



**FCC CFR47 PART 15 SUBPART C**

**DTS Wireless LAN**

**C2PC CERTIFICATION TEST REPORT**

**FOR**

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

**MODEL NUMBER : SM-J105B, SM-J105B/DL, SM-J105B/DS, SM-J106B, SM-J106B/DS**

**FCC ID: A3LSMJ105B**

**REPORT NUMBER: 15K23807-E1V2**

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Revision History

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V1	09/09/16	Initial issue	SungGil Park
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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** SAMSUNG ELECTRONICS CO., LTD.  
**EUT DESCRIPTION:** GSM/WCDMA Phone + BT/BLE, DTS b/g/n  
**MODEL NUMBER:** SM-J105B, SM-J105B/DL, SM-J105B/DS, SM-J106B, SM-J106B/DS  
**SERIAL NUMBER:** R31H8002A7P (RADIATED); R31H8002A8W (CONDUCTED)  
**DATE TESTED:** AUG 23, 2016 - SEP 09, 2016

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass

UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released For  
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Tested By:



SungGil Park  
Suwon Lab Engineer  
UL Korea, Ltd.

## 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	
<input checked="" type="checkbox"/>	Chamber 1
<input checked="" type="checkbox"/>	Chamber 2

UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at <http://www.iasonline.org/PDF/TL/TL-637.pdf>.

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

### 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

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

SM-J105B, SM-J105B/DL and SM-J105B/DS are same hardware, but for different number of SIM card slot. SM-J105B has one slot. SM-J105B/DL and SM-J105B/DS are dual SIM version. SM-J106B and SM-J106B/DS are same hardware, but different number of SIM card slot. SM-J106B has one slot. SM-J106B/DS is dual SIM version. SM-J106B/DS was used for this C2PC test.

### 5.2. MAXIMUM OUTPUT POWER

Please refer to DTS test report(15K22503-E1V2) of FCC ID: A3LSMJ105H  
(The original report of A3LSMJ105B Reused test data of A3LSMJ105H)

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antennas, with a antenna's maximum gain of 0.4 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 X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

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

802.11b mode: 1 Mbps  
802.11g mode: 6 Mbps  
802.11n HT20 mode: MCS0

## 5.5. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	EP-TA60EBE	R37G6HL0KJ1SC3	N/A
Earphone	SAMSUNG	EHS61ASFWE	N/A	N/A

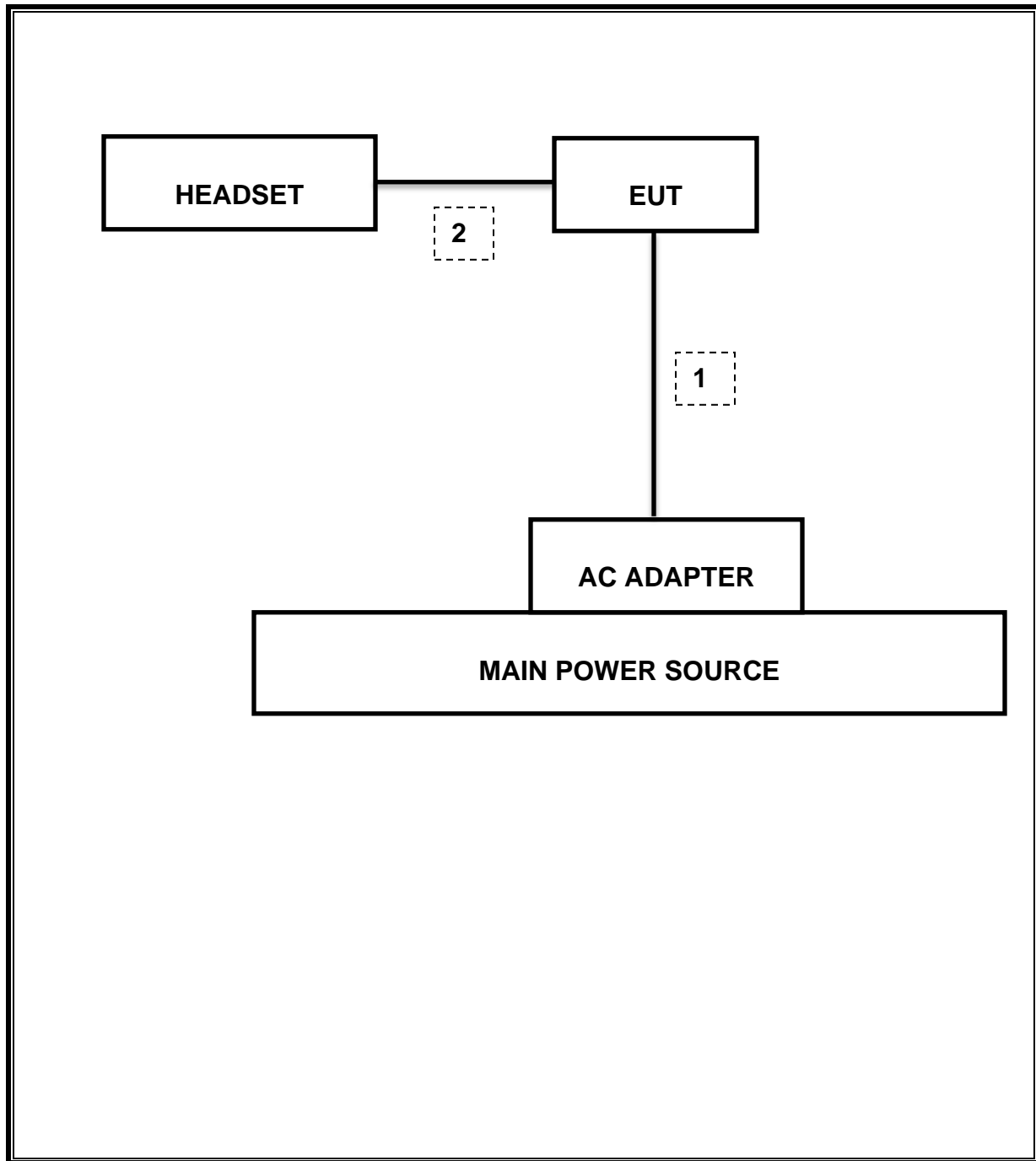
### I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	Mini-USB	Shielded	0.8m	N/A
2	Audio	1	Mini-Jack	Unshielded	1.0m	N/A

### TEST SETUP

The EUT is a stand-alone unit during the tests.  
Test software in hidden menu exercised the EUT to enable DTS mode.

**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

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## 7. MEASUREMENT METHODS

KDB 558074 D01 DTS Meas Guidance v03r05: Measurement Procedure §9.2.3.1 AVGPM is used for average power and §10.5 AVGPSD-2 is used for power spectral density.

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

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

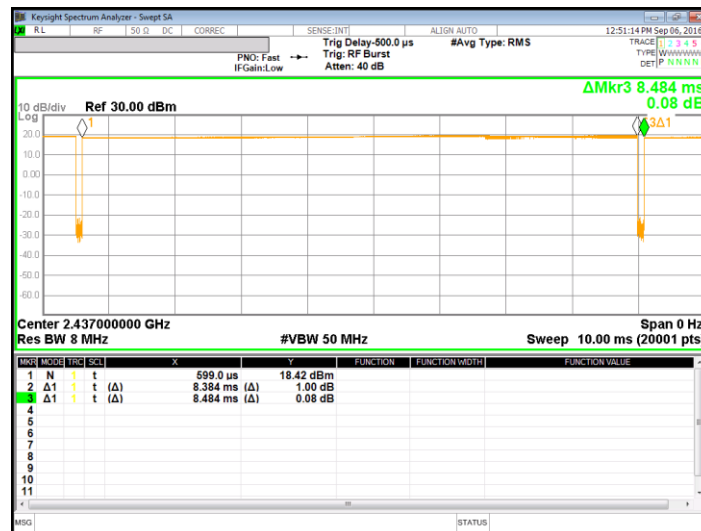
## 8. ON TIME, DUTY CYCLE

### LIMITS

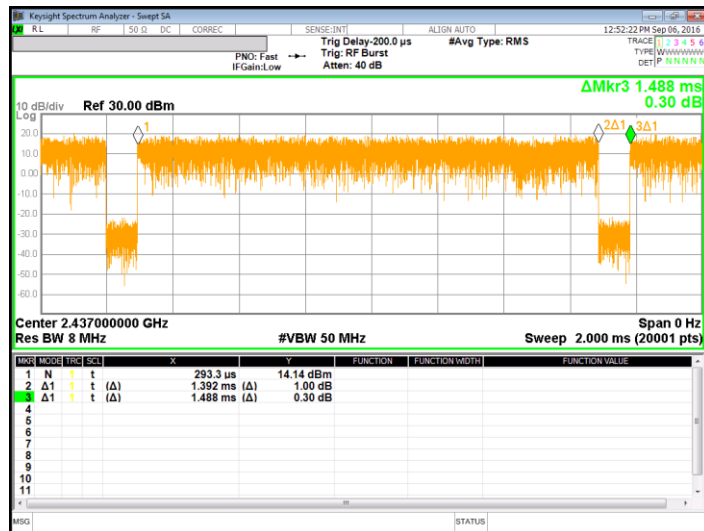
None; for reporting purposes only.

### 8.1. ON TIME AND DUTY CYCLE RESULTS

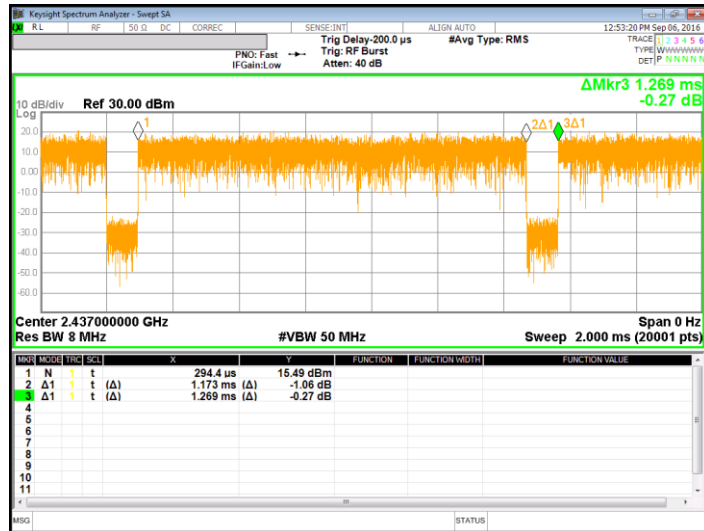
Mode	ON Time B [msec]	Period [msec]	Duty Cycle x [linear]	Duty Cycle [%]	Duty Cycle Correction Factor [dB]	1/T Minimum VBW [kHz]
<b>2400MHz Bands</b>						
802.11b	8.384	8.484	0.988	98.8%	0.00	0.010
802.11g	1.392	1.488	0.935	93.5%	0.29	0.718
802.11n HT20	1.173	1.269	0.924	92.4%	0.34	0.853



[802.11b]



[802.11g]



[802.11n]

## 9. SUMMARY TABLE

C2PC Reason: Please see SM-J106B C2PC description for details.

: The only changes of this C2PC model are memory capacity and flash LED (minor circuitry for non-transmitter portions), so we tested only radiated items.

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result
15.247 (a)(2)	Occupied Band width (6dB)	>500KHz	Conducted	See Original
2.1051, 15.247 (d)	Band Edge / Conducted Spurious Emission	-20dBc		See Original
15.247	TX conducted output power	<30dBm		See Original
15.247	PSD	<8dBm		See Original
15.207 (a)	AC Power Line conducted emissions	Section 10	Power Line conducted	See Original
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass

## 10. RADIATED TEST RESULTS

### 10.1. LIMITS AND PROCEDURE

#### LIMITS

FCC §15.205 and §15.209

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

#### TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane 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 = 0.29dB; 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.

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.

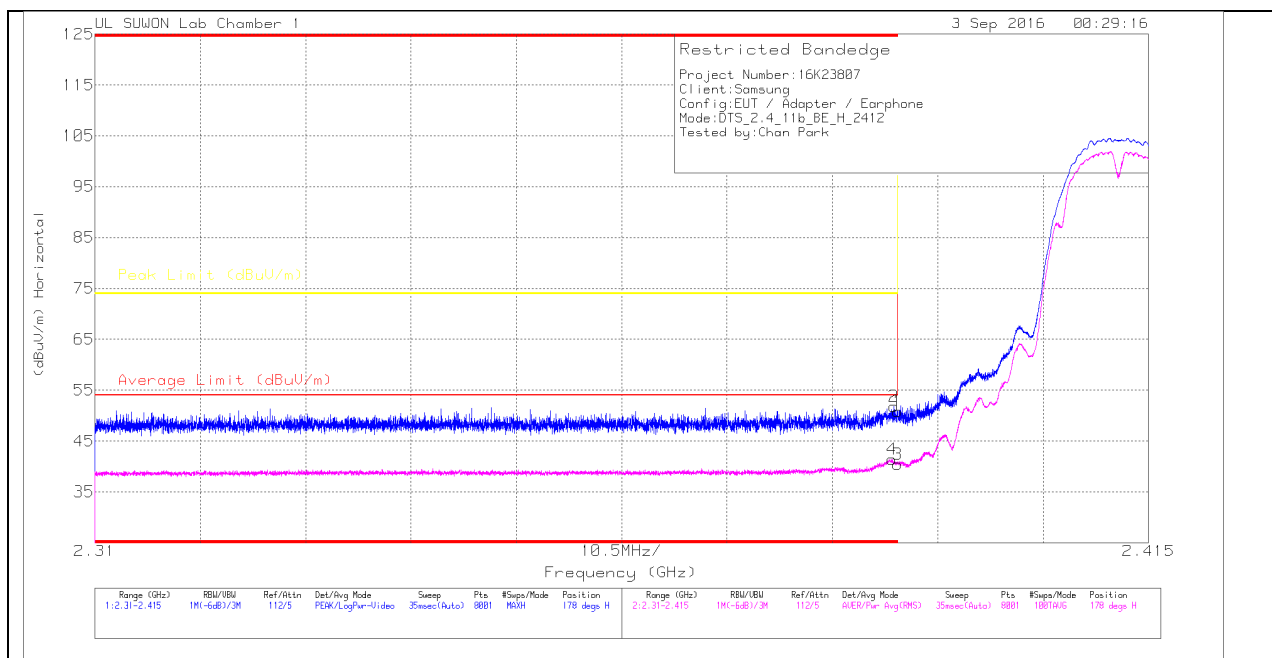
Formula for converting the filed strength from uV/m to dBuV/m is:  
Limit (dBuV/m) =  $20 \log \text{limit (uV/m)}$

## 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

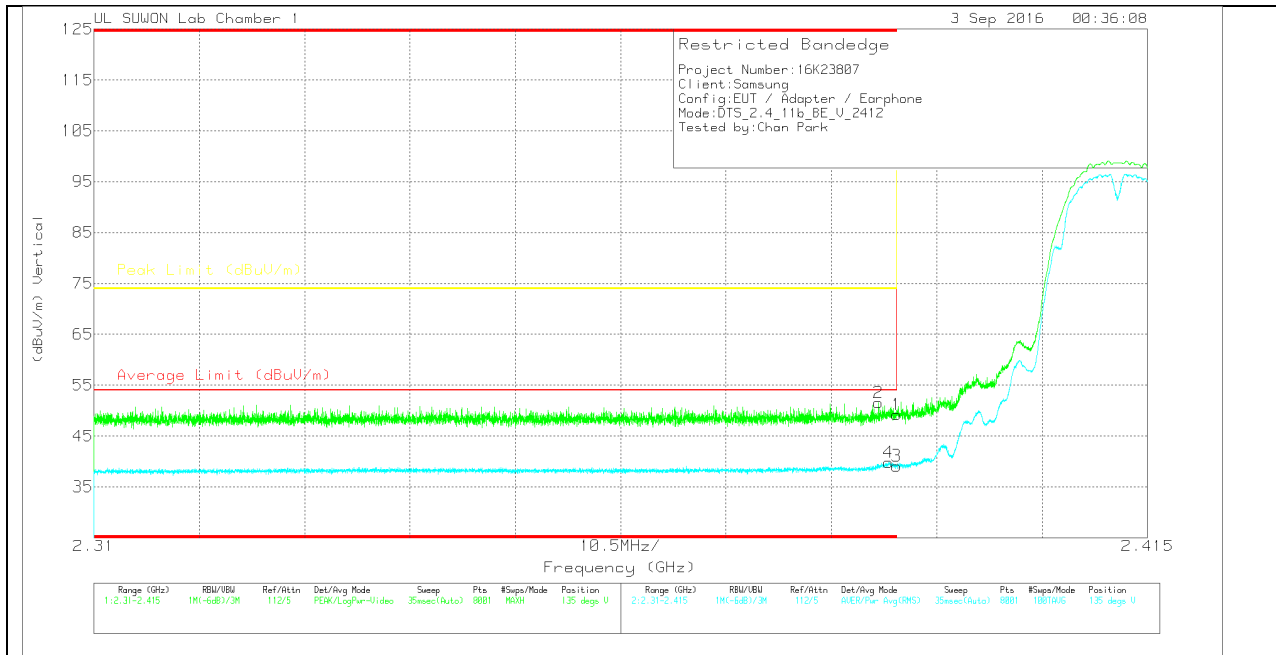
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17_150619)	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	48.03	Pk	31.8	-29	0	50.83	-	-	74	-23.17	178	100	H
2	* 2.39	49.01	Pk	31.8	-29	0	51.81	-	-	74	-22.19	178	100	H
3	* 2.39	37.66	RMS	31.8	-29	0	40.46	54	-13.54	-	-	178	100	H
4	* 2.389	38.65	RMS	31.8	-29	0	41.45	54	-12.55	-	-	178	100	H

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

Pk - Peak detector

RMS - RMS detection

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

**Trace Markers**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17)_150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	46.43	PK	31.8	-29	0	49.23	-	-	74	-24.77	135	375	V
2	* 2.388	48.79	PK	31.8	-29	0	51.59	-	-	74	-22.41	135	375	V
3	* 2.39	36.33	RMS	31.8	-29	0	39.13	54	-14.87	-	-	135	375	V
4	* 2.389	37.07	RMS	31.8	-29	0	39.87	54	-14.13	-	-	135	375	V

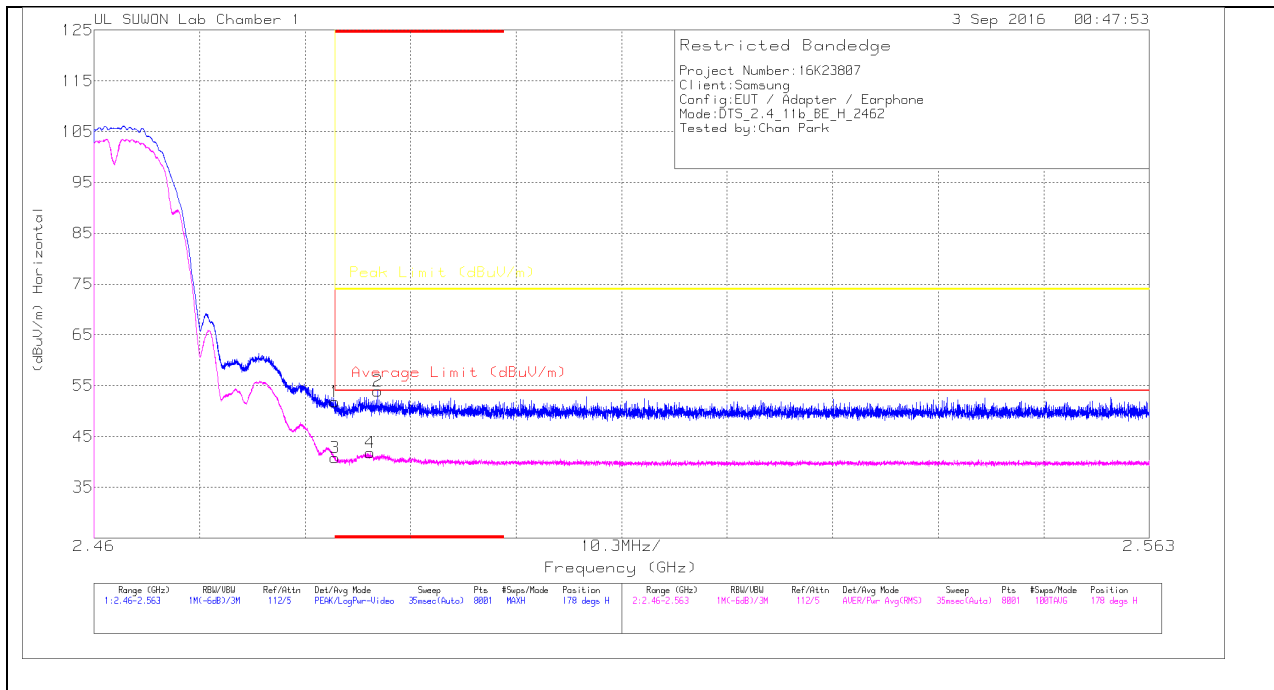
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

**HORIZONTAL PEAK AND AVERAGE PLOT**



**HORIZONTAL DATA**

**Trace Markers**

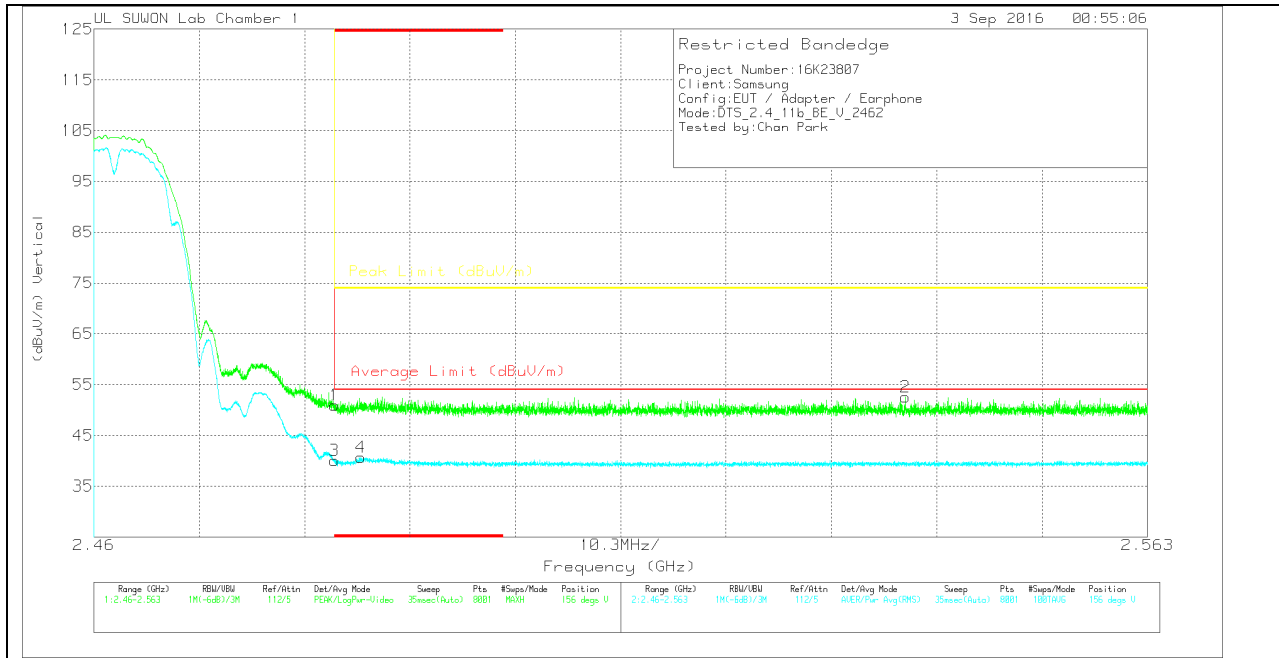
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17_150619)	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	48.15	PK	32	-28.3	0	51.85	-	-	74	-22.15	178	100	H
2	* 2.488	50.23	PK	32	-28.3	0	53.93	-	-	74	-20.07	178	100	H
3	* 2.484	37.08	RMS	32	-28.3	0	40.78	54	-13.22	-	-	178	100	H
4	* 2.487	38.09	RMS	32	-28.3	0	41.79	54	-12.21	-	-	178	100	H

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

PK - Peak detector

RMS - RMS detection

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

**Trace Markers**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17)_150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	47.22	Pk	32	-28.3	0	50.92	-	-	74	-23.08	156	363	V
2	2.539	48.89	Pk	32	-28.3	0	52.59	-	-	74	-21.41	156	363	V
3	* 2.484	36.31	RMS	32	-28.3	0	40.01	54	-13.99	-	-	156	363	V
4	* 2.486	36.96	RMS	32	-28.3	0	40.66	54	-13.34	-	-	156	363	V

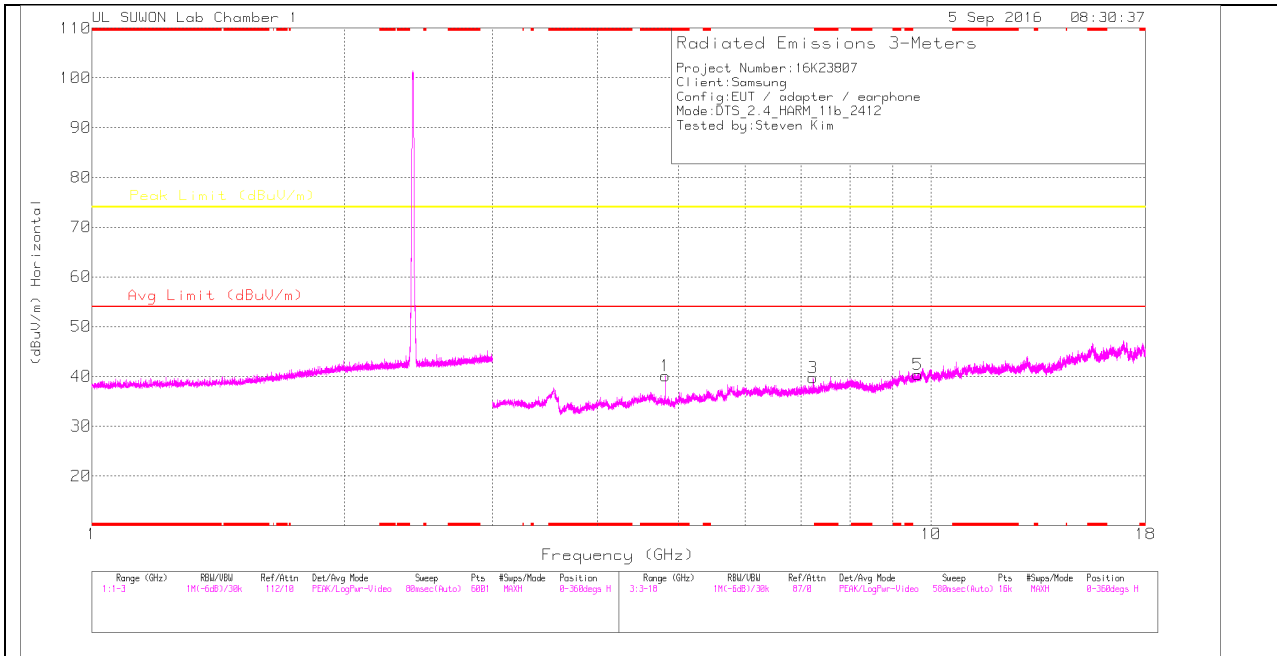
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

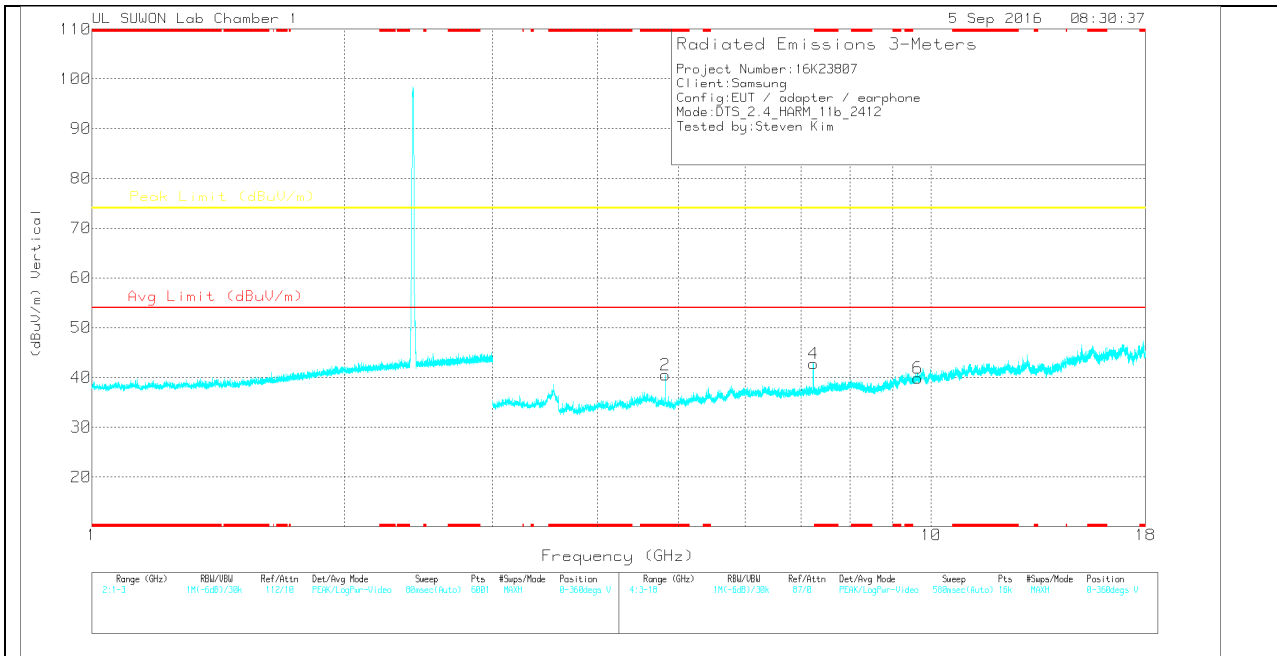
RMS - RMS detection

### HARMONICS AND SPURIOUS EMISSIONS

#### LOW CHANNEL HORIZONTAL



#### LOW CHANNEL VERTICAL



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

**LOW CHANNEL DATA**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.824	39.87	PK	34	-33.8	0	40.07	-	-	74	-33.93	0-360	100	H
3	7.233	34.96	PK	35.7	-30.9	0	39.76	-	-	74	-34.24	0-360	200	H
5	9.646	30.61	PK	37.1	-27.4	0	40.31	-	-	74	-33.69	0-360	100	H
2	* 4.823	40.31	PK	34	-33.8	0	40.51	-	-	74	-33.49	0-360	100	V
4	7.235	38	PK	35.7	-30.9	0	42.8	-	-	74	-31.2	0-360	100	V
6	9.646	30.14	PK	37.1	-27.4	0	39.84	-	-	74	-34.16	0-360	200	V

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

PK – Peak Detector

Radiated Emissions

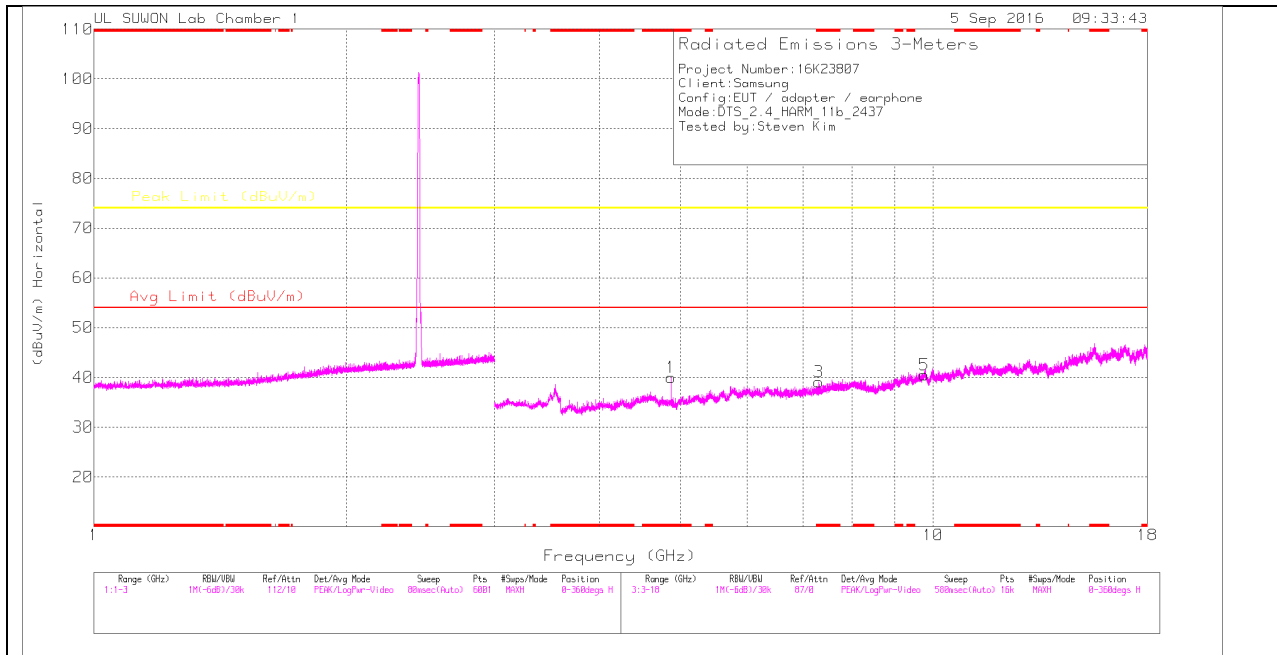
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001 68717)_1 50619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.824	48.75	PK2	34	-33.8	0	48.95	-	-	74	-25.05	1	100	H
* 4.824	39.71	MAv1	34	-33.8	0	39.91	54	-14.09	-	-	1	100	H
* 4.824	48.66	PK2	34	-33.8	0	48.86	-	-	74	-25.14	52	187	V
* 4.824	39.31	MAv1	34	-33.8	0	39.51	54	-14.49	-	-	52	187	V
7.236	47.28	PK2	35.7	-30.9	0	52.08	-	-	74	-21.92	21	100	V
7.238	45.17	PK2	35.7	-30.9	0	49.97	-	-	74	-24.03	36	330	H

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

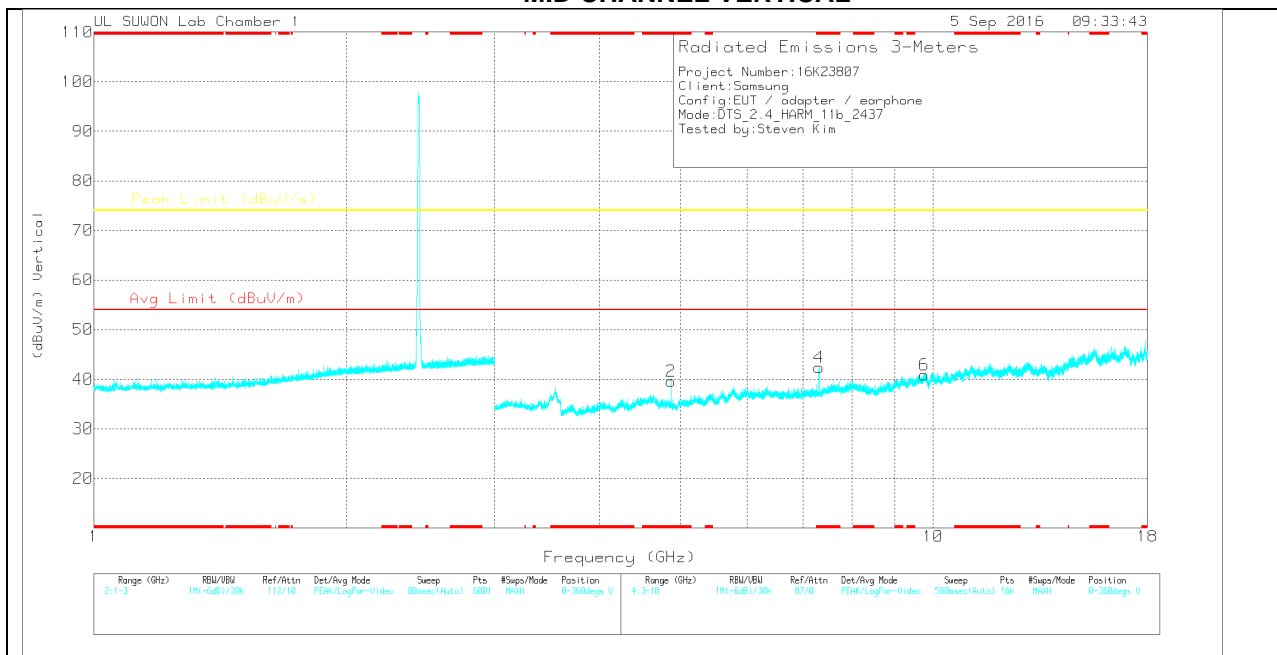
PK2 - KDB558074 Method: Maximum Peak

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(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	39.93	PK	34	-34	0	39.93	-	-	74	-34.07	0-360	100	H
3	* 7.309	34.28	PK	35.7	-30.9	0	39.08	-	-	74	-34.92	0-360	200	H
5	9.751	30.13	PK	37.2	-26.8	0	40.53	-	-	74	-33.47	0-360	100	H
2	* 4.874	39.58	PK	34	-34	0	39.58	-	-	74	-34.42	0-360	100	V
4	* 7.31	37.57	PK	35.7	-30.9	0	42.37	-	-	74	-31.63	0-360	100	V
6	9.749	30.43	PK	37.2	-26.8	0	40.83	-	-	74	-33.17	0-360	100	V

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

PK – Peak Detector

**Radiated Emissions**

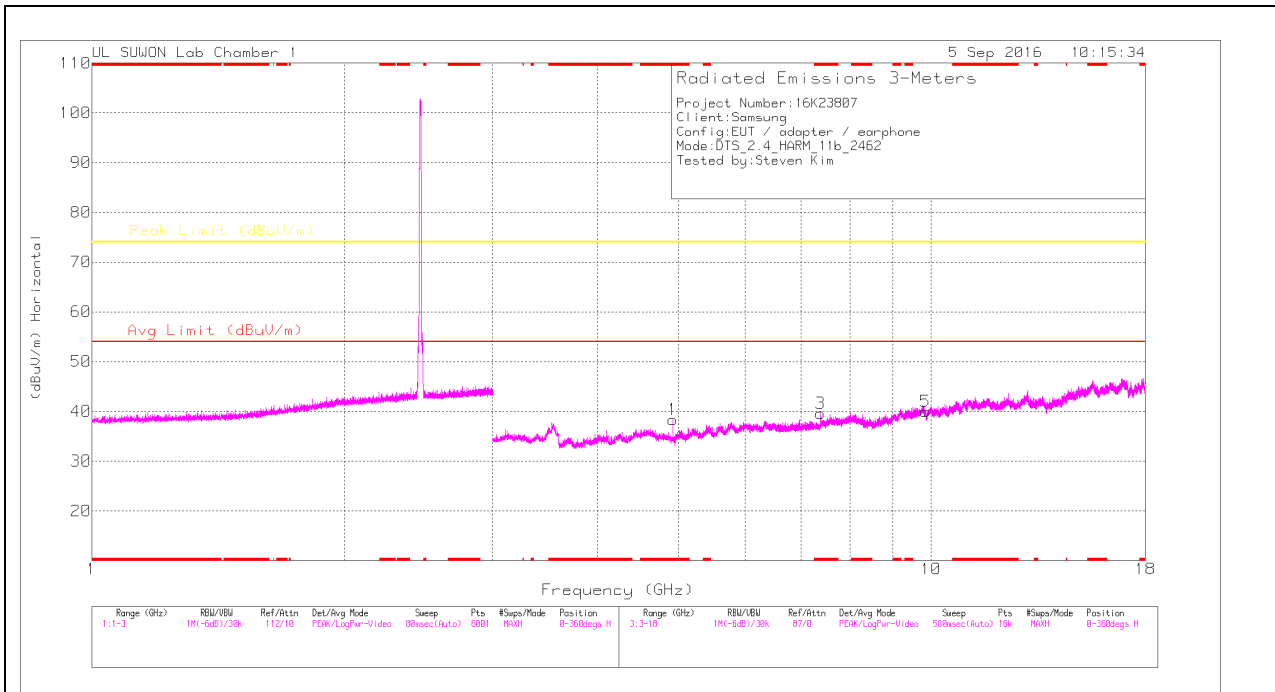
Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001 68717)_1 50619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.874	49.6	PK2	34	-34	0	49.6	-	-	74	-24.4	358	104	H
* 4.874	39.46	MAv1	34	-34	0	39.46	54	-14.54	-	-	358	104	H
* 4.874	50.15	PK2	34	-34	0	50.15	-	-	74	-23.85	64	316	V
* 4.874	42.34	MAv1	34	-34	0	42.34	54	-11.66	-	-	64	316	V
* 7.31	47.07	PK2	35.7	-30.9	0	51.87	-	-	74	-22.13	29	100	V
* 7.31	37.95	MAv1	35.7	-30.9	0	42.75	54	-11.25	-	-	29	100	V
* 7.31	46.05	PK2	35.7	-30.9	0	50.85	-	-	74	-23.15	75	244	H
* 7.31	35.28	MAv1	35.7	-30.9	0	40.08	54	-13.92	-	-	75	244	H

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

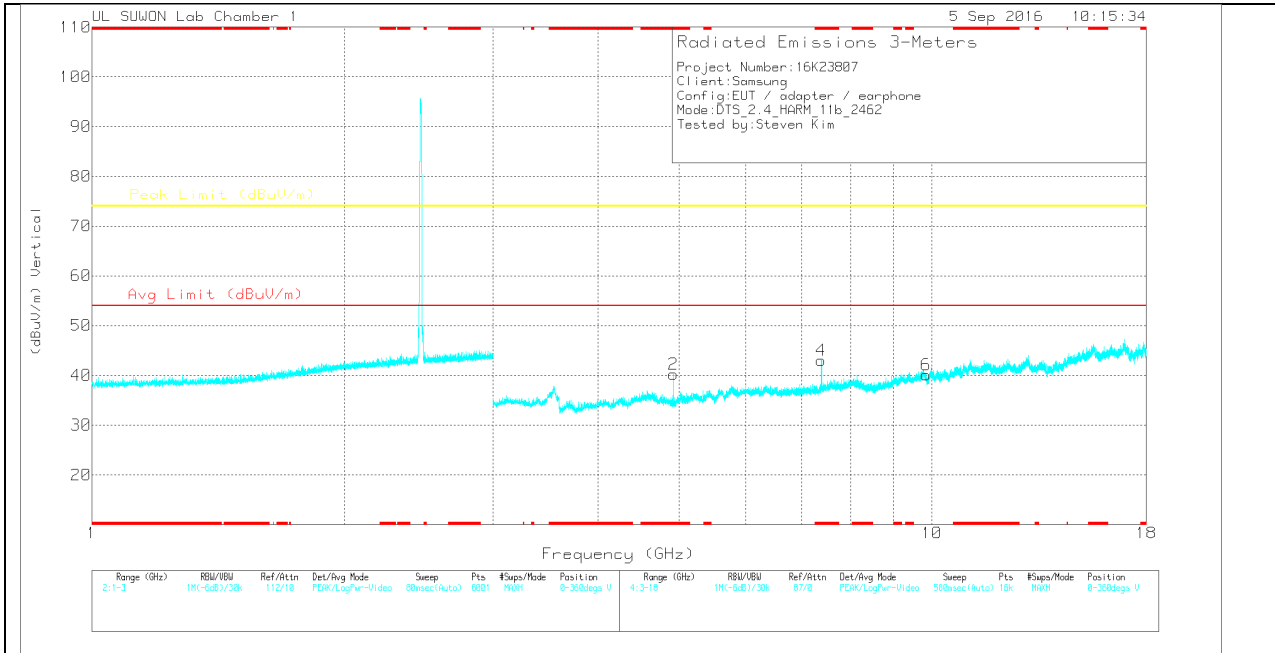
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

**HIGH CHANNEL HORIZONTAL**



**HIGH CHANNEL VERTICAL**



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

**HIGH CHANNEL DATA**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(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	* 4.924	38.37	PK	34	-34	0	38.37	-	-	74	-35.63	0-360	100	H
3	* 7.385	34.51	PK	35.8	-30.7	0	39.61	-	-	74	-34.39	0-360	200	H
5	9.846	30.24	PK	37.3	-27.6	0	39.94	-	-	74	-34.06	0-360	200	H
2	* 4.924	40.22	PK	34	-34	0	40.22	-	-	74	-33.78	0-360	200	V
4	* 7.385	37.87	PK	35.8	-30.7	0	42.97	-	-	74	-31.03	0-360	100	V
6	9.846	30.46	PK	37.3	-27.6	0	40.16	-	-	74	-33.84	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(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
* 4.924	47.9	PK2	34	-34	0	47.9	-	-	74	-26.1	355	100	H
* 4.924	38.48	MAv1	34	-34	0	38.48	54	-15.52	-	-	355	100	H
* 4.924	50	PK2	34	-34	0	50	-	-	74	-24	70	344	V
* 4.924	42.59	MAv1	34	-34	0	42.59	54	-11.41	-	-	70	344	V
* 7.386	48.03	PK2	35.8	-30.7	0	53.13	-	-	74	-20.87	34	100	V
* 7.387	38.7	MAv1	35.8	-30.7	0	43.8	54	-10.2	-	-	34	100	V
* 7.387	47.73	PK2	35.8	-30.7	0	52.83	-	-	74	-21.17	67	366	H
* 7.387	38.9	MAv1	35.8	-30.7	0	44	54	-10	-	-	67	366	H

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

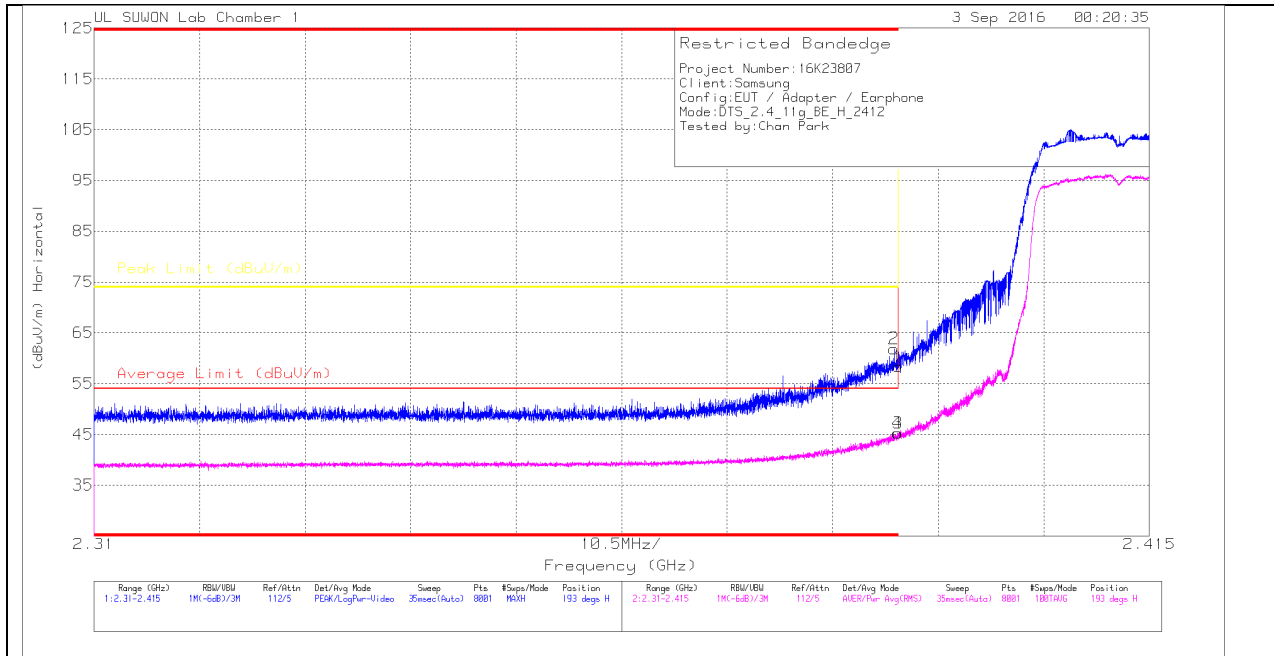
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

## 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

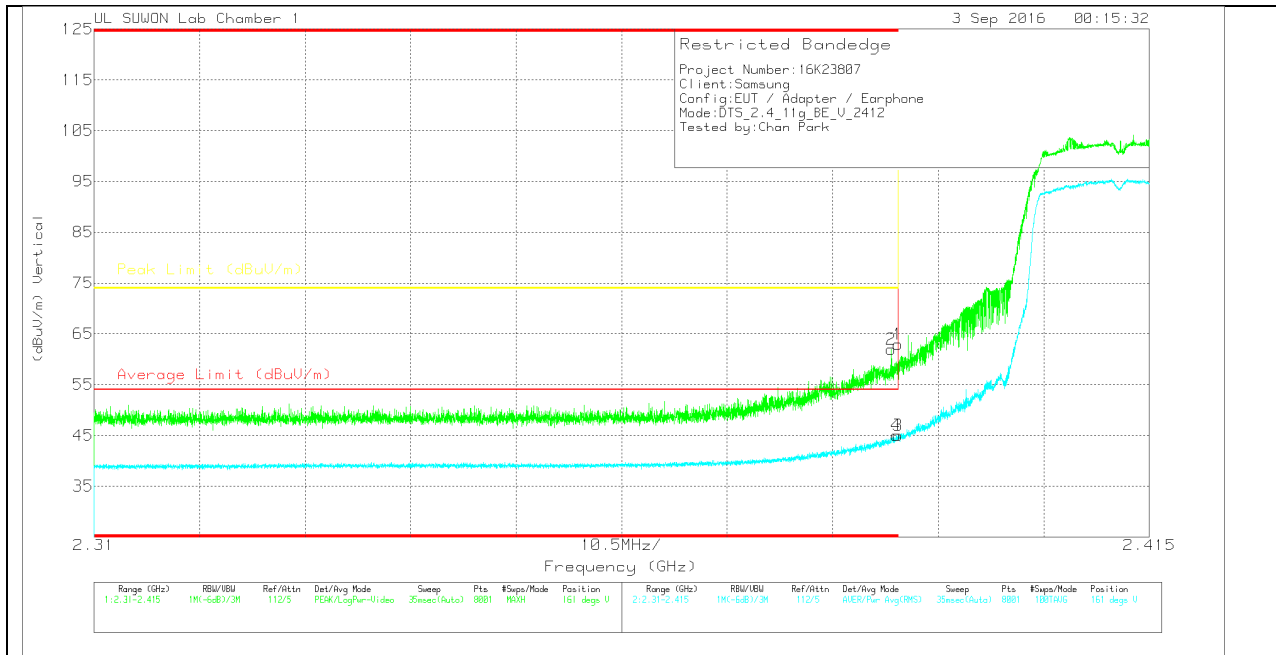
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117/001687 17)_150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	55.58	Pk		-29	0	58.38	-	-	74	-15.62	193	103	H
2	* 2.39	59.09	Pk		-29	0	61.89	-	-	74	-12.11	193	103	H
3	* 2.39	42.18	RMS		-29	.29	45.27	54	-8.73	-	-	193	103	H
4	* 2.39	42.2	RMS		-29	.29	45.29	54	-8.71	-	-	193	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 17_150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	60.1	Pk	31.8	-29	0	62.9	-	-	74	-11.1	161	384	V
2	* 2.389	59.18	Pk	31.8	-29	0	61.98	-	-	74	-12.02	161	384	V
3	* 2.39	41.91	RMS	31.8	-29	.29	45	54	-9	-	-	161	384	V
4	* 2.39	41.89	RMS	31.8	-29	.29	44.98	54	-9.02	-	-	161	384	V

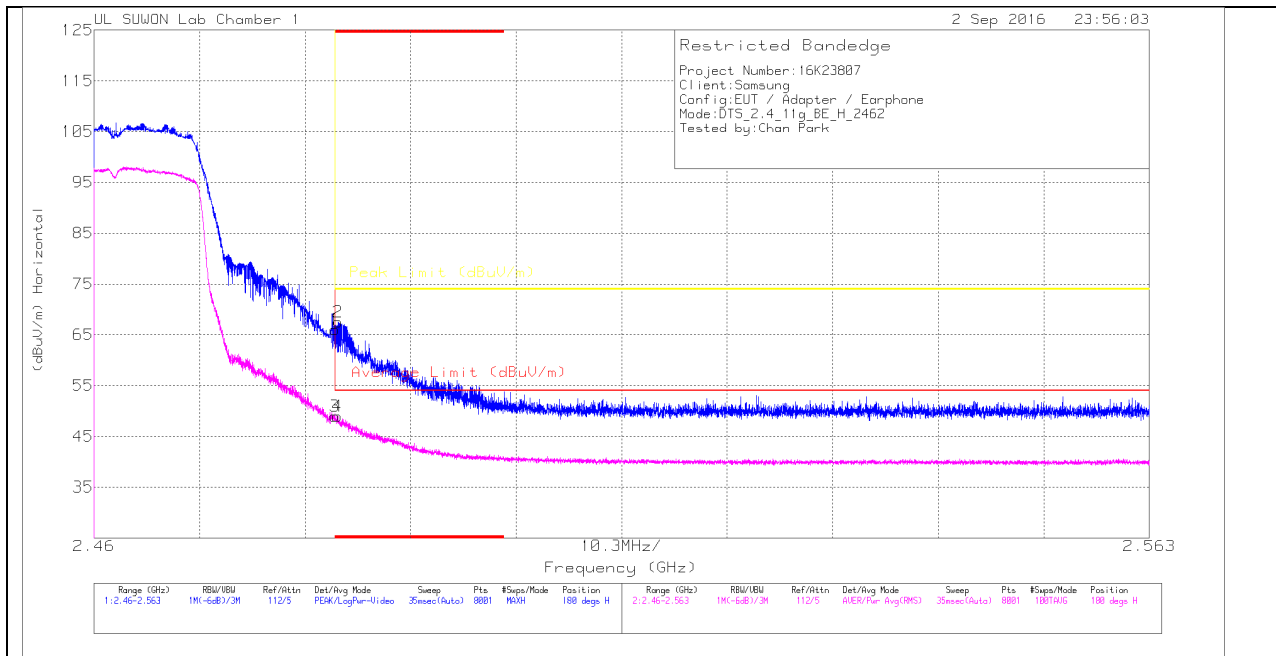
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

### AUTHORIZED BANDEDGE (HIGH CHANNEL)

#### HORIZONTAL PEAK AND AVERAGE PLOT



#### HORIZONTAL DATA

##### Trace Markers

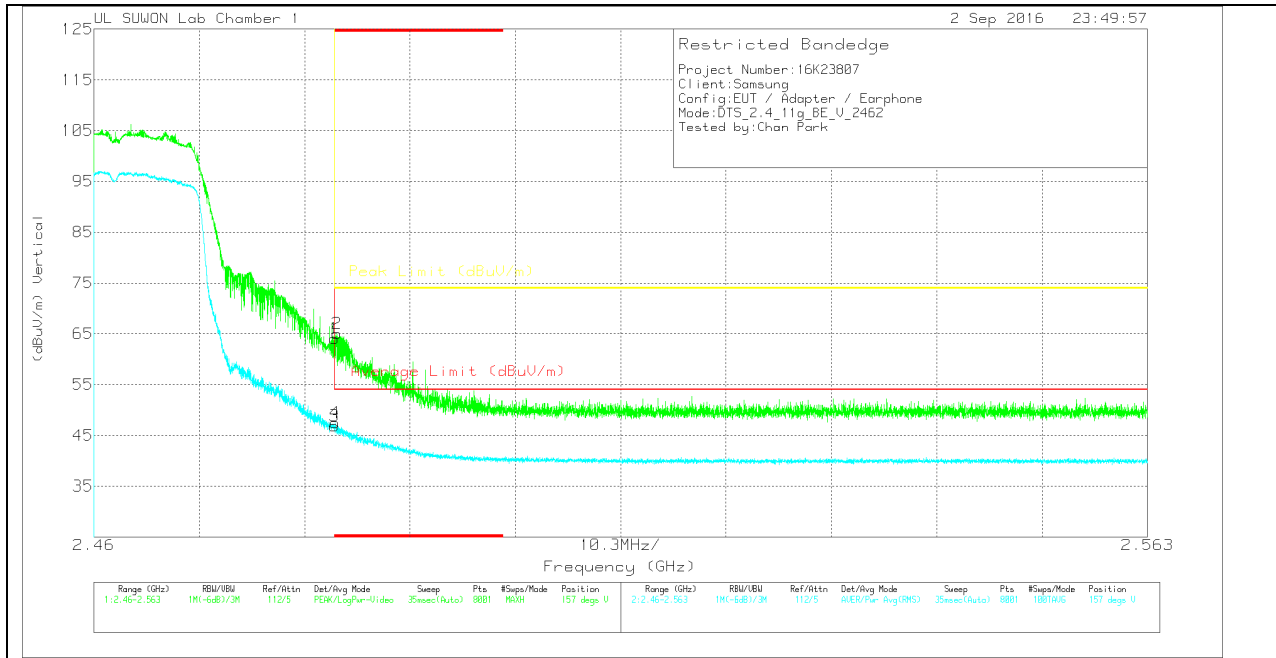
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117/001687 17_150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	62.37	Pk	32	-28.3	0	66.07	-	-	74	-7.93	180	104	H
2	* 2.484	63.78	Pk	32	-28.3	0	67.48	-	-	74	-6.52	180	104	H
3	* 2.484	44.96	RMS	32	-28.3	.29	48.95	54	-5.05	-	-	180	104	H
4	* 2.484	45.01	RMS	32	-28.3	.29	49	54	-5	-	-	180	104	H

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

Pk - Peak detector

RMS - RMS detection

**VERTICAL PEAK AND AVERAGE PLOT**



**VERTICAL DATA**

**Trace Markers**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117/001687 17_150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	60.36	Pk	32	-28.3	0	64.06	-	-	74	-9.94	157	365	V
2	* 2.484	61.35	Pk	32	-28.3	0	65.05	-	-	74	-8.95	157	365	V
3	* 2.484	42.87	RMS	32	-28.3	.29	46.86	54	-7.14	-	-	157	365	V
4	* 2.484	43.53	RMS	32	-28.3	.29	47.52	54	-6.48	-	-	157	365	V

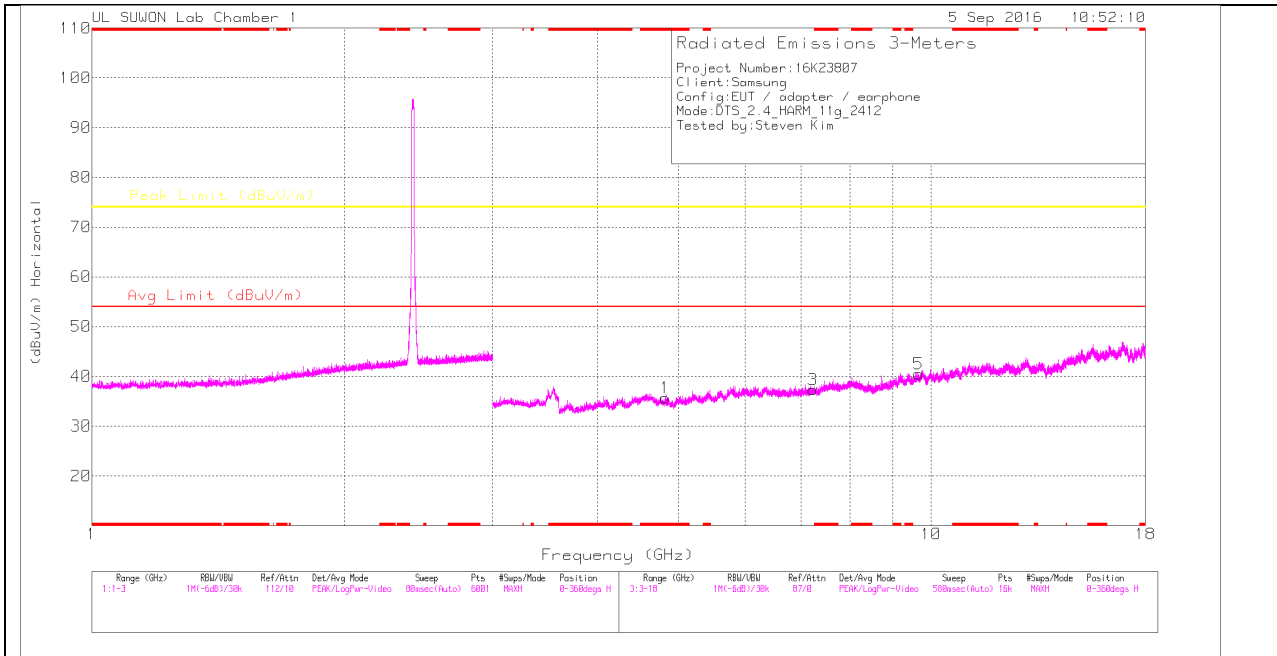
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

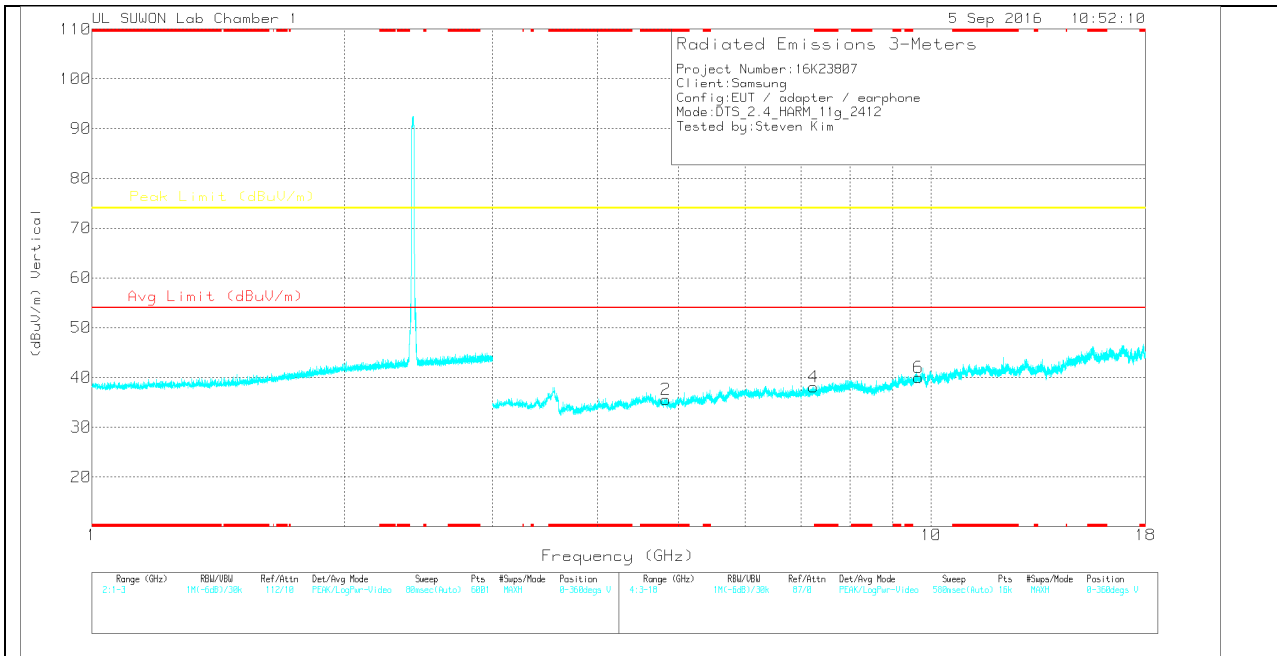
RMS - RMS detection

### 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

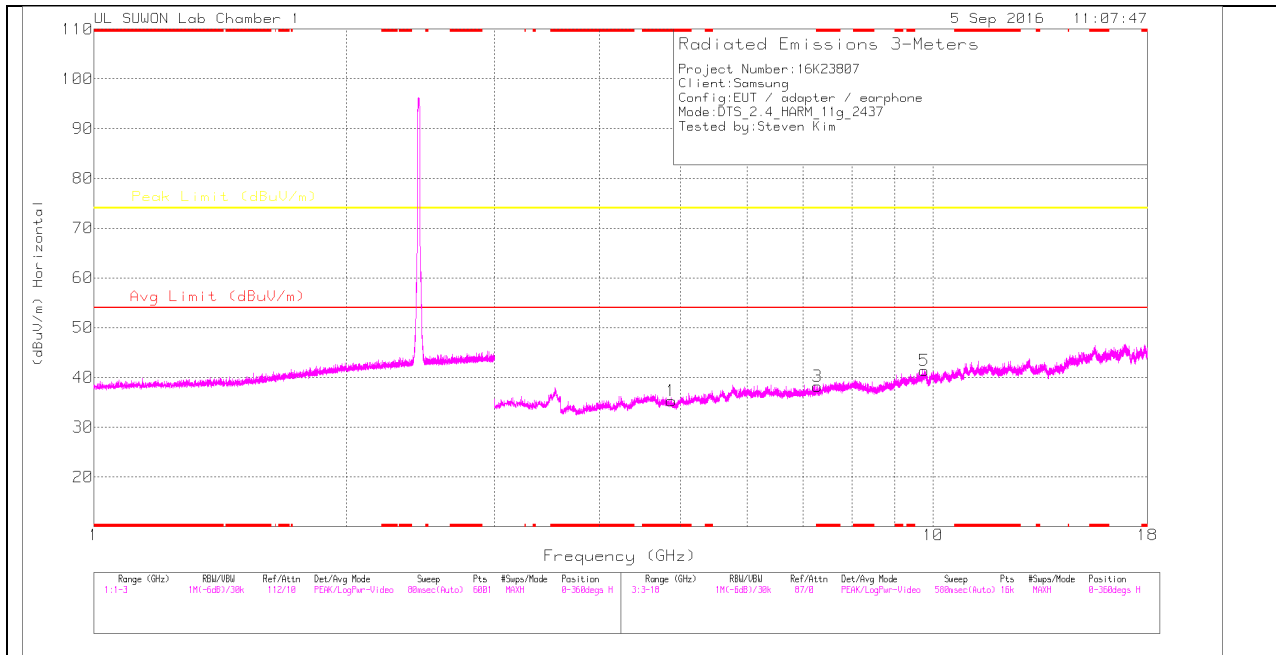
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.824	35.43	PK	34	-33.8	0	35.63	-	-	74	-38.37	0-360	200	H
3	7.233	32.51	PK	35.7	-30.9	0	37.31	-	-	74	-36.69	0-360	100	H
5	9.65	30.75	PK	37.1	-27.4	0	40.45	-	-	74	-33.55	0-360	200	H
2	* 4.826	35.37	PK	34	-33.8	0	35.57	-	-	74	-38.43	0-360	100	V
4	7.235	33.34	PK	35.7	-30.9	0	38.14	-	-	74	-35.86	0-360	100	V
6	9.653	30.35	PK	37.1	-27.5	0	39.95	-	-	74	-34.05	0-360	200	V

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

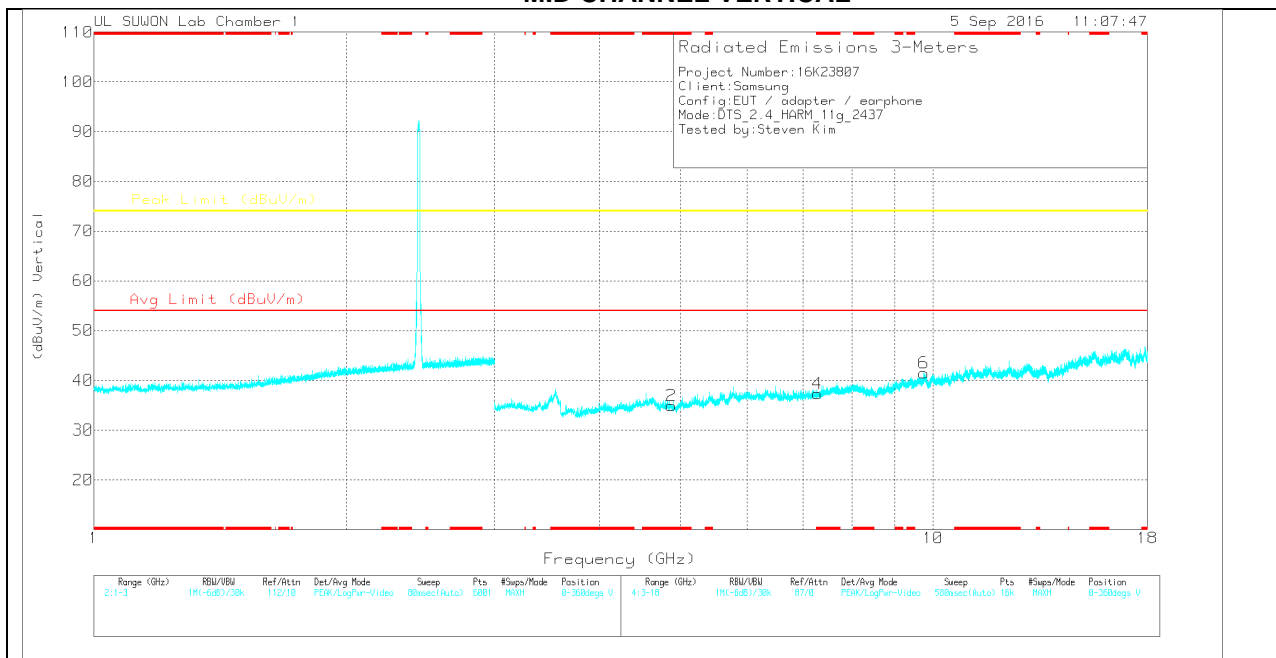
PK – Peak detector

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

**MID CHANNEL HORIZONTAL**



**MID CHANNEL VERTICAL**



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

**MID CHANNEL DATA**

Trace Markers

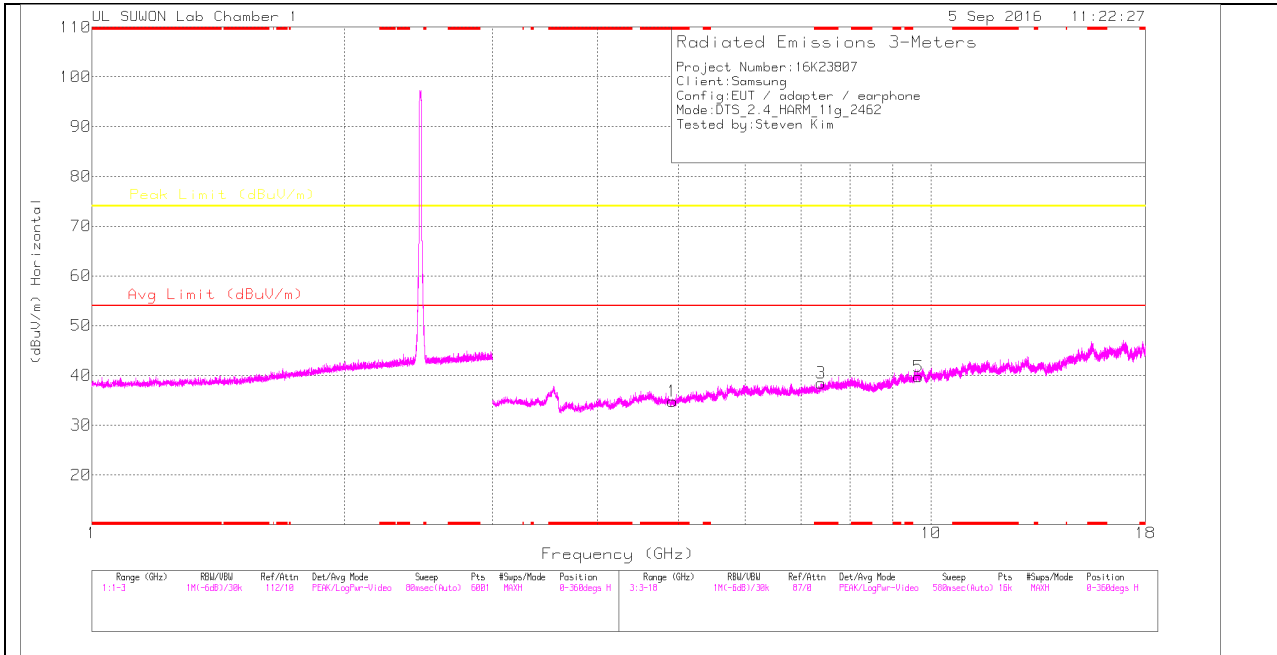
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.876	35.32	PK	34	-34	0	35.32	-	-	74	-38.68	0-360	100	H
3	* 7.28	33.45	PK	35.7	-30.9	0	38.25	-	-	74	-35.75	0-360	100	H
5	9.752	30.82	PK	37.2	-26.7	0	41.32	-	-	74	-32.68	0-360	100	H
2	* 4.876	34.98	PK	34	-34	0	34.98	-	-	74	-39.02	0-360	100	V
4	* 7.281	32.55	PK	35.7	-30.9	0	37.35	-	-	74	-36.65	0-360	200	V
6	9.748	31.11	PK	37.2	-26.8	0	41.51	-	-	74	-32.49	0-360	100	V

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

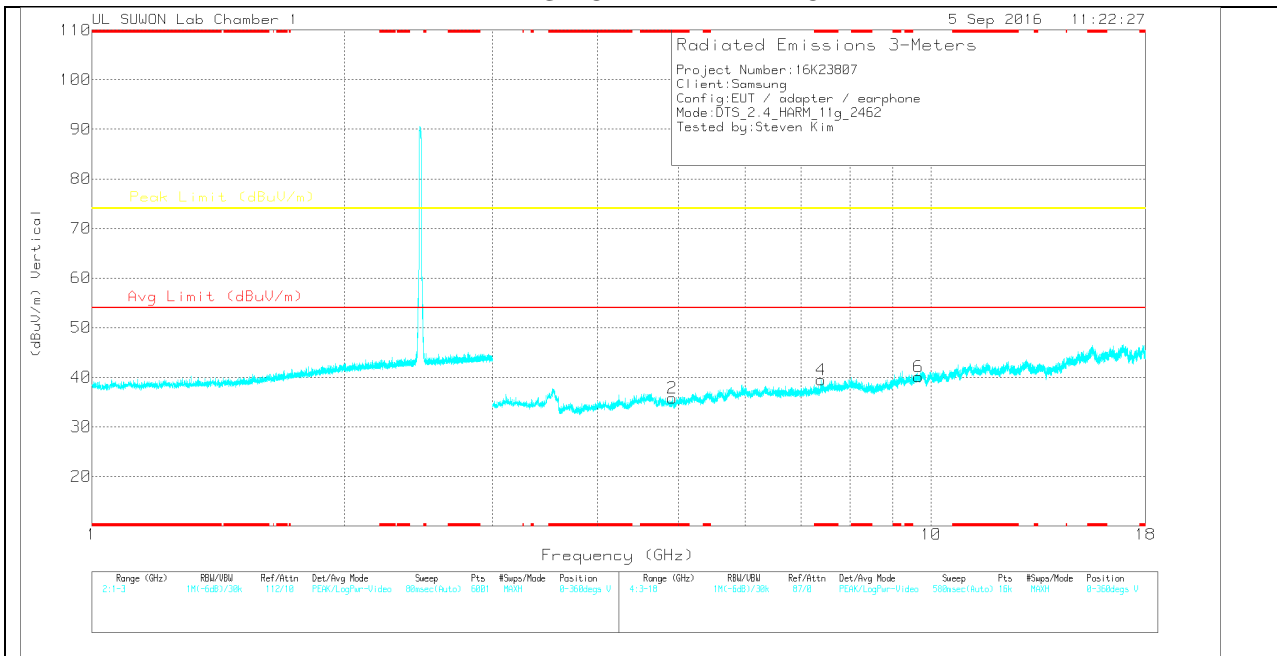
PK – Peak detector

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

**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(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	* 4.918	34.83	PK	34	-34	0	34.83	-	-	74	-39.17	0-360	100	H
3	* 7.39	33.37	PK	35.8	-30.7	0	38.47	-	-	74	-35.53	0-360	200	H
5	9.648	30.04	PK	37.1	-27.4	0	39.74	-	-	74	-34.26	0-360	100	H
2	* 4.913	35.85	PK	34	-34	0	35.85	-	-	74	-38.15	0-360	100	V
4	* 7.391	34.42	PK	35.8	-30.7	0	39.52	-	-	74	-34.48	0-360	100	V
6	9.653	30.53	PK	37.1	-27.5	0	40.13	-	-	74	-33.87	0-360	100	V

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

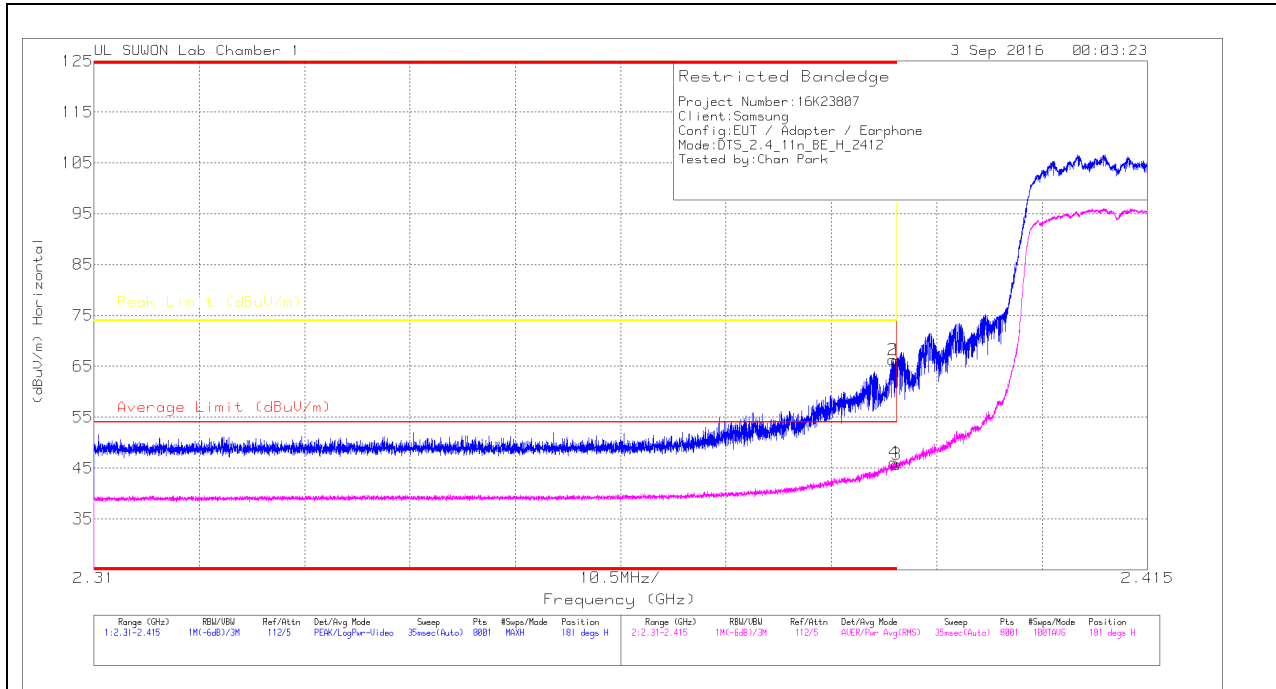
PK – Peak detector

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

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

#### RESTRICTED BANDEDGE (LOW CHANNEL)

#### HORIZONTAL PEAK AND AVERAGE PLOT



#### HORIZONTAL DATA

##### Trace Markers

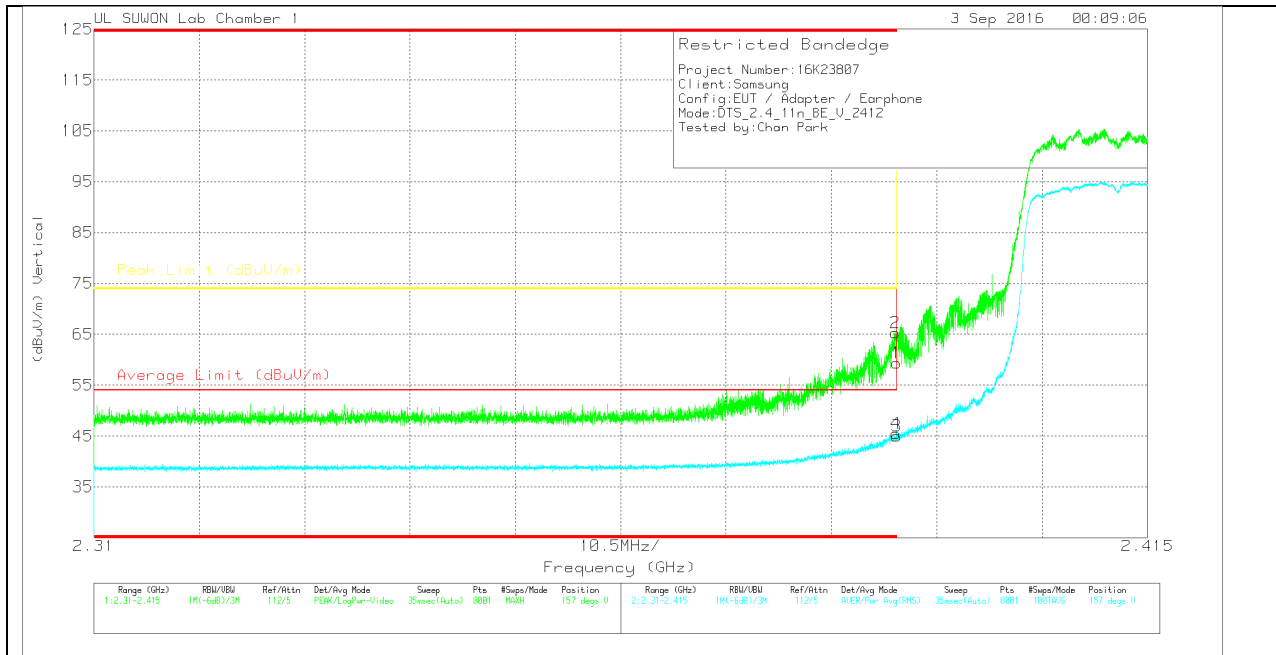
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17)_150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	63.32	Pk	31.8	-29	0	66.12	-	-	74	-7.88	181	102	H
2	* 2.39	63.47	Pk	31.8	-29	0	66.27	-	-	74	-7.73	181	102	H
3	* 2.39	42.65	RMS	31.8	-29	.34	45.79	54	-8.21	-	-	181	102	H
4	* 2.39	42.96	RMS	31.8	-29	.34	46.1	54	-7.9	-	-	181	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 17/150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	56.51	Pk	31.8	-29	0	59.31	-	-	74	-14.69	157	377	V
2	* 2.39	62.51	Pk	31.8	-29	0	65.31	-	-	74	-8.69	157	377	V
3	* 2.39	41.85	RMS	31.8	-29	.34	44.99	54	-9.01	-	-	157	377	V
4	* 2.39	42.38	RMS	31.8	-29	.34	45.52	54	-8.48	-	-	157	377	V

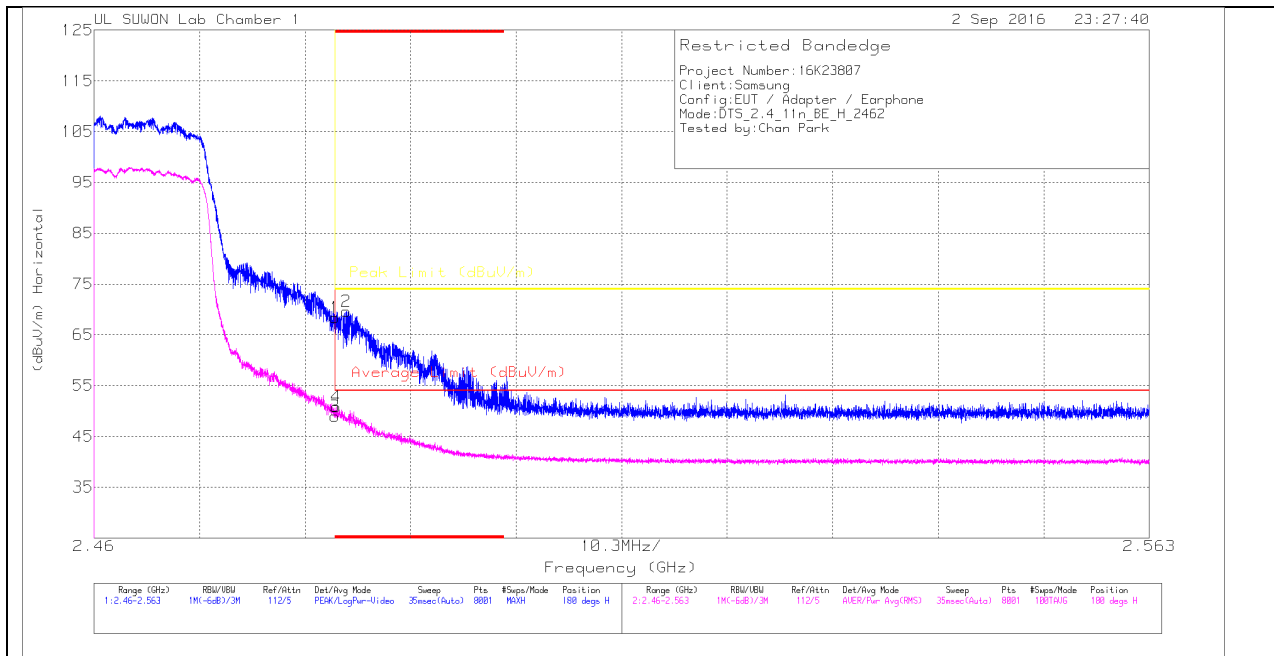
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

### AUTHORIZED BANDEDGE (HIGH CHANNEL)

#### HORIZONTAL PEAK AND AVERAGE PLOT



#### HORIZONTAL DATA

##### Trace Markers

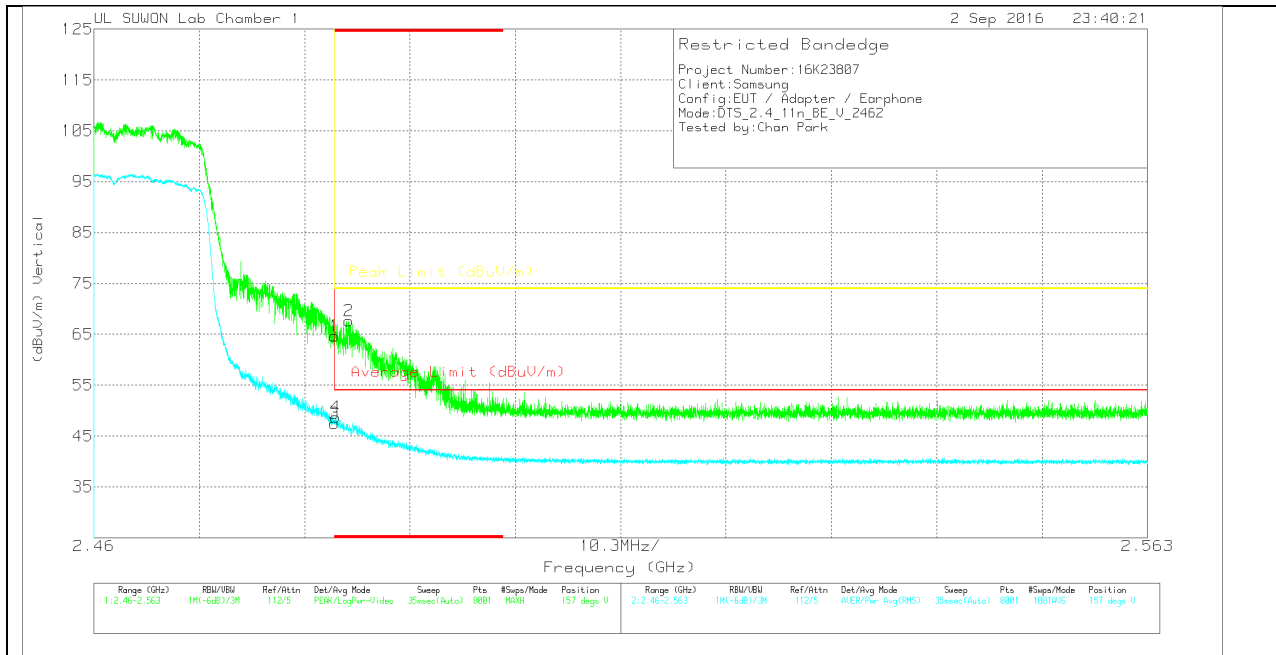
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17)_150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	64.65	Pk	32	-28.3	0	68.35	-	-	74	-5.65	180	105	H
2	* 2.485	65.93	Pk	32	-28.3	0	69.63	-	-	74	-4.37	180	105	H
3	* 2.484	44.88	RMS	32	-28.3	.34	48.92	54	-5.08	-	-	180	105	H
4	* 2.484	46.83	RMS	32	-28.3	.34	50.87	54	-3.13	-	-	180	105	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 171_150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	60.92	Pk	32	-28.3	0	64.62	-	-	74	-9.38	157	363	V
2	* 2.485	63.95	Pk	32	-28.3	0	67.65	-	-	74	-6.35	157	363	V
3	* 2.484	43.42	RMS	32	-28.3	.34	47.46	54	-6.54	-	-	157	363	V
4	* 2.484	44.71	RMS	32	-28.3	.34	48.75	54	-5.25	-	-	157	363	V

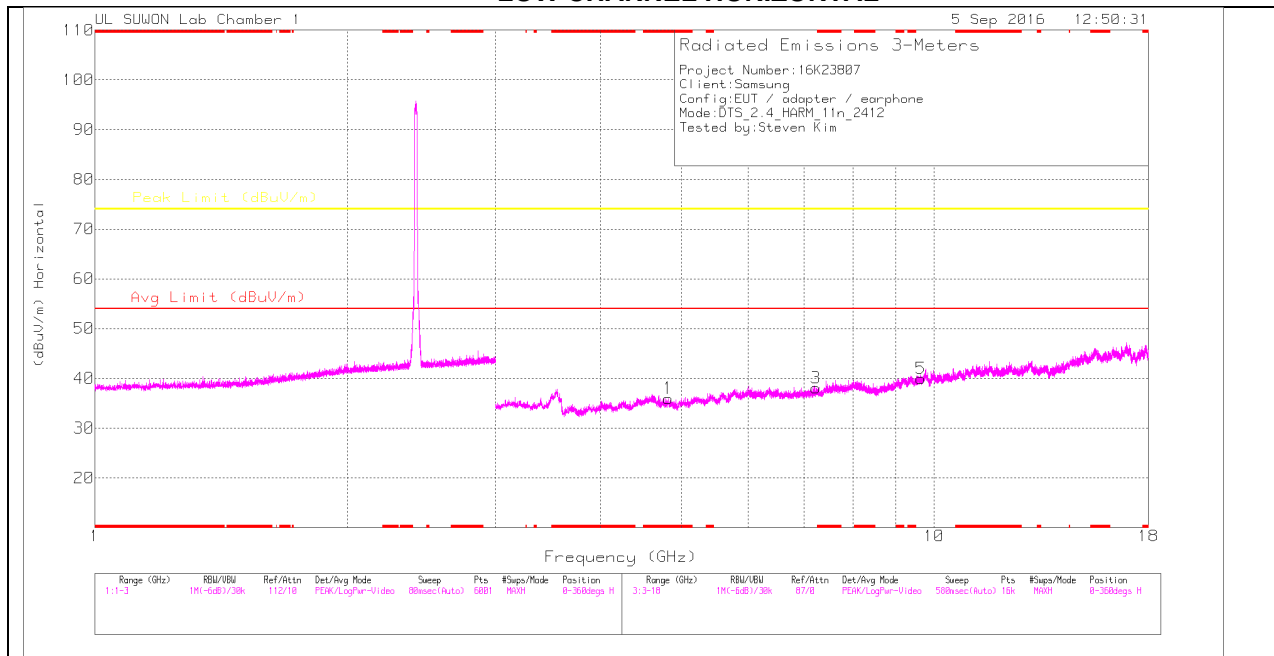
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

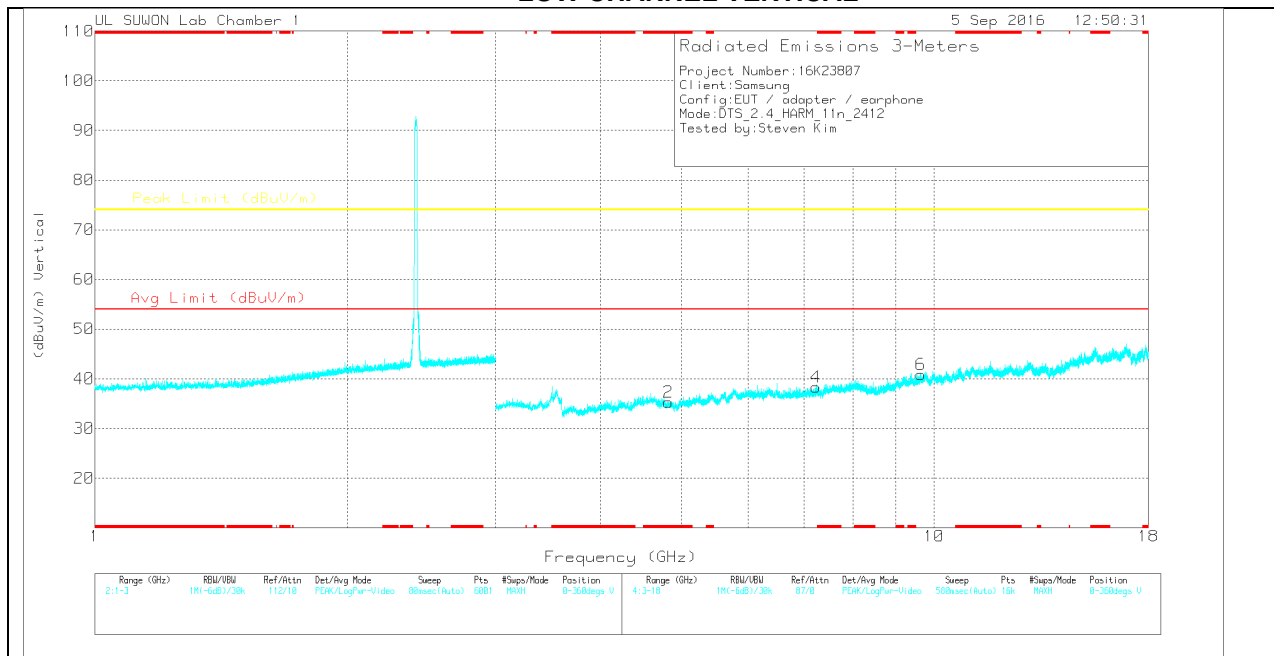
RMS - RMS detection

### HARMONICS AND SPURIOUS EMISSIONS

#### LOW CHANNEL HORIZONTAL



#### LOW CHANNEL VERTICAL



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

**LOW CHANNEL DATA**

Trace Markers

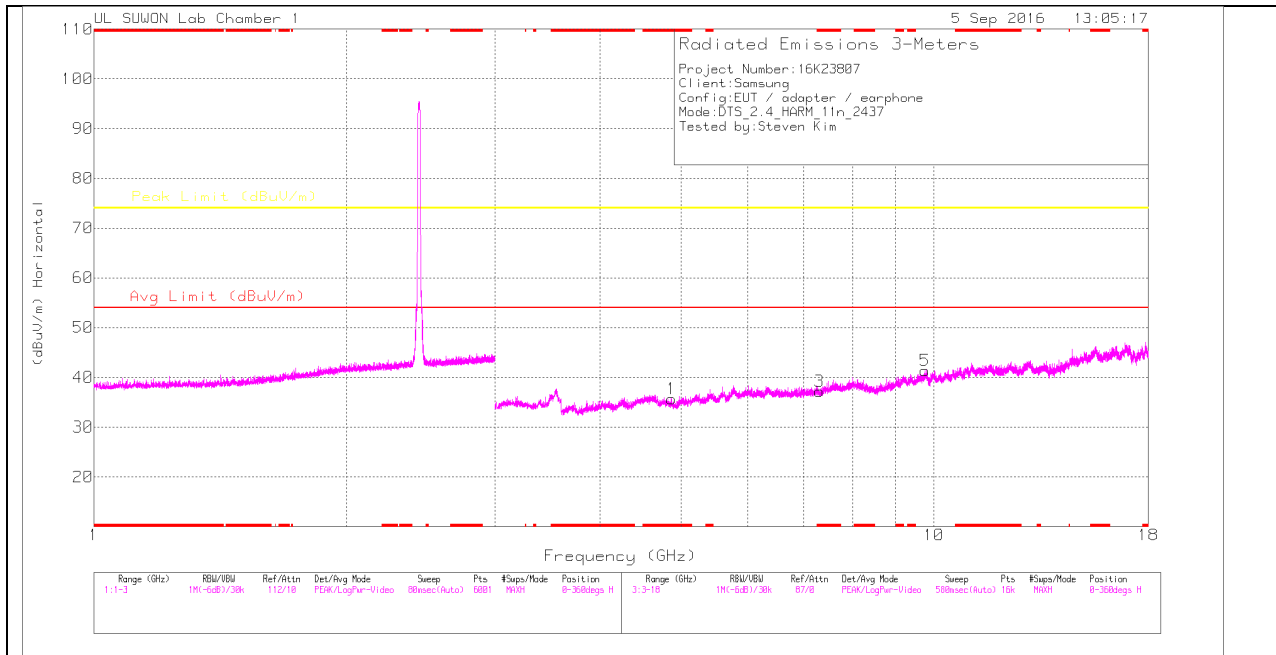
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17)_150619	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.822	35.8	PK	34	-33.8	0	36	-	-	74	-38	0-360	100	H
3	7.233	33.31	PK	35.7	-30.9	0	38.11	-	-	74	-35.89	0-360	200	H
5	9.646	30.28	PK	37.1	-27.4	0	39.98	-	-	74	-34.02	0-360	100	H
2	* 4.82	35.14	PK	34	-33.8	0	35.34	-	-	74	-38.66	0-360	100	V
4	7.233	33.52	PK	35.7	-30.9	0	38.32	-	-	74	-35.68	0-360	100	V
6	9.645	31.17	PK	37.1	-27.4	0	40.87	-	-	74	-33.13	0-360	100	V

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

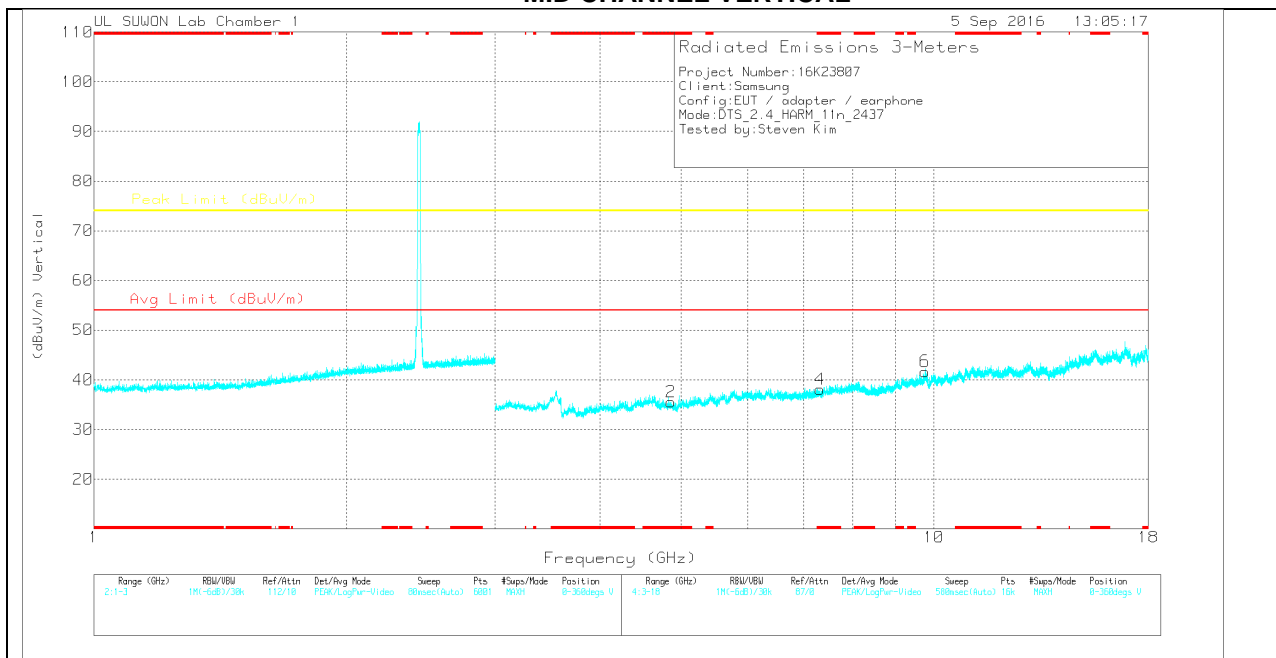
PK – Peak detector

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

**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

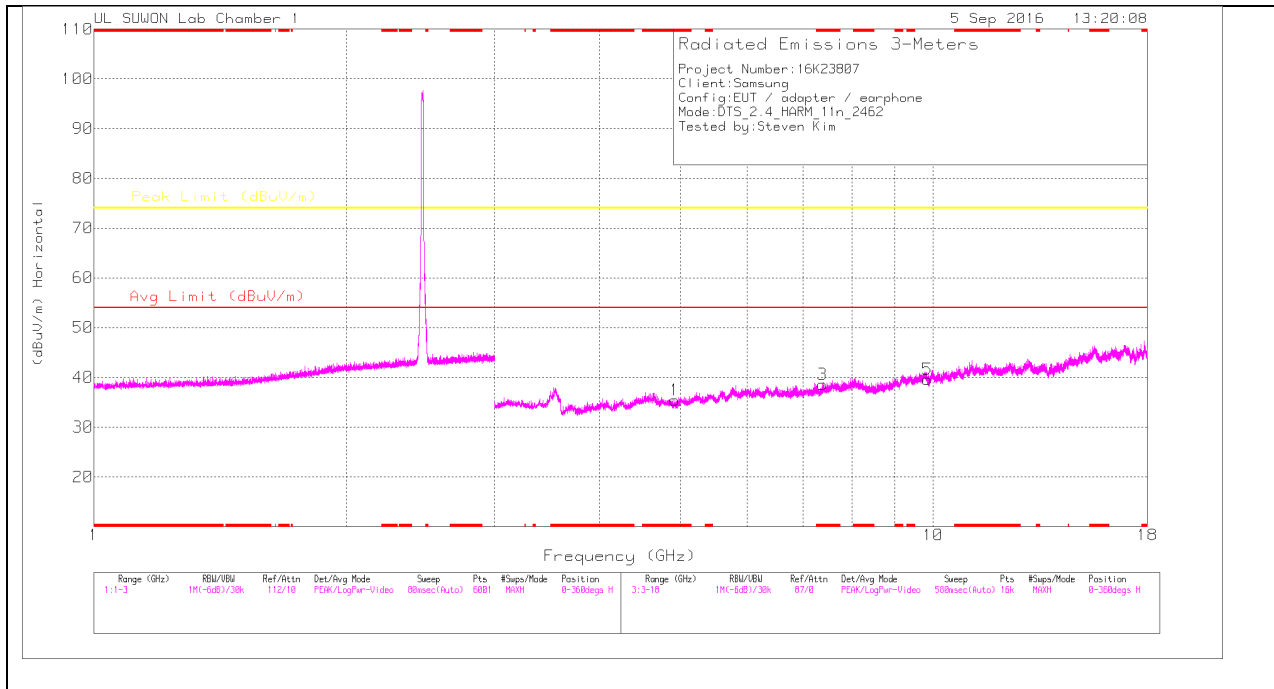
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(001687 17_150619)	Path_3	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.87	35.63	PK	34	-34	0	35.63	-	-	74	-38.37	0-360	100	H
3	* 7.308	32.39	PK	35.7	-30.9	0	37.19	-	-	74	-36.81	0-360	200	H
5	9.757	30.92	PK	37.2	-26.7	0	41.42	-	-	74	-32.58	0-360	100	H
2	* 4.866	35.6	PK	34	-34	0	35.6	-	-	74	-38.4	0-360	200	V
4	* 7.312	33.29	PK	35.7	-30.9	0	38.09	-	-	74	-35.91	0-360	100	V
6	9.758	31.19	PK	37.2	-26.7	0	41.69	-	-	74	-32.31	0-360	100	V

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

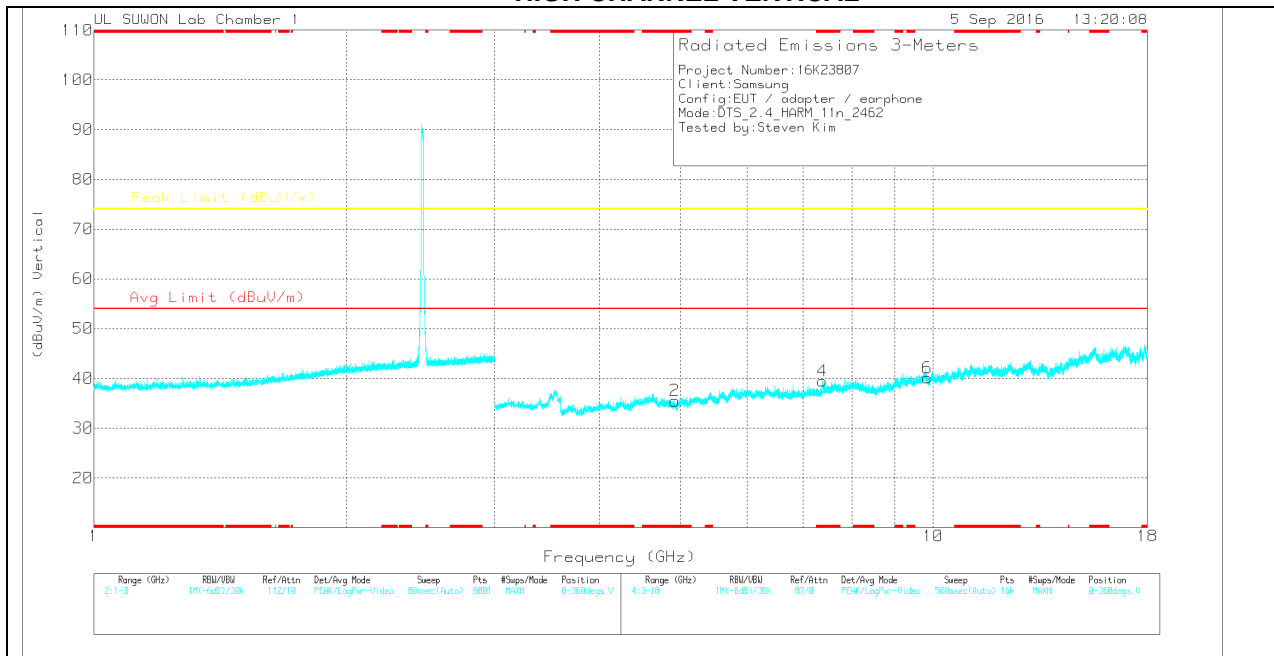
PK – Peak detector

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

### 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(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	* 4.92	35.46	PK	34	-34	0	35.46	-	-	74	-38.54	0-360	100	H
3	* 7.385	33.45	PK	35.8	-30.7	0	38.55	-	-	74	-35.45	0-360	200	H
5	9.845	29.85	PK	37.3	-27.5	0	39.65	-	-	74	-34.35	0-360	100	H
2	* 4.921	35.5	PK	34	-34	0	35.5	-	-	74	-38.5	0-360	100	V
4	* 7.383	34.47	PK	35.8	-30.8	0	39.47	-	-	74	-34.53	0-360	100	V
6	9.846	30.44	PK	37.3	-27.6	0	40.14	-	-	74	-33.86	0-360	100	V

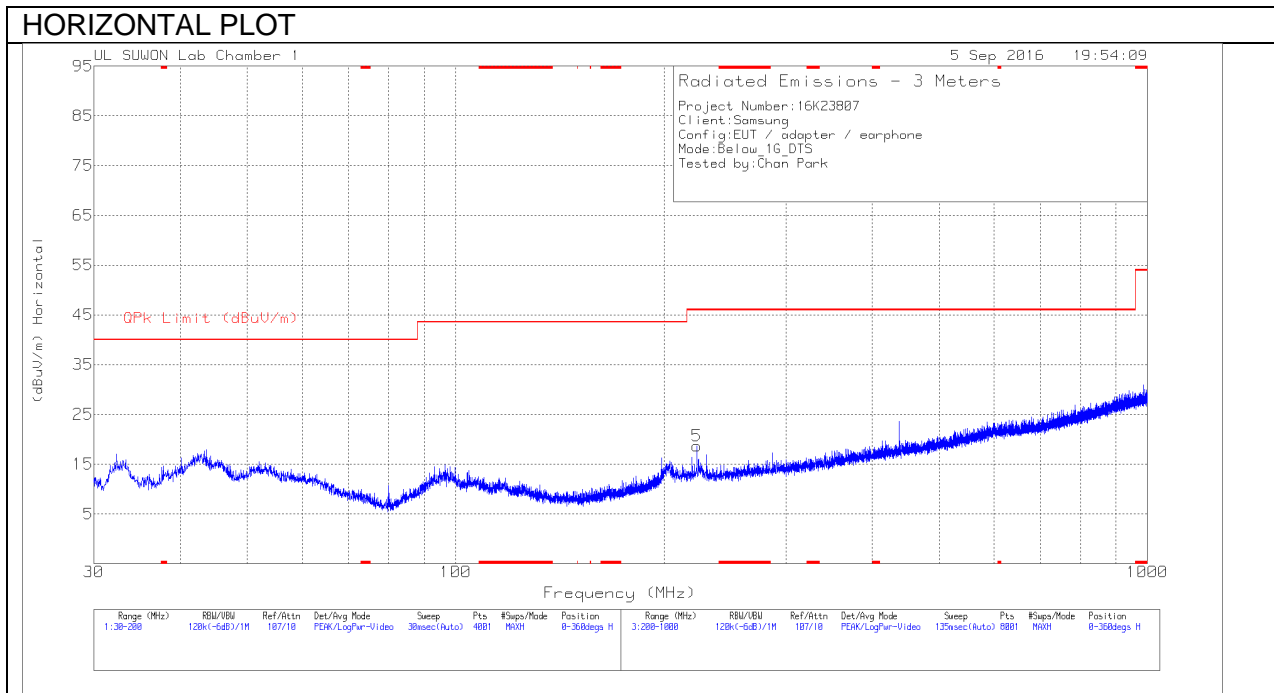
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK – Peak detector

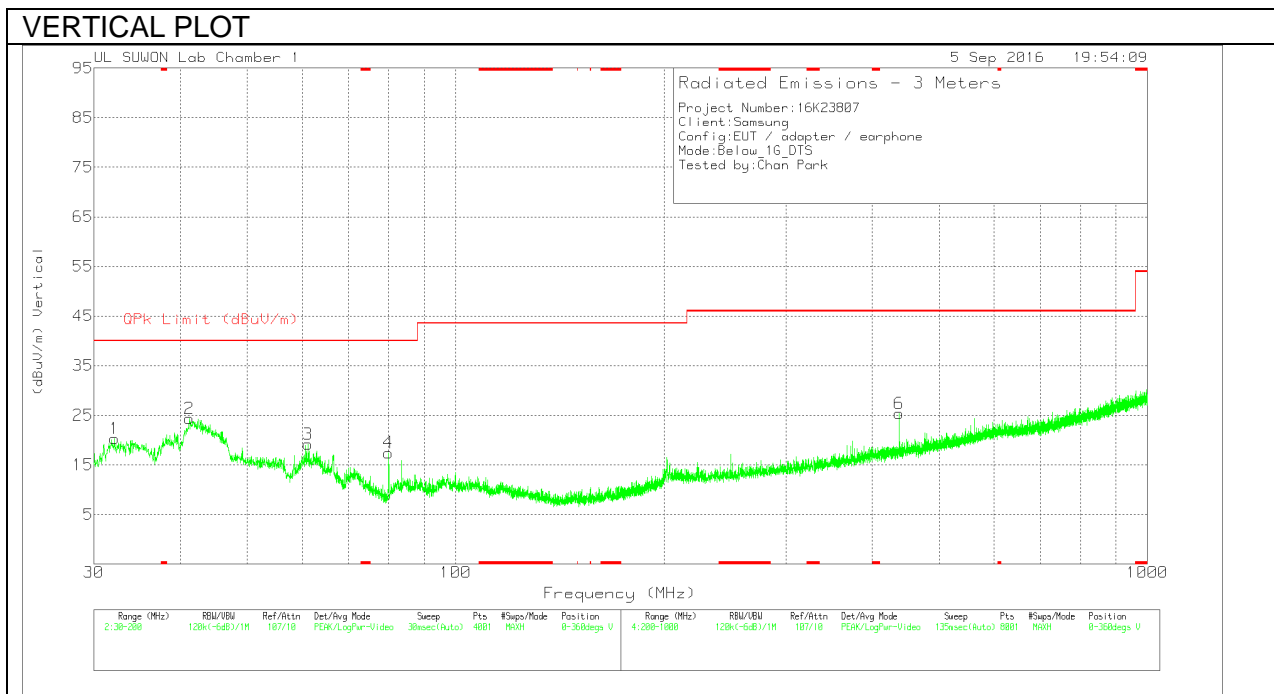
Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

### 10.3. WORST-CASE BELOW 1 GHz

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



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



**Below 1G Data**

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163-750	Bi-Log	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	32.125	40.35	Pk	10.4	-30.5	20.25	40	-19.75	0-360	100	V
2	41.22	41.93	Pk	12.7	-30.3	24.33	40	-15.67	0-360	100	V
3	61.2375	36.77	Pk	12.3	-29.9	19.17	40	-20.83	0-360	100	V
4	79.98	40.16	Pk	6.9	-29.6	17.46	40	-22.54	0-360	100	V
5	223.1	34.86	Pk	11.8	-28	18.66	46.02	-27.36	0-360	100	H
6	437.5	35.88	Pk	16.1	-26.6	25.38	46.02	-20.64	0-360	200	V

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

Pk - Peak detector