



**FCC CFR47 PART 15 SUBPART C**

**DTS Wireless LAN**

**CERTIFICATION TEST REPORT**

**FOR**

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

**MODEL NUMBER : SM-J320H/DS**

**FCC ID: A3LSMJ320H**

**REPORT NUMBER: 15K22504-E1**

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*Prepared for*  
**SAMSUNG ELECTRONICS CO., LTD.**  
**129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI,**  
**GYEONGGI-DO, 16677, KOREA**

*Prepared by*  
**UL Korea, Ltd. Suwon Laboratory**  
**218 Maeyeong-ro, Yeongtong-gu,**  
**Suwon-si, Gyeonggi-do, 16675, Korea**  
**TEL: (031) 337-9902**  
**FAX: (031) 213-5433**



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Revision History

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## 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> .....	6
4.2. <i>SAMPLE CALCULATION</i> .....	6
4.3. <i>MEASUREMENT UNCERTAINTY</i> .....	7
<b>5. EQUIPMENT UNDER TEST</b> .....	<b>8</b>
5.1. <i>DESCRIPTION OF EUT</i> .....	8
5.2. <i>MAXIMUM OUTPUT POWER</i> .....	8
5.3. <i>DESCRIPTION OF AVAILABLE ANTENNAS</i> .....	8
5.4. <i>WORST-CASE CONFIGURATION AND MODE</i> .....	8
5.5. <i>DESCRIPTION OF TEST SETUP</i> .....	9
<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> .....	12
<b>9. SUMMARY TABLE</b> .....	<b>14</b>
<b>10. ANTENNA PORT TEST RESULTS</b> .....	<b>15</b>
10.1. <i>6 dB BANDWIDTH</i> .....	15
10.1.1. 802.11b MODE IN THE 2.4 GHz BAND.....	15
10.1.2. 802.11g MODE IN THE 2.4 GHz BAND.....	15
10.1.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND.....	15
10.1.4. 6 dB BANDWIDTH PLOTS.....	16
10.2. <i>99% BANDWIDTH</i> .....	19
10.2.1. 802.11b MODE IN THE 2.4 GHz BAND.....	19
10.2.2. 802.11g MODE IN THE 2.4 GHz BAND.....	19
10.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND.....	19
10.2.4. 99% BANDWIDTH PLOTS.....	20
10.3. <i>OUTPUT POWER</i> .....	23
10.3.1. 802.11b MODE IN THE 2.4 GHz BAND.....	23
10.3.2. 802.11g MODE IN THE 2.4 GHz BAND.....	24
10.3.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND.....	24
10.4. <i>PSD</i> .....	25

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10.4.1.	802.11b MODE IN THE 2.4 GHz BAND .....	26
10.4.2.	802.11g MODE IN THE 2.4 GHz BAND .....	26
10.4.3.	802.11n HT20 MODE IN THE 2.4 GHz BAND .....	26
10.4.4.	PSD PLOTS .....	27
10.5.	<i>OUT-OF-BAND EMISSIONS</i> .....	30
10.5.1.	802.11b MODE IN THE 2.4 GHz BAND .....	31
10.5.2.	802.11g MODE IN THE 2.4 GHz BAND .....	32
10.5.3.	802.11n HT20 MODE IN THE 2.4 GHz BAND .....	33
<b>11.</b>	<b>RADIATED TEST RESULTS</b> .....	<b>34</b>
11.1.	<i>LIMITS AND PROCEDURE</i> .....	34
11.2.	<i>TRANSMITTER ABOVE 1 GHz</i> .....	35
11.2.1.	TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND .....	35
11.2.2.	TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND .....	45
11.2.3.	TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND .....	55
11.3.	<i>WORST-CASE BELOW 1 GHz</i> .....	65
<b>12.</b>	<b>AC POWER LINE CONDUCTED EMISSIONS</b> .....	<b>67</b>
<b>13.</b>	<b>SETUP PHOTOS</b> .....	<b>72</b>

## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** SAMSUNG ELECTRONICS CO., LTD.  
**EUT DESCRIPTION:** GSM/WCDMA Phone + BT/BLE and DTS b/g/n  
**MODEL NUMBER:** SM-J320H/DS  
**SERIAL NUMBER:** R31GB00F2NP (RADIATED); R31GB007VKP (CONDUCTED)  
**DATE TESTED:** DEC 16, 2015 - DEC 18, 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:



Junwhan Lee  
Suwon Lab Engineer  
UL Korea, Ltd.

## 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.

## 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, 16675, 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 GSM/WCDMA Phone + BT/BLE and DTS b/g/n.  
This test report addresses the DTS (WLAN) operational mode.

### 5.2. MAXIMUM OUTPUT POWER

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

Frequency Range [MHz]	Mode	Output Power [dBm]	Output Power [mW]
2412 - 2462	802.11b	15.41	34.75
	802.11g	14.46	27.93
	802.11n HT20	14.37	27.35

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antennas, with a antenna's maximum gain of -5.39 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	DK1GA22VS/A-E	N/A
Data Cable	SAMSUNG	ECB-DU68WE	N/A	N/A
Earphone	SAMSUNG	EHS61ASFWE	N/A	N/A

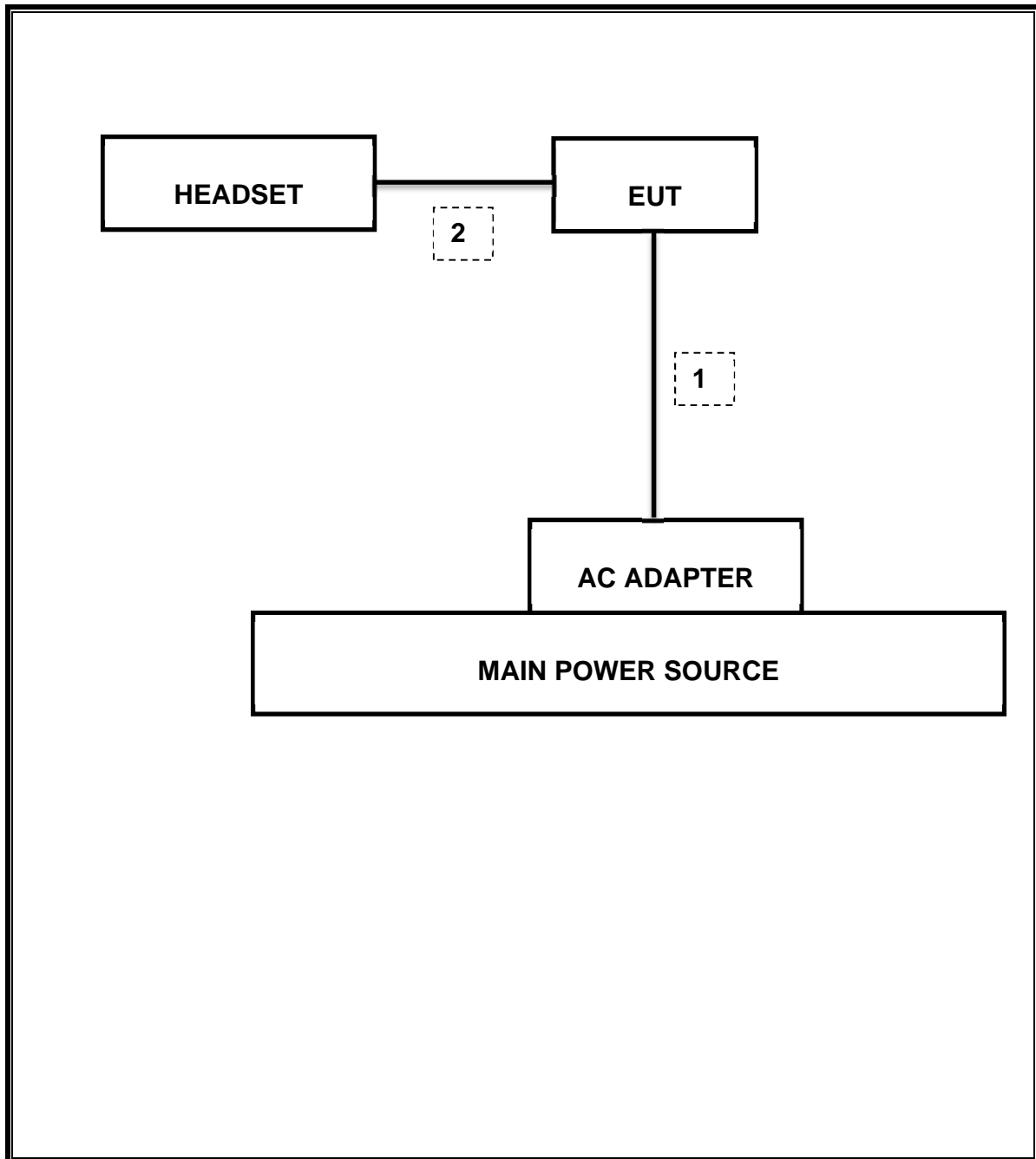
### I/O CABLES

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	750	11-17-16
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	04-25-17
Antenna, Horn, 18 GHz	ETS	3115	00167211	09-26-16
Antenna, Horn, 18 GHz	ETS	3115	00161451	05-17-17
Antenna, Horn, 18 GHz	ETS	3117	00168724	06-17-17
Antenna, Horn, 18 GHz	ETS	3117	00168717	06-17-17
Antenna, Horn, 40 GHz	ETS	3116C	00166155	09-23-16
Antenna, Horn, 40 GHz	ETS	3116C-PA	00168841	08-24-17
Preamplifier, 1000 MHz	Sonoma	310N	341282	08-18-16
Preamplifier, 1000 MHz	Sonoma	310N	351741	08-18-16
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1876511	08-18-16
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	08-18-16
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	08-19-16
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54490312	08-19-16
Bluetooth Tester	TESCOM	TC-3000C	3000C000546	08-18-16
Average Power Sensor	R&S	NRZ-Z91	102681	08-18-16
Average Power Sensor	Agilent / HP	U2000	MY54270007	08-18-16
EMI Test Receive, 40 GHz	R&S	ESU40	100439	08-19-16
EMI Test Receive, 40 GHz	R&S	ESU40	100457	08-19-16
EMI Test Receive, 3 GHz	R&S	ESR3	101832	08-19-16
Attenuator / Switch driver	HP	11713A	3748A04272	N/A
Low Pass Filter 3GHz	Micro-Tronics	LPS17541	009	08-18-16
Low Pass Filter 3GHz	Micro-Tronics	LPS17541	015	08-18-16
High Pass Filter 5GHz	Micro-Tronics	HPS17542	009	08-18-16
High Pass Filter 6GHz	Micro-Tronics	HPM17543	010	08-18-16
High Pass Filter 5GHz	Micro-Tronics	HPS17542	016	08-18-16
High Pass Filter 6GHz	Micro-Tronics	HPM17543	015	08-18-16
LISN	R&S	ENV-216	101836	08-19-16
LISN	R&S	ENV-216	101837	08-19-16

## 7. MEASUREMENT METHODS

KDB 558074 D01 DTS Meas Guidance v03r03: Measurement Procedure §9.2.3.1 AVGPM is used for average power and §10.2 AVGPSD-2 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.

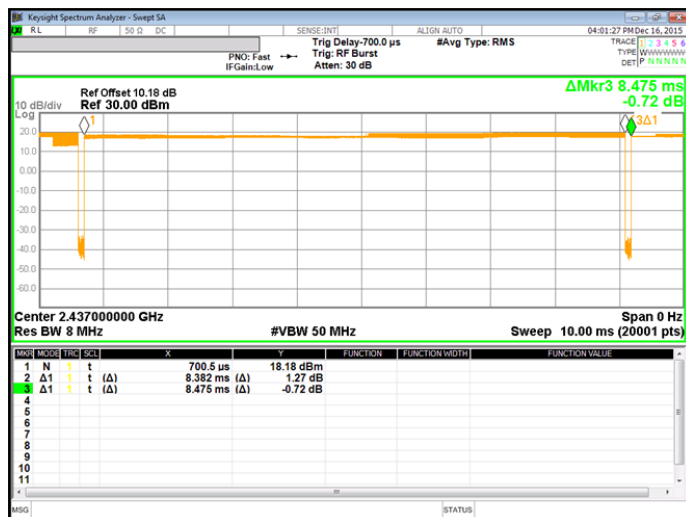
## 8. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

### LIMITS

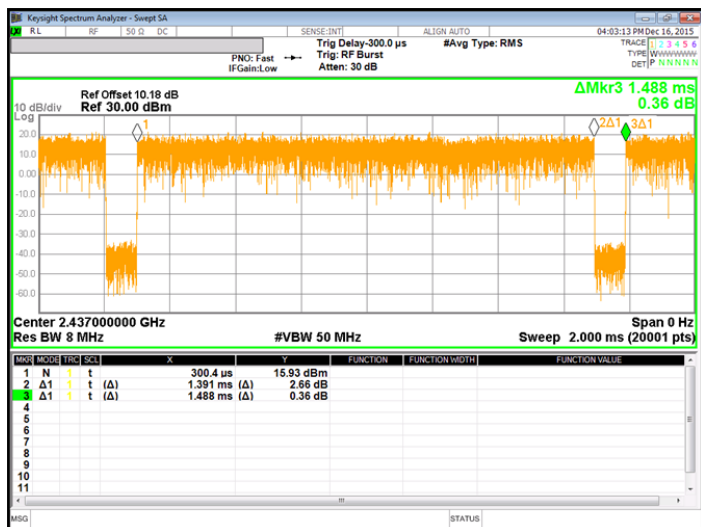
None; for reporting purposes only.

### 8.1. ON TIME AND DUTY CYCLE RESULTS

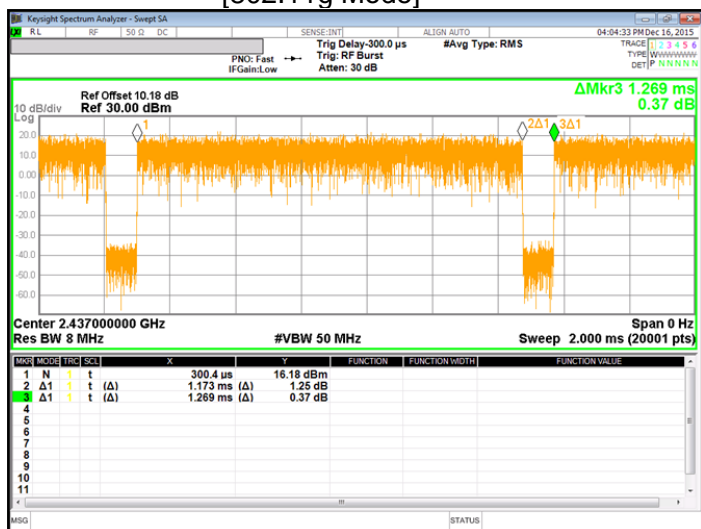
Mode	ON Time B [msec]	Period [msec]	Duty Cycle x [linear]	Duty Cycle [%]	Duty Cycle Correction Factor [dB]	1/T Minimum VBW [kHz]
<b>2400MHz Bands</b>						
802.11b	8.382	8.475	0.989	98.9%	0.00	0.010
802.11g	1.391	1.488	0.935	93.5%	0.29	0.719
802.11n HT20	1.173	1.269	0.924	92.4%	0.34	0.853



[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	8.584 MHz
2.1051, 15.247 (d)	Band Edge / Conducted Spurious Emission	-30dBc		Pass	-30.354 dBm
15.247	TX conducted output power	<30dBm		Pass	15.41 dBm
15.247	PSD	<8dBm		Pass	-12.125 dBm
15.207 (a)	AC Power Line conducted emissions	Section 10	Power Line conducted	Pass	50.89 dBuV (PK)
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass	46.31 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 v03r03: 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	8.584	0.5
Mid	2437	9.548	0.5
High	2462	9.291	0.5
Worst		8.584	0.5

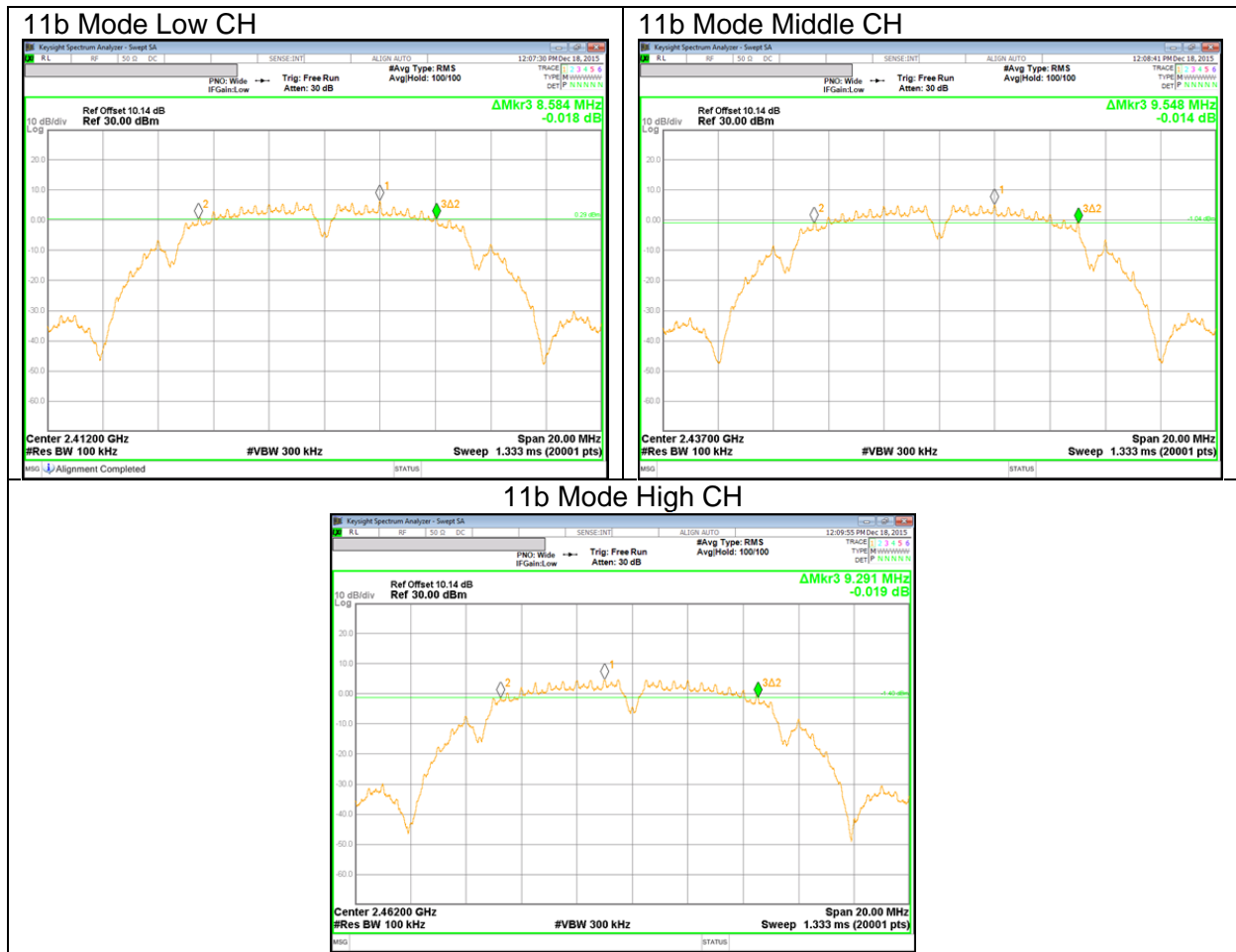
##### 10.1.2. 802.11g MODE IN THE 2.4 GHz BAND

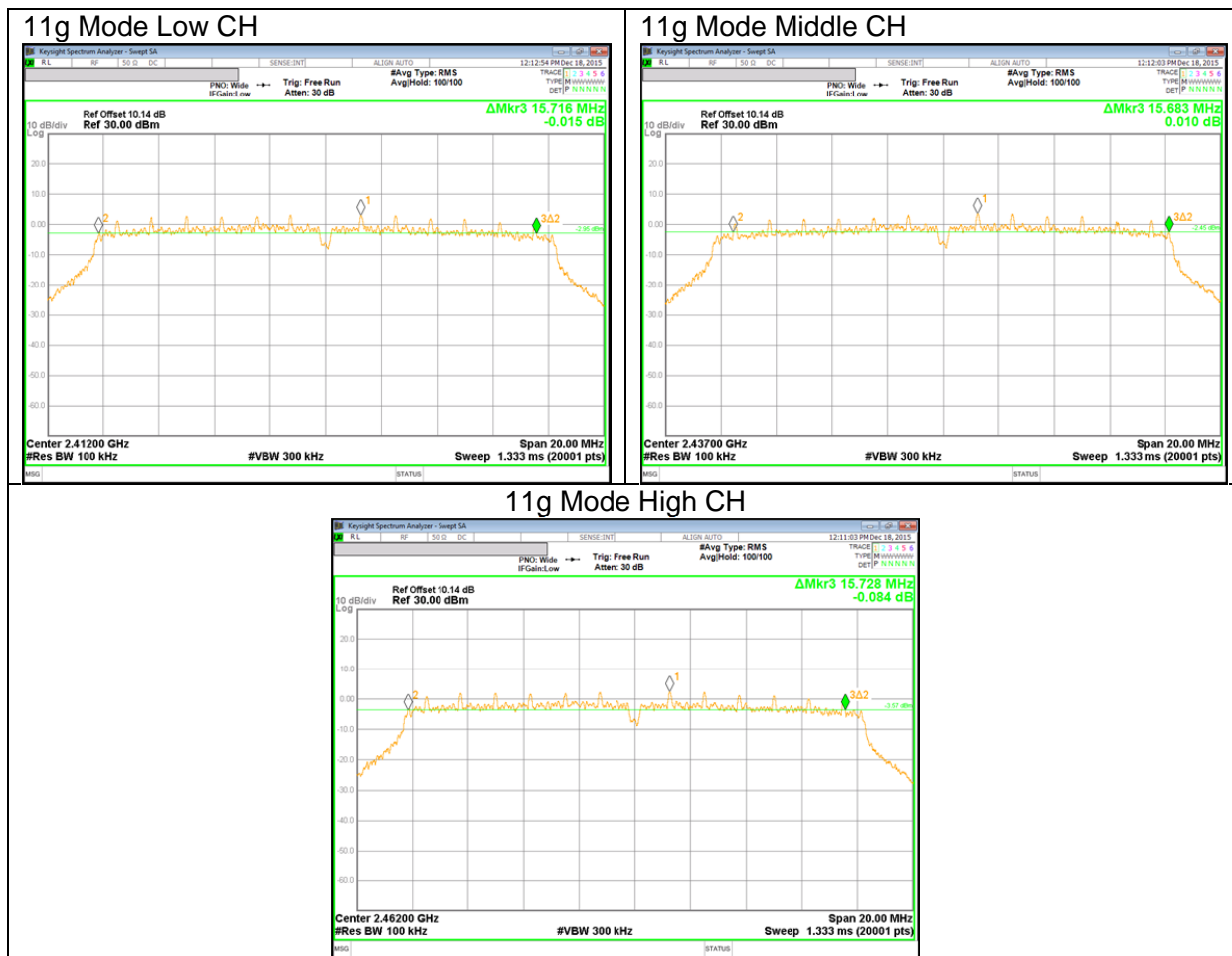
Channel	Frequency [MHz]	6 dB Bandwidth [MHz]	Minimum Limit [MHz]
Low	2412	15.716	0.5
Mid	2437	15.683	0.5
High	2462	15.728	0.5
Worst		15.683	0.5

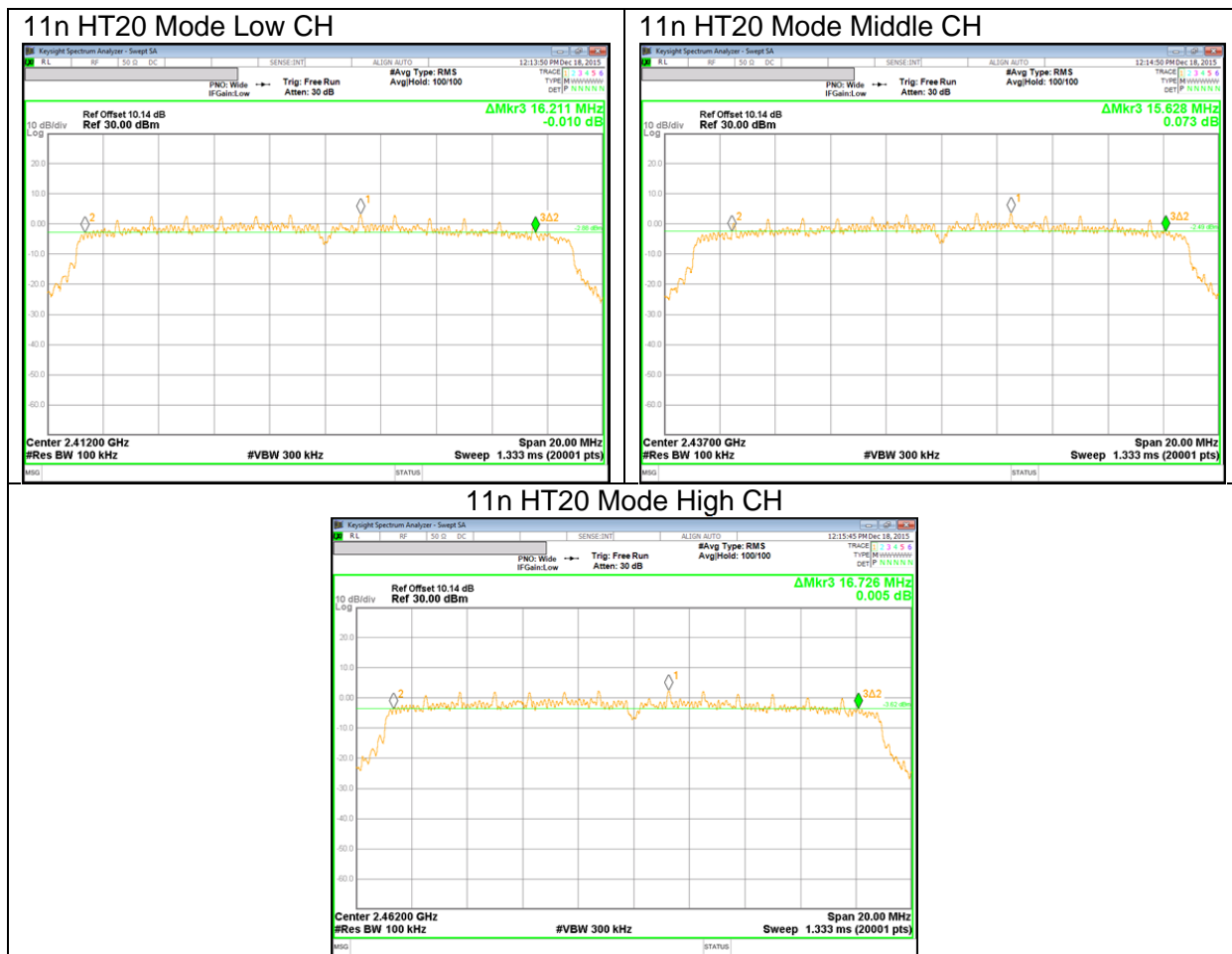
##### 10.1.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]	Minimum Limit [MHz]
Low	2412	16.211	0.5
Mid	2437	15.628	0.5
High	2462	16.726	0.5
Worst		15.628	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	11.443
Mid	2437	11.170
High	2462	11.316
Worst		11.443

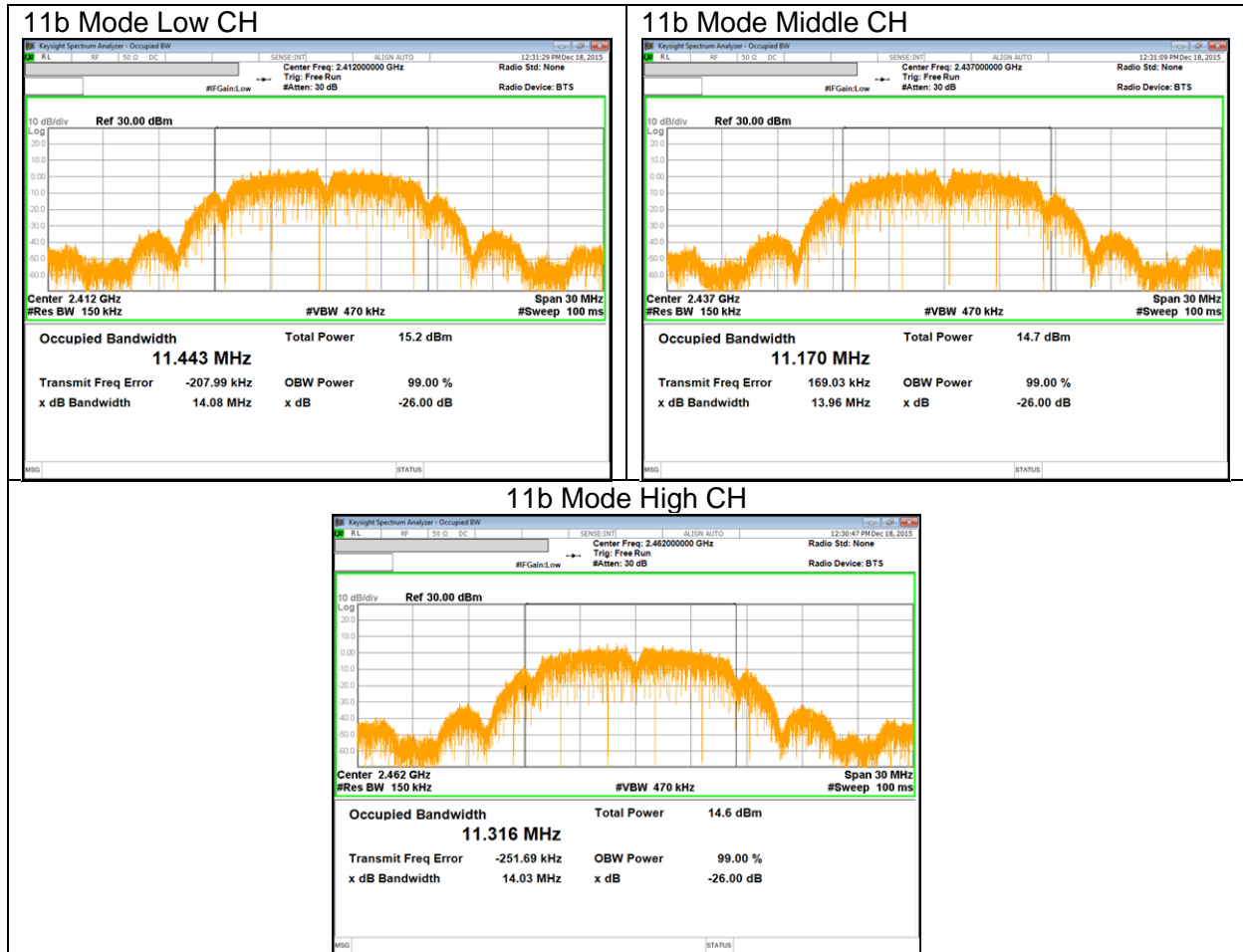
#### 10.2.2. 802.11g MODE IN THE 2.4 GHz BAND

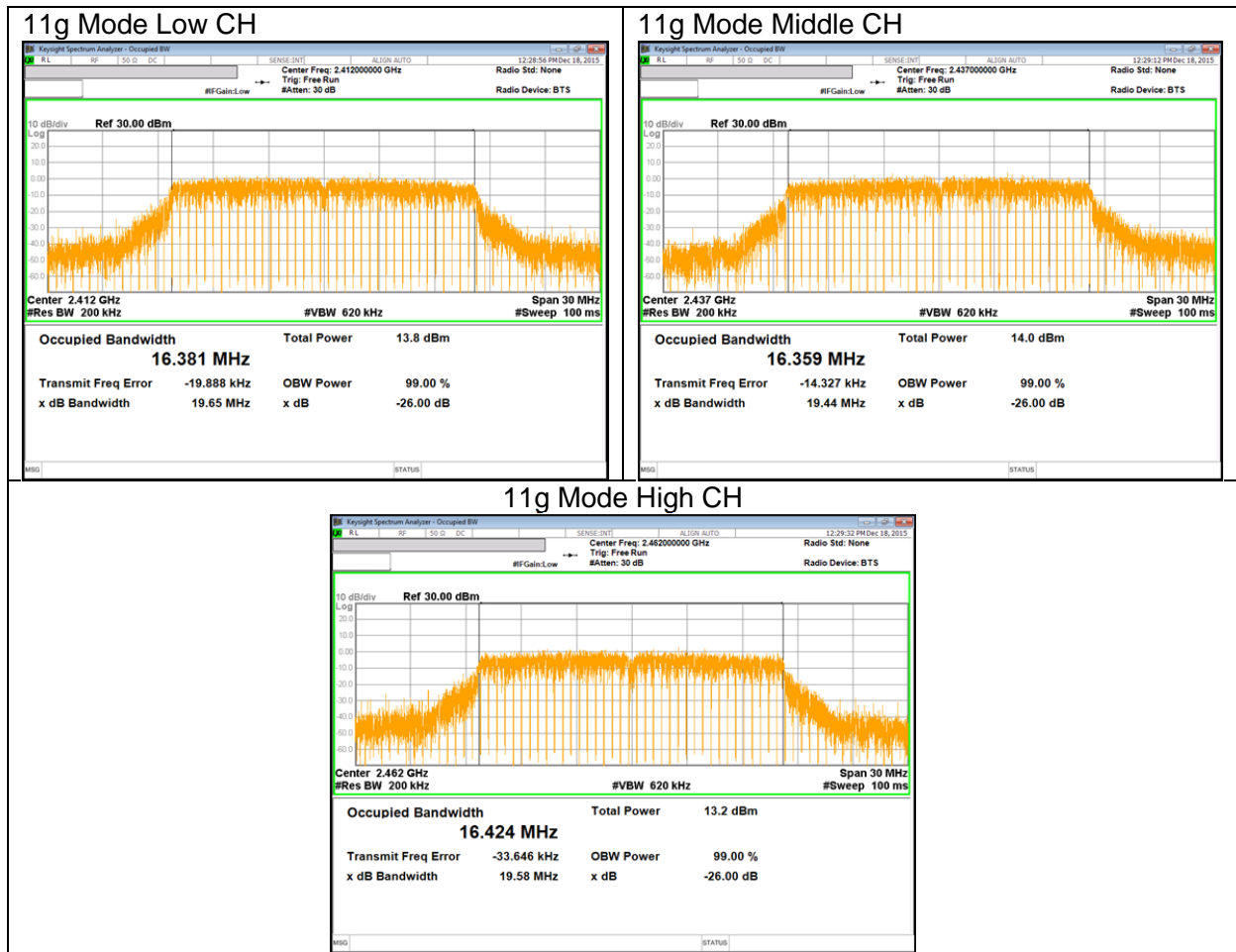
Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	2412	16.381
Mid	2437	16.359
High	2462	16.424
Worst		16.424

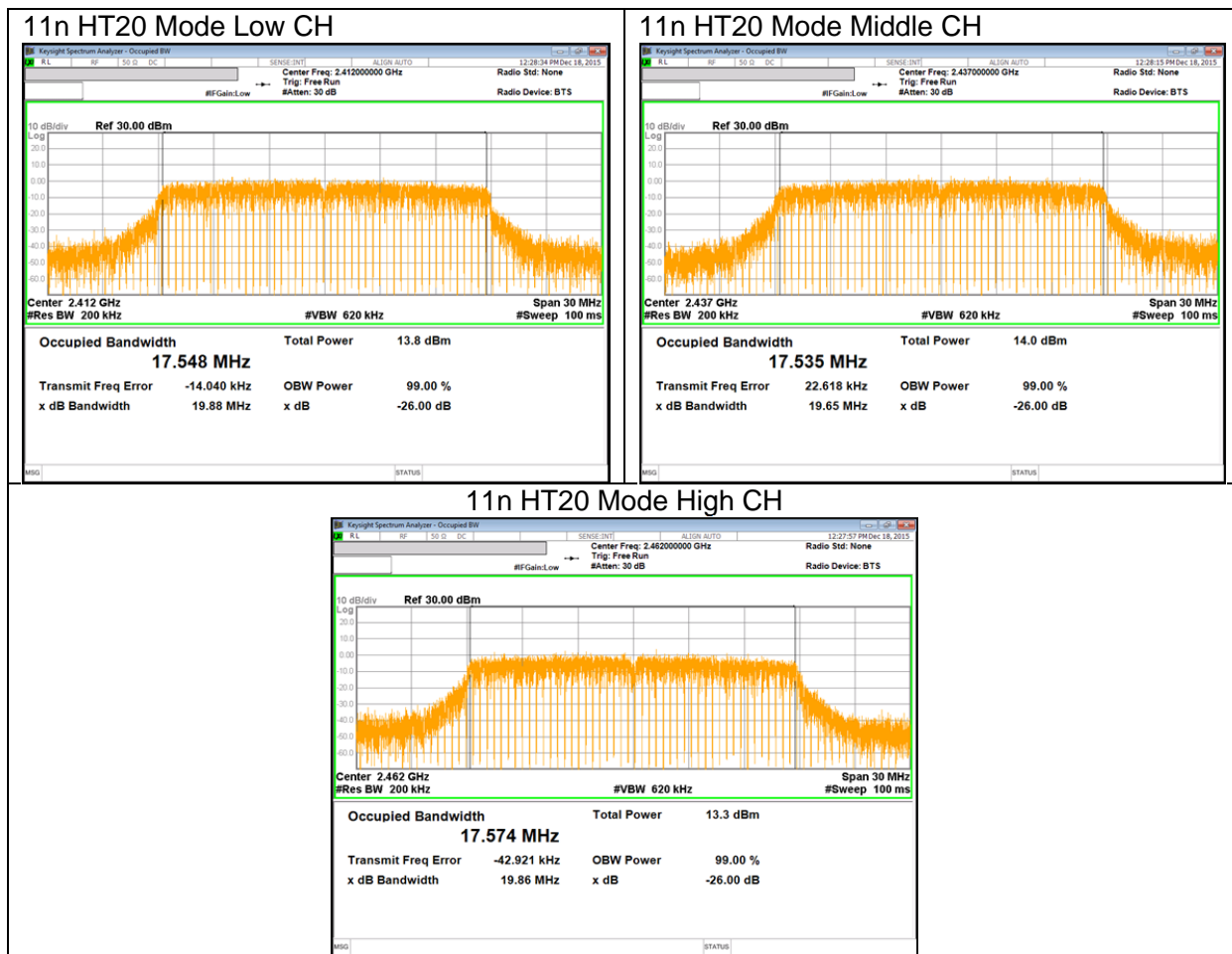
#### 10.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	2412	17.548
Mid	2437	17.535
High	2462	17.574
Worst		17.574

**10.2.4. 99% BANDWIDTH PLOTS**







### 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	-5.39	30.00	30.00	36.00	30.00
Mid	2437	-5.39	30.00	30.00	36.00	30.00
High	2462	-5.39	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	15.41	15.41	36.00	-20.59
Mid	2437	14.99	14.99	36.00	-21.01
High	2462	14.74	14.74	36.00	-21.26
Worst			15.41	36.00	-20.59

**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	-5.39	30.00	30.00	36.00	30.00
Mid	2437	-5.39	30.00	30.00	36.00	30.00
High	2462	-5.39	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	14.32	14.32	36.00	-21.68
Mid	2437	14.46	14.46	36.00	-21.54
High	2462	13.68	13.68	36.00	-22.32
Worst			14.46	36.00	-21.54

**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	-5.39	30.00	30.00	36.00	30.00
Mid	2437	-5.39	30.00	30.00	36.00	30.00
High	2462	-5.39	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	14.29	14.29	36.00	-21.71
Mid	2437	14.37	14.37	36.00	-21.63
High	2462	13.56	13.56	36.00	-22.44
Worst			14.37	36.00	-21.63

## **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 AVGPSD-2" under KDB558074 D01 DTS Meas Guidance v03r03

**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	-13.639	0.00	-13.639	8.00	-21.639
Mid	2437	-13.954	0.00	-13.954	8.00	-21.954
High	2462	-12.125	0.00	-12.125	8.00	-20.125

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

**PSD Results**

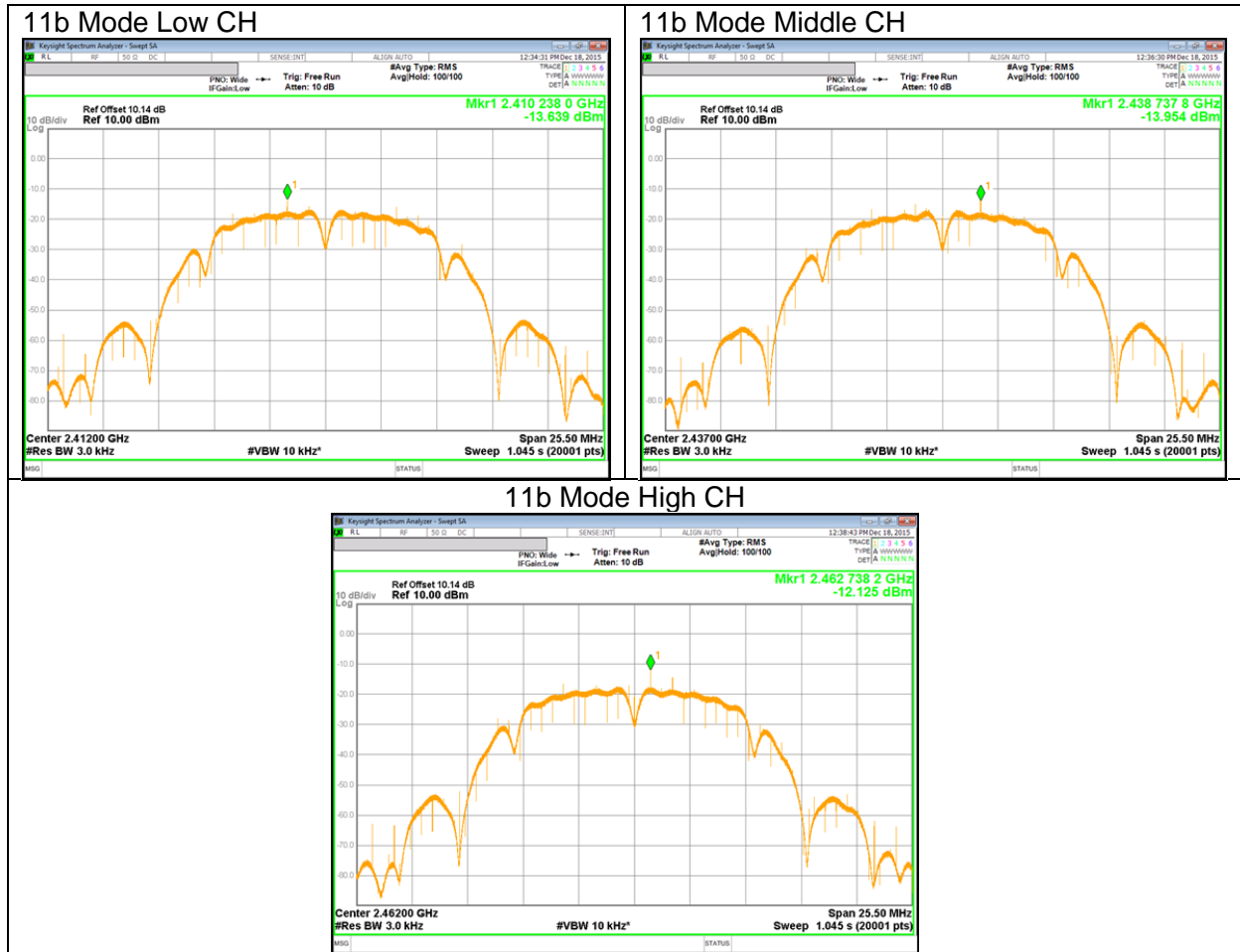
Channel	Frequency [MHz]	PSD Meas [dBm]	Duty Factor [dB]	Final PSD [dBm]	Limit [dBm]	Margin [dB]
Low	2412	-14.398	0.29	-14.108	8.00	-22.398
Mid	2437	-13.858	0.29	-13.568	8.00	-21.858
High	2462	-15.232	0.29	-14.942	8.00	-23.232

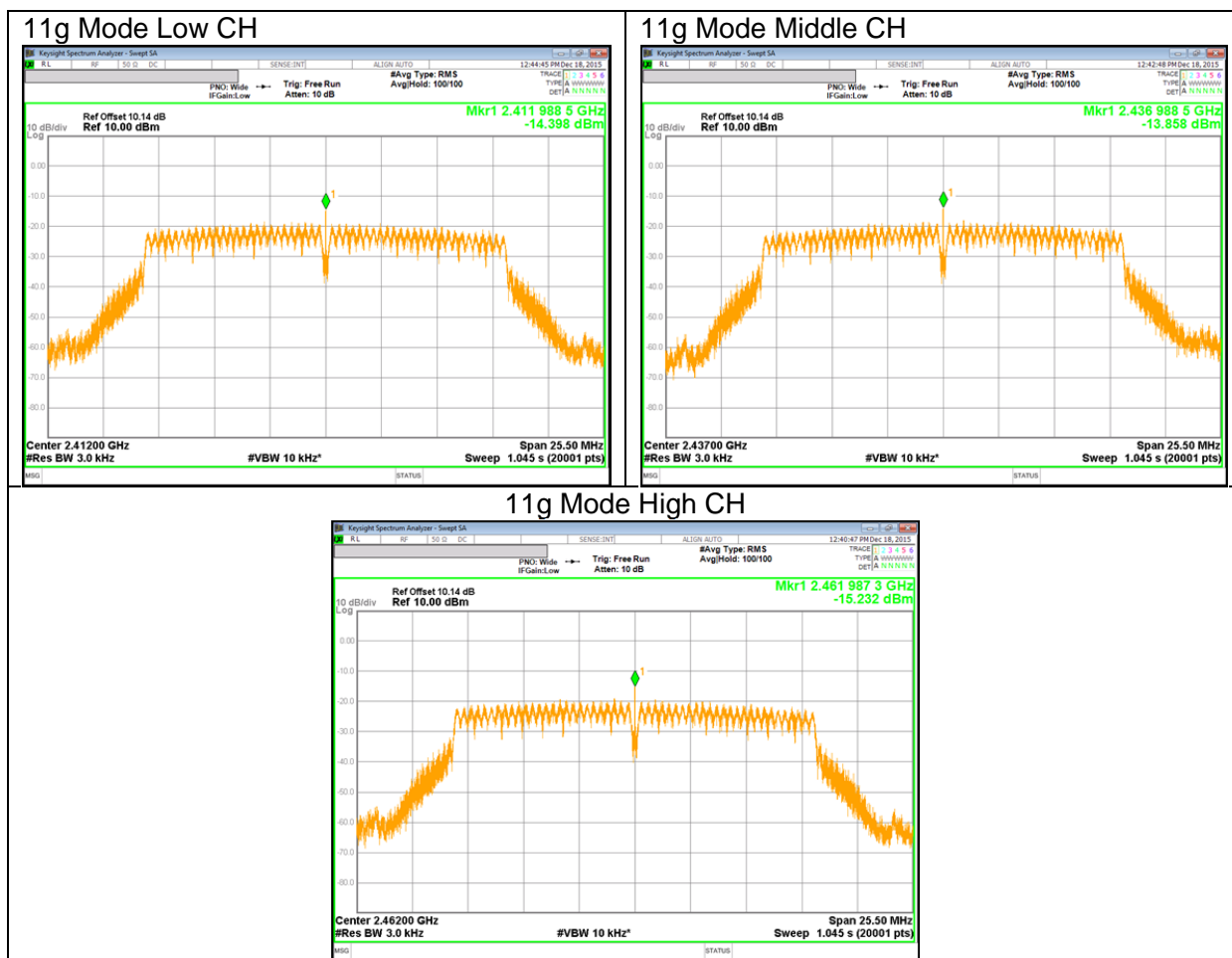
**10.4.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND**

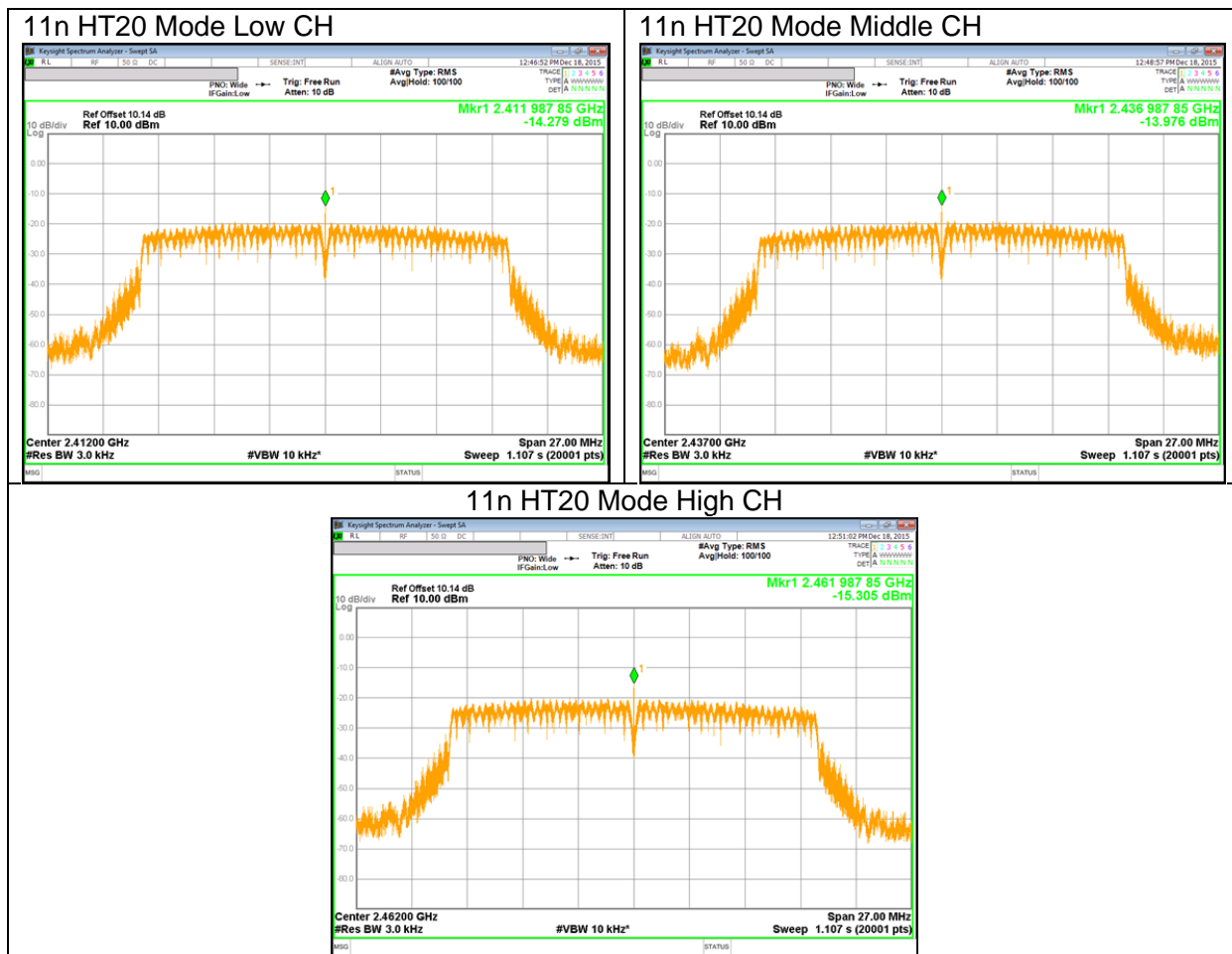
**PSD Results**

Channel	Frequency [MHz]	PSD Meas [dBm]	Duty Factor [dB]	Final PSD [dBm]	Limit [dBm]	Margin [dB]
Low	2412	-14.279	0.34	-13.939	8.00	-22.279
Mid	2437	-13.976	0.34	-13.636	8.00	-21.976
High	2462	-15.305	0.34	-14.965	8.00	-23.305

### 10.4.4. PSD PLOTS







## 10.5. OUT-OF-BAND EMISSIONS

### LIMITS

FCC §15.247 (d)

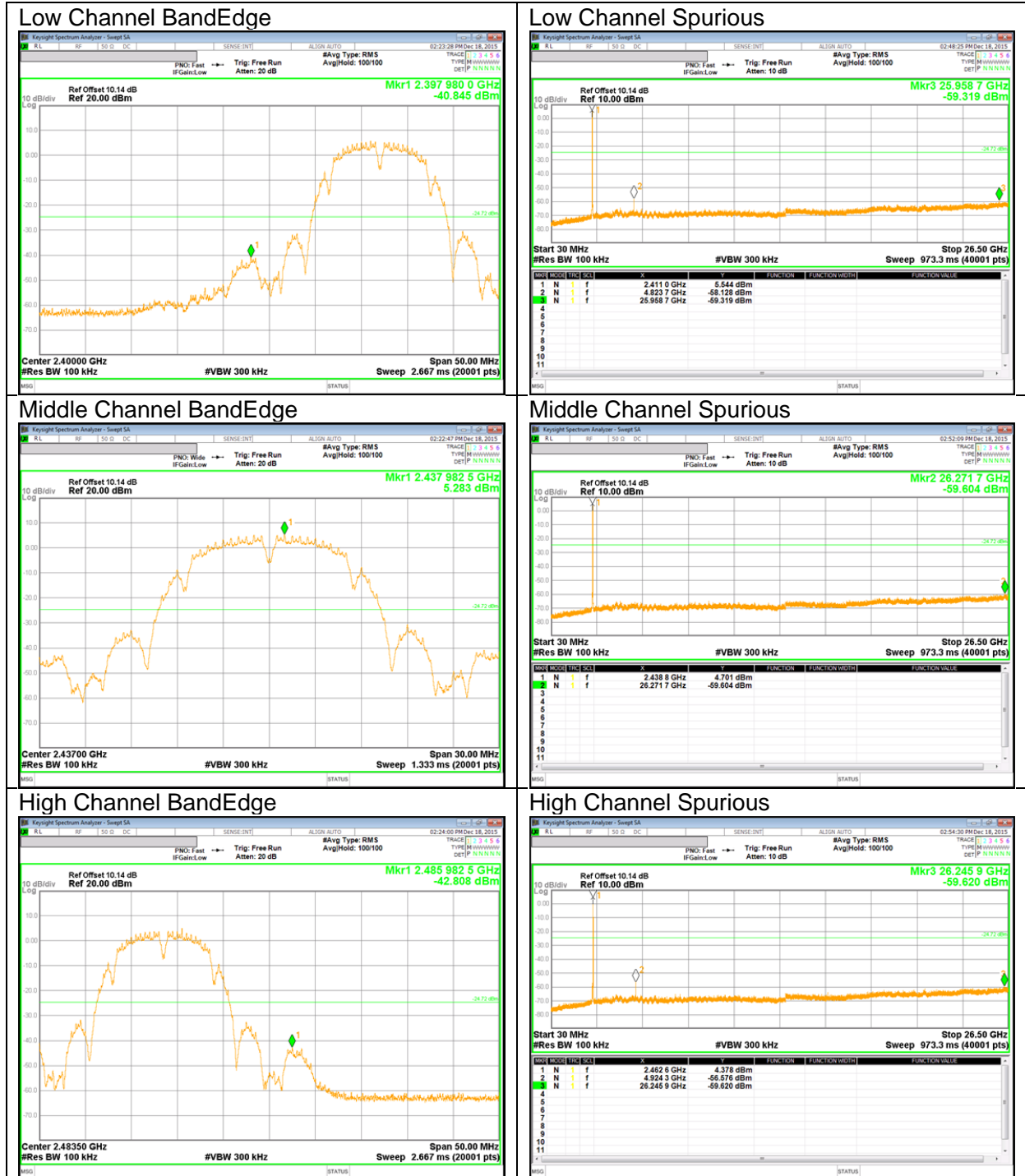
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the 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**

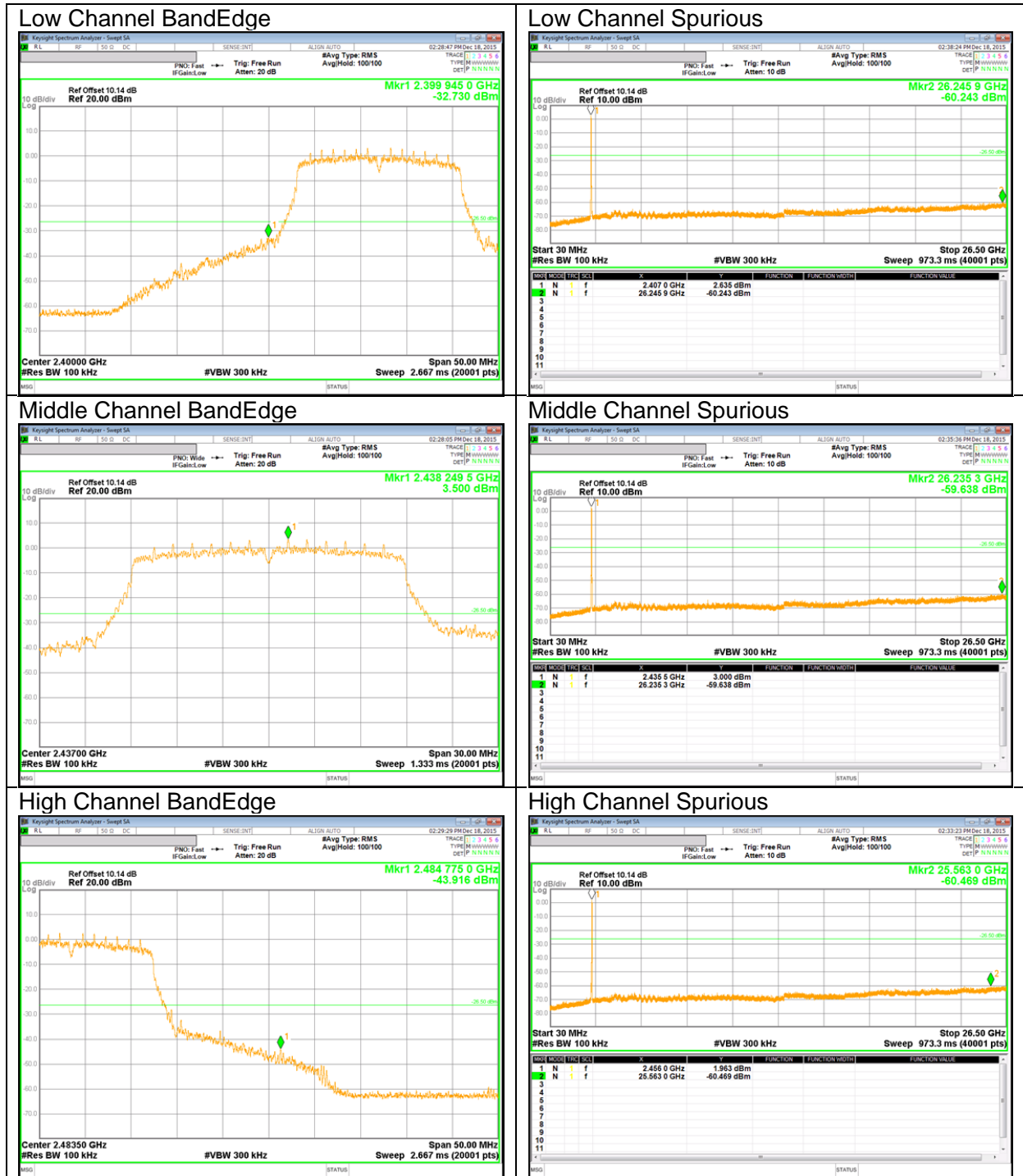
**10.5.1. 802.11b MODE IN THE 2.4 GHz BAND**



### 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 = 0.29dB; N mode = 0.34dB.

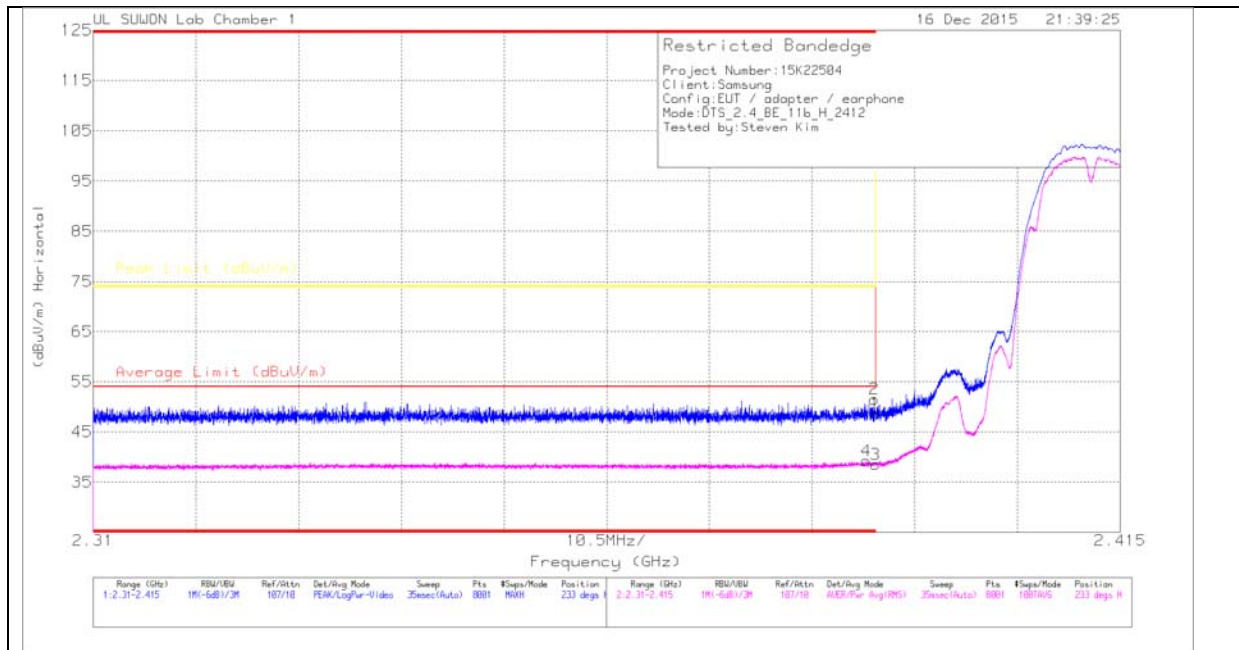
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

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

##### Trace Markers

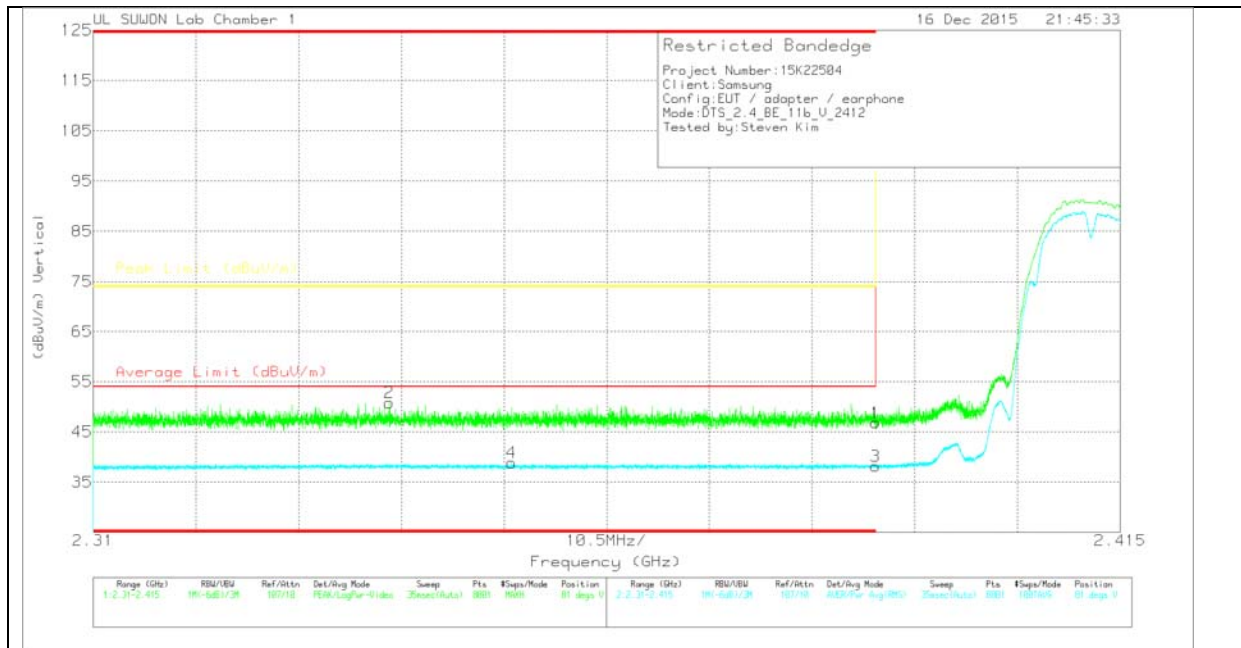
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17)_150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	45.92	PK	31.8	-29	0	48.72	-	-	74	-25.28	233	100	H
2	* 2.39	48.71	PK	31.8	-29	0	51.51	-	-	74	-22.49	233	100	H
3	* 2.39	35.72	RMS	31.8	-29	0	38.52	54	-15.48	-	-	233	100	H
4	* 2.389	36.49	RMS	31.8	-29	0	39.29	54	-14.71	-	-	233	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**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17)_150619	Path_2	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	44	Pk	31.8	-29	0	46.8	-	-	74	-27.2	81	396	V
2	* 2.34	48.11	PK	31.7	-29	0	50.81	-	-	74	-23.19	81	396	V
3	* 2.39	35.36	RMS	31.8	-29	0	38.16	54	-15.84	-	-	81	396	V
4	* 2.353	36.17	RMS	31.7	-29	0	38.87	54	-15.13	-	-	81	396	V

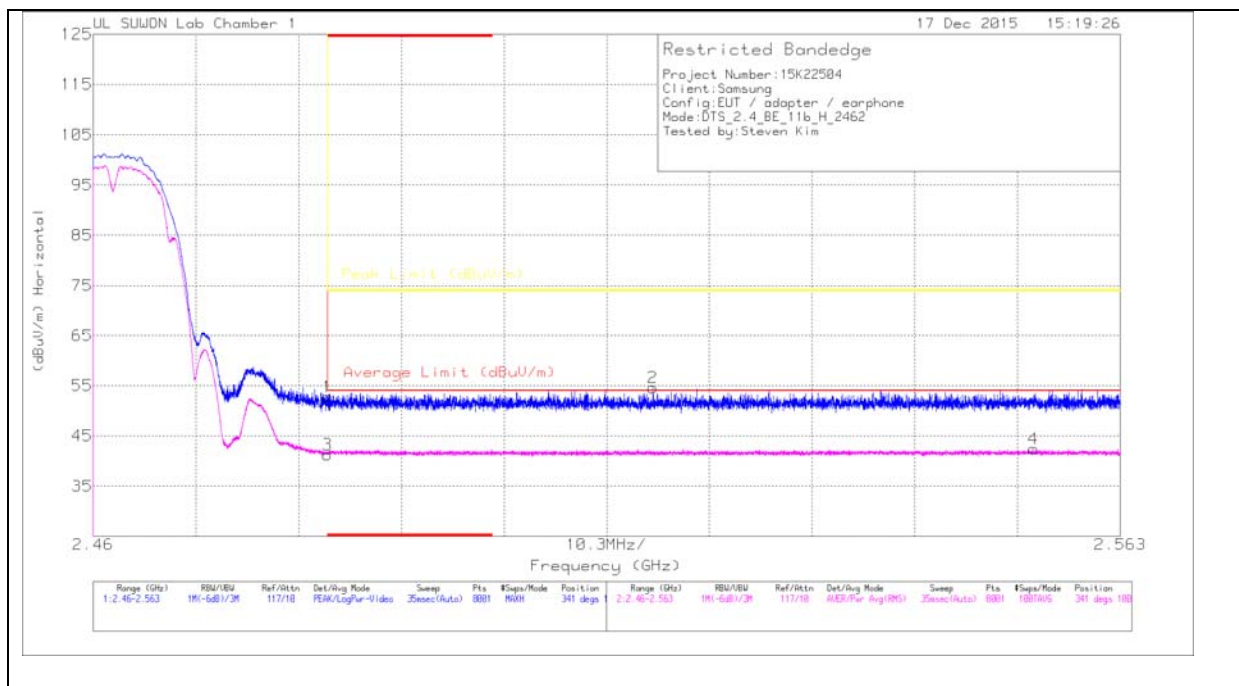
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

### AUTHORIZED BANDEDGE (HIGH CHANNEL)

#### HORIZONTAL PEAK AND AVERAGE PLOT



#### HORIZONTAL DATA

##### Trace Markers

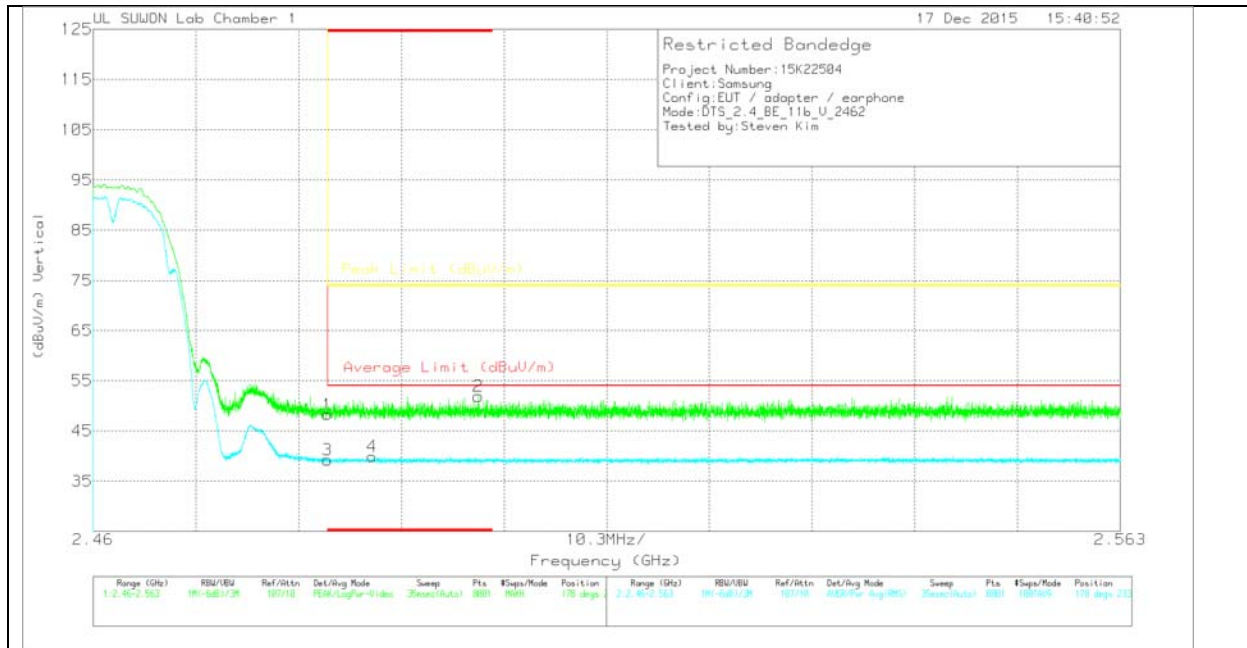
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17_150619)	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	49.07	PK	32	-28.3	0	52.77	-	-	74	-21.23	341	100	H
2	2.516	50.88	PK	32	-28.3	0	54.58	-	-	74	-19.42	341	100	H
3	* 2.484	37.58	RMS	32	-28.3	0	41.28	54	-12.72	-	-	341	100	H
4	2.554	38.62	RMS	32	-28.2	0	42.42	54	-11.58	-	-	341	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**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17)_150619	Path_2	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	44.56	Pk	32	-28.3	0	48.26	-	-	74	-25.74	178	233	V
2	* 2.499	48.2	PK	32	-28.3	0	51.9	-	-	74	-22.1	178	233	V
3	* 2.484	35.55	RMS	32	-28.3	0	39.25	54	-14.75	-	-	178	233	V
4	* 2.488	36.22	RMS	32	-28.3	0	39.92	54	-14.08	-	-	178	233	V

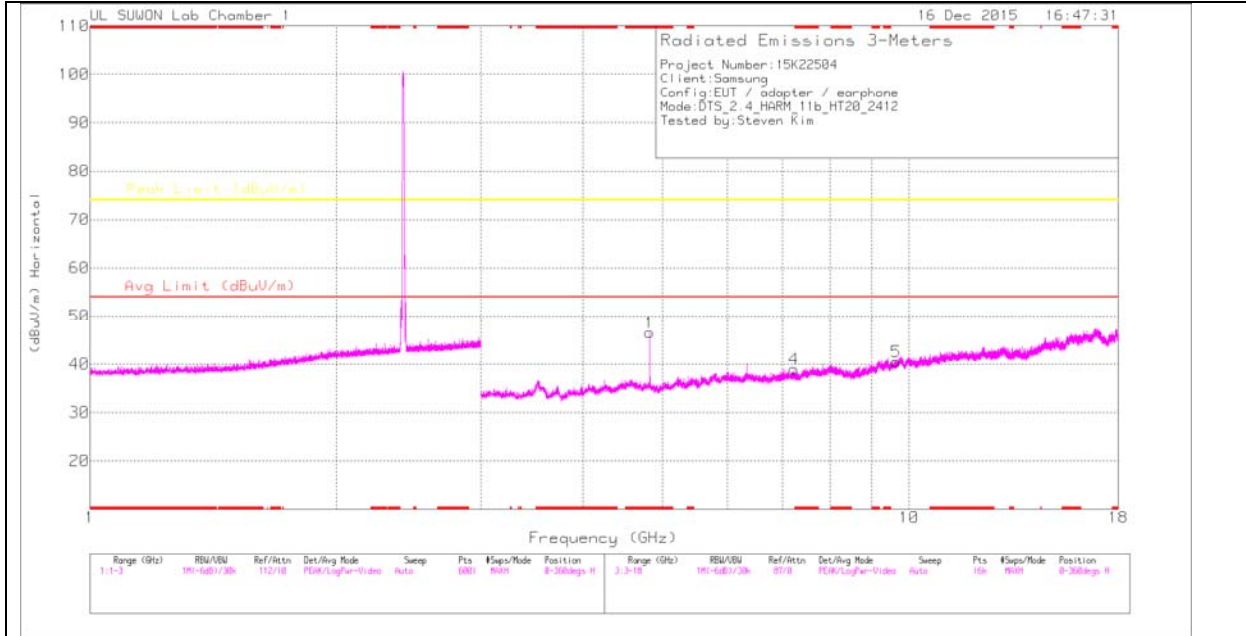
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

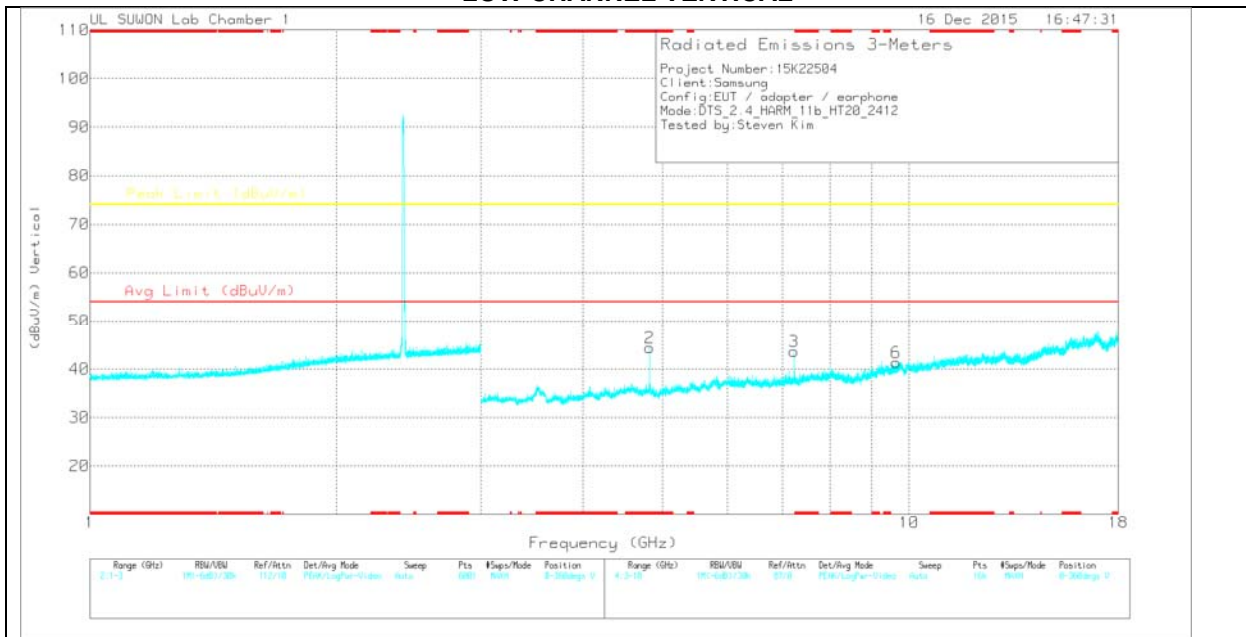
RMS - RMS detection

### 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	3117(001687 17)_150619	Path_3	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	46.33	PK	34	-33.8	0	46.53	-	-	74	-27.47	0-360	100	H
4	7.236	34.18	PK	35.7	-30.9	0	38.98	-	-	74	-35.02	0-360	200	H
5	9.646	30.84	PK	37.1	-27.4	0	40.54	-	-	74	-33.46	0-360	100	H
2	* 4.823	44.23	PK	34	-33.8	0	44.43	-	-	74	-29.57	0-360	100	V
3	7.235	38.89	PK	35.7	-30.9	0	43.69	-	-	74	-30.31	0-360	100	V
6	9.648	31.62	PK	37.1	-27.4	0	41.32	-	-	74	-32.68	0-360	100	V

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

PK – Peak Detector

Radiated Emissions

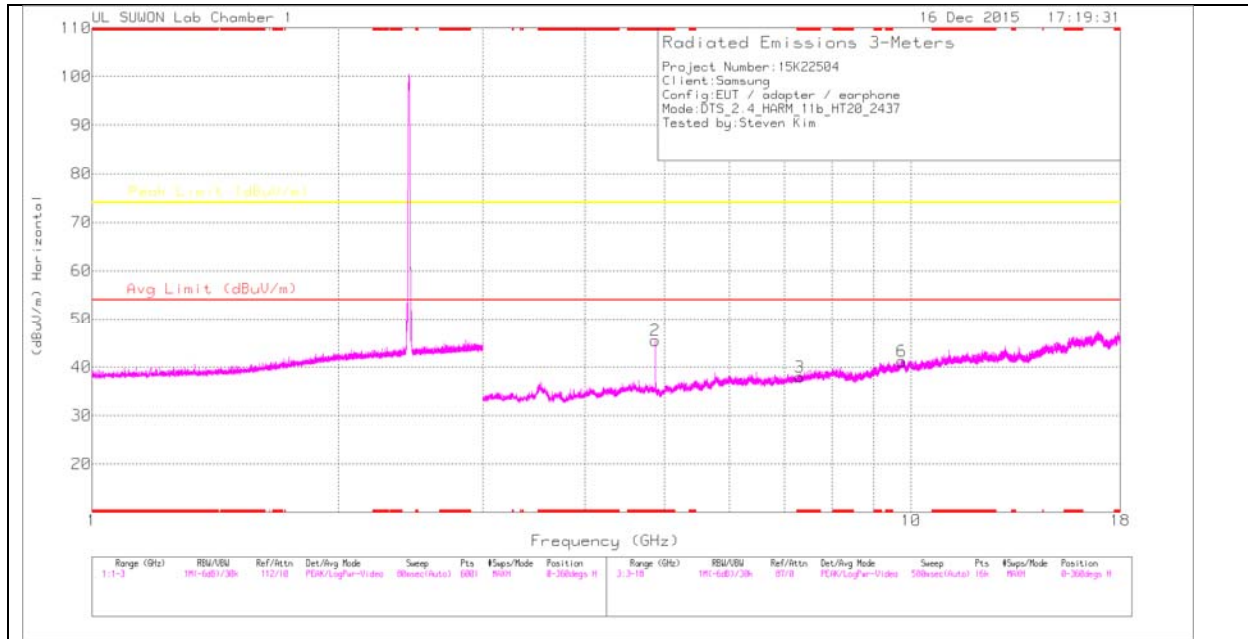
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.824	51.48	PK2	34	-33.8	0	51.68	-	-	74	-22.32	191	100	H
* 4.824	45.97	MAv1	34	-33.8	0	46.17	54	-7.83	-	-	191	100	H
* 4.824	50.83	PK2	34	-33.8	0	51.03	-	-	74	-22.97	10	272	V
* 4.824	44.97	MAv1	34	-33.8	0	45.17	54	-8.83	-	-	10	272	V
7.235	46.87	PK2	35.7	-30.9	0	51.67	-	-	74	-22.33	337	100	V

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

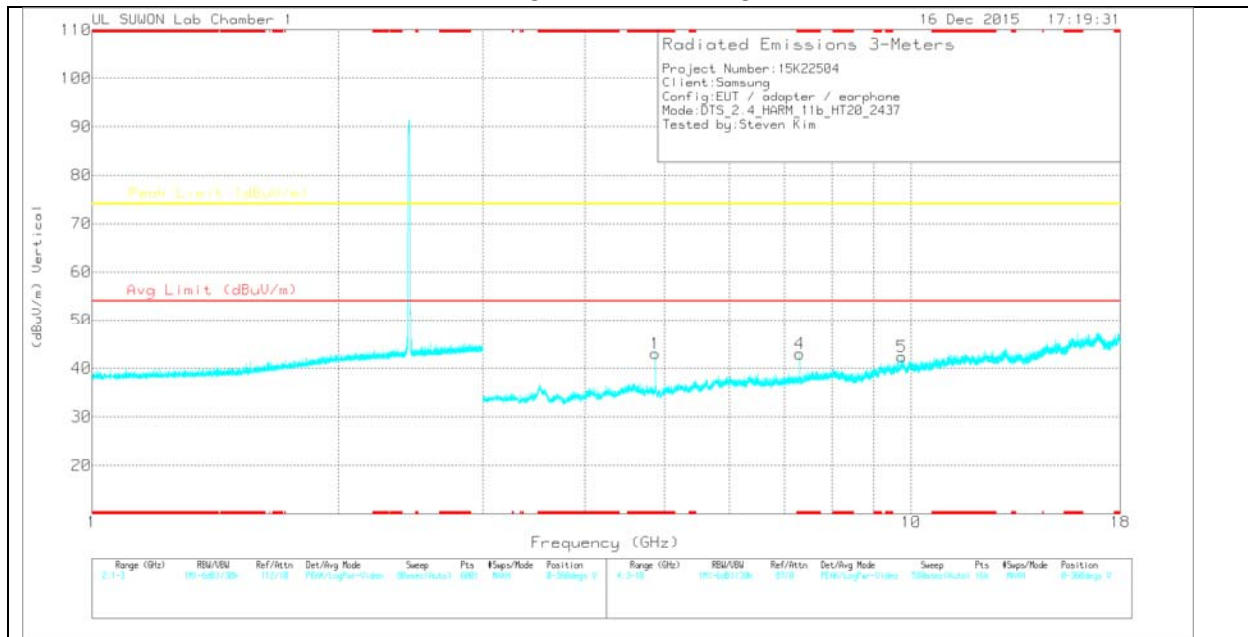
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

**MID CHANNEL HORIZONTAL**



**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	3117(00168717)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.874	45.49	PK	34	-34	0	45.49	-	-	74	-28.51	0-360	100	H
3	* 7.308	33.2	PK	35.7	-30.9	0	38	-	-	74	-36	0-360	200	H
6	9.748	30.79	PK	37.2	-26.8	0	41.19	-	-	74	-32.81	0-360	200	H
1	* 4.874	43.02	PK	34	-34	0	43.02	-	-	74	-30.98	0-360	100	V
4	* 7.31	38.16	PK	35.7	-30.9	0	42.96	-	-	74	-31.04	0-360	100	V
5	9.748	32	PK	37.2	-26.8	0	42.4	-	-	74	-31.6	0-360	100	V

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

PK – Peak Detector

Radiated Emissions

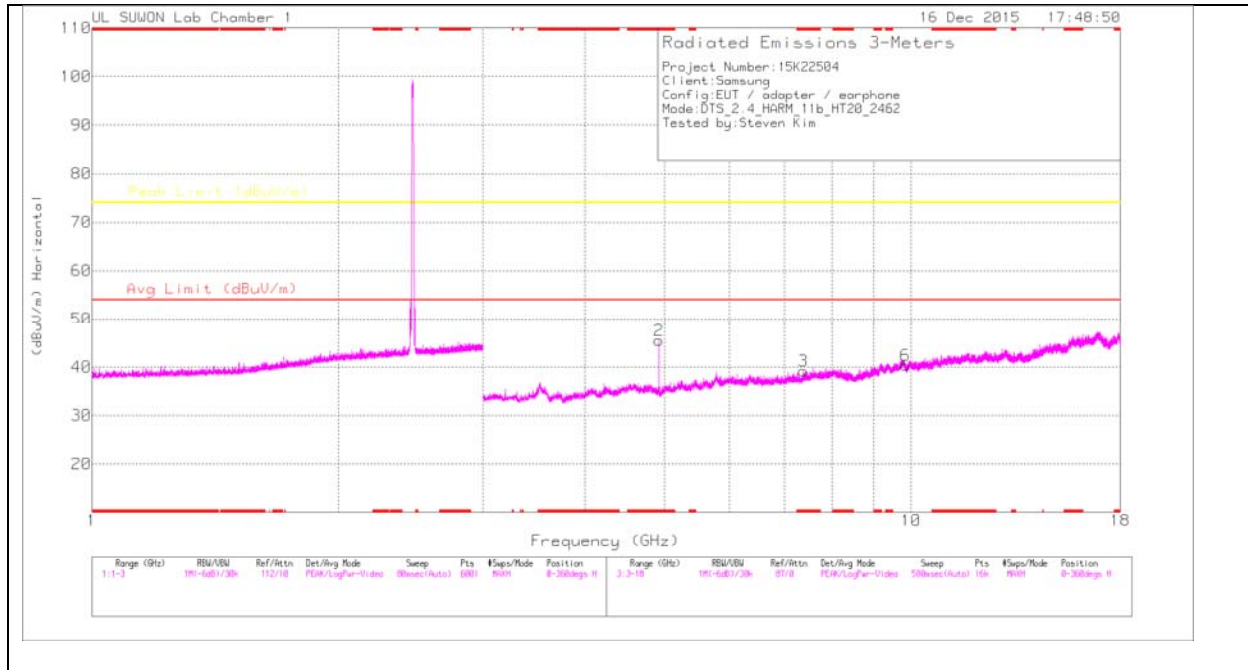
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168717)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.874	51.43	PK2	34	-34	0	51.43	-	-	74	-22.57	194	100	H
* 4.874	46.07	MAv1	34	-34	0	46.07	54	-7.93	-	-	194	100	H
* 4.874	49.82	PK2	34	-34	0	49.82	-	-	74	-24.18	334	292	V
* 4.874	43.21	MAv1	34	-34	0	43.21	54	-10.79	-	-	334	292	V
* 7.312	47	PK2	35.7	-30.9	0	51.8	-	-	74	-22.2	7	103	V
* 7.312	36.75	MAv1	35.7	-30.9	0	41.55	54	-12.45	-	-	7	103	V

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

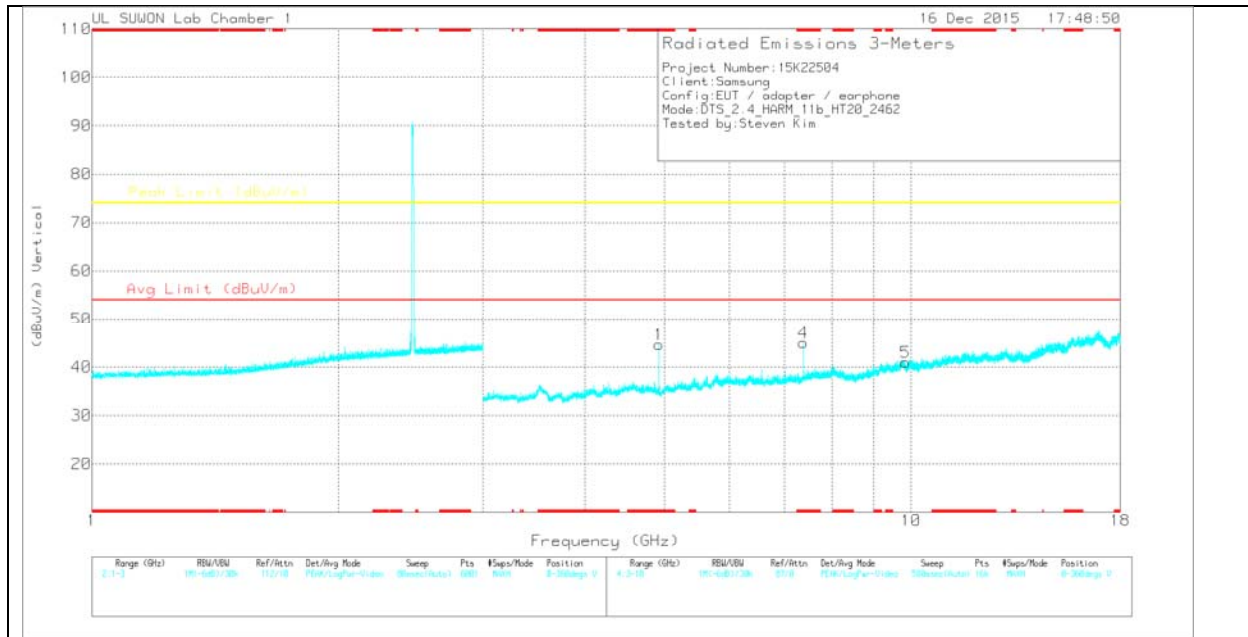
PK2 - KDB558074 Method: Maximum Peak

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	3117(00168717)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.924	45.53	PK	34	-34	0	45.53	-	-	74	-28.47	0-360	100	H
3	* 7.386	34.15	PK	35.8	-30.7	0	39.25	-	-	74	-34.75	0-360	200	H
6	9.848	30.67	PK	37.3	-27.6	0	40.37	-	-	74	-33.63	0-360	100	H
1	* 4.924	44.68	PK	34	-34	0	44.68	-	-	74	-29.32	0-360	100	V
4	* 7.385	39.96	PK	35.8	-30.7	0	45.06	-	-	74	-28.94	0-360	100	V
5	9.848	31.28	PK	37.3	-27.6	0	40.98	-	-	74	-33.02	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	3117(00168717)_150619	Path_3	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	51.37	PK2	34	-34	0	51.37	-	-	74	-22.63	210	102	H
* 4.924	45.56	MAv1	34	-34	0	45.56	54	-8.44	-	-	210	102	H
* 4.924	50.62	PK2	34	-34	0	50.62	-	-	74	-23.38	5	318	V
* 4.924	45.13	MAv1	34	-34	0	45.13	54	-8.87	-	-	5	318	V
* 7.388	45.41	PK2	35.8	-30.7	0	50.51	-	-	74	-23.49	7	240	V
* 7.387	34.49	MAv1	35.8	-30.7	0	39.59	54	-14.41	-	-	7	240	V

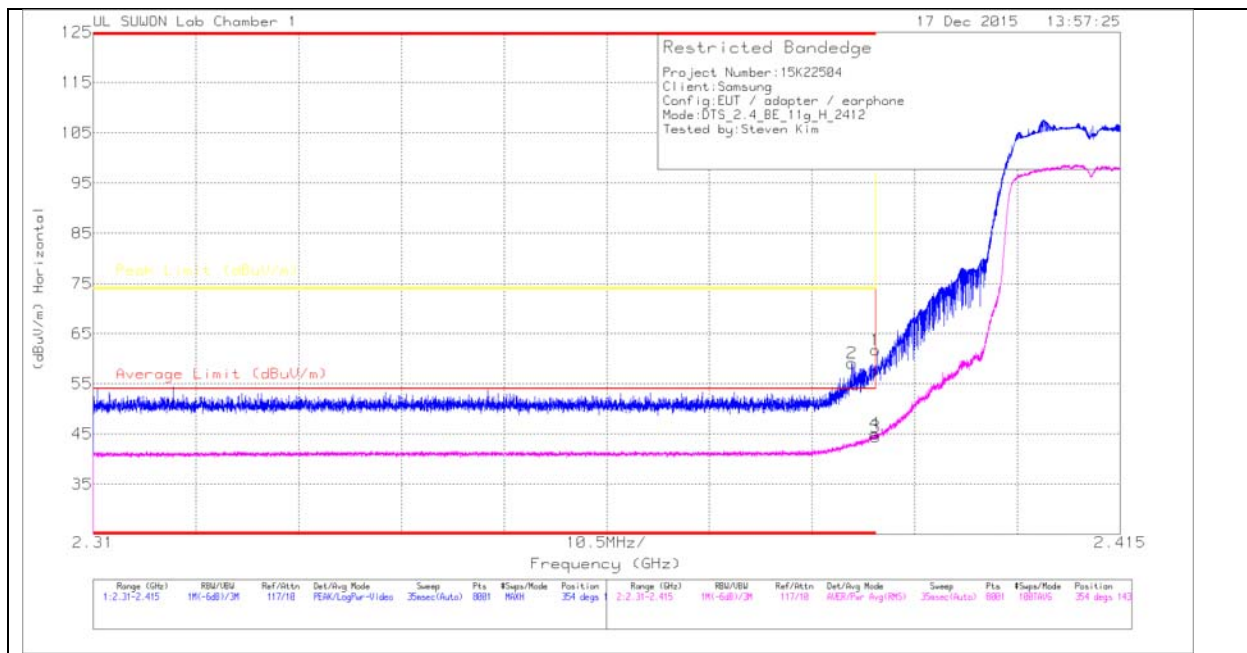
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

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

#### Trace Markers

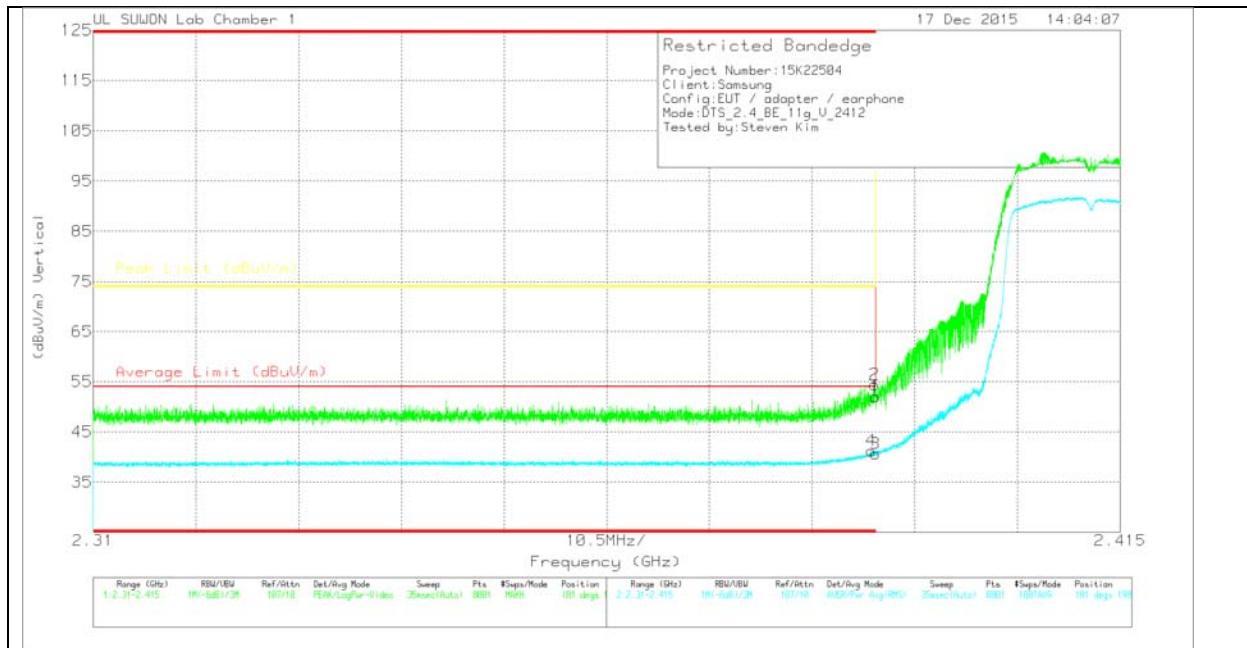
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17_150619)	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	58.86	PK	31.8	-29	0	61.66	-	-	74	-12.34	354	143	H
2	* 2.388	56.29	PK	31.8	-29	0	59.09	-	-	74	-14.91	354	143	H
3	* 2.39	41.35	RMS	31.8	-29	.29	44.44	54	-9.56	-	-	354	143	H
4	* 2.39	41.97	RMS	31.8	-29	.29	45.06	54	-8.94	-	-	354	143	H

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

PK - Peak detector

RMS - RMS detection

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17)_150619	Path_2	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	49.23	PK	31.8	-29	0	52.03	-	-	74	-21.97	181	198	V
2	* 2.39	51.62	PK	31.8	-29	0	54.42	-	-	74	-19.58	181	198	V
3	* 2.39	37.61	RMS	31.8	-29	.29	40.7	54	-13.3	-	-	181	198	V
4	* 2.39	38.2	RMS	31.8	-29	.29	41.29	54	-12.71	-	-	181	198	V

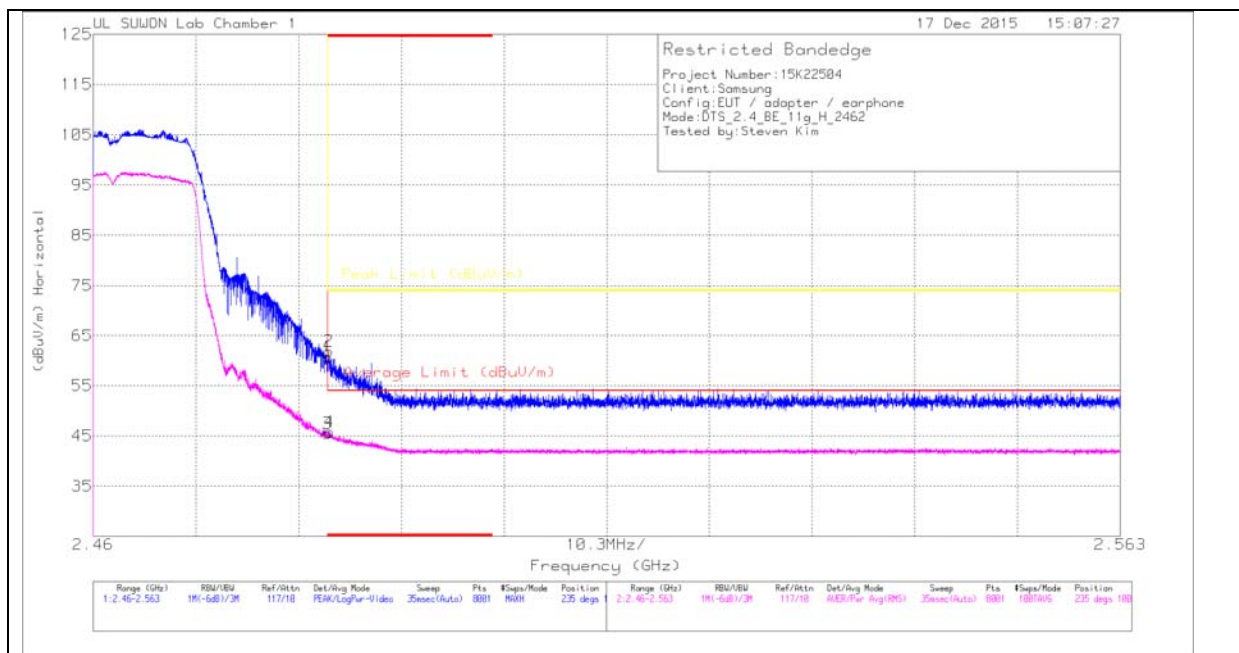
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

**HORIZONTAL PEAK AND AVERAGE PLOT**



**HORIZONTAL DATA**

Trace Markers

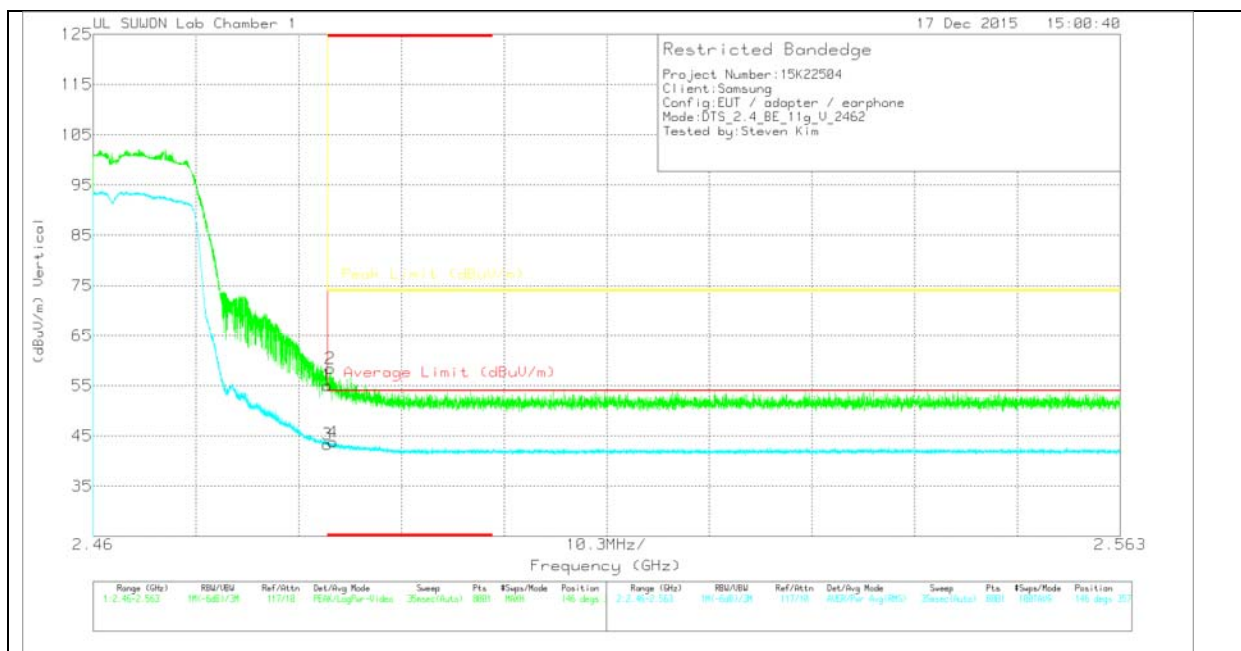
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17_150619)	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	57.02	PK	32	-28.3	0	60.72	-	-	74	-13.28	235	100	H
2	* 2.484	58.14	PK	32	-28.3	0	61.84	-	-	74	-12.16	235	100	H
3	* 2.484	41.53	RMS	32	-28.3	.29	45.52	54	-8.48	-	-	235	100	H
4	* 2.484	41.83	RMS	32	-28.3	.29	45.82	54	-8.18	-	-	235	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**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17)_150619	Path_2	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	51.35	PK	32	-28.3	0	55.05	-	-	74	-18.95	146	357	V
2	* 2.484	54.71	PK	32	-28.3	0	58.41	-	-	74	-15.59	146	357	V
3	* 2.484	39.36	RMS	32	-28.3	.29	43.35	54	-10.65	-	-	146	357	V
4	* 2.484	39.81	RMS	32	-28.3	.29	43.8	54	-10.2	-	-	146	357	V

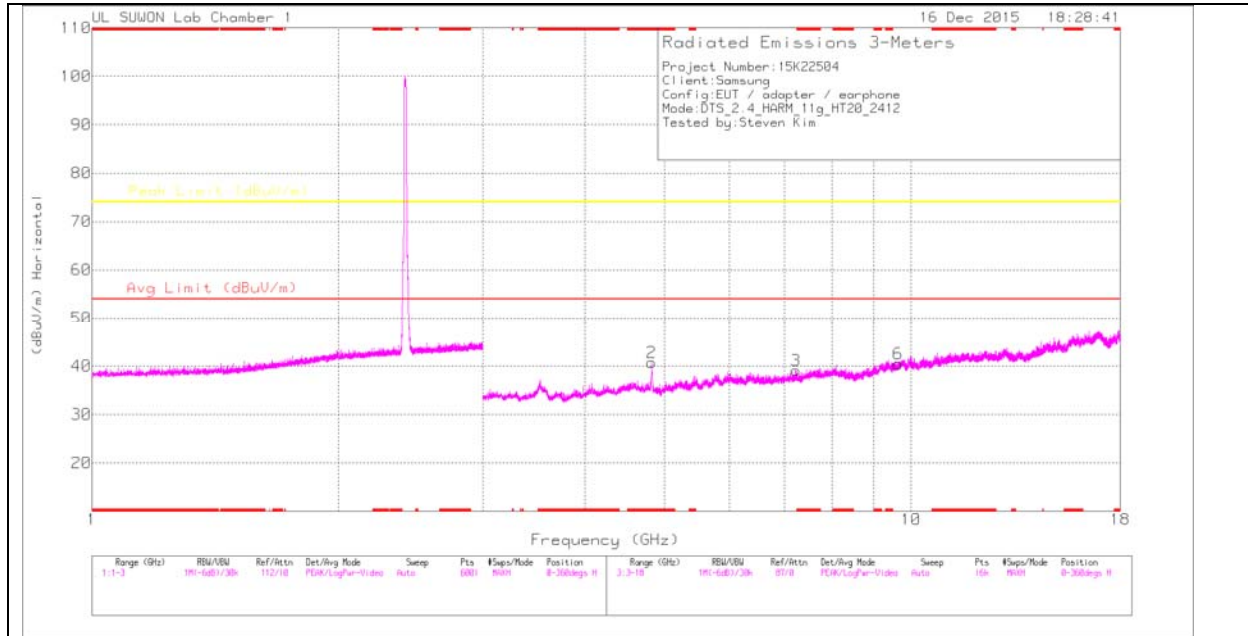
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

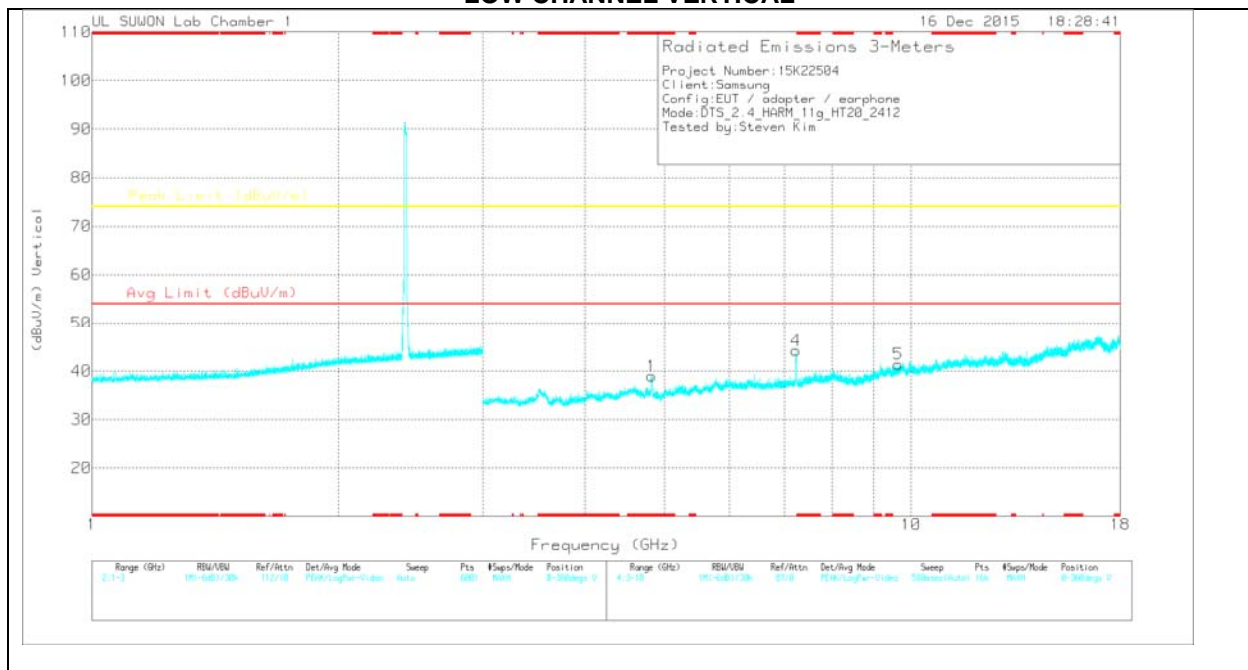
RMS - RMS detection

### 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	3117(00168717)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.821	40.5	Pk	34	-33.8	0	40.7	-	-	74	-33.3	0-360	100	H
3	7.231	34.42	Pk	35.7	-31	0	39.12	-	-	74	-34.88	0-360	200	H
6	9.642	30.63	Pk	37.1	-27.3	0	40.43	-	-	74	-33.57	0-360	100	H
1	* 4.825	38.83	Pk	34	-33.8	0	39.03	-	-	74	-34.97	0-360	100	V
4	7.233	39.43	Pk	35.7	-30.9	0	44.23	-	-	74	-29.77	0-360	100	V
5	9.647	31.74	Pk	37.1	-27.4	0	41.44	-	-	74	-32.56	0-360	100	V

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

Pk – Peak Detector

Radiated Emissions

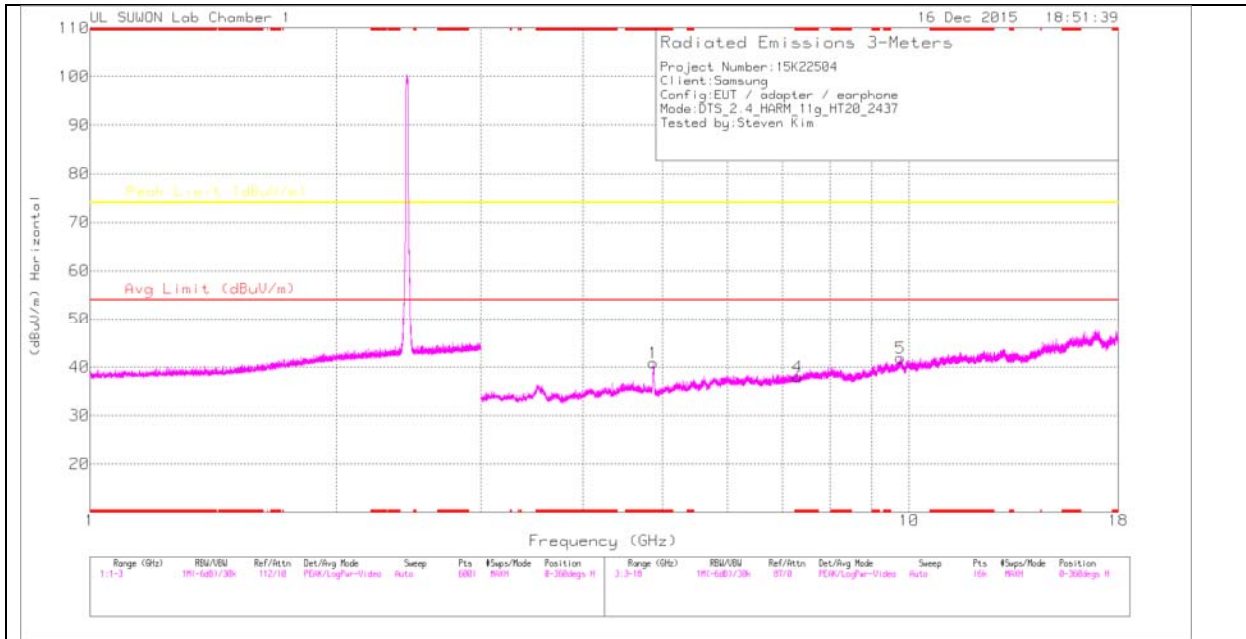
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168717)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.822	51.19	PK2	34	-33.8	0	51.39	-	-	74	-22.61	199	104	H
* 4.824	39.15	MAv1	34	-33.8	.29	39.64	54	-14.36	-	-	199	104	H
* 4.826	50.1	PK2	34	-33.8	0	50.3	-	-	74	-23.7	5	269	V
* 4.824	37.86	MAv1	34	-33.8	.29	38.35	54	-15.65	-	-	5	269	V
7.238	51.73	PK2	35.7	-30.9	0	56.53	-	-	74	-17.47	344	100	V

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

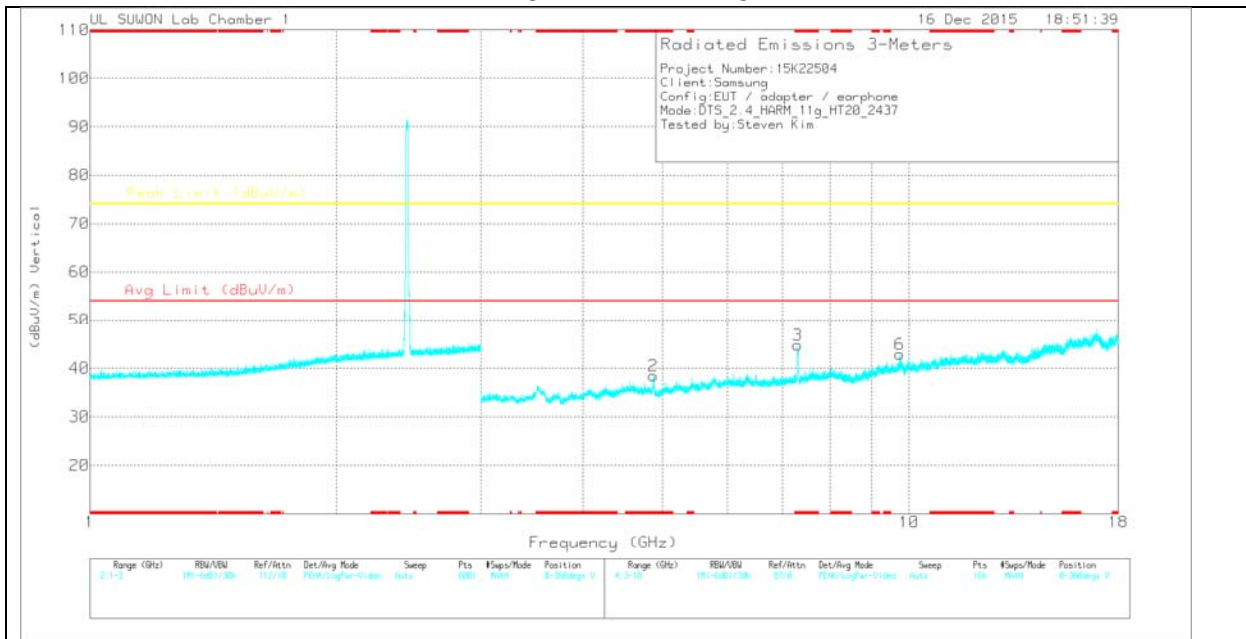
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

**MID CHANNEL HORIZONTAL**



**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	3117(00168717)_150619	Path_3	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	* 4.873	40.83	Pk	34	-34	0	40.83	-	-	74	-33.17	0-360	100	H
4	* 7.304	33.18	Pk	35.7	-30.9	0	37.98	-	-	74	-36.02	0-360	200	H
5	9.75	31.44	Pk	37.2	-26.8	0	41.84	-	-	74	-32.16	0-360	100	H
2	* 4.874	38.52	Pk	34	-34	0	38.52	-	-	74	-35.48	0-360	100	V
3	* 7.314	39.85	Pk	35.8	-30.9	0	44.75	-	-	74	-29.25	0-360	100	V
6	9.748	32.45	Pk	37.2	-26.8	0	42.85	-	-	74	-31.15	0-360	100	V

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

Pk – Peak Detector

Radiated Emissions

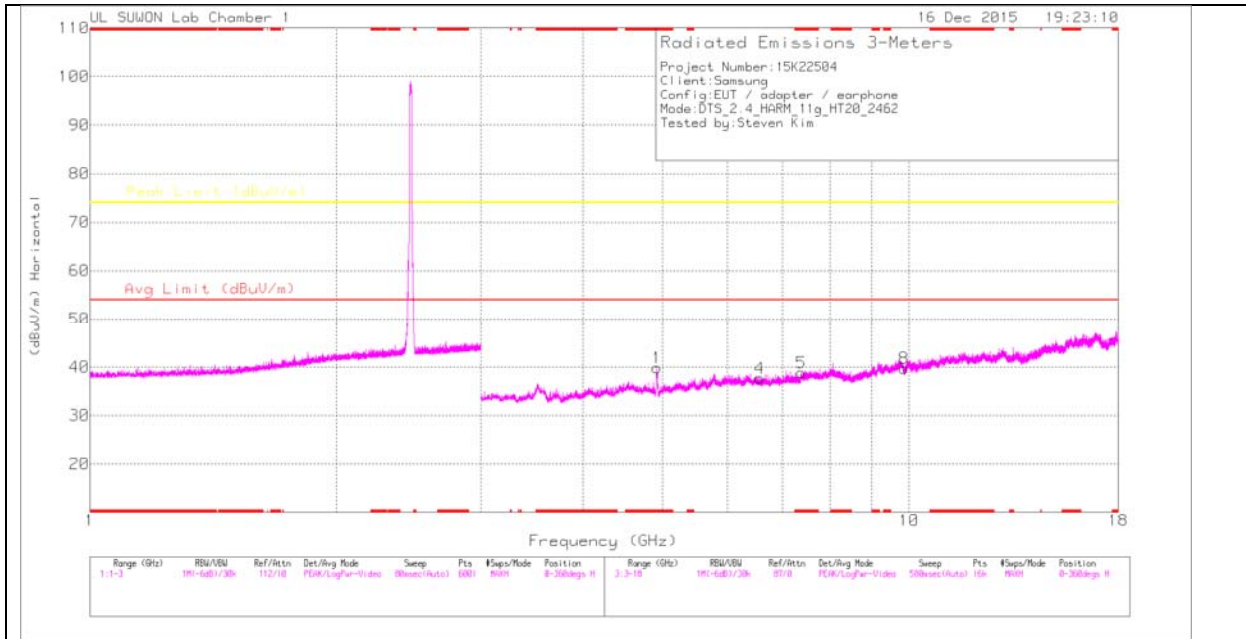
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168717)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.873	51.82	PK2	34	-34	0	51.82	-	-	74	-22.18	202	115	H
* 4.876	39.71	MAv1	34	-34	.29	40	54	-14	-	-	202	115	H
* 4.875	52.06	PK2	34	-34	0	52.06	-	-	74	-21.94	353	328	V
* 4.876	37.99	MAv1	34	-34	.29	38.28	54	-15.72	-	-	353	328	V
* 7.313	52.79	PK2	35.8	-30.9	0	57.69	-	-	74	-16.31	357	100	V
* 7.313	39.16	MAv1	35.8	-30.9	.29	44.35	54	-9.65	-	-	357	100	V

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

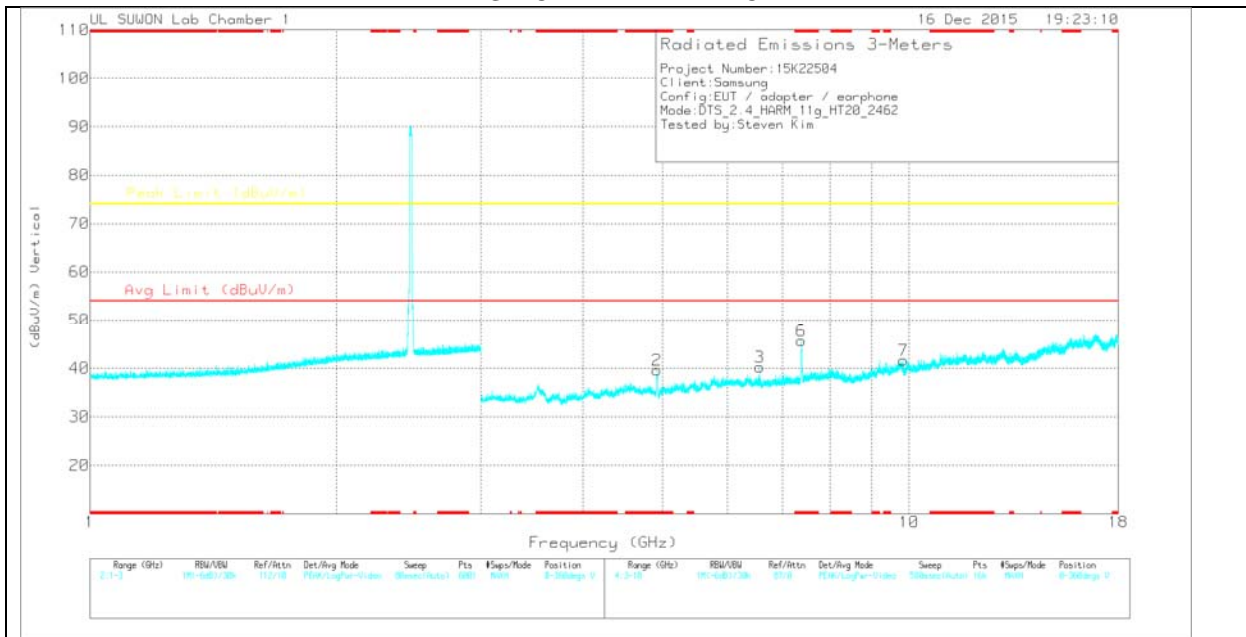
PK2 - KDB558074 Method: Maximum Peak

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	3117(00168717)_150619	Path_3	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	* 4.92	39.89	Pk	34	-34	0	39.89	-	-	74	-34.11	0-360	100	H
4	6.565	33.34	Pk	35.5	-31.1	0	37.74	-	-	74	-36.26	0-360	200	H
5	* 7.387	33.71	Pk	35.8	-30.7	0	38.81	-	-	74	-35.19	0-360	200	H
8	9.854	30.19	Pk	37.3	-27.7	0	39.79	-	-	74	-34.21	0-360	100	H
2	* 4.92	39.63	Pk	34	-34	0	39.63	-	-	74	-34.37	0-360	100	V
3	6.565	35.8	Pk	35.5	-31.1	0	40.2	-	-	74	-33.8	0-360	100	V
6	* 7.383	40.7	Pk	35.8	-30.8	0	45.7	-	-	74	-28.3	0-360	100	V
7	9.848	31.92	Pk	37.3	-27.6	0	41.62	-	-	74	-32.38	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	3117(00168717)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.92	51.76	PK2	34	-34	0	51.76	-	-	74	-22.24	190	100	H
* 4.922	38.43	MAv1	34	-34	.29	38.72	54	-15.28	-	-	190	100	H
* 4.921	52.1	PK2	34	-34	0	52.1	-	-	74	-21.9	12	105	V
* 4.924	38.53	MAv1	34	-34	.29	38.82	54	-15.18	-	-	12	105	V
6.566	44.12	PK2	35.5	-31.1	0	48.52	-	-	74	-25.48	301	362	V
* 7.388	51.16	PK2	35.8	-30.7	0	56.26	-	-	74	-17.74	35	101	V
* 7.385	37.26	MAv1	35.8	-30.7	.29	42.65	54	-11.35	-	-	35	101	V

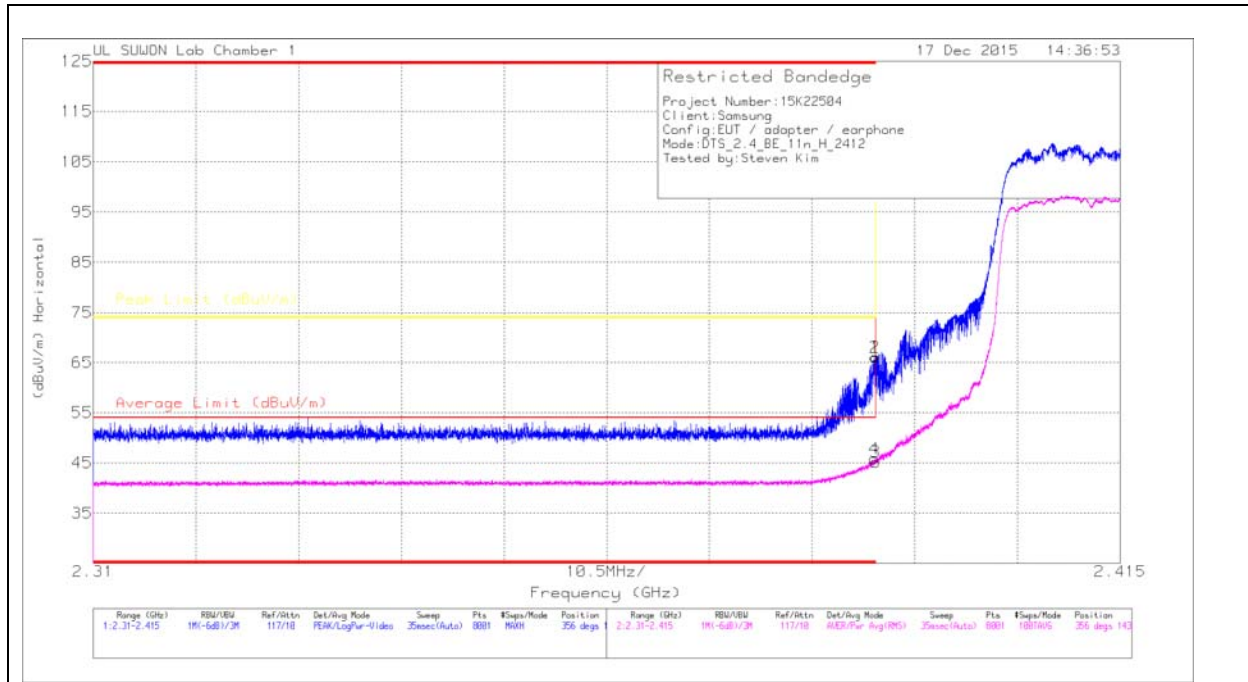
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

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

##### Trace Markers

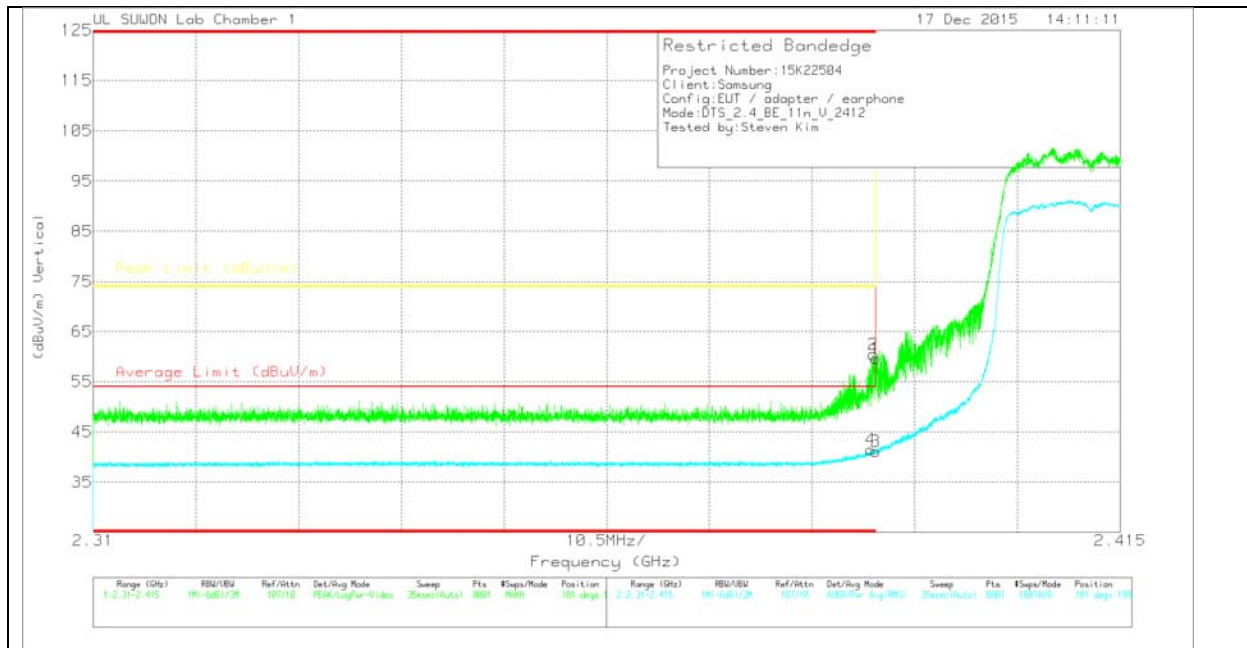
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17_150619)	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	63.37	Pk	31.8	-29	0	66.17	-	-	74	-7.83	356	143	H
2	* 2.39	63.3	Pk	31.8	-29	0	66.1	-	-	74	-7.9	356	143	H
3	* 2.39	42.04	RMS	31.8	-29	.34	45.18	54	-8.82	-	-	356	143	H
4	* 2.39	42.73	RMS	31.8	-29	.34	45.87	54	-8.13	-	-	356	143	H

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

Pk - Peak detector

RMS - RMS detection

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17)_150619	Path_2	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	56.78	PK	31.8	-29	0	59.58	-	-	74	-14.42	181	198	V
2	* 2.39	57.61	PK	31.8	-29	0	60.41	-	-	74	-13.59	181	198	V
3	* 2.39	38.01	RMS	31.8	-29	.34	41.15	54	-12.85	-	-	181	198	V
4	* 2.389	38.35	RMS	31.8	-29	.34	41.49	54	-12.51	-	-	181	198	V

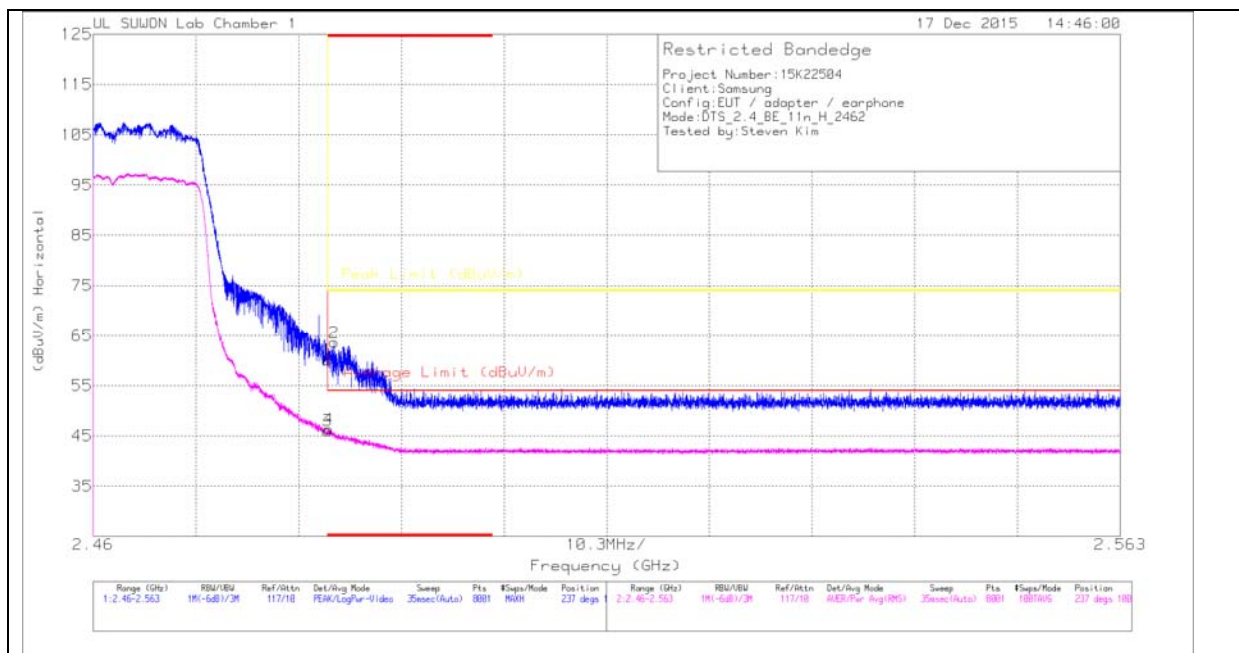
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

### AUTHORIZED BANDEDGE (HIGH CHANNEL)

#### HORIZONTAL PEAK AND AVERAGE PLOT



#### HORIZONTAL DATA

##### Trace Markers

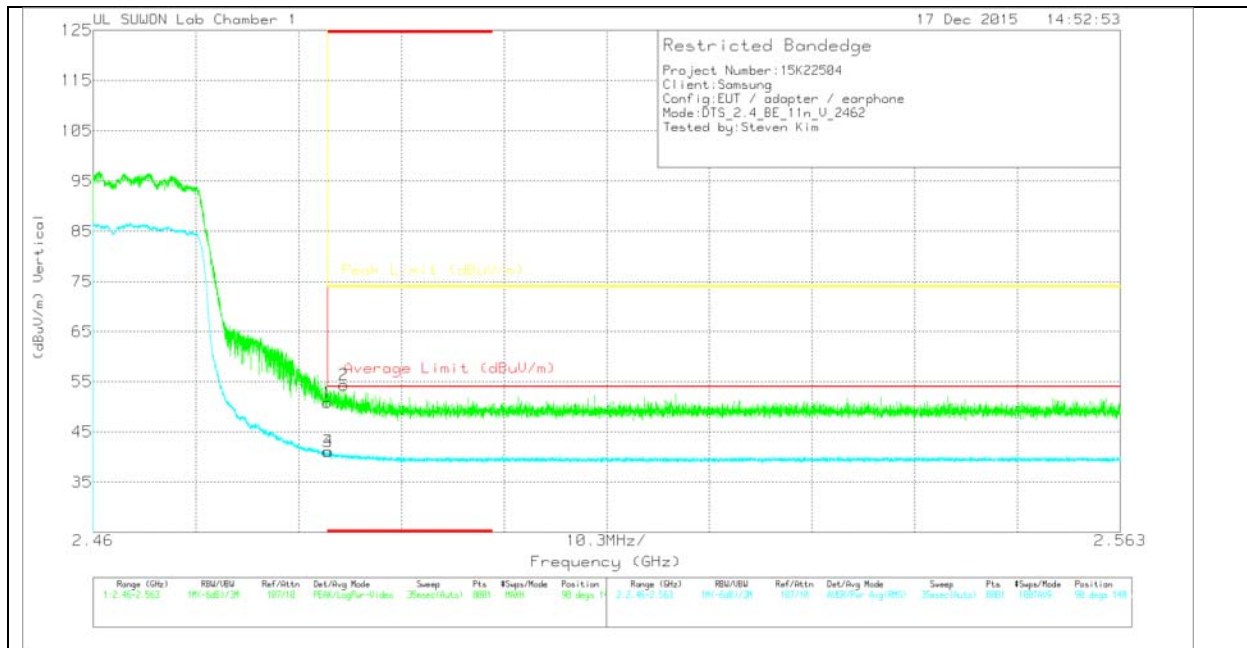
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17_150619)	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	56.44	PK	32	-28.3	0	60.14	-	-	74	-13.86	237	100	H
2	* 2.484	59.91	PK	32	-28.3	0	63.61	-	-	74	-10.39	237	100	H
3	* 2.484	42.01	RMS	32	-28.3	.34	46.05	54	-7.95	-	-	237	100	H
4	* 2.484	42.27	RMS	32	-28.3	.34	46.31	54	-7.69	-	-	237	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**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17)_150619	Path_2	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	47.13	PK	32	-28.3	0	50.83	-	-	74	-23.17	90	148	V
2	* 2.485	50.63	PK	32	-28.3	0	54.33	-	-	74	-19.67	90	148	V
3	* 2.484	37.09	RMS	32	-28.3	.34	41.13	54	-12.87	-	-	90	148	V
4	* 2.484	37.12	RMS	32	-28.3	.34	41.16	54	-12.84	-	-	90	148	V

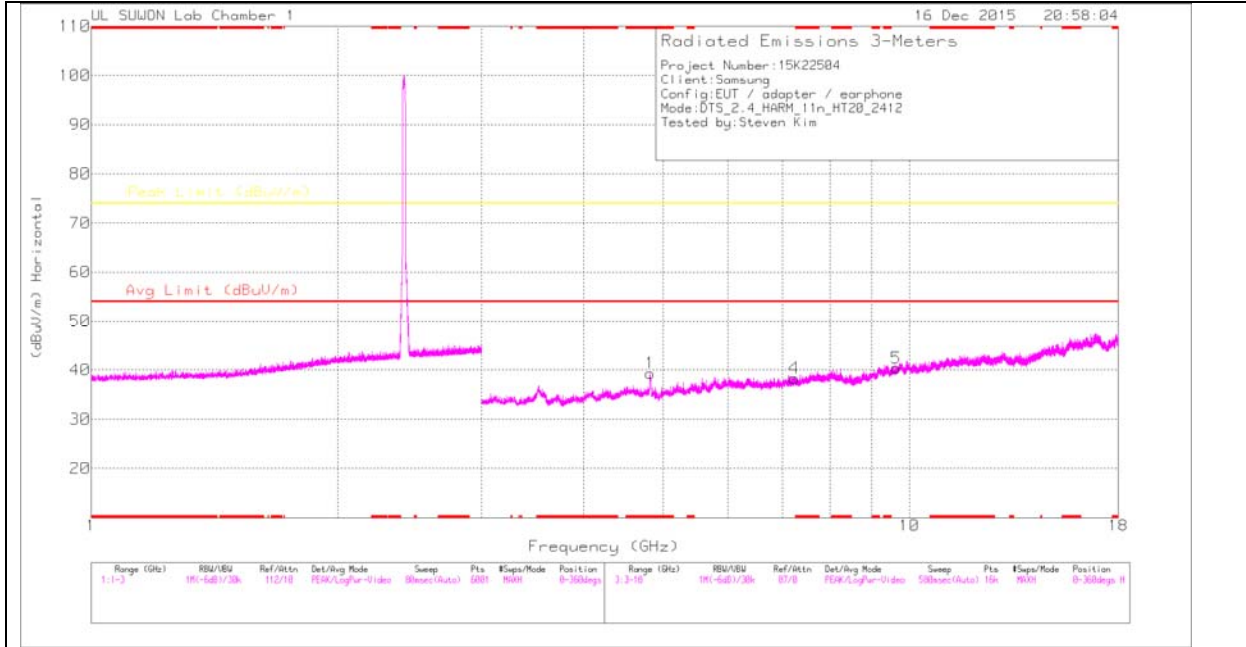
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

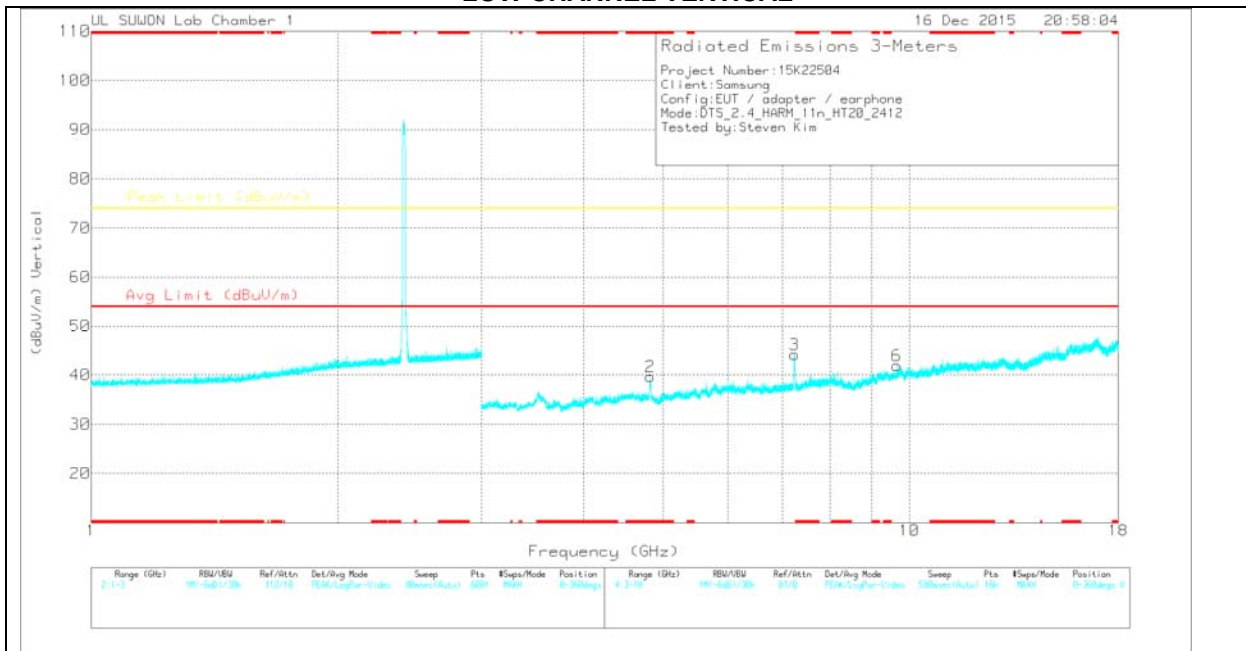
RMS - RMS detection

### 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	3117(00168717)_150619	Path_3	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	* 4.822	39.16	Pk	34	-33.8	0	39.36	-	-	74	-34.64	0-360	100	H
4	7.233	33.54	Pk	35.7	-30.9	0	38.34	-	-	74	-35.66	0-360	200	H
5	9.632	30.69	Pk	37	-27.3	0	40.39	-	-	74	-33.61	0-360	200	H
2	* 4.824	39.46	Pk	34	-33.8	0	39.66	-	-	74	-34.34	0-360	100	V
3	7.236	39.36	Pk	35.7	-30.9	0	44.16	-	-	74	-29.84	0-360	100	V
6	9.648	32.21	Pk	37.1	-27.4	0	41.91	-	-	74	-32.09	0-360	100	V

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

Pk – Peak Detector

Radiated Emissions

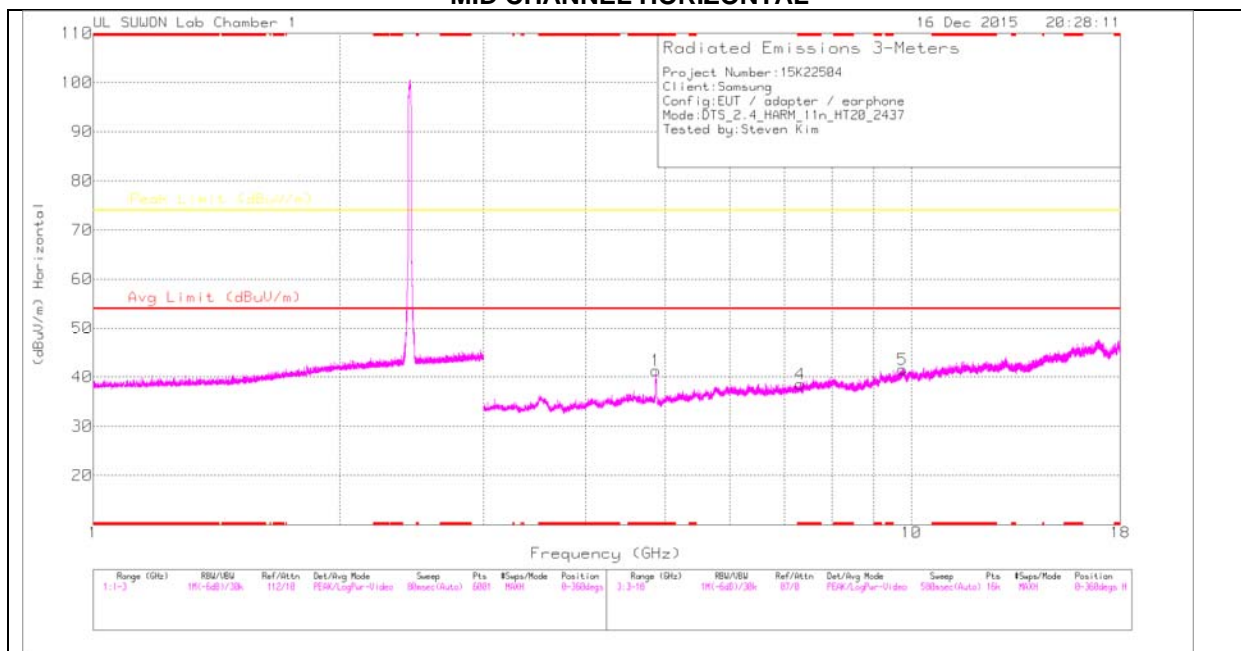
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168717)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.825	54.52	PK2	34	-33.8	0	54.72	-	-	74	-19.28	201	101	H
* 4.824	42.33	MAv1	34	-33.8	.34	42.87	54	-11.13	-	-	201	101	H
* 4.825	51.48	PK2	34	-33.8	0	51.68	-	-	74	-22.32	8	273	V
* 4.824	38.44	MAv1	34	-33.8	.34	38.98	54	-15.02	-	-	8	273	V
7.233	51.76	PK2	35.7	-30.9	0	56.56	-	-	74	-17.44	7	100	V

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

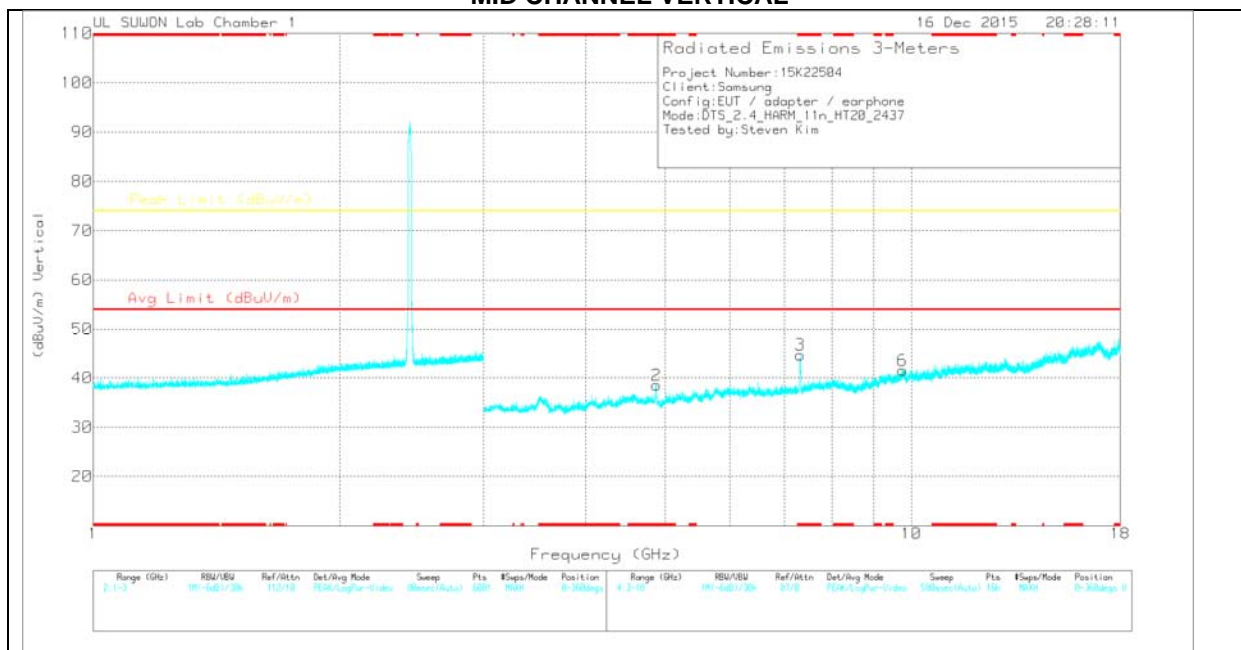
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

**MID CHANNEL HORIZONTAL**



**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	3117(00168717)_150619	Path_3	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	41.31	Pk	34	-34	0	41.31	-	-	74	-32.69	0-360	100	H
4	* 7.311	33.75	Pk	35.7	-30.9	0	38.55	-	-	74	-35.45	0-360	100	H
5	9.753	31.01	Pk	37.2	-26.7	0	41.51	-	-	74	-32.49	0-360	200	H
2	* 4.88	38.56	Pk	34	-34	0	38.56	-	-	74	-35.44	0-360	100	V
3	* 7.317	39.8	Pk	35.8	-30.9	0	44.7	-	-	74	-29.3	0-360	100	V
6	9.748	31.15	Pk	37.2	-26.8	0	41.55	-	-	74	-32.45	0-360	100	V

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

Pk – Peak Detector

Radiated Emissions

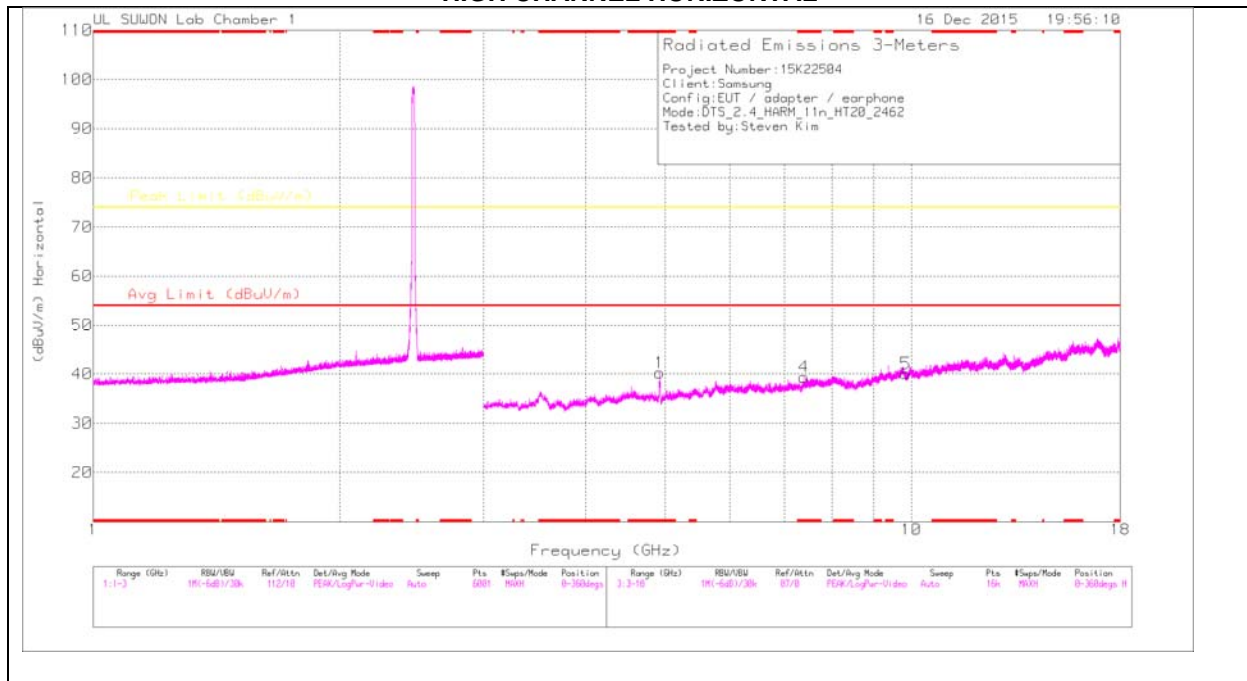
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168717)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.875	53.63	PK2	34	-34	0	53.63	-	-	74	-20.37	209	100	H
* 4.874	39.15	MAv1	34	-34	.34	39.49	54	-14.51	-	-	209	100	H
* 4.875	52.44	PK2	34	-34	0	52.44	-	-	74	-21.56	332	299	V
* 4.874	39.47	MAv1	34	-34	.34	39.81	54	-14.19	-	-	332	299	V
* 7.308	50.24	PK2	35.7	-30.9	0	55.04	-	-	74	-18.96	319	281	V
* 7.311	35	MAv1	35.7	-30.9	.34	40.14	54	-13.86	-	-	319	281	V

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

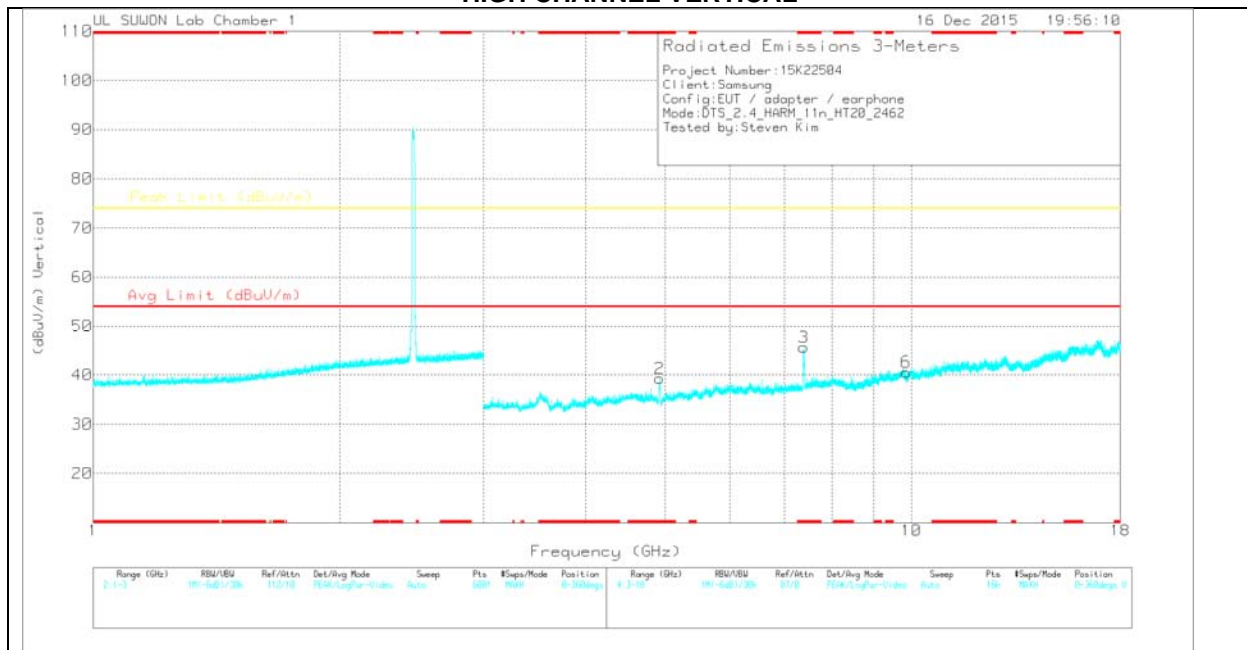
PK2 - KDB558074 Method: Maximum Peak

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	3117(00168717)_150619	Path_3	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	* 4.925	40.25	Pk	34	-34	0	40.25	-	-	74	-33.75	0-360	100	H
4	* 7.391	34.27	Pk	35.8	-30.7	0	39.37	-	-	74	-34.63	0-360	200	H
5	9.844	30.27	Pk	37.3	-27.5	0	40.07	-	-	74	-33.93	0-360	200	H
2	* 4.923	39.31	Pk	34	-34	0	39.31	-	-	74	-34.69	0-360	100	V
3	* 7.386	40.53	Pk	35.8	-30.7	0	45.63	-	-	74	-28.37	0-360	100	V
6	9.848	30.89	Pk	37.3	-27.6	0	40.59	-	-	74	-33.41	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	3117(00168717)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.925	52.55	PK2	34	-34	0	52.55	-	-	74	-21.45	209	101	H
* 4.924	39.03	MAv1	34	-34	.34	39.37	54	-14.63	-	-	209	101	H
* 4.925	51.8	PK2	34	-34	0	51.8	-	-	74	-22.2	15	262	V
* 4.924	37.69	MAv1	34	-34	.34	38.03	54	-15.97	-	-	15	262	V
* 7.383	54.01	PK2	35.8	-30.8	0	59.01	-	-	74	-14.99	16	102	V
* 7.385	38.48	MAv1	35.8	-30.7	.34	43.92	54	-10.08	-	-	16	102	V

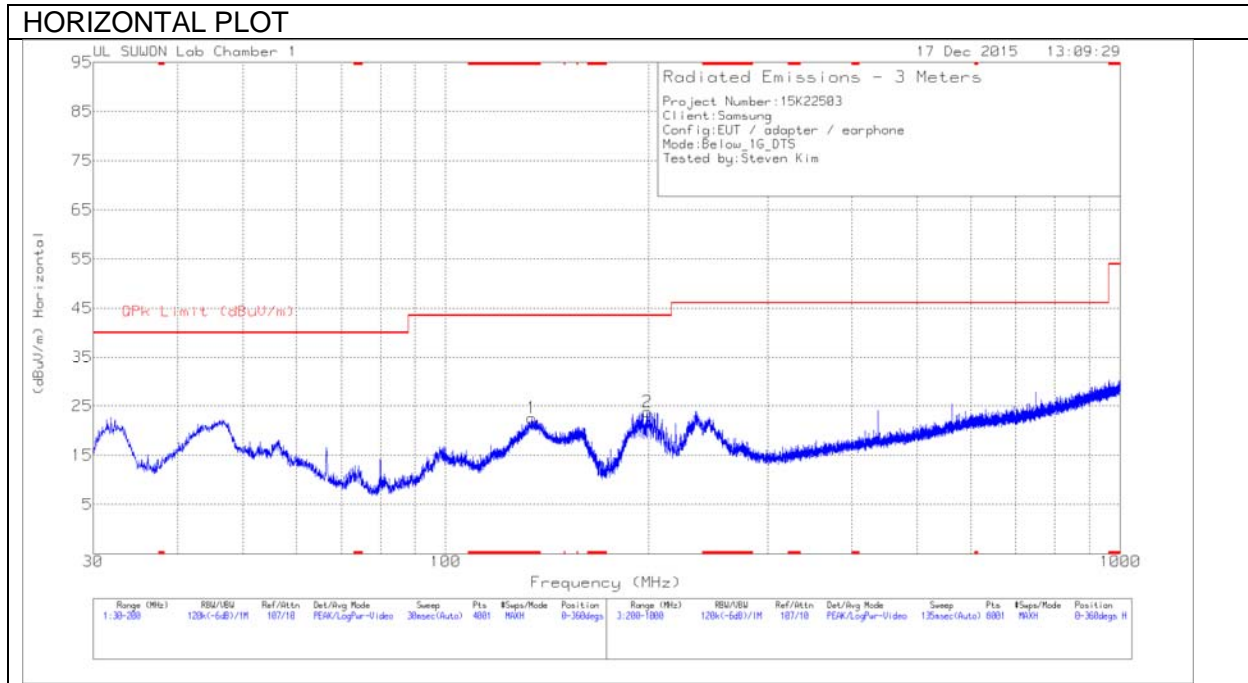
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

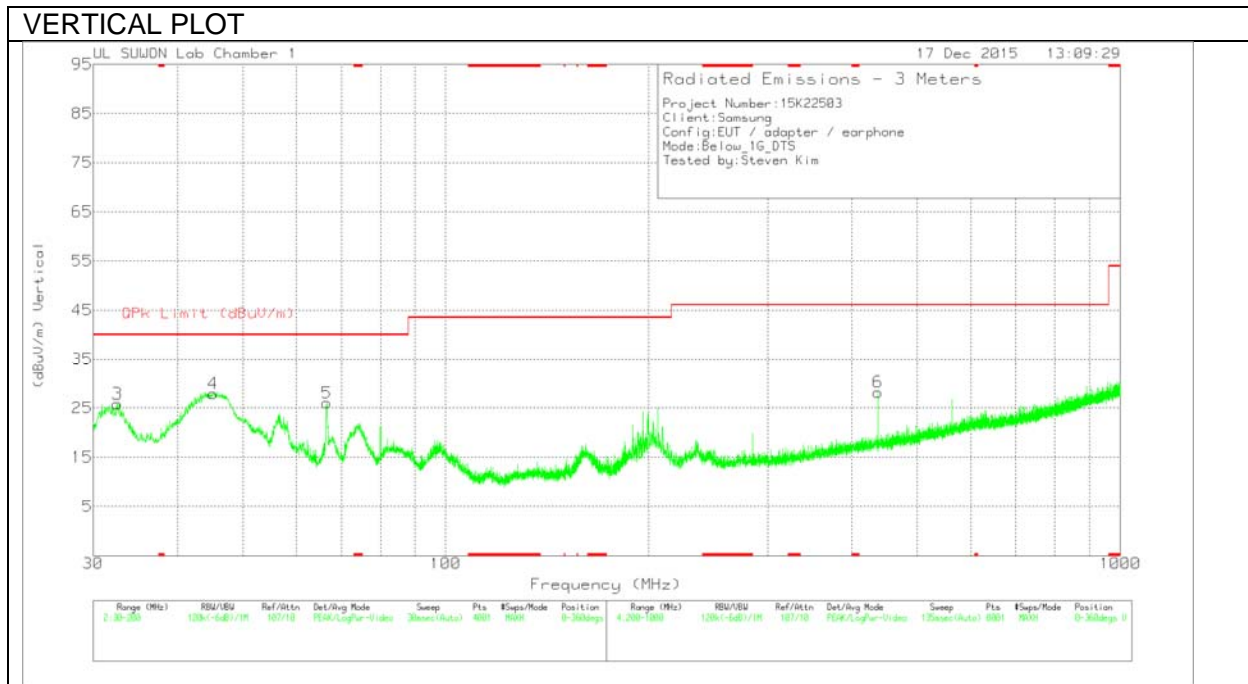
MAv1 - KDB558074 Option 1 Maximum RMS Average

### 11.3. 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**

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163-750	Bi-Log	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 134.125	42.9	Pk	8.5	-28.8	22.6	43.52	-20.92	0-360	200	H
2	198.895	40.82	Pk	11.2	-28.2	23.82	43.52	-19.7	0-360	100	H
3	32.5925	45.94	Pk	10.4	-30.5	25.84	40	-14.16	0-360	100	V
4	45.1725	44.53	Pk	13.6	-30.2	27.93	40	-12.07	0-360	100	V
5	66.5925	45.15	Pk	10.7	-29.8	26.05	40	-13.95	0-360	100	V
6	437.5	38.71	Pk	16.1	-26.6	28.21	46.02	-17.81	0-360	100	V

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

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 C63.10 2009.

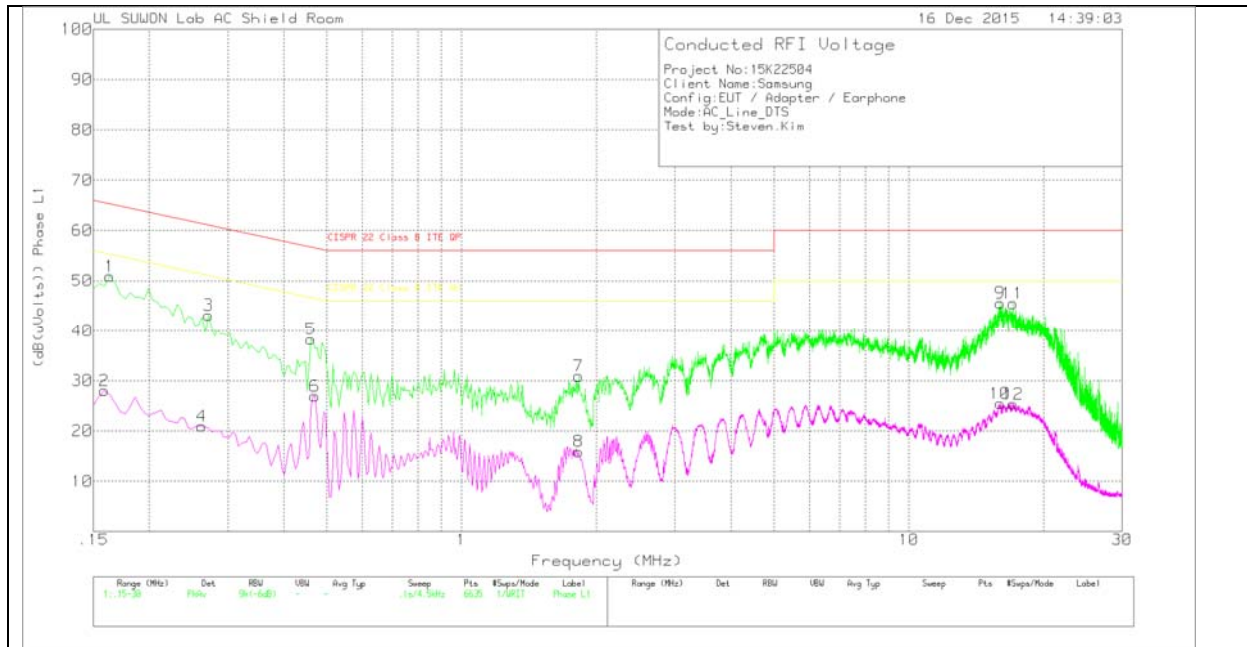
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

**RESULTS**

**WORST EMISSIONS**

**LINE 1 PLOT**



**LINE 1 RESULTS**

Trace Markers

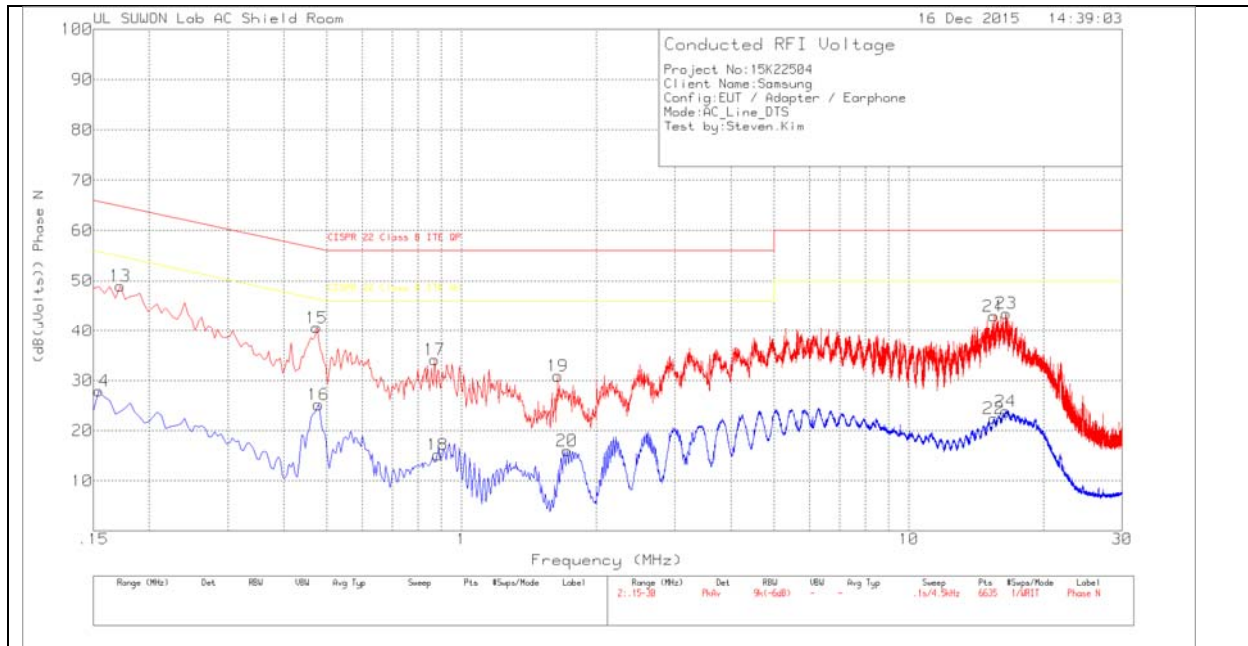
Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_w ith ex-cord_L1	CE Shield Room	Corrected Reading (dB(uVolts))	CISPR 22 Class B ITE QP	Margin (dB)	CISPR 22 Class B ITE AV	Margin (dB)
1	.1635	40.79	Pk	10.1	0	50.89	65.28	-14.39	-	-
2	.159	18.03	Av	10	0	28.03	-	-	55.52	-27.49
3	.2715	33.37	Pk	9.8	0	43.17	61.07	-17.9	-	-
4	.2625	11.19	Av	9.8	0	20.99	-	-	51.35	-30.36
5	.4605	28.12	Pk	10.2	0	38.32	56.68	-18.36	-	-
6	.4695	16.74	Av	10.2	0	26.94	-	-	46.52	-19.58
7	1.824	21.01	Pk	9.8	.1	30.91	56	-25.09	-	-
8	1.824	6.02	Av	9.8	.1	15.92	-	-	46	-30.08
9	15.999	35.21	Pk	10.2	.2	45.61	60	-14.39	-	-
10	16.0125	15.05	Av	10.2	.2	25.45	-	-	50	-24.55
11	17.0835	35.01	Pk	10.3	.2	45.51	60	-14.49	-	-
12	17.1015	14.84	Av	10.3	.2	25.34	-	-	50	-24.66

Pk - Peak detector

Av - Average detection

**LINE 2 PLOT**



## LINE 2 RESULTS

### Trace Markers

Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_w ith ex-cord_N	CE Shield Room	Corrected Reading (dB(uVolts))	CISPR 22 Class B ITE QP	Margin (dB)	CISPR 22 Class B ITE AV	Margin (dB)
13	.1725	38.8	Pk	10.2	0	49	64.84	-15.84	-	-
14	.1545	18.04	Av	9.9	0	27.94	-	-	55.75	-27.81
15	.474	30.55	Pk	10.1	0	40.65	56.44	-15.79	-	-
16	.4785	15.09	Av	10.1	0	25.19	-	-	46.37	-21.18
17	.87	24.25	Pk	9.9	0	34.15	56	-21.85	-	-
18	.8835	5.31	Av	9.9	0	15.21	-	-	46	-30.79
19	1.6395	21.02	Pk	9.8	.1	30.92	56	-25.08	-	-
20	1.7205	6.13	Av	9.8	.1	16.03	-	-	46	-29.97
21	15.486	32.39	Pk	10.4	.2	42.99	60	-17.01	-	-
22	15.495	11.86	Av	10.4	.2	22.46	-	-	50	-27.54
23	16.503	32.95	Pk	10.4	.2	43.55	60	-16.45	-	-
24	16.4625	13.25	Av	10.4	.2	23.85	-	-	50	-26.15

Pk - Peak detector

Av - Average detection