



**FCC CFR47 PART 15 SUBPART C**

**CERTIFICATION TEST REPORT**

**FOR**

**GSM/UMTS BAR PHONE WITH BLUETOOTH**

**MODEL NUMBER: GT-E3300i**

**FCC ID: A3LGTE3300I**

**REPORT NUMBER: 13I15169-2, Revision B**

**ISSUE DATE: JUNE 26, 2013**

*Prepared for*

**SAMSUNG ELECTRONICS CO., LTD.**

**416, MAETAN 3-DONG, YEONGTONG-GU**

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**NVLAP LAB CODE 200065-0**

Revision History

| Rev. | Issue Date | Revisions                                                                                            | Revised By |
|------|------------|------------------------------------------------------------------------------------------------------|------------|
| --   | 6/03/2013  | Initial Issue                                                                                        | P.KIM      |
| A    | 6/19/2013  | Updated antenna gain information with new information from customer, plus additional update to data. | P. Kim     |
| B    | 6/26/2013  | Updated Peak value reading with duty cycle factor taken into account.                                | P. Kim     |

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## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** SAMSUNG ELECTRONICS CO., LTD.  
416, MAETAN 3-DONG, YEONGTONG-GU  
SUWON-CITY, GYEONGGI-DO, 443-742, SOUTH KOREA

**EUT DESCRIPTION:** GSM/UMTS BAR PHONE WITH BT

**MODEL:** GT-E3300I

**SERIAL NUMBER:** IMEI: 35655105000811 (RADIATED)  
IMEI: 356551050009267 (CONDUCTED)

**DATE TESTED:** MAY 30~JUNE 14, 2013

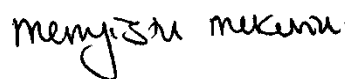
| APPLICABLE STANDARDS     |              |
|--------------------------|--------------|
| STANDARD                 | TEST RESULTS |
| CFR 47 Part 15 Subpart C | Pass         |

UL CCS 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 CCS 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 CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS 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 CCS By:

Tested By:



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WiSE PROGRAM MANAGER  
UL Verification Services

MENGISTU MEKURIA  
WiSE EMC ENGINEER  
UL Verification Services

## 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 Benicia Street, Fremont, California, USA.

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

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

### 4.3. MEASUREMENT UNCERTAINTY

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

| PARAMETER                             | UNCERTAINTY |
|---------------------------------------|-------------|
| Conducted Disturbance, 0.15 to 30 MHz | 3.52 dB     |
| Radiated Disturbance, 30 to 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 a bar-style cell phone featuring BT3.0 +basic rates +EDR+GSM/WCDMA850/1900MHz.

### 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    | 6.70               | 4.68              |
| 2402 - 2480           | Enhanced 8PSK | 6.50               | 4.47              |

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an PIFA antenna, with a maximum gain of -1.62 dBi.

### 5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was REV 1.0 and the software was E3300I.002.

## **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,Z, it was determined that X with AC orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X with AC orientation.

## 5.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

| Support Equipment List |                     |            |               |        |
|------------------------|---------------------|------------|---------------|--------|
| Description            | Manufacturer        | Model      | Serial Number | FCC ID |
| AC Adapter             | Samsung Electronics | ETA0U10JBS | DW2D203DS/7-E | DoC    |
| Headset                | Samsung Electronics | N/A        | N/A           | DoC    |

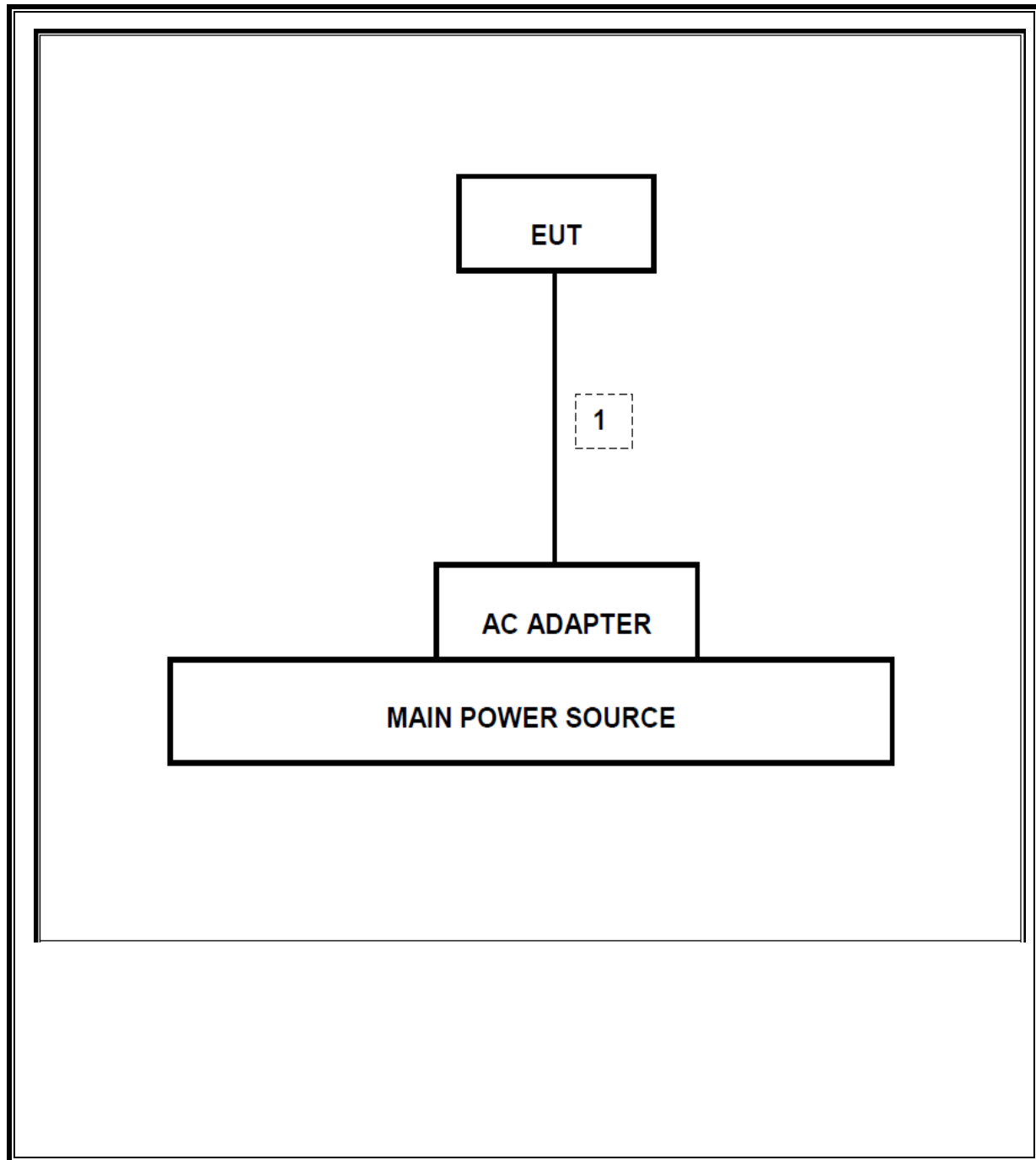
### I/O CABLES

| I/O Cable List |         |                      |                |            |                  |         |
|----------------|---------|----------------------|----------------|------------|------------------|---------|
| Cable No       | Port    | # of identical ports | Connector Type | Cable Type | Cable Length (m) | Remarks |
| 1              | USB     | 1                    | USB            | Shielded   | 1.6m             | N/A     |
| 2              | Headset | 1                    | Audio          | Shielded   | 1.5m             | N/A     |

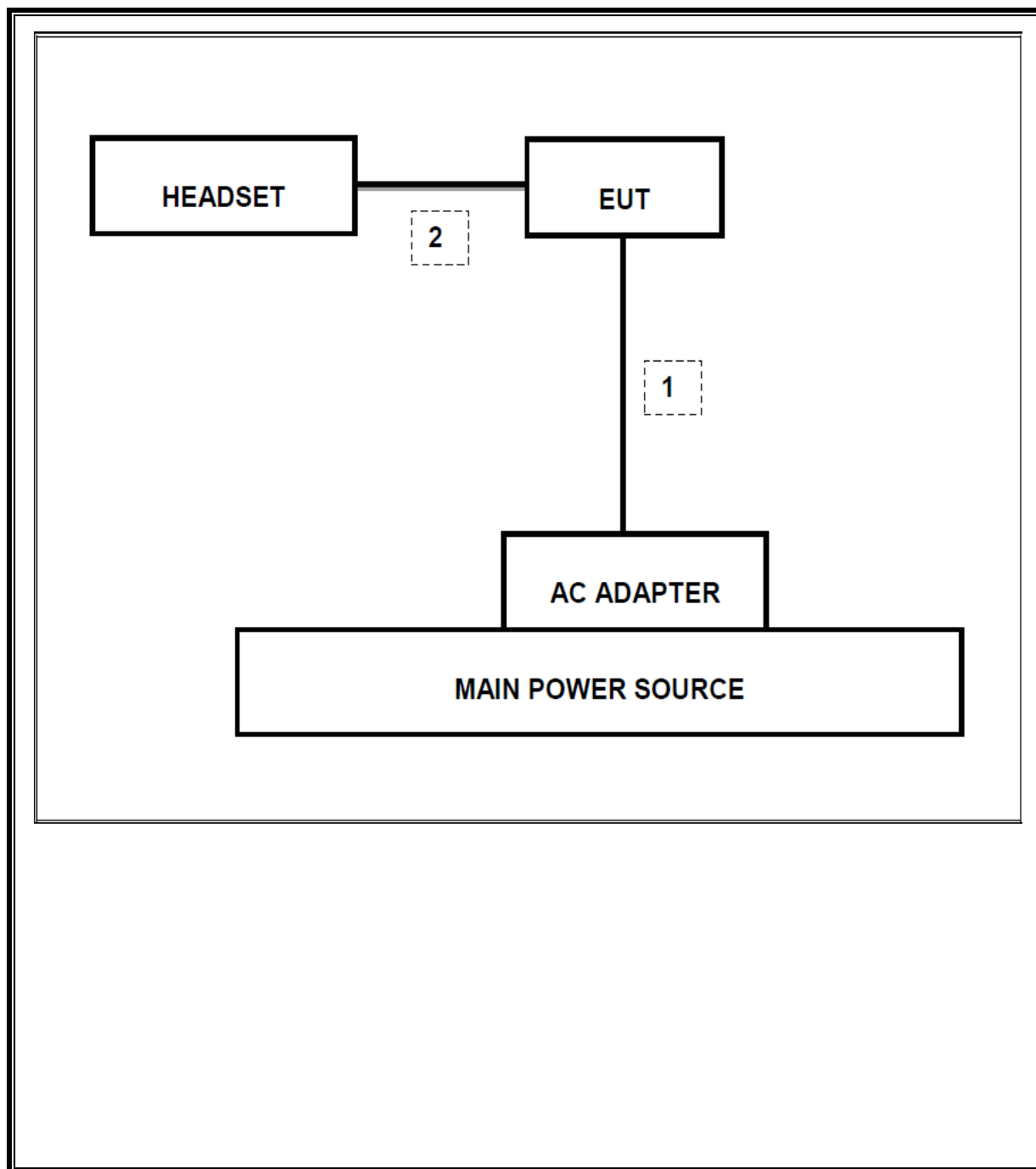
### TEST SETUP

The EUT is a standalone with an AC adapter that was tested in the worst case orientation and configuration, where applicable, during the tests. The software exercised the radio.

**SETUP DIAGRAM FOR TESTS (Conducted Setup)**



**SETUP DIAGRAM FOR Test (Radiated Setup)**



## 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| Test Equipment List        |               |                 |        |          |          |
|----------------------------|---------------|-----------------|--------|----------|----------|
| Description                | Manufacturer  | Model           | Asset  | Cal Date | Cal Due  |
| Antenna, Horn, 18 GHz      | EMCO          | 3115            | C00872 | 09/20/12 | 09/20/13 |
| Antenna, Horn, 26.5 GHz    | ARA           | MWH-1826/B      | C00589 | 07/28/12 | 07/28/13 |
| Spectrum Analyzer, 44 GHz  | Agilent / HP  | E4446A          | C01012 | 10/21/12 | 10/21/13 |
| Preamplifier, 26.5 GHz     | Agilent / HP  | 8449B           | C00749 | 10/21/12 | 10/21/13 |
| Preamplifier, 1300 MHz     | Agilent / HP  | 8447D           | C00558 | 02/21/13 | 02/21/14 |
| Reject Filter, 2.4-2.5 GHz | Micro-Tronics | BRC13192        | N02683 | CNR      | CNR      |
| Bilog 30-2000MHz           | Sunol         | JB1             | C01071 | 07/26/12 | 07/26/13 |
| Power Meter                | HP            | 437B            | T226   | 06/25/12 | 06/25/13 |
| Power Sensor               | HP            | 8481A           | T233   | 06/26/12 | 06/26/13 |
| LISN, 30 MHz               | FCC           | LISN-50/250-25- | N02625 | 01/14/13 | 01/14/14 |
| LISN, 10 kHz ~ 30 MHz      | Solar         | 8012-50-R-24-BN | N02481 | 03/07/12 | 03/07/14 |
| EMI Test Receiver, 30 MHz  | R & S         | ESHS 20         | N02396 | 08/08/12 | 08/08/13 |
| CBT Bluetooth Tester       | R & S         | CBT             | None   | 05/15/12 | 05/15/13 |

## 7. ANTENNA PORT TEST RESULTS

### 7.1. DUTY CYCLE MEASUREMENT

#### LIMIT

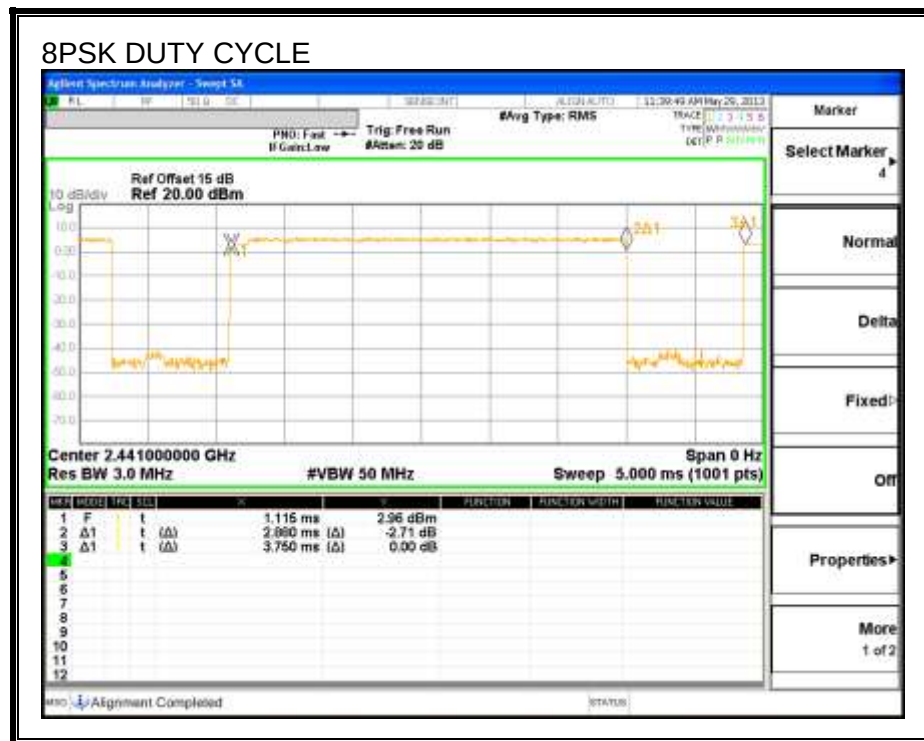
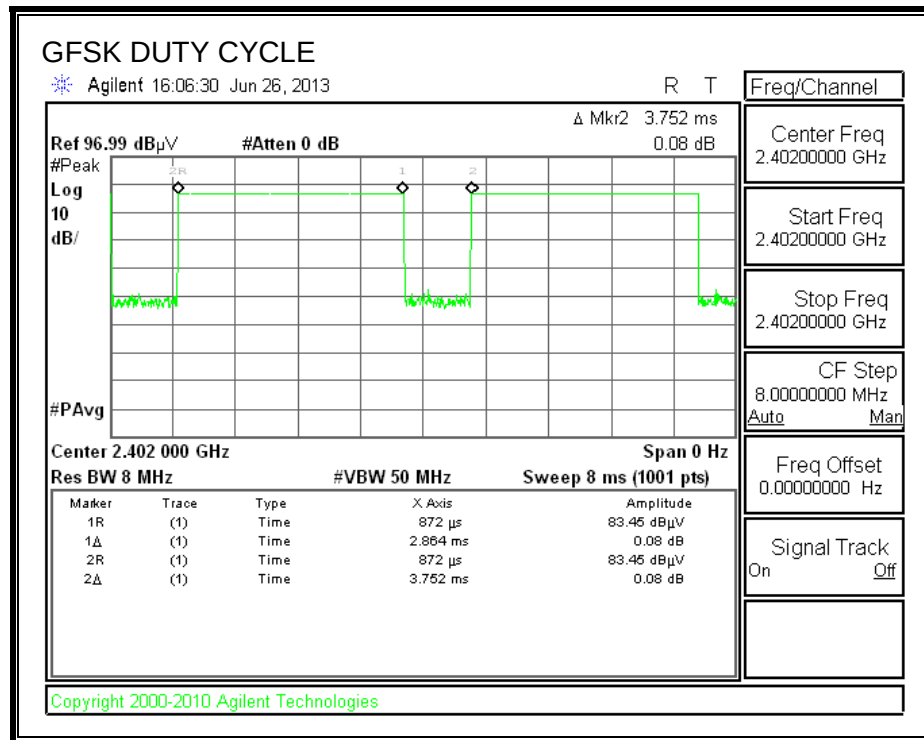
None; for Duty Cycle Correction factor purpose only

#### TEST PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method

#### RESULT

| Mode | ON Time<br>B<br>(msec) | Period<br>(msec) | Duty Cycle<br>x<br>(linear) | Duty<br>Cycle<br>(%) | Duty Cycle<br>Correction Factor<br>(dB) | 1/T<br>Minimum VBW<br>(kHz) |
|------|------------------------|------------------|-----------------------------|----------------------|-----------------------------------------|-----------------------------|
| GFSK | 2.86                   | 3.75             | 0.763                       | 76.3%                | 1.17                                    | 0.349                       |
| 8PSK | 2.88                   | 3.76             | 0.766                       | 76.6%                | 1.16                                    | 0.347                       |
|      |                        |                  |                             |                      |                                         |                             |



## 7.2. BASIC DATA RATE GFSK MODULATION

### 7.2.1. 20 dB AND 99% BANDWIDTH

#### LIMIT

None; for reporting purposes only.

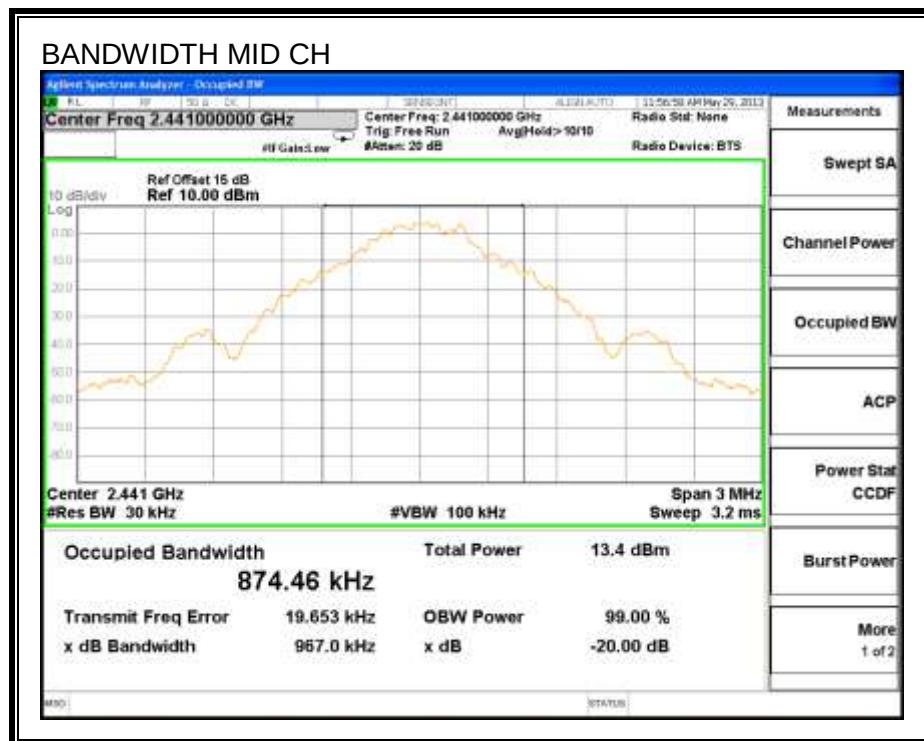
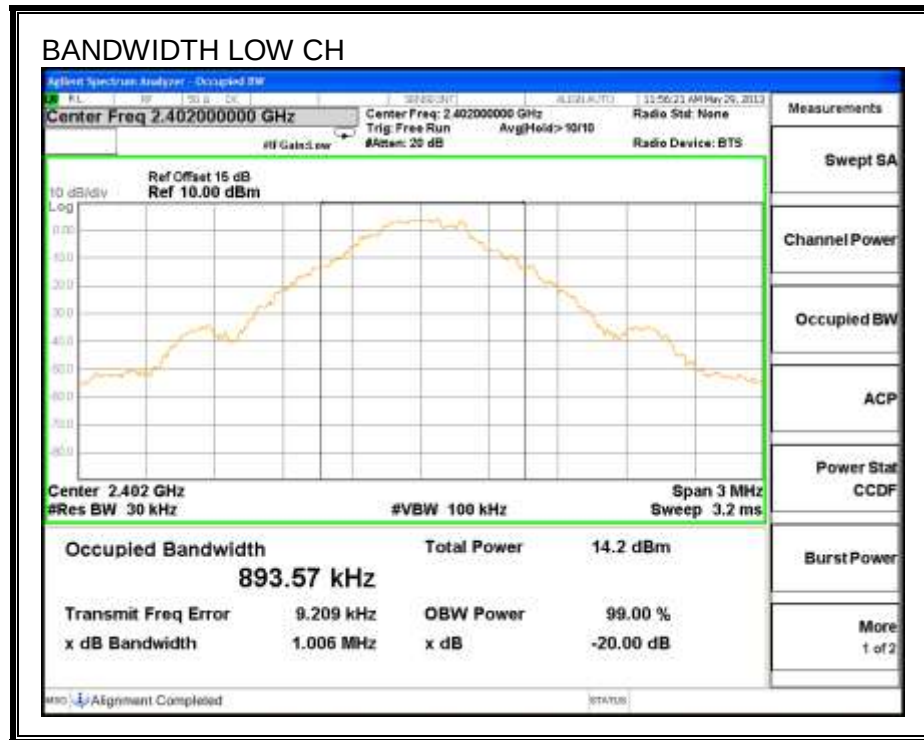
#### TEST PROCEDURE

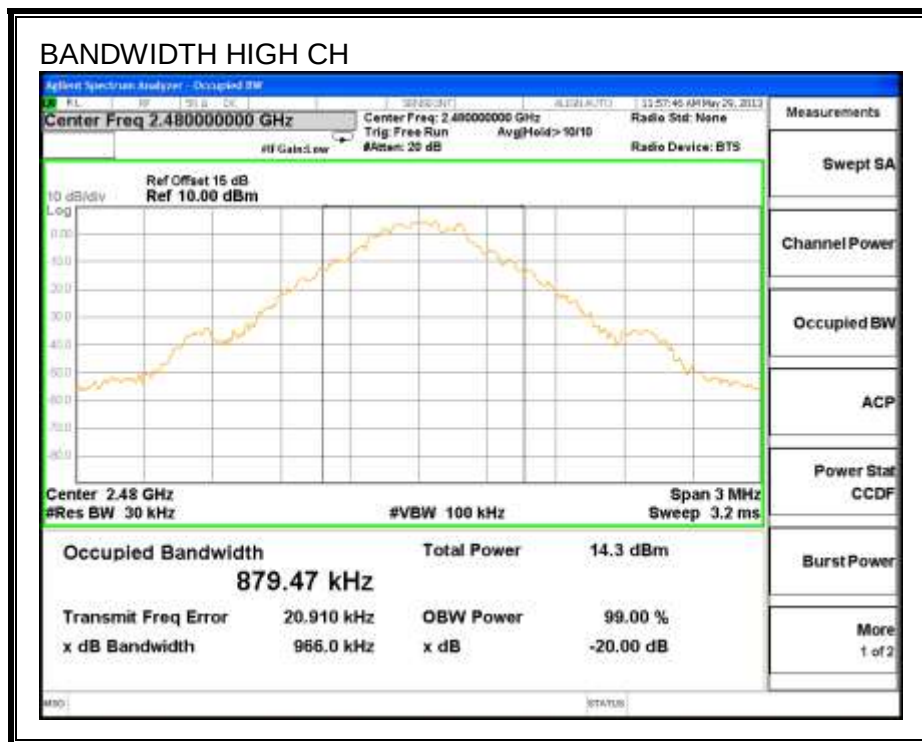
The transmitter output is connected to a spectrum analyzer. The RBW is set to  $\geq 1\%$  of the 20 dB bandwidth. The VBW is set to  $\geq$  RBW. The sweep time is coupled.

#### RESULTS

| Channel | Frequency<br>(MHz) | 20 dB Bandwidth<br>(kHz) | 99% Bandwidth<br>(kHz) |
|---------|--------------------|--------------------------|------------------------|
| Low     | 2402               | 1006                     | 893.57                 |
| Middle  | 2441               | 967                      | 874.46                 |
| High    | 2480               | 966                      | 879.47                 |

**20 dB AND 99% BANDWIDTH**





## **7.2.2. HOPPING FREQUENCY SEPARATION**

### **LIMIT**

FCC §15.247 (a) (1)

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

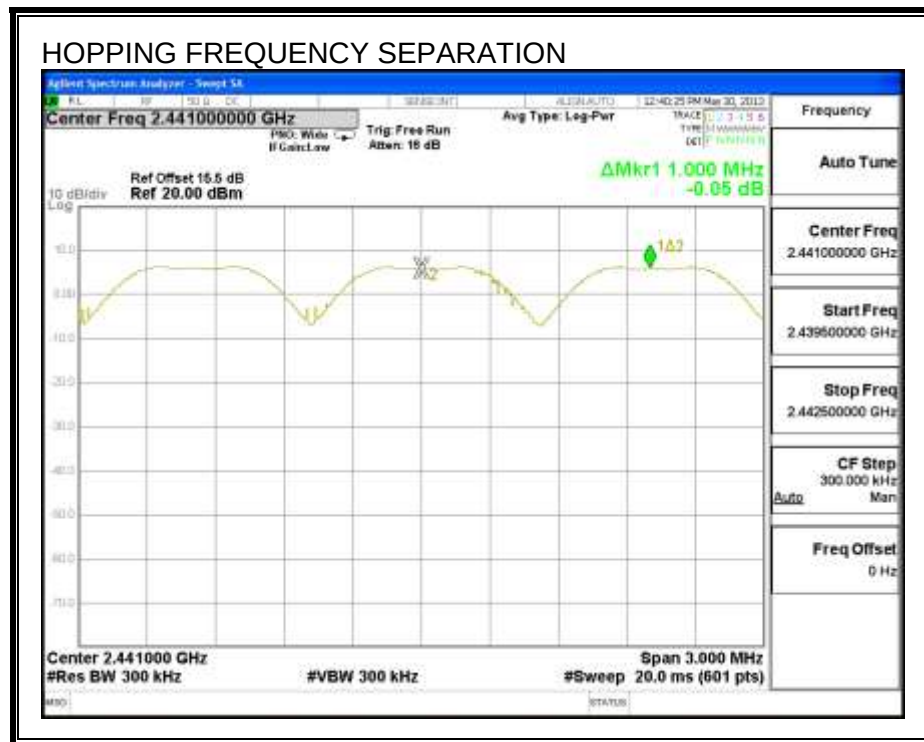
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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

### **TEST PROCEDURE**

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 100 kHz. The sweep time is coupled.

### **RESULTS**

**HOPPING FREQUENCY SEPARATION**



### **7.2.3. NUMBER OF HOPPING CHANNELS**

#### **LIMIT**

FCC §15.247 (a) (1) (iii)

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

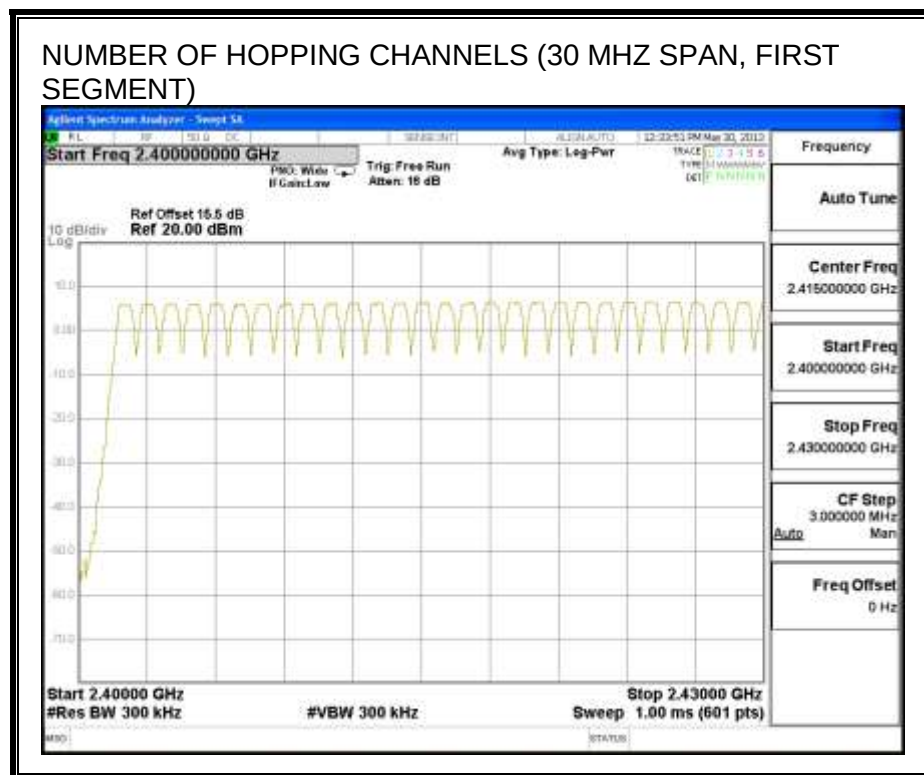
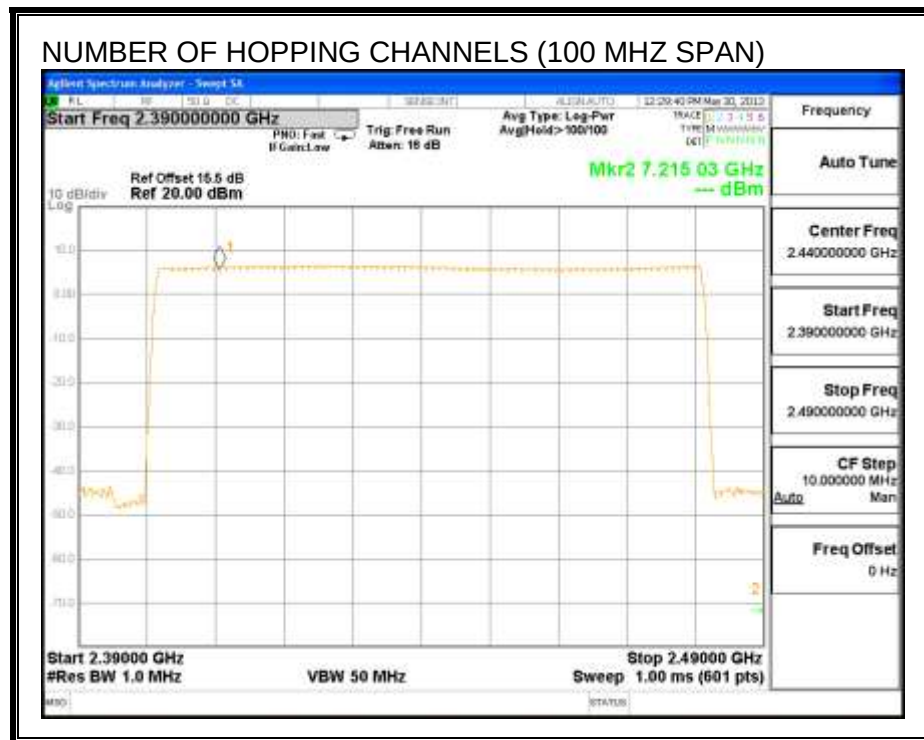
#### **TEST PROCEDURE**

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.

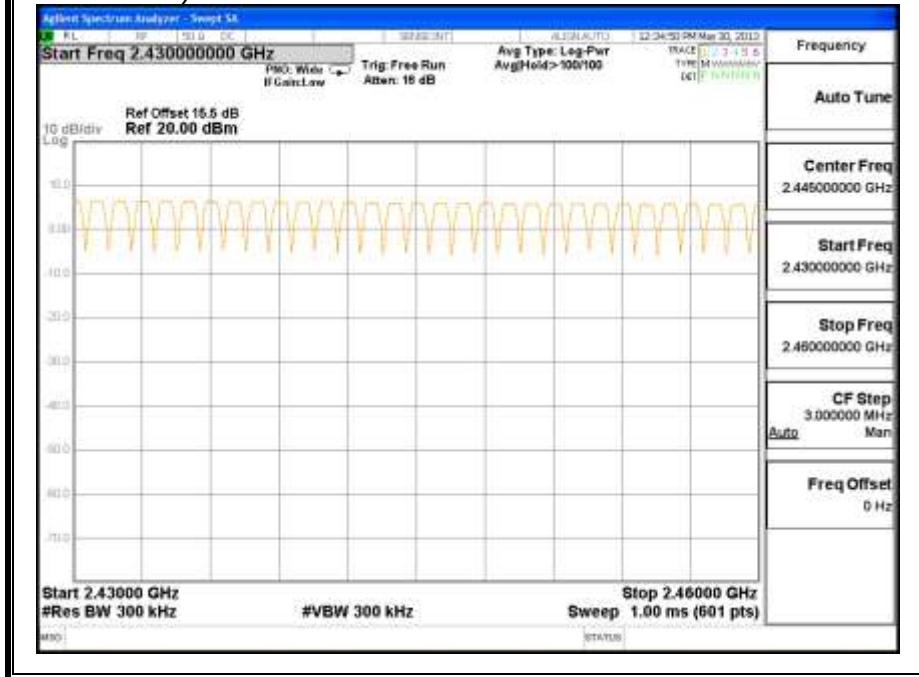
#### **RESULTS**

Normal Mode: 79 Channels observed.  
AFH Mode: 20 Channels declared.

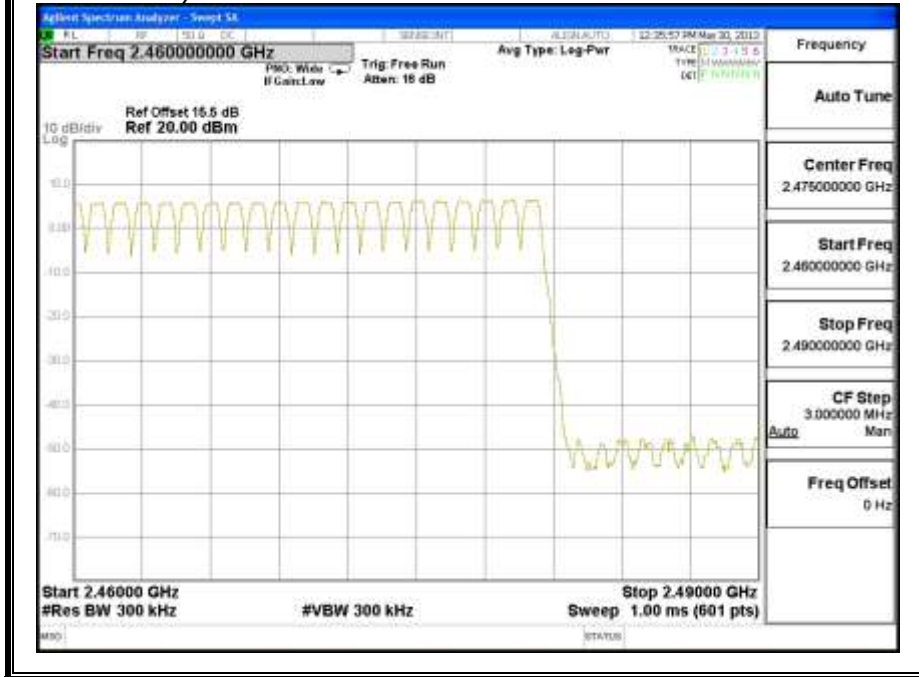
### NUMBER OF HOPPING CHANNELS



### NUMBER OF HOPPING CHANNELS (30 MHz SPAN, SECOND SEGMENT)



### NUMBER OF HOPPING CHANNELS (30 MHz SPAN, THIRD SEGMENT)



## 7.2.4. AVERAGE TIME OF OCCUPANCY

### LIMIT

FCC §15.247 (a) (1) (iii)

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.

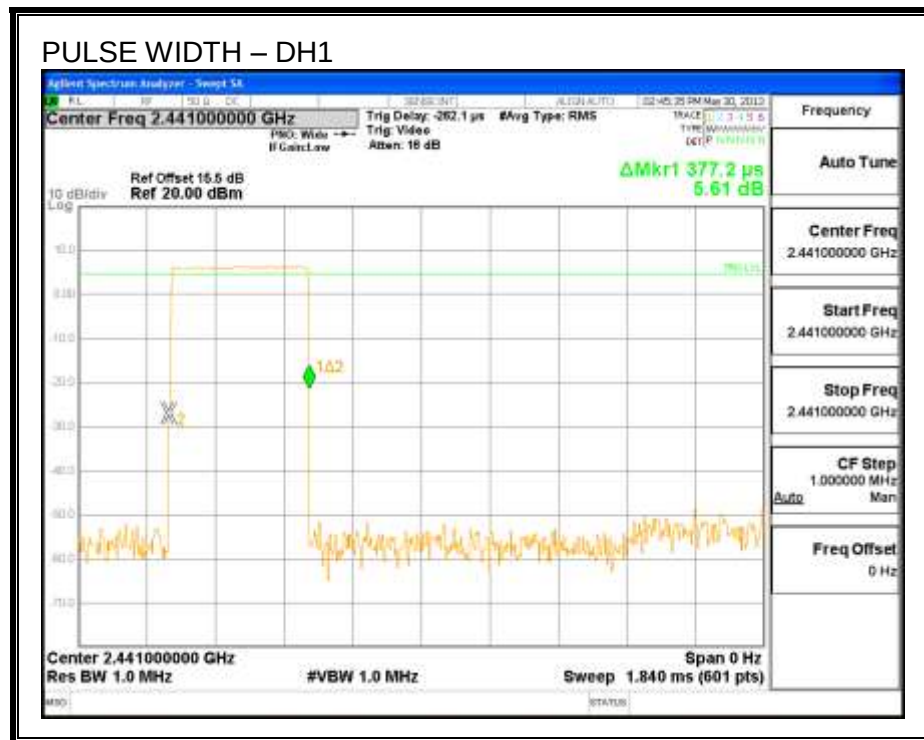
The average time of occupancy in the specified 31.6 second period (79 channels \* 0.4 s) is equal to  $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$ .

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

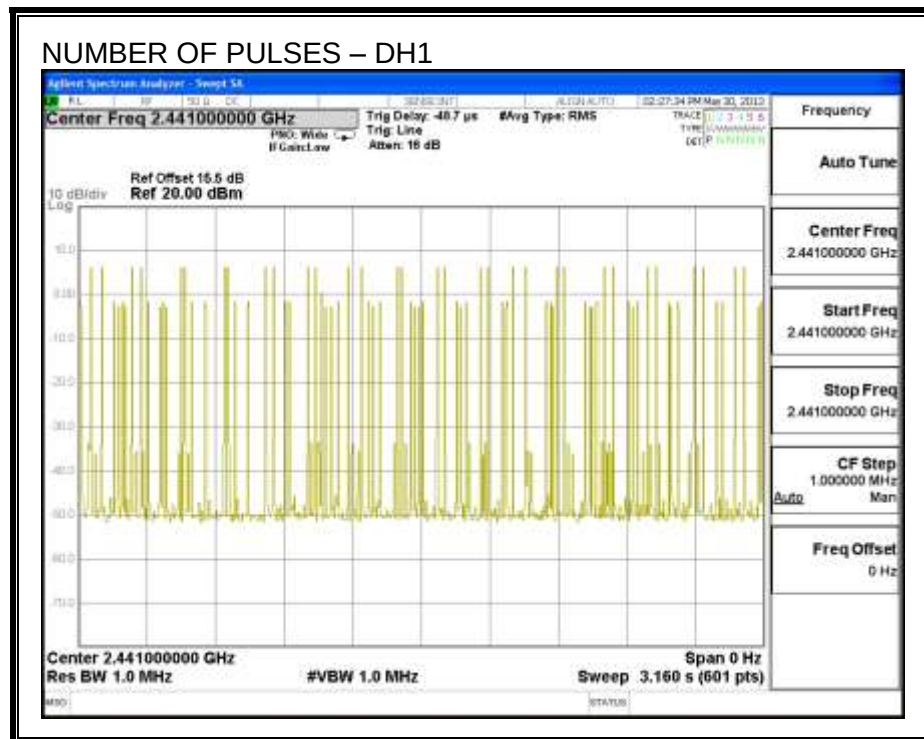
### RESULTS

| DH Packet        | Pulse Width (msec) | Number of Pulses in 3.16 seconds | Average Time of Occupancy (sec) | Limit (sec) | Margin (sec) |
|------------------|--------------------|----------------------------------|---------------------------------|-------------|--------------|
| GFSK Normal Mode |                    |                                  |                                 |             |              |
| DH1              | 0.377              | 46                               | 0.174                           | 0.4         | -0.226       |
| DH3              | 1.653              | 23                               | 0.380                           | 0.4         | -0.020       |
| DH5              | 2.860              | 12                               | 0.343                           | 0.4         | -0.057       |

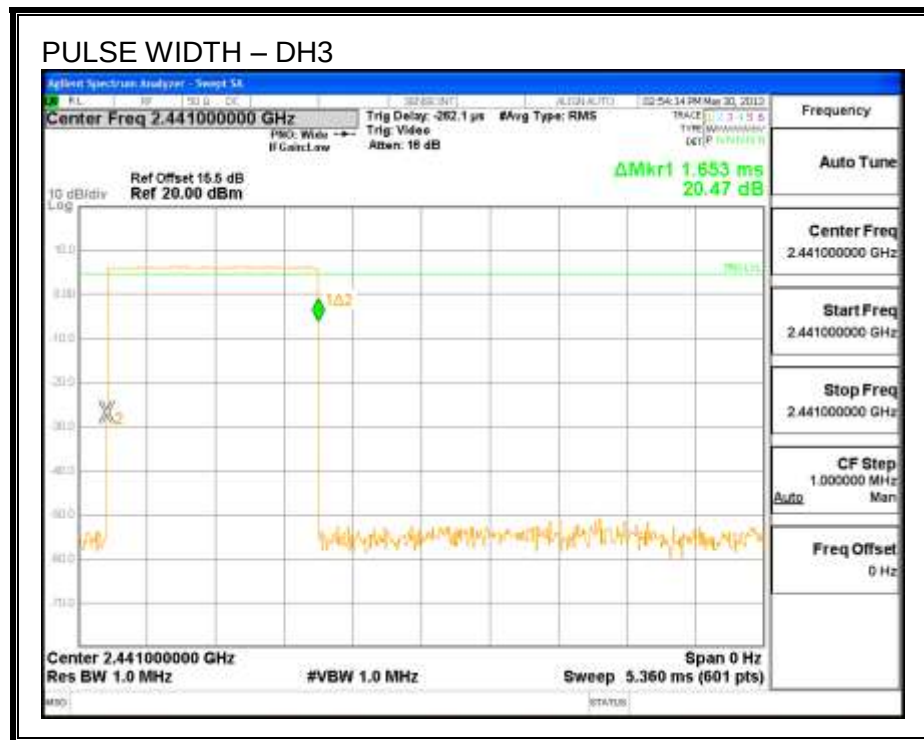
**PULSE WIDTH - DH1**



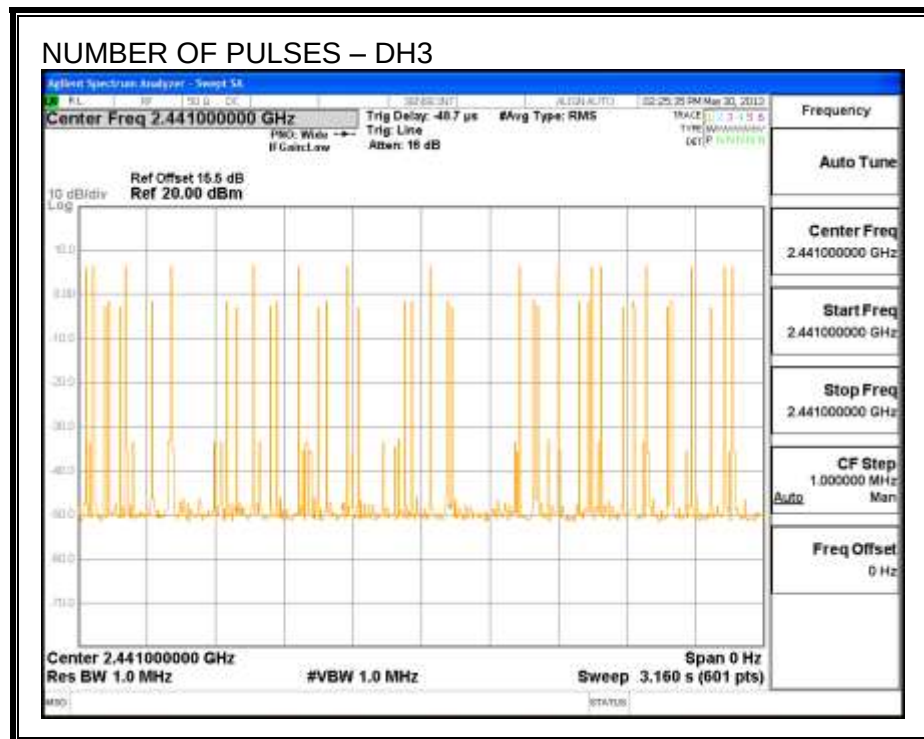
**NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1**



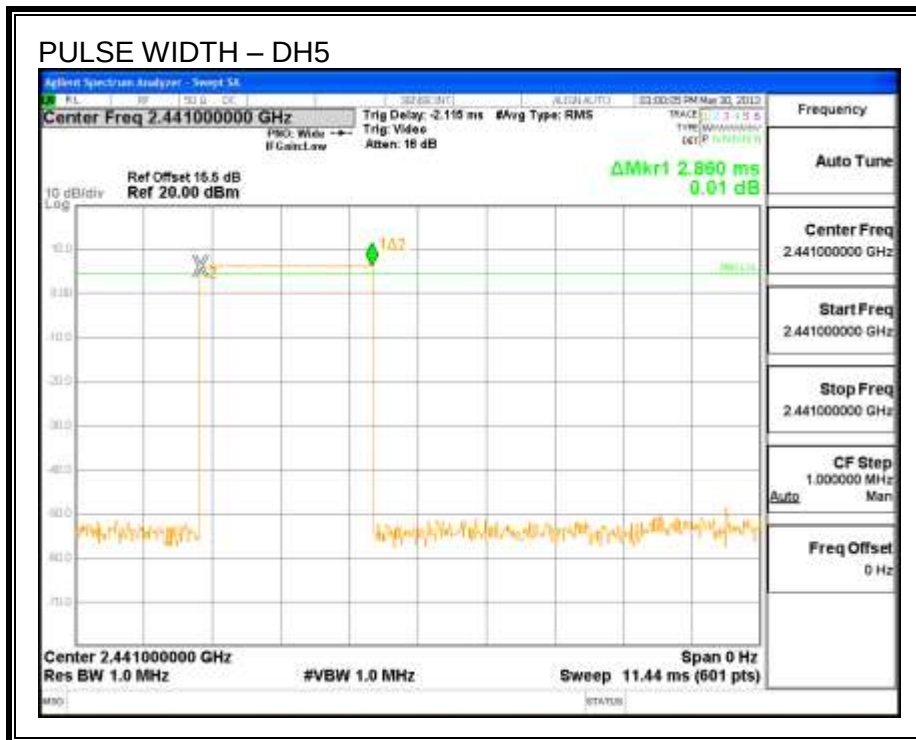
**PULSE WIDTH – DH3**



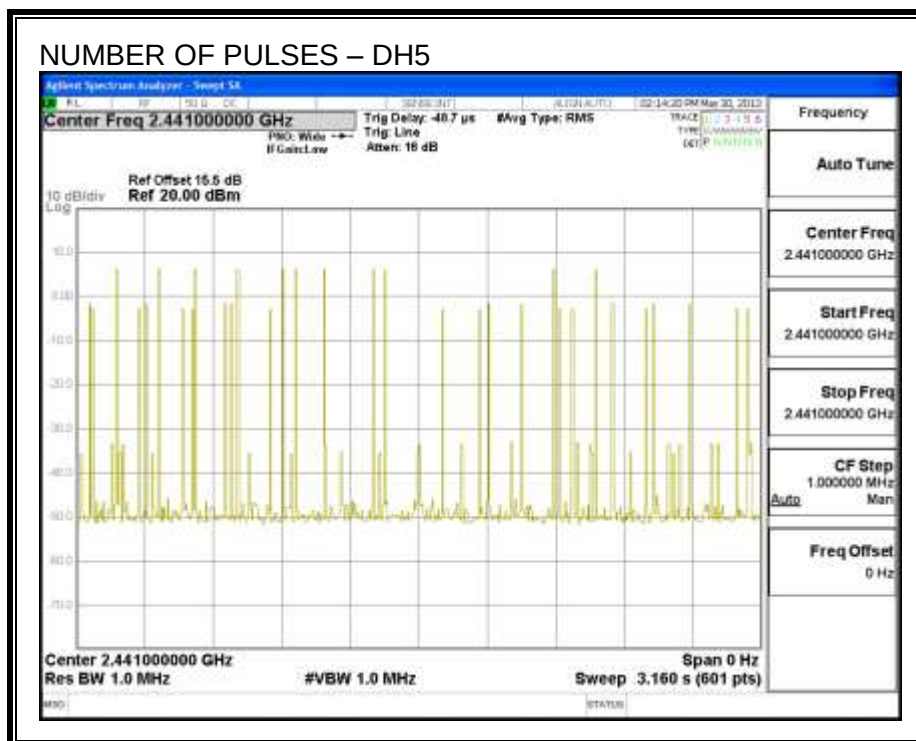
**NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3**



**PULSE WIDTH – DH5**



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



## 7.2.5. 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 10.68 dB (including 10 dB pad and 0.68 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 6.30                   |
| Middle  | 2441               | 5.60                   |
| High    | 2480               | 6.30                   |

## 7.2.6. OUTPUT POWER

### LIMIT

§15.247 (b) (1)

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

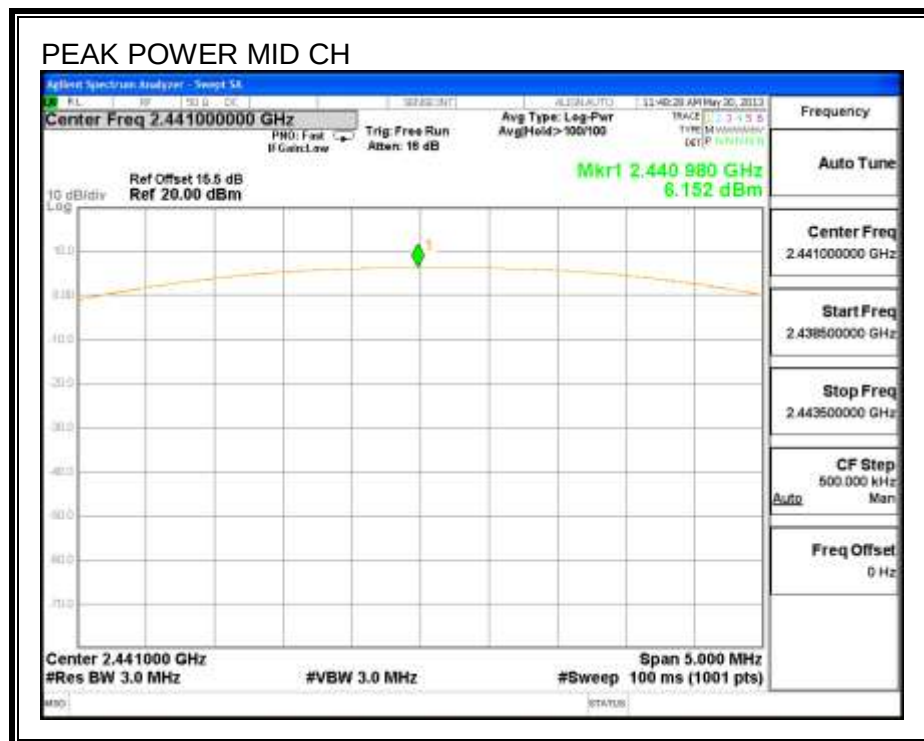
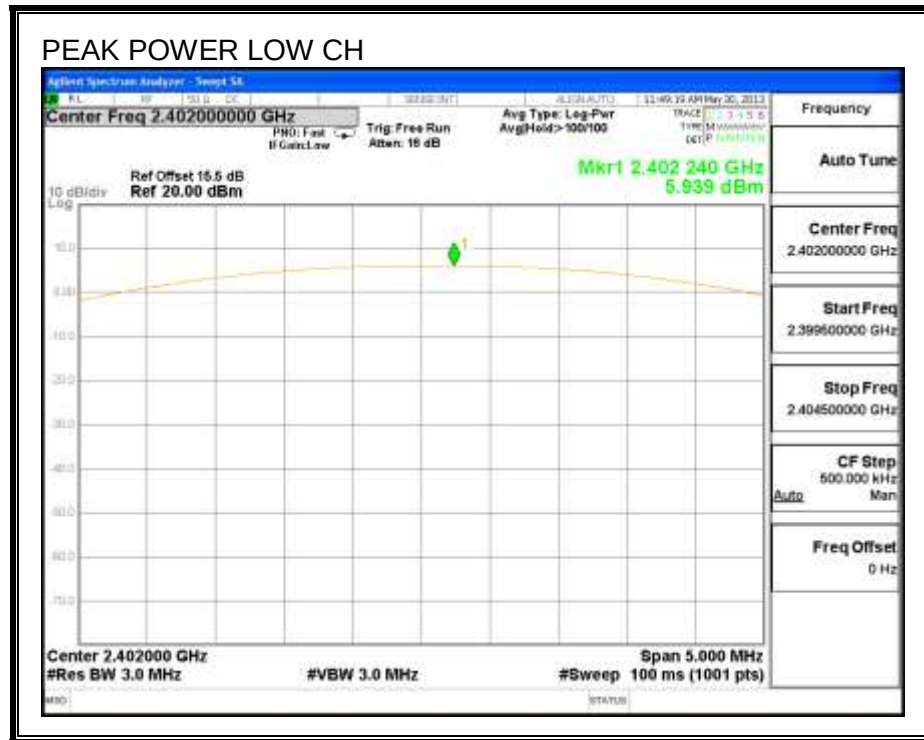
### TEST PROCEDURE

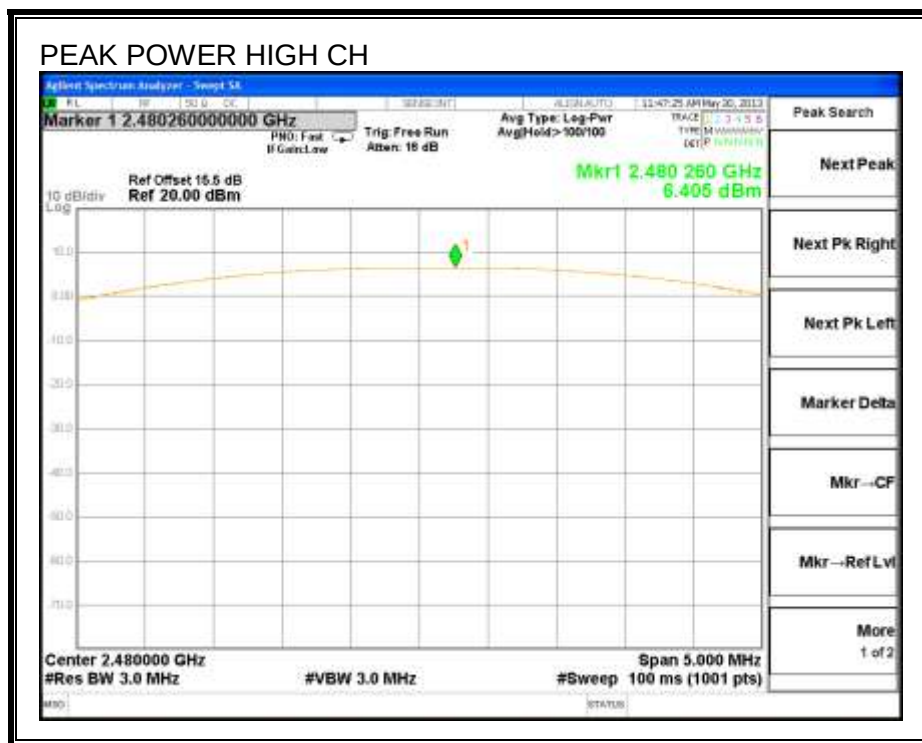
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

### RESULTS

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 5.94                  | 30             | -24.06         |
| Middle  | 2441               | 6.15                  | 30             | -23.85         |
| High    | 2480               | 6.41                  | 30             | -23.60         |

**OUTPUT POWER**





## **7.2.7. CONDUCTED SPURIOUS EMISSIONS**

### **LIMITS**

FCC §15.247 (d)

Limit = -20 dBc

### **TEST PROCEDURE**

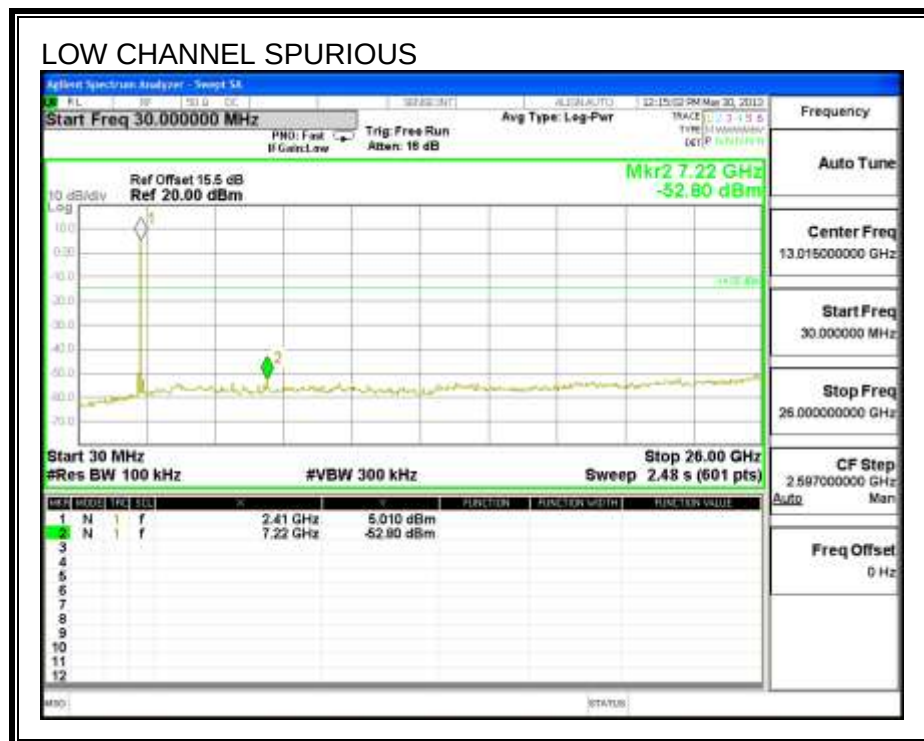
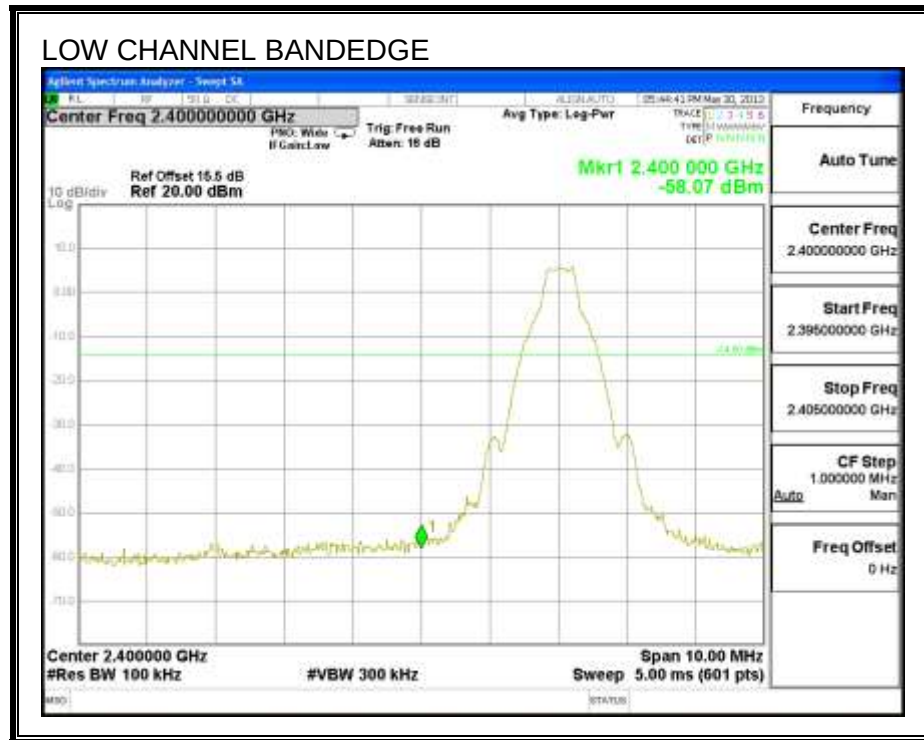
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

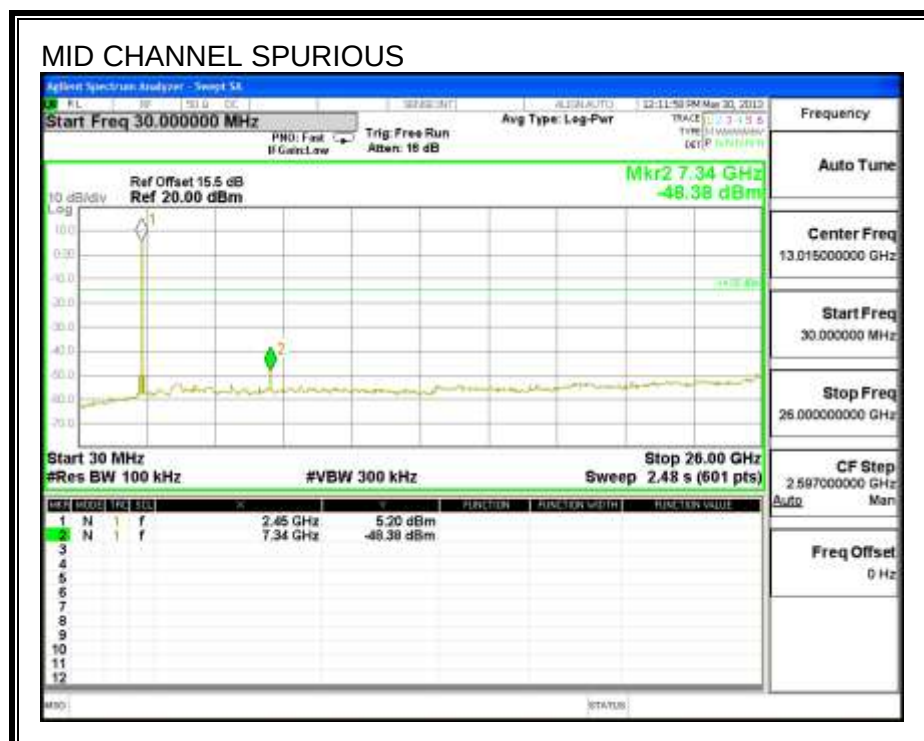
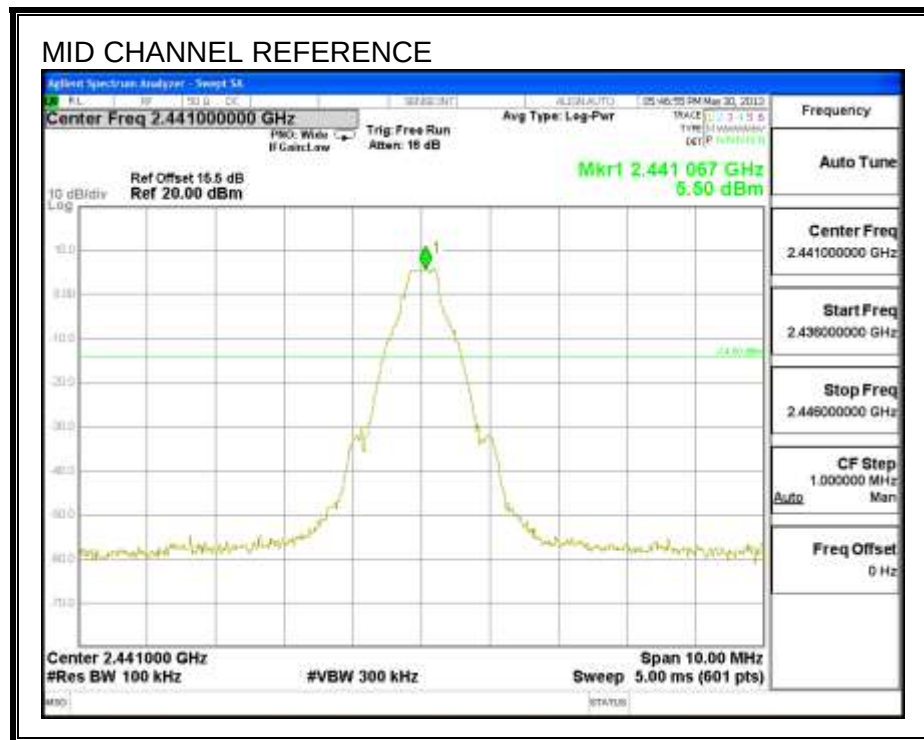
The band edges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

### **RESULTS**

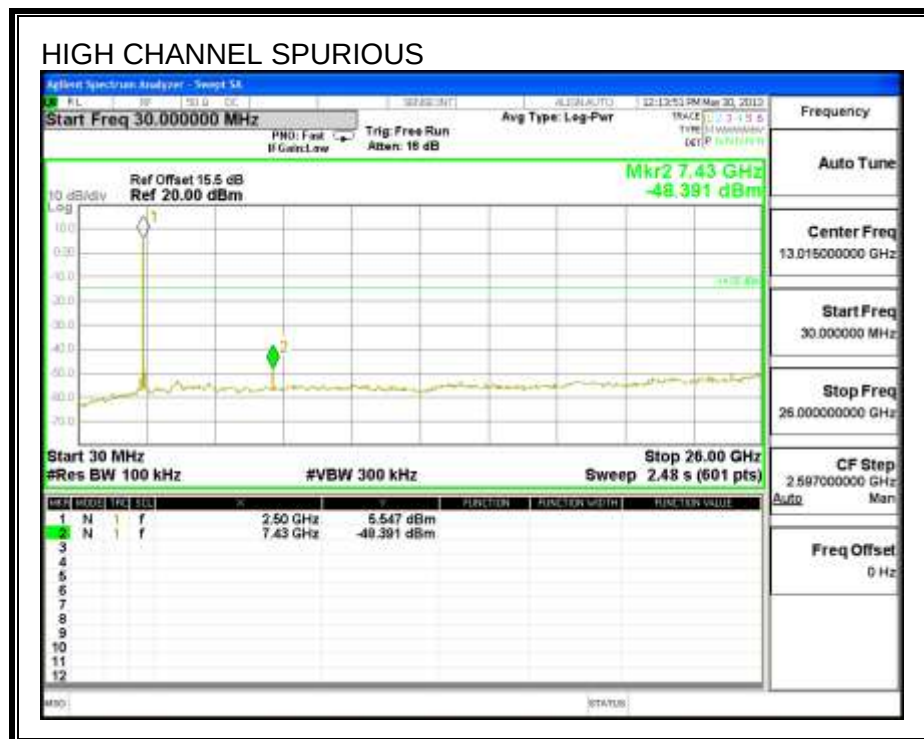
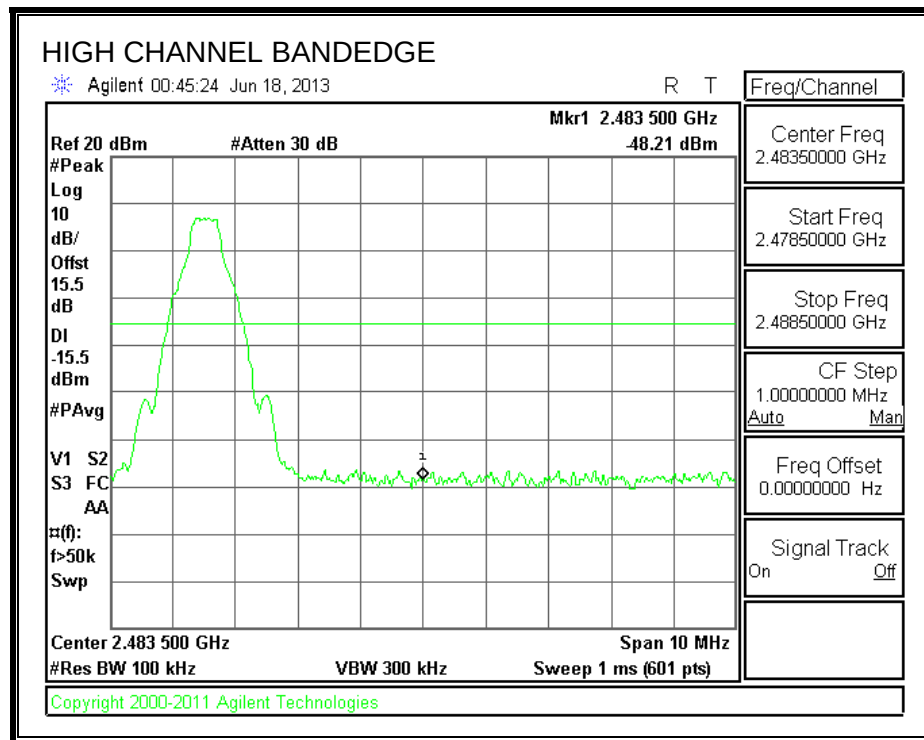
**SPURIOUS EMISSIONS, LOW CHANNEL**



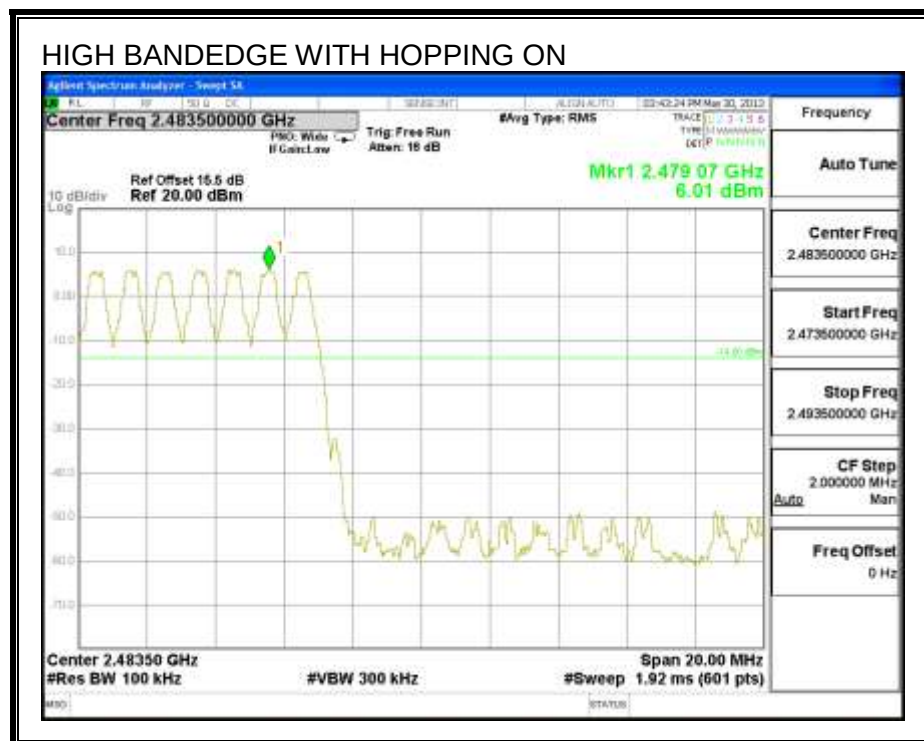
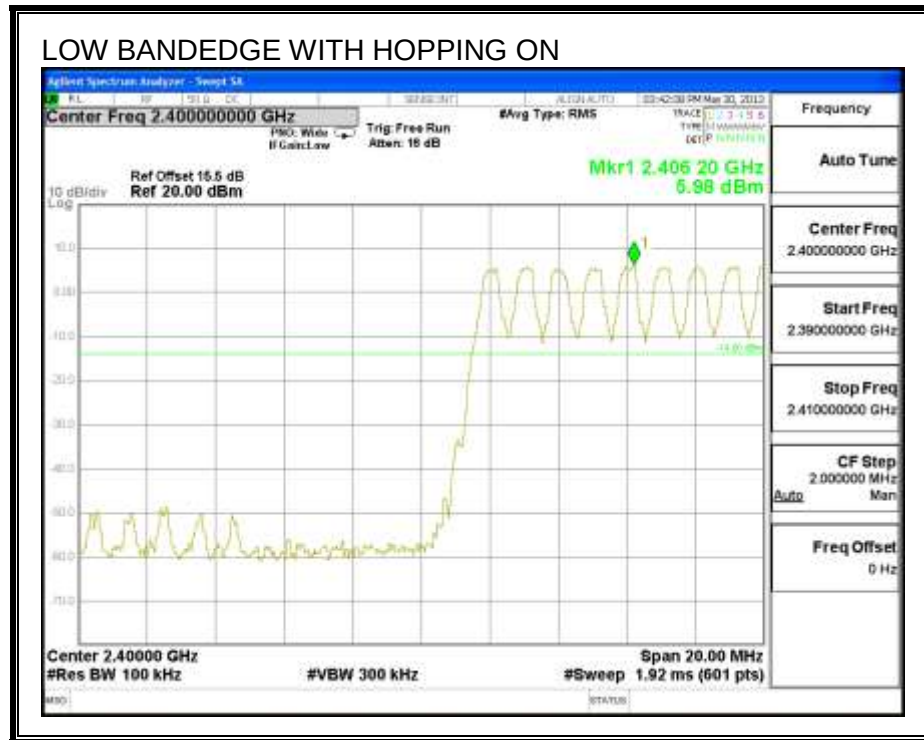
# SPURIOUS EMISSIONS, MID CHANNEL



# **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.

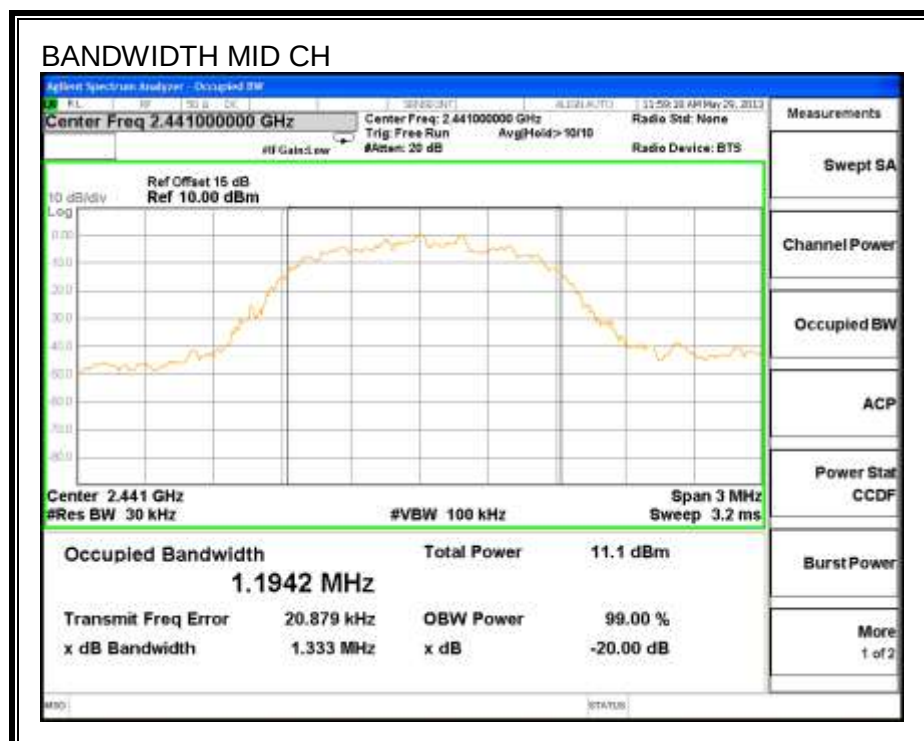
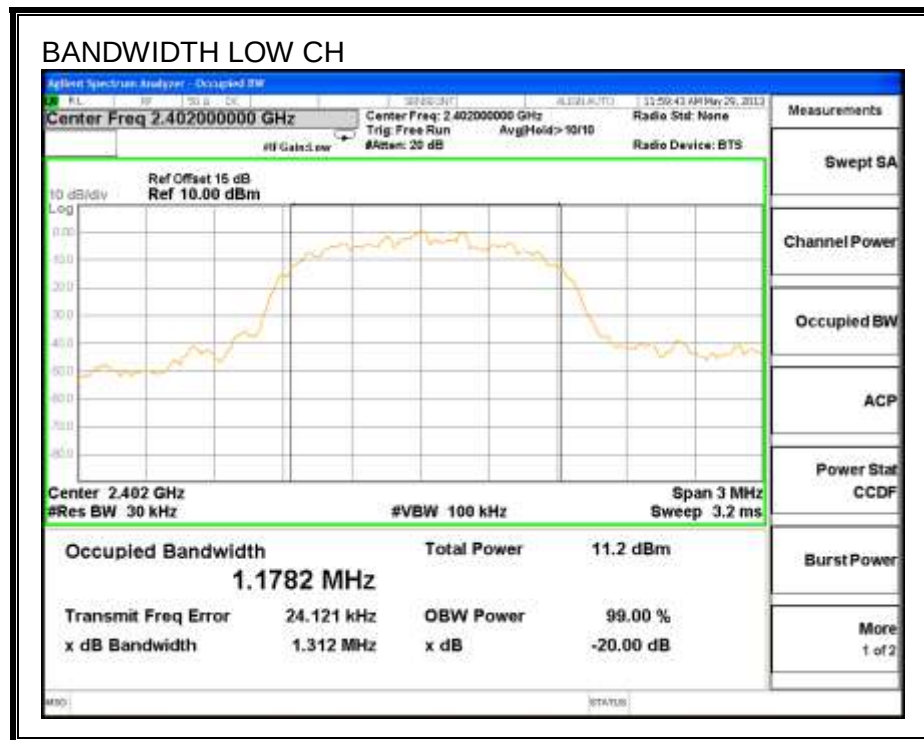
##### TEST PROCEDURE

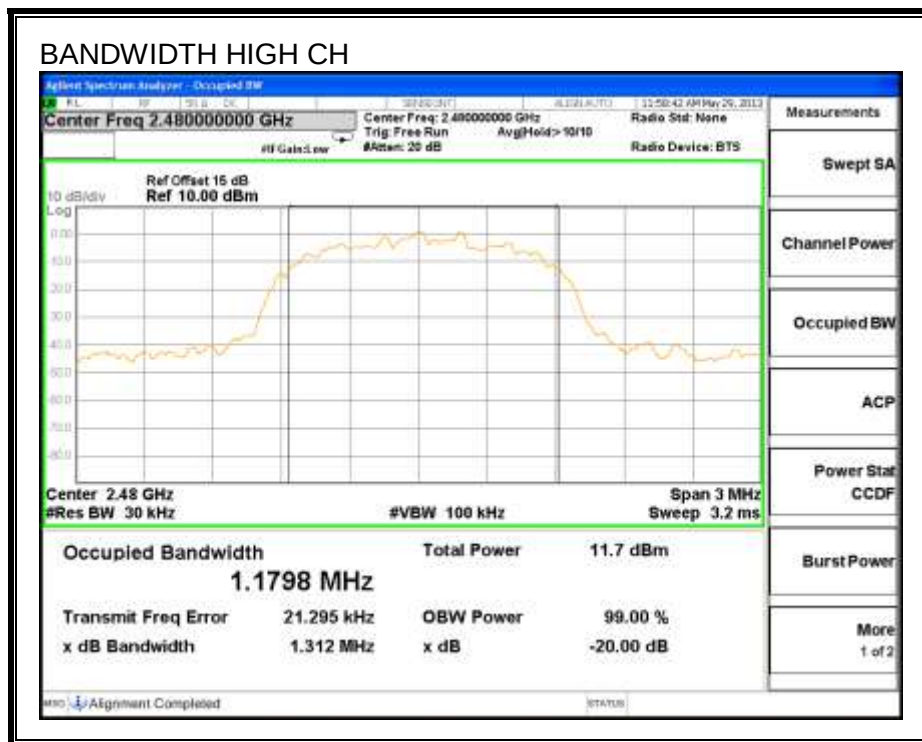
The transmitter output is connected to a spectrum analyzer. The RBW is set to  $\geq 1\%$  of the 20 dB bandwidth. The VBW is set to  $\geq$  RBW. The sweep time is coupled.

##### RESULTS

| Channel | Frequency<br>(MHz) | 20 dB Bandwidth<br>(kHz) | 99% Bandwidth<br>(kHz) |
|---------|--------------------|--------------------------|------------------------|
| Low     | 2402               | 1312                     | 1178.2                 |
| Middle  | 2441               | 1333                     | 1194.2                 |
| High    | 2480               | 1312                     | 1179.8                 |

**20 dB AND 99% BANDWIDTH**





### **7.3.2. HOPPING FREQUENCY SEPARATION**

#### **LIMIT**

FCC §15.247 (a) (1)

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

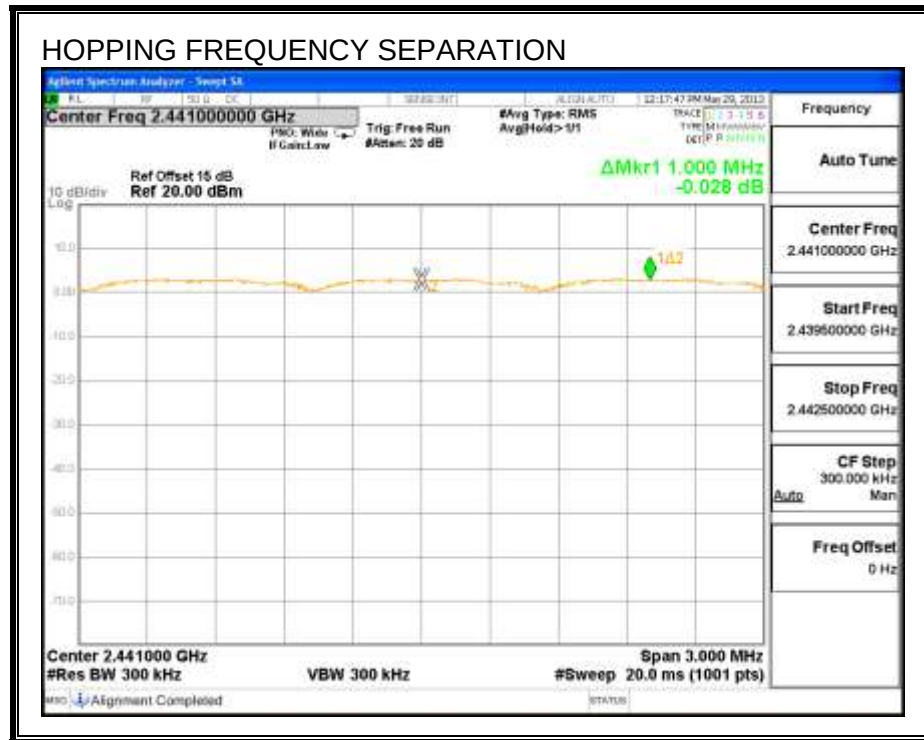
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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

#### **TEST PROCEDURE**

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 100 kHz. The sweep time is coupled.

#### **RESULTS**

### HOPPING FREQUENCY SEPARATION



### **7.3.3. NUMBER OF HOPPING CHANNELS**

#### **LIMIT**

FCC §15.247 (a) (1) (iii)

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

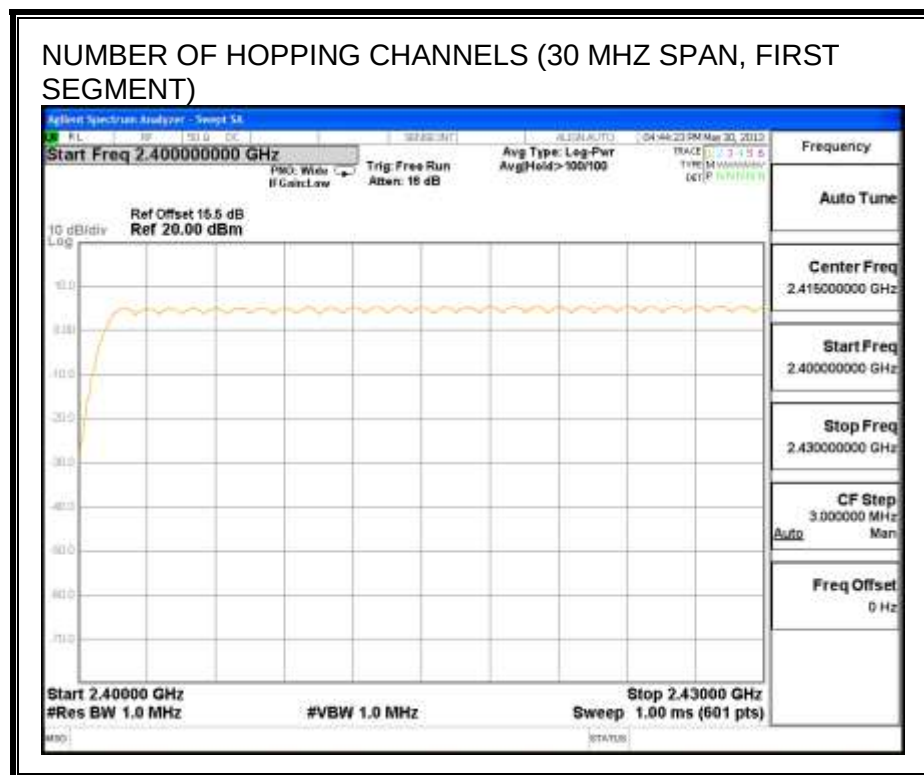
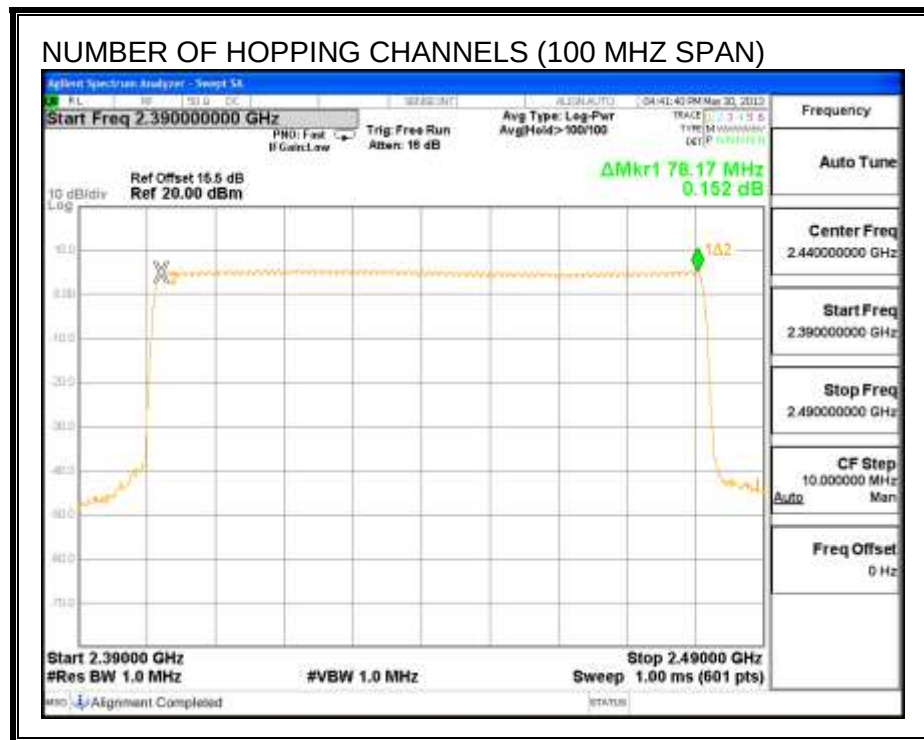
#### **TEST PROCEDURE**

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.

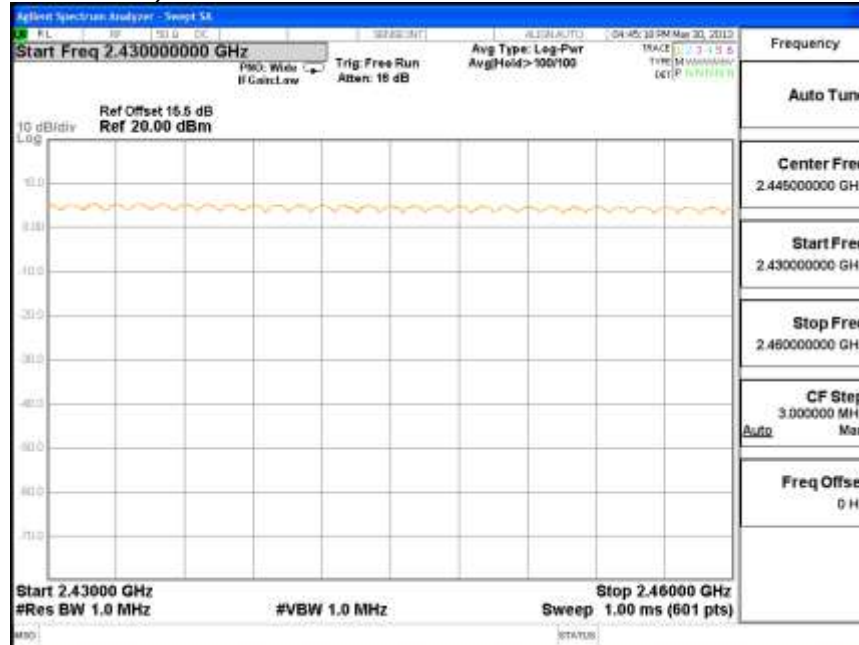
#### **RESULTS**

Normal Mode: 79 Channels observed.  
AFH Mode: 20 Channels declared.

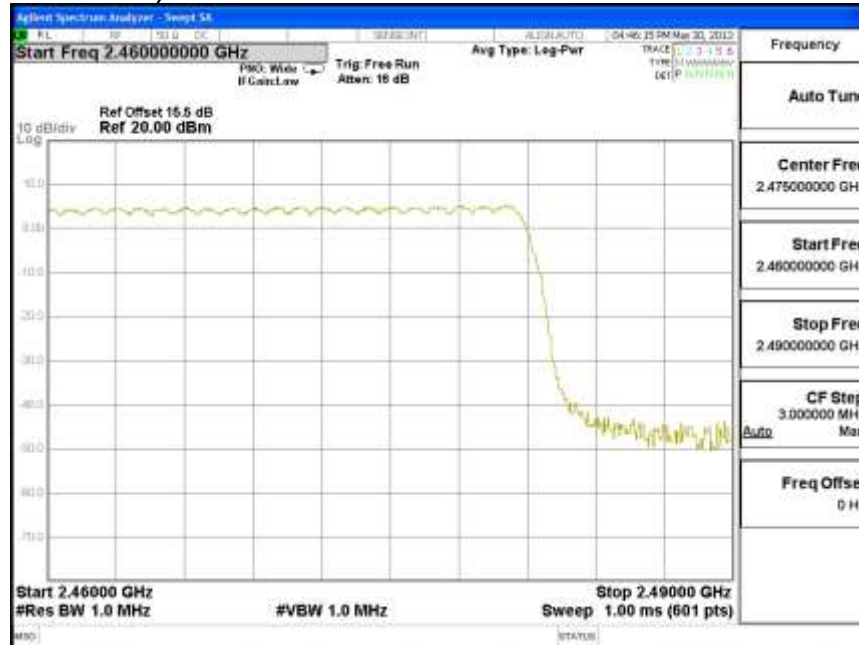
### NUMBER OF HOPPING CHANNELS



# NUMBER OF HOPPING CHANNELS (30 MHz SPAN, SECOND SEGMENT)



# NUMBER OF HOPPING CHANNELS (30 MHz SPAN, THIRD SEGMENT)



### 7.3.4. AVERAGE TIME OF OCCUPANCY

#### LIMIT

FCC §15.247 (a) (1) (iii)

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  $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$ .

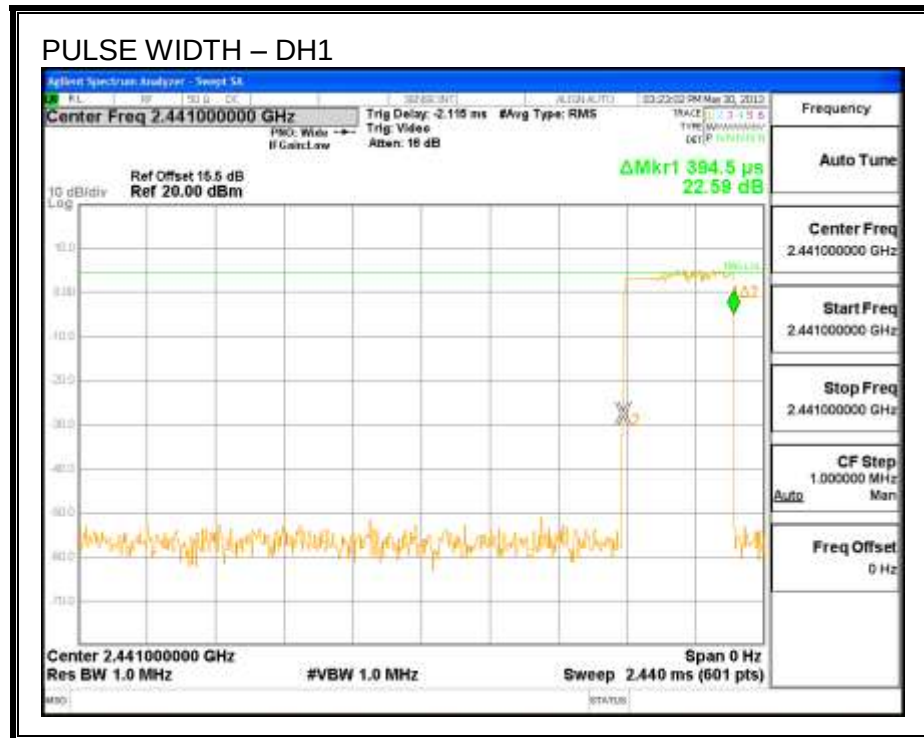
#### RESULTS

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

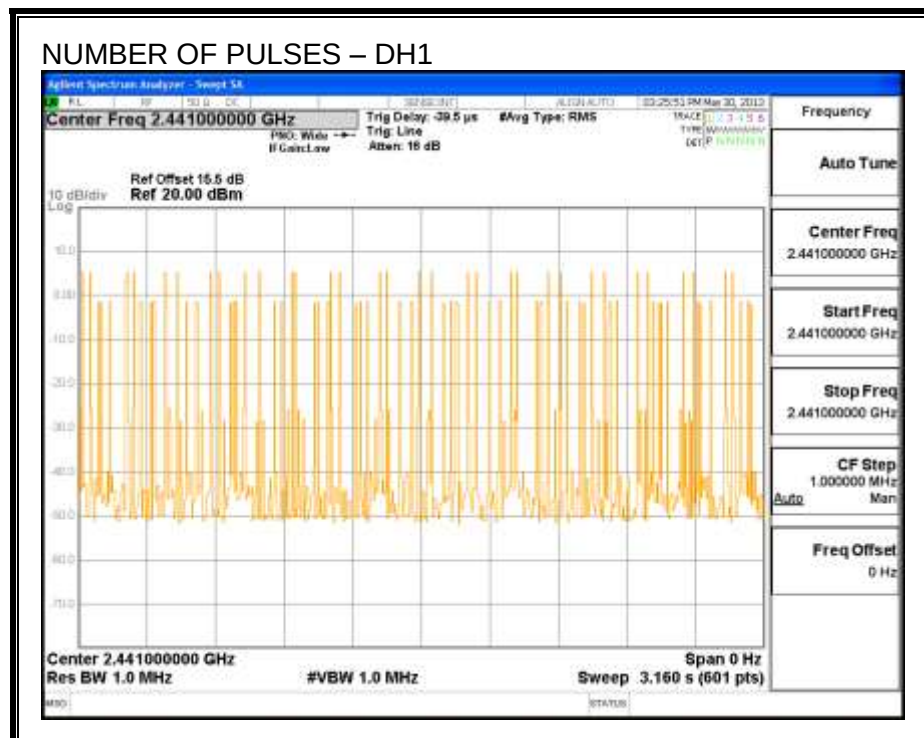
#### 8PSK (EDR) Mode

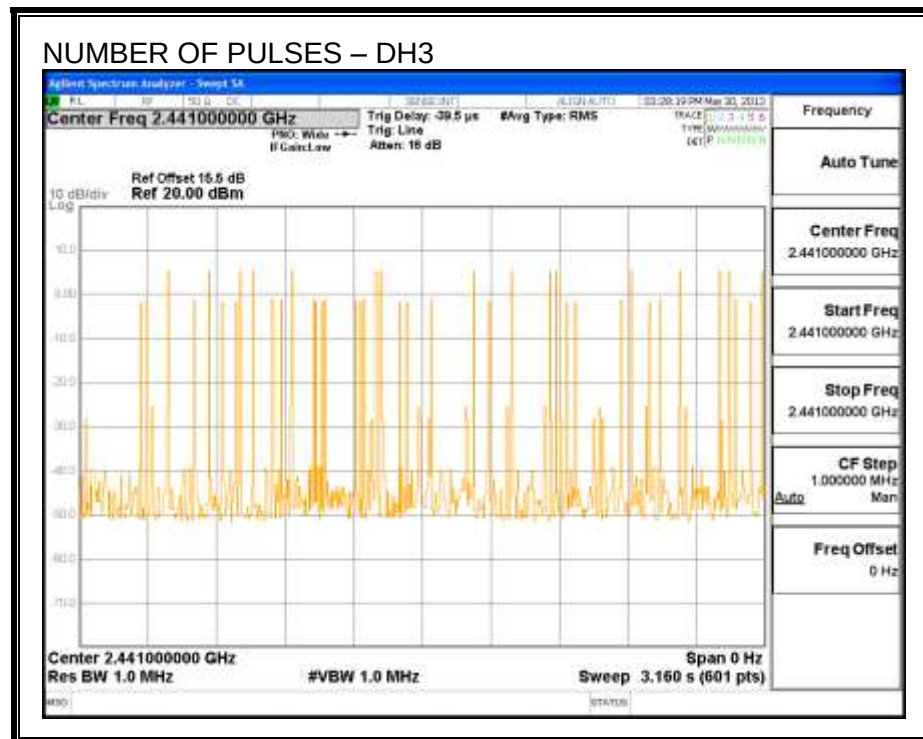
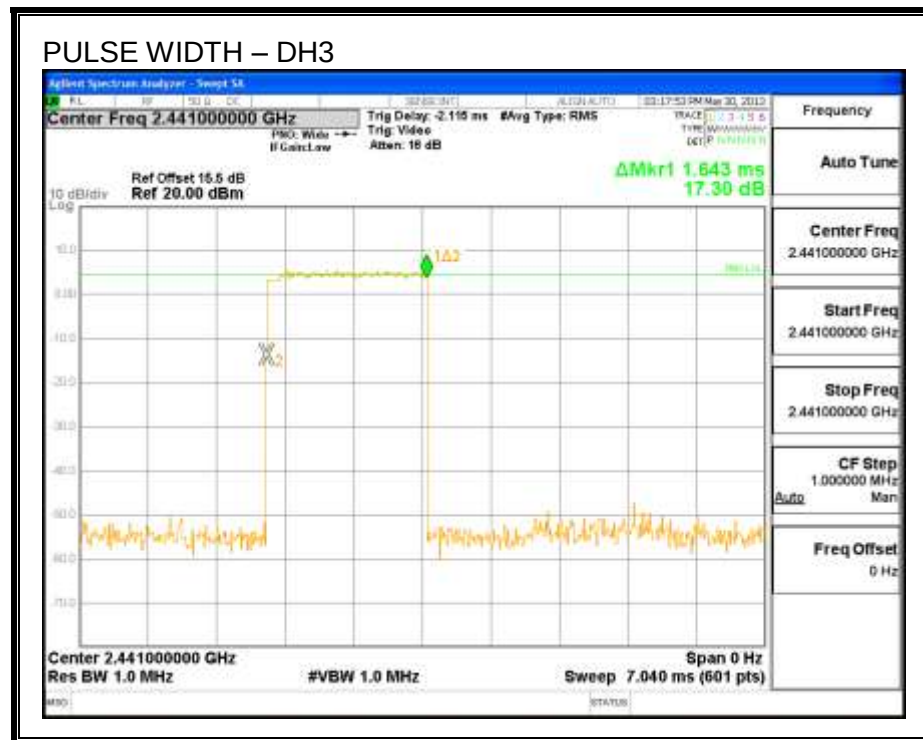
| DH Packet | Pulse Width (msec) | Number of Pulses in 3.16 seconds | Average Time of (sec) | Limit (sec) | Margin (sec) |
|-----------|--------------------|----------------------------------|-----------------------|-------------|--------------|
| DH1       | 0.395              | 41                               | 0.162                 | 0.4         | -0.238       |
| DH3       | 1.643              | 24                               | 0.394                 | 0.4         | -0.006       |
| DH5       | 2.898              | 12                               | 0.348                 | 0.4         | -0.052       |

**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 22 demonstrates compliance with channel occupancy when AFH is employed

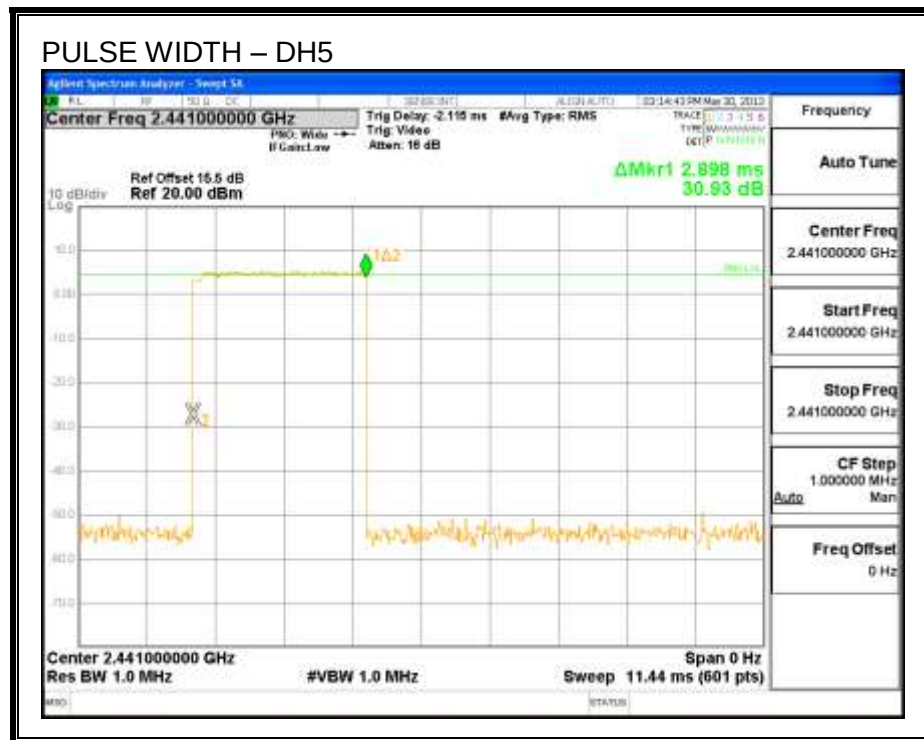


**NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1**

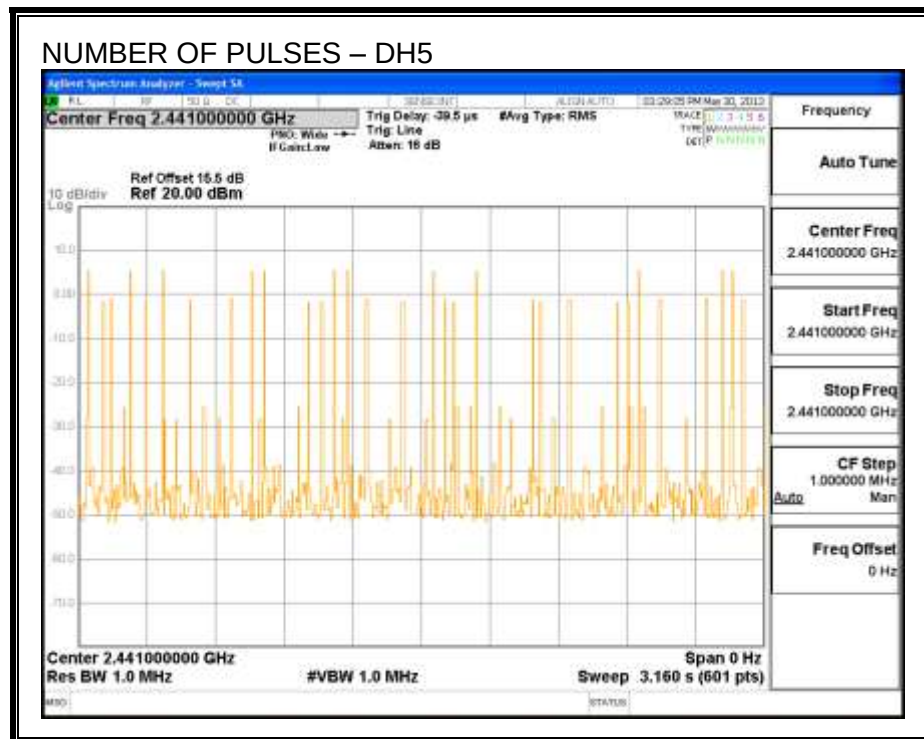




**PULSE WIDTH – DH5**



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



### 7.3.5. 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 10.68 dB (including 10 dB pad and 0.68 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 3.20                   |
| Middle  | 2441               | 2.40                   |
| High    | 2480               | 3.00                   |

### 7.3.6. OUTPUT POWER

#### LIMIT

§15.247 (b) (1)

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

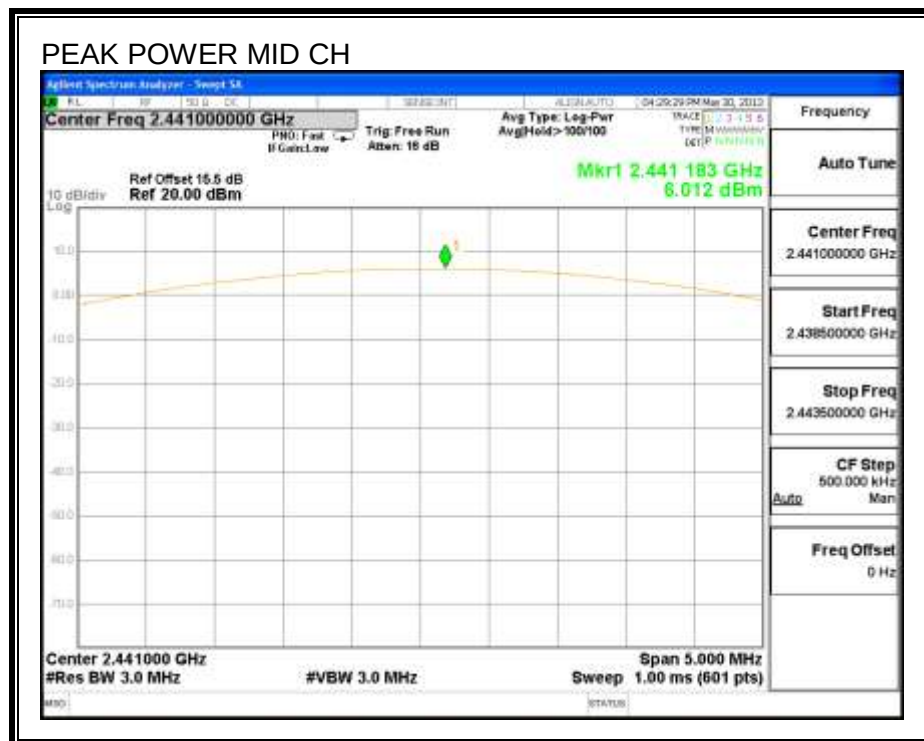
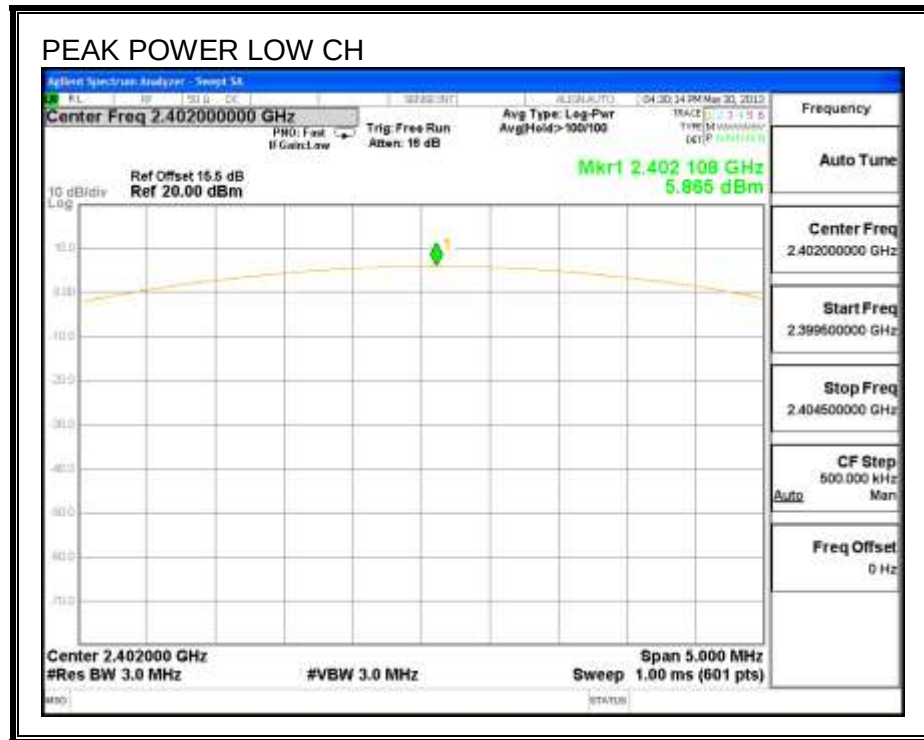
#### TEST PROCEDURE

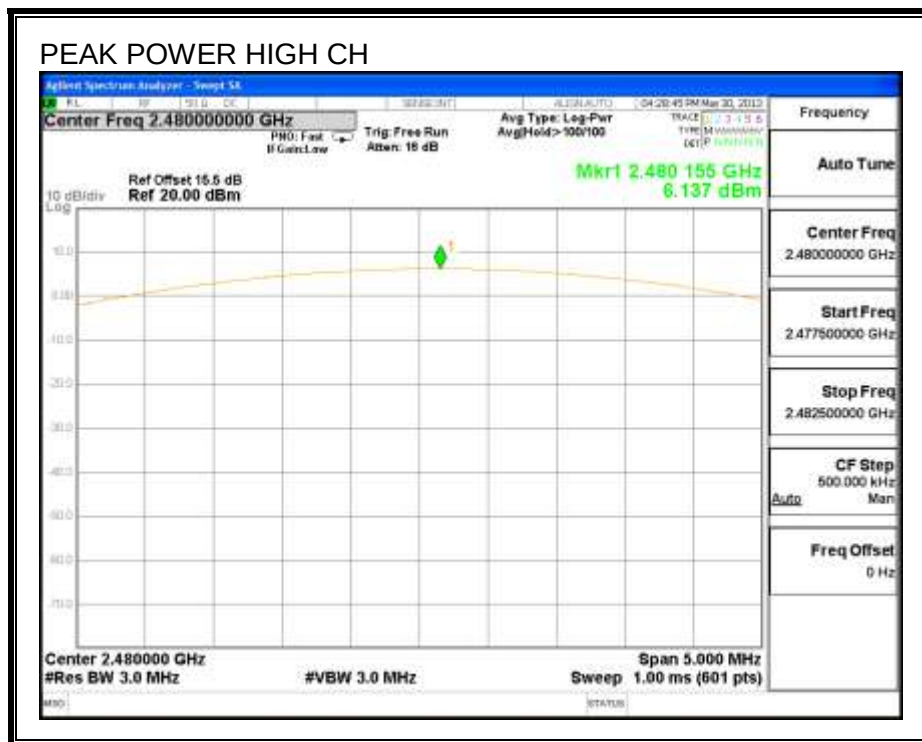
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

#### RESULTS

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 5.87                  | 30             | -24.14         |
| Middle  | 2441               | 6.01                  | 30             | -23.99         |
| High    | 2480               | 6.14                  | 30             | -23.86         |

**OUTPUT POWER**





### **7.3.7. CONDUCTED SPURIOUS EMISSIONS**

#### **LIMITS**

FCC §15.247 (d)

Limit = -20 dBc

#### **TEST PROCEDURE**

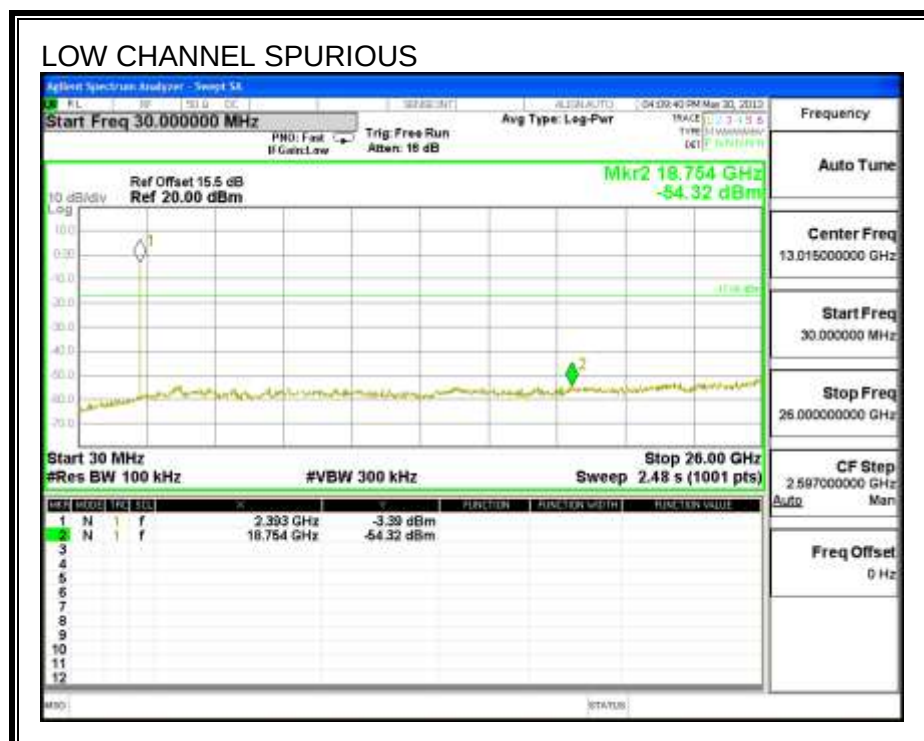
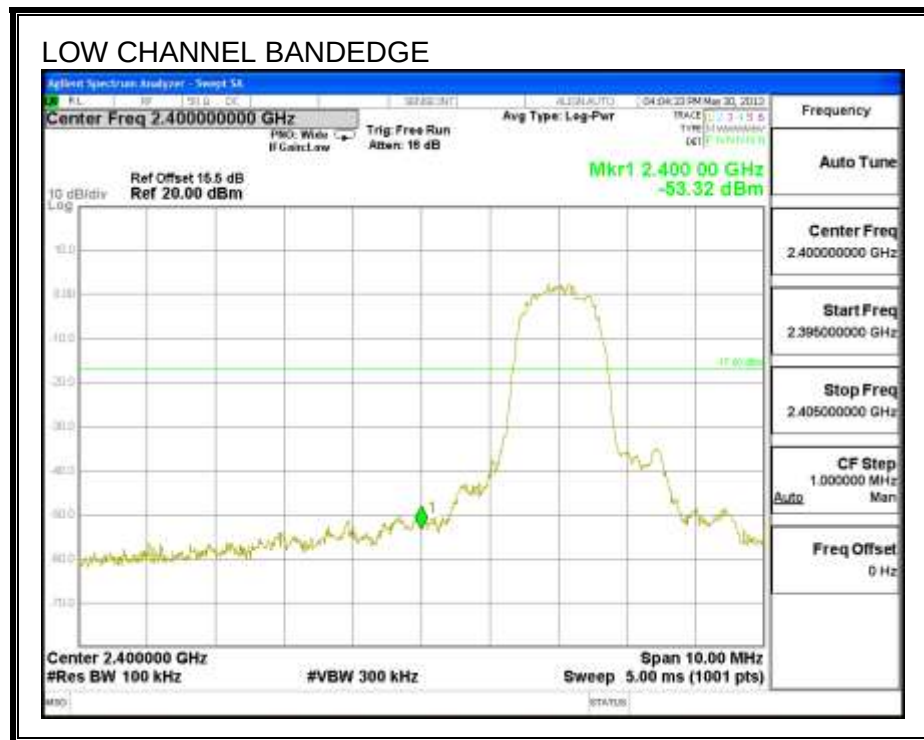
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

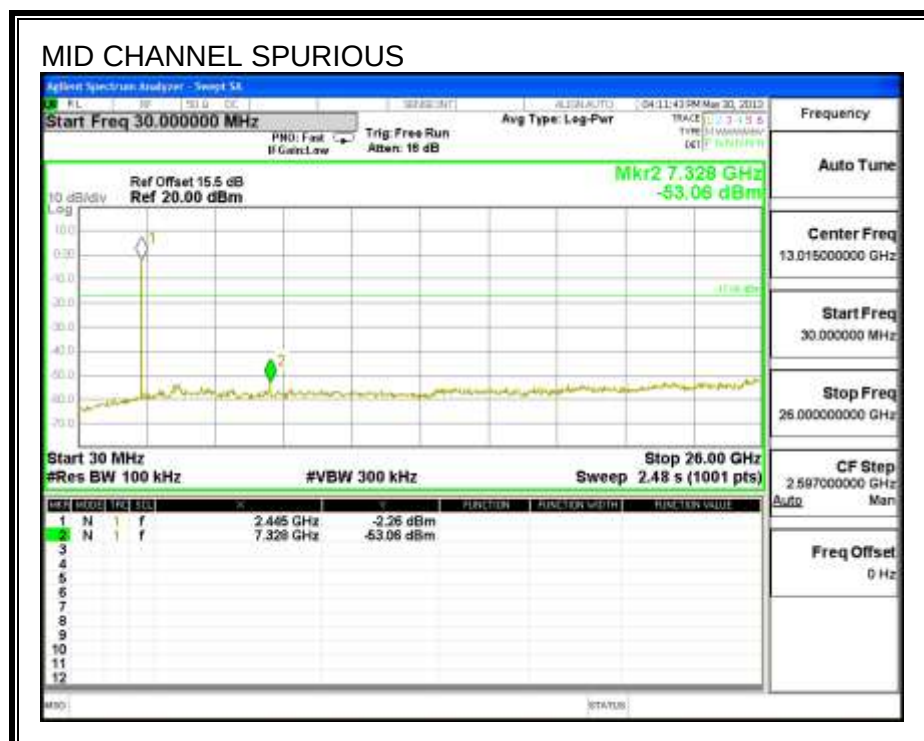
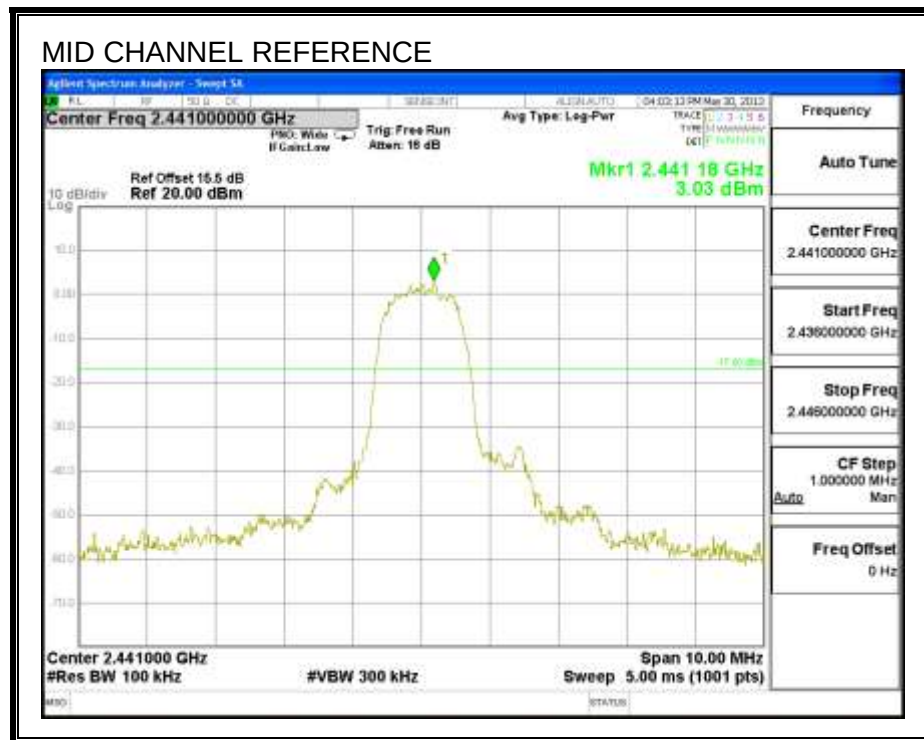
The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

#### **RESULTS**

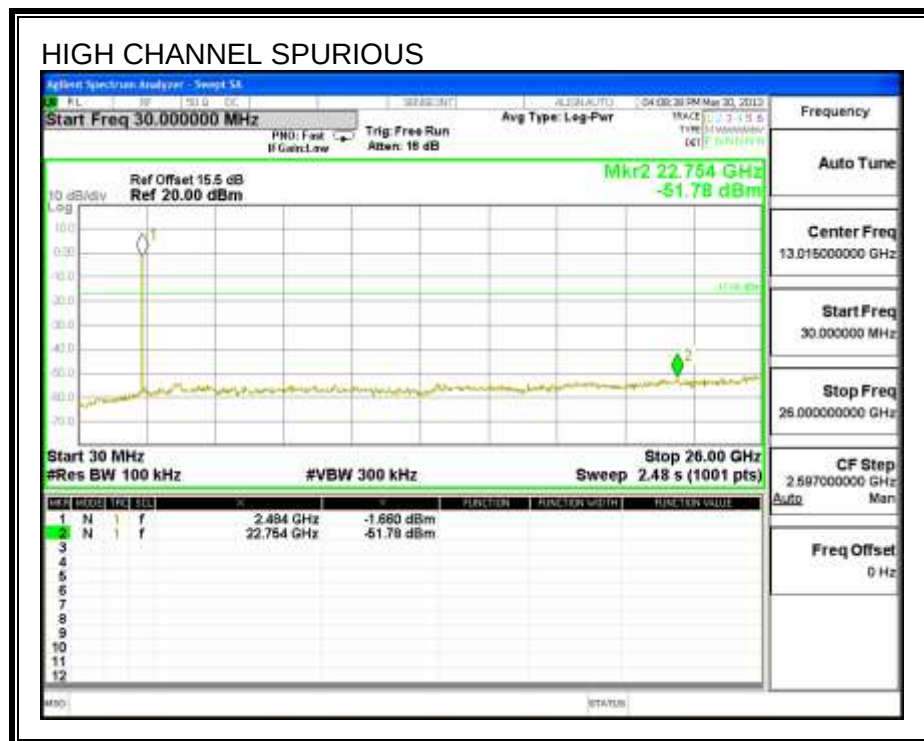
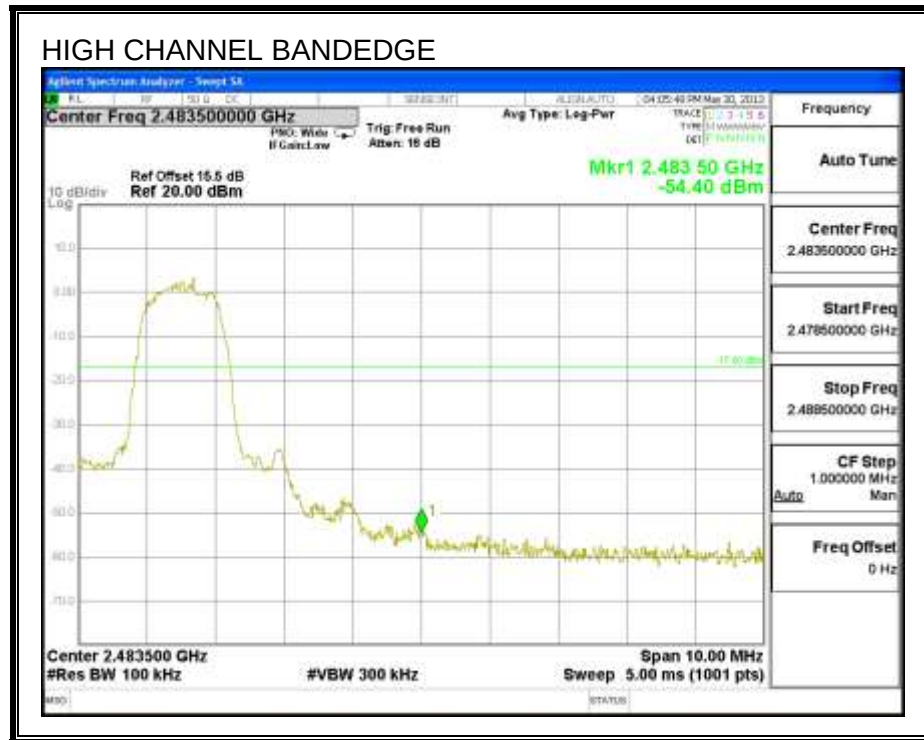
# SPURIOUS EMISSIONS, LOW CHANNEL



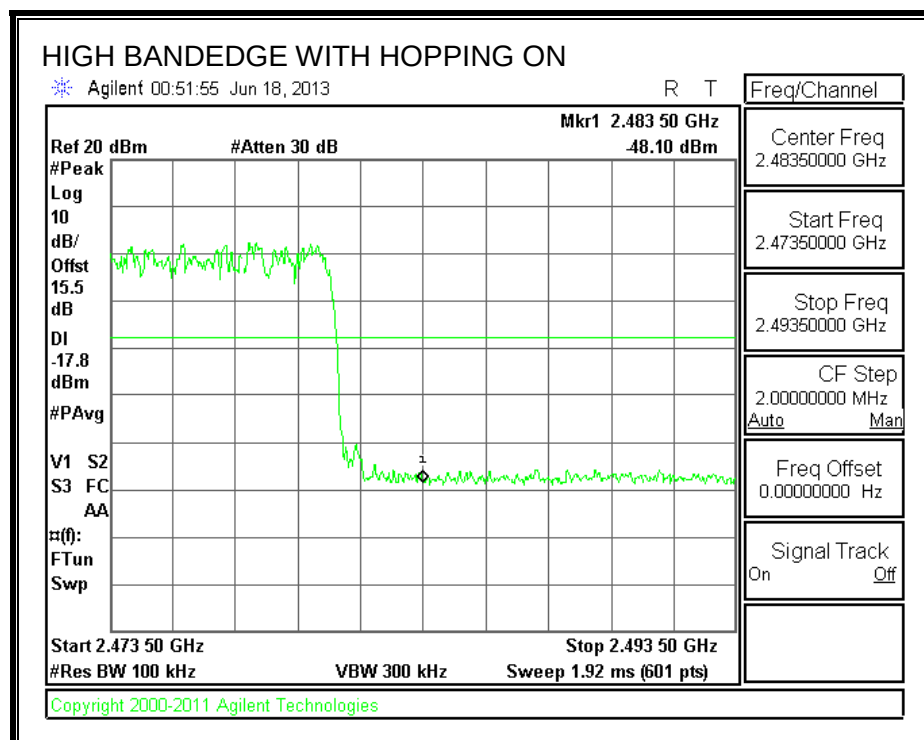
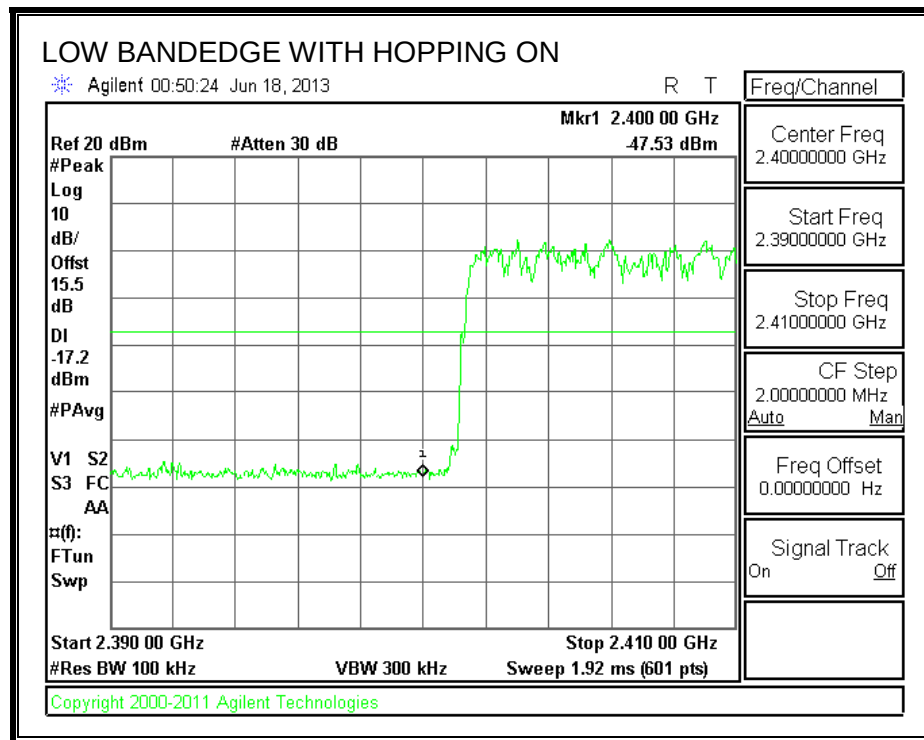
# SPURIOUS EMISSIONS, MID CHANNEL



**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

| 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.

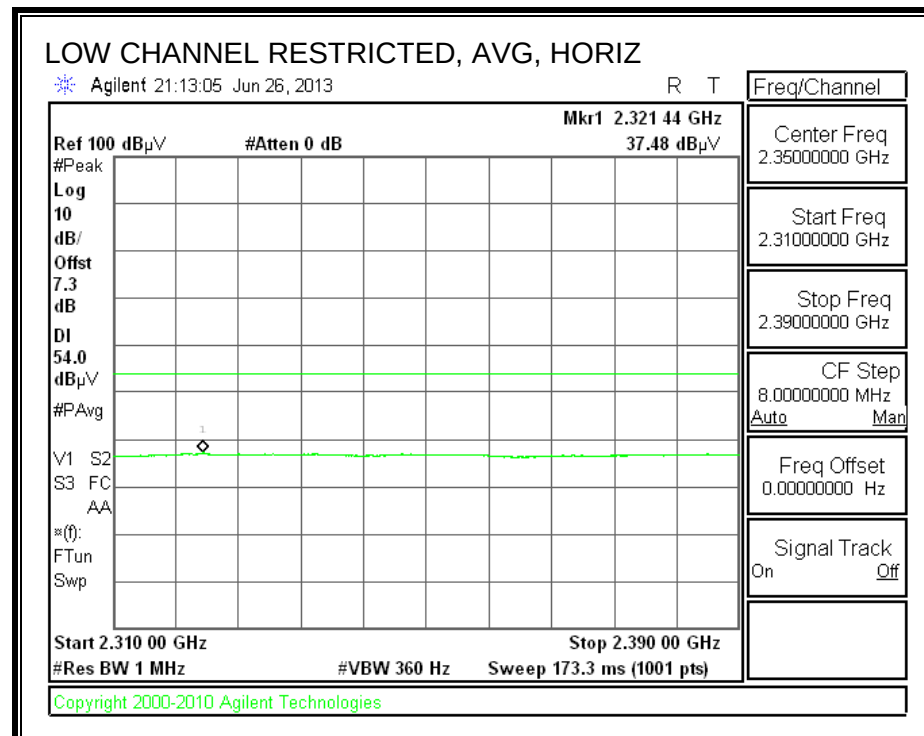
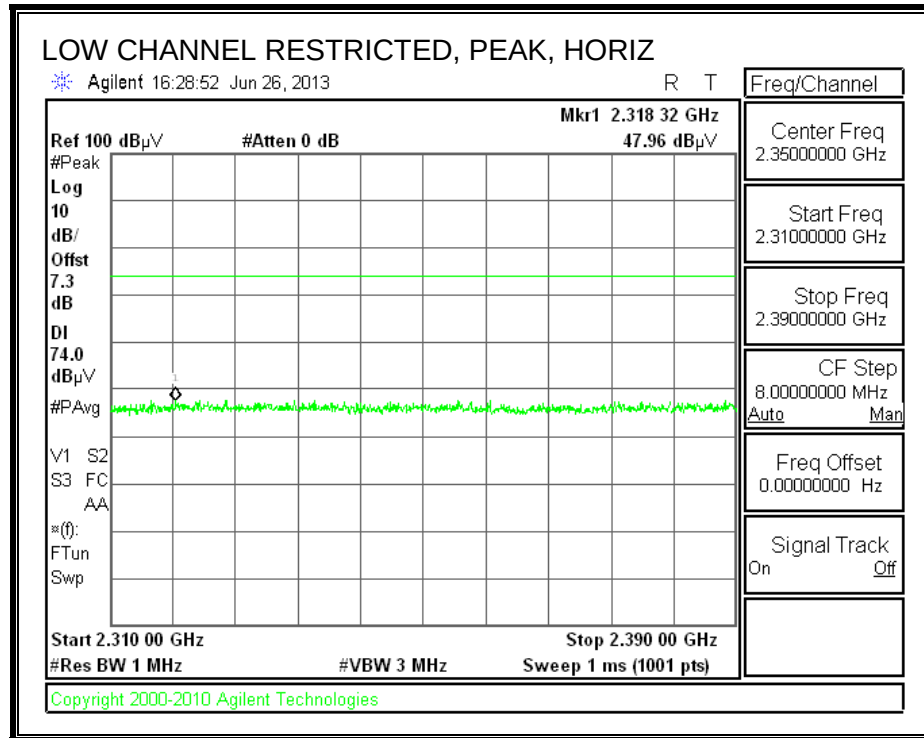
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

Duty cycle factor of  $10 \cdot \log(1/0.77) = 1.14\text{dB}$  is added to the peak reading to correct the emission power level.

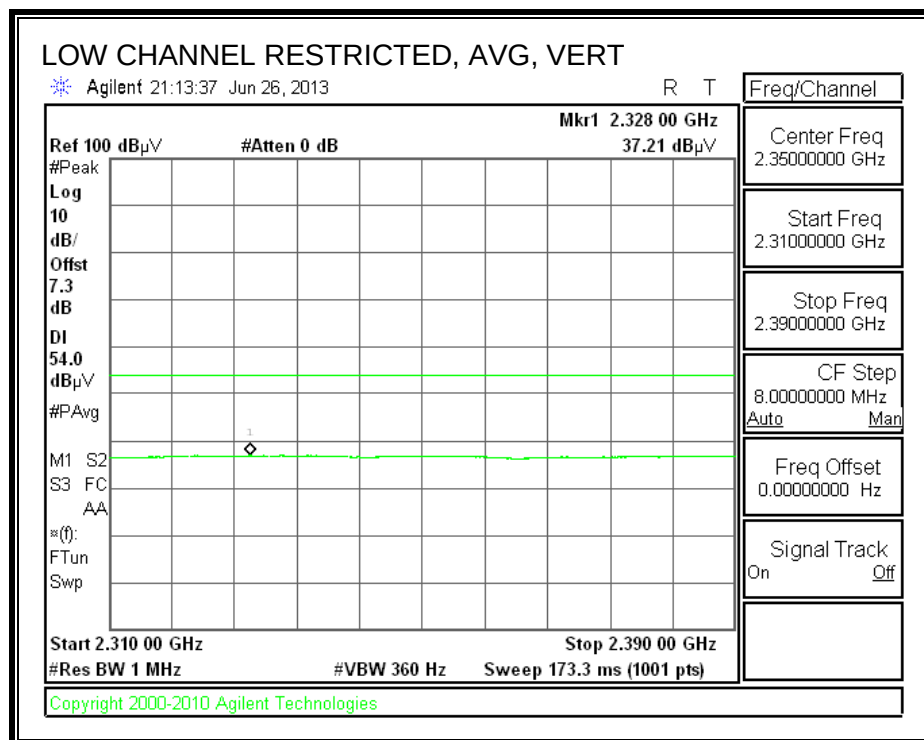
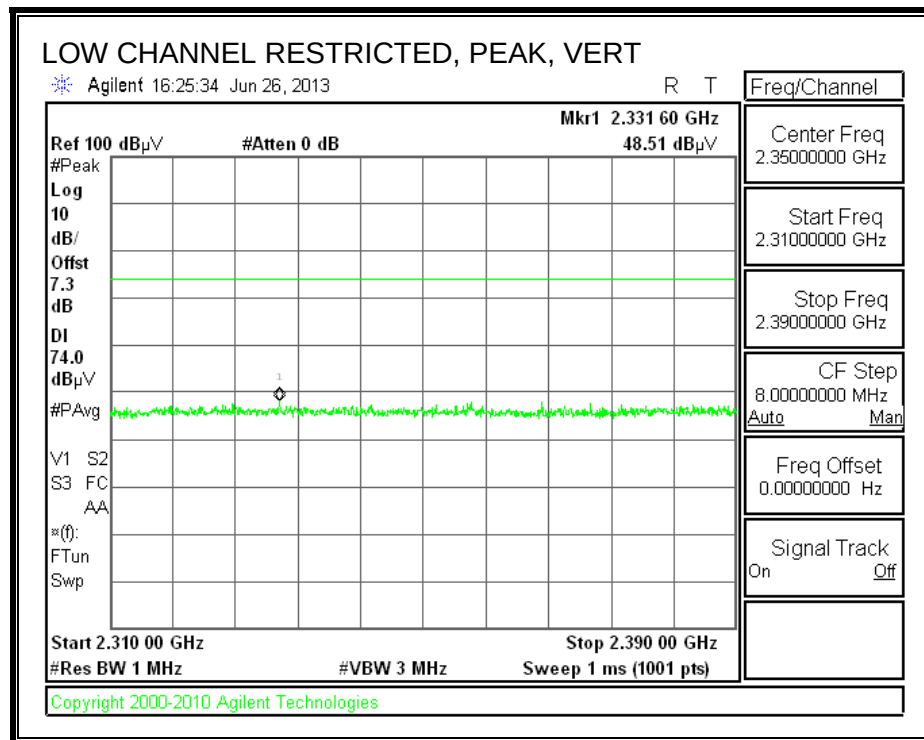
## 8.2. TRANSMITTER ABOVE 1 GHz

### 8.2.1. BASIC DATA RATE GFSK MODULATION

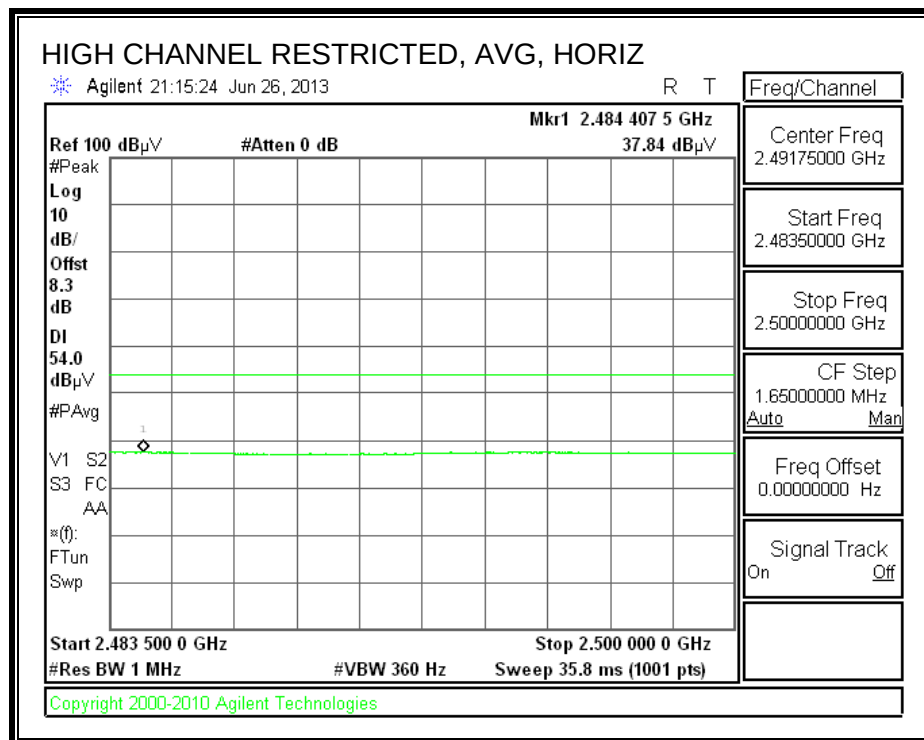
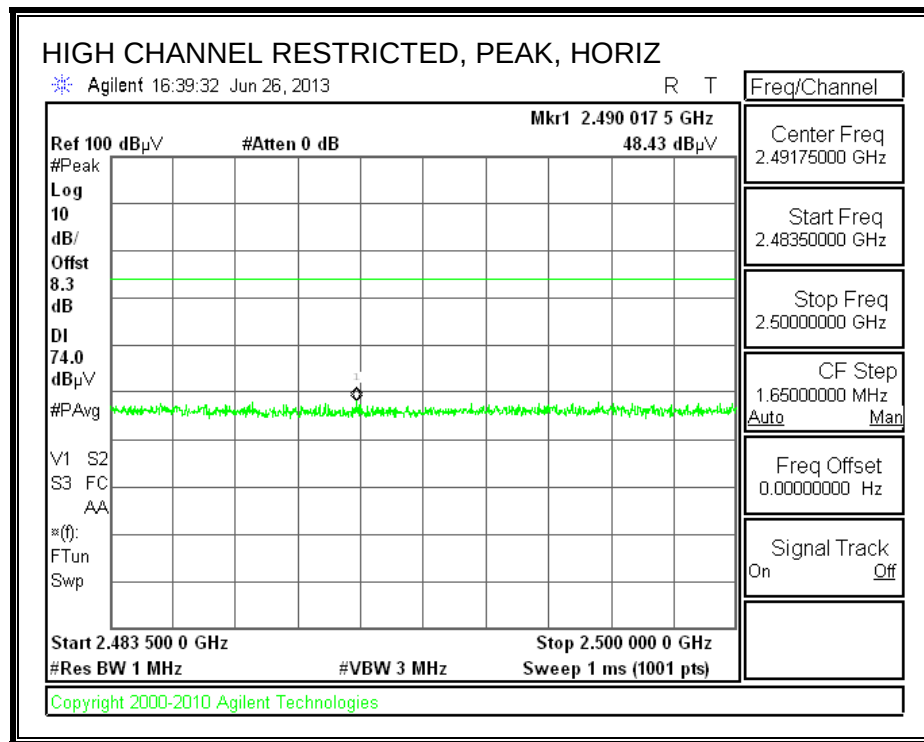
#### RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



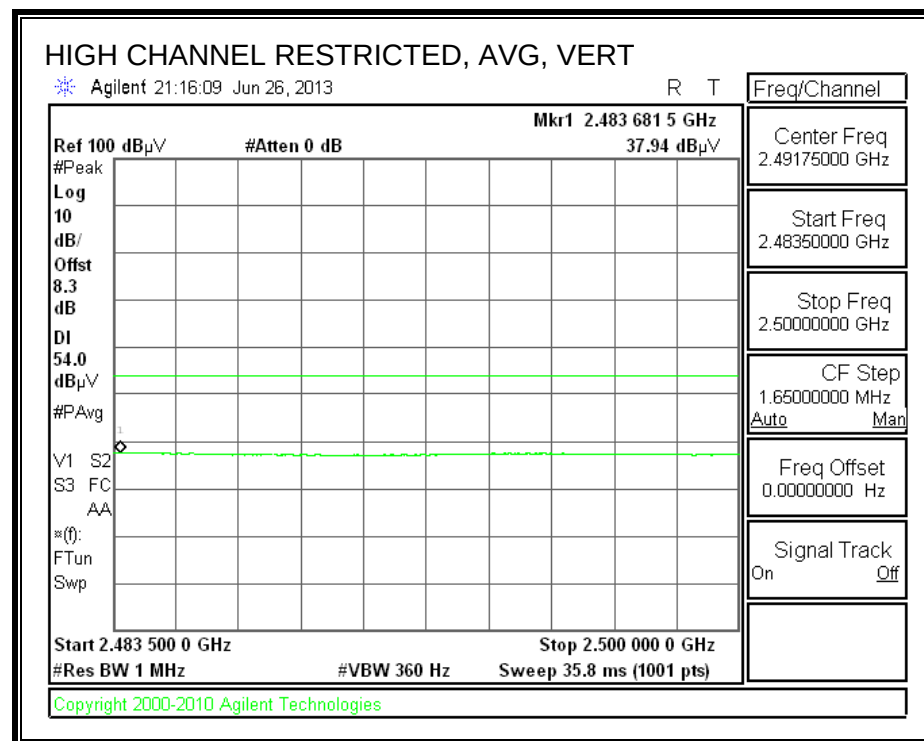
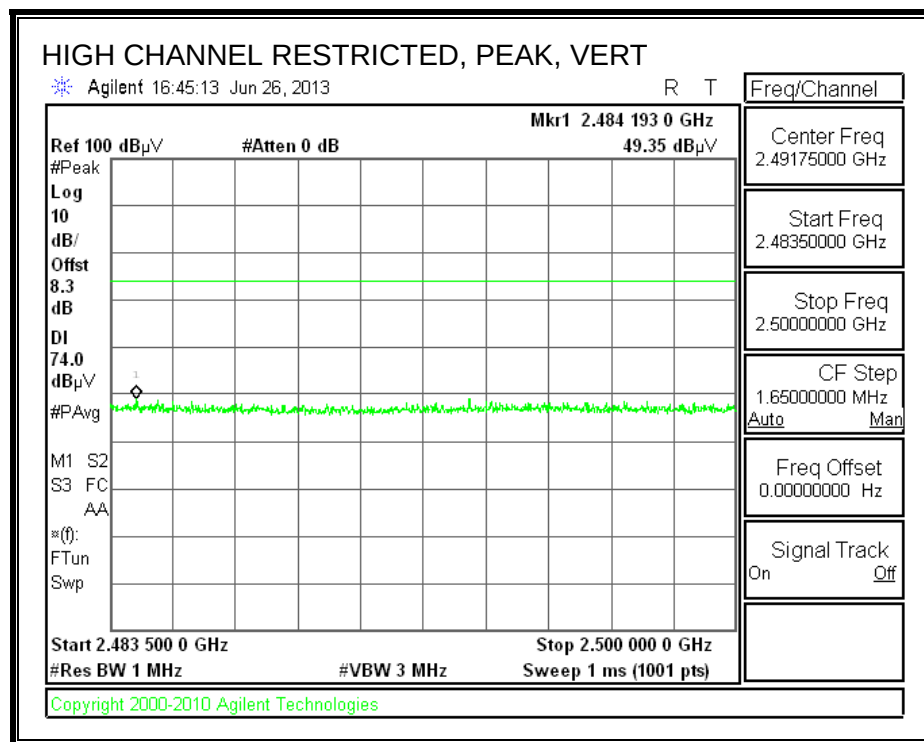
**RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**



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

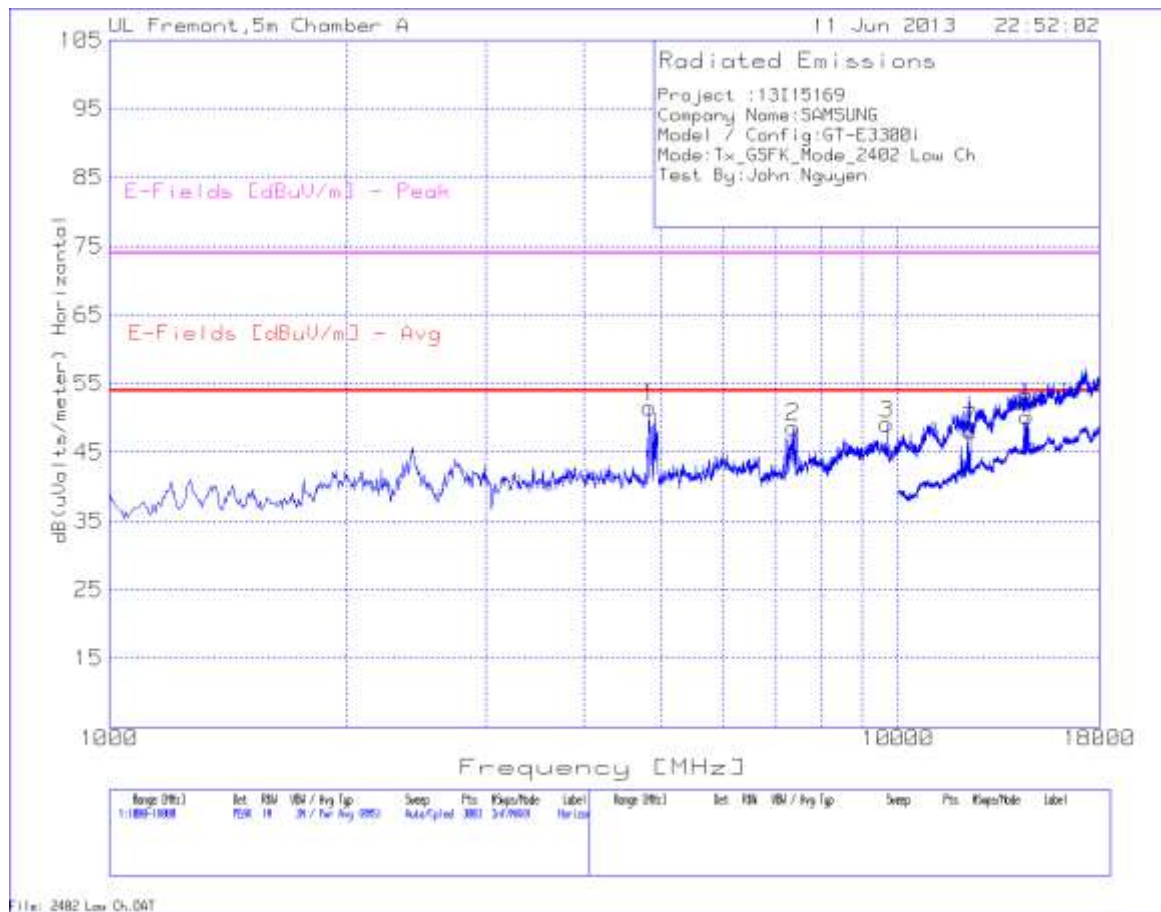


**RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)**

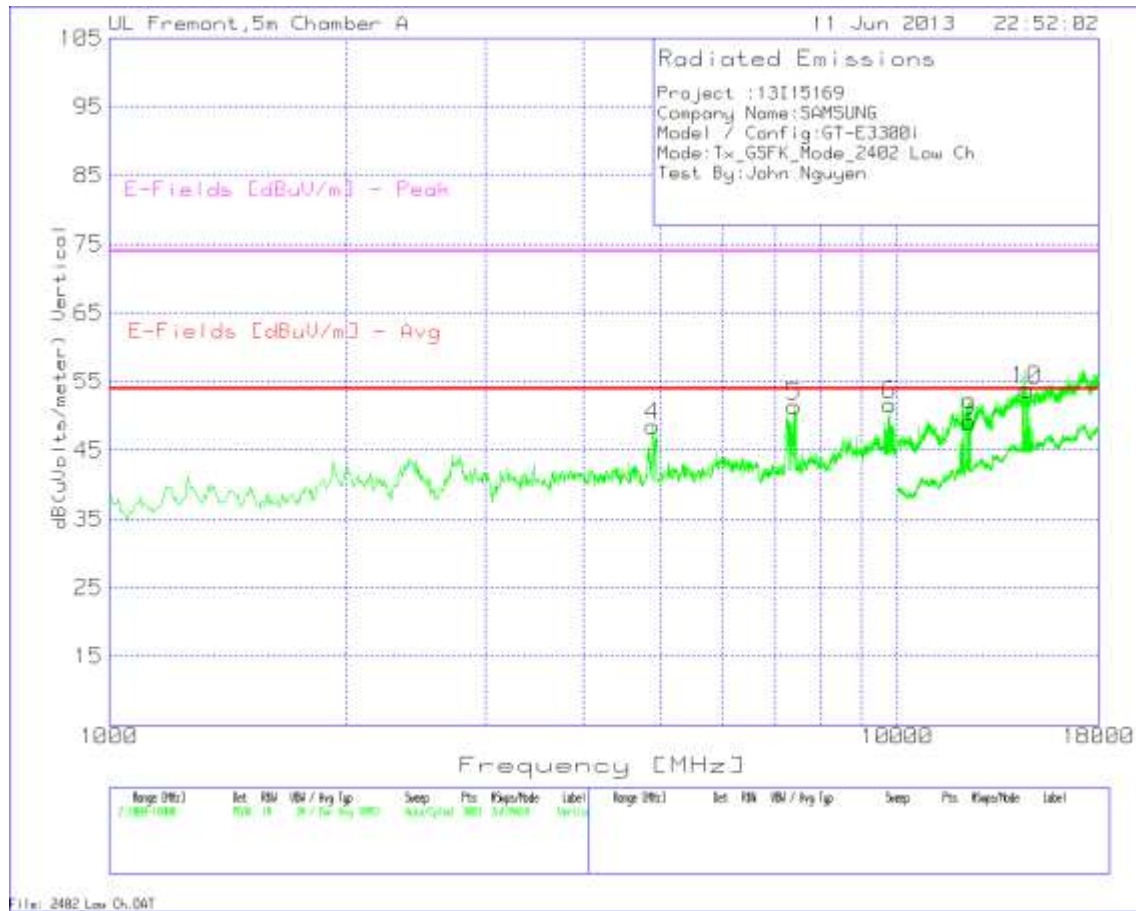


## HARMONICS AND SPURIOUS EMISSIONS

### LOW CHANNEL HORIZONTAL PLOT



# LOW CHANNEL VERTICAL PLOT



## LOW CHANNEL HORIZONTAL AND VERTICAL DATA

Project :13I15169

Company Name:SAMSUNG

Model / Config:GT-E3300i

Mode:Tx\_GSMK\_Mode\_2402 Low Ch

Test By:John Nguyen

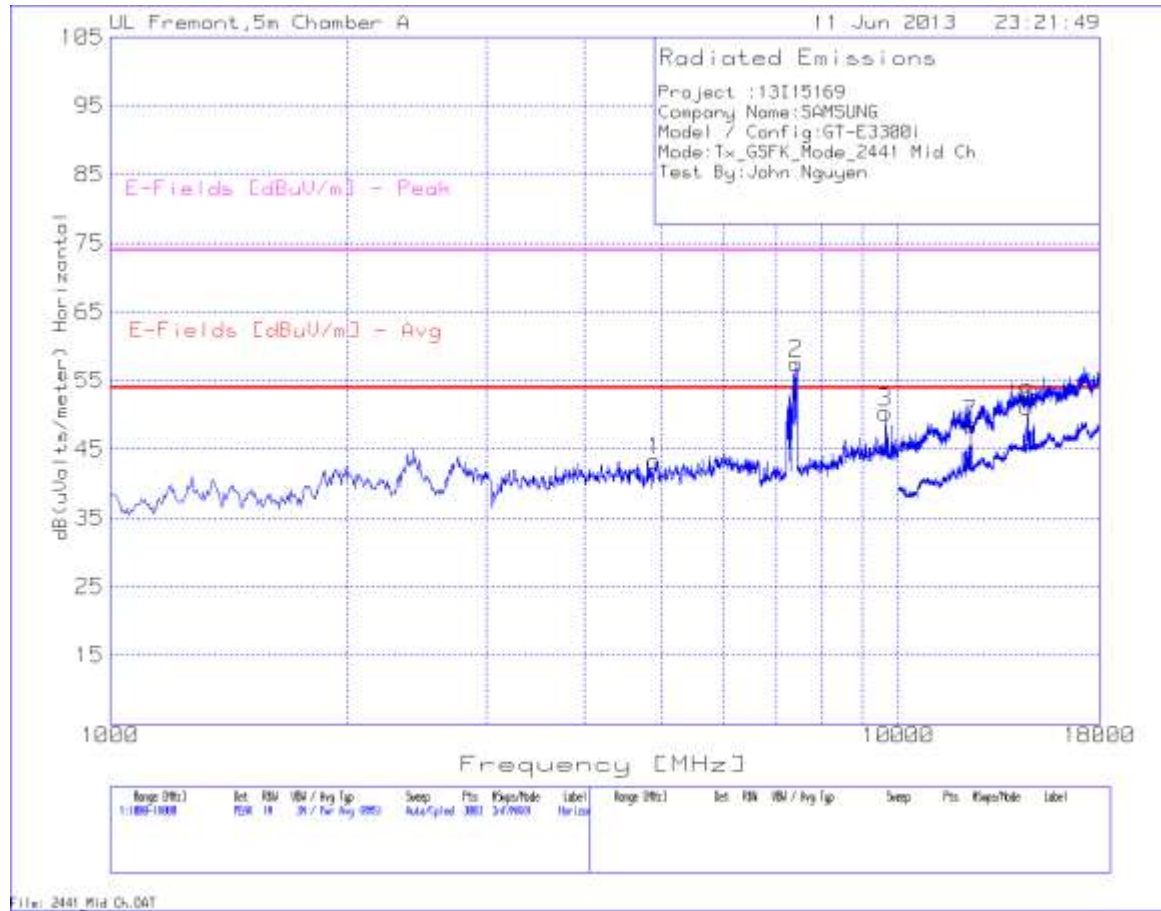
| Marker No.                 | Test Frequency | Meter Reading | Detector | T136 Ant Factor [dB/m] | T144 Preamp Gain [dB] | Cable Factor [dB] | T160 BRF [dB] | dB(uVolts /meter) | E-Fields [dBuV/m] Avg | Margin (dB) | E-Fields [dBuV/m] Peak | Margin (dB) | Height [cm] | Polarity |
|----------------------------|----------------|---------------|----------|------------------------|-----------------------|-------------------|---------------|-------------------|-----------------------|-------------|------------------------|-------------|-------------|----------|
| Horizontal 1000 - 18000MHz |                |               |          |                        |                       |                   |               |                   |                       |             |                        |             |             |          |
| 1                          | 4839.44        | 46.31         | PK       | 33.9                   | -35.7                 | 6.8               | 0.2           | 51.51             | 53.97                 | -2.46       | 74                     | -22.49      | 101         | Horz     |
| 2                          | 7359.427       | 39.97         | PK       | 35.4                   | -35.8                 | 8.7               | 0.3           | 48.57             | 53.97                 | -5.4        | 74                     | -25.43      | 101         | Horz     |
| 3                          | 9686.875       | 37.89         | PK       | 36.8                   | -36.3                 | 10.2              | 0.5           | 49.09             | 53.97                 | -4.88       | 74                     | -24.91      | 101         | Horz     |
| Vertical 1000 - 18000MHz   |                |               |          |                        |                       |                   |               |                   |                       |             |                        |             |             |          |
| 4                          | 4896.069       | 43.21         | PK       | 34                     | -35.7                 | 6.8               | 0.2           | 48.51             | 53.97                 | -5.46       | 74                     | -25.49      | 100         | Vert     |
| 5                          | 7410.393       | 42.71         | PK       | 35.4                   | -35.8                 | 8.8               | 0.3           | 51.41             | 53.97                 | -2.56       | 74                     | -22.59      | 100         | Vert     |
| 6                          | 9788.807       | 40.16         | PK       | 36.9                   | -36.3                 | 10.3              | 0.6           | 51.66             | 53.97                 | -2.31       | 74                     | -22.34      | 100         | Vert     |

| Marker No.                  | Test Frequency | Meter Reading | Detector | T136 Ant Factor [dB/m] | T144 Preamp Gain [dB] | Cable Factor [dB] | T160 BRF [dB] | dB(uVolts /meter) | E-Fields [dBuV/m] Avg | Margin (dB) | E-Fields [dBuV/m] Peak | Margin (dB) | Height [cm] | Polarity |
|-----------------------------|----------------|---------------|----------|------------------------|-----------------------|-------------------|---------------|-------------------|-----------------------|-------------|------------------------|-------------|-------------|----------|
| Horizontal 10000 - 18000MHz |                |               |          |                        |                       |                   |               |                   |                       |             |                        |             |             |          |
| 7                           | 12358.821      | 32.08         | PK       | 39                     | -35.1                 | 11.6              | 0.5           | 48.08             | 53.97                 | -5.89       | 74                     | -25.92      | 100         | Horz     |
| 8                           | 14557.721      | 31.63         | PK       | 39.9                   | -34.4                 | 12.7              | 0.4           | 50.23             | 53.97                 | -3.74       | 74                     | -23.77      | 100         | Horz     |
| Vertical 10000 - 18000MHz   |                |               |          |                        |                       |                   |               |                   |                       |             |                        |             |             |          |
| 9                           | 12346.827      | 33.28         | PK       | 39                     | -35.1                 | 11.6              | 0.4           | 49.18             | 53.97                 | -4.79       | 74                     | -24.82      | 100         | Vert     |
| 10                          | 14621.689      | 35.05         | PK       | 39.9                   | -34.4                 | 12.8              | 0.4           | 53.75             | 53.97                 | -0.22       | 74                     | -20.25      | 100         | Vert     |

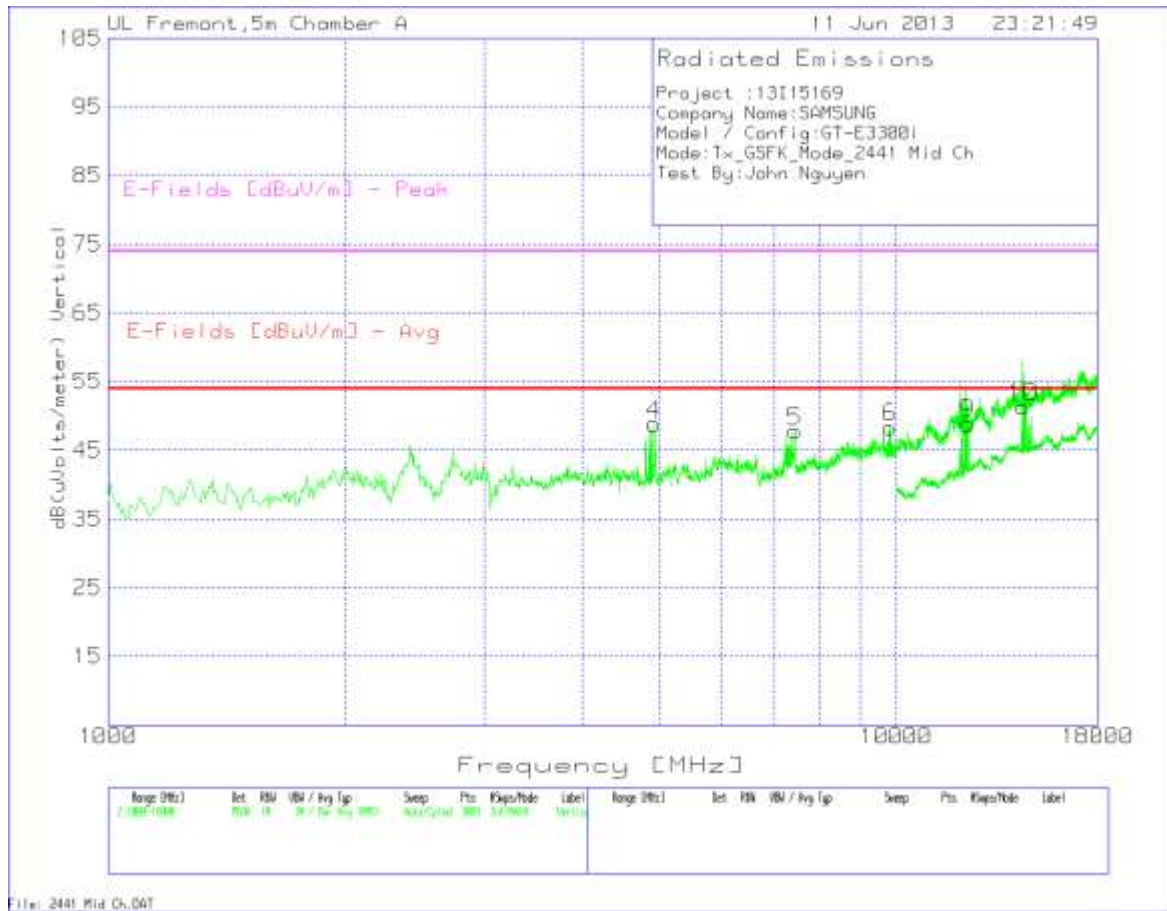
PK - Peak detector

QP - Quasi-Peak detector

# MID CHANNEL HORIZONTAL PLOT



# MID CHANNEL VERTICAL PLOT



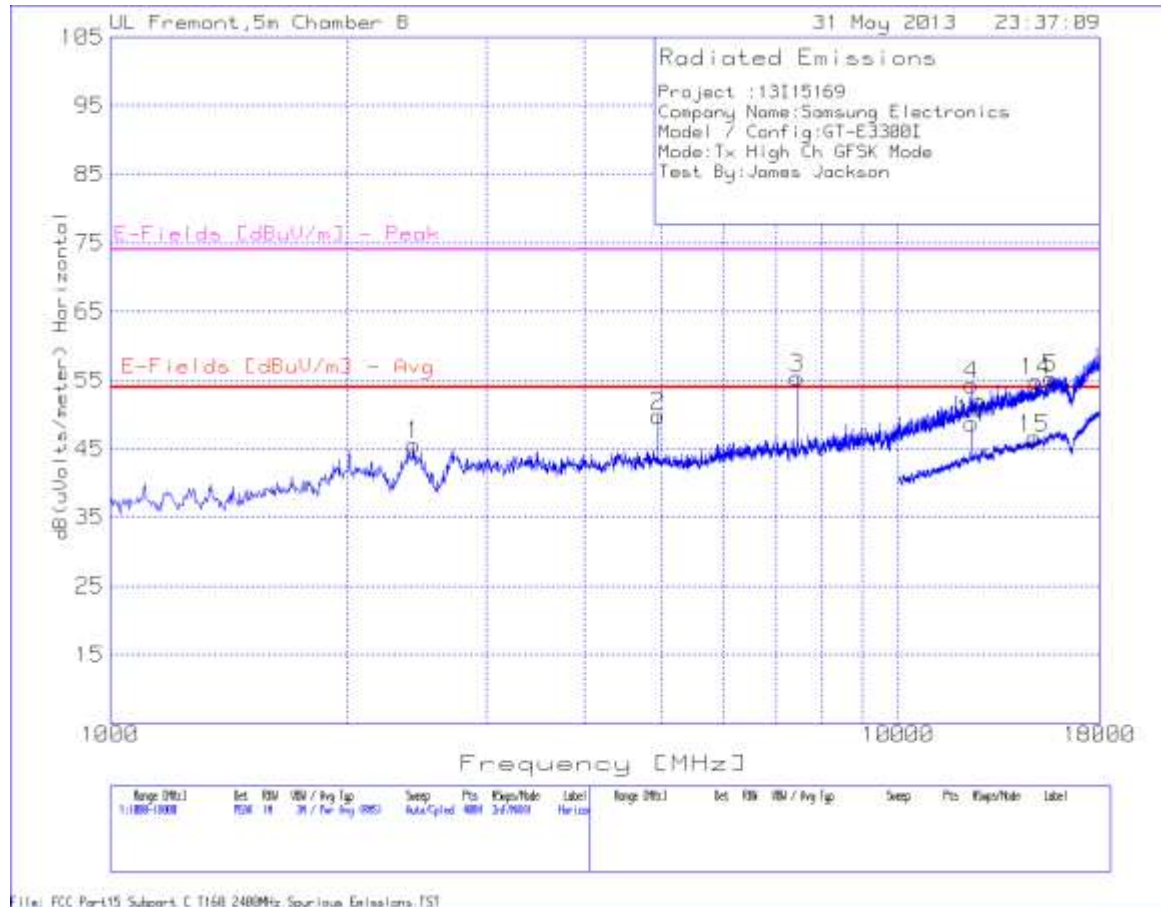
## MID CHANNEL HORIZONTAL AND VERTICAL DATA

Project :13I15169  
Company Name: SAMSUNG  
Model / Config: GT-E3300I  
Mode: Tx GSFC Mode 2441 Mid Ch  
Test By: John Nguyen

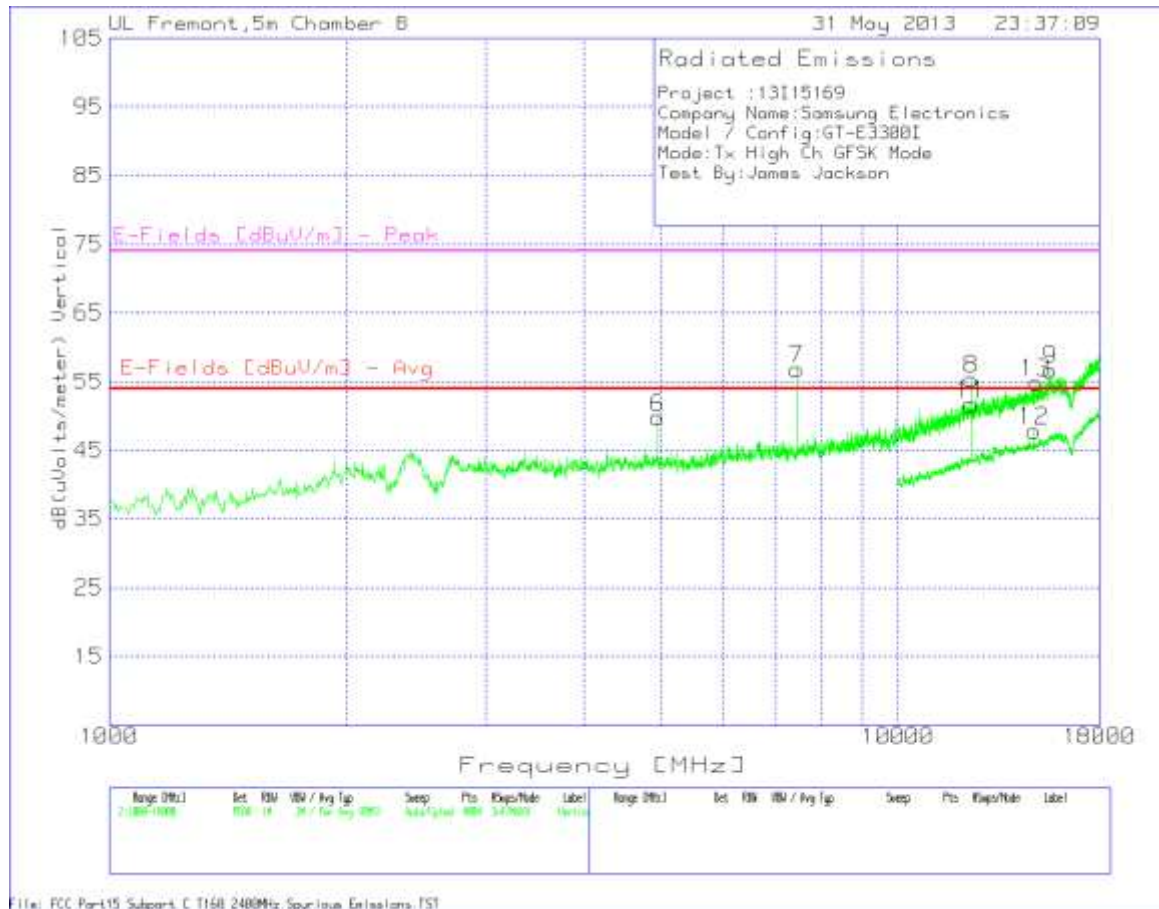
| Marker No.                  | Test Frequency | Meter Reading | Detector | T136 Ant Factor [dB/m] | T144 Preamp Gain [dB] | Cable Factor [dB] | T160 REF [dB] | dB(uVolts /meter) | Avg dB(uVolts /Meter) w DCCF | E-Fields [dBuV/m] | Margin (dB) | E-Fields [dBuV/m] | Margin (dB) | Height [cm] | Polarity | Duty Cycle Correction Factor | Duty Cycle [ms] |
|-----------------------------|----------------|---------------|----------|------------------------|-----------------------|-------------------|---------------|-------------------|------------------------------|-------------------|-------------|-------------------|-------------|-------------|----------|------------------------------|-----------------|
| Horizontal 1000 - 18000MHz  |                |               |          |                        |                       |                   |               |                   |                              |                   |             |                   |             |             |          |                              |                 |
| 1                           | 4913.058       | 37.99         | PK       | 34                     | -35.7                 | 6.8               | 0.2           | 43.29             | -                            | 53.97             | -10.68      | 74                | -36.71      | 101         | Horz     | 30.75204                     | 2.9             |
| 2                           | 7433.045       | 48.8          | PK       | 35.4                   | -35.8                 | 8.8               | 0.3           | 57.5              | 26.75                        | 53.97             | -27.22      | 74                | -16.5       | 101         | Horz     | 30.75204                     | 2.9             |
| 3                           | 9630.247       | 39.24         | PK       | 36.7                   | -36.3                 | 10.2              | 0.5           | 30.34             | 19.59                        | 53.97             | -34.38      | 74                | -23.66      | 101         | Horz     | 30.75204                     | 2.9             |
| Vertical 1000 - 18000MHz    |                |               |          |                        |                       |                   |               |                   |                              |                   |             |                   |             |             |          |                              |                 |
| 4                           | 4915.71        | 43.42         | PK       | 34                     | -35.6                 | 6.8               | 0.2           | 48.82             | -                            | 53.97             | -5.15       | 74                | -25.18      | 200         | Vert     | 30.75204                     | 2.9             |
| 5                           | 7438.708       | 39.06         | PK       | 35.4                   | -35.8                 | 8.8               | 0.3           | 47.76             | -                            | 53.97             | -6.21       | 74                | -26.24      | 100         | Vert     | 30.75204                     | 2.9             |
| 6                           | 9822.785       | 36.98         | PK       | 36.9                   | -36.3                 | 10.3              | 0.5           | 48.38             | -                            | 53.97             | -5.59       | 74                | -25.62      | 100         | Vert     | 30.75204                     | 2.9             |
| Horizontal 10000 - 18000MHz |                |               |          |                        |                       |                   |               |                   |                              |                   |             |                   |             |             |          |                              |                 |
| 7                           | 12342.829      | 32.78         | PK       | 39                     | -35.2                 | 11.6              | 0.4           | 48.58             | -                            | 53.97             | -5.39       | 74                | -25.42      | 100         | Horz     | 30.75204                     | 2.9             |
| 8                           | 14549.723      | 32.57         | PK       | 39.8                   | -34.4                 | 12.7              | 0.4           | 51.07             | 20.32                        | 53.97             | -33.65      | 74                | -22.93      | 100         | Horz     | 30.75204                     | 2.9             |
| Vertical 10000 - 18000MHz   |                |               |          |                        |                       |                   |               |                   |                              |                   |             |                   |             |             |          |                              |                 |
| 9                           | 12310.845      | 32.98         | PK       | 39                     | -35.2                 | 11.6              | 0.5           | 48.88             | -                            | 53.97             | -5.09       | 74                | -25.12      | 200         | Vert     | 30.75204                     | 2.9             |
| 10                          | 14501.749      | 32.73         | PK       | 39.8                   | -34.3                 | 12.7              | 0.4           | 51.33             | 20.58                        | 53.97             | -33.39      | 74                | -22.67      | 200         | Vert     | 30.75204                     | 2.9             |

PK - Peak detector  
QP - Quasi Peak detector  
AV - Average detector

# HIGH CHANNEL HORIZONTAL PLOT



# HIGH CHANNEL VERTICAL PLOT

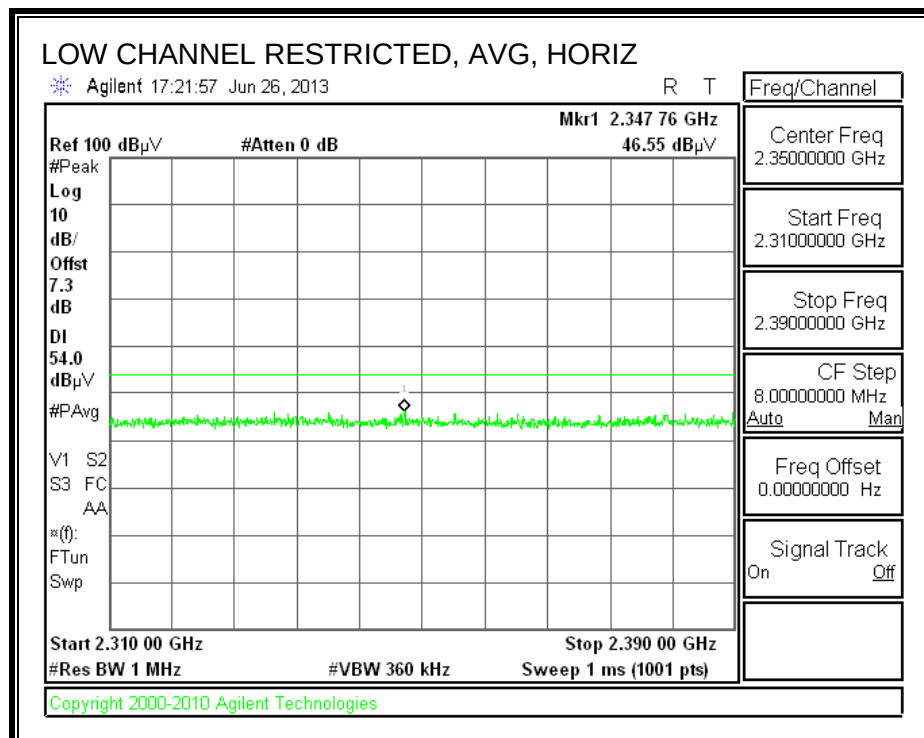
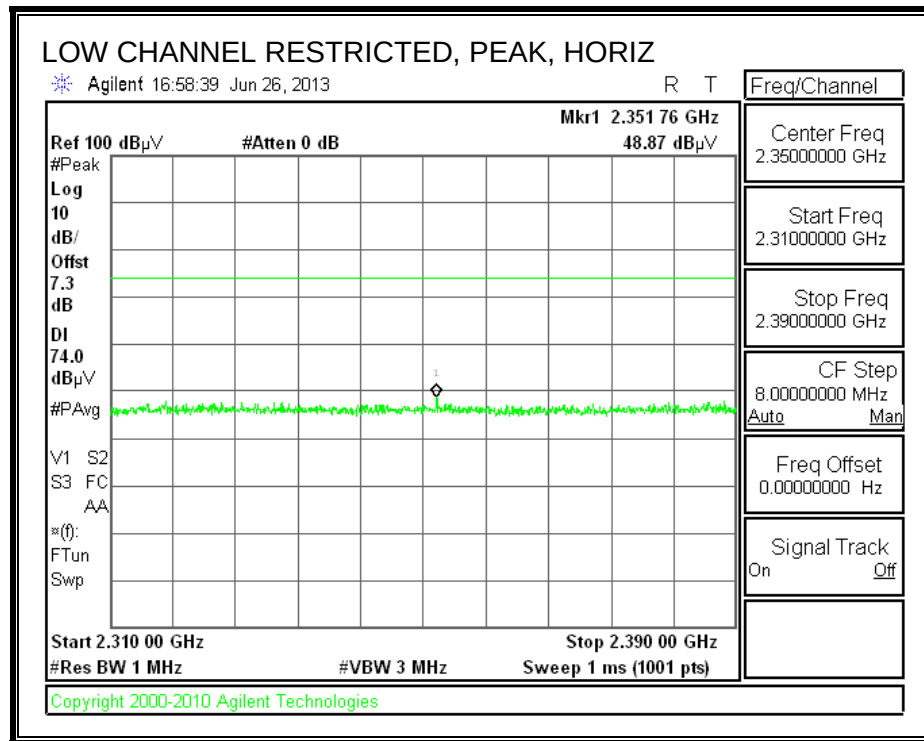


## HIGH CHANNEL HORIZONTAL AND VERTICAL DATA

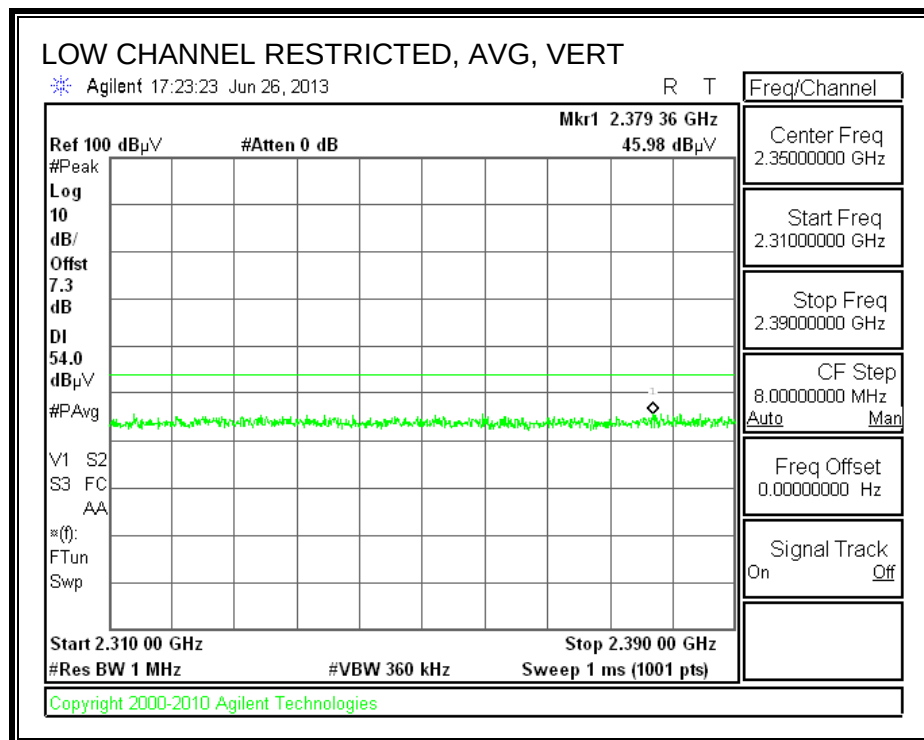
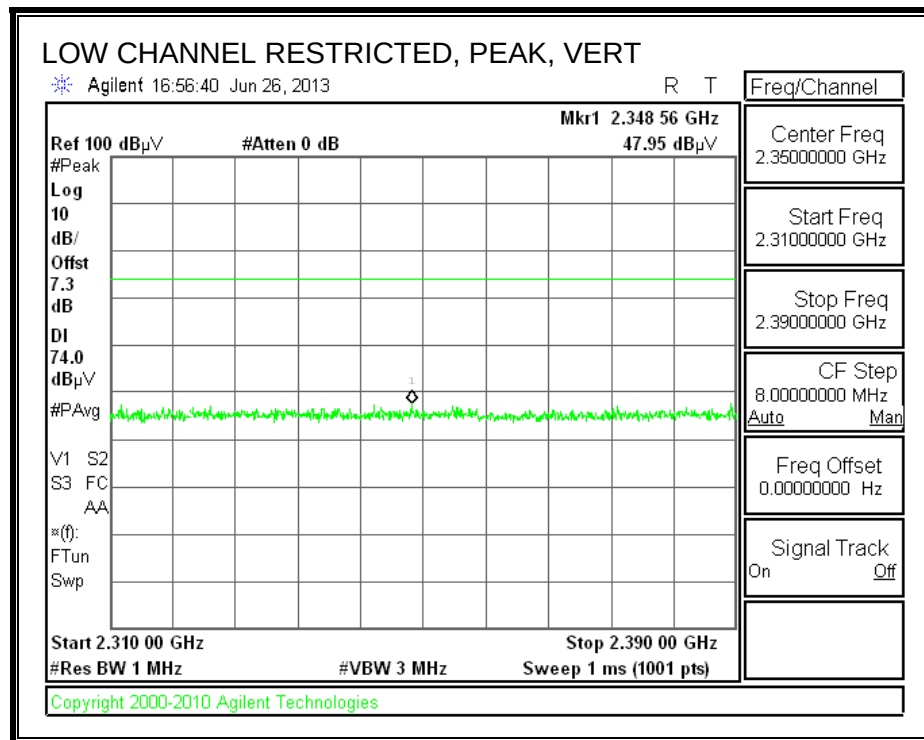
| Project :13115169                                                       |                |               |          |                        |                       |                   |               |                   |                              |                         |             |                          |             |             |          |                              |                 |
|-------------------------------------------------------------------------|----------------|---------------|----------|------------------------|-----------------------|-------------------|---------------|-------------------|------------------------------|-------------------------|-------------|--------------------------|-------------|-------------|----------|------------------------------|-----------------|
| Company Name:Samsung Electronics                                        |                |               |          |                        |                       |                   |               |                   |                              |                         |             |                          |             |             |          |                              |                 |
| Model / Config:GT-E3300                                                 |                |               |          |                        |                       |                   |               |                   |                              |                         |             |                          |             |             |          |                              |                 |
| Mode:Ta High Ch GFSK Mode                                               |                |               |          |                        |                       |                   |               |                   |                              |                         |             |                          |             |             |          |                              |                 |
| Test By:James Jackson                                                   |                |               |          |                        |                       |                   |               |                   |                              |                         |             |                          |             |             |          |                              |                 |
| Horizontal 1000 - 18000MHz                                              |                |               |          |                        |                       |                   |               |                   |                              |                         |             |                          |             |             |          |                              |                 |
| Marker No.                                                              | Test Frequency | Meter Reading | Detector | T145 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T160 REF [dB] | dB(uVolts /meter) | Avg dB(uVolts /Meter) w DCCF | E-Fields [dBuV/m] - Avg | Margin [dB] | E-Fields [dBuV/m] - Peak | Margin [dB] | Height [cm] | Polarity | Duty Cycle Correction Factor | Duty Cycle (ms) |
| 1                                                                       | 3426.93        | 42.62         | PK       | 32.4                   | -35                   | 4.7               | 0.9           | 45.62             | -                            | 53.97                   | -8.35       | 74                       | -28.38      | 135         | Horz     | 30.75204                     | 2.9             |
| 2                                                                       | 4958.031       | 42.73         | PK       | 34.6                   | -34.9                 | 7.2               | 0.2           | 49.83             | -                            | 53.97                   | -4.14       | 74                       | -24.17      | 200         | Horz     | 30.75204                     | 2.9             |
| 3                                                                       | 7438.171       | 45.23         | PK       | 36                     | -35                   | 8.9               | 0.3           | 55.43             | 24.68                        | 53.97                   | -29.29      | 74                       | -18.57      | 200         | Horz     | 30.75204                     | 2.9             |
| 4                                                                       | 12398.451      | 35.57         | PK       | 39.2                   | -32.7                 | 11.8              | 0.5           | 54.37             | -                            | 53.97                   | 0.4         | 74                       | -19.63      | 135         | Horz     | 30.75204                     | 2.9             |
| 5                                                                       | 15600.55       | 33.2          | PK       | 41.1                   | -32.9                 | 13.5              | 0.4           | 55.3              | -                            | 53.97                   | 1.33        | 74                       | -16.7       | 200         | Horz     | 30.75204                     | 2.9             |
| 10                                                                      | 12398.801      | 30.01         | PK       | 39.2                   | -32.7                 | 11.8              | 0.5           | 48.83             | -                            | 53.97                   | -3.16       | 74                       | -23.19      | 101         | Horz     | 30.75204                     | 2.9             |
| 14                                                                      | 14946.54       | 34.09         | PK       | 40                     | -32.9                 | 13.2              | 0.4           | 54.79             | -                            | 53.97                   | 0.82        | 74                       | -19.21      | 135         | Horz     | 30.75204                     | 2.9             |
| 15                                                                      | 14881.559      | 28.07         | PK       | 39.9                   | -32.9                 | 13.1              | 0.4           | 46.57             | -                            | 53.97                   | -7.4        | 74                       | -27.43      | 101         | Horz     | 30.75204                     | 2.9             |
| Vertical 1000 - 18000MHz                                                |                |               |          |                        |                       |                   |               |                   |                              |                         |             |                          |             |             |          |                              |                 |
| Marker No.                                                              | Test Frequency | Meter Reading | Detector | T145 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T160 REF [dB] | dB(uVolts /meter) | Avg dB(uVolts /Meter) w DCCF | E-Fields [dBuV/m] - Avg | Margin [dB] | E-Fields [dBuV/m] - Peak | Margin [dB] | Height [cm] | Polarity | Duty Cycle Correction Factor | Duty Cycle (ms) |
| 6                                                                       | 4958.031       | 42.65         | PK       | 34.6                   | -34.9                 | 7.2               | 0.2           | 49.75             | -                            | 53.97                   | -4.22       | 74                       | -24.25      | 101         | Vert     | 30.75204                     | 2.9             |
| 7                                                                       | 7438.171       | 46.61         | PK       | 30                     | -35                   | 8.9               | 0.3           | 56.01             | 26.05796                     | 53.97                   | -27.922     | 74                       | -17.19      | 101         | Vert     | 30.75204                     | 2.9             |
| 8                                                                       | 12398.451      | 36.63         | PK       | 39.2                   | -32.7                 | 11.8              | 0.5           | 55.43             | -                            | 53.97                   | 1.46        | 74                       | -18.57      | 200         | Vert     | 30.75204                     | 2.9             |
| 9                                                                       | 15600.55       | 34.54         | PK       | 41.1                   | -32.9                 | 13.5              | 0.4           | 56.64             | -                            | 53.97                   | 2.67        | 74                       | -17.36      | 200         | Vert     | 30.75204                     | 2.9             |
| 11                                                                      | 12398.801      | 32.9          | PK       | 39.2                   | -32.7                 | 11.8              | 0.5           | 51.7              | -                            | 53.97                   | -2.27       | 74                       | -22.3       | 101         | Vert     | 30.75204                     | 2.9             |
| 12                                                                      | 14881.559      | 27.29         | PK       | 39.9                   | -32.9                 | 13.1              | 0.4           | 47.79             | -                            | 53.97                   | -6.18       | 74                       | -26.21      | 101         | Vert     | 30.75204                     | 2.9             |
| 13                                                                      | 14963.527      | 34.18         | PK       | 40                     | -32.9                 | 13.2              | 0.4           | 54.88             | -                            | 53.97                   | 0.91        | 74                       | -19.12      | 200         | Vert     | 30.75204                     | 2.9             |
| PK - Peak detector<br>QP - Quasi-Peak detector<br>Av - Average detector |                |               |          |                        |                       |                   |               |                   |                              |                         |             |                          |             |             |          |                              |                 |

## 8.2.2. ENHANCED DATA RATE 8PSK MODULATION

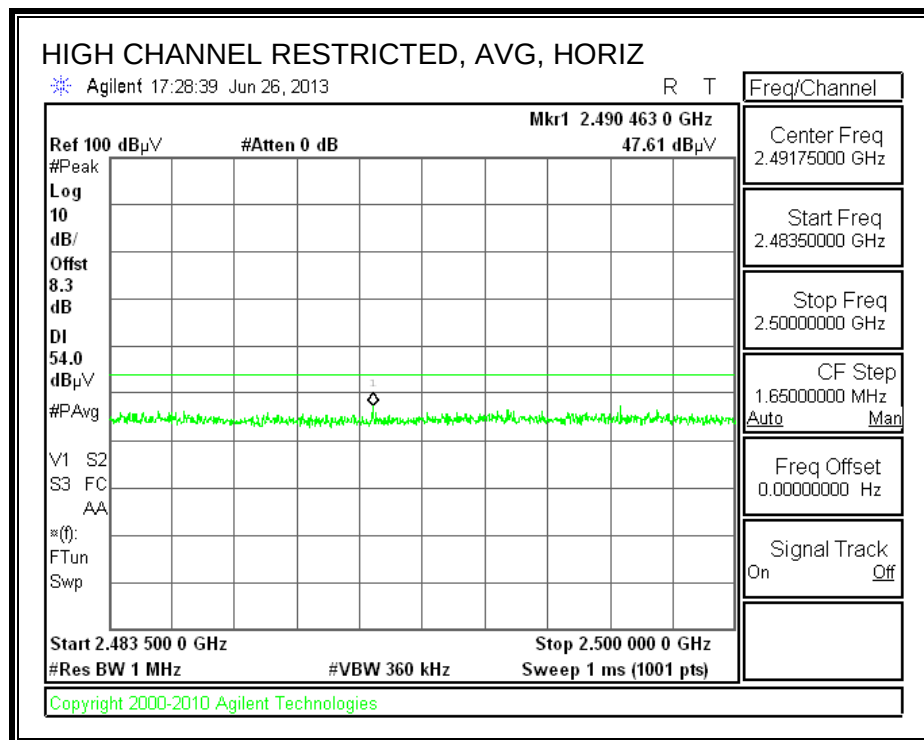
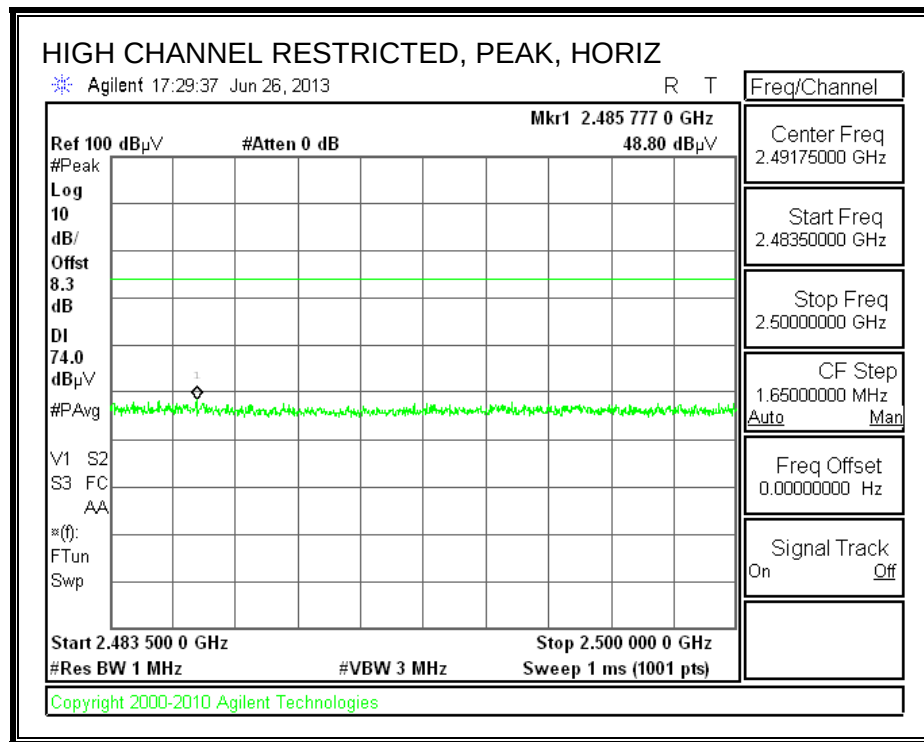
### RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



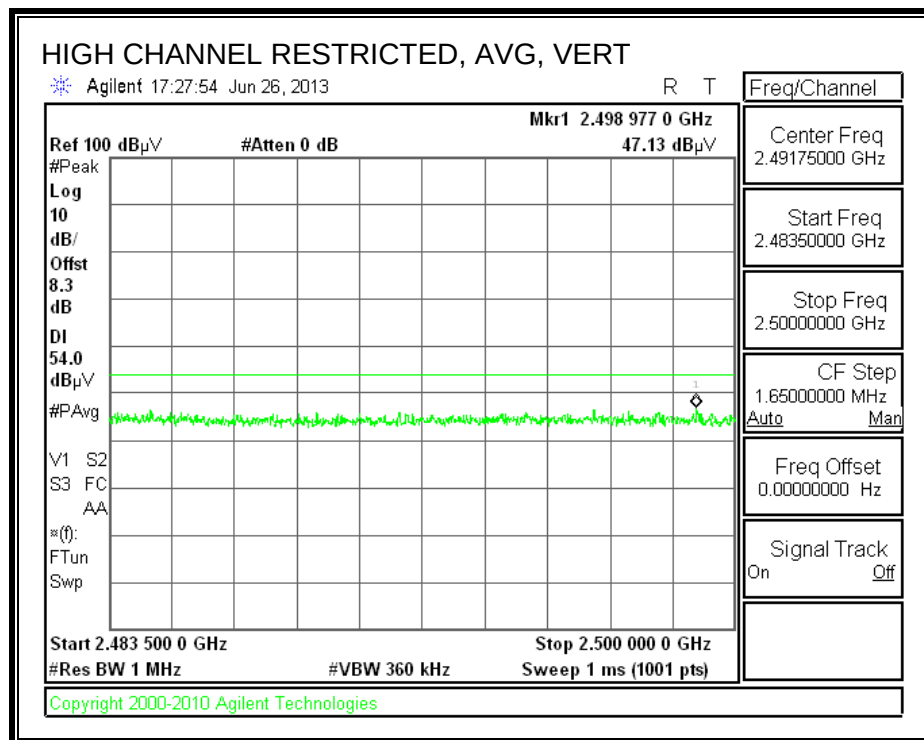
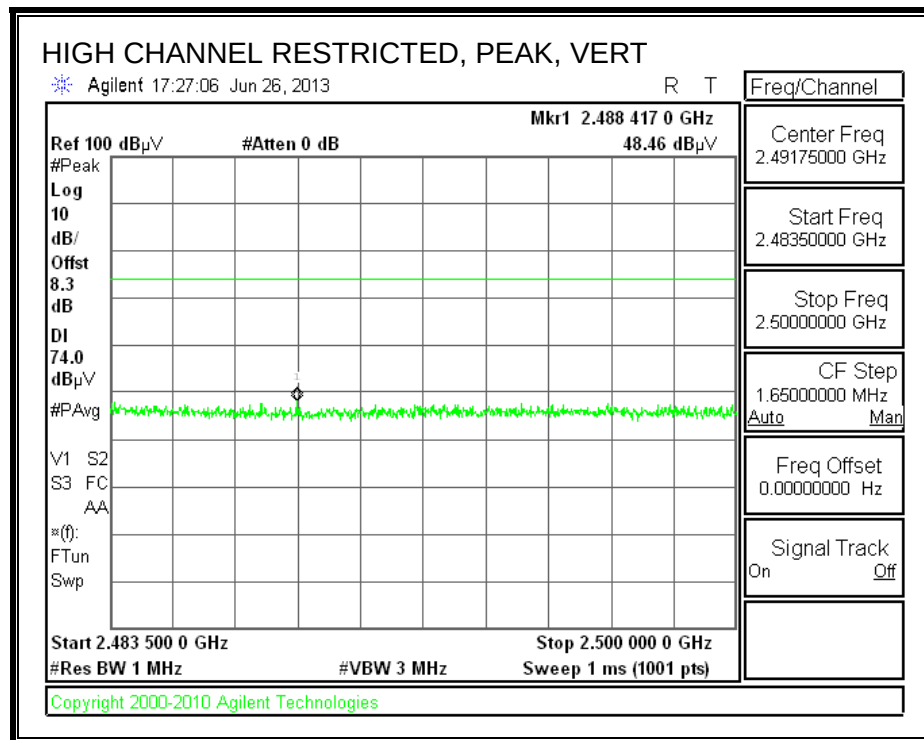
**RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**



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

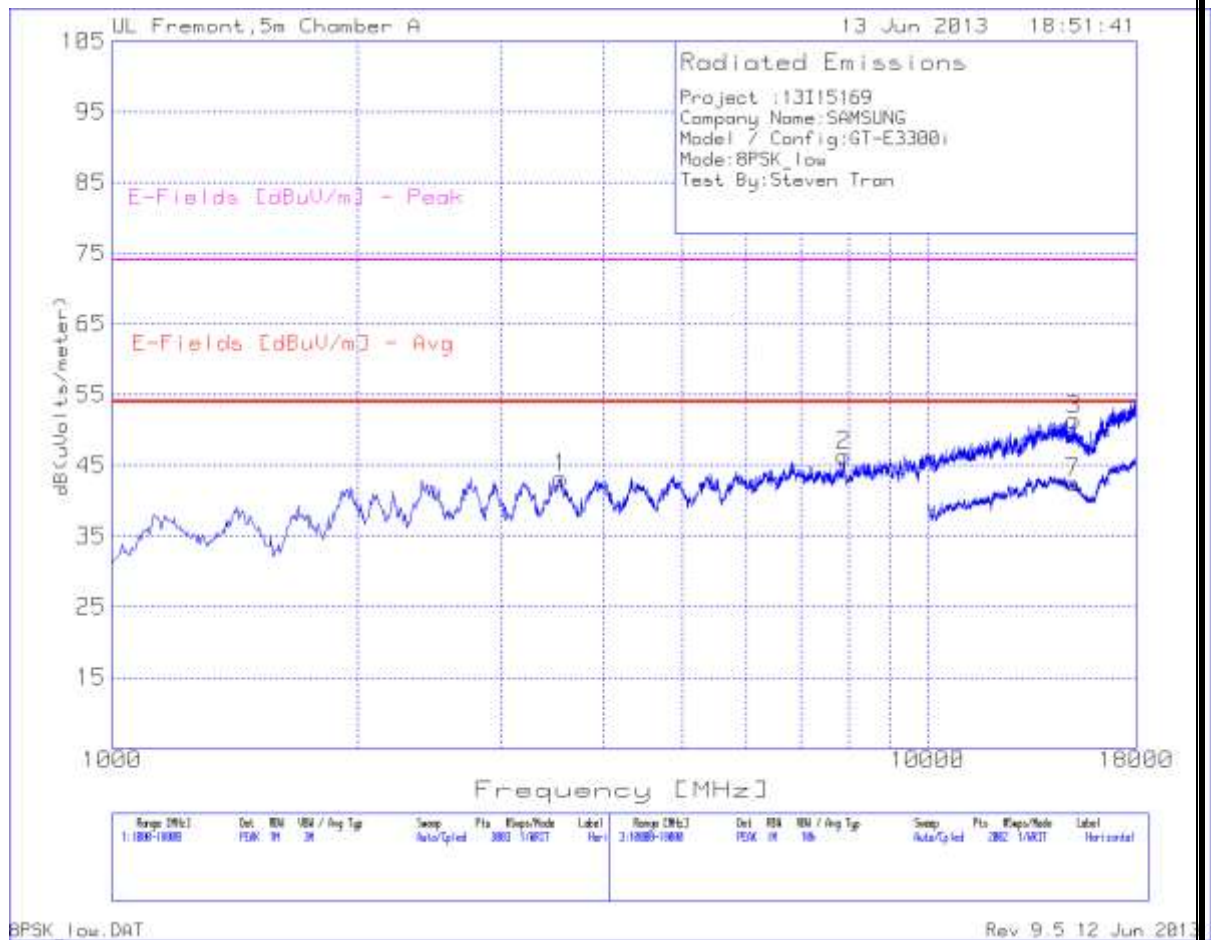


**RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)**

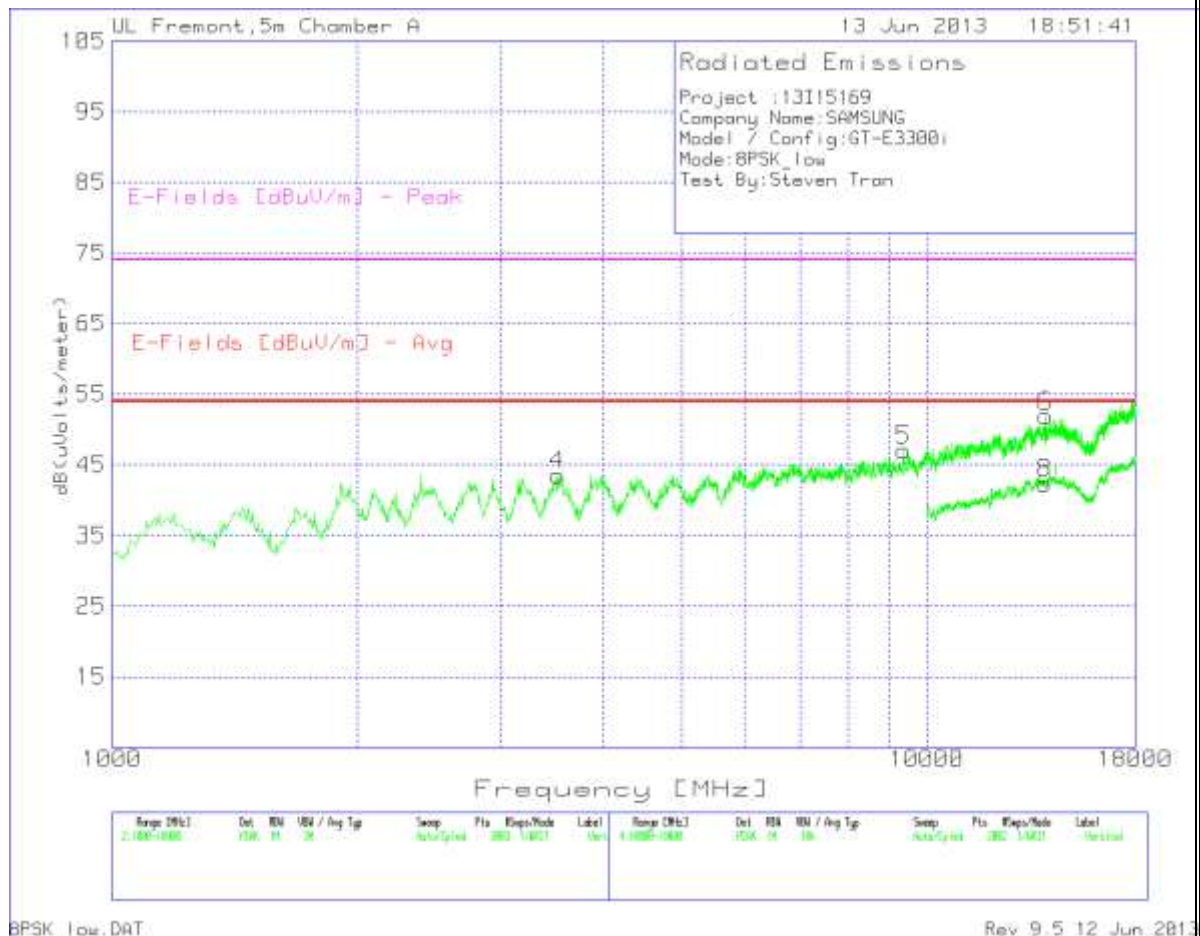


**HARMONICS AND SPURIOUS EMISSIONS**

**LOW CHANNEL HORIZONTAL PLOT**



# LOW CHANNEL VERTICAL PLOT

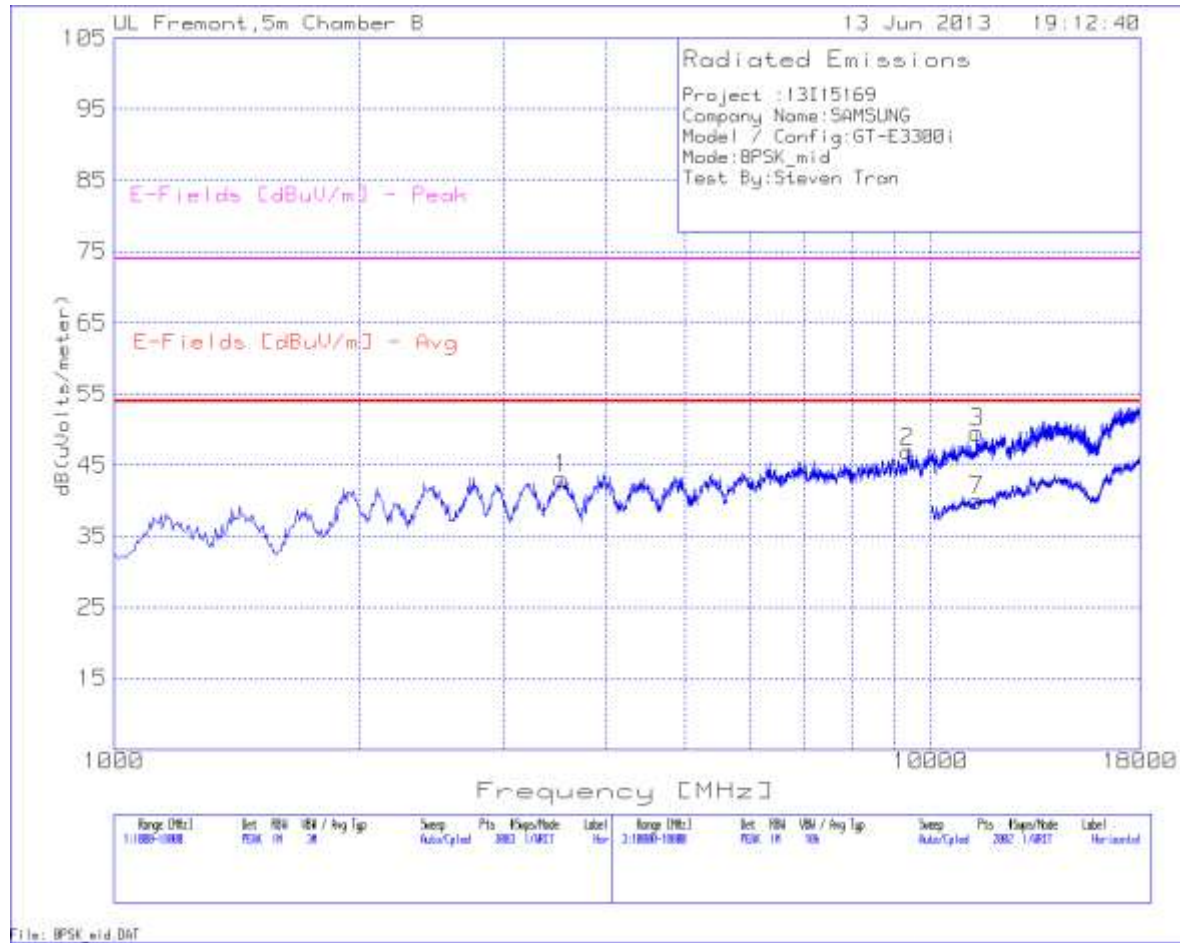


LOW CHANNEL HORIZONTAL AND VERTICAL DATA

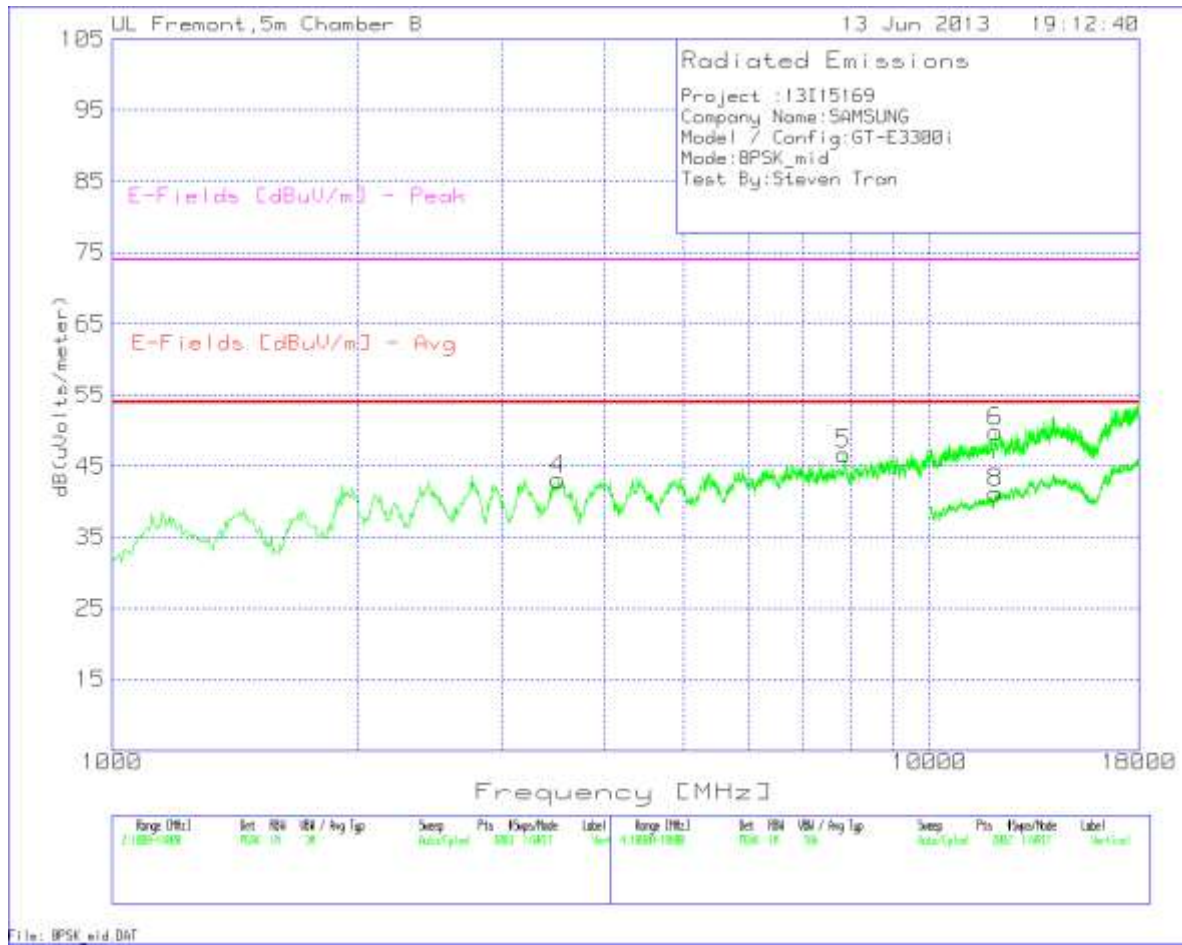
| Frequ<br>ncy<br>(GHz) | Meter<br>Readin<br>g<br>(dBuV) | Det | T136<br>Ant<br>Factor<br>[dB/m] | T144<br>Preamp<br>Gain<br>[dB] | Cable<br>Factor<br>[dB] | T160<br>BRF<br>[dB] | Correct<br>ed<br>Readin<br>g<br>dB(uVol<br>ts/mete<br>r) | E-<br>Fields<br>[dBuV/<br>m] -<br>Avg | Margin<br>(dB) | E-<br>Fields<br>[dBuV/<br>m] -<br>Peak | Margin<br>(dB) | Height<br>(cm) | Polarity |
|-----------------------|--------------------------------|-----|---------------------------------|--------------------------------|-------------------------|---------------------|----------------------------------------------------------|---------------------------------------|----------------|----------------------------------------|----------------|----------------|----------|
| 3.548                 | 40.35                          | PK  | 33.1                            | -36.3                          | 5.6                     | .4                  | 43.15                                                    | 53.97                                 | -10.82         | 74                                     | -30.85         | 101            | Horz     |
| 7.892                 | 37.36                          | PK  | 35.5                            | -35.9                          | 9.1                     | .3                  | 46.36                                                    | 53.97                                 | -7.61          | 74                                     | -27.64         | 101            | Horz     |
| 15.095                | 32.68                          | PK  | 40.3                            | -34.9                          | 13                      | .4                  | 51.48                                                    | 53.97                                 | -2.49          | 74                                     | -22.52         | 101            | Horz     |
| 3.526                 | 40.73                          | PK  | 33.1                            | -36.3                          | 5.6                     | .4                  | 43.53                                                    | 53.97                                 | -10.44         | 74                                     | -30.47         | 200            | Vert     |
| 9.37                  | 36.48                          | PK  | 36.4                            | -36.2                          | 10                      | .4                  | 47.08                                                    | 53.97                                 | -6.89          | 74                                     | -26.92         | 100            | Vert     |
| 13.996                | 33.7                           | PK  | 39.1                            | -33.8                          | 12.5                    | .4                  | 51.9                                                     | 53.97                                 | -2.07          | 74                                     | -22.1          | 100            | Vert     |
| 15.069                | 23.77                          | PK  | 40.3                            | -34.9                          | 13                      | .4                  | 42.57                                                    | 53.97                                 | -11.4          | 74                                     | -31.43         | 200            | Horz     |
| 13.97                 | 24.34                          | PK  | 39.1                            | -33.8                          | 12.4                    | .3                  | 42.34                                                    | 53.97                                 | -11.63         | 74                                     | -31.66         | 100            | Vert     |

Peak Detector

# MID CHANNEL HORIZONTAL PLOT



### MID CHANNEL VERTICAL PLOT

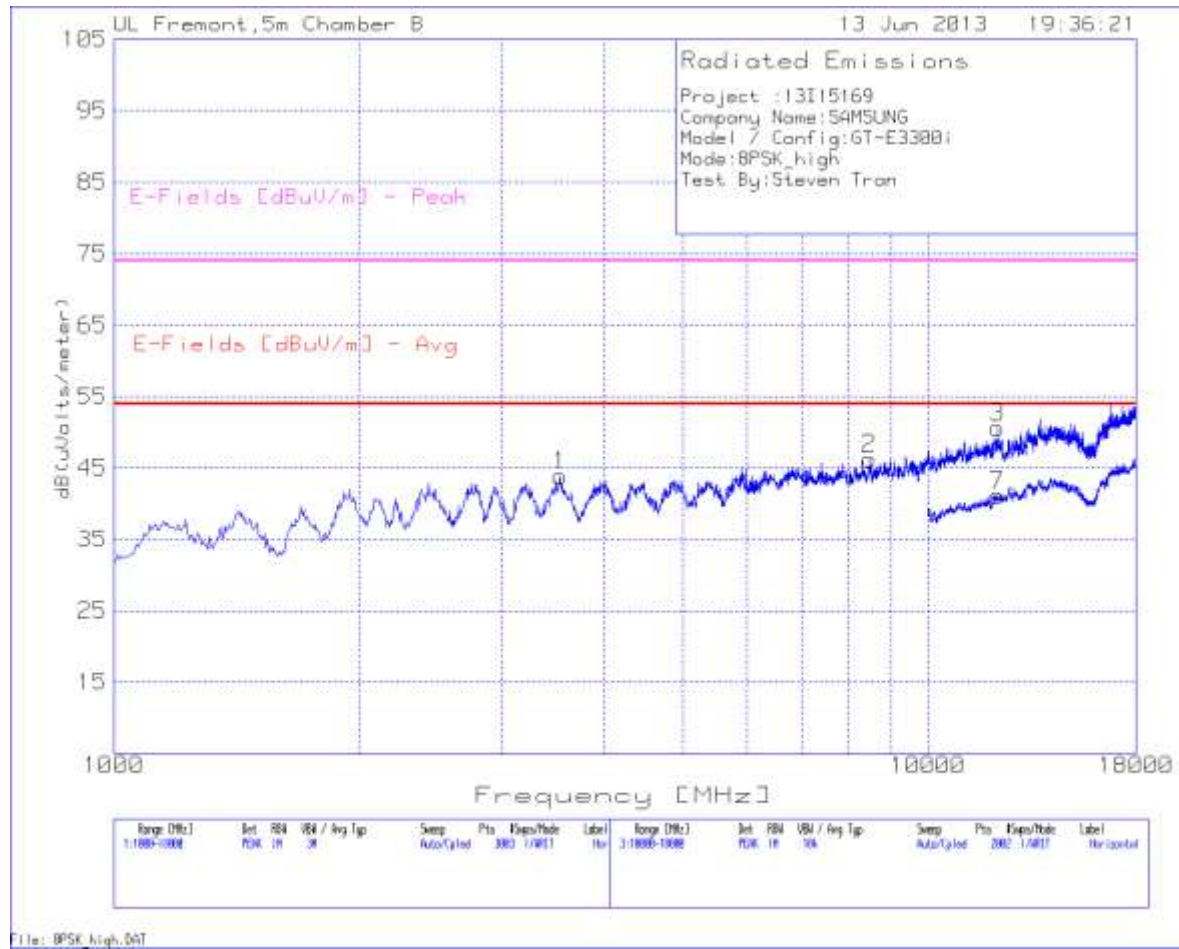


MID CHANNEL HORIZONTAL AND VERTICAL DATA

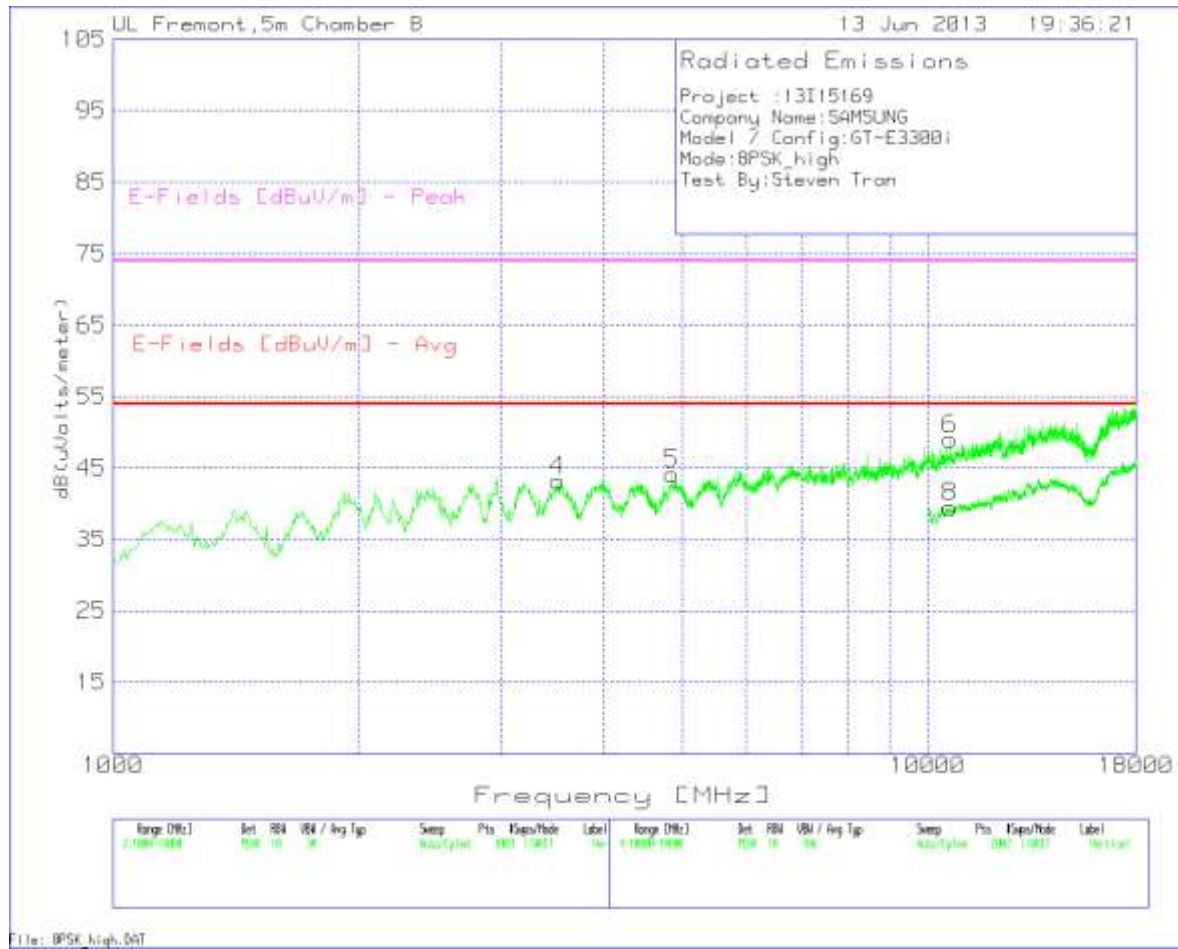
| Frequency (GHz) | Meter Reading (dBuV) | Det | T136 Ant Factor [dB/m] | T144 Preamp Gain [dB] | Cable Factor [dB] | T160 BRF [dB] | Corrected Reading dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Margin (dB) | E-Fields [dBuV/m] - Peak | Margin (dB) | Height (cm) | Polarity |
|-----------------|----------------------|-----|------------------------|-----------------------|-------------------|---------------|------------------------------------|-------------------------|-------------|--------------------------|-------------|-------------|----------|
| 3.531           | 40.14                | PK  | 33.1                   | -36.3                 | 5.6               | .5            | 43.04                              | 53.97                   | -10.93      | 74                       | -30.96      | 200         | Horz     |
| 9.364           | 36.14                | PK  | 36.4                   | -36.2                 | 10                | .5            | 46.84                              | 53.97                   | -7.13       | 74                       | -27.16      | 200         | Horz     |
| 11.369          | 35.39                | PK  | 38.1                   | -35.6                 | 11.1              | .6            | 49.59                              | 53.97                   | -4.38       | 74                       | -24.41      | 200         | Horz     |
| 3.514           | 40.22                | PK  | 33.1                   | -36.3                 | 5.6               | .4            | 43.02                              | 53.97                   | -10.95      | 74                       | -30.98      | 200         | Vert     |
| 7.858           | 37.58                | PK  | 35.5                   | -35.9                 | 9.1               | .3            | 46.58                              | 53.97                   | -7.39       | 74                       | -27.42      | 100         | Vert     |
| 12.031          | 34.38                | PK  | 38.8                   | -35.6                 | 11.5              | .7            | 49.78                              | 53.97                   | -4.19       | 74                       | -24.22      | 100         | Vert     |
| 11.391          | 25.74                | PK  | 38.2                   | -35.6                 | 11.1              | .6            | 40.04                              | 53.97                   | -13.93      | 74                       | -33.96      | 200         | Horz     |
| 12.027          | 25.66                | PK  | 38.8                   | -35.6                 | 11.5              | .8            | 41.16                              | 53.97                   | -12.81      | 74                       | -32.84      | 100         | Vert     |

Peak Detector

# HIGH CHANNEL HORIZONTAL PLOT



# HIGH CHANNEL VERTICAL PLOT



# HIGH CHANNEL HORIZONTAL AND VERTICAL DATA

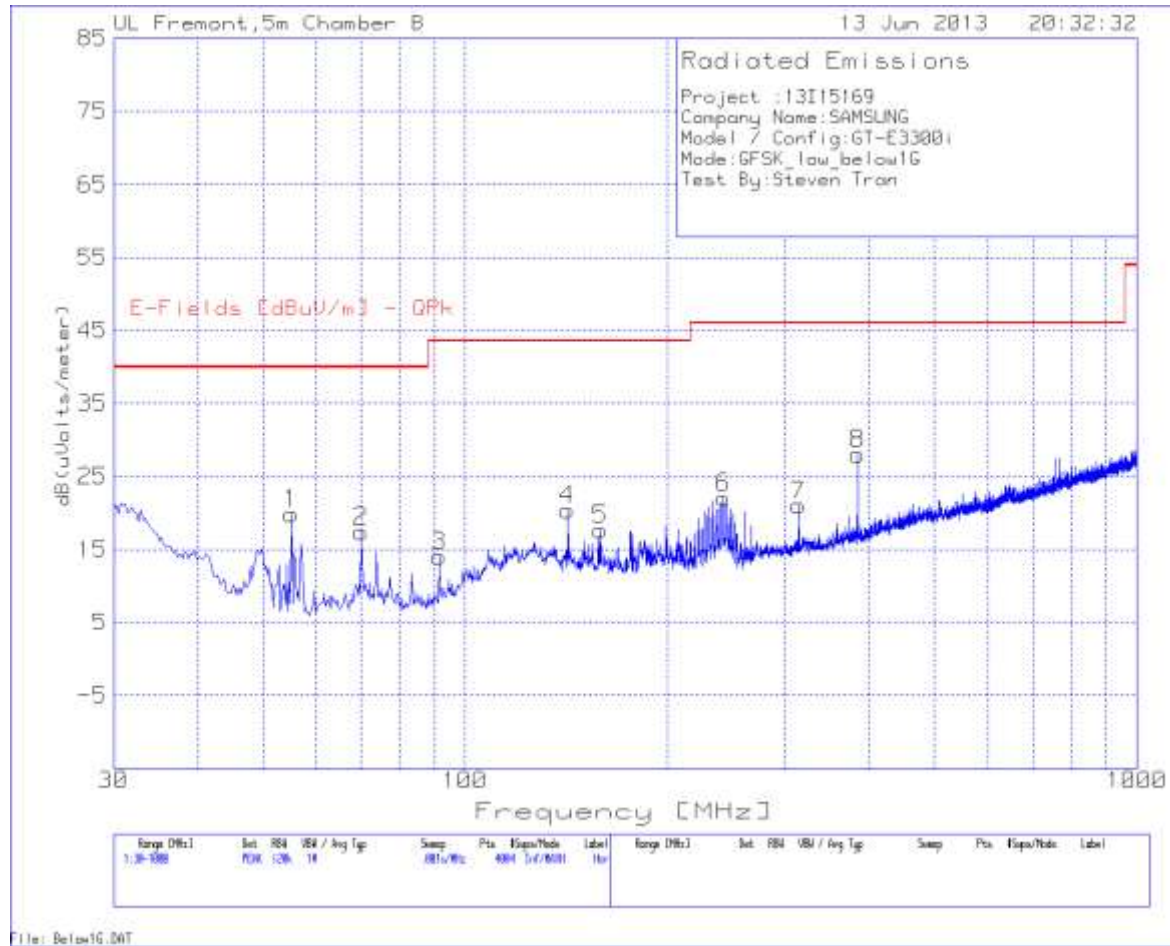
| Freque<br>ncy<br>(GHz) | Meter<br>Readin<br>g<br>(dBuV) | Det | T136<br>Ant<br>Factor<br>[dB/m] | T144<br>Preamp<br>Gain<br>[dB] | Cable<br>Factor<br>[dB] | T160<br>BRF<br>[dB] | Correct<br>ed<br>Readin<br>g<br>dB(uVol<br>ts/mete<br>r) | E-<br>Fields<br>[dBuV/<br>m] -<br>Avg | Margin<br>(dB) | E-<br>Fields<br>[dBuV/<br>m] -<br>Peak | Margin<br>(dB) | Height<br>(cm) | Polarity |
|------------------------|--------------------------------|-----|---------------------------------|--------------------------------|-------------------------|---------------------|----------------------------------------------------------|---------------------------------------|----------------|----------------------------------------|----------------|----------------|----------|
| 3.537                  | 41.11                          | PK  | 33.1                            | -36.3                          | 5.6                     | .4                  | 43.91                                                    | 53.97                                 | -10.06         | 74                                     | -30.09         | 101            | Horz     |
| 8.475                  | 36.77                          | PK  | 35.7                            | -36                            | 9.5                     | .3                  | 46.27                                                    | 53.97                                 | -7.7           | 74                                     | -27.73         | 101            | Horz     |
| 12.179                 | 34.74                          | PK  | 39                              | -35.4                          | 11.5                    | .8                  | 50.64                                                    | 53.97                                 | -3.33          | 74                                     | -23.36         | 101            | Horz     |
| 3.52                   | 40.38                          | PK  | 33.1                            | -36.3                          | 5.6                     | .4                  | 43.18                                                    | 53.97                                 | -10.79         | 74                                     | -30.82         | 100            | Vert     |
| 4.856                  | 38.88                          | PK  | 34                              | -35.7                          | 6.8                     | .2                  | 44.18                                                    | 53.97                                 | -9.79          | 74                                     | -29.82         | 100            | Vert     |
| 10.661                 | 35.54                          | PK  | 37.9                            | -35.8                          | 10.7                    | .7                  | 49.04                                                    | 53.97                                 | -4.93          | 74                                     | -24.96         | 100            | Vert     |
| 12.181                 | 25.15                          | PK  | 39                              | -35.4                          | 11.5                    | .8                  | 41.05                                                    | 53.97                                 | -12.92         | 74                                     | -32.95         | 200            | Horz     |
| 10.66                  | 25.99                          | PK  | 37.9                            | -35.8                          | 10.7                    | .7                  | 39.49                                                    | 53.97                                 | -14.48         | 74                                     | -34.51         | 200            | Vert     |

Peak Detector

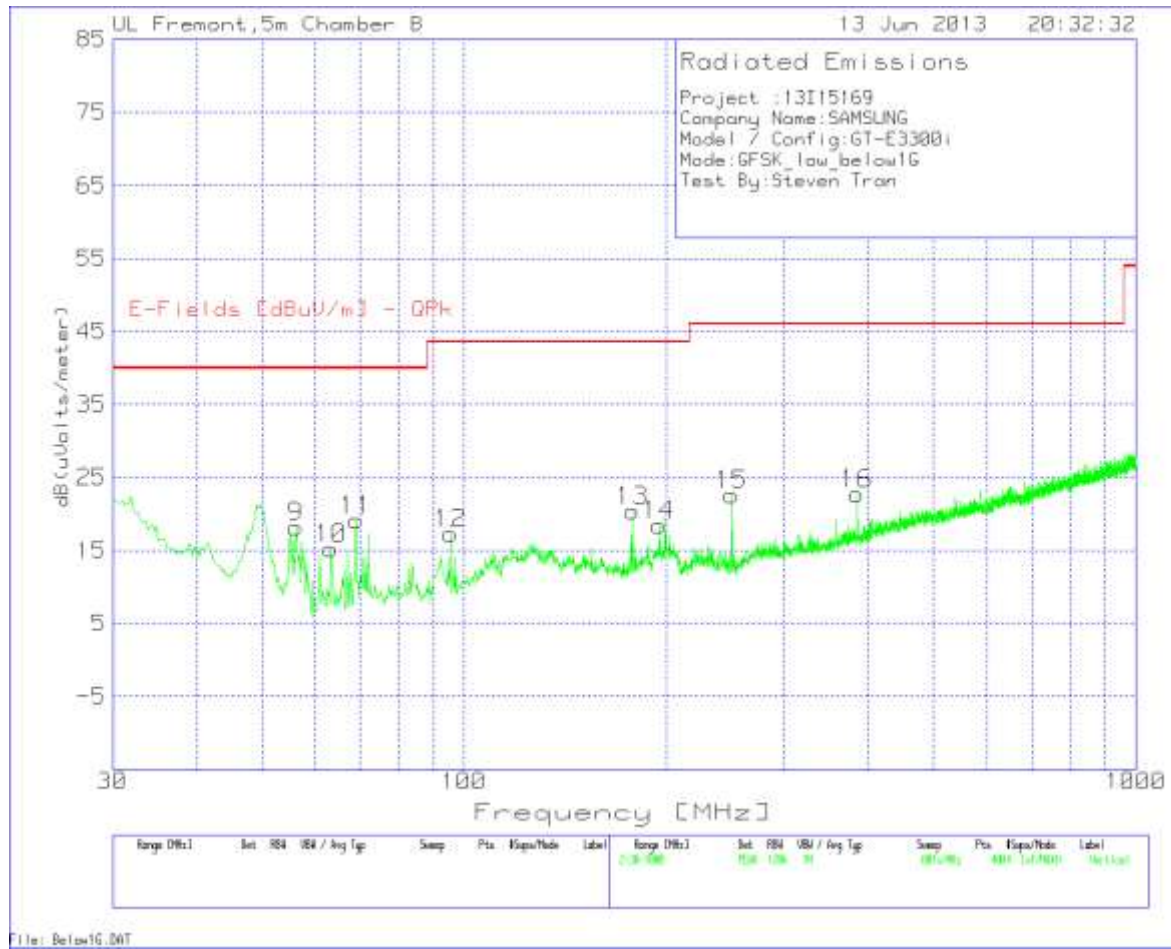
## WORST-CASE BELOW 1 GHz

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

#### HORIZONTAL PLOT



## VERTICAL PLOT



**BELOW 1 GHz HORIZONTAL AND VERTICAL DATA**

| Frequency (MHz) | Meter Reading (dBuV) | Det | T243 Antenna Factor dB/m | T10 preamp/ Cable loss [dB] | Corrected Reading dB(uVolts/m eter) | E-Fields [dBuV/m] - QPk | Margin (dB) | Height (cm) | Polarity |
|-----------------|----------------------|-----|--------------------------|-----------------------------|-------------------------------------|-------------------------|-------------|-------------|----------|
| 55.2011         | 41.92                | PK  | 6.8                      | -28.8                       | 19.92                               | 40                      | -20.08      | 400         | Horz     |
| 69.9825         | 38.26                | PK  | 7.9                      | -28.7                       | 17.46                               | 40                      | -22.54      | 101         | Horz     |
| 91.5488         | 34.65                | PK  | 7.8                      | -28.4                       | 14.05                               | 43.52                   | -29.47      | 400         | Horz     |
| 142.1934        | 35.6                 | PK  | 12.7                     | -27.9                       | 20.4                                | 43.52                   | -23.12      | 400         | Horz     |
| 158.9133        | 33.17                | PK  | 12.1                     | -27.6                       | 17.67                               | 43.52                   | -25.85      | 200         | Horz     |
| 242.5131        | 37.42                | PK  | 11.6                     | -26.9                       | 22.12                               | 46.02                   | -23.9       | 101         | Horz     |
| 313.997         | 33.6                 | PK  | 13.8                     | -26.4                       | 21                                  | 46.02                   | -25.02      | 200         | Horz     |
| 384.027         | 39.29                | PK  | 15.1                     | -26.4                       | 27.99                               | 46.02                   | -18.03      | 101         | Horz     |
| 56.1704         | 40.09                | PK  | 6.9                      | -28.8                       | 18.19                               | 40                      | -21.81      | 400         | Vert     |
| 63.4399         | 36.68                | PK  | 7.4                      | -28.8                       | 15.28                               | 40                      | -24.72      | 200         | Vert     |
| 69.0132         | 40.07                | PK  | 7.8                      | -28.7                       | 19.17                               | 40                      | -20.83      | 200         | Vert     |
| 95.4259         | 36.95                | PK  | 8.8                      | -28.4                       | 17.35                               | 43.52                   | -26.17      | 200         | Vert     |
| 178.0565        | 36.89                | PK  | 11                       | -27.5                       | 20.39                               | 43.52                   | -23.13      | 200         | Vert     |
| 195.2611        | 34.05                | PK  | 11.7                     | -27.3                       | 18.45                               | 43.52                   | -25.07      | 200         | Vert     |
| 250.2673        | 38.02                | PK  | 11.5                     | -26.9                       | 22.62                               | 46.02                   | -23.4       | 200         | Vert     |
| 384.027         | 34.08                | PK  | 15.1                     | -26.4                       | 22.78                               | 46.02                   | -23.24      | 200         | Vert     |

PK - Peak detector

## 9. 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 <sup>*</sup>  | 56 to 46 <sup>*</sup> |
| 0.5-5                       | 56                     | 46                    |
| 5-30                        | 60                     | 50                    |

<sup>\*</sup> 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.

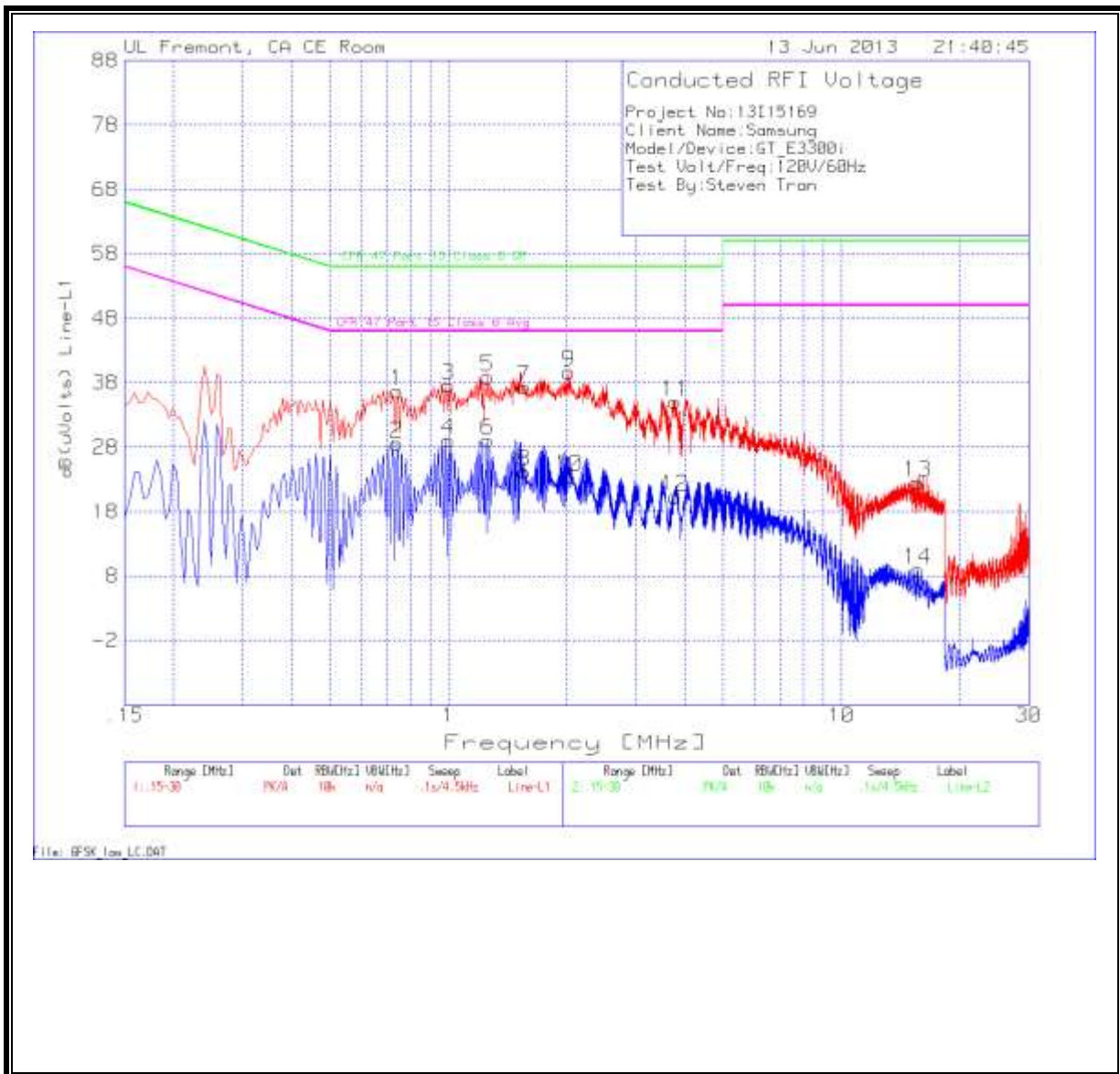
Line conducted data is recorded for both NEUTRAL and HOT lines.

### RESULTS

## 6 WORST EMISSIONS

| Project No:13I15169      |               |          |                    |                        |            |                           |        |                            |        |
|--------------------------|---------------|----------|--------------------|------------------------|------------|---------------------------|--------|----------------------------|--------|
| Client Name:Samsung      |               |          |                    |                        |            |                           |        |                            |        |
| Model/Device:GT_E3300i   |               |          |                    |                        |            |                           |        |                            |        |
| Test Volt/Freq:120V/60Hz |               |          |                    |                        |            |                           |        |                            |        |
| Test By:Steven Tran      |               |          |                    |                        |            |                           |        |                            |        |
| Line-L1 .15 - 30MHz      |               |          |                    |                        |            |                           |        |                            |        |
| Test Frequency           | Meter Reading | Detector | T24 IL L1.TXT (dB) | LC Cables 1&3.TXT (dB) | dB(uVolts) | CFR 47 Part 15 Class B QP | Margin | CFR 47 Part 15 Class B Avg | Margin |
| 0.7395                   | 36.61         | PK       | 0.1                | 0                      | 36.71      | 56                        | -19.29 | -                          | -      |
| 0.7395                   | 28.47         | Av       | 0.1                | 0                      | 28.57      | -                         | -      | 46                         | -17.43 |
| 1.0005                   | 37.48         | PK       | 0.1                | 0                      | 37.58      | 56                        | -18.42 | -                          | -      |
| 1.0005                   | 29.03         | Av       | 0.1                | 0                      | 29.13      | -                         | -      | 46                         | -16.87 |
| 1.2615                   | 38.71         | PK       | 0.1                | 0.1                    | 38.91      | 56                        | -17.09 | -                          | -      |
| 1.2615                   | 28.84         | Av       | 0.1                | 0.1                    | 29.04      | -                         | -      | 46                         | -16.96 |
| 1.563                    | 37.19         | PK       | 0.1                | 0.1                    | 37.39      | 56                        | -18.61 | -                          | -      |
| 1.563                    | 23.96         | Av       | 0.1                | 0.1                    | 24.16      | -                         | -      | 46                         | -21.84 |
| 2.0265                   | 39.4          | PK       | 0.1                | 0.1                    | 39.6       | 56                        | -16.4  | -                          | -      |
| 2.0265                   | 23.25         | Av       | 0.1                | 0.1                    | 23.45      | -                         | -      | 46                         | -22.55 |
| 3.7725                   | 34.87         | PK       | 0.1                | 0.1                    | 35.07      | 56                        | -20.93 | -                          | -      |
| 3.7725                   | 20.08         | Av       | 0.1                | 0.1                    | 20.28      | -                         | -      | 46                         | -25.72 |
| 15.639                   | 22.12         | PK       | 0.2                | 0.2                    | 22.52      | 60                        | -37.48 | -                          | -      |
| 15.639                   | 8.54          | Av       | 0.2                | 0.2                    | 8.94       | -                         | -      | 50                         | -41.06 |
| Line-L2 .15 - 30MHz      |               |          |                    |                        |            |                           |        |                            |        |
| Test Frequency           | Meter Reading | Detector | T24 IL L2.TXT (dB) | LC Cables 2&3.TXT (dB) | dB(uVolts) | CFR 47 Part 15 Class B QP | Margin | CFR 47 Part 15 Class B Avg | Margin |
| 0.4785                   | 38.02         | PK       | 0.1                | 0                      | 38.12      | 56.4                      | -18.28 | -                          | -      |
| 0.4785                   | 26.35         | Av       | 0.1                | 0                      | 26.45      | -                         | -      | 46.4                       | -19.95 |
| 1.0275                   | 39.5          | PK       | 0.1                | 0                      | 39.6       | 56                        | -16.4  | -                          | -      |
| 1.0275                   | 26.55         | Av       | 0.1                | 0                      | 26.65      | -                         | -      | 46                         | -19.35 |
| 1.653                    | 37.73         | PK       | 0.1                | 0.1                    | 37.93      | 56                        | -18.07 | -                          | -      |
| 1.653                    | 20.64         | Av       | 0.1                | 0.1                    | 20.84      | -                         | -      | 46                         | -25.16 |
| 2.0625                   | 39.47         | PK       | 0.1                | 0.1                    | 39.67      | 56                        | -16.33 | -                          | -      |
| 2.0625                   | 18.78         | Av       | 0.1                | 0.1                    | 18.98      | -                         | -      | 46                         | -27.02 |
| 2.535                    | 36.79         | PK       | 0.1                | 0.1                    | 36.99      | 56                        | -19.01 | -                          | -      |
| 2.535                    | 21.84         | Av       | 0.1                | 0.1                    | 22.04      | -                         | -      | 46                         | -23.96 |
| 4.7535                   | 34            | PK       | 0.1                | 0.1                    | 34.2       | 56                        | -21.8  | -                          | -      |
| 4.7535                   | 15.32         | Av       | 0.1                | 0.1                    | 15.52      | -                         | -      | 46                         | -30.48 |
| 26.871                   | 22.49         | PK       | 0.5                | 0.3                    | 23.29      | 60                        | -36.71 | -                          | -      |
| 26.871                   | 4.79          | Av       | 0.5                | 0.3                    | 5.59       | -                         | -      | 50                         | -44.41 |
| PK - Peak detector       |               |          |                    |                        |            |                           |        |                            |        |
| QP - Quasi-Peak detector |               |          |                    |                        |            |                           |        |                            |        |
| Av - Average detector    |               |          |                    |                        |            |                           |        |                            |        |

**LINE 1 RESULTS**



**LINE 2 RESULTS**

