



**FCC CFR47 PART 15 SUBPART C**

**CERTIFICATION TEST REPORT**

**FOR**

**CDMA/LTE PHABLET + BLUETOOTH, & DTS/UNII a/b/g/n**

**MODEL NUMBER: LG-LS770, LS770, LGLS770**

**FCC ID: ZNFLS770**

**REPORT NUMBER: 15119834-E4 REVISION A**

**ISSUE DATE: FEBRUARY 20, 2015**

*Prepared for*

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**NVLAP LAB CODE 200065-0**

Revision History

Rev.	Date	Revisions	Revised By
--	02/11/15	Initial Issue	D. Coronia
A	02/20/15	Update antenna gain information page 8	D. Coronia

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** LG ELECTRONICS MOBILECOMM U.S.A., INC  
**EUT DESCRIPTION:** CDMA/LTE PHABLET + BLUETOOTH, & DTS/UNII a/b/g/n  
**MODEL:** LG-LS770, LS770, LGLS770  
**SERIAL NUMBER:** 804AA215 (RADIATED), 00431 (CONDUCTED)  
**DATE TESTED:** JANUARY 20-29 & FEBRUARY 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.

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## 2. TEST METHODOLOGY

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

## 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
<input type="checkbox"/> Chamber A(IC: 2324B-1)	<input type="checkbox"/> Chamber D(IC: 2324B-4)
<input checked="" type="checkbox"/> Chamber B(IC: 2324B-2)	<input type="checkbox"/> Chamber E(IC: 2324B-5)
<input checked="" type="checkbox"/> Chamber C(IC: 2324B-3)	<input type="checkbox"/> Chamber F(IC: 2324B-6)
	<input type="checkbox"/> Chamber G(IC: 2324B-7)
	<input type="checkbox"/> 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:

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

### 4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 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 PHABLET + BLUETOOTH, & DTS/UNII a/b/g/n

### 5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2462	802.11b	16.0	39.81
2412 - 2462	802.11g	14.5	28.18
2412 - 2462	802.11n HT20	13.6	22.91

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a maximum gain of -3.84dBi.

## **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

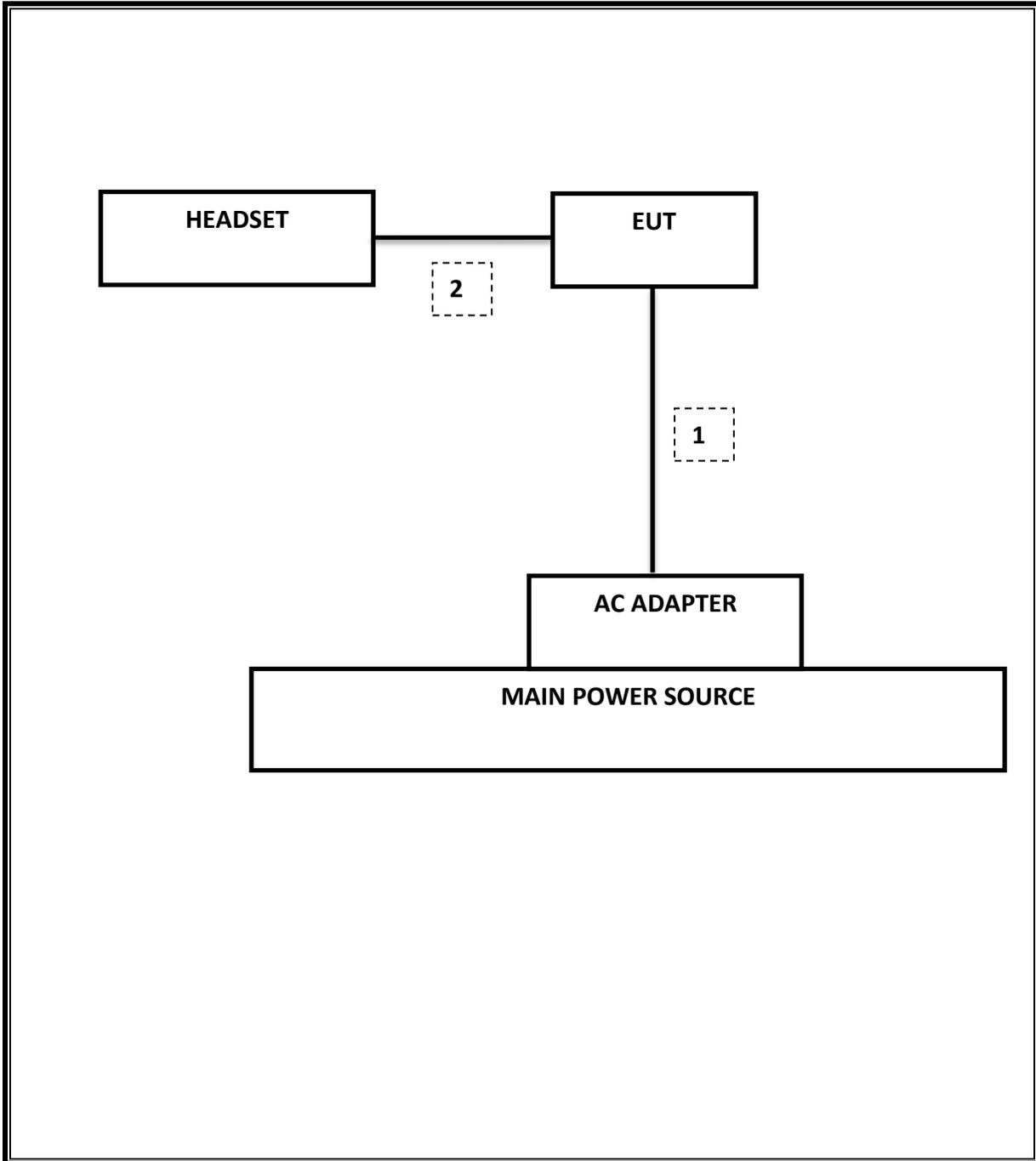
### I/O CABLES

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	8.55 MHz
2.1051, 15.247 (d)	RSS-210 A8.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-29.86 dBm
15.247	RSS-210 A8.4	TX conducted output power	<30dBm		Pass	16.00 dBm
15.247	RSS-210 A8.2	PSD	<8dBm		Pass	-12.58 dBm
15.207 (a)	RSS-GEN 8.8	AC Power Line conducted emissions	Section 10	Radiated	Pass	50.3 dBuV (AV)
15.205, 15.209	RSS-210 Clause 2.6, RSS-210 Clause 6	Radiated Spurious Emission	< 54dBuV/m		Pass	48.03 dBuV/m

## 9. ANTENNA PORT TEST RESULTS

### 9.1. 6 dB BANDWIDTH

#### LIMITS

FCC §15.247 (a) (2)

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

#### TEST PROCEDURE

Reference to KDB 558074 D01 DTS Meas Guidance v03r02: The transmitter output is connected to a spectrum analyzer with the RBW set to 100KHz, the VBW  $\geq 3 \times$  RBW, peak detector and max hold.

#### RESULTS

### 9.1.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	8.57	0.5
Mid	2437	8.60	0.5
High	2462	8.55	0.5
Worst		8.55	

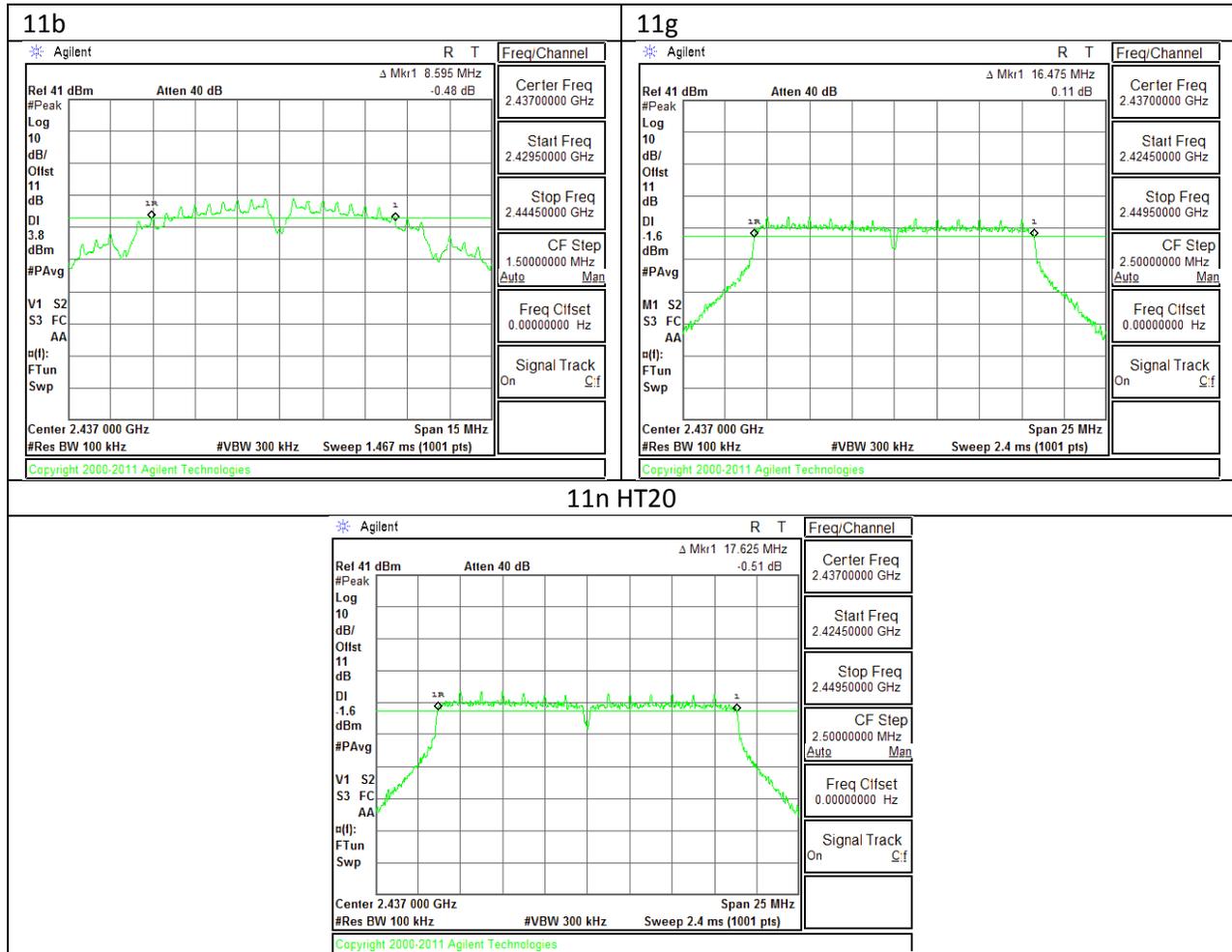
### 9.1.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.45	0.5
Mid	2437	16.48	0.5
High	2462	16.43	0.5
Worst		16.43	

### 9.1.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	17.70	0.5
Mid	2437	17.63	0.5
High	2462	17.68	0.5
Worst		17.63	

### 9.1.4. 6 dB BANDWIDTH MID CH PLOTS



## **9.2. 99% BANDWIDTH**

### **LIMITS**

None; for reporting purposes only.

### **RESULTS**

### 9.2.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	13.11
Mid	2437	13.40
High	2462	13.02
Worst		13.40

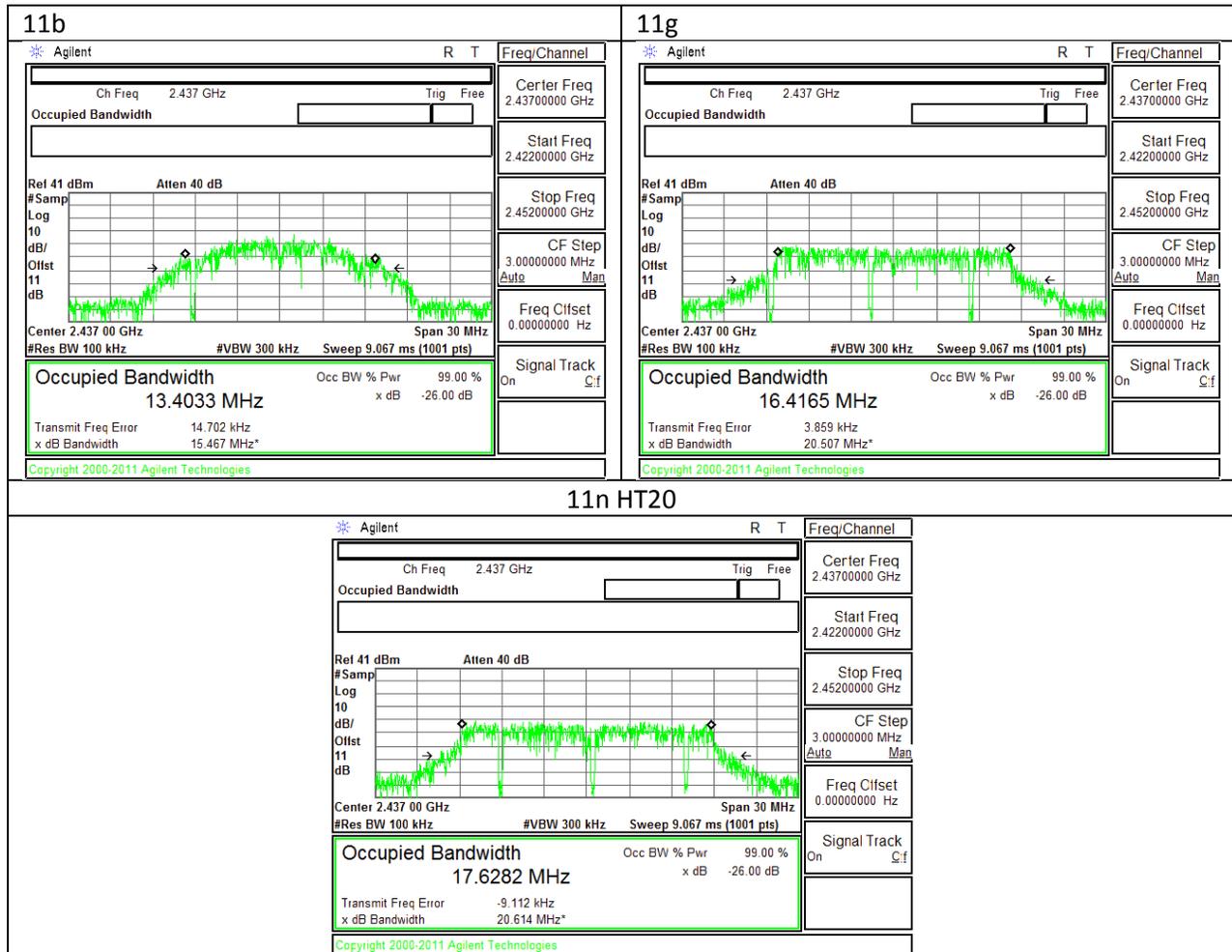
### 9.2.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.43
Mid	2437	16.42
High	2462	16.21
Worst		16.43

### 9.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.65
Mid	2437	17.63
High	2462	17.55
Worst		17.65

### 9.2.4. 99% BANDWIDTH MID CH PLOTS



### **9.3. OUTPUT POWER**

#### **LIMITS**

FCC §15.247

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### **TEST PROCEDURE**

The transmitter output is connected to a power meter.  
The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

#### **DIRECTIONAL ANTENNA GAIN**

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

#### **RESULTS**

### 9.3.1. 802.11b MODE IN THE 2.4 GHz BAND

**Limits**

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	3.40	30.00	30	36	30.00
Mid	2437	3.40	30.00	30	36	30.00
High	2462	3.40	30.00	30	36	30.00

**Results**

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	15.90	15.90	30.00	-14.10
Mid	2437	16.00	16.00	30.00	-14.00
High	2462	16.00	16.00	30.00	-14.00
Worst			16.00		

### 9.3.2. 802.11g MODE IN THE 2.4 GHz BAND

**Limits**

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	3.40	30.00	30	36	30.00
Mid	2437	3.40	30.00	30	36	30.00
High	2462	3.40	30.00	30	36	30.00

**Results**

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	14.30	14.30	30.00	-15.70
Mid	2437	14.20	14.20	30.00	-15.80
High	2462	14.50	14.50	30.00	-15.50
Worst			14.50		

### 9.3.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

#### Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	3.40	30.00	30	36	30.00
Mid	2437	3.40	30.00	30	36	30.00
High	2462	3.40	30.00	30	36	30.00

#### Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	13.50	13.50	30.00	-16.50
Mid	2437	13.60	13.60	30.00	-16.40
High	2462	13.60	13.60	30.00	-16.40
Worst			13.60		

## **9.4. PSD**

### **LIMITS**

FCC §15.247

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

### **RESULTS**

### 9.4.1. 802.11b MODE IN THE 2.4 GHz BAND

#### PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-12.76	8.0	-20.8
Mid	2437	-12.58	8.0	-20.6
High	2462	-12.86	8.0	-20.9

### 9.4.2. 802.11g MODE IN THE 2.4 GHz BAND

#### PSD Results

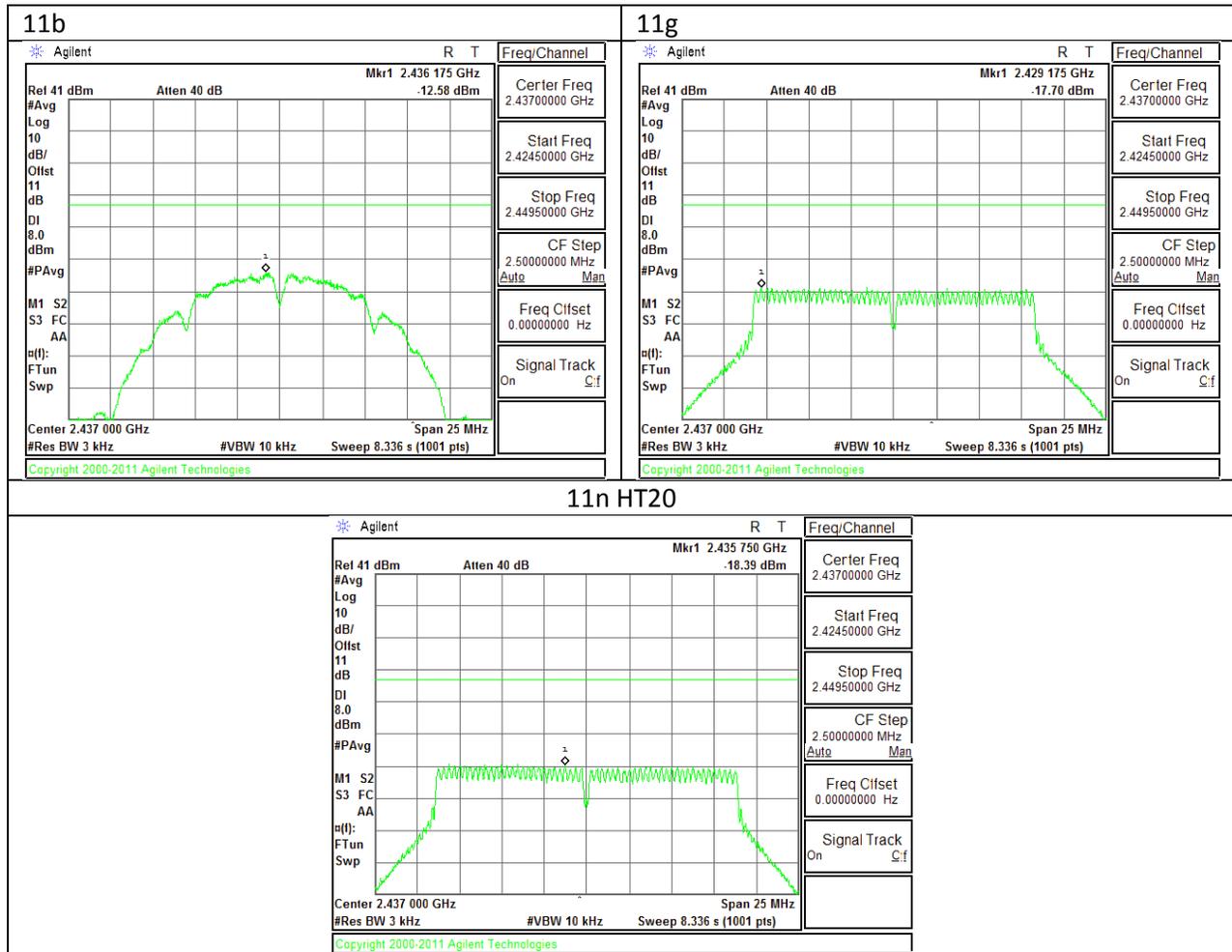
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-17.73	8.0	-25.7
Mid	2437	-17.70	8.0	-25.7
High	2462	-17.07	8.0	-25.1

### 9.4.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

#### PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-18.38	8.0	-26.4
Mid	2437	-18.39	8.0	-26.4
High	2462	-18.10	8.0	-26.1

### 9.4.4. PSD Chain 0 MID CH PLOTS



## **9.5. OUT-OF-BAND EMISSIONS**

### **LIMITS**

FCC §15.247 (d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

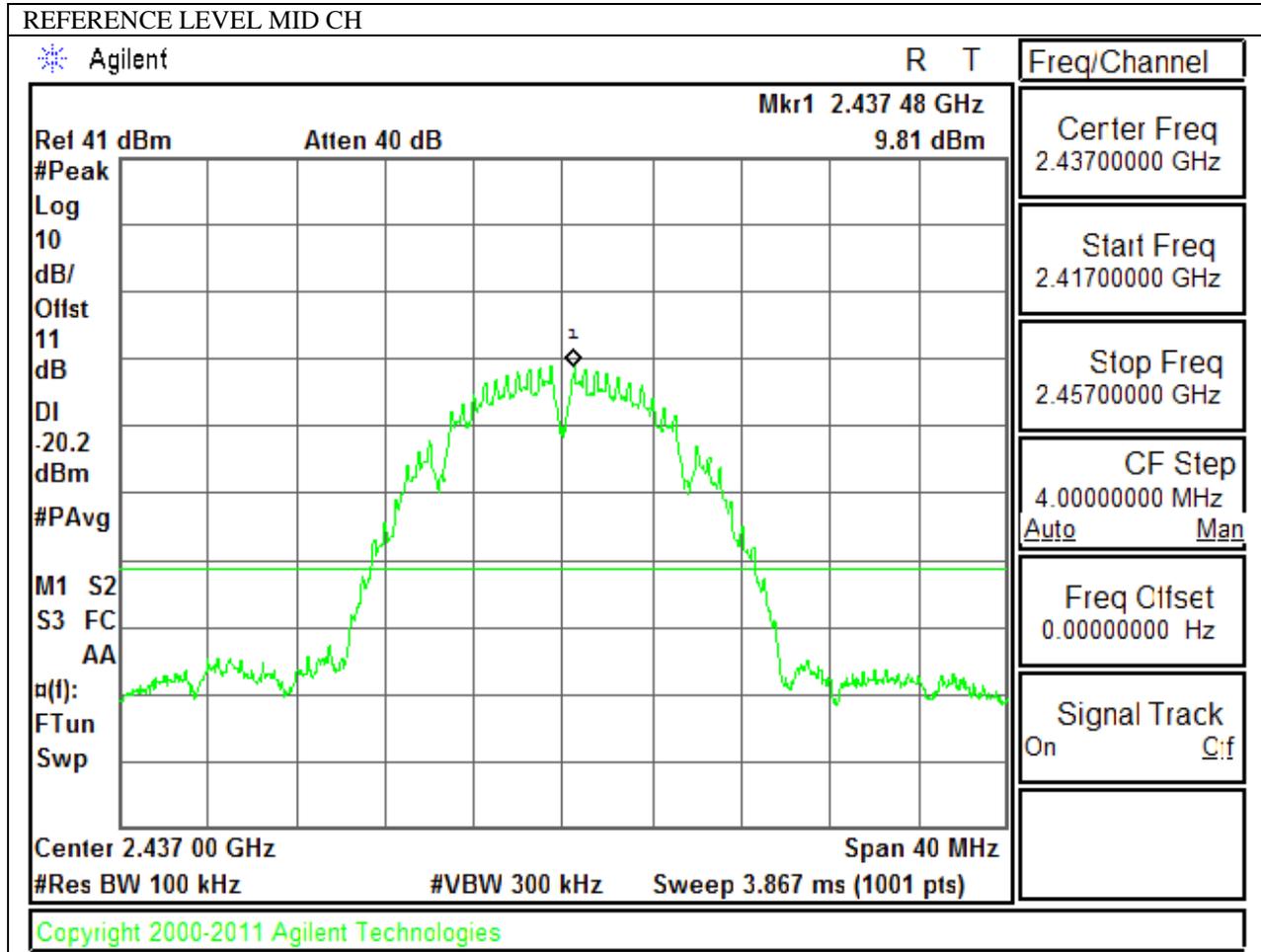
### **TEST PROCEDURE**

The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, band edge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

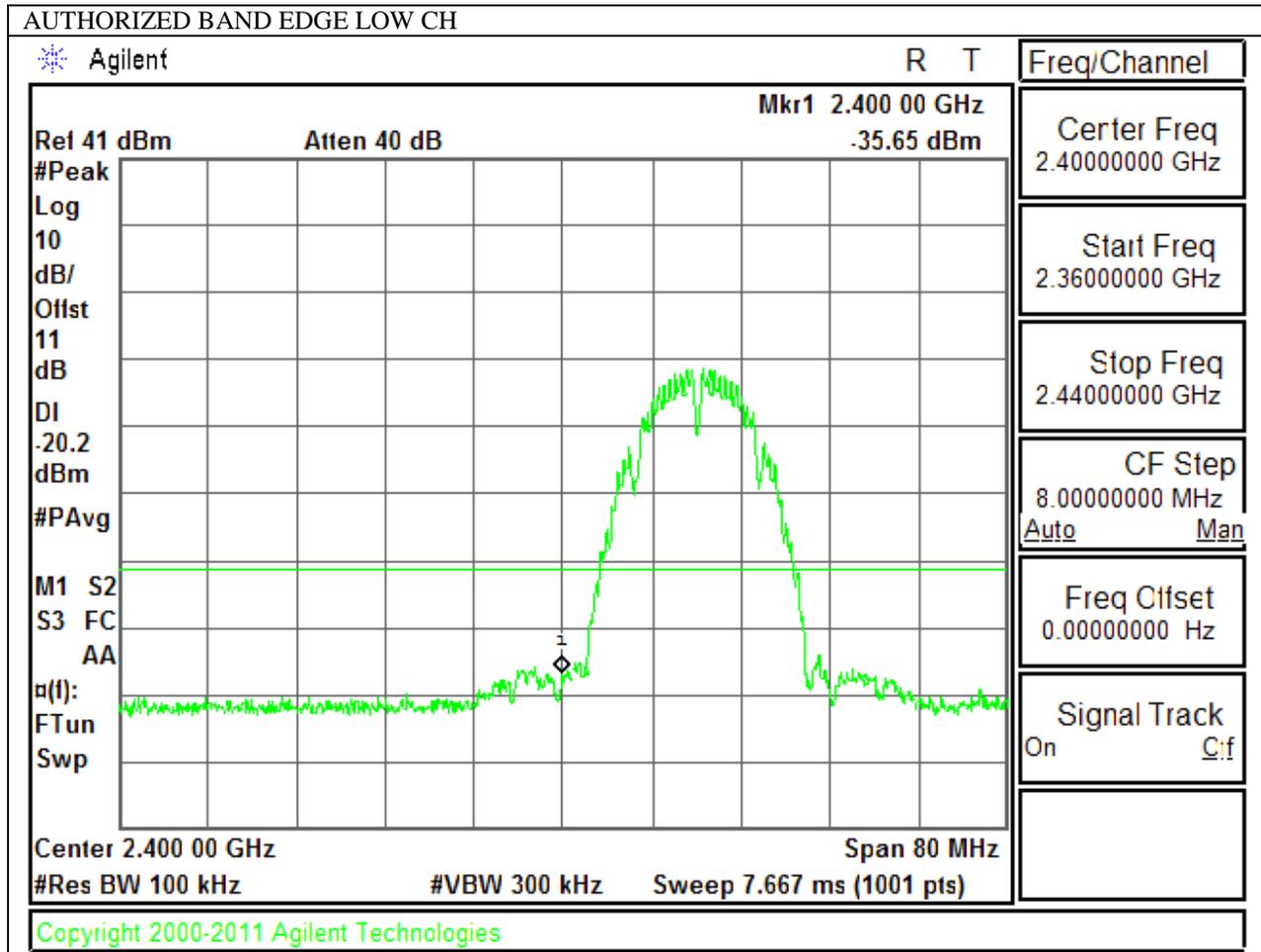
### **RESULTS**

### 9.5.1. 802.11b MODE IN THE 2.4 GHz BAND

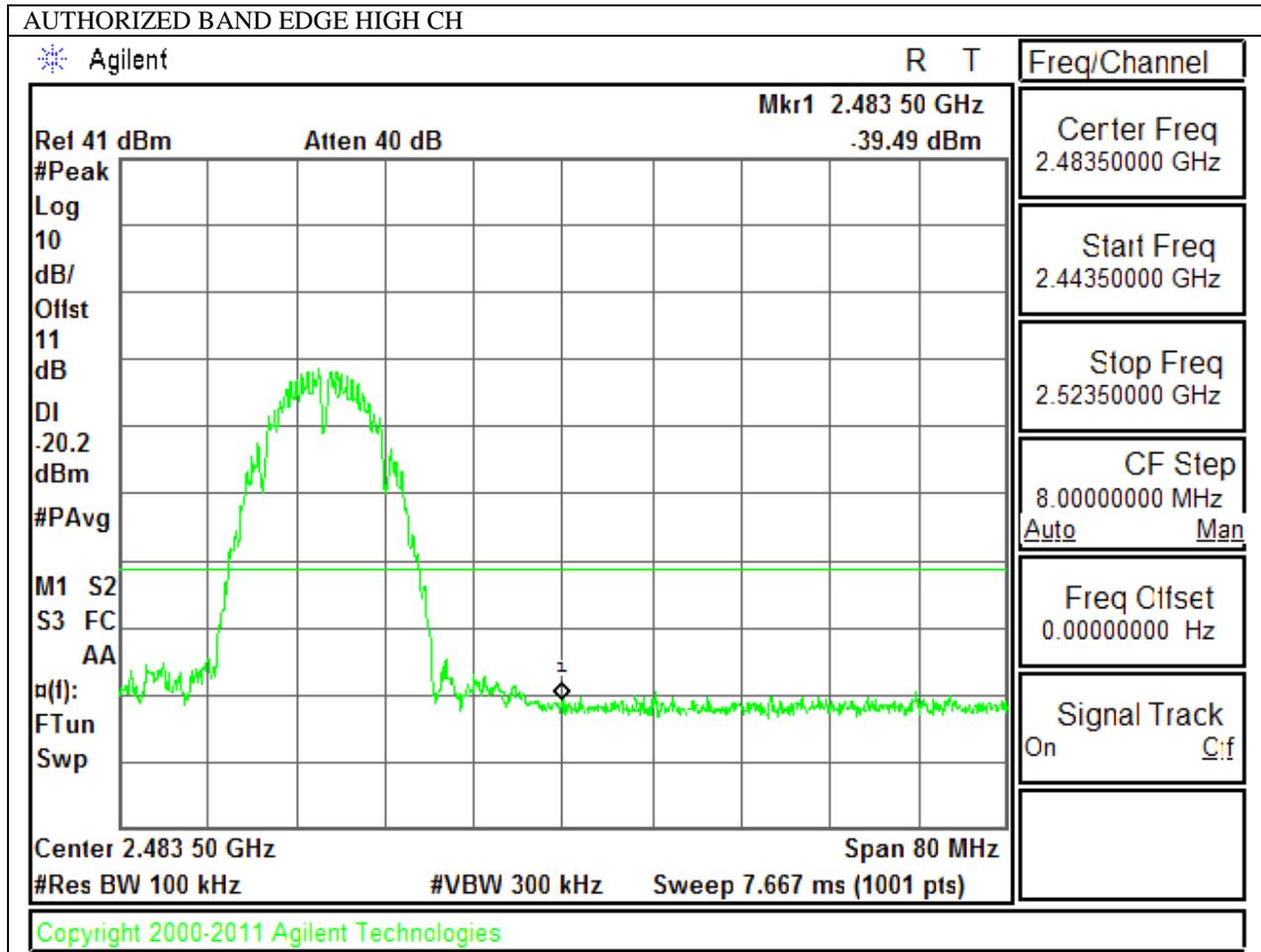
#### IN-BAND REFERENCE LEVEL



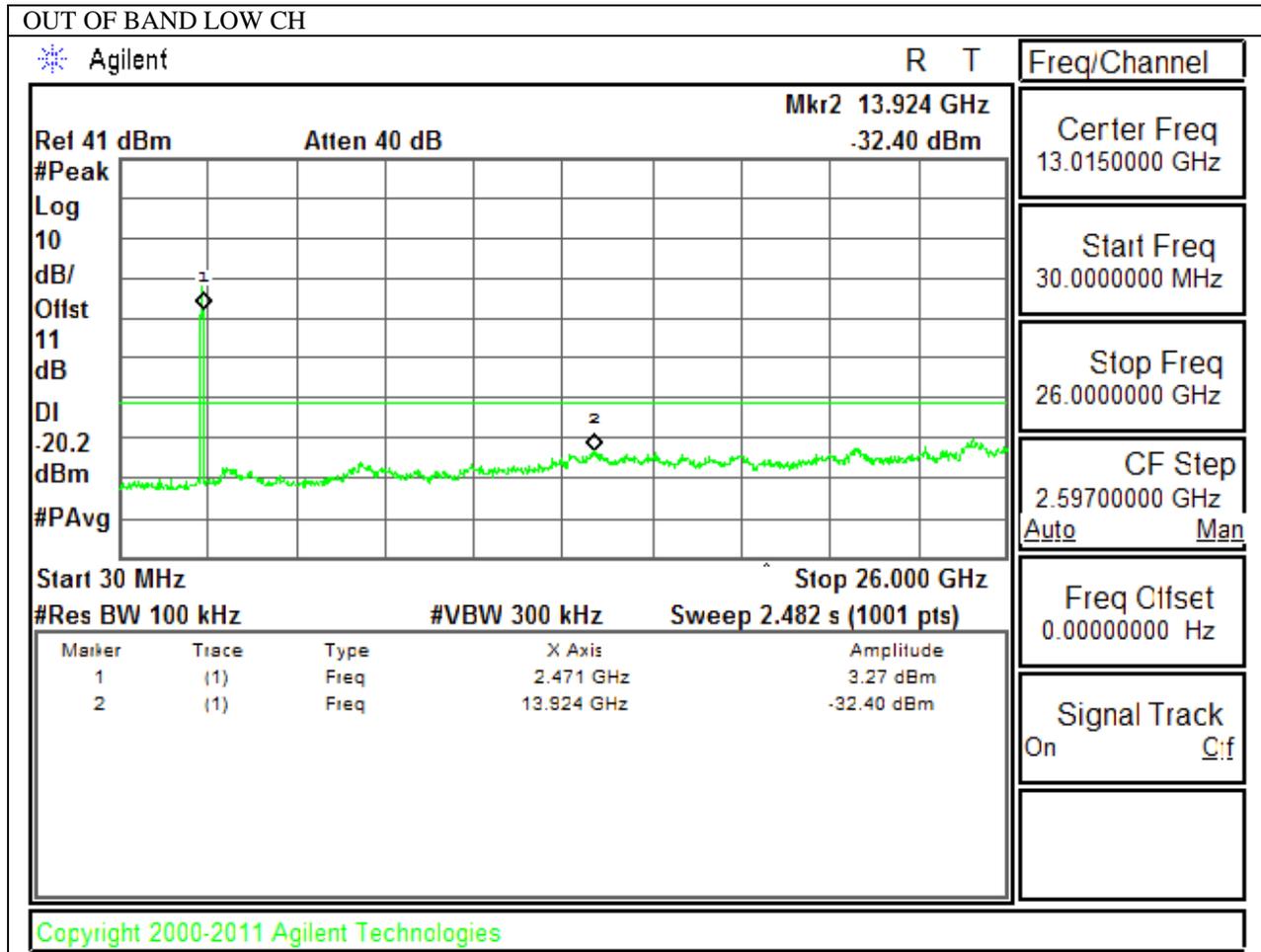
**LOW CHANNEL BANDEDGE**

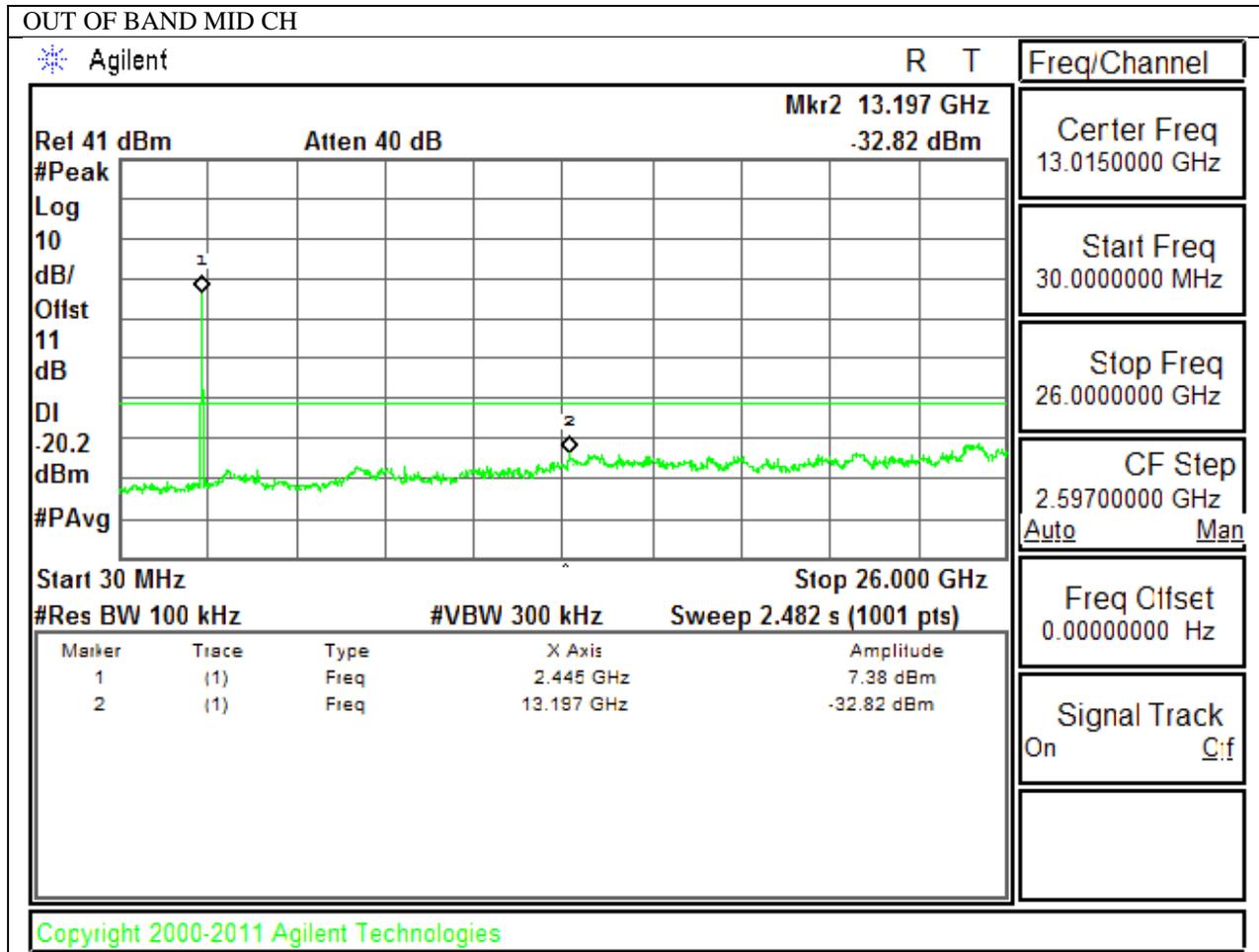


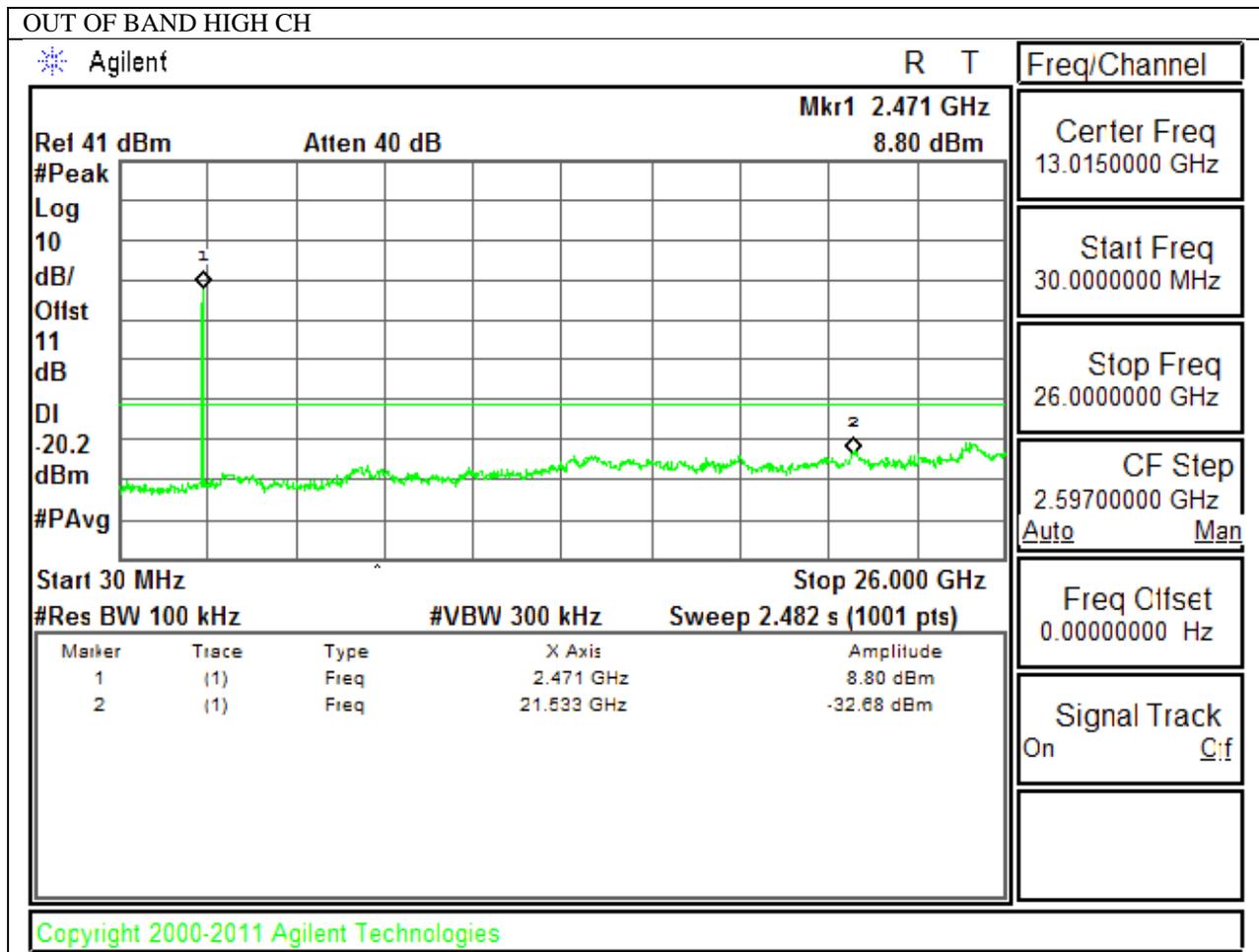
**HIGH CHANNEL BANDEDGE**



**OUT-OF-BAND EMISSIONS**

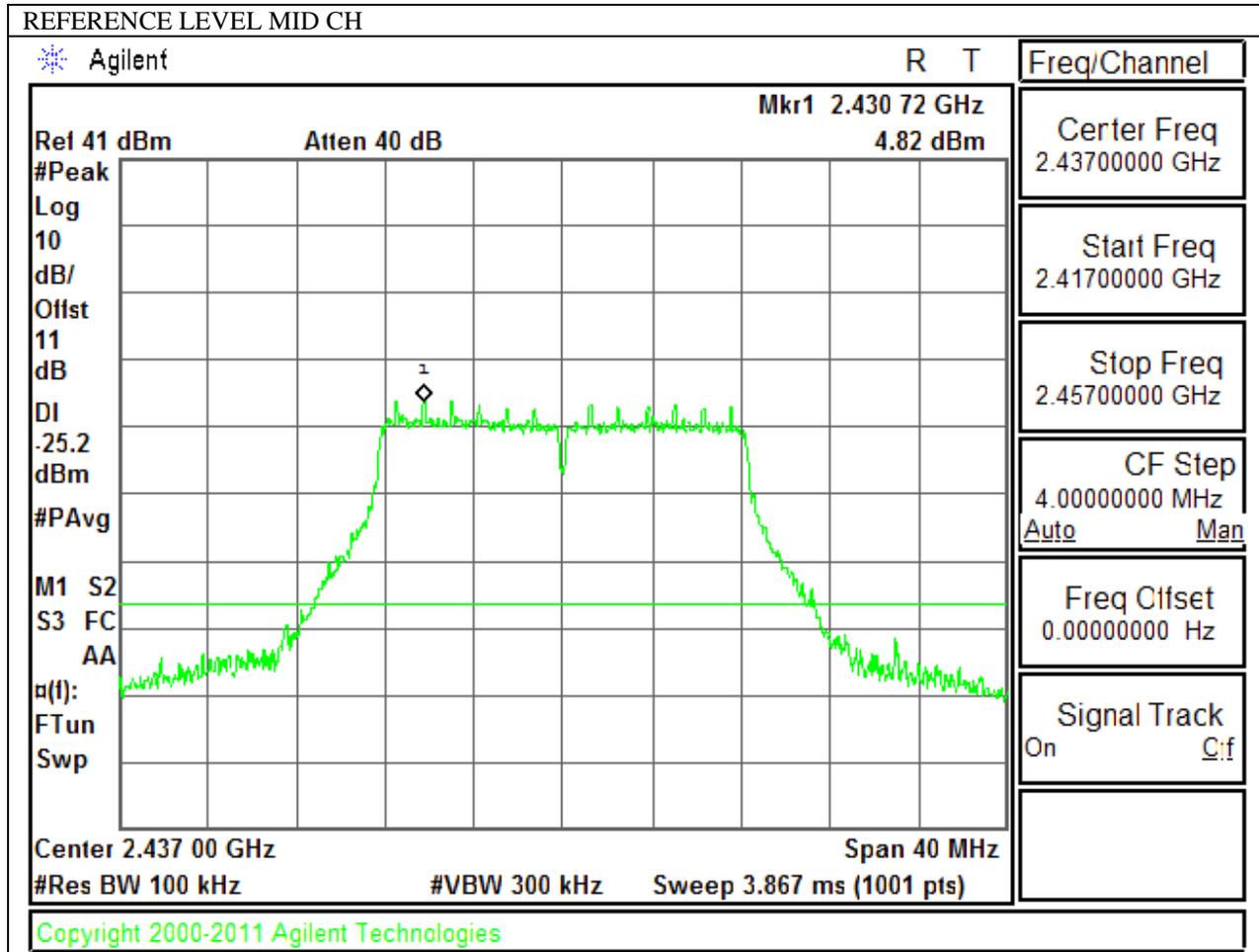




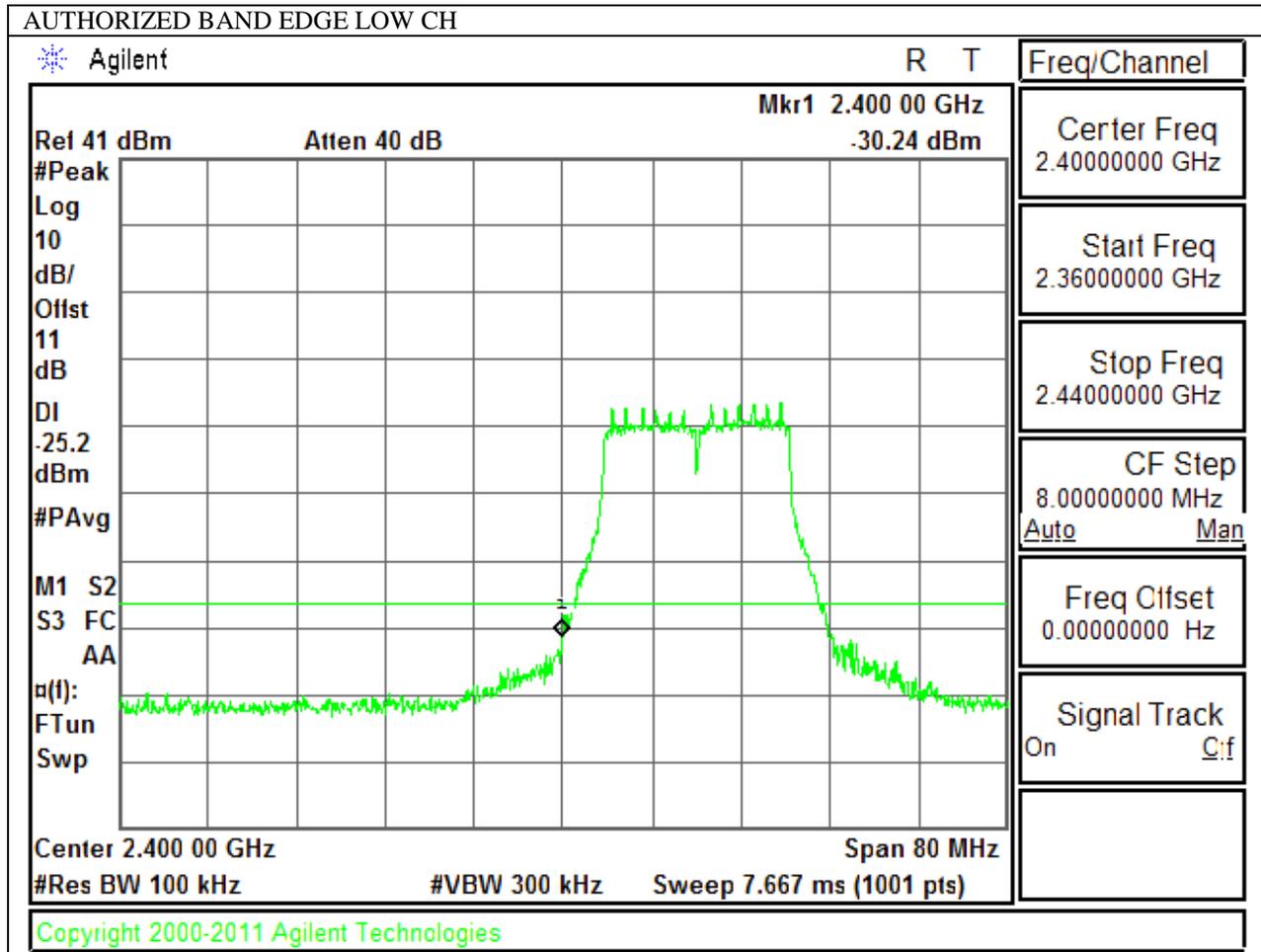


### 9.5.2. 802.11g MODE IN THE 2.4 GHz BAND

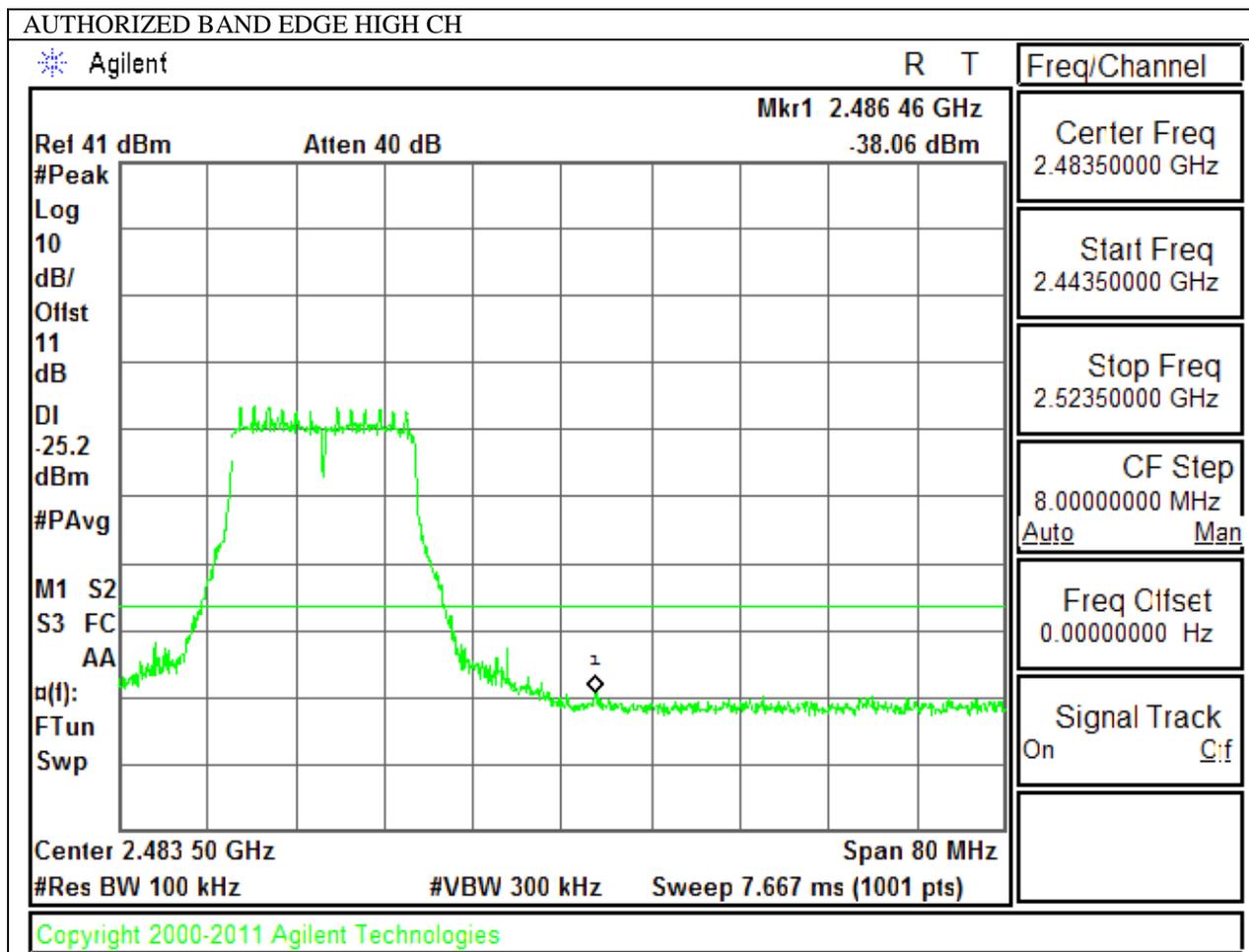
#### IN-BAND REFERENCE LEVEL



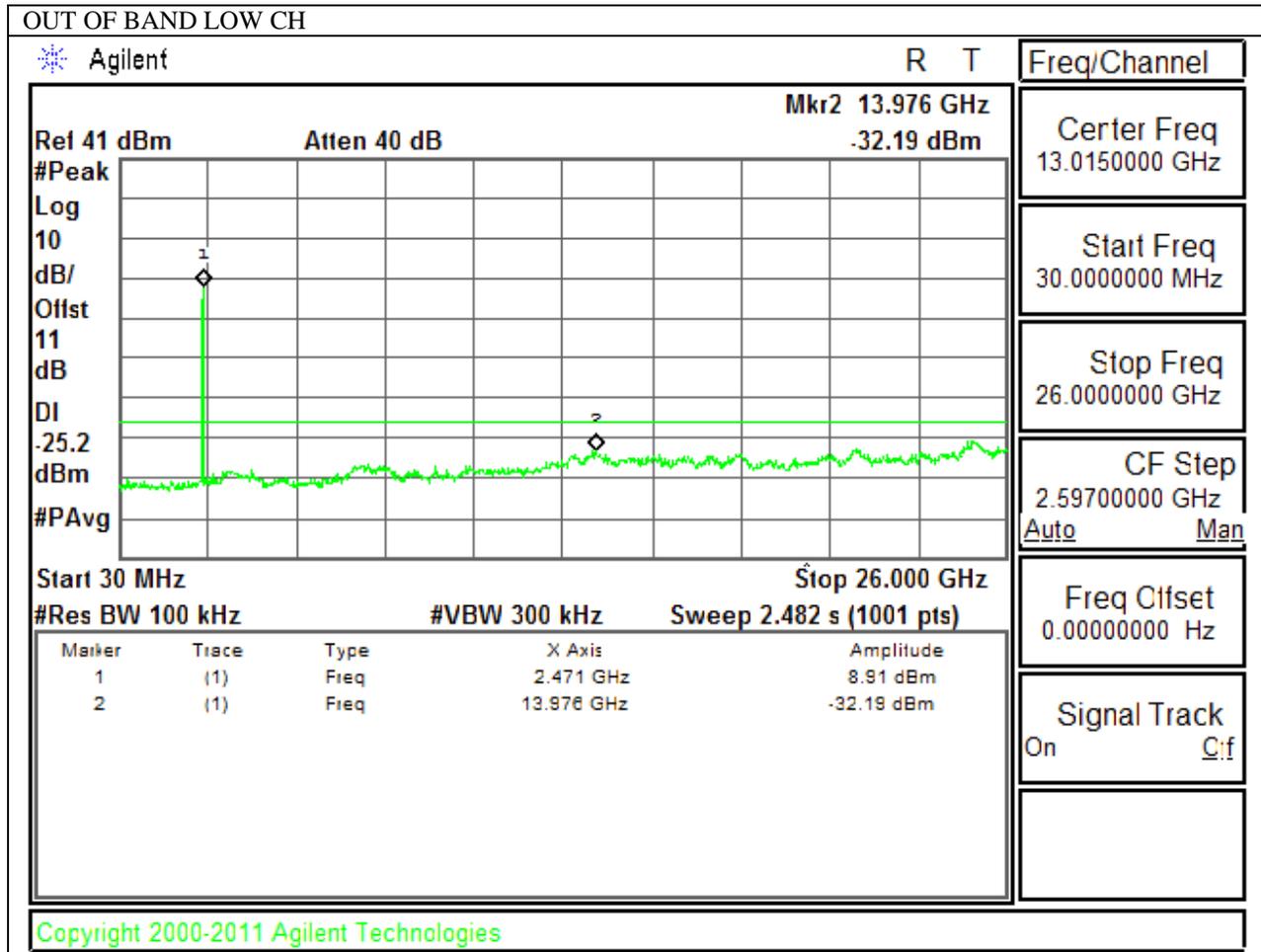
**LOW CHANNEL BANDEDGE**

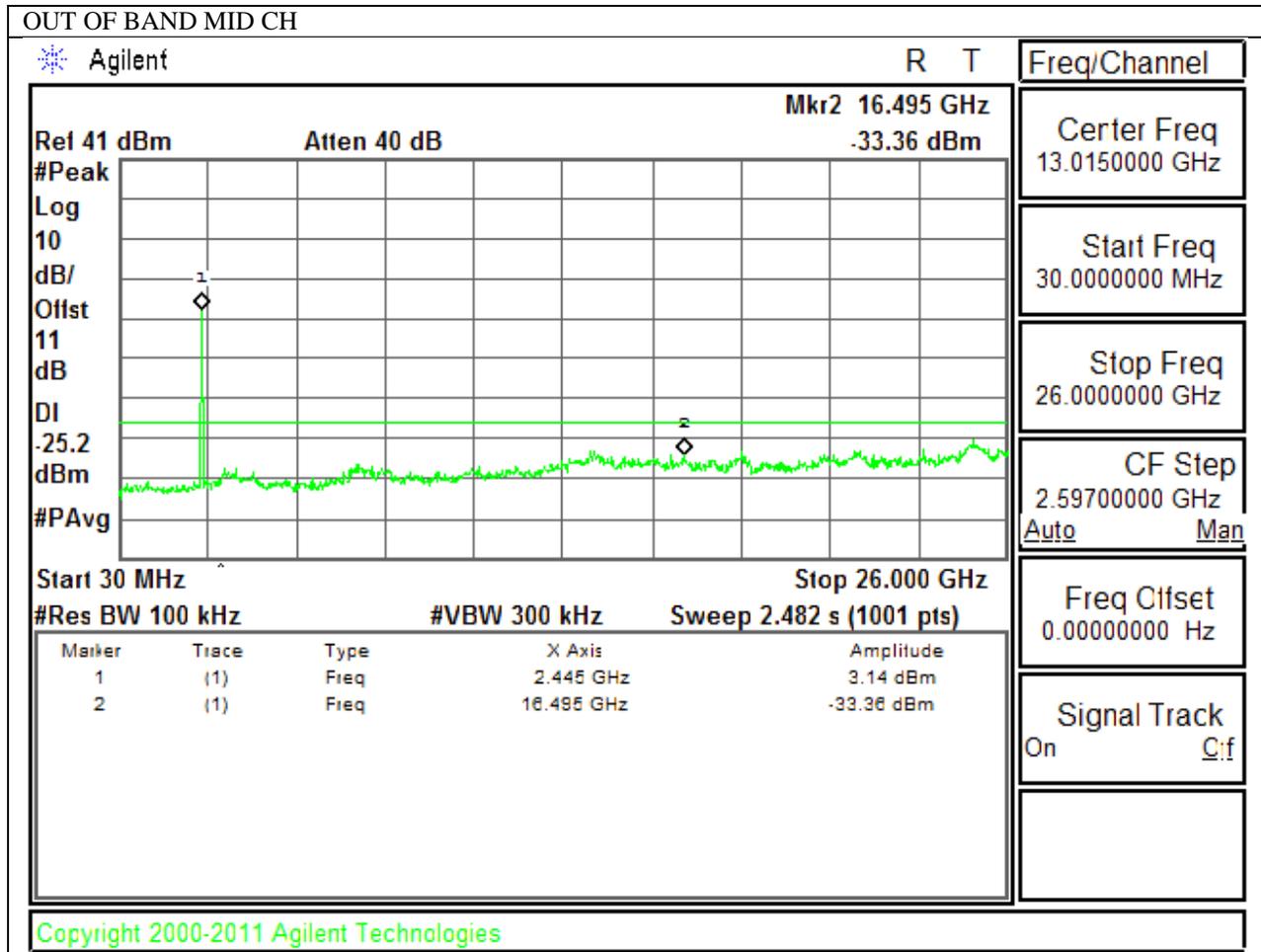


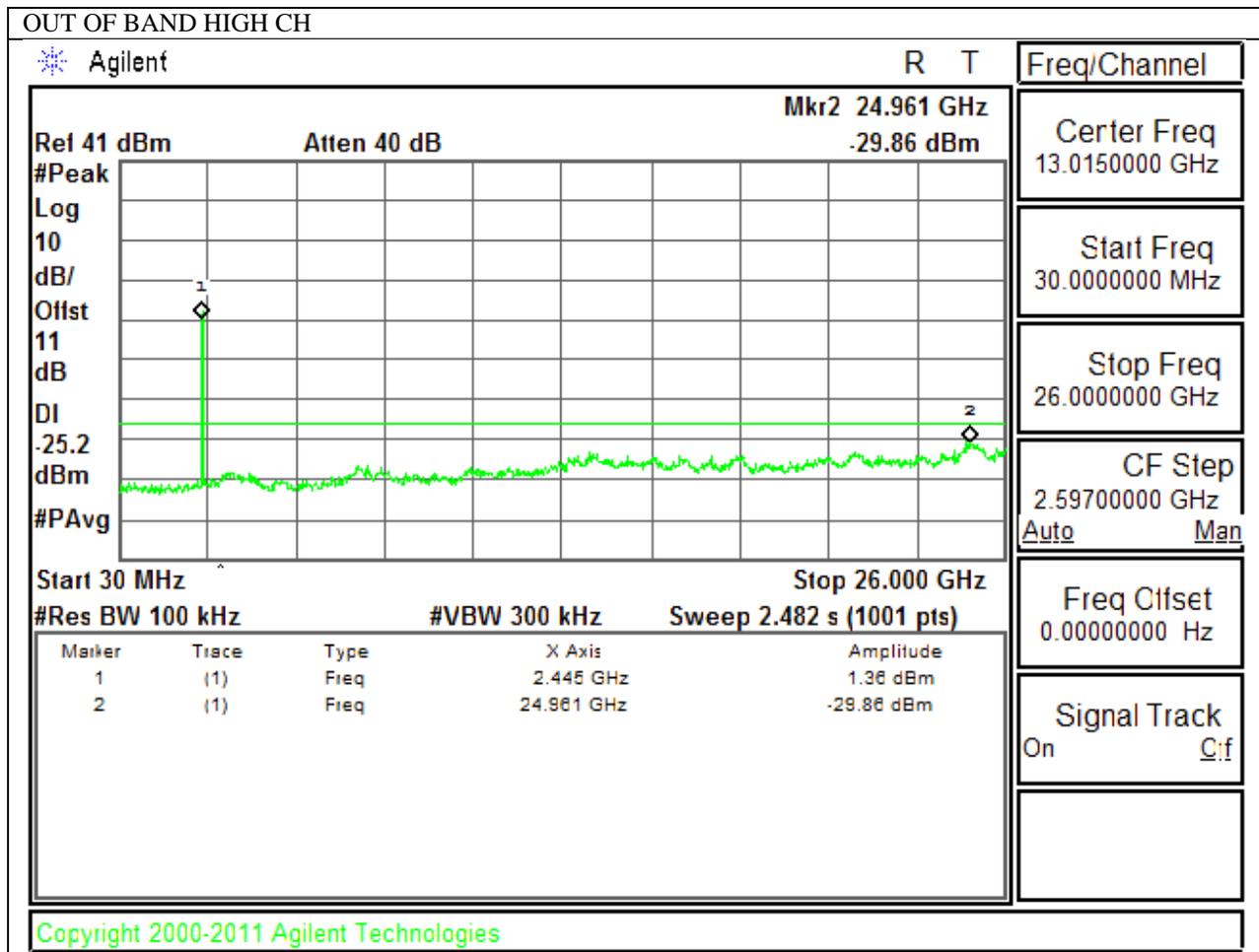
**HIGH CHANNEL BANDEDGE**



**OUT-OF-BAND EMISSIONS**

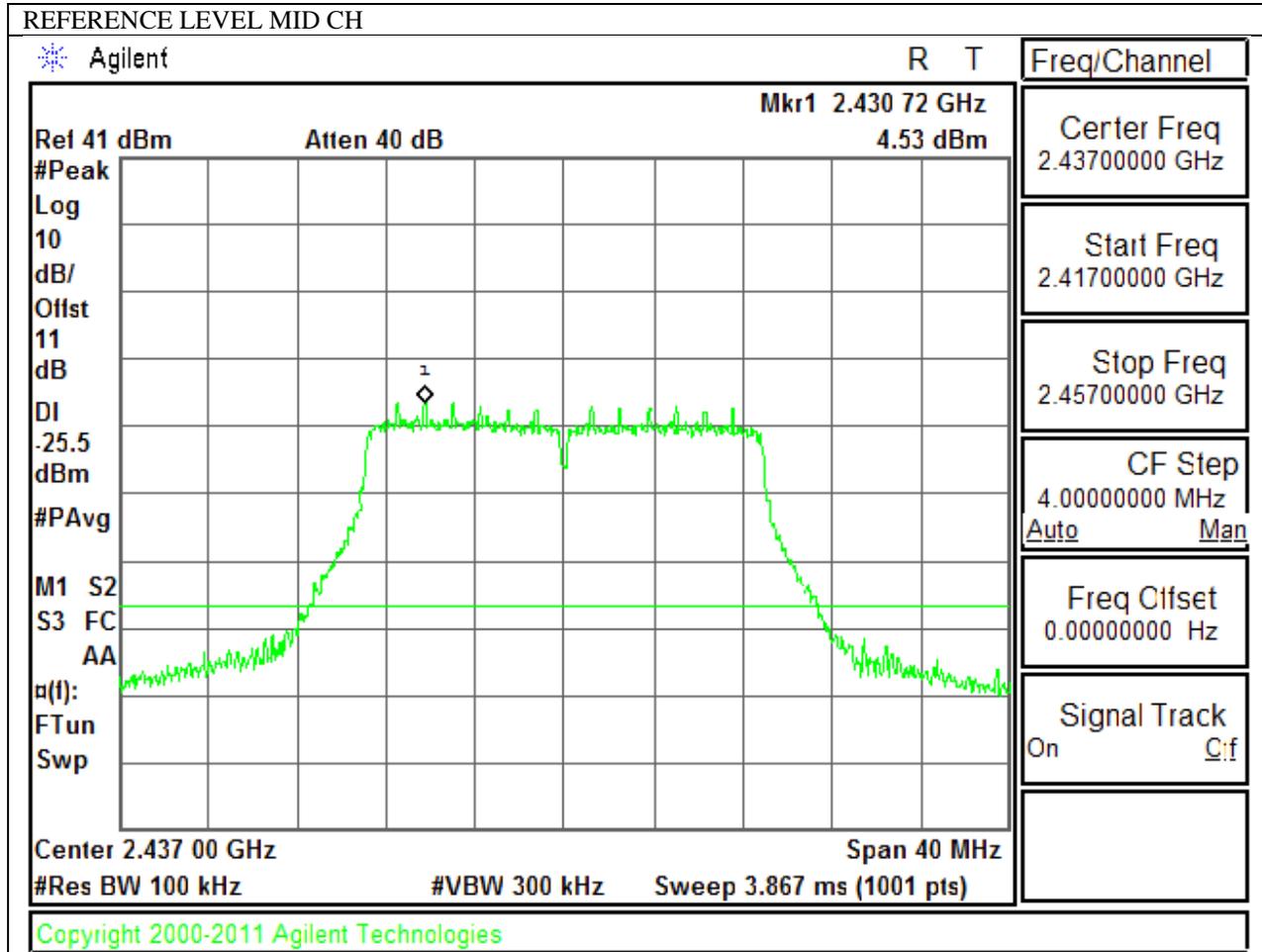




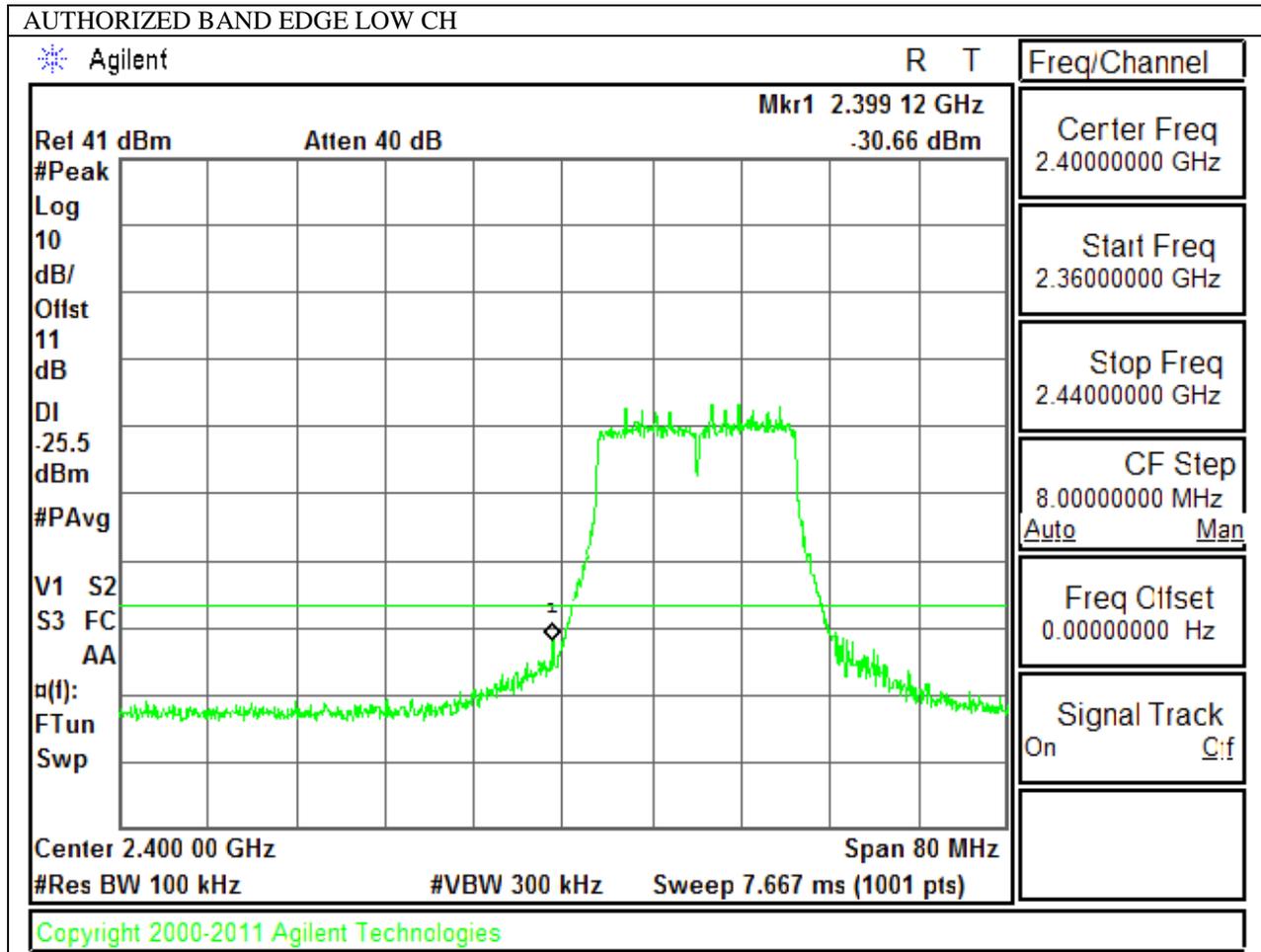


### 9.5.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

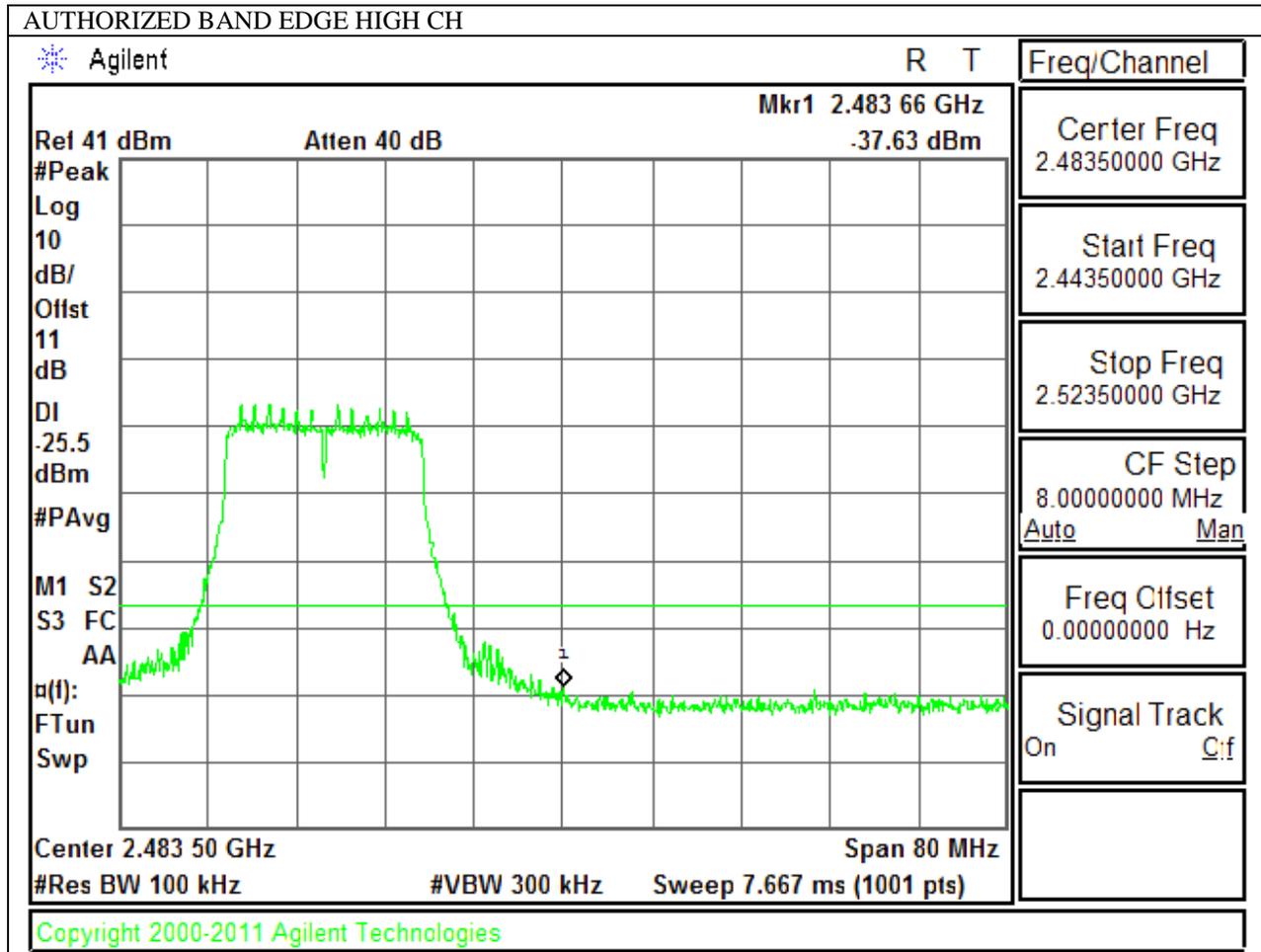
#### IN-BAND REFERENCE LEVEL



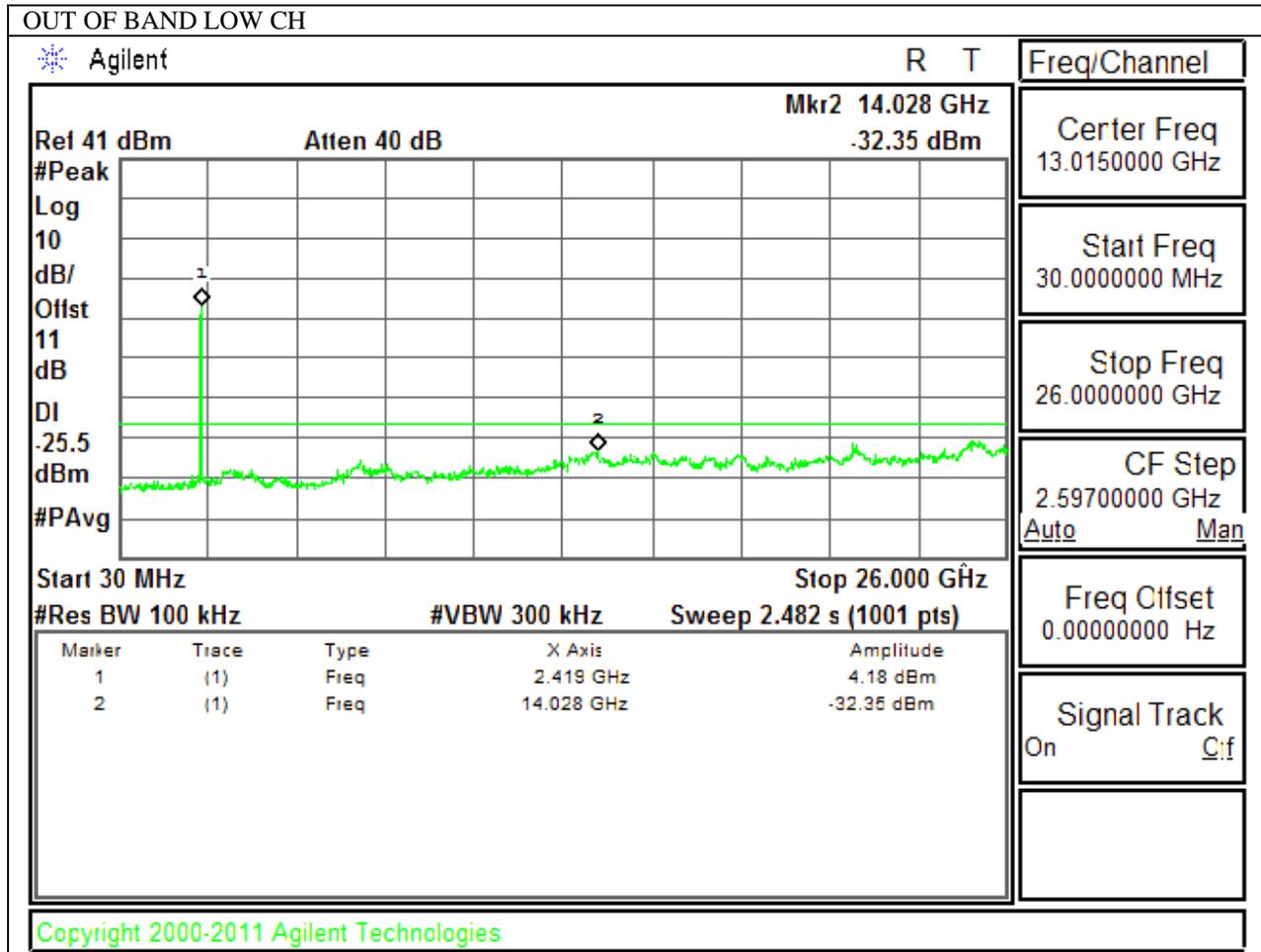
**LOW CHANNEL BANDEDGE**

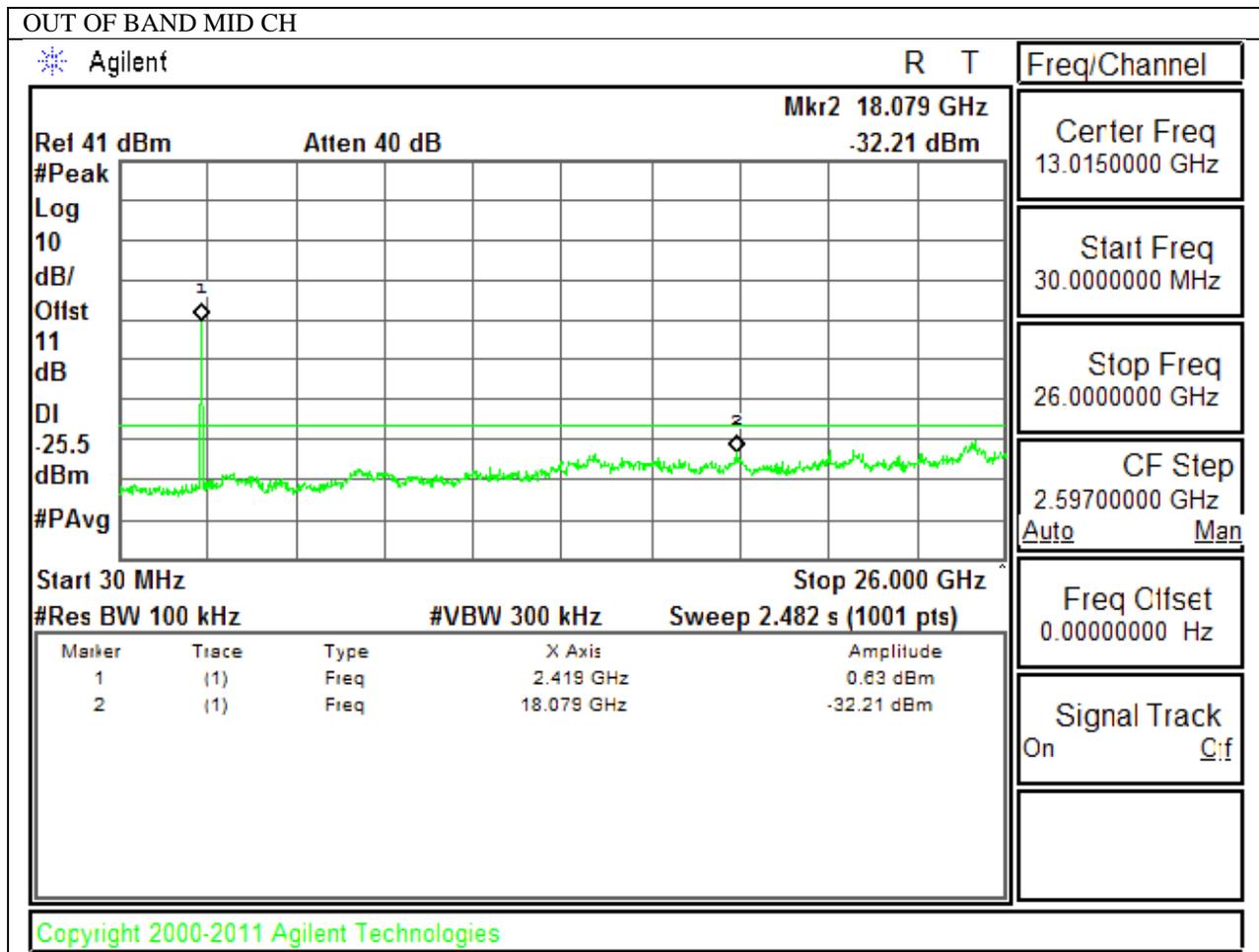


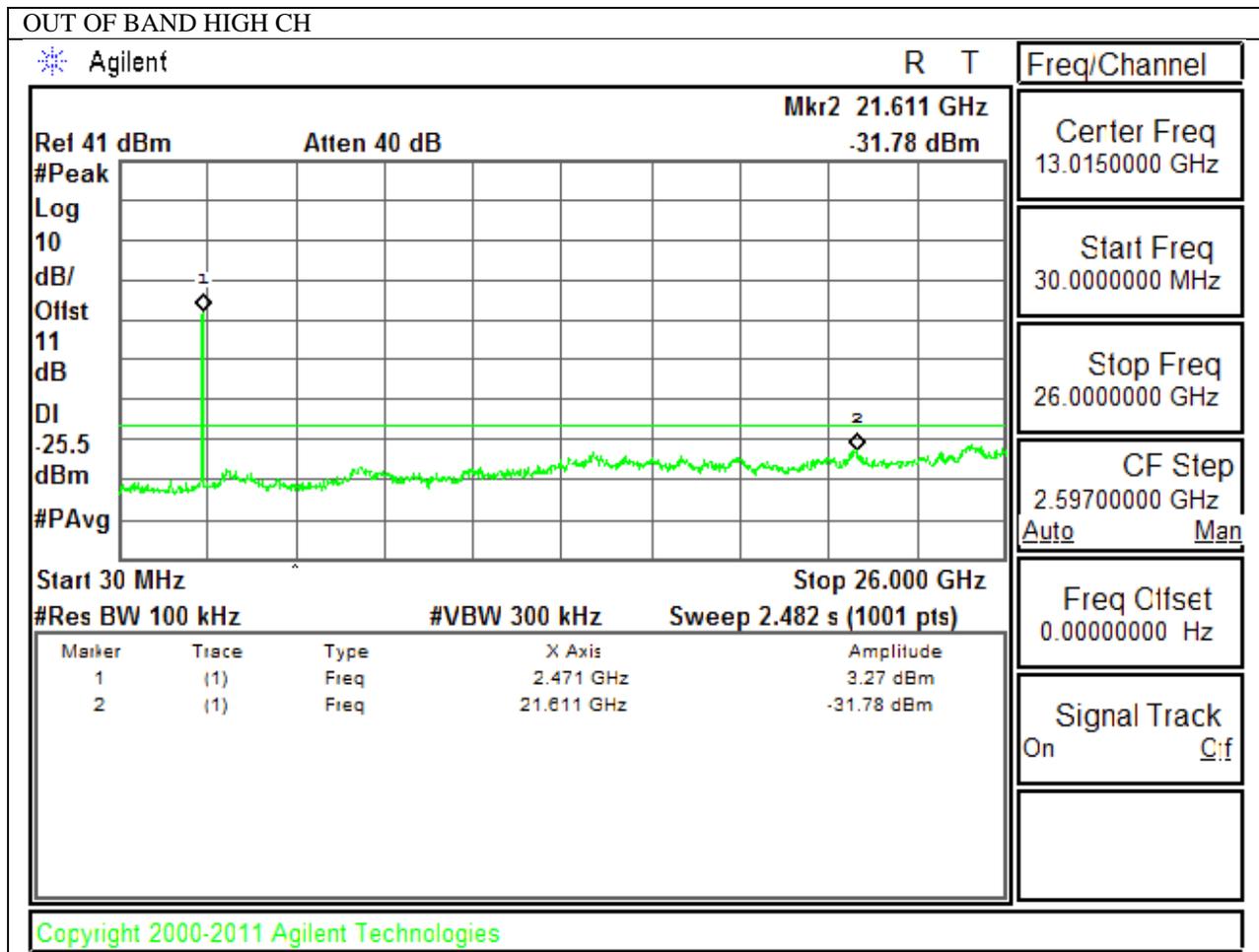
**HIGH CHANNEL BANDEDGE**



**OUT-OF-BAND EMISSIONS**







## 10. RADIATED TEST RESULTS

### 10.1. LIMITS AND PROCEDURE

#### LIMITS

FCC §15.205 and §15.209

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

#### TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters.

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

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements. Duty cycle factor =  $10\log(1/x)$  For this sample B mode = 0dB (duty cycle >98%); G mode = 0.23dB; N mode = 0.24dB.

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.

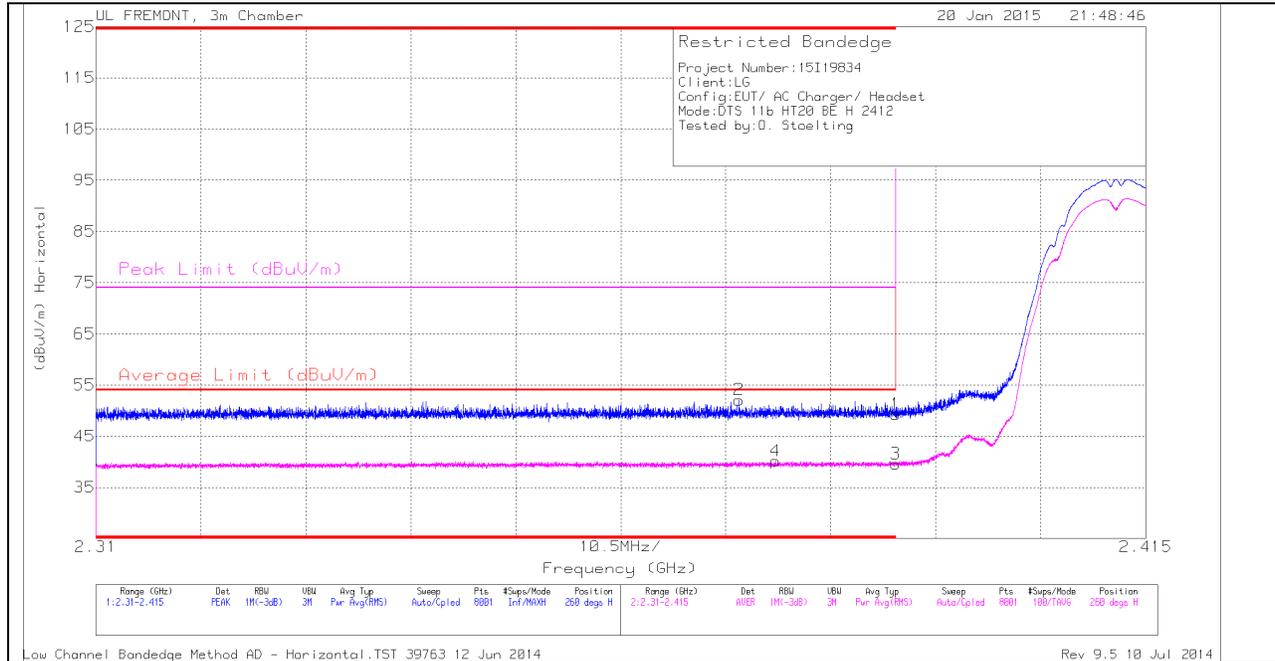
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

## 10.2. TRANSMITTER ABOVE 1 GHz

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

#### RESTRICTED BANDEDGE (LOW CHANNEL)

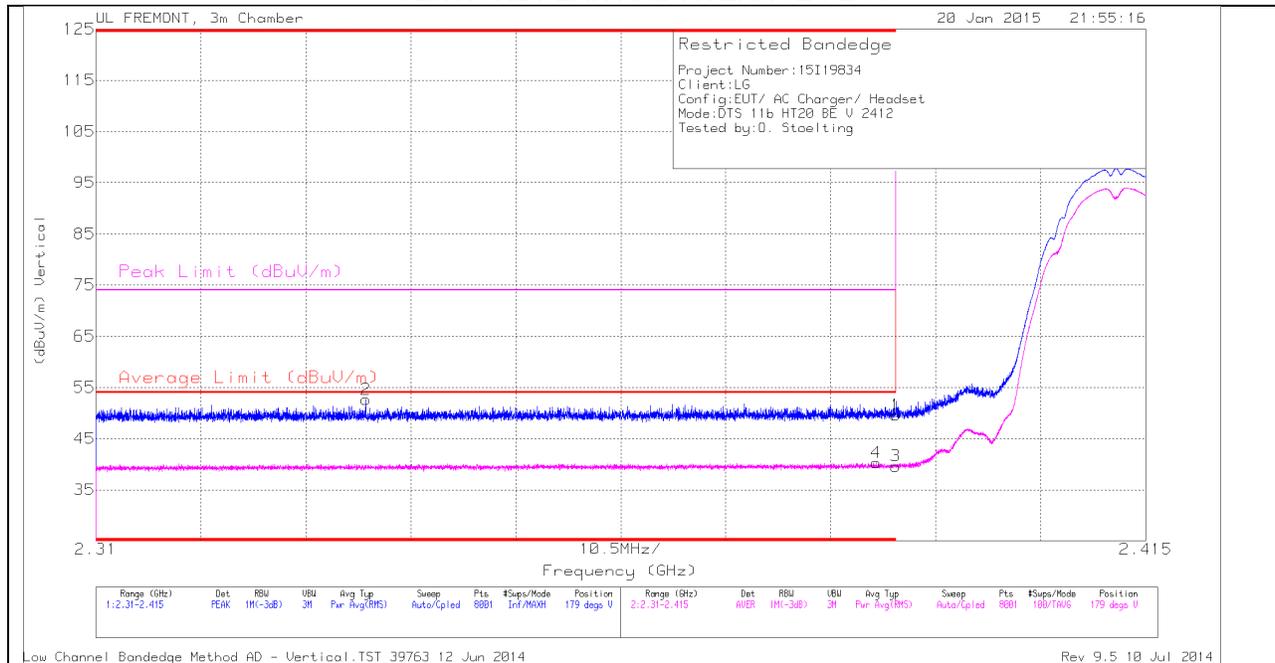
##### HORIZONTAL PEAK AND AVERAGE PLOT



#### HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/ Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.374	43.09	PK	32.1	-23.1	52.09	-	-	74	-21.91	260	306	H
4	* 2.378	31.19	RMS	32.1	-23.1	40.19	54	-13.81	-	-	260	306	H
1	* 2.39	40.31	PK	32.1	-23.1	49.31	-	-	74	-24.69	260	306	H
3	* 2.39	30.61	RMS	32.1	-23.1	39.61	54	-14.39	-	-	260	306	H

**VERTICAL PEAK AND AVERAGE PLOT**

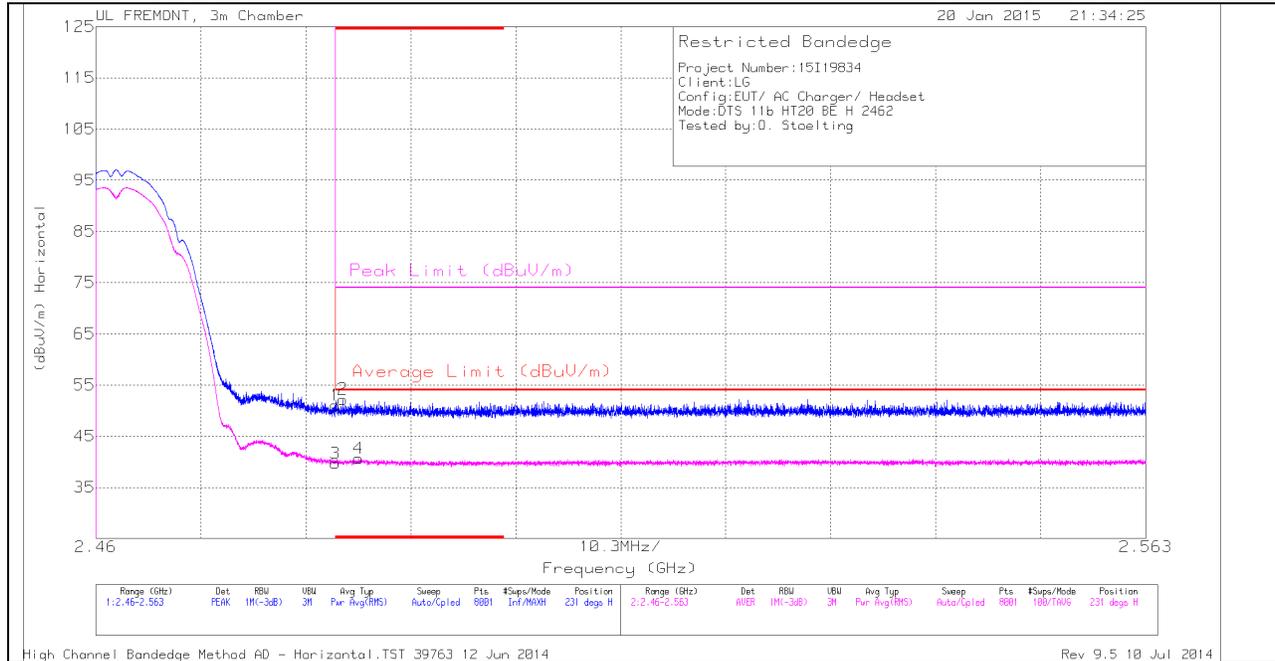


**VERTICAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/ Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.337	43.75	PK	32	-23.1	52.65	-	-	74	-21.35	179	387	V
4	* 2.388	31.32	RMS	32.1	-23.1	40.32	54	-13.68	-	-	179	387	V
1	* 2.39	40.59	PK	32.1	-23.1	49.59	-	-	74	-24.41	179	387	V
3	* 2.39	30.64	RMS	32.1	-23.1	39.64	54	-14.36	-	-	179	387	V

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

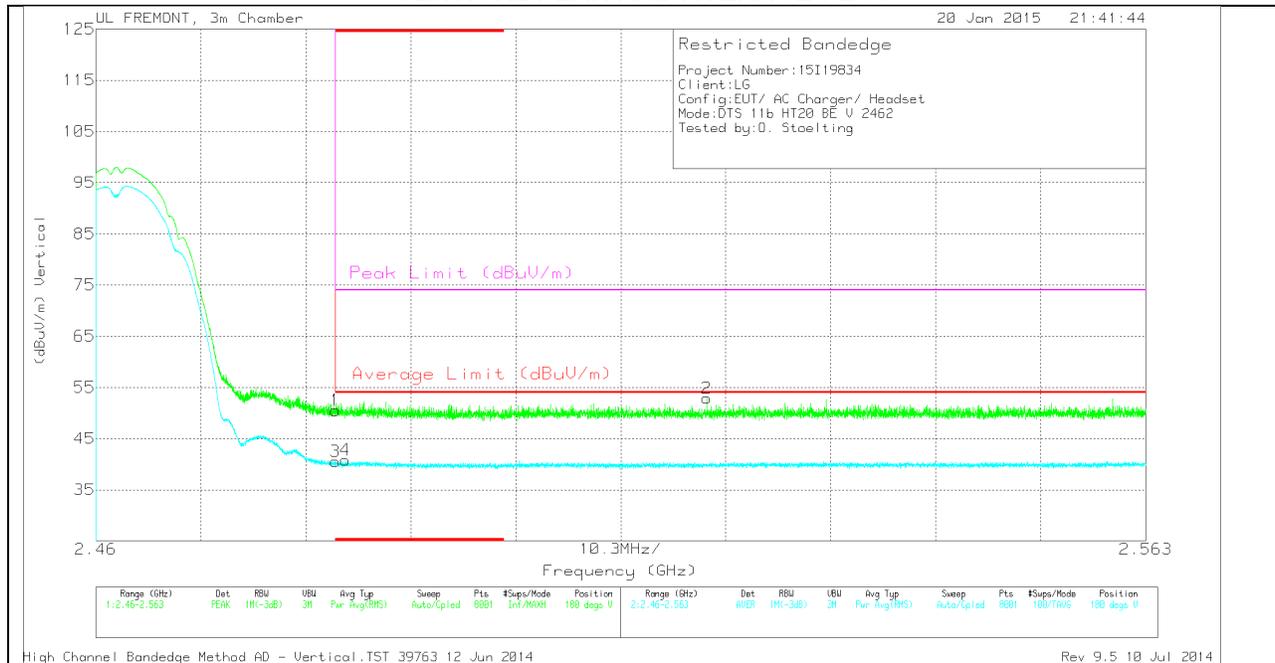
**HORIZONTAL PEAK AND AVERAGE PLOT**



**HORIZONTAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Ftr/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	41.71	PK	32.1	-22.8	51.01	-	-	74	-22.99	231	304	H
2	* 2.484	42.91	PK	32.1	-22.8	52.21	-	-	74	-21.79	231	304	H
3	* 2.484	30.38	RMS	32.1	-22.8	39.68	54	-14.32	-	-	231	304	H
4	* 2.486	31.38	RMS	32.1	-22.8	40.68	54	-13.32	-	-	231	304	H

**VERTICAL PEAK AND AVERAGE PLOT**

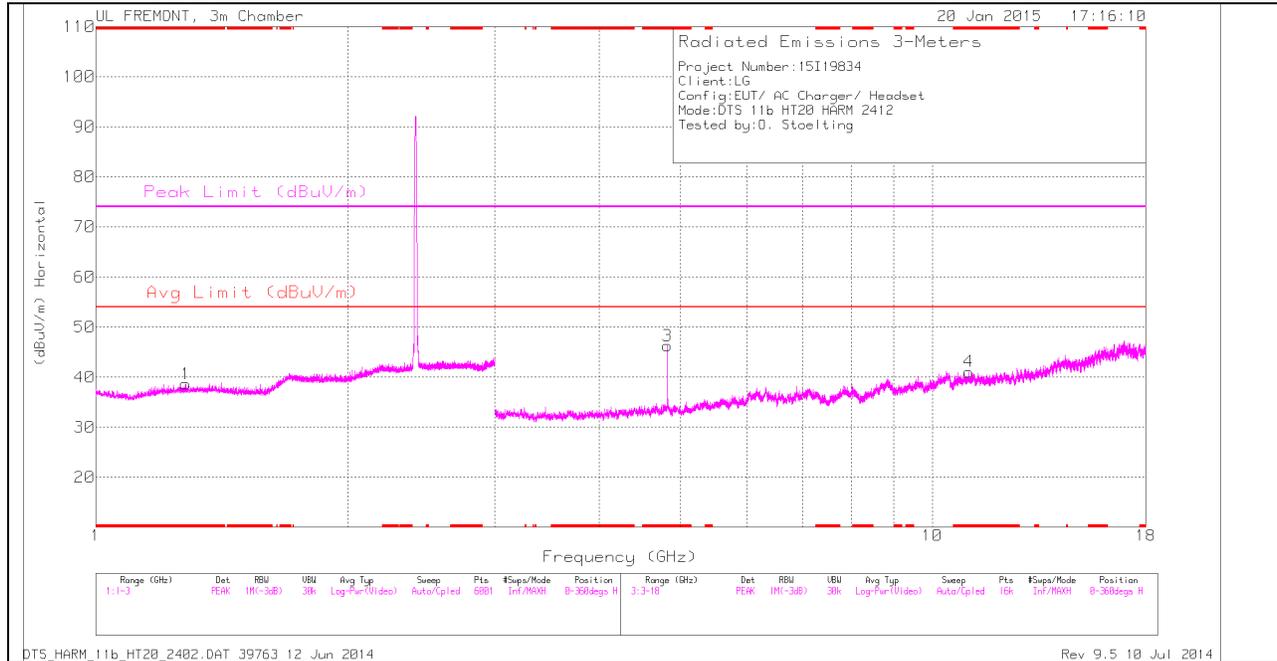


**VERTICAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/ Ftr/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	41.22	PK	32.1	-22.8	50.52	-	-	74	-23.48	180	304	V
3	* 2.484	31.25	RMS	32.1	-22.8	40.55	54	-13.45	-	-	180	304	V
4	* 2.484	31.52	RMS	32.1	-22.8	40.82	54	-13.18	-	-	180	304	V
2	2.52	43.57	PK	32.1	-22.8	52.87	-	-	74	-21.13	180	304	V

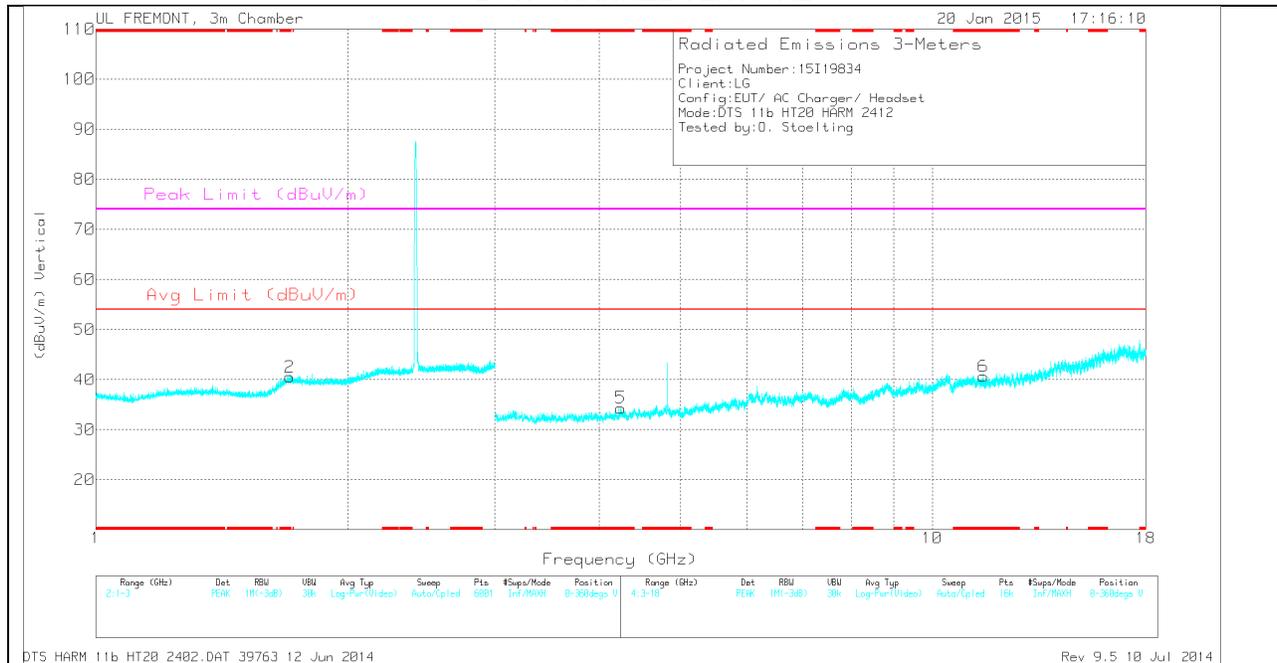
## HARMONICS AND SPURIOUS EMISSIONS

### 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 T711 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.281	34.13	PK	28.3	-23.8	38.63	-	-	74	-35.37	0-360	100	H
2	* 1.705	33.21	PK	30.7	-23.4	40.51	-	-	74	-33.49	0-360	200	V
3	* 4.824	42.56	PK	33.9	-30.2	46.26	-	-	74	-27.74	0-360	100	H
4	* 11.055	28.18	PK	38.3	-25.4	41.08	-	-	74	-32.92	0-360	100	H
5	* 4.242	31.83	PK	33.4	-30.9	34.33	-	-	74	-39.67	0-360	200	V
6	* 11.512	28.03	PK	38.1	-25.5	40.63	-	-	74	-33.37	0-360	100	V

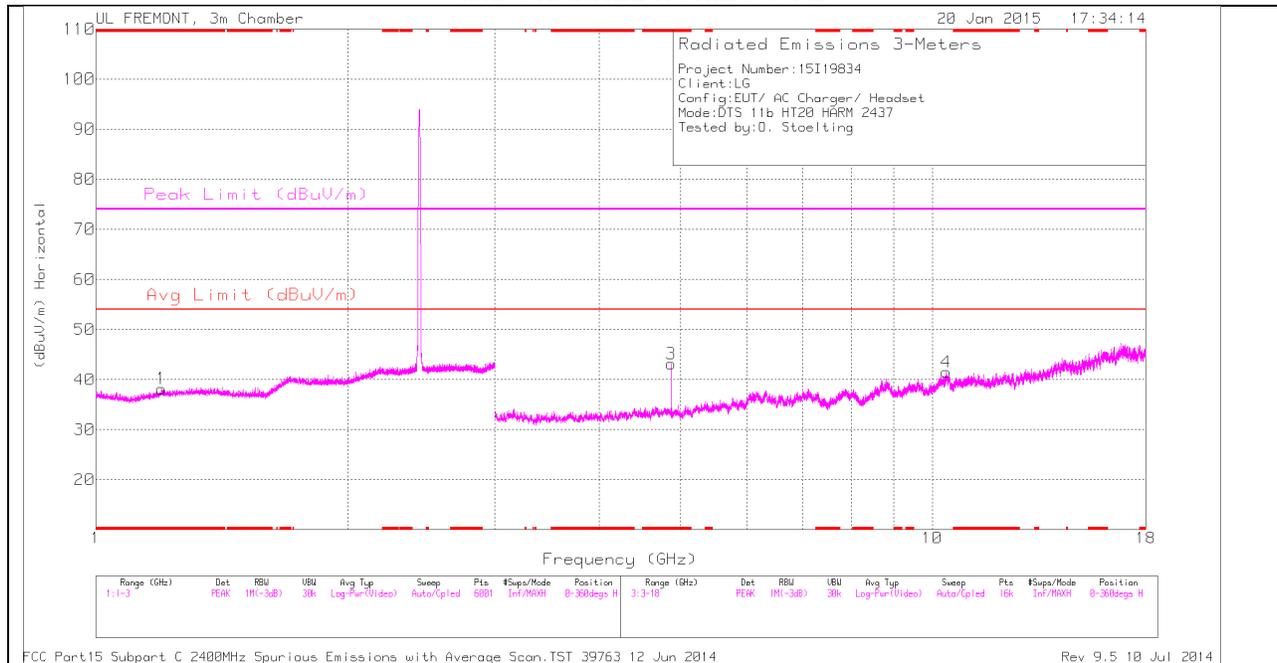
PK - Peak detector

*RADIATED EMISSIONS*

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.824	47.61	PK2	33.9	-30.3	51.21	-	-	74	-22.79	23	100	H
* 4.824	42.8	MAV1	33.9	-30.3	46.4	54	-7.6	-	-	23	100	H

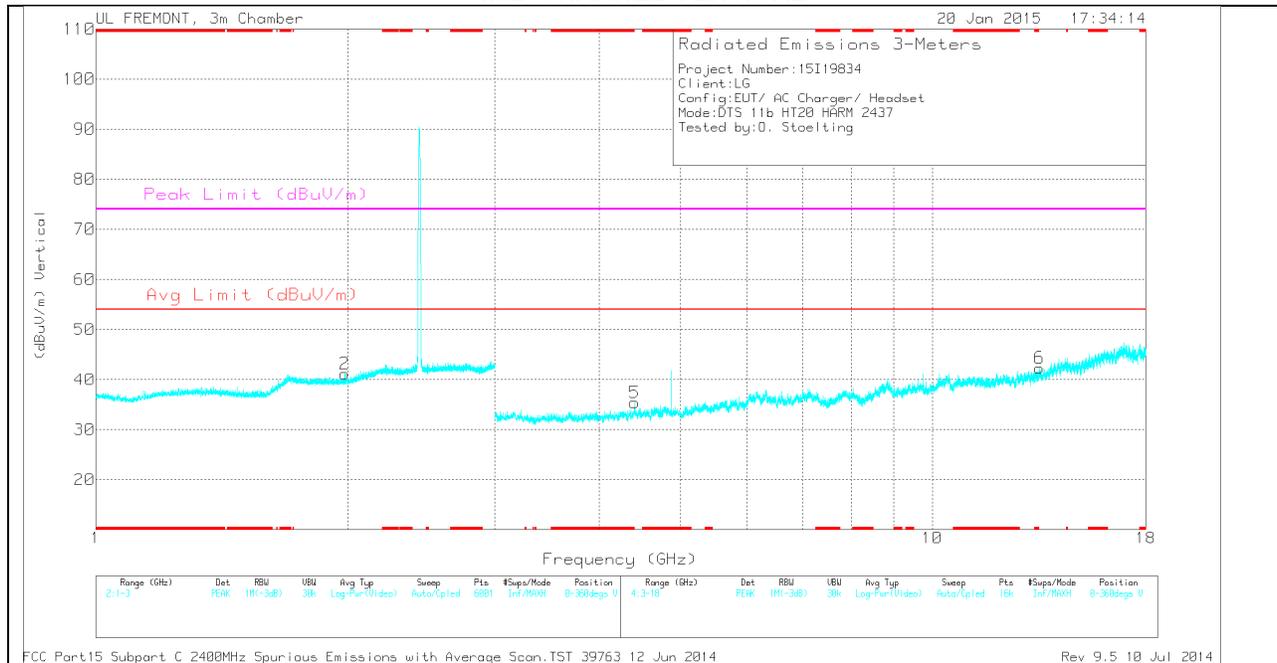
FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013

**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 T711 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.199	33.99	PK	28	-23.8	38.19	-	-	74	-35.81	0-360	200	H
3	* 4.874	39.35	PK	33.9	-30.1	43.15	-	-	74	-30.85	0-360	100	H
2	1.986	34.19	PK	30.2	-23.2	41.19	-	-	-	-	0-360	200	V
5	4.407	32.1	PK	33.5	-30.2	35.4	-	-	-	-	0-360	100	V
4	10.396	28.91	PK	38	-25.4	41.51	-	-	-	-	0-360	100	H
6	13.433	30.12	PK	38.9	-26.7	42.32	-	-	-	-	0-360	100	V

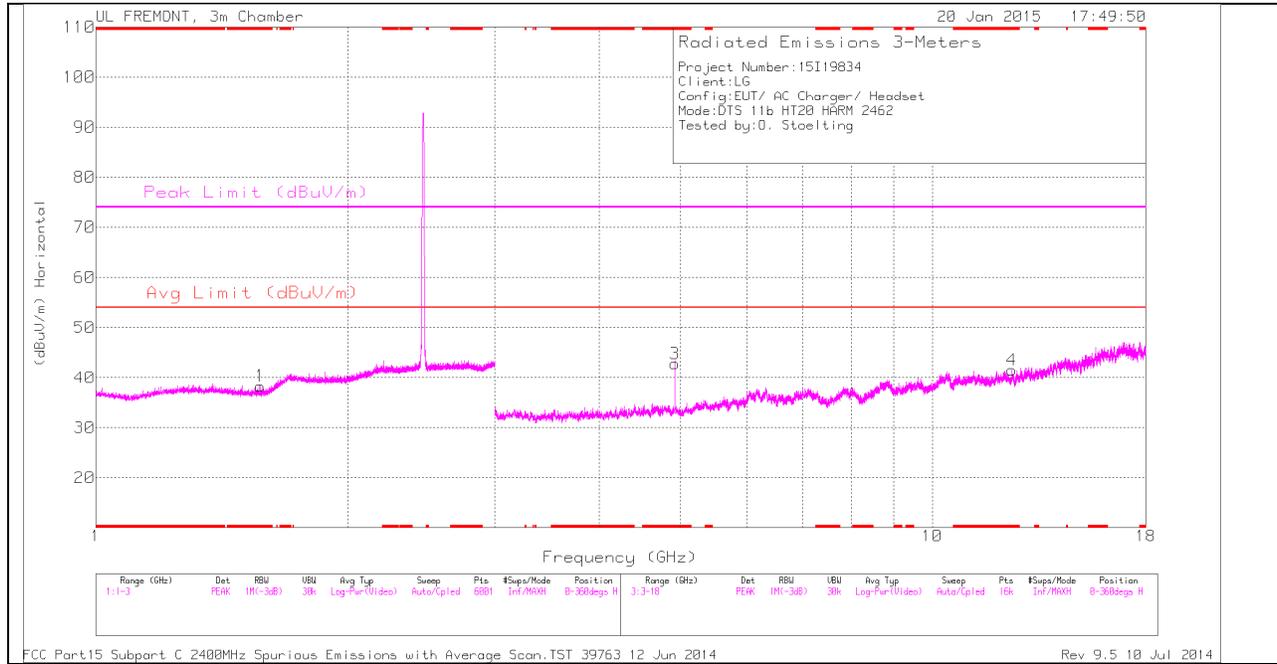
PK - Peak detector

*RADIATED EMISSIONS*

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.874	46.05	PK2	33.9	-30.1	49.85	-	-	74	-24.15	11	308	H
* 4.874	41.11	MAV1	33.9	-30.1	44.91	54	-9.09	-	-	11	308	H

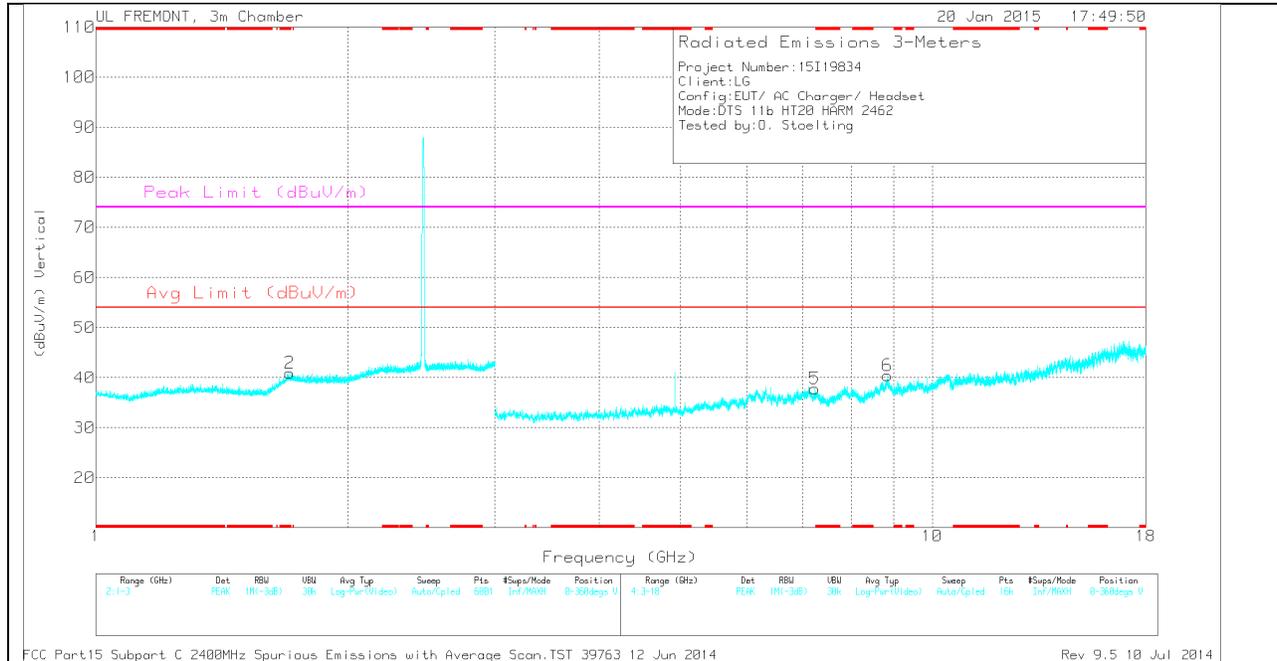
FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013

**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 T711 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.572	34.02	PK	27.7	-23.4	38.32	-	-	74	-35.68	0-360	200	H
2	* 1.706	33.52	PK	30.7	-23.3	40.92	-	-	74	-33.08	0-360	200	V
3	* 4.925	39.25	PK	33.9	-30.4	42.75	-	-	74	-31.25	0-360	200	H
4	* 12.455	29.41	PK	38.7	-26.6	41.51	-	-	74	-32.49	0-360	100	H
5	7.235	31.93	PK	35.6	-29.7	37.83	-	-	-	-	0-360	200	V
6	8.845	30.33	PK	36.6	-26.5	40.43	-	-	-	-	0-360	100	V

PK - Peak detector

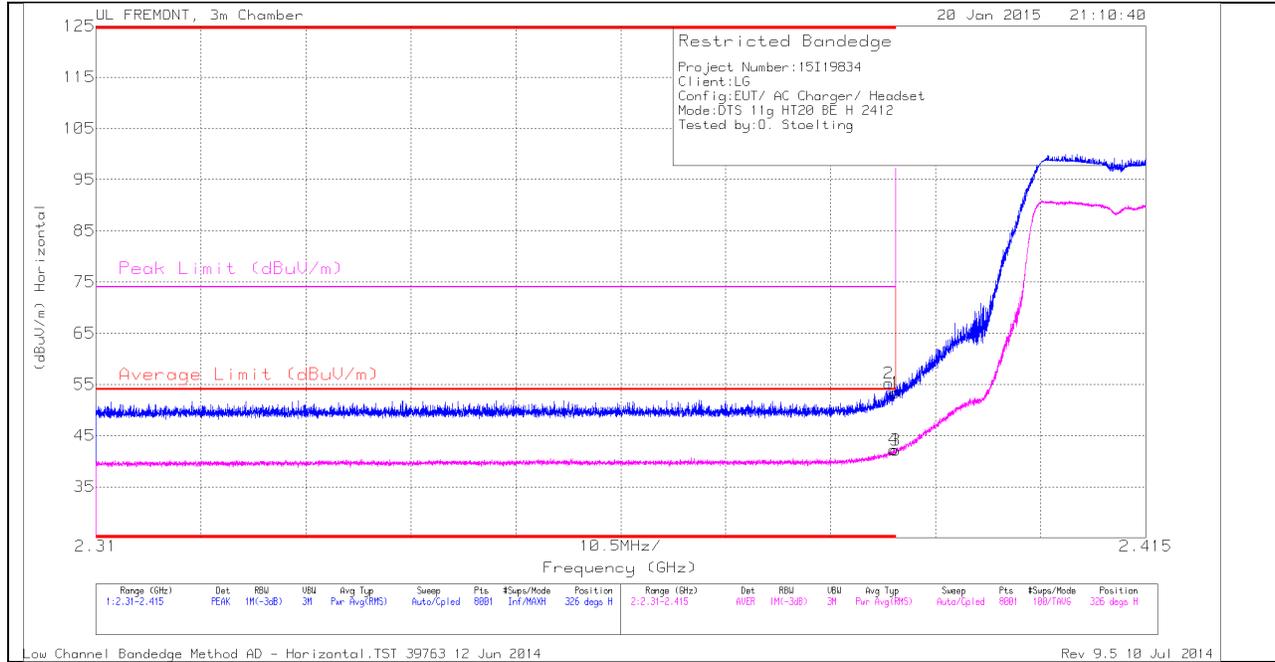
*RADIATED EMISSIONS*

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.924	46.04	PK2	33.9	-30.4	49.54	-	-	74	-24.46	19	371	H
* 4.924	40.89	MAV1	33.9	-30.4	44.39	54	-9.61	-	-	19	371	H

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

### RESTRICTED BANDEDGE (LOW CHANNEL)

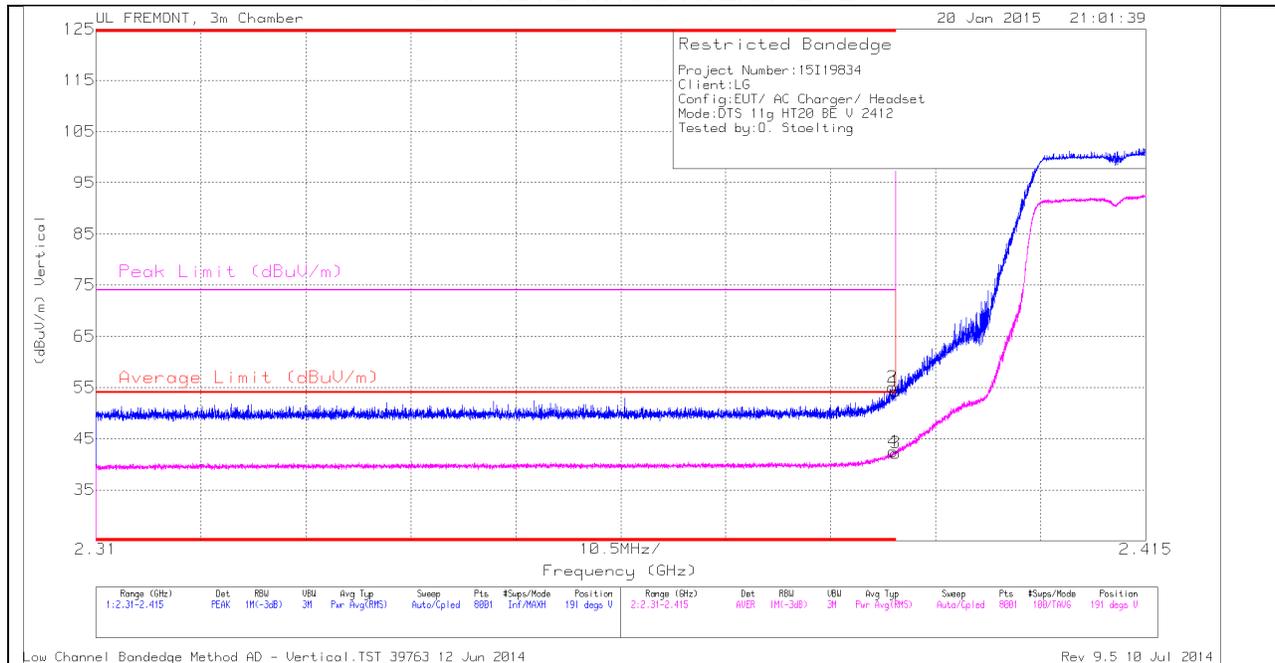
#### HORIZONTAL PEAK AND AVERAGE PLOT



#### HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cb/Filter/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.389	46.21	PK	32.1	-23.1	0	55.21	-	-	74	-18.79	326	382	H
1	* 2.39	44.39	PK	32.1	-23.1	0	53.39	-	-	74	-20.61	326	382	H
3	* 2.39	32.9	RMS	32.1	-23.1	.23	42.13	54	-11.87	-	-	326	382	H
4	* 2.39	33.01	RMS	32.1	-23.1	.23	42.24	54	-11.76	-	-	326	382	H

**VERTICAL PEAK AND AVERAGE PLOT**

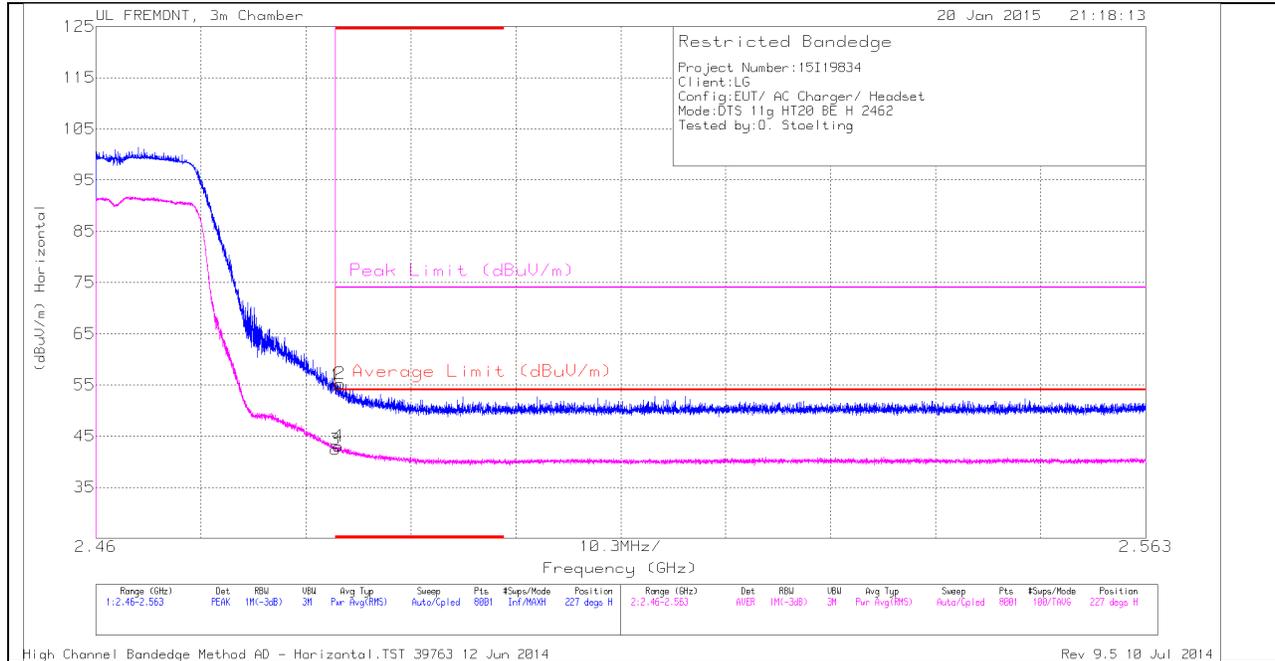


**VERTICAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cb/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	45.27	PK	32.1	-23.1	0	54.27	-	-	74	-19.73	191	386	V
2	* 2.39	46.06	PK	32.1	-23.1	0	55.06	-	-	74	-18.94	191	386	V
3	* 2.39	32.97	RMS	32.1	-23.1	.23	42.2	54	-11.8	-	-	191	386	V
4	* 2.39	33.29	RMS	32.1	-23.1	.23	42.52	54	-11.48	-	-	191	386	V

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

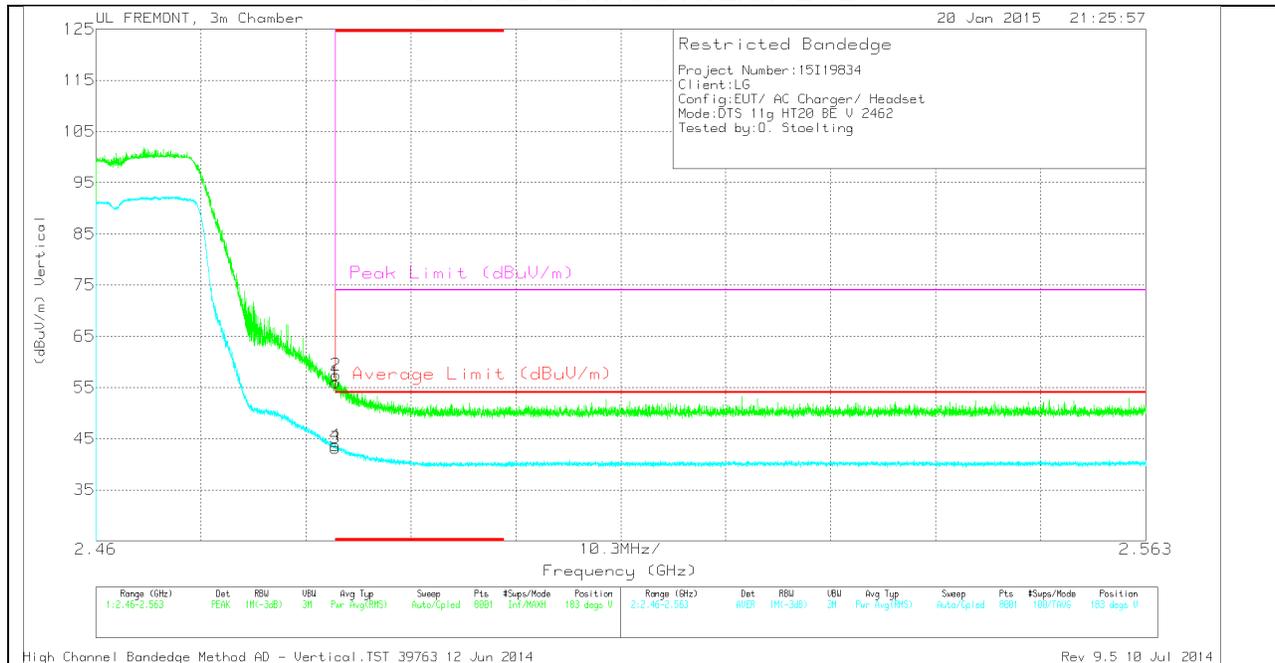
**HORIZONTAL PEAK AND AVERAGE PLOT**



**HORIZONTAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cb/Filter/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	45.68	PK	32.1	-22.8	0	54.98	-	-	74	-19.02	227	244	H
2	* 2.484	45.96	PK	32.1	-22.8	0	55.26	-	-	74	-18.74	227	244	H
3	* 2.484	32.85	RMS	32.1	-22.8	.23	42.38	54	-11.62	-	-	227	244	H
4	* 2.484	33.49	RMS	32.1	-22.8	.23	43.02	54	-10.98	-	-	227	244	H

**VERTICAL PEAK AND AVERAGE PLOT**

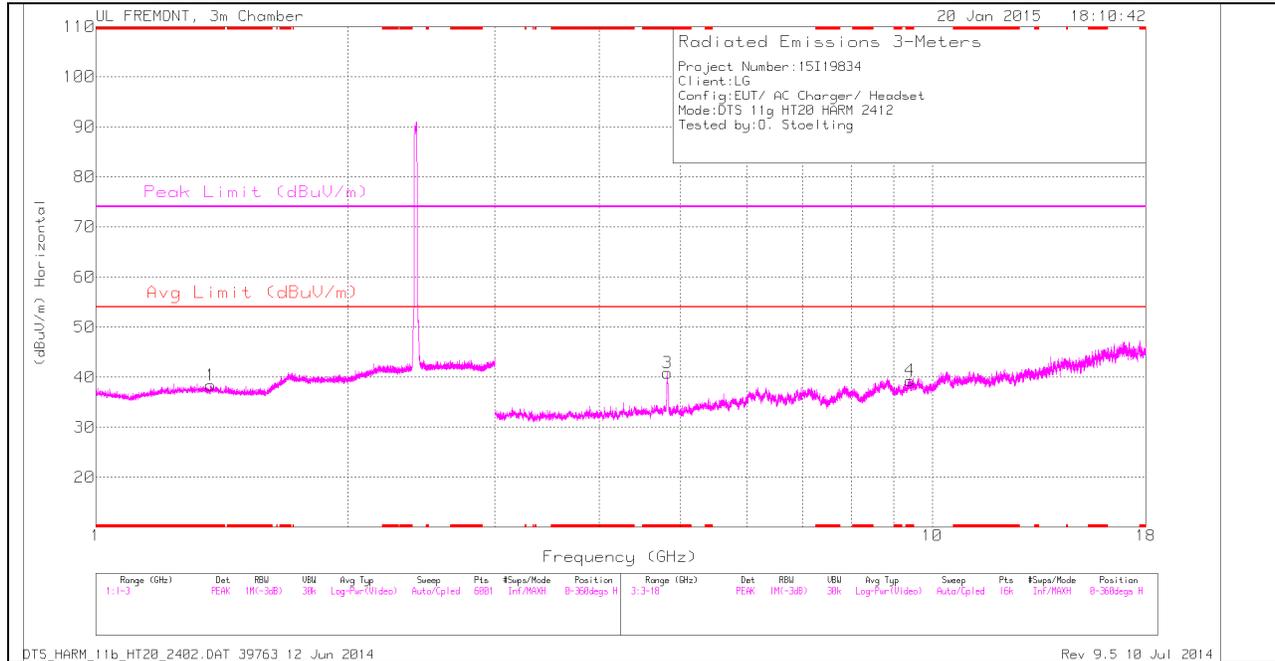


**VERTICAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cb/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	46.65	PK	32.1	-22.8	0	55.95	-	-	74	-18.05	183	368	V
2	* 2.484	48.13	PK	32.1	-22.8	0	57.43	-	-	74	-16.57	183	368	V
3	* 2.484	33.67	RMS	32.1	-22.8	.23	43.2	54	-10.8	-	-	183	368	V
4	* 2.484	34.16	RMS	32.1	-22.8	.23	43.69	54	-10.31	-	-	183	368	V

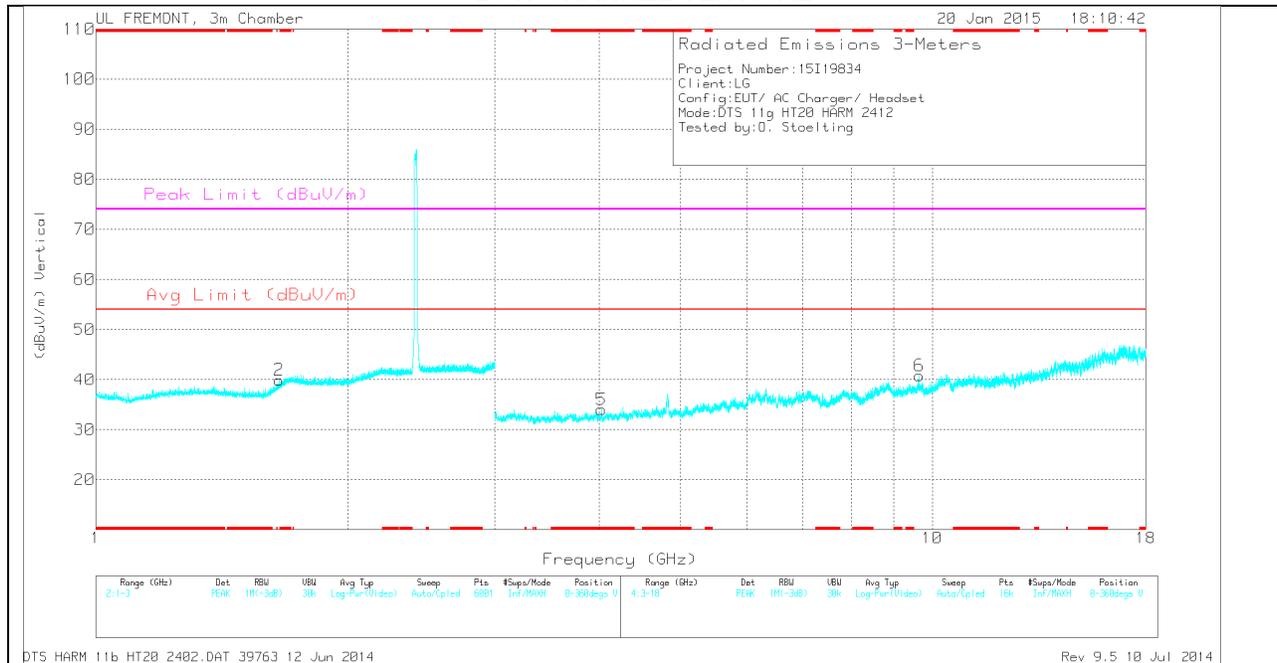
## HARMONICS AND SPURIOUS EMISSIONS

### 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*

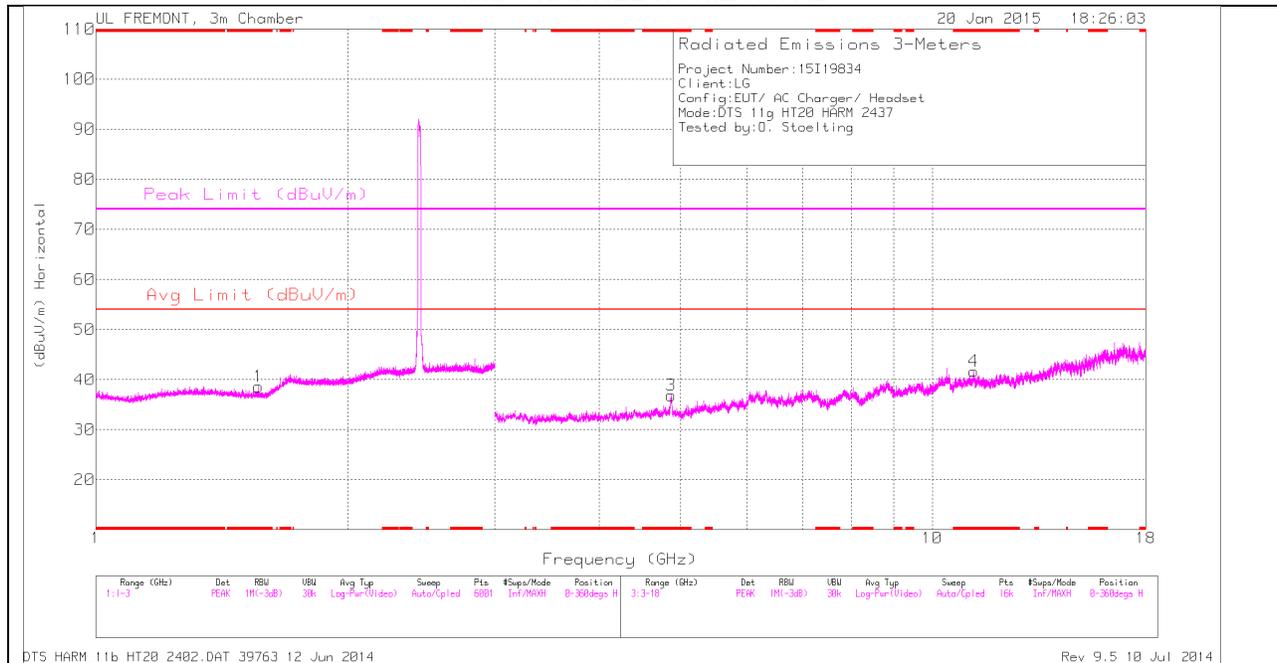
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cb/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.372	33.8	PK	28.4	-23.8	0	38.4	-	-	74	-35.6	0-360	200	H
3	* 4.823	37.26	PK	33.9	-30.3	0	40.86	-	-	74	-33.14	0-360	100	H
4	* 9.407	28.33	PK	36.9	-25.9	0	39.33	-	-	74	-34.67	0-360	100	H
5	* 4.023	32.22	PK	33.2	-31.4	0	34.02	-	-	74	-39.98	0-360	100	V
2	1.655	33.93	PK	29.4	-23.4	0	39.93	-	-	-	-	0-360	200	V
6	9.647	29.3	PK	37.1	-25.6	0	40.8	-	-	-	-	0-360	200	V

PK - Peak detector

*RADIATED EMISSIONS*

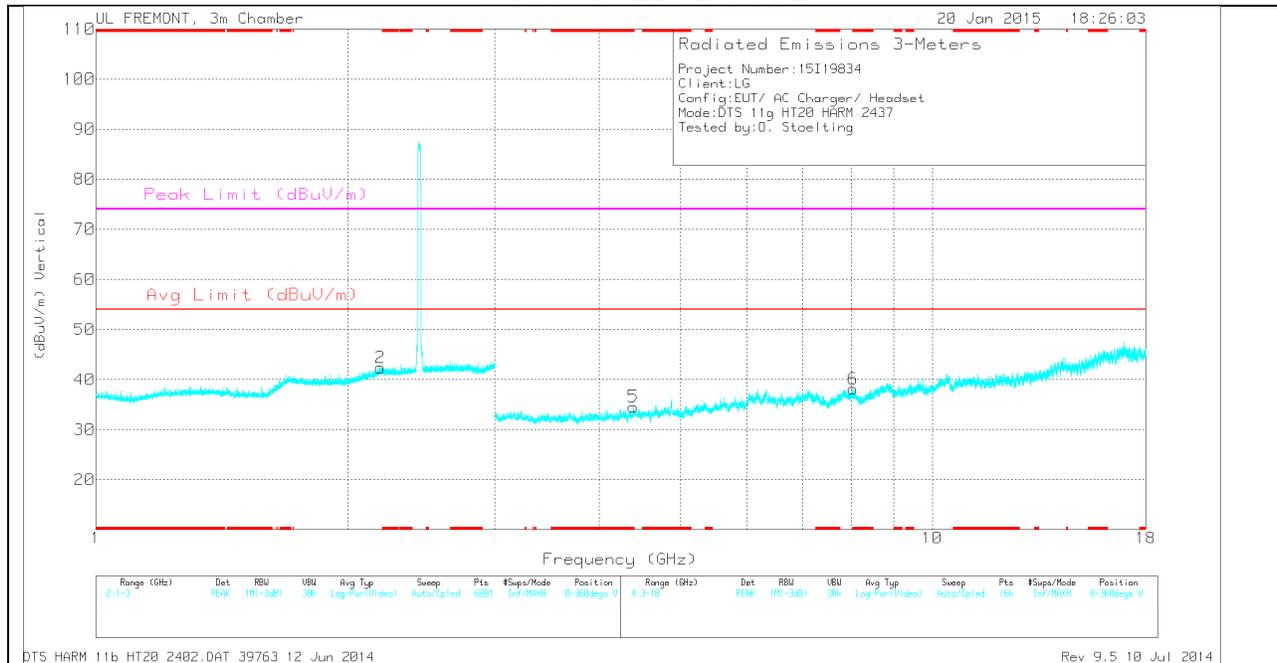
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cb/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.824	48.93	PK2	33.9	-30.2	0	52.63	-	-	74	-21.37	15	384	H
* 4.823	35.07	MAv1	33.9	-30.3	.23	38.9	54	-15.1	-	-	15	384	H

**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*

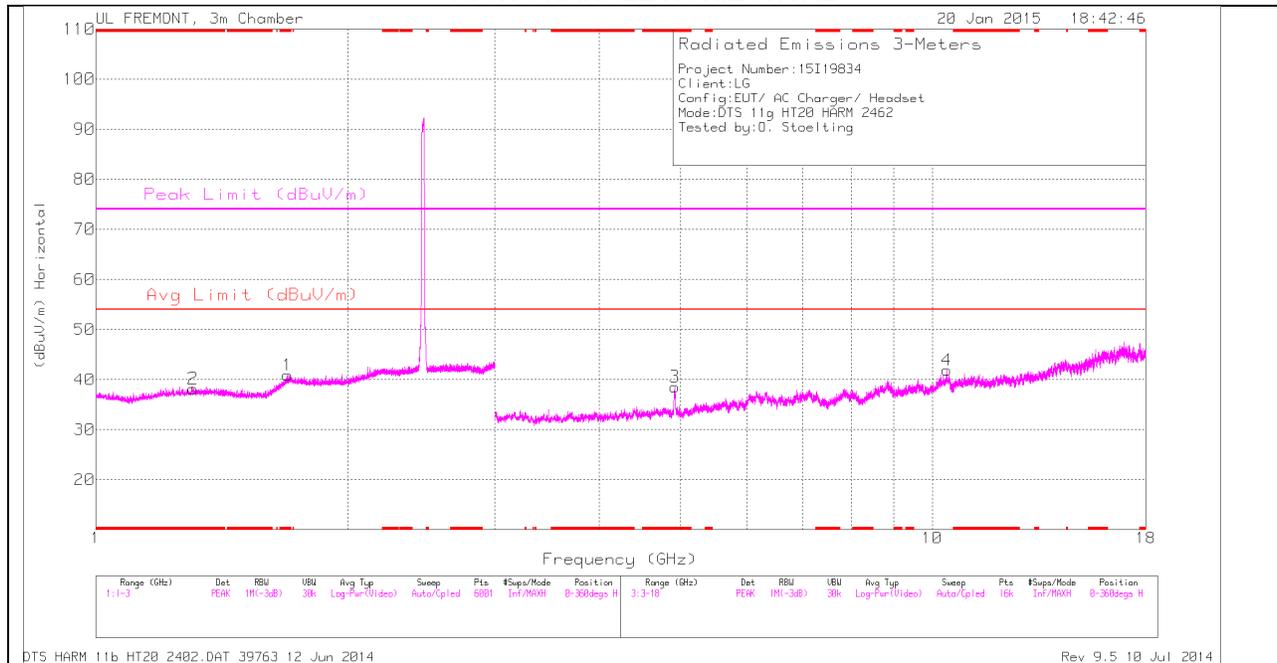
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cb/Filtr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.564	34.3	PK	27.7	-23.4	0	38.6	-	-	74	-35.4	0-360	200	H
3	* 4.871	33.06	PK	33.9	-30.1	0	36.86	-	-	74	-37.14	0-360	200	H
4	* 11.205	28.39	PK	38.3	-25	0	41.69	-	-	74	-32.31	0-360	100	H
5	* 4.391	31.18	PK	33.5	-30.1	0	34.58	-	-	74	-39.42	0-360	200	V
6	* 8.042	30.22	PK	36	-28.1	0	38.12	-	-	74	-35.88	0-360	200	V
2	2.19	33.45	PK	31.9	-23	0	42.35	-	-	-	-	0-360	200	V

PK - Peak detector

*RADIATED EMISSIONS*

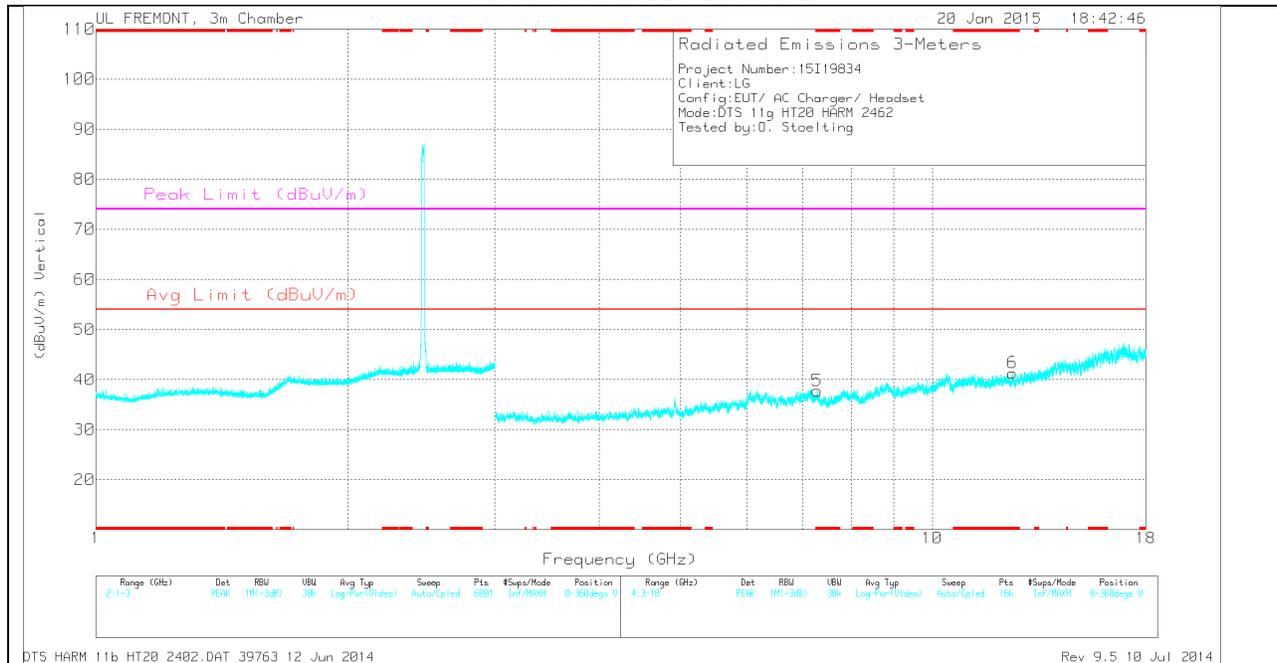
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cb/ Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 11.207	37.22	PK2	38.3	-25	0	50.52	-	-	74	-23.48	344	330	H
* 11.207	25.2	MAv1	38.3	-25	.23	38.73	54	-15.27	-	-	344	330	H

**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 T711 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.695	33.71	PK	30.6	-23.4	0	40.91	-	-	74	-33.09	0-360	200	H
2	* 1.307	33.6	PK	28.4	-23.8	0	38.2	-	-	74	-35.8	0-360	100	H
3	* 4.926	35.16	PK	33.9	-30.5	0	38.56	-	-	74	-35.44	0-360	200	H
5	* 7.285	31.24	PK	35.6	-29.1	0	37.74	-	-	74	-36.26	0-360	200	V
6	* 12.478	29.33	PK	38.7	-26.7	0	41.33	-	-	74	-32.67	0-360	200	V
4	10.407	28.88	PK	38	-25	0	41.88	-	-	-	-	0-360	200	H

PK - Peak detector

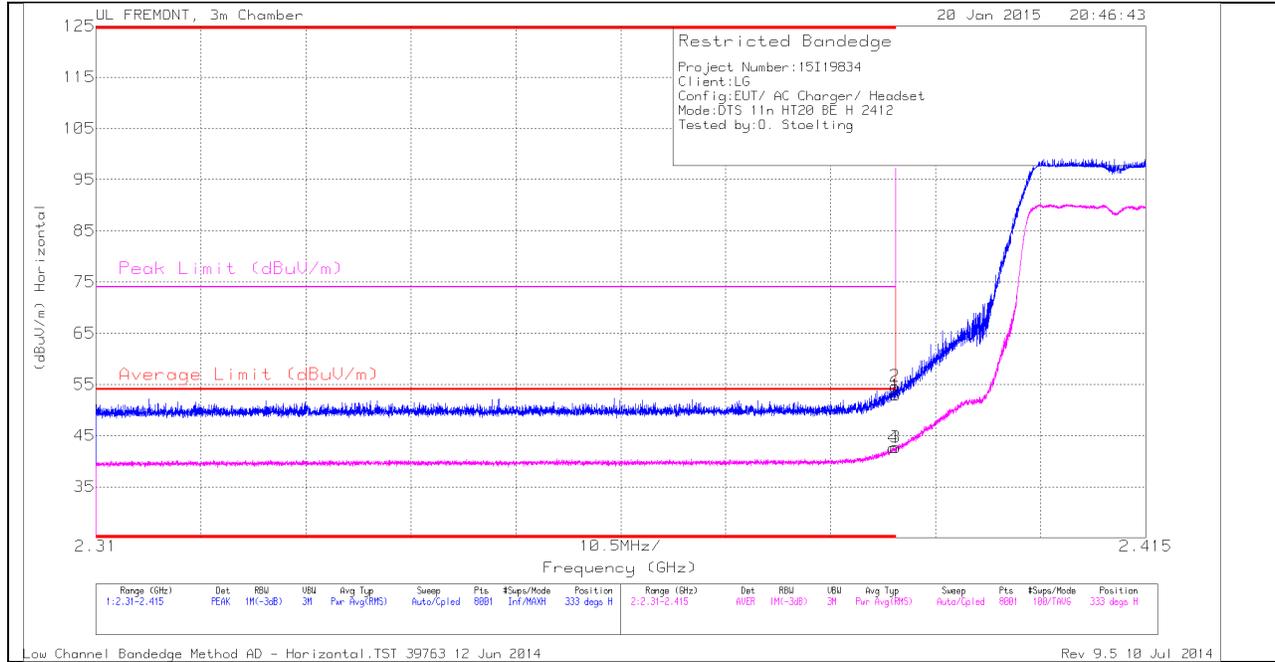
*RADIATED EMISSIONS*

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 12.478	38.22	PK2	38.7	-26.7	0	50.22	-	-	74	-23.78	87	170	V
* 12.477	26.22	MAV1	38.7	-26.7	.23	38.45	54	-15.55	-	-	87	170	V

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

**RESTRICTED BANDEDGE (LOW CHANNEL)**

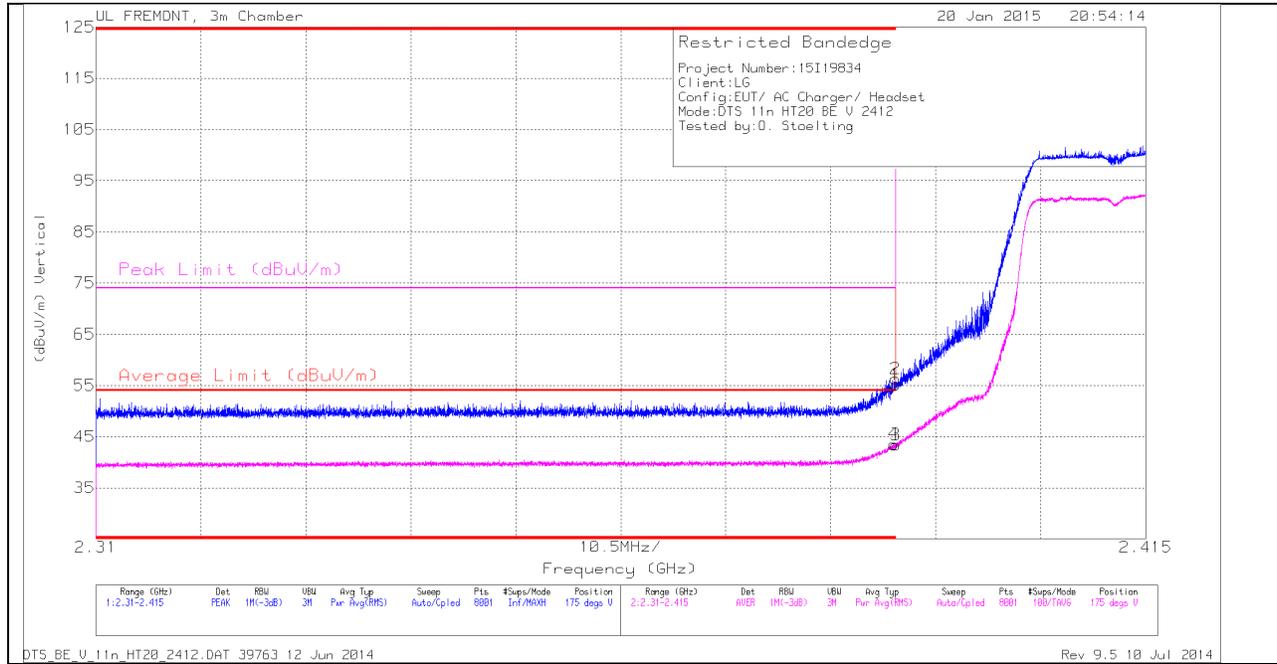
**HORIZONTAL PEAK AND AVERAGE PLOT**



**HORIZONTAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cb/Fitter/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	43.89	PK	32.1	-23.1	0	52.89	-	-	74	-21.11	333	384	H
2	* 2.39	45.62	PK	32.1	-23.1	0	54.62	-	-	74	-19.38	333	384	H
3	* 2.39	33.47	RMS	32.1	-23.1	.24	42.71	54	-11.29	-	-	333	384	H
4	* 2.39	33.39	RMS	32.1	-23.1	.24	42.63	54	-11.37	-	-	333	384	H

**VERTICAL PEAK AND AVERAGE PLOT**

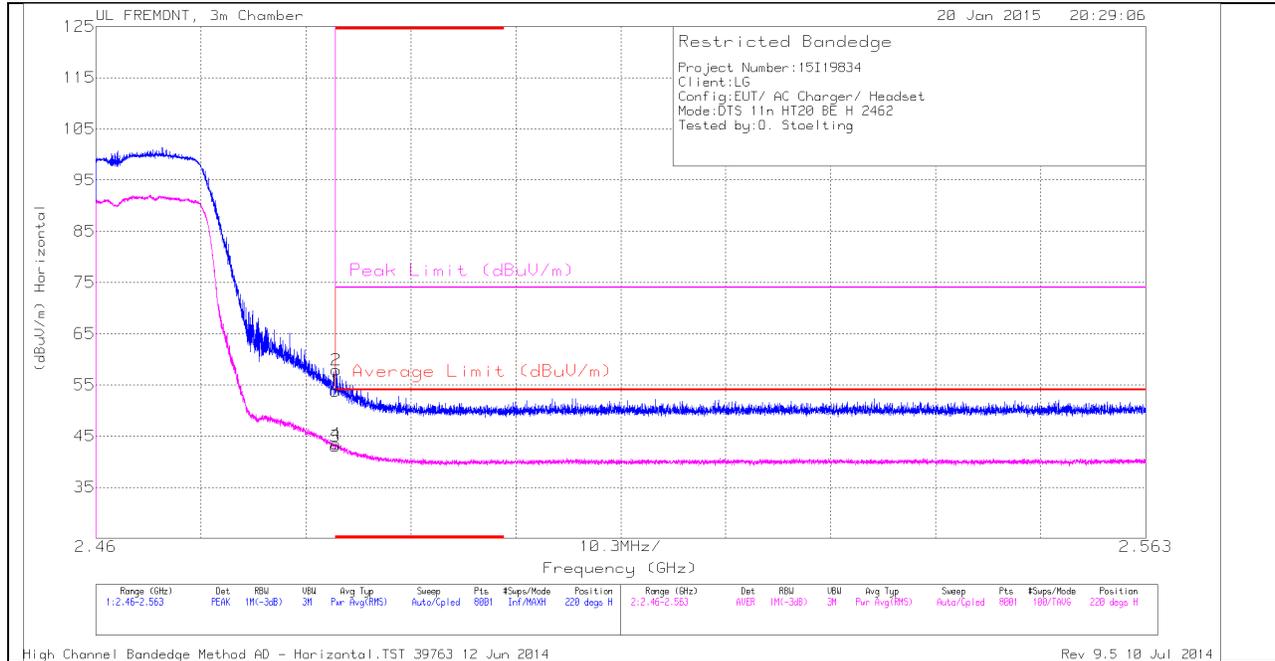


**VERTICAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cb/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	46.13	PK	32.1	-23.1	0	55.13	-	-	74	-18.87	175	386	V
2	* 2.39	47.31	PK	32.1	-23.1	0	56.31	-	-	74	-17.69	175	386	V
3	* 2.39	34.17	RMS	32.1	-23.1	.24	43.41	54	-10.59	-	-	175	386	V
4	* 2.39	34.29	RMS	32.1	-23.1	.24	43.53	54	-10.47	-	-	175	386	V

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

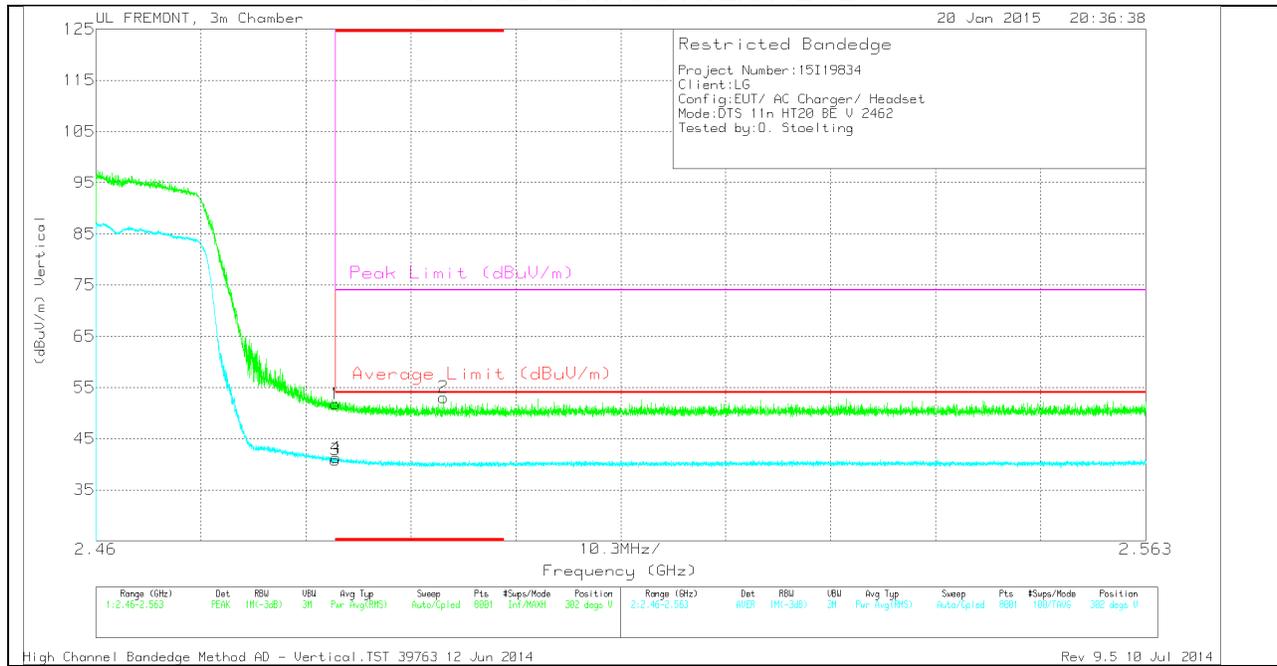
**HORIZONTAL PEAK AND AVERAGE PLOT**



**HORIZONTAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cb/Filter/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	44.52	PK	32.1	-22.8	0	53.82	-	-	74	-20.18	220	113	H
2	* 2.484	48.59	PK	32.1	-22.8	0	57.89	-	-	74	-16.11	220	113	H
3	* 2.484	33.44	RMS	32.1	-22.8	.24	42.98	54	-11.02	-	-	220	113	H
4	* 2.484	33.9	RMS	32.1	-22.8	.24	43.44	54	-10.56	-	-	220	113	H

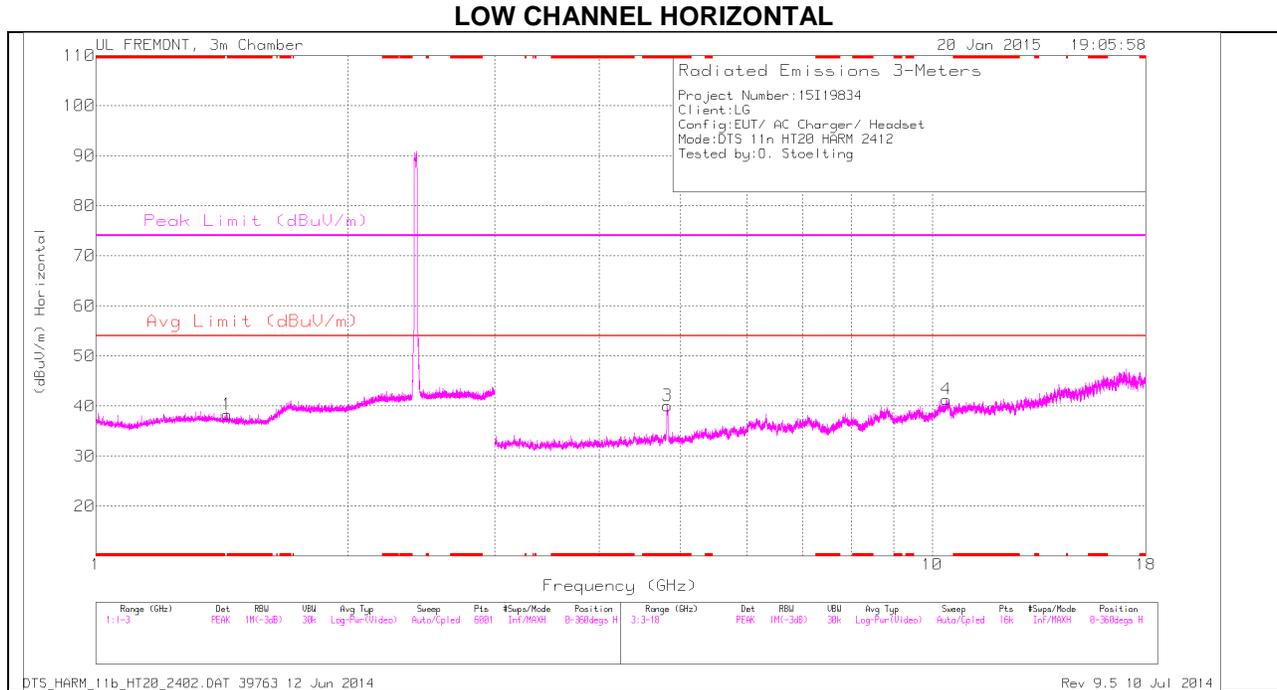
**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

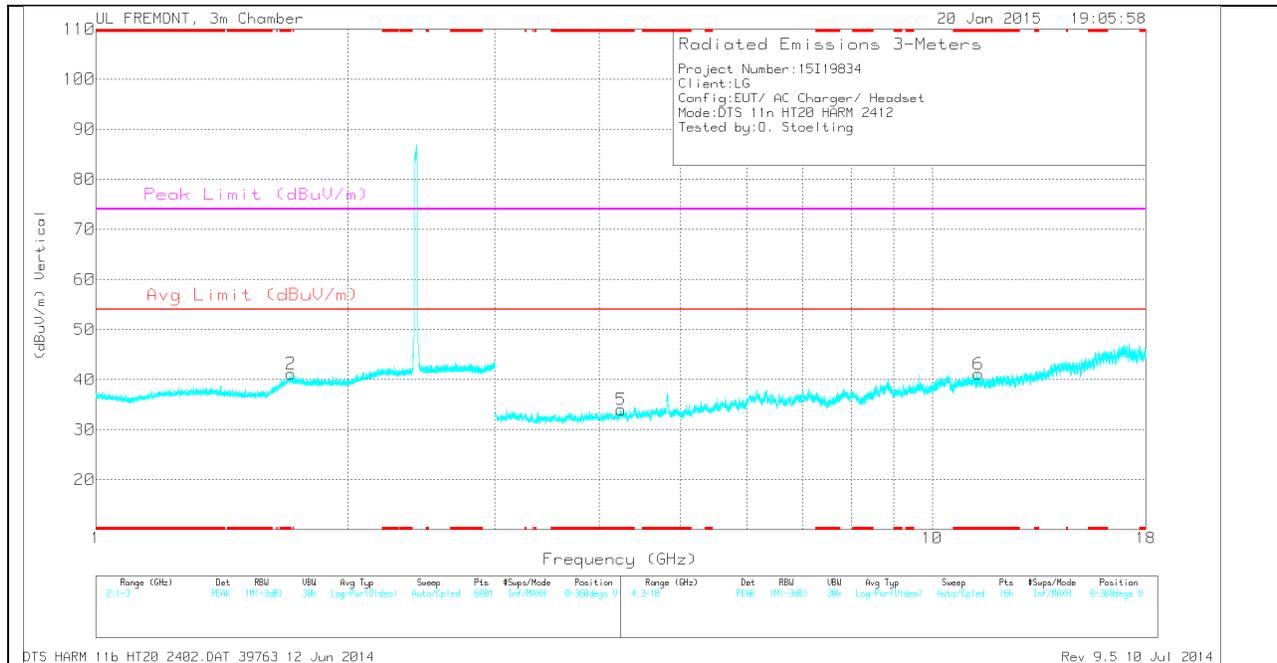
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cb/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	42.5	PK	32.1	-22.8	0	51.8	-	-	74	-22.2	302	387	V
3	* 2.484	31.32	RMS	32.1	-22.8	.24	40.86	54	-13.14	-	-	302	387	V
4	* 2.484	31.75	RMS	32.1	-22.8	.24	41.29	54	-12.71	-	-	302	387	V
2	* 2.494	43.76	PK	32.1	-22.8	0	53.06	-	-	74	-20.94	302	387	V

### HARMONICS AND SPURIOUS EMISSIONS



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

**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*

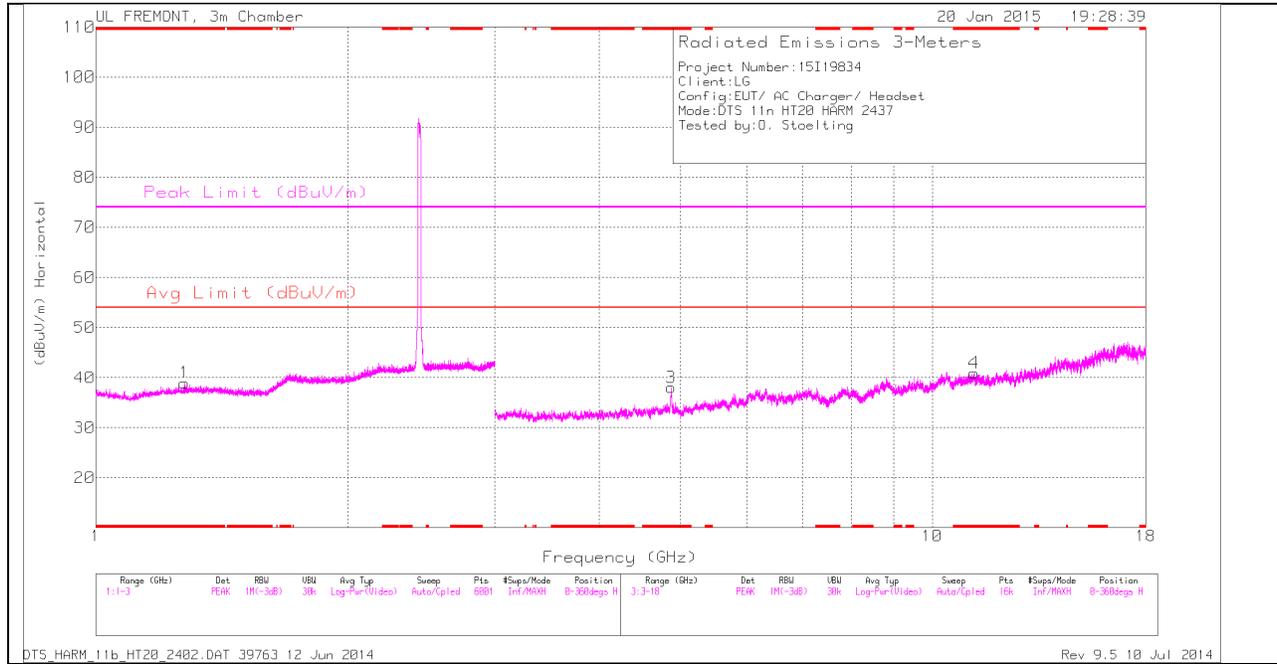
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cb/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.435	33.92	PK	28.1	-23.7	0	38.32	-	-	74	-35.68	0-360	200	H
3	* 4.823	36.48	PK	33.9	-30.3	0	40.08	-	-	74	-33.92	0-360	100	H
5	* 4.248	31.89	PK	33.4	-31.3	0	33.99	-	-	74	-40.01	0-360	100	V
6	* 11.357	28.93	PK	38.2	-26	0	41.13	-	-	74	-32.87	0-360	100	V
2	1.712	33.98	PK	30.6	-23.4	0	41.18	-	-	-	-	0-360	200	V
4	10.399	28.64	PK	38	-25.3	0	41.34	-	-	-	-	0-360	200	H

PK - Peak detector

*RADIATED EMISSIONS*

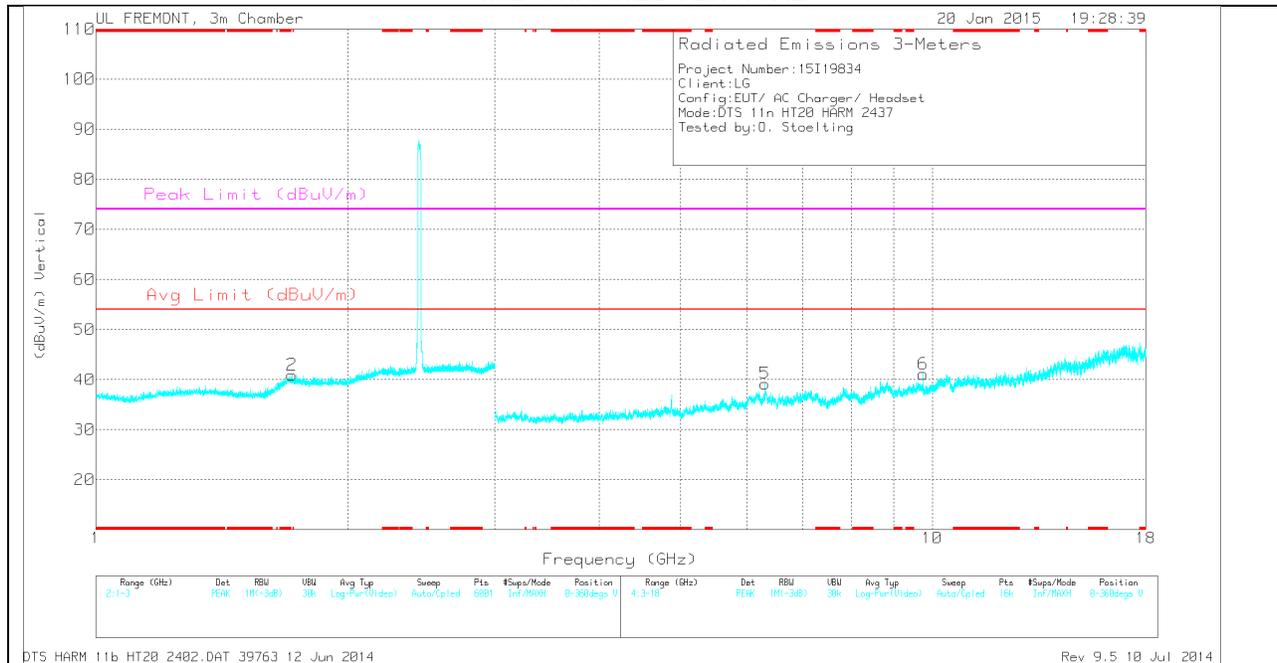
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cb/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.823	51.24	PK2	33.9	-30.3	0	54.84	-	-	74	-19.16	84	351	H
* 4.823	36.5	MAV1	33.9	-30.3	.24	40.34	54	-13.66	-	-	84	351	H
* 11.359	38.11	PK2	38.2	-26	0	50.31	-	-	74	-23.69	14	400	V
* 11.359	26.08	MAV1	38.2	-26	.24	38.52	54	-15.48	-	-	14	400	V
* 11.358	37.59	PK2	38.2	-26	0	49.79	-	-	74	-24.21	14	400	V
* 11.359	26.14	MAV1	38.2	-26	.24	38.58	54	-15.42	-	-	14	400	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*

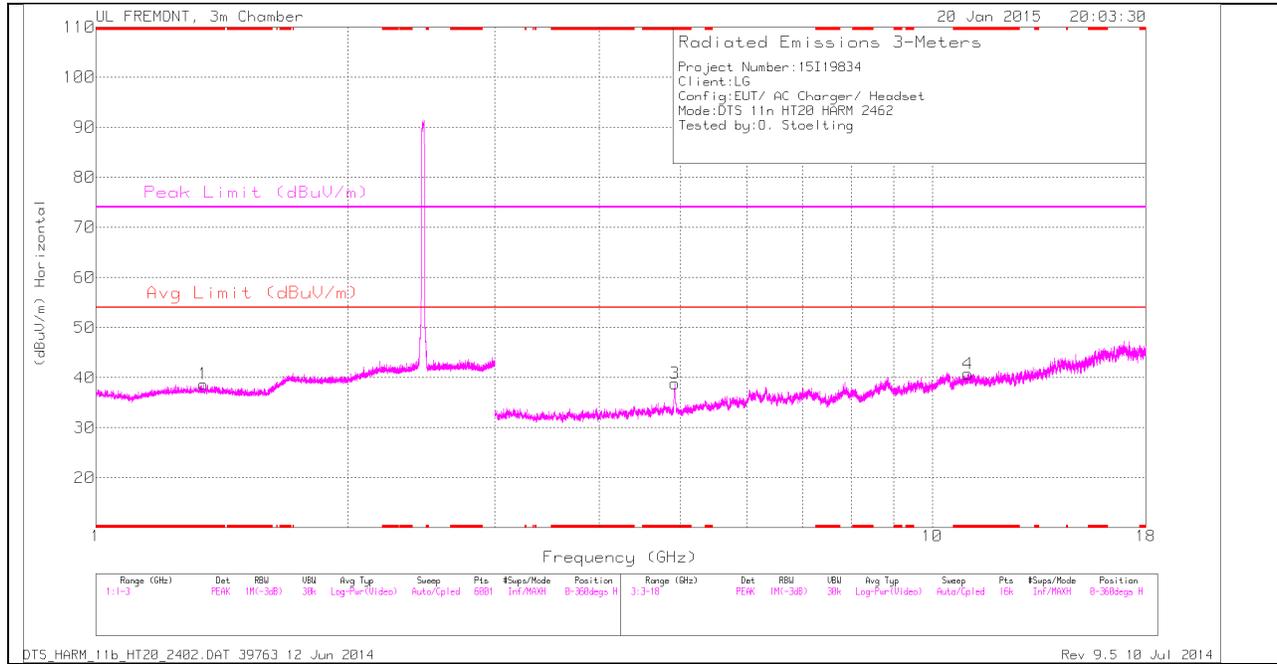
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.276	34.46	PK	28.3	-23.8	0	38.96	-	-	74	-35.04	0-360	200	H
3	* 4.874	34.2	PK	33.9	-30.1	0	38	-	-	74	-36	0-360	100	H
4	* 11.221	27.74	PK	38.3	-25.1	0	40.94	-	-	74	-33.06	0-360	100	H
2	1.716	33.74	PK	30.6	-23.4	0	40.94	-	-	-	-	0-360	100	V
5	6.313	32.81	PK	36	-29.6	0	39.21	-	-	-	-	0-360	200	V
6	9.748	29.6	PK	37.2	-25.7	0	41.1	-	-	-	-	0-360	200	V

PK - Peak detector

*RADIATED EMISSIONS*

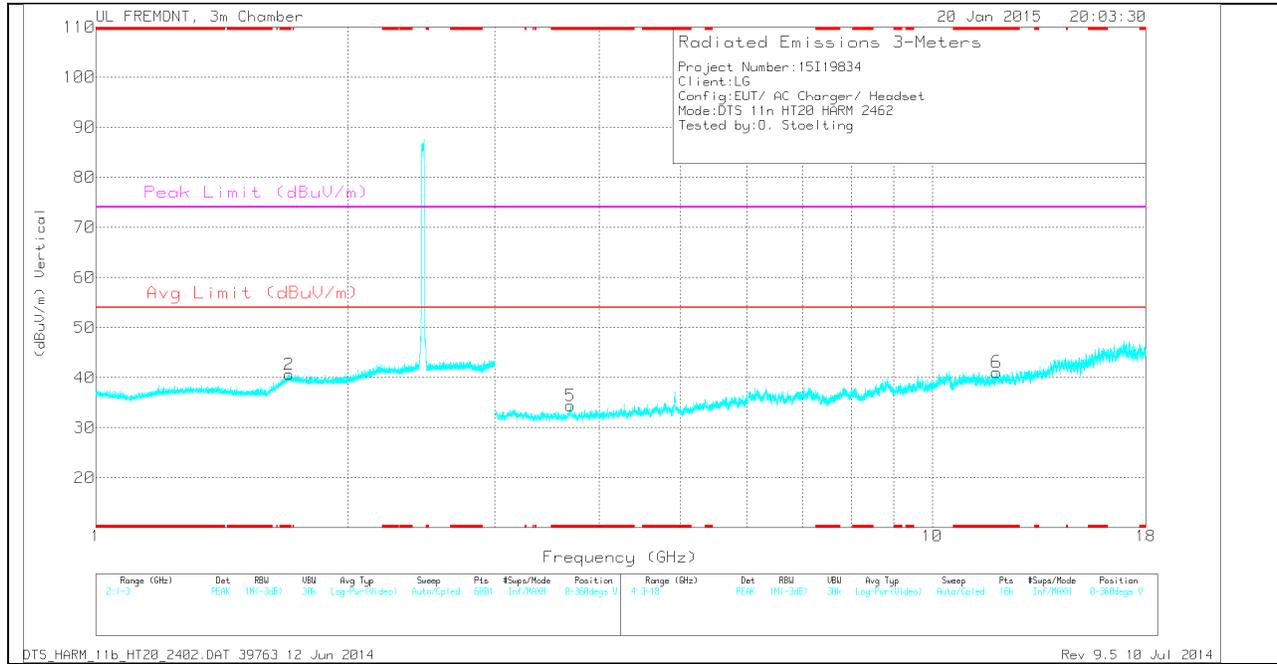
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 11.22	37.18	PK2	38.3	-25.1	0	50.38	-	-	74	-23.62	31	224	H
* 11.223	24.58	MAV1	38.3	-25.1	.24	38.02	54	-15.98	-	-	31	224	H
9.748	38.39	PK2	37.2	-25.7	0	49.89	-	-	-	-	300	172	V
9.748	28.08	MAV1	37.2	-25.7	.24	39.82	-	-	-	-	300	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 T711 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.345	34.12	PK	28.4	-23.8	0	38.72	-	-	74	-35.28	0-360	100	H
2	* 1.703	33.32	PK	30.7	-23.4	0	40.62	-	-	74	-33.38	0-360	200	V
3	* 4.925	35.36	PK	33.9	-30.4	0	38.86	-	-	74	-35.14	0-360	200	H
4	* 11.03	27.93	PK	38.3	-25.5	0	40.73	-	-	74	-33.27	0-360	200	H
5	* 3.692	32.3	PK	32.9	-30.8	0	34.4	-	-	74	-39.6	0-360	100	V
6	* 11.937	28.74	PK	38.4	-26.1	0	41.04	-	-	74	-32.96	0-360	200	V

PK - Peak detector

*RADIATED EMISSIONS*

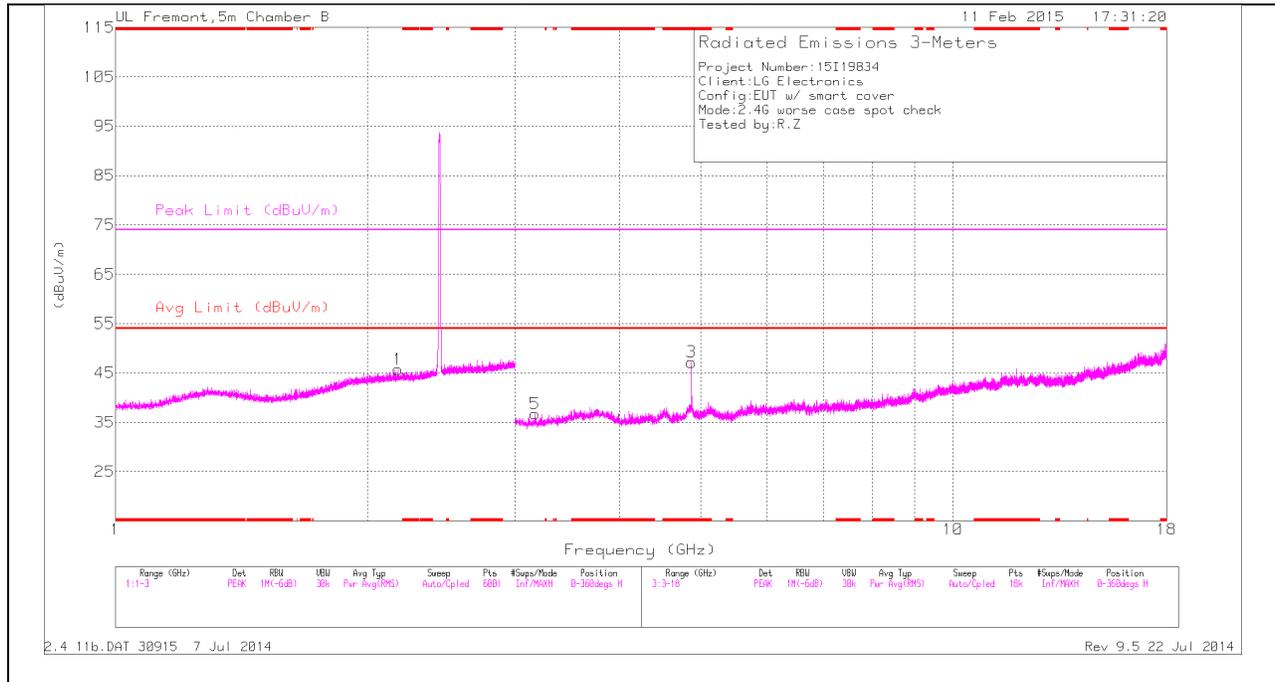
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 11.029	36.78	PK2	38.3	-25.5	0	49.58	-	-	74	-24.42	263	217	H
* 11.028	25.11	MAV1	38.3	-25.5	.24	38.15	54	-15.85	-	-	263	217	H
* 11.938	38.43	PK2	38.4	-26.1	0	50.73	-	-	74	-23.27	278	119	V
* 11.935	26.03	MAV1	38.4	-26.1	.24	38.57	54	-15.43	-	-	278	119	V

### 10.3. ADDITIONAL TESTS (Phone with Smart Case and Stylus Pen)

#### 10.3.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND (Worst case)

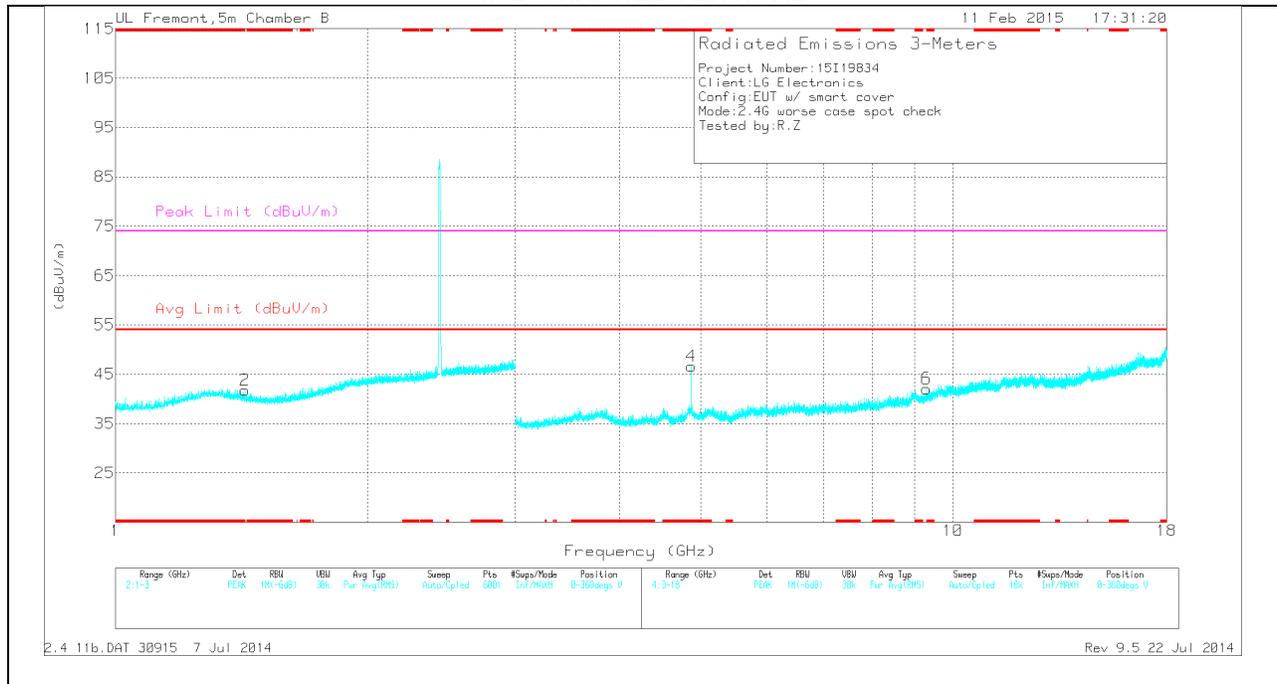
#### HARMONICS AND SPURIOUS EMISSIONS

##### 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**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 4.874	40.79	PK	34.2	-27.8	47.19	-	-	74	-26.81	0-360	101	H
4	* 4.874	40.2	PK	34.2	-27.8	46.6	-	-	74	-27.4	0-360	201	V
2	1.428	34.9	PK	29	-22.1	41.8	-	-	-	-	0-360	101	V
1	2.176	35.02	PK	31.8	-21.1	45.72	-	-	-	-	0-360	100	H
5	3.172	32.6	PK	33.3	-29.2	36.7	-	-	-	-	0-360	101	H
6	9.299	28.51	PK	36.4	-22.8	42.11	-	-	-	-	0-360	101	V

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

PK - Peak detector

**Radiated Emissions**

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cbl/Filtr/Pad (db)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.874	44.4	PK2	34.2	-27.8	50.8	-	-	74	-23.2	356	103	H
* 4.874	39.72	MAV1	34.2	-27.8	46.12	54	-7.88	-	-	356	103	H
* 4.874	45.94	PK2	34.2	-27.8	52.34	-	-	74	-21.66	72	387	V
* 4.874	41.63	MAV1	34.2	-27.8	48.03	54	-5.97	-	-	72	387	V

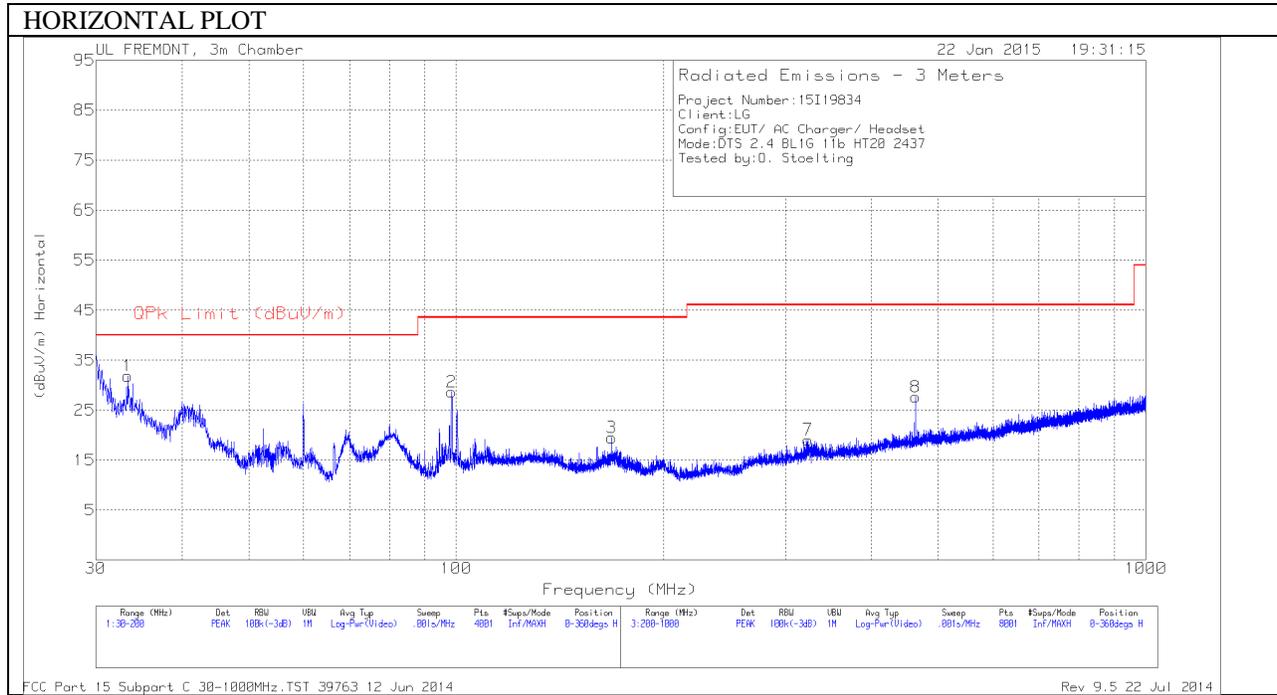
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

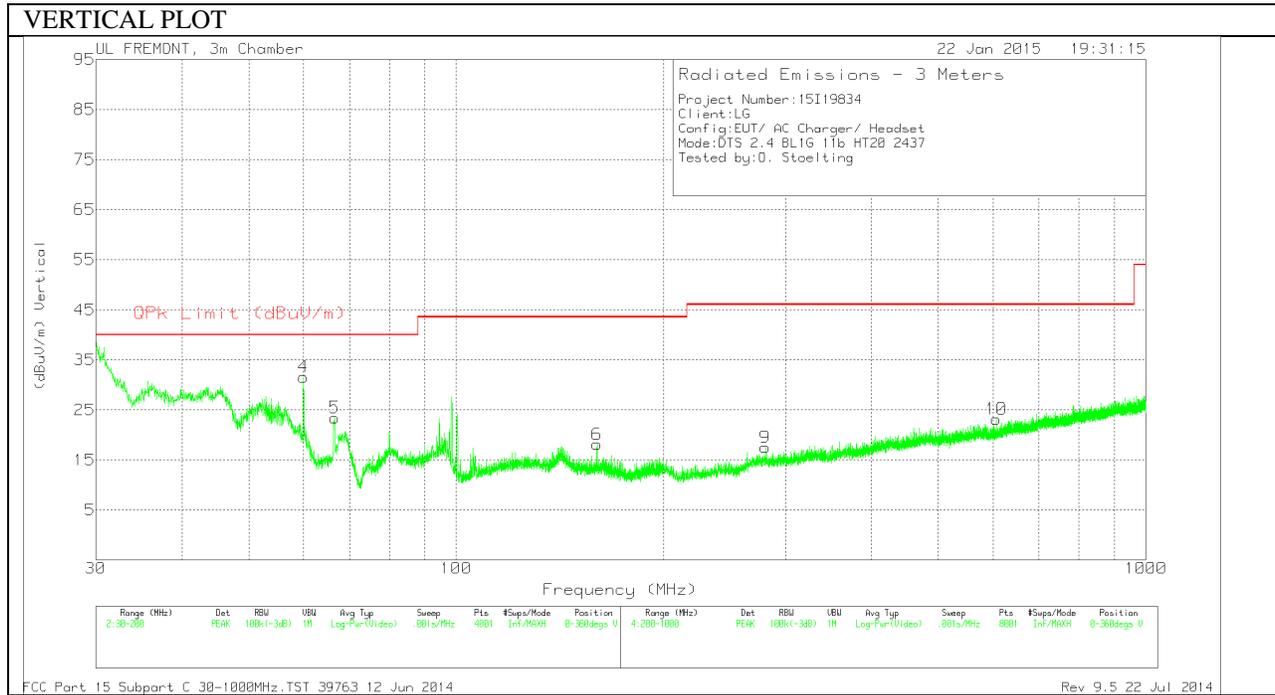
MAV1 - KDB558074 Option 1 Maximum RMS Average

### 10.4. WORST-CASE BELOW 1 GHz

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



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



**Below 1G Data**

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T185 (dB/m)	Amp/Cbl (dB/m)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	33.4	40.84	PK	18.5	-27.5	31.84	40	-8.16	0-360	300	H
4	60.005	51.59	PK	7.1	-27.1	31.59	40	-8.41	0-360	100	V
5	66.5925	42.73	PK	7.8	-27.1	23.43	40	-16.57	0-360	100	V
2	98.4675	45.93	PK	9.5	-26.8	28.63	43.52	-14.89	0-360	300	H
6	160.0075	32.25	PK	12.1	-26.2	18.15	43.52	-25.37	0-360	100	V
3	167.9975	33.98	PK	11.6	-26.1	19.48	43.52	-24.04	0-360	200	H
9	280.6	29.34	PK	13.4	-25.2	17.54	46.02	-28.48	0-360	200	V
7	323.9	30.35	PK	13.9	-25.2	19.05	46.02	-26.97	0-360	100	H
8	463.7	36.33	PK	17.1	-25.8	27.63	46.02	-18.39	0-360	200	H
10	607.2	30.17	PK	18.6	-25.6	23.17	46.02	-22.85	0-360	100	V

PK - Peak detector

## 11. AC POWER LINE CONDUCTED EMISSIONS

### LIMITS

FCC §15.207 (a)

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

\*Decreases with the logarithm of the frequency.

### TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4 2009.

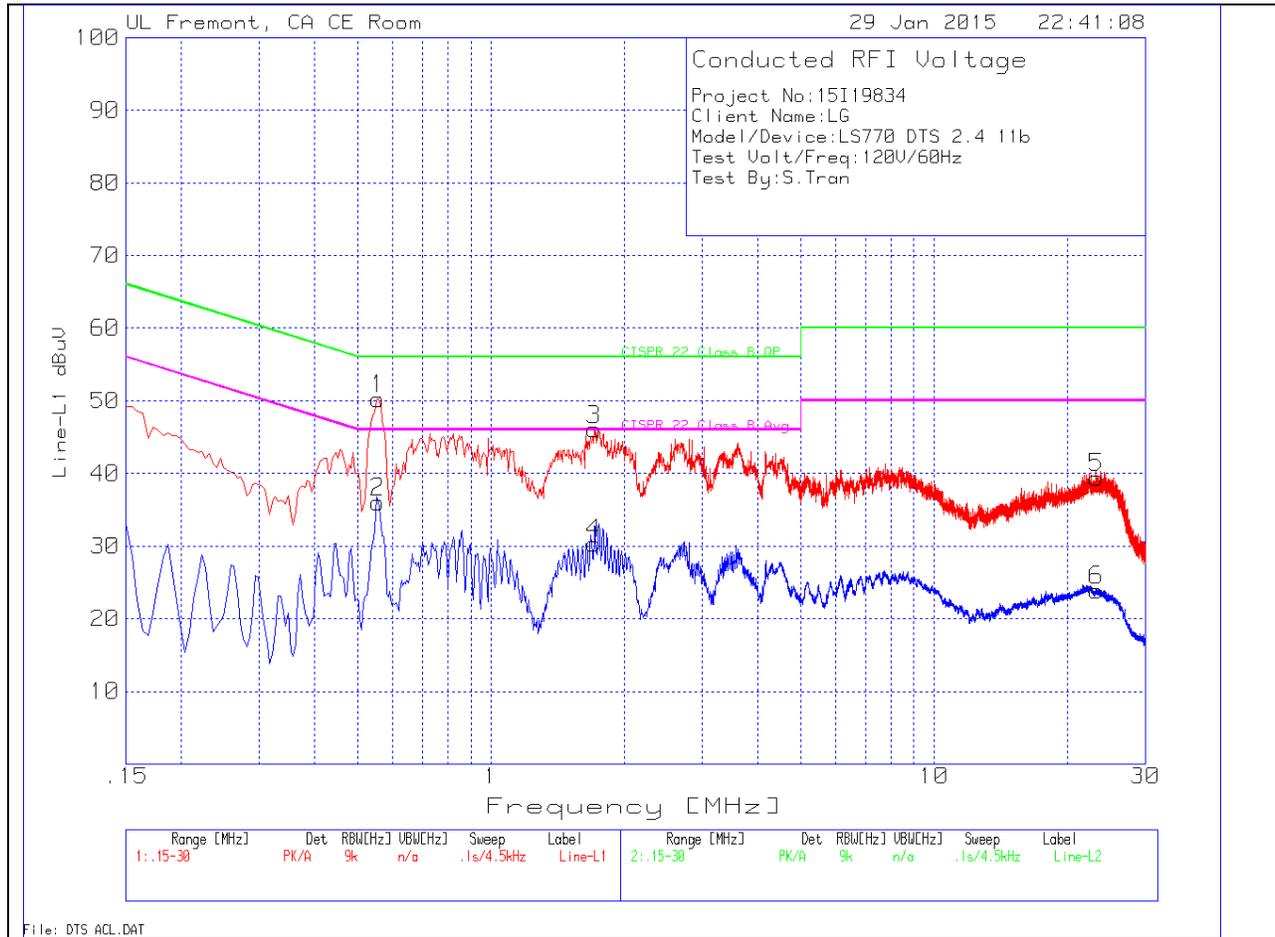
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

### RESULTS

**6 WORST EMISSIONS**

**LINE 1 PLOT**



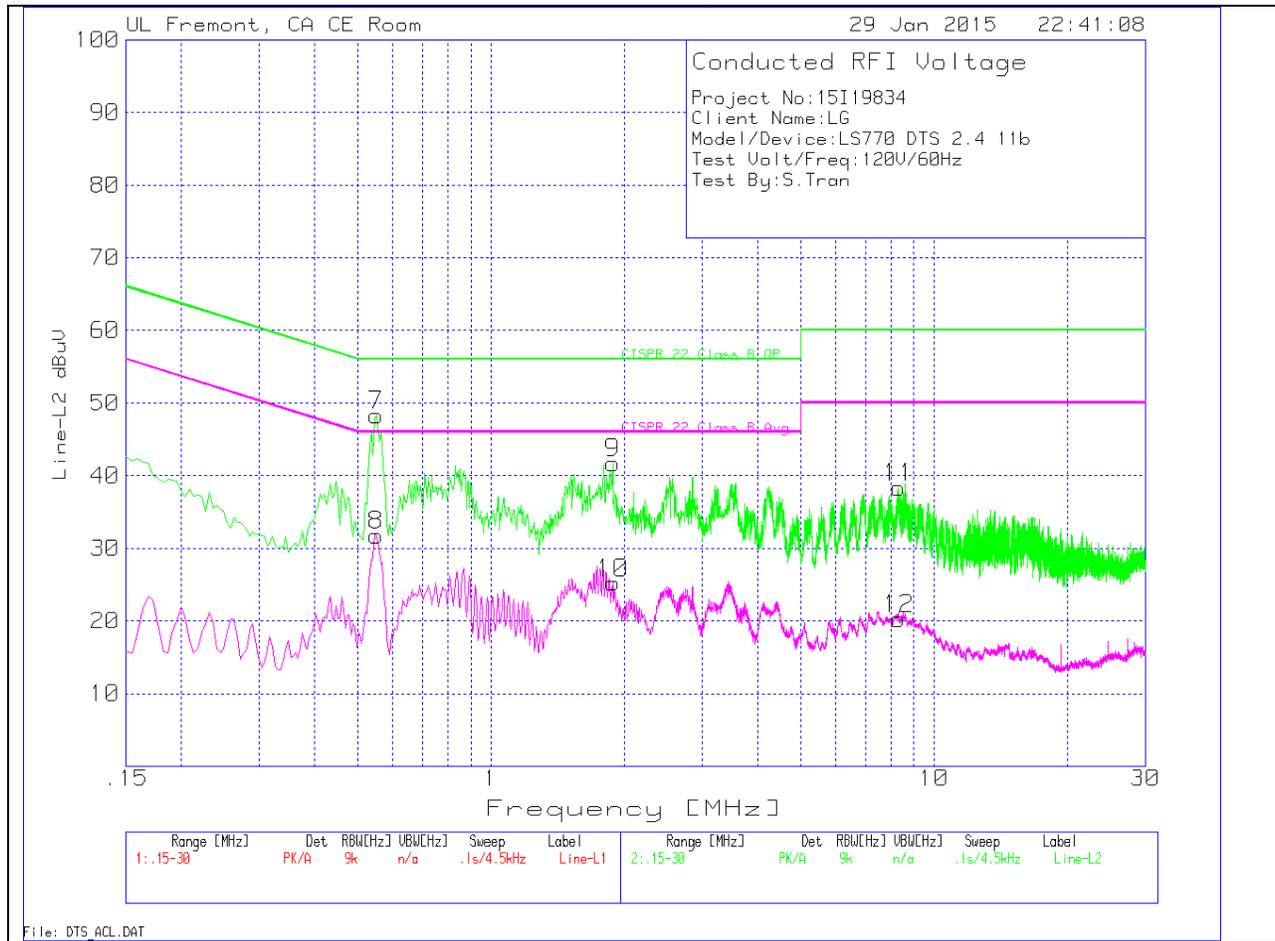
**LINE 1 RESULTS**

Line-L1 .15 - 30MHz

**Trace Markers**

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1 (dB)	LC Cables 1&3 (dB)	Corrected Reading dBuV	CISPR 22 Class B QP	Margin to Limit (dB)	CISPR 22 Class B Avg	Margin to Limit (dB)
1	.555	49.96	PK	.3	0	50.26	56	-5.74	-	-
2	.555	35.7	Av	.3	0	36	-	-	46	-10
3	1.707	45.75	PK	.2	.1	46.05	56	-9.95	-	-
4	1.707	30.05	Av	.2	.1	30.35	-	-	46	-15.65
5	23.2845	38.94	PK	.3	.2	39.44	60	-20.56	-	-
6	23.2845	23.36	Av	.3	.2	23.86	-	-	50	-26.14

### LINE 2 PLOT



### LINE 2 RESULTS

#### 12. Line-L2 .15 - 30MHz

##### Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2 (dB)	LC Cables 2&3 (dB)	Corrected Reading dBuV	CISPR 22 Class B QP	Margin to Limit (dB)	CISPR 22 Class B Avg	Margin to Limit (dB)
7	.5505	48.05	PK	.3	0	48.35	56	-7.65	-	-
8	.5505	31.45	Av	.3	0	31.75	-	-	46	-14.25
9	1.8825	41.4	PK	.2	.1	41.7	56	-14.3	-	-
10	1.8825	24.95	Av	.2	.1	25.25	-	-	46	-20.75
11	8.331	38.04	PK	.2	.1	38.34	60	-21.66	-	-
12	8.331	19.95	Av	.2	.1	20.25	-	-	50	-29.75