



**FCC CFR47 PART 15 SUBPART C**

**CERTIFICATION TEST REPORT**

**FOR**

**CDMA/LTE Phone + Bluetooth & DTS/UNII a/b/g/n + NFC**

**MODEL NUMBER: LG-VS876, LGVS876, VS876, LG-AS876, AS876 and LGAS876**

**FCC ID: ZNFVS876**

**REPORT NUMBER: 13U16594-4, Revision B**

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**NVLAP LAB CODE 200065-0**

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--	1/9/14	Initial Issue	P. Kim
A	1/21/14	Add Models LG-AS876, AS876 and LGAS876	P. Kim
B	1/27/14	Add HT40 data	P. Kim

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** LG ELECTRONICS MOBILECOMM U.S.A., INC  
**EUT DESCRIPTION:** CDMA/LTE Phone + Bluetooth & DTS/UNII a/b/g/n + NFC  
**MODEL:** LG-VS876, LGVS876, VS876, LG-AS876, AS876 and LGAS876  
**SERIAL NUMBER:** 1792206-VS  
**DATE TESTED:** DECEMBER 13, 2013 – JANUARY 26, 2014

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

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

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

Approved & Released  
For UL Verification Services Inc. By:

Tested By:



PHILIP KIM  
WiSE PROGRAM MANAGER  
UL Verification Services Inc.

CHARLES VERGONIO  
WiSE LAB TECHNICIAN  
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, ANSI C63.10-2009.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

## 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:

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

### 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 Phone Bluetooth and WLAN (2.4 & 5GHz) + NFC.

### 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	16.43	43.95
2412 - 2462	802.11g	17.26	53.21
2412 - 2462	802.11n HT20	16.27	42.36
5745-5825	802.11a	19.4	87.10
5745-5825	802.11n HT20	18.44	69.82
5745-5825	802.11n HT40	19.4	87.10

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a maximum gain -2.09 dBi (2.4GHz) and 1.79 dBi (5.8GHz).

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## 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  
802.11a 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-02WD	DA3Y0035121	N/A
Earphone	LG	EAB62209201	N/A	N/A

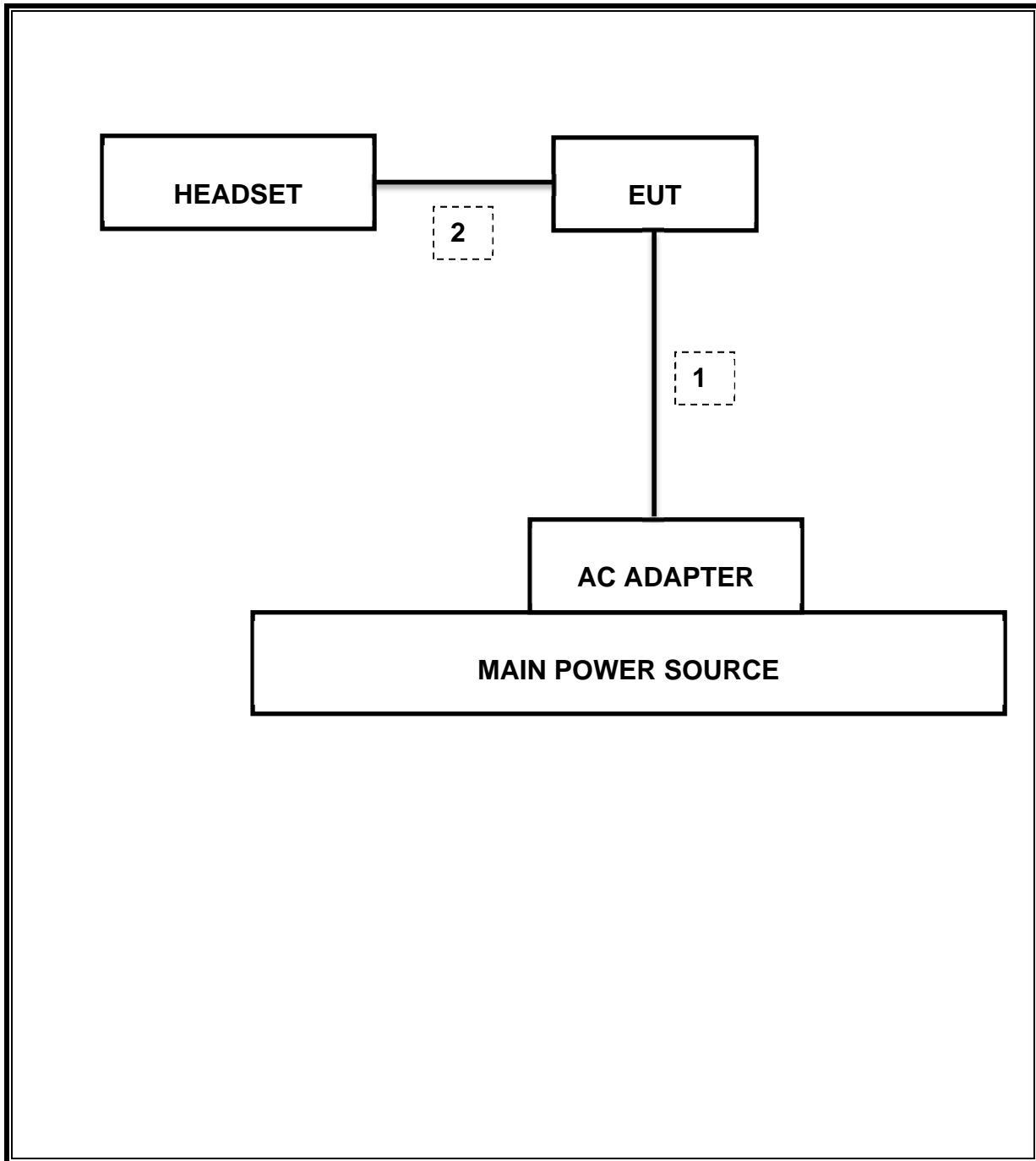
### I/O CABLES

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 Date	Cal Due
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB1	C01016	08/14/13	08/14/14
Antenna, Horn, 18 GHz	ETS	3117	C01006	12/11/13	12/11/14
Antenna, Horn, 25.5 GHz	ARA	MWH-1826/B	C00980	11/14/13	11/14/14
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	01/16/14	01/16/15
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	10/22/13	10/22/14
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01012	10/21/13	10/21/14
PXA SIGNAL ANALYZER	Agilent / HP	N9030A	N/A		05/09/14
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/08/13	08/08/14
LISN, 30 MHz	FCC	50/250-25-2	C00626	01/14/14	01/14/15
Reject Filter, 2.4GHz	Micro-Tronics	BRM50702	N02684	CNR	CNR
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/2013	12/13/2014

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## 7. MEASUREMENT METHODS

KDB 558074 D01 DTS Meas Guidance v03r01:Measurement Procedure PK2 is used for power and PKPSD is used for power spectral density.

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

## 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	8.58MHz
2.1051, 15.247 (d)	RSS-210 A8.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-36.29dBc
15.247	RSS-210 A8.4	TX conducted output power	<30dBm		Pass	19.40dBm
15.247	RSS-210 A8.2	PSD	<8dBm		Pass	-9.03dBm
15.207 (a)	RSS-GEN 7.2.2	AC Power Line conducted emissions	Section 10	Radiated	Pass	26.29dBuV
15.205, 15.209	RSS-210 Clause 2.6, RSS-210 Clause 6	Radiated Spurious Emission	< 54dBuV/m		Pass	46.8dBuV

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## 9. ANTENNA PORT TEST RESULTS

### 9.1. 6 dB BANDWIDTH

#### LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

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

#### TEST PROCEDURE

Reference to KDB 558074 D01 DTS Meas Guidance v03r01: 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	9.05	0.5
Mid	2437	9.05	0.5
High	2462	8.58	0.5
Worst		8.58	

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

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.46	0.5
Mid	2437	16.46	0.5
High	2462	16.46	0.5
Worst		16.46	

**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	17.67	0.5
Mid	2437	17.67	0.5
High	2462	17.71	0.5
Worst		17.67	

**9.1.4. 802.11a MODE IN THE 5.8 GHz BAND**

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	16.460	0.5
Mid	5785	16.500	0.5
High	5825	16.460	0.5
Worst		16.460	

**9.1.5. 802.11n HT20 MODE IN THE 5.8 GHz BAND**

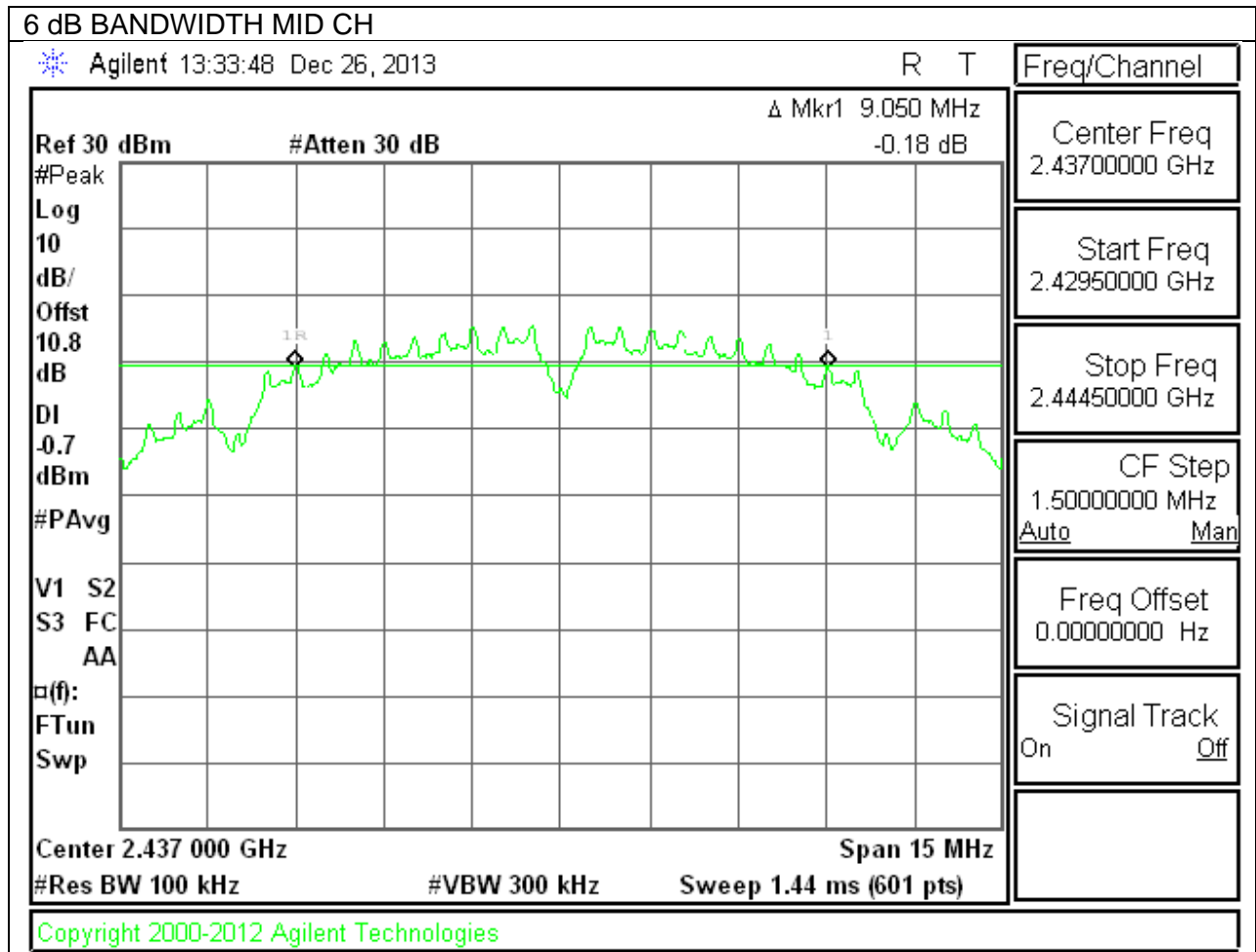
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	17.670	0.5
Mid	5785	17.670	0.5
High	5825	17.620	0.5
Worst		17.620	

**9.1.1. 802.11n HT40 MODE IN THE 5.8 GHz BAND**

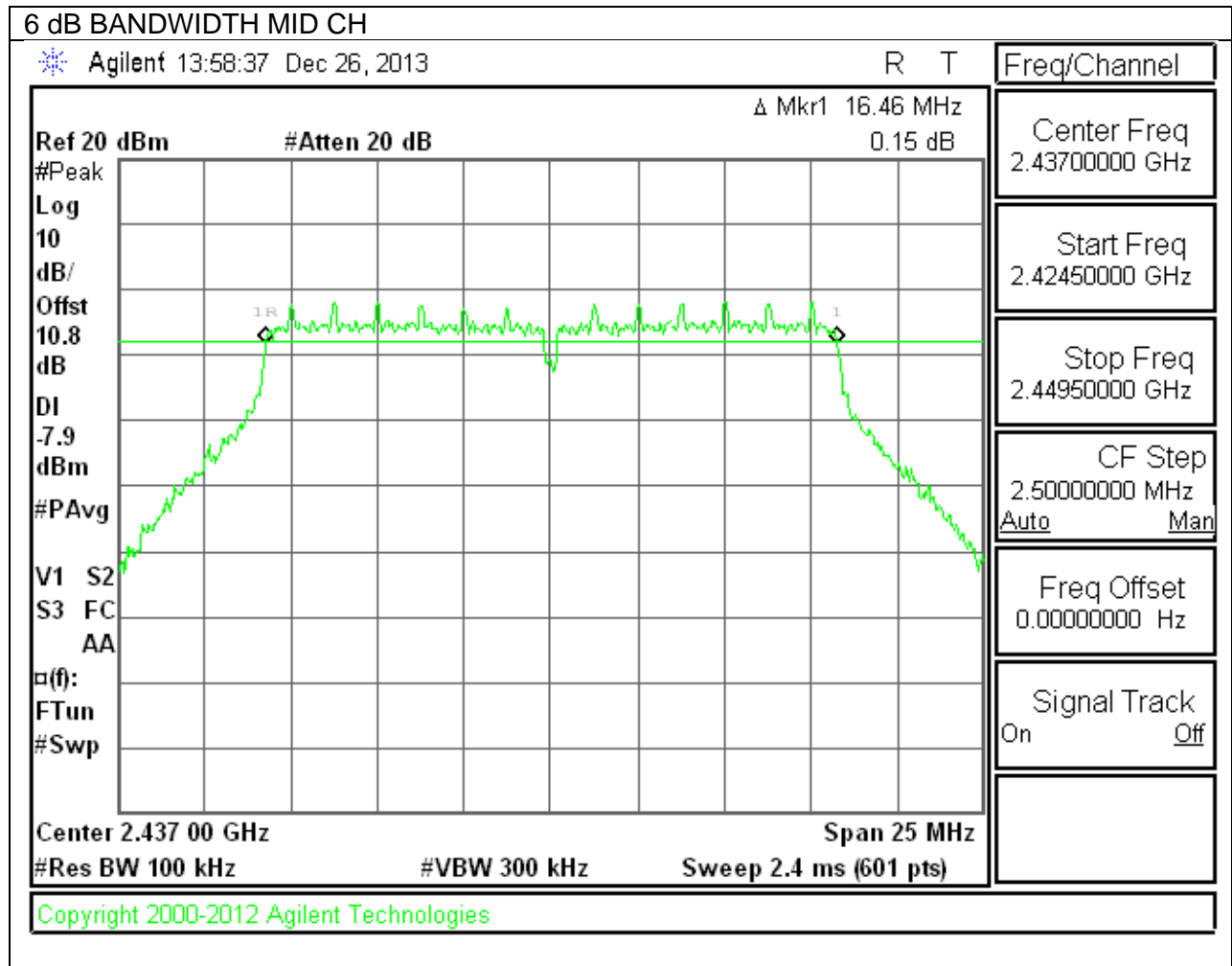
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5755	35.5	0.5
High	5795	35.6	0.5
Worst		35.5	0.5



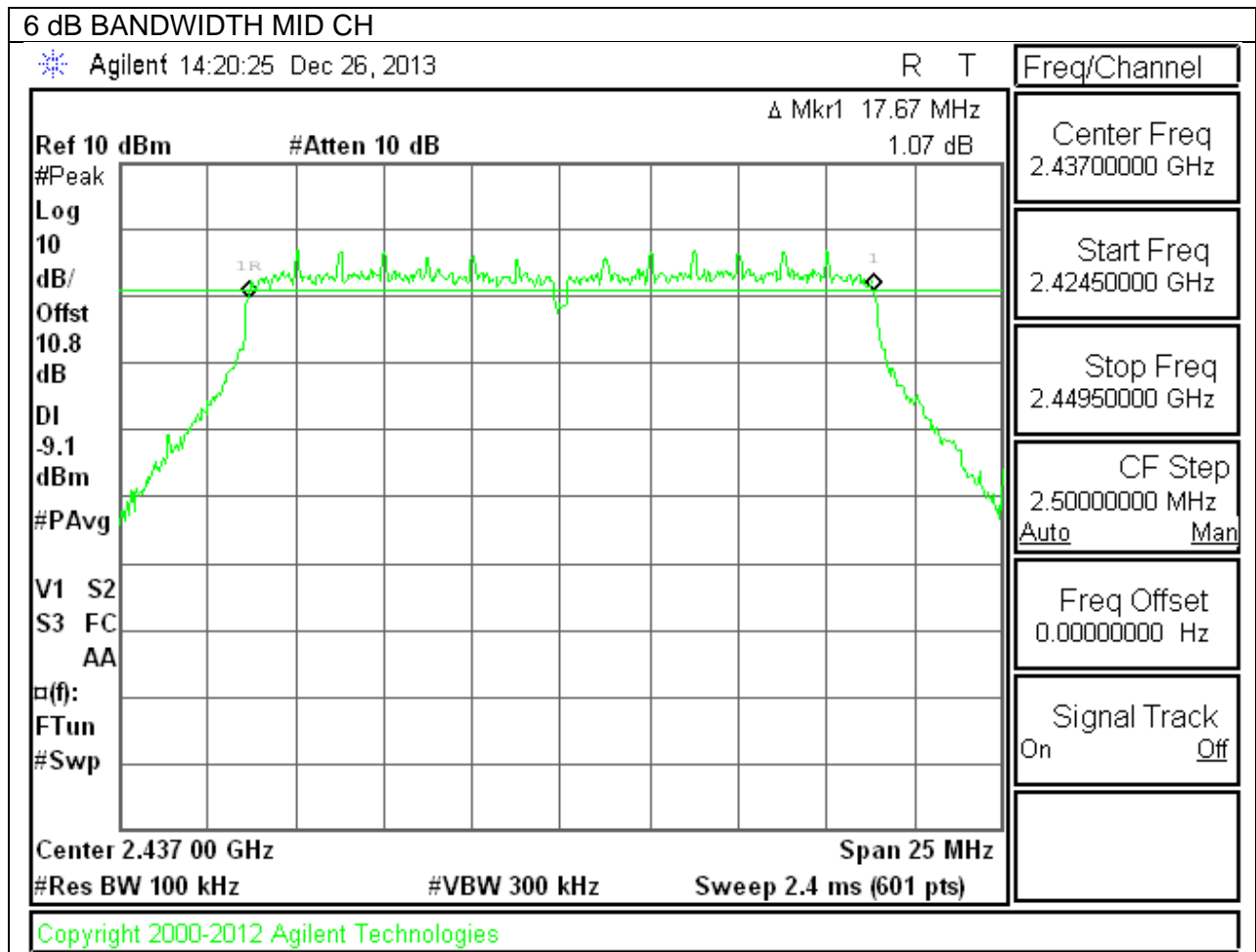
**802.11b 6 dB BANDWIDTH**



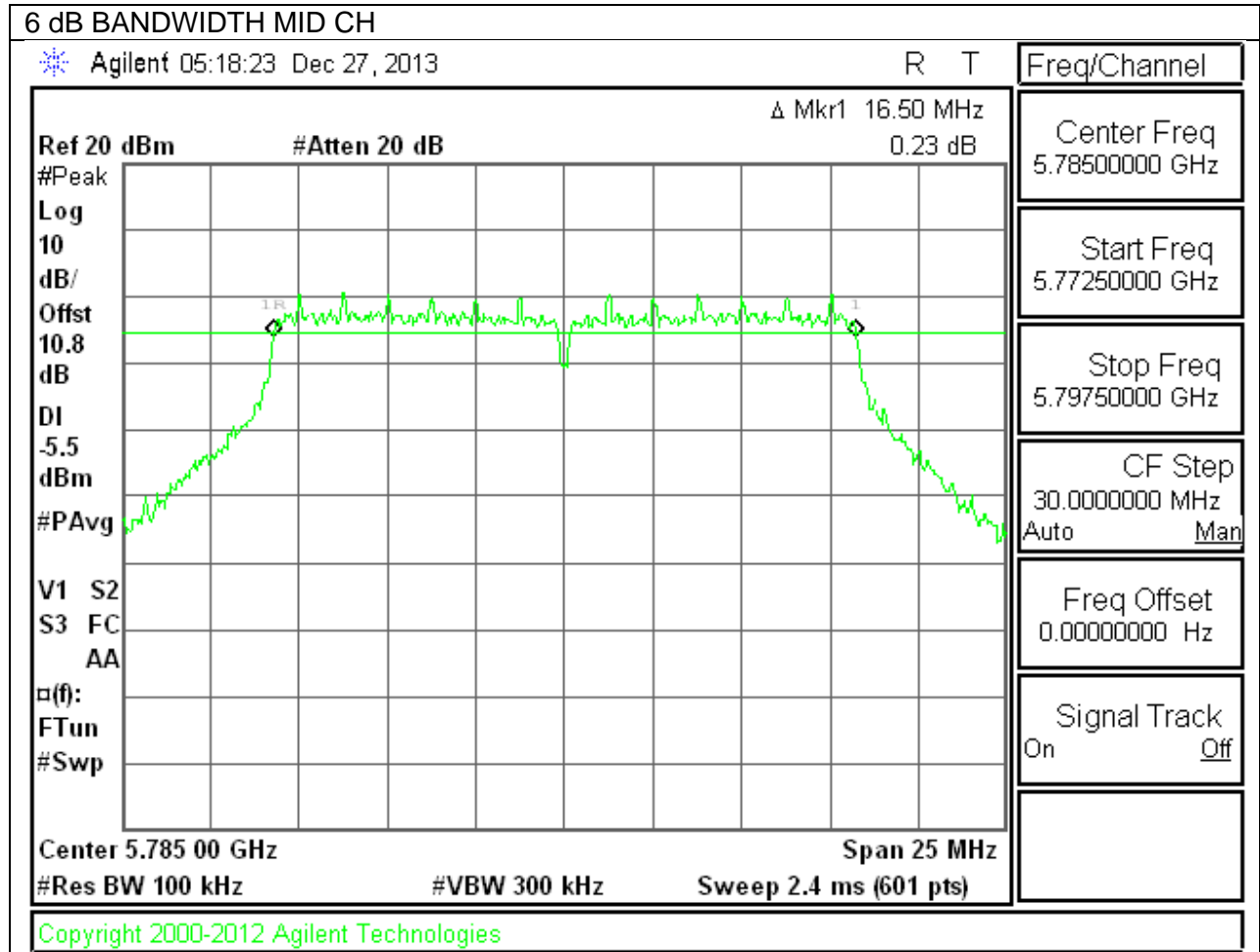
**802.11g 6 dB BANDWIDTH**



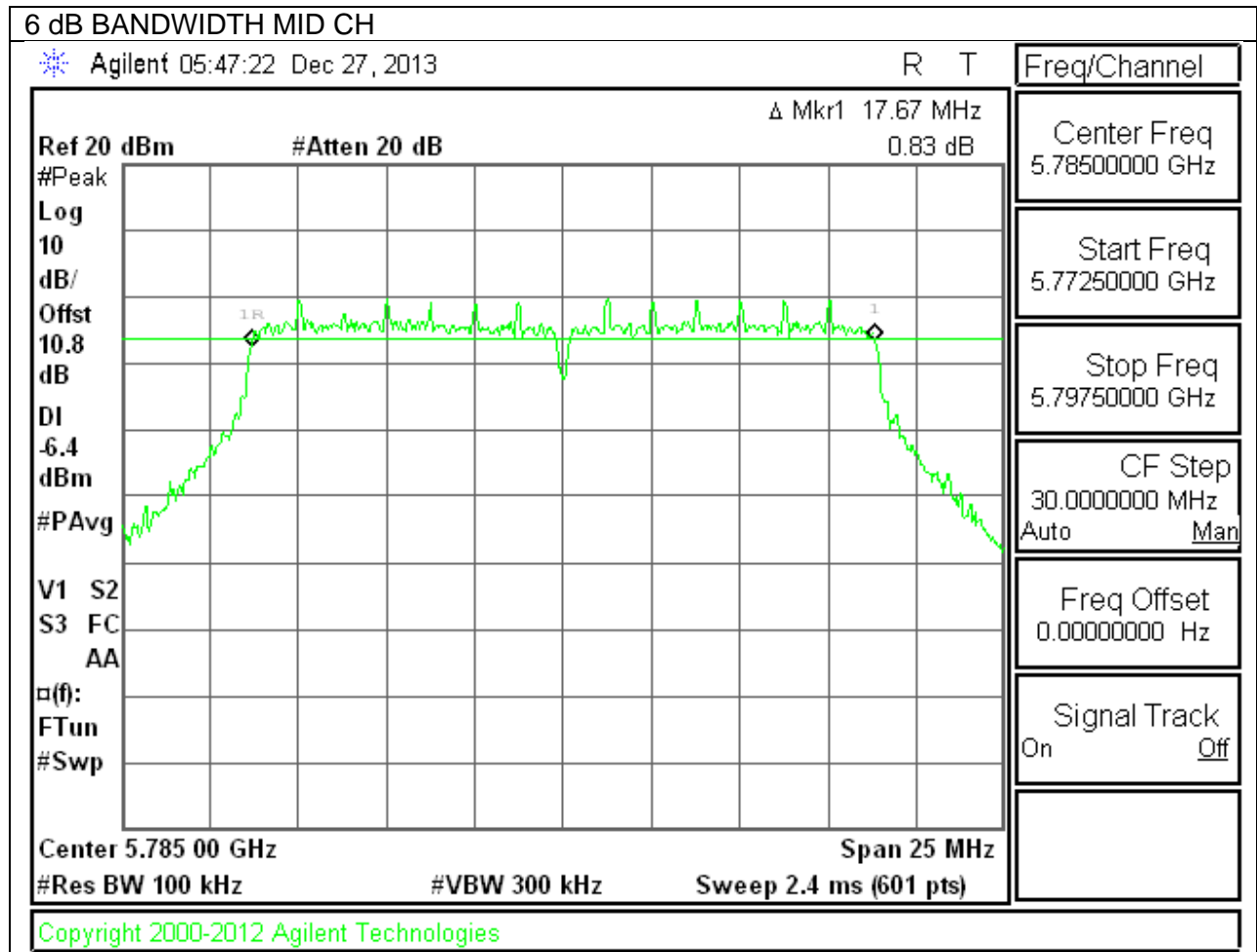
**802.11n 6 dB BANDWIDTH**



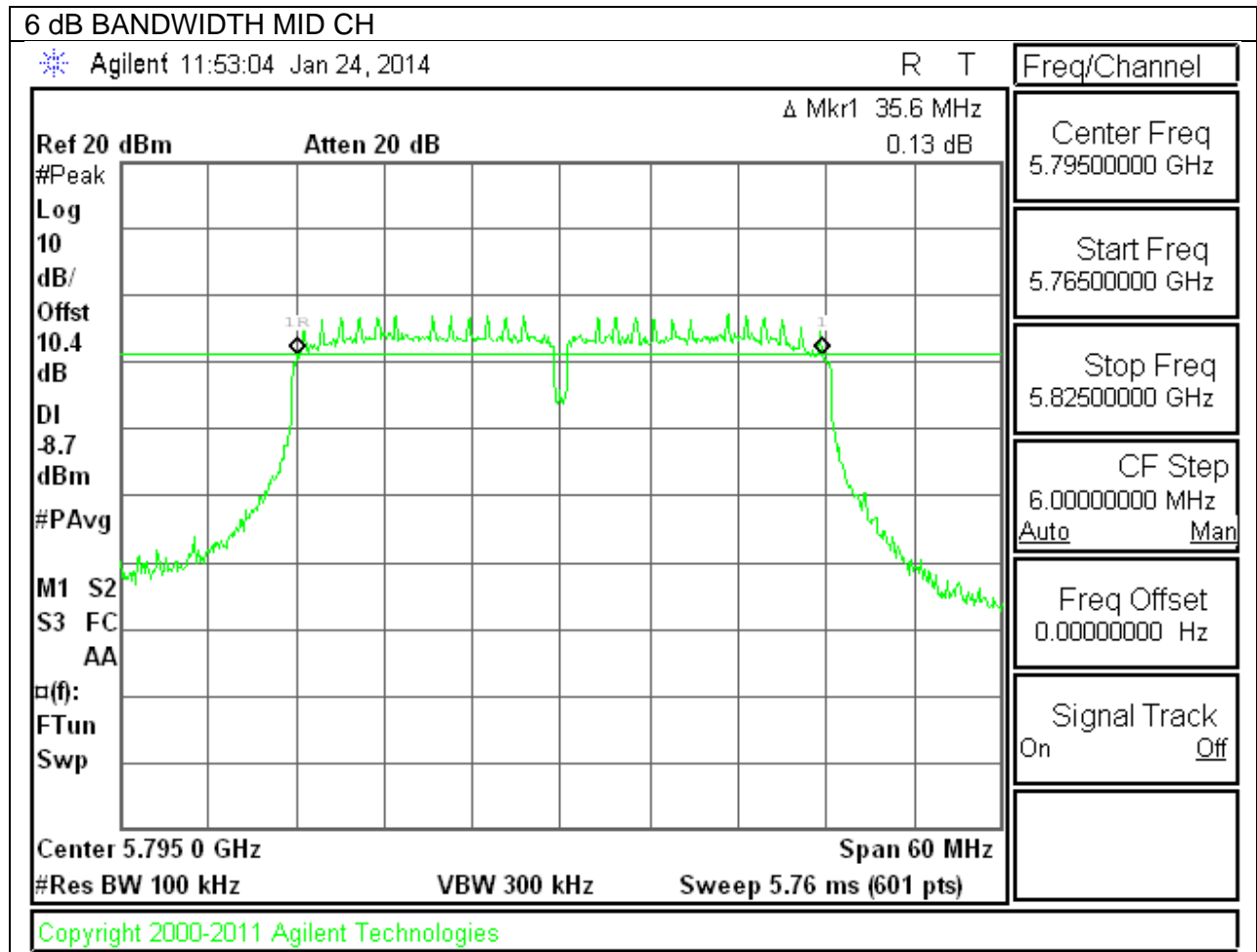
**802.11a 5.8GHz mode 6 dB BANDWIDTH**



**802.11n HT20 5.8GHz mode 6 dB BANDWIDTH**



**802.11n HT40 5.8GHz mode 6 dB BANDWIDTH**



## 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	13.10
Mid	2437	13.11
High	2462	13.13
Worst		13.13

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

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.37
Mid	2437	16.39
High	2462	16.51
Worst		16.51

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

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.48
Mid	2437	17.53
High	2462	17.63
Worst		17.63

#### 9.2.4. 802.11a MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5745	16.340
Mid	5785	16.380
High	5825	16.470
Worst		16.470

**9.2.5. 802.11n HT20 MODE IN THE 5.8 GHz BAND**

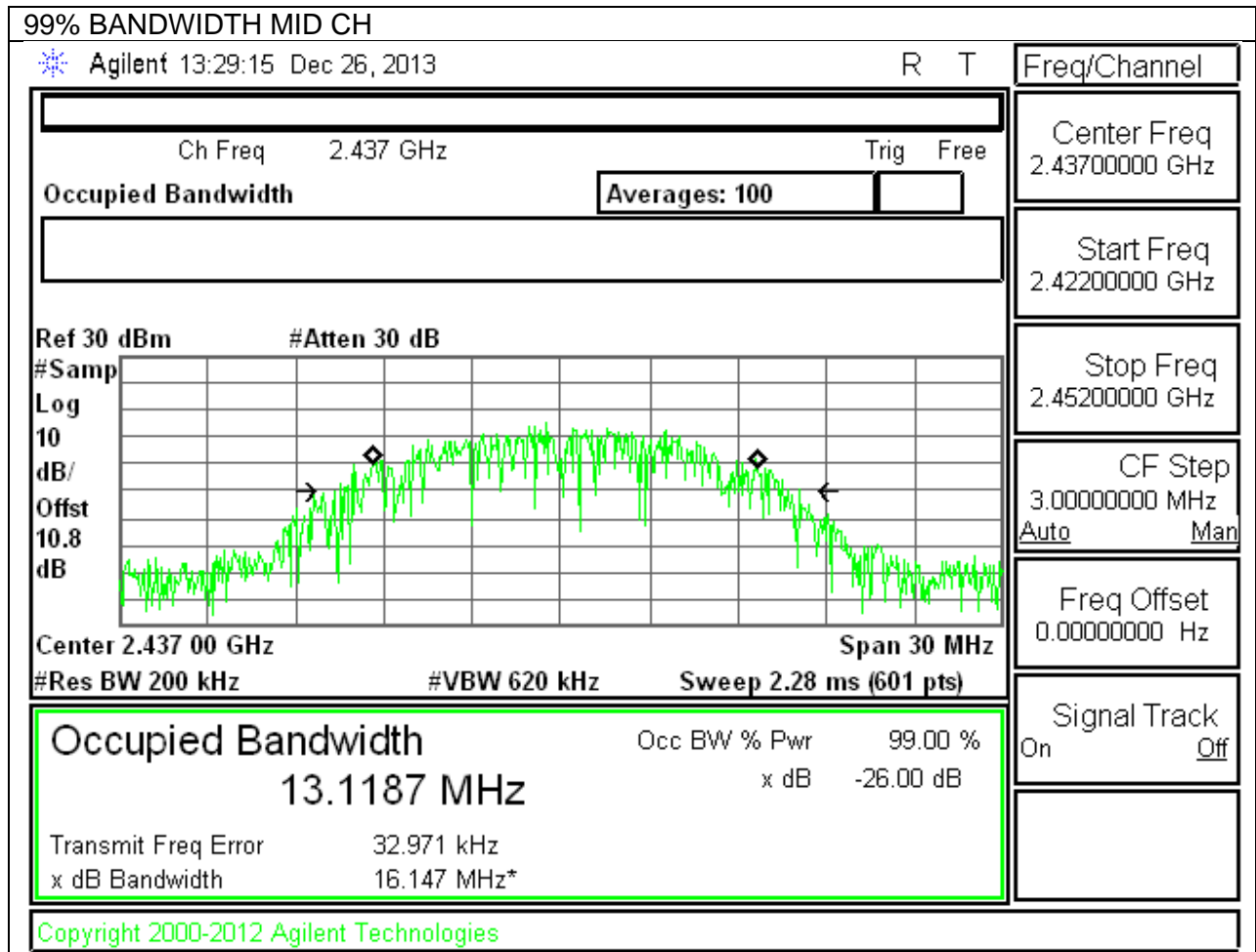
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5745	17.540
Mid	5785	17.670
High	5825	17.520
Worst		17.670

**9.2.1. 802.11n HT40 MODE IN THE 5.8 GHz BAND**

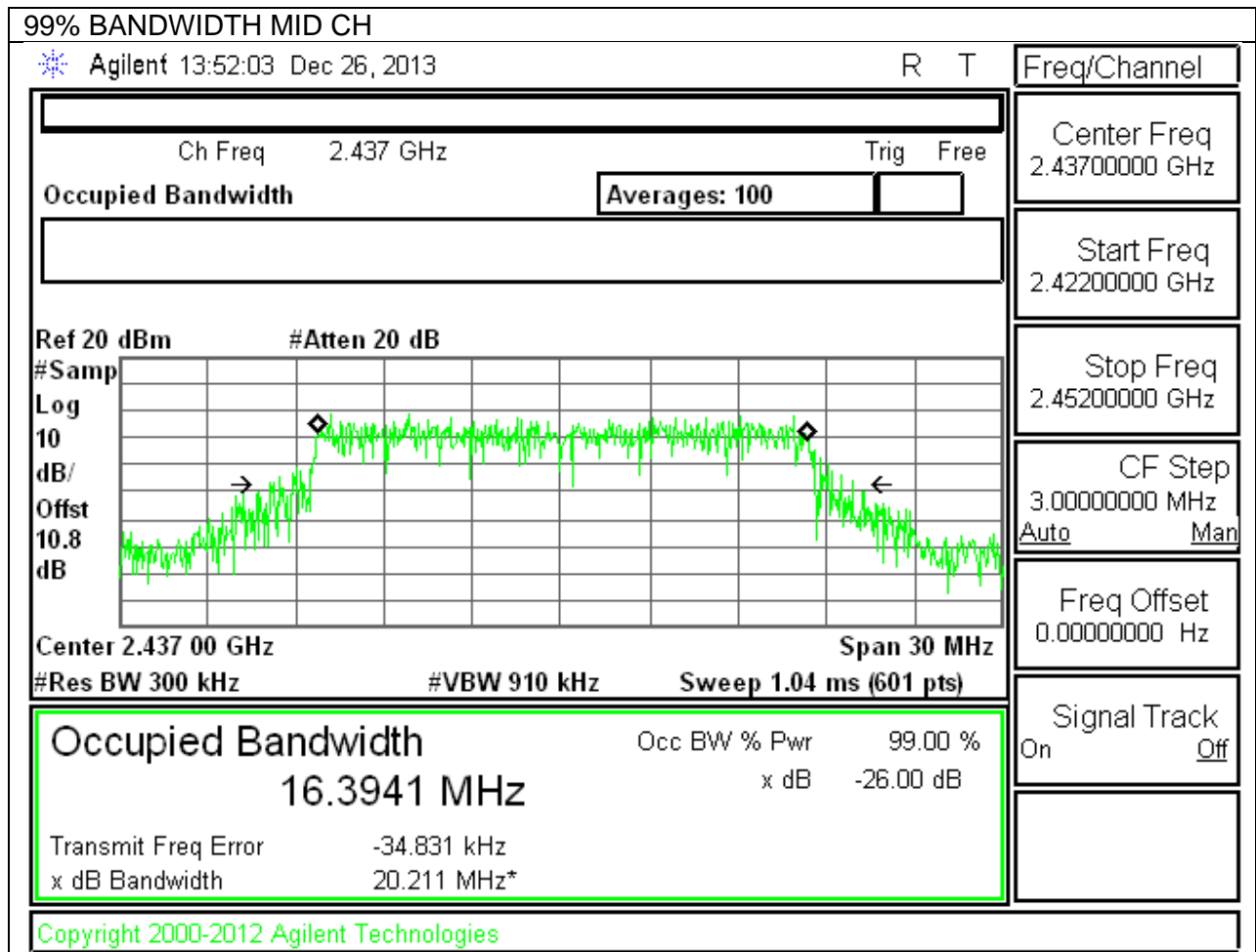
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5755	36.5
High	5795	36.5
Worst		36.5



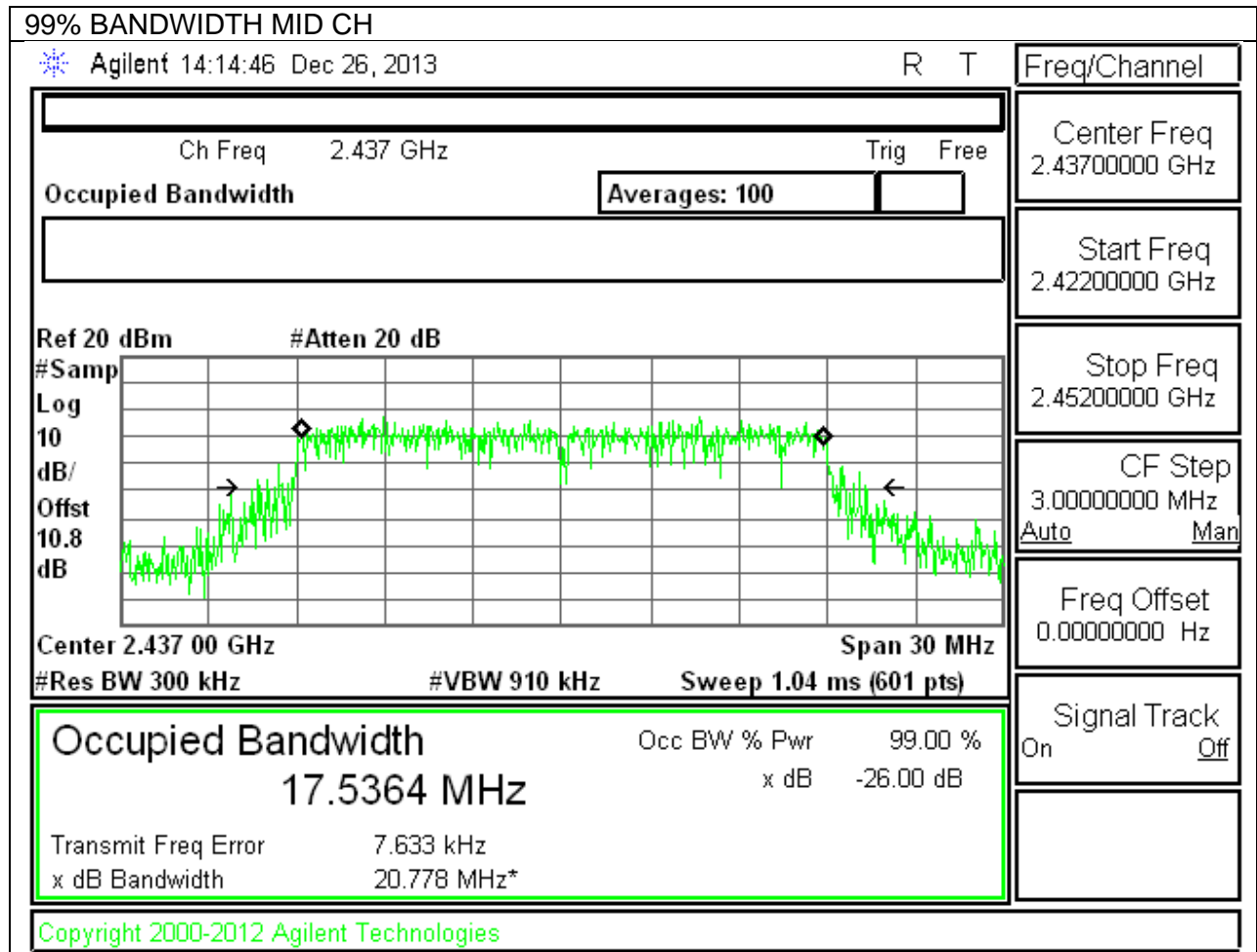
**802.11b 99% BANDWIDTH**



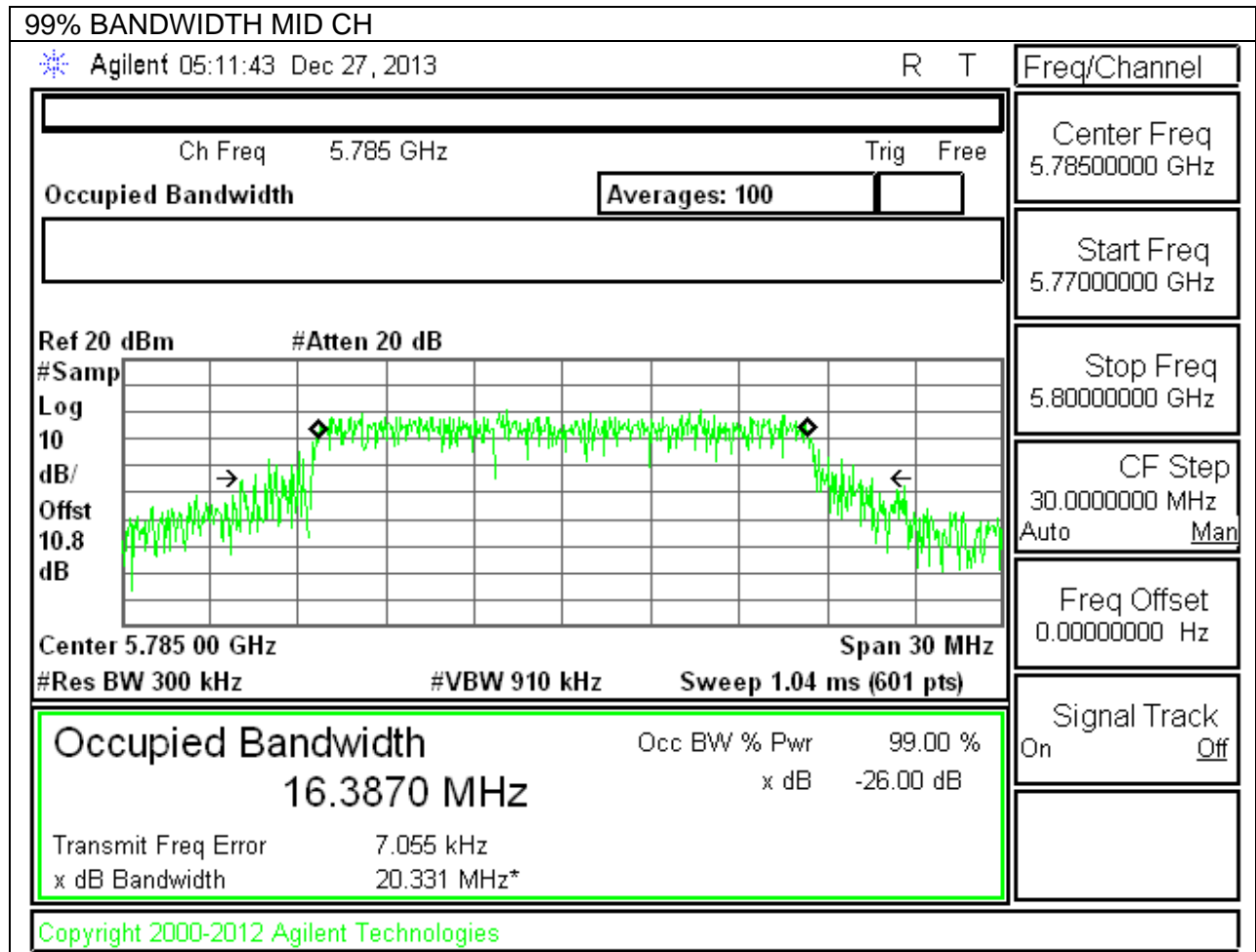
**802.11g 99% BANDWIDTH**



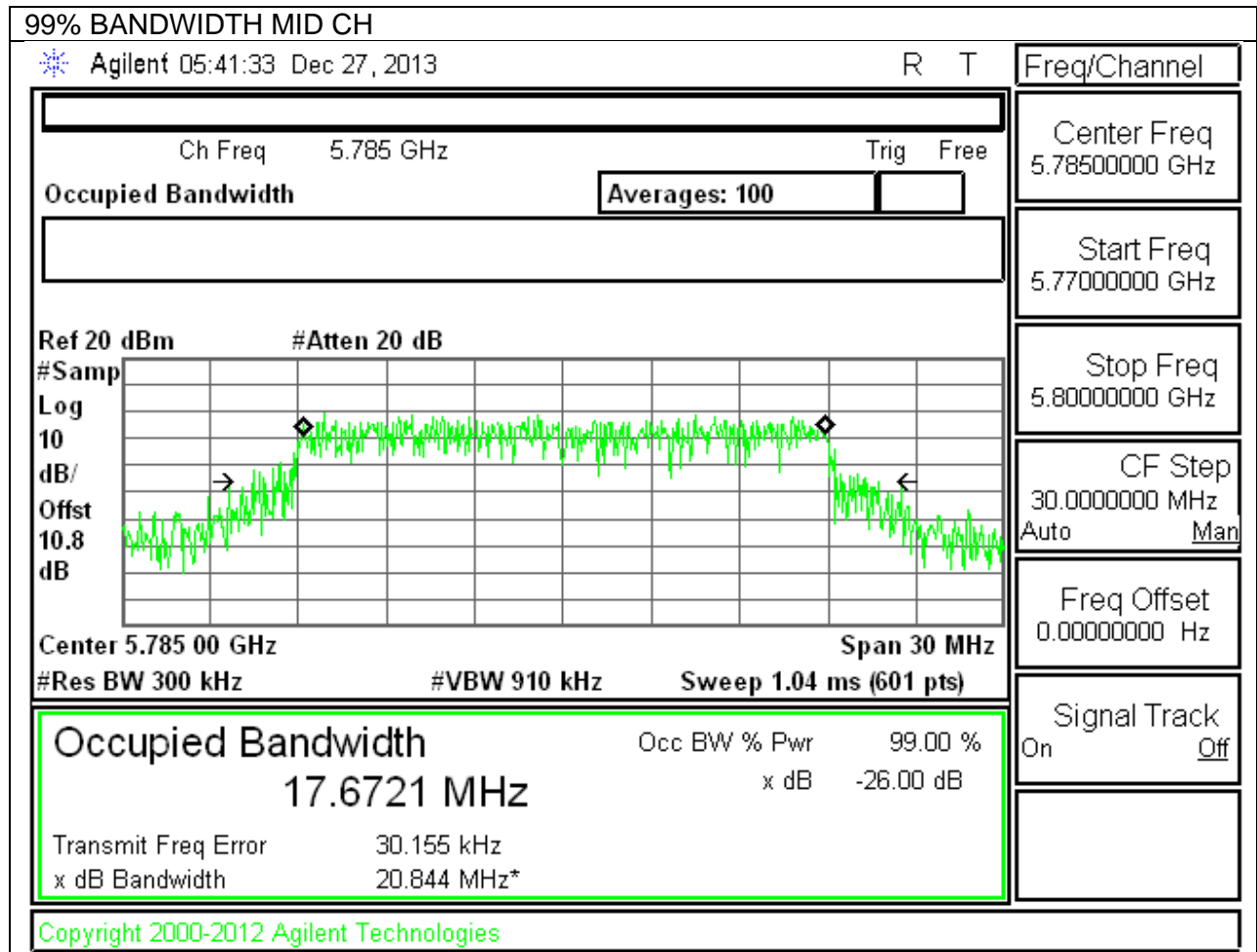
**802.11n 99% BANDWIDTH**



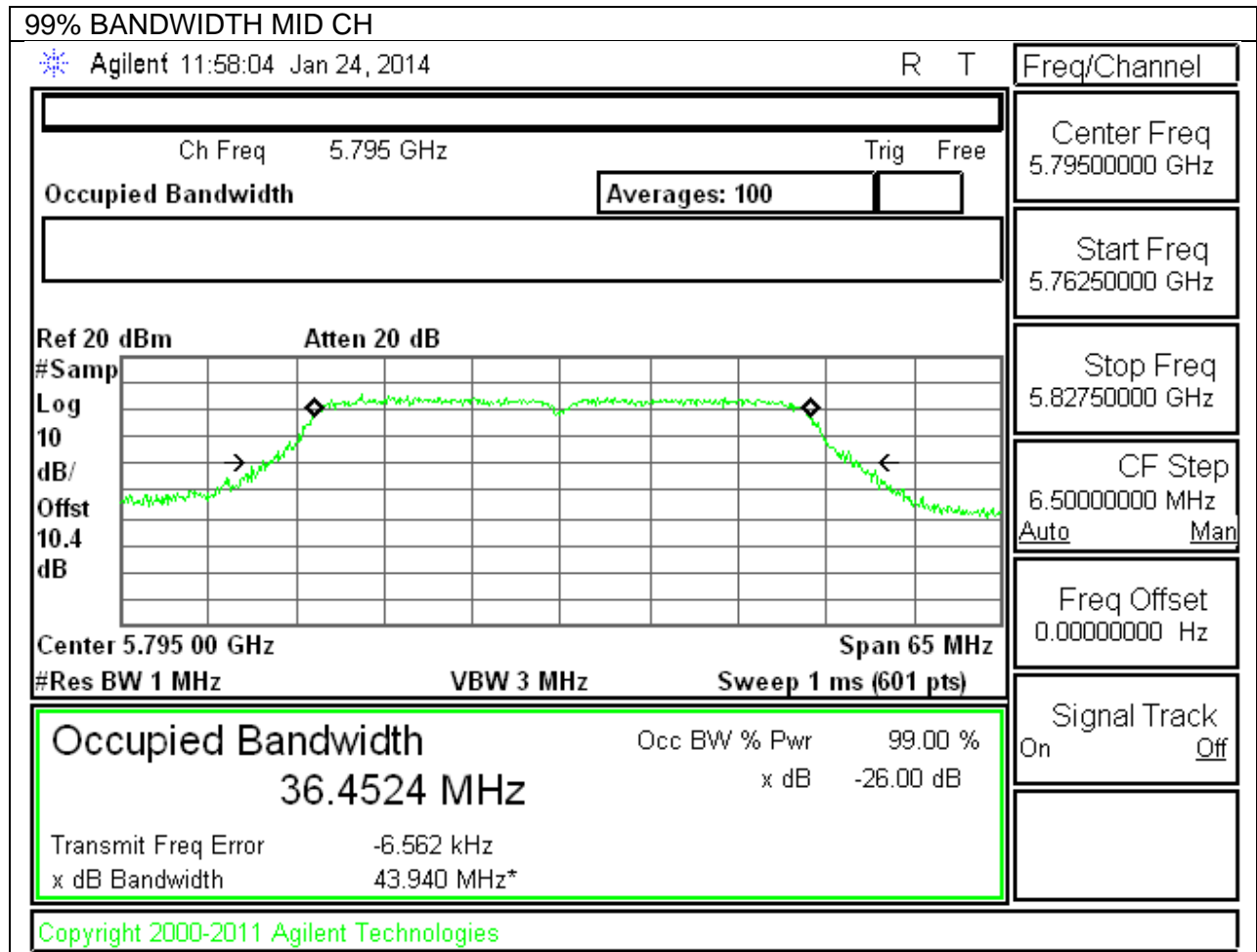
**802.11a 5.8GHz mode 99% BANDWIDTH**



**802.11n 5.8GHz mode 99% BANDWIDTH**



**802.11n HT40 5.8GHz mode 99% BANDWIDTH**



### **9.3. AVERAGE POWER**

#### **LIMITS**

None; for reporting purposes only.

#### **TEST PROCEDURE**

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 0.2 dB (including 10 dB pad and 0.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

#### **RESULTS**

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

Channel	Frequency (MHz)	Avg Power (dBm)
Low	2412	14.40
Mid	2437	14.90
High	2462	14.70
Worst		14.900

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

Channel	Frequency (MHz)	Avg Power (dBm)
Low	2412	9.90
Mid	2437	10.10
High	2462	10.00
Worst		10.100

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

Channel	Frequency (MHz)	Avg Power (dBm)
Low	2412	8.70
Mid	2437	9.20
High	2462	9.00
Worst		9.200

### 9.3.4. 802.11a MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	Avg Power (dBm)
Low	5745	12.400
Mid	5785	12.500
High	5825	12.400
Worst		12.500

### 9.3.5. 802.11n HT20 MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	Avg Power (dBm)
Low	5745	11.400
Mid	5785	11.600
High	5825	11.700
Worst		11.700



### 9.3.1. 802.11n HT40 MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	Avg Power (dBm)
Low	5755	9.8
High	5795	10.3
Worst		10.3

## **9.4. OUTPUT POWER**

### **LIMITS**

FCC §15.247

IC RSS-210 A8.4

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

### **DIRECTIONAL ANTENNA GAIN**

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

**RESULTS**

**9.4.1. 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	-2.09	30.00	30	36	30.00
Mid	2437	-2.09	30.00	30	36	30.00
High	2462	-2.09	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	15.99	15.99	30.00	-14.01
Mid	2437	16.43	16.43	30.00	-13.57
High	2462	16.38	16.38	30.00	-13.62
Worst			16.43		

**9.4.2. 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	-2.09	30.00	30	36	30.00
Mid	2437	-2.09	30.00	30	36	30.00
High	2462	-2.09	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	16.50	16.50	30.00	-13.50
Mid	2437	17.00	17.00	30.00	-13.00
High	2462	17.26	17.26	30.00	-12.74
Worst			17.26		

**9.4.3. 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	-2.09	30.00	30	36	30.00
Mid	2437	-2.09	30.00	30	36	30.00
High	2462	-2.09	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	15.63	15.63	30.00	-14.37
Mid	2437	16.08	16.08	30.00	-13.92
High	2462	16.27	16.27	30.00	-13.73
Worst			16.27		

**9.4.4. 802.11a MODE IN THE 5.8 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	5745	1.79	30.00	30	36	30.00
Mid	5785	1.79	30.00	30	36	30.00
High	5825	1.79	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	5745	19.30	19.30	30.00	-10.70
Mid	5785	19.40	19.40	30.00	-10.60
High	5825	19.30	19.30	30.00	-10.70
Worst			19.40		

**9.4.5. 802.11n HT20 MODE IN THE 5.8 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	5745	1.79	30.00	30	36	30.00
Mid	5785	1.79	30.00	30	36	30.00
High	5825	1.79	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	5745	18.13	18.13	30.00	-11.87
Mid	5785	18.36	18.36	30.00	-11.64
High	5825	18.44	18.44	30.00	-11.56
Worst			18.44		

**9.4.1. 802.11n HT40 MODE IN THE 5.8 GHz BAND**

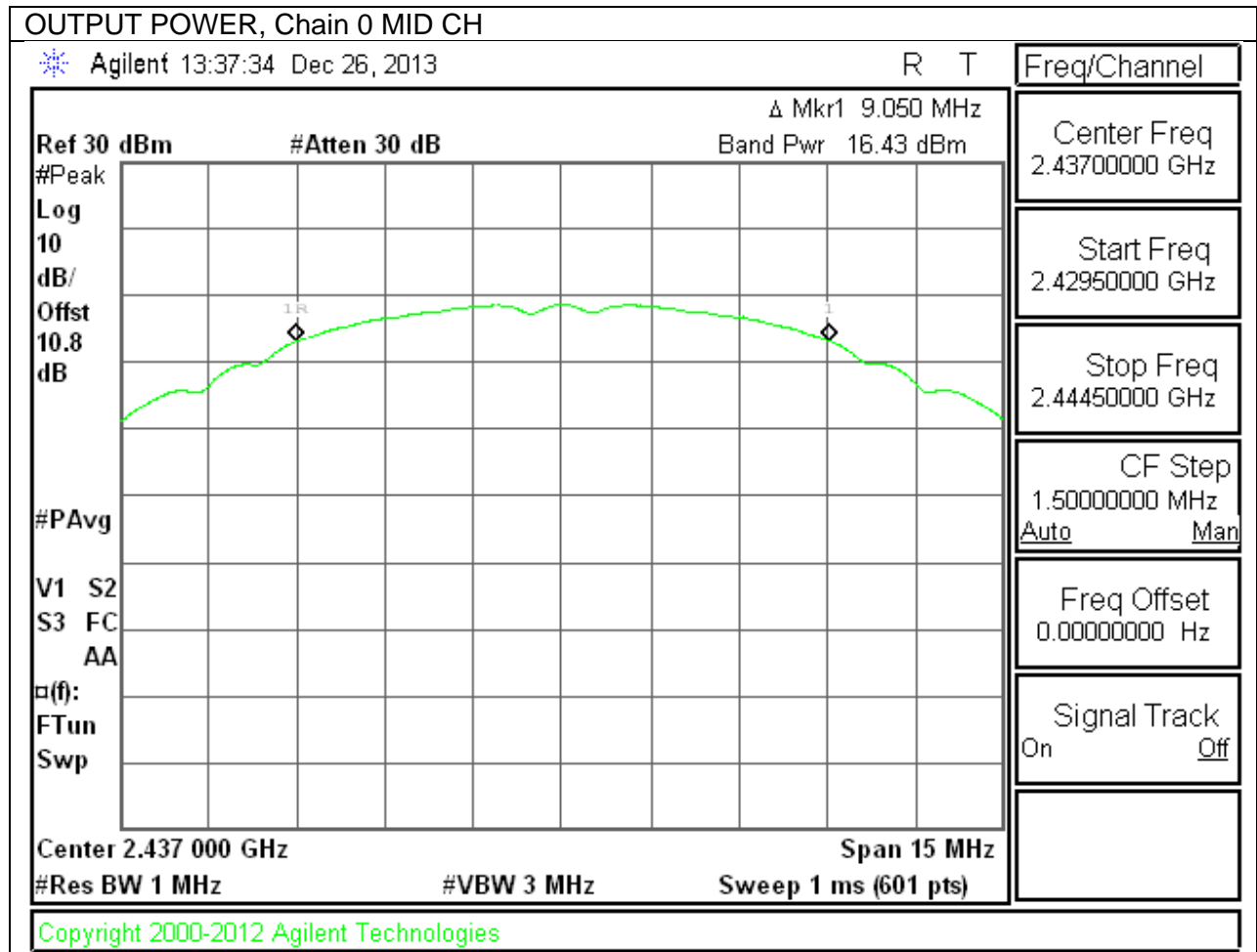
**Limits**

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	5755	1.79	30.00	30	36	30.00
High	5795	1.79	30.00	30	36	30.00

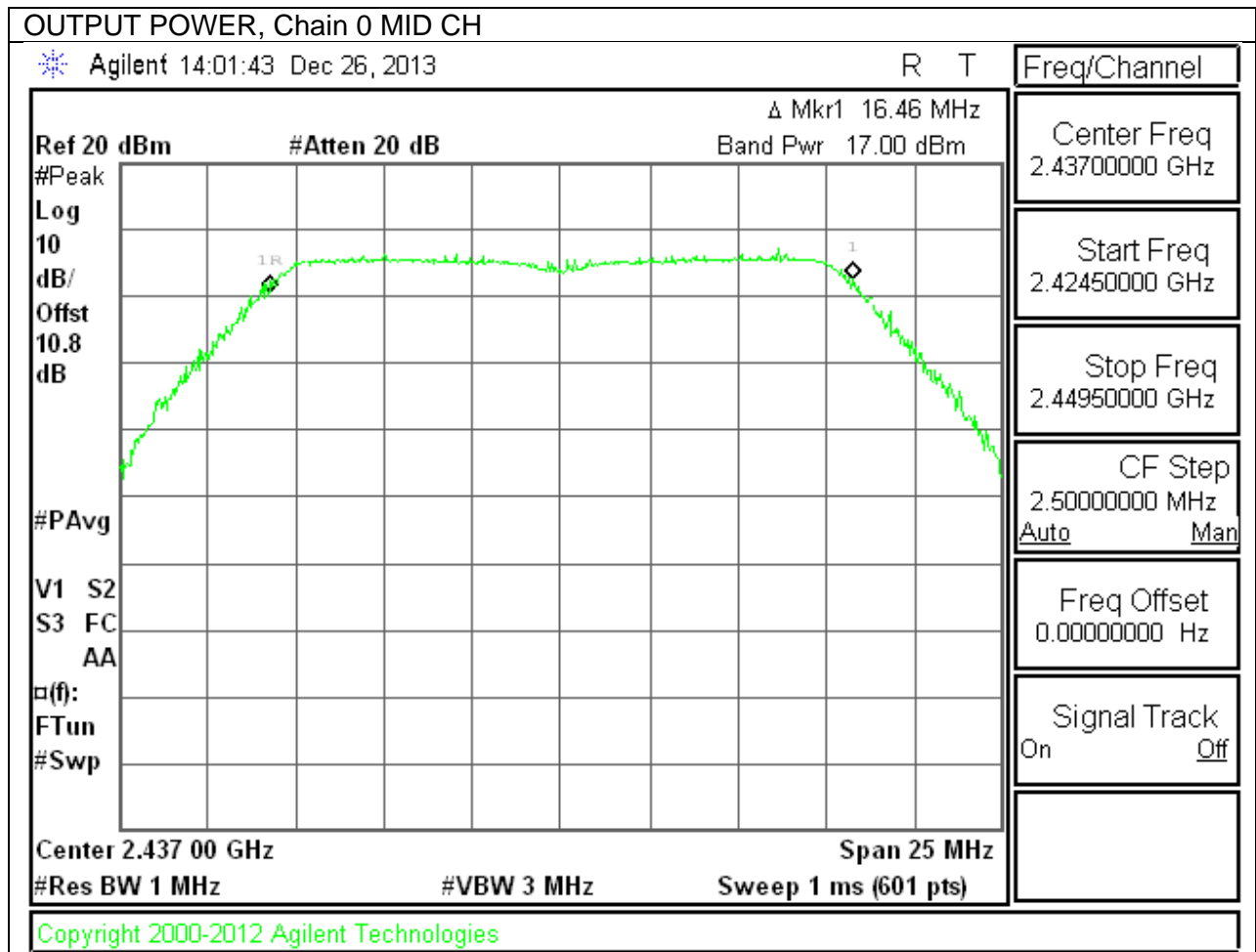
**Results**

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	5755	19.18	19.18	30.00	-10.82
High	5795	19.40	19.40	30.00	-10.60
Worst			19.40		

**802.11b OUTPUT POWER, Chain 0**

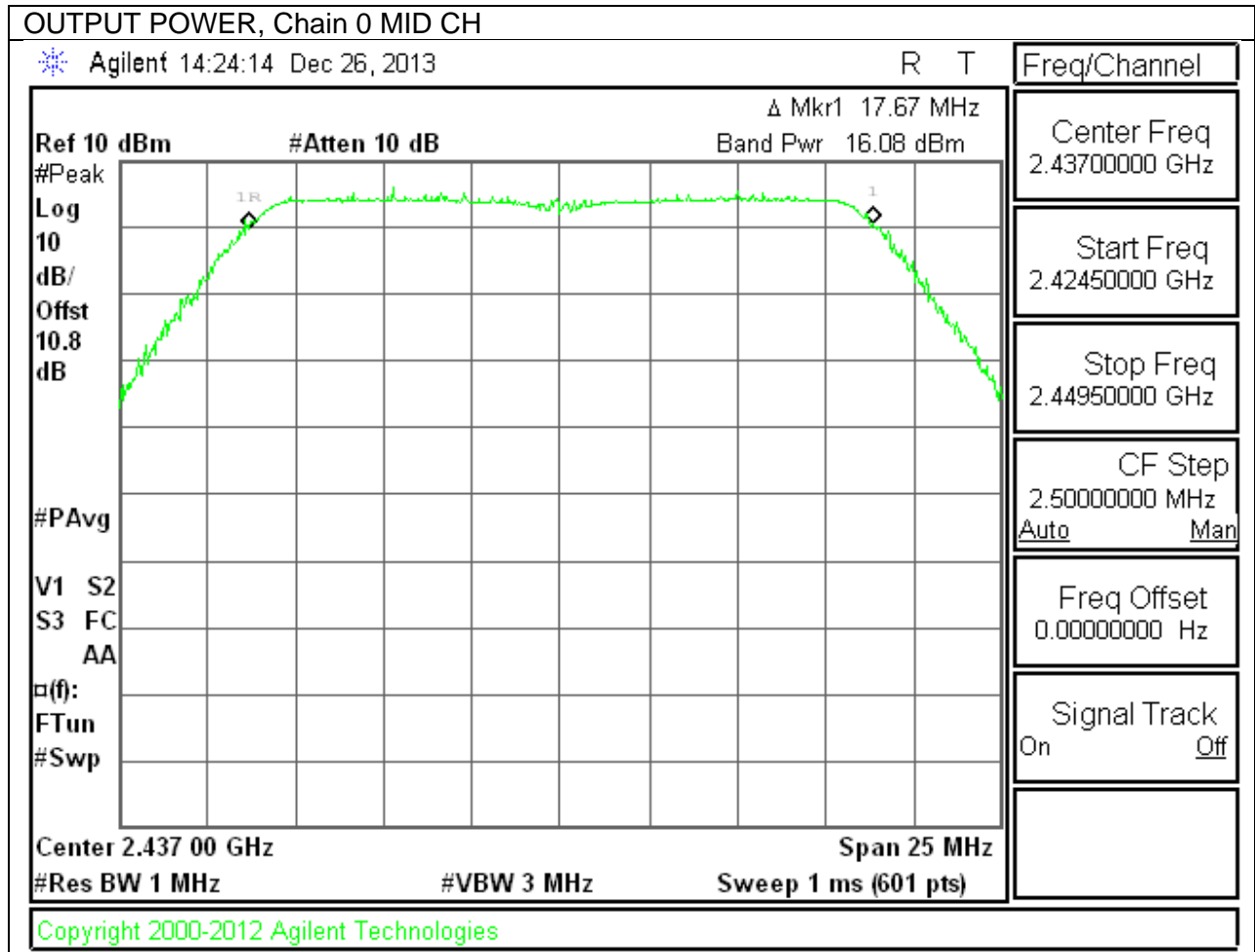


**802.11g OUTPUT POWER, Chain 0**

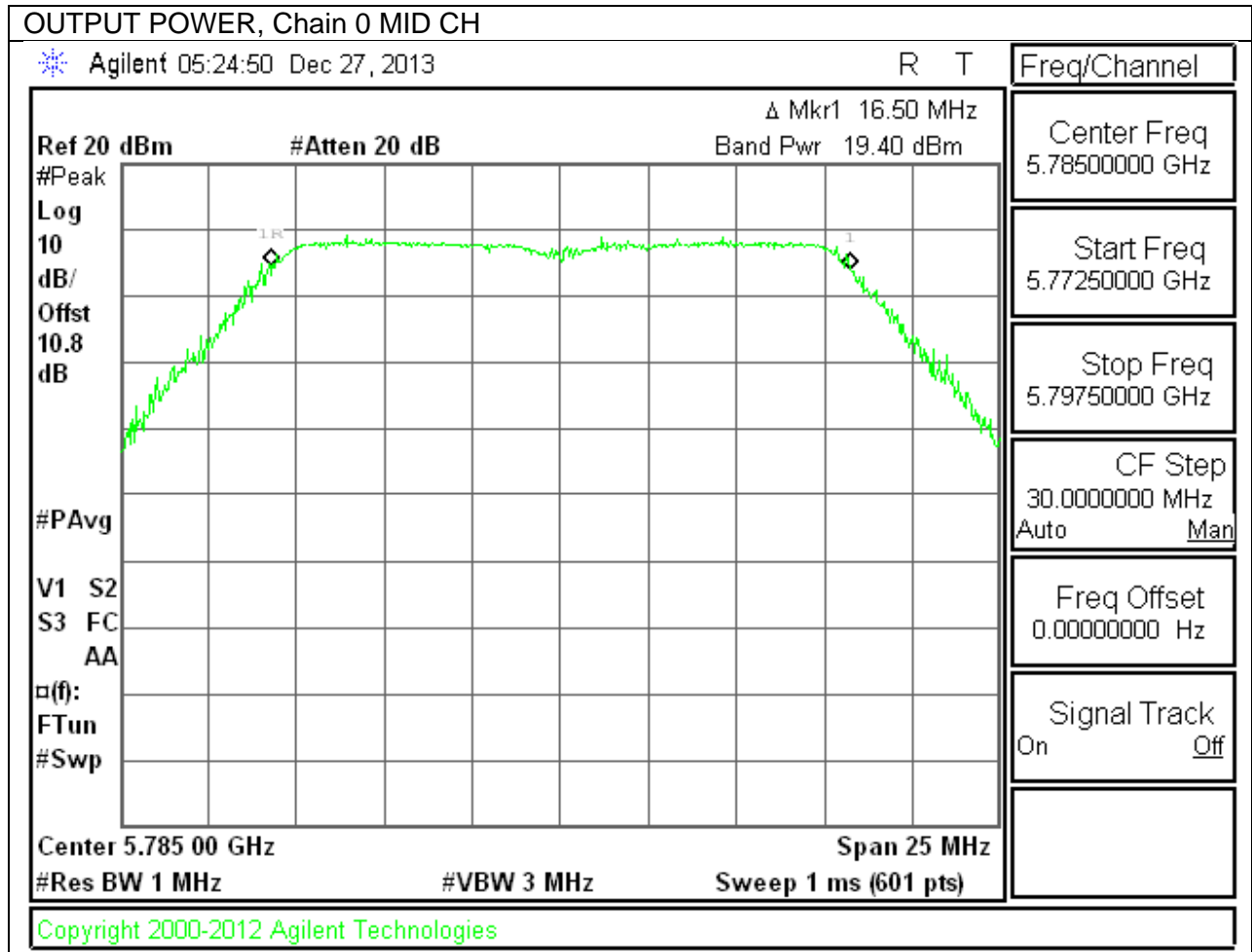




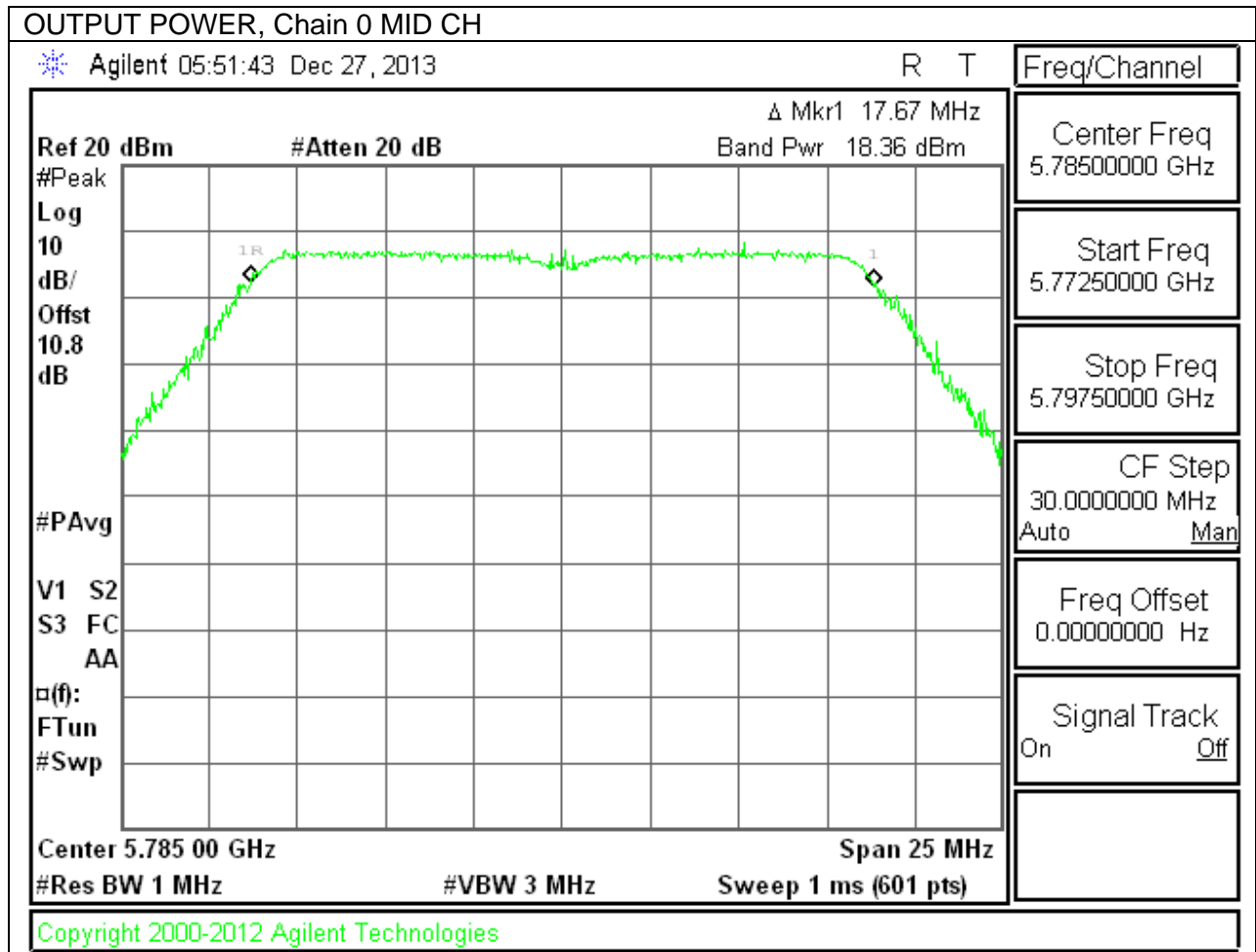
**802.11n OUTPUT POWER, Chain 0**



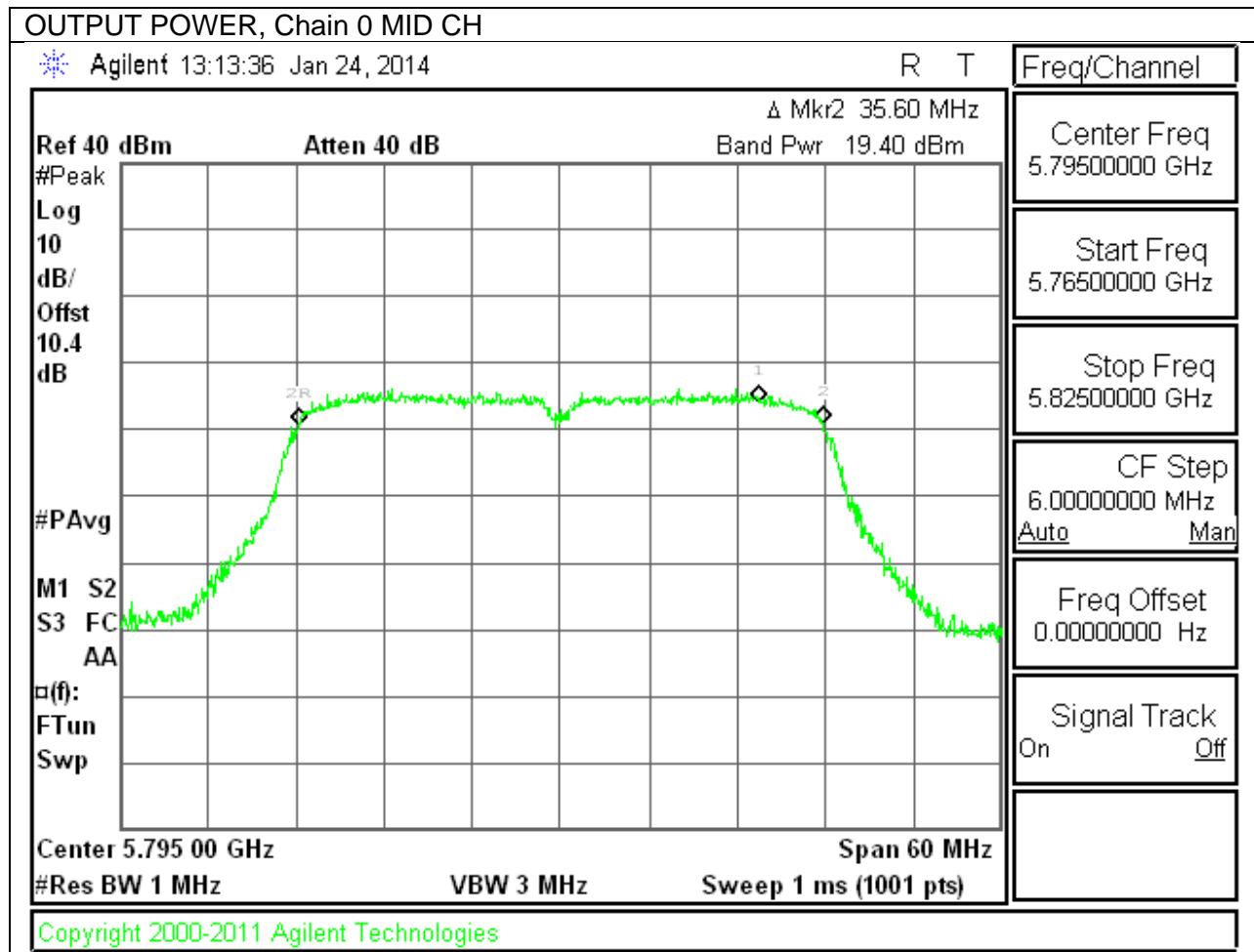
**802.11a HT20 5.8GHz mode OUTPUT POWER, Chain 0**



**802.11n HT20 5.8GHz mode OUTPUT POWER, Chain 0**



**802.11n HT40 5.8GHz mode OUTPUT POWER, Chain 0**



## 9.5. PSD

### LIMITS

FCC §15.247

IC RSS-210 A8.2

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

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

##### PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-9.26	8.0	-17.3
Mid	2437	-9.03	8.0	-17.0
High	2462	-9.15	8.0	-17.2

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

##### PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-16.43	8.0	-24.4
Mid	2437	-15.03	8.0	-23.0
High	2462	-16.41	8.0	-24.4

**9.5.3. 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	-17.40	8.0	-25.4
Mid	2437	-17.33	8.0	-25.3
High	2462	-16.64	8.0	-24.6

**9.5.4. 802.11a MODE IN THE 5.8 GHz BAND**

**PSD Results**

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	5745	-13.32	8.0	-21.3
Mid	5785	-13.54	8.0	-21.5
High	5825	-14.07	8.0	-22.1

**9.5.5. 802.11n HT20 MODE IN THE 5.8 GHz BAND**

**PSD Results**

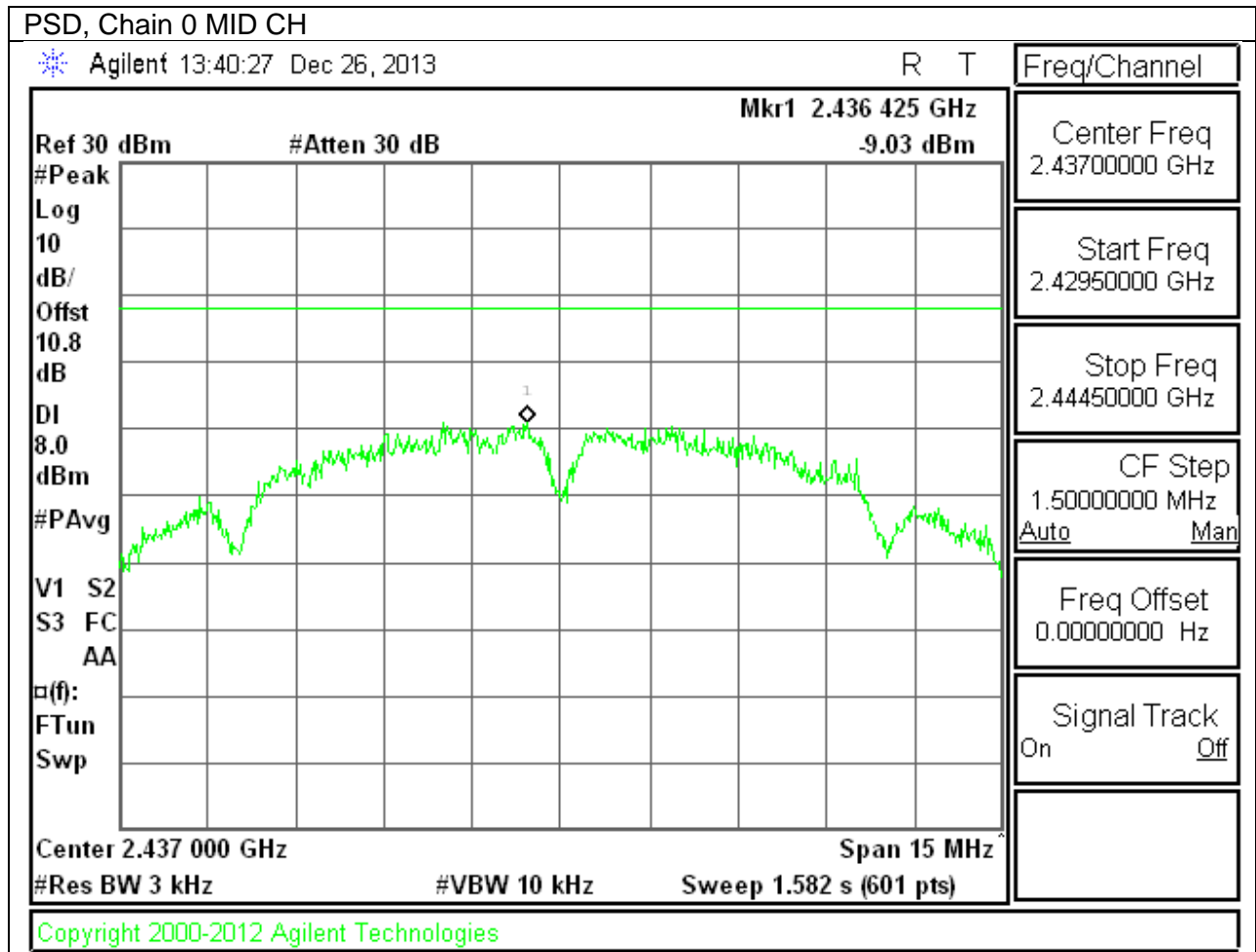
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	5745	-13.23	8.0	-21.2
Mid	5785	-14.41	8.0	-22.4
High	5825	-14.05	8.0	-22.1

**9.5.1. 802.11n HT40 MODE IN THE 5.8 GHz BAND**

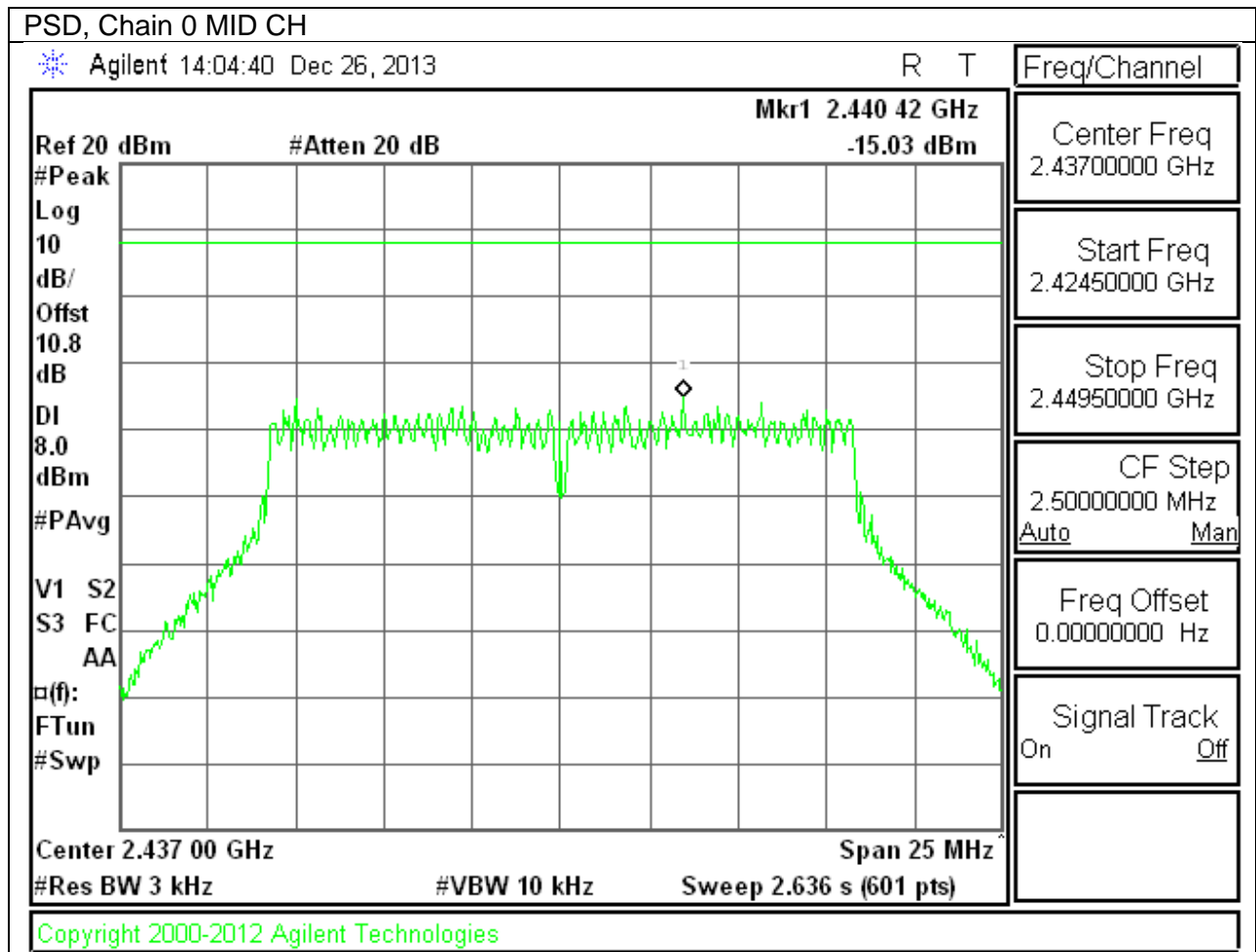
**PSD Results**

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	5755	-18.59	8.0	-26.6
High	5795	-18.66	8.0	-26.7

**802.11b PSD, Chain 0**

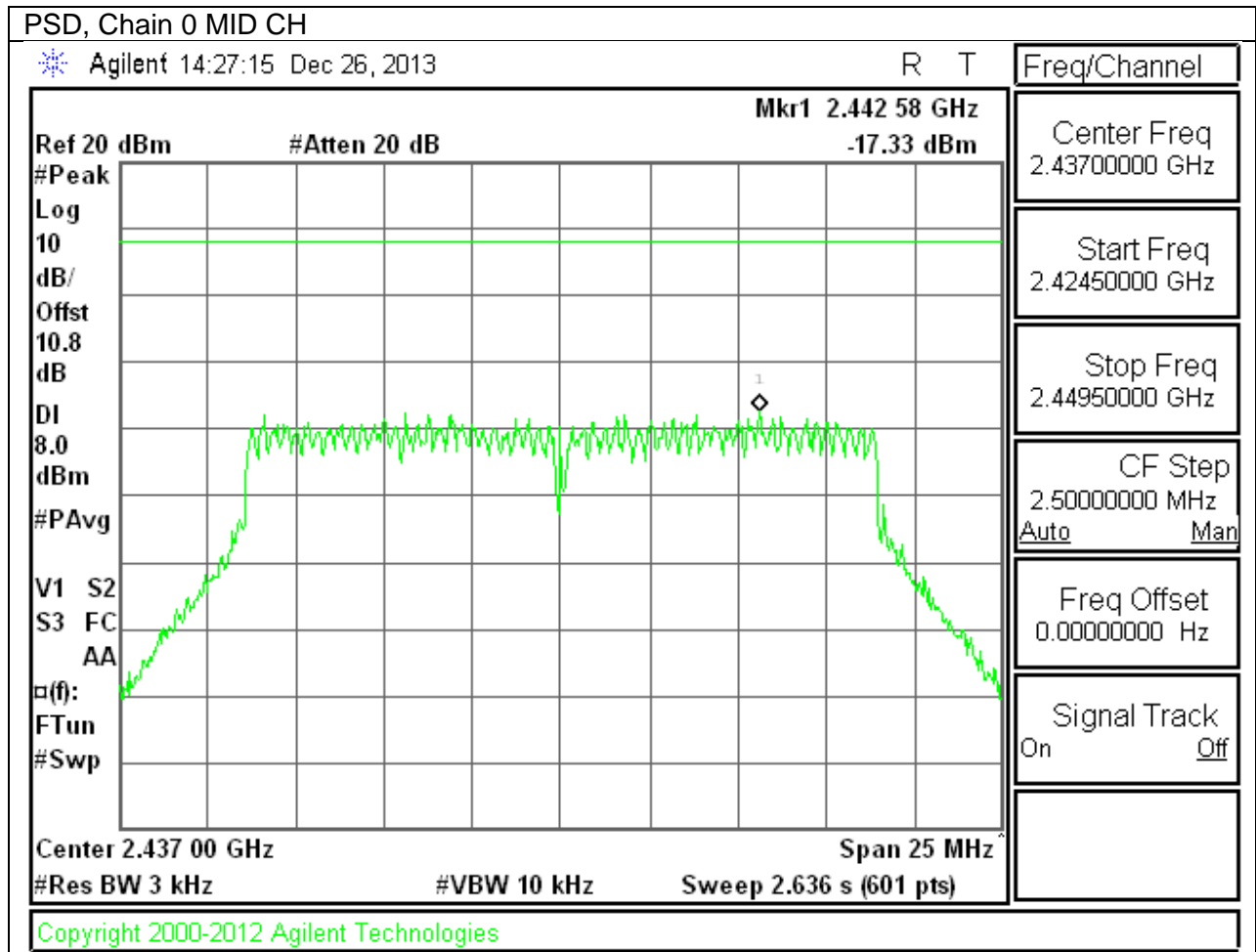


**802.11g PSD, Chain 0**

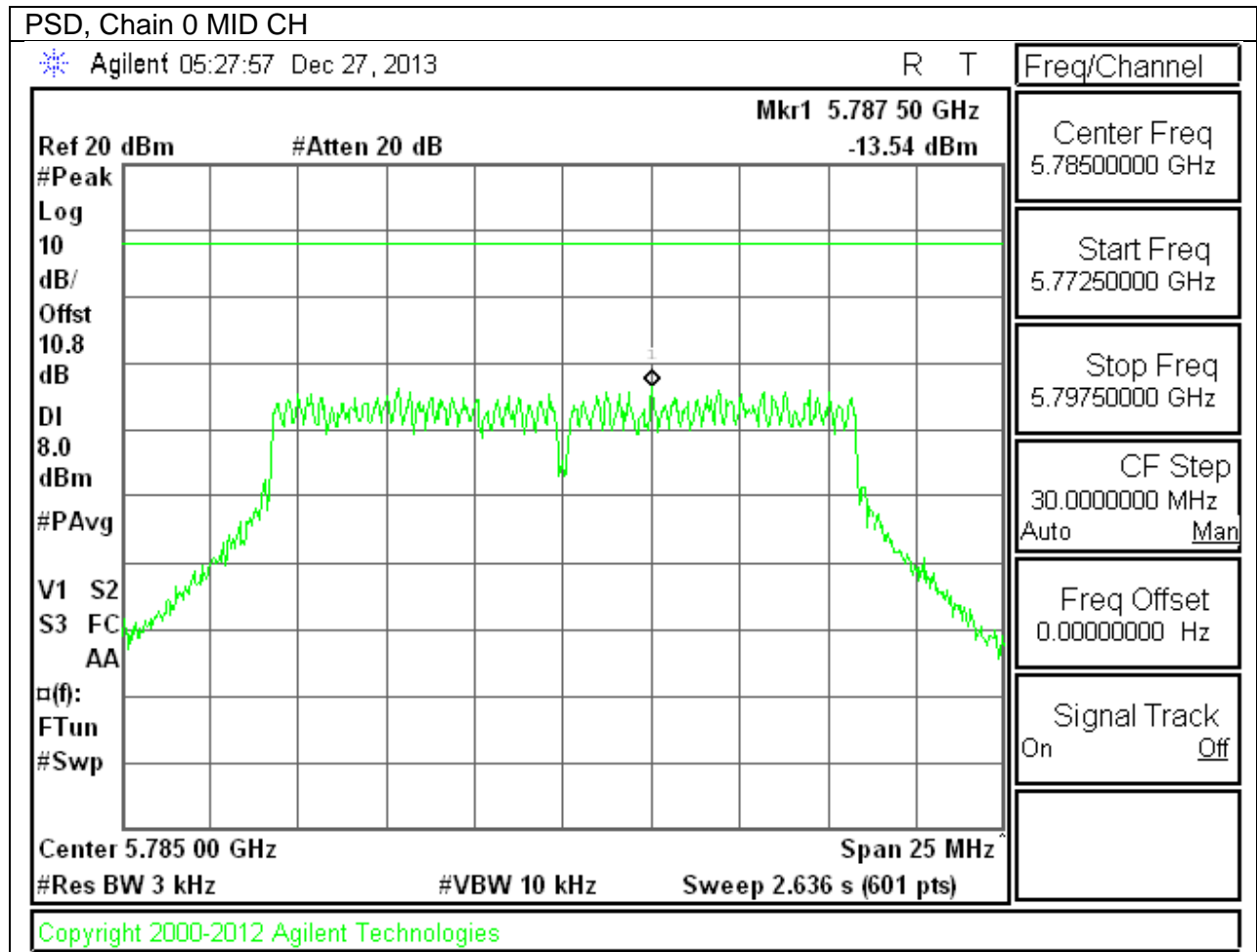




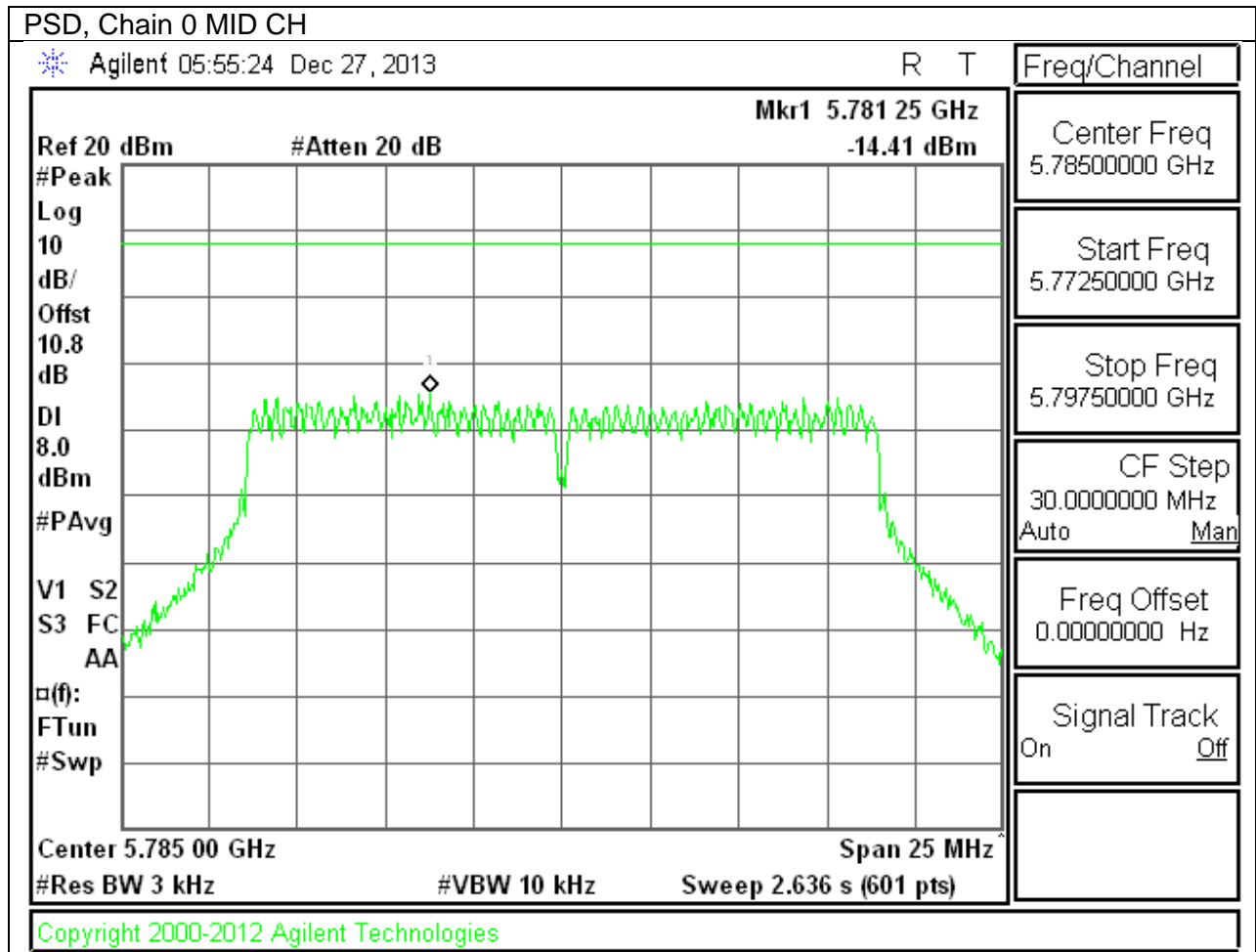
**802.11n PSD, Chain 0**



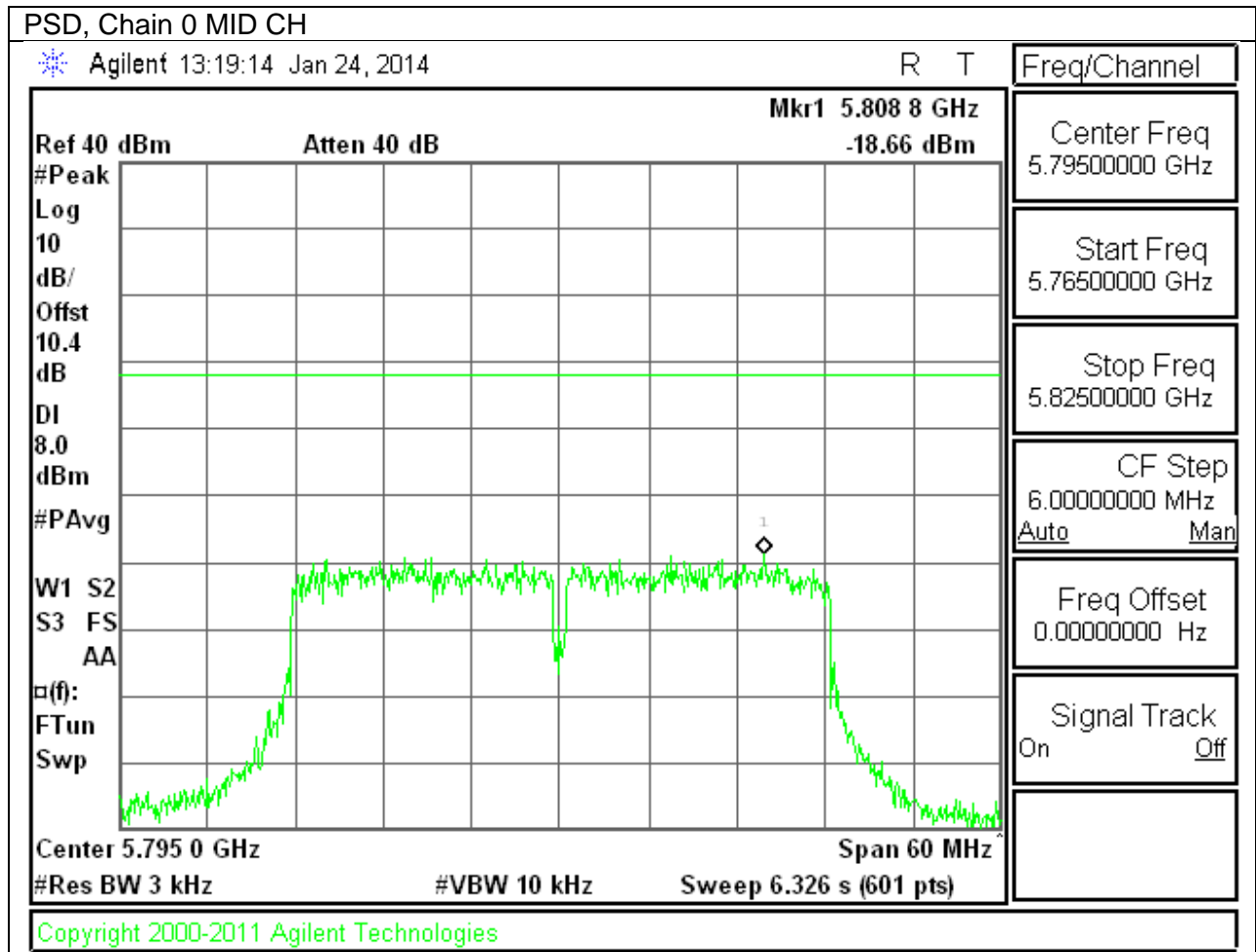
**802.11a HT20 5.8GHz mode PSD, Chain 0**



**802.11n HT20 5.8GHz mode PSD, Chain 0**



**802.11n HT40 5.8GHz mode PSD, Chain 0**



## 9.6. OUT-OF-BAND EMISSIONS

### LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

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

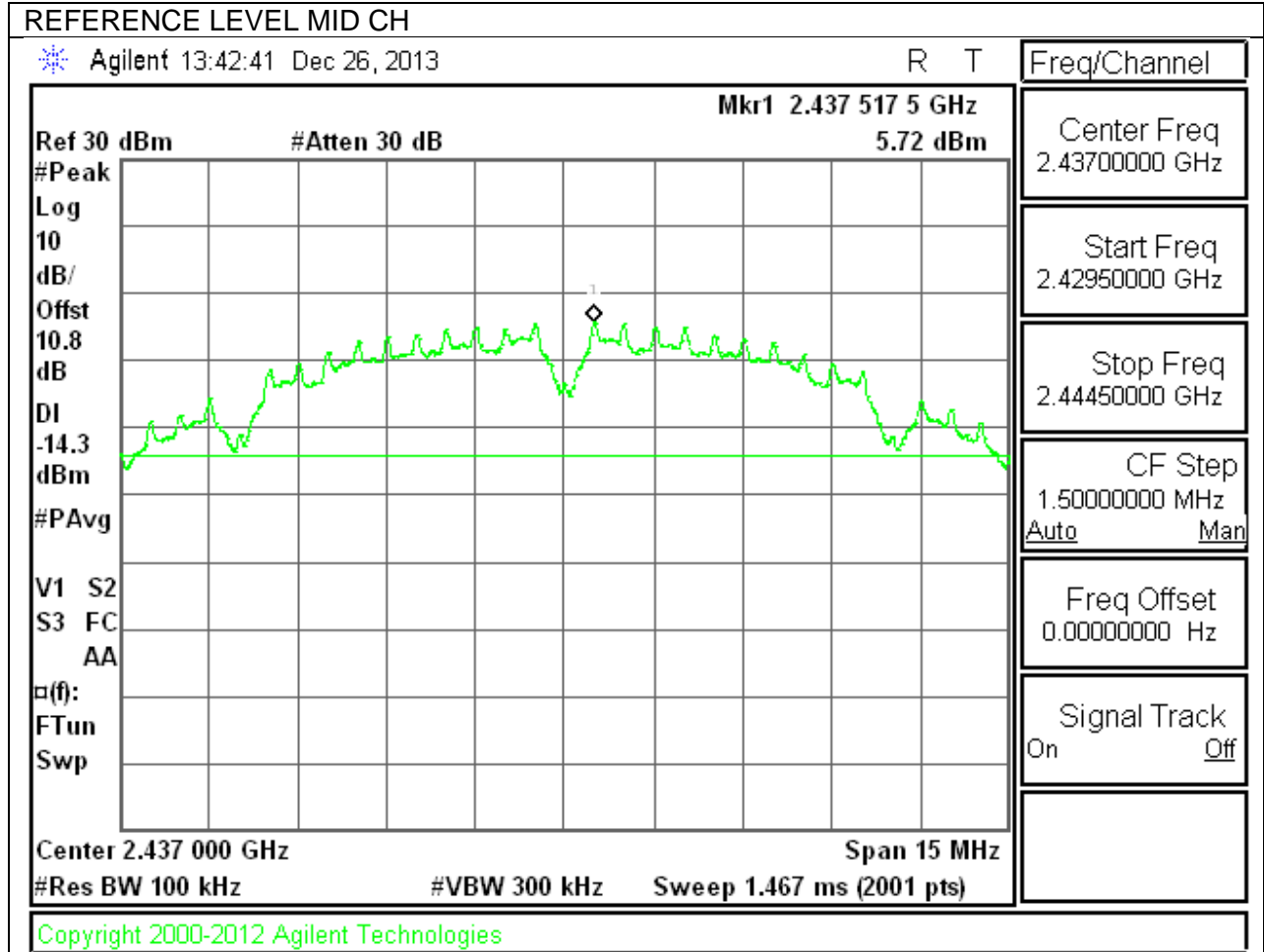
### TEST PROCEDURE

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

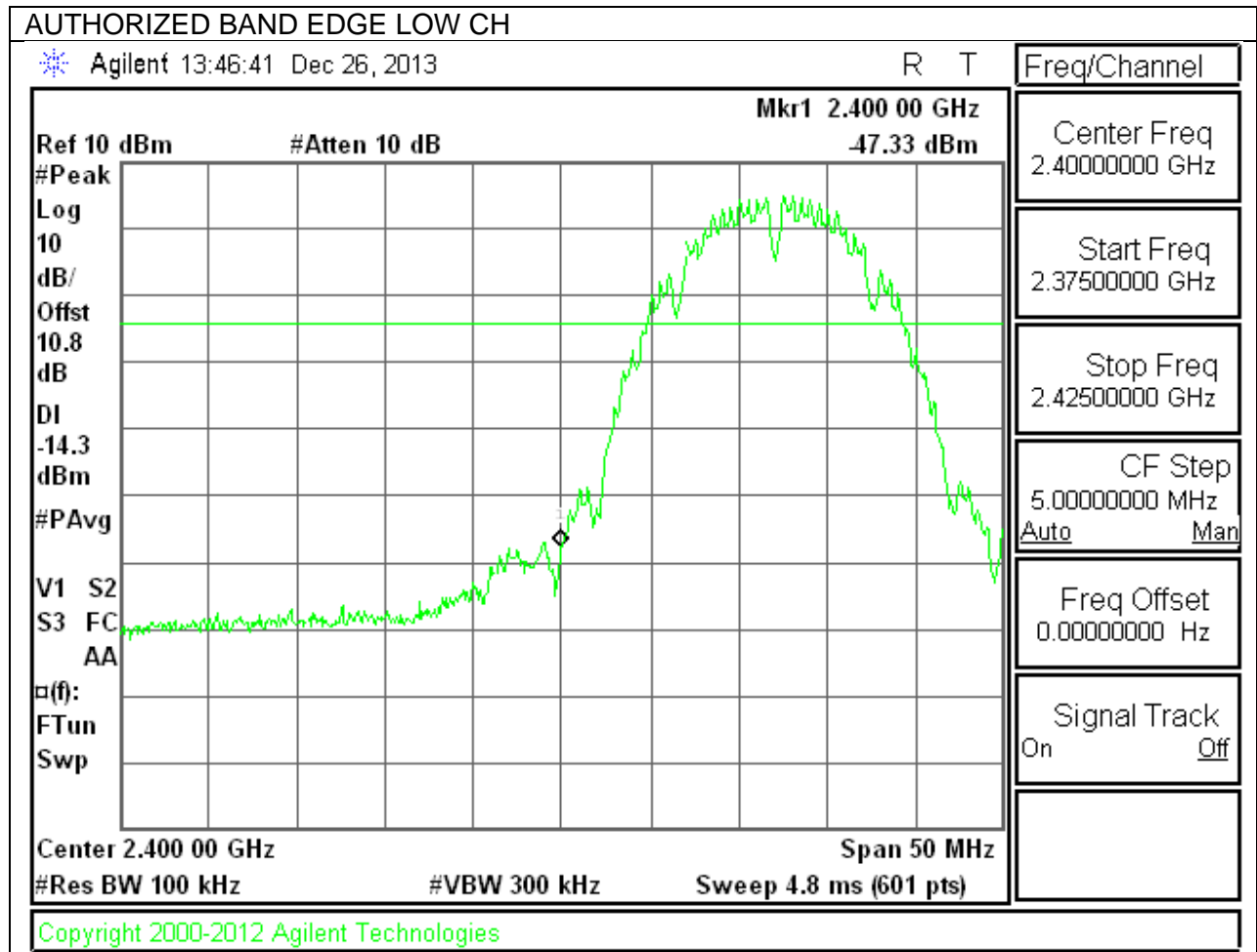
**RESULTS**

**9.6.1. 802.11b MODE IN THE 2.4 GHz BAND**

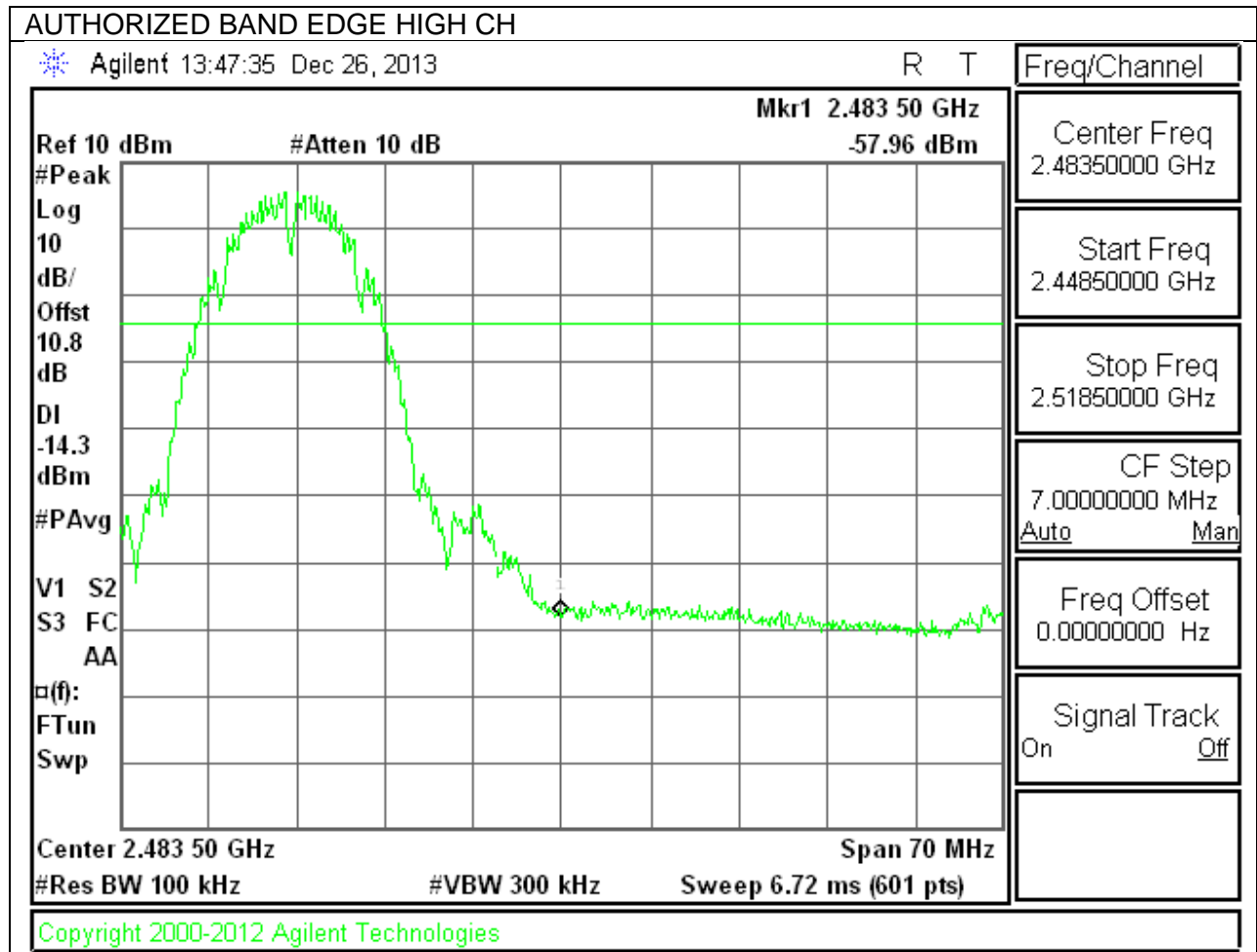
**IN-BAND REFERENCE LEVEL**



**LOW CHANNEL BANDEDGE**

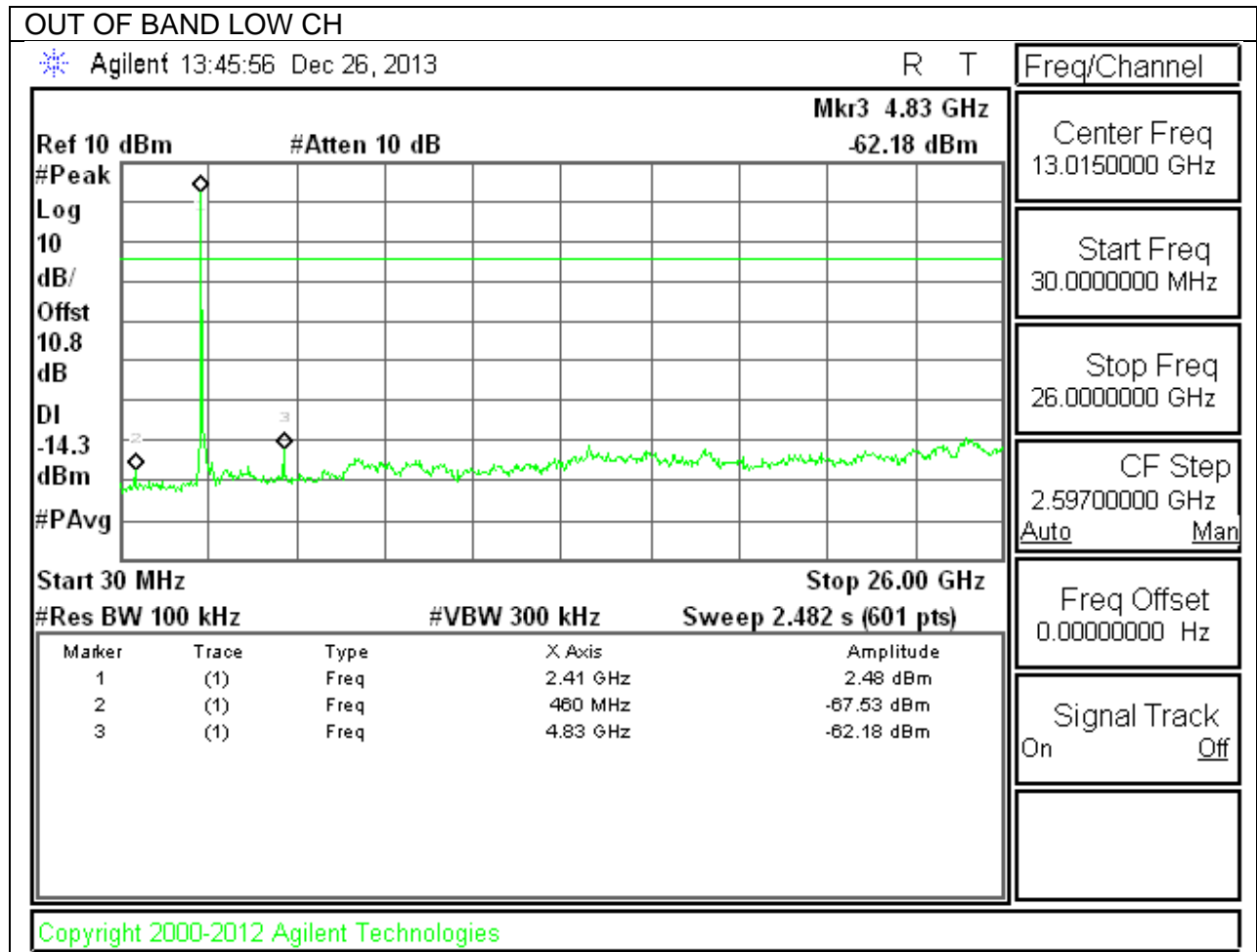


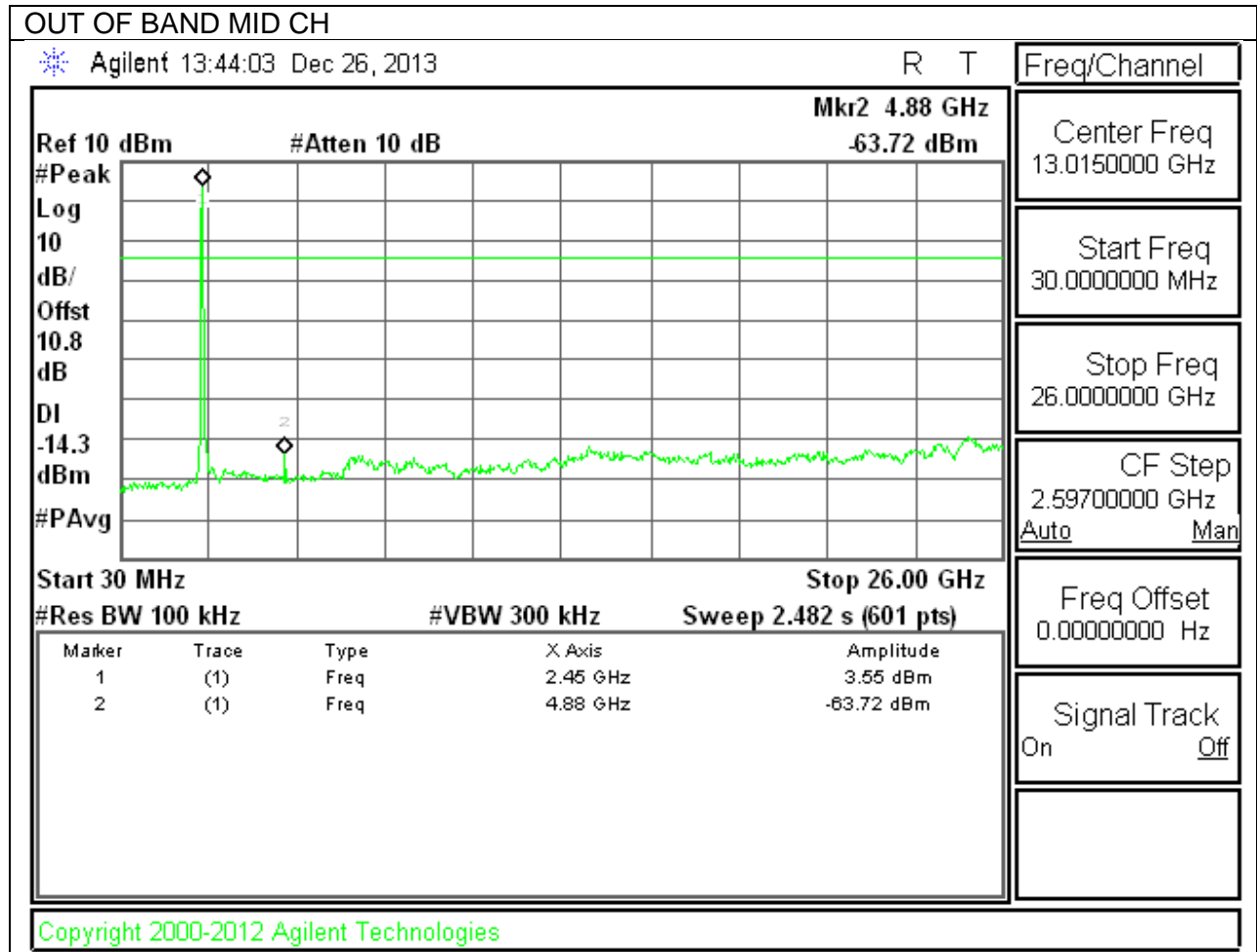
**HIGH CHANNEL BANDEDGE**

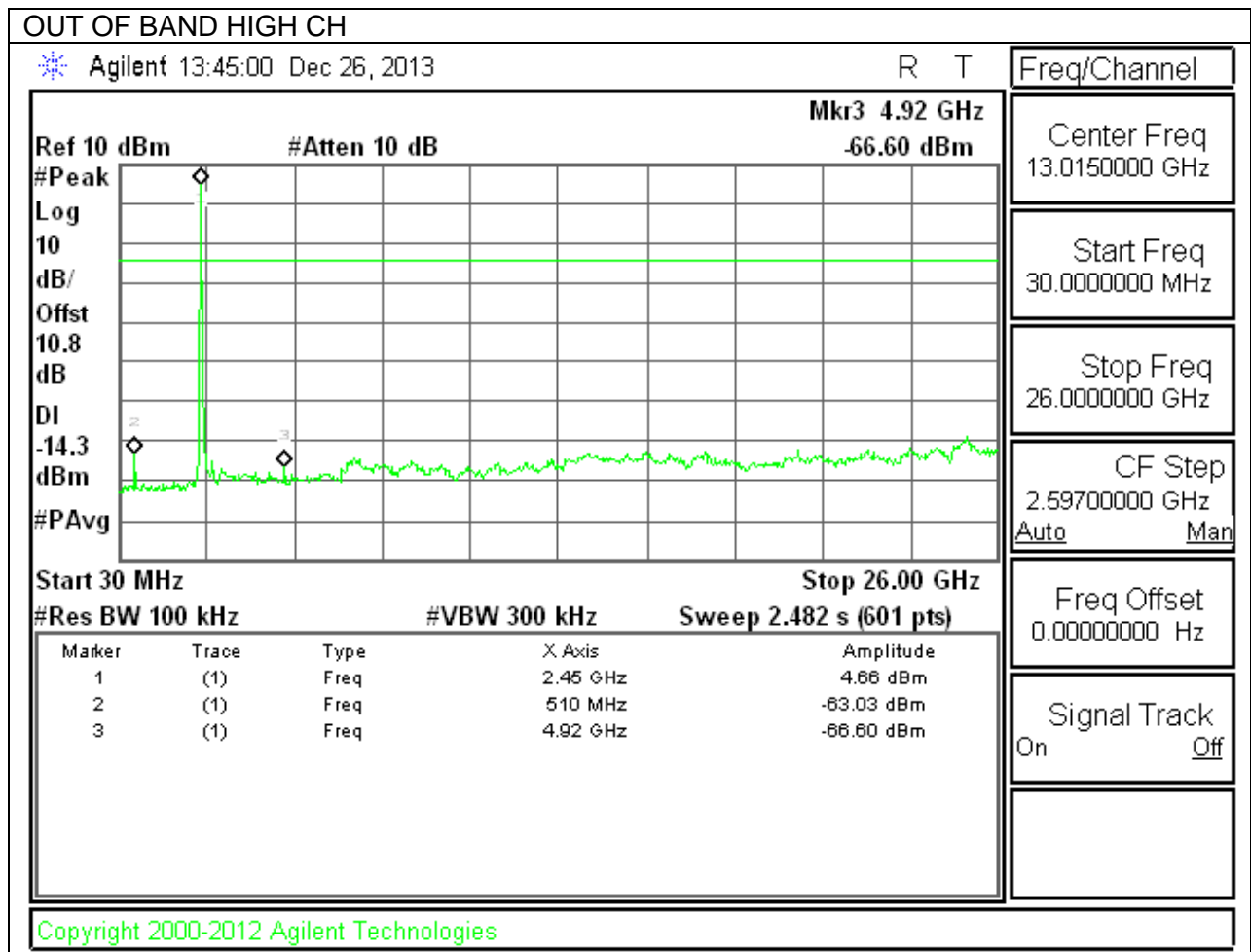




**OUT-OF-BAND EMISSIONS**

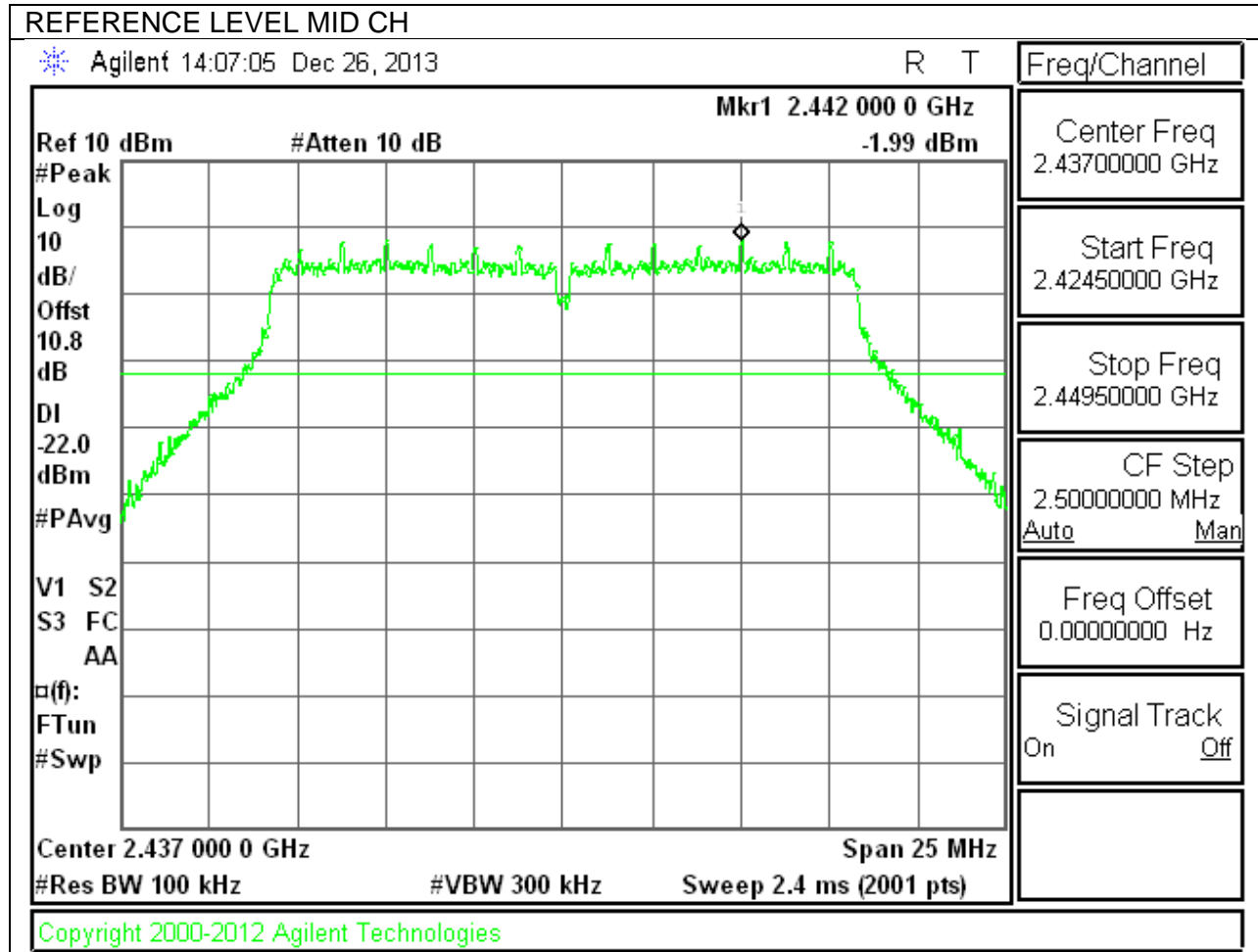




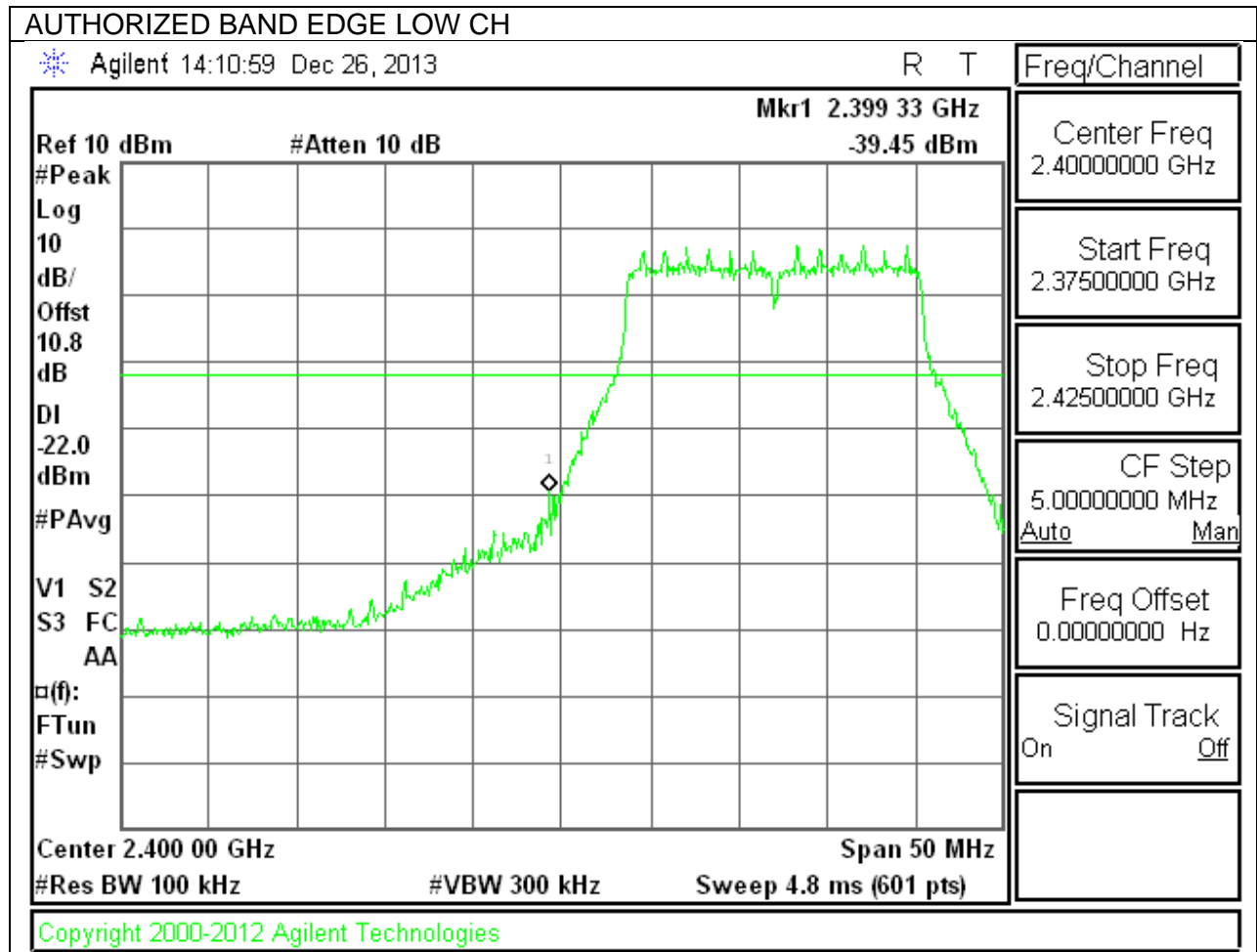


### 9.6.2. 802.11g MODE IN THE 2.4 GHz BAND

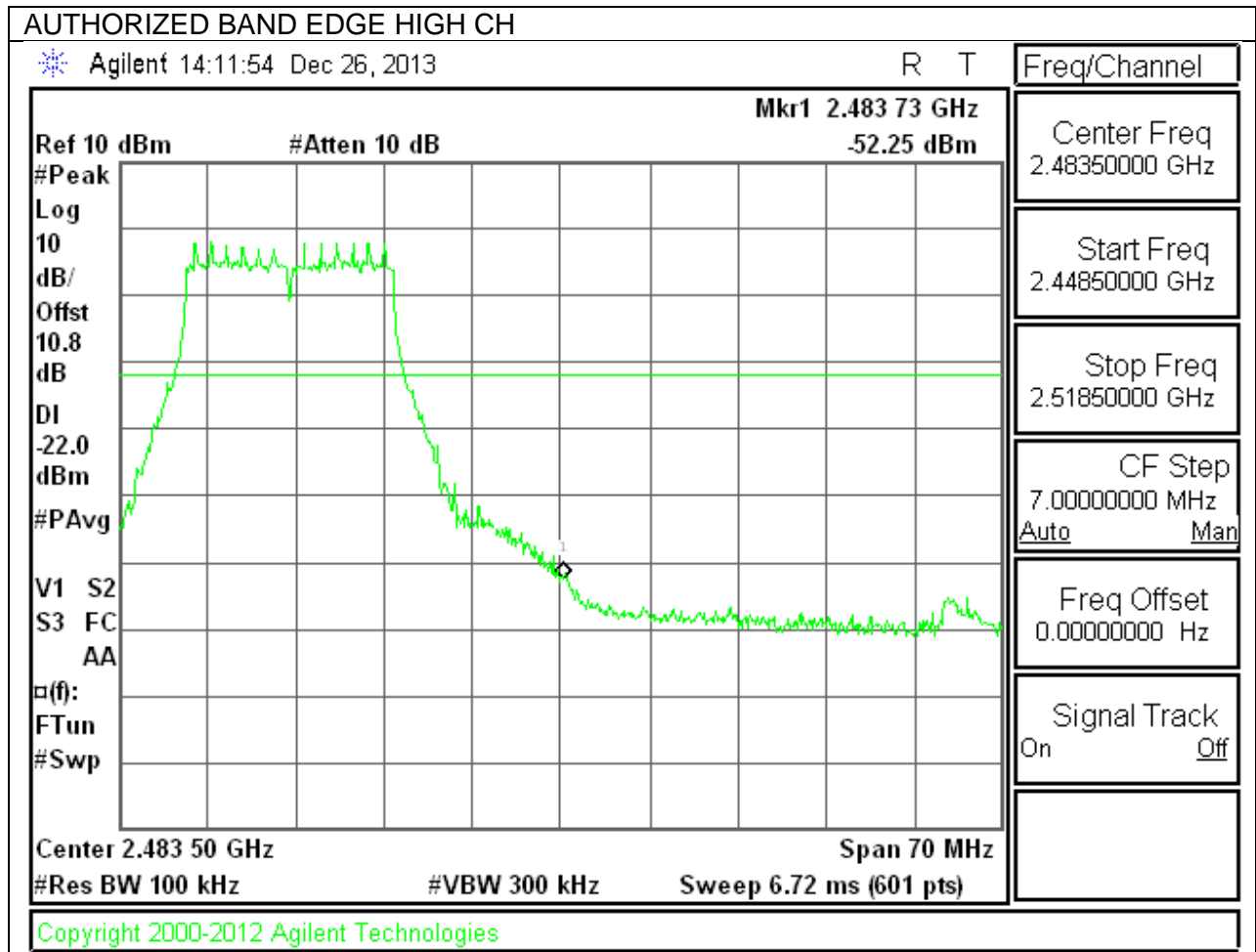
#### IN-BAND REFERENCE LEVEL



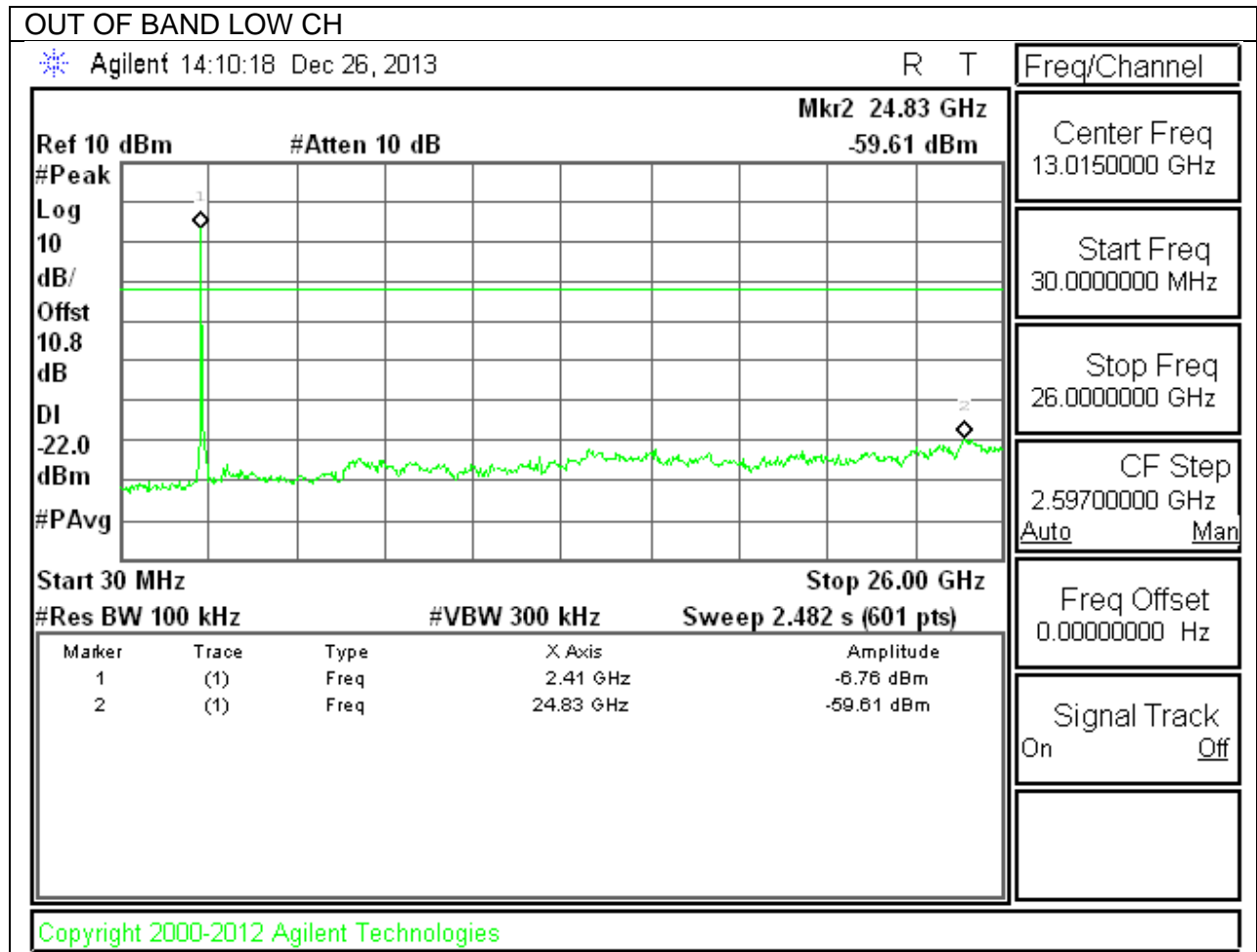
**LOW CHANNEL BANDEDGE**

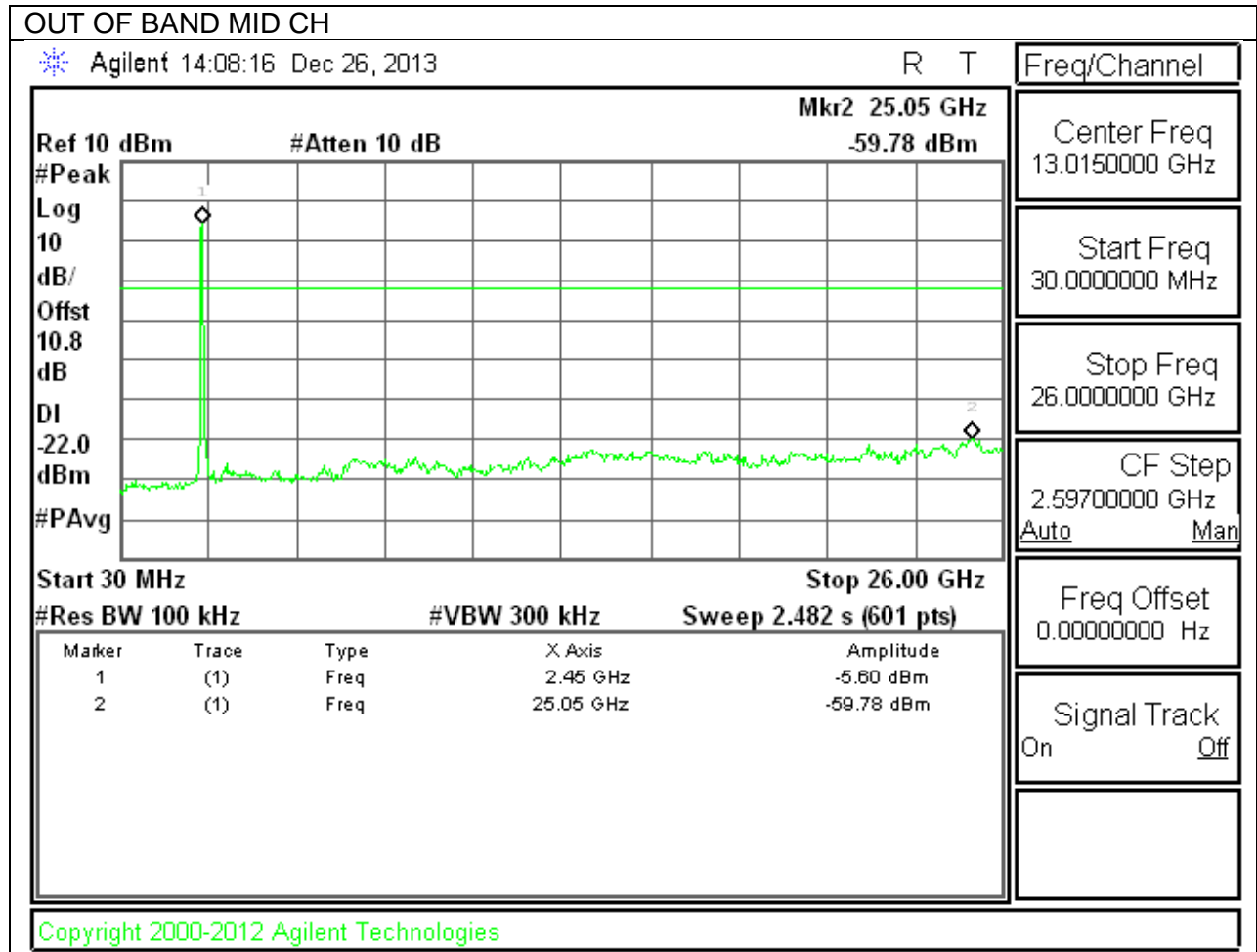


**HIGH CHANNEL BANDEDGE**

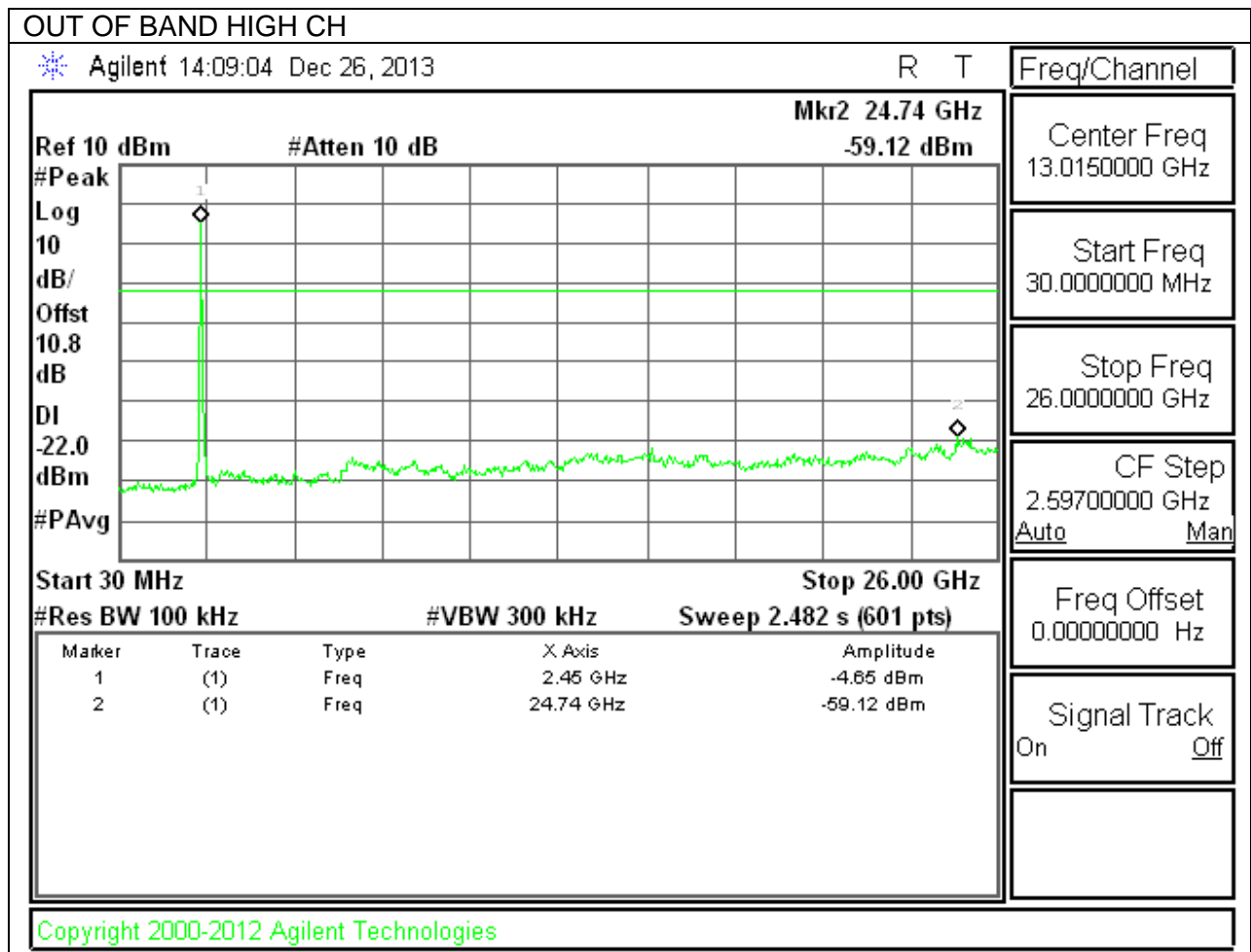


**OUT-OF-BAND EMISSIONS**



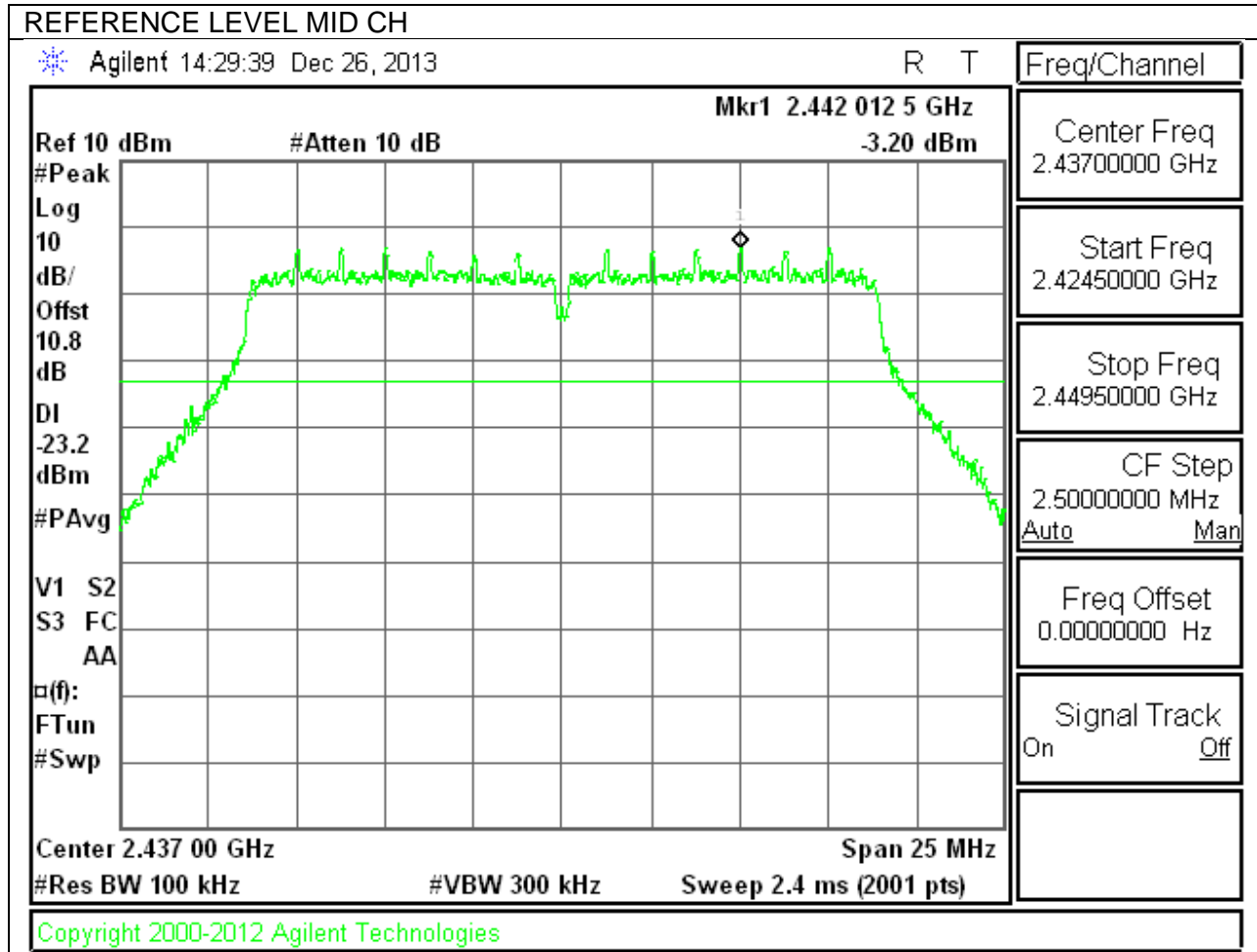




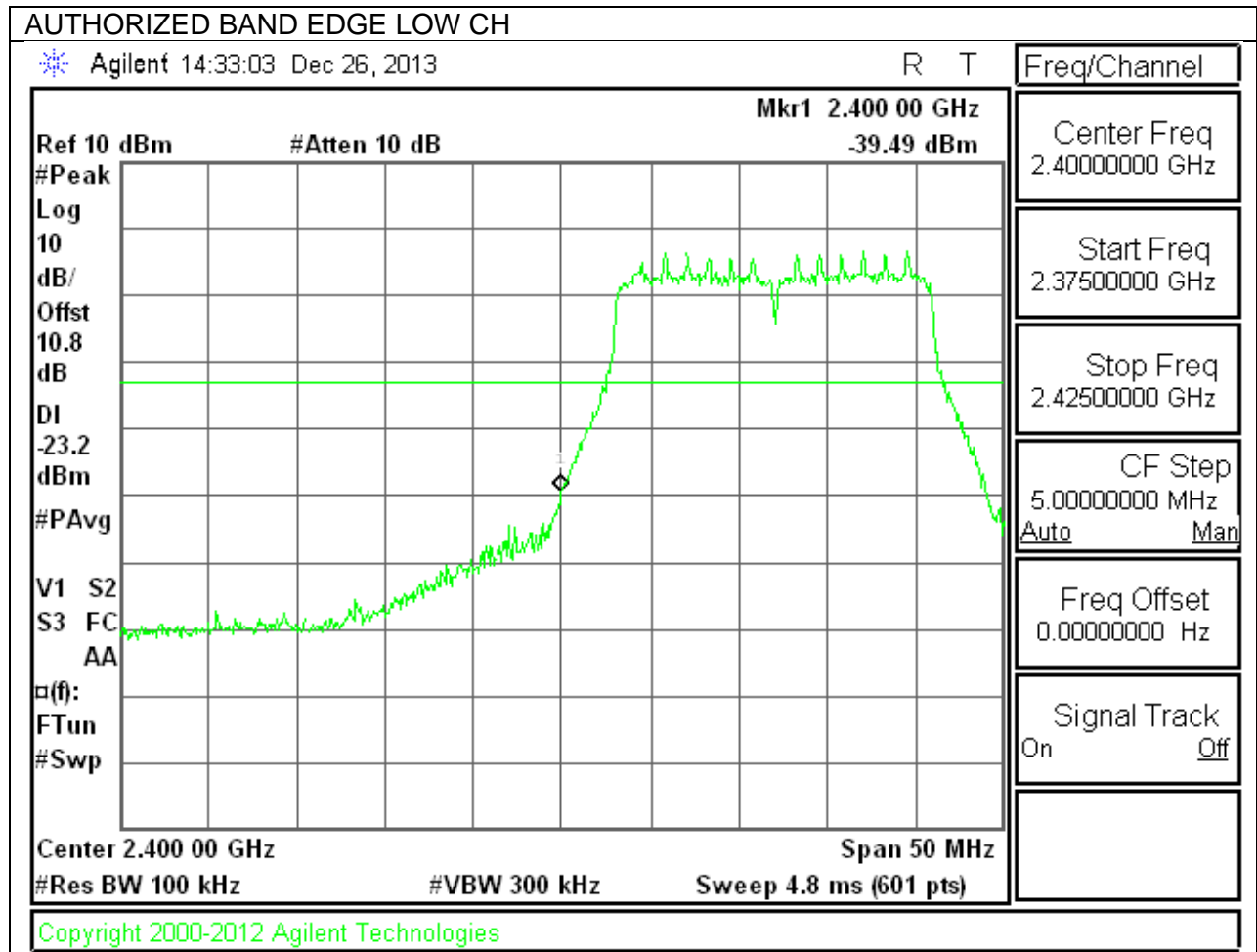


### 9.6.3. 802.11n MODE IN THE 2.4 GHz BAND

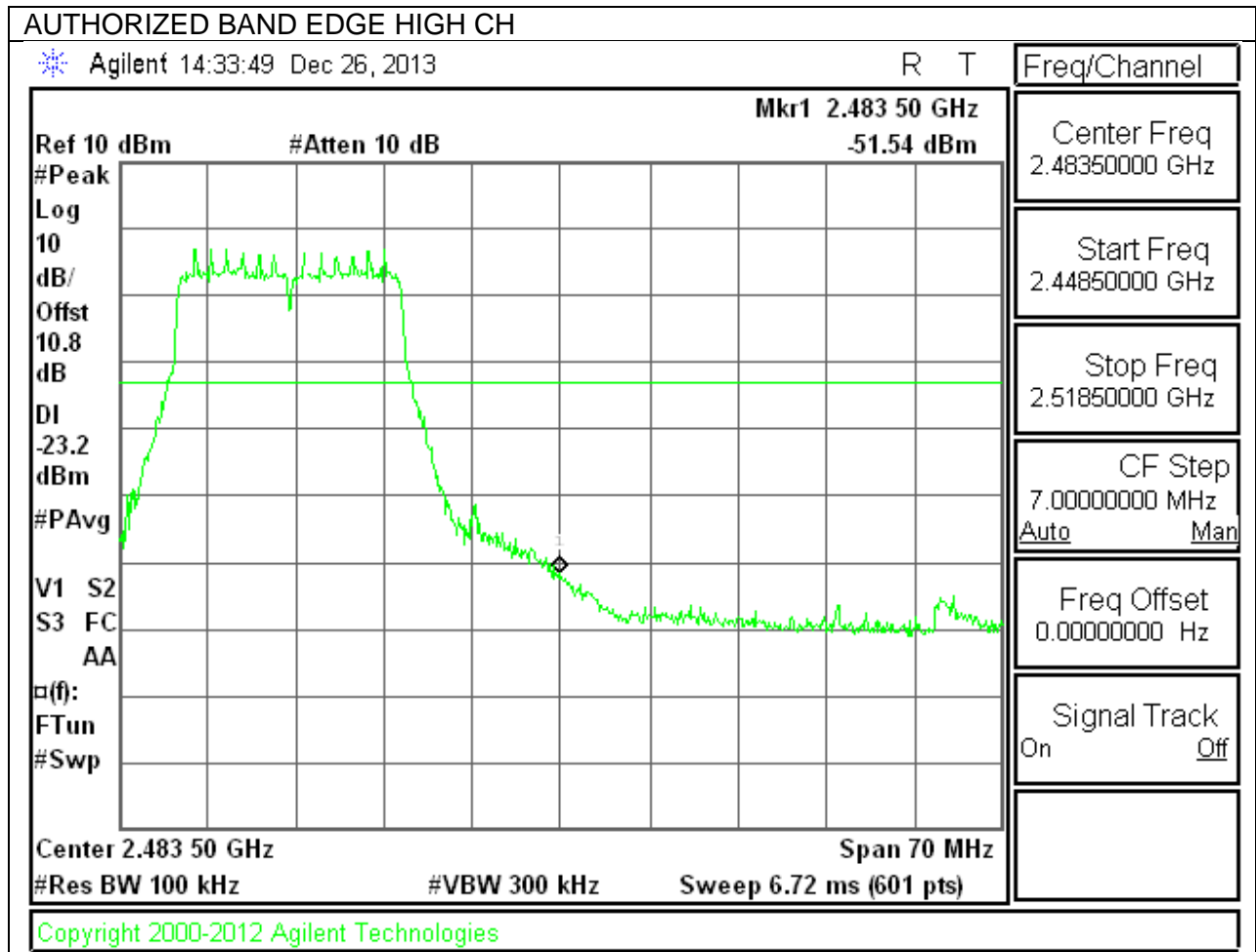
#### IN-BAND REFERENCE LEVEL



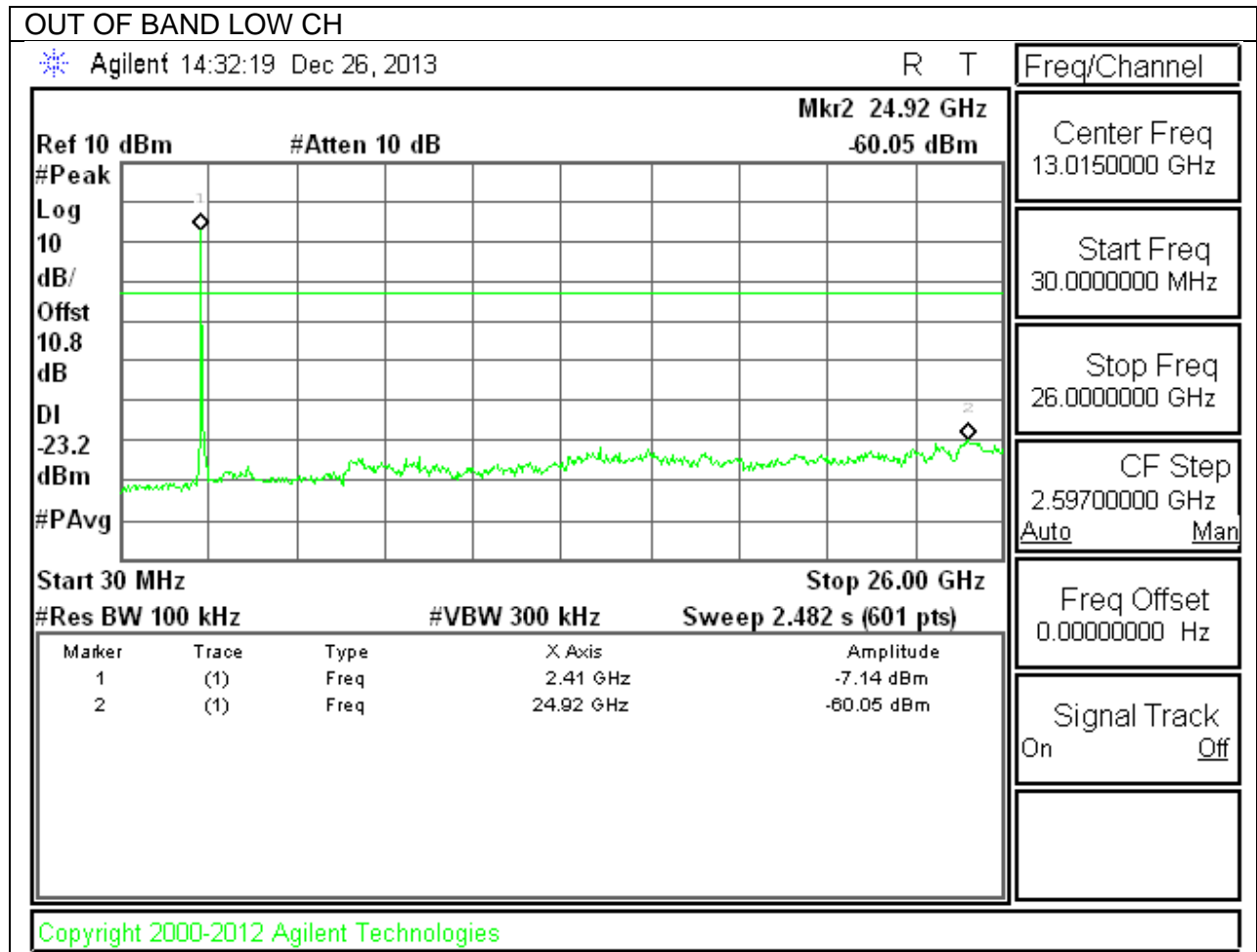
**LOW CHANNEL BANDEDGE**

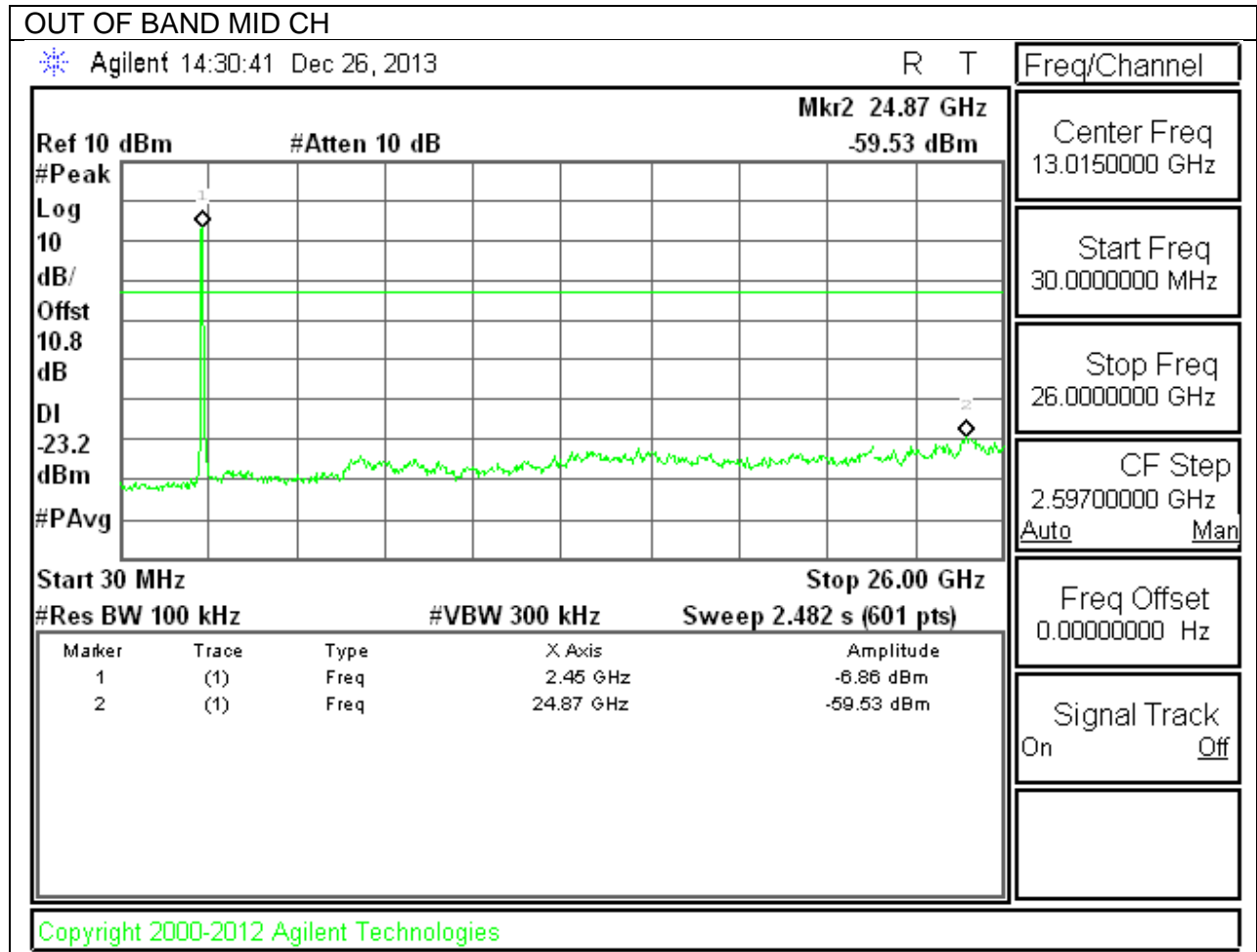


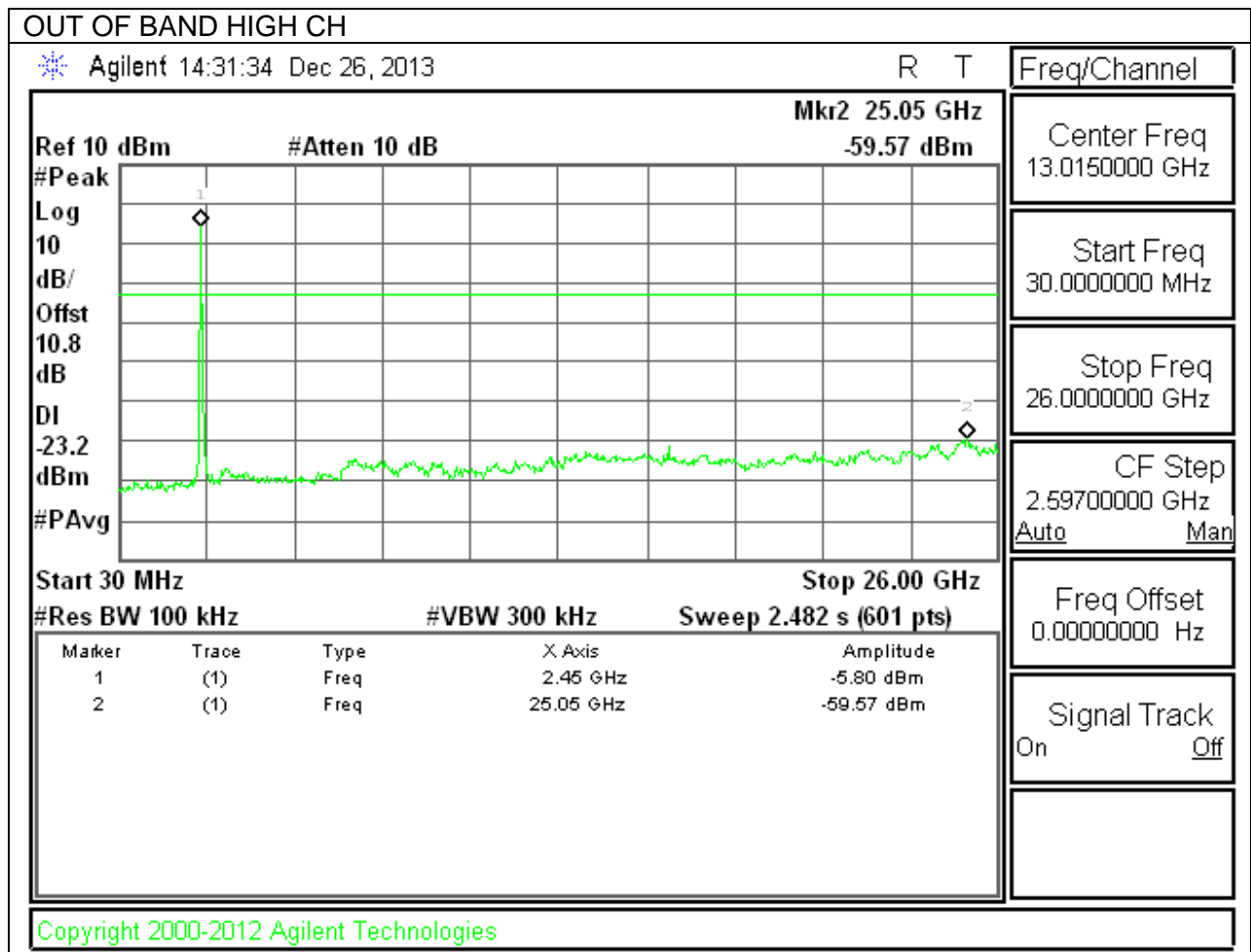
**HIGH CHANNEL BANDEDGE**



**OUT-OF-BAND EMISSIONS**

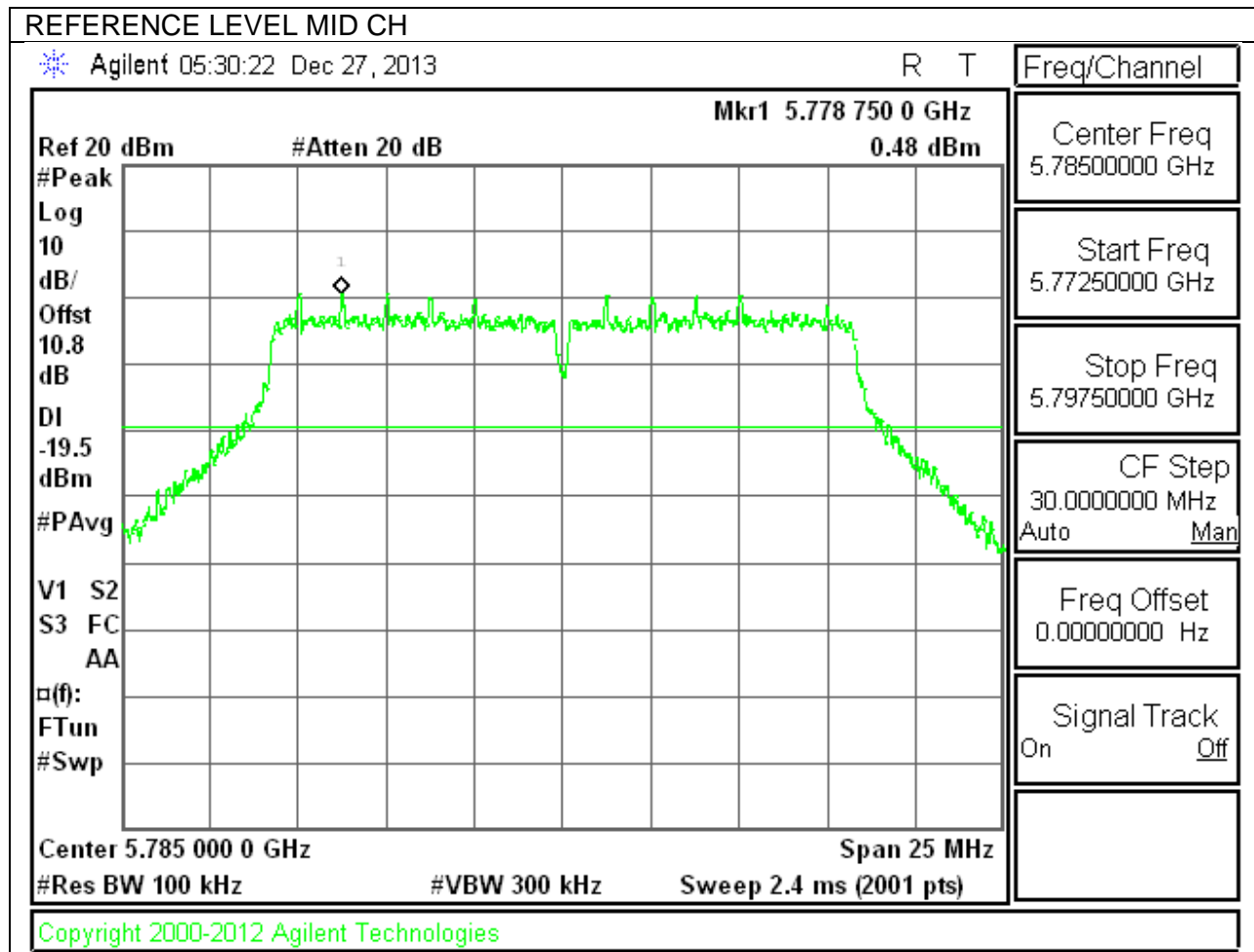






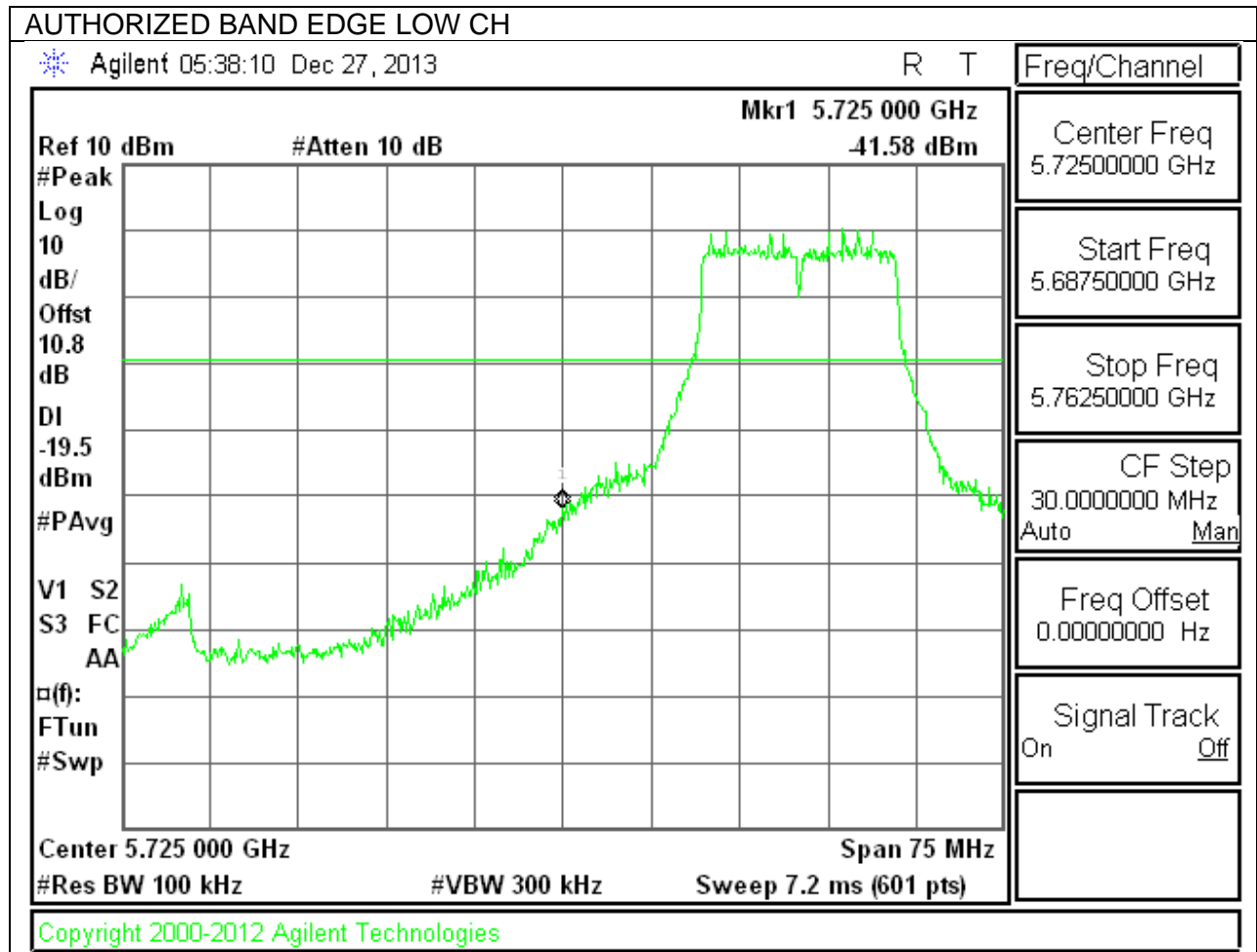
### 9.6.4. 802.11a MODE IN THE 5.8 GHz BAND

#### IN-BAND REFERENCE LEVEL

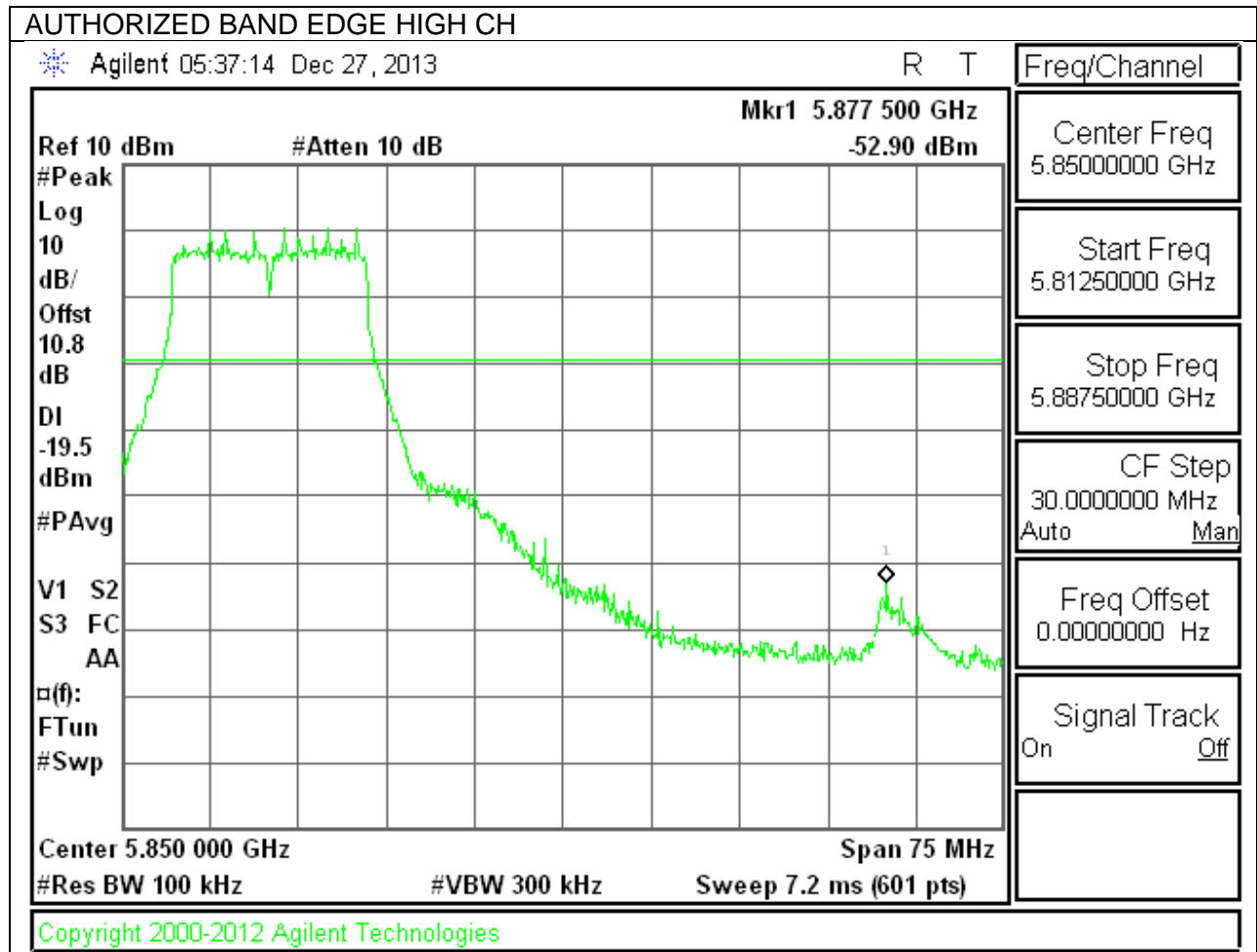




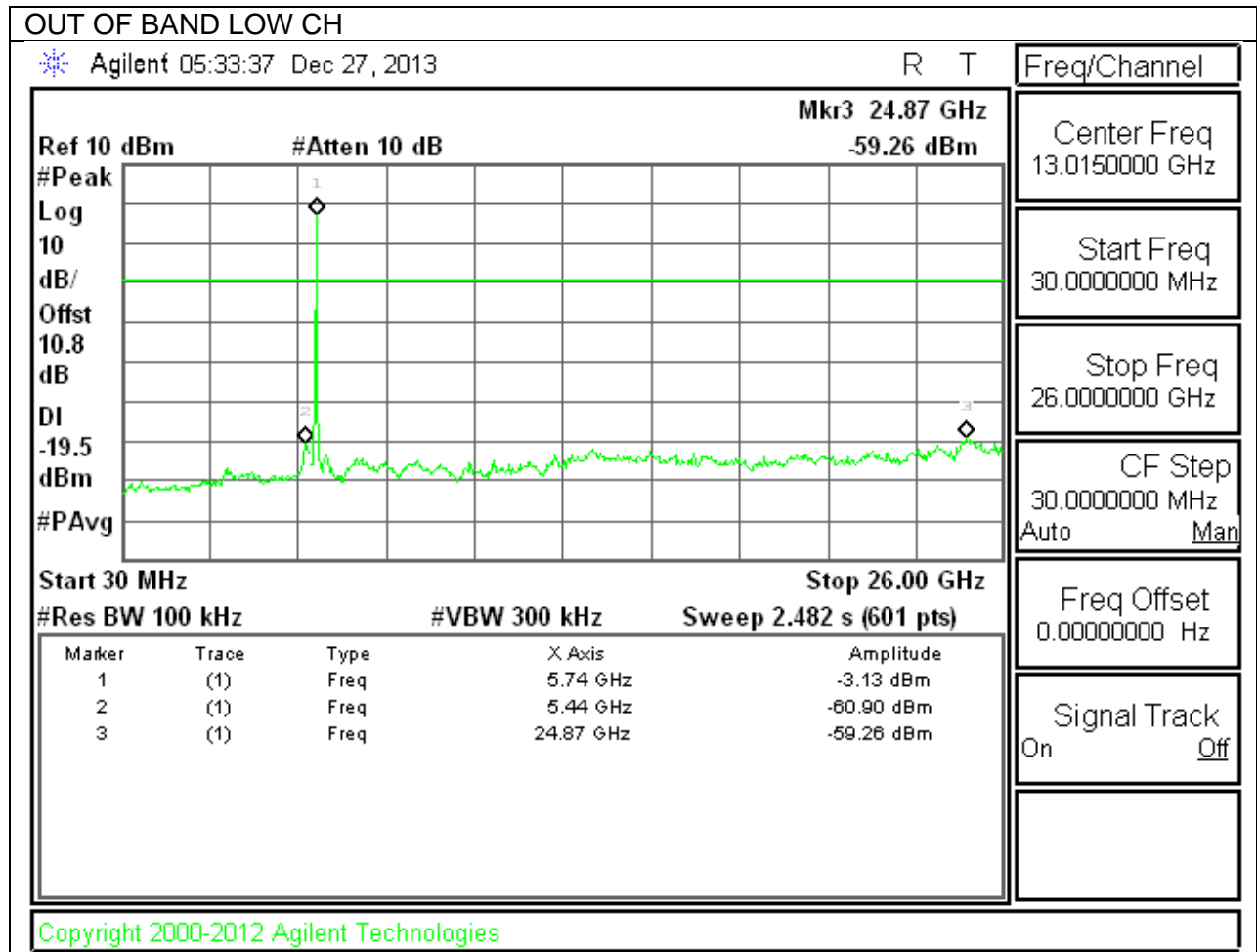
**LOW CHANNEL BANDEDGE**

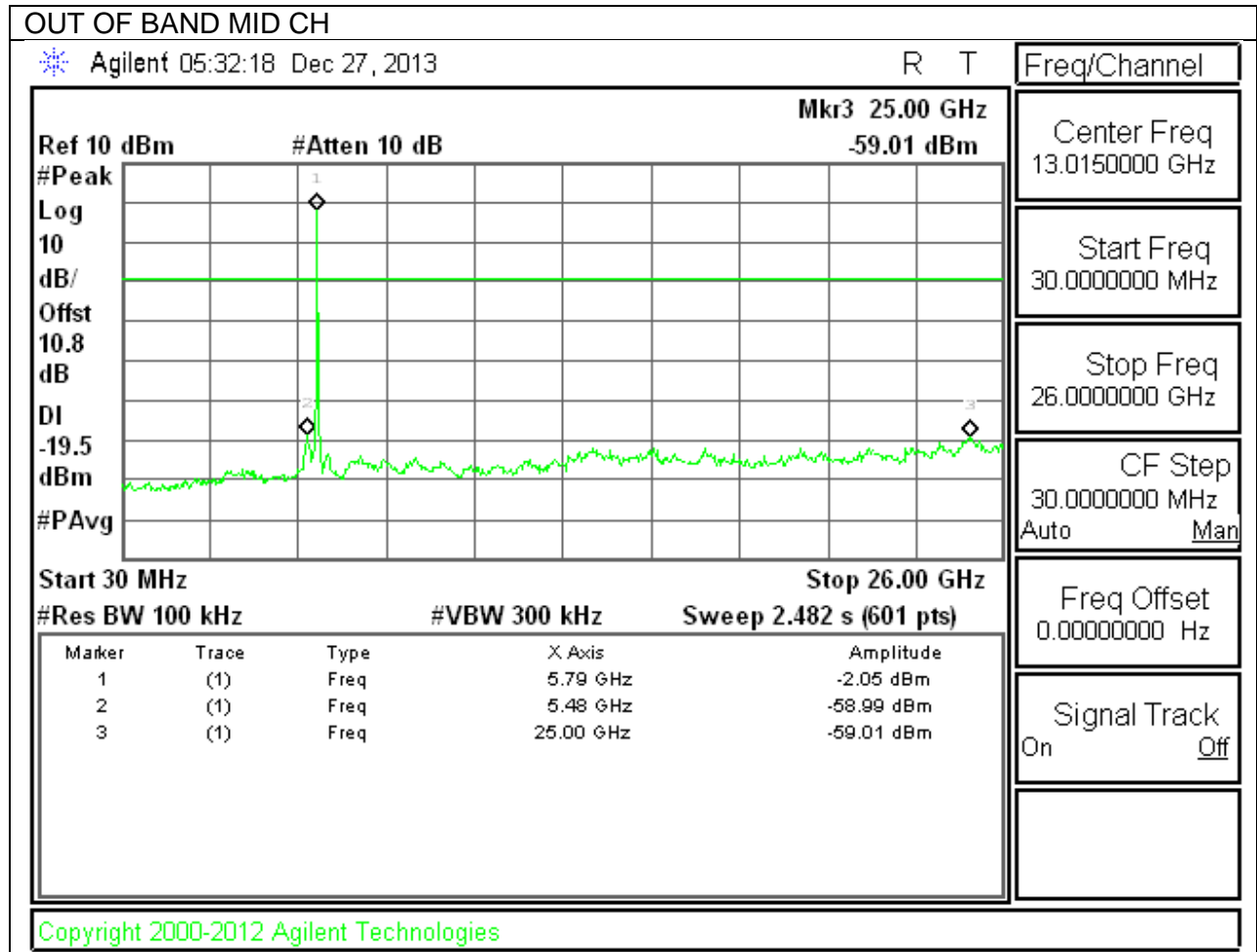


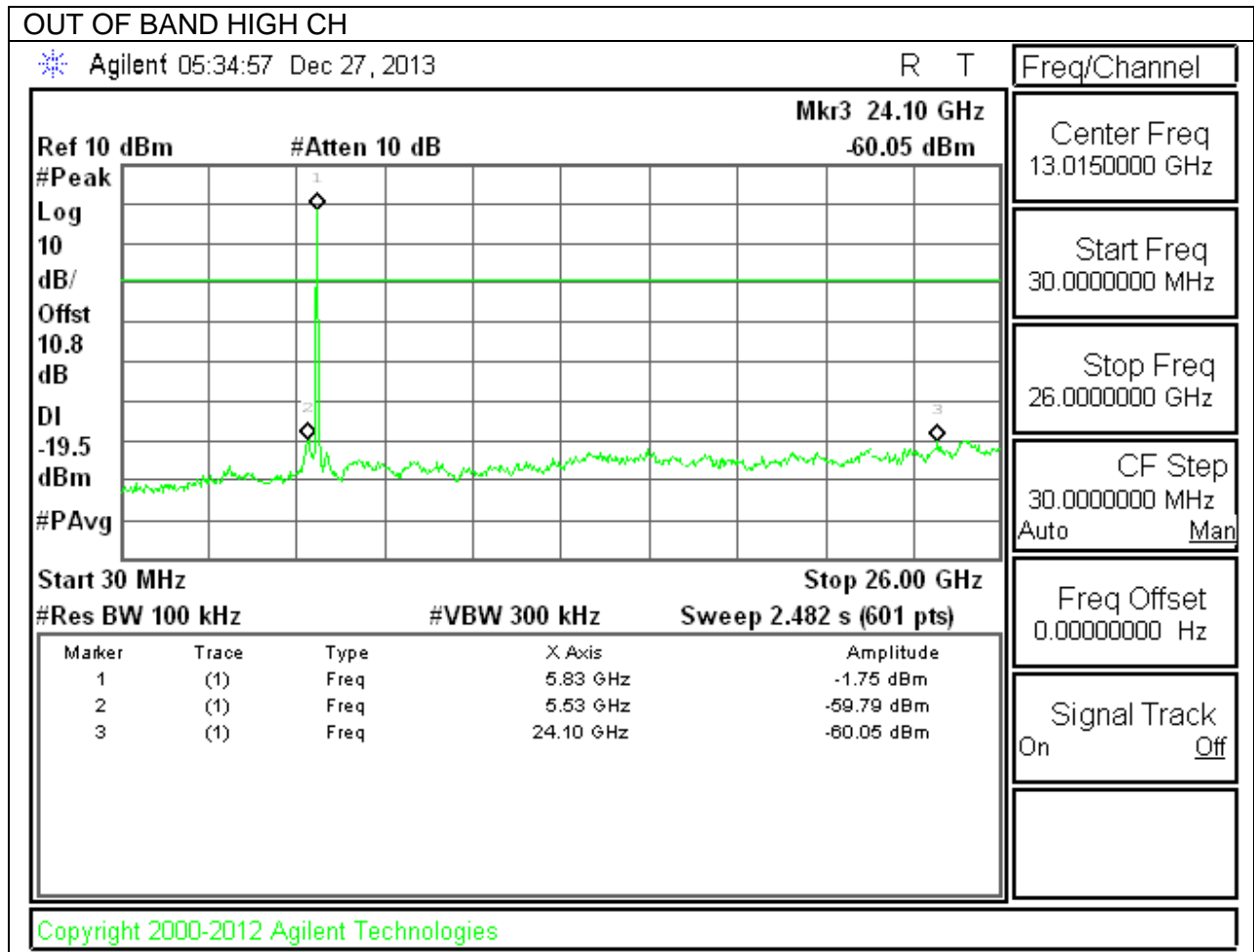
**HIGH CHANNEL BANDEDGE**



**OUT-OF-BAND EMISSIONS**

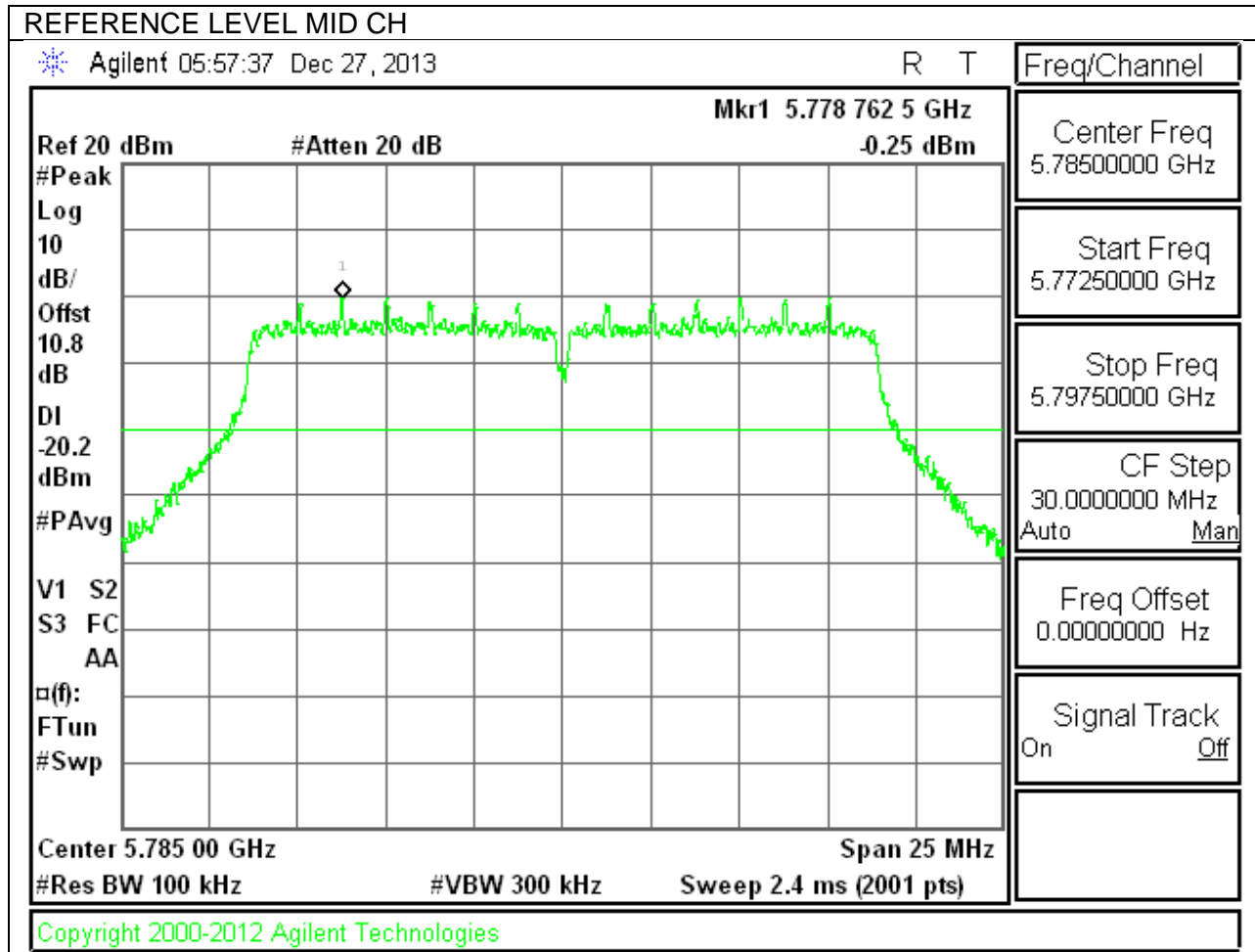






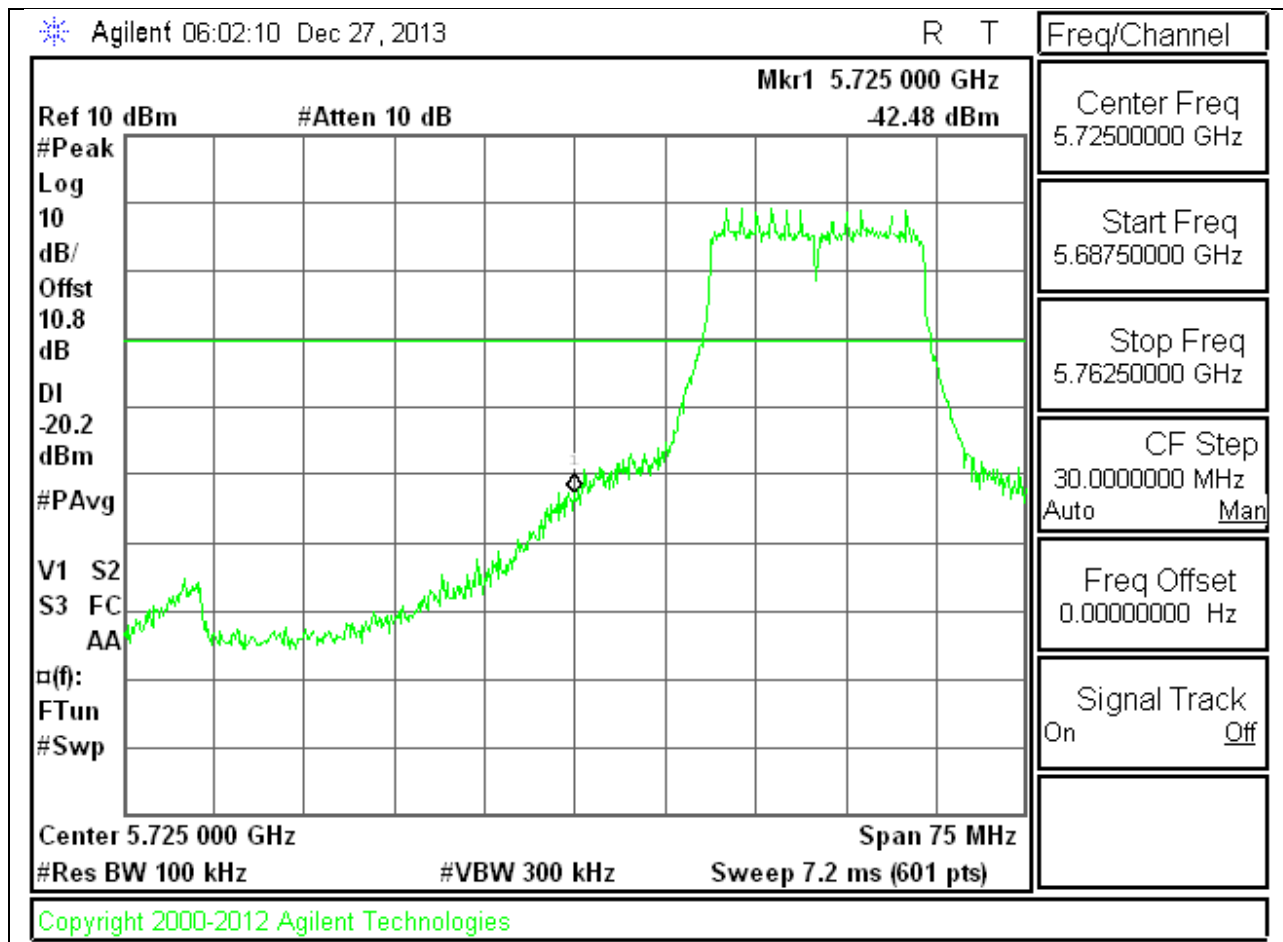
### 9.6.5. 802.11n MODE IN THE 5.8 GHz BAND

#### IN-BAND REFERENCE LEVEL

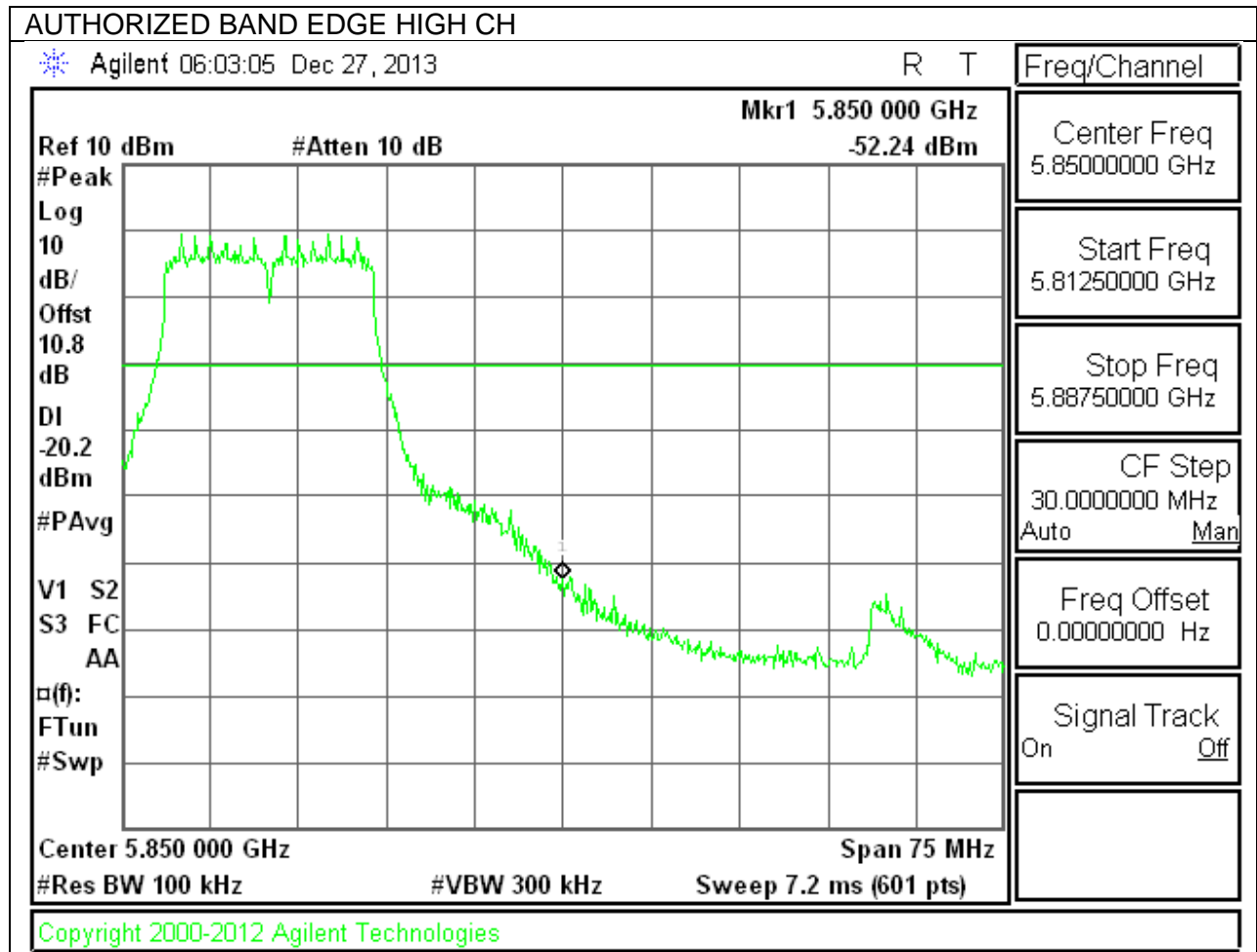


#### LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH

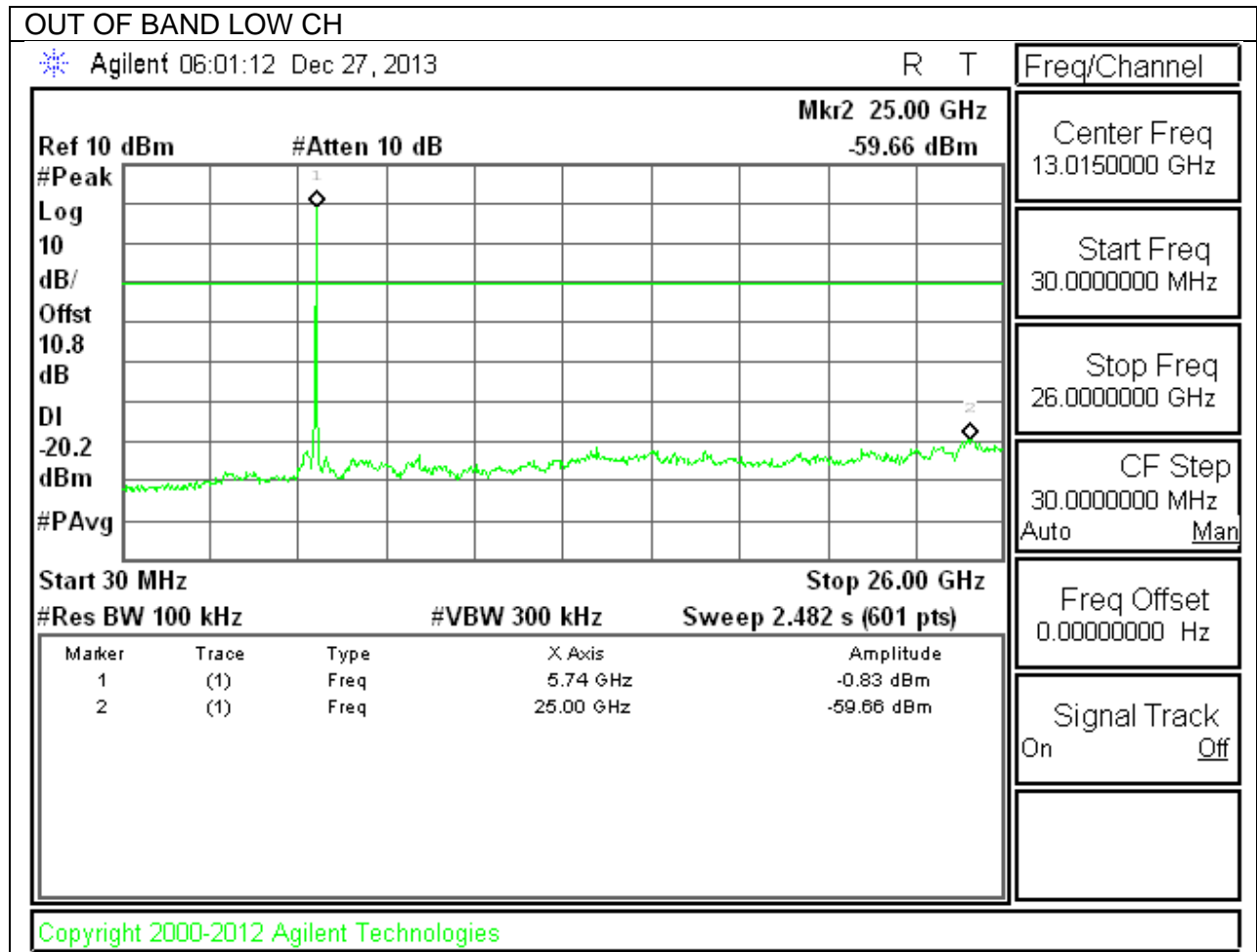


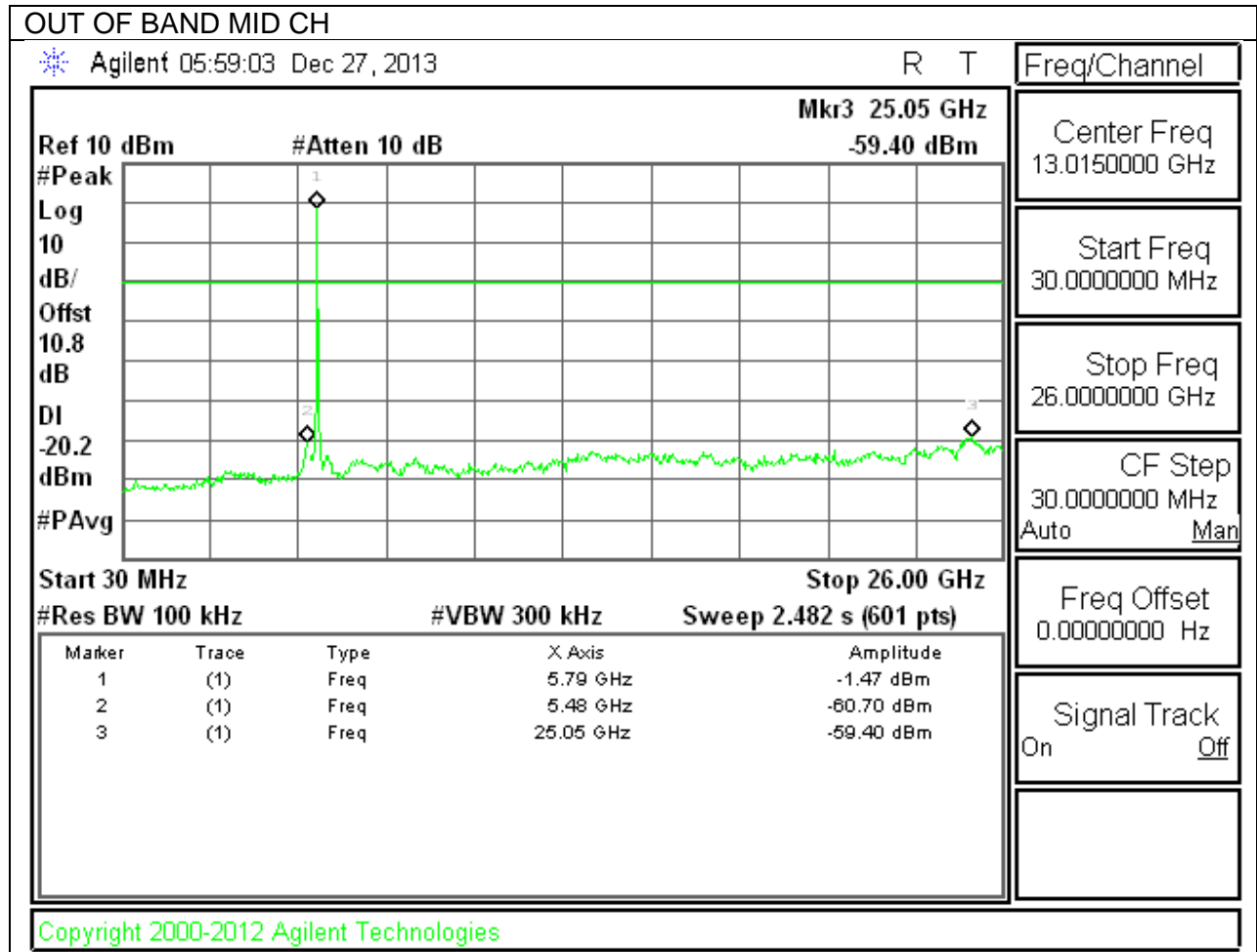
**HIGH CHANNEL BANDEDGE**

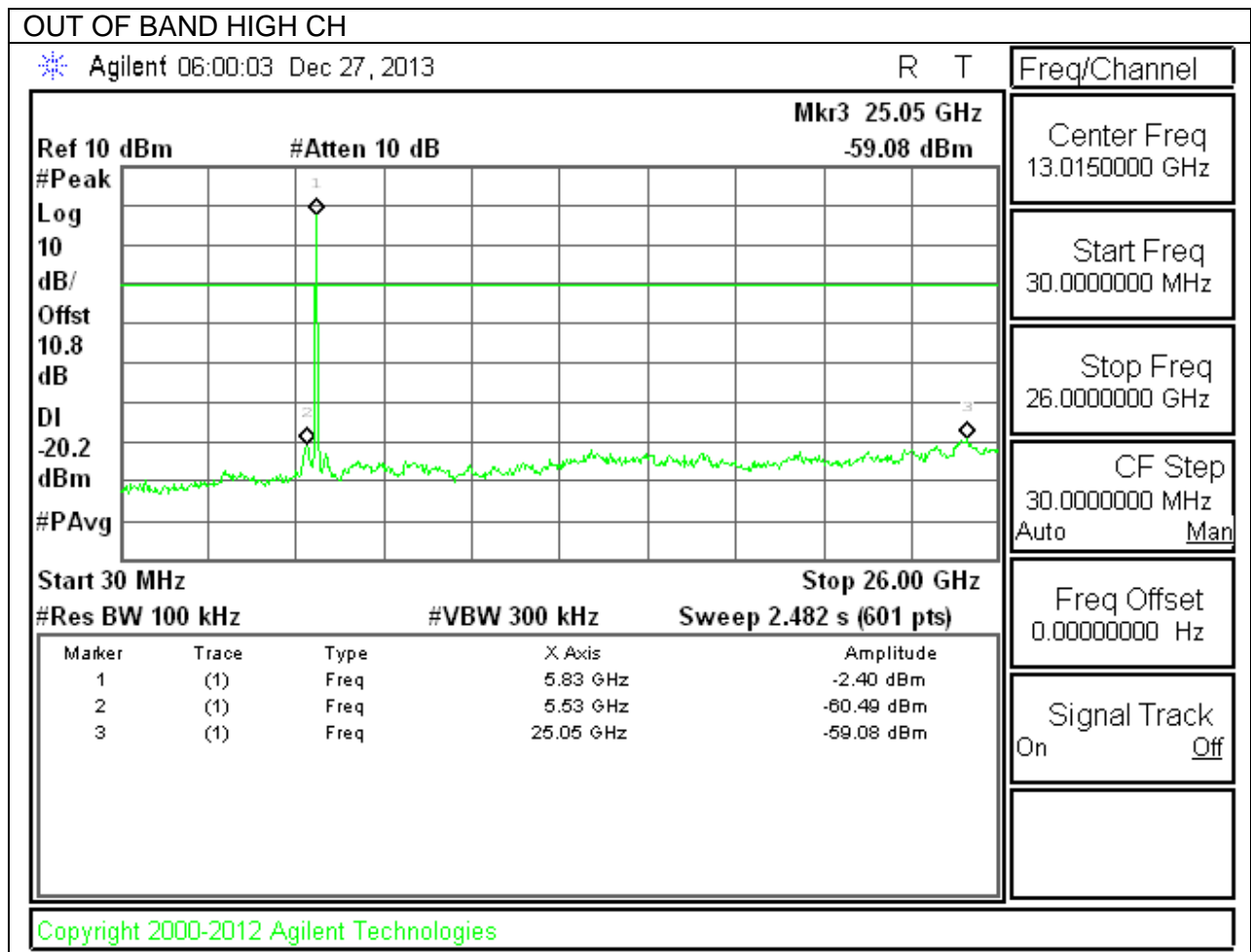




**OUT-OF-BAND EMISSIONS**

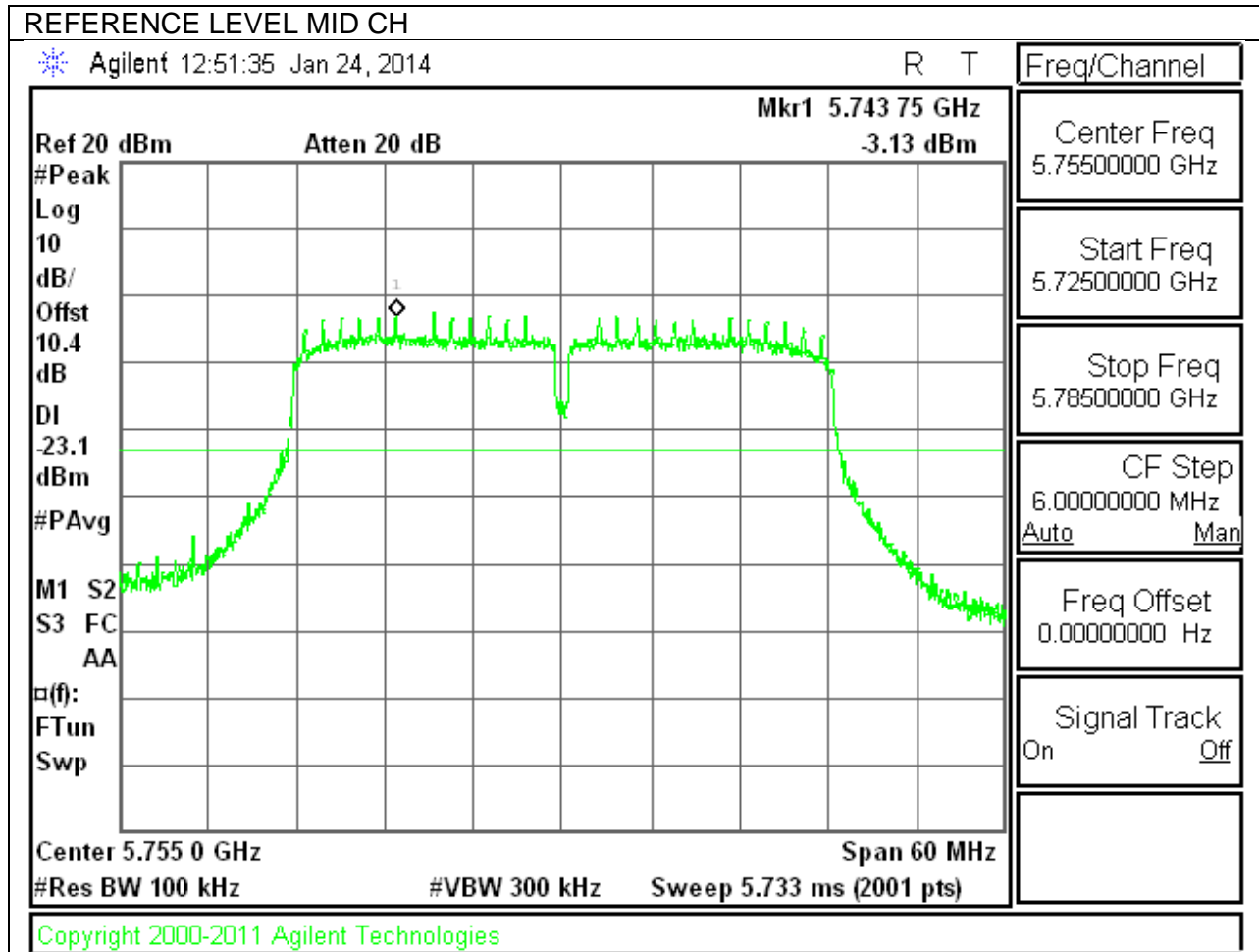




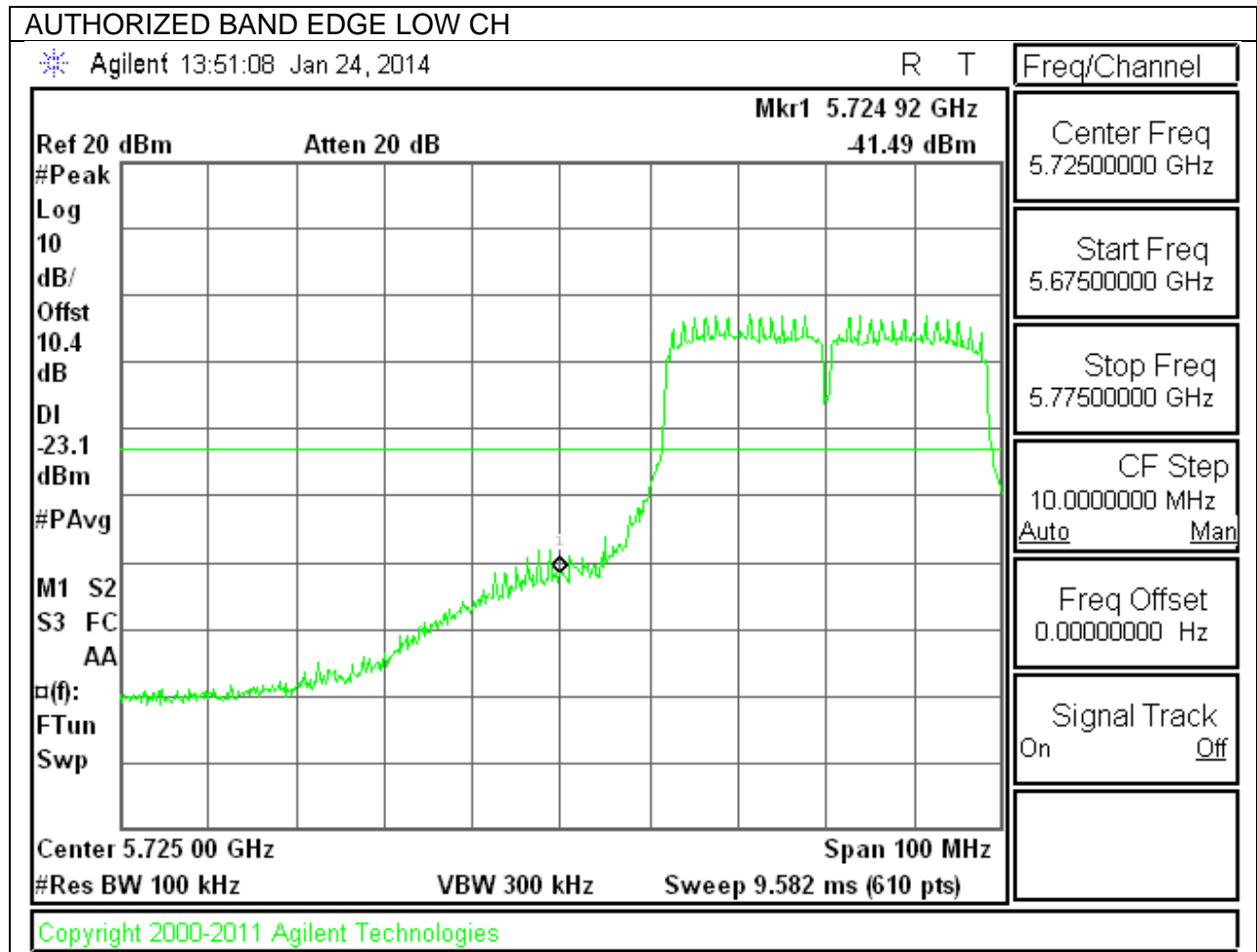


### 9.6.1. 802.11n HT40 MODE IN THE 5.8 GHz BAND

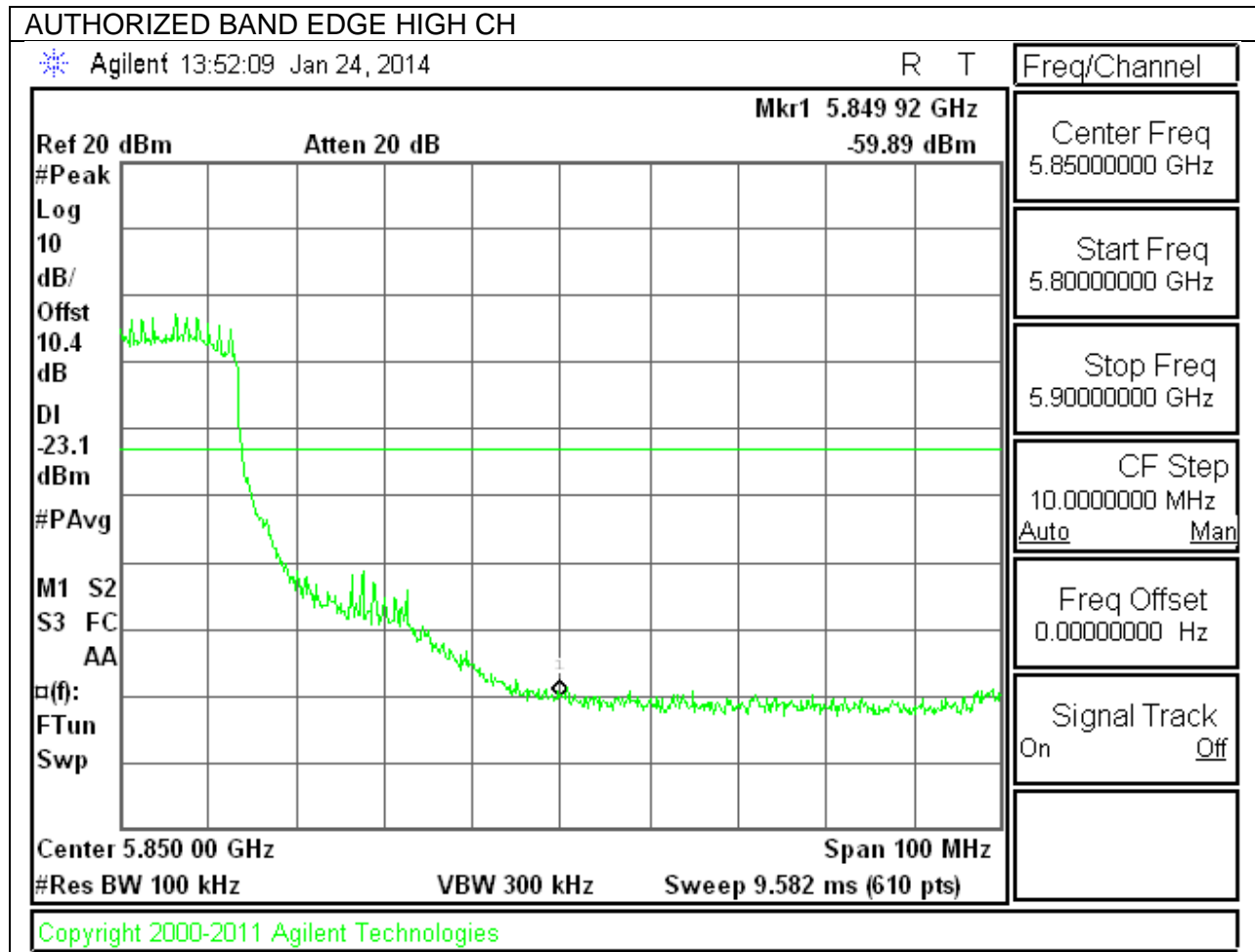
#### IN-BAND REFERENCE LEVEL



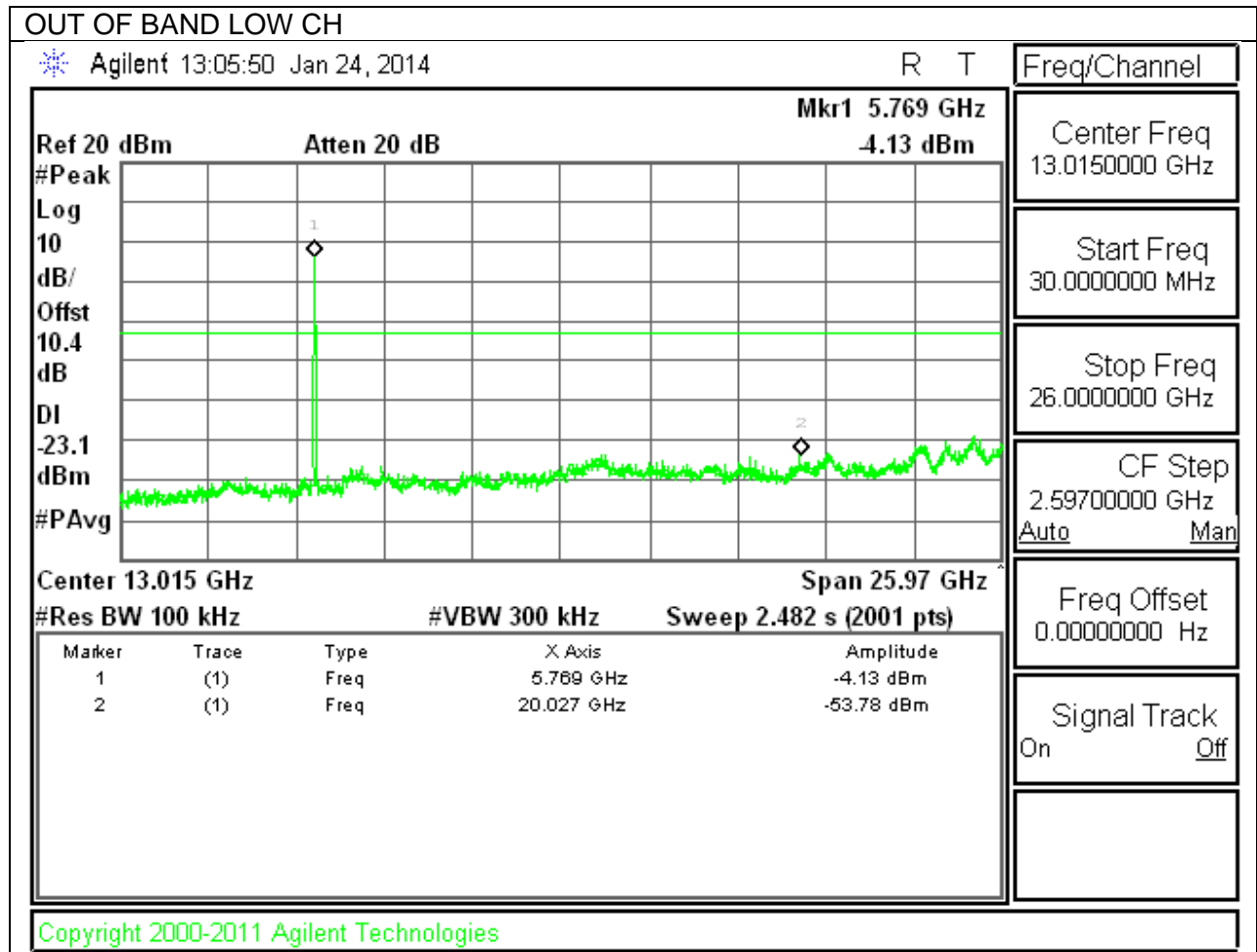
**LOW CHANNEL BANDEDGE**

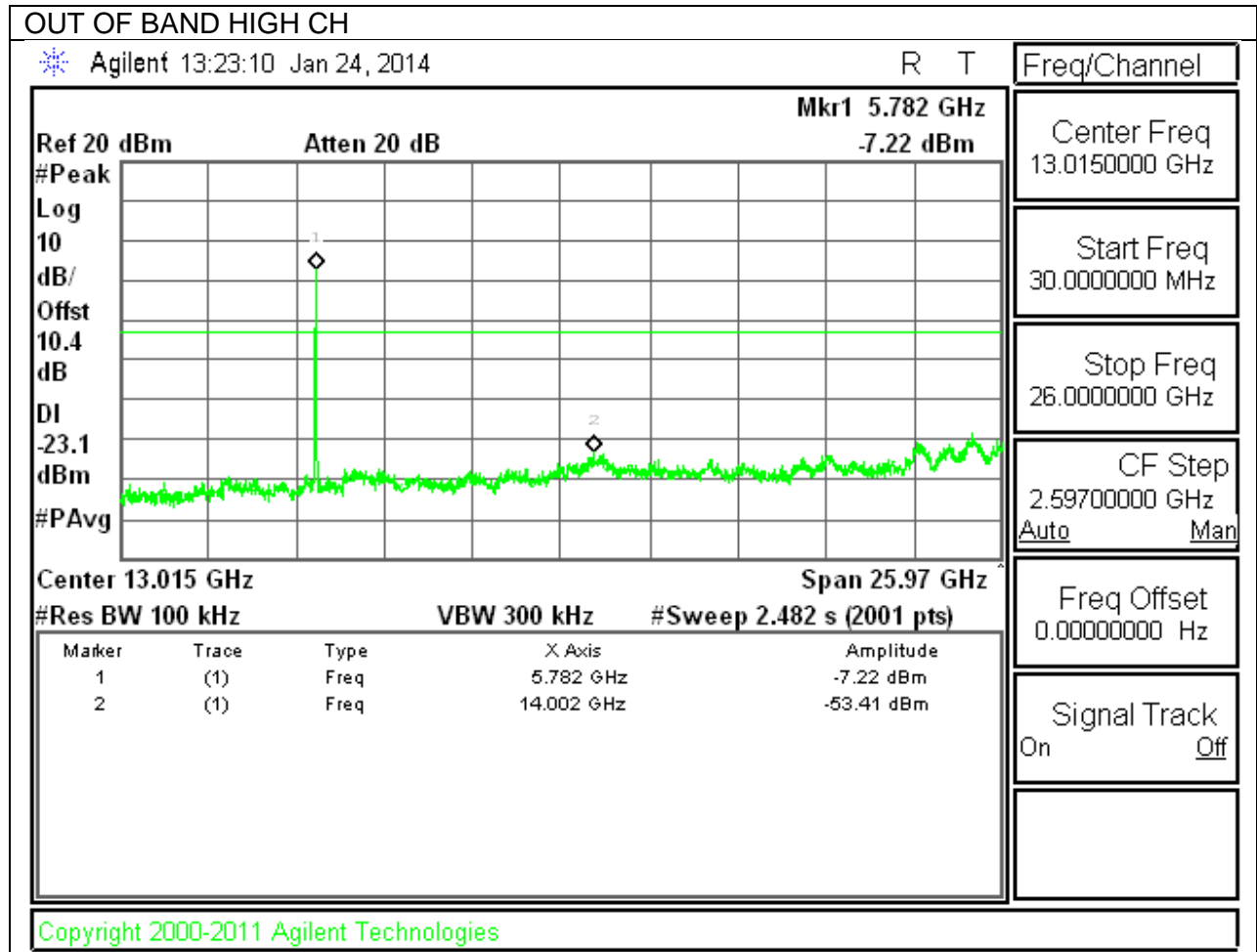


**HIGH CHANNEL BANDEDGE**



**OUT-OF-BAND EMISSIONS**







## 10. RADIATED TEST RESULTS

### 10.1. LIMITS AND PROCEDURE

#### LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

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.

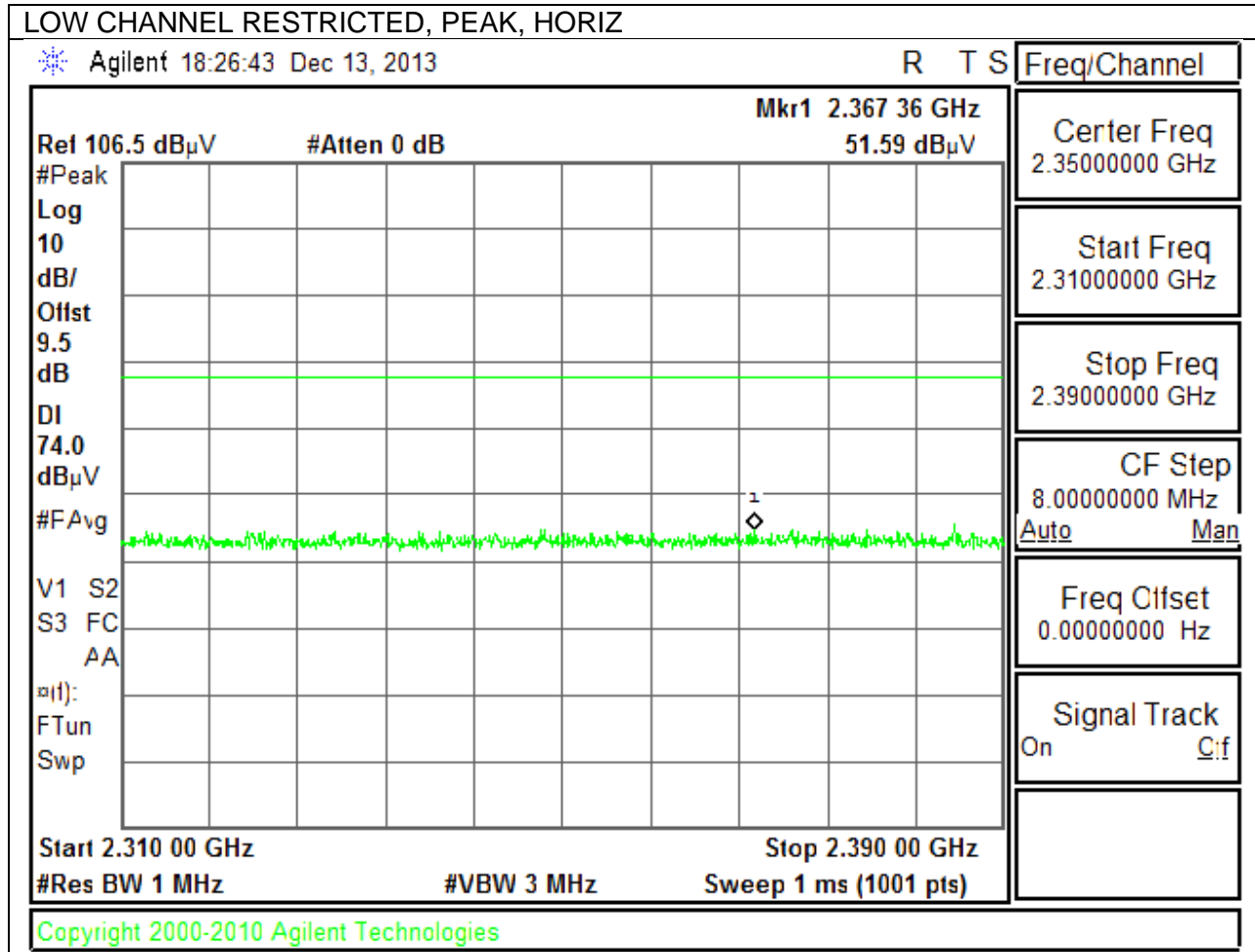
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements. Duty cycle factor=  $10\log(1/x)$  For this sample B mode = 0dB (duty cycle >98%); G mode = 0.2dB; N mode = 0.2dB.

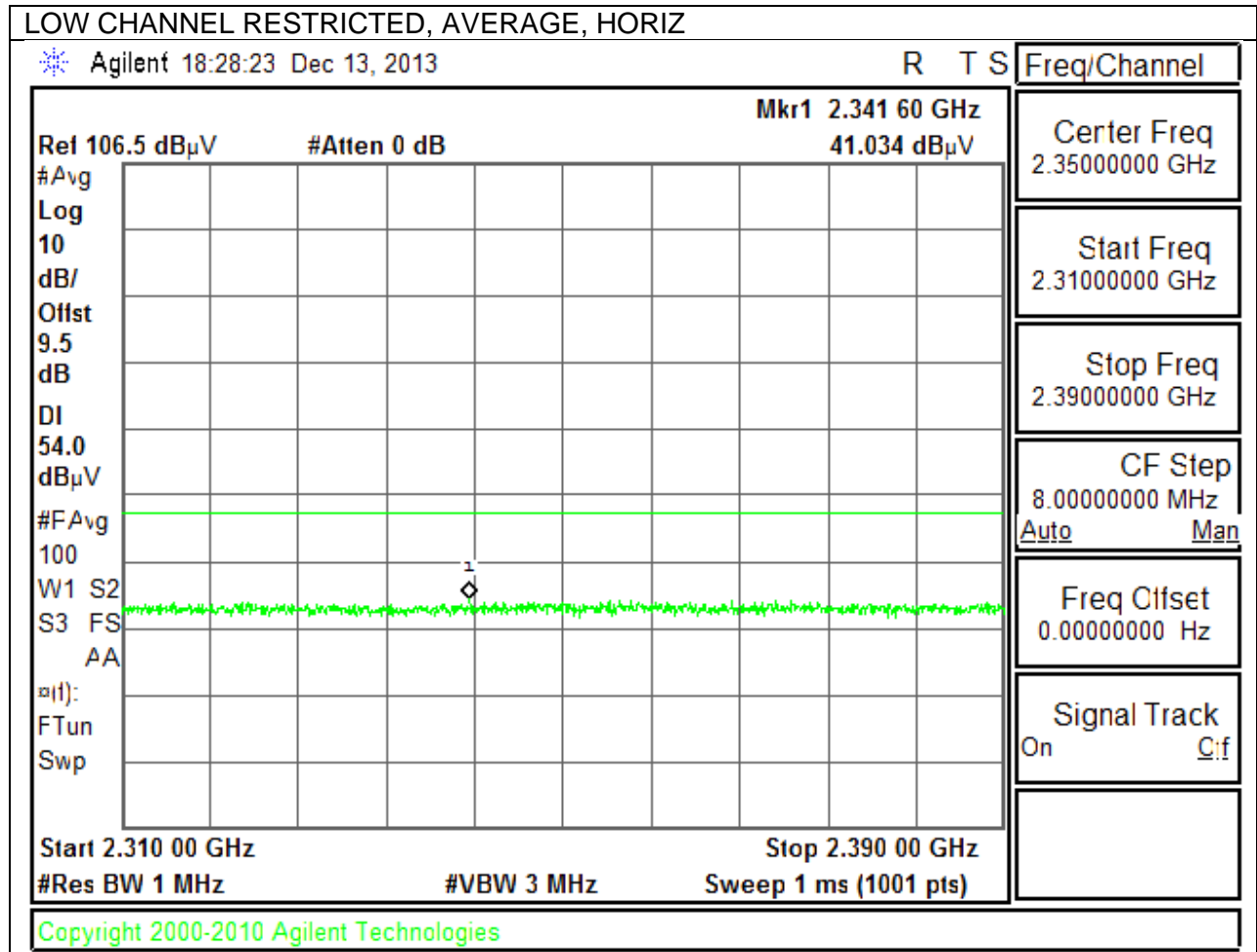
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

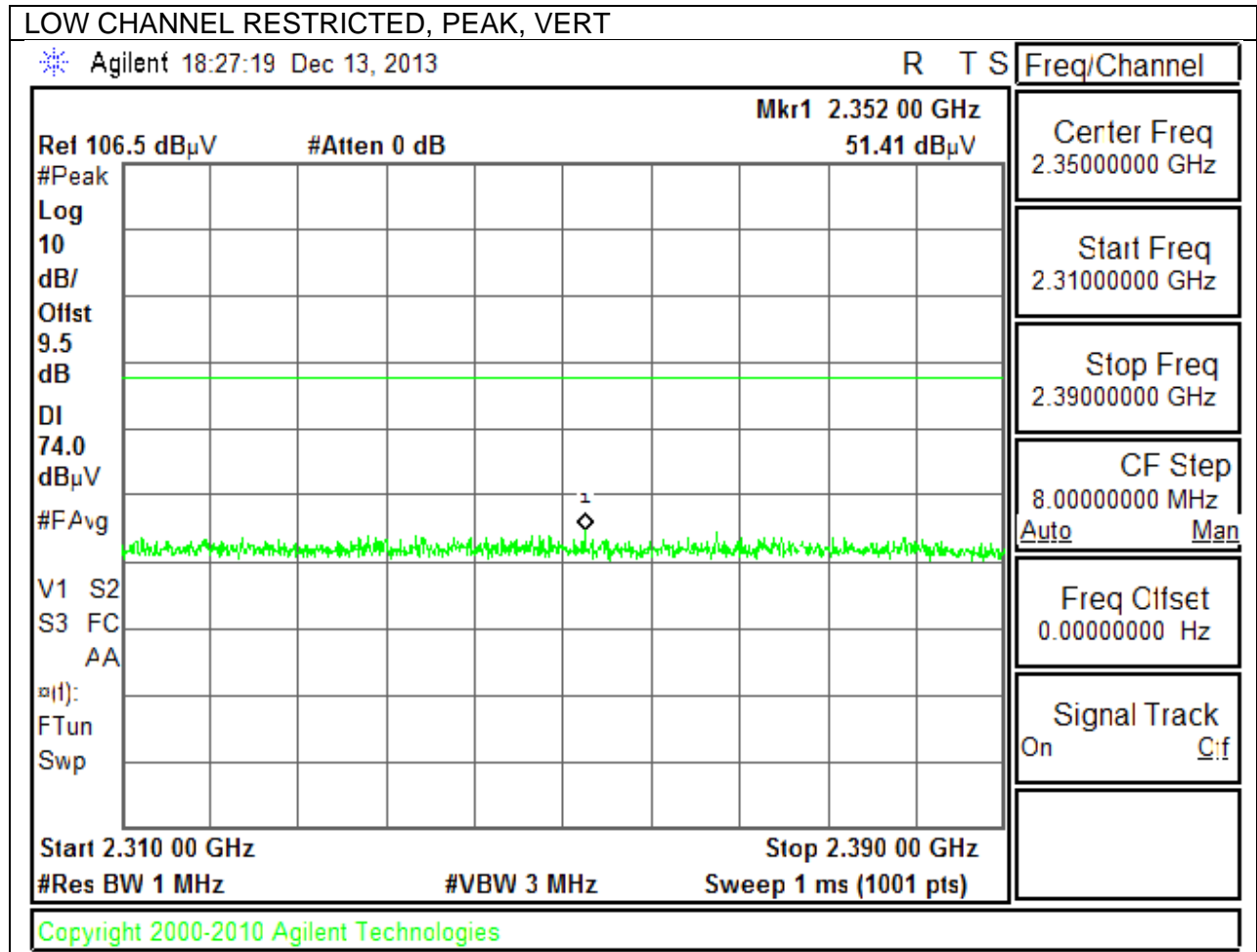
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

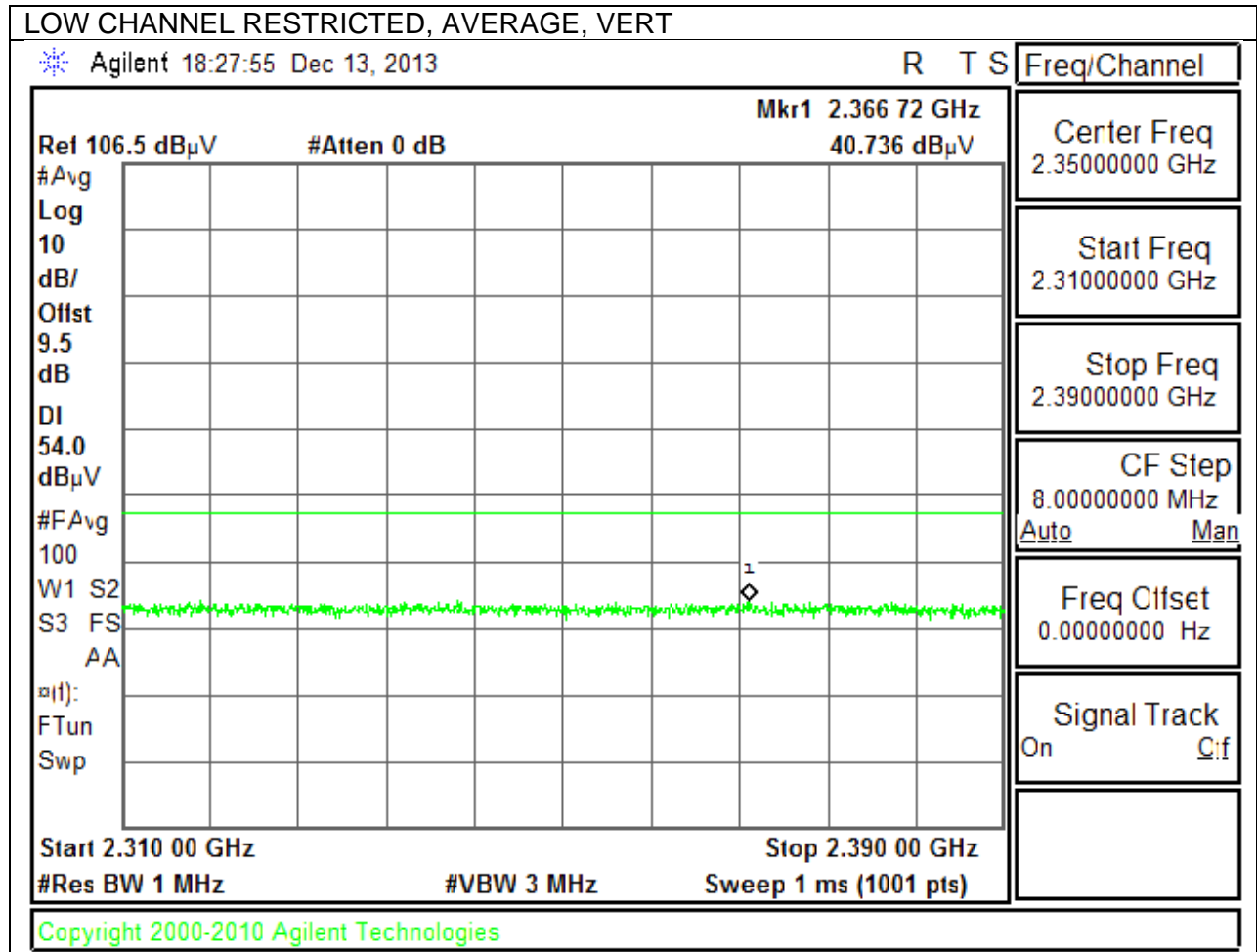
## 10.2. TRANSMITTER ABOVE 1 GHz

### 10.2.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND RESTRICTED BANDEDGE (LOW CHANNEL)

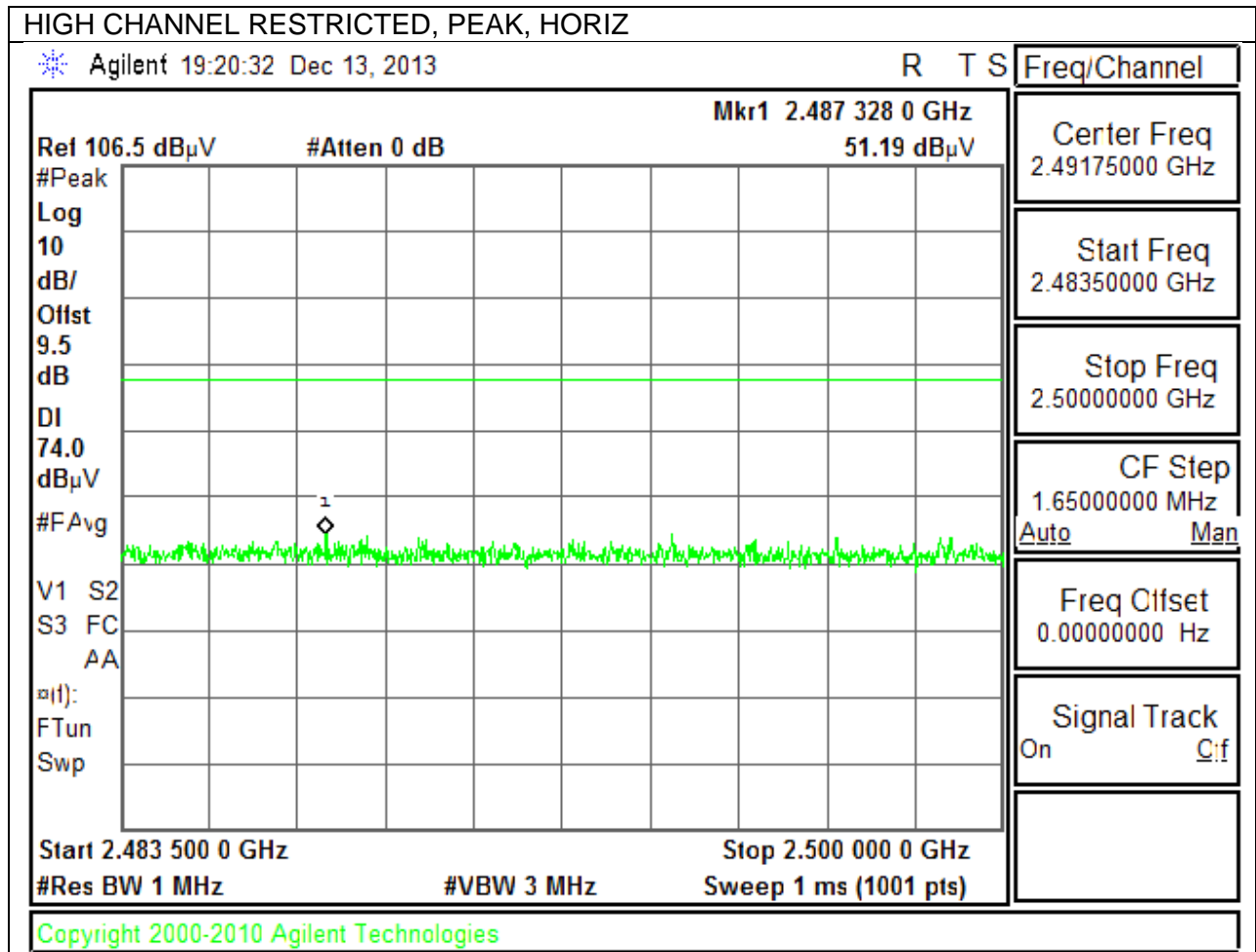


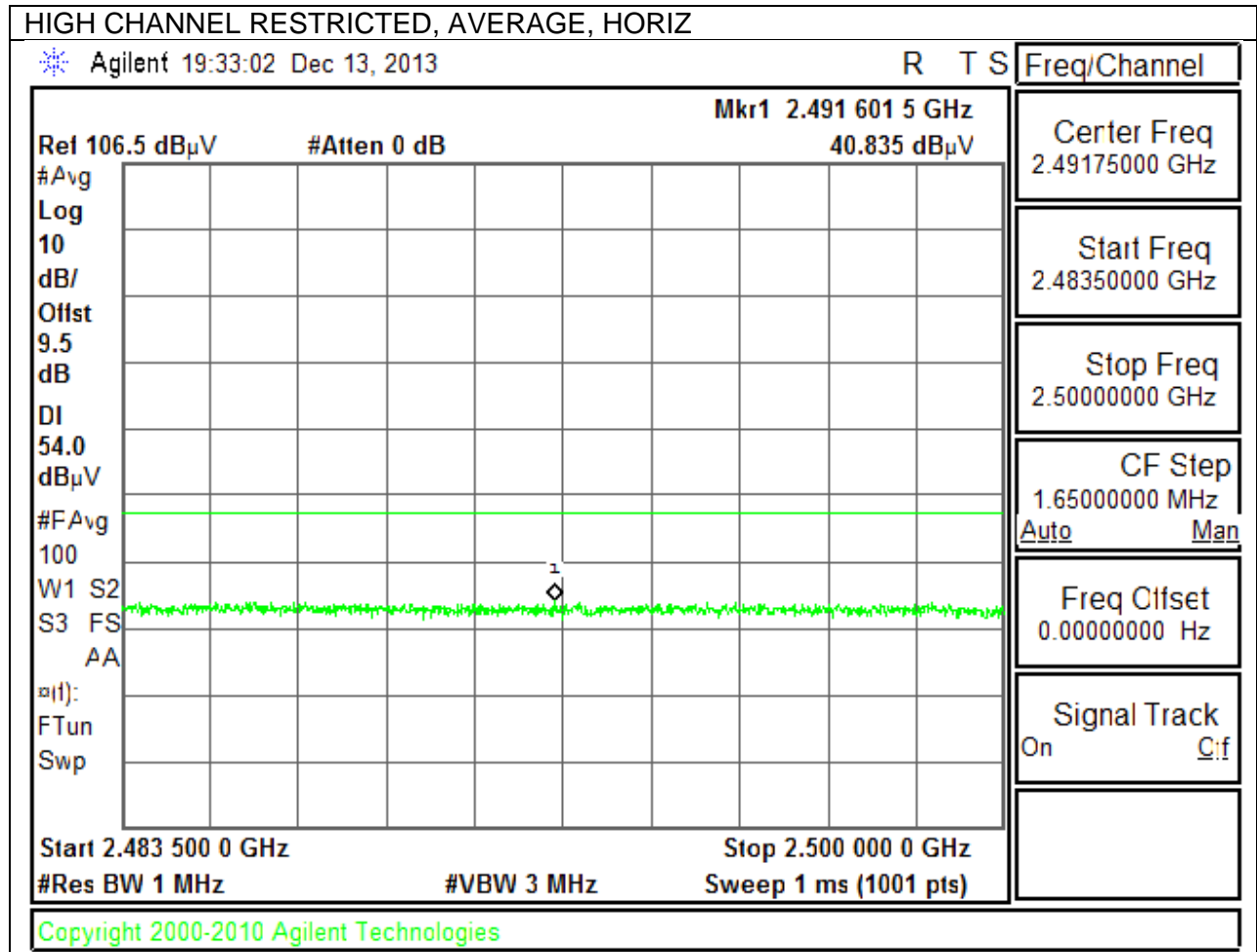


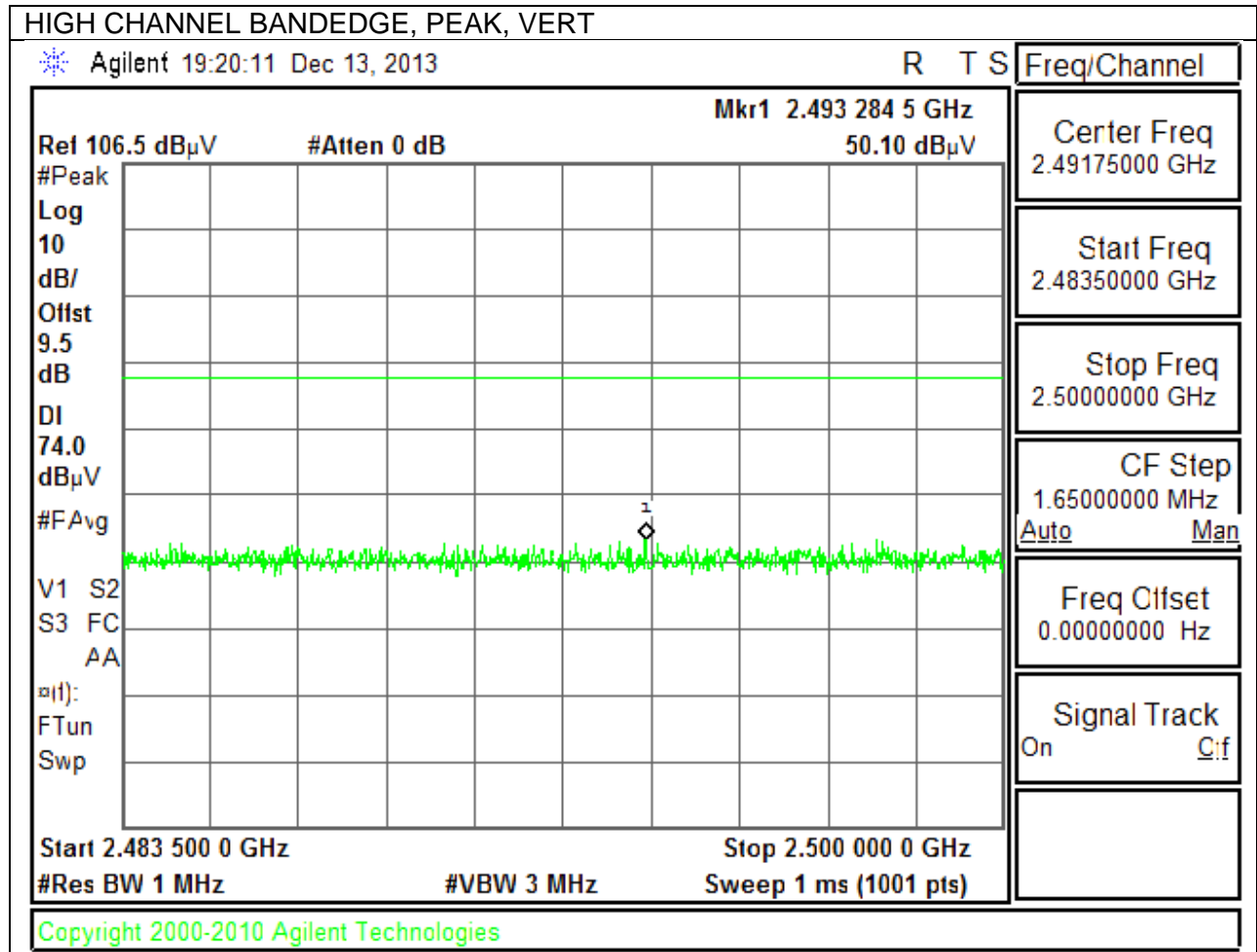




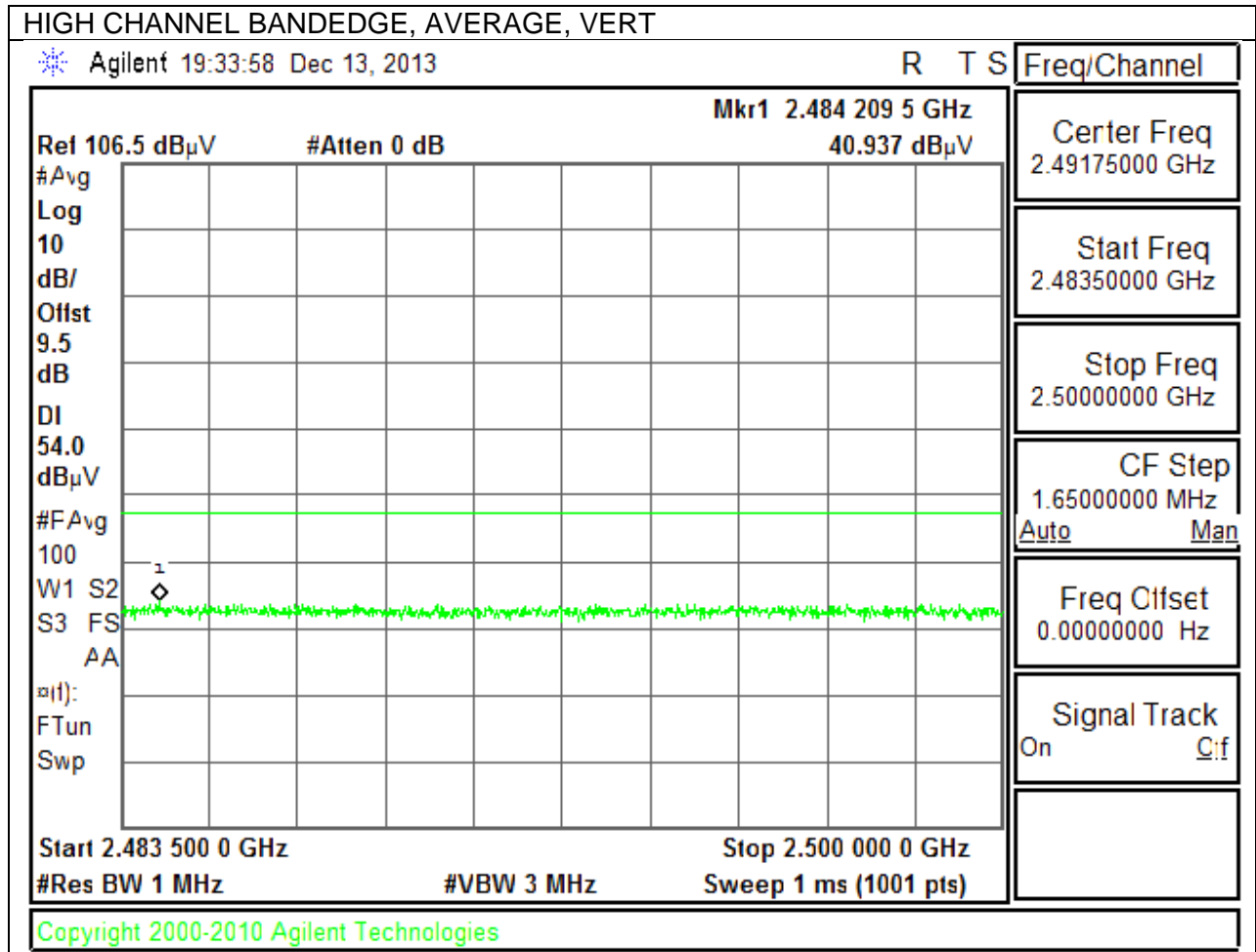
**AUTHORIZED BANDEDGE (HIGH CHANNEL)**



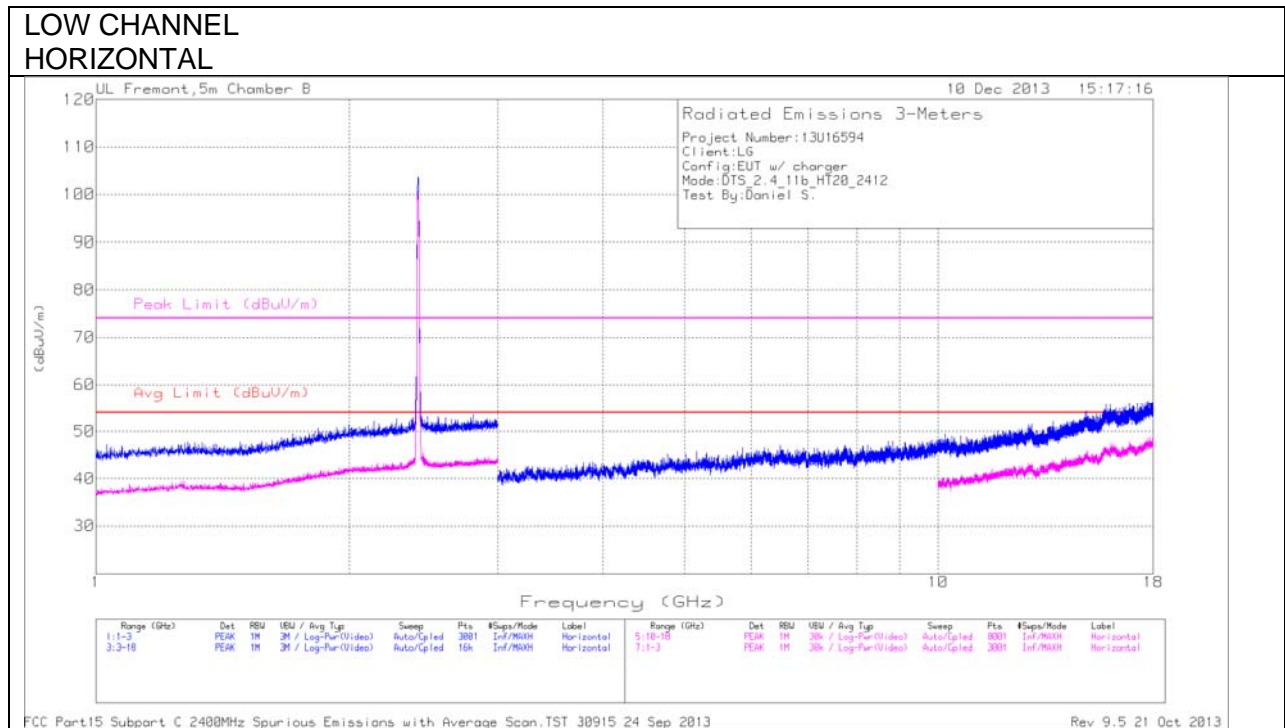






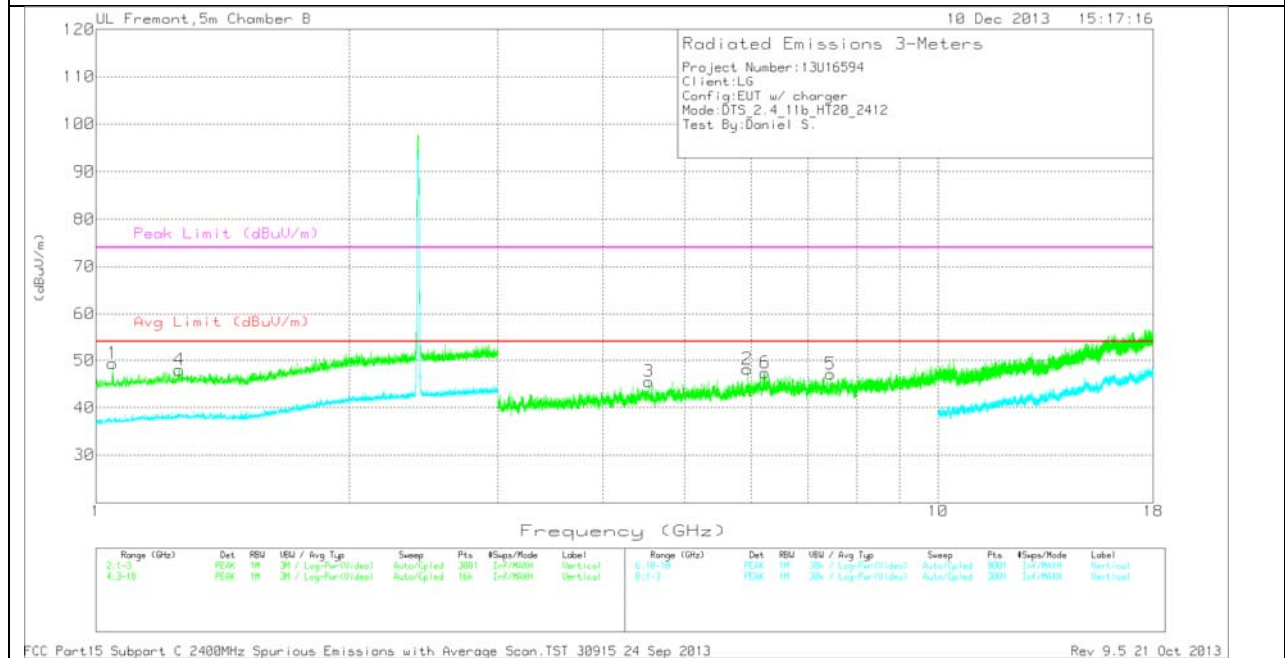


### HARMONICS AND SPURIOUS EMISSIONS



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



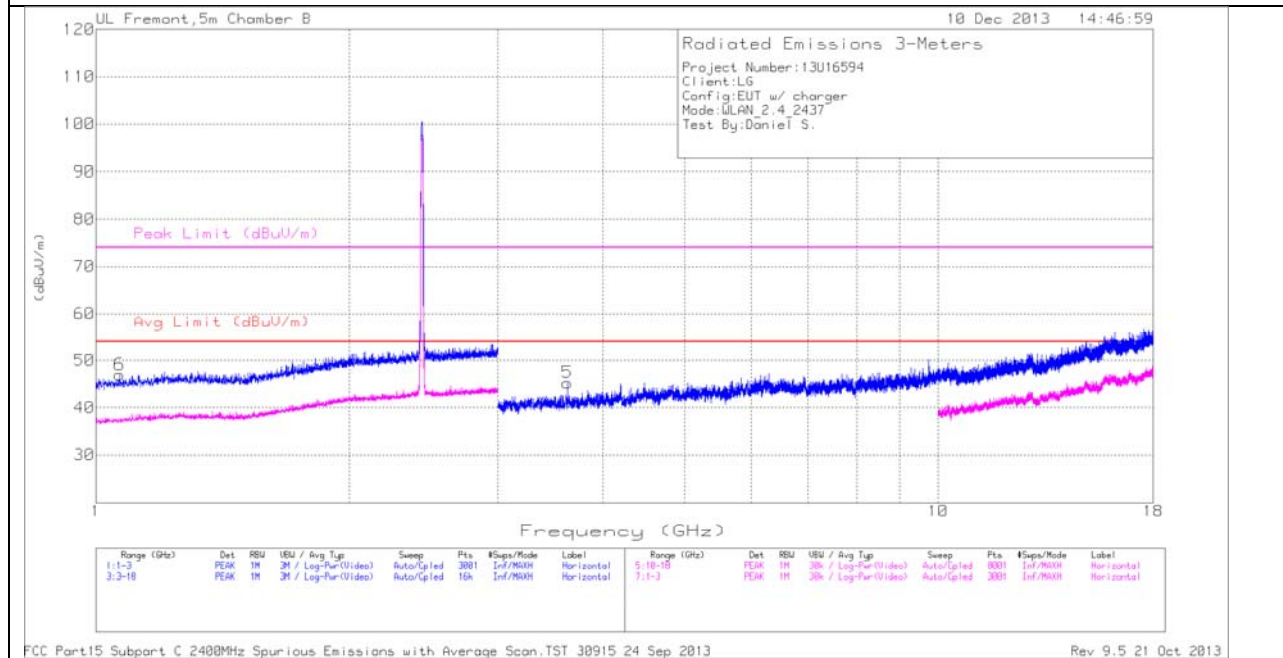
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

Marker	Frequenc y (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl /Fitr/Pad (dB)	Correcte d Reading (dBuV/m )	Avg Limit (dBuV/m )	Margin (dB)	Peak Limit (dBuV/m )	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.047	46.56	PK	27.6	-24.8	49.36	53.97	-4.61	74	-24.64	0-360	202	V
4	1.256	43.97	PK	28.6	-24.6	47.97	53.97	-6	74	-26.03	0-360	99	V
3	4.534	40.72	PK	34.5	-29.7	45.52	53.97	-8.45	74	-28.48	0-360	99	V
2	5.934	40.84	PK	35.7	-28.4	48.14	53.97	-5.83	74	-25.86	0-360	99	V
6	6.229	39.25	PK	36	-27.9	47.35	53.97	-6.62	74	-26.65	0-360	201	V
5	7.452	38.16	PK	36	-27.1	47.06	53.97	-6.91	74	-26.94	0-360	99	V

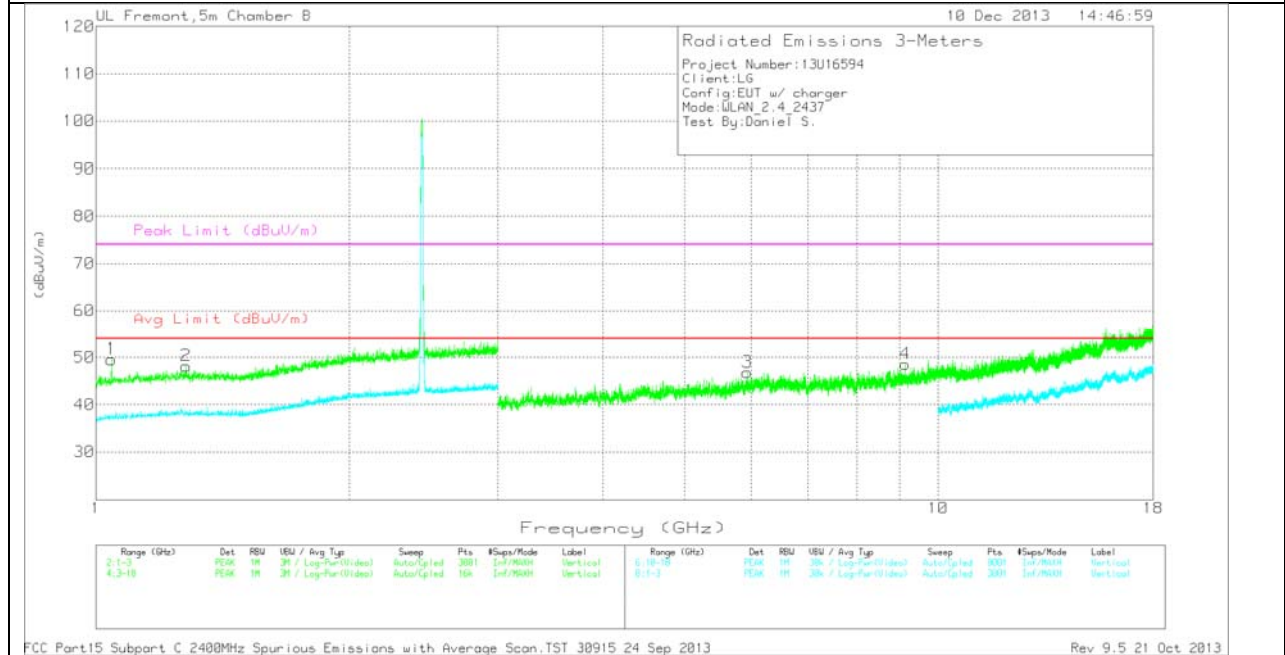
PK - Peak detector

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

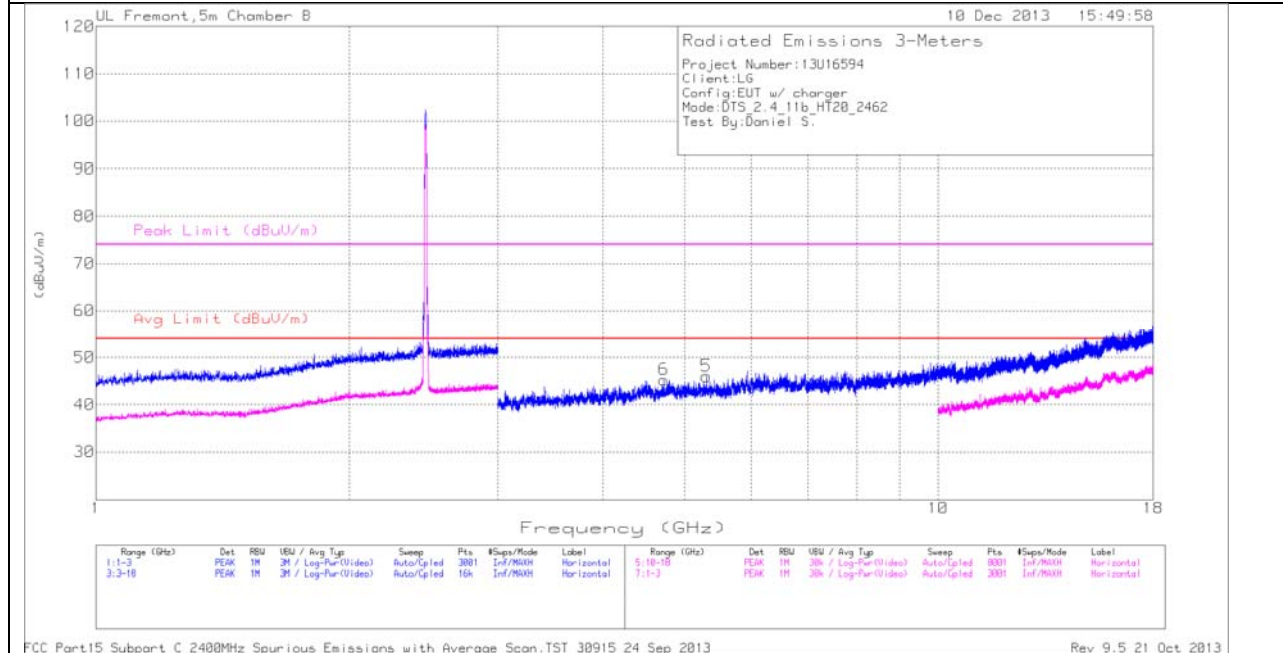
Marker	Frequenc y (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Correcte d Reading (dBuV/m )	Avg Limit (dBuV/m )	Margin (dB)	Peak Limit (dBuV/m )	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.043	46.87	PK	27.6	-24.9	49.57	53.97	-4.4	74	-24.43	0-360	202	V
6	1.067	44.04	PK	27.7	-24.8	46.94	53.97	-7.03	74	-27.06	0-360	201	H
2	1.279	44.18	PK	28.6	-24.6	48.18	53.97	-5.79	74	-25.82	0-360	202	V
5	3.629	42.87	PK	33.5	-31.1	45.27	53.97	-8.7	74	-28.73	0-360	201	H
3	5.934	39.54	PK	35.7	-28.4	46.84	53.97	-7.13	74	-27.16	0-360	99	V
4	9.138	36.6	PK	36.9	-24.9	48.6	53.97	-5.37	74	-25.4	0-360	201	V

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1.046	33.31	MAv1	27.6	-24.8	36.11	53.97	-17.86	74	-37.89	359	276	H

PK - Peak detector

MAv1 - KDB558074 Option 1 Maximum RMS Average

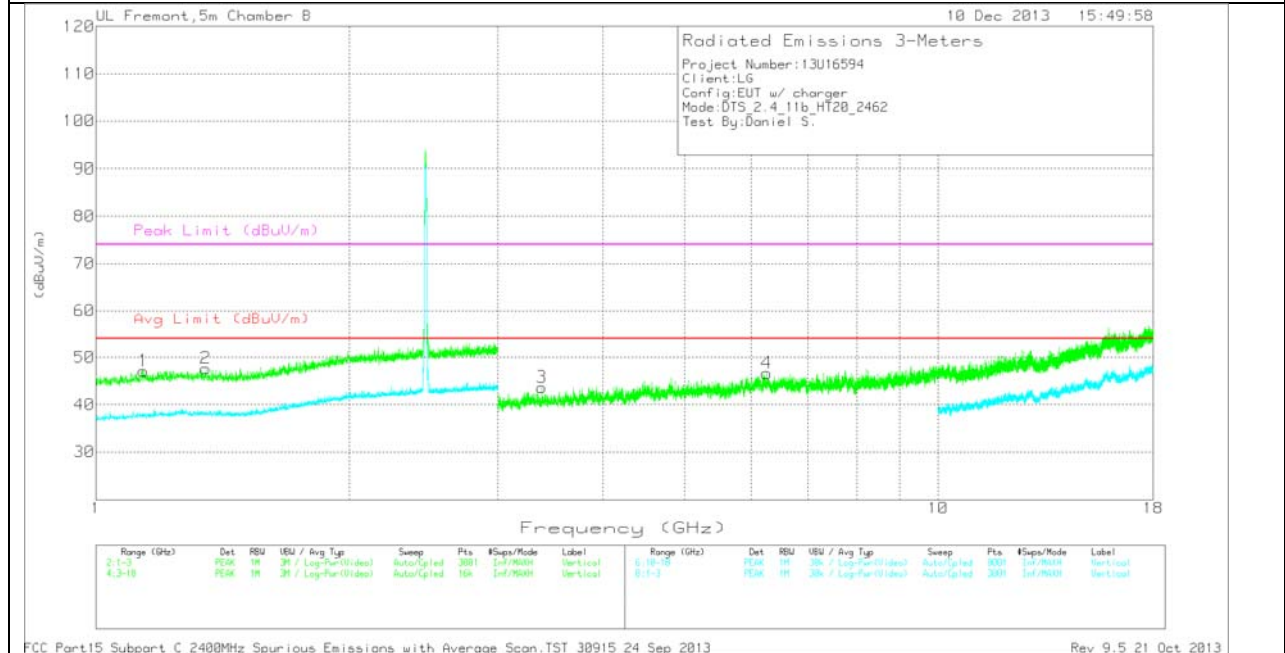
**HIGH CHANNEL  
 HORIZONTAL**



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



**HIGH CHANNEL  
 VERTICAL**



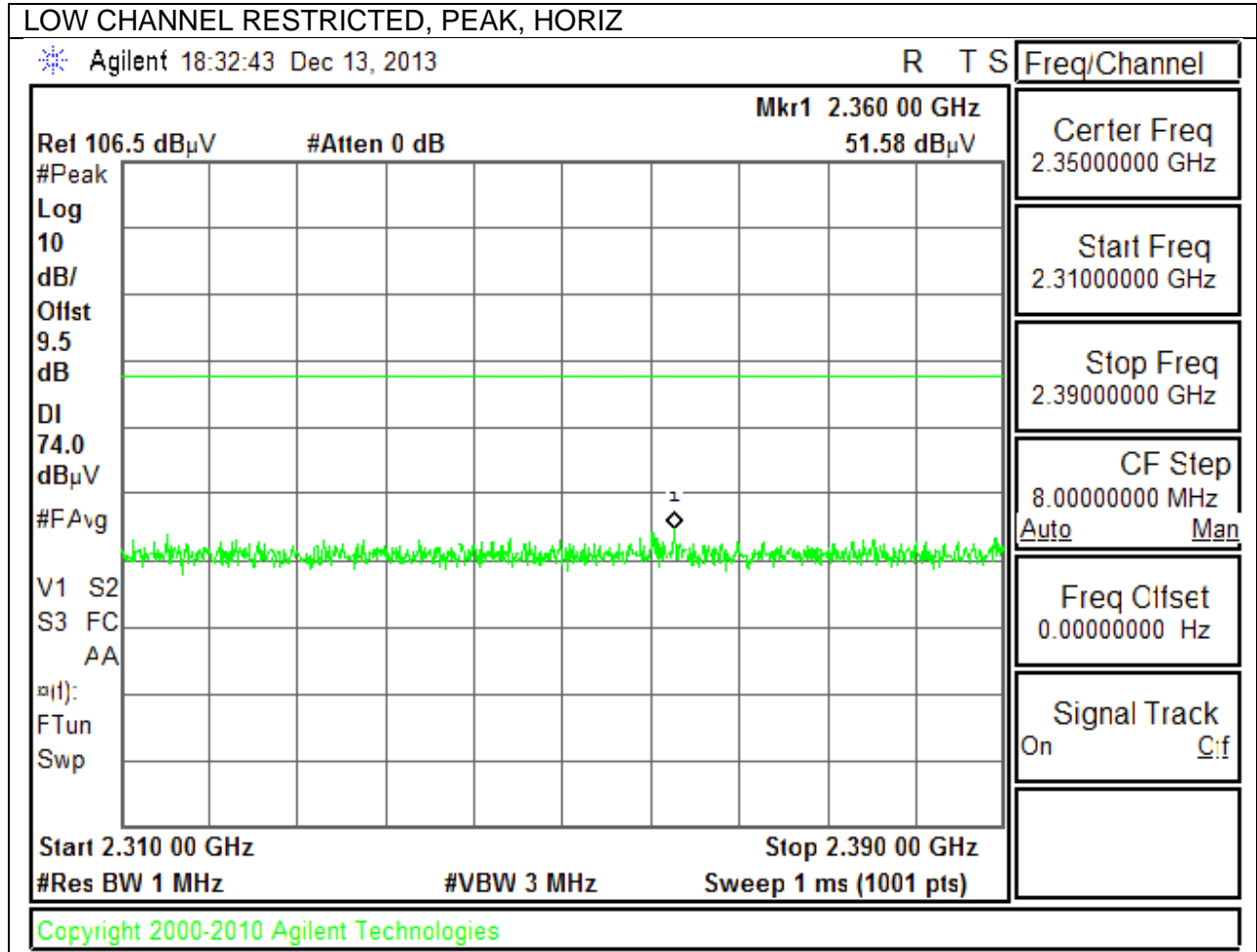
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

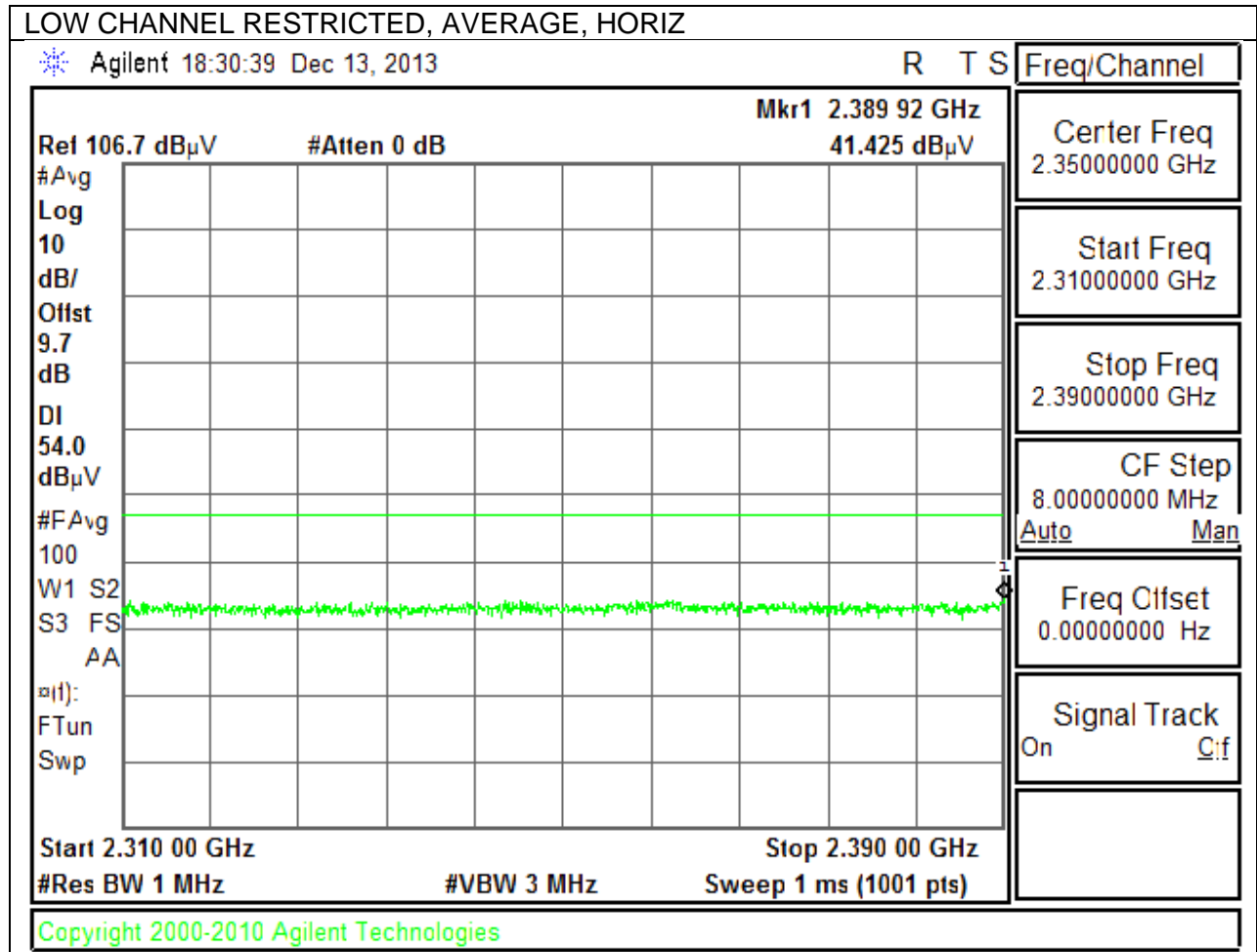
HIGH CHANNEL DATA

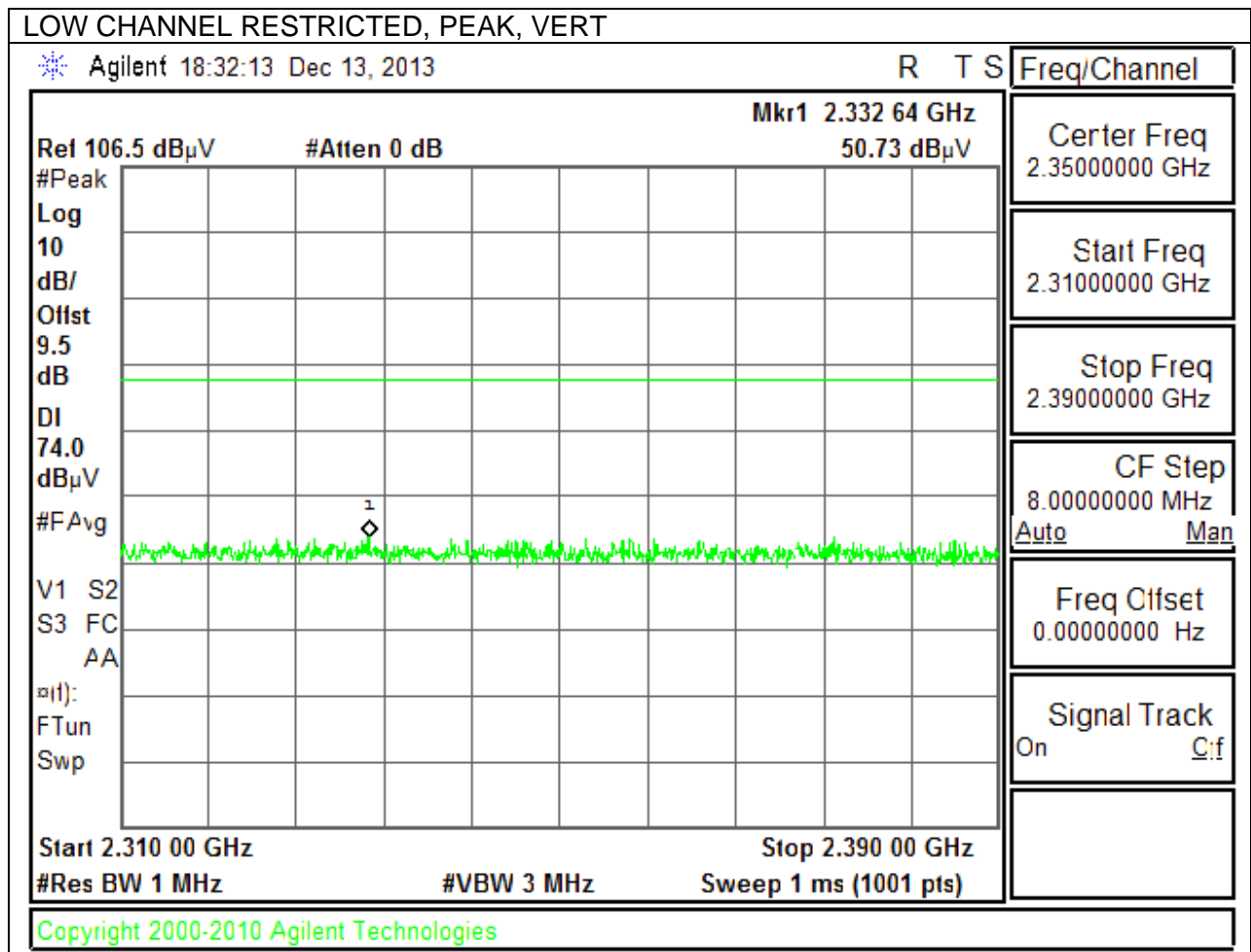
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl /Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.139	43.69	PK	28.1	-24.7	47.09	53.97	-6.88	74	-26.91	0-360	99	V
2	1.35	43.76	PK	28.4	-24.5	47.66	53.97	-6.31	74	-26.34	0-360	201	V
3	3.384	41.61	PK	33.2	-31.2	43.61	53.97	-10.36	74	-30.39	0-360	99	V
6	4.724	39.88	PK	34.7	-29.3	45.28	53.97	-8.69	74	-28.72	0-360	99	H
5	5.306	39.79	PK	34.9	-28.7	45.99	53.97	-7.98	74	-28.01	0-360	99	H
4	6.259	38.54	PK	36	-27.9	46.64	53.97	-7.33	74	-27.36	0-360	202	V

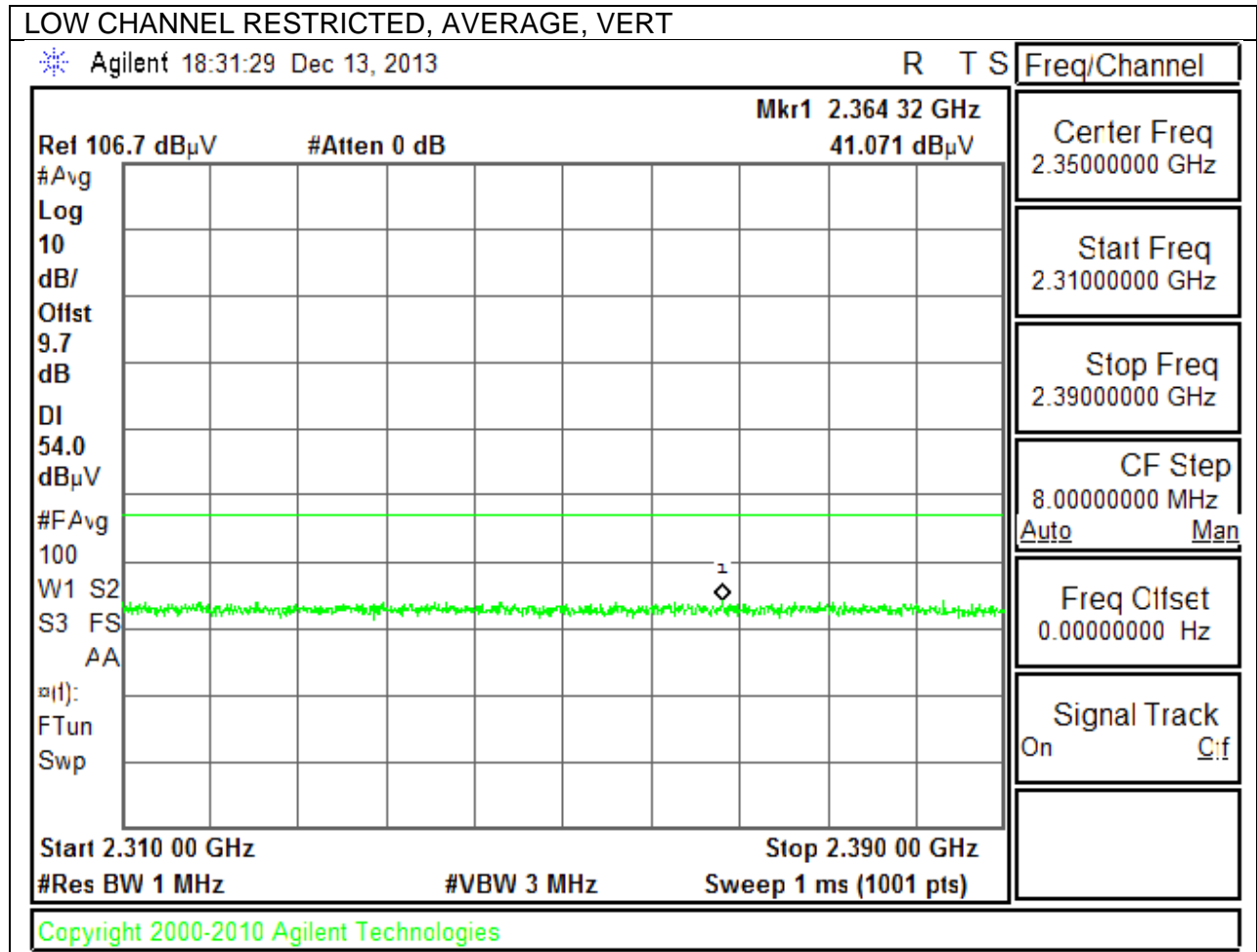
PK - Peak detector

**10.2.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND  
 RESTRICTED BANDEDGE (LOW CHANNEL)**

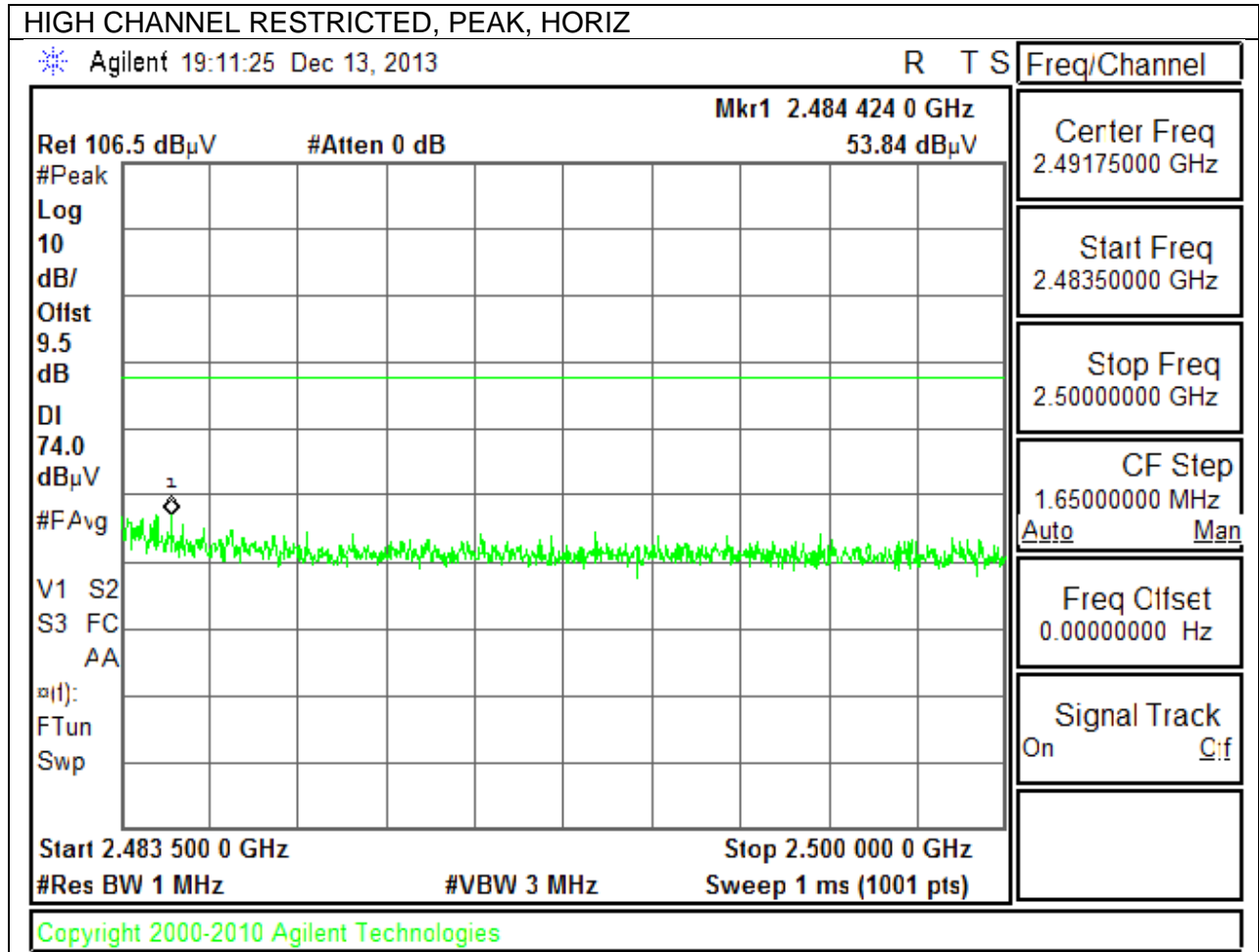


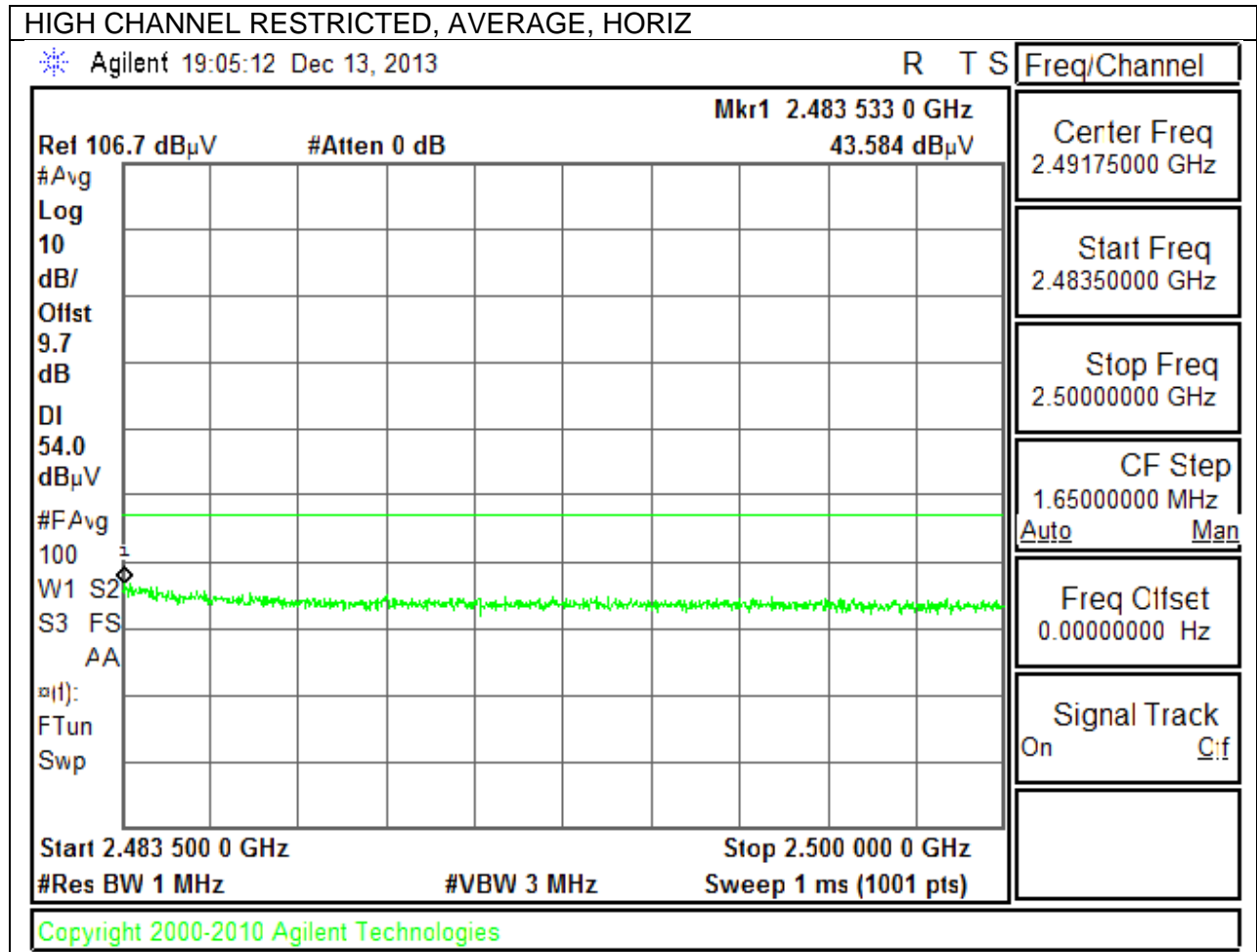




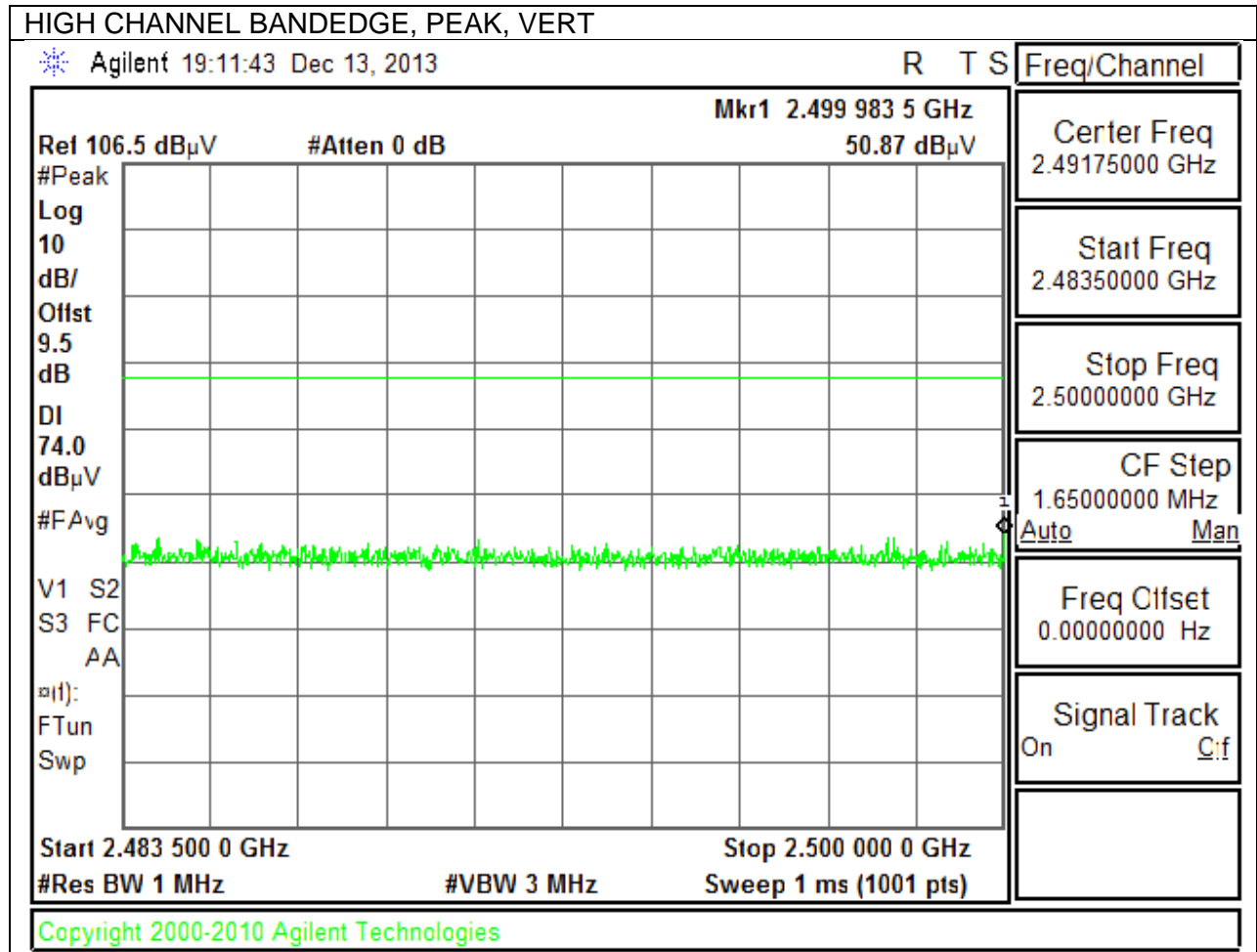


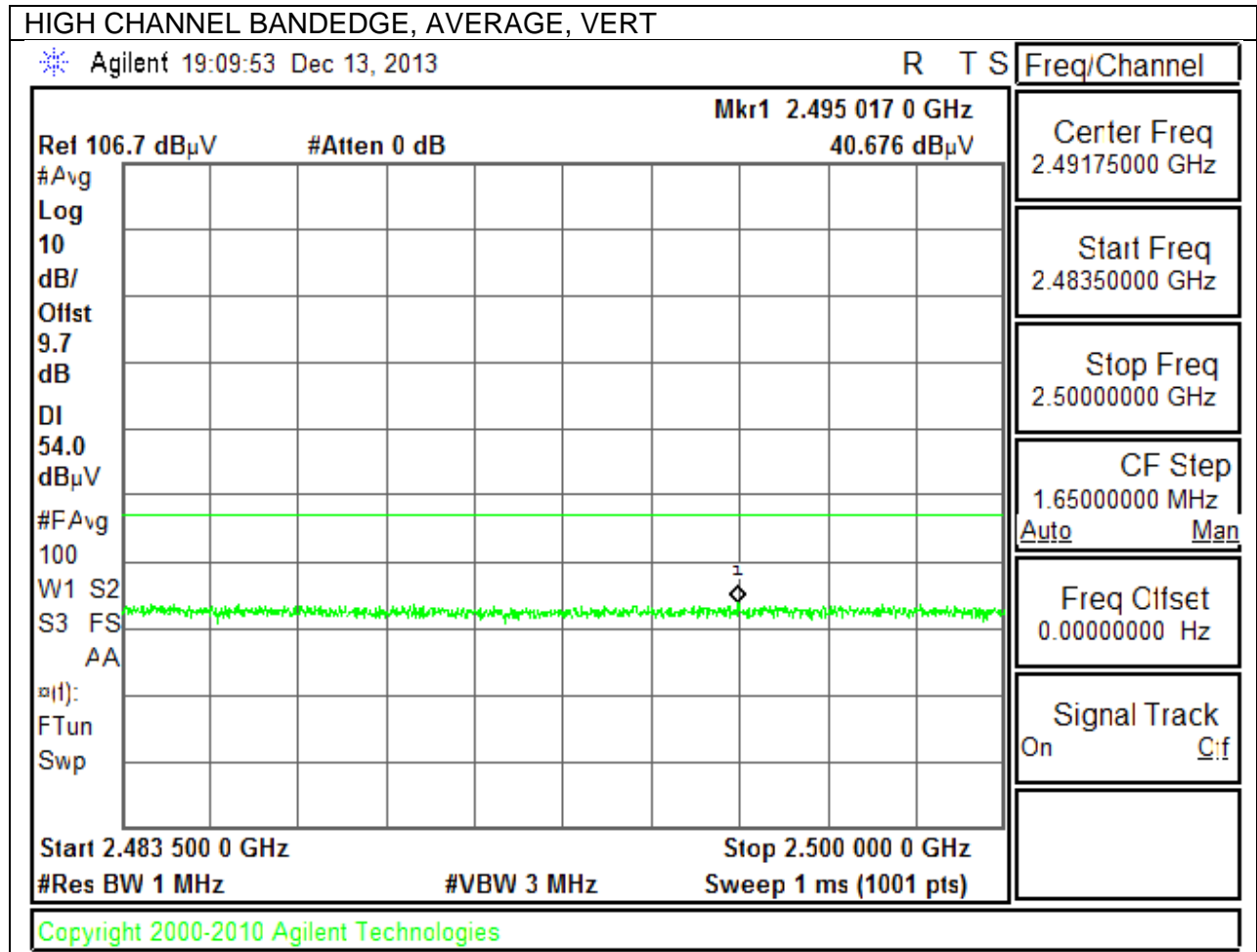
**AUTHORIZED BANDEDGE (HIGH CHANNEL)**



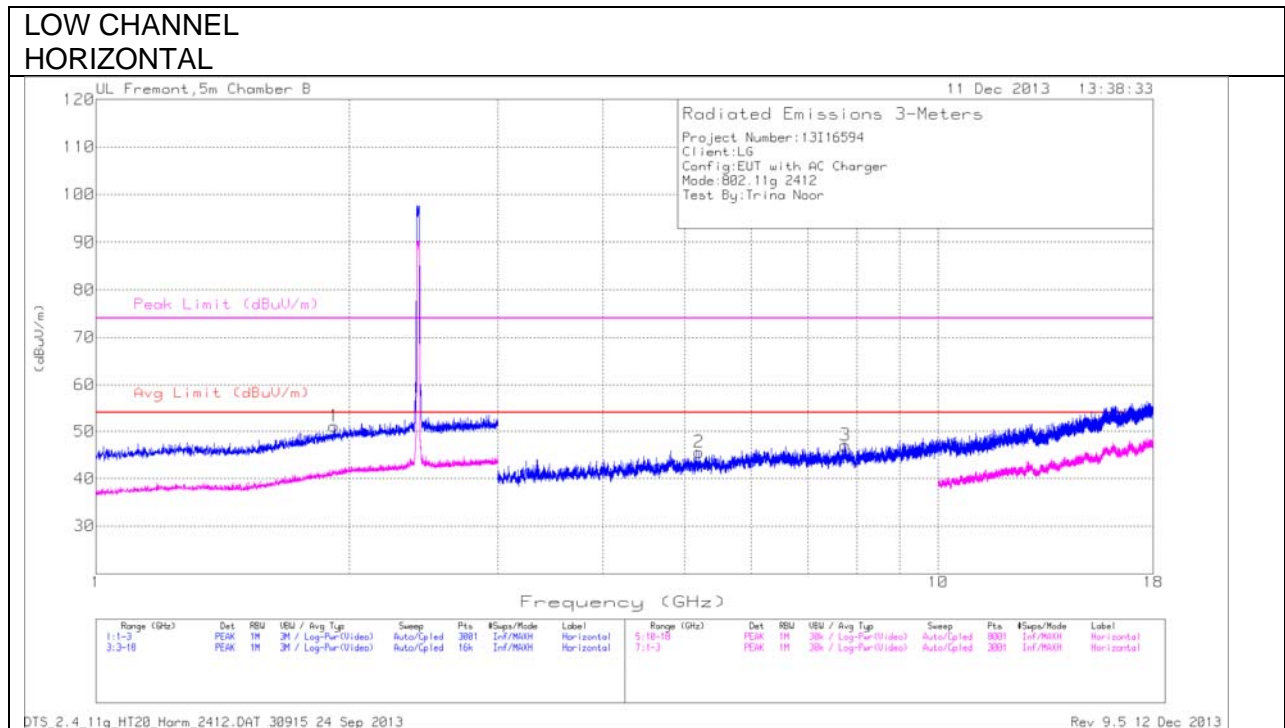






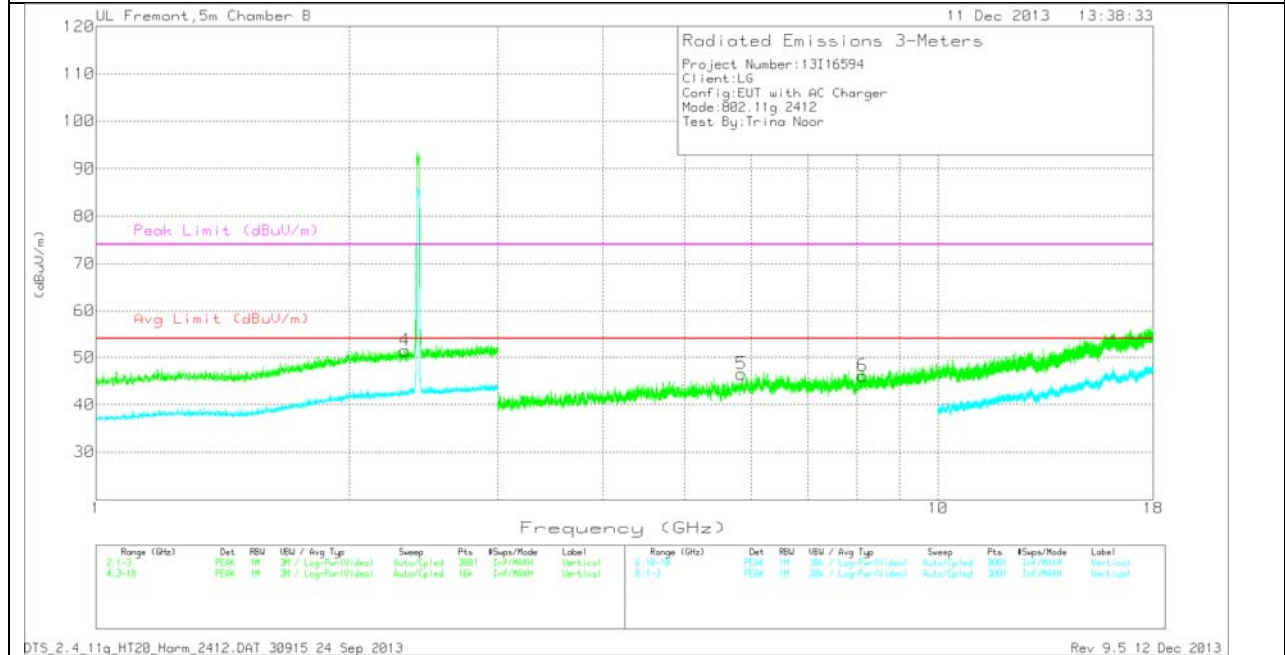


### HARMONICS AND SPURIOUS EMISSIONS



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



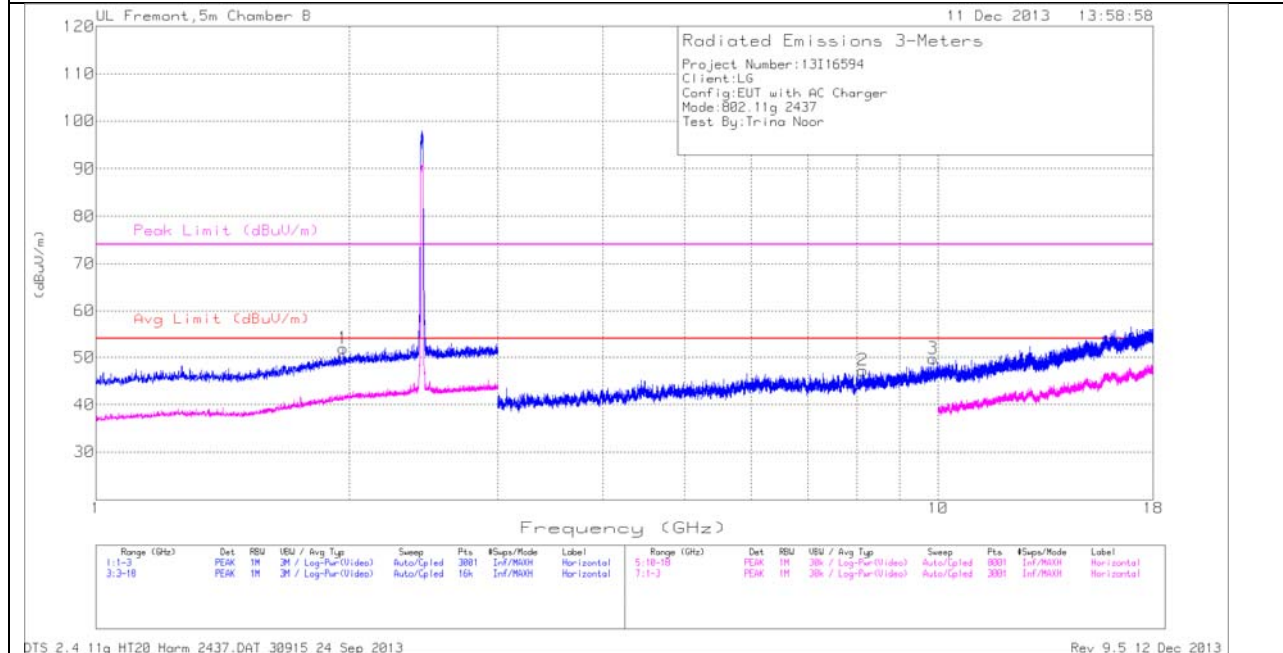
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.917	43.5	PK	31.2	-23.6	51.1	53.97	-2.87	74	-22.9	0-360	201	H
4	2.327	42.33	PK	32.2	-23.1	51.43	53.97	-2.54	74	-22.57	0-360	202	V
2	5.203	40.99	PK	34.8	-30.2	45.59	53.97	-8.38	74	-28.41	0-360	99	H
5	5.842	40.22	PK	35.5	-29.2	46.52	53.97	-7.45	74	-27.48	0-360	99	V
3	7.758	36.94	PK	36.2	-26.1	47.04	53.97	-6.93	74	-26.96	0-360	99	H
6	8.132	36.31	PK	36.1	-26.3	46.11	53.97	-7.86	74	-27.89	0-360	202	V

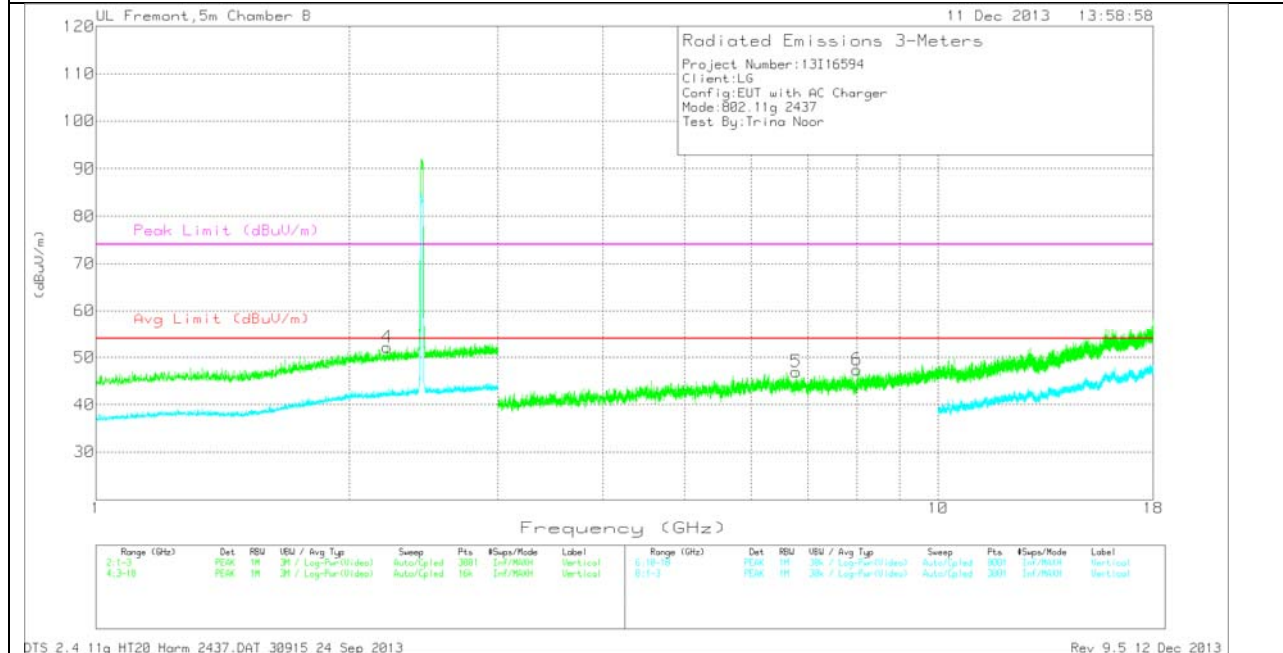
PK - Peak detector

MID CHANNEL  
 HORIZONTAL



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

MID CHANNEL  
 VERTICAL



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

MID CHANNEL DATA

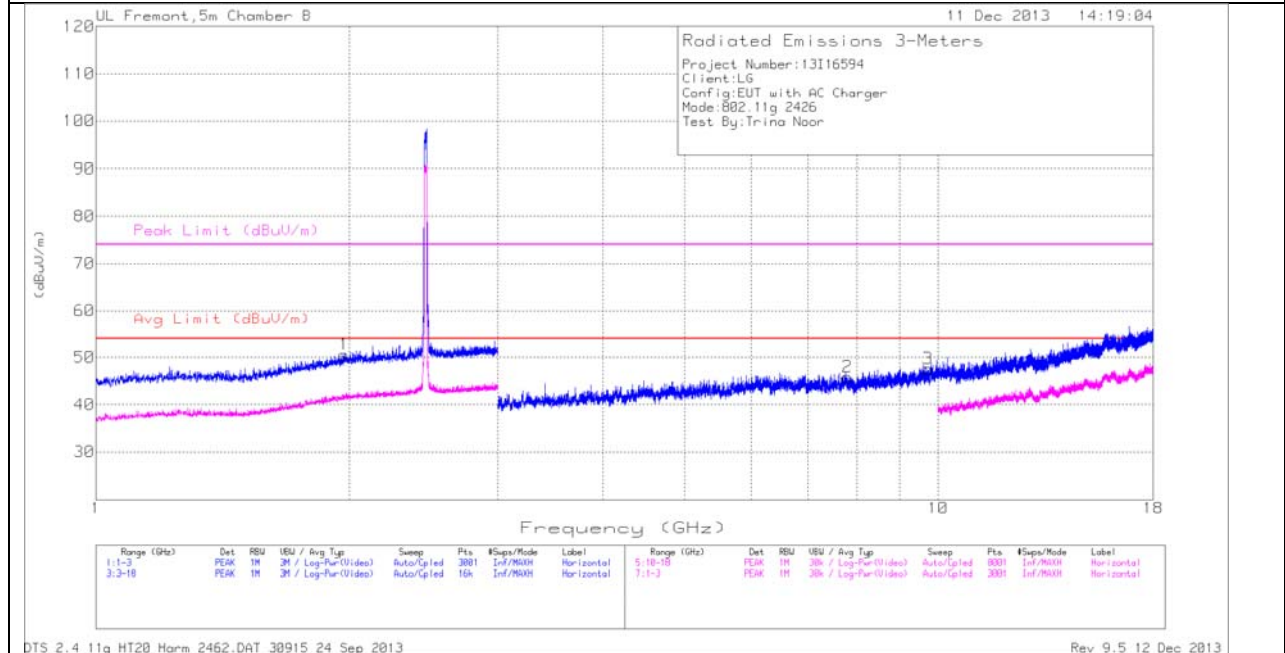
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.966	43.76	PK	31.6	-23.5	51.86	53.97	-2.11	74	-22.14	0-360	99	H
4	2.217	43.22	PK	32.1	-23.2	52.12	53.97	-1.85	74	-21.88	0-360	202	V
5	6.781	39.28	PK	35.8	-28.1	46.98	53.97	-6.99	74	-27.02	0-360	202	V
6	8.009	38.15	PK	36.1	-26.9	47.35	53.97	-6.62	74	-26.65	0-360	202	V
2	8.14	37.57	PK	36.1	-26.4	47.27	53.97	-6.7	74	-26.73	0-360	99	H
3	9.857	36.35	PK	37.6	-24.2	49.75	53.97	-4.22	74	-24.25	0-360	99	H

PK - Peak detector

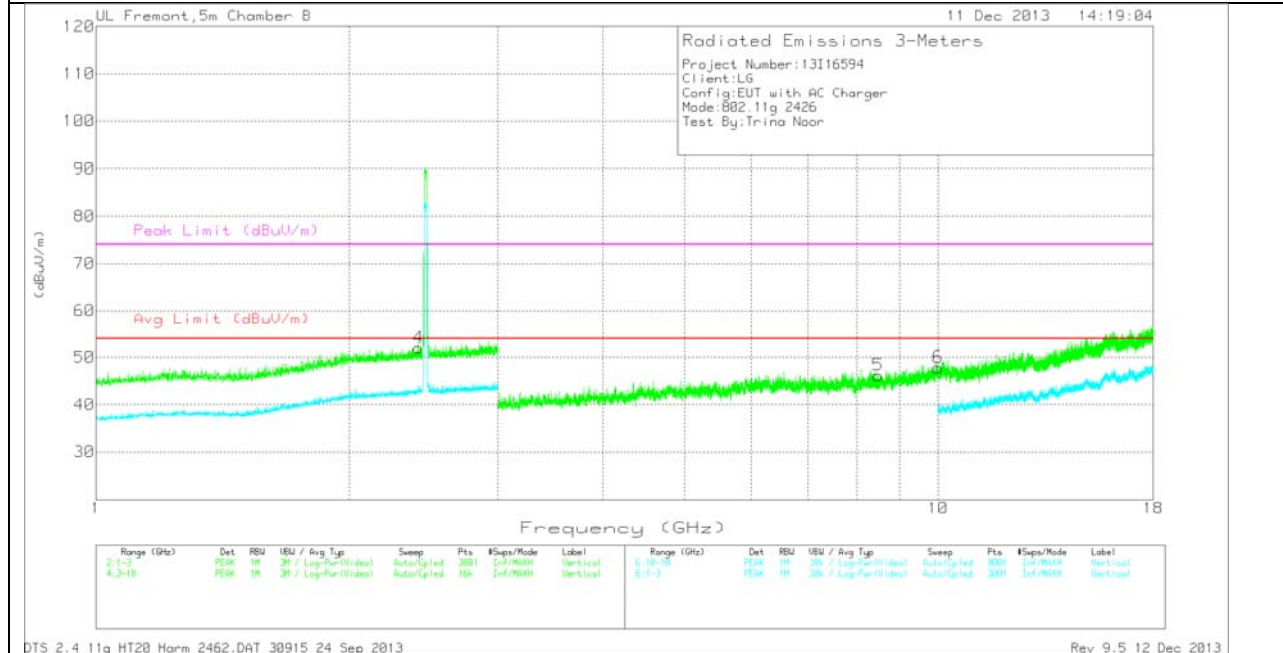


**HIGH CHANNEL  
 HORIZONTAL**



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**



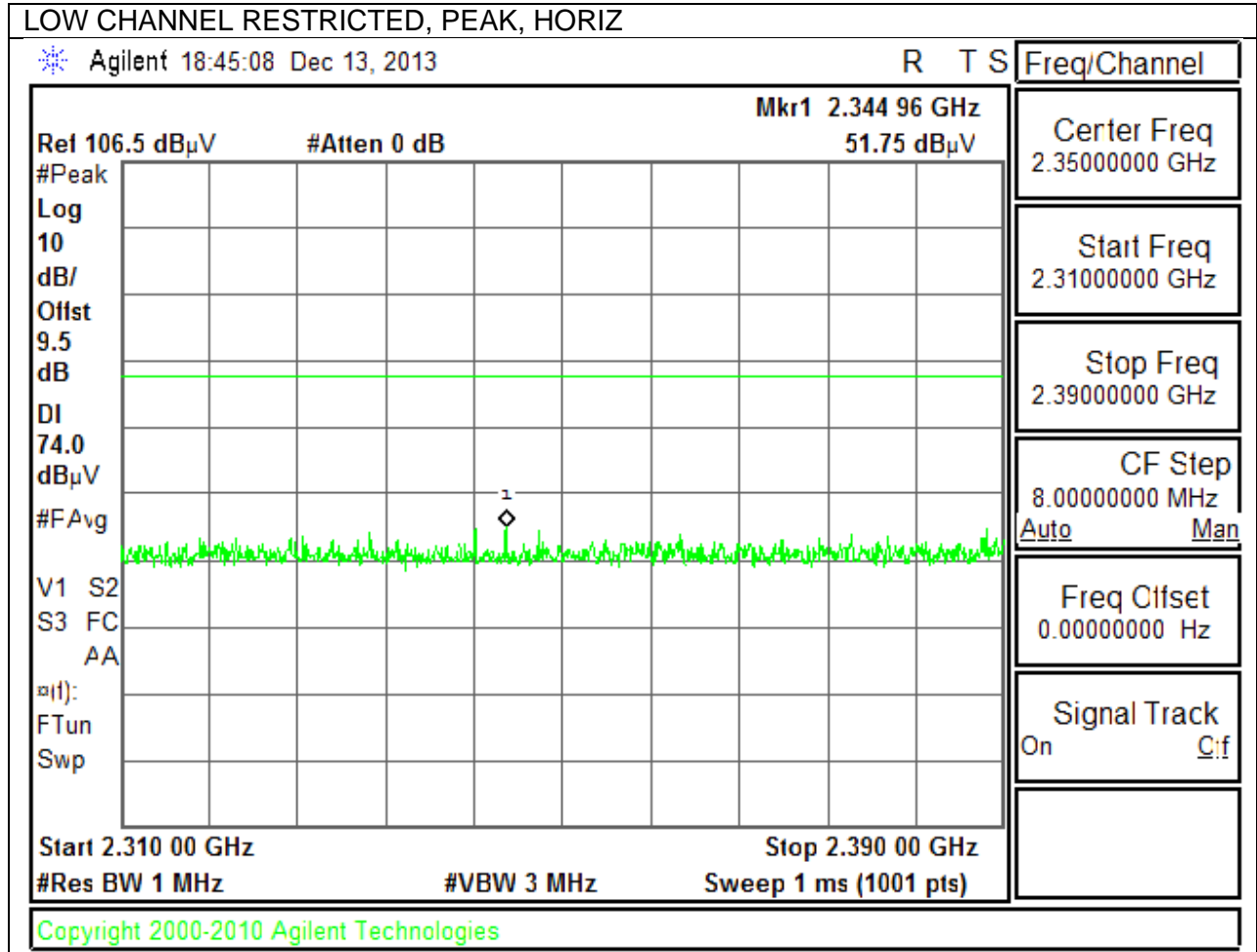
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

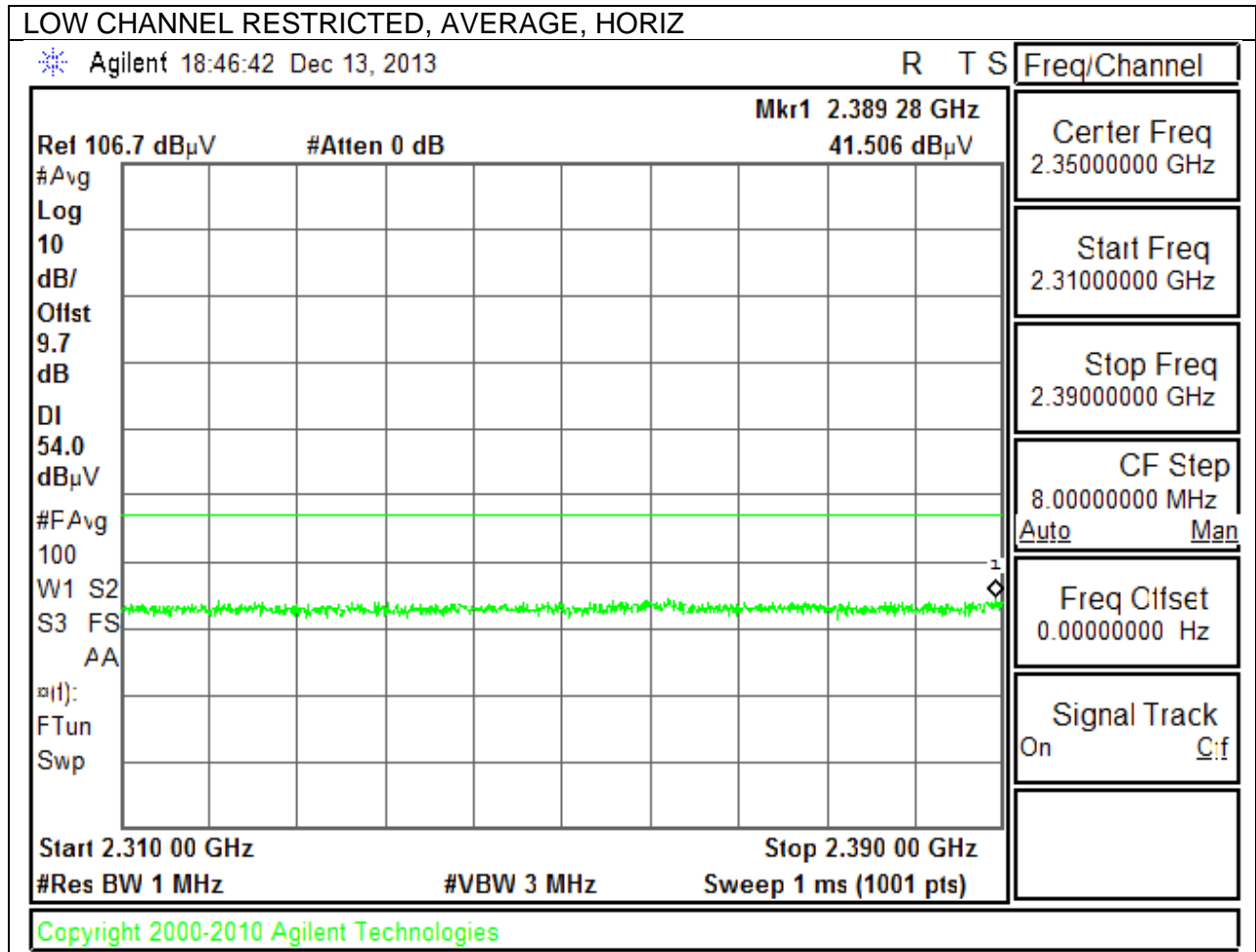
HIGH CHANNEL DATA

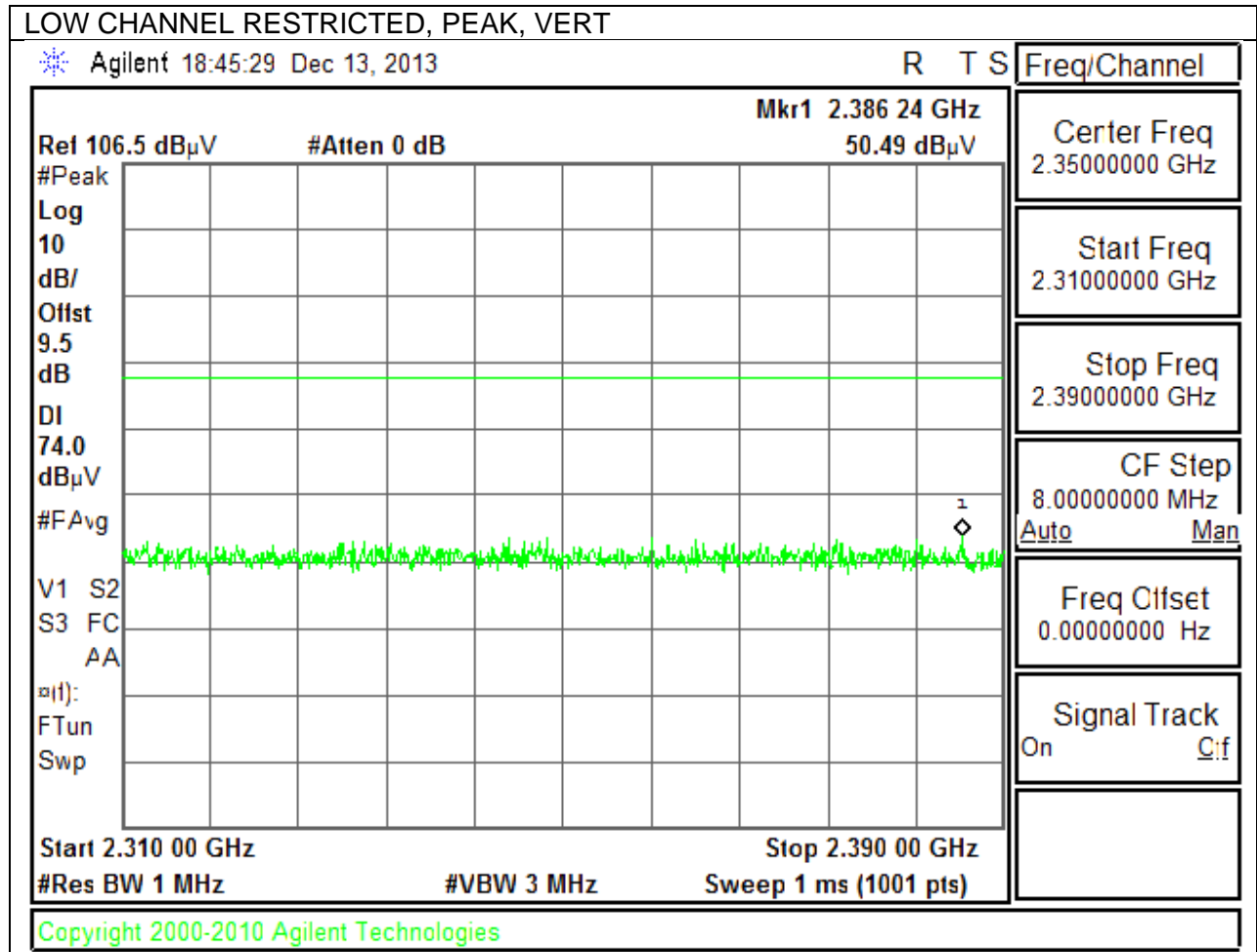
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.971	42.48	PK	31.6	-23.5	50.58	53.97	-3.39	74	-23.42	0-360	201	H
4	2.415	42.28	PK	32.4	-22.7	51.98	53.97	-1.99	74	-22.02	0-360	202	V
2	7.805	36.32	PK	36.2	-26.7	45.82	53.97	-8.15	74	-28.18	0-360	99	H
5	8.482	36.11	PK	36.2	-26.1	46.21	53.97	-7.76	74	-27.79	0-360	202	V
3	9.715	33.85	PK	37.5	-23.8	47.55	53.97	-6.42	74	-26.45	0-360	201	H
6	9.995	34.14	PK	37.8	-24.1	47.84	53.97	-6.13	74	-26.16	0-360	99	V

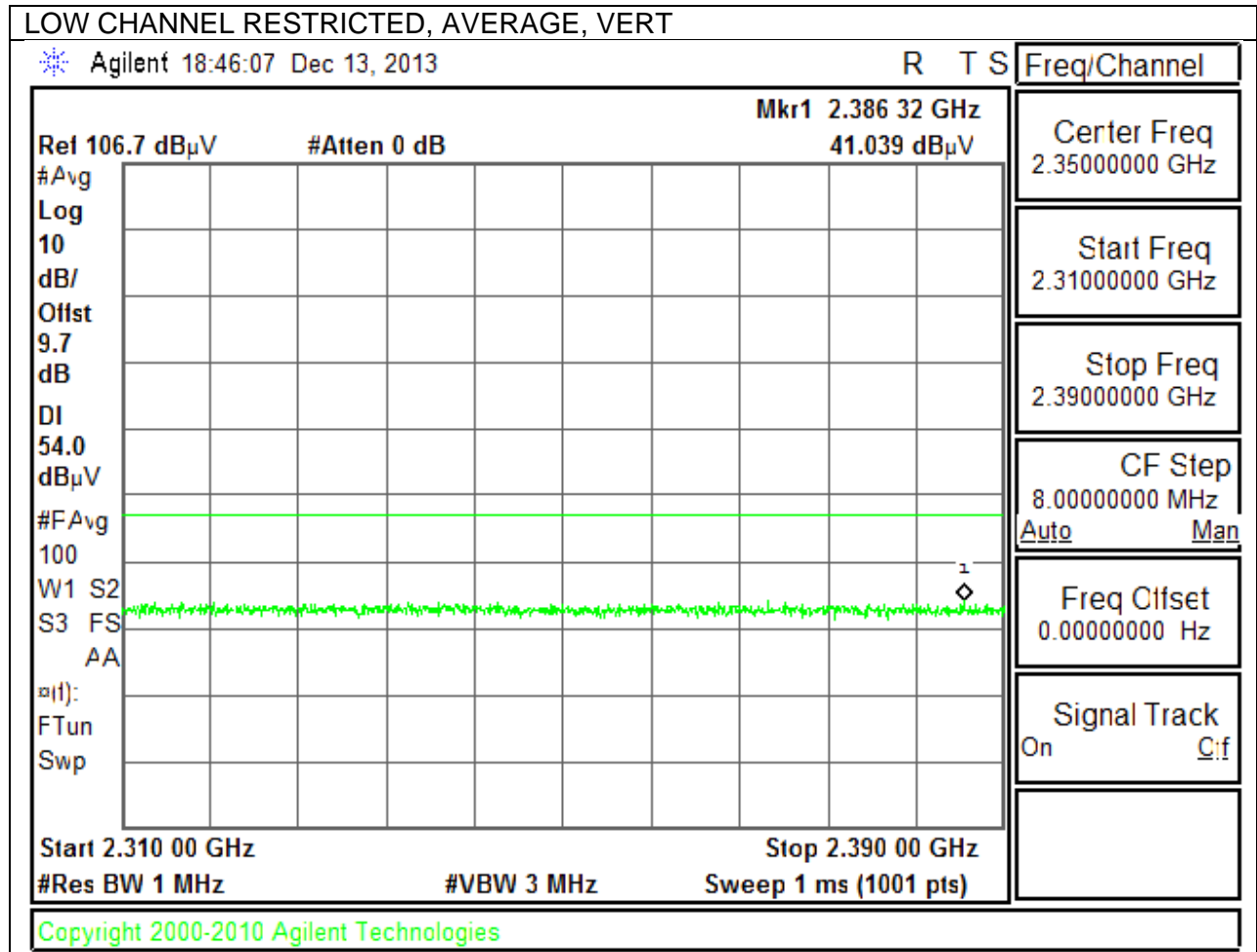
PK - Peak detector

**10.2.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND  
 RESTRICTED BANDEDGE (LOW CHANNEL)**

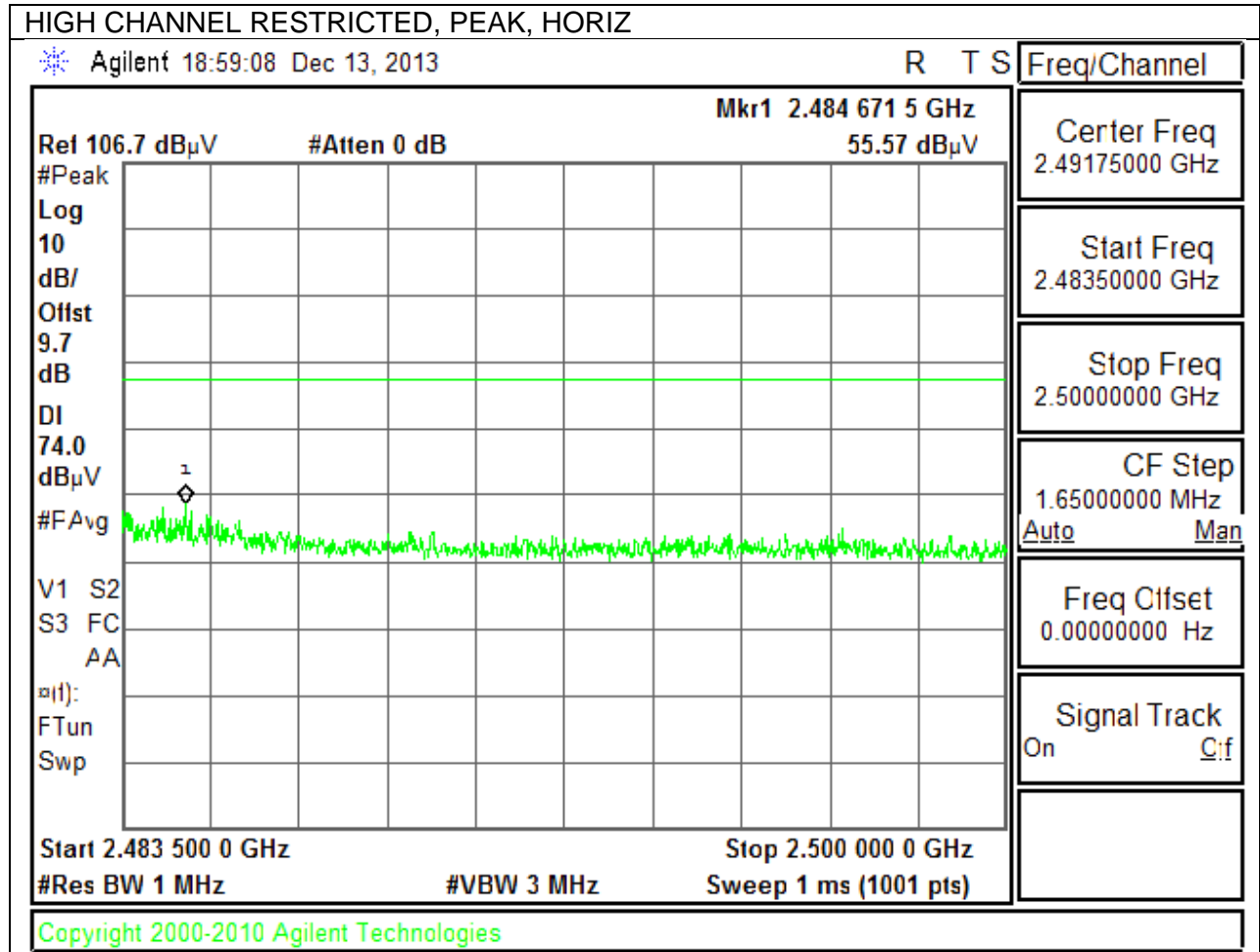




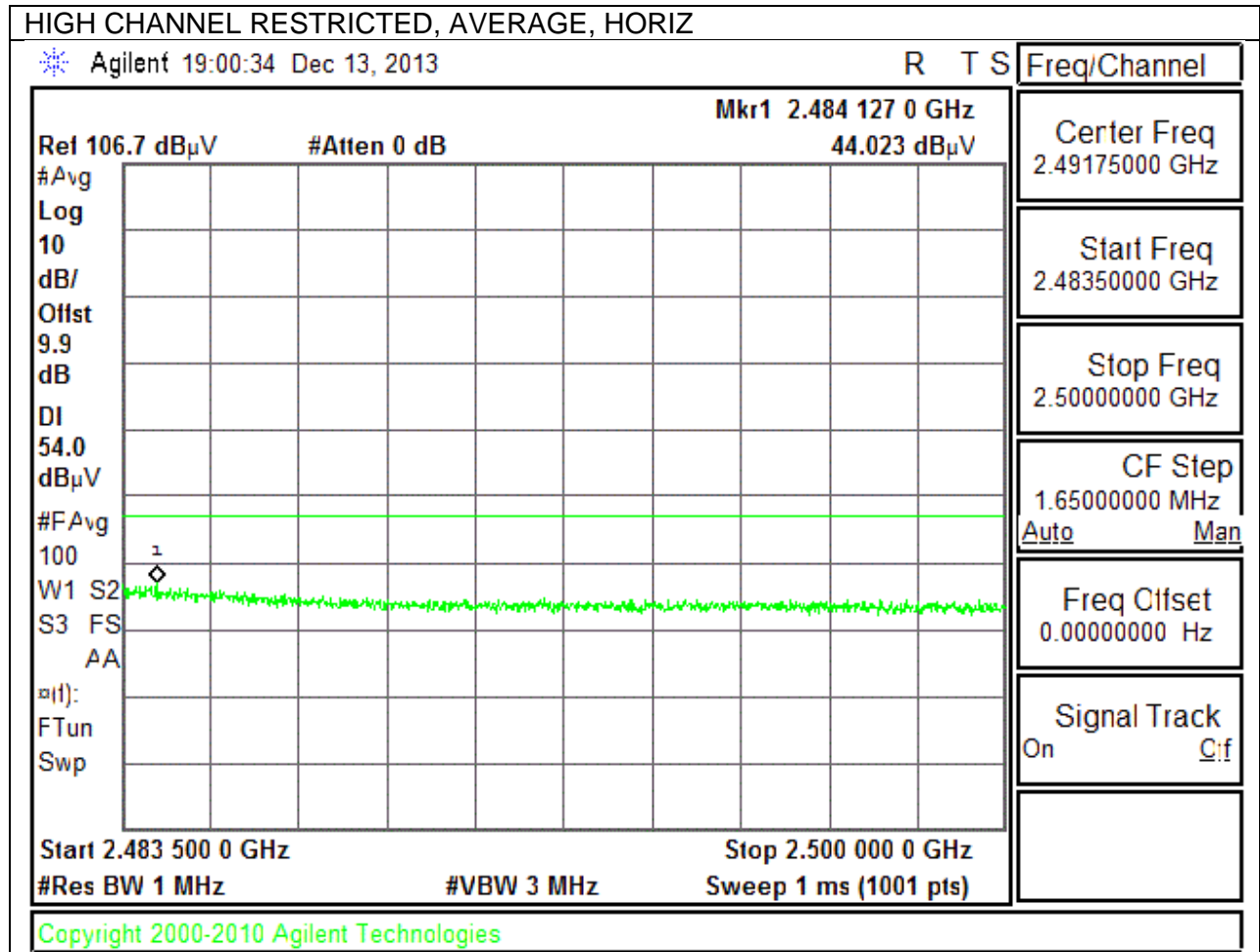


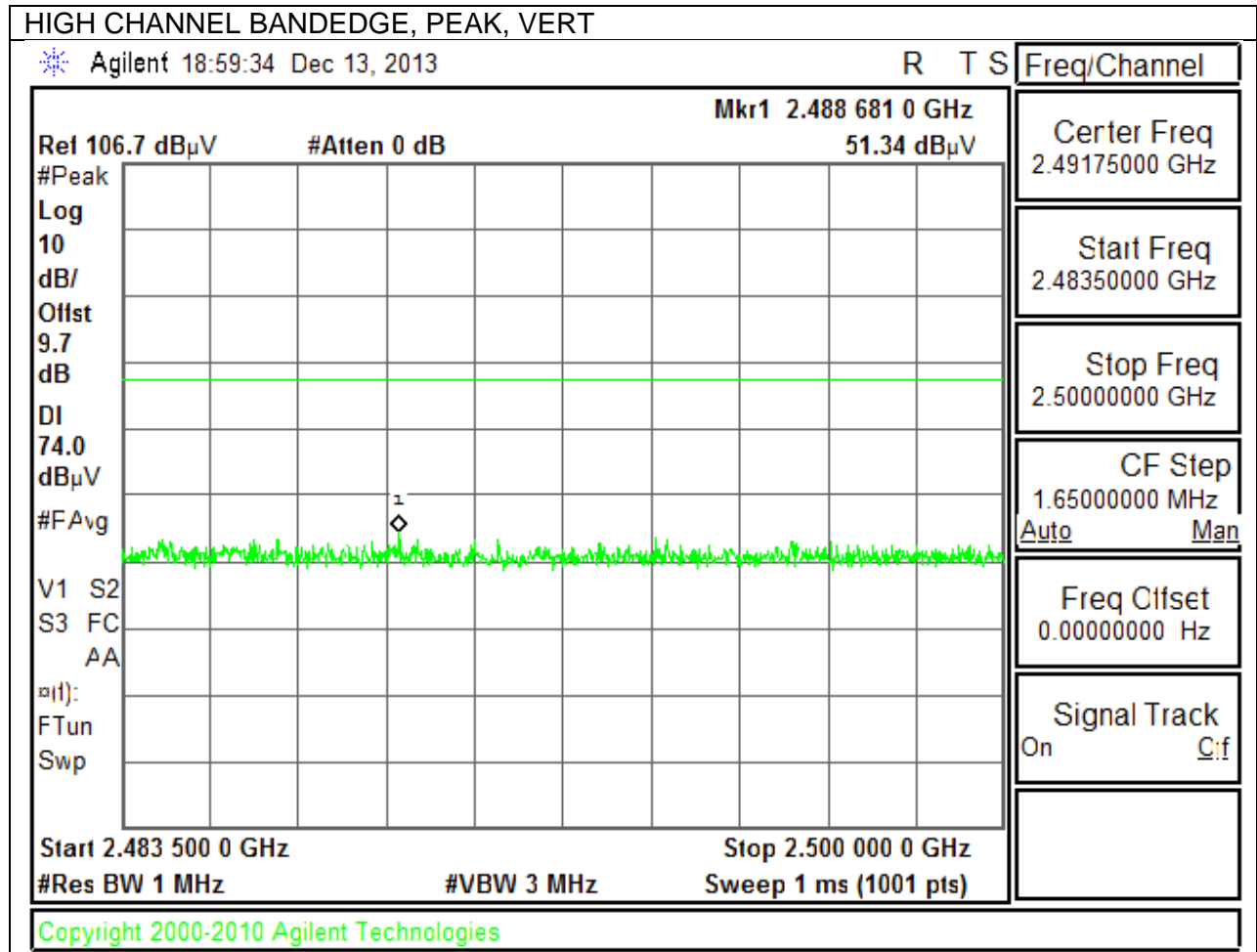


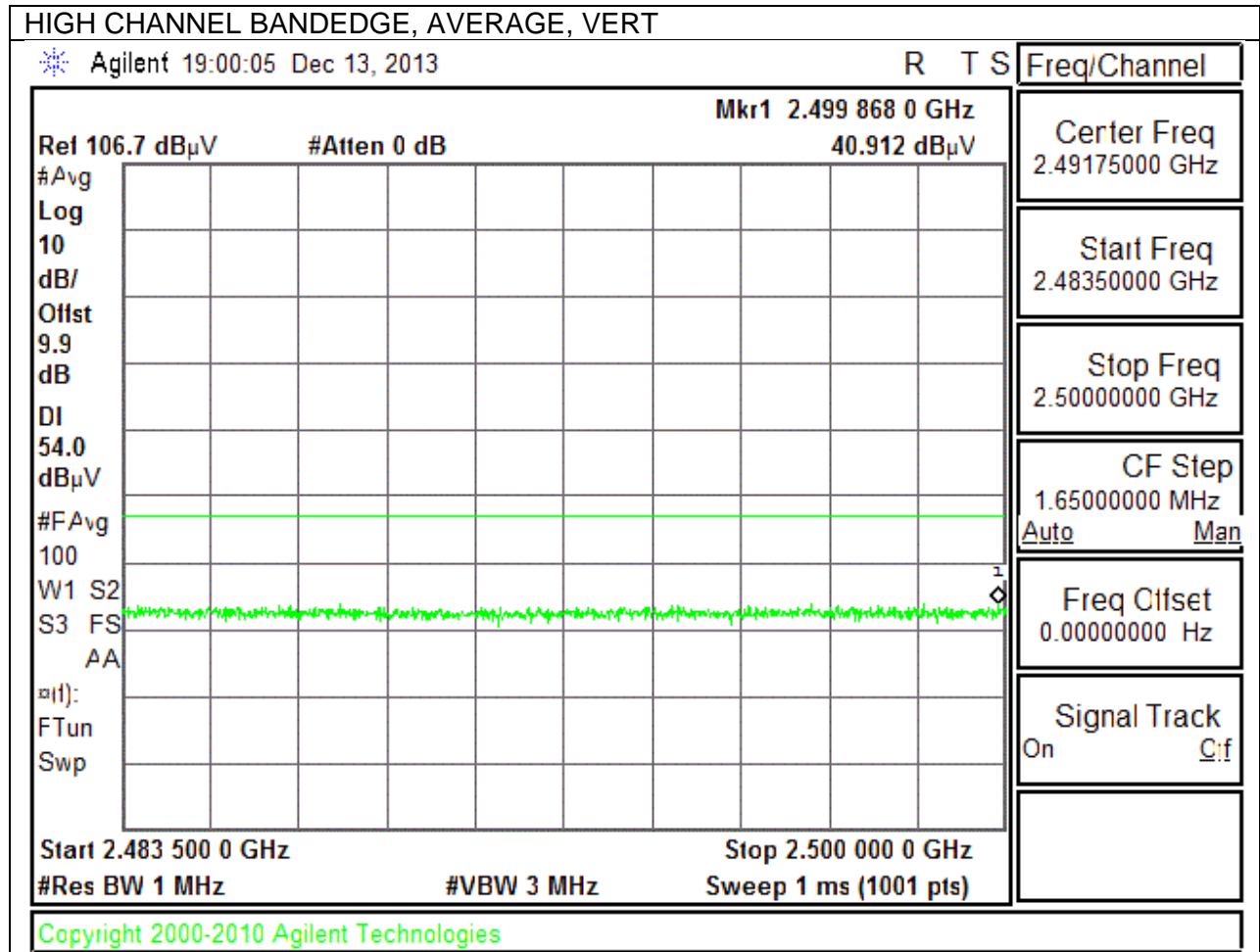
**AUTHORIZED BANDEDGE (HIGH CHANNEL)**



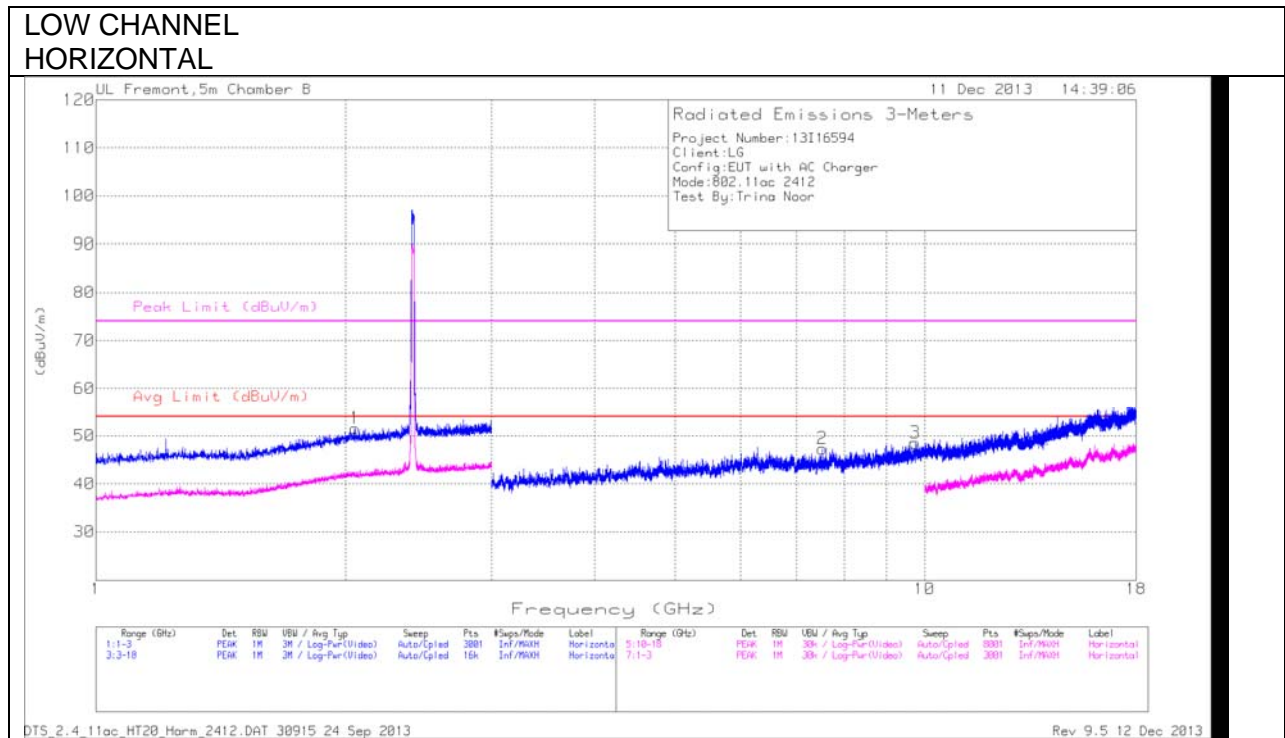






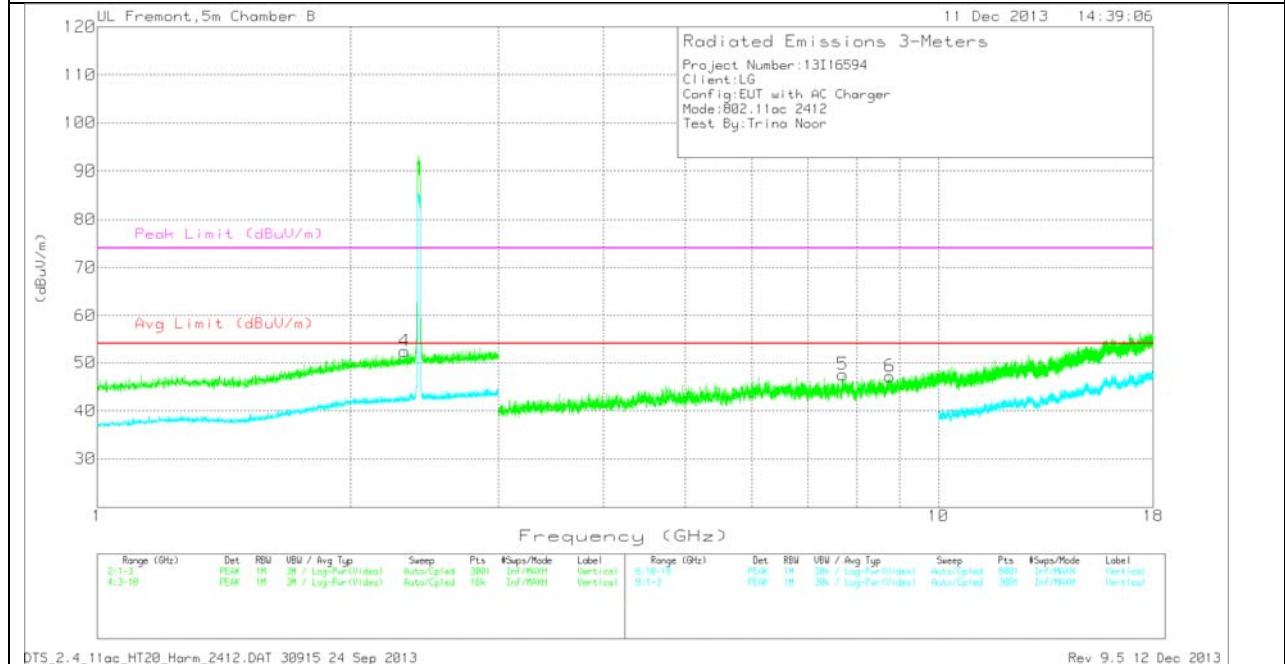


### HARMONICS AND SPURIOUS EMISSIONS



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



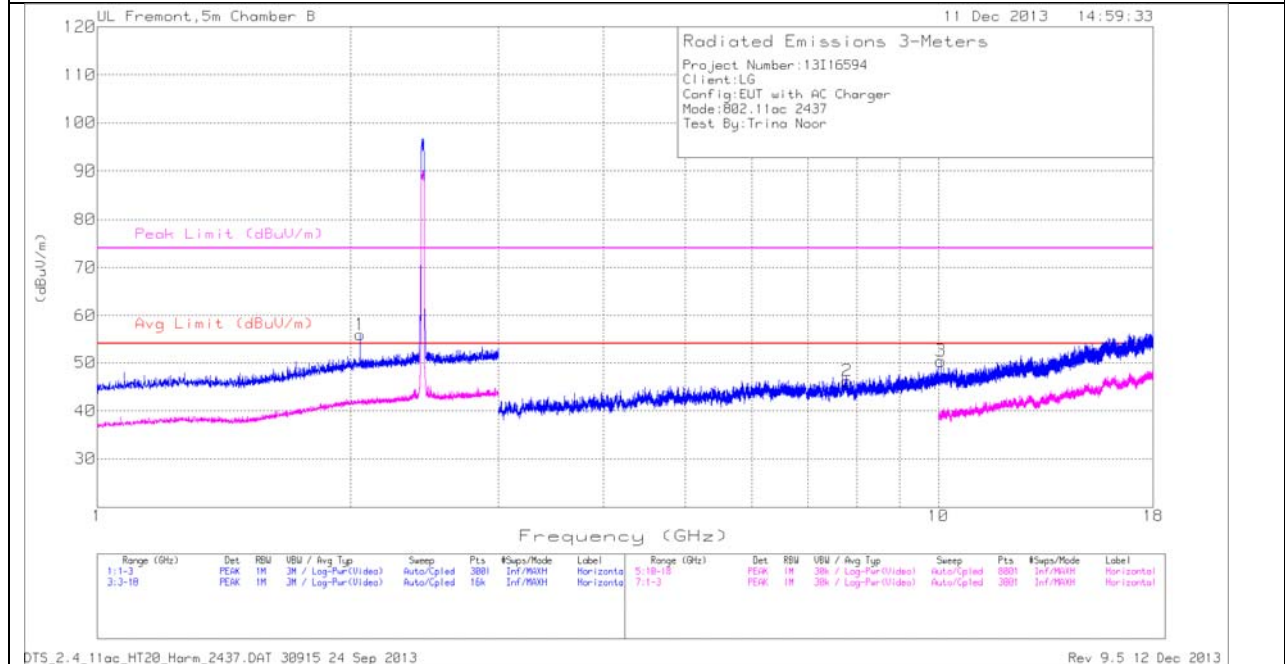
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.054	43.14	PK	31.9	-23.5	51.54	53.97	-2.43	74	-22.46	0-360	201	H
4	2.319	43.2	PK	32.2	-23	52.4	53.97	-1.57	74	-21.6	0-360	202	V
2	7.526	38.38	PK	36	-27.1	47.28	53.97	-6.69	74	-26.72	0-360	201	H
5	7.701	38.04	PK	36.2	-26.7	47.54	53.97	-6.43	74	-26.46	0-360	99	V
6	8.754	36.05	PK	36.4	-25.3	47.15	53.97	-6.82	74	-26.85	0-360	201	V
3	9.74	35.08	PK	37.5	-24.1	48.48	53.97	-5.49	74	-25.52	0-360	99	H

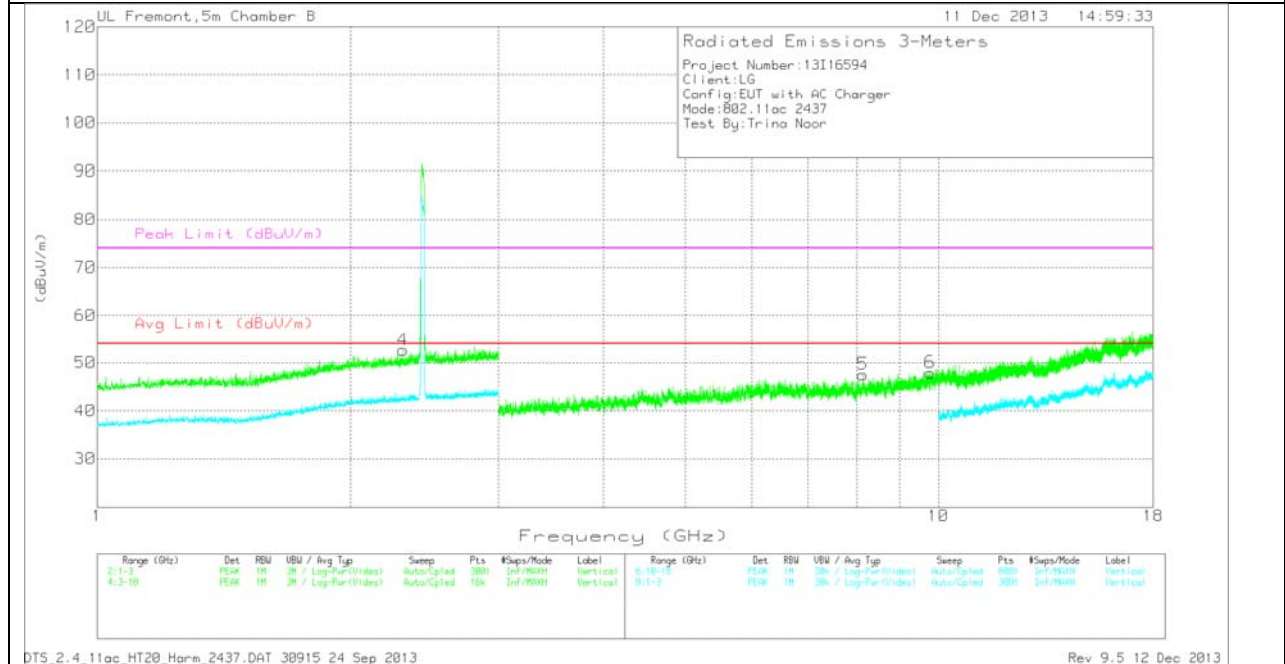
PK - Peak detector

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.

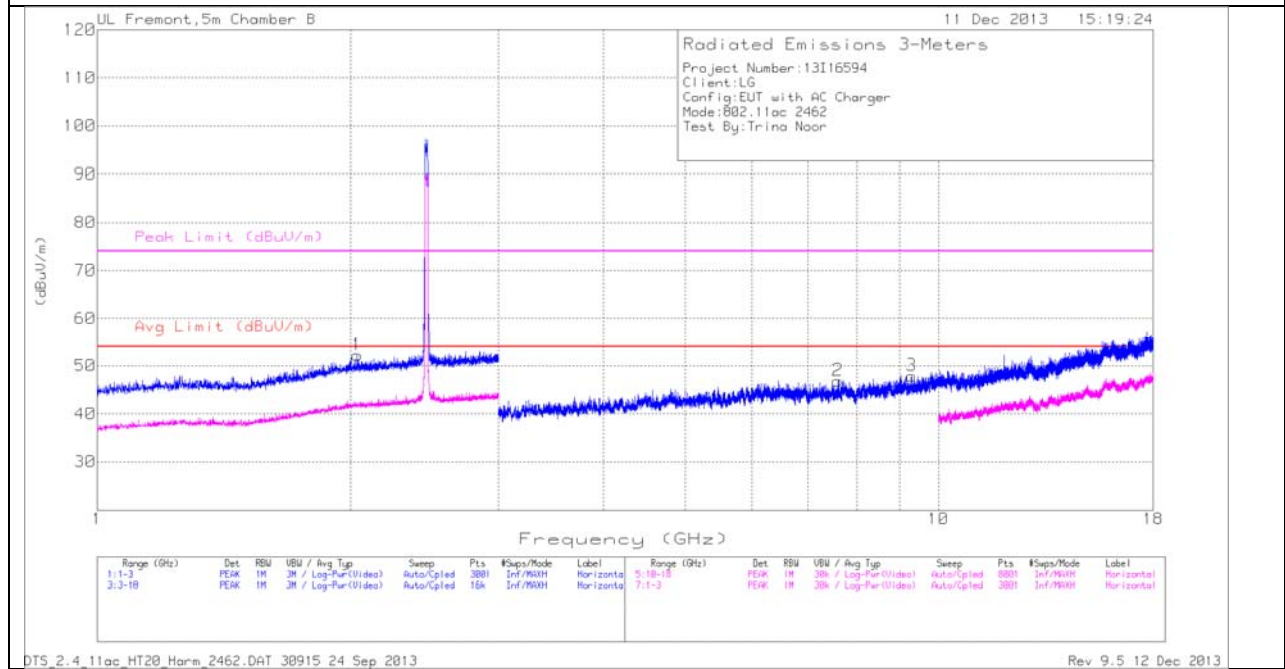


MID CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
*1	2.054	47.53	PK	31.9	-23.5	55.93	53.97	1.96	74	-18.07	0-360	201	H
4	2.31	43.47	PK	32.2	-23	52.67	53.97	-1.3	74	-21.33	0-360	201	V
2	7.788	36.39	PK	36.2	-26.4	46.19	53.97	-7.78	74	-27.81	0-360	201	H
5	8.135	37.83	PK	36.1	-26.4	47.53	53.97	-6.44	74	-26.47	0-360	202	V
6	9.78	34.11	PK	37.5	-23.7	47.91	53.97	-6.06	74	-26.09	0-360	99	V
3	10.071	36.55	PK	37.9	-24.1	50.35	53.97	-3.62	74	-23.65	0-360	99	H

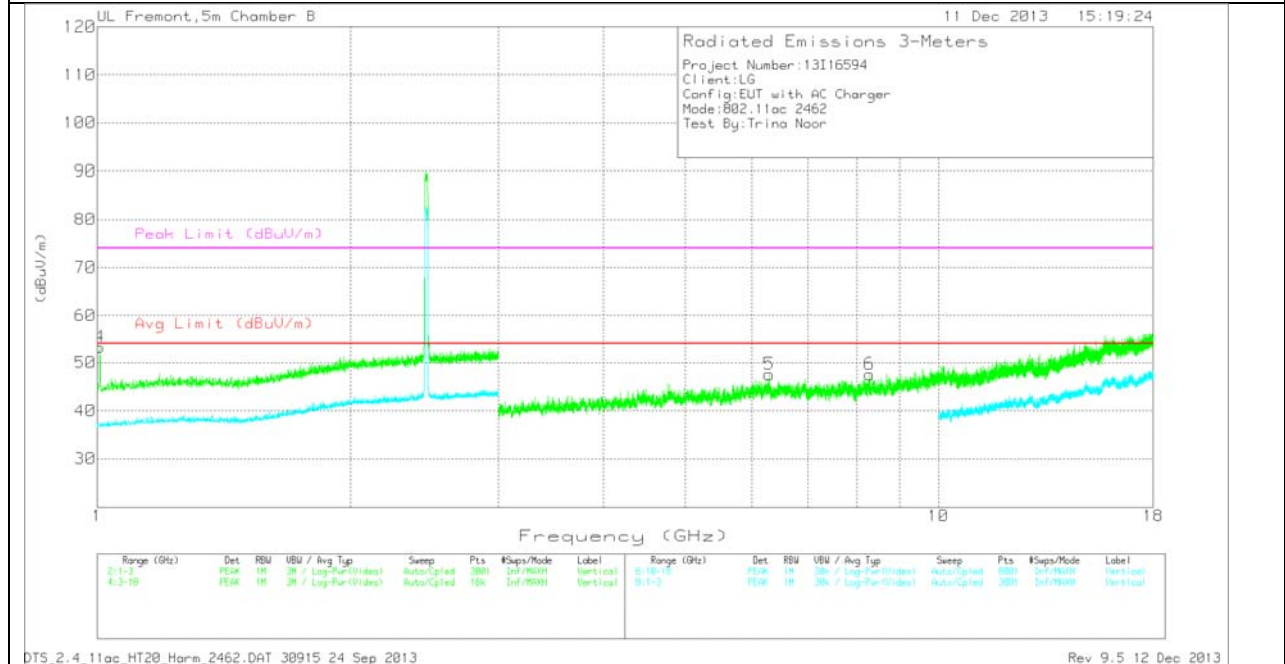
PK - Peak detector  
 \*Unrestricted Band

**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**



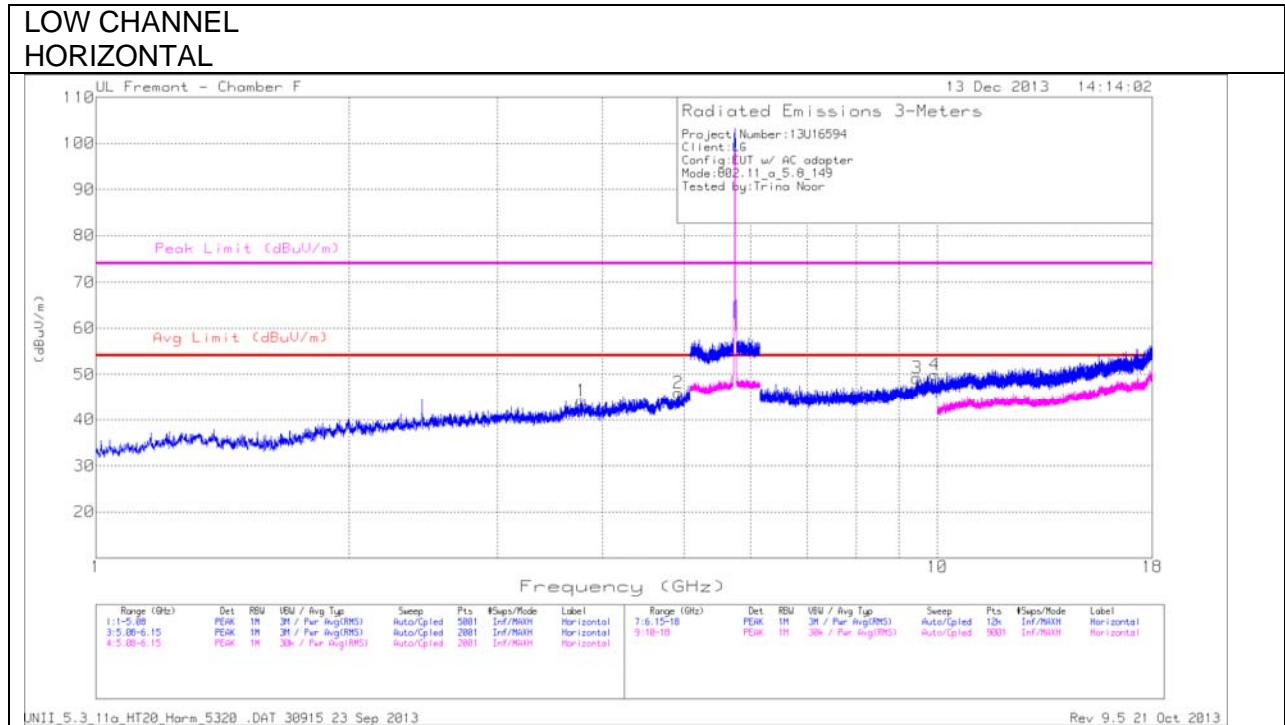
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

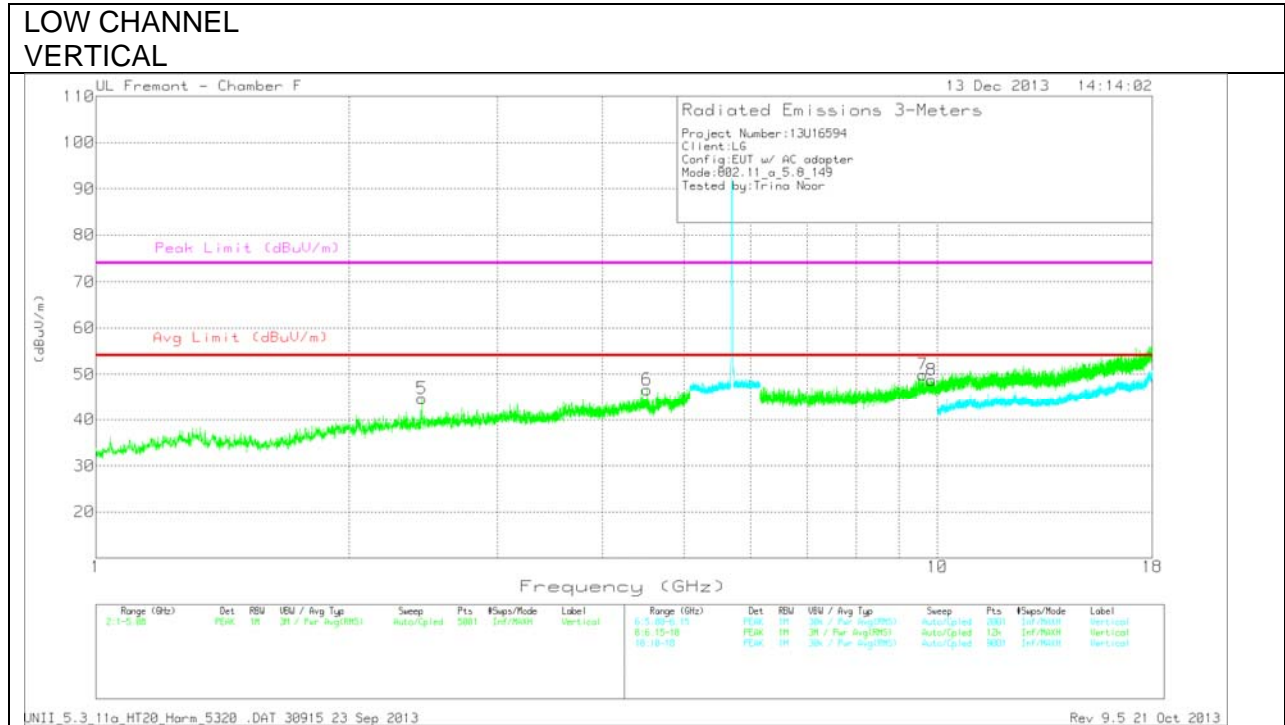
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	1.007	50.77	PK	27.4	-24.9	53.27	53.97	-7	74	-20.73	0-360	202	V
1	2.037	43.92	PK	31.8	-23.5	52.22	53.97	-1.75	74	-21.78	0-360	201	H
5	6.294	39.55	PK	36	-28	47.55	53.97	-6.42	74	-26.45	0-360	99	V
2	7.594	38.17	PK	36.1	-27.4	46.87	53.97	-7.1	74	-27.13	0-360	99	H
6	8.28	38.2	PK	36.1	-26.7	47.6	53.97	-6.37	74	-26.4	0-360	99	V
3	9.297	35.5	PK	37	-24.6	47.9	53.97	-6.07	74	-26.1	0-360	99	H

PK - Peak detector

### 10.2.4. TX ABOVE 1 GHz 802.11a HT20 MODE IN THE 5.8 GHz BAND HARMONICS AND SPURIOUS EMISSIONS



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

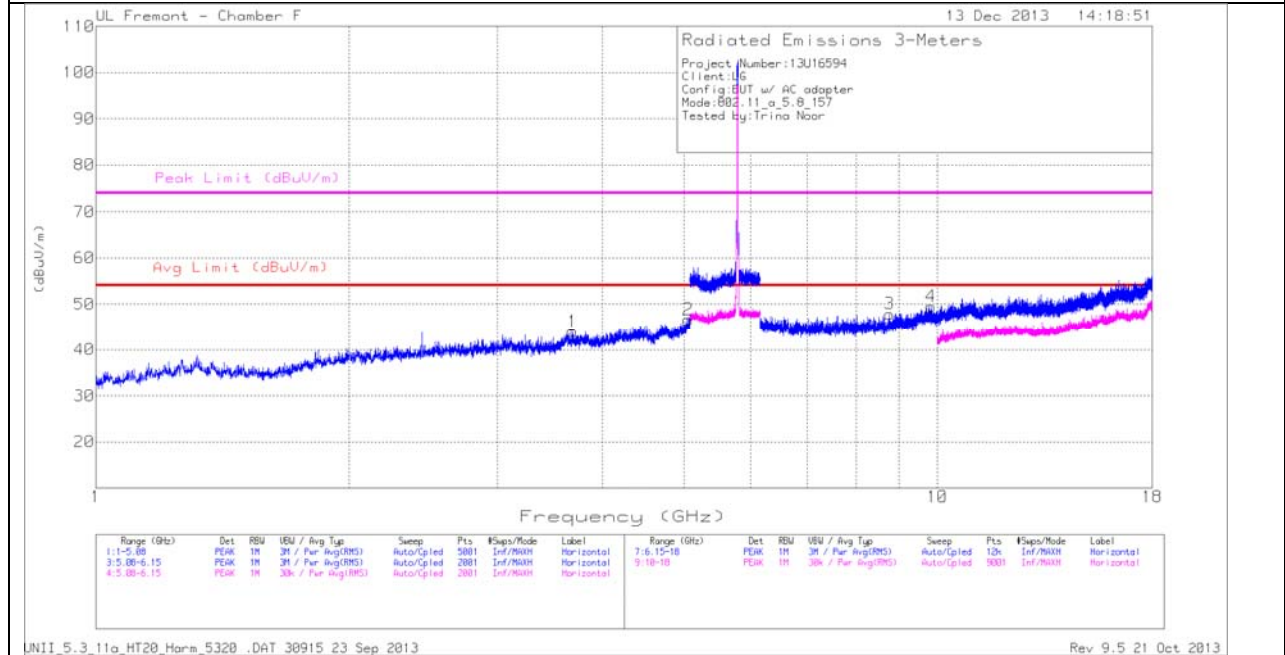
LOW CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cbl /5GHz LPF	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	2.441	43.08	PK	32.3	-30.7	44.68	53.97	-9.29	74	-29.32	0-360	200	V
1	3.78	40.3	PK	33.6	-29.7	44.2	53.97	-9.77	74	-29.8	0-360	100	H
6	4.518	40.55	PK	34	-27.9	46.65	53.97	-7.32	74	-27.35	0-360	100	V
2	4.922	39.25	PK	34	-27.3	45.95	53.97	-8.02	74	-28.05	0-360	100	H

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cbl /6GHz HPF	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	9.452	35.36	PK	37	-23.2	49.16	53.97	-4.81	74	-24.84	0-360	199	H
7	9.613	35.73	PK	37.3	-23.1	49.93	53.97	-4.04	74	-24.07	0-360	200	V
8	9.84	34.54	PK	37.5	-23.3	48.74	53.97	-5.23	74	-25.26	0-360	101	V
4	9.929	35.24	PK	37.6	-22.9	49.94	53.97	-4.03	74	-24.06	0-360	199	H

PK - Peak detector

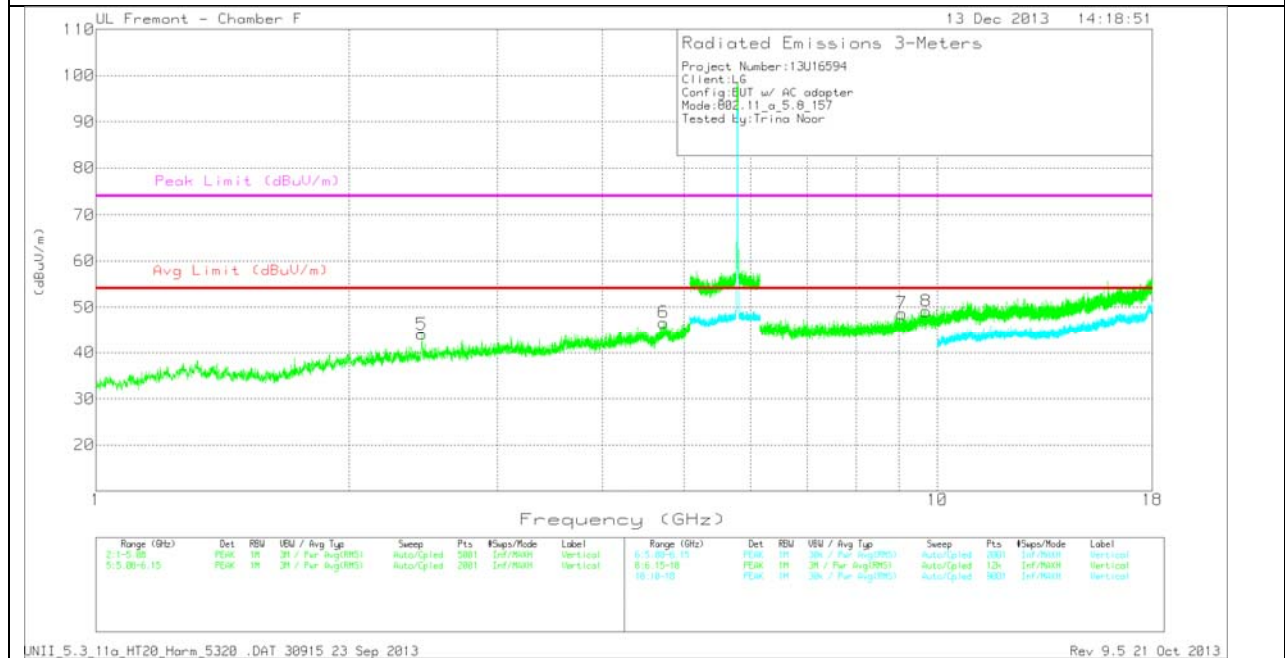
MID CHANNEL  
 HORIZONTAL



Note: Emission was scanned up to 40GHz; 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 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

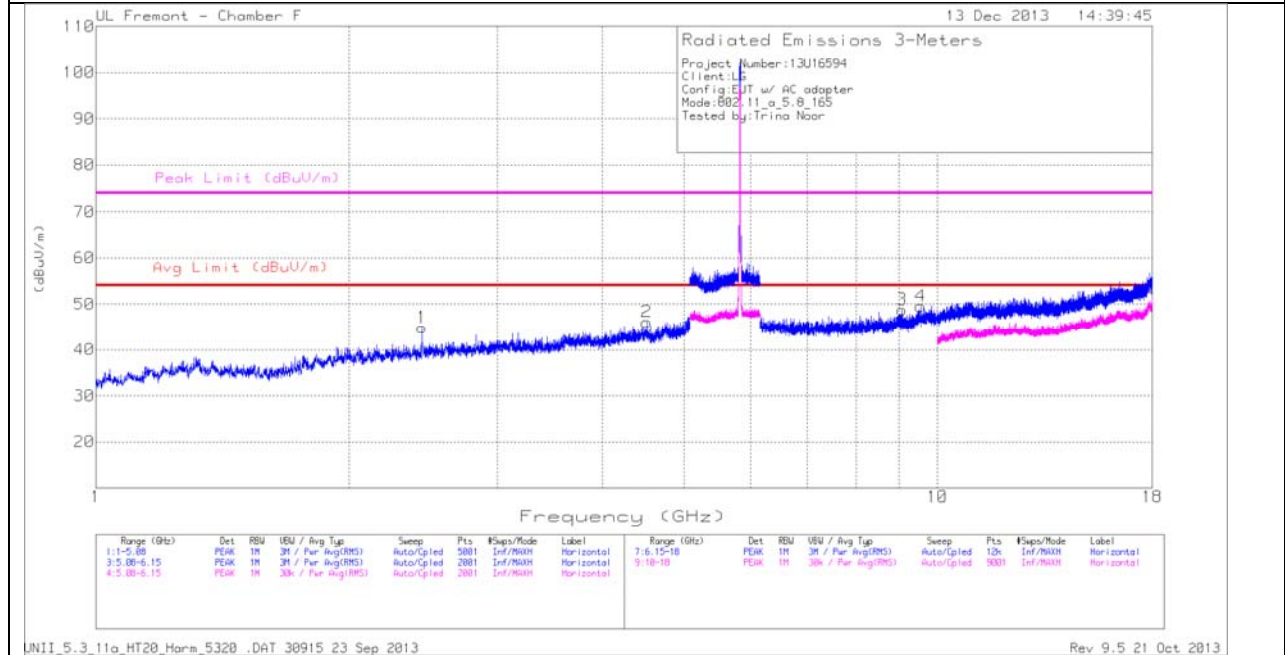
MID CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cbl /5GHz LPF	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	2.439	42.47	PK	32.3	-30.7	44.07	53.97	-9.9	74	-29.93	0-360	201	V
1	3.685	39.8	PK	33.6	-29.4	44	53.97	-9.97	74	-30	0-360	199	H
6	4.727	40.57	PK	34.1	-28	46.67	53.97	-7.3	74	-27.33	0-360	101	V
2	5.056	39	PK	34.1	-26.5	46.6	53.97	-7.37	74	-27.4	0-360	199	H

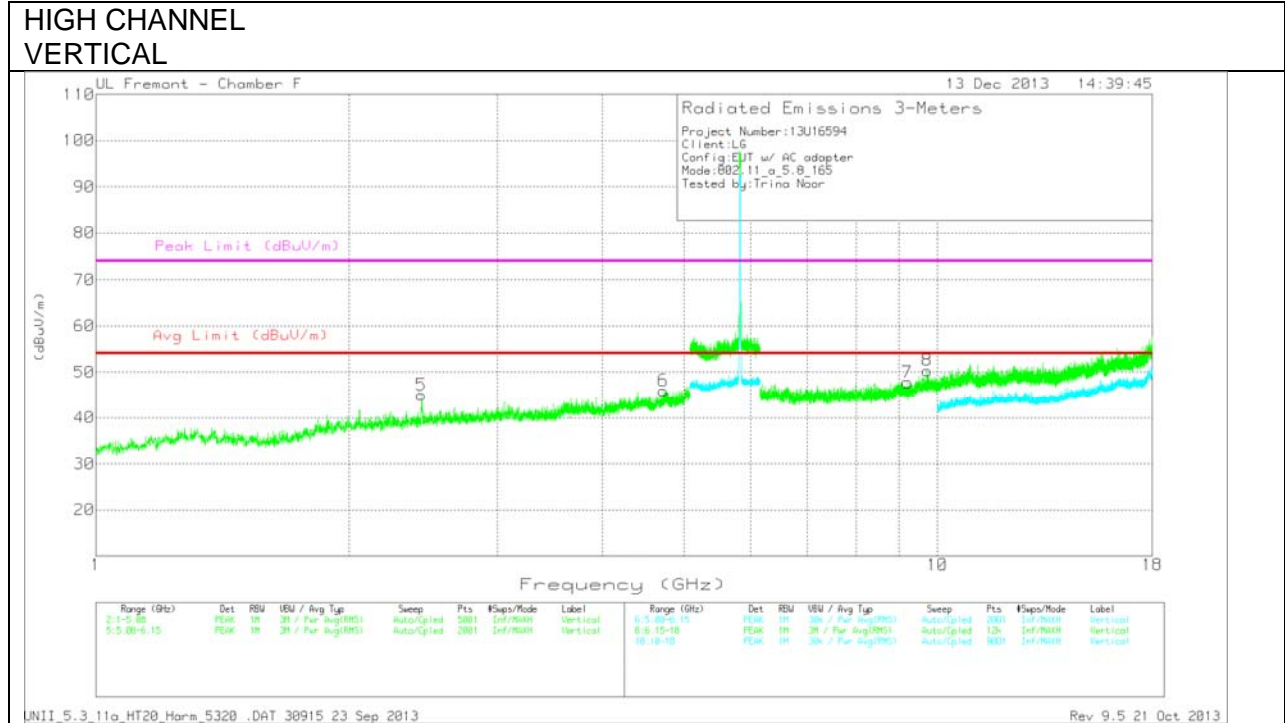
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cbl /6GHz HPF	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	8.77	36.29	PK	36.2	-24.6	47.89	53.97	-6.08	74	-26.11	0-360	199	H
7	9.071	36.52	PK	36.4	-24.3	48.62	53.97	-5.35	74	-25.38	0-360	201	V
8	9.697	35.34	PK	37.4	-23.6	49.14	53.97	-4.83	74	-24.86	0-360	201	V
4	9.822	35.25	PK	37.5	-23.3	49.45	53.97	-4.52	74	-24.55	0-360	100	H

PK - Peak detector

**HIGH CHANNEL  
 HORIZONTAL**



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

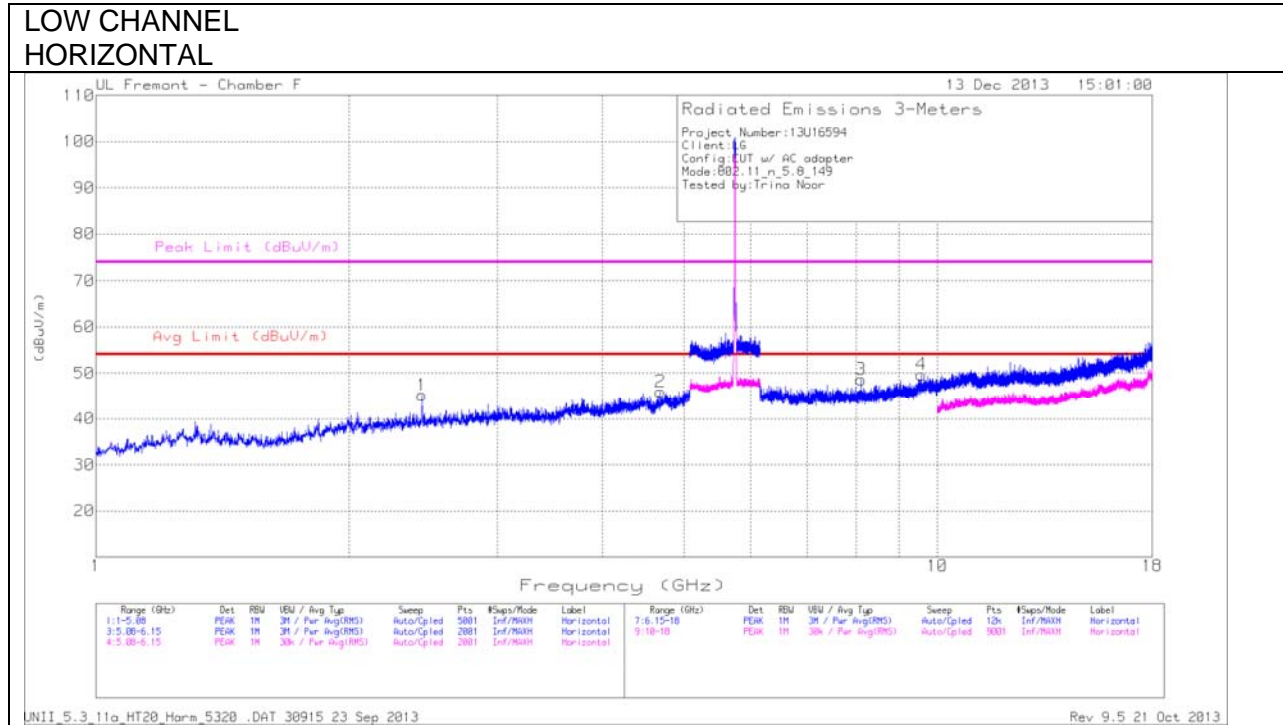
HIGH CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cbl /5GHz LPF	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	2.436	43.38	PK	32.3	-30.7	44.98	53.97	-8.99	74	-29.02	0-360	200	V
1	2.441	43.25	PK	32.3	-30.7	44.85	53.97	-9.12	74	-29.15	0-360	199	H
2	4.514	39.82	PK	34	-27.7	46.12	53.97	-7.85	74	-27.88	0-360	199	H
6	4.723	39.94	PK	34.1	-28.1	45.94	53.97	-8.03	74	-28.06	0-360	101	V

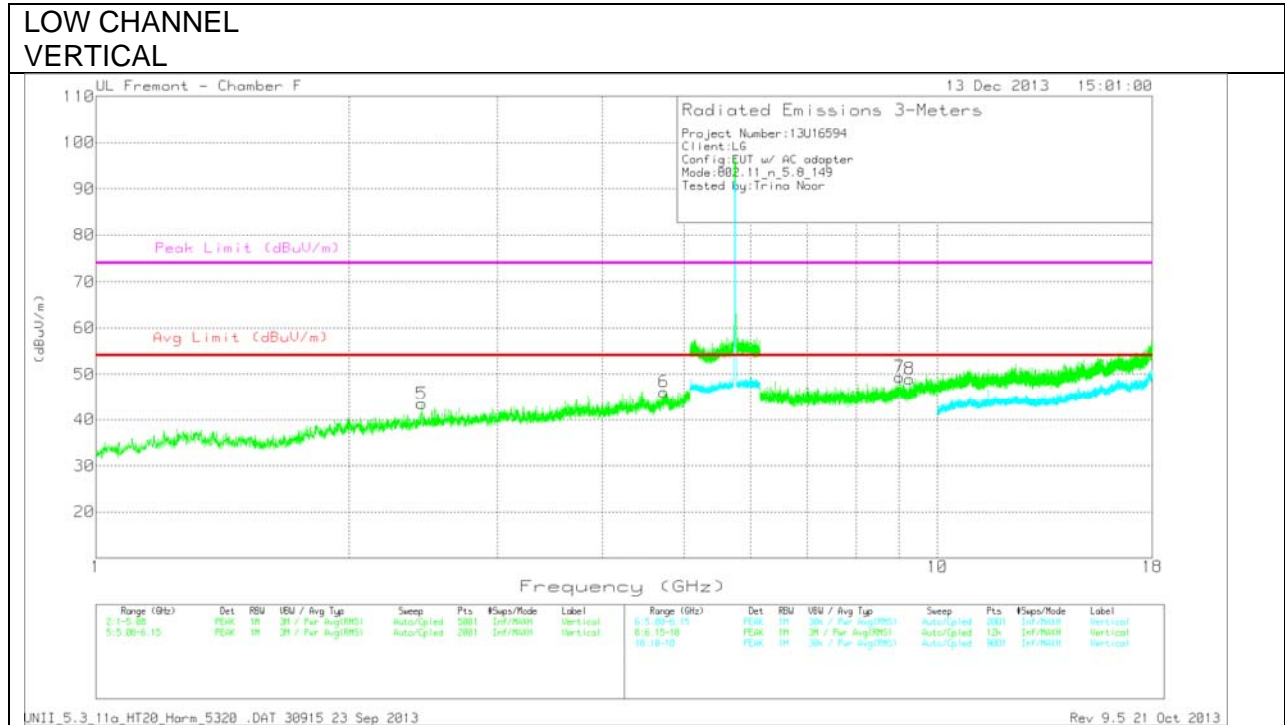
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cbl /6GHz HPF	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	9.078	36.61	PK	36.4	-24.2	48.81	53.97	-5.16	74	-25.19	0-360	199	H
7	9.213	35.09	PK	36.6	-23.9	47.79	53.97	-6.18	74	-26.21	0-360	101	V
4	9.551	34.76	PK	37.2	-22.4	49.56	53.97	-4.41	74	-24.44	0-360	100	H
8	9.728	35.85	PK	37.4	-22.9	50.35	53.97	-3.62	74	-23.65	0-360	201	V

PK - Peak detector

### 10.2.5. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.8 GHz BAND HARMONICS AND SPURIOUS EMISSIONS



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

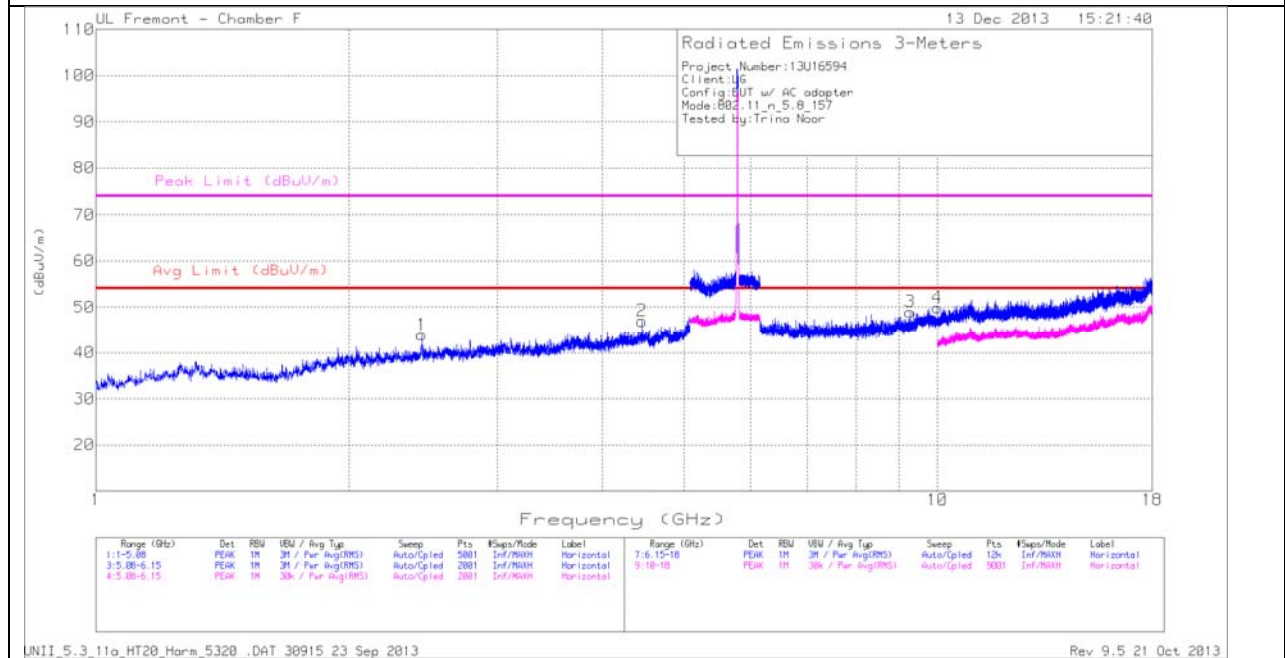
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cbl /5GHz LPF	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	2.439	41.92	PK	32.3	-30.7	43.52	53.97	-10.45	74	-30.48	0-360	200	V
1	2.44	43.6	PK	32.3	-30.7	45.2	53.97	-8.77	74	-28.8	0-360	199	H
2	4.686	39.13	PK	34.1	-27.3	45.93	53.97	-8.04	74	-28.07	0-360	100	H
6	4.732	39.92	PK	34.1	-27.9	46.12	53.97	-7.85	74	-27.88	0-360	200	V

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cbl /6GHz HPF	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	8.114	38.01	PK	36	-25.4	48.61	53.97	-5.36	74	-25.39	0-360	199	H
7	9.02	36.85	PK	36.4	-23.9	49.35	53.97	-4.62	74	-24.65	0-360	200	V
8	9.263	36.04	PK	36.7	-23.8	48.94	53.97	-5.03	74	-25.06	0-360	200	V
4	9.57	35.21	PK	37.2	-22.7	49.71	53.97	-4.26	74	-24.29	0-360	199	H

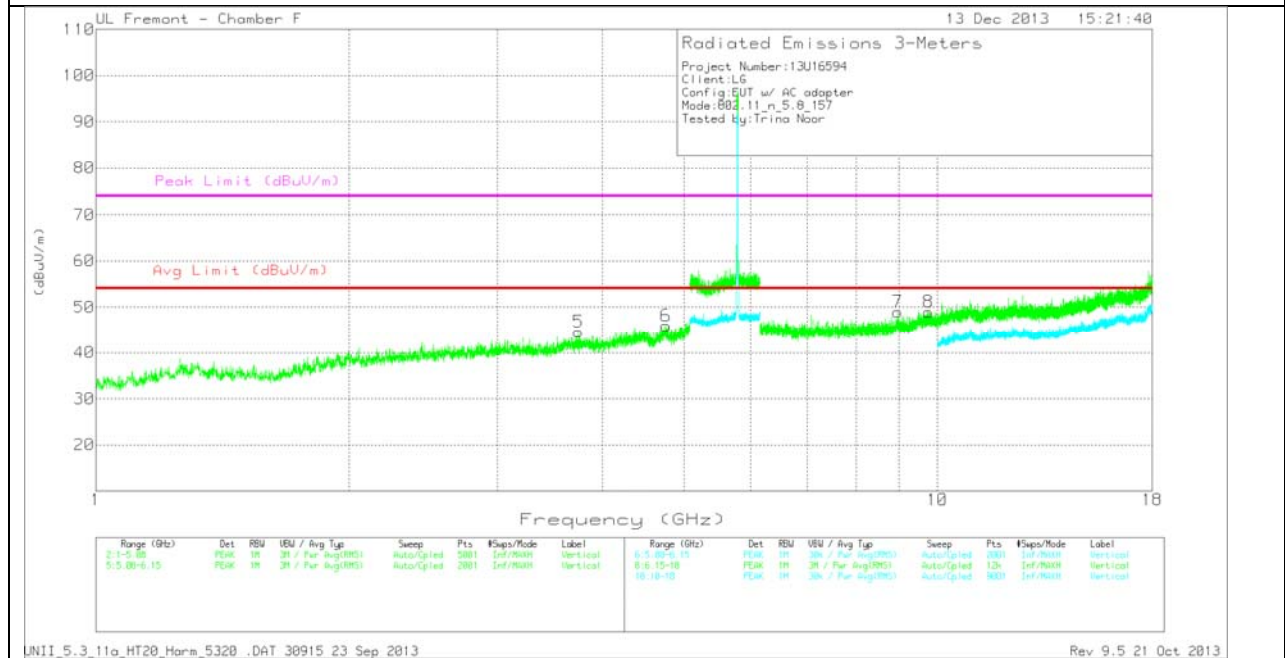
PK - Peak detector



MID CHANNEL  
 HORIZONTAL



MID CHANNEL  
 VERTICAL



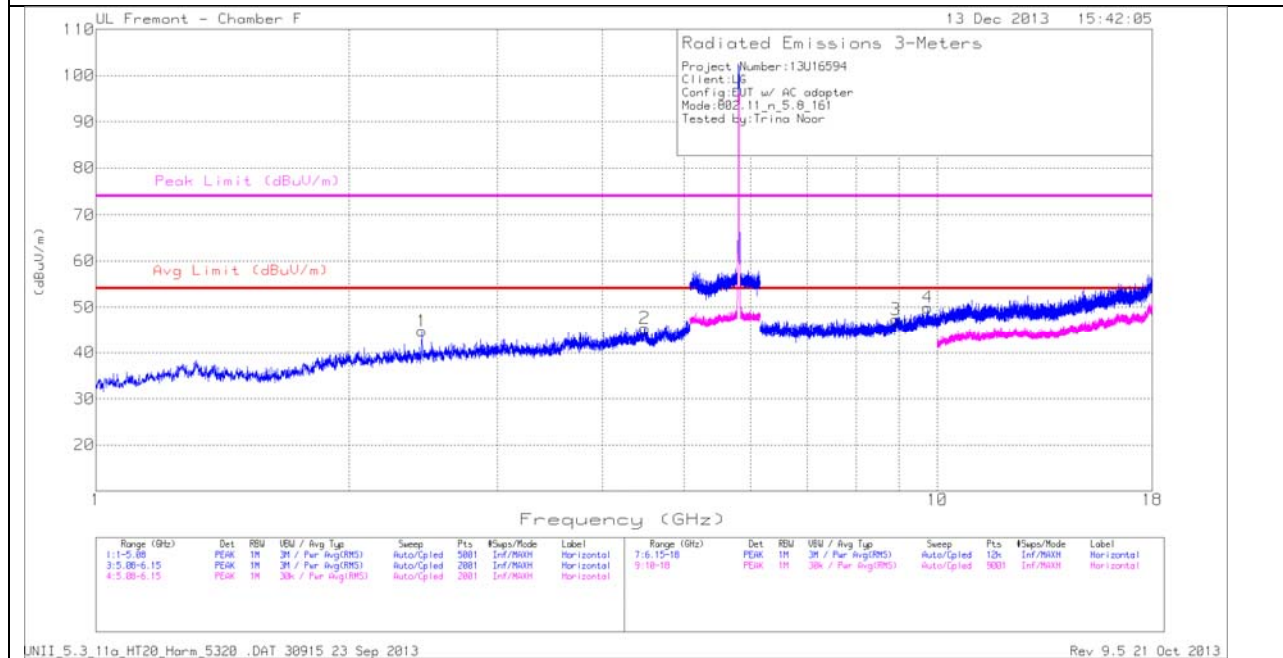
MID CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cbl /5GHz LPF	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.439	42.31	PK	32.3	-30.7	43.91	53.97	-10.06	74	-30.09	0-360	199	H
5	3.745	40.59	PK	33.5	-29.5	44.59	53.97	-9.38	74	-29.41	0-360	200	V
2	4.456	40.59	PK	33.8	-27.4	46.99	53.97	-6.98	74	-27.01	0-360	100	H
6	4.758	39.52	PK	34.1	-27.7	45.92	53.97	-8.05	74	-28.08	0-360	200	V

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cbl /6GHz HPF	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
7	8.971	36.33	PK	36.3	-23.7	48.93	53.97	-5.04	74	-25.07	0-360	101	V
3	9.279	36.4	PK	36.7	-24.1	49	53.97	-4.97	74	-25	0-360	199	H
8	9.757	34.44	PK	37.5	-23	48.94	53.97	-5.03	74	-25.06	0-360	101	V
4	9.995	34.99	PK	37.6	-22.7	49.89	53.97	-4.08	74	-24.11	0-360	199	H

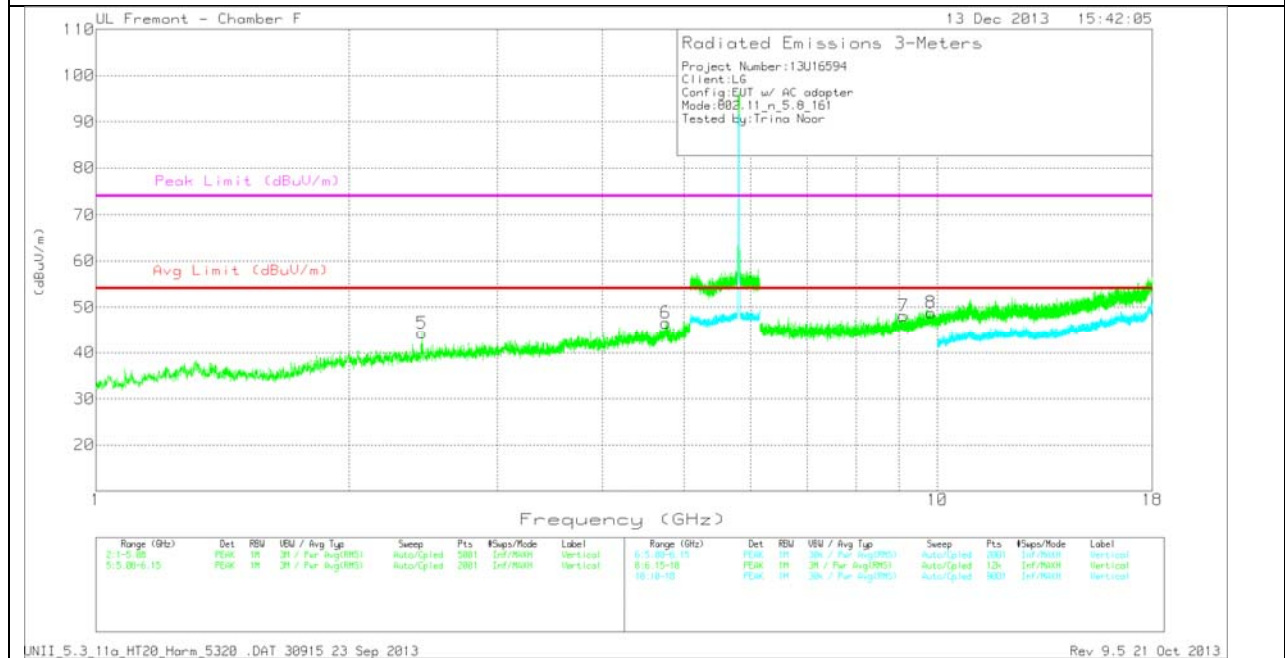
PK - Peak detector

**HIGH CHANNEL  
 HORIZONTAL**



Note: Emission was scanned up to 40GHz; 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 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

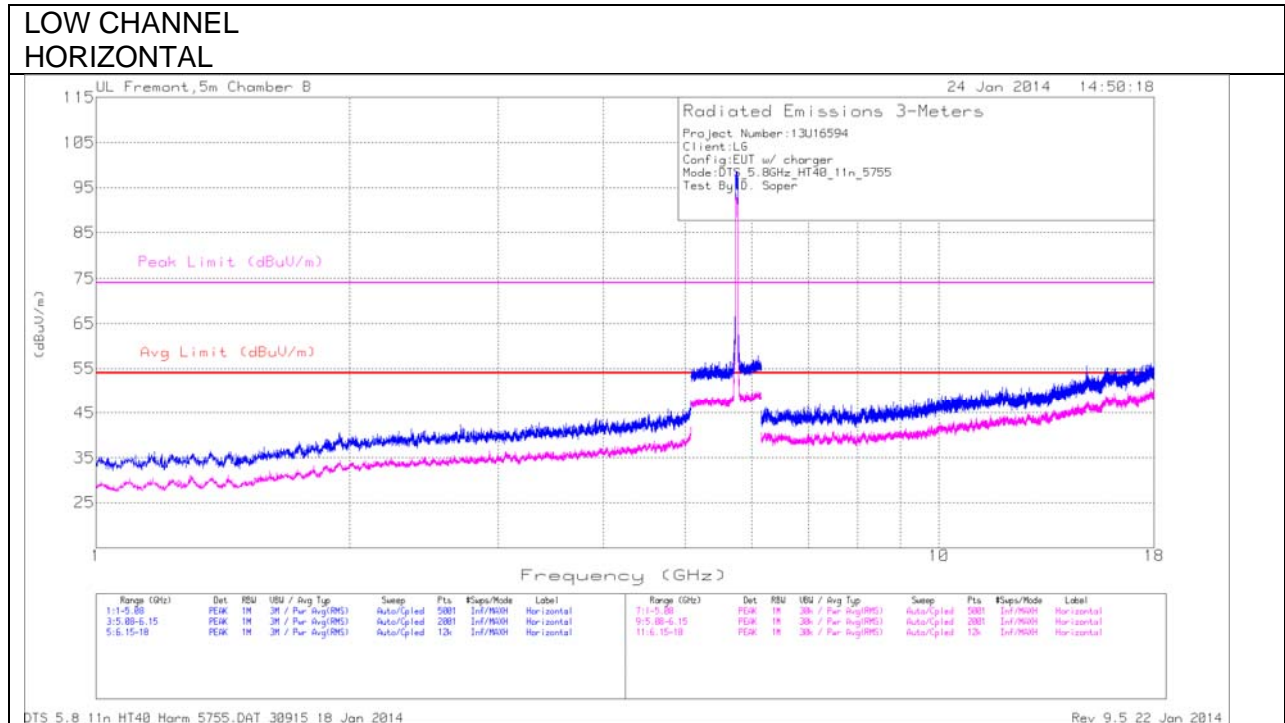
HIGH CHANNEL DATA

Marker	Frequenc y (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cbl /5GHz LPF	Correcte d Reading (dBuV/m )	Avg Limit (dBuV/m )	Margin (dB)	Peak Limit (dBuV/m )	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.44	43.19	PK	32.3	-30.7	44.79	53.97	-9.18	74	-29.21	0-360	199	H
5	2.44	42.73	PK	32.3	-30.7	44.33	53.97	-9.64	74	-29.67	0-360	201	V
2	4.488	38.86	PK	33.9	-27.4	45.36	53.97	-8.61	74	-28.64	0-360	100	H
6	4.756	40.19	PK	34.1	-27.7	46.59	53.97	-7.38	74	-27.41	0-360	201	V

Marker	Frequenc y (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cbl /6GHz HPF	Correcte d Reading (dBuV/m )	Avg Limit (dBuV/m )	Margin (dB)	Peak Limit (dBuV/m )	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	8.922	34.98	PK	36.3	-24	47.28	53.97	-6.69	74	-26.72	0-360	199	H
7	9.118	35.51	PK	36.5	-23.9	48.11	53.97	-5.86	74	-25.89	0-360	200	V
4	9.738	35.35	PK	37.4	-22.8	49.95	53.97	-4.02	74	-24.05	0-360	199	H
8	9.829	34.73	PK	37.5	-23.4	48.83	53.97	-5.14	74	-25.17	0-360	101	V

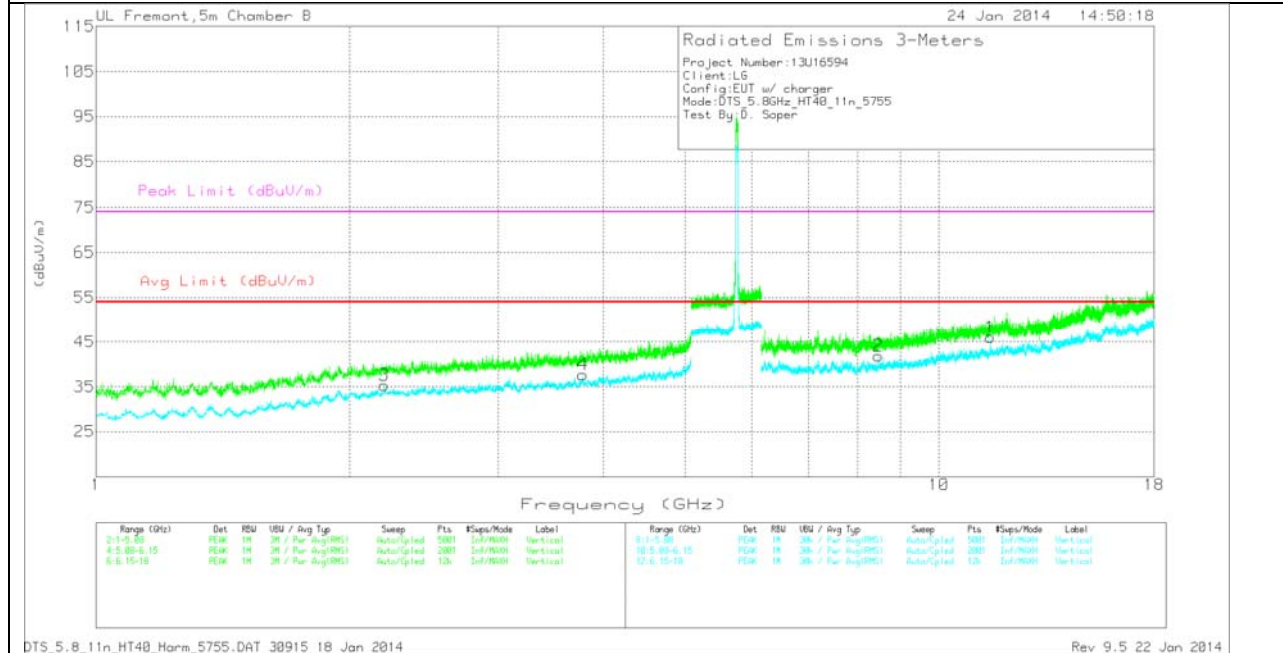
PK - Peak detector

### 10.2.6. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.8 GHz BAND HARMONICS AND SPURIOUS EMISSIONS



Note: Emission was scanned up to 40GHz; 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 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

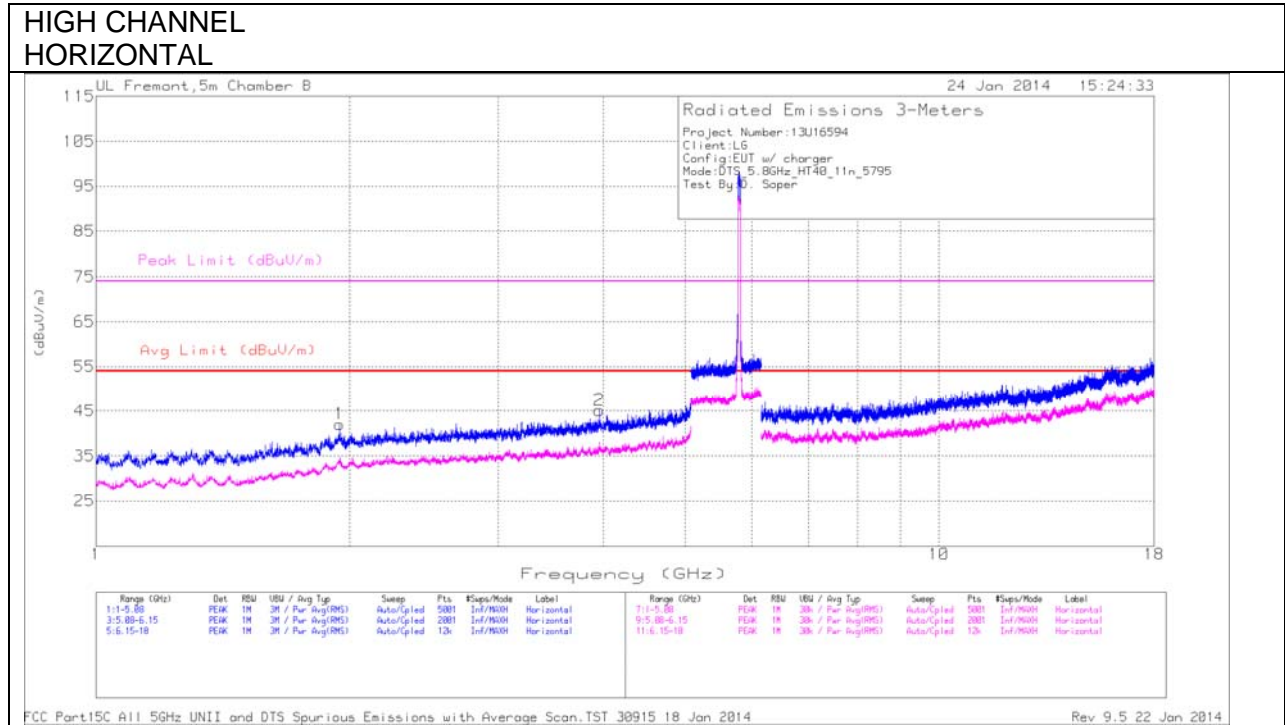


LOW CHANNEL DATA  
 Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/Filter/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	2.199	35.72	Avg	32	-32.4	0	35.32	54	-18.68	-	-	0-360	99	V
4	3.782	34.89	Avg	33.8	-31	0	37.69	54	-16.31	-	-	0-360	99	V
2	8.474	31.93	Avg	36.2	-26.3	0	41.83	54	-12.17	-	-	0-360	202	V
1	11.51	30.3	Avg	38.7	-22.9	0	46.1	54	-7.9	-	-	0-360	99	V

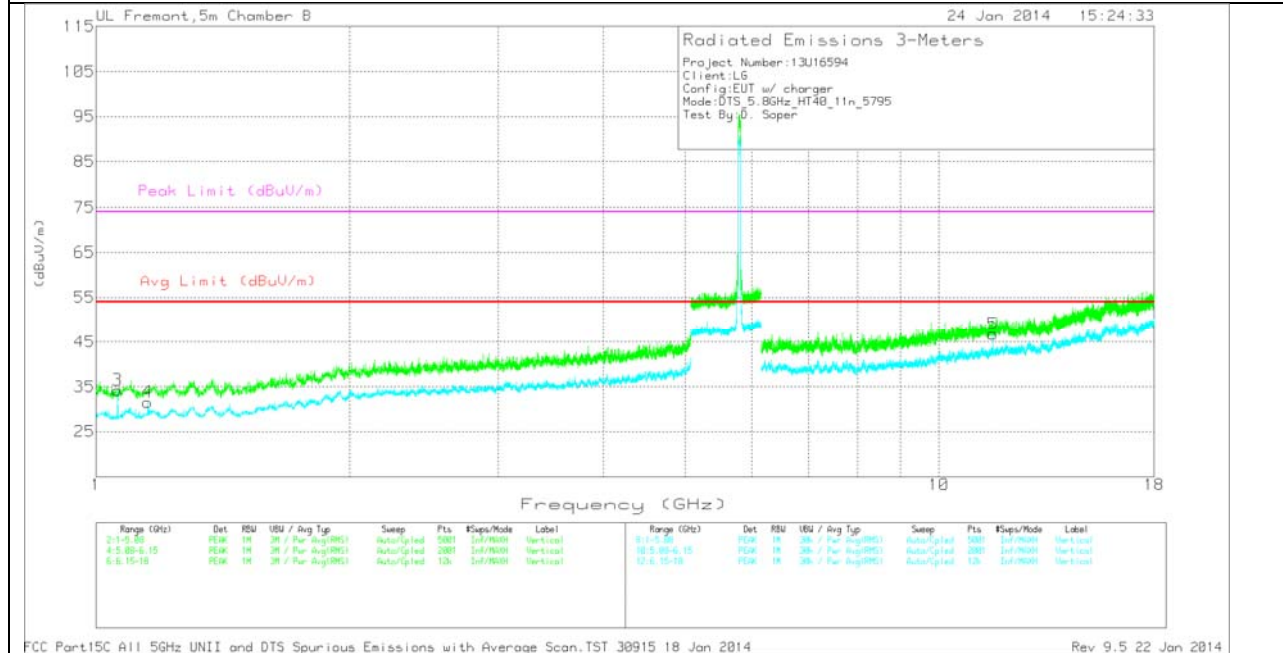
Avg - Video bandwidth < Resolution bandwidth

DTS\_5.8\_11n\_HT40\_Harm\_5755.DAT 30915 18 Jan 2014 Rev 9.5 22 Jan 2014



Note: Emission was scanned up to 40GHz; 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 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb/Filter/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	1.06	40.86	Avg	27.7	-34.4	0	34.16	54	-19.84	-	-	0-360	202	V
4	1.152	37.93	Avg	28.1	-34.5	0	31.53	54	-22.47	-	-	0-360	202	V
1	1.945	43.13	PK	31.4	-32.5	0	42.03	54	-11.97	74	-31.97	0-360	99	H
2	3.954	41.26	PK	33.9	-30	0	45.16	54	-8.84	74	-28.84	0-360	202	H
5	11.59	30.9	Avg	38.8	-22.9	0	46.6	54	-7.2	-	-	0-360	202	V

PK - Peak detector

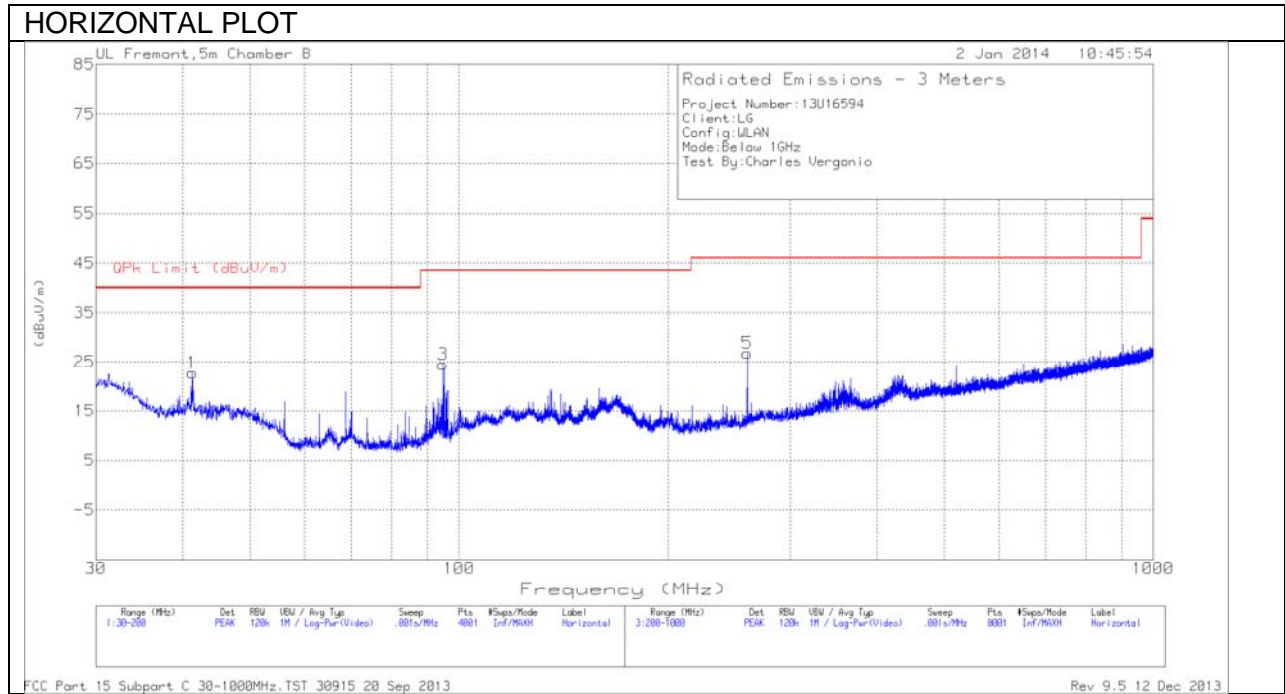
Avg - Video bandwidth < Resolution bandwidth

FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30915 18

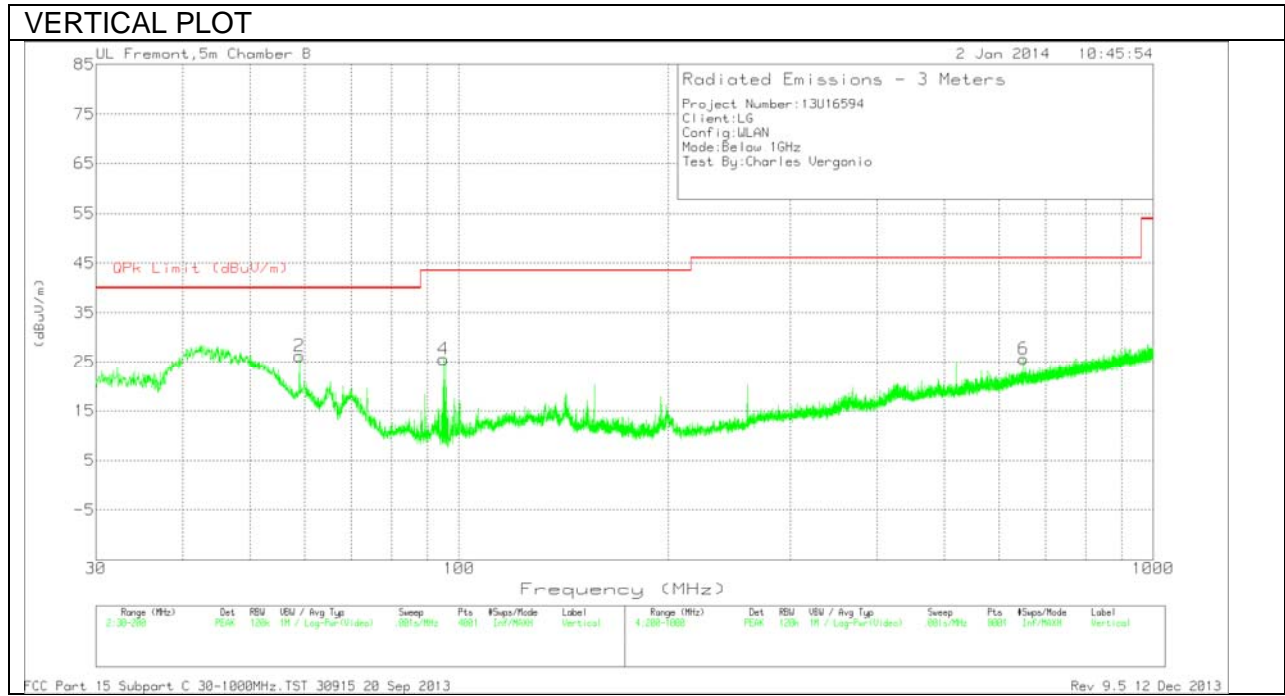
Jan 2014 Rev 9.5 22 Jan 2014

### 10.3. 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 T243 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	41.305	38.92	PK	12.5	-28.7	22.72	40	-17.28	0-360	400	H
2	58.9	47.63	PK	7.1	-28.5	26.23	40	-13.77	0-360	101	V
3	94.8125	43.99	PK	8.6	-28.1	24.49	43.52	-19.03	0-360	300	H
4	94.9825	45	PK	8.7	-28.1	25.6	43.52	-17.92	0-360	101	V
5	260.2	41.08	PK	12.1	-26.4	26.78	46.02	-19.24	0-360	101	H
6	650.4	30.83	PK	19.9	-25.1	25.63	46.02	-20.39	0-360	200	V

PK - Peak detector

## 11. AC POWER LINE CONDUCTED EMISSIONS

### LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

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.

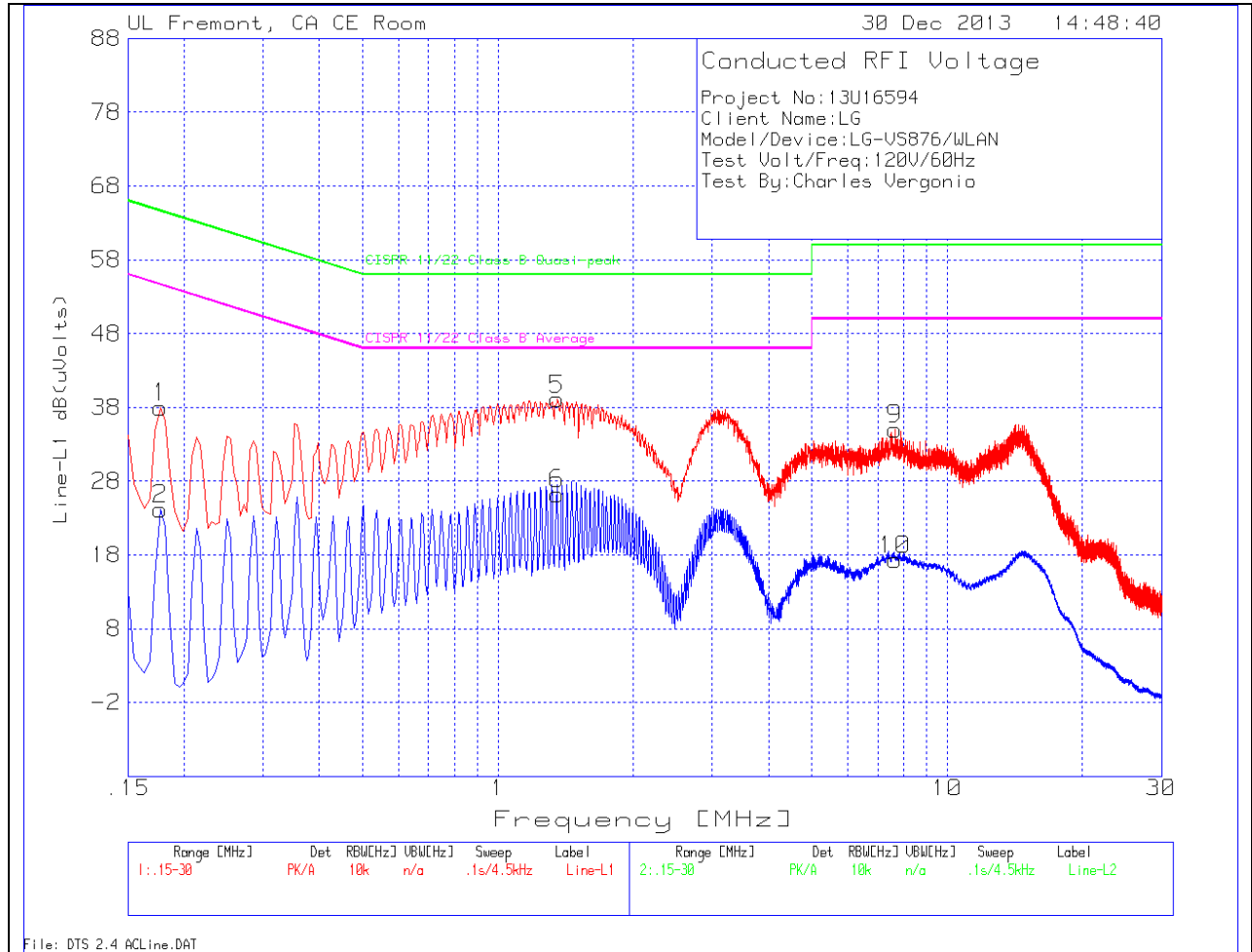
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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



**RESULTS**

**6 WORST EMISSIONS**

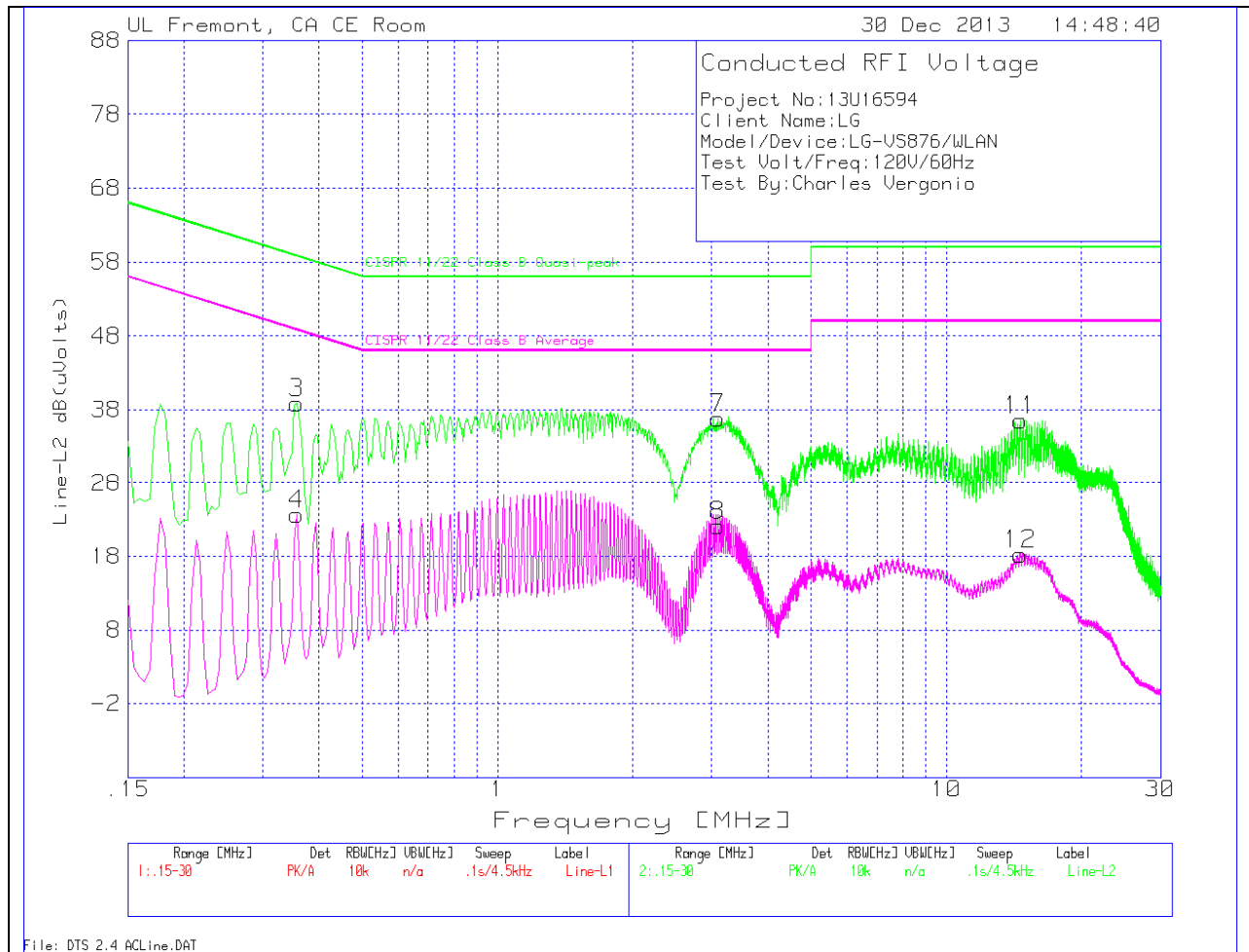


**LINE 1 RESULTS**

**Trace Markers**

Marker	Frequency (MHz)	Meter Reading (dBUV)	Det	T24 IL L1 (dB)	LC Cables 1&3 (dB)	Corrected Reading dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin to Limit (dB)	CISPR 11/22 Class B Average	Margin to Limit (dB)
1	.177	37.92	PK	.1	0	38.02	64.6	-26.58	-	-
2	.177	24.11	Av	.1	0	24.21	-	-	54.6	-30.39
5	1.356	38.87	PK	.1	.1	39.07	56	-16.93	-	-
6	1.356	26.09	Av	.1	.1	26.29	-	-	46	-19.71
9	7.6425	34.83	PK	.1	.1	35.03	60	-24.97	-	-
10	7.6425	17.09	Av	.1	.1	17.29	-	-	50	-32.71

**LINE 2 RESULTS**



**LINE 2 RESULTS**

**Trace Markers**

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2 (dB)	LC Cables 2&3 (dB)	Corrected Reading dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin to Limit (dB)	CISPR 11/22 Class B Average	Margin to Limit (dB)
3	.357	38.76	PK	.1	0	38.86	58.8	-19.94	-	-
4	.357	23.6	Av	.1	0	23.7	-	-	48.8	-25.1
7	3.093	36.65	PK	.1	.1	36.85	56	-19.15	-	-
8	3.093	21.96	Av	.1	.1	22.16	-	-	46	-23.84
11	14.5995	36.13	PK	.2	.2	36.53	60	-23.47	-	-
12	14.5995	17.81	Av	.2	.2	18.21	-	-	50	-31.79

PK - Peak detector