FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

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

MODEL NUMBER : SC-01H

FCC ID: A3LSC01H

REPORT NUMBER: 15K21504-E1

ISSUE DATE: SEP 22, 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

Rev.	Issue Date	Revisions	Revised By
--	09/02/15	Initial issue	Junwhan Lee
A	09/22/15	Revised section 6	Junwhan Lee

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 443-823, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

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UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 443-823, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 443-823, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION:	GSM/WCDMA Phone + Bluetooth/BLE, DTS b/g/n and NFC
MODEL NUMBER:	SC-01H
SERIAL NUMBER:	R38G70DOR6V (RADIATED); 74d6c83c (CONDUCTED)
DATE TESTED:	AUG 10, 2015 - AUG 17, 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, 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
☐ Chamber 1
☒ 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:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

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%.

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

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

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	15.27	33.65
	802.11g	13.29	21.33
	802.11n HT20	11.56	14.32

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antennas, with a antenna's maximum gain of -0.23 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 Z orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Z 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

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5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	EP-TA20EWE	R37FC2100M1SE3	N/A
Data Cable	SAMSUNG	ECB-DU4EWE	N/A	N/A
Earphone	SAMSUNG	EG920BW	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.

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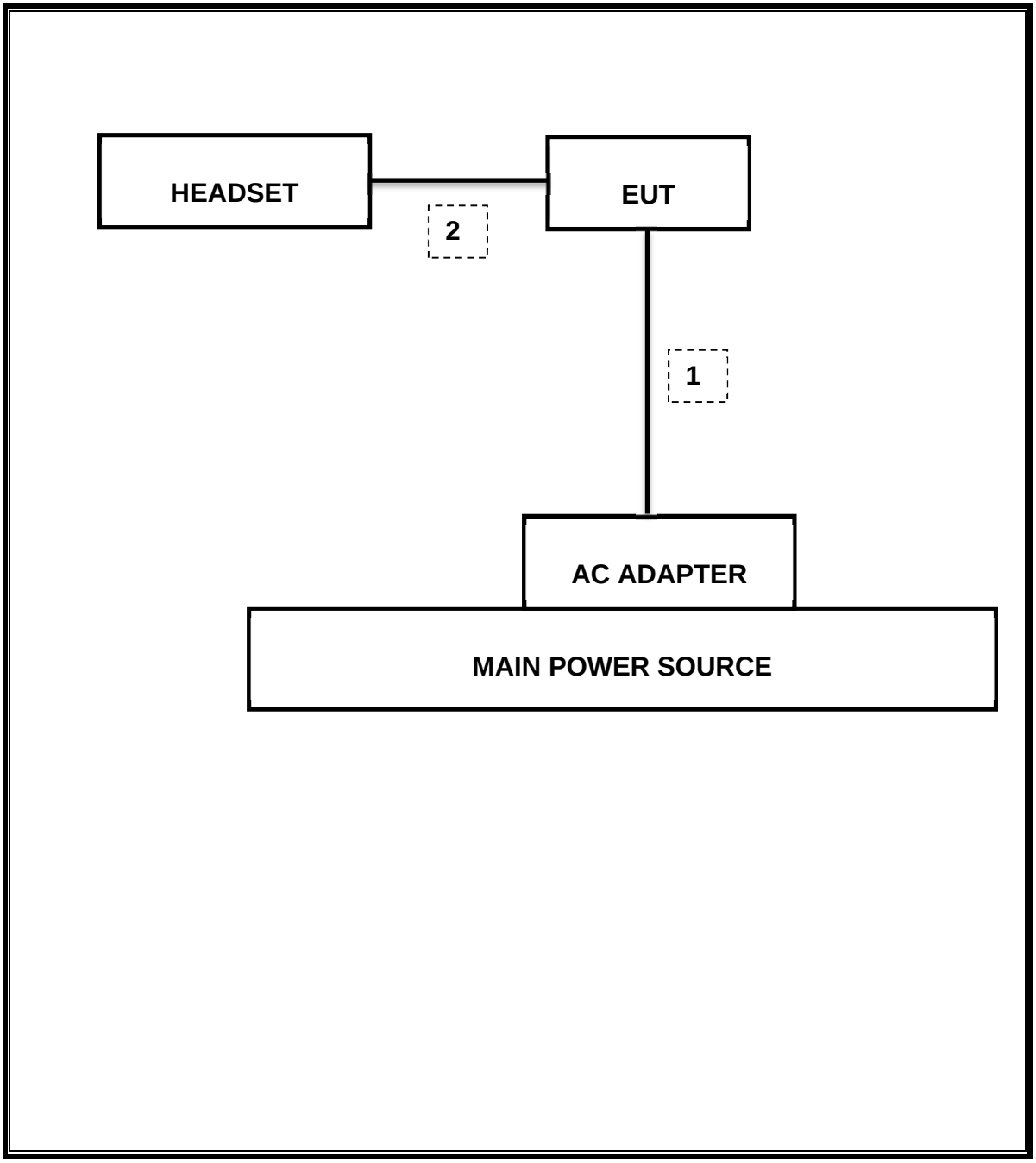
SETUP DIAGRAM FOR TESTS



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	11-17-15
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	04-25-16
Antenna, Horn, 18 GHz	ETS	3115	0016145	05-17-16
Antenna, Horn, 18 GHz	ETS	3117	00168724	06-17-16
Antenna, Horn, 18 GHz	ETS	3117	00168717	06-17-16
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
Combiner	WEINSCHEL	1575	2153	11-17-15

7. MEASUREMENT METHODS

KDB 558074 D01 DTS Meas Guidance v03r03: Measurement Procedure §9.2.3.1 AVGPM is used for 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]
2400MHz Bands						
802.11b	8.415	8.514	0.988	98.8%	0.00	0.010
802.11g	1.396	1.494	0.934	93.4%	0.29	0.716
802.11n HT20	1.296	1.394	0.930	93.0%	0.32	0.772

[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	7.092 MHz
2.1051, 15.247 (d)	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-31.518 dBm
15.247	TX conducted output power	<30dBm		Pass	15.27 dBm
15.247	PSD	<8dBm		Pass	-15.255 dBm
15.207 (a)	AC Power Line conducted emissions	Section 10	Power Line conducted	Pass	42.77 dBuV (QP)
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass	46.6 dBuV/m (AV)

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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 to100KHz, the VBW >= 3 x 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	7.092	0.5
Mid	2437	7.100	0.5
High	2462	7.108	0.5
Worst		7.092	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	16.333	0.5
Mid	2437	16.342	0.5
High	2462	16.356	0.5
Worst		16.333	0.5

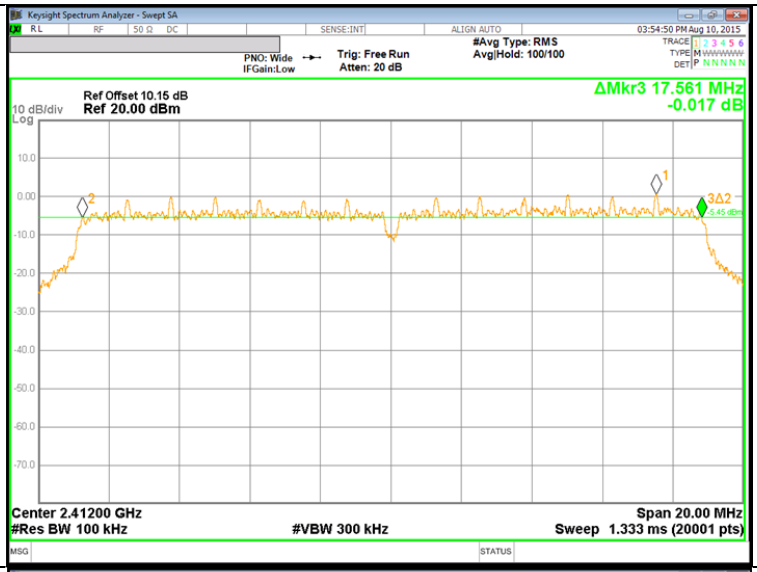
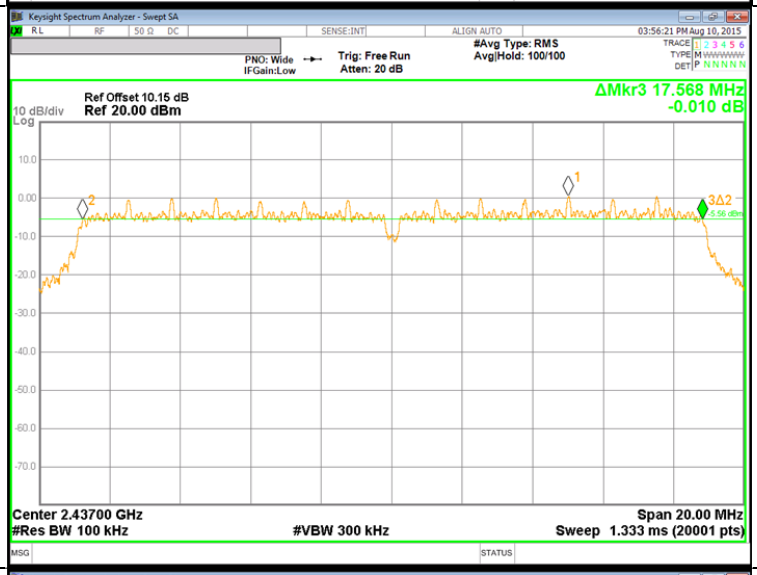
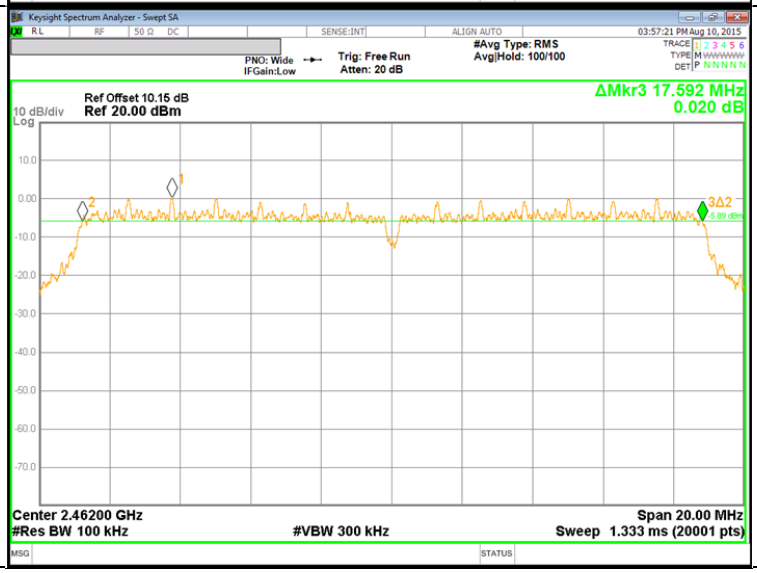
10.1.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]	Minimum Limit [MHz]
Low	2412	17.561	0.5
Mid	2437	17.568	0.5
High	2462	17.592	0.5
Worst		17.561	0.5

10.1.4. 6 dB BANDWIDTH PLOTS

802.11b Mode Low CH			
802.11b Mode Middle CH			
802.11b Mode High CH			

802.11g Mode Low CH	
802.11g Mode Middle CH	
802.11g Mode High CH	

802.11n Mode Low CH		
802.11n Mode Middle CH		
802.11n Mode High CH		

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	12.261
Mid	2437	12.256
High	2462	12.213
Worst		12.261

10.2.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	2412	16.507
Mid	2437	16.501
High	2462	16.512
Worst		16.512

10.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	2412	17.702
Mid	2437	17.683
High	2462	17.702
Worst		17.702

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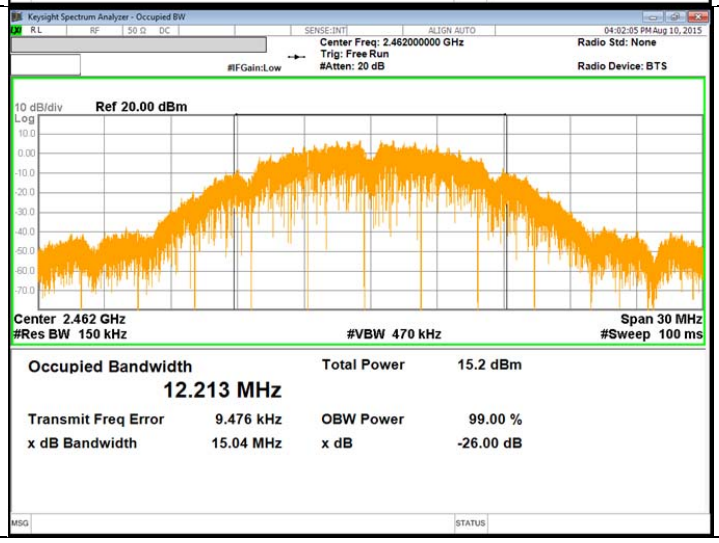
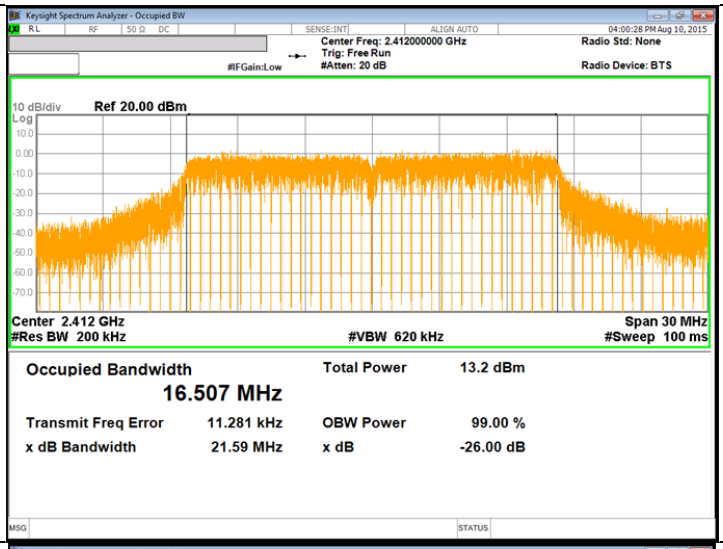
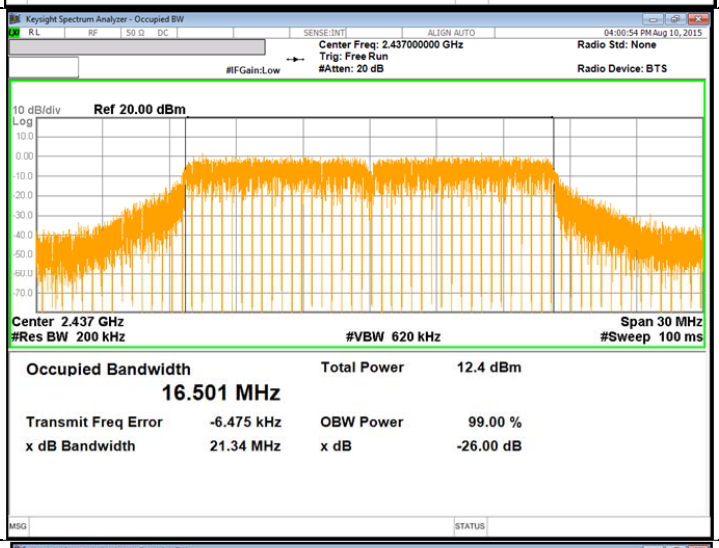
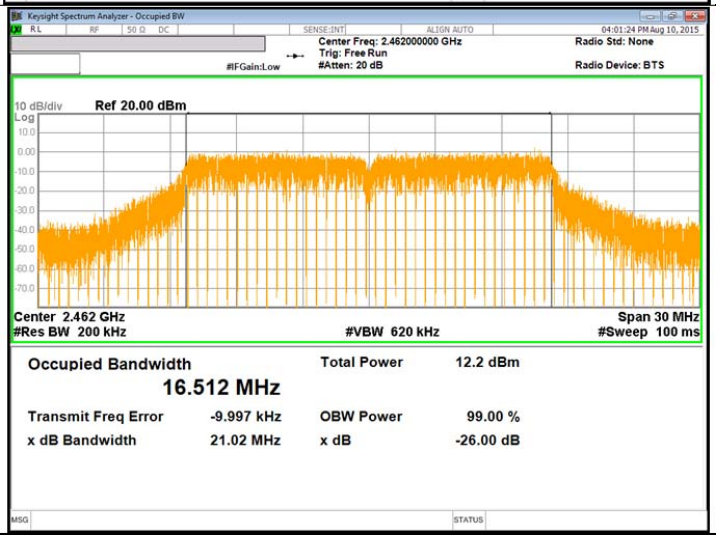
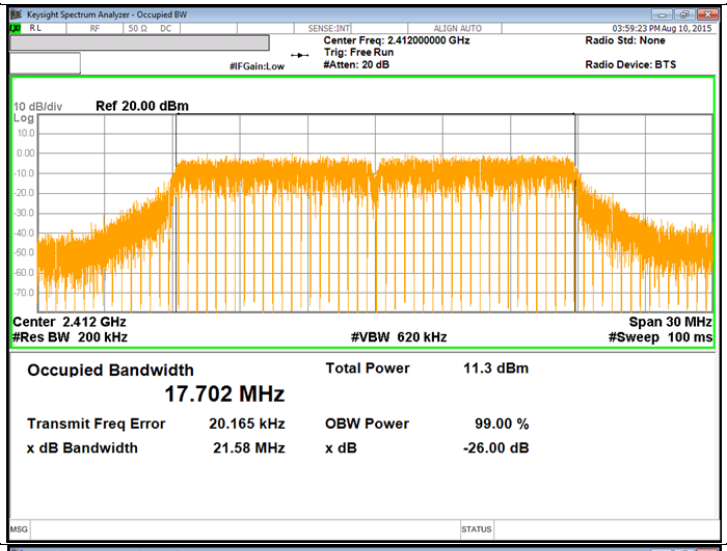
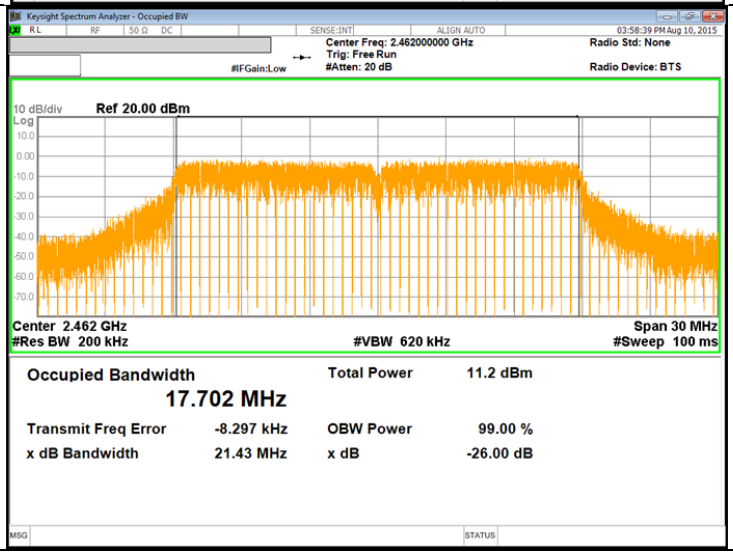
10.2.4. 99% BANDWIDTH PLOTS

802.11b Mode Low CH		
802.11b Mode Middle CH		
802.11b Mode High CH		

802.11g Mode Low CH		
802.11g Mode Middle CH		
802.11g Mode High CH		

802.11n Mode Low CH		
802.11n Mode Middle CH		
802.11n Mode High CH		

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	-0.23	30.00	30.00	36.00	30.00
Mid	2437	-0.23	30.00	30.00	36.00	30.00
High	2462	-0.23	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	14.6	14.60	36.00	-21.40
Mid	2437	15.27	15.27	36.00	-20.73
High	2462	15.15	15.15	36.00	-20.85
Worst			15.27	36.00	-20.73

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	-0.23	30.00	30.00	36.00	30.00
Mid	2437	-0.23	30.00	30.00	36.00	30.00
High	2462	-0.23	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	13.29	13.29	36.00	-22.71
Mid	2437	12.44	12.44	36.00	-23.56
High	2462	12.38	12.38	36.00	-23.62
Worst			13.29	36.00	-22.71

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	-0.23	30.00	30.00	36.00	30.00
Mid	2437	-0.23	30.00	30.00	36.00	30.00
High	2462	-0.23	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	11.56	11.56	36.00	-24.44
Mid	2437	11.47	11.47	36.00	-24.53
High	2462	11.31	11.31	36.00	-24.69
Worst			11.56	36.00	-24.44

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	-16.054	0.00	-16.054	8.00	-24.054
Mid	2437	-15.255	0.00	-15.255	8.00	-23.255
High	2462	-15.589	0.00	-15.589	8.00	-23.589

10.4.2. 802.11g MODE IN THE 2.4 GHz BAND

PSD Results

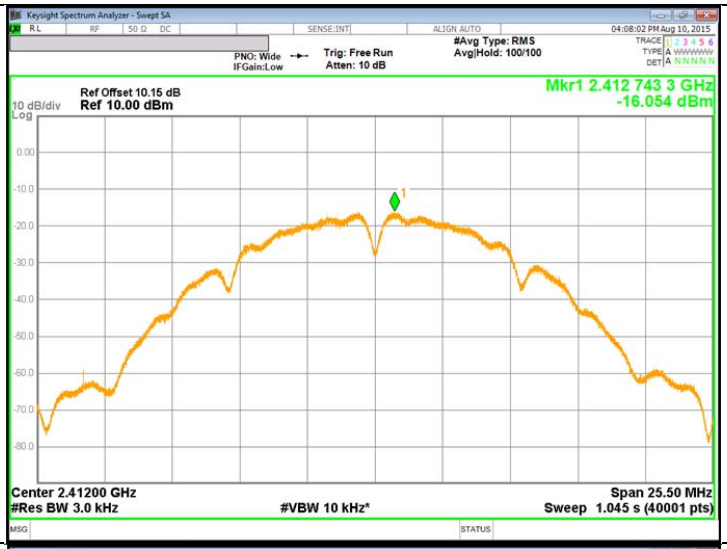
Channel	Frequency [MHz]	PSD Meas [dBm]	Duty Factor [dB]	Final PSD [dBm]	Limit [dBm]	Margin [dB]
Low	2412	-20.777	0.29	-20.487	8.00	-28.487
Mid	2437	-21.791	0.29	-21.501	8.00	-29.501
High	2462	-21.756	0.29	-21.466	8.00	-29.466

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	-22.687	0.32	-22.367	8.00	-30.367
Mid	2437	-22.468	0.32	-22.148	8.00	-30.148
High	2462	-23.004	0.32	-22.684	8.00	-30.684

10.4.4. PSD PLOTS

802.11b Mode Low CH		
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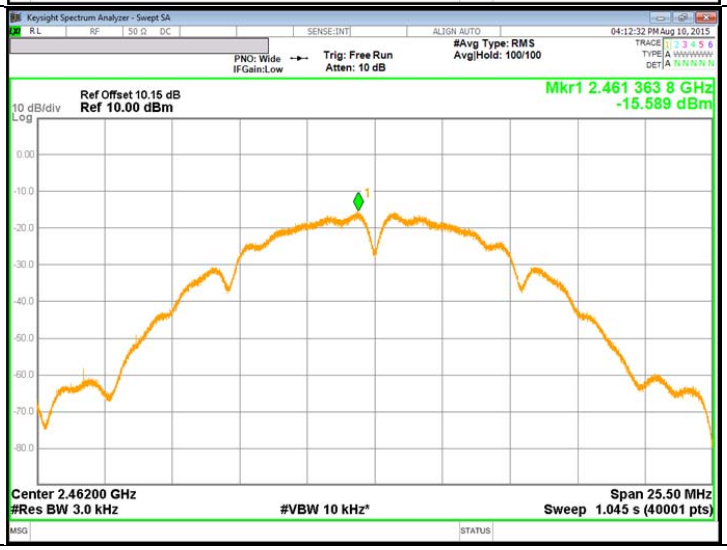
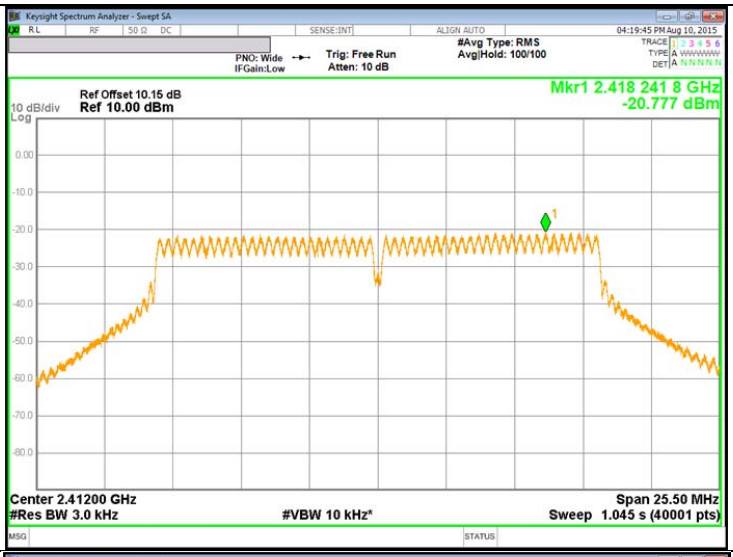
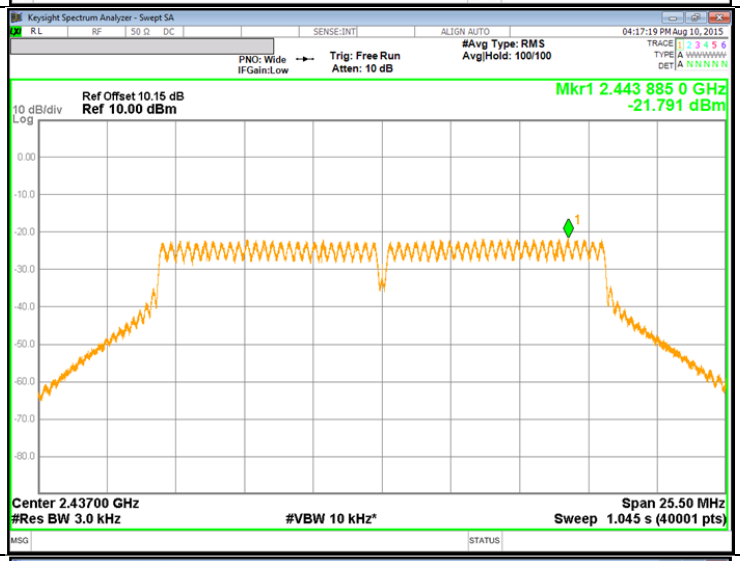
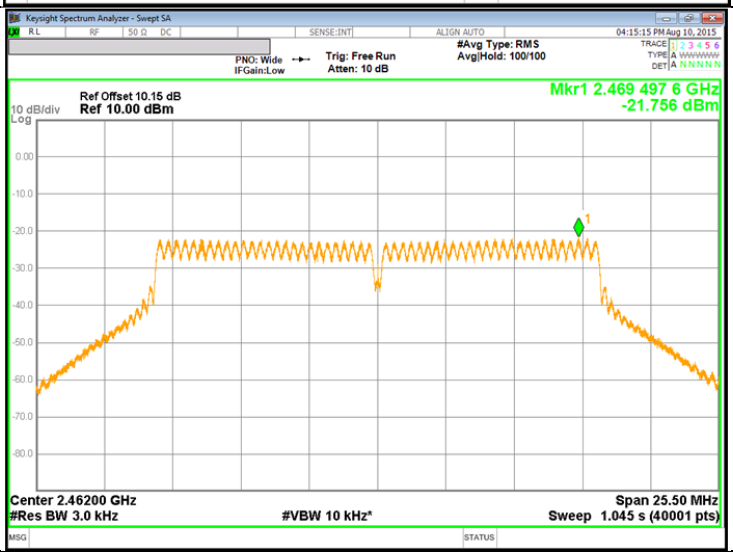
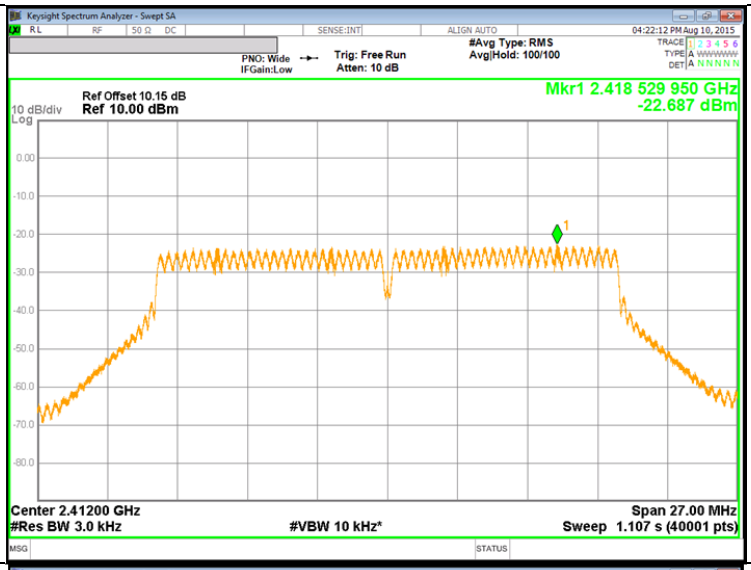
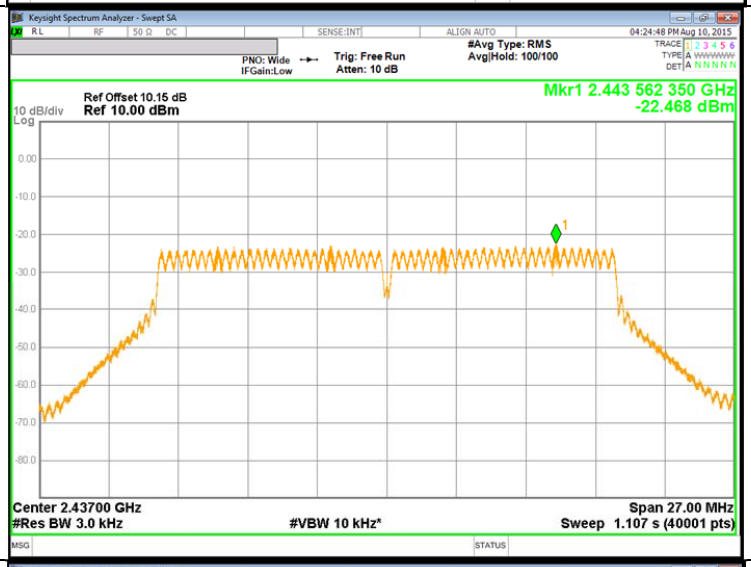
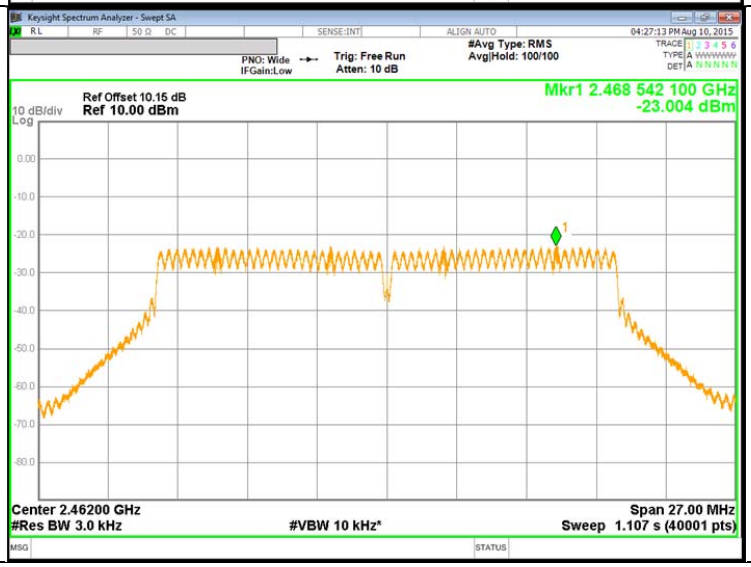
802.11b Mode High CH		

802.11g Mode Low CH		
802.11g Mode Middle CH		
802.11g Mode High CH		

802.11n Mode Low CH		
802.11n Mode Middle CH		
802.11n Mode High CH		

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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.

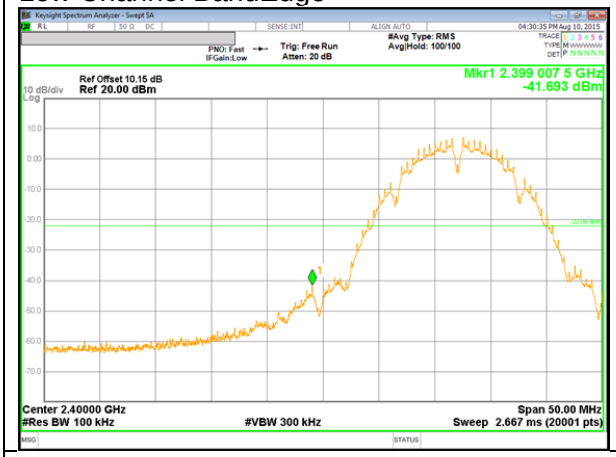
TEST PROCEDURE

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.

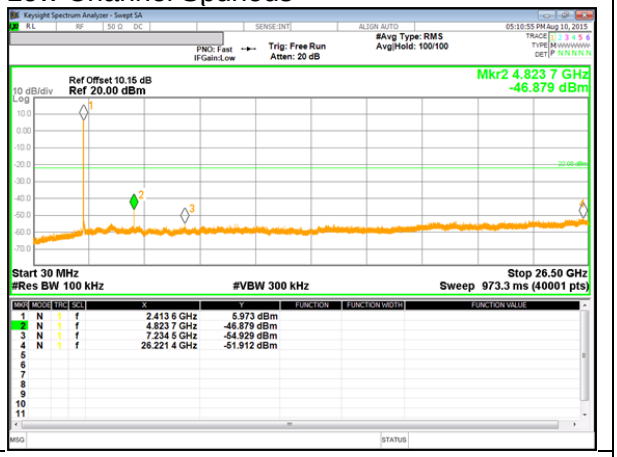
RESULTS

10.5.1. 802.11b MODE IN THE 2.4 GHz BAND

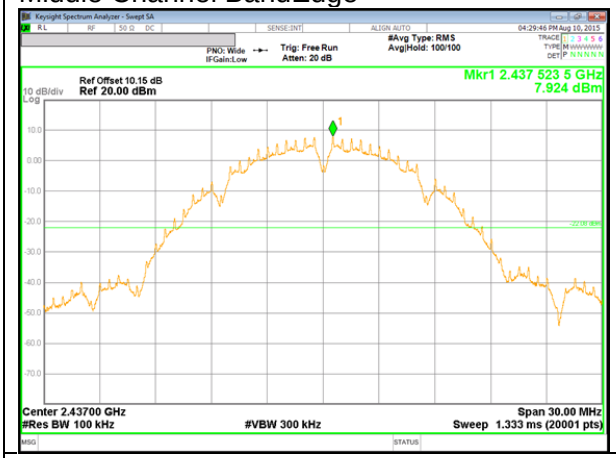
Low Channel BandEdge



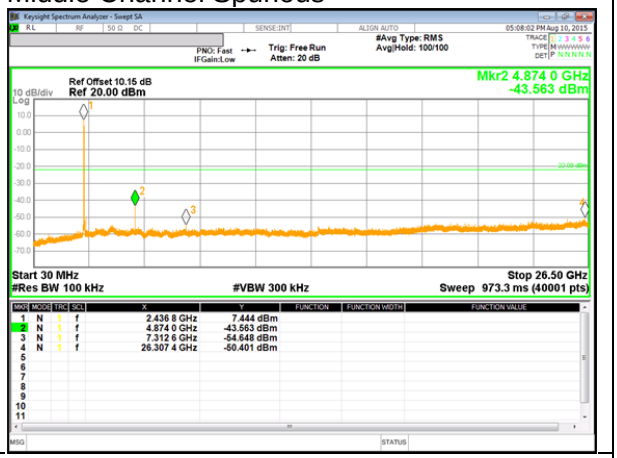
Low Channel Spurious



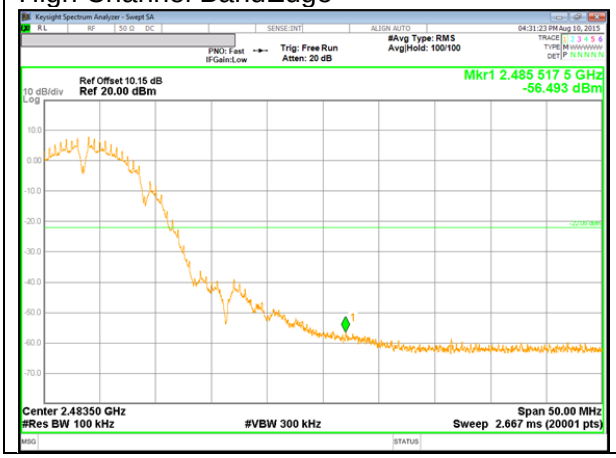
Middle Channel BandEdge



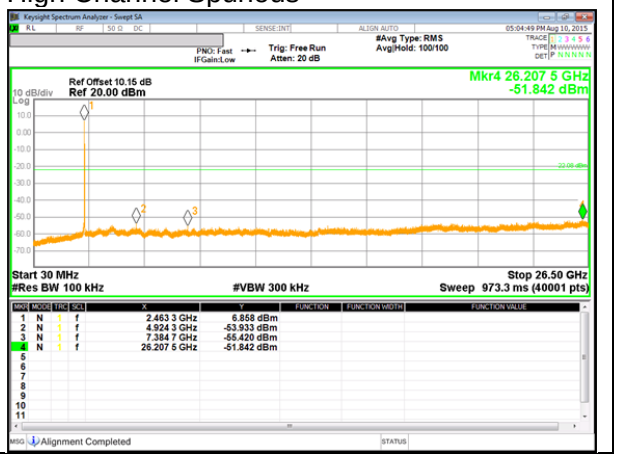
Middle Channel Spurious



High Channel BandEdge

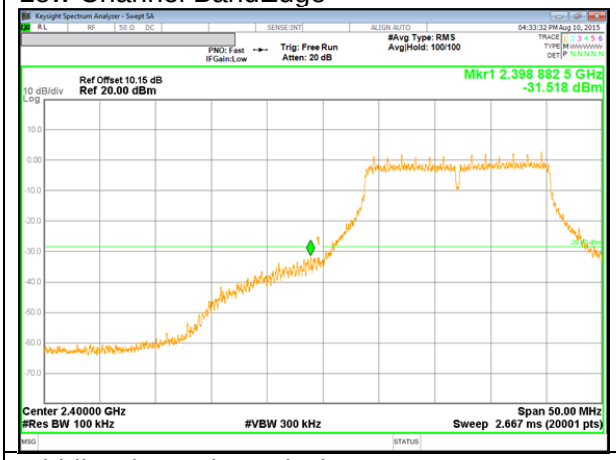


High Channel Spurious

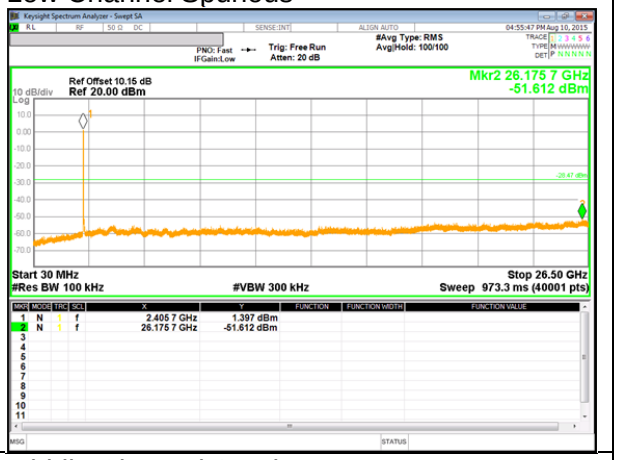


10.5.2. 802.11g MODE IN THE 2.4 GHz BAND

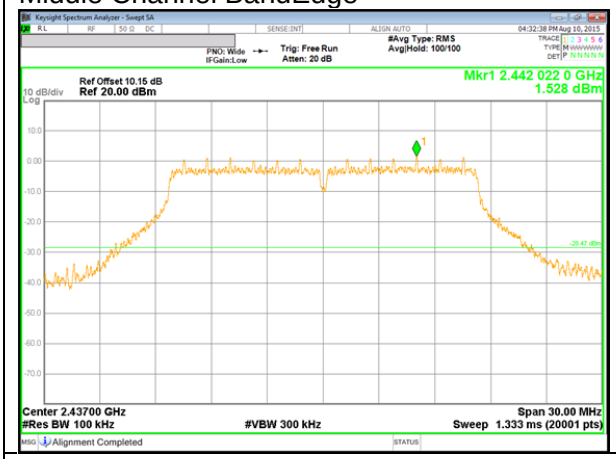
Low Channel BandEdge



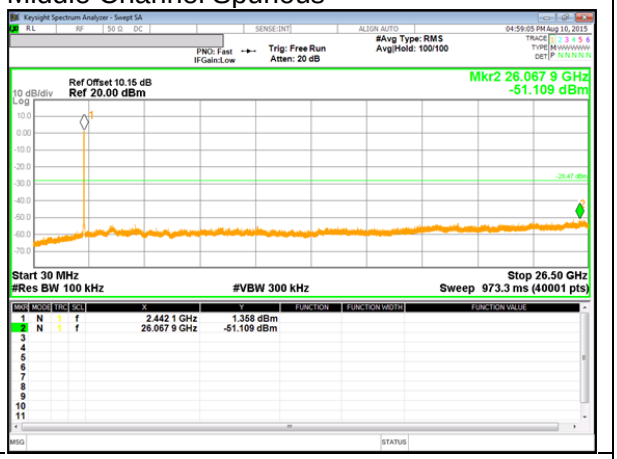
Low Channel Spurious



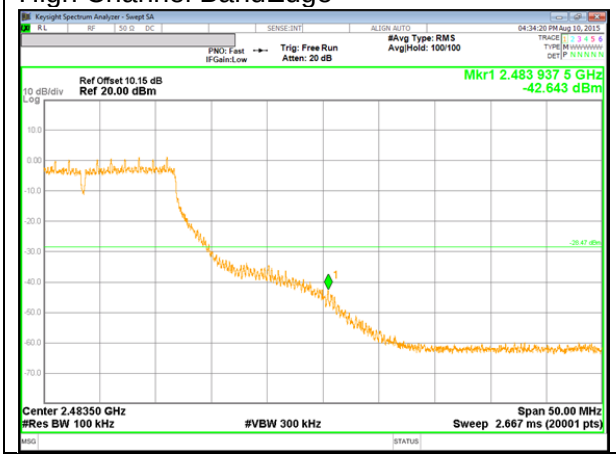
Middle Channel BandEdge



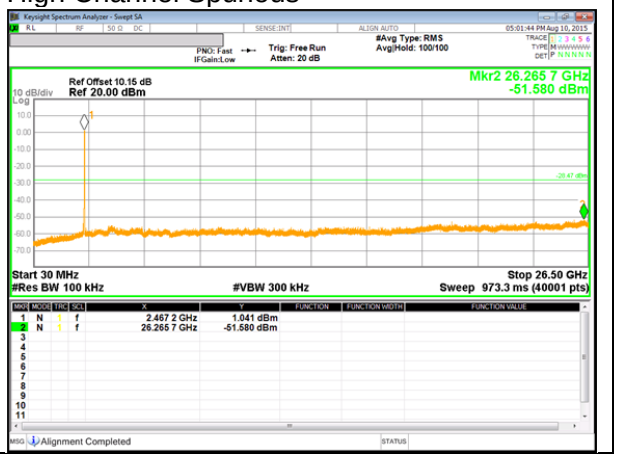
Middle Channel Spurious



High Channel BandEdge

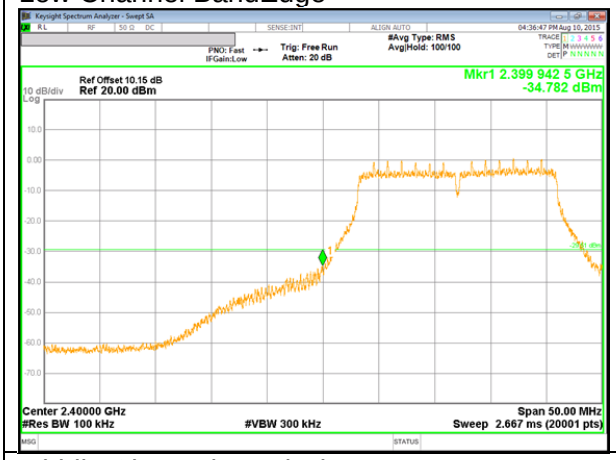


High Channel Spurious

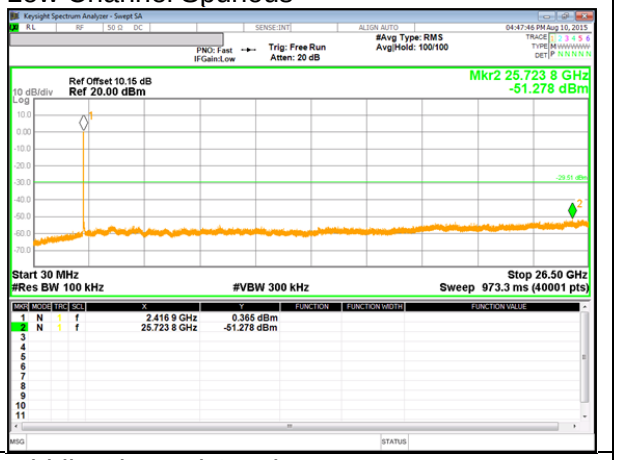


10.5.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

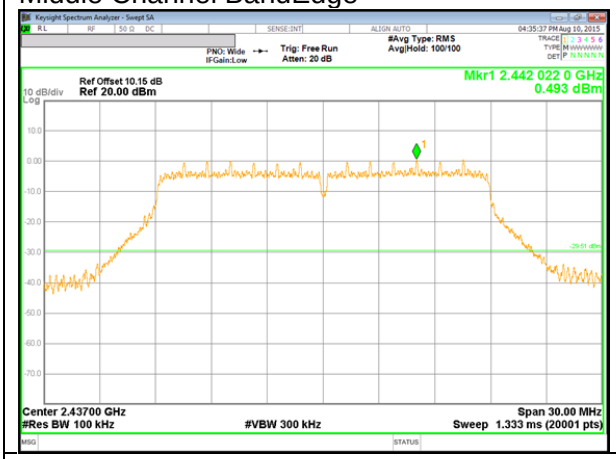
Low Channel BandEdge



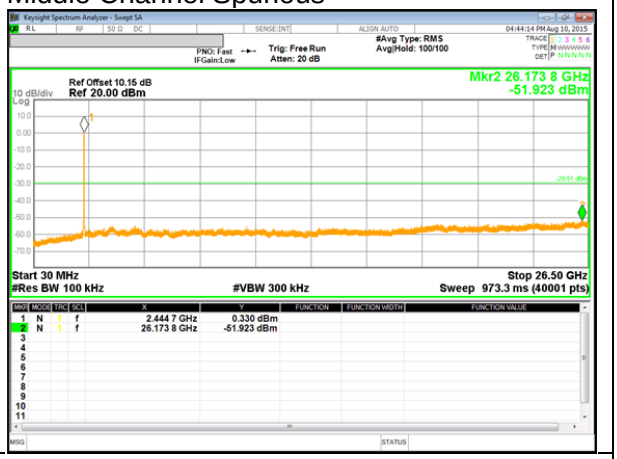
Low Channel Spurious



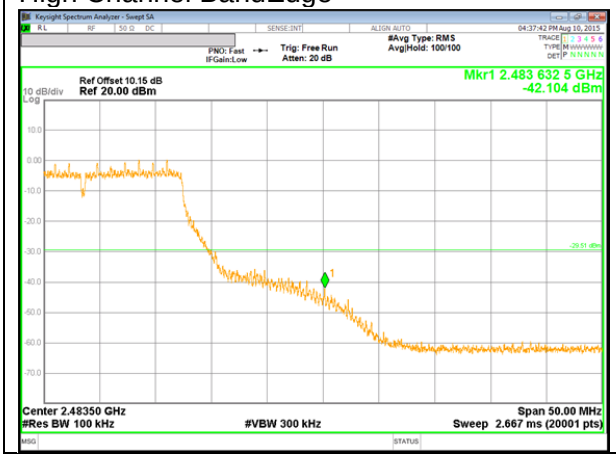
Middle Channel BandEdge



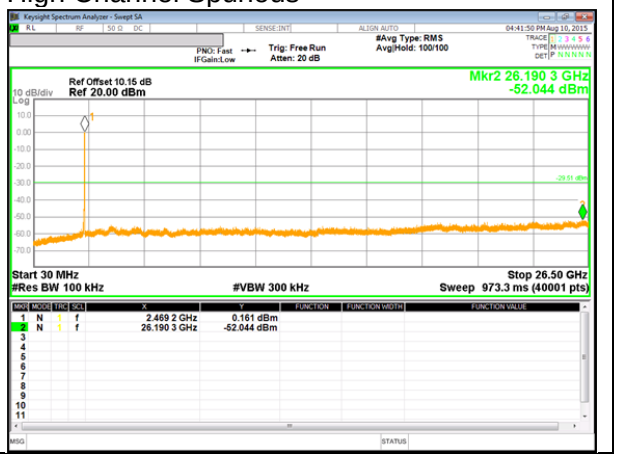
Middle Channel Spurious



High Channel BandEdge



High Channel Spurious



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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= 10log (1/x) For this sample B mode = 0dB (duty cycle >98%); G mode = 0.29dB; 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.

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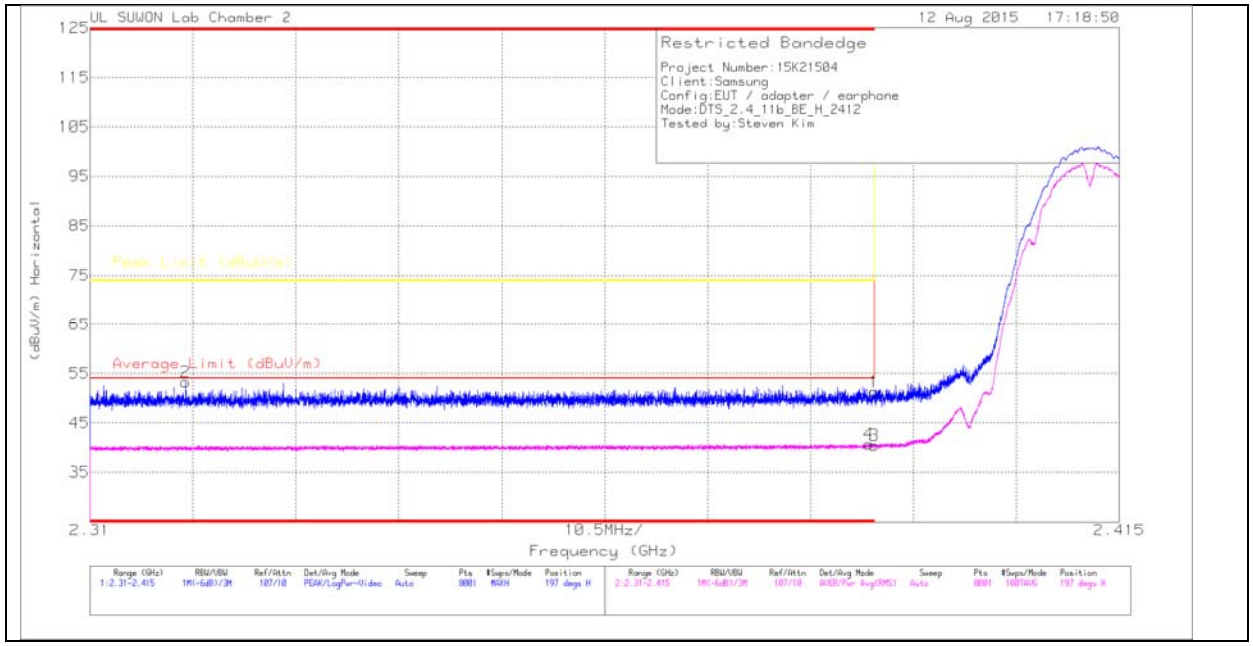
11.2. TRANSMITTER ABOVE 1 GHz

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

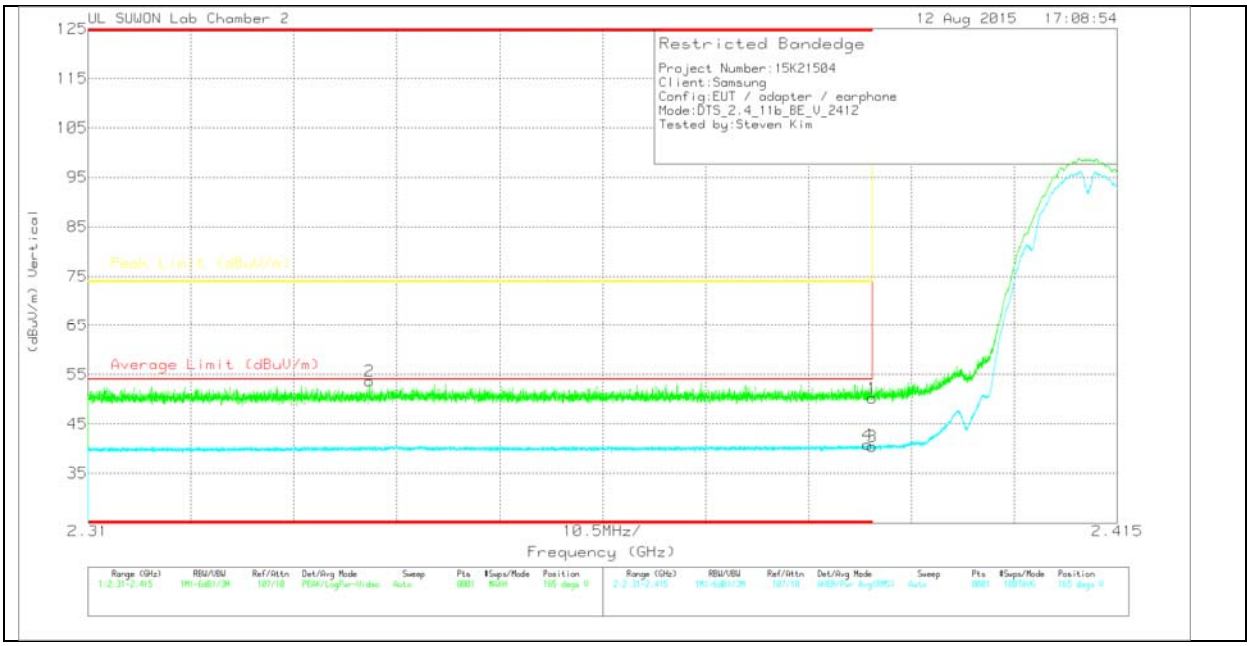
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.09	Pk	31.7	-19.5	0	51.29	-	-	74	-22.71	197	285	H
2	* 2.32	41.39	Pk	31.6	-19.7	0	53.29	-	-	74	-20.71	197	285	H
3	* 2.39	28.29	RMS	31.7	-19.5	0	40.49	54	-13.51	-	-	197	285	H
4	* 2.389	28.54	RMS	31.7	-19.5	0	40.74	54	-13.26	-	-	197	285	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(00168724)_150619	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	37.99	Pk	31.7	-19.5	0	50.19	-	-	74	-23.81	165	127	V
2	* 2.339	41.69	Pk	31.6	-19.6	0	53.69	-	-	74	-20.31	165	127	V
3	* 2.39	28.24	RMS	31.7	-19.5	0	40.44	54	-13.56	-	-	165	127	V
4	* 2.39	28.61	RMS	31.7	-19.5	0	40.81	54	-13.19	-	-	165	127	V

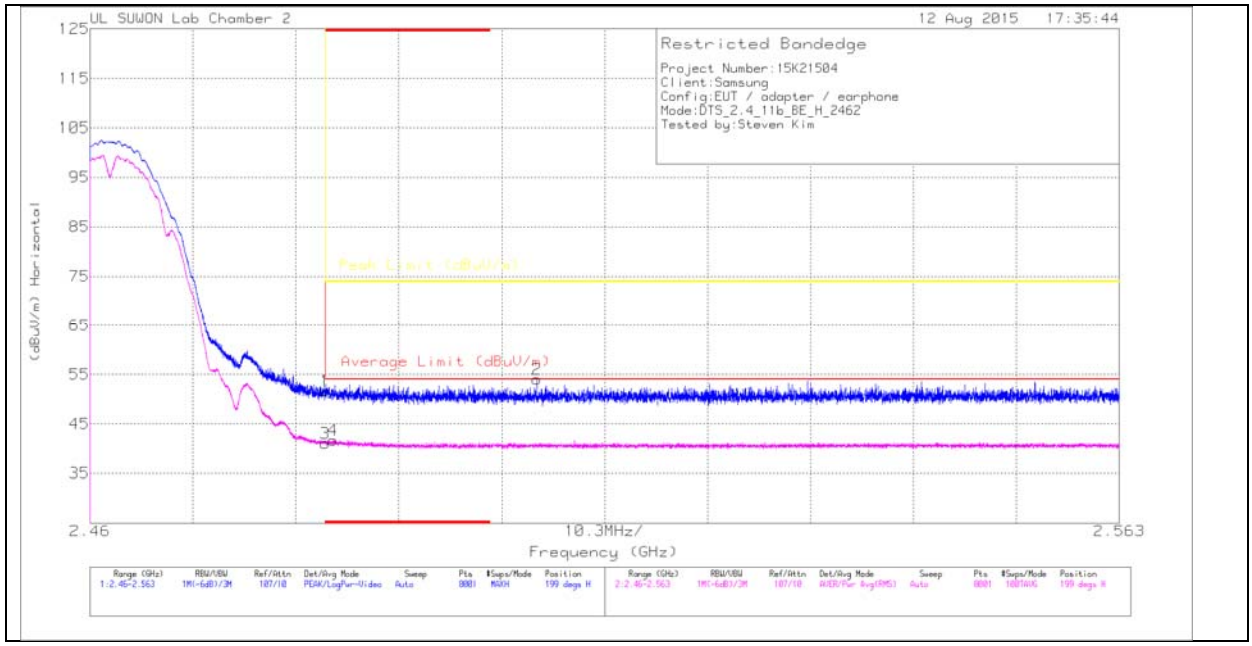
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

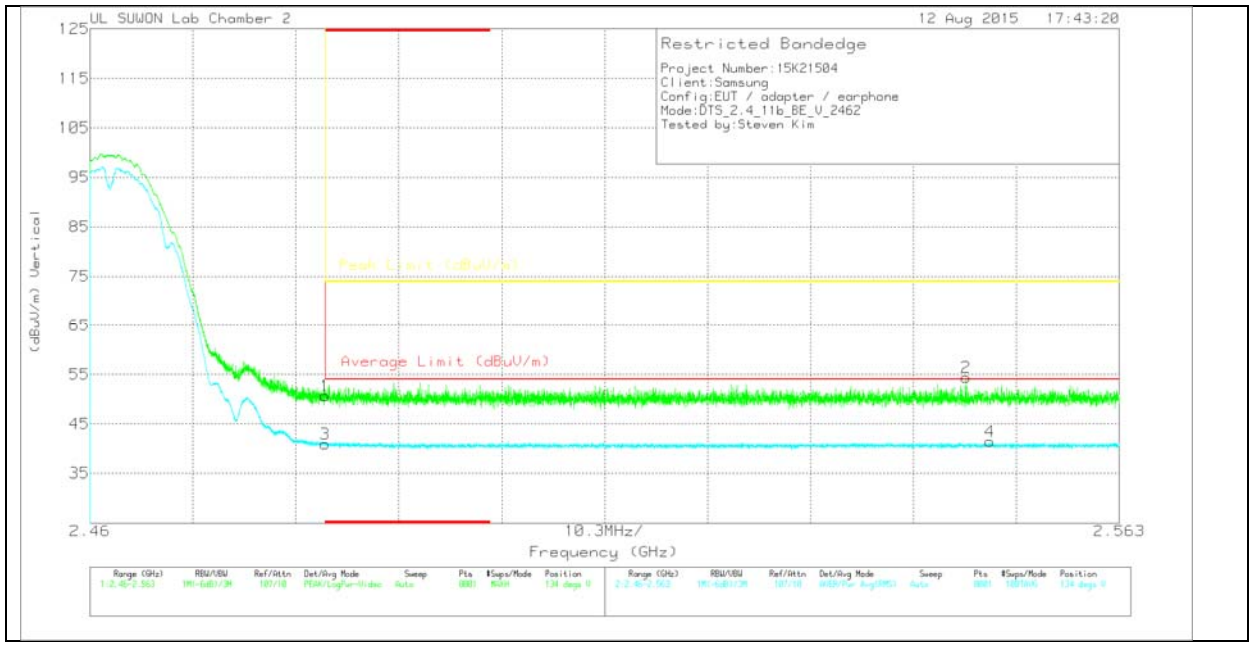
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	39.34	Pk	31.8	-19.4	0	51.74	-	-	74	-22.26	199	281	H
2	2.505	41.49	Pk	31.9	-19.3	0	54.09	-	-	74	-19.91	199	281	H
3	* 2.484	28.7	RMS	31.8	-19.4	0	41.1	54	-12.9	-	-	199	281	H
4	* 2.484	29.28	RMS	31.8	-19.4	0	41.68	54	-12.32	-	-	199	281	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(00168724)_150619	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	38.27	Pk	31.8	-19.4	0	50.67	-	-	74	-23.33	134	272	V
2	2.548	41.77	Pk	31.9	-19.3	0	54.37	-	-	74	-19.63	134	272	V
3	* 2.484	28.58	RMS	31.8	-19.4	0	40.98	54	-13.02	-	-	134	272	V
4	2.55	28.77	RMS	31.9	-19.3	0	41.37	54	-12.63	-	-	134	272	V

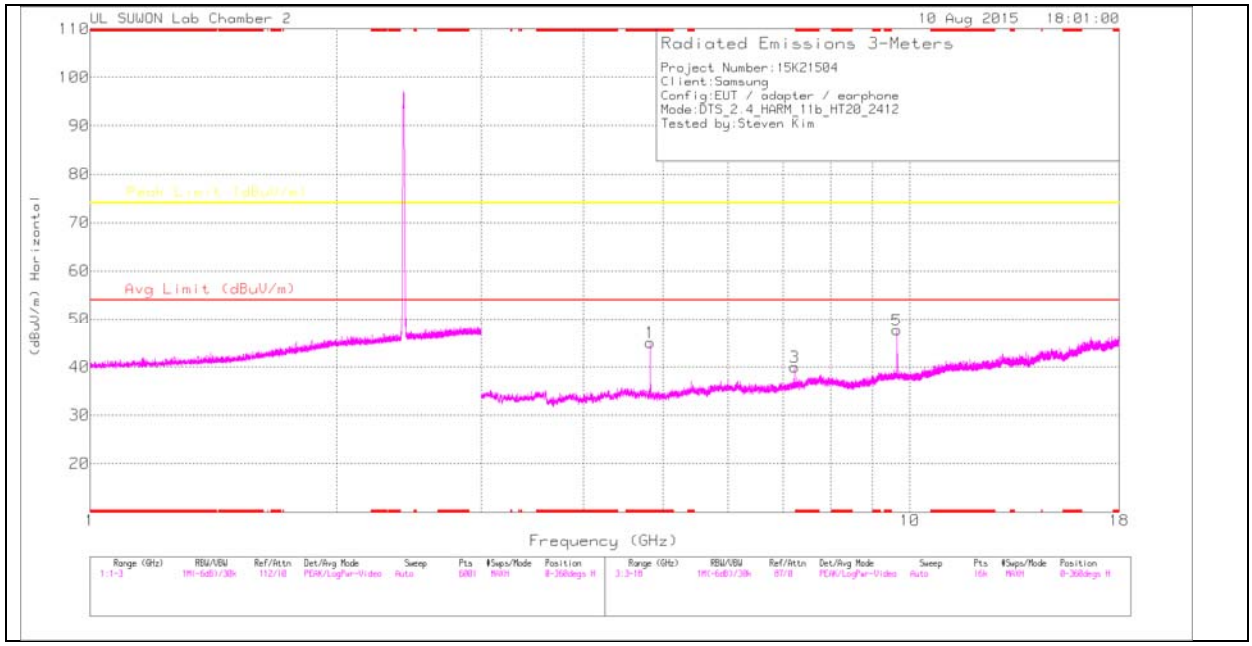
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

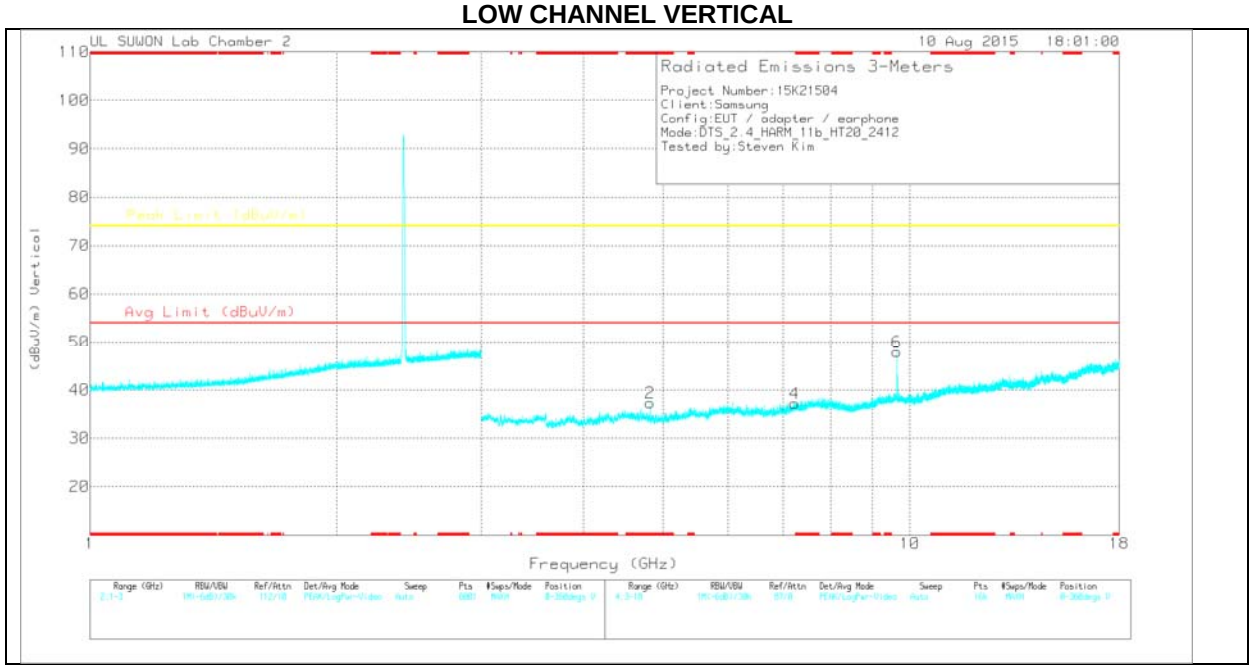
RMS - RMS detection

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(00168724)_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	36.45	PK	33.9	-25.3	0	45.05	-	-	74	-28.95	0-360	100	H
3	7.235	27.13	PK	35.8	-23	0	39.93	-	-	74	-34.07	0-360	200	H
5	9.648	29.79	PK	36.9	-19	0	47.69	-	-	74	-26.31	0-360	200	H
2	* 4.823	28.71	PK	33.9	-25.3	0	37.31	-	-	74	-36.69	0-360	200	V
4	7.237	24.46	PK	35.8	-23	0	37.26	-	-	74	-36.74	0-360	100	V
6	9.648	30.07	PK	36.9	-19	0	47.97	-	-	74	-26.03	0-360	200	V

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

PK – Peak detector

Radiated Emissions

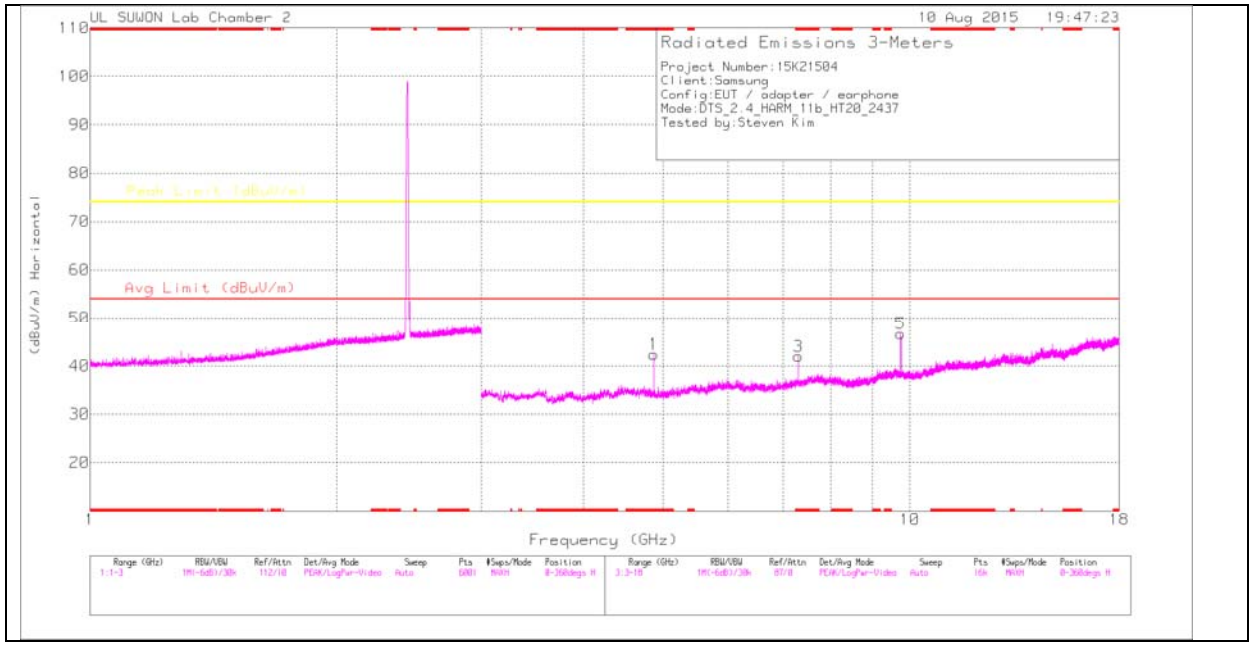
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.824	43.24	PK2	33.9	-25.3	0	51.84	-	-	74	-22.16	149	330	H
* 4.824	38	MAv1	33.9	-25.3	0	46.6	54	-7.4	-	-	149	330	H
7.237	37.67	PK2	35.8	-23	0	50.47	-	-	74	-23.53	93	248	H
9.648	35.14	PK2	36.9	-19	0	53.04	-	-	74	-20.96	194	205	H
* 4.824	39.57	PK2	33.9	-25.3	0	48.17	-	-	74	-25.83	159	351	V
* 4.824	31.59	MAv1	33.9	-25.3	0	40.19	54	-13.81	-	-	159	351	V
7.236	35.4	PK2	35.8	-23	0	48.2	-	-	74	-25.8	28	368	V
9.648	36.02	PK2	36.9	-19	0	53.92	-	-	74	-20.08	165	183	V

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

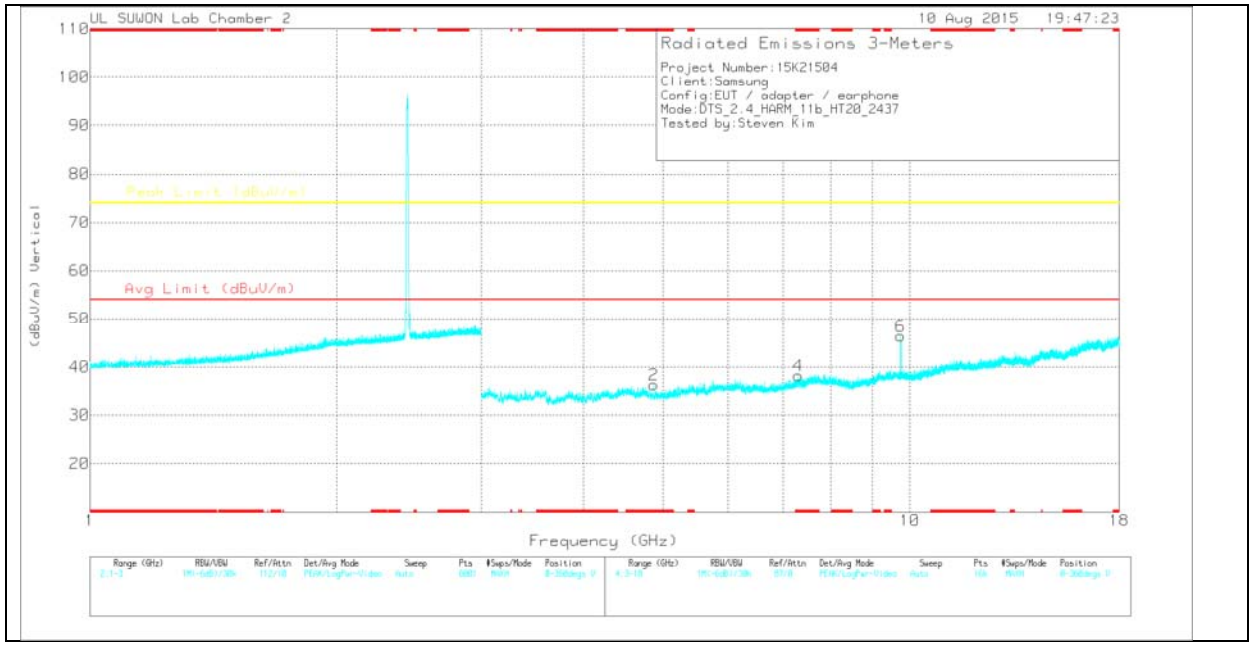
PK2 - KDB558074 Method: Maximum Peak

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(00168724)_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	33.75	PK	33.9	-25.2	0	42.45	-	-	74	-31.55	0-360	100	H
3	* 7.309	28.7	PK	35.9	-22.6	0	42	-	-	74	-32	0-360	200	H
5	9.748	29.05	PK	37	-19.3	0	46.75	-	-	74	-27.25	0-360	200	H
2	* 4.874	27.59	PK	33.9	-25.2	0	36.29	-	-	74	-37.71	0-360	200	V
4	* 7.31	24.95	PK	35.9	-22.6	0	38.25	-	-	74	-35.75	0-360	100	V
6	9.748	28.69	PK	37	-19.3	0	46.39	-	-	74	-27.61	0-360	200	V

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

PK – Peak detector

Radiated Emissions

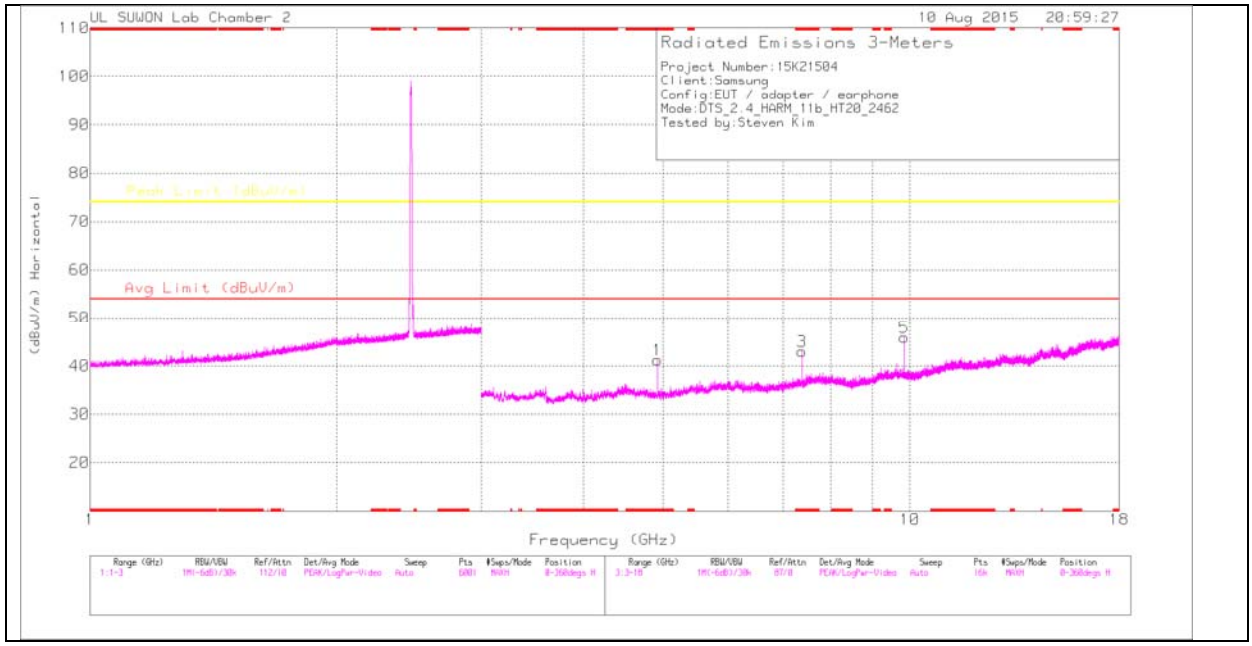
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.874	40.78	PK2	33.9	-25.2	0	49.48	-	-	74	-24.52	147	293	H
* 4.874	34.8	MAv1	33.9	-25.2	0	43.5	54	-10.5	-	-	147	293	H
* 7.312	38.36	PK2	35.9	-22.6	0	51.66	-	-	74	-22.34	168	222	H
* 7.31	30	MAv1	35.9	-22.6	0	43.3	54	-10.7	-	-	168	222	H
9.748	35.23	PK2	37	-19.3	0	52.93	-	-	74	-21.07	206	195	H
* 4.874	37.96	PK2	33.9	-25.2	0	46.66	-	-	74	-27.34	228	216	V
* 4.874	27.19	MAv1	33.9	-25.2	0	35.89	54	-18.11	-	-	228	216	V
* 7.312	38.46	PK2	35.9	-22.6	0	51.76	-	-	74	-22.24	188	327	V
* 7.31	29.37	MAv1	35.9	-22.6	0	42.67	54	-11.33	-	-	188	327	V
9.748	33.91	PK2	37	-19.3	0	51.61	-	-	74	-22.39	150	239	V

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

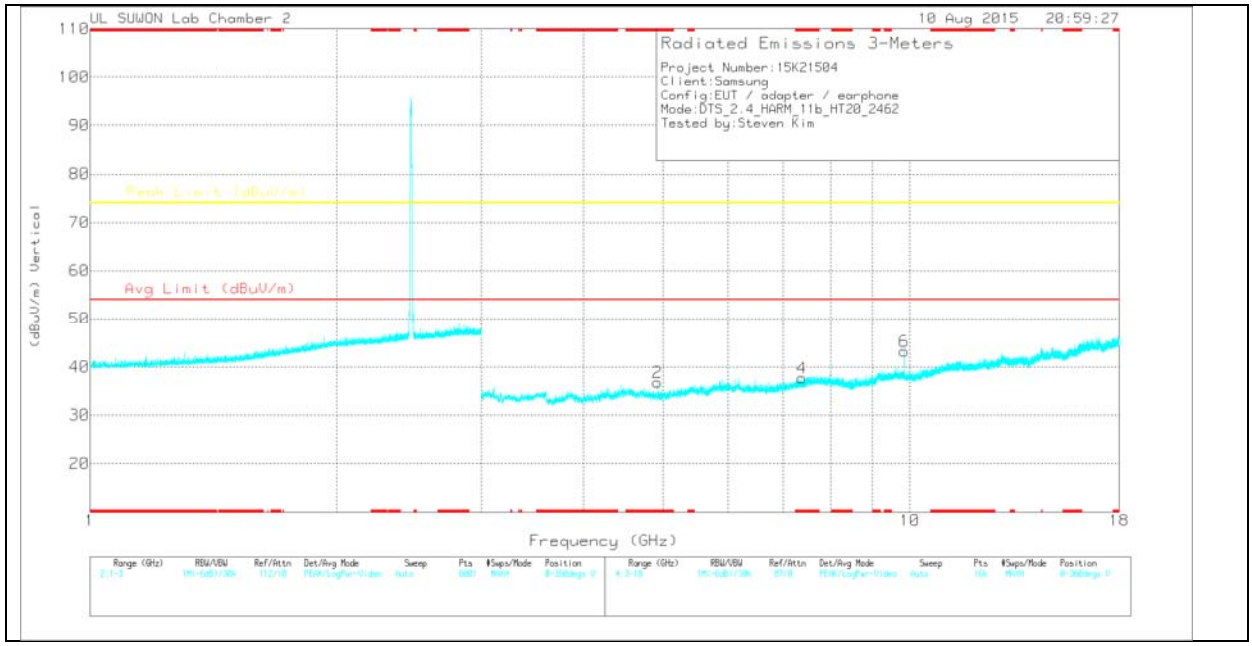
PK2 - KDB558074 Method: Maximum Peak

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(00168724)_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	* 4.924	32.44	PK	33.9	-25.1	0	41.24	-	-	74	-32.76	0-360	100	H
3	* 7.385	29.35	PK	35.9	-22.2	0	43.05	-	-	74	-30.95	0-360	200	H
5	9.848	27.99	PK	37.1	-19.2	0	45.89	-	-	74	-28.11	0-360	200	H
2	* 4.924	27.97	PK	33.9	-25.1	0	36.77	-	-	74	-37.23	0-360	200	V
4	* 7.385	24.02	PK	35.9	-22.2	0	37.72	-	-	74	-36.28	0-360	100	V
6	9.848	25.42	PK	37.1	-19.2	0	43.32	-	-	74	-30.68	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(00168724)_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	39.7	PK2	33.9	-25.1	0	48.5	-	-	74	-25.5	158	285	H
* 4.924	32.97	MAv1	33.9	-25.1	0	41.77	54	-12.23	-	-	158	285	H
* 7.387	38.45	PK2	35.9	-22.2	0	52.15	-	-	74	-21.85	175	311	H
* 7.385	29.61	MAv1	35.9	-22.2	0	43.31	54	-10.69	-	-	175	311	H
9.848	34.49	PK2	37.1	-19.2	0	52.39	-	-	74	-21.61	202	106	H
* 4.924	37.62	PK2	33.9	-25.1	0	46.42	-	-	74	-27.58	197	151	V
* 4.924	27.66	MAv1	33.9	-25.1	0	36.46	54	-17.54	-	-	197	151	V
* 7.385	37.72	PK2	35.9	-22.2	0	51.42	-	-	74	-22.58	194	318	V
* 7.385	28.35	MAv1	35.9	-22.2	0	42.05	54	-11.95	-	-	194	318	V
9.848	34.92	PK2	37.1	-19.2	0	52.82	-	-	74	-21.18	150	148	V

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

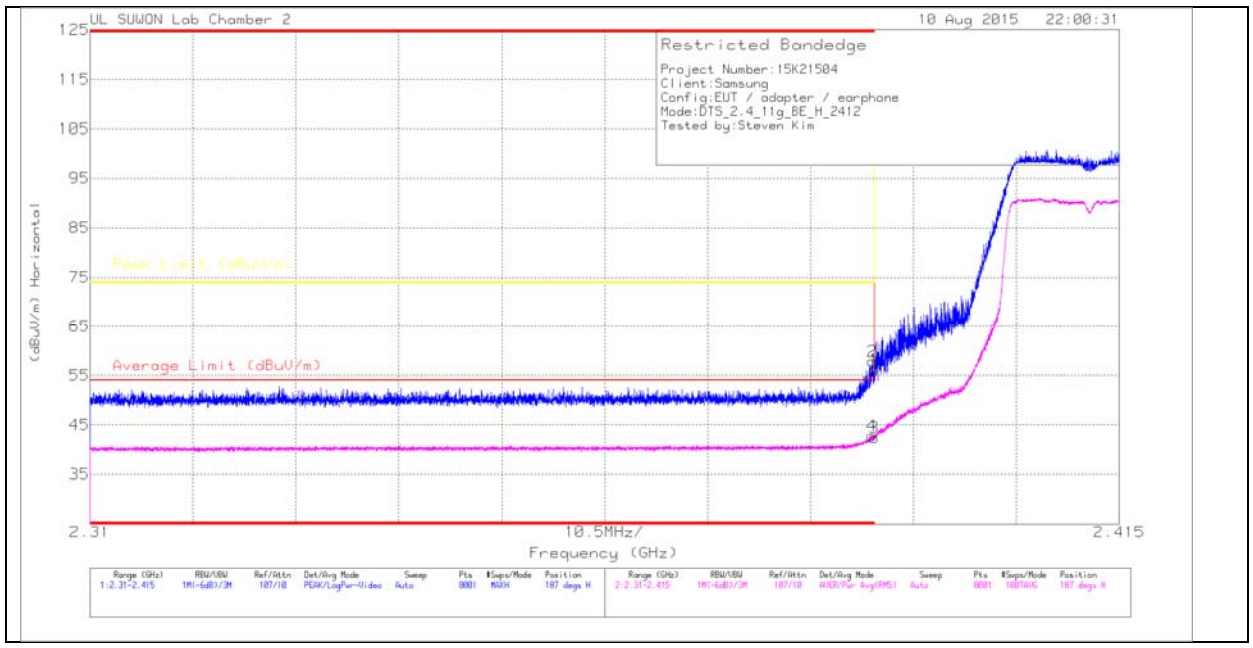
PK2 - KDB558074 Method: Maximum Peak

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

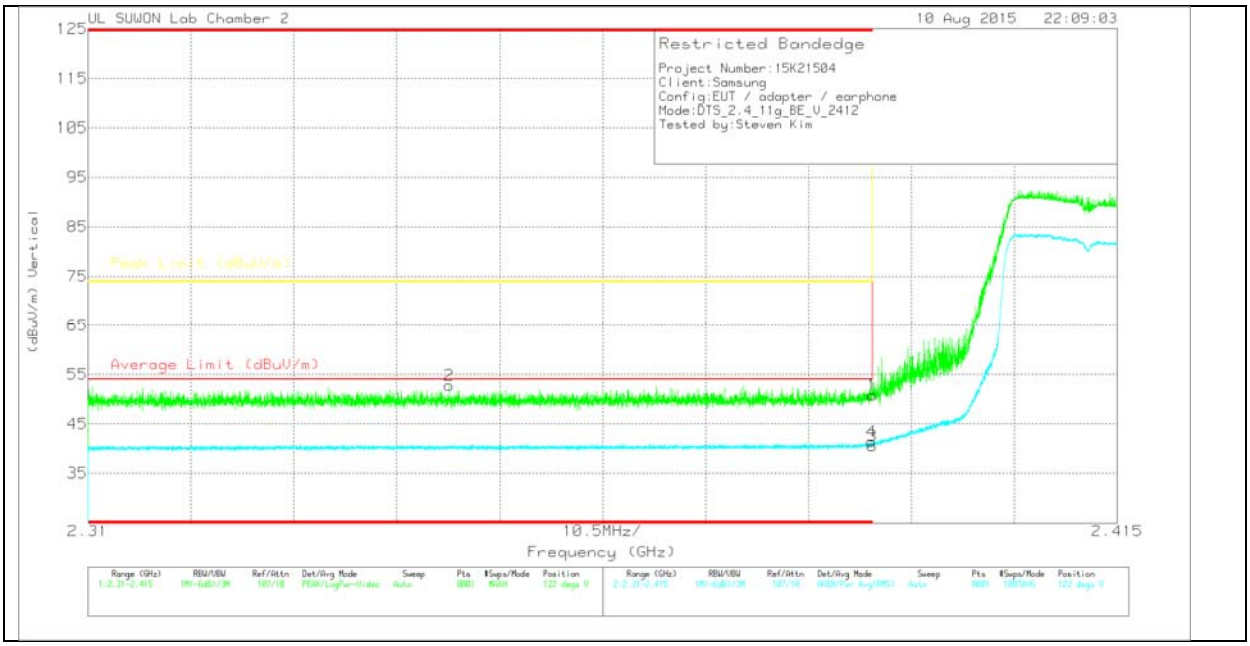
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	44.04	Pk	31.7	-19.5	0	56.24	-	-	74	-17.76	187	135	H
2	* 2.39	45.68	Pk	31.7	-19.5	0	57.88	-	-	74	-16.12	187	135	H
3	* 2.39	29.94	RMS	31.7	-19.5	.29	42.43	54	-11.57	-	-	187	135	H
4	* 2.39	30.25	RMS	31.7	-19.5	.29	42.74	54	-11.26	-	-	187	135	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(00168724)_150619	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	38.62	Pk	31.7	-19.5	0	50.82	-	-	74	-23.18	122	351	V
2	* 2.347	40.76	Pk	31.6	-19.6	0	52.76	-	-	74	-21.24	122	351	V
3	* 2.39	28.02	RMS	31.7	-19.5	.29	40.51	54	-13.49	-	-	122	351	V
4	* 2.39	28.9	RMS	31.7	-19.5	.29	41.39	54	-12.61	-	-	122	351	V

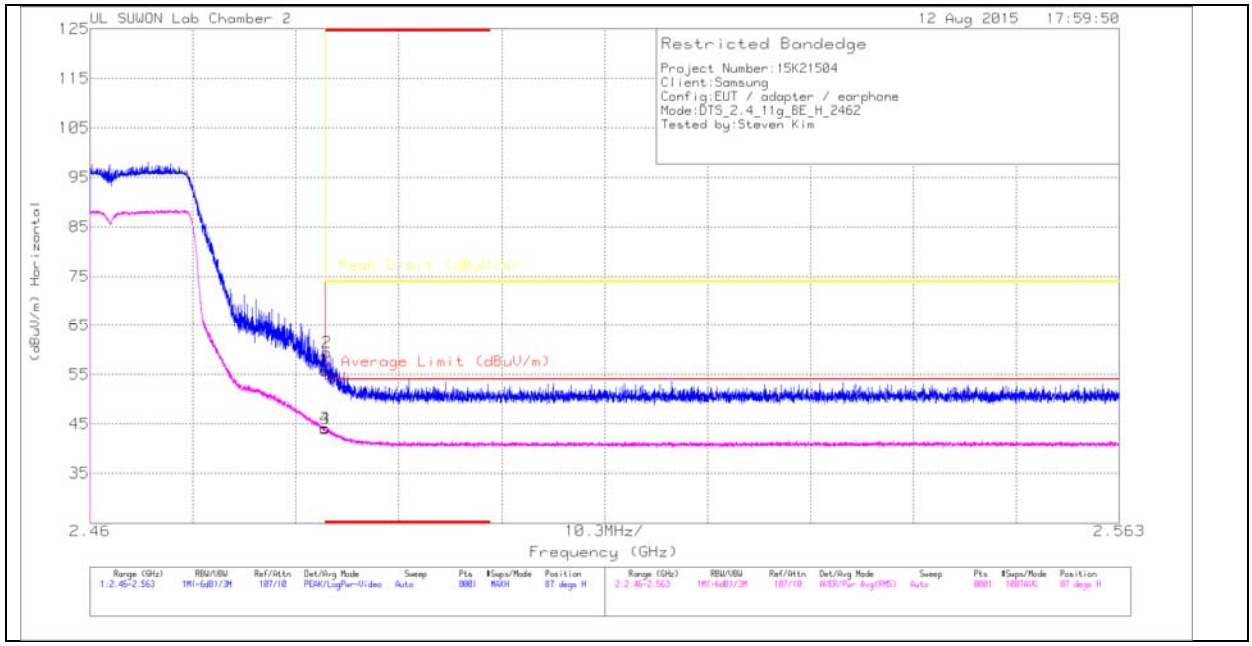
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

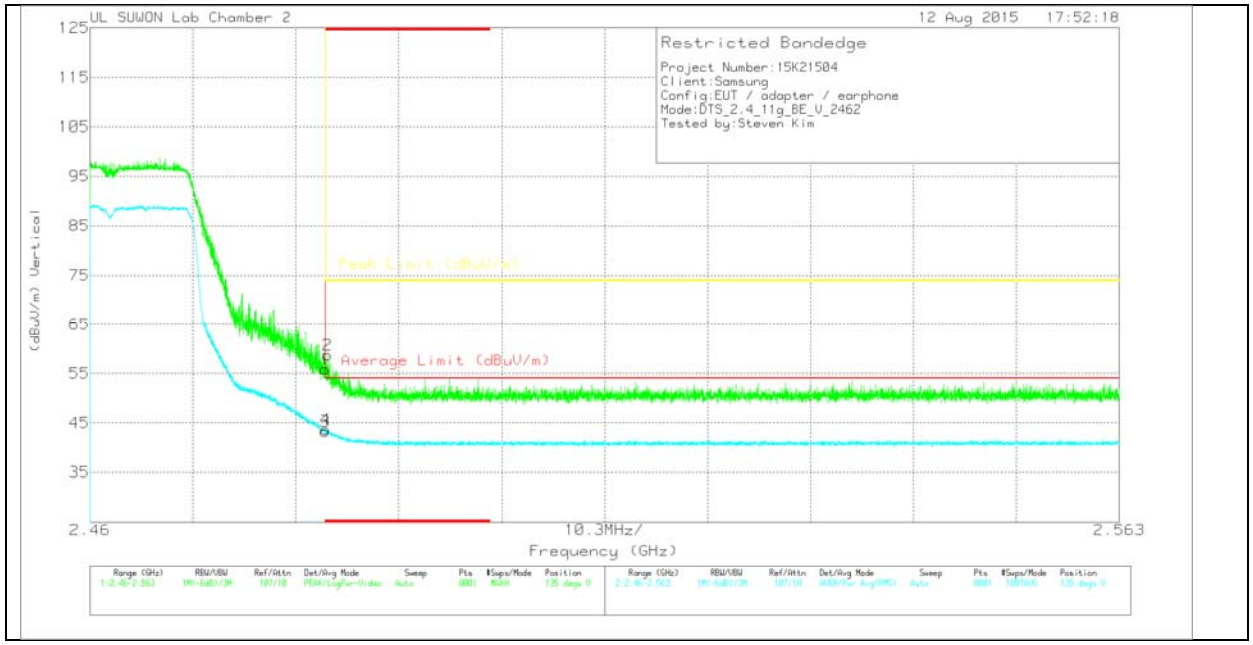
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	43.43	Pk	31.8	-19.4	0	55.83	-	-	74	-18.17	87	172	H
2	* 2.484	47.08	Pk	31.8	-19.4	0	59.48	-	-	74	-14.52	87	172	H
3	* 2.484	31.29	RMS	31.8	-19.4	.29	43.98	54	-10.02	-	-	87	172	H
4	* 2.484	31.49	RMS	31.8	-19.4	.29	44.18	54	-9.82	-	-	87	172	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(00168724)_150619	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	43.52	Pk	31.8	-19.4	0	55.92	-	-	74	-18.08	135	215	V
2	* 2.484	46.37	Pk	31.8	-19.4	0	58.77	-	-	74	-15.23	135	215	V
3	* 2.484	30.62	RMS	31.8	-19.4	.29	43.31	54	-10.69	-	-	135	215	V
4	* 2.484	30.98	RMS	31.8	-19.4	.29	43.67	54	-10.33	-	-	135	215	V

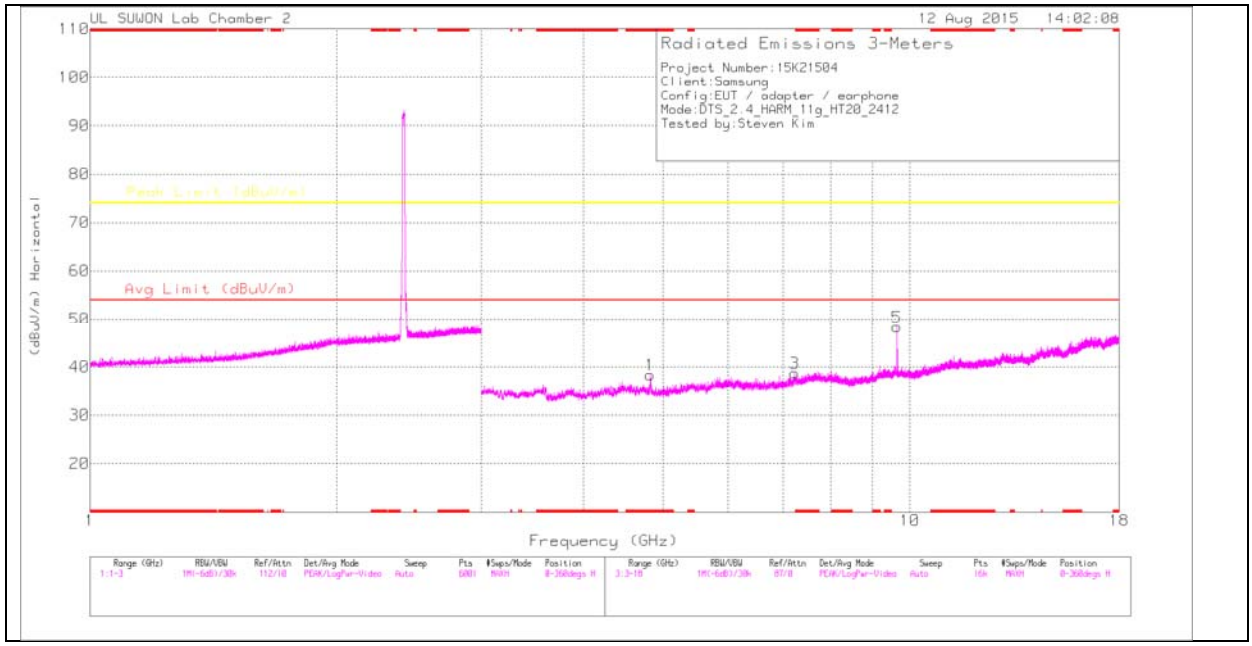
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

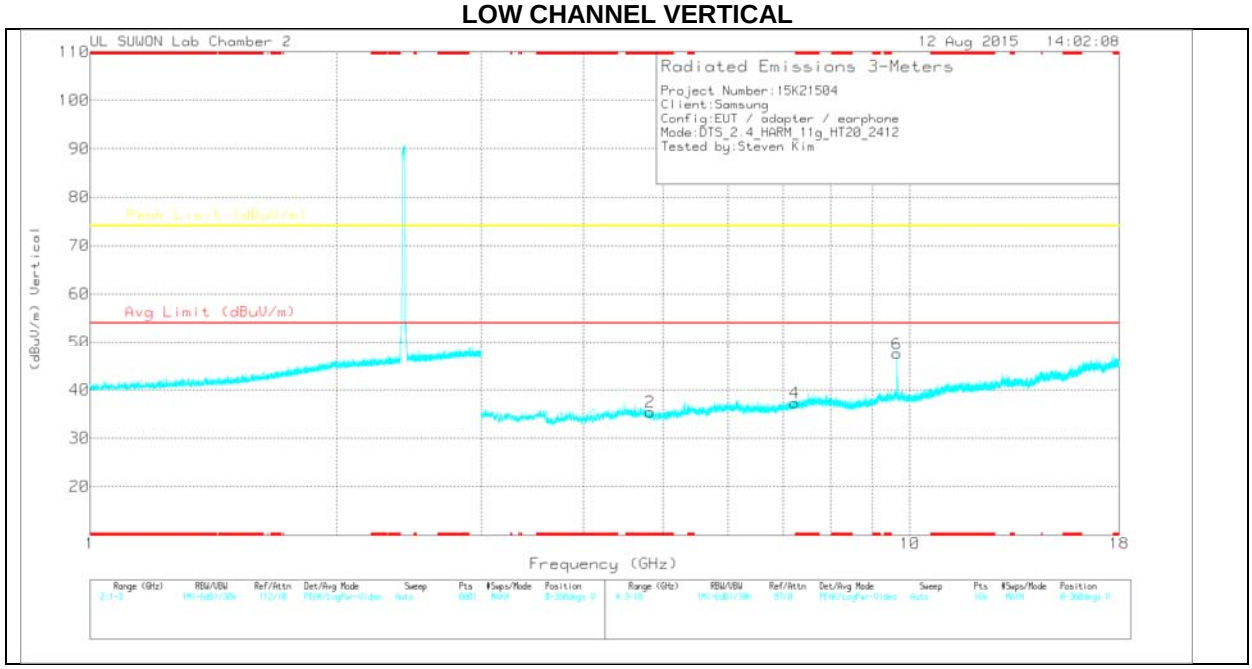
RMS - RMS detection

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(00168724)_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	29.78	PK	33.9	-25.3	0	38.38	-	-	74	-35.62	0-360	100	H
3	7.232	25.92	PK	35.8	-23	0	38.72	-	-	74	-35.28	0-360	200	H
5	9.648	30.47	PK	36.9	-19	0	48.37	-	-	74	-25.63	0-360	200	H
2	* 4.823	26.8	PK	33.9	-25.3	0	35.4	-	-	74	-38.6	0-360	200	V
4	7.238	24.55	PK	35.8	-23	0	37.35	-	-	74	-36.65	0-360	200	V
6	9.648	29.62	PK	36.9	-19	0	47.52	-	-	74	-26.48	0-360	200	V

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

PK – Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_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
9.648	35.83	PK2	36.9	-19	0	53.73	-	-	74	-20.27	193	163	H
9.648	36.22	PK2	36.9	-19	0	54.12	-	-	74	-19.88	159	185	V

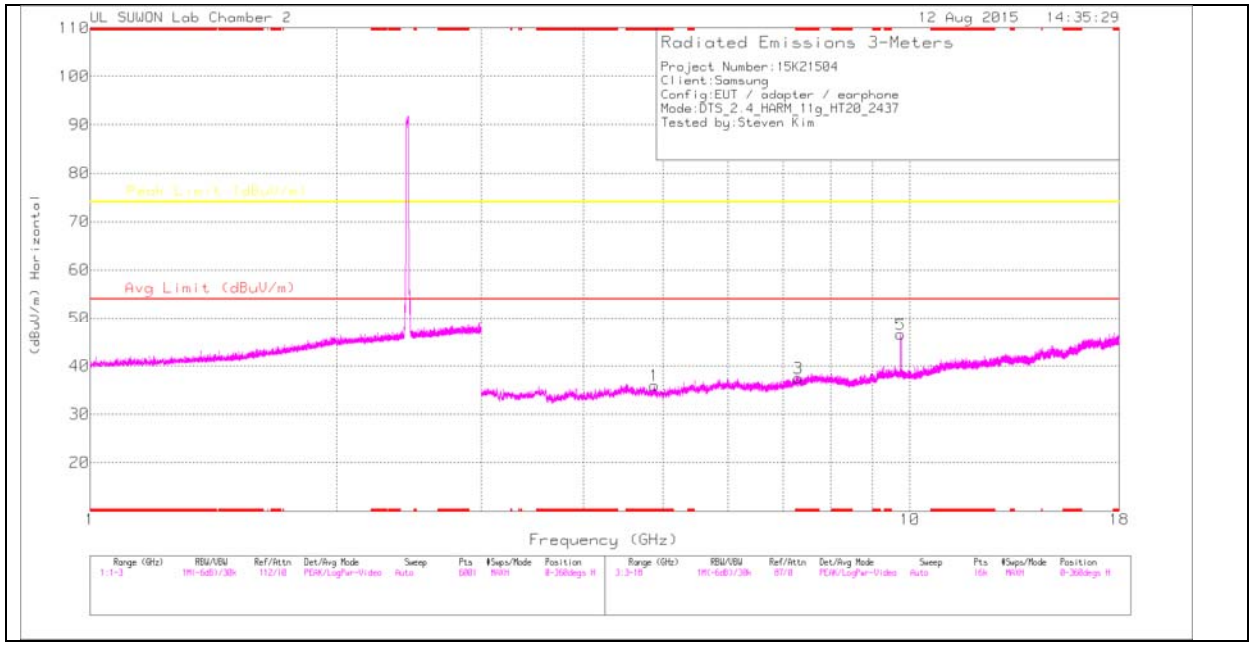
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

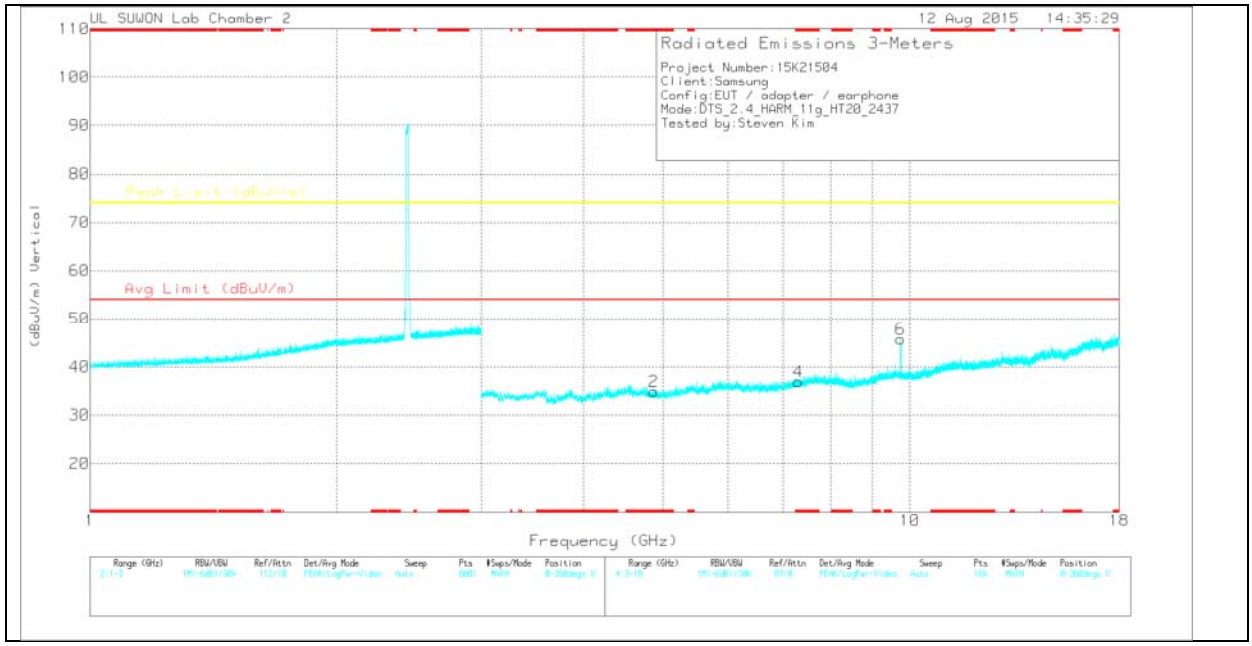
NOTE : Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 443-823, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

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(00168724)_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	* 4.876	27.28	PK	33.9	-25.2	0	35.98	-	-	74	-38.02	0-360	100	H
3	* 7.31	24.15	PK	35.9	-22.6	0	37.45	-	-	74	-36.55	0-360	200	H
5	9.748	28.86	PK	37	-19.3	0	46.56	-	-	74	-27.44	0-360	200	H
2	* 4.874	26.24	PK	33.9	-25.2	0	34.94	-	-	74	-39.06	0-360	100	V
4	* 7.309	23.62	PK	35.9	-22.6	0	36.92	-	-	74	-37.08	0-360	100	V
6	9.748	28.09	PK	37	-19.3	0	45.79	-	-	74	-28.21	0-360	200	V

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

PK – Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_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
9.748	35.22	PK2	37	-19.3	0	52.92	-	-	74	-21.08	206	137	H
9.748	34.87	PK2	37	-19.3	0	52.57	-	-	74	-21.43	144	132	V

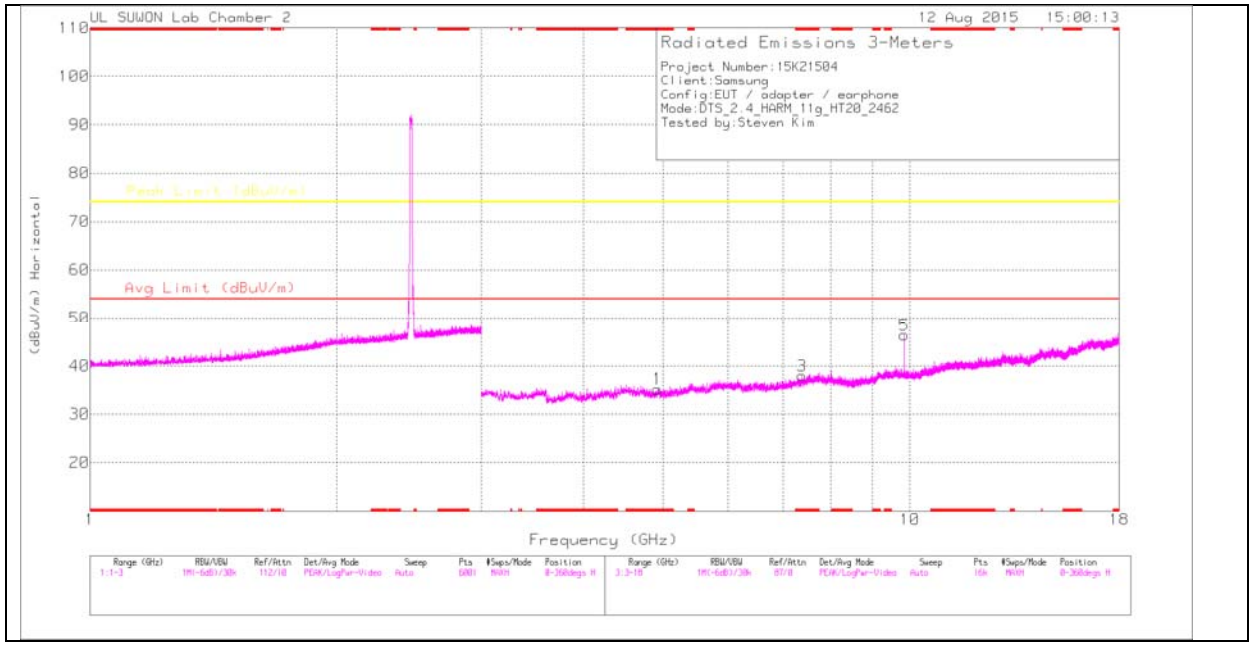
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

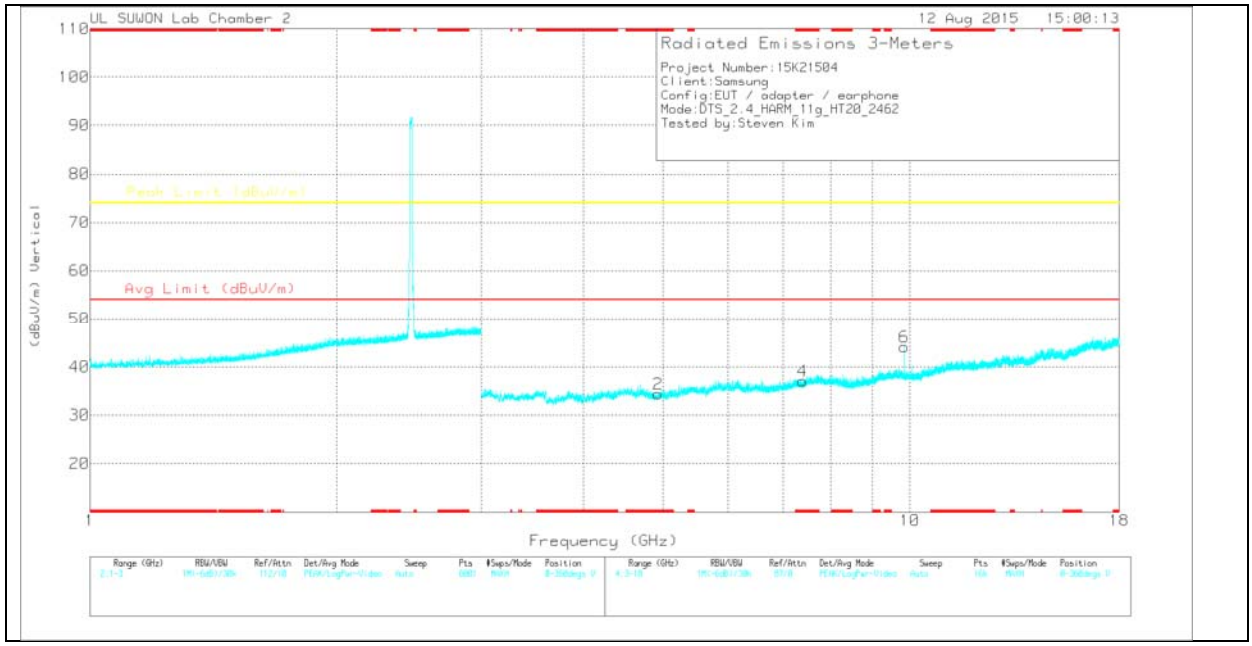
NOTE : Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 443-823, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

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(00168724)_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	26.44	PK	33.9	-25.1	0	35.24	-	-	74	-38.76	0-360	200	H
3	* 7.385	24.21	PK	35.9	-22.2	0	37.91	-	-	74	-36.09	0-360	100	H
5	9.848	28.49	PK	37.1	-19.2	0	46.39	-	-	74	-27.61	0-360	200	H
2	* 4.929	25.58	PK	33.9	-25.1	0	34.38	-	-	74	-39.62	0-360	100	V
4	* 7.392	23.31	PK	35.9	-22.1	0	37.11	-	-	74	-36.89	0-360	100	V
6	9.848	26.24	PK	37.1	-19.2	0	44.14	-	-	74	-29.86	0-360	200	V

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

PK – Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_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
9.848	36.01	PK2	37.1	-19.2	0	53.91	-	-	74	-20.09	200	163	H
9.848	34.39	PK2	37.1	-19.2	0	52.29	-	-	74	-21.71	153	159	V

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

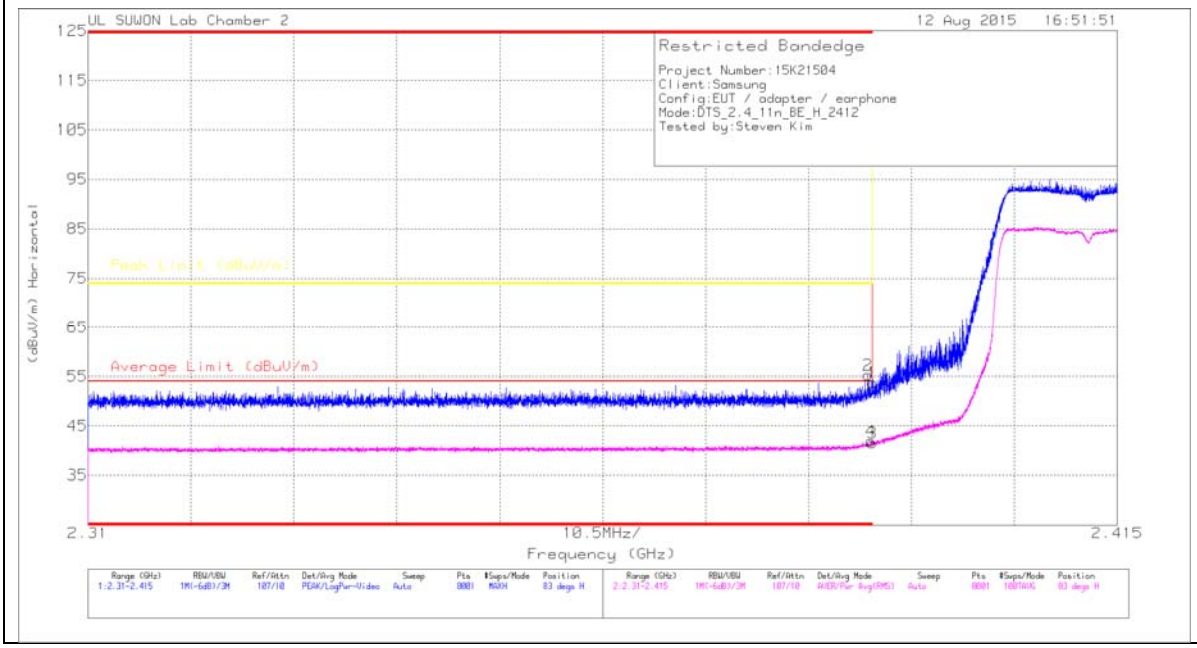
PK2 - KDB558074 Method: Maximum Peak

NOTE : Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

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

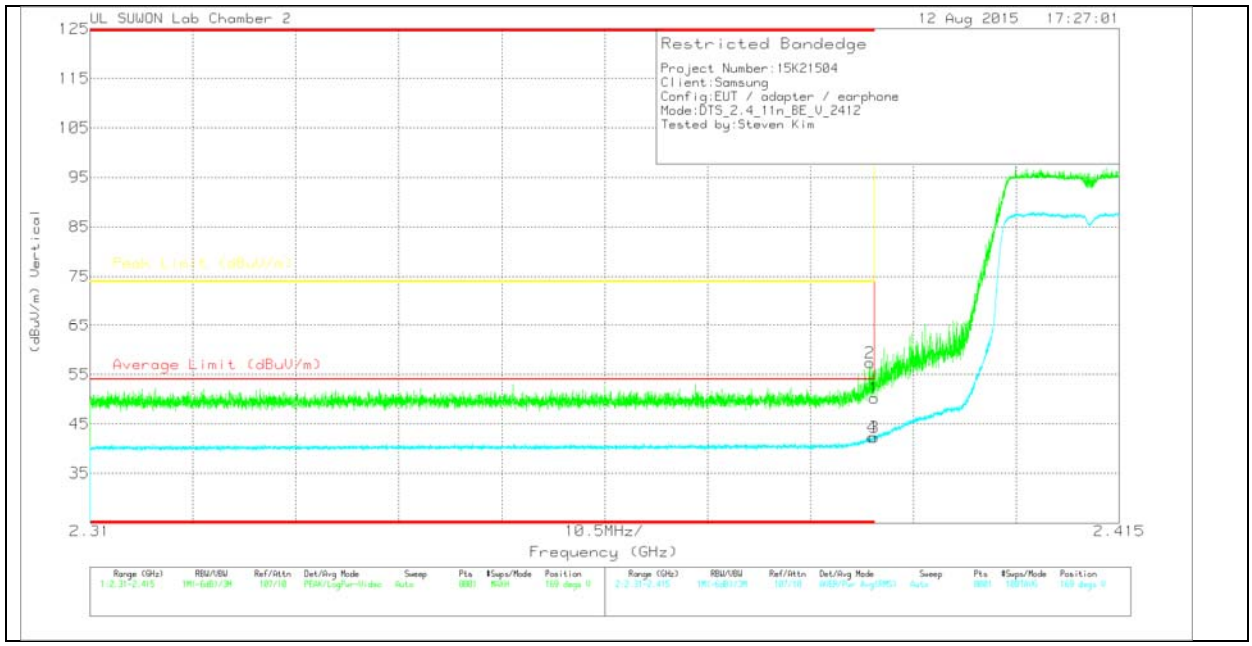
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	41.57	Pk	31.7	-19.5	0	53.77	-	-	74	-20.23	83	103	H
2	* 2.39	43.04	Pk	31.7	-19.5	0	55.24	-	-	74	-18.76	83	103	H
3	* 2.39	29	RMS	31.7	-19.5	.32	41.52	54	-12.48	-	-	83	103	H
4	* 2.39	29.4	RMS	31.7	-19.5	.32	41.92	54	-12.08	-	-	83	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

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	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	38.03	Pk	31.7	-19.5	0	50.23	-	-	74	-23.77	169	137	V
2	* 2.39	45.19	Pk	31.7	-19.5	0	57.39	-	-	74	-16.61	169	137	V
3	* 2.39	29.74	RMS	31.7	-19.5	.32	42.26	54	-11.74	-	-	169	137	V
4	* 2.39	29.79	RMS	31.7	-19.5	.32	42.31	54	-11.69	-	-	169	137	V

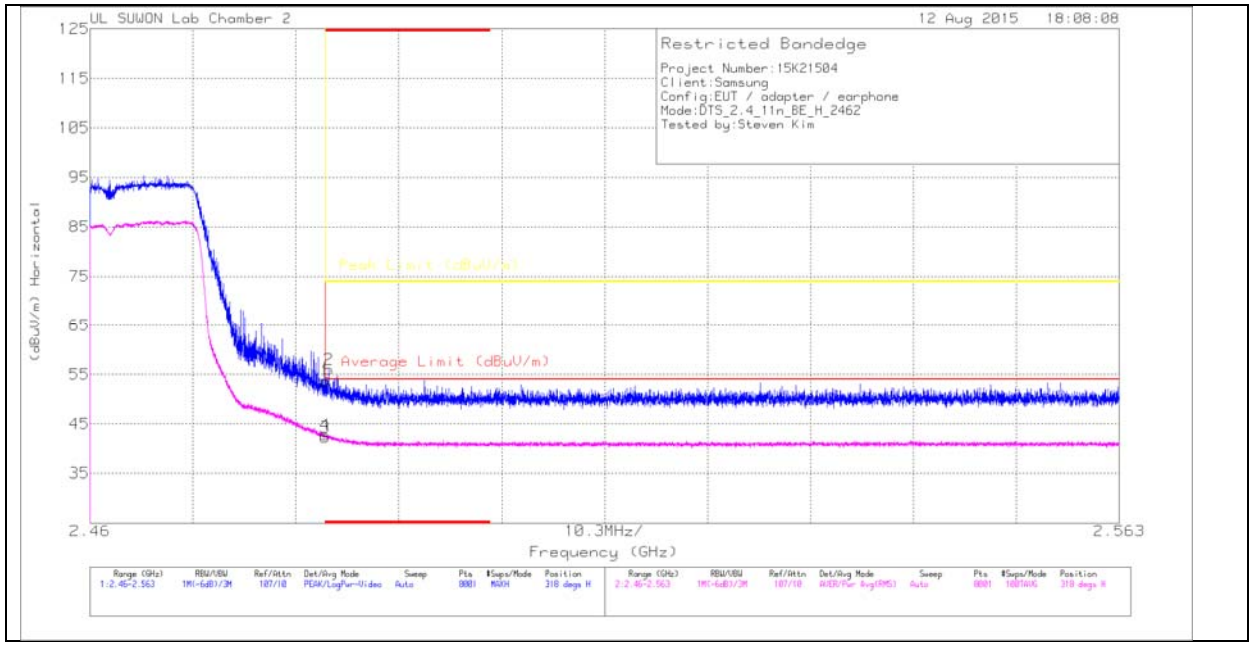
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

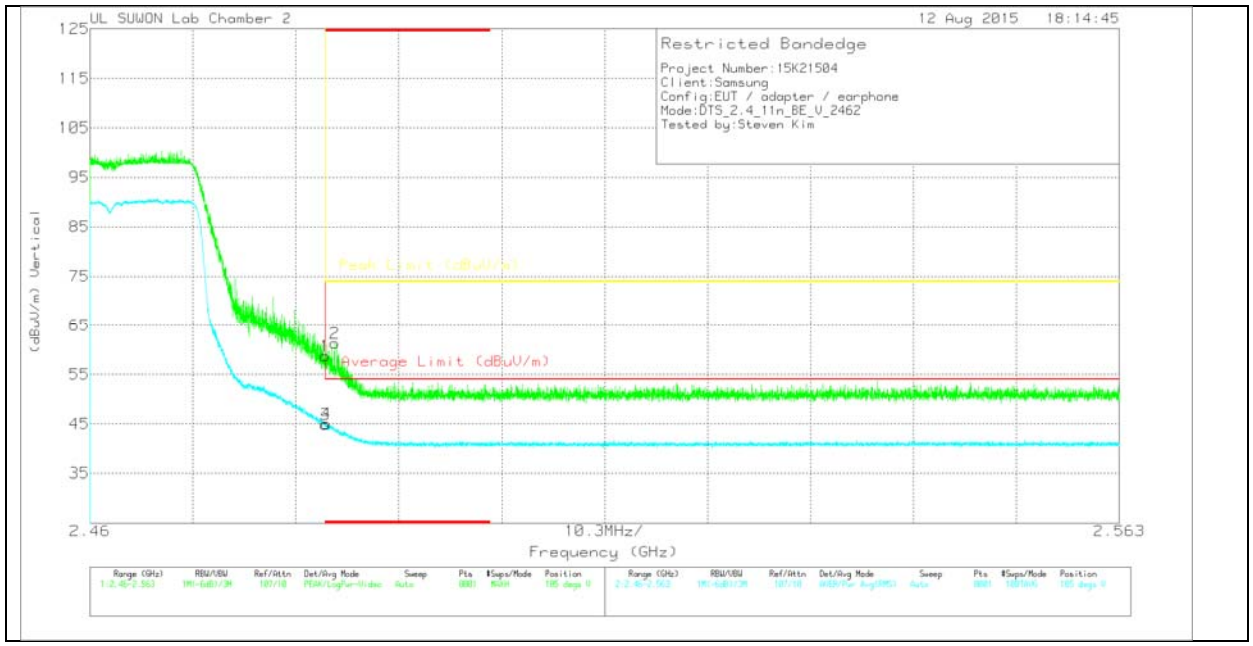
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	41.3	Pk	31.8	-19.4	0	53.7	-	-	74	-20.3	318	110	H
2	* 2.484	43.59	Pk	31.8	-19.4	0	55.99	-	-	74	-18.01	318	110	H
3	* 2.484	29.6	RMS	31.8	-19.4	.32	42.32	54	-11.68	-	-	318	110	H
4	* 2.484	30.02	RMS	31.8	-19.4	.32	42.74	54	-11.26	-	-	318	110	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(00168724)_150619	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	46.29	Pk	31.8	-19.4	0	58.69	-	-	74	-15.31	185	342	V
2	* 2.484	48.91	Pk	31.8	-19.4	0	61.31	-	-	74	-12.69	185	342	V
3	* 2.484	32.22	RMS	31.8	-19.4	.32	44.94	54	-9.06	-	-	185	342	V
4	* 2.484	32.28	RMS	31.8	-19.4	.32	45	54	-9	-	-	185	342	V

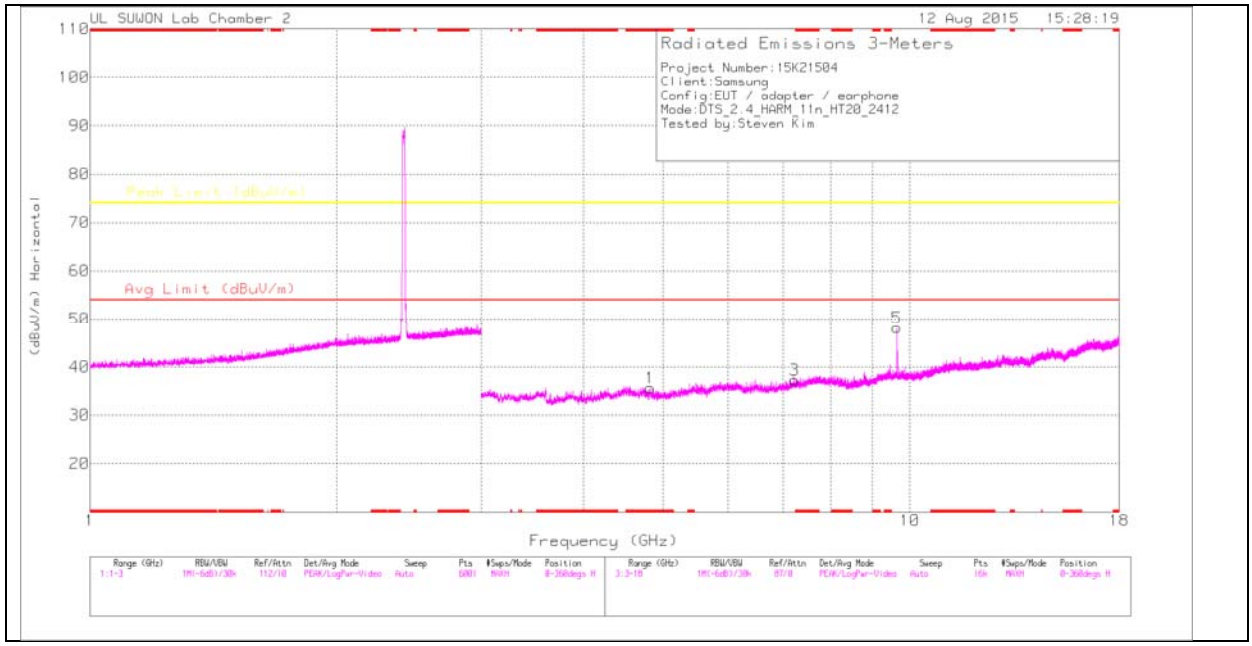
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

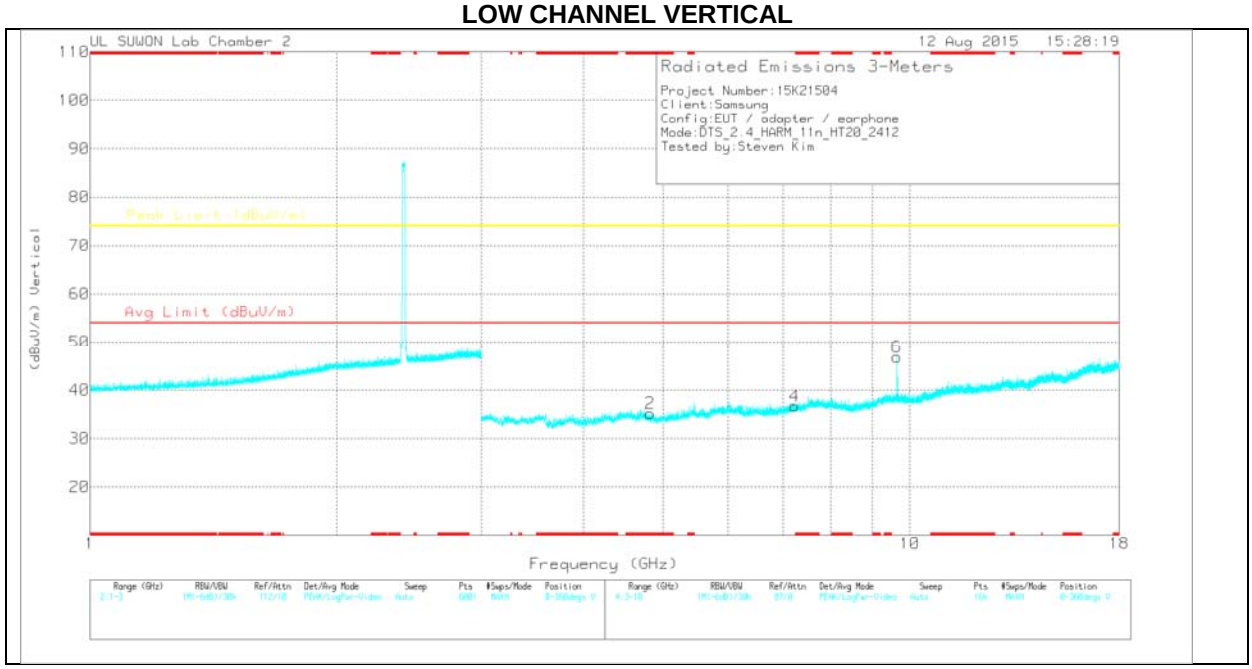
RMS - RMS detection

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(00168724)_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	* 4.82	27.08	PK	33.9	-25.3	0	35.68	-	-	74	-38.32	0-360	200	H
3	7.234	24.57	PK	35.8	-23	0	37.37	-	-	74	-36.63	0-360	100	H
5	9.648	30.35	PK	36.9	-19	0	48.25	-	-	74	-25.75	0-360	200	H
2	* 4.82	26.64	PK	33.9	-25.3	0	35.24	-	-	74	-38.76	0-360	100	V
4	7.234	23.95	PK	35.8	-23	0	36.75	-	-	74	-37.25	0-360	100	V
6	9.648	28.98	PK	36.9	-19	0	46.88	-	-	74	-27.12	0-360	200	V

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

PK – Peak detector

Radiated Emissions

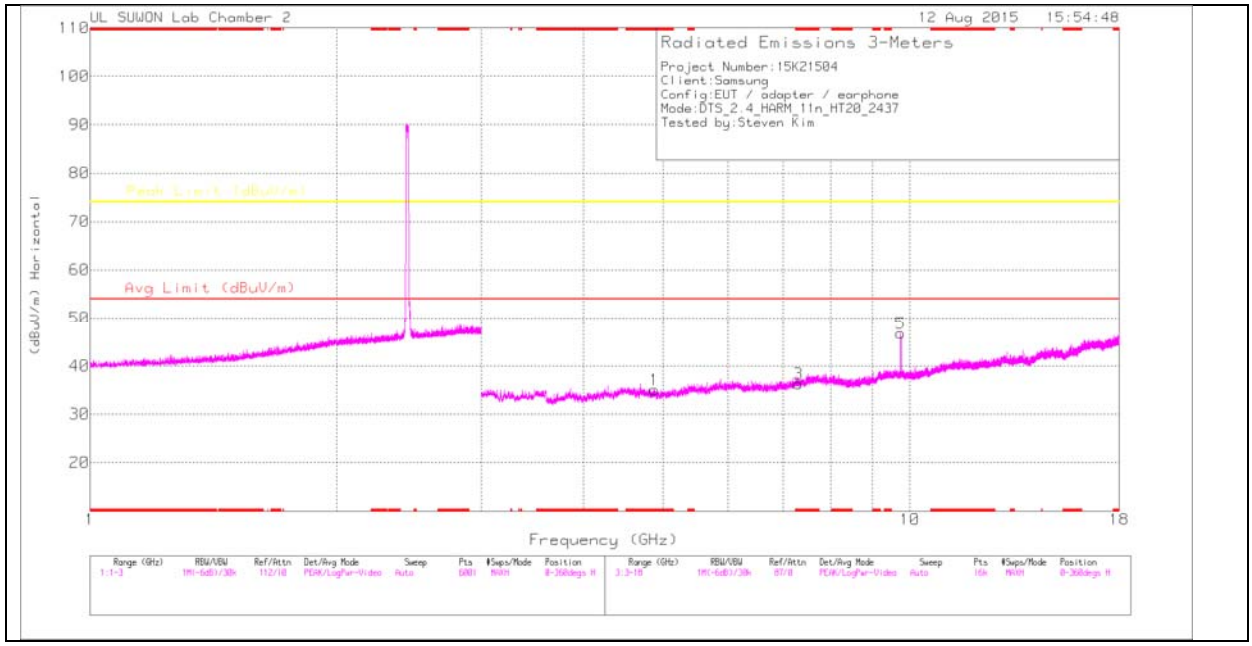
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
9.648	35.73	PK2	36.9	-19	0	53.63	-	-	74	-20.37	194	174	H
9.648	35.9	PK2	36.9	-19	0	53.8	-	-	74	-20.2	163	161	V

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

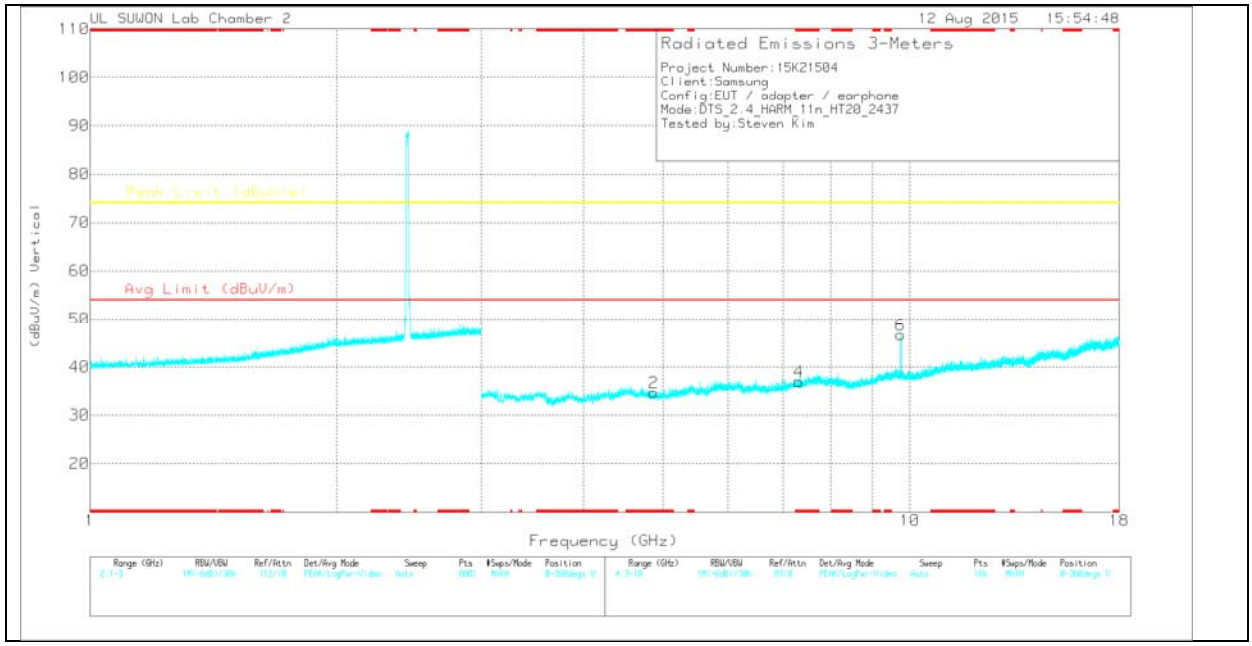
PK2 - KDB558074 Method: Maximum Peak

NOTE : Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

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(00168724)_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	* 4.877	26.34	PK	33.9	-25.2	0	35.04	-	-	74	-38.96	0-360	100	H
3	* 7.308	23.04	PK	35.9	-22.6	0	36.34	-	-	74	-37.66	0-360	100	H
5	9.748	29.08	PK	37	-19.3	0	46.78	-	-	74	-27.22	0-360	200	H
2	* 4.874	26.03	PK	33.9	-25.2	0	34.73	-	-	74	-39.27	0-360	100	V
4	* 7.316	23.7	PK	35.9	-22.6	0	37	-	-	74	-37	0-360	100	V
6	9.748	29	PK	37	-19.3	0	46.7	-	-	74	-27.3	0-360	200	V

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

PK – Peak detector

Radiated Emissions

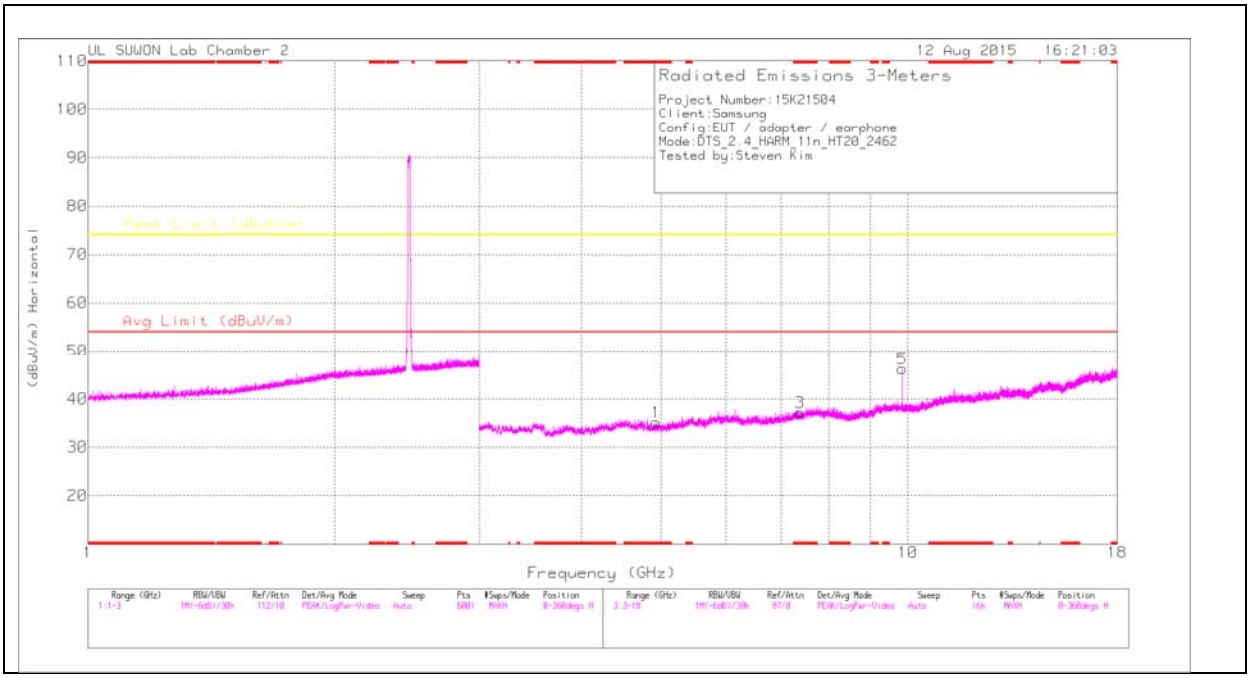
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
9.748	35.62	PK2	37	-19.3	0	53.32	-	-	74	-20.68	209	148	H
9.748	34.86	PK2	37	-19.3	0	52.56	-	-	74	-21.44	156	212	V

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

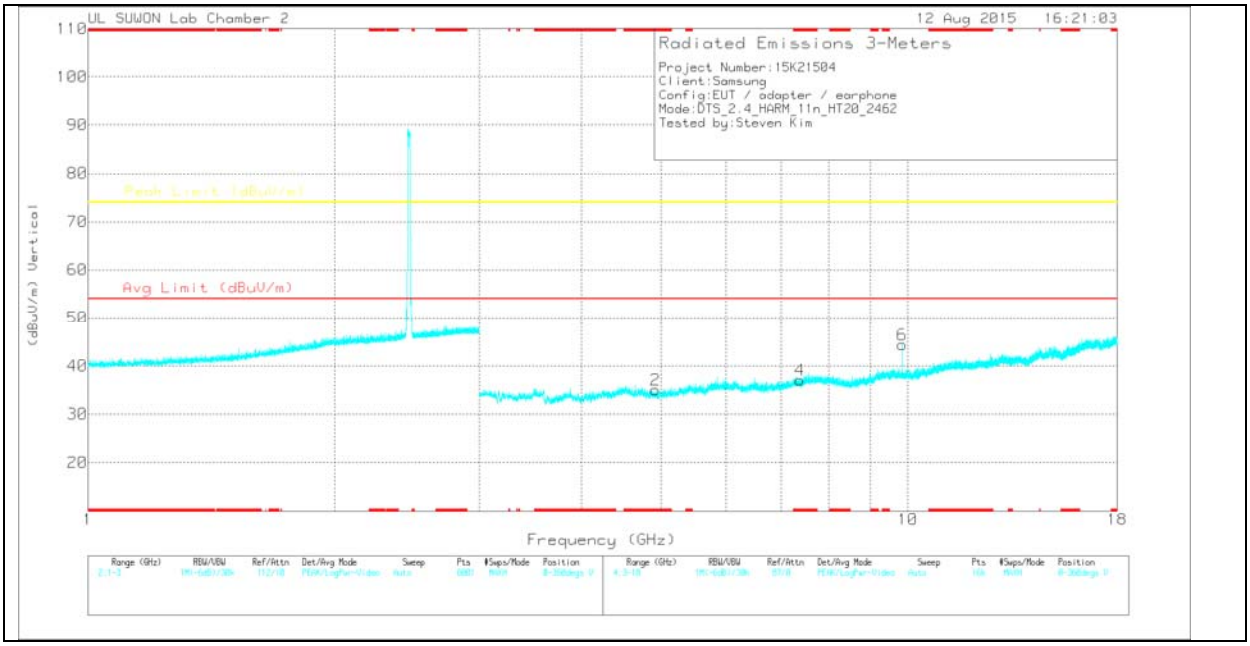
PK2 - KDB558074 Method: Maximum Peak

NOTE : Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

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(00168724)_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	* 4.927	26.37	PK	33.9	-25.1	0	35.17	-	-	74	-38.83	0-360	100	H
3	* 7.383	23.5	PK	35.9	-22.2	0	37.2	-	-	74	-36.8	0-360	100	H
5	9.848	28.38	PK	37.1	-19.2	0	46.28	-	-	74	-27.72	0-360	200	H
2	* 4.922	26.27	PK	33.9	-25.1	0	35.07	-	-	74	-38.93	0-360	200	V
4	* 7.388	23.34	PK	35.9	-22.2	0	37.04	-	-	74	-36.96	0-360	100	V
6	9.848	26.51	PK	37.1	-19.2	0	44.41	-	-	74	-29.59	0-360	200	V

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

PK – Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_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
9.848	35.01	PK2	37.1	-19.2	0	52.91	-	-	74	-21.09	206	188	H
9.848	33.83	PK2	37.1	-19.2	0	51.73	-	-	74	-22.27	159	220	V

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

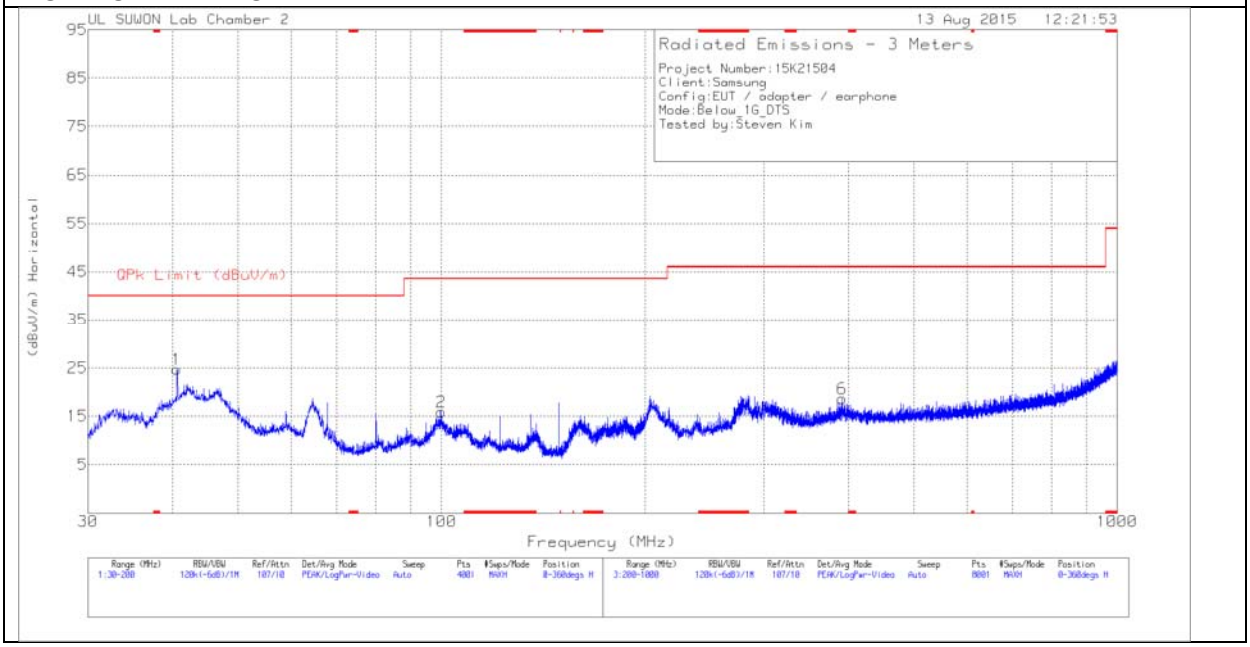
PK2 - KDB558074 Method: Maximum Peak

NOTE : Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

11.3. WORST-CASE BELOW 1 GHz

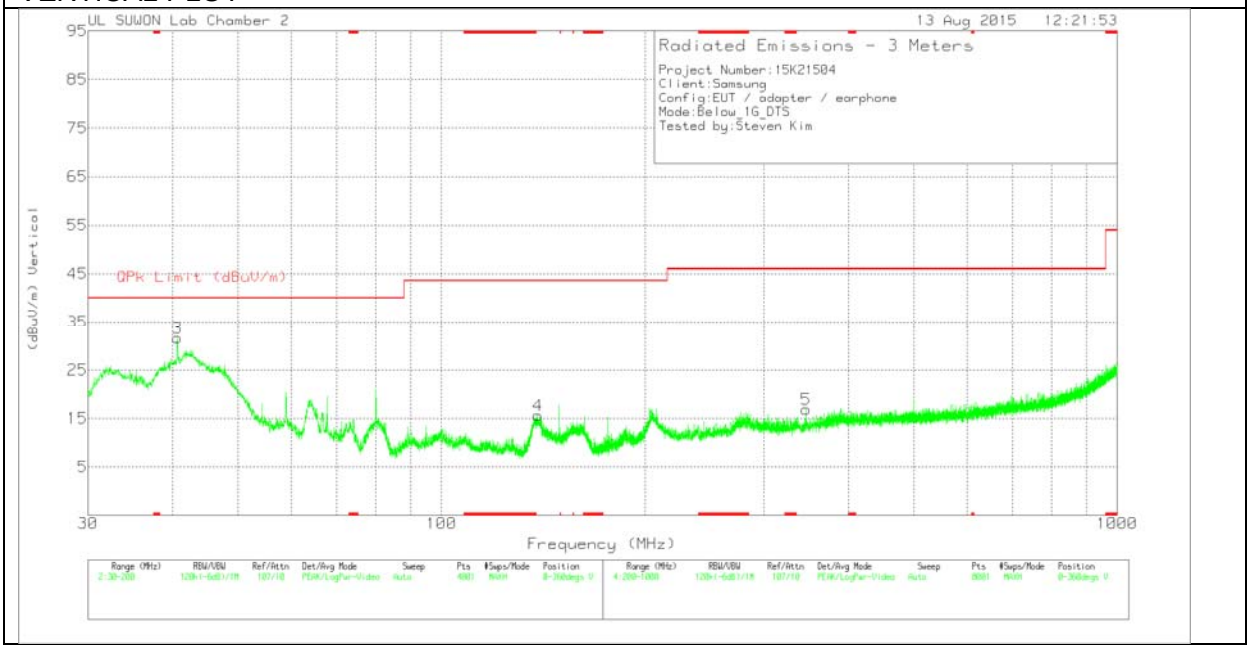
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



Below 1G Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163-749	Below_1G	DC Corr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	40.625	42.62	Pk	12.9	-30.8	0	24.72	40	-15.28	0-360	400	H
2	99.955	34.76	Pk	11.6	-30.5	0	15.86	43.52	-27.66	0-360	300	H
3	40.6675	49.58	Pk	12.9	-30.8	0	31.68	40	-8.32	0-360	100	V
4	139.0125	38.01	Pk	8	-30.4	0	15.61	43.52	-27.91	0-360	100	V
6	391.5	33.4	Pk	15.1	-29.8	0	18.7	46.02	-27.32	0-360	100	H
5	346.7	32.51	Pk	14.3	-29.9	0	16.91	46.02	-29.11	0-360	100	V

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.

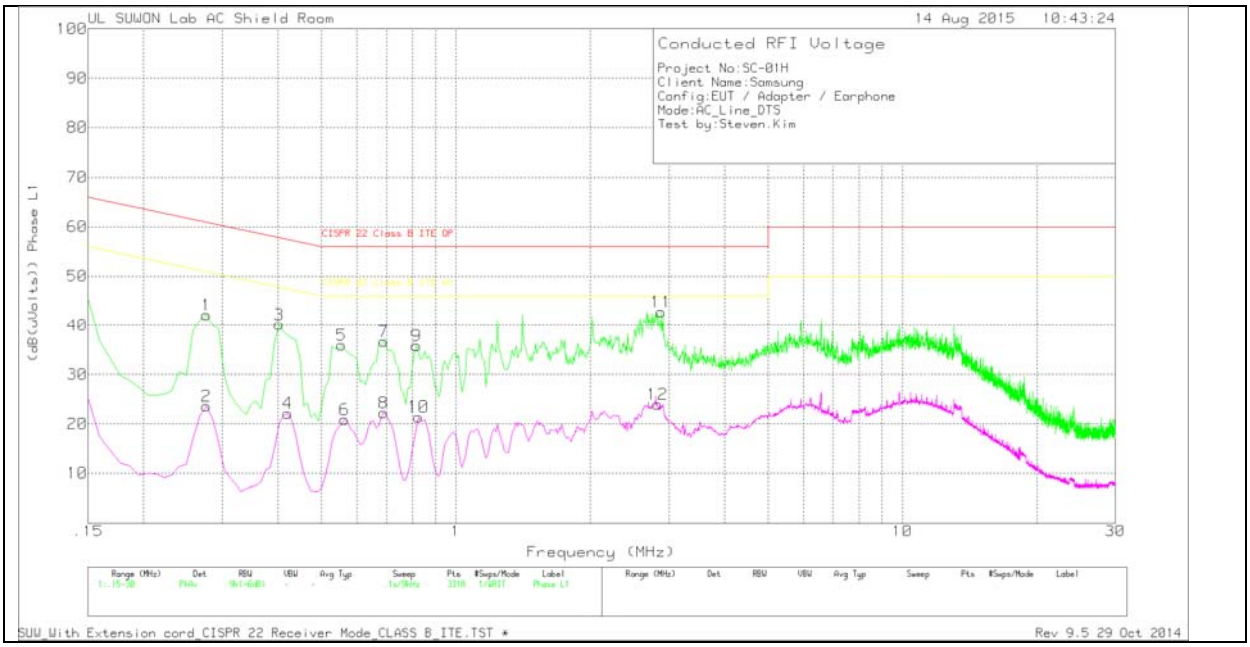
Line conducted data is recorded for both NEUTRAL and HOT lines.

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 443-823, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

RESULTS

WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

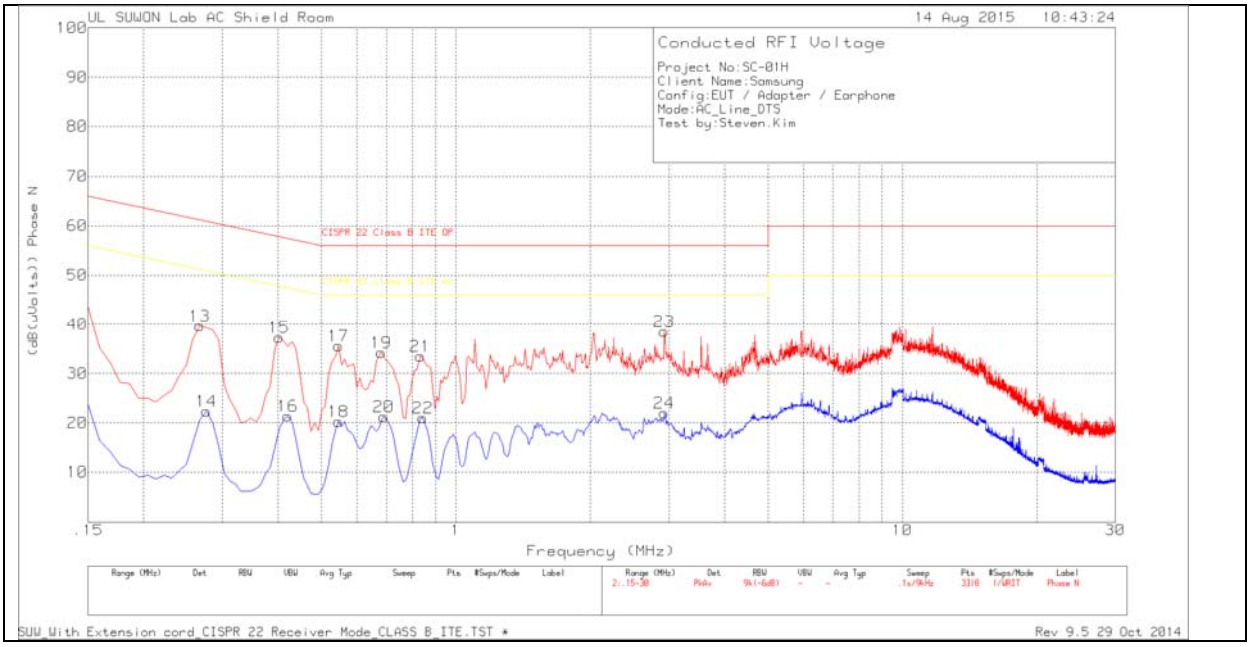
Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_with ex-cord_L1	CE Shield Room	Corrected Reading (dBuV))	CISPR 22 Class B ITE QP	Margin (dB)	CISPR 22 Class B ITE AV	Margin (dB)
1	.276	32.38	Pk	9.8	0	42.18	60.94	-18.76	-	-
2	.276	13.83	Av	9.8	0	23.63	-	-	50.94	-27.31
3	.402	30.06	Pk	10.1	0	40.16	57.81	-17.65	-	-
4	.42	12.07	Av	10.1	0	22.17	-	-	47.45	-25.28
5	.555	25.92	Pk	10.1	0	36.02	56	-19.98	-	-
6	.564	10.74	Av	10.1	0	20.84	-	-	46	-25.16
7	.69	26.57	Pk	10.1	0	36.67	56	-19.33	-	-
8	.69	12.15	Av	10.1	0	22.25	-	-	46	-23.75
9	.816	25.85	Pk	10	0	35.85	56	-20.15	-	-
10	.825	11.43	Av	10	0	21.43	-	-	46	-24.57
11	2.886	32.87	Pk	9.8	.1	42.77	56	-13.23	-	-
12	2.832	14.12	Av	9.8	.1	24.02	-	-	46	-21.98

Pk - Peak detector

Av - Average detection

LINE 2 PLOT



LINE 2 RESULTS

Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_with ex-cord_N	CE Shield Room	Corrected Reading (dBuV)	CISPR 22 Class B ITE QP	Margin (dB)	CISPR 22 Class B ITE AV	Margin (dB)
13	.267	30.01	Pk	9.7	0	39.71	61.21	-21.5	-	-
14	.276	12.56	Av	9.8	0	22.36	-	-	50.94	-28.58
15	.402	27.17	Pk	10.1	0	37.27	57.81	-20.54	-	-
16	.42	11.25	Av	10.1	0	21.35	-	-	47.45	-26.1
17	.546	25.48	Pk	10.1	0	35.58	56	-20.42	-	-
18	.546	10.21	Av	10.1	0	20.31	-	-	46	-25.69
19	.681	24.23	Pk	10	0	34.23	56	-21.77	-	-
20	.69	11.2	Av	10	0	21.2	-	-	46	-24.8
21	.834	23.59	Pk	9.9	0	33.49	56	-22.51	-	-
22	.843	11.15	Av	9.9	0	21.05	-	-	46	-24.95
23	2.931	28.68	Pk	9.8	.1	38.58	56	-17.42	-	-
24	2.931	12.1	Av	9.8	.1	22	-	-	46	-24

Pk - Peak detector

Av - Average detection