



**FCC CFR47 PART 15 SUBPART C**

**CERTIFICATION TEST REPORT**

**FOR**

**GSM/WCDMA/LTE Tablet + Bluetooth, DTS/UNII a/b/g/n/ac, ANT+ & NFC**

**FCC ID: PY7TM-0053**

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** SONY MOBILE COMMUNICATIONS, INC.  
**EUT DESCRIPTION:** GSM/WCDMA/LTE Tablet + Bluetooth, DTS/UNII a/b/g/n/ac, ANT+ & NFC  
**SERIAL NUMBER:** CB5A20E0RY (Radiated), CB5A208FAY (Conducted)  
**DATE TESTED:** August 12-19, 2014

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

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

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

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## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.4-2009, RSS-GEN Issue 3, and RSS-210 Issue 8.

## 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 checked="" type="checkbox"/> Chamber A	<input type="checkbox"/> Chamber D
<input type="checkbox"/> Chamber B	<input type="checkbox"/> Chamber E
<input type="checkbox"/> Chamber C	<input type="checkbox"/> Chamber F
	<input type="checkbox"/> Chamber G
	<input type="checkbox"/> Chamber H

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:

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

### 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 GSM/WCDMA/LTE Tablet + Bluetooth, DTS/UNII a/b/g/n/ac, ANT+ & NFC.  
This test report addresses the DTS (WLAN) operational mode.

### 5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum total conducted output power as follows:

Frequency Range (MHz)	Mode	Total Output Power (dBm)	Total Output Power (mW)
2412 - 2462	802.11b	16.91	49.09
2412 - 2462	802.11g	16.31	42.76
2412 - 2462	802.11n HT20	16.31	42.76

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes two FPCB antennas, with a maximum gain of -1.9 dBi and -1.2 dBi.

### 5.4. List of test reduction and modes covering other modes:

2400 - 2483.5 MHz Authorized Frequency Band (Antenna Port & Radiated Testing)		
Frequency Range (MHz)	Mode	Covered by
2412 - 2462	802.11b Legacy 1TX	802.11b CDD 2TX
2412 - 2462	802.11g Legacy 1TX/STBC 2TX	802.11g CDD 2TX
2412 - 2462	802.11n 1TX	802.11n HT20 CDD 2TX
2412 - 2462	802.11n STBC 2TX/SDM 2TX	802.11n HT20 CDD 2TX
2412 - 2462	802.11ac STBC 2TX/SDM 2TX/TX BF 2TX	802.11n HT20 CDD 2TX

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## 5.5. 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 and 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

## 5.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Sony	EP880	4W01 S08489 SEM	DoC
Earphone	Sony	MH410c	14071EB60060A84	DoC
MHL cable	Sony	N/A	N/A	N/A

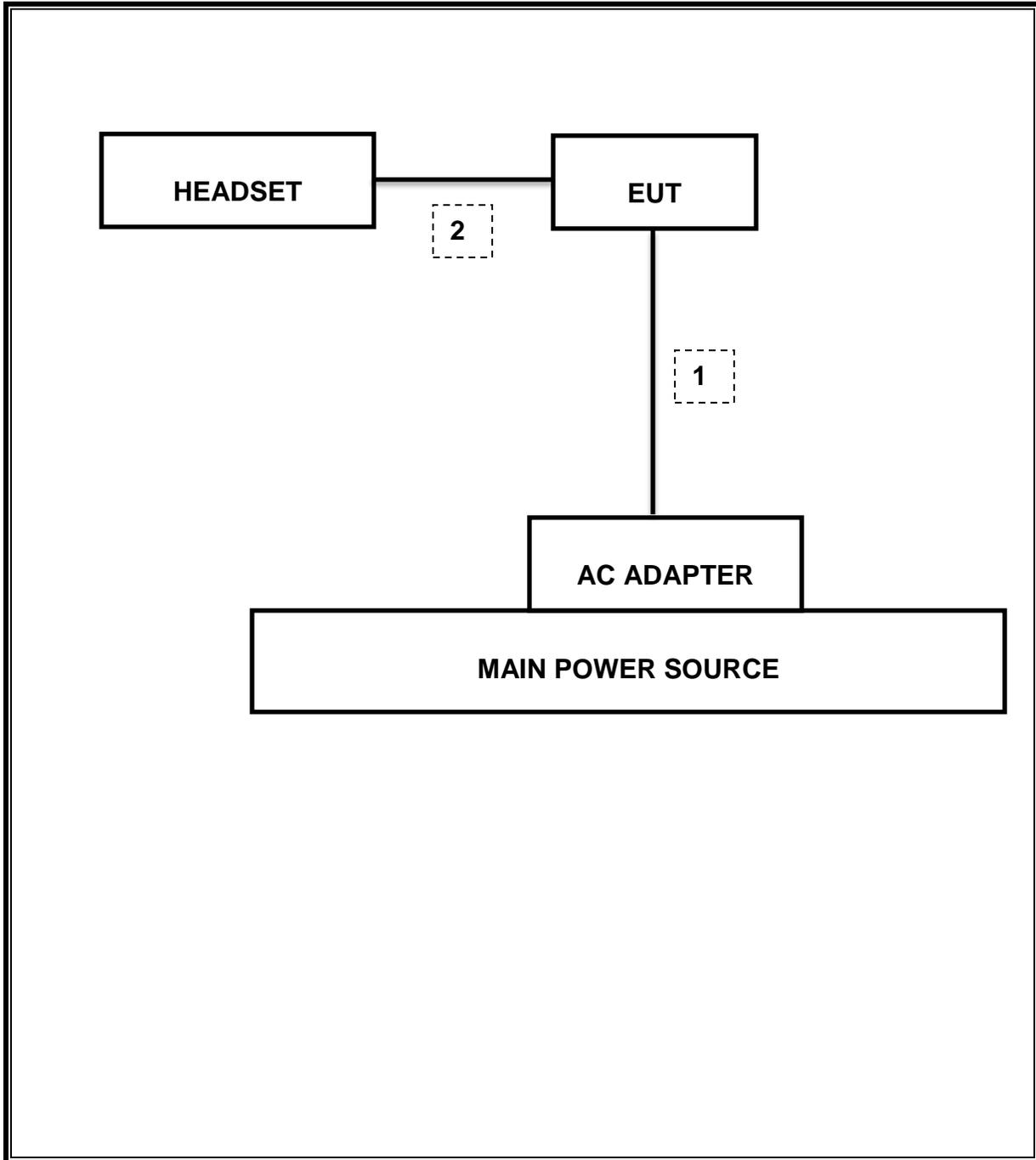
### I/O CABLES

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	12/20/14
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	12/13/14
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/14
Antenna, Horn, 1-18 GHz	ETS	3117	C01022	02/21/15
Antenna, Horn, 18- 26 GHz	ARA	MWH-1826/B	C00946	11/12/14
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

## 7. MEASUREMENT METHODS

KDB 558074 D01 DTS Meas Guidance v03r02: Measurement Procedure AVGPM-G is used for power and AVGPS-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. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

### LIMITS

None; for reporting purposes only.

### PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

### 8.1. ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
<b>2400MHz Bands</b>						
802.11b	3.13	3	1.000	100.0%	0.00	0.010
802.11g	3.13	3	0.994	99.4%	0.00	0.010
802.11n HT20	1.48	1	0.987	98.7%	0.00	0.010

## 9. SUMMARY TABLE

The FCC ID: PY7TM-0053 shares the same enclosure and circuit board as FCC ID: PY7TM-0050. The DTS WLAN circuitry and layout, including antenna, are almost identical between the two units. The DTS WLAN antenna and surrounding circuitry is the same between these two units. The main difference between the two models is that WWAN circuitry in FCC ID: PY7TM-0050 is removed few bands for FCC ID: PY7TM-0053

After confirming through preliminary radiated emissions that the performance of the FCC ID: PY7TM-0053 remains representative of FCC ID: PY7TM-0050, test data for FCC ID: PY7TM-0050 is being submitted for this application to cover DTS WLAN features.

Radiated emissions were fully re-evaluated against FCC Part 15B requirements for digital devices and results indicated no significant differences between the two versions due to the depopulation of the WWAN circuitry.

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	8.565MHz
2.1051, 15.247 (d)	RSS-210 A8.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-40.36dBm
15.247	RSS-210 A8.4	TX conducted output power	<30dBm		Pass	16.91dBm
15.247	RSS-210 A8.2	PSD	<8dBm		Pass	-13.59dBm
15.207 (a)	RSS-GEN 7.2.2	AC Power Line conducted emissions	Section 10	Radiated	Pass	17.72dBuV(AV)
15.205, 15.209	RSS-210 Clause 2.6, RSS-210 Clause 6	Radiated Spurious Emission	< 54dBuV/m		Pass	46.41dBuV/m

## **10. ANTENNA PORT TEST RESULTS**

### **10.1. 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**

**10.1.1. 802.11b MODE IN THE 2.4 GHZ BAND**

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	2412	8.570	8.600	0.5
Mid	2437	9.065	9.090	0.5
High	2462	8.565	9.080	0.5

**10.1.2. 802.11g MODE IN THE 2.4 GHZ BAND**

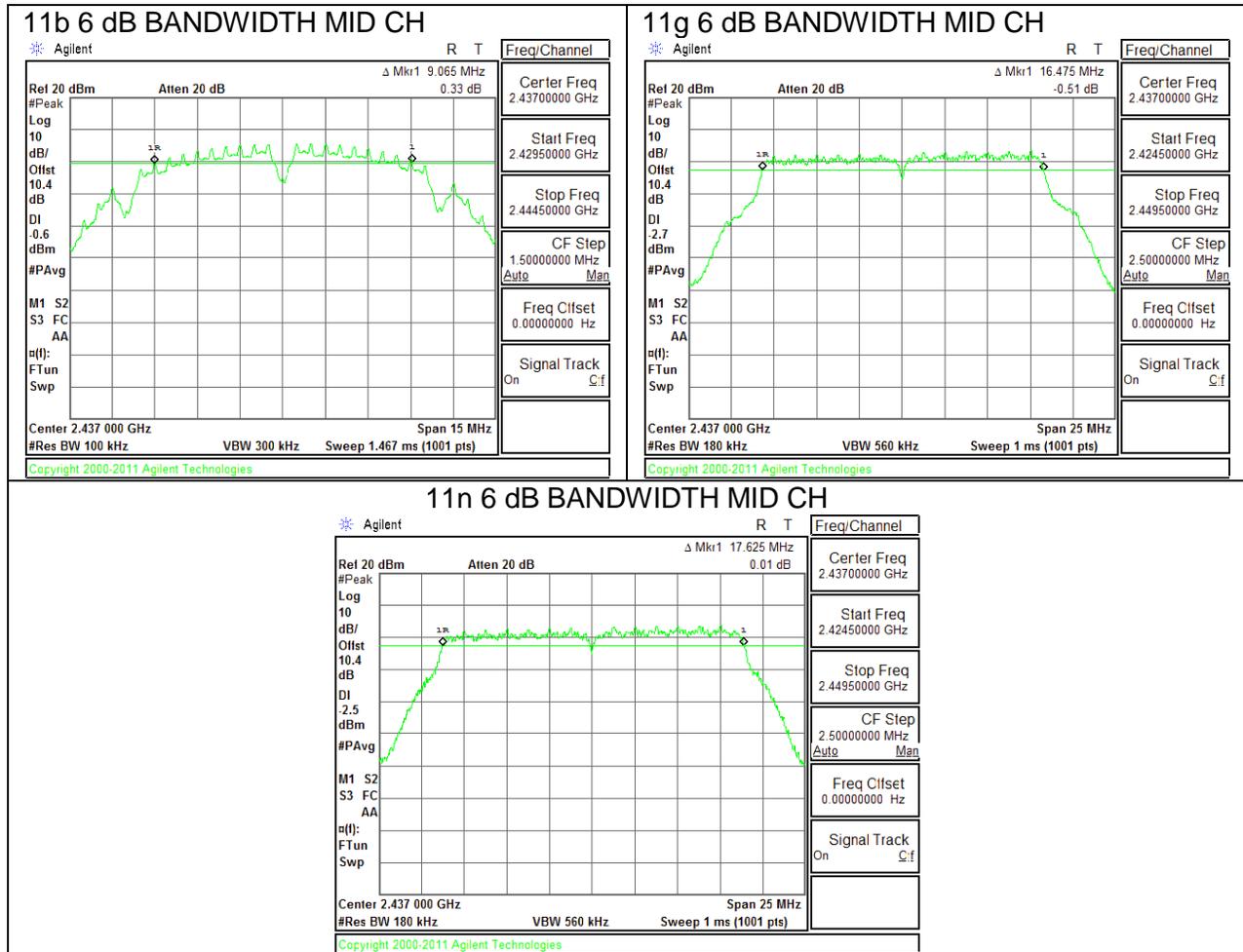
Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	2412	16.200	15.800	0.5
Mid	2437	16.475	16.500	0.5
High	2462	16.450	16.450	0.5

**10.1.3. 802.11n HT20 MODE IN THE 2.4 GHZ BAND**

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	2412	17.125	17.000	0.5
Mid	2437	17.625	17.700	0.5
High	2462	17.675	17.675	0.5

### 10.1.1. 6 dB BANDWIDTH MID CH PLOTS

#### 6 dB BANDWIDTH CHAIN 0





## 10.2. 99% BANDWIDTH

### LIMITS

None; for reporting purposes only.

### RESULTS

#### 10.2.1. 802.11b MODE IN THE 2.4 GHZ BAND

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	2412	11.0400	11.2200
Mid	2437	11.2800	11.4900
High	2462	11.2500	11.3400

#### 10.2.2. 802.11g MODE IN THE 2.4 GHZ BAND

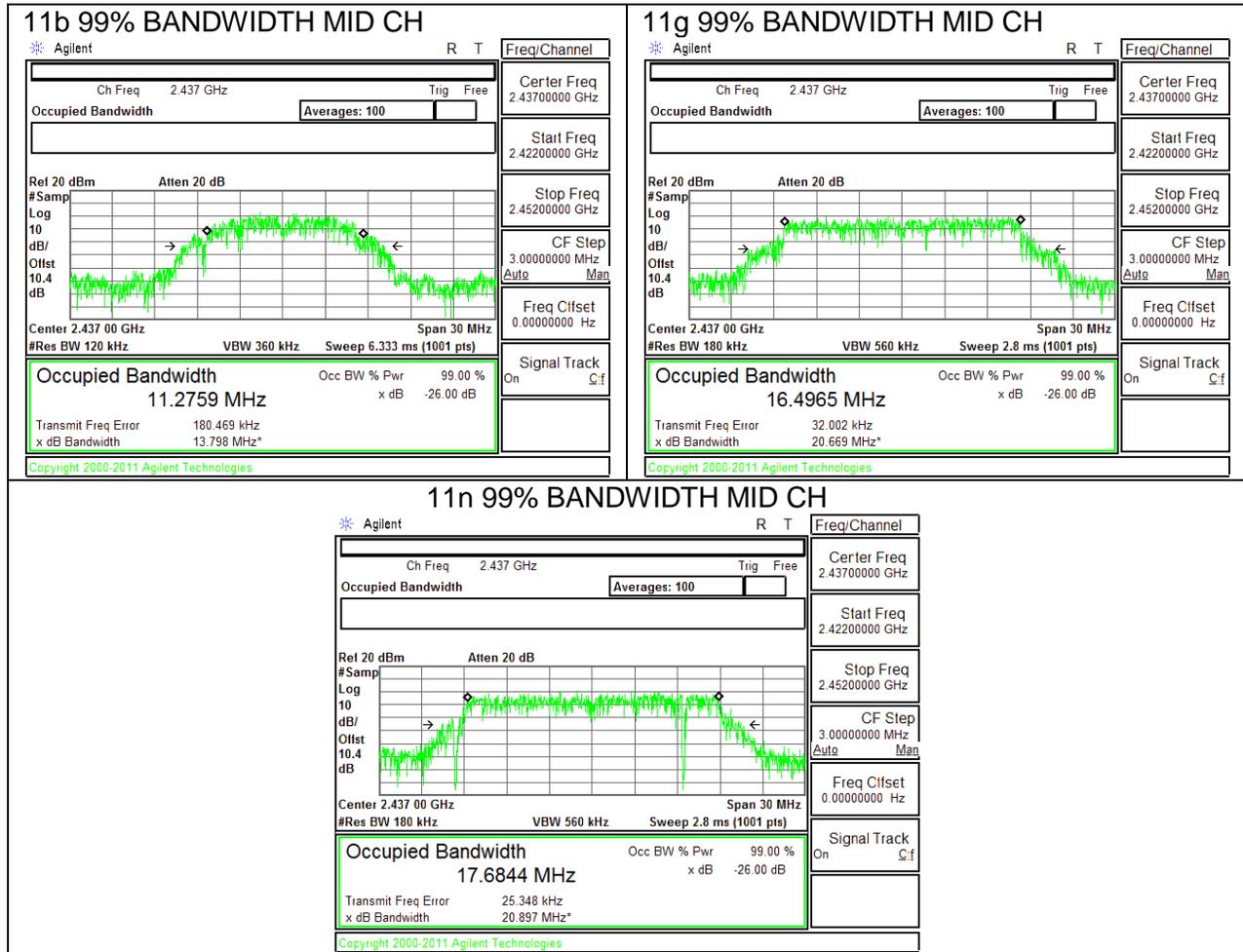
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	2412	16.4100	16.4700
Mid	2437	16.5000	16.4900
High	2462	16.4900	16.4500

#### 10.2.3. 802.11n HT20 MODE IN THE 2.4 GHZ BAND

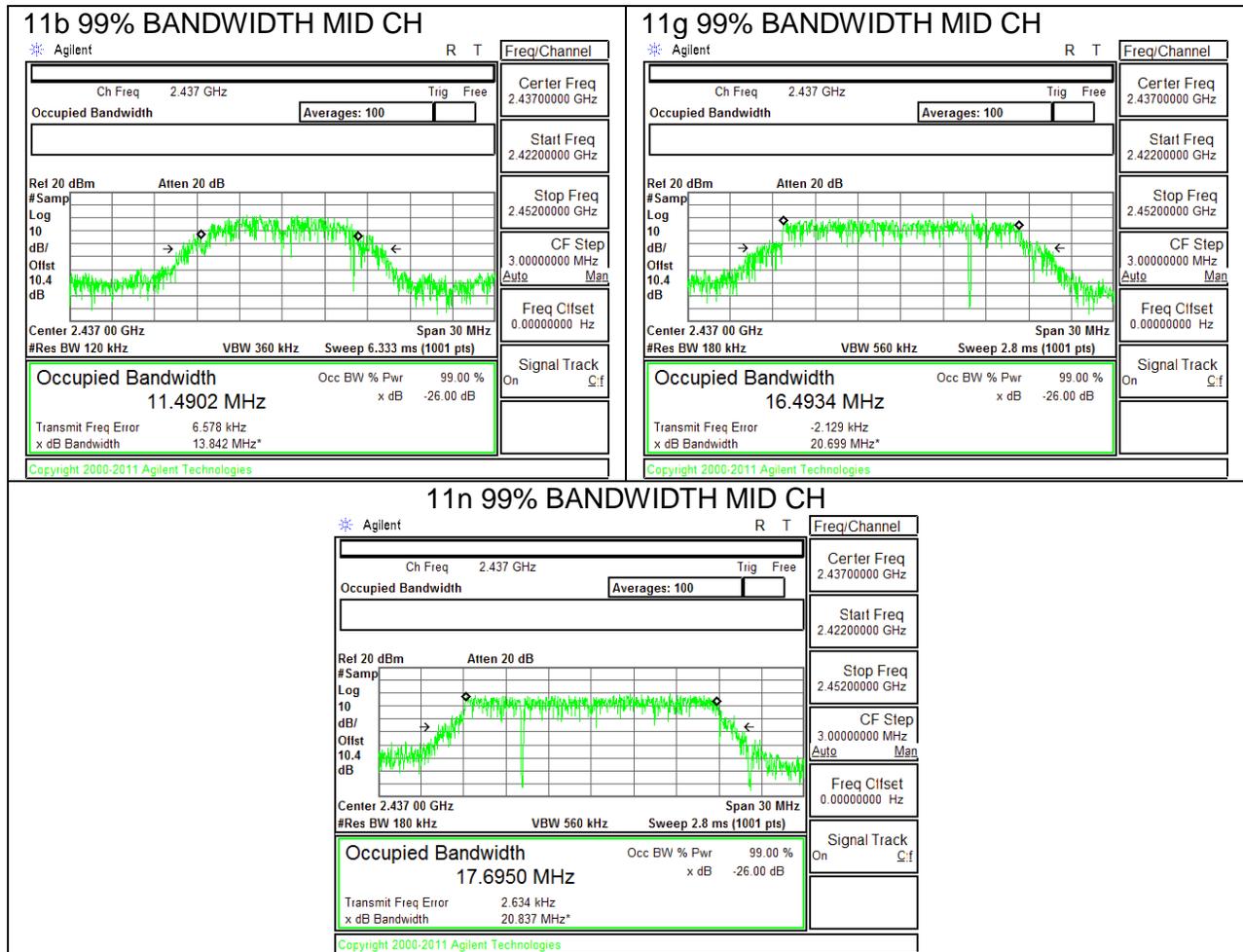
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	2412	17.6000	17.6400
Mid	2437	17.6800	17.7000
High	2462	17.6600	17.6300

### 10.2.1. 99% BANDWIDTH MID CH PLOTS

#### 99% BANDWIDTH CHAIN 0



**99% BANDWIDTH CHAIN 1**



### 10.3. 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.

#### DIRECTIONAL ANTENNA GAIN

For Power: The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

2.4GHz

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
0.40	-1.20	-0.33

For PSD: The TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

2.4GHz

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
0.40	-1.20	2.65

**RESULTS**

**10.3.1. 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	-0.33	30.00	30	36	30.00
Mid	2437	-0.33	30.00	30	36	30.00
High	2462	-0.33	30.00	30	36	30.00

**Results**

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
Low	2412	13.00	13.30	16.16	30.00	-13.84
Mid	2437	13.30	13.30	16.31	30.00	-13.69
High	2462	14.00	13.80	16.91	30.00	-13.09

**10.3.2. 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	-0.33	30.00	30	36	30.00
Mid	2437	-0.33	30.00	30	36	30.00
High	2462	-0.33	30.00	30	36	30.00

**Results**

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
Low	2412	12.80	13.00	15.91	30.00	-14.09
Mid	2437	12.80	13.00	15.91	30.00	-14.09
High	2462	13.50	13.10	16.31	30.00	-13.69

**10.3.3. 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	-0.33	30.00	30	36	30.00
Mid	2437	-0.33	30.00	30	36	30.00
High	2462	-1.54	30.00	30	36	30.00

**Results**

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
Low	2412	12.80	13.00	15.91	30.00	-14.09
Mid	2437	12.80	13.00	15.91	30.00	-14.09
High	2462	13.50	13.10	16.31	30.00	-13.69

## 10.4. 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

#### 10.4.1. 802.11b MODE IN THE 2.4 GHz BAND

##### PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-16.07	-17.21	-13.59	8.0	-21.6
Mid	2437	-16.46	-16.92	-13.67	8.0	-21.7
High	2462	-16.76	-16.92	-13.83	8.0	-21.8

#### 10.4.2. 802.11g MODE IN THE 2.4 GHz BAND

##### PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-18.61	-18.85	-15.72	8.0	-23.7
Mid	2437	-19.80	-20.15	-16.96	8.0	-25.0
High	2462	-20.52	-20.50	-17.50	8.0	-25.5

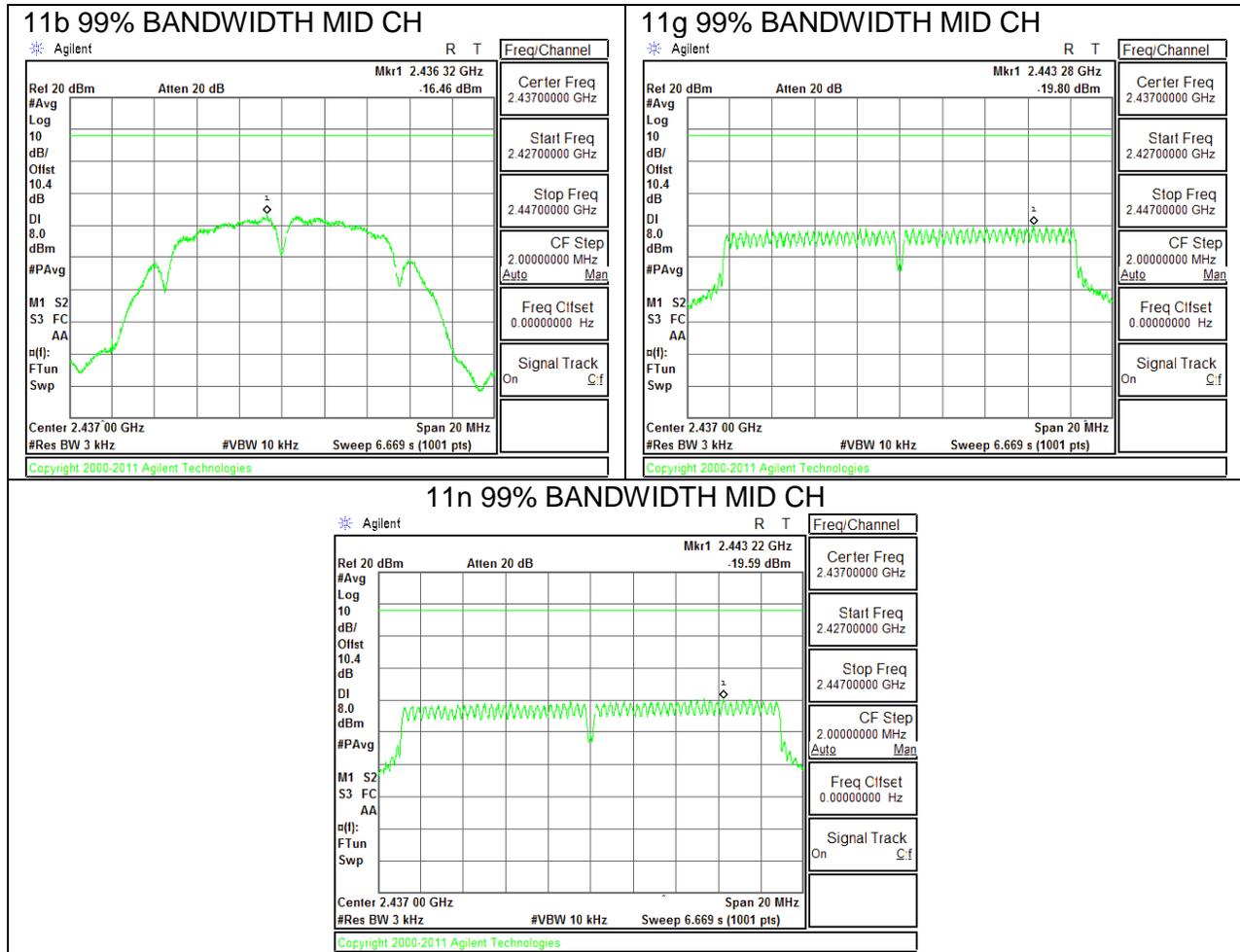
#### 10.4.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

##### PSD Results

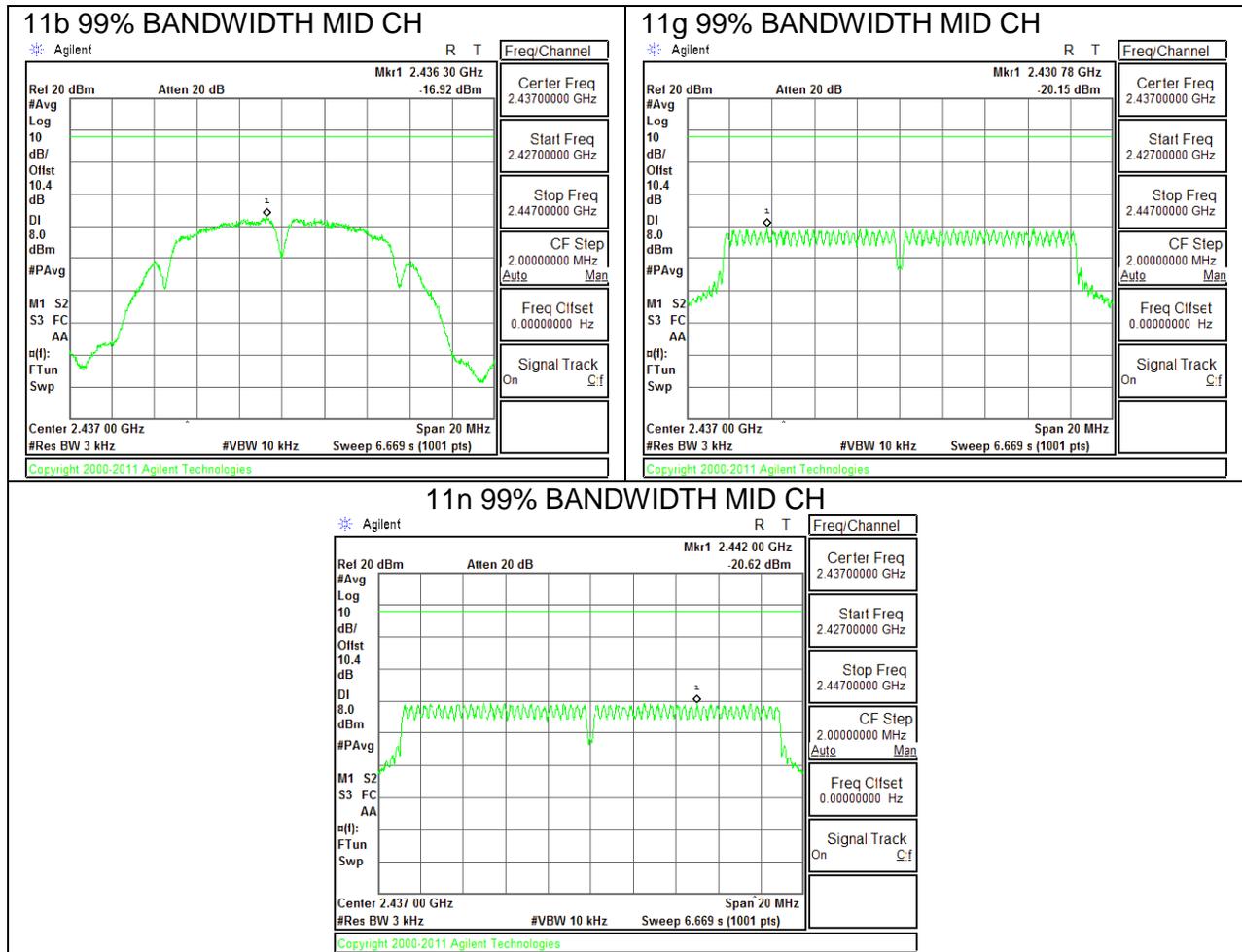
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-19.40	-19.61	-16.49	8.0	-24.5
Mid	2437	-19.59	-20.62	-17.06	8.0	-25.1
High	2462	-20.07	-20.03	-17.04	8.0	-25.0

### 10.4.1. PSD MID CH PLOTS

#### PSD CHAIN 0



**PSD CHAIN 1**



## **10.5. 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.

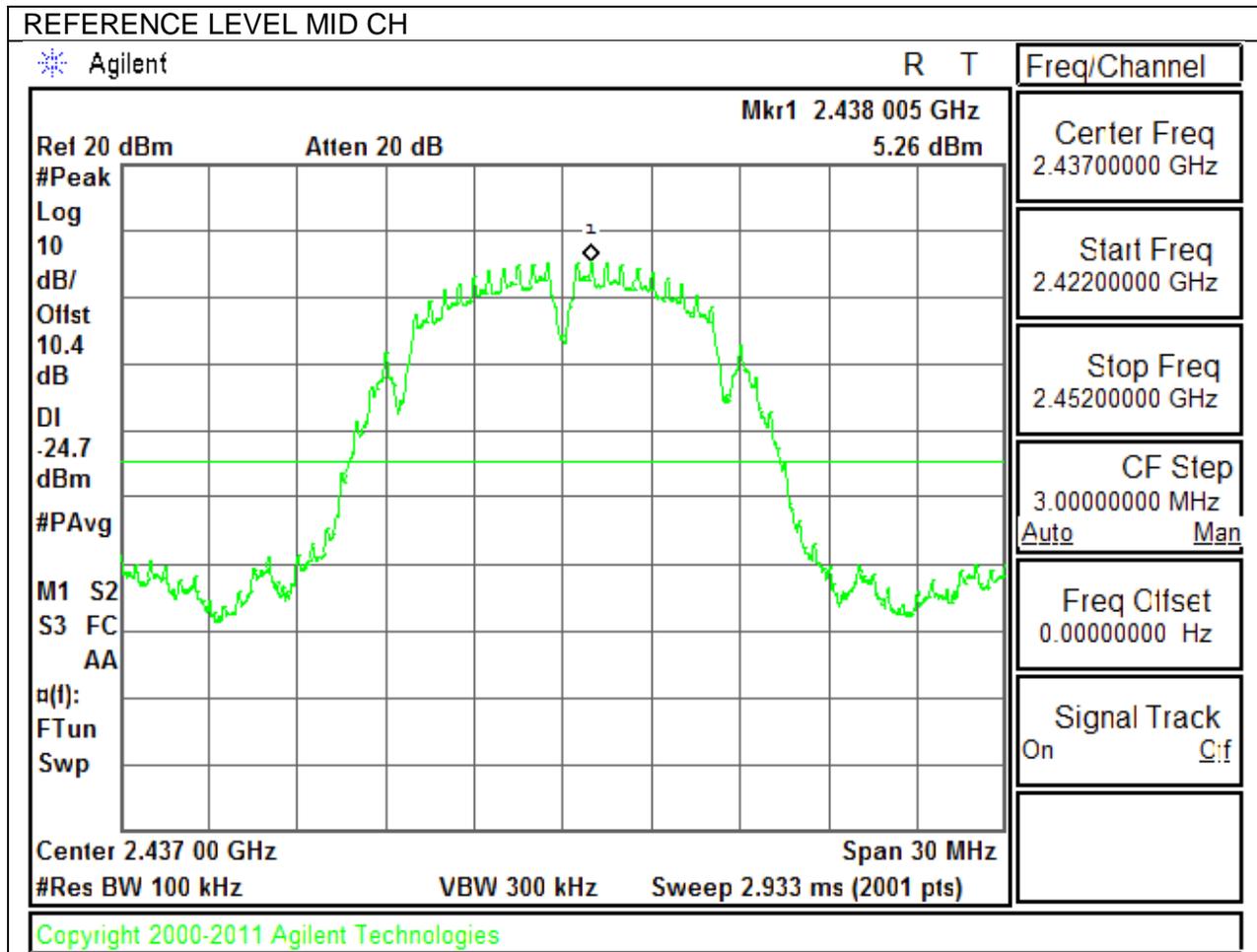
### **TEST PROCEDURE**

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, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

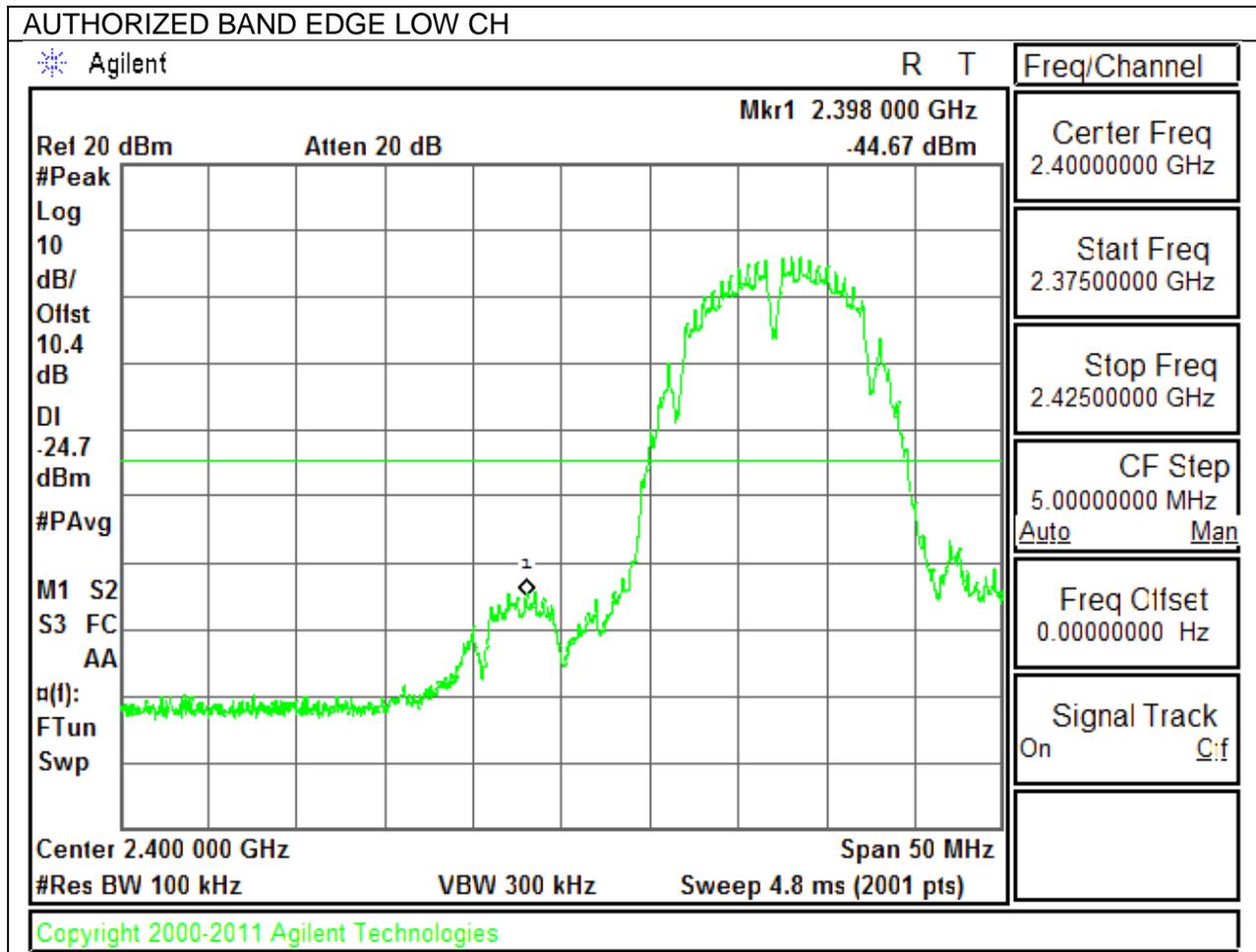
**RESULTS**

**10.5.1. 802.11b MODE IN THE 2.4 GHZ BAND CHAIN 0**

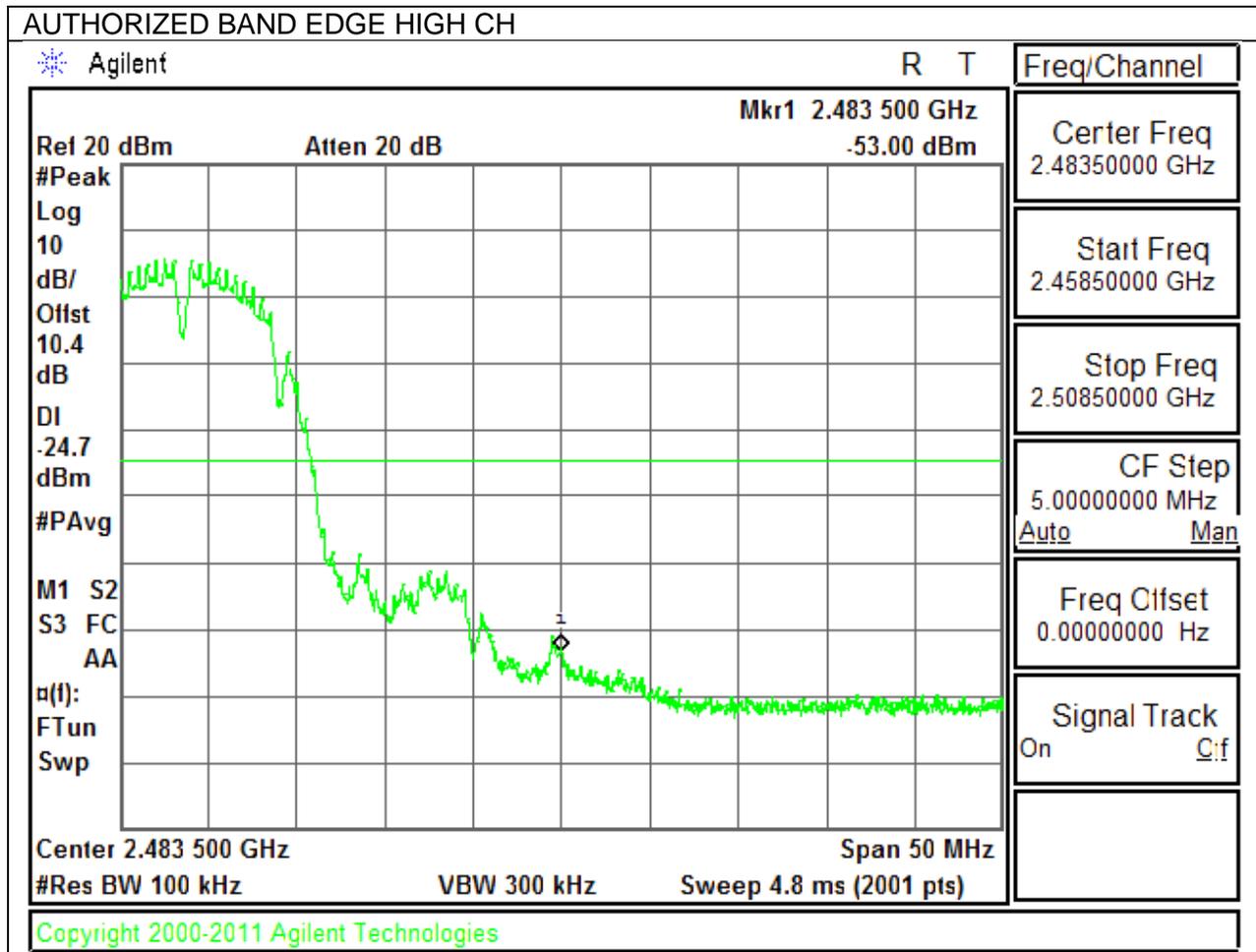
**IN-BAND REFERENCE LEVEL**



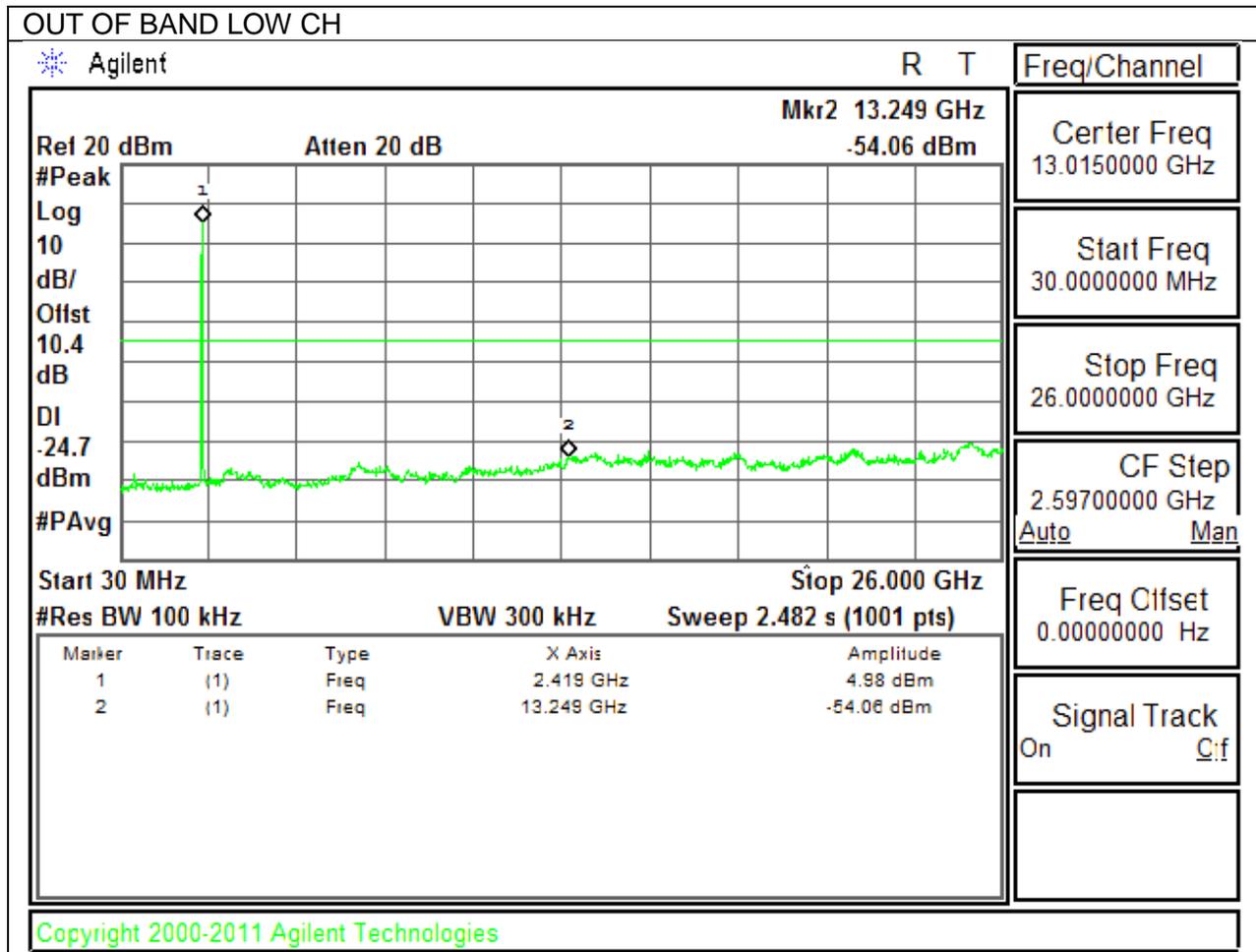
**LOW CHANNEL BANDEDGE**

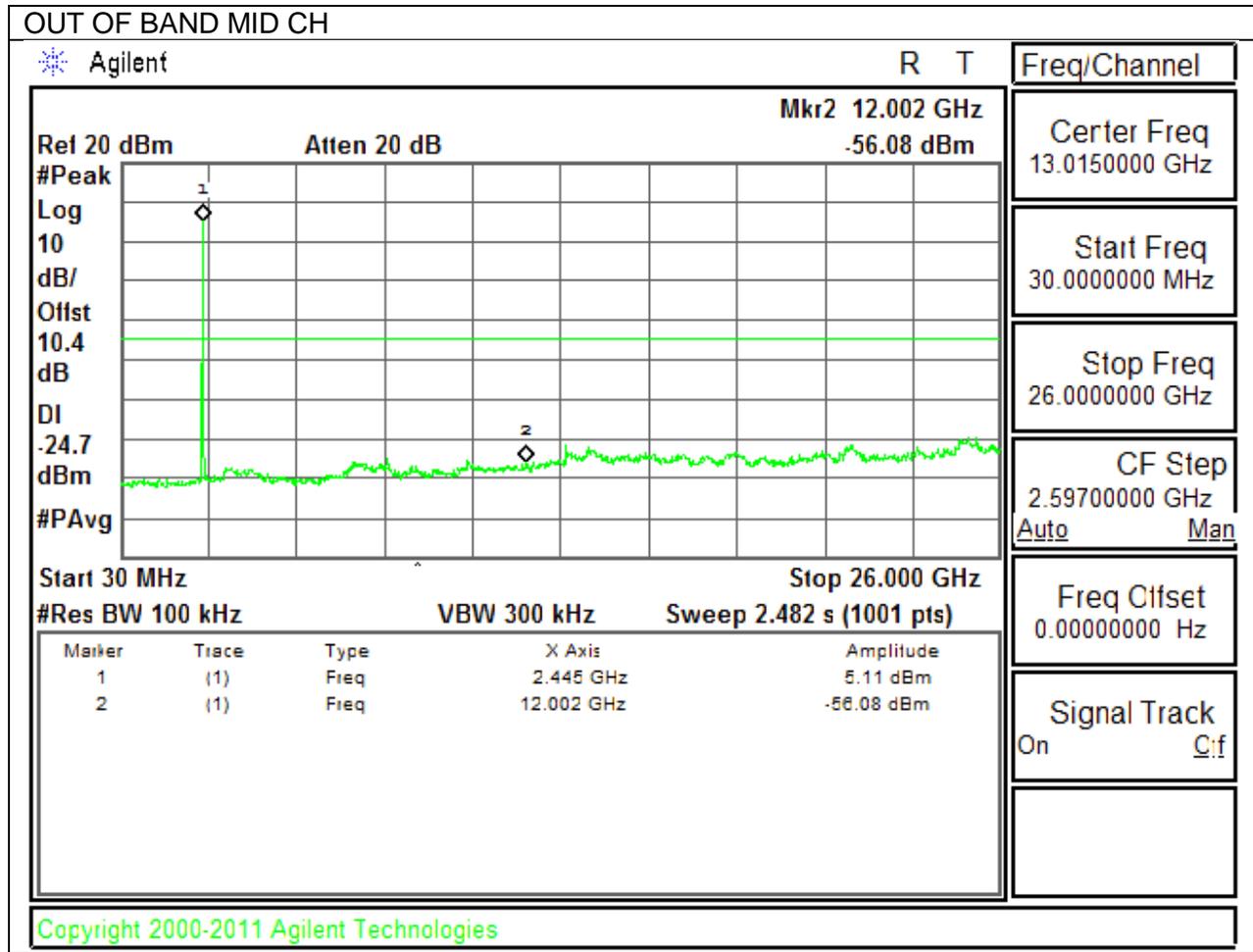


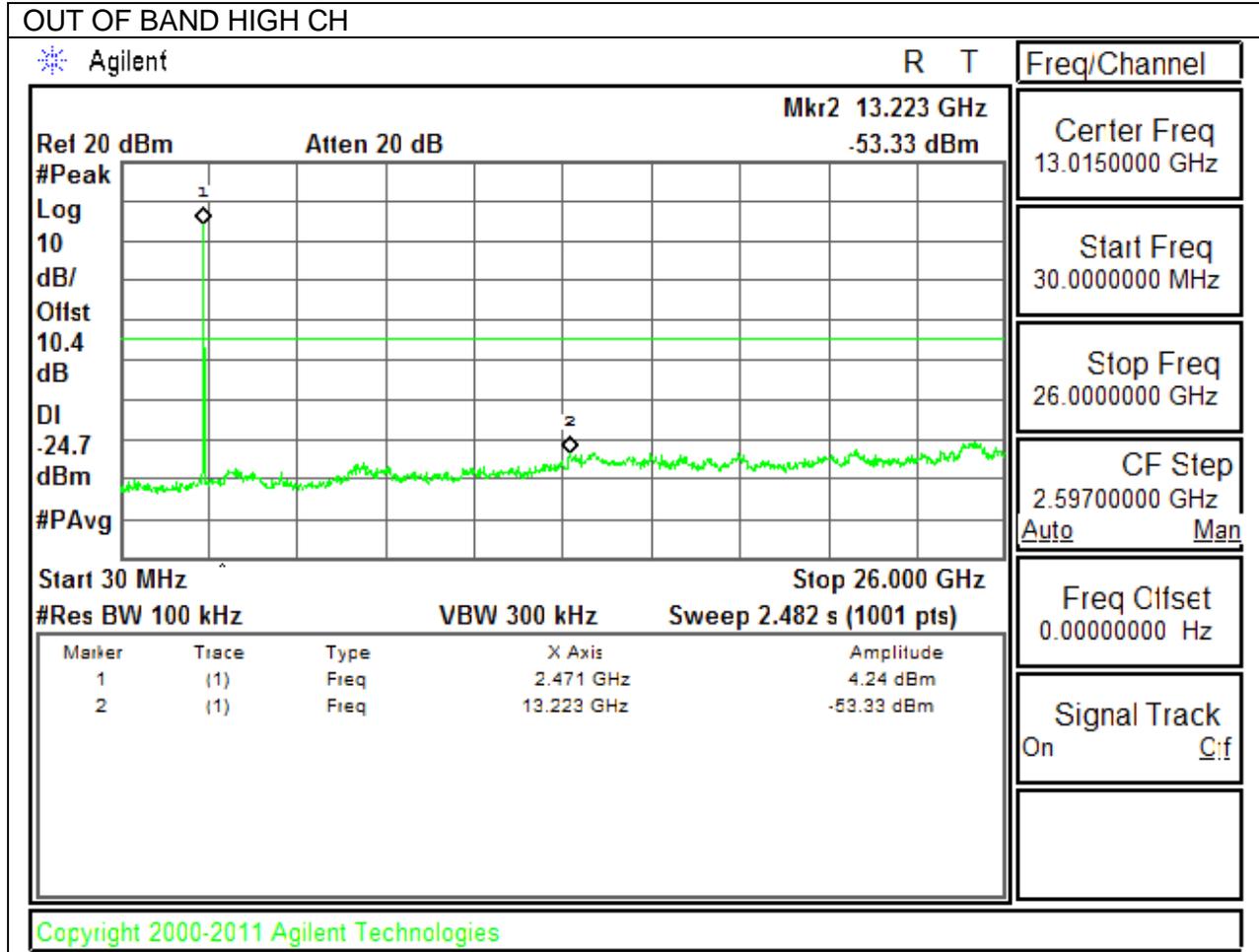
**HIGH CHANNEL BANDEDGE**



**OUT-OF-BAND EMISSIONS**

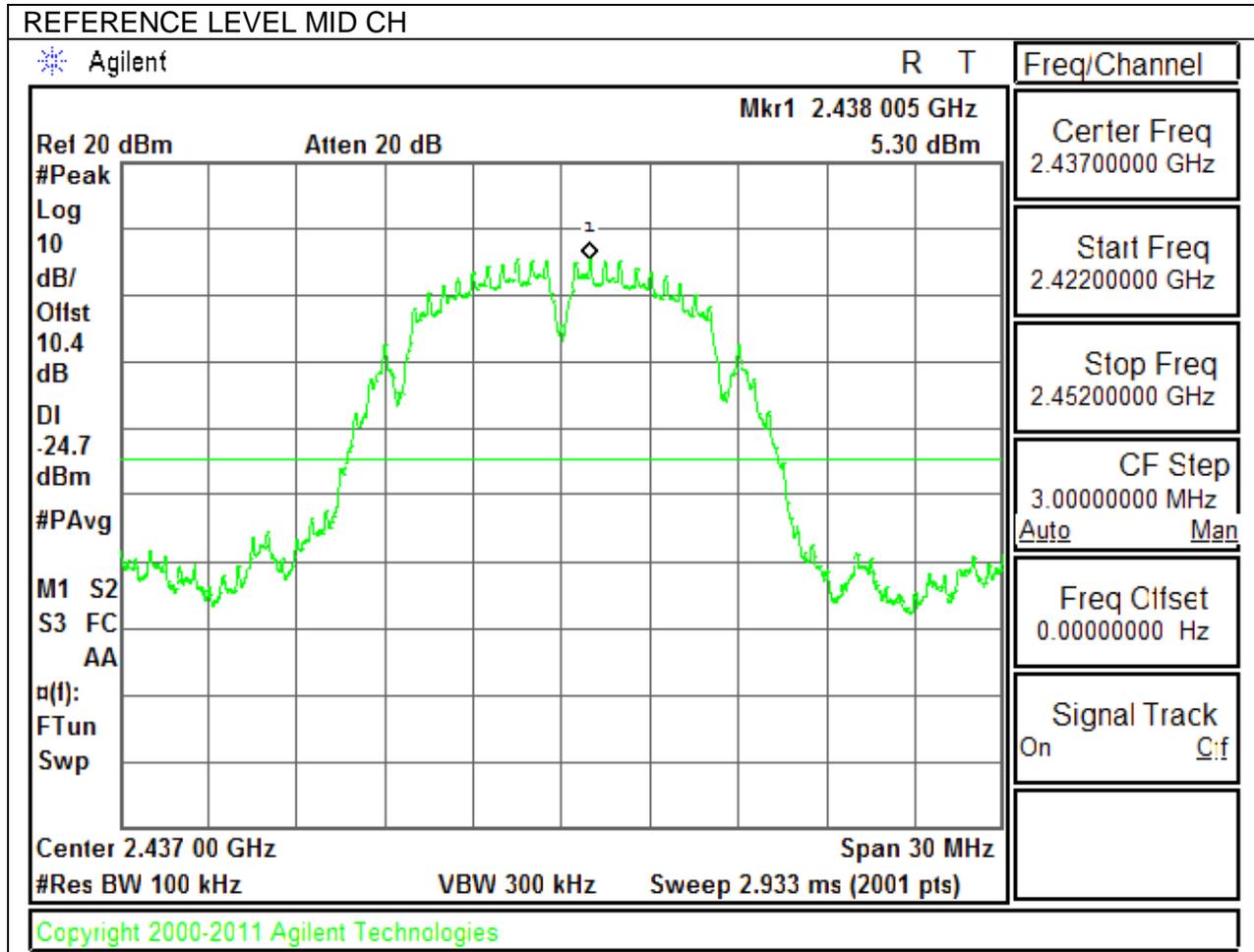




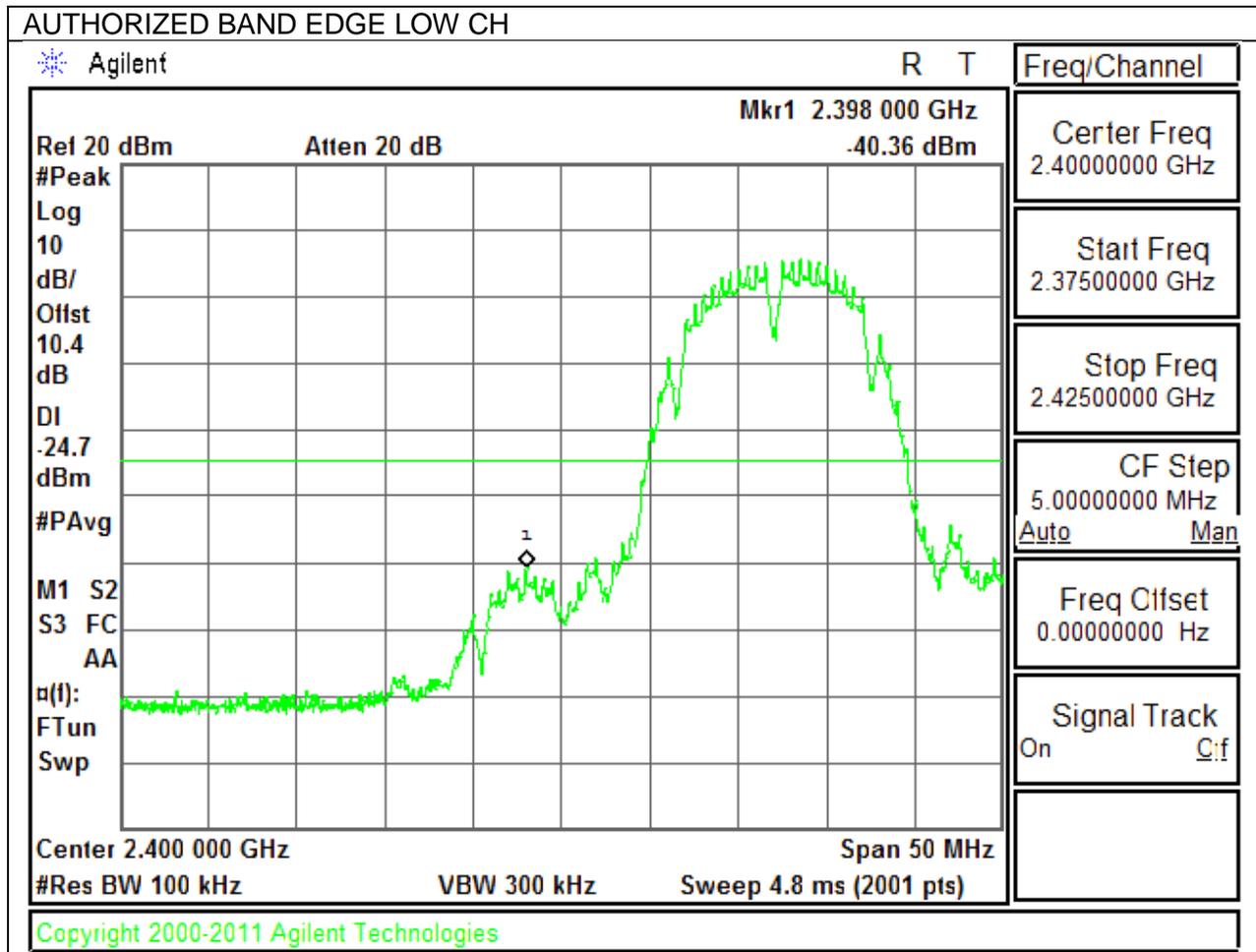


**10.5.2. 802.11b MODE IN THE 2.4 GHz BAND CHAIN 1**

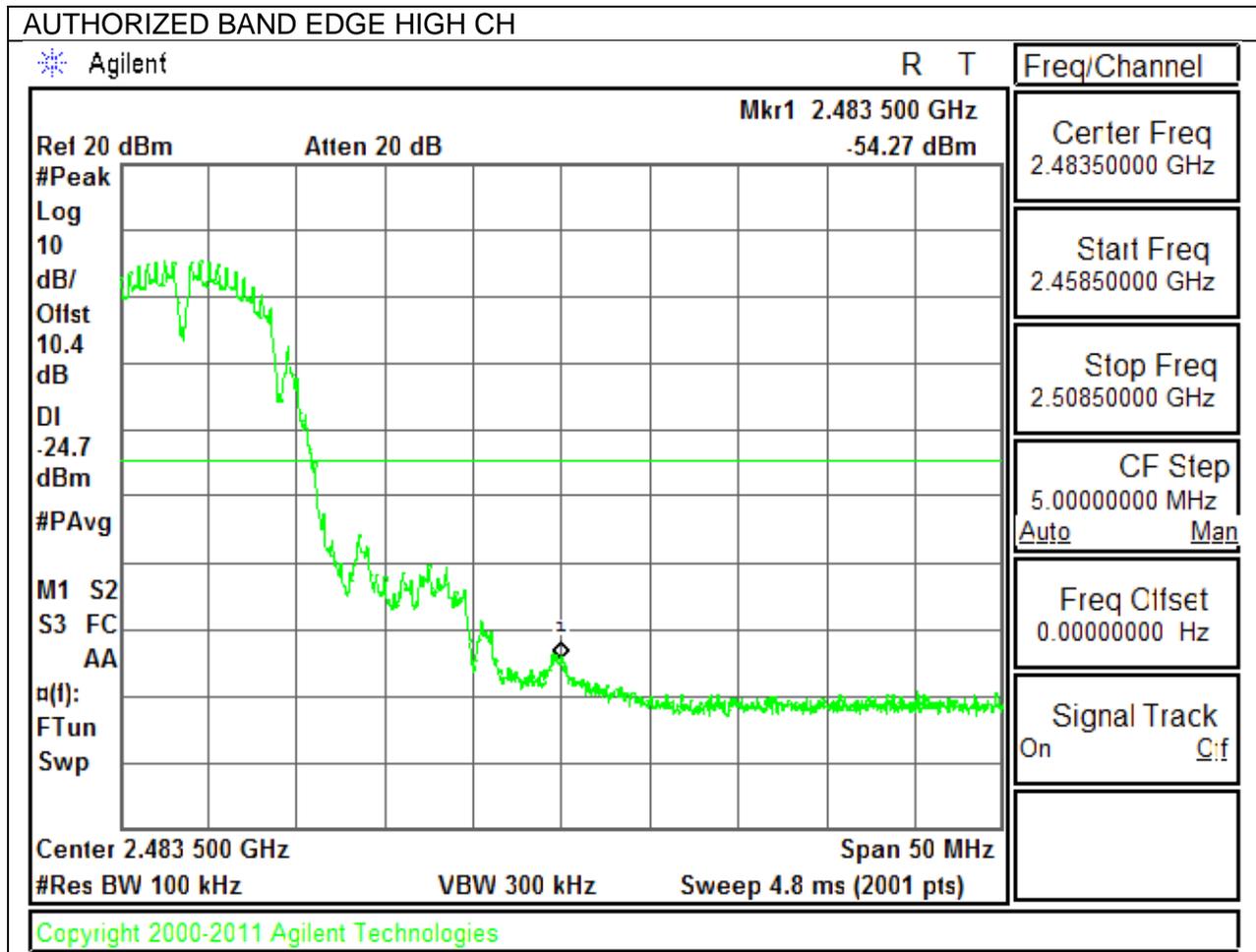
**IN-BAND REFERENCE LEVEL**



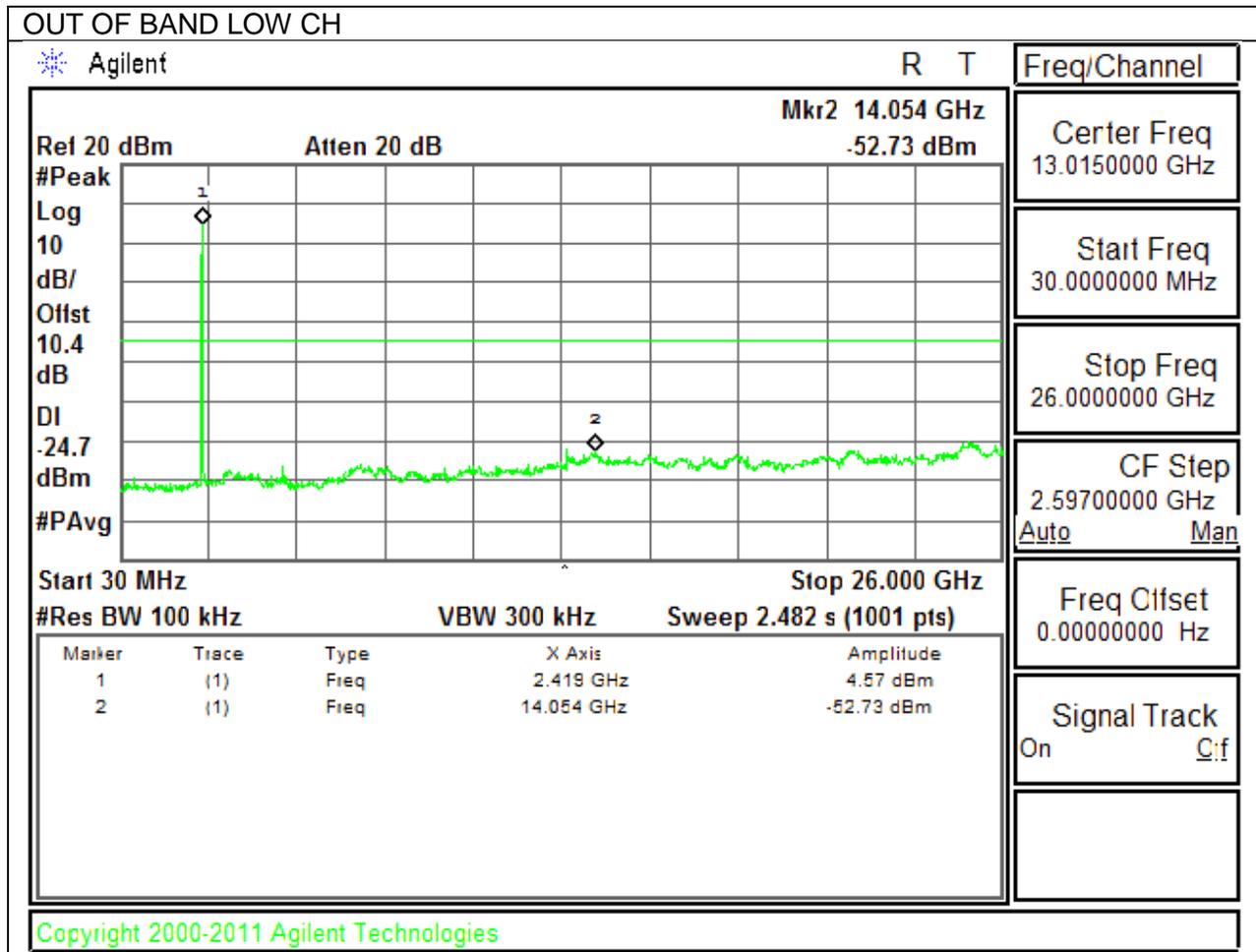
**LOW CHANNEL BANDEDGE**

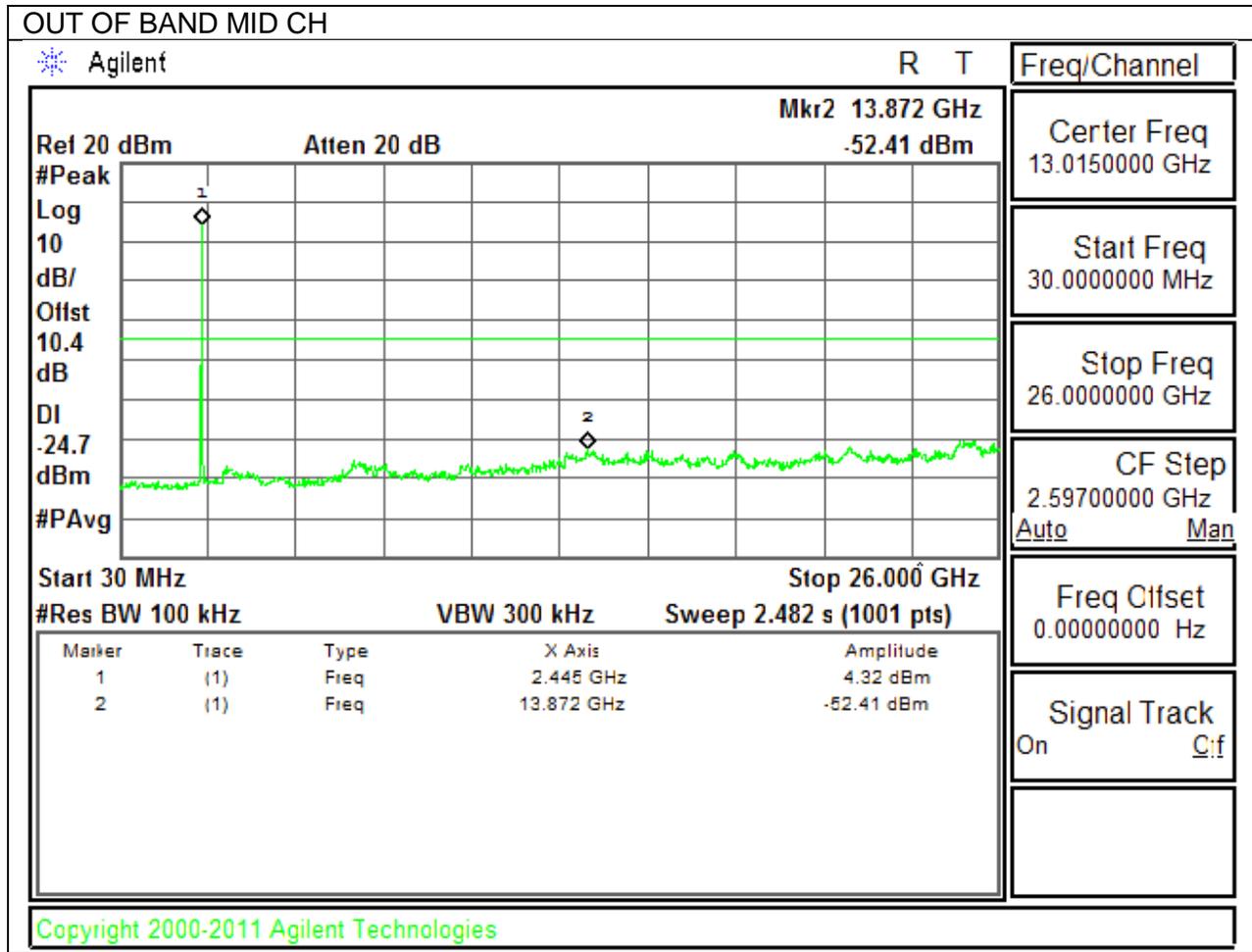


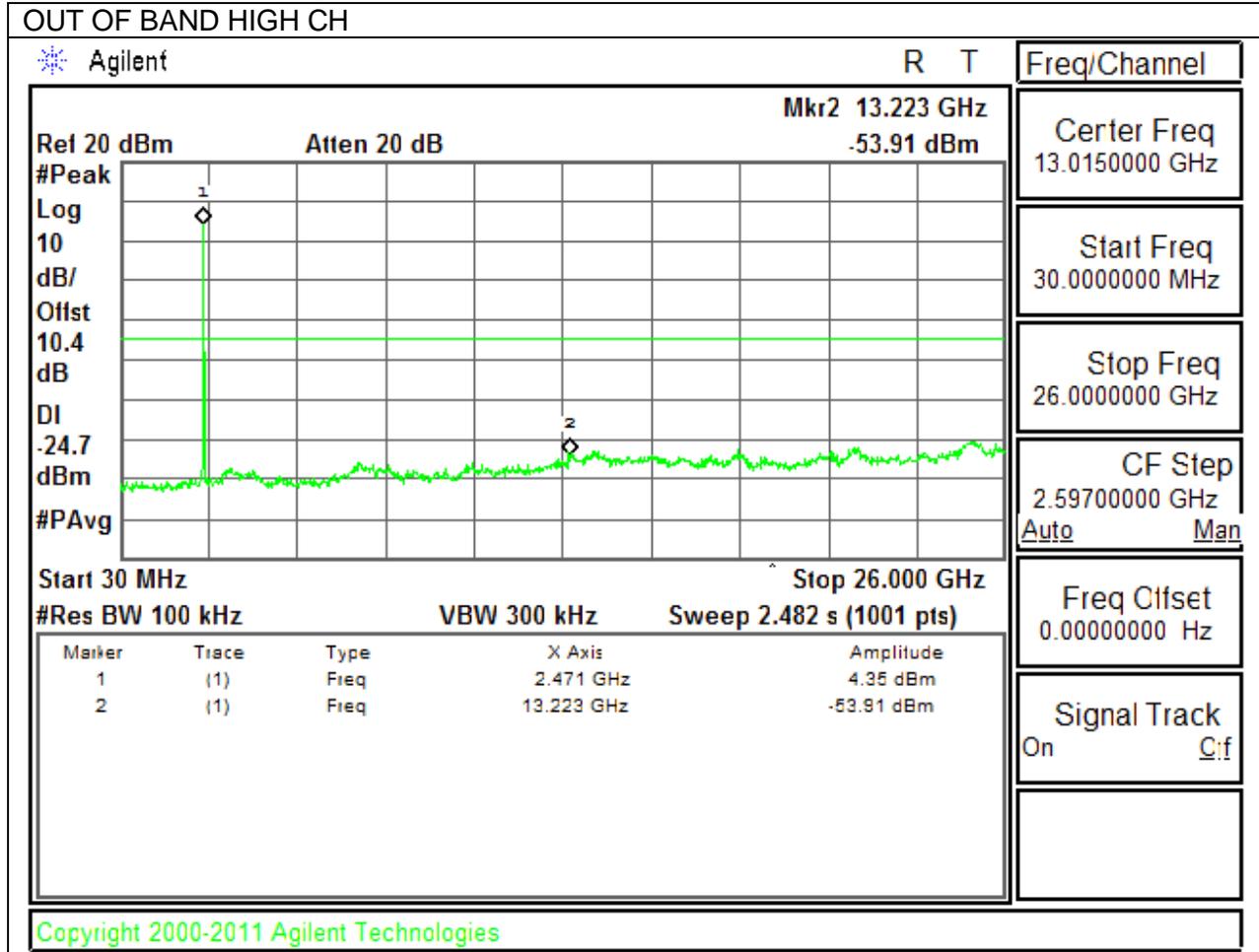
**HIGH CHANNEL BANDEDGE**



**OUT-OF-BAND EMISSIONS**

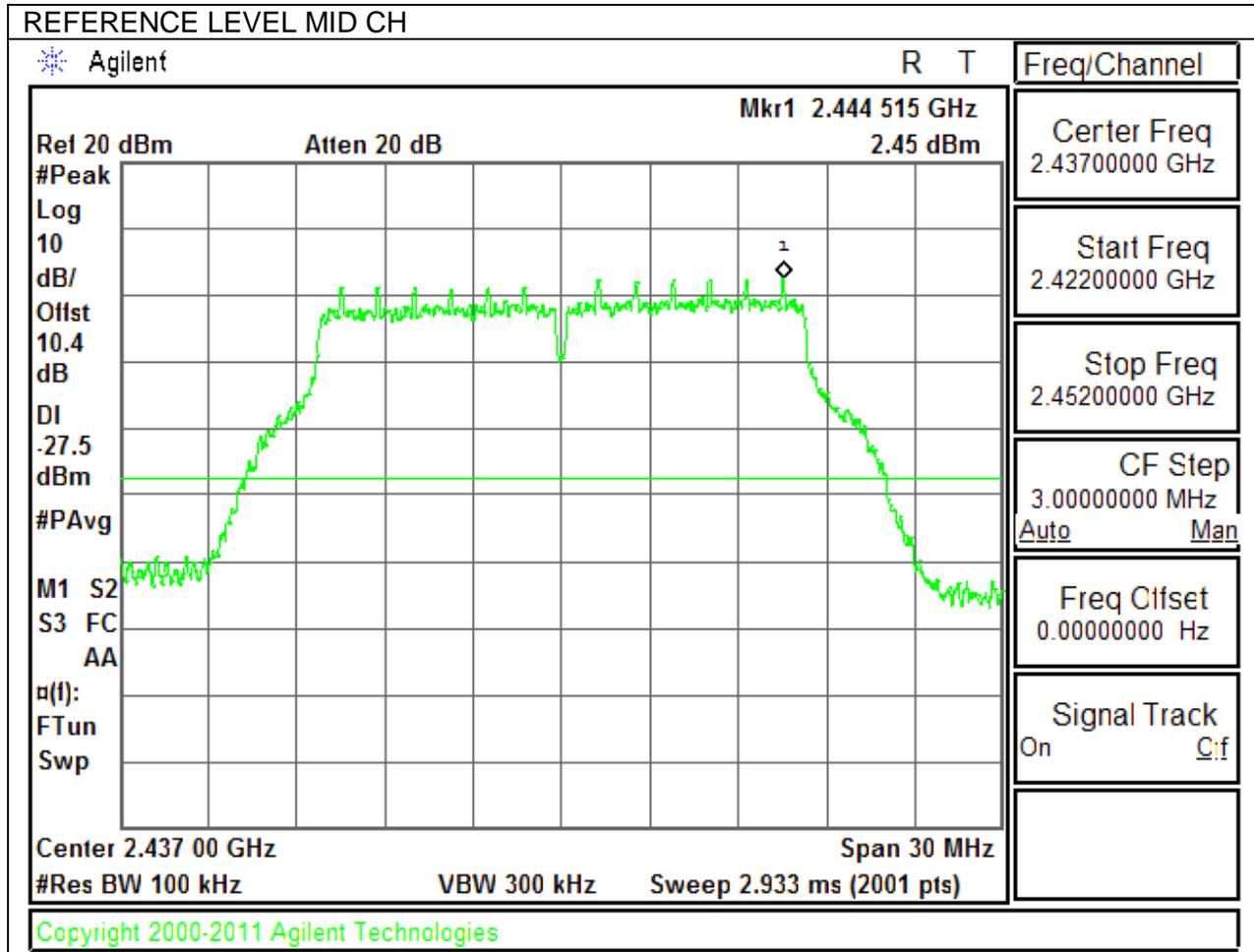




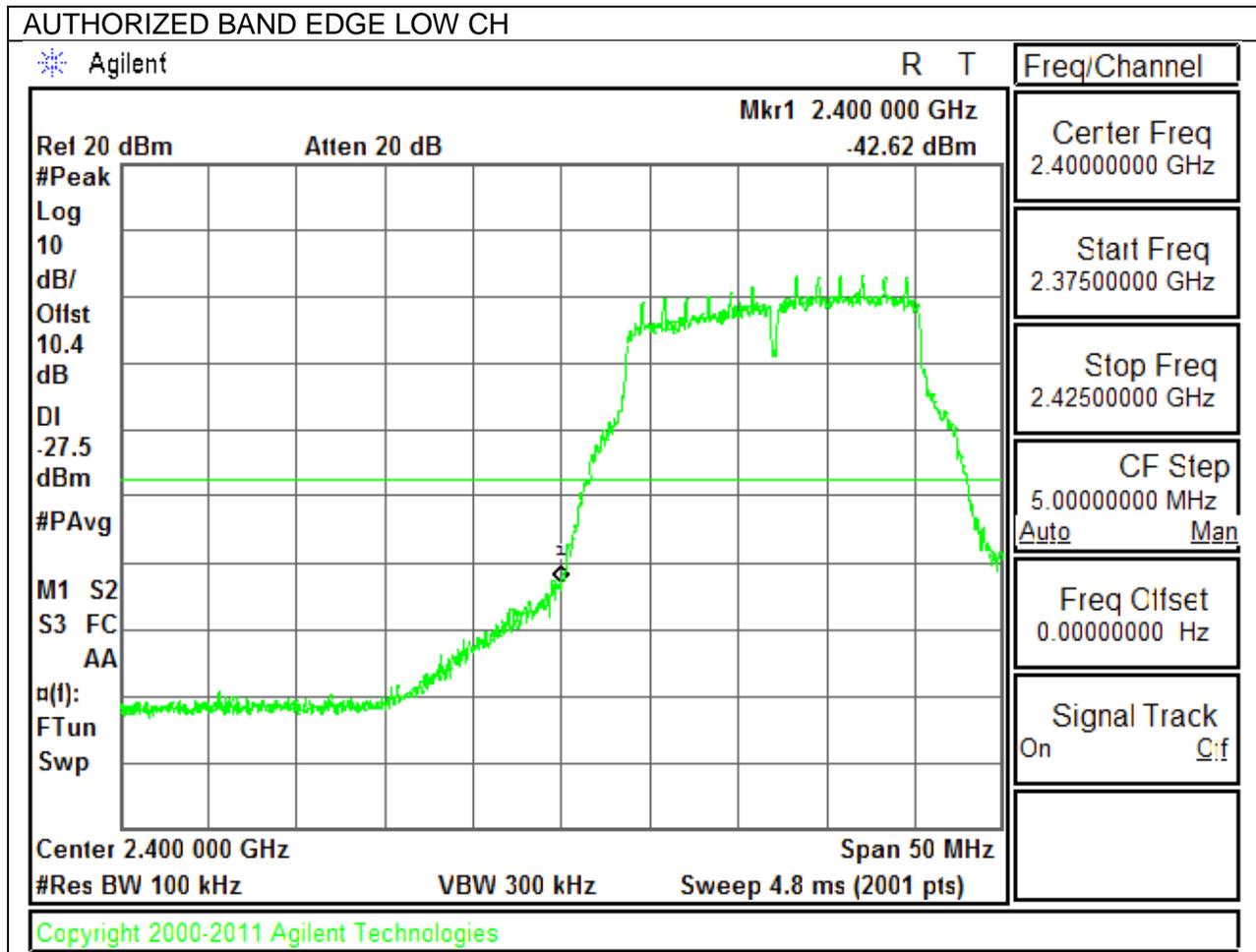


**10.5.3. 802.11g MODE IN THE 2.4 GHz BAND CHAIN 0**

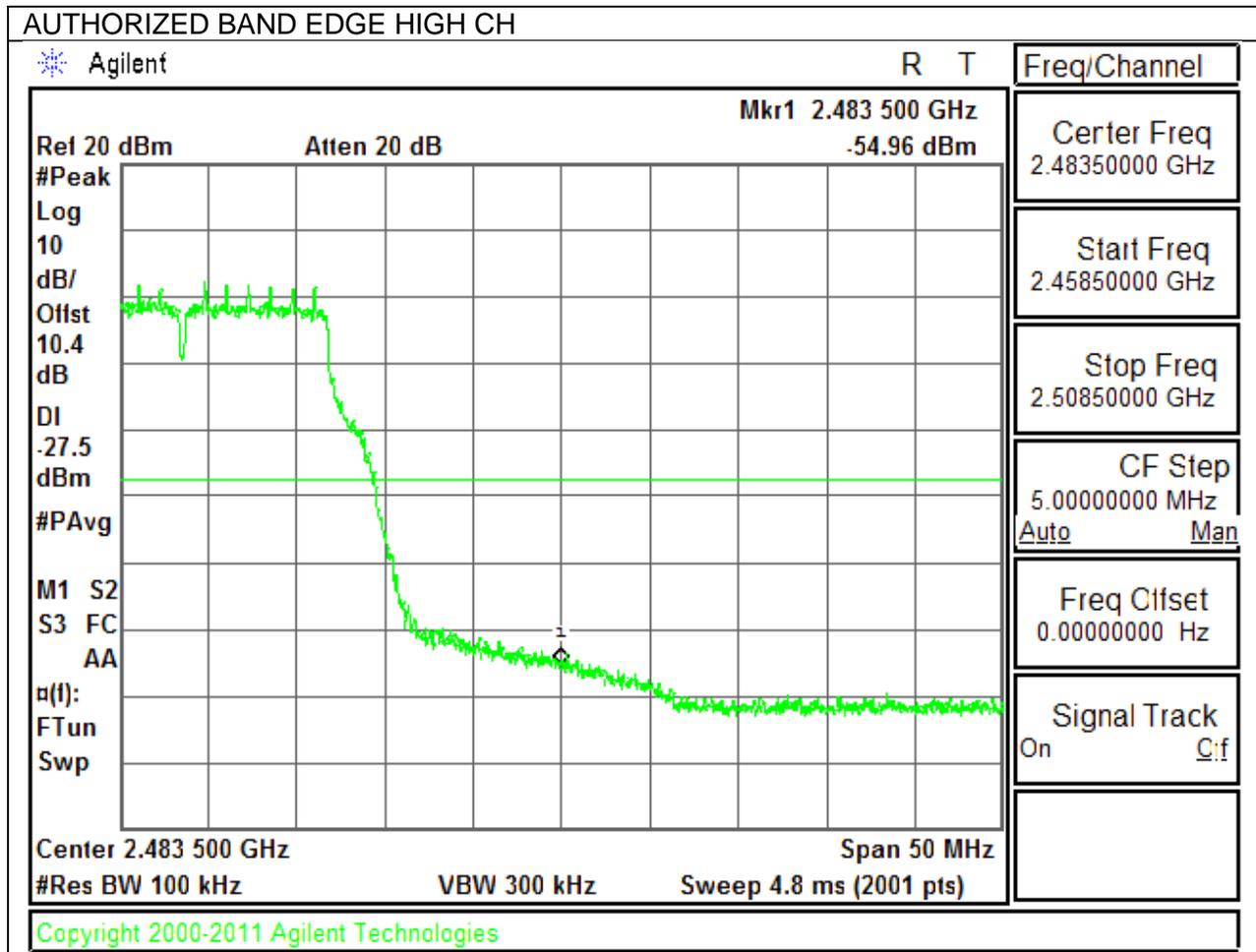
**IN-BAND REFERENCE LEVEL**



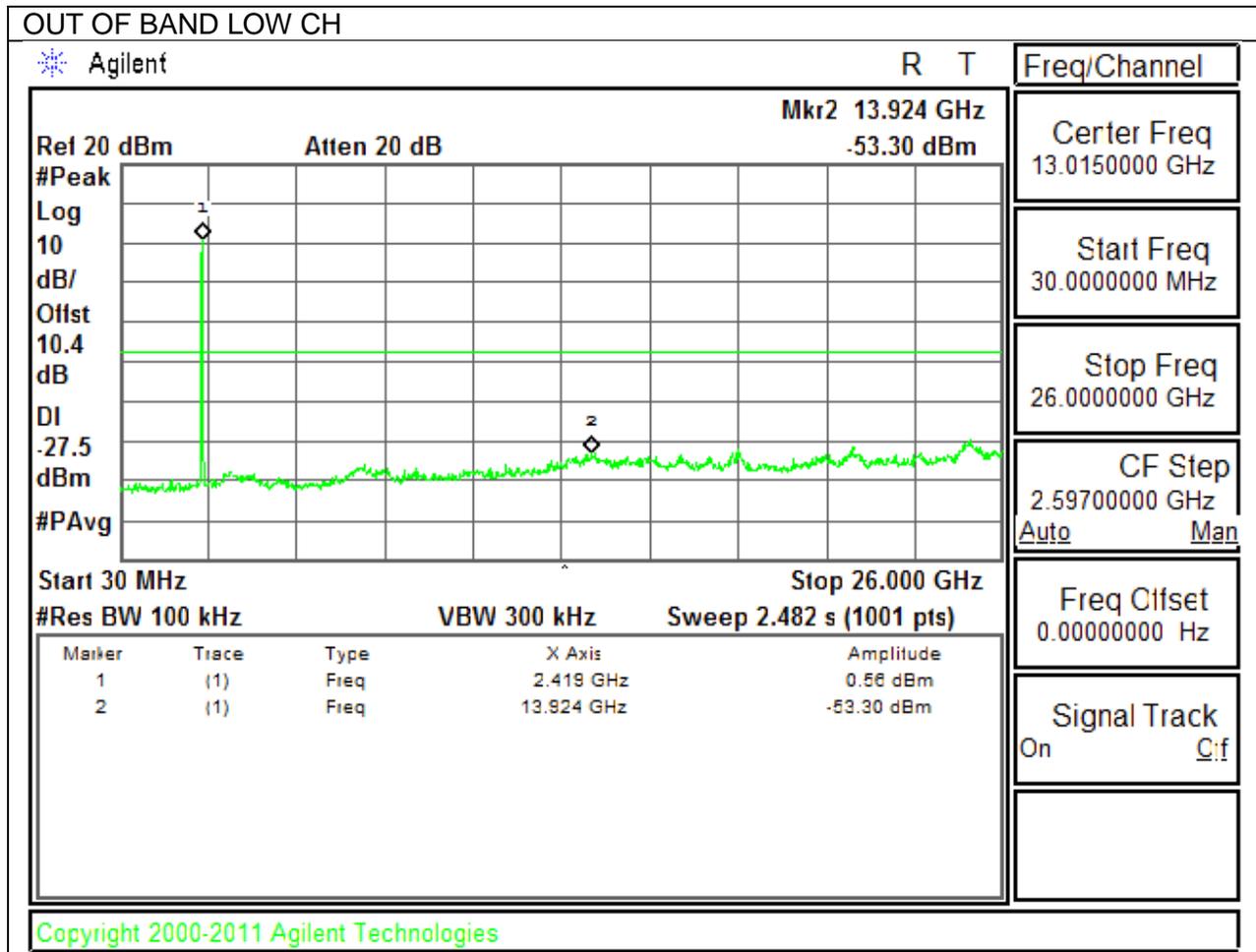
**LOW CHANNEL BANDEDGE**

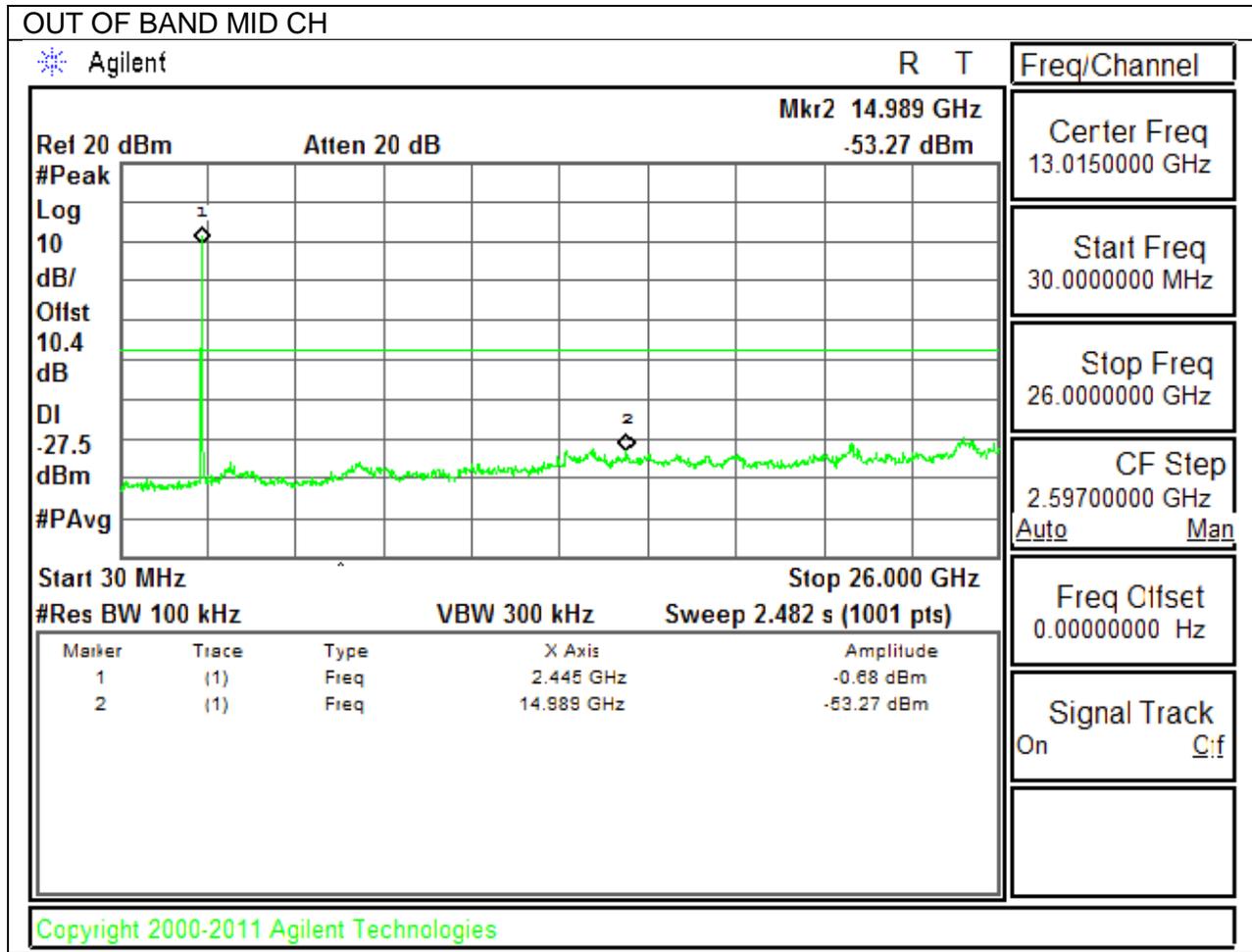


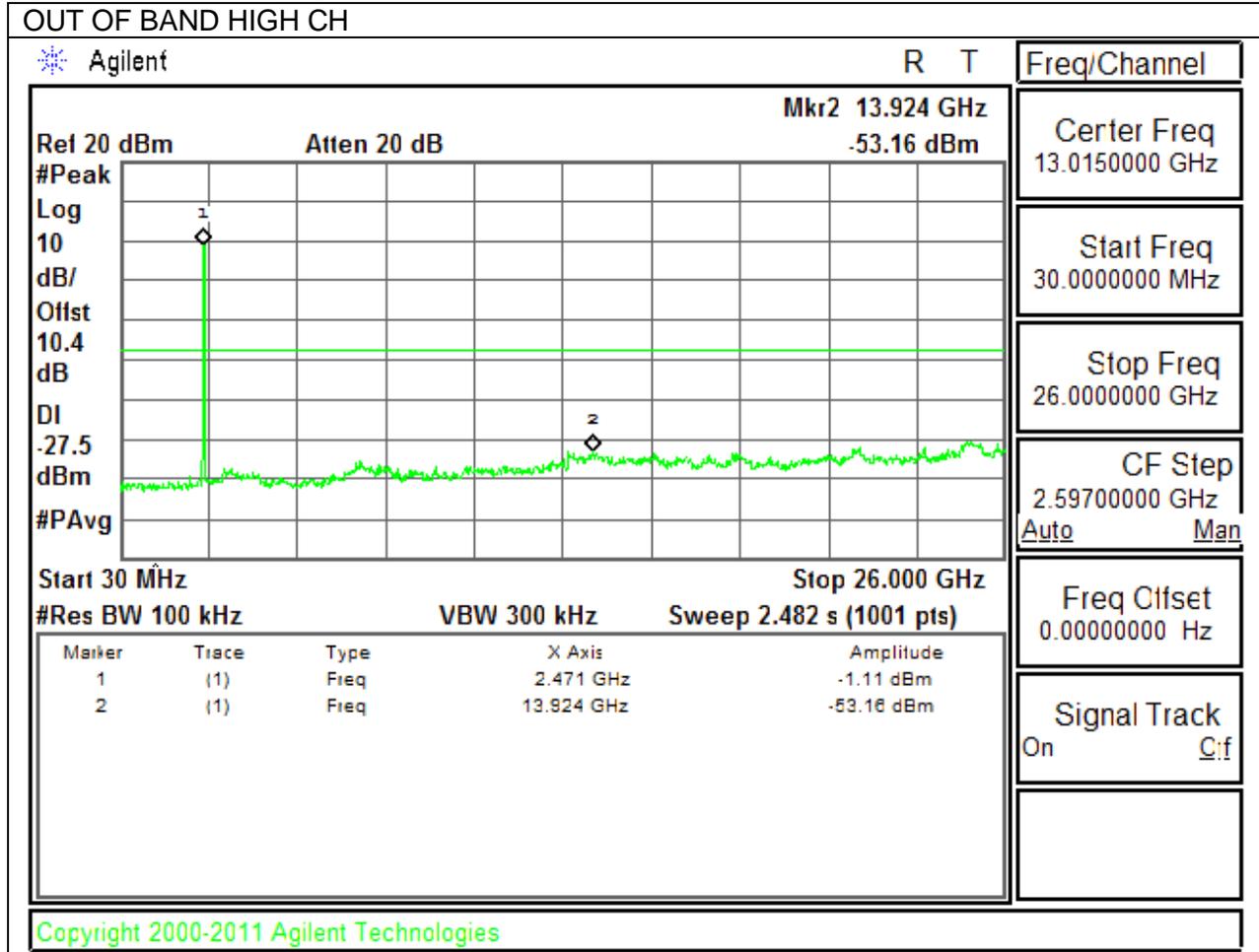
**HIGH CHANNEL BANDEDGE**



**OUT-OF-BAND EMISSIONS**

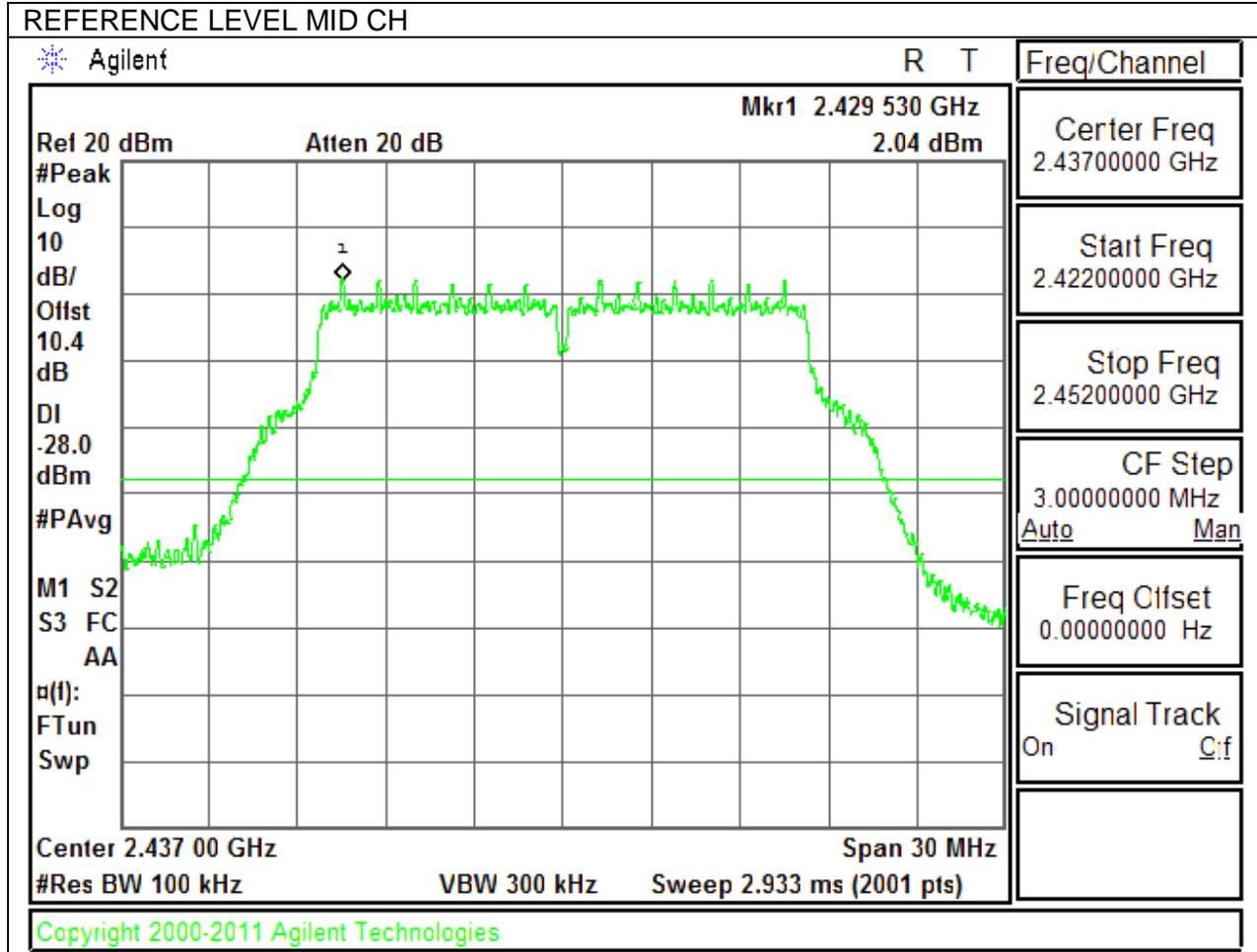




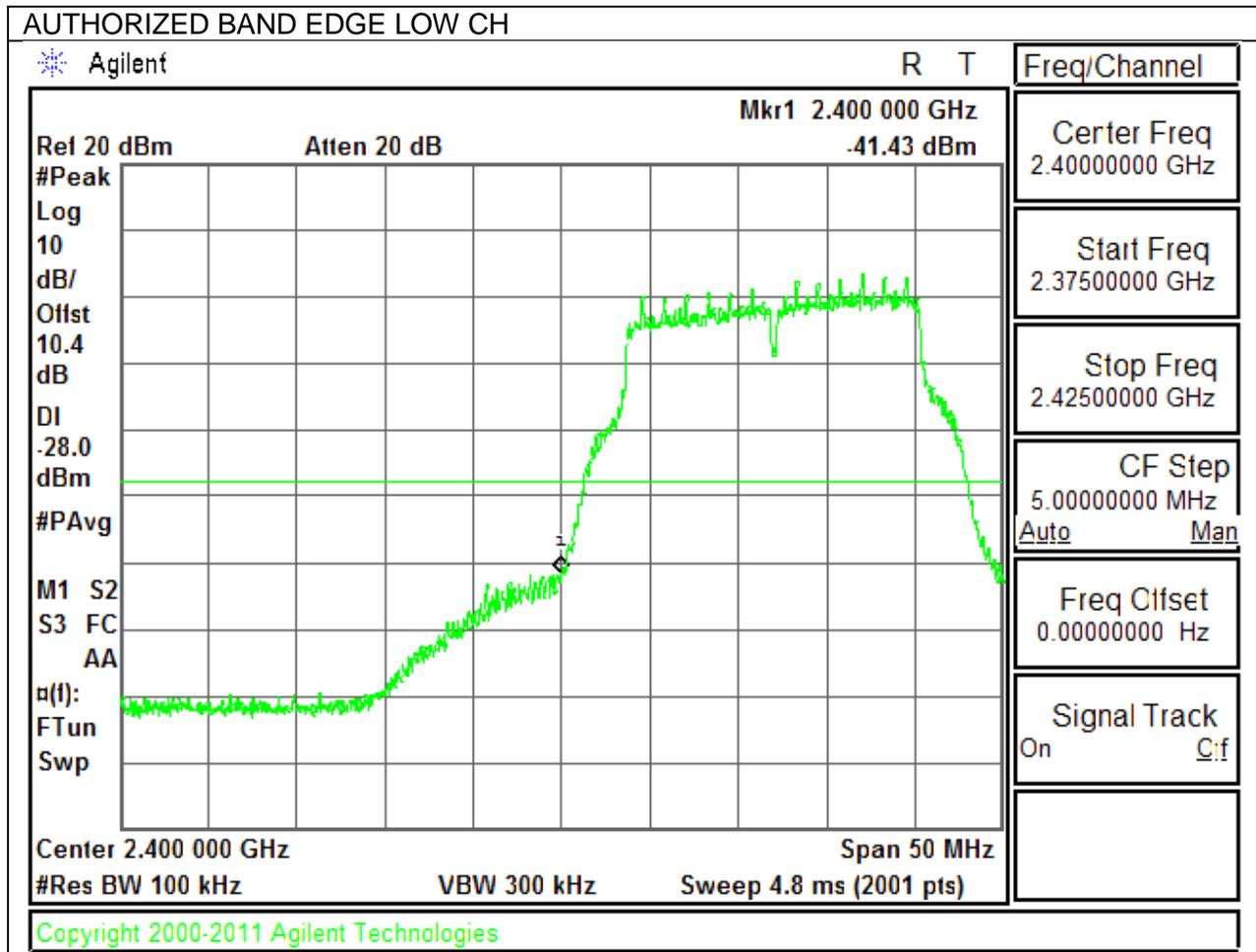


**10.5.4. 802.11g MODE IN THE 2.4 GHz BAND CHAIN 1**

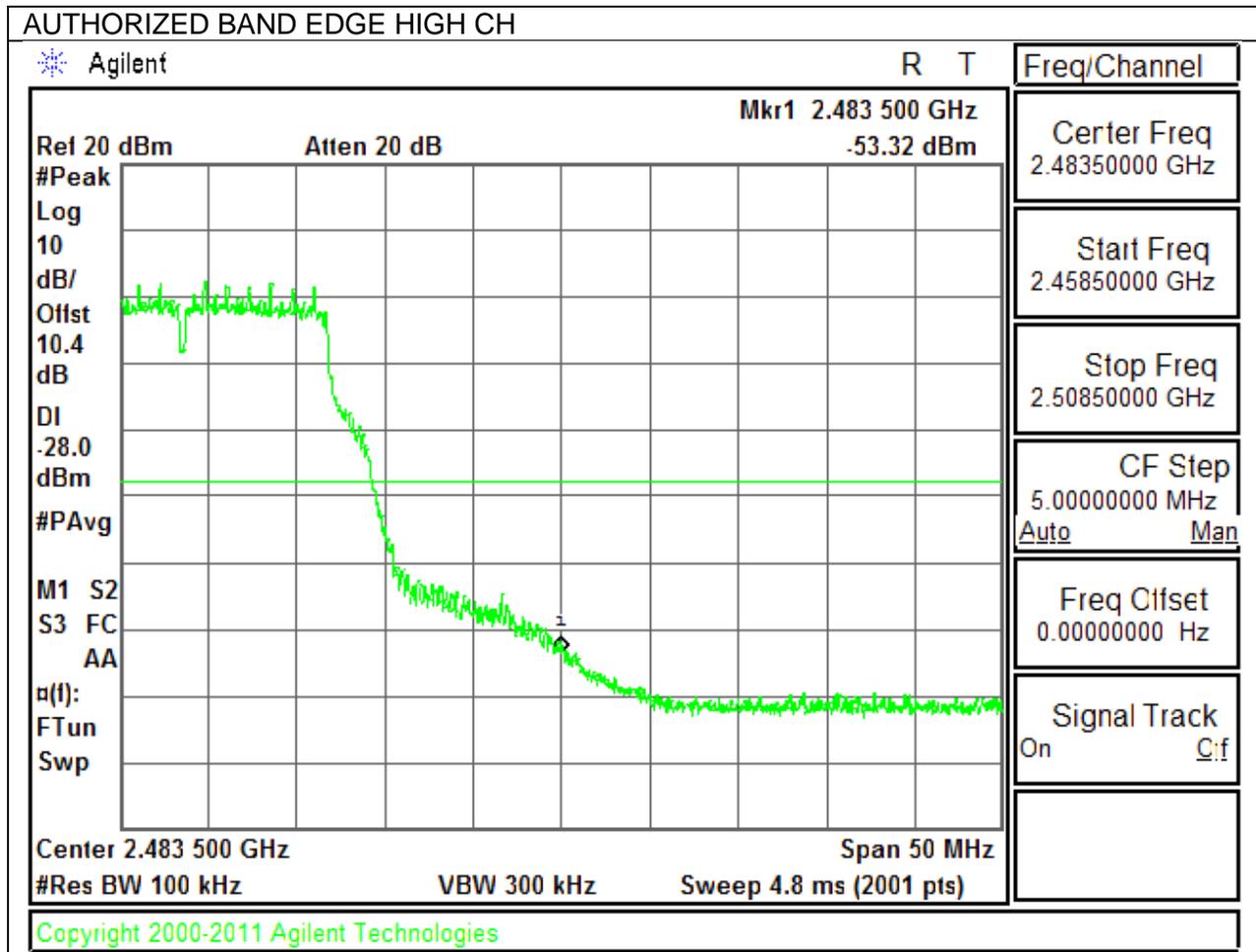
**IN-BAND REFERENCE LEVEL**



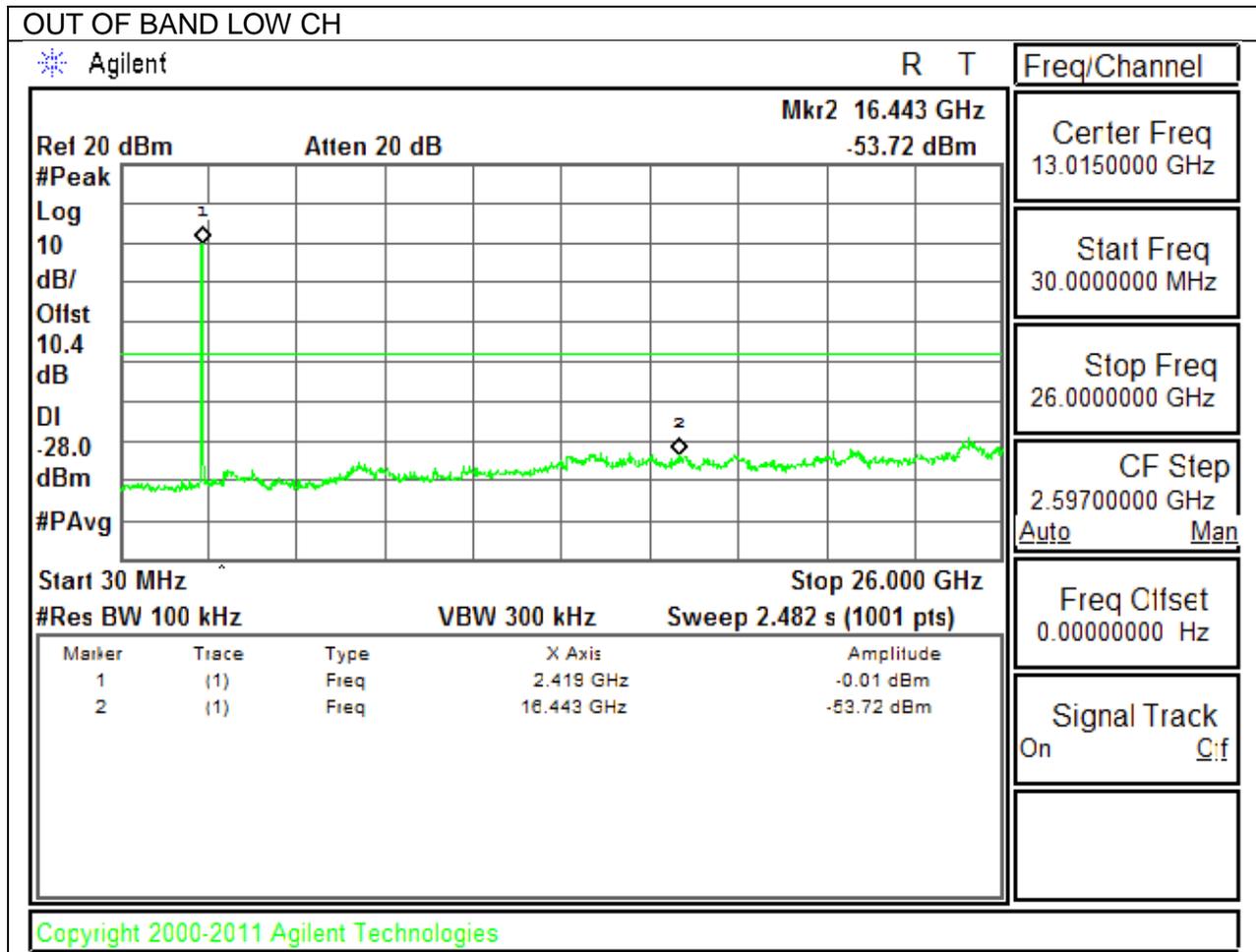
**LOW CHANNEL BANDEDGE**

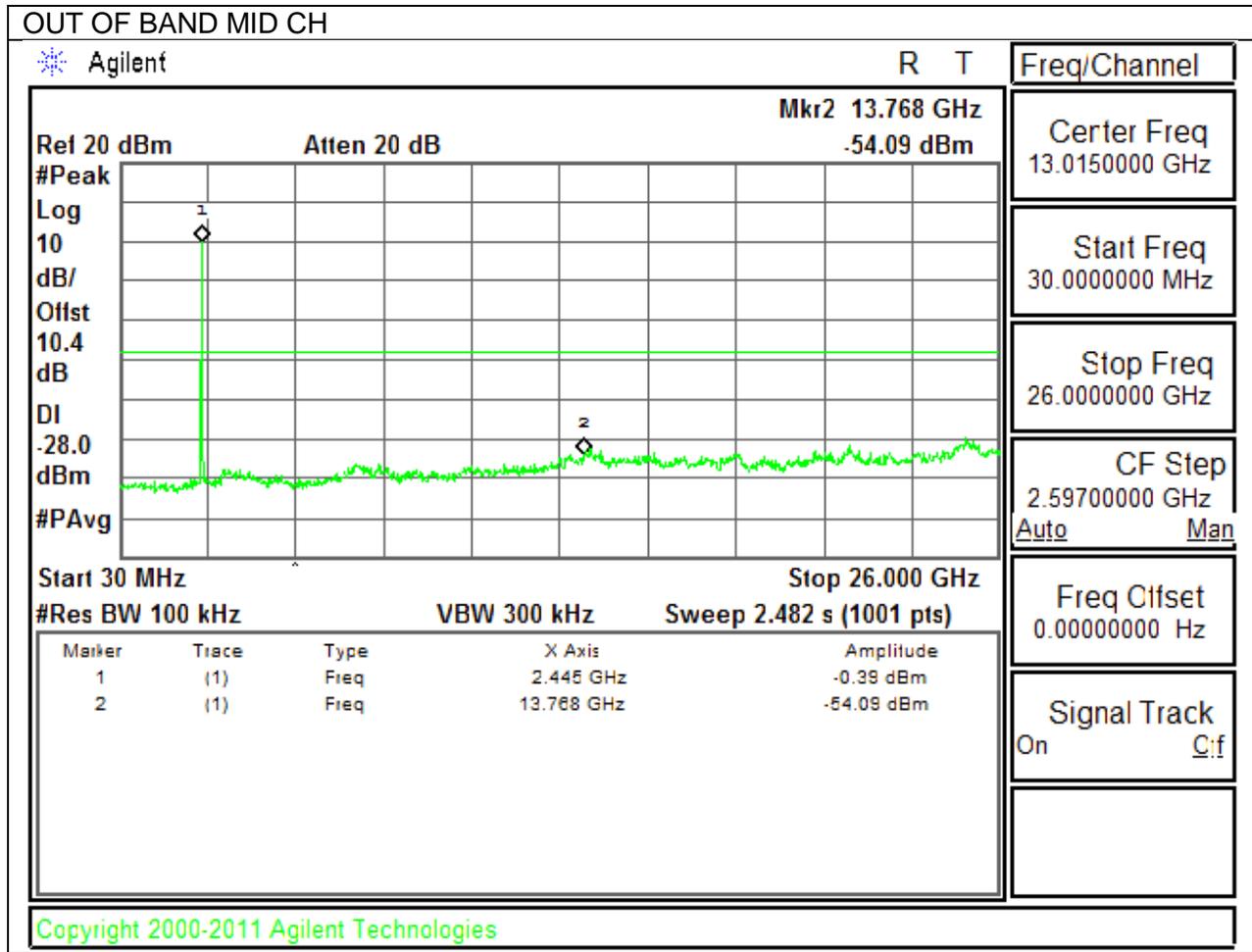


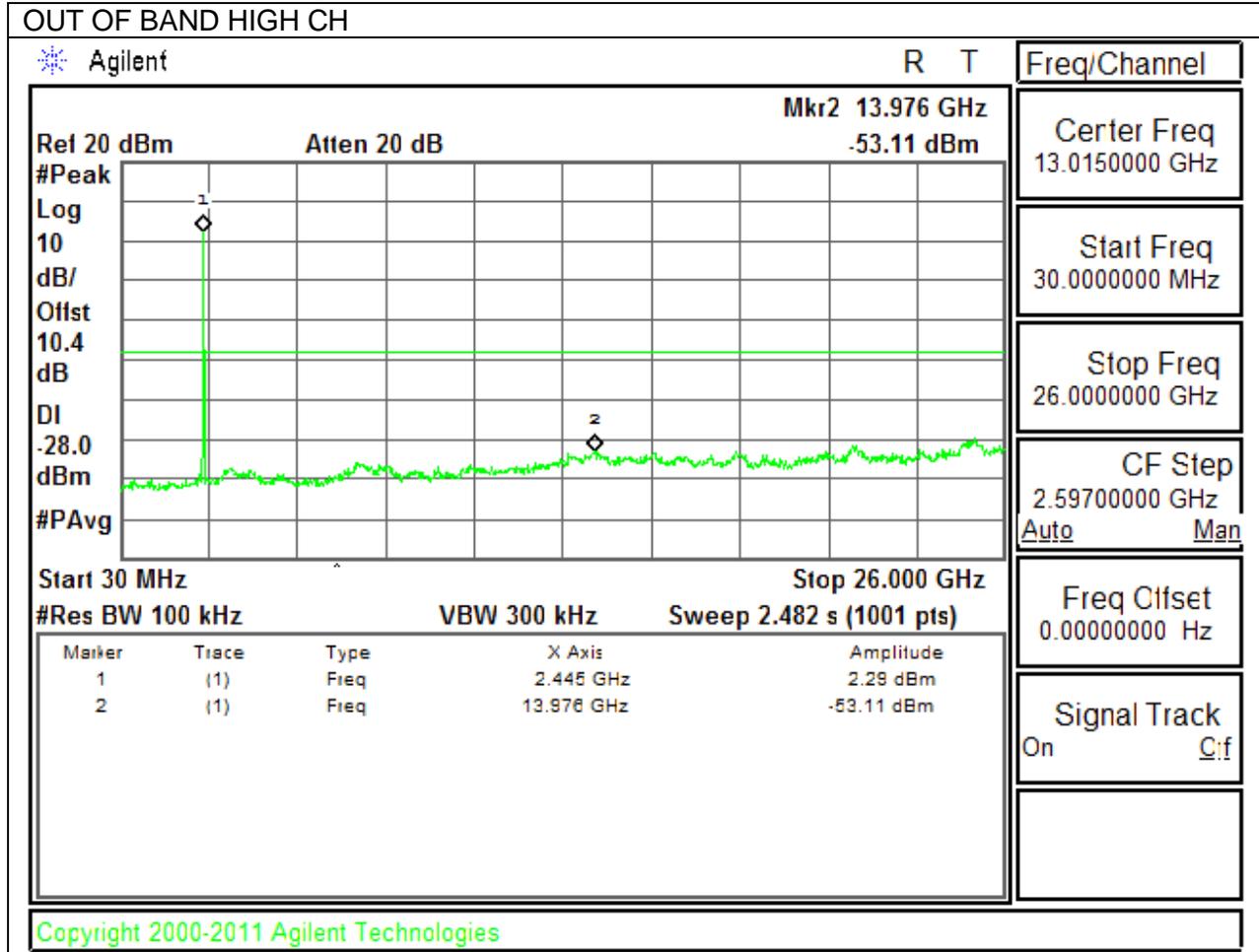
**HIGH CHANNEL BANDEDGE**



**OUT-OF-BAND EMISSIONS**

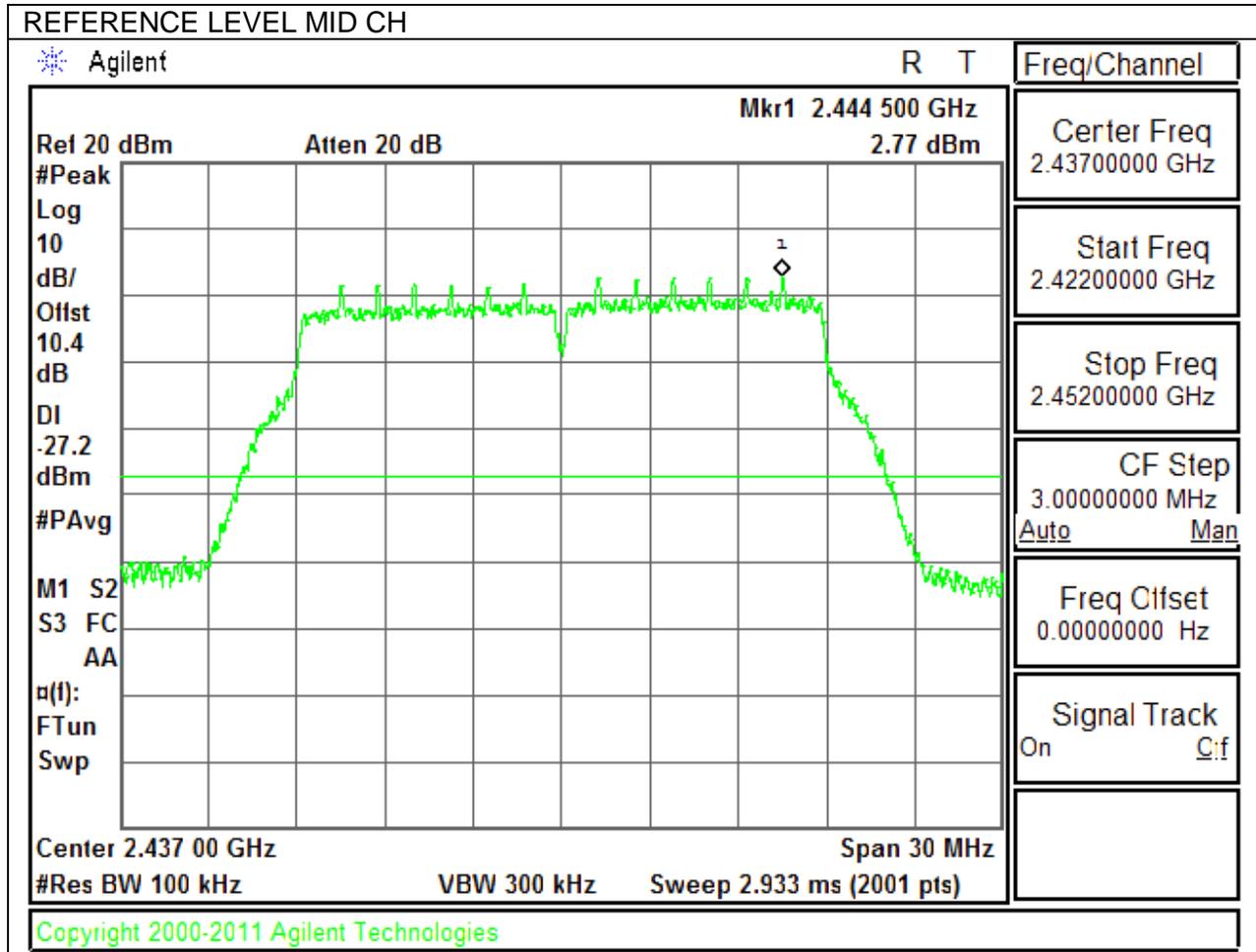




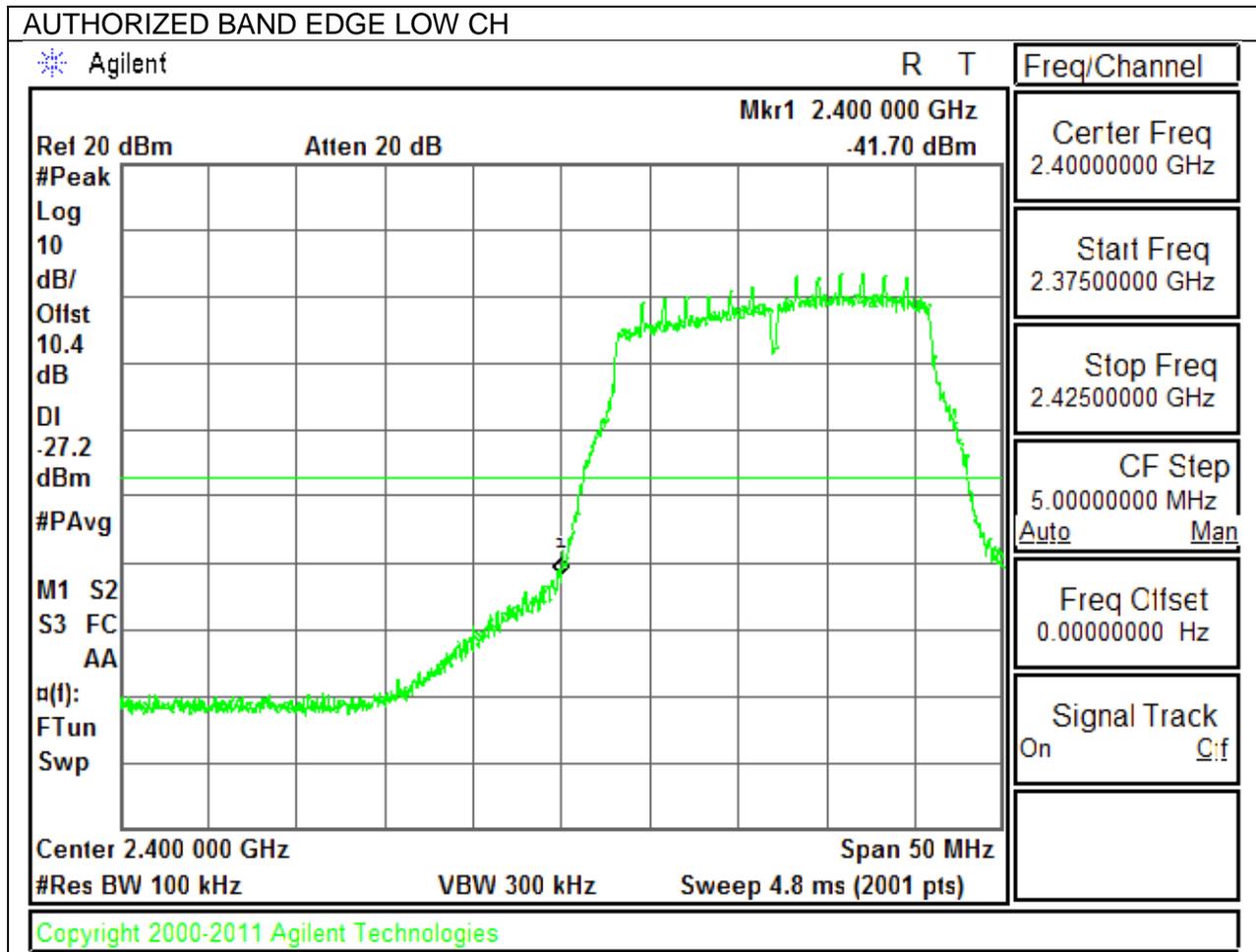


**10.5.5. 802.11n MODE IN THE 2.4 GHz BAND CHAIN 0**

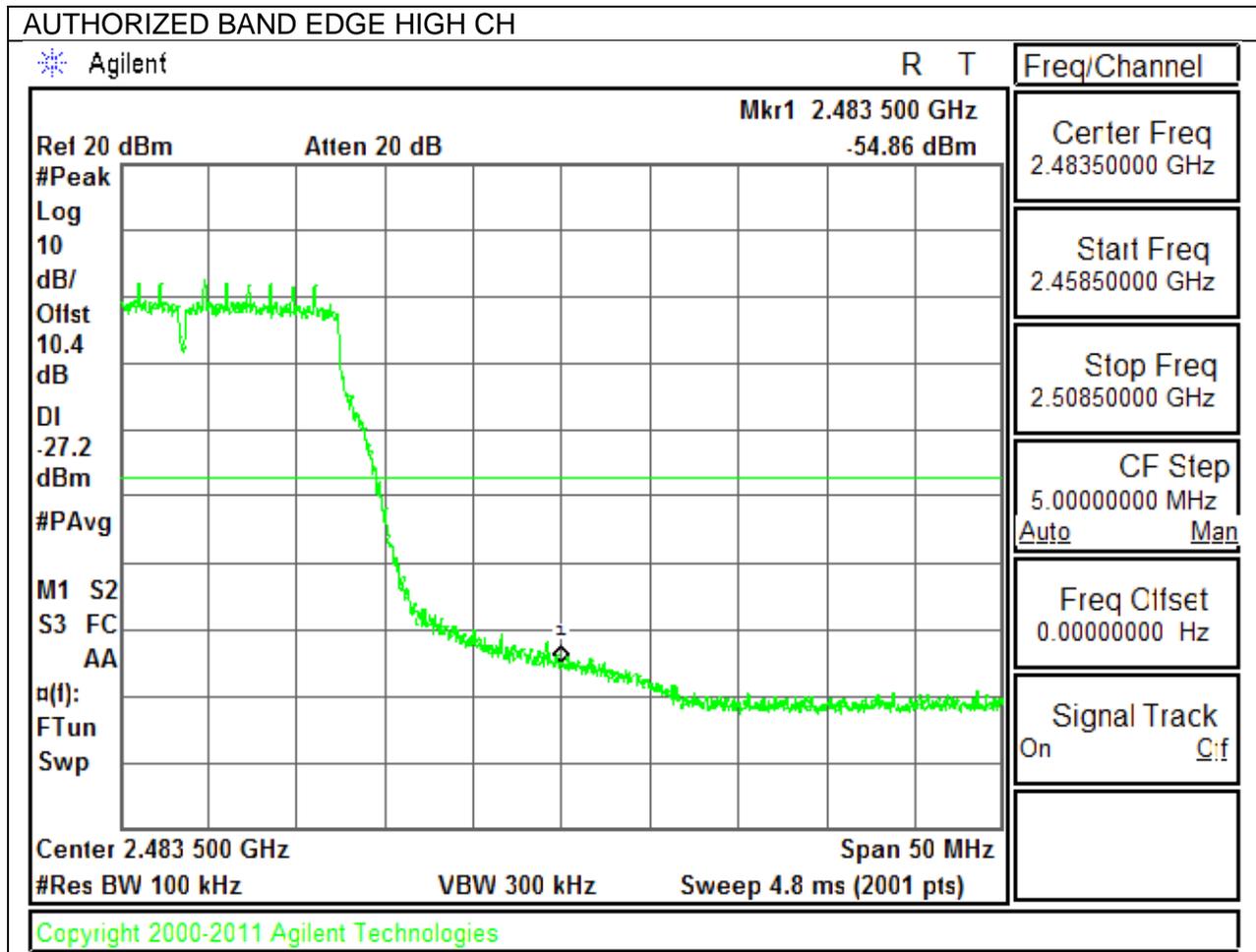
**IN-BAND REFERENCE LEVEL**



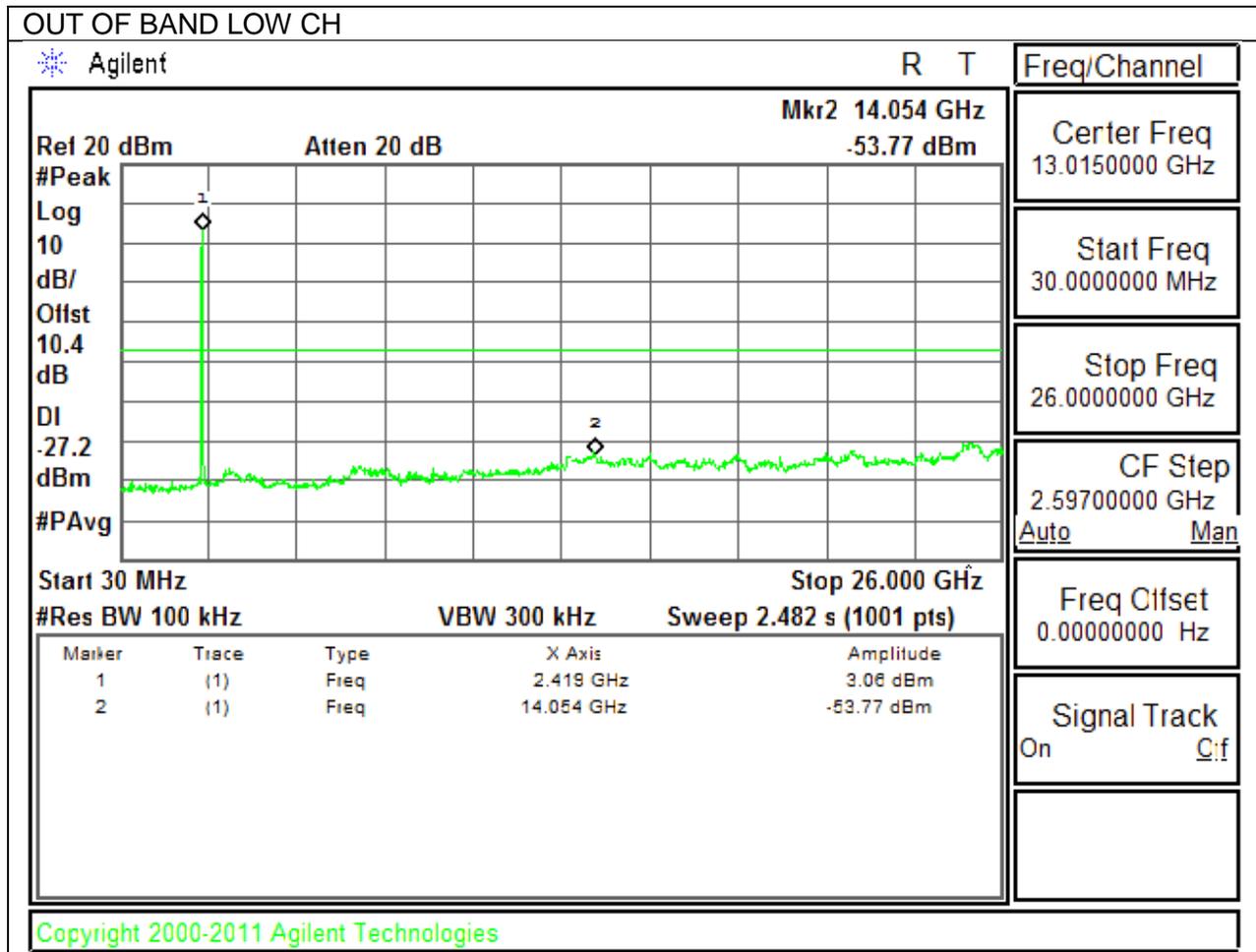
**LOW CHANNEL BANDEDGE**

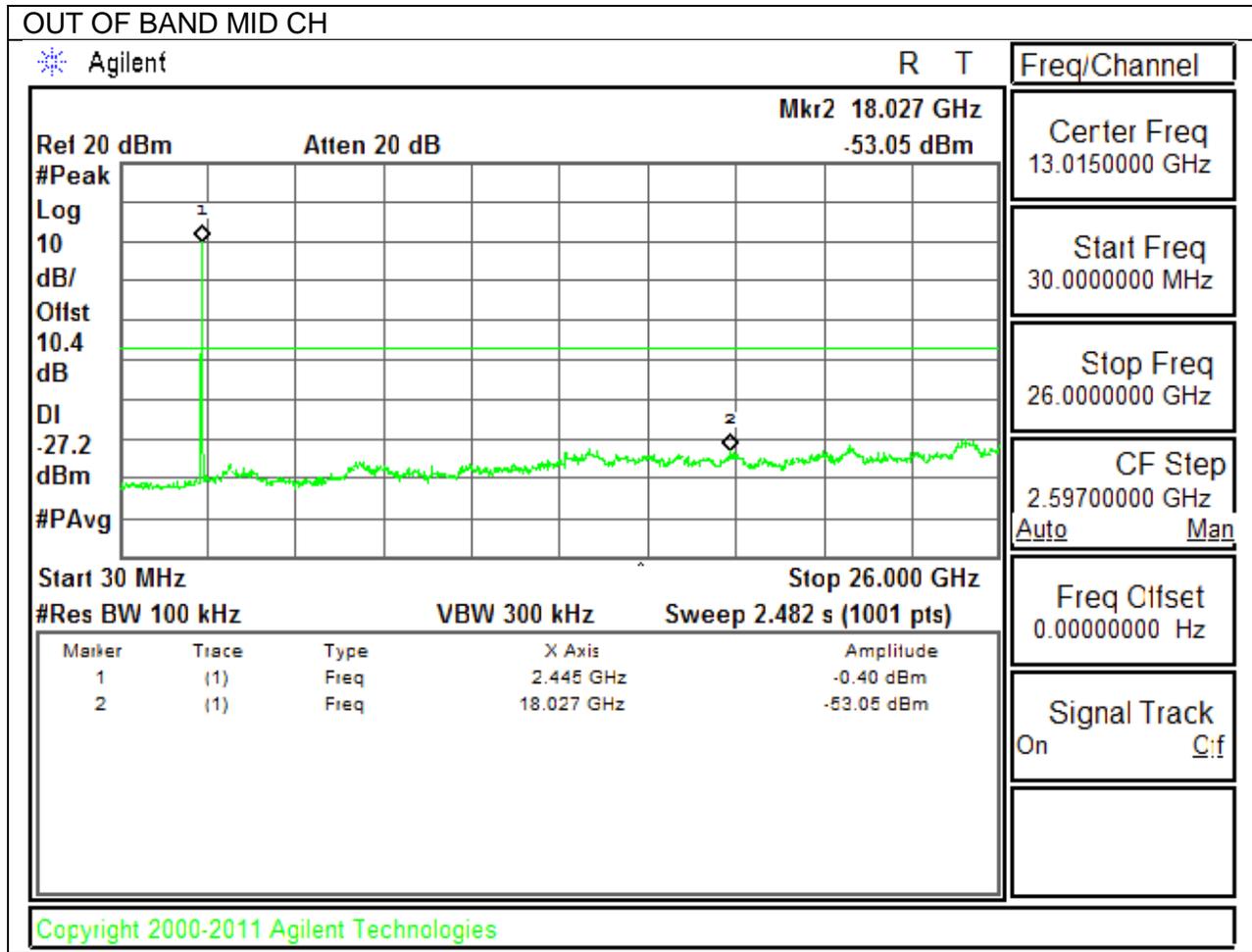


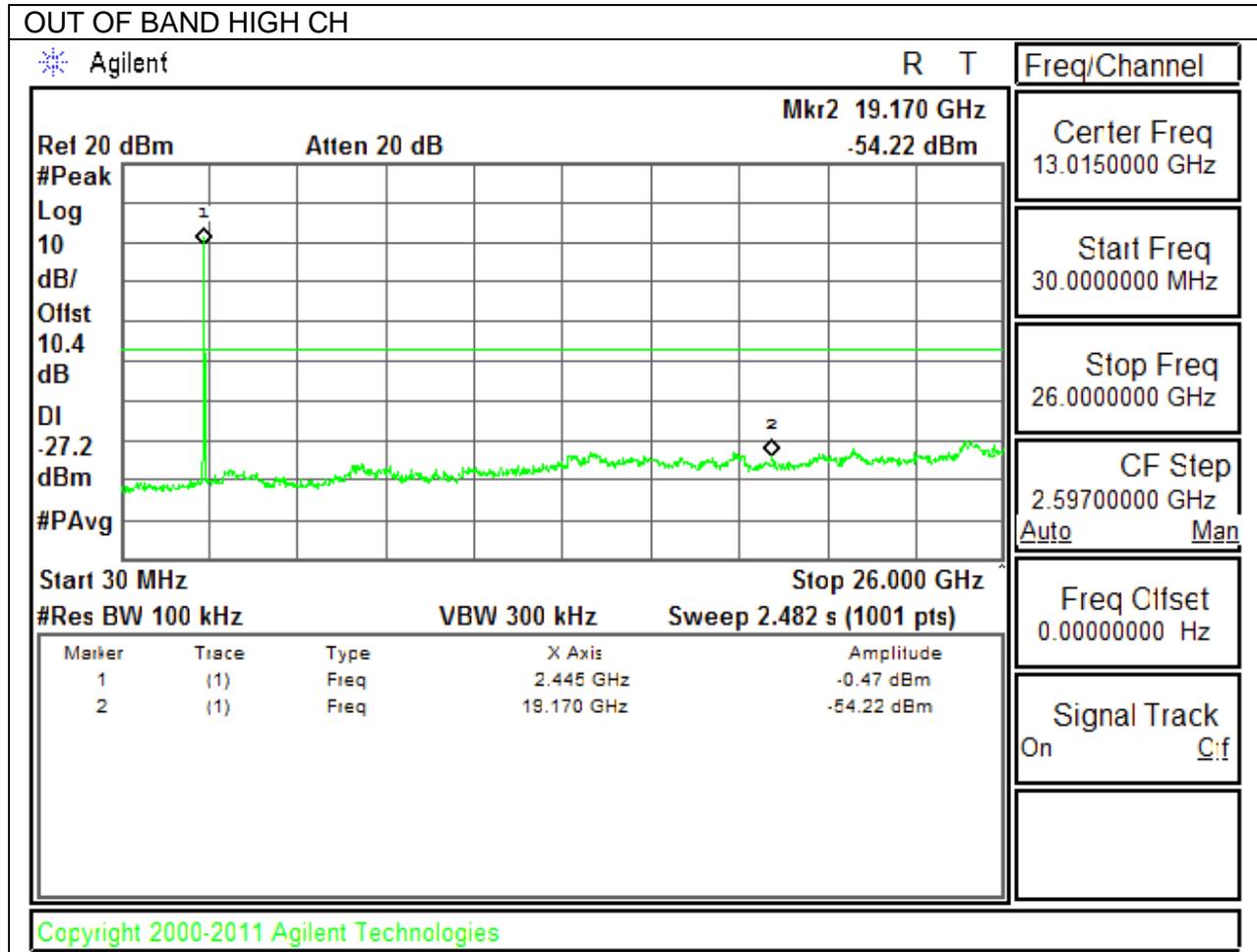
**HIGH CHANNEL BANDEDGE**



**OUT-OF-BAND EMISSIONS**

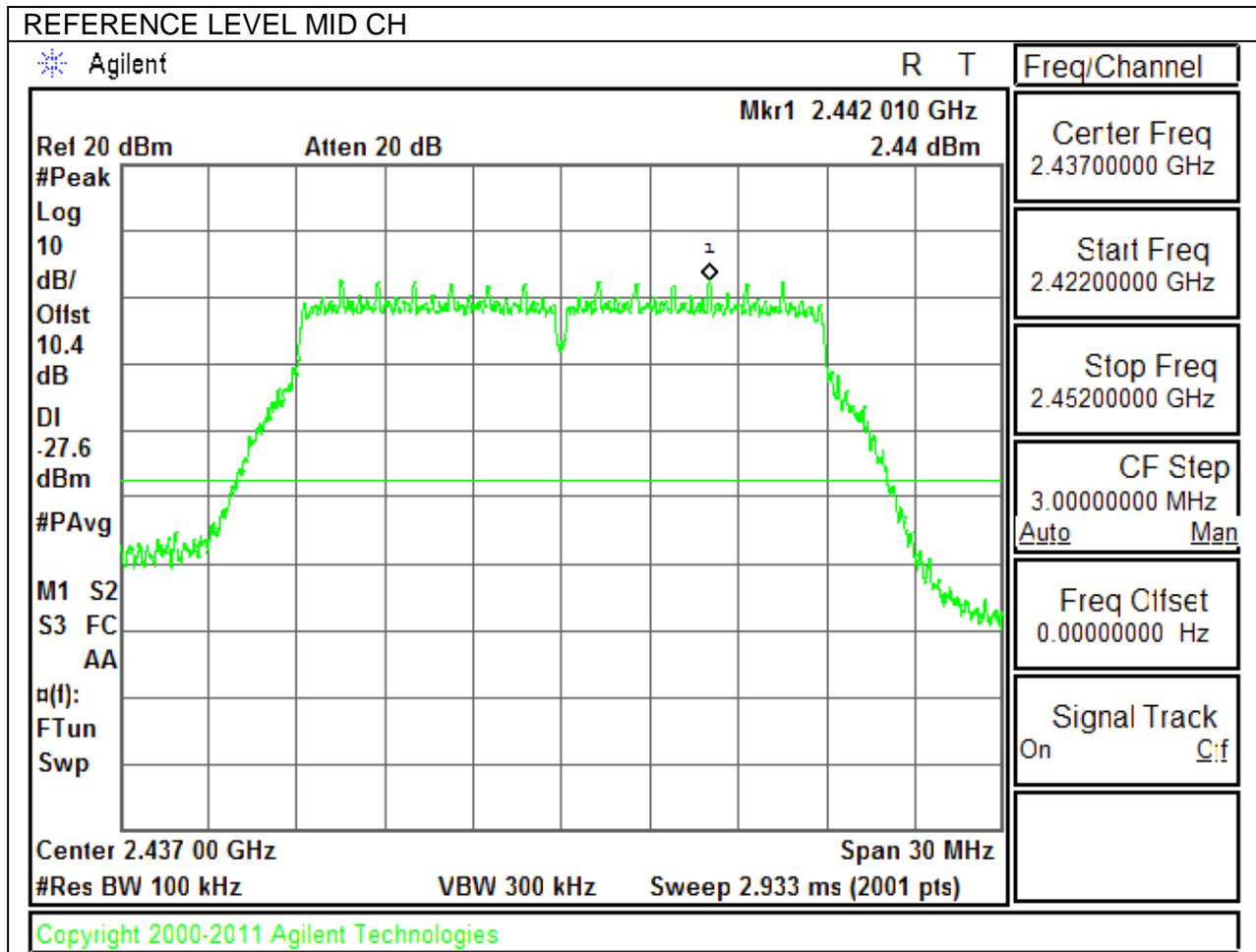




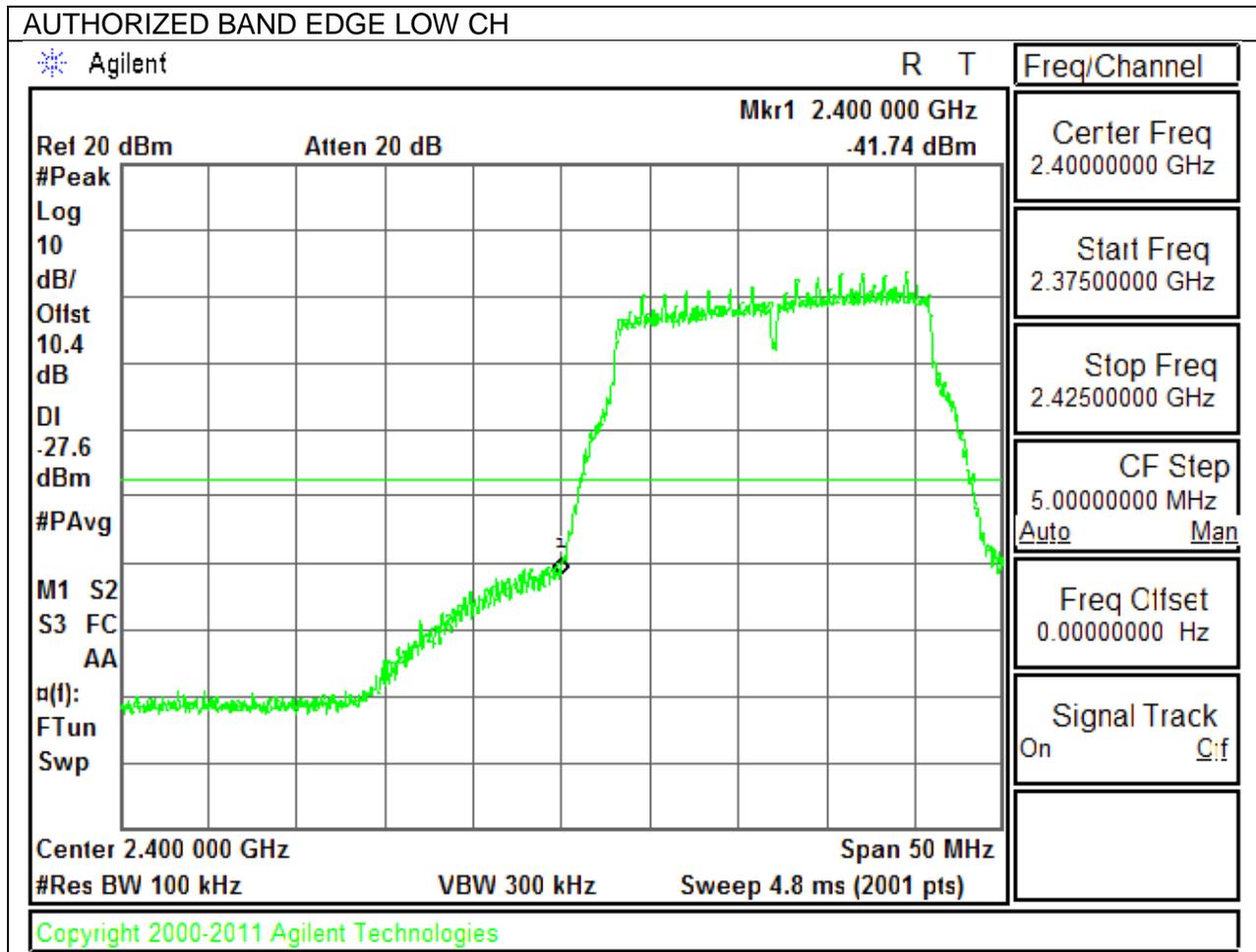


**10.5.6. 802.11n MODE IN THE 2.4 GHZ BAND CHAIN 1**

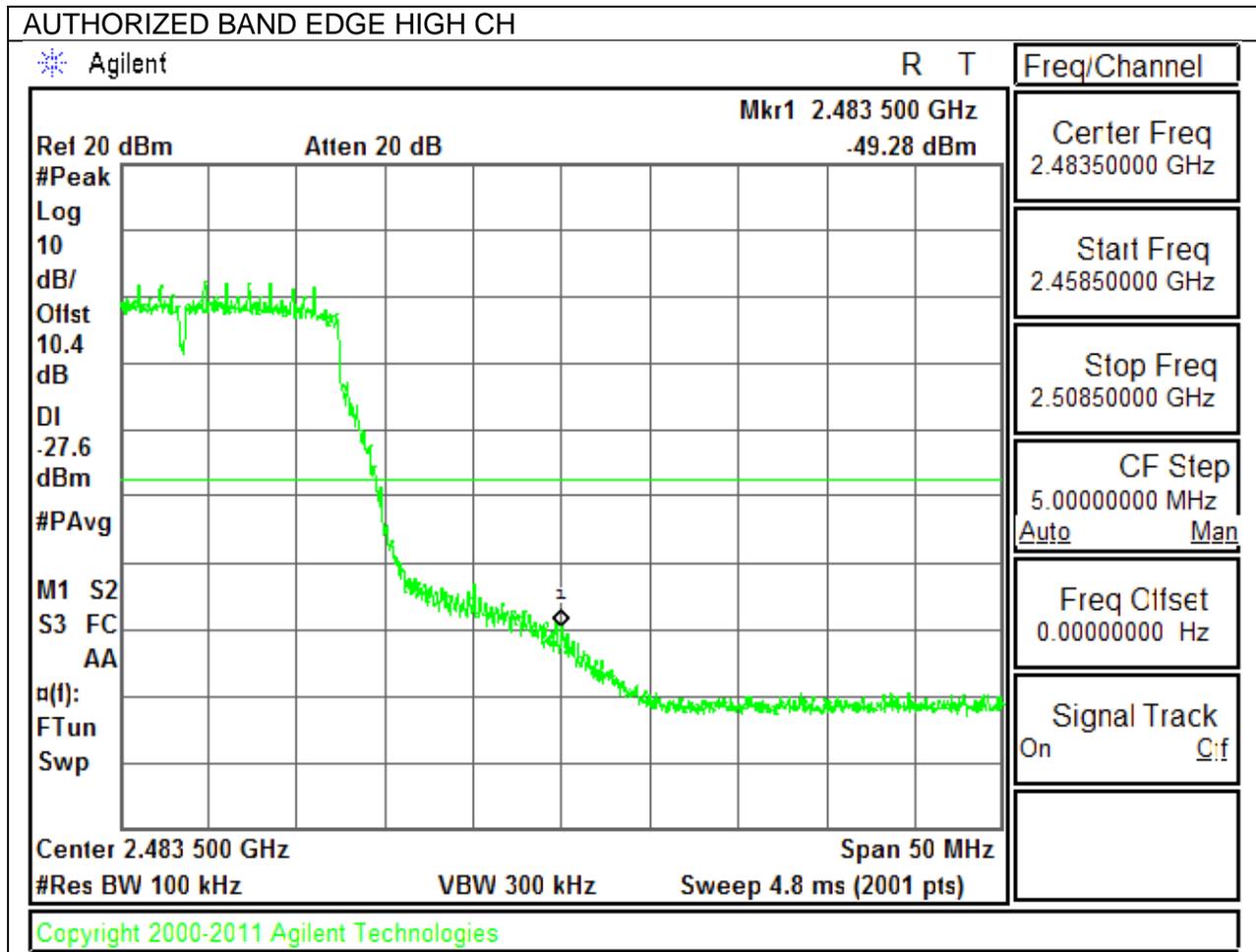
**IN-BAND REFERENCE LEVEL**



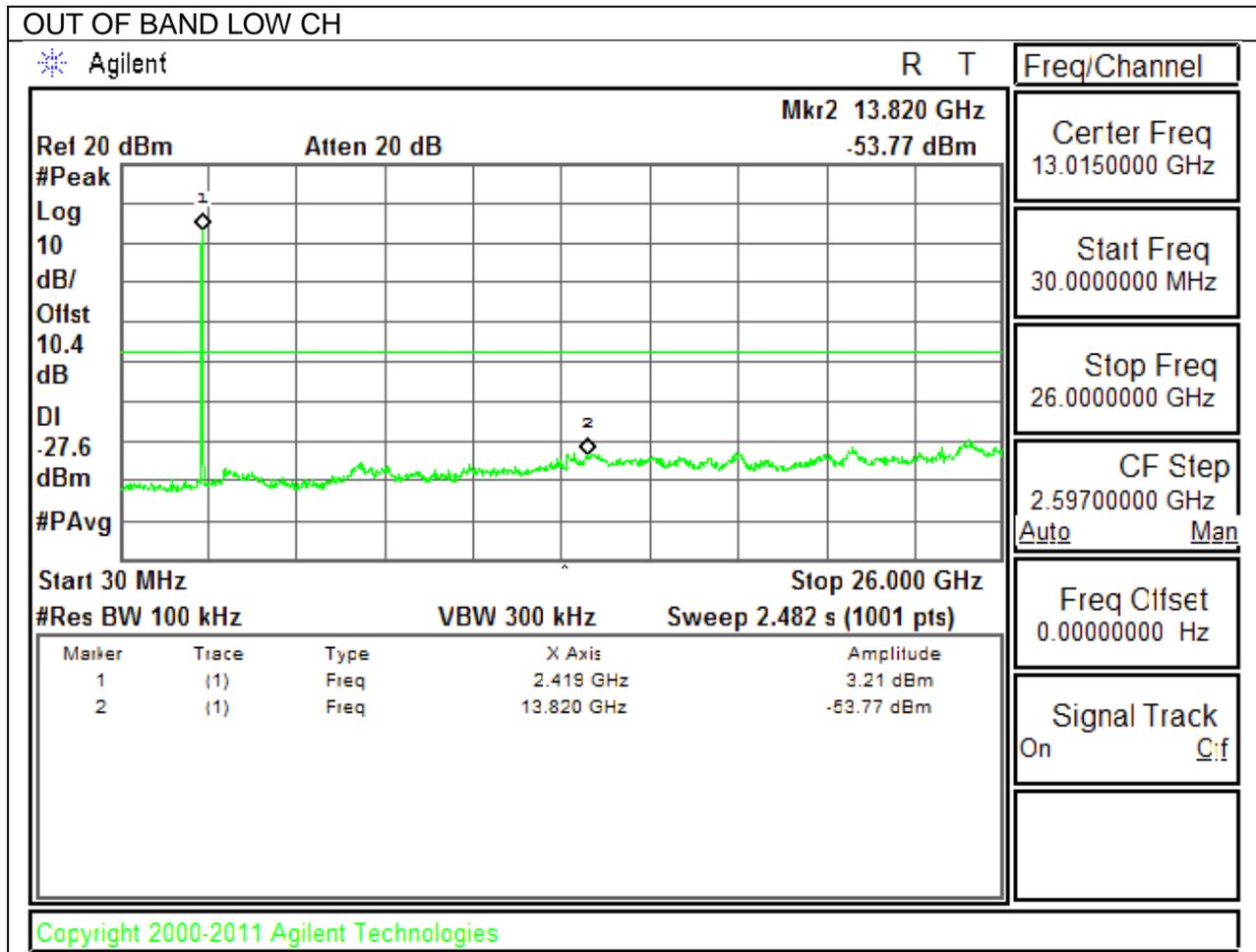
**LOW CHANNEL BANDEDGE**

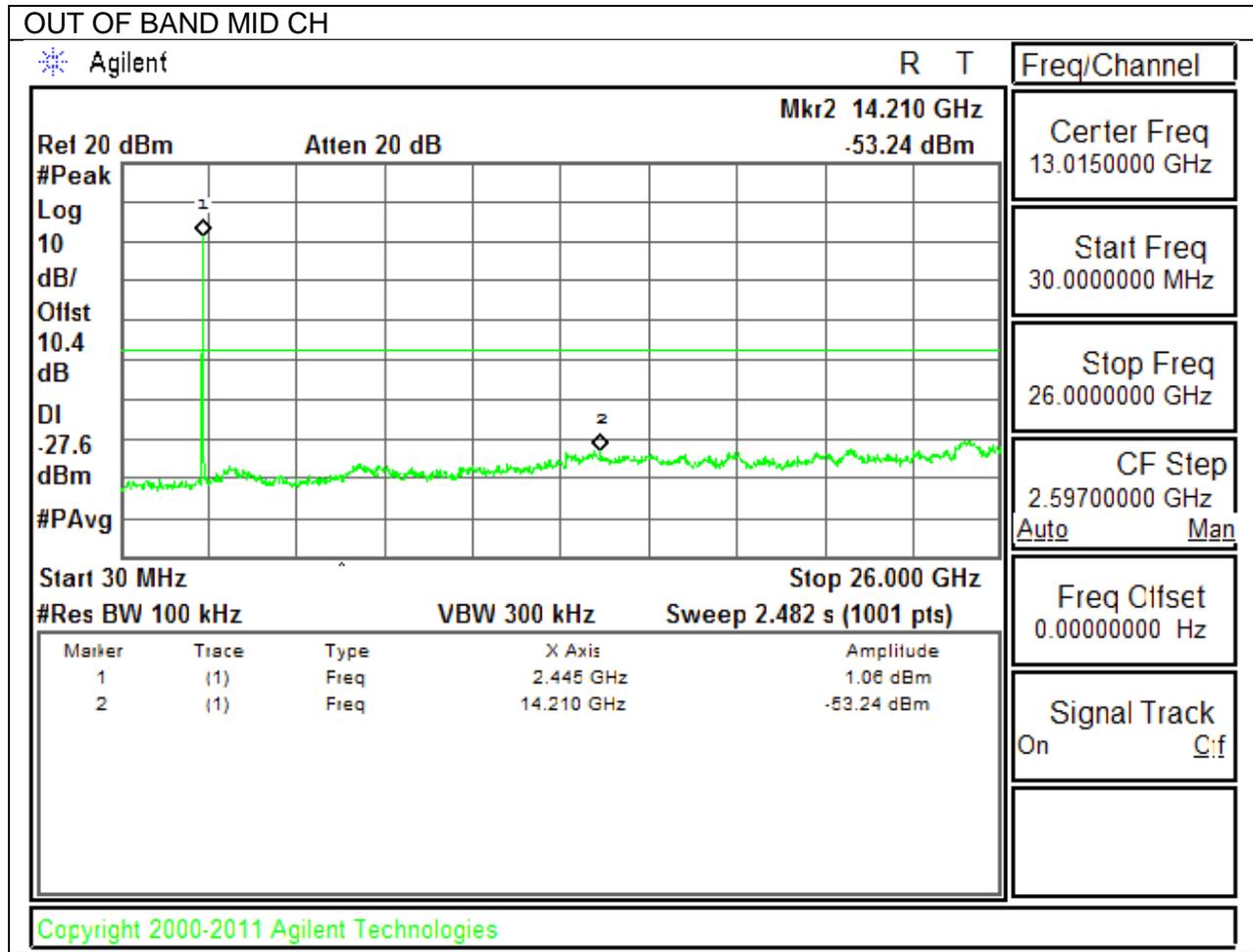


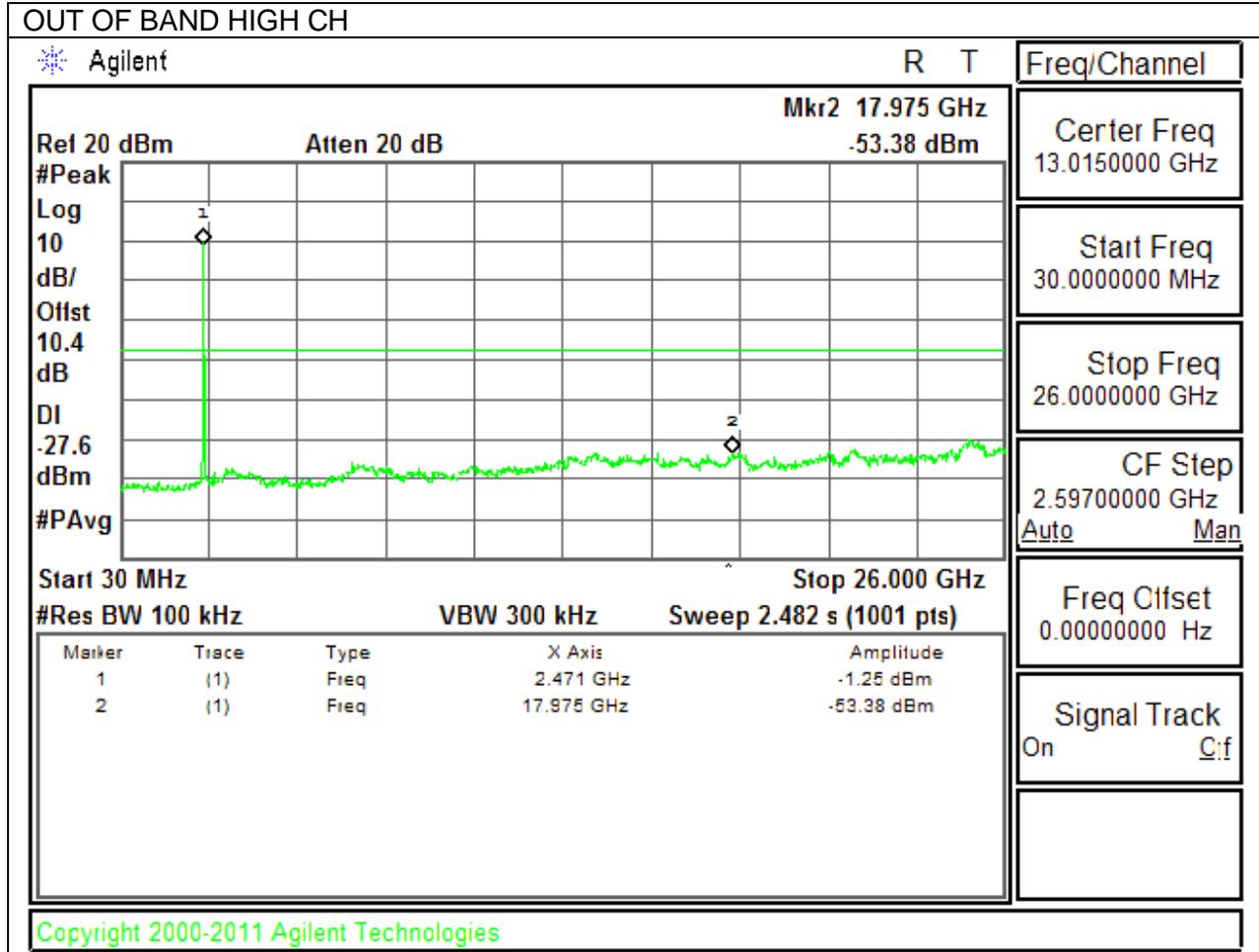
**HIGH CHANNEL BANDEDGE**



**OUT-OF-BAND EMISSIONS**







## 11. RADIATED TEST RESULTS

### 11.1. 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/g/n mode = 0dB (duty cycle >98%).

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.

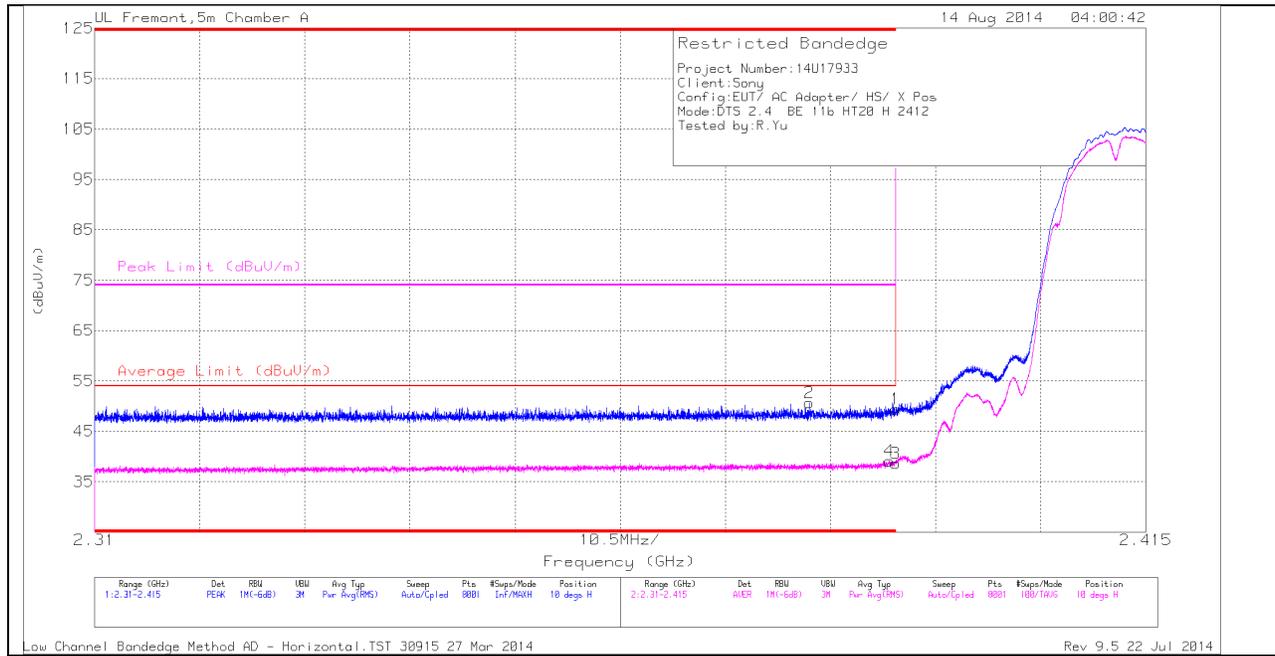
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

## 11.2. TRANSMITTER ABOVE 1 GHz

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

#### RESTRICTED BANDEDGE (LOW CHANNEL)

#### HORIZONTAL PEAK AND AVERAGE PLOT



#### HORIZONTAL DATA

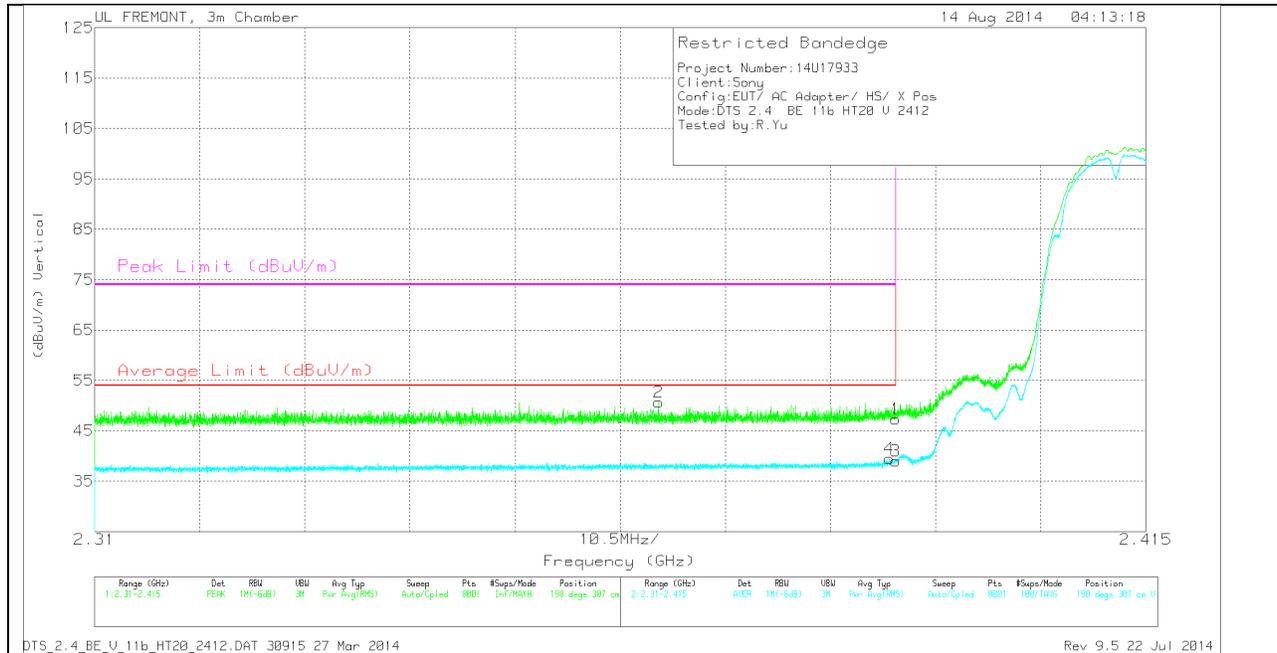
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.24	PK	32.2	-23	49.44	-	-	74	-24.56	10	288	H
2	* 2.381	41.5	PK	32.2	-23	50.7	-	-	74	-23.3	10	288	H
3	* 2.39	29.44	RMS	32.2	-23	38.64	54	-15.36	-	-	10	288	H
4	* 2.389	29.9	RMS	32.2	-23	39.1	54	-14.9	-	-	10	288	H

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

PK - Peak detector

RMS - RMS detection

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

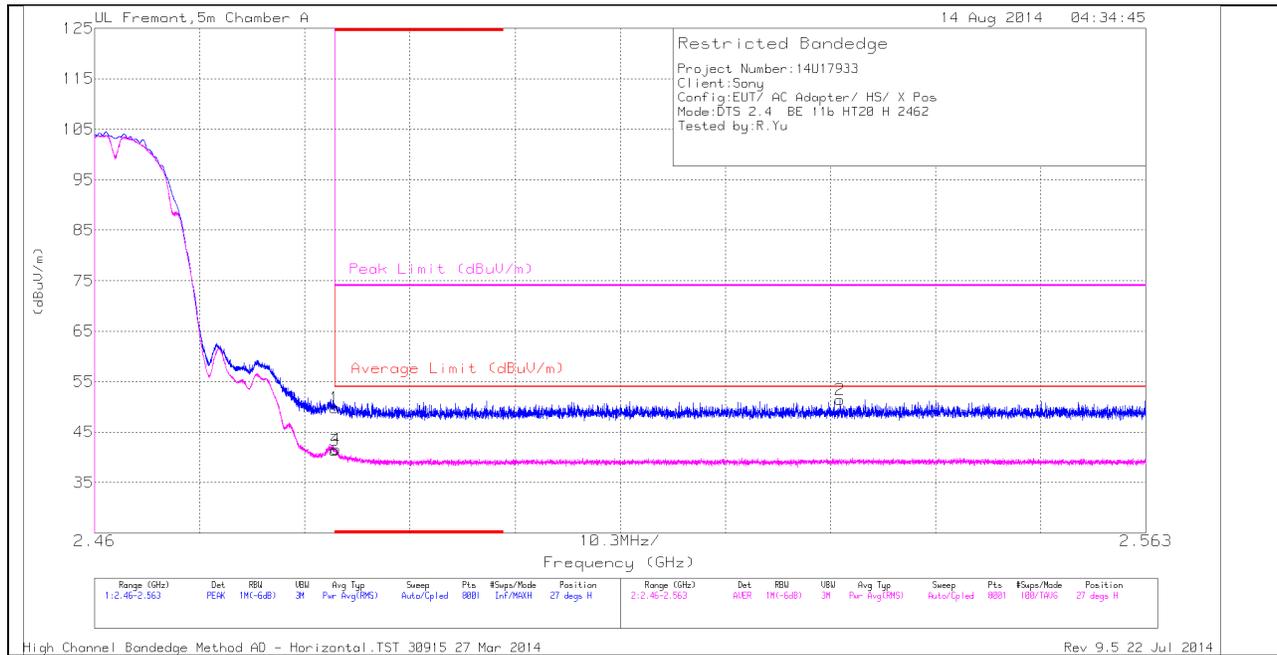
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.366	41.57	PK	32	-22.9	50.67	-	-	74	-23.33	198	307	V
4	2.389	30.29	RMS	32.2	-23	39.49	54	-14.51	-	-	198	307	V
1	2.39	38.07	PK	32.2	-23	47.27	-	-	74	-26.73	198	307	V
3	2.39	29.85	RMS	32.2	-23	39.05	54	-14.95	-	-	198	307	V

PK - Peak detector

RMS - RMS detection

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

**HORIZONTAL PEAK AND AVERAGE PLOT**



**HORIZONTAL DATA**

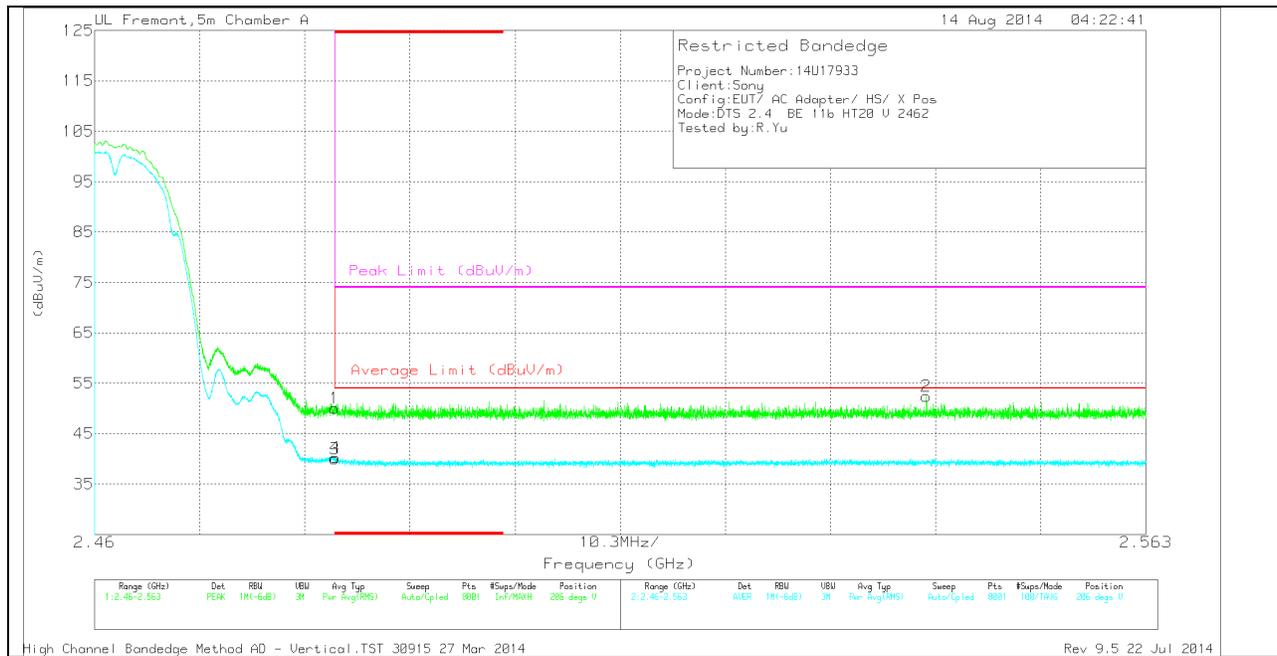
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	39.76	PK	32.7	-22.7	49.76	-	-	74	-24.24	27	235	H
3	* 2.484	31.34	RMS	32.7	-22.7	41.34	54	-12.66	-	-	27	235	H
4	* 2.484	31.57	RMS	32.7	-22.7	41.57	54	-12.43	-	-	27	235	H
2	2.533	41.02	PK	32.9	-22.5	51.42	-	-	74	-22.58	27	235	H

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

PK - Peak detector

RMS - RMS detection

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	40.02	PK	32.7	-22.7	50.02	-	-	74	-23.98	206	296	V
3	* 2.484	29.98	RMS	32.7	-22.7	39.98	54	-14.02	-	-	206	296	V
4	* 2.484	30.18	RMS	32.7	-22.7	40.18	54	-13.82	-	-	206	296	V
2	2.542	41.97	PK	32.9	-22.5	52.37	-	-	74	-21.63	206	296	V

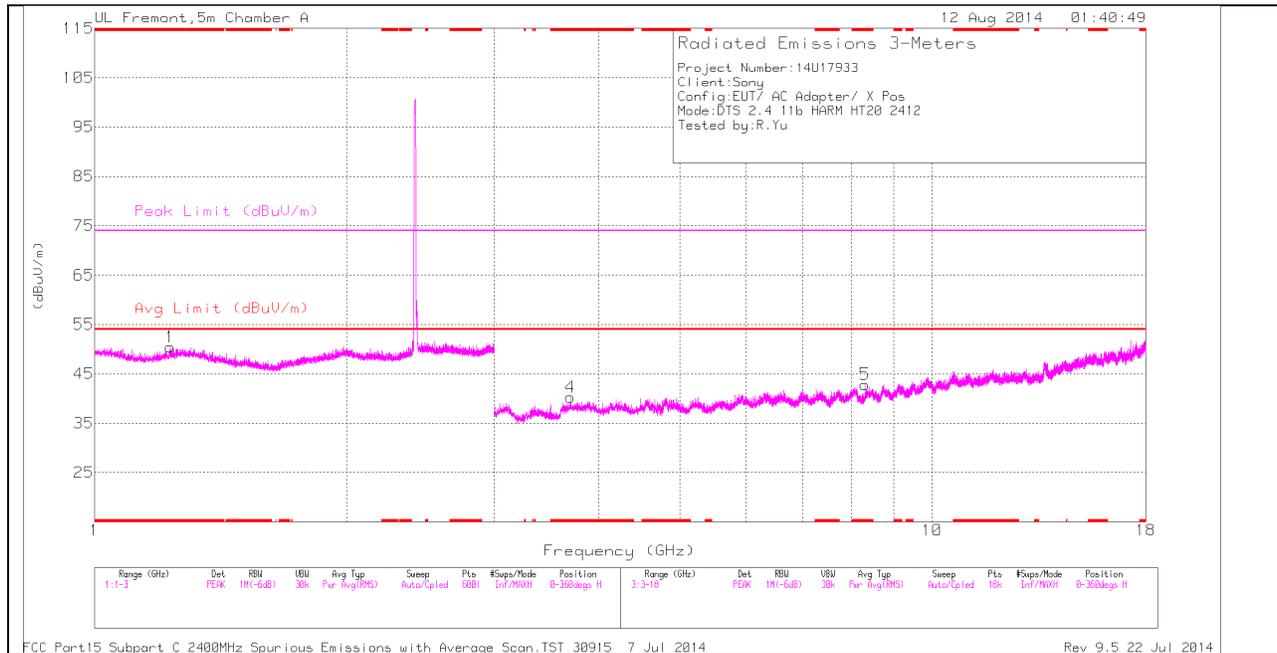
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

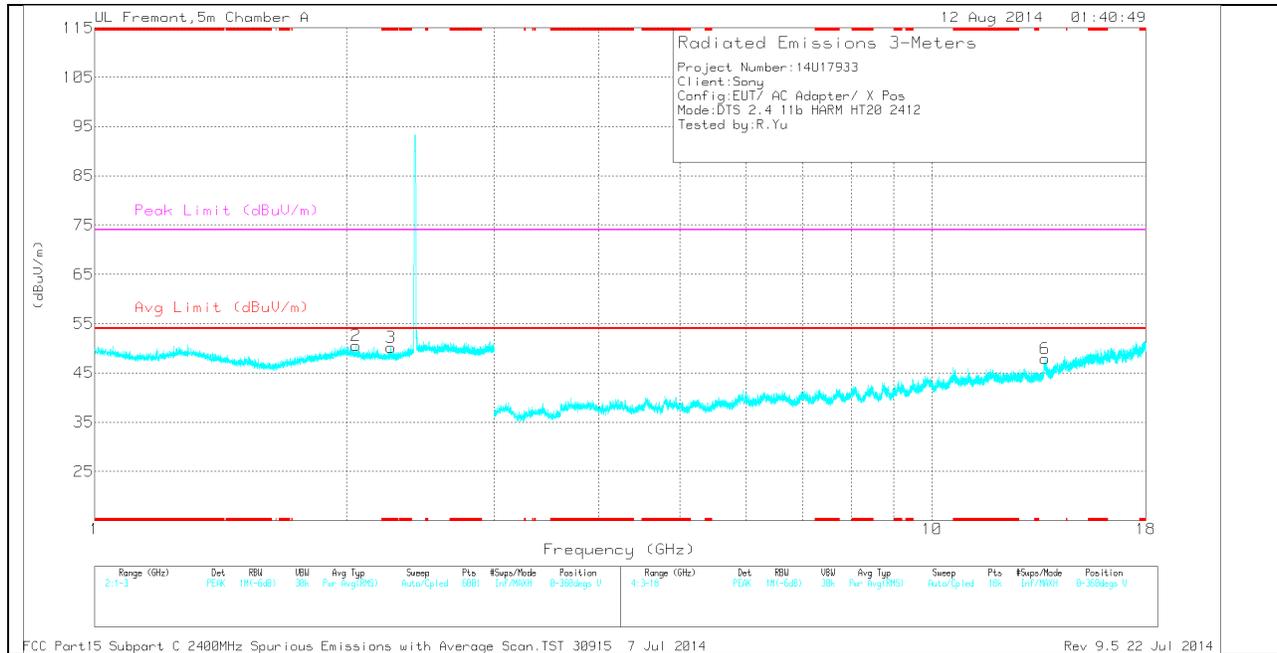
### HARMONICS AND SPURIOUS EMISSIONS

#### LOW CHANNEL HORIZONTAL



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

**LOW CHANNEL VERTICAL**



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

**LOW CHANNEL DATA**

*TRACE MARKERS*

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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	* 1.232	37.67	PK	29.6	-16.8	50.47	-	-	74	-23.53	0-360	201	H
3	* 2.26	35.76	PK	31.4	-17	50.16	-	-	74	-23.84	0-360	201	V
4	* 3.7	32.6	PK	33.4	-25.7	40.3	-	-	74	-33.7	0-360	201	H
5	* 8.319	29.67	PK	35.6	-22.4	42.87	-	-	74	-31.13	0-360	201	H
2	2.053	36.13	PK	31.9	-17.5	50.53	-	-	-	-	0-360	100	V
6	13.64	27.03	PK	38.8	-17.9	47.93	-	-	-	-	0-360	201	V

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

PK - Peak detector

**Radiated Emissions**

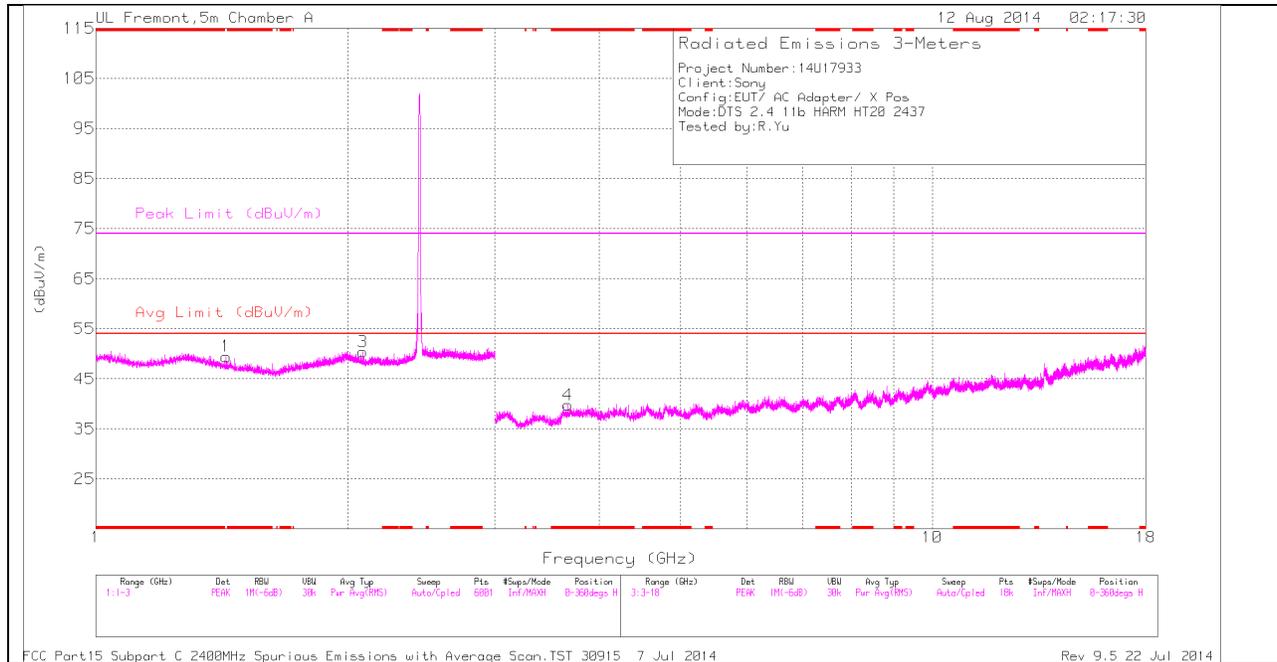
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.233	44.45	PK2	29.6	-16.9	57.15	-	-	74	-16.85	1	202	H
* 1.232	33.19	MAV1	29.6	-16.8	45.99	54	-8.01	-	-	1	202	H

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

PK2 - KDB558074 Method: Maximum Peak

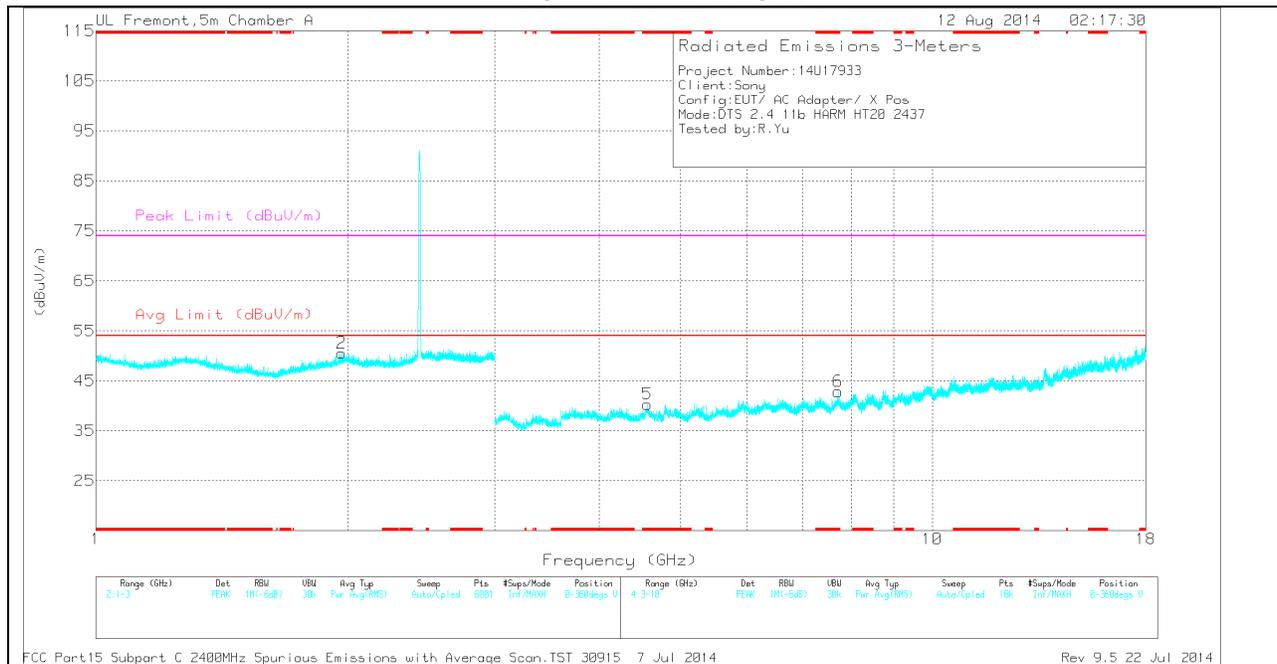
MAV1 - KDB558074 Option 1 Maximum RMS Average

**MID CHANNEL HORIZONTAL**



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

**MID CHANNEL VERTICAL**



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

**MID CHANNEL DATA**

*TRACE MARKERS*

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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	* 3.667	32.75	PK	33.3	-26.3	39.75	-	-	74	-34.25	0-360	100	H
5	* 4.562	30.94	PK	33.9	-24.5	40.34	-	-	74	-33.66	0-360	201	V
6	* 7.714	28.56	PK	35.4	-21.1	42.86	-	-	74	-31.14	0-360	201	V
1	1.432	37.26	PK	29.5	-17.3	49.46	-	-	-	-	0-360	100	H
2	1.967	36.05	PK	31.9	-17.4	50.55	-	-	-	-	0-360	100	V
3	2.087	36.3	PK	31.8	-17.7	50.4	-	-	-	-	0-360	201	H

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

PK - Peak detector

**Radiated Emissions**

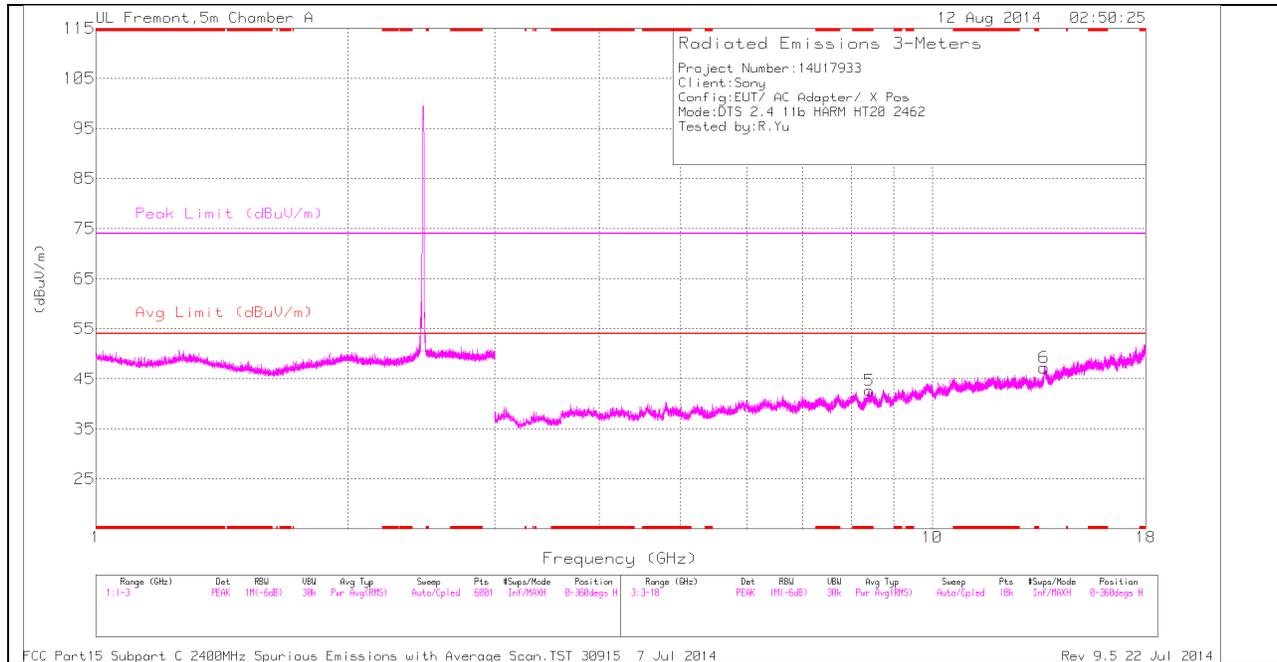
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.563	38.28	PK2	33.9	-24.5	47.68	-	-	74	-26.32	1	202	V
* 4.564	27.47	MAV1	33.9	-24.5	36.87	54	-17.13	-	-	1	202	V

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

PK2 - KDB558074 Method: Maximum Peak

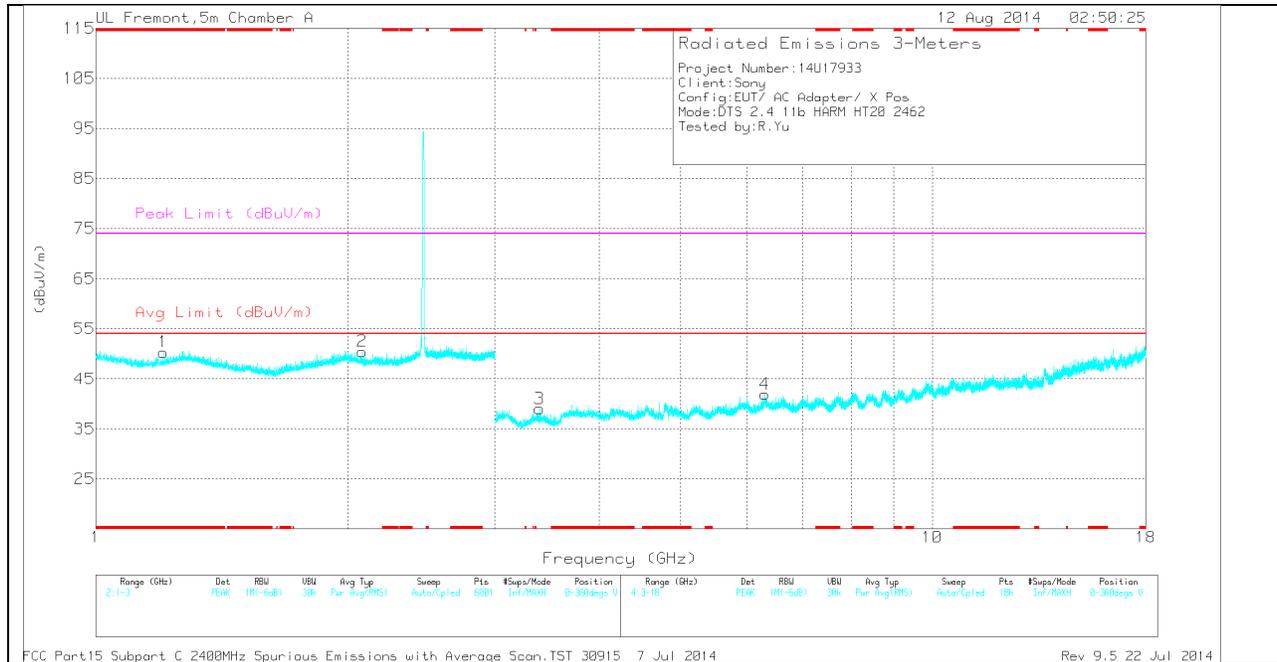
MAV1 - KDB558074 Option 1 Maximum RMS Average

**HIGH CHANNEL HORIZONTAL**



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

**HIGH CHANNEL VERTICAL**



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

**HIGH CHANNEL DATA**

*TRACE MARKERS*

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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	* 1.205	38.03	PK	29.3	-17	50.33	-	-	74	-23.67	0-360	201	V
5	* 8.415	27.73	PK	35.7	-20.8	42.63	-	-	74	-31.37	0-360	201	H
2	2.084	36.26	PK	31.8	-17.6	50.46	-	-	-	-	0-360	100	V
3	3.392	32.04	PK	33	-26	39.04	-	-	-	-	0-360	201	V
4	6.31	29.13	PK	35.5	-22.7	41.93	-	-	-	-	0-360	201	V
6	13.608	26.53	PK	38.8	-18.1	47.23	-	-	-	-	0-360	100	H

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

PK - Peak detector

**Radiated Emissions**

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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
* 1.204	44.28	PK2	29.3	-17	56.58	-	-	74	-17.42	1	202	V
* 1.204	33.19	MAv1	29.3	-17	45.49	54	-8.51	-	-	1	202	V

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

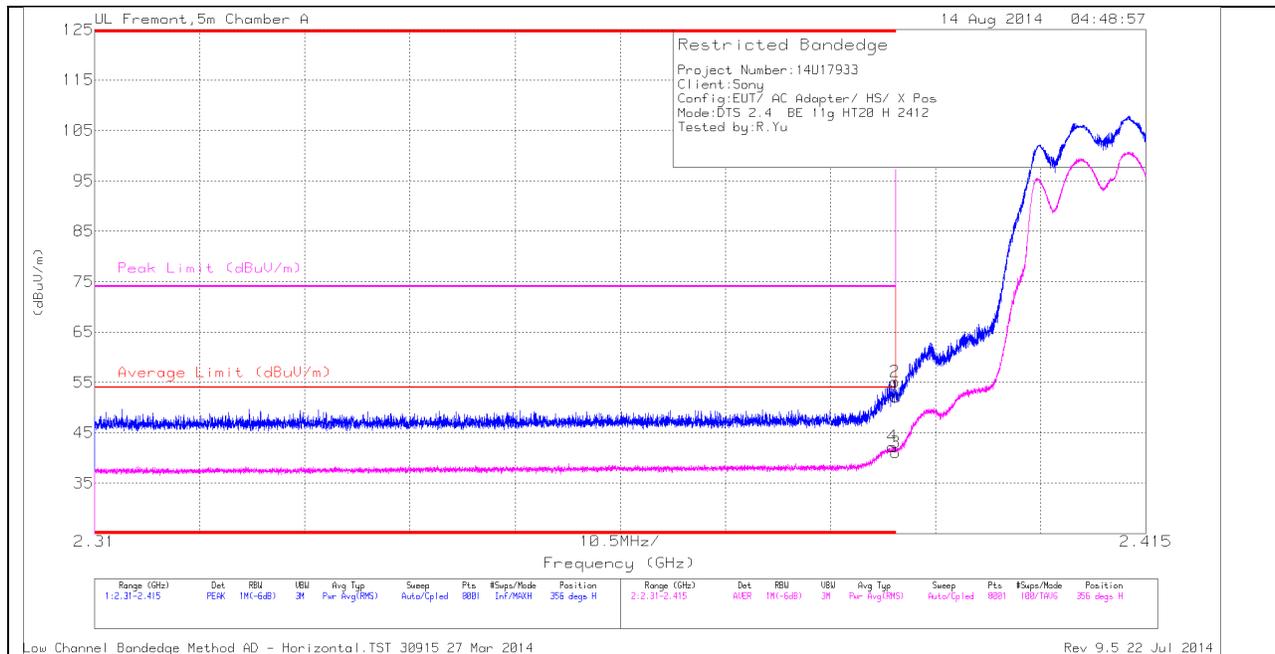
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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

### RESTRICTED BANDEDGE (LOW CHANNEL)

#### HORIZONTAL PEAK AND AVERAGE PLOT



#### HORIZONTAL DATA

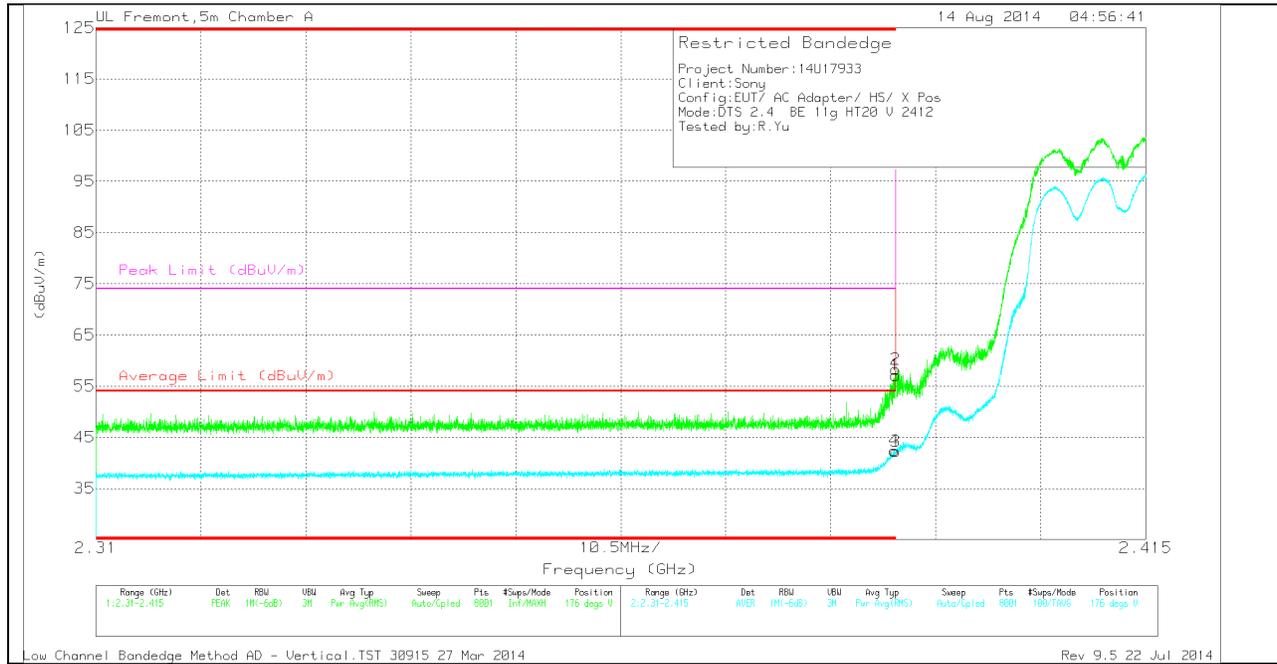
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	42.95	PK	32.2	-23	52.15	-	-	74	-21.85	356	237	H
2	* 2.39	45.97	PK	32.2	-23	55.17	-	-	74	-18.83	356	237	H
3	* 2.39	31.85	RMS	32.2	-23	41.09	54	-12.91	-	-	356	237	H
4	* 2.39	33.04	RMS	32.2	-23	42.28	54	-11.72	-	-	356	237	H

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

PK - Peak detector

RMS - RMS detection

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cb/Filter/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	47.92	PK	32.2	-23	57.12	-	-	74	-16.88	176	240	V
2	* 2.39	49.05	PK	32.2	-23	58.25	-	-	74	-15.75	176	240	V
3	* 2.39	32.99	RMS	32.2	-23	42.23	54	-11.77	-	-	176	240	V
4	* 2.39	33.15	RMS	32.2	-23	42.39	54	-11.61	-	-	176	240	V

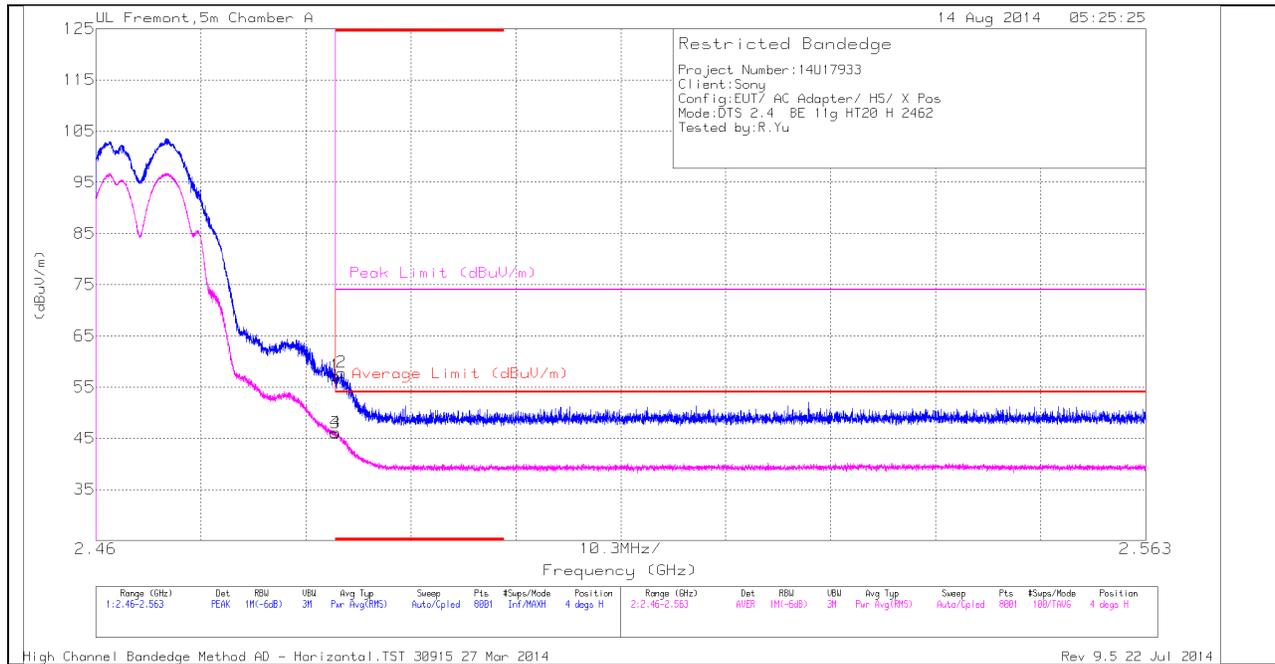
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

### AUTHORIZED BANDEDGE (HIGH CHANNEL)

#### HORIZONTAL PEAK AND AVERAGE PLOT



#### HORIZONTAL DATA

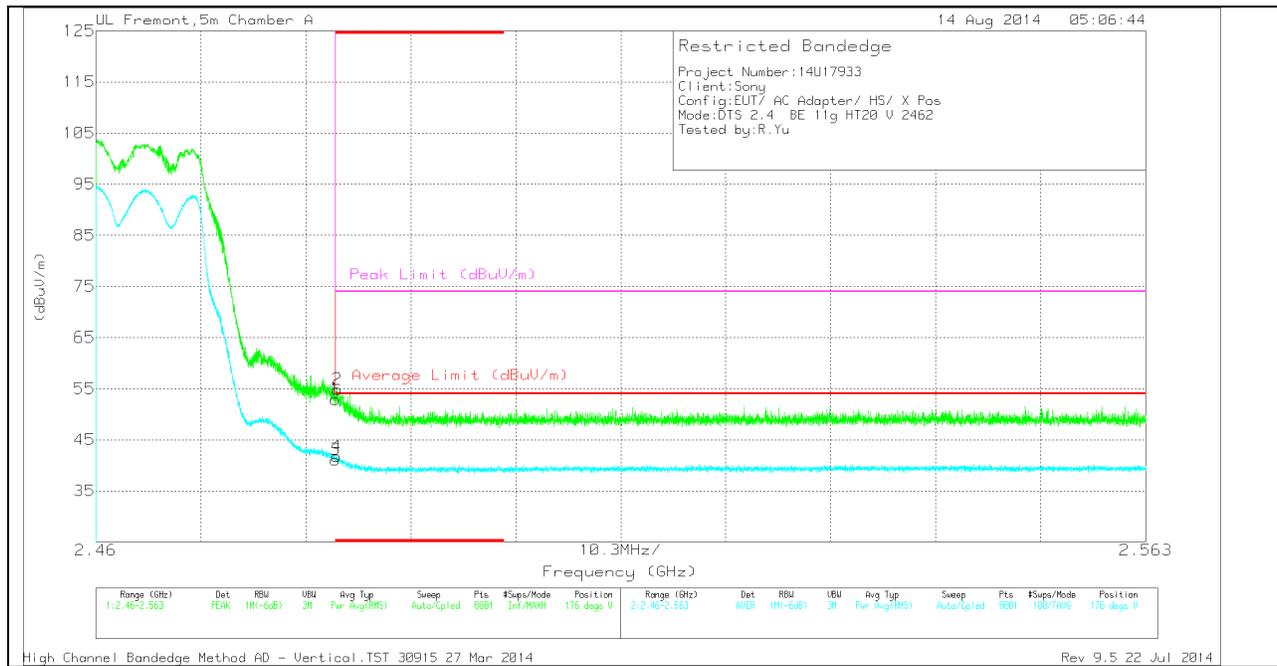
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	47.23	PK	32.7	-22.7	57.23	-	-	74	-16.77	4	117	H
2	* 2.484	47.84	PK	32.7	-22.7	57.84	-	-	74	-16.16	4	117	H
3	* 2.484	35.95	RMS	32.7	-22.7	45.99	54	-8.01	-	-	4	117	H
4	* 2.484	36.1	RMS	32.7	-22.7	46.14	54	-7.86	-	-	4	117	H

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

PK - Peak detector

RMS - RMS detection

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cb/Filter/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	42.95	PK	32.7	-22.7	52.95	-	-	74	-21.05	176	287	V
2	* 2.484	44.86	PK	32.7	-22.7	54.86	-	-	74	-19.14	176	287	V
3	* 2.484	31.06	RMS	32.7	-22.7	41.1	54	-12.9	-	-	176	287	V
4	* 2.484	31.7	RMS	32.7	-22.7	41.74	54	-12.26	-	-	176	287	V

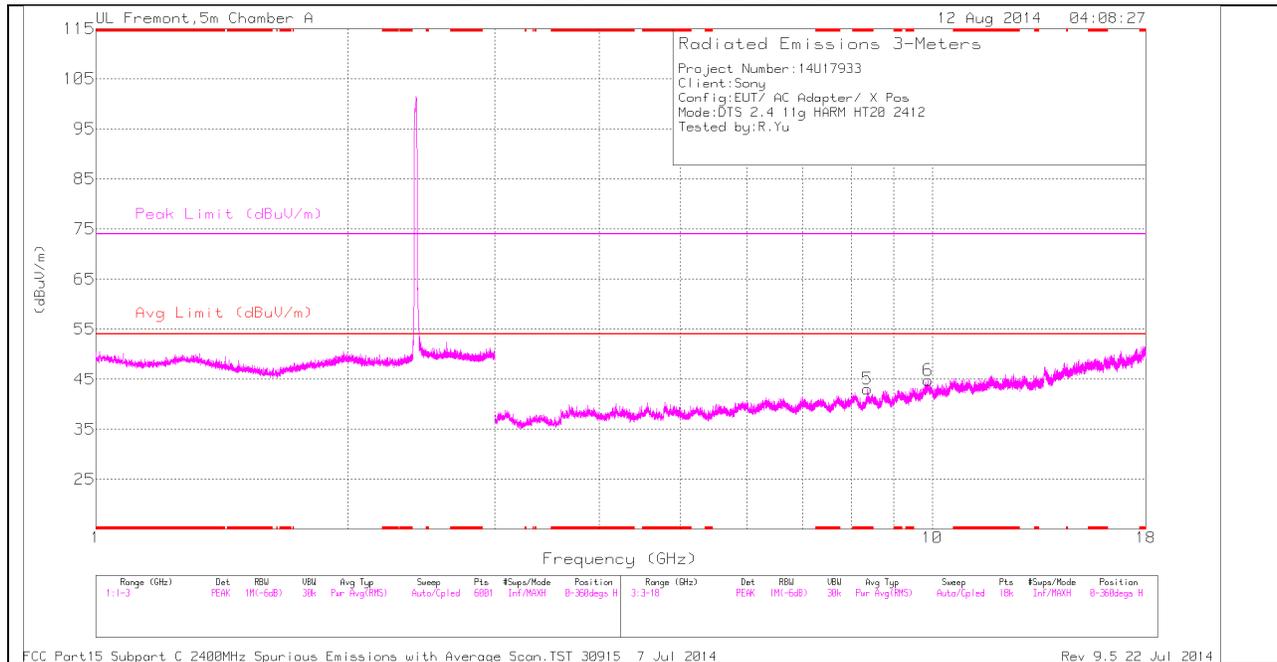
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

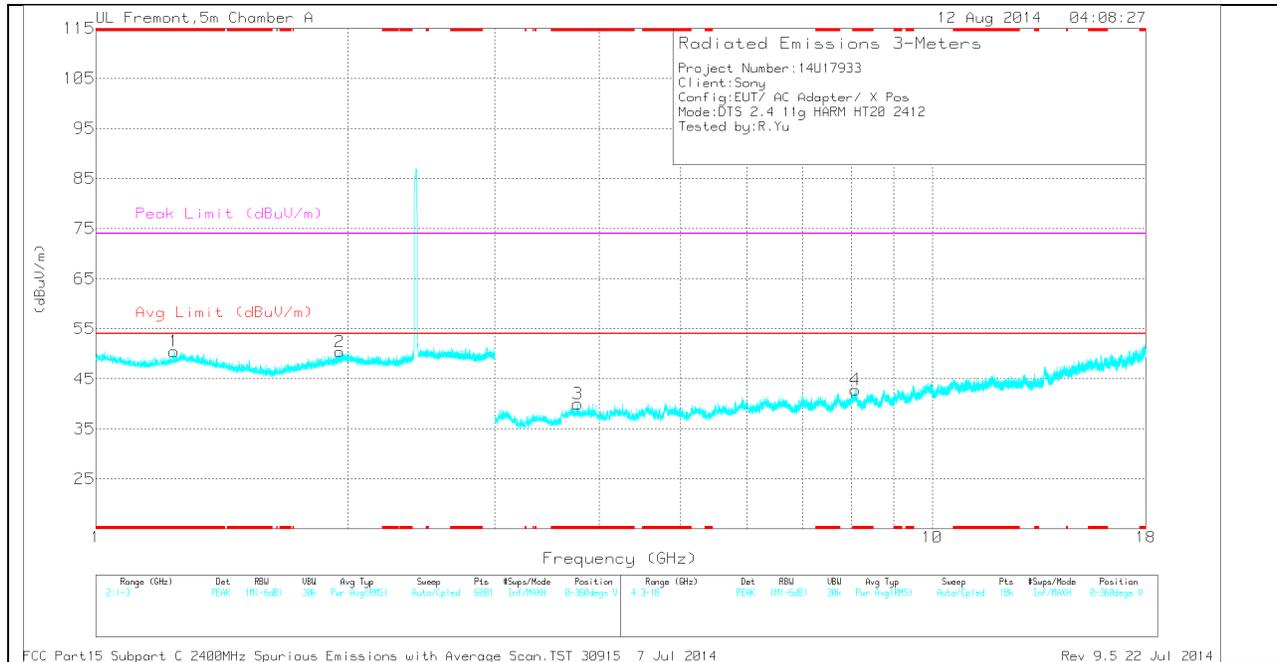
### HARMONICS AND SPURIOUS EMISSIONS

#### LOW CHANNEL HORIZONTAL



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

**LOW CHANNEL VERTICAL**



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

**LOW CHANNEL DATA**

*TRACE MARKERS*

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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	* 1.241	37.47	PK	29.7	-16.7	0	50.47	-	-	74	-23.53	0-360	100	V
5	* 8.364	28.36	PK	35.7	-21	0	43.06	-	-	74	-30.94	0-360	100	H
3	* 3.768	32.38	PK	33.6	-26	0	39.98	-	-	74	-34.02	0-360	201	V
4	* 8.091	27.7	PK	35.5	-20.4	0	42.8	-	-	74	-31.2	0-360	201	V
2	1.957	35.88	PK	31.9	-17.4	0	50.38	-	-	-	-	0-360	100	V
6	9.886	26.7	PK	37	-18.9	0	44.8	-	-	-	-	0-360	100	H

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

PK - Peak detector

**Radiated Emissions**

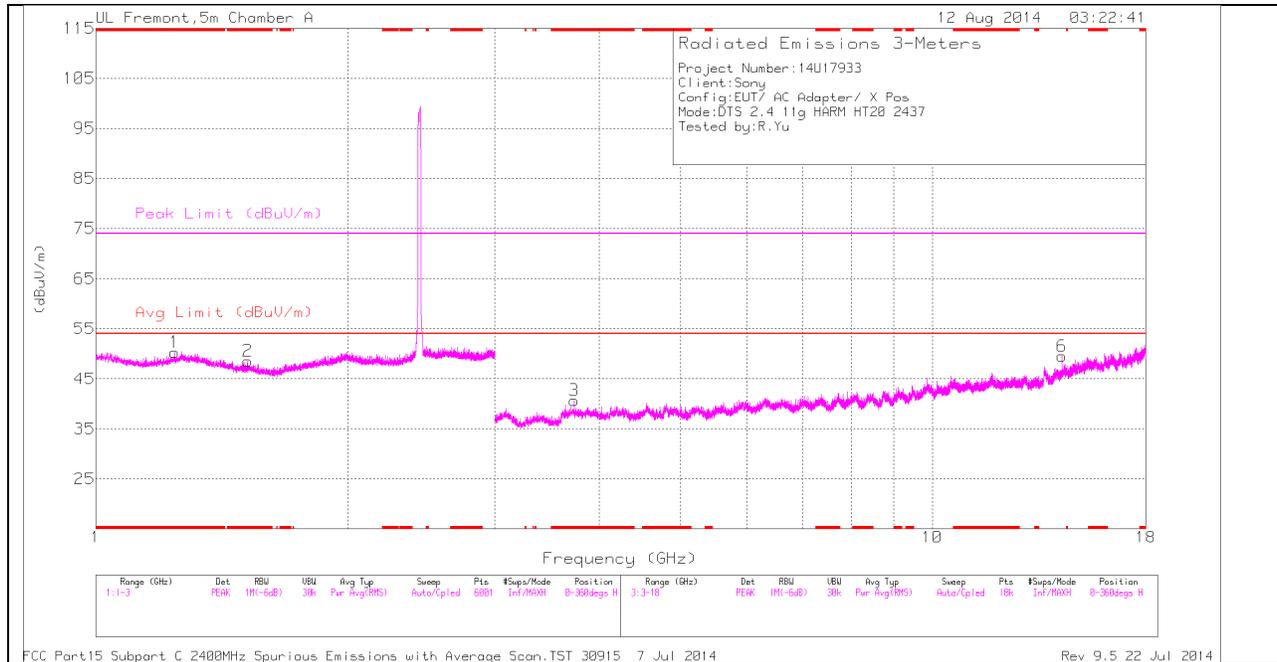
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 8.363	35.56	PK2	35.7	-21	0	50.26	-	-	74	-23.74	1	100	H
* 8.364	24.07	MAv1	35.7	-21	0	38.77	54	-15.23	-	-	1	100	H

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

PK2 - KDB558074 Method: Maximum Peak

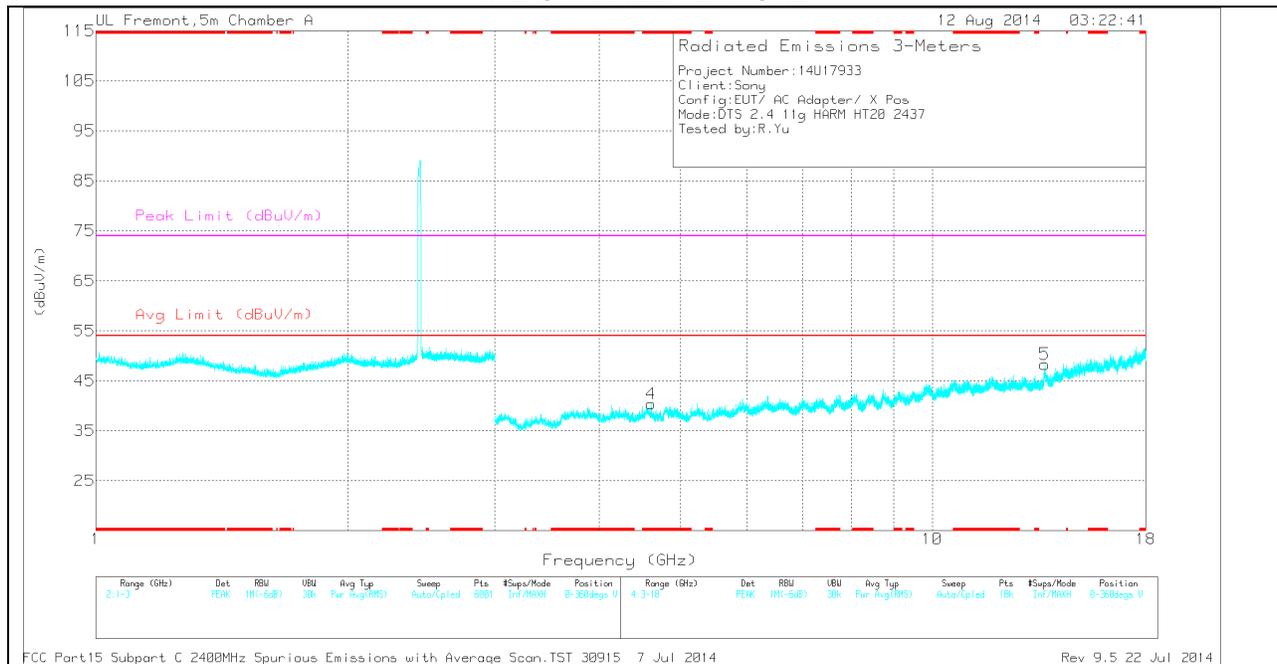
MAv1 - KDB558074 Option 1 Maximum RMS Average

**MID CHANNEL HORIZONTAL**



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

**MID CHANNEL VERTICAL**



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

**MID CHANNEL DATA**

*TRACE MARKERS*

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Ftr/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	* 1.243	37.41	PK	29.7	-16.8	0	50.31	-	-	74	-23.69	0-360	201	H
2	* 1.52	36.67	PK	28.7	-16.8	0	48.57	-	-	74	-25.43	0-360	100	H
3	* 3.734	33.27	PK	33.5	-26.1	0	40.67	-	-	74	-33.33	0-360	201	H
4	* 4.612	31.39	PK	34	-25	0	40.39	-	-	74	-33.61	0-360	100	V
5	13.63	27.41	PK	38.8	-17.9	0	48.31	-	-	-	-	0-360	201	V
6	14.298	28.33	PK	39.6	-18.4	0	49.53	-	-	-	-	0-360	201	H

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

PK - Peak detector

**Radiated Emissions**

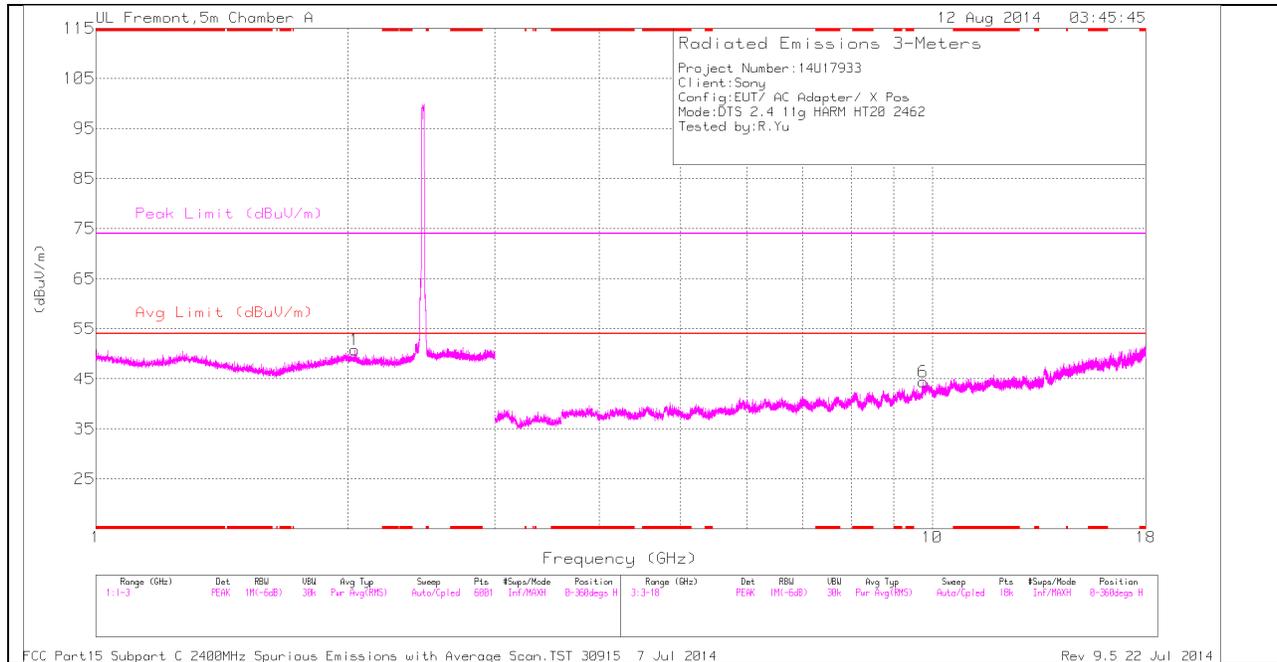
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
14.299	33.51	PK2	39.6	-18.5	0	54.61	-	-	-	-	1	202	H
14.299	22.8	MAv1	39.6	-18.5	0	43.9	-	-	-	-	1	202	H

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

PK2 - KDB558074 Method: Maximum Peak

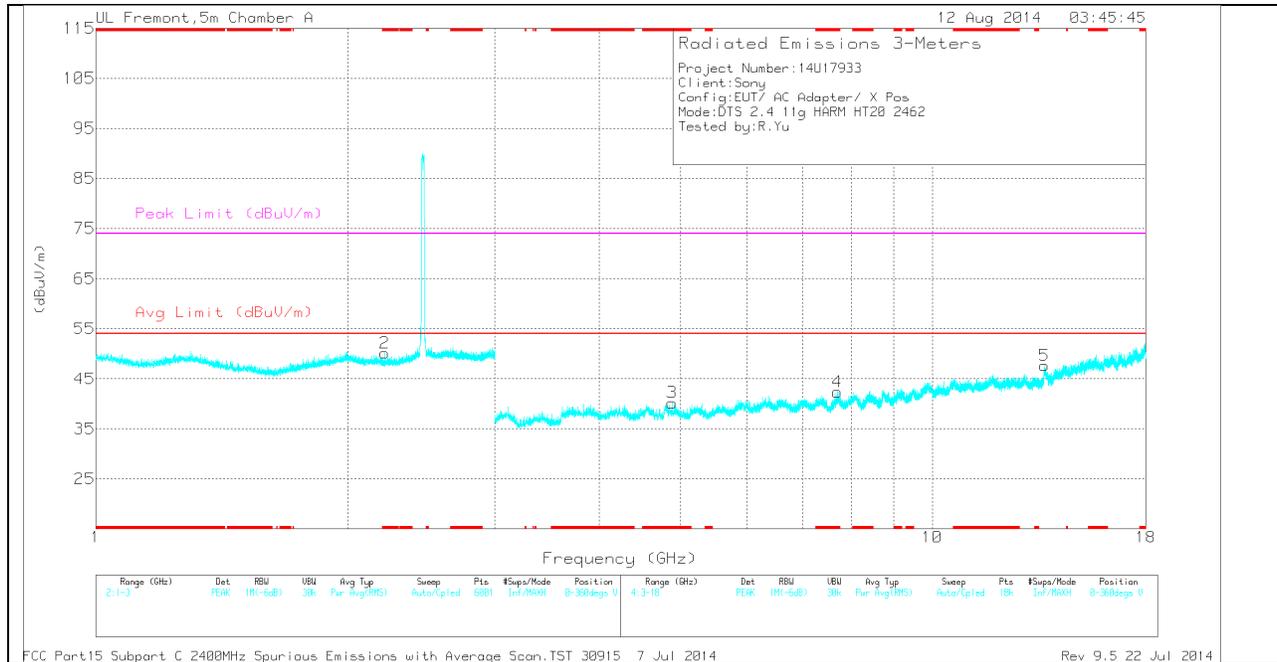
MAv1 - KDB558074 Option 1 Maximum RMS Average

**HIGH CHANNEL HORIZONTAL**



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

**HIGH CHANNEL VERTICAL**



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

**HIGH CHANNEL DATA**

*TRACE MARKERS*

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.216	36.02	PK	31.3	-17.2	0	50.12	-	-	74	-23.88	0-360	201	V
3	* 4.887	30.52	PK	34	-24.3	0	40.22	-	-	74	-33.78	0-360	201	V
4	* 7.7	28.06	PK	35.4	-21.1	0	42.36	-	-	74	-31.64	0-360	100	V
1	2.039	36.14	PK	32	-17.4	0	50.74	-	-	-	-	0-360	201	H
6	9.755	27.87	PK	36.9	-20.4	0	44.37	-	-	-	-	0-360	100	H
5	13.613	26.86	PK	38.8	-18	0	47.66	-	-	-	-	0-360	201	V

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

PK - Peak detector

**Radiated Emissions**

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Ftr/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
13.611	22.88	MAv1	38.8	-18.1	0	43.58	-	-	-	-	1	202	V
13.612	34.6	PK2	38.8	-18	0	55.4	-	-	-	-	1	202	V

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

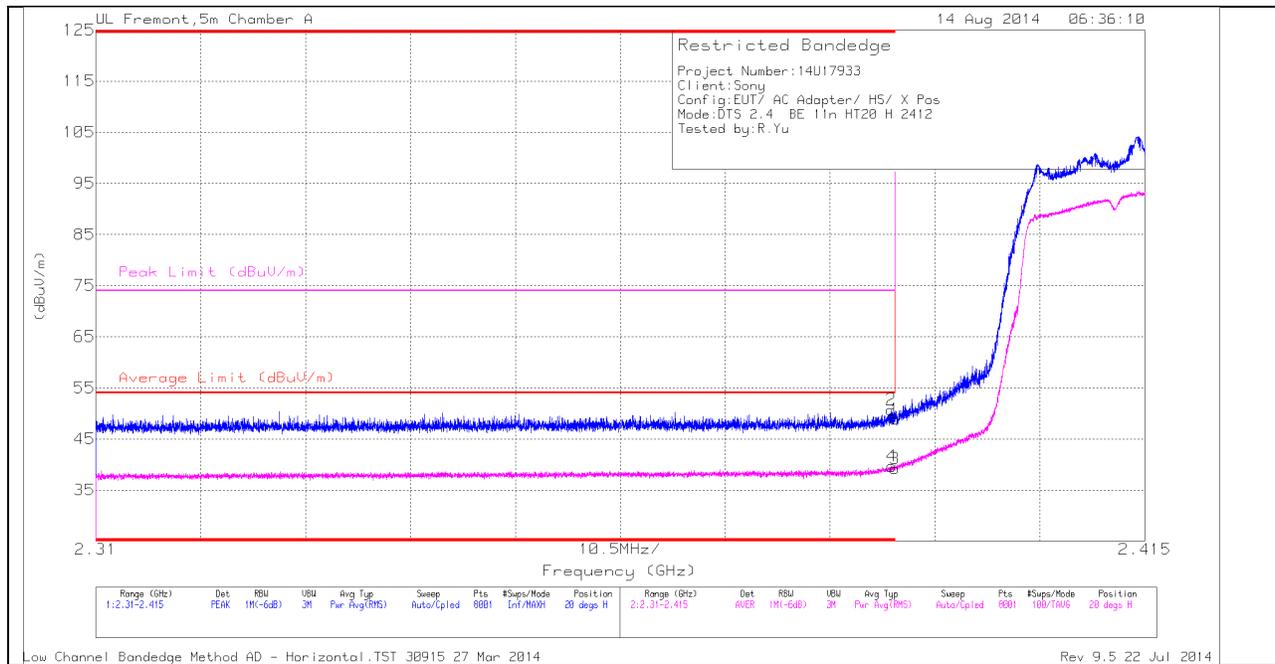
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

### 11.2.3. 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

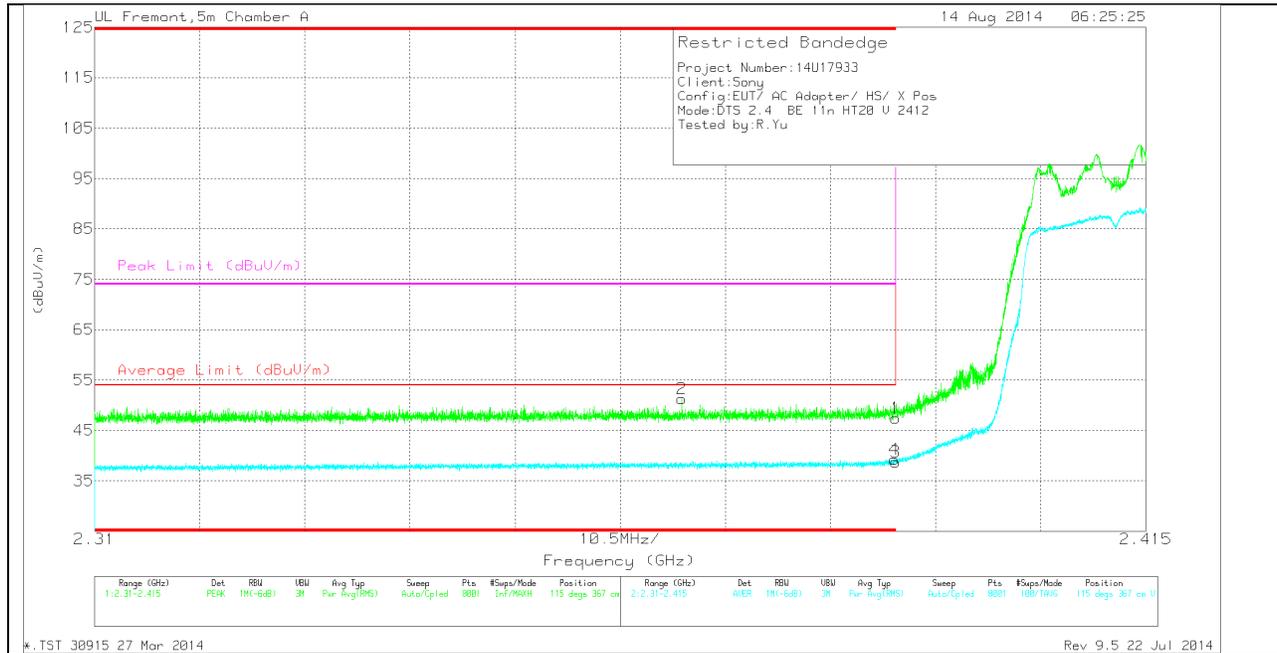
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cb/Filter/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.66	PK	32.2	-23	48.86	-	-	74	-25.14	20	250	H
2	* 2.39	41.51	PK	32.2	-23	50.71	-	-	74	-23.29	20	250	H
3	* 2.39	29.95	RMS	32.2	-23	39.21	54	-14.79	-	-	20	250	H
4	* 2.39	30.4	RMS	32.2	-23	39.66	54	-14.34	-	-	20	250	H

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

PK - Peak detector

RMS - RMS detection

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cb/Fitter/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	38.27	PK	32.2	-23	47.47	-	-	74	-26.53	115	367	V
2	* 2.369	42.11	PK	32.1	-22.9	51.31	-	-	74	-22.69	115	367	V
3	* 2.39	29.54	RMS	32.2	-23	38.8	54	-15.2	-	-	115	367	V
4	* 2.39	29.97	RMS	32.2	-23	39.23	54	-14.77	-	-	115	367	V

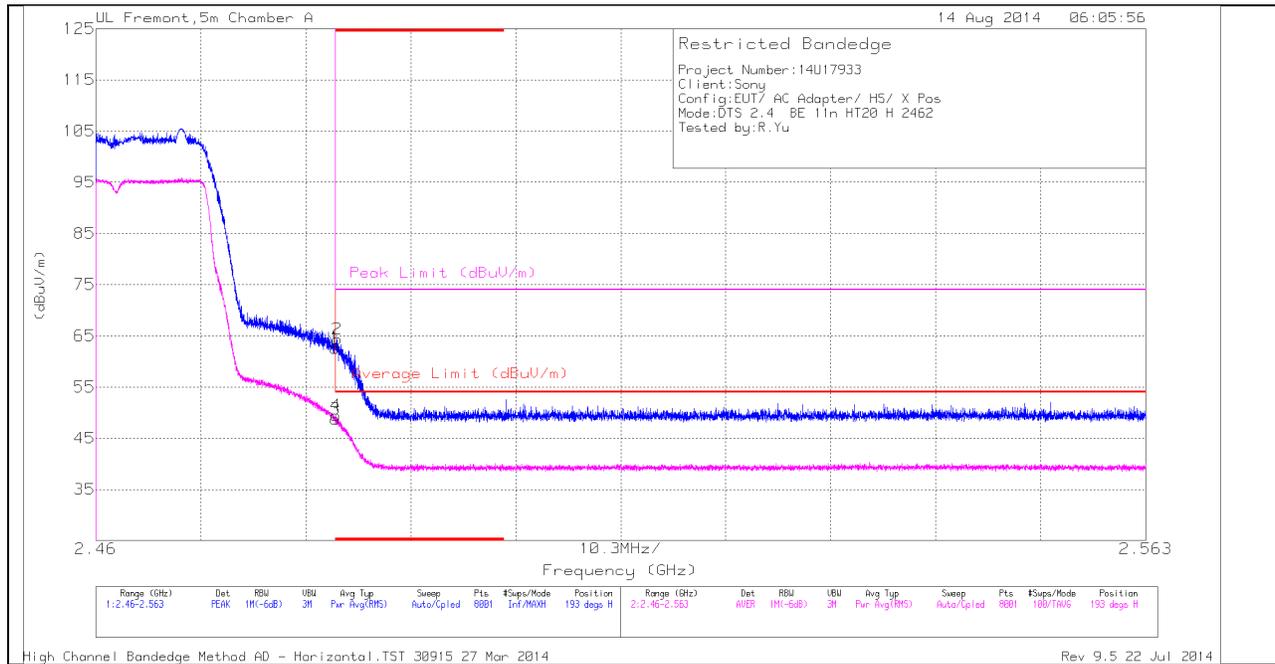
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

### AUTHORIZED BANDEDGE (HIGH CHANNEL)

#### HORIZONTAL PEAK AND AVERAGE PLOT



#### HORIZONTAL DATA

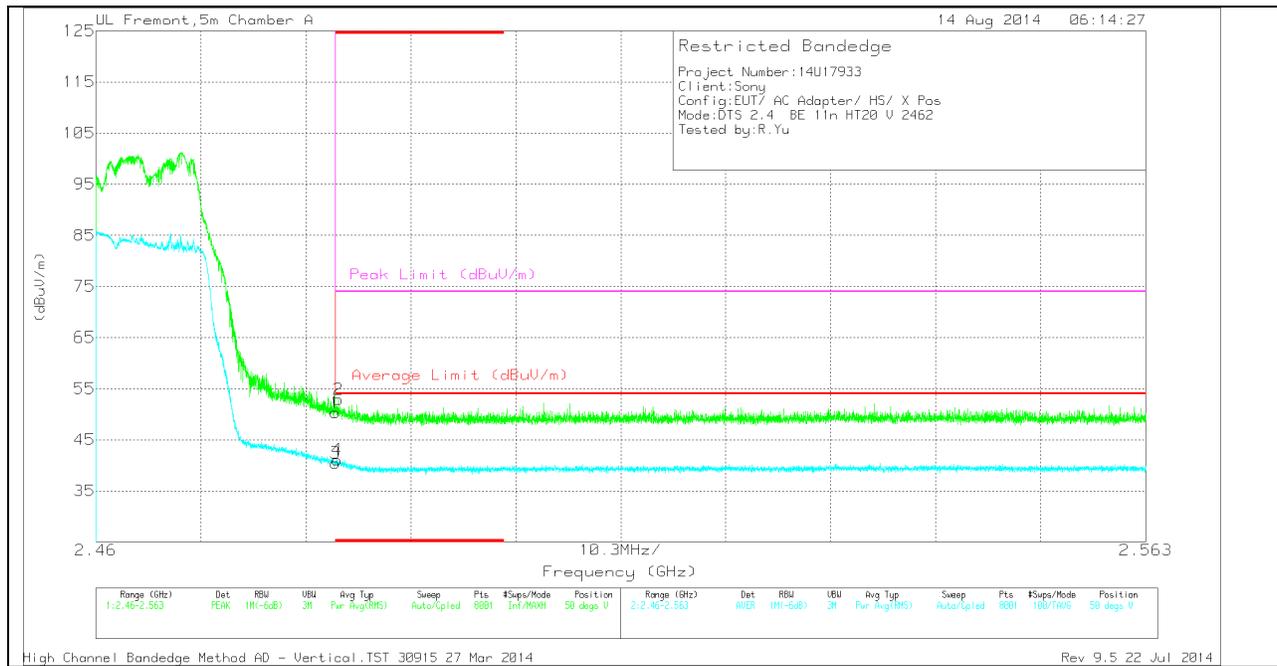
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	52.61	PK	32.7	-22.7	62.61	-	-	74	-11.39	193	103	H
2	* 2.484	54.38	PK	32.7	-22.7	64.38	-	-	74	-9.62	193	103	H
3	* 2.484	38.69	RMS	32.7	-22.7	48.75	54	-5.25	-	-	193	103	H
4	* 2.484	39.38	RMS	32.7	-22.7	49.44	54	-4.56	-	-	193	103	H

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

PK - Peak detector

RMS - RMS detection

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	40.3	PK	32.7	-22.7	50.3	-	-	74	-23.7	50	346	V
2	* 2.484	42.88	PK	32.7	-22.7	52.88	-	-	74	-21.12	50	346	V
3	* 2.484	30.47	RMS	32.7	-22.7	40.47	54	-13.53	-	-	50	346	V
4	* 2.484	31.06	RMS	32.7	-22.7	41.06	54	-12.94	-	-	50	346	V

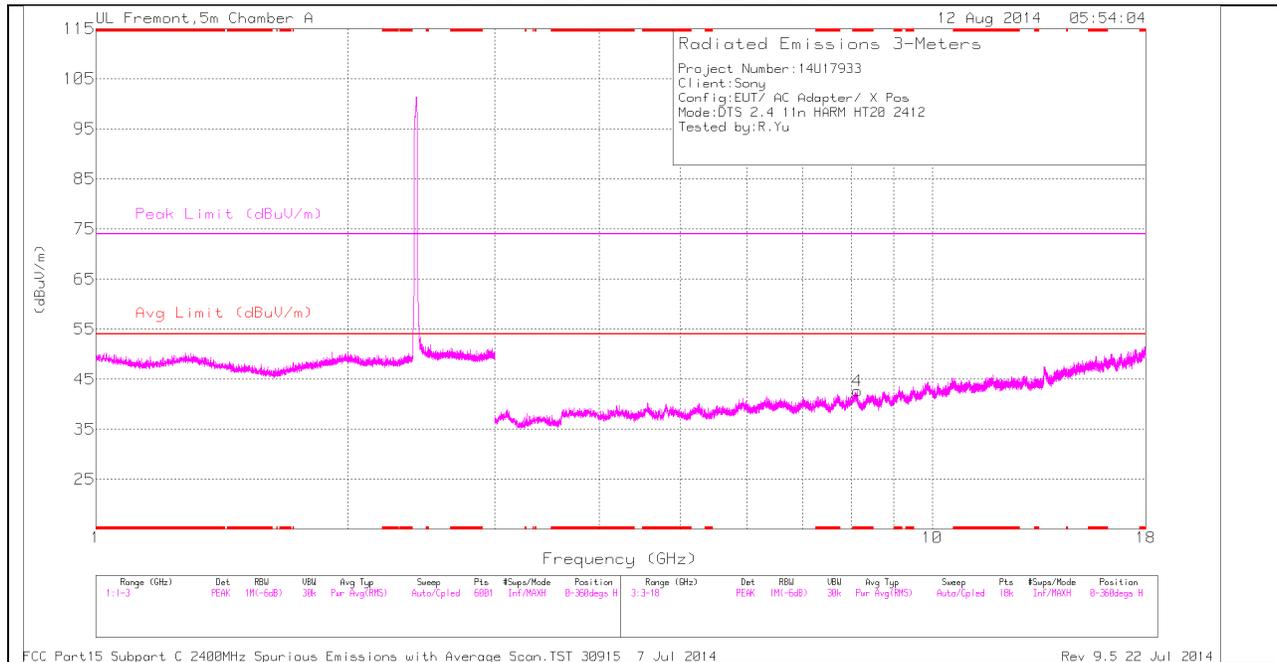
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

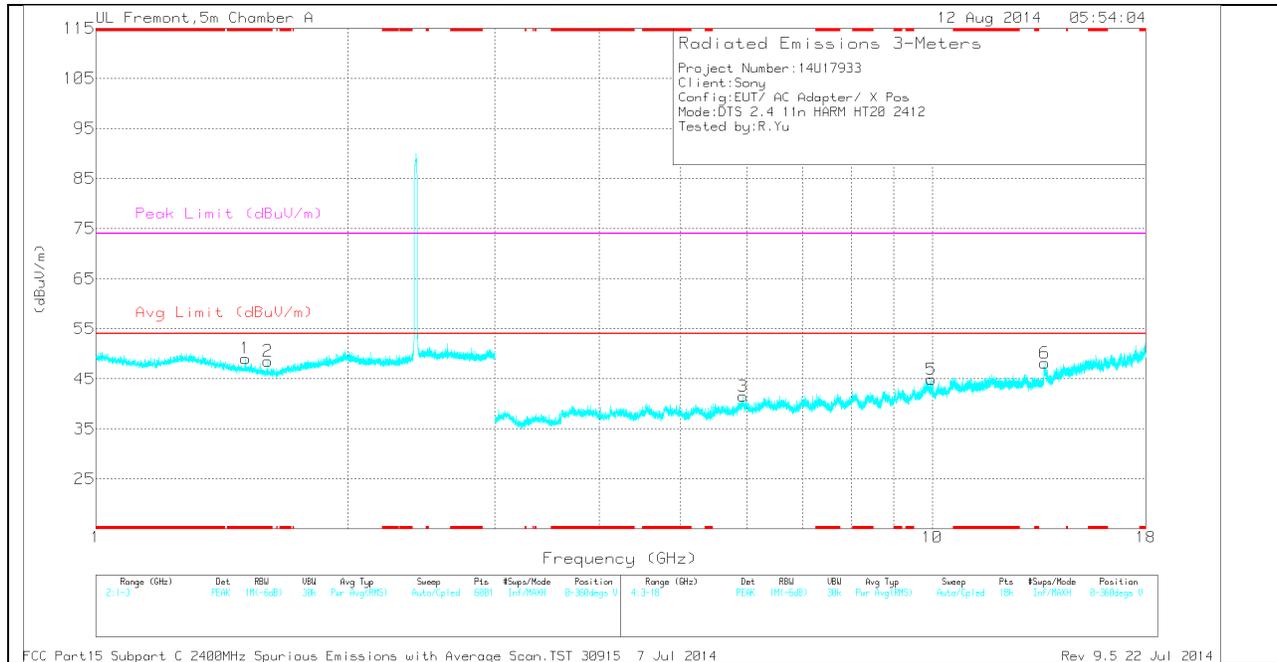
### HARMONICS AND SPURIOUS EMISSIONS

#### LOW CHANNEL HORIZONTAL



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

**LOW CHANNEL VERTICAL**



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

**LOW CHANNEL DATA**

*TRACE MARKERS*

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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	* 1.51	37.29	PK	28.7	-16.9	0	49.09	-	-	74	-24.91	0-360	201	V
2	* 1.606	37.24	PK	28.8	-17.5	0	48.54	-	-	74	-25.46	0-360	100	V
4	* 8.137	28.62	PK	35.5	-21.5	0	42.62	-	-	74	-31.38	0-360	100	H
3	5.942	29.31	PK	35.1	-22.9	0	41.51	-	-	-	-	0-360	100	V
5	9.979	27.08	PK	37.1	-19.3	0	44.88	-	-	-	-	0-360	100	V
6	13.629	27.23	PK	38.8	-17.9	0	48.13	-	-	-	-	0-360	100	V

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

PK - Peak detector

**Radiated Emissions**

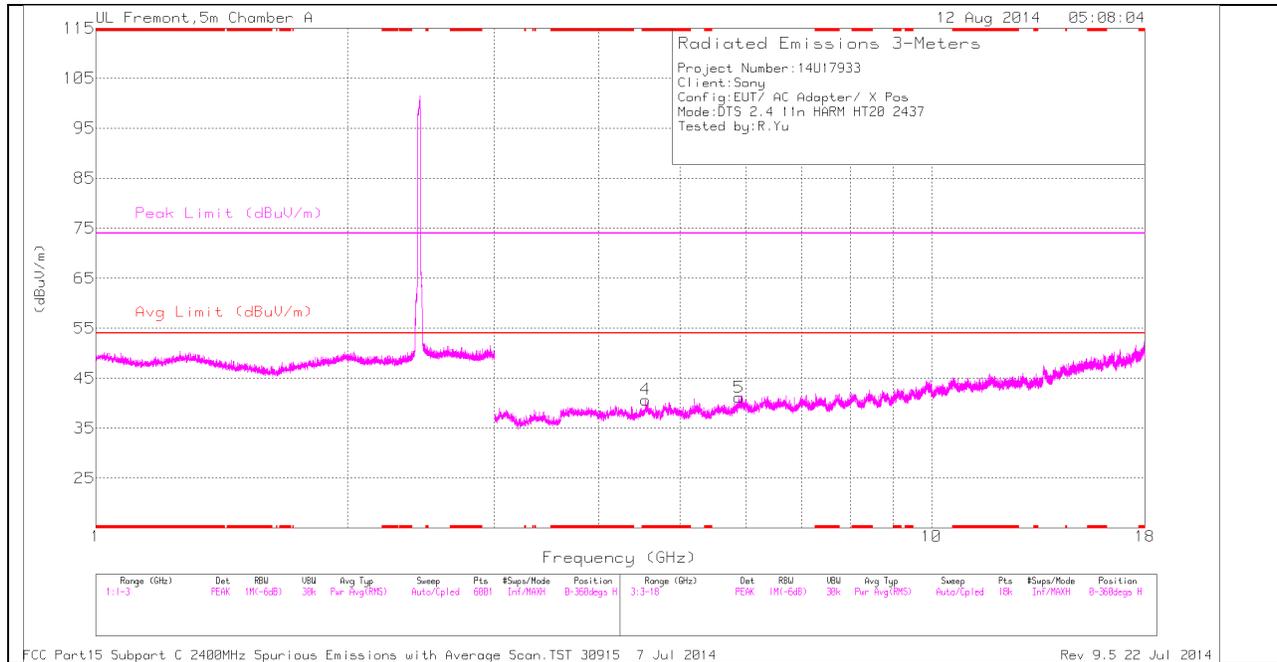
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
13.628	23.04	MAv1	38.8	-17.9	0	43.94	-	-	-	-	1	100	V
13.63	33.8	PK2	38.8	-17.9	0	54.7	-	-	-	-	1	100	V

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

PK2 - KDB558074 Method: Maximum Peak

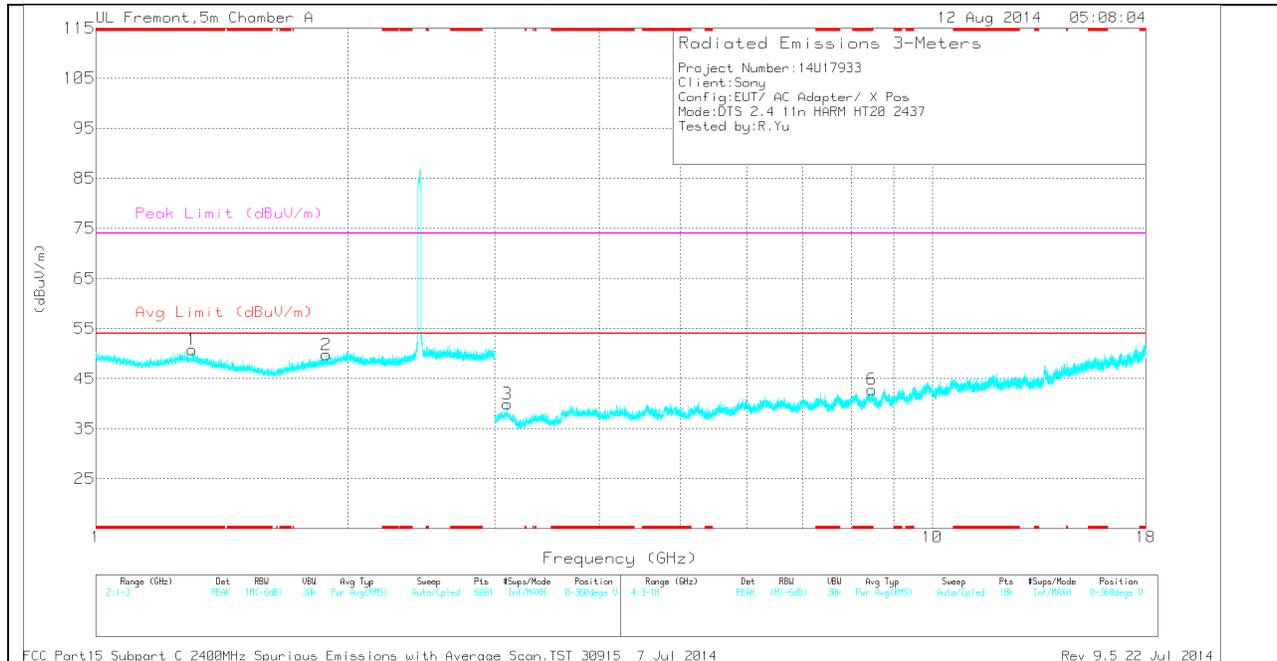
MAv1 - KDB558074 Option 1 Maximum RMS Average

**MID CHANNEL HORIZONTAL**



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

**MID CHANNEL VERTICAL**



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

**MID CHANNEL DATA**

*TRACE MARKERS*

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Ftr/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	* 1.305	37.51	PK	30.2	-16.9	0	50.81	-	-	74	-23.19	0-360	100	V
4	* 4.552	31.41	PK	33.9	-24.6	0	40.71	-	-	74	-33.29	0-360	201	H
6	* 8.466	28.04	PK	35.7	-20.9	0	42.84	-	-	74	-31.16	0-360	201	V
2	1.886	35.75	PK	31.5	-17.5	0	49.75	-	-	-	-	0-360	100	V
3	3.102	32.42	PK	32.8	-25.3	0	39.92	-	-	-	-	0-360	100	V
5	5.883	29.35	PK	35	-23.2	0	41.15	-	-	-	-	0-360	201	H

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

PK - Peak detector

**Radiated Emissions**

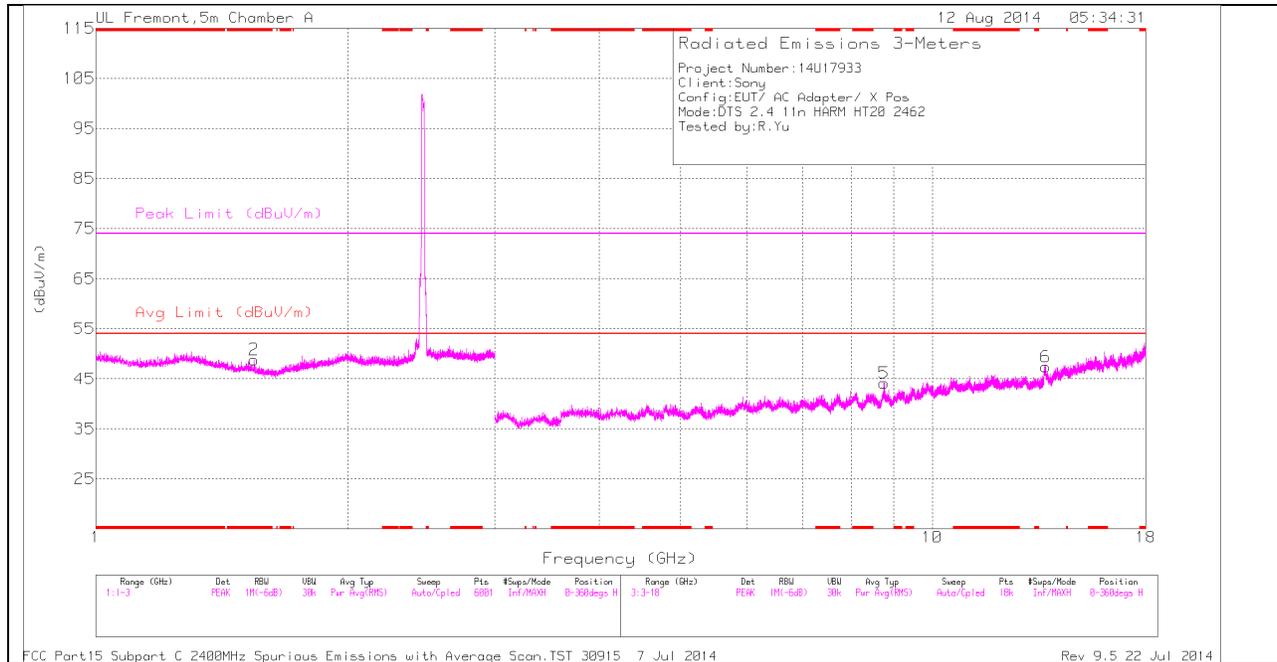
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.551	38.42	PK2	33.9	-24.6	0	47.72	-	-	74	-26.28	1	202	H
* 4.552	27.33	MAv1	33.9	-24.6	0	36.63	54	-17.37	-	-	1	202	H

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

PK2 - KDB558074 Method: Maximum Peak

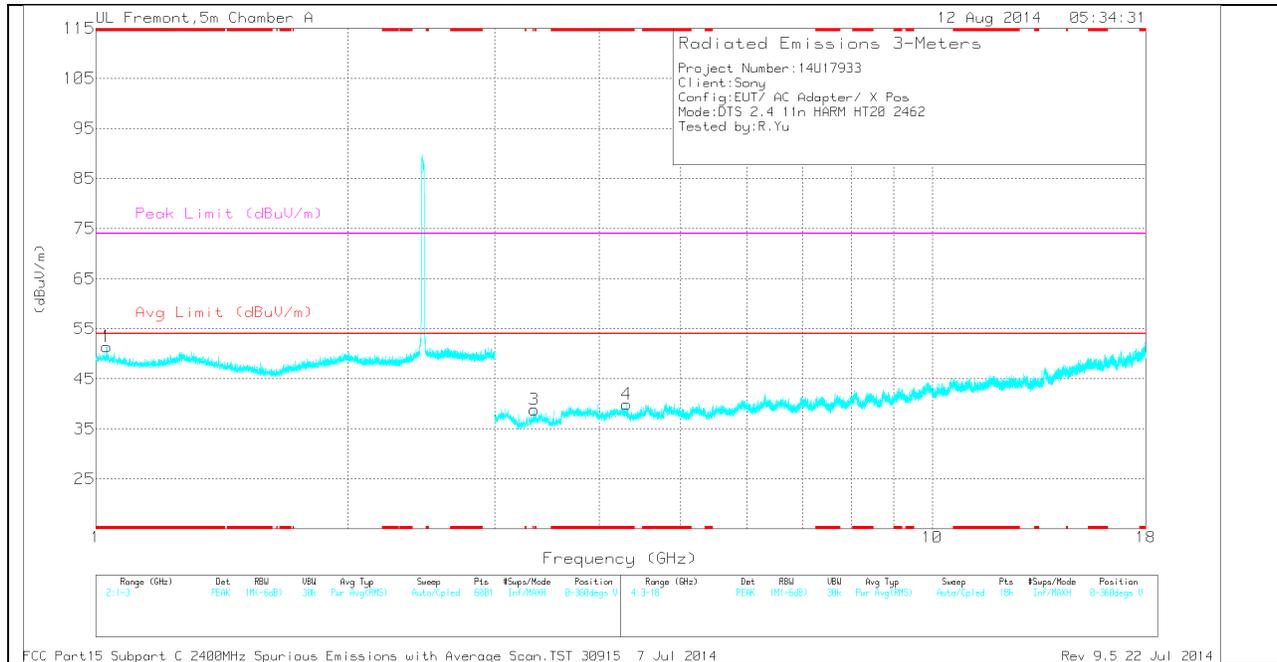
MAv1 - KDB558074 Option 1 Maximum RMS Average

**HIGH CHANNEL HORIZONTAL**



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

**HIGH CHANNEL VERTICAL**



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

**HIGH CHANNEL DATA**

*TRACE MARKERS*

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 1.546	37.1	PK	28.7	-17	0	48.8	-	-	74	-25.2	0-360	201	H
1	* 1.031	38.74	PK	28.6	-15.9	0	51.44	-	-	74	-22.56	0-360	100	V
4	* 4.311	31.42	PK	34	-25.5	0	39.92	-	-	74	-34.08	0-360	100	V
3	3.343	31.75	PK	33	-25.9	0	38.85	-	-	-	-	0-360	100	V
5	8.756	28.32	PK	35.8	-20	0	44.12	-	-	-	-	0-360	100	H
6	13.668	27.21	PK	38.8	-18.6	0	47.41	-	-	-	-	0-360	100	H

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

PK - Peak detector

**Radiated Emissions**

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Ftr/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
* 1.029	44.95	PK2	28.6	-16	0	57.55	-	-	74	-16.45	1	100	V
* 1.029	33.81	MAv1	28.6	-16	0	46.41	54	-7.59	-	-	1	100	V

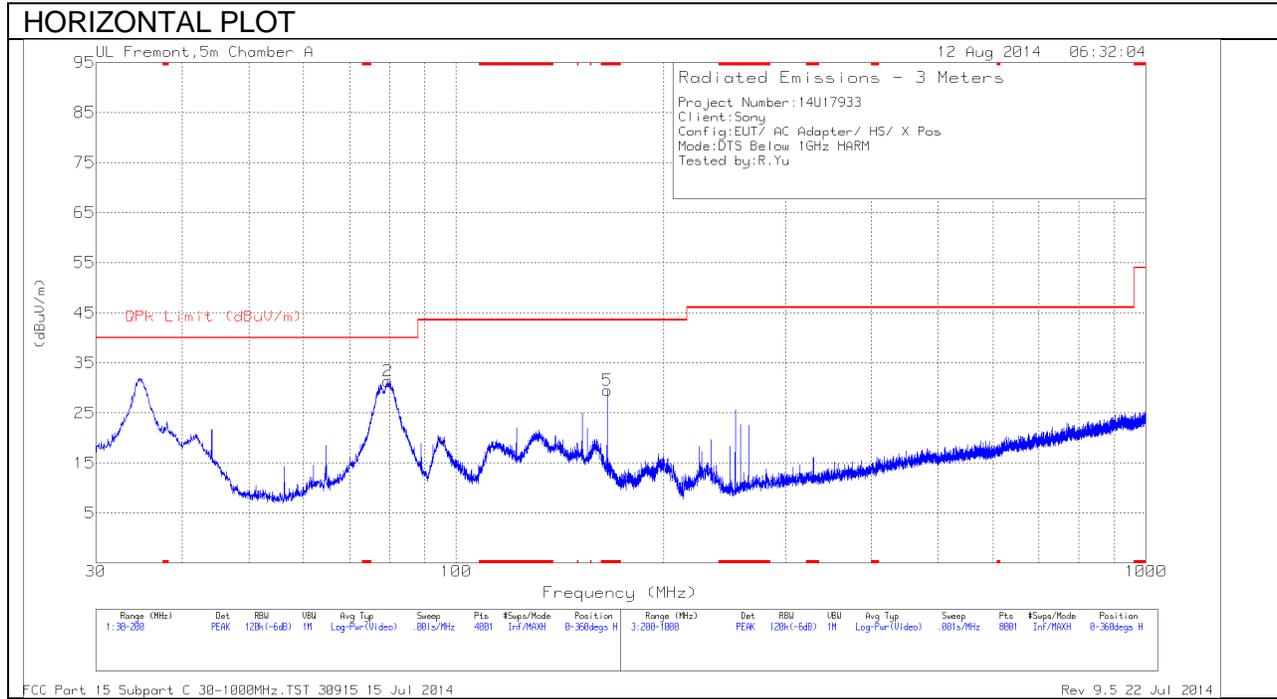
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

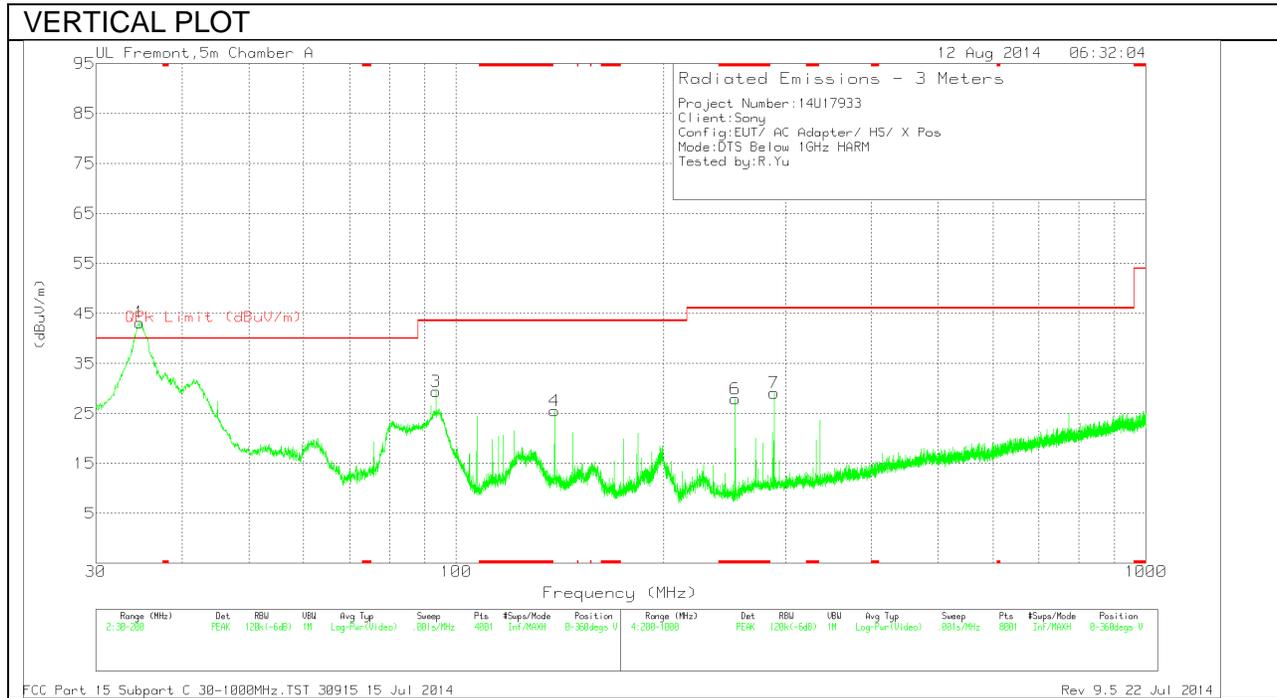
MAv1 - KDB558074 Option 1 Maximum RMS Average

### 11.3. 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 T130 (dB/m)	Amp/Cbl (dB/m)	DC Corr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 165.6175	47.51	PK	12	-30	0	29.51	43.52	-14.01	0-360	300	H
6	* 253.8	45.98	PK	11.5	-29.6	0	27.88	46.02	-18.14	0-360	101	V
1	34.76	55.99	PK	18.2	-31	0	43.19	40	3.19	0-360	101	V
2	79.555	54.46	PK	7.6	-30.7	0	31.36	40	-8.64	0-360	200	H
3	93.4525	51.41	PK	8.4	-30.4	0	29.41	43.52	-14.11	0-360	101	V
4	138.8425	42.4	PK	13.3	-30.2	0	25.5	43.52	-18.02	0-360	101	V
7	288.9	45.11	PK	13.3	-29.3	0	29.11	46.02	-16.91	0-360	101	V

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

PK - Peak detector

**Radiated Emissions**

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T130 (dB/m)	Amp/Cbl (dB/m)	DC Corr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
34.76	23.91	QP	18.1	-31	0	11.01	40	-28.99	1	101	V

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

QP - Quasi-Peak detector

## 12. 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.

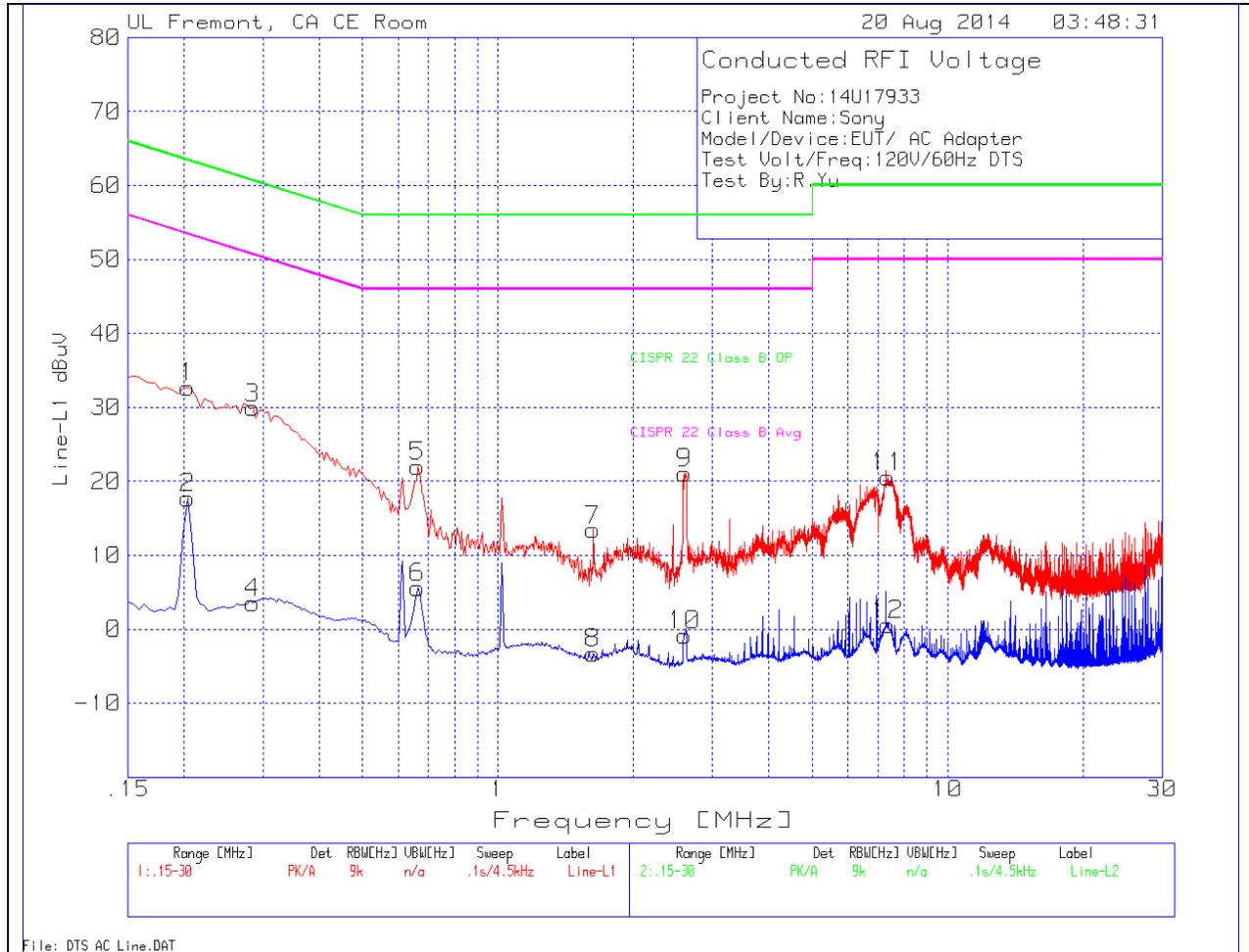
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

**RESULTS**

**6 WORST EMISSIONS**

**LINE 1 PLOT**

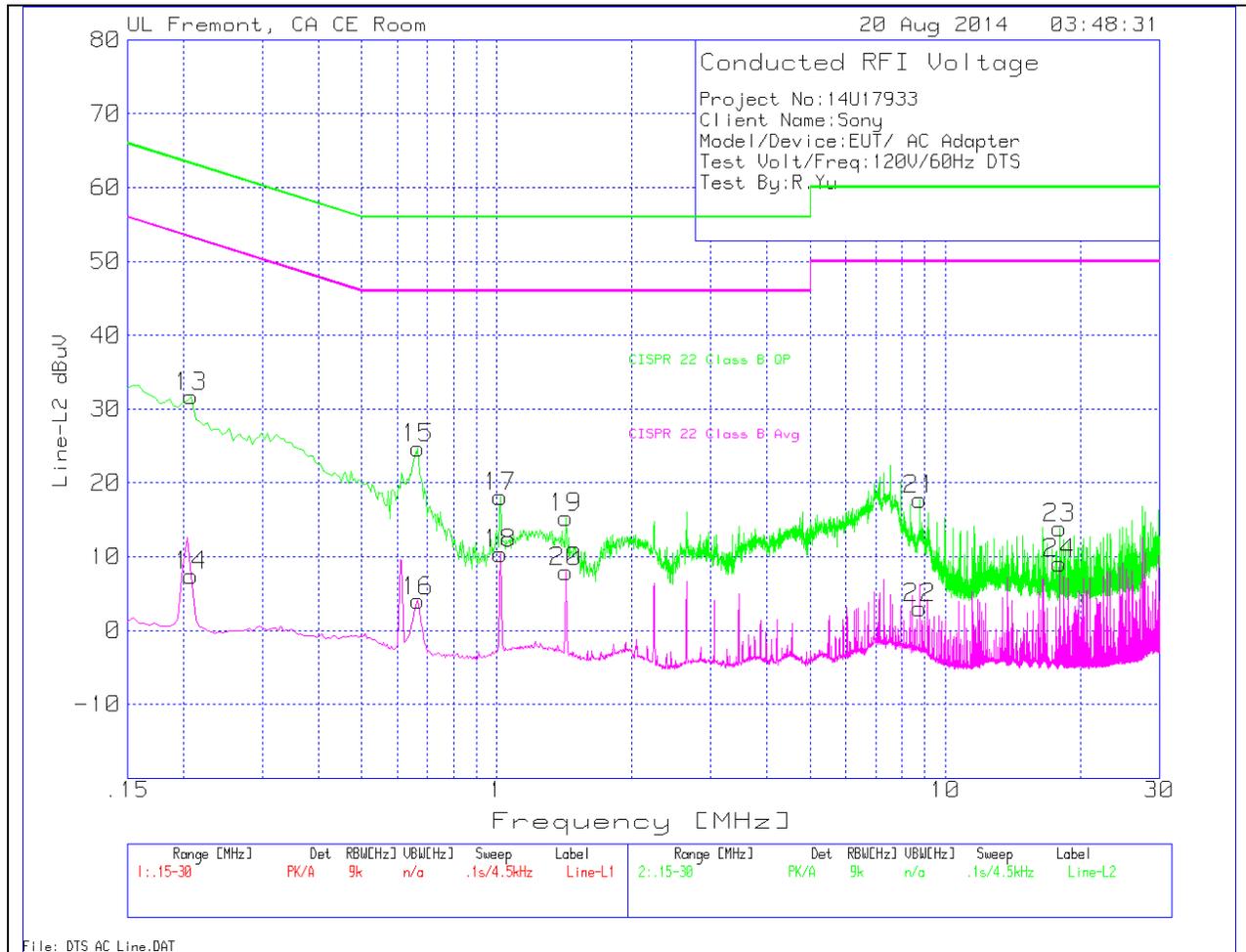


**LINE 1 RESULTS**

**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	.204	31.75	PK	.9	0	32.65	63.4	-30.75	-	-
2	.204	16.82	Av	.9	0	17.72	-	-	53.4	-35.68
3	.285	29.31	PK	.6	0	29.91	60.7	-30.79	-	-
4	.285	2.95	Av	.6	0	3.55	-	-	50.7	-47.15
5	.663	21.68	PK	.3	0	21.98	56	-34.02	-	-
6	.663	5.32	Av	.3	0	5.62	-	-	46	-40.38
7	1.6305	13.11	PK	.2	.1	13.41	56	-42.59	-	-
8	1.6305	-3.54	Av	.2	.1	-3.24	-	-	46	-49.24
9	2.598	20.76	PK	.2	.1	21.06	56	-34.94	-	-
10	2.598	-1.17	Av	.2	.1	-1.87	-	-	46	-46.87
11	7.35	20.32	PK	.2	.1	20.62	60	-39.38	-	-
12	7.35	.26	Av	.2	.1	.56	-	-	50	-49.44

**LINE 2 PLOT**



**LINE 2 RESULTS**

**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)
13	.2085	30.71	PK	1	0	31.71	63.3	-31.59	-	-
14	.2085	6.4	Av	1	0	7.4	-	-	53.3	-45.9
15	.6675	24.35	PK	.3	0	24.65	56	-31.35	-	-
16	.6675	3.7	Av	.3	0	4	-	-	46	-42
17	1.0185	17.86	PK	.3	0	18.16	56	-37.84	-	-
18	1.0185	10.11	Av	.3	0	10.41	-	-	46	-35.59
19	1.428	15.02	PK	.2	.1	15.32	56	-40.68	-	-
20	1.428	7.6	Av	.2	.1	7.9	-	-	46	-38.1
21	8.7585	17.48	PK	.2	.1	17.78	60	-42.22	-	-
22	8.7585	2.79	Av	.2	.1	3.09	-	-	50	-46.91
23	17.979	13.34	PK	.3	.2	13.84	60	-46.16	-	-
24	17.979	8.58	Av	.3	.2	9.08	-	-	50	-40.92