



FCC 47 CFR PART 15 SUBPART C  
INDUSTRY CANADA RSS-210 ISSUE 8

CERTIFICATION TEST REPORT

FOR

802.11a/g/n/ac WLAN + Bluetooth PCI-E Custom Combination Card

MODEL NUMBER: BCM943602CS

FCC ID: QDS-BRCM1080  
IC: 4324A-BRCM1080

REPORT NUMBER: 13U16561-4, Revision B

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--	04/09/14	Initial Issue	F. Ibrahim
A	05/30/14	Revised Section 5.3	F. Ibrahim
B	06/12/14	Add statement under Maximum Power Table – Section 5.2	S. Kuwatani

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## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** BROADCOM CORPORATION  
190 MATHILDA PLACE  
SUNNYVALE, CA 94086, U.S.A.

**EUT DESCRIPTION:** 802.11a/g/n/ac WLAN + Bluetooth PCI-E Custom Combination Card

**MODEL:** BCM943602CS

**SERIAL NUMBER:** P301 SN: 333 (Radiated Sample) and 339 (Conducted Sample)

**DATE TESTED:** March 05 to April 08, 2014

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 8	Pass
INDUSTRY CANADA RSS-GEN Issue 3	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:



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FRANK IBRAHIM  
PROGRAM MANAGER  
UL Verification Services Inc.

Tested By:



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THANH PHAM  
EMC LAB ENGINEER  
UL Verification Services Inc.

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15, 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 type="checkbox"/> Chamber A	<input type="checkbox"/> Chamber D
<input checked="" type="checkbox"/> Chamber B	<input type="checkbox"/> Chamber E
<input type="checkbox"/> Chamber C	<input type="checkbox"/> Chamber F

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 1000 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 an 802.11a/g/n/ac WLAN + Bluetooth PCI-E Custom Combination Card.

The radio module is manufactured by Broadcom.

### 5.2. MAXIMUM OUTPUT POWER

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

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	Basic GFSK	9.172	8.26
2402 - 2480	Enhanced 8PSK	7.840	6.08

Broadcom declares that the maximum average output power for BT will not exceed 8.2 dBm. This is also stated in the Operation Description.

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The EUT utilizes an 802.11a/b/g/n/ac WLAN/BT antenna with a maximum gain of 4.82 dBi for BT.

### 5.4. SOFTWARE AND DRIVER

The EUT driver software installed during testing was Broadcom, Ver. 5.6.0.9020.

The test utility software used during testing was Broadcom Bluetooth, Ver. 1.8.4.7.

### 5.5. WORST-CASE CONFIGURATION AND MODE

EUT is for desktop applications; there is only one orientation for the antenna, the EUT was tested with normal antenna orientation.

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.

Chain J1 (WiFi 3) is used for testing BT.

Based on client's input, there is no colocation among different radios.

## 5.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Dell	Latitude E6400	2477655473	DoC
AC Adapter	Dell	DA90PE3-00	CN-0WTC00V-48661	DoC
Catalyst PCIe. Board	Enterprises Inc.	NA	NA	N/A
X29T	Broadcom	BCM94331C5AD	P300	N/A
Laptop	Dell	Latitude E6400	6MYFMJ1	DoC
AC Adapter	Dell	PA2 /CF745	CN-0CF745-48661	DoC
Catalyst PCIe. Board	Enterprises Inc.	NA	NA	N/A
X29T	Broadcom	BCM94331C5AD	P300	N/A

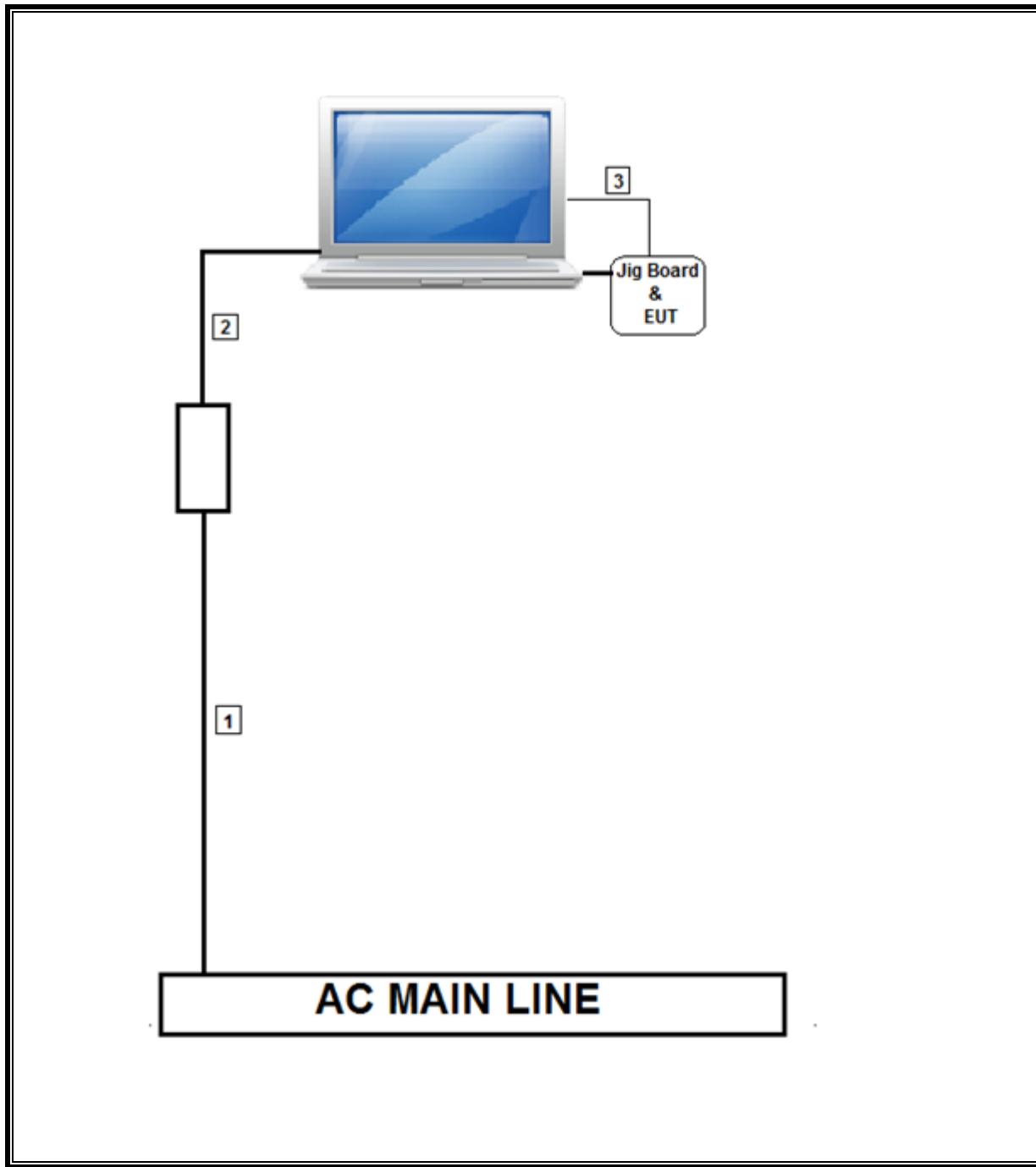
### I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	US 115V	Un-Shielded	1.0m	NA
2	DC	1	DC	Un-Shielded	0.8m	NA
3	USB	1	USB	Un-Shielded	0.8m	NA

### TEST SETUP

The EUT was tested as an external module that installed on an USB to test JIG board connected to a host Laptop PC via USB cable. 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
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01161	05/07/13	05/07/14
PXA Signal Analyzer	Agilent	N9030A	T339	12/10/13	12/10/14
Horn Antenna, 1GHz-18GHz	ETS Lindgren	3117	T119	01/06/14	01/06/15
Antenna, Horn, 18 GHz	EMCO	3115	C01218	01/18/14	01/18/15
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00980	11/14/13	11/14/14
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C01016	08/22/13	08/22/14
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	10/19/13	10/19/14
Peak Power Meter	Agilent / HP	N1921A	T309	12/12/13	12/12/14
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	01/16/14	01/16/15
5GHz Low Pass Filter	Micro-Tronics	LPS17541	F00219	06/26/13	06/26/14
3GHz High Pass Filter	Micro-Tronics	HPS17542	F00222	06/26/13	06/26/14
6GHz High Pass Filter	Micro-Tronics	HPM17543	F00224	06/26/13	06/26/14

## 7. ANTENNA PORT TEST RESULTS

### 7.1. ON TIME AND DUTY CYCLE

#### LIMITS

None; for reporting purposes only.

#### PROCEDURE

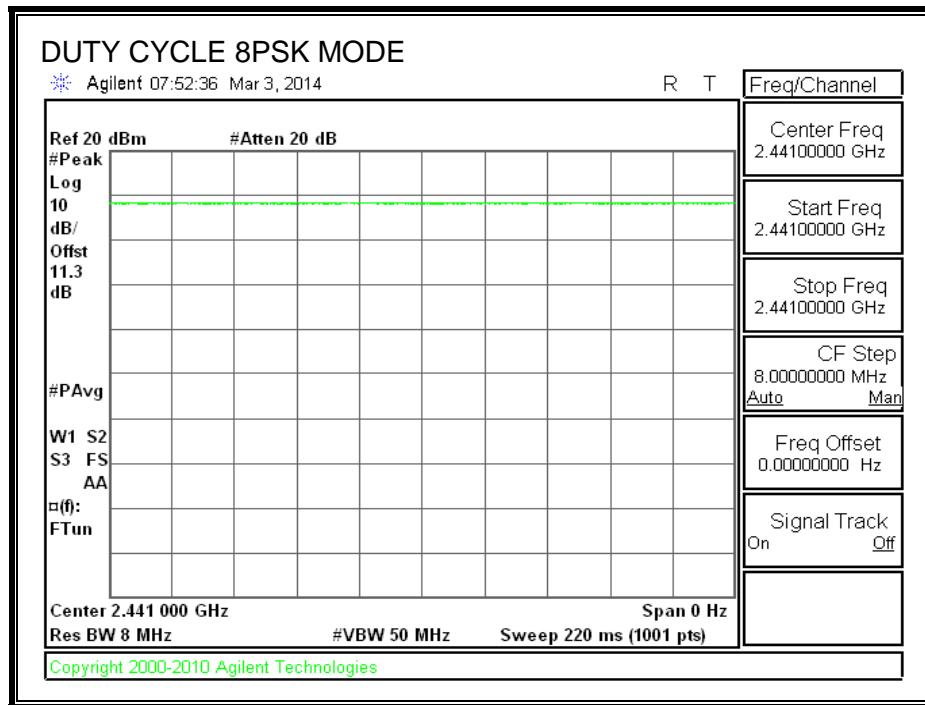
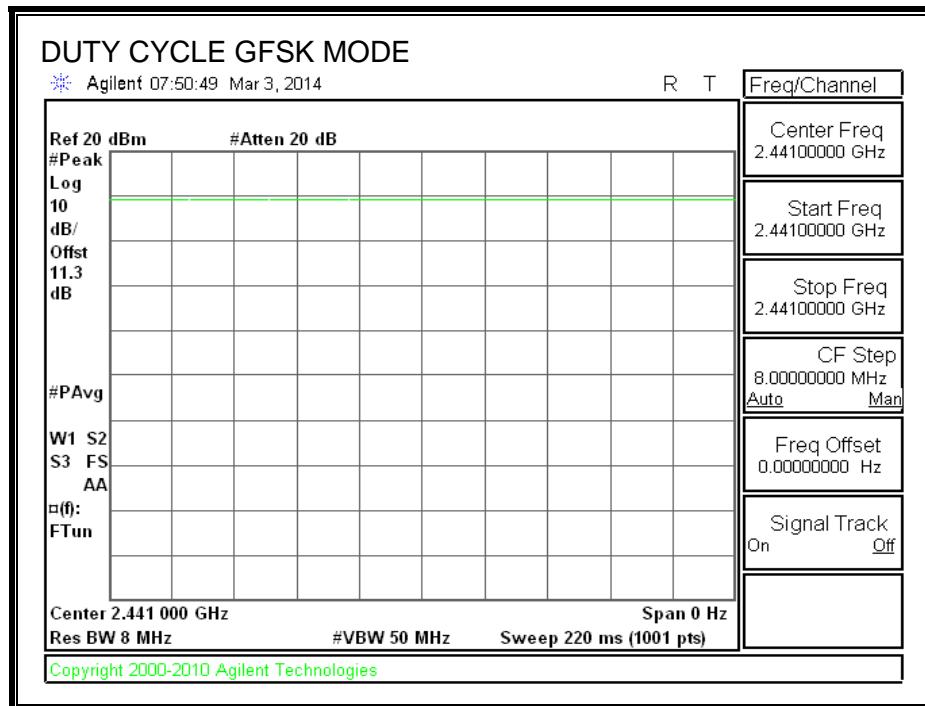
KDB 558074 Zero-Span Spectrum Analyzer Method.

#### 7.1.1. 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/B Minimum VBW (kHz)
<b>2.4 GHz band (Hopping OFF)</b>						
Bluetooth GFSK	1.000	1.000	1.000	100.00%	0.00	0.010
Bluetooth 8PSK	1.000	1.000	1.000	100.00%	0.00	0.010

## 7.1.2. DUTY CYCLE PLOTS

### HOPPING OFF



## 7.2. BASIC DATA RATE GFSK MODULATION

### 7.2.1. 20 dB AND 99% BANDWIDTH -

#### LIMIT

None; for reporting purposes only.

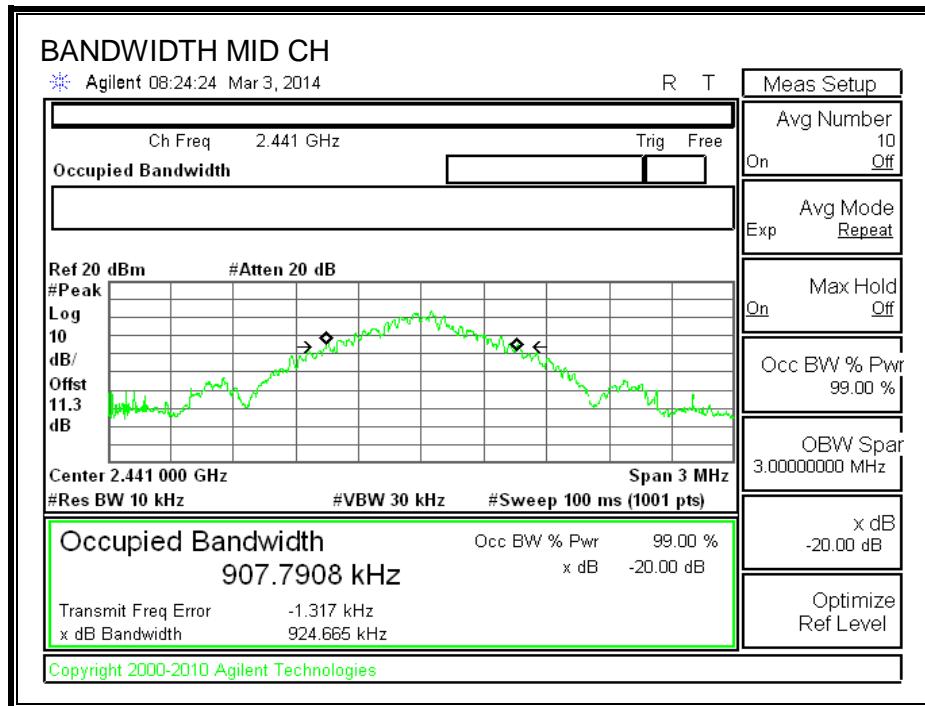
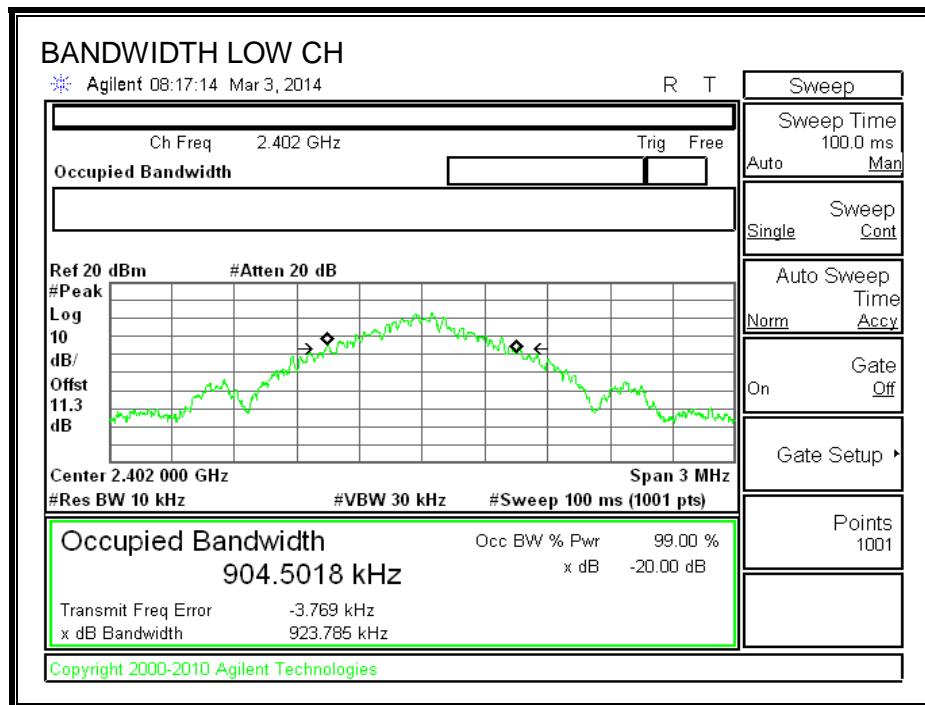
#### TEST PROCEDURE

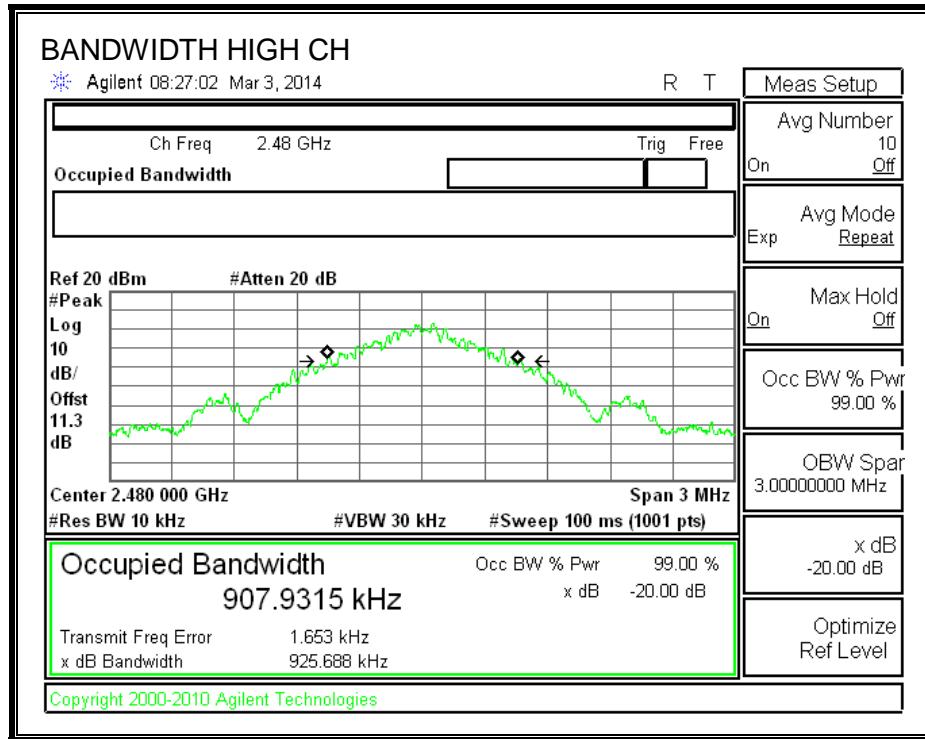
The transmitter output is connected to a spectrum analyzer. The RBW is set to  $\geq 1\%$  of the 20 dB bandwidth. The VBW is set to  $\geq$  RBW. The sweep time is coupled.

#### RESULTS

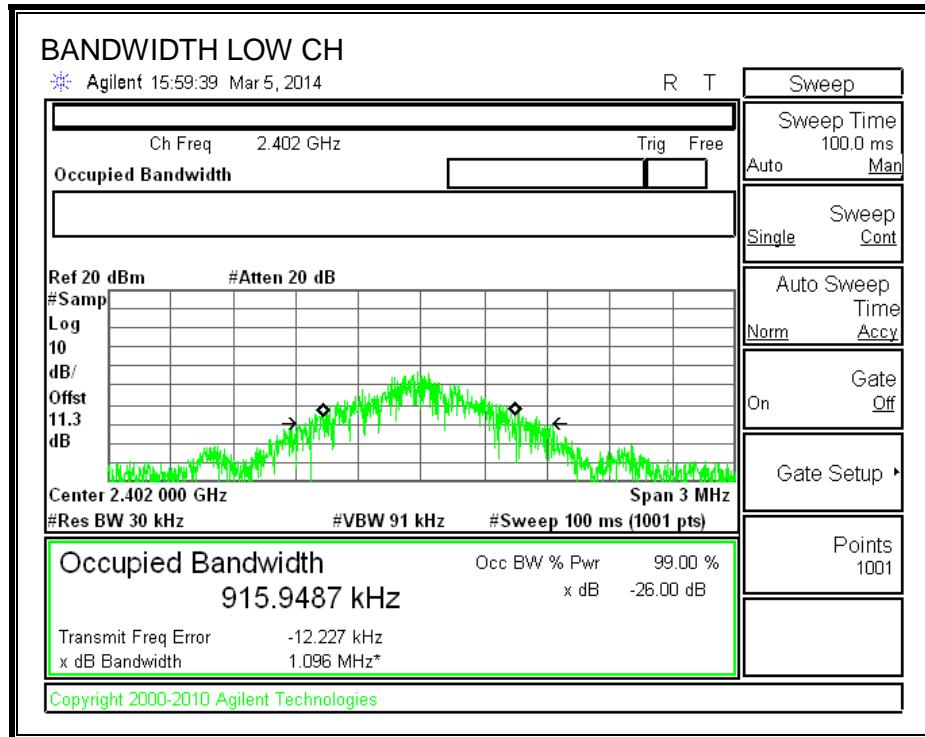
Channel	Frequency (MHz)	20 dB Bandwidth (kHz)	99% Bandwidth (kHz)
Low	2402	923.785	915.9487
Middle	2441	924.665	917.7309
High	2480	925.688	923.5527

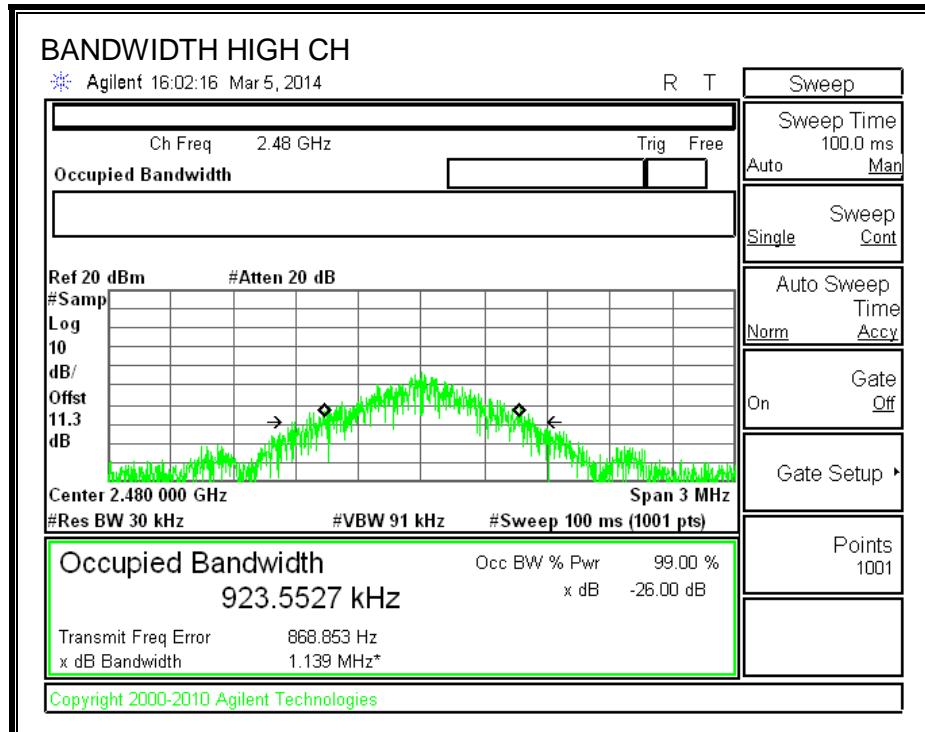
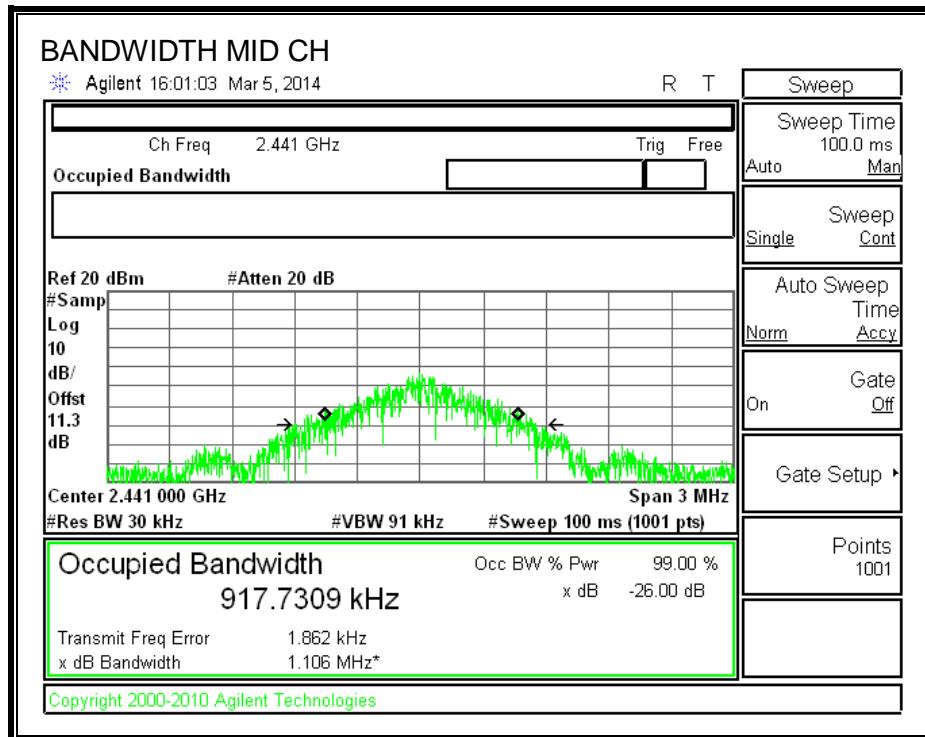
## 20 dB BANDWIDTH





## 99% BANDWIDTH





## 7.2.2. HOPPING FREQUENCY SEPARATION

### LIMIT

FCC §15.247 (a) (1)

IC RSS-210 A8.1 (b)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hoping channel, whichever is greater.

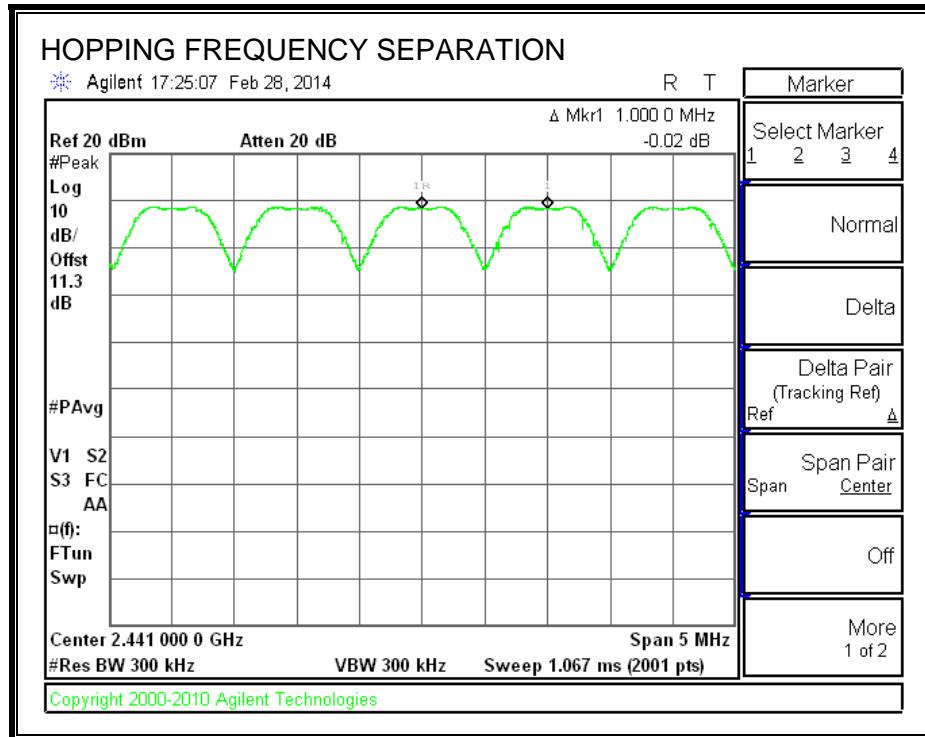
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

### TEST PROCEDURE

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

## RESULTS

### HOPPING FREQUENCY SEPARATION



### 7.2.3. NUMBER OF HOPPING CHANNELS

#### LIMIT

FCC §15.247 (a) (1) (iii)

IC RSS-210 A8.1 (d)

Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels.

#### TEST PROCEDURE

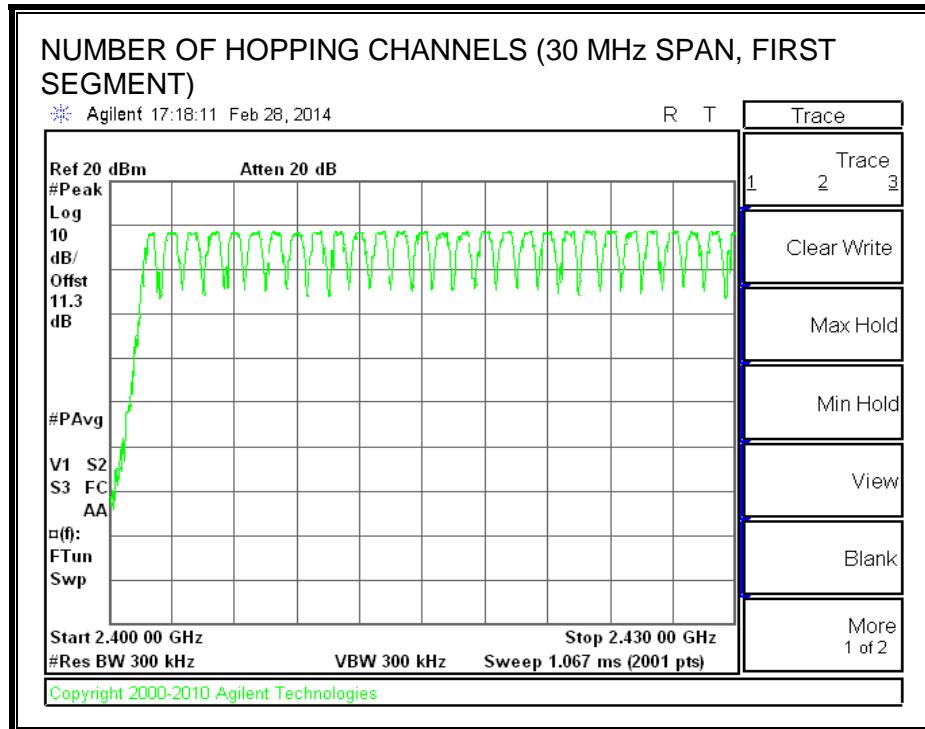
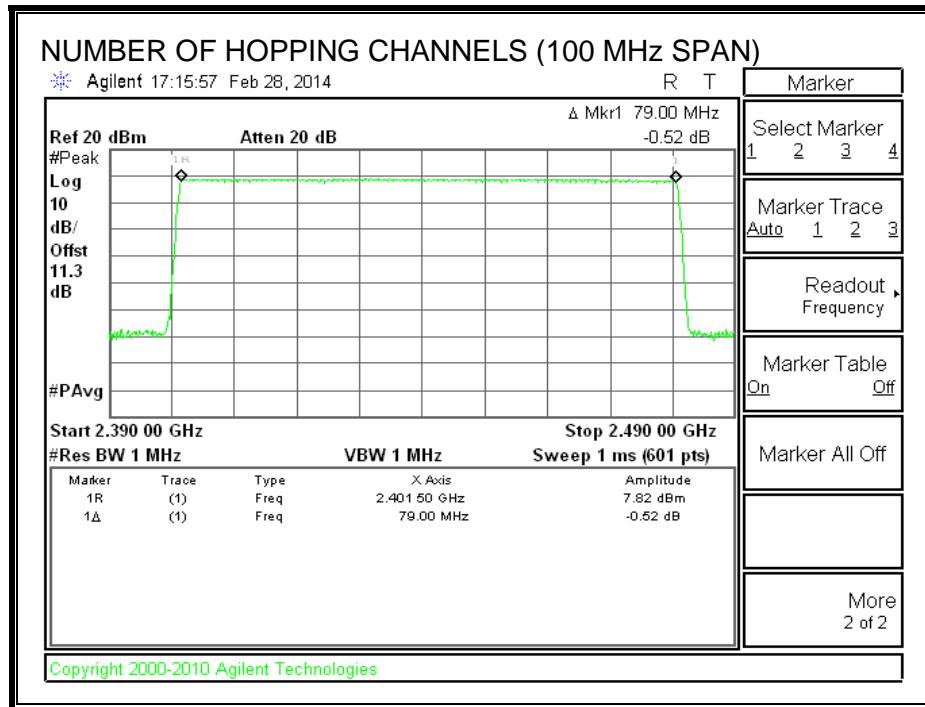
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

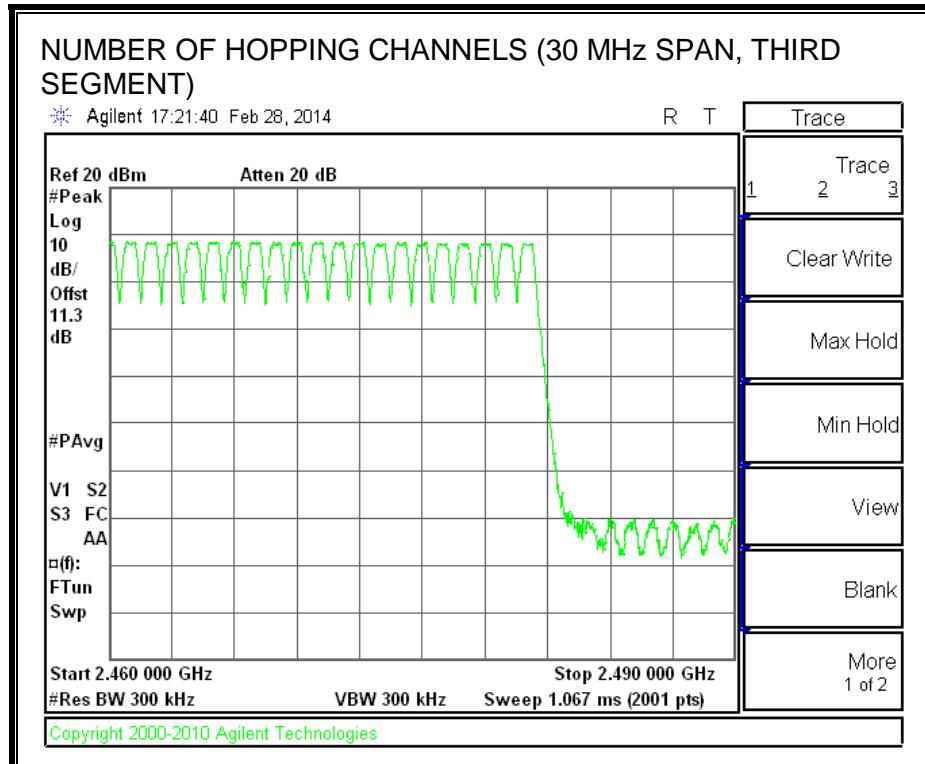
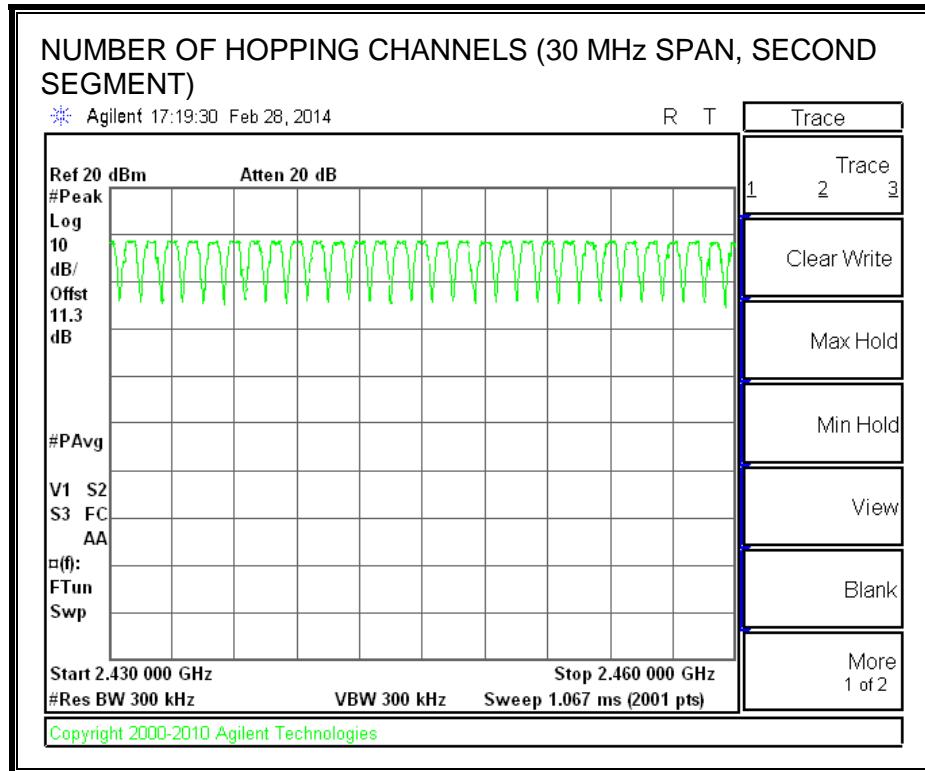
#### RESULTS

Normal Mode: 79 Channels were observed.

AFH Mode: 20 Channels were declared by the client.

## NUMBER OF HOPPING CHANNELS





## 7.2.4. AVERAGE TIME OF OCCUPANCY

### LIMIT

FCC §15.247 (a) (1) (iii)

IC RSS-210 A8.1 (d)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

### TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centered on a single, selected hopping channel. The width of a single pulse is measured in a fast scan. The number of pulses is measured in a 3.16 second scan, to enable resolution of each occurrence.

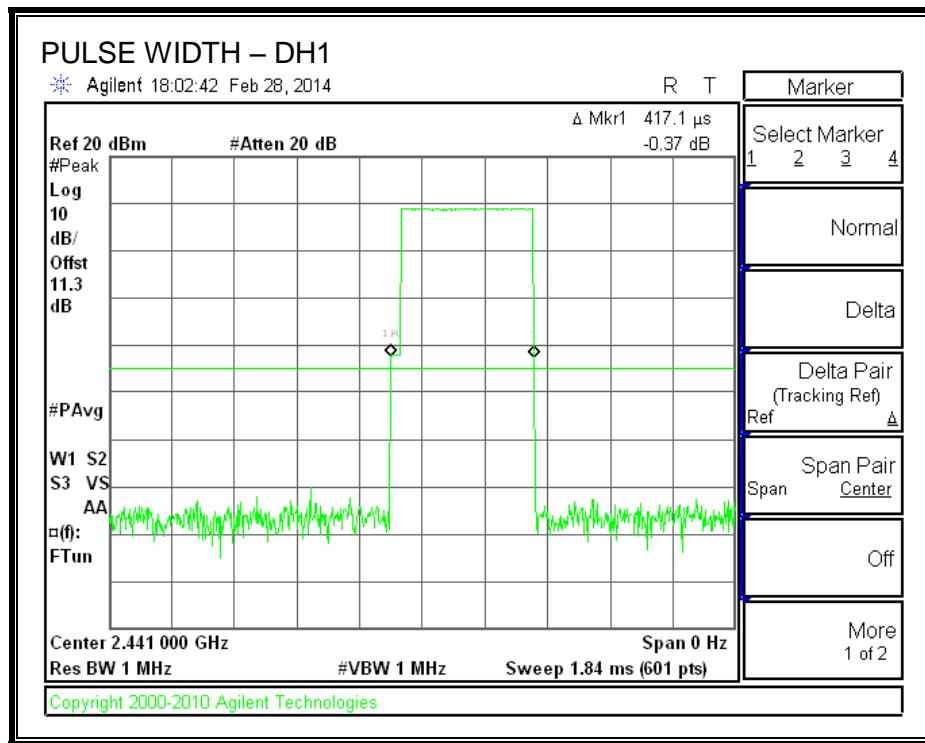
The average time of occupancy in the specified 31.6 second period (79 channels \* 0.4 s) is equal to  $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$ .

For AFH mode, the average time of occupancy in the specified 8 second period (20 channels \* 0.4 seconds) is equal to  $10 * (\# \text{ of pulses in } 0.8 \text{ s}) * \text{pulse width}$ .

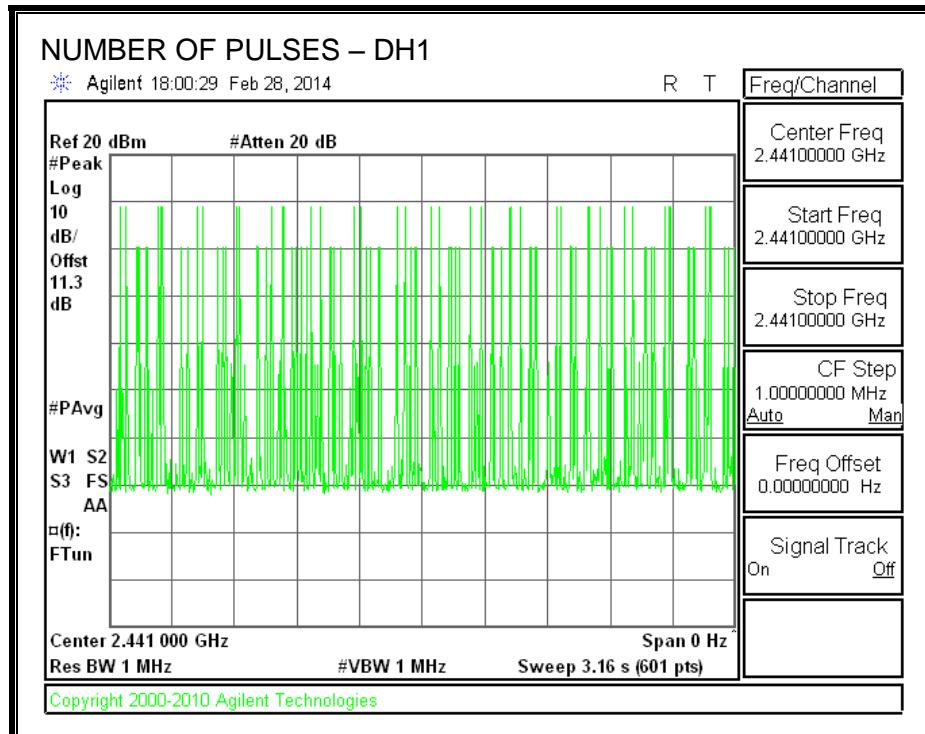
### RESULTS

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
<b>GFSK Normal Mode</b>					
DH1	0.4171	32.00	0.133	0.4	-0.2665
DH3	1.7160	19.00	0.326	0.4	-0.0740
DH5	2.9110	13.00	0.378	0.4	-0.0216
DH Packet	Pulse Width (msec)	Number of Pulses in 0.8 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
<b>GFSK AFH Mode</b>					
DH1	0.4171	8.00	0.033	0.4	-0.3666
DH3	1.7160	4.75	0.082	0.4	-0.3185
DH5	2.9110	3.25	0.095	0.4	-0.3054

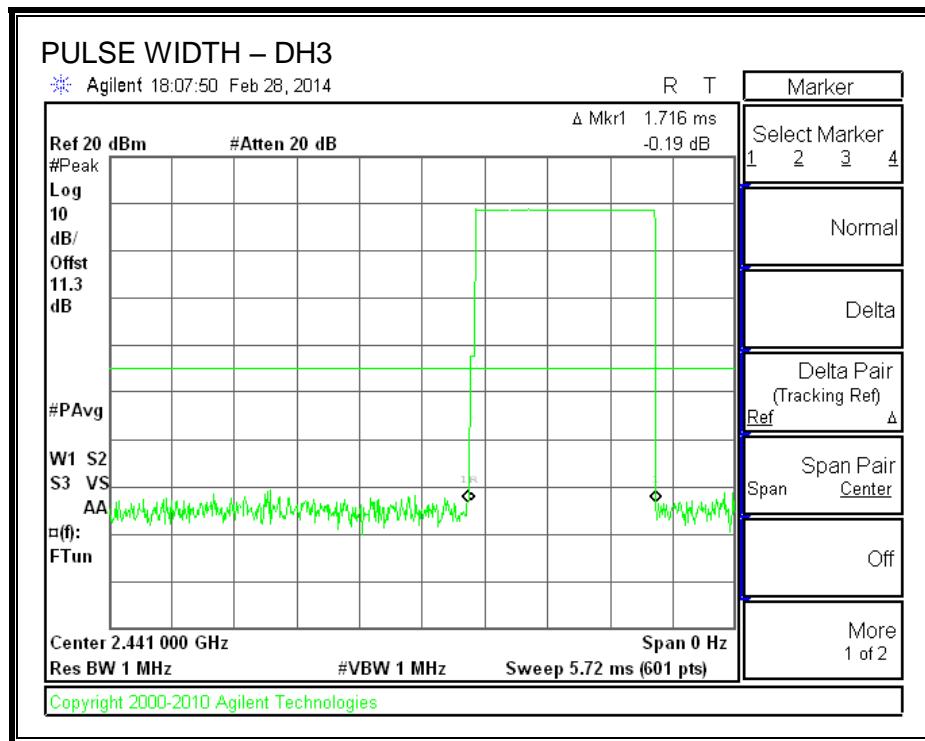
## PULSE WIDTH - DH1



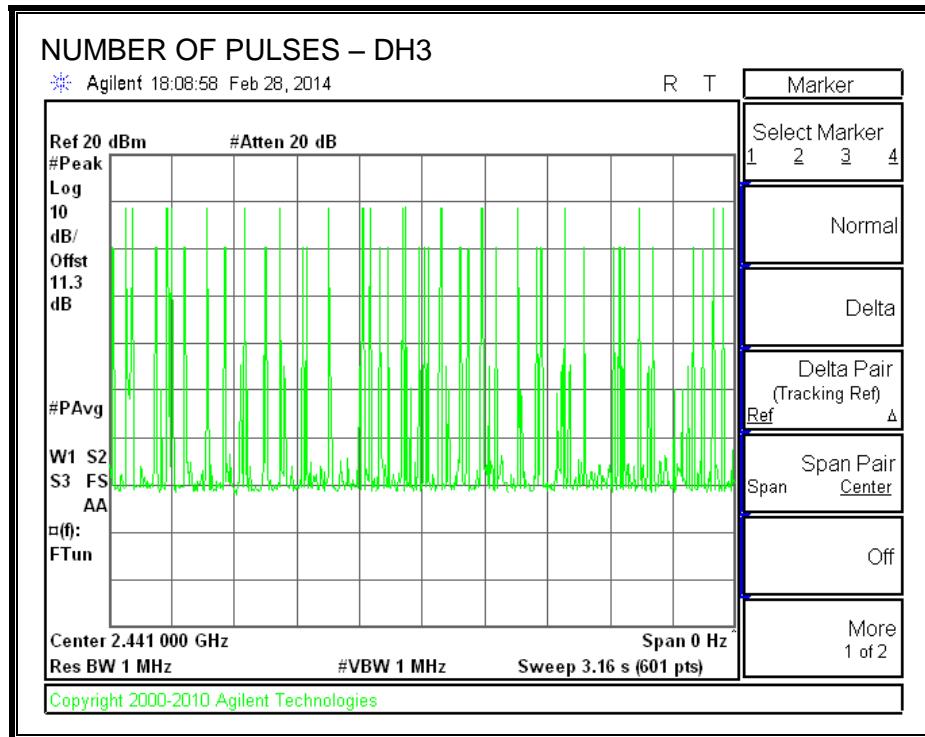
## NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1



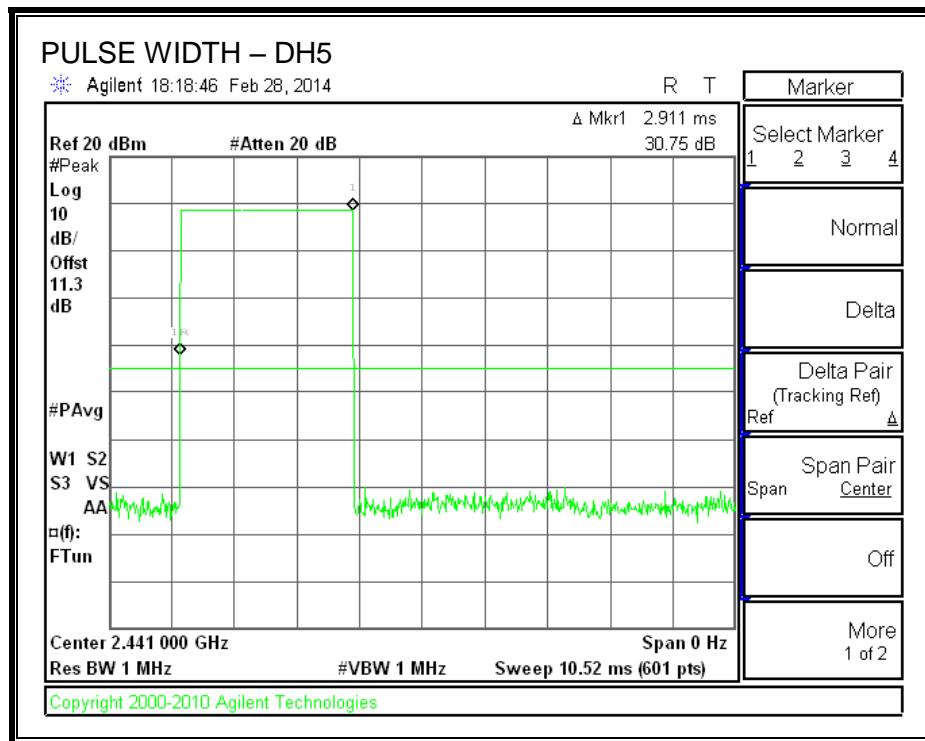
### PULSE WIDTH – DH3



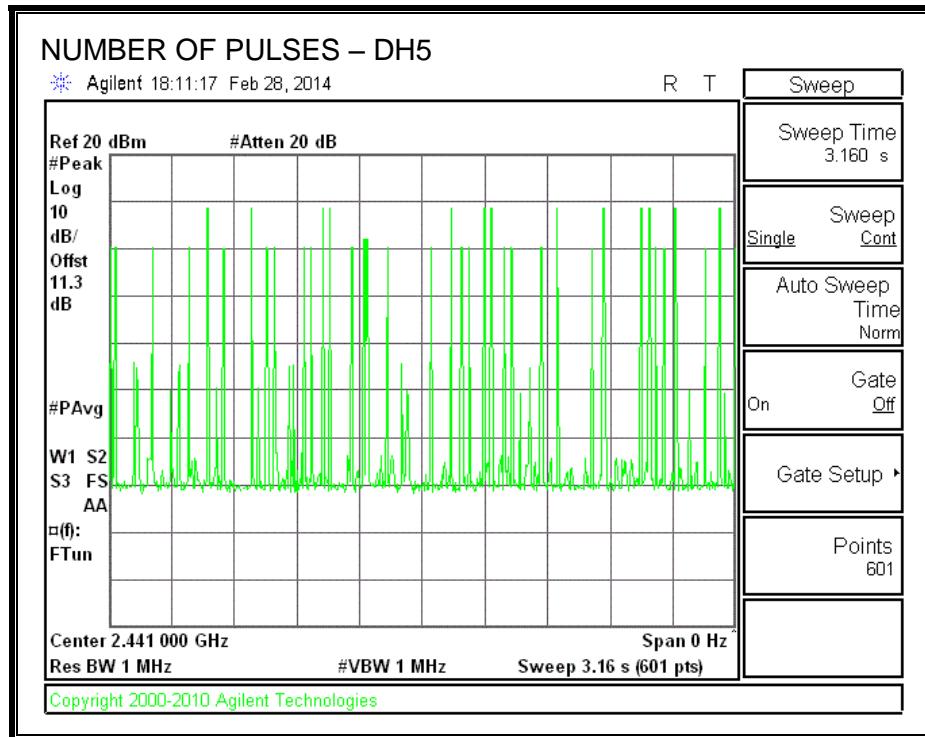
### NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3



## PULSE WIDTH – DH5



## NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5



## 7.2.5. OUTPUT POWER

### LIMIT

§15.247 (b) (1)

RSS-210 Issue 7 Clause A8.4

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

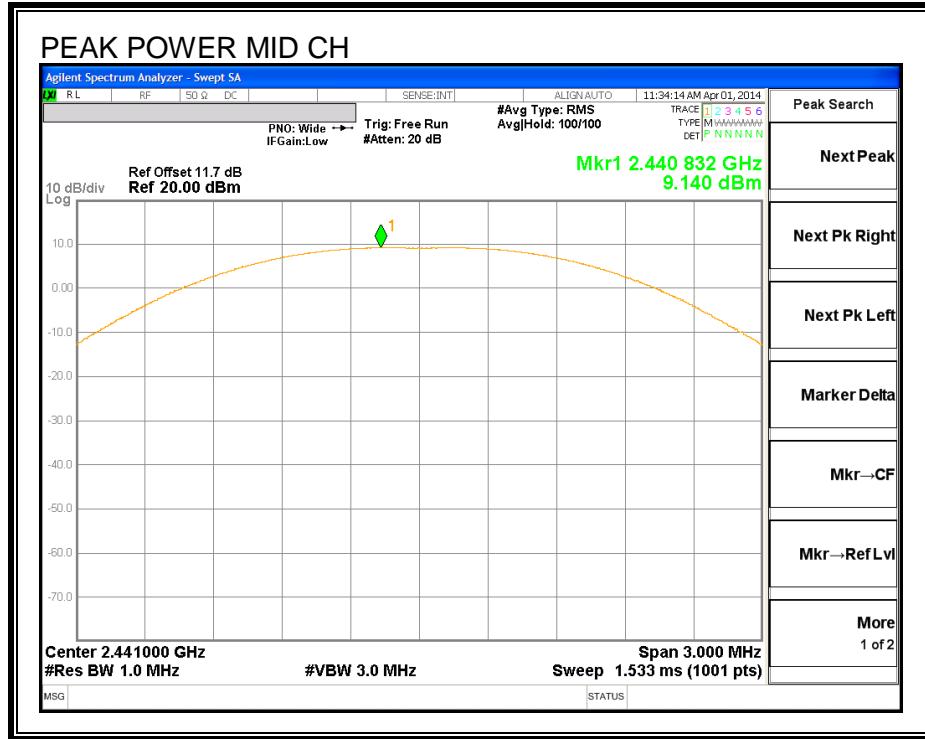
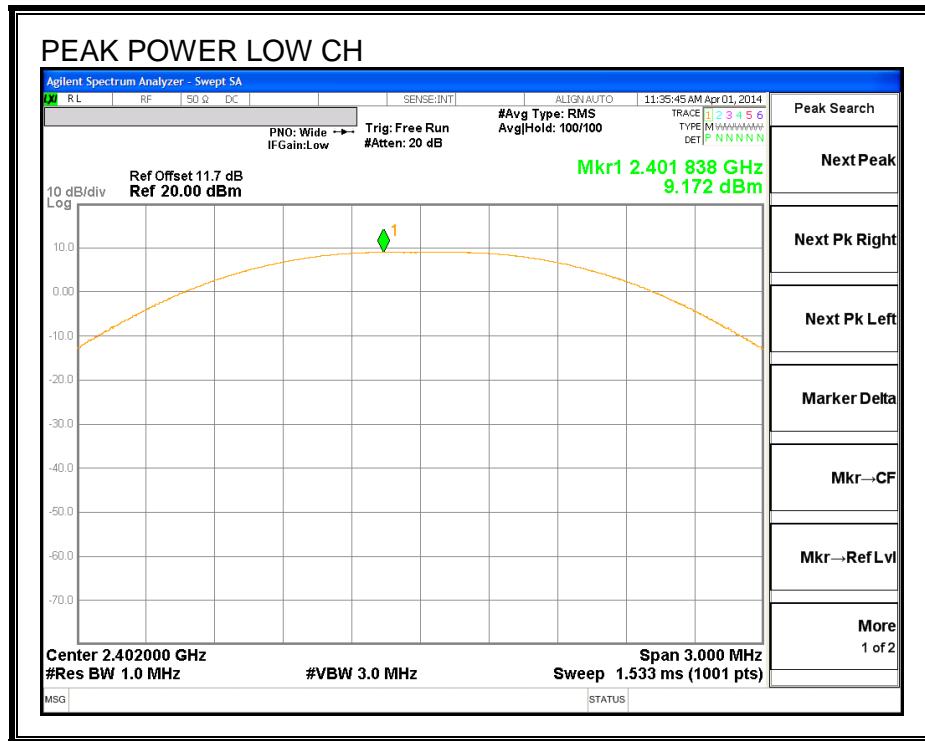
### TEST PROCEDURE

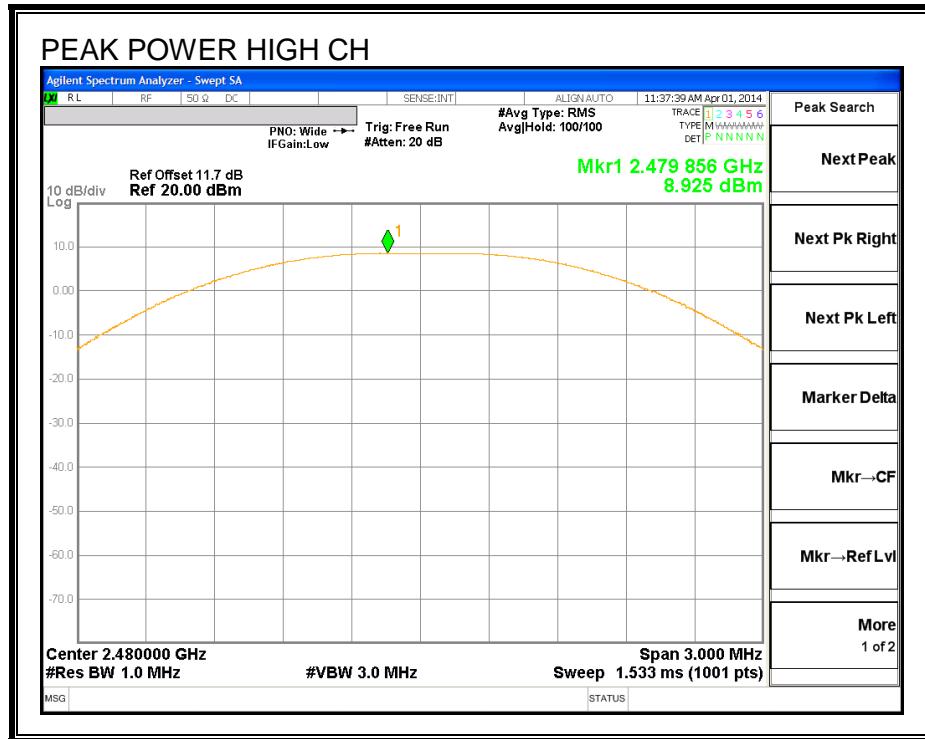
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

### RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.172	30	-20.83
Middle	2441	9.140	30	-20.86
High	2480	8.925	30	-21.08

## OUTPUT POWER





## 7.2.6. AVERAGE POWER

### LIMIT

None; for reporting purposes only.

### TEST PROCEDURE

The transmitter output is connected to a power meter.

### RESULTS

The cable assembly insertion loss of 11.3 dB was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	8.80
Middle	2441	8.90
High	2480	8.40

## 7.2.7. CONDUCTED SPURIOUS EMISSIONS

### LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

Limit = -30 dBc

### TEST PROCEDURE

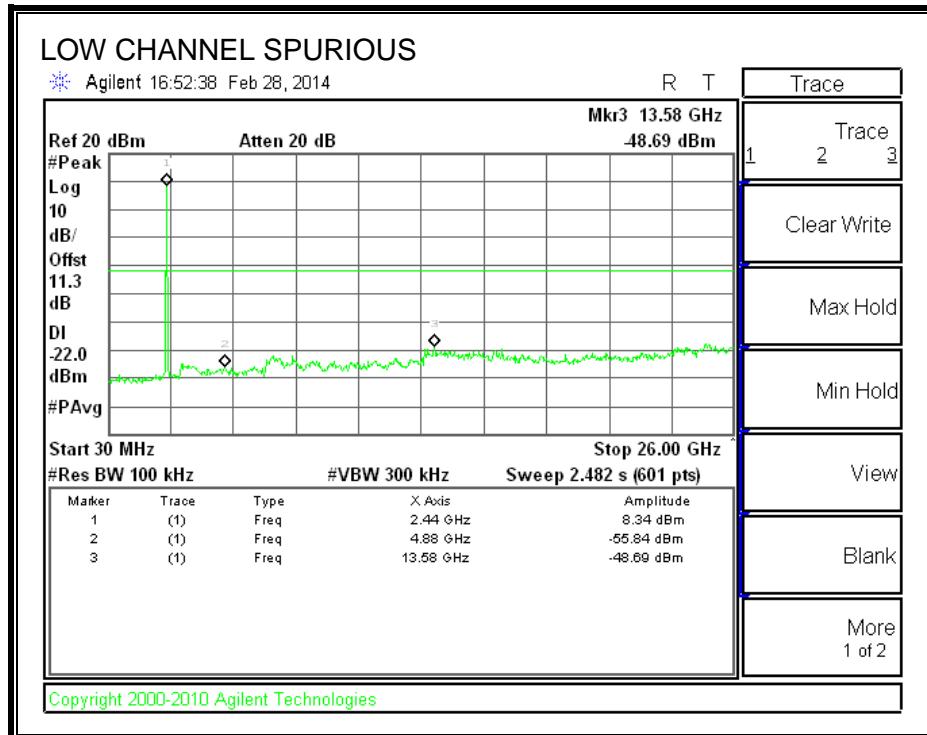
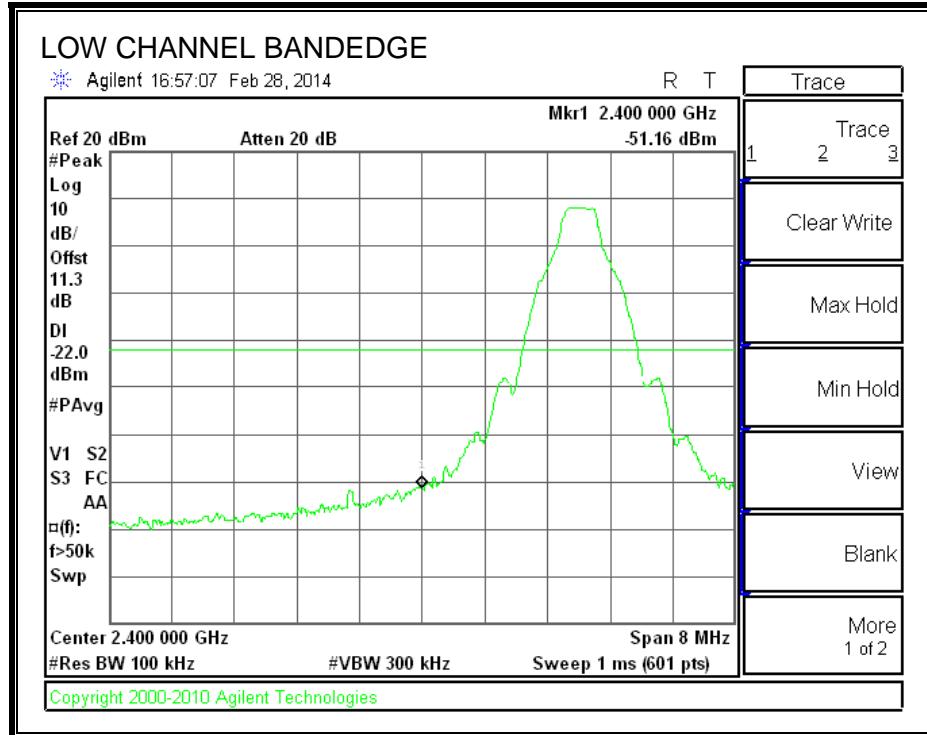
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

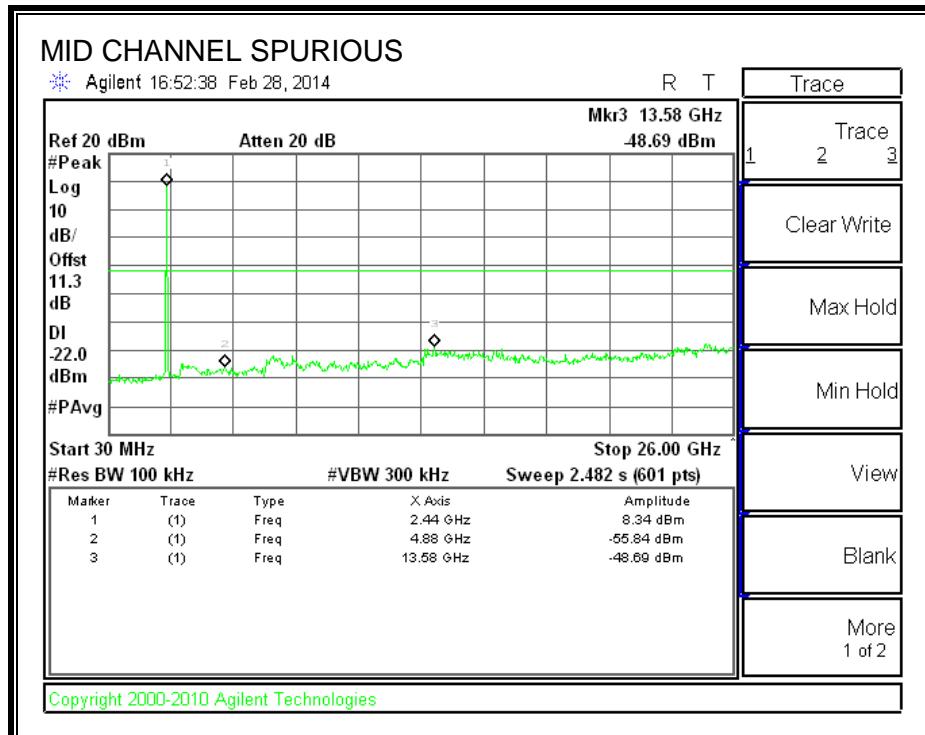
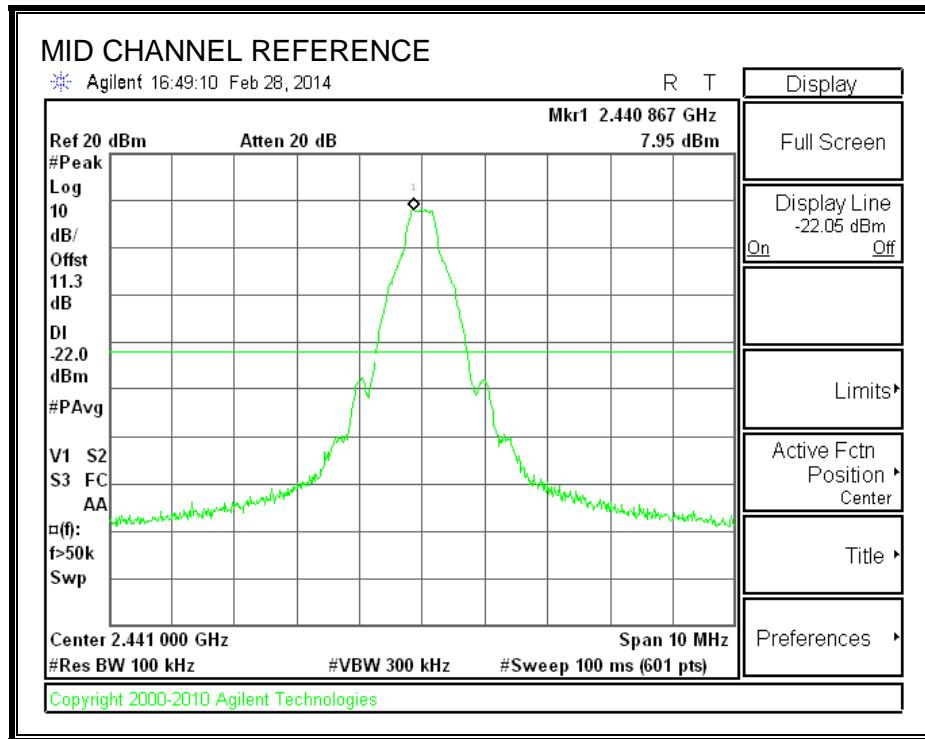
The band edges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

## RESULTS

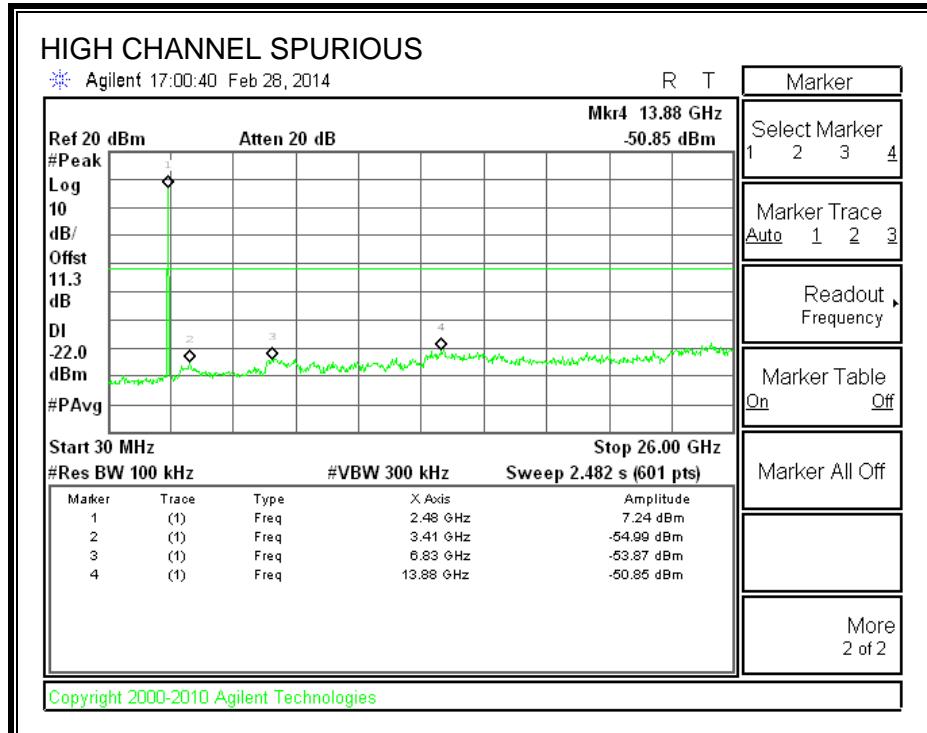
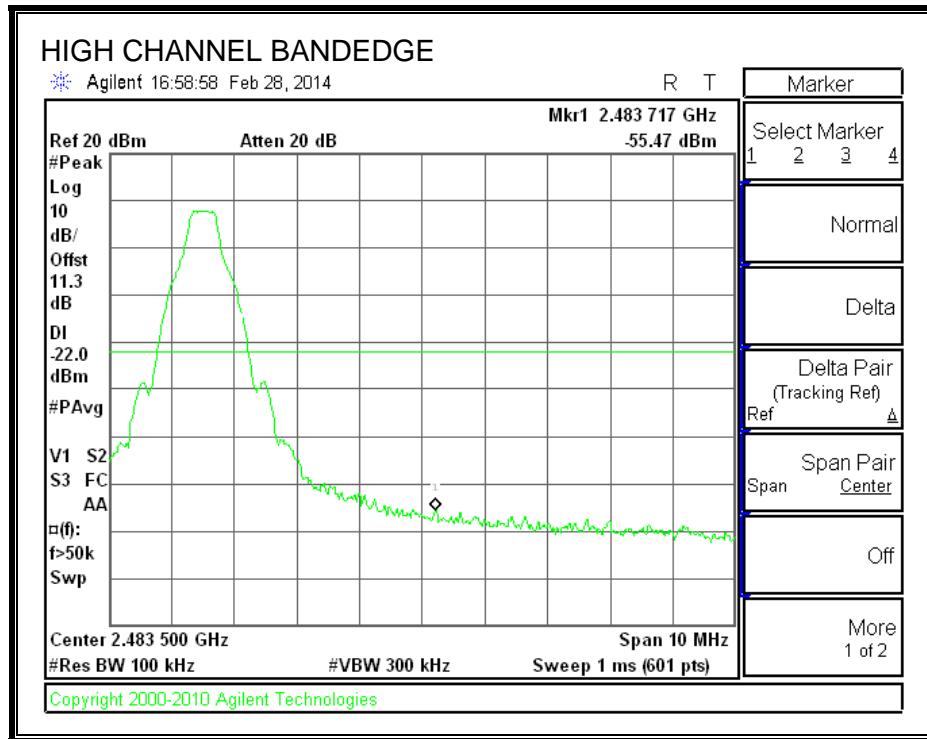
### SPURIOUS EMISSIONS, LOW CHANNEL



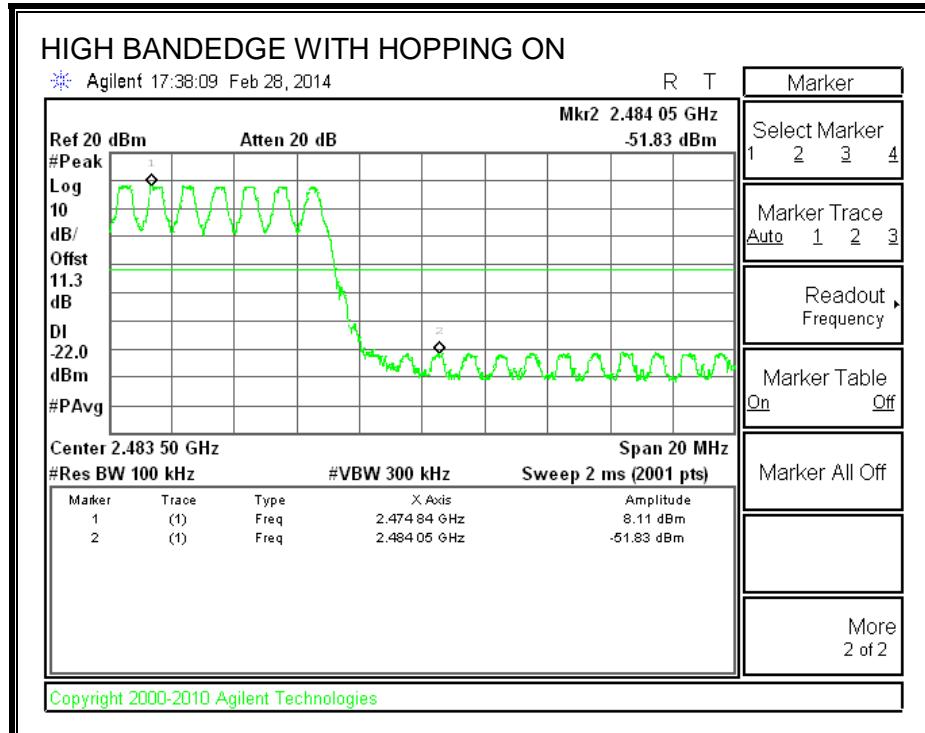
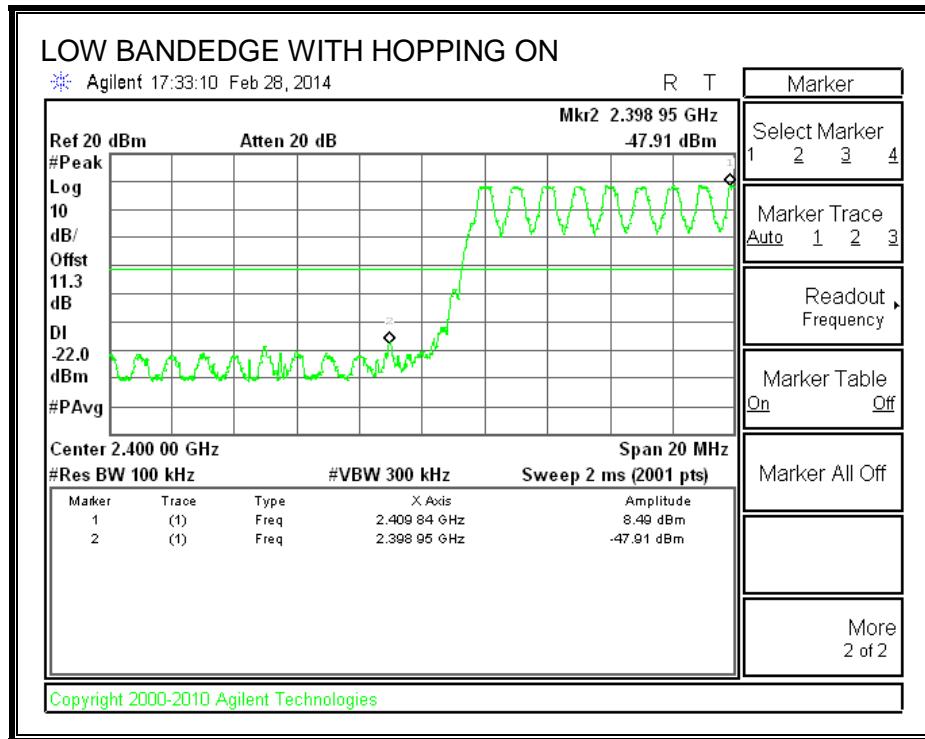
## SPURIOUS EMISSIONS, MID CHANNEL



**SPURIOUS EMISSIONS, HIGH CHANNEL**



**SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



### 7.3. ENHANCED DATA RATE 8PSK MODULATION

#### 7.3.1. 20 dB AND 99% BANDWIDTH

##### LIMIT

None; for reporting purposes only.

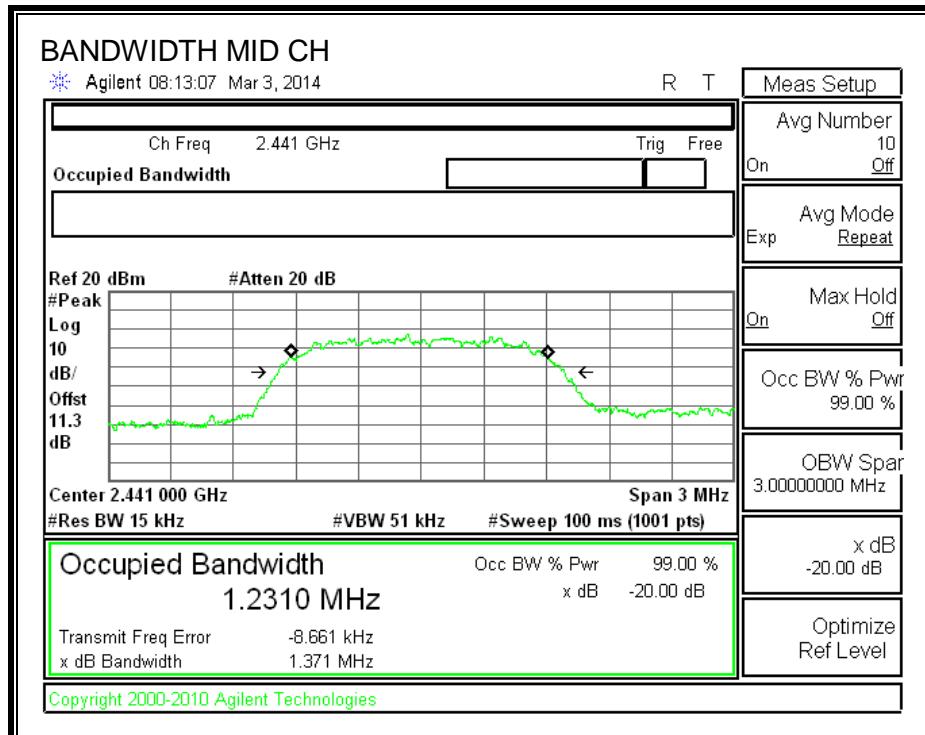
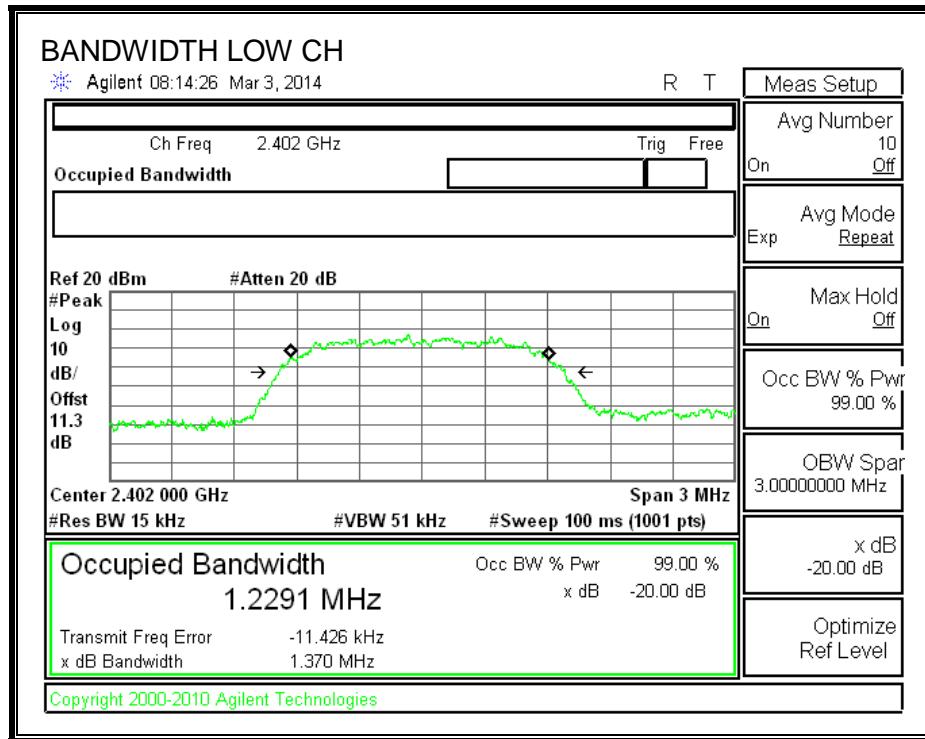
##### TEST PROCEDURE

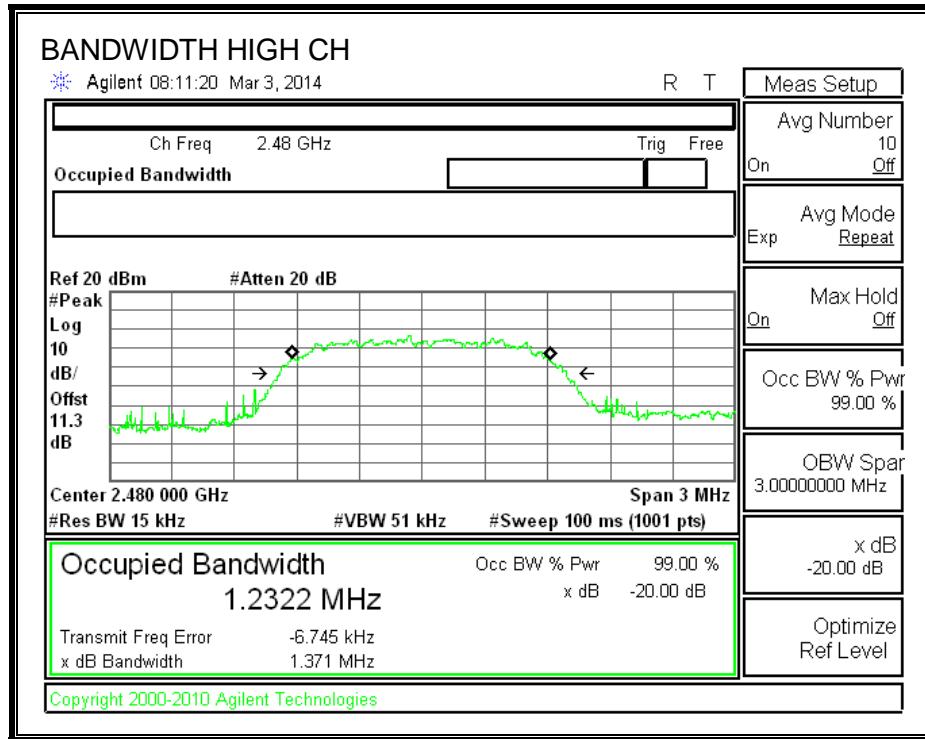
The transmitter output is connected to a spectrum analyzer. The RBW is set to  $\geq 1\%$  of the 20 dB bandwidth. The VBW is set to  $\geq$  RBW. The sweep time is coupled.

##### RESULTS

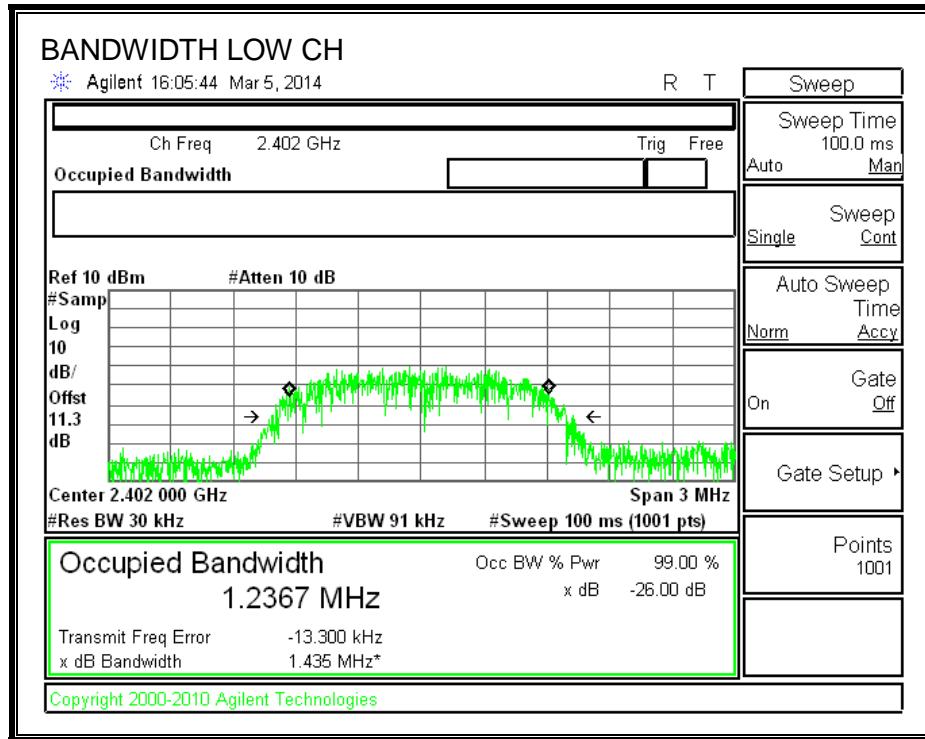
Channel	Frequency (MHz)	20 dB Bandwidth (kHz)	99% Bandwidth (kHz)
Low	2402	1370	1236.7
Middle	2441	1371	1240.5
High	2480	1371	1218.8

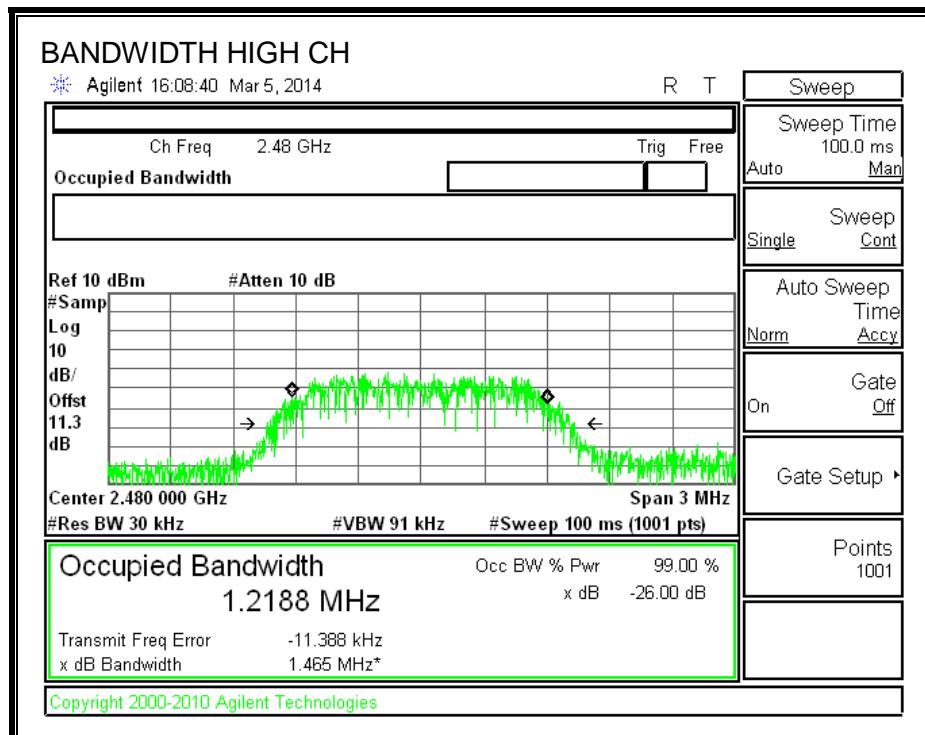
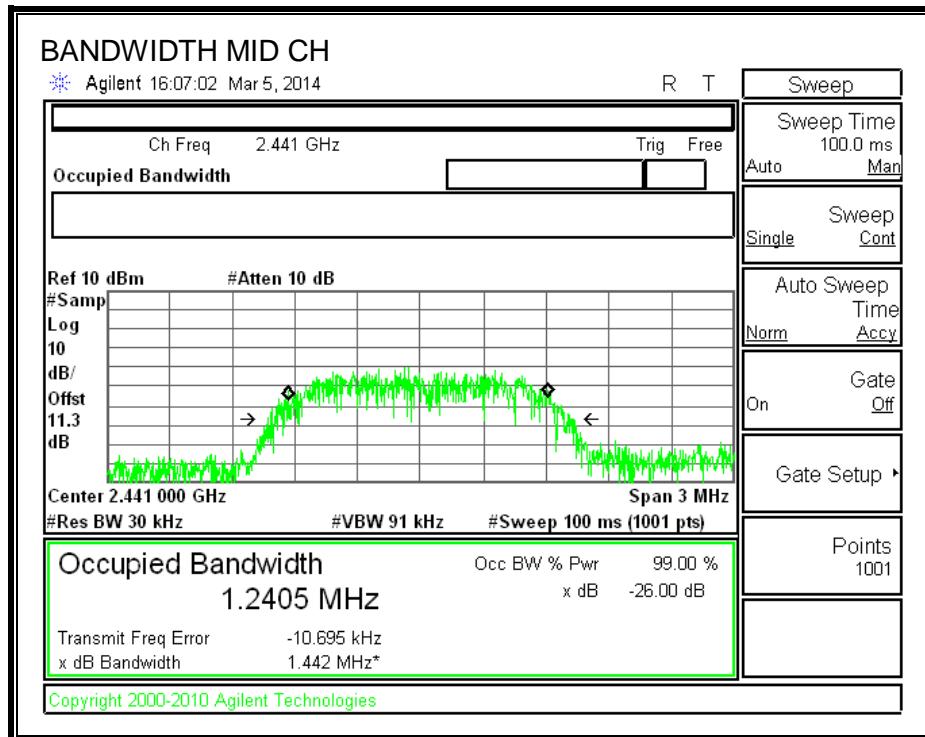
## 20 dB BANDWIDTH





### 99% BANDWIDTH





### 7.3.2. HOPPING FREQUENCY SEPARATION

#### LIMIT

FCC §15.247 (a) (1)

IC RSS-210 A8.1 (b)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hoping channel, whichever is greater.

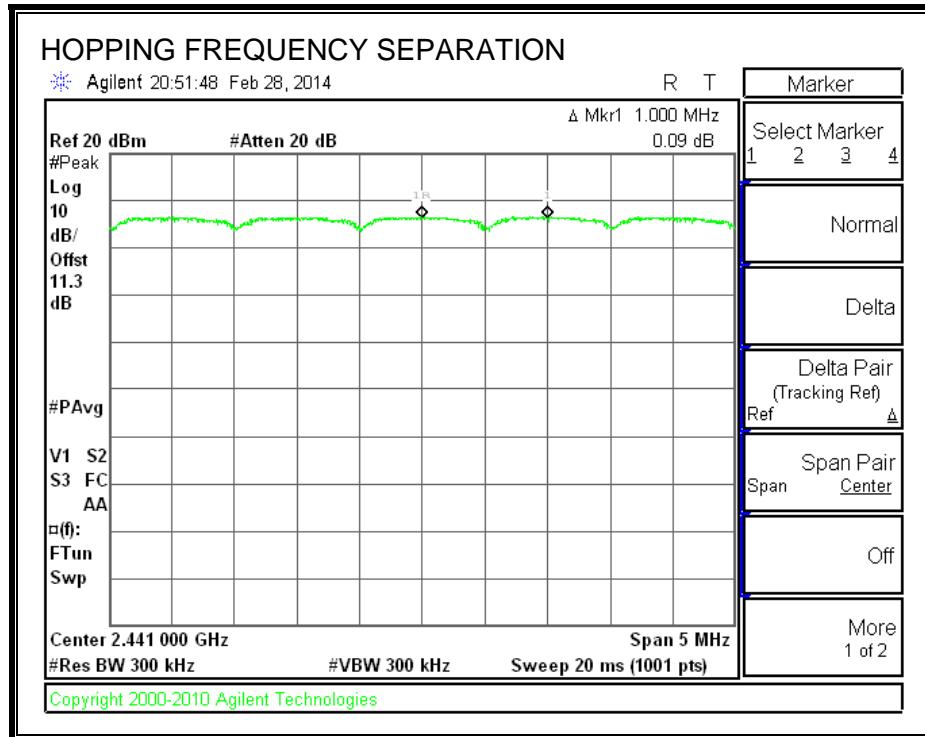
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

#### TEST PROCEDURE

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

## RESULTS

### HOPPING FREQUENCY SEPARATION



### 7.3.3. NUMBER OF HOPPING CHANNELS

#### LIMIT

FCC §15.247 (a) (1) (iii)

IC RSS-210 A8.1 (d)

Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels.

#### TEST PROCEDURE

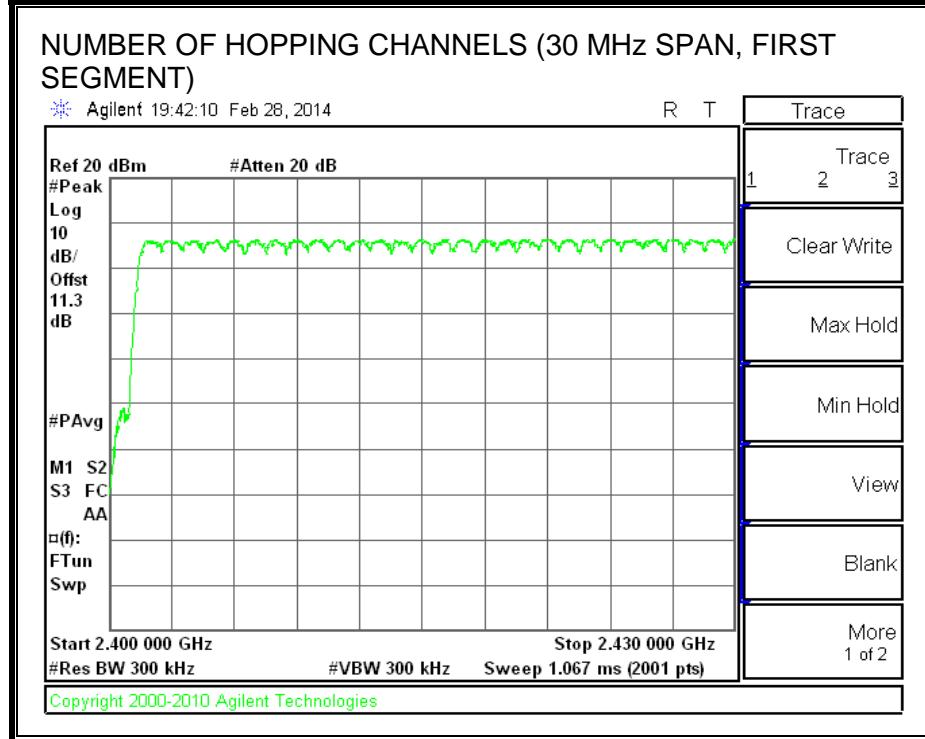
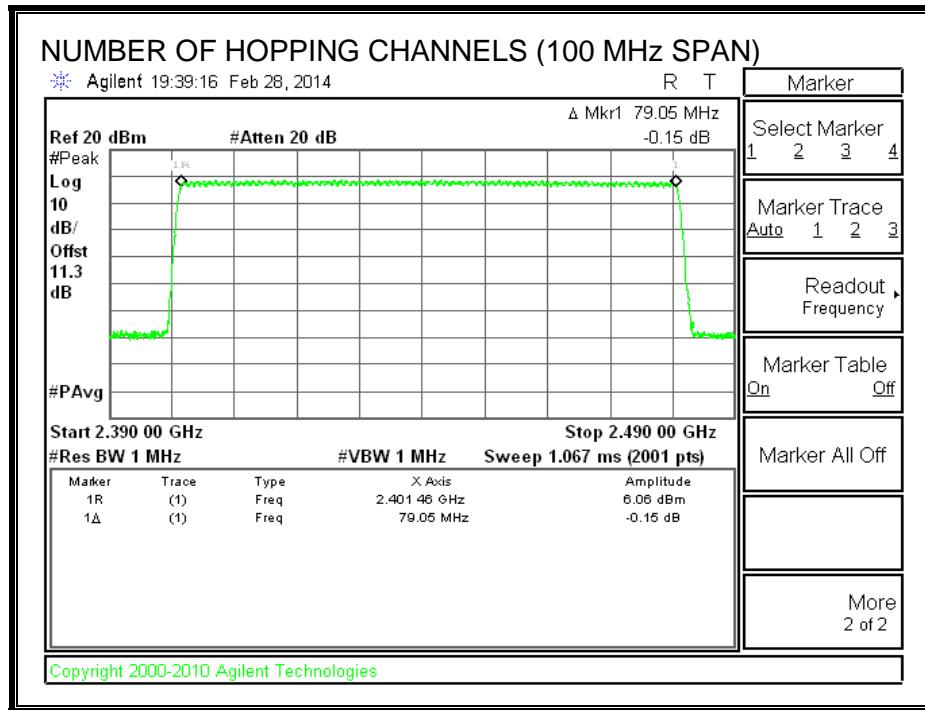
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

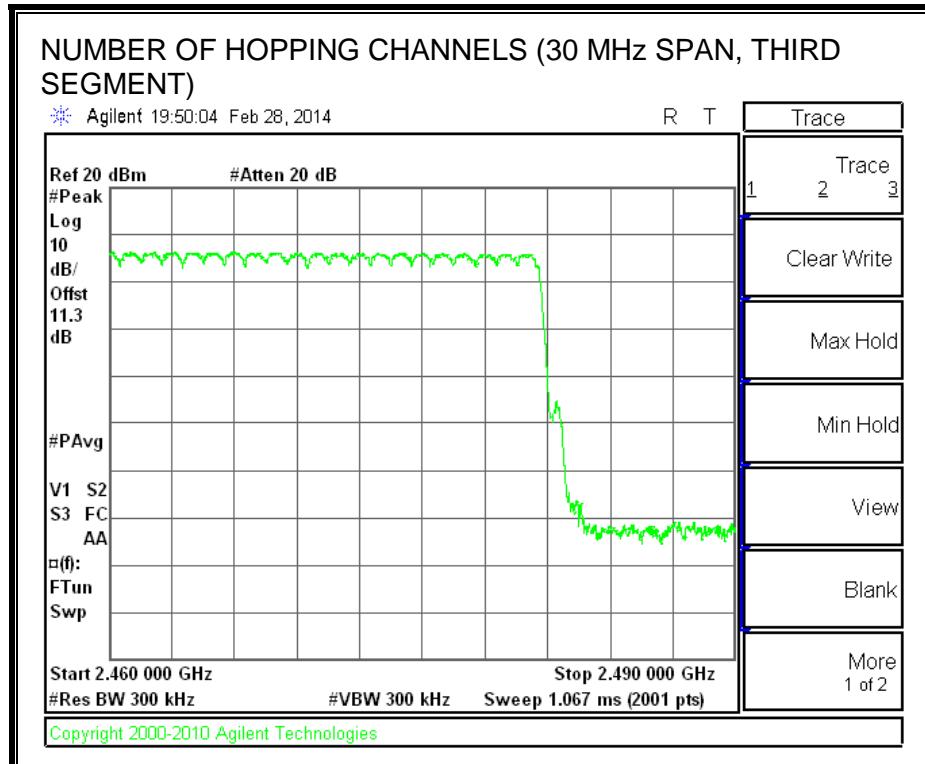
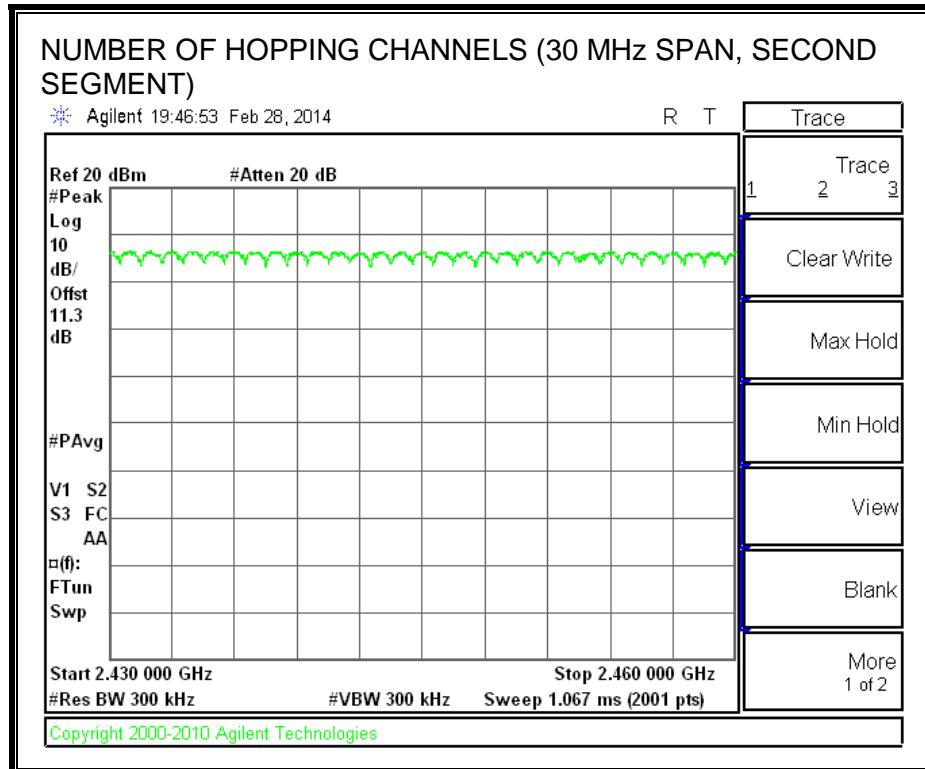
#### RESULTS

Normal Mode: 79 Channels were observed.

AFH Mode: 20 channels were declared by the client.

**NUMBER OF HOPPING CHANNELS**





### 7.3.4. AVERAGE TIME OF OCCUPANCY

#### LIMIT

FCC §15.247 (a) (1) (iii)

IC RSS-210 A8.1 (d)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

#### TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centered on a single, selected hopping channel. The width of a single pulse is measured in a fast scan. The number of pulses is measured in a 3.16 second scan, to enable resolution of each occurrence.

The average time of occupancy in the specified 31.6 second period (79 channels \* 0.4 s) is equal to  $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$ .

#### RESULTS

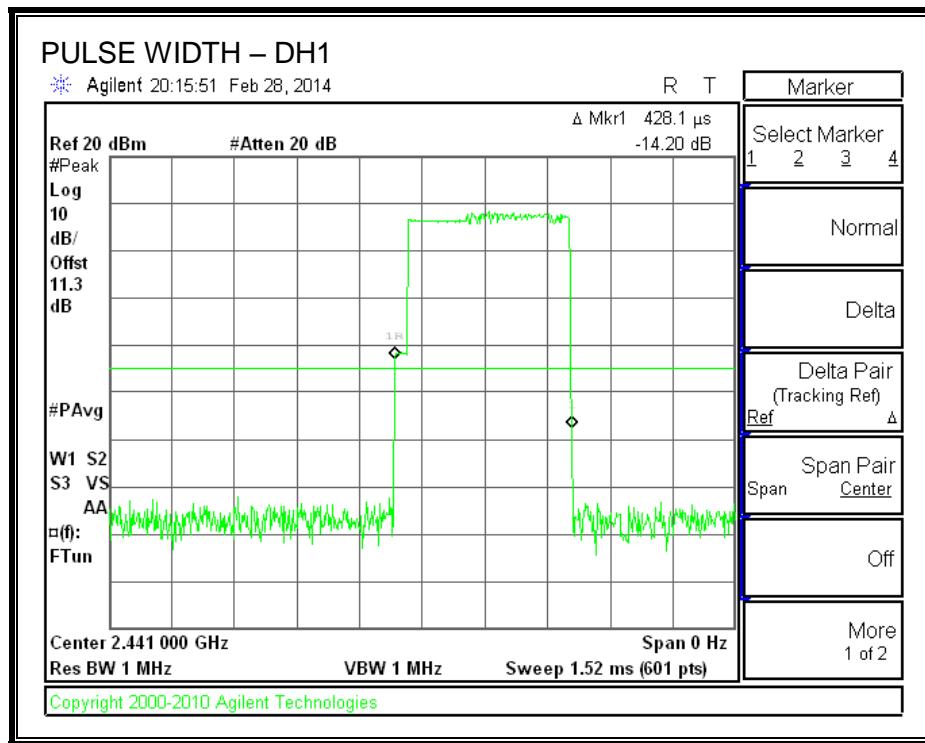
Time Of Occupancy =  $10 * \text{xx pulses} * \text{yy msec} = \text{zz msec}$

##### 8PSK (EDR) Mode

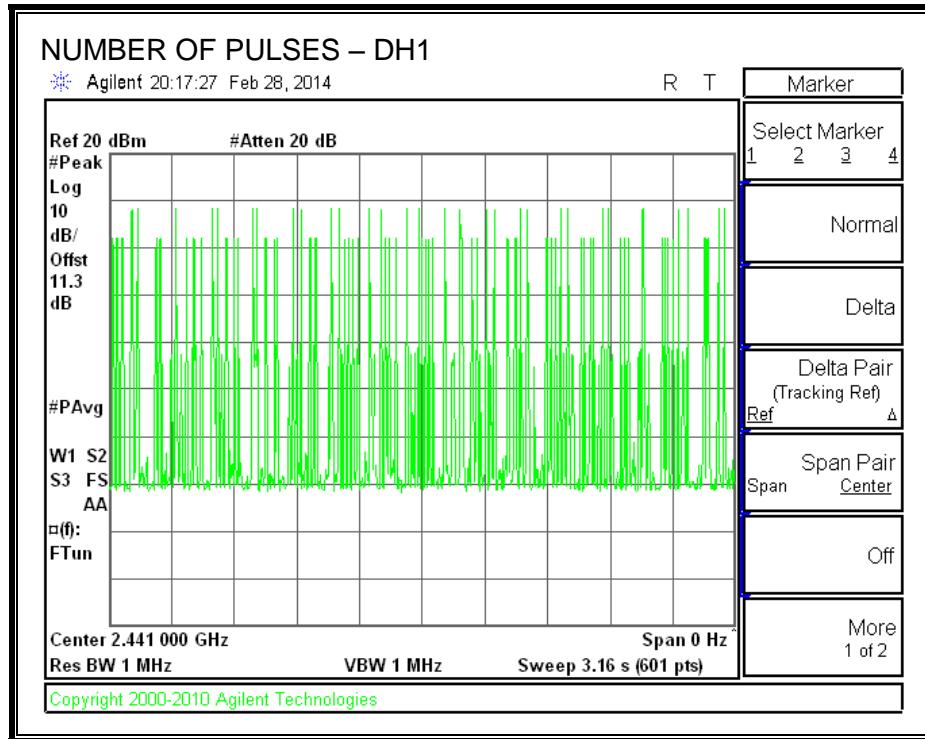
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of (sec)	Limit (sec)	Margin (sec)
DH1	0.4281	30	0.128	0.4	-0.2716
DH3	1.6200	18	0.292	0.4	-0.1084
DH5	2.8790	13	0.374	0.4	-0.0257

**Note:** for AFH (8PSK) mode, please refer to the results of AFH (GFSK) mode; the channel selection and hopping rate are the same for both EDR and Basic Rate operation, data for Basic Rate on page 23 demonstrates compliance with channel occupancy when AFH is employed.

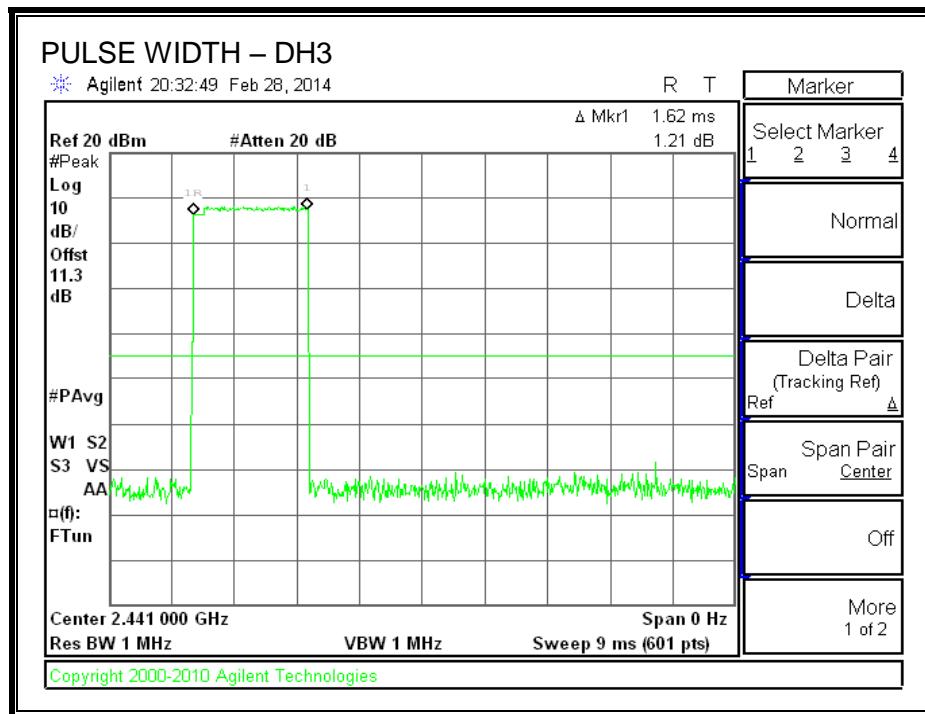
## PULSE WIDTH - DH1



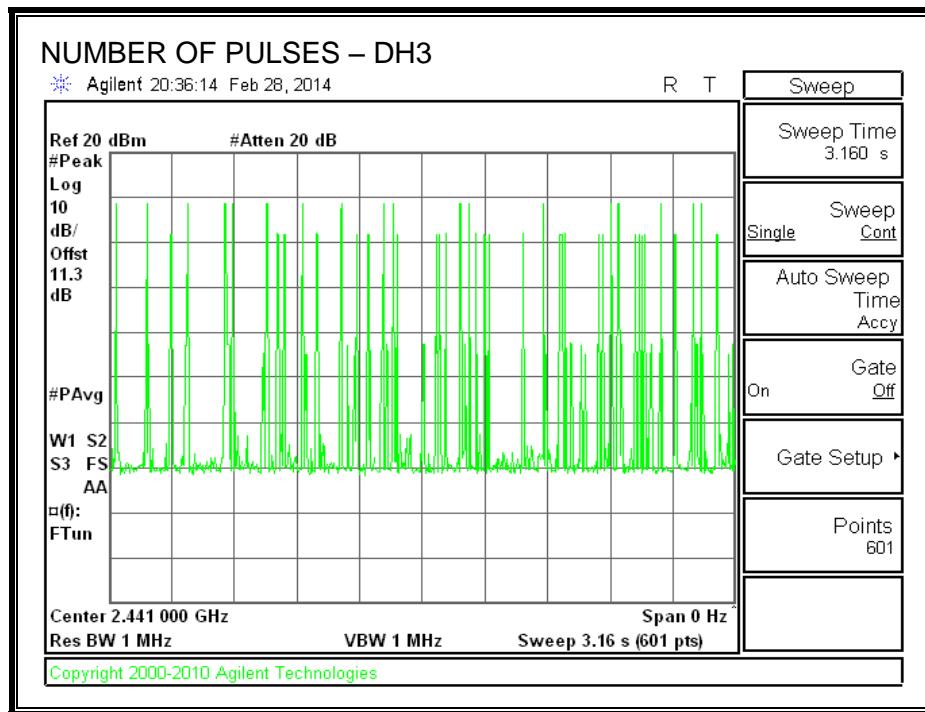
## NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1



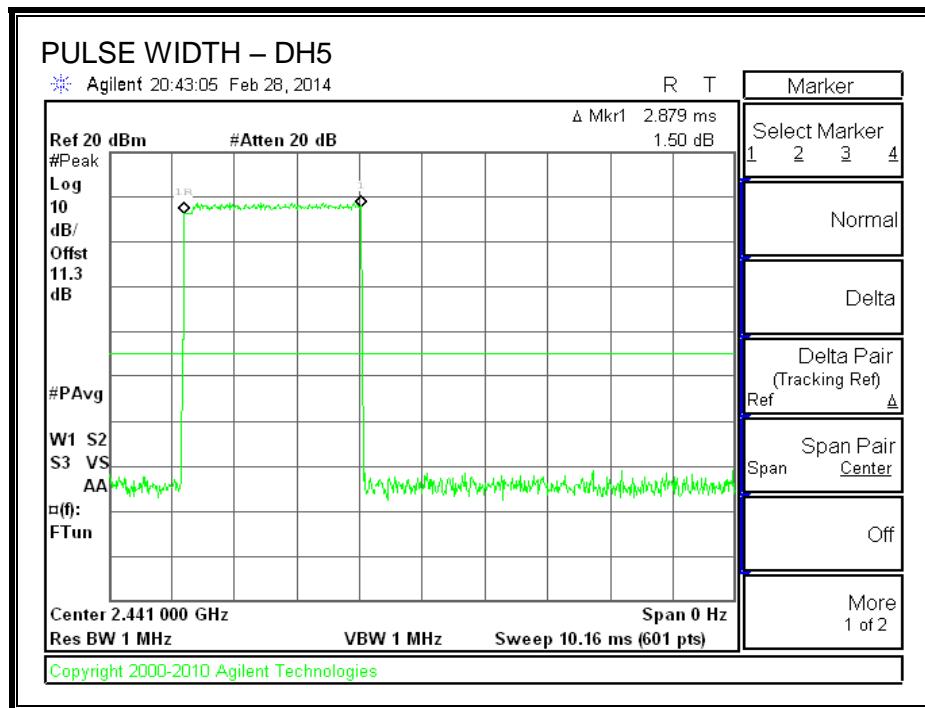
### PULSE WIDTH – DH3



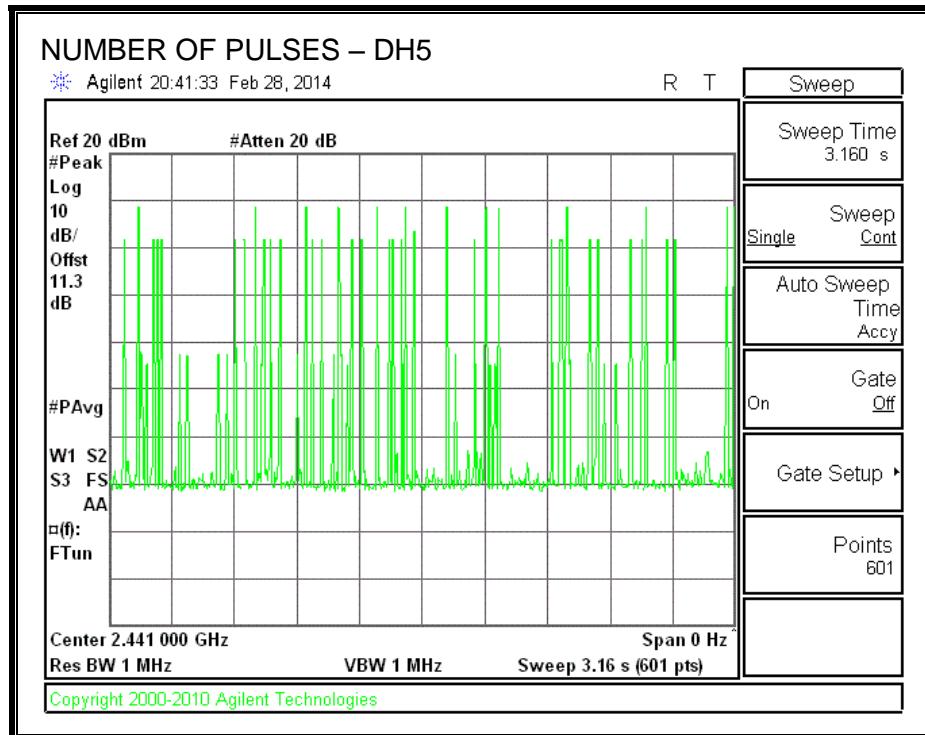
### NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3



## PULSE WIDTH – DH5



## NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5



### 7.3.5. OUTPUT POWER

#### LIMIT

§15.247 (b) (1)

RSS-210 Issue 7 Clause A8.4

The maximum antenna gain is less than 6 dBi, therefore the limit is 20.97 dBm.

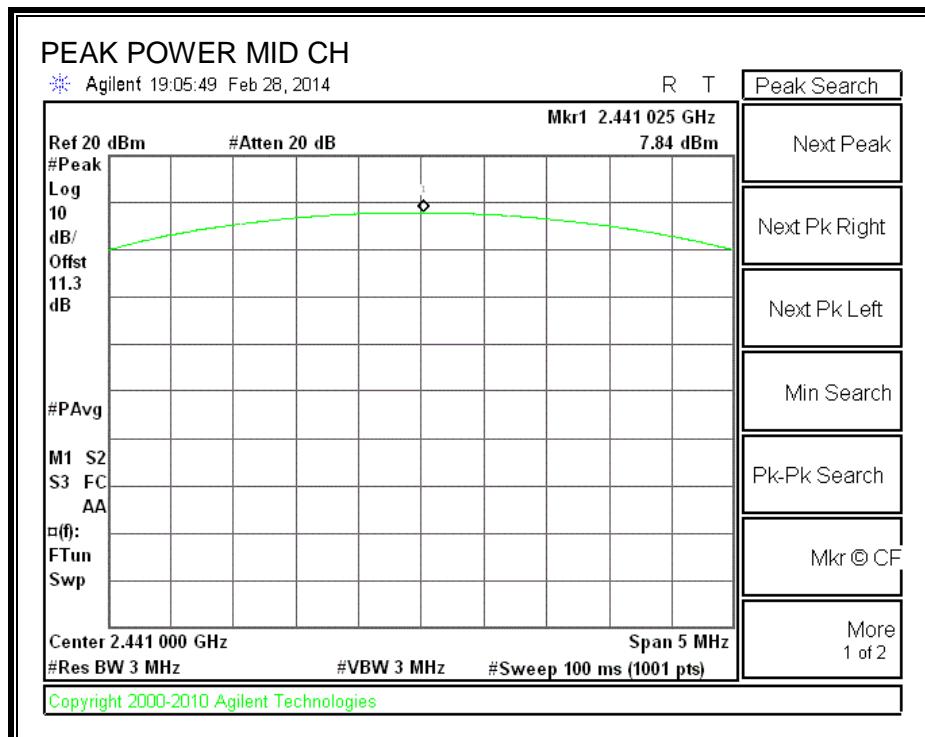
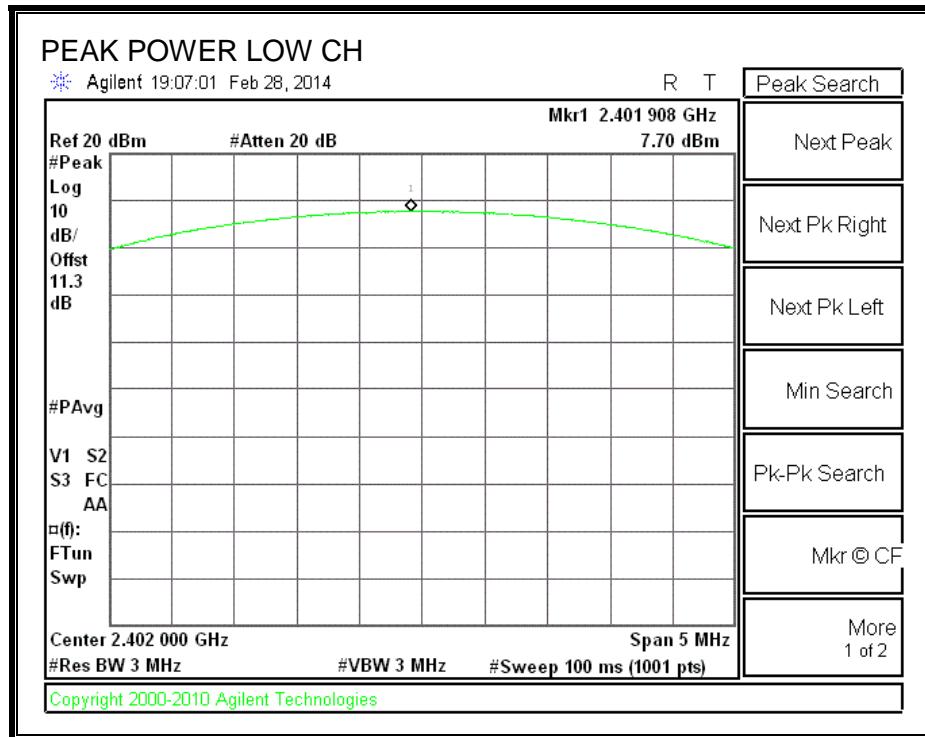
#### TEST PROCEDURE

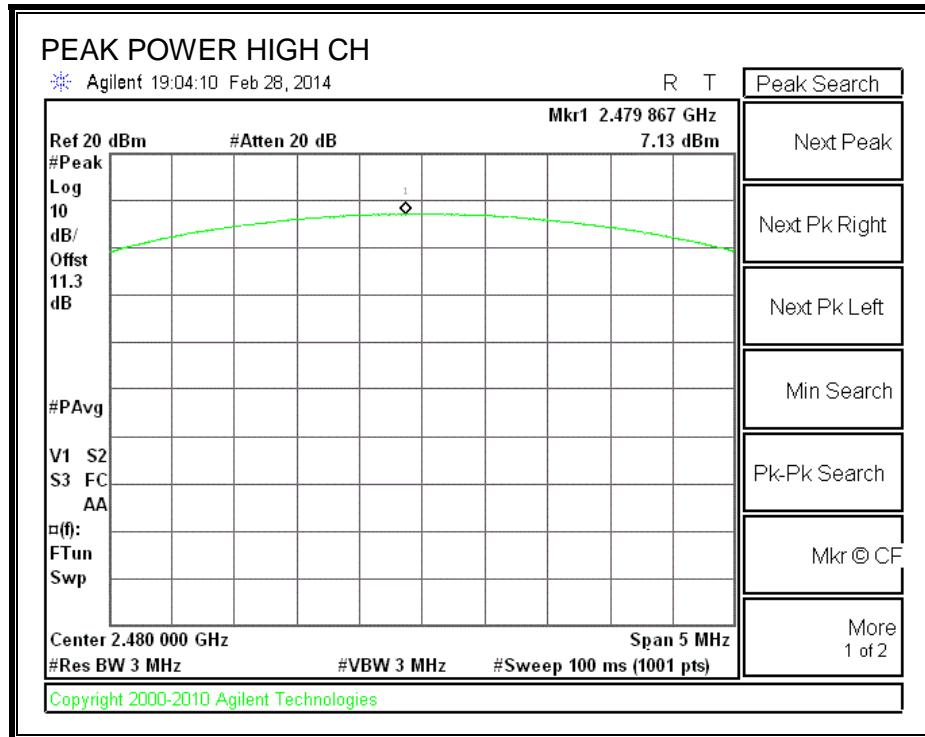
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

#### RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	7.70	20.97	-13.27
Middle	2441	7.84	20.97	-13.13
High	2480	7.13	20.97	-13.84

## OUTPUT POWER





### 7.3.6. AVERAGE POWER

#### LIMIT

None; for reporting purposes only.

#### TEST PROCEDURE

The transmitter output is connected to a power meter.

#### RESULTS

The cable assembly insertion loss of 11.3 dB was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	5.50
Middle	2441	5.50
High	2480	4.80

### 7.3.7. CONDUCTED SPURIOUS EMISSIONS

#### LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

Limit = -30 dBc

#### TEST PROCEDURE

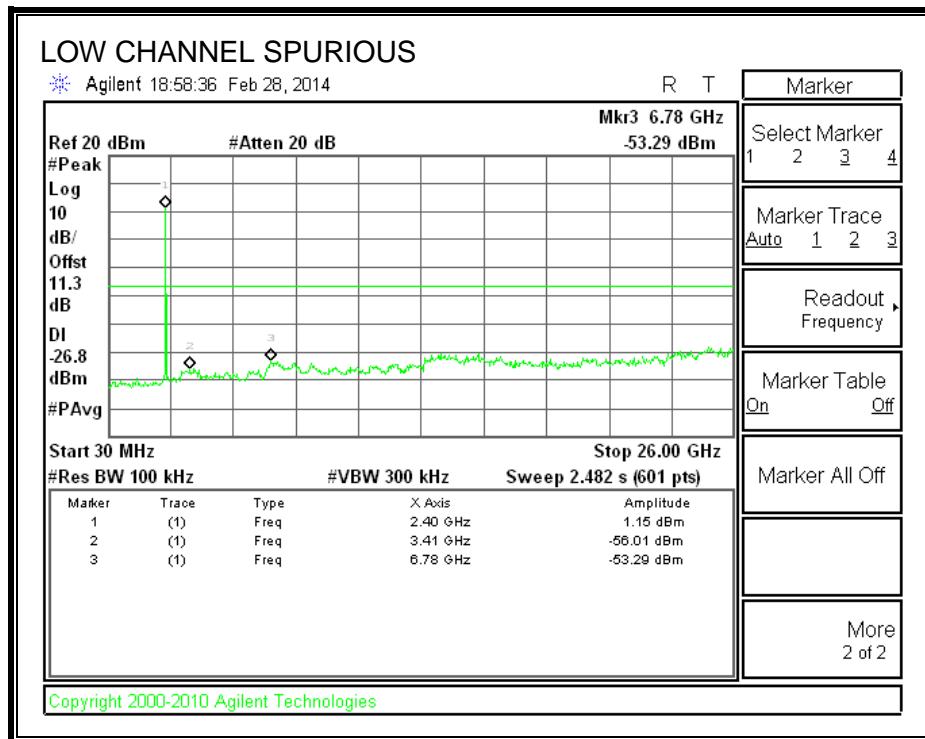
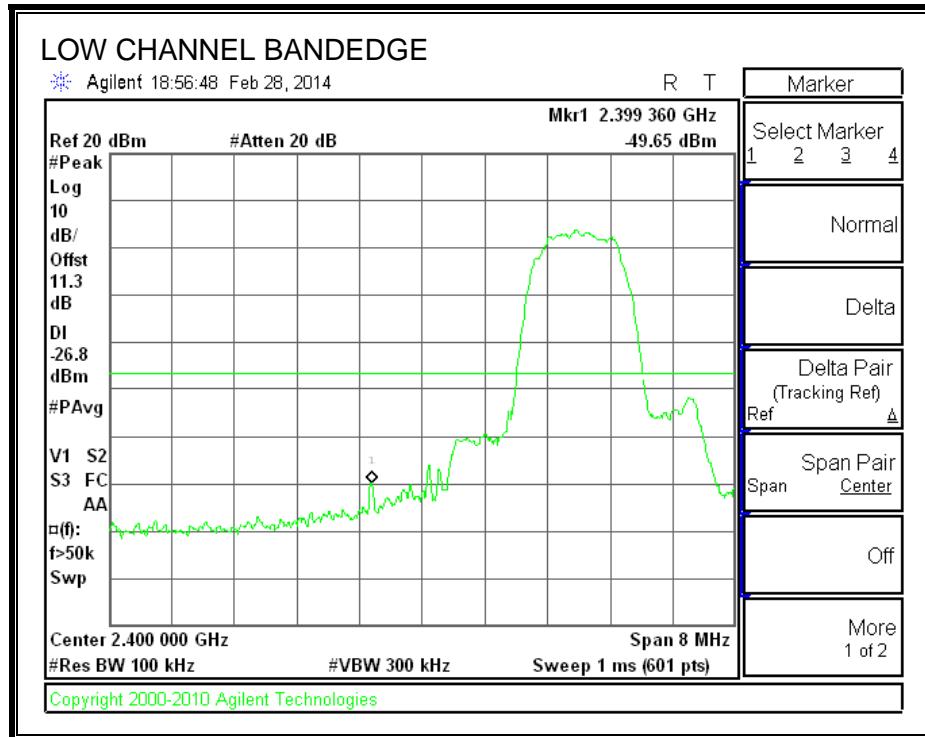
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

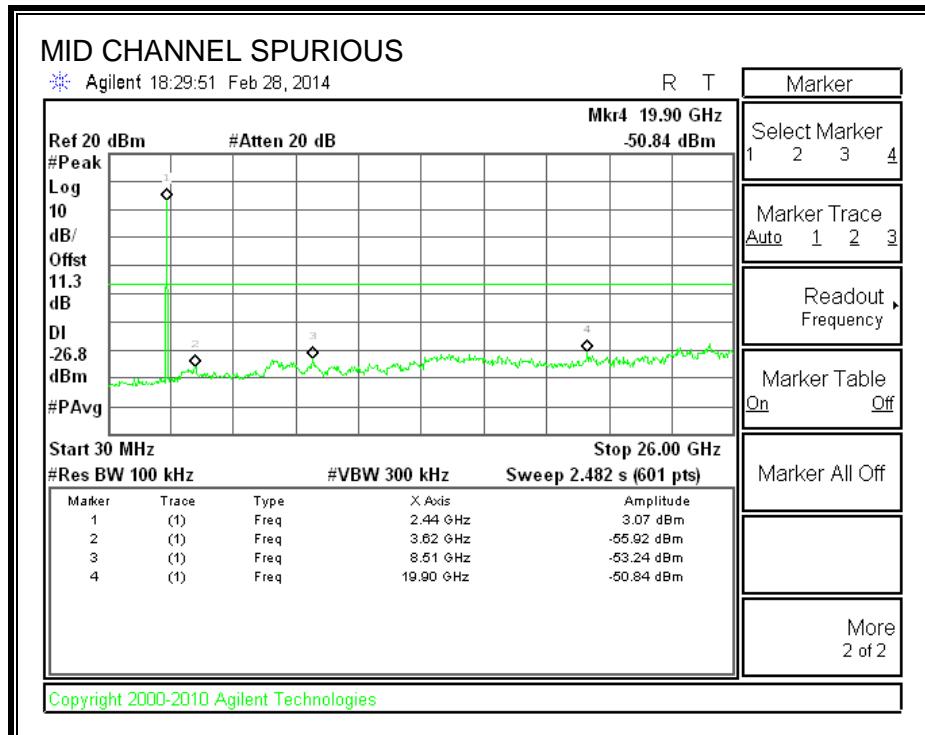
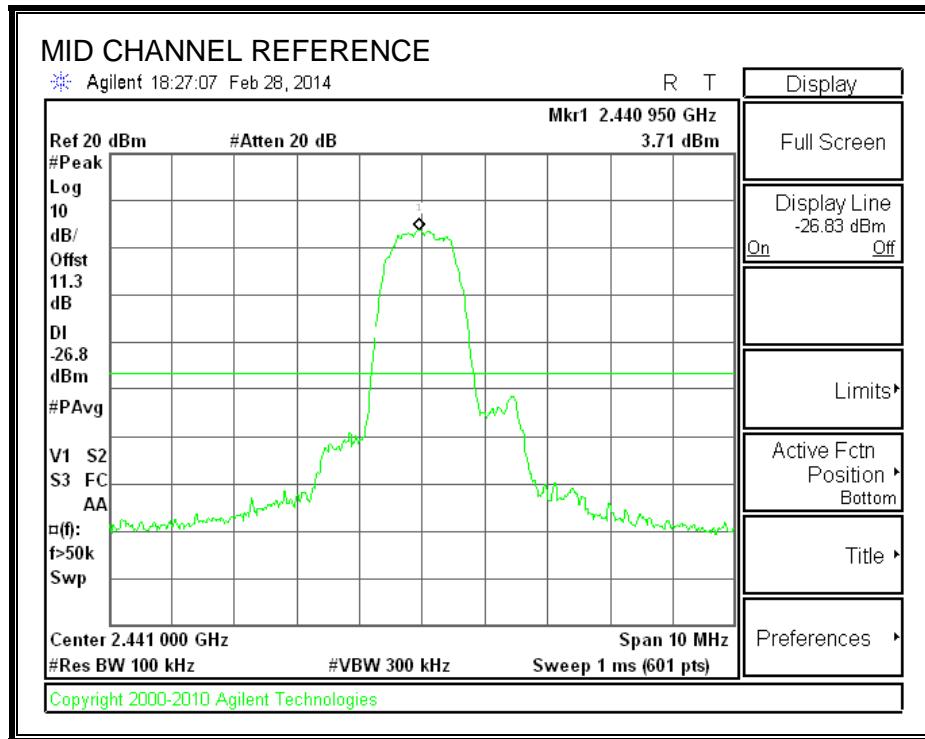
The band edges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

## RESULTS

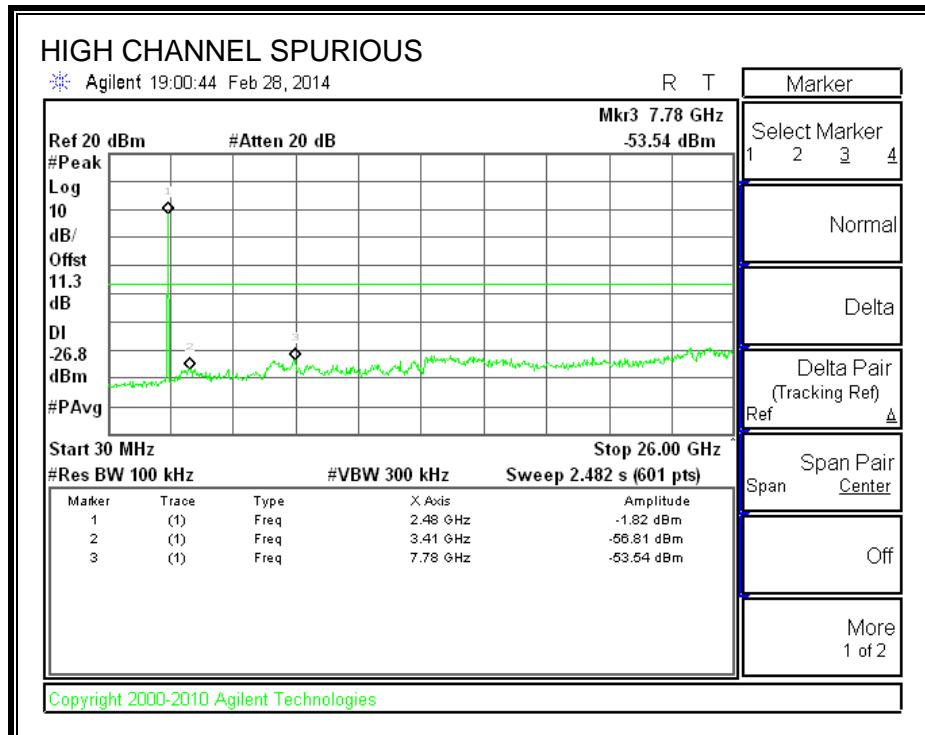
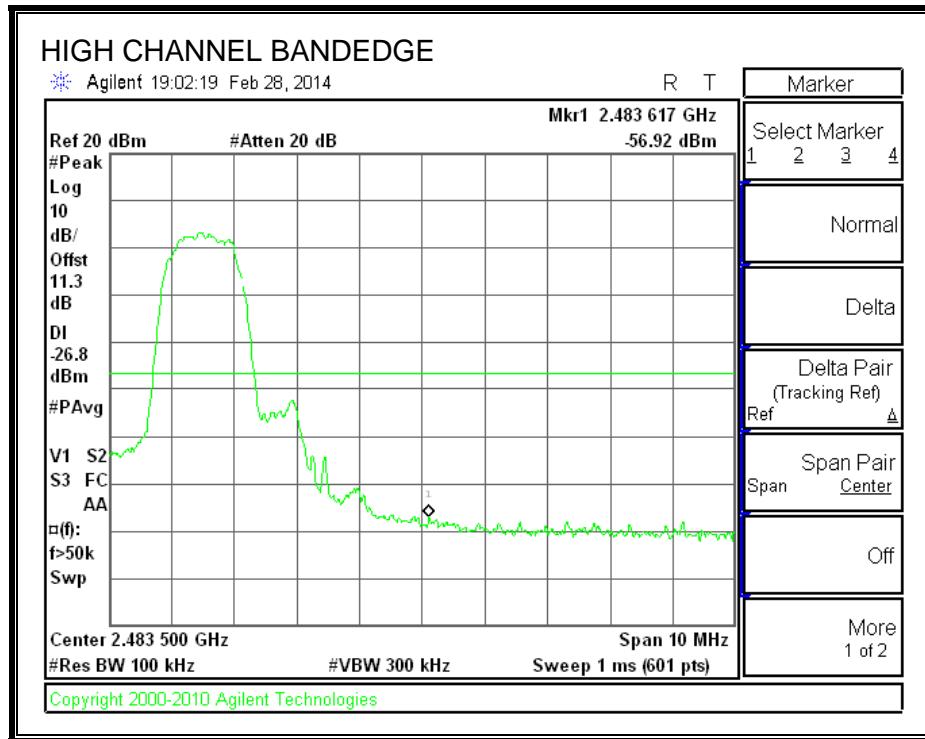
### SPURIOUS EMISSIONS, LOW CHANNEL



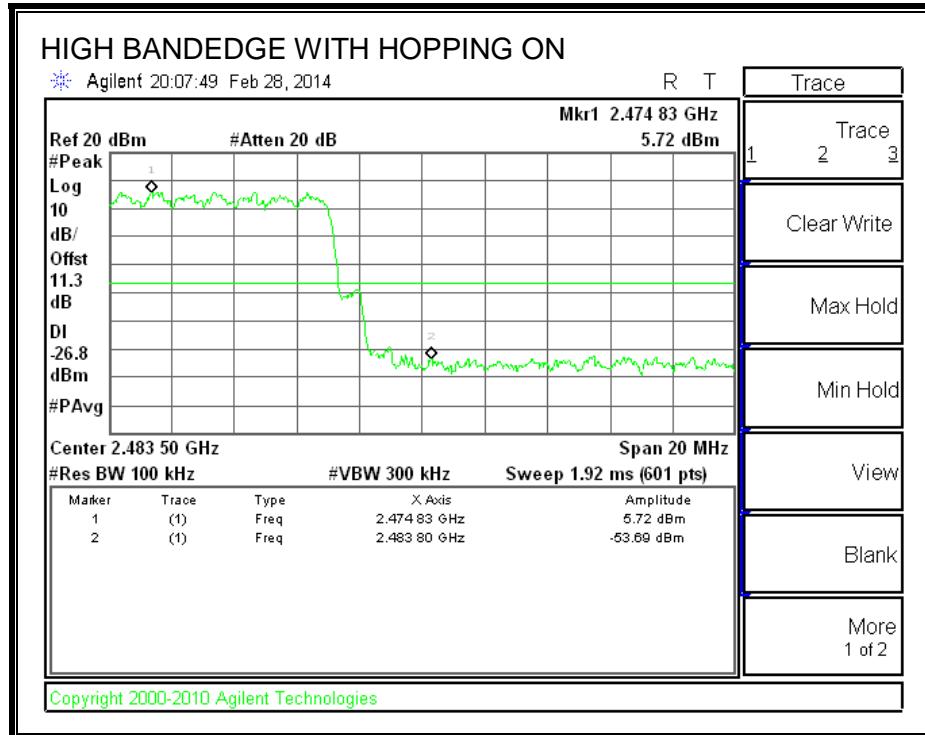
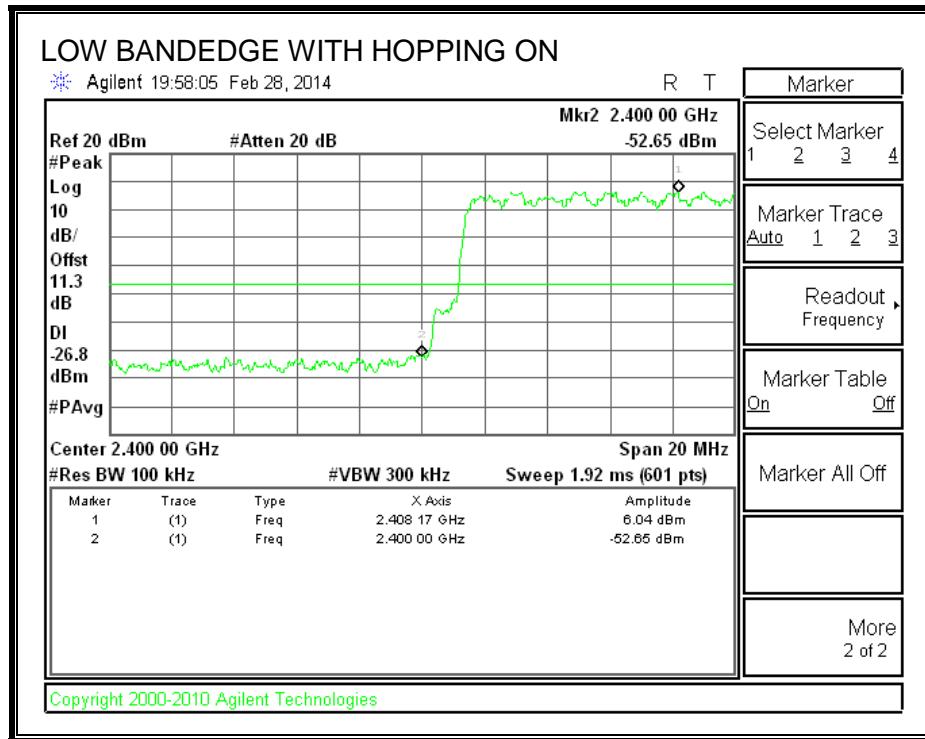
**SPURIOUS EMISSIONS, MID CHANNEL**



**SPURIOUS EMISSIONS, HIGH CHANNEL**



**SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



## 8. RADIATED TEST RESULTS

### 8.1. 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. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

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

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

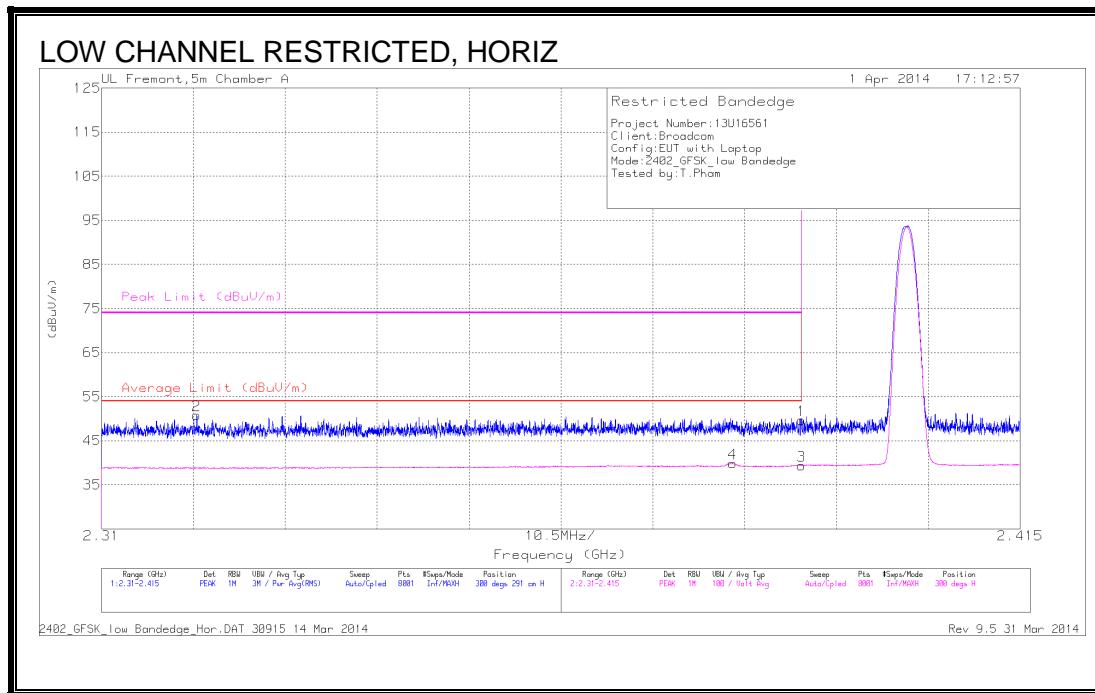
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

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

## 8.2. TRANSMITTER ABOVE 1 GHz

### 8.2.1. BASIC DATA RATE GFSK MODULATION

#### RESTRICTED BANDEDGE (LOW CHANNEL)



#### Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.46	PK	32.1	-22.9	49.66	-	-	74	-24.34	300	291	H
2	* 2.321	42.1	PK	31.7	-23	50.8	-	-	74	-23.2	300	291	H
3	* 2.39	30.21	VB1T	32.1	-22.9	39.41	54	-14.59	-	-	300	291	H
4	* 2.382	30.64	VB1T	32.1	-22.9	39.84	54	-14.16	-	-	300	291	H

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

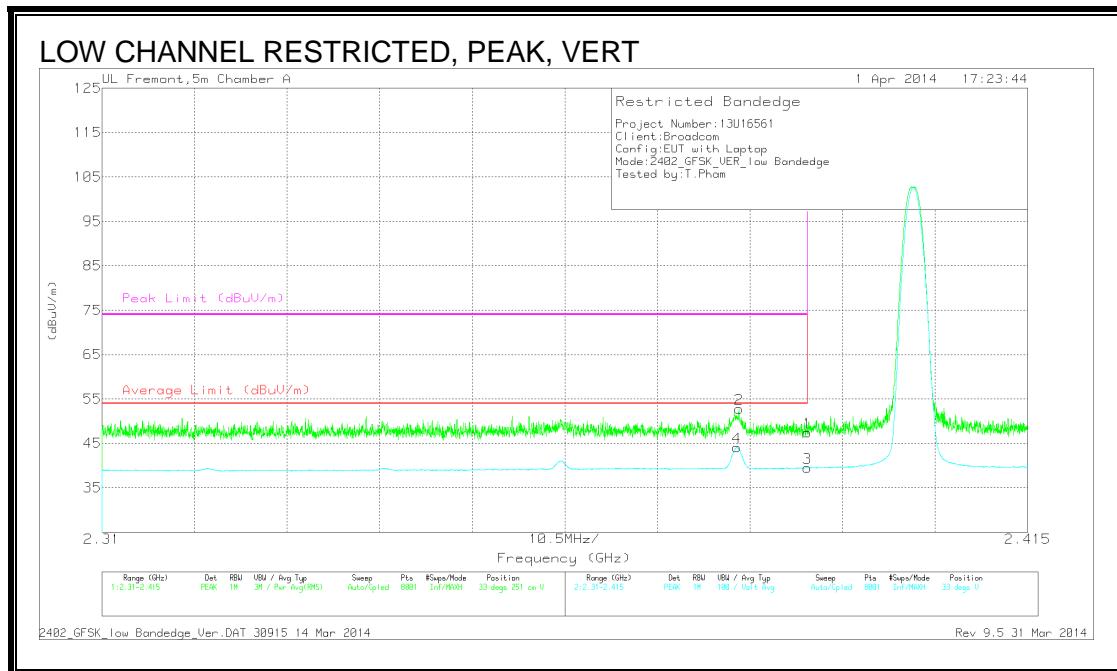
PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

Low Channel Bandedge Method 1T - Horizontal.TST 30915 14 Mar 2014

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**RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**



**Trace Markers**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	38.21	PK	32.1	-22.9	47.41	-	-	74	-26.59	33	251	V
2	* 2.382	43.55	PK	32.1	-22.9	52.75	-	-	74	-21.25	33	251	V
3	* 2.39	30.26	VB1T	32.1	-22.9	39.46	54	-14.54	-	-	33	251	V
4	* 2.382	34.88	VB1T	32.1	-22.9	44.08	54	-9.92	-	-	33	251	V

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

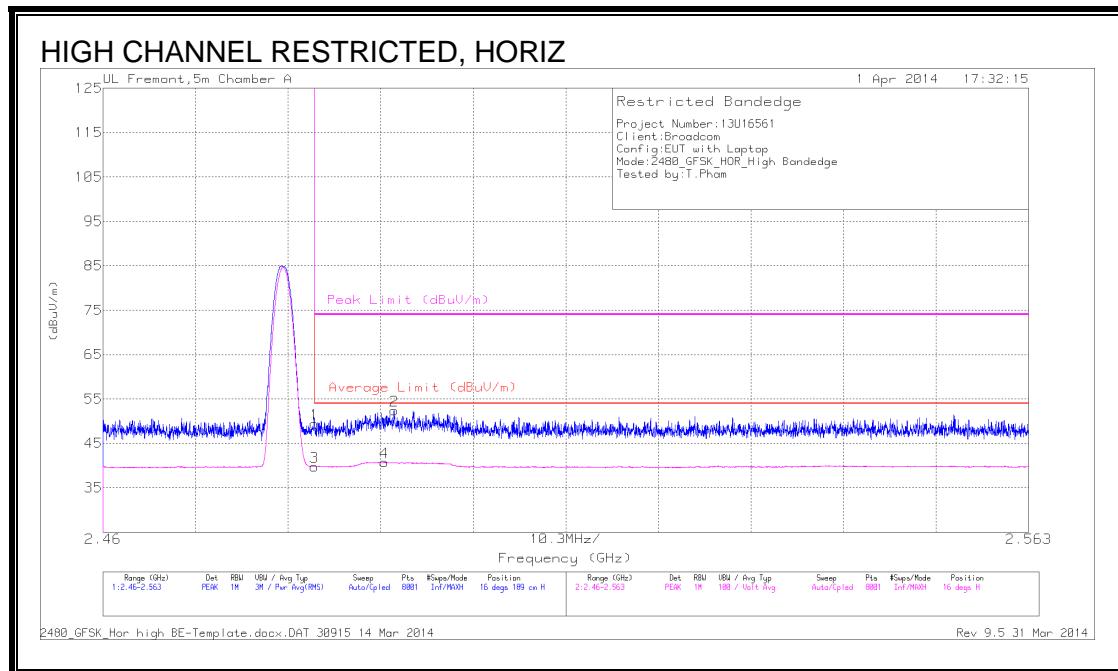
PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

Low Channel Bandedge Method 1T - Vertical.TST 30915 14 Mar 2014

Rev 9.5 31 Mar 2014

**RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)**



**Trace Markers**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	39.66	PK	32.4	-22.6	49.46	-	-	74	-24.54	16	189	H
2	* 2.492	42.66	PK	32.4	-22.7	52.36	-	-	74	-21.64	16	189	H
3	* 2.484	29.95	VB1T	32.4	-22.6	39.75	54	-14.25	-	-	16	189	H
4	* 2.491	31.05	VB1T	32.4	-22.7	40.75	54	-13.25	-	-	16	189	H

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

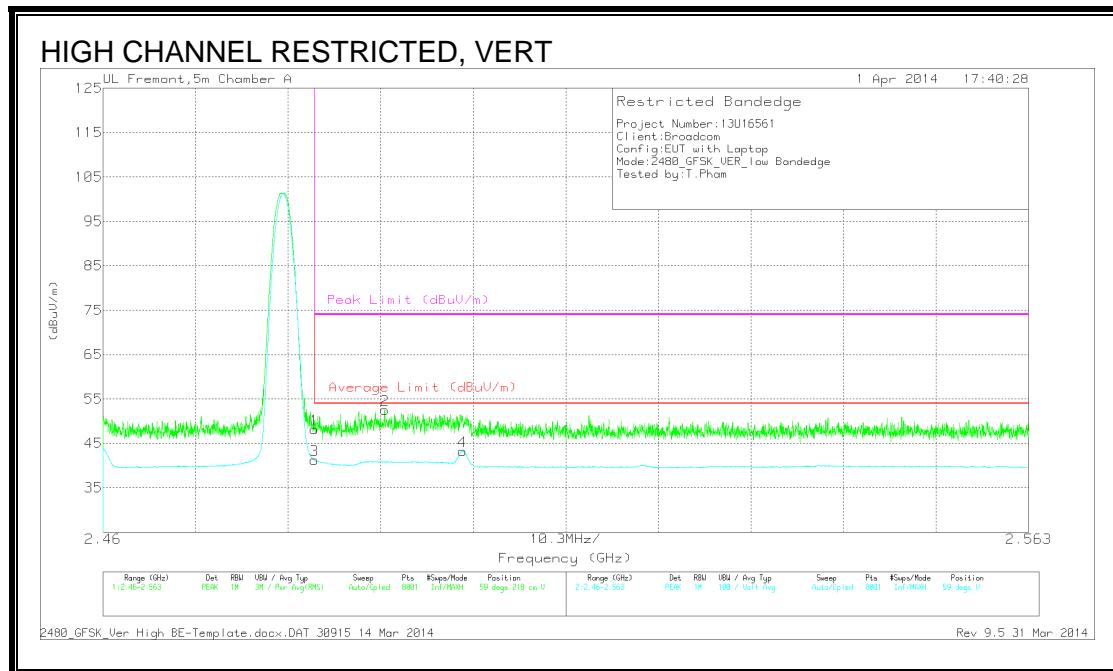
PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

2480\_GFSK\_Hor high BE-Template.docx.DAT 30915 14 Mar 2014

Rev 9.5 31 Mar 2014

**RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)**



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	38.39	PK	32.4	-22.6	48.19	-	-	74	-25.81	59	218	V
2	* 2.491	42.84	PK	32.4	-22.7	52.54	-	-	74	-21.46	59	218	V
3	* 2.484	31.42	VB1T	32.4	-22.6	41.22	54	-12.78	-	-	59	218	V
4	2.5	33.63	VB1T	32.4	-22.8	43.23	54	-10.77	-	-	59	218	V

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

PK - Peak detector

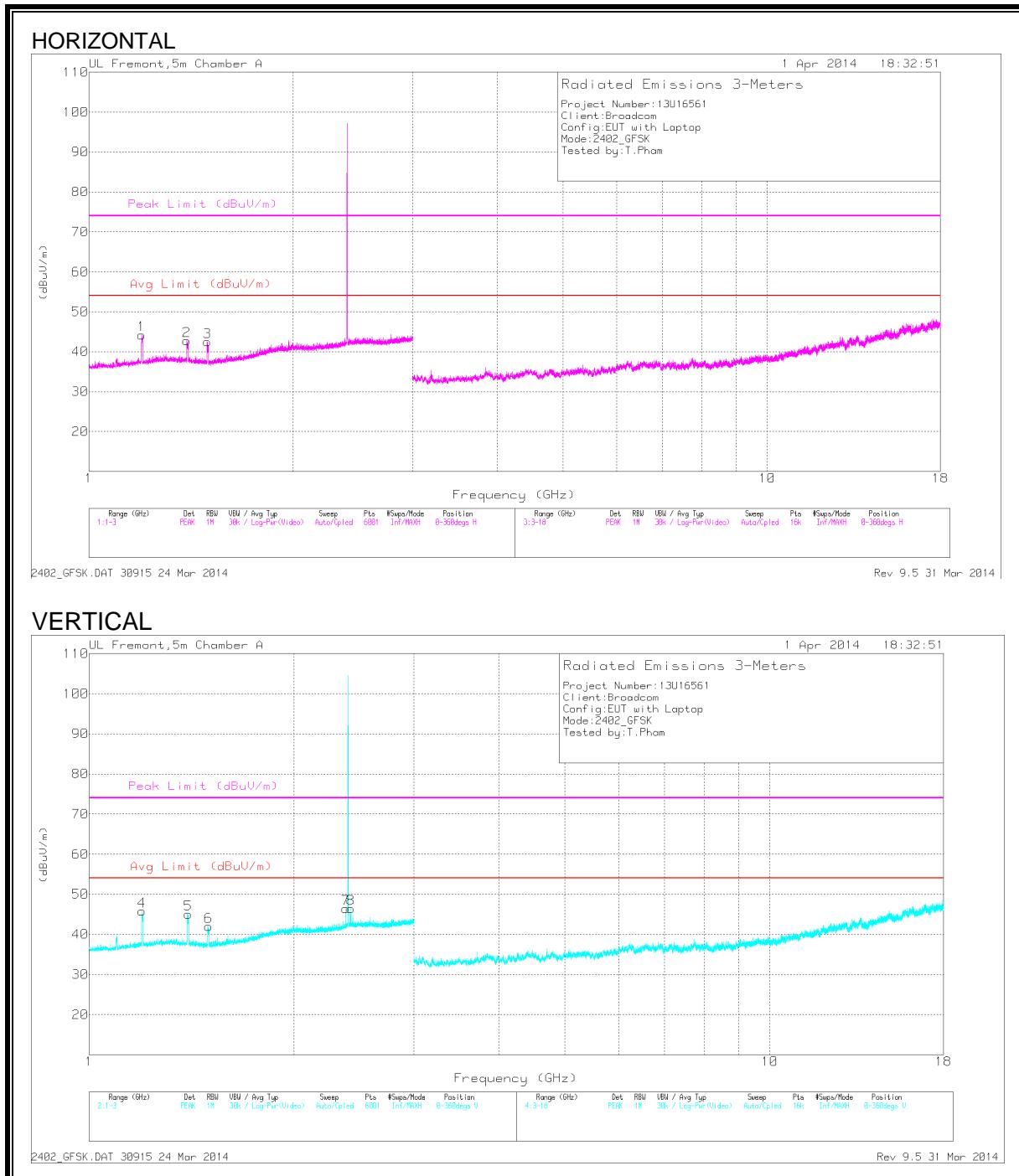
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

High Channel Bandedge Method 1T - Vertical.TST 30915 14 Mar 2014

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## HARMONICS AND SPURIOUS EMISSIONS

### GFSK, LOW CHANNEL – 2402 MHz



**GFSK, LOW CHANNEL – 2402 MHz, DATA**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.196	40.72	PK	28.2	-24.7	44.22	-	-	74	-29.78	0-360	202	H
2	* 1.394	38.74	PK	28.5	-24.5	42.74	-	-	74	-31.26	0-360	99	H
3	* 1.494	38.78	PK	27.9	-24.2	42.48	-	-	74	-31.52	0-360	99	H
4	* 1.195	42.3	PK	28.2	-24.7	45.8	-	-	74	-28.2	0-360	202	V
5	* 1.399	41.03	PK	28.5	-24.5	45.03	-	-	74	-28.97	0-360	202	V
6	* 1.499	38.35	PK	27.9	-24.2	42.05	-	-	74	-31.95	0-360	99	V
7	* 2.382	37.29	PK	32.1	-22.9	46.49	-	-	74	-27.51	0-360	202	V
8	2.422	36.84	PK	32.2	-22.6	46.44	-	-	-	-	0-360	202	V

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

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.196	48.95	PK2	28.2	-24.7	52.45	-	-	74	-21.55	69	199	H
* 1.198	38.82	MAv1	28.2	-24.7	42.32	54	-11.68	-	-	69	199	H
* 1.397	45	PK2	28.5	-24.5	49	-	-	74	-25	30	257	H
* 1.399	34.55	MAv1	28.5	-24.5	38.55	54	-15.45	-	-	30	257	H
* 1.497	45.21	PK2	27.9	-24.2	48.91	-	-	74	-25.09	269	179	H
* 1.494	34.94	MAv1	28	-24.2	38.74	54	-15.26	-	-	269	179	H
* 1.198	50.13	PK2	28.2	-24.7	53.63	-	-	74	-20.37	320	200	V
* 1.199	40.95	MAv1	28.2	-24.7	44.45	54	-9.55	-	-	320	200	V
* 1.398	43.2	PK2	28.5	-24.5	47.2	-	-	74	-26.8	249	294	V
* 1.406	32.64	MAv1	28.5	-24.5	36.64	54	-17.36	-	-	249	294	V
* 1.497	43.35	PK2	27.9	-24.2	47.05	-	-	74	-26.95	55	267	V
* 1.494	32.82	MAv1	28	-24.2	36.62	54	-17.38	-	-	55	267	V
* 2.382	43.3	PK2	32.1	-22.9	52.5	-	-	74	-21.5	1	265	V
* 2.382	32.82	MAv1	32.1	-22.9	42.02	54	-11.98	-	-	1	265	V

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

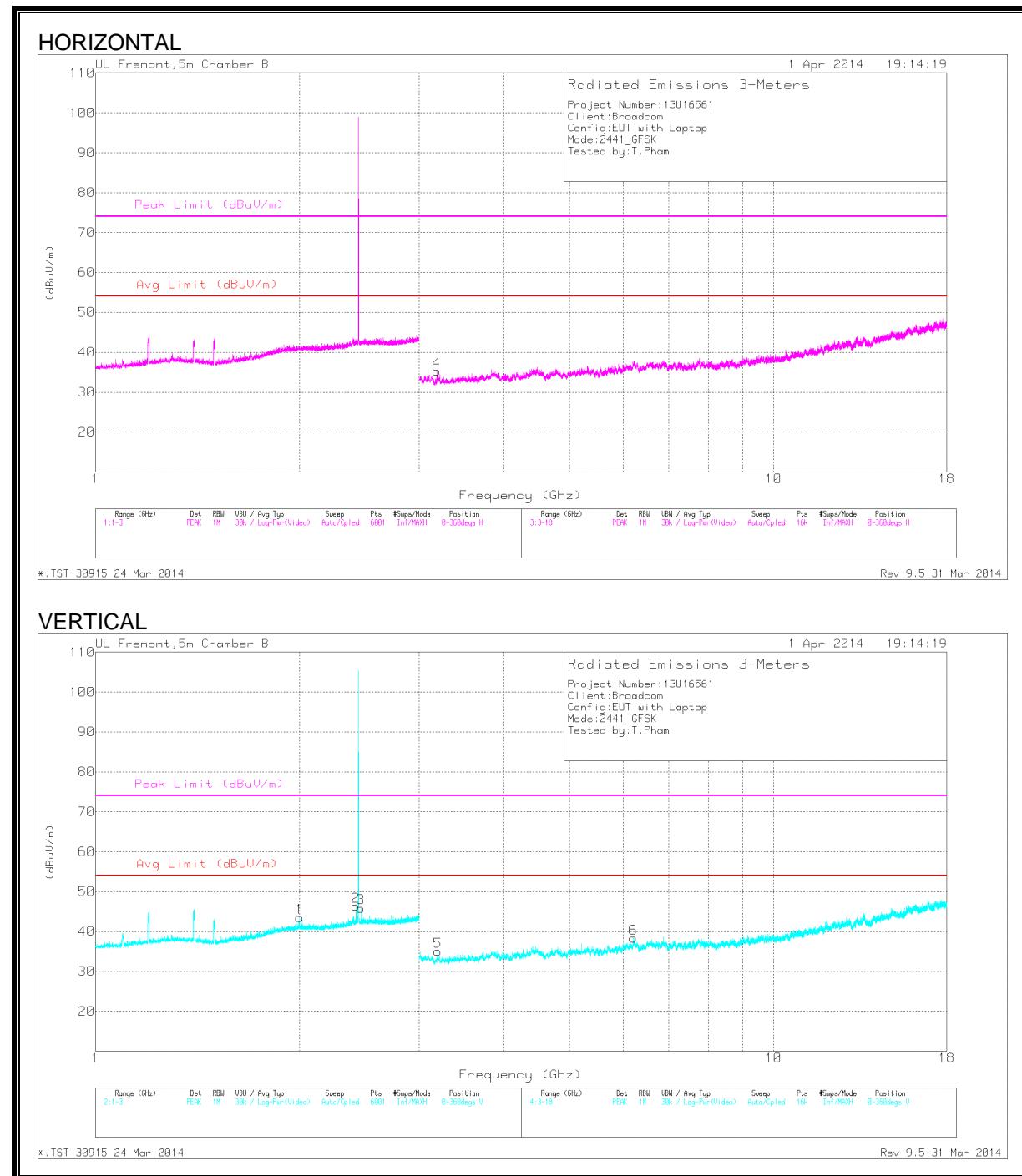
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 30915 24 Mar 2014

Rev 9.5 31 Mar 2014

**GFSK, MID CHANNEL – 2441 MHz**



**GFSK, MID CHANNEL – 2441 MHz, DATA**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dB <sub>u</sub> V)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dB <sub>u</sub> V/m)	Avg Limit (dB <sub>u</sub> V/m)	Margin (dB)	Peak Limit (dB <sub>u</sub> V/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.998	35.69	PK	31.3	-23.5	43.49	-	-	-	-	0-360	202	V
2	2.421	36.75	PK	32.2	-22.6	46.35	-	-	-	-	0-360	202	V
3	2.461	36.37	PK	32.3	-22.8	45.87	-	-	-	-	0-360	202	V
4	3.187	33.89	PK	32.8	-31.4	35.29	-	-	-	-	0-360	202	H
5	3.197	33.54	PK	32.8	-31.3	35.04	-	-	-	-	0-360	202	V
6	6.207	30.7	PK	35.4	-27.8	38.3	-	-	-	-	0-360	99	V

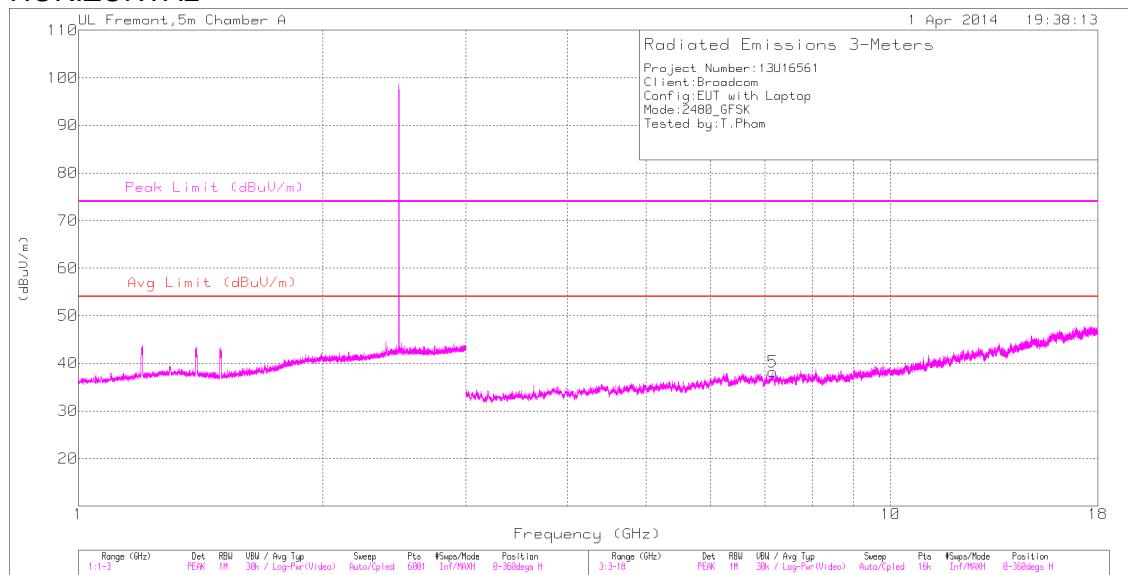
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 30915 24 Mar 2014  
Rev 9.5 31 Mar 2014

**GFSK, HIGH CHANNEL – 2480 MHz**

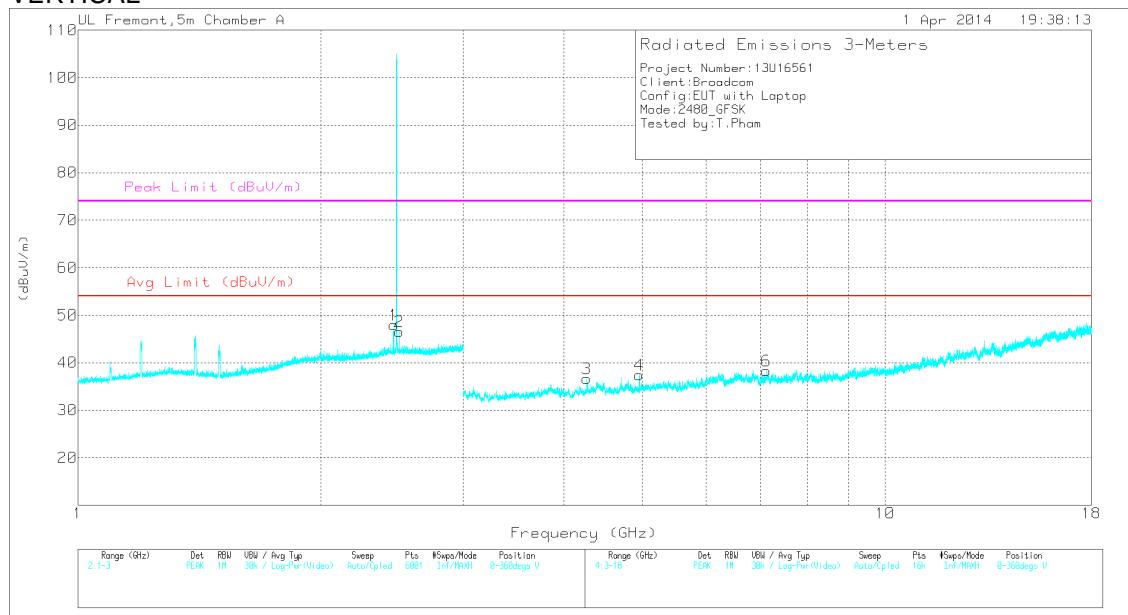
**HORIZONTAL**



2480\_GFSK.DAT 30915 24 Mar 2014

Rev 9.5 31 Mar 2014

**VERTICAL**



2480\_GFSK.DAT 30915 24 Mar 2014

Rev 9.5 31 Mar 2014

**GFSK, HIGH CHANNEL – 2480 MHz, DATA**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.5	36.97	PK	32.4	-22.8	46.57	-	-	74	-27.43	0-360	202	V
3	* 4.265	33.94	PK	33.6	-30.9	36.64	-	-	74	-37.36	0-360	202	V
4	* 4.959	33.44	PK	34.2	-30.2	37.44	-	-	74	-36.56	0-360	202	V
1	2.46	38.51	PK	32.3	-22.8	48.01	-	-	-	-	0-360	202	V
6	7.122	29.77	PK	35.6	-27.1	38.27	-	-	-	-	0-360	202	V
5	7.159	30.15	PK	35.6	-27.5	38.25	-	-	-	-	0-360	99	H

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

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.497	42.21	PK2	32.4	-22.7	51.91	-	-	74	-22.09	64	321	V
* 2.499	32.33	MAv1	32.4	-22.7	42.03	54	-11.97	-	-	64	321	V
* 4.264	42.18	PK2	33.6	-30.9	44.88	-	-	74	-29.12	217	287	V
* 4.275	30.86	MAv1	33.7	-31	33.56	54	-20.44	-	-	217	287	V
* 4.966	39.48	PK2	34.2	-30.1	43.58	-	-	74	-30.42	10	137	V
* 4.96	29.89	MAv1	34.2	-30.2	33.89	54	-20.11	-	-	10	137	V

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

PK2 - KDB558074 Method: Maximum Peak

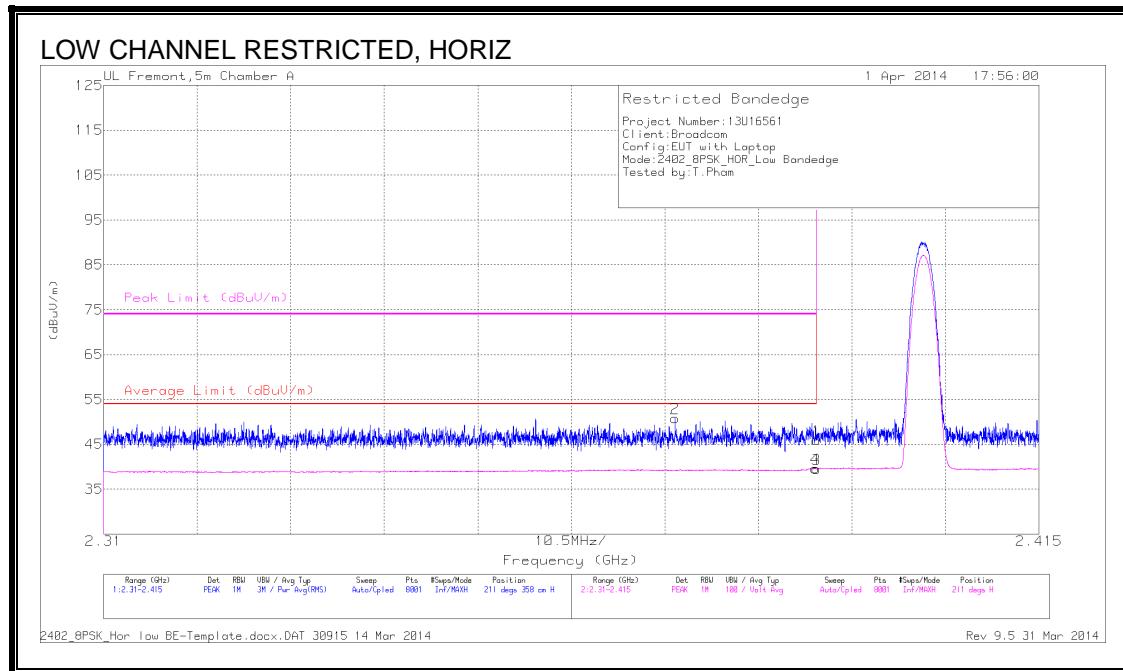
MAv1 - KDB558074 Option 1 Maximum RMS Average

FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 30915 24 Mar 2014

Rev 9.5 31 Mar 2014

## 8.2.2. ENHANCED DATA RATE 8PSK MODULATION

### RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



### Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBmV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBmV/m)	Average Limit (dBmV/m)	Margin (dB)	Peak Limit (dBmV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	36.77	PK	32.1	-22.9	45.97	-	-	74	-28.03	211	358	H
2	* 2.374	41.65	PK	32	-22.8	50.85	-	-	74	-23.15	211	358	H
3	* 2.39	30.31	VB1T	32.1	-22.9	39.51	54	-14.49	-	-	211	358	H
4	* 2.39	30.44	VB1T	32.1	-22.9	39.64	54	-14.36	-	-	211	358	H

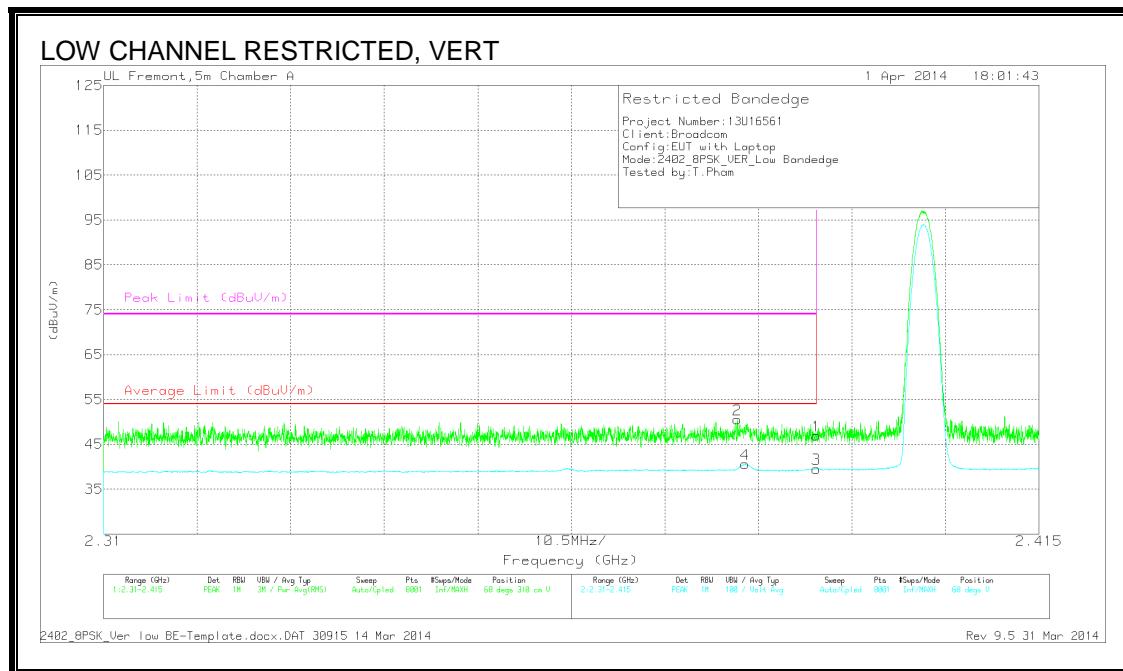
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet  
Low Channel Bandedge Method 1T - Horizontal.TST 30915 14 Mar 2014

Rev 9.5 31 Mar 2014

**RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	37.77	PK	32.1	-22.9	46.97	-	-	74	-27.03	68	310	V
2	* 2.381	41.49	PK	32	-22.9	50.59	-	-	74	-23.41	68	310	V
3	* 2.39	30.35	VB1T	32.1	-22.9	39.55	54	-14.45	-	-	68	310	V
4	* 2.382	31.36	VB1T	32.1	-22.9	40.56	54	-13.44	-	-	68	310	V

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

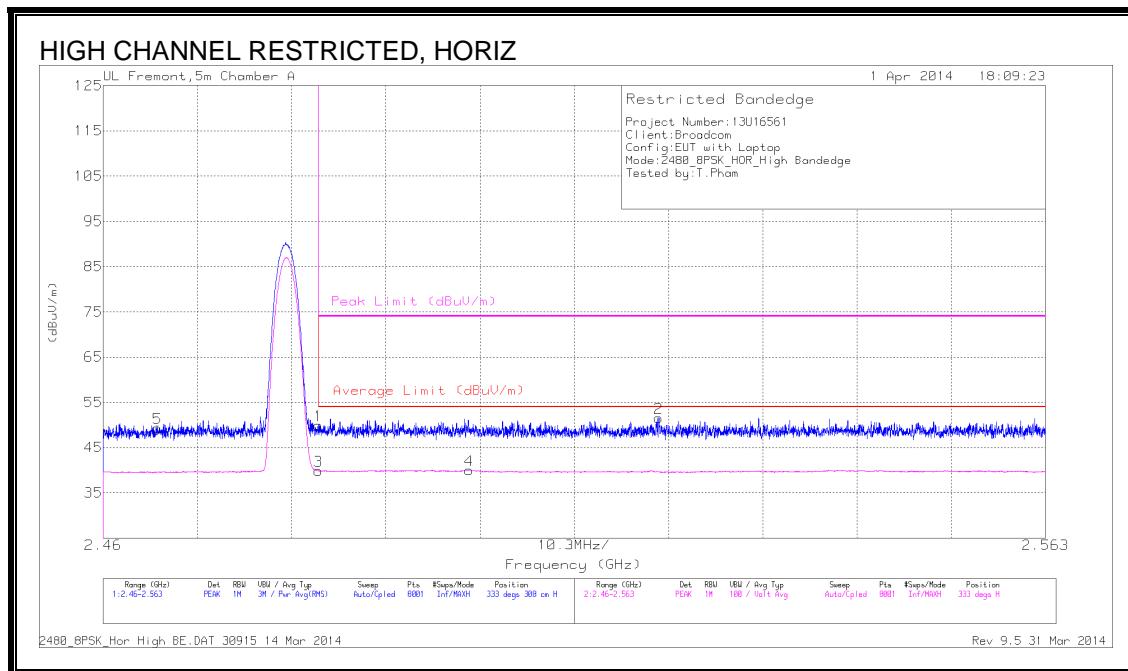
PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

Low Channel Bandedge Method 1T - Vertical.TST 30915 14 Mar 2014

Rev 9.5 31 Mar 2014

**RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)**



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	40.07	PK	32.4	-22.6	49.87	-	-	74	-24.13	333	308	H
3	* 2.484	30.08	VB1T	32.4	-22.6	39.88	54	-14.12	-	-	333	308	H
5	2.466	39.85	PK	32.3	-22.8	49.35	-	-	-	-	333	308	H
4	2.5	30.44	VB1T	32.4	-22.8	40.04	54	-13.96	-	-	333	308	H
2	2.521	41.86	PK	32.5	-22.8	51.56	-	-	74	-22.44	333	308	H

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

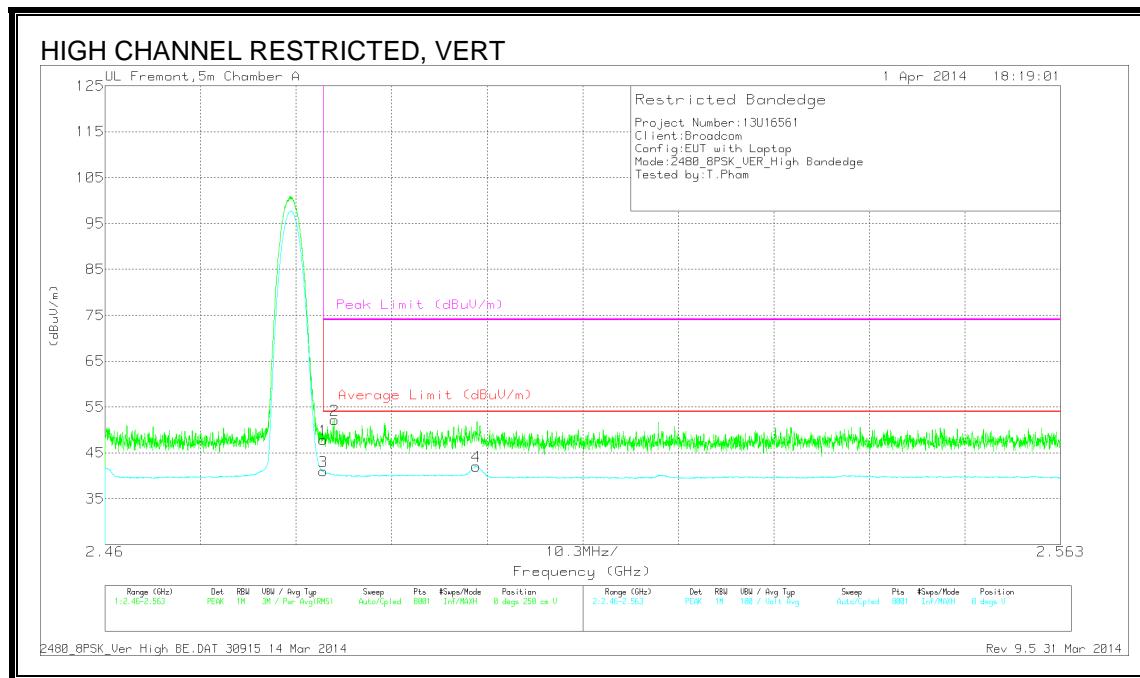
PK - Peak detector

VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

High Channel Bandedge Method 1T - Horizontal.TST 30915 14 Mar 2014

Rev 9.5 31 Mar 2014

**RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)**



**Trace Markers**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	38.06	PK	32.4	-22.6	47.86	-	-	74	-26.14	0	250	V
2	* 2.485	42.34	PK	32.4	-22.6	52.14	-	-	74	-21.86	0	250	V
3	* 2.484	31.15	VB1T	32.4	-22.6	40.95	54	-13.05	-	-	0	250	V
4	* 2.5	32.44	VB1T	32.4	-22.8	42.04	54	-11.96	-	-	0	250	V

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

PK - Peak detector

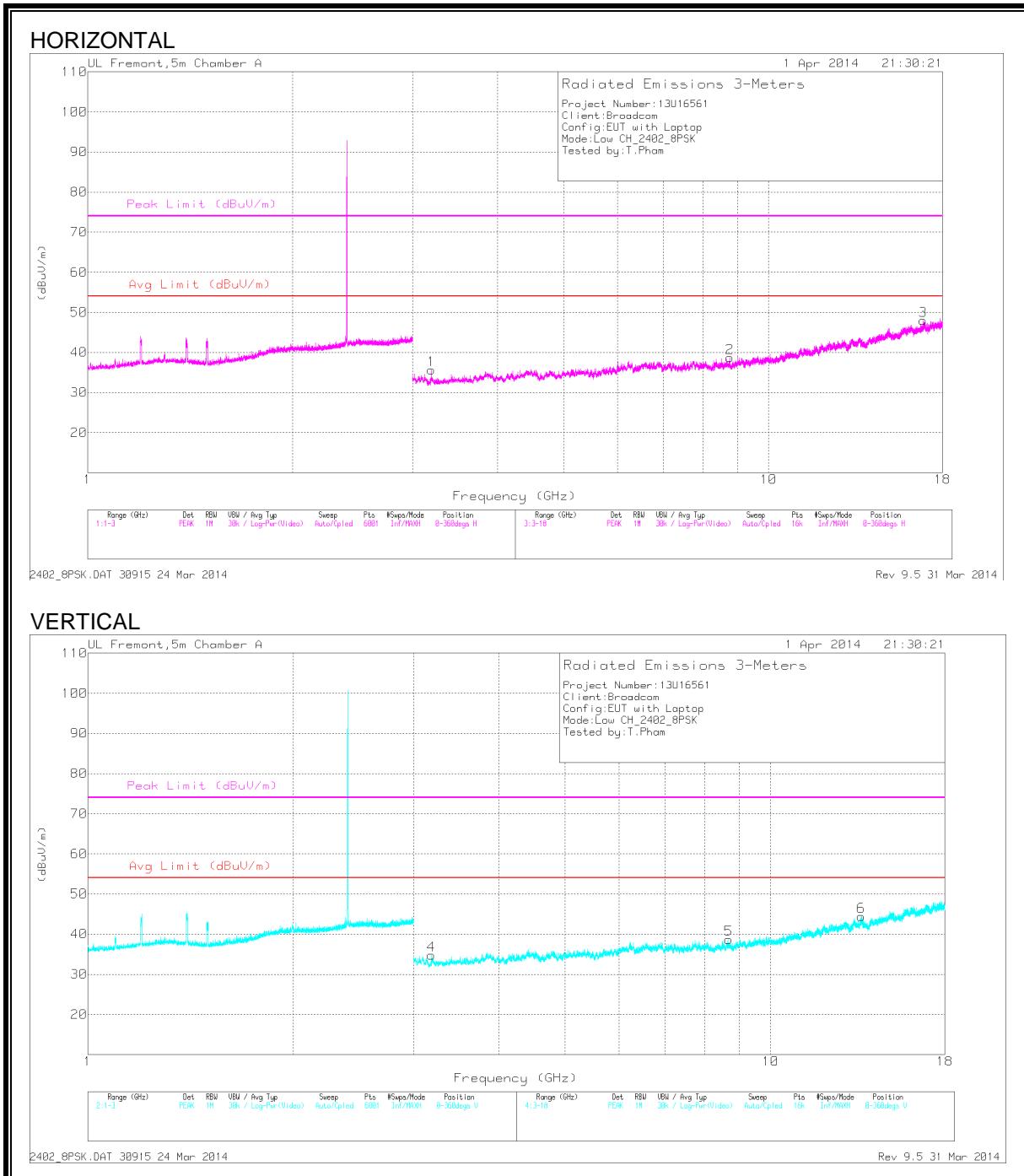
VB1T - FHSS Method: VB=1/Ton, Voltage Averaging Max Hold where: Ton is the duration of the packet

High Channel Bandedge Method 1T - Vertical.TST 30915 14 Mar 2014

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## HARMONICS AND SPURIOUS EMISSIONS

### 8PSK, LOW CHANNEL – 2402 MHz



**8PSK, LOW CHANNEL - 2402 MHz, DATA**

Trace Markers

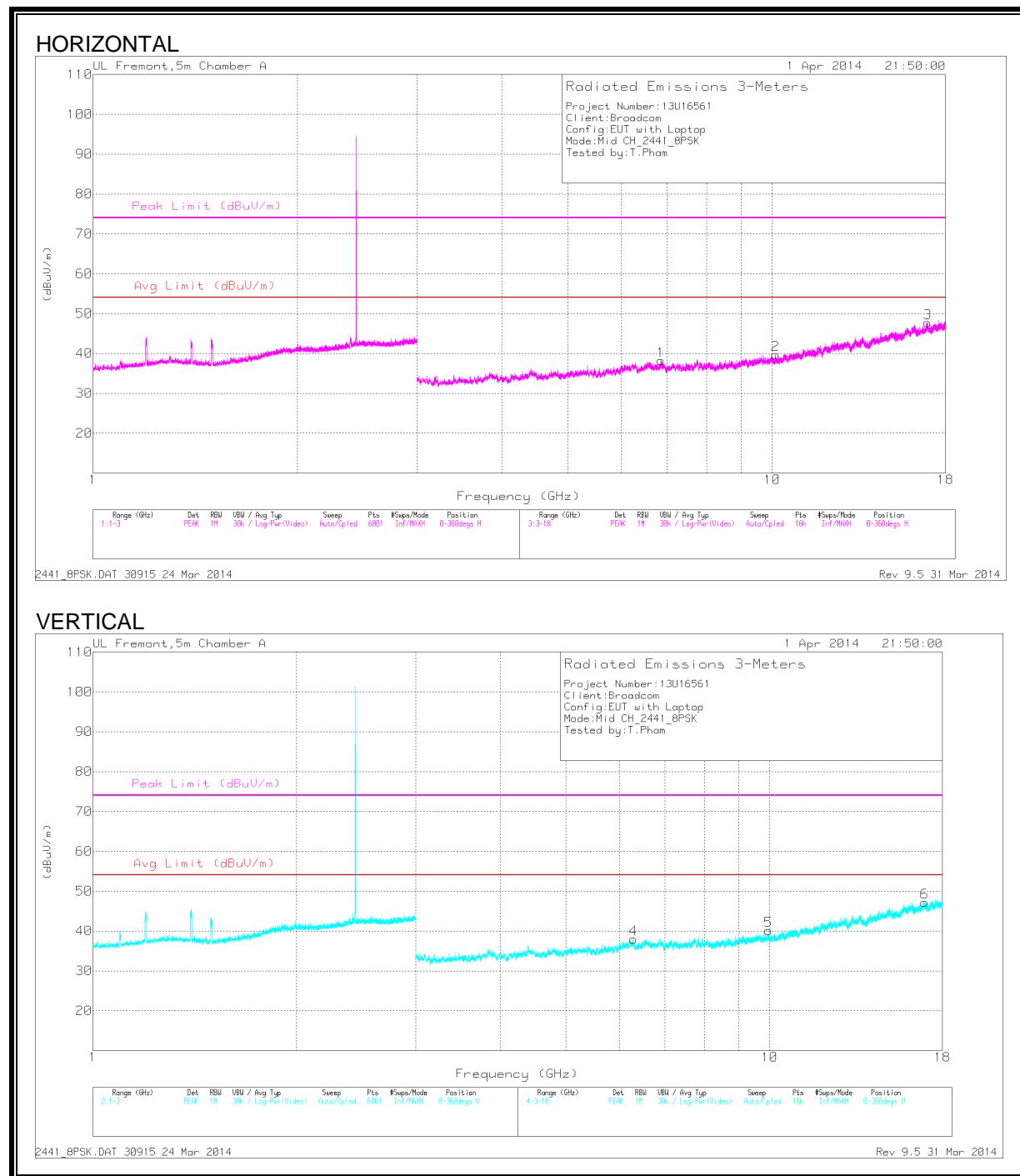
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	3.186	33.39	PK	32.8	-31.4	34.79	-	-	-	-	0-360	99	V
1	3.198	34.01	PK	32.8	-31.2	35.61	-	-	-	-	0-360	202	H
5	8.682	28.37	PK	35.9	-25.6	38.67	-	-	-	-	0-360	202	V
2	8.774	28.48	PK	36	-25.8	38.68	-	-	-	-	0-360	99	H
6	13.578	26.82	PK	38.8	-21.2	44.42	-	-	-	-	0-360	202	V
3	16.87	25.48	PK	41.4	-18.9	47.98	-	-	-	-	0-360	99	H

PK - Peak detector

FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 30915 24 Mar 2014

Rev 9.5 31 Mar 2014

**8PSK, MID CHANNEL – 2441MHz**



**8PSK, MID CHANNEL – 2441MHz, 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)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	6.289	30.4	PK	35.5	-28	37.9	-	-	-	-	0-360	99	V
1	6.863	29.99	PK	35.6	-27.4	38.19	-	-	-	-	0-360	202	H
5	9.964	27.09	PK	37	-24	40.09	-	-	-	-	0-360	202	V
2	10.109	26.34	PK	37.1	-23.7	39.74	-	-	-	-	0-360	202	H
6	16.93	24.72	PK	41.4	-18.9	47.22	-	-	-	-	0-360	99	V
3	16.935	25.26	PK	41.4	-18.9	47.76	-	-	-	-	0-360	99	H

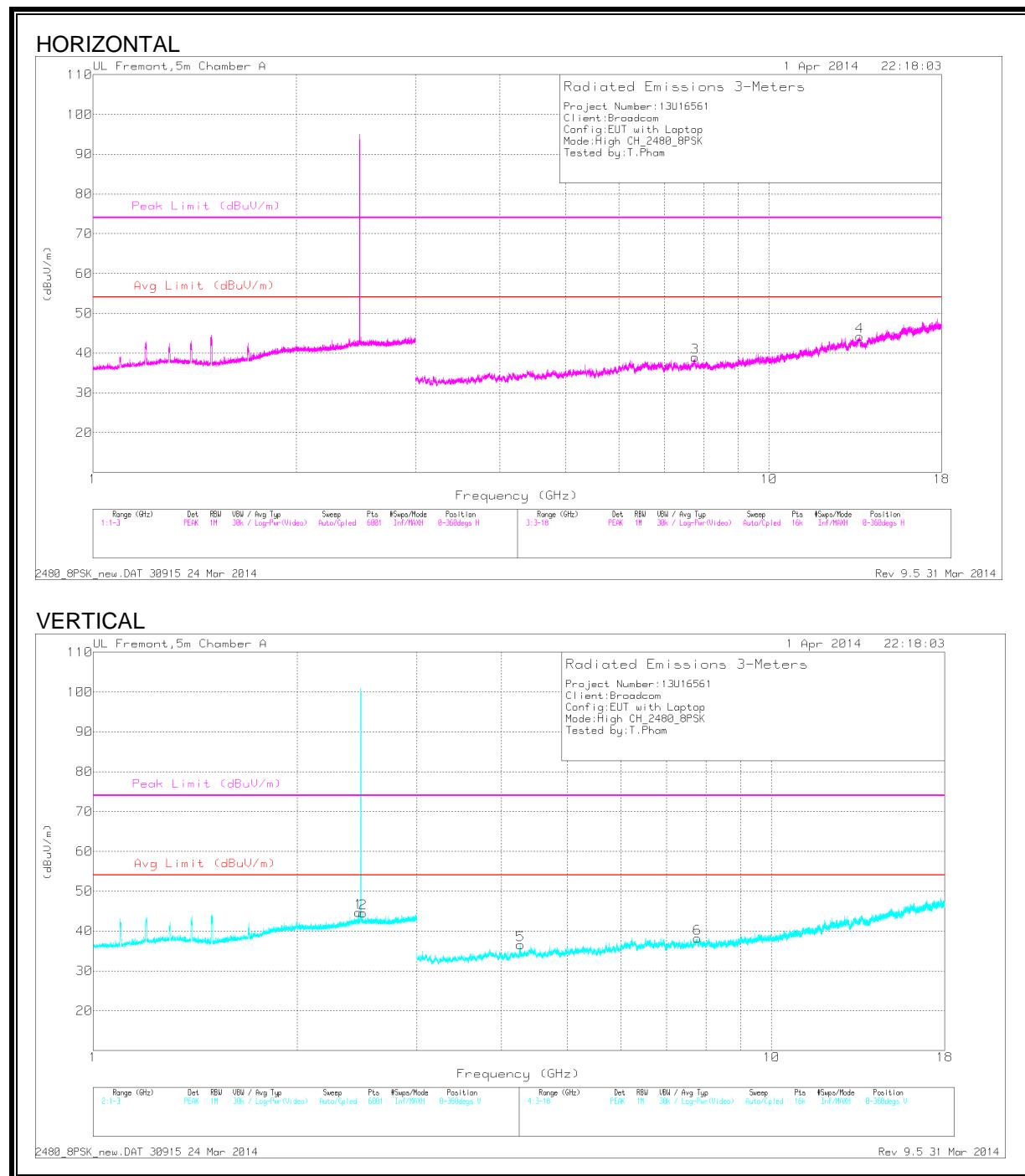
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 30915 24 Mar 2014

Rev 9.5 31 Mar 2014

**8PSK, HIGH CHANNEL – 2480 MHz**



**8PSK, HIGH CHANNEL – 2480 MHz, DATA**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.5	34.93	PK	32.4	-22.8	44.53	-	-	74	-29.47	0-360	202	V
5	* 4.264	33.82	PK	33.6	-30.9	36.52	-	-	74	-37.48	0-360	202	V
1	2.46	35.14	PK	32.3	-22.8	44.64	-	-	-	-	0-360	202	V
3	7.772	29.28	PK	35.7	-26	38.98	-	-	-	-	0-360	202	H
6	7.778	28.54	PK	35.7	-26	38.24	-	-	-	-	0-360	99	V
4	13.614	26.86	PK	38.8	-21.5	44.16	-	-	-	-	0-360	202	H

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

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.498	42.92	PK2	32.4	-22.7	52.62	-	-	74	-21.38	89	263	V
* 2.498	31.87	MAv1	32.4	-22.7	41.57	54	-12.43	-	-	89	263	V
* 4.265	40.87	PK2	33.6	-30.9	43.57	-	-	74	-30.43	2	275	V
* 4.274	30.82	MAv1	33.7	-31	33.52	54	-20.48	-	-	2	275	V

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

PK2 - KDB558074 Method: Maximum Peak

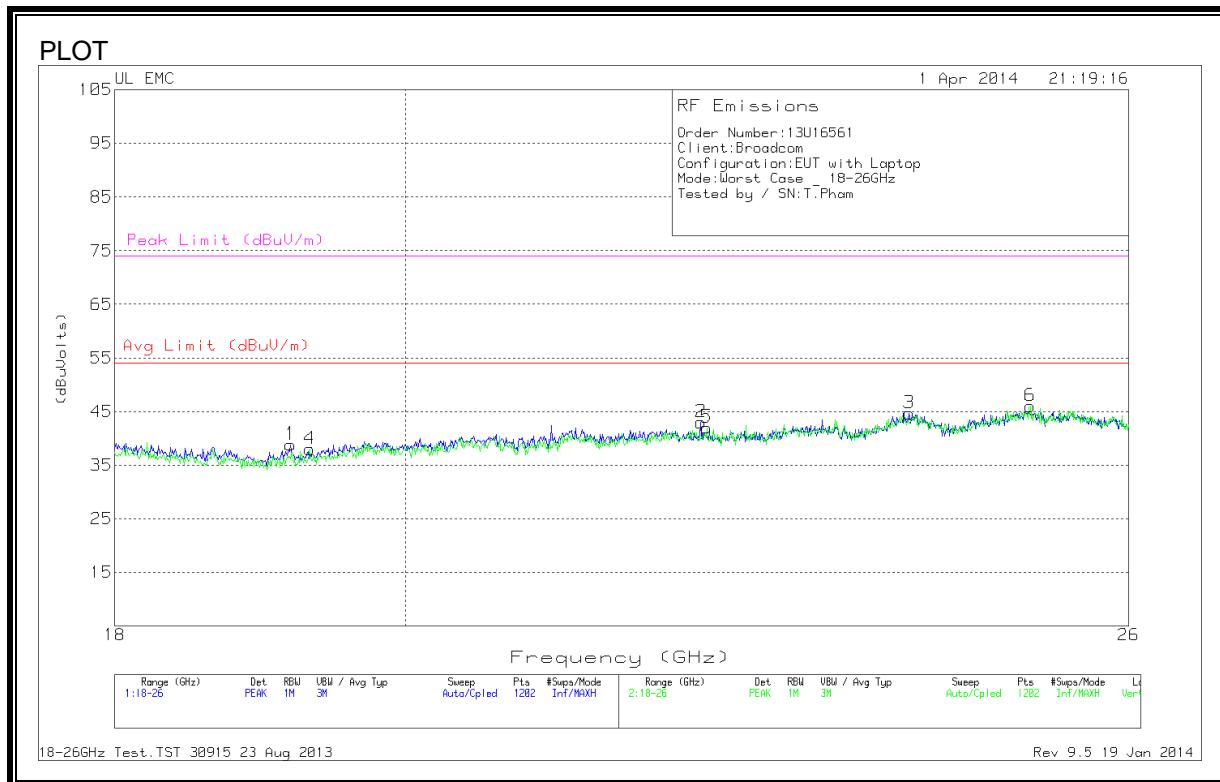
MAv1 - KDB558074 Option 1 Maximum RMS Average

FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 30915 24 Mar 2014

Rev 9.5 31 Mar 2014

### 8.3. WORST-CASE 18\_26 GHz

#### SPURIOUS EMISSIONS 18 TO 26 GHz (WORST-CASE CONFIGURATION)



#### Trace Markers

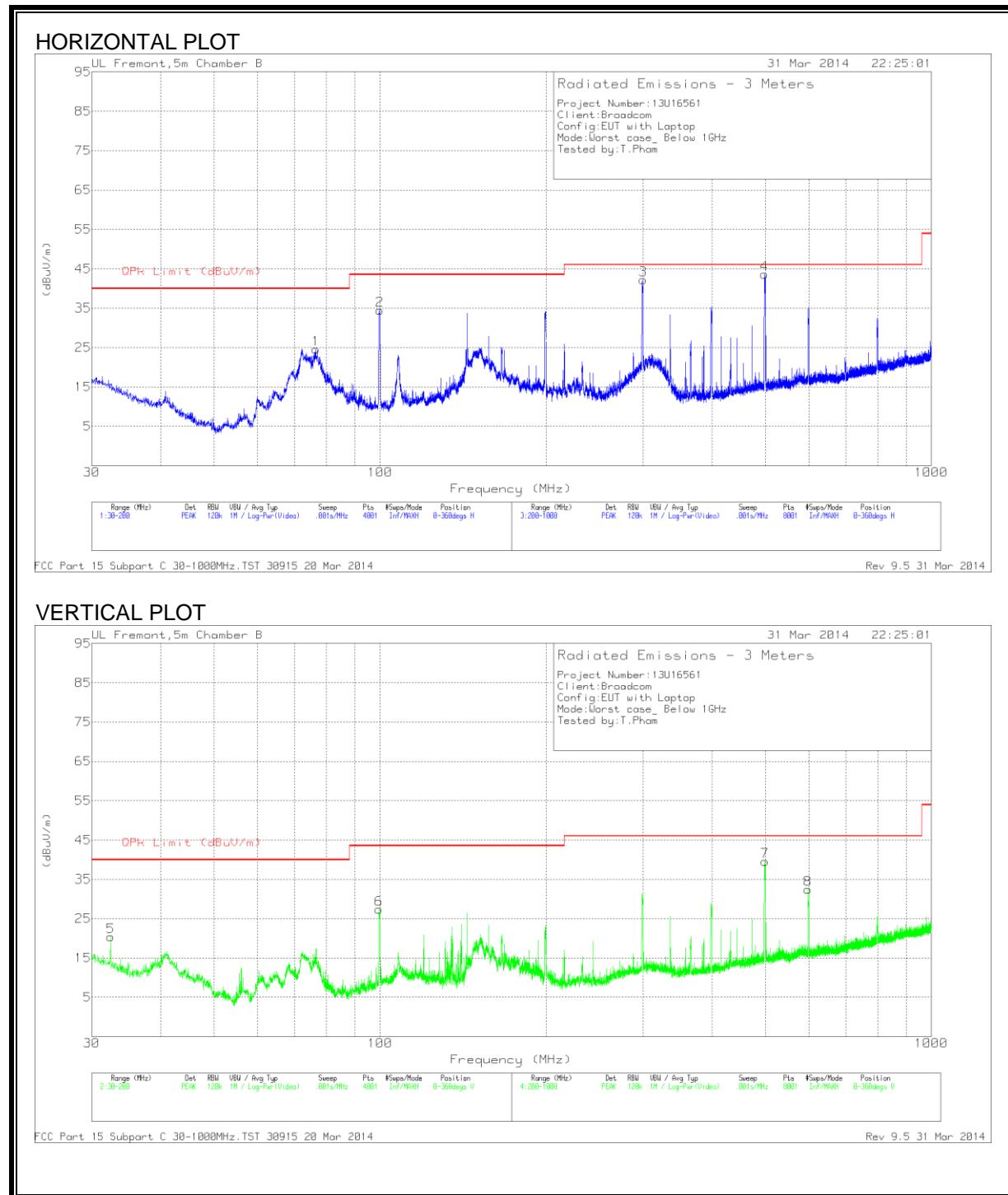
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T89 (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	19.186	39.33	PK	32.5	-23.5	-9.5	38.83	54	-15.167	74	-35.167
2	22.263	42.5	PK	33.2	-23.2	-9.5	43	54	-11	74	-31
3	24.008	43.37	PK	33.6	-22.8	-9.5	44.67	54	-9.333	74	-29.333
4	19.319	38.8	PK	32.5	-23.8	-9.5	38	54	-16	74	-36
5	22.31	41.3	PK	33.3	-23.1	-9.5	42	54	-12	74	-32
6	25.087	44.5	PK	33.9	-22.9	-9.5	46	54	-8	74	-28

PK - Peak detector

18-26GHz Test.TST 30915 23 Aug 2013 Rev 9.5 19 Jan 2014

## 8.4. WORST-CASE BELOW 1 GHz

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



## EMISSIONS DATA

### Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	32.465	30.05	PK	19.2	-28.8	20.45	40	-19.55	0-360	101	V
1	76.4525	44.86	PK	8	-28.3	24.56	40	-15.44	0-360	400	H
6	99.615	45.22	PK	10.2	-28.1	27.32	43.52	-16.2	0-360	101	V
2	99.9125	52.34	PK	10.3	-28.1	34.54	43.52	-8.98	0-360	300	H
3	299.8	55.07	PK	13.2	-26	42.27	46.02	-3.75	0-360	101	H
4	497.9	51.82	PK	17.6	-25.8	43.62	46.02	-2.4	0-360	200	H
7	499.6	47.72	PK	17.7	-25.8	39.62	46.02	-6.4	0-360	101	V
8	597.4	39.33	PK	18.5	-25.4	32.43	46.02	-13.59	0-360	300	V

PK - Peak detector

### Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
300.024	49.33	QP	13.2	-26	36.53	46.02	-9.49	0	101	H
498.444	38.92	QP	18	-25.7	31.22	46.02	-14.8	158	370	H

QP - Quasi-Peak detector

FCC Part 15 Subpart C 30-1000MHz.TST 30915 20 Mar 2014

Rev 9.5 31 Mar 2014

## 9. AC POWER LINE CONDUCTED EMISSIONS

### LIMITS

FCC §15.207 (a)

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

\* Decreases with the logarithm of the frequency.

### TEST PROCEDURE

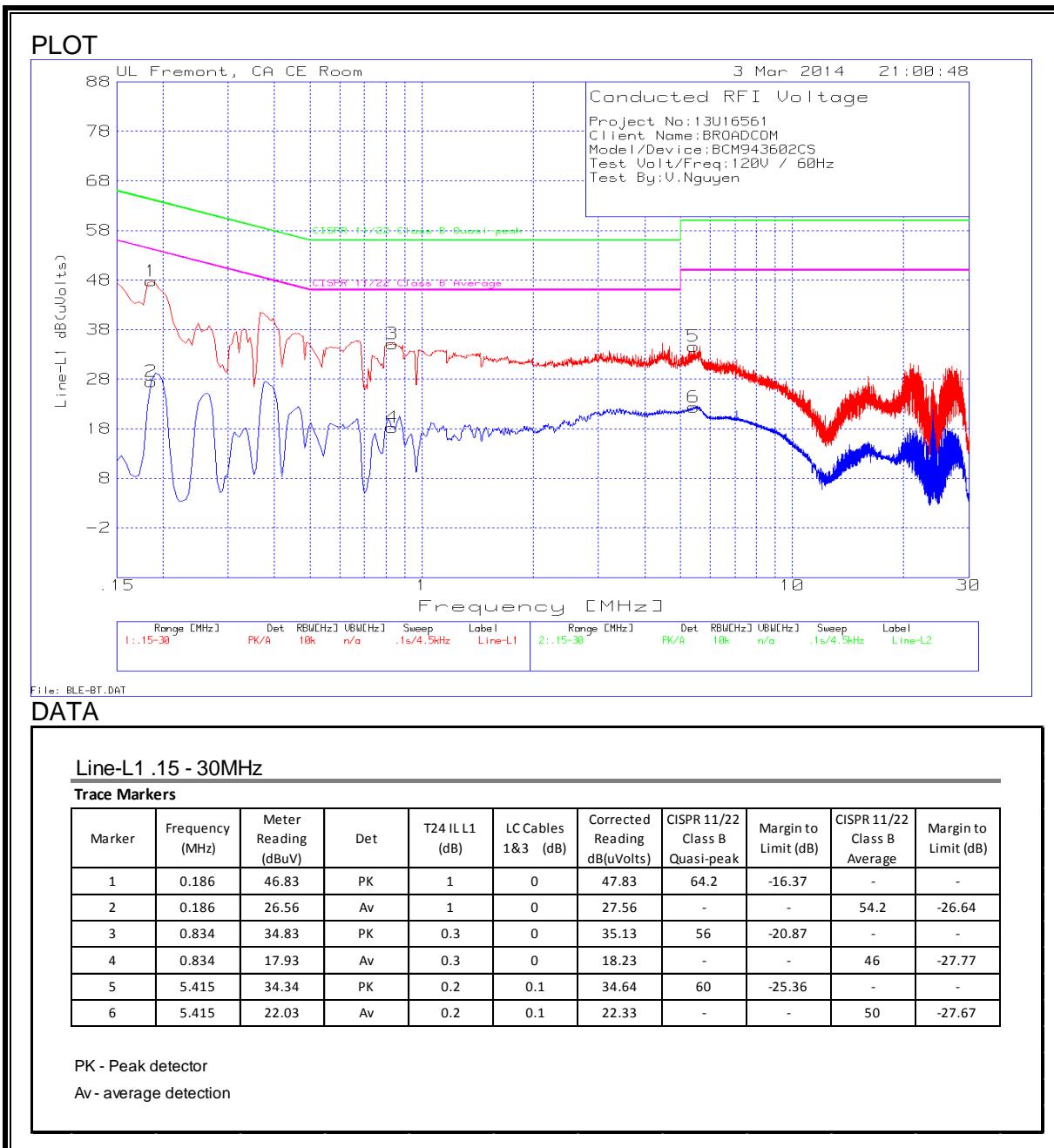
The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

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.

## **6 WORST EMISSIONS**

### **LINE 1 RESULTS**



## LINE 2 RESULTS

