



**FCC CFR47 PART 15 SUBPART C**

**CERTIFICATION TEST REPORT**

**FOR**

**GSM/WCDMA Phone + Bluetooth/BLE and DTS b/g/n**

**MODEL NUMBER : SM-G531H, SM-G531H/DS**

**FCC ID: A3LSMG531H**

**REPORT NUMBER: 15K20806-E1**

**ISSUE DATE: JUN 03, 2015**

*Prepared for*

**SAMSUNG ELECTRONICS CO., LTD.  
129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI,  
GYEONGGI-DO, 443-742, KOREA**

*Prepared by*

**UL Korea, Ltd. Suwon Laboratory  
218 Maeyeong-ro, Yeongtong-gu,  
Suwon-si, Gyeonggi-do, 443-823, Korea  
TEL: (031) 337-9902  
FAX: (031) 213-5433**



**ACCREDITED**

**TL-637**

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
--	06/03/15	Initial issue	SungGil Park

## TABLE OF CONTENTS

<b>1. ATTESTATION OF TEST RESULTS .....</b>	<b>5</b>
<b>2. TEST METHODOLOGY .....</b>	<b>6</b>
<b>3. FACILITIES AND ACCREDITATION .....</b>	<b>6</b>
<b>4. CALIBRATION AND UNCERTAINTY .....</b>	<b>6</b>
4.1. <i>MEASURING INSTRUMENT CALIBRATION .....</i>	<i>6</i>
4.2. <i>SAMPLE CALCULATION .....</i>	<i>6</i>
4.3. <i>MEASUREMENT UNCERTAINTY.....</i>	<i>7</i>
<b>5. EQUIPMENT UNDER TEST.....</b>	<b>8</b>
5.1. <i>DESCRIPTION OF EUT .....</i>	<i>8</i>
5.2. <i>MAXIMUM OUTPUT POWER.....</i>	<i>8</i>
5.3. <i>DESCRIPTION OF AVAILABLE ANTENNAS .....</i>	<i>8</i>
5.4. <i>WORST-CASE CONFIGURATION AND MODE.....</i>	<i>8</i>
5.5. <i>DESCRIPTION OF TEST SETUP.....</i>	<i>9</i>
<b>6. TEST AND MEASUREMENT EQUIPMENT .....</b>	<b>11</b>
<b>7. MEASUREMENT METHODS .....</b>	<b>12</b>
<b>8. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS .....</b>	<b>12</b>
8.1. <i>ON TIME AND DUTY CYCLE RESULTS.....</i>	<i>12</i>
<b>9. SUMMARY TABLE .....</b>	<b>13</b>
<b>10. ANTENNA PORT TEST RESULTS .....</b>	<b>14</b>
10.1. <i>6 dB BANDWIDTH .....</i>	<i>14</i>
10.1.1. <i>802.11b MODE IN THE 2.4 GHz BAND .....</i>	<i>14</i>
10.1.2. <i>802.11g MODE IN THE 2.4 GHz BAND .....</i>	<i>14</i>
10.1.3. <i>802.11n HT20 MODE IN THE 2.4 GHz BAND.....</i>	<i>14</i>
10.1.4. <i>6 dB BANDWIDTH PLOTS.....</i>	<i>15</i>
10.2. <i>99% BANDWIDTH .....</i>	<i>18</i>
10.2.1. <i>802.11b MODE IN THE 2.4 GHz BAND .....</i>	<i>18</i>
10.2.2. <i>802.11g MODE IN THE 2.4 GHz BAND .....</i>	<i>18</i>
10.2.3. <i>802.11n HT20 MODE IN THE 2.4 GHz BAND.....</i>	<i>18</i>
10.2.4. <i>99% BANDWIDTH PLOTS.....</i>	<i>19</i>
10.3. <i>OUTPUT POWER.....</i>	<i>22</i>
10.3.1. <i>802.11b MODE IN THE 2.4 GHz BAND .....</i>	<i>22</i>
10.3.2. <i>802.11g MODE IN THE 2.4 GHz BAND .....</i>	<i>23</i>
10.3.3. <i>802.11n HT20 MODE IN THE 2.4 GHz BAND.....</i>	<i>23</i>
10.4. <i>PSD.....</i>	<i>24</i>

10.4.1.	802.11b MODE IN THE 2.4 GHz BAND .....	24
10.4.2.	802.11g MODE IN THE 2.4 GHz BAND .....	24
10.4.3.	802.11n HT20 MODE IN THE 2.4 GHz BAND.....	24
10.4.4.	PSD PLOTS .....	26
10.5.	<i>OUT-OF-BAND EMISSIONS</i> .....	29
10.5.1.	802.11b MODE IN THE 2.4 GHz BAND .....	30
10.5.2.	802.11g MODE IN THE 2.4 GHz BAND .....	31
10.5.3.	802.11n HT20 MODE IN THE 2.4 GHz BAND.....	32
<b>11.</b>	<b>RADIATED TEST RESULTS .....</b>	<b>33</b>
11.1.	<i>LIMITS AND PROCEDURE</i> .....	33
11.2.	<i>TRANSMITTER ABOVE 1 GHz</i> .....	34
11.2.1.	TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND.....	34
11.2.2.	TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND.....	44
11.2.3.	TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND .....	54
11.3.	<i>WORST-CASE BELOW 1 GHz</i> .....	64
<b>12.</b>	<b>AC POWER LINE CONDUCTED EMISSIONS .....</b>	<b>66</b>
<b>13.</b>	<b>SETUP PHOTOS .....</b>	<b>69</b>

# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** SAMSUNG ELECTRONICS CO., LTD.  
**EUT DESCRIPTION:** GSM/WCDMA Phone + Bluetooth/BLE and DTS b/g/n  
**MODEL NUMBER:** SM-G531H, SM-G531H/DS  
**SERIAL NUMBER:** R31G401XZYL (RADIATED); R31G401XZZY (CONDUCTED)  
**DATE TESTED:** MAY 11 – JUN 03, 2015

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

UL Korea, Ltd. 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 Korea, Ltd. 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 Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. 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 IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released For  
UL Korea, Ltd. By:



CY Choi  
Suwon Lab Engineer  
UL Korea, Ltd.

Tested By:



SungGil Park  
Suwon Lab Engineer  
UL Korea, Ltd.

## 2. TEST METHODOLOGY

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

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 443-823, Korea. Line conducted emissions are measured only at the 218 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.

218 Maeyeong-ro	
<input checked="" type="checkbox"/>	Chamber 1
<input type="checkbox"/>	Chamber 2

UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at <http://www.iasonline.org/PDF/TL/TL-637.pdf>.

## 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	2.32 dB
Radiated Disturbance, Below 1GHz	4.14 dB
Radiated Disturbance, Above 1 GHz	5.97 dB

Uncertainty figures are valid to a confidence level of 95%.

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA Phone + Bluetooth/BLE, DTS b/g/n.

SM-G531H and SM-G531H/DS are same hardware but for different number of SIM card slot. SM-G531H has one slot. SM-G531H/DS is dual SIM version.

This test report addresses the DTS (WLAN) operational mode.

### 5.2. MAXIMUM OUTPUT POWER

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

Frequency Range [MHz]	Mode	Output Power [dBm]	Output Power [mW]
2412 - 2462	802.11b	15.25	33.50
	802.11g	13.72	23.55
	802.11n HT20	12.58	18.11

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antennas, with a antenna's maximum gain of -2.68 dBi.

### 5.4. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

The fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

Based on the baseline scan, the worst-case data rates were:

802.11b mode: 1 Mbps  
802.11g mode: 6 Mbps  
802.11n HT20 mode: MCS0

## 5.5. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	ETA0U83EWE	N/A	N/A
Data Cable	SAMSUNG	ECB-DU68WE	N/A	N/A
Earphone	SAMSUNG	EHS61ASFWE	N/A	N/A

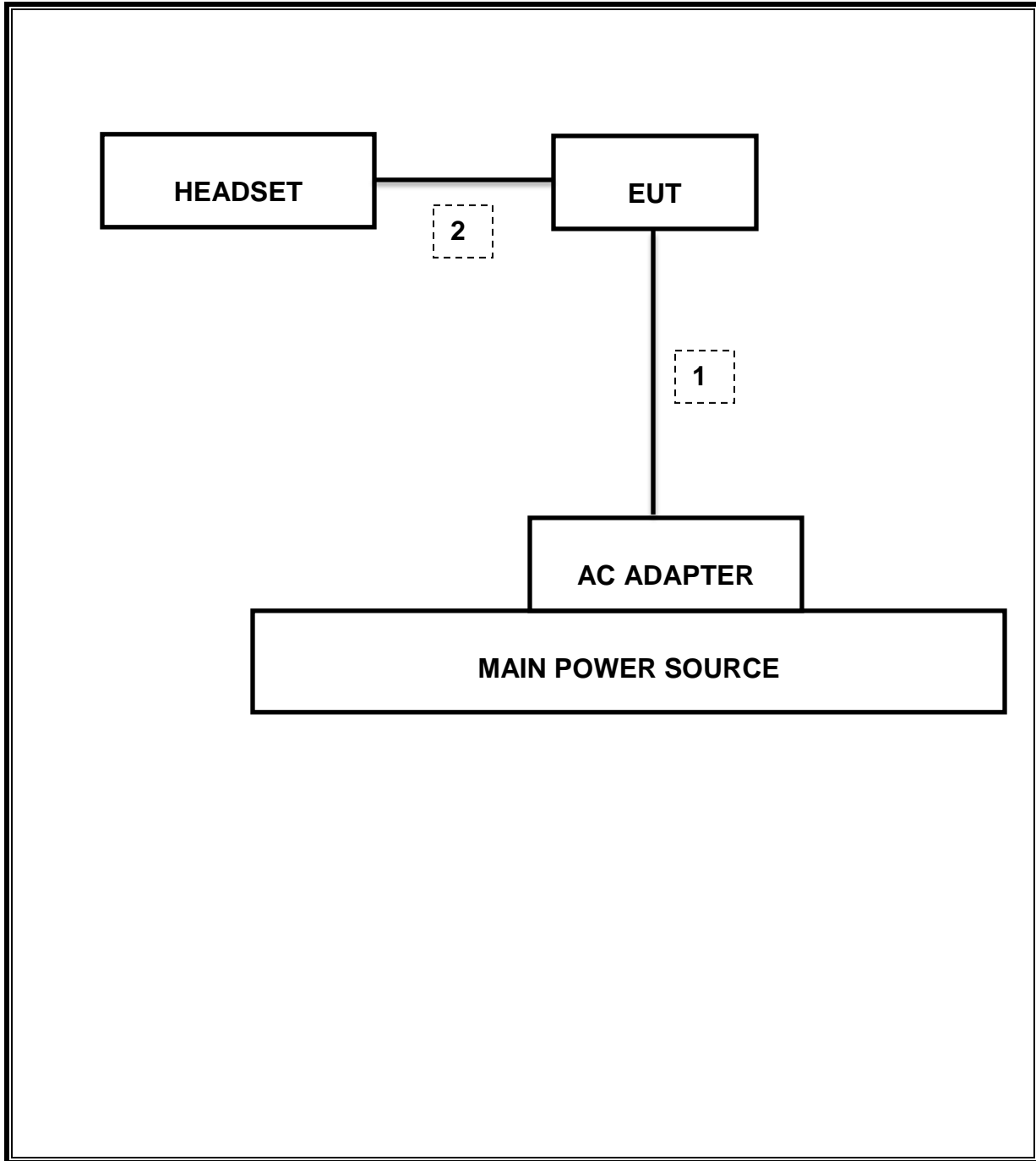
### I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	Mini-USB	Shielded	0.8m	N/A
2	Audio	1	Mini-Jack	Unshielded	1.0m	N/A

### TEST SETUP

The EUT is a stand-alone unit during the tests. Test software exercised the radio card.

**SETUP DIAGRAM FOR TESTS**



## 6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List				
Description	Manufacturer	Model	S/N	Cal Due
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	950	11-17-15
Antenna, Horn, 18 GHz	ETS	3115	00167211	09-20-15
Antenna, Horn, 40 GHz	ETS	3116C	00166255	09-23-15
Antenna, Horn, 40 GHz	ETS	3116C-PA	00168841	09-29-15
Preamplifier, 1000 MHz	Sonoma	310N	341282	11-17-15
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1876511	11-18-15
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	09-23-15
Bluetooth Tester	TESCOM	TC-3000C	3000C000546	11-17-15
Average Power Sensor	R&S	NRZ-Z91	102681	11-17-15
Average Power Sensor	Agilent / HP	U2000	MY54270007	09-23-15
EMI Test Receive, 40 GHz	R&S	ESU40	100439	11-17-15
EMI Test Receive, 3 GHz	R&S	ESR3	101832	11-17-15
Attenuator / Switch driver	HP	11713A	3748A04272	N/A
Low Pass Filter 3GHz	Micro-Tronics	LPS17541	009	11-17-15
High Pass Filter 5GHz	Micro-Tronics	HPS17542	009	11-17-15
High Pass Filter 6GHz	Micro-Tronics	HPM17543	010	11-17-15
LISN	R&S	ENV-216	101836	04-09-16
LISN	R&S	ENV-216	101837	04-09-16

## 7. MEASUREMENT METHODS

KDB 558074 D01 DTS Meas Guidance v03r02: Measurement Procedure §9.2.3.1 AVGPM is used for power and §10.2 AVGPS-1 is used for power spectral density.

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

Band edge emissions within Restricted Bands are measured using RMS with duty cycle factor offset method.

## 8. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

### LIMITS

None; for reporting purposes only.

### 8.1. ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B [msec]	Period [msec]	Duty Cycle x [linear]	Duty Cycle [%]	Duty Cycle Correction Factor [dB]	1/T Minimum VBW [kHz]
<b>2400MHz Bands</b>						
802.11b	8.607	8.707	0.989	98.9%	0.00	0.010
802.11g	1.425	1.527	0.933	93.3%	0.30	0.702
802.11n HT20	1.336	1.437	0.930	93.0%	0.32	0.749



[802.11b Mode]

[802.11g Mode]

[802.11n Mode]

## 9. SUMMARY TABLE

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result	Worst Case
15.247 (a)(2)	Occupied Band width (6dB)	>500KHz	Conducted	Pass	8.549 MHz
2.1051, 15.247 (d)	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-30.50 dBm
15.247	TX conducted output power	<30dBm		Pass	15.25 dBm
15.247	PSD	<8dBm		Pass	-6.210 dBm
15.207 (a)	AC Power Line conducted emissions	Section 10	Power Line conducted	Pass	51.59 dBuV (QP)
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass	50.83 dBuV/m (AV)

## 10. ANTENNA PORT TEST RESULTS

### 10.1. 6 dB BANDWIDTH

#### LIMITS

FCC §15.247 (a) (2)

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

#### TEST PROCEDURE

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

#### RESULTS

##### 10.1.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]	Minimum Limit [MHz]
Low	2412	9.037	0.5
Mid	2437	9.042	0.5
High	2462	8.549	0.5
Worst		8.549	0.5

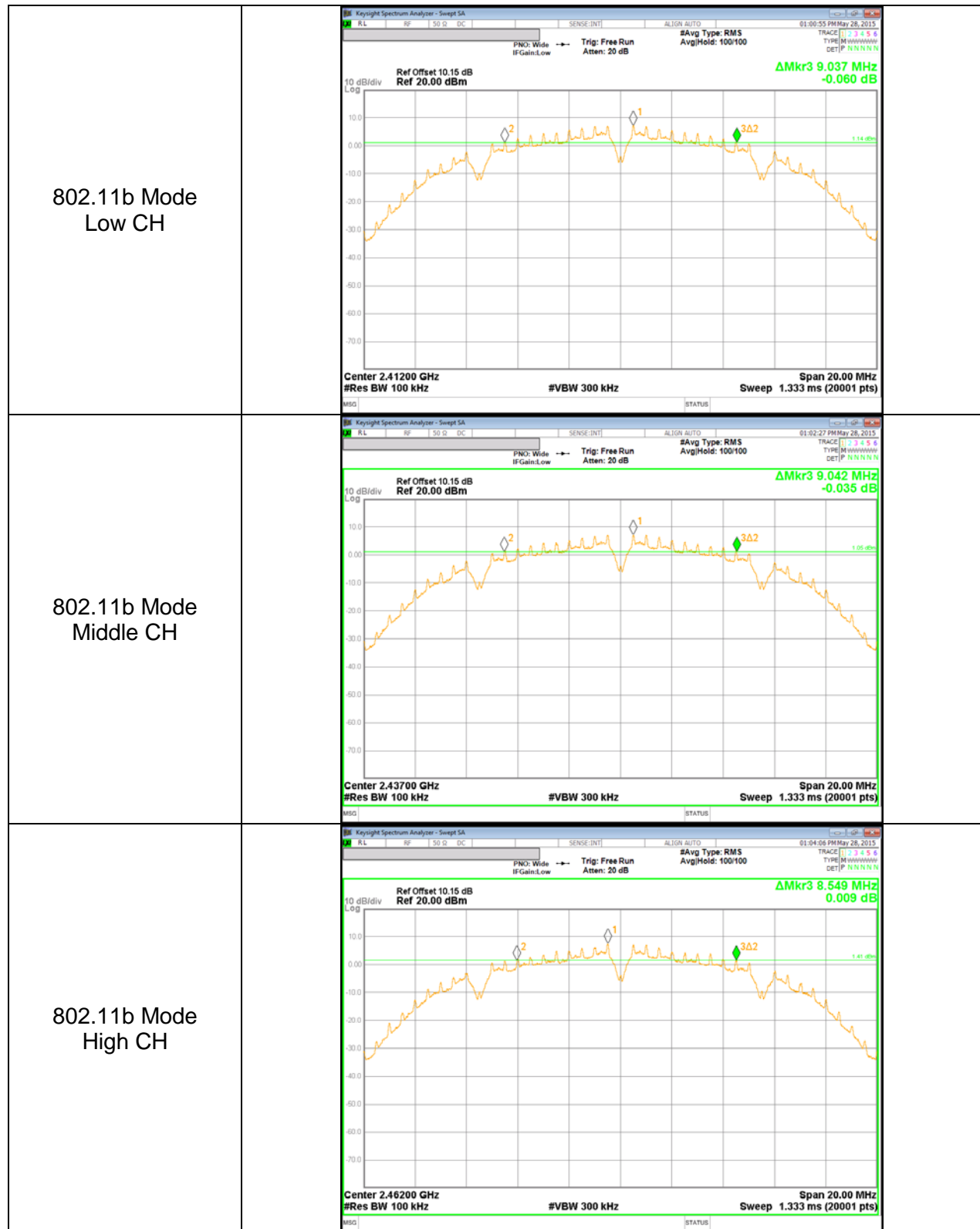
##### 10.1.2. 802.11g MODE IN THE 2.4 GHz BAND

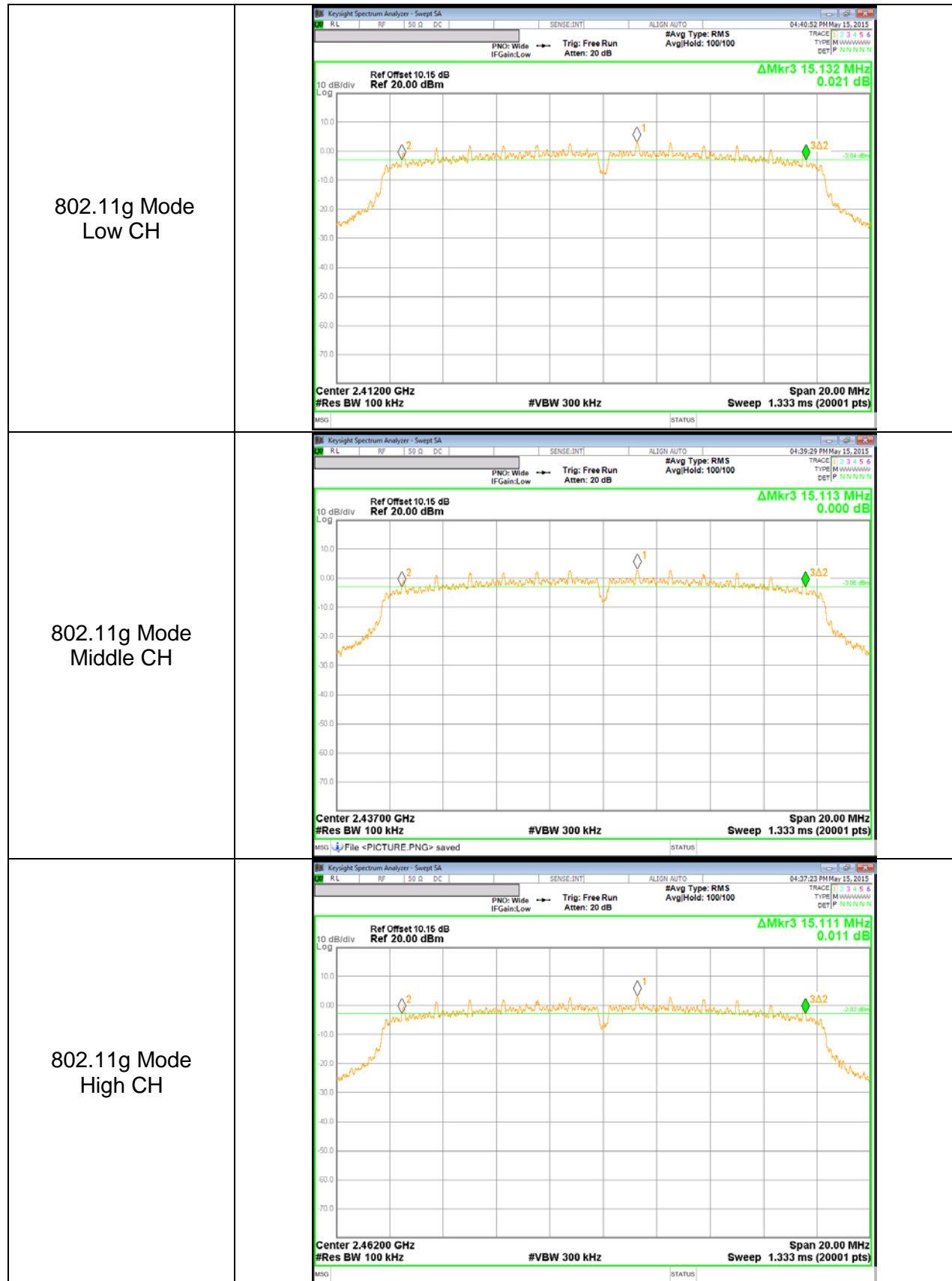
Channel	Frequency [MHz]	6 dB Bandwidth [MHz]	Minimum Limit [MHz]
Low	2412	15.132	0.5
Mid	2437	15.113	0.5
High	2462	15.111	0.5
Worst		15.111	0.5

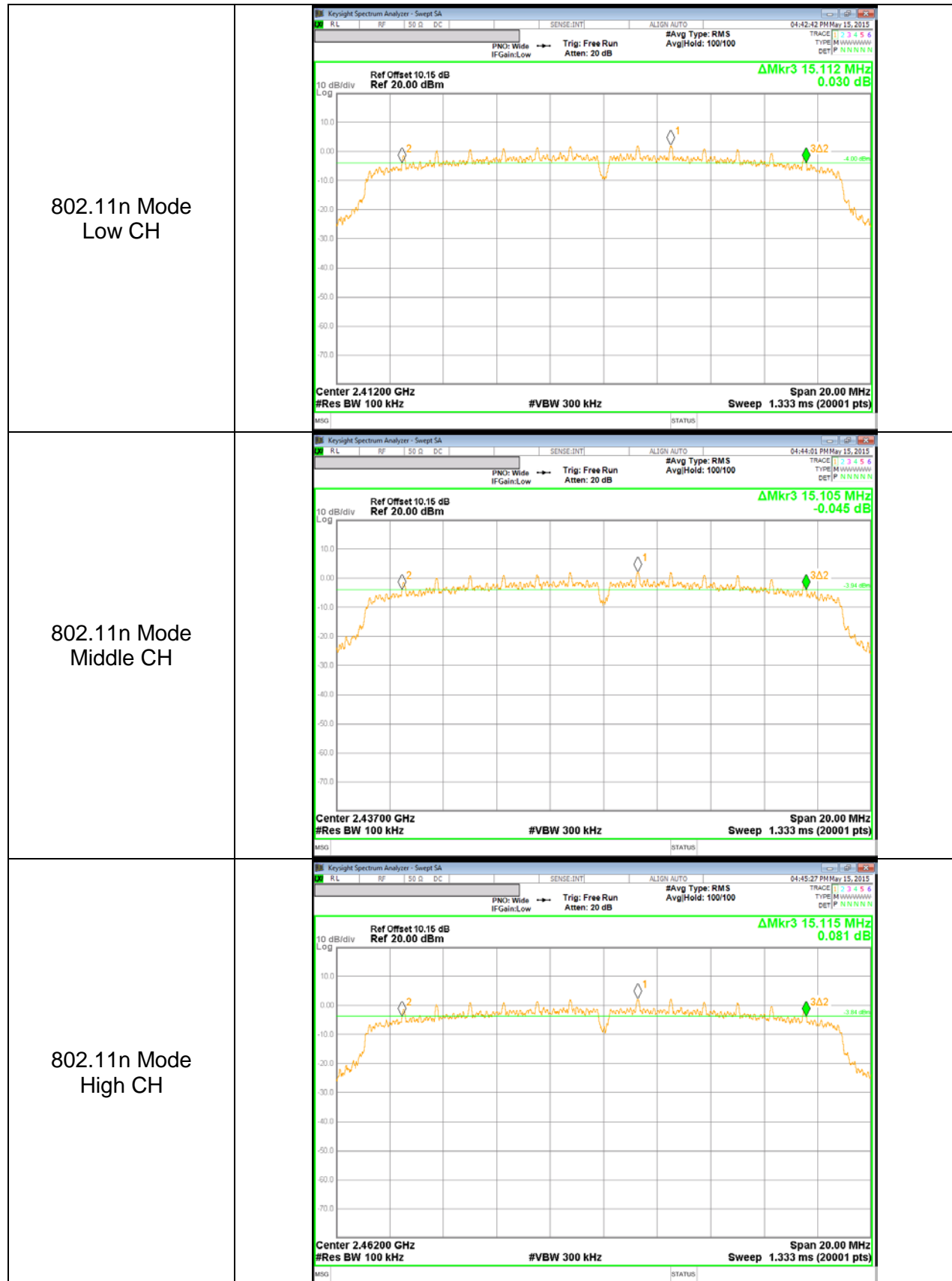
##### 10.1.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]	Minimum Limit [MHz]
Low	2412	15.112	0.5
Mid	2437	15.105	0.5
High	2462	15.115	0.5
Worst		15.105	0.5

**10.1.4. 6 dB BANDWIDTH PLOTS**







## 10.2. 99% BANDWIDTH

### LIMITS

None; for reporting purposes only.

### RESULTS

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

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	2412	14.206
Mid	2437	14.137
High	2462	14.031
Worst		14.206

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

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	2412	16.329
Mid	2437	16.348
High	2462	16.332
Worst		16.348

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

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	2412	17.503
Mid	2437	17.504
High	2462	17.481
Worst		17.504

**10.2.4. 99% BANDWIDTH PLOTS**

<p>802.11b Mode Low CH</p>	<p>KeySight Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.41200000 GHz      Trig: Free Run      #Atten: 20 dB</p> <p>Radio Std: None      Radio Device: BTS</p> <p>10 dB/div Ref 20.00 dBm</p> <p>Center 2.412 GHz #Res BW 150 kHz #VBW 470 kHz Span 30 MHz #Sweep 100 ms</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>15.2 dBm</td> </tr> <tr> <td><b>14.206 MHz</b></td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>-29.010 kHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> <tr> <td>x dB Bandwidth</td> <td></td> <td></td> </tr> <tr> <td>9.486 MHz</td> <td></td> <td></td> </tr> </table>	Occupied Bandwidth	Total Power	15.2 dBm	<b>14.206 MHz</b>			Transmit Freq Error	OBW Power	99.00 %	-29.010 kHz	x dB	-6.00 dB	x dB Bandwidth			9.486 MHz		
Occupied Bandwidth	Total Power	15.2 dBm																	
<b>14.206 MHz</b>																			
Transmit Freq Error	OBW Power	99.00 %																	
-29.010 kHz	x dB	-6.00 dB																	
x dB Bandwidth																			
9.486 MHz																			
<p>802.11b Mode Middle CH</p>	<p>KeySight Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.43700000 GHz      Trig: Free Run      #Atten: 20 dB</p> <p>Radio Std: None      Radio Device: BTS</p> <p>10 dB/div Ref 20.00 dBm</p> <p>Center 2.437 GHz #Res BW 150 kHz #VBW 470 kHz Span 30 MHz #Sweep 100 ms</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>15.1 dBm</td> </tr> <tr> <td><b>14.137 MHz</b></td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>226 Hz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> <tr> <td>x dB Bandwidth</td> <td></td> <td></td> </tr> <tr> <td>7.579 MHz</td> <td></td> <td></td> </tr> </table>	Occupied Bandwidth	Total Power	15.1 dBm	<b>14.137 MHz</b>			Transmit Freq Error	OBW Power	99.00 %	226 Hz	x dB	-6.00 dB	x dB Bandwidth			7.579 MHz		
Occupied Bandwidth	Total Power	15.1 dBm																	
<b>14.137 MHz</b>																			
Transmit Freq Error	OBW Power	99.00 %																	
226 Hz	x dB	-6.00 dB																	
x dB Bandwidth																			
7.579 MHz																			
<p>802.11b Mode High CH</p>	<p>KeySight Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.46200000 GHz      Trig: Free Run      #Atten: 20 dB</p> <p>Radio Std: None      Radio Device: BTS</p> <p>10 dB/div Ref 20.00 dBm</p> <p>Center 2.462 GHz #Res BW 150 kHz #VBW 470 kHz Span 30 MHz #Sweep 100 ms</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>15.3 dBm</td> </tr> <tr> <td><b>14.031 MHz</b></td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>-10.206 kHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> <tr> <td>x dB Bandwidth</td> <td></td> <td></td> </tr> <tr> <td>8.531 MHz</td> <td></td> <td></td> </tr> </table>	Occupied Bandwidth	Total Power	15.3 dBm	<b>14.031 MHz</b>			Transmit Freq Error	OBW Power	99.00 %	-10.206 kHz	x dB	-6.00 dB	x dB Bandwidth			8.531 MHz		
Occupied Bandwidth	Total Power	15.3 dBm																	
<b>14.031 MHz</b>																			
Transmit Freq Error	OBW Power	99.00 %																	
-10.206 kHz	x dB	-6.00 dB																	
x dB Bandwidth																			
8.531 MHz																			

<p>802.11g Mode Low CH</p>	<p>Center Freq: 2.41200000 GHz          Trig: Free Run          #Atten: 20 dB          Radio Std: None          Radio Device: BTS</p> <p>Center 2.412 GHz          #Res BW 200 kHz          #VBW 620 kHz          Span 30 MHz          #Sweep 100 ms</p> <p>Occupied Bandwidth <b>16.329 MHz</b>          Total Power 13.1 dBm          Transmit Freq Error -19.286 kHz          OBW Power 99.00 %          x dB Bandwidth 15.90 MHz          x dB -6.00 dB</p>
<p>802.11g Mode Middle CH</p>	<p>Center Freq: 2.43700000 GHz          Trig: Free Run          #Atten: 20 dB          Radio Std: None          Radio Device: BTS</p> <p>Center 2.437 GHz          #Res BW 200 kHz          #VBW 620 kHz          Span 30 MHz          #Sweep 100 ms</p> <p>Occupied Bandwidth <b>16.348 MHz</b>          Total Power 13.2 dBm          Transmit Freq Error -12.136 kHz          OBW Power 99.00 %          x dB Bandwidth 15.15 MHz          x dB -6.00 dB</p>
<p>802.11g Mode High CH</p>	<p>Center Freq: 2.46200000 GHz          Trig: Free Run          #Atten: 20 dB          Radio Std: None          Radio Device: BTS</p> <p>Center 2.462 GHz          #Res BW 200 kHz          #VBW 620 kHz          Span 30 MHz          #Sweep 100 ms</p> <p>Occupied Bandwidth <b>16.332 MHz</b>          Total Power 13.2 dBm          Transmit Freq Error -22.987 kHz          OBW Power 99.00 %          x dB Bandwidth 14.98 MHz          x dB -6.00 dB</p>

<p>802.11n Mode Low CH</p>	<p>Center Freq: 2.41200000 GHz              Trig: Free Run              #Atten: 20 dB              Radio Std: None              Radio Device: BTS</p> <p>Ref 20.00 dBm</p> <p>Center 2.412 GHz              #Res BW 200 kHz              #VBW 620 kHz              Span 30 MHz              #Sweep 100 ms</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>12.1 dBm</td> </tr> <tr> <td colspan="3"><b>17.503 MHz</b></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>-21.006 kHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> <tr> <td>x dB Bandwidth</td> <td></td> <td></td> </tr> <tr> <td>16.88 MHz</td> <td></td> <td></td> </tr> </table>	Occupied Bandwidth	Total Power	12.1 dBm	<b>17.503 MHz</b>			Transmit Freq Error	OBW Power	99.00 %	-21.006 kHz	x dB	-6.00 dB	x dB Bandwidth			16.88 MHz		
Occupied Bandwidth	Total Power	12.1 dBm																	
<b>17.503 MHz</b>																			
Transmit Freq Error	OBW Power	99.00 %																	
-21.006 kHz	x dB	-6.00 dB																	
x dB Bandwidth																			
16.88 MHz																			
<p>802.11n Mode Middle CH</p>	<p>Center Freq: 2.43700000 GHz              Trig: Free Run              #Atten: 20 dB              Radio Std: None              Radio Device: BTS</p> <p>Ref 20.00 dBm</p> <p>Center 2.437 GHz              #Res BW 200 kHz              #VBW 620 kHz              Span 30 MHz              #Sweep 100 ms</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>12.1 dBm</td> </tr> <tr> <td colspan="3"><b>17.504 MHz</b></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>-23.031 kHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> <tr> <td>x dB Bandwidth</td> <td></td> <td></td> </tr> <tr> <td>14.70 MHz</td> <td></td> <td></td> </tr> </table>	Occupied Bandwidth	Total Power	12.1 dBm	<b>17.504 MHz</b>			Transmit Freq Error	OBW Power	99.00 %	-23.031 kHz	x dB	-6.00 dB	x dB Bandwidth			14.70 MHz		
Occupied Bandwidth	Total Power	12.1 dBm																	
<b>17.504 MHz</b>																			
Transmit Freq Error	OBW Power	99.00 %																	
-23.031 kHz	x dB	-6.00 dB																	
x dB Bandwidth																			
14.70 MHz																			
<p>802.11n Mode High CH</p>	<p>Center Freq: 2.46200000 GHz              Trig: Free Run              #Atten: 20 dB              Radio Std: None              Radio Device: BTS</p> <p>Ref 20.00 dBm</p> <p>Center 2.462 GHz              #Res BW 200 kHz              #VBW 620 kHz              Span 30 MHz              #Sweep 100 ms</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>12.1 dBm</td> </tr> <tr> <td colspan="3"><b>17.481 MHz</b></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>-17.517 kHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> <tr> <td>x dB Bandwidth</td> <td></td> <td></td> </tr> <tr> <td>14.25 MHz</td> <td></td> <td></td> </tr> </table>	Occupied Bandwidth	Total Power	12.1 dBm	<b>17.481 MHz</b>			Transmit Freq Error	OBW Power	99.00 %	-17.517 kHz	x dB	-6.00 dB	x dB Bandwidth			14.25 MHz		
Occupied Bandwidth	Total Power	12.1 dBm																	
<b>17.481 MHz</b>																			
Transmit Freq Error	OBW Power	99.00 %																	
-17.517 kHz	x dB	-6.00 dB																	
x dB Bandwidth																			
14.25 MHz																			

### 10.3. OUTPUT POWER

#### LIMITS

FCC §15.247

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

#### DIRECTIONAL ANTENNA GAIN

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

#### TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 10.1 dB (including 10 dB pad and 0.1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

#### RESULTS

##### 10.3.1. 802.11b MODE IN THE 2.4 GHz BAND

###### Limits

Channel	Frequency [MHz]	Directional Gain Primary [dBi]	FCC Power Limit [dBm]	IC Power Limit [dBm]	IC EIRP Limit [dBm]	Max Power [dBm]
Low	2412	-2.51	30.00	30.00	36.00	30.00
Mid	2437	-2.51	30.00	30.00	36.00	30.00
High	2462	-2.51	30.00	30.00	36.00	30.00

###### Results

Channel	Frequency [MHz]	Primary Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Margin [dB]
Low	2412	15.25	15.25	36.00	-20.75
Mid	2437	15.18	15.18	36.00	-20.82
High	2462	15.12	15.12	36.00	-20.88
Worst			15.25	36.00	-20.75

**10.3.2. 802.11g MODE IN THE 2.4 GHz BAND**

**Limits**

Channel	Frequency [MHz]	Directional Gain Primary [dBi]	FCC Power Limit [dBm]	IC Power Limit [dBm]	IC EIRP Limit [dBm]	Max Power [dBm]
Low	2412	-2.51	30.00	30.00	36.00	30.00
Mid	2437	-2.51	30.00	30.00	36.00	30.00
High	2462	-2.51	30.00	30.00	36.00	30.00

**Results**

Channel	Frequency [MHz]	Primary Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Margin [dB]
Low	2412	13.67	13.67	36.00	-22.33
Mid	2437	13.70	13.70	36.00	-22.30
High	2462	13.72	13.72	36.00	-22.28
Worst			13.72	36.00	-22.28

**10.3.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND**

**Limits**

Channel	Frequency [MHz]	Directional Gain Primary [dBi]	FCC Power Limit [dBm]	IC Power Limit [dBm]	IC EIRP Limit [dBm]	Max Power [dBm]
Low	2412	-2.51	30.00	30.00	36.00	30.00
Mid	2437	-2.51	30.00	30.00	36.00	30.00
High	2462	-2.51	30.00	30.00	36.00	30.00

**Results**

Channel	Frequency [MHz]	Primary Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Margin [dB]
Low	2412	12.50	12.50	36.00	-23.50
Mid	2437	12.54	12.54	36.00	-23.46
High	2462	12.58	12.58	36.00	-23.42
Worst			12.58	36.00	-23.42

## 10.4. PSD

### LIMITS

FCC §15.247

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

### TEST PROCEDURE

Power Spectral Density was performed utilizing the “Method AVGPS-1” under KDB558074 D01 DTS Meas Guidance v03r02

### RESULTS

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

##### PSD Results

Channel	Frequency [MHz]	PSD Meas [dBm]	Duty Factor [dB]	Final PSD [dBm]	Limit [dBm]	Margin [dB]
Low	2412	-15.912	0.00	-15.91	8.00	-23.91
Mid	2437	-16.081	0.00	-16.08	8.00	-24.08
High	2462	-15.800	0.00	-15.80	8.00	-23.80

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

##### PSD Results

Channel	Frequency [MHz]	PSD Meas [dBm]	Duty Factor [dB]	Final PSD [dBm]	Limit [dBm]	Margin [dB]
Low	2412	-19.64	0.30	-19.34	8.00	-27.64
Mid	2437	-19.94	0.30	-19.64	8.00	-27.94
High	2462	-19.657	0.30	-19.36	8.00	-27.66

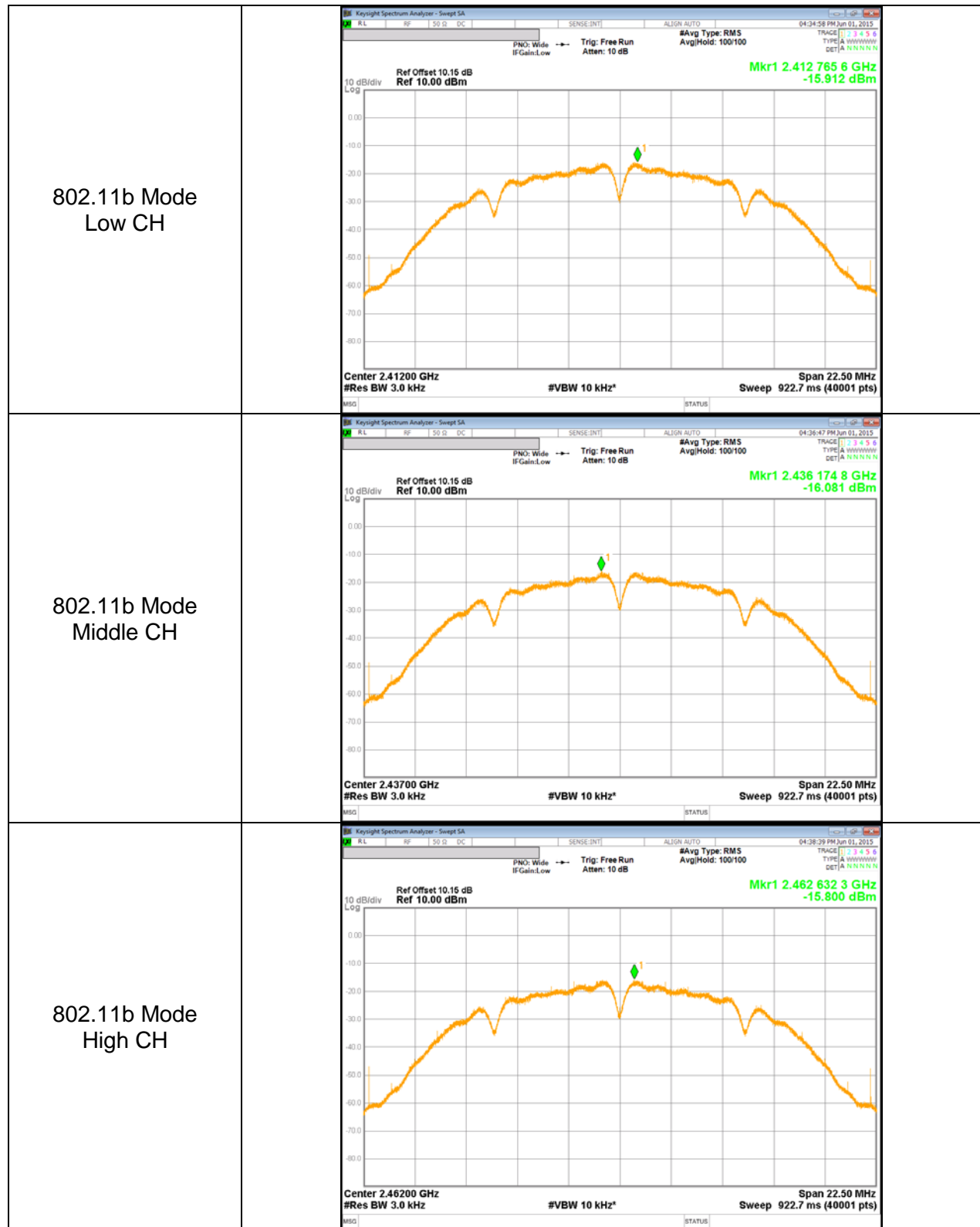
#### 10.4.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

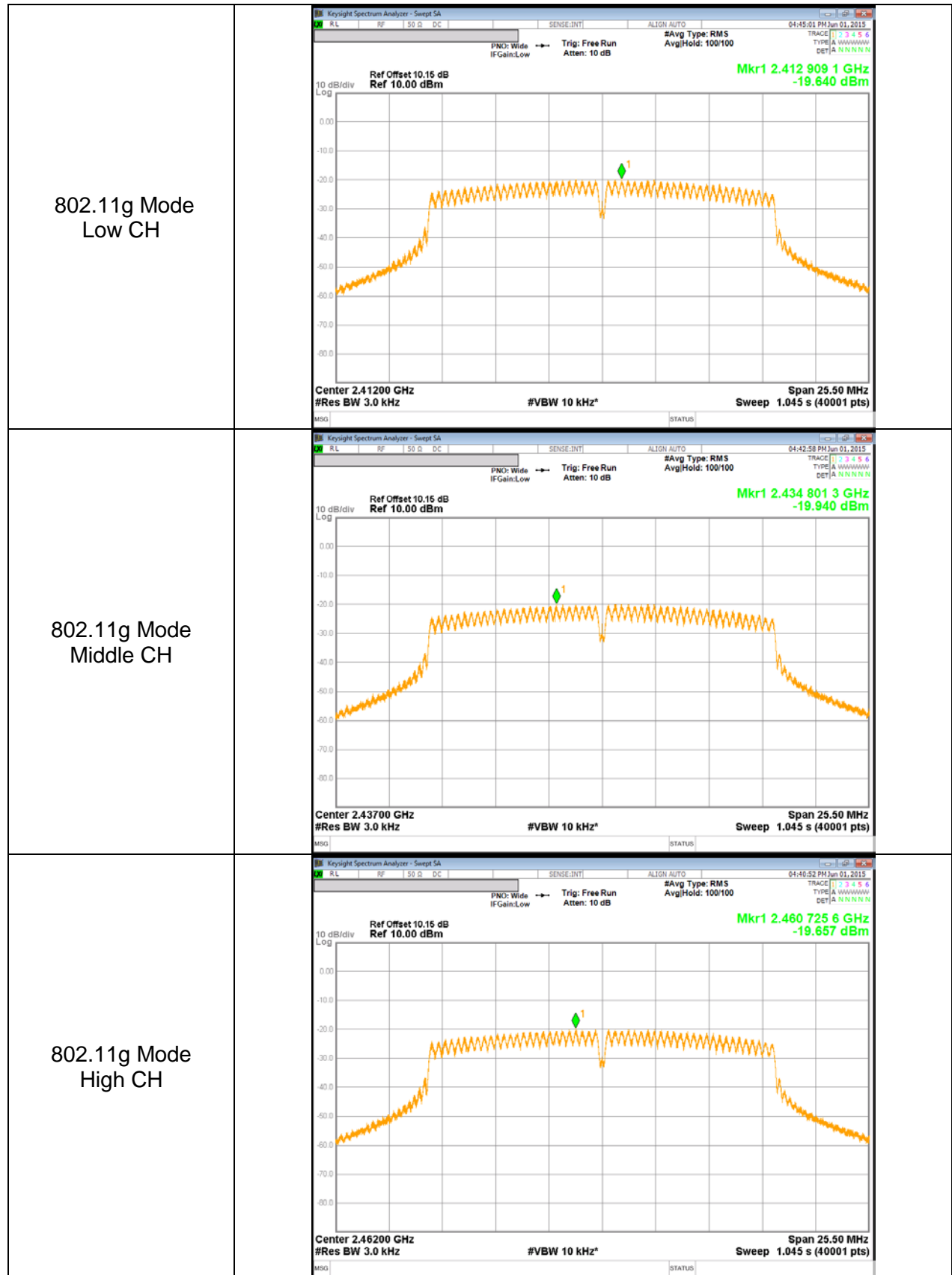
##### PSD Results

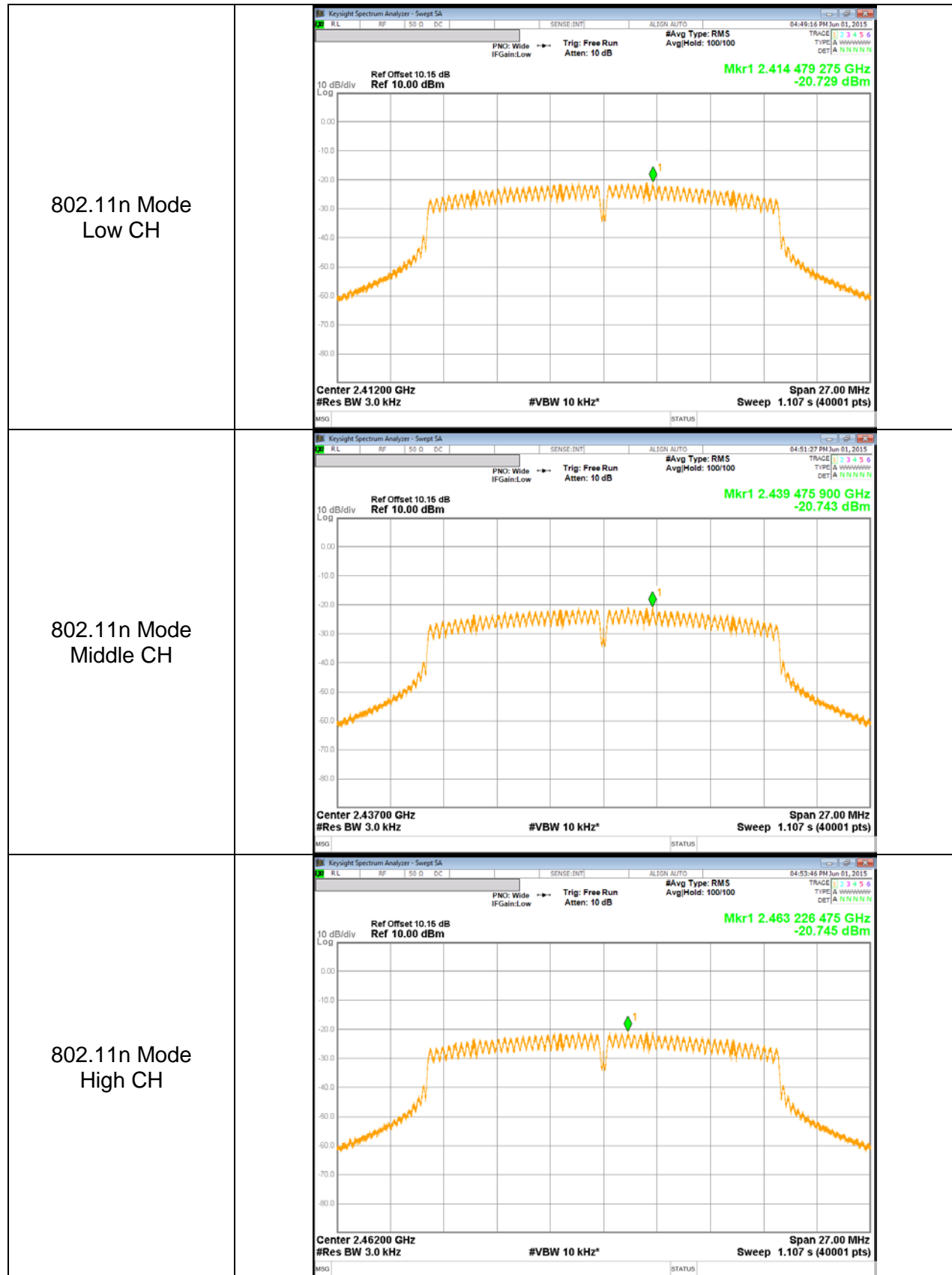
Channel	Frequency [MHz]	PSD Meas [dBm]	Duty Factor [dB]	Final PSD [dBm]	Limit [dBm]	Margin [dB]
Low	2412	-20.729	0.32	-20.41	8.00	-28.73
Mid	2437	-20.743	0.32	-20.42	8.00	-28.74
High	2462	-20.745	0.32	-20.43	8.00	-28.75



### 10.4.4. PSD PLOTS







## 10.5. OUT-OF-BAND EMISSIONS

### LIMITS

FCC §15.247 (d)

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

### TEST PROCEDURE

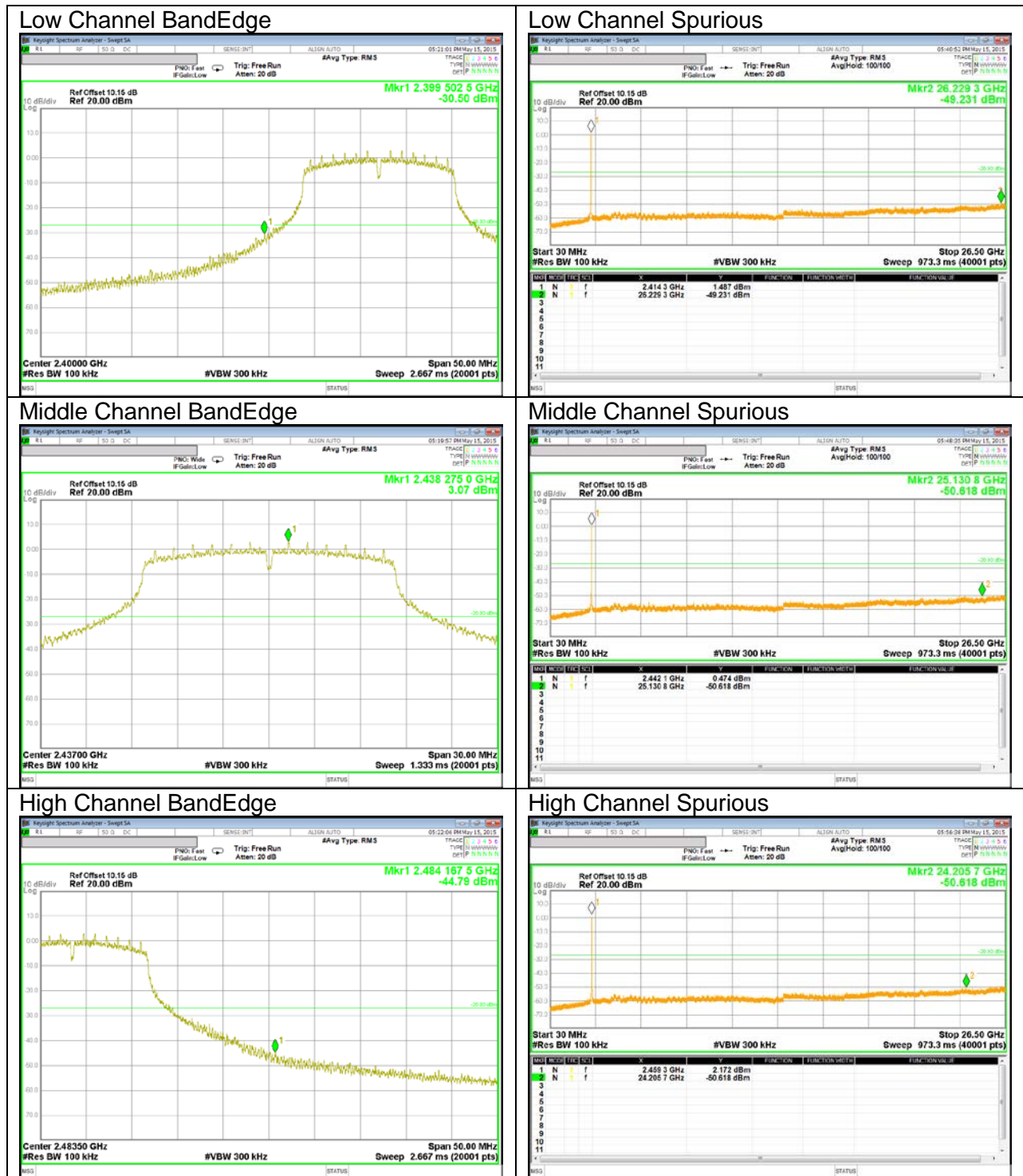
The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

**RESULTS**

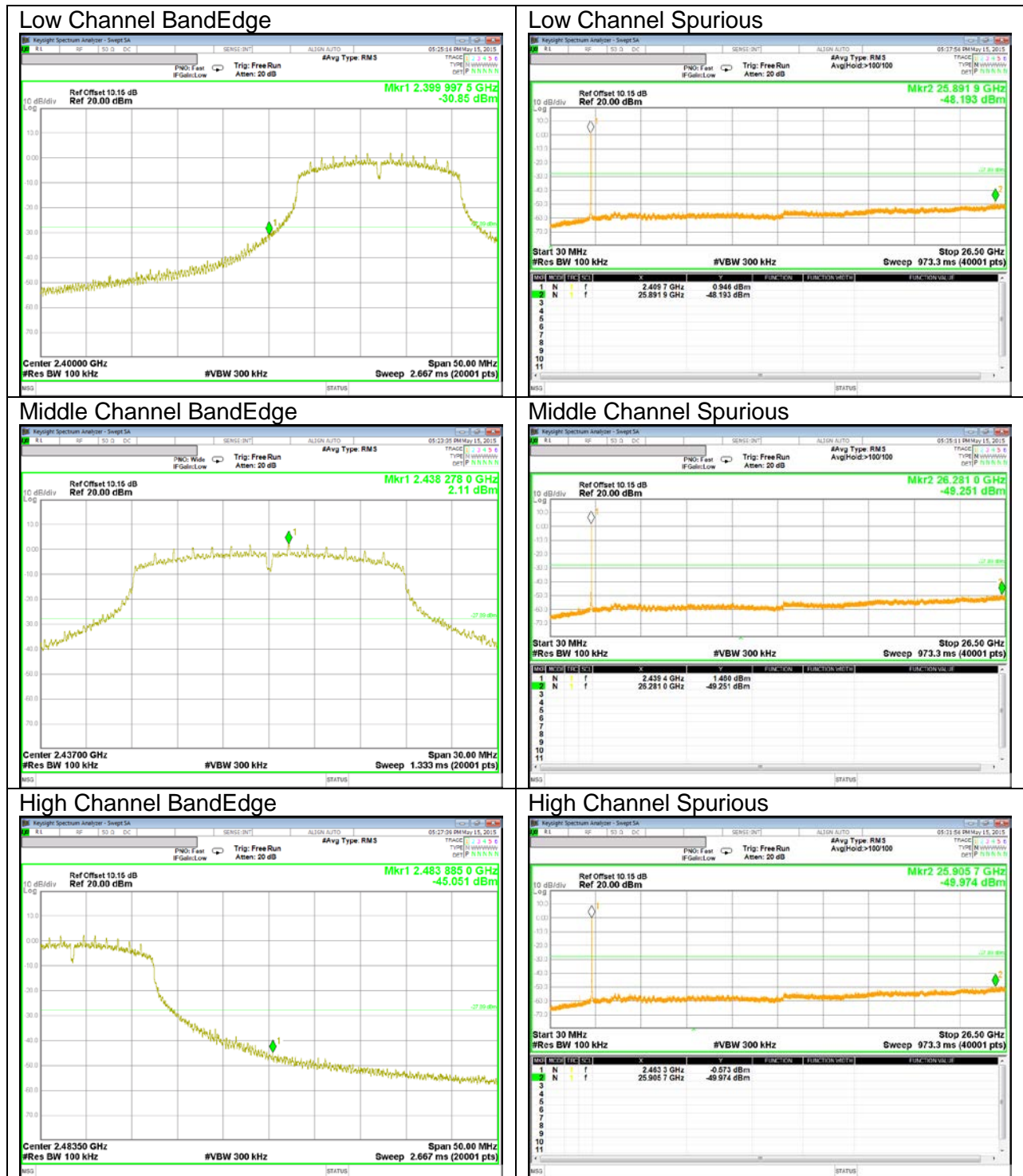
**10.5.1. 802.11b MODE IN THE 2.4 GHZ BAND**



## 10.5.2. 802.11g MODE IN THE 2.4 GHZ BAND



### 10.5.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND



## 11. RADIATED TEST RESULTS

### 11.1. LIMITS AND PROCEDURE

#### LIMITS

FCC §15.205 and §15.209

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

#### TEST PROCEDURE

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

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

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements. Duty cycle factor=  $10\log(1/x)$  For this sample B mode = 0dB (duty cycle >98%); G mode = 0.30dB; N mode = 0.32dB.

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

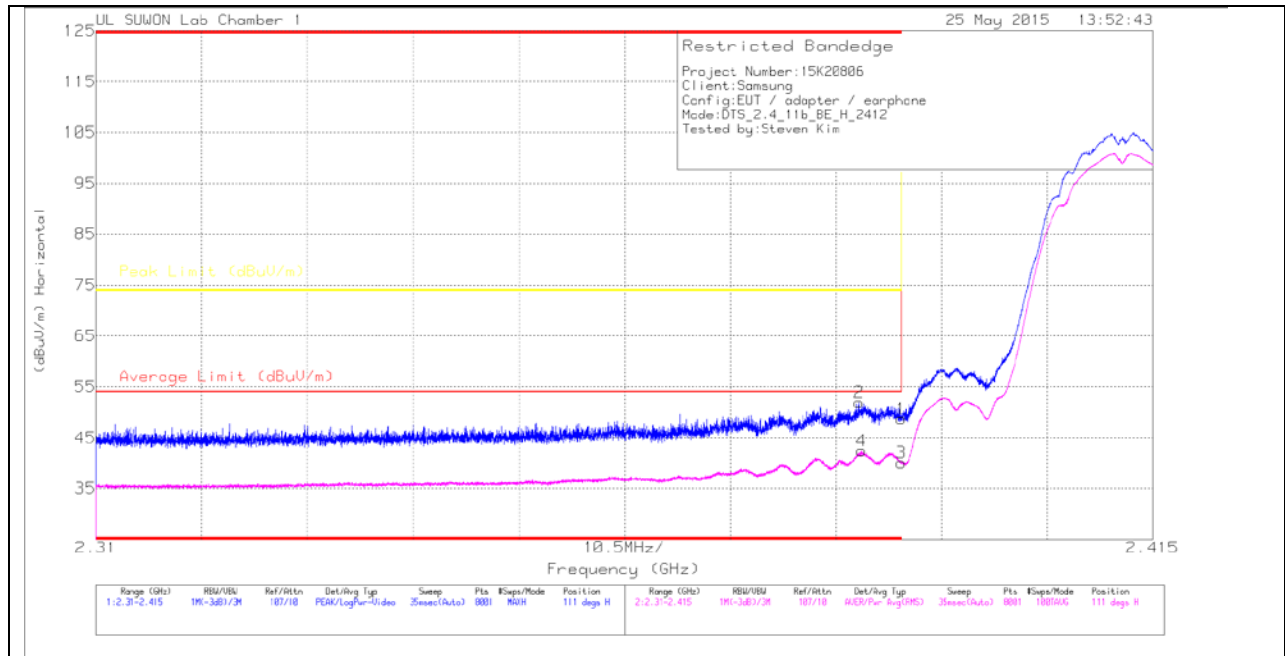
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

## 11.2. TRANSMITTER ABOVE 1 GHz

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

#### RESTRICTED BANDEDGE (LOW CHANNEL)

#### HORIZONTAL PEAK AND AVERAGE PLOT



#### HORIZONTAL DATA

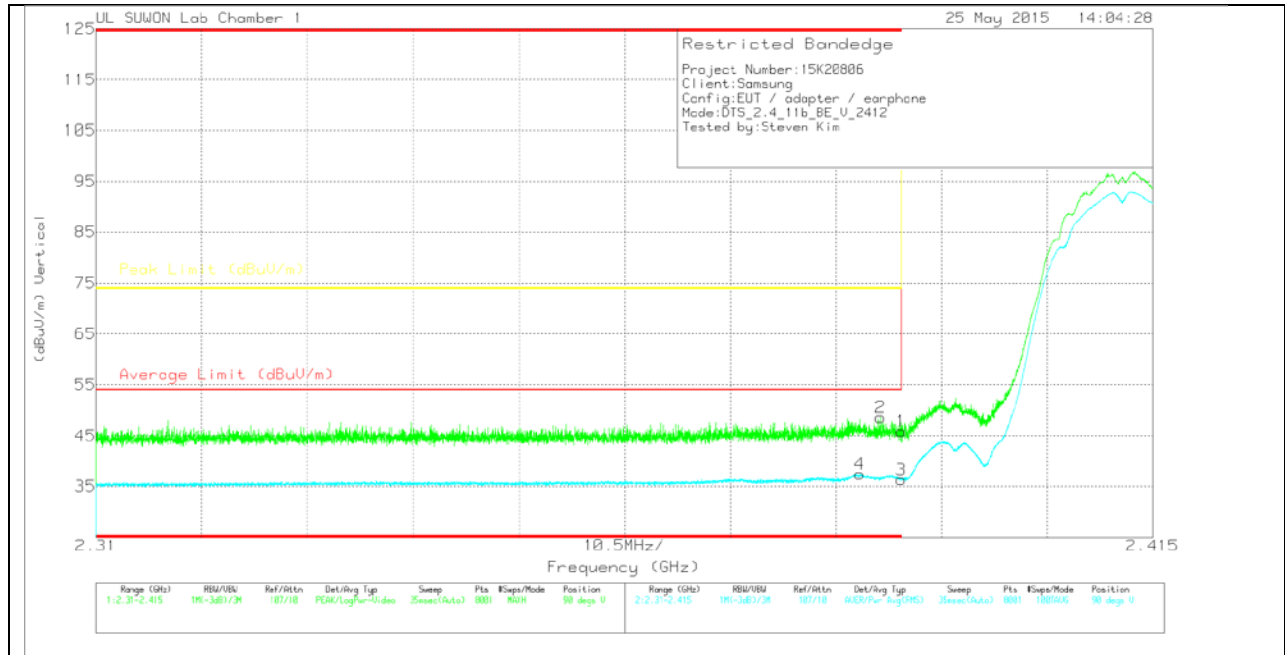
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	43.58	Pk	27.9	-22.8	0	48.68	-	-	74	-25.32	111	101	H
2	* 2.386	46.78	Pk	27.9	-22.8	0	51.88	-	-	74	-22.12	111	101	H
3	* 2.39	34.99	RMS	27.9	-22.8	0	40.09	54	-13.91	-	-	111	101	H
4	* 2.386	37.32	RMS	27.9	-22.8	0	42.42	54	-11.58	-	-	111	101	H

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

Pk - Peak detector

RMS - RMS detection

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_2_10d B	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.8	Pk	27.9	-22.8	0	45.9	-	-	74	-28.1	90	129	V
2	* 2.388	43.55	Pk	27.9	-22.8	0	48.65	-	-	74	-25.35	90	129	V
3	* 2.39	31.27	RMS	27.9	-22.8	0	36.37	54	-17.63	-	-	90	129	V
4	* 2.386	32.41	RMS	27.9	-22.8	0	37.51	54	-16.49	-	-	90	129	V

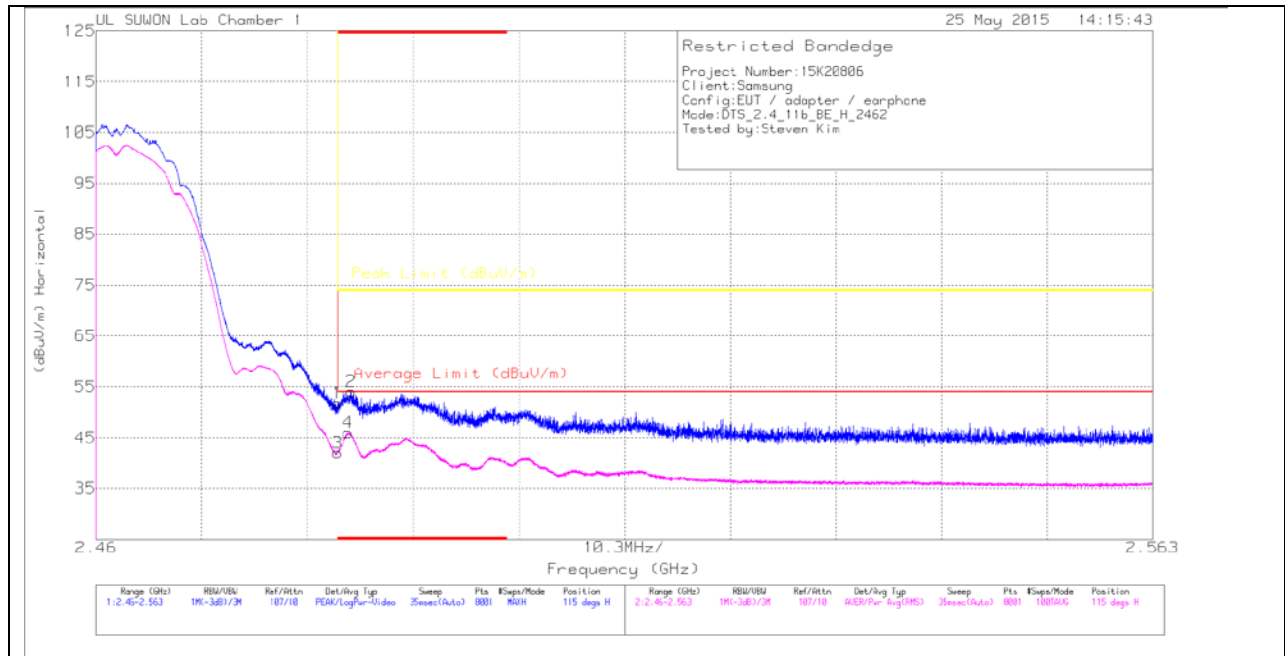
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

**HORIZONTAL PEAK AND AVERAGE PLOT**



**HORIZONTAL DATA**

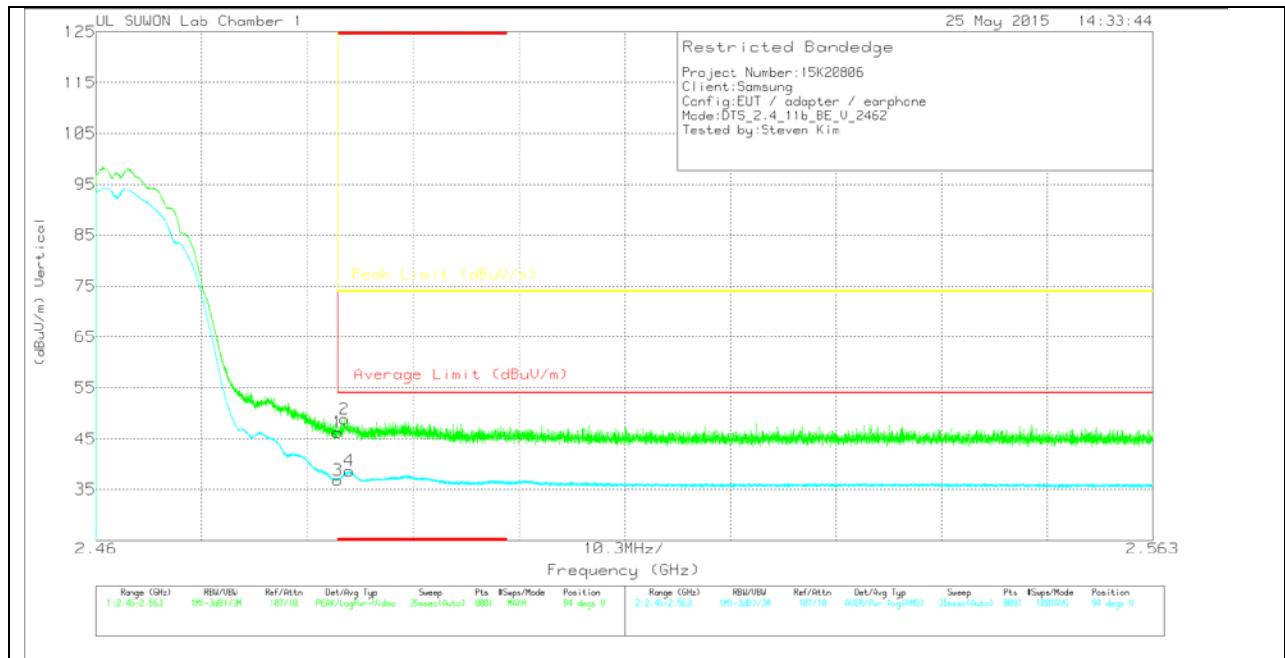
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	46.51	Pk	27.9	-22.6	0	51.81	-	-	74	-22.19	115	100	H
2	* 2.485	48.71	Pk	27.9	-22.6	0	54.01	-	-	74	-19.99	115	100	H
3	* 2.484	36.7	RMS	27.9	-22.6	0	42	54	-12	-	-	115	100	H
4	* 2.485	40.75	RMS	27.9	-22.6	0	46.05	54	-7.95	-	-	115	100	H

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

Pk - Peak detector

RMS - RMS detection

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	31150 Factor	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	40.98	Pk	27.9	-22.6	0	46.28	-	-	74	-27.72	94	100	V
2	* 2.484	43.5	Pk	27.9	-22.6	0	48.8	-	-	74	-25.2	94	100	V
3	* 2.484	31.53	RMS	27.9	-22.6	0	36.83	54	-17.17	-	-	94	100	V
4	* 2.485	33.36	RMS	27.9	-22.6	0	38.66	54	-15.34	-	-	94	100	V

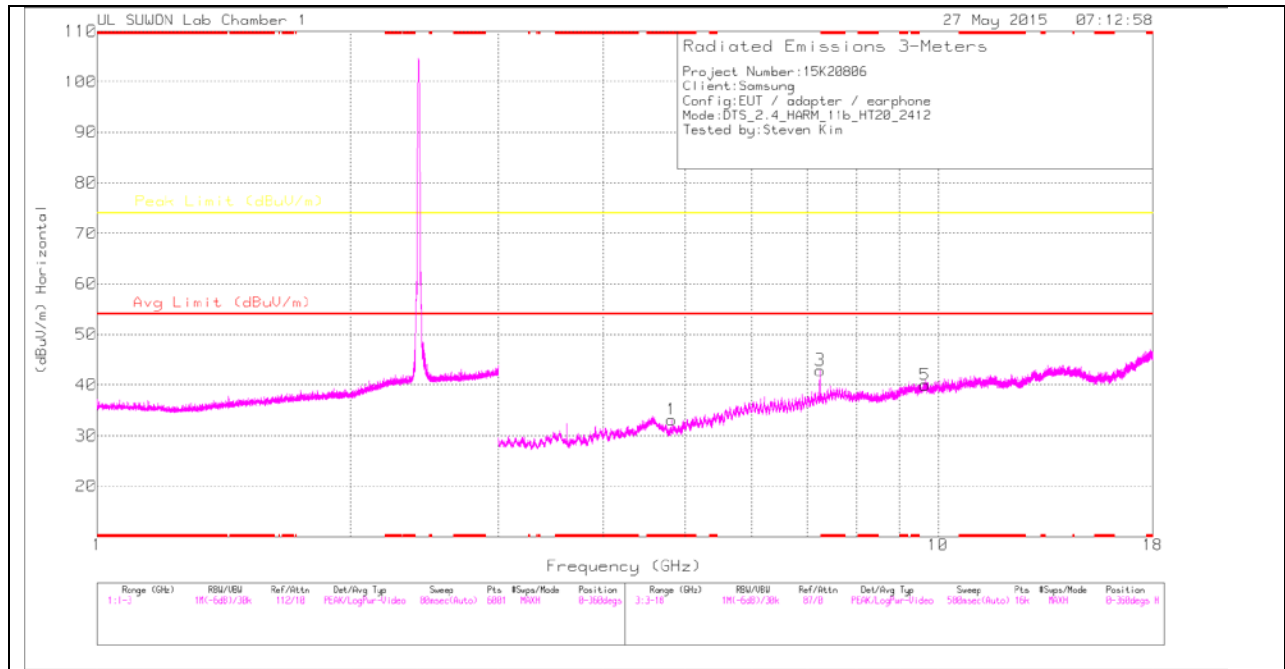
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

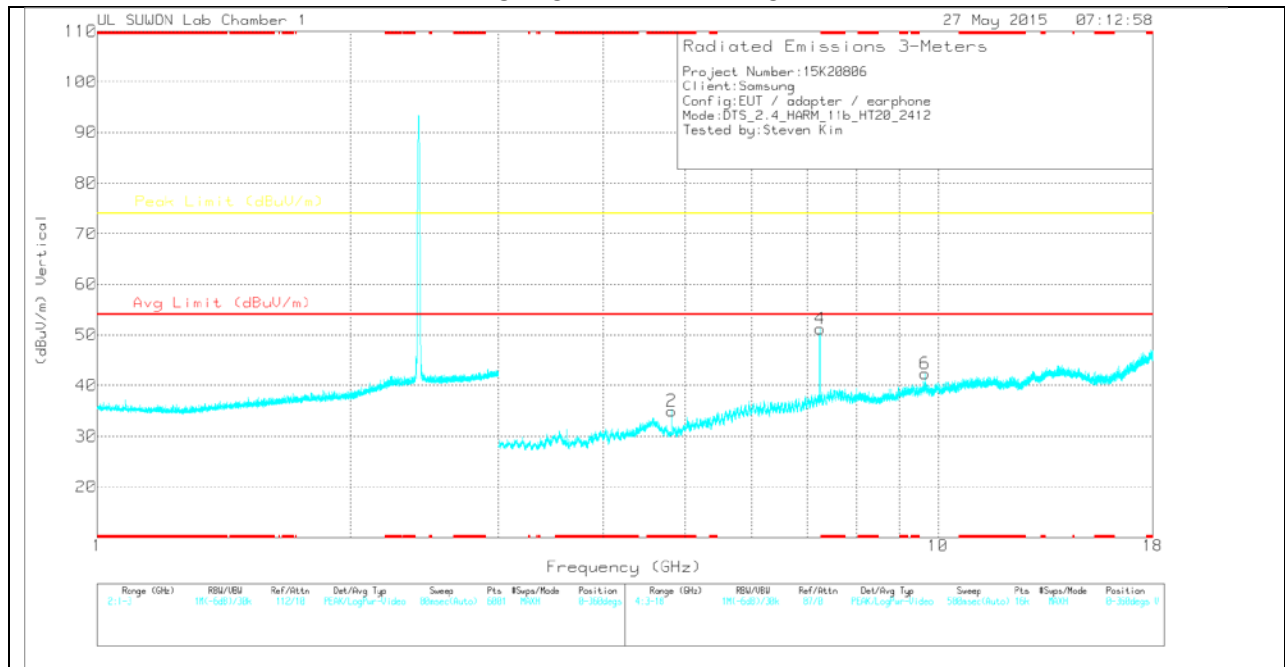
RMS - RMS detection

### HARMONICS AND SPURIOUS EMISSIONS

#### LOW CHANNEL HORIZONTAL



#### LOW CHANNEL VERTICAL



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

**LOW CHANNEL DATA**

*TRACE MARKERS*

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.823	30.84	PK	31.9	-29.6	0	33.14	-	-	74	-40.86	0-360	100	H
3	7.236	31.43	PK	37	-25.5	0	42.93	-	-	-	-	0-360	200	H
5	9.647	23.19	PK	37.6	-20.8	0	39.99	-	-	-	-	0-360	200	H
2	* 4.824	32.69	PK	31.9	-29.6	0	34.99	-	-	74	-39.01	0-360	100	V
4	7.236	39.71	PK	37	-25.5	0	51.21	-	-	-	-	0-360	100	V
6	9.647	25.57	PK	37.6	-20.8	0	42.37	-	-	-	-	0-360	100	V

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

PK – Peak Detector

**Radiated Emissions**

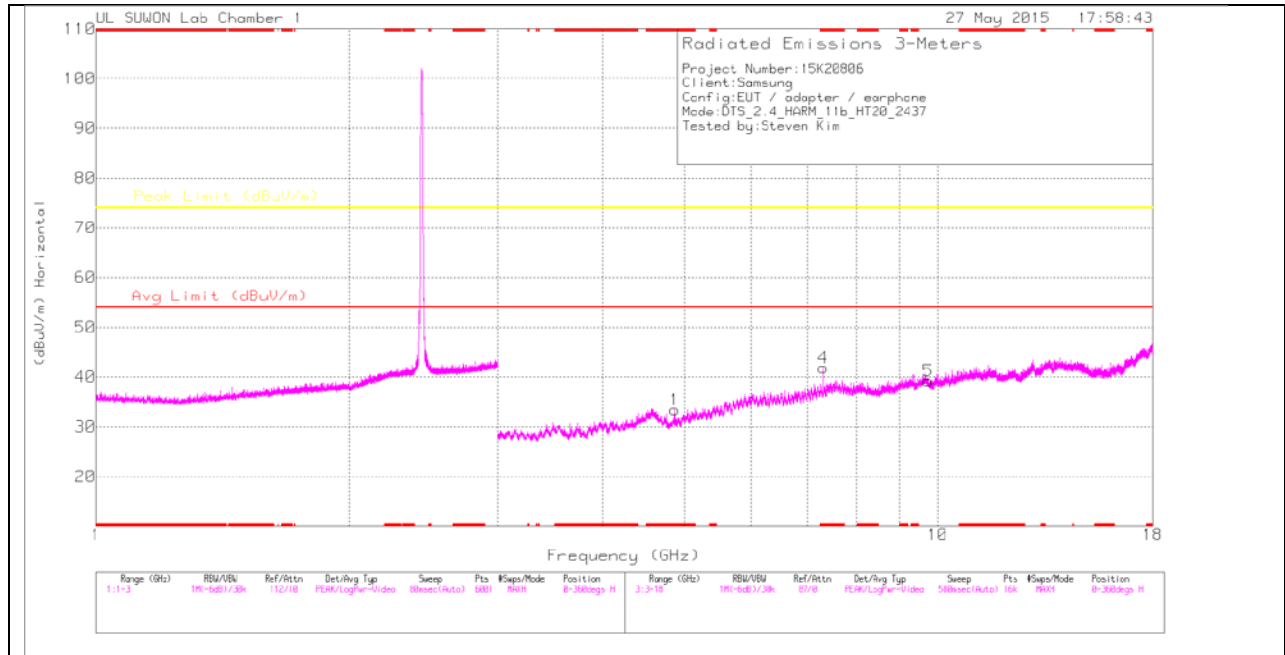
Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3 GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.823	40.11	PK2	31.9	-29.6	0	42.41	-	-	74	-31.59	3	100	H
* 4.824	29.05	MAv1	31.9	-29.6	0	31.35	54	-22.65	-	-	3	100	H
7.237	42.9	PK2	37	-25.5	0	54.4	-	-	-	-	266	289	H
7.237	35.52	MAv1	37	-25.5	0	47.02	-	-	-	-	266	289	H
9.648	34.08	PK2	37.6	-20.8	0	50.88	-	-	-	-	170	299	H
9.648	22.89	MAv1	37.6	-20.8	0	39.69	-	-	-	-	170	299	H
* 4.824	41.4	PK2	31.9	-29.6	0	43.7	-	-	74	-30.3	120	343	V
* 4.824	32.87	MAv1	31.9	-29.6	0	35.17	54	-18.83	-	-	120	343	V
7.237	49.79	PK2	37	-25.5	0	61.29	-	-	-	-	114	360	V
7.235	44.28	MAv1	37	-25.5	0	55.78	-	-	-	-	114	360	V
9.648	34.83	PK2	37.6	-20.8	0	51.63	-	-	-	-	135	101	V
9.648	25.4	MAv1	37.6	-20.8	0	42.2	-	-	-	-	135	101	V

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

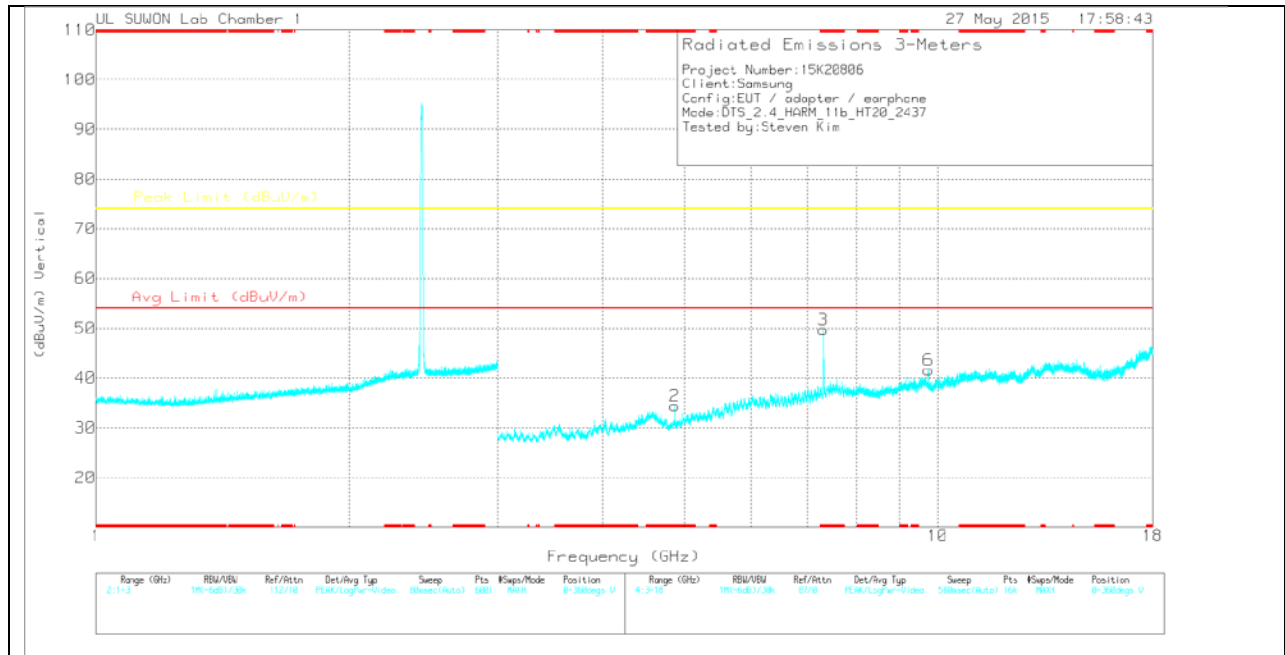
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

**MID CHANNEL HORIZONTAL**



**MID CHANNEL VERTICAL**



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

**MID CHANNEL DATA**

*TRACE MARKERS*

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.874	30.65	PK	32	-29.2	0	33.45	-	-	74	-40.55	0-360	100	H
3	* 7.311	30.53	PK	37.1	-25.7	0	41.93	-	-	74	-32.07	0-360	200	H
5	9.746	23.53	PK	37.6	-21.9	0	39.23	-	-	-	-	0-360	200	H
2	* 4.873	31.64	PK	32	-29.2	0	34.44	-	-	74	-39.56	0-360	100	V
4	* 7.312	38.36	PK	37.1	-25.7	0	49.76	-	-	74	-24.24	0-360	100	V
6	9.749	25.96	PK	37.6	-21.9	0	41.66	-	-	-	-	0-360	100	V

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

PK – Peak detector

**Radiated Emissions**

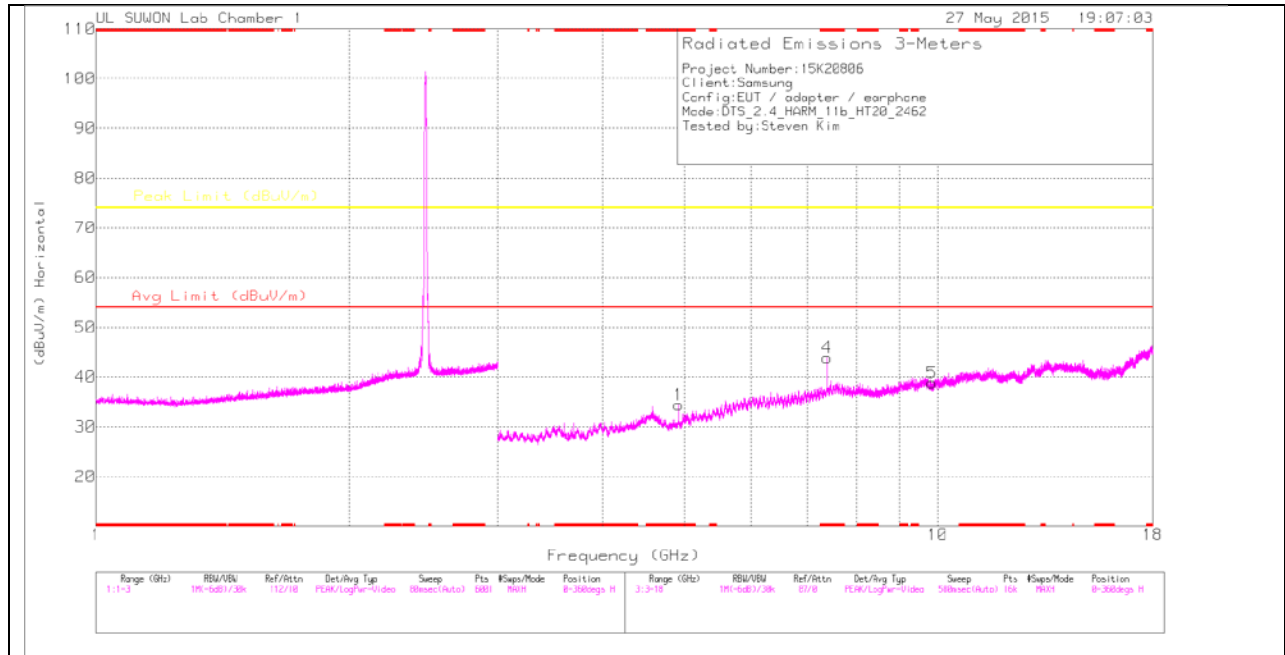
Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3 GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.874	40.72	PK2	32	-29.2	0	43.52	-	-	74	-30.48	22	101	H
* 4.874	30.78	MAv1	32	-29.2	0	33.58	54	-20.42	-	-	22	101	H
* 7.31	40.67	PK2	37.1	-25.7	0	52.07	-	-	74	-21.93	84	201	H
* 7.31	31.62	MAv1	37.1	-25.7	0	43.02	54	-10.98	-	-	84	201	H
9.745	33.66	PK2	37.6	-21.9	0	49.36	-	-	-	-	84	201	H
9.747	20.38	MAv1	37.6	-21.9	0	36.08	-	-	-	-	84	201	H
* 4.874	41.89	PK2	32	-29.2	0	44.69	-	-	74	-29.31	206	256	V
* 4.874	32.27	MAv1	32	-29.2	0	35.07	54	-18.93	-	-	206	256	V
* 7.31	44.59	PK2	37.1	-25.7	0	55.99	-	-	74	-18.01	94	289	V
* 7.31	38.04	MAv1	37.1	-25.7	0	49.44	54	-4.56	-	-	94	289	V
9.748	35.51	PK2	37.6	-21.9	0	51.21	-	-	-	-	0	101	V
9.748	26.44	MAv1	37.6	-21.9	0	42.14	-	-	-	-	0	101	V

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

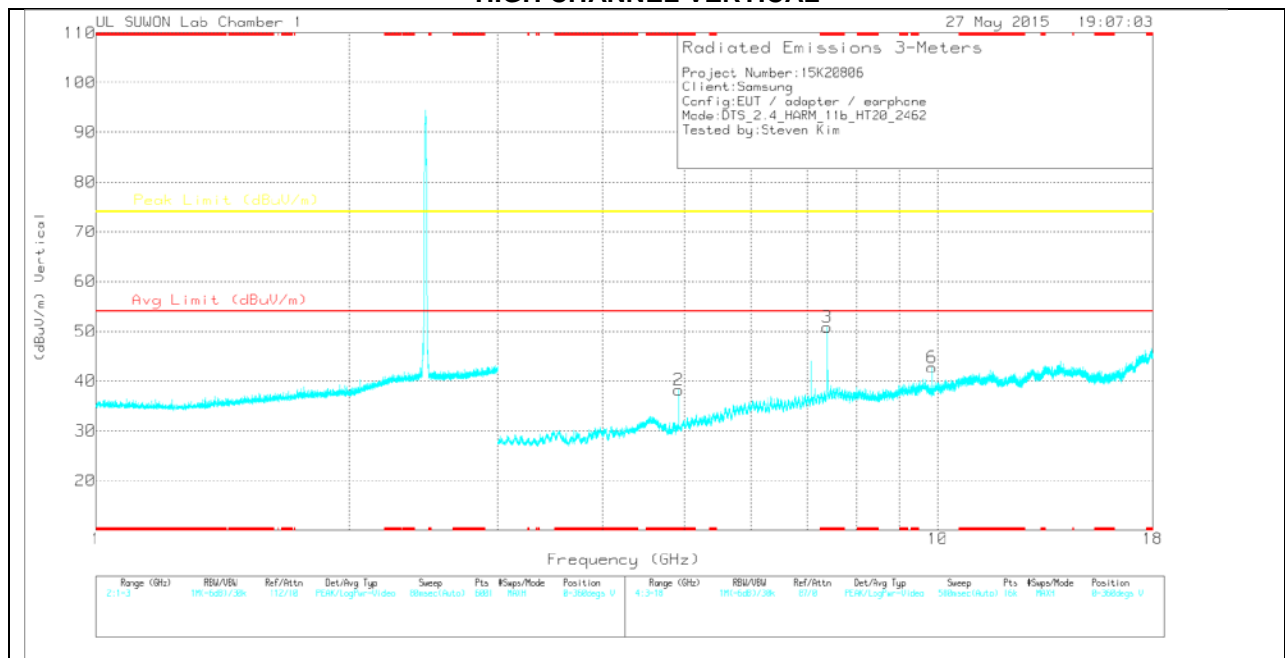
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

### HIGH CHANNEL HORIZONTAL



### HIGH CHANNEL VERTICAL



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

**HIGH CHANNEL DATA**

*TRACE MARKERS*

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.924	31.28	PK	32.1	-29	0	34.38	-	-	74	-39.62	0-360	100	H
4	* 7.386	31.82	PK	37.2	-25.1	0	43.92	-	-	74	-30.08	0-360	200	H
5	9.846	22.7	PK	37.8	-21.6	0	38.9	-	-	-	-	0-360	100	H
2	* 4.924	35.07	PK	32.1	-29	0	38.17	-	-	74	-35.83	0-360	200	V
3	* 7.386	38.8	PK	37.2	-25.1	0	50.9	-	-	74	-23.1	0-360	100	V
6	9.848	26.6	PK	37.8	-21.6	0	42.8	-	-	-	-	0-360	100	V

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

PK – Peak detector

**Radiated Emissions**

Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3 GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.924	40.51	PK2	32.1	-29	0	43.61	-	-	74	-30.39	139	188	H
* 4.924	31	MAv1	32.1	-29	0	34.1	54	-19.9	-	-	139	188	H
* 7.385	41.29	PK2	37.2	-25.1	0	53.39	-	-	74	-20.61	141	293	H
* 7.385	33.8	MAv1	37.2	-25.1	0	45.9	54	-8.1	-	-	141	293	H
9.845	33.29	PK2	37.8	-21.7	0	49.39	-	-	-	-	141	100	H
9.847	21.1	MAv1	37.8	-21.6	0	37.3	-	-	-	-	141	100	H
* 4.923	42.33	PK2	32.1	-29	0	45.43	-	-	74	-28.57	222	206	V
* 4.924	33.13	MAv1	32.1	-29	0	36.23	54	-17.77	-	-	222	206	V
* 7.385	44.89	PK2	37.2	-25.1	0	56.99	-	-	74	-17.01	324	101	V
* 7.385	38.73	MAv1	37.2	-25.1	0	50.83	54	-3.17	-	-	324	101	V
9.848	35.29	PK2	37.8	-21.6	0	51.49	-	-	-	-	5	102	V
9.848	26.27	MAv1	37.8	-21.6	0	42.47	-	-	-	-	5	102	V

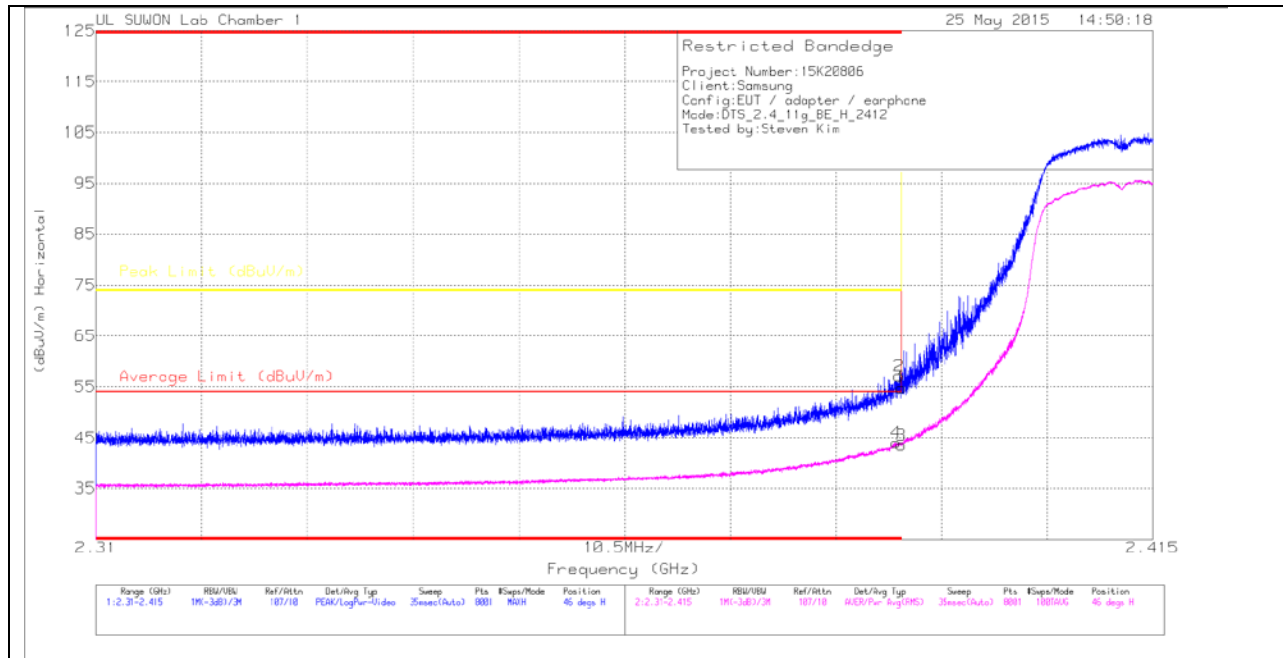
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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

### HORIZONTAL PEAK AND AVERAGE PLOT



### HORIZONTAL DATA

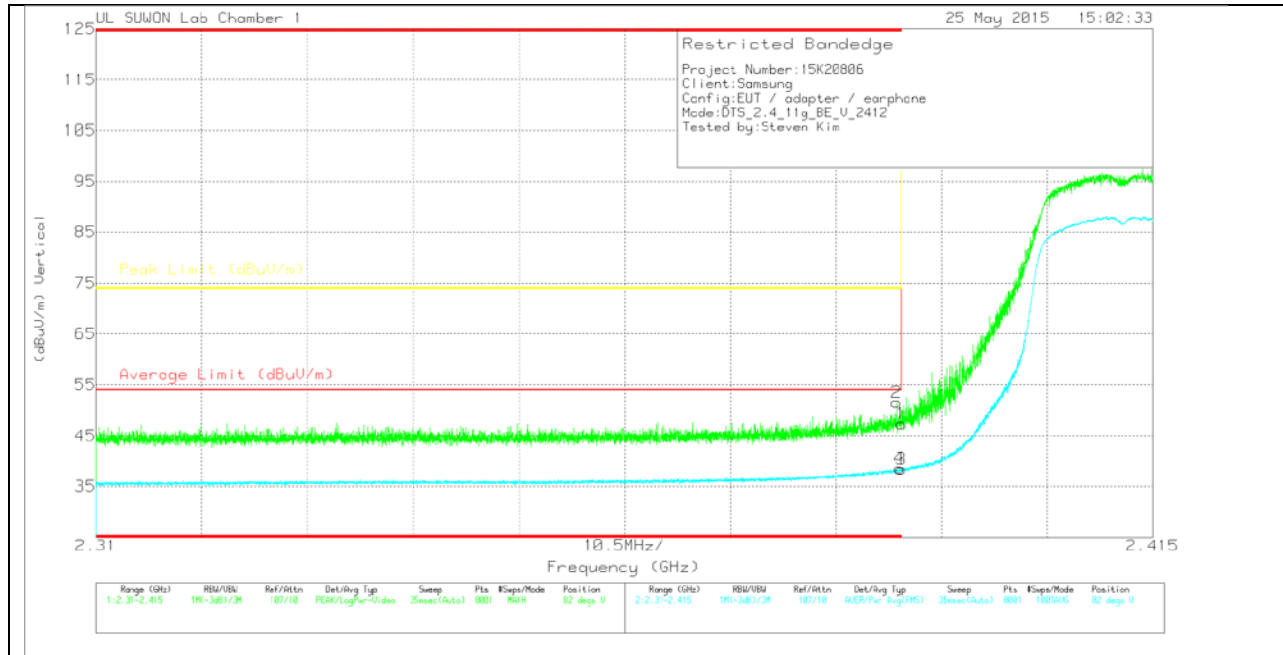
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	49.69	Pk	27.9	-22.8	0	54.79	-	-	74	-19.21	46	100	H
2	* 2.39	51.99	Pk	27.9	-22.8	0	57.09	-	-	74	-16.91	46	100	H
3	* 2.39	38.08	RMS	27.9	-22.8	.3	43.48	54	-10.52	-	-	46	100	H
4	* 2.389	38.6	RMS	27.9	-22.8	.3	44	54	-10	-	-	46	100	H

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

Pk - Peak detector

RMS - RMS detection

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_2_10d B	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	42.25	Pk	27.9	-22.8	0	47.35	-	-	74	-26.65	82	368	V
2	* 2.39	46.44	Pk	27.9	-22.8	0	51.54	-	-	74	-22.46	82	368	V
3	* 2.39	33.03	RMS	27.9	-22.8	.3	38.43	54	-15.57	-	-	82	368	V
4	* 2.39	33.14	RMS	27.9	-22.8	.3	38.54	54	-15.46	-	-	82	368	V

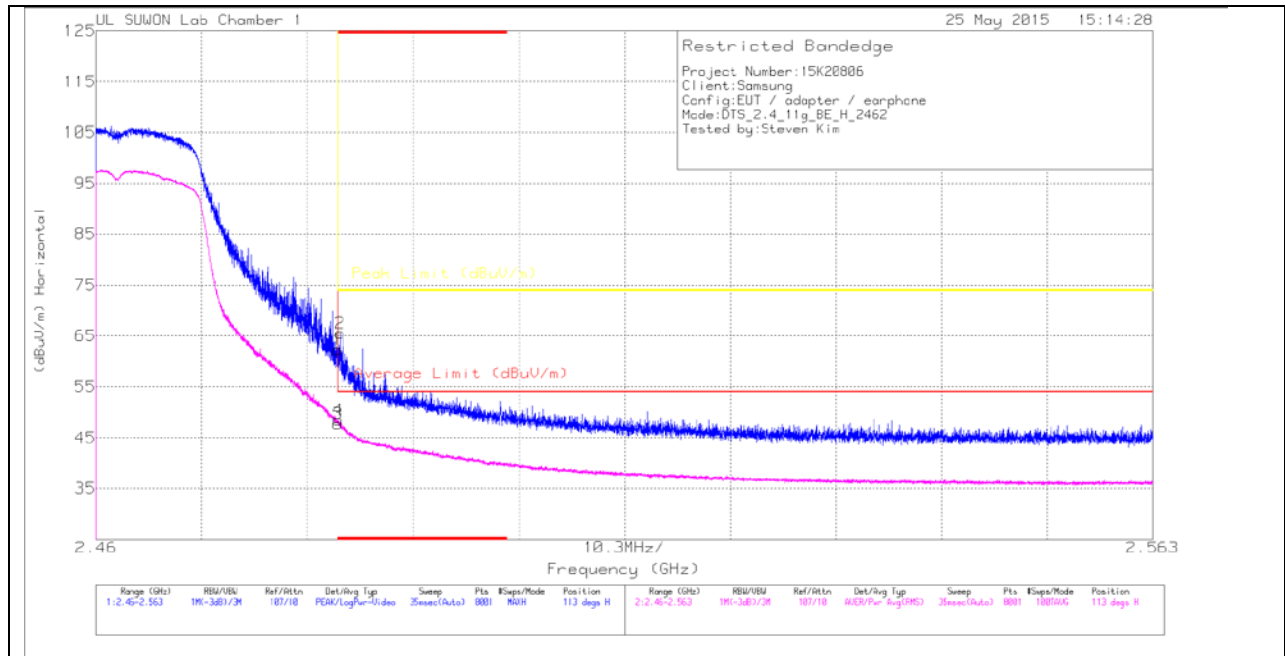
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

**HORIZONTAL PEAK AND AVERAGE PLOT**



**HORIZONTAL DATA**

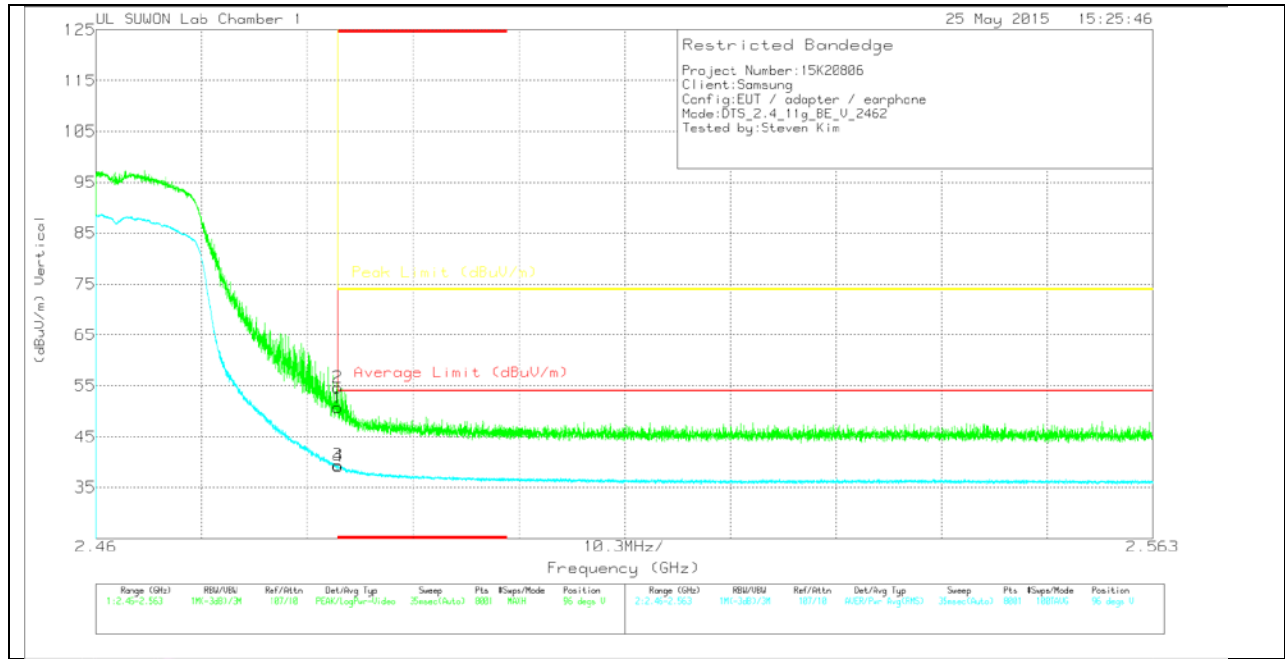
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	56.97	Pk	27.9	-22.6	0	62.27	-	-	74	-11.73	113	101	H
2	* 2.484	60.24	Pk	27.9	-22.6	0	65.54	-	-	74	-8.46	113	101	H
3	* 2.484	42.15	RMS	27.9	-22.6	.3	47.75	54	-6.25	-	-	113	101	H
4	* 2.484	42.86	RMS	27.9	-22.6	.3	48.46	54	-5.54	-	-	113	101	H

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

Pk - Peak detector

RMS - RMS detection

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_2_10d B	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	45.38	Pk	27.9	-22.6	0	50.68	-	-	74	-23.32	96	102	V
2	* 2.484	49.36	Pk	27.9	-22.6	0	54.66	-	-	74	-19.34	96	102	V
3	* 2.484	33.8	RMS	27.9	-22.6	.3	39.4	54	-14.6	-	-	96	102	V
4	* 2.484	33.65	RMS	27.9	-22.6	.3	39.25	54	-14.75	-	-	96	102	V

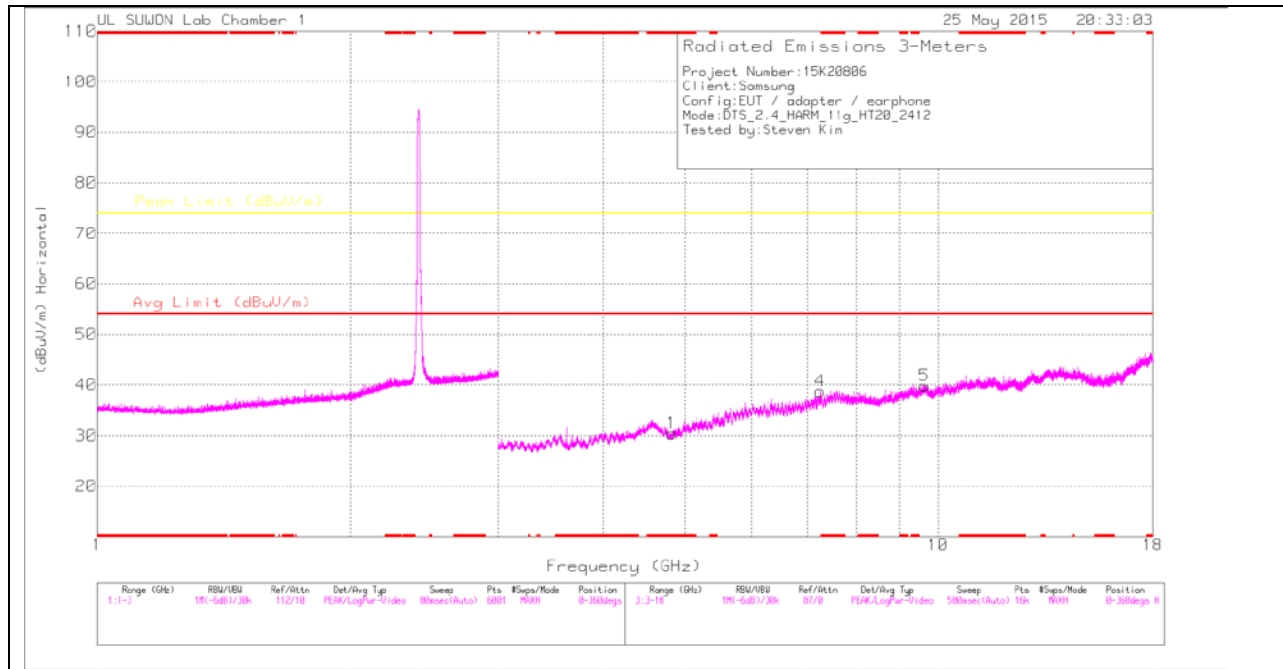
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

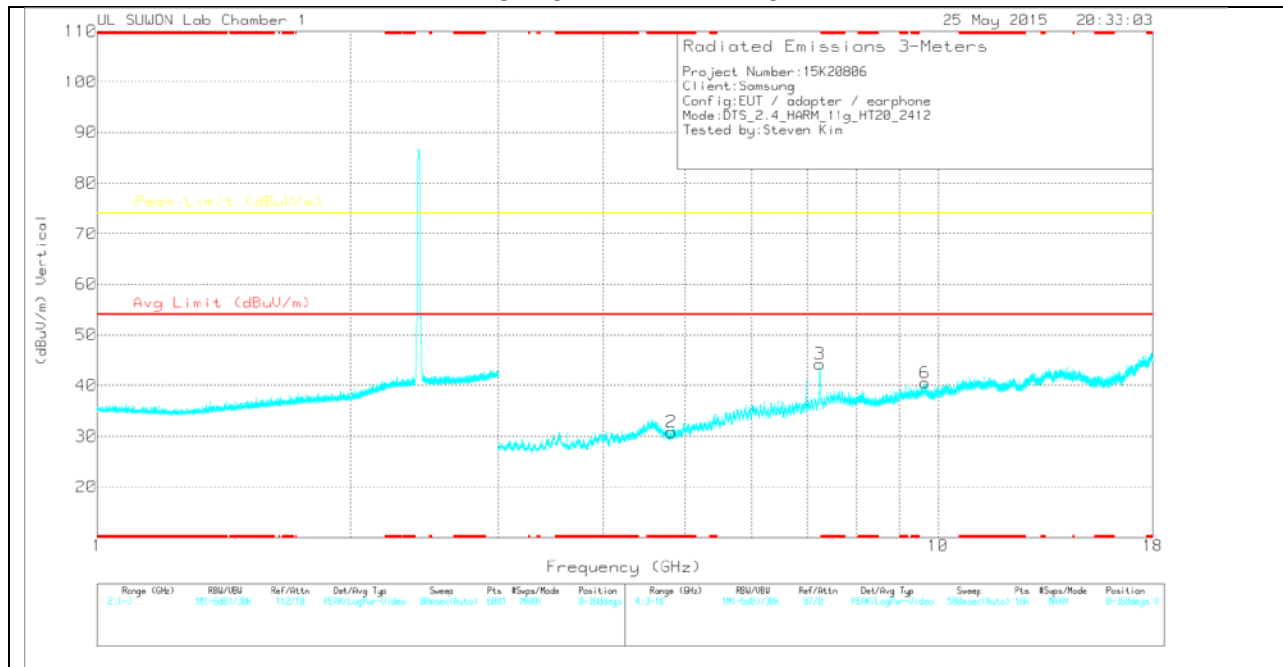
RMS - RMS detection

## HARMONICS AND SPURIOUS EMISSIONS

### LOW CHANNEL HORIZONTAL



### LOW CHANNEL VERTICAL



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

**LOW CHANNEL DATA**

*TRACE MARKERS*

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.823	28.11	PK	31.9	-29.6	0	30.41	-	-	74	-43.59	0-360	200	H
4	7.236	27.26	PK	37	-25.5	0	38.76	-	-	-	-	0-360	200	H
5	9.641	23.06	PK	37.6	-20.8	0	39.86	-	-	-	-	0-360	200	H
2	* 4.82	28.49	PK	31.9	-29.6	0	30.79	-	-	74	-43.21	0-360	200	V
3	7.233	32.77	PK	37	-25.5	0	44.27	-	-	-	-	0-360	100	V
6	9.647	23.74	PK	37.6	-20.8	0	40.54	-	-	-	-	0-360	100	V

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

PK – Peak detector

**Radiated Emissions**

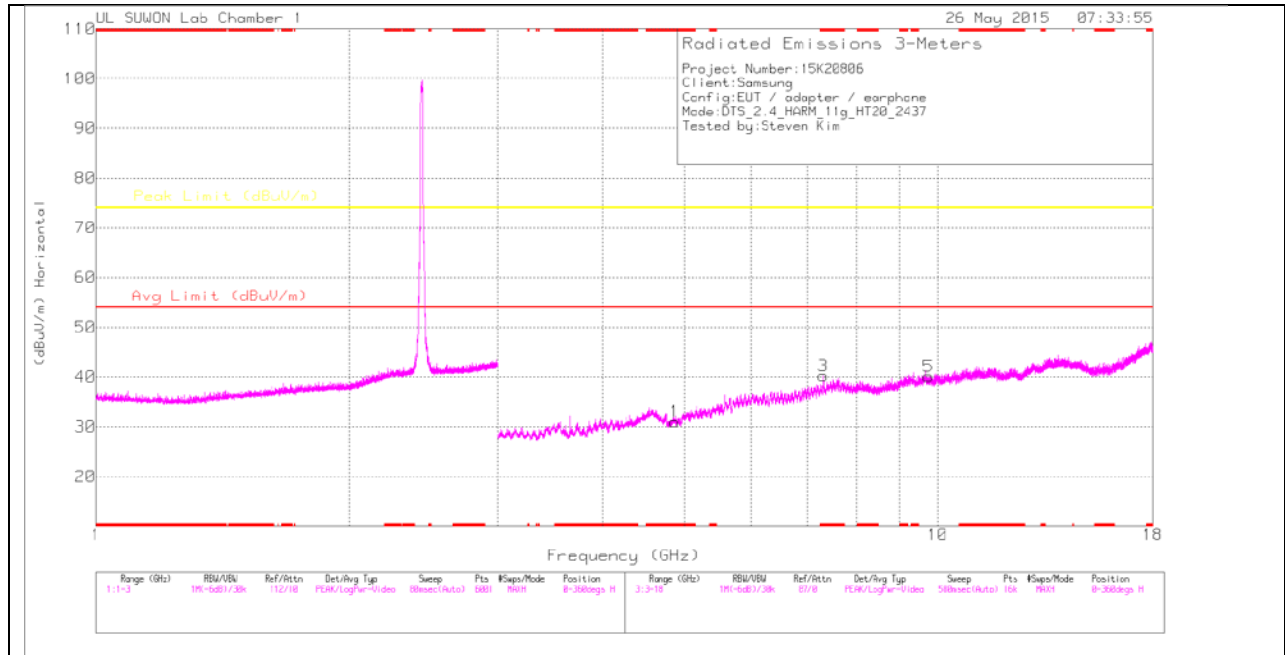
Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3 GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.823	39.1	PK2	31.9	-29.6	0	41.4	-	-	74	-32.6	3	200	H
* 4.822	27.9	MAv1	31.9	-29.6	.3	30.5	54	-23.5	-	-	3	200	H
7.236	36.6	PK2	37	-25.5	0	48.1	-	-	-	-	3	200	H
7.235	24.04	MAv1	37	-25.5	.3	35.84	-	-	-	-	3	200	H
9.64	32.65	PK2	37.6	-20.8	0	49.45	-	-	-	-	3	200	H
9.643	22.39	MAv1	37.6	-20.8	.3	39.49	-	-	-	-	3	200	H
* 4.818	39.12	PK2	31.9	-29.6	0	41.42	-	-	74	-32.58	3	200	V
* 4.819	26.49	MAv1	31.9	-29.6	.3	29.09	54	-24.91	-	-	3	200	V
7.233	46.96	PK2	37	-25.5	0	58.46	-	-	-	-	124	294	V
7.236	31.77	MAv1	37	-25.5	.3	43.57	-	-	-	-	124	294	V
9.647	33.78	PK2	37.6	-20.8	0	50.58	-	-	-	-	188	222	V
9.649	20.63	MAv1	37.6	-20.8	.3	37.73	-	-	-	-	188	222	V

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

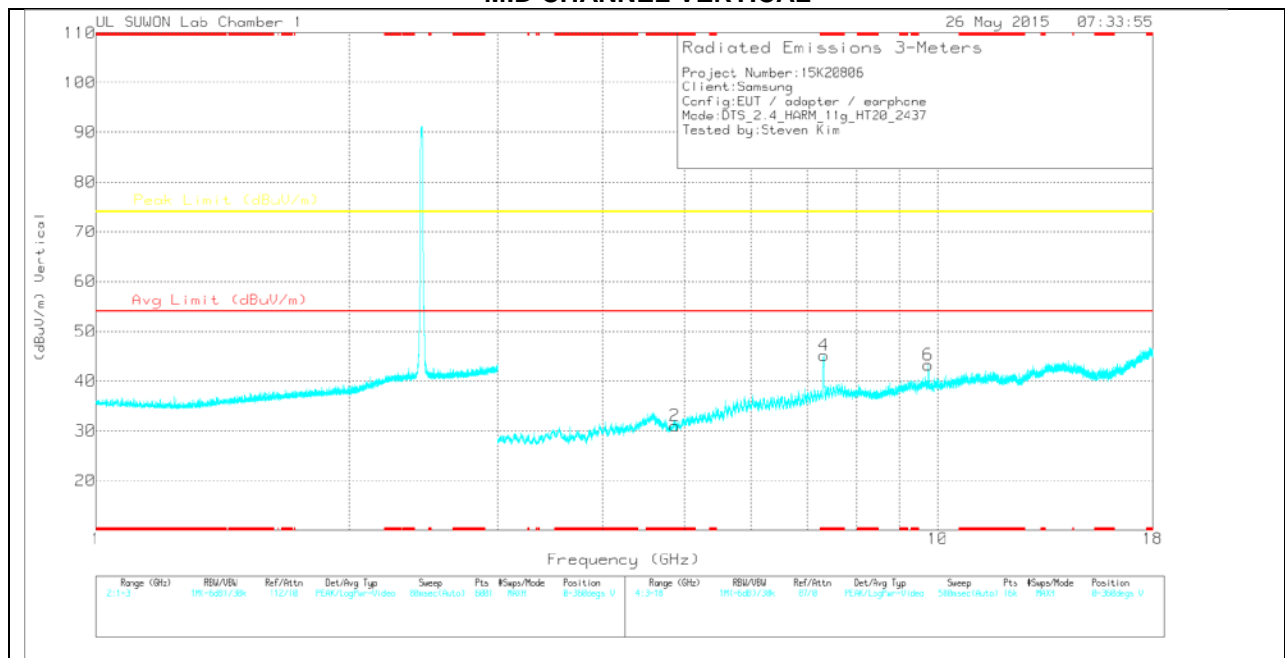
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

**MID CHANNEL HORIZONTAL**



**MID CHANNEL VERTICAL**



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

**MID CHANNEL DATA**

*TRACE MARKERS*

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.874	28.17	PK	32	-29.2	0	30.97	-	-	74	-43.03	0-360	200	H
4	* 7.31	28.78	PK	37.1	-25.7	0	40.18	-	-	74	-33.82	0-360	100	H
5	9.749	24.38	PK	37.6	-21.9	0	40.08	-	-	-	-	0-360	100	H
2	* 4.874	28.2	PK	32	-29.2	0	31	-	-	74	-43	0-360	100	V
3	* 7.316	33.68	PK	37.1	-25.6	0	45.18	-	-	74	-28.82	0-360	100	V
6	9.748	27.53	PK	37.6	-21.9	0	43.23	-	-	-	-	0-360	100	V

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

PK – Peak detector

**Radiated Emissions**

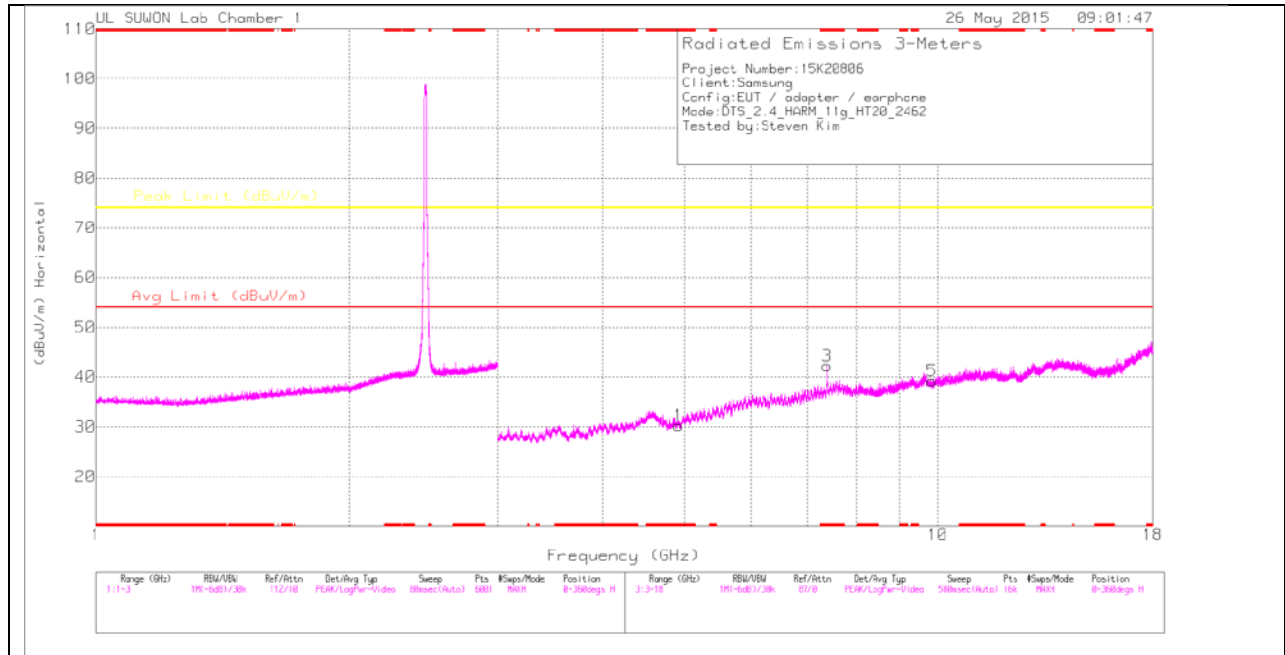
Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3 GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.874	39.13	PK2	32	-29.2	0	41.93	-	-	74	-32.07	358	200	H
* 4.873	28.38	MAv1	32	-29.2	.3	31.48	54	-22.52	-	-	358	200	H
* 7.312	46.25	PK2	37.1	-25.7	0	57.65	-	-	74	-16.35	156	320	H
* 7.311	29.91	MAv1	37.1	-25.7	.3	41.61	54	-12.39	-	-	156	320	H
9.748	33.79	PK2	37.6	-21.9	0	49.49	-	-	-	-	360	100	H
9.748	22.21	MAv1	37.6	-21.9	.3	38.21	-	-	-	-	360	100	H
* 4.874	39.1	PK2	32	-29.2	0	41.9	-	-	74	-32.1	358	100	V
* 4.872	26.91	MAv1	32	-29.2	.3	30.01	54	-23.99	-	-	358	100	V
* 7.316	44.56	PK2	37.1	-25.6	0	56.06	-	-	74	-17.94	360	303	V
* 7.315	29.08	MAv1	37.1	-25.7	.3	40.78	54	-13.22	-	-	360	303	V
9.748	36.2	PK2	37.6	-21.9	0	51.9	-	-	-	-	360	100	V
9.748	25.57	MAv1	37.6	-21.9	.3	41.57	-	-	-	-	360	100	V

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

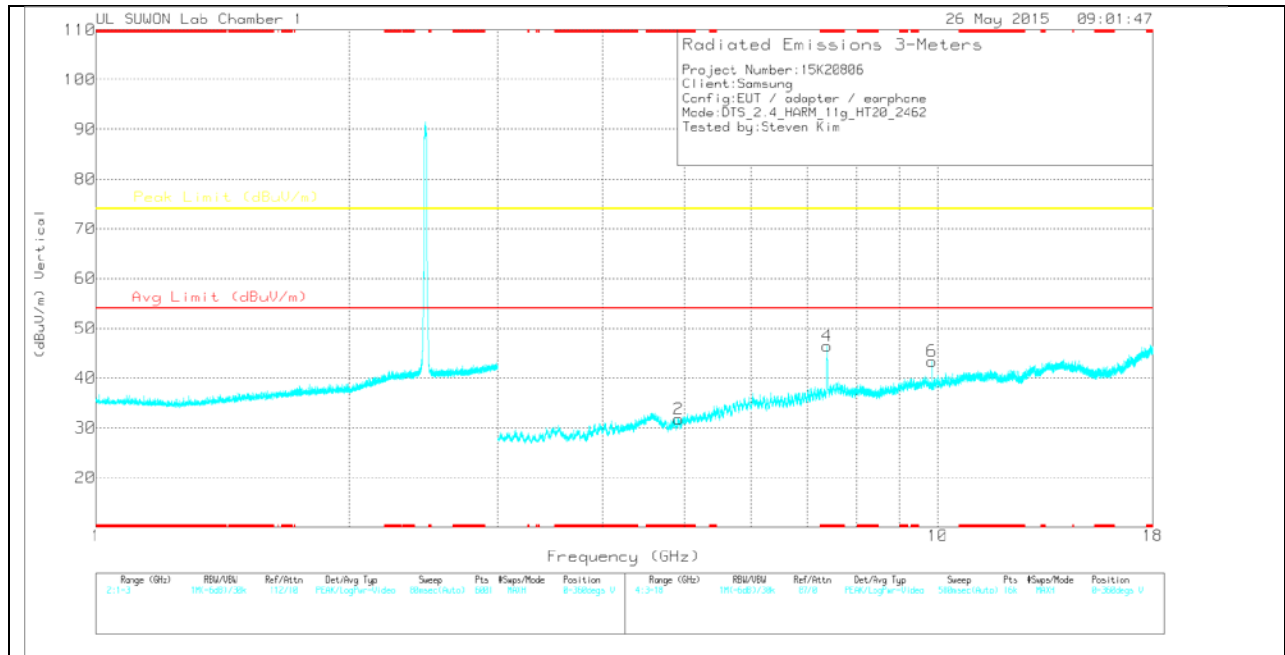
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

### HIGH CHANNEL HORIZONTAL



### HIGH CHANNEL VERTICAL



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

**HIGH CHANNEL DATA**

*TRACE MARKERS*

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.924	27.13	PK	32.1	-29	0	30.23	-	-	74	-43.77	0-360	200	H
4	* 7.388	30.01	PK	37.3	-25.1	0	42.21	-	-	74	-31.79	0-360	200	H
5	9.847	23.08	PK	37.8	-21.6	0	39.28	-	-	-	-	0-360	100	H
2	* 4.924	28.71	PK	32.1	-29	0	31.81	-	-	74	-42.19	0-360	100	V
3	* 7.384	34.29	PK	37.2	-25.1	0	46.39	-	-	74	-27.61	0-360	100	V
6	9.848	27.22	PK	37.8	-21.6	0	43.42	-	-	-	-	0-360	100	V

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

PK – Peak detector

**Radiated Emissions**

Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3 GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.923	39	PK2	32.1	-29	0	42.1	-	-	74	-31.9	358	200	H
* 4.923	27.02	MAv1	32.1	-29	.3	30.42	54	-23.58	-	-	358	200	H
* 7.388	45.11	PK2	37.3	-25.1	0	57.31	-	-	74	-16.69	143	360	H
* 7.386	30.4	MAv1	37.2	-25.1	.3	42.8	54	-11.2	-	-	143	360	H
9.846	33.2	PK2	37.8	-21.7	0	49.3	-	-	-	-	129	100	H
9.845	22.49	MAv1	37.8	-21.7	.3	38.89	-	-	-	-	129	100	H
* 4.922	39.5	PK2	32.1	-29	0	42.6	-	-	74	-31.4	358	100	V
* 4.923	25.93	MAv1	32.1	-29	.3	29.33	54	-24.67	-	-	358	100	V
* 7.384	44.74	PK2	37.2	-25.1	0	56.84	-	-	74	-17.16	129	288	V
* 7.386	29.57	MAv1	37.2	-25.1	.3	41.97	54	-12.03	-	-	129	288	V
9.848	34.08	PK2	37.8	-21.6	0	50.28	-	-	-	-	355	125	V
9.848	22.93	MAv1	37.8	-21.6	.3	39.43	-	-	-	-	355	125	V

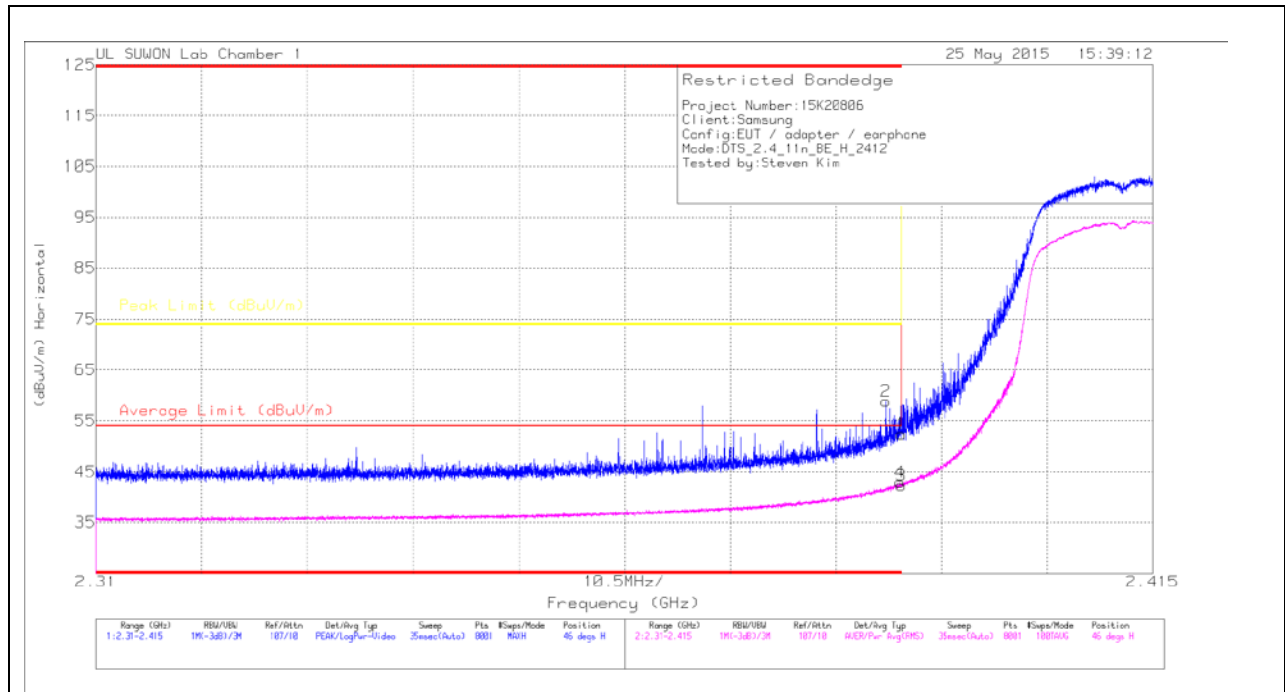
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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

#### HORIZONTAL PEAK AND AVERAGE PLOT



#### HORIZONTAL DATA

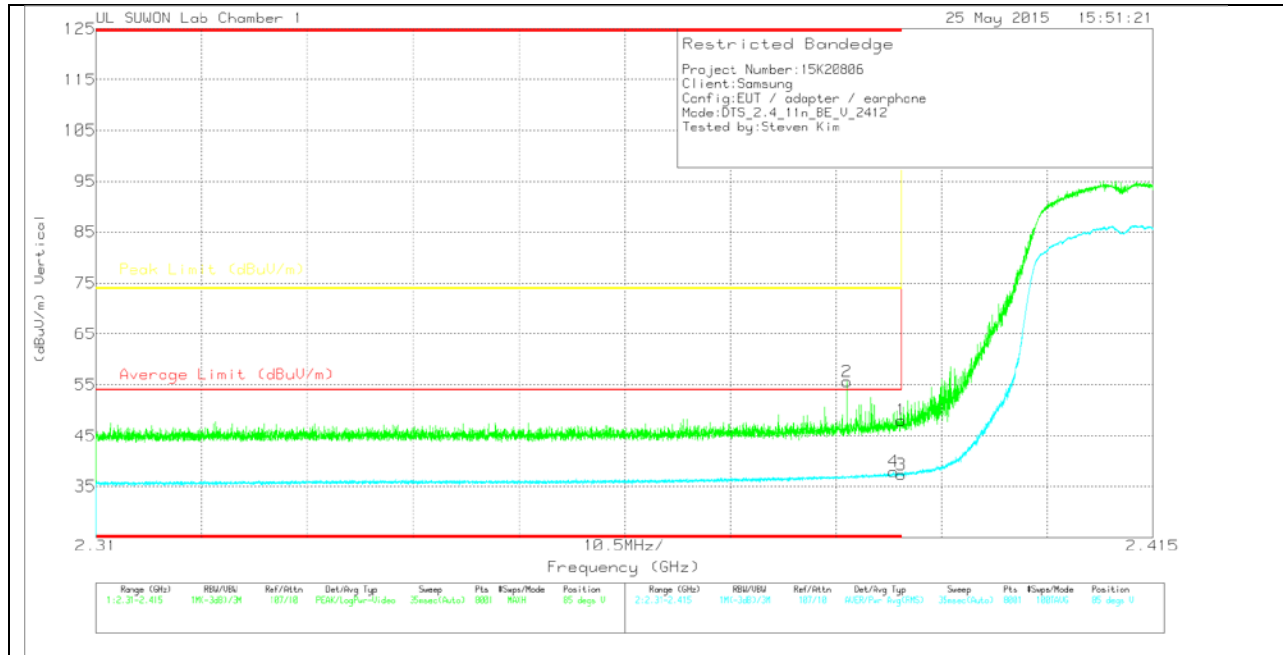
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	47.36	Pk	27.9	-22.8	0	52.46	-	-	74	-21.54	46	101	H
2	* 2.388	53.77	Pk	27.9	-22.8	0	58.87	-	-	74	-15.13	46	101	H
3	* 2.39	36.87	RMS	27.9	-22.8	.32	42.29	54	-11.71	-	-	46	101	H
4	* 2.39	37.44	RMS	27.9	-22.8	.32	42.86	54	-11.14	-	-	46	101	H

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

Pk - Peak detector

RMS - RMS detection

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_2_10d B	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	42.94	Pk	27.9	-22.8	0	48.04	-	-	74	-25.96	85	101	V
2	* 2.385	50.49	Pk	27.9	-22.8	0	55.59	-	-	74	-18.41	85	101	V
3	* 2.39	31.95	RMS	27.9	-22.8	.32	37.37	54	-16.63	-	-	85	101	V
4	* 2.389	32.54	RMS	27.9	-22.8	.32	37.96	54	-16.04	-	-	85	101	V

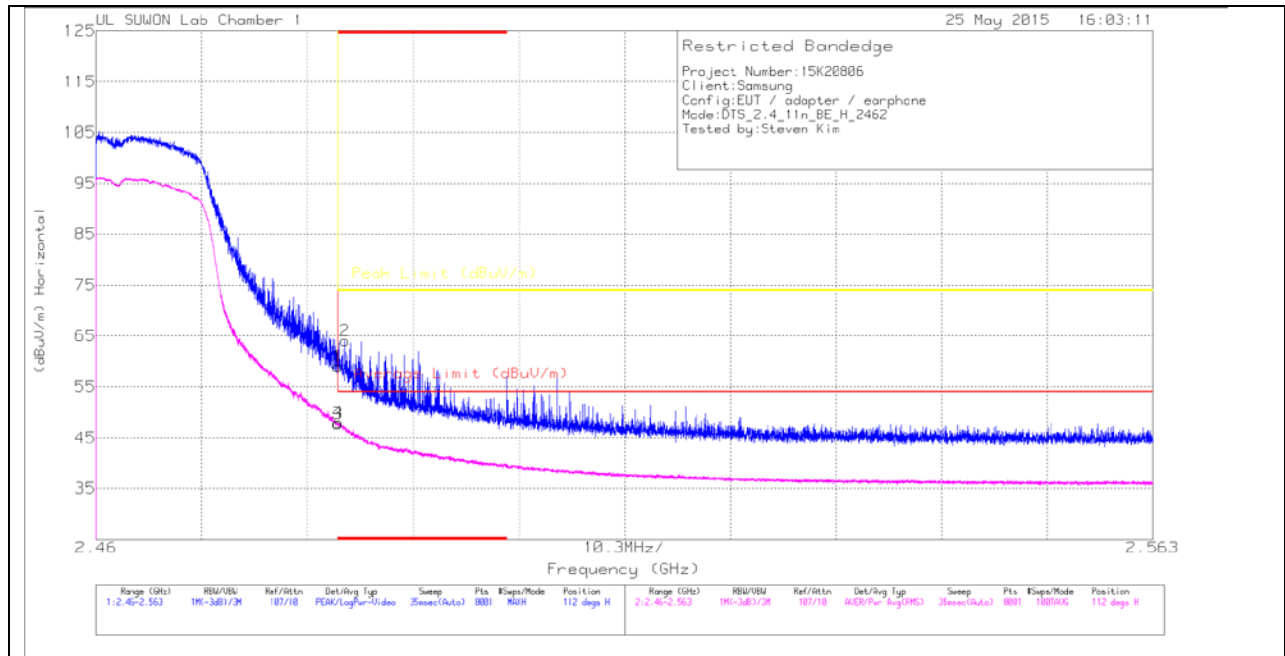
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

**HORIZONTAL PEAK AND AVERAGE PLOT**



**HORIZONTAL DATA**

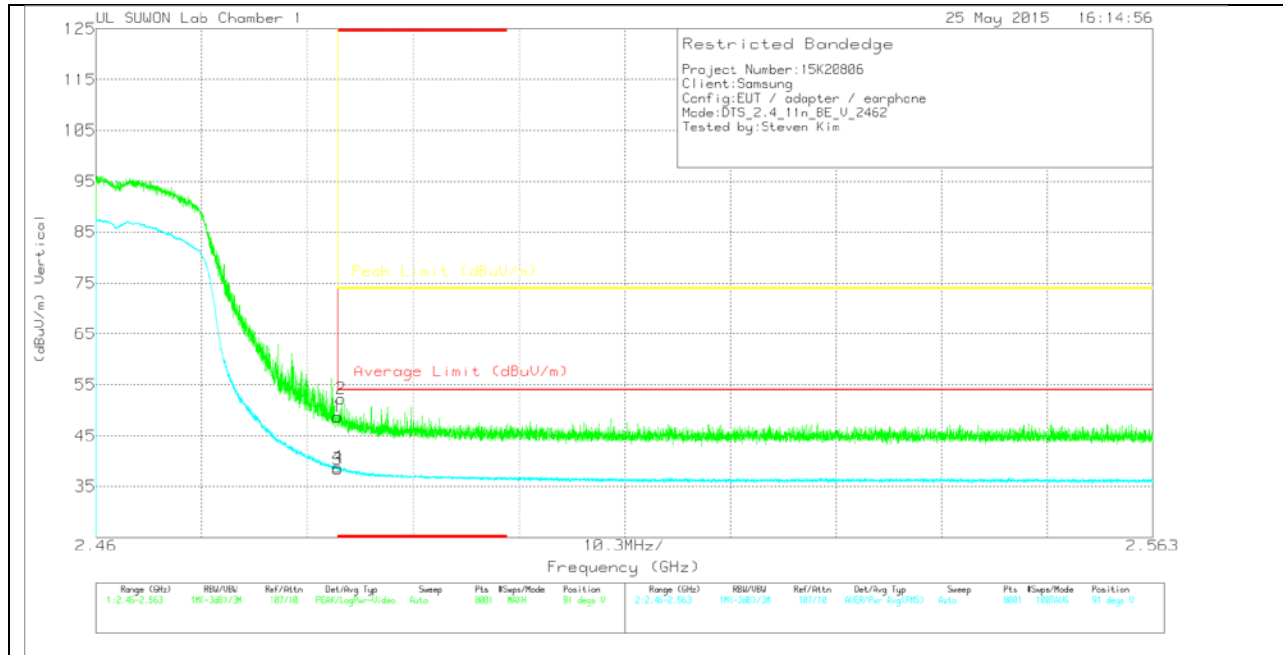
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_2_10d B	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	53.63	Pk	27.9	-22.6	0	58.93	-	-	74	-15.07	112	103	H
2	* 2.484	58.81	Pk	27.9	-22.6	0	64.11	-	-	74	-9.89	112	103	H
3	* 2.484	42.12	RMS	27.9	-22.6	.32	47.74	54	-6.26	-	-	112	103	H
4	* 2.484	42.36	RMS	27.9	-22.6	.32	47.98	54	-6.02	-	-	112	103	H

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

Pk - Peak detector

RMS - RMS detection

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_2_10d B	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	43.48	Pk	27.9	-22.6	0	48.78	-	-	74	-25.22	91	100	V
2	* 2.484	47.01	Pk	27.9	-22.6	0	52.31	-	-	74	-21.69	91	100	V
3	* 2.484	32.84	RMS	27.9	-22.6	.32	38.46	54	-15.54	-	-	91	100	V
4	* 2.484	33.24	RMS	27.9	-22.6	.32	38.86	54	-15.14	-	-	91	100	V

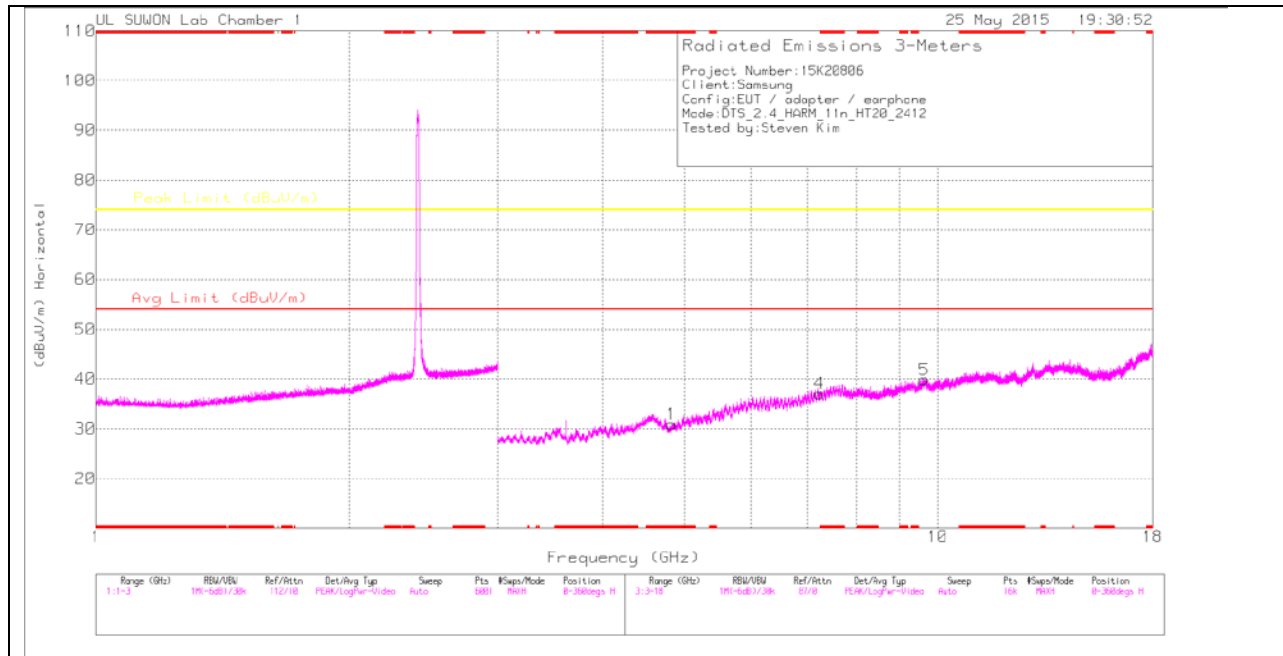
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

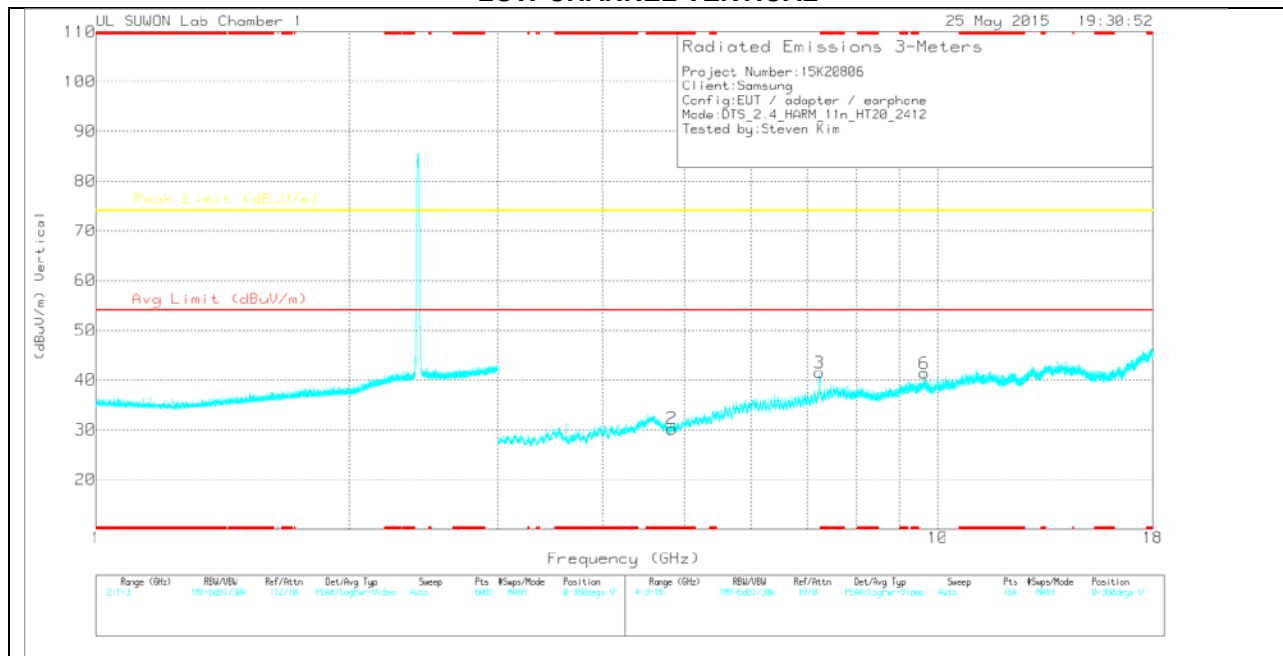
RMS - RMS detection

## HARMONICS AND SPURIOUS EMISSIONS

### LOW CHANNEL HORIZONTAL



### LOW CHANNEL VERTICAL



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

**LOW CHANNEL DATA**

*TRACE MARKERS*

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.834	28.36	PK	31.9	-29.4	0	30.86	-	-	74	-43.14	0-360	100	H
4	7.233	25.55	PK	37	-25.5	0	37.05	-	-	-	-	0-360	100	H
5	9.647	23.04	PK	37.6	-20.8	0	39.84	-	-	-	-	0-360	200	H
2	* 4.834	27.69	PK	31.9	-29.4	0	30.19	-	-	74	-43.81	0-360	200	V
3	7.234	30.03	PK	37	-25.5	0	41.53	-	-	-	-	0-360	100	V
6	9.647	24.57	PK	37.6	-20.8	0	41.37	-	-	-	-	0-360	100	V

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

PK – Peak detector

**Radiated Emissions**

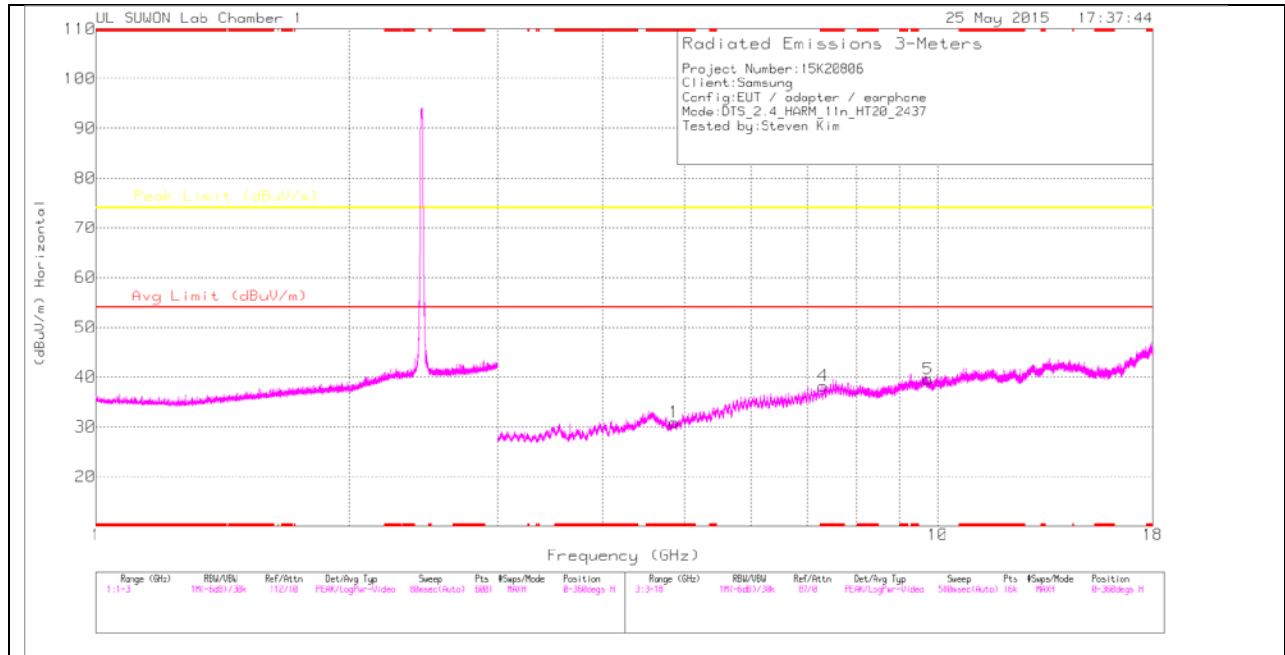
Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3 GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.834	38.55	PK2	31.9	-29.4	0	41.05	-	-	74	-32.95	358	100	H
* 4.834	27.72	MAv1	31.9	-29.4	.32	30.54	54	-23.46	-	-	358	100	H
7.233	35.87	PK2	37	-25.5	0	47.37	-	-	-	-	358	100	H
7.233	22.43	MAv1	37	-25.5	.32	34.25	-	-	-	-	358	100	H
9.605	33.66	PK2	37.7	-21	0	50.36	-	-	-	-	264	200	H
9.601	21.5	MAv1	37.7	-21	0	38.2	-	-	-	-	264	200	H
* 4.835	38.6	PK2	31.9	-29.4	0	41.1	-	-	74	-32.9	264	200	V
* 4.832	27.19	MAv1	31.9	-29.5	.32	29.91	54	-24.09	-	-	264	200	V
7.233	45.26	PK2	37	-25.5	0	56.76	-	-	-	-	99	155	V
7.236	28.21	MAv1	37	-25.5	.32	40.03	-	-	-	-	99	155	V
9.648	33.29	PK2	37.6	-20.8	0	50.09	-	-	-	-	148	203	V

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

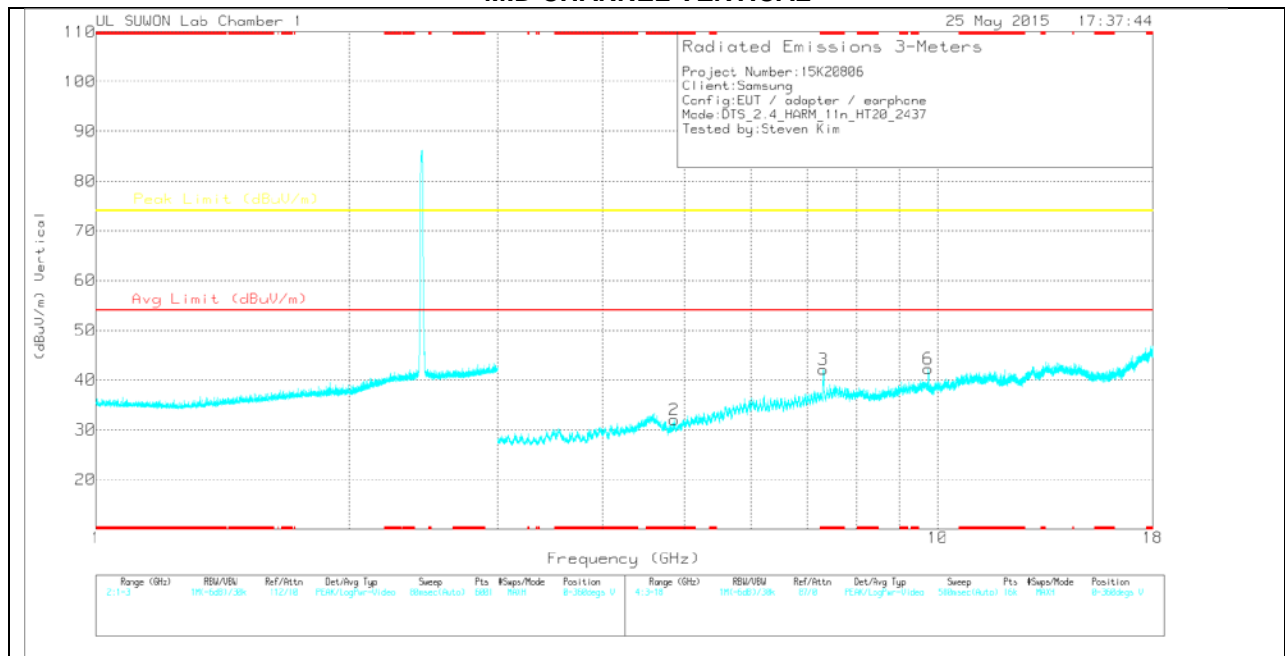
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

**MID CHANNEL HORIZONTAL**



**MID CHANNEL VERTICAL**



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

**MID CHANNEL DATA**

*TRACE MARKERS*

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.864	28.11	PK	32	-29.2	0	30.91	-	-	74	-43.09	0-360	200	H
4	* 7.314	26.79	PK	37.1	-25.7	0	38.19	-	-	74	-35.81	0-360	200	H
5	9.748	23.86	PK	37.6	-21.9	0	39.56	-	-	-	-	0-360	200	H
2	* 4.866	29.17	PK	32	-29.2	0	31.97	-	-	74	-42.03	0-360	100	V
3	* 7.31	30.72	PK	37.1	-25.7	0	42.12	-	-	74	-31.88	0-360	100	V
6	9.748	26.58	PK	37.6	-21.9	0	42.28	-	-	-	-	0-360	100	V

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

PK – Peak detector

**Radiated Emissions**

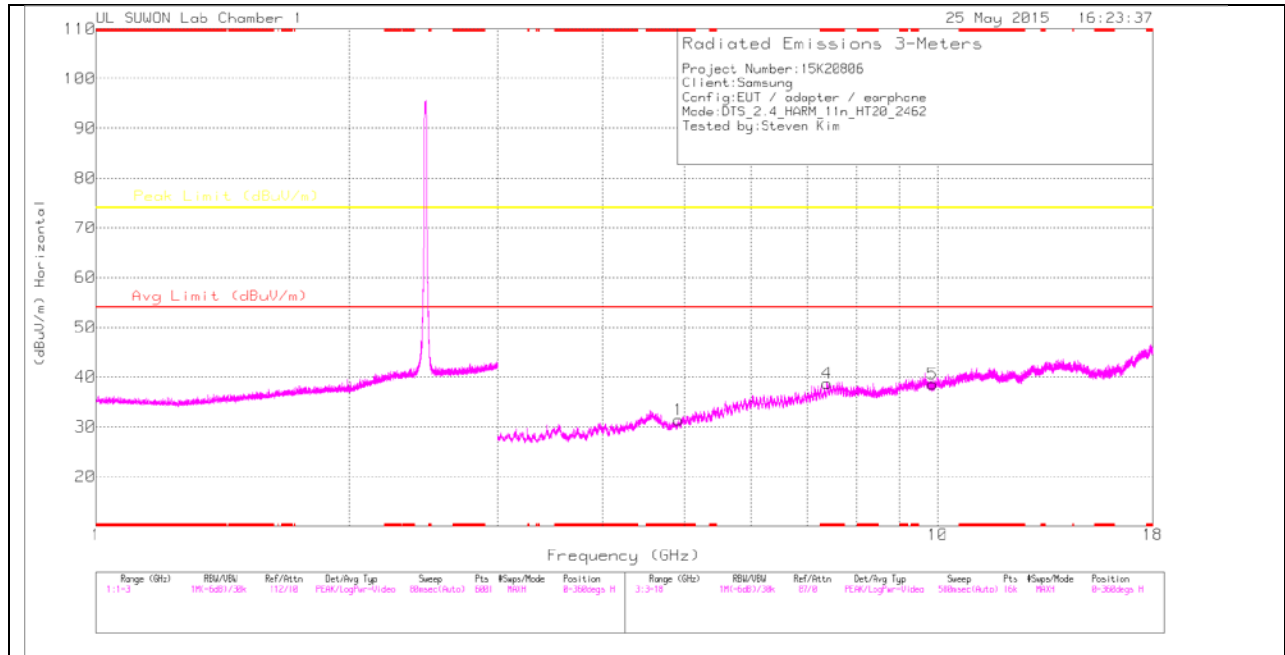
Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3 GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.864	39.69	PK2	32	-29.2	0	42.49	-	-	74	-31.51	358	200	H
* 4.863	23.28	MAv1	32	-29.2	0	26.08	54	-27.92	-	-	358	200	H
* 7.318	37.54	PK2	37.1	-25.6	0	49.04	-	-	74	-24.96	80	348	H
* 7.313	24.91	MAv1	37.1	-25.7	.32	36.63	54	-17.37	-	-	80	348	H
9.747	33.76	PK2	37.6	-21.9	0	49.46	-	-	-	-	80	200	H
9.747	20.99	MAv1	37.6	-21.9	.32	37.01	-	-	-	-	80	200	H
* 4.867	39.27	PK2	32	-29.2	0	42.07	-	-	74	-31.93	358	100	V
* 4.865	25.33	MAv1	32	-29.2	.32	28.45	54	-25.55	-	-	358	100	V
* 7.309	43.9	PK2	37.1	-25.7	0	55.3	-	-	74	-18.7	132	276	V
* 7.311	28.07	MAv1	37.1	-25.7	.32	39.79	54	-14.21	-	-	132	276	V
9.747	33.95	PK2	37.6	-21.9	0	49.65	-	-	-	-	313	165	V
9.748	21.61	MAv1	37.6	-21.9	.32	37.63	-	-	-	-	313	165	V

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

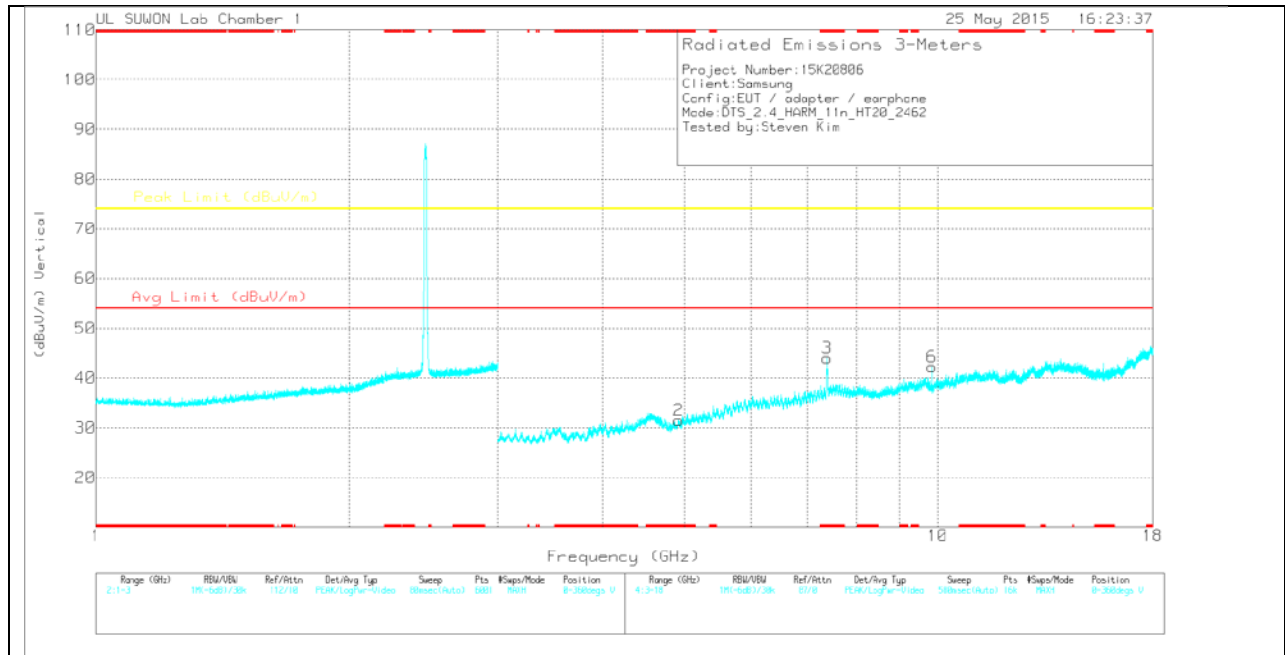
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

**HIGH CHANNEL HORIZONTAL**



**HIGH CHANNEL VERTICAL**



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

**HIGH CHANNEL DATA**

*TRACE MARKERS*

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.922	28.34	PK	32.1	-29	0	31.44	-	-	74	-42.56	0-360	100	H
4	* 7.385	26.58	PK	37.2	-25.1	0	38.68	-	-	74	-35.32	0-360	200	H
5	9.86	22.2	PK	37.8	-21.4	0	38.6	-	-	-	-	0-360	100	H
2	* 4.926	28.38	PK	32.1	-29	0	31.48	-	-	74	-42.52	0-360	100	V
3	* 7.385	31.89	PK	37.2	-25.1	0	43.99	-	-	74	-30.01	0-360	100	V
6	9.848	26.01	PK	37.8	-21.6	0	42.21	-	-	-	-	0-360	100	V

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

PK – Peak detector

**Radiated Emissions**

Frequency (GHz)	Meter Reading (dBuV)	Det	3115D Factor	Path_3_3 GHP	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.921	39.32	PK2	32.1	-29.1	0	42.32	-	-	74	-31.68	135	227	H
* 4.923	26.8	MAv1	32.1	-29	.32	30.22	54	-23.78	-	-	135	227	H
* 7.385	44.72	PK2	37.2	-25.1	0	56.82	-	-	74	-17.18	184	361	H
* 7.386	29.94	MAv1	37.2	-25.1	.32	42.36	54	-11.64	-	-	184	361	H
9.86	33.75	PK2	37.8	-21.4	0	50.15	-	-	-	-	285	242	H
9.86	21.13	MAv1	37.8	-21.4	0	37.53	-	-	-	-	285	242	H
* 4.924	39.08	PK2	32.1	-29	0	42.18	-	-	74	-31.82	121	146	V
* 4.926	27.1	MAv1	32.1	-29	.32	30.52	54	-23.48	-	-	121	146	V
* 7.38	45.79	PK2	37.2	-25.2	0	57.79	-	-	74	-16.21	106	261	V
* 7.387	30.89	MAv1	37.2	-25.1	.32	43.31	54	-10.69	-	-	106	261	V
9.847	34.52	PK2	37.8	-21.6	0	50.72	-	-	-	-	314	320	V
9.847	21.31	MAv1	37.8	-21.6	.32	37.83	-	-	-	-	314	320	V

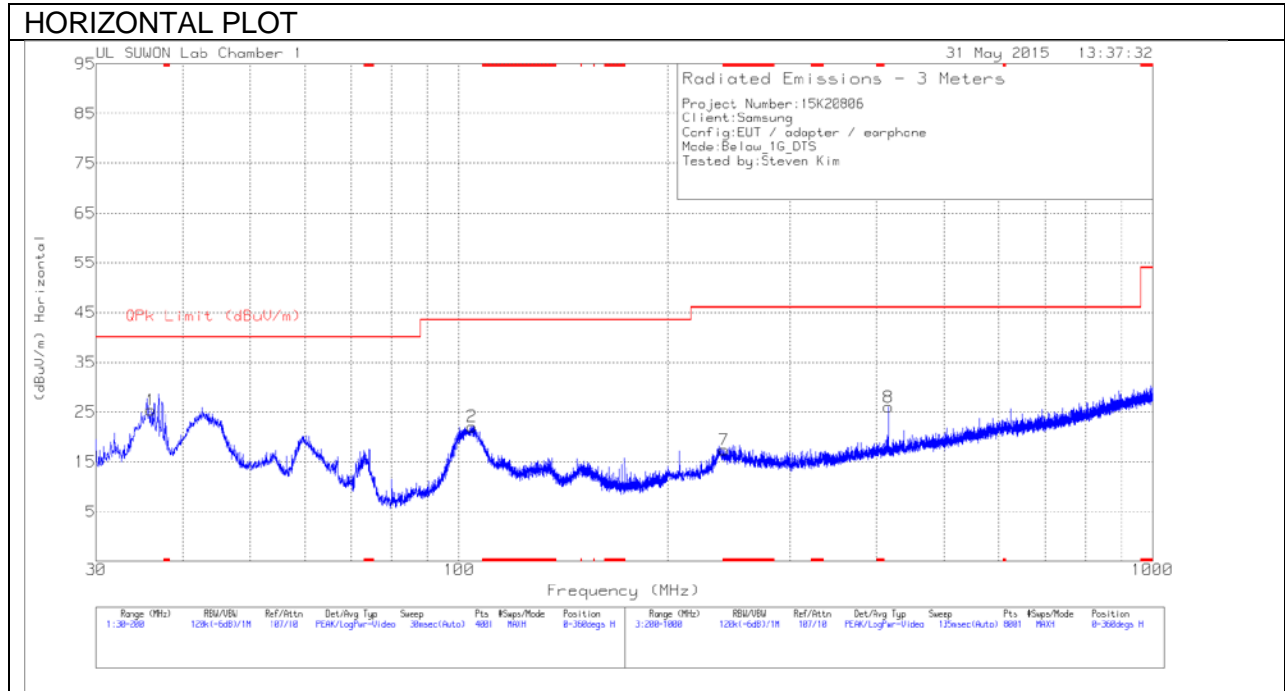
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

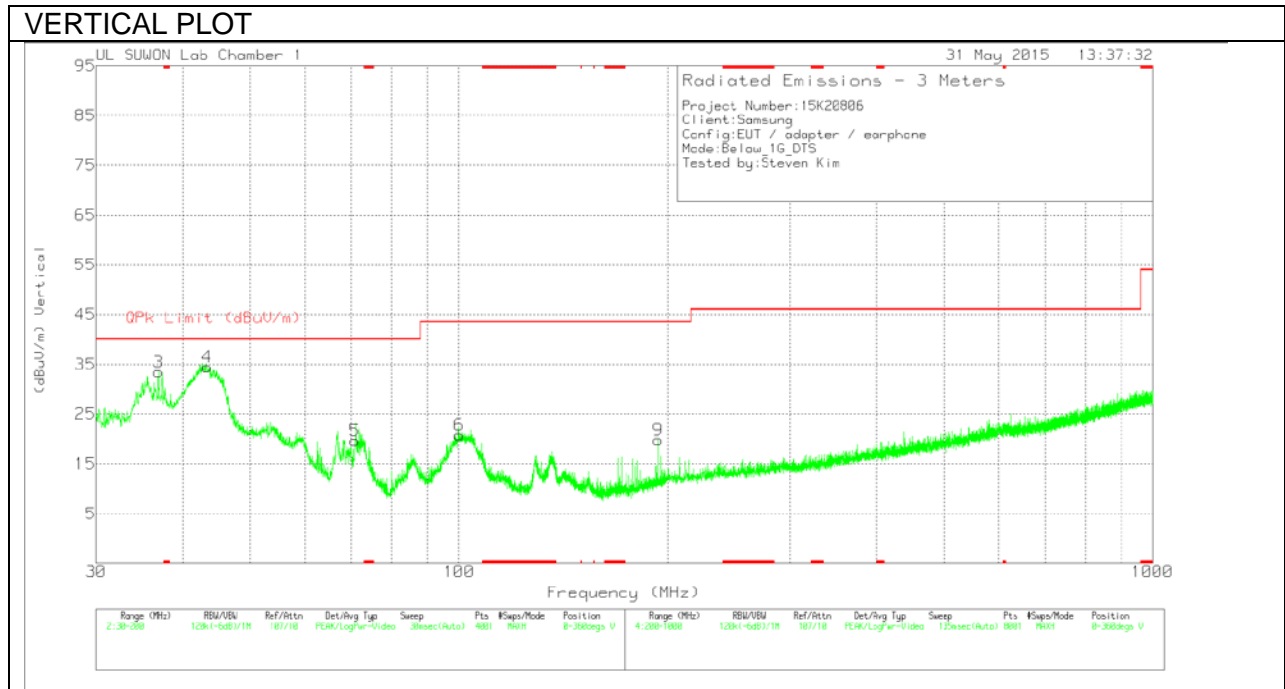
MAv1 - KDB558074 Option 1 Maximum RMS Average

### 11.3. WORST-CASE BELOW 1 GHz

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



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



**Below 1G Data**

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163-750	Bi-Log	DC Corr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	35.95	44.89	Pk	10.9	-30.4	0	25.39	40	-14.61	0-360	300	H
2	104.3325	40.11	Pk	11.2	-29.2	0	22.11	43.52	-21.41	0-360	300	H
3	36.8425	52.64	Pk	11.2	-30.4	0	33.44	40	-6.56	0-360	100	V
4	43.345	51.47	Pk	13.2	-30.2	0	34.47	40	-5.53	0-360	100	V
5	70.885	40.03	Pk	9.4	-29.7	0	19.73	40	-20.27	0-360	100	V
6	100.125	38.63	Pk	11.5	-29.3	0	20.83	43.52	-22.69	0-360	100	V
9	193.71	37.26	Pk	10.7	-28.2	0	19.76	43.52	-23.76	0-360	100	V
7	* 241.2	33.05	Pk	12.2	-27.8	0	17.45	46.02	-28.57	0-360	100	H
8	416	36.79	Pk	15.8	-26.6	0	25.99	46.02	-20.03	0-360	100	H
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163-750	Bi-Log	DC Corr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity

Pk - Peak detector

## 12. AC POWER LINE CONDUCTED EMISSIONS

### LIMITS

FCC §15.207 (a)

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

\*Decreases with the logarithm of the frequency.

### TEST PROCEDURE

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

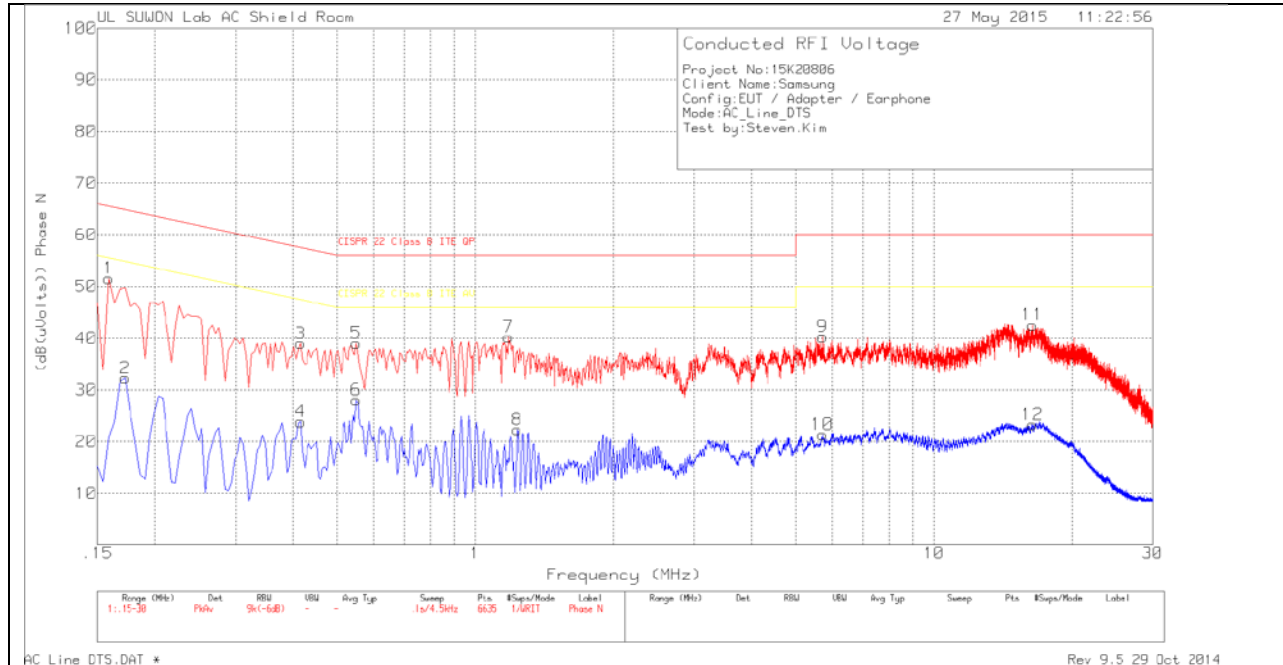
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

**RESULTS**

**6 WORST EMISSIONS**

**LINE 1 PLOT**



**LINE 1 RESULTS**

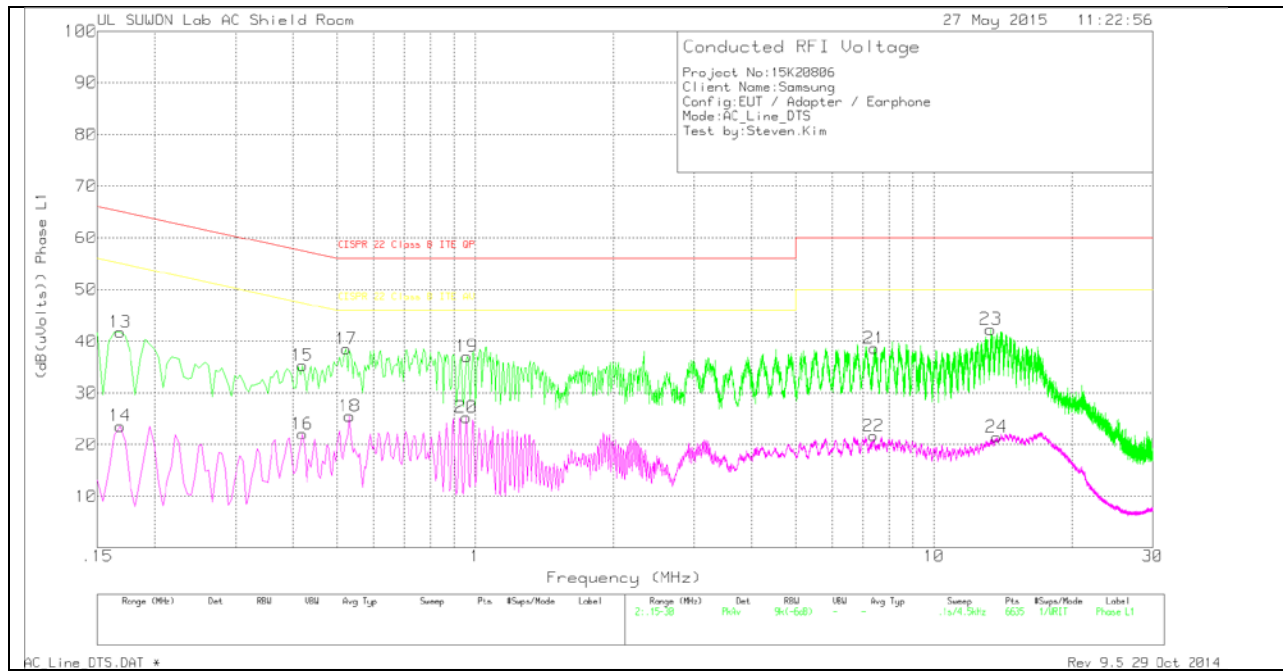
Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN HPF ON and Extension cord	CE Shield Room	Corrected Reading (dBuV)	CISPR 22 Class B ITE QP	Margin (dB)	CISPR 22 Class B ITE AV	Margin (dB)
1	.159	41.59	Pk	10	0	51.59	65.52	-13.93	-	-
2	.1725	22.11	Av	10.2	0	32.31	-	-	54.84	-22.53
3	.4155	28.89	Pk	10.1	0	38.99	57.54	-18.55	-	-
4	.4155	13.75	Av	10.1	0	23.85	-	-	47.54	-23.69
5	.5505	28.94	Pk	10.1	0	39.04	56	-16.96	-	-
6	.5505	17.97	Av	10.1	0	28.07	-	-	46	-17.93
7	1.1805	30.36	Pk	9.8	.1	40.26	56	-15.74	-	-
8	1.2345	12.42	Av	9.8	.1	22.32	-	-	46	-23.68
9	5.7165	30.39	Pk	9.8	.1	40.29	60	-19.71	-	-
10	5.7165	11.49	Av	9.8	.1	21.39	-	-	50	-28.61
11	16.404	31.98	Pk	10.4	.2	42.58	60	-17.42	-	-
12	16.404	12.69	Av	10.4	.2	23.29	-	-	50	-26.71

Pk - Peak detector

Av - Average detection

**LINE 2 PLOT**



**LINE 2 RESULTS**

Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_w ith extension cord_L1	CE Shield Room	Corrected Reading (dBuV)	CISPR 22 Class B ITE QP	Margin (dB)	CISPR 22 Class B ITE AV	Margin (dB)
13	.168	31.6	Pk	10.2	0	41.8	65.06	-23.26	-	-
14	.168	13.39	Av	10.2	0	23.59	-	-	55.06	-31.47
15	.42	25.22	Pk	10.1	0	35.32	57.45	-22.13	-	-
16	.42	11.96	Av	10.1	0	22.06	-	-	47.45	-25.39
17	.5235	28.42	Pk	10.1	0	38.52	56	-17.48	-	-
18	.5325	15.41	Av	10.1	0	25.51	-	-	46	-20.49
19	.96	27.16	Pk	9.9	0	37.06	56	-18.94	-	-
20	.9555	15.38	Av	9.9	0	25.28	-	-	46	-20.72
21	7.4175	28.65	Pk	9.9	.1	38.65	60	-21.35	-	-
22	7.3905	11.71	Av	9.9	.1	21.71	-	-	50	-28.29
23	13.3125	32.02	Pk	10.1	.2	42.32	60	-17.68	-	-
24	13.713	11.18	Av	10.1	.2	21.48	-	-	50	-28.52

Pk - Peak detector

Av - Average detection