



FCC 47 CFR PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

PORTABLE GAMING DEVICE

MODEL NUMBER: P2523

FCC ID: VOB-P2523

REPORT NUMBER: 14U19497-E7V2

ISSUE DATE: JULY 12, 2016

Prepared for

NVIDIA

2701 SAN TOMAS EXPY

SANTA CLARA, CA 95050

Prepared by

UL VERIFICATION SERVICES INC.

47173 BENICIA STREET

FREMONT, CA 94538, U.S.A.

TEL: (510) 771-1000

FAX: (510) 661-0888



NVLAP LAB CODE 200065-0

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	6/20/16	Initial Issue	D. Corona
V1	7/12/16	Updated Section 6, added note on Section 10.3.1-10.3.4 & 11.1.1-11.1.2	D. Corona

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	5
2. TEST METHODOLOGY	6
3. FACILITIES AND ACCREDITATION	6
4. CALIBRATION AND UNCERTAINTY	6
4.1. MEASURING INSTRUMENT CALIBRATION	6
4.2. SAMPLE CALCULATION	6
4.3. MEASUREMENT UNCERTAINTY	7
5. EQUIPMENT UNDER TEST	8
5.1. DESCRIPTION OF EUT	8
5.2. MAXIMUM OUTPUT POWER.....	8
5.3. DESCRIPTION OF AVAILABLE ANTENNAS	8
5.4. WORST-CASE CONFIGURATION AND MODE	10
5.5. DESCRIPTION OF TEST SETUP.....	11
6. TEST AND MEASUREMENT EQUIPMENT	13
7. MEASUREMENT METHODS	14
8. SUMMARY TABLE	15
9. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS	16
10. ANTENNA PORT TEST RESULTS SISO 802.11b/g Chain 0 and 1	17
10.1. 6 dB BANDWIDTH	17
10.1.1. 6 dB BANDWIDTH PLOTS AND TABLE	18
10.2. 99% BANDWIDTH	22
10.2.1. 99% BANDWIDTH PLOTS AND TABLE	23
10.3. OUTPUT POWER	27
10.3.1. 802.11b MODE IN THE 2.4 GHz BAND (Chain 0)	28
10.3.2. 802.11b MODE IN THE 2.4 GHz BAND (Chain 1)	29
10.3.3. 802.11g MODE IN THE 2.4 GHz BAND (Chain 0)	30
10.3.4. 802.11g MODE IN THE 2.4 GHz BAND (Chain1)	31
10.4. POWER SPECTRAL DENSITY.....	32
10.4.1. POWER SPECTRAL DENSITY PLOTS AND TABLE	33
10.5. CONDUCTED SPURIOUS AND OUT-OF-BAND EMISSIONS	37
10.5.1. BANEDGE AND SPURIOUS EMISSIONS PLOTS	38

11. ANTENNA PORT TEST RESULTS MIMO 802.11n Mode.....	42
11.1. 6 dB BANDWIDTH	42
11.1.1. 6 dB BANDWIDTH PLOTS AND TABLE	43
11.2. 99% BANDWIDTH	45
11.2.1. 99% BANDWIDTH PLOTS AND TABLE	46
11.1. OUTPUT POWER	48
11.1.1. 802.11n HT20 MODE IN THE 2.4 GHz BAND	49
11.1.2. 802.11n HT40 MODE IN THE 2.4 GHz BAND	50
11.2. POWER SPECTRAL DENSITY.....	51
11.2.1. POWER SPECTRAL DENSITY PLOTS AND TABLE	52
11.3. CONDUCTED SPURIOUS AND OUT-OF-BAND EMISSIONS	54
11.3.1. BANDEDGE AND SPURIOUS EMISSIONS PLOTS	55
12. RADIATED TEST RESULTS SISO 802.11b/g Chain 0	57
12.1. LIMITS AND PROCEDURE.....	57
12.2. TRANSMITTER ABOVE 1 GHz.....	58
12.2.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND	58
12.2.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND	71
13. RADIATED TEST RESULTS SISO 802.11b/g Chain 1	84
13.1. TRANSMITTER ABOVE 1 GHz.....	84
13.1.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND	84
13.1.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND	97
14. RADIATED TEST RESULTS MIMO 802.11n Mode.....	110
14.1. LIMITS AND PROCEDURE.....	110
14.2. TRANSMITTER ABOVE 1 GHz.....	111
14.2.1. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND	111
1.1.1. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 2.4 GHz BAND	124
1.2. TRANSMITTER BELOW 1 GHz.....	137
15. AC POWER LINE CONDUCTED EMISSIONS	139
16. SETUP PHOTOS	144

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: NVIDIA
EUT DESCRIPTION: Portable Gaming Device
MODEL: P2523
SERIAL NUMBER: P2523-E02-S0929
DATE TESTED: NOVEMBER 21-DECEMBER 8, 2014

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.

Approved & Released For
UL Verification Services Inc. By:



DAN CORONIA
CONSUMER TECHNOLOGY DIVISION
WISE PROJECT LEAD
UL VERIFICATION SERVICES INC

Tested By:



KIYA KEDIDA
CONSUMER TECHNOLOGY DIVISION
WISE LAB ENGINEER
UL VERIFICATION SERVICES INC

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15, FCC KDB 662911.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street
☐ Chamber A(IC: 2324B-1)	☐ Chamber D(IC: 2324B-4)
☒ Chamber B(IC: 2324B-2)	☐ Chamber E(IC: 2324B-5)
☒ Chamber C(IC: 2324B-3)	☐ Chamber F(IC: 2324B-6)
	☐ Chamber G(IC: 2324B-7)
	☐ Chamber H(IC: 2324B-8)

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers A through H are covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-8, respectively.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://ts.nist.gov/standards/scopes/2000650.htm>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned}\text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable} \\ &\text{Loss (dB)} - \text{Preamplifier Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m}\end{aligned}$$

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 9KHz to 30 MHz	2.14 dB
Radiated Disturbance, 30 to 1000 MHz	4.98 dB
Radiated Disturbance, 1000 to 6000 MHz	3.86 dB
Radiated Disturbance, 6000 to 18000 MHz	4.23 dB
Radiated Disturbance, 18000 to 26000 MHz	5.30 dB
Radiated Disturbance, 26000 to 40000 MHz	5.23 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a Portable Gaming Device.

5.2. MAXIMUM OUTPUT POWER

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

Frequency Range (MHz)	Mode	Total Output Power (dBm)	Total Output Power (mW)
2412 - 2462	802.11b	18.8	75.86
2412 - 2462	802.11g	19.6	92.04
2412 - 2462	802.11n HT20	20.6	115.08
2422 - 2452	802.11n HT40	16.4	43.75

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna for the 802.11b/g, 802.11n HT20/HT40 modes with maximum peak gains as described below:

Frequency (MHz)	Antenna Gain (dBi)	
	Core0	Core1
2.4	3.36	0.85

List of test reduction and modes covering other modes:

2400 - 2483.5 MHz Authorized Frequency Band (Antenna Port & Radiated Testing)		
Frequency Range (MHz)	Mode	Covered by
2412 - 2462	802.11b Legacy 1TX	802.11b CDD 2TX
2412 - 2462	802.11g Legacy 1TX	802.11g CDD 2TX
2412 - 2462	802.11n 1TX	802.11n HT20 CDD 2TX
2412 - 2462	802.11n STBC 2TX	802.11n HT20 CDD 2TX
2422 - 2452	802.11n HT40 1TX	802.11n HT40 CDD 2TX
2422 - 2452	802.11n HT40 STBC 2TX	802.11n HT40 CDD 2TX

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 Z orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Z orientation.

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

802.11b mode: 1 Mbps

802.11g mode: 6 Mbps

802.11n HT20mode: MCS0

802.11n HT40mode: MCS0

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	NVIDIA	SPA011AU5W	R43001	N/A

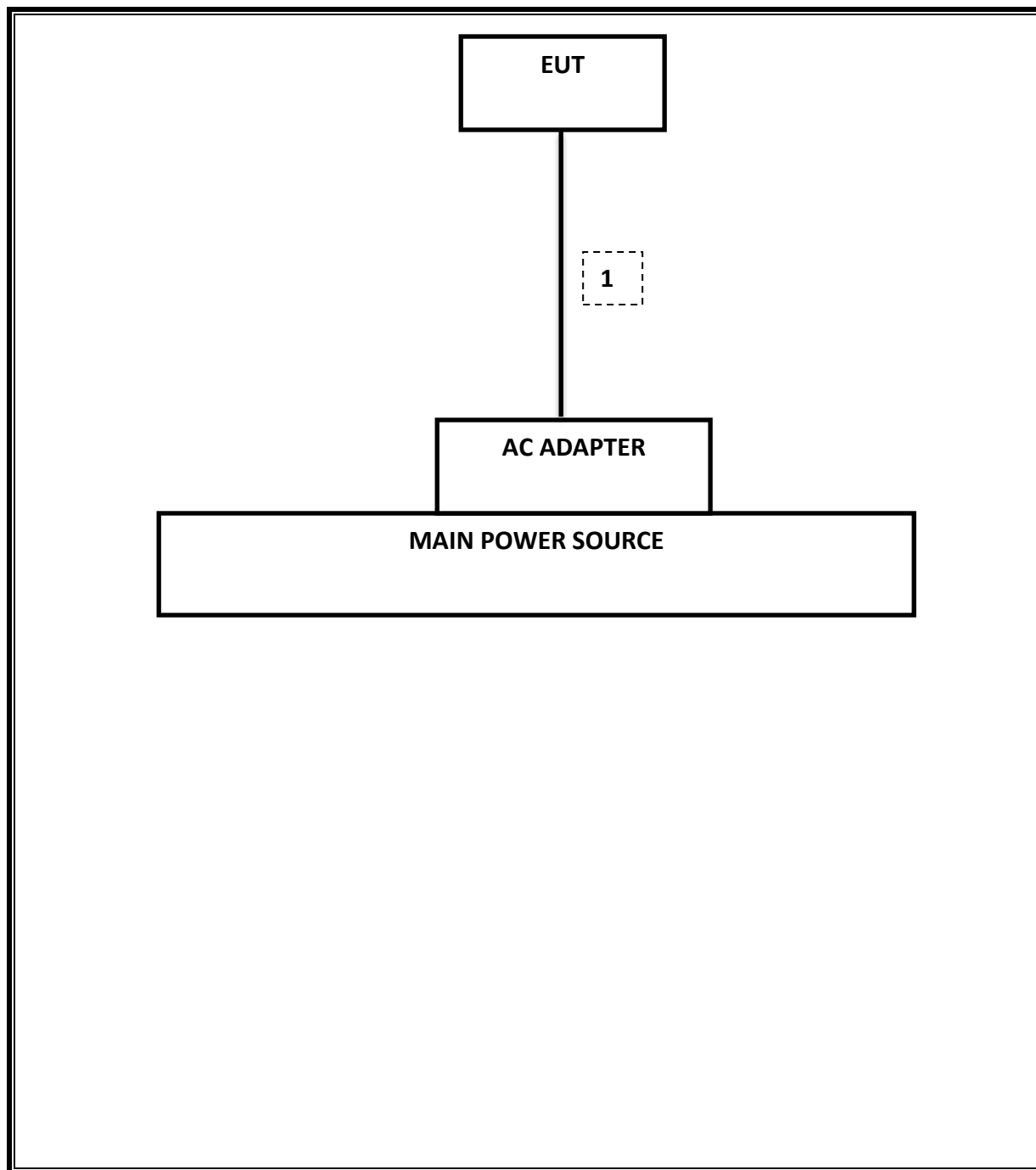
I/O CABLES

Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	Mini USB	Shielded	1.2m	N/A

TEST SETUP

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

SETUP DIAGRAM FOR TESTS



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	12/20/14
Spectrum Analyzer, 9KHz-40GHz	HP	8564E	C00986	04/01/15
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	100773	08/15/15
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/14
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/14
Antenna, Horn, 1-18 GHz	ETS	3117	C01022	02/21/15
Antenna, Horn, 18- 26 GHz	ARA	MWH-1826/B	C00946	11/12/15
Antenna, Horn, 26-40 GHz	ARA	MWH-2640	C00891	06/28/15
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	T243	03/06/15
RF Preamplifier, 100KHz -> 1300MHz	HP	TBD	C00825	06/01/15
RF Preamplifier, 1GHz - 18GHz	Miteq	NSP4000-SP2	924343	03/23/15
RF Preamplifier, 1GHz - 26.5GHz	HP	8449B	F00351	06/27/15
AC Power Supply, 2,500VA 45-500Hz	Elgar-Ametek	CW2501M	F00013	CNR
RF Preamplifier, 1GHz - 18GHz	Miteq	AFS42-00101800-25-S-42	1818466	05/09/15
Attenuator / Switch driver	HP	11713A	F00204	CNR
Low Pass Filter 3GHz	Micro-Tronics	LPS17541	F00219	05/23/15
High Pass Filter 5GHz	Micro-Tronics	HPS17542	F00222	05/22/15
High Pass Filter 6GHz	Micro-Tronics	HPM17543	F00224	05/22/15

Test Software List			
Description	Manufacturer	Model	Version
Radiated Software	UL	UL EMC	Version 9.5, 07/22/14
Conducted Software	UL	UL EMC	Version 9.5, 05/17/14
Antenna Port Software	UL	UL RF	Version 2.1.1.1, 1/20/15

7. MEASUREMENT METHODS

On Time and Duty Cycle: KDB 558074 D01 v03r05, Section 6.

6 dB Emission BW: KDB 558074 D01 v03r05, Section 8.

99% BW: ANSI C63.10-2013, Section 6.9.3.

Conducted Output Power: KDB 558074 D01 v03r05, Section 9.2.3.1 (Method AVGPM-G).

Power Spectral Density: KDB 558074 D01 v03r05, Section 10.3 (Method AVGPS-1).

Unwanted emissions in restricted bands: KDB 558074 D01 v03r05, Section 12.0, 12.2.

Unwanted emissions in non-restricted bands: KDB 558074 D01 v03r05, Section 11.1, 11.2, and 11.3

AC Power Line Conducted Emissions: ANSI C63.10-2013, Section 6.2.

8. SUMMARY TABLE

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

9. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

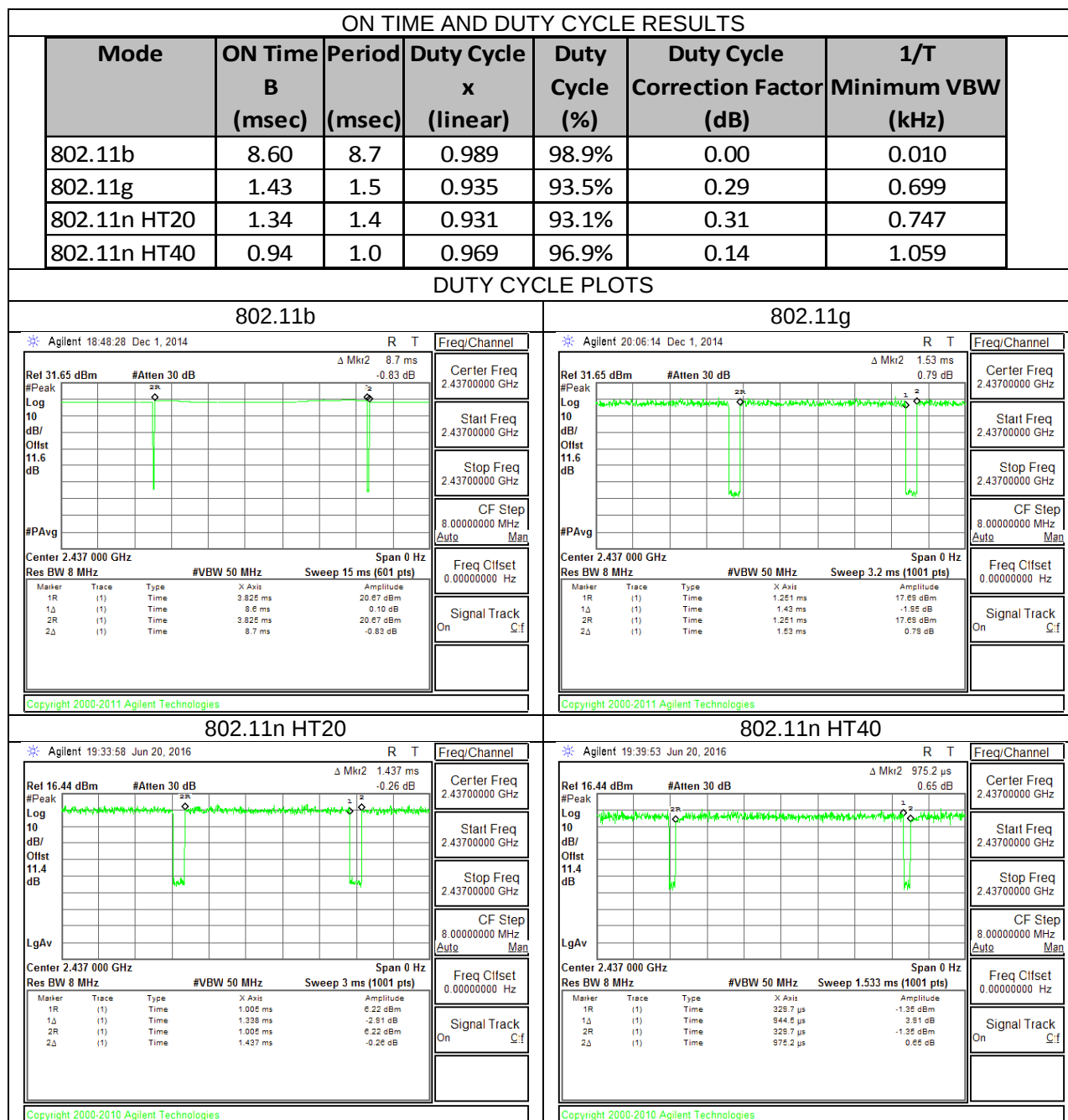
LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

9.1.1. ON TIME AND DUTY CYCLE RESULTS



10. ANTENNA PORT TEST RESULTS SISO 802.11b/g Chain 0 and 1

10.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

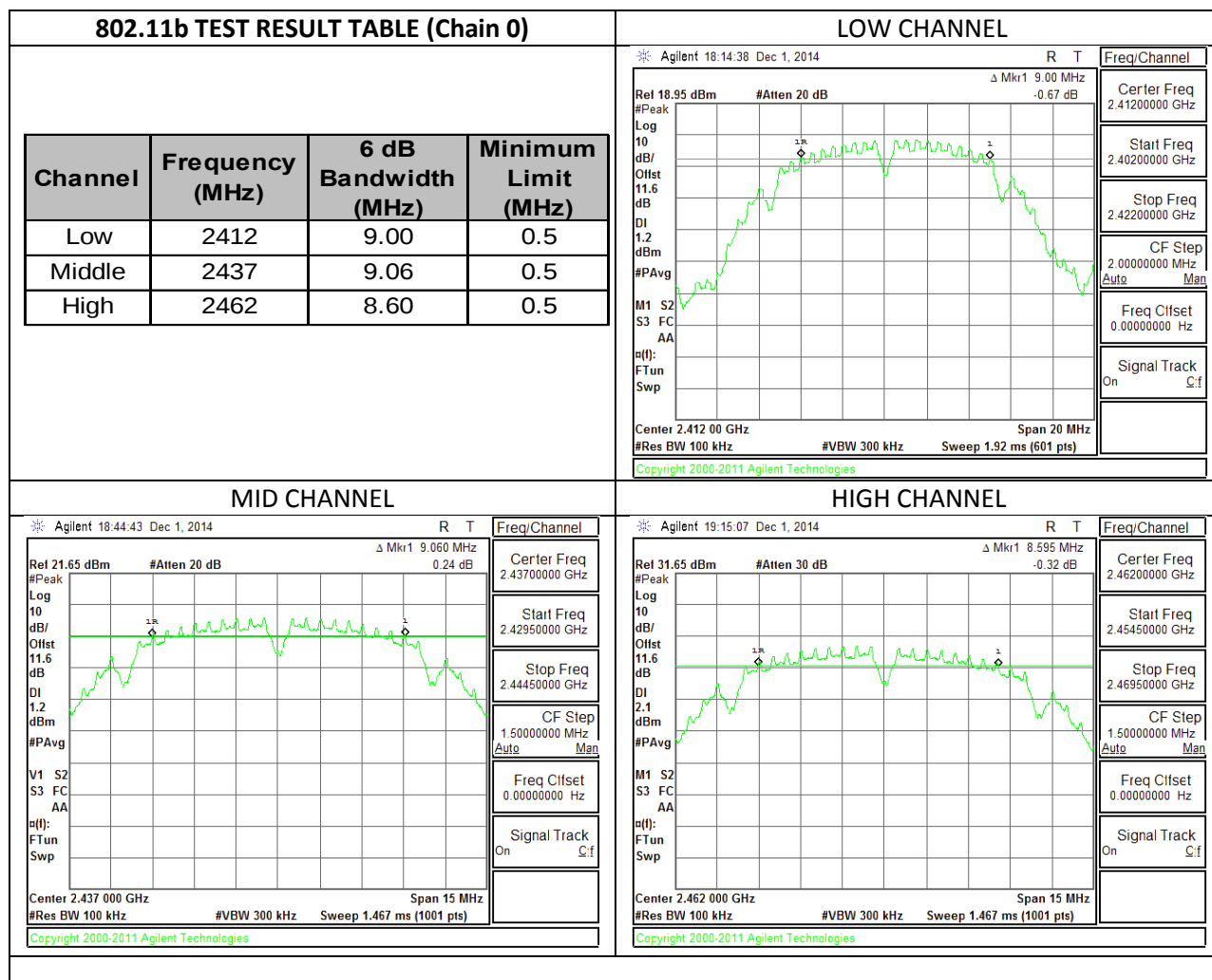
The minimum 6 dB bandwidth shall be at least 500 kHz.

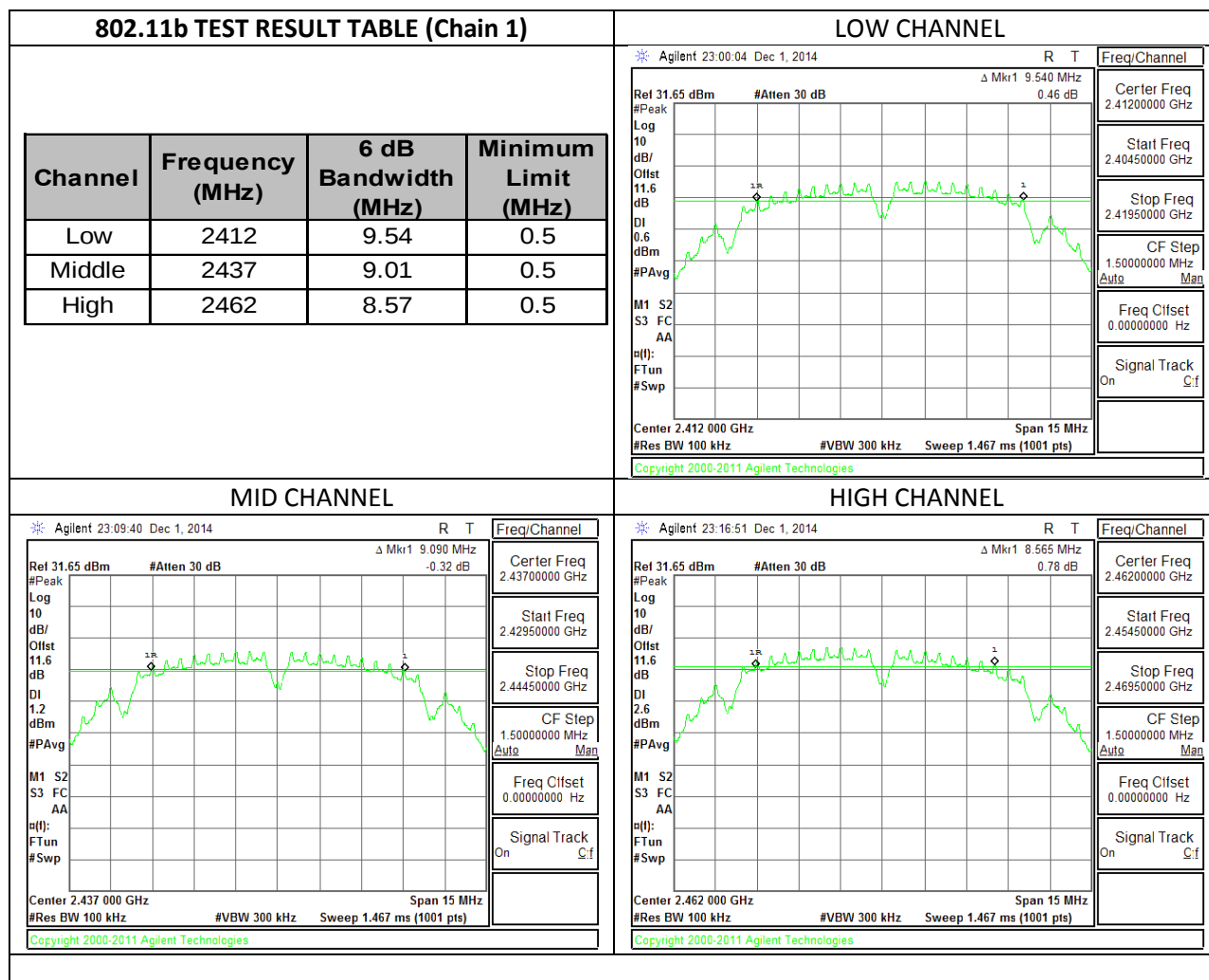
TEST PROCEDURE

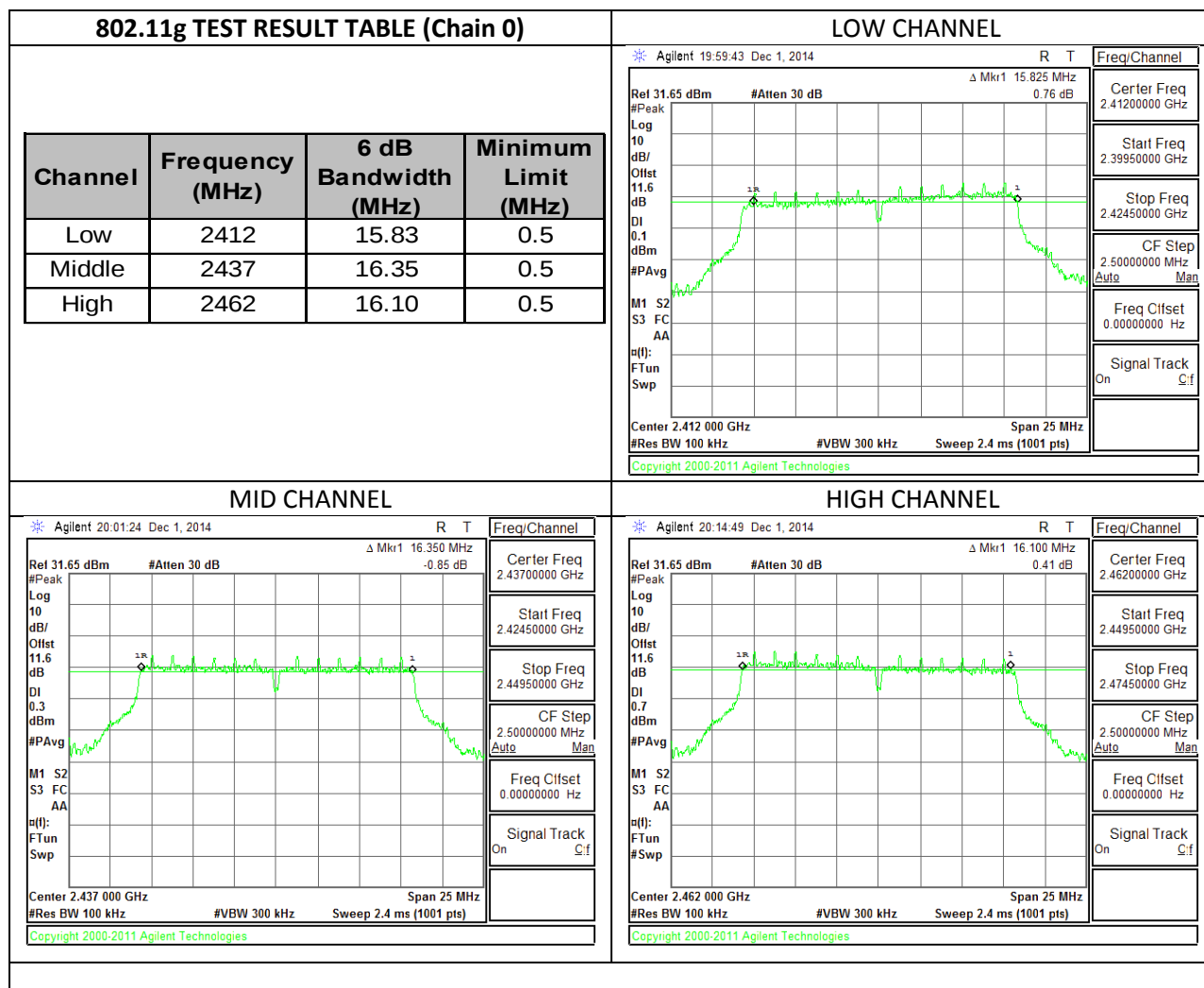
KDB 58074 D01 v03r05 Section 8.1

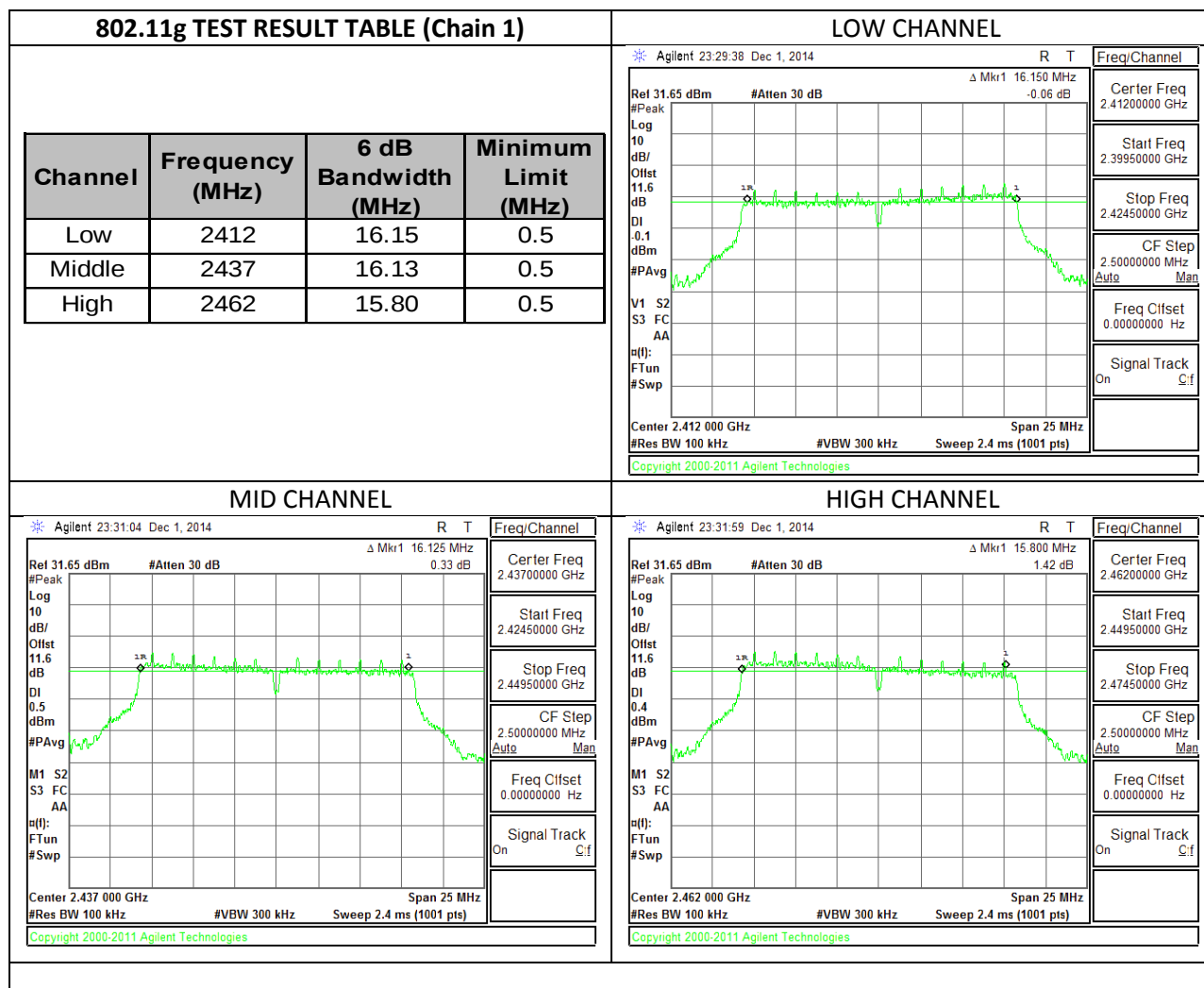
RESULTS

10.1.1. 6 dB BANDWIDTH PLOTS AND TABLE









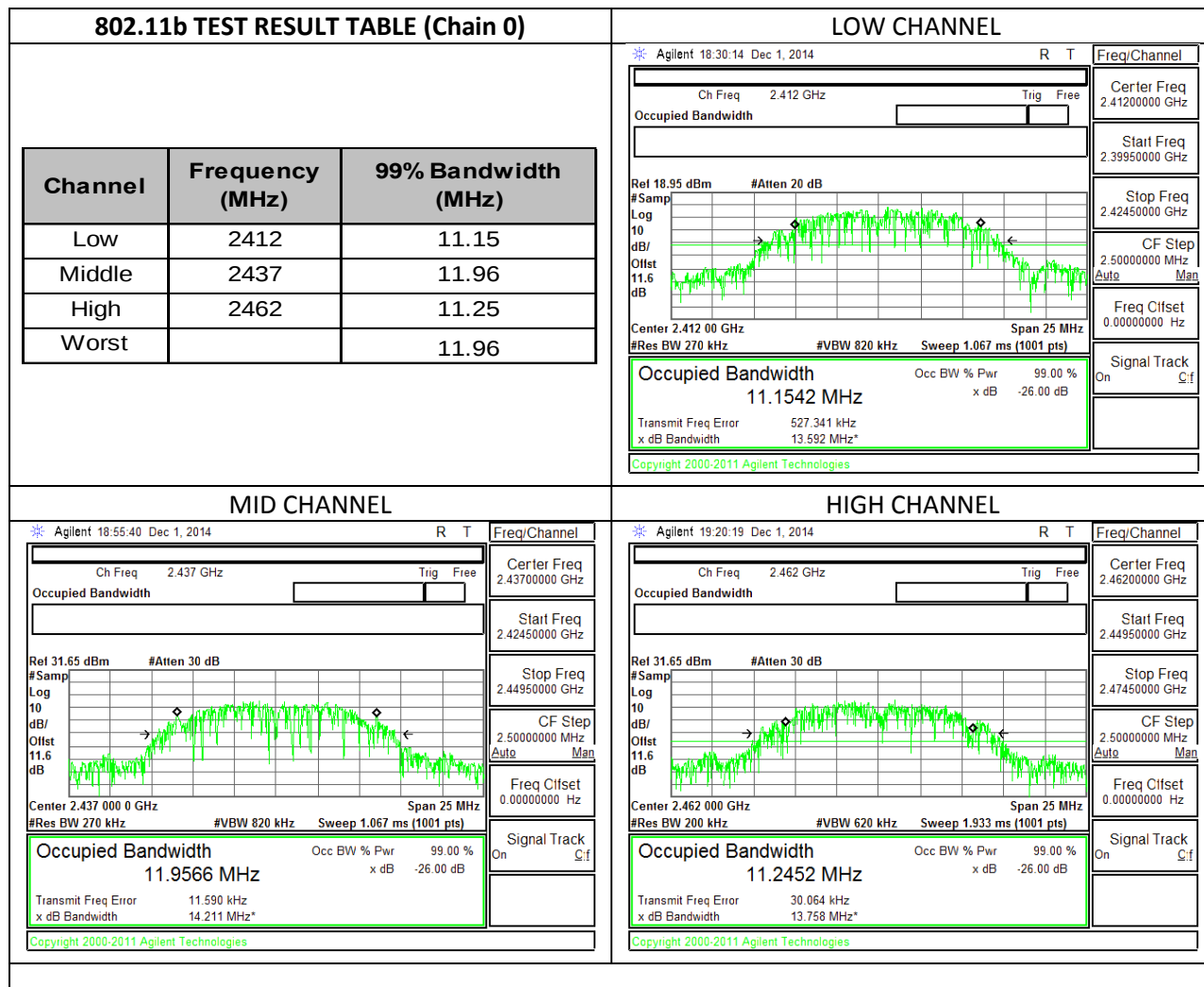
10.2. **99% BANDWIDTH**

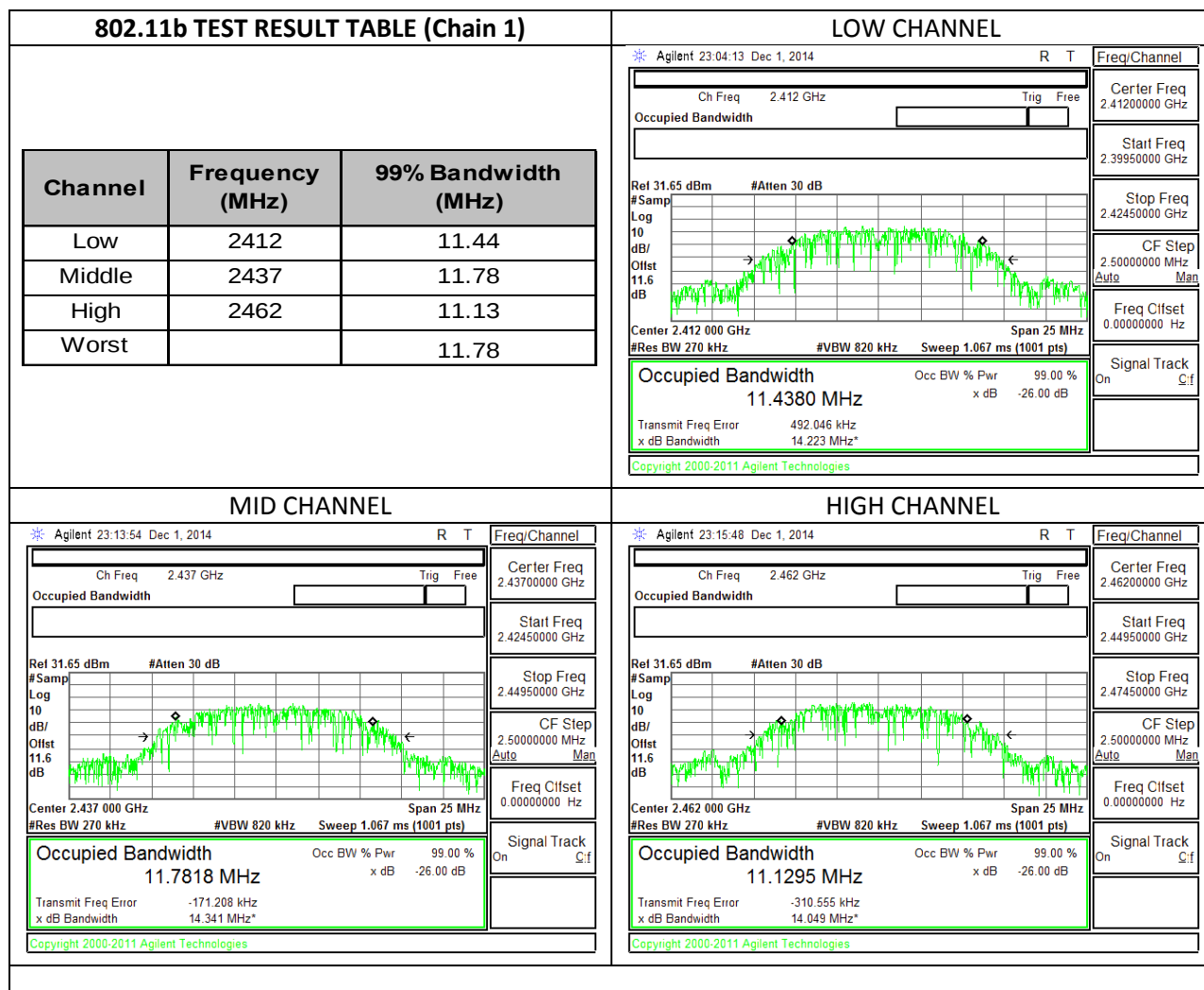
LIMITS

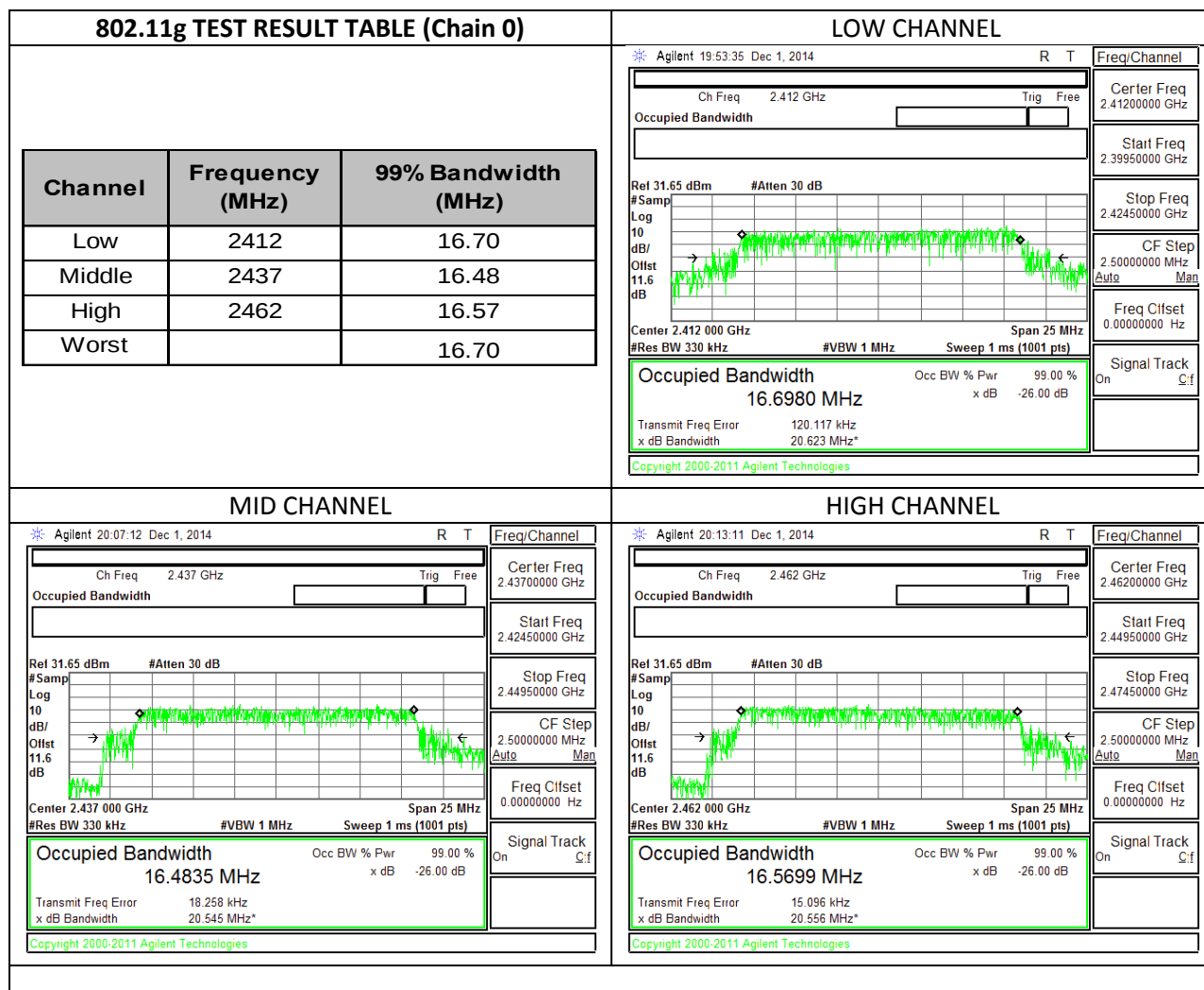
None; for reporting purposes only.

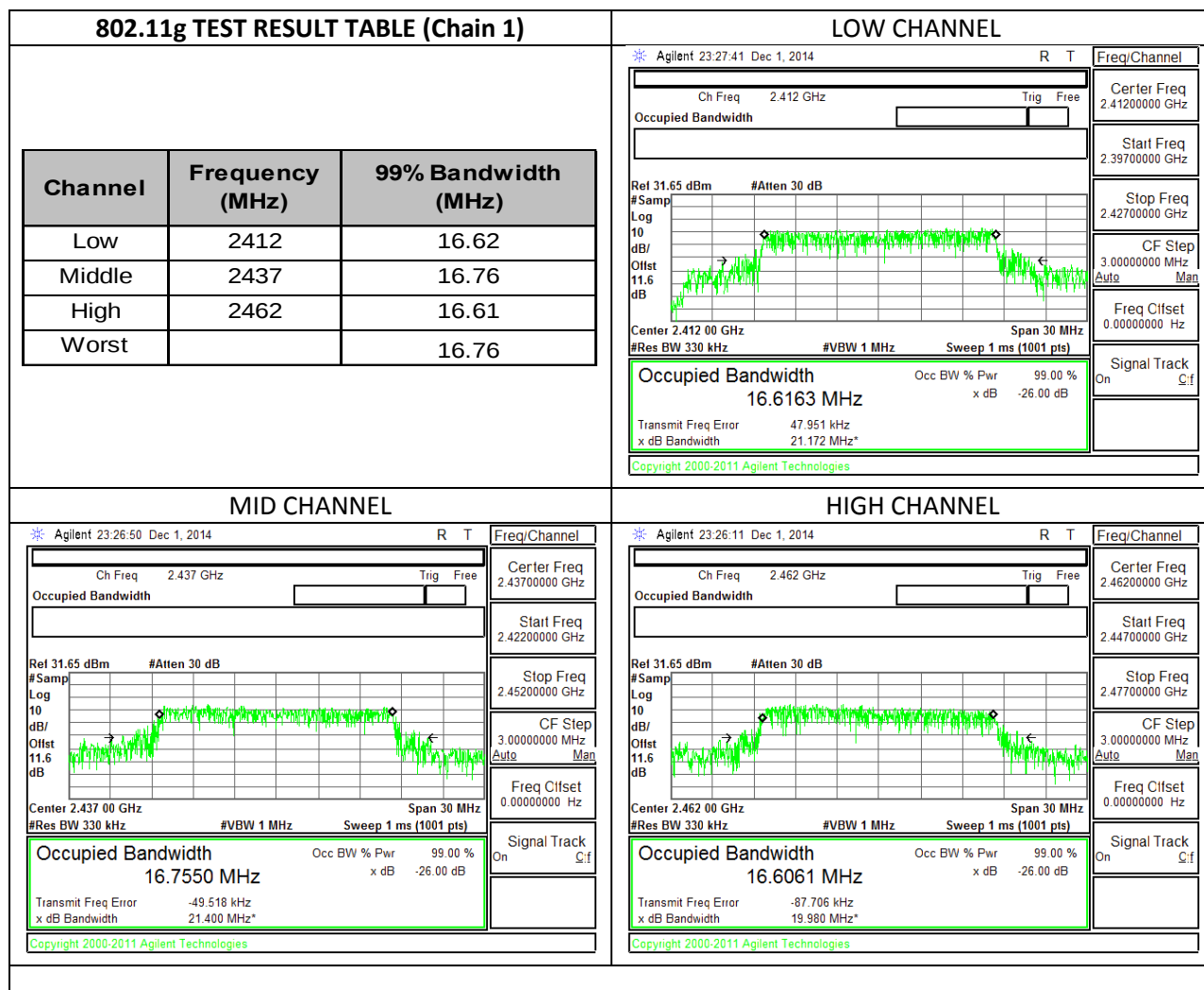
RESULTS

10.2.1. 99% BANDWIDTH PLOTS AND TABLE









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

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

RESULTS

10.3.1. 802.11b MODE IN THE 2.4 GHZ BAND (Chain 0)

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	3.36	30.00	30	36	30.00
Mid	2437	3.36	30.00	30	36	30.00
High	2462	3.36	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
1	2412	18.50	18.50	30.00	-11.50
6	2437	18.40	18.40	30.00	-11.60
10	2457	19.00	19.00	30.00	-11.00
11	2462	18.20	18.20	30.00	-11.80
Worst			19.00		

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

10.3.2. 802.11b MODE IN THE 2.4 GHZ BAND (Chain 1)

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	0.85	30.00	30	36	30.00
Mid	2437	0.85	30.00	30	36	30.00
High	2462	0.85	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)
1	2412	17.60	17.60	30.00	-12.40
6	2437	18.50	18.50	30.00	-11.50
10	2457	18.80	18.80	30.00	-11.20
11	2462	18.30	18.30	30.00	-11.70
Worst			18.80		

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

10.3.3. 802.11g MODE IN THE 2.4 GHZ BAND (Chain 0)

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	3.36	30.00	30	36	30.00
Mid	2437	3.36	30.00	30	36	30.00
High	2462	3.36	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
1	2412	12.70	12.70	30.00	-17.30
2	2417	16.10	16.10	30.00	-13.90
3	2422	18.06	18.06	30.00	-11.94
4	2427	18.00	18.00	30.00	-12.00
6	2437	18.23	18.23	30.00	-11.77
8	2447	18.11	18.11	30.00	-11.89
9	2452	17.70	17.70	30.00	-12.30
10	2457	16.60	16.60	30.00	-13.40
11	2462	12.24	12.24	30.00	-17.76
Worst			18.23		

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

10.3.4. 802.11g MODE IN THE 2.4 GHZ BAND (Chain1)

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	0.85	30.00	30	36	30.00
Mid	2437	0.85	30.00	30	36	30.00
High	2462	0.85	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)
1	2412	12.60	12.60	30.00	-17.40
2	2417	16.20	16.20	30.00	-13.80
3	2422	18.30	18.30	30.00	-11.70
4	2427	17.90	17.90	30.00	-12.10
6	2437	18.20	18.20	30.00	-11.80
8	2447	18.20	18.20	30.00	-11.80
9	2452	18.10	18.10	30.00	-11.90
10	2457	17.04	17.04	30.00	-12.96
11	2462	12.58	12.58	30.00	-17.42
Worst			18.30		

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

10.4. POWER SPECTRAL DENSITY

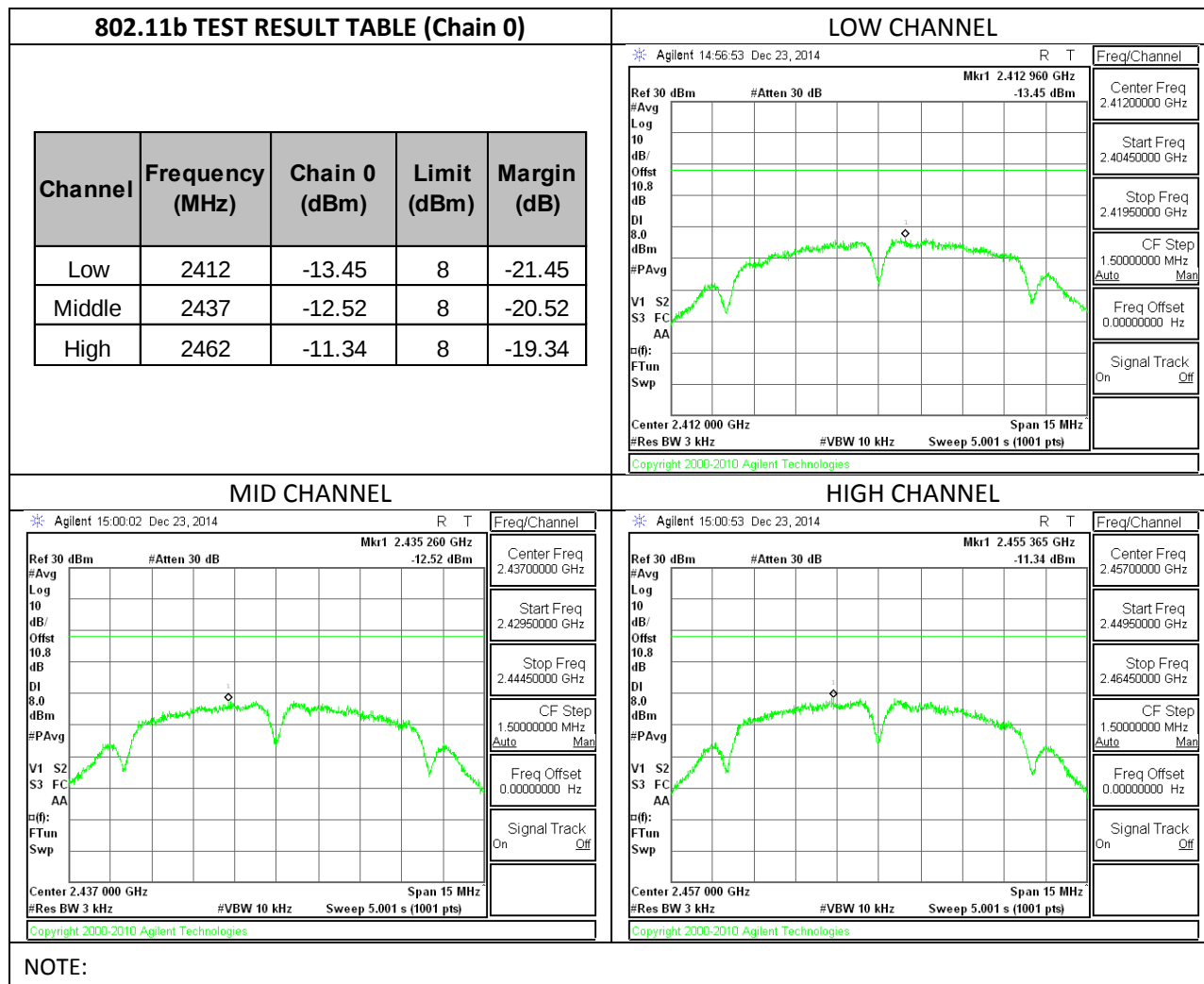
LIMITS

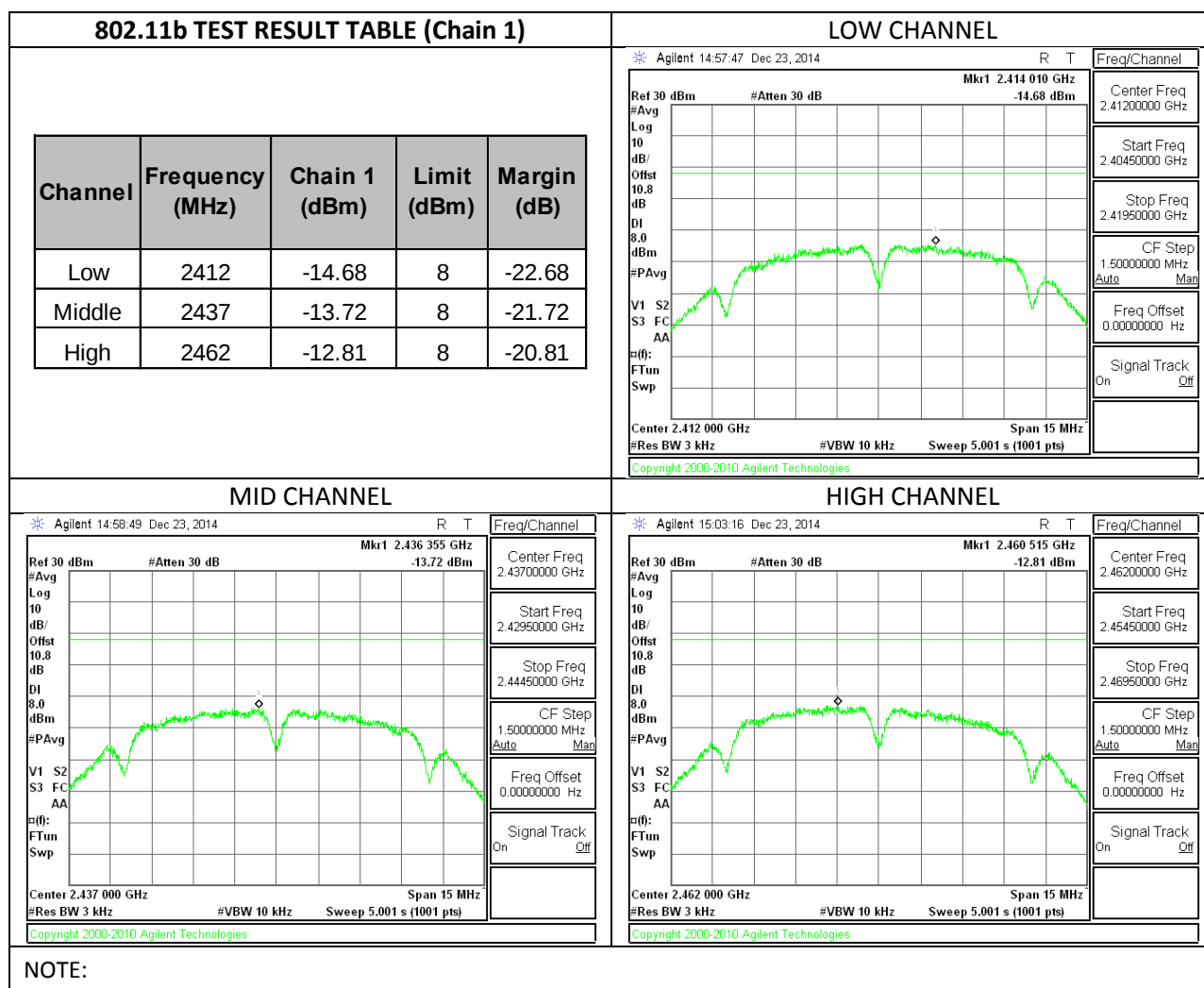
FCC §15.247

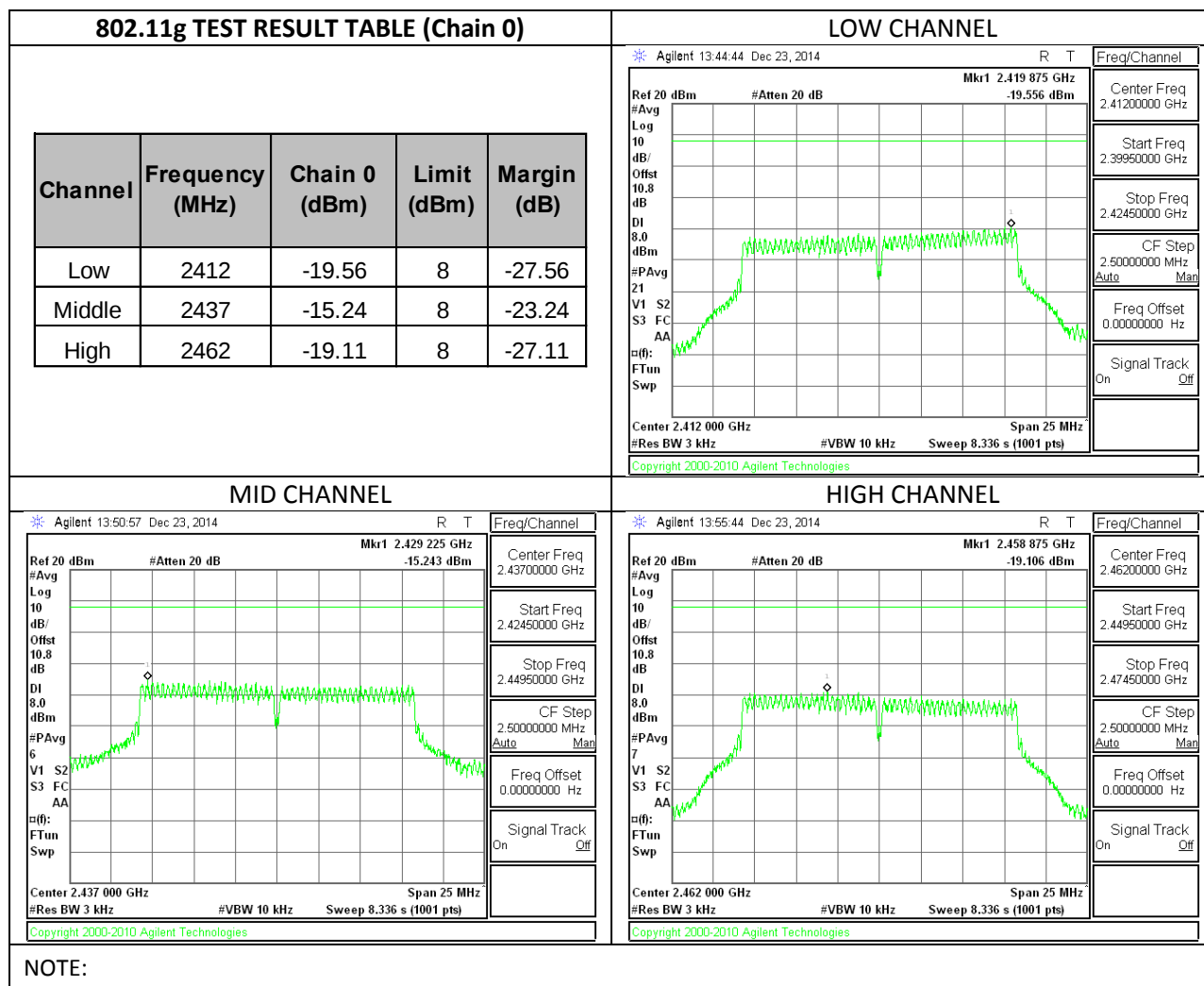
The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

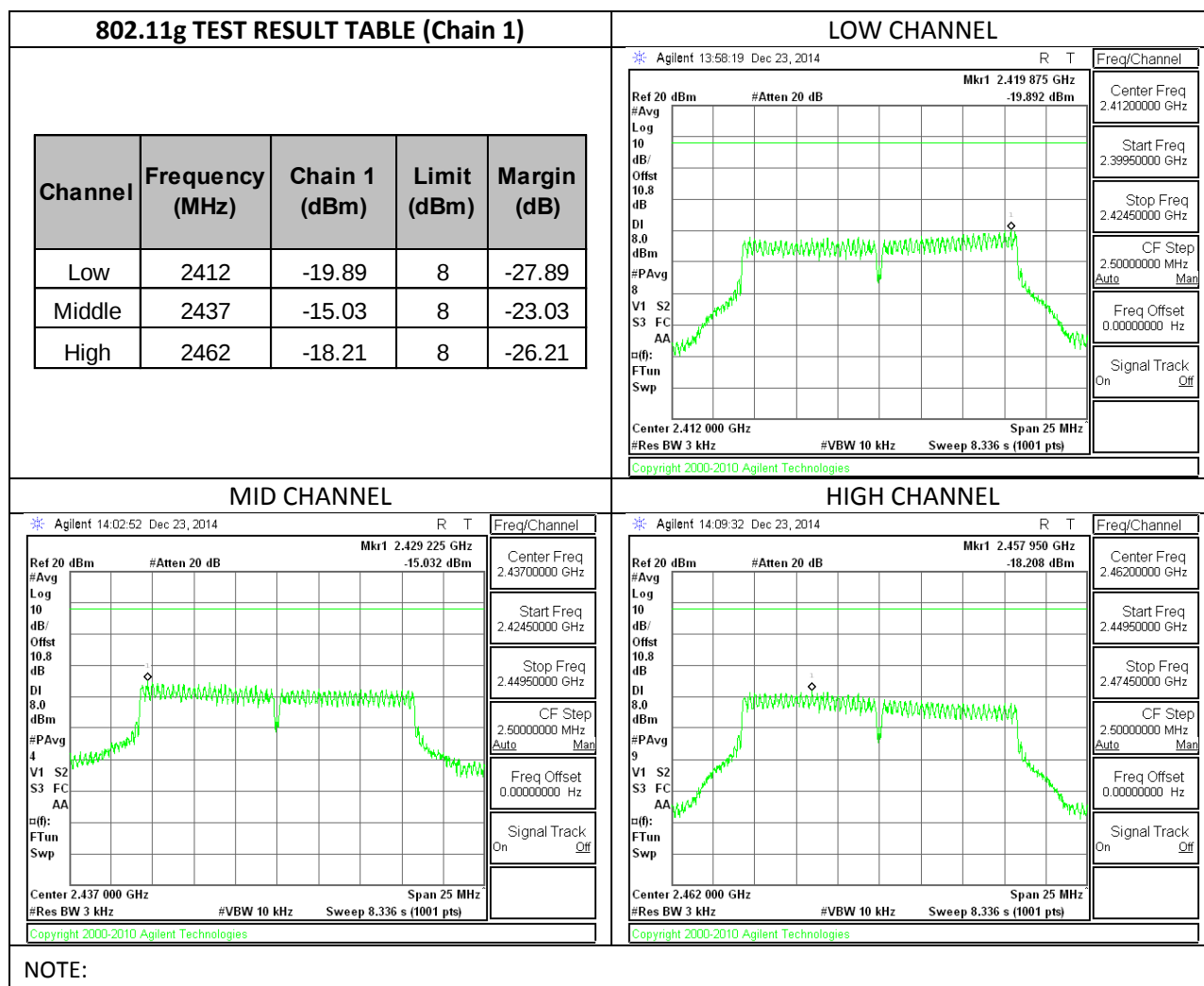
RESULTS

10.4.1. POWER SPECTRAL DENSITY PLOTS AND TABLE









NOTE:

10.5. CONDUCTED SPURIOUS AND 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.

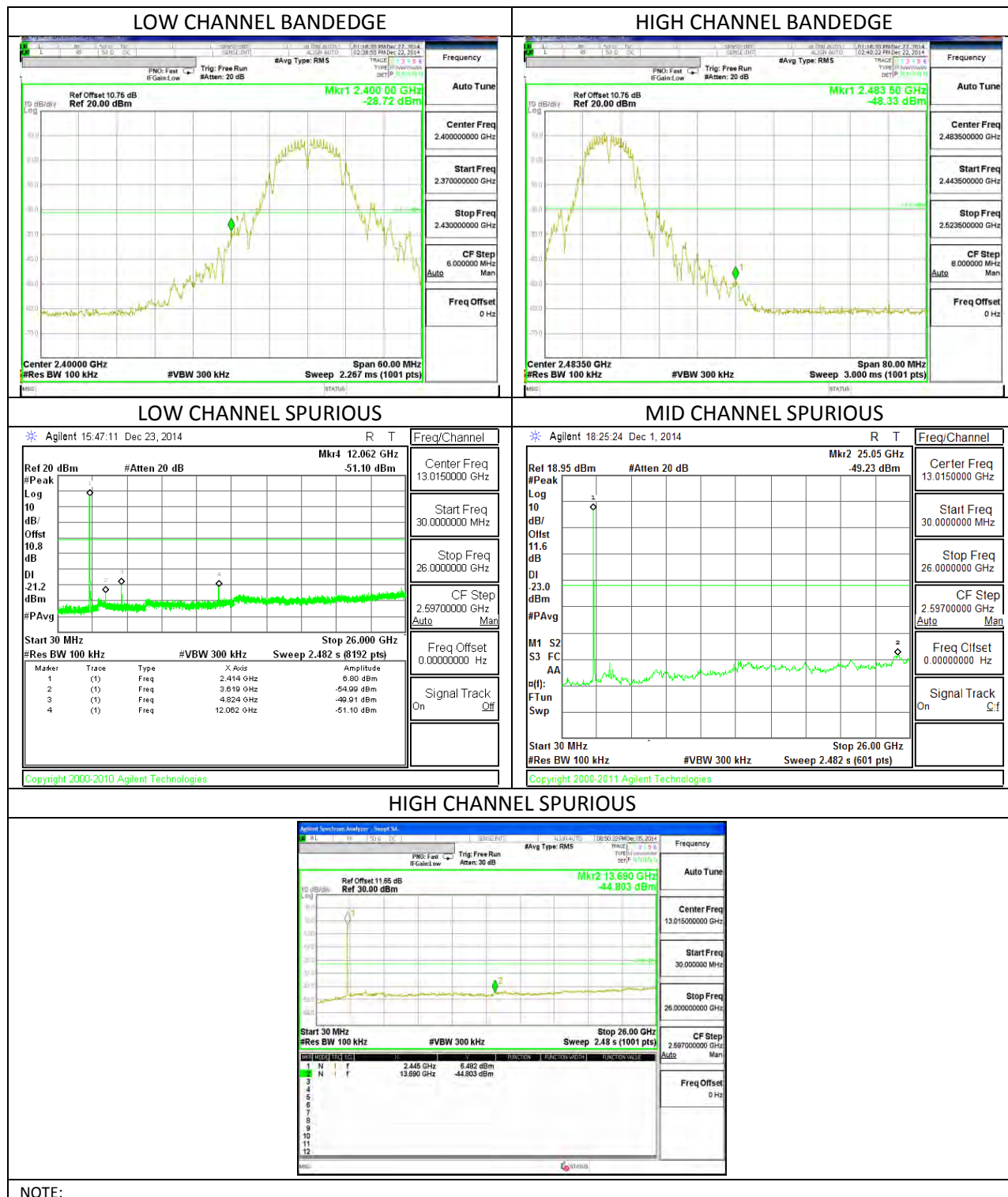
TEST PROCEDURE

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.

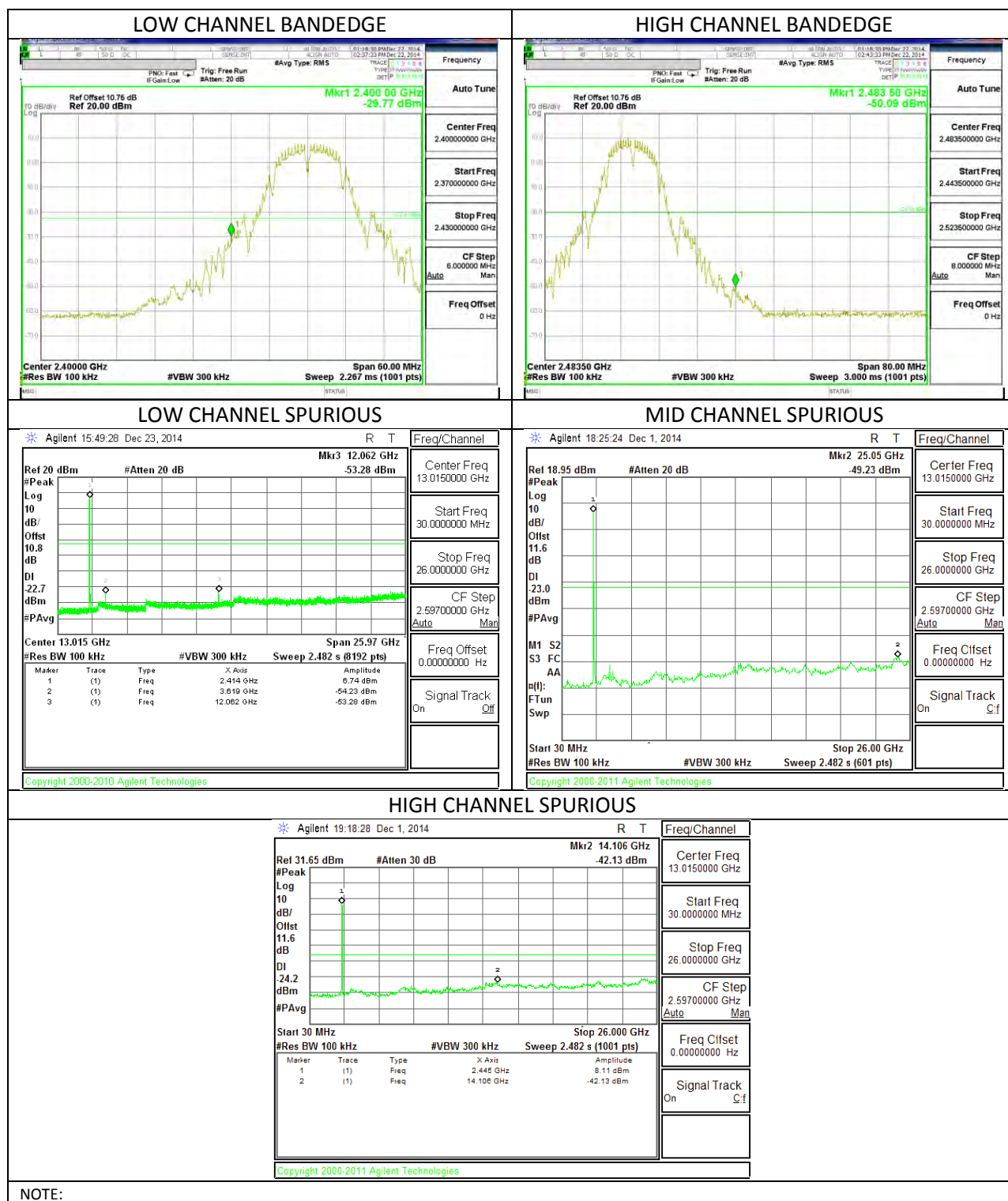
RESULTS

10.5.1. BANDEDGE AND SPURIOUS EMISSIONS PLOTS

802.11b Mode – Chain 0

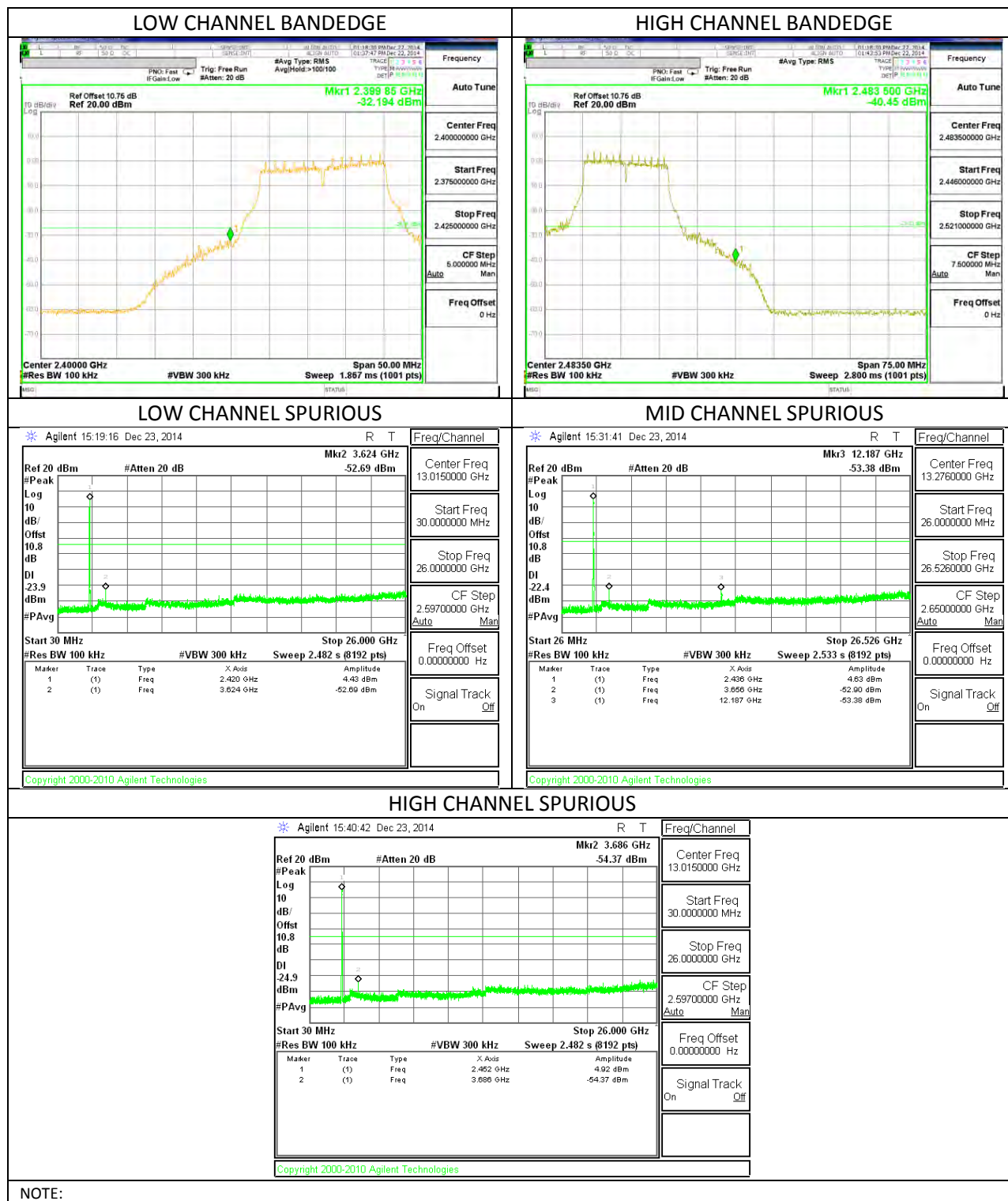


802.11b Mode – Chain 1



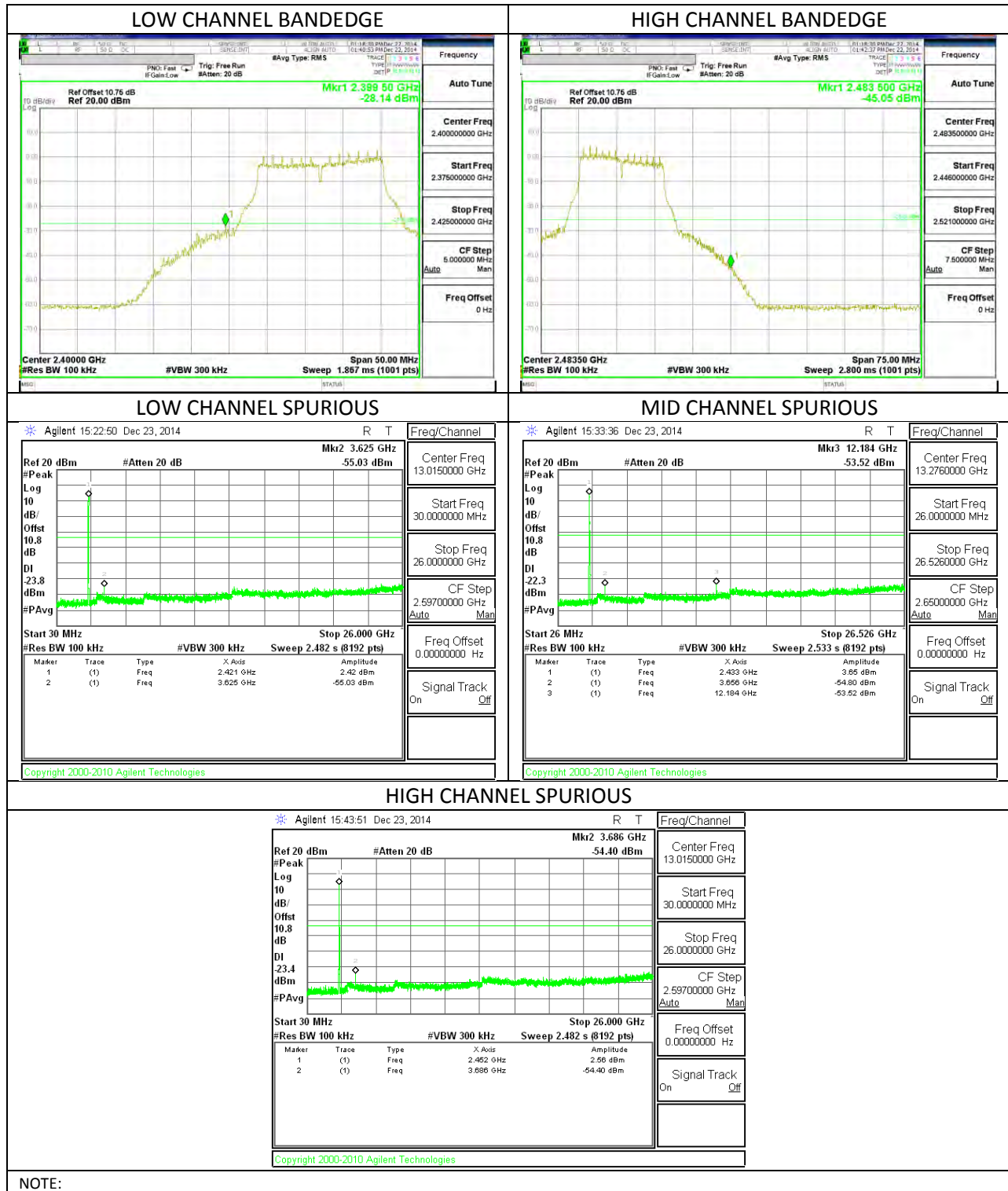
NOTE:

802.11g Mode – Chain 0



NOTE:

802.11g Mode – Chain 1



NOTE:

11. ANTENNA PORT TEST RESULTS MIMO 802.11n Mode

11.1. 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 v03r05: The transmitter output is connected to a spectrum analyzer with the RBW set to 100 kHz, the VBW $\geq 3 \times$ RBW, peak detector and max hold.

KDB Reference

662911 D01 Multiple Transmitter Output v02r01

RESULTS

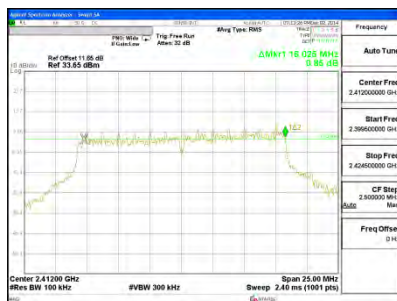
11.1.1. 6 dB BANDWIDTH PLOTS AND TABLE

802.11n HT20 TEST RESULT TABLE

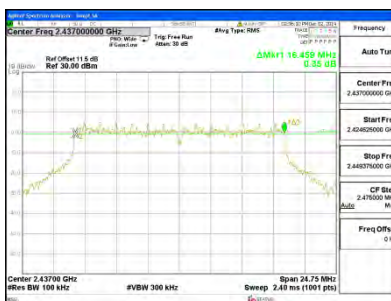
Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
2412	16.03	16.08	0.5
2437	16.46	16.50	0.5
2462	16.45	16.50	0.5
Worst	16.03		

CHAIN 0

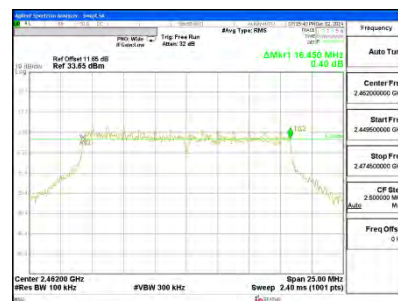
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

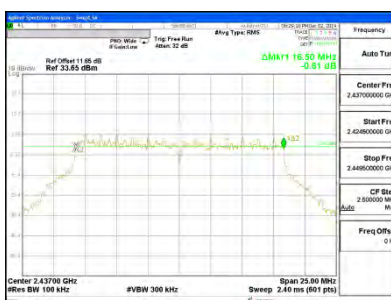


CHAIN 1

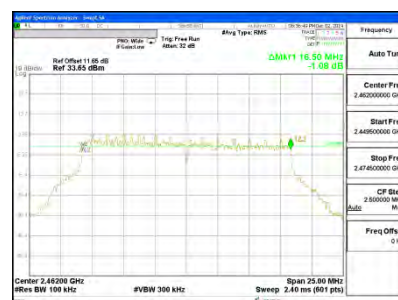
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



NOTE:

802.11n HT40 TEST RESULT TABLE

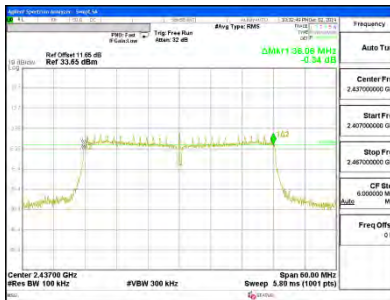
Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
2422	28.80	35.22	0.5
2437	36.06	36.42	0.5
2452	35.10	35.28	0.5
Worst	28.80		

CHAIN 0

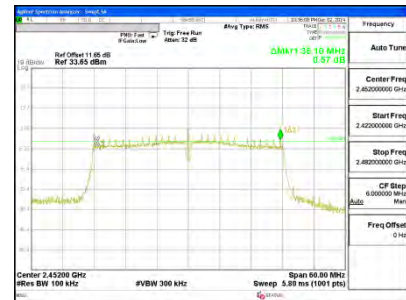
LOW CHANNEL



MID CHANNEL

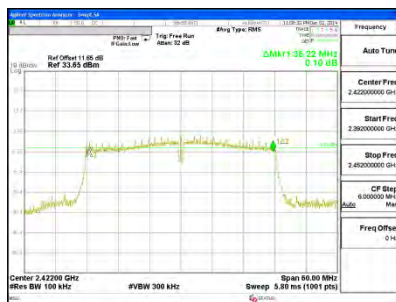


HIGH CHANNEL

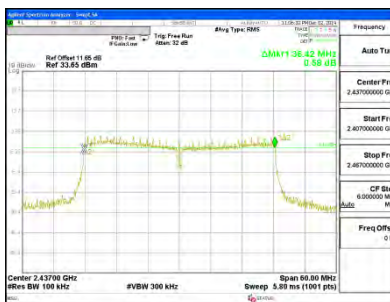


CHAIN 1

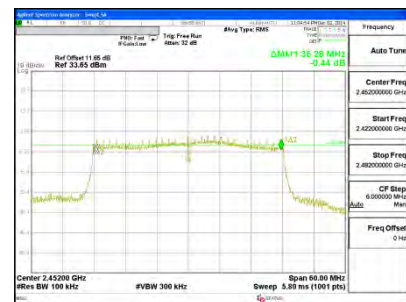
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



NOTE:

11.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

11.2.1. 99% BANDWIDTH PLOTS AND TABLE

802.11n HT20 TEST RESULT TABLE

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	2412	16.59	16.65
Mid	2437	16.99	16.65
High	2462	16.62	16.59

CHAIN 0

LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



CHAIN 1

LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



NOTE:

802.11n HT40 TEST RESULT TABLE

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	2422	36.07	36.10
Mid	2437	36.43	36.37
High	2452	36.23	36.32

CHAIN 0

LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



CHAIN 1

LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



NOTE:

11.1. 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

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

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.36	0.85	5.21

RESULTS

11.1.1. 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	5.21	30.00	30	36	30.00
Mid	2437	5.21	30.00	30	36	30.00
High	2462	5.21	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
1	2412	14.60	14.10	17.37	30.00	-12.63
2	2417	15.50	15.50	18.51	30.00	-11.49
3	2422	17.70	17.30	20.51	30.00	-9.49
6	2437	17.30	17.30	20.31	30.00	-9.69
9	2452	17.35	17.84	20.61	30.00	-9.39
10	2457	16.87	17.54	20.23	30.00	-9.77
11	2462	13.00	13.00	16.01	30.00	-13.99

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

11.1.2. 802.11n HT40 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	2422	5.21	30.00	30	36	30.00
Mid	2437	5.21	30.00	30	36	30.00
High	2452	5.21	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
Low	2422	12.00	12.00	15.01	30.00	-14.99
Mid	2437	13.40	13.40	16.41	30.00	-13.59
High	2452	13.00	13.00	16.01	30.00	-13.99

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

11.2. POWER SPECTRAL DENSITY

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

11.2.1. POWER SPECTRAL DENSITY PLOTS AND TABLE

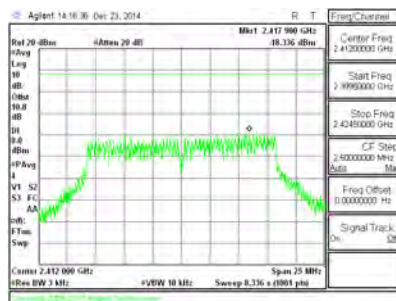
802.11n HT20 TEST RESULT TABLE

PSD Results

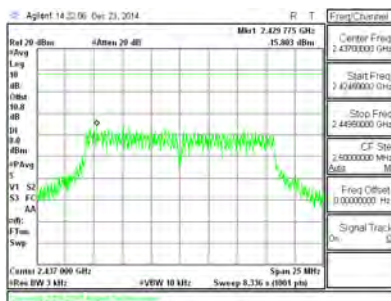
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-18.34	-18.35	-15.33	8.0	-23.3
Mid	2437	-15.80	-15.68	-12.73	8.0	-20.7
High	2462	-19.76	-16.92	-15.10	8.0	-23.1

CHAIN 0

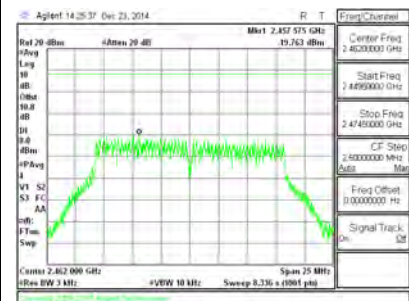
LOW CHANNEL



MID CHANNEL

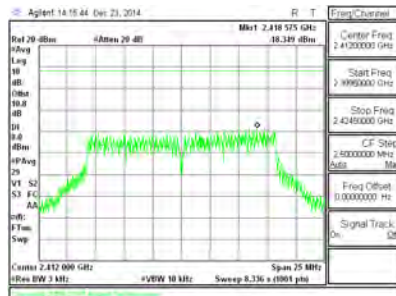


HIGH CHANNEL

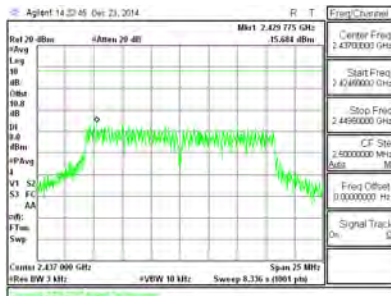


CHAIN 1

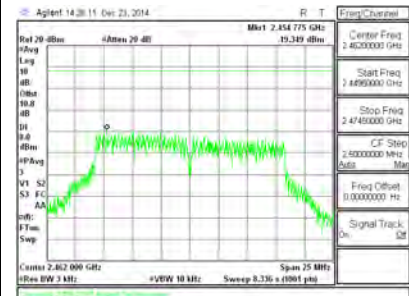
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



NOTE:

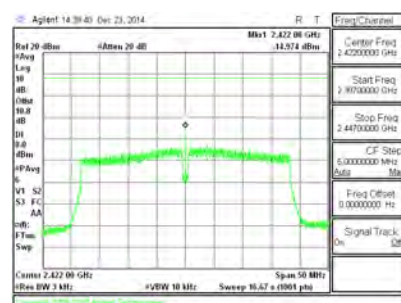
802.11n HT40 TEST RESULT TABLE

PSD Results

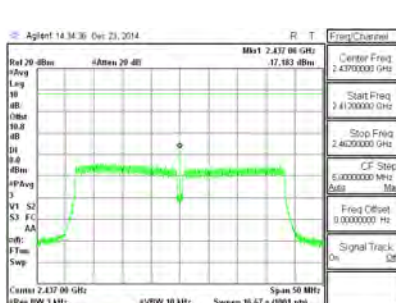
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2422	-14.97	-11.67	-10.00	8.0	-18.0
Mid	2437	-17.18	-13.49	-11.95	8.0	-19.9
High	2452	-17.20	-13.90	-12.23	8.0	-20.2

CHAIN 0

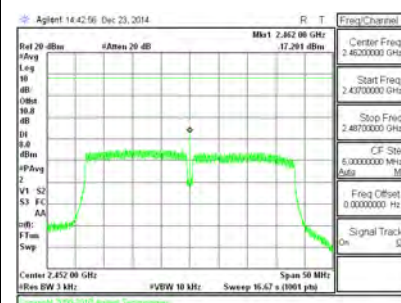
LOW CHANNEL



MID CHANNEL

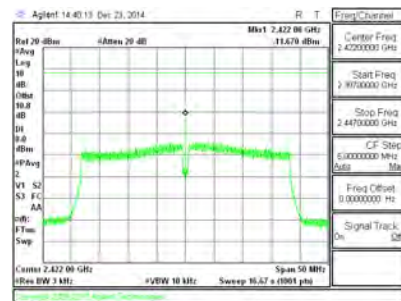


HIGH CHANNEL

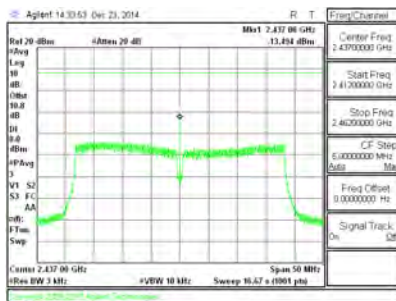


CHAIN 1

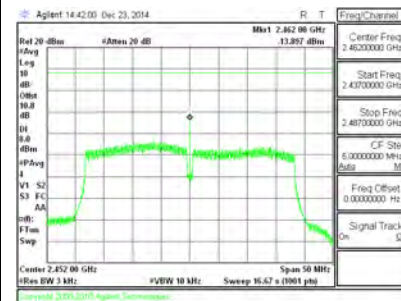
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



NOTE:

11.3. CONDUCTED SPURIOUS AND 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

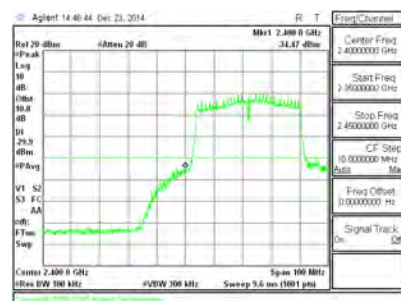
11.3.1. BANDEDGE AND SPURIOUS EMISSIONS PLOTS

802.11n HT20 TEST RESULT TABLE		
CHAIN 0		
LOW CHANNEL BANDEDGE	MID CHANNEL REFERENCE	HIGH CHANNEL BANDEDGE
LOW CHANNEL SPURIOUS	MID CHANNEL SPURIOUS	HIGH CHANNEL SPURIOUS
CHAIN 1		
LOW CHANNEL BANDEDGE	MID CHANNEL REFERENCE	HIGH CHANNEL BANDEDGE
LOW CHANNEL SPURIOUS	MID CHANNEL SPURIOUS	HIGH CHANNEL SPURIOUS

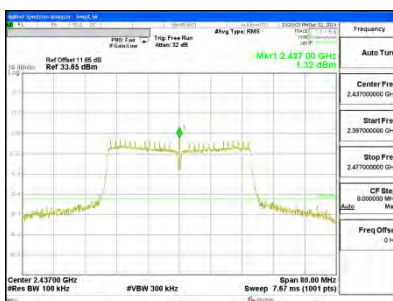
802.11n HT40 TEST RESULT TABLE

CHAIN 0

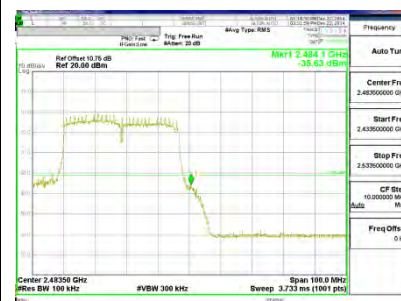
LOW CHANNEL BANDEDGE



MID CHANNEL REFERENCE



HIGH CHANNEL BANDEDGE



LOW CHANNEL SPURIOUS



MID CHANNEL SPURIOUS

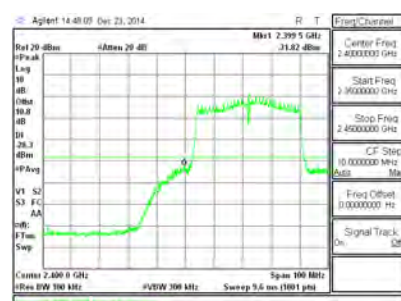


HIGH CHANNEL SPURIOUS

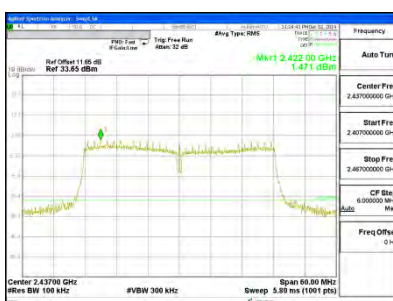


CHAIN 1

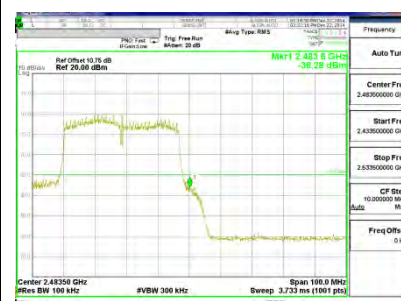
LOW CHANNEL BANDEDGE



MID CHANNEL REFERENCE



HIGH CHANNEL BANDEDGE



LOW CHANNEL SPURIOUS



MID CHANNEL SPURIOUS



HIGH CHANNEL SPURIOUS



12. RADIATED TEST RESULTS SISO 802.11b/g Chain 0

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 150 cm for above 1GHz. The antenna to EUT distance is 3 meters.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements. Duty cycle factor= $10\log(1/x)$ For this sample B mode = 0dB (duty cycle >98%); G mode = 0.3dB; N HT20 mode = 0.30dB; N HT40 mode=0.14dB.

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.

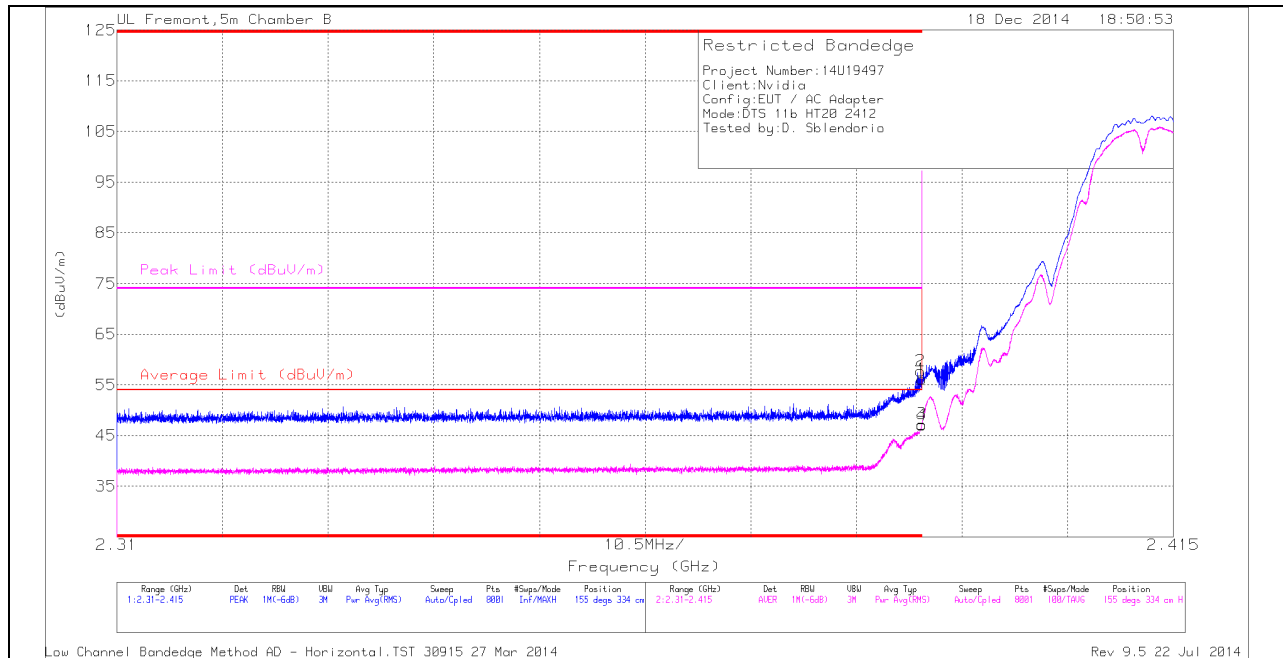
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

12.2. TRANSMITTER ABOVE 1 GHz

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

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

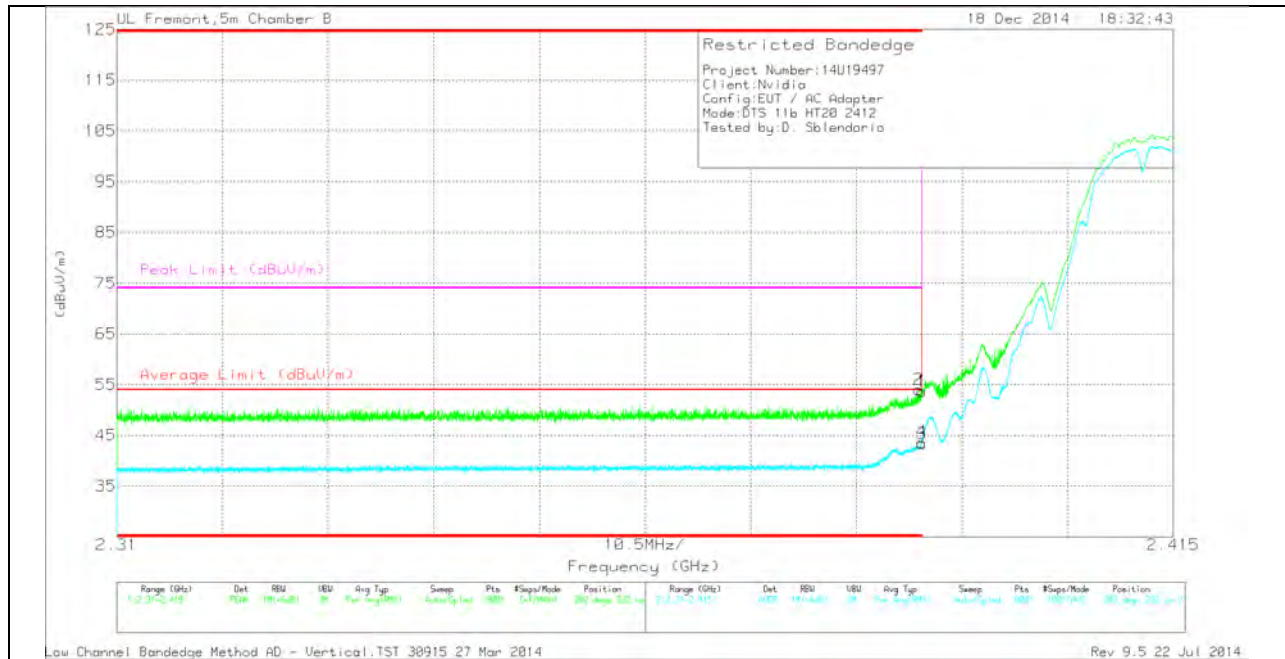
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	46.67	PK	32.1	-22.7	0	56.07	-	-	74	-17.93	155	334
2	* 2.39	48.33	PK	32.1	-22.7	0	57.73	-	-	74	-16.27	155	334
3	* 2.39	37.85	RMS	32.1	-22.7	0	47.25	54	-6.75	-	-	155	334
4	* 2.39	37.67	RMS	32.1	-22.7	0	47.07	54	-6.93	-	-	155	334

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

PK - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	44.3	PK	32.1	-22.7	0	53.7	-	-	74	-20.3	202	232	V
2	* 2.39	44.64	PK	32.1	-22.7	0	54.04	-	-	74	-19.96	202	232	V
3	* 2.39	33.99	RMS	32.1	-22.7	0	43.39	54	-10.61	-	-	202	232	V
4	* 2.39	34.25	RMS	32.1	-22.7	0	43.65	54	-10.35	-	-	202	232	V

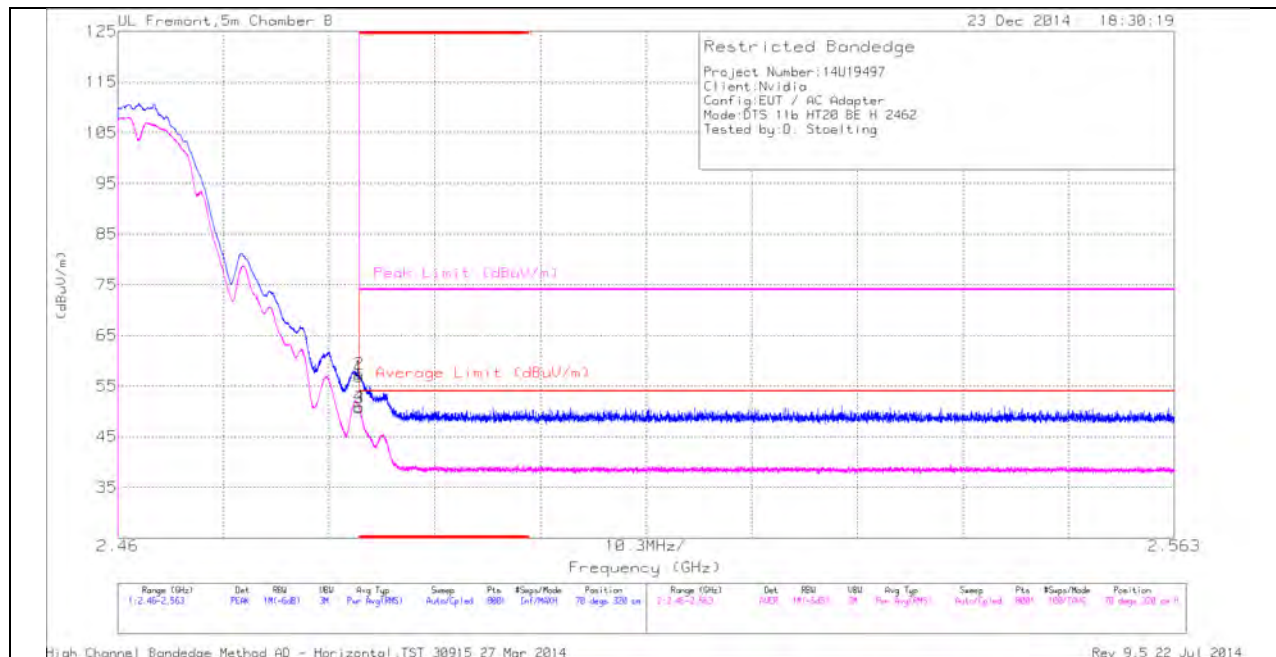
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

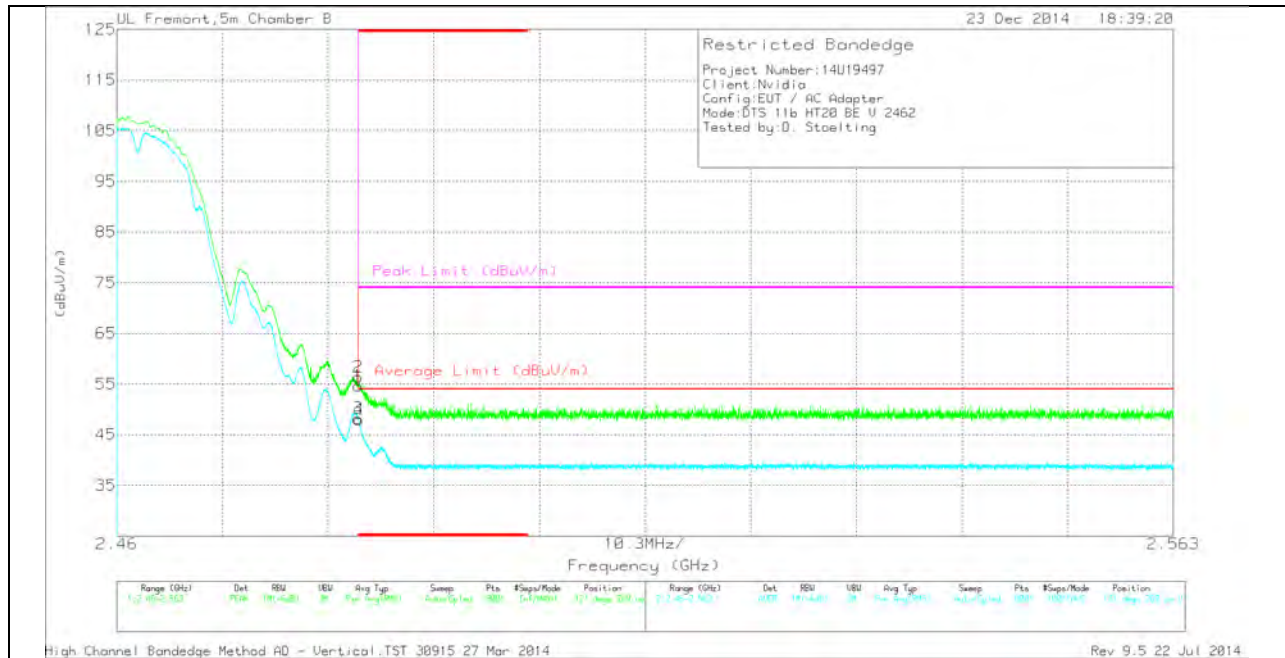
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	47.05	PK	32.4	-22.6	56.85	-	-	74	-17.15	70	320	H
2	* 2.484	47.55	PK	32.4	-22.6	57.35	-	-	74	-16.65	70	320	H
3	* 2.484	40.9	RMS	32.4	-22.6	50.7	54	-3.3	-	-	70	320	H
4	* 2.484	41.11	RMS	32.4	-22.6	50.91	54	-3.09	-	-	70	320	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

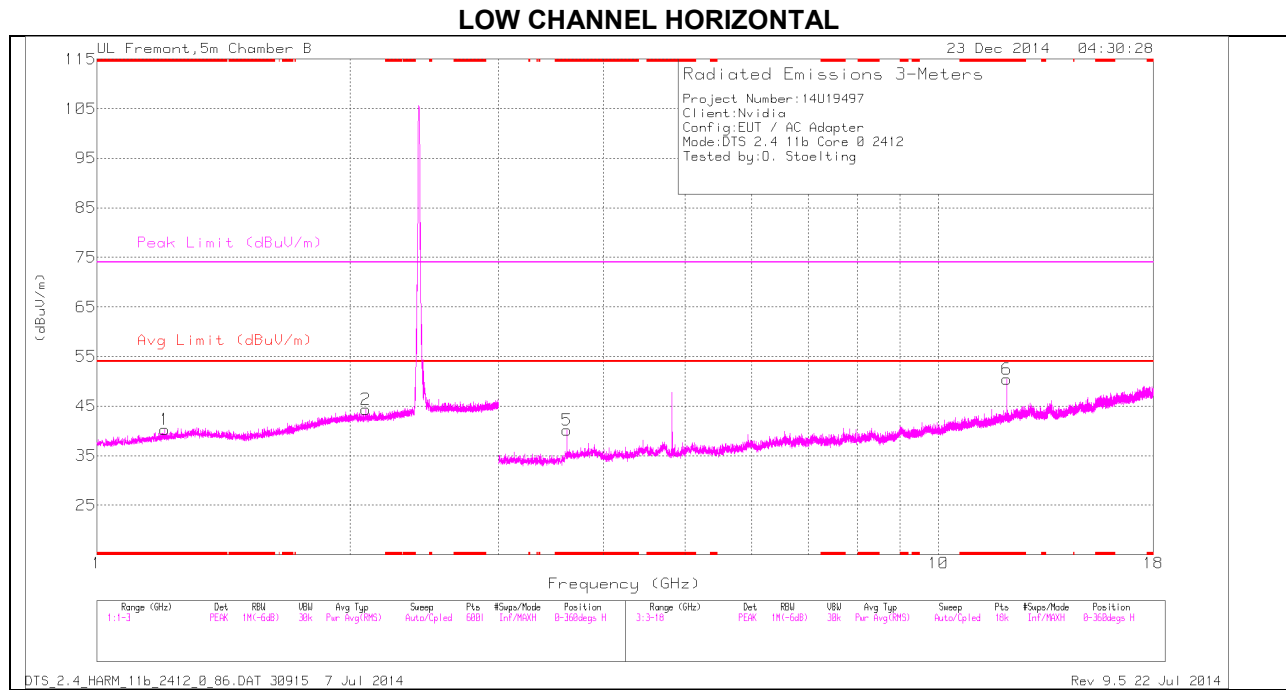
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	44.83	PK	32.4	-22.6	54.63	-	-	74	-19.37	121	269	V
2	* 2.484	46.53	PK	32.4	-22.6	56.33	-	-	74	-17.67	121	269	V
3	* 2.484	38.44	RMS	32.4	-22.6	48.24	54	-5.76	-	-	121	269	V
4	* 2.484	38.17	RMS	32.4	-22.6	47.97	54	-6.03	-	-	121	269	V

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

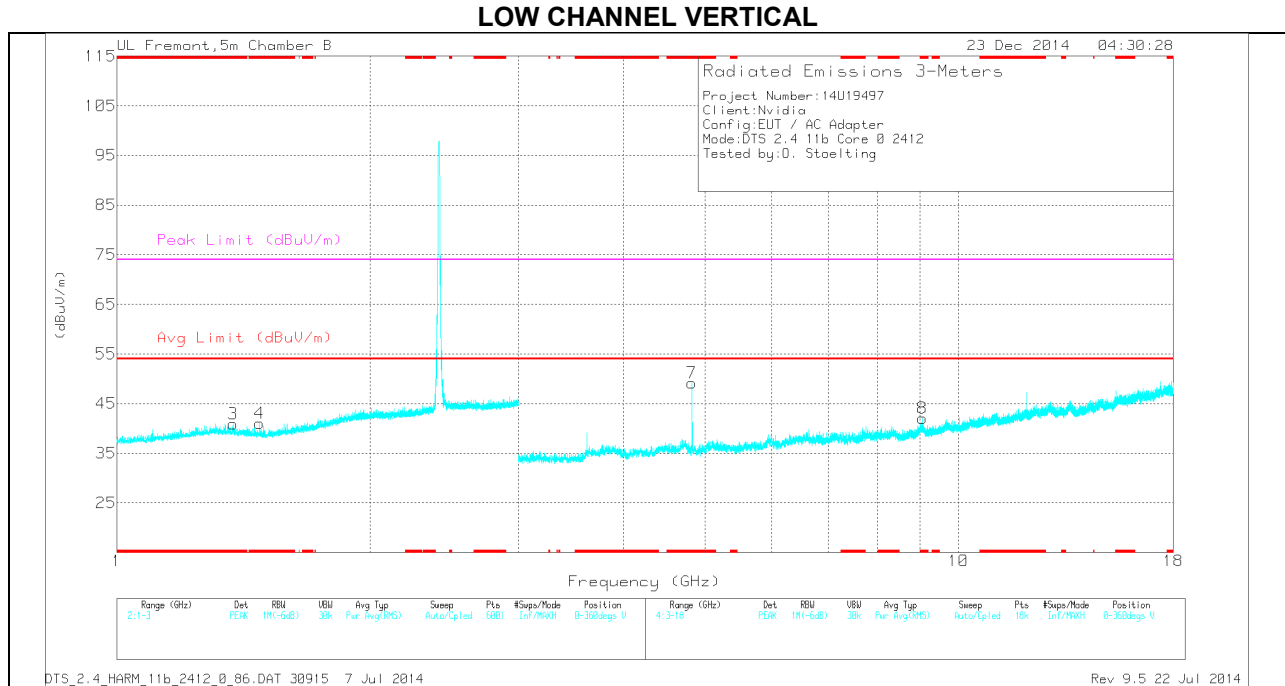
PK - Peak detector

RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS



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



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 DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/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	* 1.204	36.46	PK	28.2	-24.4	40.26	-	-	74	-33.74	0-360	101	H
3	* 1.373	36.56	PK	28.6	-24.3	40.86	-	-	74	-33.14	0-360	200	V
4	* 1.478	37.07	PK	28	-24	41.07	-	-	74	-32.93	0-360	101	V
5	* 3.618	37.84	PK	33.2	-30.9	40.14	-	-	74	-33.86	0-360	199	H
6	* 12.061	34.21	PK	38.8	-22.6	50.41	-	-	74	-23.59	0-360	199	H
7	* 4.824	44.91	PK	34.2	-30	49.11	-	-	74	-24.89	0-360	199	V
8	* 9.065	30.09	PK	36.3	-24.4	41.99	-	-	74	-32.01	0-360	199	V
2	2.088	36.16	PK	31.3	-23.1	44.36	-	-	-	-	0-360	200	H

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

PK - Peak detector

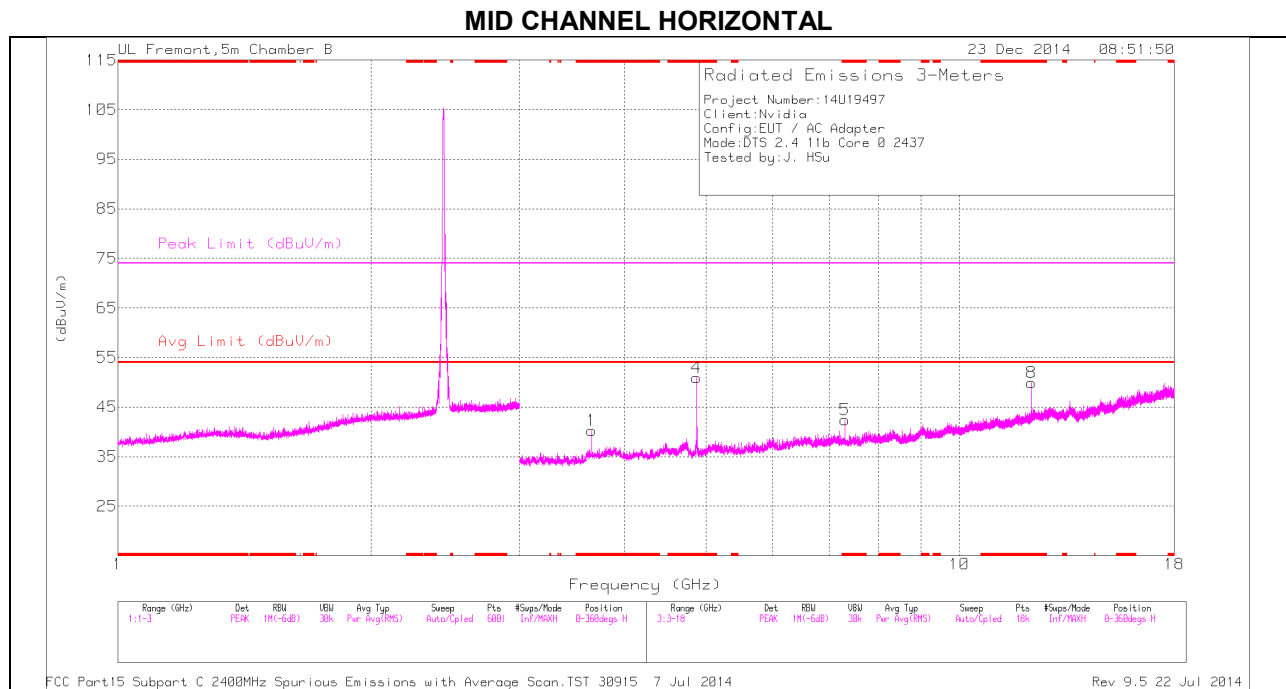
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.618	44.09	PK2	33.2	-30.9	46.39	-	-	74	-27.61	78	205	H
* 3.618	38.06	MAV1	33.2	-30.9	40.36	54	-13.64	-	-	78	205	H
* 12.06	40.52	PK2	38.8	-22.5	56.82	-	-	74	-17.18	349	159	H
* 12.059	33.94	MAV1	38.8	-22.5	50.24	54	-3.76	-	-	349	159	H
* 4.824	47.98	PK2	34.2	-30	52.18	-	-	74	-21.82	42	230	V
* 4.824	44.32	MAV1	34.2	-30	48.52	54	-5.48	-	-	42	230	V
* 9.064	37.02	PK2	36.3	-24.4	48.92	-	-	74	-25.08	227	124	V
* 9.065	25.12	MAV1	36.3	-24.4	37.02	54	-16.98	-	-	227	124	V

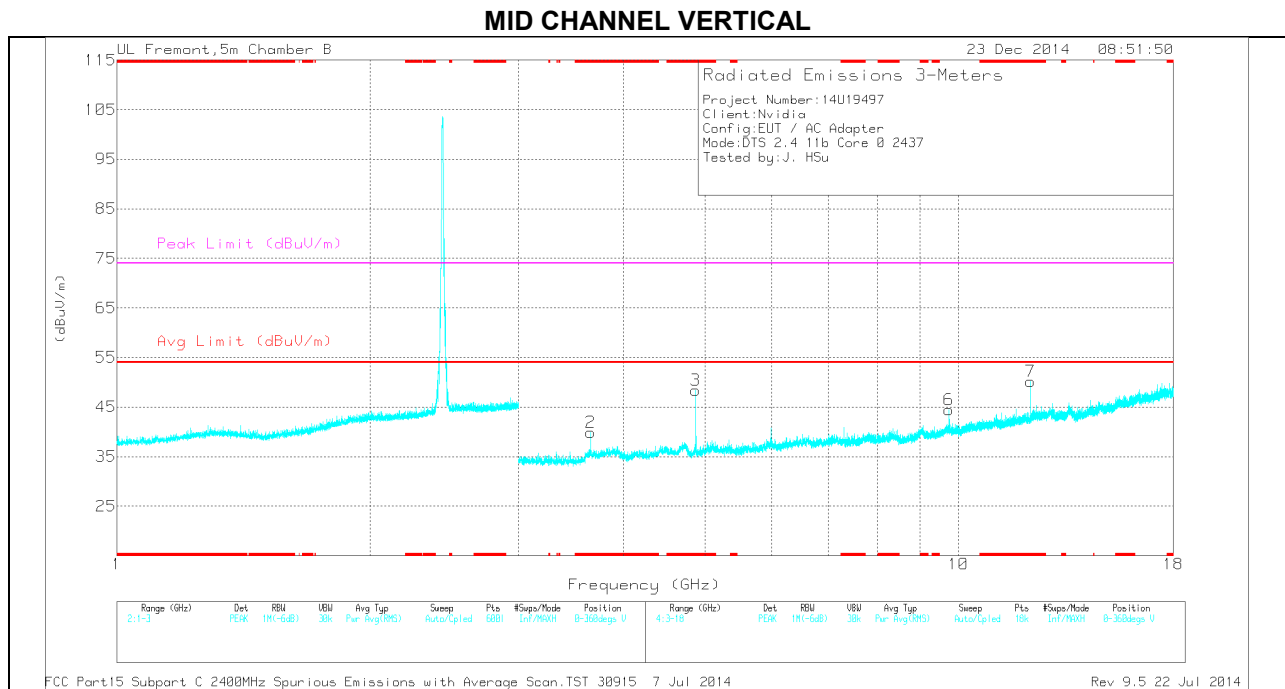
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection



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



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 DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.656	38.12	PK	33.2	-31	40.32	-	-	74	-33.68	0-360	199	H
4	* 4.874	47.31	PK	34.2	-30.6	50.91	-	-	74	-23.09	0-360	199	H
5	* 7.311	35.23	PK	35.6	-28.4	42.43	-	-	74	-31.57	0-360	199	H
8	* 12.184	33.57	PK	38.9	-22.5	49.97	-	-	74	-24.03	0-360	199	H
2	* 3.655	37.65	PK	33.2	-31	39.85	-	-	74	-34.15	0-360	101	V
3	* 4.874	44.84	PK	34.2	-30.6	48.44	-	-	74	-25.56	0-360	199	V
7	* 12.186	33.72	PK	38.9	-22.5	50.12	-	-	74	-23.88	0-360	199	V
6	9.748	31.76	PK	36.9	-24.2	44.46	-	-	-	-	0-360	101	V

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

PK - Peak detector

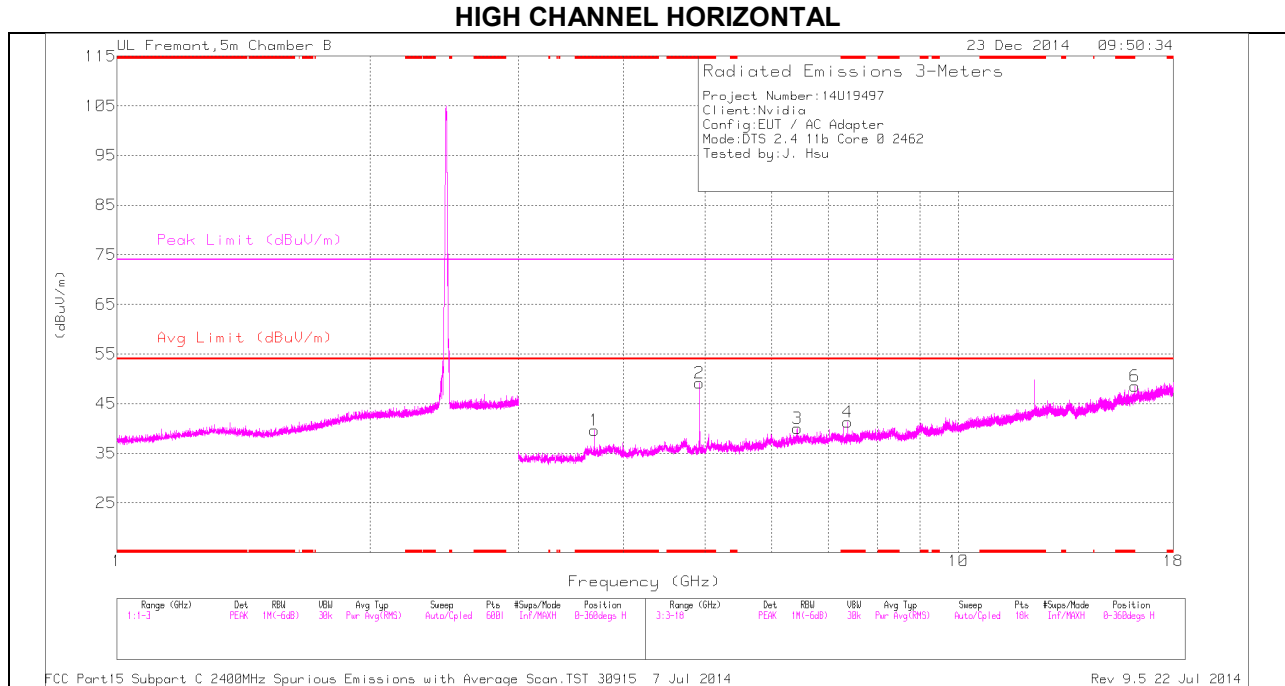
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.874	49.97	PK2	34.2	-30.6	53.57	-	-	74	-20.43	168	218	H
* 4.874	46.6	MAV1	34.2	-30.6	50.2	54	-3.8	-	-	168	218	H
* 7.311	42.47	PK2	35.6	-28.4	49.67	-	-	74	-24.33	57	136	H
* 7.311	33.57	MAV1	35.6	-28.4	40.77	54	-13.23	-	-	57	136	H
* 12.185	40.95	PK2	38.9	-22.5	57.35	-	-	74	-16.65	350	139	V
* 12.184	34.69	MAV1	38.9	-22.5	51.09	54	-2.91	-	-	350	139	V

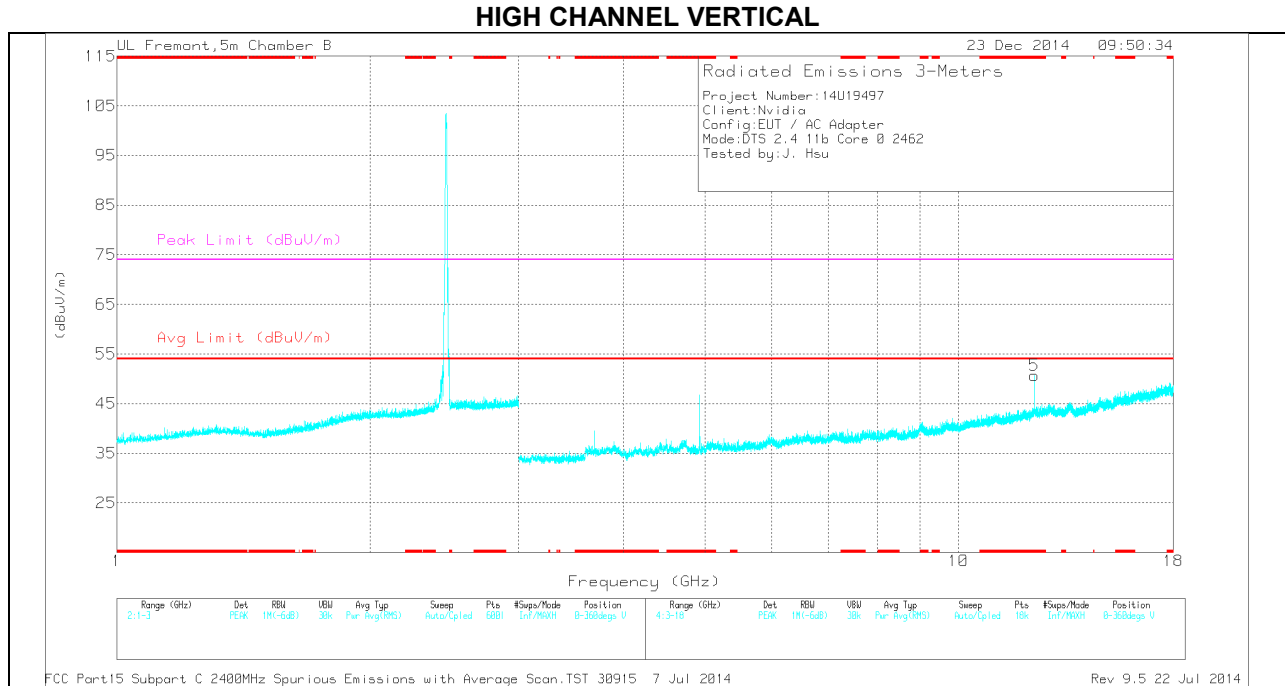
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection



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



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 DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.692	37.7	PK	33.3	-31.4	39.6	-	-	74	-34.4	0-360	199	H
2	* 4.924	45.89	PK	34.2	-30.9	49.19	-	-	74	-24.81	0-360	199	H
4	* 7.386	33.52	PK	35.6	-27.8	41.32	-	-	74	-32.68	0-360	199	H
5	* 12.309	33.69	PK	39	-22	50.69	-	-	74	-23.31	0-360	199	V
3	6.431	33.63	PK	35.6	-29.2	40.03	-	-	-	-	0-360	101	H
6	16.204	28.14	PK	41.1	-20.7	48.54	-	-	-	-	0-360	199	H

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

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.924	49.7	PK2	34.2	-30.9	53	-	-	74	-21	281	163	H
* 4.924	46.55	MAV1	34.2	-30.9	49.85	54	-4.15	-	-	281	163	H
* 12.31	39.92	PK2	39	-22	56.92	-	-	74	-17.08	349	143	V
* 12.309	33.19	MAV1	39	-22	50.19	54	-3.81	-	-	349	143	V

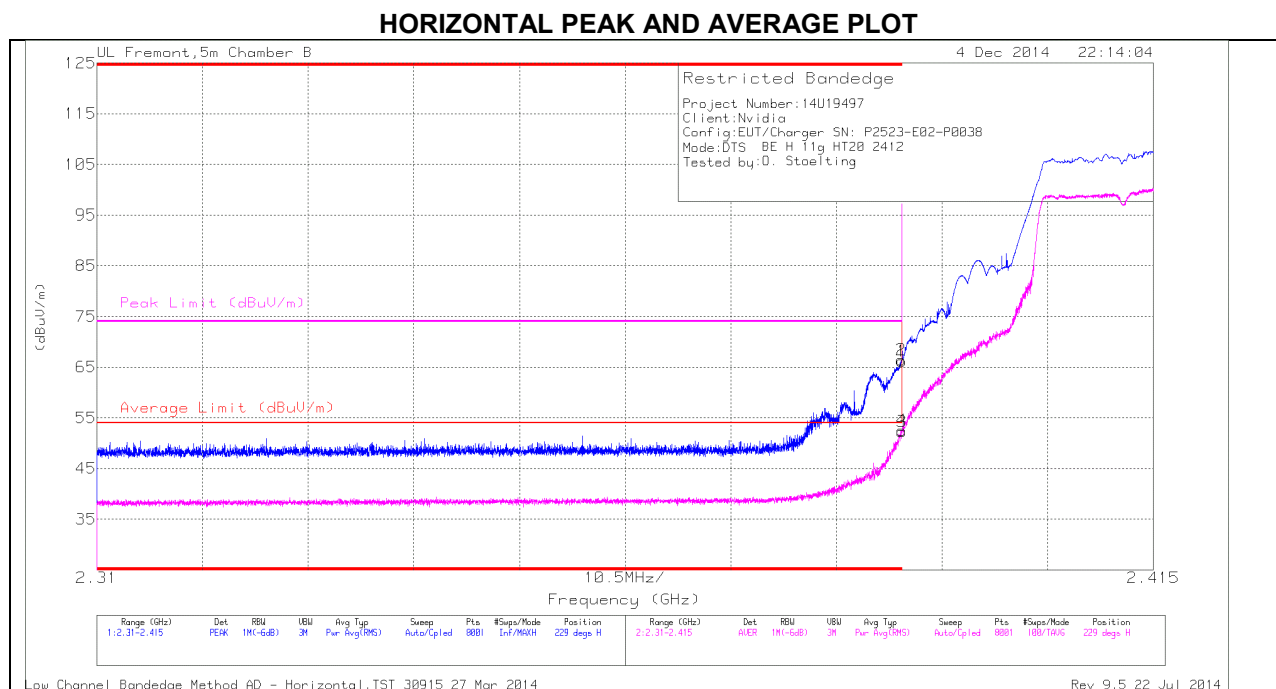
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection

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

RESTRICTED BANDEDGE (LOW CHANNEL)



HORIZONTAL DATA

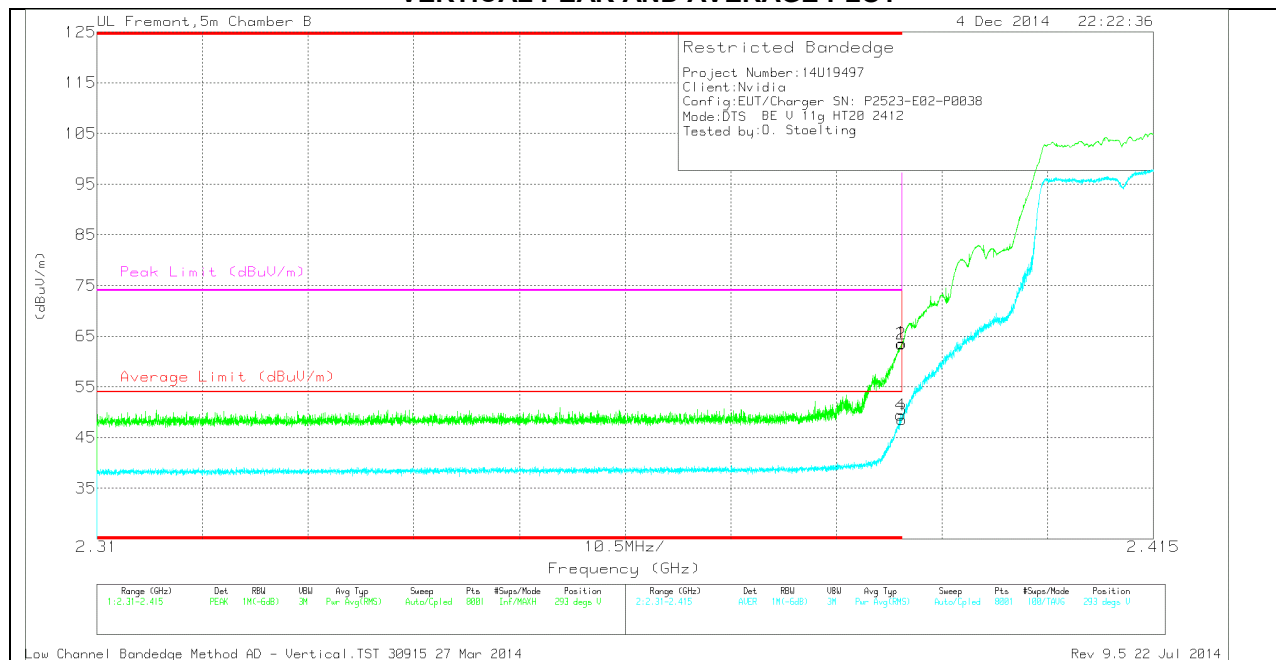
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitter/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	56.84	PK	32.1	-22.7	0	66.24	-	-	74	-7.76	229	336	H
2	* 2.39	57.05	PK	32.1	-22.7	0	66.45	-	-	74	-7.55	229	336	H
3	* 2.39	42.64	RMS	32.1	-22.7	.29	52.33	54	-1.67	-	-	229	336	H
4	* 2.39	42.89	RMS	32.1	-22.7	.29	52.58	54	-1.42	-	-	229	336	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitter/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	54.24	PK	32.1	-22.7	0	63.64	-	-	74	-10.36	293	281	V
2	* 2.39	54	PK	32.1	-22.7	0	63.4	-	-	74	-10.6	293	281	V
3	* 2.39	38.92	RMS	32.1	-22.7	.29	48.61	54	-5.39	-	-	293	281	V
4	* 2.39	39.71	RMS	32.1	-22.7	.29	49.4	54	-4.6	-	-	293	281	V

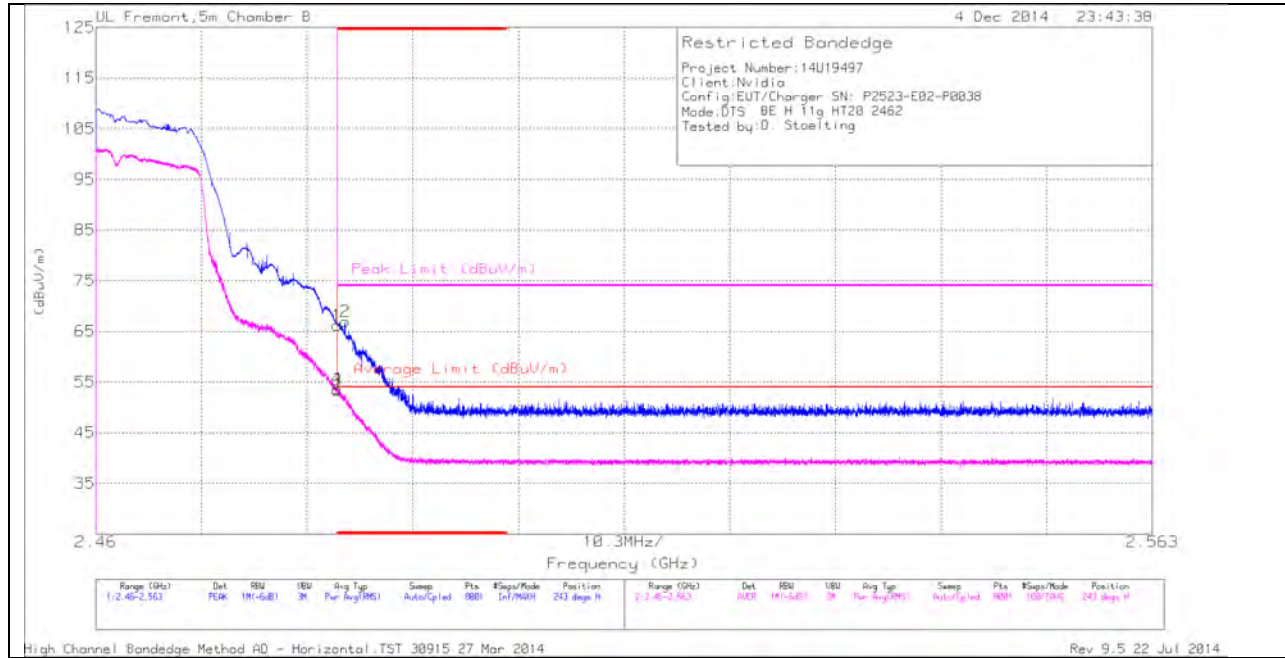
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



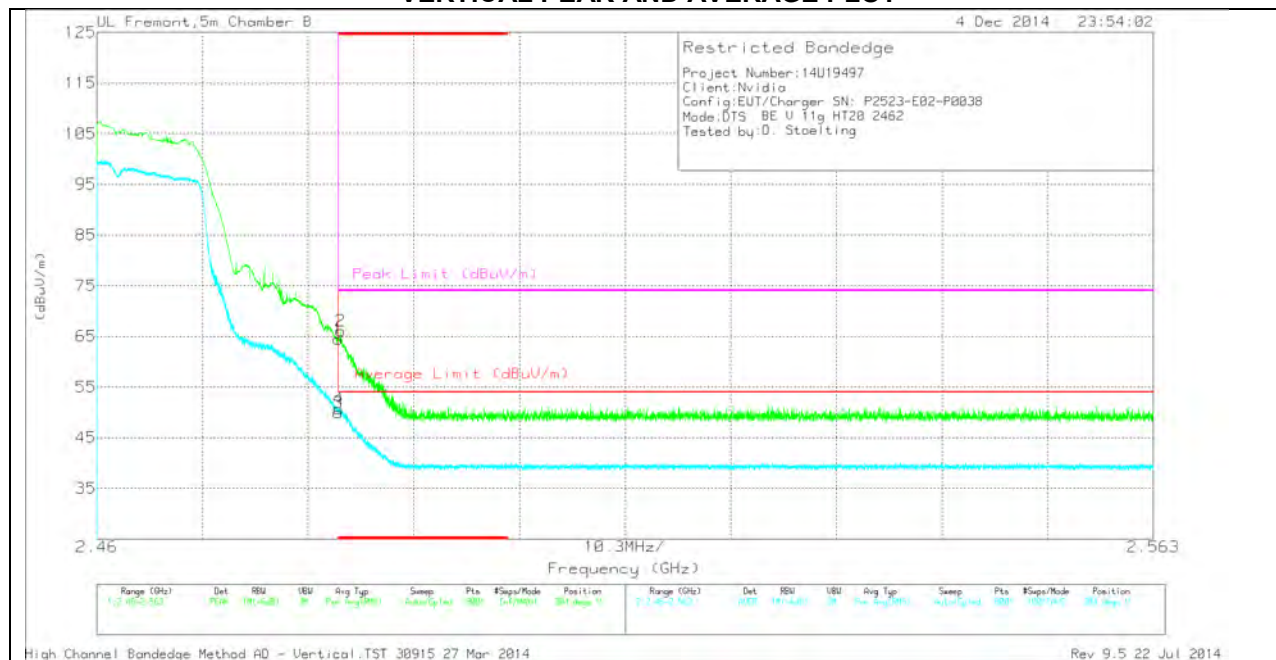
HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	56.44	PK	32.4	-22.6	0	66.24	-	-	74	-7.76	243	322	H
2	* 2.484	57.18	PK	32.4	-22.6	0	66.98	-	-	74	-7.02	243	322	H
3	* 2.484	43.29	RMS	32.4	-22.6	.29	53.38	54	-.62	-	-	243	322	H
4	* 2.484	43.53	RMS	32.4	-22.6	.29	53.62	54	-.38	-	-	243	322	H

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

PK - Peak detector

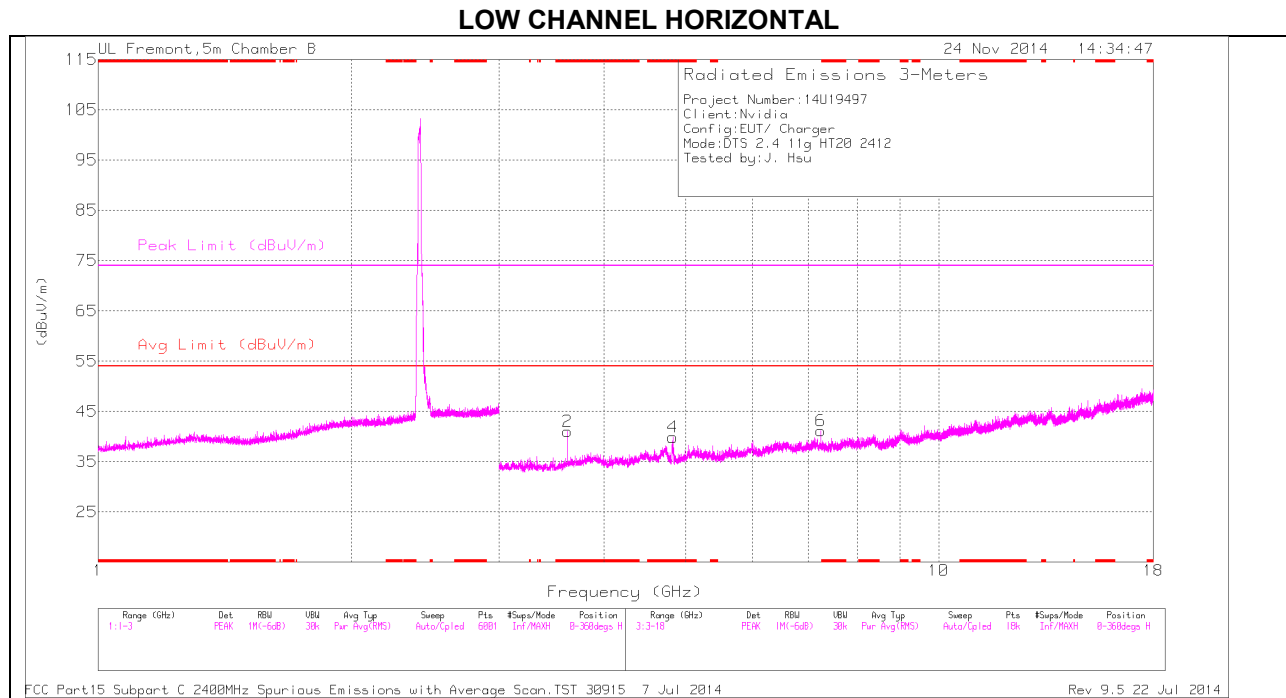
RMS - RMS detection



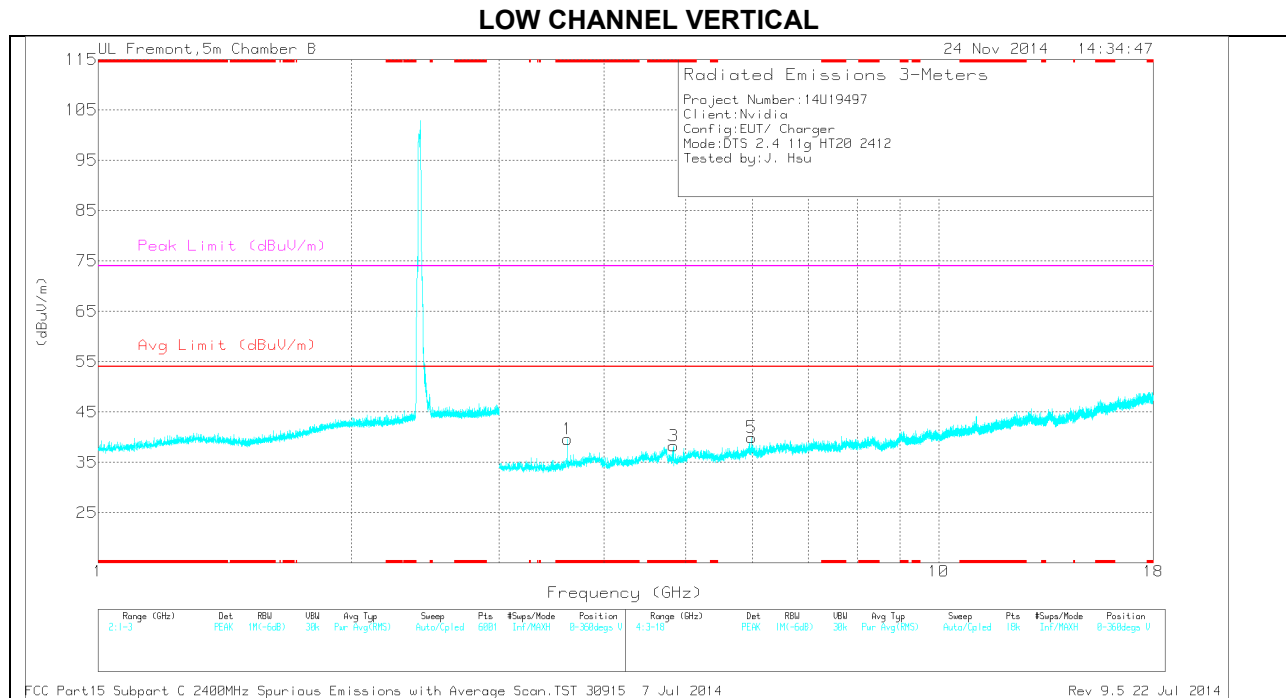
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF 134S (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	54.63	PK	32.4	-22.6	0	64.43	-	-	74	-9.57	304	332	V
2	* 2.484	56.27	PK	32.4	-22.6	0	66.07	-	-	74	-7.93	304	332	V
3	* 2.484	39.88	RMS	32.4	-22.6	.29	49.97	54	-4.03	-	-	304	332	V
4	* 2.484	40.62	RMS	32.4	-22.6	.29	50.71	54	-3.29	-	-	304	332	V

RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS



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



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 DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr /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
2	* 3.618	38.71	PK	33.2	-30.9	0	41.01	-	-	74	-32.99	0-360	101	H
4	* 4.827	35.67	PK	34.2	-30	0	39.87	-	-	74	-34.13	0-360	101	H
1	* 3.618	37.32	PK	33.2	-30.9	0	39.62	-	-	74	-34.38	0-360	101	V
3	* 4.837	34.27	PK	34.2	-30.2	0	38.27	-	-	74	-35.73	0-360	200	V
5	5.99	33.52	PK	35.2	-28.8	0	39.92	-	-	-	-	0-360	200	V
6	7.236	33.33	PK	35.6	-27.8	0	41.13	-	-	-	-	0-360	200	H

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

Pk - Peak detector

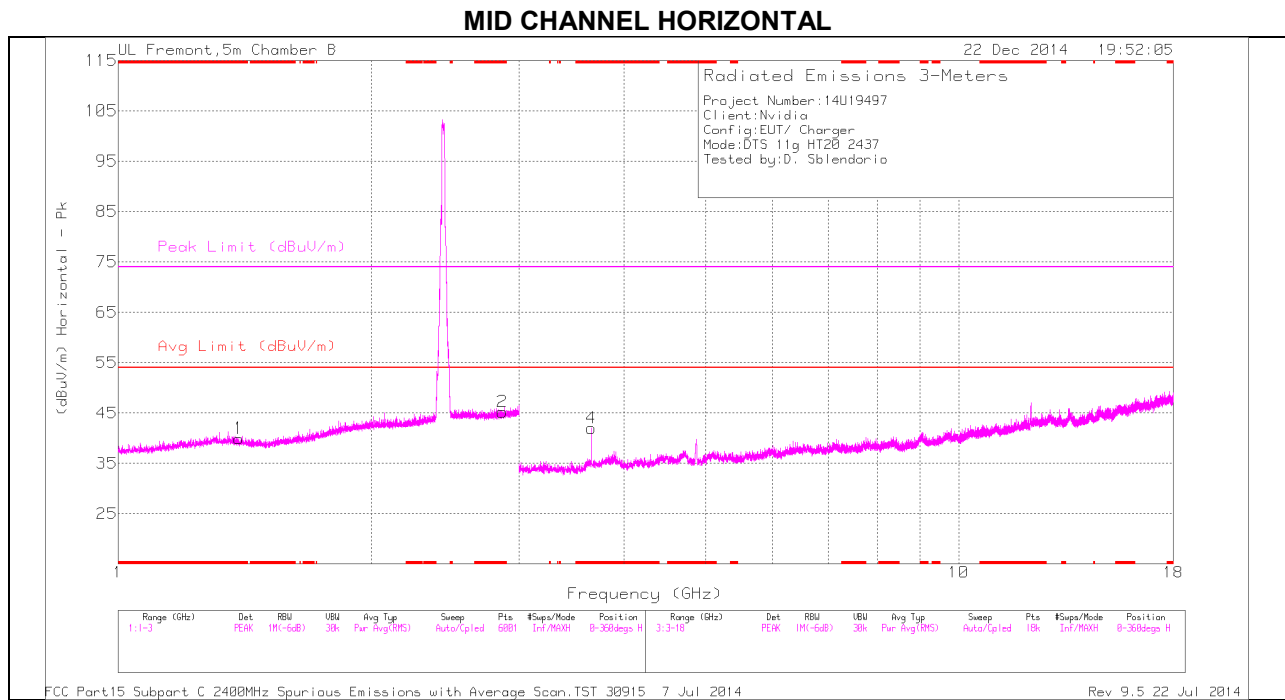
RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/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
* 3.618	44.59	PK2	33.2	-30.9	0	46.89	-	-	74	-27.11	197	103	H
* 3.618	38.19	MAv1	33.2	-30.9	.3	40.79	54	-13.21	-	-	197	103	H
* 4.828	45.05	PK2	34.2	-30	0	49.25	-	-	74	-24.75	303	166	H
* 4.823	32.5	MAv1	34.2	-30	.3	37	54	-17	-	-	303	166	H

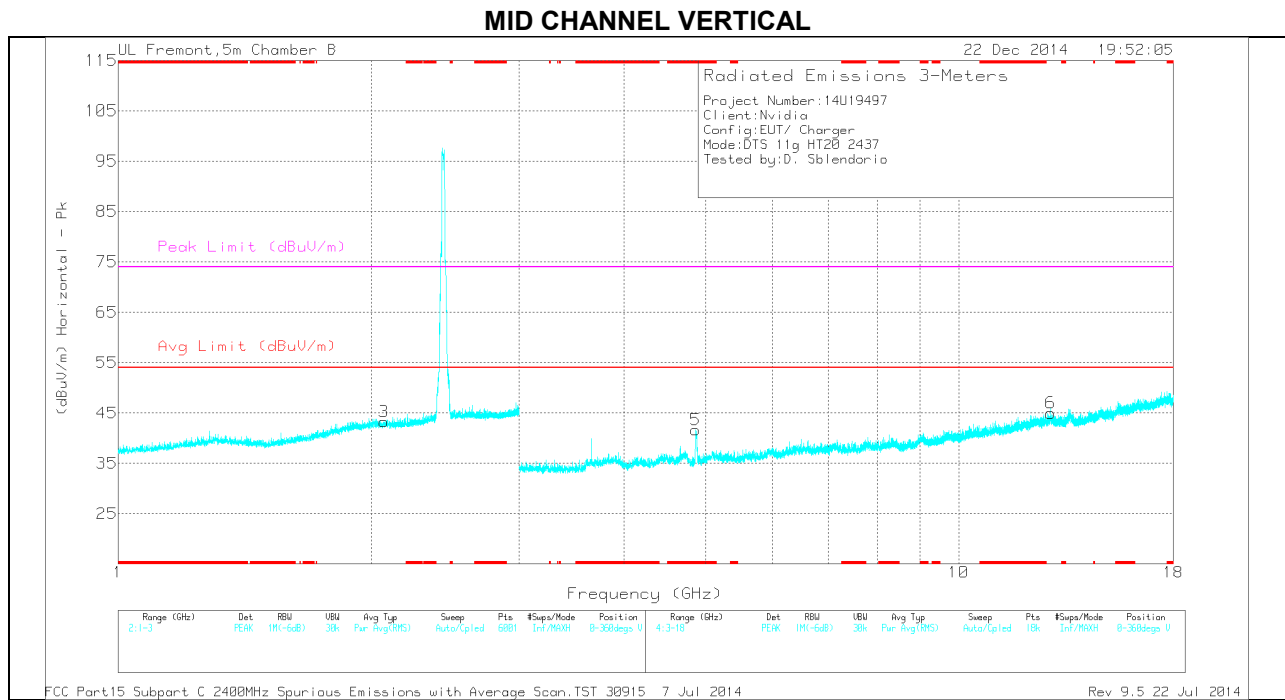
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection



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



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 DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/Ftr /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	* 1.392	35.64	PK	28.5	-24.2	0	39.94	-	-	74	-34.06	0-360	199	H
2	* 2.866	35.04	PK	32.5	-22.3	0	45.24	-	-	74	-28.76	0-360	101	H
4	* 3.656	39.79	PK	33.2	-31	0	41.99	-	-	74	-32.01	0-360	199	H
5	* 4.868	37.95	PK	34.2	-30.5	0	41.65	-	-	74	-32.35	0-360	199	V
3	2.072	35.17	PK	31.3	-23.2	0	43.27	-	-	-	-	0-360	101	V
6	12.874	26.77	PK	39.2	-21	0	44.97	-	-	-	-	0-360	199	V

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

PK - Peak detector

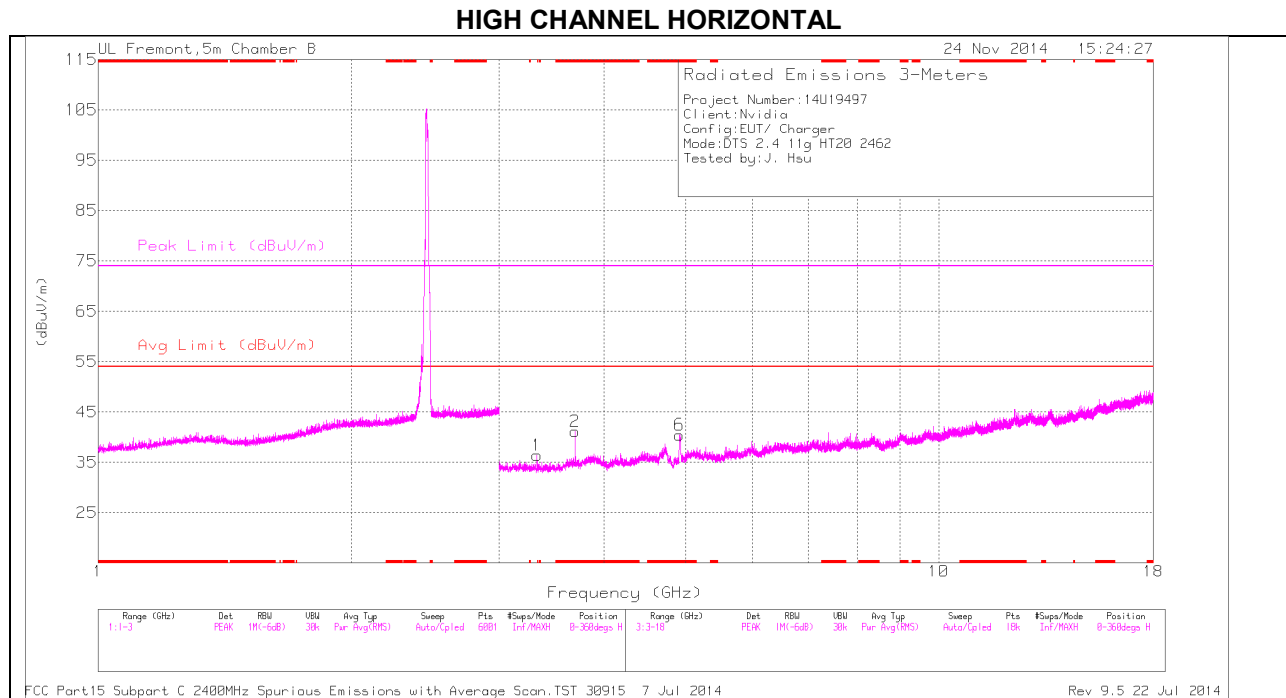
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/Ftr /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
* 3.655	42.92	PK2	33.2	-31	0	45.12	-	-	74	-28.88	359	199	H
* 3.656	35.62	MAV1	33.2	-31	.3	38.12	54	-15.88	-	-	359	199	H
* 4.868	43.08	PK2	34.2	-30.5	0	46.78	-	-	74	-27.22	359	199	V
* 4.869	31.8	MAV1	34.2	-30.6	.3	35.7	54	-18.3	-	-	359	199	V

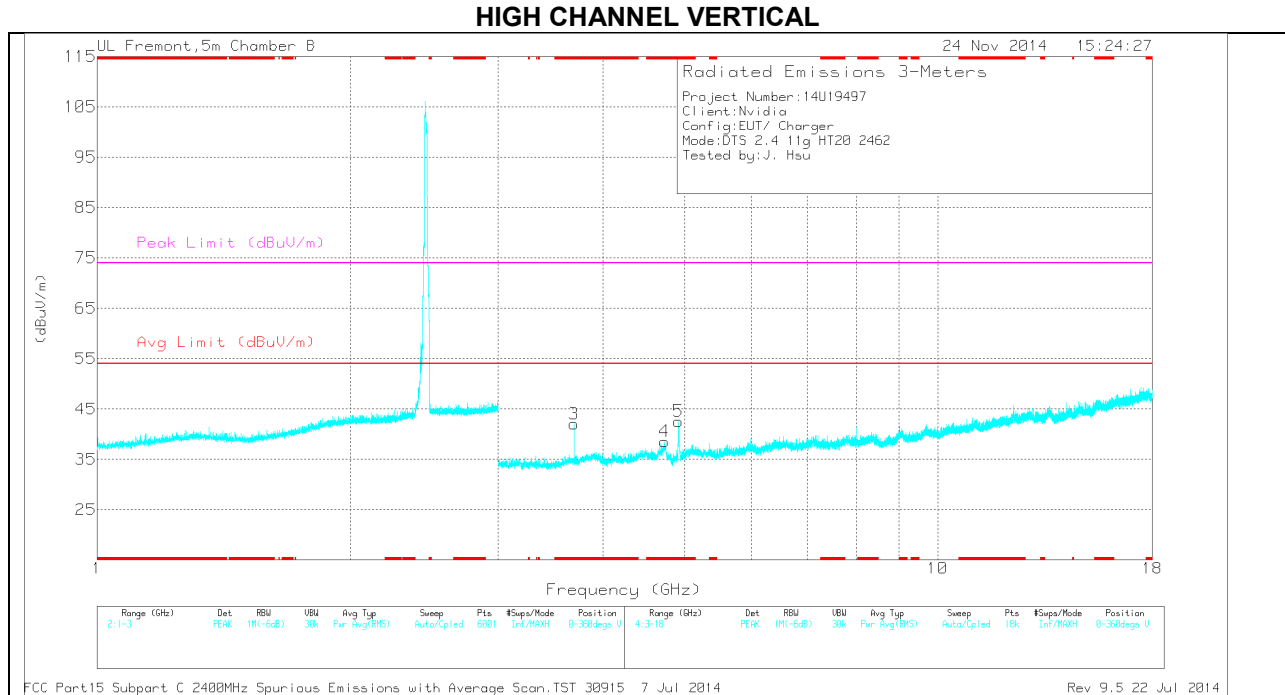
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection



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



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 DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr /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
2	* 3.693	39.22	PK	33.3	-31.4	0	41.12	-	-	74	-32.88	0-360	199	H
6	* 4.917	37.04	PK	34.2	-30.8	0	40.44	-	-	74	-33.56	0-360	199	H
3	* 3.693	40.11	PK	33.3	-31.4	0	42.01	-	-	74	-31.99	0-360	101	V
4	* 4.736	33.57	PK	34.2	-29.2	0	38.57	-	-	74	-35.43	0-360	101	V
5	* 4.912	39.16	PK	34.2	-30.8	0	42.56	-	-	74	-31.44	0-360	101	V
1	3.328	34.91	PK	32.8	-31.3	0	36.41	-	-	-	-	0-360	101	H

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

Pk - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr /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
* 3.693	45.72	PK2	33.3	-31.4	0	47.62	-	-	74	-26.38	39	101	V
* 3.693	39.78	MAV1	33.3	-31.4	.3	41.98	54	-12.02	-	-	39	101	V
* 4.913	48.39	PK2	34.2	-30.8	0	51.79	-	-	74	-22.21	210	146	V
* 4.913	35.07	MAV1	34.2	-30.8	.3	38.77	54	-15.23	-	-	210	146	V

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

Pk - Peak detector

RMS - RMS detection

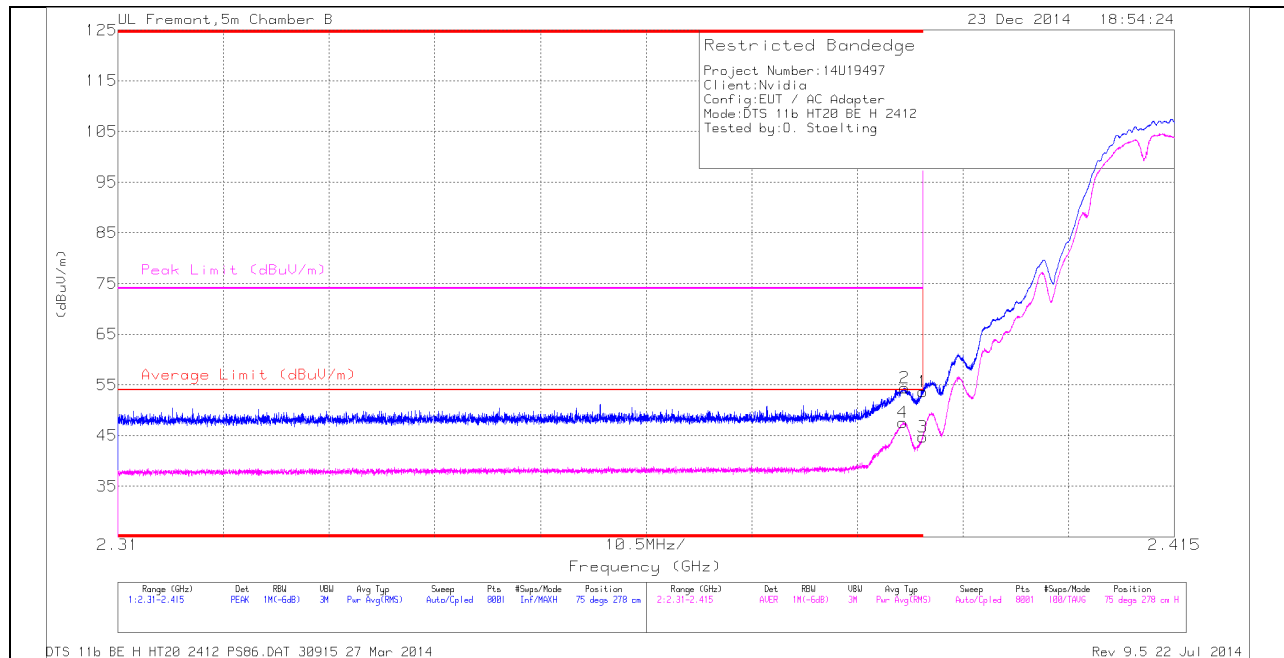
13. RADIATED TEST RESULTS SISO 802.11b/g Chain 1

13.1. TRANSMITTER ABOVE 1 GHz

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

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.388	44.96	PK	32.1	-22.7	54.36	-	-	74	-19.64	75	278	H
4	* 2.388	38.17	RMS	32.1	-22.7	47.57	54	-6.43	-	-	75	278	H
1	* 2.39	44.26	PK	32.1	-22.7	53.66	-	-	74	-20.34	75	278	H
3	* 2.39	35.28	RMS	32.1	-22.7	44.68	54	-9.32	-	-	75	278	H

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

PK - Peak detector

RMS - RMS detection

UL Fremont, 5m Chamber B

23 Dec 2014 19:08:55

Restricted Bandedge

Project Number: 14U19497
Client: Nvidia
Config: EUT / AC Adapter
Mode: DTS 11b HT28 BE U 2412
Tested by: B. Stoelting

Peak Limit (dBu/m)

Average Limit (dBu/m)

dBu/m

Frequency (GHz)

10.5MHz/

Range (GHz)	Det	RBW	VBW	Avg Type	Sweep	Pts	#Samps/Mode	Position	Range (GHz)	Det	RBW	VBW	Avg Type	Sweep	Pts	#Samps/Mode	Position
1.23-2.415	Peak	100kHz	30	Peak Avg (RMS)	Auto	1000	1000000	204 Range 100.0us	2.3-2.415	AVG	100kHz	30	Peak Avg (RMS)	Auto	1000	1000000	204 Range 100.0us

Low Channel Bandedge Method AD - Vertical.TST 30915 27 Mar 2014

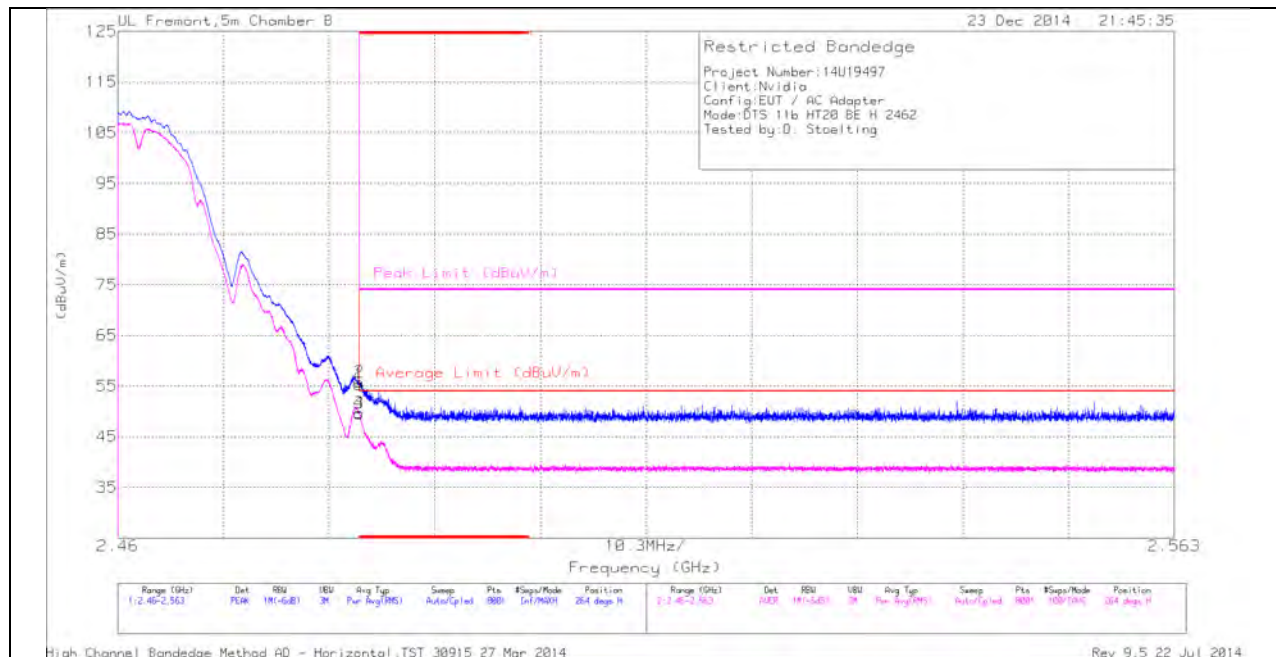
Rev 9.5 22 Jul 2014

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.388	44.77	PK	32.1	-22.7	54.17	-	-	74	-19.83	224	328	V
4	* 2.388	37.33	RMS	32.1	-22.7	46.73	54	-7.27	-	-	224	328	V
1	* 2.39	43.08	PK	32.1	-22.7	52.48	-	-	74	-21.52	224	328	V
3	* 2.39	34.43	RMS	32.1	-22.7	43.83	54	-10.17	-	-	224	328	V

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

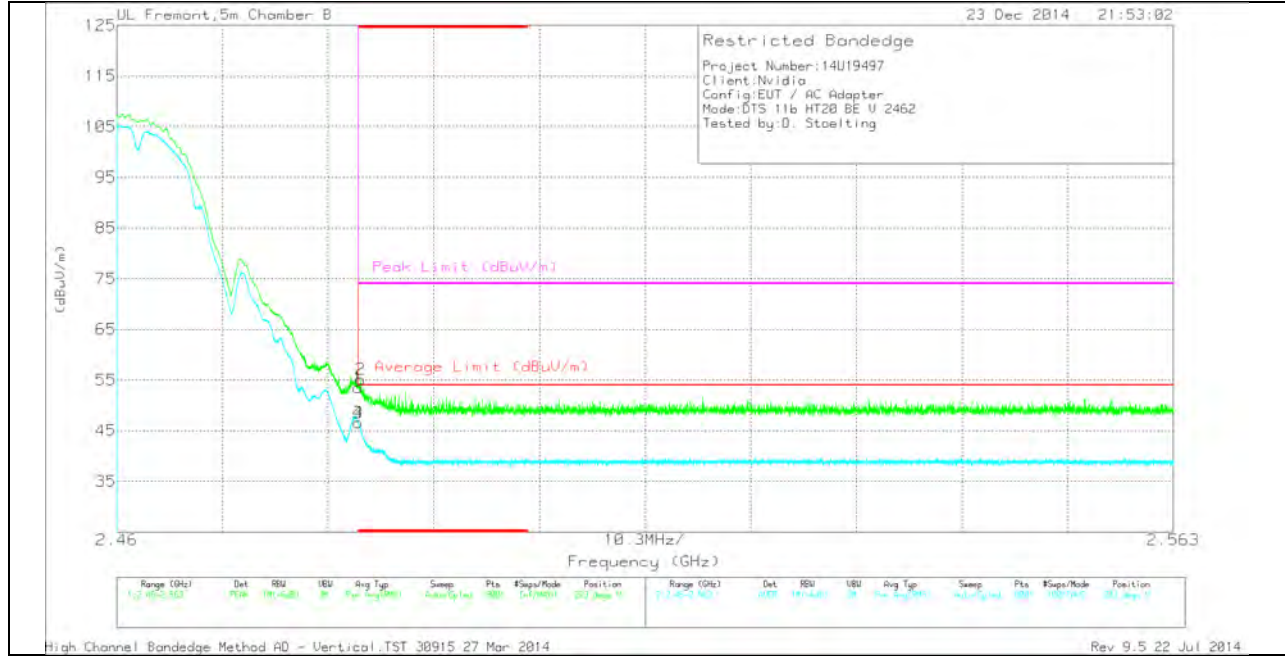
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	45.52	PK	32.4	-22.6	55.32	-	-	74	-18.68	264	266	H
2	* 2.484	45.95	PK	32.4	-22.6	55.75	-	-	74	-18.25	264	266	H
3	* 2.484	39.86	RMS	32.4	-22.6	49.66	54	-4.34	-	-	264	266	H
4	* 2.484	39.81	RMS	32.4	-22.6	49.61	54	-4.39	-	-	264	266	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/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	43.77	PK	32.4	-22.6	53.57	-	-	74	-20.43	223	321	V
2	* 2.484	45.37	PK	32.4	-22.6	55.17	-	-	74	-18.83	223	321	V
3	* 2.484	36.76	RMS	32.4	-22.6	46.56	54	-7.44	-	-	223	321	V
4	* 2.484	36.73	RMS	32.4	-22.6	46.53	54	-7.47	-	-	223	321	V

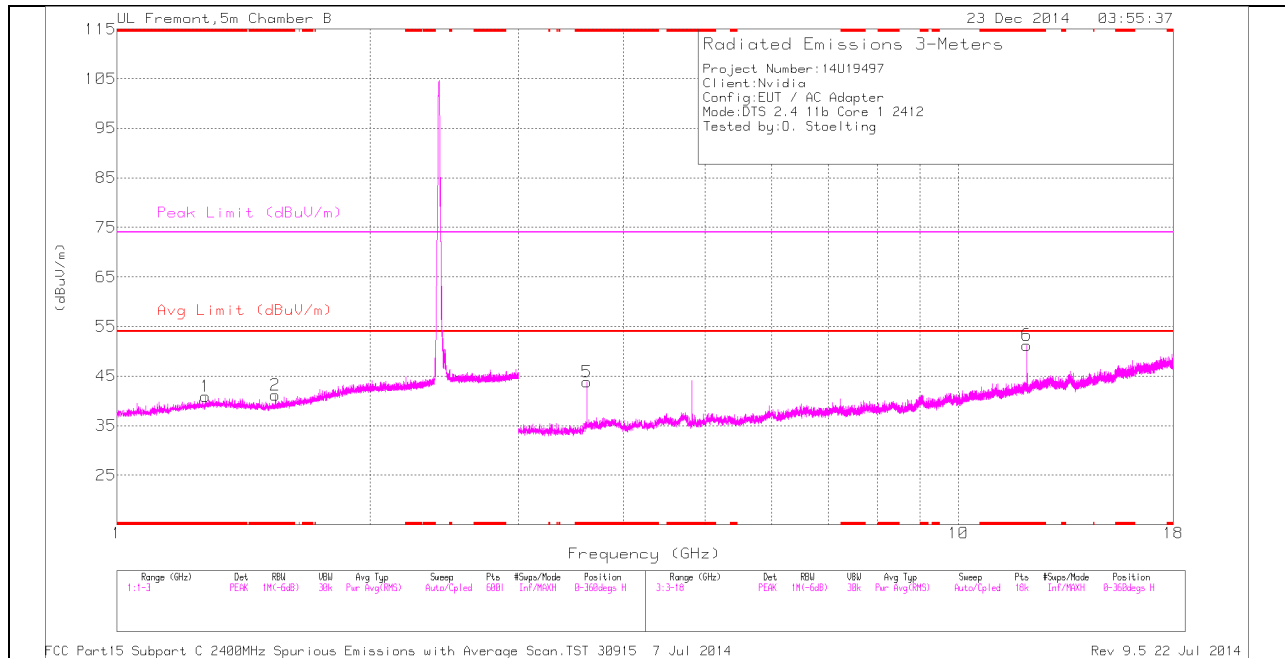
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK - Peak detector

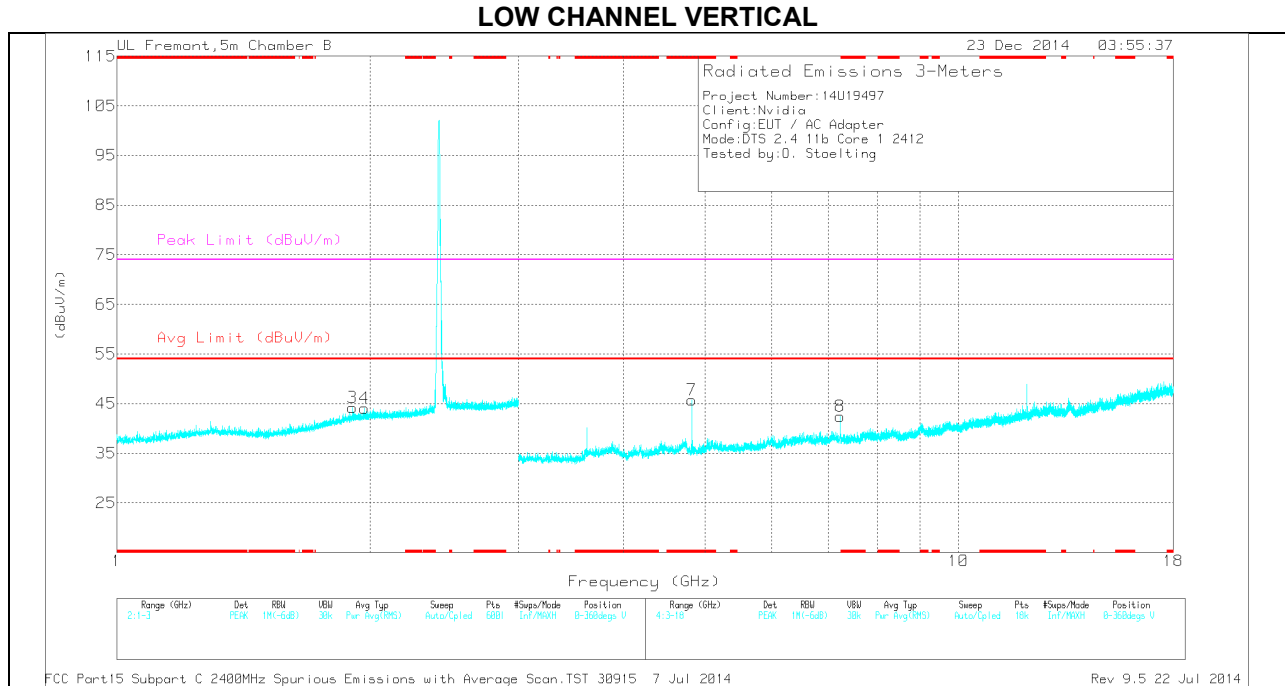
RMS - RMS detection

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.



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 DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/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	* 1.273	36.55	PK	28.7	-24.4	40.85	-	-	74	-33.15	0-360	199	H
2	* 1.543	36.81	PK	28.2	-23.9	41.11	-	-	74	-32.89	0-360	101	H
5	* 3.618	41.5	PK	33.2	-30.9	43.8	-	-	74	-30.2	0-360	199	H
6	* 12.061	35.05	PK	38.8	-22.6	51.25	-	-	74	-22.75	0-360	199	H
7	* 4.824	41.5	PK	34.2	-30	45.7	-	-	74	-28.3	0-360	199	V
3	1.906	36.56	PK	31.1	-23.4	44.26	-	-	-	-	0-360	199	V
4	1.969	36.16	PK	31.3	-23.4	44.06	-	-	-	-	0-360	101	V
8	7.234	34.58	PK	35.6	-27.8	42.38	-	-	-	-	0-360	199	V

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

PK - Peak detector

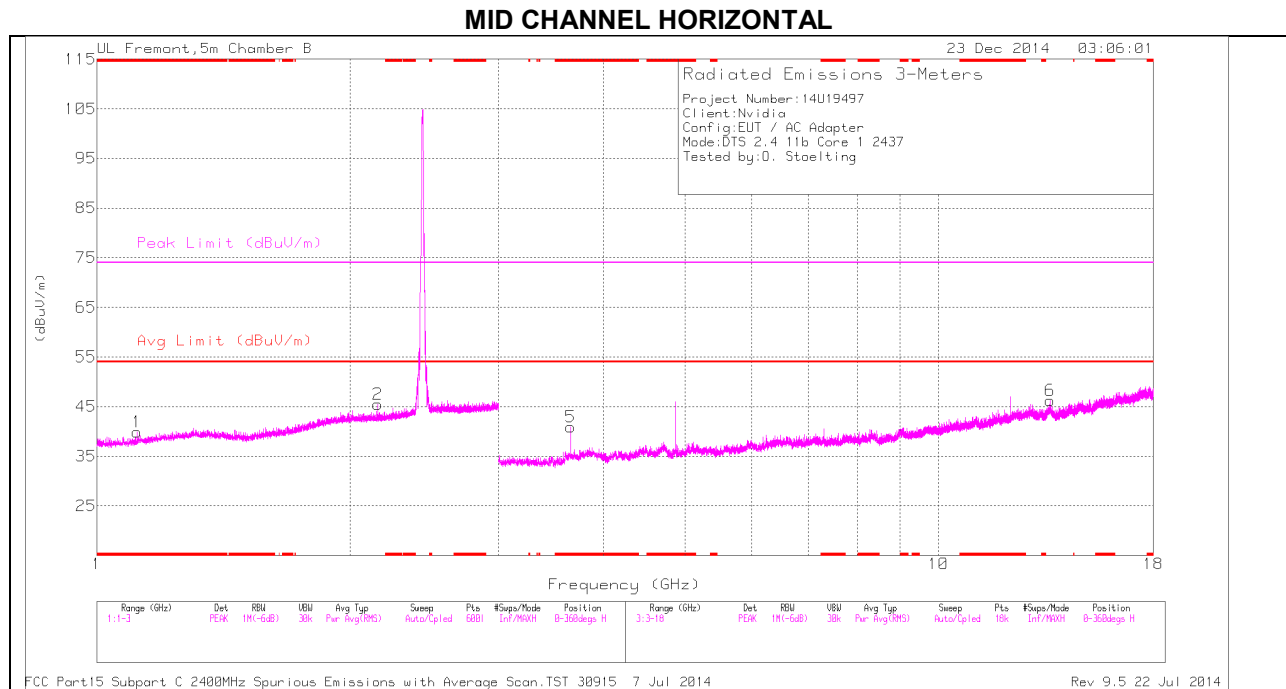
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.618	45.61	PK2	33.2	-30.9	47.91	-	-	74	-26.09	257	200	H
* 3.618	39.94	MAV1	33.2	-30.9	42.24	54	-11.76	-	-	257	200	H
* 12.061	41.01	PK2	38.8	-22.6	57.21	-	-	74	-16.79	16	243	H
* 12.061	34.58	MAV1	38.8	-22.6	50.78	54	-3.22	-	-	16	243	H
* 4.824	45.69	PK2	34.2	-30	49.89	-	-	74	-24.11	230	230	V
* 4.824	41.82	MAV1	34.2	-30	46.02	54	-7.98	-	-	230	230	V
7.235	42.48	PK2	35.6	-27.8	50.28	-	-	-	-	111	198	V
7.235	33.7	MAV1	35.6	-27.8	41.5	-	-	-	-	111	198	V

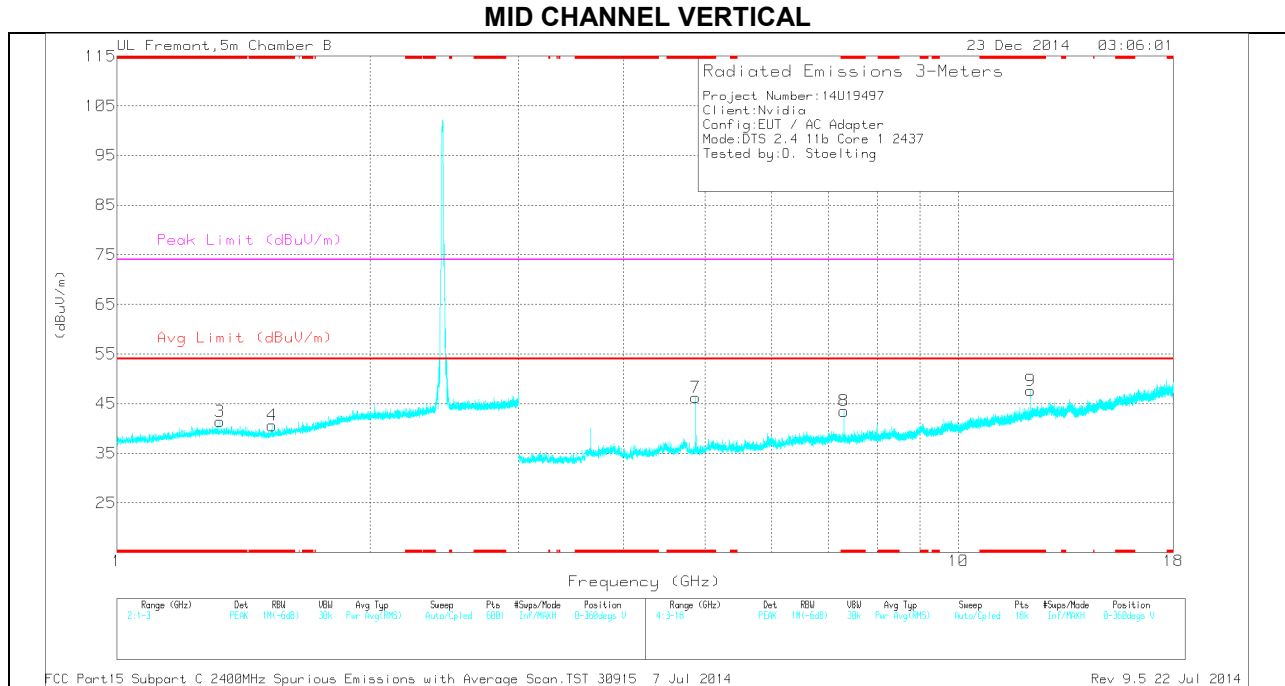
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection



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



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 DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/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	* 1.116	36.84	PK	27.5	-24.5	39.84	-	-	74	-34.16	0-360	101	H
3	* 1.325	36.94	PK	28.8	-24.3	41.44	-	-	74	-32.56	0-360	101	V
4	* 1.528	36.39	PK	28.1	-23.9	40.59	-	-	74	-33.41	0-360	101	V
5	* 3.656	38.75	PK	33.2	-31	40.95	-	-	74	-33.05	0-360	199	H
7	* 4.874	42.68	PK	34.2	-30.6	46.28	-	-	74	-27.72	0-360	199	V
8	* 7.31	36.31	PK	35.6	-28.4	43.51	-	-	74	-30.49	0-360	199	V
9	* 12.184	31.23	PK	38.9	-22.5	47.63	-	-	74	-26.37	0-360	199	V
2	2.155	37.25	PK	31.3	-23.1	45.45	-	-	-	-	0-360	101	H
6	13.583	27.8	PK	38.8	-20.4	46.2	-	-	-	-	0-360	101	H

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

PK - Peak detector

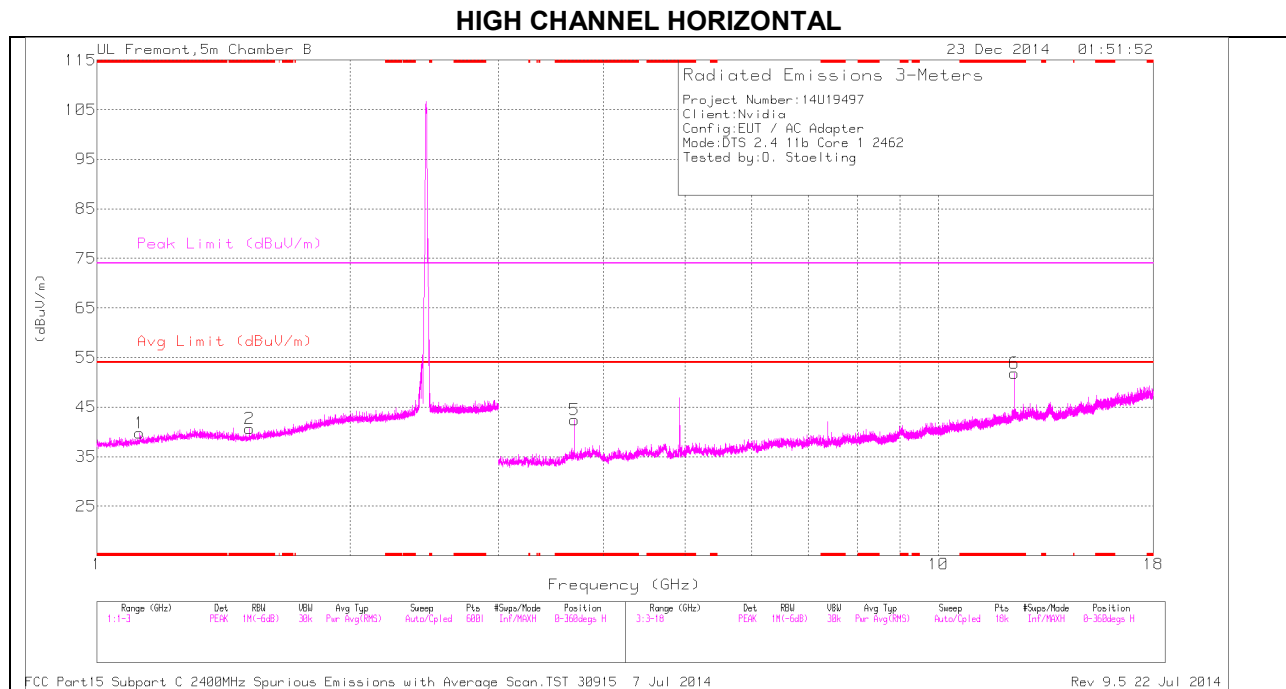
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.655	43.75	PK2	33.2	-31	45.95	-	-	74	-28.05	254	267	H
* 3.656	35.97	MAV1	33.2	-31	38.17	54	-15.83	-	-	254	267	H
* 4.874	46.95	PK2	34.2	-30.6	50.55	-	-	74	-23.45	225	252	V
* 4.874	42.18	MAV1	34.2	-30.6	45.78	54	-8.22	-	-	225	252	V
* 7.311	42.96	PK2	35.6	-28.4	50.16	-	-	74	-23.84	211	247	V
* 7.31	34.74	MAV1	35.6	-28.4	41.94	54	-12.06	-	-	211	247	V
* 12.185	38.58	PK2	38.9	-22.5	54.98	-	-	74	-19.02	234	336	V
* 12.184	30.08	MAV1	38.9	-22.5	46.48	54	-7.52	-	-	234	336	V

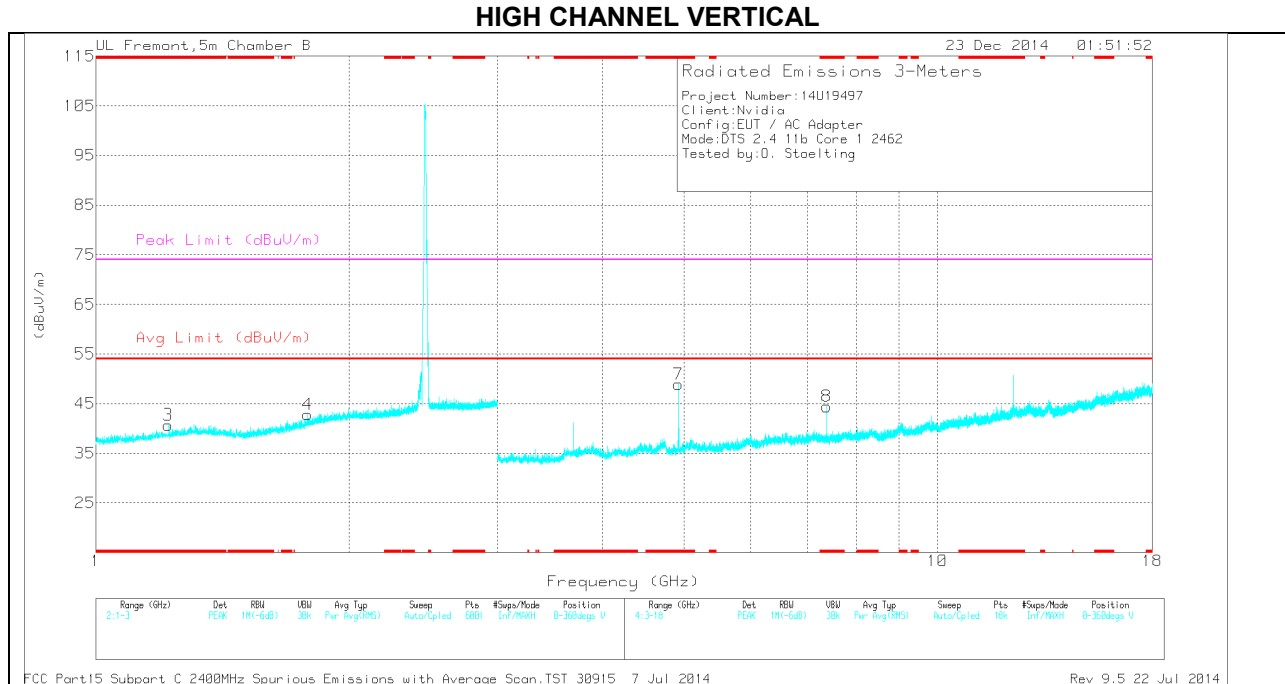
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection



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



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 DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/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	* 1.125	36.61	PK	27.6	-24.5	39.71	-	-	74	-34.29	0-360	200	H
2	* 1.518	36.54	PK	28	-23.9	40.64	-	-	74	-33.36	0-360	101	H
3	* 1.218	36.81	PK	28.3	-24.4	40.71	-	-	74	-33.29	0-360	101	V
5	* 3.693	40.47	PK	33.3	-31.4	42.37	-	-	74	-31.63	0-360	199	H
6	* 12.311	34.84	PK	39	-22	51.84	-	-	74	-22.16	0-360	199	H
7	* 4.924	45.56	PK	34.2	-30.9	48.86	-	-	74	-25.14	0-360	199	V
8	* 7.385	36.6	PK	35.6	-27.8	44.4	-	-	74	-29.6	0-360	199	V
4	1.785	36.26	PK	30	-23.5	42.76	-	-	-	-	0-360	101	V

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

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.693	45.09	PK2	33.3	-31.4	46.99	-	-	74	-27.01	84	230	H
* 3.693	38.94	MAV1	33.3	-31.4	40.84	54	-13.16	-	-	84	230	H
* 12.31	41.29	PK2	39	-22	58.29	-	-	74	-15.71	222	235	H
* 12.309	35.07	MAV1	39	-22	52.07	54	-1.93	-	-	222	235	H
* 4.924	51.21	PK2	34.2	-30.9	54.51	-	-	74	-19.49	156	231	V
* 4.924	44.94	MAV1	34.2	-30.9	48.24	54	-5.76	-	-	156	231	V
* 7.386	43.75	PK2	35.6	-27.8	51.55	-	-	74	-22.45	37	200	V
* 7.385	36.66	MAV1	35.6	-27.8	44.46	54	-9.54	-	-	37	200	V

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

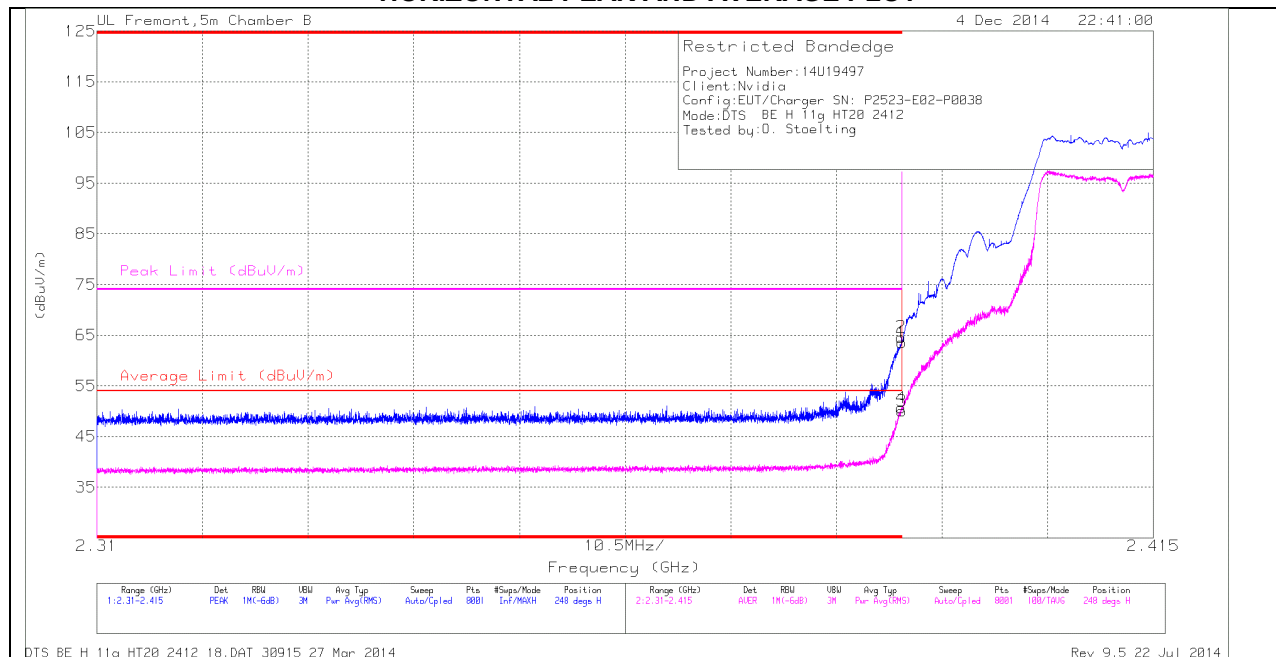
Pk - Peak detector

RMS - RMS detection

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

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

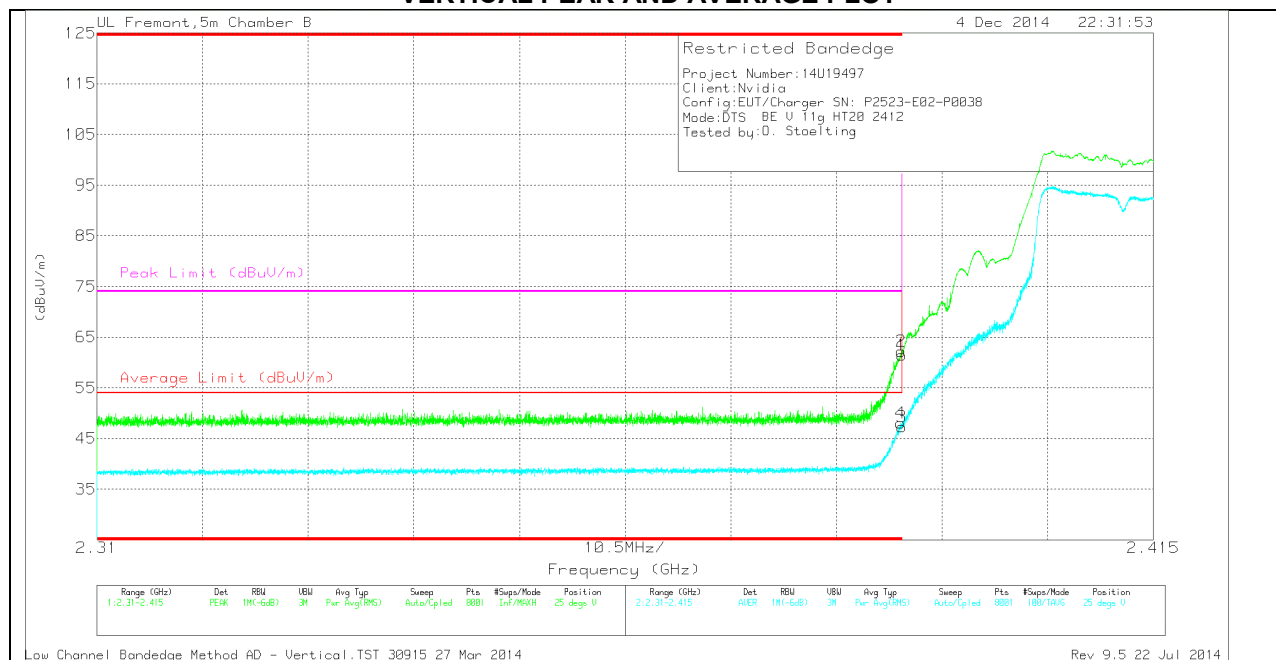
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	54.23	PK	32.1	-22.7	0	63.63	-	-	74	-10.37	248	271	H
2	* 2.39	55.23	PK	32.1	-22.7	0	64.63	-	-	74	-9.37	248	271	H
3	* 2.39	40.3	RMS	32.1	-22.7	.29	49.99	54	-4.01	-	-	248	271	H
4	* 2.39	40.94	RMS	32.1	-22.7	.29	50.63	54	-3.37	-	-	248	271	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	52.08	PK	32.1	-22.7	0	61.48	-	-	74	-12.52	25	274	V
2	* 2.39	52.86	PK	32.1	-22.7	0	62.26	-	-	74	-11.74	25	274	V
3	* 2.39	37.63	RMS	32.1	-22.7	.29	47.32	54	-6.68	-	-	25	274	V
4	* 2.39	38.41	RMS	32.1	-22.7	.29	48.1	54	-5.9	-	-	25	274	V

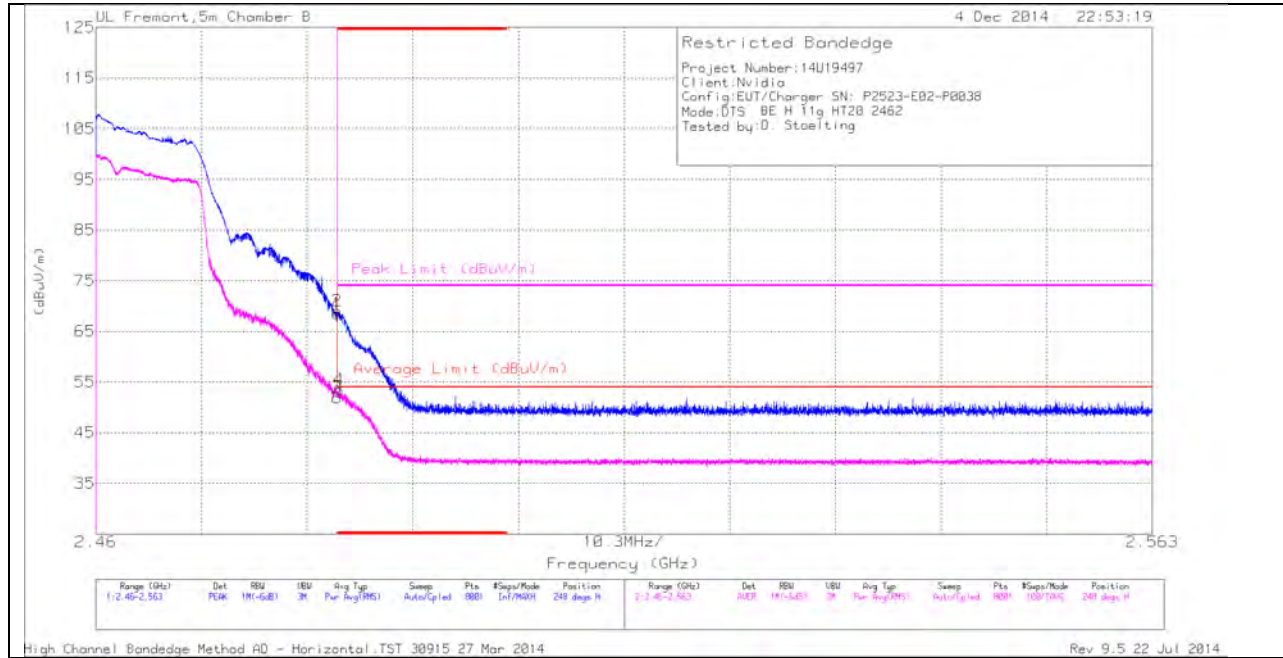
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



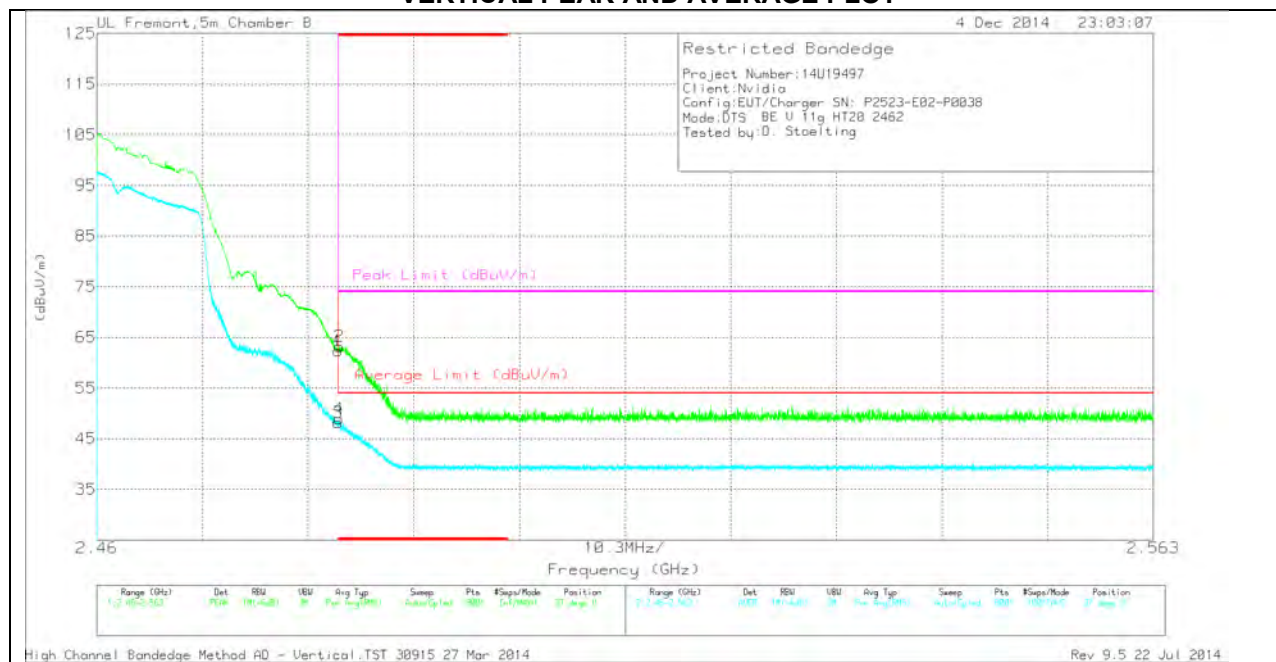
HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	58.72	PK	32.4	-22.6	0	68.52	-	-	74	-5.48	248	265	H
2	* 2.484	59.22	PK	32.4	-22.6	0	69.02	-	-	74	-4.98	248	265	H
3	* 2.484	41.76	RMS	32.4	-22.6	.29	51.85	54	-2.15	-	-	248	265	H
4	* 2.484	43.46	RMS	32.4	-22.6	.29	53.55	54	-45	-	-	248	265	H

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

PK - Peak detector

RMS - RMS detection

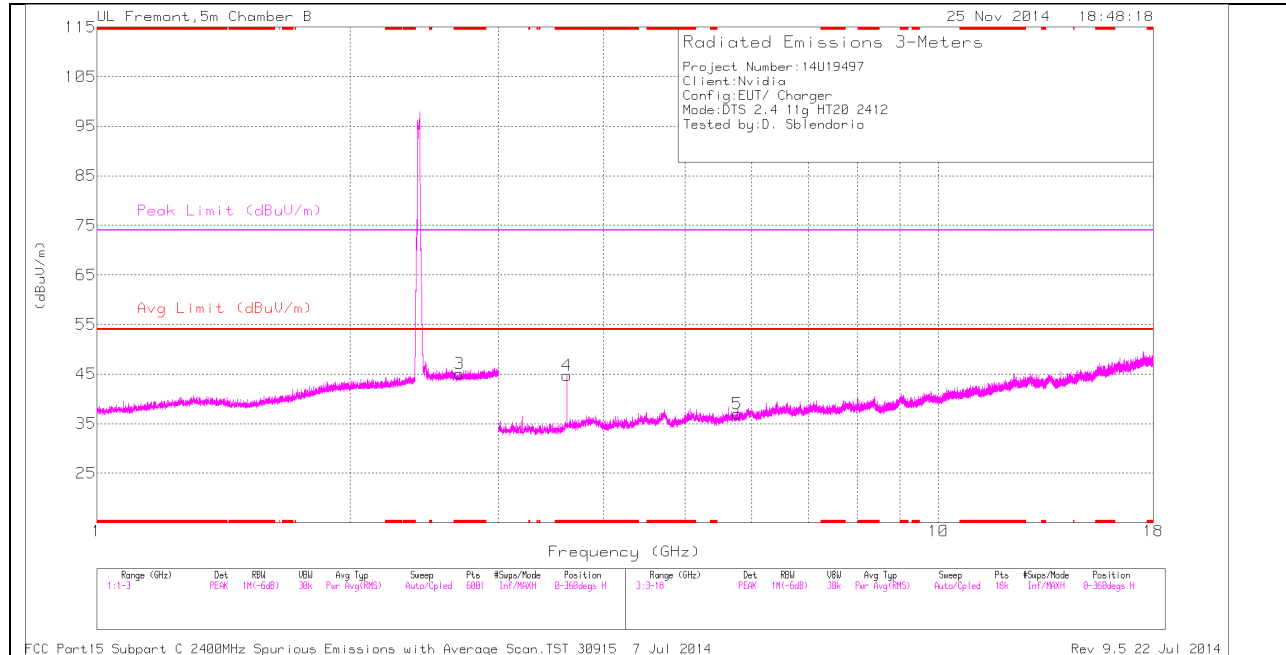


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	52.54	PK	32.4	-22.6	0	62.34	-	-	74	-11.66	37	325	V
2	* 2.484	53.37	PK	32.4	-22.6	0	63.17	-	-	74	-10.83	37	325	V
3	* 2.484	38.1	RMS	32.4	-22.6	.29	48.19	54	-5.81	-	-	37	325	V
4	* 2.484	38.78	RMS	32.4	-22.6	.29	48.87	54	-5.13	-	-	37	325	V

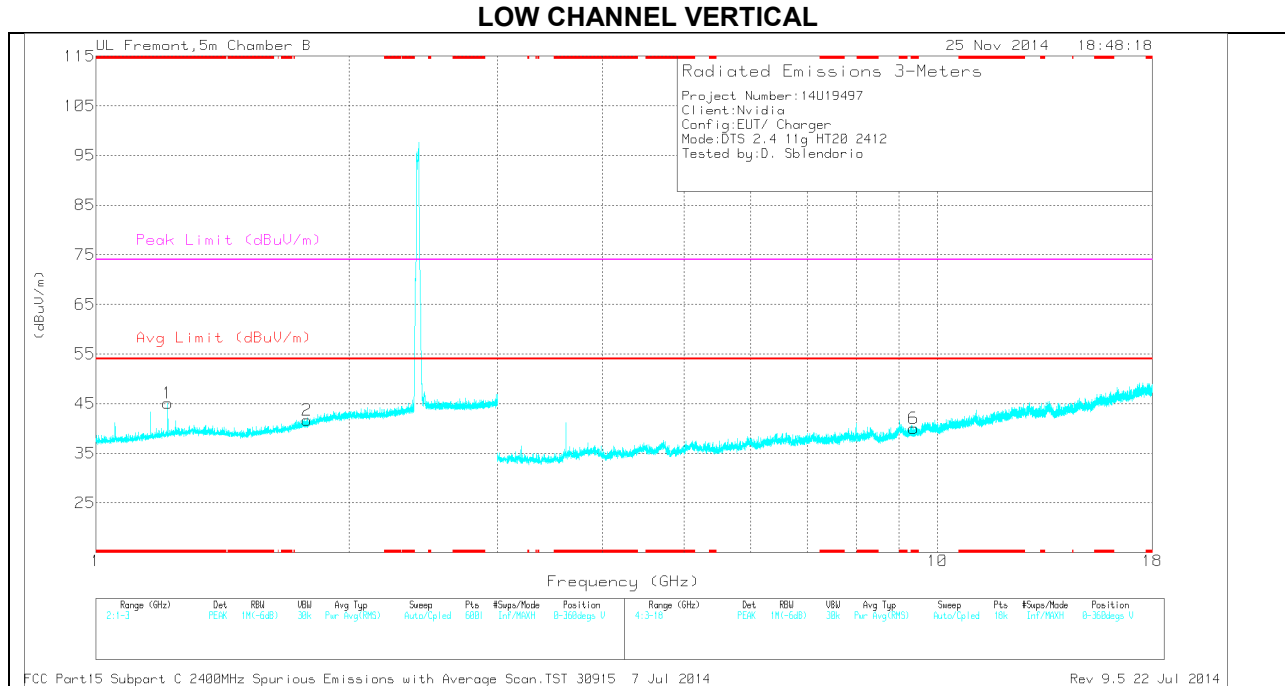
RMS - RMS detection

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.



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 DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr /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
3	* 2.696	35.25	PK	32.2	-22.4	0	45.05	-	-	74	-28.95	0-360	200	H
1	* 1.217	41.21	PK	28.3	-24.4	0	45.11	-	-	74	-28.89	0-360	101	V
4	* 3.618	42.41	PK	33.2	-30.9	0	44.71	-	-	74	-29.29	0-360	199	H
6	* 9.37	28.46	PK	36.5	-25	0	39.96	-	-	74	-34.04	0-360	199	V
2	1.783	35.18	PK	30	-23.5	0	41.68	-	-	-	-	0-360	200	V
5	5.761	32.26	PK	34.6	-29.9	0	36.96	-	-	-	-	0-360	101	H

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

PK - Peak detector

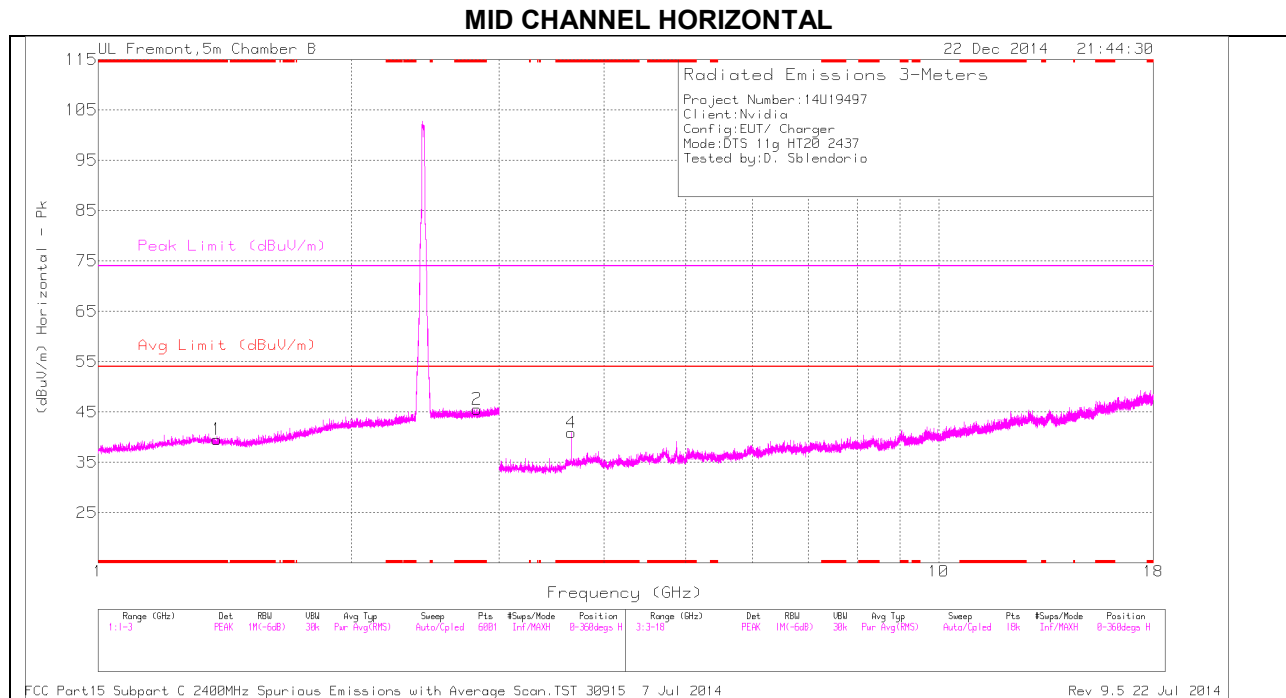
RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr /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
* 3.618	41.33	PK2	33.2	-30.9	0	43.63	-	-	74	-30.37	1	198	H
* 3.618	30.84	MAV1	33.2	-30.9	.29	33.43	54	-20.57	-	-	1	198	H

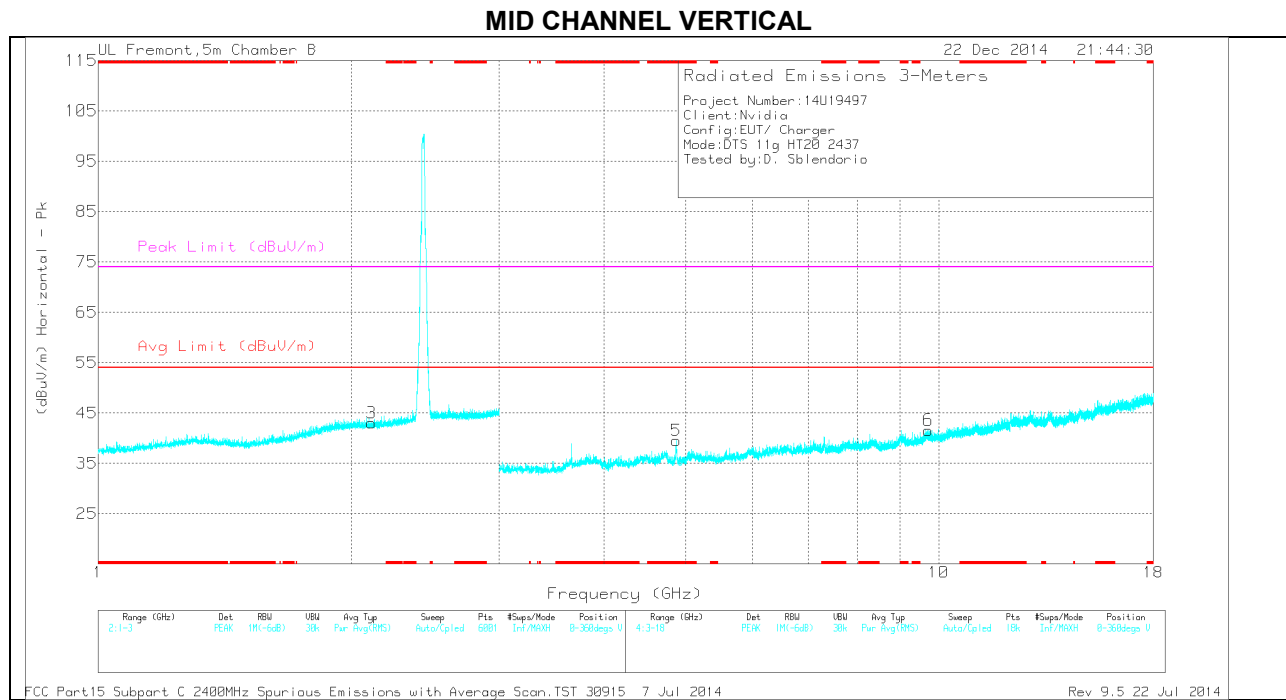
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK - Peak detector

RMS - RMS detection



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



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 DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr /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	* 1.384	35.26	PK	28.6	-24.3	0	39.56	-	-	74	-34.44	0-360	101	H
2	* 2.825	35.48	PK	32.4	-22.3	0	45.58	-	-	74	-28.42	0-360	200	H
4	* 3.656	38.71	PK	33.2	-31	0	40.91	-	-	74	-33.09	0-360	199	H
5	* 4.871	35.94	PK	34.2	-30.6	0	39.54	-	-	74	-34.46	0-360	199	V
3	2.115	34.82	PK	31.3	-23.1	0	43.02	-	-	-	-	0-360	200	V
6	9.725	28.87	PK	36.9	-24.2	0	41.57	-	-	-	-	0-360	101	V

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

PK - Peak detector

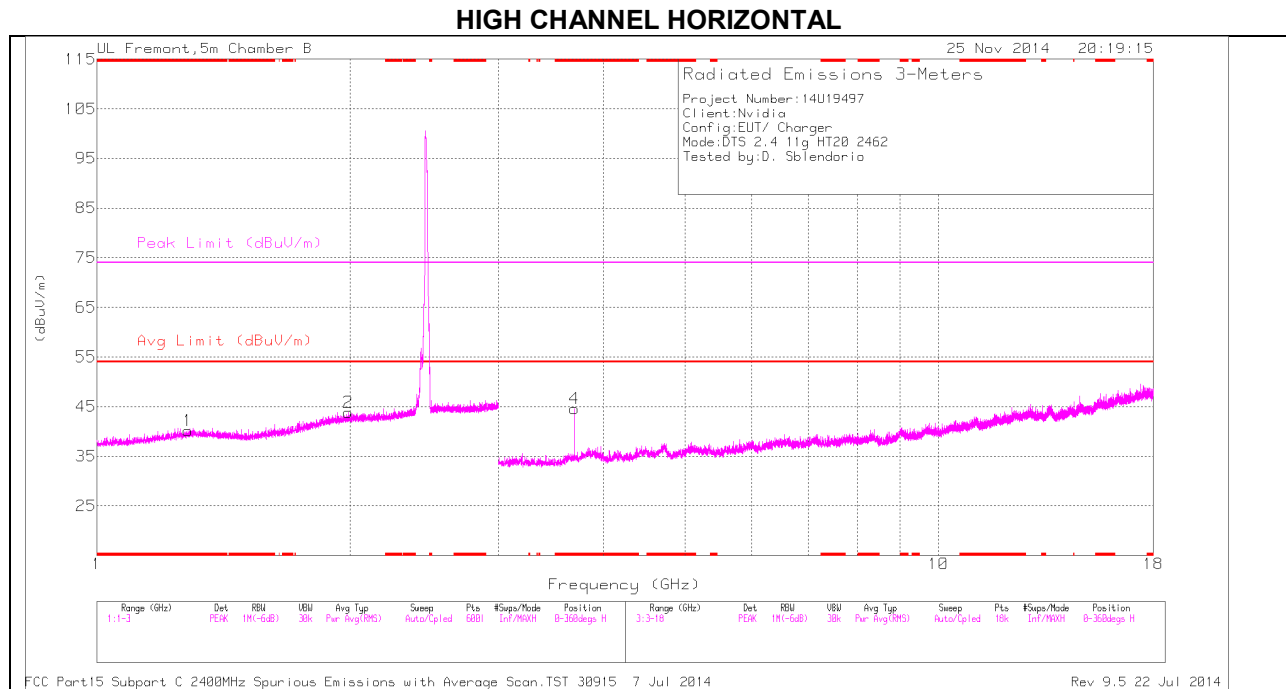
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr /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
* 3.655	43.42	PK2	33.2	-31	0	45.62	-	-	74	-28.38	359	198	H
* 3.655	36.01	MAV1	33.2	-31	.29	38.5	54	-15.5	-	-	359	198	H

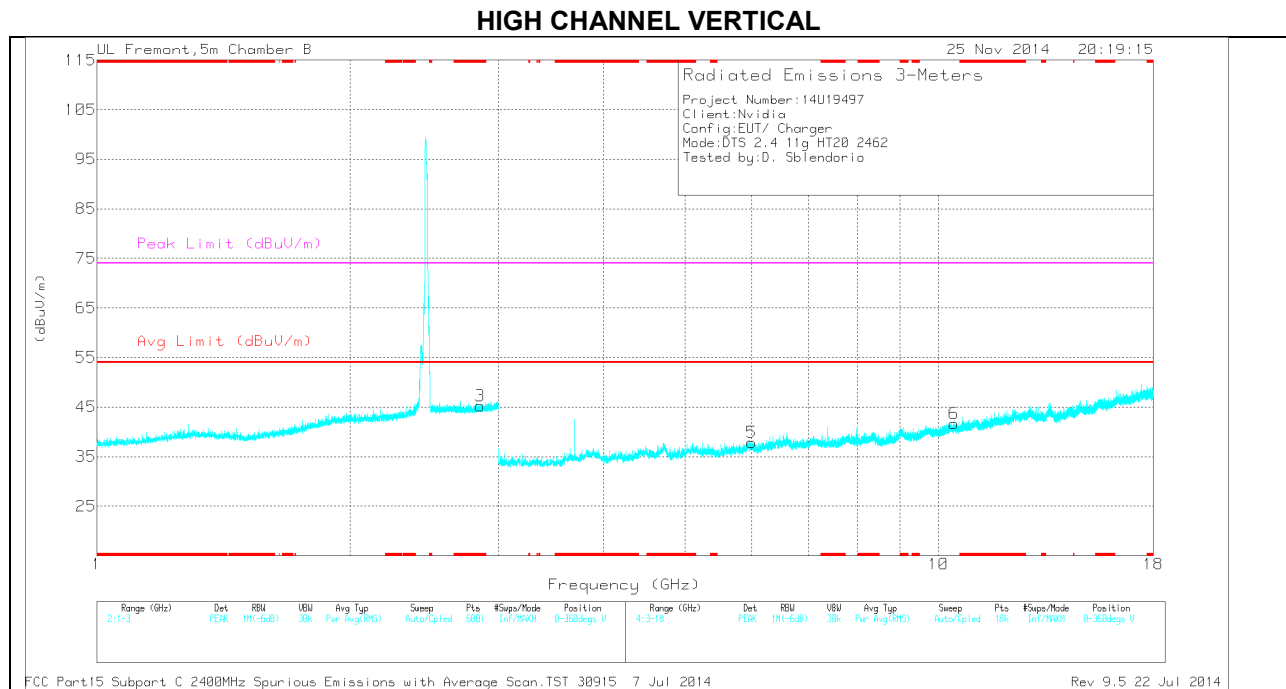
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection



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



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 DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr /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	* 1.283	35.83	PK	28.7	-24.4	0	40.13	-	-	74	-33.87	0-360	101	H
3	* 2.854	35.06	PK	32.5	-22.3	0	45.26	-	-	74	-28.74	0-360	101	V
4	* 3.693	42.71	PK	33.3	-31.4	0	44.61	-	-	74	-29.39	0-360	199	H
2	1.988	35.83	PK	31.3	-23.3	0	43.83	-	-	-	-	0-360	101	H
5	5.995	31.48	PK	35.2	-28.8	0	37.88	-	-	-	-	0-360	101	V
6	10.432	27.77	PK	37.4	-23.5	0	41.67	-	-	-	-	0-360	101	V

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

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr /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
* 3.694	41.86	PK2	33.3	-31.4	0	43.76	-	-	74	-30.24	359	198	H
* 3.693	31.02	MAV1	33.3	-31.4	.29	33.21	54	-20.79	-	-	359	198	H

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

Pk - Peak detector

RMS - RMS detection

14. RADIATED TEST RESULTS MIMO 802.11n Mode

14.1. 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. 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 = $10\log(1/x)$ For this sample B mode = 0dB (duty cycle >98%); G mode = 0.3dB; N HT20 mode = 0.30dB; N HT40 mode = 0.14dB.

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.

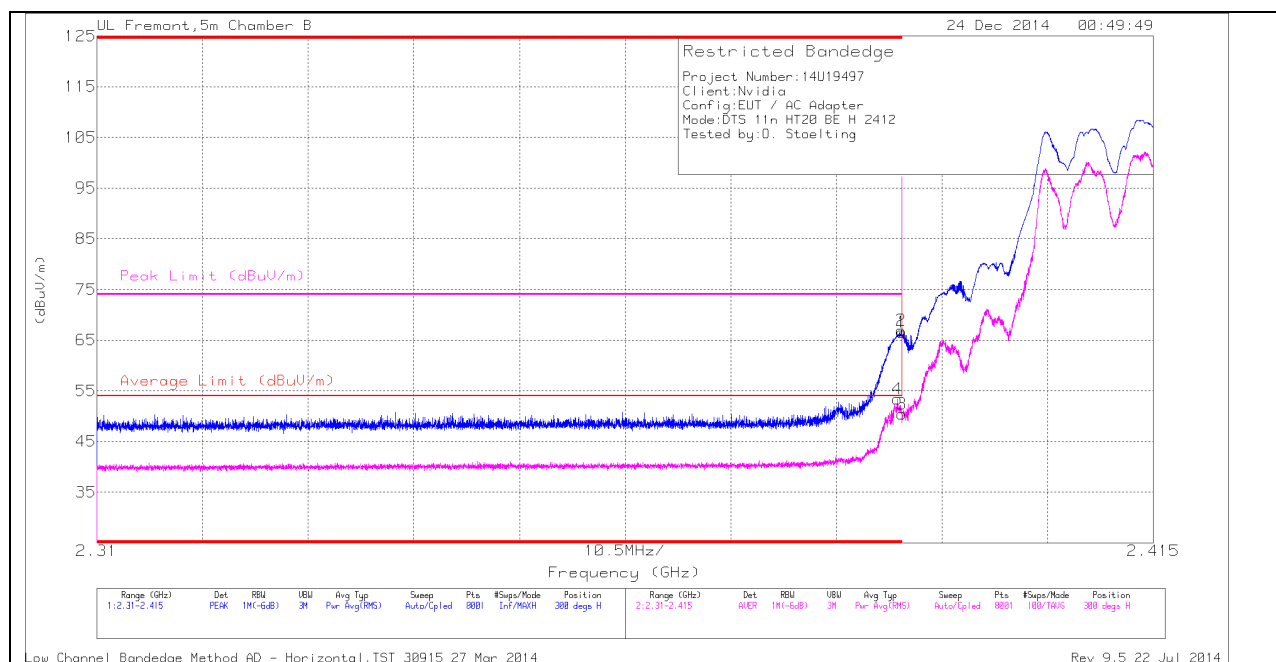
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

14.2. TRANSMITTER ABOVE 1 GHz

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

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

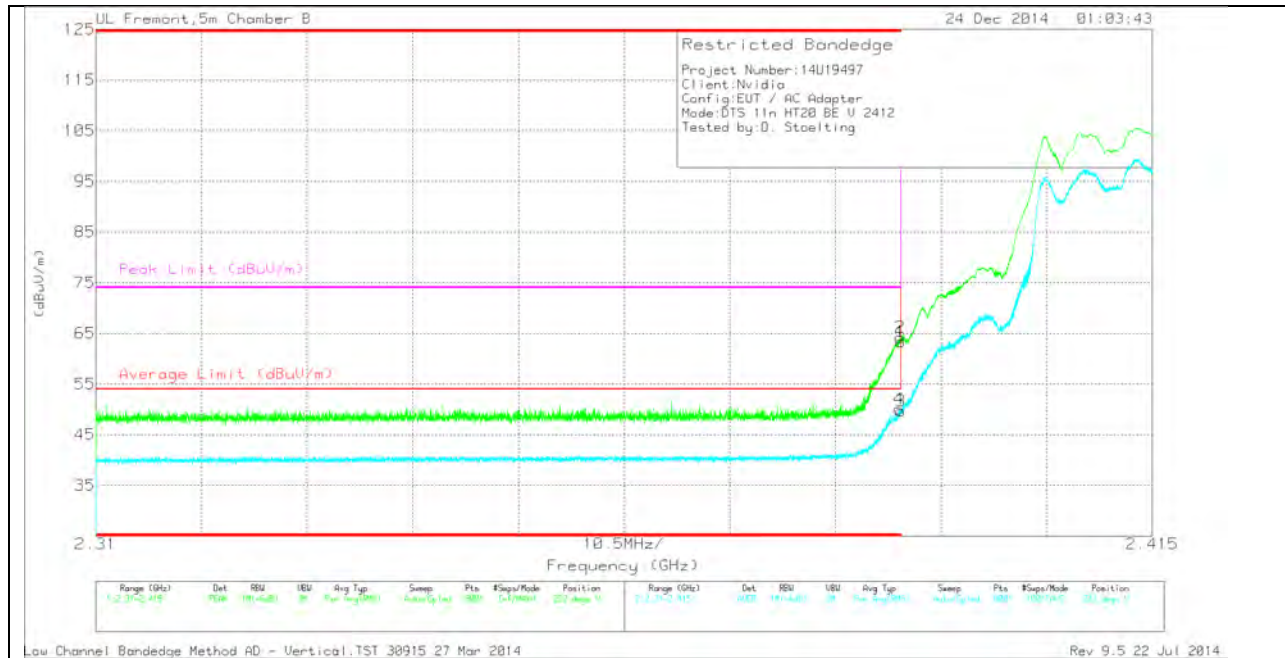
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitter/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	57.16	PK	32.1	-22.7	0	66.56	-	-	74	-7.44	300	326	H
2	* 2.39	57.55	PK	32.1	-22.7	0	66.95	-	-	74	-7.05	300	326	H
3	* 2.39	40.66	RMS	32.1	-22.7	0.3	50.36	54	-3.64	-	-	300	326	H
4	* 2.39	43.745	RMS	32.1	-22.7	0.3	53.45	54	-55	-	-	300	326	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	53.89	PK	32.1	-22.7	0	63.29	-	-	74	-10.71	222	342	V
2	* 2.39	54.74	PK	32.1	-22.7	0	64.14	-	-	74	-9.86	222	342	V
3	* 2.39	39.97	RMS	32.1	-22.7	0.3	49.67	54	-4.33	-	-	222	342	V
4	* 2.39	40.29	RMS	32.1	-22.7	0.3	49.99	54	-4.01	-	-	222	342	V

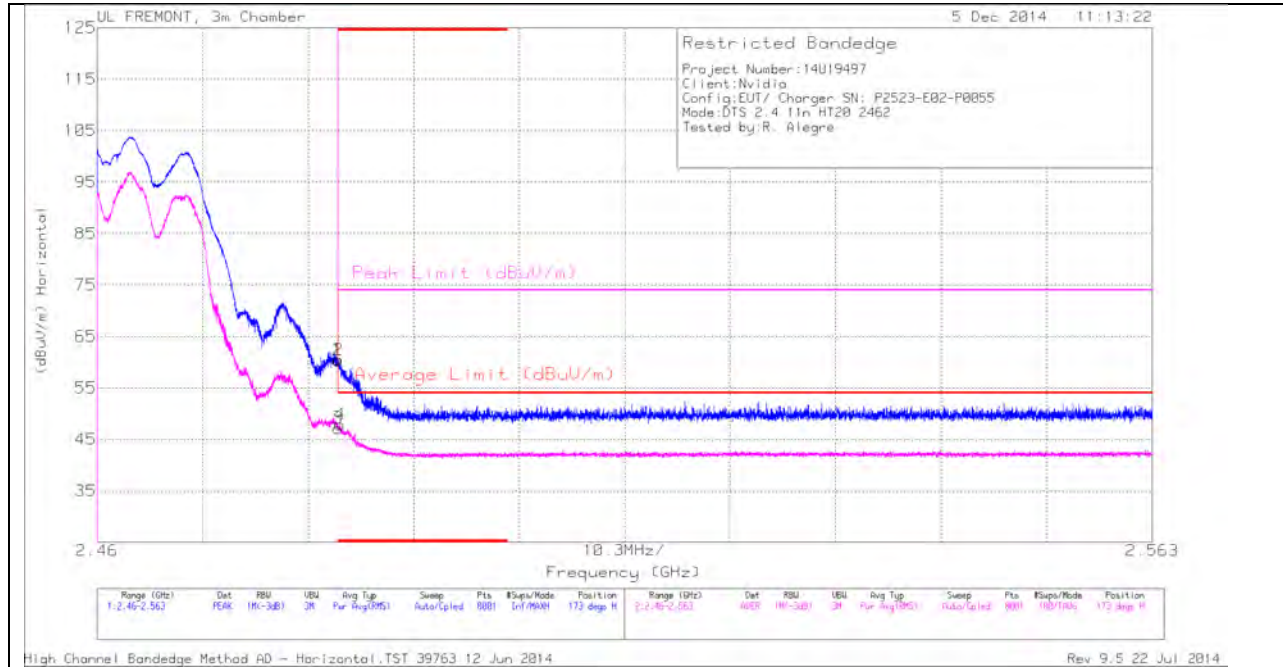
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

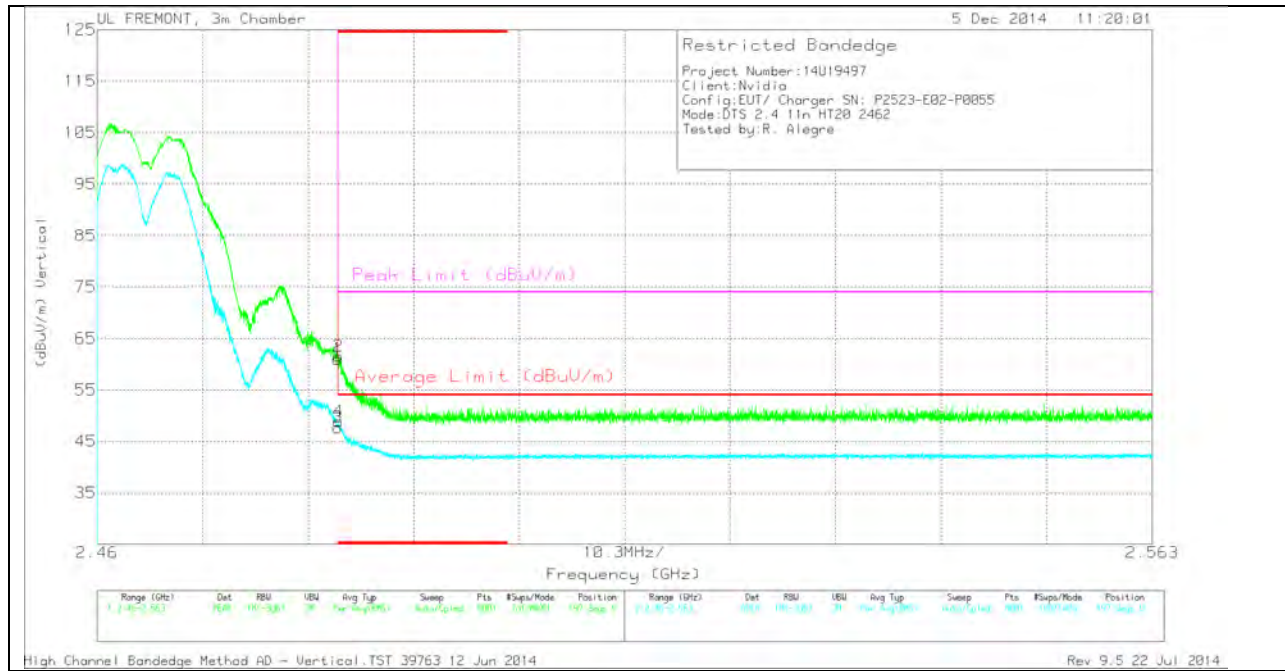
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	50.92	PK	32.3	-22.8	0	60.42	-	-	74	-13.58	173	271	H
2	* 2.484	50.97	PK	32.3	-22.8	0	60.47	-	-	74	-13.53	173	271	H
3	* 2.484	37.42	RMS	32.3	-22.8	0.3	47.22	54	-6.78	-	-	173	271	H
4	* 2.484	38.13	RMS	32.3	-22.8	0.3	47.93	54	-6.07	-	-	173	271	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

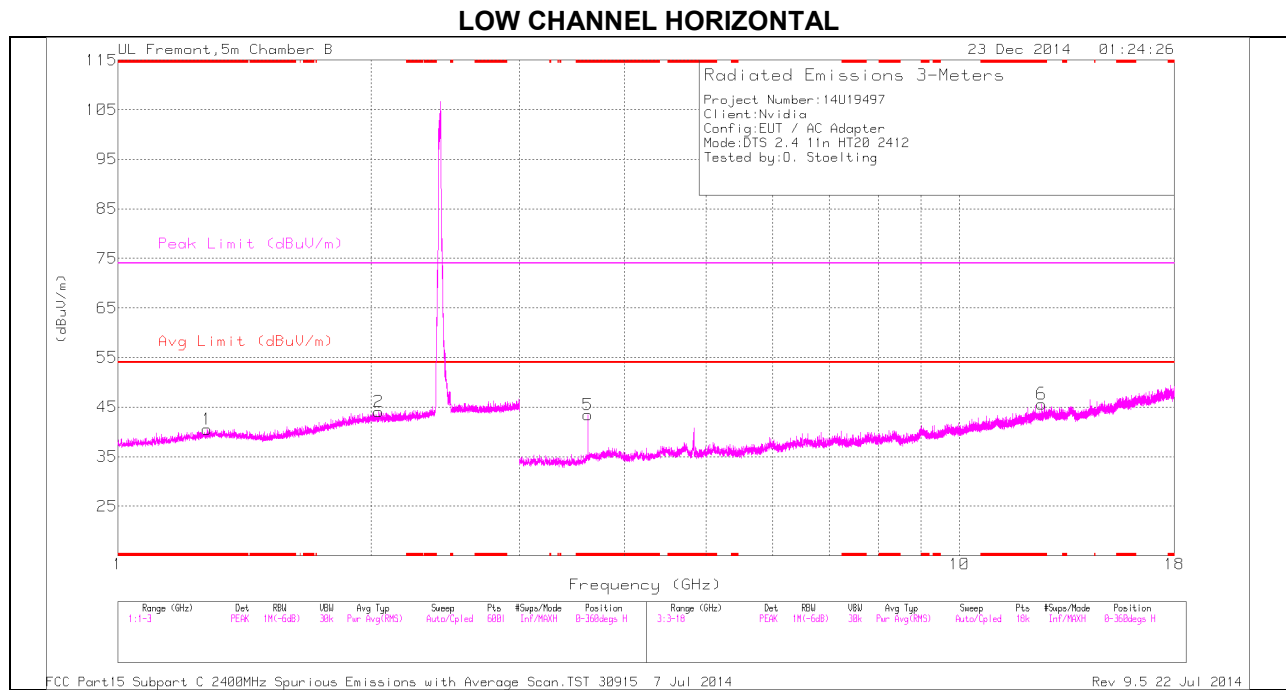
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fitter/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	51.53	PK	32.3	-22.8	0	61.03	-	-	74	-12.97	197	225	V
2	* 2.484	52.04	PK	32.3	-22.8	0	61.54	-	-	74	-12.46	197	225	V
3	* 2.484	37.95	RMS	32.3	-22.8	0.3	47.75	54	-6.25	-	-	197	225	V
4	* 2.484	39.1	RMS	32.3	-22.8	0.3	48.9	54	-5.1	-	-	197	225	V

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

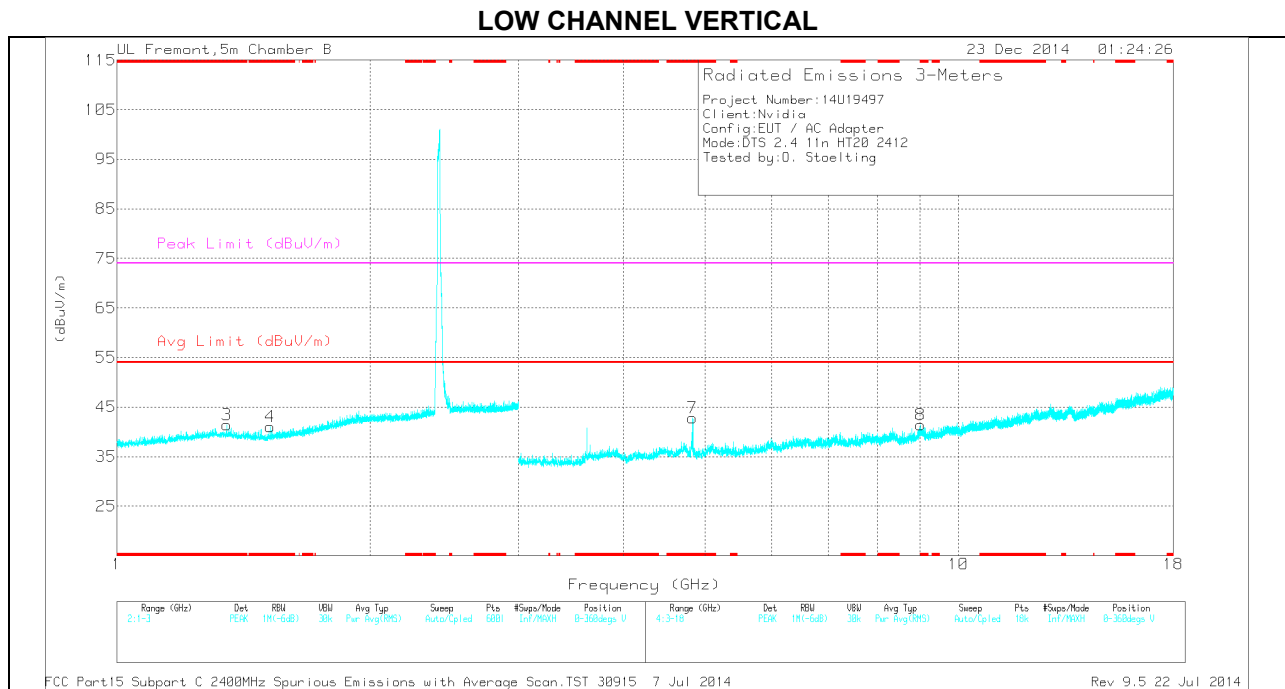
PK - Peak detector

RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS



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



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 DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr /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	* 1.276	36.13	PK	28.7	-24.3	0	40.53	-	-	74	-33.47	0-360	199	H
3	* 1.35	37.07	PK	28.7	-24.3	0	41.47	-	-	74	-32.53	0-360	101	V
4	* 1.521	36.89	PK	28	-23.9	0	40.99	-	-	74	-33.01	0-360	199	V
5	* 3.617	41.14	PK	33.2	-30.9	0	43.44	-	-	74	-30.56	0-360	200	H
6	* 12.512	29.06	PK	39	-22.4	0	45.66	-	-	74	-28.34	0-360	200	H
7	* 4.833	38.72	PK	34.2	-30.1	0	42.82	-	-	74	-31.18	0-360	200	V
8	* 9.012	29.46	PK	36.2	-24.3	0	41.36	-	-	74	-32.64	0-360	101	V
2	2.04	36.06	PK	31.3	-23.3	0	44.06	-	-	-	-	0-360	101	H

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

PK - Peak detector

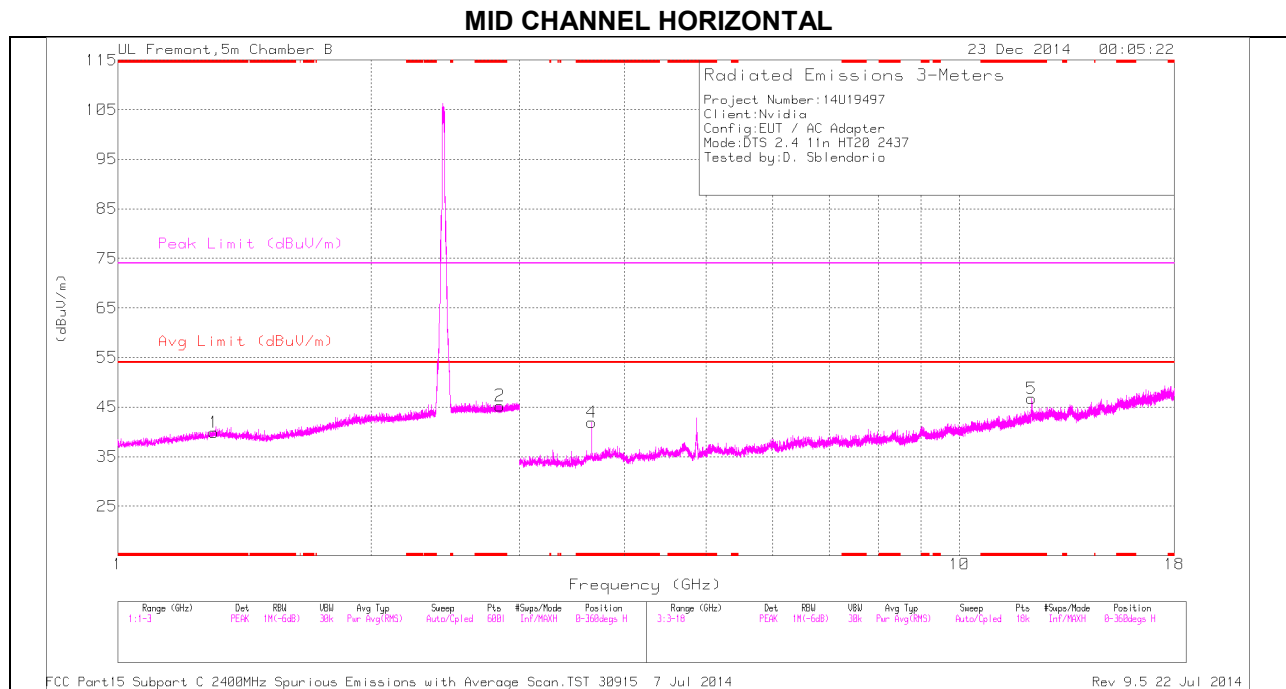
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr /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
* 3.618	44.51	PK2	33.2	-30.9	0	46.81	-	-	74	-27.19	251	269	H
* 3.618	38.89	MAV1	33.2	-30.9	.3	41.49	54	-12.51	-	-	251	269	H
* 4.833	46.01	PK2	34.2	-30.2	0	50.01	-	-	74	-23.99	221	217	V
* 4.833	32.78	MAV1	34.2	-30.1	.3	37.18	54	-16.82	-	-	221	217	V

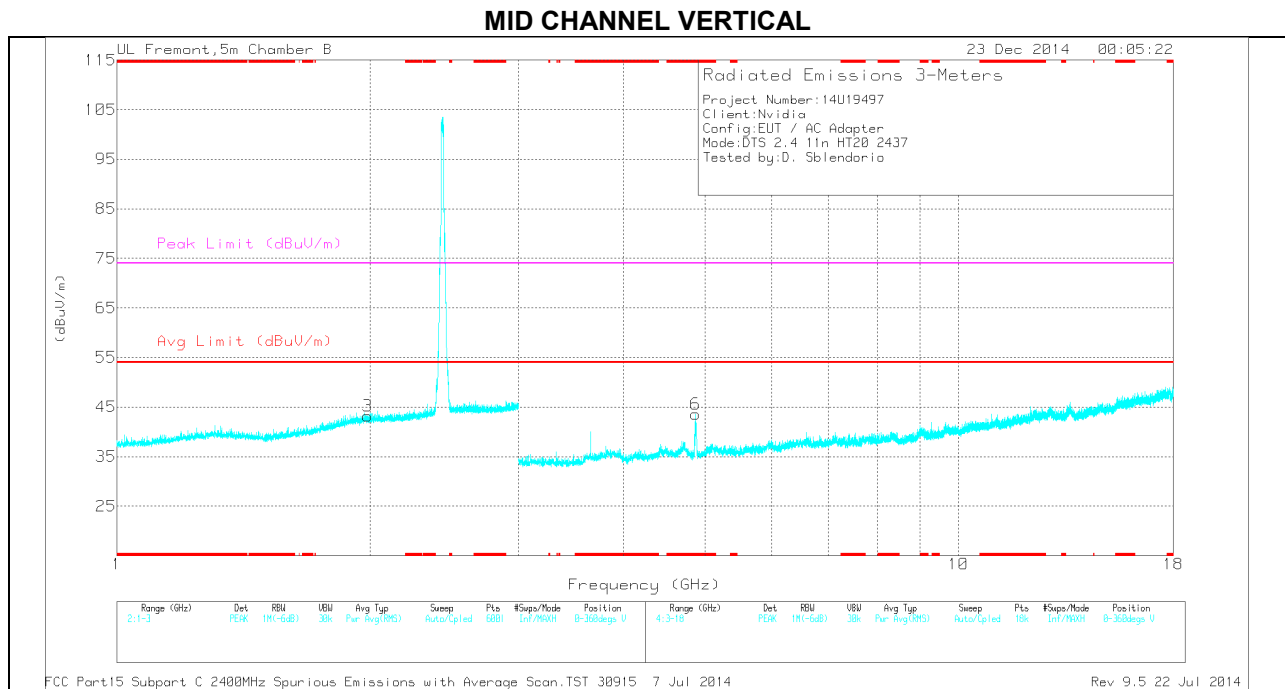
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK - Peak detector

RMS - RMS detection



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



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 DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr /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	* 1.301	35.33	PK	28.9	-24.3	0	39.93	-	-	74	-34.07	0-360	101	H
2	* 2.842	35.08	PK	32.5	-22.3	0	45.28	-	-	74	-28.72	0-360	101	H
4	* 3.656	39.75	PK	33.2	-31	0	41.95	-	-	74	-32.05	0-360	199	H
5	* 12.179	30.46	PK	38.9	-22.6	0	46.76	-	-	74	-27.24	0-360	199	H
6	* 4.872	39.95	PK	34.2	-30.6	0	43.55	-	-	74	-30.45	0-360	101	V
3	1.986	35.23	PK	31.3	-23.3	0	43.23	-	-	-	-	0-360	199	V

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

PK - Peak detector

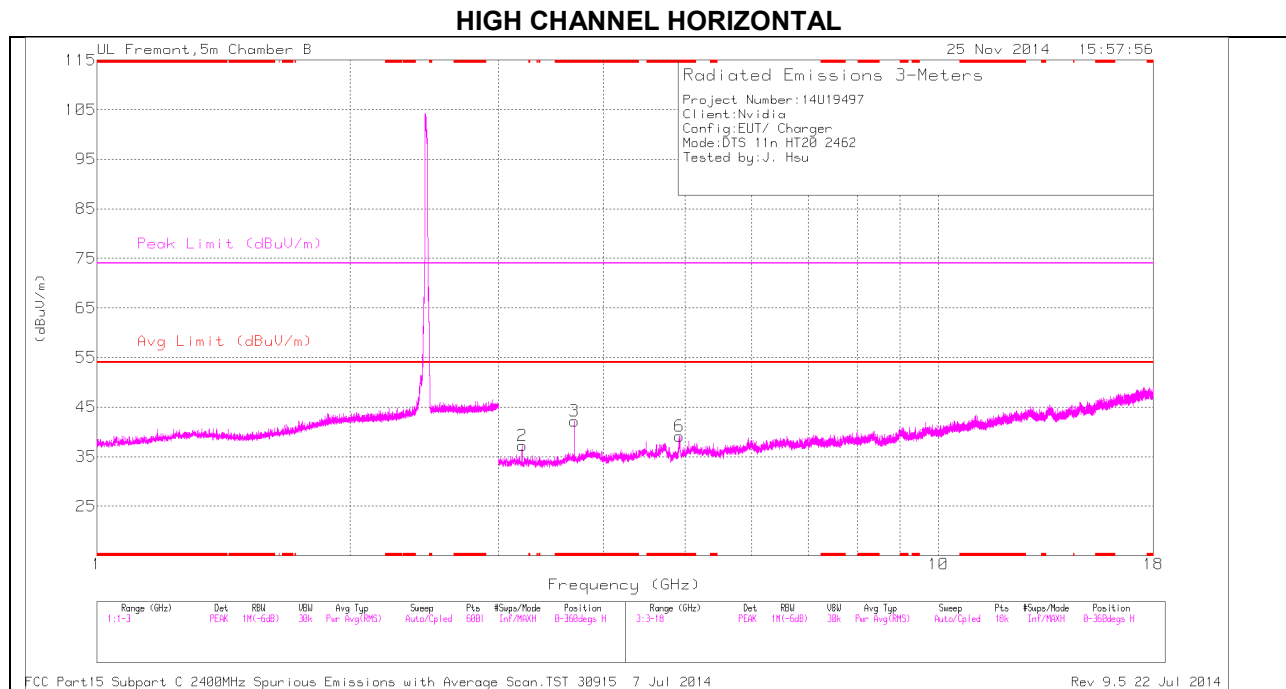
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.873	49.46	PK2	34.2	-30.6	0	53.06	-	-	74	-20.94	310	200	V
* 4.873	36.65	MAV1	34.2	-30.6	.3	40.55	54	-13.45	-	-	310	200	V

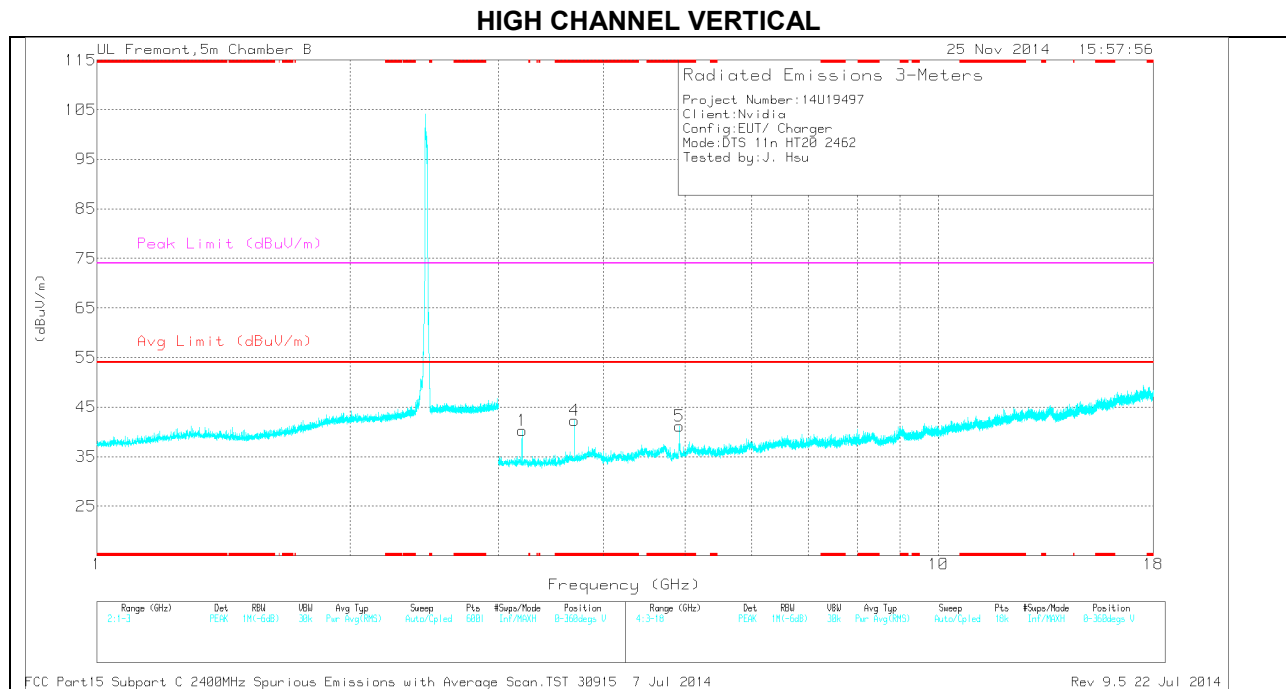
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection



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



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 DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr /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
3	* 3.693	40.27	PK	33.3	-31.4	0	42.17	-	-	74	-31.83	0-360	199	H
6	* 4.922	35.8	PK	34.2	-30.9	0	39.1	-	-	74	-34.9	0-360	101	H
4	* 3.693	40.45	PK	33.3	-31.4	0	42.35	-	-	74	-31.65	0-360	199	V
5	* 4.925	37.85	PK	34.2	-30.9	0	41.15	-	-	74	-32.85	0-360	199	V
2	3.2	35.49	PK	32.8	-31.1	0	37.19	-	-	-	-	0-360	199	H
1	3.2	38.53	PK	32.8	-31.1	0	40.23	-	-	-	-	0-360	199	V

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

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.929	45.1	PK2	34.2	-30.9	0	48.4	-	-	74	-25.6	35	221	V
* 4.924	33.64	MAV1	34.2	-30.9	.3	39.24	54	-16.76	-	-	35	221	V

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

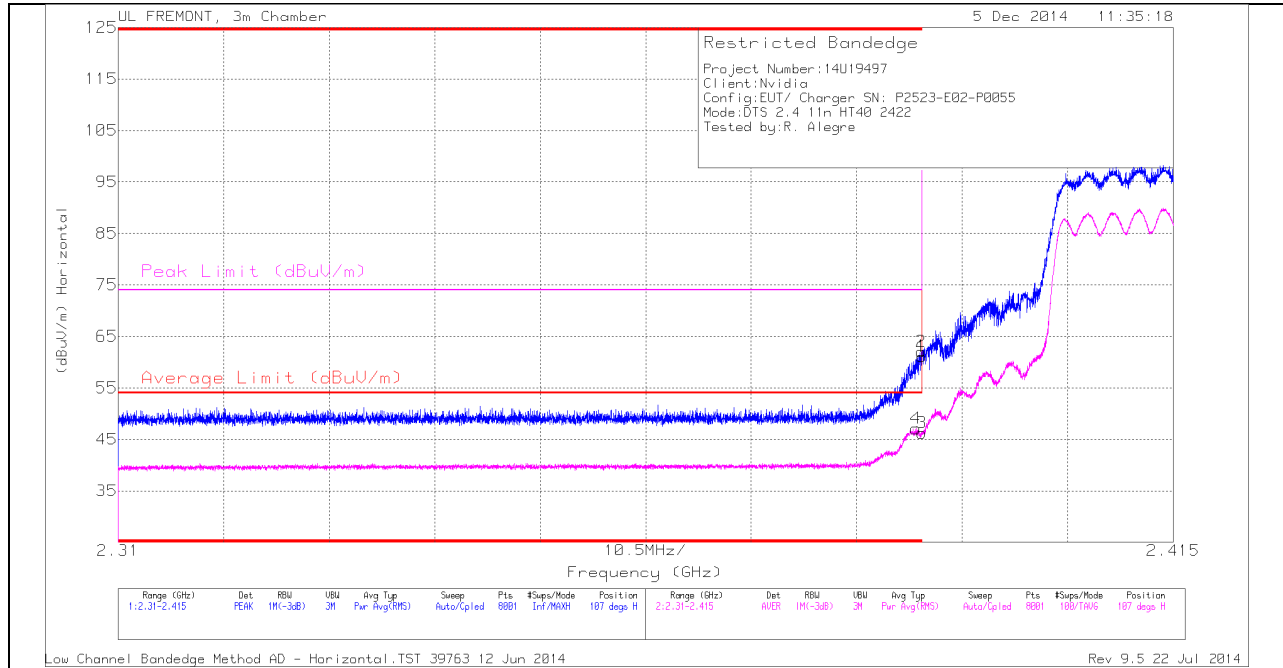
Pk - Peak detector

RMS - RMS detection

1.1.1. 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

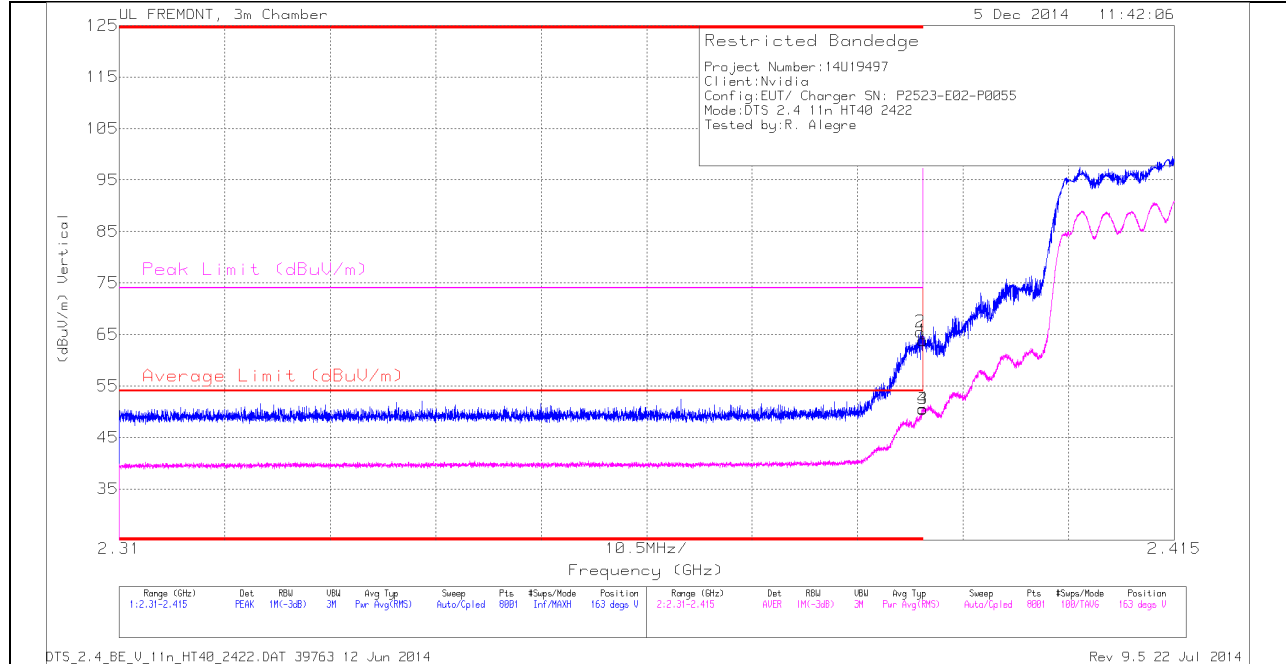
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fitter/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	52.13	PK	32.1	-23.1	0	61.13	-	-	74	-12.87	107	159	H
2	* 2.39	53.04	PK	32.1	-23.1	0	62.04	-	-	74	-11.96	107	159	H
3	* 2.39	37.12	RMS	32.1	-23.1	.14	46.26	54	-7.74	-	-	107	159	H
4	* 2.389	37.96	RMS	32.1	-23.1	.14	47.1	54	-6.9	-	-	107	159	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filt r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	54.84	PK	32.1	-23.1	0	63.84	-	-	74	-10.16	163	143	V
2	* 2.39	56.5	PK	32.1	-23.1	0	65.5	-	-	74	-8.5	163	143	V
3	* 2.39	41.37	RMS	32.1	-23.1	.14	50.51	54	-3.49	-	-	163	143	V
4	* 2.39	41.47	RMS	32.1	-23.1	.14	50.61	54	-3.39	-	-	163	143	V

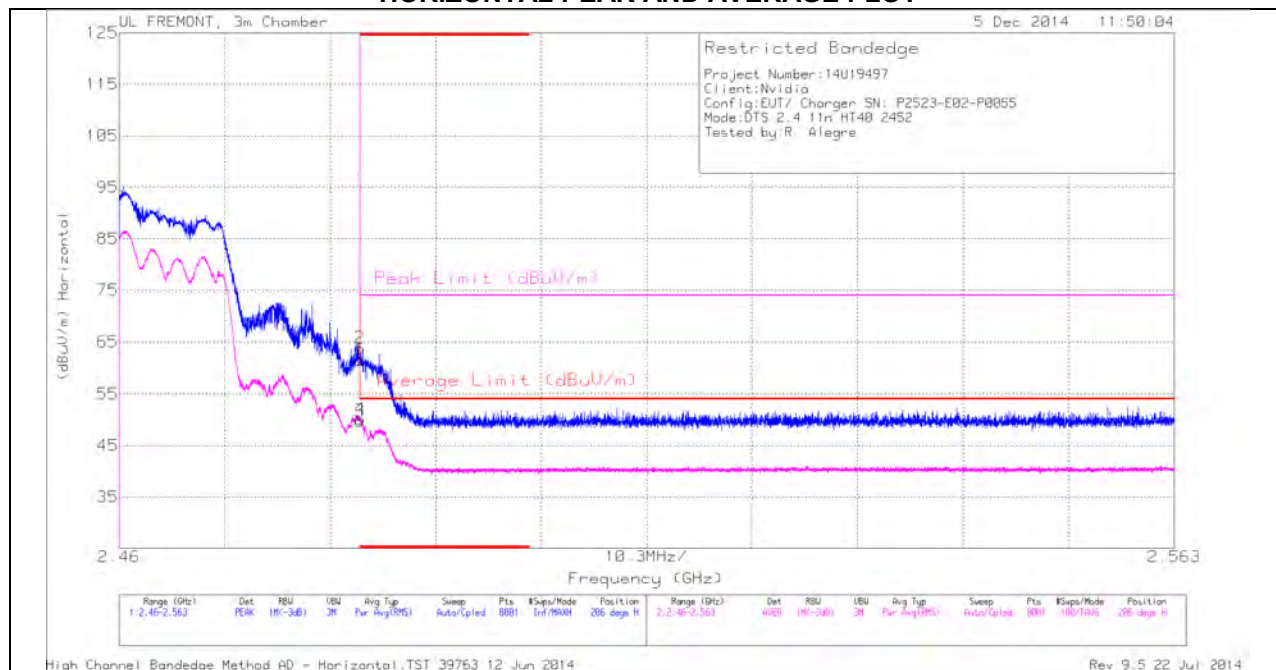
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

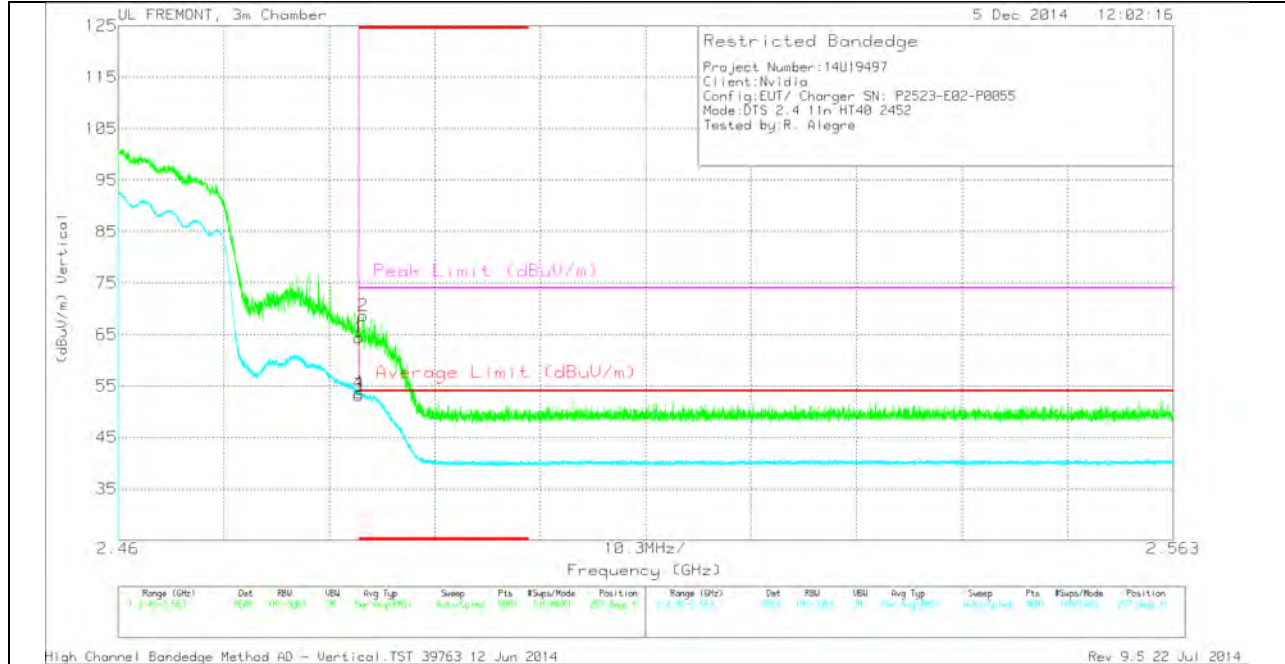
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	52.09	PK	32.3	-22.8	0	61.59	-	-	74	-12.41	206	235	H
2	* 2.484	54.29	PK	32.3	-22.8	0	63.79	-	-	74	-10.21	206	235	H
3	* 2.484	40.12	RMS	32.3	-22.8	.14	49.76	54	-4.24	-	-	206	235	H
4	* 2.484	40.47	RMS	32.3	-22.8	.14	50.11	54	-3.89	-	-	206	235	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filter/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	54.92	PK	32.3	-22.8	0	64.42	-	-	74	-9.58	257	100	V
2	* 2.484	59.18	PK	32.3	-22.8	0	68.68	-	-	74	-5.32	257	100	V
3	* 2.484	43.54	RMS	32.3	-22.8	.14	53.18	54	-.82	-	-	257	100	V
4	* 2.484	44.02	RMS	32.3	-22.8	.14	53.66	54	-.34	-	-	257	100	V

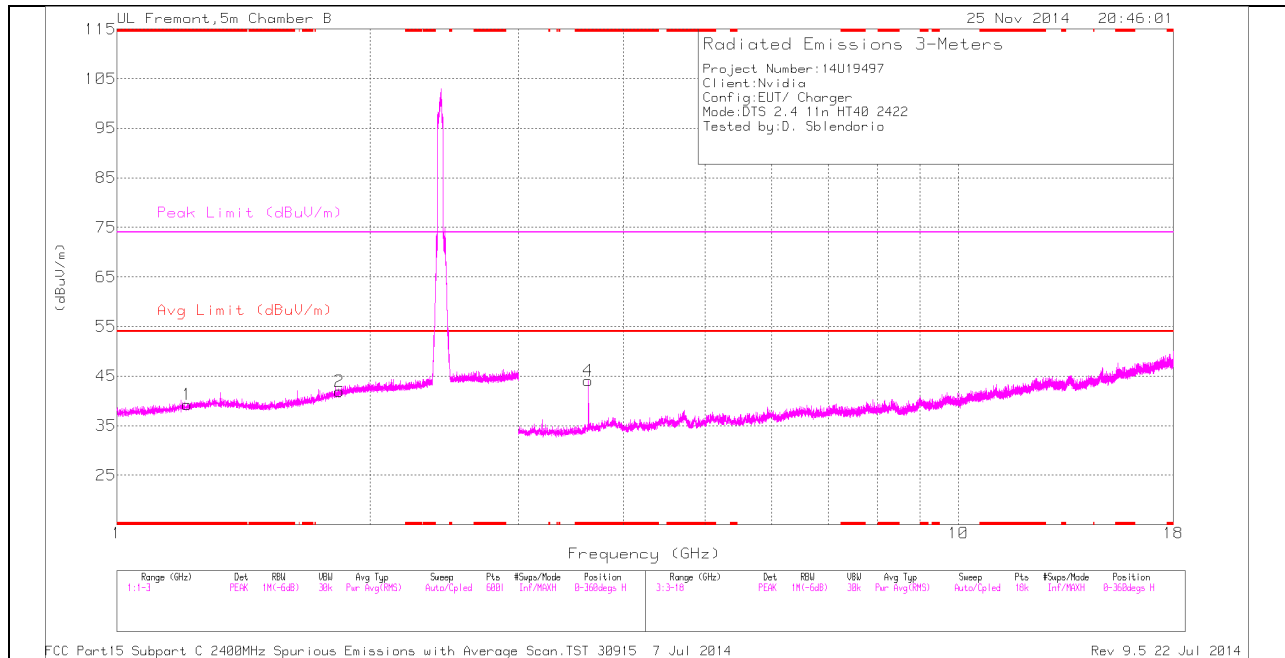
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK - Peak detector

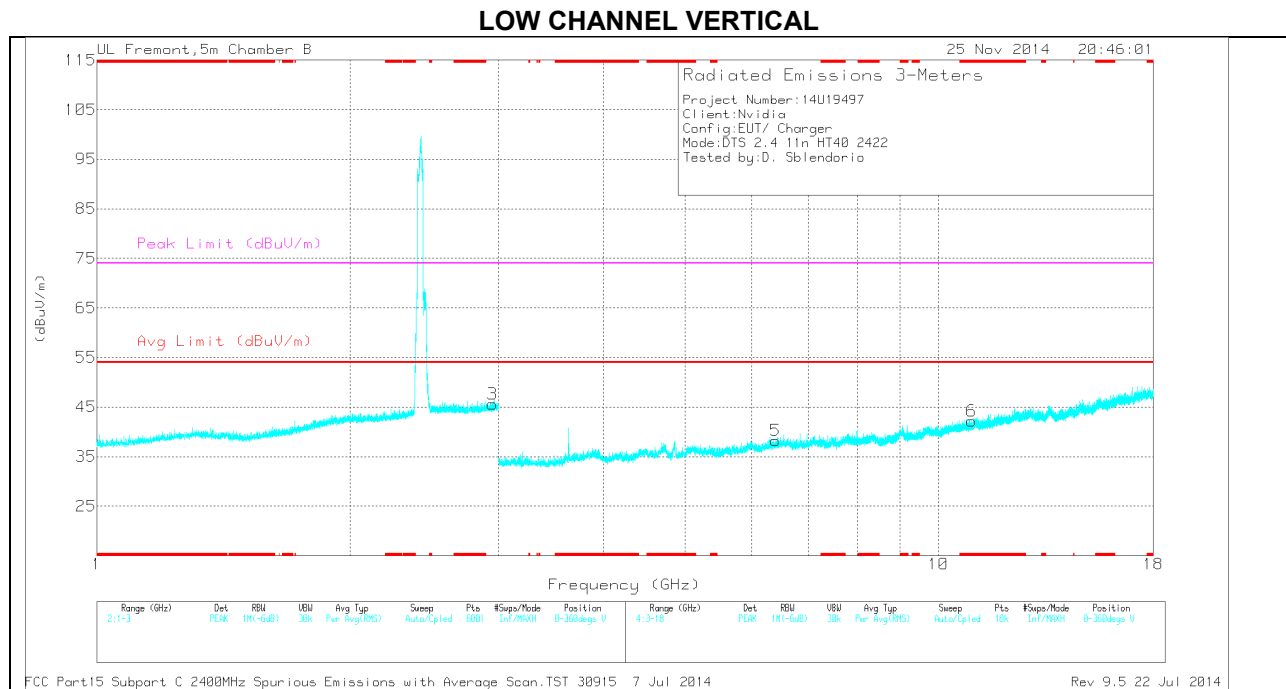
RMS - RMS detection

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.



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 DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr /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	* 1.212	35.32	PK	28.3	-24.4	0	39.22	-	-	74	-34.78	0-360	199	H
4	* 3.633	41.84	PK	33.2	-31	0	44.04	-	-	74	-29.96	0-360	199	H
6	* 10.956	27.56	PK	37.8	-23.2	0	42.16	-	-	74	-31.84	0-360	101	V
2	1.839	34.97	PK	30.5	-23.5	0	41.97	-	-	-	-	0-360	199	H
3	2.951	35.15	PK	32.7	-22.3	0	45.55	-	-	-	-	0-360	101	V
5	6.401	32.01	PK	35.6	-29.4	0	38.21	-	-	-	-	0-360	101	V

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

PK - Peak detector

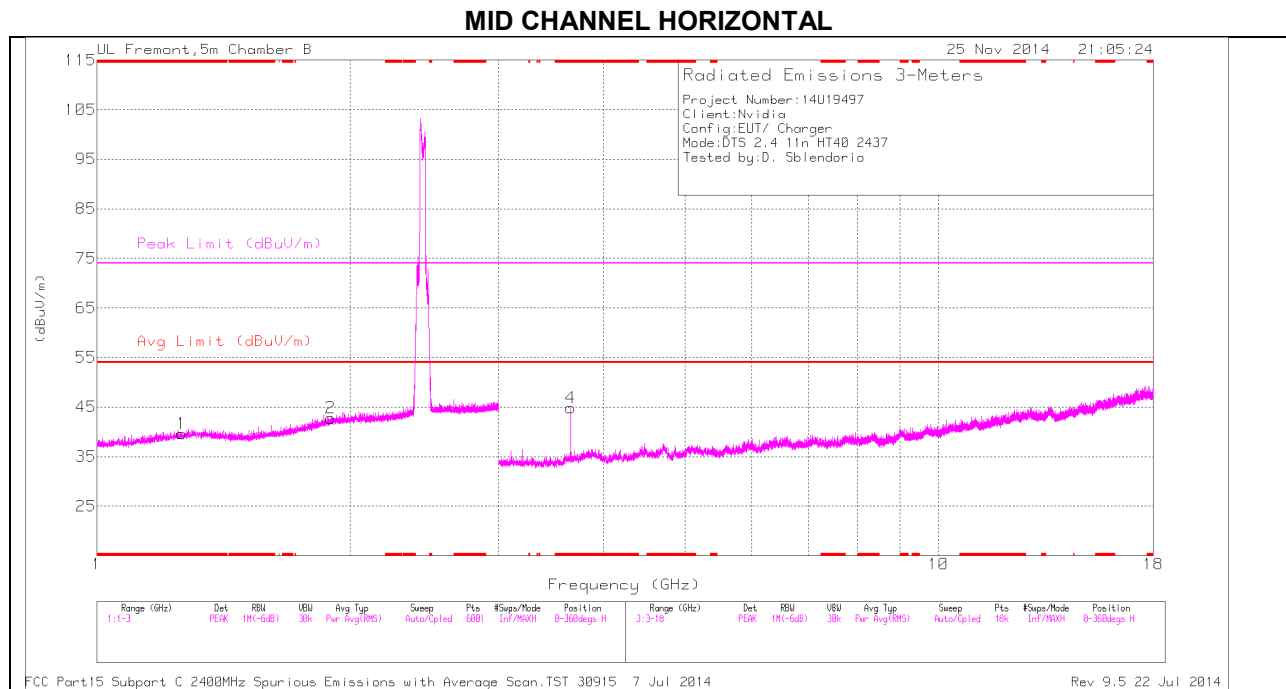
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr /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
* 3.635	41.26	PK2	33.2	-31	0	43.46	-	-	74	-30.54	360	199	H
* 3.633	31.39	MAV1	33.2	-31	.14	33.73	54	-20.27	-	-	360	199	H

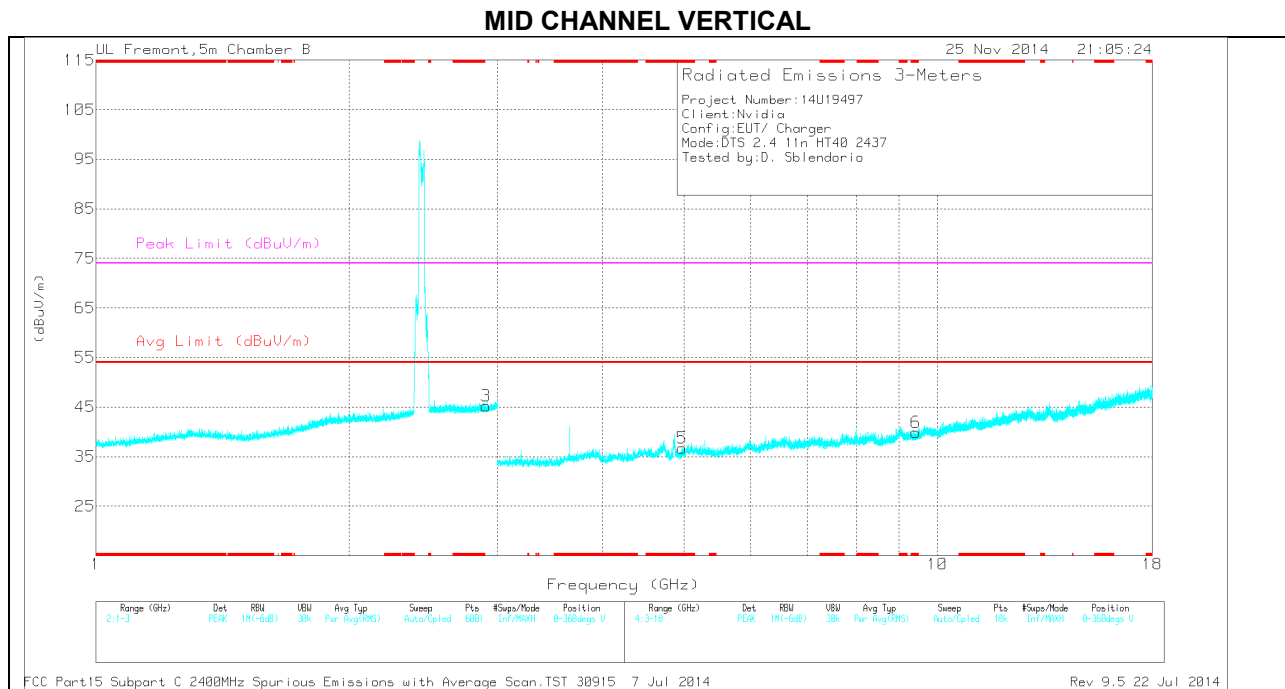
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection



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



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 DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr /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	* 1.262	35.41	PK	28.6	-24.4	0	39.61	-	-	74	-34.39	0-360	101	H
4	* 3.656	42.67	PK	33.2	-31	0	44.87	-	-	74	-29.13	0-360	199	H
5	* 4.977	32.68	PK	34.2	-30.2	0	36.68	-	-	74	-37.32	0-360	101	V
6	* 9.434	28.42	PK	36.5	-25	0	39.92	-	-	74	-34.08	0-360	101	V
2	1.894	35.15	PK	31	-23.4	0	42.75	-	-	-	-	0-360	101	H
3	2.906	34.79	PK	32.6	-22.2	0	45.19	-	-	-	-	0-360	199	V

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

PK - Peak detector

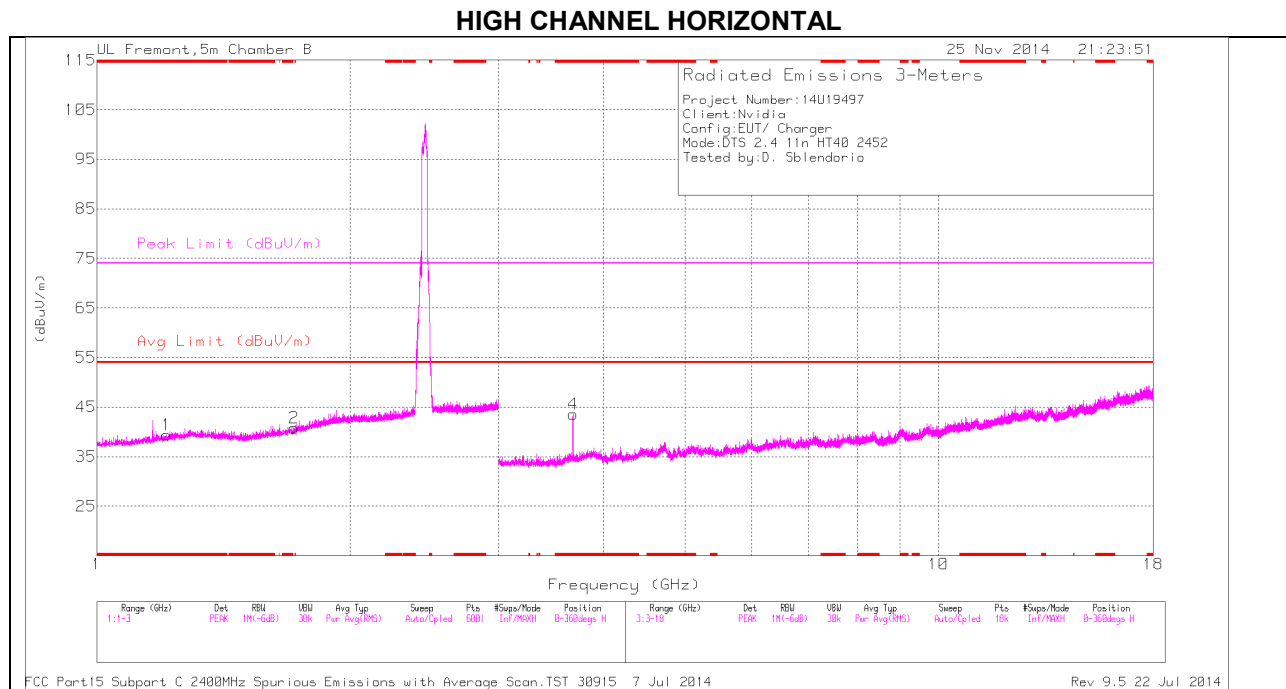
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr /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
* 3.655	41.42	PK2	33.2	-31	0	43.62	-	-	74	-30.38	359	199	H
* 3.656	31.49	MAV1	33.2	-31	.14	33.83	54	-20.17	-	-	359	199	H

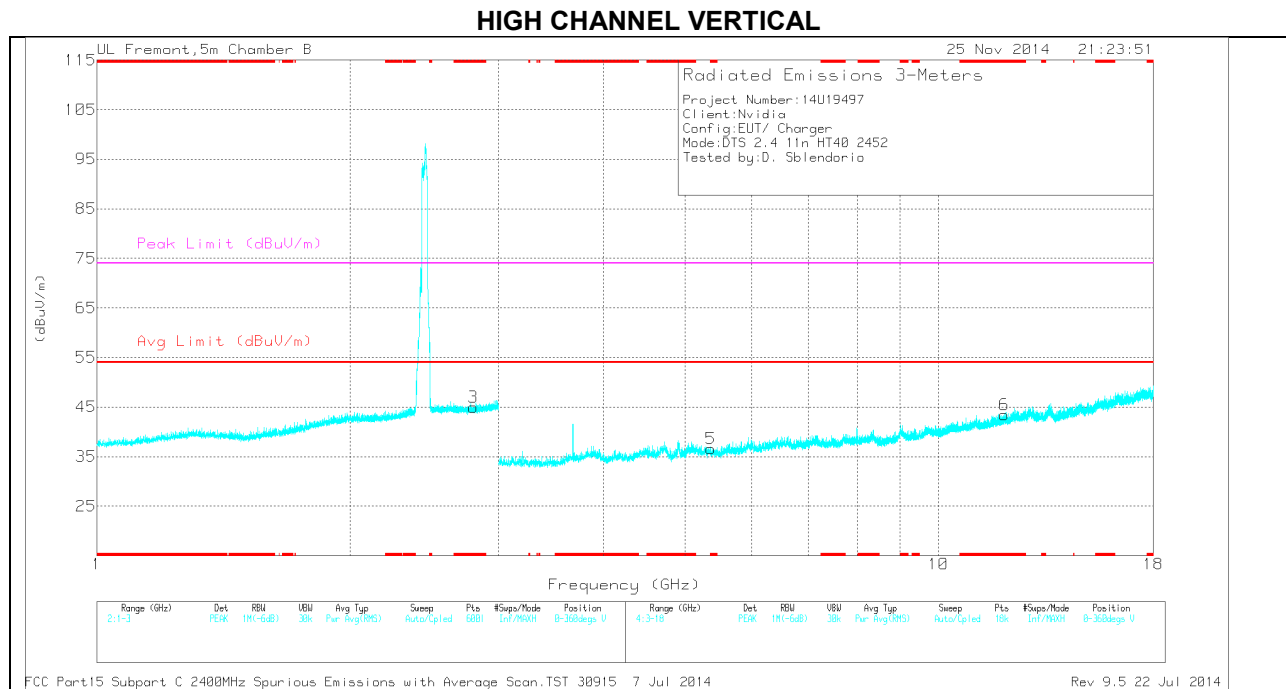
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

Pk - Peak detector

RMS - RMS detection



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



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 DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr /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	* 1.211	35.51	PK	28.3	-24.4	0	39.41	-	-	74	-34.59	0-360	199	H
3	* 2.802	34.88	PK	32.3	-22.2	0	44.98	-	-	74	-29.02	0-360	199	V
4	* 3.678	41.52	PK	33.3	-31.2	0	43.62	-	-	74	-30.38	0-360	199	H
5	* 5.362	31.23	PK	34.5	-29.1	0	36.63	-	-	74	-37.37	0-360	101	V
6	* 11.967	26.77	PK	38.7	-22	0	43.47	-	-	74	-30.53	0-360	199	V
2	1.715	35.02	PK	29.2	-23.5	0	40.72	-	-	-	-	0-360	199	H

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

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr /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
* 3.678	41.28	PK2	33.3	-31.2	0	43.38	-	-	74	-30.62	360	198	H
* 3.678	30.35	MAv1	33.3	-31.2	.14	32.59	54	-21.41	-	-	360	198	H

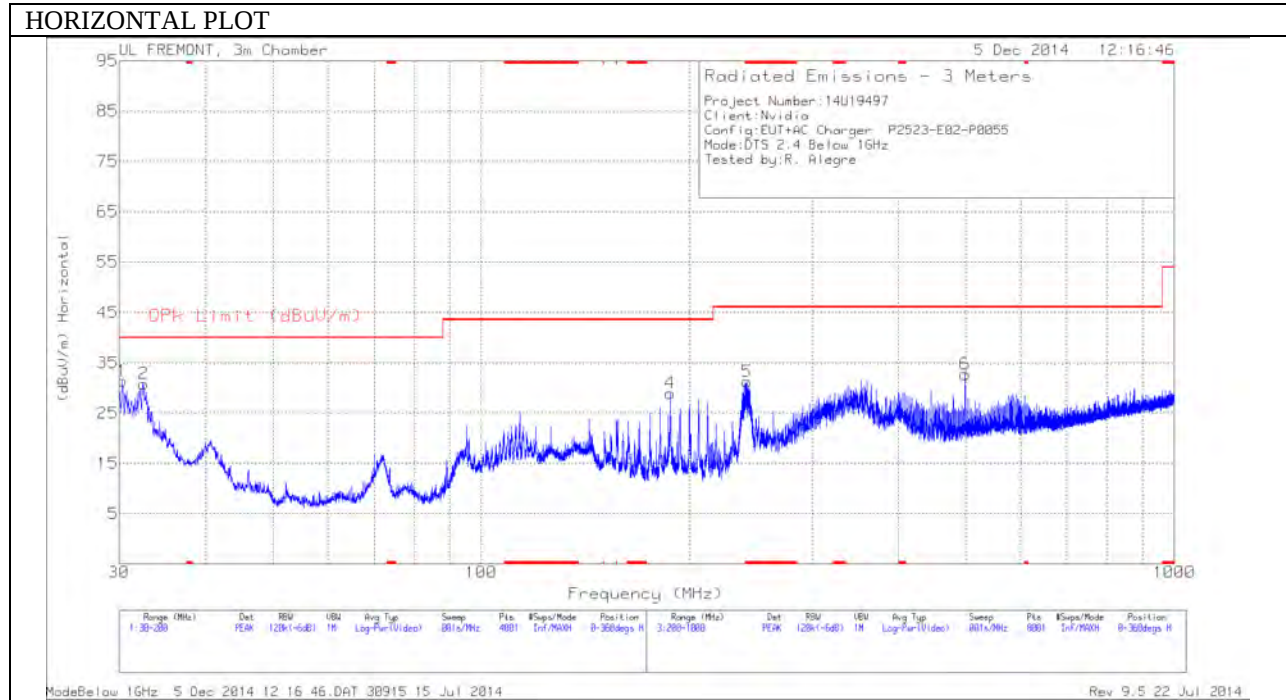
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band

PK - Peak detector

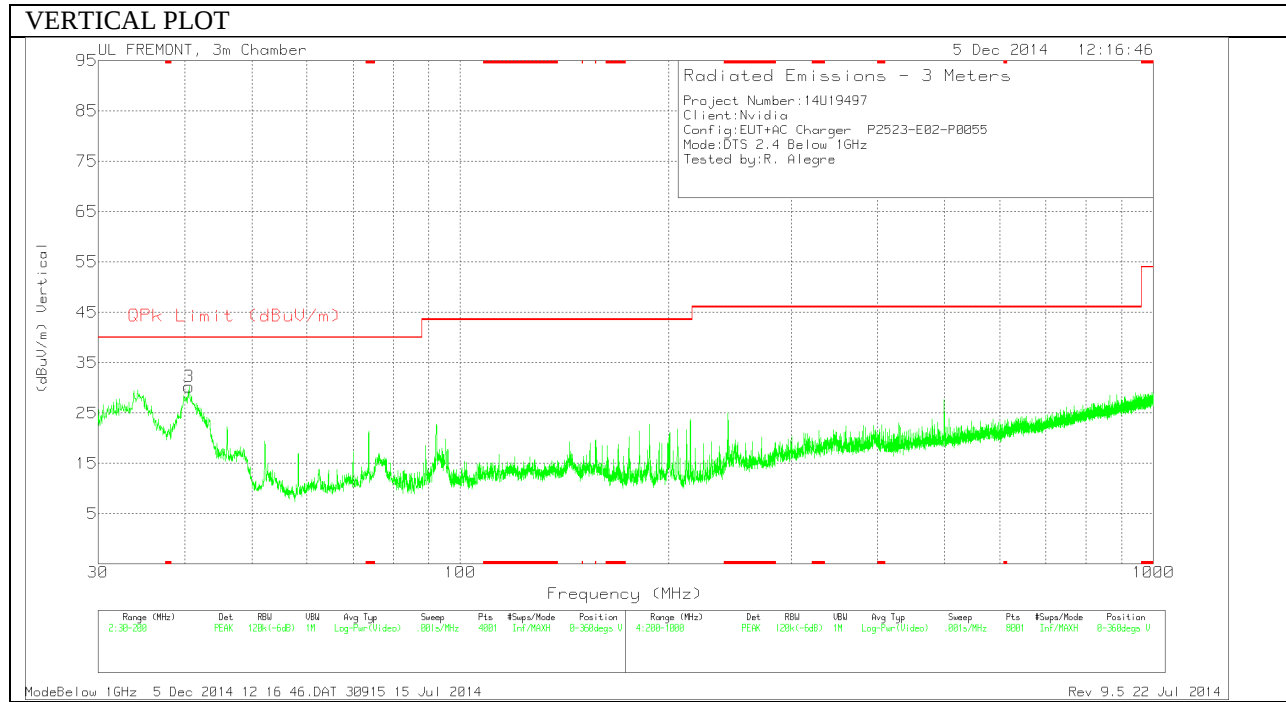
RMS - RMS detection

1.2. TRANSMITTER BELOW 1 GHz

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



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



Below 1G Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 241.8	46.05	PK	11.6	-26.4	31.25	46.02	-14.77	0-360	101	H
1	30.34	39.11	PK	21.1	-28.8	31.41	40	-8.59	0-360	101	H
2	32.55	40.13	PK	19.5	-28.8	30.83	40	-9.17	0-360	101	H
3	40.5825	45.53	PK	13.3	-28.6	30.23	40	-9.77	0-360	101	V
4	187.42	44.76	PK	11.2	-27	28.96	43.52	-14.56	0-360	101	H
6	499.2	41.22	PK	17.4	-25.9	32.72	46.02	-13.3	0-360	200	H

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

Pk - Peak detector

15. 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.

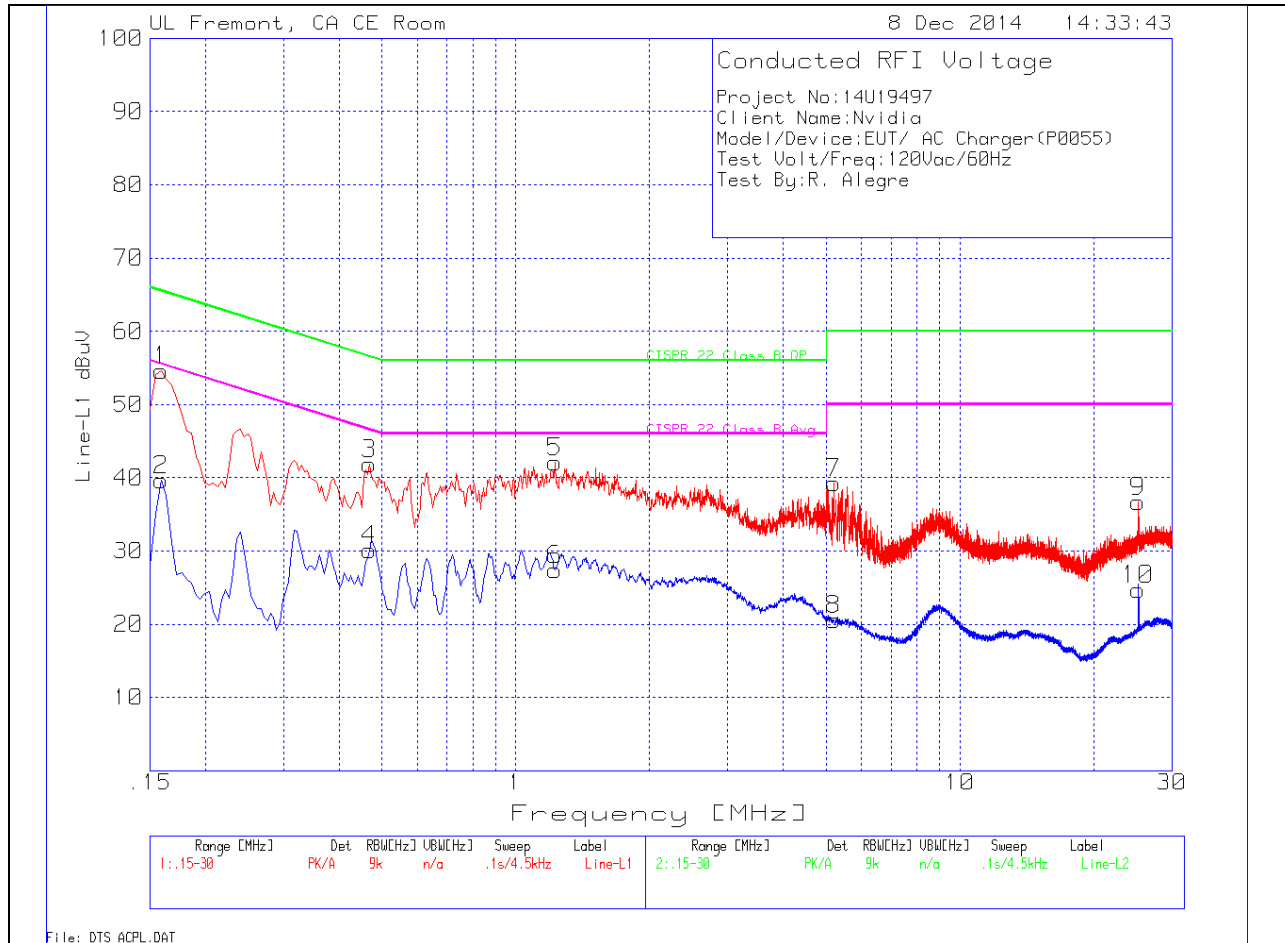
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

6 WORST EMISSIONS

LINE 1 PLOT



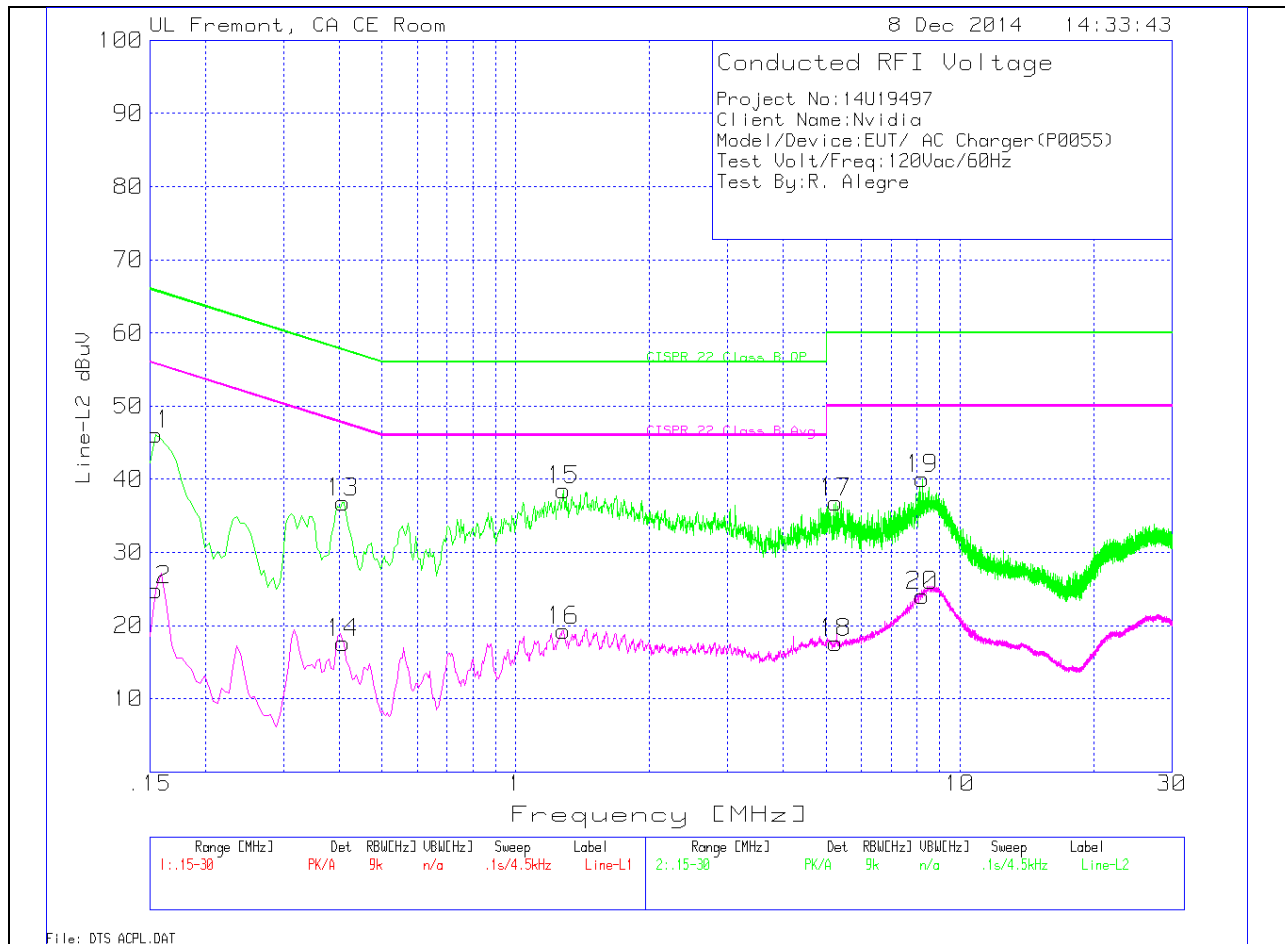
LINE 1 RESULTS

Line-L1 .15 - 30MHz

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1 (dB)	LC Cables 1&3 (dB)	Corrected Reading dBuV	CISPR 22 Class B QP	Margin to Limit (dB)	CISPR 22 Class B Avg	Margin to Limit (dB)
1	.159	53.34	PK	1.3	0	54.64	65.5	-10.86	-	-
2	.159	38.39	Av	1.3	0	39.69	-	-	55.5	-15.81
3	.4695	41.46	PK	.4	0	41.86	56.5	-14.64	-	-
4	.4695	29.74	Av	.4	0	30.14	-	-	46.5	-16.36
5	1.2255	41.78	PK	.2	.1	42.08	56	-13.92	-	-
6	1.2255	27.06	Av	.2	.1	27.36	-	-	46	-18.64
7	5.199	38.92	PK	.2	.1	39.22	60	-20.78	-	-
8	5.199	20.32	Av	.2	.1	20.62	-	-	50	-29.38
9	25.206	36.09	PK	.3	.3	36.69	60	-23.31	-	-
10	25.206	24.16	Av	.3	.3	24.76	-	-	50	-25.24

LINE 2 PLOT



LINE 2 RESULTS

Line-L2 .15 - 30MHz

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2 (dB)	LC Cables 2&3 (dB)	Corrected Reading dBuV	CISPR 22 Class B QP	Margin to Limit (dB)	CISPR 22 Class B Avg	Margin to Limit (dB)
11	.1545	44.67	PK	1.4	0	46.07	65.8	-19.73	-	-
12	.1545	23.47	Av	1.4	0	24.87	-	-	55.8	-30.93
13	.40875	36.47	PK	.4	0	36.87	57.7	-20.83	-	-
14	.40875	17.18	Av	.4	0	17.58	-	-	47.7	-30.12
15	1.2795	38.17	PK	.2	.1	38.47	56	-17.53	-	-
16	1.2795	18.96	Av	.2	.1	19.26	-	-	46	-26.74
17	5.244	36.49	PK	.2	.1	36.79	60	-23.21	-	-
18	5.244	17.31	Av	.2	.1	17.61	-	-	50	-32.39
19	8.241	39.74	PK	.2	.1	40.04	60	-19.96	-	-
20	8.241	23.79	Av	.2	.1	24.09	-	-	50	-25.91

PK - Peak detector

Av - average detection