FCC CFR47 PART 15 SUBPART C

BLUETOOTH LOW ENERGY

CERTIFICATION TEST REPORT

FOR

PORTABLE GAMING DEVICE

MODEL NUMBER: P2523

FCC ID: VOB-P2523

REPORT NUMBER: 14U19497-E6V2

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Revision History

Rev.	Issue Date	Revisions	Revised By
V1	6/20/16	Initial Issue	D. Coronia
V2	7/12/16	Updated Section 6	D. Coronia

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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.

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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.

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:

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

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

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 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 peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402-2480	BLE	6.22	4.19

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a maximum gain of 3.36 dBi.

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

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

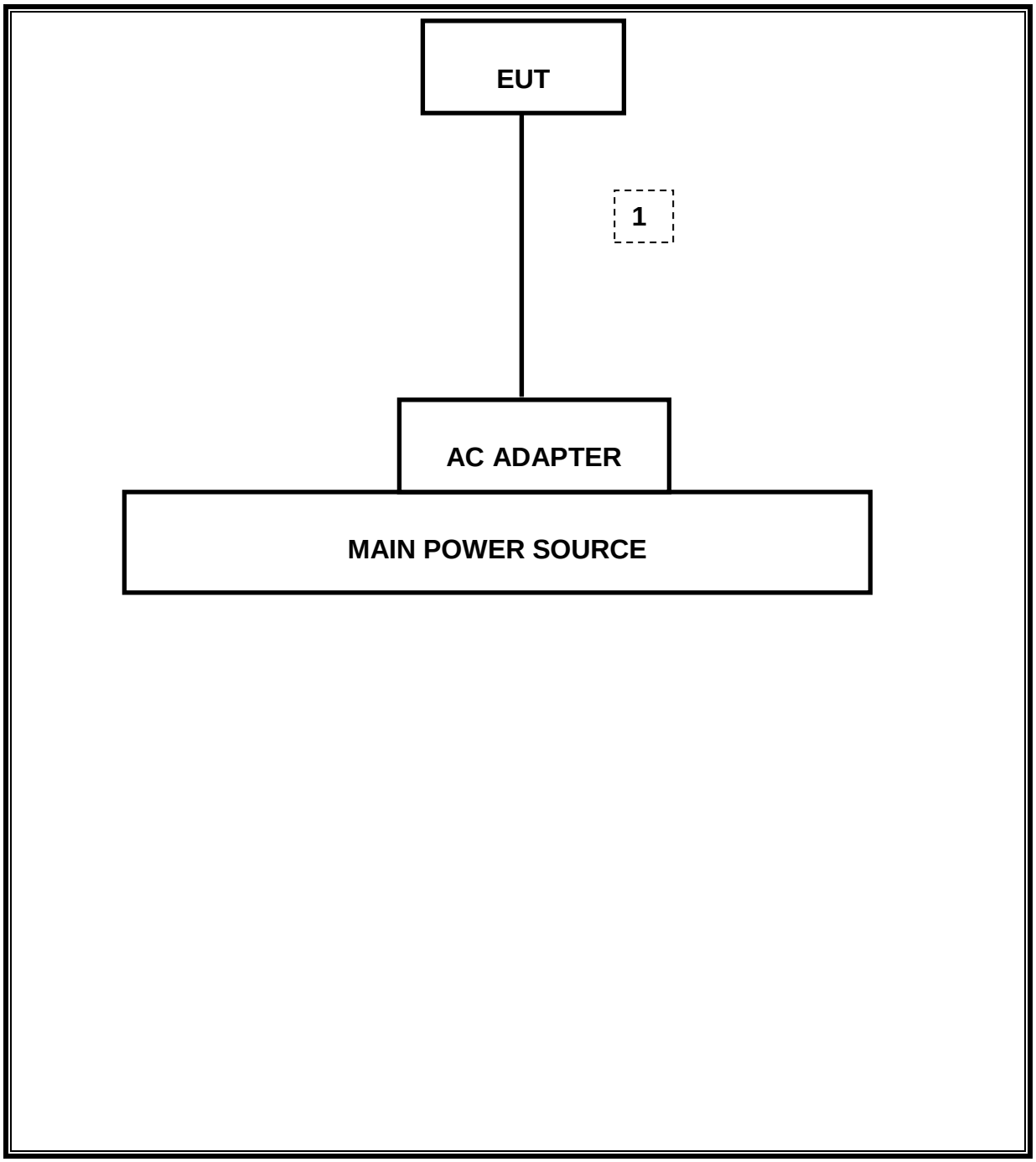
I/O CABLES

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 continuously transmitting Bluetooth through the EUT's software.

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	C00986	4/1/2015
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01179	2/26/2015
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	8/8/2015
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	5/8/2015
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	10/22/2015
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	N/A	3/6/2015
Antenna, Horn, 18 GHz	ETS	3117	C01022	2/21/2015
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00589	12/17/2014
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/2014
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/2014
LISN, 30 MHz	FCC	50/250-25-2	C00626	1/14/2015

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NIST USA.

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

Duty Cycle: KDB 558074 D01 v03r05, Section 6.0

6 dB BW: KDB 558074 D01 v03r05, Section 8.1.

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

Output Power: KDB 558074 D01 v03r05, Section 9.1.1.

Power Spectral Density: KDB 558074 D01 v03r05, Section 10.2.

Out-of-band emissions in non-restricted bands: KDB 558074 D01 v03r05, Section 11.0.

Out-of-band emissions in restricted bands: KDB 558074 D01 v03r05, Section 12.1, 12.2

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

8. SUMMARY

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) with 99%	>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	Radiated Spurious Emission	< 54dBuV/m		Pass

9. ANTENNA PORT TEST RESULTS

9.1. ON TIME, DUTY CYCLE

LIMITS

None; for reporting purposes only

PROCEDURE

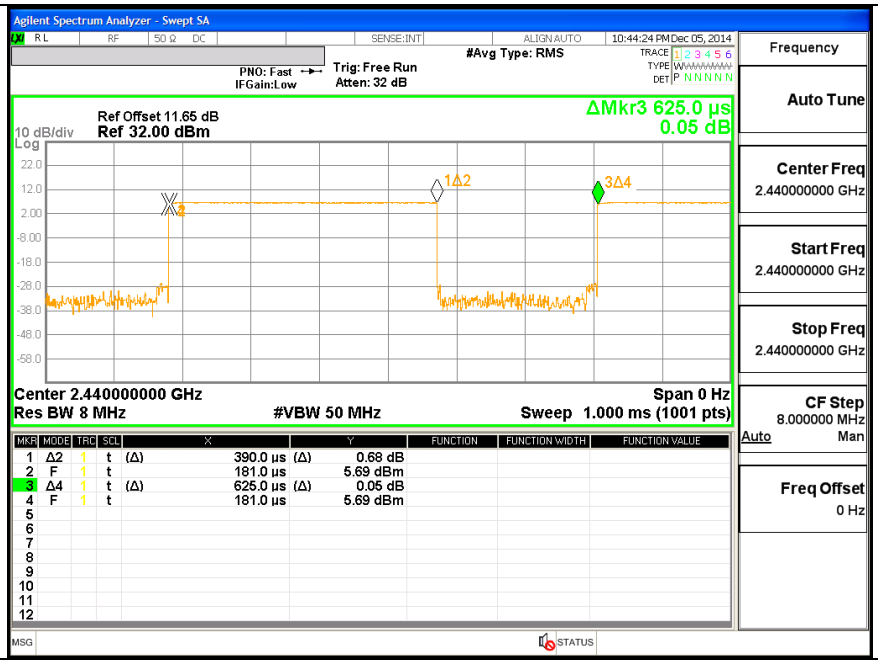
KDB 558074 Zero-Span Spectrum Analyzer Method

RESULTS

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
BLE	0.390	0.626	0.623	62.34%	2.05	2.564

DUTY CYCLE PLOTS



NOTE: --

9.2. 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

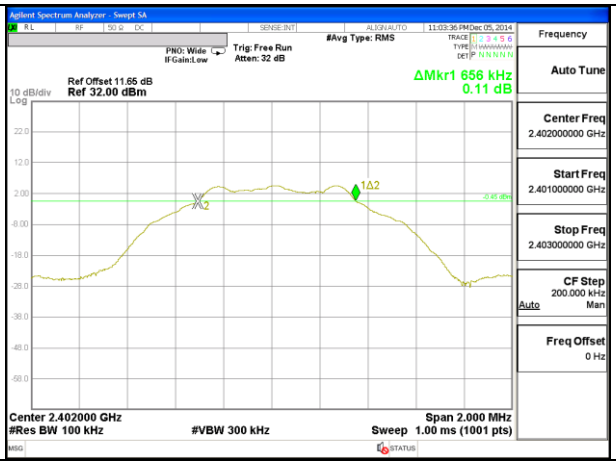
RESULTS

6 dB BANDWIDTH PLOTS AND TABLE

6 dB TEST RESULT TABLE

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.6560	0.5
Middle	2440	0.7100	0.5
High	2480	0.6980	0.5

LOW CHANNEL



MID CHANNEL

HIGH CHANNEL

NOTE:

9.3. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

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

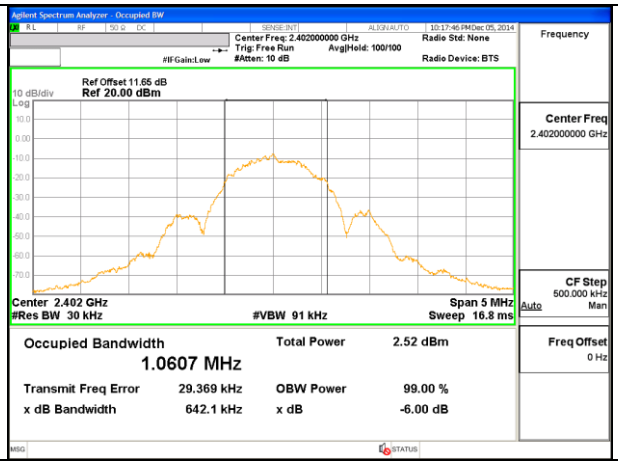
RESULTS

99% BANDWIDTH PLOTS AND TABLE

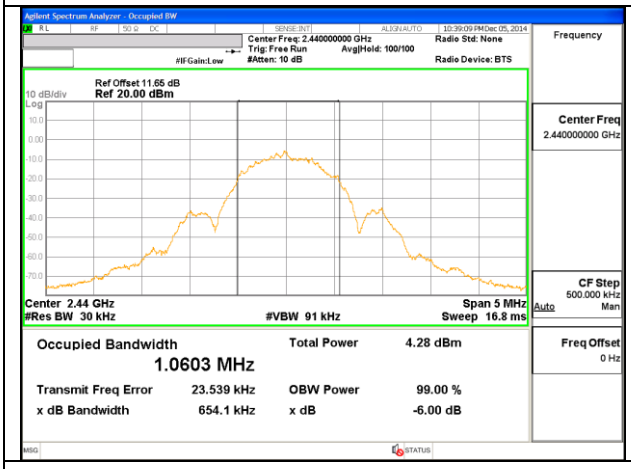
99% TEST RESULT TABLE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0607
Middle	2440	1.0603
High	2480	1.0623

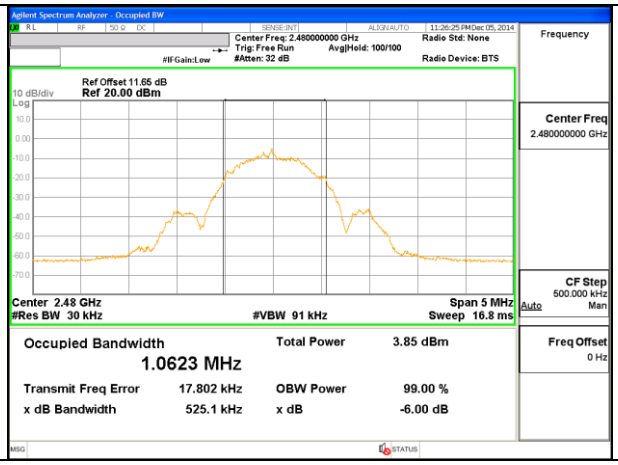
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



NOTE:

9.4. OUTPUT POWER

LIMITS

FCC §15.247 (b)

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

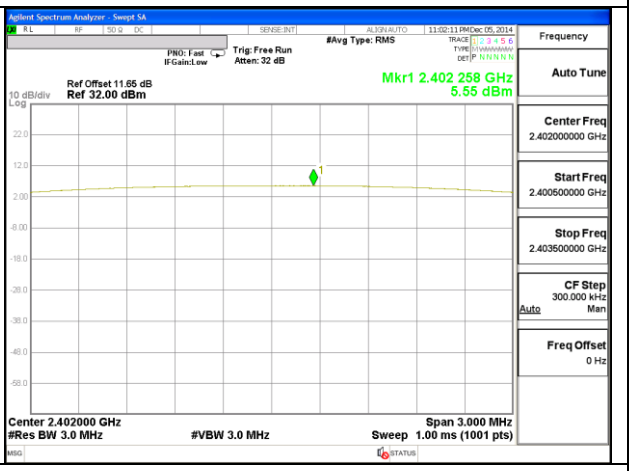
RESULTS

OUTPUT POWER PLOTS AND TABLE

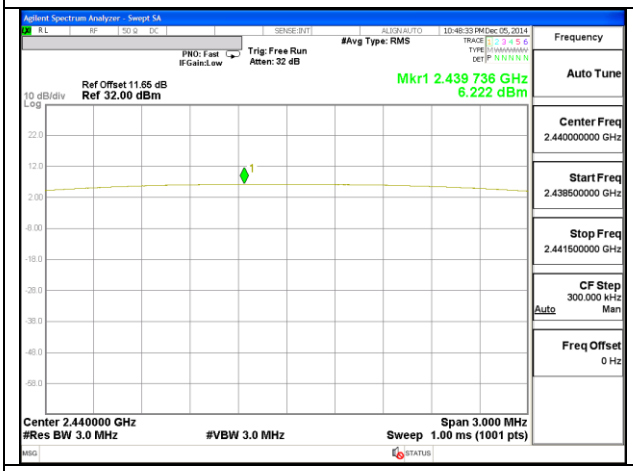
OUTPUT POWER TEST RESULT TABLE

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	5.550	30	-24.45
Middle	2440	6.222	30	-23.78
High	2480	5.870	30	-24.13

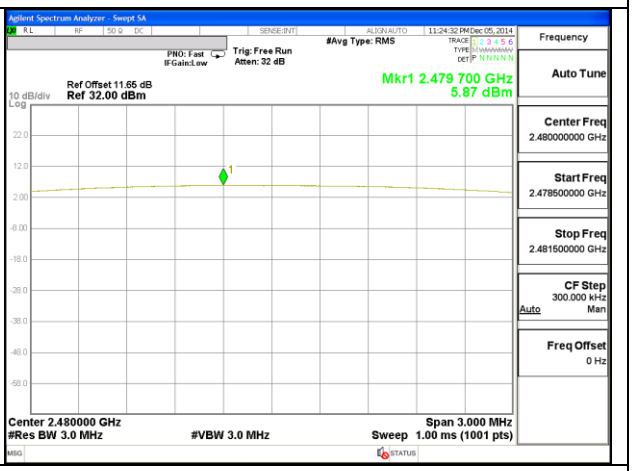
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



NOTE:

9.5. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

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

AVERAGE POWER

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	5.44
Middle	2440	6.08
High	2480	5.23

NOTE: --

9.6. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

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.

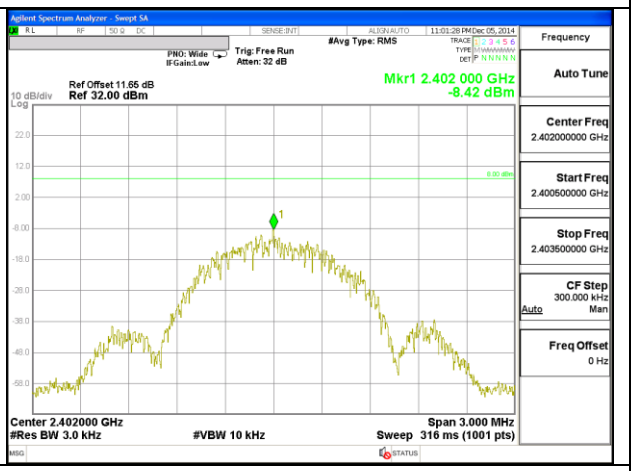
RESULTS

POWER SPECTRAL DENSITY PLOTS AND TABLE

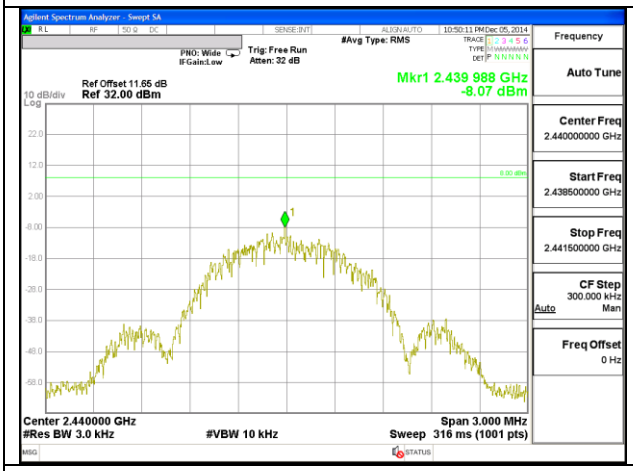
POWER SPECTRAL DENSITY TEST RESULT TABLE

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-8.42	8	-16.42
Middle	2440	-8.07	8	-16.07
High	2480	-8.09	8	-16.09

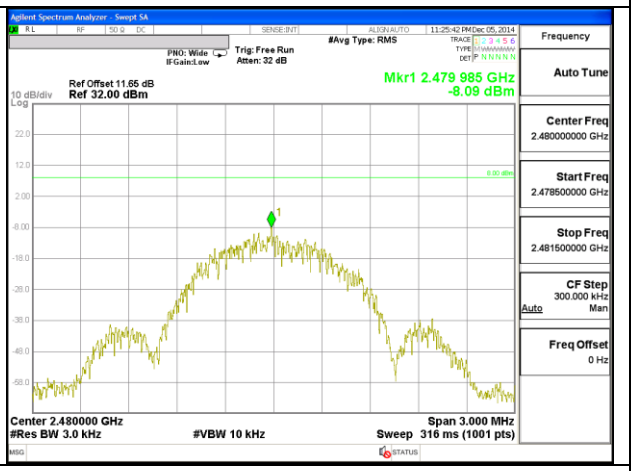
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



NOTE:

9.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

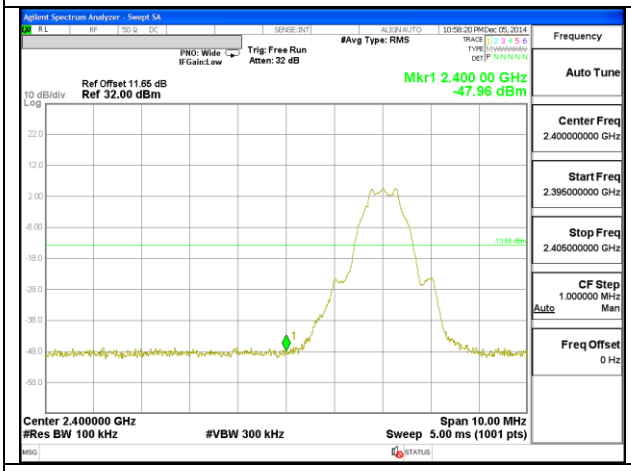
FCC §15.247 (d)

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

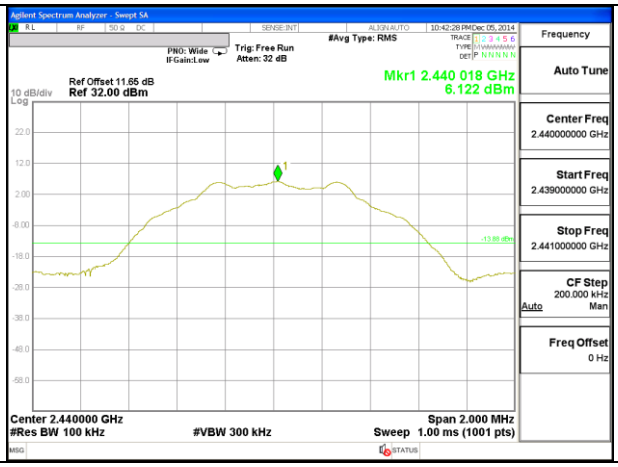
RESULTS

BANDEDGE AND SPURIOUS EMISSIONS PLOTS

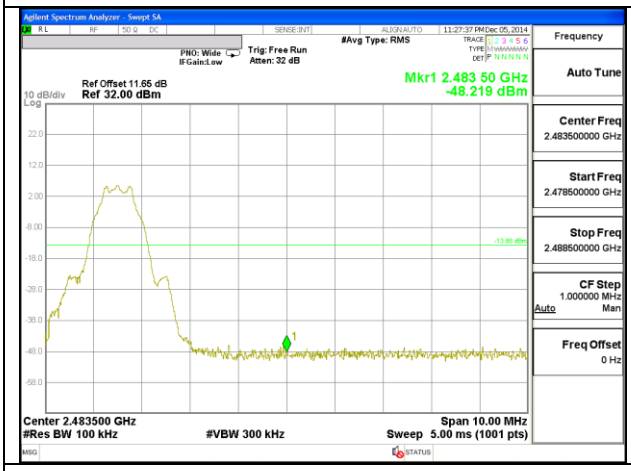
LOW CHANNEL BANDEDGE



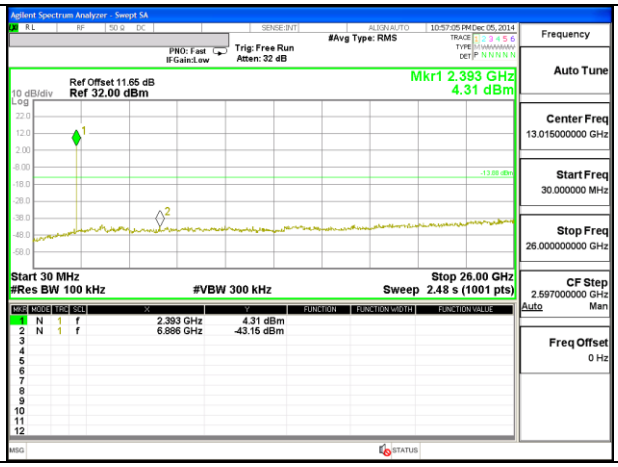
MID CHANNEL REFERENCE



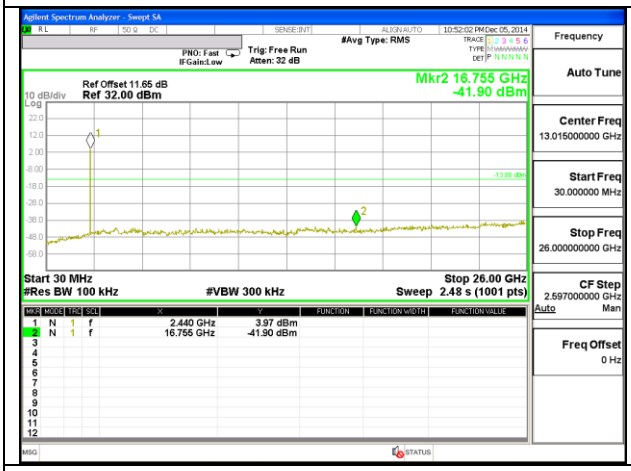
HIGH CHANNEL BANDEDGE



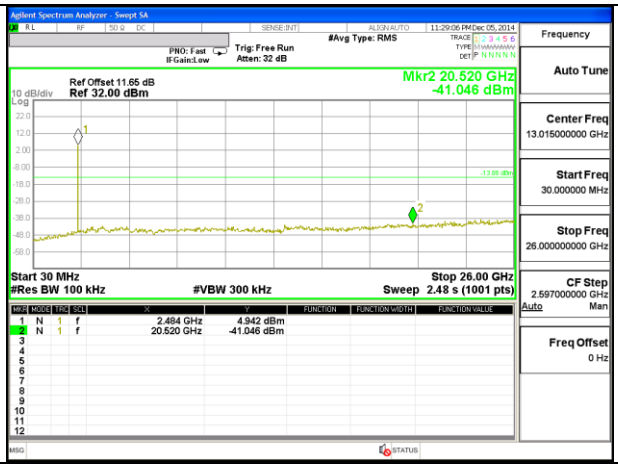
LOW CHANNEL SPURIOUS



MID CHANNEL SPURIOUS



HIGH CHANNEL SPURIOUS



NOTE:

10. RADIATED TEST RESULTS

LIMITS AND PROCEDURE

FCC §15.205 and §15.209

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

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150cm for above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

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

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and add duty cycle factor for average measurements. Duty cycle factor = 10 log (1/x). For this sample: DCF = 10log (1/0.624)=2.05dB

The spectrum from 1GHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

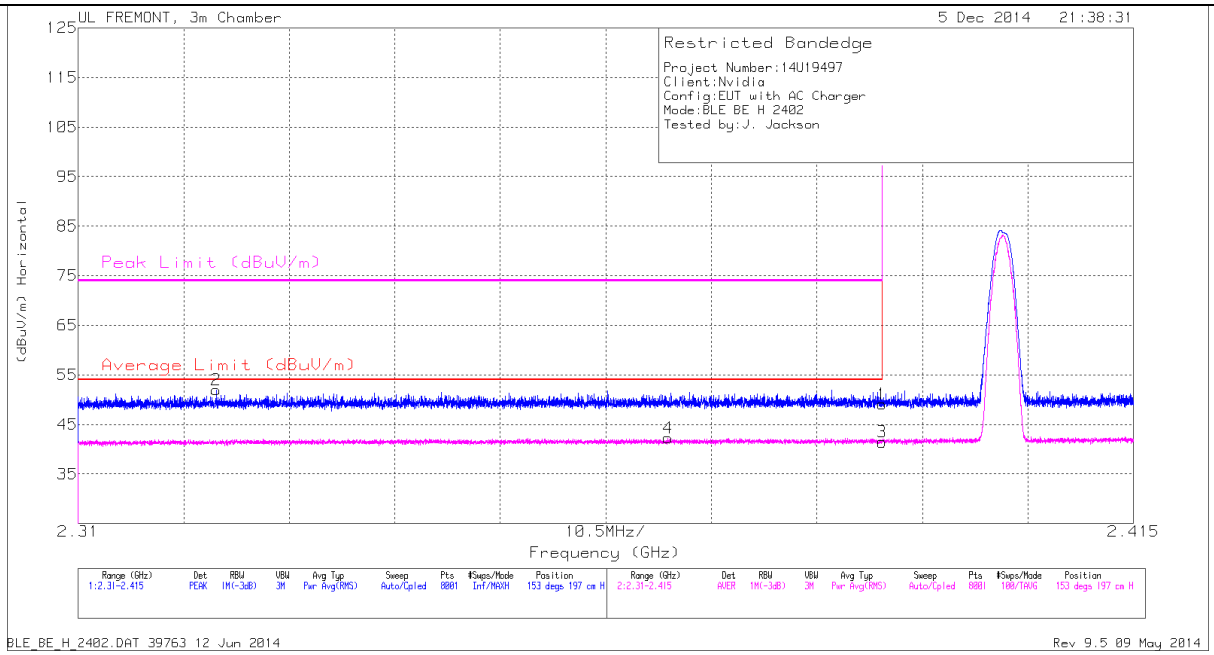
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

RESULTS

10.1. TRANSMITTER ABOVE 1 GHz

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



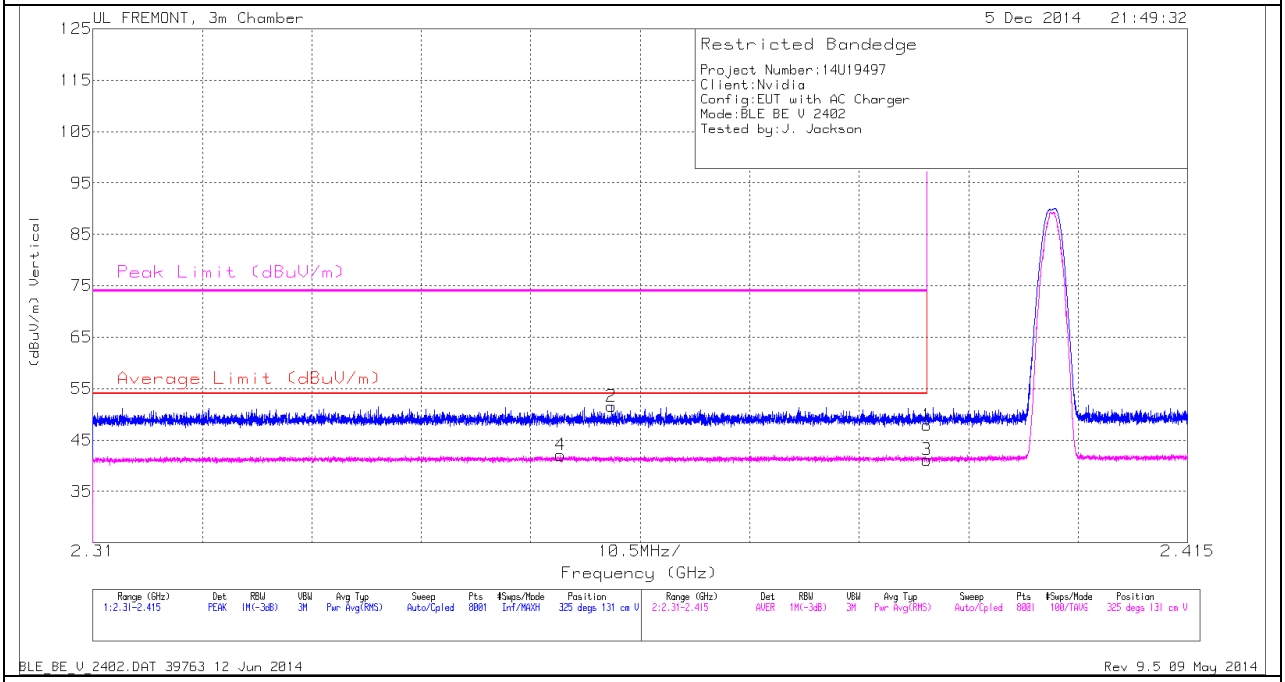
HORIZONTAL VERTICAL PEAK AND AVERAGE DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.324	43.17	PK	31.9	-23.1	0	51.97	-	-	74	-22.03	153	197	H
4	2.369	31.28	RMS	32	-23.1	2.1	42.28	54	-11.72	-	-	153	197	H
1	2.39	40.1	PK	32.1	-23.1	0	49.1	-	-	74	-24.9	153	197	H
3	2.39	30.4	RMS	32.1	-23.1	2.1	41.5	54	-12.5	-	-	153	197	H

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band
PK - Peak detector
RMS - RMS detection

RESTRICTED BANDEDGE (LOW CHANNEL)

VERTICAL PEAK AND AVERAGE PLOT



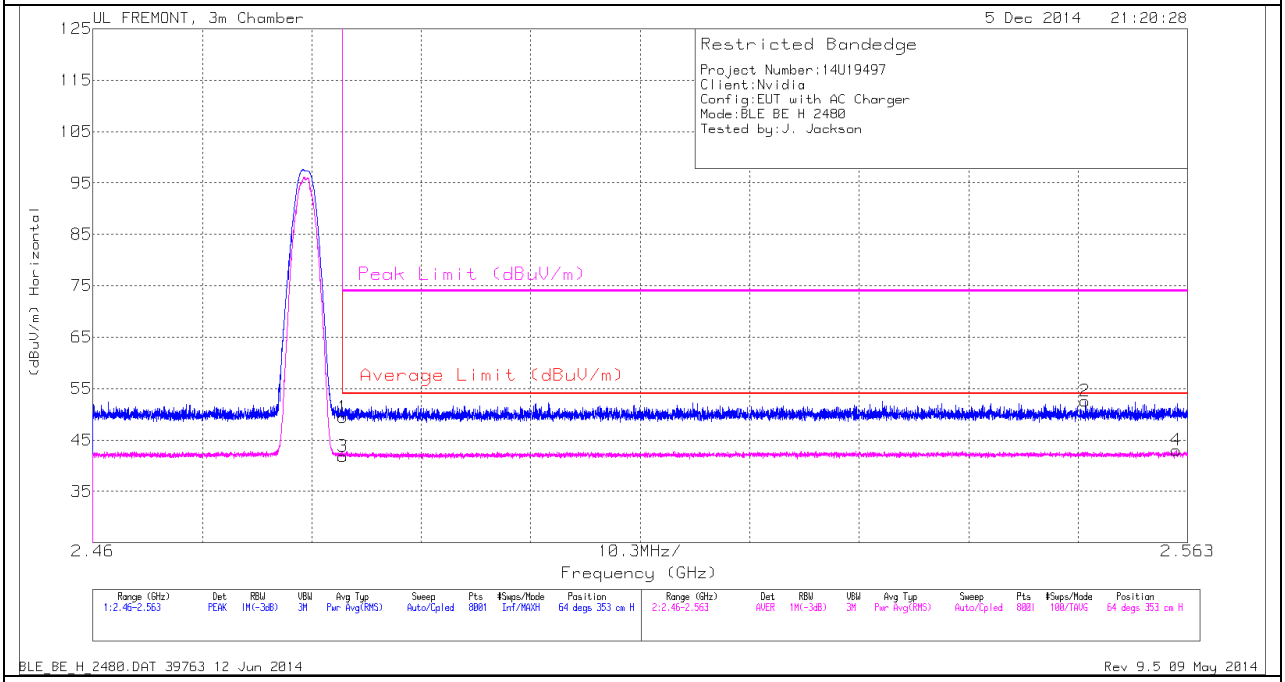
VERTICAL PEAK AND AVERAGE DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	2.355	31.11	RMS	32	-23.1	2.1	42.11	54	-11.89	-	-	325	131	V
2	2.36	42.69	PK	32	-23.1	0	51.59	-	-	74	-22.41	325	131	V
1	2.39	38.88	PK	32.1	-23.1	0	47.88	-	-	74	-26.12	325	131	V
3	2.39	30.09	RMS	32.1	-23.1	2.1	41.19	54	-12.81	-	-	325	131	V

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band
PK - Peak detector
RMS - RMS detection

RESTRICTED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



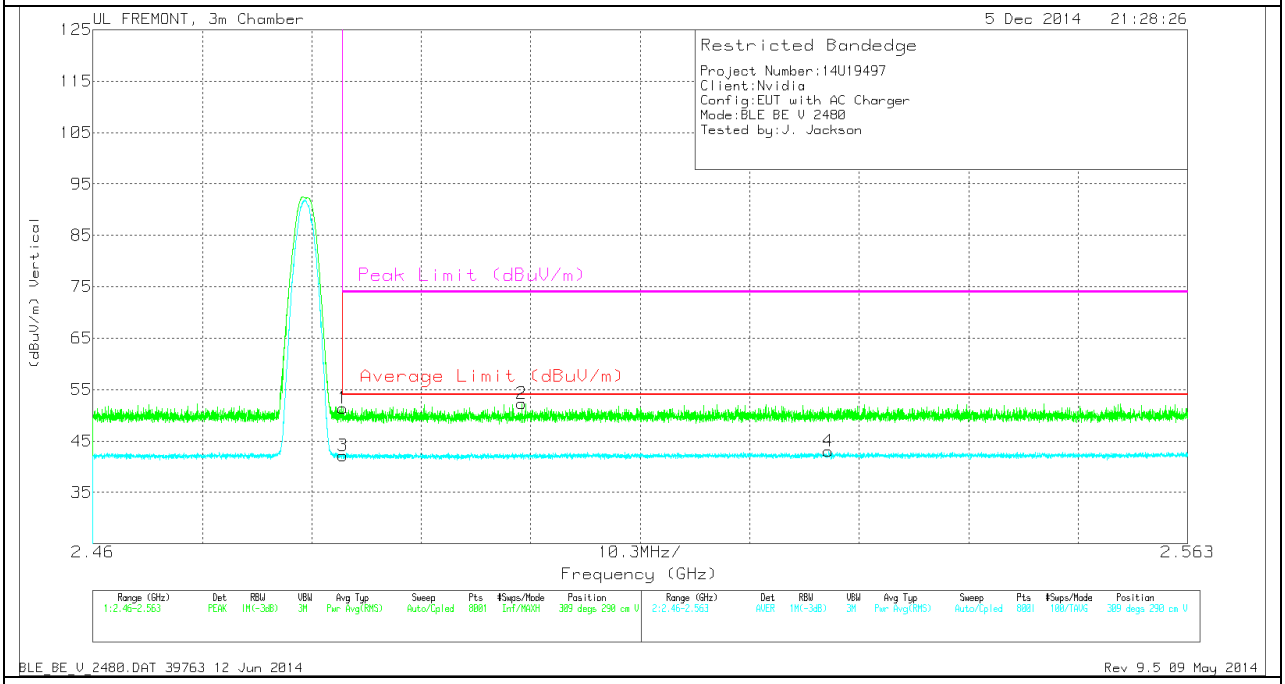
HORIZONTAL PEAK AND AVERAGE DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/F ltr/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	39.96	PK	32.3	-22.8	0	49.46	-	-	74	-24.54	64	353	H
3	2.484	30.24	RMS	32.3	-22.8	2.1	41.84	54	-12.16	-	-	64	353	H
2	2.553	42.87	PK	32.4	-22.7	0	52.57	-	-	74	-21.43	64	353	H
4	2.562	31.26	RMS	32.4	-22.7	2.1	43.06	54	-10.94	-	-	64	353	H

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band
PK - Peak detector
RMS - RMS detection

RESTRICTED BANDEDGE (HIGH CHANNEL)

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL PEAK AND AVERAGE DATA

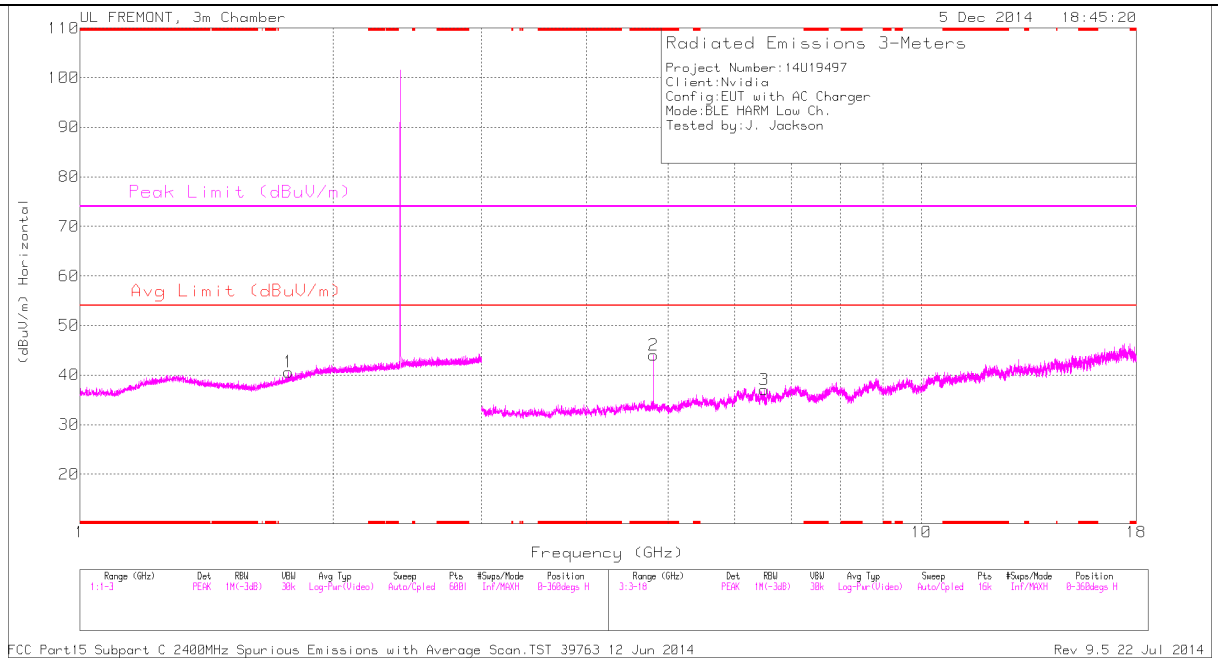
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	41.86	PK	32.3	-22.8	0	51.36	-	-	74	-22.64	309	290	V
3	2.484	30.61	RMS	32.3	-22.8	2.1	42.21	54	-11.79	-	-	309	290	V
2	2.5	42.7	PK	32.3	-22.7	0	52.3	-	-	74	-21.7	309	290	V
4	2.529	31.15	RMS	32.4	-22.6	2.1	43.05	54	-10.95	-	-	309	290	V

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band
PK - Peak detector
RMS - RMS detection

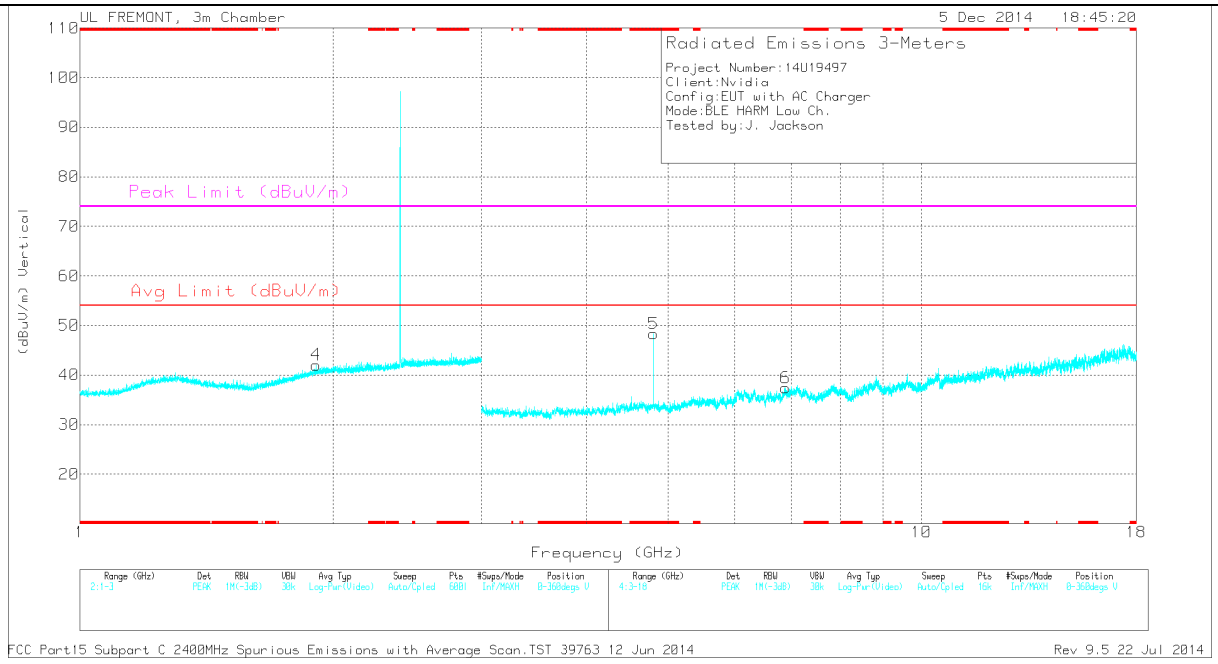
HARMONICS AND SPURIOUS EMISSIONS

SPURIOUS (LOW CHANNEL)

HORIZONTAL PLOT



VERTICAL PLOT



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 T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.804	40.25	PK	34.1	-30.3	0	44.05	-	-	74	-29.95	0-360	100	H
5	* 4.805	44.56	PK	34.1	-30.3	0	48.36	-	-	74	-25.64	0-360	200	V
1	1.77	34.16	PK	29.8	-23.3	0	40.66	-	-	-	-	0-360	100	H
4	1.909	33.86	PK	31.3	-23.1	0	42.06	-	-	-	-	0-360	100	V
3	6.499	31.39	PK	35.5	-29.9	0	36.99	-	-	-	-	0-360	200	H
6	6.896	30.33	PK	35.6	-28.5	0	37.43	-	-	-	-	0-360	200	V

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

Radiated Emissions

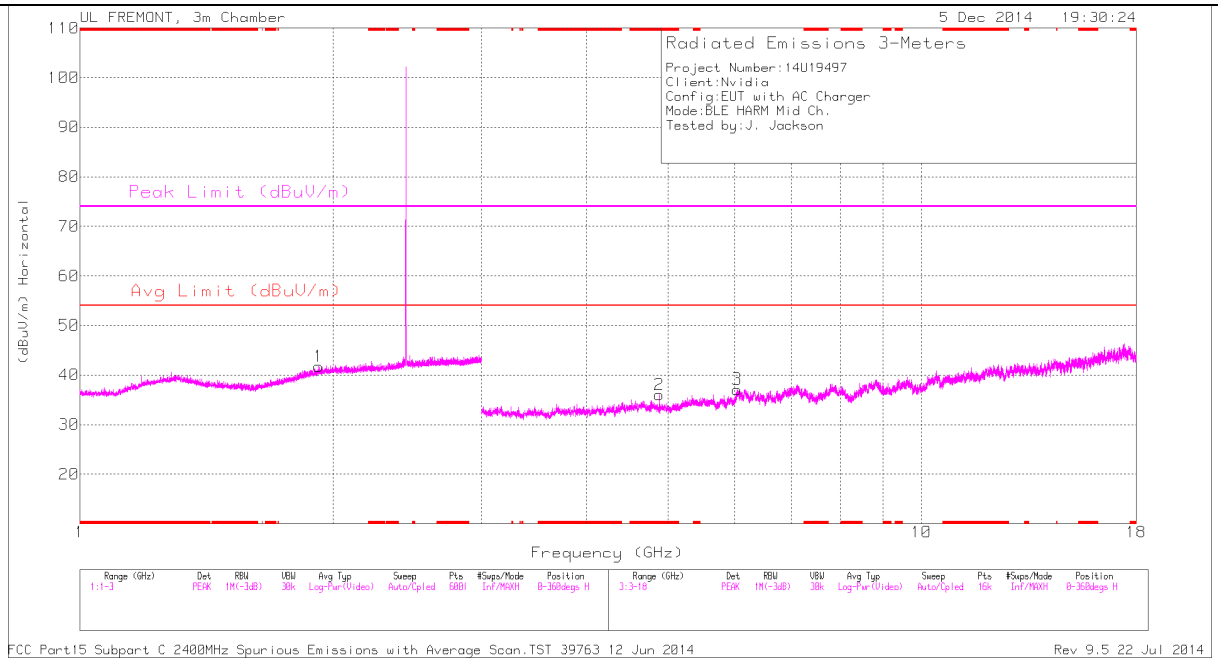
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.804	45.36	PK2	34.1	-30.3	0	49.16	-	-	74	-24.84	0	233	H
* 4.804	36.23	MAv1	34.1	-30.3	2.1	42.13	54	-11.87	-	-	0	233	H
* 4.805	47.06	PK2	34.1	-30.3	0	50.86	-	-	74	-23.14	147	243	V
* 4.804	39.85	MAv1	34.1	-30.3	2.1	45.75	54	-8.25	-	-	147	243	V

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band
PK - Peak detector
RMS - RMS detection

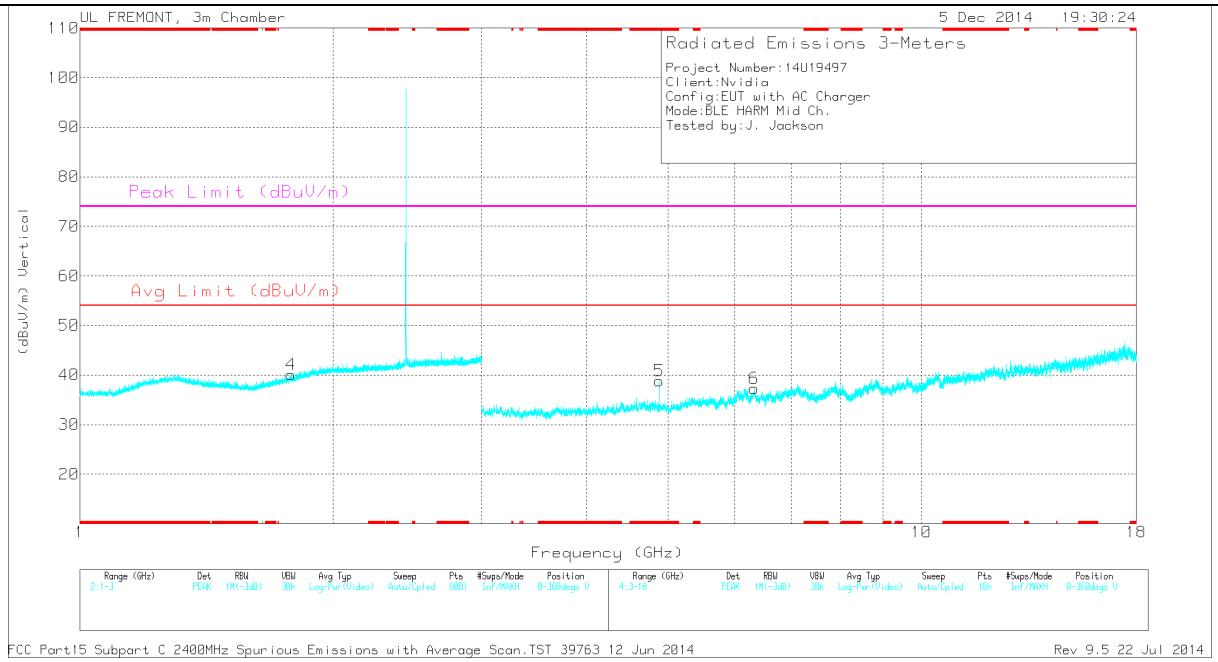
NOTE:

SPURIOUS (MID CHANNEL)

HORIZONTAL PLOT



VERTICAL PLOT



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 T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.88	32.23	PK	34	-30.2	0	36.03	-	-	74	-37.97	0-360	200	H
5	* 4.881	35.04	PK	34	-30.2	0	38.84	-	-	74	-35.16	0-360	200	V
4	1.781	33.64	PK	29.9	-23.4	0	40.14	-	-	-	-	0-360	200	V
1	1.922	33.64	PK	31.3	-23.2	0	41.74	-	-	-	-	0-360	200	H
3	6.04	31.11	PK	35.3	-29.3	0	37.11	-	-	-	-	0-360	200	H
6	6.329	30.88	PK	35.4	-29	0	37.28	-	-	-	-	0-360	100	V

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

Radiated Emissions

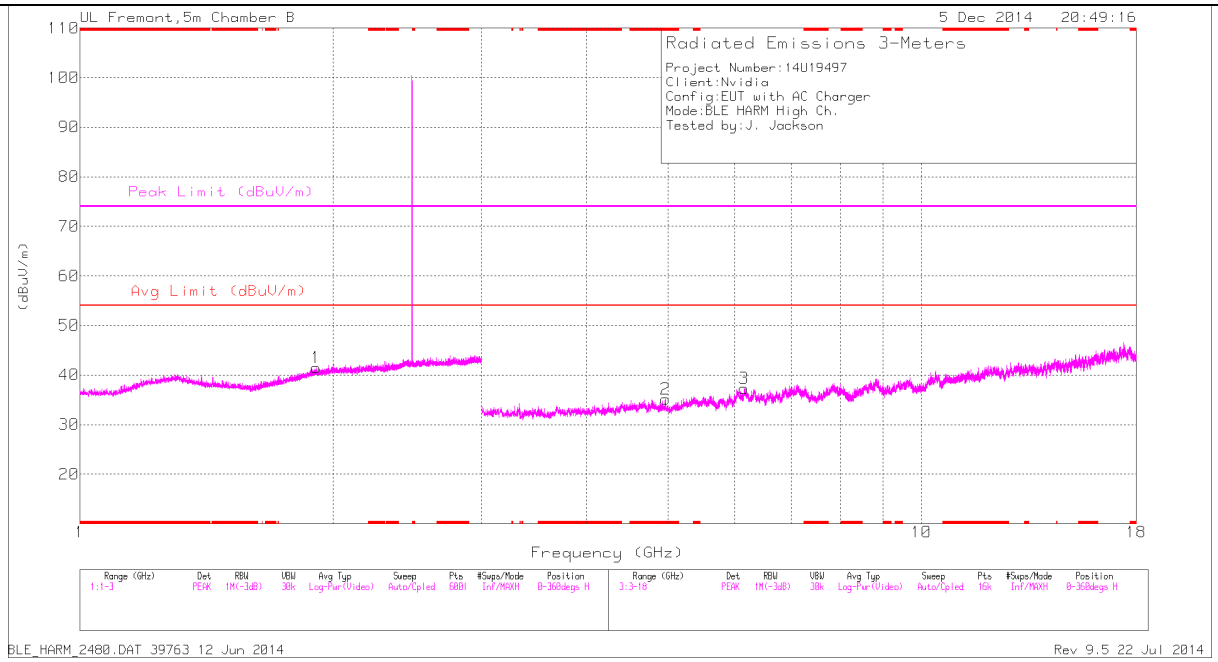
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.88	41.54	PK2	34	-30.2	0	45.34	-	-	74	-28.66	351	282	H
* 4.88	30.35	MAv1	34	-30.2	2.1	36.25	54	-17.75	-	-	351	282	H
* 4.878	41.15	PK2	34	-30.2	0	44.95	-	-	74	-29.05	172	130	V
* 4.88	29.59	MAv1	34	-30.2	2.1	35.49	54	-18.51	-	-	172	130	V

* - indicates frequency in CFR15.205/IC 8.10 Restricted Band
PK - Peak detector
RMS - RMS detection

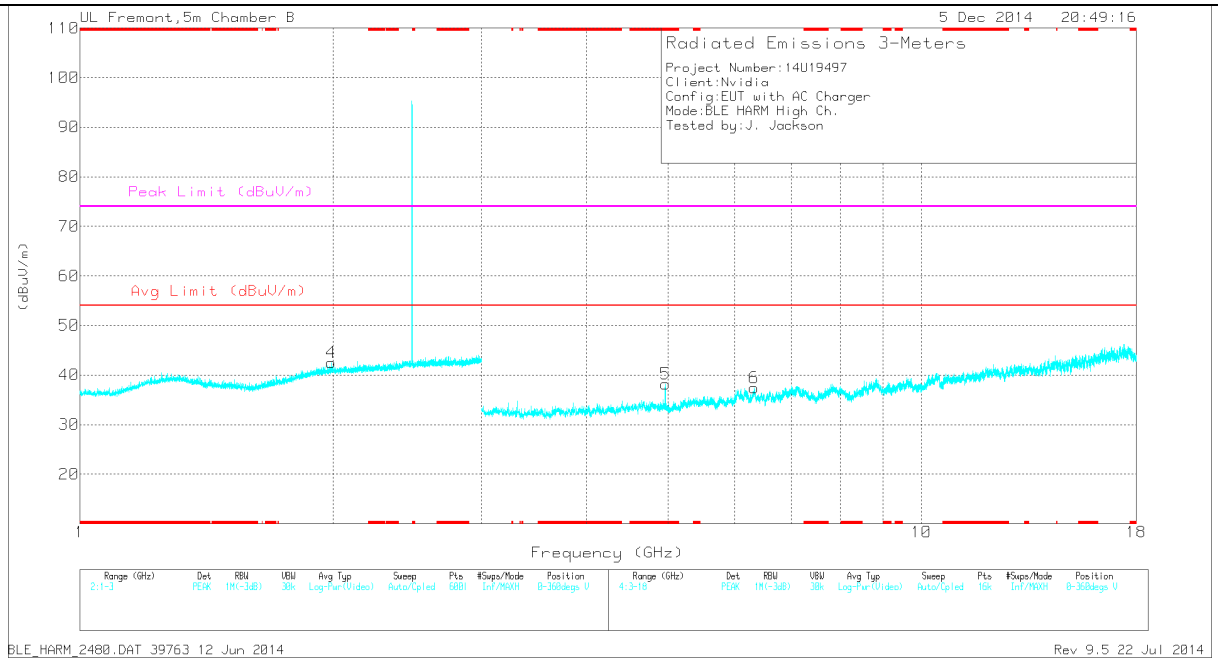
NOTE:

SPURIOUS (HIGH CHANNEL)

HORIZONTAL PLOT



VERTICAL PLOT



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 T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.96	32.12	PK	34	-31	0	35.12	-	-	74	-38.88	0-360	200	H
5	* 4.96	35.16	PK	34	-31	0	38.16	-	-	74	-35.84	0-360	200	V
1	1.907	33.34	PK	31.3	-23.2	0	41.44	-	-	-	-	0-360	200	H
4	1.988	34.08	PK	31.6	-23.2	0	42.48	-	-	-	-	0-360	200	V
3	6.158	31.71	PK	35.3	-29.7	0	37.31	-	-	-	-	0-360	200	H
6	6.322	31.32	PK	35.4	-29.3	0	37.42	-	-	-	-	0-360	200	V

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

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.96	42.56	PK2	34	-31	0	45.56	-	-	74	-28.44	125	153	H
* 4.96	30.63	MAv1	34	-31	2.1	35.73	54	-18.25	-	-	125	153	H
* 4.959	44.21	PK2	34	-31	0	47.21	-	-	74	-26.79	140	258	V
* 4.96	34.23	MAv1	34	-31	2.1	39.33	54	-14.67	-	-	140	258	V

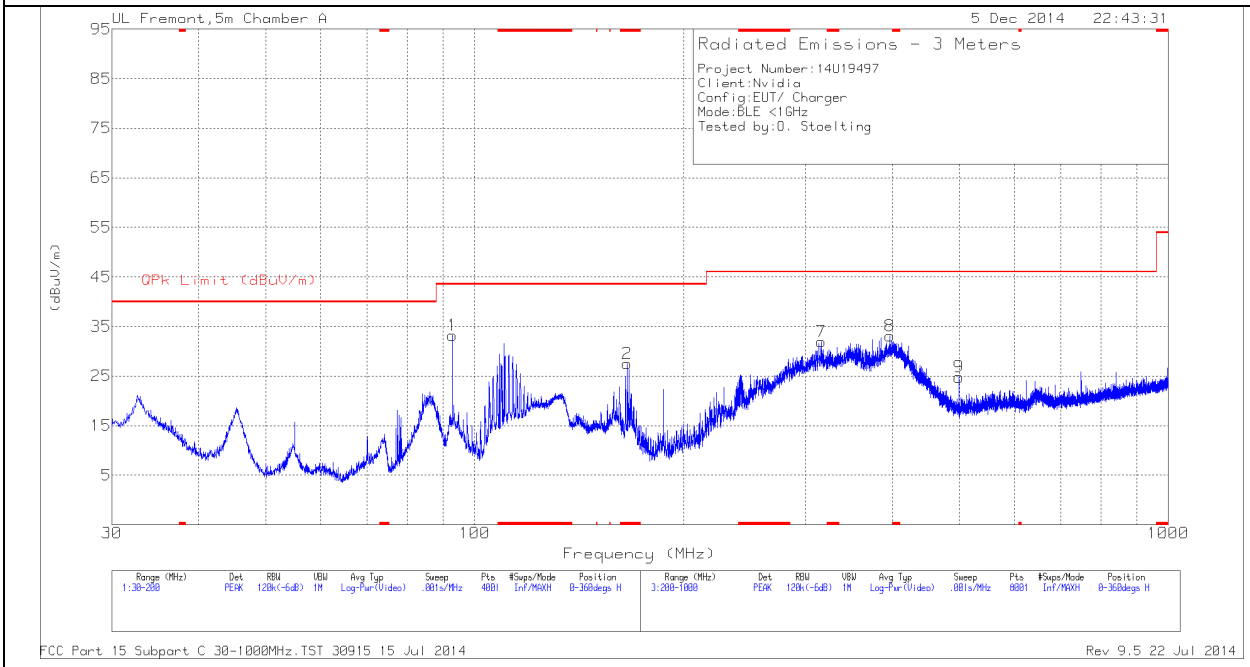
* - indicates frequency in CFR15.205/IC 8.10 Restricted Band
PK - Peak detector
RMS - RMS detection

NOTE:

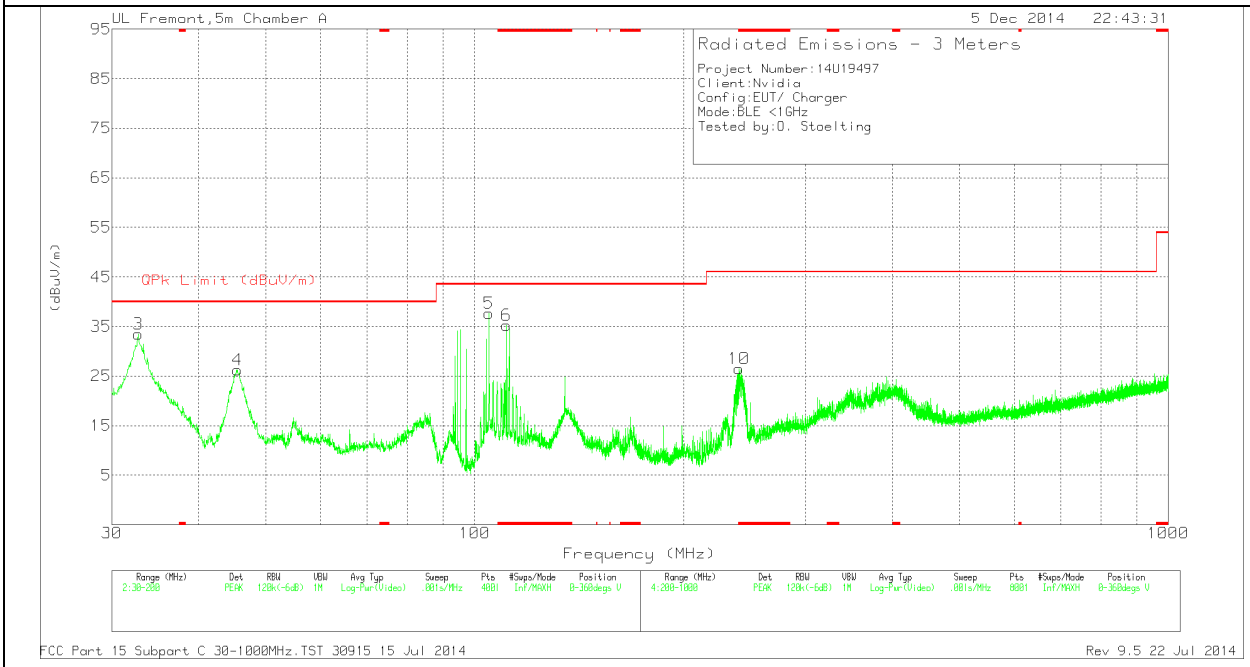
10.1. TRANSMITTER BELOW 1 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



Note: --

BELOW 1 GHz TABLE

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T130 (dB/m)	Amp/Cbl (dB/m)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 165.9575	46	PK	11.7	-30.2	27.5	43.52	-16.02	0-360	400	H
6	* 111.26	52.82	PK	12.8	-30.4	35.22	43.52	-8.3	0-360	101	V
10	* 240.4	44.65	PK	11.5	-29.7	26.45	46.02	-19.57	0-360	101	V
3	32.7625	45.48	PK	19.2	-31.2	33.48	40	-6.52	0-360	101	V
4	45.5125	47.06	PK	10.3	-31.1	26.26	40	-13.74	0-360	101	V
1	92.9	55.57	PK	8.3	-30.6	33.27	43.52	-10.25	0-360	400	H
5	104.885	56.69	PK	11.5	-30.5	37.69	43.52	-5.83	0-360	101	V
7	316.2	47.38	PK	13.9	-29.3	31.98	46.02	-14.04	0-360	101	H
8	396.6	47.14	PK	15.1	-29.1	33.14	46.02	-12.88	0-360	101	H
9	499.2	35.88	PK	17.6	-28.7	24.78	46.02	-21.24	0-360	200	H

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

PK - Peak detector

Note: --

11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS AND PROCEDURE

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

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

*Decreases with the logarithm of the frequency.

TEST PROCEDURE

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

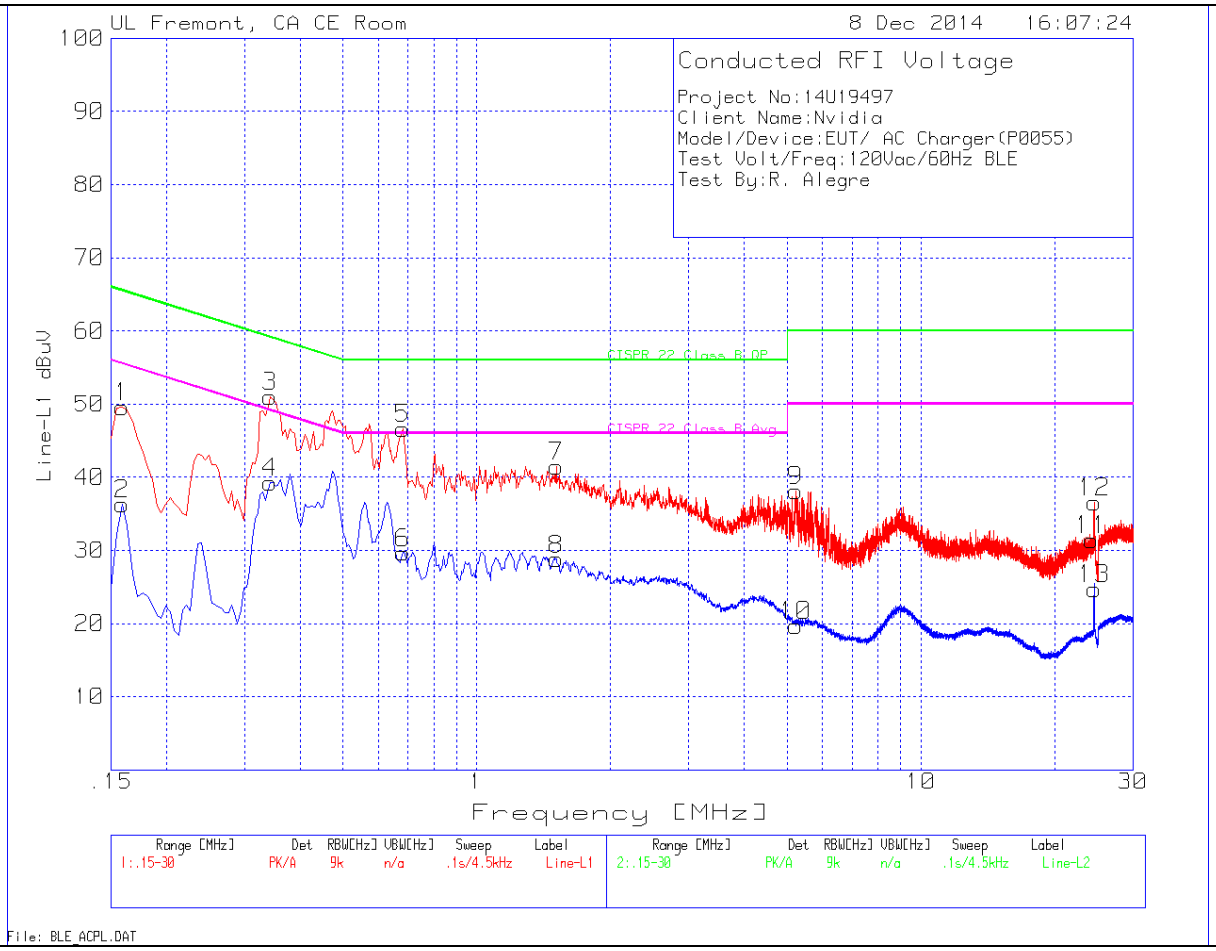
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

6 WORST EMISSIONS

LINE 1 PLOT

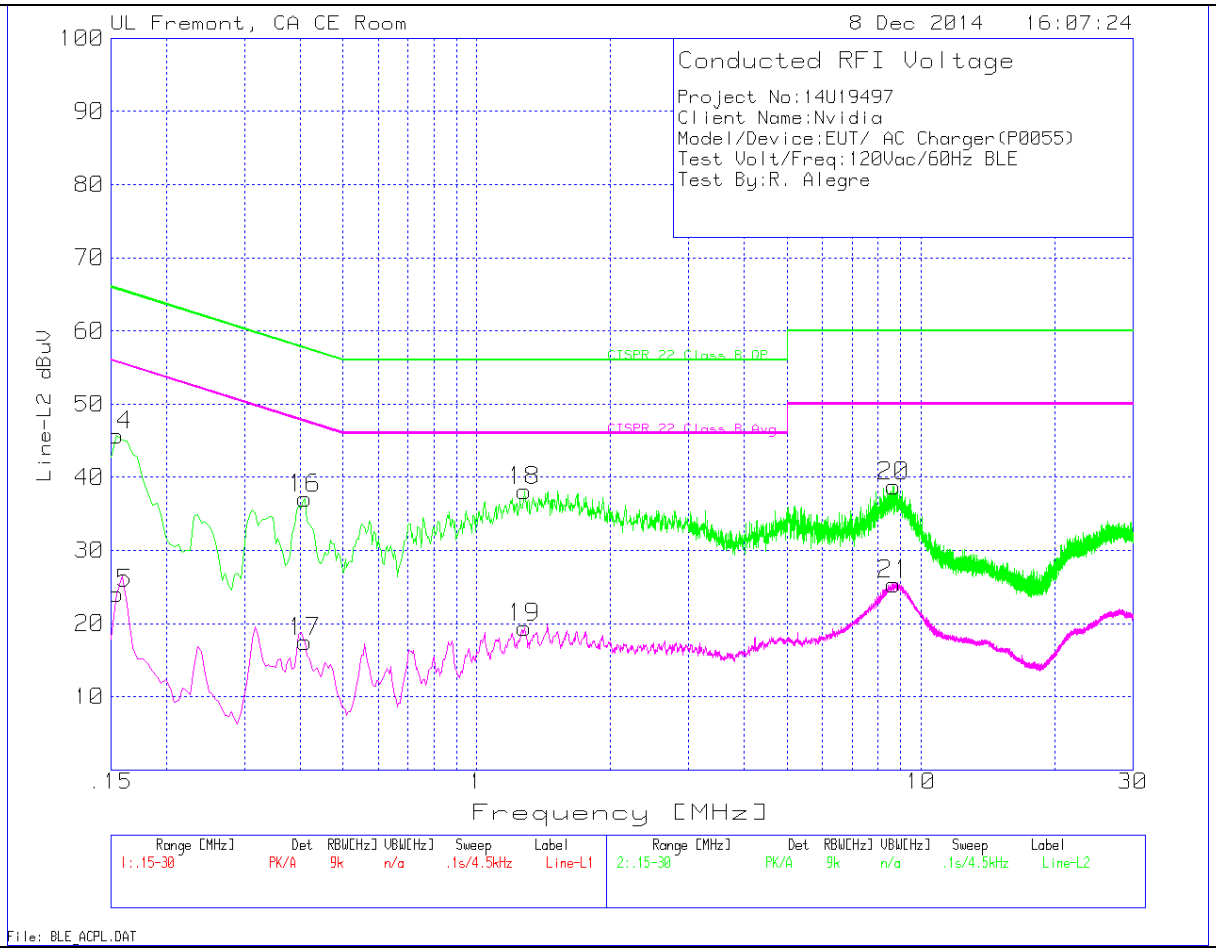


LINE 1 DATA

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	48.31	PK	1.3	0	49.61	65.5	-15.89	-	-
2	.159	34.96	Av	1.3	0	36.26	-	-	55.5	-19.24
3	.3435	50.56	PK	.5	0	51.06	59.1	-8.04	-	-
4	.3435	38.79	Av	.5	0	39.29	-	-	49.1	-9.81
5	.681	46.36	PK	.3	0	46.66	56	-9.34	-	-
6	.681	29.37	Av	.3	0	29.67	-	-	46	-16.33
7	1.509	41.17	PK	.2	.1	41.47	56	-14.53	-	-
8	1.509	28.47	Av	.2	.1	28.77	-	-	46	-17.23
9	5.217	37.81	PK	.2	.1	38.11	60	-21.89	-	-
10	5.217	19.37	Av	.2	.1	19.67	-	-	50	-30.33
11	24.2295	30.87	PK	.3	.3	31.47	60	-28.53	-	-
12	24.558	35.93	PK	.3	.3	36.53	60	-23.47	-	-
13	24.558	24.11	Av	.3	.3	24.71	-	-	50	-25.29

LINE 2 PLOT



LINE 2 DATA

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)
14	.1545	44.28	PK	1.4	0	45.68	65.8	-20.12	-	-
15	.1545	22.64	Av	1.4	0	24.04	-	-	55.8	-31.76
16	.411	36.63	PK	.4	0	37.03	57.6	-20.57	-	-
17	.411	17.06	Av	.4	0	17.46	-	-	47.6	-30.14
18	1.2795	37.86	PK	.2	.1	38.16	56	-17.84	-	-
19	1.2795	19.12	Av	.2	.1	19.42	-	-	46	-26.58
20	8.7	38.43	PK	.2	.1	38.73	60	-21.27	-	-
21	8.7	25.01	Av	.2	.1	25.31	-	-	50	-24.69