



FCC CFR47 PART 15 SUBPART C

DTS Wireless LAN

CERTIFICATION TEST REPORT

FOR

WCDMA/LTE Tablet + Bluetooth/BLE, DTS/UNII a/b/g/n/ac and ANT+

MODEL NUMBER : SM-T818V

FCC ID: A3LSMT818V

REPORT NUMBER: 16K23802-E1V2

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skRevision History

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

EUT DESCRIPTION: WCDMA/LTE Tablet + Bluetooth/BLE, DTS/UNII a/b/g/n/ac and ANT+

MODEL NUMBER: SM-T818V

SERIAL NUMBER: R32H5003EKB, R32H7007B3K (RADIATED);
R32H5003EJN, R32H7007MGE (CONDUCTED)

DATE TESTED: JUL 11, 2016 - SEP 05, 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.

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1.1. INTRODUCTION OF TEST DATA REUSE

This report referenced from the FCC ID: A3LSMT818T, DTS (FCC CFR 47 Part 15C).
And the applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID.

1.2. DIFFERENCE

The FCC ID: A3LSMT818V shares the same enclosure and circuit board as FCC ID: A3LSMT818T. The WLAN circuitry and layout are identical between these two units.
The WLAN antennas and surrounding circuitry are the same between these two units.

After confirming through preliminary radiated emissions that the performance of the FCC ID: A3LSMT818T remains representative of FCC ID: A3LSMT818V. The test data of FCC ID: A3LSMT818T being submitted for this application to cover WLAN features.

1.3. SPOT CHECK VERIFICATION DATA

Band		Test Item	Worst Mode	Worst Freq. (MHz)	Worst Bandwidth (MHz)	Test Limit (dBμV/m)	Original Model SM-T818T (FCC ID : A3LSMT818T)	Spot Check Model SM-T818V (FCC ID : A3LSMT818V)	Deviation
							Measured Data(dBμV/m)	Measured Power (dBμV/m)	
DTS	2.4GHz	Band Edge	802.11b	2462.0	20	54(avg)	47.94	47.78	-0.16
		RSE	802.11b	2412.0	20	54(avg)	38.41	40.89	2.48
		Band Edge	802.11g	2412.0	20	54(avg)	48.26	49.40	1.14
		RSE	802.11g	2462.0	20	54(avg)	38.59	38.13	-0.46
		Band Edge	802.11n	2457.0	20	54(avg)	51.40	48.65	-2.75
		RSE	802.11n	2457.0	20	54(avg)	39.00	41.37	2.37

Comparison of two models, Deviation is within The EMC Lab Measurement Uncertainty range and all test results are under FCC Technical Limits.

1.4. REFERENCE DETAIL

Reference application that contains the reused reference data.

Equipment Class	Reference FCC ID	Type Grant/Permissive Change	Reference Application	Folder Test/RF Exposure	Report Title / Section
DTS	A3LSMT818T	Grant	16K23624-E1V1	Test	FCC Report DTS WLAN / All sections
			16K23795-S1V1	RF Exposure	FCC Report SAR / Section 9.3, 10.8
DSS	A3LSMT818T	Grant	16K23624-E3V1	Test	FCC Report BT / All sections
			16K23795-S1V1	RF Exposure	FCC Report SAR / Section 9.5, 10.10
NII	A3LSMT818T	Grant	16K23624-E4V1	Test	FCC Report UNII DFS WLAN / All sections (Except DFS)
			16K23795-S1V1	RF Exposure	FCC Report SAR / Section 9.4, 10.9
DXX	A3LSMT818T	Grant	16K23624-E5V1	Test	FCC Report ANT+ / All sections
PCB	A3LSMT818T	Grant	16K23624-E6V1	Test	FCC Report WWAN / All sections for WCDMA B2, B5 LTE B2/B4/B5
			16K23795-S1V1	RF Exposure	FCC Report SAR / Section for WCDMA B2 (9.1, 10.1), WCDMA B5 (9.1, 10.3), LTE B2 (9.2, 10.4), LTE B4 (9.2, 10.5), LTE B5 (9.2, 10.6)

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, 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:

$$\begin{aligned}\text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m}\end{aligned}$$

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	2.32 dB
Radiated Disturbance, Below 1GHz	4.14 dB
Radiated Disturbance, Above 1 GHz	5.97 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a WCDMA/LTE Tablet + Bluetooth/BLE, DTS/UNII a/b/g/n/ac and ANT+. This test report addresses the DTS (WLAN) operational mode.

WiFi MIMO Condition

Frequency	Mode	Antenna 1	Antenna 2
2.4 GHz	802.11b	TX / RX	TX / RX
	802.11g	TX / RX	TX / RX
	802.11n	TX / RX	TX / RX
	802.11n MIMO	TX / RX	TX / RX
5 GHz	802.11a	TX / RX	TX / RX
	802.11n	TX / RX	TX / RX
	802.11ac	TX / RX	TX / RX
	802.11n/ac MIMO	TX / RX	TX / RX

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]	
		Antenna1	Antenna2	Antenna1	Antenna2
2412 - 2462	802.11b	20.10	20.12	102.33	102.80
	802.11g	20.43	20.49	110.41	111.94
	802.11g MIMO	23.11		204.64	
	802.11n SISO	20.46	20.45	111.17	110.92
	802.11n MIMO	23.42		219.79	

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes FPCB antennas, with a antenna1's maximum gain of 0.61 dBi and antenna2's maximum gain of -3.87 dBi .

5.4. LIST OF TEST REDUCTION AND MODES

The output power on covered modes is equal to or less than one referenced.

2400 - 2483.5 MHz Authorized Frequency Band (Radiated Testing)		
Frequency Range (MHz)	Mode	Covered by
2412 - 2462	802.11b Legacy 1TX	802.11b Legacy 1TX
	802.11g Legacy 1TX	802.11g CDD 2TX
	802.11n 1TX	802.11n HT20 CDD 2TX
	802.11n STBC 2TX	802.11n HT20 CDD 2TX

5.5. 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 X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

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

802.11b mode: 1 Mbps (Legacy 1TX)
802.11g mode: 6 Mbps (CDD 2TX)
802.11n HT20 mode: MCS0 (CDD 2TX)

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	EP-TA12JWE	DK3H518VS/B- E	N/A
Data Cable	SAMSUNG	DG925UWE	N/A	N/A
Earphone	SAMSUNG	EHS64AVFWE	N/A	N/A

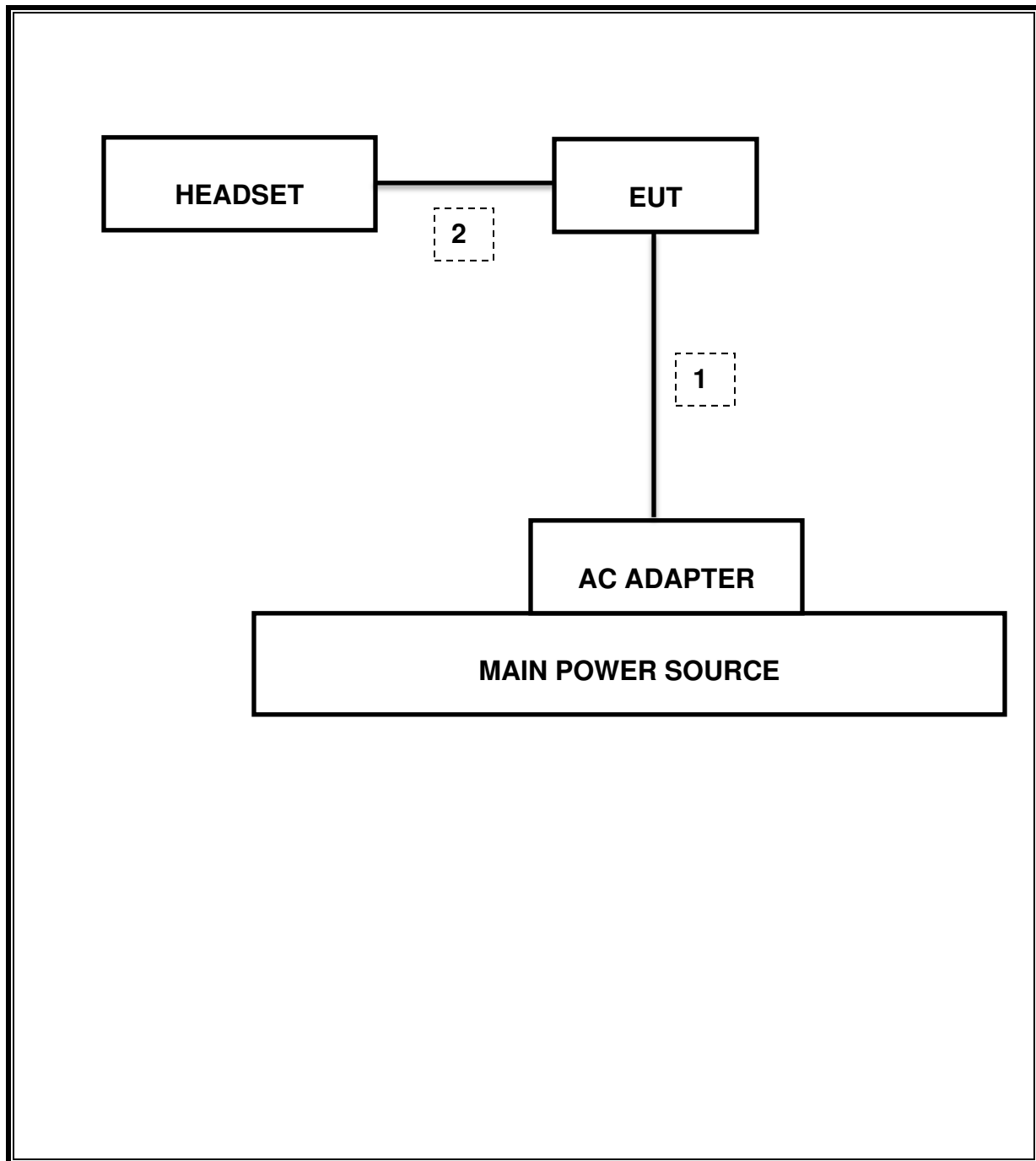
I/O CABLES

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.

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	08-17-17
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	NRZ-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	PASTERNAK	PE7087-10	A009	08-16-17

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 AVGPS-2 is used for power spectral density.

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

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

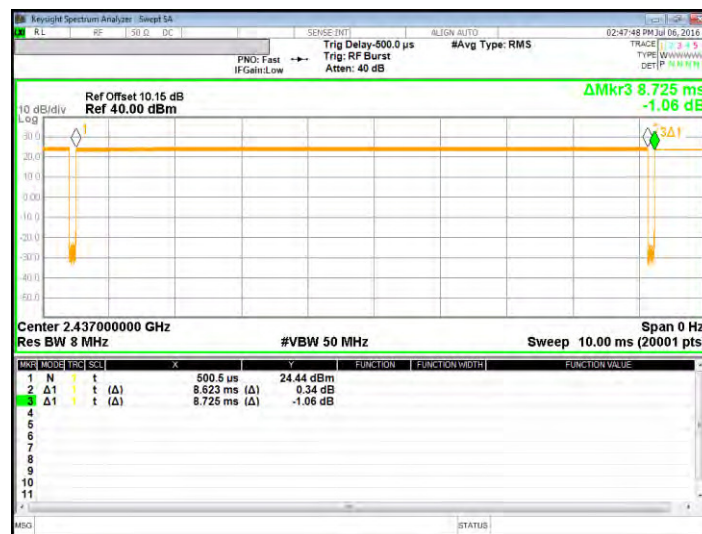
8. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

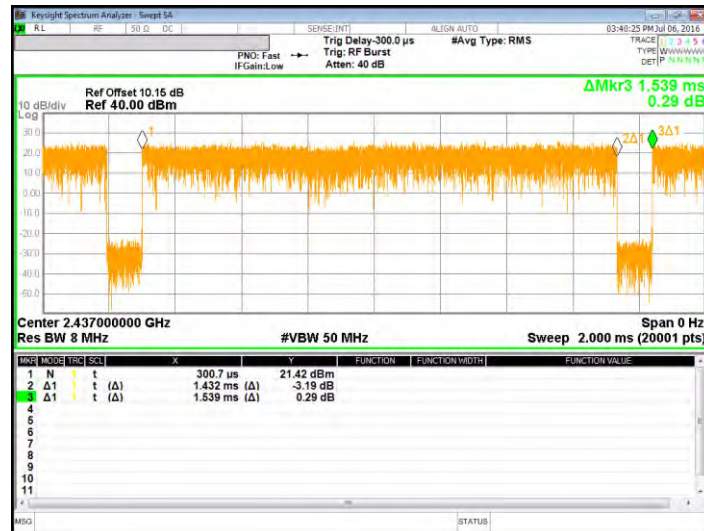
None; for reporting purposes only.

8.1. ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B [msec]	Period [msec]	Duty Cycle x [linear]	Duty Cycle [%]	Duty Cycle Correction Factor [dB]	1/T Minimum VBW [kHz]
2400MHz Bands						
802.11b	8.623	8.725	0.988	98.8%	0.00	0.010
802.11g	1.432	1.539	0.930	93.0%	0.31	0.698
802.11n HT20	1.34	1.447	0.926	92.6%	0.33	0.746



[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	8.039 MHz
2.1051, 15.247 (d)	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-25.41 dBm
15.247	TX conducted output power	<30dBm		Pass	23.42 dBm (AV)
15.247	PSD	<8dBm		Pass	-10.16 dBm (AV)
15.207 (a)	AC Power Line conducted emissions	Section 10	Power Line conducted	Pass	41.06 dBuV (PK)
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass	51.4 dBuV/m (AV)

10. ANTENNA PORT TEST RESULTS

10.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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

TEST PROCEDURE

Reference to KDB 558074 D01 DTS Meas Guidance v03r05: The transmitter output is connected to a spectrum analyzer with the RBW set to 100KHz, the VBW $\geq 3 \times$ RBW, peak detector and max hold.

RESULTS

10.1.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]		Minimum Limit [MHz]
		Primary Antenna 1	Secondary Antenna 2	
Low	2412	8.042	8.061	0.5
Mid	2437	8.039	8.054	0.5
High	2462	8.053	8.052	0.5
Worst		8.039		

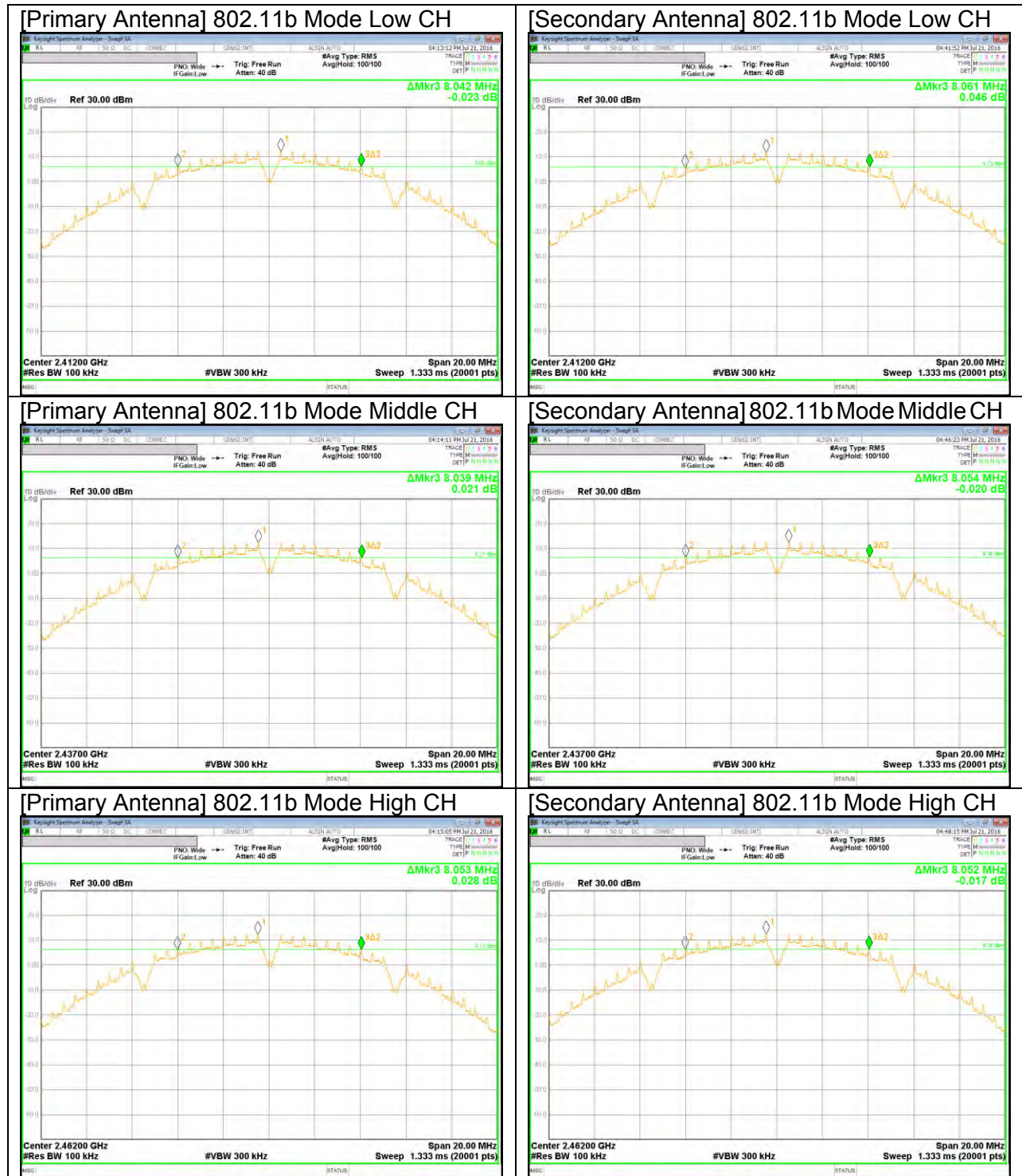
10.1.2. 802.11g MODE IN THE 2.4 GHz BAND

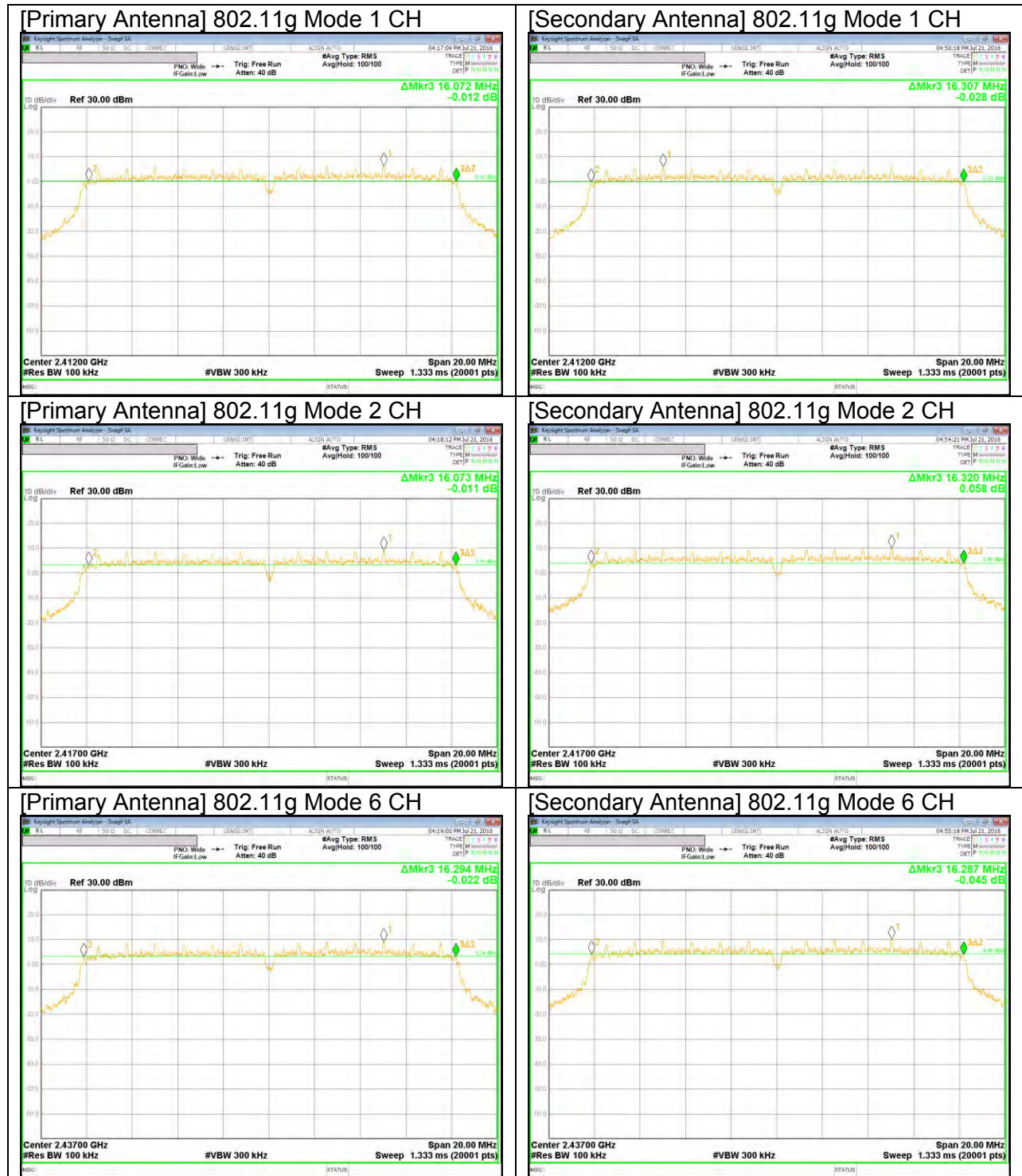
Channel	Frequency [MHz]	6 dB Bandwidth [MHz]		Minimum Limit [MHz]
		Primary Antenna 1	Secondary Antenna 2	
1	2412	16.072	16.307	0.5
2	2417	16.073	16.320	0.5
6	2437	16.294	16.287	0.5
10	2457	16.056	16.303	0.5
11	2462	15.933	15.927	0.5
Worst		15.927		

10.1.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]		Minimum Limit [MHz]
		Chain 0	Chain 1	
1	2412	16.672	17.287	0.5
2	2417	16.912	17.274	0.5
6	2437	16.655	16.523	0.5
10	2457	16.660	16.661	0.5
11	2462	16.337	16.312	0.5
Worst		16.312		

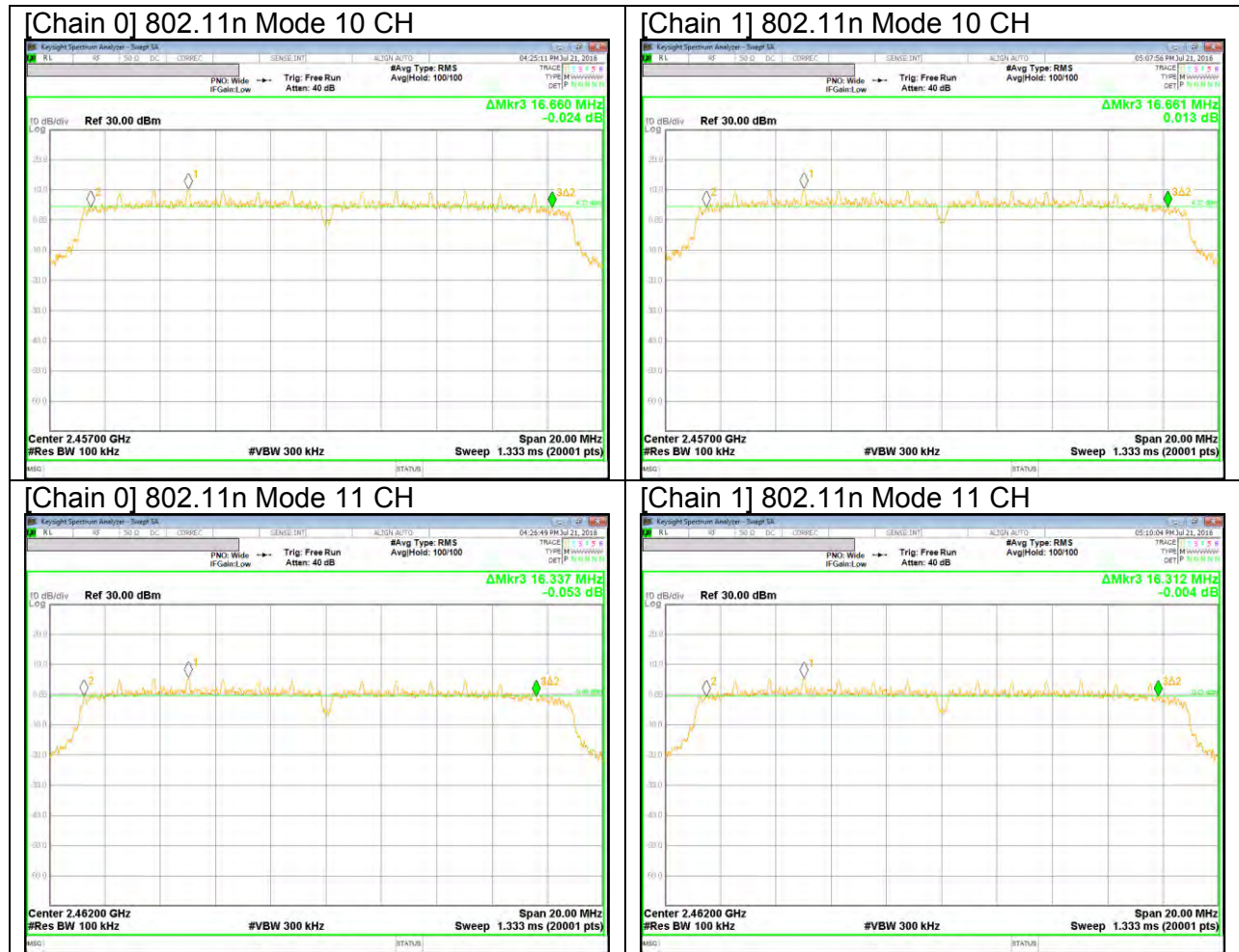
10.1.4. 6 dB BANDWIDTH PLOTS











10.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

10.2.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]	
		Primary Antenna 1	Secondary Antenna 2
Low	2412	13.044	13.229
Mid	2437	13.052	12.990
High	2462	13.146	13.146

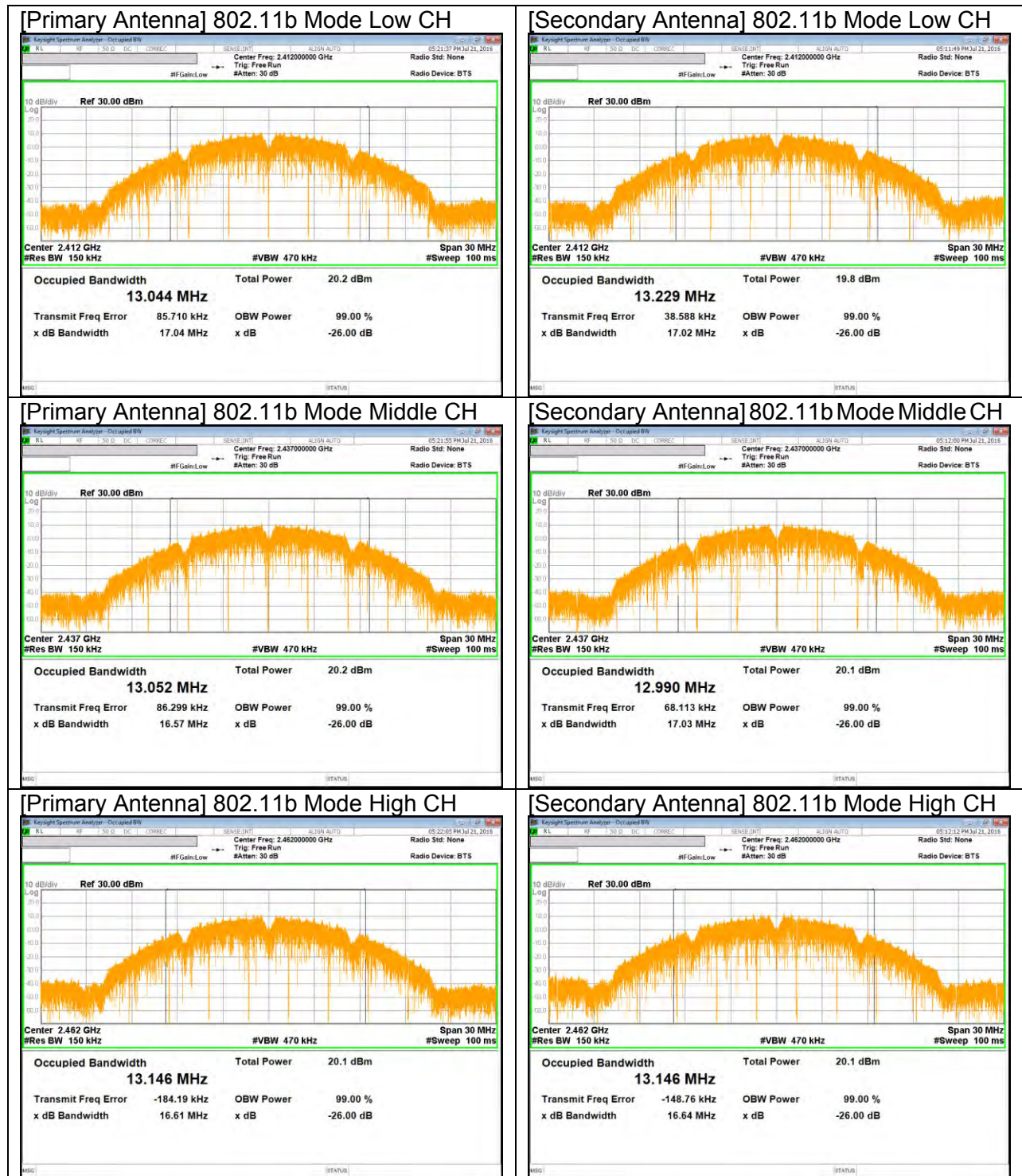
10.2.2. 802.11g MODE IN THE 2.4 GHz BAND

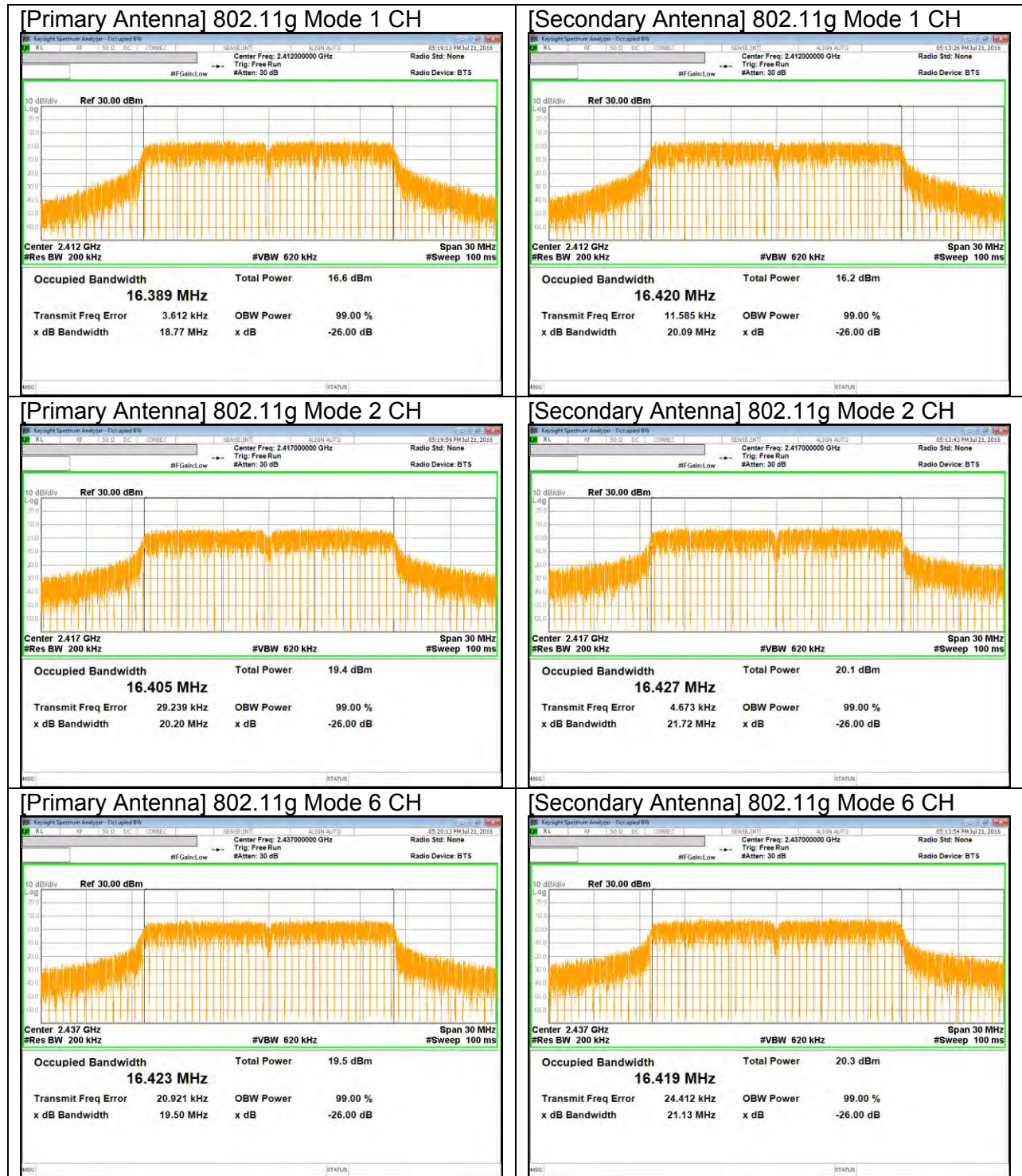
Channel	Frequency [MHz]	99% Bandwidth [MHz]	
		Primary Antenna 1	Secondary Antenna 2
1	2412	16.389	16.420
2	2417	16.405	16.427
6	2437	16.423	16.419
10	2457	16.447	16.416
11	2462	16.404	16.394

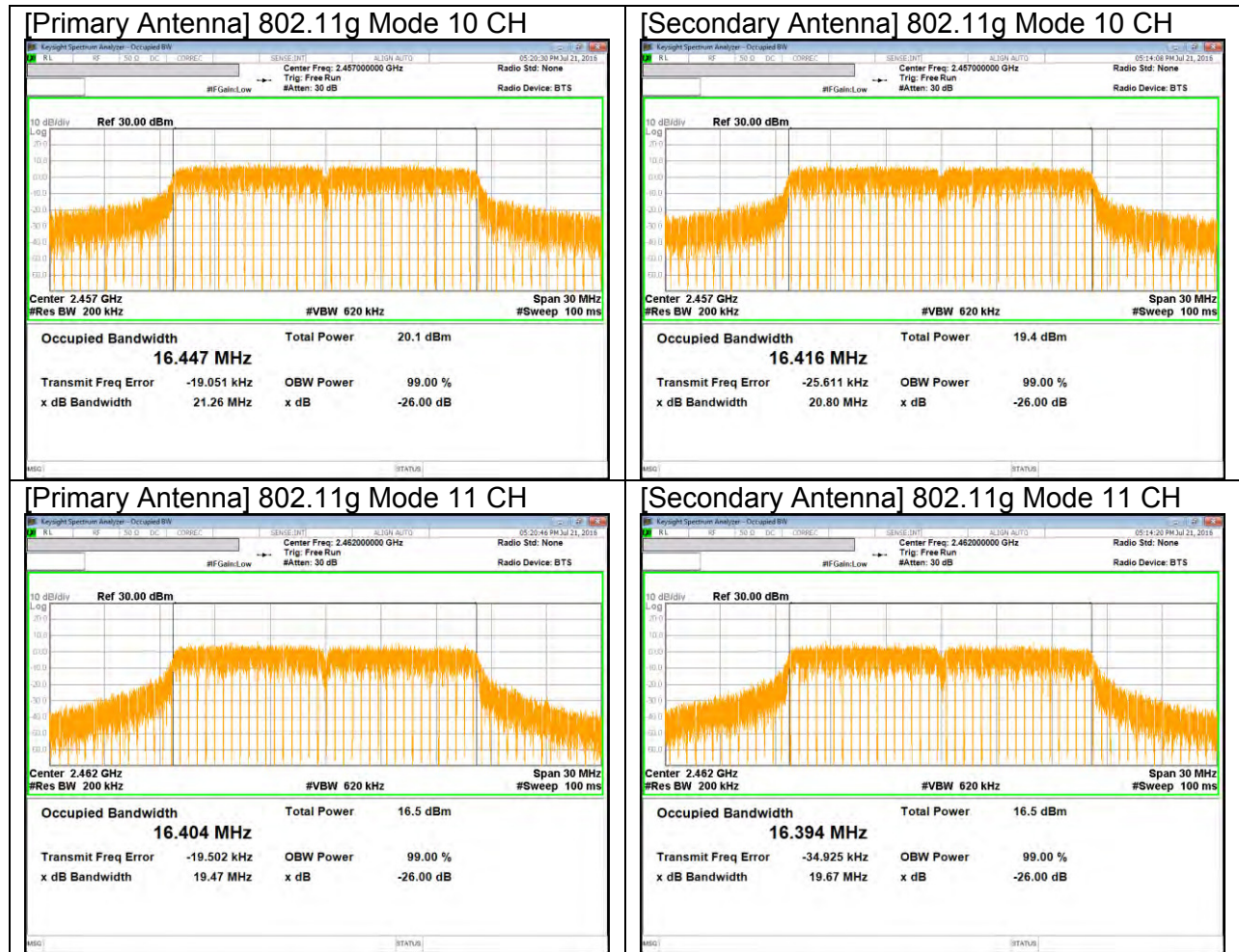
10.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

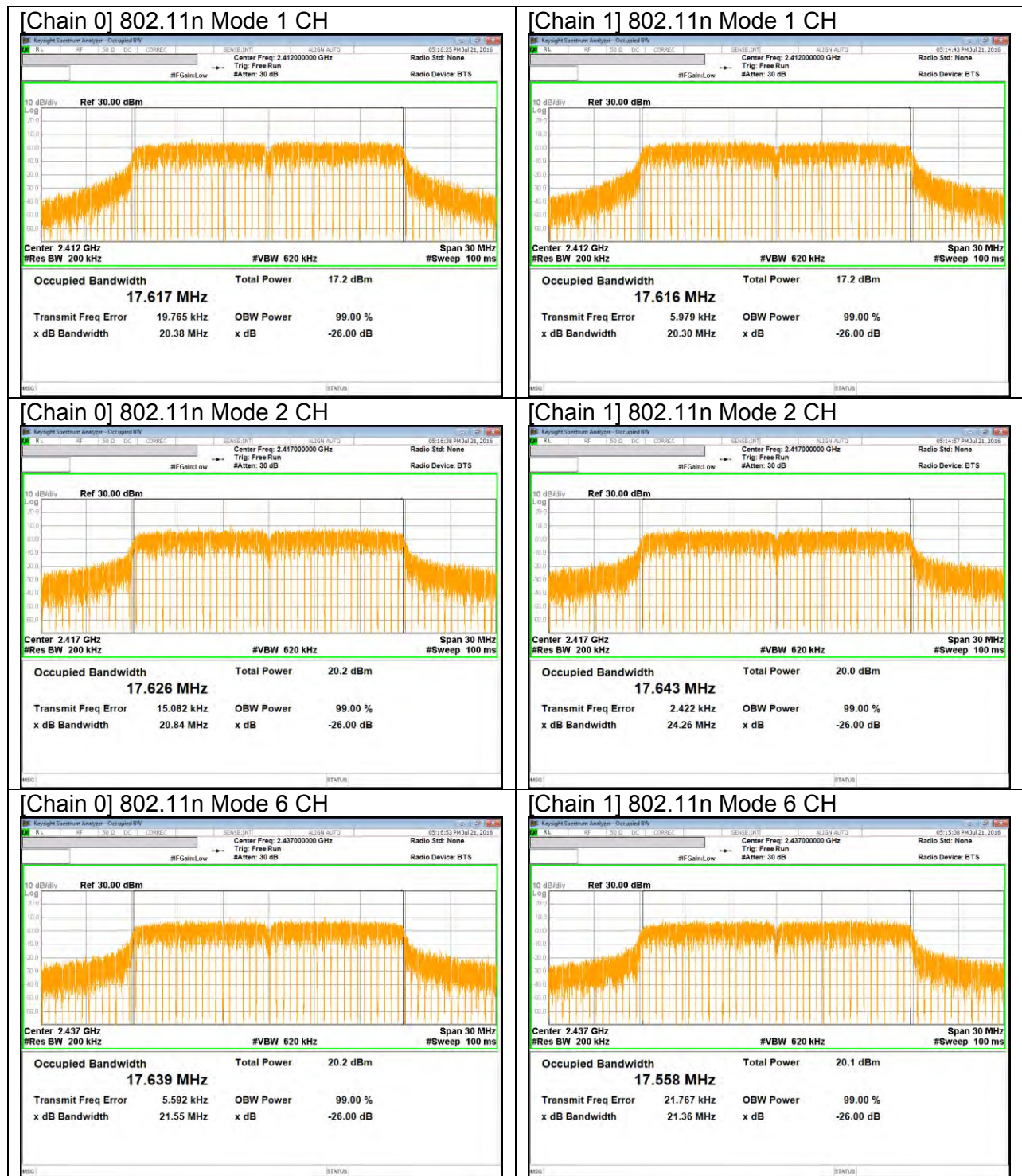
Channel	Frequency [MHz]	99% Bandwidth [MHz]	
		Chain 0	Chain 1
1	2412	17.617	17.616
2	2417	17.626	17.643
6	2437	17.639	17.558
10	2457	17.633	17.637
11	2462	17.503	17.550

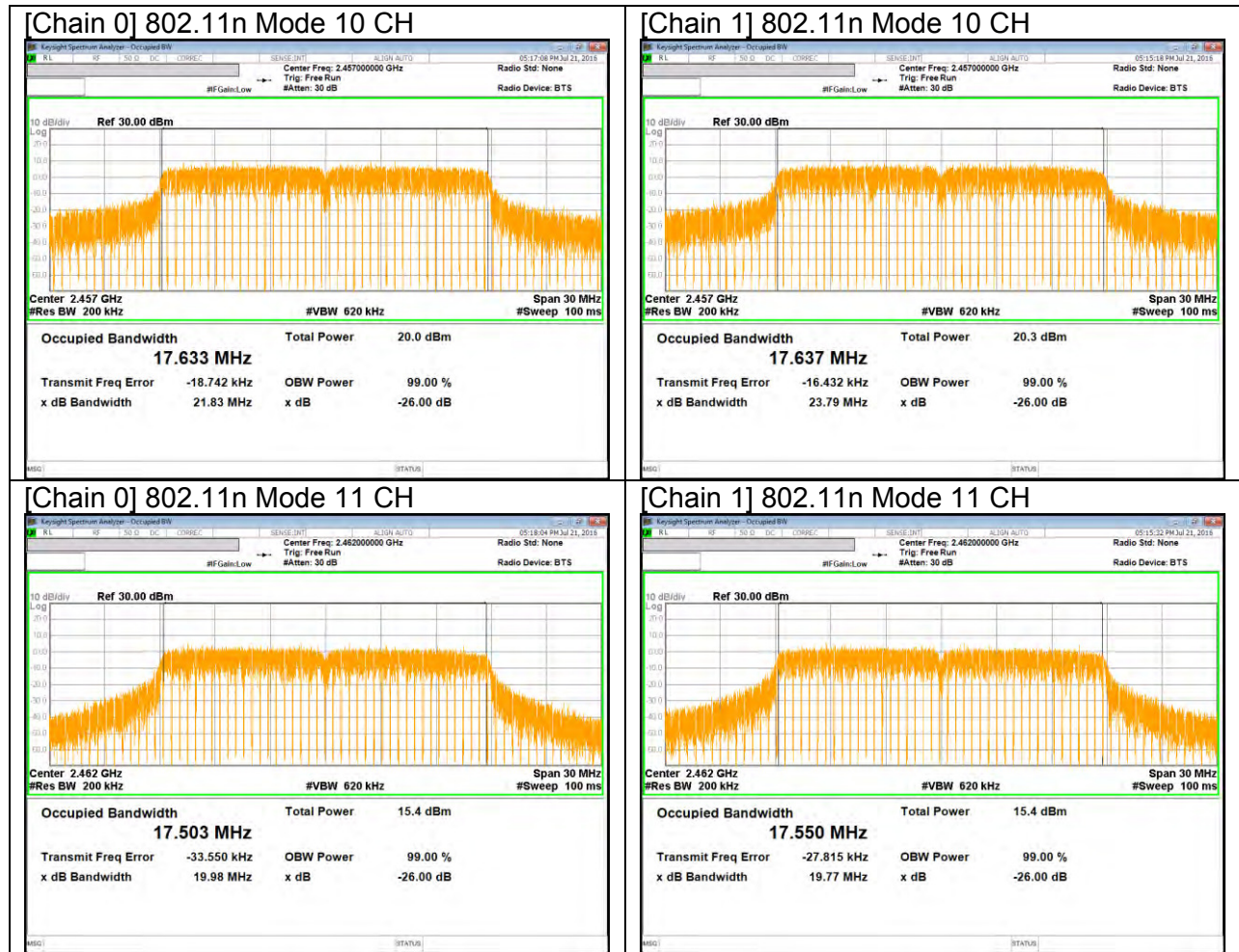
10.2.4. 99% BANDWIDTH PLOTS











10.3. OUTPUT POWER

LIMITS

FCC §15.247

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

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)

DIRECTIONAL ANTENNA GAIN

For Power: The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

2.4GHz

Chain 0 Antenna Gain [dBi]	Chain 1 Antenna Gain [dBi]	Uncorrelated Chains Directional Gain [dBi]
0.61	-3.87	-1.08

For PSD: The TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

2.4GHz

Chain 0 Antenna Gain [dBi]	Chain 1 Antenna Gain [dBi]	Correlated Chains Directional Gain [dBi]
0.61	-3.87	1.67

- IEEE 802.11b Mode is not supported MIMO operation. So can't transmit on two antennas as the same time.

RESULTS

10.3.1. 802.11b MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency [MHz]	Directional Gain Primary [dBi]	Directional Gain Secondary [dBi]	FCC Power Limit [dBm]	IC Power Limit [dBm]	IC EIRP Limit [dBm]	Max Power [dBm]
Low	2412	0.61	-3.87	30.00	30.00	36.00	30.00
Mid	2437	0.61	-3.87	30.00	30.00	36.00	30.00
High	2462	0.61	-3.87	30.00	30.00	36.00	30.00

Duty Cycle CF [dB]	0.00	Included in Calculations of Corr'd Power
--------------------	------	--

Results

Channel	Frequency [MHz]	Primary Meas Power [dBm]	Secondary Meas Power [dBm]	Maximum Power [dBm]	Power Limit [dBm]	Margin [dB]
Low	2412	19.96	19.81	19.96	30.00	-10.04
Mid	2437	20.10	20.04	20.10	30.00	-9.90
High	2462	20.00	20.12	20.12	30.00	-9.88
Worst				20.12		

10.3.2. 802.11g MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency [MHz]	Directional Gain [dBi]	FCC Power Limit [dBm]	IC Power Limit [dBm]	IC EIRP Limit [dBm]	Max Power EIRP Limit [dBm]
Low	2412	-1.08	30.00	30.00	36.00	30.00
Mid	2437	-1.08	30.00	30.00	36.00	30.00
High	2462	-1.08	30.00	30.00	36.00	30.00

Duty Cycle CF [dB]	0.31	Included in Calculations of Corr'd Power
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Results

Channel	Frequency [MHz]	Primary Meas Power [dBm]	Secondary Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Margin [dB]
1	2412	16.80	16.56	19.69	30.00	-10.31
2	2417	19.63	20.38	23.03	30.00	-6.97
6	2437	19.67	20.49	23.11	30.00	-6.89
10	2457	20.43	19.69	23.09	30.00	-6.91
11	2462	16.70	16.88	19.80	30.00	-10.20
Worst				23.11		

10.3.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency [MHz]	Directional Gain [dBi]	FCC Power Limit [dBm]	IC Power Limit [dBm]	IC EIRP Limit [dBm]	Max Power [dBm]
Low	2412	-1.08	30.00	30.00	36.00	30.00
Mid	2437	-1.08	30.00	30.00	36.00	30.00
High	2462	-1.08	30.00	30.00	36.00	30.00

Duty Cycle CF [dB]	0.33	Included in Calculations of Corr'd Power
--------------------	------	--

Results

Channel	Frequency [MHz]	Chain 0 Meas Power [dBm]	Chain 1 Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Margin [dB]
1	2412	17.49	17.41	20.46	30.00	-9.54
2	2417	20.42	20.20	23.32	30.00	-6.68
6	2437	20.46	20.35	23.42	30.00	-6.58
10	2457	20.23	20.45	23.35	30.00	-6.65
11	2462	15.64	15.80	18.73	30.00	-11.27
Worst				23.42		

10.4. PSD

LIMITS

FCC §15.247

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

TEST PROCEDURE

Power Spectral Density was performed utilizing the "Method AVGPS-2" under KDB558074 D01 DTS Meas Guidance v03r05

RESULTS

10.4.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	Primary Antenna 1 [dBm]	Secondary Antenna 2 [dBm]	Total PSD [dBm]	Limit [dBm]	Margin [dB]
Low	2412	-11.12	-11.12	-11.12	8.00	-19.12
Mid	2437	-10.81	-10.61	-10.61	8.00	-18.61
High	2462	-10.91	-10.96	-10.91	8.00	-18.91

Duty Cycle CF [dB]	0.00	Included in Calculations of PPSD
--------------------	------	----------------------------------

10.4.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	Primary Antenna 1 [dBm]	Secondary Antenna 2 [dBm]	Total PSD [dBm]	Limit [dBm]	Margin [dB]
1	2412	-17.02	-17.38	-13.87	8.00	-21.87
2	2417	-14.30	-13.81	-10.73	8.00	-18.73
6	2437	-14.12	-13.77	-10.62	8.00	-18.62
10	2457	-13.50	-14.37	-10.59	8.00	-18.59
11	2462	-17.19	-17.10	-13.83	8.00	-21.83

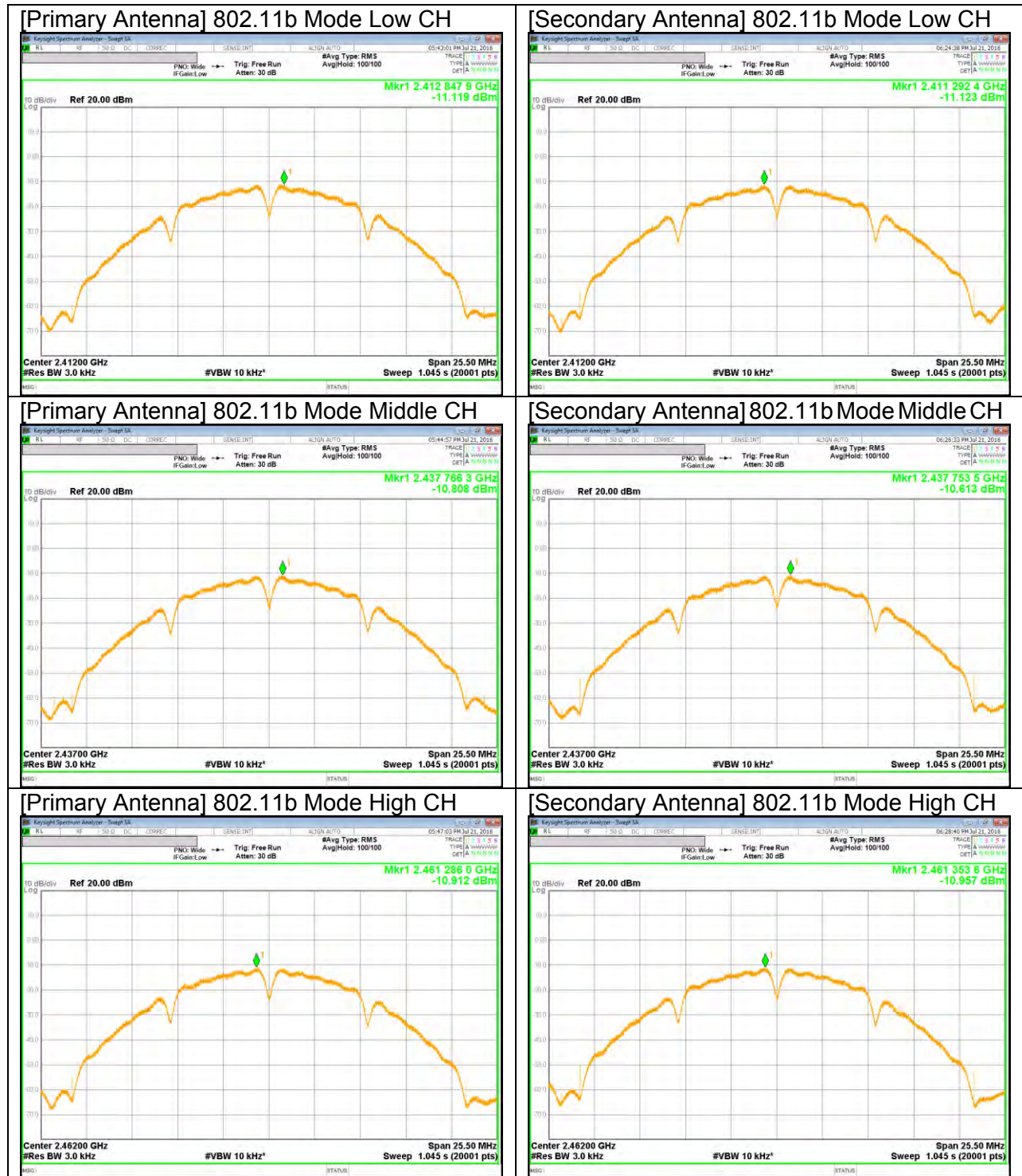
Duty Cycle CF [dB]	0.31	Included in Calculations of PPSD
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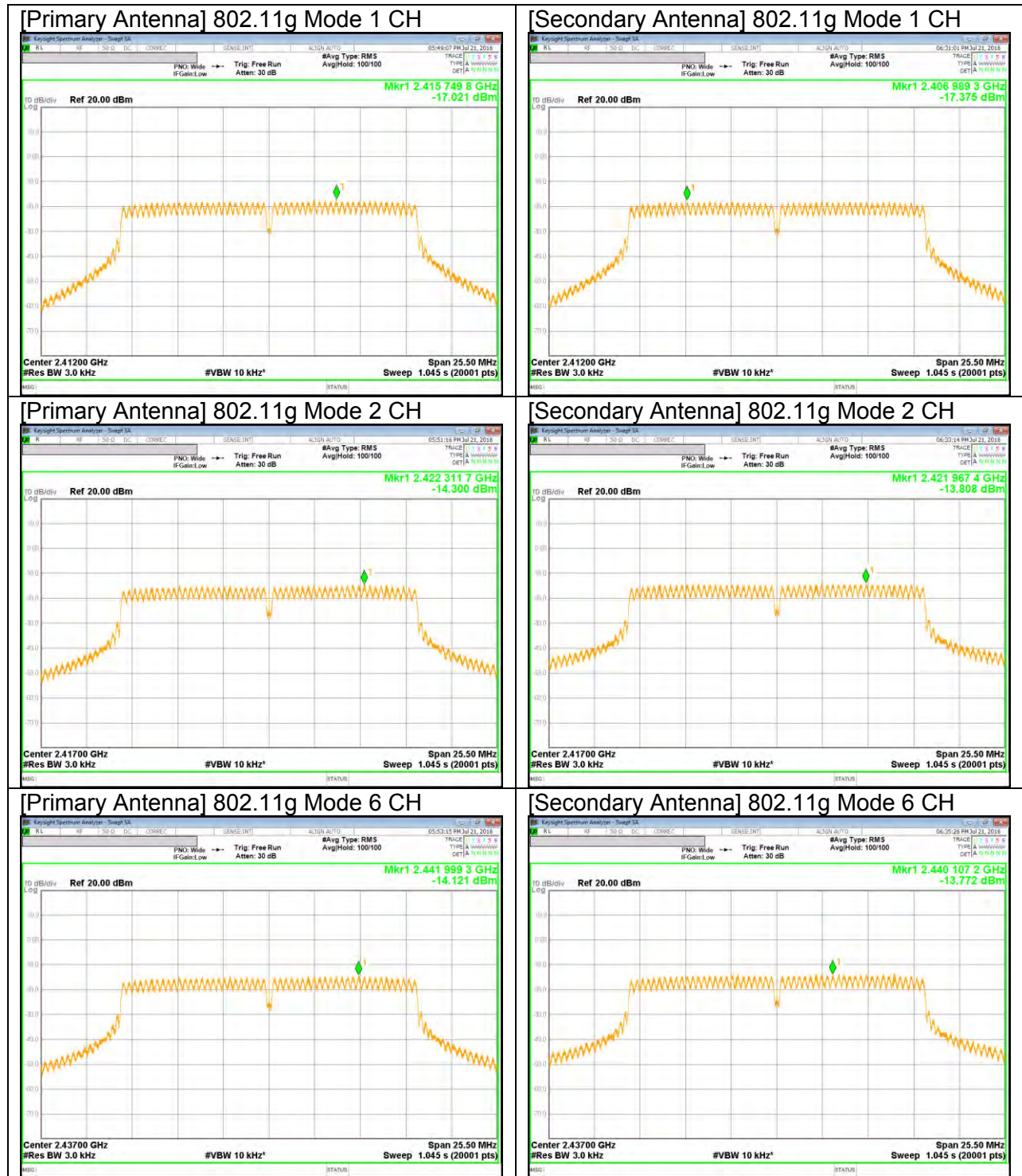
10.4.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

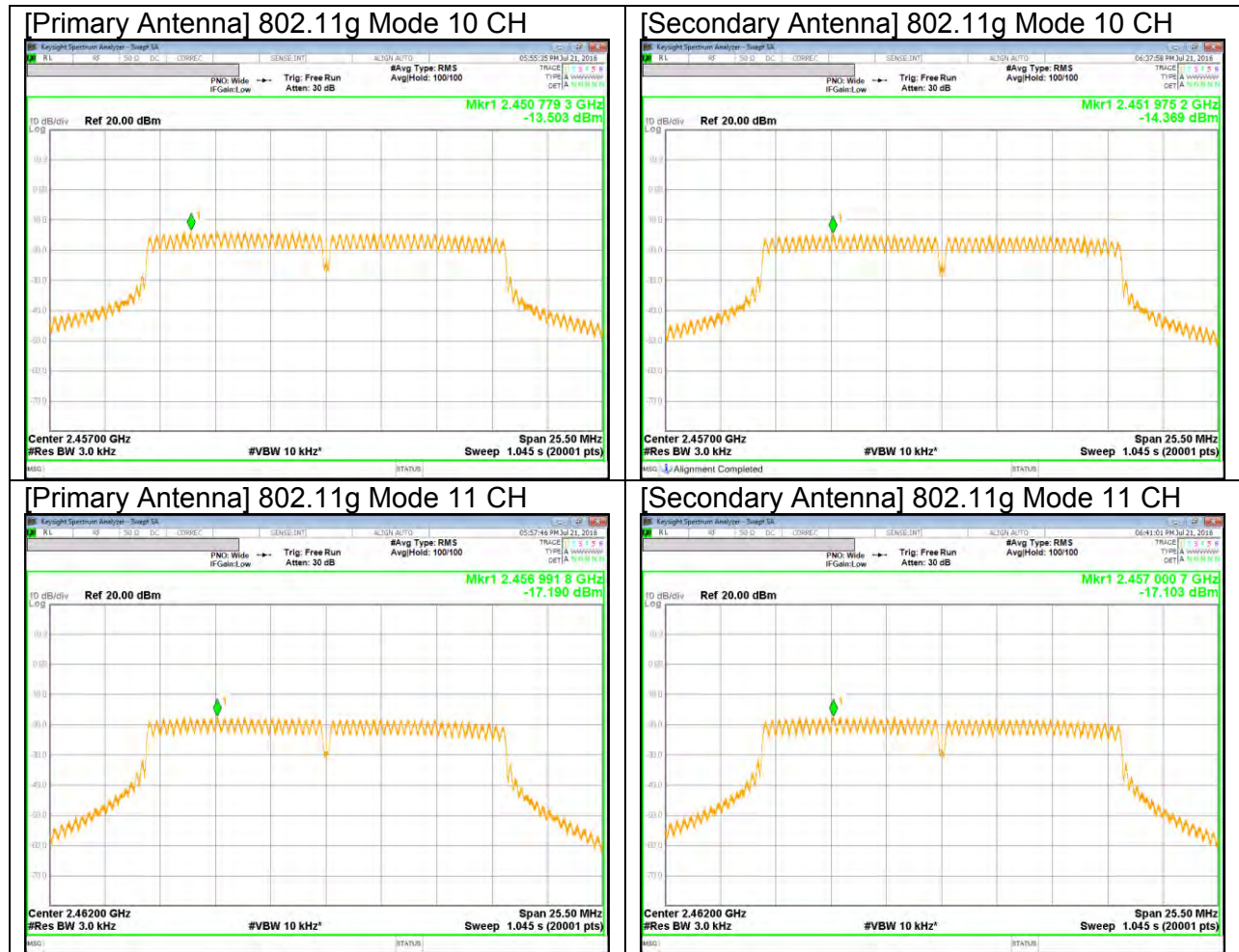
Channel	Frequency [MHz]	Chain 0 Meas [dBm]	Chain 1 Meas [dBm]	Total PSD [dBm]	Limit [dBm]	Margin [dB]
1	2412	-16.61	-16.82	-13.37	8.00	-21.37
2	2417	-13.48	-13.53	-10.16	8.00	-18.16
6	2437	-13.59	-13.43	-10.17	8.00	-18.17
10	2457	-13.55	-13.59	-10.23	8.00	-18.23
11	2462	-18.28	-18.01	-14.80	8.00	-22.80

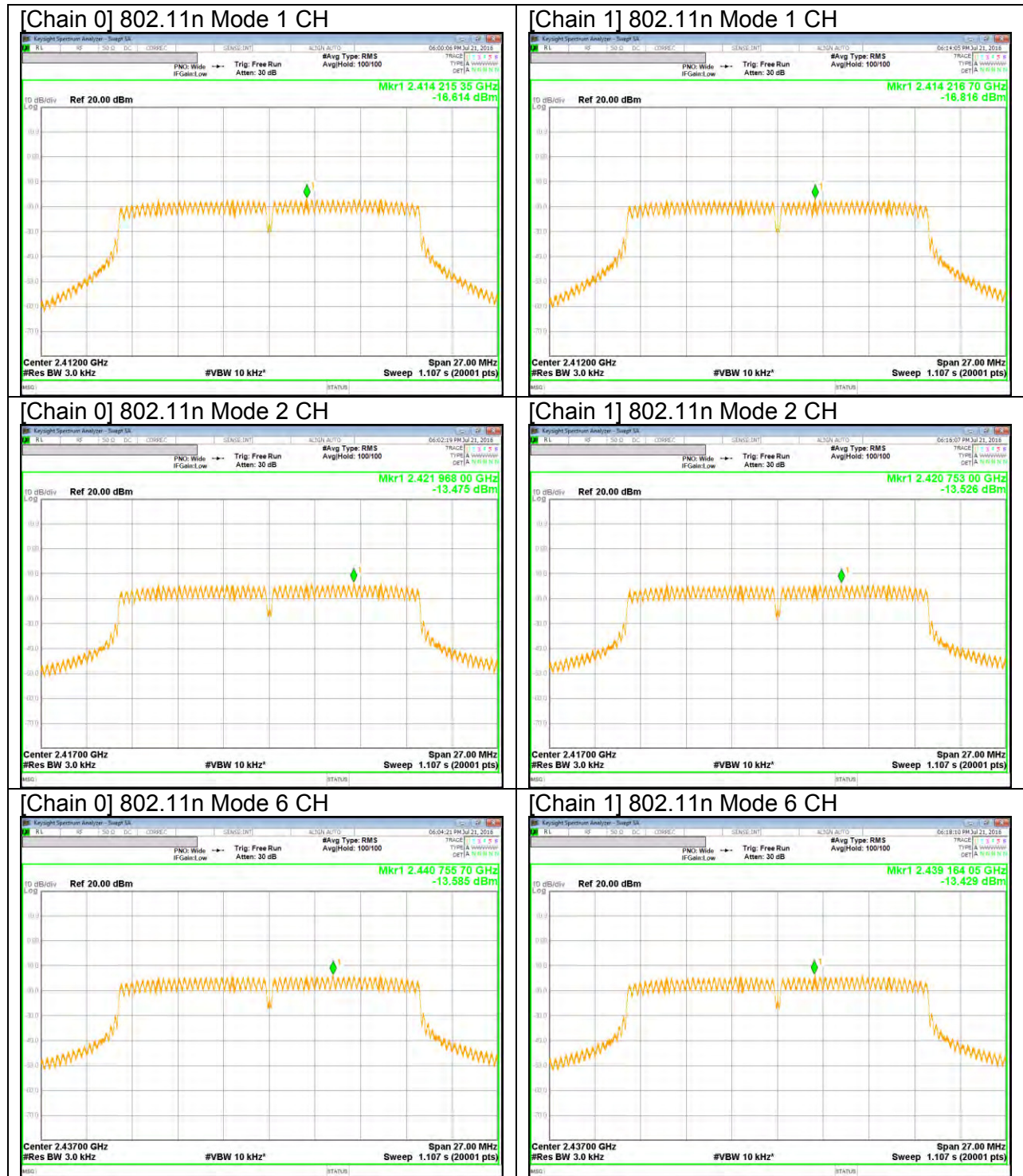
Duty Cycle CF [dB]	0.33	Included in Calculations of PPSD
--------------------	------	----------------------------------

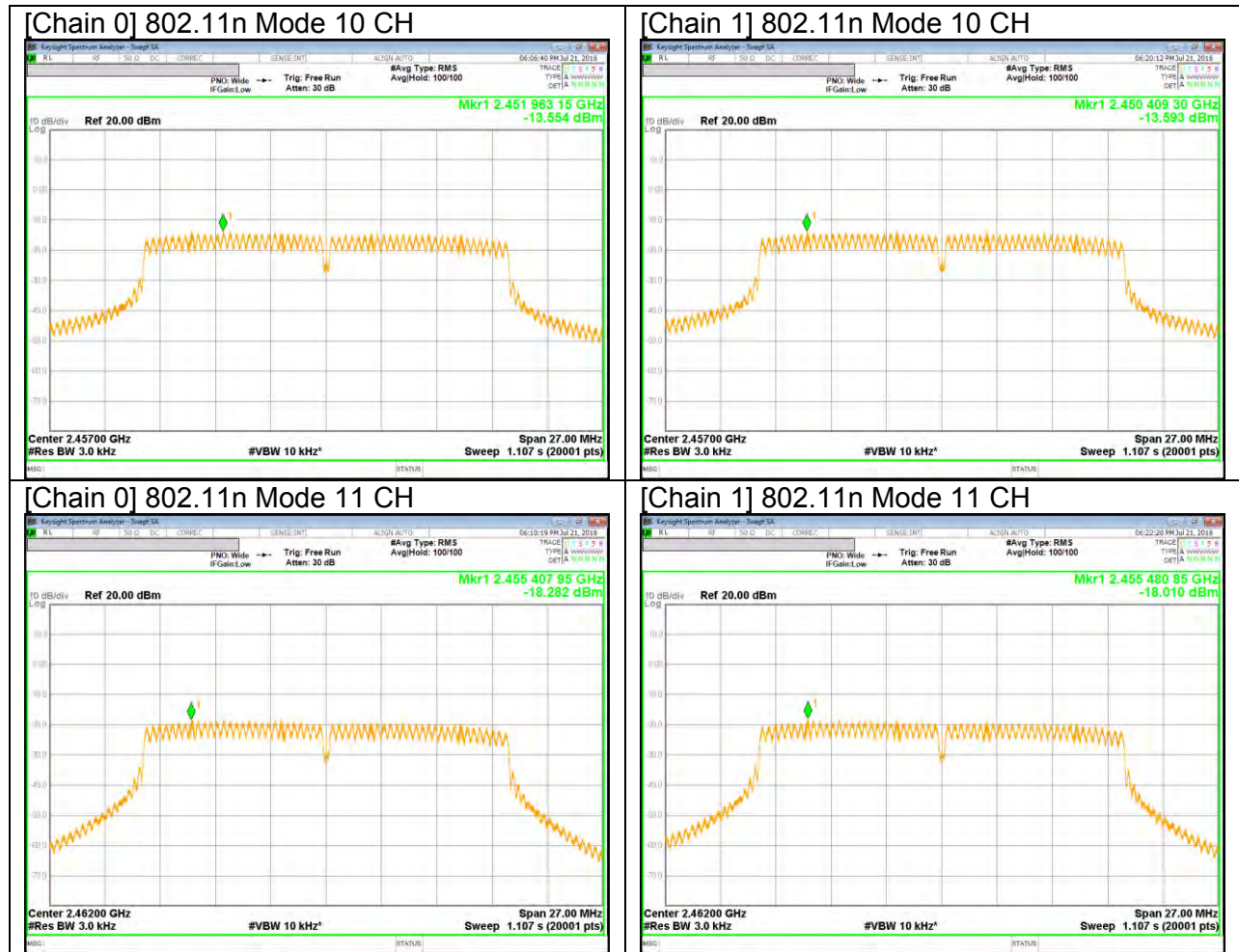
10.4.4. PSD PLOTS











10.5. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

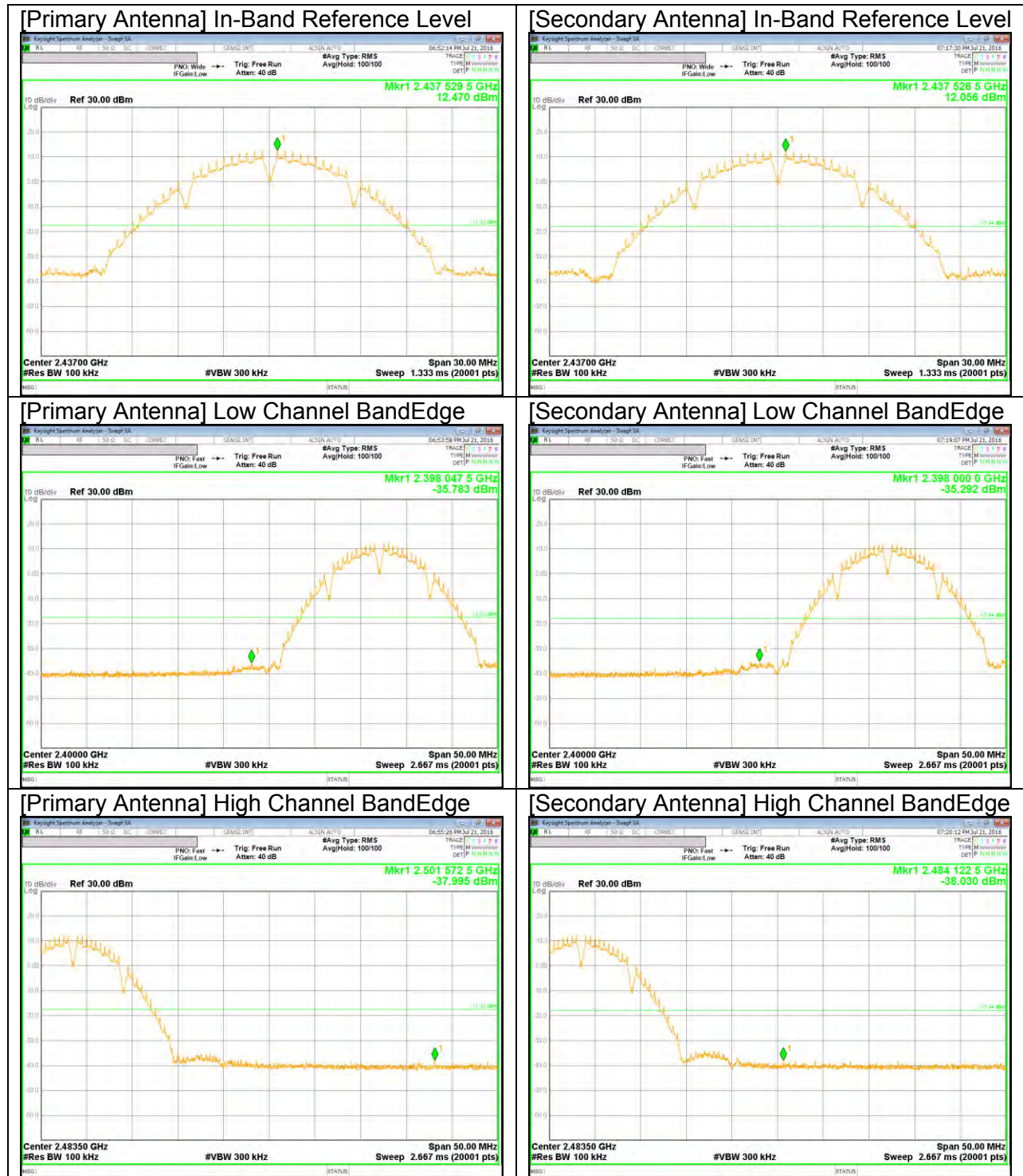
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the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

TEST PROCEDURE

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

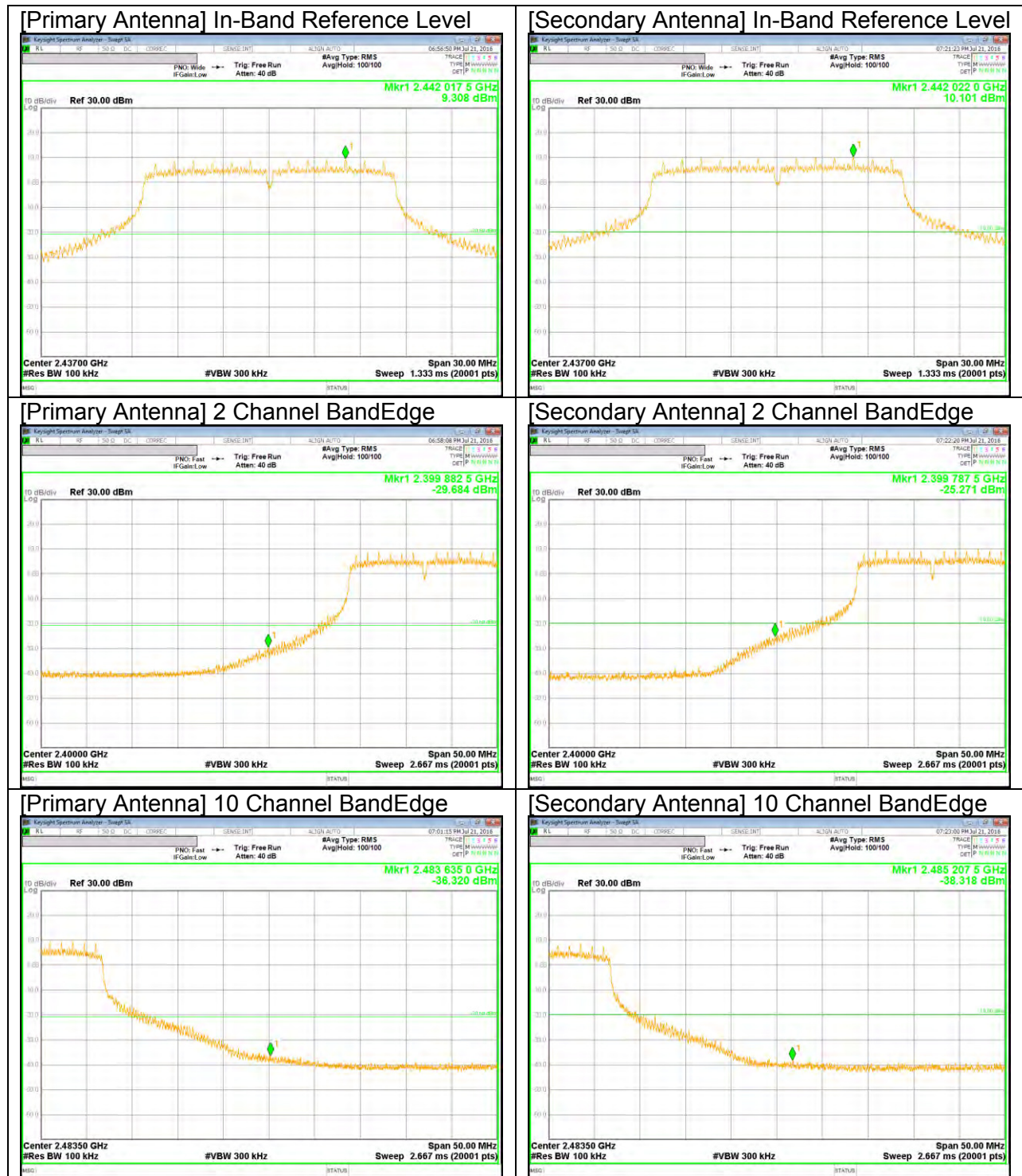
RESULTS

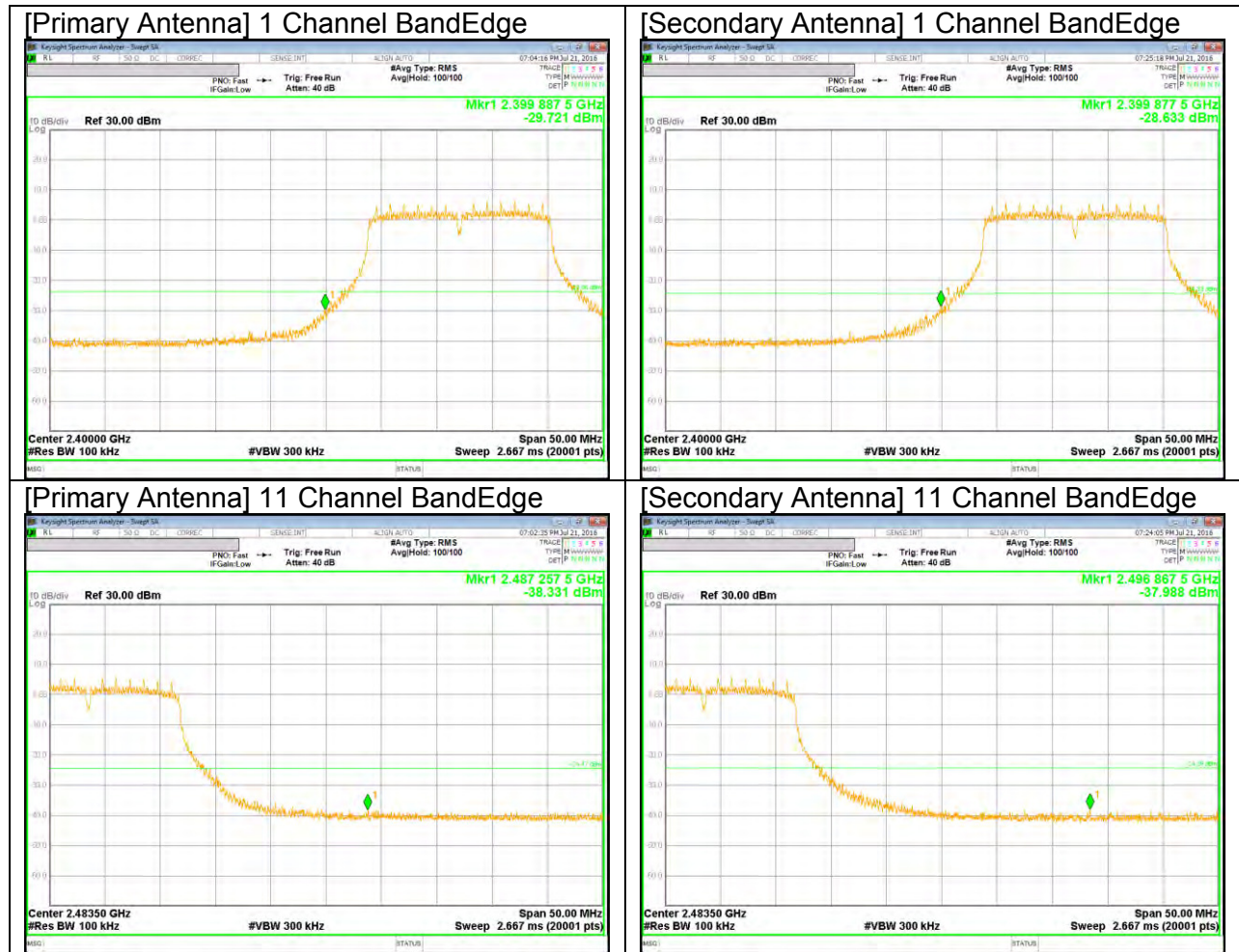
10.5.1. 802.11b MODE IN THE 2.4 GHZ BAND



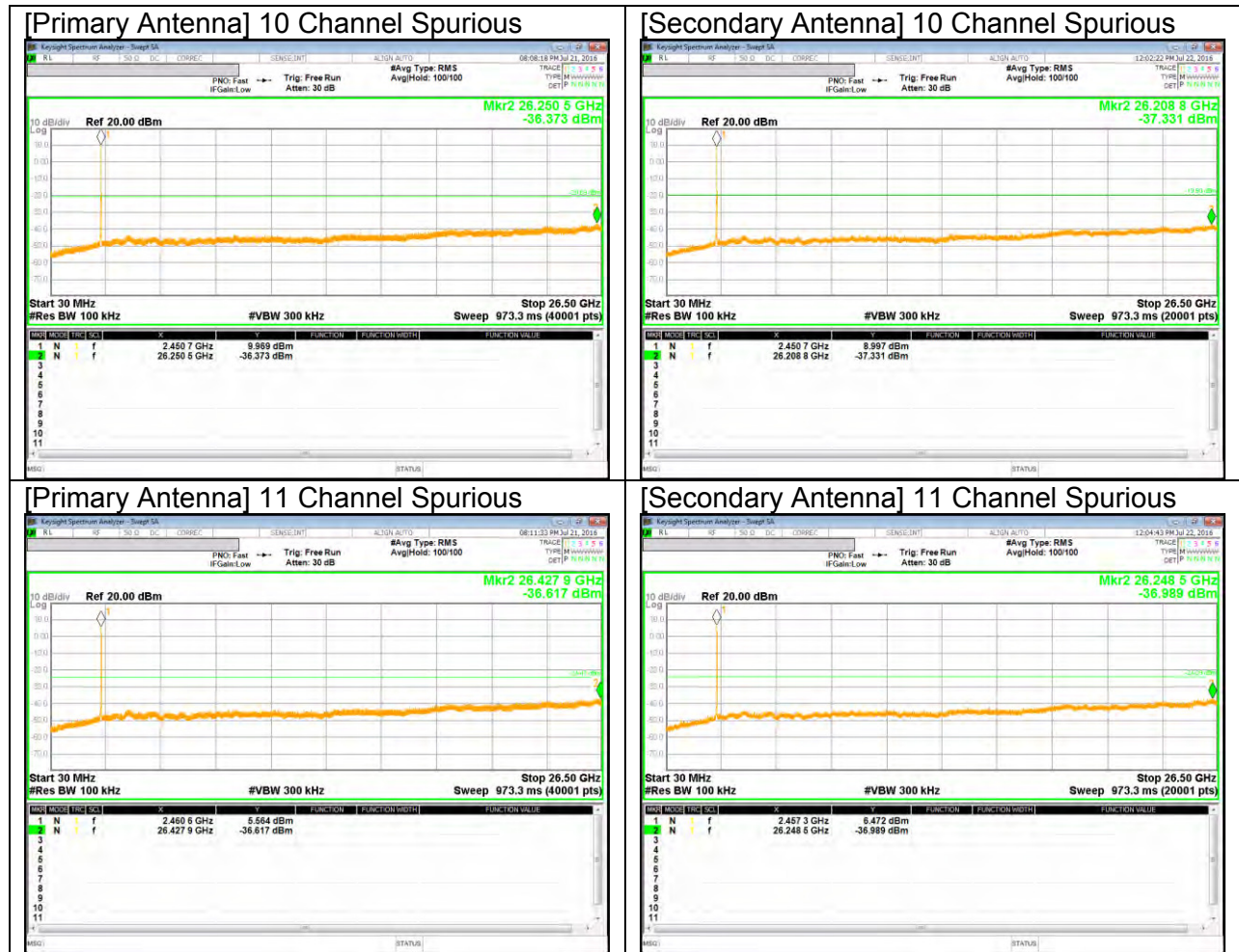


10.5.2. 802.11g MODE IN THE 2.4 GHZ BAND

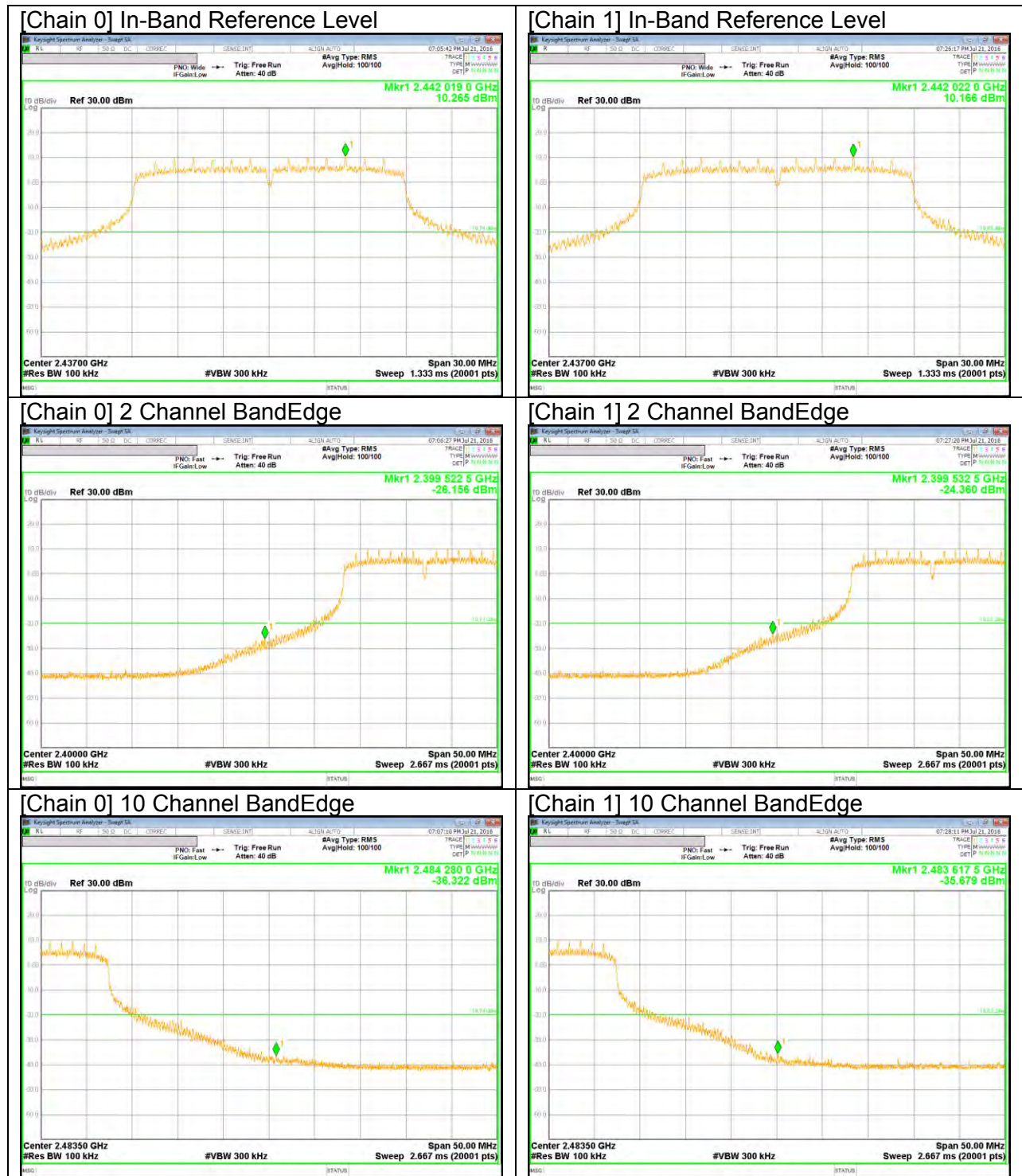


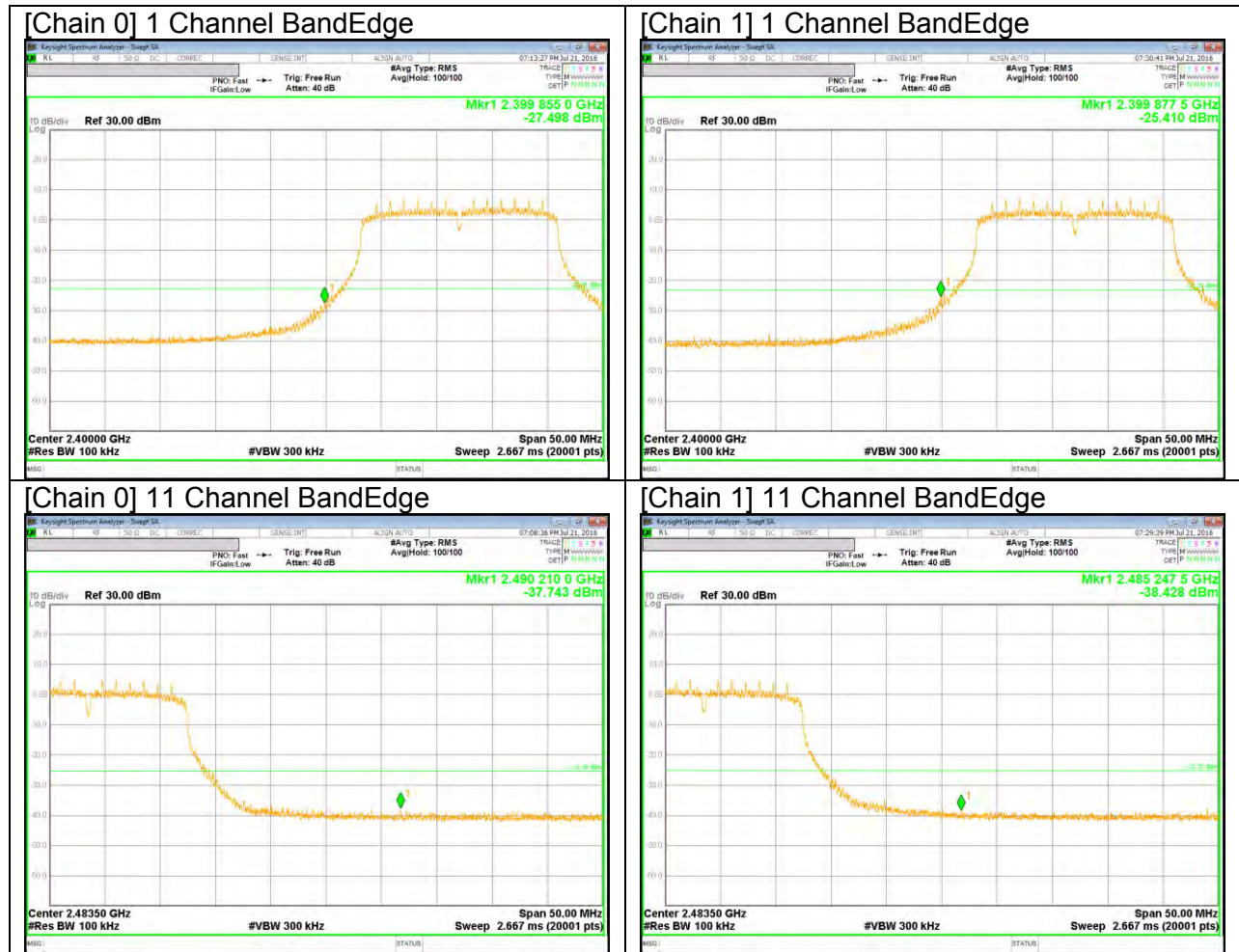




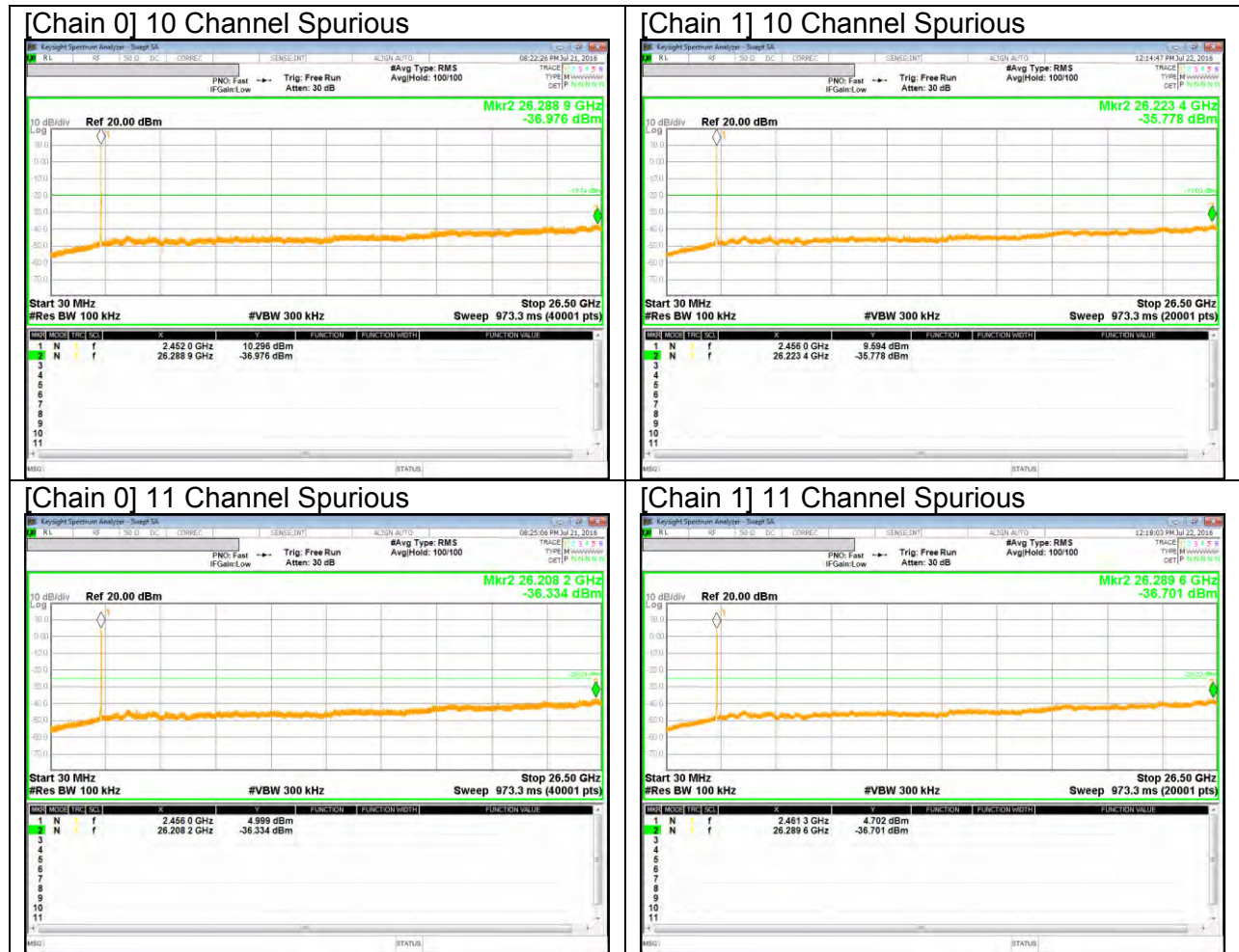


10.5.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND









11. RADIATED TEST RESULTS

11.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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.

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. Duty cycle factor= $10\log(1/x)$ For this sample B mode = 0dB (duty cycle >98%); G mode = 0.31dB; N mode = 0.33dB.

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.

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.

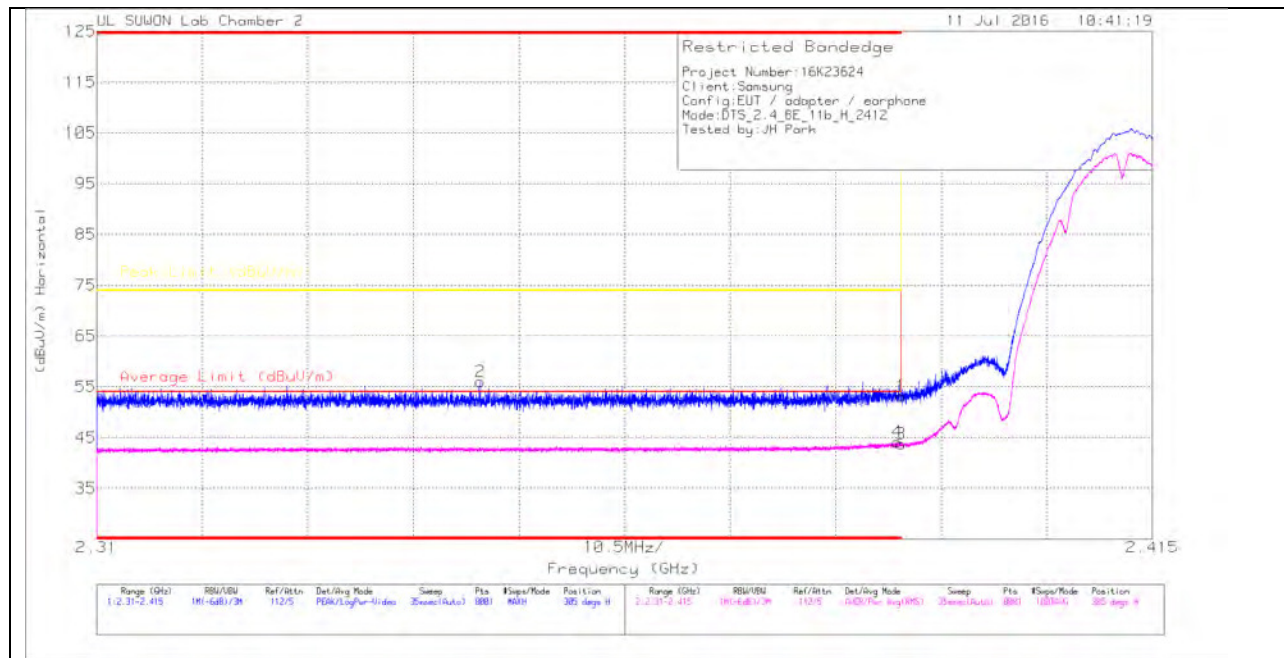
Formula for converting the filed strength from uV/m to dBuV/m is:
Limit (dBuV/m) = $20 \log \text{limit (uV/m)}$

11.2. TRANSMITTER ABOVE 1 GHz

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

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

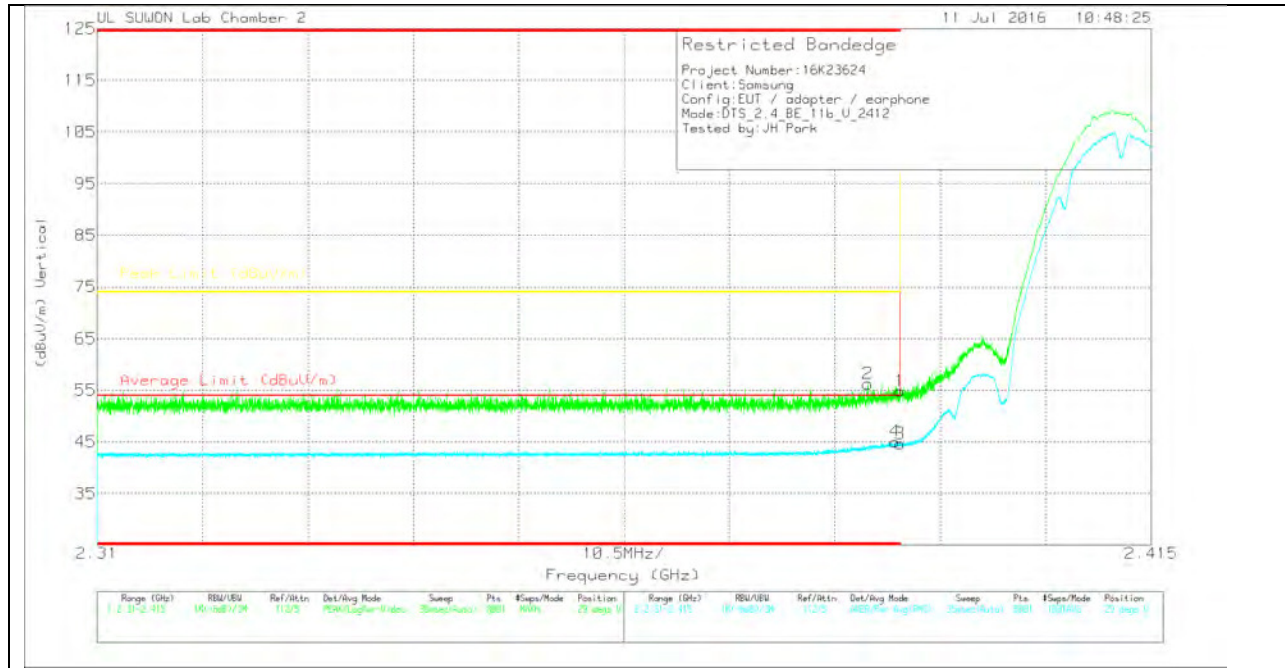
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.95	Pk	31.7	-19.5	0	53.15	-	-	74	-20.85	305	246	H
2	* 2.348	44.06	Pk	31.6	-19.6	0	56.06	-	-	74	-17.94	305	246	H
3	* 2.39	31.61	RMS	31.7	-19.5	0	43.81	54	-10.19	-	-	305	246	H
4	* 2.39	31.91	RMS	31.7	-19.5	0	44.11	54	-9.89	-	-	305	246	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	42.64	Pk			0	54.84	-	-	74	-19.16	29	236	V
2	* 2.387	44.07	Pk			0	56.27	-	-	74	-17.73	29	236	V
3	* 2.39	32.47	RMS			0	44.67	54	-9.33	-	-	29	236	V
4	* 2.389	32.86	RMS			0	45.06	54	-8.94	-	-	29	236	V

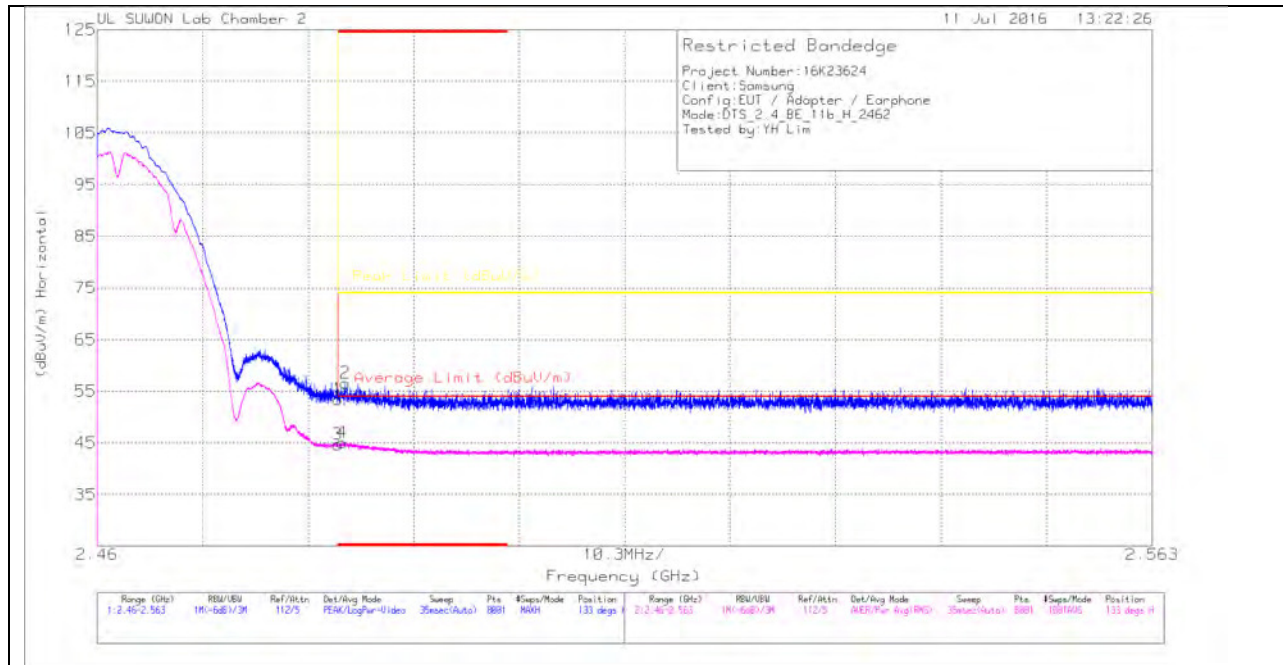
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

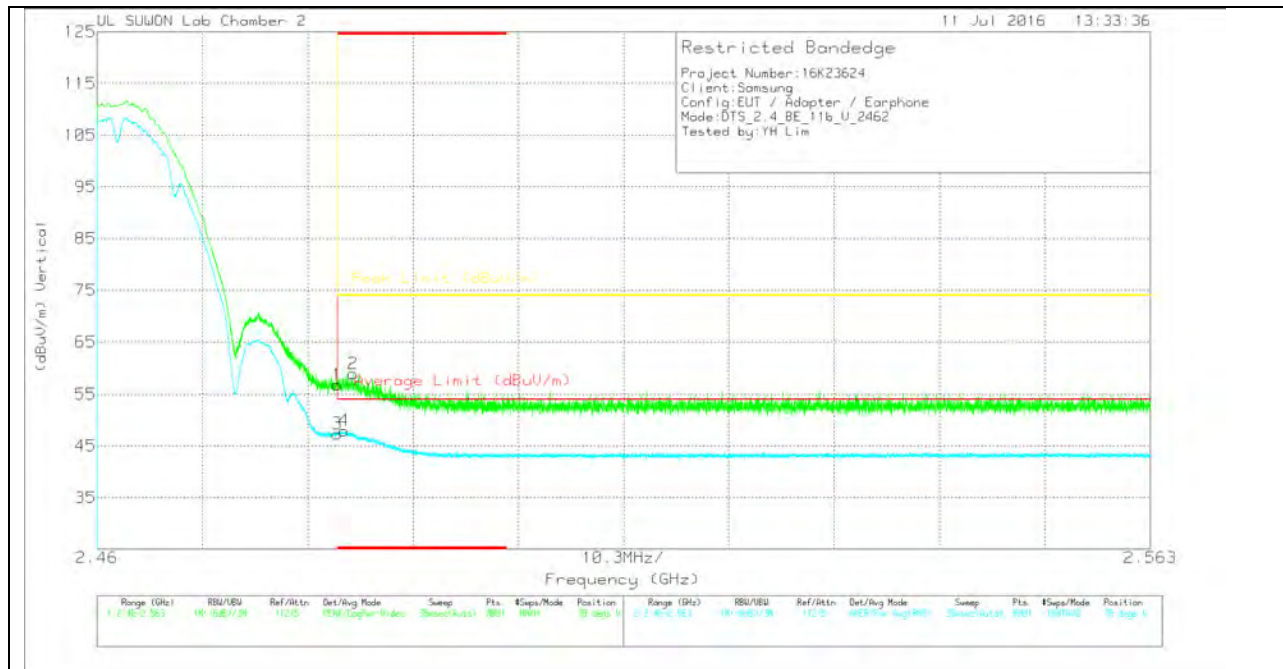
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	41.04	Pk	31.8	-19.4	0	53.44	-	-	74	-20.56	133	142	H
2	* 2.484	44.2	Pk	31.8	-19.4	0	56.6	-	-	74	-17.4	133	142	H
3	* 2.484	32.31	RMS	31.8	-19.4	0	44.71	54	-9.29	-	-	133	142	H
4	* 2.484	32.68	RMS	31.8	-19.4	0	45.08	54	-8.92	-	-	133	142	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	44.39	Pk	31.8	-19.4	0	56.79	-	-	74	-17.21	78	365	V
2	* 2.485	46.59	Pk	31.8	-19.4	0	58.99	-	-	74	-15.01	78	365	V
3	* 2.484	34.95	RMS	31.8	-19.4	0	47.35	54	-6.65	-	-	78	365	V
4	* 2.484	35.54	RMS	31.8	-19.4	0	47.94	54	-6.06	-	-	78	365	V

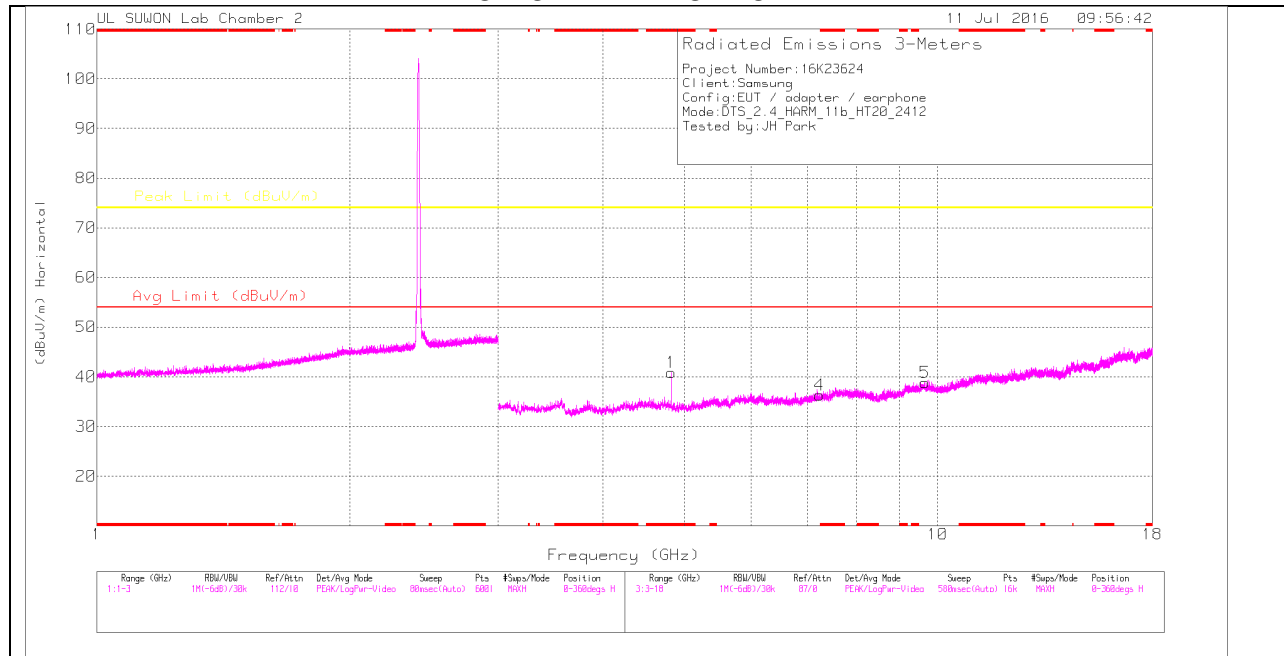
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

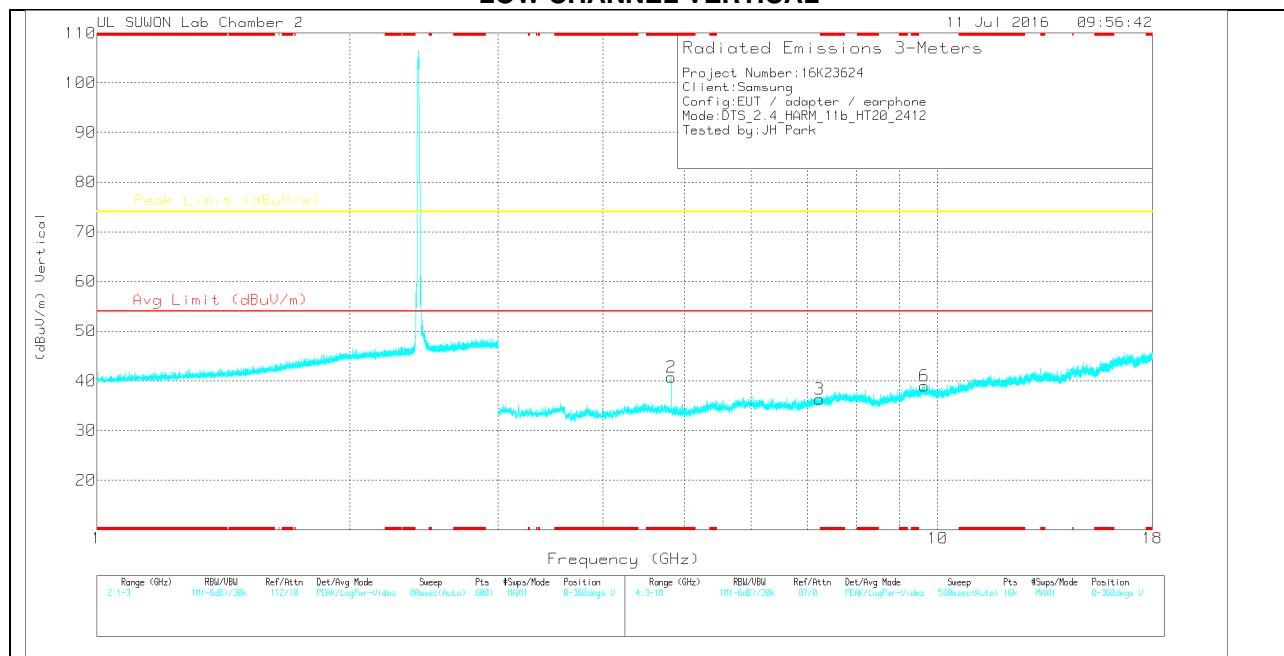
RMS - RMS detection

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(0016872 4)_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	32.24	PK	33.9	-25.3	0	40.84	-	-	74	-33.16	0-360	200	H
4	7.239	23.57	PK	35.8	-23	0	36.37	-	-	74	-37.63	0-360	200	H
5	9.656	20.92	PK	36.9	-19	0	38.82	-	-	74	-35.18	0-360	100	H
2	* 4.823	32.09	PK	33.9	-25.3	0	40.69	-	-	74	-33.31	0-360	200	V
3	7.237	23.55	PK	35.8	-23	0	36.35	-	-	74	-37.65	0-360	200	V
6	9.636	21.12	PK	36.9	-19.1	0	38.92	-	-	74	-35.08	0-360	100	V

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

PK – Peak Detector

Radiated Emissions

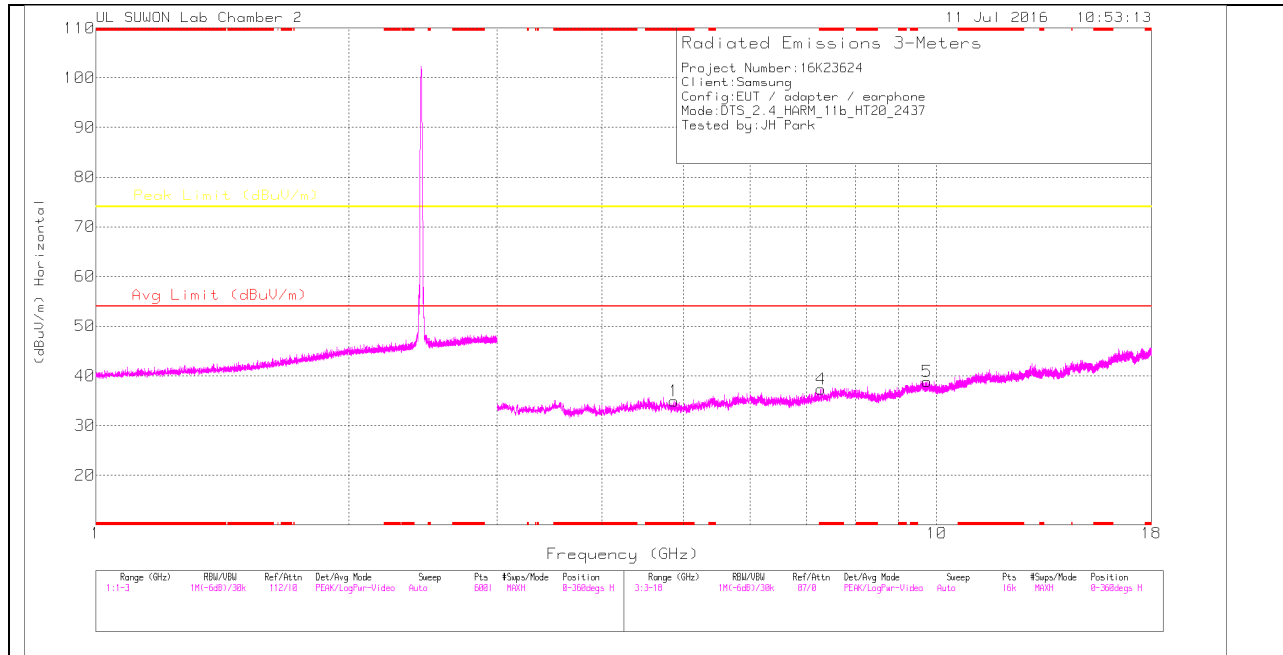
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8724)_150 619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.824	38.24	PK2	33.9	-25.3	0	46.84	-	-	74	-27.16	213	244	H
* 4.824	29.81	MAv1	33.9	-25.3	0	38.41	54	-15.59	-	-	213	244	H
* 4.825	38.58	PK2	33.9	-25.3	0	47.18	-	-	74	-26.82	359	208	V
* 4.824	29.23	MAv1	33.9	-25.3	0	37.83	54	-16.17	-	-	359	208	V

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

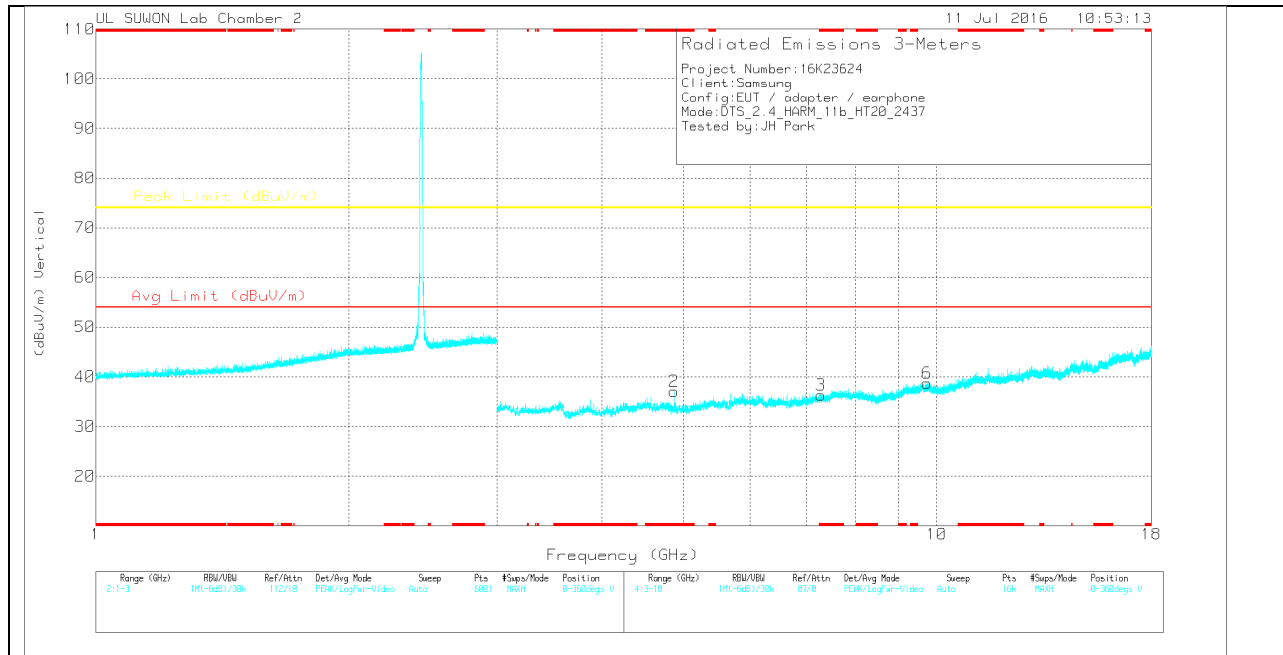
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL HORIZONTAL



MID CHANNEL VERTICAL



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

MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016872 4)_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	26.28	PK	33.9	-25.2	0	34.98	-	-	74	-39.02	0-360	200	H
4	* 7.286	24.38	PK	35.8	-22.8	0	37.38	-	-	74	-36.62	0-360	100	H
5	9.743	21.09	PK	37	-19.3	0	38.79	-	-	74	-35.21	0-360	200	H
2	* 4.874	28.41	PK	33.9	-25.2	0	37.11	-	-	74	-36.89	0-360	200	V
3	* 7.287	23.28	PK	35.8	-22.8	0	36.28	-	-	74	-37.72	0-360	100	V
6	9.746	21.05	PK	37	-19.3	0	38.75	-	-	74	-35.25	0-360	200	V

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

PK – Peak detector

Radiated Emissions

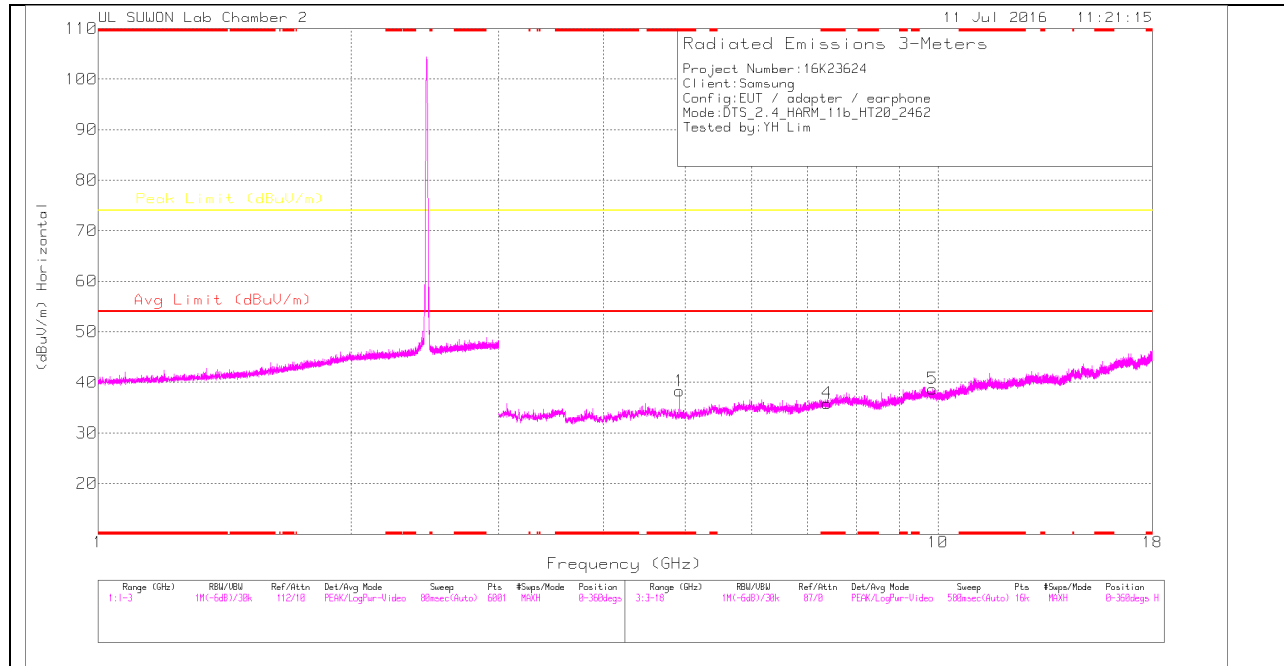
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8724)_150 619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.873	37.36	PK2	33.9	-25.2	0	46.06	-	-	74	-27.94	208	338	H
* 4.874	25.5	MAV1	33.9	-25.2	0	34.2	54	-19.8	-	-	208	338	H
* 4.874	36.87	PK2	33.9	-25.2	0	45.57	-	-	74	-28.43	170	393	V
* 4.874	26.99	MAV1	33.9	-25.2	0	35.69	54	-18.31	-	-	170	393	V

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

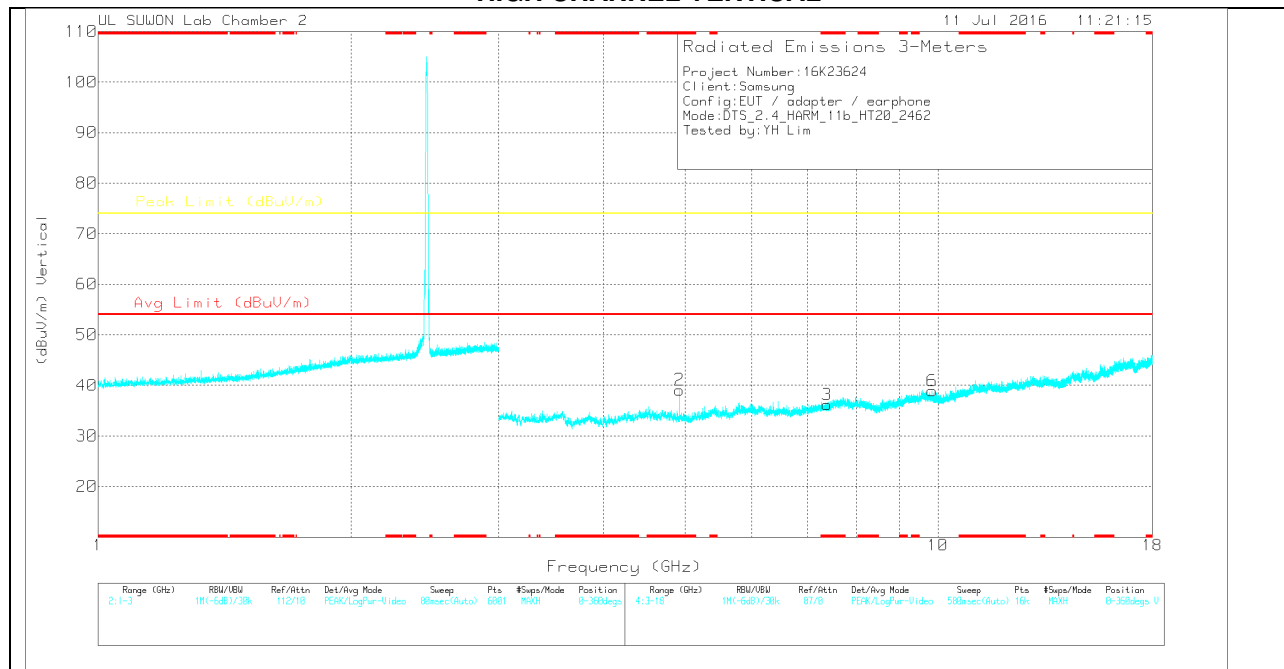
PK2 - KDB558074 Method: Maximum Peak

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(0016872 4)_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	29.51	Pk	33.9	-25.1	0	38.31	-	-	74	-35.69	0-360	100	H
4	* 7.382	22.16	Pk	35.9	-22.2	0	35.86	-	-	74	-38.14	0-360	200	H
5	9.85	20.84	Pk	37.1	-19.2	0	38.74	-	-	74	-35.26	0-360	200	H
2	* 4.924	30.28	Pk	33.9	-25.1	0	39.08	-	-	74	-34.92	0-360	200	V
3	* 7.383	22.5	Pk	35.9	-22.2	0	36.2	-	-	74	-37.8	0-360	200	V
6	9.843	20.99	Pk	37.1	-19.2	0	38.89	-	-	74	-35.11	0-360	100	V

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

Pk – Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8724)_150 619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.924	38.33	PK2	33.9	-25.1	0	47.13	-	-	74	-26.87	213	242	H
* 4.924	28.38	MAV1	33.9	-25.1	0	37.18	54	-16.82	-	-	213	242	H
* 4.924	37.78	PK2	33.9	-25.1	0	46.58	-	-	74	-27.42	0	197	V
* 4.924	27.73	MAV1	33.9	-25.1	0	36.53	54	-17.47	-	-	0	197	V

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

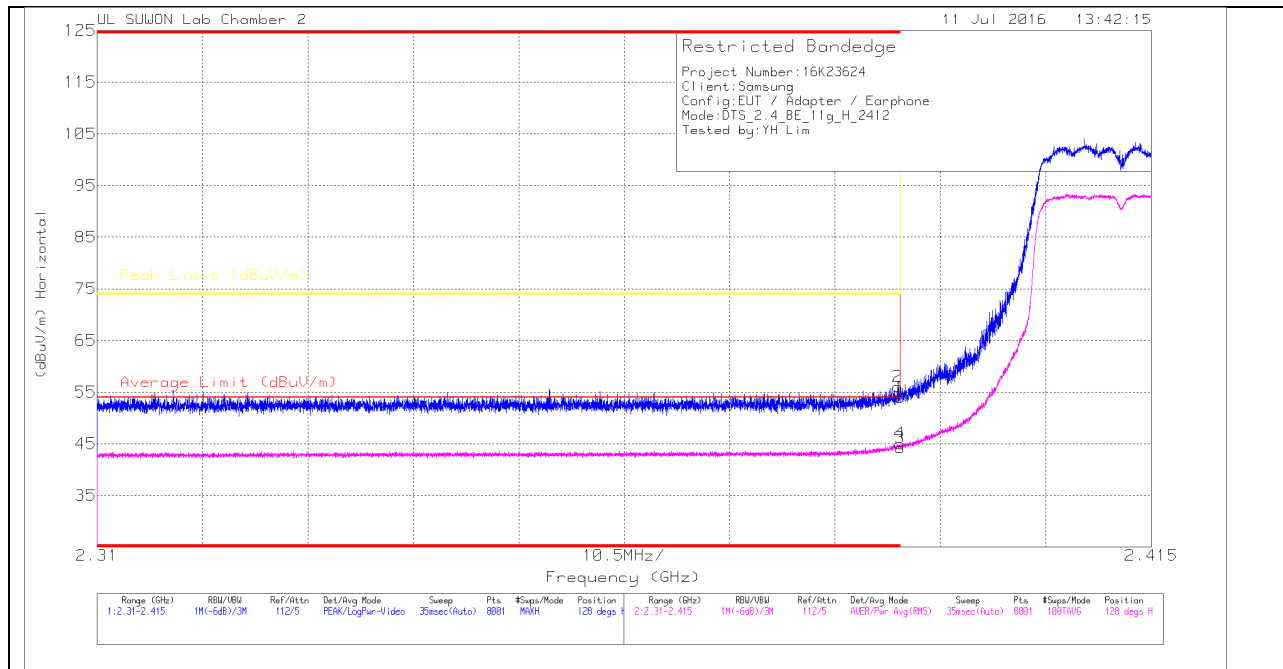
PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

11.2.2. TX ABOVE 1 GHz 802.11g 2TX CDD MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (1 CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

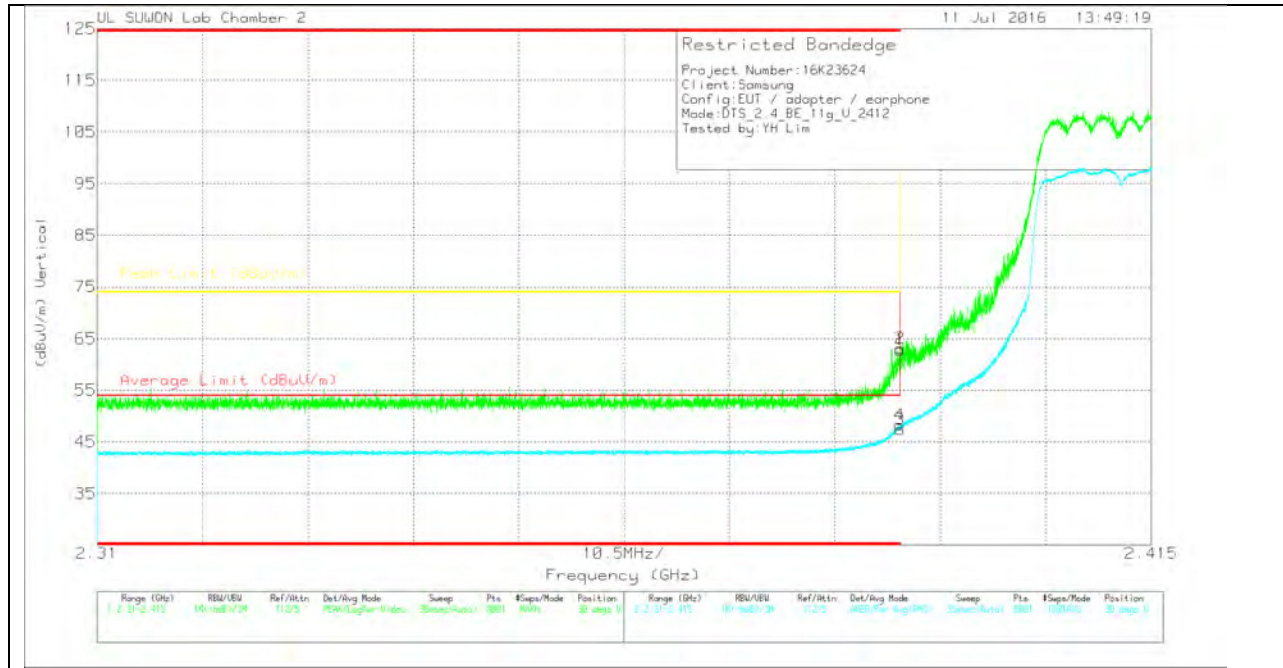
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	41.81	Pk	31.7	-19.5	0	54.01	-	-	74	-19.99	128	150	H
2	* 2.39	43.87	Pk	31.7	-19.5	0	56.07	-	-	74	-17.93	128	150	H
3	* 2.39	31.77	RMS	31.7	-19.5	.31	44.28	54	-9.72	-	-	128	150	H
4	* 2.39	32.56	RMS	31.7	-19.5	.31	45.07	54	-8.93	-	-	128	150	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	50.65	Pk	31.7	-19.5	0	62.85	-	-	74	-11.15	30	237	V
2	* 2.39	50.91	Pk	31.7	-19.5	0	63.11	-	-	74	-10.89	30	237	V
3	* 2.39	34.94	RMS	31.7	-19.5	.31	47.45	54	-6.55	-	-	30	237	V
4	* 2.39	35.75	RMS	31.7	-19.5	.31	48.26	54	-5.74	-	-	30	237	V

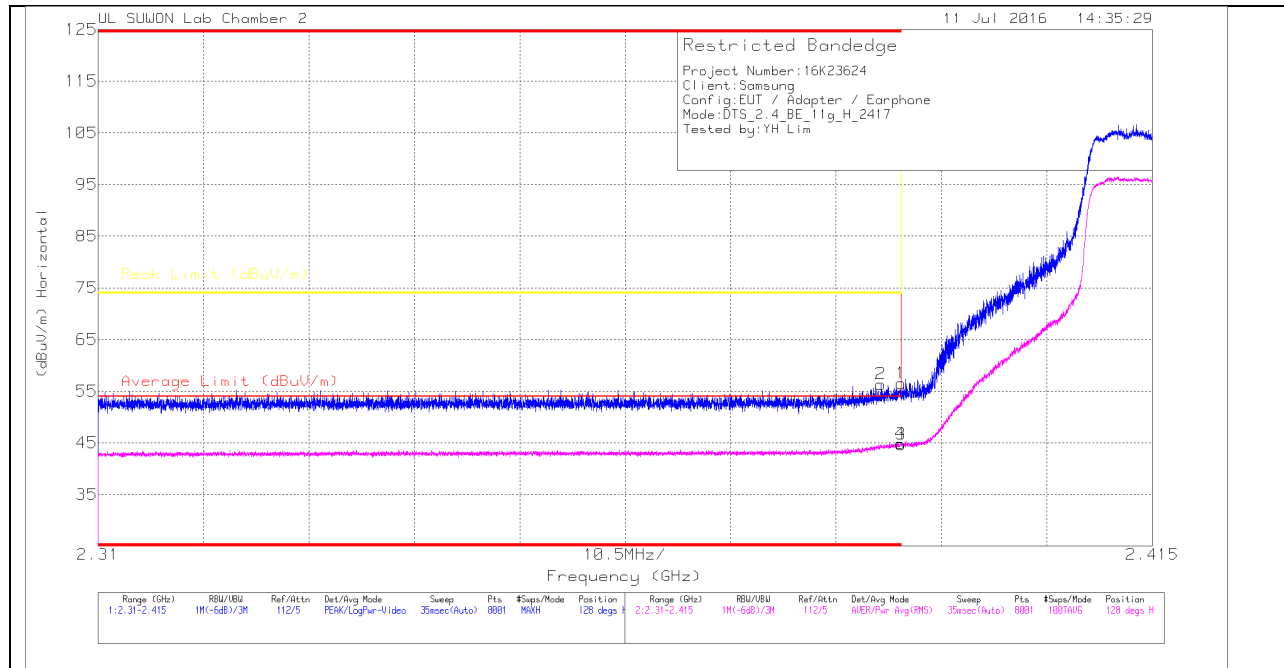
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

RESTRICTED BANDEDGE (2 CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

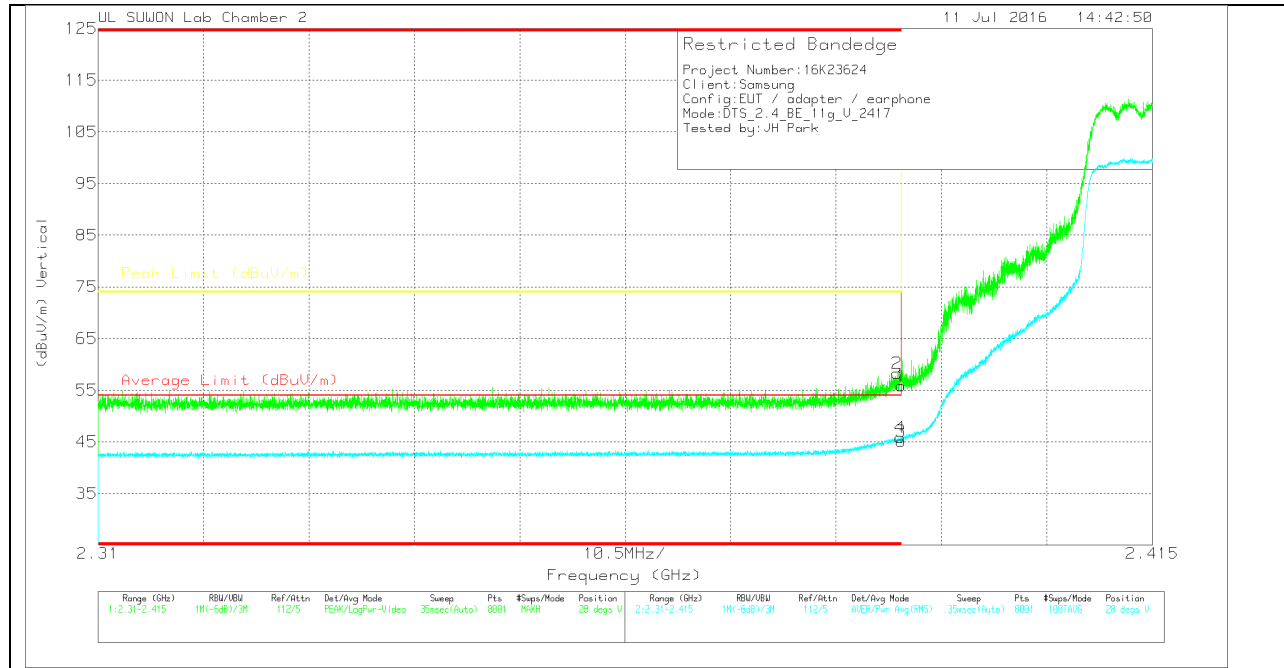
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	44.33	Pk	31.7	-19.5	0	56.53	-	-	74	-17.47	128	102	H
2	* 2.388	44.19	Pk	31.7	-19.5	0	56.39	-	-	74	-17.61	128	102	H
3	* 2.39	32.21	RMS	31.7	-19.5	.31	44.72	54	-9.28	-	-	128	102	H
4	* 2.39	32.35	RMS	31.7	-19.5	.31	44.86	54	-9.14	-	-	128	102	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	43.66	Pk	31.7	-19.5	0	55.86	-	-	74	-18.14	28	237	V
2	* 2.39	46.08	Pk	31.7	-19.5	0	58.28	-	-	74	-15.72	28	237	V
3	* 2.39	32.9	RMS	31.7	-19.5	0	45.1	54	-8.9	-	-	28	237	V
4	* 2.39	33.63	RMS	31.7	-19.5	0	45.83	54	-8.17	-	-	28	237	V

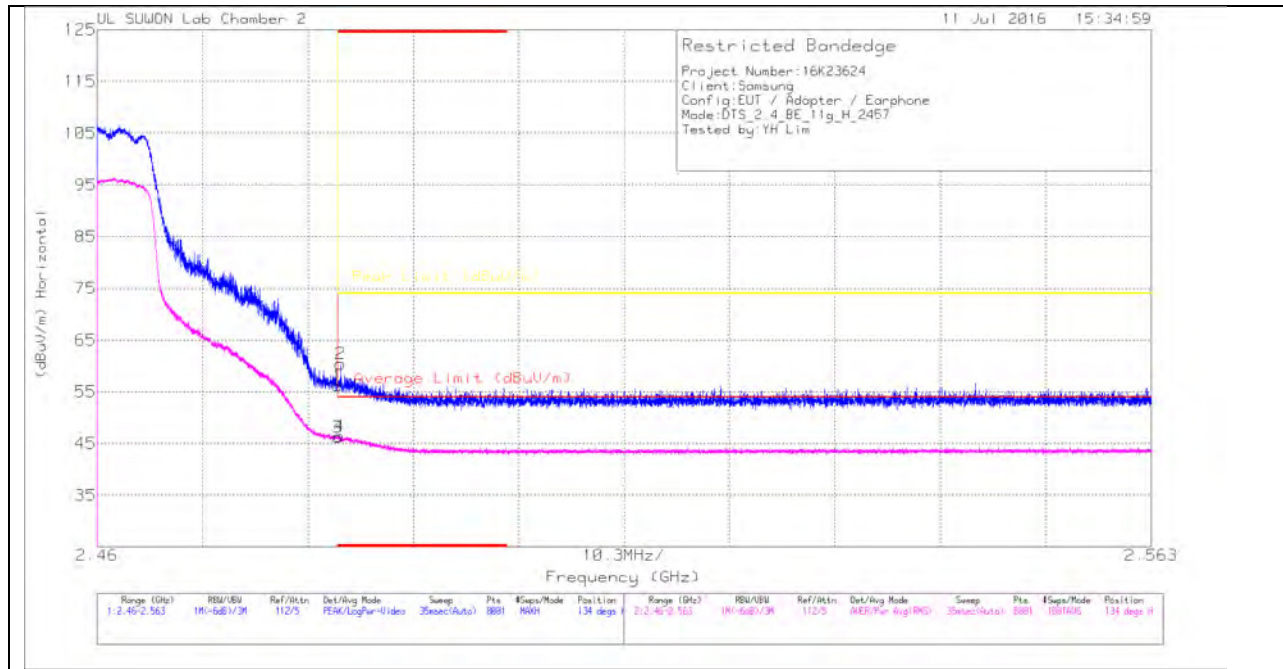
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (10 CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

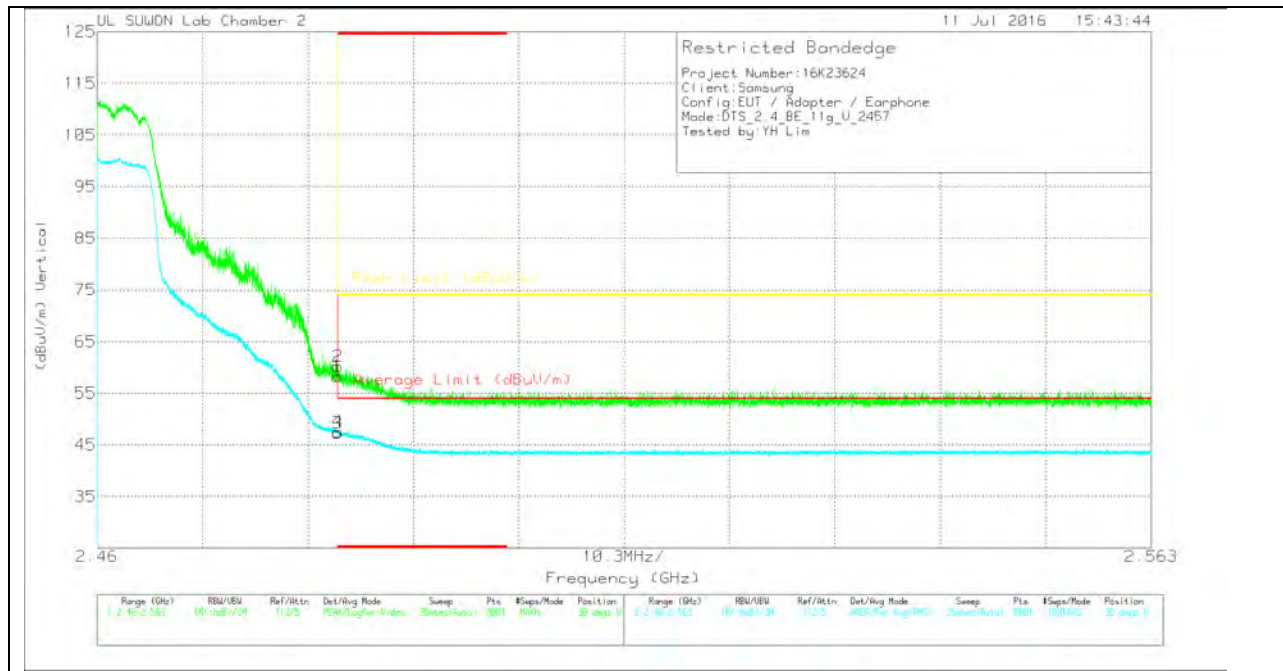
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	43.82	Pk	31.8	-19.4	0	56.22	-	-	74	-17.78	134	100	H
2	* 2.484	48.01	Pk	31.8	-19.4	0	60.41	-	-	74	-13.59	134	100	H
3	* 2.484	33.52	RMS	31.8	-19.4	.31	46.23	54	-7.77	-	-	134	100	H
4	* 2.484	33.71	RMS	31.8	-19.4	.31	46.42	54	-7.58	-	-	134	100	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	45.89	Pk	31.8	-19.4	0	58.29	-	-	74	-15.71	30	192	V
2	* 2.484	47.79	Pk	31.8	-19.4	0	60.19	-	-	74	-13.81	30	192	V
3	* 2.484	34.58	RMS	31.8	-19.4	.31	47.29	54	-6.71	-	-	30	192	V
4	* 2.484	34.81	RMS	31.8	-19.4	.31	47.52	54	-6.48	-	-	30	192	V

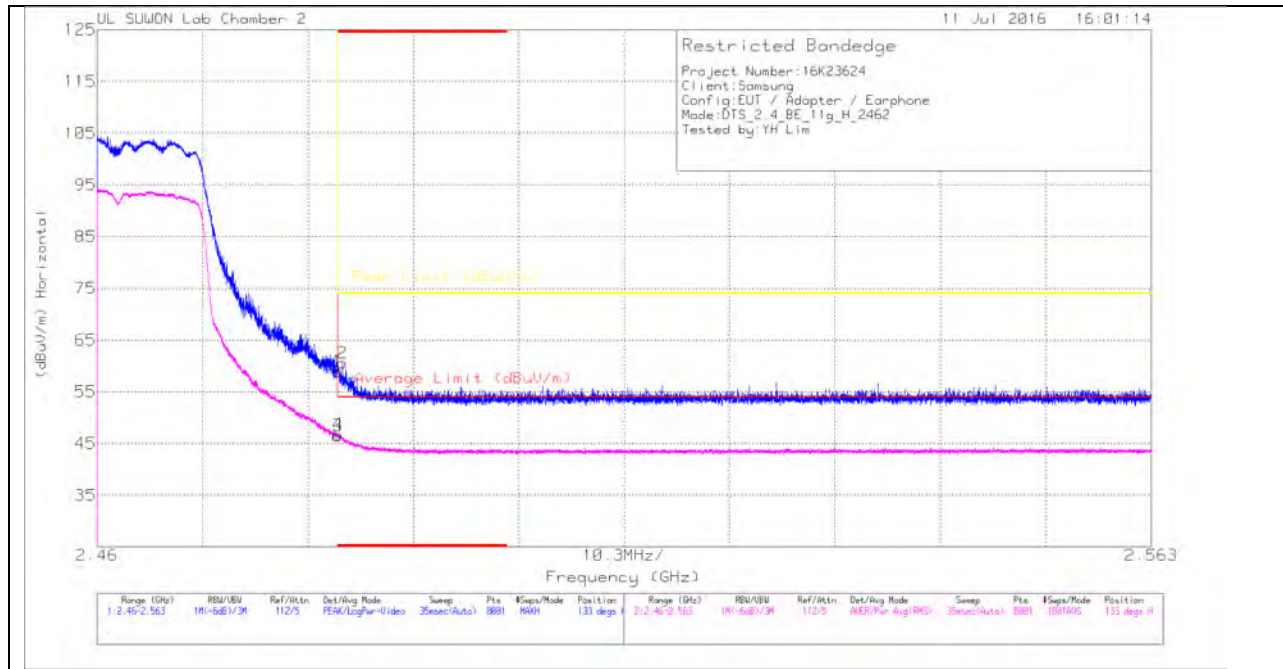
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (11 CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

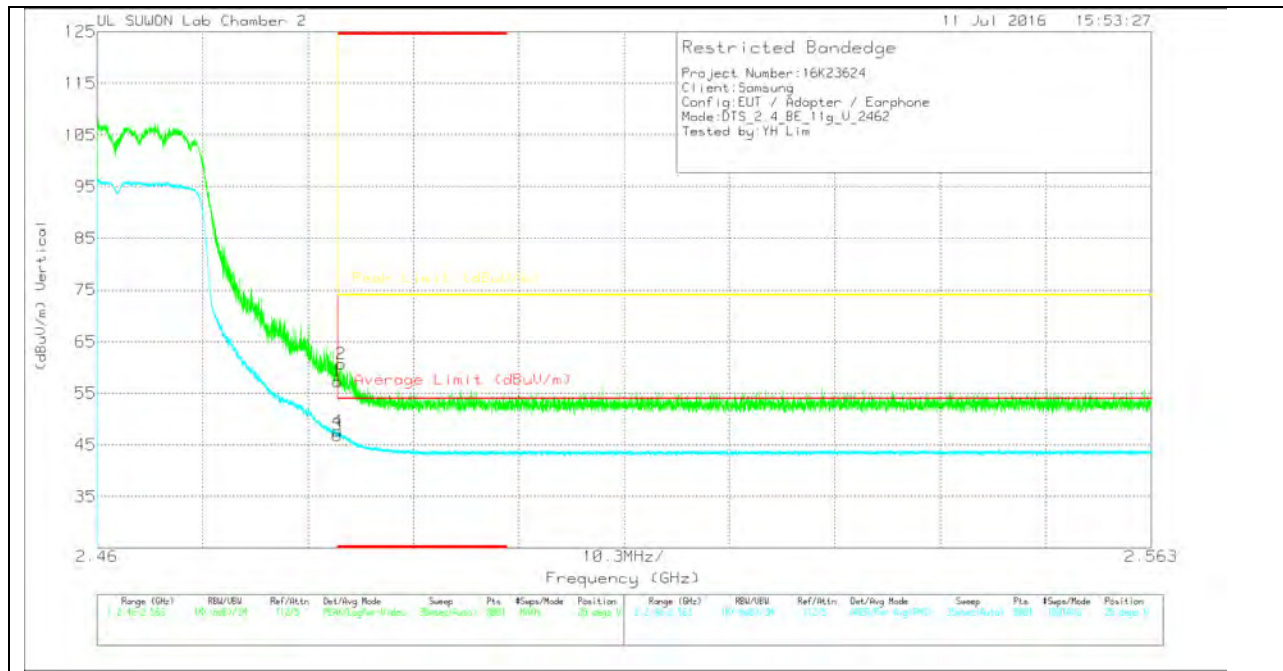
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	46.61	Pk			0	59.01	-	-	74	-14.99	133	103	H
2	* 2.484	48.16	Pk			0	60.56	-	-	74	-13.44	133	103	H
3	* 2.484	33.79	RMS			.31	46.5	54	-7.5	-	-	133	103	H
4	* 2.484	34.02	RMS			.31	46.73	54	-7.27	-	-	133	103	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	44.87	Pk	31.8	-19.4	0	57.27	-	-	74	-16.73	28	301	V
2	* 2.484	48.28	Pk	31.8	-19.4	0	60.68	-	-	74	-13.32	28	301	V
3	* 2.484	34.19	RMS	31.8	-19.4	.31	46.9	54	-7.1	-	-	28	301	V
4	* 2.484	34.97	RMS	31.8	-19.4	.31	47.68	54	-6.32	-	-	28	301	V

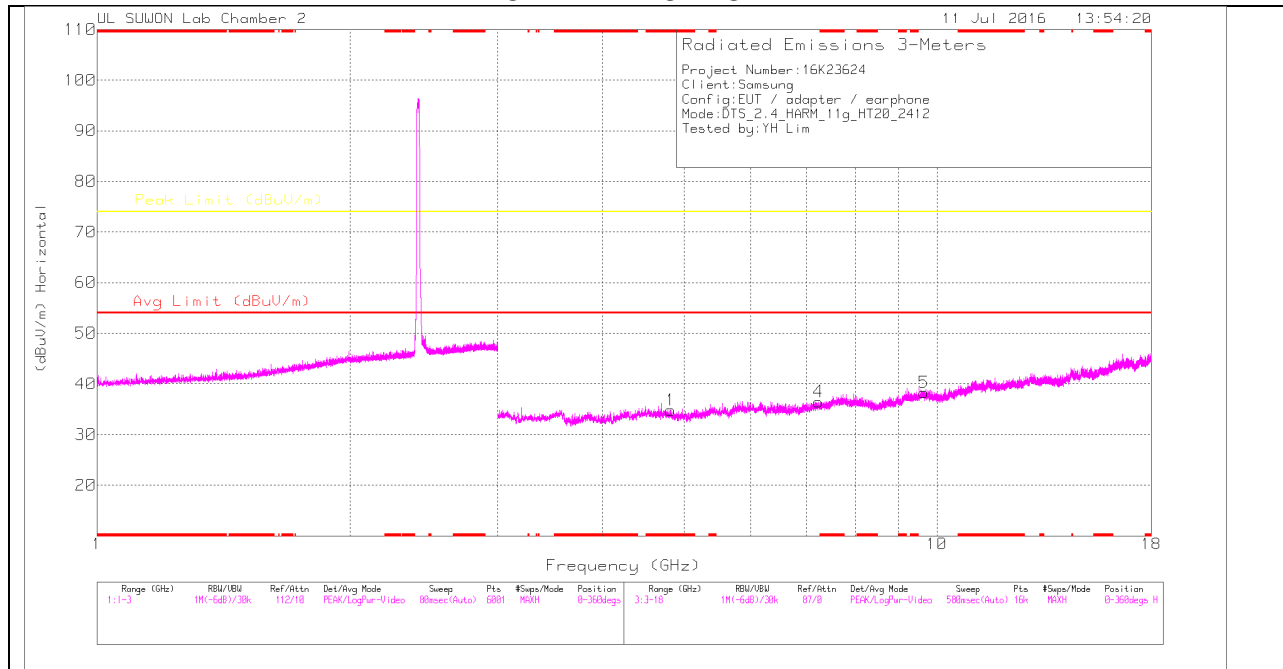
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

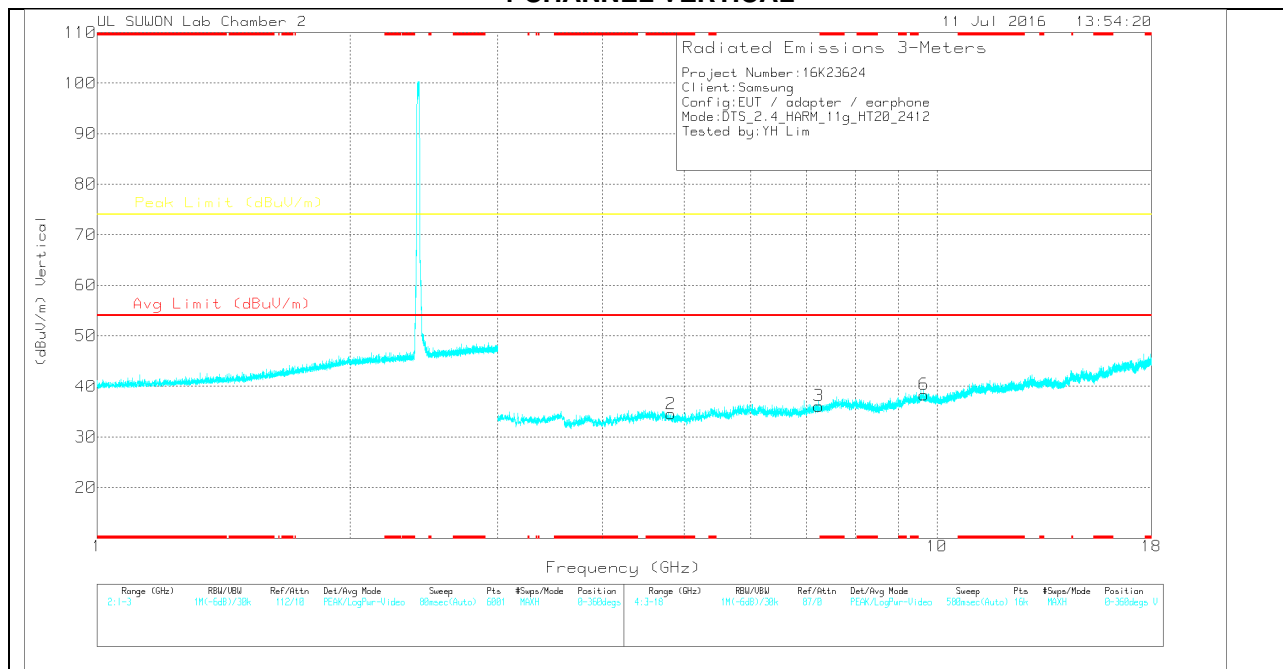
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

1 CHANNEL HORIZONTAL



1 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.

1 CHANNEL DATA

Trace Markers

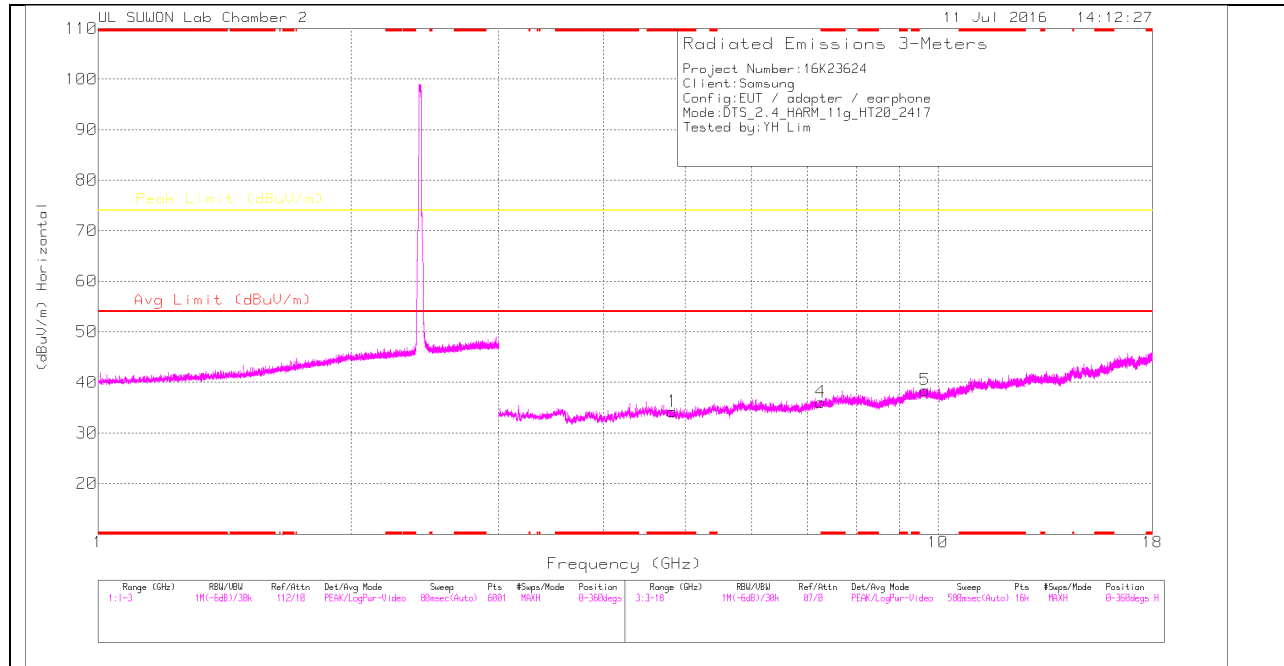
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016872 4)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.82	26.22	Pk	33.9	-25.3	0	34.82	-	-	74	-39.18	0-360	100	H
4	7.232	23.65	Pk	35.8	-23	0	36.45	-	-	74	-37.55	0-360	100	H
5	9.647	20.4	Pk	36.9	-19	0	38.3	-	-	74	-35.7	0-360	200	H
2	* 4.821	25.98	Pk	33.9	-25.3	0	34.58	-	-	74	-39.42	0-360	200	V
3	7.233	23.32	Pk	35.8	-23	0	36.12	-	-	74	-37.88	0-360	200	V
6	9.647	20.46	Pk	36.9	-19	0	38.36	-	-	74	-35.64	0-360	100	V

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

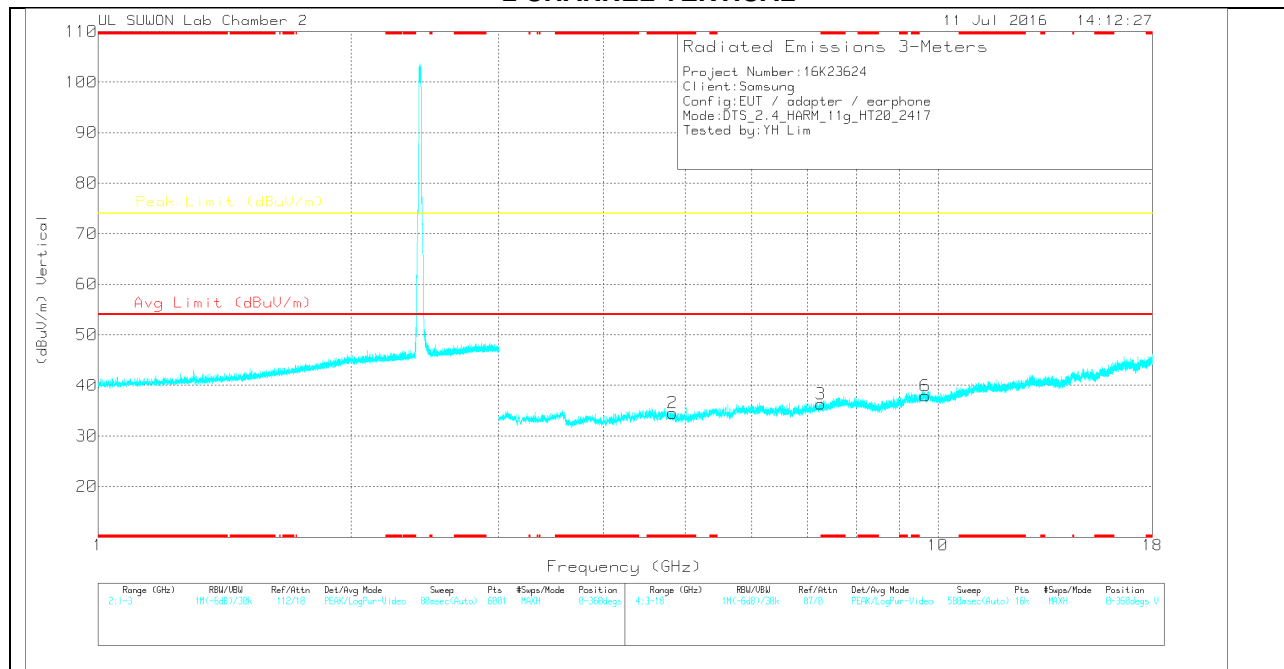
Pk – Peak detector

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

2 CHANNEL HORIZONTAL



2 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.

2 CHANNEL DATA

Trace Markers

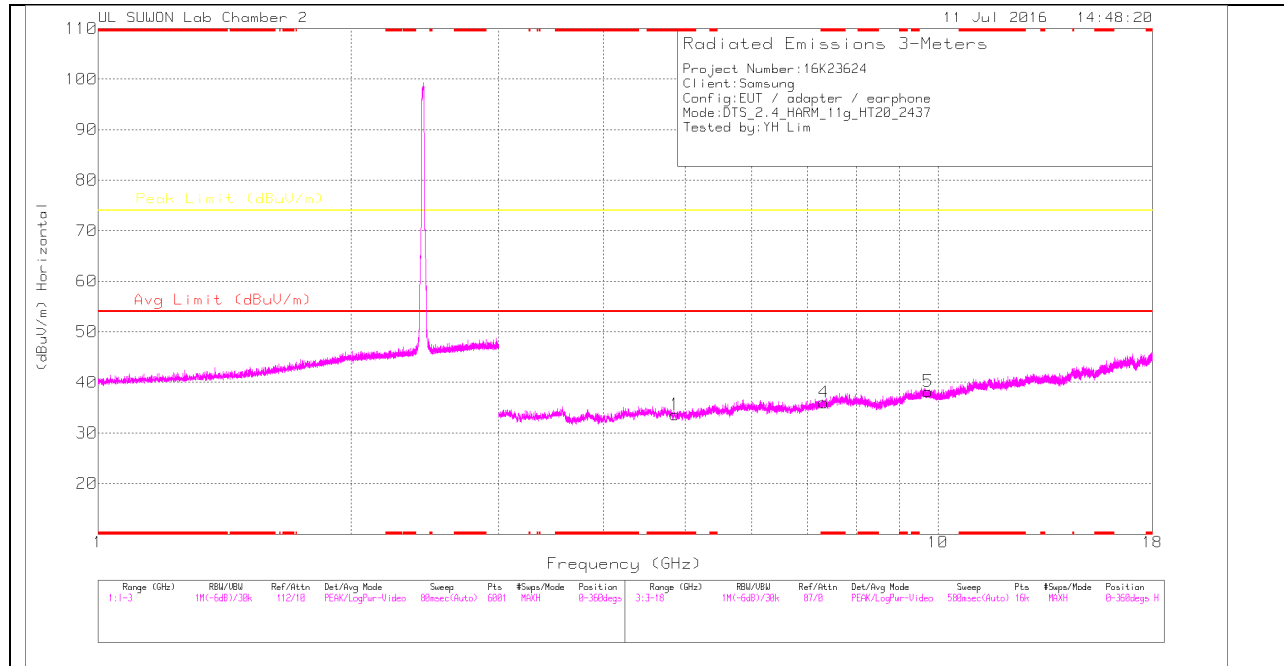
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016872 4)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.833	25.63	Pk	33.9	-25.3	0	34.23	-	-	74	-39.77	0-360	100	H
4	* 7.253	23.31	Pk	35.8	-23	0	36.11	-	-	74	-37.89	0-360	200	H
5	9.658	20.69	Pk	36.9	-19.1	0	38.49	-	-	74	-35.51	0-360	100	H
2	* 4.834	25.93	Pk	33.9	-25.3	0	34.53	-	-	74	-39.47	0-360	200	V
3	* 7.255	23.51	Pk	35.8	-23	0	36.31	-	-	74	-37.69	0-360	200	V
6	9.659	20.1	Pk	36.9	-19.1	0	37.9	-	-	74	-36.1	0-360	200	V

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

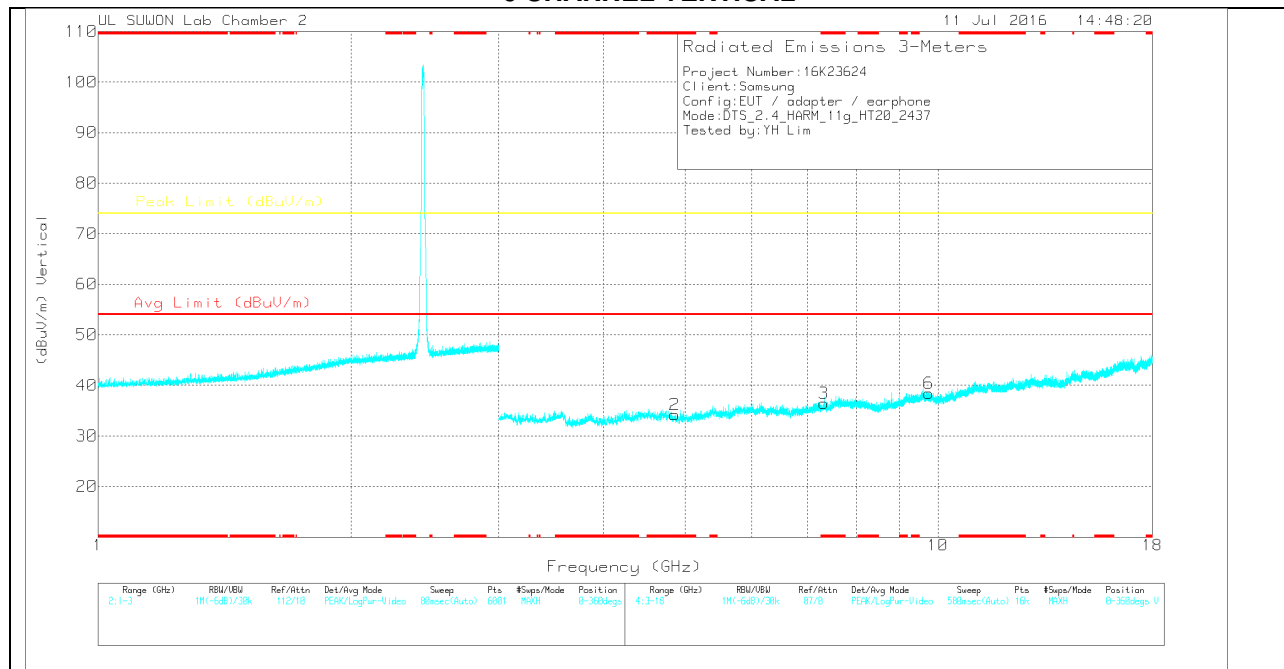
Pk – Peak detector

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

6 CHANNEL HORIZONTAL



6 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.

6 CHANNEL DATA

Trace Markers

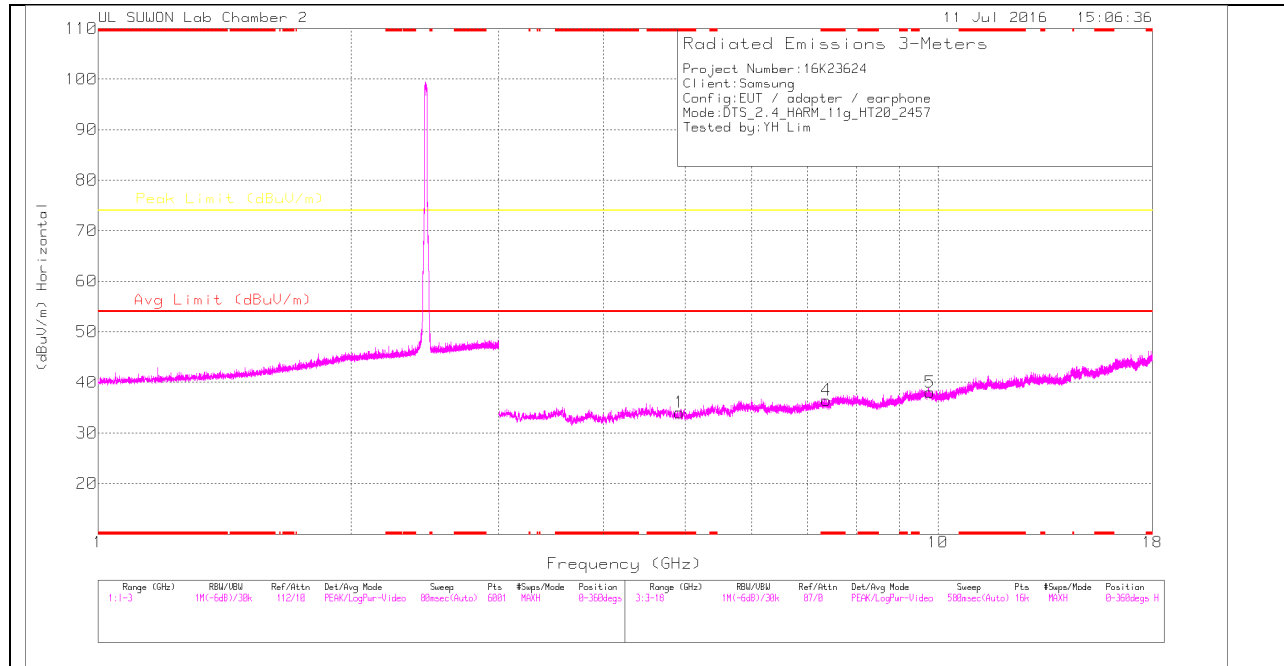
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016872 4)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.866	25.02	Pk	33.9	-25.3	0	33.62	-	-	74	-40.38	0-360	100	H
4	* 7.32	22.61	Pk	35.9	-22.5	0	36.01	-	-	74	-37.99	0-360	100	H
5	9.734	20.5	Pk	37	-19.3	0	38.2	-	-	74	-35.8	0-360	200	H
2	* 4.861	25.59	Pk	33.9	-25.3	0	34.19	-	-	74	-39.81	0-360	100	V
3	* 7.316	23.14	Pk	35.9	-22.6	0	36.44	-	-	74	-37.56	0-360	200	V
6	9.75	20.7	Pk	37	-19.3	0	38.4	-	-	74	-35.6	0-360	100	V

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

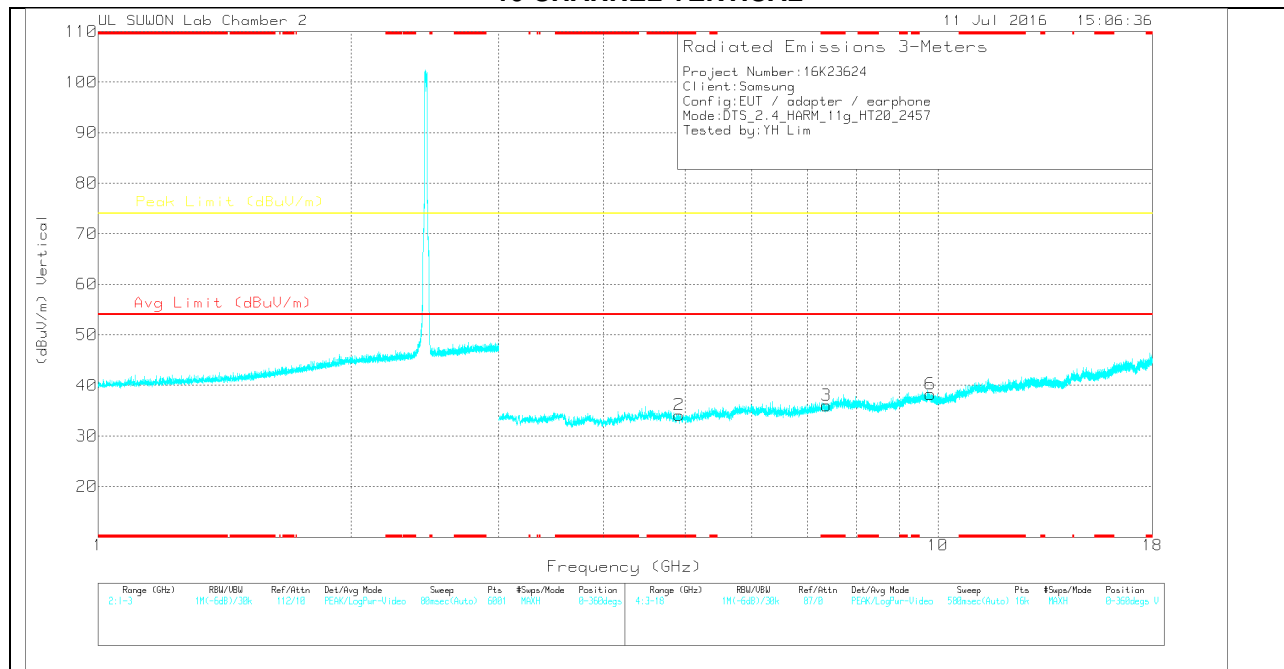
Pk – Peak detector

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

10 CHANNEL HORIZONTAL



10 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.

10 CHANNEL DATA

Trace Markers

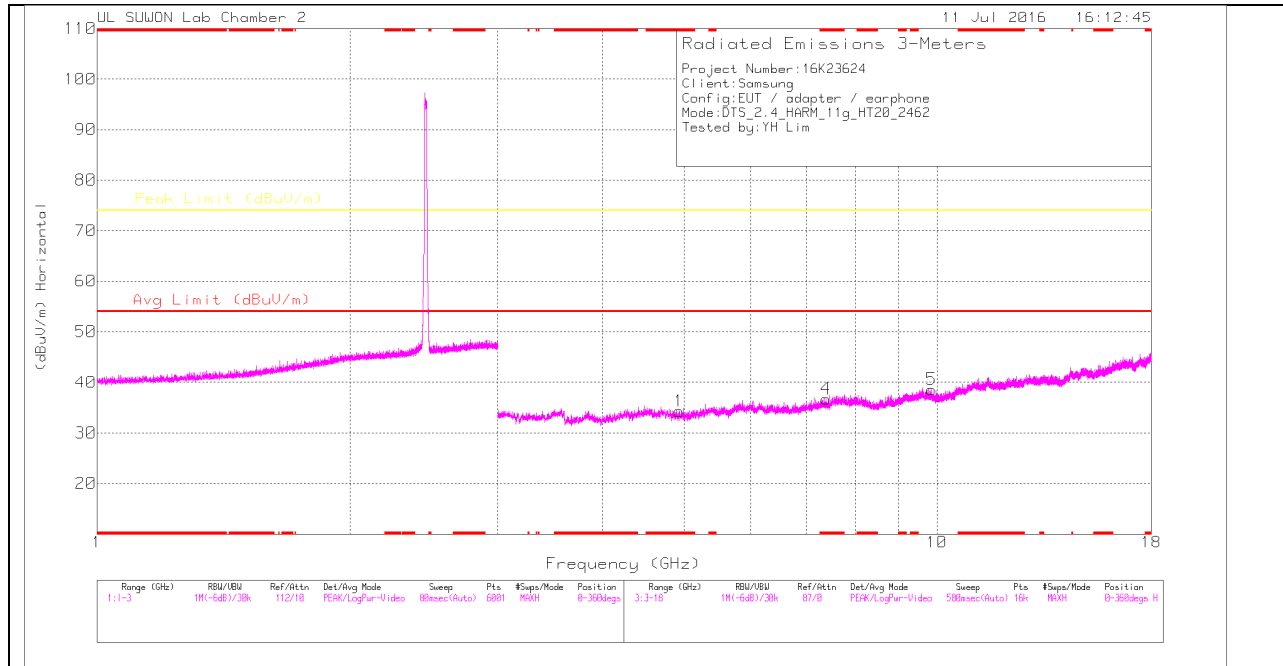
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016872 4)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.922	25.22	Pk	33.9	-25.1	0	34.02	-	-	74	-39.98	0-360	100	H
4	* 7.363	22.85	Pk	35.9	-22.3	0	36.45	-	-	74	-37.55	0-360	100	H
5	9.791	20.32	Pk	37	-19.3	0	38.02	-	-	74	-35.98	0-360	200	H
2	* 4.919	25.33	Pk	33.9	-25.1	0	34.13	-	-	74	-39.87	0-360	200	V
3	* 7.366	22.41	Pk	35.9	-22.3	0	36.01	-	-	74	-37.99	0-360	200	V
6	9.793	20.56	Pk	37	-19.3	0	38.26	-	-	74	-35.74	0-360	200	V

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

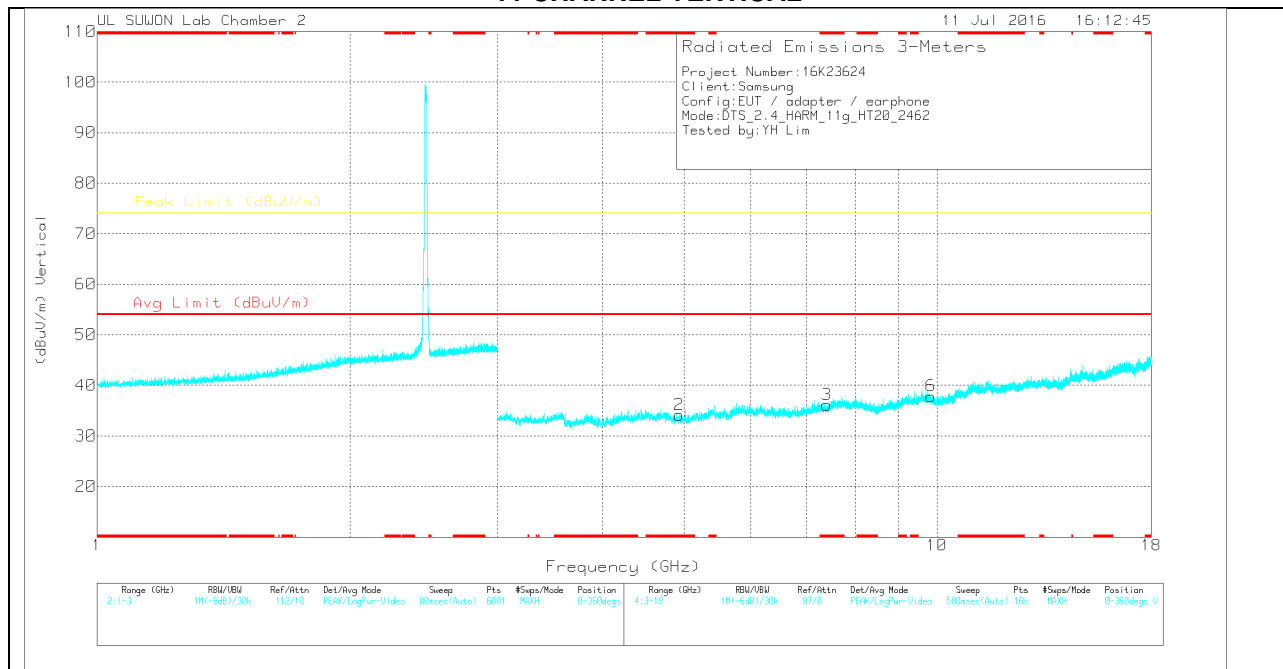
Pk – Peak detector

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

11 CHANNEL HORIZONTAL



11 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.

11 CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016872 4)_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	* 4.935	25.48	Pk	33.9	-25.1	0	34.28	-	-	74	-39.72	0-360	100	H
4	* 7.381	23.03	Pk	35.9	-22.2	0	36.73	-	-	74	-37.27	0-360	100	H
5	9.848	20.69	Pk	37.1	-19.2	0	38.59	-	-	74	-35.41	0-360	100	H
2	* 4.934	25.35	Pk	33.9	-25.1	0	34.15	-	-	74	-39.85	0-360	100	V
3	* 7.393	22.35	Pk	35.9	-22.1	0	36.15	-	-	74	-37.85	0-360	100	V
6	9.842	19.96	Pk	37.1	-19.2	0	37.86	-	-	74	-36.14	0-360	100	V

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

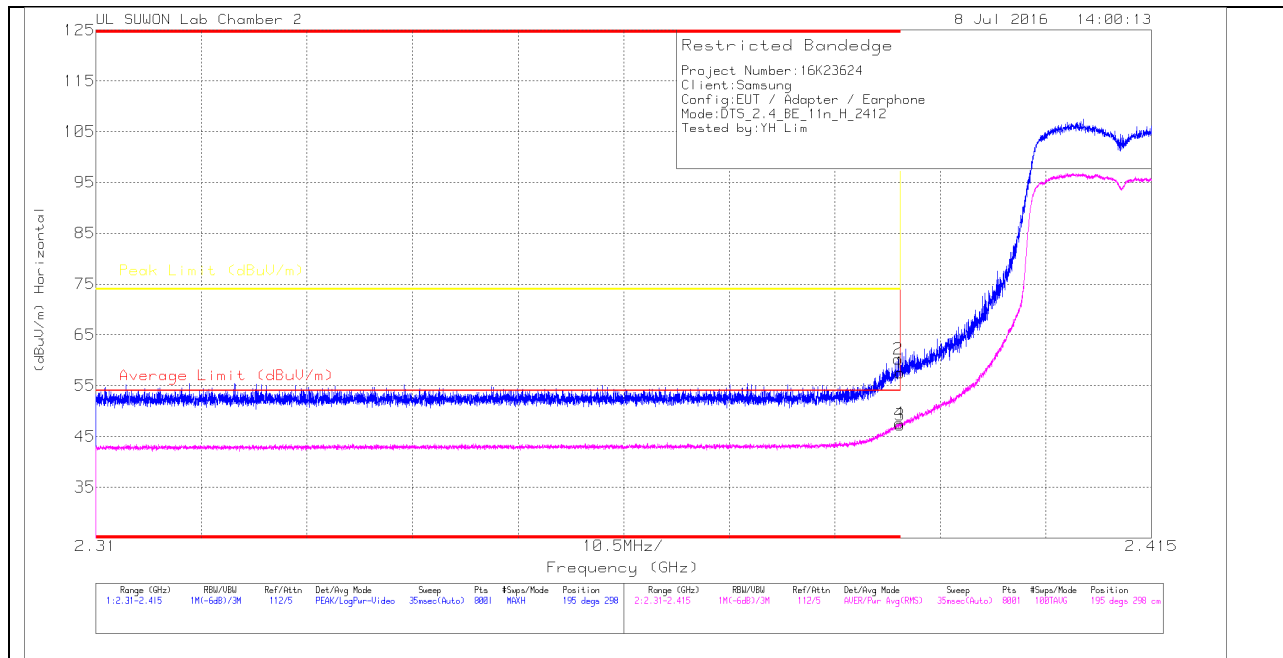
Pk – Peak detector

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

11.2.3. TX ABOVE 1 GHz 802.11n HT20 2TX CDD MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (1 CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

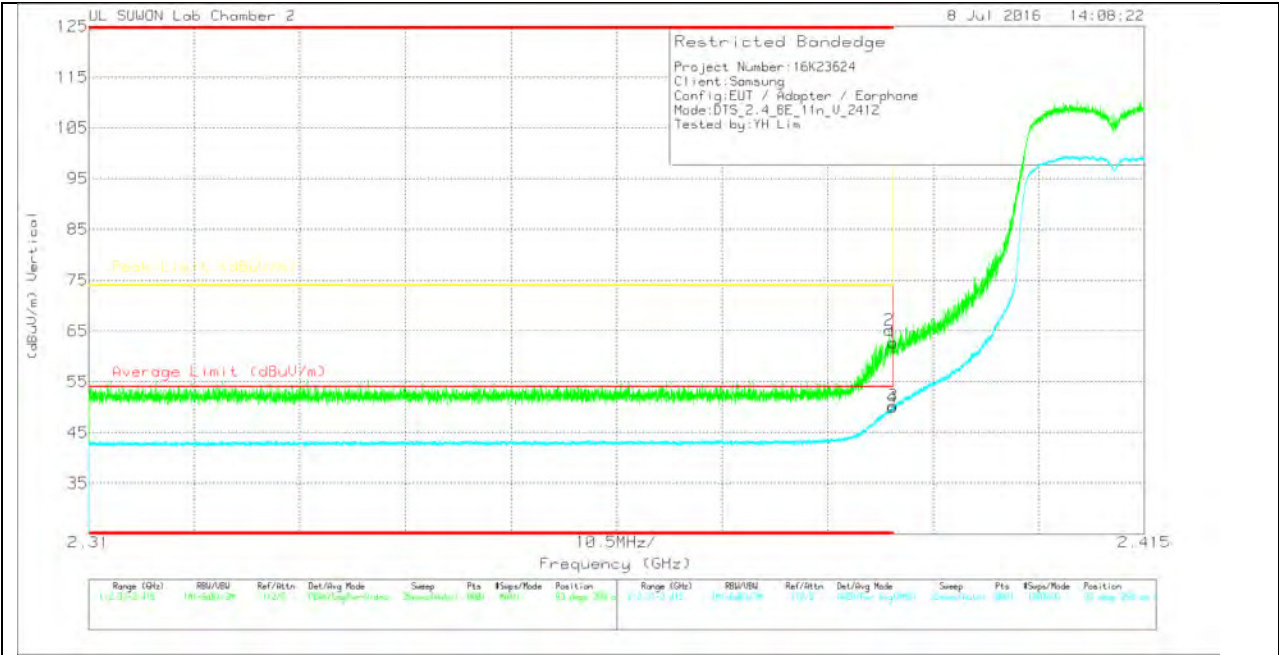
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	45.26	Pk	31.7	-19.5	0	57.46	-	-	74	-16.54	195	298	H
2	* 2.39	47.97	Pk	31.7	-19.5	0	60.17	-	-	74	-13.83	195	298	H
3	* 2.39	34.74	RMS	31.7	-19.5	.33	47.27	54	-6.73	-	-	195	298	H
4	* 2.39	35.11	RMS	31.7	-19.5	.33	47.64	54	-6.36	-	-	195	298	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	50.51	Pk	31.7	-19.5	0	62.71	-	-	74	-11.29	93	298	V
2	* 2.39	52.92	Pk	31.7	-19.5	0	65.12	-	-	74	-8.88	93	298	V
3	* 2.39	37.8	RMS	31.7	-19.5	.33	50.33	54	-3.67	-	-	93	298	V
4	* 2.39	37.46	RMS	31.7	-19.5	.33	49.99	54	-4.01	-	-	93	298	V

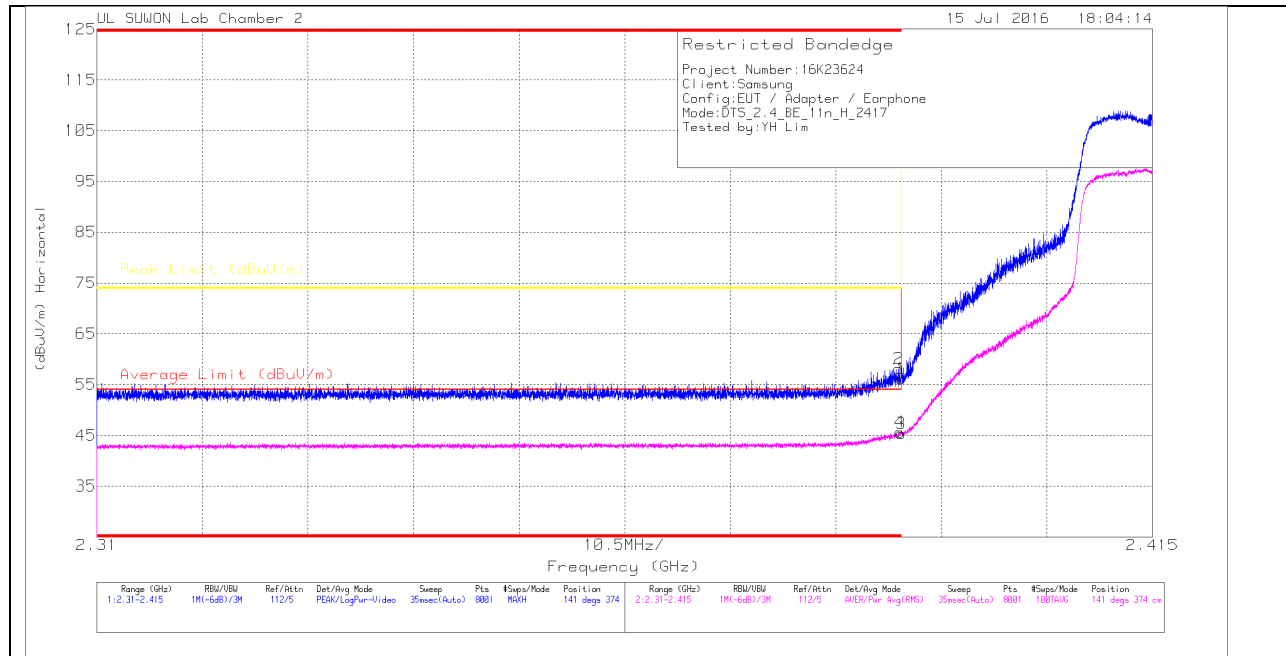
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

RESTRICTED BANDEDGE (2 CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

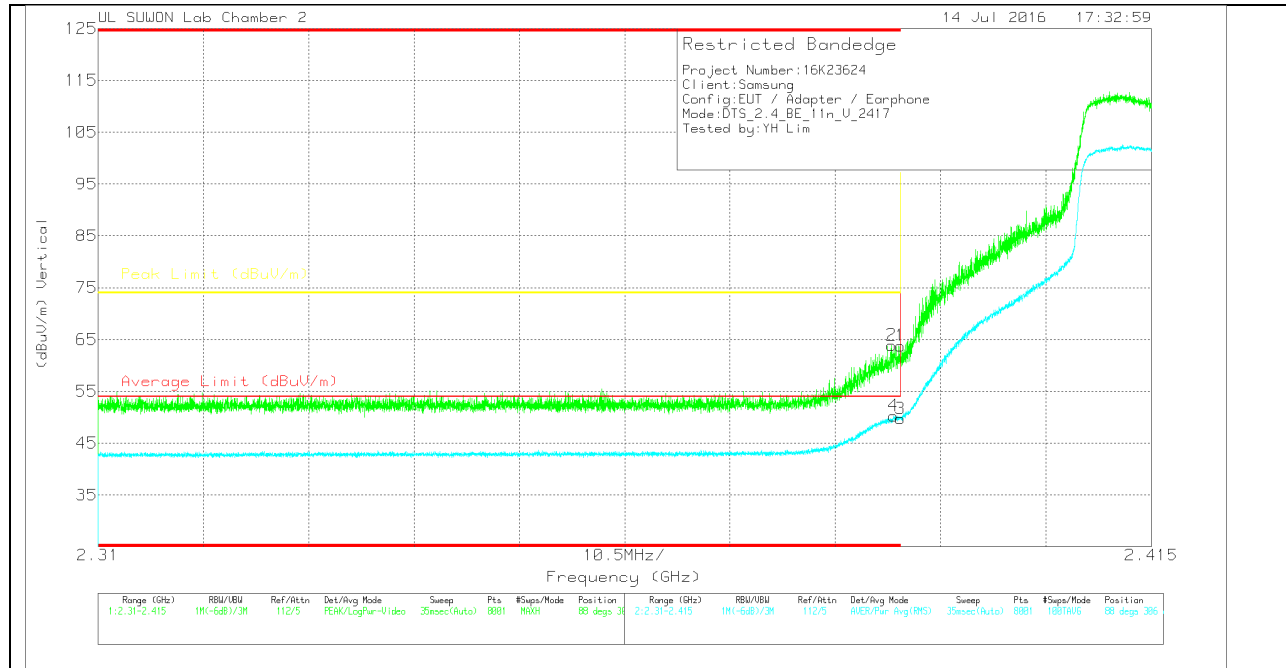
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Pk Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	43.9	PK	31.7	-19.5	0	56.1	-	-	74	-17.9	141	374	H
2	* 2.39	45.97	PK	31.7	-19.5	0	58.17	-	-	74	-15.83	141	374	H
3	* 2.39	32.8	RMS	31.7	-19.5	.33	45.33	54	-8.67	-	-	141	374	H
4	* 2.39	33.15	RMS	31.7	-19.5	.33	45.68	54	-8.32	-	-	141	374	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	51.61	Pk	31.7	-19.5	0	63.81	-	-	74	-10.19	88	306	V
2	* 2.389	51.71	Pk	31.7	-19.5	0	63.91	-	-	74	-10.09	88	306	V
3	* 2.39	37.2	RMS	31.7	-19.5	.33	49.73	54	-4.27	-	-	88	306	V
4	* 2.389	37.76	RMS	31.7	-19.5	.33	50.29	54	-3.71	-	-	88	306	V

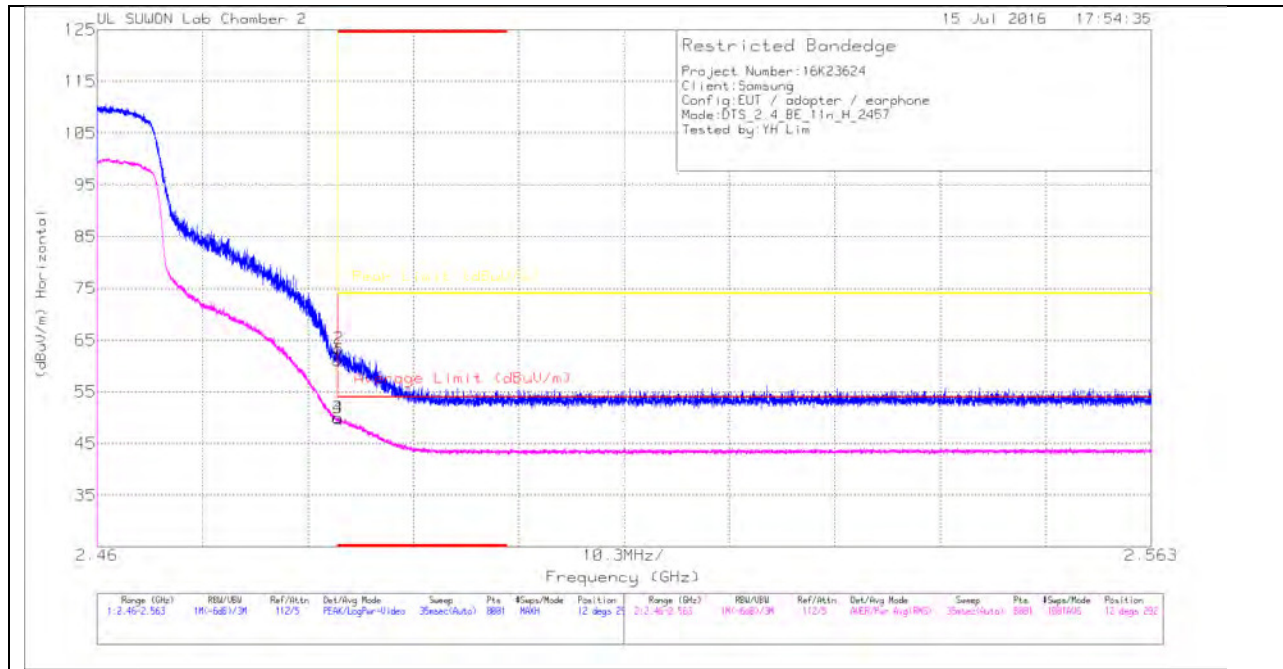
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (10 CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

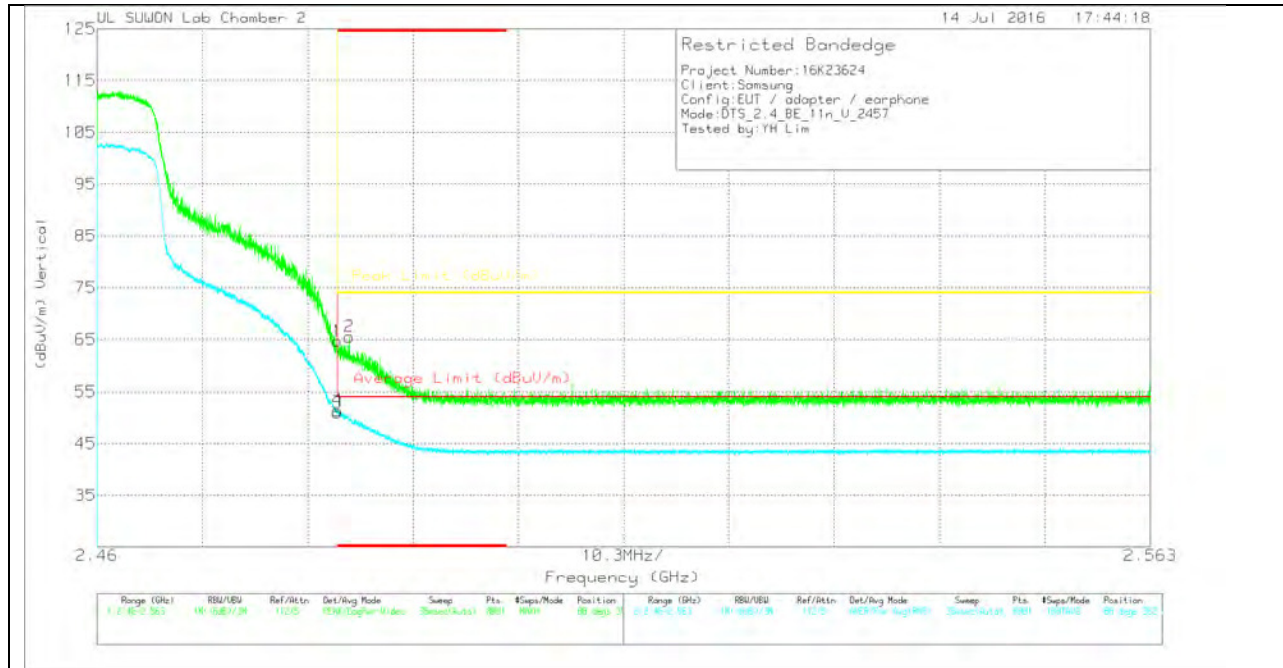
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	48.69	Pk	31.8	-19.4	0	61.09	-	-	74	-12.91	12	292	H
2	* 2.484	50.93	Pk	31.8	-19.4	0	63.33	-	-	74	-10.67	12	292	H
3	* 2.484	37.26	RMS	31.8	-19.4	.33	49.99	54	-4.01	-	-	12	292	H
4	* 2.484	37.22	RMS	31.8	-19.4	.33	49.95	54	-4.05	-	-	12	292	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	52.33	Pk	31.8	-19.4	0	64.73	-	-	74	-9.27	88	352	V
2	* 2.485	53.12	Pk	31.8	-19.4	0	65.52	-	-	74	-8.48	88	352	V
3	* 2.484	38.26	RMS	31.8	-19.4	.33	50.99	54	-3.01	-	-	88	352	V
4	* 2.484	38.67	RMS	31.8	-19.4	.33	51.4	54	-2.6	-	-	88	352	V

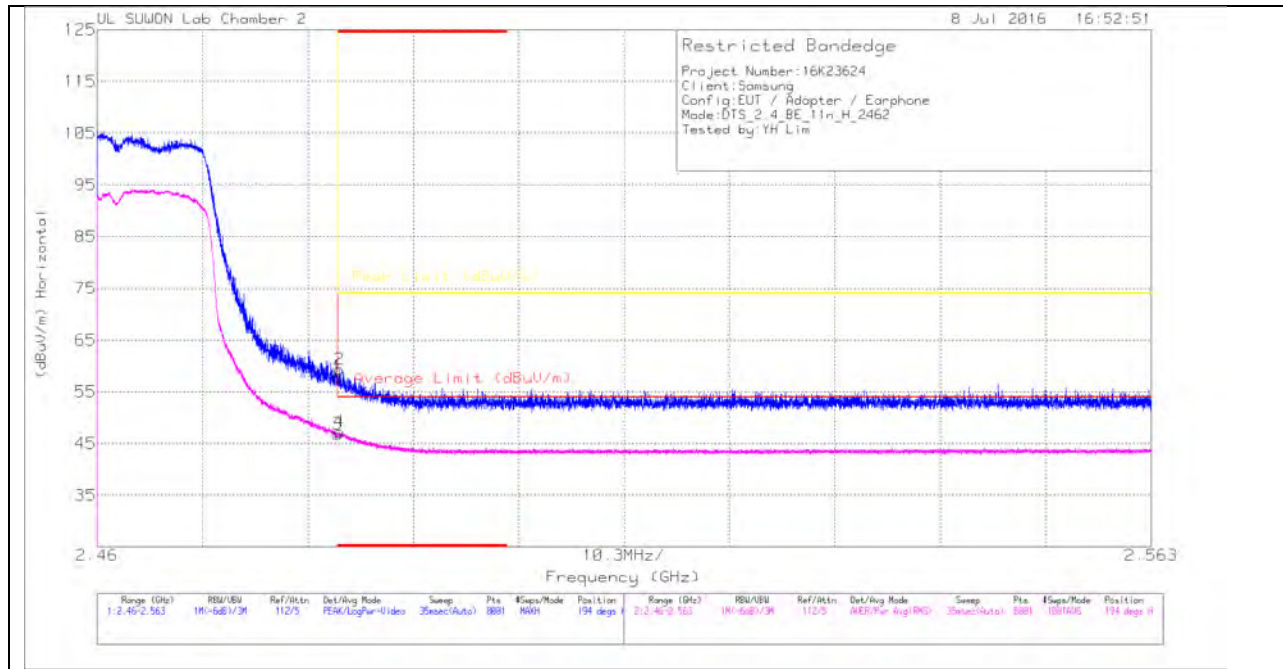
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (11 CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

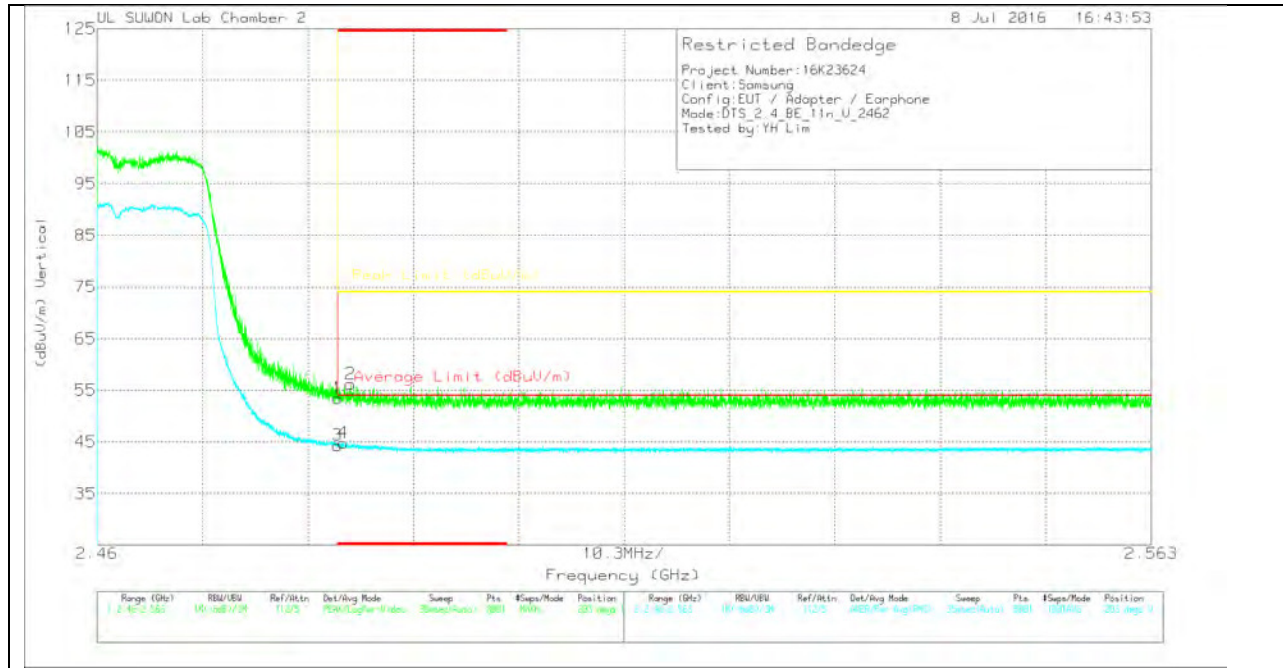
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	45.52	Pk	31.8	-19.4	0	57.92	-	-	74	-16.08	194	176	H
2	* 2.484	46.95	Pk	31.8	-19.4	0	59.35	-	-	74	-14.65	194	176	H
3	* 2.484	34.12	RMS	31.8	-19.4	.33	46.85	54	-7.15	-	-	194	176	H
4	* 2.484	34.55	RMS	31.8	-19.4	.33	47.28	54	-6.72	-	-	194	176	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 24)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	41.06	Pk	31.8	-19.4	0	53.46	-	-	74	-20.54	203	100	V
2	* 2.485	43.82	Pk	31.8	-19.4	0	56.22	-	-	74	-17.78	203	100	V
3	* 2.484	31.6	RMS	31.8	-19.4	.33	44.33	54	-9.67	-	-	203	100	V
4	* 2.484	32.08	RMS	31.8	-19.4	.33	44.81	54	-9.19	-	-	203	100	V

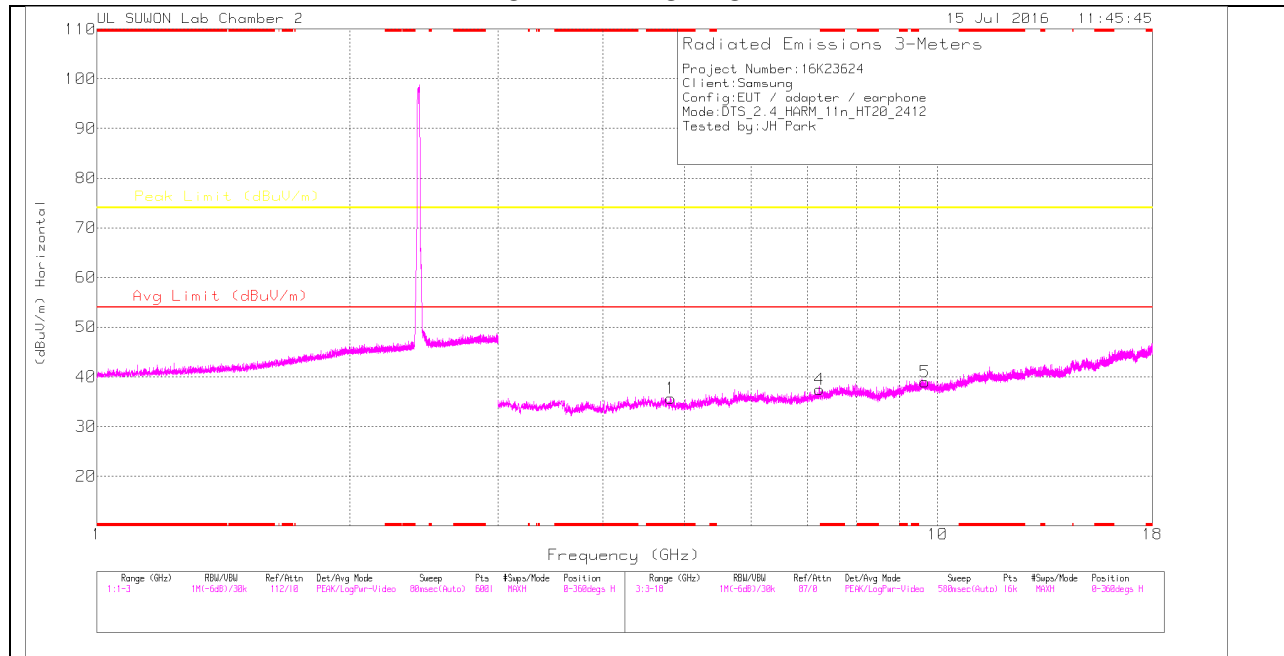
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

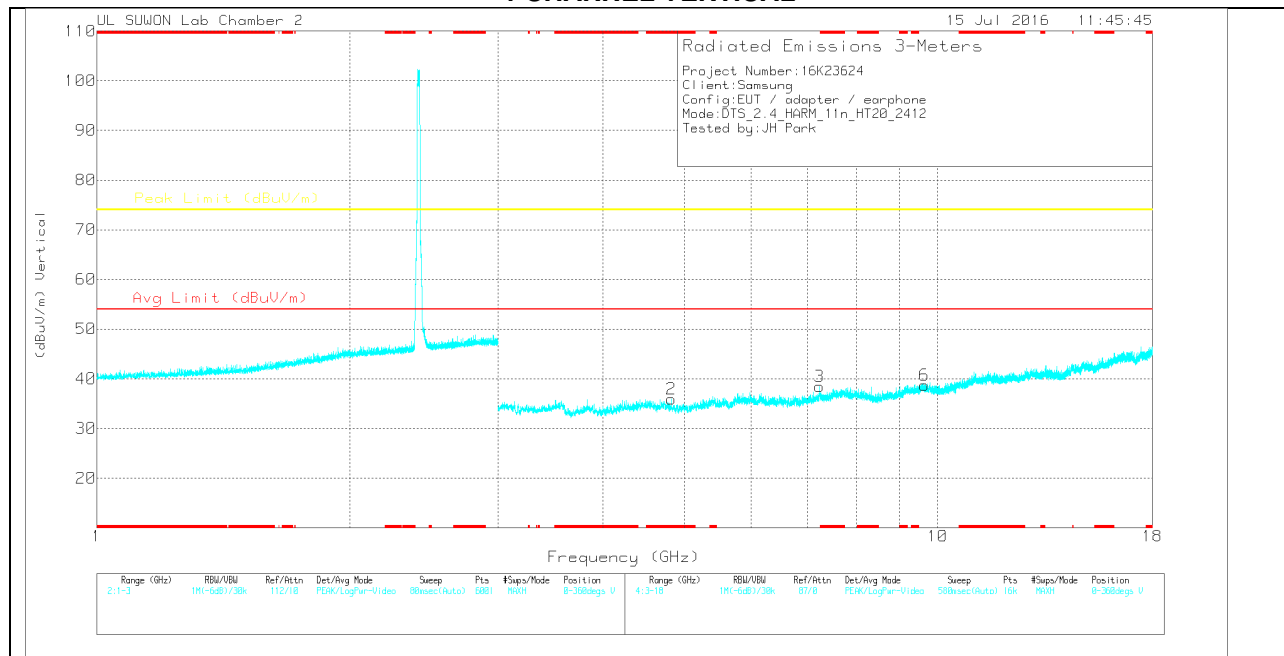
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

1 CHANNEL HORIZONTAL



1 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.

1 CHANNEL DATA

Trace Markers

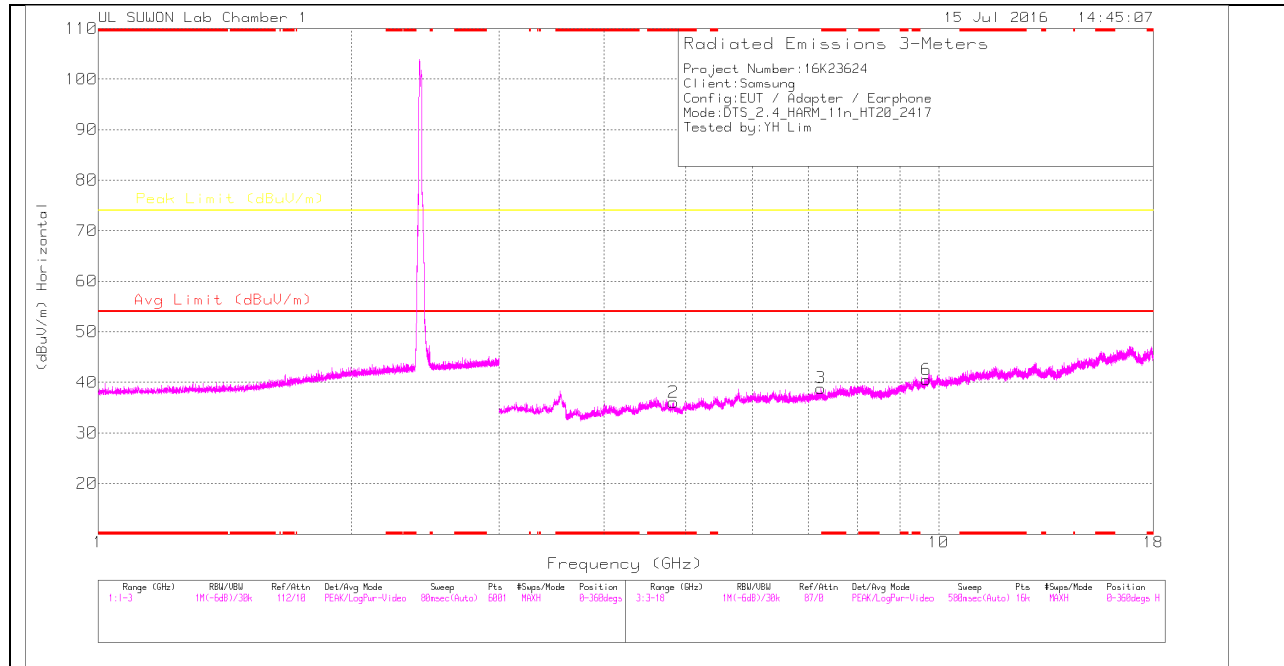
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016872 4)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.812	27.12	PK	33.9	-25.3	0	35.72	-	-	74	-38.28	0-360	100	H
4	7.24	24.71	PK	35.8	-23	0	37.51	-	-	74	-36.49	0-360	100	H
5	9.65	21.02	PK	36.9	-19	0	38.92	-	-	74	-35.08	0-360	200	H
2	* 4.819	27.36	PK	33.9	-25.3	0	35.96	-	-	74	-38.04	0-360	200	V
3	7.236	25.7	PK	35.8	-23	0	38.5	-	-	74	-35.5	0-360	200	V
6	9.648	20.81	PK	36.9	-19	0	38.71	-	-	74	-35.29	0-360	200	V

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

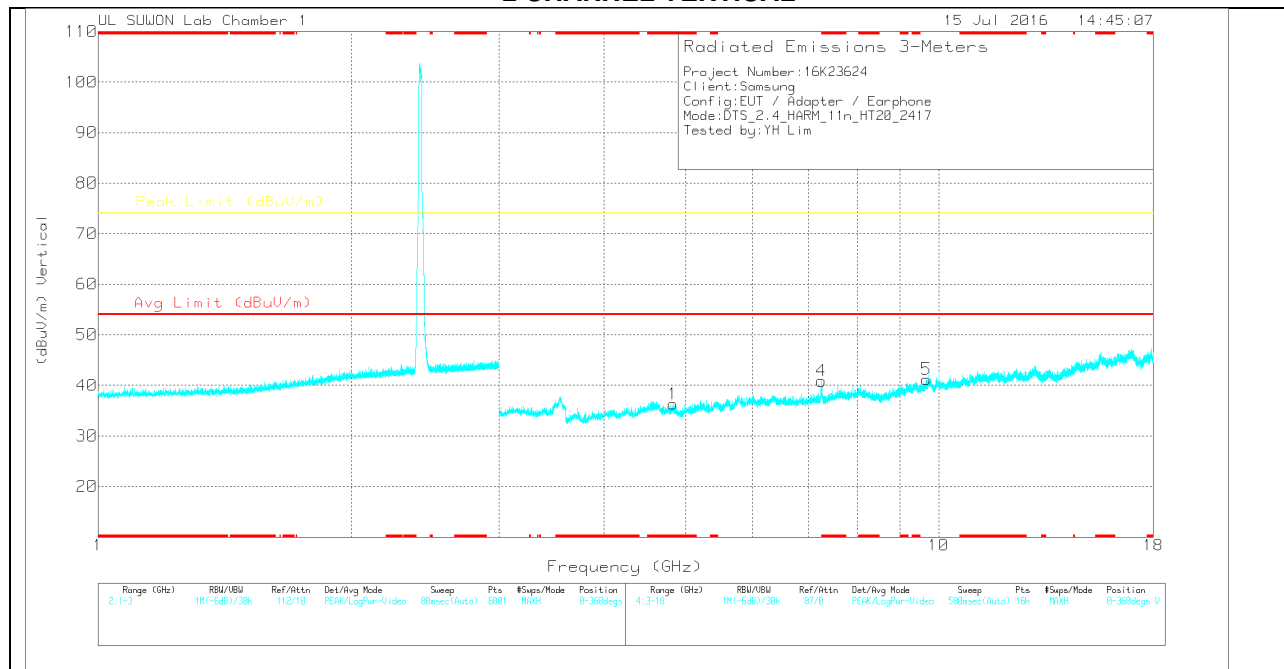
PK – Peak Detector

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

2 CHANNEL HORIZONTAL



2 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.

2 CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.836	35.94	Pk	34	-33.9	0	36.04	-	-	74	-37.96	0-360	100	H
3	7.242	34.06	Pk	35.7	-30.9	0	38.86	-	-	74	-35.14	0-360	200	H
6	9.667	31.14	Pk	37.1	-27.7	0	40.54	-	-	74	-33.46	0-360	100	H
1	* 4.831	36.1	Pk	34	-33.8	0	36.3	-	-	74	-37.7	0-360	100	V
4	* 7.256	36.07	Pk	35.7	-30.9	0	40.87	-	-	74	-33.13	0-360	100	V
5	9.671	31.79	Pk	37.1	-27.7	0	41.19	-	-	74	-32.81	0-360	100	V

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

Pk – Peak detector

Radiated Emissions

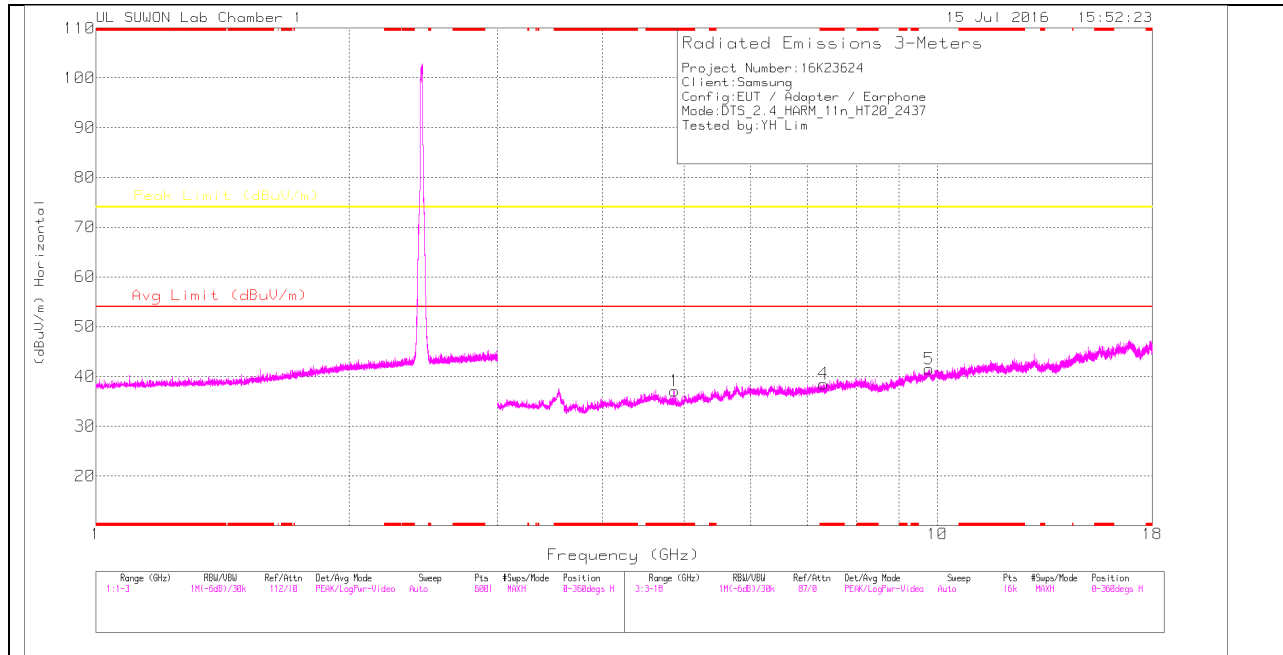
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
7.24	47.85	PK2	35.7	-30.9	0	52.65	-	-	74	-21.35	329	263	H
7.237	48.48	PK2	35.7	-30.9	0	53.28	-	-	74	-20.72	80	218	V

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

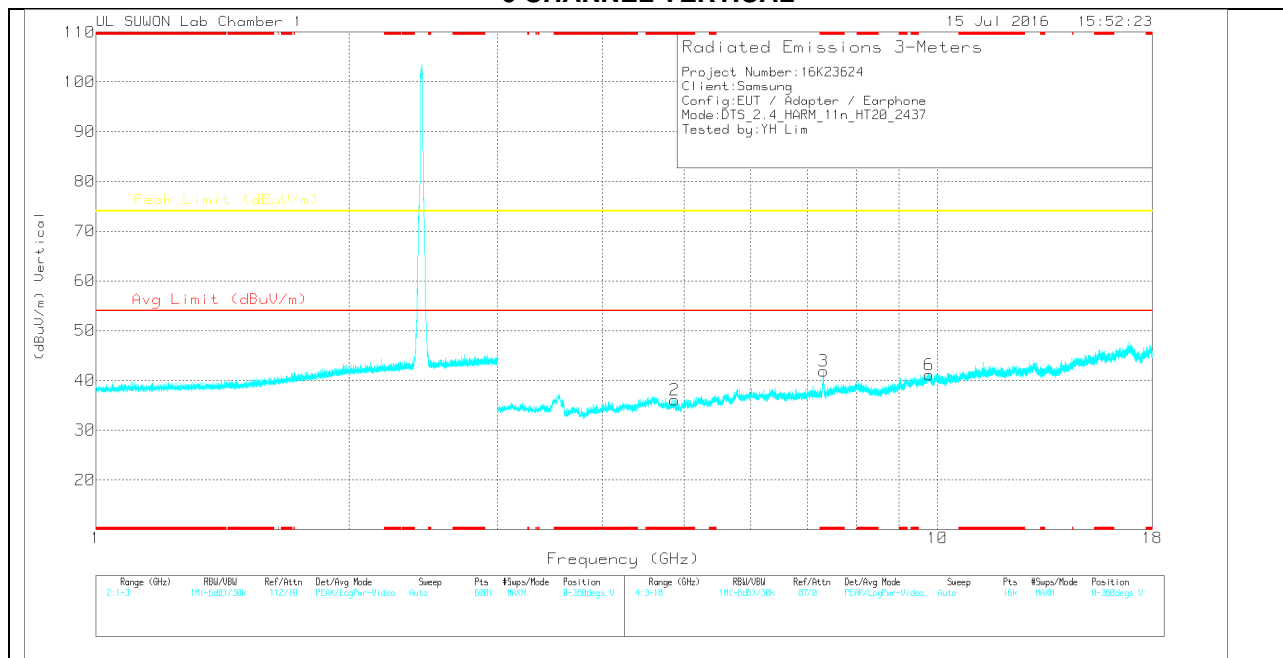
PK2 - KDB558074 Method: Maximum Peak

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

6 CHANNEL HORIZONTAL



6 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.

6 CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.874	37.04	Pk	34	-34	0	37.04	-	-	74	-36.96	0-360	100	H
4	* 7.32	33.63	Pk	35.8	-30.9	0	38.53	-	-	74	-35.47	0-360	200	H
5	9.767	30.82	Pk	37.2	-26.5	0	41.52	-	-	74	-32.48	0-360	100	H
2	* 4.875	36.04	Pk	34	-34	0	36.04	-	-	74	-37.96	0-360	100	V
3	* 7.324	36.99	Pk	35.8	-30.9	0	41.89	-	-	74	-32.11	0-360	100	V
6	9.77	30.41	Pk	37.2	-26.5	0	41.11	-	-	74	-32.89	0-360	100	V

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

Pk – Peak detector

Radiated Emissions

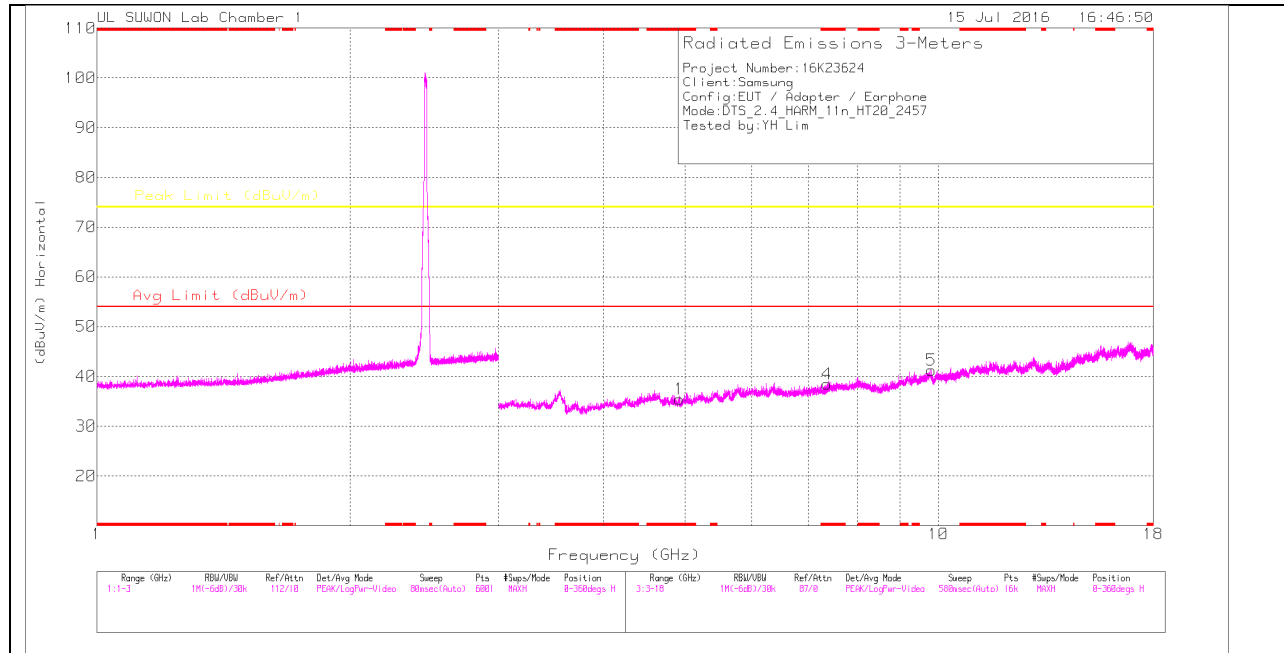
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001 68717)_1 50619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 7.322	53.92	PK2	35.8	-30.9	0	58.82	-	-	74	-15.18	36	111	V
* 7.322	32.66	MAV1	35.8	-30.9	0	37.56	54	-16.44	-	-	36	111	V
* 7.32	46.23	PK2	35.8	-30.9	0	51.13	-	-	74	-22.87	228	280	H
* 7.316	32.9	MAV1	35.8	-30.9	.33	38.13	54	-15.87	-	-	228	280	H

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

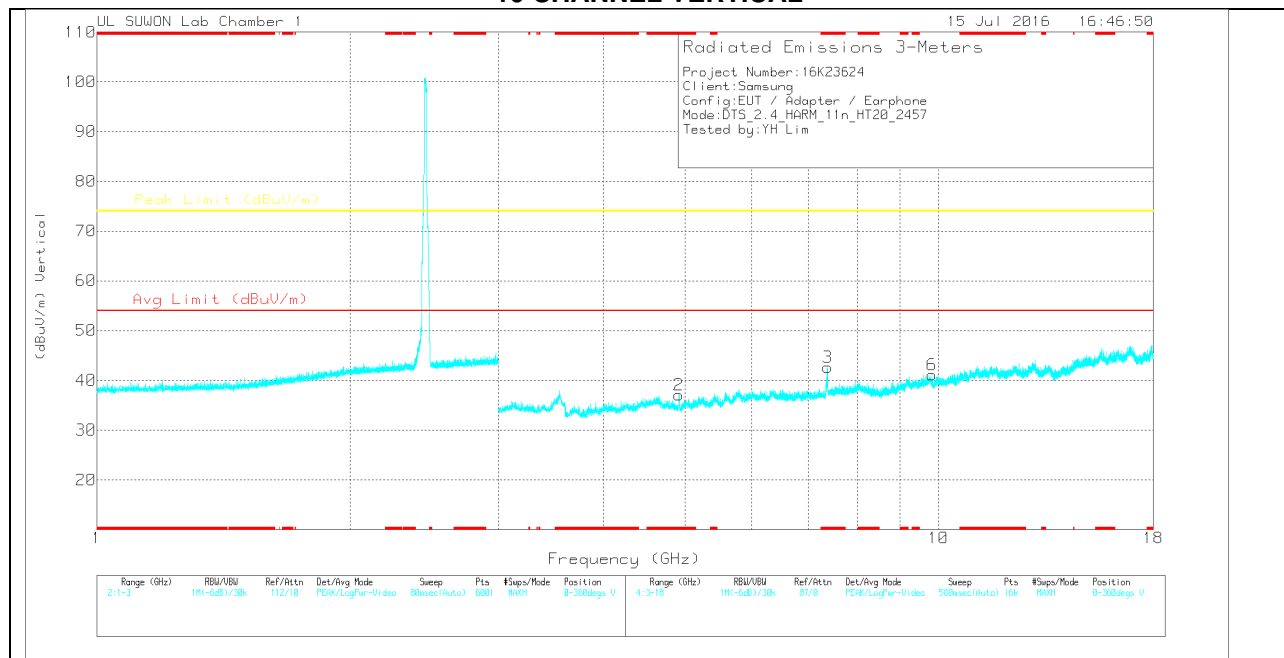
PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

10 CHANNEL HORIZONTAL



10 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.

10 CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.921	35.41	Pk	34	-34	0	35.41	-	-	74	-38.59	0-360	200	H
4	* 7.375	33.46	Pk	35.8	-30.8	0	38.46	-	-	74	-35.54	0-360	200	H
5	9.81	30.61	Pk	37.3	-26.7	0	41.21	-	-	74	-32.79	0-360	200	H
2	* 4.916	37.11	Pk	34	-34	0	37.11	-	-	74	-36.89	0-360	100	V
3	* 7.381	37.69	Pk	35.8	-30.8	0	42.69	-	-	74	-31.31	0-360	100	V
6	9.828	30.89	Pk	37.3	-27.1	0	41.09	-	-	74	-32.91	0-360	100	V

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

Pk – Peak detector

Radiated Emissions

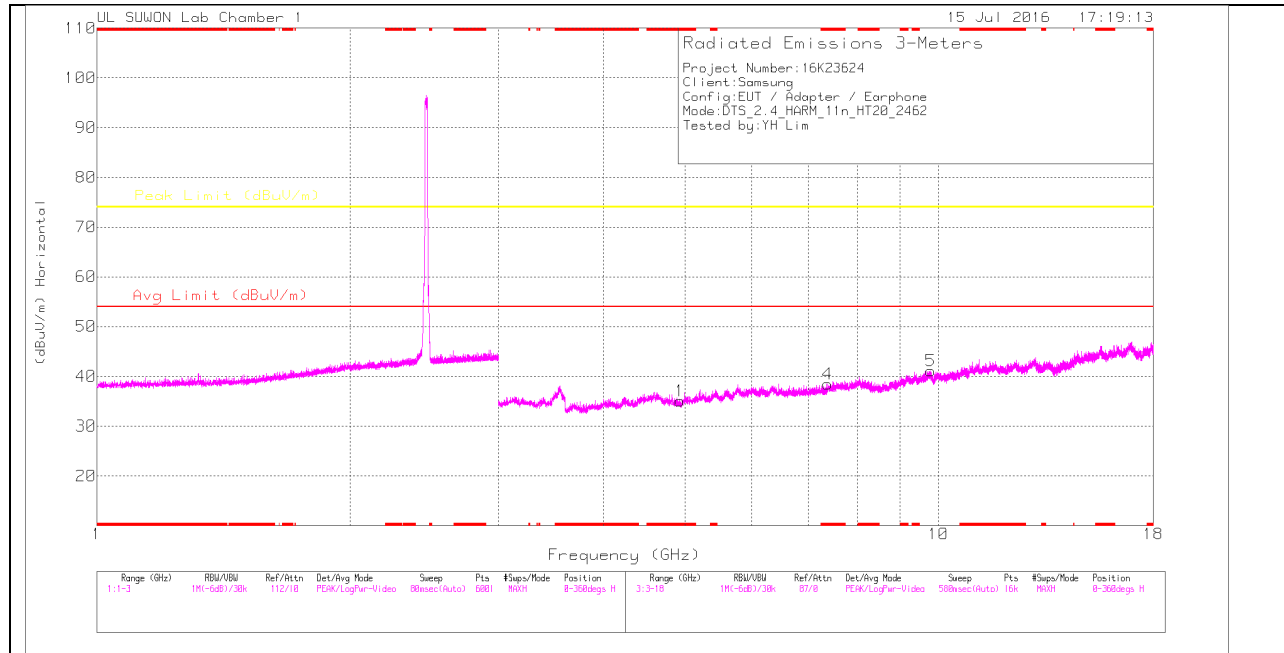
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001 68717)_1 50619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 7.377	51.33	PK2	35.8	-30.8	0	56.33	-	-	74	-17.67	91	265	V
* 7.377	33.67	MAv1	35.8	-30.8	.33	39	54	-15	-	-	91	265	V
* 7.375	48.43	PK2	35.8	-30.8	0	53.43	-	-	74	-20.57	225	324	H
* 7.376	31.74	MAv1	35.8	-30.8	.33	37.07	54	-16.93	-	-	225	324	H

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

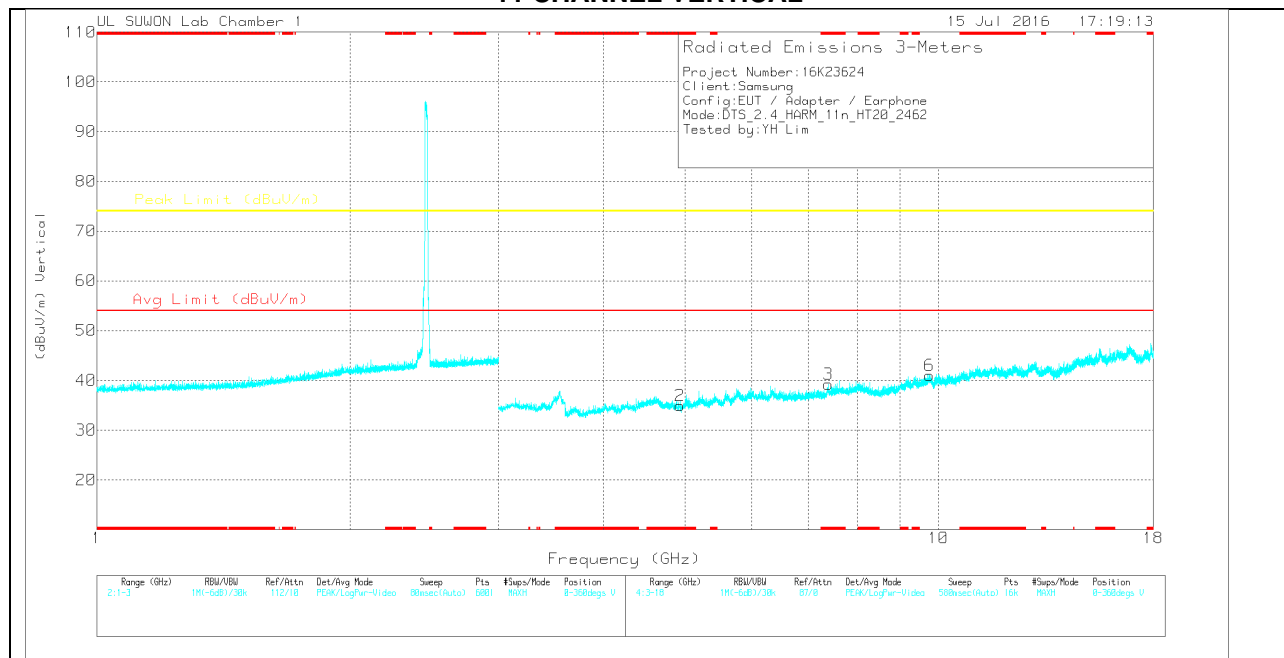
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

11 CHANNEL HORIZONTAL



11 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.

11 CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.928	35.09	Pk	34	-34	0	35.09	-	-	74	-38.91	0-360	100	H
4	* 7.386	33.35	Pk	35.8	-30.7	0	38.45	-	-	74	-35.55	0-360	100	H
5	9.786	30.37	Pk	37.2	-26.5	0	41.07	-	-	74	-32.93	0-360	200	H
2	* 4.931	34.88	Pk	34	-34	0	34.88	-	-	74	-39.12	0-360	100	V
3	* 7.396	34.01	Pk	35.8	-30.6	0	39.21	-	-	74	-34.79	0-360	200	V
6	9.762	30.37	Pk	37.2	-26.6	0	40.97	-	-	74	-33.03	0-360	100	V

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

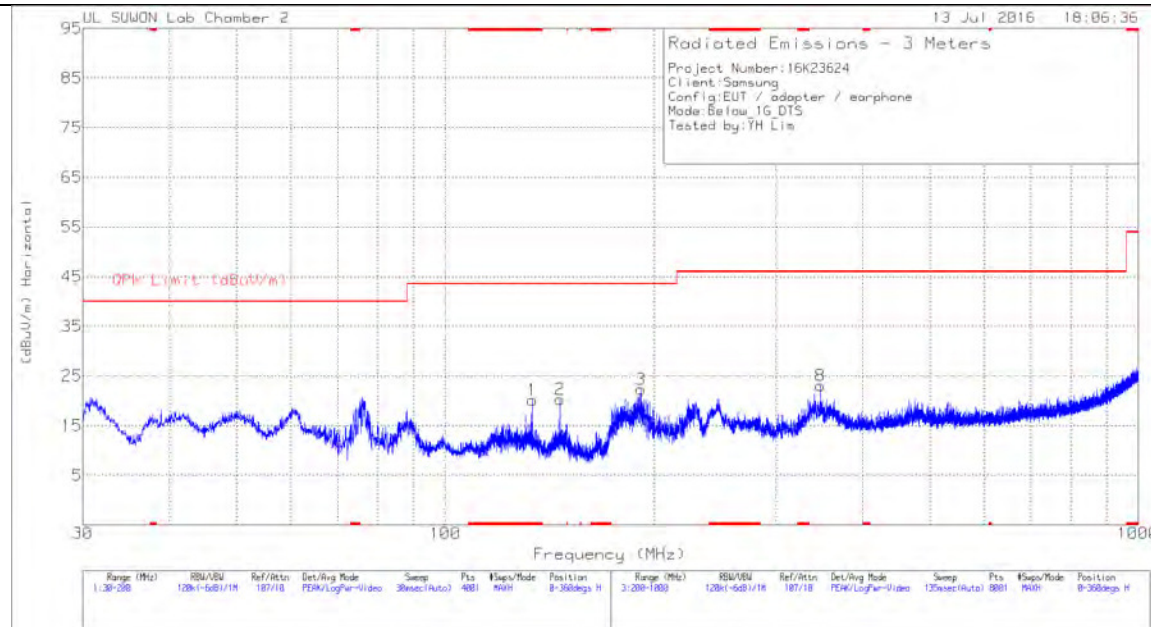
Pk – Peak detector

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

11.3. WORST-CASE BELOW 1 GHz

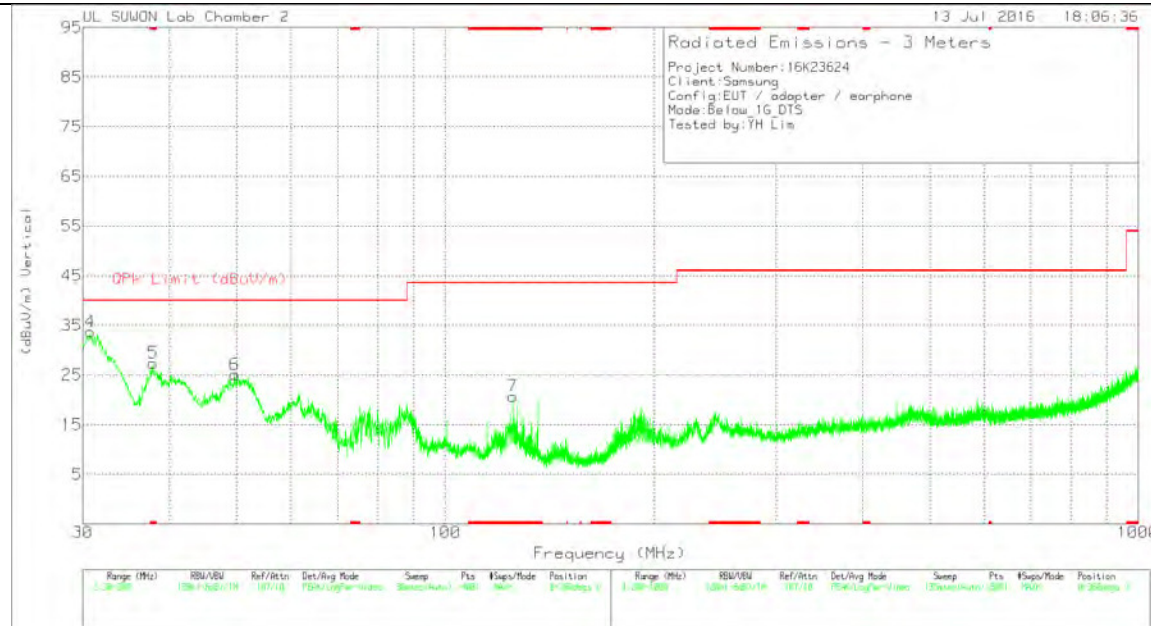
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



Below 1G Data

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163-749	Below_1G	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 133.53	42.07	Pk	8.6	-30.5	20.17	43.52	-23.35	0-360	400	H
2	146.45	42.55	Pk	8.1	-30.4	20.25	43.52	-23.27	0-360	400	H
3	191.415	42	Pk	10.6	-30.3	22.3	43.52	-21.22	0-360	200	H
4	30.7225	54.24	Pk	10.3	-30.8	33.74	40	-6.26	0-360	100	V
5	* 37.905	46.35	Pk	11.9	-30.8	27.45	40	-12.55	0-360	100	V
6	49.6775	41.72	Pk	14.1	-30.7	25.12	40	-14.88	0-360	100	V
7	* 125.2425	41.85	Pk	9.4	-30.5	20.75	43.52	-22.77	0-360	100	V
8	347.7	38.53	Pk	14.3	-29.8	23.03	46.02	-22.99	0-360	100	H

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

Pk - Peak detector

12. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

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

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

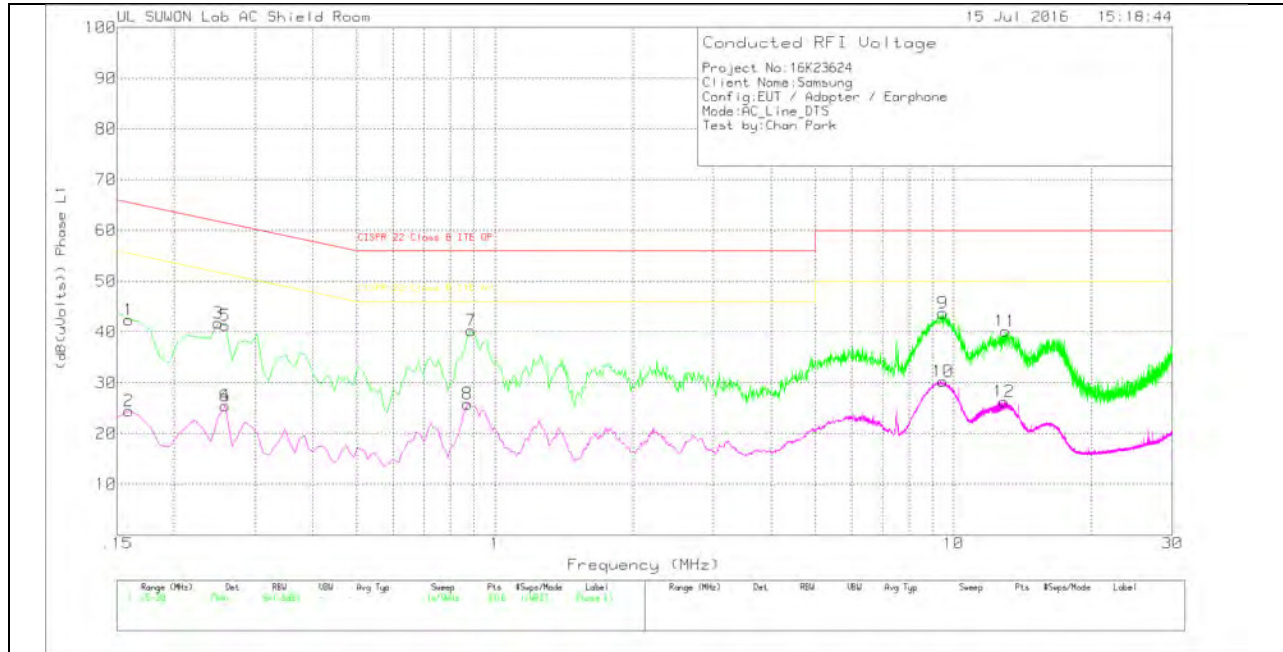
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

6 WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

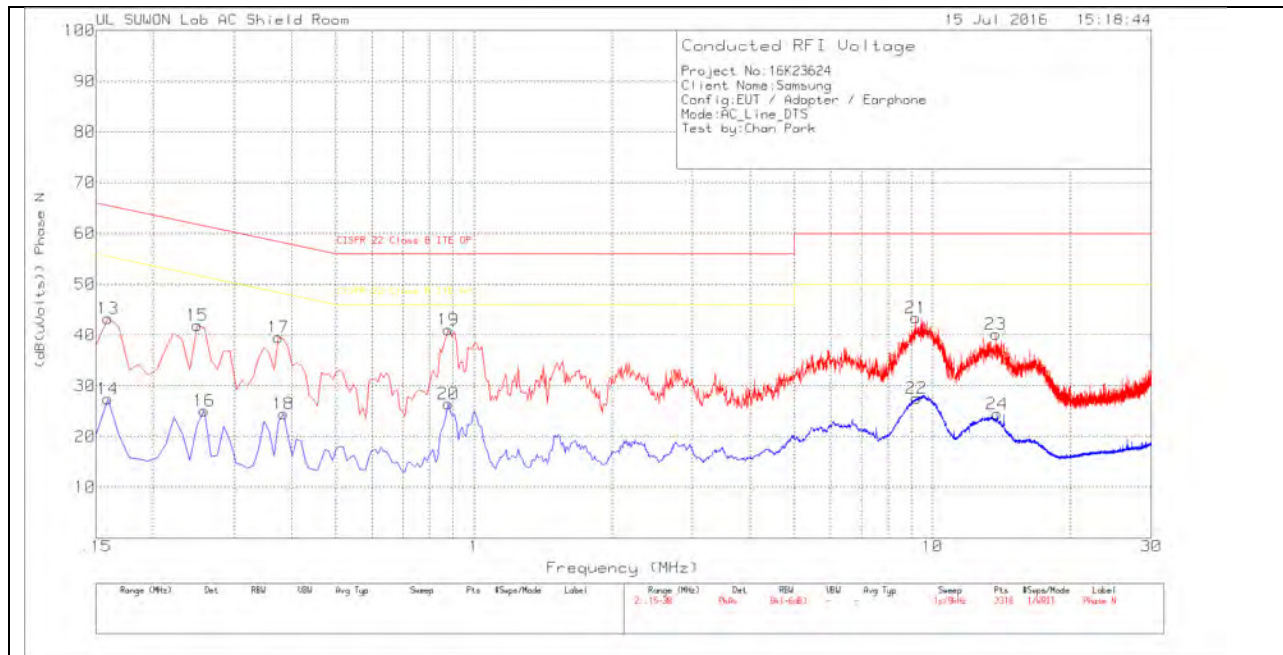
Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_w ith ex-cord_L1	CE Shield Room	Corrected Reading (dB(uVolts))	CISPR 22 Class B ITE QP	Margin (dB)	CISPR 22 Class B ITE AV	Margin (dB)
1	.159	32.44	Pk	10	0	42.44	65.52	-23.08	-	-
2	.159	14.5	Av	10	0	24.5	-	-	55.52	-31.02
3	.249	32.03	Pk	9.7	0	41.73	61.79	-20.06	-	-
4	.258	15.61	Av	9.8	0	25.41	-	-	51.5	-26.09
5	.258	31.5	Pk	9.8	0	41.3	61.5	-20.2	-	-
6	.258	15.61	Av	9.8	0	25.41	-	-	51.5	-26.09
7	.888	30.24	Pk	10	0	40.24	56	-15.76	-	-
8	.87	15.88	Av	10	0	25.88	-	-	46	-20.12
9	9.474	33.51	Pk	10	.2	43.71	60	-16.29	-	-
10	9.483	20.03	Av	10	.2	30.23	-	-	50	-19.77
11	12.957	29.91	Pk	10.1	.2	40.21	60	-19.79	-	-
12	12.876	16	Av	10.1	.2	26.3	-	-	50	-23.7

Pk - Peak detector

Av - Average detection

LINE 2 PLOT



LINE 2 RESULTS

Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101837_w ith ex-cord_N	CE Shield Room	Corrected Reading (dB(uVolts))	CISPR 22 Class B ITE QP	Margin (dB)	CISPR 22 Class B ITE AV	Margin (dB)
13	.159	33.29	Pk	10	0	43.29	65.52	-22.23	-	-
14	.159	17.45	Av	10	0	27.45	-	-	55.52	-28.07
15	.249	32.17	Pk	9.7	0	41.87	61.79	-19.92	-	-
16	.258	15.39	Av	9.7	0	25.09	-	-	51.5	-26.41
17	.375	29.44	Pk	10.1	0	39.54	58.39	-18.85	-	-
18	.384	14.36	Av	10.1	0	24.46	-	-	48.19	-23.73
19	.879	31.16	Pk	9.9	0	41.06	56	-14.94	-	-
20	.879	16.51	Av	9.9	0	26.41	-	-	46	-19.59
21	9.195	33.24	Pk	10	.2	43.44	60	-16.56	-	-
22	9.231	17.34	Av	10	.2	27.54	-	-	50	-22.46
23	13.749	29.69	Pk	10.3	.2	40.19	60	-19.81	-	-
24	13.839	13.93	Av	10.3	.2	24.43	-	-	50	-25.57

Pk - Peak detector

Av - Average detection