FCC CFR47 PART 15 SUBPART C

DTS Wireless LAN

CERTIFICATION TEST REPORT

FOR

LTE Watch + BT/BLE and DTS b/g/n

MODEL NUMBER : SM-R765V

FCC ID: A3LSMR765V

REPORT NUMBER: 4787821625-E1V2

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Prepared for
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ACCREDITED
TL-637

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	02/03/17	Initial issue	Junwhan Lee
V2	02/09/17	Revised section 2 and note on section 10. New section 7 added (Reference measurement results. Duty cycle test results and 99% OBW results moved to new section. Verification results for Wi-Fi Ch. 12/13 added).	Junwhan Lee

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TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS 5

2. TEST METHODOLOGY 6

3. FACILITIES AND ACCREDITATION 6

4. CALIBRATION AND UNCERTAINTY 6

4.1. MEASURING INSTRUMENT CALIBRATION 6

4.2. SAMPLE CALCULATION 6

4.3. MEASUREMENT UNCERTAINTY 7

5. EQUIPMENT UNDER TEST 8

5.1. DESCRIPTION OF EUT 8

5.2. MAXIMUM OUTPUT POWER 8

5.3. DESCRIPTION OF AVAILABLE ANTENNAS 8

5.4. WORST-CASE CONFIGURATION AND MODE 8

5.5. DESCRIPTION OF TEST SETUP 9

6. TEST AND MEASUREMENT EQUIPMENT 11

7. REFERENCE MEASUREMENT RESULTS 12

7.1. ON TIME AND DUTY CYCLE RESULTS 12

7.2. 99% BANDWIDTH 14

7.2.1. 802.11b MODE IN THE 2.4 GHz BAND 14
7.2.2. 802.11g MODE IN THE 2.4 GHz BAND 14
7.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND 14
7.2.4. 99% BANDWIDTH PLOTS 15

7.3. Verification of geo-location functioning for Wi-Fi Ch. 12& 13 18

7.3.1. Setup Configuration 18
7.3.2. Test Results 18

8. SUMMARY TABLE 19

9. ANTENNA PORT TEST RESULTS 20

9.1. 6 dB BANDWIDTH 20

9.1.1. 802.11b MODE IN THE 2.4 GHz BAND 20
9.1.2. 802.11g MODE IN THE 2.4 GHz BAND 20
9.1.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND 20
9.1.4. 6 dB BANDWIDTH PLOTS 21

9.2. OUTPUT POWER 24

9.2.1. 802.11b MODE IN THE 2.4 GHz BAND 25
9.2.2. 802.11g MODE IN THE 2.4 GHz BAND 26
9.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND 27

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9.3. PSD 28
9.3.1. 802.11b MODE IN THE 2.4 GHz BAND 29
9.3.2. 802.11g MODE IN THE 2.4 GHz BAND 29
9.3.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND 29
9.3.4. PSD PLOTS 30

9.4. OUT-OF-BAND EMISSIONS 33
9.4.1. 802.11b MODE IN THE 2.4 GHz BAND 34
9.4.2. 802.11g MODE IN THE 2.4 GHz BAND 37
9.4.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND 40

10. RADIATED TEST RESULTS 43

10.1. LIMITS AND PROCEDURE 43

10.2. TRANSMITTER ABOVE 1 GHz 45
10.2.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND 45
10.2.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND 55
10.2.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND 65

10.3. WORST-CASE BELOW 1 GHz 75

11. AC POWER LINE CONDUCTED EMISSIONS 77

12. SETUP PHOTOS 82

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

EUT DESCRIPTION: LTE Watch + BT/BLE and DTS b/g/n

MODEL NUMBER: SM-R765V

SERIAL NUMBER: R3AH8008D4T, R3AH8008L9F, R3AH8008H6J, R3AH8008GVV, R3AH8008H2R (RADIATED); R3AH600ATNL (CONDUCTED)

DATE TESTED: JAN 16, 2017 - JAN 24, 2017

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.

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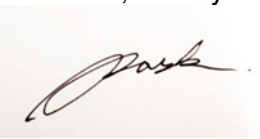
UL Korea, Ltd. By:



SungGil Park
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 following methods.

1. FCC CFR 47 Part 2.
2. FCC CFR 47 Part 15.
3. KDB 558074 D01 DTS Meas Guidance v03r05.
4. KDB 594280 D01 Software configuration control v02r01.
5. ANSI C63.10-2013.

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

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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

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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 LTE Watch + 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 average output power as follows:

Frequency Range [MHz]	Mode	Output Power [dBm]	Output Power [mW]
2412 - 2462	802.11b	16.16	41.30
	802.11g	15.37	34.43
	802.11n HT20	14.05	25.41

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antennas, with a antenna's maximum gain of -4.5 dBi.

5.4. WORST-CASE CONFIGURATION AND MODE

Radiated emission below 1GHz and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Radiated emission above 1GHz was performed with the EUT set to transmit low/mid/high channels.

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
Adapter	SAMSUNG	ETA0U60JBE	DK2H202VS/7 -E	N/A
Data Cable	SAMSUNG	ECB-DU2EBE	N/A	N/A
Wireless Charger	SAMSUNG	EP-YO760	RF7HC1KGZSVCIS	A3LEPYO760

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

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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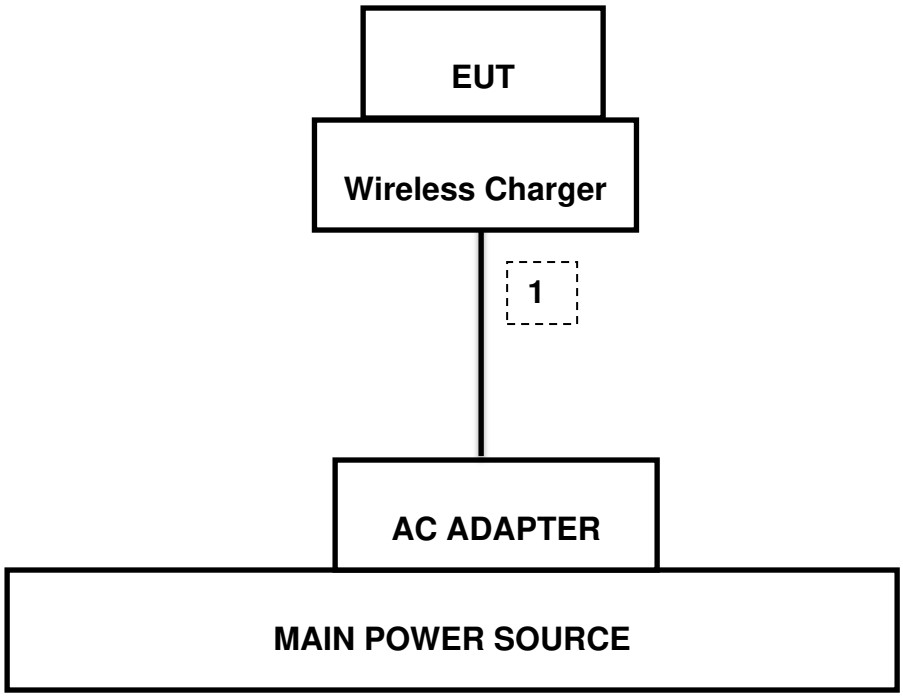
SETUP DIAGRAM FOR TESTS



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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	10-14-18
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	04-25-17
Antenna, Horn, 18 GHz	ETS	3115	00167211	10-14-18
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	08-17-17
Preamplifier, 1000 MHz	Sonoma	310N	351741	08-16-17
Preamplifier	ETS	3115-PA	00167475	08-17-17
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	08-16-17
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	08-17-17
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54490312	08-16-17
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	11-25-17
Average Power Sensor	R&S	NRP-Z91	102681	08-16-17
Average Power Sensor	Agilent / HP	U2000	MY54270007	08-17-17
EMI Test Receive, 40 GHz	R&S	ESU40	100439	08-17-17
EMI Test Receive, 40 GHz	R&S	ESU40	100457	08-16-17
EMI Test Receive, 3 GHz	R&S	ESR3	101832	08-16-17
Attenuator / Switch driver	HP	11713A	3748A04272	N/A
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	009	08-17-17
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	015	08-16-17
High Pass Filter 3GHz	Micro-Tronics	HPM17543	010	08-17-17
High Pass Filter 3GHz	Micro-Tronics	HPM17543	015	08-16-17
High Pass Filter 6GHz	Micro-Tronics	HPM17542	009	08-17-17
High Pass Filter 6GHz	Micro-Tronics	HPM17542	016	08-16-17
LISN	R&S	ENV-216	101836	08-16-17
LISN	R&S	ENV-216	101837	08-16-17
Attenuator	PASTERNACK	PE7087-10	A009	08-16-17
UL Software				
Description	**Manufacturer**	**Model**	**Version**	
Radiated software	UL	UL EMC	Ver 9.5	
AC Line Conducted software	UL	UL EMC	Ver 9.5	

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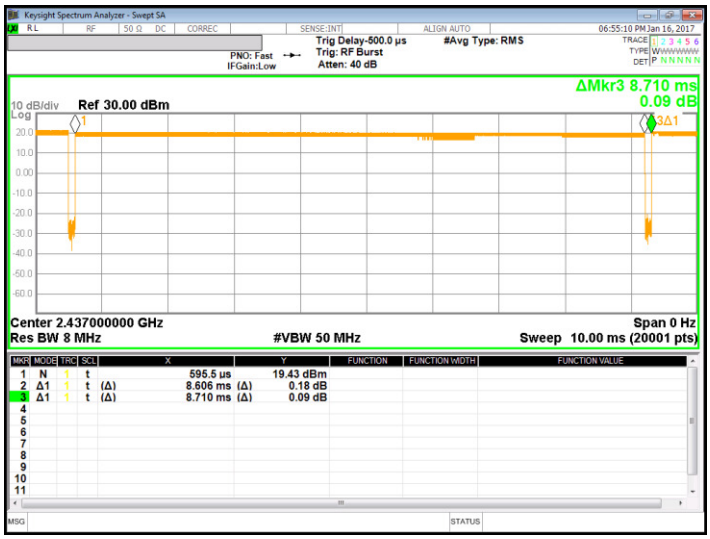
7. REFERENCE MEASUREMENT RESULTS

7.1. ON TIME AND DUTY CYCLE RESULTS

LIMITS

None; for reporting purposes only.

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	8.606	8.71	0.988	98.8%	0.00	0.010
802.11g	1.427	1.536	0.929	92.9%	0.32	0.701
802.11n HT20	1.335	1.444	0.925	92.5%	0.34	0.749



[802.11b]

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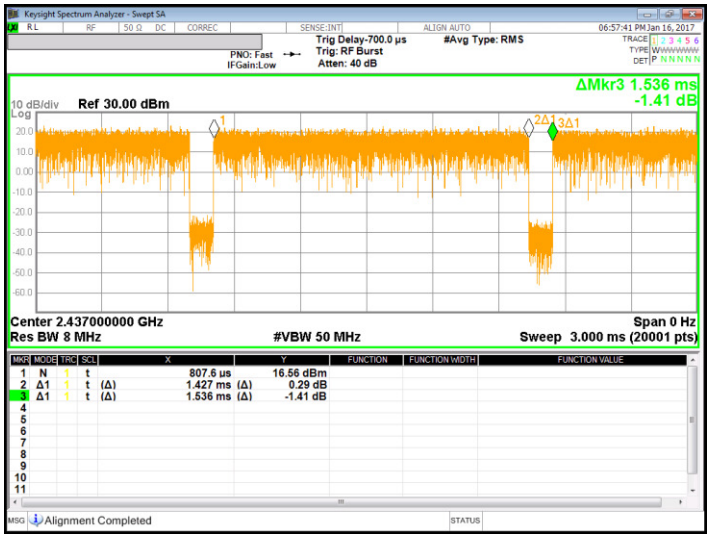
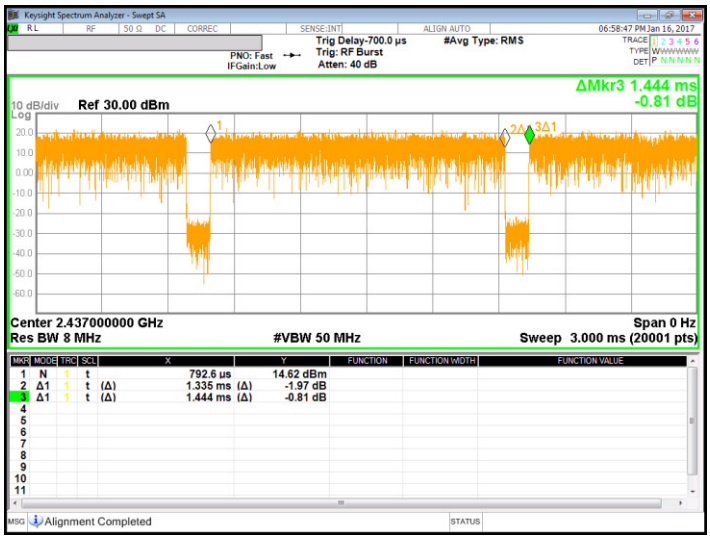


[802.11g]



[802.11n]

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7.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

7.2.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	2412	11.379
Mid	2437	11.229
High	2462	11.269
Worst		11.379

7.2.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	2412	16.352
Mid	2437	16.332
High	2462	16.377
Worst		16.377

7.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	2412	17.542
Mid	2437	17.571
High	2462	17.580
Worst		17.580

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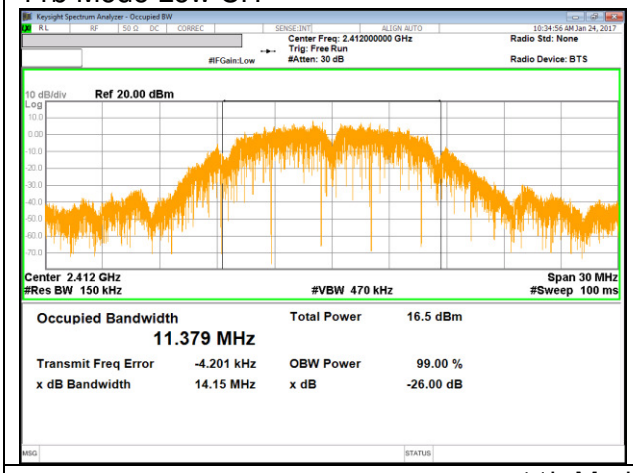
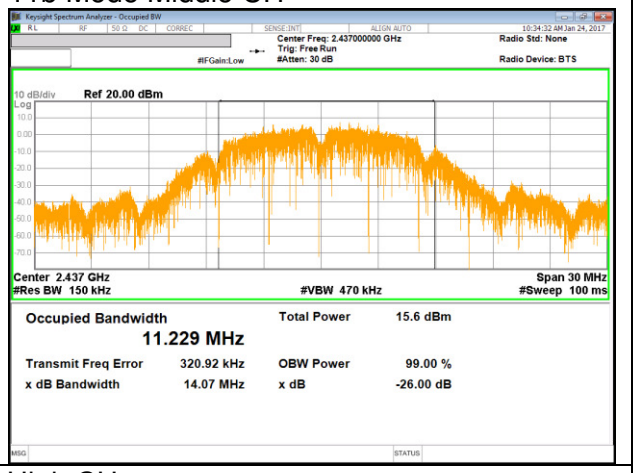
7.2.4. 99% BANDWIDTH PLOTS

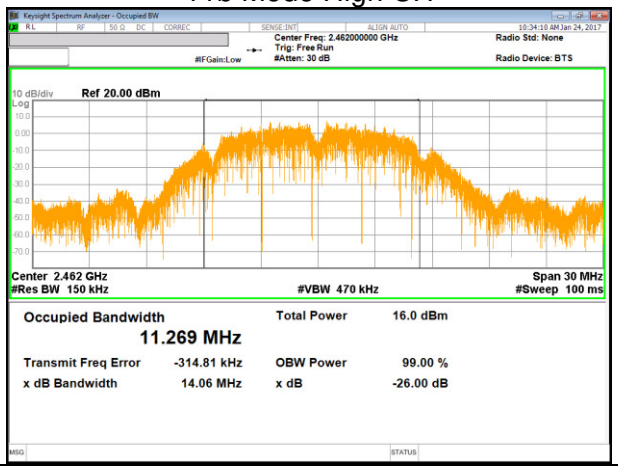
11b Mode Low CH



11b Mode Middle CH



11b Mode High CH



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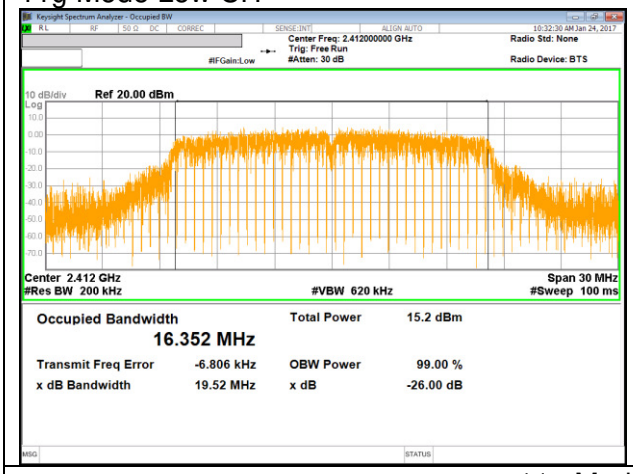
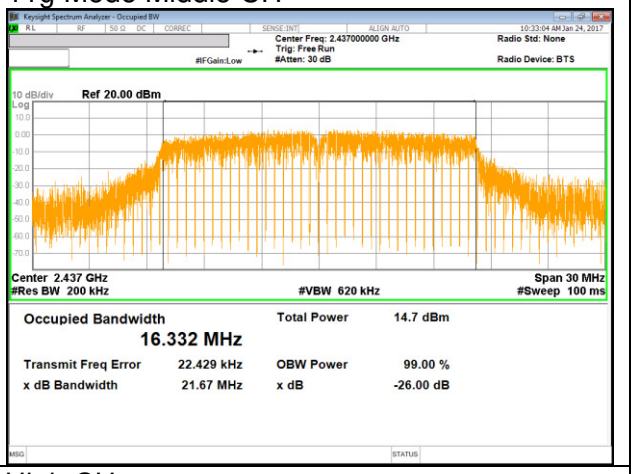
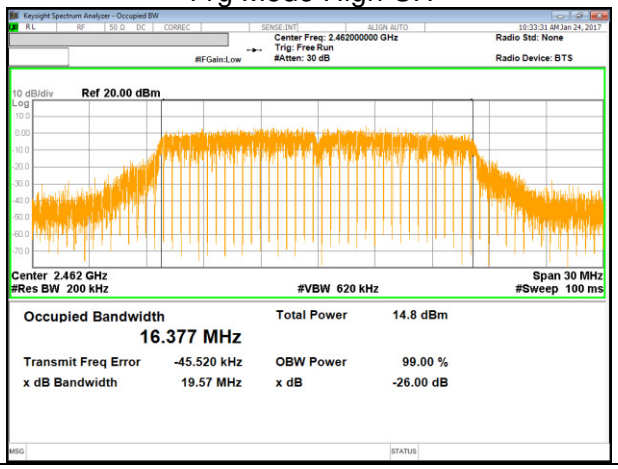
11g Mode Low CH



11g Mode Middle CH



11g Mode High CH



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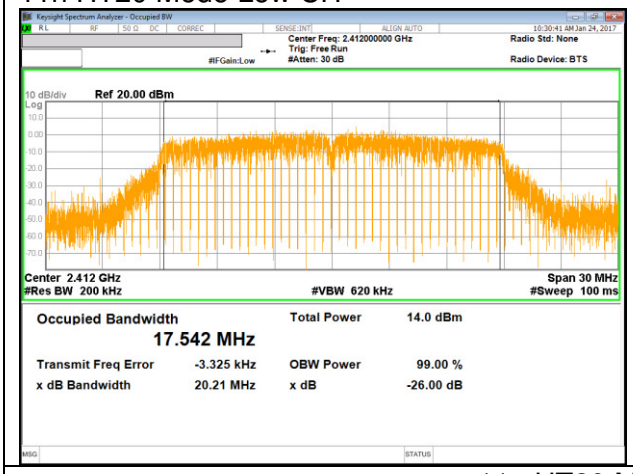
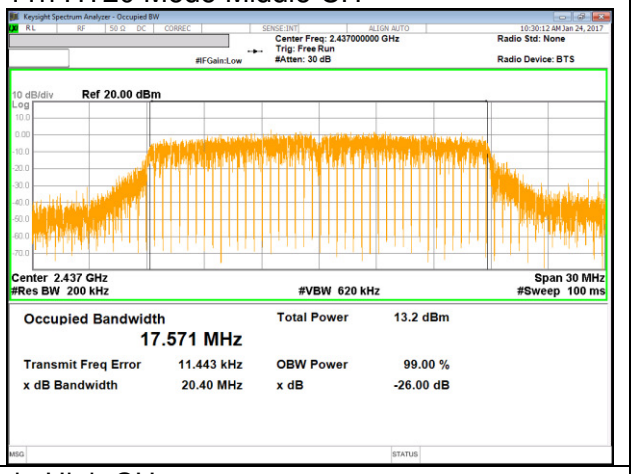
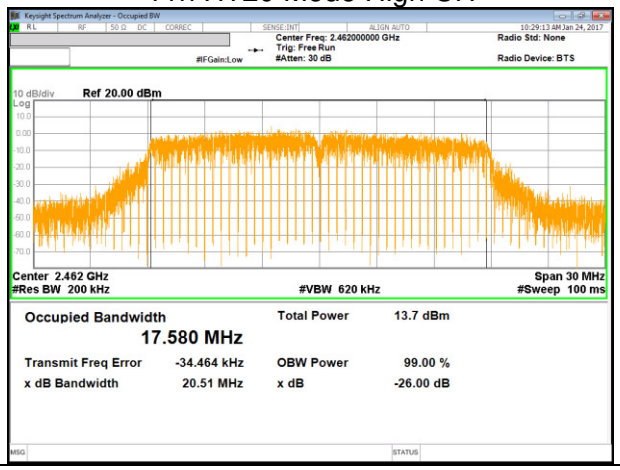
11n HT20 Mode Low CH



11n HT20 Mode Middle CH



11n HT20 Mode High CH



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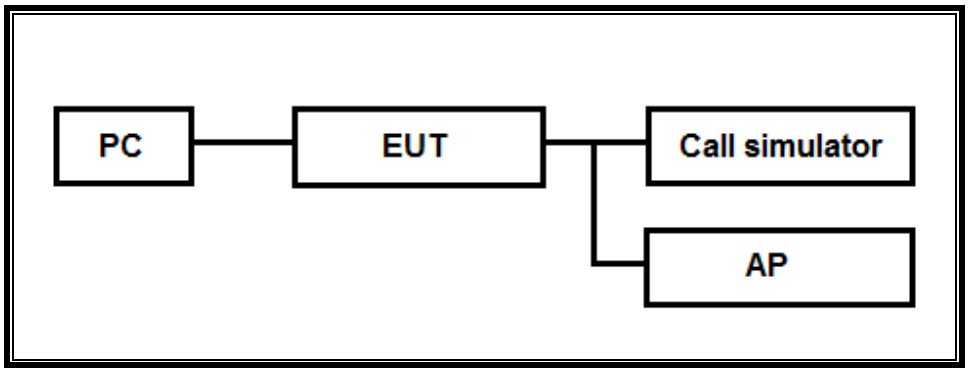
7.3. Verification of geo-location functioning for Wi-Fi Ch. 12& 13

7.3.1. Setup Configuration



7.3.2. Test Results

MCC	US	Non-US (KR)	Airplane
Country	United States	Korea	Default mode (US)
Channel 1	Connected	Connected	Connected
Channel 2	Connected	Connected	Connected
Channel 3	Connected	Connected	Connected
Channel 4	Connected	Connected	Connected
Channel 5	Connected	Connected	Connected
Channel 6	Connected	Connected	Connected
Channel 7	Connected	Connected	Connected
Channel 8	Connected	Connected	Connected
Channel 9	Connected	Connected	Connected
Channel 10	Connected	Connected	Connected
Channel 11	Connected	Connected	Connected
Channel 12	Not Connected	Connected	Not Connected
Channel 13	Not Connected	Connected	Not Connected

Note : Test scripts used are fully described in the operational description

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8. 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	8.079 MHz
2.1051, 15.247 (d)	Band Edge / Conducted Spurious Emission	-30dBc		Pass	-29.6 dBm
15.247	TX conducted output power	<30dBm		Pass	16.16 dBm
15.247	PSD	<8dBm		Pass	-14.475 dBm
15.207 (a)	AC Power Line conducted emissions	Section 10	Power Line conducted	Pass	39.76 dBuV (Pk)
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass	50.85 dBuV/m (Av)

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9. ANTENNA PORT TEST RESULTS

9.1. 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.

RESULTS

9.1.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]	Minimum Limit [MHz]
Low	2412	8.079	0.5
Mid	2437	8.563	0.5
High	2462	8.535	0.5
Worst		8.079	0.5

9.1.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]	Minimum Limit [MHz]
Low	2412	15.107	0.5
Mid	2437	15.455	0.5
High	2462	15.458	0.5
Worst		15.107	0.5

9.1.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]	Minimum Limit [MHz]
Low	2412	15.113	0.5
Mid	2437	16.048	0.5
High	2462	16.060	0.5
Worst		15.113	0.5

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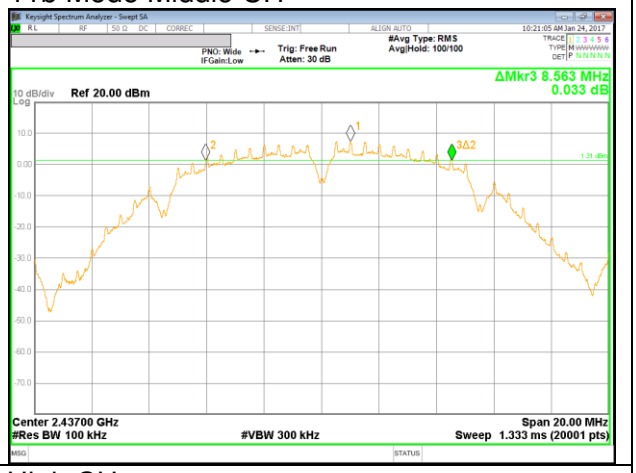
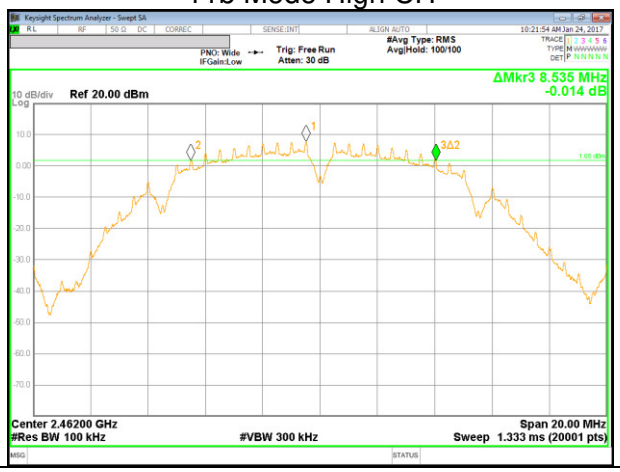
9.1.4. 6 dB BANDWIDTH PLOTS

11b Mode Low CH

11b Mode Middle CH



11b Mode High CH



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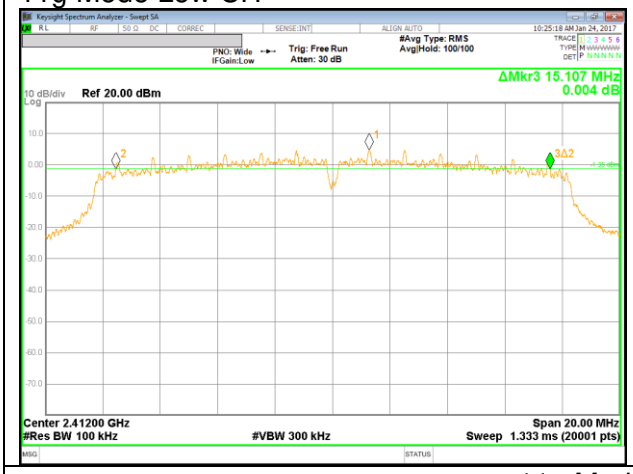
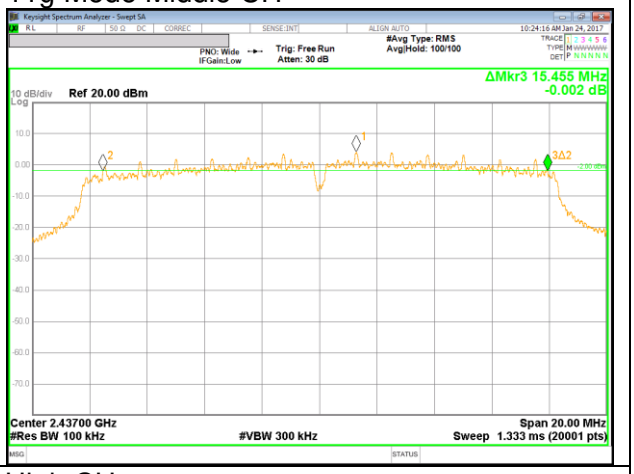
11g Mode Low CH



11g Mode Middle CH



11g Mode High CH

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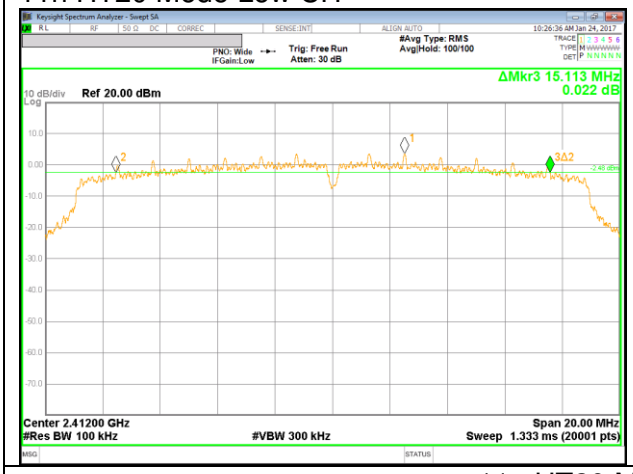
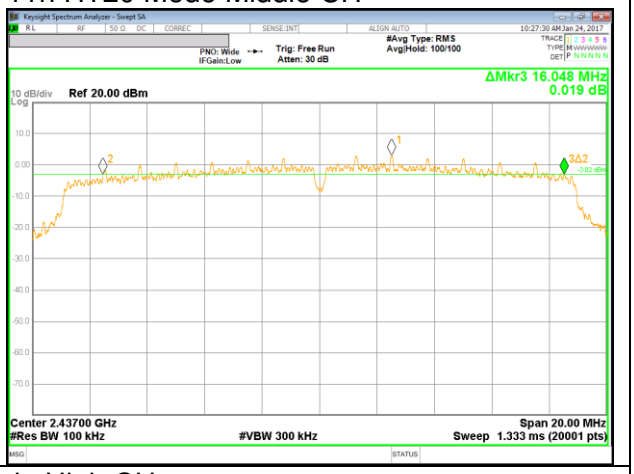
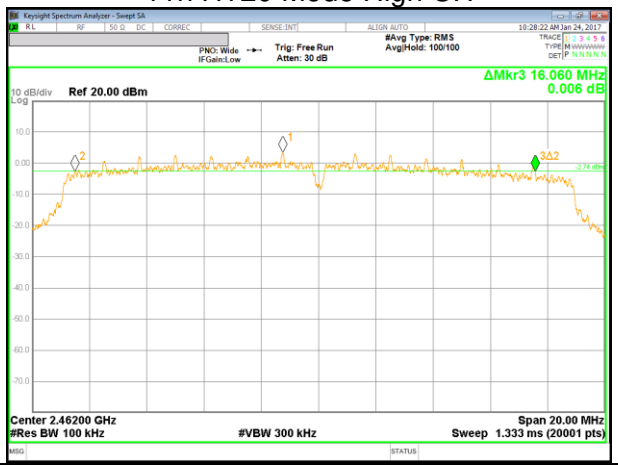
11n HT20 Mode Low CH



11n HT20 Mode Middle CH



11n HT20 Mode High CH



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9.2. 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.

Output power measurement was performed utilizing the “§9.2.3.1 AVGPM” under KDB558074 D01 DTS Meas Guidance v03r05.

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

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RESULTS

9.2.1. 802.11b MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency [MHz]	Directional Gain Primary [dBi]	FCC Power Limit [dBm]	Max Power [dBm]
Low	2412	-4.50	30.00	30.00
Mid	2437	-4.50	30.00	30.00
High	2462	-4.50	30.00	30.00

Results

Channel	Frequency [MHz]	Meas Power [dBm]	Total Power [dBm]	Power Limit [dBm]	Margin [dB]
Low	2412	16.16	16.16	30.00	-13.84
Mid	2437	15.48	15.48	30.00	-14.52
High	2462	15.89	15.89	30.00	-14.11
Worst			16.16	30.00	-13.84

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9.2.2. 802.11g MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency [MHz]	Directional Gain Primary [dBi]	FCC Power Limit [dBm]	Max Power [dBm]
Low	2412	-4.50	30.00	30.00
Mid	2437	-4.50	30.00	30.00
High	2462	-4.50	30.00	30.00

Results

Channel	Frequency [MHz]	Meas Power [dBm]	Total Power [dBm]	Power Limit [dBm]	Margin [dB]
Low	2412	15.37	15.37	30.00	-14.63
Mid	2437	14.74	14.74	30.00	-15.26
High	2462	15.07	15.07	30.00	-14.93
Worst			15.37	30.00	-14.63

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9.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency [MHz]	Directional Gain Primary [dBi]	FCC Power Limit [dBm]	Max Power [dBm]
Low	2412	-4.50	30.00	30.00
Mid	2437	-4.50	30.00	30.00
High	2462	-4.50	30.00	30.00

Results

Channel	Frequency [MHz]	Meas Power [dBm]	Total Power [dBm]	Power Limit [dBm]	Margin [dB]
Low	2412	14.00	14.00	30.00	-16.00
Mid	2437	13.44	13.44	30.00	-16.56
High	2462	14.05	14.05	30.00	-15.95
Worst			14.05	30.00	-15.95

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9.3. 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 §10.3 AVGPSD-1 (802.11 b mode) and §10.5 AVGPSD-2(802.11 g/n mode)” under KDB558074 D01 DTS Meas Guidance v03r05.

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RESULTS

9.3.1. 802.11b MODE IN THE 2.4 GHz BAND

PSD Results

Channel	Frequency [MHz]	PSD Meas [dBm]	Duty Factor [dB]	Final PSD [dBm]	Limit [dBm]	Margin [dB]
Low	2412	-15.022	0.00	-15.022	8.00	-23.022
Mid	2437	-15.979	0.00	-15.979	8.00	-23.979
High	2462	-15.036	0.00	-15.036	8.00	-23.036

9.3.2. 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	-15.032	0.32	-14.712	8.00	-23.032
Mid	2437	-15.766	0.32	-15.446	8.00	-23.766
High	2462	-14.795	0.32	-14.475	8.00	-22.795

9.3.3. 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	-19.463	0.34	-19.123	8.00	-27.463
Mid	2437	-19.853	0.34	-19.513	8.00	-27.853
High	2462	-19.501	0.34	-19.161	8.00	-27.501

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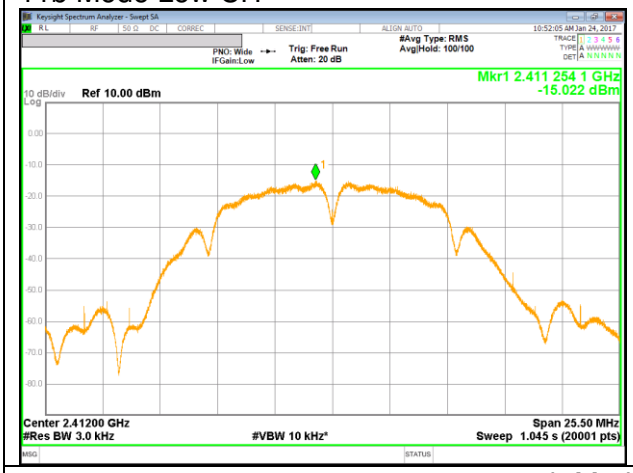
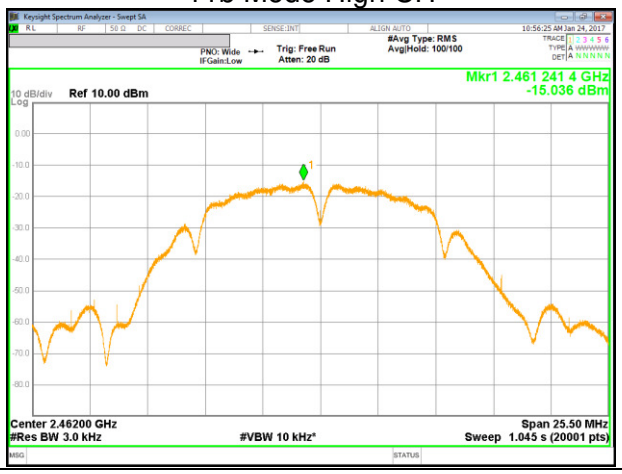
9.3.4. PSD PLOTS

11b Mode Low CH



11b Mode Middle CH

11b Mode High CH



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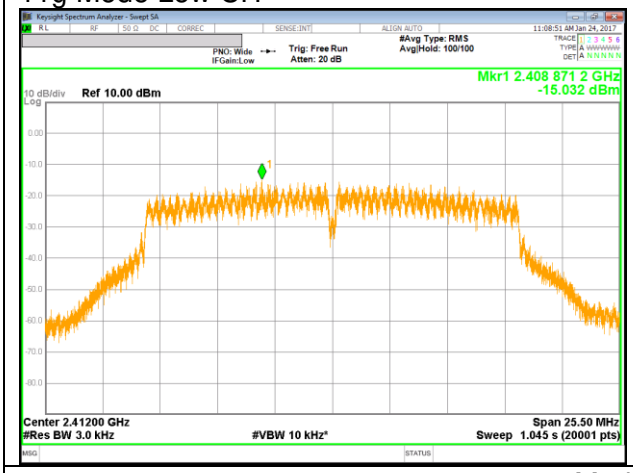
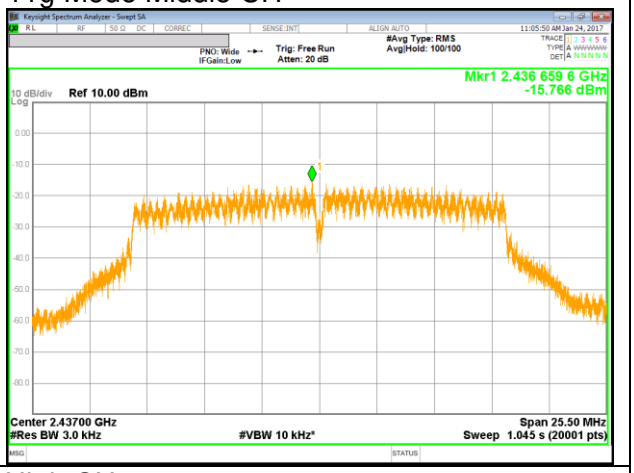
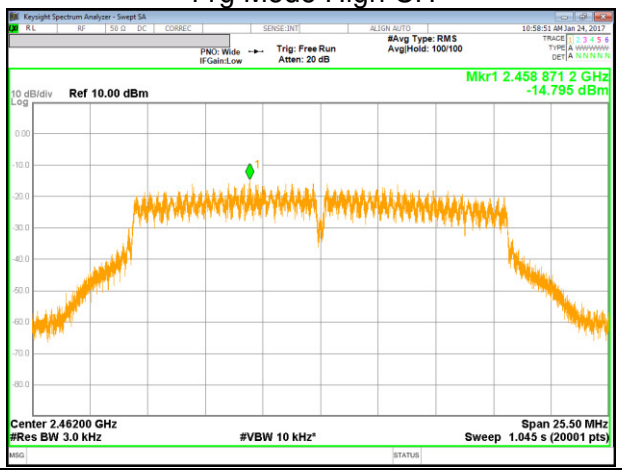
11g Mode Low CH



11g Mode Middle CH



11g Mode High CH



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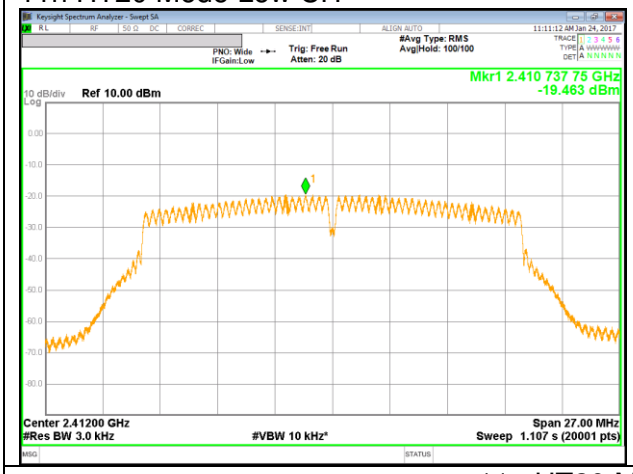
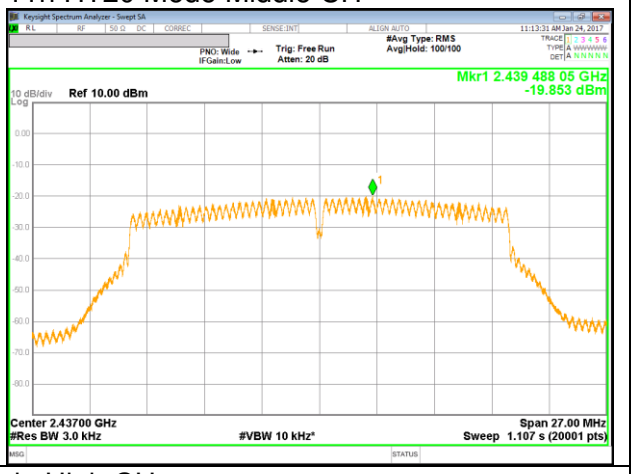
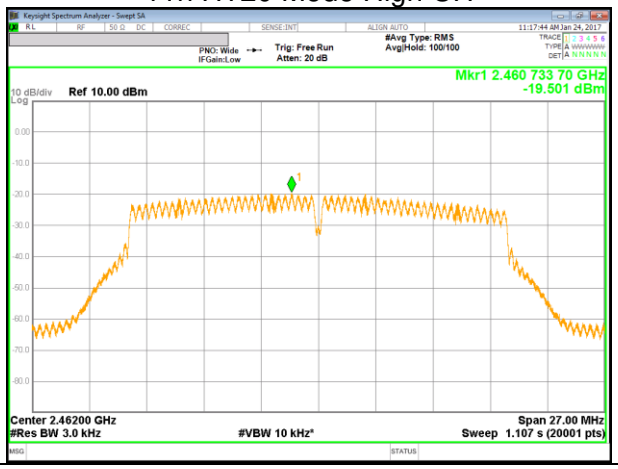
11n HT20 Mode Low CH



11n HT20 Mode Middle CH



11n HT20 Mode High CH



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9.4. 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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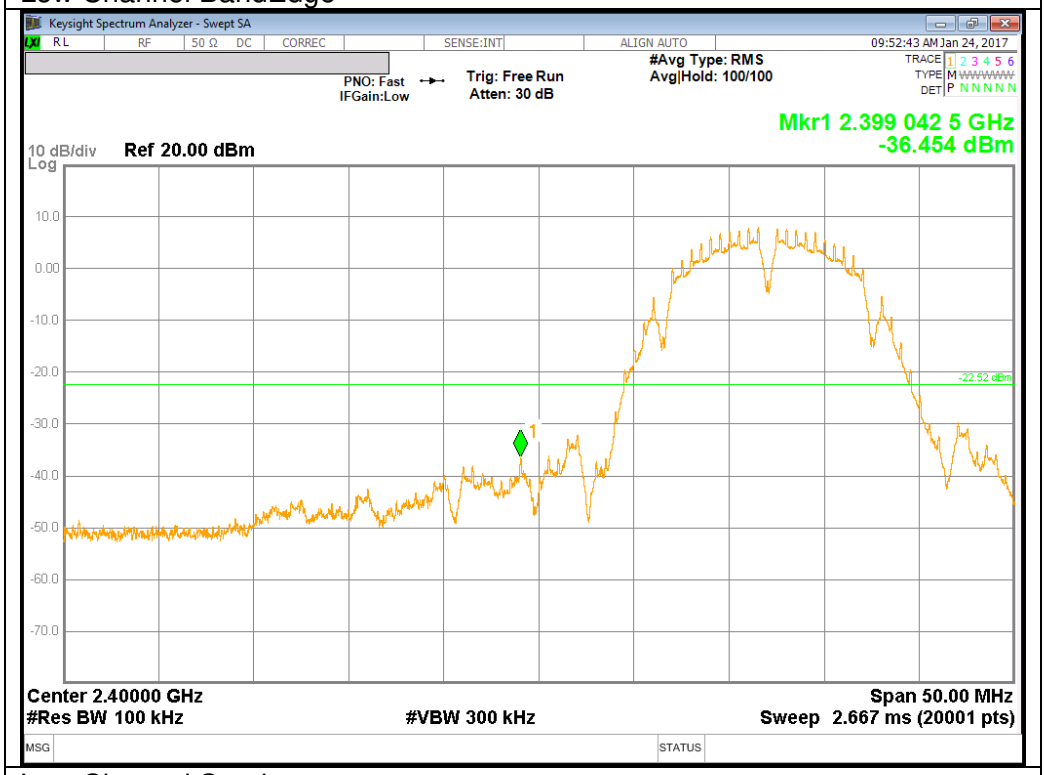
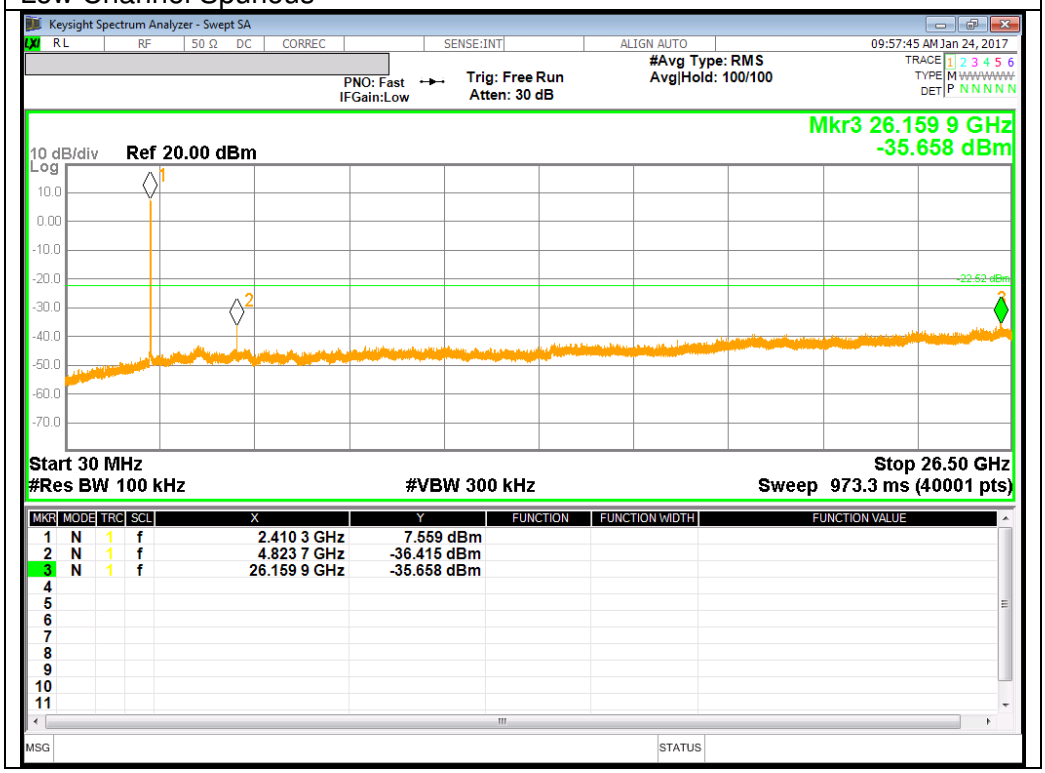
RESULTS

9.4.1. 802.11b MODE IN THE 2.4 GHz BAND

Low Channel BandEdge



Low Channel Spurious



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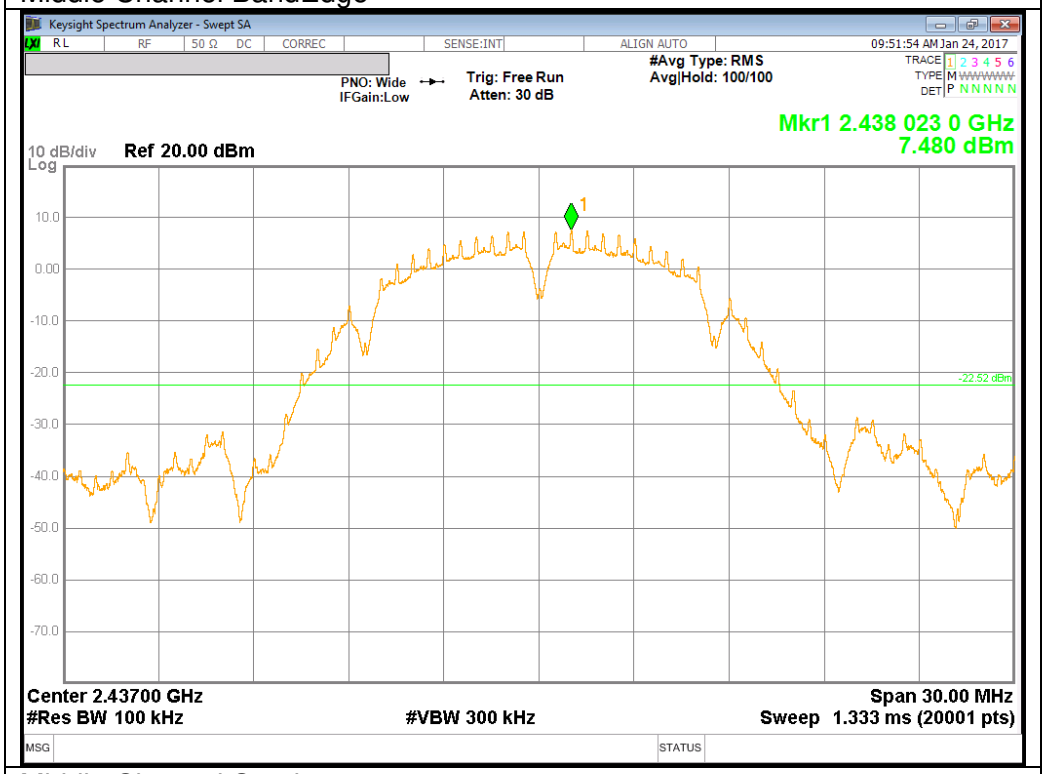
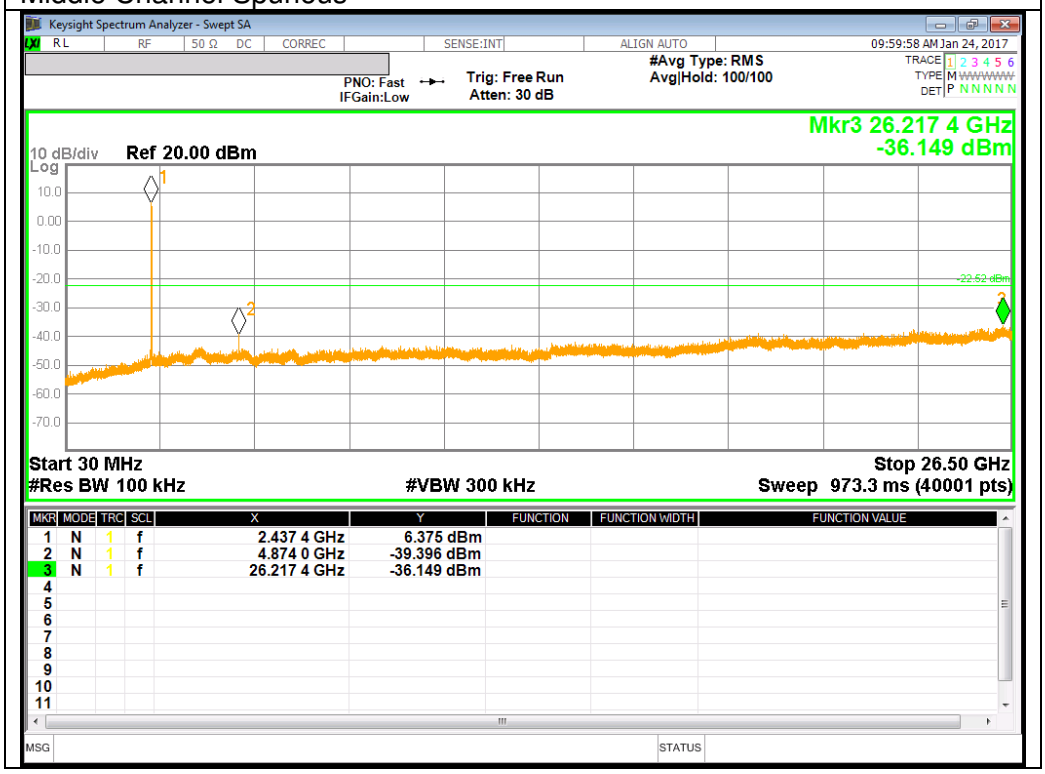
Middle Channel BandEdge



Middle Channel Spurious



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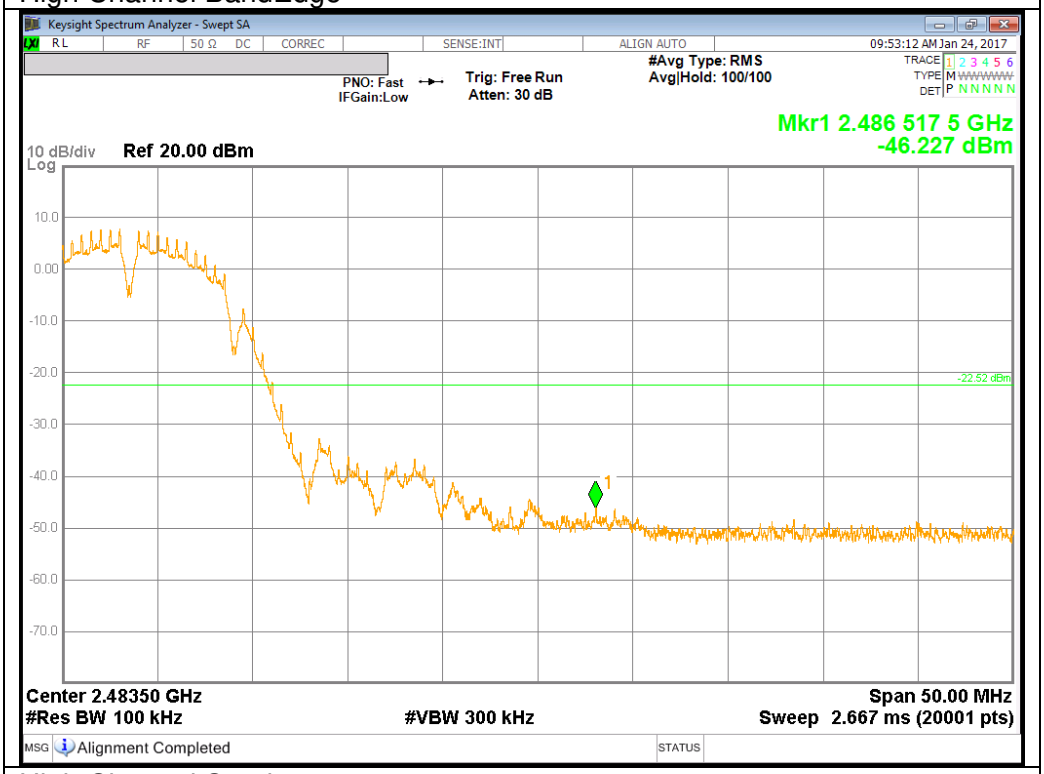
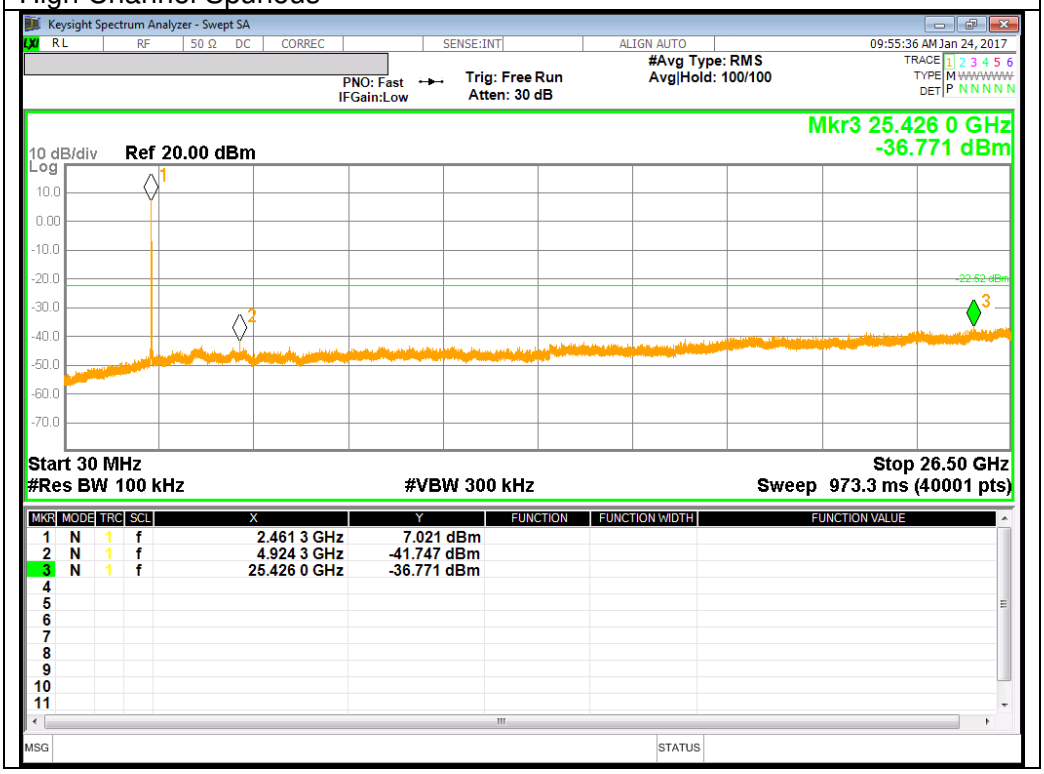
High Channel BandEdge



High Channel Spurious



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.461 3 GHz	7.021 dBm			
2	N	1	f	4.924 3 GHz	-41.747 dBm			
3	N	1	f	25.426 0 GHz	-36.771 dBm			
4								
5								
6								
7								
8								
9								
10								
11								

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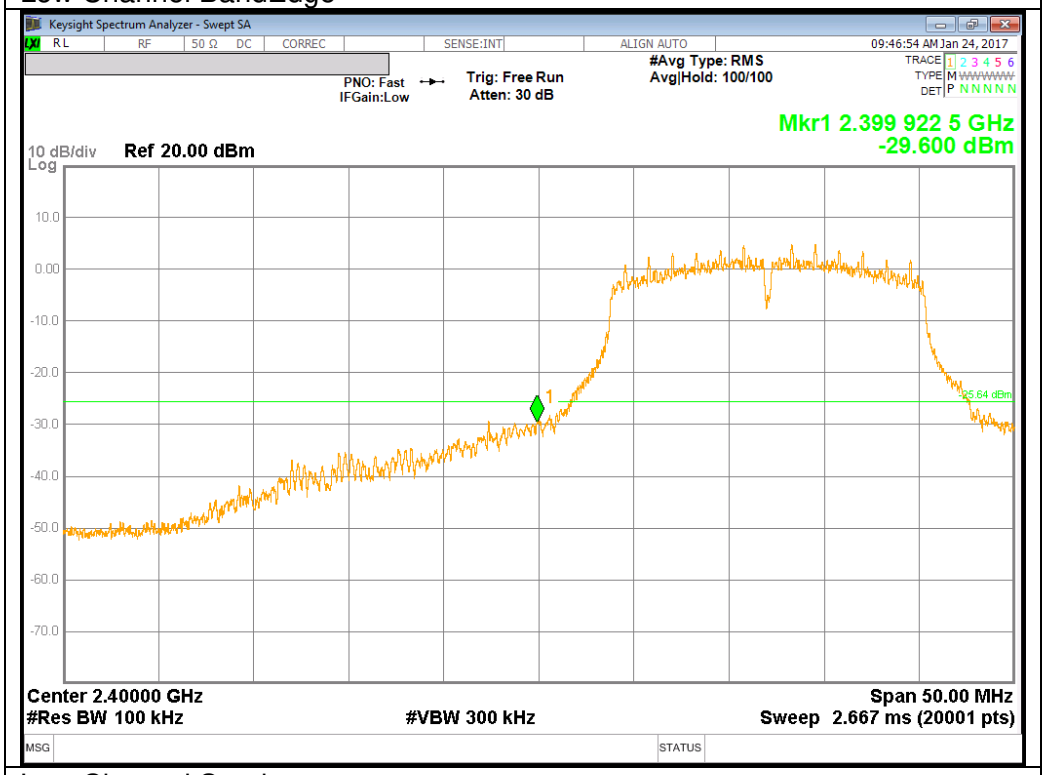
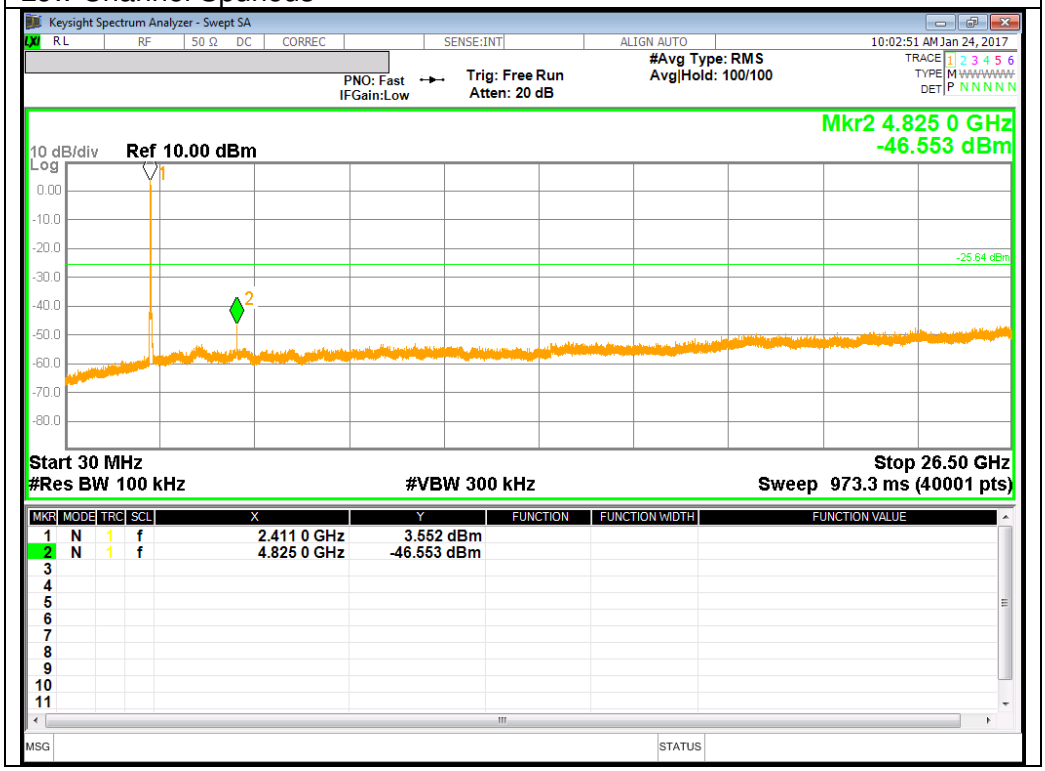
9.4.2. 802.11g MODE IN THE 2.4 GHz BAND

Low Channel BandEdge



Low Channel Spurious



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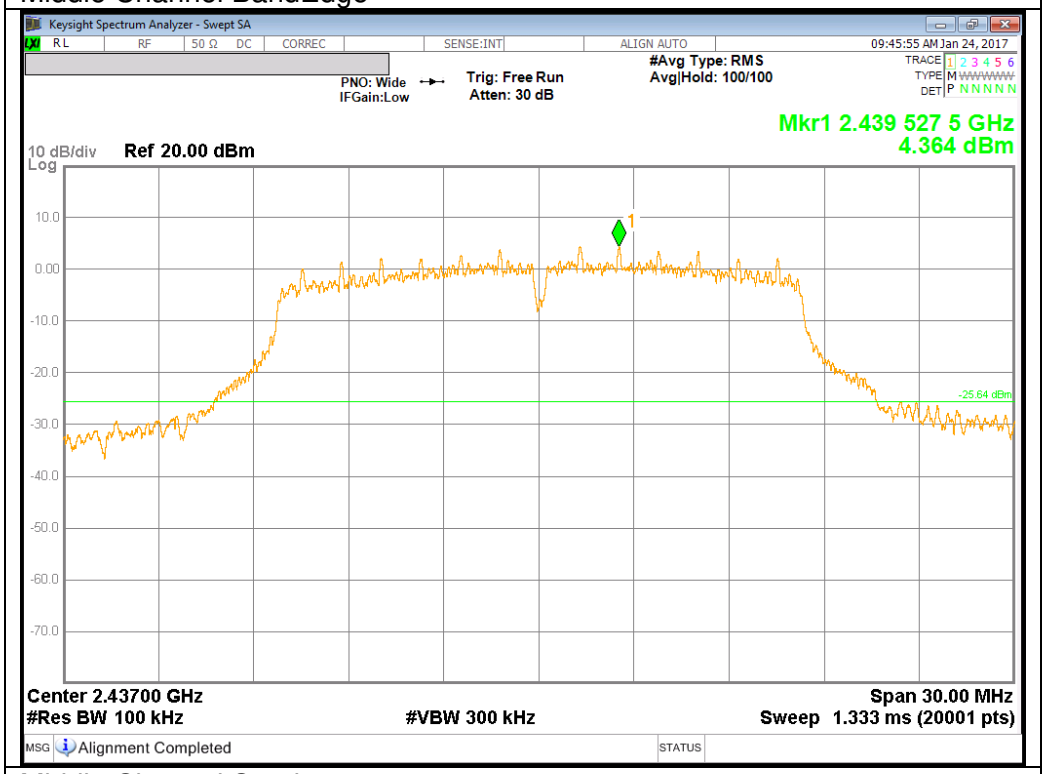
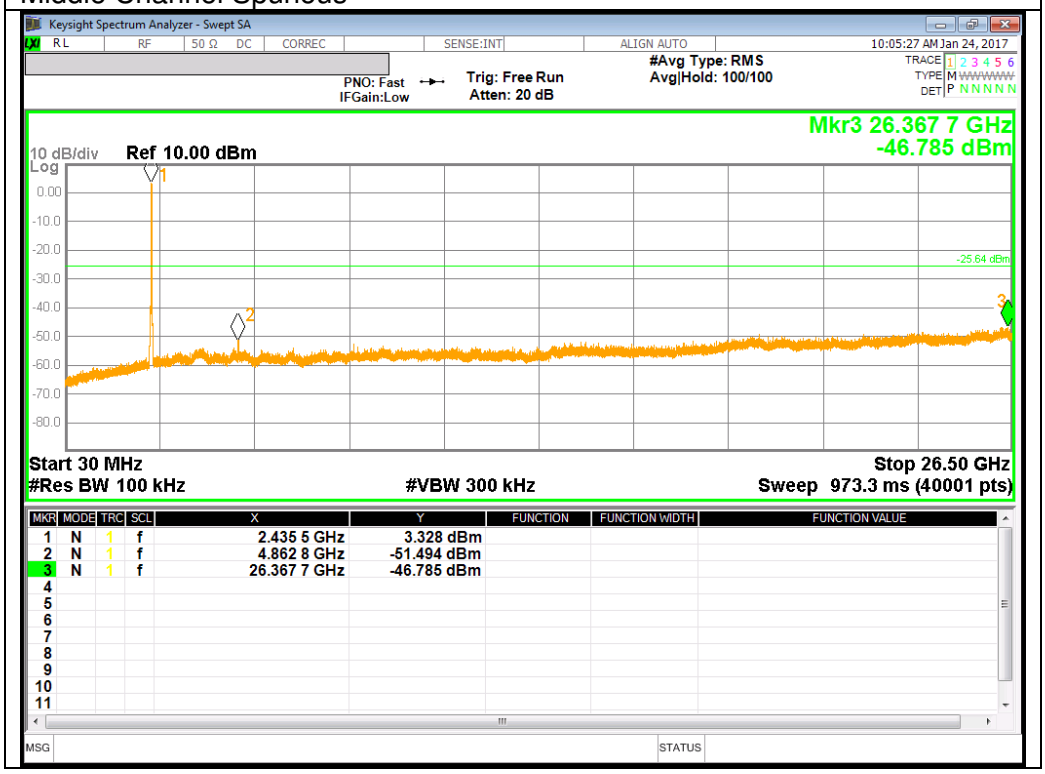
Middle Channel BandEdge



Middle Channel Spurious



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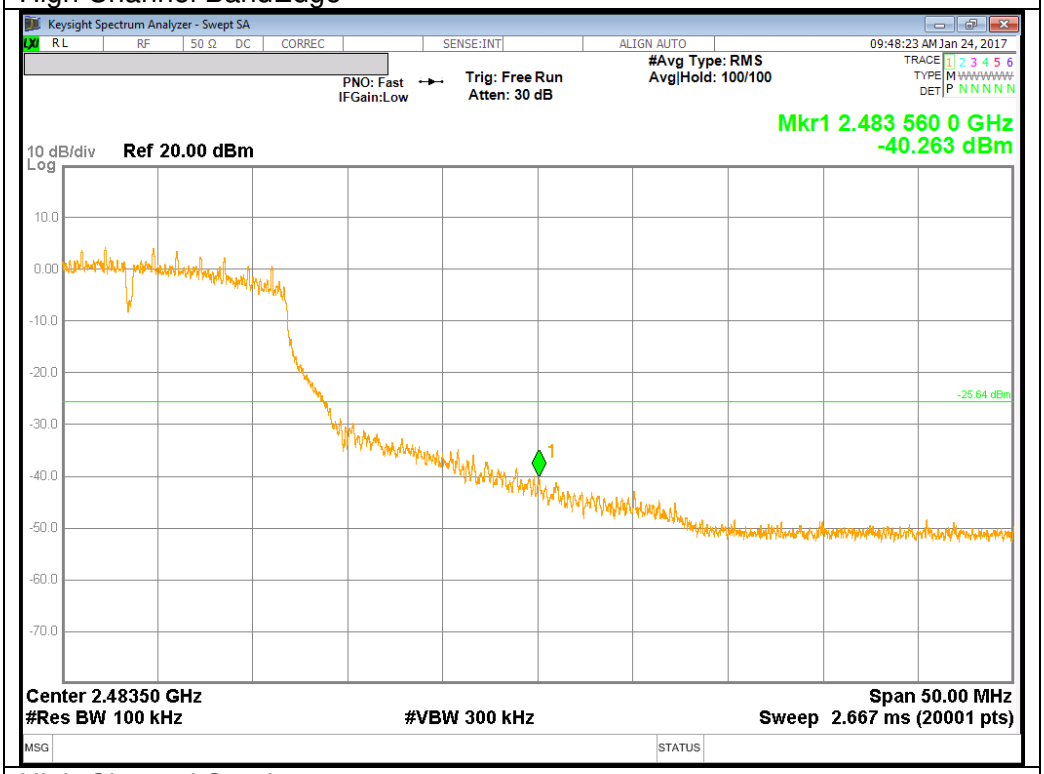
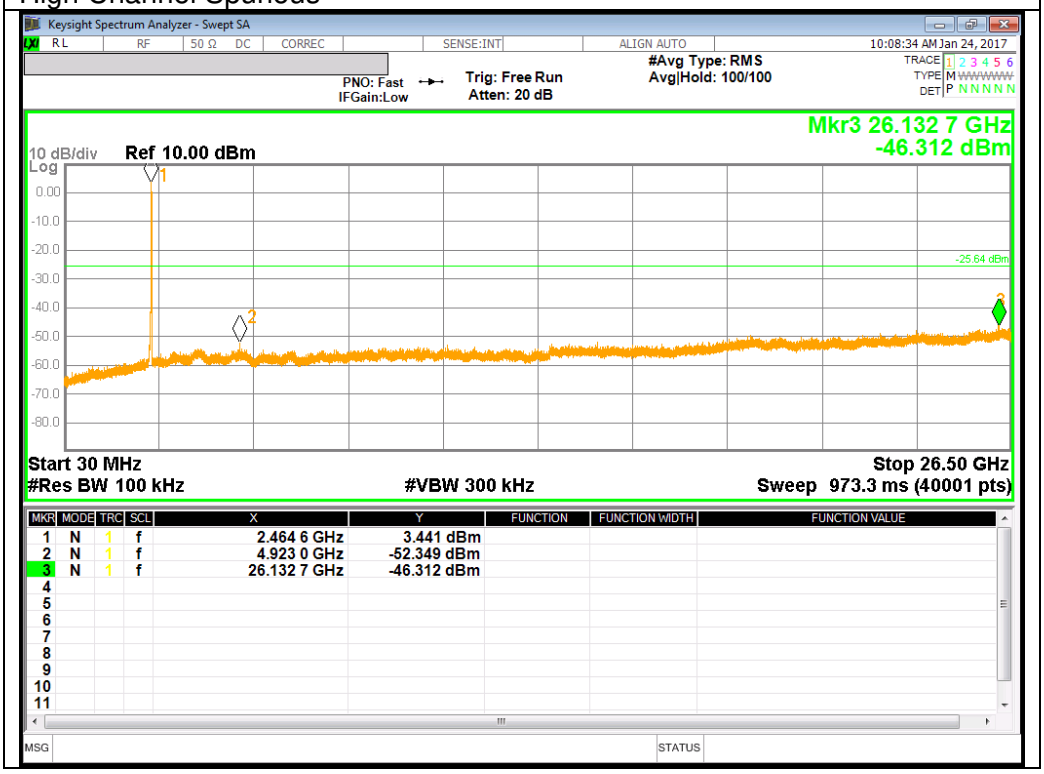
High Channel BandEdge



High Channel Spurious



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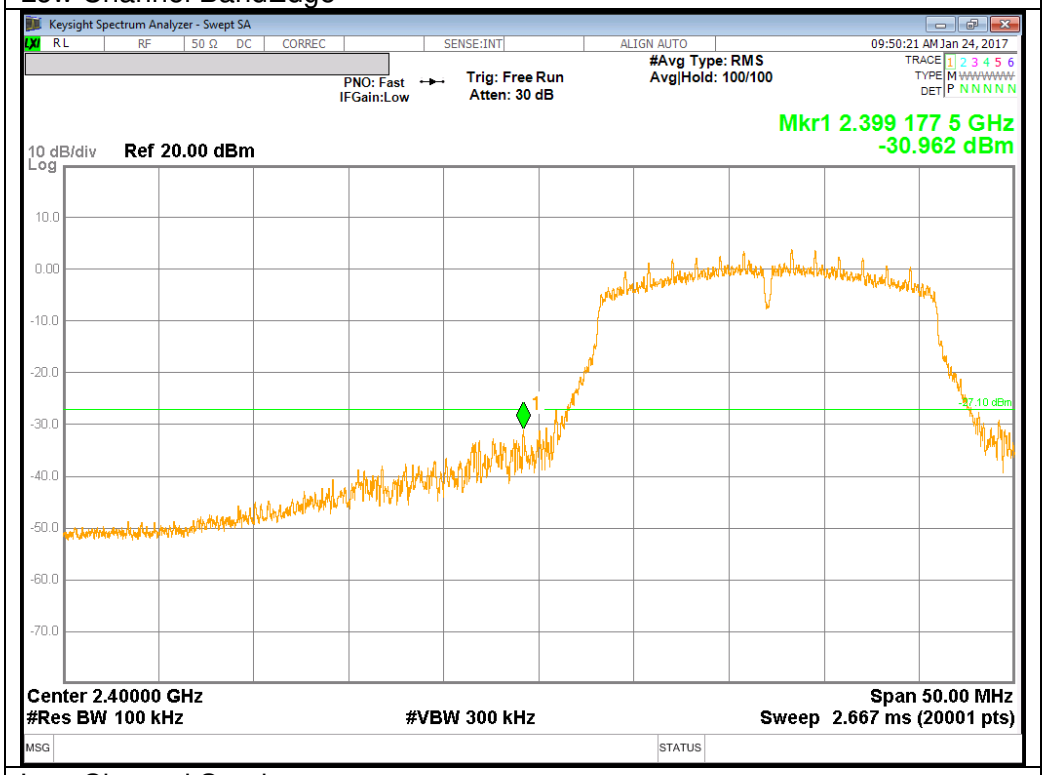
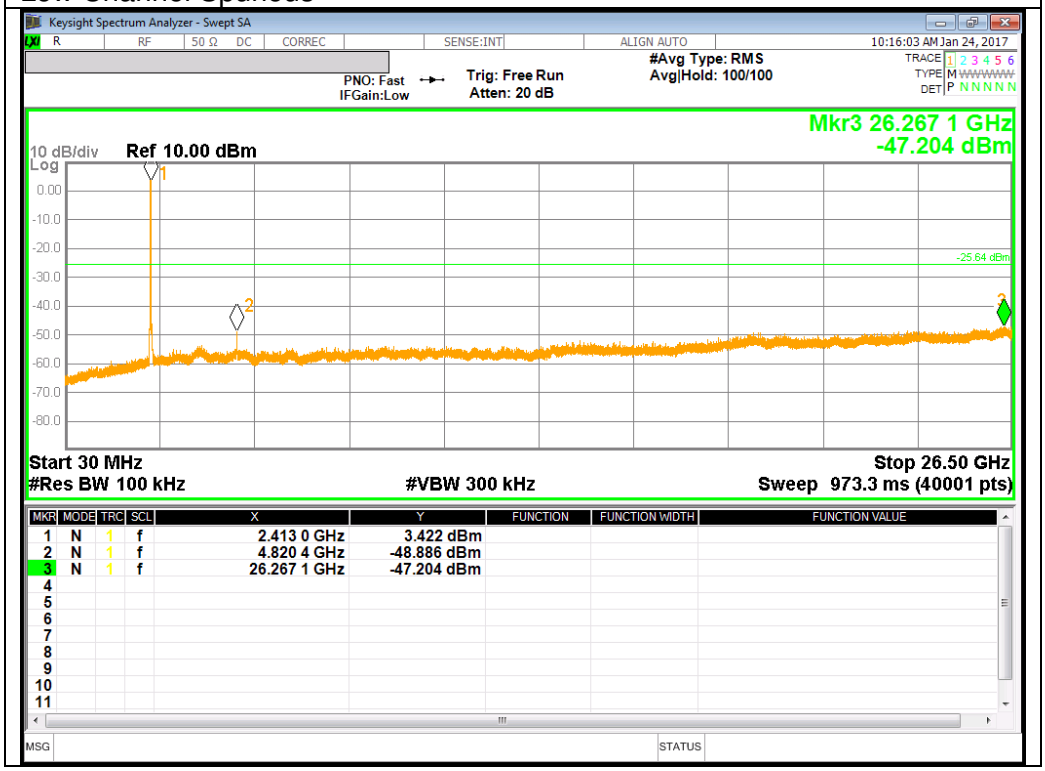
9.4.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Low Channel BandEdge



Low Channel Spurious



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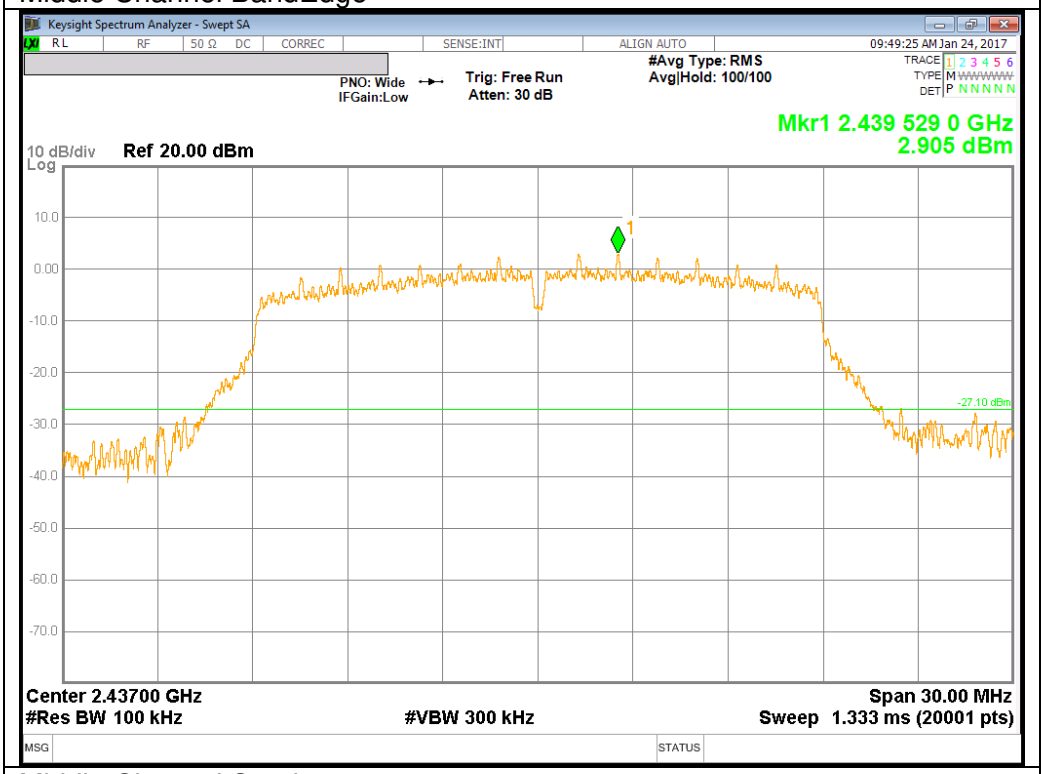
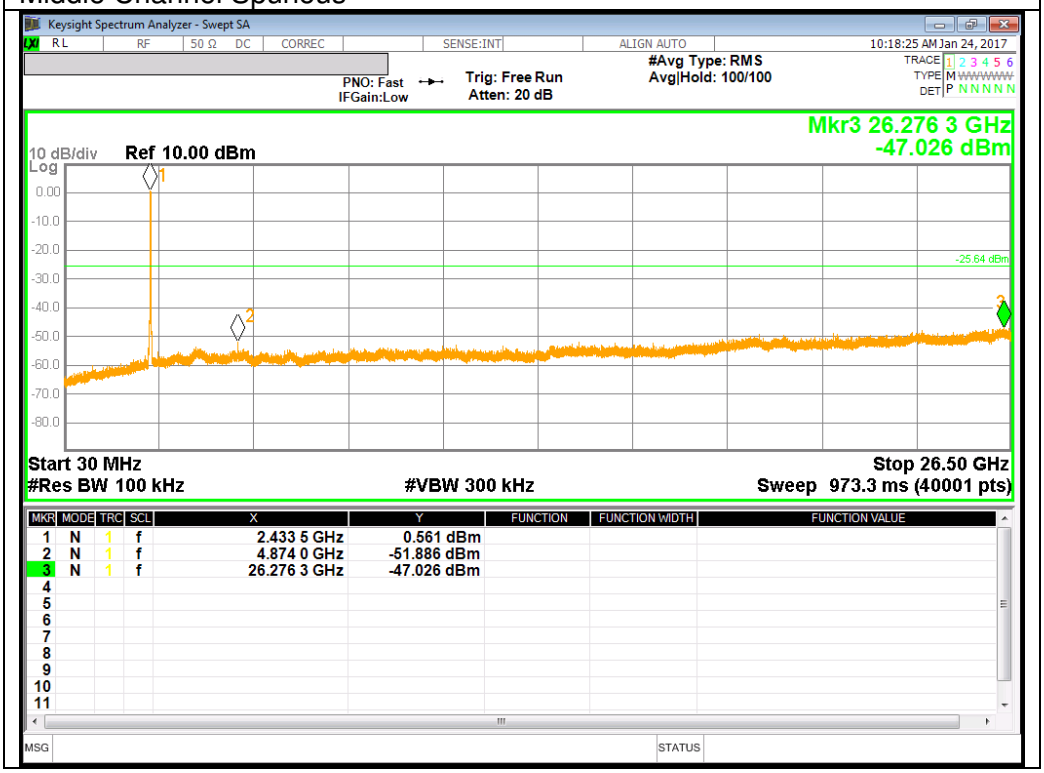
Middle Channel BandEdge



Middle Channel Spurious



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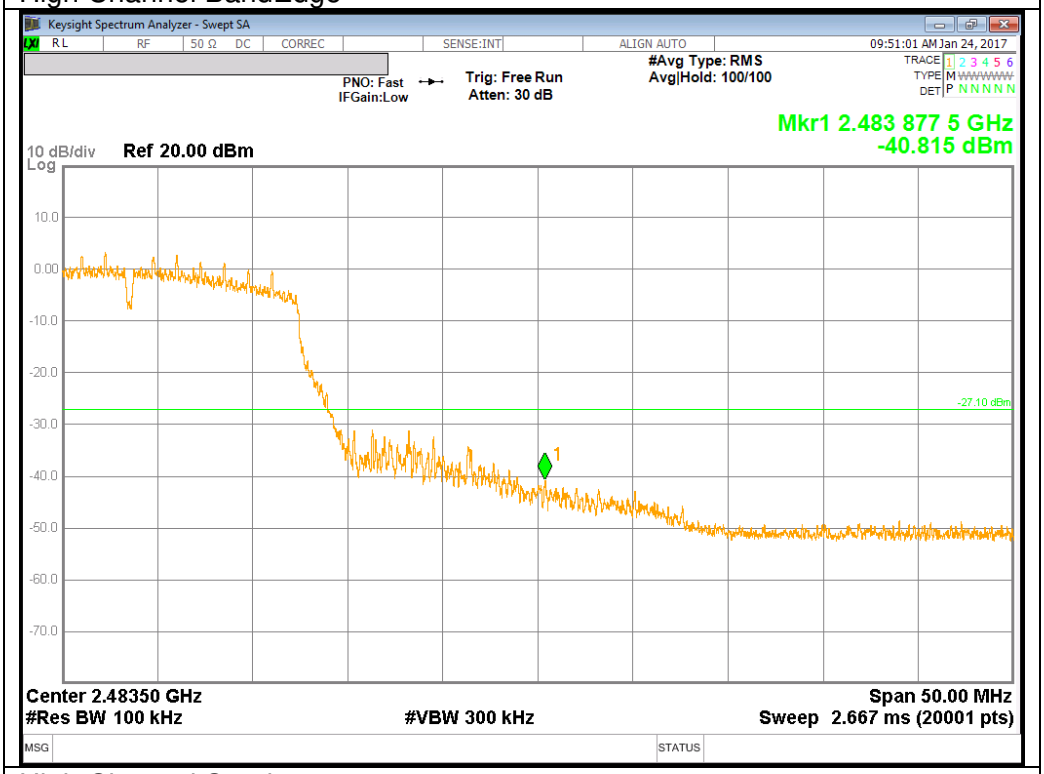
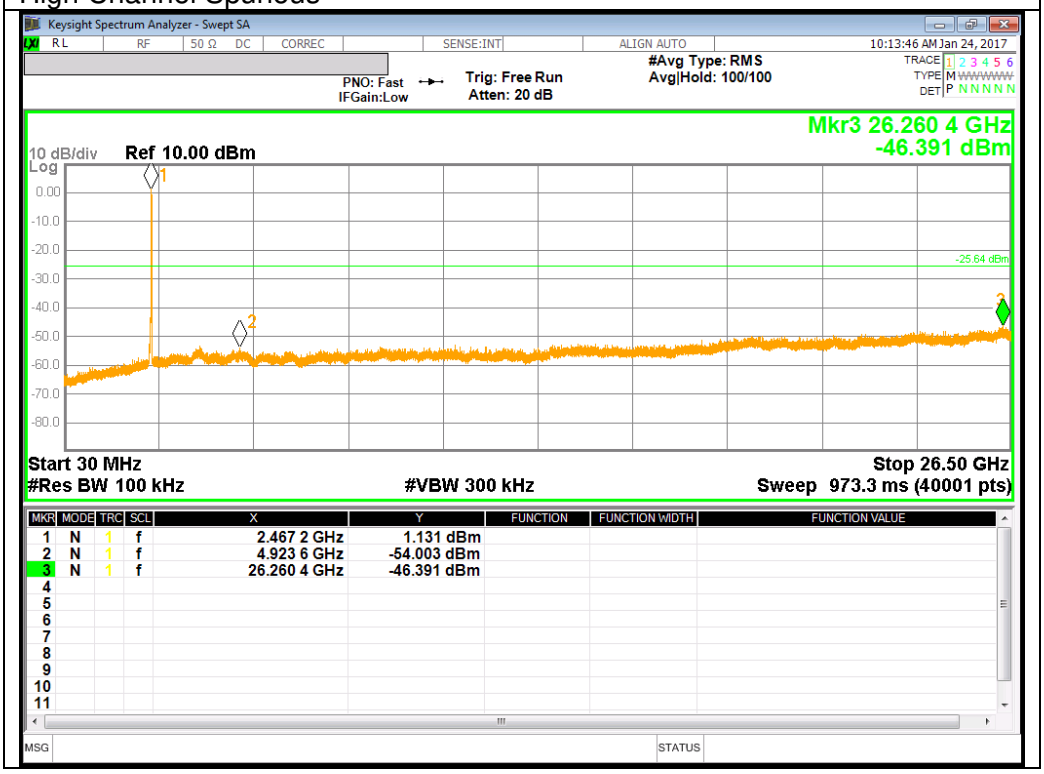
High Channel BandEdge



High Channel Spurious



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10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

Limits for radiated disturbance of an intentional radiator		
Frequency range (MHz)	Limits (µV/m)	Measurement Distance (m)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 – 88	100**	3
88 - 216	150**	3
216 – 960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g. §§ 15.231 and 15.241.

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TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150 cm for above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

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

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements. (Restriced bandedge, Final detection of spurious harmonic emissions)
Duty cycle factor= 10log (1/x) For this sample B mode = 0dB (duty cycle >98%); G mode = 0.32dB; N mode = 0.34dB.

Pre-scans to detect harmonic and spurious emissions, the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

The spectrum from 1 GHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.
(From 30MHz to 1GHz, test was performed with the EUT set to transmit at the channel with highest output power)

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.

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.

Note : Emission was pre-scanned from 9KHz to 30MHz; No emissions were detected which was at least 20dB below the specification limit (consider distance correction factor).
Per FCC part 15.31(o), test results were not reported.

Formula for converting the filed strength from uV/m to dBuV/m is:
Limit (dBuV/m) = 20 log limit (uV/m)

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site.
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field based on KDB 937606.

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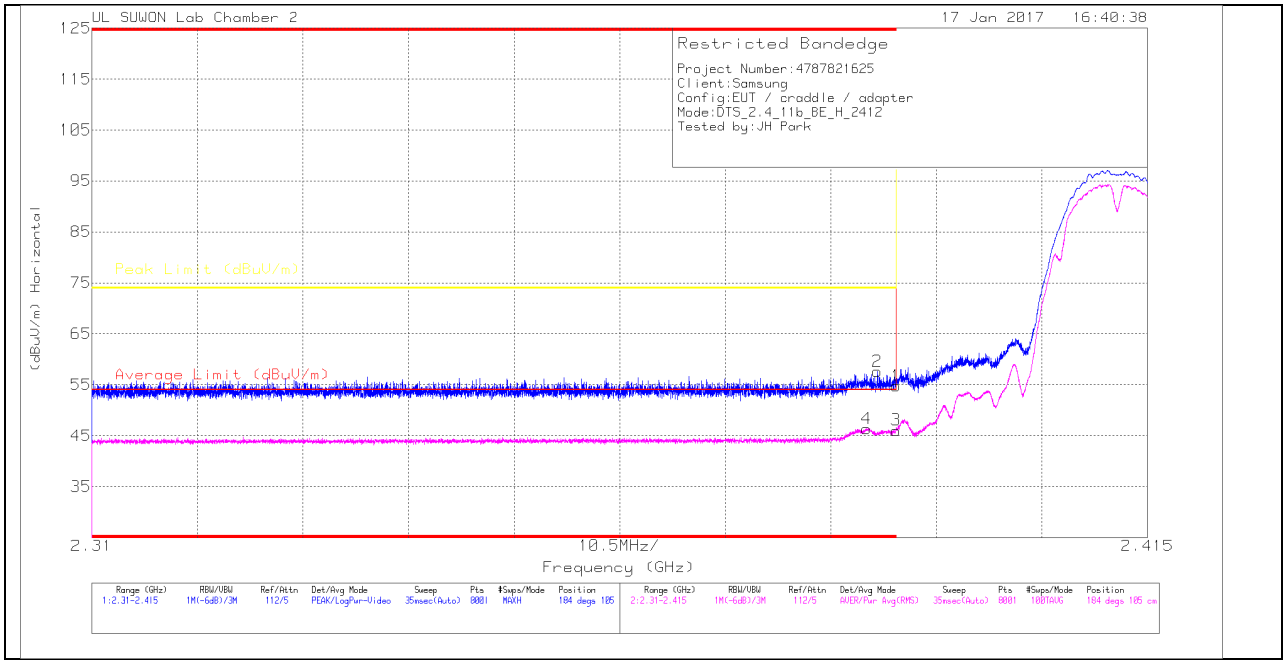
10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. 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	10dB[dB]	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	41.32	Pk	31.7	-18.2	0	54.82	-	-	74	-19.18	184	105	H
2	* 2.388	44.12	Pk	31.7	-18.2	0	57.62	-	-	74	-16.38	184	105	H
3	* 2.39	32.56	RMS	31.7	-18.2	0	46.06	54	-7.94	-	-	184	105	H
4	* 2.387	32.92	RMS	31.7	-18.2	0	46.42	54	-7.58	-	-	184	105	H

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

Pk - Peak detector

RMS - RMS detection

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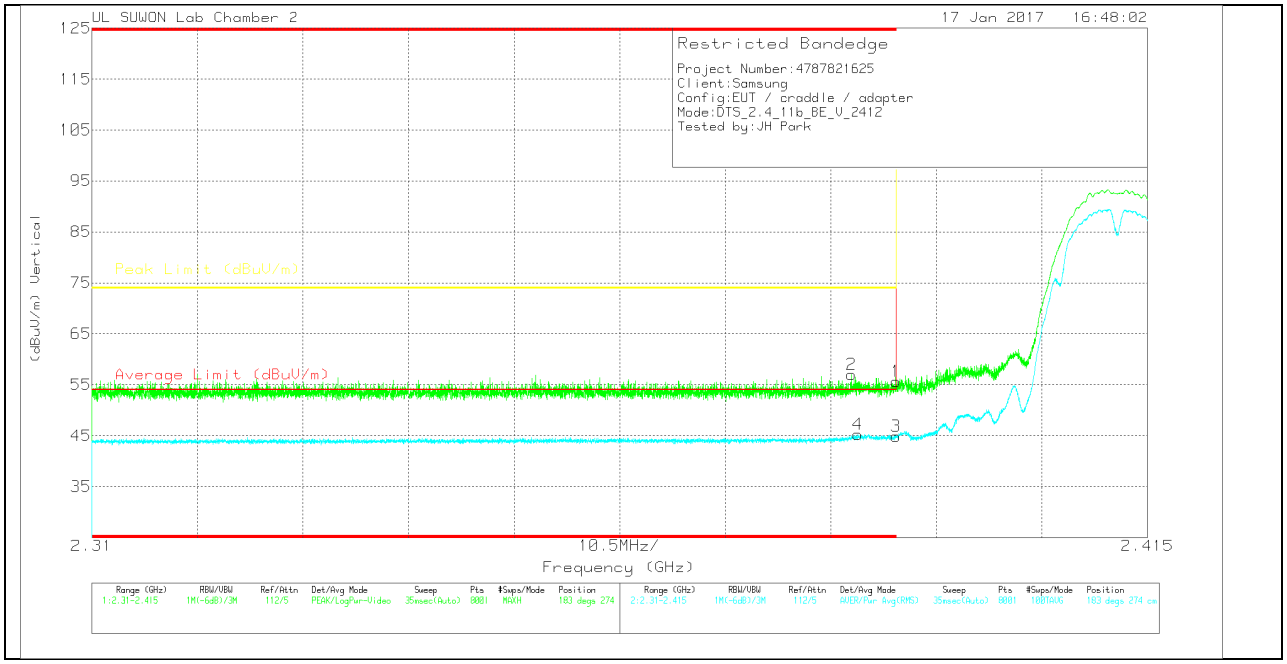
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	10dB[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	42.1	Pk	31.7	-18.2	0	55.6	-	-	74	-18.4	183	274	V
2	* 2.386	43.54	Pk	31.7	-18.2	0	57.04	-	-	74	-16.96	183	274	V
3	* 2.39	31.37	RMS	31.7	-18.2	0	44.87	54	-9.13	-	-	183	274	V
4	* 2.386	31.79	RMS	31.7	-18.2	0	45.29	54	-8.71	-	-	183	274	V

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

Pk - Peak detector

RMS - RMS detection

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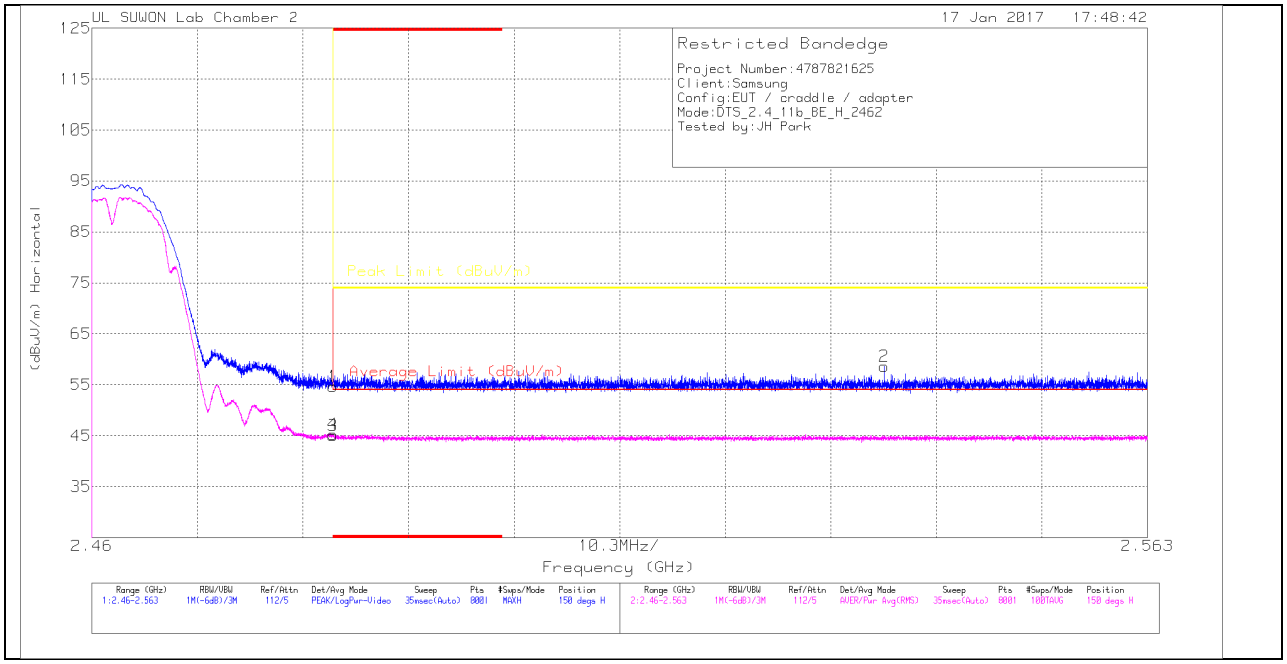
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	10dB[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	40.81	Pk	31.8	-18	0	54.61	-	-	74	-19.39	150	120	H
2	2.537	44.67	Pk	31.9	-18	0	58.57	-	-	74	-15.43	150	120	H
3	* 2.484	31.17	RMS	31.8	-18	0	44.97	54	-9.03	-	-	150	120	H
4	* 2.484	31.46	RMS	31.8	-18	0	45.26	54	-8.74	-	-	150	120	H

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

Pk - Peak detector

RMS - RMS detection

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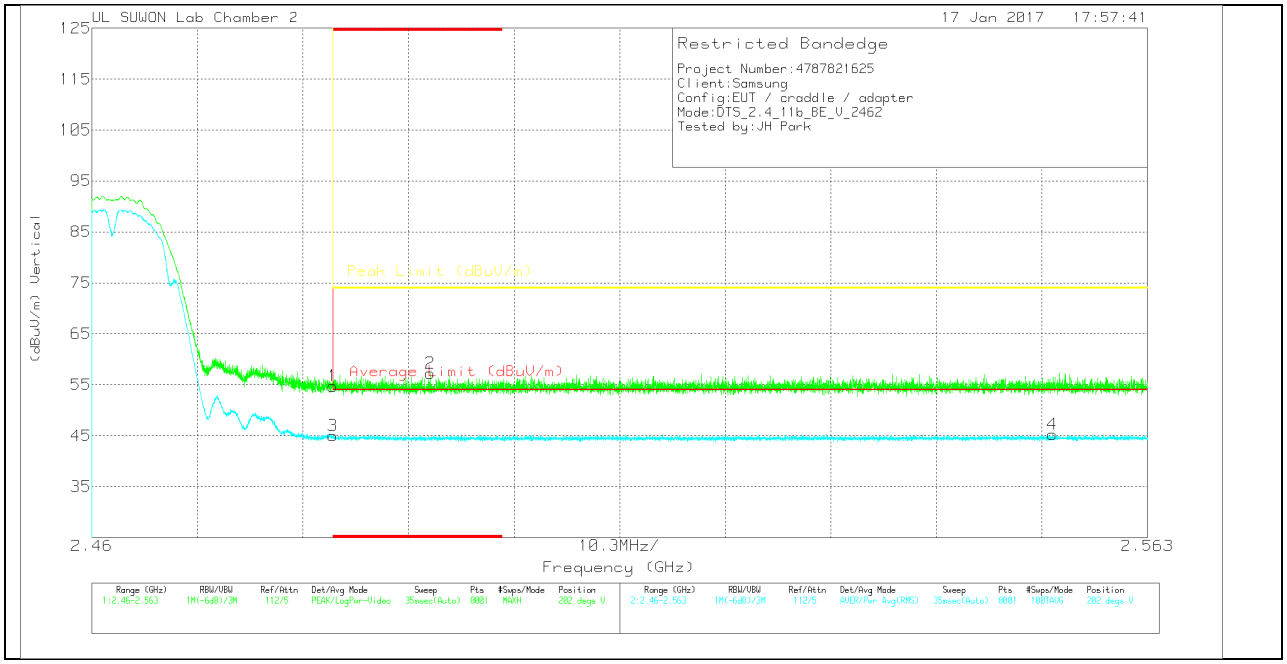
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	10dB[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	40.92	Pk	31.8	-18	0	54.72	-	-	74	-19.28	202	107	V
2	* 2.493	43.48	Pk	31.8	-18	0	57.28	-	-	74	-16.72	202	107	V
3	* 2.484	31.22	RMS	31.8	-18	0	45.02	54	-8.98	-	-	202	107	V
4	2.554	31.34	RMS	31.9	-18	0	45.24	54	-8.76	-	-	202	107	V

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

Pk - Peak detector

RMS - RMS detection

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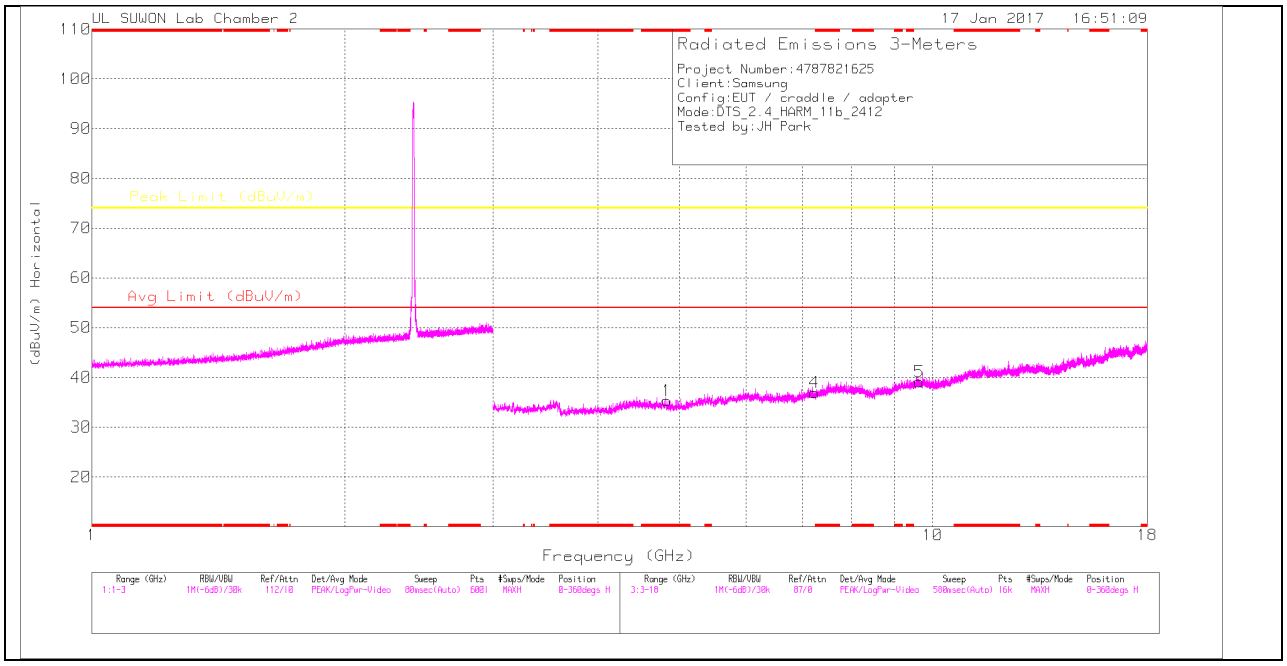
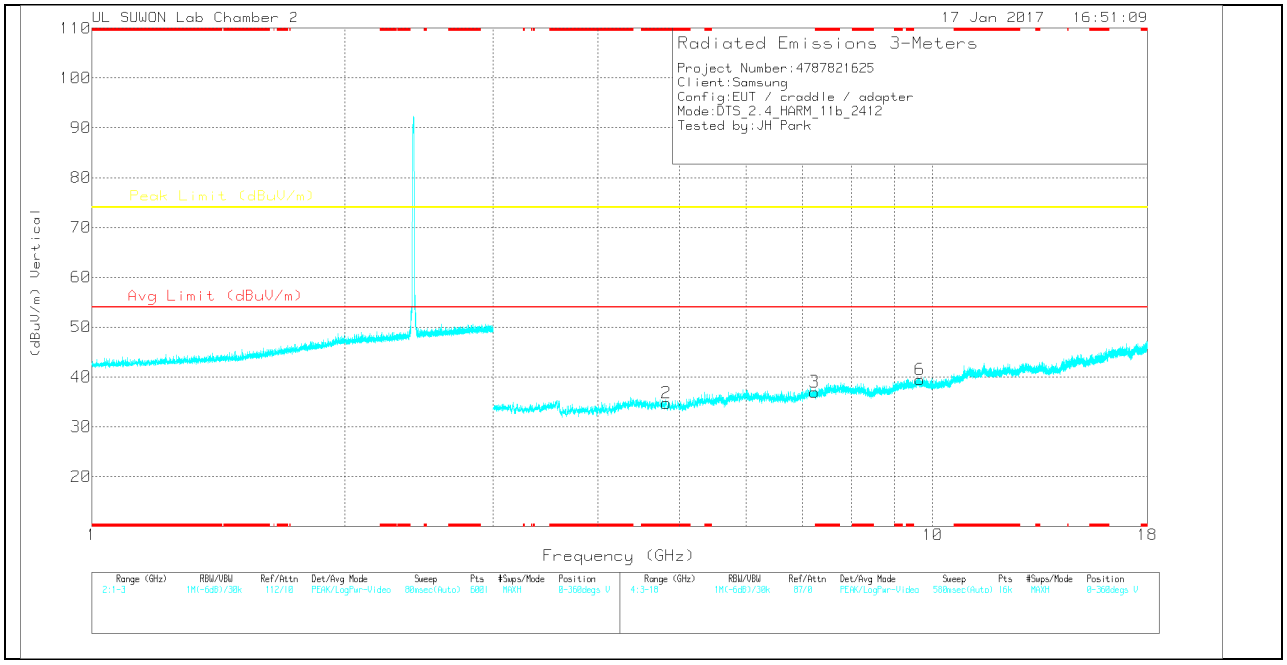
HARMONICS AND SPURIOUS EMISSIONS

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.

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LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	3GHz_HP[dB]	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	* 4.827	25.74	PK	33.9	-24.3	0	35.34	-	-	74	-38.66	0-360	150	H
4	7.24	23.16	PK	35.8	-22	0	36.96	-	-	74	-37.04	0-360	150	H
5	9.648	20.49	PK	36.9	-18.3	0	39.09	-	-	74	-34.91	0-360	250	H
2	* 4.825	25.14	PK	33.9	-24.3	0	34.74	-	-	74	-39.26	0-360	150	V
3	7.235	23.11	PK	35.8	-21.9	0	37.01	-	-	74	-36.99	0-360	150	V
6	9.649	20.87	PK	36.9	-18.3	0	39.47	-	-	74	-34.53	0-360	150	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 limt (54dBuV/m).

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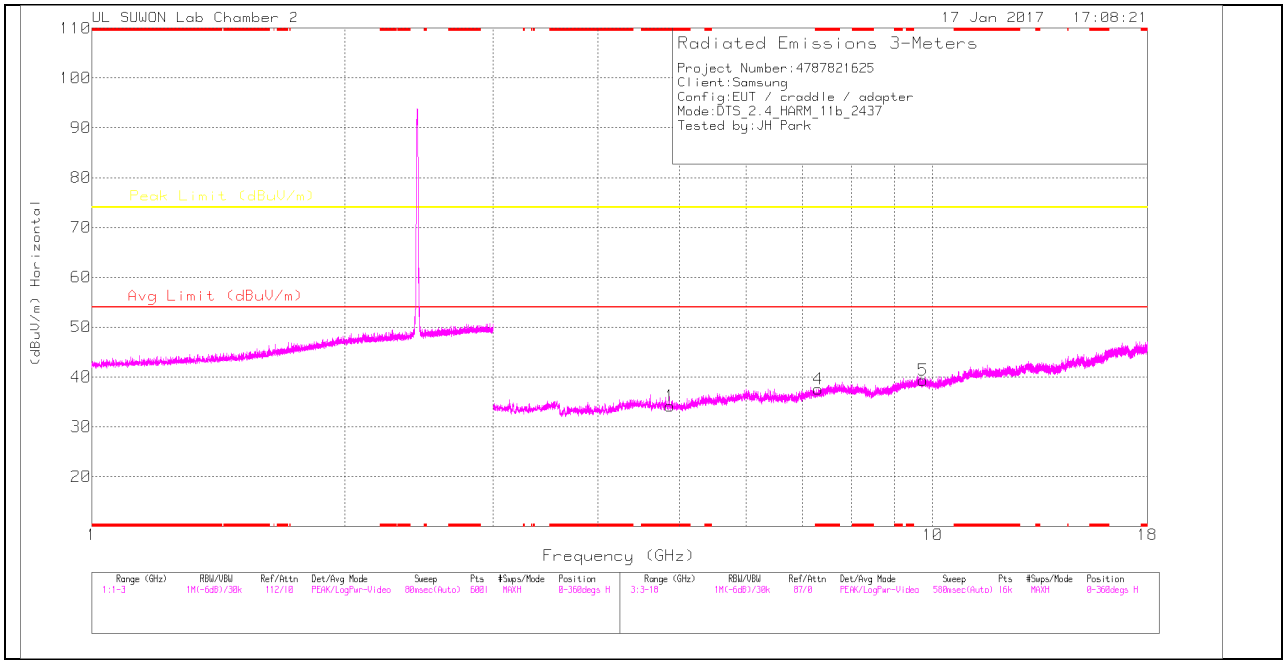
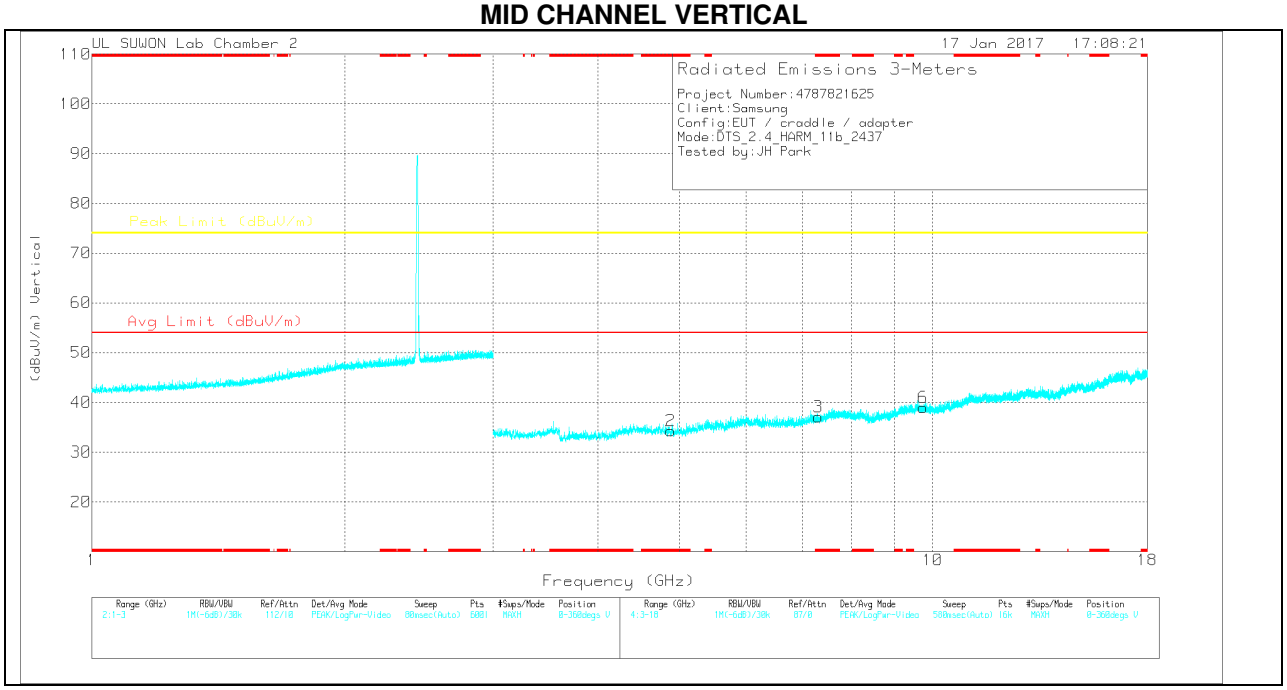
MID CHANNEL HORIZONTAL



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.

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MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	3GHz_HP[dB]	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	24.81	PK	33.9	-24.5	0	34.21	-	-	74	-39.79	0-360	150	H
4	* 7.308	23.66	PK	35.9	-22	0	37.56	-	-	74	-36.44	0-360	150	H
5	9.748	20.46	PK	37	-18.1	0	39.36	-	-	74	-34.64	0-360	250	H
2	* 4.878	24.89	PK	33.9	-24.5	0	34.29	-	-	74	-39.71	0-360	150	V
3	* 7.31	23.21	PK	35.9	-22	0	37.11	-	-	74	-36.89	0-360	250	V
6	9.744	20.07	PK	37	-18.1	0	38.97	-	-	74	-35.03	0-360	250	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 limt (54dBuV/m).

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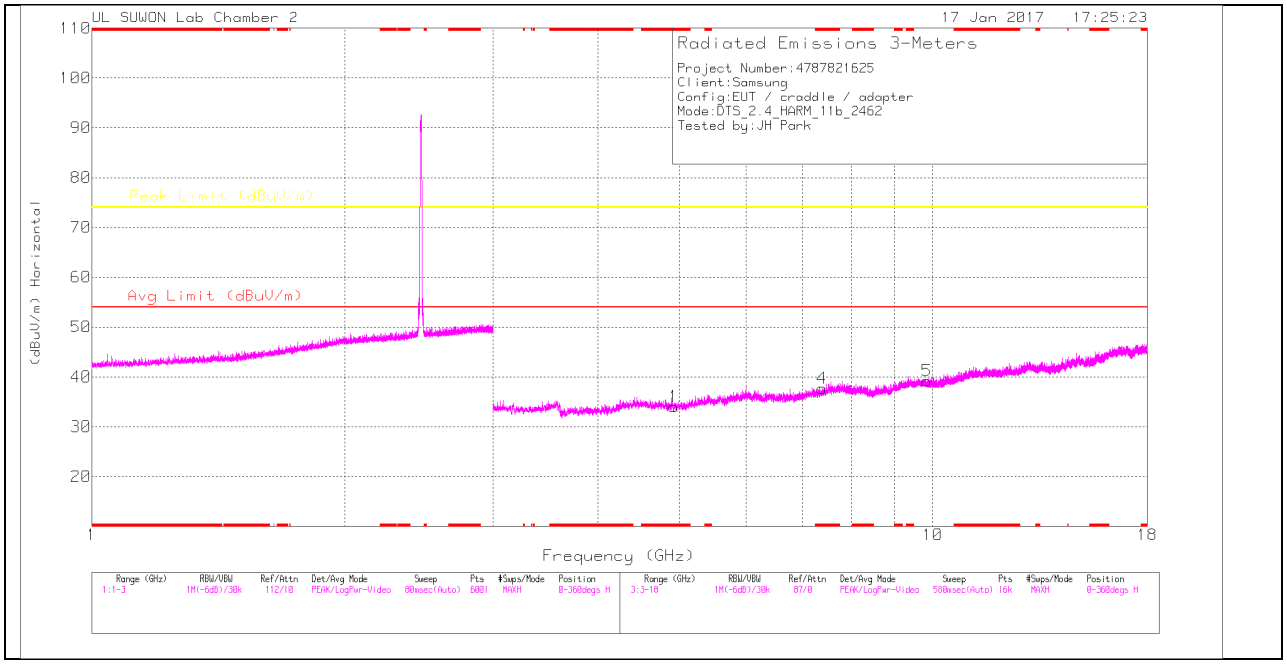
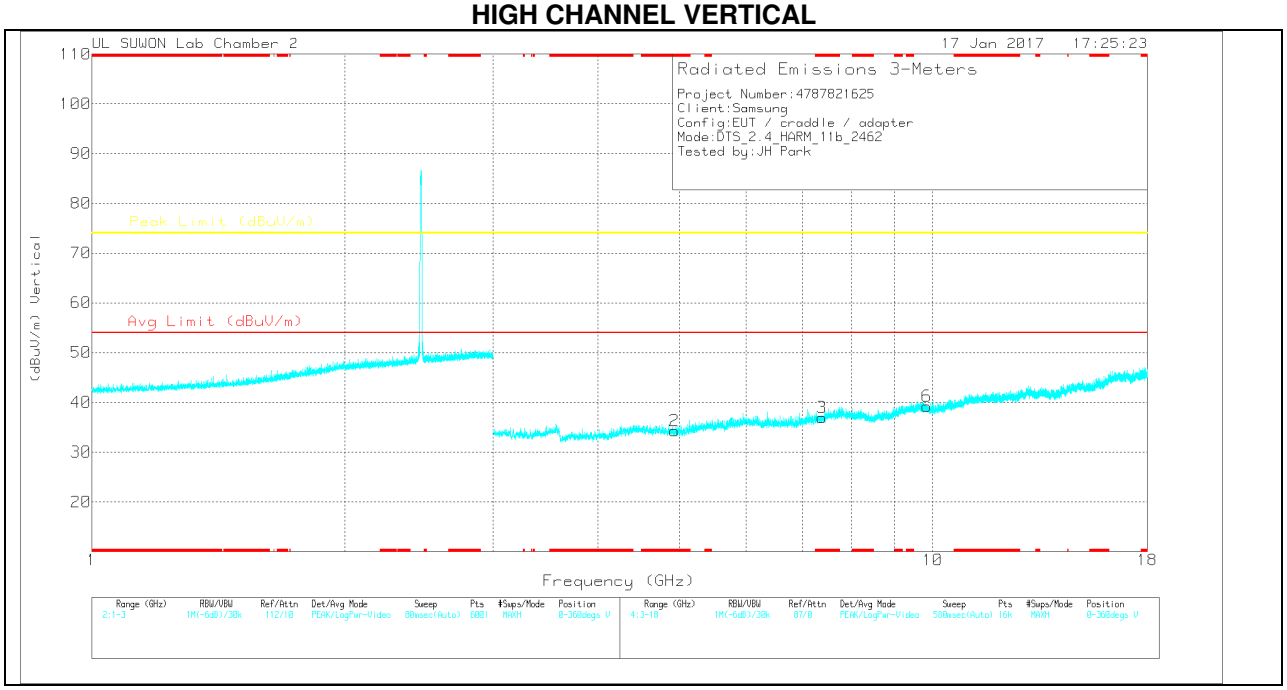
HIGH CHANNEL HORIZONTAL



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.

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HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	3GHz_HP[dB]	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	24.83	PK	33.9	-24.7	0	34.03	-	-	74	-39.97	0-360	250	H
4	* 7.383	23.19	PK	35.9	-21.4	0	37.69	-	-	74	-36.31	0-360	250	H
5	9.847	19.99	PK	37.1	-17.9	0	39.19	-	-	74	-34.81	0-360	250	H
2	* 4.928	25.08	PK	33.9	-24.7	0	34.28	-	-	74	-39.72	0-360	150	V
3	* 7.384	22.4	PK	35.9	-21.4	0	36.9	-	-	74	-37.1	0-360	250	V
6	9.847	20.01	PK	37.1	-17.9	0	39.21	-	-	74	-34.79	0-360	250	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 limt (54dBuV/m).

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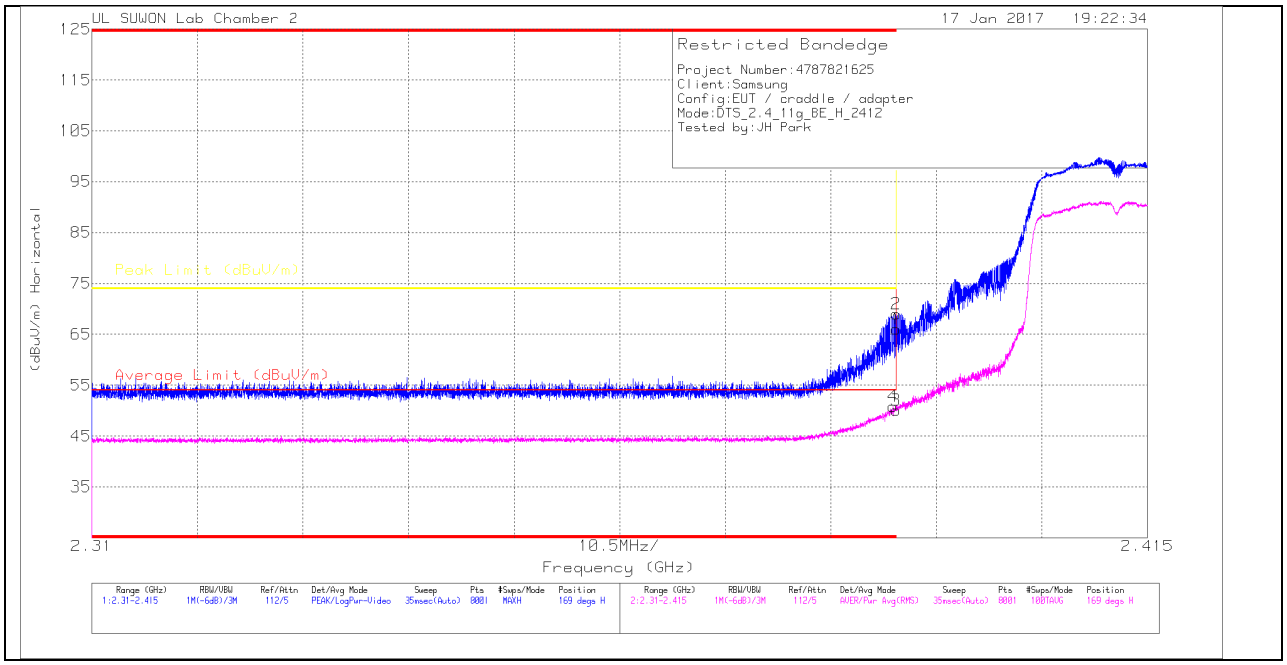
10.2.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	10dB[dB]	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	52.59	Pk	31.7	-18.2	0	66.09	-	-	74	-7.91	169	101	H
2	* 2.39	55.47	Pk	31.7	-18.2	0	68.97	-	-	74	-5.03	169	101	H
3	* 2.39	36.29	RMS	31.7	-18.2	.32	50.11	54	-3.89	-	-	169	101	H
4	* 2.39	37.03	RMS	31.7	-18.2	.32	50.85	54	-3.15	-	-	169	101	H

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

Pk - Peak detector

RMS - RMS detection

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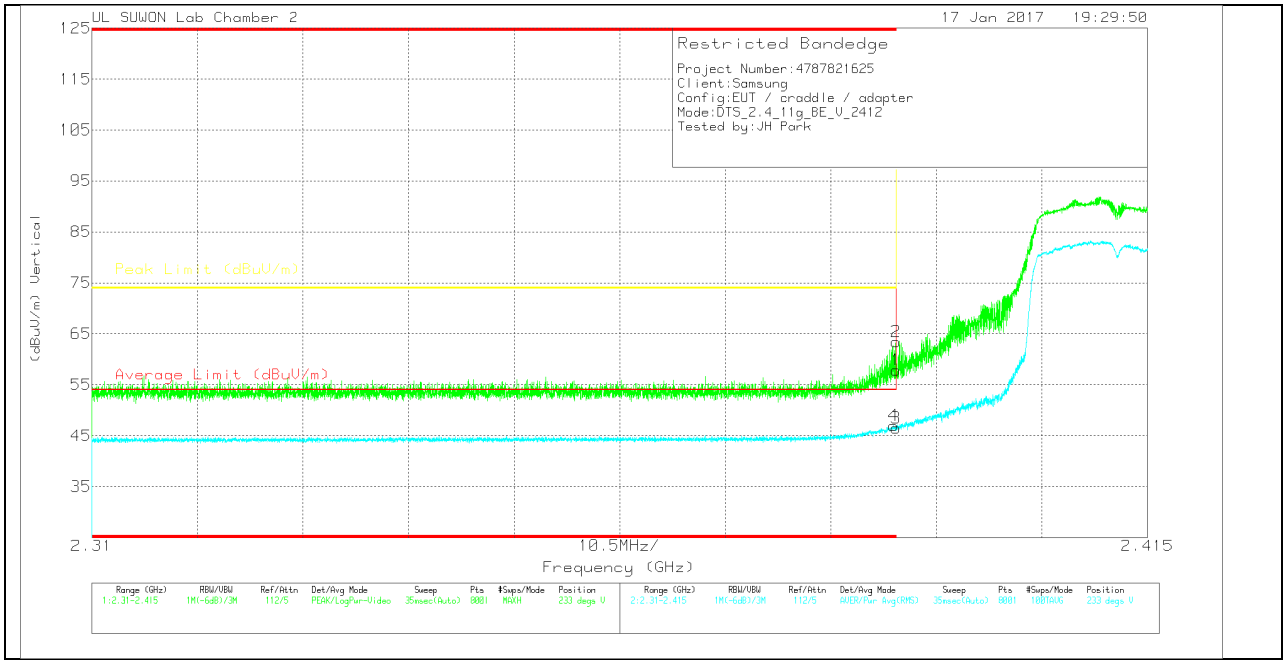
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	10dB[dB]	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	44.35	Pk	31.7	-18.2	0	57.85	-	-	74	-16.15	233	111	V
2	* 2.39	49.89	Pk	31.7	-18.2	0	63.39	-	-	74	-10.61	233	111	V
3	* 2.39	32.66	RMS	31.7	-18.2	.32	46.48	54	-7.52	-	-	233	111	V
4	* 2.39	33.12	RMS	31.7	-18.2	.32	46.94	54	-7.06	-	-	233	111	V

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

Pk - Peak detector

RMS - RMS detection

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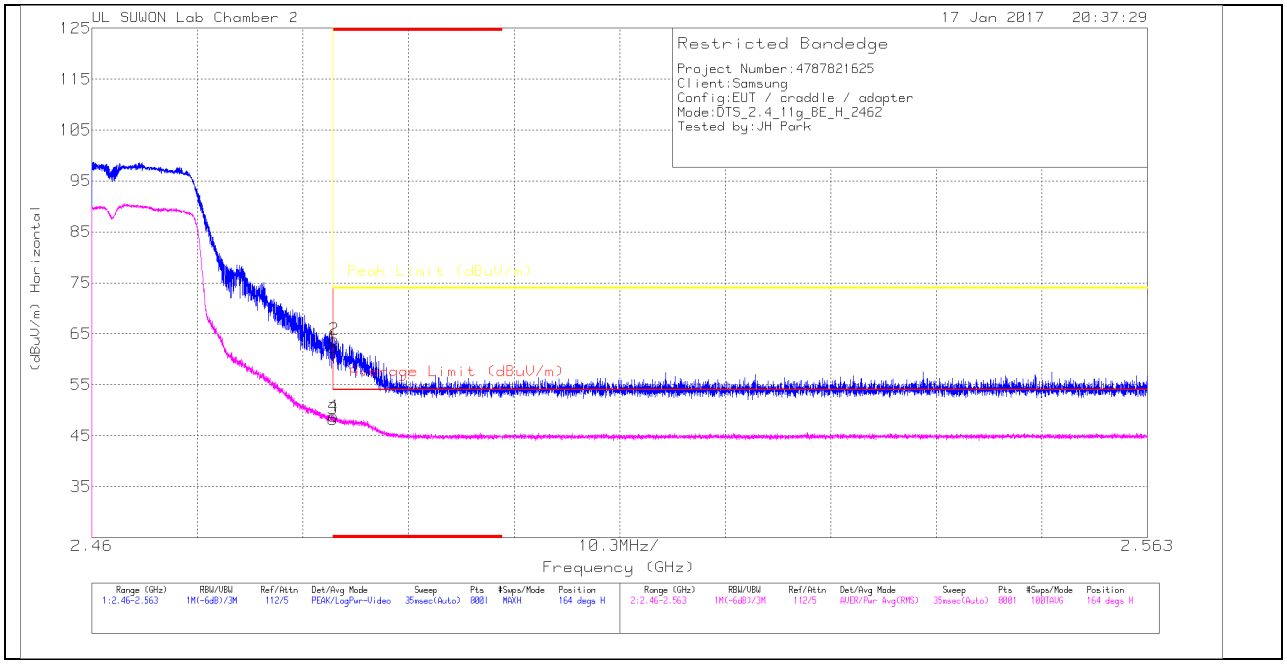
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	10dB[dB]	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	48.53	Pk	31.8	-18	0	62.33	-	-	74	-11.67	164	262	H
2	* 2.484	50.16	Pk	31.8	-18	0	63.96	-	-	74	-10.04	164	262	H
3	* 2.484	34.17	RMS	31.8	-18	.32	48.29	54	-5.71	-	-	164	262	H
4	* 2.484	34.75	RMS	31.8	-18	.32	48.87	54	-5.13	-	-	164	262	H

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

Pk - Peak detector

RMS - RMS detection

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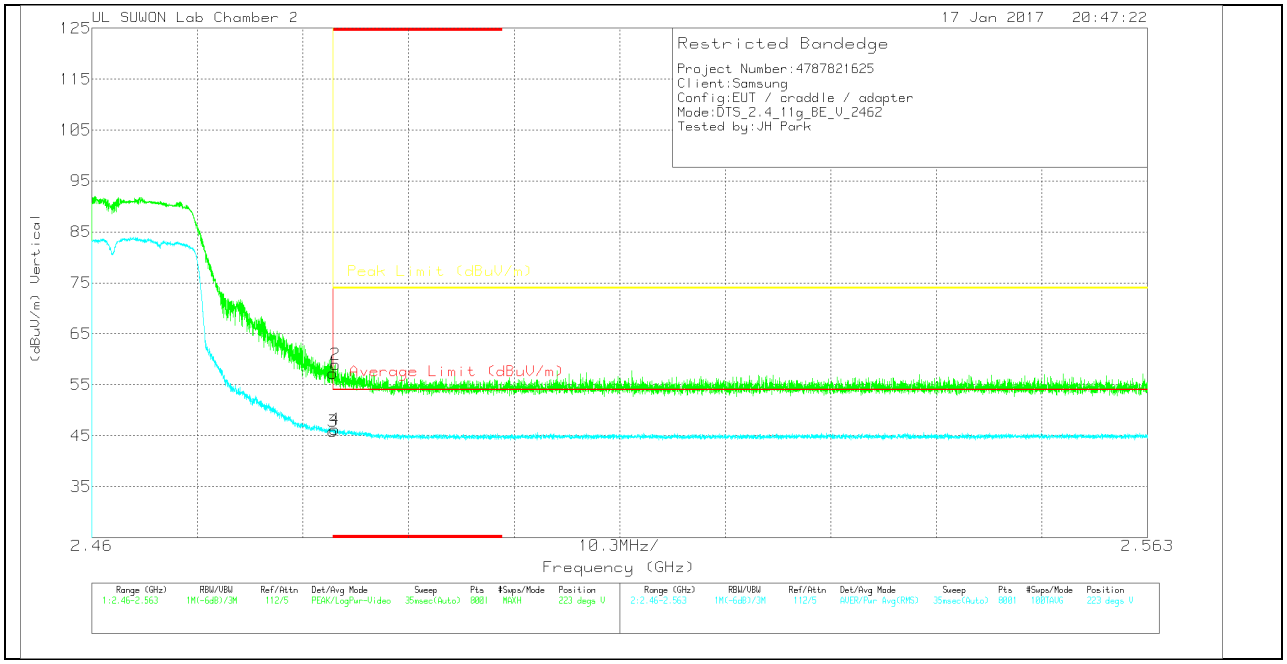
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	10dB[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	43.48	Pk	31.8	-18	0	57.28	-	-	74	-16.72	223	111	V
2	* 2.484	45.16	Pk	31.8	-18	0	58.96	-	-	74	-15.04	223	111	V
3	* 2.484	31.77	RMS	31.8	-18	.32	45.89	54	-8.11	-	-	223	111	V
4	* 2.484	32.18	RMS	31.8	-18	.32	46.3	54	-7.7	-	-	223	111	V

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

Pk - Peak detector

RMS - RMS detection

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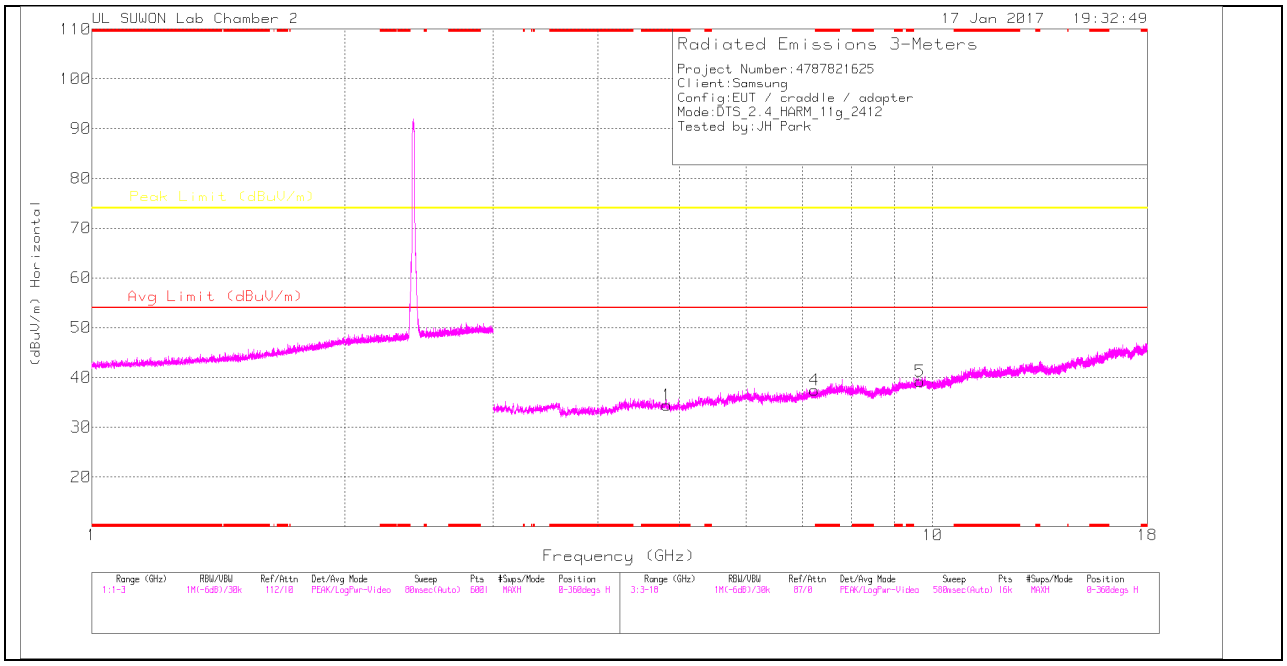
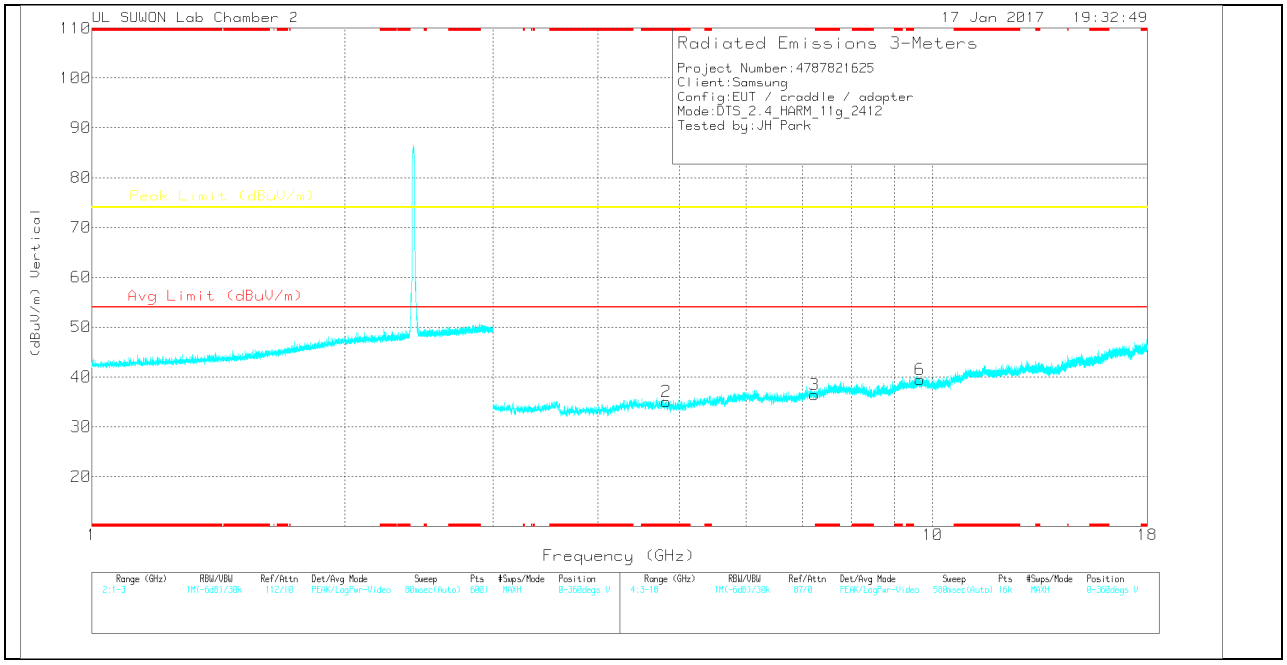
HARMONICS AND SPURIOUS EMISSIONS

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.

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LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	3GHz_HP[dB]	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	24.86	PK	33.9	-24.3	0	34.46	-	-	74	-39.54	0-360	250	H
4	7.232	23.57	PK	35.8	-21.9	0	37.47	-	-	74	-36.53	0-360	250	H
5	9.649	20.58	PK	36.9	-18.3	0	39.18	-	-	74	-34.82	0-360	250	H
2	* 4.82	25.47	PK	33.9	-24.3	0	35.07	-	-	74	-38.93	0-360	150	V
3	7.236	22.7	PK	35.8	-22	0	36.5	-	-	74	-37.5	0-360	250	V
6	9.651	20.85	PK	36.9	-18.3	0	39.45	-	-	74	-34.55	0-360	150	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 limt (54dBuV/m).

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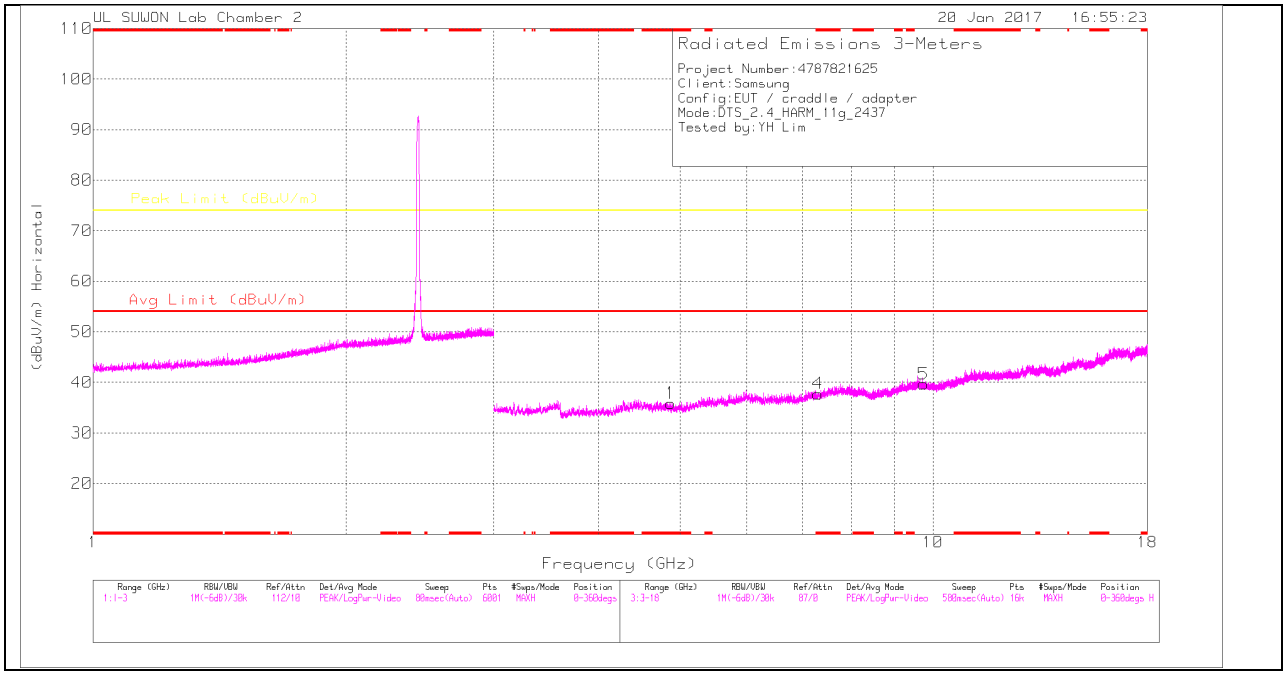
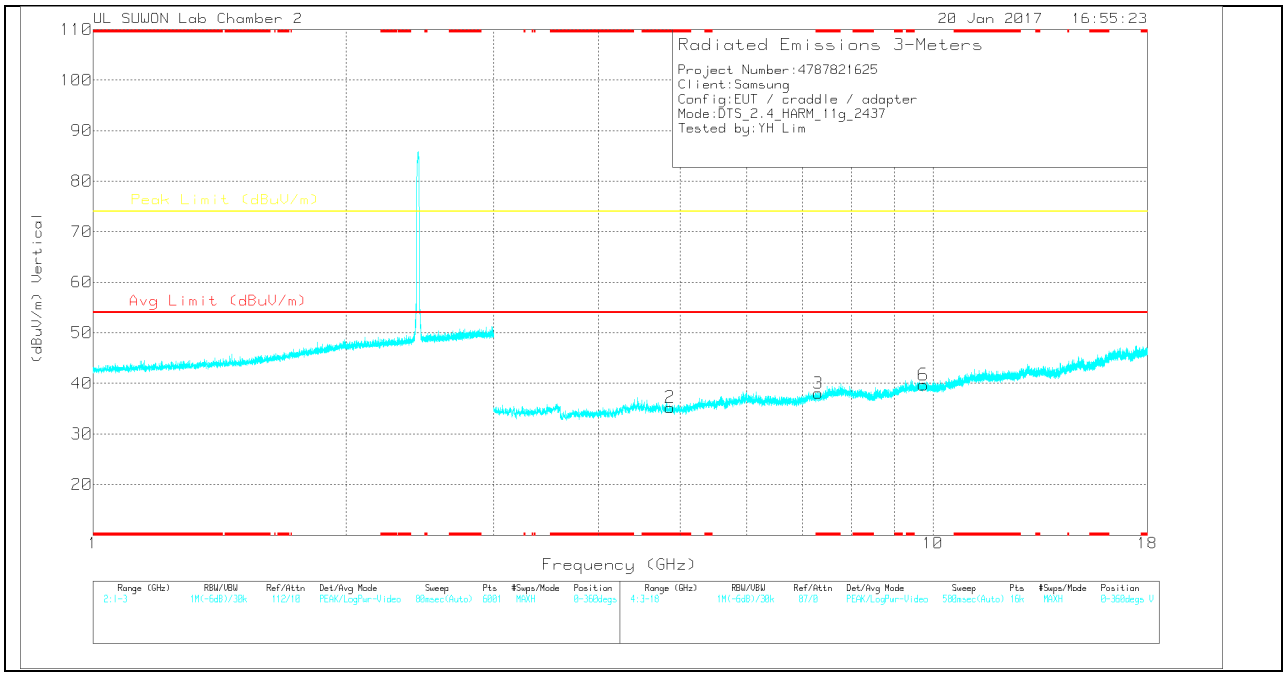
MID CHANNEL HORIZONTAL



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.

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MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	3GHz_HP[dB]	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	* 4.871	26.44	Pk	33.9	-24.5	0	35.84	-	-	74	-38.16	0-360	250	H
4	* 7.297	23.94	Pk	35.8	-22	0	37.74	-	-	74	-36.26	0-360	250	H
5	9.743	20.78	Pk	37	-18.1	0	39.68	-	-	74	-34.32	0-360	250	H
2	* 4.864	25.74	Pk	33.9	-24.4	0	35.24	-	-	74	-38.76	0-360	150	V
3	* 7.302	24.12	Pk	35.9	-22	0	38.02	-	-	74	-35.98	0-360	150	V
6	9.742	20.8	Pk	37	-18.1	0	39.7	-	-	74	-34.3	0-360	250	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 limt (54dBuV/m).

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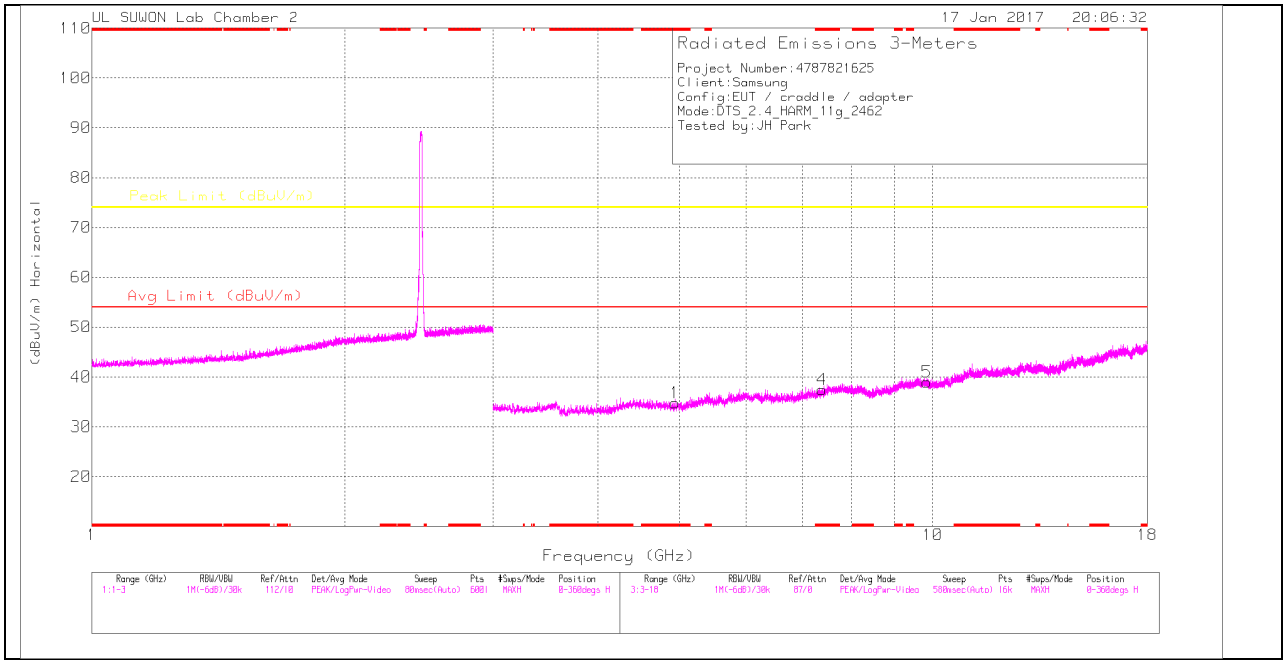
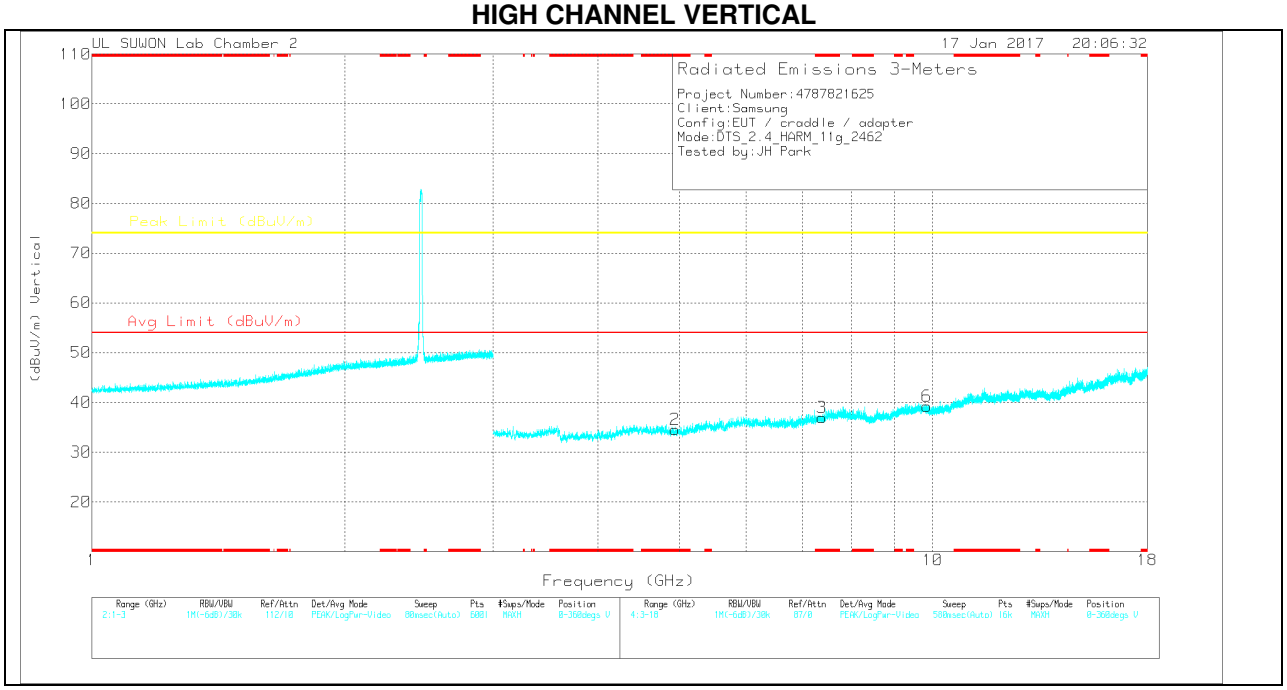
HIGH CHANNEL HORIZONTAL



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.

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HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	3GHz_HP[dB]	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	* 4.936	25.64	PK	33.9	-24.7	0	34.84	-	-	74	-39.16	0-360	250	H
4	* 7.388	22.98	PK	35.9	-21.4	0	37.48	-	-	74	-36.52	0-360	250	H
5	9.848	19.76	PK	37.1	-17.9	0	38.96	-	-	74	-35.04	0-360	150	H
2	* 4.936	25.29	PK	33.9	-24.7	0	34.49	-	-	74	-39.51	0-360	150	V
3	* 7.388	22.48	PK	35.9	-21.4	0	36.98	-	-	74	-37.02	0-360	150	V
6	9.848	20.03	PK	37.1	-17.9	0	39.23	-	-	74	-34.77	0-360	150	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 limt (54dBuV/m).

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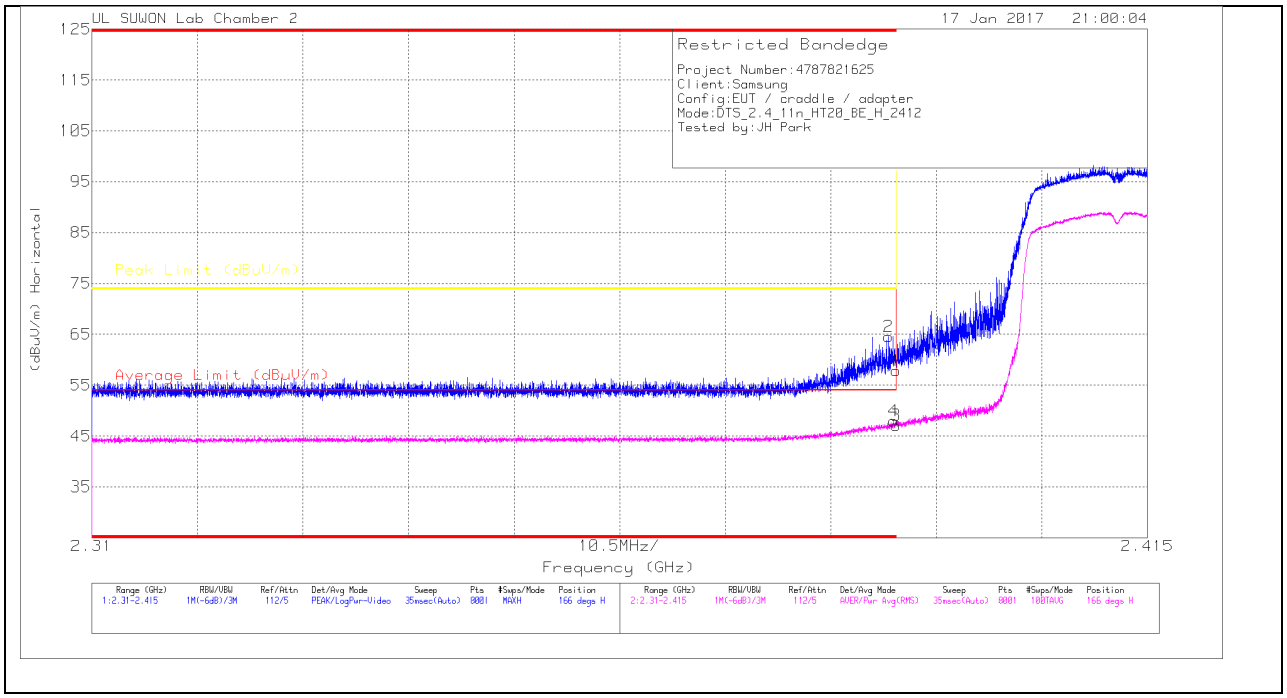
10.2.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	10dB[dB]	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	44.41	Pk	31.7	-18.2	0	57.91	-	-	74	-16.09	166	100	H
2	* 2.389	51.06	Pk	31.7	-18.2	0	64.56	-	-	74	-9.44	166	100	H
3	* 2.39	33.22	RMS	31.7	-18.2	.34	47.06	54	-6.94	-	-	166	100	H
4	* 2.39	34.16	RMS	31.7	-18.2	.34	48	54	-6	-	-	166	100	H

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

Pk - Peak detector

RMS - RMS detection

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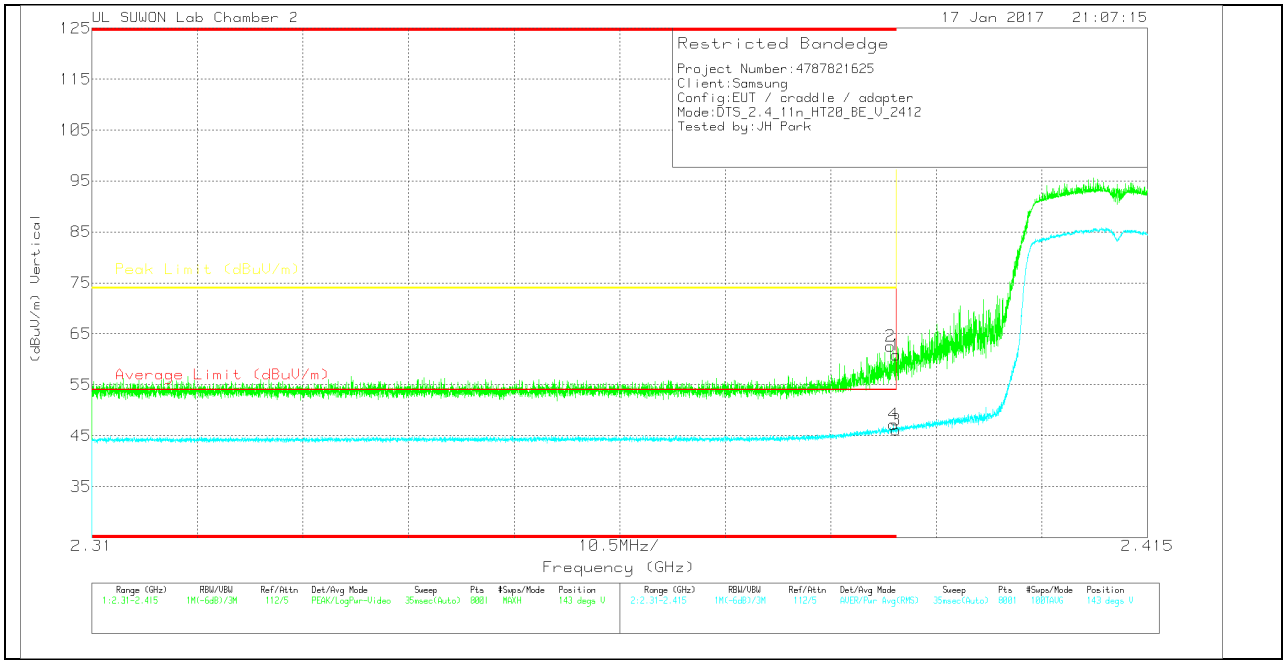
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	10dB[dB]	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	47.37	Pk	31.7	-18.2	0	60.87	-	-	74	-13.13	143	179	V
2	* 2.389	49.02	Pk	31.7	-18.2	0	62.52	-	-	74	-11.48	143	179	V
3	* 2.39	32.26	RMS	31.7	-18.2	.34	46.1	54	-7.9	-	-	143	179	V
4	* 2.39	33.35	RMS	31.7	-18.2	.34	47.19	54	-6.81	-	-	143	179	V

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

Pk - Peak detector

RMS - RMS detection

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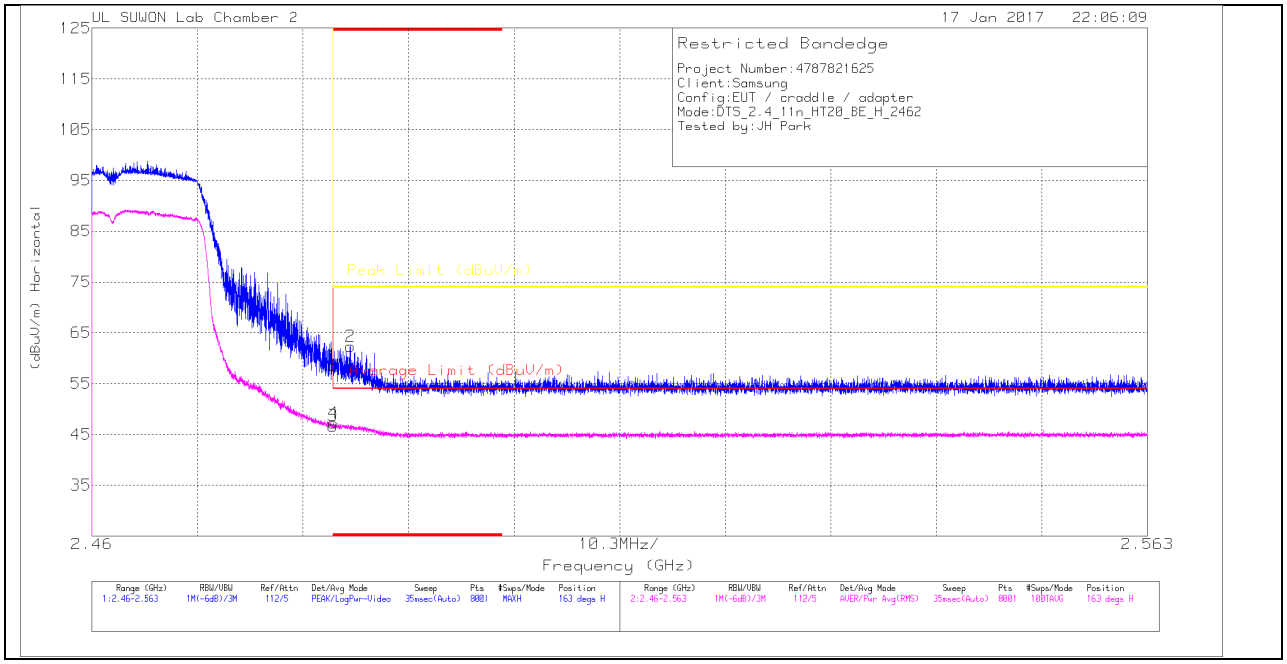
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	10dB[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	44.78	Pk	31.8	-18	0	58.58	-	-	74	-15.42	163	264	H
2	* 2.485	48.47	Pk	31.8	-18	0	62.27	-	-	74	-11.73	163	264	H
3	* 2.484	32.54	RMS	31.8	-18	.34	46.68	54	-7.32	-	-	163	264	H
4	* 2.484	33.15	RMS	31.8	-18	.34	47.29	54	-6.71	-	-	163	264	H

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

Pk - Peak detector

RMS - RMS detection

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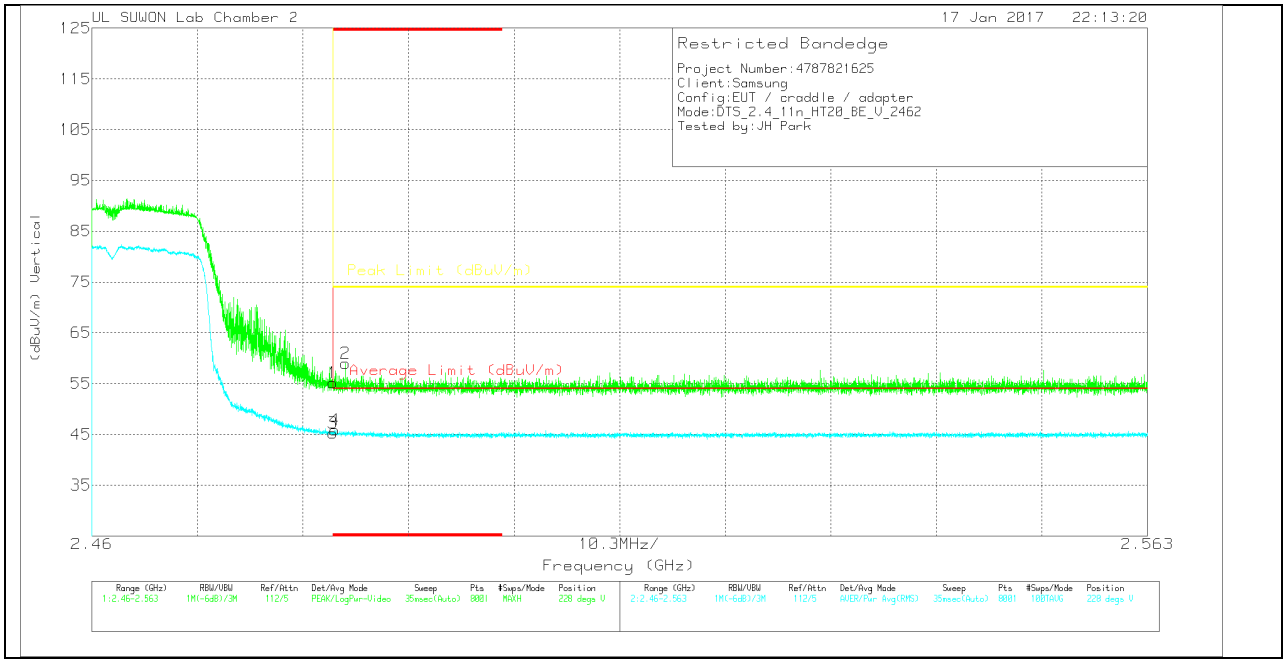
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	10dB[dB]	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	41.4	Pk	31.8	-18	0	55.2	-	-	74	-18.8	228	110	V
2	* 2.485	45.23	Pk	31.8	-18	0	59.03	-	-	74	-14.97	228	110	V
3	* 2.484	31.06	RMS	31.8	-18	.34	45.2	54	-8.8	-	-	228	110	V
4	* 2.484	31.68	RMS	31.8	-18	.34	45.82	54	-8.18	-	-	228	110	V

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

Pk - Peak detector

RMS - RMS detection

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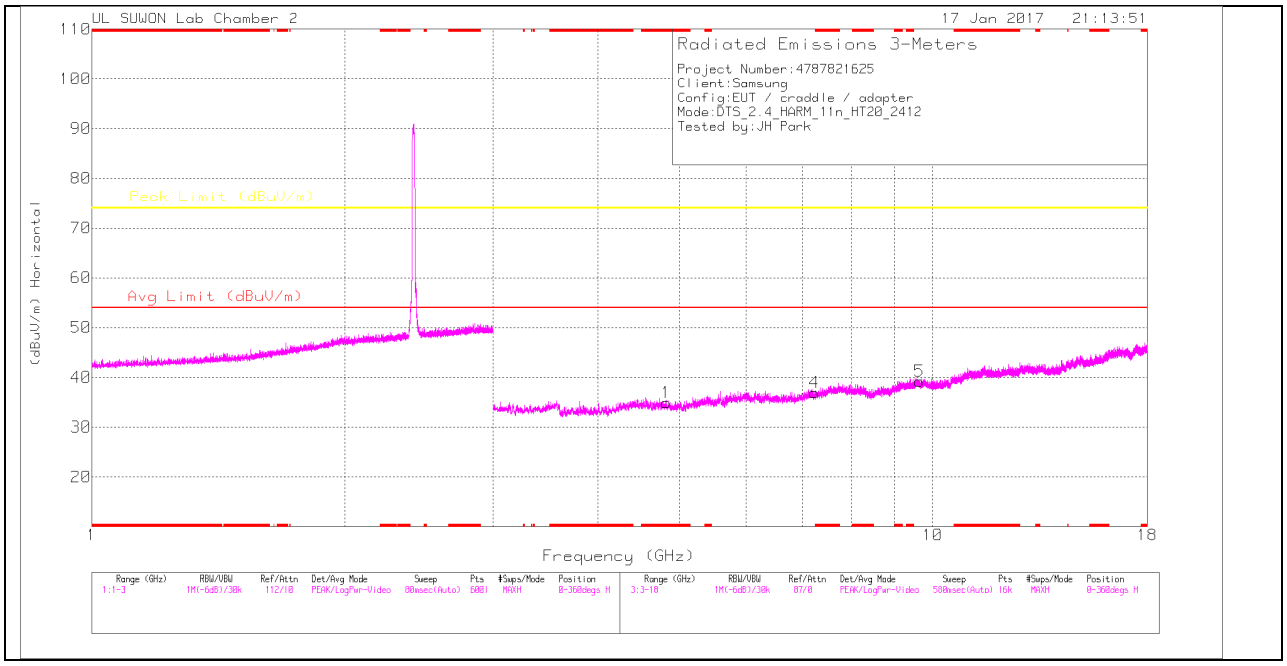
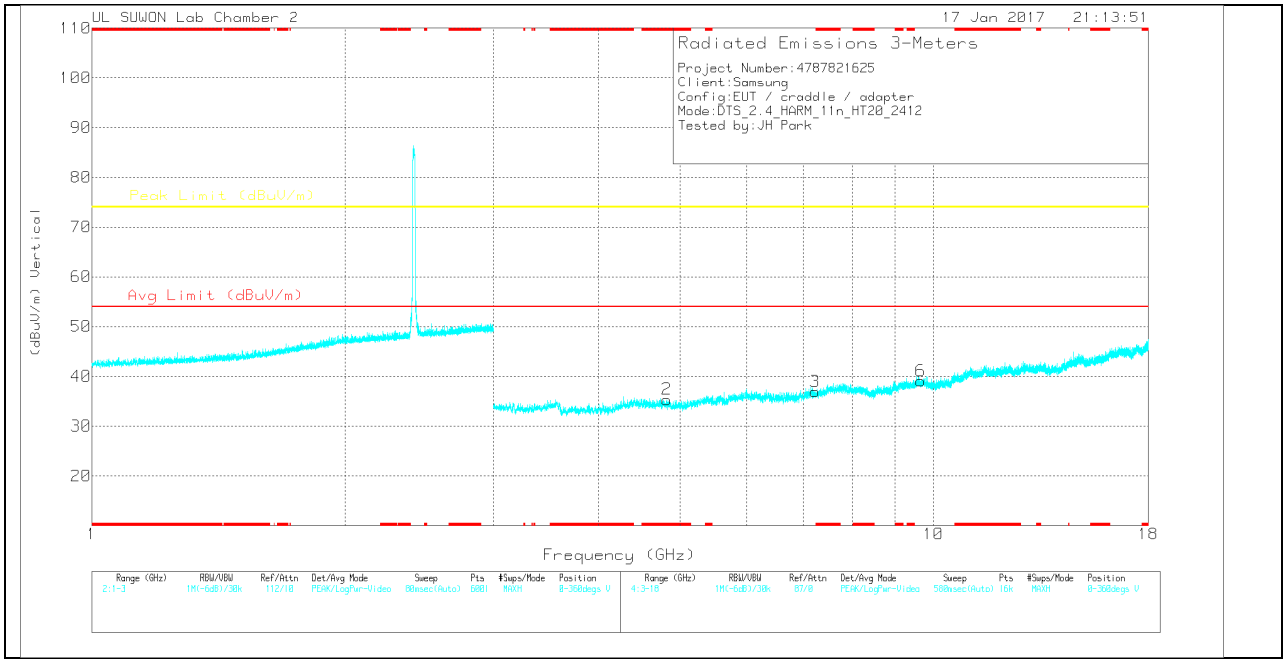
HARMONICS AND SPURIOUS EMISSIONS

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.

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LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	3GHz_HP[dB]	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	25.27	PK	33.9	-24.3	0	34.87	-	-	74	-39.13	0-360	250	H
4	7.233	23	PK	35.8	-21.9	0	36.9	-	-	74	-37.1	0-360	150	H
5	9.648	20.67	PK	36.9	-18.3	0	39.27	-	-	74	-34.73	0-360	250	H
2	* 4.821	25.77	PK	33.9	-24.3	0	35.37	-	-	74	-38.63	0-360	250	V
3	7.237	23.17	PK	35.8	-22	0	36.97	-	-	74	-37.03	0-360	150	V
6	9.651	20.54	PK	36.9	-18.3	0	39.14	-	-	74	-34.86	0-360	250	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 limt (54dBuV/m).

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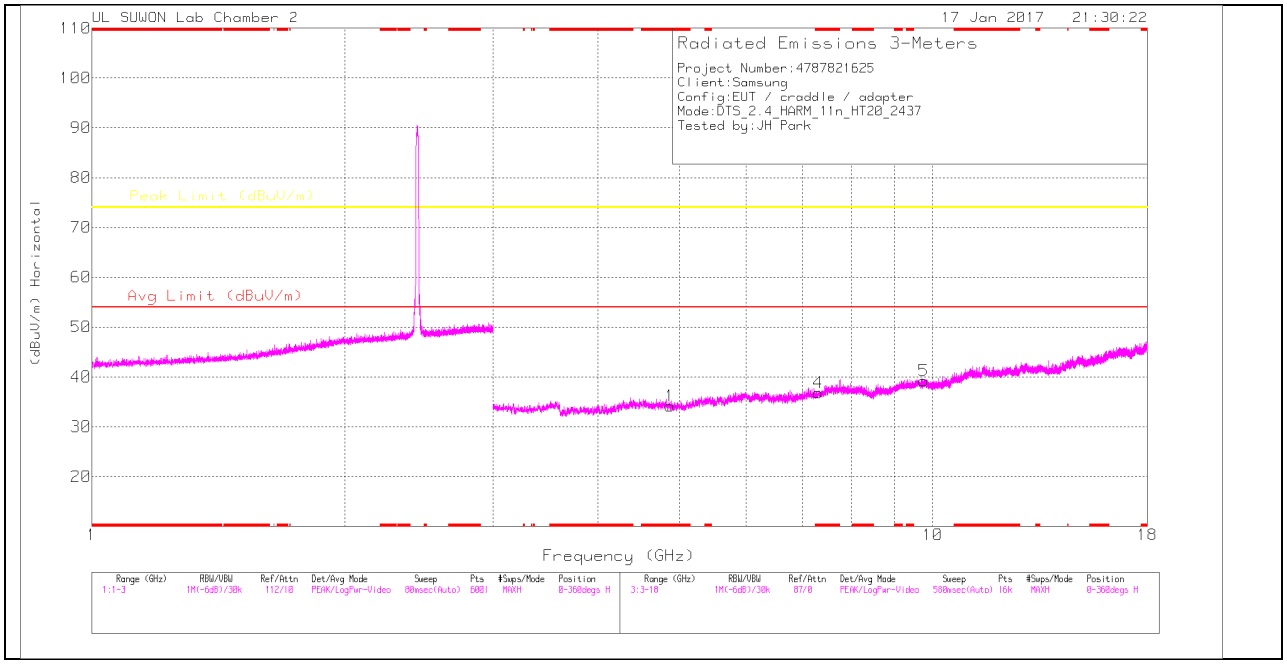
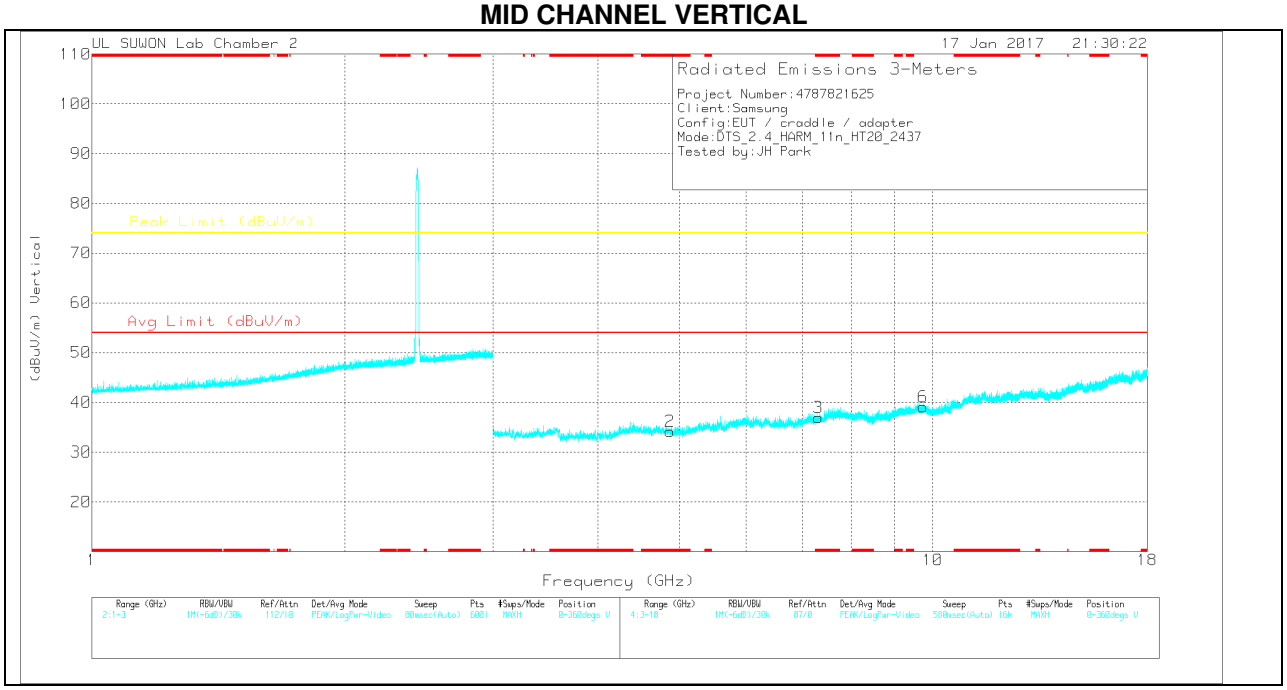
MID CHANNEL HORIZONTAL



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.

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MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	3GHz_HP[dB]	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	24.74	PK	33.9	-24.5	0	34.14	-	-	74	-39.86	0-360	150	H
4	* 7.309	22.91	PK	35.9	-22	0	36.81	-	-	74	-37.19	0-360	250	H
5	9.751	20.33	PK	37	-18.1	0	39.23	-	-	74	-34.77	0-360	150	H
2	* 4.873	24.75	PK	33.9	-24.5	0	34.15	-	-	74	-39.85	0-360	250	V
3	* 7.312	23.03	PK	35.9	-22	0	36.93	-	-	74	-37.07	0-360	150	V
6	9.747	20.24	PK	37	-18.1	0	39.14	-	-	74	-34.86	0-360	250	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 limt (54dBuV/m).

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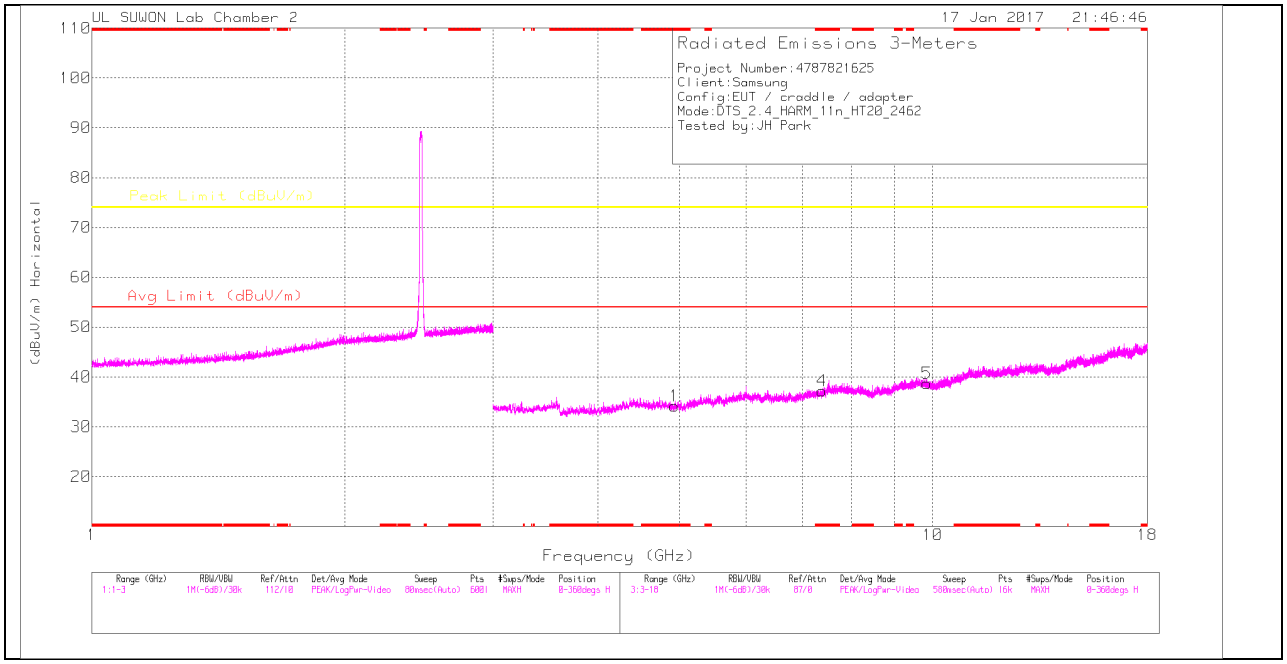
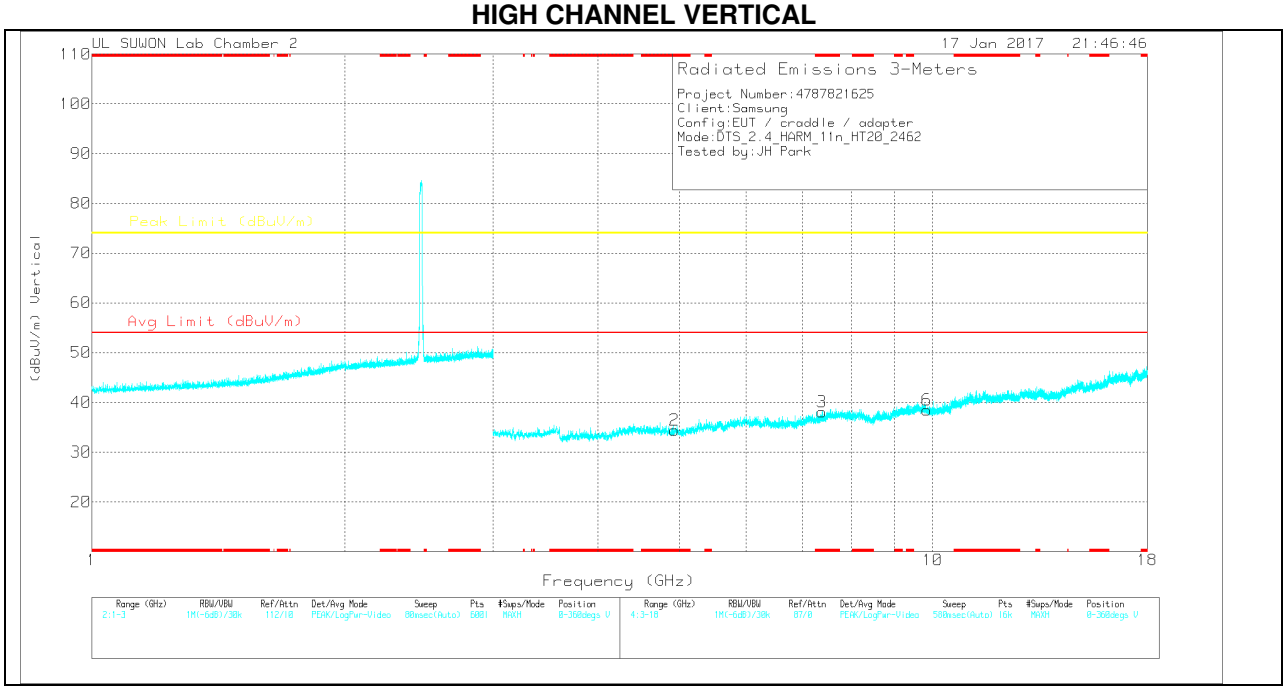
HIGH CHANNEL HORIZONTAL



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.

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HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168724)_150619	3GHz_HP[dB]	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	* 4.928	25.01	PK	33.9	-24.7	0	34.21	-	-	74	-39.79	0-360	150	H
4	* 7.386	22.73	PK	35.9	-21.4	0	37.23	-	-	74	-36.77	0-360	150	H
5	9.846	19.5	PK	37.1	-17.9	0	38.7	-	-	74	-35.3	0-360	250	H
2	* 4.926	25.18	PK	33.9	-24.7	0	34.38	-	-	74	-39.62	0-360	250	V
3	* 7.385	23.62	PK	35.9	-21.4	0	38.12	-	-	74	-35.88	0-360	150	V
6	9.848	19.28	PK	37.1	-17.9	0	38.48	-	-	74	-35.52	0-360	250	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 limt (54dBuV/m).

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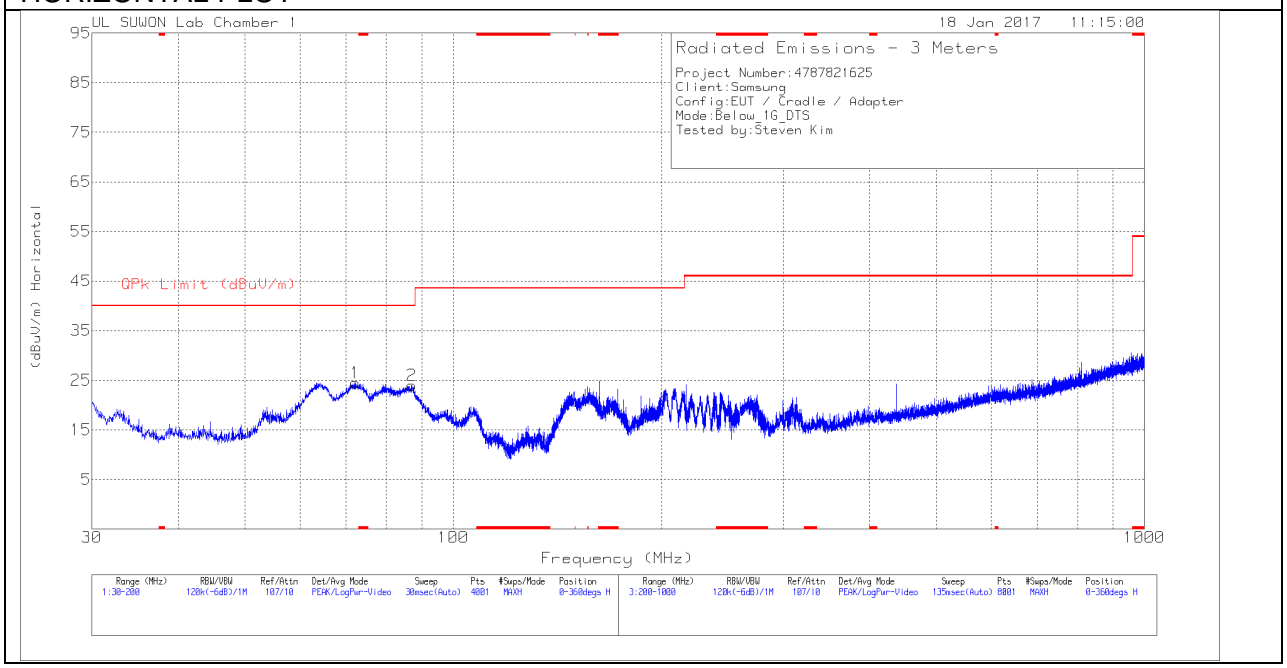
10.3. WORST-CASE BELOW 1 GHz

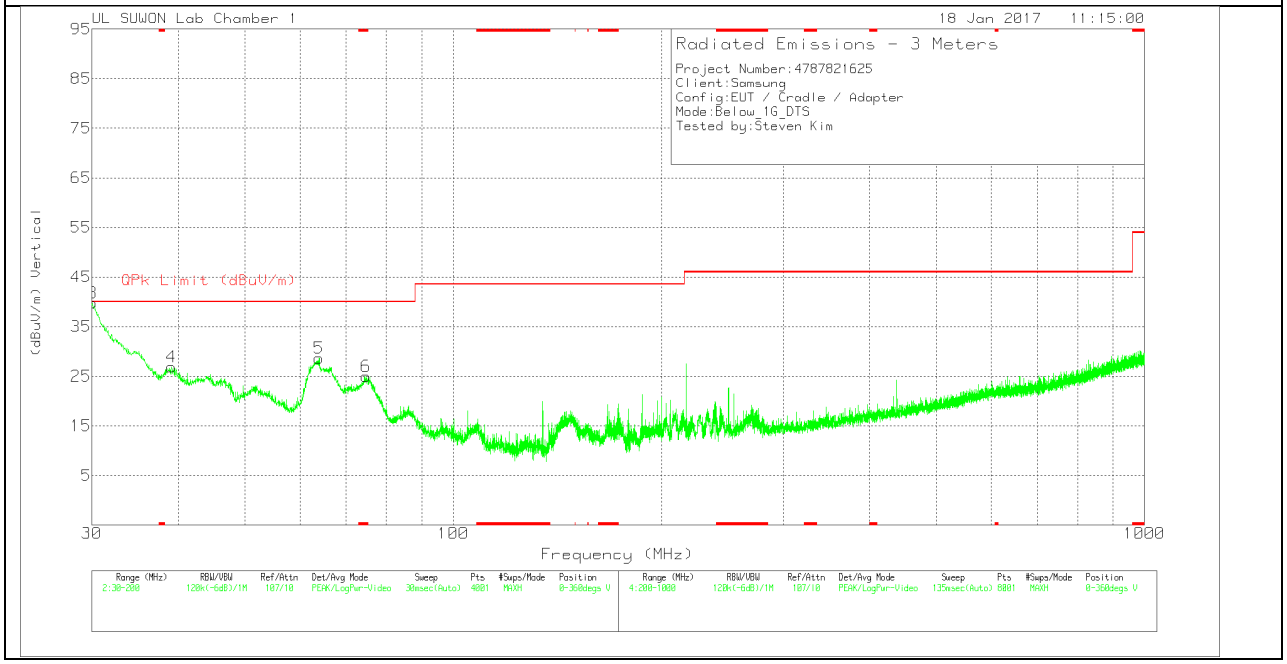
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

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	72.16	45.15	Pk	9	-29.7	24.45	40	-15.55	0-360	300	H
2	87.035	44.75	Pk	8.7	-29.5	23.95	40	-16.05	0-360	200	H
3	30.0425	59.93	Pk	10.3	-30.5	39.73	40	-.27	0-360	100	V
4	39.1375	45.09	Pk	12.1	-30.3	26.89	40	-13.11	0-360	100	V
5	63.9788	47.17	Pk	11.4	-29.9	28.67	40	-11.33	0-360	100	V
6	* 74.8375	46.39	Pk	8.3	-29.7	24.99	40	-15.01	0-360	200	V

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

Pk - Peak detector

Radiated Emissions

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
30.006	57.13	Qp	10.3	-30.5	36.93	40	-3.07	260	100	V

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

Qp - Quasi-Peak detector

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11. 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.

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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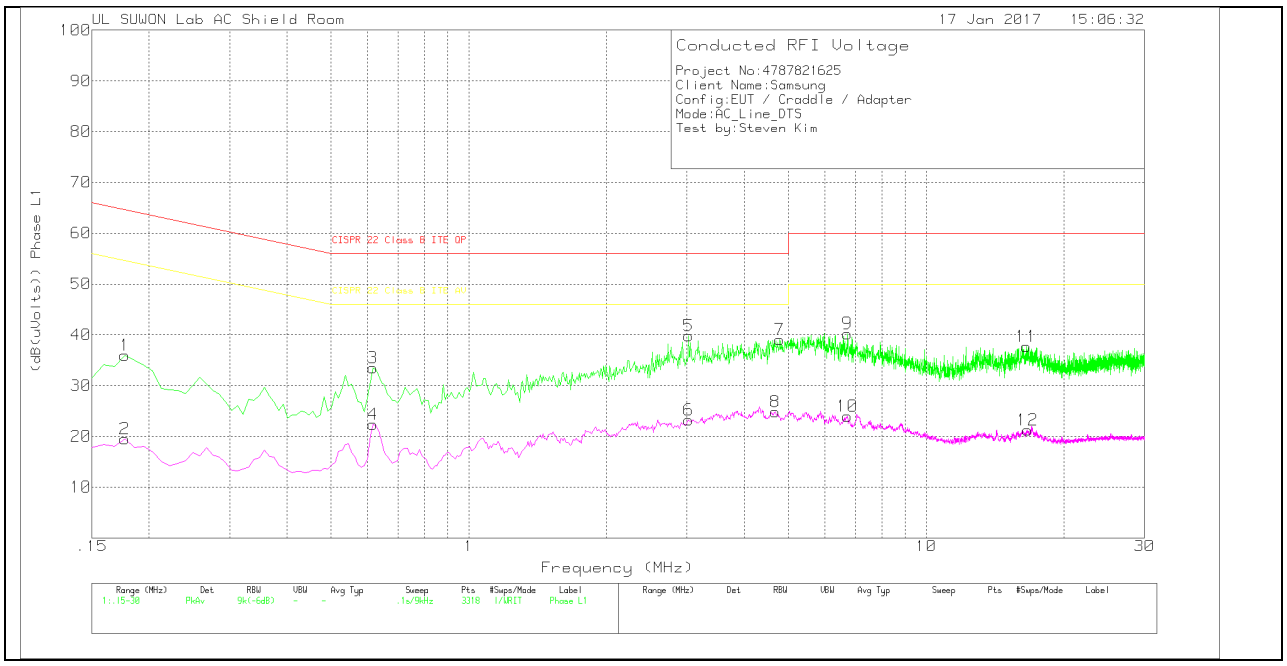
RESULTS

WORST EMISSIONS

LINE 1 PLOT



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LINE 1 RESULTS

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	26.01	Pk	10	0	36.01	64.63	-28.62	-	-
2	.177	9.48	Av	10	0	19.48	-	-	54.63	-35.15
3	.618	23.61	Pk	9.9	0	33.51	56	-22.49	-	-
4	.618	12.43	Av	9.9	0	22.33	-	-	46	-23.67
5	3.021	29.86	Pk	9.8	.1	39.76	56	-16.24	-	-
6	3.021	13.31	Av	9.8	.1	23.21	-	-	46	-22.79
7	4.785	29.17	Pk	9.8	.1	39.07	56	-16.93	-	-
8	4.677	14.89	Av	9.8	.1	24.79	-	-	46	-21.21
9	6.729	30.23	Pk	9.9	.1	40.23	60	-19.77	-	-
10	6.72	14.01	Av	9.9	.1	24.01	-	-	50	-25.99
11	16.566	27.35	Pk	10.2	.2	37.75	60	-22.25	-	-
12	16.629	10.88	Av	10.2	.2	21.28	-	-	50	-28.72

Pk - Peak detector

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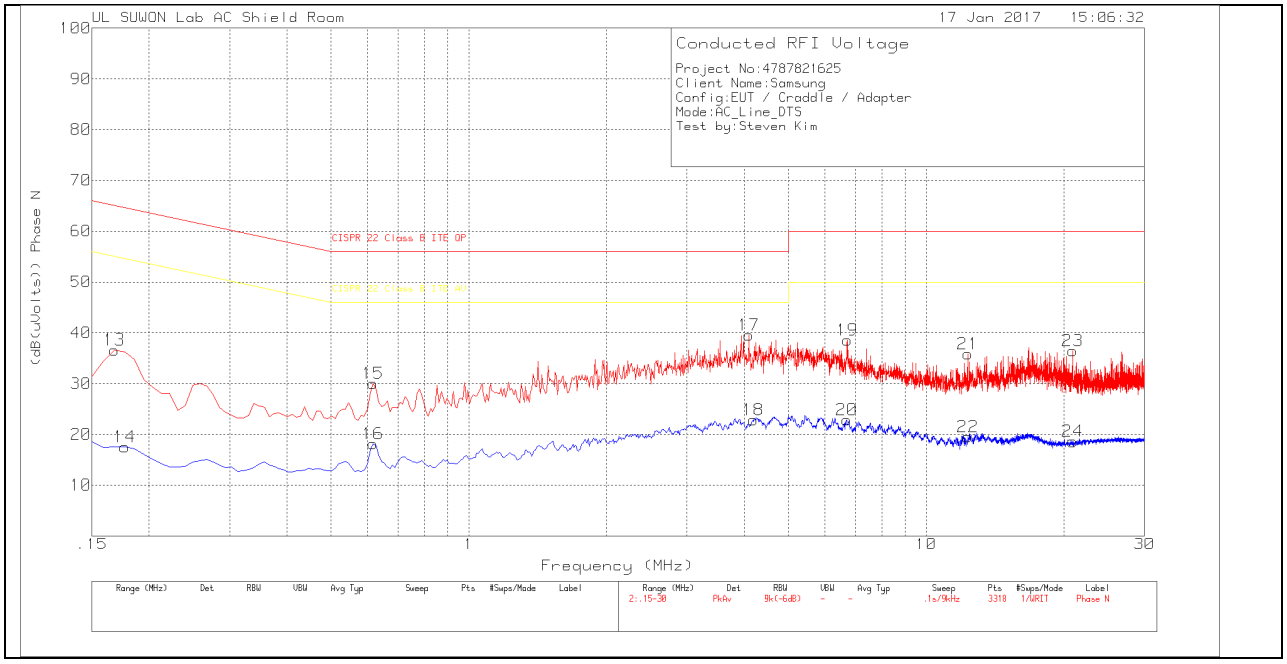
LINE 2 PLOT



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LINE 2 RESULTS

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	.168	26.64	Pk	10	0	36.64	65.06	-28.42	-	-
14	.177	7.59	Av	10	0	17.59	-	-	54.63	-37.04
15	.618	20.16	Pk	9.9	0	30.06	56	-25.94	-	-
16	.618	8.22	Av	9.9	0	18.12	-	-	46	-27.88
17	4.092	29.67	Pk	9.8	.1	39.57	56	-16.43	-	-
18	4.182	12.99	Av	9.8	.1	22.89	-	-	46	-23.11
19	6.729	28.54	Pk	9.9	.1	38.54	60	-21.46	-	-
20	6.702	12.89	Av	9.9	.1	22.89	-	-	50	-27.11
21	12.318	25.47	Pk	10.2	.2	35.87	60	-24.13	-	-
22	12.345	9.12	Av	10.2	.2	19.52	-	-	50	-30.48
23	20.877	25.58	Pk	10.7	.2	36.48	60	-23.52	-	-
24	20.877	7.69	Av	10.7	.2	18.59	-	-	50	-31.41

Pk - Peak detector

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