FCC CFR47 PART 15 SUBPART C

C2PC CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/LTE PHONE + BLUETOOTH & 2.4GHz DTS b/g/n

MODEL NUMBER: LG-L33L, LGL33L, L33L, LG-H343, LGH343, H343

FCC ID: ZNFL33L

REPORT NUMBER: 15I19923-E4

ISSUE DATE: FEBRUARY 16, 2015

Prepared for

LG ELECTRONICS MOBILECOMM U.S.A., INC
1000 SYLVAN AVENUE
ENGLEWOOD CLIFFS,
NEW JERSEY, 07632, U.S.A

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

Rev.	Issue Date	Revisions	Revised By
--	02/16/15	Initial Issue	D. Coronia

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS 4

2. TEST METHODOLOGY 5

3. FACILITIES AND ACCREDITATION 5

4. CALIBRATION AND UNCERTAINTY 5

4.1. MEASURING INSTRUMENT CALIBRATION 5

4.2. SAMPLE CALCULATION 5

4.3. MEASUREMENT UNCERTAINTY 6

5. EQUIPMENT UNDER TEST 7

5.1. DESCRIPTION OF EUT 7

5.2. MAXIMUM OUTPUT POWER 7

5.3. DESCRIPTION OF AVAILABLE ANTENNAS 7

5.4. WORST-CASE CONFIGURATION AND MODE 8

5.5. DESCRIPTION OF TEST SETUP 9

6. TEST AND MEASUREMENT EQUIPMENT 11

7. MEASUREMENT METHODS 12

8. SUMMARY TABLE 13

9. RADIATED TEST RESULTS 14

9.1. LIMITS AND PROCEDURE 14

9.2. TRANSMITTER ABOVE 1 GHz 15

9.2.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND 15

9.2.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND 28

9.2.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND 41

9.3. WORST-CASE BELOW 1 GHz 54

SETUP PHOTOS 56

1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	LG ELECTRONICS MOBILECOMM U.S.A., INC
EUT DESCRIPTION:	GSM/WCDMA/LTE PHONE + BLUETOOTH & 2.4GHz DTS b/g/n
MODEL:	LG-L33L, LGL33L, L33L, LG-H343, LGH343, H343
SERIAL NUMBER:	501CYMR000195
DATE TESTED:	February 4 & 11, 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.

Approved & Released For
UL Verification Services Inc. By:

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

Tested By:

STEVEN TRAN
CONSUMER TECHNOLOGY DIVISION
WiSE LAB ENGINEER
UL VERIFICATION SERVICES INC

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, and ANSI C63.4-2009.

3. FACILITIES AND ACCREDITATION

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

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

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

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 GSM/WCDMA/LTE PHONE + BLUETOOTH & 2.4GHz DTS b/g/n.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:
See original report for details.

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a maximum gain of -2.7 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 X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X 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

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
AC Adapter	LG	MCS-02WR	RA4Y1031433	N/A
Earphone	LG	N/A	N/A	N/A

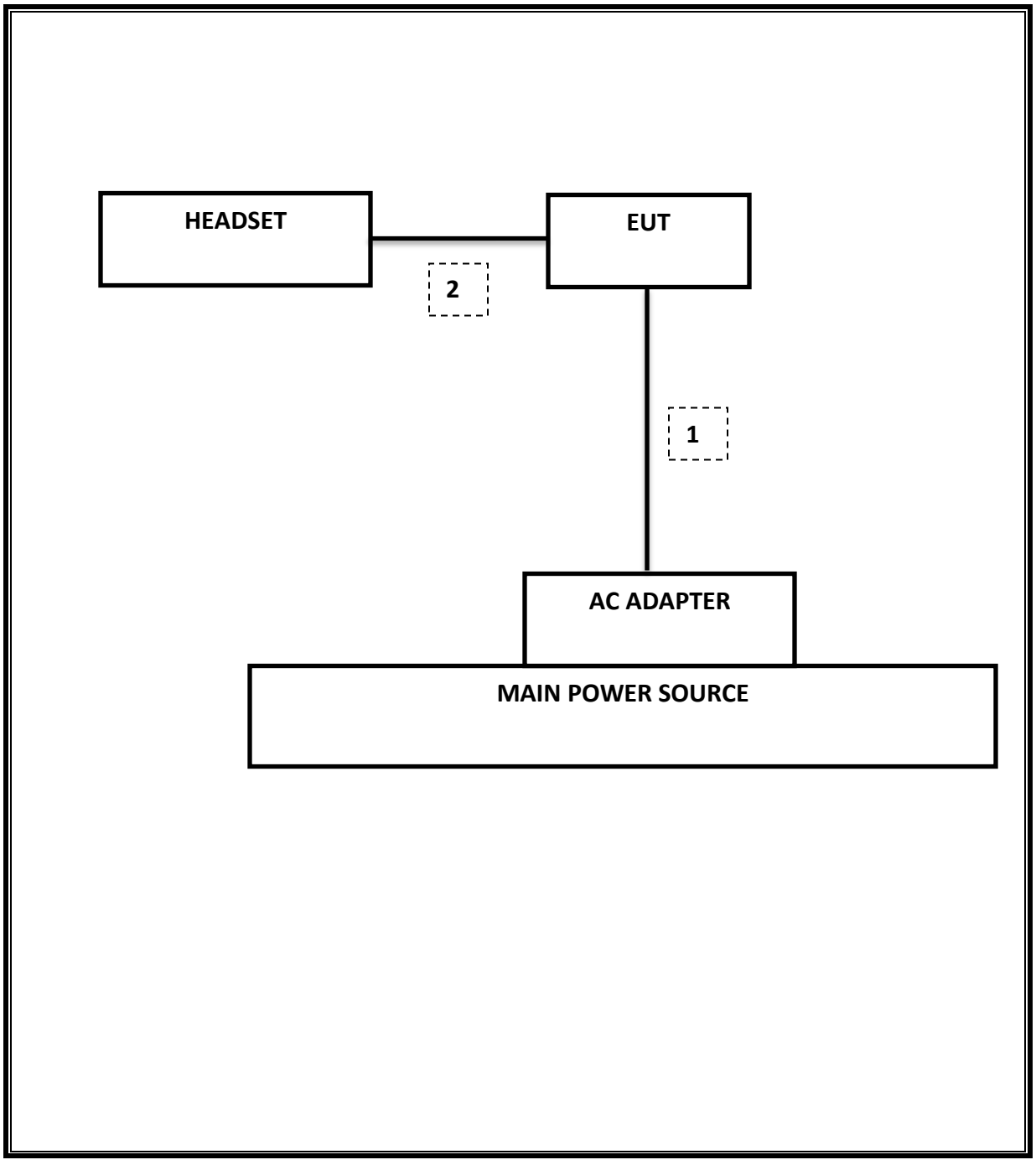
I/O CABLES

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

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	12/20/15
Spectrum Analyzer,9KHz-40GHz	HP	8564E	C00986	04/01/15
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	1000741	08/13/15
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/18/15
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/15
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/15
Antenna, Horn, 1-18 GHz	ETS	3117	C01022	02/21/15
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 - 40GHz	Miteq	NSP4000-SP2	C00990	08/20/15
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
CLT Software	UL	UL RF	Version 1.0, 02/02/15
Antenna Port Software	UL	UL RF	Version 2.1.1.1, 1/20/15

7. MEASUREMENT METHODS

KDB 558074 D01 DTS Meas Guidance v03r02:Measurement Procedure AVGPM-G is used for power and AVGPSD-3 is used for power spectral density.

Unwanted emissions within Restricted Bands are measured using traditional radiated procedures.

Band edge emissions within Restricted Bands are measured using RMS with duty cycle factor offset method.

8. SUMMARY TABLE

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Worst Case
15.247 (a)(2)	RSS-210 A8.2(a)	Occupied Band width (6dB)	>500KHz	Conducted	Pass	See Original
2.1051, 15.247 (d)	RSS-210 A8.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	See Original
15.247	RSS-210 A8.4	TX conducted output power	<30dBm		Pass	See Original
15.247	RSS-210 A8.2	PSD	<8dBm		Pass	See Original
15.207 (a)	RSS-GEN 7.2.2	AC Power Line conducted emissions	Section 10	Radiated	Pass	See Original
15.205, 15.209	RSS-210 Clause 2.6, RSS-210 Clause 6	Radiated Spurious Emission	< 54dBuV/m		Pass	44.3 dBuV/m

9. RADIATED TEST RESULTS

9.1. 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= 10log (1/x) For this sample B mode = 0dB (duty cycle >98%); G mode = 0.21dB; N mode = 0.22dB.

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.

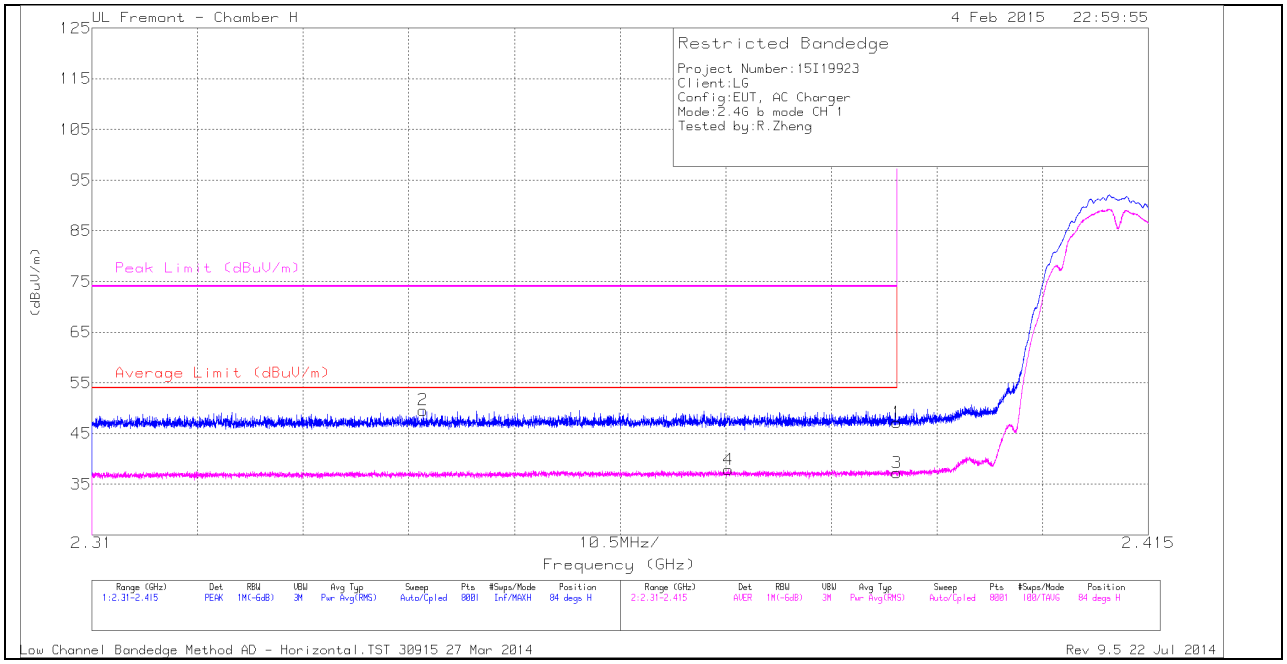
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

9.2. TRANSMITTER ABOVE 1 GHz

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

RESTRICTED BANDEDGE (LOW CHANNEL)

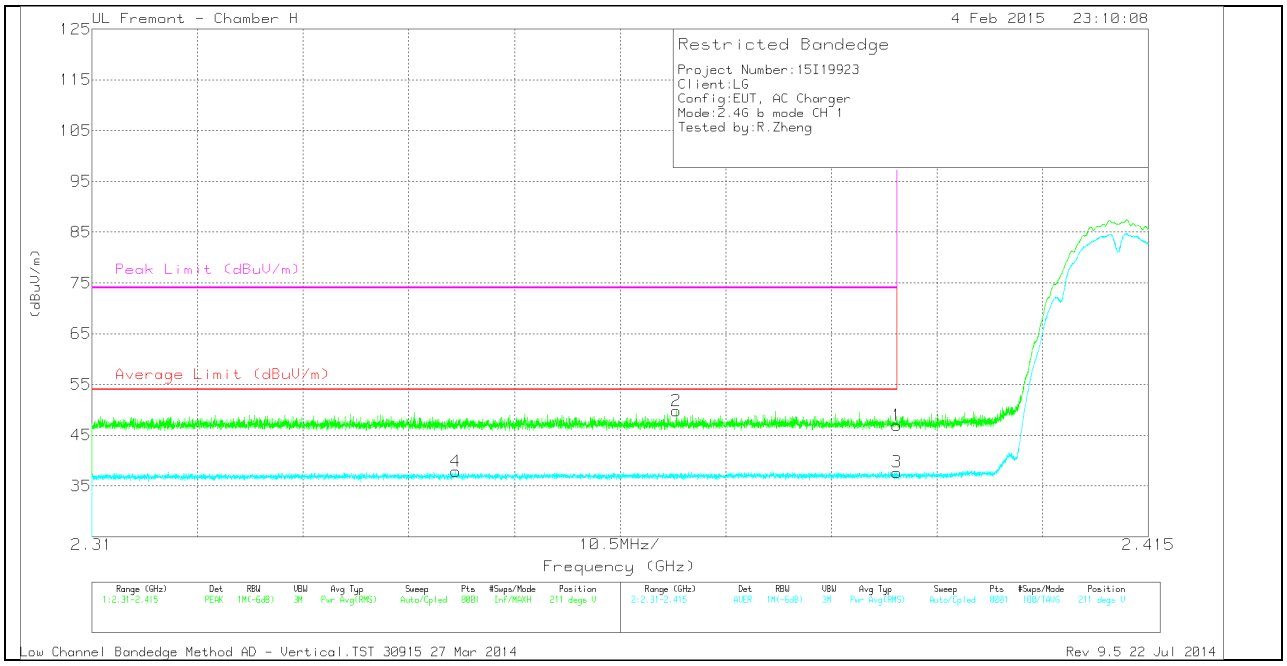
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.74	PK	32	-24.6	47.14	-	-	74	-26.86	84	330	H
2	* 2.343	42.31	PK	31.9	-24.6	49.61	-	-	74	-24.39	84	330	H
3	* 2.39	29.81	RMS	32	-24.6	37.21	54	-16.79	-	-	84	330	H
4	* 2.373	30.62	RMS	31.9	-24.6	37.92	54	-16.08	-	-	84	330	H

VERTICAL PEAK AND AVERAGE PLOT

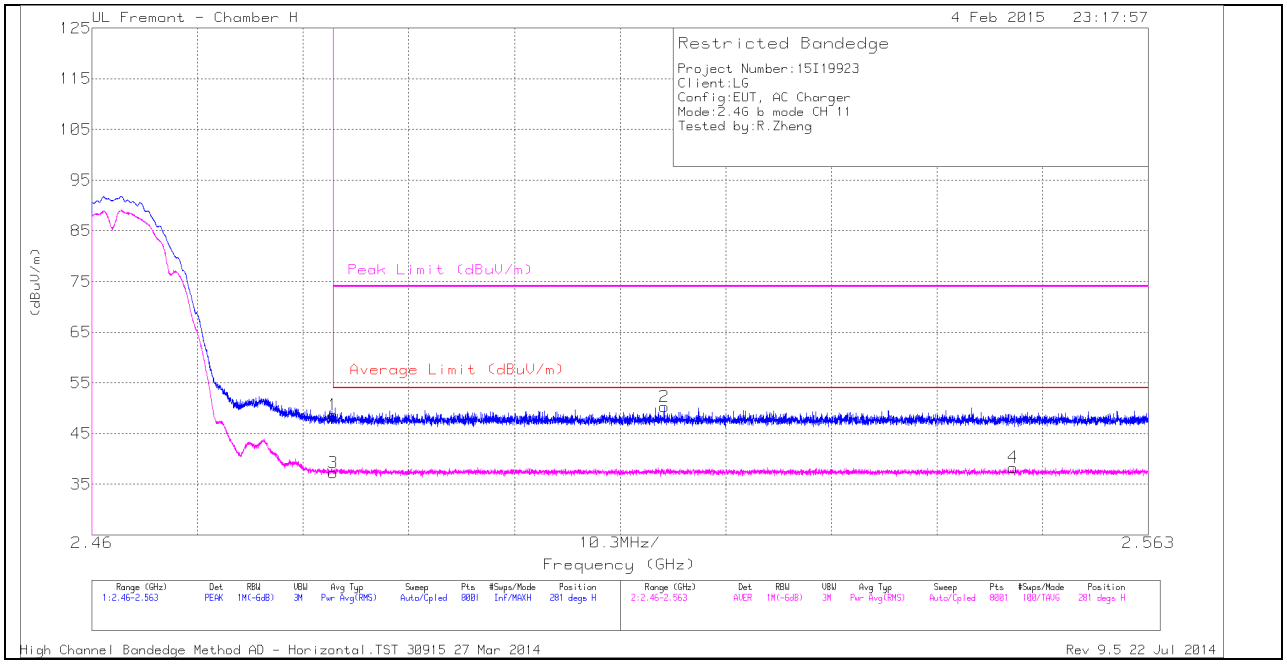


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 2.346	30.59	RMS	31.9	-24.6	37.89	54	-16.11	-	-	211	249	V
2	* 2.368	42.47	PK	31.9	-24.6	49.77	-	-	74	-24.23	211	249	V
1	* 2.39	39.53	PK	32	-24.6	46.93	-	-	74	-27.07	211	249	V
3	* 2.39	30.29	RMS	32	-24.6	37.69	54	-16.31	-	-	211	249	V

AUTHORIZED BANDEDGE (HIGH CHANNEL)

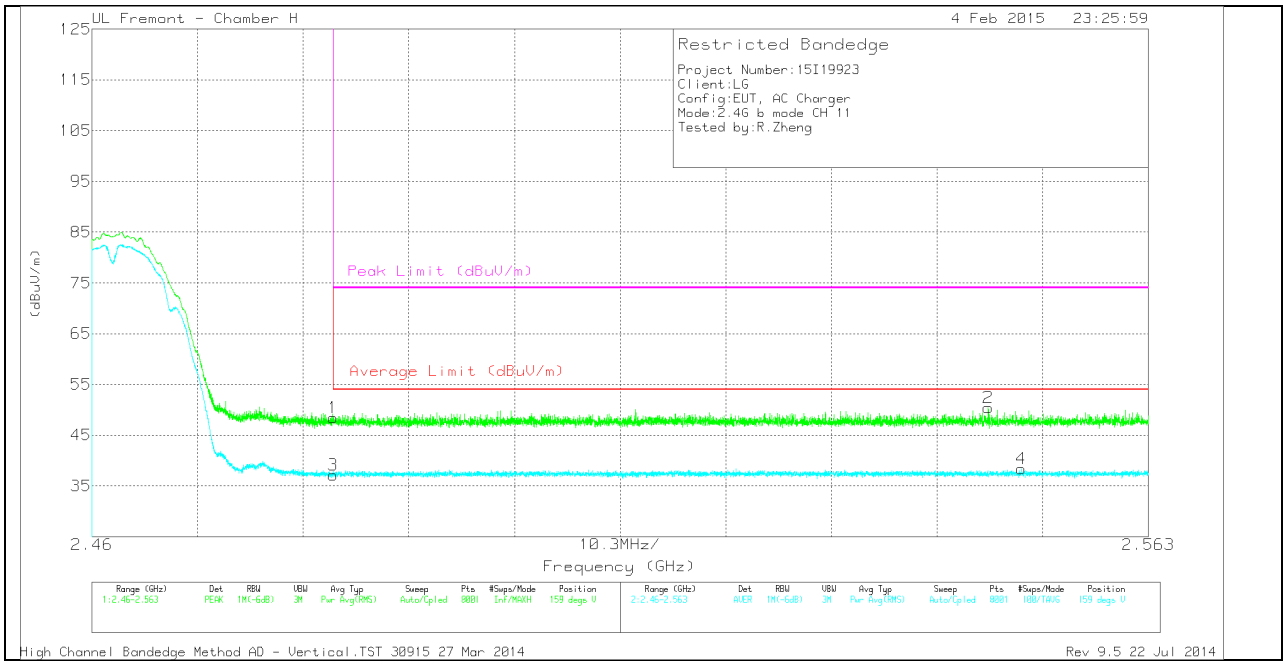
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	40.96	PK	32.2	-24.5	48.66	-	-	74	-25.34	281	287	H
3	* 2.484	29.58	RMS	32.2	-24.5	37.28	54	-16.72	-	-	281	287	H
2	2.516	42.54	PK	32.2	-24.4	50.34	-	-	74	-23.66	281	287	H
4	2.55	30.41	RMS	32.2	-24.3	38.31	54	-15.69	-	-	281	287	H

VERTICAL PEAK AND AVERAGE PLOT

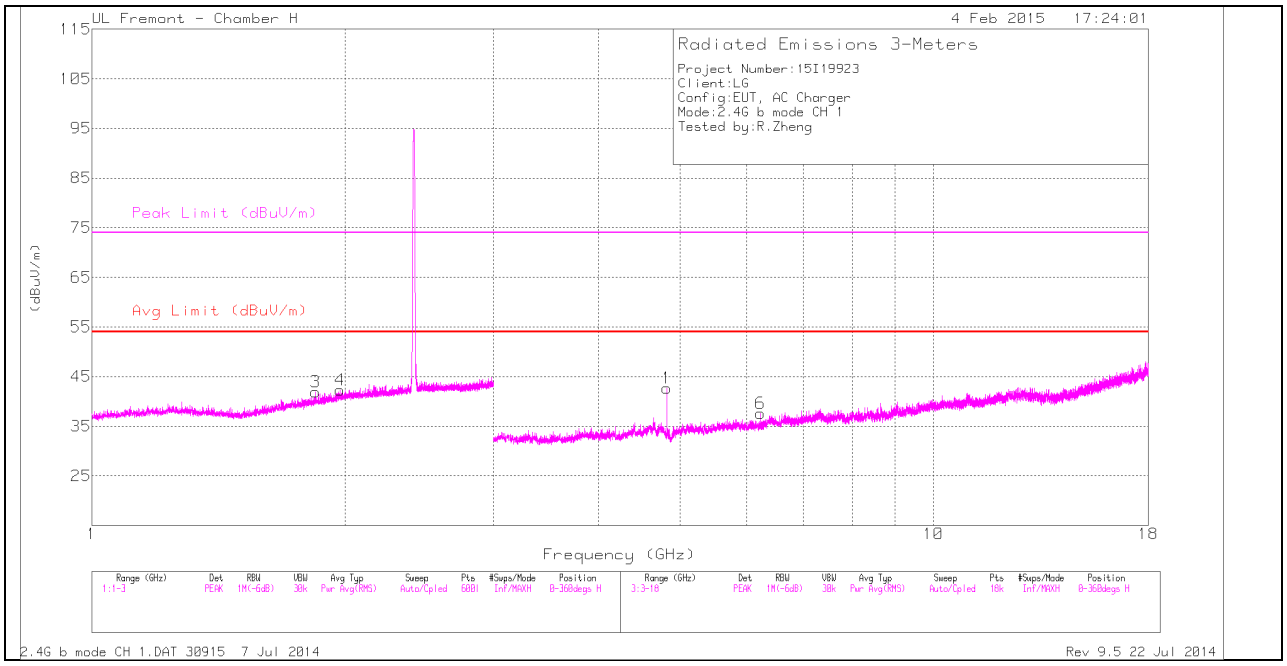


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	40.68	PK	32.2	-24.5	48.38	-	-	74	-25.62	159	340	V
3	* 2.484	29.44	RMS	32.2	-24.5	37.14	54	-16.86	-	-	159	340	V
2	2.547	42.46	PK	32.2	-24.3	50.36	-	-	74	-23.64	159	340	V
4	2.551	30.48	RMS	32.2	-24.3	38.38	54	-15.62	-	-	159	340	V

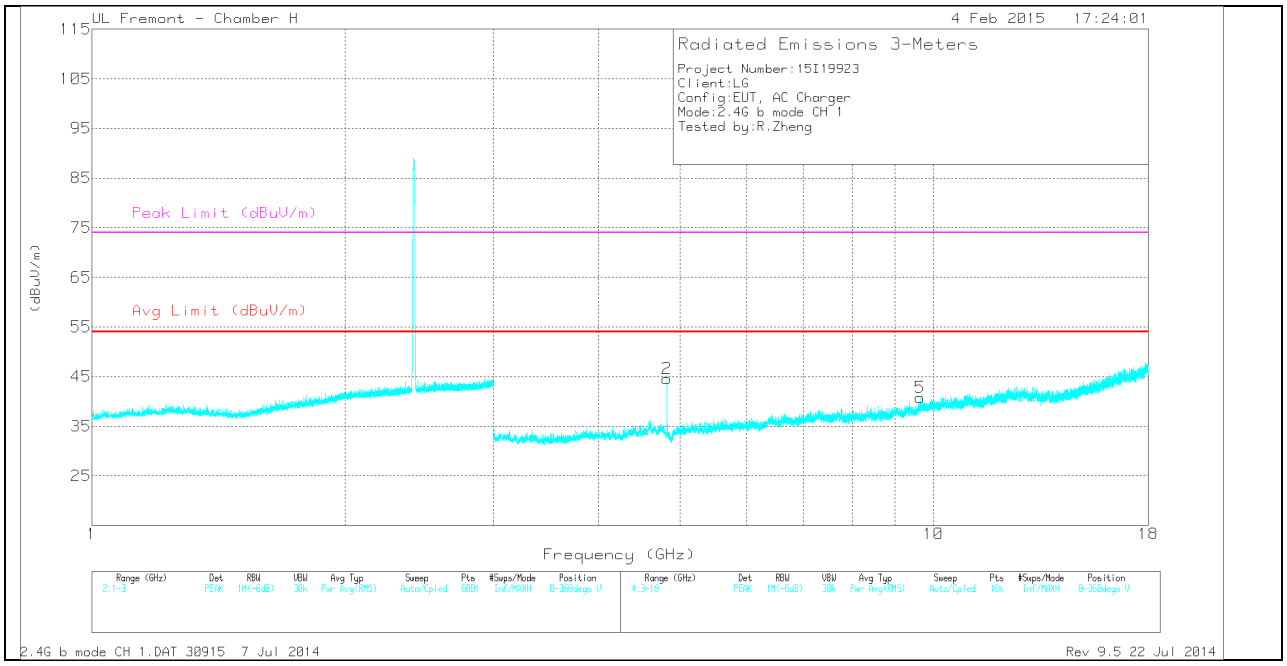
HARMONICS AND SPURIOUS EMISSIONS

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

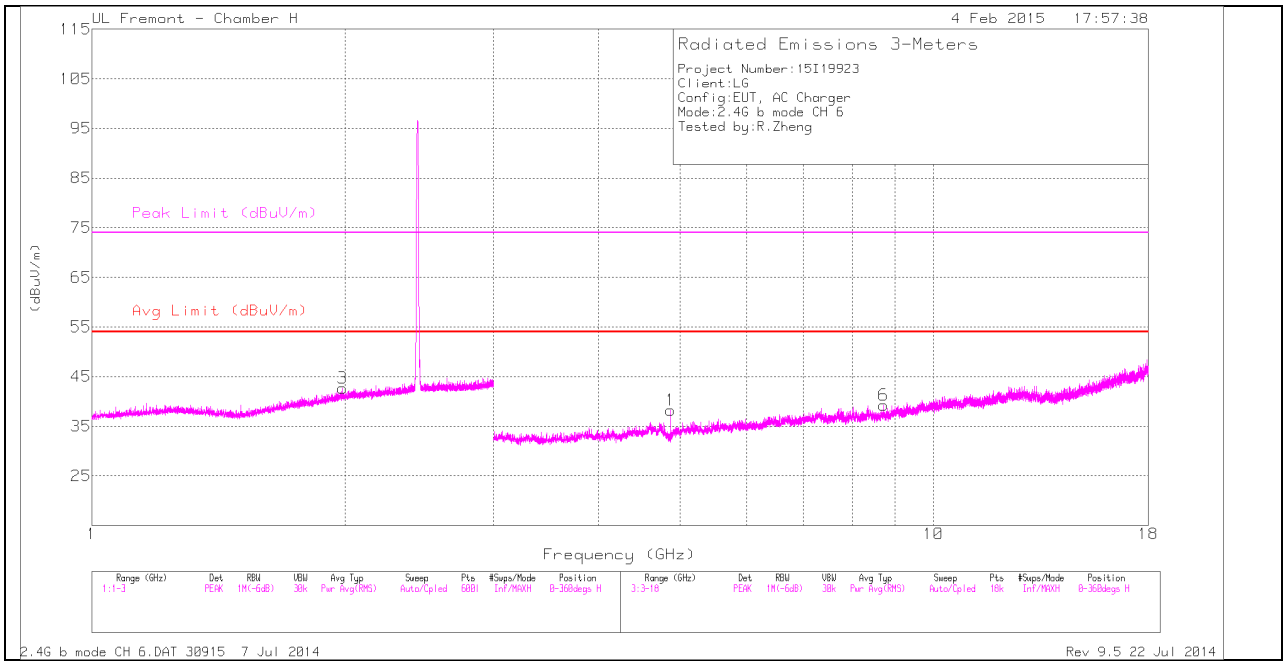
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.824	40.67	PK	34.3	-32.3	42.67	-	-	74	-31.33	0-360	100	H
2	* 4.824	42.6	PK	34.3	-32.3	44.6	-	-	74	-29.4	0-360	201	V
3	1.844	36.77	PK	30.3	-25.2	41.87	-	-	-	-	0-360	100	H
4	1.972	36.17	PK	31.1	-25	42.27	-	-	-	-	0-360	100	H
6	6.226	34.03	PK	35.4	-31.8	37.63	-	-	-	-	0-360	201	H
5	9.648	30.23	PK	36.9	-26.4	40.73	-	-	-	-	0-360	100	V

PK - Peak detector

RADIATED EMISSIONS

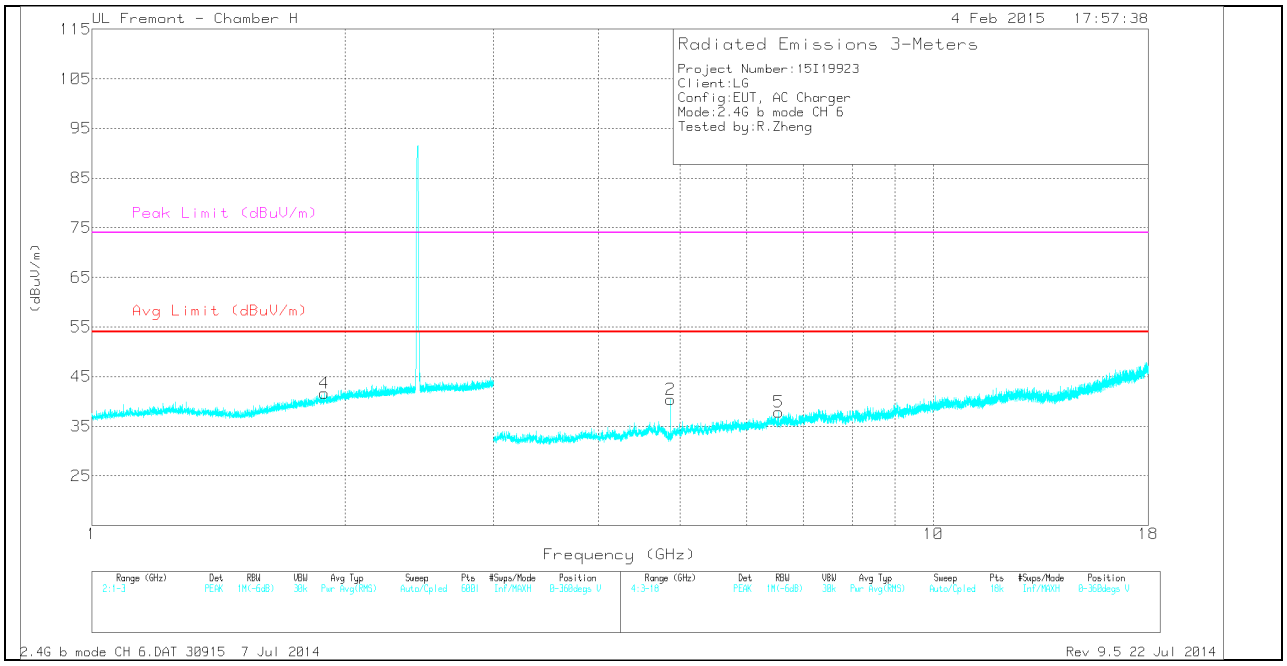
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.824	44.99	PK2	34.3	-32.3	46.99	-	-	74	-27.01	81	140	H
* 4.824	39.63	MAv1	34.3	-32.3	41.63	54	-12.37	-	-	81	140	H
* 4.824	47.09	PK2	34.3	-32.3	49.09	-	-	74	-24.91	98	181	V
* 4.824	42.3	MAv1	34.3	-32.3	44.3	54	-9.7	-	-	98	181	V

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

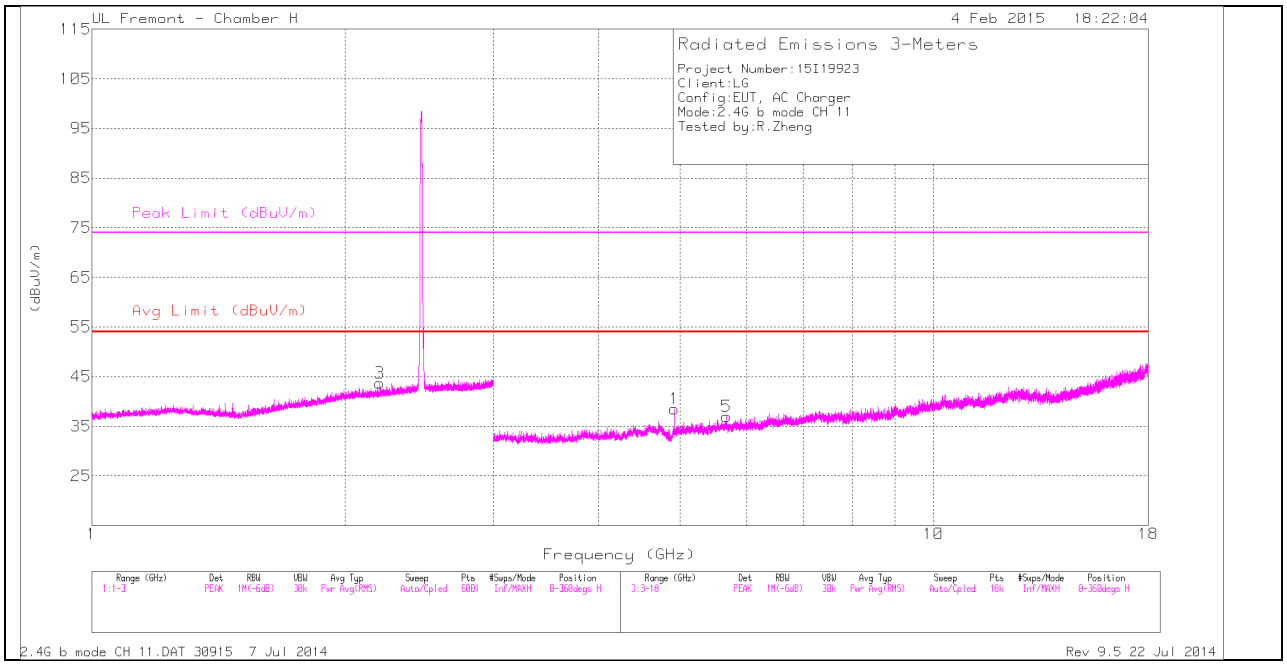
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.874	36.18	PK	34.3	-32.2	38.28	-	-	74	-35.72	0-360	100	H
2	* 4.874	38.3	PK	34.3	-32.2	40.4	-	-	74	-33.6	0-360	201	V
4	1.89	36.32	PK	30.6	-25.2	41.72	-	-	-	-	0-360	201	V
3	1.986	36.48	PK	31.2	-25	42.68	-	-	-	-	0-360	100	H
5	6.549	33.67	PK	35.6	-31.4	37.87	-	-	-	-	0-360	100	V
6	8.731	30.66	PK	36.2	-27.6	39.26	-	-	-	-	0-360	100	H

PK - Peak detector

RADIATED EMISSIONS

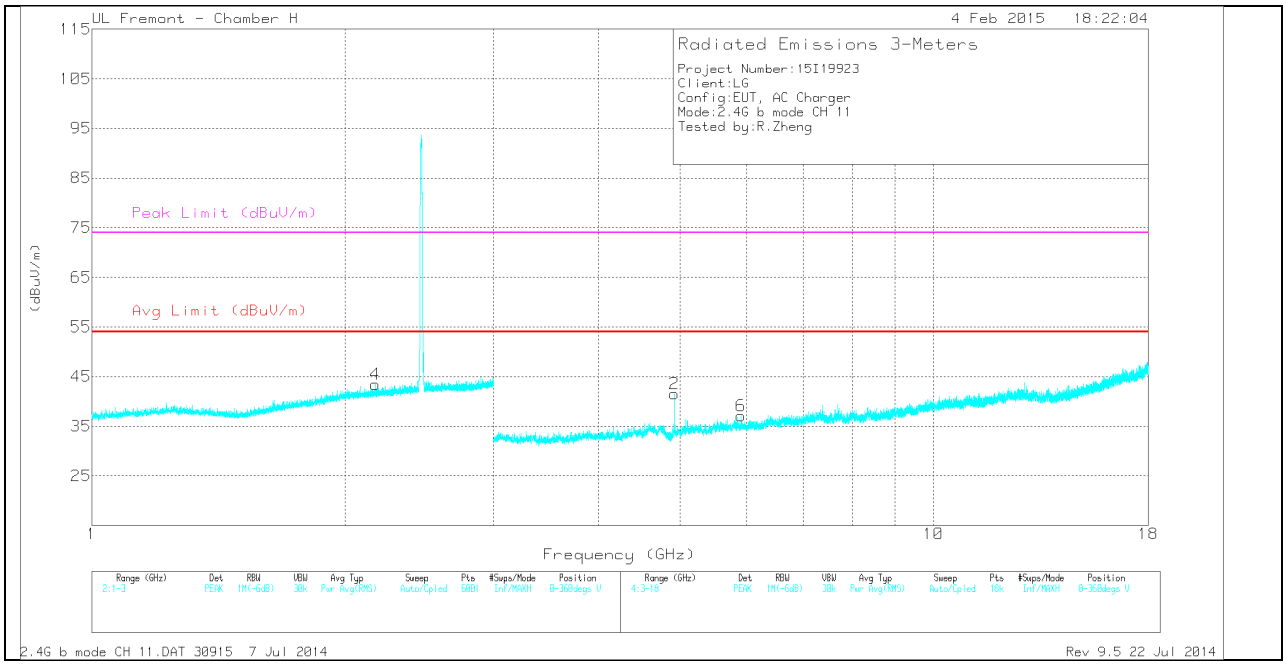
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.874	42.51	PK2	34.3	-32.2	44.61	-	-	74	-29.39	81	140	H
* 4.874	35.26	MAv1	34.3	-32.2	37.36	54	-16.64	-	-	81	140	H
* 4.874	43.41	PK2	34.3	-32.2	45.51	-	-	74	-28.49	96	215	V
* 4.874	36.75	MAv1	34.3	-32.2	38.85	54	-15.15	-	-	96	215	V

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 T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.924	36.27	PK	34.3	-32.1	38.47	-	-	74	-35.53	0-360	100	H
2	* 4.924	39.33	PK	34.3	-32.1	41.53	-	-	74	-32.47	0-360	201	V
4	2.17	36.66	PK	31.6	-24.8	43.46	-	-	-	-	0-360	201	V
3	2.199	36.78	PK	31.6	-24.7	43.68	-	-	-	-	0-360	100	H
5	5.676	33.86	PK	35	-31.9	36.96	-	-	-	-	0-360	100	H
6	5.905	33.95	PK	35.1	-32	37.05	-	-	-	-	0-360	201	V

PK - Peak detector

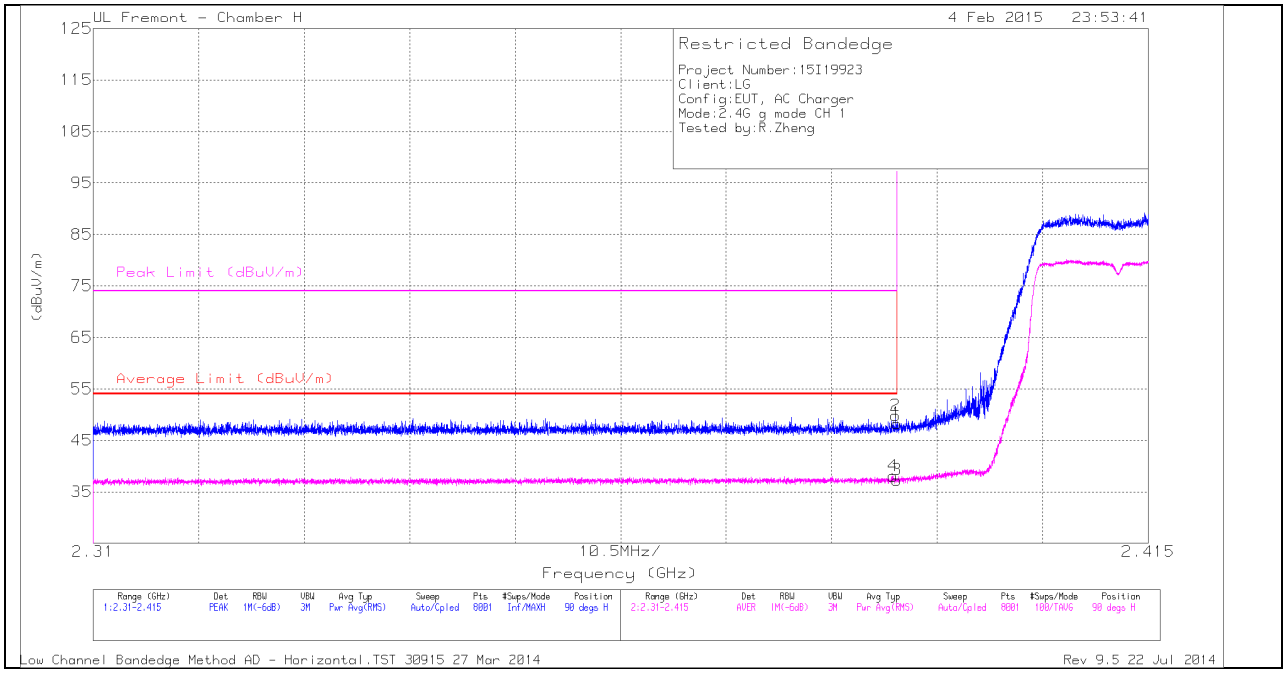
RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.924	42.78	PK2	34.3	-32.1	44.98	-	-	74	-29.02	75	107	H
* 4.924	35.27	MAv1	34.3	-32.1	37.47	54	-16.53	-	-	75	107	H
* 4.924	44.44	PK2	34.3	-32.1	46.64	-	-	74	-27.36	95	176	V
* 4.924	38.05	MAv1	34.3	-32.1	40.25	54	-13.75	-	-	95	176	V

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

RESTRICTED BANDEDGE (LOW CHANNEL)

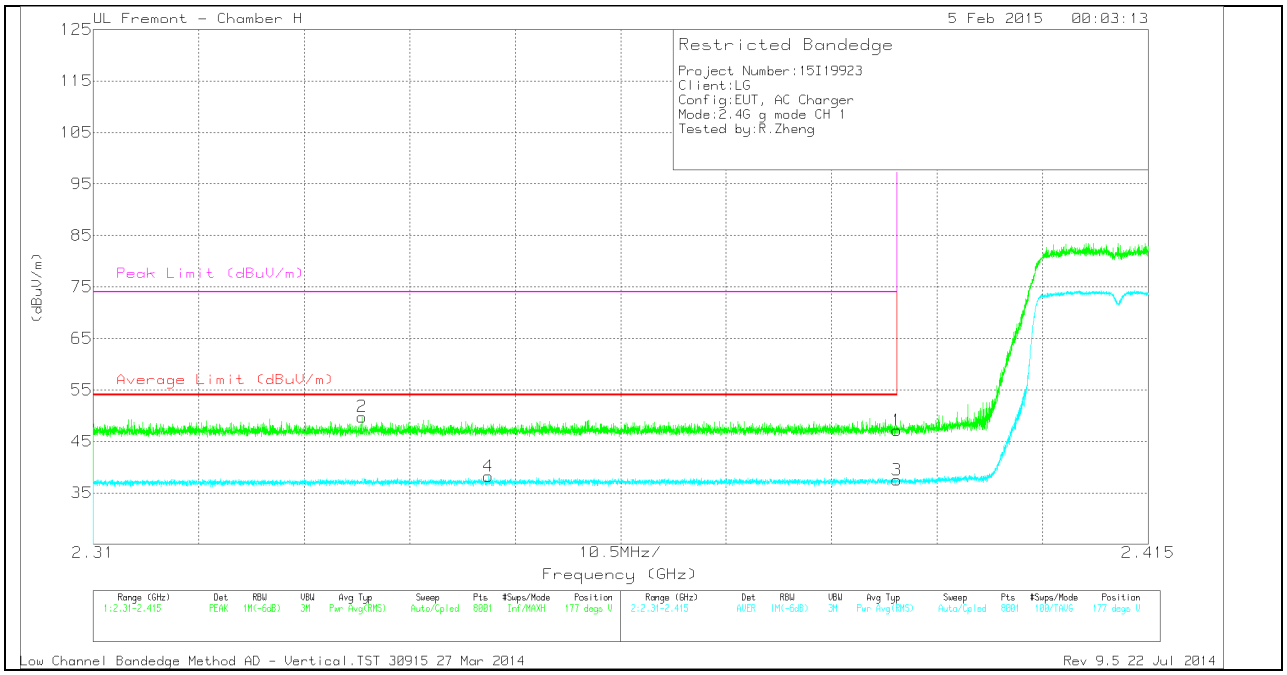
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.91	PK	32	-24.6	0	48.31	-	-	74	-25.69	90	383	H
2	* 2.39	42.41	PK	32	-24.6	0	49.81	-	-	74	-24.19	90	383	H
3	* 2.39	29.7	RMS	32	-24.6	.21	37.31	54	-16.69	-	-	90	383	H
4	* 2.39	30.45	RMS	32	-24.6	.21	38.06	54	-15.94	-	-	90	383	H

VERTICAL PEAK AND AVERAGE PLOT

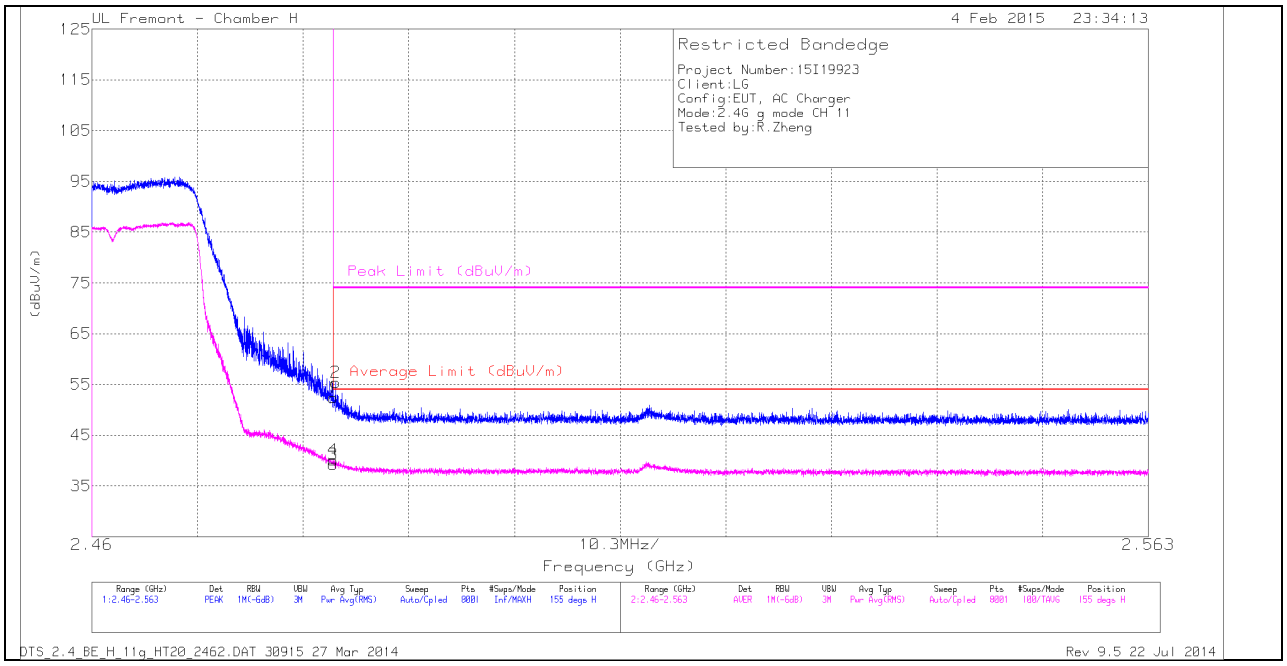


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.76	PK	32	-24.6	0	47.16	-	-	74	-26.84	177	316	V
2	* 2.337	42.37	PK	31.9	-24.5	0	49.77	-	-	74	-24.23	177	316	V
3	* 2.39	29.87	RMS	32	-24.6	.21	37.48	54	-16.52	-	-	177	316	V
4	* 2.349	30.69	RMS	31.9	-24.6	.21	38.2	54	-15.8	-	-	177	316	V

AUTHORIZED BANDEDGE (HIGH CHANNEL)

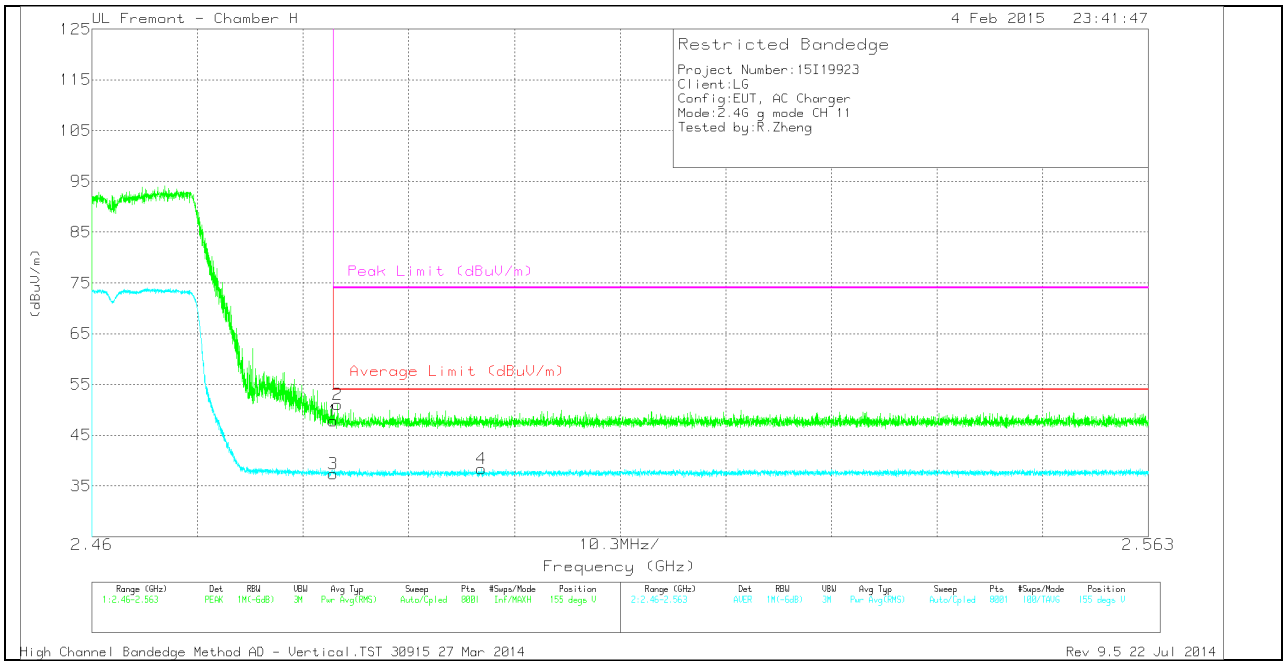
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (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	44.7	PK	32.2	-24.5	0	52.4	-	-	74	-21.6	155	167	H
2	* 2.484	47.72	PK	32.2	-24.5	0	55.42	-	-	74	-18.58	155	167	H
3	* 2.484	31.34	RMS	32.2	-24.5	.21	39.25	54	-14.75	-	-	155	167	H
4	* 2.484	32.25	RMS	32.2	-24.5	.21	40.16	54	-13.84	-	-	155	167	H

VERTICAL PEAK AND AVERAGE PLOT

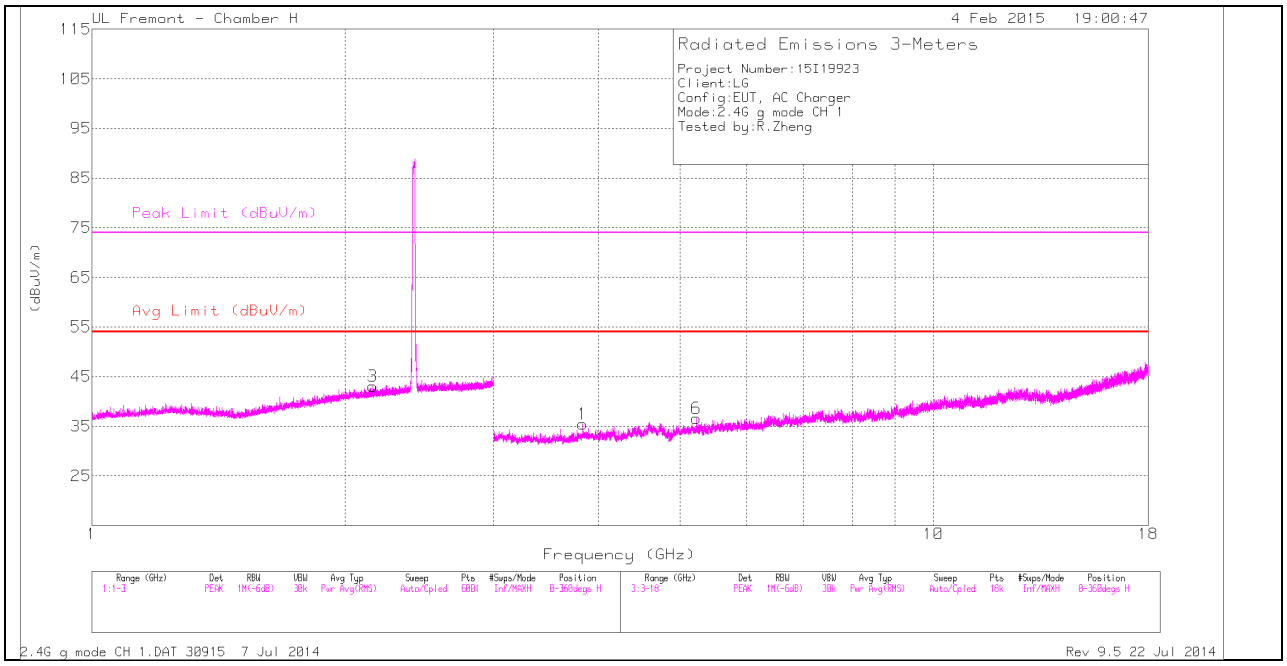


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (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	40.13	PK	32.2	-24.5	0	47.83	-	-	74	-26.17	155	167	V
2	* 2.484	43.37	PK	32.2	-24.5	0	51.07	-	-	74	-22.93	155	167	V
3	* 2.484	29.43	RMS	32.2	-24.5	.21	37.34	54	-16.66	-	-	155	167	V
4	* 2.498	30.51	RMS	32.2	-24.5	.21	38.42	54	-15.58	-	-	155	167	V

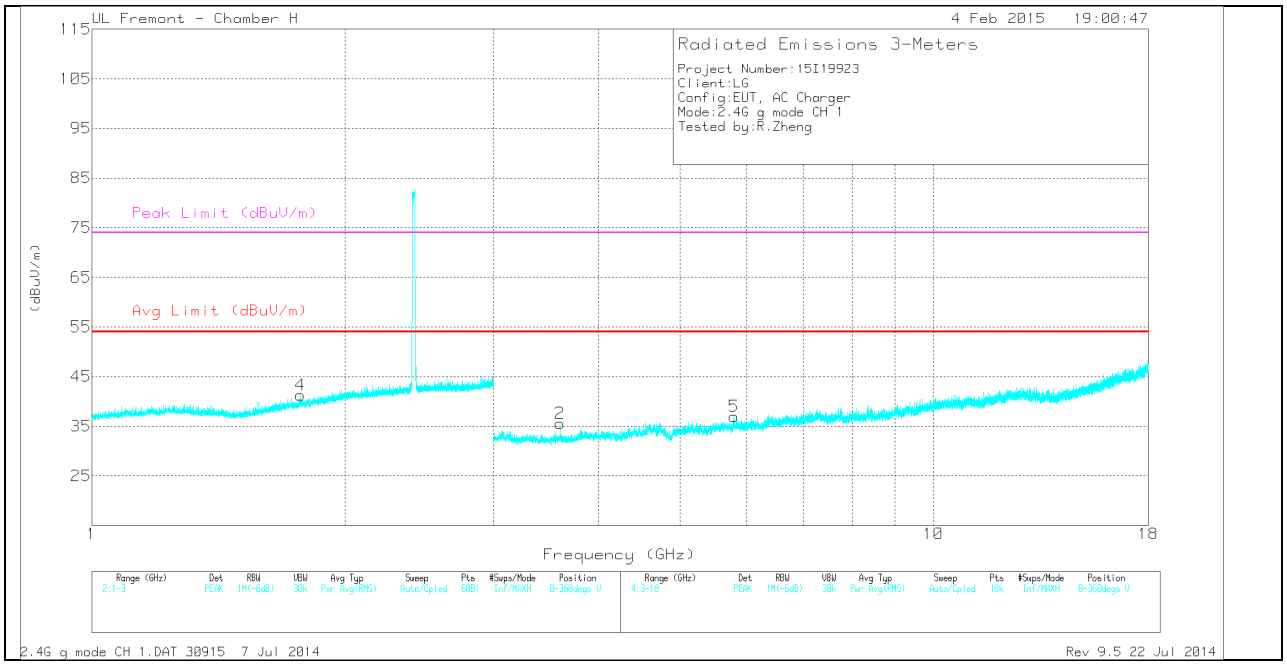
HARMONICS AND SPURIOUS EMISSIONS

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

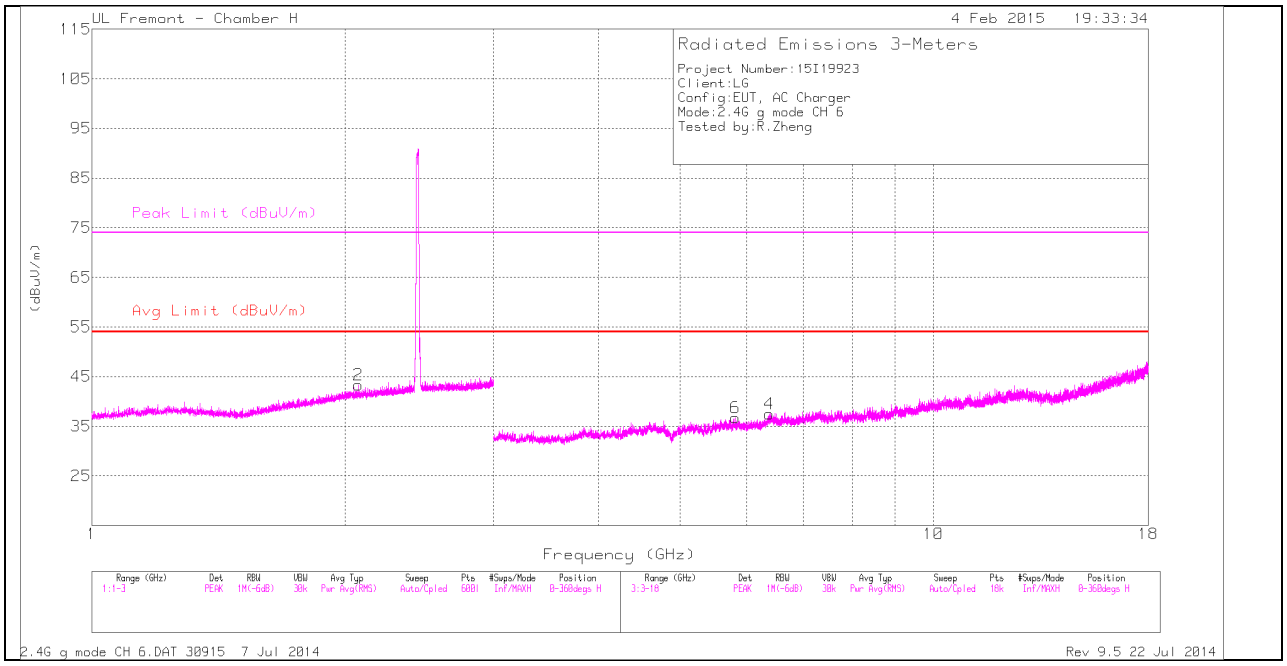
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.83	34.24	PK	33.3	-32.1	0	35.44	-	-	74	-38.56	0-360	100	H
2	* 3.599	35.34	PK	33	-32.8	0	35.54	-	-	74	-38.46	0-360	201	V
4	1.77	36.59	PK	29.8	-25.1	0	41.29	-	-	-	-	0-360	201	V
3	2.156	36.35	PK	31.5	-24.8	0	43.05	-	-	-	-	0-360	100	H
6	5.224	33.77	PK	34.7	-31.9	0	36.57	-	-	-	-	0-360	201	H
5	5.797	32.73	PK	35	-30.8	0	36.93	-	-	-	-	0-360	100	V

PK - Peak detector

RADIATED EMISSIONS

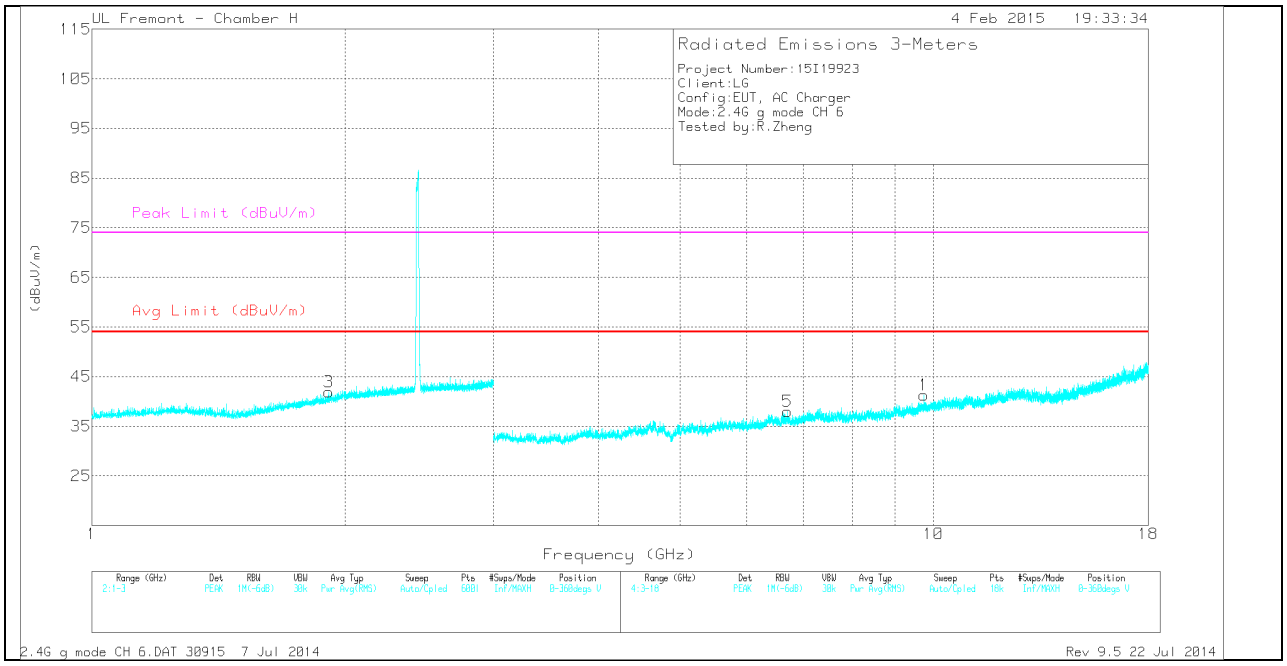
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.832	41.47	PK2	33.3	-32.1	0	42.67	-	-	74	-31.33	104	299	H
* 3.832	29.88	MAv1	33.3	-32.1	.21	31.29	54	-22.71	-	-	104	299	H
* 3.6	41.25	PK2	33	-32.8	0	41.45	-	-	74	-32.55	252	284	V
* 3.601	29.95	MAv1	33	-32.9	.21	30.26	54	-23.74	-	-	252	284	V

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.

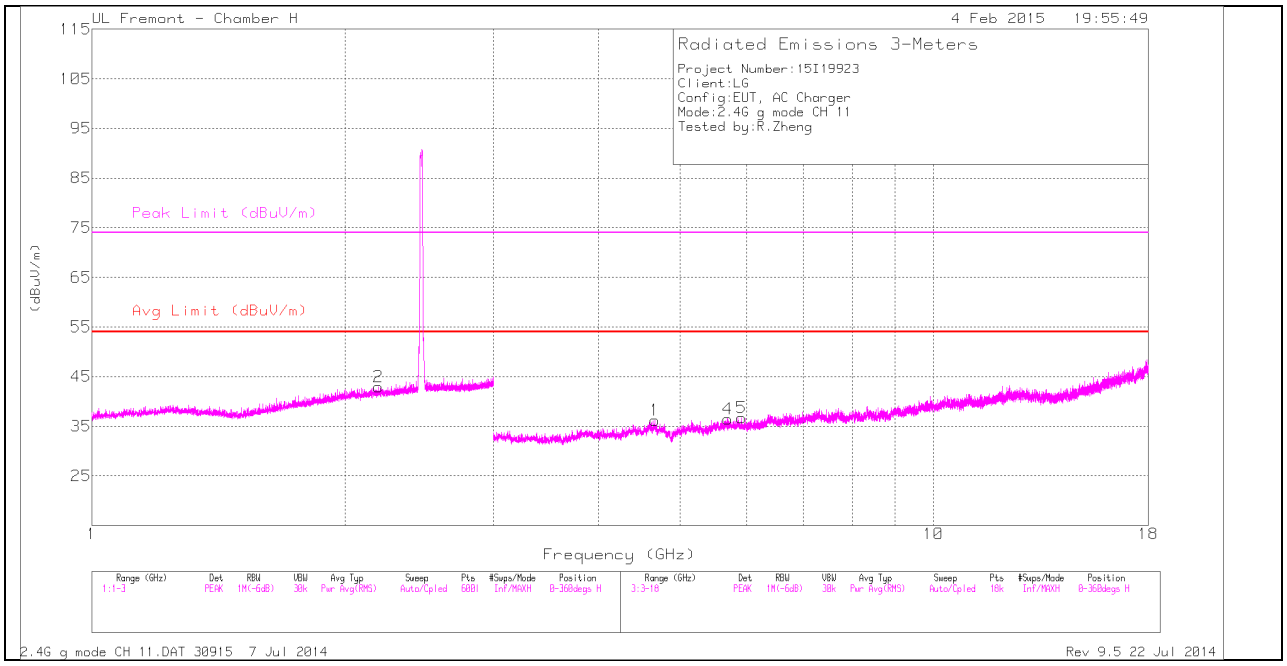
MID CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (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
3	1.911	36.28	PK	30.7	-25.1	0	41.88	-	-	-	-	0-360	100	V
2	2.073	36.84	PK	31.4	-24.9	0	43.34	-	-	-	-	0-360	100	H
6	5.813	32.53	PK	35.1	-30.9	0	36.73	-	-	-	-	0-360	100	H
4	6.382	32.22	PK	35.5	-30.3	0	37.42	-	-	-	-	0-360	100	H
5	6.711	31.69	PK	35.8	-29.5	0	37.99	-	-	-	-	0-360	100	V
1	9.748	30.59	PK	36.9	-26.2	0	41.29	-	-	-	-	0-360	100	V

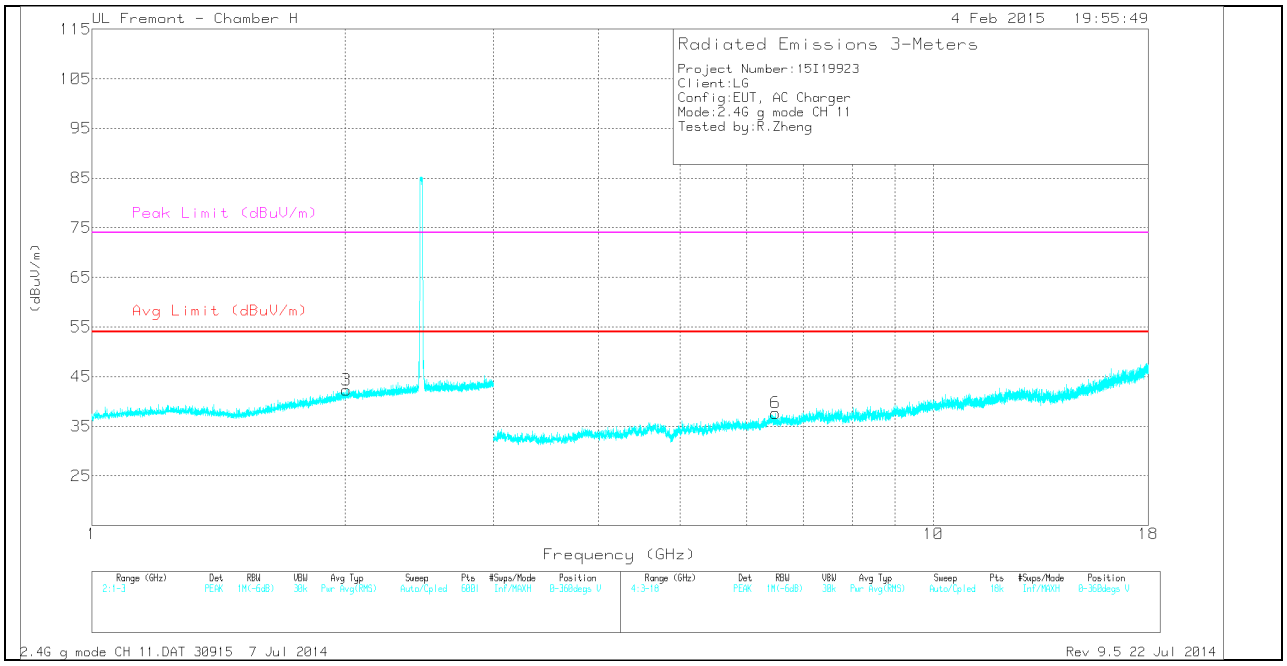
PK - Peak detector

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 T863 (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	* 4.664	33.95	PK	34.2	-31.9	0	36.25	-	-	74	-37.75	0-360	201	H
3	2.005	35.95	PK	31.3	-24.9	0	42.35	-	-	-	-	0-360	201	V
2	2.189	36	PK	31.6	-24.7	0	42.9	-	-	-	-	0-360	100	H
4	5.701	33.14	PK	35	-31.7	0	36.44	-	-	-	-	0-360	100	H
5	5.912	33.76	PK	35.1	-32.1	0	36.76	-	-	-	-	0-360	100	H
6	6.487	32.97	PK	35.6	-30.9	0	37.67	-	-	-	-	0-360	201	V

PK - Peak detector

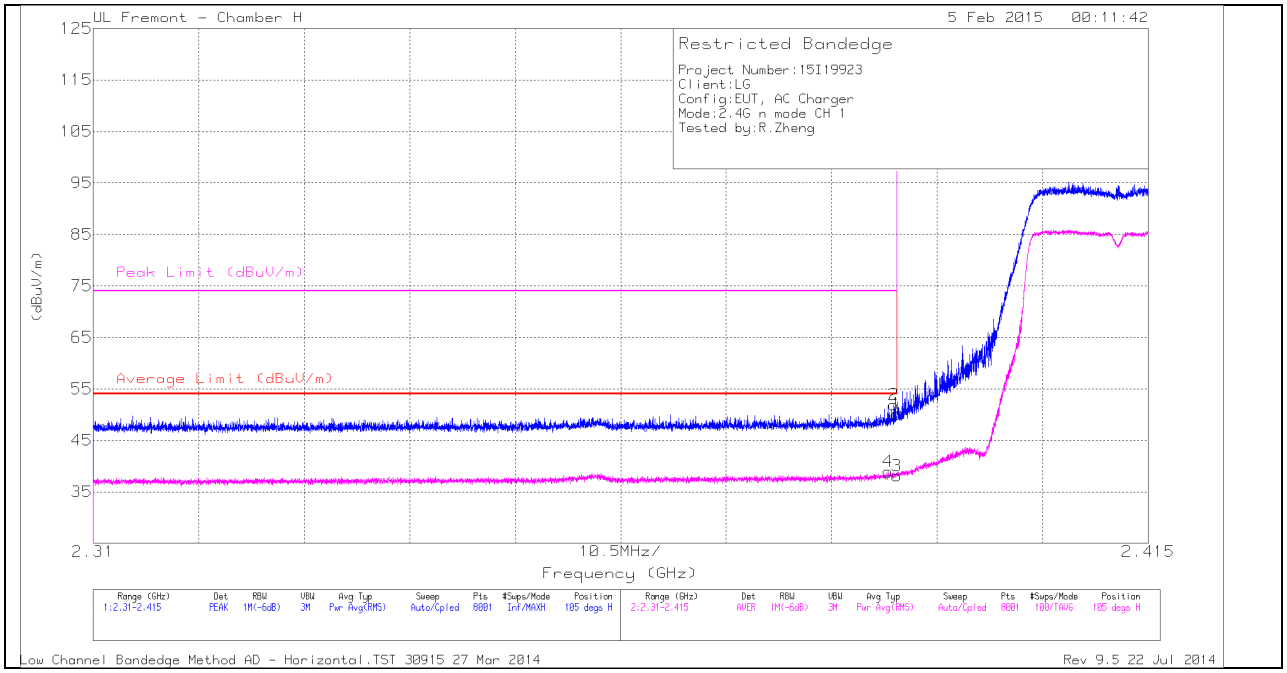
RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (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
* 4.664	41.33	PK2	34.2	-31.9	0	43.63	-	-	74	-30.37	1	140	H
* 4.664	29.87	MAv1	34.2	-31.9	.21	32.38	54	-21.62	-	-	1	140	H

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

RESTRICTED BANDEDGE (LOW CHANNEL)

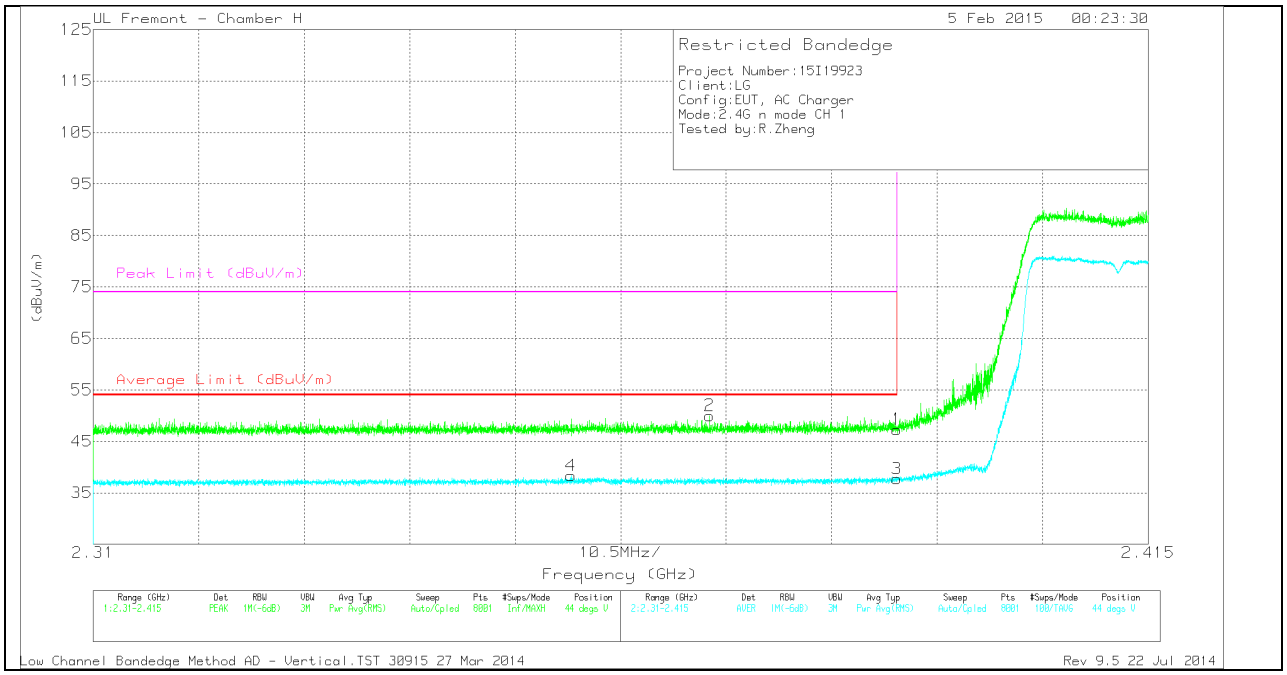
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	42.75	PK	32	-24.6	0	50.15	-	-	74	-23.85	105	259	H
2	* 2.39	44.48	PK	32	-24.6	0	51.88	-	-	74	-22.12	105	259	H
3	* 2.39	30.47	RMS	32	-24.6	.22	38.09	54	-15.91	-	-	105	259	H
4	* 2.389	31.3	RMS	32	-24.6	.22	38.92	54	-15.08	-	-	105	259	H

VERTICAL PEAK AND AVERAGE PLOT

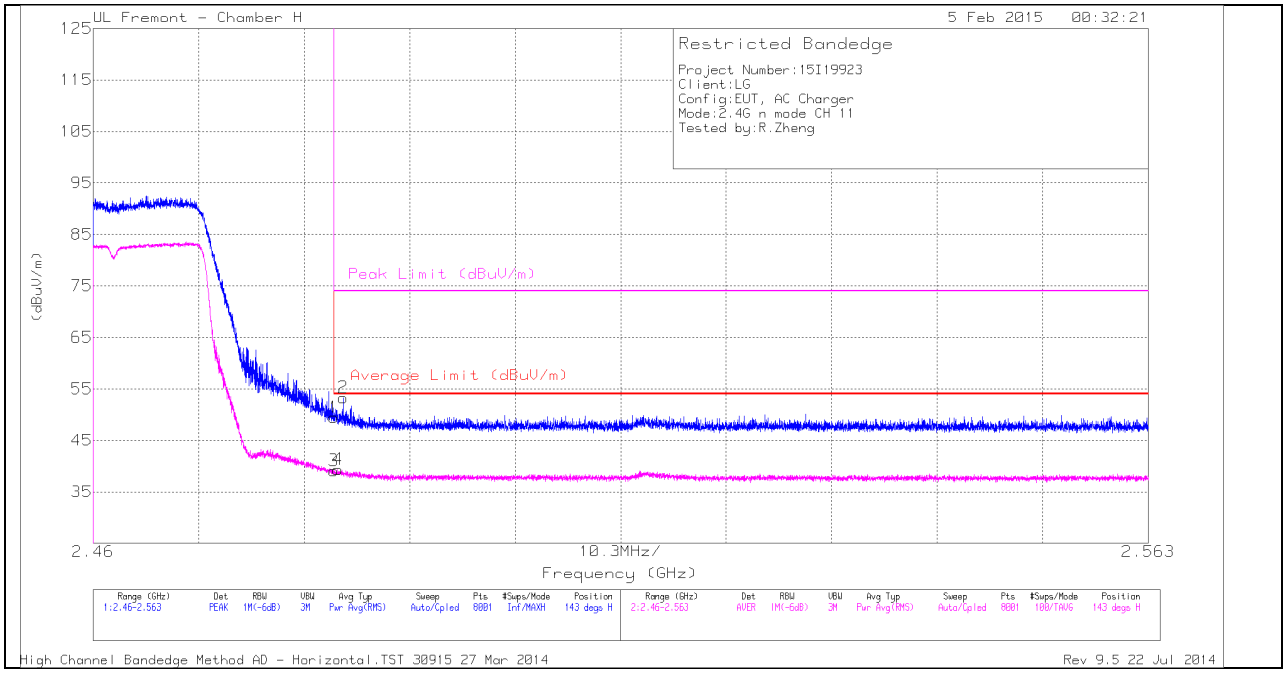


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.92	PK	32	-24.6	0	47.32	-	-	74	-26.68	44	217	V
2	* 2.371	42.7	PK	31.9	-24.6	0	50	-	-	74	-24	44	217	V
3	* 2.39	30.09	RMS	32	-24.6	.22	37.71	54	-16.29	-	-	44	217	V
4	* 2.358	30.8	RMS	31.9	-24.6	.22	38.32	54	-15.68	-	-	44	217	V

AUTHORIZED BANDEDGE (HIGH CHANNEL)

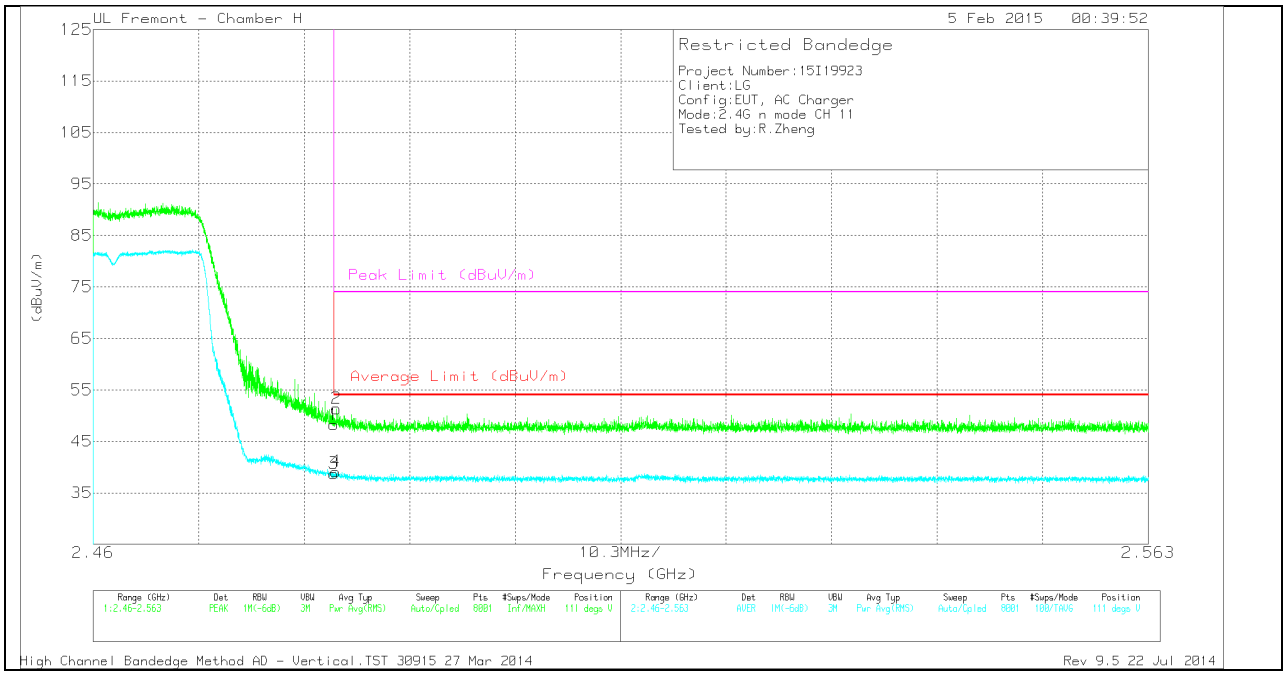
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (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	41.78	PK	32.2	-24.5	0	49.48	-	-	74	-24.52	143	204	H
2	* 2.484	45.61	PK	32.2	-24.5	0	53.31	-	-	74	-20.69	143	204	H
3	* 2.484	31.18	RMS	32.2	-24.5	.22	39.1	54	-14.9	-	-	143	204	H
4	* 2.484	31.43	RMS	32.2	-24.5	.22	39.35	54	-14.65	-	-	143	204	H

VERTICAL PEAK AND AVERAGE PLOT

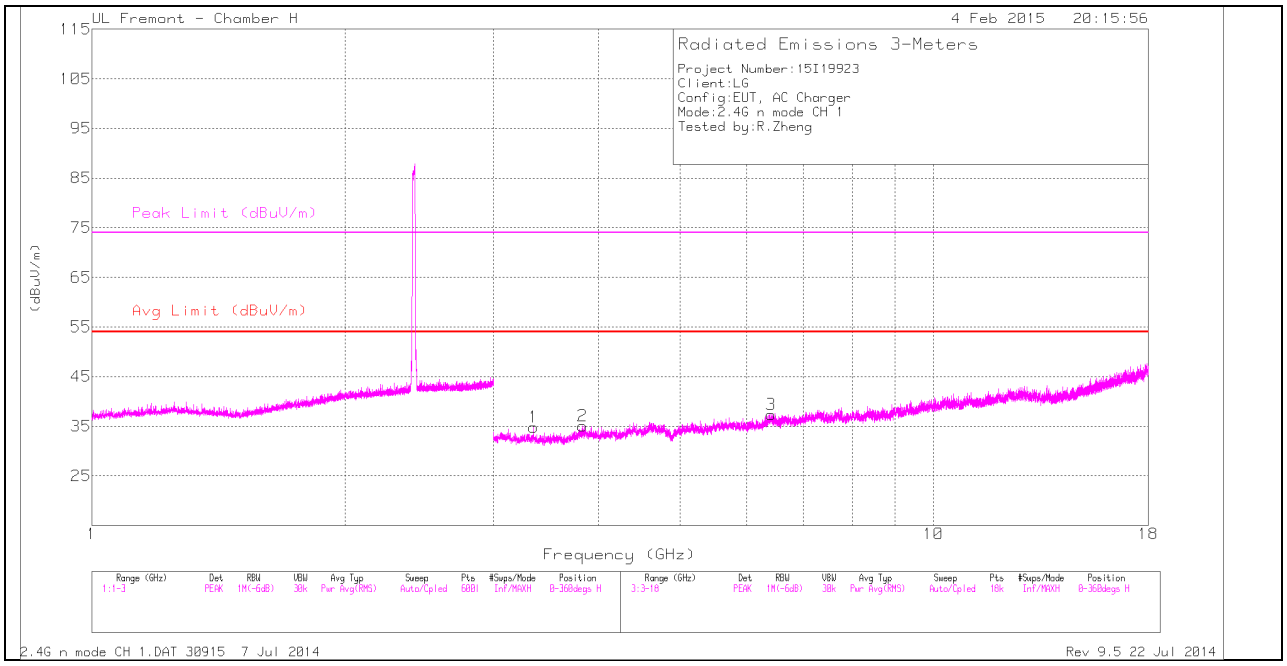


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (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	40.53	PK	32.2	-24.5	0	48.23	-	-	74	-25.77	111	202	V
2	* 2.484	43.67	PK	32.2	-24.5	0	51.37	-	-	74	-22.63	111	202	V
3	* 2.484	30.85	RMS	32.2	-24.5	.22	38.77	54	-15.23	-	-	111	202	V
4	* 2.484	31.22	RMS	32.2	-24.5	.22	39.14	54	-14.86	-	-	111	202	V

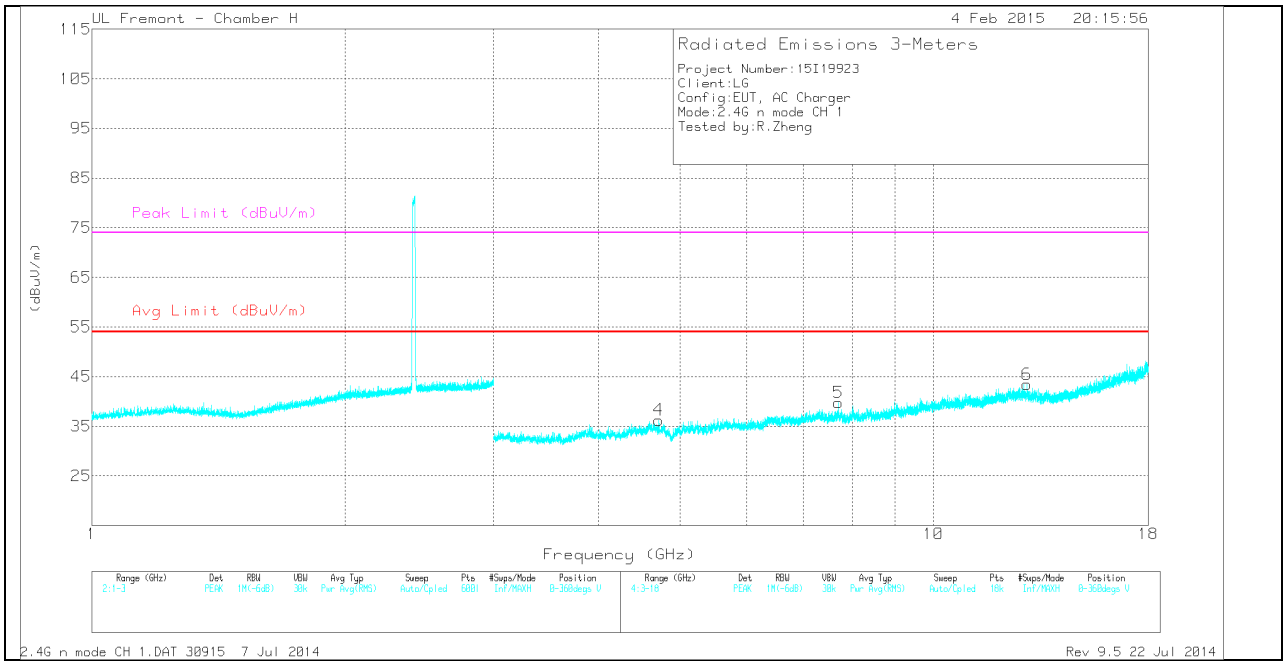
HARMONICS AND SPURIOUS EMISSIONS

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

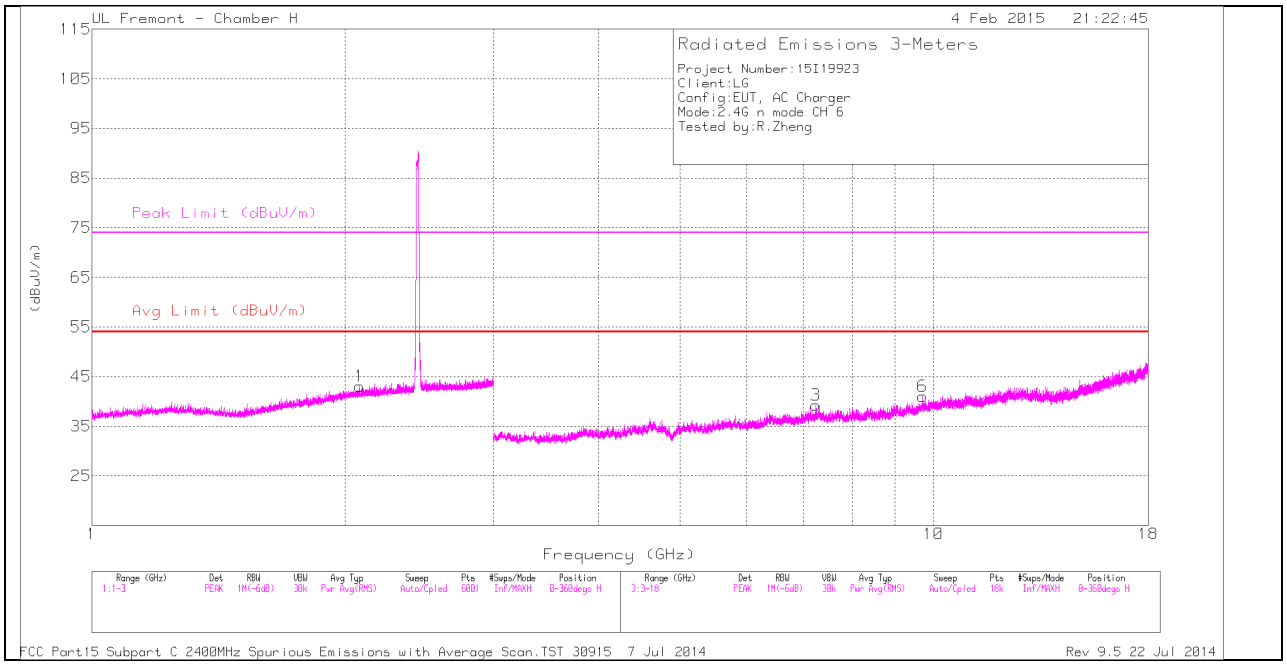
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.35	34.25	PK	32.9	-32.3	0	34.85	-	-	74	-39.15	0-360	100	H
2	* 3.832	33.75	PK	33.3	-32	0	35.05	-	-	74	-38.95	0-360	100	H
4	* 4.717	33.67	PK	34.3	-31.7	0	36.27	-	-	74	-37.73	0-360	201	V
5	* 7.708	32.21	PK	36.1	-28.5	0	39.81	-	-	74	-34.19	0-360	100	V
3	6.415	32.09	PK	35.5	-30.2	0	37.39	-	-	-	-	0-360	100	H
6	12.914	29.57	PK	39.2	-25.3	0	43.47	-	-	-	-	0-360	201	V

PK - Peak detector

RADIATED EMISSIONS

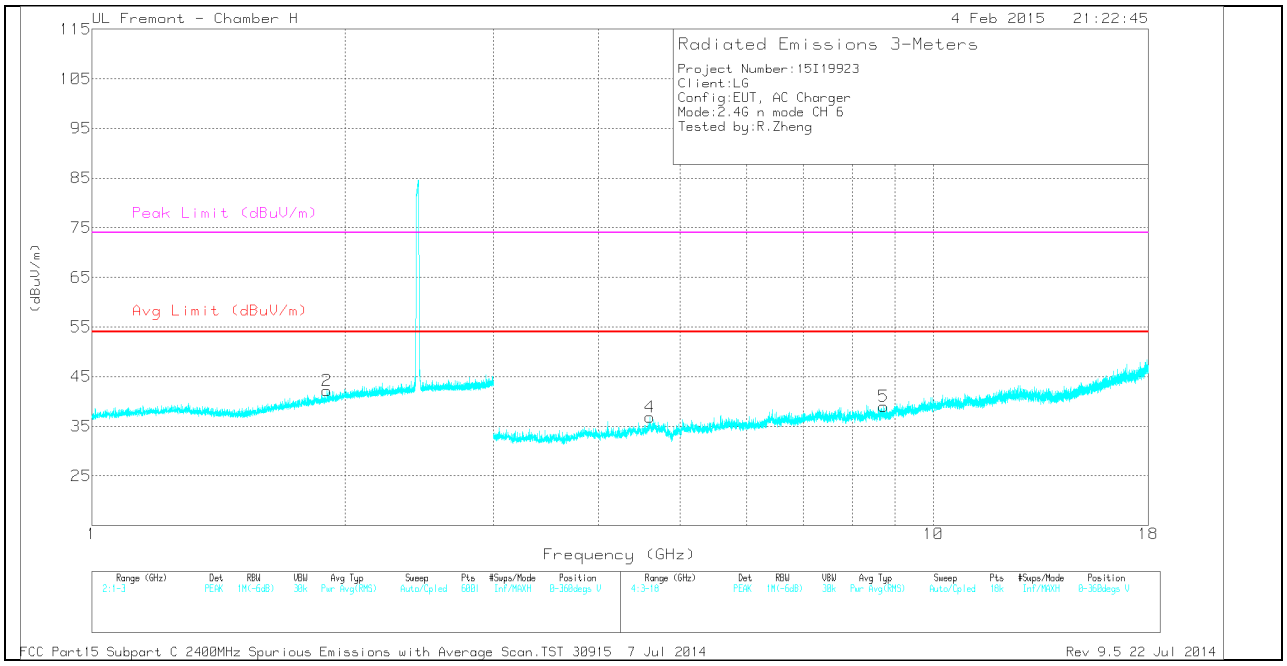
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.352	40.66	PK2	32.9	-32.4	0	41.16	-	-	74	-32.84	88	179	H
* 3.351	29.39	MAv1	32.9	-32.4	.22	30.11	54	-23.89	-	-	88	179	H
* 3.831	40.97	PK2	33.3	-32.1	0	42.17	-	-	74	-31.83	22	368	H
* 3.833	29.94	MAv1	33.3	-32.1	.22	31.36	54	-22.64	-	-	22	368	H
* 4.719	40.64	PK2	34.3	-31.7	0	43.24	-	-	74	-30.76	212	234	V
* 4.719	29.35	MAv1	34.3	-31.7	.22	32.17	54	-21.83	-	-	212	234	V
* 7.71	38.66	PK2	36.1	-28.6	0	46.16	-	-	74	-27.84	212	100	V
* 7.707	27.65	MAv1	36.1	-28.5	.22	35.47	54	-18.53	-	-	212	100	V
6.416	39.62	PK2	35.5	-30.2	0	44.92	-	-	-	-	22	100	H
12.915	36.22	PK2	39.2	-25.3	0	50.12	-	-	-	-	212	202	V

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

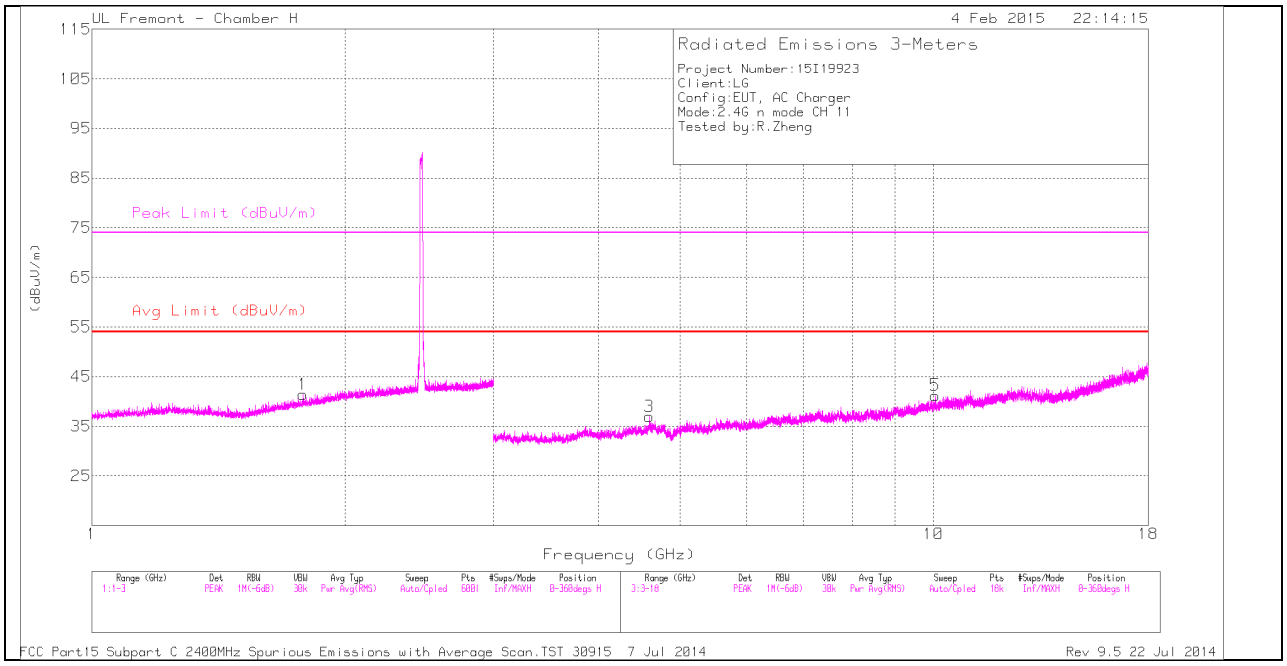
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 7.251	33.13	PK	36.2	-30.1	0	39.23	-	-	74	-34.77	0-360	201	H
4	* 4.602	35.14	PK	34.1	-32.4	0	36.84	-	-	74	-37.16	0-360	201	V
2	1.901	36.63	PK	30.7	-25.1	0	42.23	-	-	-	-	0-360	201	V
1	2.079	36.58	PK	31.4	-24.9	0	43.08	-	-	-	-	0-360	98	H
5	8.726	30.44	PK	36.2	-27.6	0	39.04	-	-	-	-	0-360	201	V
6	9.702	30.3	PK	36.9	-26.2	0	41	-	-	-	-	0-360	100	H

PK - Peak detector

RADIATED EMISSIONS

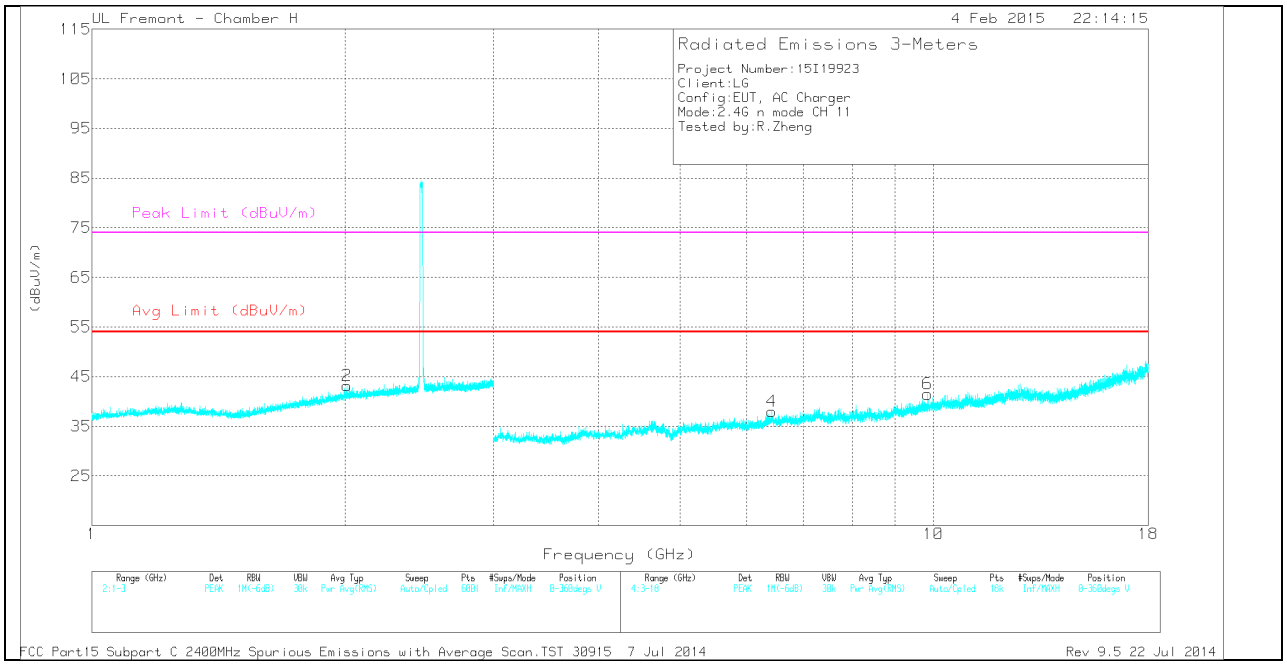
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 7.251	40.35	PK2	36.2	-30.1	0	46.45	-	-	74	-27.55	346	185	H
* 7.251	28.29	MAv1	36.2	-30.1	.22	34.61	54	-19.39	-	-	346	185	H
* 4.601	41.8	PK2	34.1	-32.4	0	43.5	-	-	74	-30.5	94	172	V
* 4.602	30.6	MAv1	34.1	-32.4	.22	32.52	54	-21.48	-	-	94	172	V

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 T863 (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
3	* 4.597	35.26	PK	34.1	-32.4	0	36.96	-	-	74	-37.04	0-360	201	H
1	1.782	36.63	PK	29.9	-25.1	0	41.43	-	-	-	-	0-360	201	H
2	2.009	36.76	PK	31.3	-24.9	0	43.16	-	-	-	-	0-360	100	V
4	6.427	32.77	PK	35.5	-30.3	0	37.97	-	-	-	-	0-360	201	V
6	9.848	31.18	PK	37.1	-26.8	0	41.48	-	-	-	-	0-360	100	V
5	10.054	29.82	PK	37.3	-25.9	0	41.22	-	-	-	-	0-360	201	H

PK - Peak detector

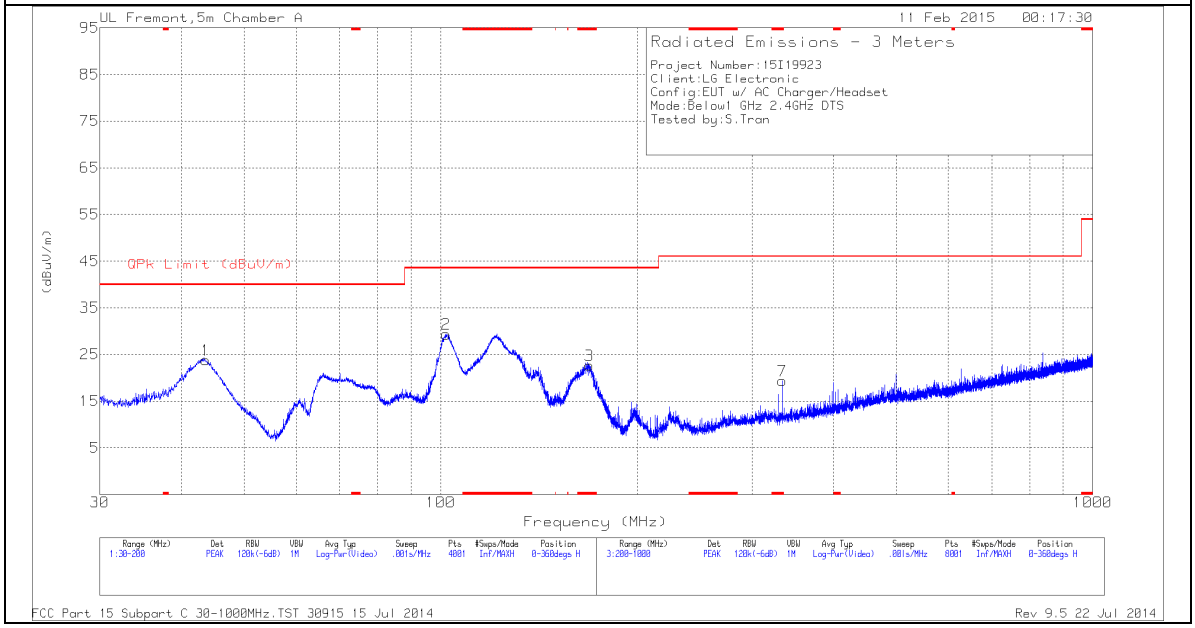
RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (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
* 4.598	41.75	PK2	34.1	-32.4	0	43.45	-	-	74	-30.55	212	373	H
* 4.596	30.57	MAv1	34.1	-32.4	.22	32.49	54	-21.51	-	-	212	373	H

9.3. WORST-CASE BELOW 1 GHz

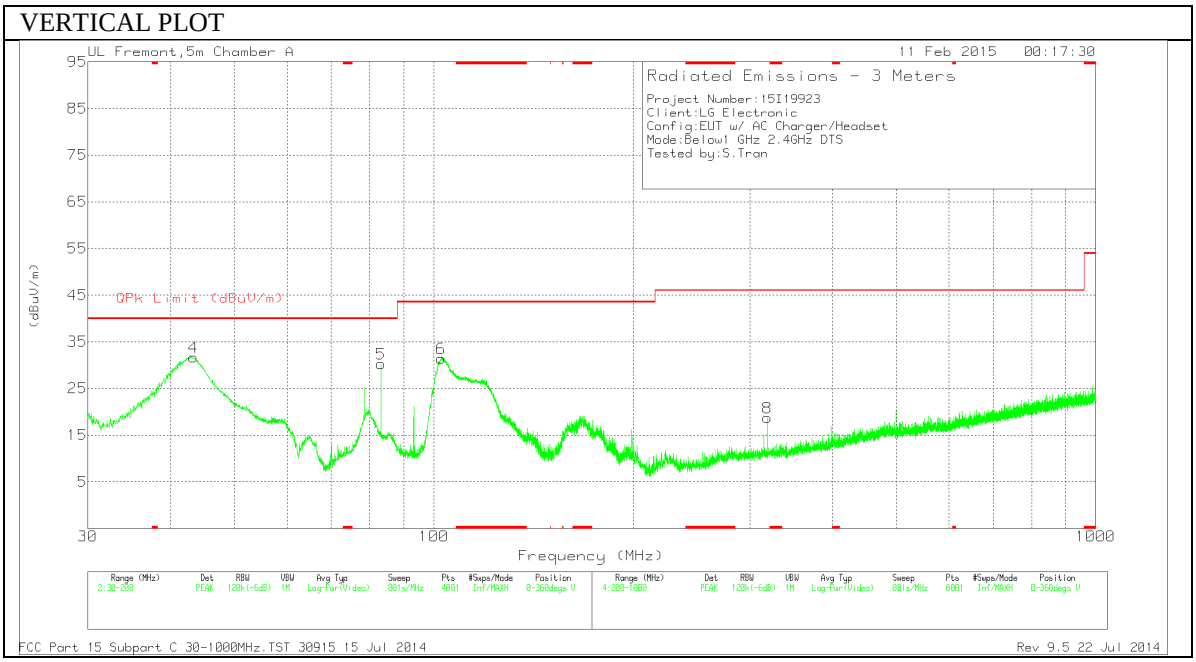
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



Below 1G Data

Trace Markers

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
3	* 168.9325	41.11	PK	11.7	-30.1	22.71	43.52	-20.81	0-360	200	H
7	* 334.1	34.69	PK	13.9	-29.2	19.39	46.02	-26.63	0-360	101	H
4	43.345	51.01	PK	11.8	-31.1	31.71	40	-8.29	0-360	101	V
1	43.6425	43.35	PK	11.6	-31.1	23.85	40	-16.15	0-360	400	H
5	83.21	53.67	PK	7.3	-30.7	30.27	40	-9.73	0-360	101	V
2	101.9525	49.65	PK	10.2	-30.5	29.35	43.52	-14.17	0-360	200	H
6	102.5475	51.4	PK	10.5	-30.5	31.4	43.52	-12.12	0-360	101	V
8	319.1	34.01	PK	14	-29.3	18.71	46.02	-27.31	0-360	101	V

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