FCC CFR47 PART 15 SUBPART C

BLUETOOTH LOW ENERGY CERTIFICATION TEST REPORT

FOR

CDMA/LTE PHONE WITH BT & DTS WLAN b/g/n

MODEL NUMBER: LGL62VL, L62VL, LG-L62VL

FCC ID: ZNFL62VL

REPORT NUMBER: 15I22333-E3V1

ISSUE DATE: 12/14/2015

Prepared for
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	12/14/2015		D. CORONIA

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	LG ELECTRONICS MOBILECOMM U.S.A., INC.
EUT DESCRIPTION:	CDMA/LTE PHONE WITH BT & DTS WLAN b/g/n
MODEL:	LGL62VL, L62VL, LG-L62VL
SERIAL NUMBER:	511KPWQ000233, 511KPXV000234, 511KPKN0002299, 511KPUU000230
DATE TESTED:	NOVEMBER 24-30, 2015

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

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

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

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013 for FCC, FCC CFR 47 Part 2, and 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	☐ Chamber D
☒ Chamber B	☐ Chamber E
☐ Chamber C	☐ Chamber F
	☐ Chamber G
	☐ Chamber H

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

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

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

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

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

4.3. MEASUREMENT UNCERTAINTY

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

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

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a CDMA/LTE PHONE WITH BT & DTS WLAN b/g/n

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	0.70	1.17

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a maximum gain of 0.24dBi.

5.4. WORST-CASE CONFIGURATION AND MODE

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

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

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
AC Adapter	LG	MCS-02WRE	N/A	N/A
Earphone	LG	N/A	N/A	N/A

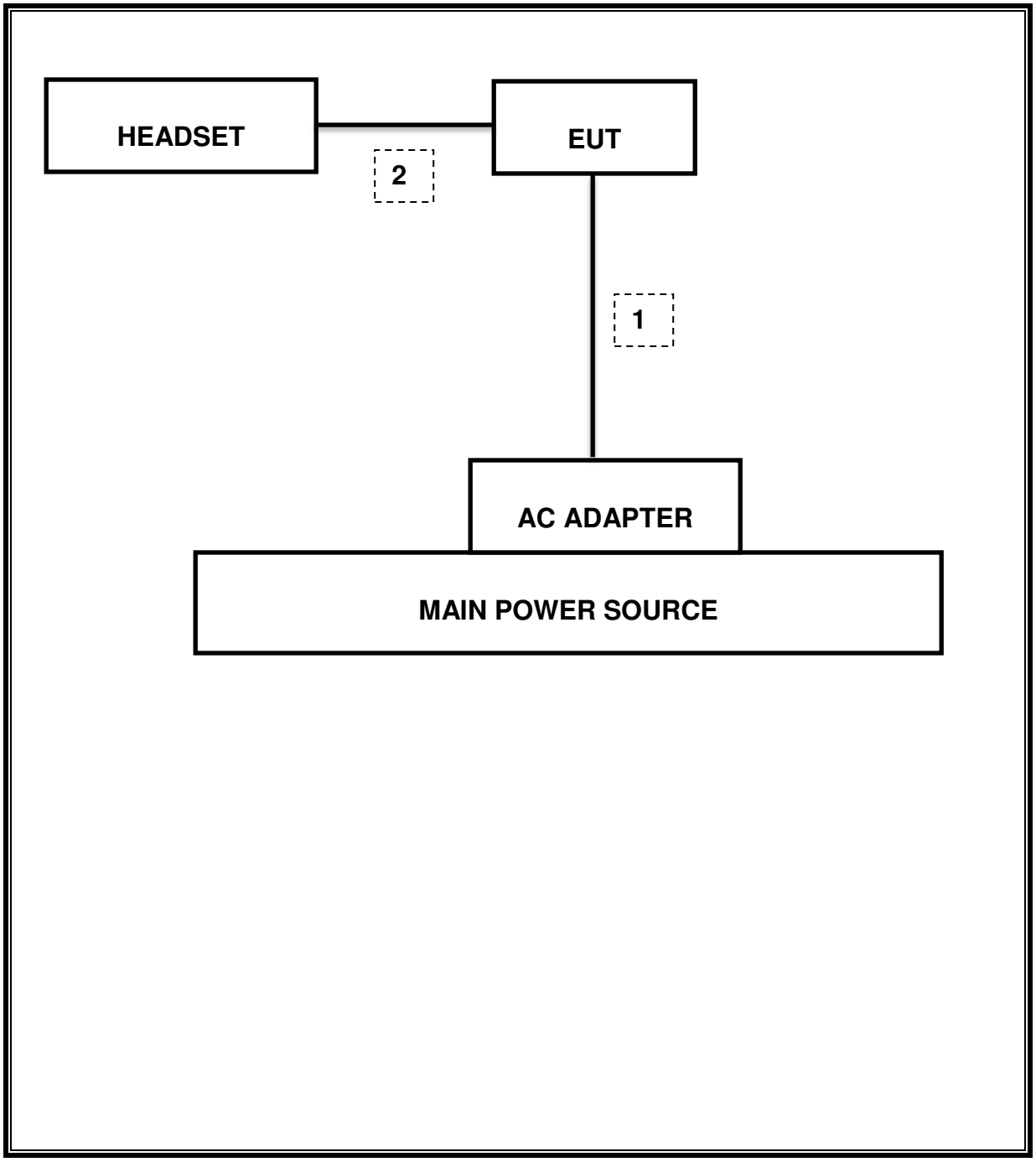
I/O CABLES

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

TEST SETUP

EUT was set in the Hidden menu mode to enable BLE communications.

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**	**T Number**	**Cal Due**
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB1	130	09/01/16
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB1	477	06/10/16
Antenna, Horn, 18GHz	EMCO	3115	59	11/18/16
Antenna, Horn, 18GHz	ETS Lindgren	3117	345	03/03/16
Antenna, Horn, 18GHz	ETS Lindgren	3117	136	03/03/16
Antenna, Horn, 18GHz	ETS Lindgren	3117	863	04/10/16
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	447	05/12/16
RF Preamplifier, 1GHz - 18GHz	Miteq	NSP4000-SP2	88	04/07/16
RF Preamplifier, 1GHz - 26.5GHz	HP	8449B	404	06/29/16
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	123	10/22/16
Spectrum Analyzer, PXA, 3 Hz to 44 GHz	Keysight	N9030A	908	03/03/16
Spectrum Analyzer, PXA, 3 Hz to 44 GHz	Keysight	N9030A	907	01/07/16
EMI Test Receiver, 9 KHz to 7 GHz	Rohde & Schwarz	ECSI7	284	09/10/16
Peak Power Meter	Agilent / HP	E4416A	84	01/26/16
Peak / Average Power Sensor	Keysight	E9327A	117	03/09/16
LISN, 30 MHz	FCC	50/250-25-2	24	01/16/16
Reject Filter, 2.4GHz	Micro-Tronics	BRM50702	160	CNR
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	417	05/04/16
High Pass Filter 6GHz	Micro-Tronics	HPS17542	893	04/25/16
High Pass Filter 3GHz	Micro-Tronics	HPS17543	898	04/25/16

Test Software List			
Description	**Manufacturer**	**Model**	**Version**
Radiated Software	UL	UL EMC	Ver 9.5, June 24, 2015
Conducted Software	UL	UL EMC	Ver 9.5, May 26, 2015
CLT Software	UL	UL RF	Ver 1.0, Feb 2, 2015
Antenna Port Software	UL	UL RF	Ver 3.7, Nov 12, 2015

7. SUMMARY TABLE

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Worst Case
15.247 (a)(2)	RSS-247 5.2.1	Occupied Band width (6dB)	>500KHz	Conducted	Pass	0.647 MHz
2.1051, 15.247 (d)	RSS-247 5.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-49.76 dBm
15.247	RSS-247 5.4.4	TX conducted output power	<30dBm		Pass	0.70 dBm
15.247	RSS-247 5.2.2	PSD	<8dBm		Pass	-15.09 dBm
15.207 (a)	RSS-GEN 8.8	AC Power Line conducted emissions	Section 10	Radiated	Pass	46.61 dBuV(PK)
15.205, 15.209	RSS-GEN 8.9/7	Radiated Spurious Emission	< 54dBuV/m		Pass	41.95 dBuV/m

8. ANTENNA PORT TEST RESULTS

8.1. ON TIME, DUTY CYCLE

LIMITS

None; for reporting purposes only

PROCEDURE

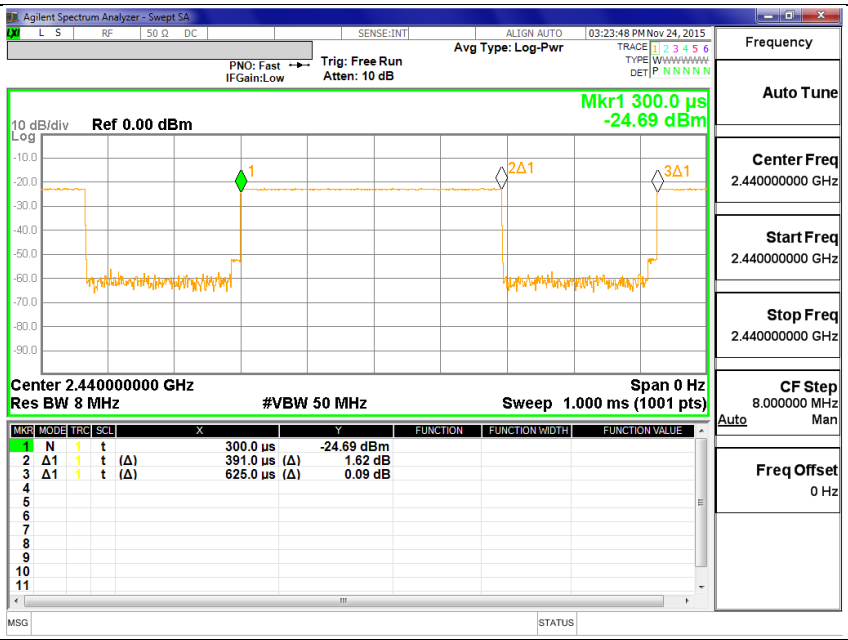
KDB 558074 Zero-Span Spectrum Analyzer Method

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	0.391	0.625	0.625	62.54%	2.04	2.557

DUTY CYCLE PLOTS



NOTE: --

8.2. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

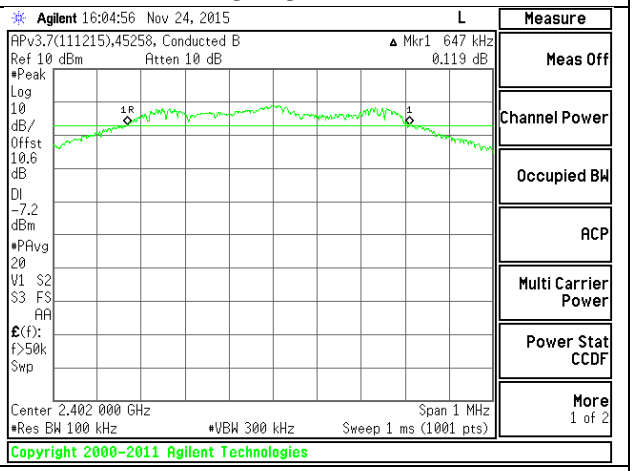
RESULTS

8.2.1. 6 dB BANDWIDTH PLOTS AND TABLE

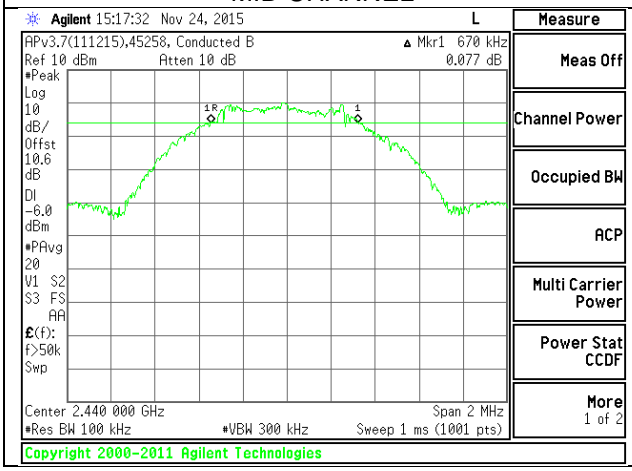
TEST RESULT TABLE

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)
Low	2402	0.647
Middle	2440	0.670
High	2480	0.663
Worst		0.670

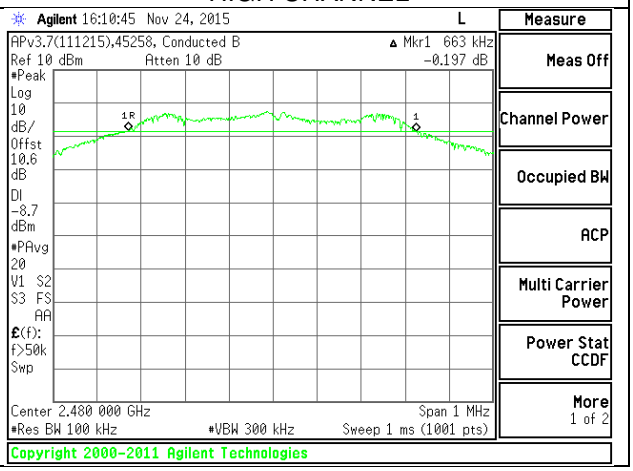
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



8.3. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Reference to KDB558074 D01 DTS Meas Guidance v03r03: 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.

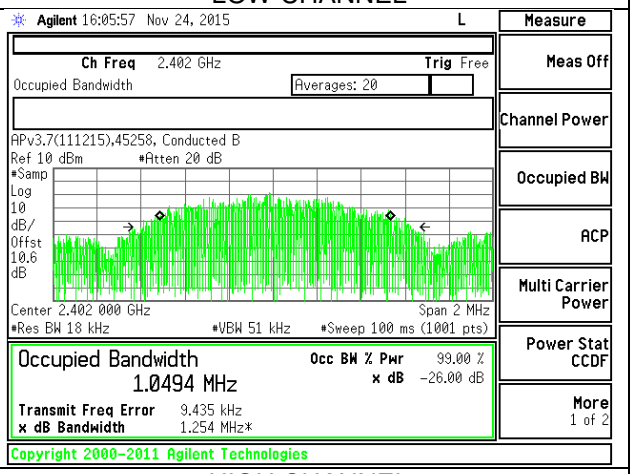
RESULTS

8.3.1. 99% BANDWIDTH PLOTS AND TABLE

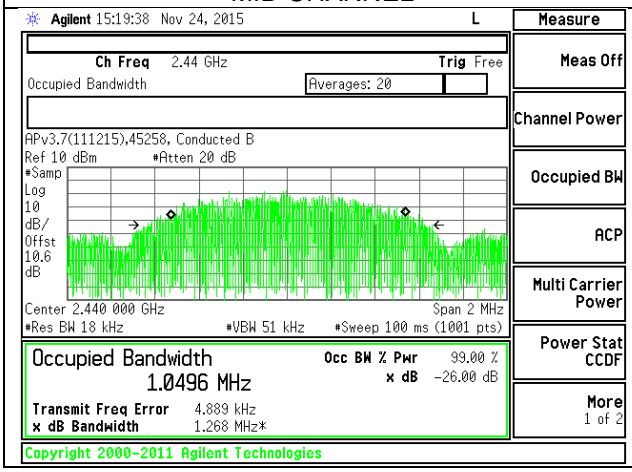
TEST RESULT TABLE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.049
Middle	2440	1.050
High	2480	1.054
Worst		1.054

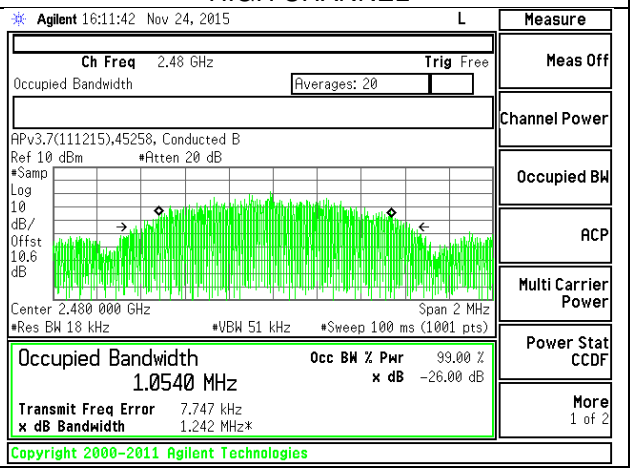
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



8.4. OUTPUT POWER

LIMITS

FCC §15.247 (b)

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

TEST PROCEDURE

Peak power is measured using KDB558074 D01 DTS Meas Guidance v03r03 spectrum analyzer.

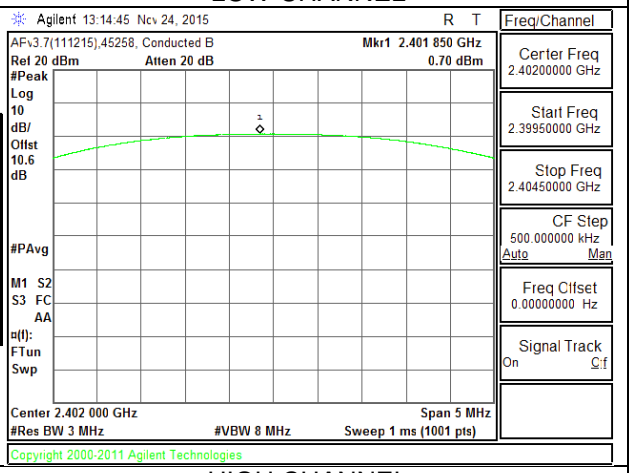
RESULTS

8.4.1. OUTPUT POWER PLOTS

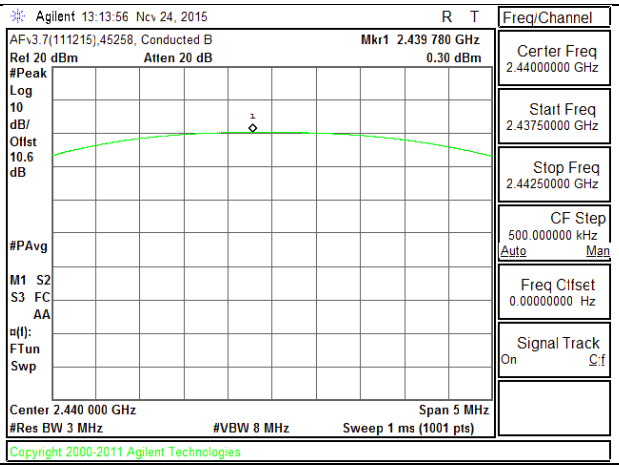
TEST RESULT TABLE

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	0.70	30	-29.30
Middle	2440	0.30	30	-29.70
High	2480	-2.12	30	-32.12
Worst		0.70		-29.30

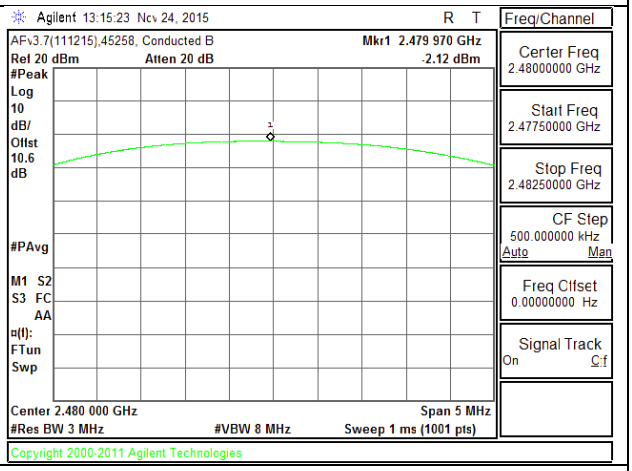
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



NOTE:

8.5. 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 10.7 dB (including 10 dB pad and 0.7 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	-1.4
Middle	2440	-0.2
High	2480	-2.5
Worst		-0.2

NOTE: --

8.6. 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.

TEST PROCEDURE

Power Spectral Density was performed utilizing the “Method PKPSD (Peak PSD)” under KDB558074 D01 DTS Meas Guidance v03r03.

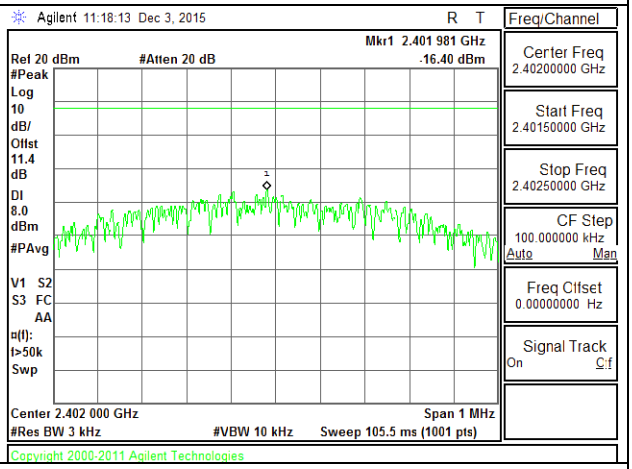
RESULTS

8.6.1. POWER SPECTRAL DENSITY PLOTS AND TABLE

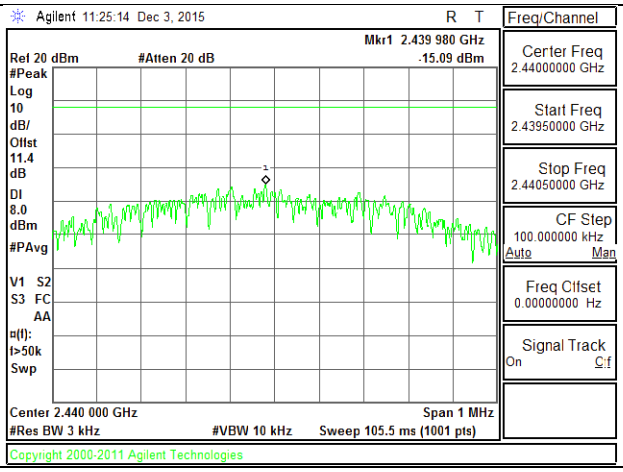
POWER SPECTRAL DENSITY TEST RESULT TABLE

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-16.4	8	-24.4
Middle	2440	-15.09	8	-23.09
High	2480	-17.34	8	-25.34

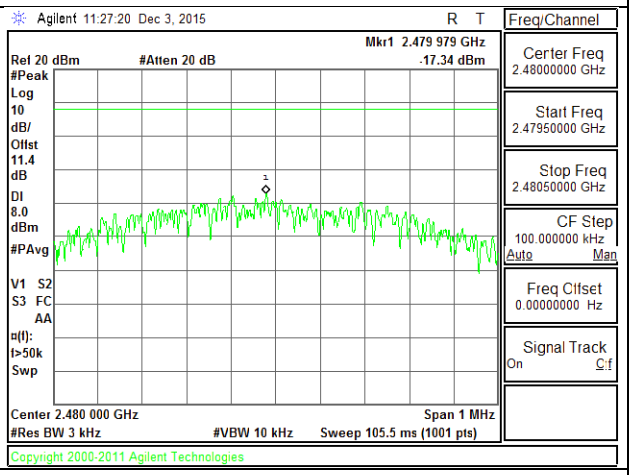
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



NOTE:

8.7. 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.

TEST PROCEDURE

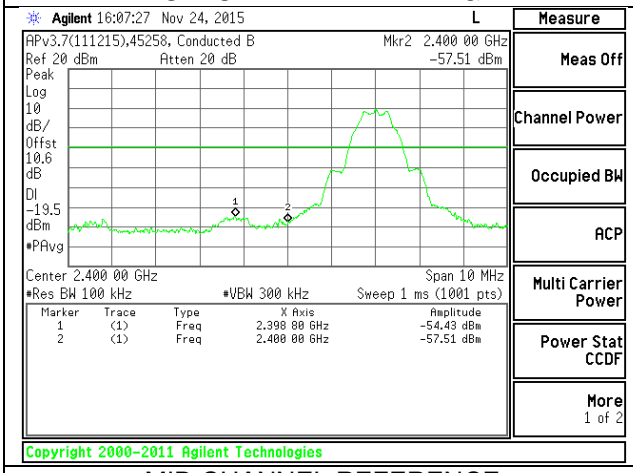
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

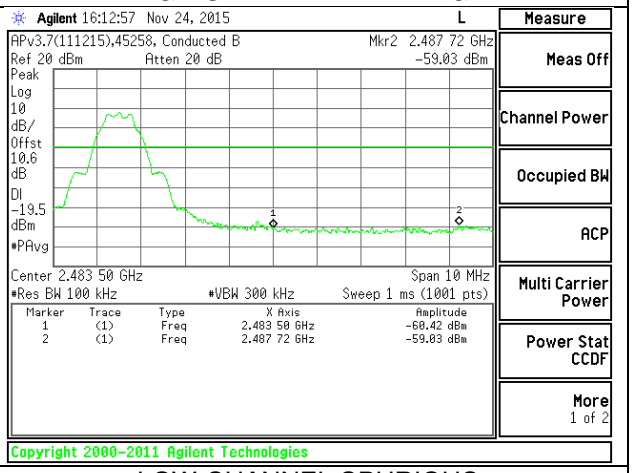
RESULTS

8.7.1. BANDEDGE AND SPURIOUS EMISSIONS PLOTS

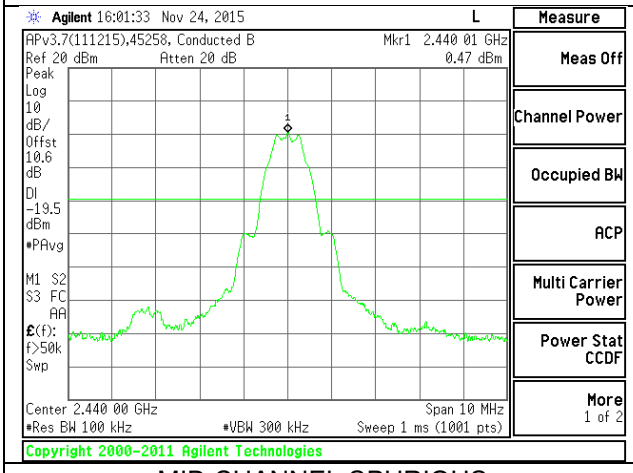
LOW CHANNEL BANDEDGE



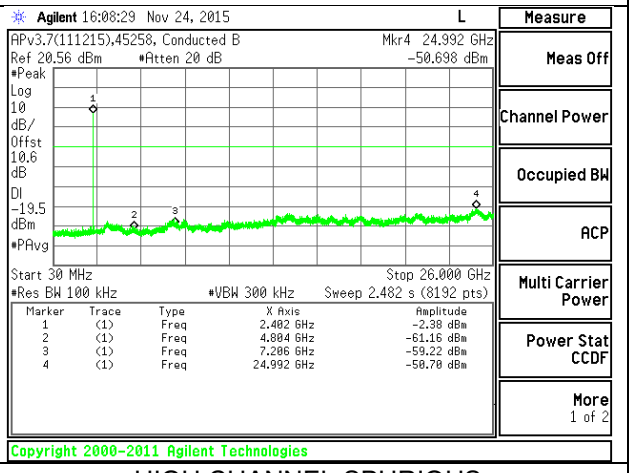
HIGH CHANNEL BANDEDGE



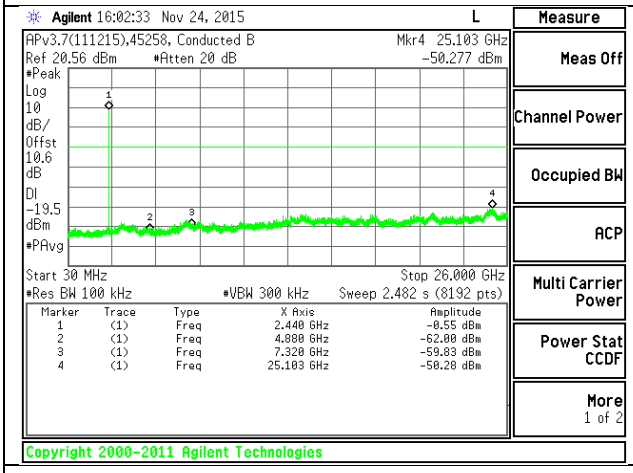
MID CHANNEL REFERENCE



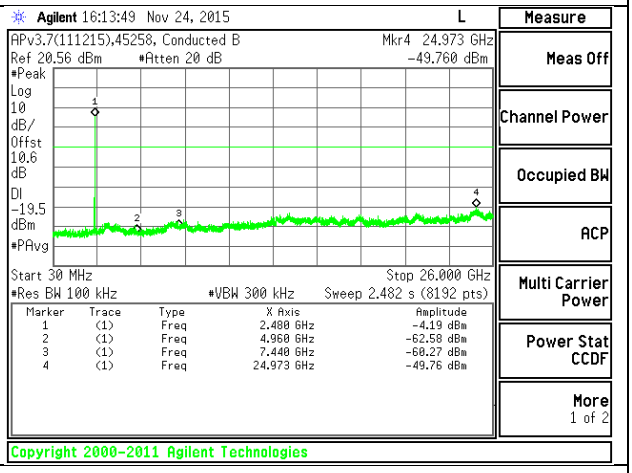
LOW CHANNEL SPURIOUS



MID CHANNEL SPURIOUS



HIGH CHANNEL SPURIOUS



NOTE:--

9. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209

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

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150cm for above 1GHz. The antenna to EUT distance is 3 meters. 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 (1/0.626)=2.04dB

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

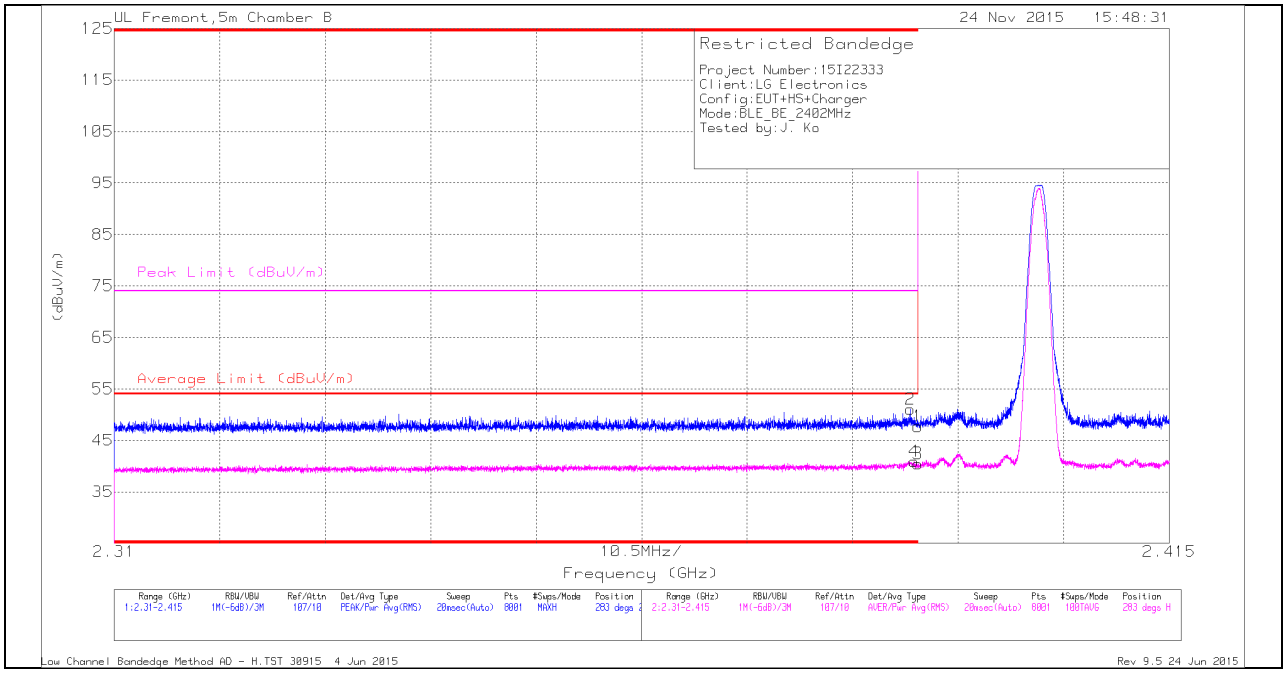
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

RESULTS

9.1. TRANSMITTER ABOVE 1 GHz

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

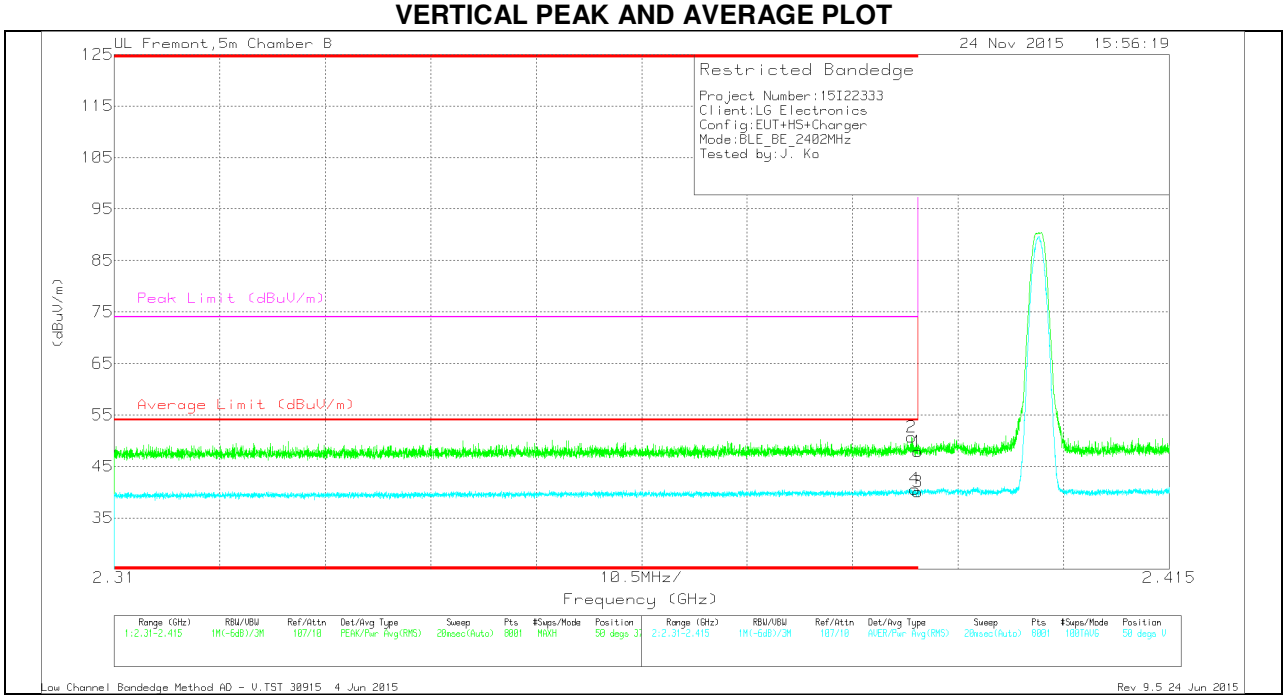
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.389	43.17	Pk	32	-24.1	0	51.07	-	-	74	-22.93	283	245	H
1	* 2.39	39.81	Pk	32	-24.1	0	47.71	-	-	74	-26.29	283	245	H
3	* 2.39	30.52	RMS	32	-24.1	2.04	40.46	54	-13.54	-	-	283	245	H
4	* 2.39	30.98	RMS	32	-24.1	2.04	40.92	54	-13.08	-	-	283	245	H

* - indicates frequency in CFR15.205/IC7.2.2 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/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.389	42.77	Pk	32	-24.1	0	50.67	-	-	74	-23.33	50	378	V
1	* 2.39	39.97	Pk	32	-24.1	0	47.87	-	-	74	-26.13	50	378	V
3	* 2.39	30.09	RMS	32	-24.1	2.04	40.03	54	-13.97	-	-	50	378	V
4	* 2.39	30.67	RMS	32	-24.1	2.04	40.61	54	-13.39	-	-	50	378	V

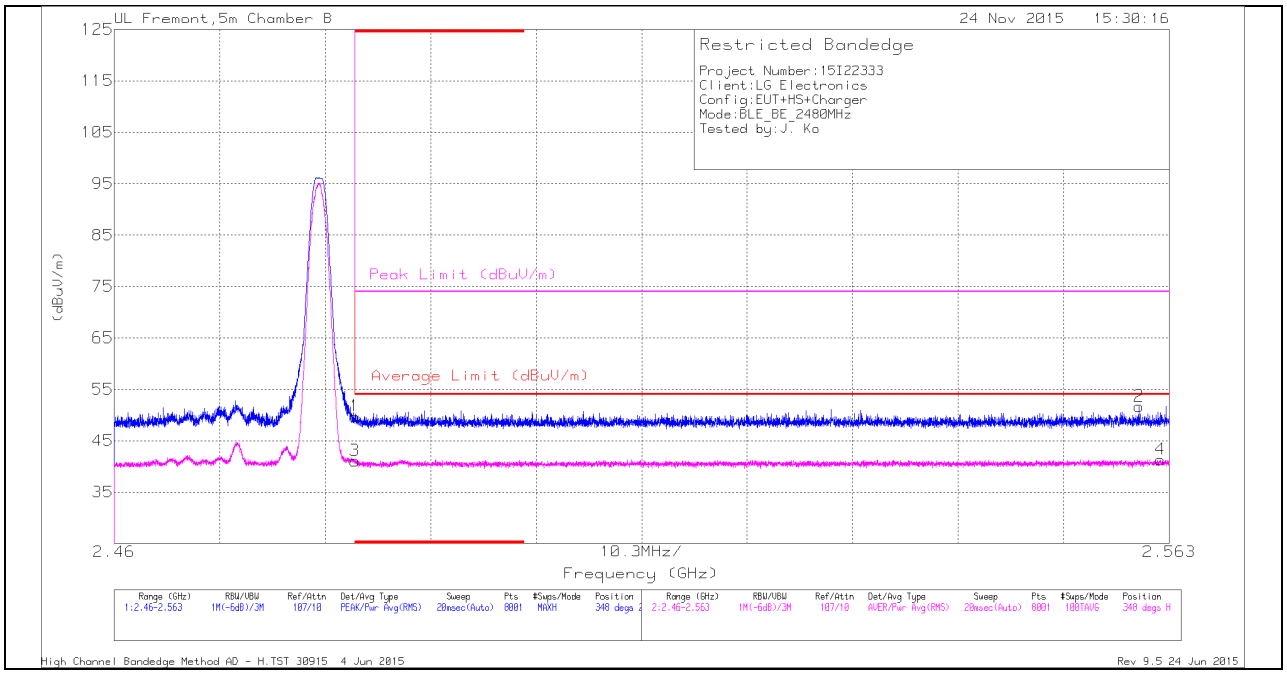
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

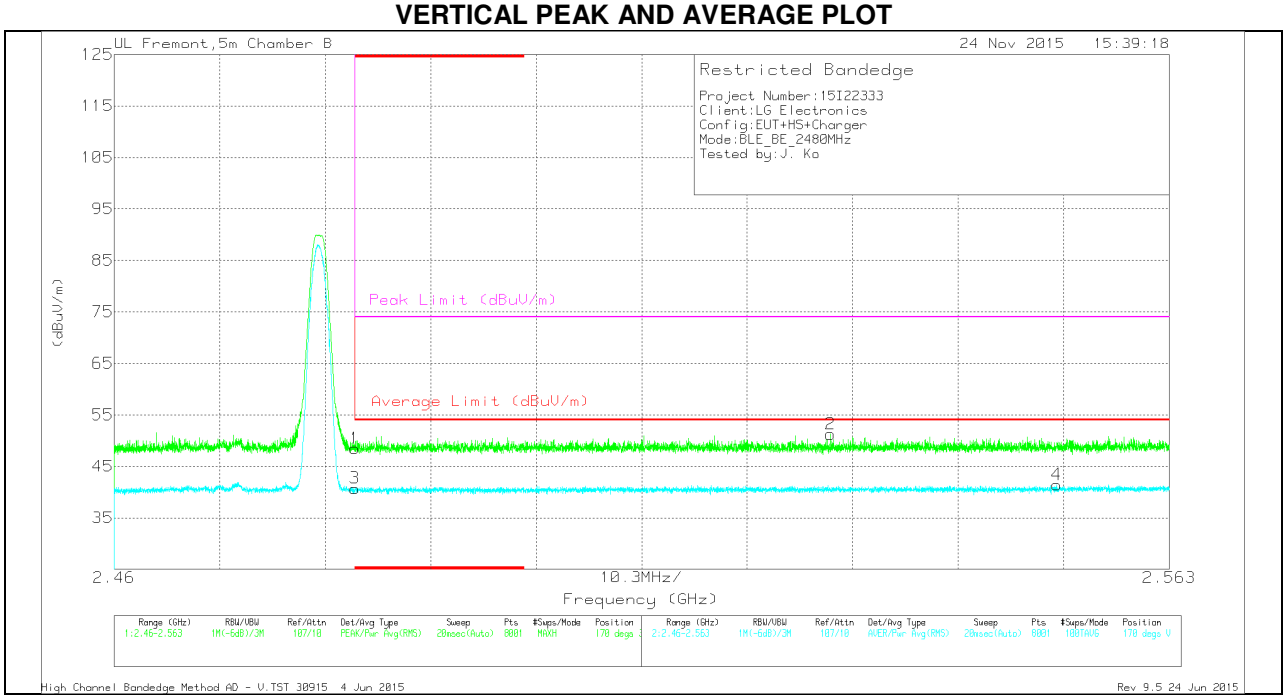
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	41.28	Pk	32.5	-24	0	49.78	-	-	74	-24.22	348	210	H
3	* 2.484	30.58	RMS	32.5	-24	2.04	41.12	54	-12.88	-	-	348	210	H
2	2.56	42.89	Pk	32.7	-23.9	0	51.69	-	-	74	-22.31	348	210	H
4	2.562	30.5	RMS	32.7	-23.9	2.04	41.34	54	-12.66	-	-	348	210	H

* - indicates frequency in CFR15.205/IC7.2.2 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/Flt r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	39.98	Pk	32.5	-24	0	48.48	-	-	74	-25.52	170	314	V
3	* 2.484	30.2	RMS	32.5	-24	2.04	40.74	54	-13.26	-	-	170	314	V
2	2.53	42.56	Pk	32.6	-23.9	0	51.26	-	-	74	-22.74	170	314	V
4	2.552	30.59	RMS	32.7	-23.9	2.04	41.43	54	-12.57	-	-	170	314	V

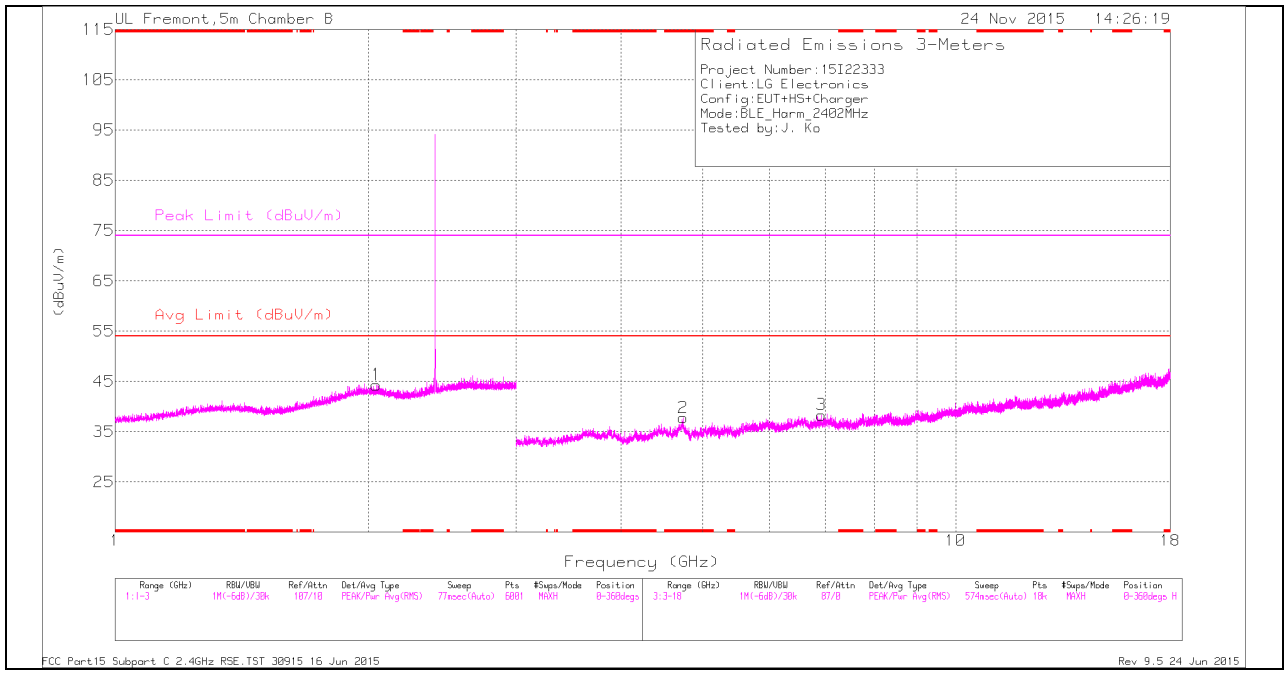
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

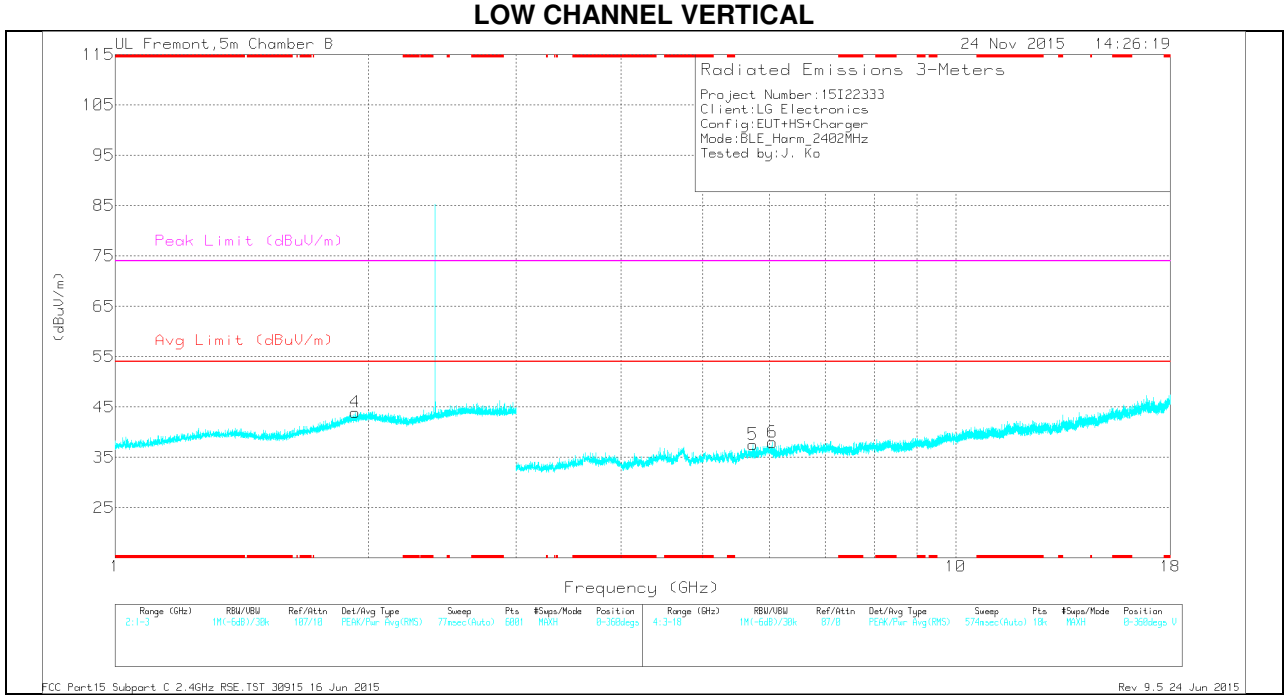
HARMONICS AND SPURIOUS EMISSIONS

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.

LOW CHANNEL VERTICAL



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

LOW CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.739	34.15	Pk	34.3	-30.7	0	37.75	-	-	74	-36.25	0-360	199	H
4	1.931	36.46	Pk	32	-24.5	0	43.96	-	-	-	-	0-360	101	V
1	2.045	36.71	Pk	32.1	-24.5	0	44.31	-	-	-	-	0-360	200	H
5	5.742	34.16	Pk	35.1	-31.7	0	37.56	-	-	-	-	0-360	199	V
6	6.051	33.98	Pk	35.6	-31.6	0	37.98	-	-	-	-	0-360	199	V
3	6.922	32.74	Pk	36.1	-30.5	0	38.34	-	-	-	-	0-360	199	H

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

Pk - Peak detector

RADIATED EMISSIONS

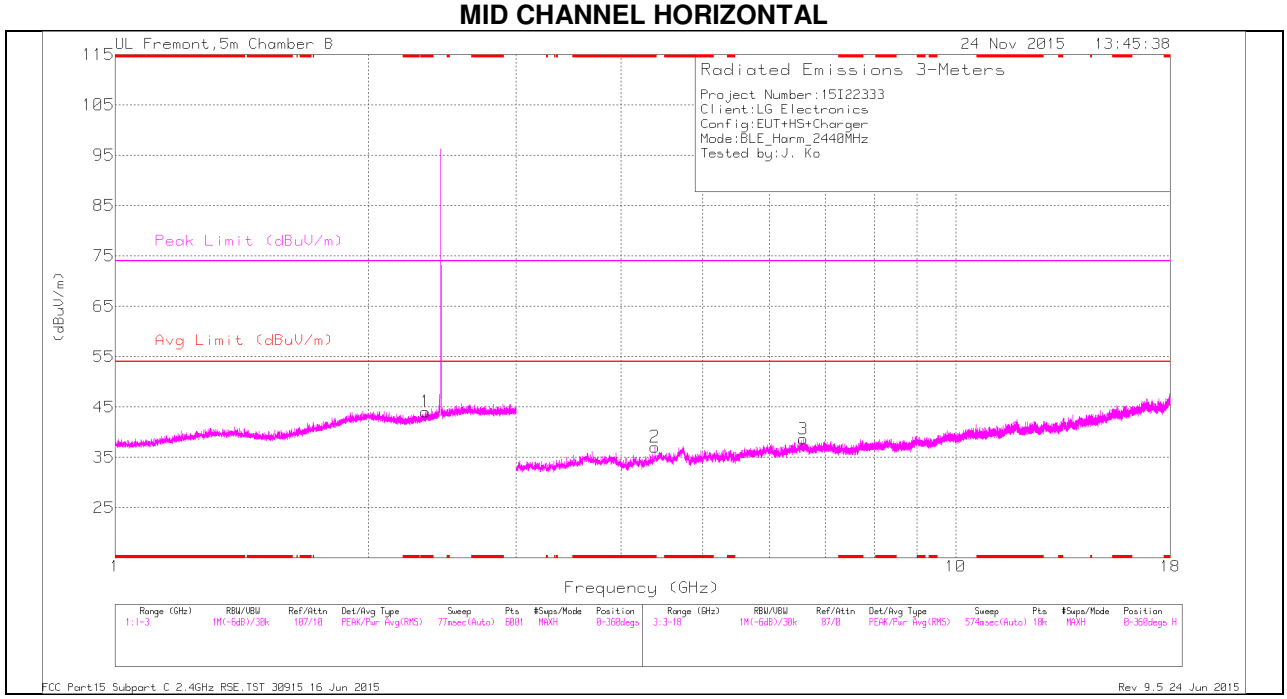
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.739	41.89	PK2	34.3	-30.7	0	45.49	-	-	74	-28.51	185	302	H
* 4.739	30.24	MAv1	34.3	-30.7	2.04	35.88	54	-18.12	-	-	185	302	H
1.931	44.28	PK2	32	-24.5	0	51.78	-	-	74	-22.22	1	103	V
1.933	32.4	MAv1	32	-24.5	2.04	41.94	54	-12.06	-	-	1	103	V
2.043	32.31	MAv1	32.1	-24.5	2.04	41.95	54	-12.05	-	-	1	199	H
2.045	44.37	PK2	32.1	-24.5	0	51.97	-	-	74	-22.03	1	199	H
5.74	41.77	PK2	35.1	-31.6	0	45.27	-	-	74	-28.73	185	200	V
5.741	30.58	MAv1	35.1	-31.7	2.04	36.02	54	-17.98	-	-	185	200	V
6.049	41.74	PK2	35.6	-31.6	0	45.74	-	-	74	- 28.26	185	200	V
6.051	29.66	MAv1	35.6	-31.6	2.04	35.7	54	-18.3	-	-	185	200	V
6.922	29.17	MAv1	36.1	-30.5	2.04	36.81	54	-17.19	-	-	185	200	H
6.923	40.08	PK2	36.1	-30.5	0	45.68	-	-	74	-28.32	185	200	H

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

PK2 - KDB558074 Method: Maximum Peak

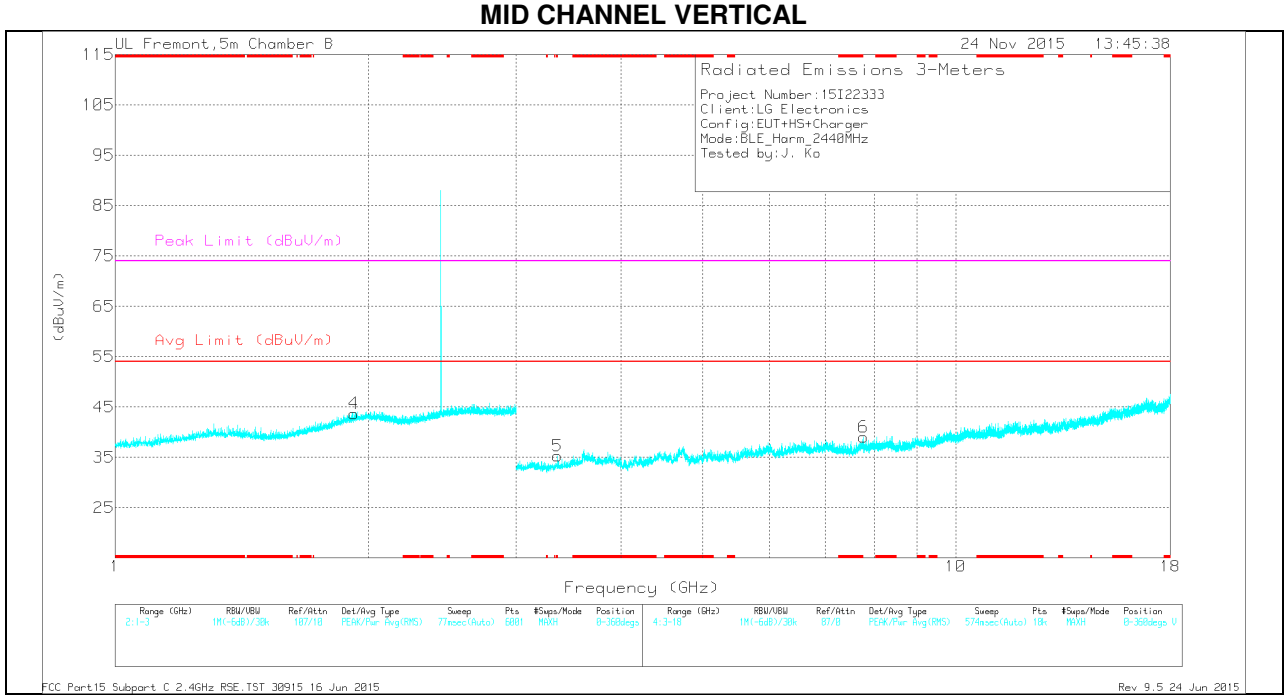
MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL HORIZONTAL



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

MID CHANNEL VERTICAL



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

MID CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.341	36.49	Pk	31.8	-24.2	0	44.09	-	-	74	-29.91	0-360	101	H
2	* 4.387	35.16	Pk	33.8	-31.9	0	37.06	-	-	74	-36.94	0-360	101	H
4	1.923	36.3	Pk	31.9	-24.5	0	43.7	-	-	-	-	0-360	101	V
5	3.361	34.98	Pk	32.9	-32.6	0	35.28	-	-	-	-	0-360	199	V
3	6.584	33.26	Pk	35.9	-30.5	0	38.66	-	-	-	-	0-360	199	H
6	7.767	32.02	Pk	35.5	-28.5	0	39.02	-	-	-	-	0-360	199	V

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

Pk - Peak detector

RADIATED EMISSIONS

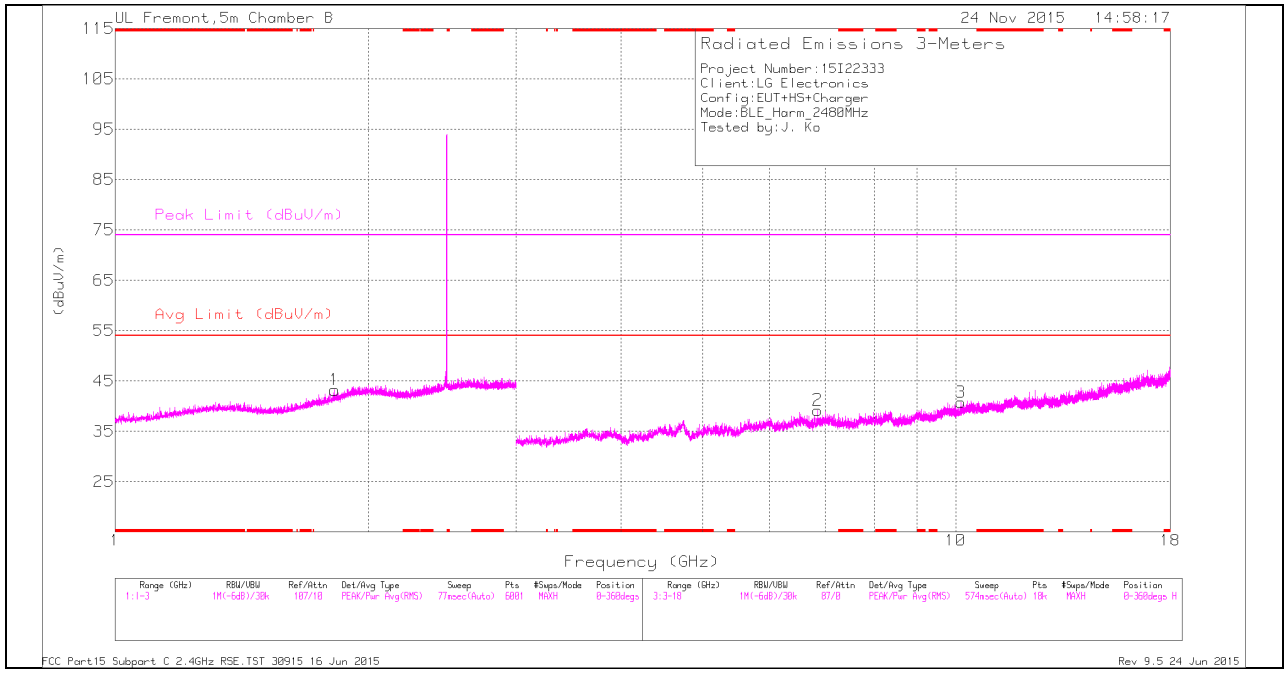
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.34	43.6	PK2	31.7	-24.2	0	51.1	-	-	74	-22.9	91	318	H
* 2.342	31.83	MAv1	31.8	-24.2	2.04	41.47	54	-12.53	-	-	91	318	H
* 4.385	41.88	PK2	33.8	-31.9	0	43.78	-	-	74	-30.22	31	374	H
* 4.386	30.32	MAv1	33.8	-31.9	2.04	34.26	54	-19.74	-	-	31	374	H
1.923	45.01	PK2	31.9	-24.6	0	52.31	-	-	74	-21.69	235	101	V
1.924	31.96	MAv1	31.9	-24.5	2.04	41.4	54	-12.6	-	-	235	101	V
3.36	30.53	MAv1	32.9	-32.6	2.04	32.87	54	-21.13	-	-	31	201	V
3.363	41.86	PK2	32.9	-32.6	0	42.16	-	-	74	-31.84	31	201	V
6.582	28.98	MAv1	35.9	-30.5	2.04	36.42	54	-17.58	-	-	31	201	H
6.583	40.25	PK2	35.9	-30.5	0	45.65	-	-	74	-28.35	31	201	H
7.766	39.02	PK2	35.5	-28.5	0	46.02	-	-	74	-27.98	31	201	V
7.767	27.55	MAv1	35.5	-28.5	2.04	36.59	54	-17.41	-	-	31	201	V

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

PK2 - KDB558074 Method: Maximum Peak

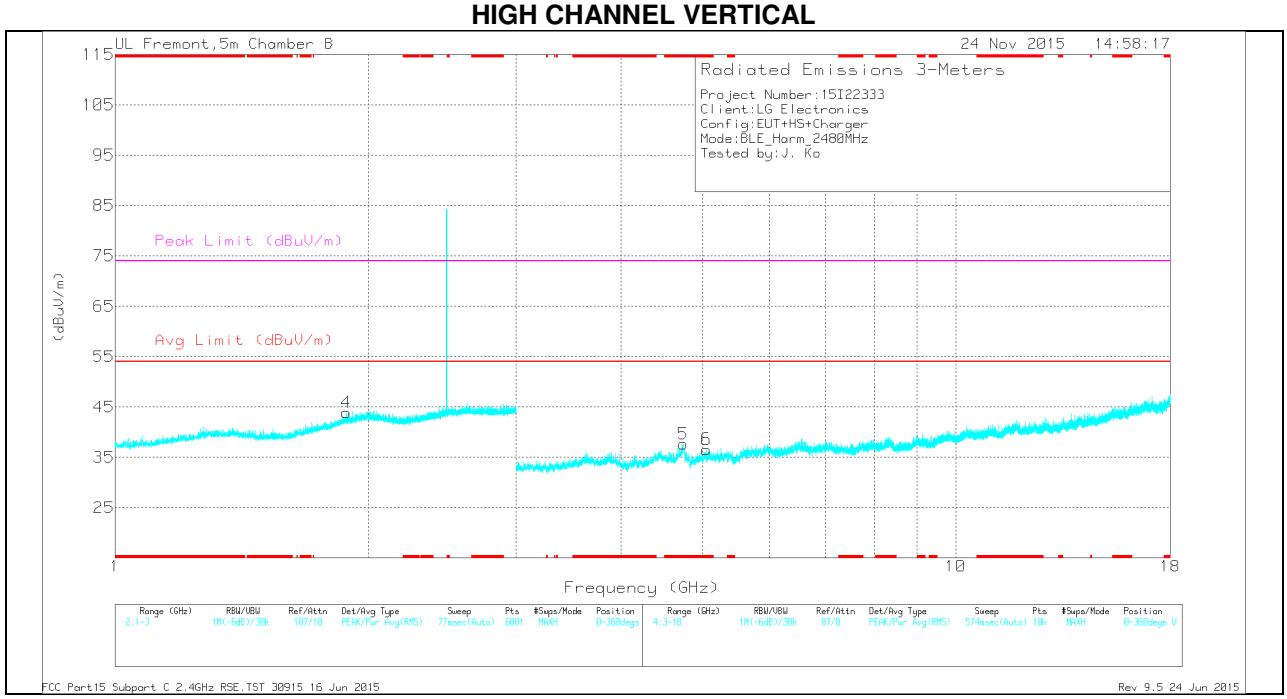
MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL HORIZONTAL



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

HIGH CHANNEL VERTICAL



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

HIGH CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 4.738	34.07	Pk	34.3	-30.7	0	37.67	-	-	74	-36.33	0-360	101	V
6	* 5.053	33.37	Pk	34	-30.8	0	36.57	-	-	74	-37.43	0-360	101	V
1	1.825	36.93	Pk	31	-24.7	0	43.23	-	-	-	-	0-360	199	H
4	1.883	36.9	Pk	31.6	-24.6	0	43.9	-	-	-	-	0-360	199	V
2	6.849	33.49	Pk	36	-30.3	0	39.19	-	-	-	-	0-360	200	H
3	10.15	29.37	Pk	37.3	-25.9	0	40.77	-	-	-	-	0-360	101	H

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

Pk - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.739	42.25	PK2	34.3	-30.7	0	45.85	-	-	74	-28.15	23	119	V
* 4.74	30.47	MAv1	34.3	-30.7	2.04	36.11	54	-17.89	-	-	23	119	V
* 5.054	39.95	PK2	34	-30.8	0	43.15	-	-	74	-30.85	3	137	V
* 5.055	28.39	MAv1	34	-30.8	2.04	33.63	54	-20.37	-	-	3	137	V
1.825	44.18	PK2	31	-24.7	0	50.48	-	-	74	-23.52	360	199	H
1.827	32.35	MAv1	31	-24.7	2.04	40.69	54	-13.31	-	-	360	199	H
1.882	32.4	MAv1	31.6	-24.6	2.04	41.44	54	-12.56	-	-	360	199	V
1.884	44.25	PK2	31.6	-24.6	0	51.25	-	-	74	-22.75	360	199	V
6.848	39.94	PK2	36	-30.3	0	45.64	-	-	74	-28.36	360	199	H
6.848	28.79	MAv1	36	-30.3	2.04	36.53	54	-17.47	-	-	360	199	H
10.15	36.38	PK2	37.3	-25.9	0	47.78	-	-	74	-26.22	360	102	H
10.15	25.29	MAv1	37.3	-25.9	2.04	38.73	54	-15.27	-	-	360	102	H

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

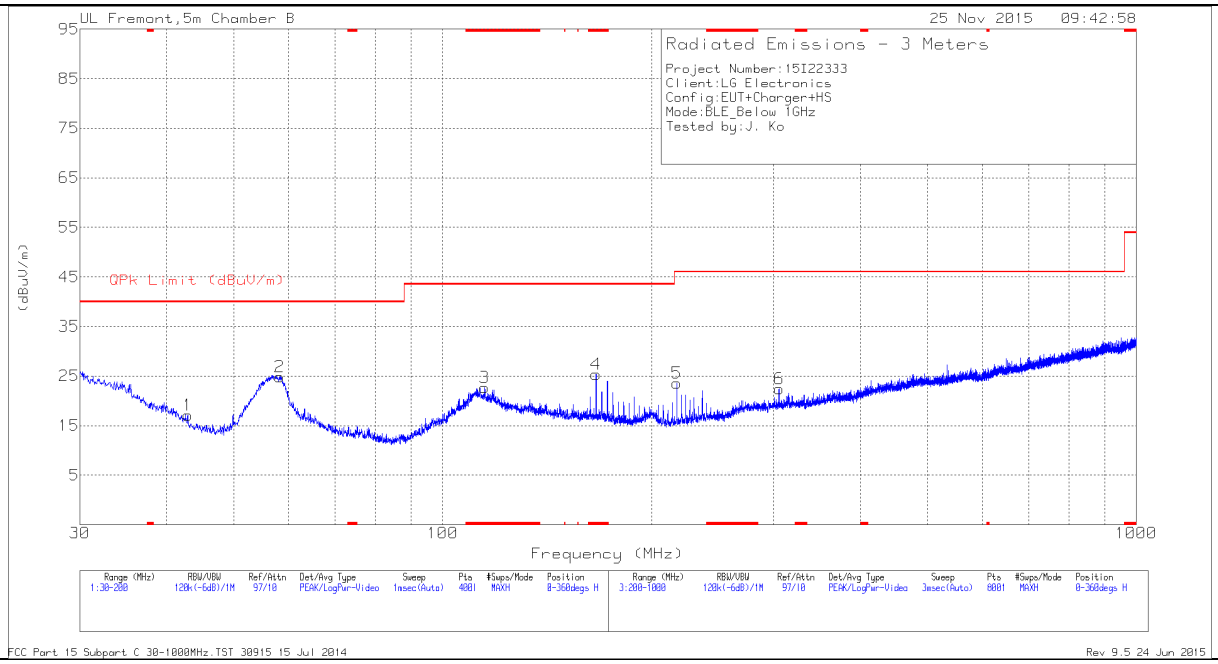
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

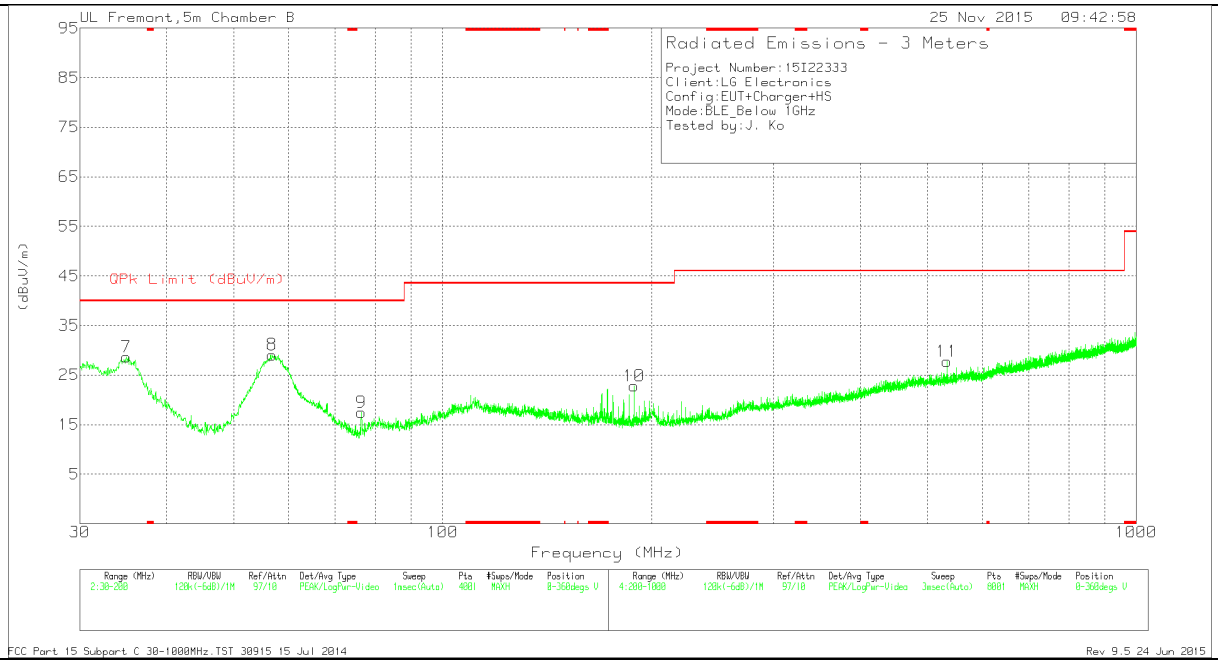
9.2. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



BELOW 1 GHz TABLE

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T130 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 115.0425	33.42	Pk	17.3	-28	22.72	43.52	-20.8	0-360	299	H
4	* 166.425	36.87	Pk	15.9	-27.4	25.37	43.52	-18.15	0-360	101	H
7	35.015	35.82	Pk	21.6	-28.8	28.62	40	-11.38	0-360	101	V
1	42.92	30.14	Pk	15.7	-28.7	17.14	40	-22.86	0-360	399	H
8	56.8175	46.49	Pk	11.2	-28.6	29.09	40	-10.91	0-360	101	V
2	58.1775	42.18	Pk	11.3	-28.6	24.88	40	-15.12	0-360	399	H
9	76.325	34.06	Pk	11.8	-28.4	17.46	40	-22.54	0-360	101	V
10	188.78	34.66	Pk	15.2	-27.1	22.76	43.52	-20.76	0-360	101	V
5	217.6	35.82	Pk	14.6	-26.9	23.52	46.02	-22.5	0-360	101	H
6	305.4	31.04	Pk	17.5	-26.1	22.44	46.02	-23.58	0-360	101	H
11	533.3	31.96	Pk	22	-26.2	27.76	46.02	-18.26	0-360	101	V

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

Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T130 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
57.3175	43.51	Qp	11.2	-28.5	26.21	40	-13.79	2	113	V

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

Qp - Quasi-Peak detector

10. 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

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.

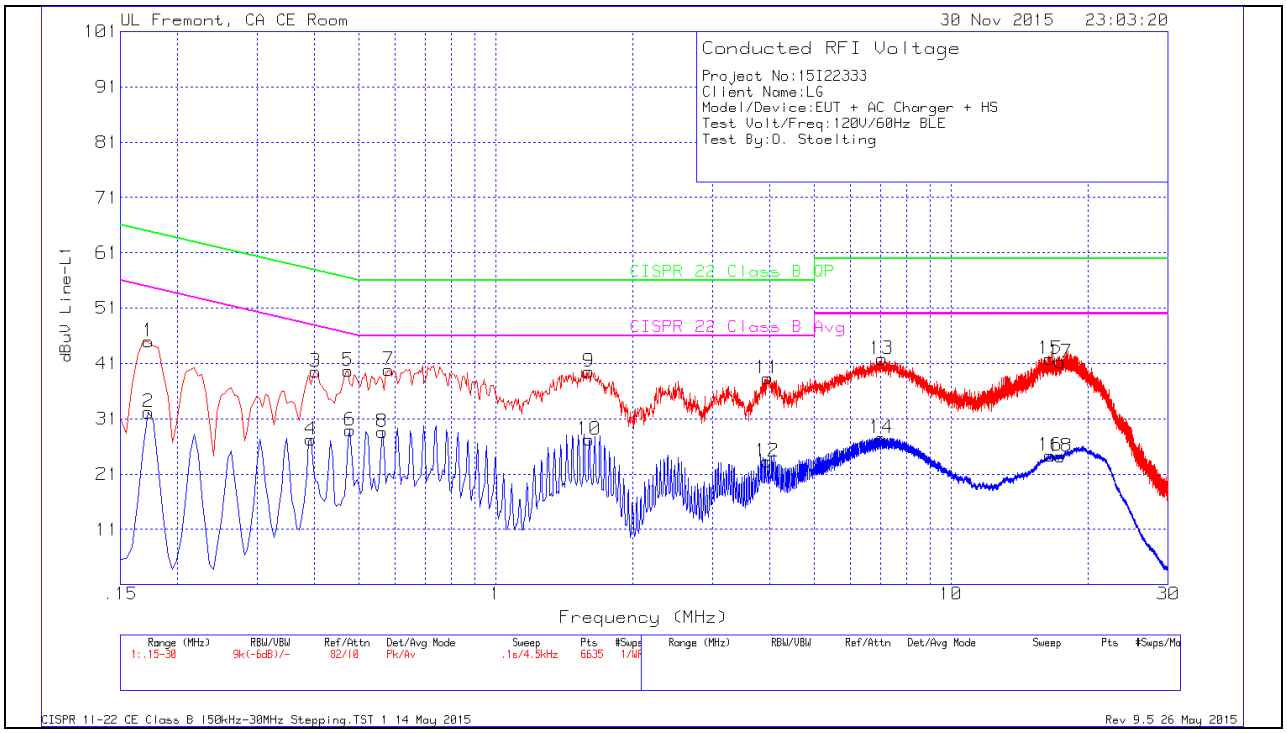
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

6 WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

Trace Markers

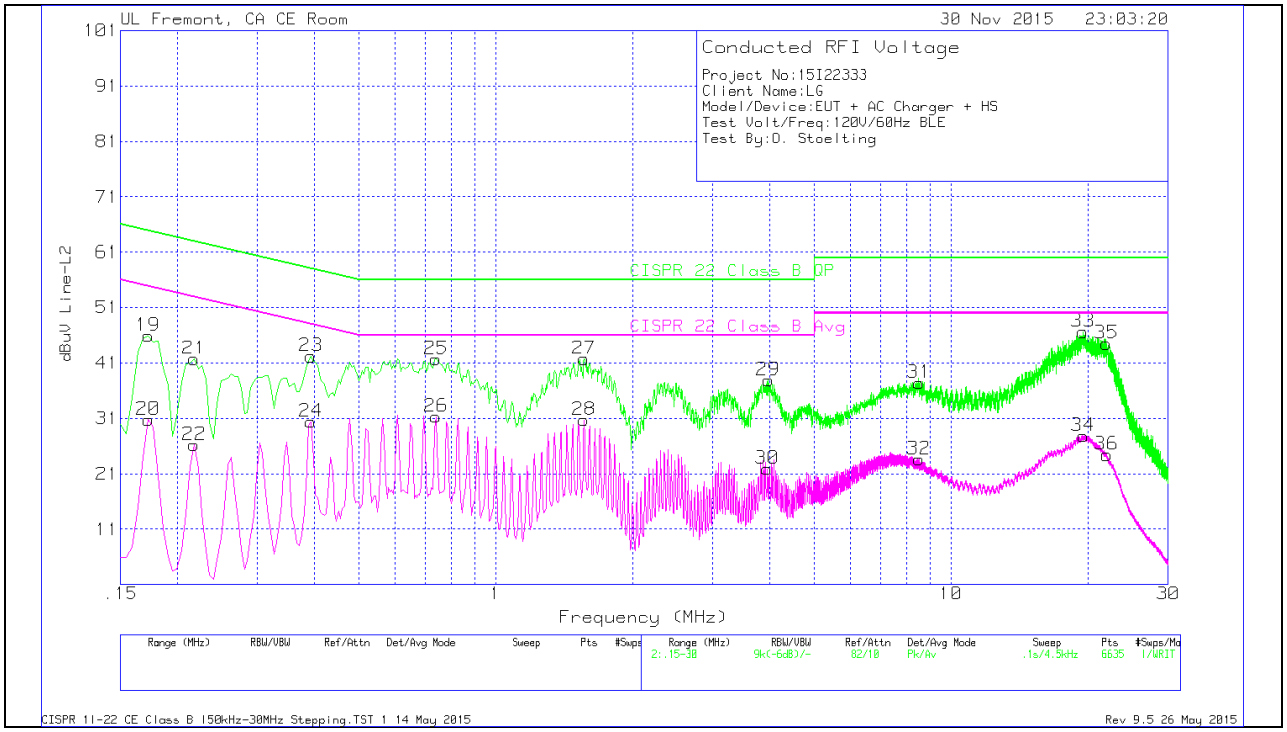
Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.1725	43.86	Pk	1.1	0	44.96	64.84	-19.88		
2	.1725	31.07	Av	1.1	0	32.17	-	-	54.84	-22.67
3	.402	39.12	Pk	.4	0	39.52	57.81	-18.29		
4	.393	26.87	Av	.4	0	27.27	-	-	48	-20.73
5	.474	39.29	Pk	.4	0	39.69	56.44	-16.75		
6	.4785	28.54	Av	.4	0	28.94	-	-	46.37	-17.43
7	.582	39.54	Pk	.3	0	39.84	56	-16.16		
8	.564	28.34	Av	.3	0	28.64	-	-	46	-17.36
9	1.6035	39.25	Pk	.2	.1	39.55	56	-16.45		
10	1.6035	26.93	Av	.2	.1	27.23	-	-	46	-18.77
11	3.9525	38.05	Pk	.2	.1	38.35	56	-17.65		
12	3.948	23.02	Av	.2	.1	23.32	-	-	46	-22.68
13	7.044	41.55	Pk	.2	.1	41.85	60	-18.15		
14	7.026	27.2	Av	.2	.1	27.5	-	-	50	-22.5
15	16.503	41.36	Pk	.3	.2	41.86	60	-18.14		
16	16.5255	23.87	Av	.3	.2	24.37	-	-	50	-25.63
17	17.3895	40.77	Pk	.3	.2	41.27	60	-18.73		
18	17.3805	23.75	Av	.3	.2	24.25	-	-	50	-25.75

Pk - Peak detector

Av - Average detection

LINE 2 PLOT



LINE 2 RESULTS

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
19	.1725	44.68	Pk	1.2	0	45.88	64.84	-18.96		
20	.1725	29.57	Av	1.2	0	30.77	-	-	54.84	-24.07
21	.2175	40.84	Pk	.9	0	41.74	62.91	-21.17		
22	.2175	25.31	Av	.9	0	26.21	-	-	52.91	-26.7
23	.393	41.82	Pk	.4	0	42.22	58	-15.78		
24	.393	30.02	Av	.4	0	30.42	-	-	48	-17.58
25	.7395	41.42	Pk	.3	0	41.72	56	-14.28		
26	.7395	31.01	Av	.3	0	31.31	-	-	46	-14.69
27	1.563	41.43	Pk	.2	.1	41.73	56	-14.27		
28	1.563	30.43	Av	.2	.1	30.73	-	-	46	-15.27
29	3.966	37.62	Pk	.2	.1	37.92	56	-18.08		
30	3.948	21.61	Av	.2	.1	21.91	-	-	46	-24.09
31	8.511	37.09	Pk	.2	.1	37.39	60	-22.61		
32	8.502	23.31	Av	.2	.1	23.61	-	-	50	-26.39
33	19.4865	46.11	Pk	.3	.2	46.61	60	-13.39		
34	19.509	27.29	Av	.3	.2	27.79	-	-	50	-22.21
35	21.939	43.99	Pk	.3	.2	44.49	60	-15.51		
36	21.975	23.94	Av	.3	.2	24.44	-	-	50	-25.56

Pk - Peak detector

Av - Average detection