FCC CFR47 PART 15 SUBPART C

DTS Wireless LAN

CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/LTE Tablet + BT/BLE and DTS b/g/n

MODEL NUMBER : SM-T285YD

FCC ID: A3LSMT285YD

REPORT NUMBER: 16K23304-E1V1

ISSUE DATE: MAY 25, 2016

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

ACCREDITED
TL-637

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	05/25/16	Initial issue	Junwhan Lee

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, 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, 16675, 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, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION:	GSM/WCDMA/LTE Tablet + BT/BLE and DTS b/g/n
MODEL NUMBER:	SM-T285YD
SERIAL NUMBER:	R32H40036RF, R32H40036PB(RADIATED); R32H40035XH (CONDUCTED)
DATE TESTED:	APR 25, 2016 - MAY 25, 2016

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.

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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
☒ 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 GSM/WCDMA/LTE Tablet + 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	15.18	32.96
	802.11g	13.48	22.28
	802.11n HT20	12.44	17.54

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antennas, with a antenna's maximum gain of -1.01 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	ETA0U84IWE	R37H2AD7L11RC3	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 in hidden menu exercised the EUT to enable DTS mode.

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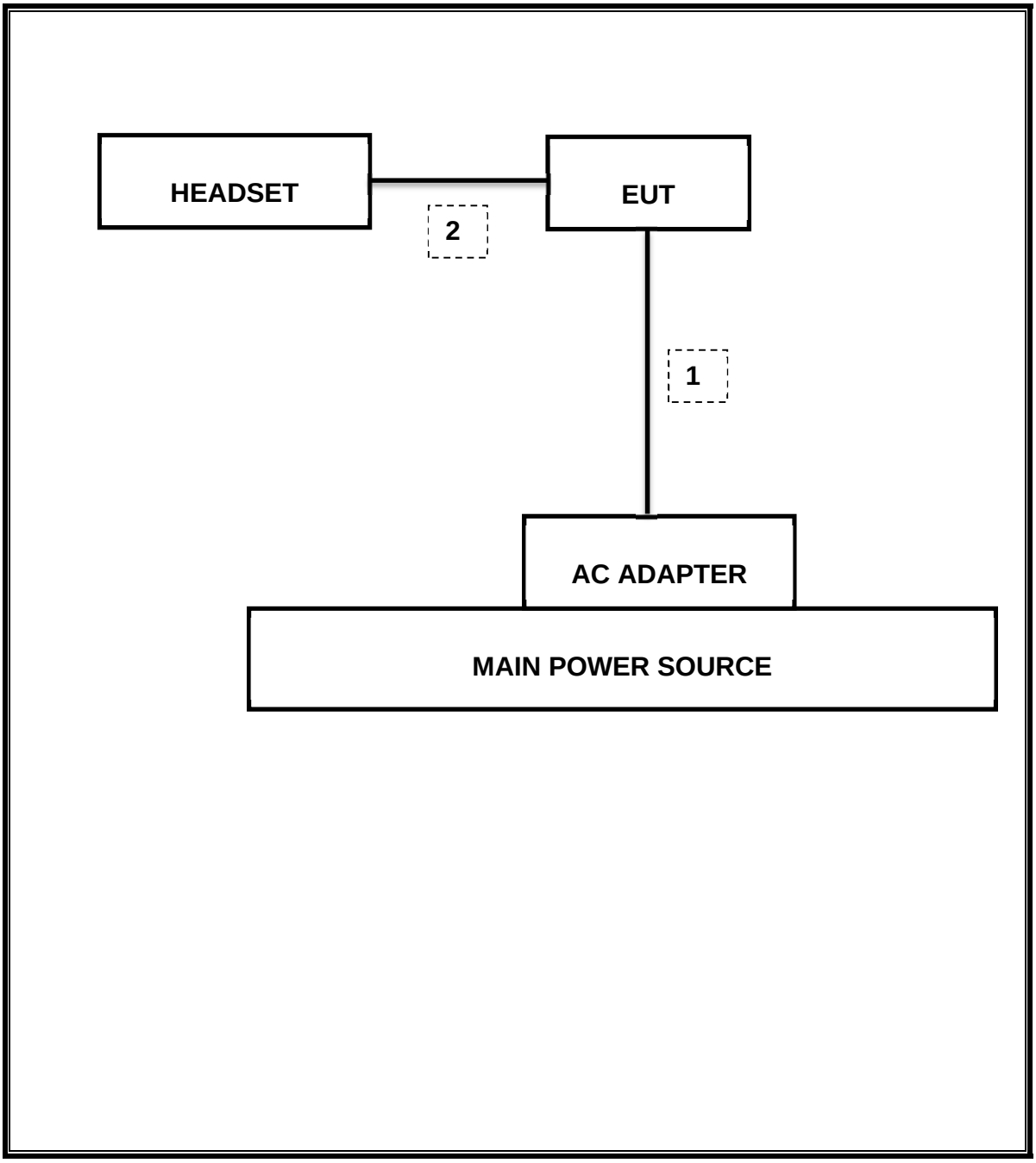
SETUP DIAGRAM FOR TESTS



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	11-17-16
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	04-25-17
Antenna, Horn, 18 GHz	ETS	3115	00167211	09-20-16
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	11-30-17
Antenna, Horn, 40 GHz	ETS	3116C-PA	00168841	12-15-17
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
Attenuator	PASTERNACK	PE7087-10	A009	08-19-16

7. MEASUREMENT METHODS

KDB 558074 D01 DTS Meas Guidance v03r05: Measurement Procedure §9.2.3.1 AVGPM is used for average power and §10.5 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.

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8. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

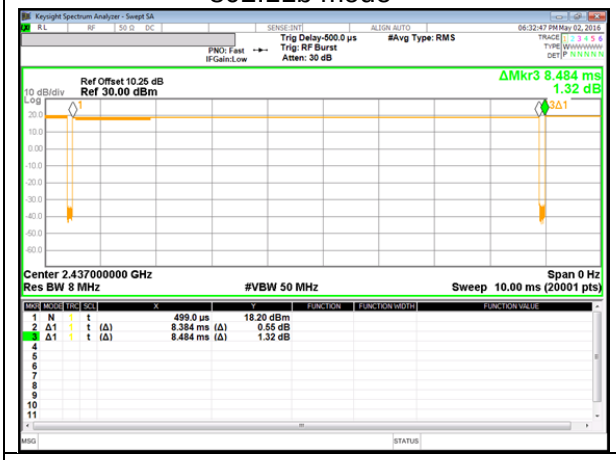
LIMITS

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	8.384	8.484	0.988	98.8%	0.00	0.010
802.11g	1.392	1.488	0.935	93.5%	0.29	0.718
802.11n HT20	1.174	1.269	0.925	92.5%	0.34	0.852

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	8.546 MHz
2.1051, 15.247 (d)	Band Edge / Conducted Spurious Emission	-30dBc		Pass	-35.799 dBm
15.247	TX conducted output power	<30dBm		Pass	15.18 dBm
15.247	PSD	<8dBm		Pass	-11.644 dBm
15.207 (a)	AC Power Line conducted emissions	Section 10	Power Line conducted	Pass	50.67 dBuV (PK)
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass	49.81 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 v03r05: The transmitter output is connected to a spectrum analyzer with the RBW set to100KHz, the VBW >= 3 x RBW, peak detector and max hold.

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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	8.546	0.5
Mid	2437	8.575	0.5
High	2462	8.548	0.5
Worst		8.546	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	15.440	0.5
Mid	2437	15.702	0.5
High	2462	16.027	0.5
Worst		15.440	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	16.156	0.5
Mid	2437	16.692	0.5
High	2462	16.555	0.5
Worst		16.156	0.5

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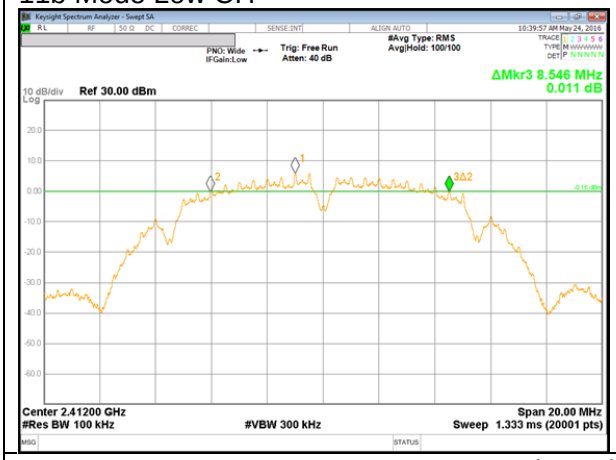
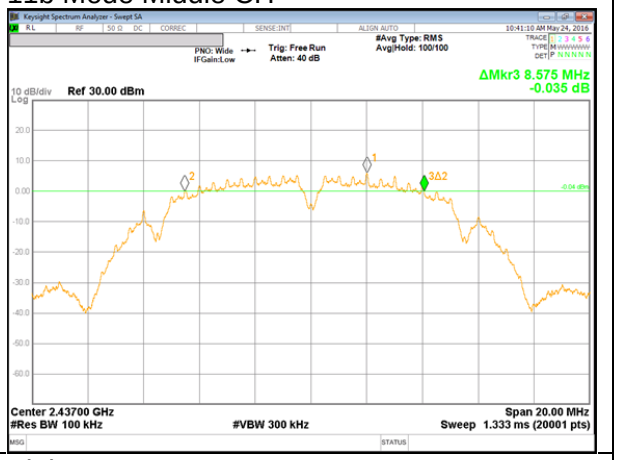
10.1.4. 6 dB BANDWIDTH PLOTS

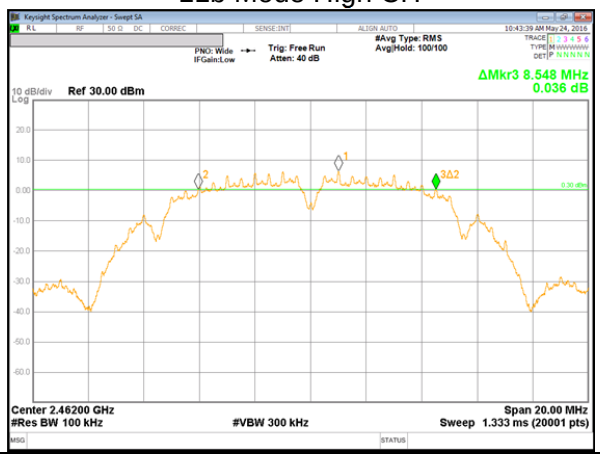
11b Mode Low CH



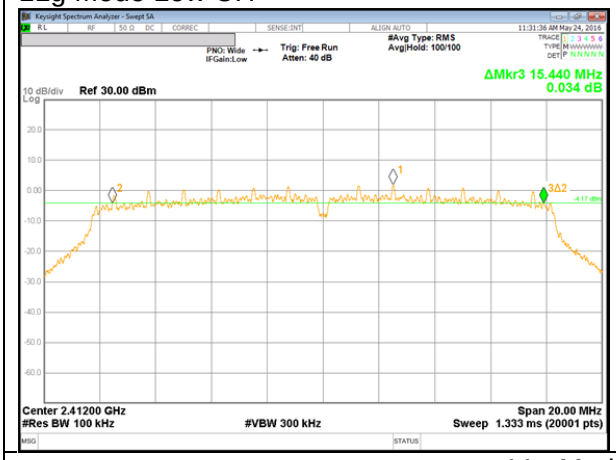
11b Mode Middle CH



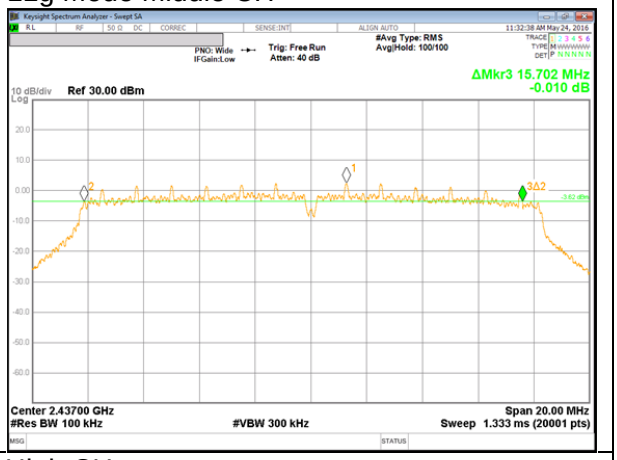
11b Mode High CH



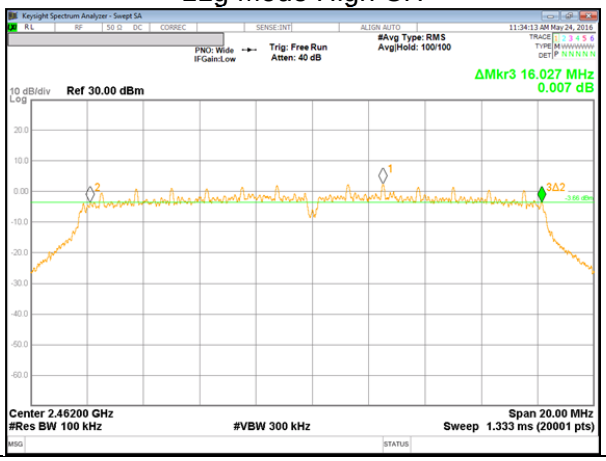
11g Mode Low CH



11g Mode Middle CH



11g Mode High CH



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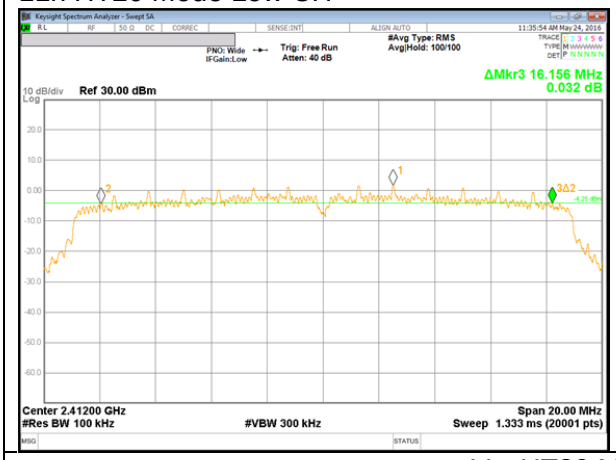
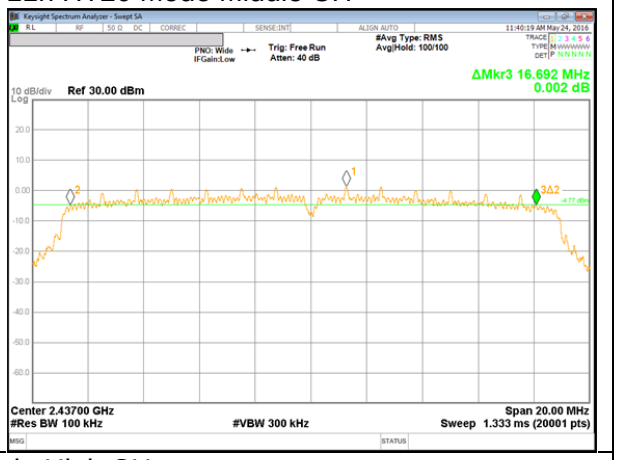
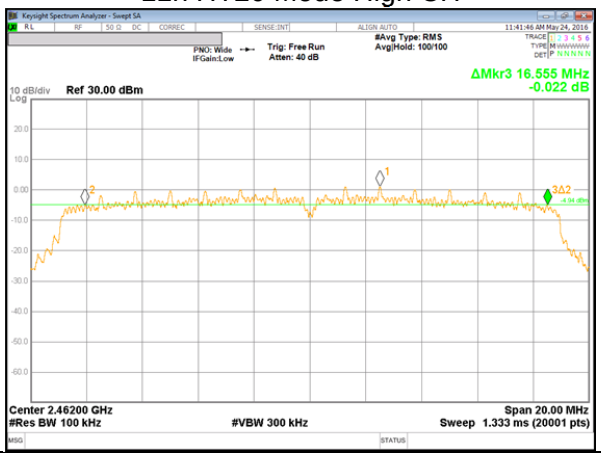
11n HT20 Mode Low CH



11n HT20 Mode Middle CH



11n HT20 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	11.327
Mid	2437	11.251
High	2462	11.519
Worst		11.519

10.2.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	2412	16.395
Mid	2437	16.416
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	17.536
Mid	2437	17.566
High	2462	17.563
Worst		17.566

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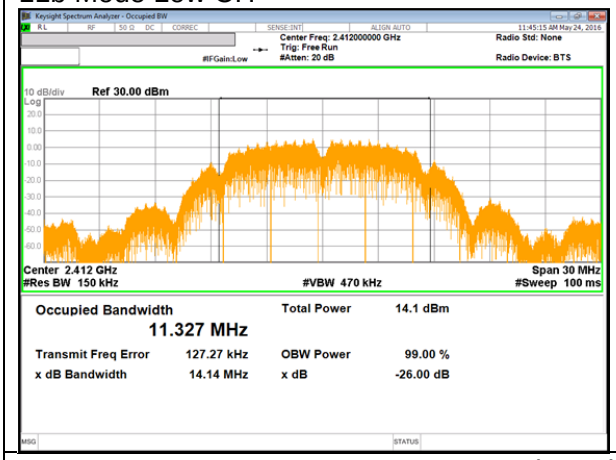
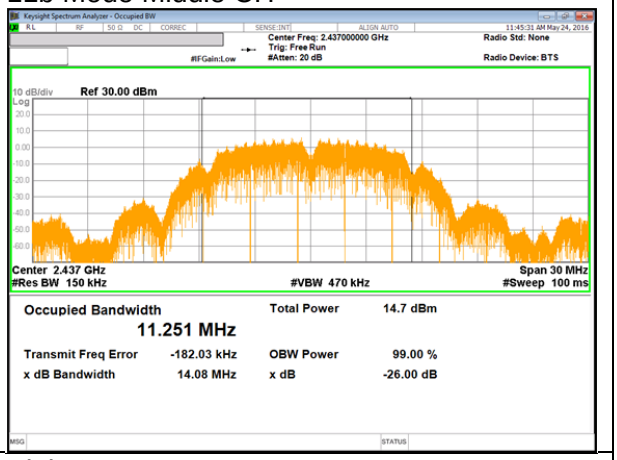
10.2.4. 99% BANDWIDTH PLOTS

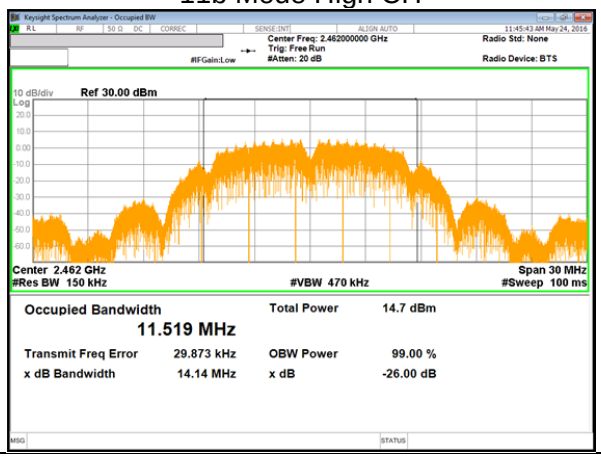
11b Mode Low CH



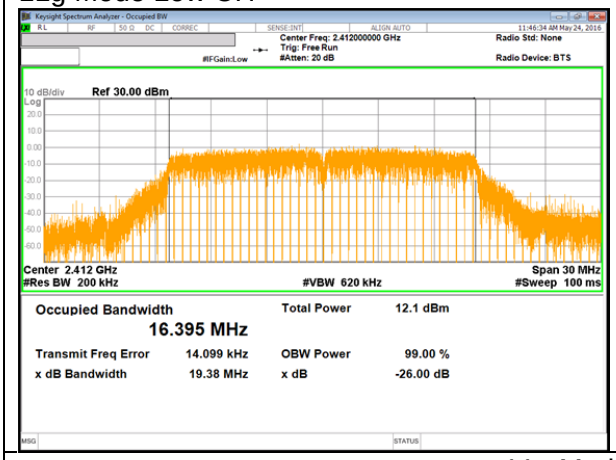
11b Mode Middle CH



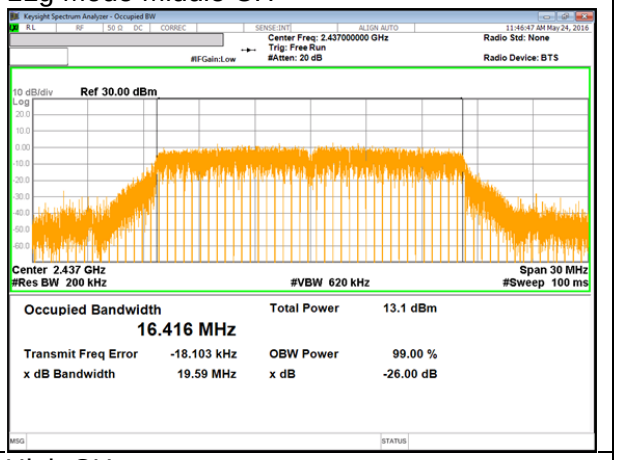
11b Mode High CH



11g Mode Low CH



11g Mode Middle CH



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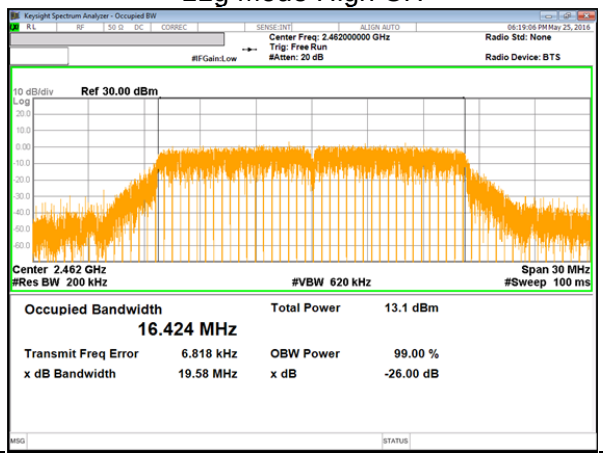
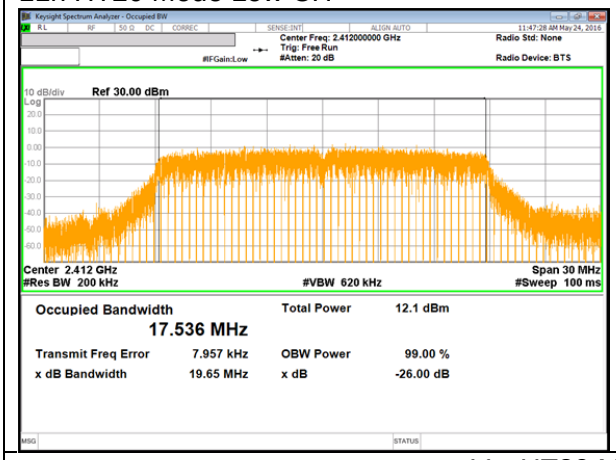
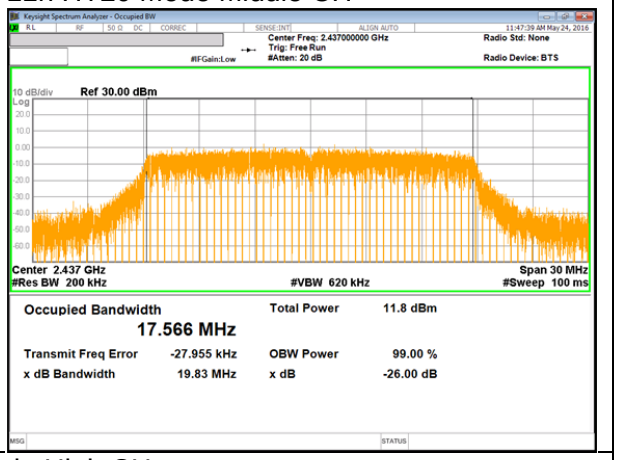


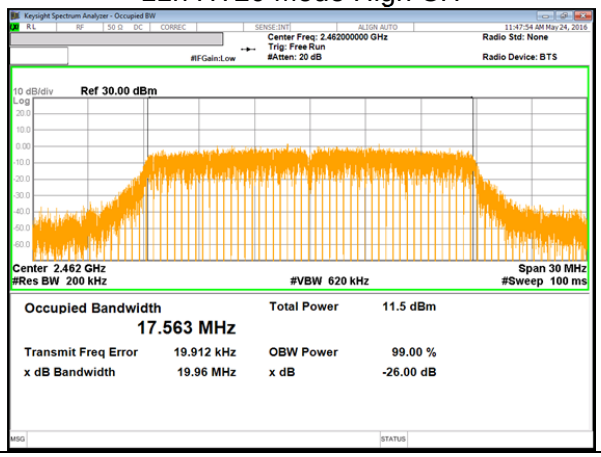
11n HT20 Mode Low CH



11n HT20 Mode Middle CH



11n HT20 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.

Duty cycle correction factor is already added to the average output power results for duty cycle factor < 98%. (802.11g, 802.11n mode)

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	-1.01	30.00	30.00	36.00	30.00
Mid	2437	-1.01	30.00	30.00	36.00	30.00
High	2462	-1.01	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	14.68	14.68	30.00	-15.32
Mid	2437	14.95	14.95	30.00	-15.05
High	2462	15.18	15.18	30.00	-14.82
Worst			15.18	30.00	-14.82

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	-1.01	30.00	30.00	36.00	30.00
Mid	2437	-1.01	30.00	30.00	36.00	30.00
High	2462	-1.01	30.00	30.00	36.00	30.00

Results

Channel	Frequency [MHz]	Primary Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Margin [dB]
Low	2412	12.85	12.85	30.00	-17.15
Mid	2437	13.44	13.44	30.00	-16.56
High	2462	13.48	13.48	30.00	-16.52
Worst			13.48	30.00	-16.52

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	-1.01	30.00	30.00	36.00	30.00
Mid	2437	-1.01	30.00	30.00	36.00	30.00
High	2462	-1.01	30.00	30.00	36.00	30.00

Results

Channel	Frequency [MHz]	Primary Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Margin [dB]
Low	2412	12.32	12.32	30.00	-17.68
Mid	2437	12.44	12.44	30.00	-17.56
High	2462	12.14	12.14	30.00	-17.86
Worst			12.44	30.00	-17.56

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 v03r05

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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	-14.983	0.00	-14.983	8.00	-22.983
Mid	2437	-11.644	0.00	-11.644	8.00	-19.644
High	2462	-13.505	0.00	-13.505	8.00	-21.505

10.4.2. 802.11g MODE IN THE 2.4 GHz BAND

PSD Results

Channel	Frequency [MHz]	PSD Meas [dBm]	Duty Factor [dB]	Final PSD [dBm]	Limit [dBm]	Margin [dB]
Low	2412	-19.012	0.29	-18.722	8.00	-27.012
Mid	2437	-16.707	0.29	-16.417	8.00	-24.707
High	2462	-17.977	0.29	-17.687	8.00	-25.977

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	-19.222	0.34	-18.882	8.00	-27.222
Mid	2437	-19.005	0.34	-18.665	8.00	-27.005
High	2462	-16.185	0.34	-15.845	8.00	-24.185

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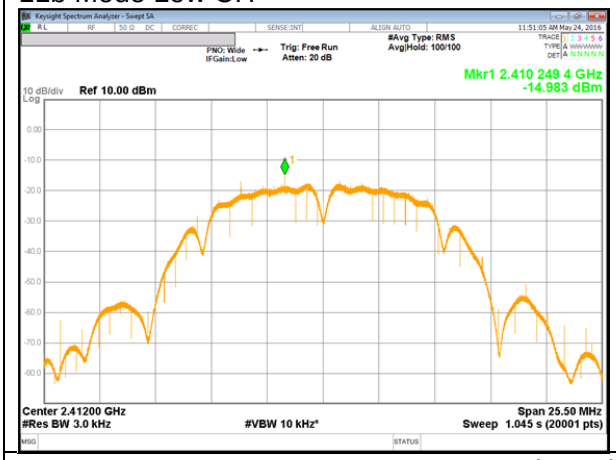
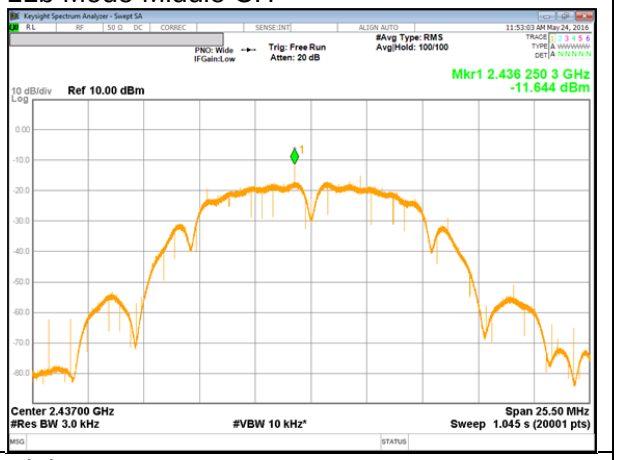
10.4.4. PSD PLOTS

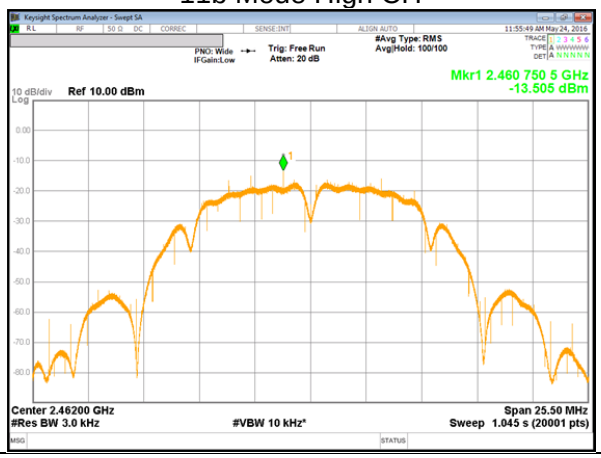
11b Mode Low CH



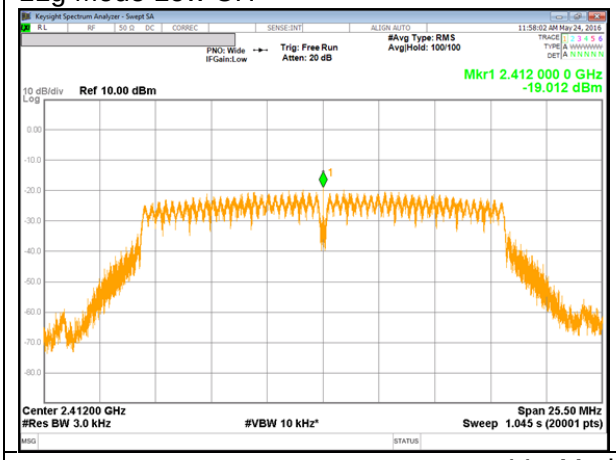
11b Mode Middle CH



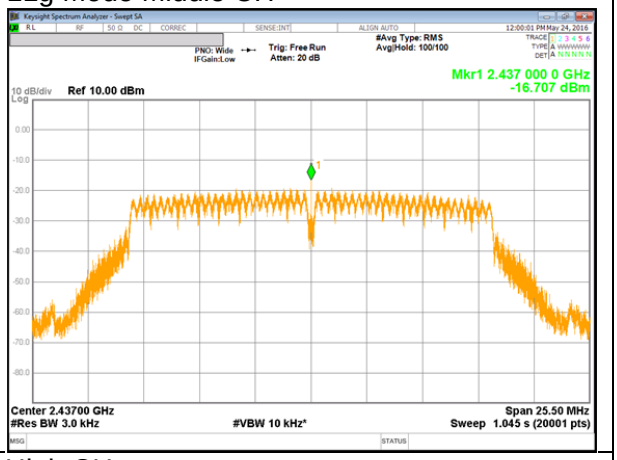
11b Mode High CH



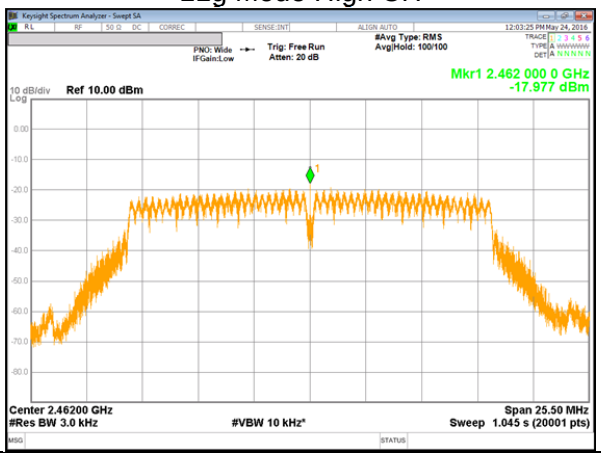
11g Mode Low CH



11g Mode Middle CH



11g Mode High CH



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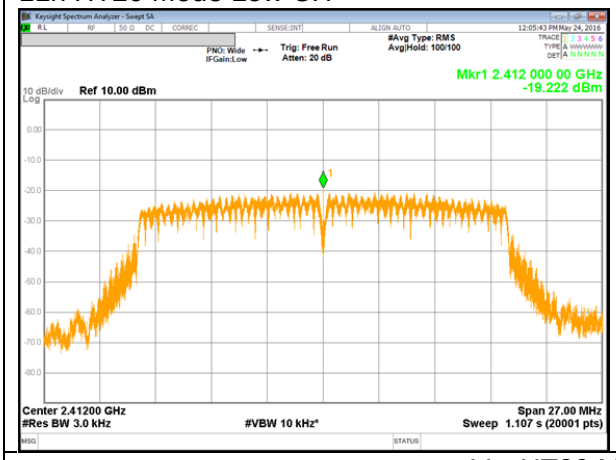
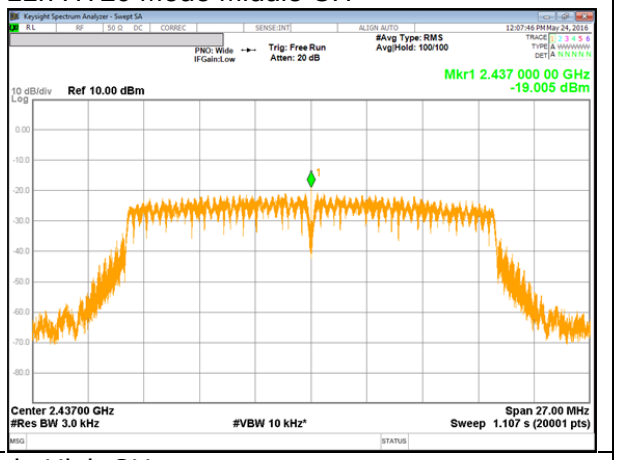
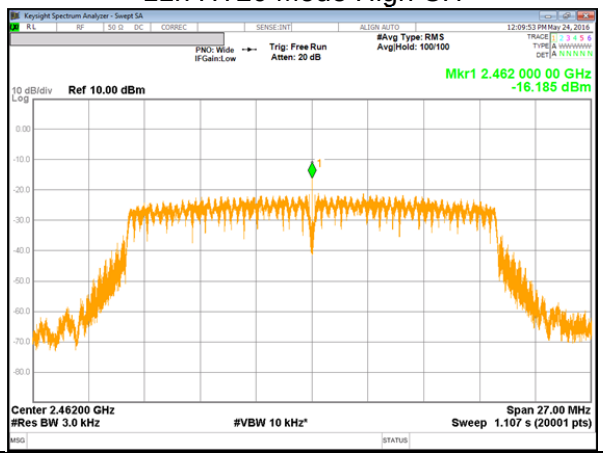
11n HT20 Mode Low CH



11n HT20 Mode Middle CH



11n HT20 Mode High CH



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.

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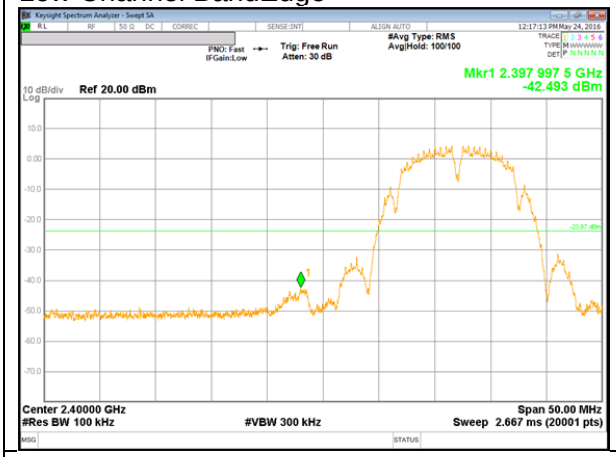
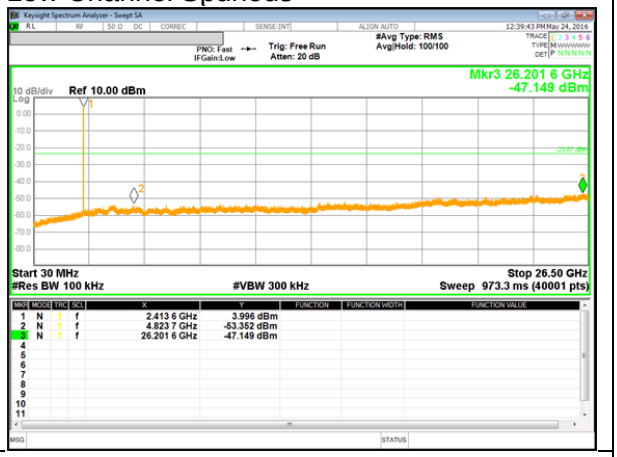
RESULTS

10.5.1. 802.11b MODE IN THE 2.4 GHz BAND

Low Channel BandEdge

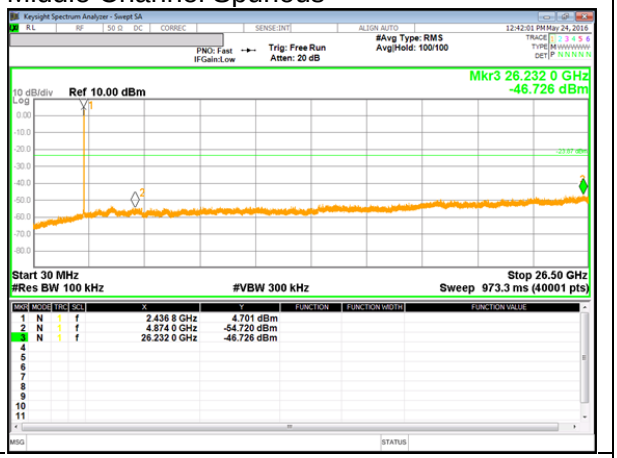


Low Channel Spurious

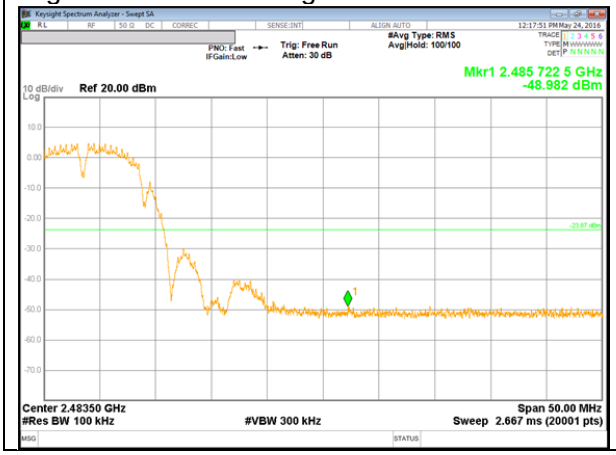


Middle Channel BandEdge

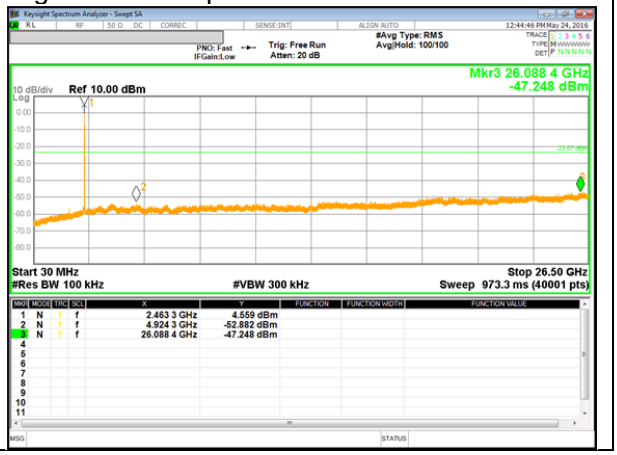
Middle Channel Spurious



High Channel BandEdge



High Channel Spurious



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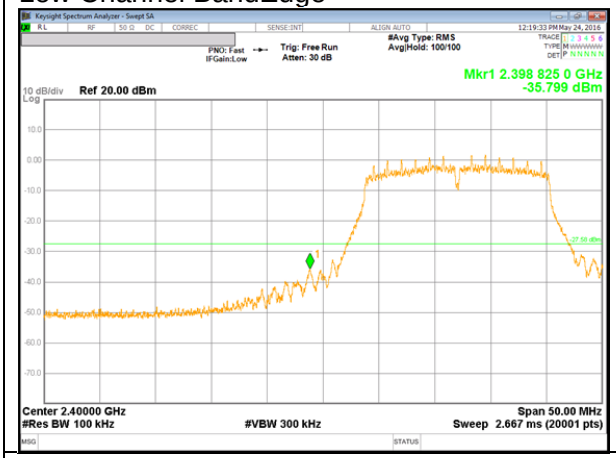
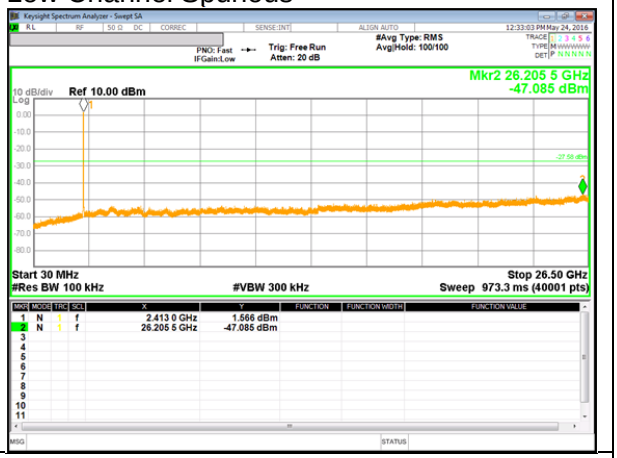
10.5.2. 802.11g MODE IN THE 2.4 GHz BAND

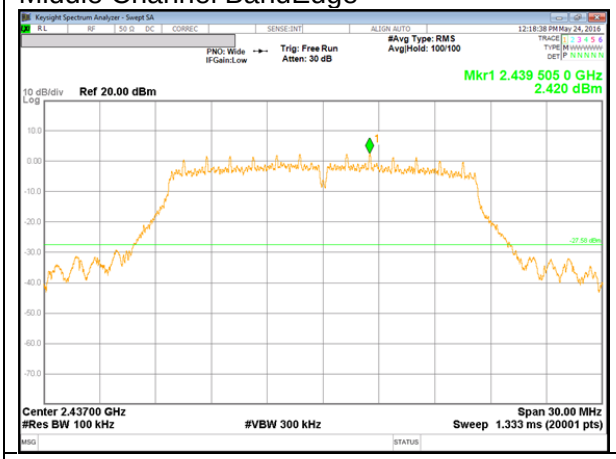
Low Channel BandEdge



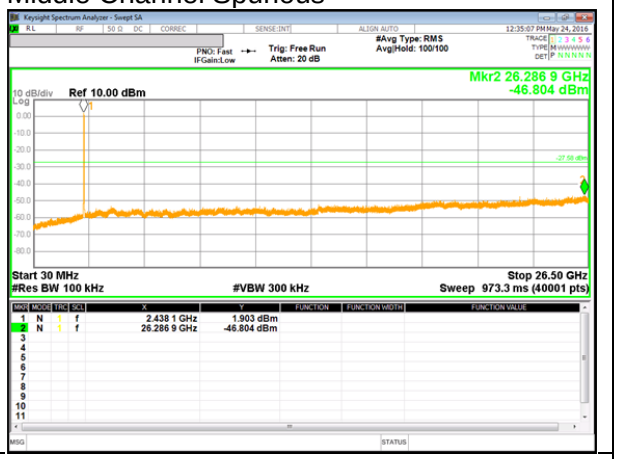
Low Channel Spurious



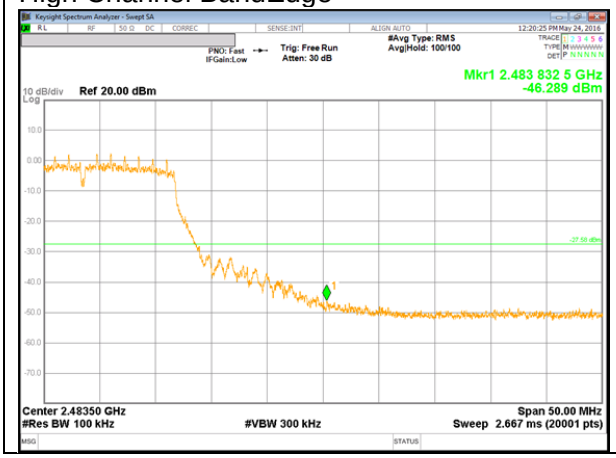
Middle Channel BandEdge



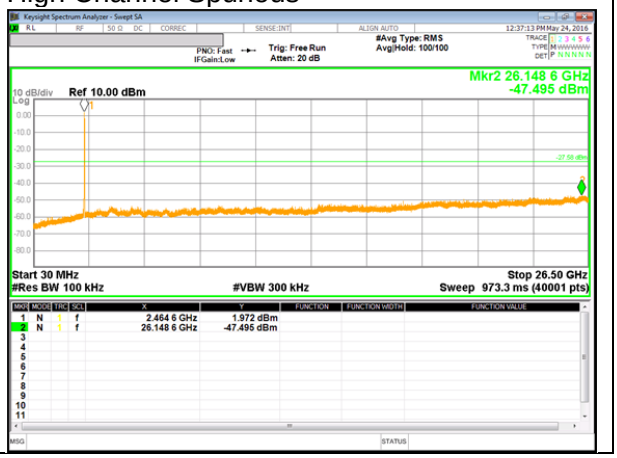
Middle Channel Spurious



High Channel BandEdge



High Channel Spurious



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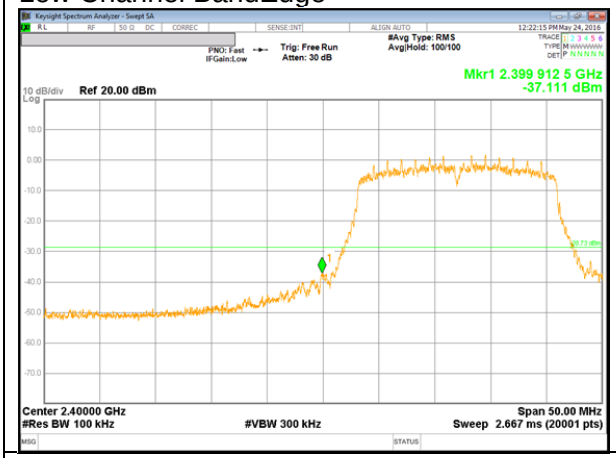
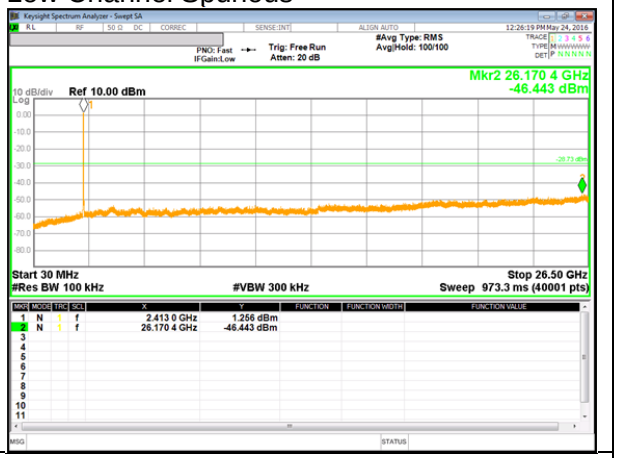
10.5.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

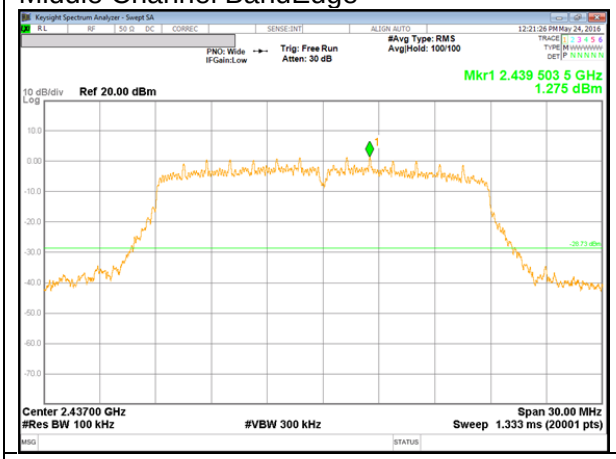
Low Channel BandEdge



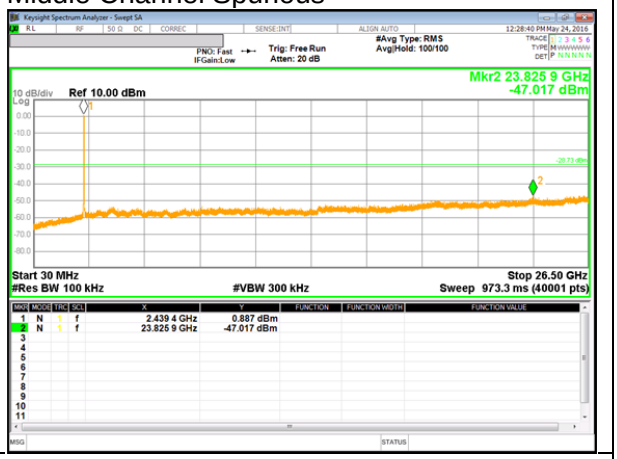
Low Channel Spurious



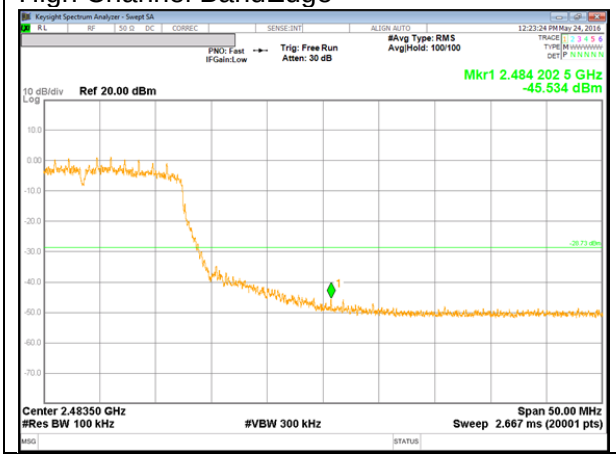
Middle Channel BandEdge



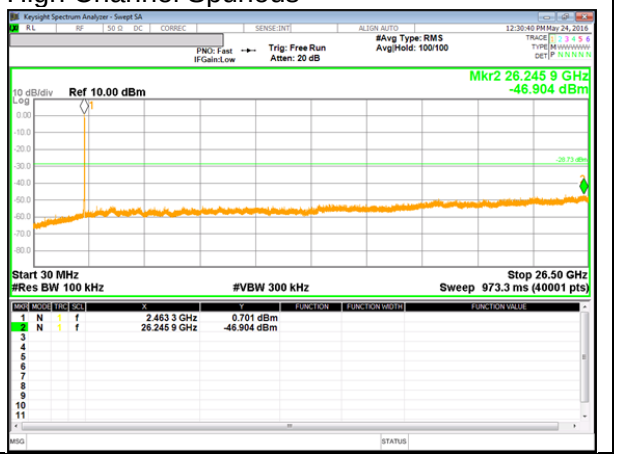
Middle Channel Spurious



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 = 0.34dB.

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.

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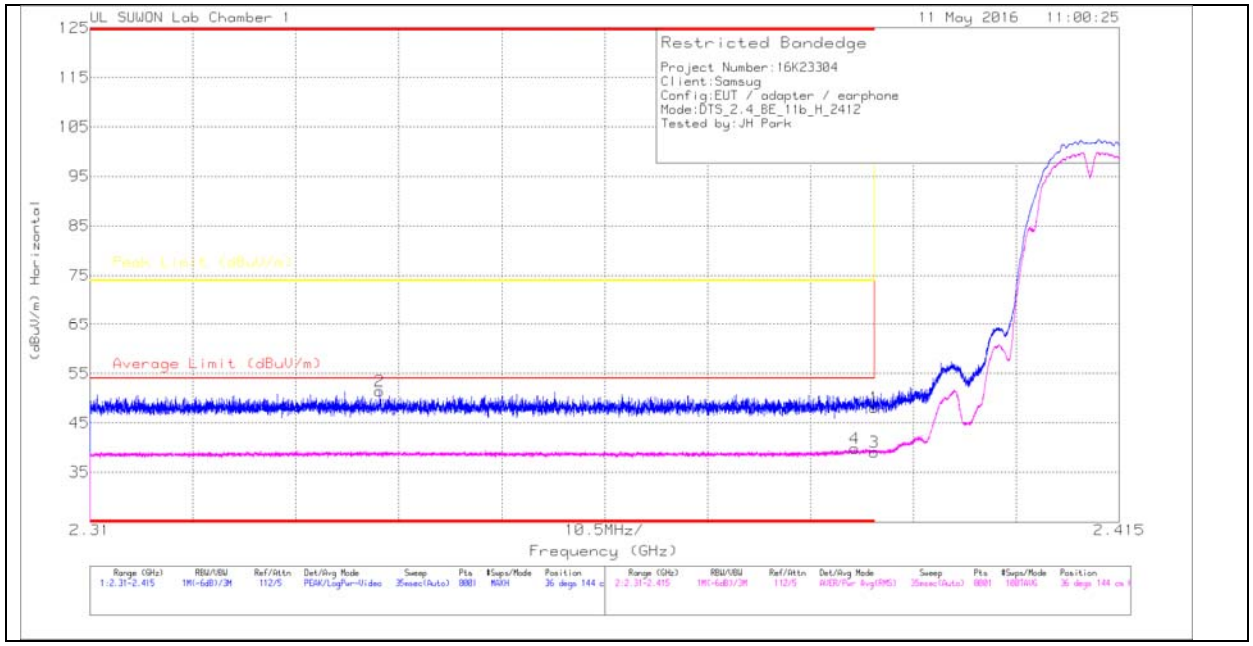
11.2. TRANSMITTER ABOVE 1 GHz

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

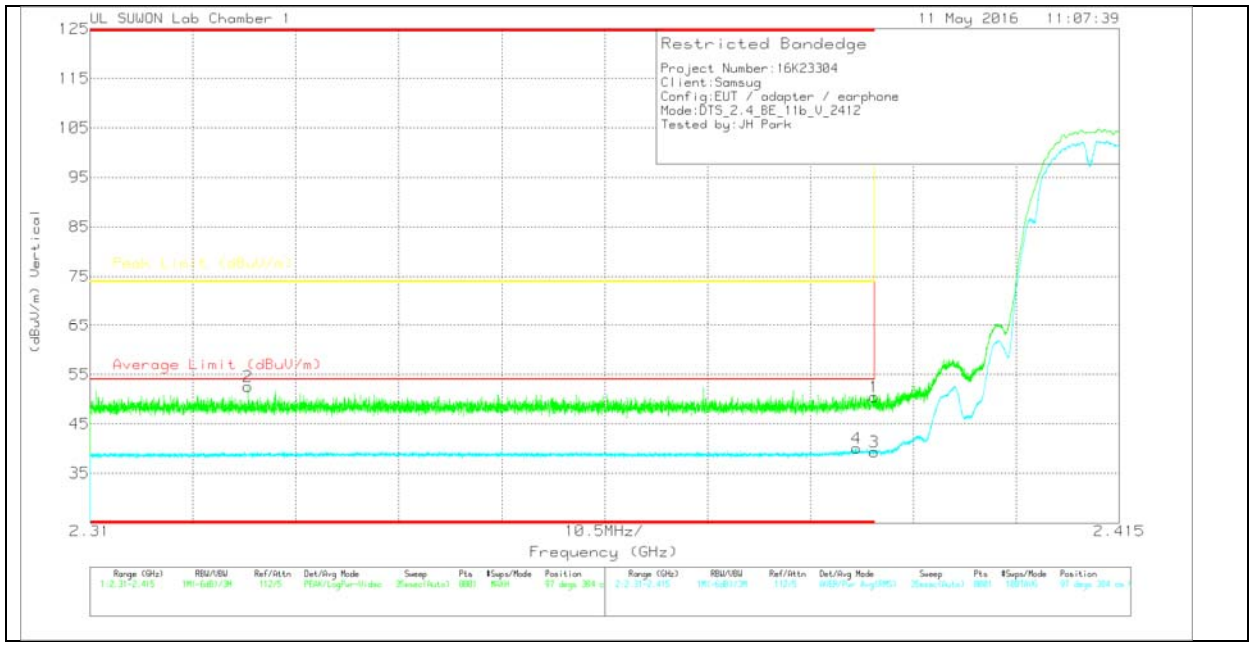
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168717)_150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	45.35	Pk	31.8	-29	0	48.15	-	-	74	-25.85	36	144	H
2	* 2.34	48.74	Pk	31.7	-29	0	51.44	-	-	74	-22.56	36	144	H
3	* 2.39	36.25	RMS	31.8	-29	0	39.05	54	-14.95	-	-	36	144	H
4	* 2.388	36.96	RMS	31.8	-29	0	39.76	54	-14.24	-	-	36	144	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(00168717)_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	47.62	Pk	31.8	-29	0	50.42	-	-	74	-23.58	97	384	V
2	* 2.326	49.83	Pk	31.7	-29	0	52.53	-	-	74	-21.47	97	384	V
3	* 2.39	36.49	RMS	31.8	-29	0	39.29	54	-14.71	-	-	97	384	V
4	* 2.388	37.25	RMS	31.8	-29	0	40.05	54	-13.95	-	-	97	384	V

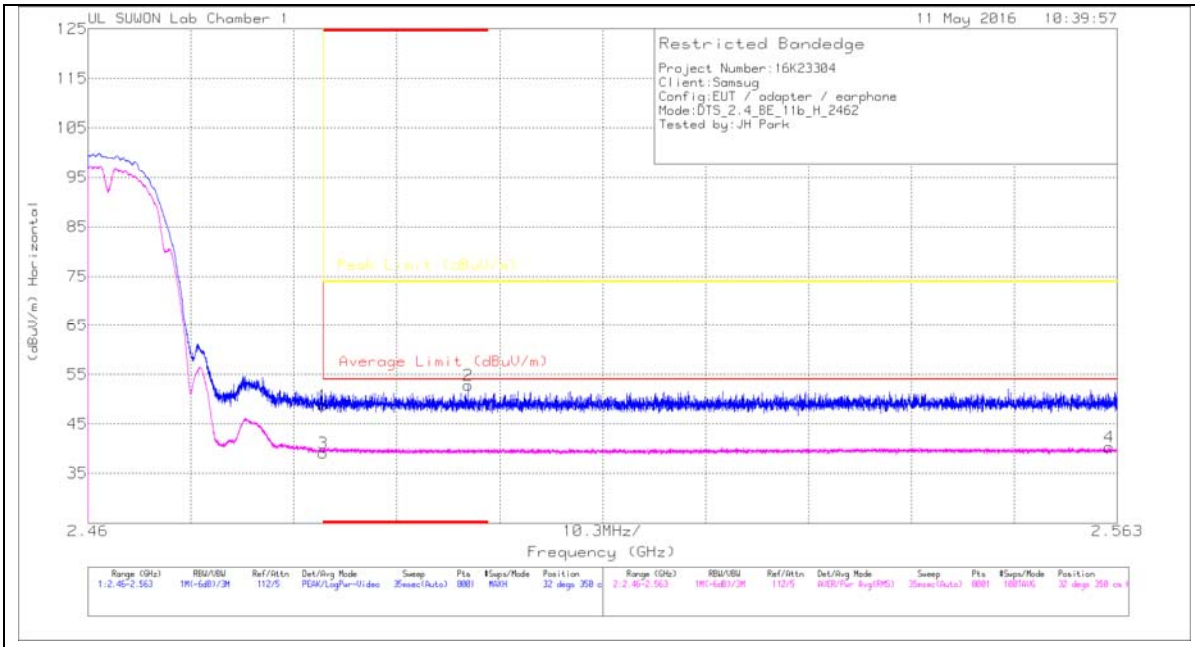
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

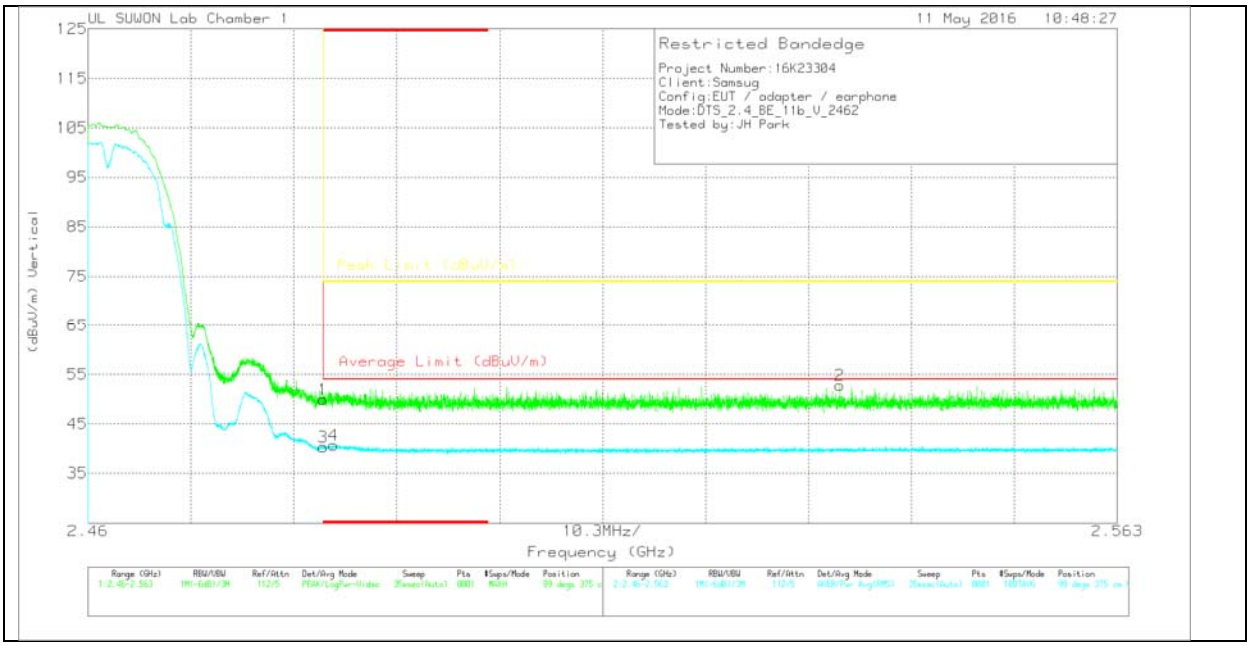
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168717)_150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	45.06	Pk	32	-28.3	0	48.76	-	-	74	-25.24	32	350	H
2	* 2.498	49.05	Pk	32	-28.3	0	52.75	-	-	74	-21.25	32	350	H
3	* 2.484	35.42	RMS	32	-28.3	0	39.12	54	-14.88	-	-	32	350	H
4	2.562	36.51	RMS	32	-28.2	0	40.31	54	-13.69	-	-	32	350	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(00168717)_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	46.22	Pk	32	-28.3	0	49.92	-	-	74	-24.08	99	375	V
2	2.535	49.14	Pk	32	-28.3	0	52.84	-	-	74	-21.16	99	375	V
3	* 2.484	36.63	RMS	32	-28.3	0	40.33	54	-13.67	-	-	99	375	V
4	* 2.485	37.01	RMS	32	-28.3	0	40.71	54	-13.29	-	-	99	375	V

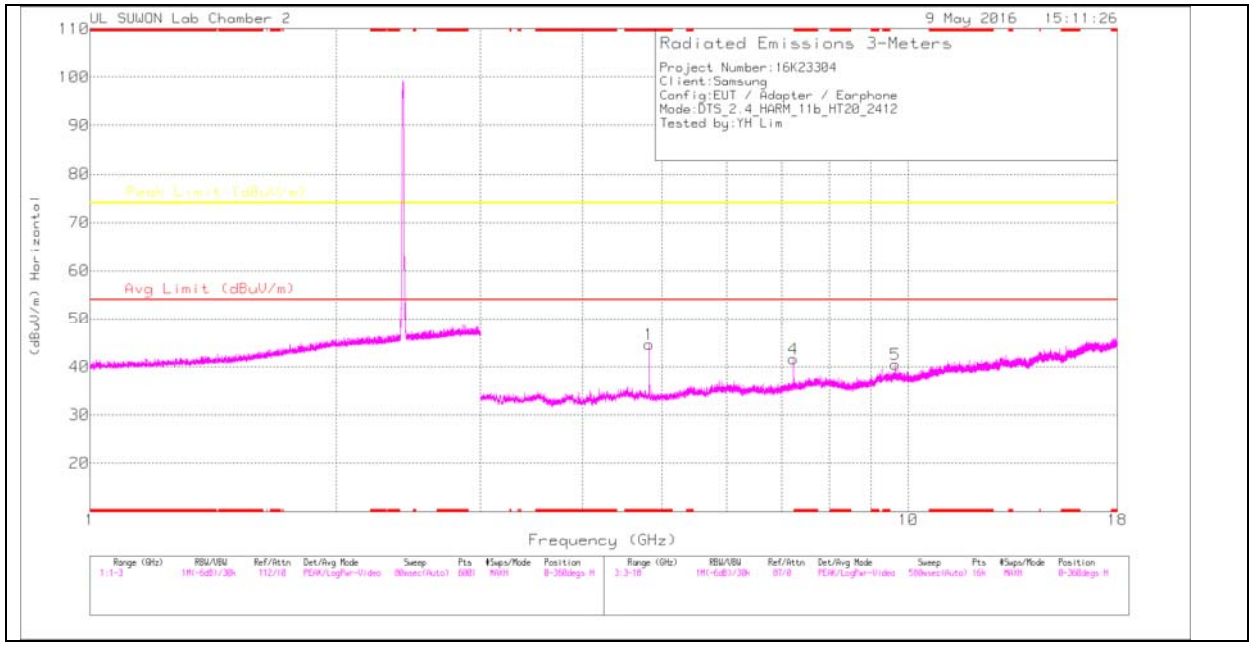
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

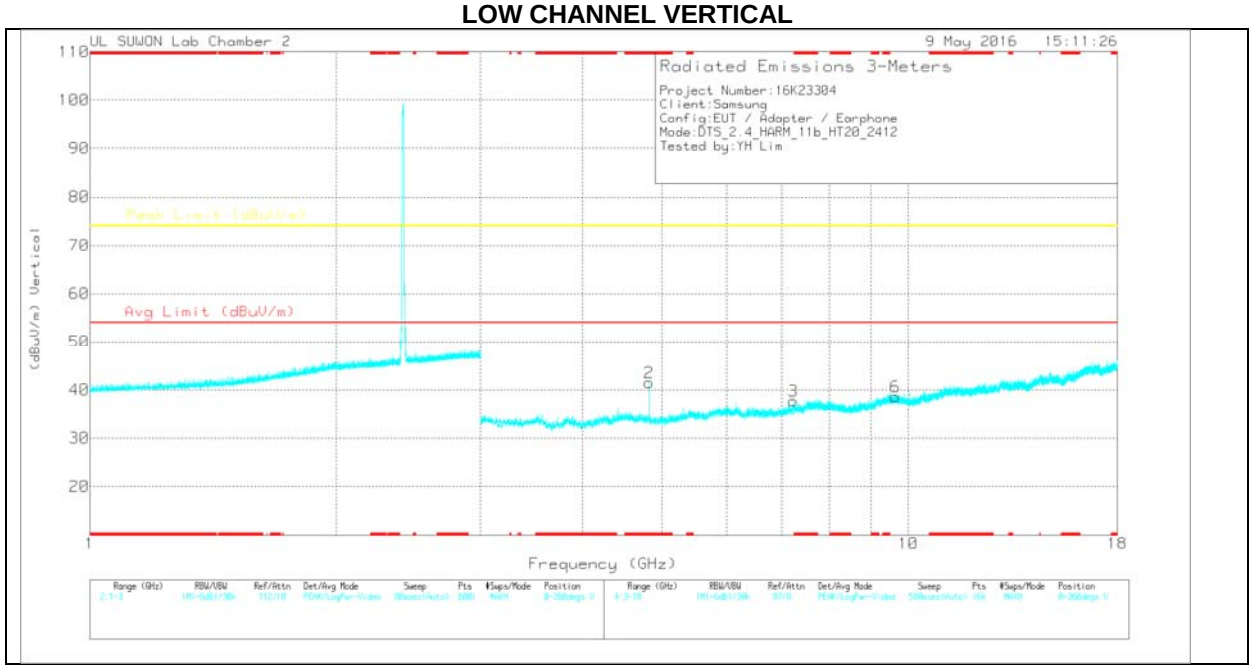
RMS - RMS detection

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	36.05	Pk	33.9	-25.3	0	44.65	-	-	74	-29.35	0-360	200	H
4	7.238	28.78	Pk	35.8	-23	0	41.58	-	-	74	-32.42	0-360	100	H
5	9.648	22.55	Pk	36.9	-19	0	40.45	-	-	74	-33.55	0-360	200	H
2	* 4.823	32.88	Pk	33.9	-25.3	0	41.48	-	-	74	-32.52	0-360	100	V
3	7.238	24.95	Pk	35.8	-23	0	37.75	-	-	74	-36.25	0-360	200	V
6	9.647	20.74	Pk	36.9	-19	0	38.64	-	-	74	-35.36	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	40.41	PK2	33.9	-25.3	0	49.01	-	-	74	-24.99	32	104	H
* 4.824	33.92	MAv1	33.9	-25.3	0	42.52	54	-11.48	-	-	32	104	H
* 4.824	40.26	PK2	33.9	-25.3	0	48.86	-	-	74	-25.14	19	348	V
* 4.824	33.88	MAv1	33.9	-25.3	0	42.48	54	-11.52	-	-	19	348	V
7.24	34.94	PK2	35.8	-23	0	47.74	-	-	74	-26.26	190	306	V
7.237	37.18	PK2	35.8	-23	0	49.98	-	-	74	-24.02	74	241	H

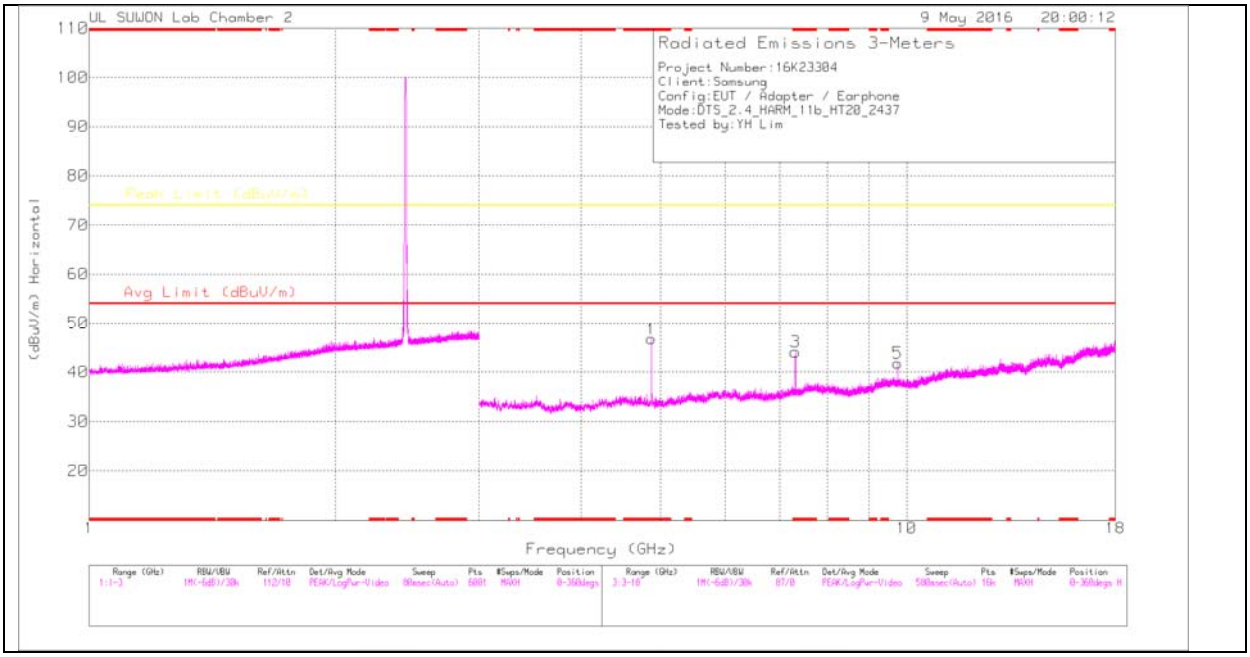
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

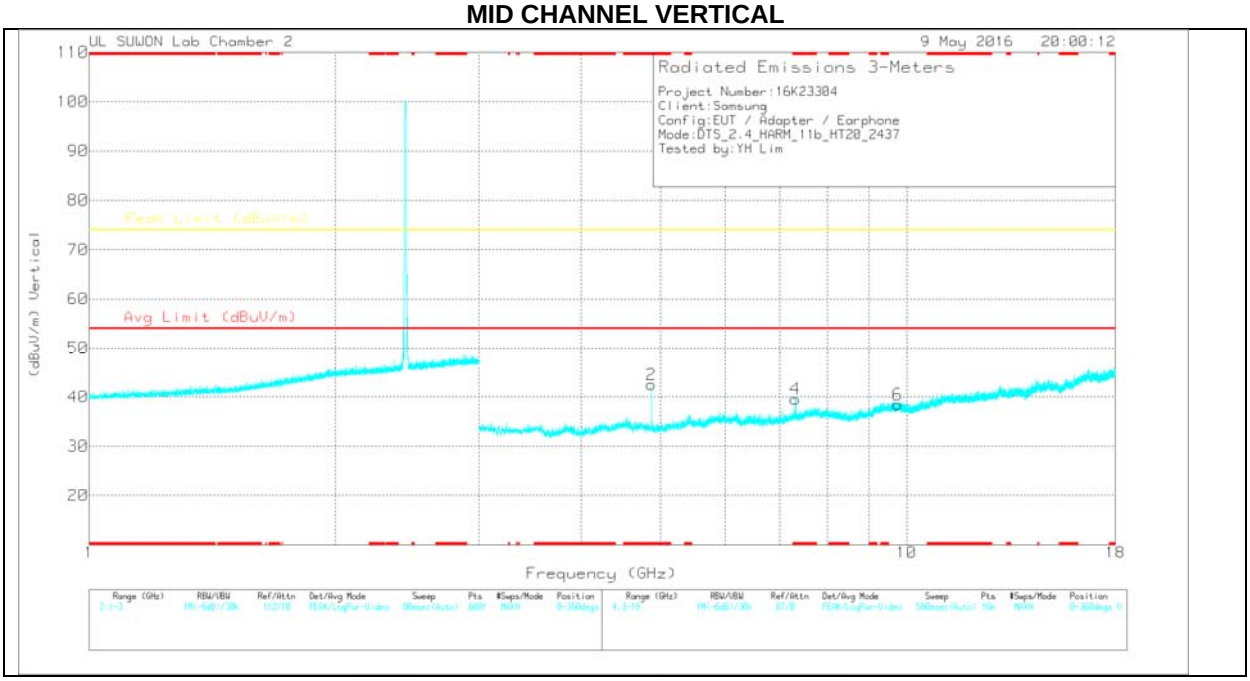
MAv1 - KDB558074 Option 1 Maximum RMS Average

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, 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	* 4.874	38.03	PK	33.9	-25.2	0	46.73	-	-	74	-27.27	0-360	200	H
3	* 7.31	30.81	PK	35.9	-22.6	0	44.11	-	-	74	-29.89	0-360	100	H
5	9.748	24.12	PK	37	-19.3	0	41.82	-	-	74	-32.18	0-360	100	H
2	* 4.874	33.82	PK	33.9	-25.2	0	42.52	-	-	74	-31.48	0-360	100	V
4	* 7.308	26.3	PK	35.9	-22.6	0	39.6	-	-	74	-34.4	0-360	200	V
6	9.748	20.75	PK	37	-19.3	0	38.45	-	-	74	-35.55	0-360	100	V

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

PK – Peak detector

Radiated Emissions

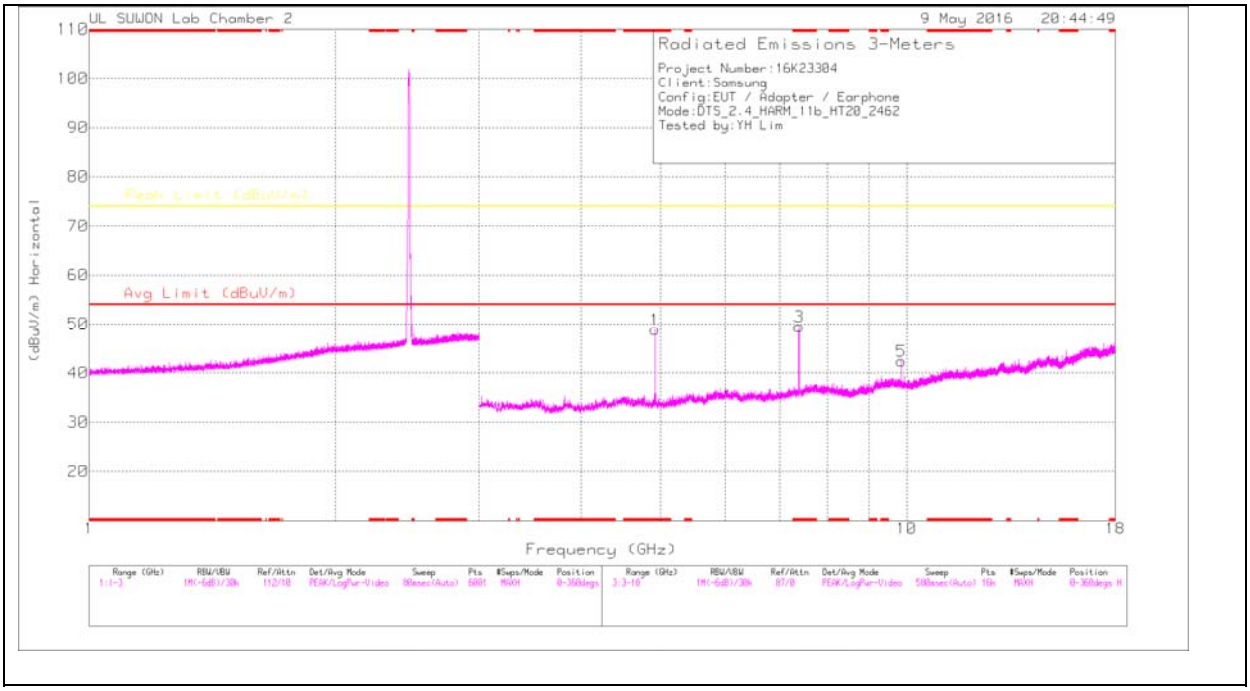
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.874	41.85	PK2	33.9	-25.2	0	50.55	-	-	74	-23.45	76	100	H
* 4.874	36.4	MAv1	33.9	-25.2	0	45.1	54	-8.9	-	-	76	100	H
* 7.31	38.94	PK2	35.9	-22.6	0	52.24	-	-	74	-21.76	69	184	H
* 7.31	31.06	MAv1	35.9	-22.6	0	44.36	54	-9.64	-	-	69	184	H
9.748	32.33	PK2	37	-19.3	0	50.03	-	-	74	-23.97	351	208	H
* 4.874	40.7	PK2	33.9	-25.2	0	49.4	-	-	74	-24.6	6	138	V
* 4.874	34.3	MAv1	33.9	-25.2	0	43	54	-11	-	-	6	138	V
* 7.31	37.2	PK2	35.9	-22.6	0	50.5	-	-	74	-23.5	101	254	V
* 7.312	26.75	MAv1	35.9	-22.6	0	40.05	54	-13.95	-	-	101	254	V

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

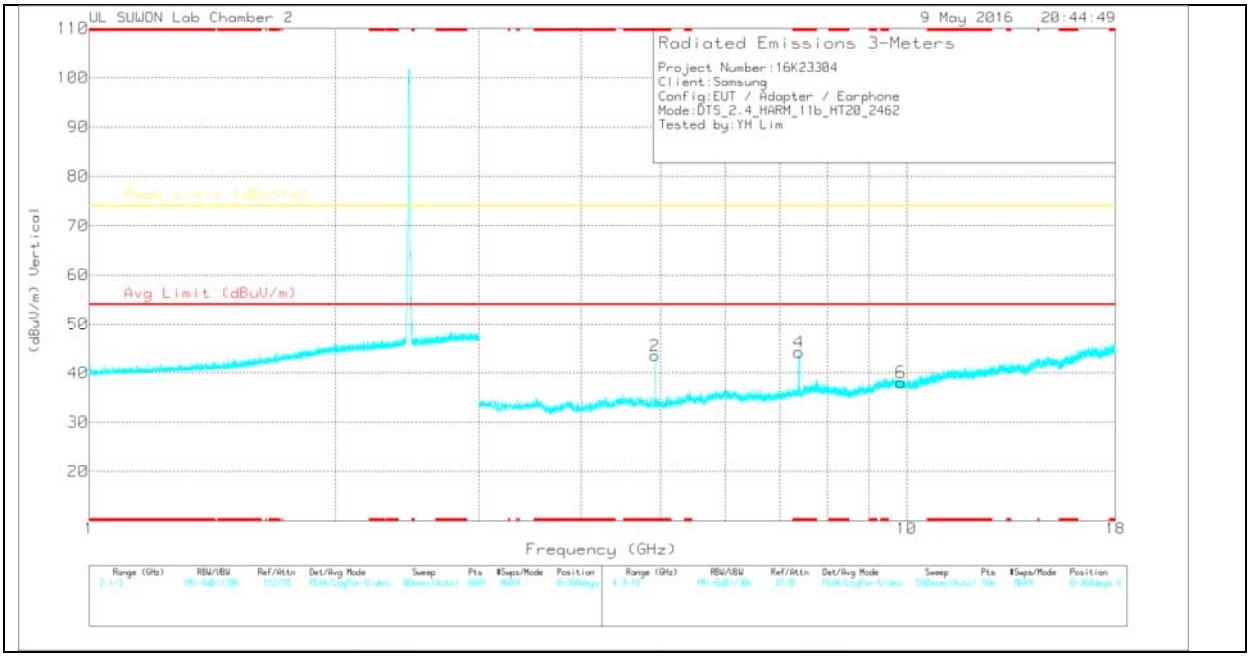
PK2 - KDB558074 Method: Maximum Peak

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	40.09	PK	33.9	-25.1	0	48.89	-	-	74	-25.11	0-360	200	H
3	* 7.386	35.79	PK	35.9	-22.2	0	49.49	-	-	74	-24.51	0-360	100	H
5	9.848	24.48	PK	37.1	-19.2	0	42.38	-	-	74	-31.62	0-360	200	H
2	* 4.924	34.74	PK	33.9	-25.1	0	43.54	-	-	74	-30.46	0-360	100	V
4	* 7.385	30.52	PK	35.9	-22.2	0	44.22	-	-	74	-29.78	0-360	200	V
6	9.843	20.18	PK	37.1	-19.2	0	38.08	-	-	74	-35.92	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	42.95	PK2	33.9	-25.1	0	51.75	-	-	74	-22.25	334	102	H
* 4.924	38.47	MAv1	33.9	-25.1	0	47.27	54	-6.73	-	-	334	102	H
* 7.387	42.16	PK2	35.9	-22.2	0	55.86	-	-	74	-18.14	43	101	H
* 7.387	36.11	MAv1	35.9	-22.2	0	49.81	54	-4.19	-	-	43	101	H
9.848	32.47	PK2	37.1	-19.2	0	50.37	-	-	74	-23.63	0	153	H
* 4.924	40.43	PK2	33.9	-25.1	0	49.23	-	-	74	-24.77	32	103	V
* 4.924	34.96	MAv1	33.9	-25.1	0	43.76	54	-10.24	-	-	32	103	V
* 7.387	38.32	PK2	35.9	-22.2	0	52.02	-	-	74	-21.98	109	243	V
* 7.387	30.38	MAv1	35.9	-22.2	0	44.08	54	-9.92	-	-	109	243	V

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

PK2 - KDB558074 Method: Maximum Peak

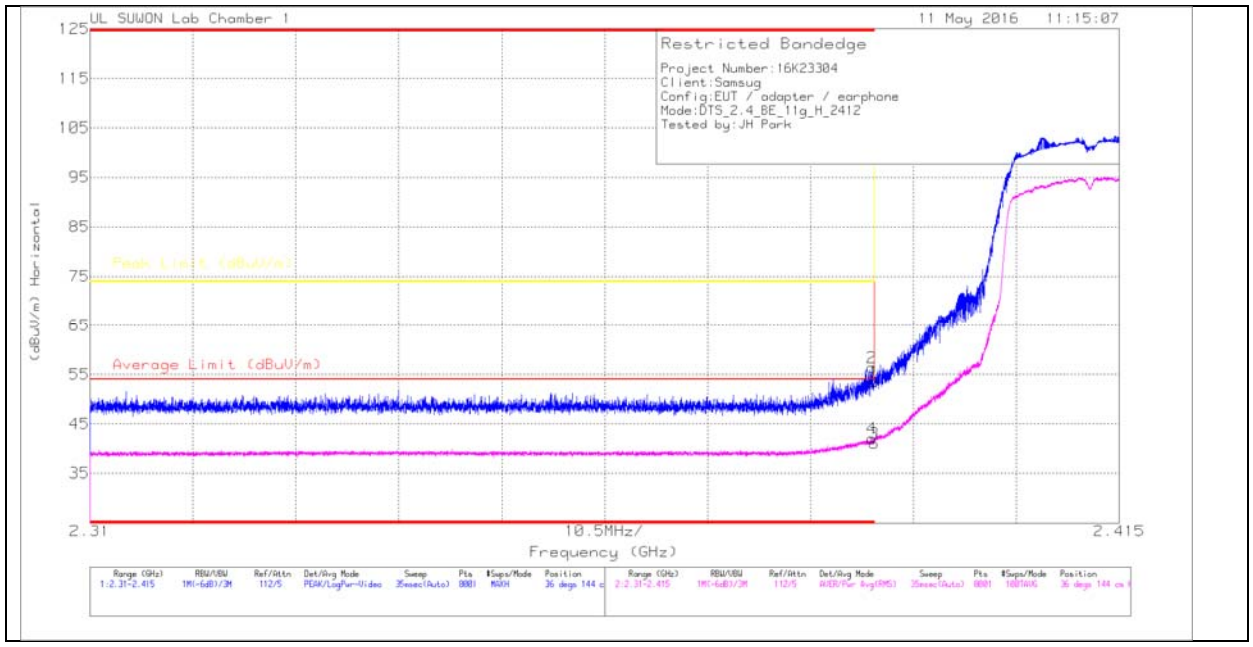
MAv1 - KDB558074 Option 1 Maximum RMS Average

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

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

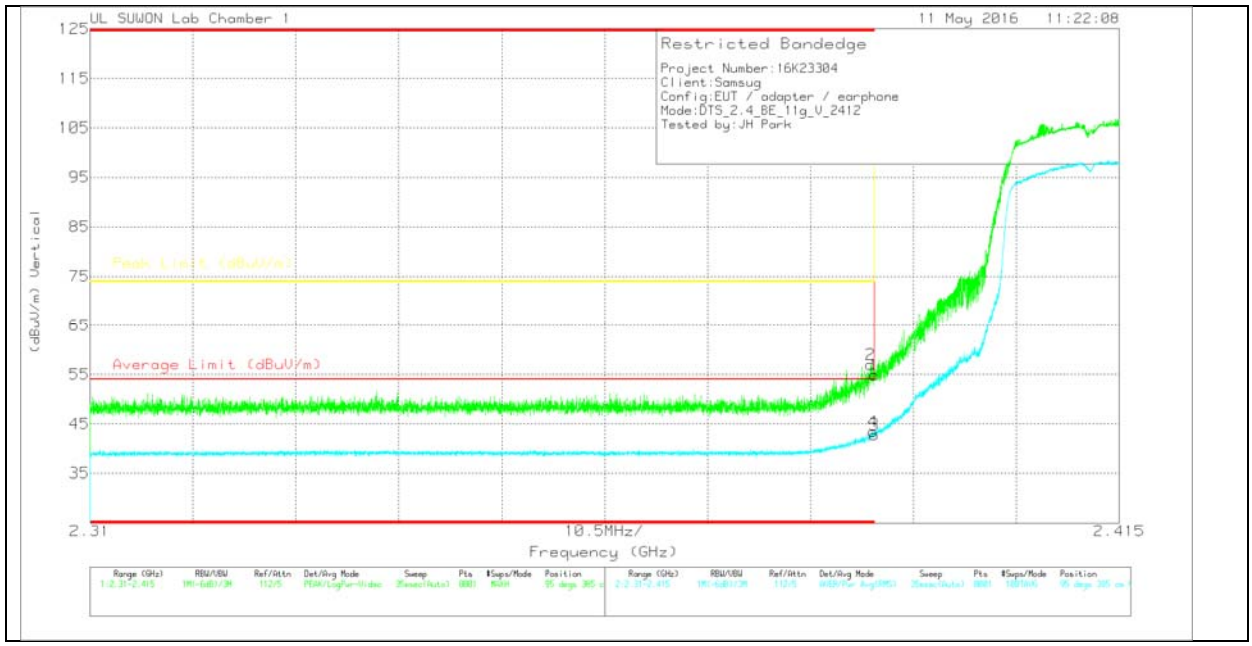
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168717)_150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	50.7	Pk	31.8	-29	0	53.5	-	-	74	-20.5	36	144	H
2	* 2.39	53.58	Pk	31.8	-29	0	56.38	-	-	74	-17.62	36	144	H
3	* 2.39	38	RMS	31.8	-29	.29	41.09	54	-12.91	-	-	36	144	H
4	* 2.39	38.93	RMS	31.8	-29	.29	42.02	54	-11.98	-	-	36	144	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(00168717)_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	52.13	Pk	31.8	-29	0	54.93	-	-	74	-19.07	95	385	V
2	* 2.39	54.22	Pk	31.8	-29	0	57.02	-	-	74	-16.98	95	385	V
3	* 2.39	39.75	RMS	31.8	-29	.29	42.84	54	-11.16	-	-	95	385	V
4	* 2.39	40.36	RMS	31.8	-29	.29	43.45	54	-10.55	-	-	95	385	V

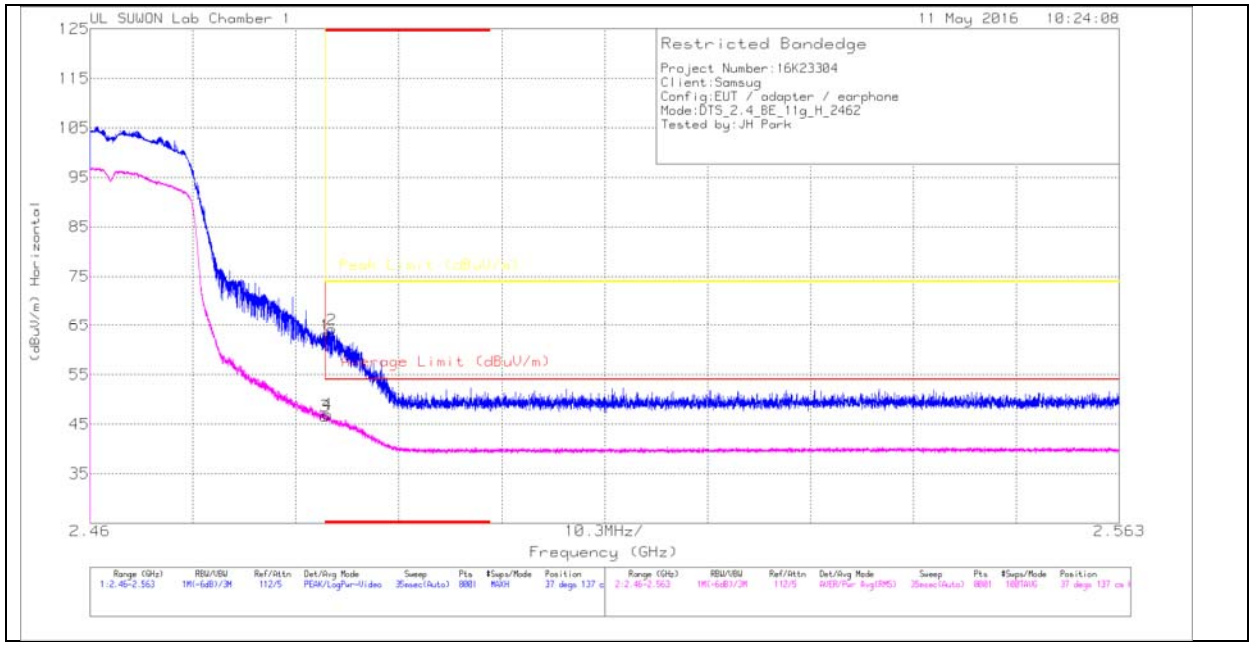
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

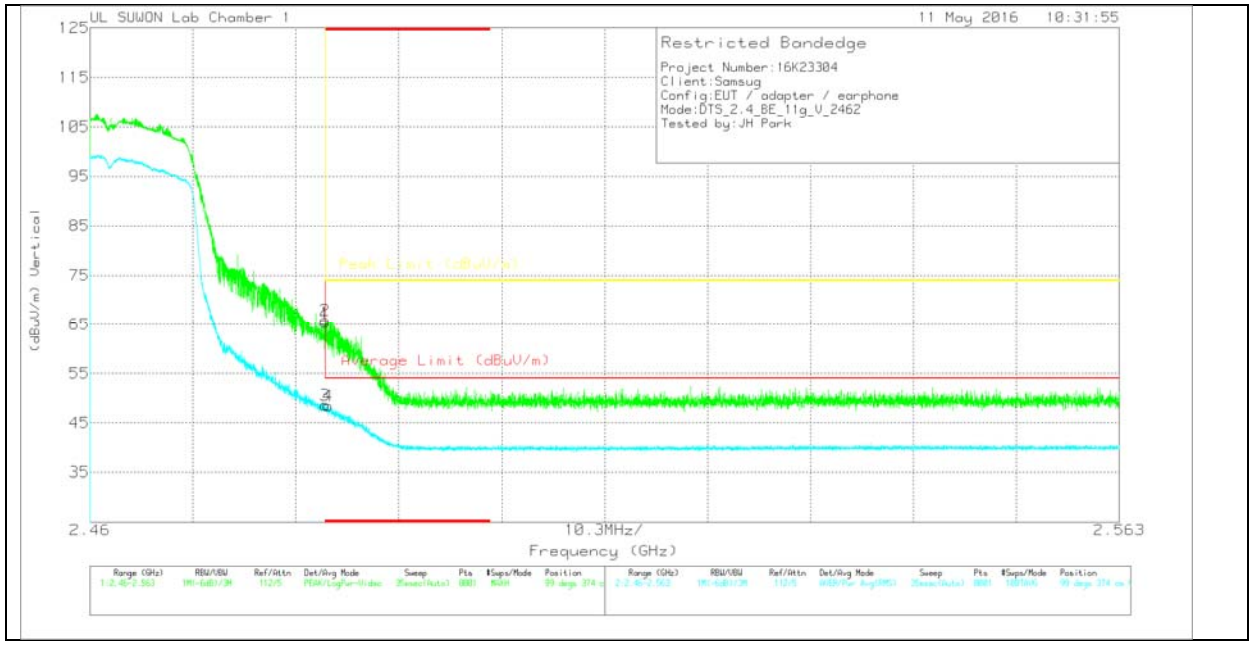
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168717)_150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	59.36	Pk	32	-28.3	0	63.06	-	-	74	-10.94	37	137	H
2	* 2.484	60.51	Pk	32	-28.3	0	64.21	-	-	74	-9.79	37	137	H
3	* 2.484	42.68	RMS	32	-28.3	.29	46.67	54	-7.33	-	-	37	137	H
4	* 2.484	42.95	RMS	32	-28.3	.29	46.94	54	-7.06	-	-	37	137	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(00168717)_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	61.75	Pk	32	-28.3	0	65.45	-	-	74	-8.55	99	374	V
2	* 2.484	62.16	Pk	32	-28.3	0	65.86	-	-	74	-8.14	99	374	V
3	* 2.484	44.59	RMS	32	-28.3	.29	48.58	54	-5.42	-	-	99	374	V
4	* 2.484	44.46	RMS	32	-28.3	.29	48.45	54	-5.55	-	-	99	374	V

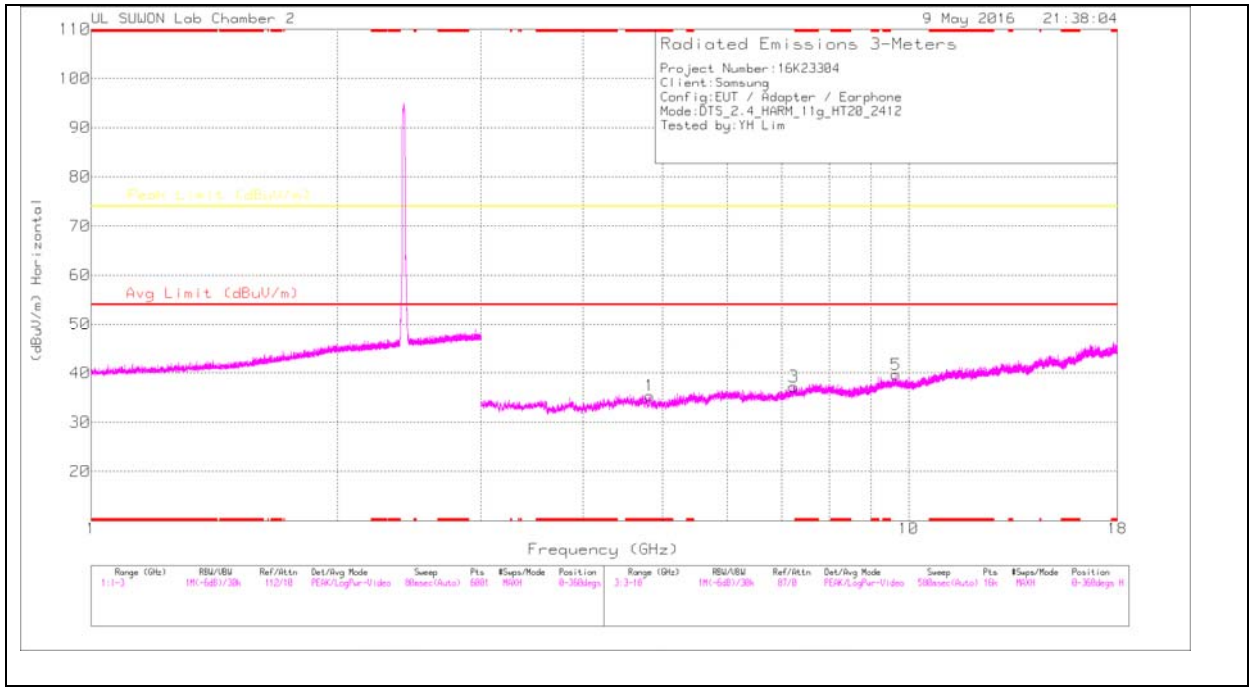
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

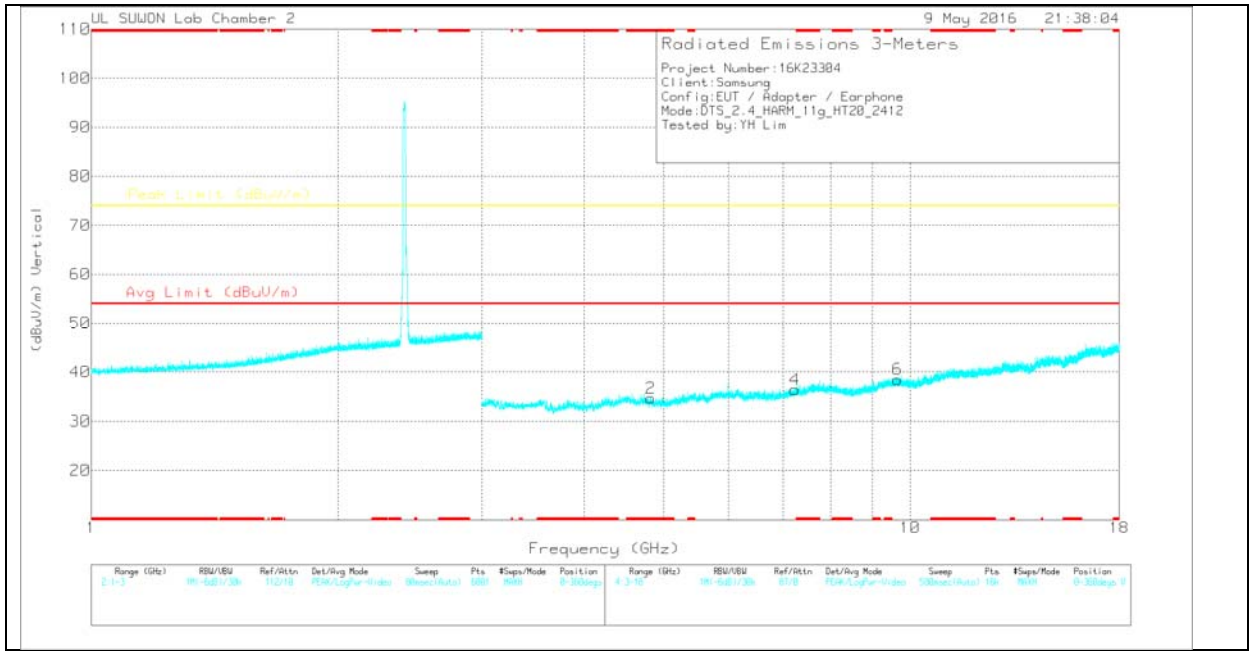
RMS - RMS detection

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

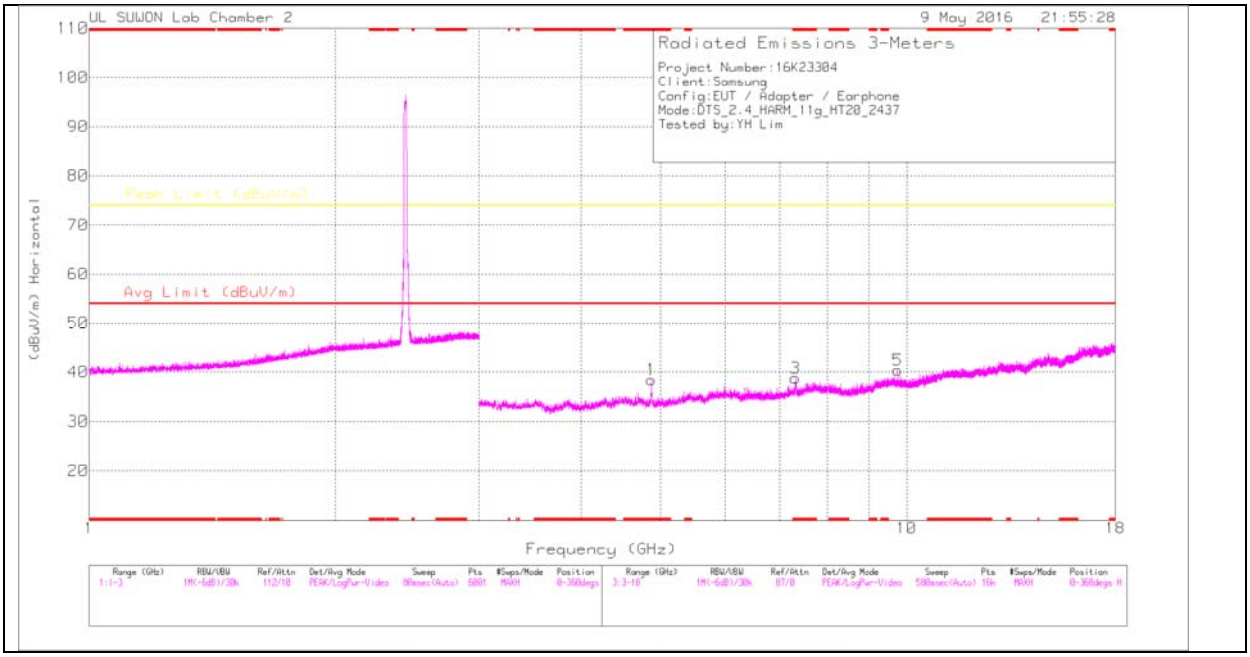
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.826	26.78	PK	33.9	-25.3	0	35.38	-	-	74	-38.62	0-360	100	H
3	7.235	24.42	PK	35.8	-23	0	37.22	-	-	74	-36.78	0-360	100	H
5	9.647	21.75	PK	36.9	-19	0	39.65	-	-	74	-34.35	0-360	200	H
2	* 4.822	26.1	PK	33.9	-25.3	0	34.7	-	-	74	-39.3	0-360	100	V
4	7.234	23.62	PK	35.8	-23	0	36.42	-	-	74	-37.58	0-360	100	V
6	9.646	20.59	PK	36.9	-19	0	38.49	-	-	74	-35.51	0-360	200	V

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

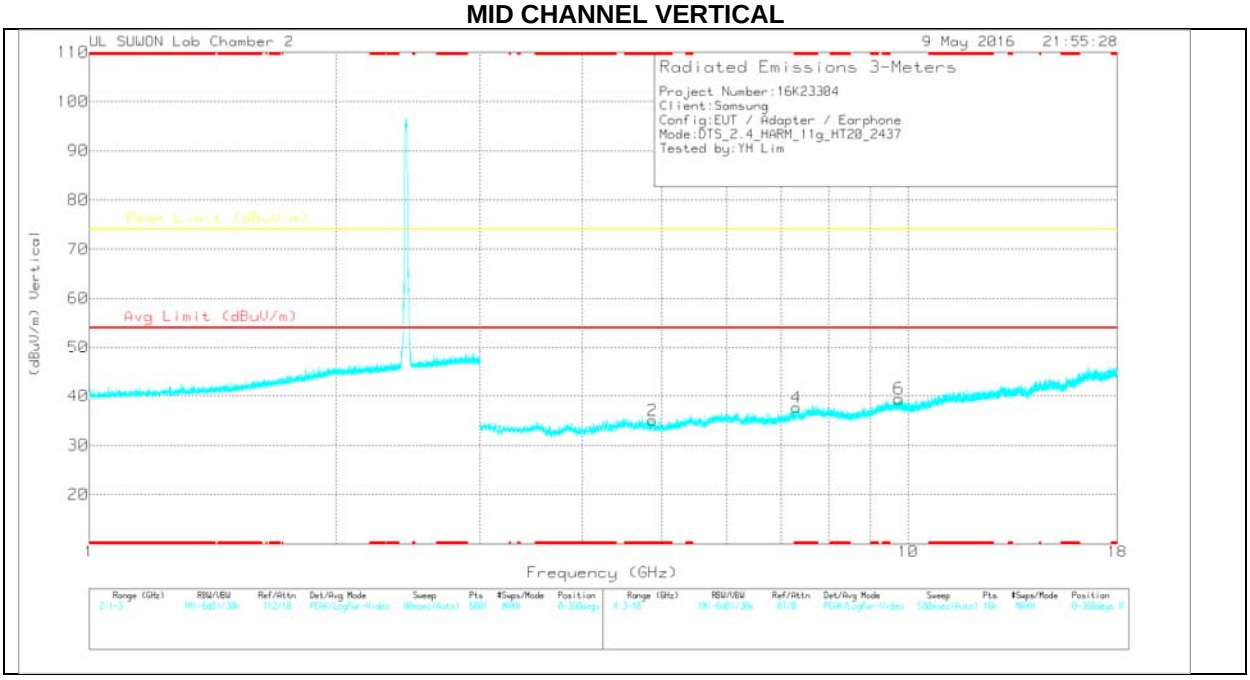
PK – Peak detector

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	* 4.875	29.75	PK	33.9	-25.2	0	38.45	-	-	74	-35.55	0-360	200	H
3	* 7.31	25.49	PK	35.9	-22.6	0	38.79	-	-	74	-35.21	0-360	100	H
5	9.748	22.73	PK	37	-19.3	0	40.43	-	-	74	-33.57	0-360	100	H
2	* 4.872	26.35	PK	33.9	-25.2	0	35.05	-	-	74	-38.95	0-360	100	V
4	* 7.308	24.35	PK	35.9	-22.6	0	37.65	-	-	74	-36.35	0-360	100	V
6	9.744	21.77	PK	37	-19.3	0	39.47	-	-	74	-34.53	0-360	200	V

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

PK – Peak detector

Radiated Emissions

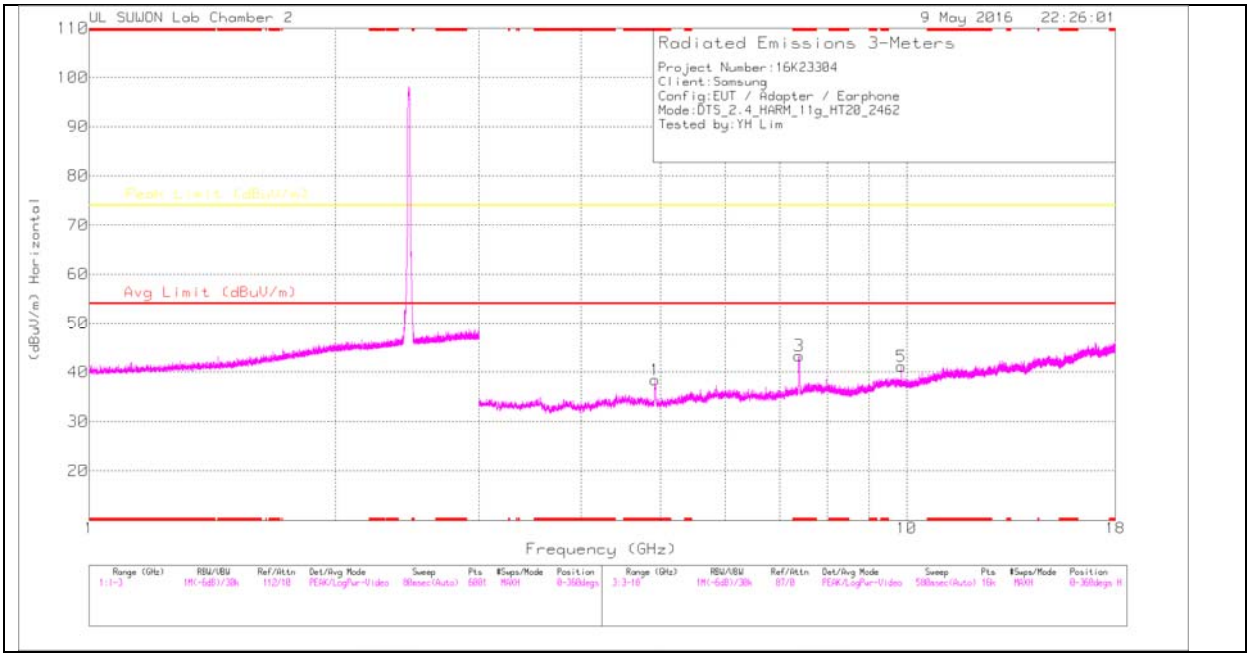
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.875	40.76	PK2	33.9	-25.2	0	49.46	-	-	74	-24.54	49	184	H
* 4.874	27.85	MAv1	33.9	-25.2	.29	36.84	54	-17.16	-	-	49	184	H
* 7.314	38.43	PK2	35.9	-22.6	0	51.73	-	-	74	-22.27	69	104	H
* 7.311	25.4	MAv1	35.9	-22.6	.29	38.99	54	-15.01	-	-	69	104	H
9.748	31.12	PK2	37	-19.3	0	48.82	-	-	74	-25.18	334	312	H

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

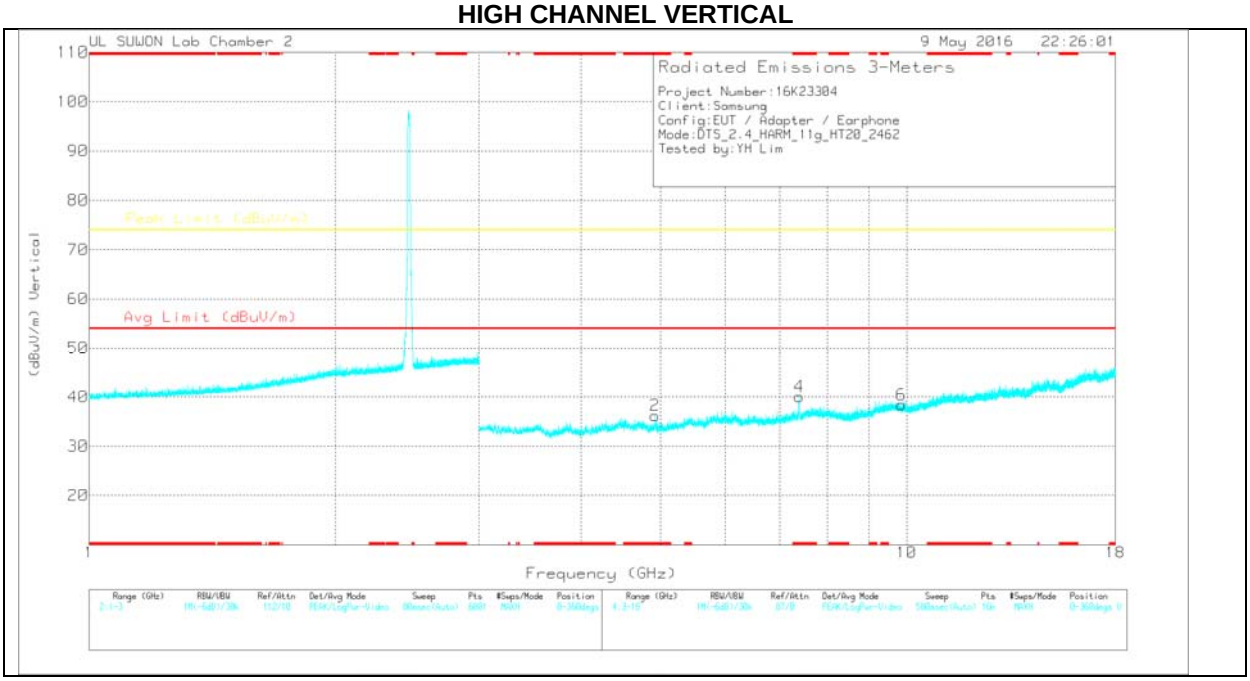
PK2 - KDB558074 Method: Maximum Peak

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	* 4.926	29.64	PK	33.9	-25.1	0	38.44	-	-	74	-35.56	0-360	200	H
3	* 7.385	29.6	PK	35.9	-22.2	0	43.3	-	-	74	-30.7	0-360	100	H
5	9.848	23.24	PK	37.1	-19.2	0	41.14	-	-	74	-32.86	0-360	100	H
2	* 4.924	27.45	PK	33.9	-25.1	0	36.25	-	-	74	-37.75	0-360	200	V
4	* 7.389	26.37	PK	35.9	-22.2	0	40.07	-	-	74	-33.93	0-360	200	V
6	9.848	20.5	PK	37.1	-19.2	0	38.4	-	-	74	-35.6	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(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
* 4.926	40.95	PK2	33.9	-25.1	0	49.75	-	-	74	-24.25	52	119	H
* 4.926	27.61	MAv1	33.9	-25.1	.29	36.7	54	-17.3	-	-	52	119	H
* 7.388	42.4	PK2	35.9	-22.2	0	56.1	-	-	74	-17.9	36	101	H
* 7.386	27.72	MAv1	35.9	-22.2	.29	41.71	54	-12.29	-	-	36	101	H
9.845	32.29	PK2	37.1	-19.2	0	50.19	-	-	74	-23.81	341	230	H
* 4.923	37.96	PK2	33.9	-25.1	0	46.76	-	-	74	-27.24	33	105	V
* 4.924	25.57	MAv1	33.9	-25.1	.29	34.66	54	-19.34	-	-	33	105	V
* 7.388	39.18	PK2	35.9	-22.2	0	52.88	-	-	74	-21.12	84	141	V
* 7.388	25.03	MAv1	35.9	-22.2	.29	39.02	54	-14.98	-	-	84	141	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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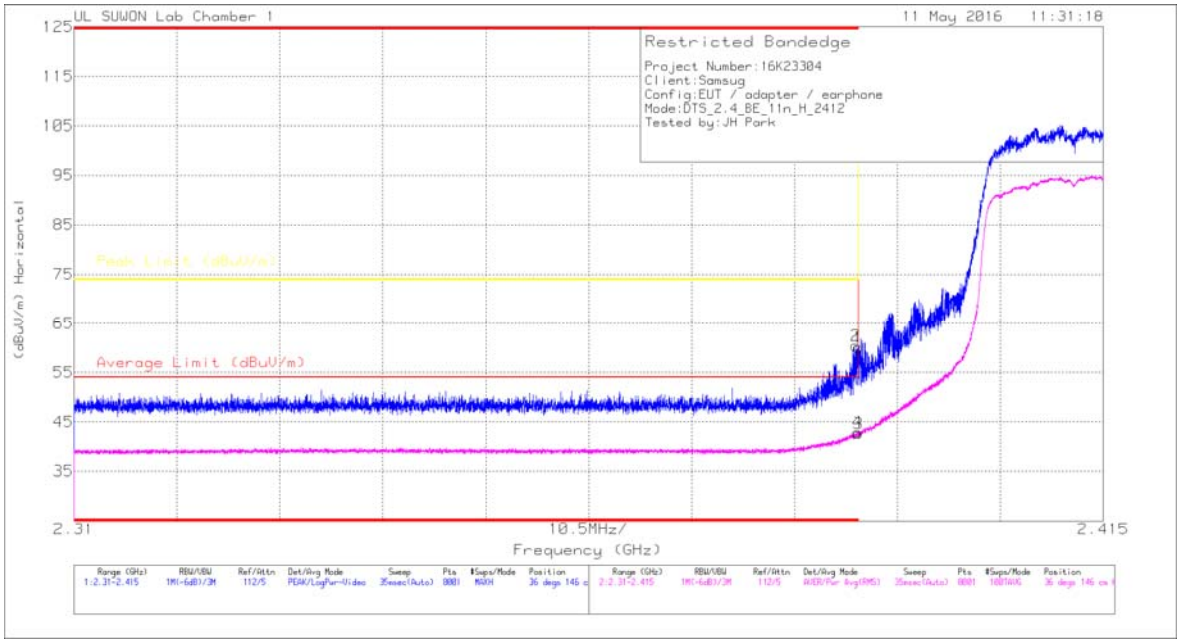
11.2.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

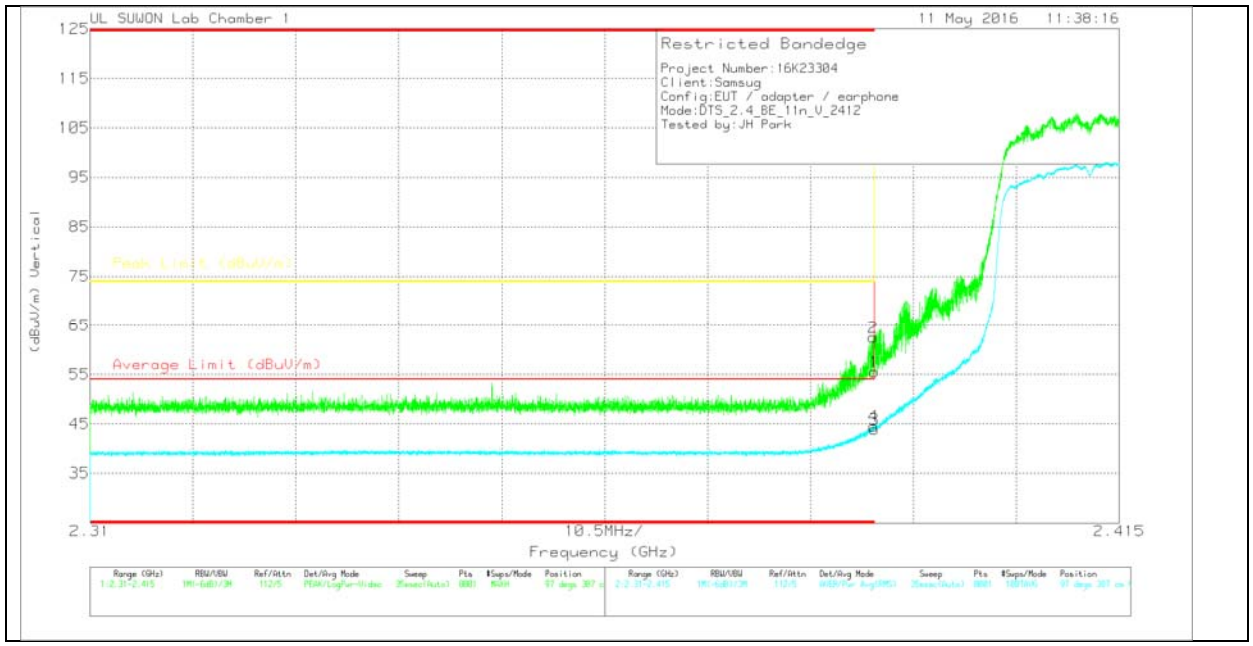
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168717)_150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	57.33	Pk	31.8	-29	0	60.13	-	-	74	-13.87	36	146	H
2	* 2.39	57.62	Pk	31.8	-29	0	60.42	-	-	74	-13.58	36	146	H
3	* 2.39	39.56	RMS	31.8	-29	.29	42.65	54	-11.35	-	-	36	146	H
4	* 2.39	39.76	RMS	31.8	-29	.29	42.85	54	-11.15	-	-	36	146	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(00168717)_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	52.67	Pk	31.8	-29	0	55.47	-	-	74	-18.53	97	387	V
2	* 2.39	59.79	Pk	31.8	-29	0	62.59	-	-	74	-11.41	97	387	V
3	* 2.39	40.78	RMS	31.8	-29	.34	43.92	54	-10.08	-	-	97	387	V
4	* 2.39	41.41	RMS	31.8	-29	.34	44.55	54	-9.45	-	-	97	387	V

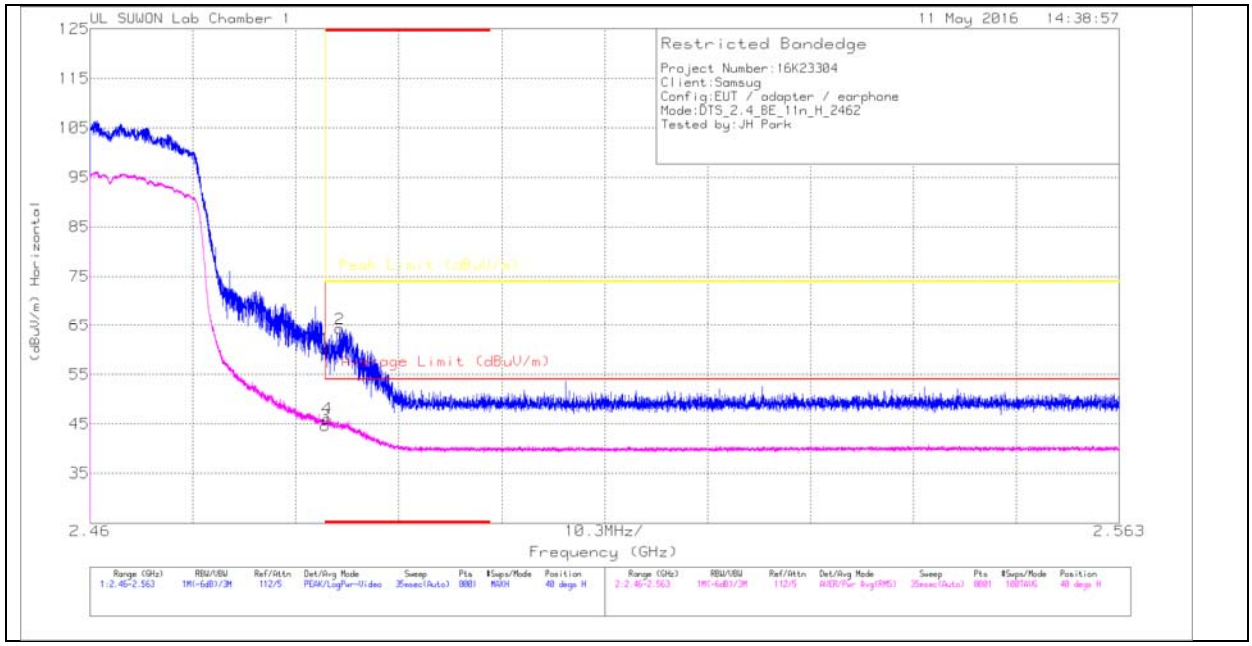
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

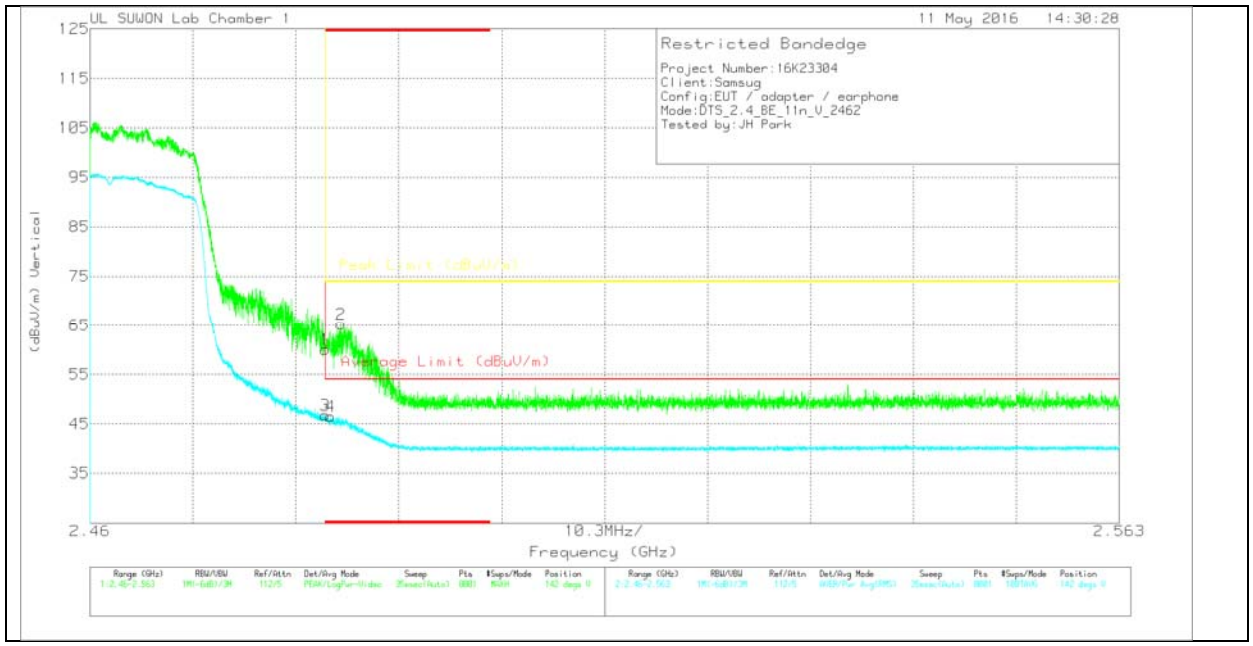
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168717)_150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	56.46	Pk	32	-28.3	0	60.16	-	-	74	-13.84	40	295	H
2	* 2.485	60.57	Pk	32	-28.3	0	64.27	-	-	74	-9.73	40	295	H
3	* 2.484	40.55	RMS	32	-28.3	.34	44.59	54	-9.41	-	-	40	295	H
4	* 2.484	42.02	RMS	32	-28.3	.34	46.06	54	-7.94	-	-	40	295	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(00168717)_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	56.43	Pk	32	-28.3	0	60.13	-	-	74	-13.87	142	374	V
2	* 2.485	61.54	Pk	32	-28.3	0	65.24	-	-	74	-8.76	142	374	V
3	* 2.484	42.73	RMS	32	-28.3	.34	46.77	54	-7.23	-	-	142	374	V
4	* 2.484	42.5	RMS	32	-28.3	.34	46.54	54	-7.46	-	-	142	374	V

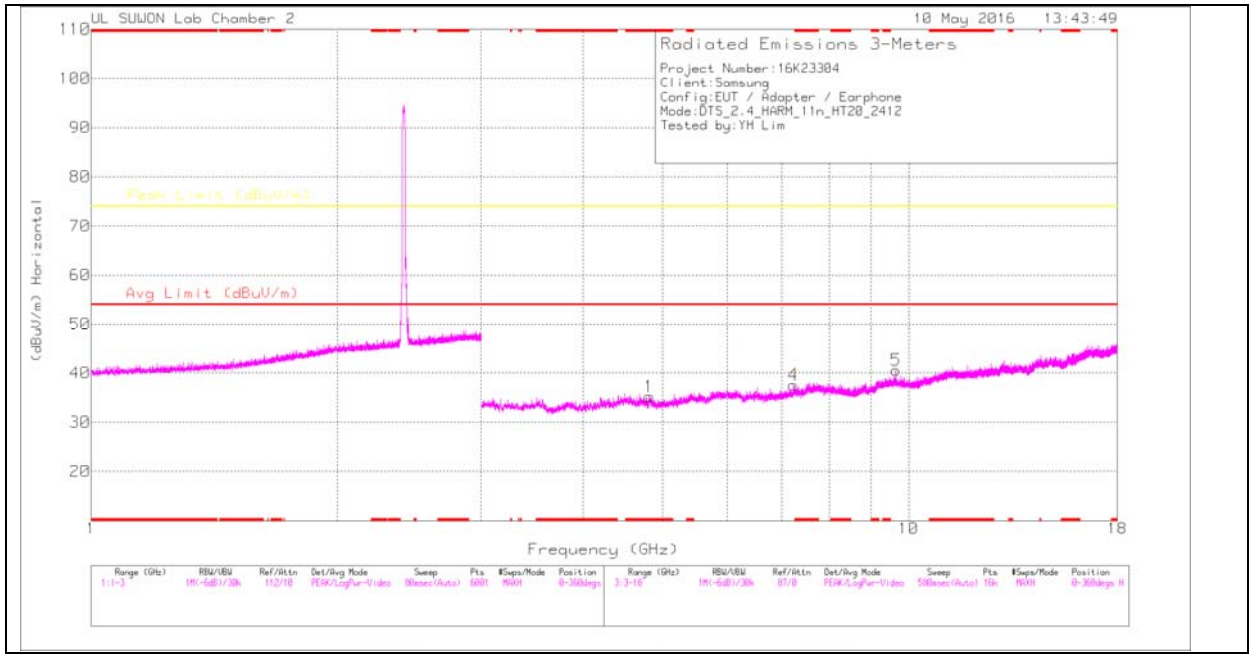
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

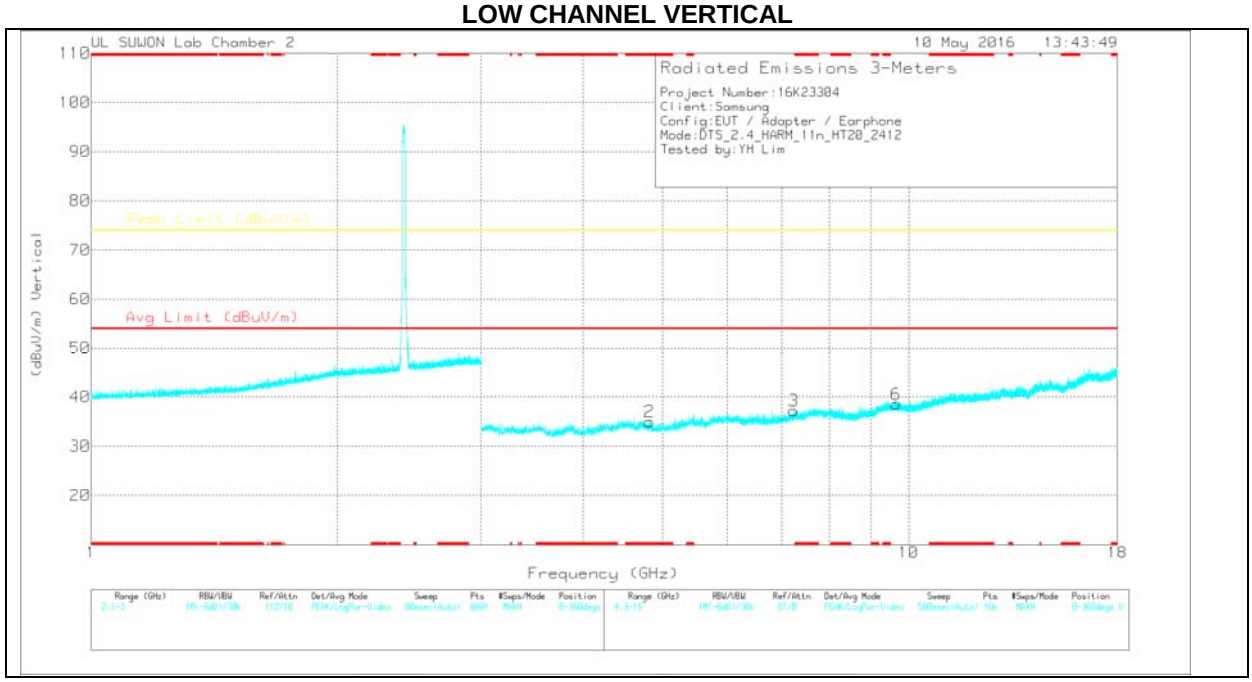
RMS - RMS detection

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	* 4.819	26.61	Pk	33.9	-25.3	0	35.21	-	-	74	-38.79	0-360	100	H
4	7.233	24.79	Pk	35.8	-23	0	37.59	-	-	74	-36.41	0-360	100	H
5	9.648	22.69	Pk	36.9	-19	0	40.59	-	-	74	-33.41	0-360	100	H
2	* 4.82	26.39	Pk	33.9	-25.3	0	34.99	-	-	74	-39.01	0-360	100	V
3	7.235	24.4	Pk	35.8	-23	0	37.2	-	-	74	-36.8	0-360	200	V
6	9.646	20.63	Pk	36.9	-19	0	38.53	-	-	74	-35.47	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	31.32	PK2	36.9	-19	0	49.22	-	-	74	-24.78	97	172	H

* - 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).

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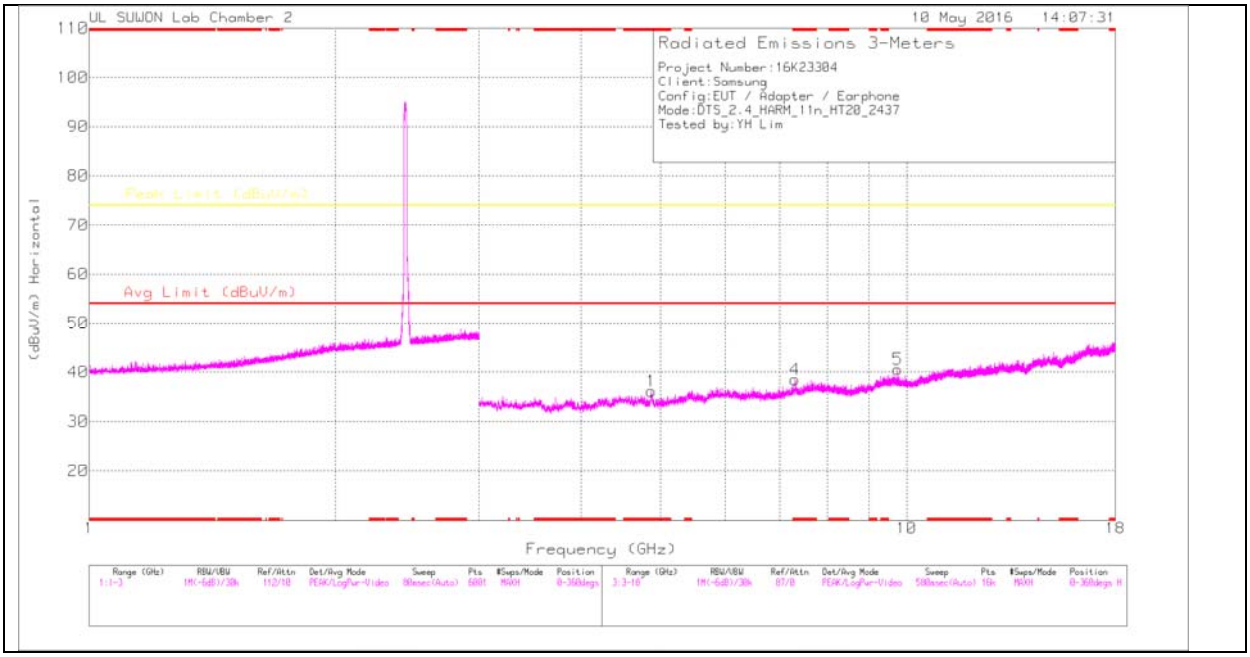
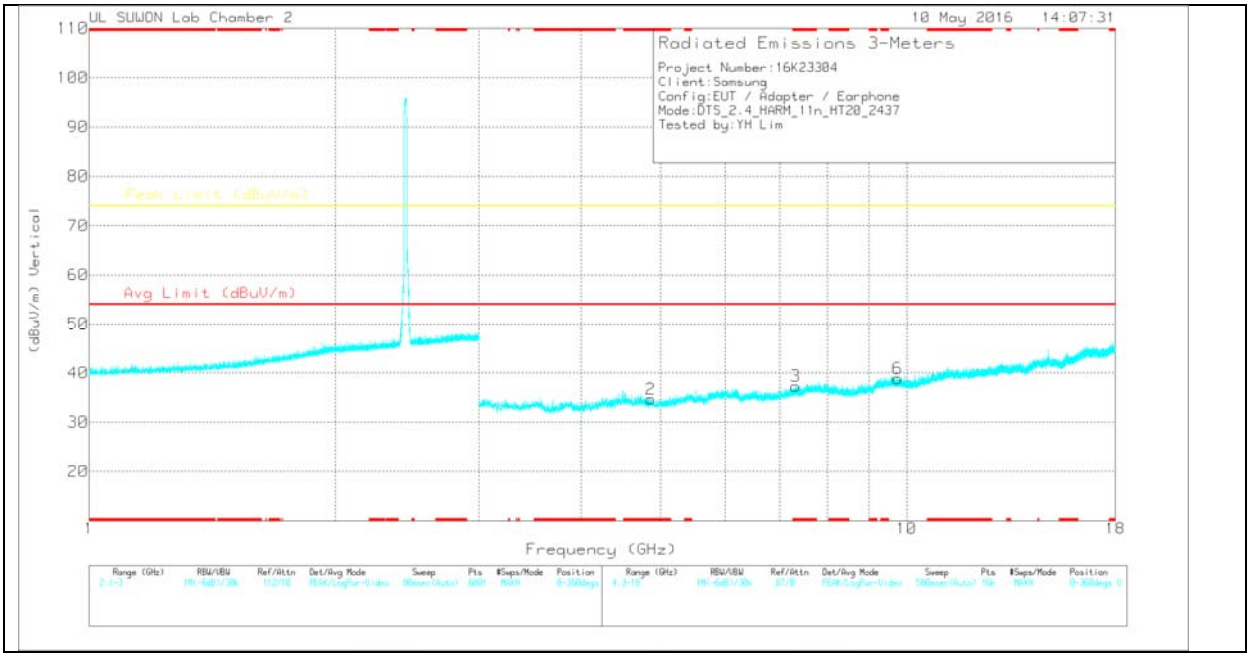
MID CHANNEL HORIZONTAL



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	* 4.872	27.44	Pk	33.9	-25.2	0	36.14	-	-	74	-37.86	0-360	100	H
4	* 7.307	25.21	Pk	35.9	-22.6	0	38.51	-	-	74	-35.49	0-360	100	H
5	9.748	22.88	Pk	37	-19.3	0	40.58	-	-	74	-33.42	0-360	100	H
2	* 4.865	26.08	Pk	33.9	-25.3	0	34.68	-	-	74	-39.32	0-360	100	V
3	* 7.312	24.03	Pk	35.9	-22.6	0	37.33	-	-	74	-36.67	0-360	100	V
6	9.748	21.18	Pk	37	-19.3	0	38.88	-	-	74	-35.12	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
* 4.875	40.93	PK2	33.9	-25.2	0	49.63	-	-	74	-24.37	53	103	H
* 4.874	26.38	MAv1	33.9	-25.2	.34	35.42	54	-18.58	-	-	53	103	H
* 7.308	37.24	PK2	35.9	-22.6	0	50.54	-	-	74	-23.46	67	111	H
* 7.31	23.65	MAv1	35.9	-22.6	.34	37.29	54	-16.71	-	-	67	111	H
9.747	31.79	PK2	37	-19.3	0	49.49	-	-	74	-24.51	15	154	H

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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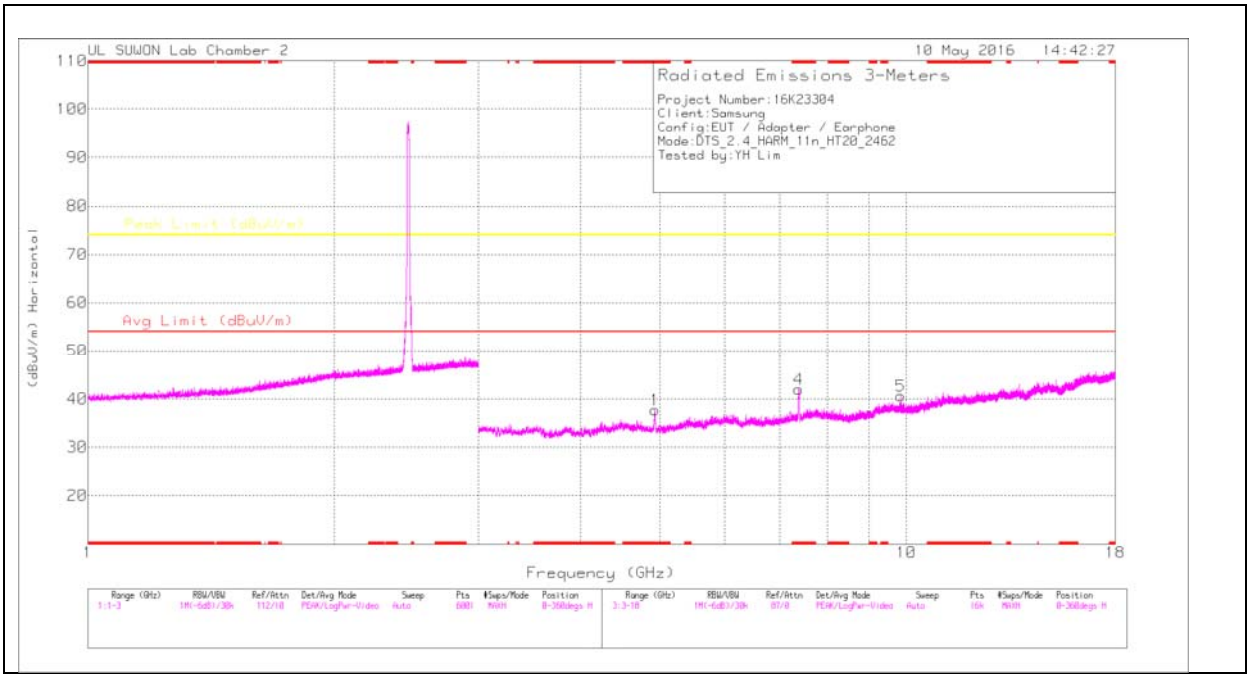
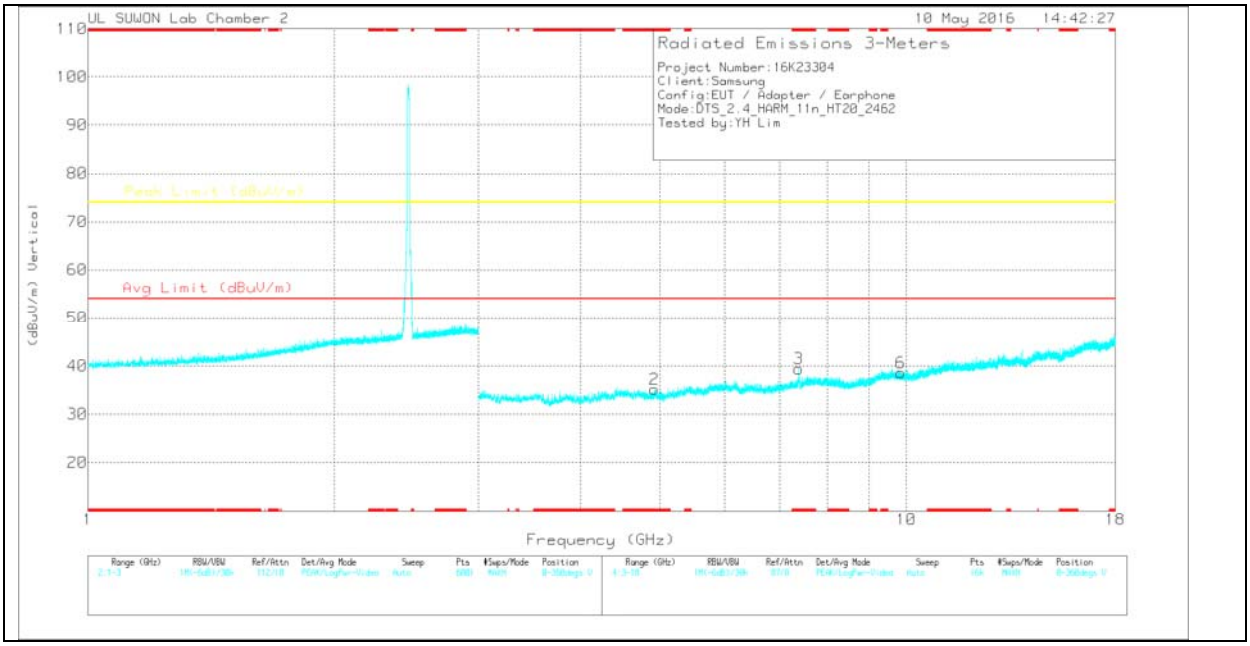
HIGH CHANNEL HORIZONTAL



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	* 4.926	28.89	Pk	33.9	-25.1	0	37.69	-	-	74	-36.31	0-360	100	H
4	* 7.383	28.26	Pk	35.9	-22.2	0	41.96	-	-	74	-32.04	0-360	200	H
5	9.848	22.7	Pk	37.1	-19.2	0	40.6	-	-	74	-33.4	0-360	200	H
2	* 4.92	26.34	Pk	33.9	-25.1	0	35.14	-	-	74	-38.86	0-360	100	V
3	* 7.383	25.72	Pk	35.9	-22.2	0	39.42	-	-	74	-34.58	0-360	100	V
6	9.847	20.74	Pk	37.1	-19.2	0	38.64	-	-	74	-35.36	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
* 4.923	40.71	PK2	33.9	-25.1	0	49.51	-	-	74	-24.49	57	100	H
* 4.923	26.58	MAv1	33.9	-25.1	.34	35.72	54	-18.28	-	-	57	100	H
* 7.391	42.57	PK2	35.9	-22.2	0	56.27	-	-	74	-17.73	66	112	H
* 7.388	27.12	MAv1	35.9	-22.2	.34	41.16	54	-12.84	-	-	66	112	H
9.848	31.74	PK2	37.1	-19.2	0	49.64	-	-	74	-24.36	7	153	H
* 7.391	37.45	PK2	35.9	-22.2	0	51.15	-	-	74	-22.85	105	274	V
* 7.388	23.11	MAv1	35.9	-22.2	.34	37.15	54	-16.85	-	-	105	274	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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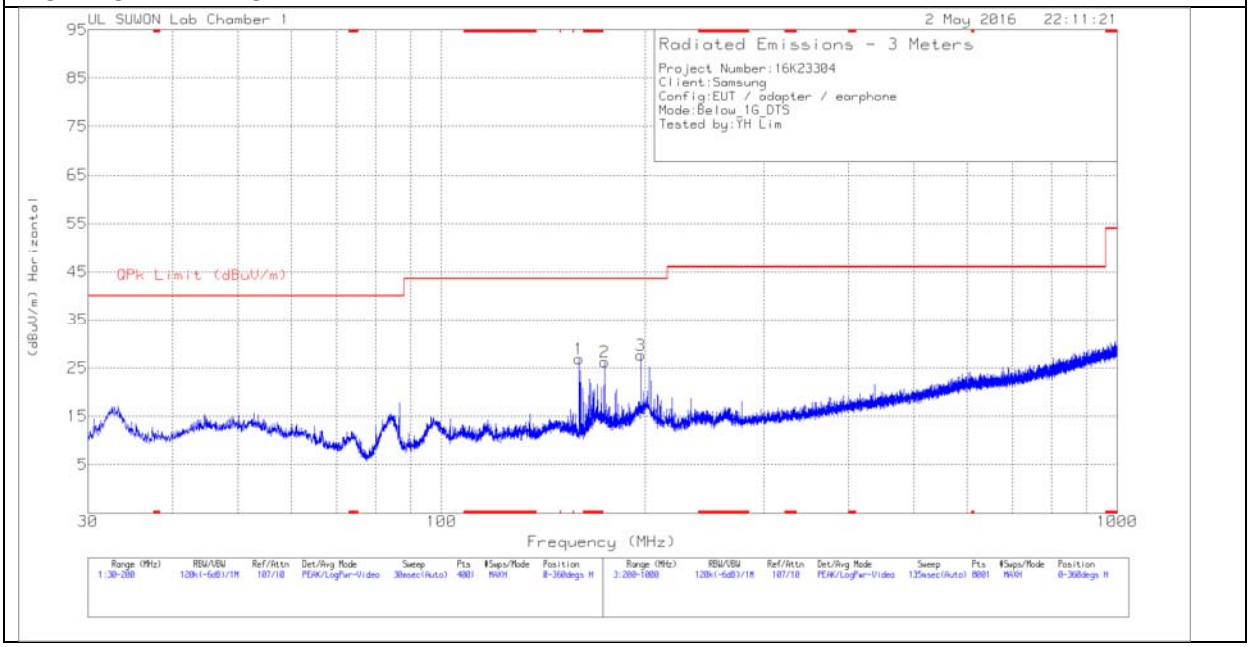
11.3. WORST-CASE BELOW 1 GHz

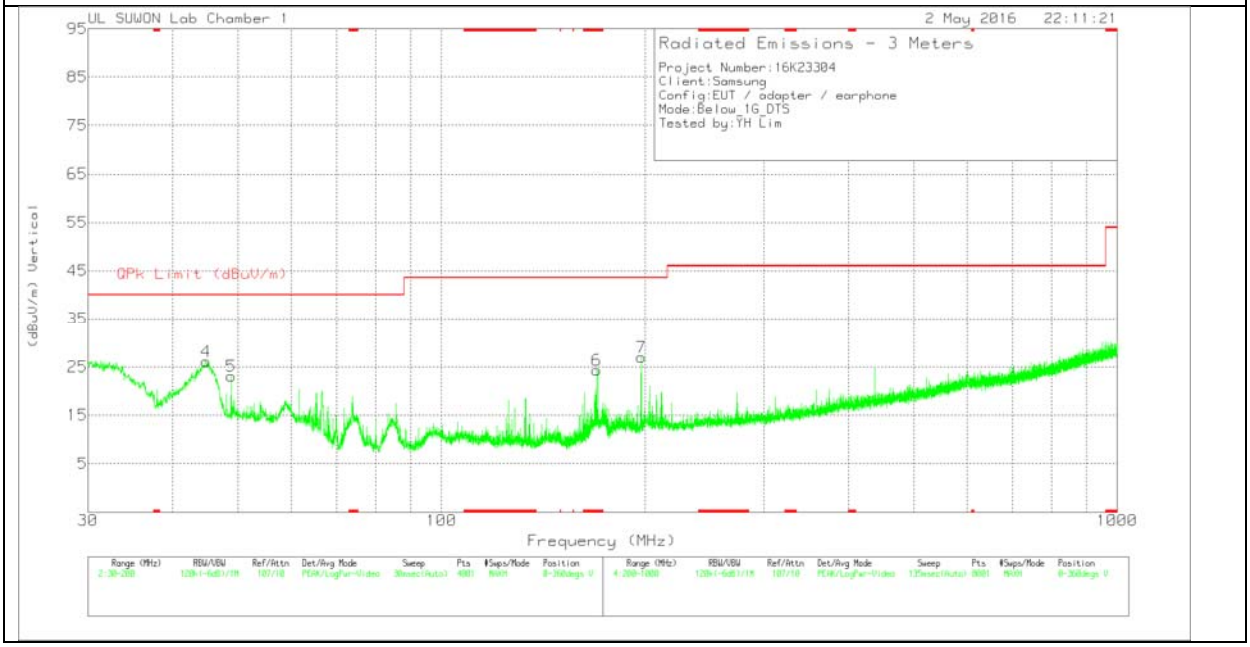
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



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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	159.9225	46.94	Pk	8.5	-28.6	26.84	43.52	-16.68	0-360	300	H
2	174.415	45.42	Pk	9.2	-28.4	26.22	43.52	-17.3	0-360	200	H
3	197.1525	44.77	Pk	11.1	-28.2	27.67	43.52	-15.85	0-360	100	H
4	44.8325	42.71	Pk	13.6	-30.2	26.11	40	-13.89	0-360	100	V
5	48.8275	39.51	Pk	13.8	-30.2	23.11	40	-16.89	0-360	100	V
6	* 169.6125	43.88	Pk	8.9	-28.4	24.38	43.52	-19.14	0-360	300	V
7	197.8325	44.08	Pk	11.1	-28.2	26.98	43.52	-16.54	0-360	200	V

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

Pk - Peak detector

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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.

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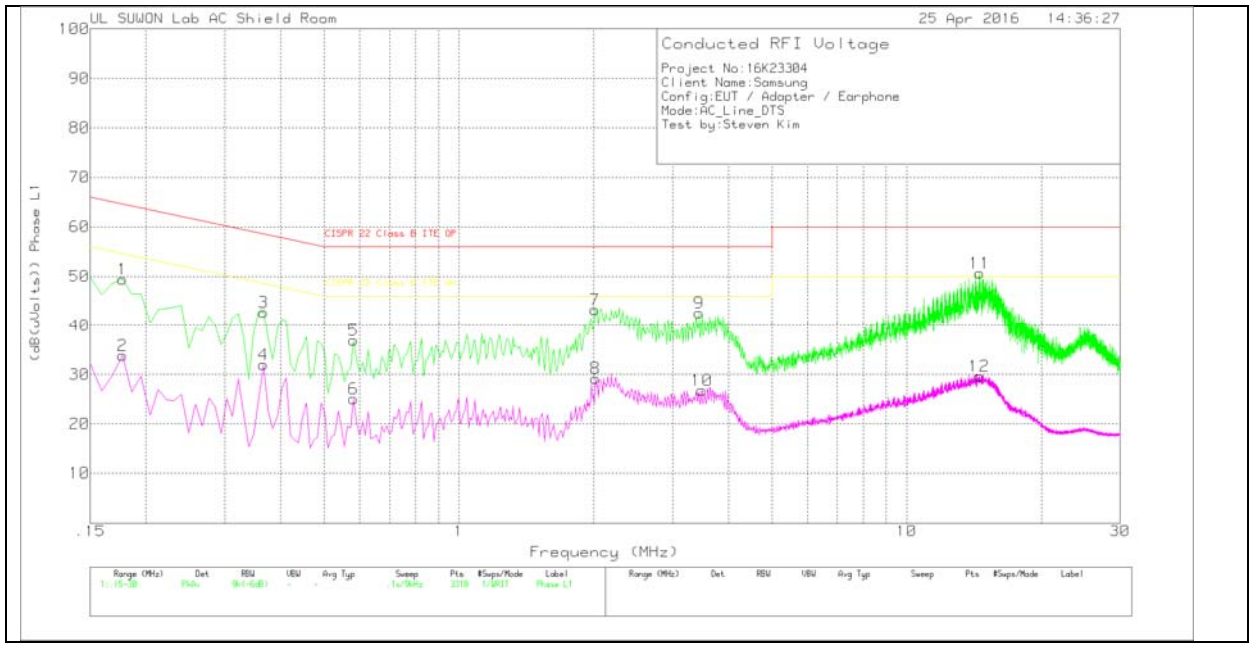
RESULTS

WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

Trace Markers

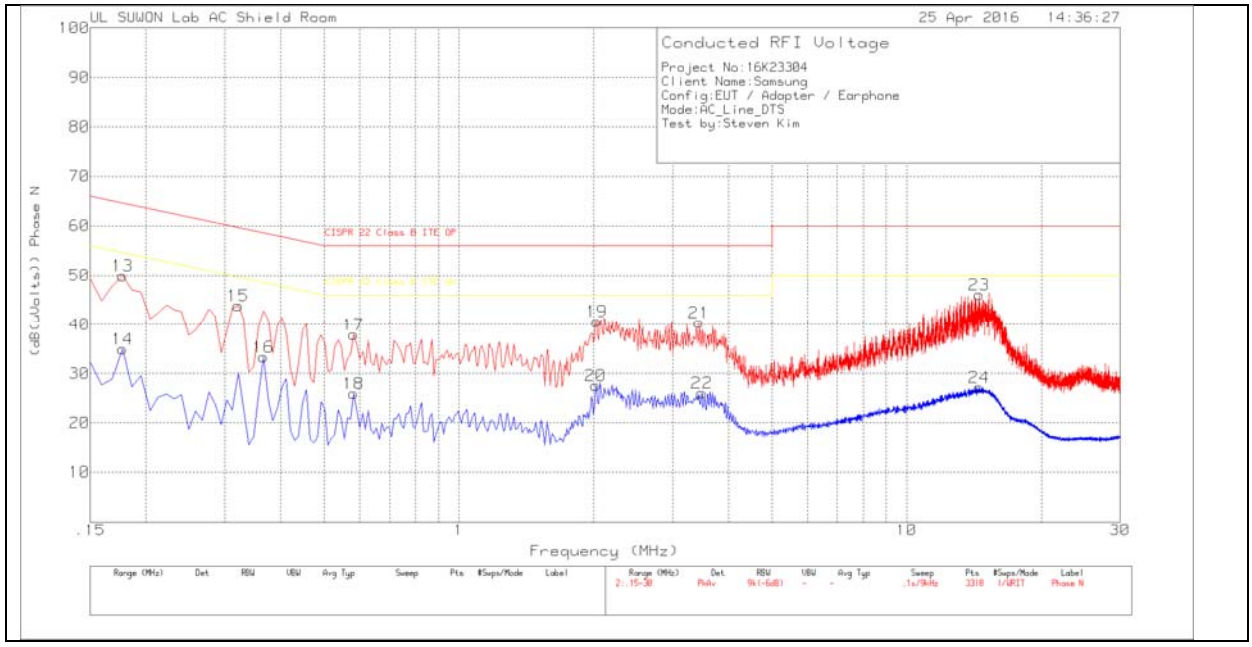
Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_with 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	.177	39.28	Pk	10.2	0	49.48	64.63	-15.15	-	-
2	.177	23.68	Av	10.2	0	33.88	-	-	54.63	-20.75
3	.366	32.69	Pk	10.1	0	42.79	58.59	-15.8	-	-
4	.366	21.85	Av	10.1	0	31.95	-	-	48.59	-16.64
5	.582	26.9	Pk	10.1	0	37	56	-19	-	-
6	.582	15.02	Av	10.1	0	25.12	-	-	46	-20.88
7	2.013	33.41	Pk	9.8	.1	43.31	56	-12.69	-	-
8	2.022	19.32	Av	9.8	.1	29.22	-	-	46	-16.78
9	3.444	32.79	Pk	9.8	.1	42.69	56	-13.31	-	-
10	3.489	16.95	Av	9.8	.1	26.85	-	-	46	-19.15
11	14.55	40.37	Pk	10.1	.2	50.67	60	-9.33	-	-
12	14.541	19.34	Av	10.1	.2	29.64	-	-	50	-20.36

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_with 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	.177	39.88	Pk	10.1	0	49.98	64.63	-14.65	-	-
14	.177	24.88	Av	10.1	0	34.98	-	-	54.63	-19.65
15	.321	34.02	Pk	9.9	0	43.92	59.68	-15.76	-	-
16	.366	23.21	Av	10.1	0	33.31	-	-	48.59	-15.28
17	.582	27.85	Pk	10.1	0	37.95	56	-18.05	-	-
18	.582	15.79	Av	10.1	0	25.89	-	-	46	-20.11
19	2.031	30.78	Pk	9.8	.1	40.68	56	-15.32	-	-
20	2.022	17.6	Av	9.8	.1	27.5	-	-	46	-18.5
21	3.444	30.46	Pk	9.8	.1	40.36	56	-15.64	-	-
22	3.489	16.13	Av	9.8	.1	26.03	-	-	46	-19.97
23	14.541	35.61	Pk	10.3	.2	46.11	60	-13.89	-	-
24	14.505	16.66	Av	10.3	.2	27.16	-	-	50	-22.84

Pk - Peak detector

Av - Average detection

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15C
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433