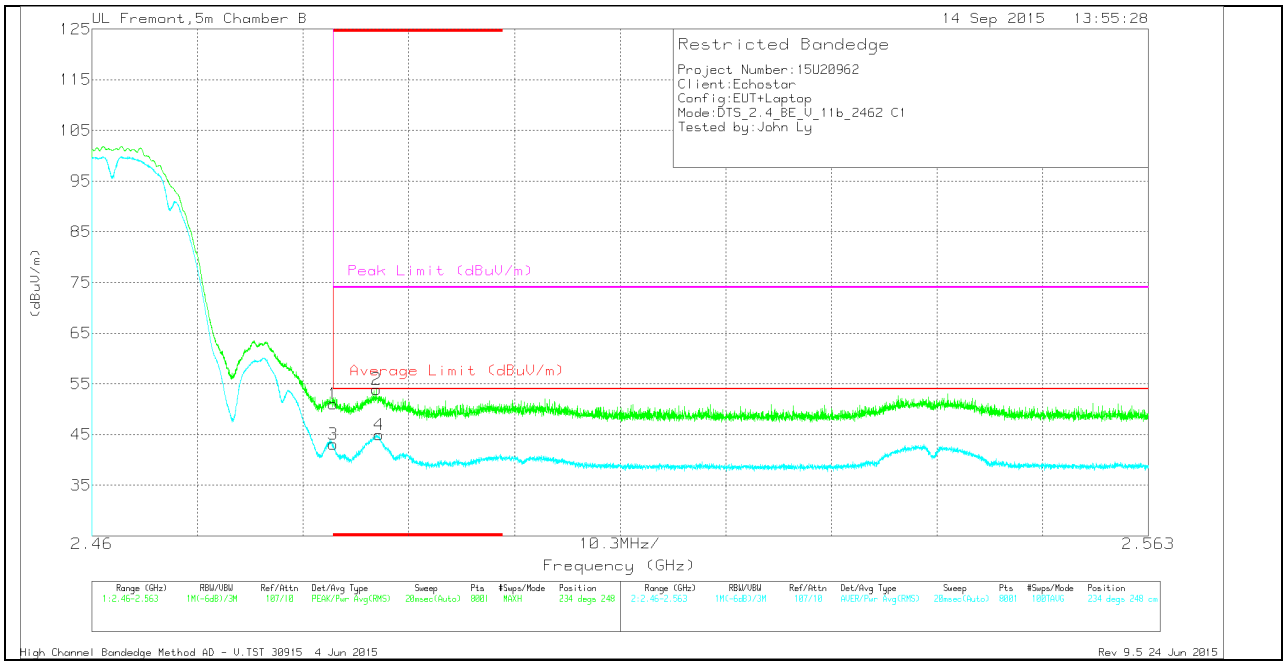
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	42.53	Pk	32.5	-24	51.03	-	-	74	-22.97	234	248	V
2	* 2.488	45.45	Pk	32.5	-24	53.95	-	-	74	-20.05	234	248	V
3	* 2.484	34.6	RMS	32.5	-24	43.1	54	-10.9	-	-	234	248	V
4	* 2.488	36.46	RMS	32.5	-24	44.96	54	-9.04	-	-	234	248	V

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

Pk - Peak detector

RMS - RMS detection

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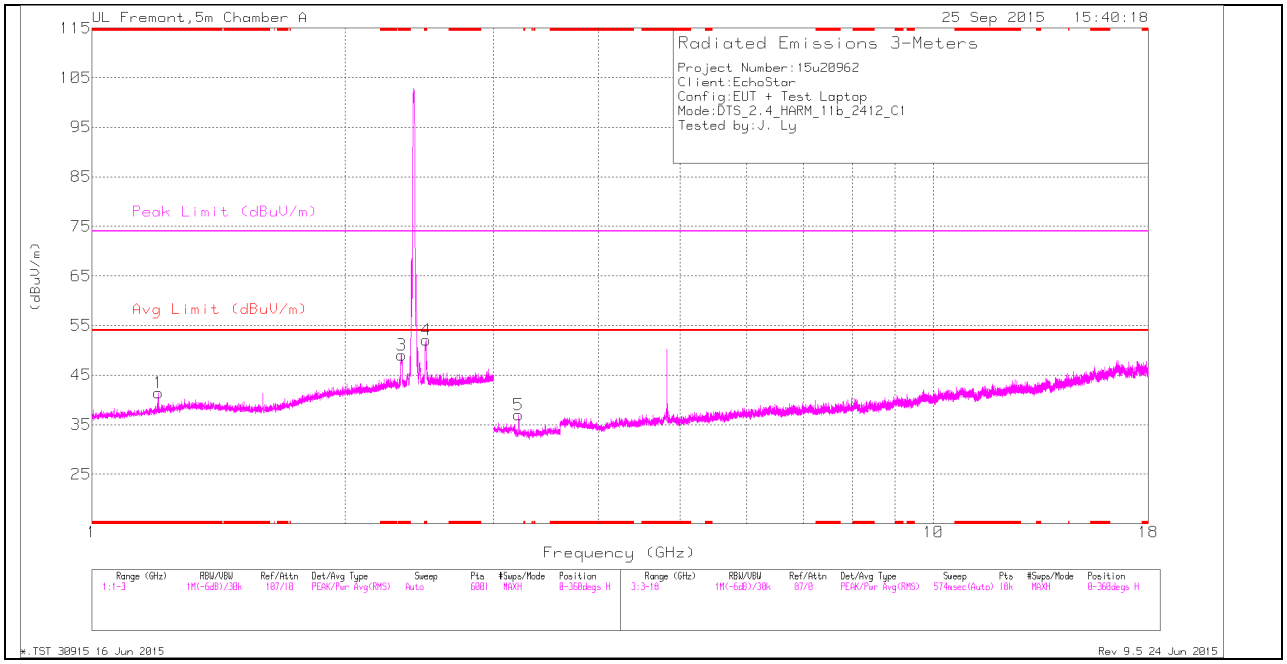
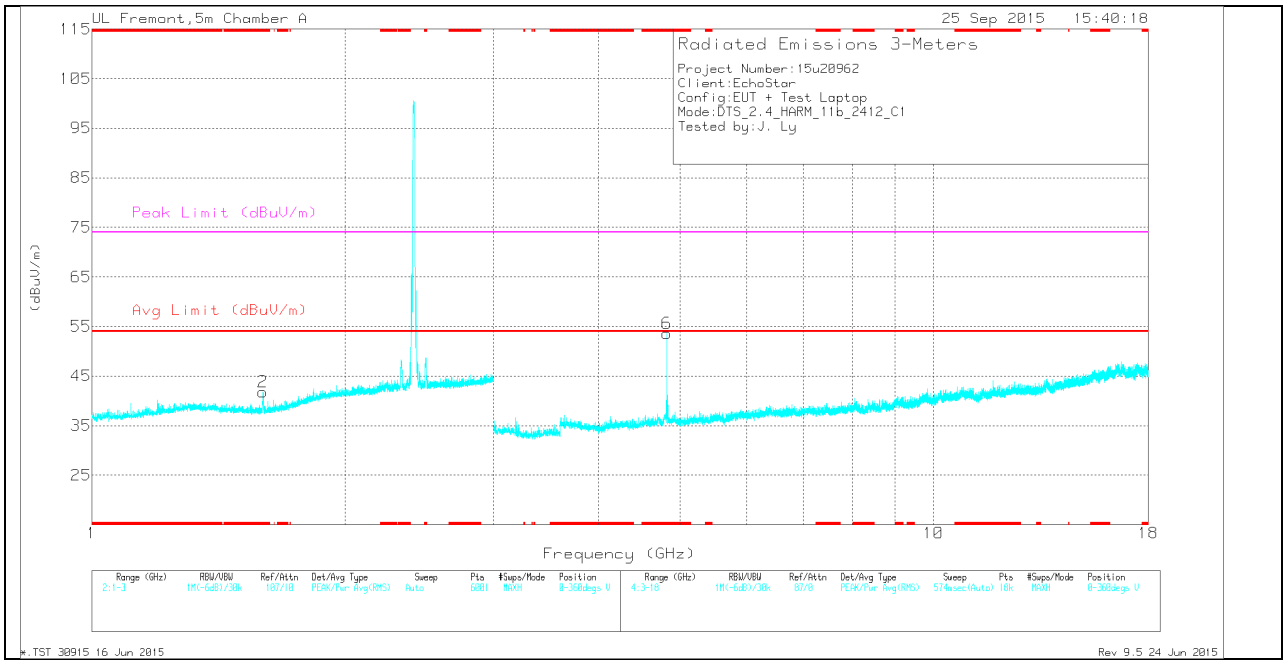
HARMONICS AND SPURIOUS EMISSIONS

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.

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 T136 (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	* 1.199	39.57	Pk	28	-26.1	0	41.47	-	-	74	-32.53	0-360	100	H
3	* 2.334	41.86	Pk	31.9	-24.7	0	49.06	-	-	74	-24.94	0-360	201	H
4	* 2.494	44.42	Pk	32.1	-24.5	0	52.02	-	-	74	-21.98	0-360	201	H
2	* 1.596	39.47	Pk	27.9	-25.6	0	41.77	-	-	74	-32.23	0-360	100	V
6	* 4.824	49.25	Pk	33.9	-29.6	0	53.55	-	-	74	-20.45	0-360	200	V
5	3.216	36.42	Pk	32.7	-32.2	0	36.92	-	-	-	-	0-360	201	H

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

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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
* 1.199	32.75	PK2	28	-26.1	0	34.65	-	-	74	-39.35	93	128	H
* 1.199	32.85	MAv1	28	-26.1	0	34.75	54	-19.25	-	-	93	128	H
* 2.334	48.26	PK2	31.9	-24.7	0	55.46	-	-	74	-18.54	22	255	H
* 2.334	39.07	MAv1	31.9	-24.7	0	46.27	54	-7.73	-	-	22	255	H
* 2.493	50.27	PK2	32.1	-24.5	0	57.87	-	-	74	-16.13	43	265	H
* 2.493	41.67	MAv1	32.1	-24.5	0	49.27	54	-4.73	-	-	43	265	H
* 1.595	47.36	PK2	27.9	-25.6	0	49.66	-	-	74	-24.34	0	133	V
* 1.595	32.46	MAv1	27.9	-25.6	0	34.76	54	-19.24	-	-	0	133	V
* 4.824	52.74	PK2	33.9	-29.6	0	57.04	-	-	74	-16.96	42	234	V
* 4.824	48.93	MAv1	33.9	-29.6	0	53.23	54	-.77	-	-	42	234	V
3.216	43.75	PK2	32.7	-32.2	0	44.25	-	-	74	-29.75	6	213	H

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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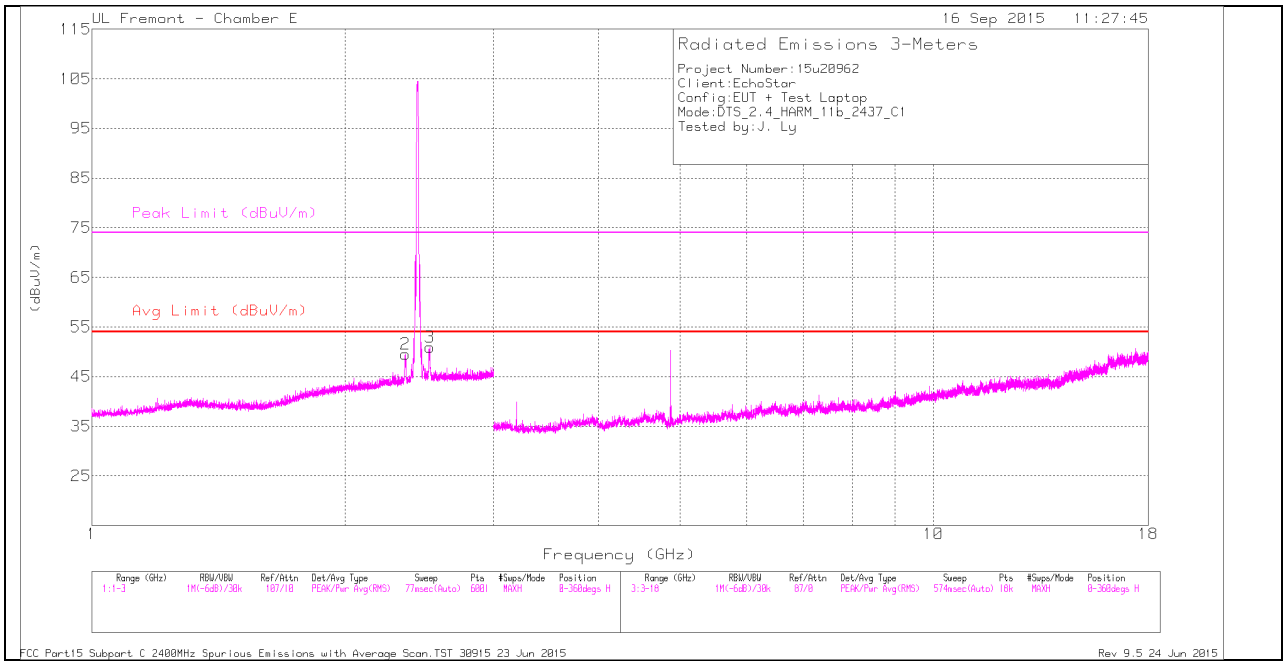
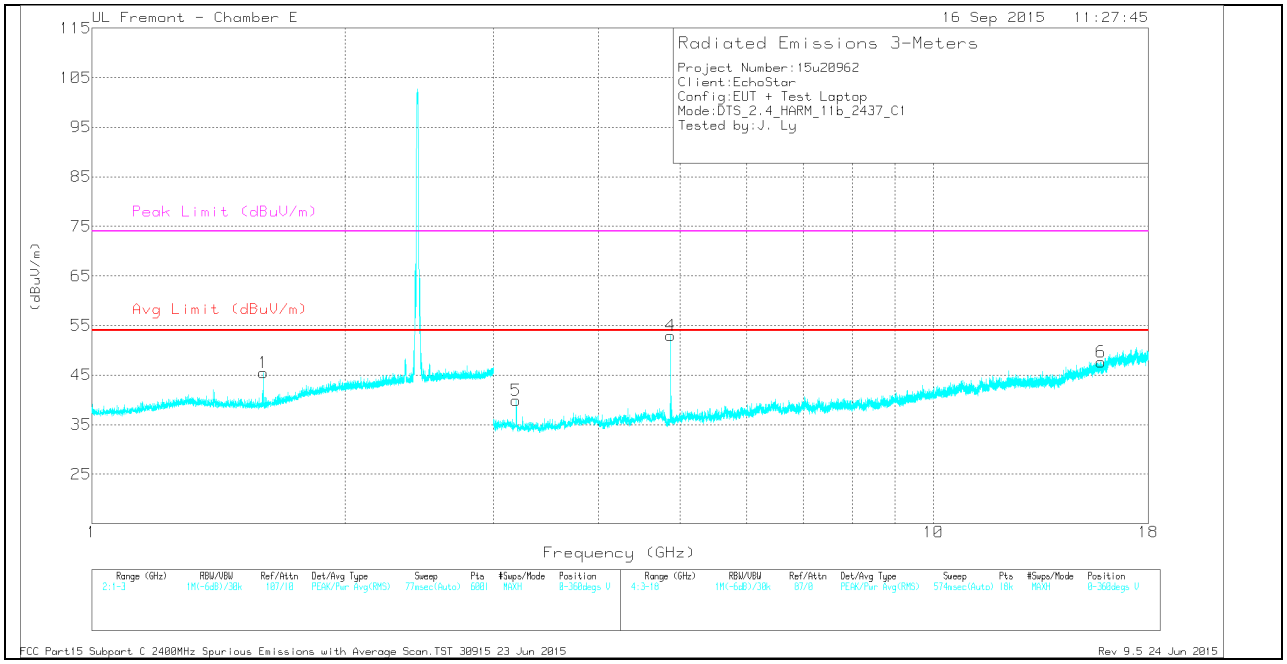
MID CHANNEL HORIZONTAL



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

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)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.358	40.71	Pk	32	-23.2	49.51	-	-	74	-24.49	0-360	200	H
1	* 1.598	42.34	Pk	27.9	-24.8	45.44	-	-	74	-28.56	0-360	101	V
4	* 4.874	49.21	Pk	34.1	-30.4	52.91	-	-	74	-21.09	0-360	200	V
6	* 15.805	30.09	Pk	40.4	-22.8	47.69	-	-	74	-26.31	0-360	200	V
3	2.52	41.57	Pk	32.2	-22.8	50.97	-	-	74	-23.03	0-360	100	H
5	3.193	37.91	Pk	32.7	-30.7	39.91	-	-	74	-34.09	0-360	200	V

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

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.359	47.76	PK2	32	-23.2	56.56	-	-	74	-17.44	334	259	H
* 2.359	37.98	MAv1	32	-23.2	46.78	54	-7.22	-	-	334	259	H
* 1.598	49.24	PK2	27.9	-24.8	52.34	-	-	74	-21.66	334	259	V
* 1.597	33.67	MAv1	27.9	-24.8	36.77	54	-17.23	-	-	334	259	V
* 4.874	52.17	PK2	34.1	-30.4	55.87	-	-	74	-18.13	334	259	V
* 4.874	49.88	MAv1	34.1	-30.4	53.58	54	-0.42	-	-	334	259	V
* 15.804	37.29	PK2	40.4	-22.8	54.89	-	-	74	-19.11	334	259	V
* 15.804	26.36	MAv1	40.4	-22.8	43.96	54	-10.04	-	-	334	259	V
2.519	40.75	MAv1	32.2	-22.8	50.15	54	-3.85	-	-	334	259	H
2.52	49.44	PK2	32.2	-22.8	58.84	-	-	74	-15.16	334	259	H
3.193	46.62	PK2	32.7	-30.7	48.62	-	-	74	-25.38	334	259	V
3.194	30.77	MAv1	32.7	-30.8	32.67	54	-21.33	-	-	334	259	V

* - indicates frequency in CFR15.205/IC7.2.2 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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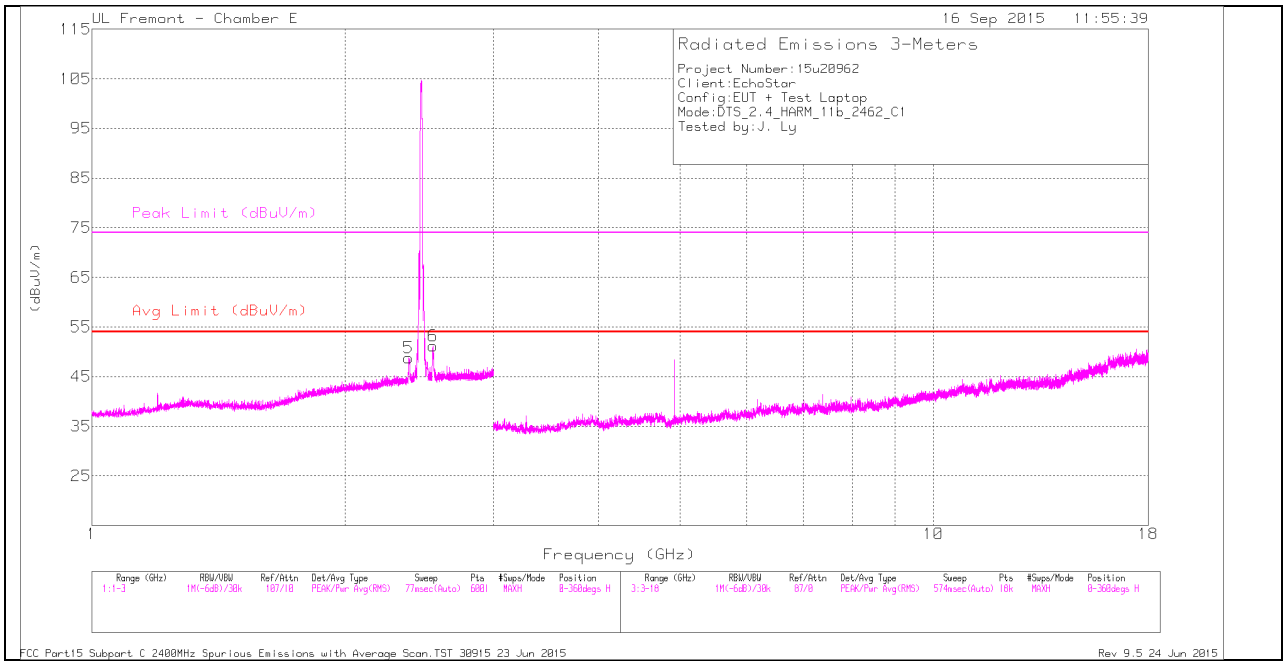
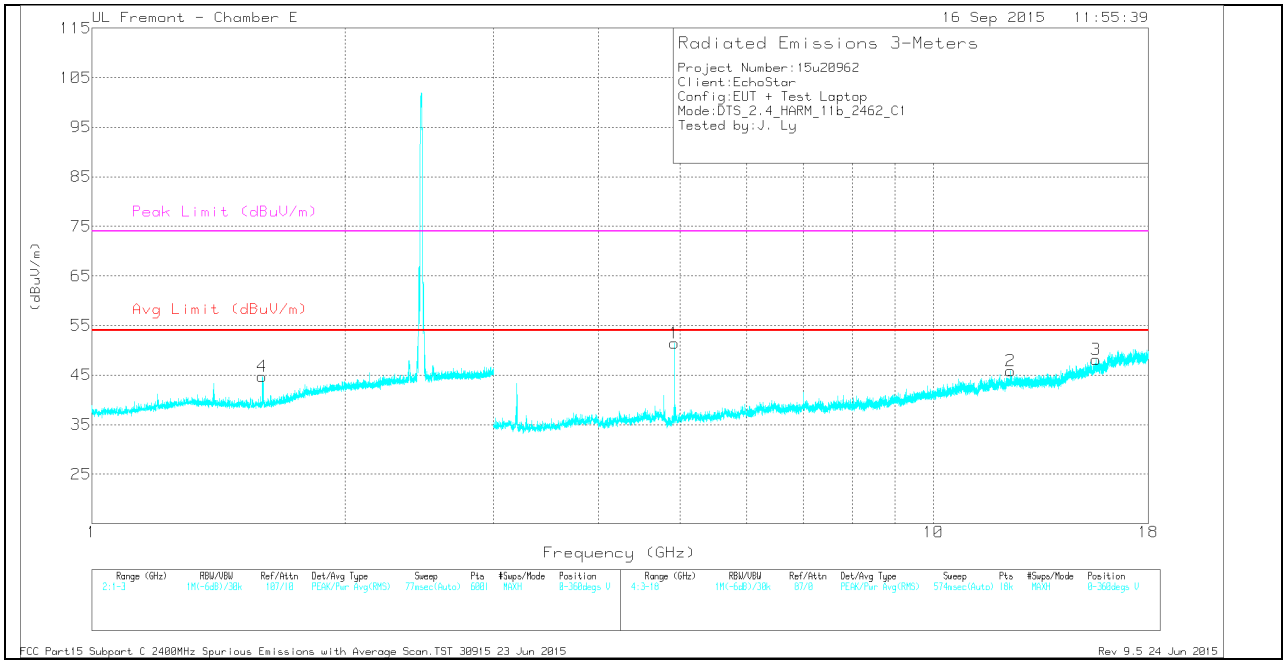
HIGH CHANNEL HORIZONTAL



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

HIGH CHANNEL VERTICAL



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

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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)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 2.38	39.93	Pk	32	-23.1	48.83	-	-	74	-25.17	0-360	200	H
4	* 1.594	41.46	Pk	28	-24.8	44.66	-	-	74	-29.34	0-360	200	V
1	* 4.924	47.97	Pk	34.1	-30.6	51.47	-	-	74	-22.53	0-360	200	V
2	* 12.339	31.3	Pk	38.9	-24.4	45.8	-	-	74	-28.2	0-360	101	V
3	* 15.601	29.09	Pk	40.3	-21.3	48.09	-	-	74	-25.91	0-360	200	V
6	2.544	41.64	Pk	32.3	-22.8	51.14	-	-	74	-22.86	0-360	200	H

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

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.381	47.59	PK2	32	-23.1	56.49	-	-	74	-17.51	323	349	H
* 2.38	38.19	MAv1	32	-23.1	47.09	54	-6.91	-	-	323	349	H
* 1.594	47.9	PK2	28	-24.8	51.1	-	-	74	-22.9	323	349	V
* 1.596	33.21	MAv1	27.9	-24.8	36.31	54	-17.69	-	-	323	349	V
* 4.924	52.12	PK2	34.1	-30.6	55.62	-	-	74	-18.38	323	349	V
* 4.924	49.8	MAv1	34.1	-30.6	53.3	54	-0.7	-	-	323	349	V
* 12.341	37.6	PK2	38.9	-24.3	52.2	-	-	74	-21.8	323	349	V
* 12.338	26.76	MAv1	38.9	-24.4	41.26	54	-12.74	-	-	323	349	V
* 15.602	36.2	PK2	40.4	-21.3	55.3	-	-	74	-18.7	323	349	V
* 15.602	25.09	MAv1	40.4	-21.3	44.19	54	-9.81	-	-	323	349	V
2.543	48.05	PK2	32.3	-22.8	57.55	-	-	74	-16.45	323	349	H
2.543	38.64	MAv1	32.3	-22.8	48.14	54	-5.86	-	-	323	349	H

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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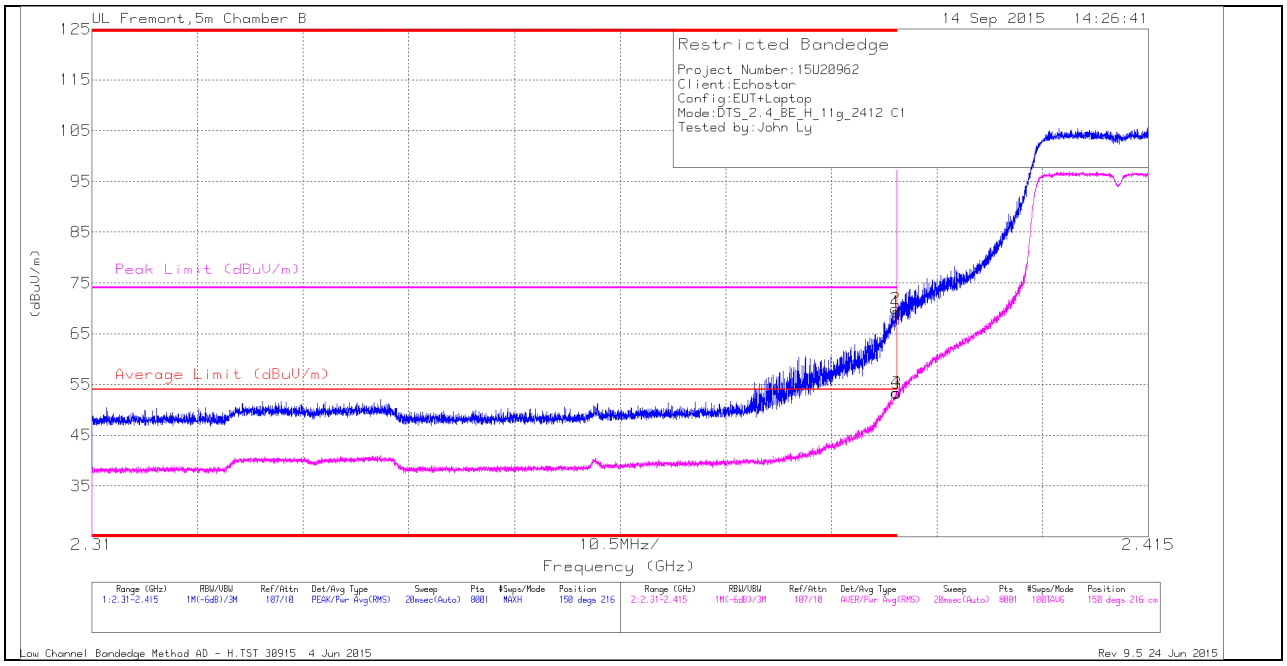
11.2.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



CH 1 HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	61.34	Pk	32	-24.1	69.24	-	-	74	-4.76	150	216	H
2	* 2.39	62	Pk	32	-24.1	69.9	-	-	74	-4.1	150	216	H
3	* 2.39	45.41	RMS	32	-24.1	53.31	54	-.69	-	-	150	216	H
4	* 2.39	45.51	RMS	32	-24.1	53.41	54	-.59	-	-	150	216	H

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

Pk - Peak detector

RMS - RMS detection

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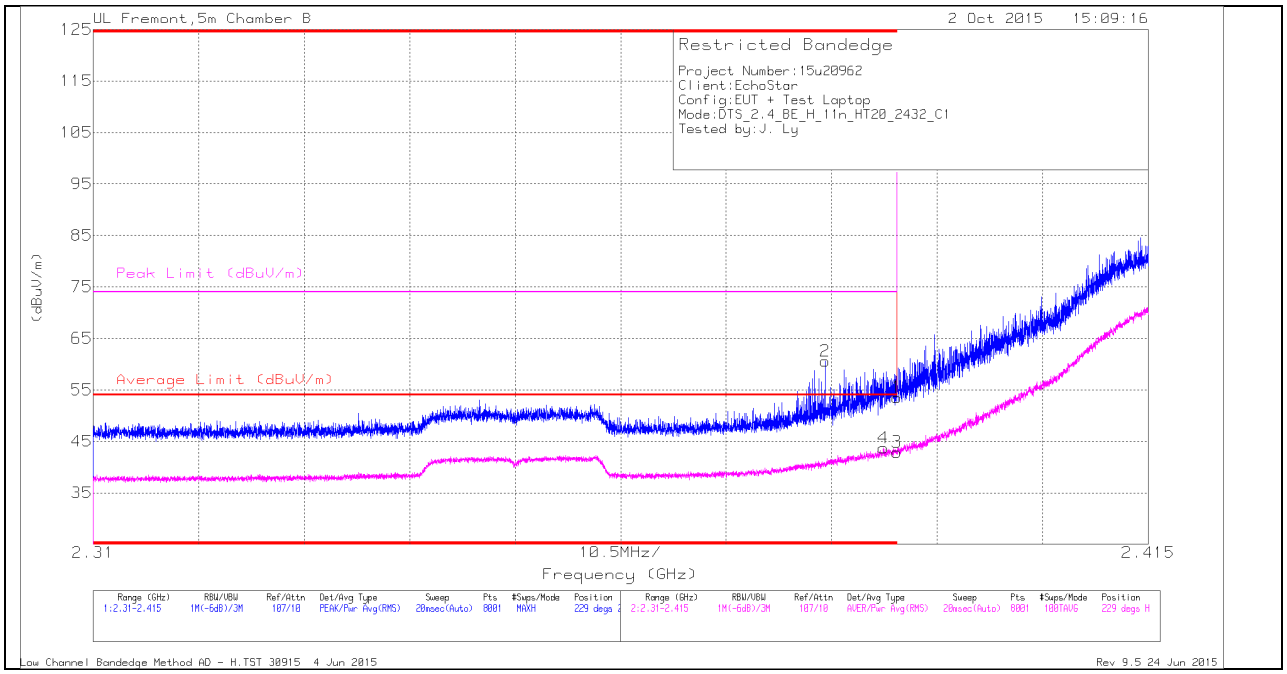

CH 5 HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	* 2.383	52.66	Pk	32	-24.1	60.56	-	-	74	-13.44	229	278	H
4	* 2.389	35.81	RMS	32	-24.1	43.71	54	-10.29	-	-	229	278	H
1	* 2.39	45.64	Pk	32	-24.1	53.54	-	-	74	-20.46	229	278	H
3	* 2.39	35.02	RMS	32	-24.1	42.92	54	-11.08	-	-	229	278	H

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

Pk - Peak detector

RMS - RMS detection

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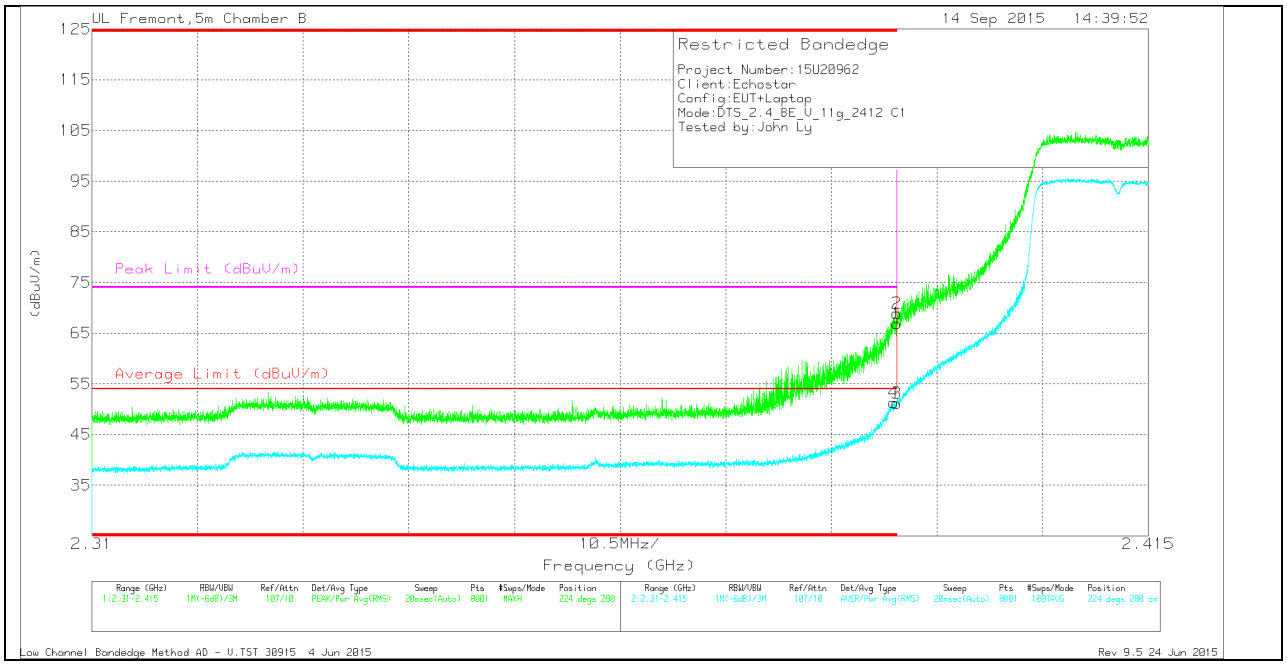
VERTICAL PEAK AND AVERAGE PLOT



CH1 VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	59.02	Pk	32	-24.1	66.92	-	-	74	-7.08	224	280	V
2	* 2.39	61.03	Pk	32	-24.1	68.93	-	-	74	-5.07	224	280	V
3	* 2.39	43.24	RMS	32	-24.1	51.14	54	-2.86	-	-	224	280	V
4	* 2.39	43.39	RMS	32	-24.1	51.29	54	-2.71	-	-	224	280	V

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

Pk - Peak detector

RMS - RMS detection

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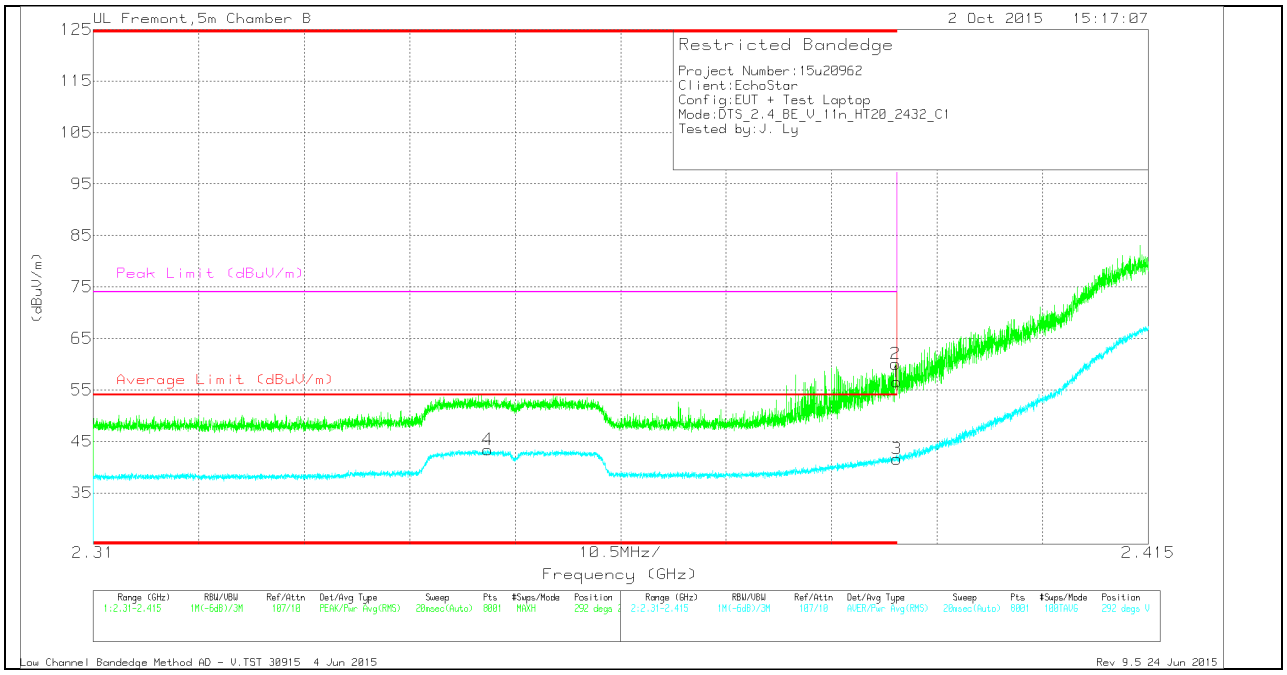

CH 5 VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	48.66	Pk	32	-24.1	56.56	-	-	74	-17.44	292	274	V
2	* 2.39	52.16	Pk	32	-24.1	60.06	-	-	74	-13.94	292	274	V
3	* 2.39	33.71	RMS	32	-24.1	41.61	54	-12.39	-	-	292	274	V
4	* 2.349	35.78	RMS	31.8	-24.2	43.38	54	-10.62	-	-	292	274	V

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

Pk - Peak detector

RMS - RMS detection

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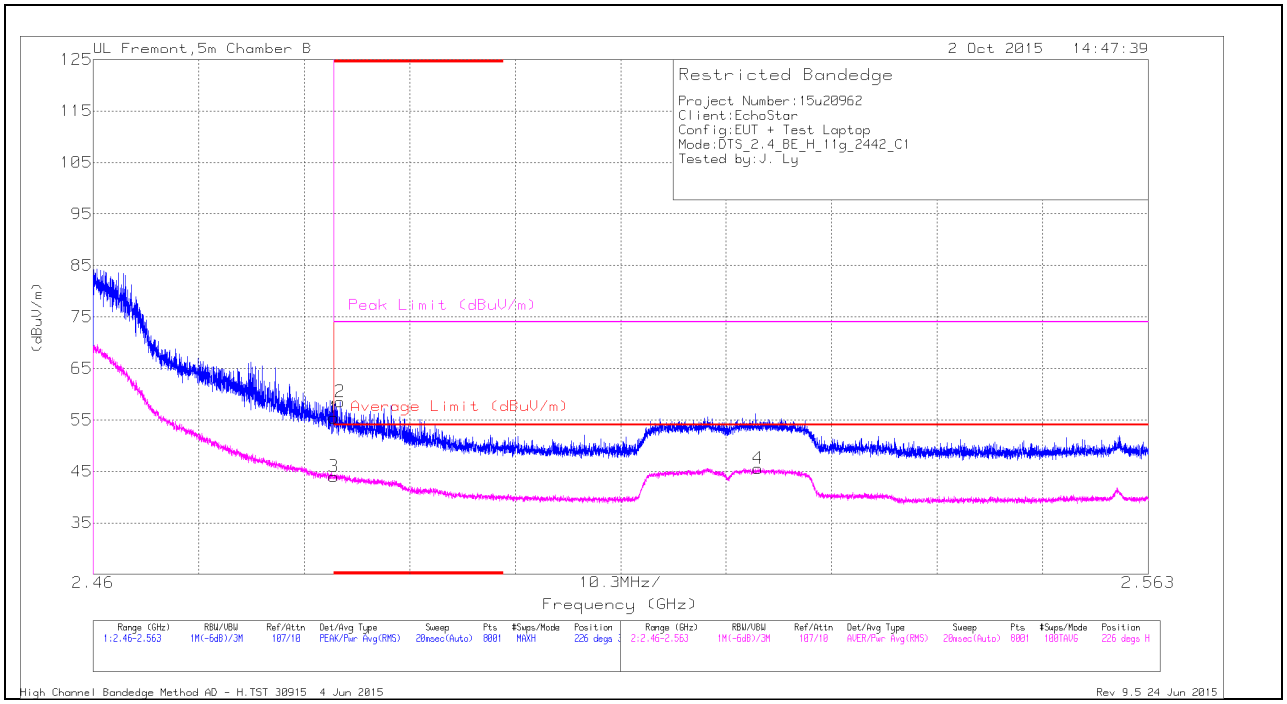
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



CH 7 HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	46.92	Pk	32.5	-24	55.42	-	-	74	-18.58	226	341	H
2	* 2.484	50.03	Pk	32.5	-24	58.53	-	-	74	-15.47	226	341	H
3	* 2.484	35.5	RMS	32.5	-24	44	54	-10	-	-	226	341	H
4	2.525	36.9	RMS	32.6	-23.9	45.6	54	-8.4	-	-	226	341	H

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

Pk - Peak detector

RMS - RMS detection

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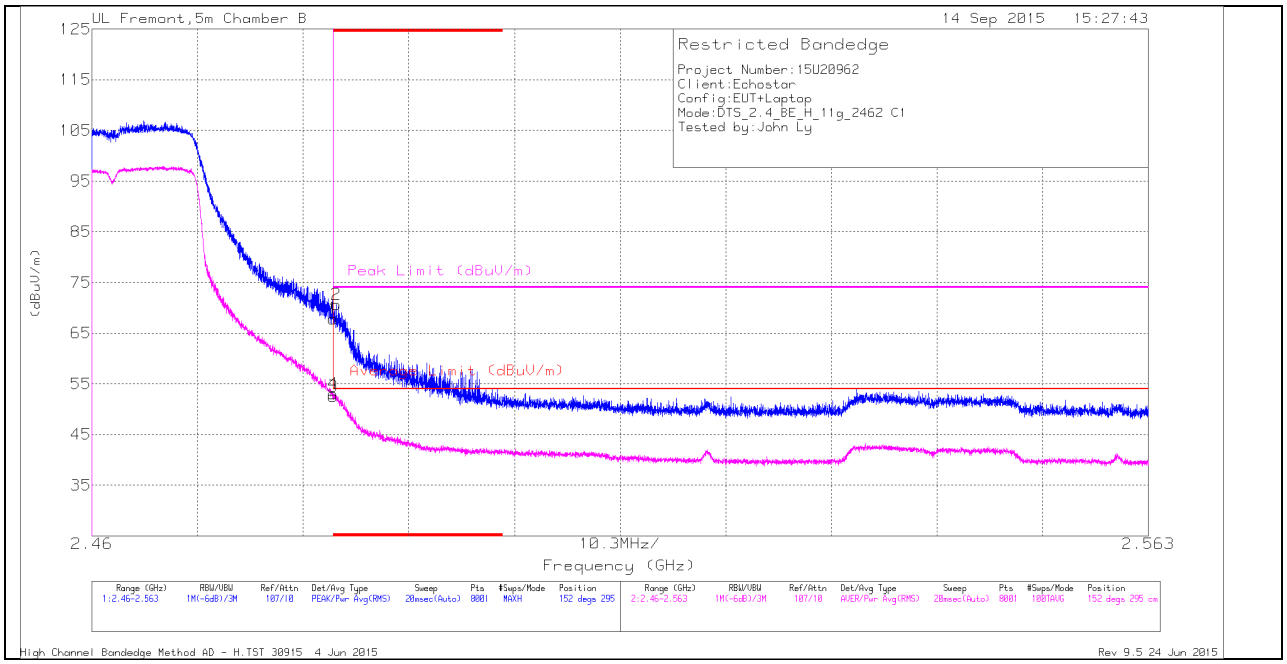

CH 11 HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	59.36	Pk	32.5	-24	67.86	-	-	74	-6.14	152	295	H
2	* 2.484	62.19	Pk	32.5	-24	70.69	-	-	74	-3.31	152	295	H
3	* 2.484	43.98	RMS	32.5	-24	52.48	54	-1.52	-	-	152	295	H
4	* 2.484	44.57	RMS	32.5	-24	53.07	54	-.93	-	-	152	295	H

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

Pk - Peak detector

RMS - RMS detection

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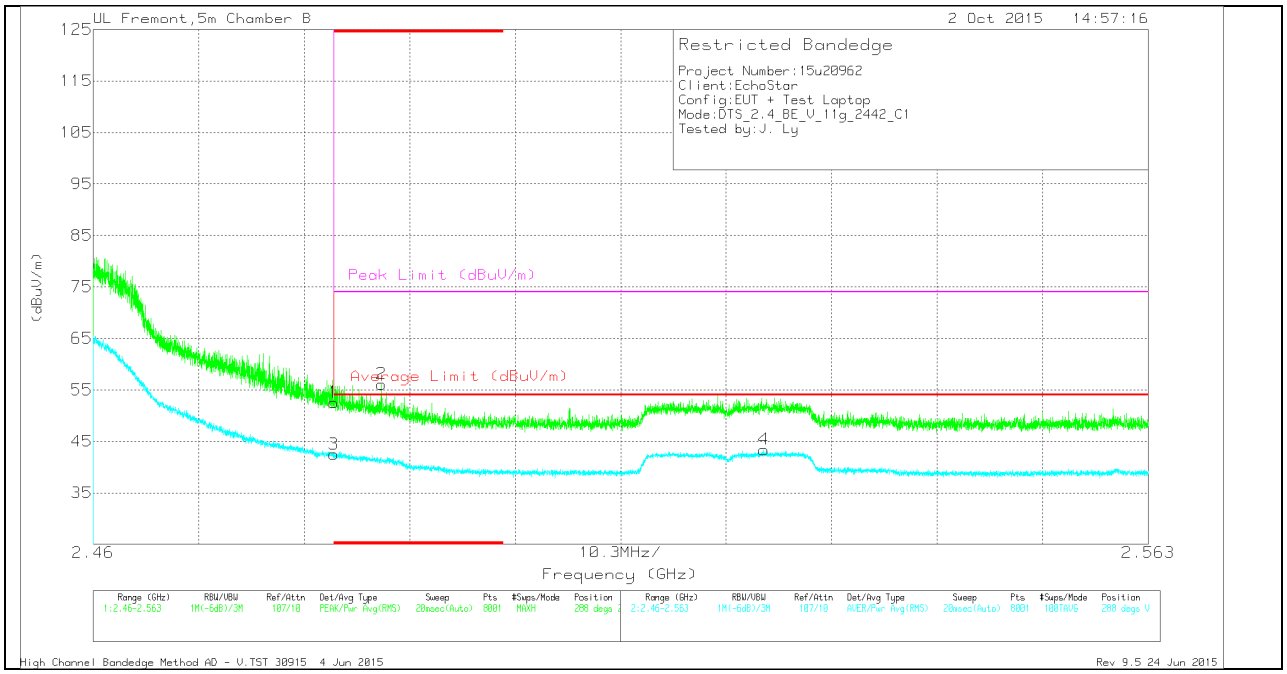
VERTICAL PEAK AND AVERAGE PLOT



CH 7 VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	44.07	Pk	32.5	-24	52.57	-	-	74	-21.43	288	276	V
2	* 2.488	47.63	Pk	32.5	-24	56.13	-	-	74	-17.87	288	276	V
3	* 2.484	34	RMS	32.5	-24	42.5	54	-11.5	-	-	288	276	V
4	2.525	34.72	RMS	32.6	-23.9	43.42	54	-10.58	-	-	288	276	V

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

Pk - Peak detector

RMS - RMS detection

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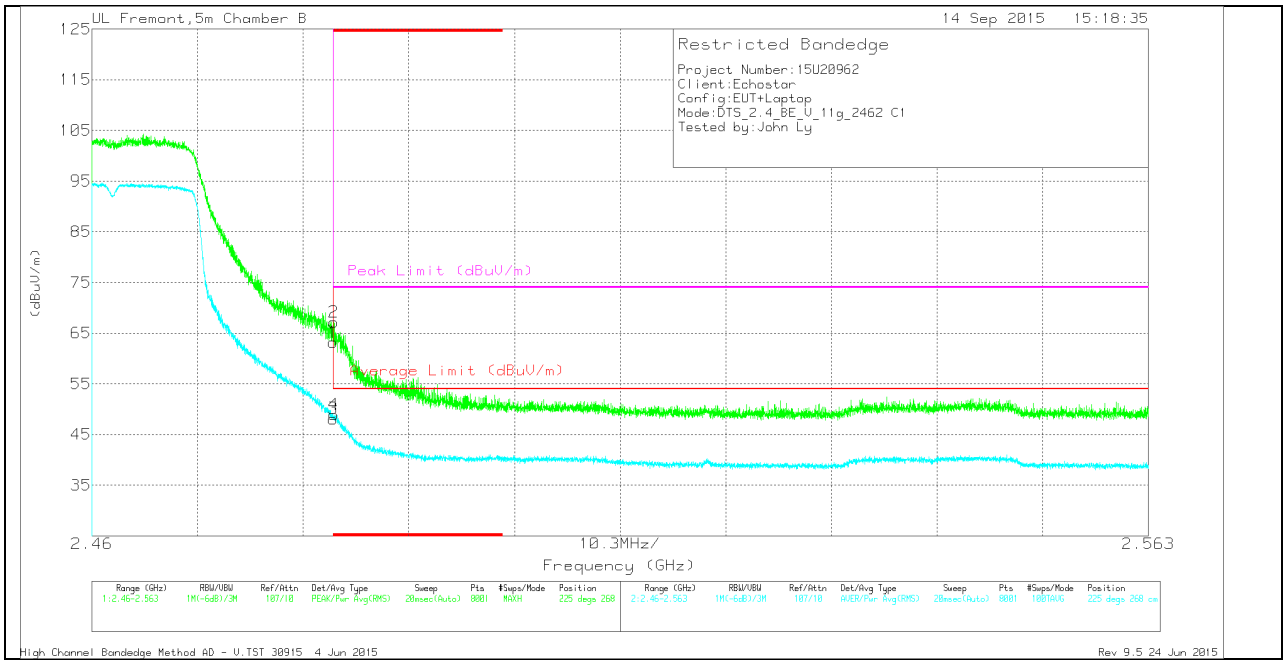

CH 11 VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	54.75	Pk	32.5	-24	63.25	-	-	74	-10.75	225	268	V
2	* 2.484	58.68	Pk	32.5	-24	67.18	-	-	74	-6.82	225	268	V
3	* 2.484	39.62	RMS	32.5	-24	48.12	54	-5.88	-	-	225	268	V
4	* 2.484	40.4	RMS	32.5	-24	48.9	54	-5.1	-	-	225	268	V

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

Pk - Peak detector

RMS - RMS detection

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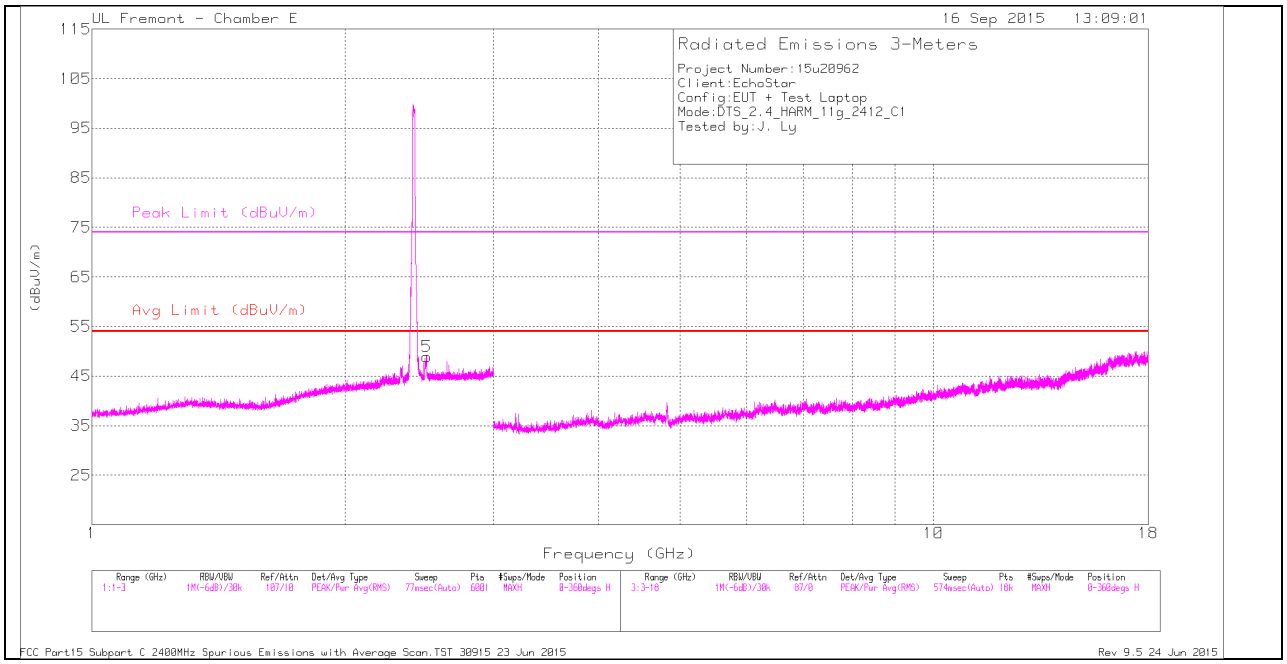
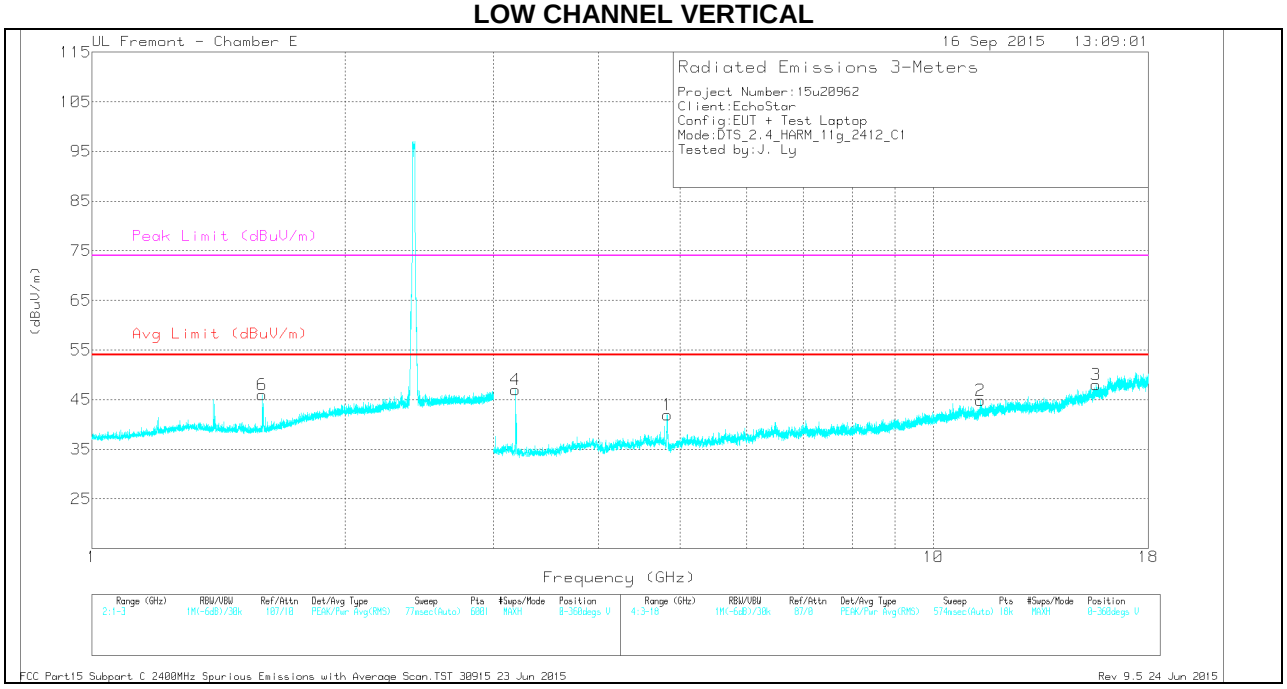
HARMONICS AND SPURIOUS EMISSIONS

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.

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)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 2.499	39.6	Pk	32.2	-22.9	48.9	-	-	74	-25.1	0-360	200	H
6	* 1.593	42.78	Pk	28	-24.8	45.98	-	-	74	-28.02	0-360	101	V
1	* 4.827	37.92	Pk	34.1	-30.1	41.92	-	-	74	-32.08	0-360	200	V
2	* 11.373	29.52	Pk	38	-22.7	44.82	-	-	74	-29.18	0-360	101	V
3	* 15.609	28.78	Pk	40.4	-21.2	47.98	-	-	74	-26.02	0-360	101	V
4	3.186	44.86	Pk	32.7	-30.6	46.96	-	-	74	-27.04	0-360	101	V

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

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.499	48.37	PK2	32.2	-22.9	57.67	-	-	74	-16.33	328	302	H
* 2.498	37.08	MAv1	32.2	-22.9	46.38	54	-7.62	-	-	328	302	H
* 1.595	49.51	PK2	28	-24.8	52.71	-	-	74	-21.29	328	302	V
* 1.594	33.63	MAv1	28	-24.8	36.83	54	-17.17	-	-	328	302	V
* 4.825	48.66	PK2	34.1	-30.1	52.66	-	-	74	-21.34	328	302	V
* 4.826	35.33	MAv1	34.1	-30.1	39.33	54	-14.67	-	-	328	302	V
* 11.371	36.15	PK2	38	-22.8	51.35	-	-	74	-22.65	328	302	V
* 11.371	25.15	MAv1	38	-22.8	40.35	54	-13.65	-	-	328	302	V
* 15.611	36.31	PK2	40.4	-21.3	55.41	-	-	74	-18.59	328	302	V
* 15.609	25.02	MAv1	40.4	-21.2	44.22	54	-9.78	-	-	328	302	V
3.186	47.37	PK2	32.7	-30.6	49.47	-	-	74	-24.53	328	302	V
3.186	31.24	MAv1	32.7	-30.6	33.34	54	-20.66	-	-	328	302	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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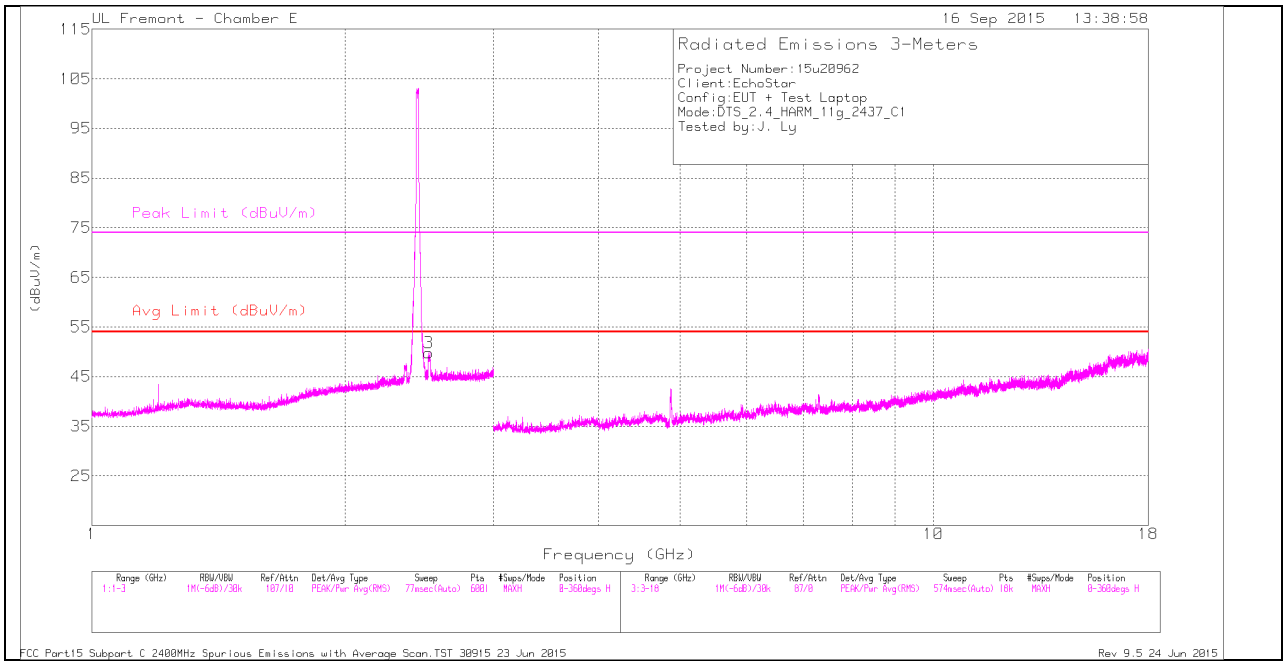
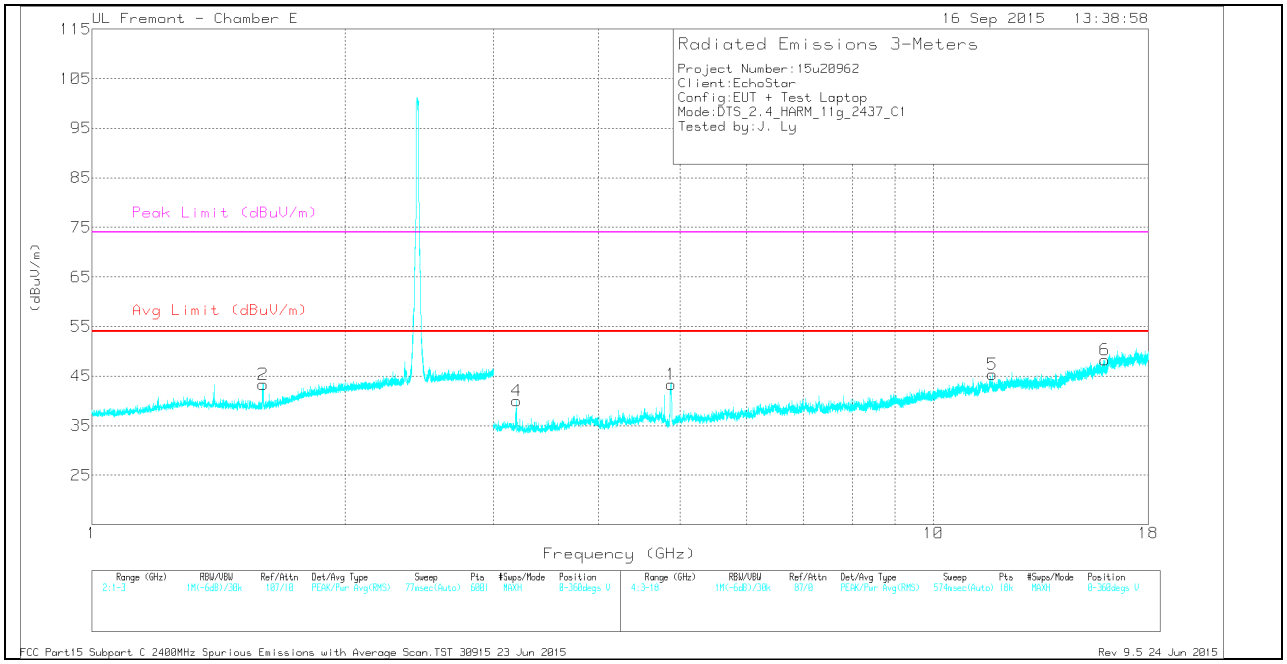
MID CHANNEL HORIZONTAL



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

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)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 1.597	40.19	Pk	27.9	-24.8	43.29	-	-	74	-30.71	0-360	200	V
1	* 4.876	39.57	Pk	34.1	-30.4	43.27	-	-	74	-30.73	0-360	200	V
5	* 11.74	30.43	Pk	38.2	-23.3	45.33	-	-	74	-28.67	0-360	101	V
6	* 15.976	29.88	Pk	40.6	-22.2	48.28	-	-	74	-25.72	0-360	101	V
3	2.513	40.44	Pk	32.2	-22.8	49.84	-	-	74	-24.16	0-360	200	H
4	3.195	38.13	Pk	32.7	-30.8	40.03	-	-	74	-33.97	0-360	101	V

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

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
* 1.597	48.34	PK2	27.9	-24.8	51.44	-	-	74	-22.56	332	264	V
* 1.597	33.51	MAv1	27.9	-24.8	36.61	54	-17.39	-	-	332	264	V
* 4.874	51.55	PK2	34.1	-30.4	55.25	-	-	74	-18.75	332	264	V
* 4.874	39.11	MAv1	34.1	-30.4	42.81	54	-11.19	-	-	332	264	V
* 11.739	36.44	PK2	38.2	-23.2	51.44	-	-	74	-22.56	332	264	V
* 11.738	25.83	MAv1	38.2	-23.2	40.83	54	-13.17	-	-	332	264	V
* 15.974	37.08	PK2	40.6	-22.2	55.48	-	-	74	-18.52	332	264	V
* 15.975	26.17	MAv1	40.6	-22.2	44.57	54	-9.43	-	-	332	264	V
2.512	39.36	MAv1	32.2	-22.8	48.76	54	-5.24	-	-	332	264	H
2.514	49.58	PK2	32.2	-22.8	58.98	-	-	74	-15.02	332	264	H
3.194	31.11	MAv1	32.7	-30.8	33.01	54	-20.99	-	-	332	264	V
3.195	46.83	PK2	32.7	-30.8	48.73	-	-	74	-25.27	332	264	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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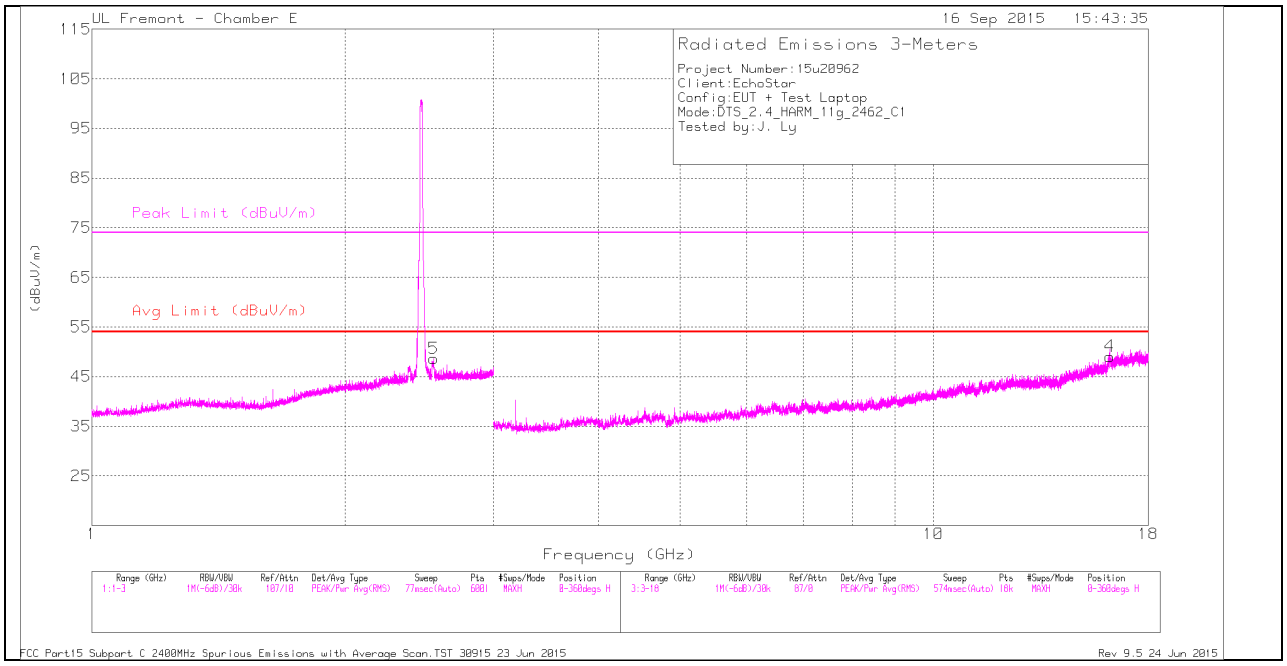
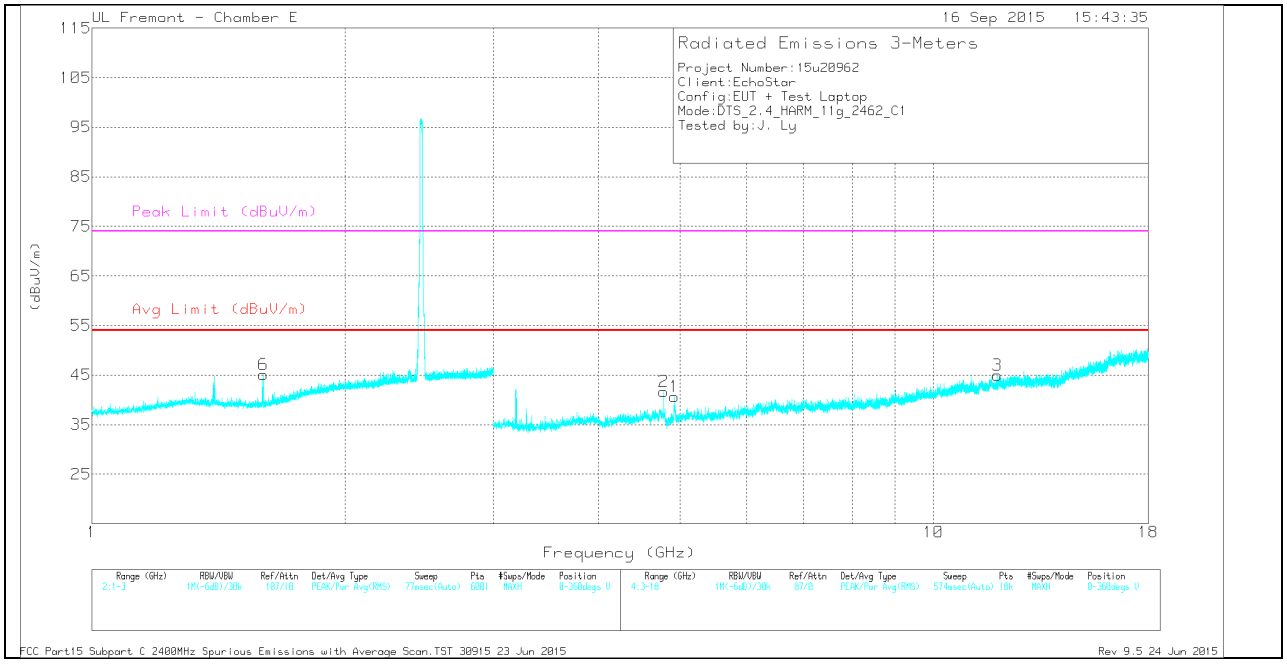
HIGH CHANNEL HORIZONTAL



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

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)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	* 1.599	42.05	Pk	27.9	-24.8	45.15	-	-	74	-28.85	0-360	101	V
1	* 4.924	37.15	Pk	34.1	-30.6	40.65	-	-	74	-33.35	0-360	200	V
2	* 4.782	36.94	Pk	34.1	-29.4	41.64	-	-	74	-32.36	0-360	200	V
3	* 11.918	29.82	Pk	38.5	-23.4	44.92	-	-	74	-29.08	0-360	200	V
5	2.549	39.14	Pk	32.3	-22.8	48.64	-	-	74	-25.36	0-360	200	H
4	16.202	28.69	Pk	40.9	-20.5	49.09	-	-	74	-24.91	0-360	101	H

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

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (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
* 1.6	47.83	PK2	27.9	-24.8	50.93	-	-	74	-23.07	323	260	V
* 1.599	33.31	MAv1	27.9	-24.8	36.41	54	-17.59	-	-	323	260	V
* 4.925	47.61	PK2	34.1	-30.6	51.11	-	-	74	-22.89	323	260	V
* 4.924	34.77	MAv1	34.1	-30.6	38.27	54	-15.73	-	-	323	260	V
* 4.781	44.51	PK2	34.1	-29.3	49.31	-	-	74	-24.69	323	260	V
* 4.781	29.63	MAv1	34.1	-29.3	34.43	54	-19.57	-	-	323	260	V
* 11.92	36.94	PK2	38.5	-23.4	52.04	-	-	74	-21.96	323	260	V
* 11.918	25.69	MAv1	38.5	-23.4	40.79	54	-13.21	-	-	323	260	V
2.547	47.49	PK2	32.3	-22.8	56.99	-	-	74	-17.01	323	260	H
2.548	36.38	MAv1	32.3	-22.8	45.88	54	-8.12	-	-	323	260	H
16.202	38	PK2	40.9	-20.5	58.4	-	-	74	-15.6	323	260	H
16.202	25.71	MAv1	40.9	-20.5	46.11	54	-7.89	-	-	323	260	H

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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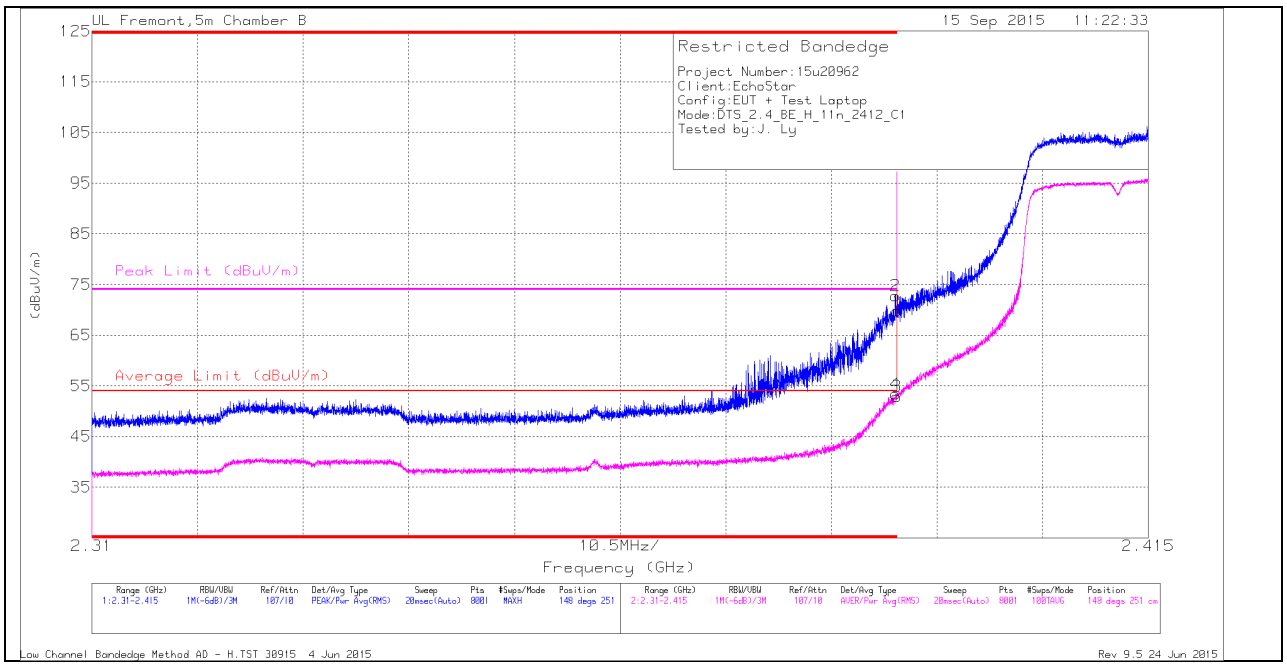
11.2.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



CH 1 HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	61.91	Pk	32	-24.1	69.81	-	-	74	-4.19	148	251	H
2	* 2.39	64.84	Pk	32	-24.1	72.74	-	-	74	-1.26	148	251	H
3	* 2.39	44.99	RMS	32	-24.1	52.89	54	-1.11	-	-	148	251	H
4	* 2.39	45.52	RMS	32	-24.1	53.42	54	-.58	-	-	148	251	H

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

Pk - Peak detector

RMS - RMS detection

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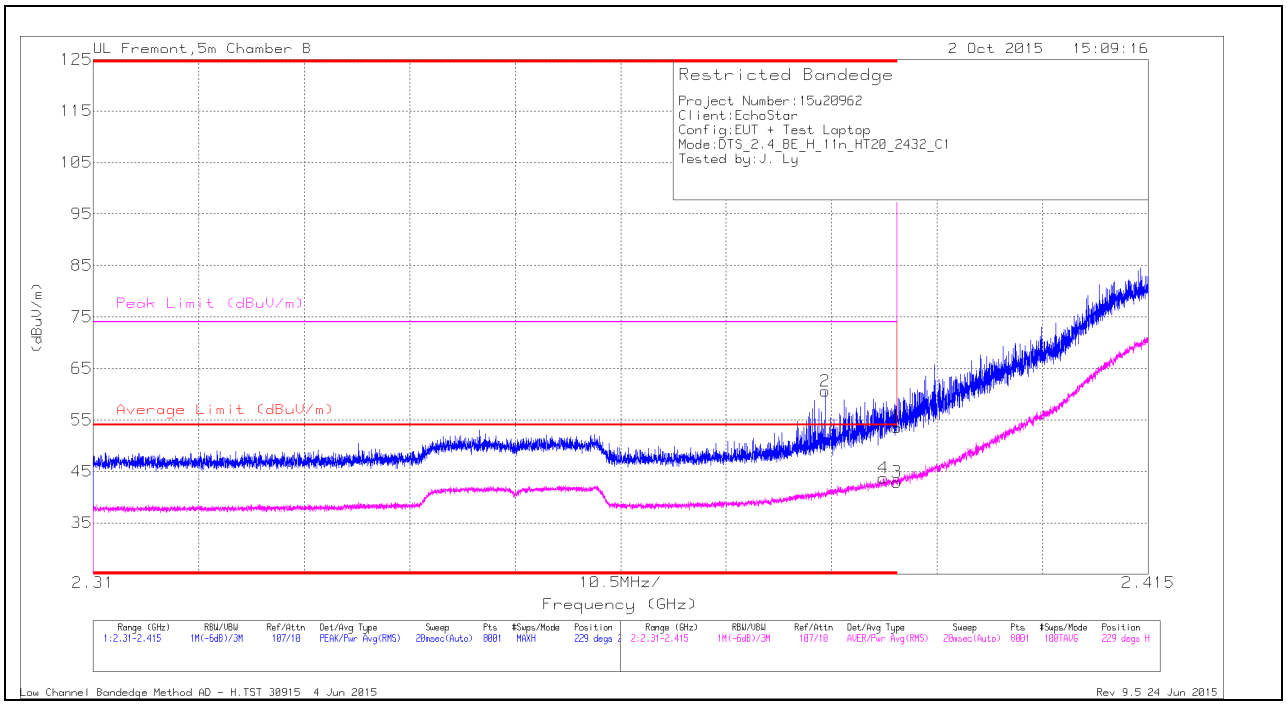

CH 5 HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	* 2.383	52.66	Pk	32	-24.1	60.56	-	-	74	-13.44	229	278	H
4	* 2.389	35.81	RMS	32	-24.1	43.71	54	-10.29	-	-	229	278	H
1	* 2.39	45.64	Pk	32	-24.1	53.54	-	-	74	-20.46	229	278	H
3	* 2.39	35.02	RMS	32	-24.1	42.92	54	-11.08	-	-	229	278	H

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

Pk - Peak detector

RMS - RMS detection

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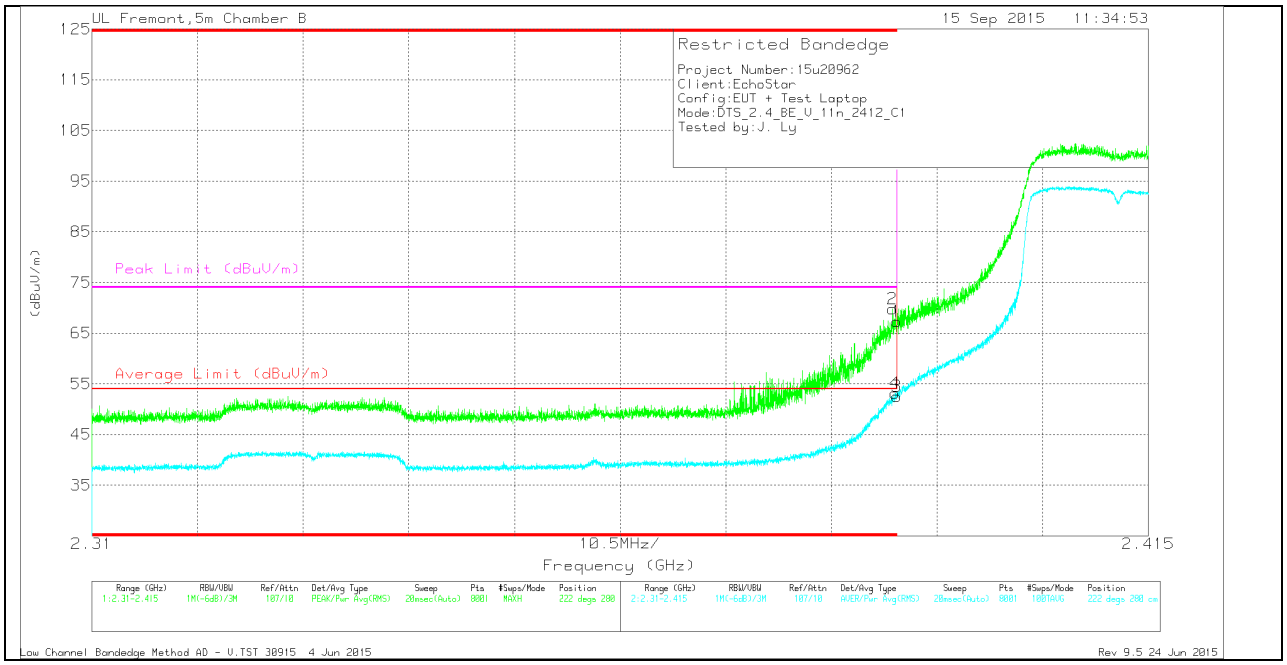
VERTICAL PEAK AND AVERAGE PLOT



CH 1 VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	59.42	Pk	32	-24.1	67.32	-	-	74	-6.68	222	280	V
2	* 2.39	61.91	Pk	32	-24.1	69.81	-	-	74	-4.19	222	280	V
3	* 2.39	44.62	RMS	32	-24.1	52.52	54	-1.48	-	-	222	280	V
4	* 2.39	45.29	RMS	32	-24.1	53.19	54	-.81	-	-	222	280	V

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

Pk - Peak detector

RMS - RMS detection

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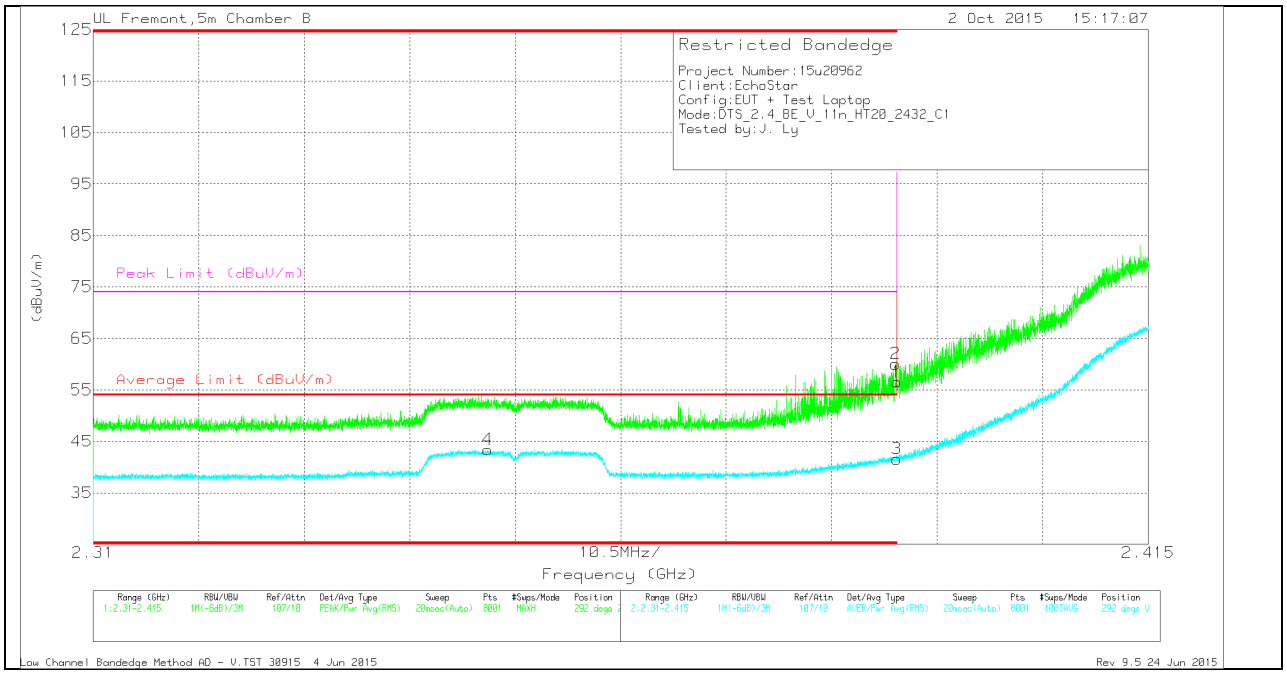

CH 5 VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	48.66	Pk	32	-24.1	56.56	-	-	74	-17.44	292	274	V
2	* 2.39	52.16	Pk	32	-24.1	60.06	-	-	74	-13.94	292	274	V
3	* 2.39	33.71	RMS	32	-24.1	41.61	54	-12.39	-	-	292	274	V
4	* 2.349	35.78	RMS	31.8	-24.2	43.38	54	-10.62	-	-	292	274	V

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

Pk - Peak detector

RMS - RMS detection

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
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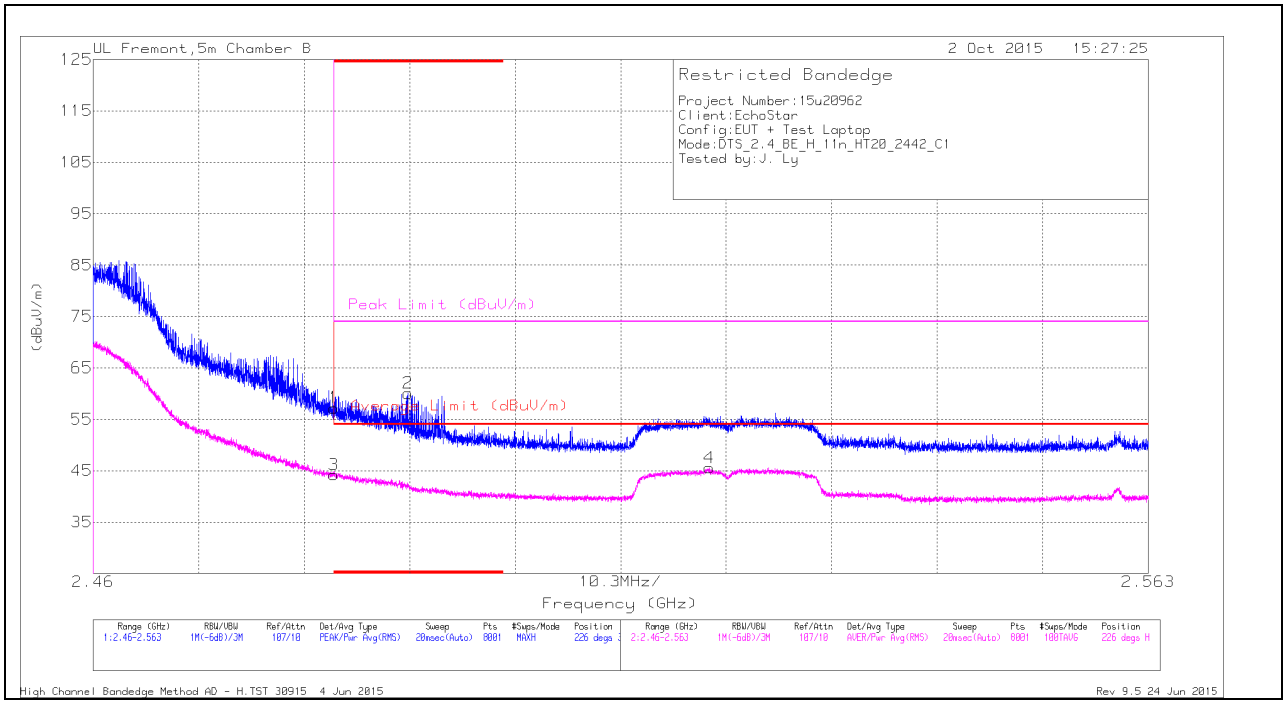
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



CH 7 HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	48.73	Pk	32.5	-24	57.23	-	-	74	-16.77	226	342	H
2	* 2.491	51.45	Pk	32.5	-23.9	60.05	-	-	74	-13.95	226	342	H
3	* 2.484	35.69	RMS	32.5	-24	44.19	54	-9.81	-	-	226	342	H
4	2.52	36.85	RMS	32.6	-23.9	45.55	54	-8.45	-	-	226	342	H

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

Pk - Peak detector

RMS - RMS detection

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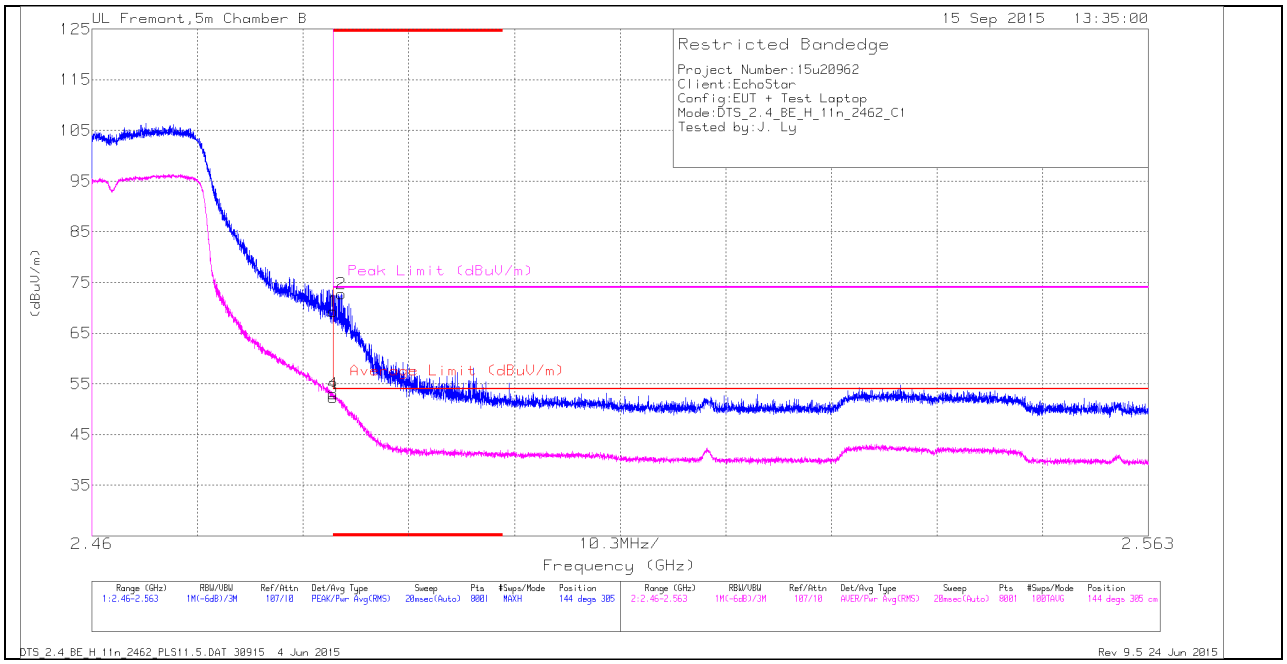

CH 11 HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	60.78	Pk	32.5	-24	69.28	-	-	74	-4.72	144	305	H
2	* 2.484	64.27	Pk	32.5	-24	72.77	-	-	74	-1.23	144	305	H
3	* 2.484	43.81	RMS	32.5	-24	52.31	54	-1.69	-	-	144	305	H
4	* 2.484	44.54	RMS	32.5	-24	53.04	54	-.96	-	-	144	305	H

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

Pk - Peak detector

RMS - RMS detection

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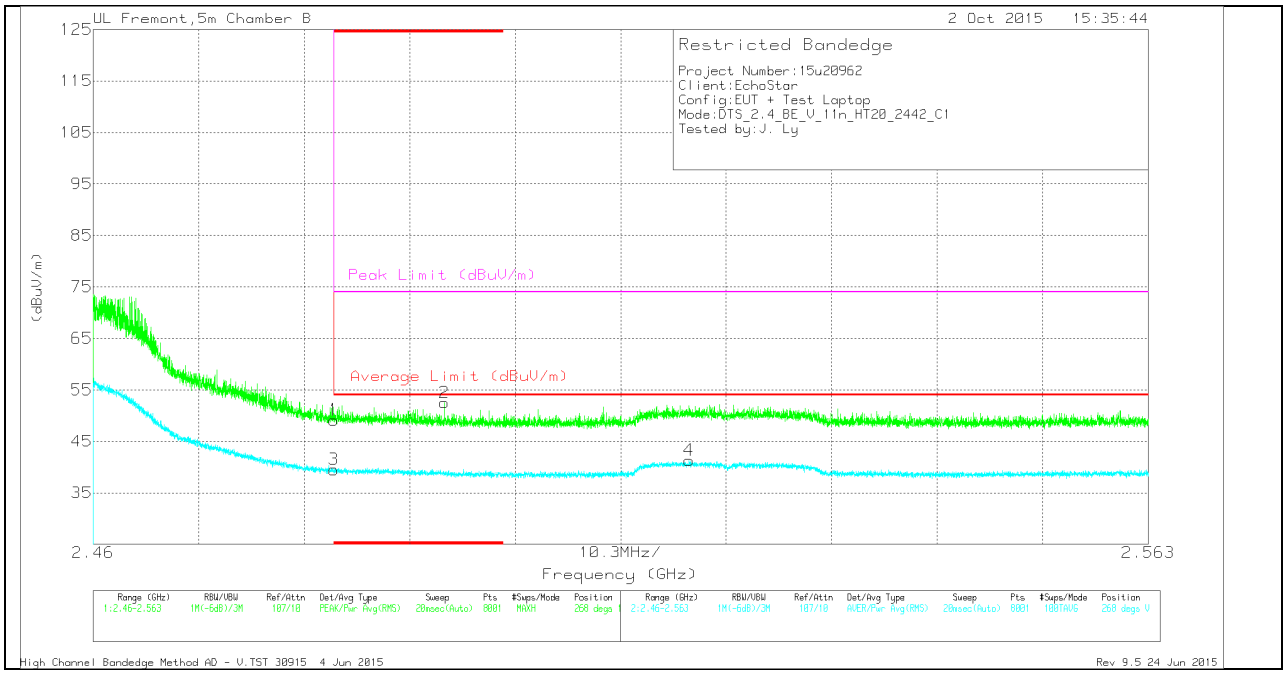
VERTICAL PEAK AND AVERAGE PLOT



CH 7 VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	40.63	Pk	32.5	-24	49.13	-	-	74	-24.87	268	146	V
2	* 2.494	43.93	Pk	32.5	-23.9	52.53	-	-	74	-21.47	268	146	V
3	* 2.484	31.02	RMS	32.5	-24	39.52	54	-14.48	-	-	268	146	V
4	2.518	32.6	RMS	32.6	-23.9	41.3	54	-12.7	-	-	268	146	V

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

Pk - Peak detector

RMS - RMS detection

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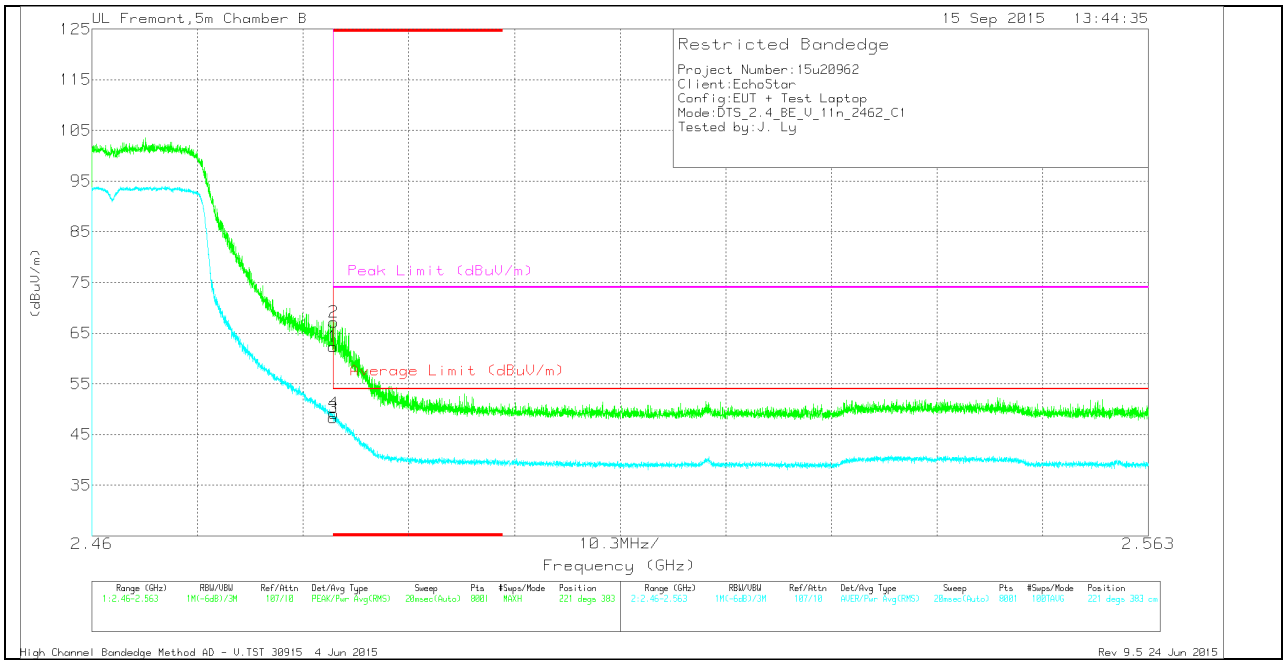

CH 11 VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	53.87	Pk	32.5	-24	62.37	-	-	74	-11.63	221	383	V
2	* 2.484	58.67	Pk	32.5	-24	67.17	-	-	74	-6.83	221	383	V
3	* 2.484	39.77	RMS	32.5	-24	48.27	54	-5.73	-	-	221	383	V
4	* 2.484	40.65	RMS	32.5	-24	49.15	54	-4.85	-	-	221	383	V

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

Pk - Peak detector

RMS - RMS detection

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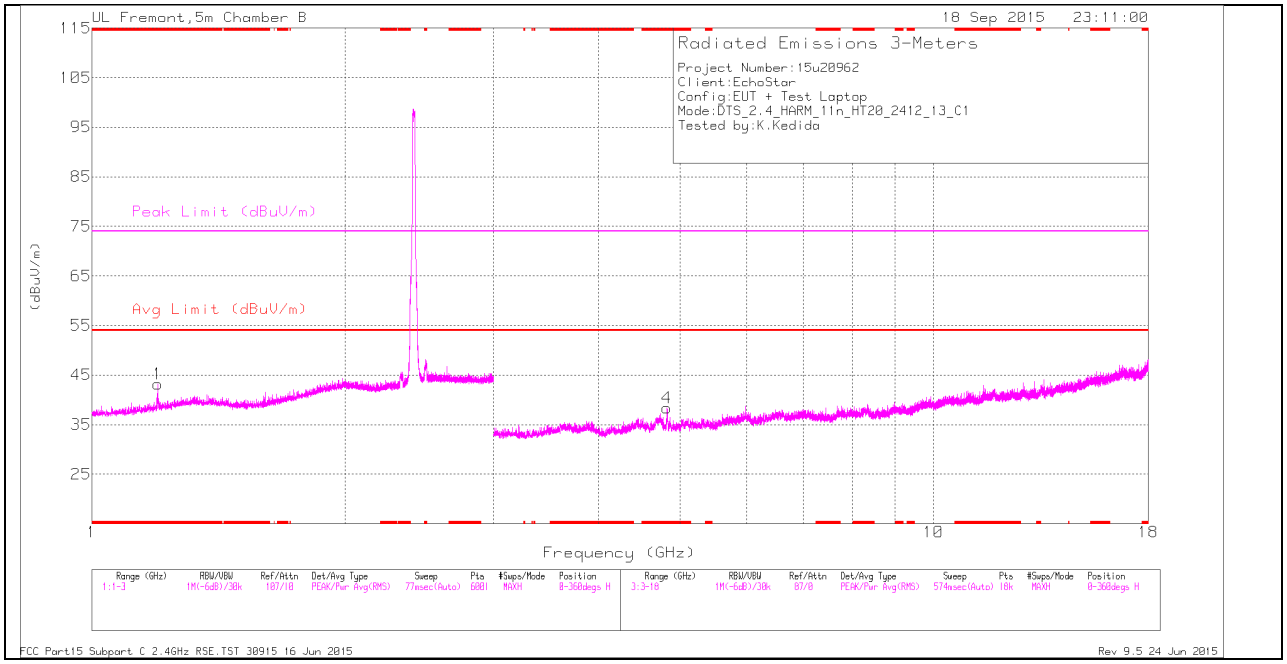
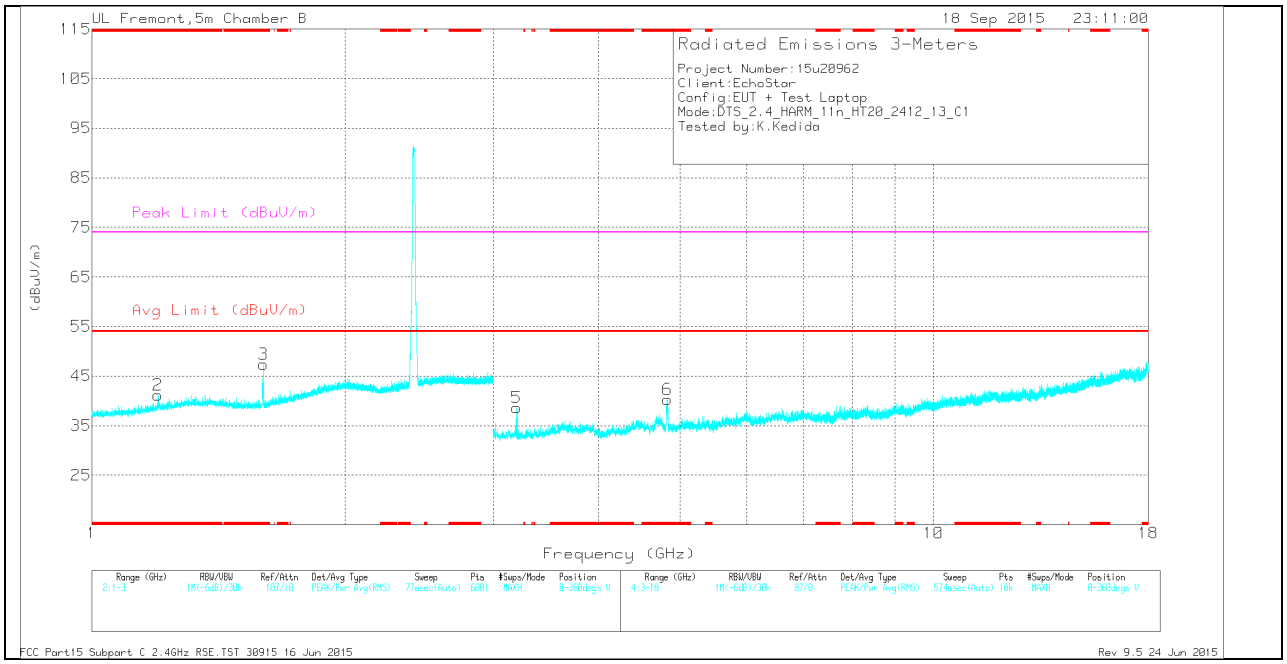
HARMONICS AND SPURIOUS EMISSIONS

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.

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 T345 (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	* 1.197	40.14	Pk	28.5	-25.5	43.14	-	-	74	-30.86	0-360	200	H
2	* 1.197	38.18	Pk	28.5	-25.5	41.18	-	-	74	-32.82	0-360	101	V
3	* 1.598	43.52	Pk	28.8	-25	47.32	-	-	74	-26.68	0-360	101	V
4	* 4.823	35.64	Pk	34.3	-31.6	38.34	-	-	74	-35.66	0-360	101	H
6	* 4.827	37.68	Pk	34.3	-31.7	40.28	-	-	74	-33.72	0-360	199	V
5	3.199	38.3	Pk	32.4	-32.1	38.6	-	-	-	-	0-360	101	V

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

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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
* 1.195	50.66	PK2	28.4	-25.5	53.56	-	-	74	-20.44	291	189	H
* 1.198	32.68	MAv1	28.5	-25.5	35.68	54	-18.32	-	-	291	189	H
* 1.196	45.11	PK2	28.4	-25.5	48.01	-	-	74	-25.99	291	102	V
* 1.196	32.91	MAv1	28.4	-25.5	35.81	54	-18.19	-	-	291	102	V
* 1.599	45.76	PK2	28.8	-25	49.56	-	-	74	-24.44	291	102	V
* 1.597	32.55	MAv1	28.8	-25	36.35	54	-17.65	-	-	291	102	V
* 4.825	44.72	PK2	34.3	-31.6	47.42	-	-	74	-26.58	232	264	H
* 4.822	32.44	MAv1	34.3	-31.6	35.14	54	-18.86	-	-	232	264	H
* 4.825	46.66	PK2	34.3	-31.6	49.36	-	-	74	-24.64	212	320	V
* 4.826	34.25	MAv1	34.3	-31.6	36.95	54	-17.05	-	-	212	320	V
3.198	48.34	PK2	32.4	-32.1	48.64	-	-	74	-25.36	232	102	V
3.198	31.33	MAv1	32.4	-32.1	31.63	54	-22.37	-	-	232	102	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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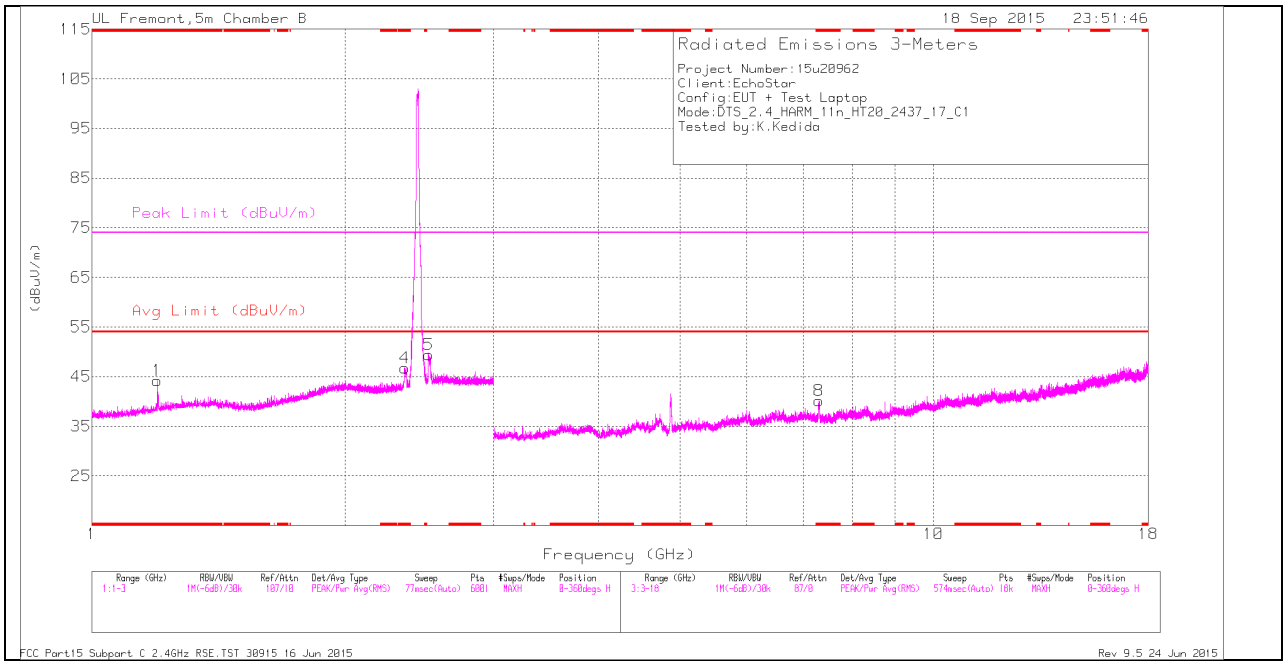
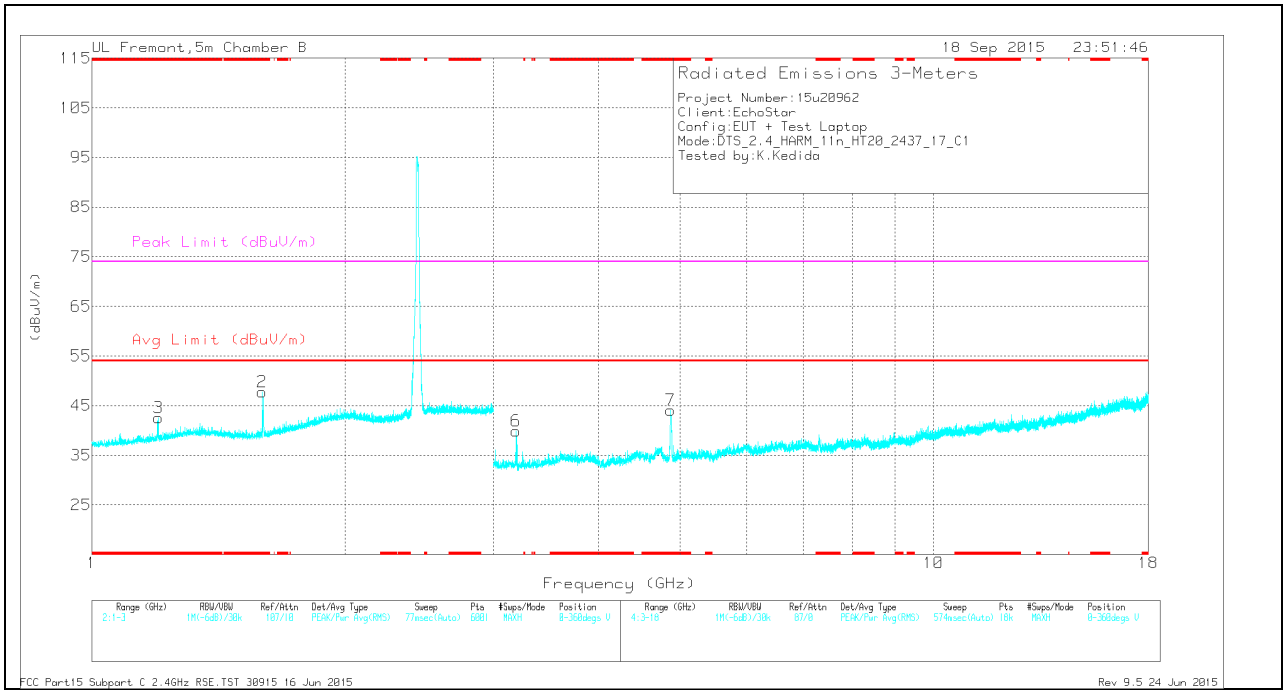
MID CHANNEL HORIZONTAL



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

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 T345 (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	* 1.196	41.21	Pk	28.5	-25.5	44.21	-	-	74	-29.79	0-360	200	H
4	* 2.354	39.17	Pk	31.8	-24.2	46.77	-	-	74	-27.23	0-360	200	H
2	* 1.593	43.93	Pk	28.8	-25	47.73	-	-	74	-26.27	0-360	101	V
3	* 1.199	39.57	Pk	28.5	-25.5	42.57	-	-	74	-31.43	0-360	101	V
8	* 7.305	35.19	Pk	35.3	-30.3	40.19	-	-	74	-33.81	0-360	200	H
7	* 4.872	42.23	Pk	34.2	-32.4	44.03	-	-	74	-29.97	0-360	200	V
5	2.514	40.82	Pk	32.6	-24	49.42	-	-	-	-	0-360	200	H
6	3.19	39.53	Pk	32.4	-32	39.93	-	-	-	-	0-360	101	V

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

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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
* 1.197	48.49	PK2	28.5	-25.5	51.49	-	-	74	-22.51	286	192	H
* 1.195	32.67	MAv1	28.4	-25.5	35.57	54	-18.43	-	-	286	192	H
* 2.354	44.38	PK2	31.8	-24.2	51.98	-	-	74	-22.02	286	200	H
* 2.353	32.73	MAv1	31.8	-24.2	40.33	54	-13.67	-	-	286	200	H
* 1.593	50.6	PK2	28.8	-25	54.4	-	-	74	-19.6	342	102	V
* 1.593	32.7	MAv1	28.8	-25	36.5	54	-17.5	-	-	342	102	V
* 1.198	45.27	PK2	28.5	-25.5	48.27	-	-	74	-25.73	342	102	V
* 1.201	32.93	MAv1	28.5	-25.5	35.93	54	-18.07	-	-	342	102	V
* 7.307	46.22	PK2	35.3	-30.3	51.22	-	-	74	-22.78	195	200	H
* 7.307	32.07	MAv1	35.3	-30.3	37.07	54	-16.93	-	-	195	200	H
* 4.872	53.13	PK2	34.2	-32.4	54.93	-	-	74	-19.07	209	294	V
* 4.872	40.09	MAv1	34.2	-32.4	41.89	54	-12.11	-	-	209	294	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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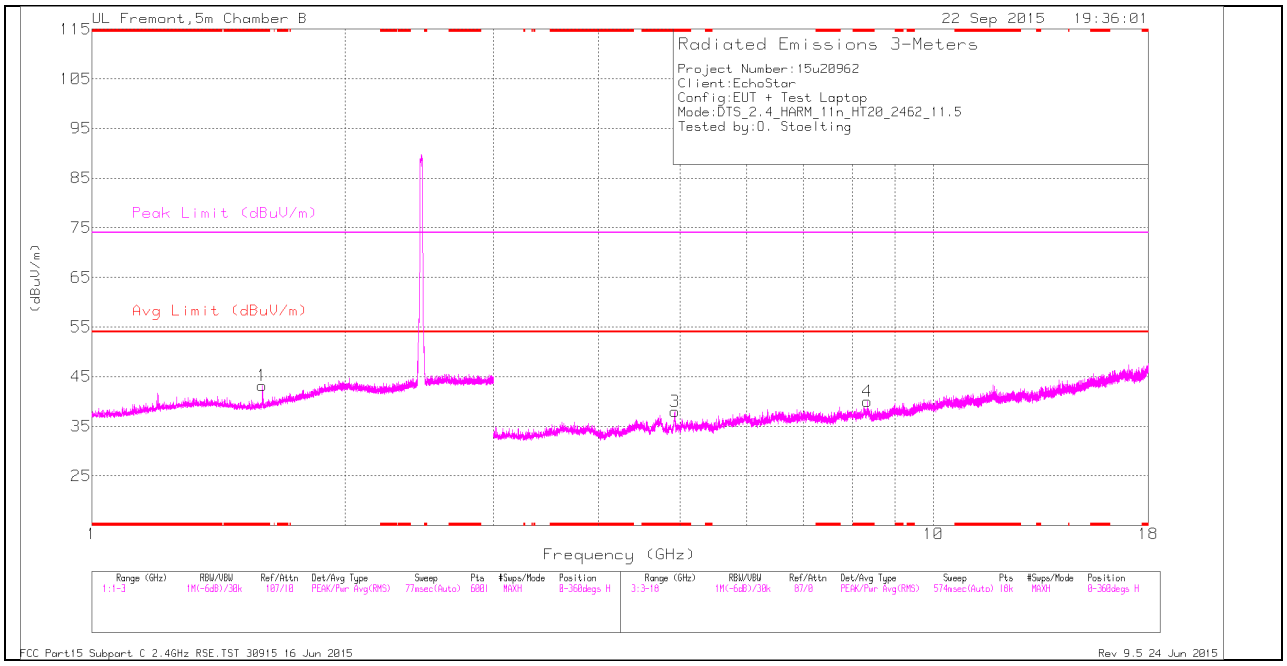
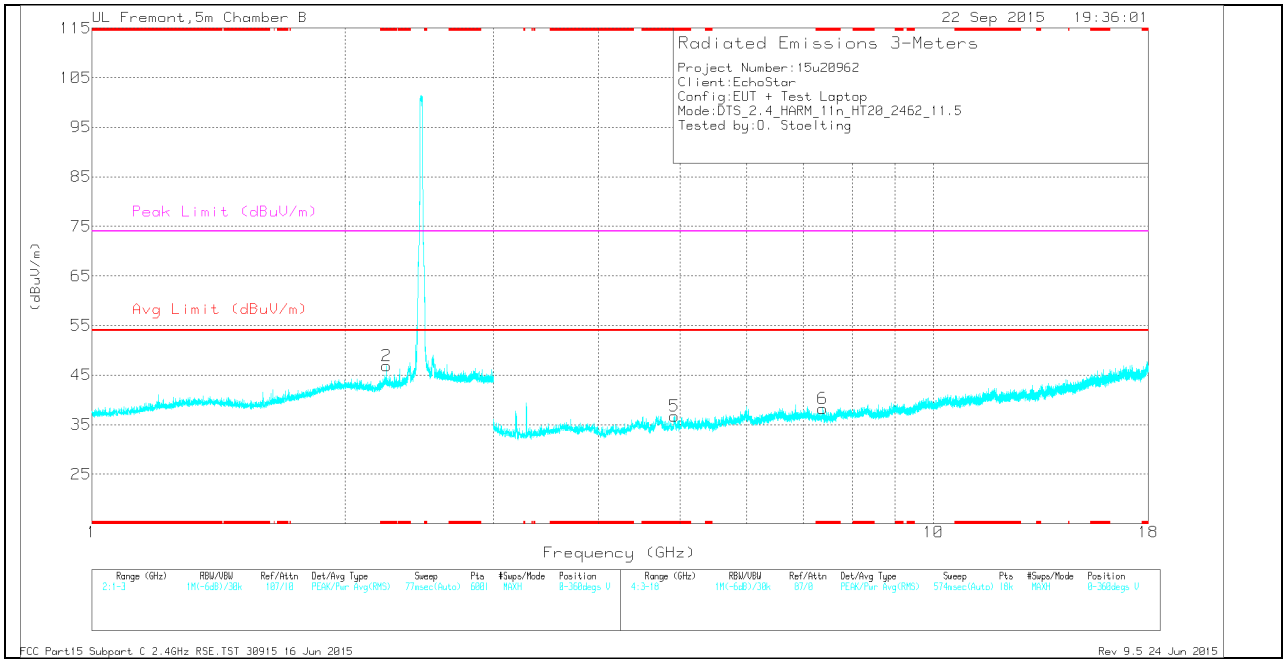
HIGH CHANNEL HORIZONTAL



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

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 T345 (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	* 1.593	39.37	Pk	28.8	-25	43.17	-	-	74	-30.83	0-360	101	H
2	* 2.24	39.9	Pk	31.3	-24.3	46.9	-	-	74	-27.1	0-360	199	V
3	* 4.927	36.41	Pk	34.1	-32.5	38.01	-	-	74	-35.99	0-360	101	H
4	* 8.346	31.65	Pk	35.7	-27.3	40.05	-	-	74	-33.95	0-360	101	H
5	* 4.923	35.17	Pk	34.1	-32.5	36.77	-	-	74	-37.23	0-360	101	V
6	* 7.38	32.17	Pk	35.4	-29.3	38.27	-	-	74	-35.73	0-360	199	V

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

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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
* 1.593	44.15	PK2	28.8	-25	47.95	-	-	74	-26.05	1	102	H
* 1.594	32.59	MAv1	28.8	-25	36.39	54	-17.61	-	-	1	102	H
* 2.24	48.91	PK2	31.3	-24.3	55.91	-	-	74	-18.09	216	253	V
* 2.24	39.16	MAv1	31.3	-24.3	46.16	54	-7.84	-	-	216	253	V
* 4.925	46.96	PK2	34.1	-32.5	48.56	-	-	74	-25.44	216	102	H
* 4.925	34.11	MAv1	34.1	-32.5	35.71	54	-18.29	-	-	216	102	H
* 8.345	38.42	PK2	35.7	-27.3	46.82	-	-	74	-27.18	216	102	H
* 8.344	27.49	MAv1	35.7	-27.3	35.89	54	-18.11	-	-	216	102	H
* 4.924	45.18	PK2	34.1	-32.5	46.78	-	-	74	-27.22	216	102	V
* 4.923	32.91	MAv1	34.1	-32.5	34.51	54	-19.49	-	-	216	102	V
* 7.381	39.46	PK2	35.4	-29.3	45.56	-	-	74	-28.44	216	198	V
* 7.38	28.43	MAv1	35.4	-29.3	34.53	54	-19.47	-	-	216	198	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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12. RADIATED TEST RESULTS MIMO

12.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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

TEST PROCEDURE

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

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 N HT20mode = 0dB(duty cycle >98%); N HT40 mode = 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.

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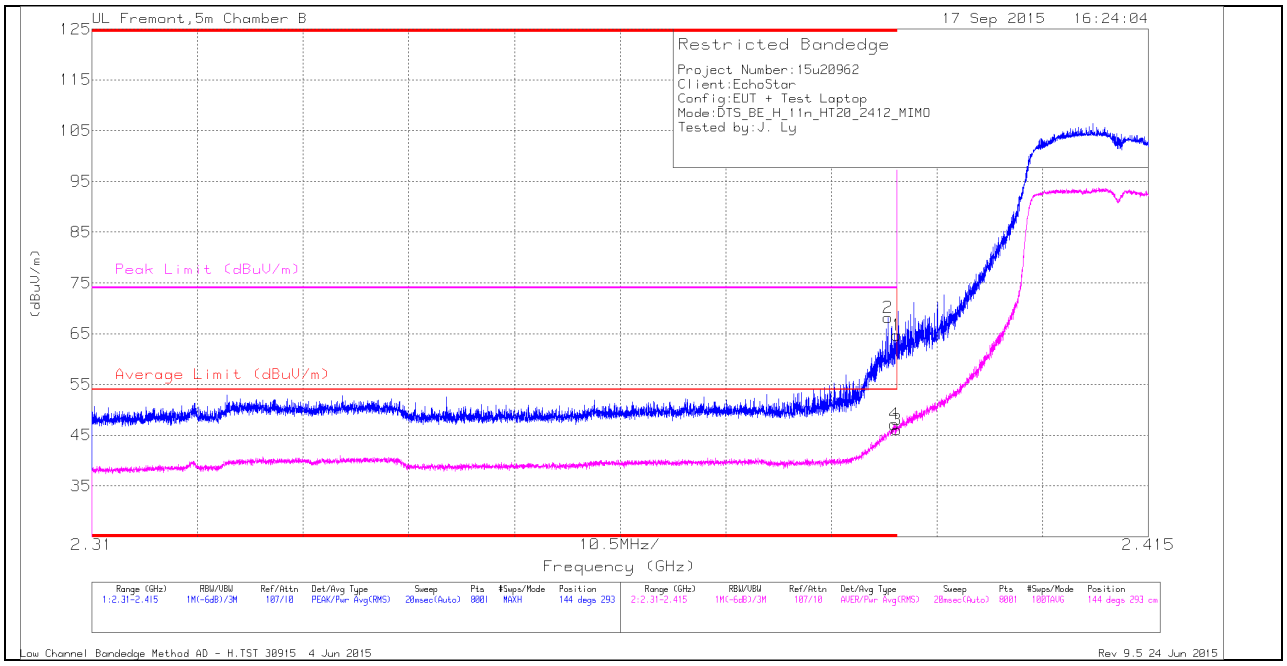
12.1.1. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



CH 1 HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	56.83	Pk	32	-24.1	64.73	-	-	74	-9.27	144	293	H
2	* 2.389	60.25	Pk	32	-24.1	68.15	-	-	74	-5.85	144	293	H
3	* 2.39	38.22	RMS	32	-24.1	46.12	54	-7.88	-	-	144	293	H
4	* 2.39	39.23	RMS	32	-24.1	47.13	54	-6.87	-	-	144	293	H

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

Pk - Peak detector

RMS - RMS detection

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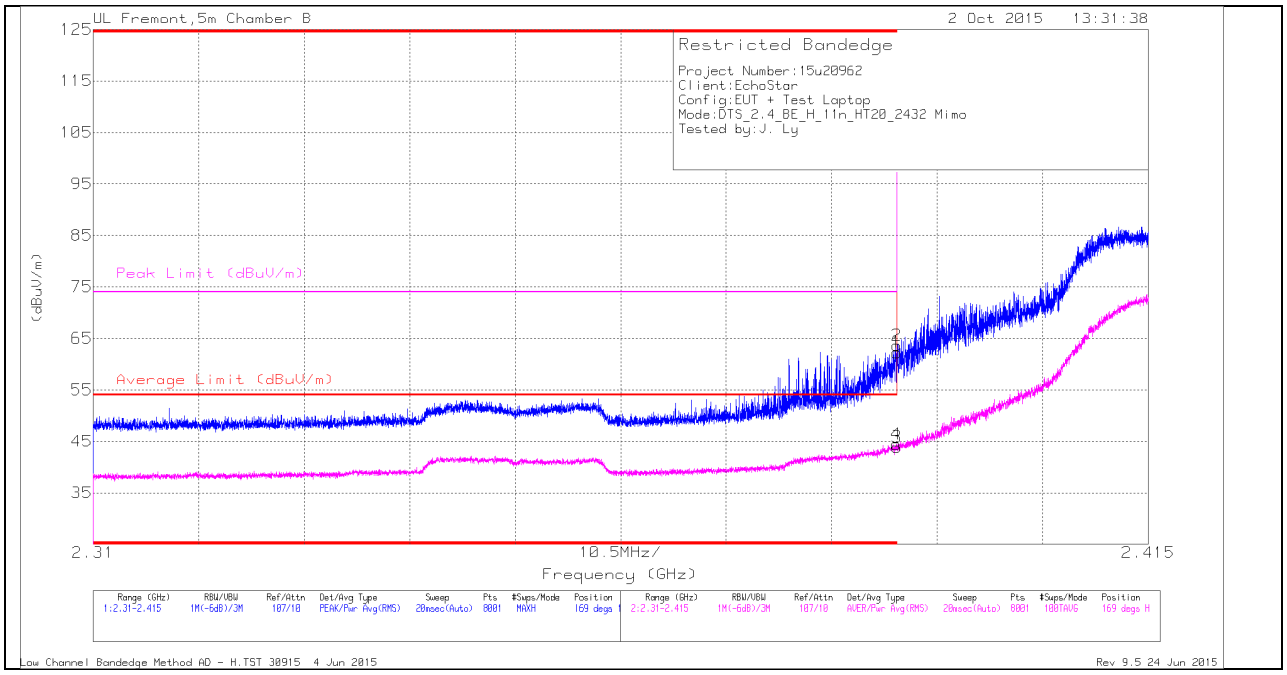

CH5 HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	54.36	Pk	32	-24.1	62.26			74	-11.74	169	169	H
2	* 2.39	55.71	Pk	32	-24.1	63.61			74	-10.39	169	169	H
3	* 2.39	35.98	RMS	32	-24.1	43.88	54	-10.12	-	-	169	169	H
4	* 2.39	36.52	RMS	32	-24.1	44.42	54	-9.58	-	-	169	169	H

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

Pk - Peak detector

RMS - RMS detection

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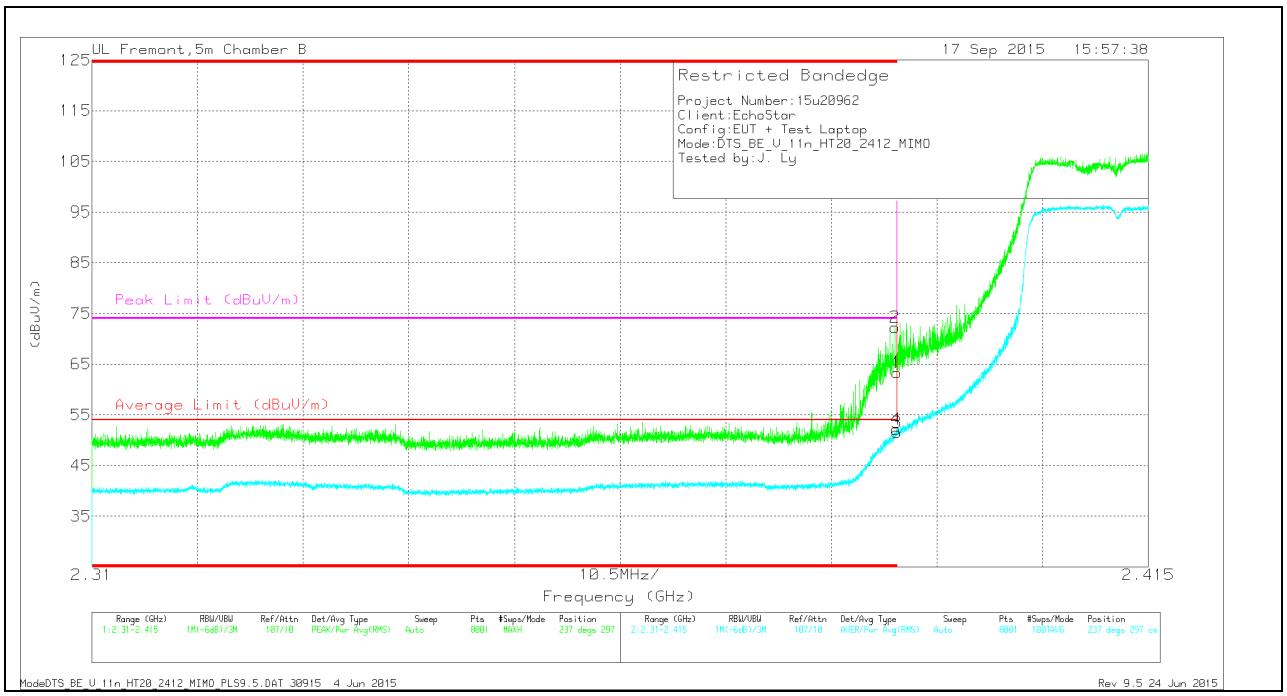
VERTICAL PEAK AND AVERAGE PLOT



CH 1 VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	55.44	Pk	32	-24.1	63.34	-	-	74	-10.66	237	297	V
2	* 2.39	64.38	Pk	32	-24.1	72.28	-	-	74	-1.72	237	297	V
3	* 2.39	43.64	RMS	32	-24.1	51.54	54	-2.46	-	-	237	297	V
4	* 2.39	44.28	RMS	32	-24.1	52.18	54	-1.82	-	-	237	297	V

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

Pk - Peak detector

RMS - RMS detection

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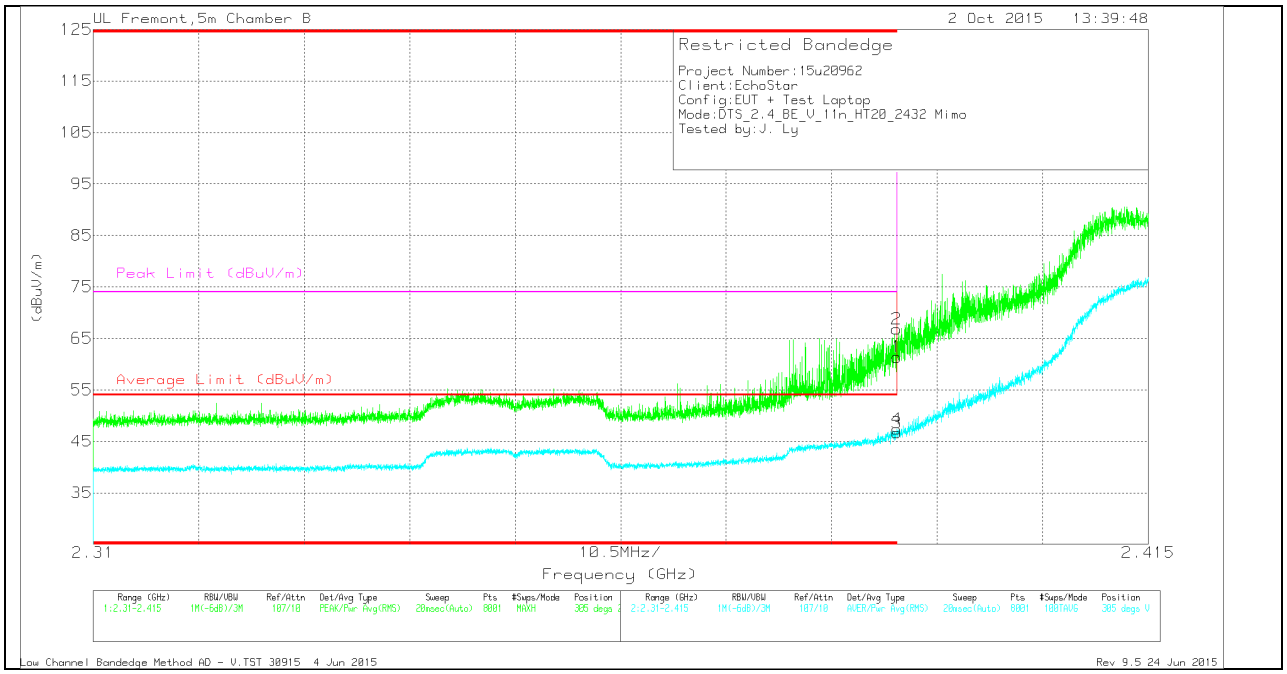

CH 5 VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	53.49	Pk	32	-24.1	61.39	-	-	74	-12.61	305	285	V
2	* 2.39	58.89	Pk	32	-24.1	66.79	-	-	74	-7.21	305	285	V
3	* 2.39	38.77	RMS	32	-24.1	46.67	54	-7.33	-	-	305	285	V
4	* 2.39	39.49	RMS	32	-24.1	47.39	54	-6.61	-	-	305	285	V

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

Pk - Peak detector

RMS - RMS detection

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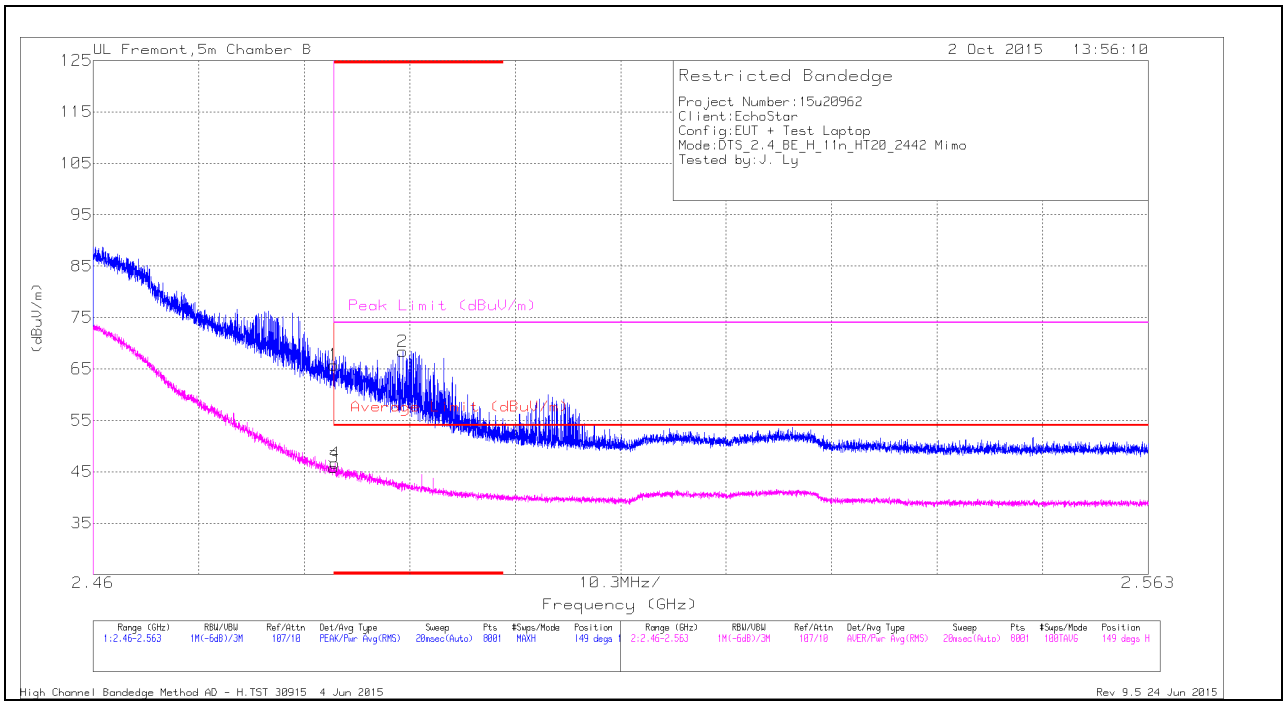
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



CH 7 HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	57.25	Pk	32.5	-24	65.75	-	-	74	-8.25	149	115	H
3	* 2.484	37.36	RMS	32.5	-24	45.86	54	-8.14	-	-	149	115	H
4	* 2.484	38.16	RMS	32.5	-24	46.66	54	-7.34	-	-	149	115	H
2	* 2.49	59.91	Pk	32.5	-24	68.41	-	-	74	-5.59	149	115	H

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

Pk - Peak detector

RMS - RMS detection

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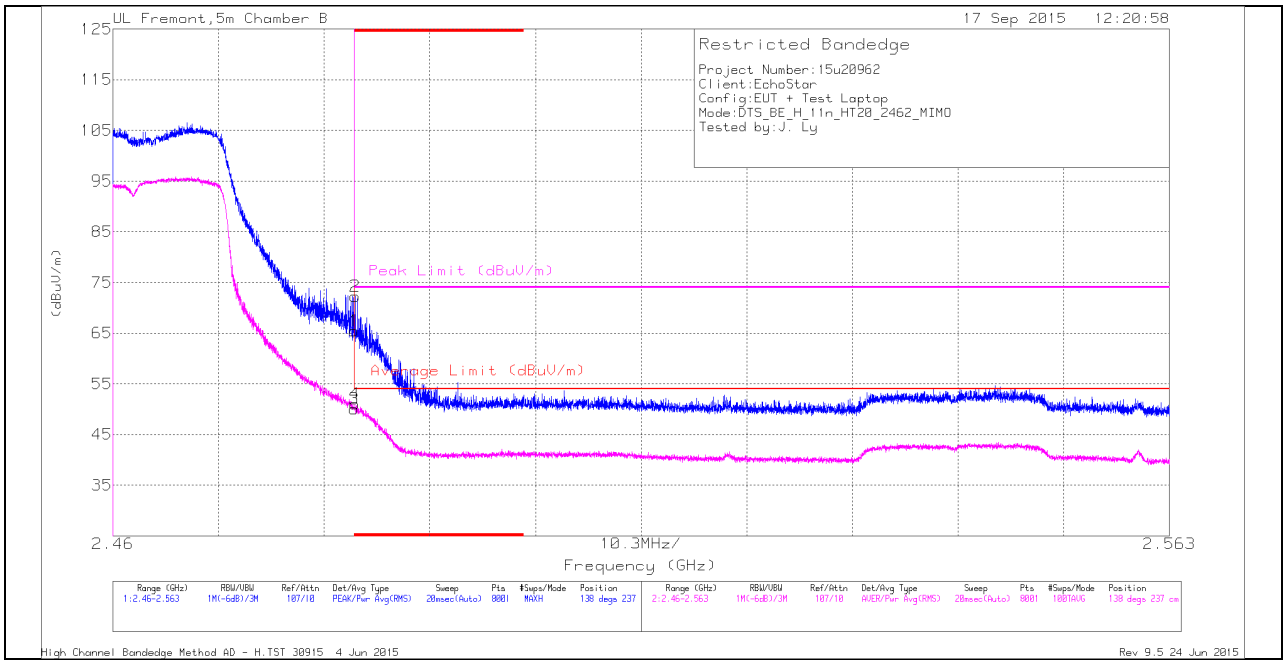

CH 11 HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	56.94	Pk	32.5	-24	65.44	-	-	74	-8.56	138	237	H
2	* 2.484	63.75	Pk	32.5	-24	72.25	-	-	74	-1.75	138	237	H
3	* 2.484	41.57	RMS	32.5	-24	50.07	54	-3.93	-	-	138	237	H
4	* 2.484	42.48	RMS	32.5	-24	50.98	54	-3.02	-	-	138	237	H

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

Pk - Peak detector

RMS - RMS detection

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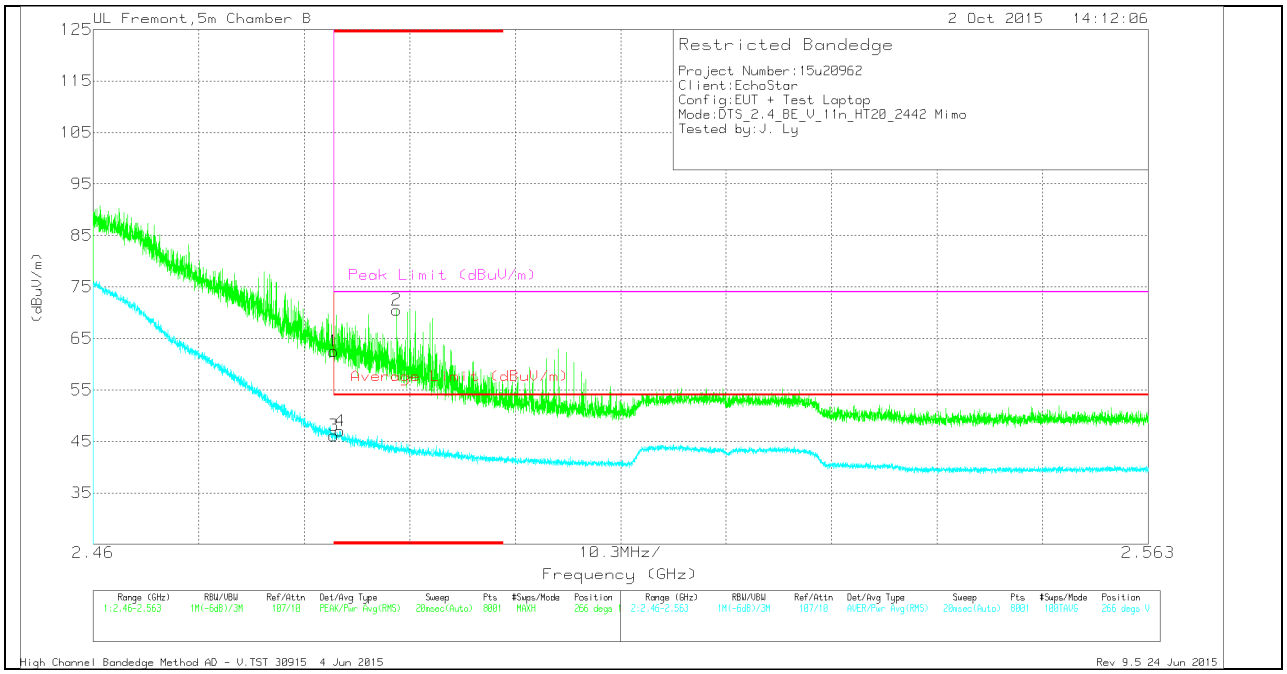
VERTICAL PEAK AND AVERAGE PLOT



CH 7 VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	53.99	Pk	32.5	-24	62.49	-	-	74	-11.51	266	199	V
2	* 2.49	62.03	Pk	32.5	-24	70.53	-	-	74	-3.47	266	199	V
3	* 2.484	37.63	RMS	32.5	-24	46.13	54	-7.87	-	-	266	199	V
4	* 2.484	38.52	RMS	32.5	-24	47.02	54	-6.98	-	-	266	199	V

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

Pk - Peak detector

RMS - RMS detection

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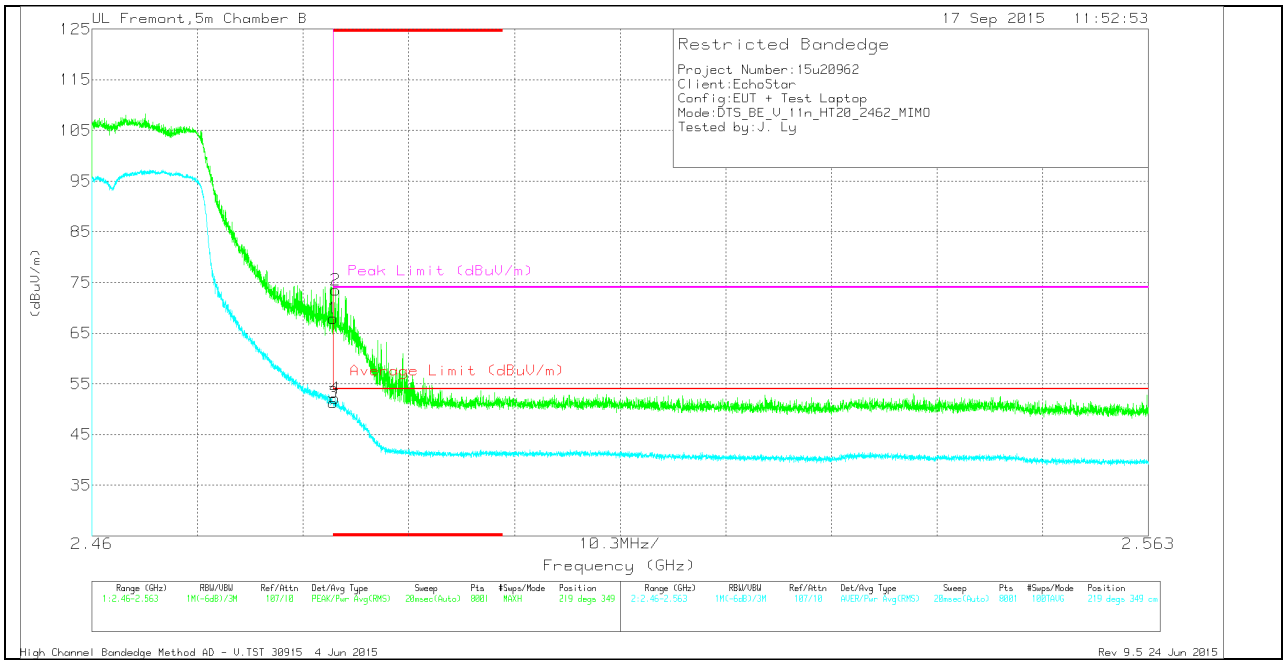

CH 11 VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	59.41	Pk	32.5	-24	67.91	-	-	74	-6.09	219	349	V
2	* 2.484	65.03	Pk	32.5	-24	73.53	-	-	74	-.47	219	349	V
3	* 2.484	42.74	RMS	32.5	-24	51.24	54	-2.76	-	-	219	349	V
4	* 2.484	43.7	RMS	32.5	-24	52.2	54	-1.8	-	-	219	349	V

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

Pk - Peak detector

RMS - RMS detection

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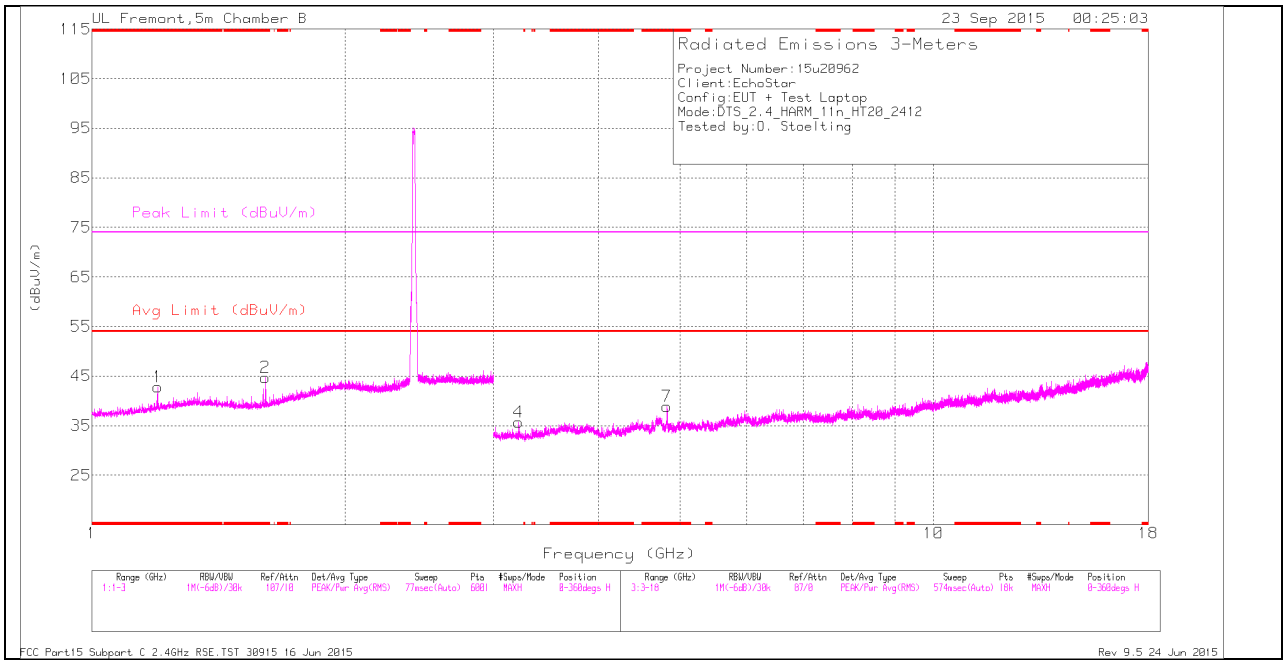
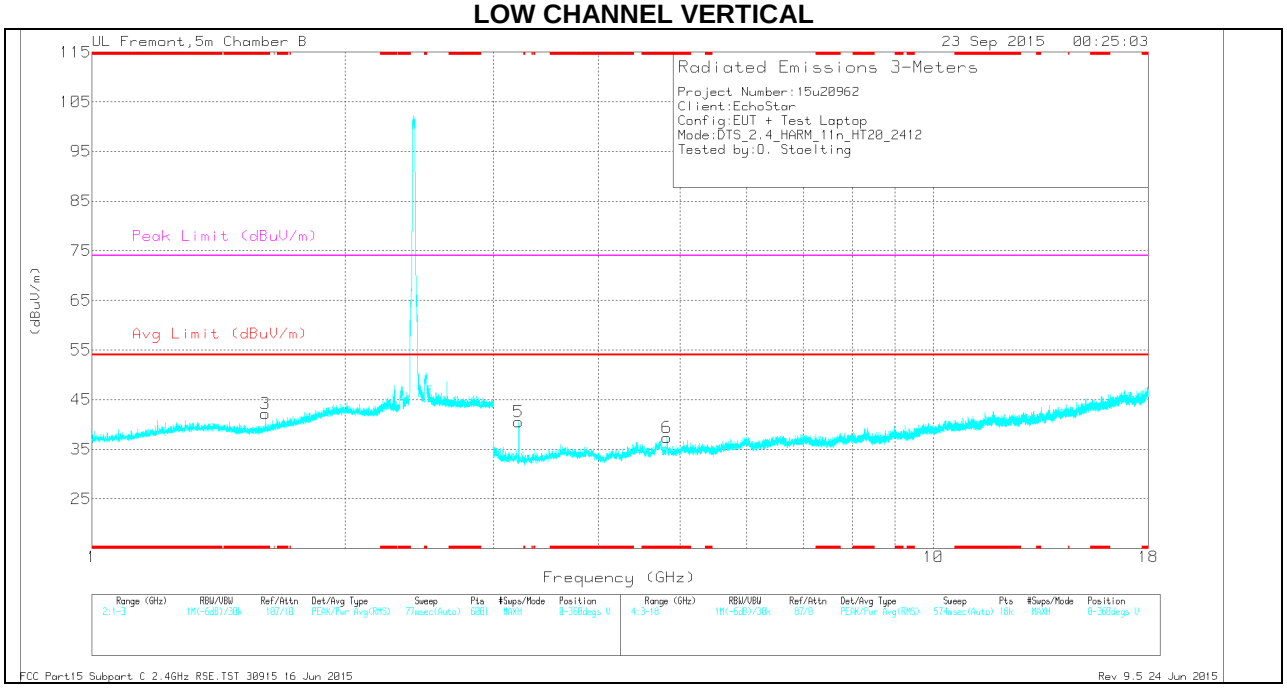
HARMONICS AND SPURIOUS EMISSIONS

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.

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 T345 (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	* 1.197	39.77	Pk	28.5	-25.5	0	42.77	-	-	74	-31.23	0-360	101	H
2	* 1.608	40.86	Pk	28.9	-25	0	44.76	-	-	74	-29.24	0-360	101	H
3	* 1.608	38.32	Pk	28.9	-25	0	42.22	-	-	74	-31.78	0-360	199	V
7	* 4.824	36.21	Pk	34.3	-31.6	0	38.91	-	-	74	-35.09	0-360	101	H
6	* 4.822	34.62	Pk	34.3	-31.6	0	37.32	-	-	74	-36.68	0-360	101	V
4	3.216	35.69	Pk	32.4	-32.4	0	35.69	-	-	-	-	0-360	199	H
5	3.216	40.51	Pk	32.4	-32.4	0	40.51	-	-	-	-	0-360	199	V

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

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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
* 1.197	46.56	PK2	28.5	-25.5	49.56	-	-	74	-24.44	1	101	H
* 1.198	32.9	MAv1	28.5	-25.5	35.9	54	-18.1	-	-	1	101	H
* 1.608	46.3	PK2	28.9	-25	50.2	-	-	74	-23.8	1	101	H
* 1.608	38.5	MAv1	28.9	-25	42.4	54	-11.6	-	-	1	101	H
* 1.608	48.05	PK2	28.9	-25	51.95	-	-	74	-22.05	234	105	H
* 1.608	40.73	MAv1	28.9	-25	44.63	54	-9.37	-	-	234	105	H
* 1.608	44.38	PK2	28.9	-25	48.28	-	-	74	-25.72	234	199	V
* 1.608	33.2	MAv1	28.9	-25	37.1	54	-16.9	-	-	234	199	V
* 4.824	46.29	PK2	34.3	-31.6	43.94	-	-	74	-25.01	135	106	H
* 4.824	32.98	MAv1	34.3	-31.6	35.33	54	-18.67	-	-	135	106	H
* 4.824	43.06	PK2	34.3	-31.6	48.99	-	-	74	-28.24	135	102	V
* 4.822	31.27	MAv1	34.3	-31.6	35.68	54	-18.32	-	-	135	102	V
3.216	43.94	PK2	32.4	-32.4	43.93	-	-	74	-30.07	234	199	H
3.216	35.33	MAv1	32.4	-32.4	35.18	54	-18.82	-	-	234	199	H
3.216	43.93	PK2	32.4	-32.4	45.76	-	-	74	-28.24	135	199	V
3.216	35.18	MAv1	32.4	-32.4	33.97	54	-20.03	-	-	135	199	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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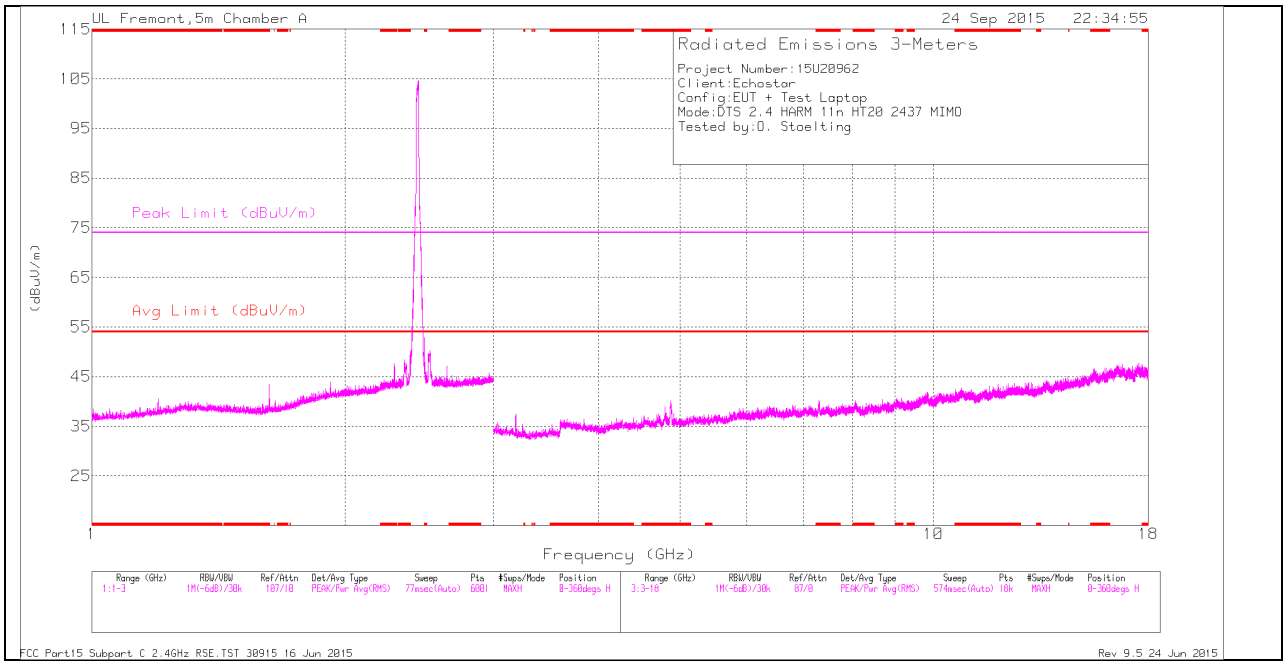
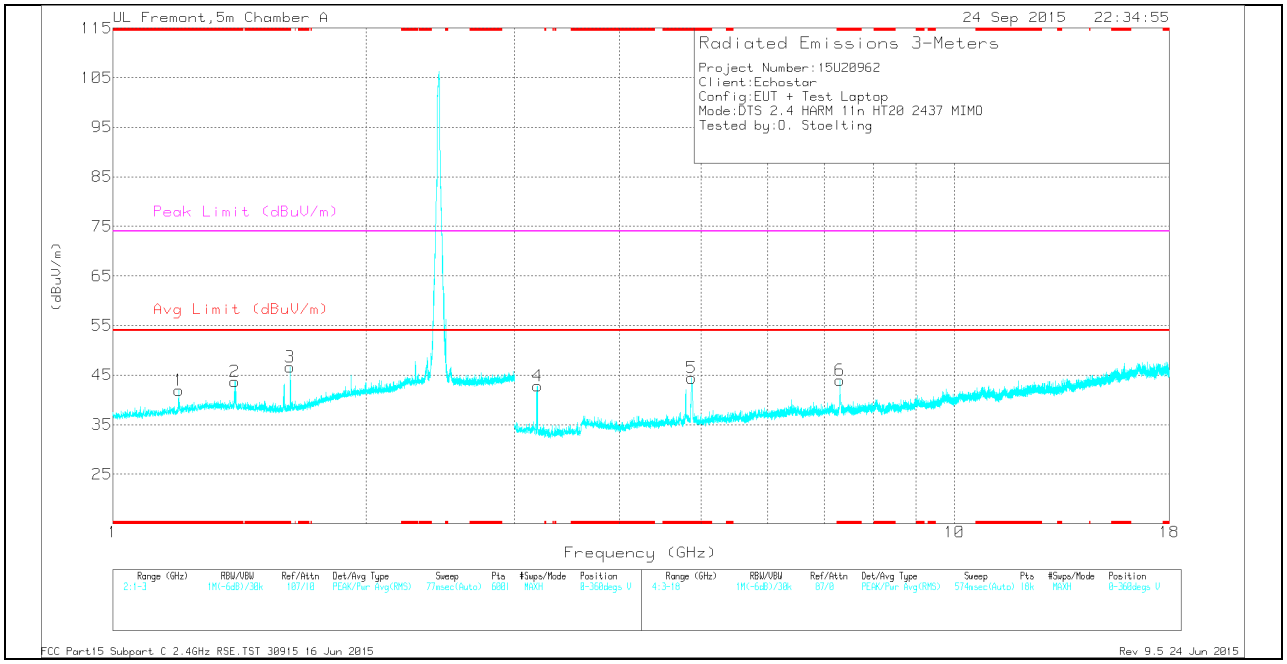
MID CHANNEL HORIZONTAL



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

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 T136 (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	* 1.197	39.97	Pk	28	-26.1	41.87	-	-	74	-32.13	0-360	100	V
2	* 1.396	40.86	Pk	28.5	-25.7	43.66	-	-	74	-30.34	0-360	200	V
3	* 1.625	44.04	Pk	28.1	-25.5	46.64	-	-	74	-27.36	0-360	200	V
5	* 4.872	39.8	Pk	33.9	-29.3	44.4	-	-	74	-29.6	0-360	200	V
6	* 7.306	35	Pk	35.5	-26.6	43.9	-	-	74	-30.1	0-360	100	V
4	3.195	41.84	Pk	32.7	-31.7	42.84	-	-	-	-	0-360	100	V

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

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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
* 1.196	48.25	PK2	28	-26.1	50.15	-	-	74	-23.85	203	116	V
* 1.198	32.87	MAv1	28	-26.1	34.77	54	-19.23	-	-	203	116	V
* 1.394	49.57	PK2	28.5	-25.7	52.37	-	-	74	-21.63	189	211	V
* 1.396	32.93	MAv1	28.5	-25.7	35.73	54	-18.27	-	-	189	211	V
* 1.625	49.78	PK2	28.1	-25.5	52.38	-	-	74	-21.62	272	231	V
* 1.625	43.8	MAv1	28.1	-25.5	46.4	54	-7.6	-	-	272	231	V
* 4.873	50.04	PK2	33.9	-29.3	54.64	-	-	74	-19.36	304	304	V
* 4.873	37.75	MAv1	33.9	-29.3	42.35	54	-11.65	-	-	304	304	V
* 7.305	43.65	PK2	35.5	-26.6	52.55	-	-	74	-21.45	345	164	V
* 7.308	30.28	MAv1	35.5	-26.6	39.18	54	-14.82	-	-	345	164	V
3.194	30.57	MAv1	32.7	-31.7	31.57	54	-22.43	-	-	213	234	V
3.195	50.57	PK2	32.7	-31.7	51.57	-	-	74	-22.43	213	234	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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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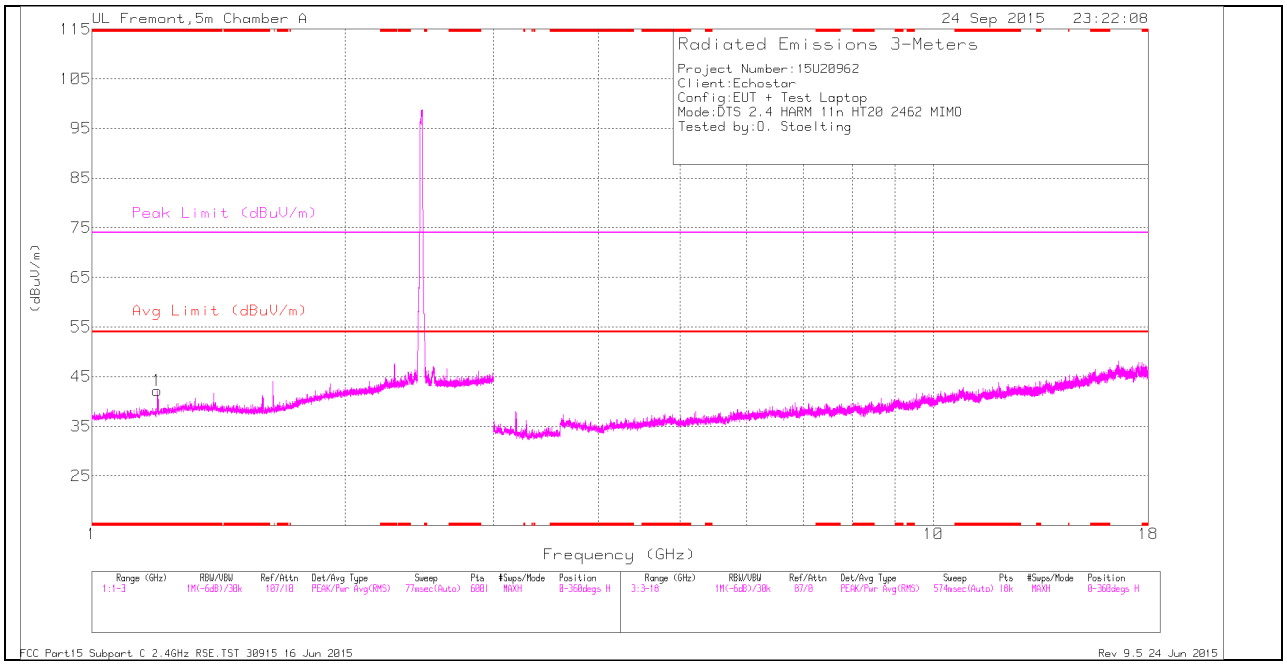
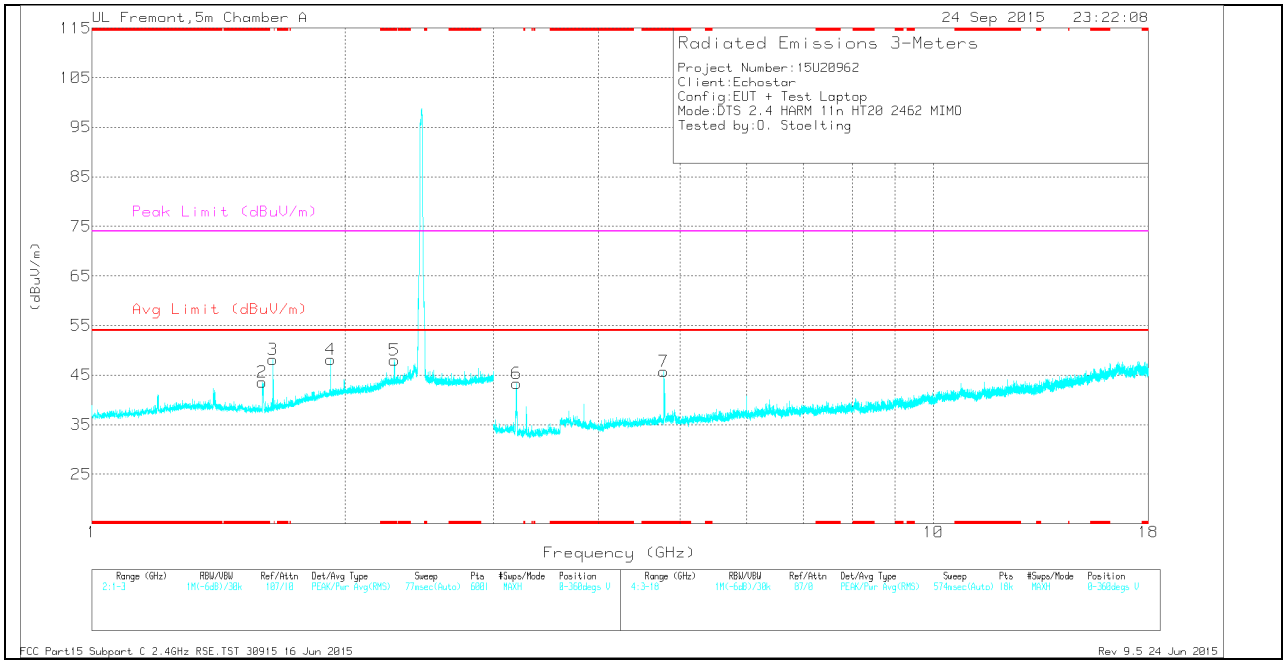
HIGH CHANNEL HORIZONTAL



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

HIGH CHANNEL VERTICAL



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

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HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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	* 1.196	40.28	Pk	28	-26.1	42.18	-	-	74	-31.82	0-360	201	H
2	* 1.594	41.25	Pk	27.9	-25.6	43.55	-	-	74	-30.45	0-360	200	V
5	* 2.288	41.06	Pk	31.8	-24.8	48.06	-	-	74	-25.94	0-360	200	V
7	* 4.779	41.76	Pk	34	-30	45.76	-	-	74	-28.24	0-360	100	V
3	1.641	45.39	Pk	28.2	-25.5	48.09	-	-	-	-	0-360	200	V
4	1.92	42.39	Pk	30.9	-25.1	48.19	-	-	-	-	0-360	200	V
6	3.194	42.31	Pk	32.7	-31.7	43.31	-	-	-	-	0-360	100	V

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

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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
* 1.198	47.87	PK2	28	-26.1	49.77	-	-	74	-24.23	253	243	H
* 1.195	32.89	MAv1	28	-26.1	34.79	54	-19.21	-	-	253	243	H
* 1.596	50.54	PK2	27.9	-25.6	52.84	-	-	74	-21.16	214	360	V
* 1.596	33.46	MAv1	27.9	-25.6	35.76	54	-18.24	-	-	214	360	V
* 2.288	49.69	PK2	31.8	-24.8	56.69	-	-	74	-17.31	56	315	V
* 2.288	41.86	MAv1	31.8	-24.8	48.86	54	-5.14	-	-	56	315	V
* 4.78	49.98	PK2	34	-30	53.98	-	-	74	-20.02	223	252	V
* 4.779	29.94	MAv1	34	-30	33.94	54	-20.06	-	-	223	252	V
1.641	49.19	PK2	28.2	-25.5	51.89	-	-	74	-22.11	268	220	V
1.641	43.45	MAv1	28.2	-25.5	46.15	54	-7.85	-	-	268	220	V
1.92	54.96	PK2	30.9	-25.1	60.76	-	-	74	-13.24	349	267	V
1.92	33.38	MAv1	30.9	-25.1	39.18	54	-14.82	-	-	349	267	V
3.194	50.64	PK2	32.7	-31.7	51.64	-	-	74	-22.36	212	232	V
3.196	30.99	MAv1	32.7	-31.8	31.89	54	-22.11	-	-	212	232	V

* - indicates frequency in CFR15.205/IC7.2.2 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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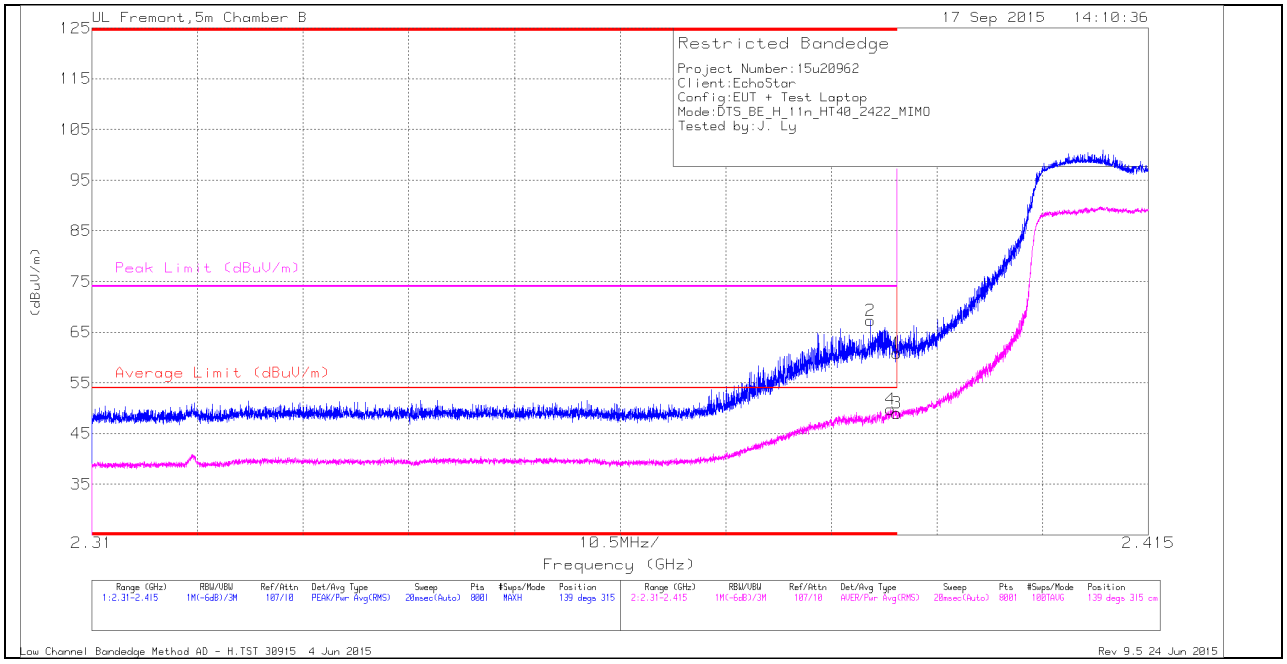
12.1.2. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ 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	52.94	Pk	32	-24.1	60.84	-	-	74	-13.16	139	315	H
2	* 2.387	59.36	Pk	32	-24.1	67.26	-	-	74	-6.74	139	315	H
3	* 2.39	41.09	RMS	32	-24.1	48.99	54	-5.01	-	-	139	315	H
4	* 2.389	41.91	RMS	32	-24.1	49.81	54	-4.19	-	-	139	315	H

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

Pk - Peak detector

RMS - RMS detection

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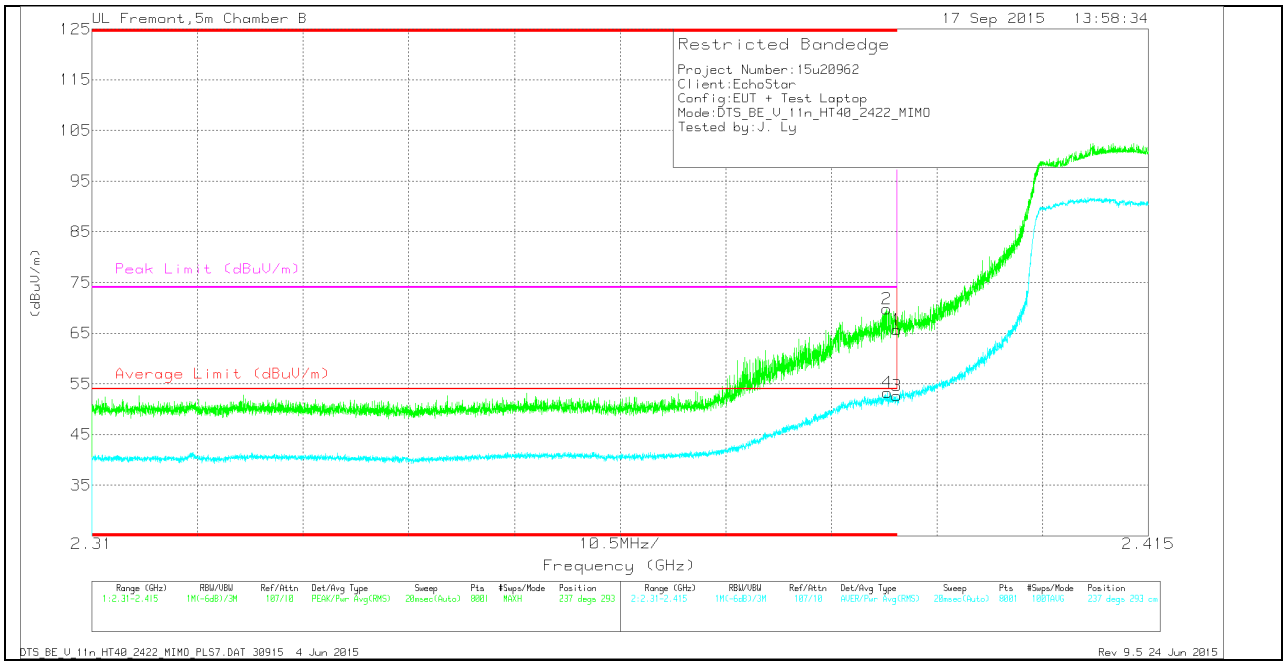
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	57.75	Pk	32	-24.1	65.65	-	-	74	-8.35	237	293	V
2	* 2.389	61.91	Pk	32	-24.1	69.81	-	-	74	-4.19	237	293	V
3	* 2.39	44.75	RMS	32	-24.1	52.65	54	-1.35	-	-	237	293	V
4	* 2.389	45.36	RMS	32	-24.1	53.26	54	-.74	-	-	237	293	V

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

Pk - Peak detector

RMS - RMS detection

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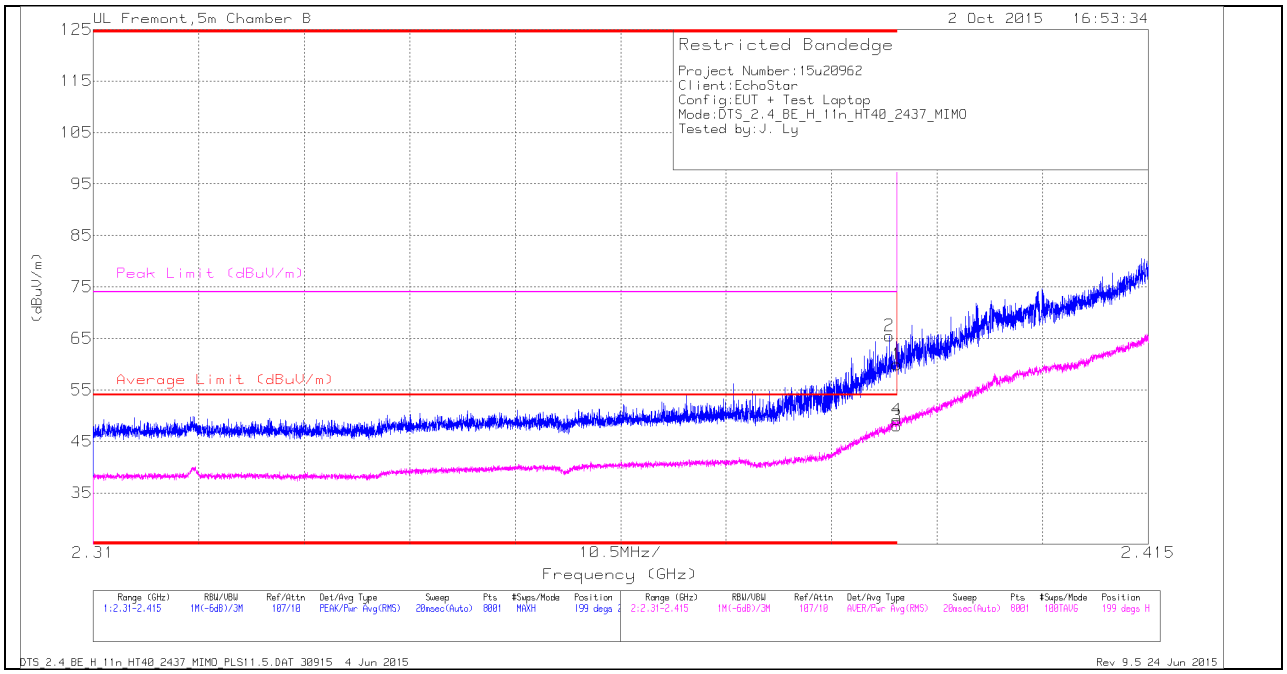
LOW BANDEDGE (MID CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	57.62	Pk	32	-24.1	65.52	-	-	74	-8.48	199	250	H
1	* 2.39	52.03	Pk	32	-24.1	59.93	-	-	74	-14.07	199	250	H
3	* 2.39	40.12	RMS	32	-24.1	48.02	54	-5.98	-	-	199	250	H
4	* 2.39	41.31	RMS	32	-24.1	49.21	54	-4.79	-	-	199	250	H

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

Pk - Peak detector

RMS - RMS detection

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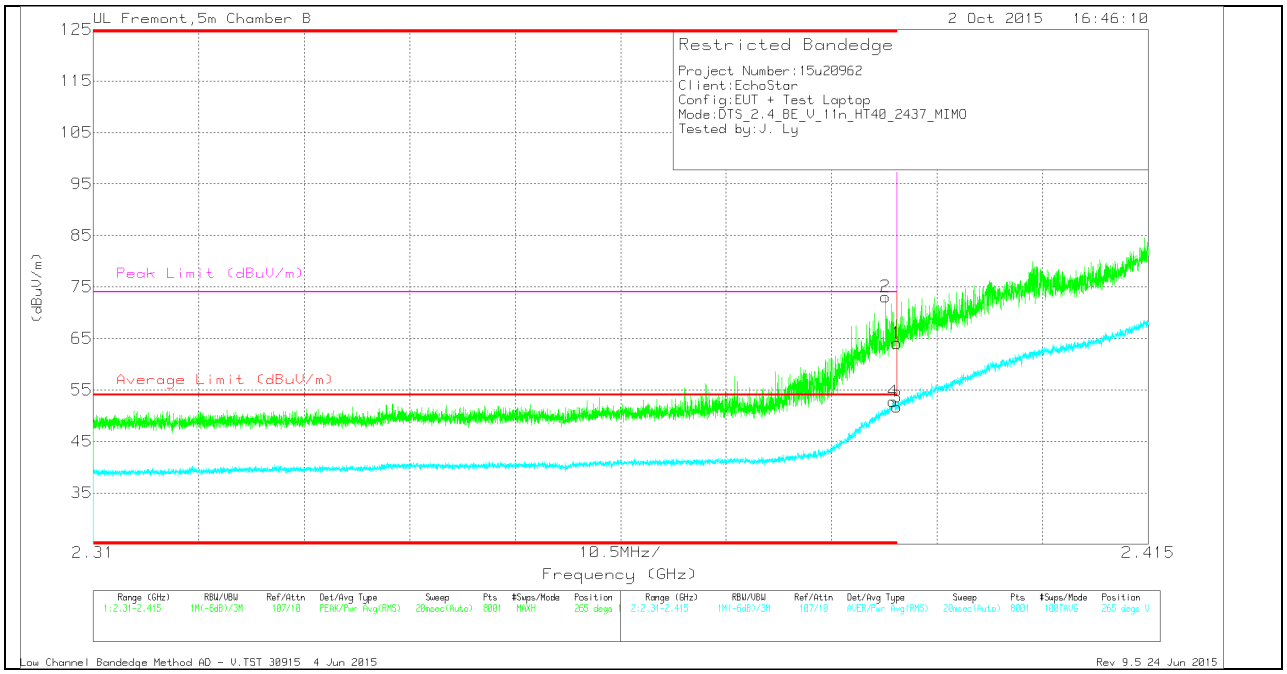
LOW BANDEDGE (MID CHANNEL)

VERTICAL PEAK AND AVERAGE PLOT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	65.2	Pk	32	-24.1	73.1	-	-	74	-.9	265	194	V
1	* 2.39	56.18	Pk	32	-24.1	64.08	-	-	74	-9.92	265	194	V
3	* 2.39	43.79	RMS	32	-24.1	51.69	54	-2.31	-	-	265	194	V
4	* 2.39	44.85	RMS	32	-24.1	52.75	54	-1.25	-	-	265	194	V

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

Pk - Peak detector

RMS - RMS detection

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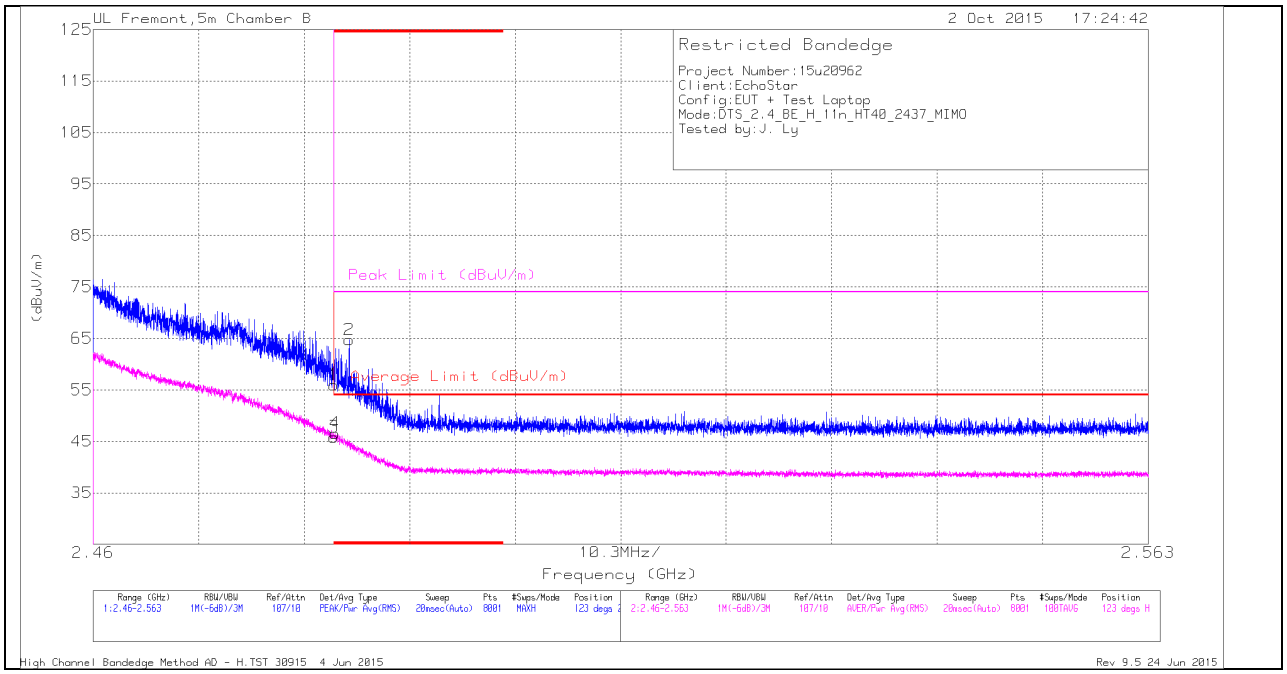
HIGH BANDEDGE (MID CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	47.49	Pk	32.5	-24	55.99	-	-	74	-18.01	123	281	H
3	* 2.484	37.35	RMS	32.5	-24	45.85	54	-8.15	-	-	123	281	H
4	* 2.484	38.07	RMS	32.5	-24	46.57	54	-7.43	-	-	123	281	H
2	* 2.485	56.21	Pk	32.5	-24	64.71	-	-	74	-9.29	123	281	H

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

Pk - Peak detector

RMS - RMS detection

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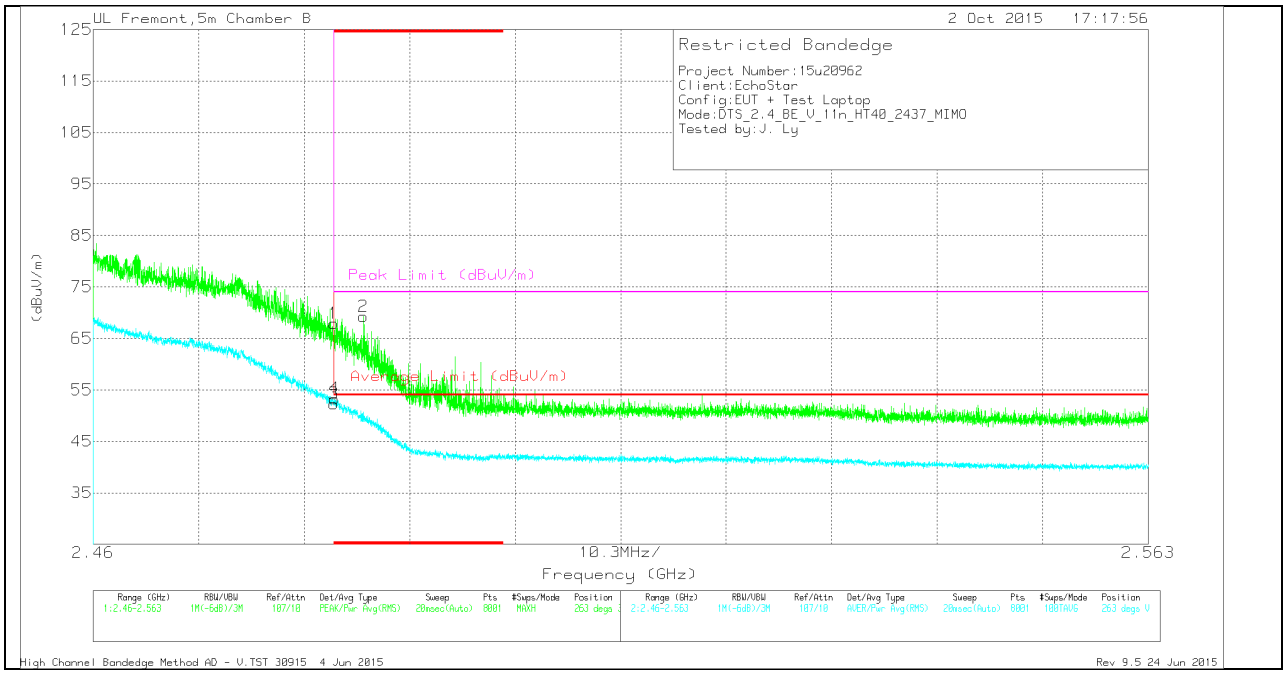
HIGH BANDEDGE (MID CHANNEL)

VERTICAL PEAK AND AVERAGE PLOT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	59.4	Pk	32.5	-24	67.9	-	-	74	-6.1	263	319	V
3	* 2.484	43.82	RMS	32.5	-24	52.32	54	-1.68	-	-	263	319	V
4	* 2.484	44.81	RMS	32.5	-24	53.31	54	-.69	-	-	263	319	V
2	* 2.486	60.74	Pk	32.5	-24	69.24	-	-	74	-4.76	263	319	V

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

Pk - Peak detector

RMS - RMS detection

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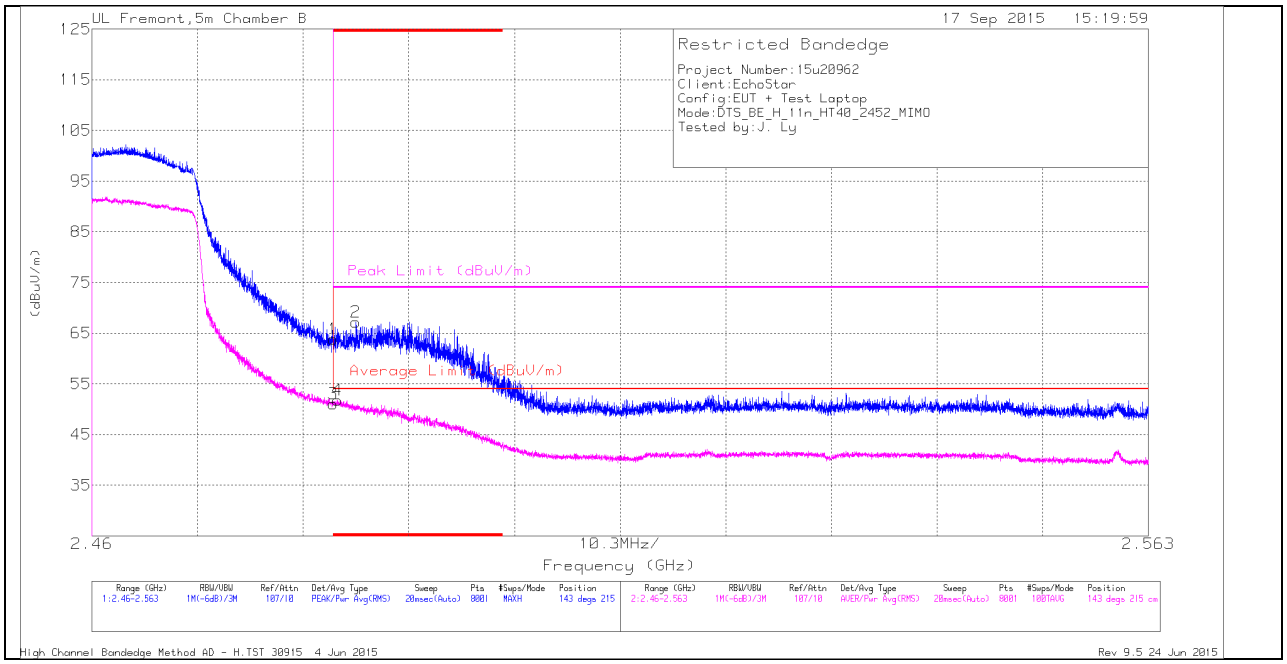
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	55.28	Pk	32.5	-24	63.78	-	-	74	-10.22	143	215	H
2	* 2.486	58.69	Pk	32.5	-24	67.19	-	-	74	-6.81	143	215	H
3	* 2.484	42.58	RMS	32.5	-24	51.08	54	-2.92	-	-	143	215	H
4	* 2.484	43.25	RMS	32.5	-24	51.75	54	-2.25	-	-	143	215	H

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

Pk - Peak detector

RMS - RMS detection

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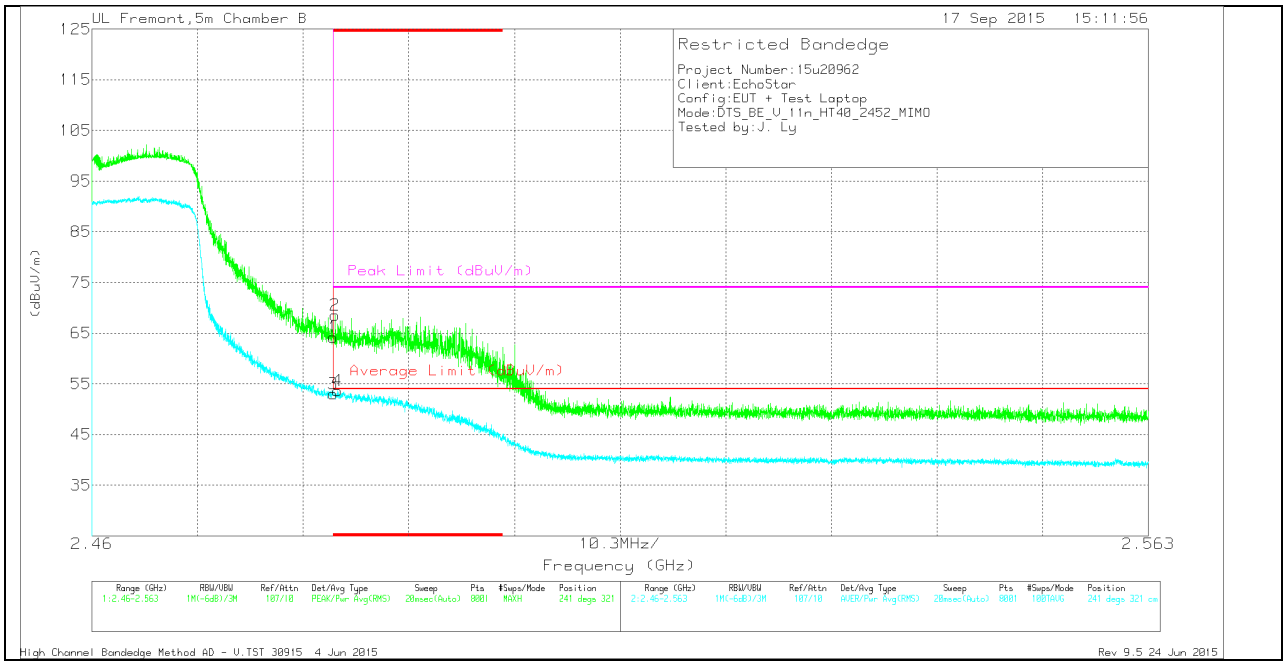
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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	55.73	Pk	32.5	-24	64.23	-	-	74	-9.77	241	321	V
2	* 2.484	60.03	Pk	32.5	-24	68.53	-	-	74	-5.47	241	321	V
3	* 2.484	44.47	RMS	32.5	-24	52.97	54	-1.03	-	-	241	321	V
4	* 2.484	44.91	RMS	32.5	-24	53.41	54	-.59	-	-	241	321	V

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

Pk - Peak detector

RMS - RMS detection

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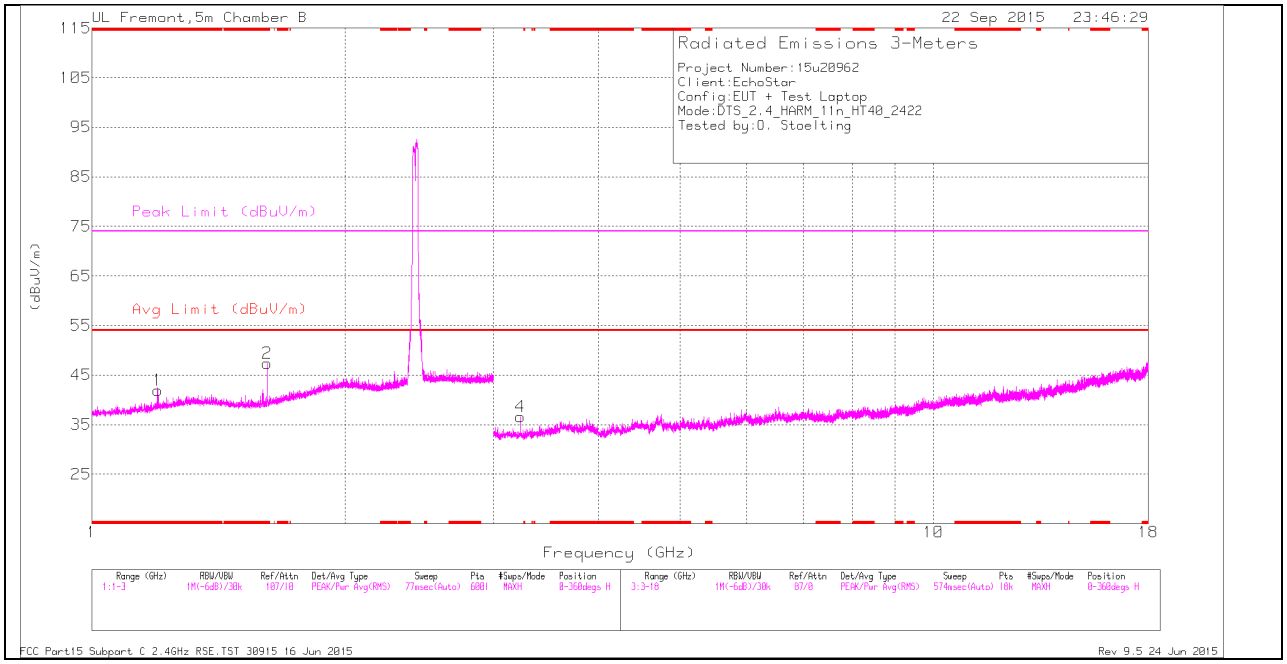
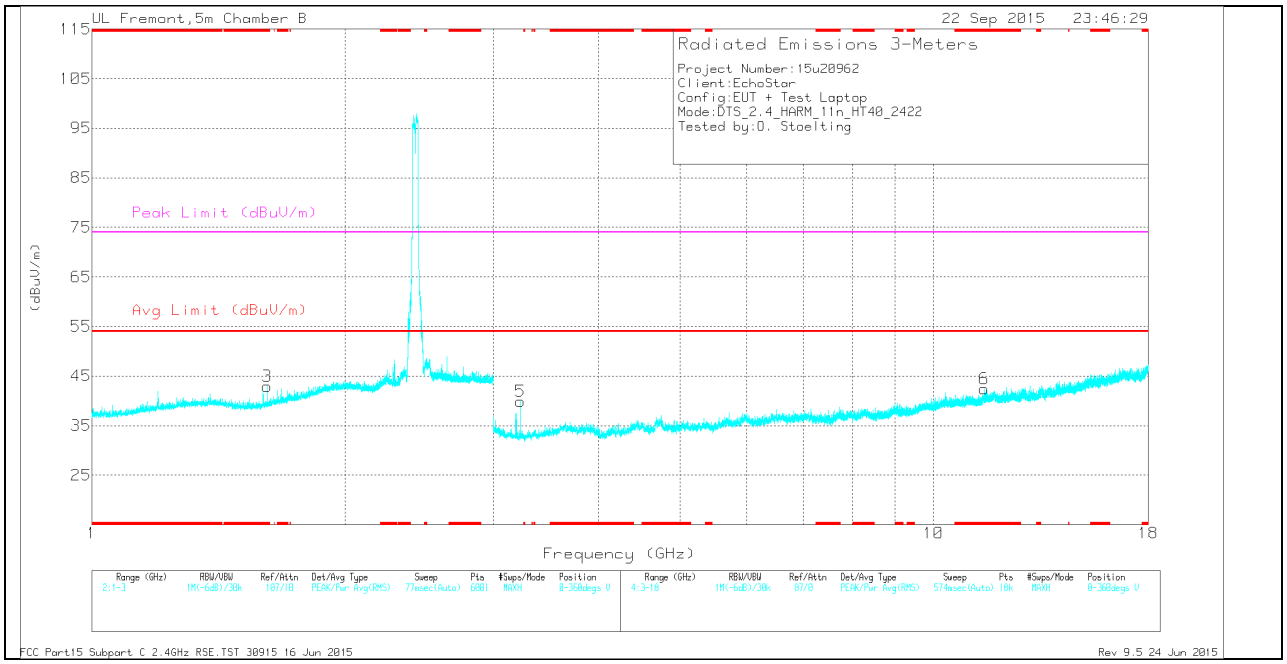
HARMONICS AND SPURIOUS EMISSIONS

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.

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 T345 (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	* 1.198	38.93	Pk	28.5	-25.5	41.93	-	-	74	-32.07	0-360	101	H
2	* 1.615	43.45	Pk	28.9	-25	47.35	-	-	74	-26.65	0-360	101	H
3	* 1.615	39.09	Pk	28.9	-25	42.99	-	-	74	-31.01	0-360	101	V
6	* 11.481	28.81	Pk	38.2	-24.6	42.41	-	-	74	-31.59	0-360	199	V
4	3.229	36.69	Pk	32.5	-32.6	36.59	-	-	-	-	0-360	199	H
5	3.229	39.99	Pk	32.5	-32.6	39.89	-	-	-	-	0-360	101	V

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

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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
* 1.197	45.85	PK2	28.5	-25.5	48.85	-	-	74	-25.15	360	101	H
* 1.199	32.86	MAv1	28.5	-25.5	35.86	54	-18.14	-	-	360	101	H
* 1.615	47.94	PK2	28.9	-25	51.84	-	-	74	-22.16	228	222	H
* 1.615	41.31	MAv1	28.9	-25	45.21	54	-8.79	-	-	228	222	H
* 1.614	44.28	PK2	28.9	-25	48.18	-	-	74	-25.82	228	102	V
* 1.615	33.29	MAv1	28.9	-25	37.19	54	-16.81	-	-	228	102	V
* 11.48	35.68	PK2	38.2	-24.6	49.28	-	-	74	-24.72	262	200	V
* 11.483	23.98	MAv1	38.2	-24.6	37.58	54	-16.42	-	-	262	200	V
3.229	43.44	PK2	32.5	-32.6	43.34	-	-	74	-30.66	228	199	H
3.229	34.37	MAv1	32.5	-32.6	34.27	54	-19.73	-	-	228	199	H
3.229	38.04	MAv1	32.5	-32.6	37.94	54	-16.06	-	-	228	102	V
3.23	45.45	PK2	32.5	-32.6	45.35	-	-	74	-28.65	228	102	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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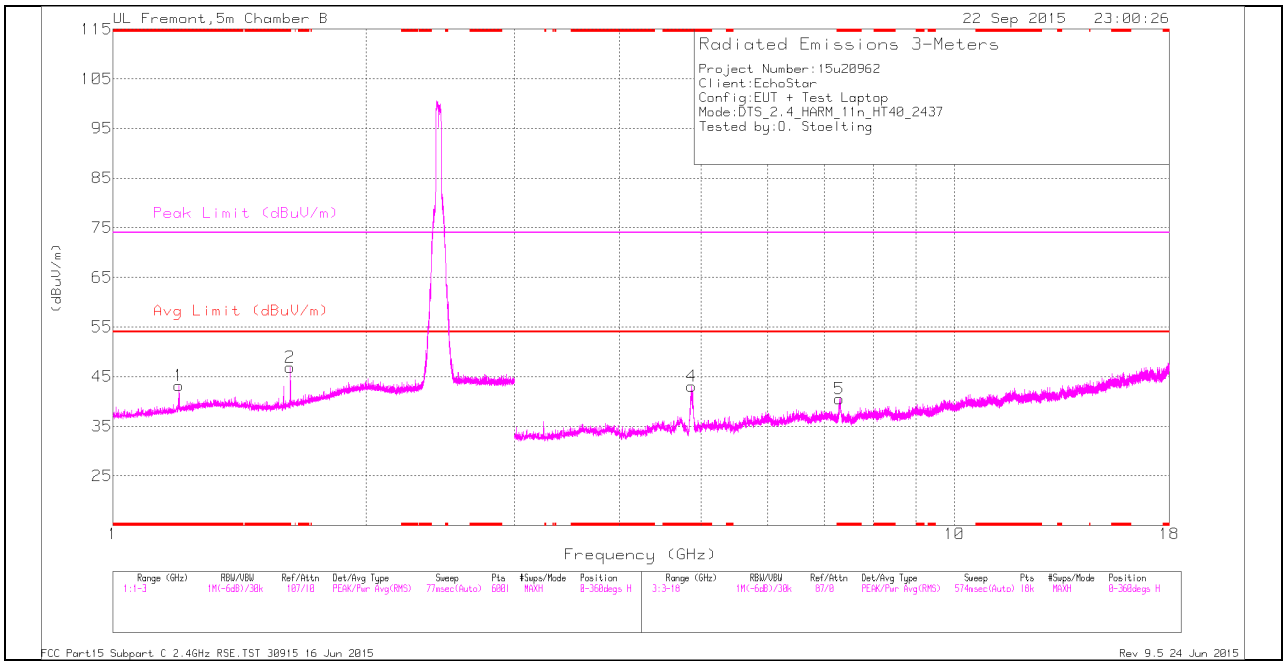
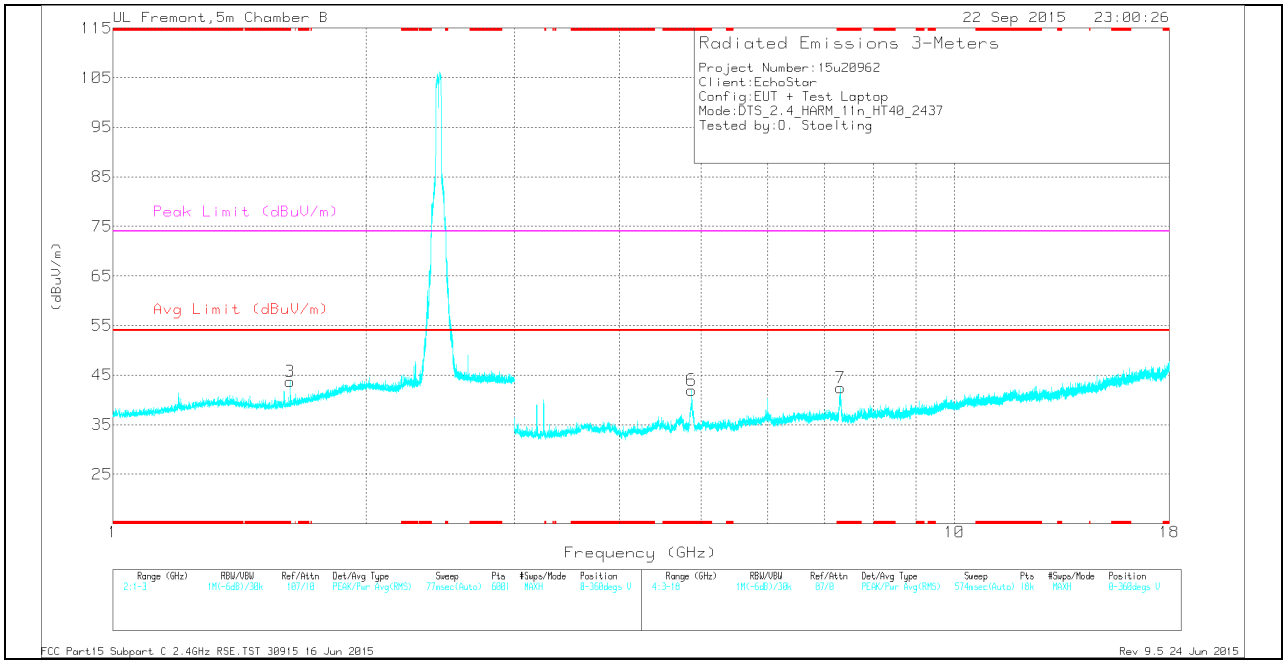
MID CHANNEL HORIZONTAL



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

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 T345 (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	* 1.198	40.14	Pk	28.5	-25.5	43.14	-	-	74	-30.86	0-360	102	H
2	* 1.625	42.73	Pk	29	-24.9	46.83	-	-	74	-27.17	0-360	102	H
3	* 1.625	39.59	Pk	29	-24.9	43.69	-	-	74	-30.31	0-360	101	V
4	* 4.875	41.28	Pk	34.2	-32.4	43.08	-	-	74	-30.92	0-360	101	H
5	* 7.302	35.67	Pk	35.3	-30.4	40.57	-	-	74	-33.43	0-360	101	H
6	* 4.87	40.18	Pk	34.2	-32.4	41.98	-	-	74	-32.02	0-360	199	V
7	* 7.321	37.13	Pk	35.3	-30	42.43	-	-	74	-31.57	0-360	101	V

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

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.2	45.35	PK2	28.5	-25.5	48.35	-	-	74	-25.65	1	101	H
* 1.198	32.83	MAv1	28.5	-25.5	35.83	54	-18.17	-	-	1	101	H
* 1.625	48.52	PK2	29	-24.9	52.62	-	-	74	-21.38	109	136	H
* 1.625	42.1	MAv1	29	-24.9	46.2	54	-7.8	-	-	109	136	H
* 1.625	45.98	PK2	29	-24.9	50.08	-	-	74	-23.92	173	142	V
* 1.625	36.53	MAv1	29	-24.9	40.63	54	-13.37	-	-	173	142	V
* 4.873	51.27	PK2	34.2	-32.4	53.07	-	-	74	-20.93	206	143	H
* 4.873	39.28	MAv1	34.2	-32.4	41.08	54	-12.92	-	-	206	143	H
* 7.302	43.15	PK2	35.3	-30.4	48.05	-	-	74	-25.95	123	262	H
* 7.304	30.27	MAv1	35.3	-30.3	35.27	54	-18.73	-	-	123	262	H
* 4.872	48.42	PK2	34.2	-32.4	50.22	-	-	74	-23.78	181	395	V
* 4.871	35.26	MAv1	34.2	-32.4	37.06	54	-16.94	-	-	181	395	V
* 7.322	47.29	PK2	35.3	-30	52.59	-	-	74	-21.41	189	103	V
* 7.32	32.79	MAv1	35.3	-30	38.09	54	-15.91	-	-	189	103	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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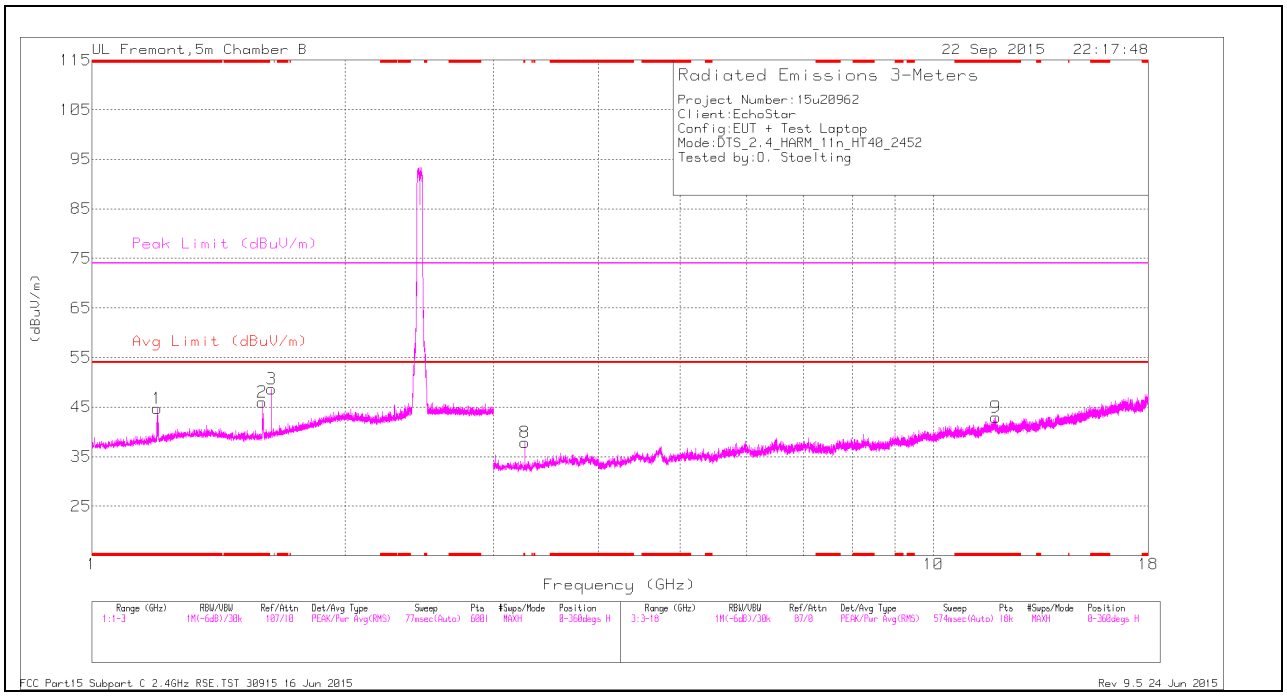
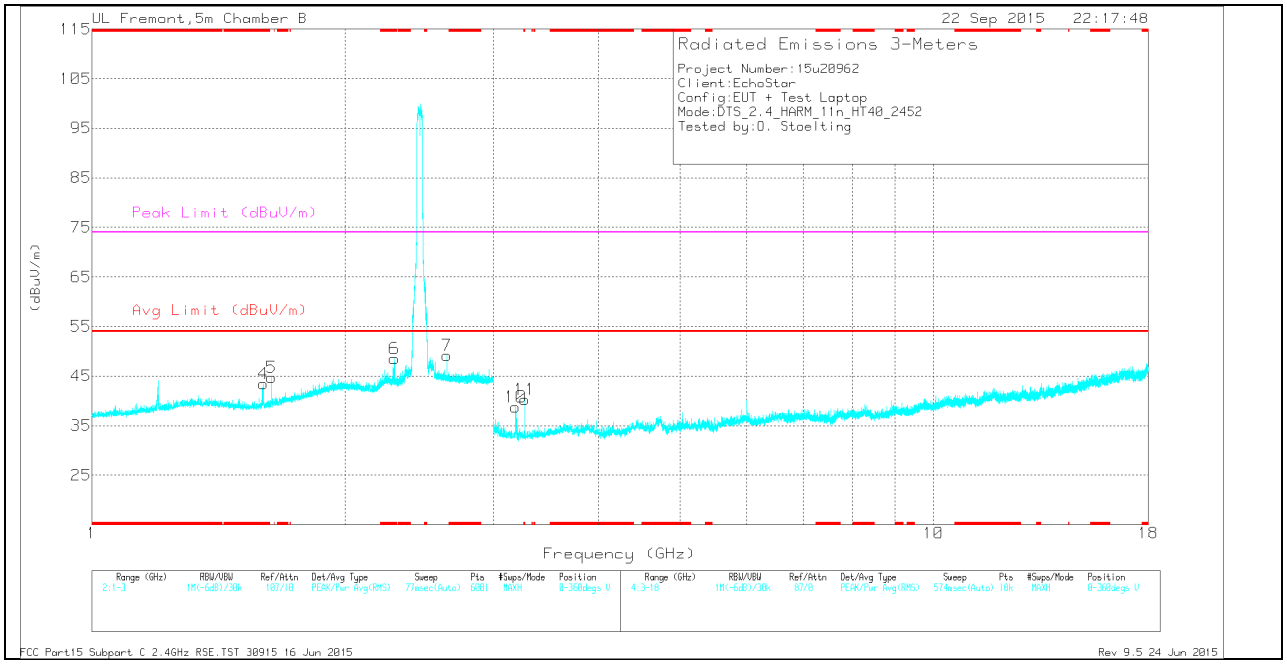
HIGH CHANNEL HORIZONTAL



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

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 T345 (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	* 1.195	41.8	Pk	28.4	-25.5	44.7	-	-	74	-29.3	0-360	101	H
2	* 1.593	42.21	Pk	28.8	-25	46.01	-	-	74	-27.99	0-360	101	H
4	* 1.598	39.66	Pk	28.8	-25	43.46	-	-	74	-30.54	0-360	101	V
6	* 2.288	41.32	Pk	31.5	-24.3	48.52	-	-	74	-25.48	0-360	101	V
9	* 11.86	28.98	Pk	38.6	-24.7	42.88	-	-	74	-31.12	0-360	101	H
3	1.635	44.46	Pk	29.1	-24.9	48.66	-	-	-	-	0-360	101	H
5	1.635	40.48	Pk	29.1	-24.9	44.68	-	-	-	-	0-360	101	V
7	2.64	40.2	Pk	32.7	-23.8	49.1	-	-	-	-	0-360	199	V
10	3.188	38.3	Pk	32.4	-32	38.7	-	-	-	-	0-360	101	V
8	3.269	38.01	Pk	32.6	-32.8	37.81	-	-	-	-	0-360	200	H
11	3.269	40.47	Pk	32.6	-32.8	40.27	-	-	-	-	0-360	101	V

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

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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
* 1.196	45.89	PK2	28.4	-25.5	48.79	-	-	74	-25.21	360	101	H
* 1.194	33.01	MAv1	28.4	-25.5	35.91	54	-18.09	-	-	360	101	H
* 1.591	44.73	PK2	28.8	-25	48.53	-	-	74	-25.47	360	101	H
* 1.592	32.48	MAv1	28.8	-25	36.28	54	-17.72	-	-	360	101	H
* 1.6	44.44	PK2	28.8	-25	48.24	-	-	74	-25.76	109	102	V
* 1.598	32.56	MAv1	28.8	-25	36.36	54	-17.64	-	-	109	102	V
* 2.288	48.66	PK2	31.5	-24.3	55.86	-	-	74	-18.14	222	130	V
* 2.288	40.13	MAv1	31.5	-24.3	47.33	54	-6.67	-	-	222	130	V
* 11.858	35.57	PK2	38.6	-24.7	49.47	-	-	74	-24.53	161	102	H
* 11.861	24.42	MAv1	38.6	-24.7	38.32	54	-15.68	-	-	161	102	H
1.635	49.3	PK2	29.1	-24.9	53.5	-	-	74	-20.5	109	134	H
1.635	43.31	MAv1	29.1	-24.9	47.51	54	-6.49	-	-	109	134	H
1.635	46.2	PK2	29.1	-24.9	50.4	-	-	74	-23.6	109	102	V
1.635	36.78	MAv1	29.1	-24.9	40.98	54	-13.02	-	-	109	102	V
2.64	46.57	PK2	32.7	-23.8	55.47	-	-	74	-18.53	162	189	V
2.64	36.86	MAv1	32.7	-23.8	45.76	54	-8.24	-	-	162	189	V
3.187	42.44	PK2	32.4	-32	42.84	-	-	74	-31.16	161	102	V
3.187	30.3	MAv1	32.4	-32	30.7	54	-23.3	-	-	161	102	V
3.269	33.69	MAv1	32.6	-32.8	33.49	54	-20.51	-	-	161	199	H
3.269	45.22	PK2	32.6	-32.8	45.02	-	-	74	-28.98	161	102	V
3.269	36.74	MAv1	32.6	-32.8	36.54	54	-17.46	-	-	161	102	V
3.27	43.28	PK2	32.6	-32.8	43.08	-	-	74	-30.92	161	199	H

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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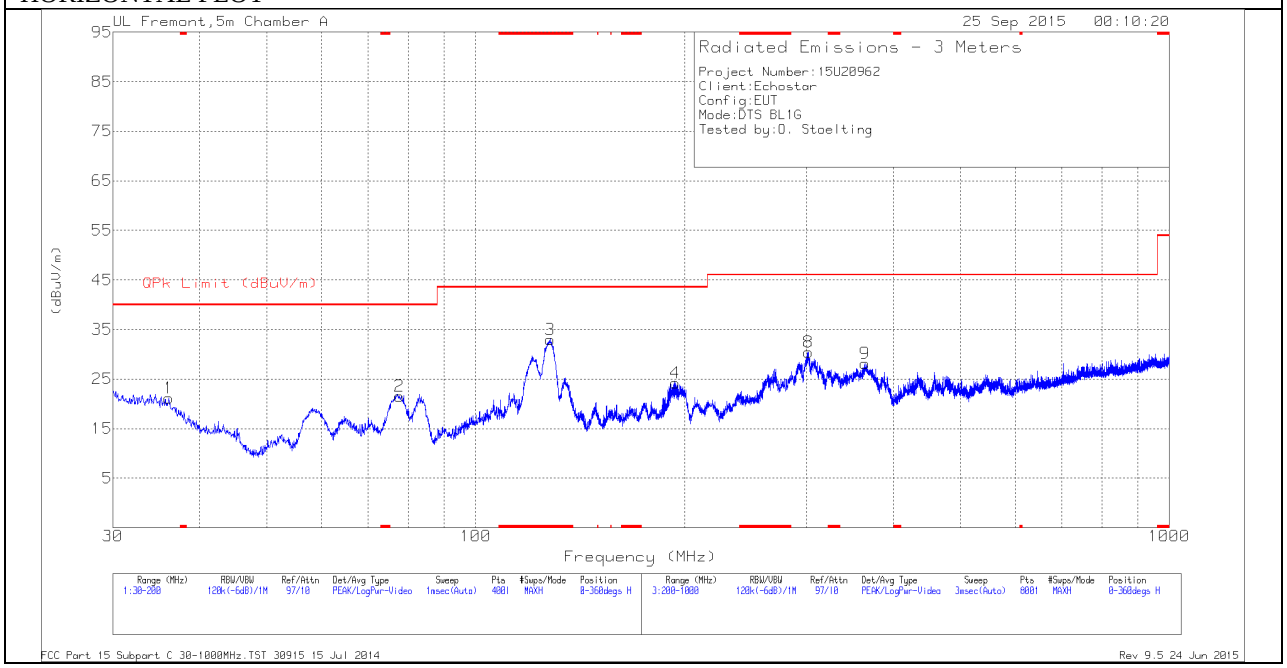
12.2. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



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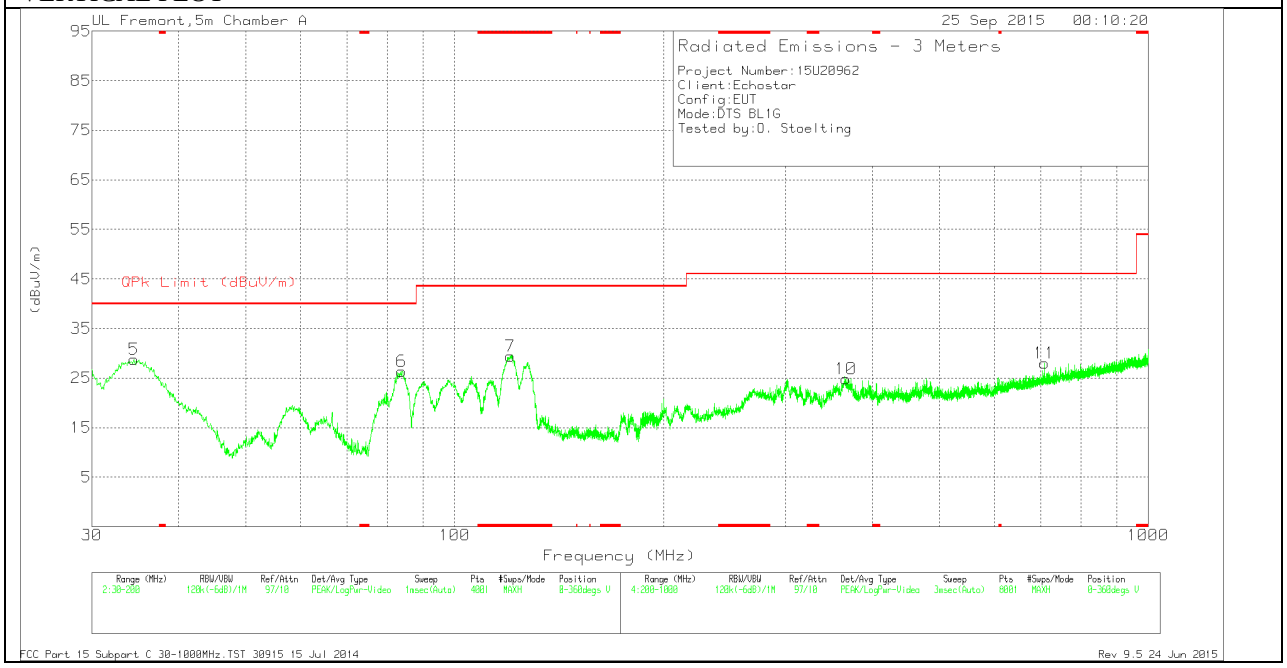
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT



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Below 1G Data

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T477 (dB/m)	Amp/Cbl (dB/m)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 128.175	45.63	Pk	17.7	-30.4	32.93	43.52	-10.59	0-360	199	H
7	* 120.2488	42.11	Pk	17.7	-30.4	29.41	43.52	-14.11	0-360	101	V
5	34.505	38.02	Pk	21.9	-31.2	28.72	40	-11.28	0-360	101	V
1	36.0775	31.54	Pk	20.8	-31.2	21.14	40	-18.86	0-360	199	H
2	77.6425	40.79	Pk	11.6	-30.8	21.59	40	-18.41	0-360	399	H
6	83.9325	45.99	Pk	11.1	-30.7	26.39	40	-13.61	0-360	101	V
4	193.9225	38.64	Pk	15.6	-30	24.24	43.52	-19.28	0-360	101	H
8	302	42.47	Pk	17.4	-29.4	30.47	46.02	-15.55	0-360	101	H
9	363.9	38.4	Pk	18.9	-29.2	28.1	46.02	-17.92	0-360	101	H
10	366.3	35.17	Pk	18.9	-29.2	24.87	46.02	-21.15	0-360	101	V
11	709	31.78	Pk	24.4	-28.2	27.98	46.02	-18.04	0-360	199	V

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

Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T477 (dB/m)	Amp/Cbl (dB/m)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 127.9667	42.81	Qp	17.7	-30.4	30.11	43.52	-13.41	241	228	H

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

Qp - Quasi-Peak detector

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13. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

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.

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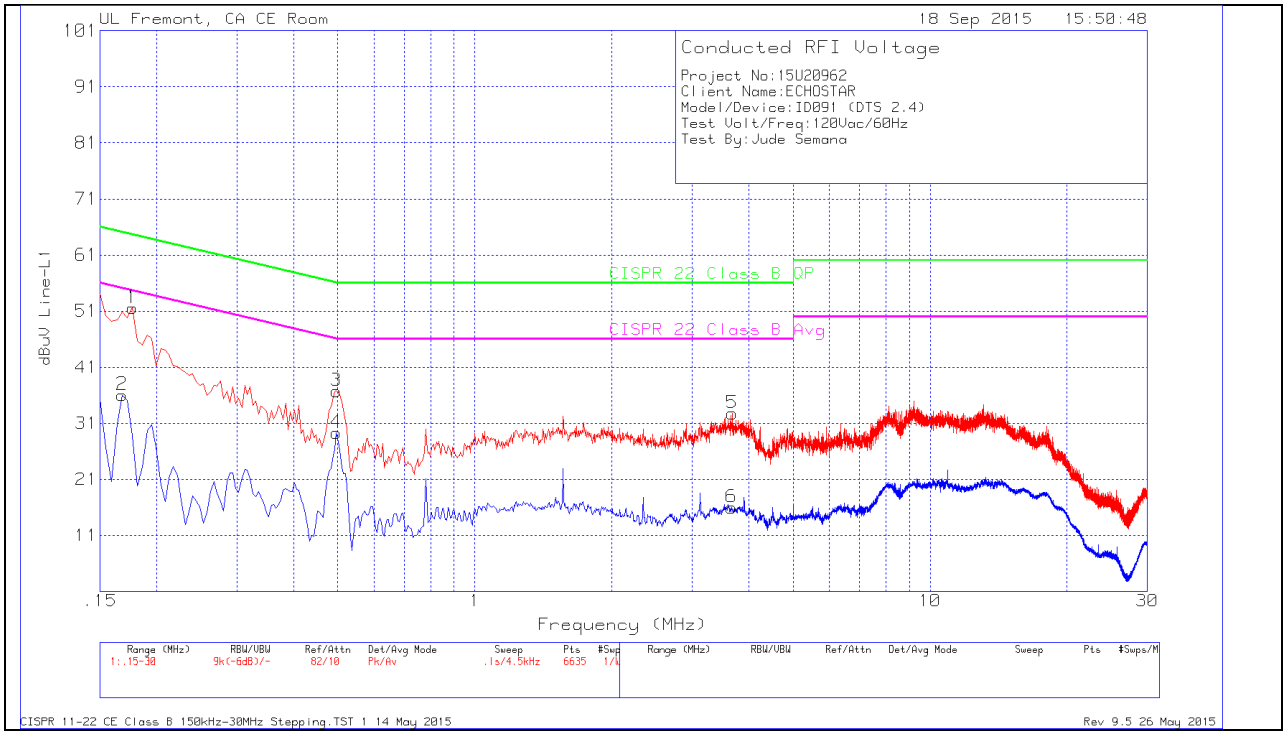
RESULTS

6 WORST EMISSIONS

LINE 1 PLOT



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LINE 1 RESULTS

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.177	50.44	Pk	1.1	0	51.54	64.63	-13.09	-	-
2	.168	34.84	Av	1.2	0	36.04	-	-	55.06	-19.02
3	.4965	36.45	Pk	.3	0	36.75	56.06	-19.31	-	-
4	.4965	29	Av	.3	0	29.3	-	-	46.06	-16.76
5	3.678	32.45	Pk	.2	.1	32.75	56	-23.25	-	-
6	3.6645	15.7	Av	.2	.1	16	-	-	46	-30

Pk - Peak detector

Av - Average detection

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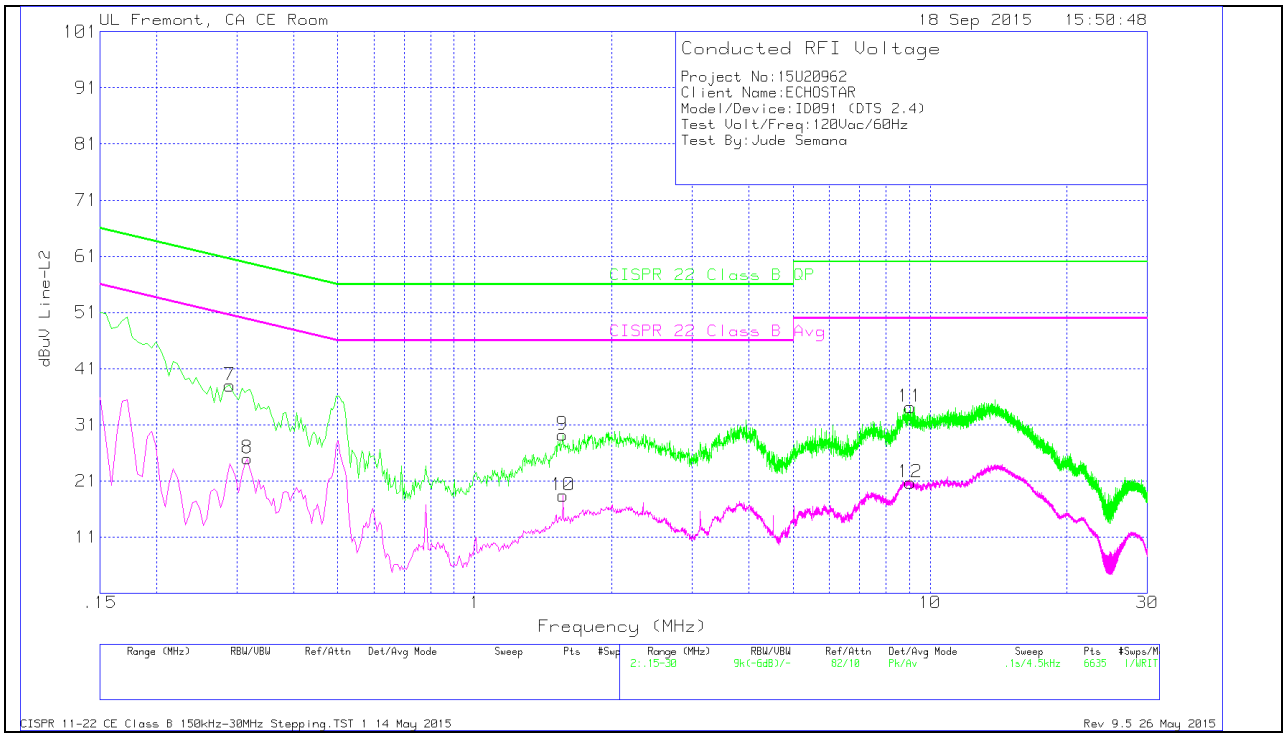
LINE 2 PLOT



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LINE 2 RESULTS

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
7	.2895	37.42	Pk	.6	0	38.02	60.54	-22.52	-	-
8	.3165	24.42	Av	.6	0	25.02	-	-	49.8	-24.78
9	1.5585	28.93	Pk	.2	.1	29.23	56	-26.77	-	-
10	1.563	18.1	Av	.2	.1	18.4	-	-	46	-27.6
11	9.0465	33.88	Pk	.2	.1	34.18	60	-25.82	-	-
12	9.0465	20.41	Av	.2	.1	20.71	-	-	50	-29.29

Pk - Peak detector

Av - Average detection

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14. POWER SETTING TABLE

SISO

All Power setting numbers in dBm

Channel ID	1	2	3	4	5	6	7	8	9	10	11
Center Freq.	2412	2417	2422	2427	2432	2437	2442	2447	2452	2457	2462
11b	17	17	17	17	17	17	17	17	17	17	17
11g	13	13	13	13	17	17	17	12.5	12.5	12.5	12.5
11n 20	13	13	13	13	17	17	17	11.5	11.5	11.5	11.5
11n 40			7			10			8		

MIMO

All Power setting numbers in dBm

Channel ID	1	2	3	4	5	6	7	8	9	10	11
Center Freq.	2412	2417	2422	2427	2432	2437	2442	2447	2452	2457	2462
11n 20	9.5	9.5	9.5	9.5	17	17	17	9.5	9.5	9.5	9.5
11n 40			7			10			8		

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