



FCC CFR47 PART 15 SUBPART C

Bluetooth

C2PC CERTIFICATION TEST REPORT

FOR

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

MODEL NUMBER : SM-J105H, SM-J105H/DD, SM-J105H/DS, SM-J106H/DS

FCC ID: A3LSMJ105H

REPORT NUMBER: 15K23808-E3V1

ISSUE DATE: SEP 12, 2016

Prepared for

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Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	09/12/16	Initial issue	SungGil Park

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION: GSM Phone + BT/BLE, DTS b/g/n
MODEL NUMBER: SM-J105H, SM-J105H/DD, SM-J105H/DS, SM-J106H/DS
SERIAL NUMBER: R31H80008PB (RADIATED); R31H80007AM (CONDUCTED)
DATE TESTED: AUG 23, 2016 - SEP 12, 2016

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

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

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

Approved & Released For
UL Korea, Ltd. By:



CY Choi
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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea. Line conducted emissions are measured only at the 218 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

218 Maeyeong-ro	
☒	Chamber 1
☒	Chamber 2

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

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

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

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

SM-J105H and SM-J105H/DS are same hardware, but for different number of SIM card slot.
SM-J105H has one slot. SM-J105H/DS is dual SIM version.
SM-J105H/DS and SM-J106H/DS are same hardware, but for different memory capacity and flash LED.
SM-J106H/DS was used for this C2PC test.

5.2. MAXIMUM OUTPUT POWER

Please refer to the BT test report(15K22503-E3V1) of FCC ID: A3LSMJ105H

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a 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.

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

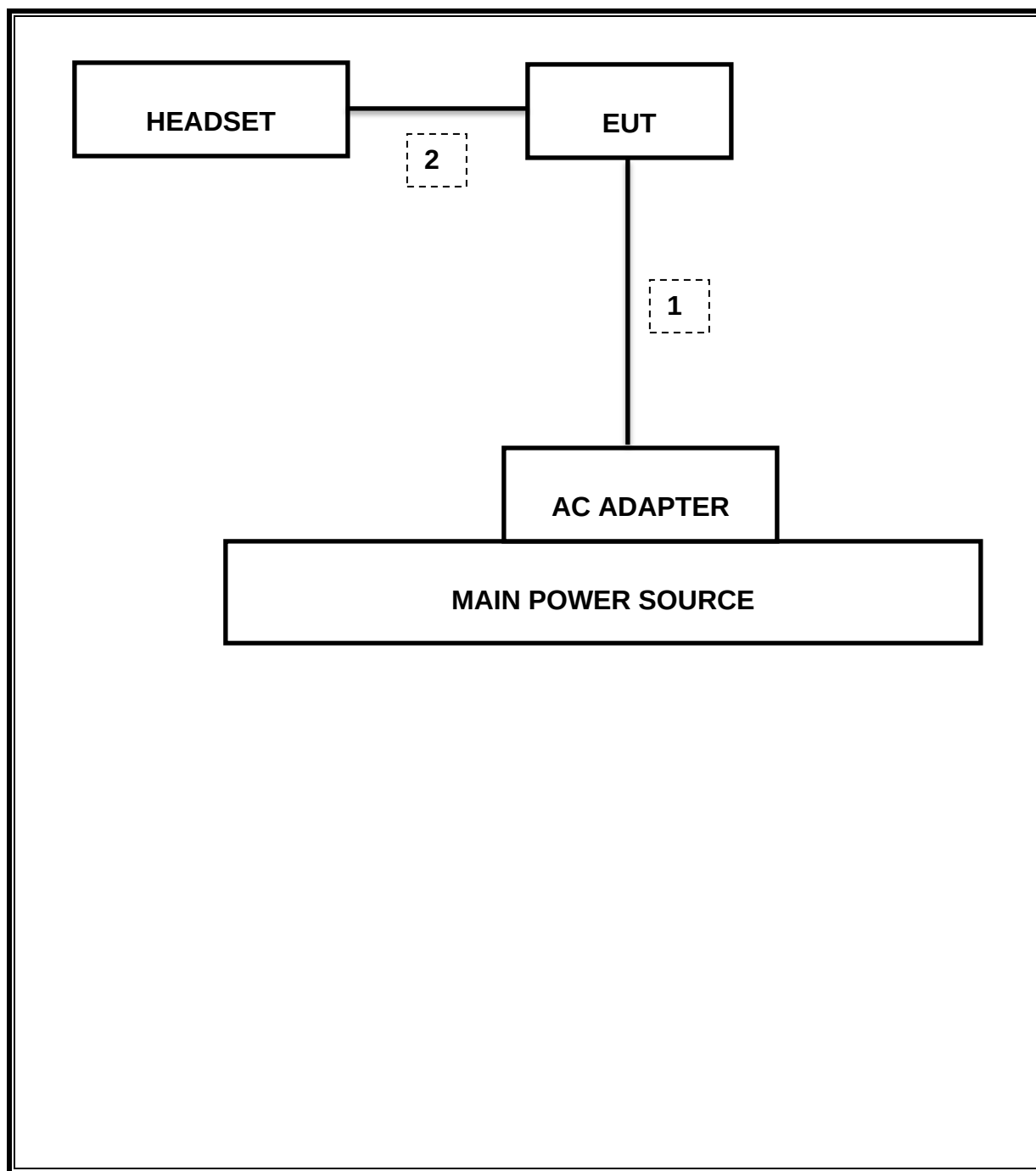
I/O CABLES

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
1	Audio	1	Mini-Jack	Unshielded	1.0m	N/A

TEST SETUP

The EUT is continuously communicating to the Bluetooth tester during the tests.
EUT was set in the Hidden menu mode to enable BT communications.

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
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	11-25-17
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
Bluetooth Tester	TESCOM	TC-3000C	3000C000546	08-18-17
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. 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.

The other items, please refer to the DTS test report(15K22503-E2V1) of FCC ID: A3LSMJ105H

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result
2.1049	Occupied Band width (99%)	N/A	Conducted	See Original
2.1051, 15.247 (d)	Band Edge / Conducted Spurious Emission	-20dBc		See Original
15.247 (b)(1)	TX conducted output power	<21dBm		See Original
15.247 (a)(1)	Hopping frequency separation	> 25KHz		See Original
15.247 (a)(1)(iii)	Number of Hopping channels	More than 15 non-overlapping channels		See Original
15.247 (a)(1)(iii)	Avg Time of Occupancy	< 0.4sec		See Original
15.207 (a)	AC Power Line conducted emissions	Section 10	Power Line conducted	See Original
15.205, 15.209	Radiated Spurious Emission	< 40dBuV/m	Radiated	Pass

8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. 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.(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.)

For band edge measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 1/T (on time) for average measurement.

$GFSK = 1/T = 1 / 0.0029S = 350Hz$.

The spectrum from 1 GHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz 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.

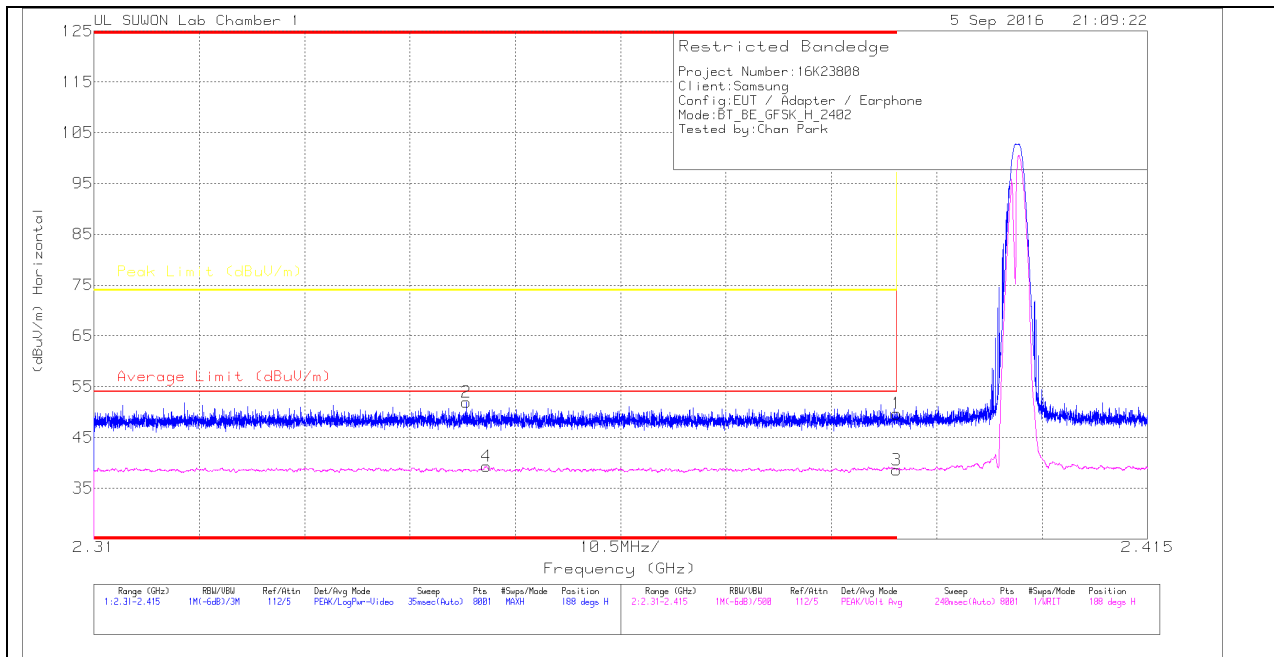
Note : Emission was pre-scanned from 9KHz to 30MHz; No emissions were detected which was at least 20dB below the specification limit (consider distance correction factor).
Per FCC part 15.31(o), test results were not reported.

8.1. TRANSMITTER ABOVE 1 GHz

8.1.1. BASIC DATA RATE GFSK MODULATION

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

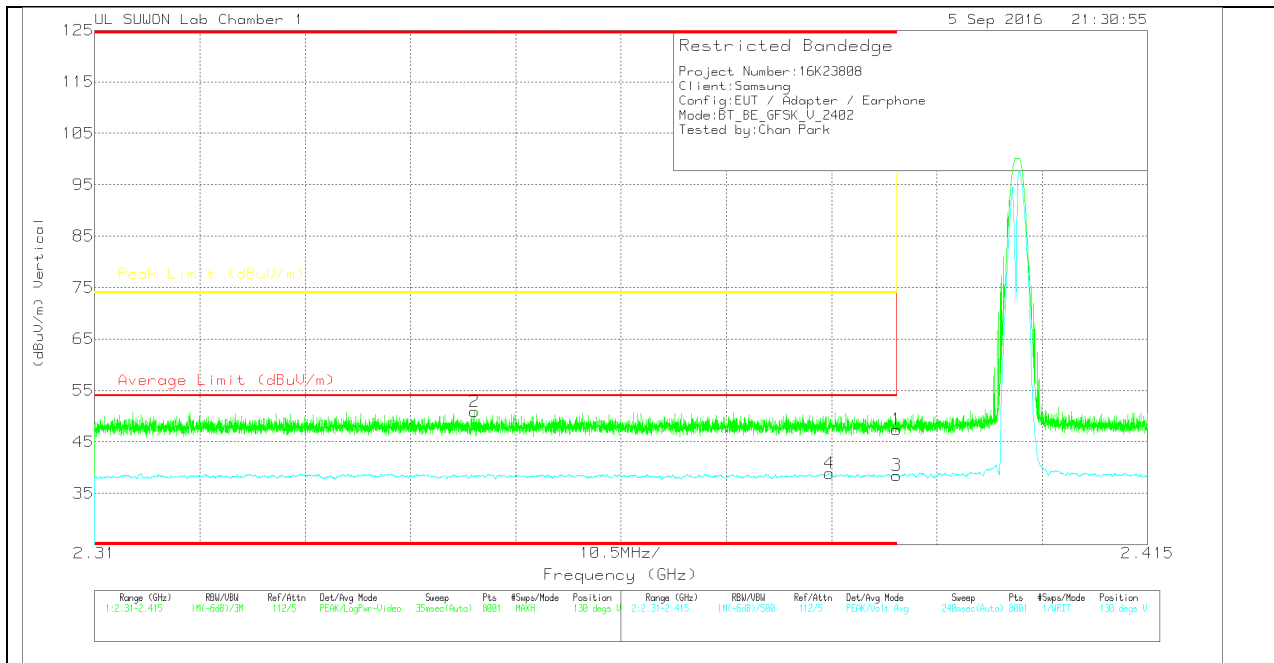
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_2	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarit y	Marker
1	* 2.39	46.85	Pk	31.8	-29	49.65	-	-	74	-24.35	188	111	H	1
2	* 2.347	49.26	Pk	31.7	-29	51.96	-	-	74	-22.04	188	111	H	2
3	* 2.39	35.82	VA1T	31.8	-29	38.62	54	-15.38	-	-	188	111	H	3
4	* 2.349	36.64	VA1T	31.7	-29	39.34	54	-14.66	-	-	188	111	H	4

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

Pk - Peak detector

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

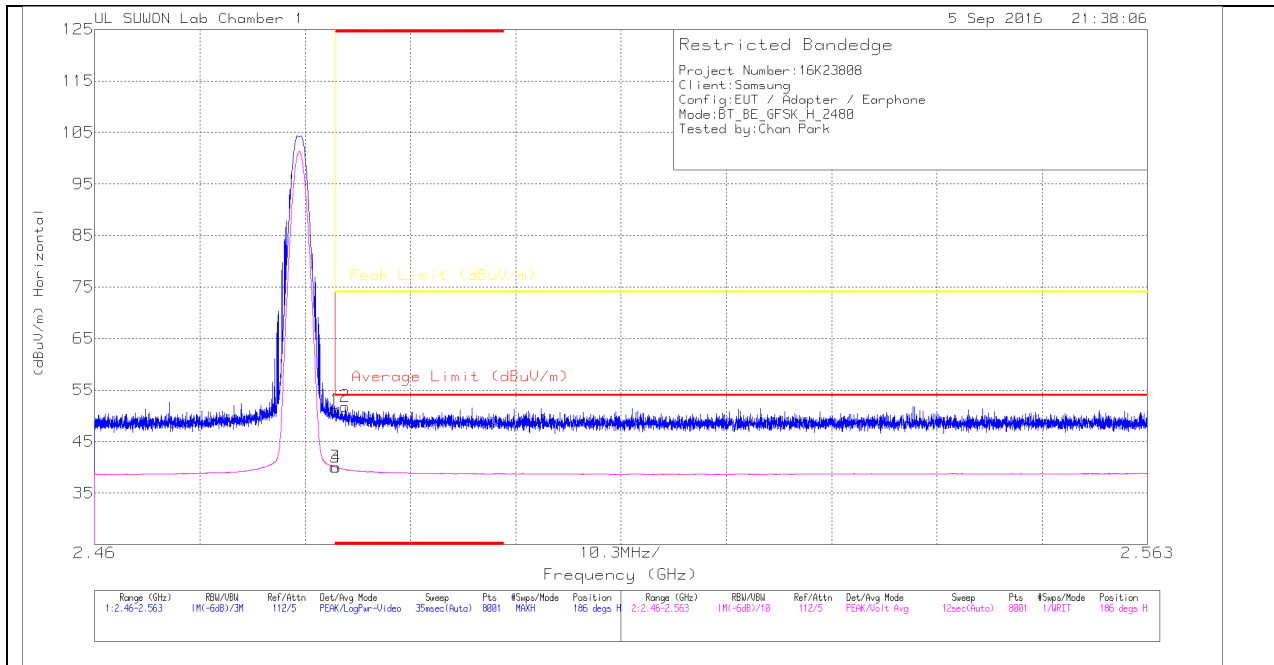
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_2	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarit y	Marker
1	* 2.39	44.59	Pk	31.8	-29	47.39	-	-	74	-26.61	130	244	V	1
2	* 2.348	48.17	Pk	31.7	-29	50.87	-	-	74	-23.13	130	244	V	2
3	* 2.39	35.68	VA1T	31.8	-29	38.48	54	-15.52	-	-	130	244	V	3
4	* 2.383	36.07	VA1T	31.8	-29	38.87	54	-15.13	-	-	130	244	V	4

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

Pk - Peak detector

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

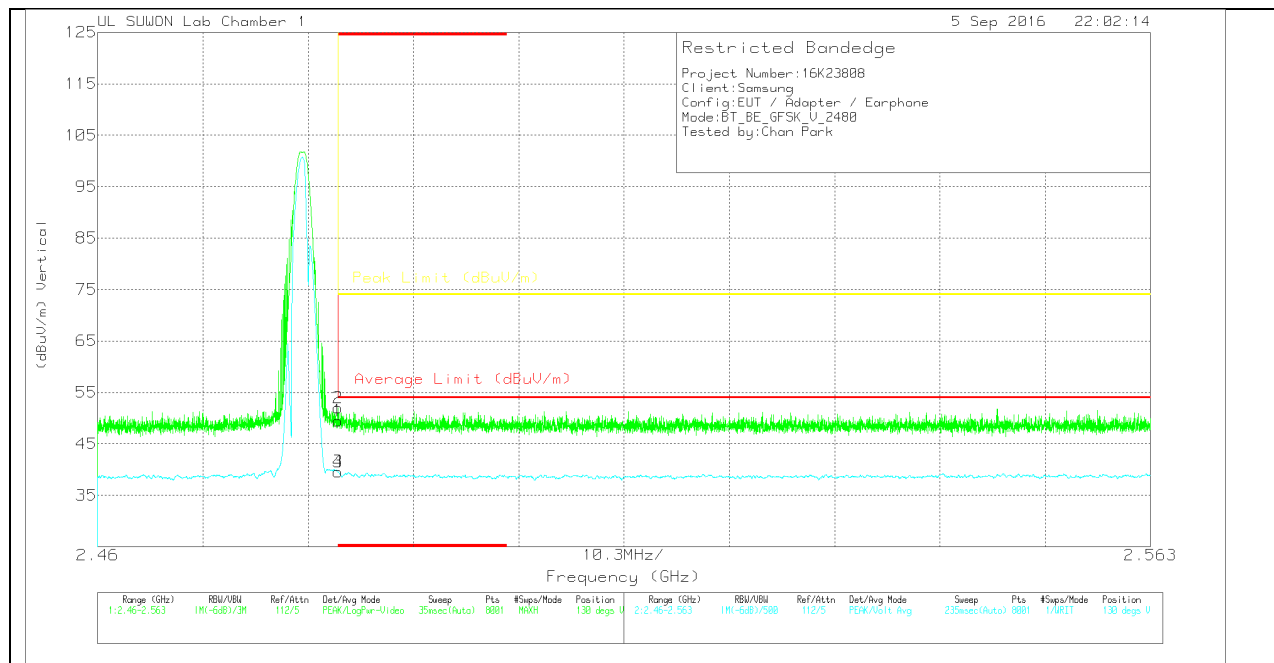
Trace Markers

Marker	Frequenc y (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_2	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/ m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarit y	Marker
1	* 2.484	48.06	Pk	32	-28.9	51.16	-	-	74	-22.84	186	104	H	1
2	* 2.485	48.71	Pk	32	-28.9	51.81	-	-	74	-22.19	186	104	H	2
3	* 2.484	36.98	VA1T	32	-28.9	40.08	54	-13.92	-	-	186	104	H	3
4	* 2.484	36.89	VA1T	32	-28.9	39.99	54	-14.01	-	-	186	104	H	4

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

Pk - Peak detector

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

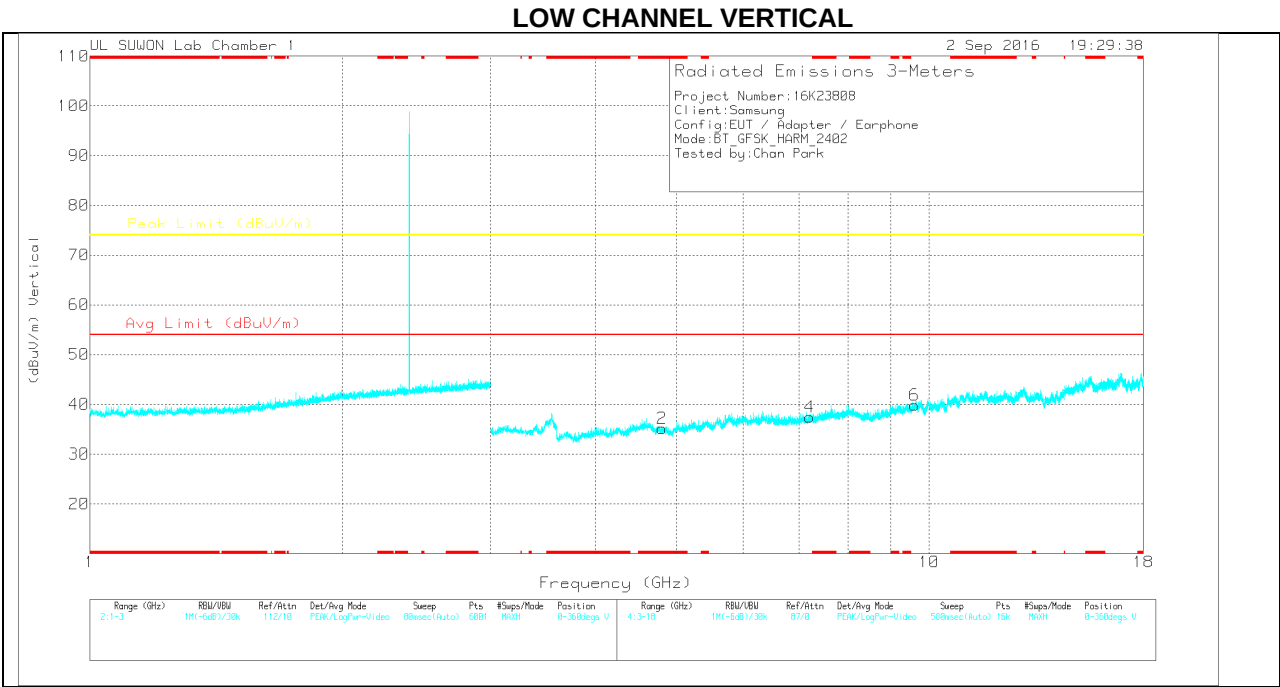
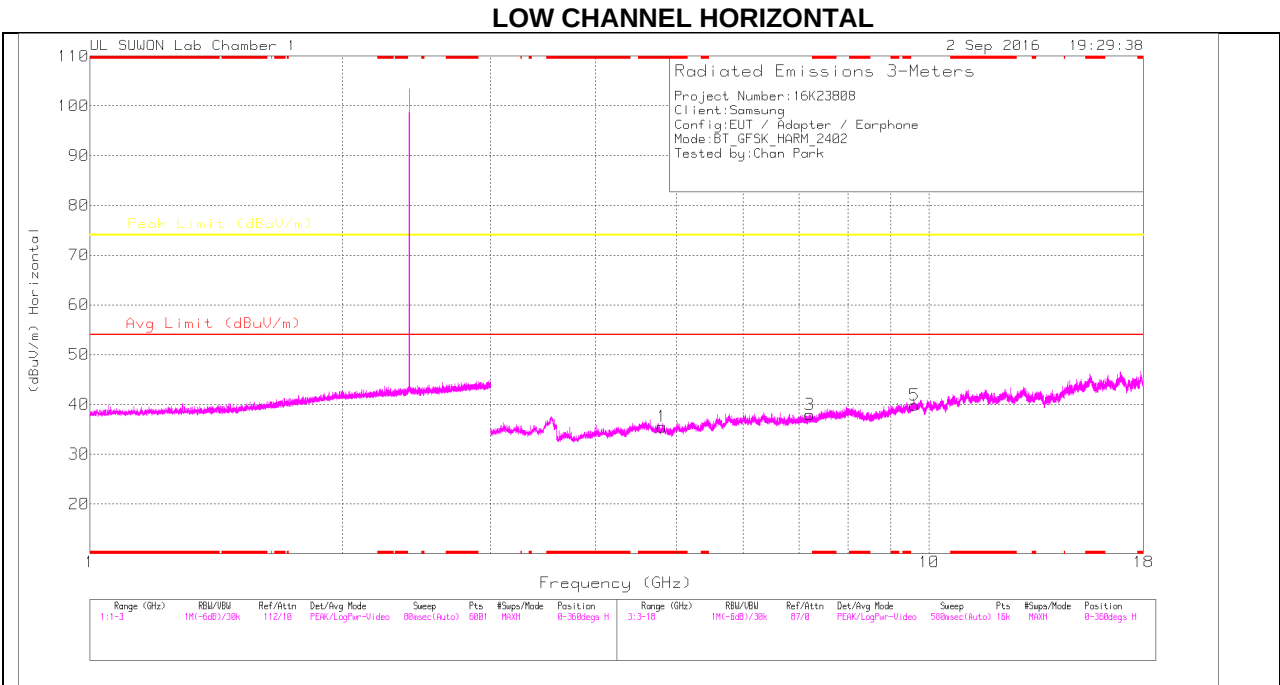
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_2	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarit y	Marker
1	* 2.484	46.38	Pk	32	-28.9	49.48	-	-	74	-24.52	130	234	V	1
2	* 2.484	48.89	Pk	32	-28.9	51.99	-	-	74	-22.01	130	234	V	2
3	* 2.484	36.48	VA1T	32	-28.9	39.58	54	-14.42	-	-	130	234	V	3
4	* 2.484	36.47	VA1T	32	-28.9	39.57	54	-14.43	-	-	130	234	V	4

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

Pk - Peak detector

HARMONICS AND SPURIOUS EMISSIONS



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

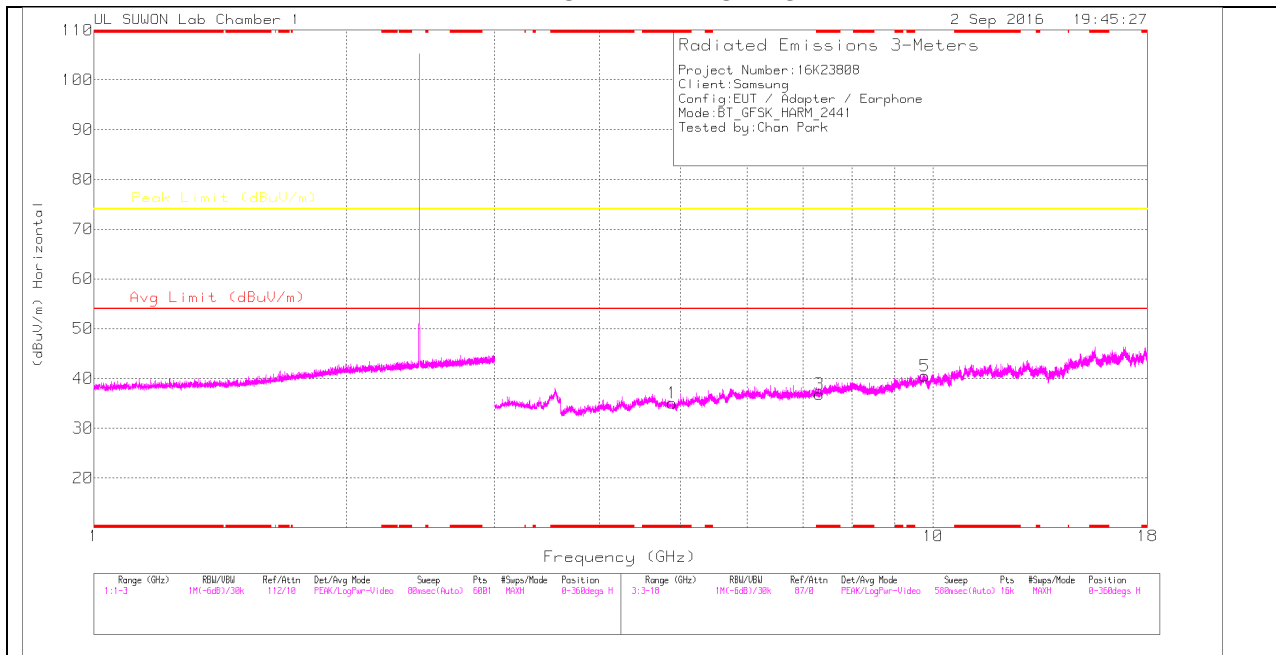
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.807	35.3	PK	34	-33.8	35.5	-	-	74	-38.5	0-360	100	H
3	7.208	33.08	PK	35.7	-30.8	37.98	-	-	74	-36.02	0-360	100	H
5	9.607	30.16	PK	37	-27.3	39.86	-	-	74	-34.14	0-360	100	H
2	* 4.805	34.95	PK	34	-33.8	35.15	-	-	74	-38.85	0-360	200	V
4	7.208	32.54	PK	35.7	-30.8	37.44	-	-	74	-36.56	0-360	100	V
6	9.61	30.2	PK	37	-27.3	39.9	-	-	74	-34.1	0-360	100	V

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

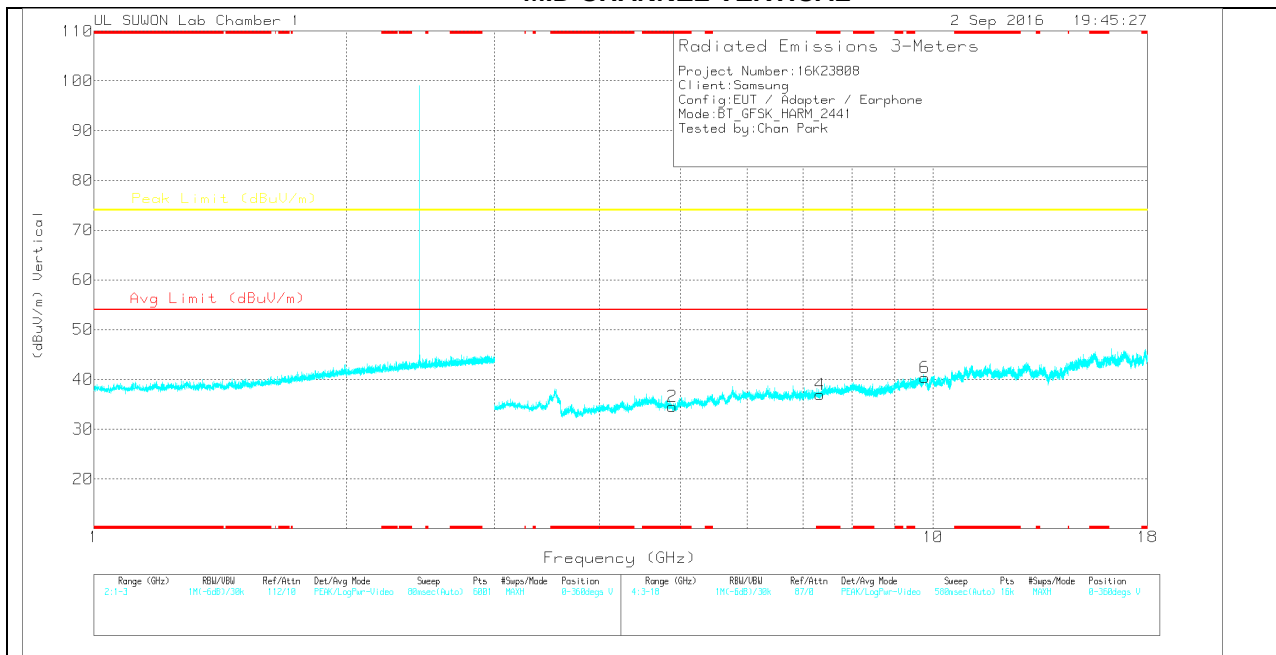
PK – Peak Detector

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

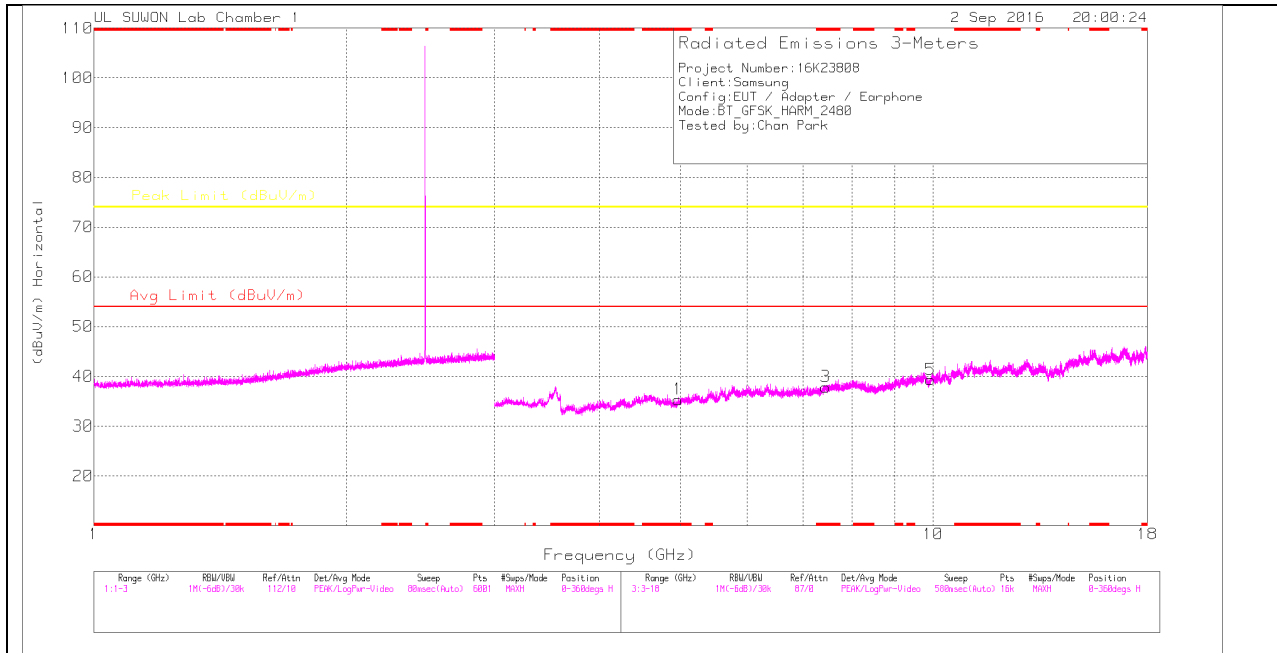
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.89	35.1	PK	34	-34	35.1	-	-	74	-38.9	0-360	100	H
3	* 7.321	31.92	PK	35.8	-30.9	36.82	-	-	74	-37.18	0-360	200	H
5	9.767	29.74	PK	37.2	-26.5	40.44	-	-	74	-33.56	0-360	200	H
2	* 4.89	34.51	PK	34	-34	34.51	-	-	74	-39.49	0-360	100	V
4	* 7.323	32.1	PK	35.8	-30.9	37	-	-	74	-37	0-360	100	V
6	9.766	29.71	PK	37.2	-26.6	40.31	-	-	74	-33.69	0-360	100	V

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

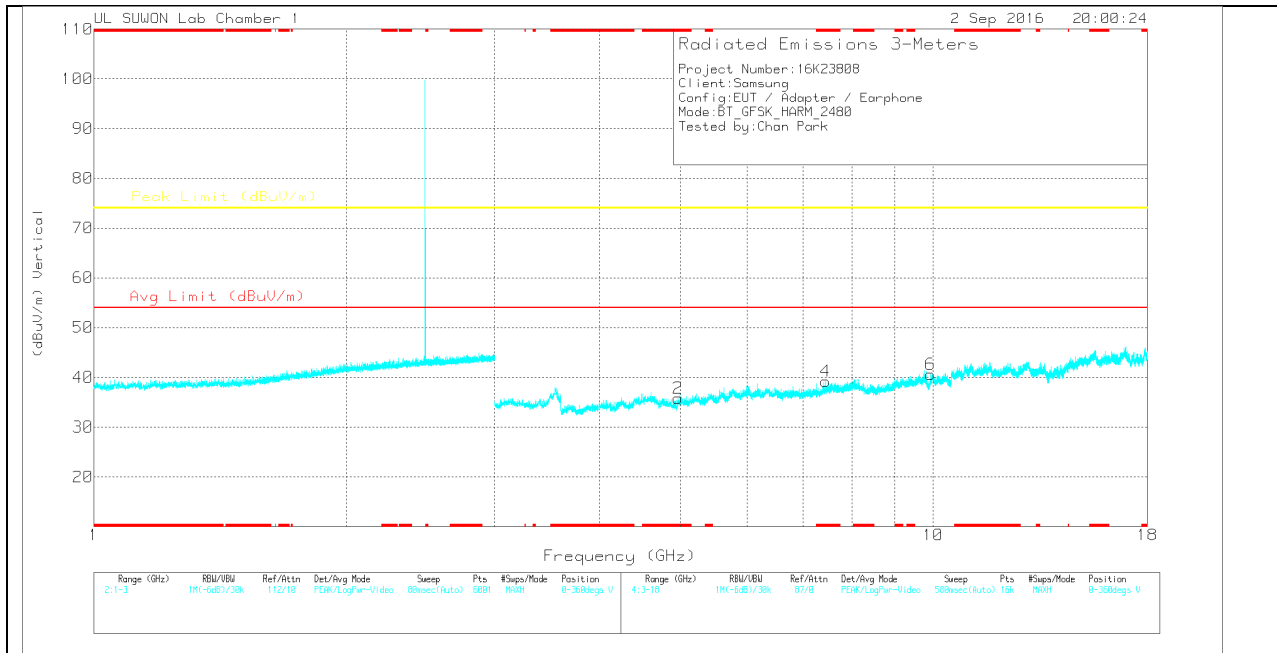
PK – Peak Detector

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(0016 8717)_150 619	Path_3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.961	35.37	PK	34	-34	35.37	-	-	74	-38.63	0-360	100	H
3	* 7.441	32.8	PK	35.8	-30.7	37.9	-	-	74	-36.1	0-360	200	H
5	9.92	29.13	PK	37.4	-27.2	39.33	-	-	74	-34.67	0-360	100	H
2	* 4.961	35.85	PK	34	-34	35.85	-	-	74	-38.15	0-360	100	V
4	* 7.439	34.11	PK	35.8	-30.7	39.21	-	-	74	-34.79	0-360	100	V
6	9.926	30.35	PK	37.4	-27.1	40.65	-	-	74	-33.35	0-360	100	V

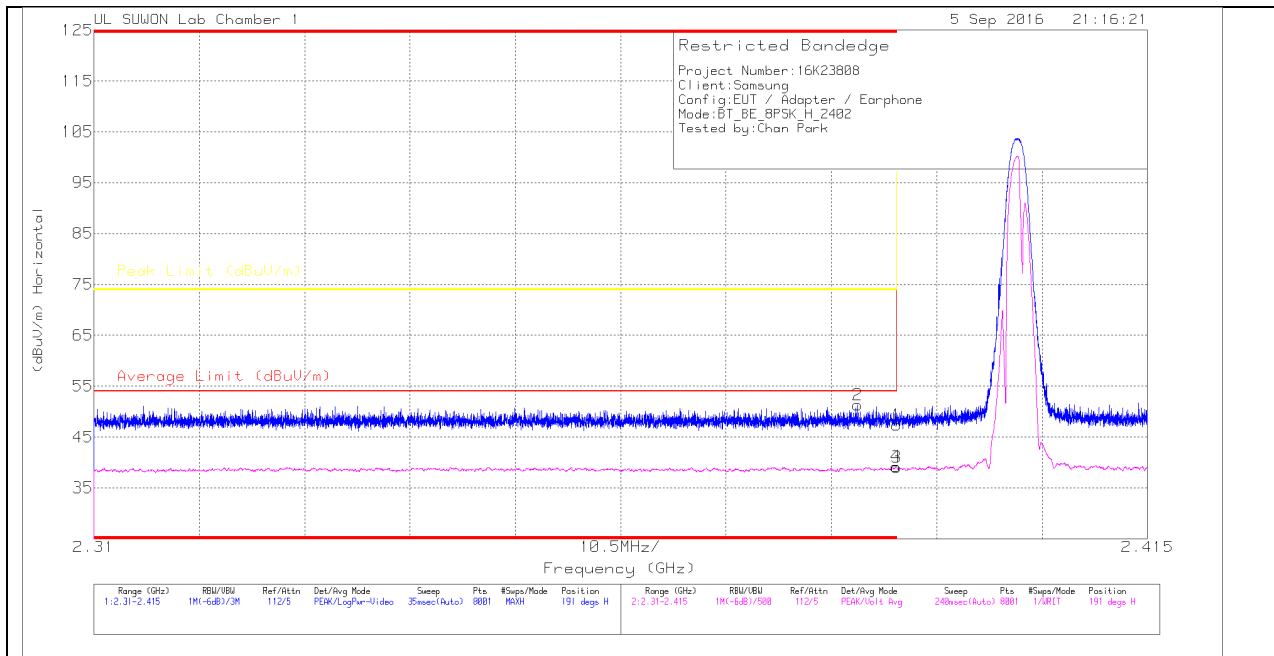
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK – Peak Detector

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

8.1.2. ENHANCED DATA RATE 8PSK MODULATION RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

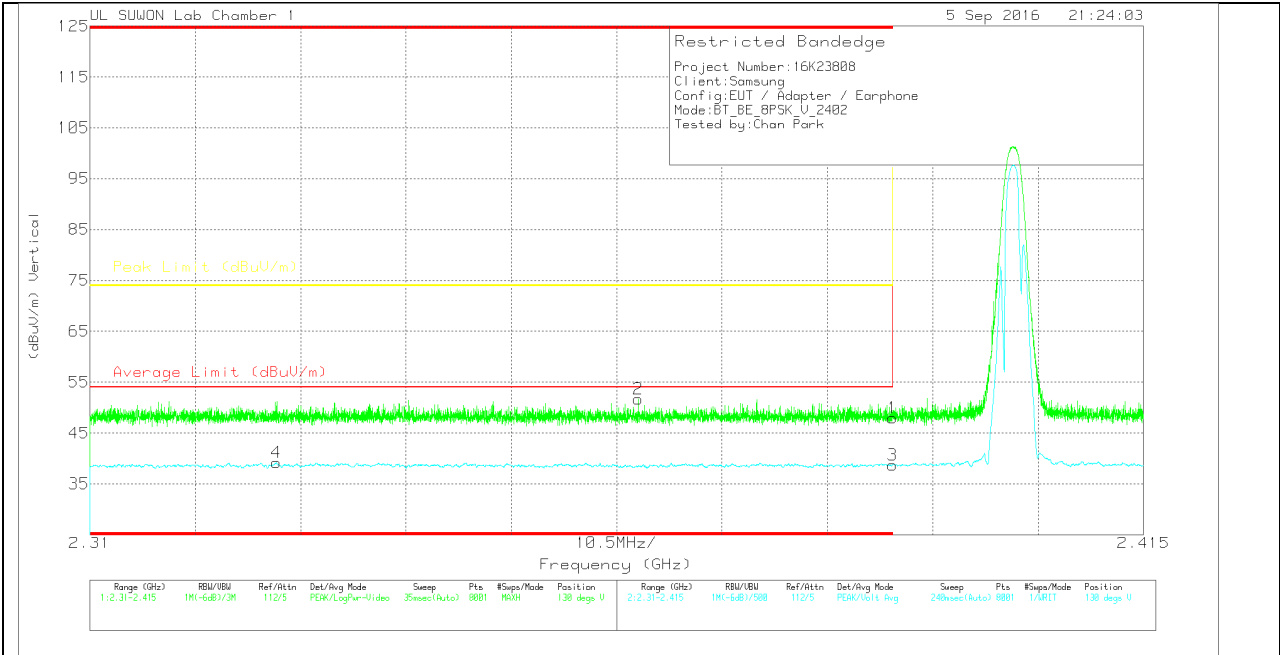
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_2	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarit y	Marker
1	* 2.39	44.59	Pk	31.8	-29	47.39	-	-	74	-26.61	191	109	H	1
2	* 2.386	48.52	Pk	31.8	-29	51.32	-	-	74	-22.68	191	109	H	2
3	* 2.39	36.24	VA1T	31.8	-29	39.04	54	-14.96	-	-	191	109	H	3
4	* 2.39	36.36	VA1T	31.8	-29	39.16	54	-14.84	-	-	191	109	H	4

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

Pk - Peak detector

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

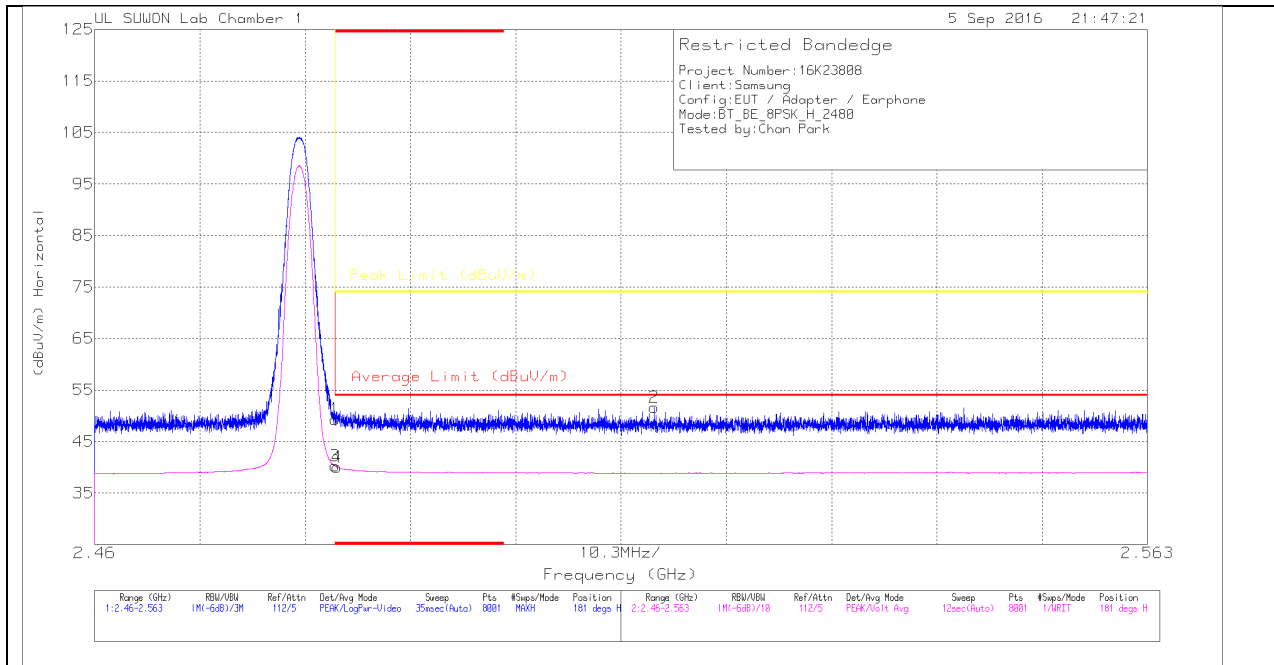
Marker	Frequenc y (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_2	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/ m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarit y	Marker
1	* 2.39	45.14	Pk	31.8	-29	47.94	-	-	74	-26.06	130	245	V	1
2	* 2.365	48.86	Pk	31.8	-29	51.66	-	-	74	-22.34	130	245	V	2
3	* 2.39	35.95	VA1T	31.8	-29	38.75	54	-15.25	-	-	130	245	V	3
4	* 2.329	36.45	VA1T	31.7	-29	39.15	54	-14.85	-	-	130	245	V	4

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

Pk - Peak detector

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

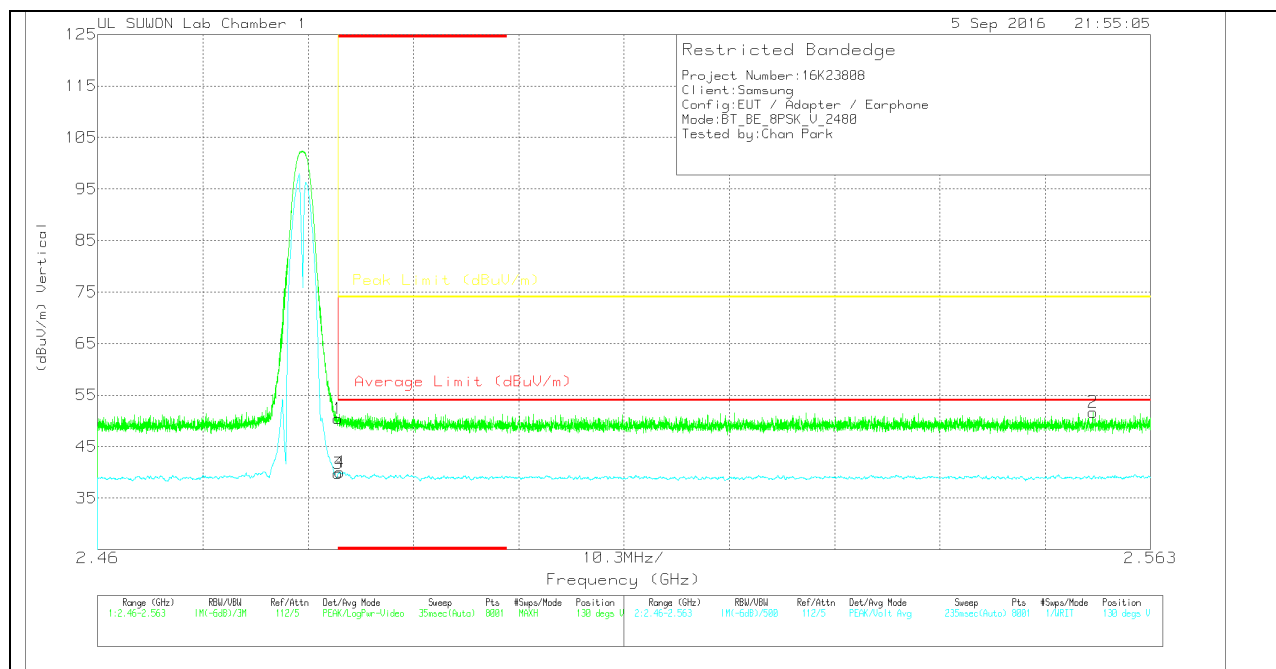
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_2	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarit y	Marker
1	* 2.484	46.27	Pk	32	-28.9	49.37	-	-	74	-24.63	181	104	H	1
2	2.515	48.53	Pk	32	-28.9	51.63	-	-	74	-22.37	181	104	H	2
3	* 2.484	37.18	VA1T	32	-28.9	40.28	54	-13.72	-	-	181	104	H	3
4	* 2.484	36.95	VA1T	32	-28.9	40.05	54	-13.95	-	-	181	104	H	4

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

Pk - Peak detector

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

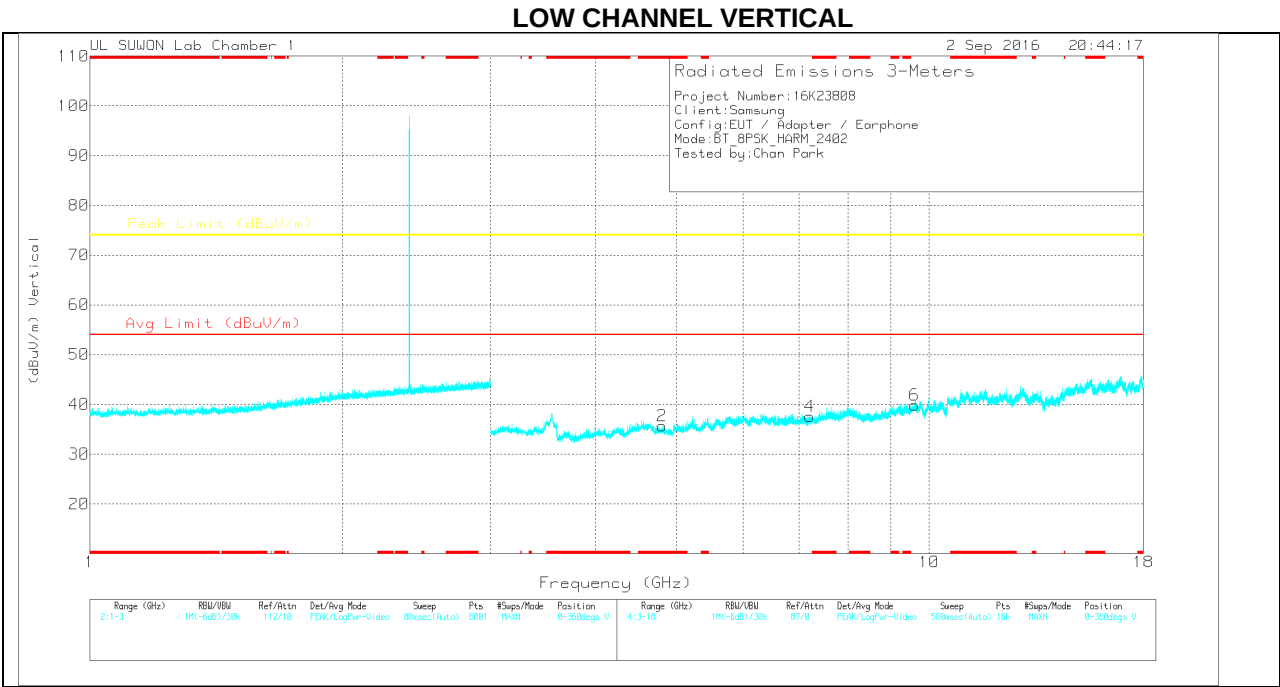
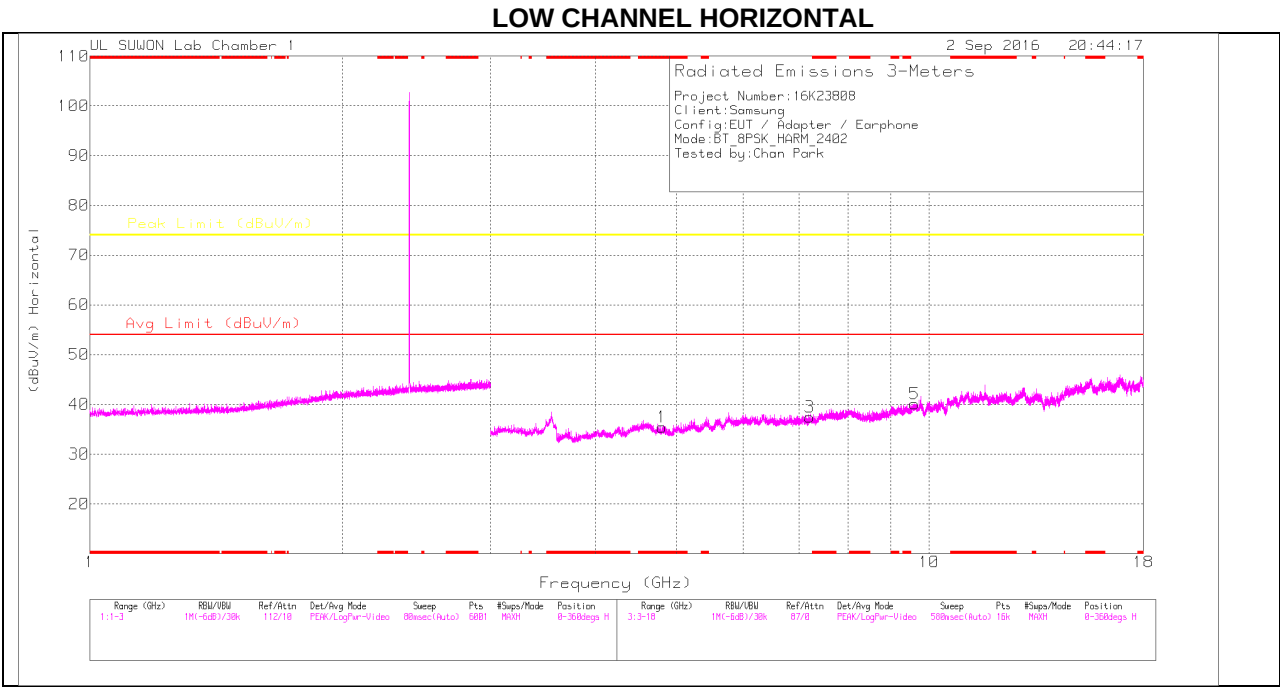
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117/0016 8717_150 619	Path_2	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarit y	Marker
1	* 2.484	47.32	Pk	32	-28.9	50.42	-	-	74	-23.58	130	233	V	1
2	2.557	48.47	Pk	32	-28.8	51.67	-	-	74	-22.33	130	233	V	2
3	* 2.484	36.65	VA1T	32	-28.9	39.75	54	-14.25	-	-	130	233	V	3
4	* 2.484	36.9	VA1T	32	-28.9	40	54	-14	-	-	130	233	V	4

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

Pk - Peak detector

HARMONICS AND SPURIOUS EMISSIONS



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

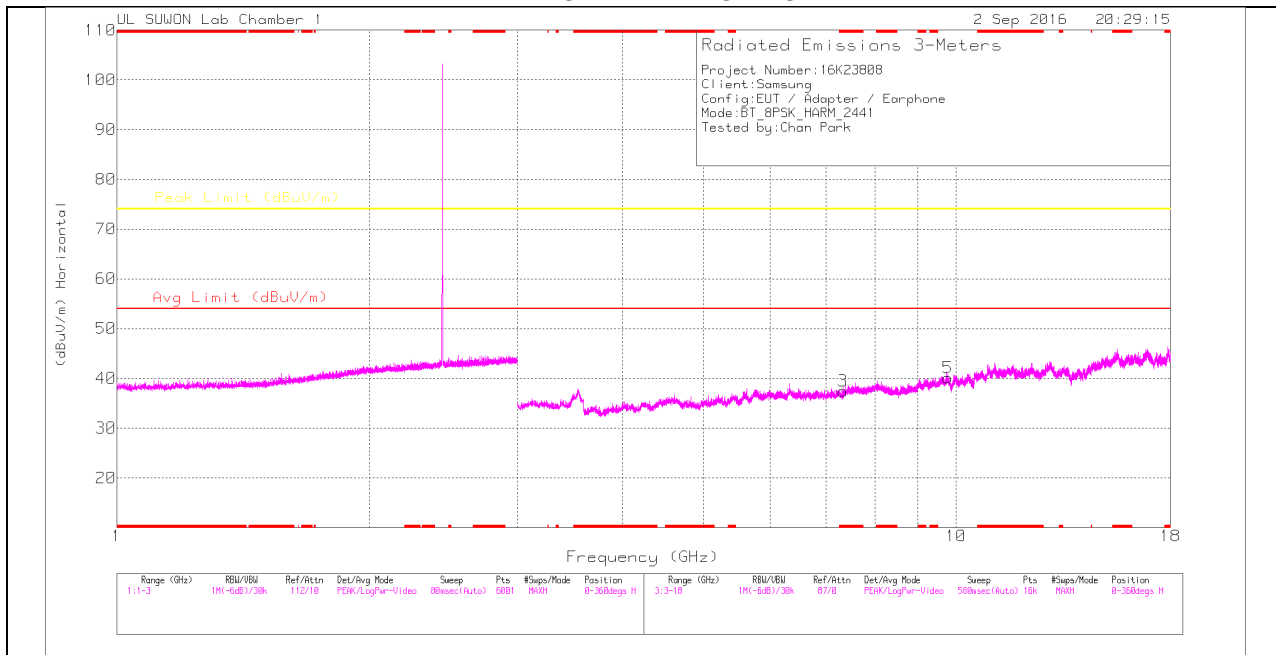
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.807	35.19	PK	34	-33.8	35.39	-	-	74	-38.61	0-360	100	H
3	7.205	32.56	PK	35.7	-30.8	37.46	-	-	74	-36.54	0-360	100	H
5	9.61	30.45	PK	37	-27.3	40.15	-	-	74	-33.85	0-360	200	H
2	* 4.805	35.53	PK	34	-33.8	35.73	-	-	74	-38.27	0-360	200	V
4	7.203	32.63	PK	35.7	-30.8	37.53	-	-	74	-36.47	0-360	100	V
6	9.607	30.18	PK	37	-27.3	39.88	-	-	74	-34.12	0-360	100	V

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

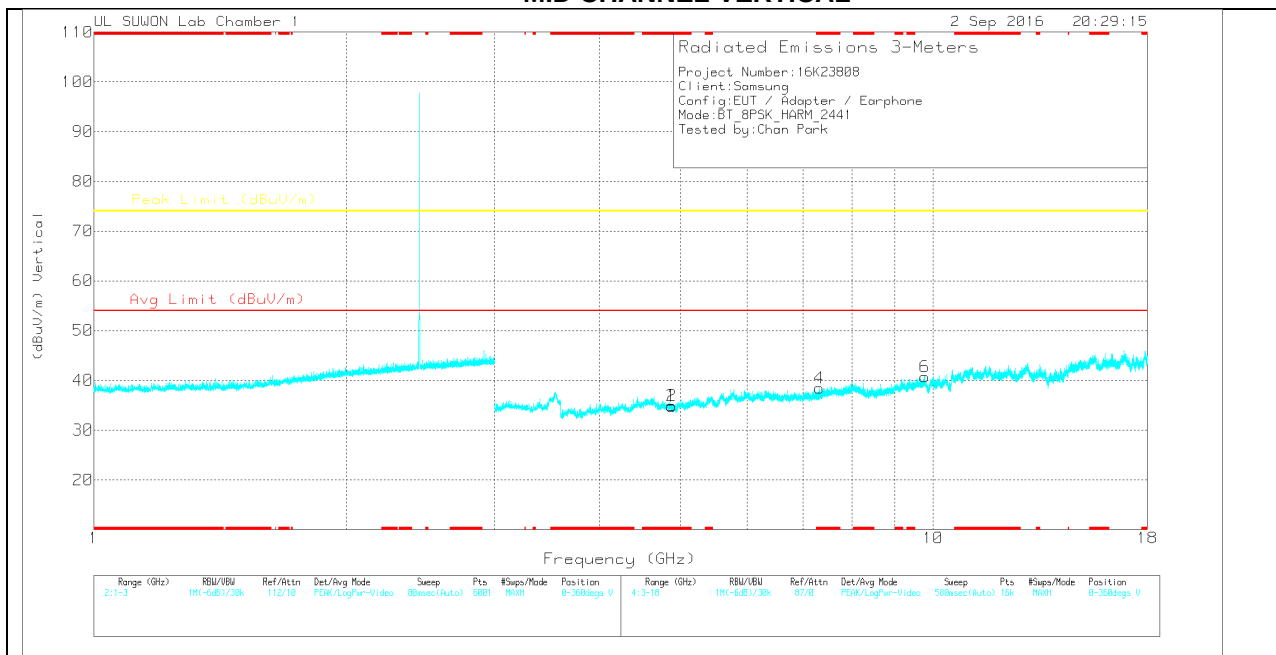
PK – Peak Detector

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

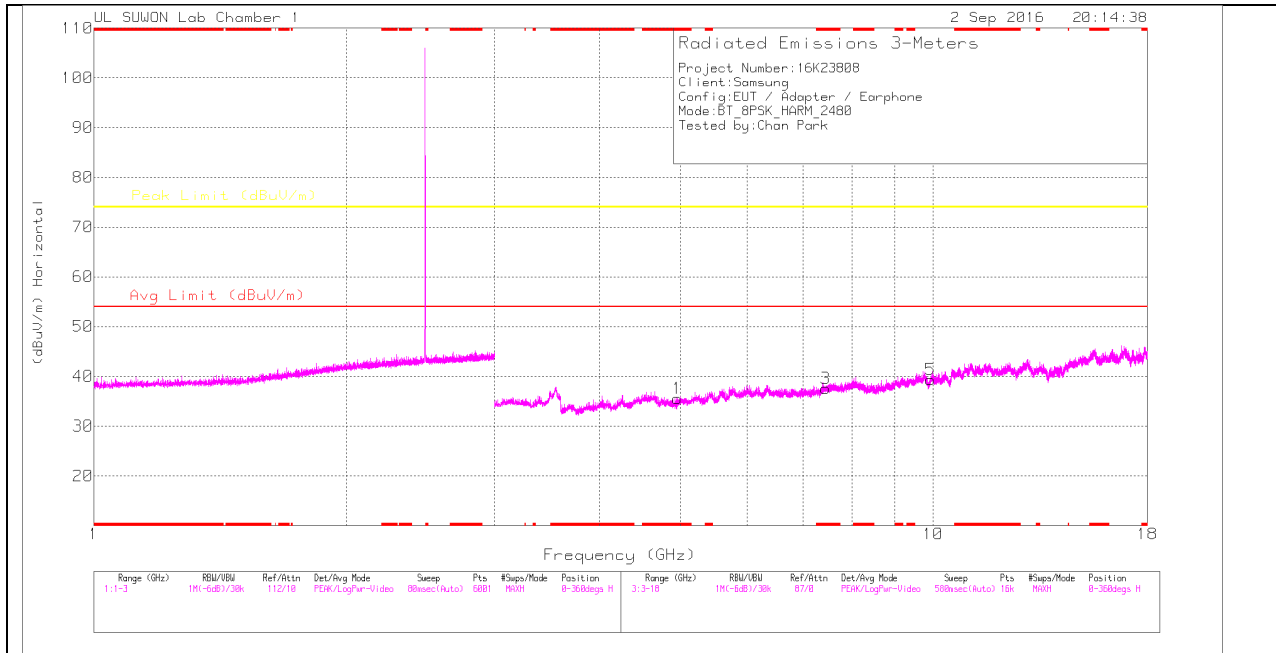
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(0016 8717)_150 619	Path_3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 7.331	32.49	PK	35.8	-30.8	37.49	-	-	74	-36.51	0-360	100	H
5	9.768	29.46	PK	37.2	-26.5	40.16	-	-	74	-33.84	0-360	100	H
1	* 4.881	34.86	PK	34	-34	34.86	-	-	74	-39.14	0-360	100	V
2	* 4.878	34.93	PK	34	-34	34.93	-	-	74	-39.07	0-360	200	V
4	* 7.323	33.54	PK	35.8	-30.9	38.44	-	-	74	-35.56	0-360	200	V
6	9.766	30.17	PK	37.2	-26.6	40.77	-	-	74	-33.23	0-360	200	V

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

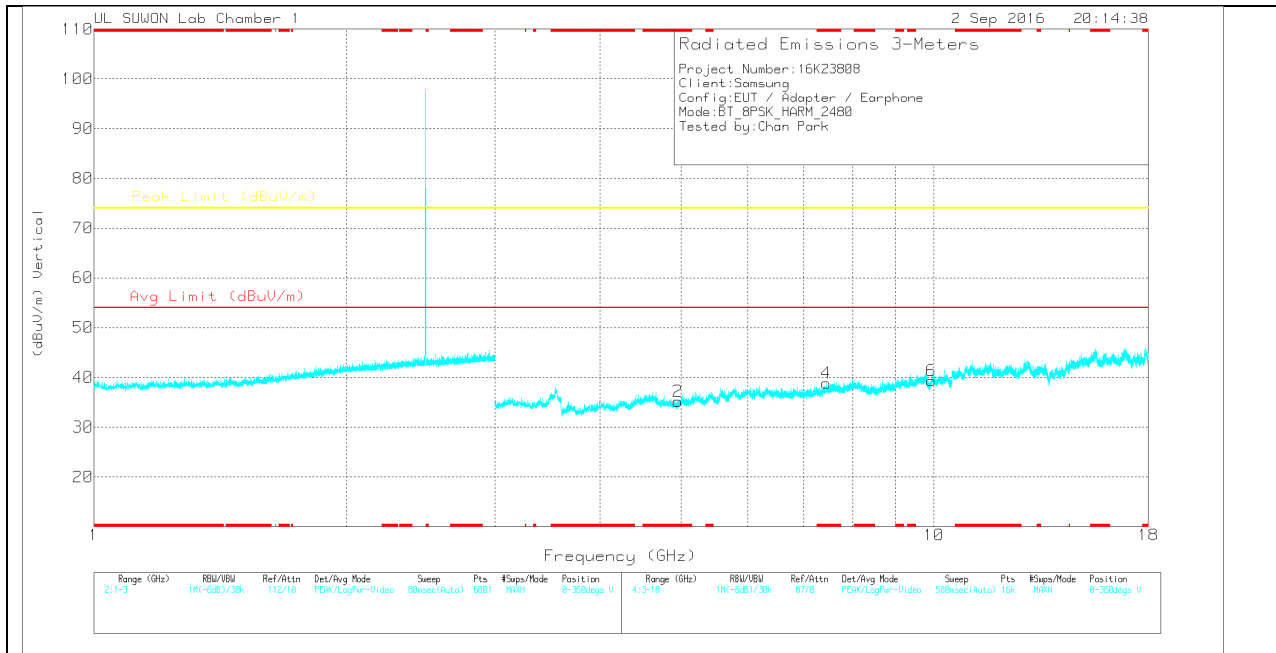
PK – Peak Detector

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

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(0016 8717)_150 619	Path_3	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.96	35.6	PK	34	-34	35.6	-	-	74	-38.4	0-360	200	H
3	* 7.44	32.49	PK	35.8	-30.7	37.59	-	-	74	-36.41	0-360	200	H
5	9.92	29.16	PK	37.4	-27.2	39.36	-	-	74	-34.64	0-360	100	H
2	* 4.957	35.23	PK	34	-34	35.23	-	-	74	-38.77	0-360	100	V
4	* 7.44	33.75	PK	35.8	-30.7	38.85	-	-	74	-35.15	0-360	200	V
6	9.919	29.13	PK	37.4	-27.2	39.33	-	-	74	-34.67	0-360	100	V

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

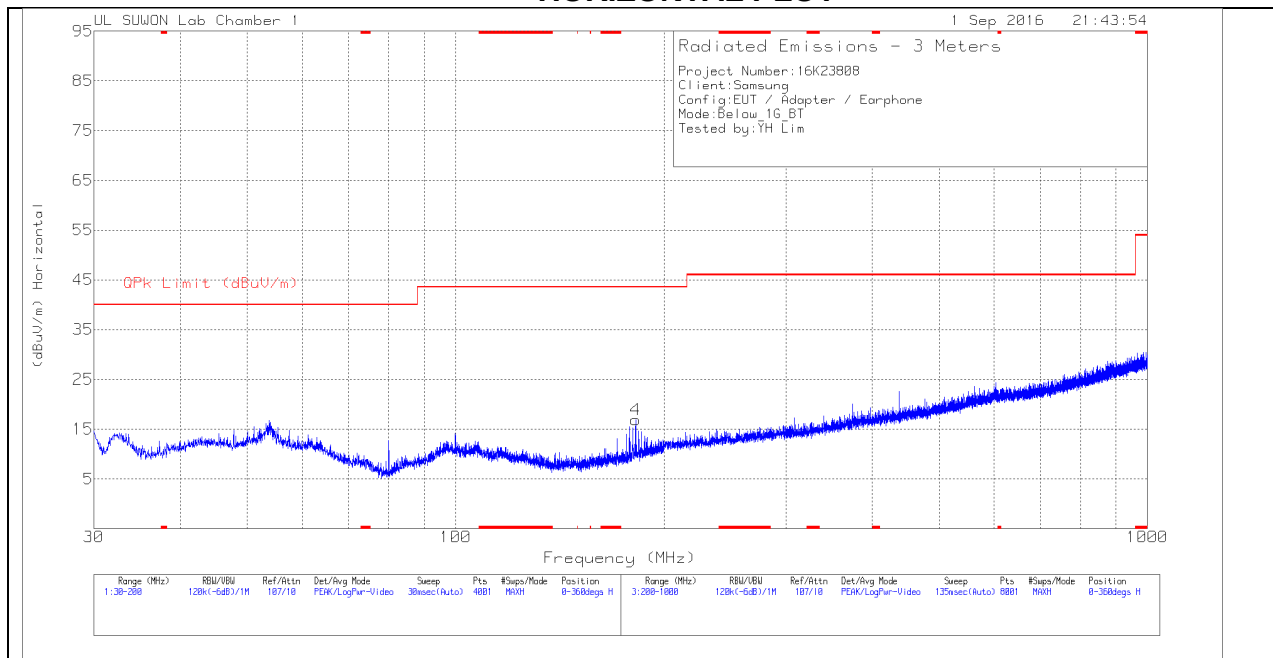
PK – Peak Detector

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

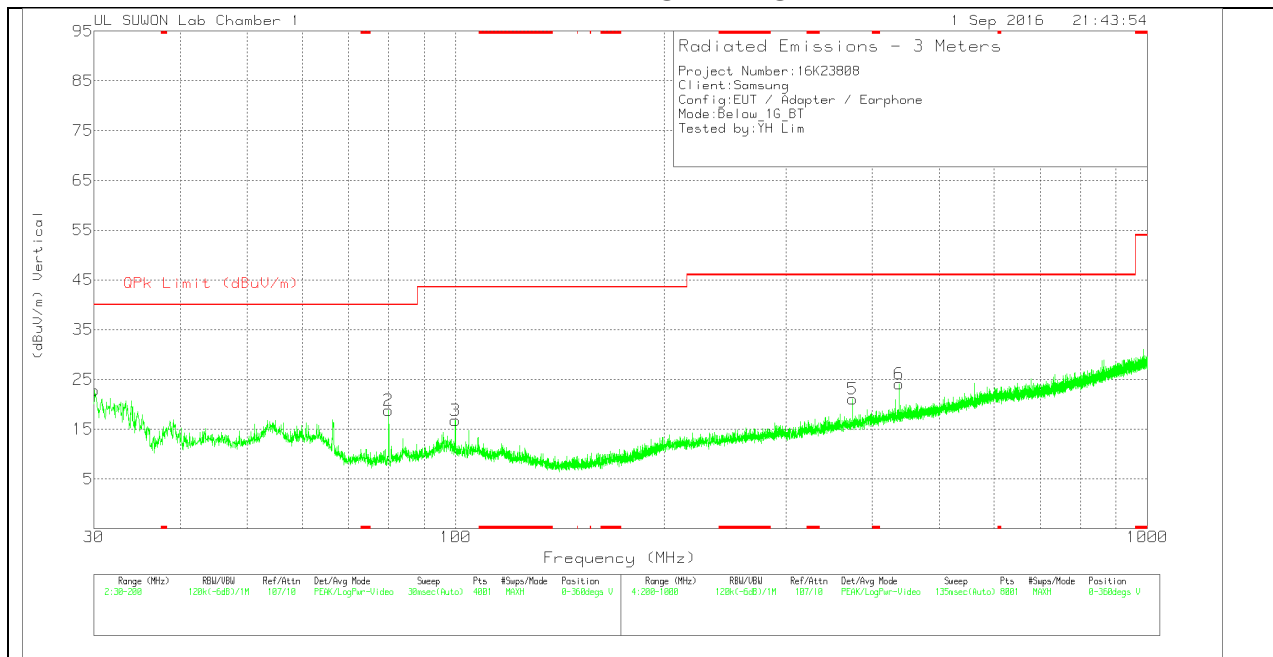
8.2. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



BELOW 1 GHz TABLE

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
4	182.0225	35.63	Pk	9.6	-28.3	16.93	43.52	-26.59	0-360	200	H
1	30.085	43.01	Pk	10.3	-30.5	22.81	40	-17.19	0-360	100	V
2	79.98	41.51	Pk	6.9	-29.6	18.81	40	-21.19	0-360	200	V
3	99.8913	34.58	Pk	11.5	-29.3	16.78	43.52	-26.74	0-360	100	V
5	375	33	Pk	15	-26.9	21.1	46.02	-24.92	0-360	100	V
6	437.5	34.61	Pk	16.1	-26.6	24.11	46.02	-21.91	0-360	100	V

Pk - Peak detector