FCC CFR47 PART 15 SUBPART B

CELLULAR RECEIVER MODE

C2PC TEST REPORT

FOR

GSM/WCDMA/LTE Phone + BT/BLE, DTS/UNII a/b/g/n/ac, ANT+ and NFC

MODEL NUMBER : SM-A405FM/DS

FCC ID: A3LSMA405FN

REPORT NUMBER: 4788911300-E1V2

ISSUE DATE: MAR 14, 2019

Prepared for
SAMSUNG ELECTRONICS CO., LTD.
129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI,
GYEONGGI-DO, 16677, KOREA

Prepared by
UL Korea, Ltd.
26th floor, 152, Teheran-ro, Gangnam-gu Seoul, 06236, Korea
Suwon Test Site: UL Korea, Ltd. Suwon Laboratory
218 Maeyeong-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16675, Korea
TEL: (031) 337-9902
FAX: (031) 213-5433

ACCREDITED
Testing Laboratory

TL-637

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	03/08/19	Initial issue	Junwhan Lee
V2	03/14/19	Updated to address TCB's question	Junwhan Lee

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS 4

2. TEST METHODOLOGY 5

3. FACILITIES AND ACCREDITATION 5

4. CALIBRATION AND UNCERTAINTY 5

4.1. MEASURING INSTRUMENT CALIBRATION 5

4.2. MEASUREMENT UNCERTAINTY 5

5. EQUIPMENT UNDER TEST 6

5.1. DESCRIPTION OF EUT 6

5.2. TEST MODE 6

5.3. WORST-CASE ORIENTATION 6

5.4. DESCRIPTION OF TEST SETUP 7

6. TEST AND MEASUREMENT EQUIPMENT 8

7. APPLICABLE LIMIYS AND TEST RESULTS 9

7.1. Above 1 GHz in the GSM850 10

7.2. Above 1 GHz in the WCDMA Band 5 16

7.3. Above 1 GHz in the LTE Band 5 22

7.4. Below 1 GHz in the GSM850 28

7.5. Below 1 GHz in the WCDMA Band 5 34

7.6. Below 1 GHz in the LTE Band 5 40

8. Appendix A: SETUP PHOTOS 46

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

EUT DESCRIPTION: GSM/WCDMA/LTE Phone + BT/BLE, DTS/UNII a/b/g/n/ac, ANT+ and NFC

MODEL NUMBER: SM-A405FM/DS

SERIAL NUMBER: R38M10522RK, 32008e9153d116ff (RADIATED);

DATE TESTED: MAR 07, 2019 – MAR 14, 2019;

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15B	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:

SungGil Park
Suwon Lab Engineer
UL Korea, Ltd.

Tested By:

Junwhan Lee
Suwon Lab Engineer
UL Korea, Ltd.

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with following methods.

1. FCC CFR 47 Part 2.
2. FCC CFR 47 Part 15.
3. ANSI C63.4 : 2014

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
☐ Chamber 3

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. 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	3.86 dB
Radiated Disturbance, Above 1 GHz	5.97 dB

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

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE Phone + BT/BLE, DTS/UNII a/b/g/n/ac, ANT+ and NFC.
This test report addresses the WWAN receiver mode. (GSM850/WCDMA B5/LTE B5)

5.2. TEST MODE

Mode	Description
GSM850	Communicating with Call simulator(CMW500)
WCDMA BAND 5	Communicating with Call simulator(CMW500)
LTE BAND 5	Communicating with Call simulator(CMW500)

5.3. WORST-CASE ORIENTATION

For GSM850, 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.

For WCDMA B5 / LTE B5, the fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z it was determined that Z orientation was worst-case orientation.

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

5.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	EP-TA200	R37KCHE3W01SE3	N/A
Data Cable	SAMSUNG	EP-D140AWE	N/A	N/A
Earphone	SAMSUNG	EHS61ASFWE	N/A	N/A

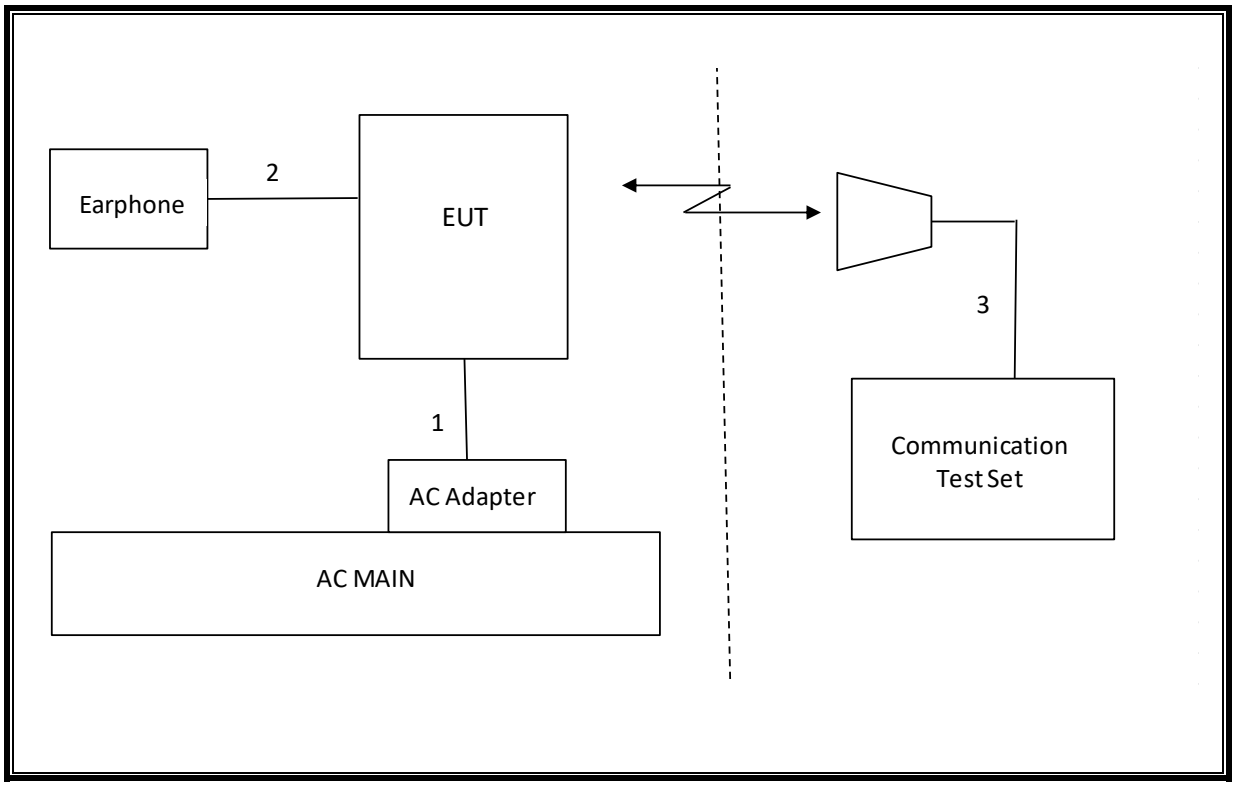
I/O CABLE

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	C Type	Shielded	1.1m	N/A
2	Audio	2	Mini-Jack	Unshielded	1.2m	N/A

TEST SETUP

The EUT is continuously communicated to the call box during the tests.

SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

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, Tuned Dipole 400~1000 MHz	ETS	3121D DB4	00164753	06-30-19
Antenna, Horn, 40 GHz	ETS	3116C	00166155	12-04-19
Preamplifier	ETS	3116C-PA	00168841	08-09-19
Antenna, Horn, 40 GHz	ETS	3116C	00168645	12-04-19
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	750	08-04-20
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	845	08-04-20
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	08-04-20
Antenna, Horn, 18 GHz	ETS	3115	00167211	08-04-20
Antenna, Horn, 18 GHz	ETS	3115	00161451	08-04-20
Antenna, Horn, 18 GHz	ETS	3117	00168724	08-04-20
Antenna, Horn, 18 GHz	ETS	3117	00205959	08-04-20
Antenna, Horn, 18 GHz	ETS	3117	00168717	08-04-20
Communications Test Set	R&S	CMW500	115331	08-07-19
Preamplifier, 1000 MHz	Sonoma	310N	341282	08-07-19
Preamplifier, 1000 MHz	Sonoma	310N	370599	08-06-19
Preamplifier, 1000 MHz	Sonoma	310N	351741	08-07-19
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1876511	08-07-19
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	08-07-19
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	08-07-19
EMI Test Receive, 40 GHz	R&S	ESU40	100439	08-06-19
EMI Test Receive, 40 GHz	R&S	ESU40	100457	08-06-19
EMI Test Receive, 44 GHz	R&S	ESW40	101590	08-06-19
High Pass Filter 1.2GHz	Micro-Tronics	HPM50108-02	G005	08-08-19
High Pass Filter 1.2GHz	Micro-Tronics	HPM50108-02	G006	08-08-19
High Pass Filter 2.8GHz	Micro-Tronics	HPM50111-02	010	08-08-19
High Pass Filter 2.8GHz	Micro-Tronics	HPM50111-02	011	08-08-19
High Pass Filter 4GHz	Micro-Tronics	HPM50118-02	G001	08-08-19
High Pass Filter 4GHz	Micro-Tronics	HPM50118-02	G002	08-08-19
Attenuator	PASTERNACK	PE7087-10	A009	08-08-19
Attenuator	PASTERNACK	PE7087-10	A001	08-08-19
Attenuator	PASTERNACK	PE7087-10	A008	08-08-19
Attenuator	PASTERNACK	PE7087-10	2	08-07-19

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

7. APPLICABLE LIMIYS AND TEST RESULTS

. TEST PROCEDURE

ANSI C63.4: 2014

LIMIT

§15.109 (a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

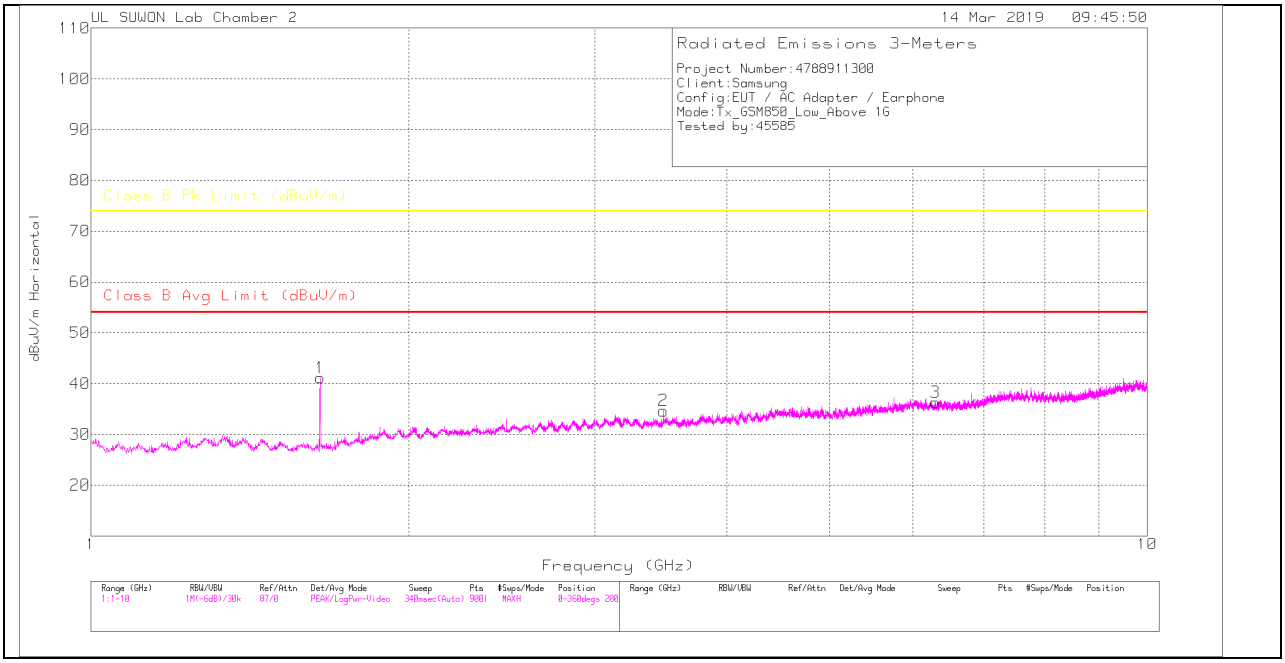
Limits for radiated disturbance of Class B ITE at measuring distance of 3 m	
Frequency range (MHz)	Quasi-peak limits (dBµV/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
Above 960 MHz	54
Note: The lower limit shall apply at the transition frequency.	

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

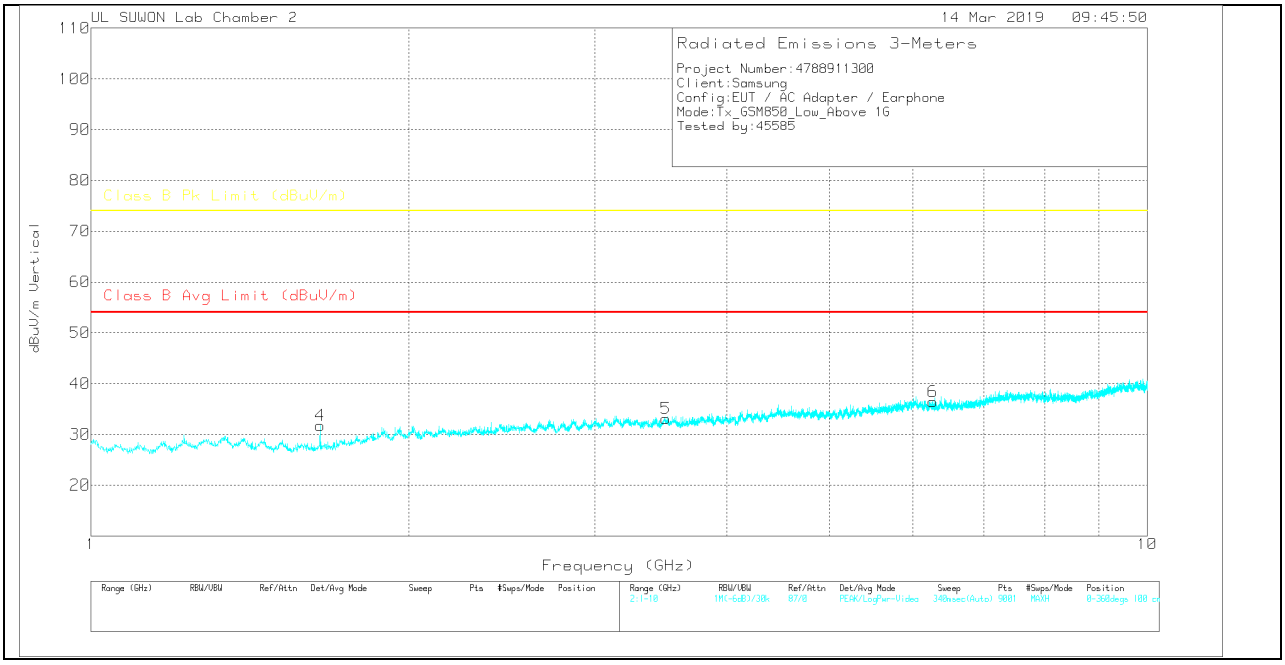
7.1. Above 1 GHz in the GSM850

LOW CHANNEL(869.2MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HPF	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.648	43.65	PK	28.3	-31.4	.6	41.15	-	-	74	-32.85	0-360	100	H
2	3.483	30.45	PK	32.7	-29	.5	34.65	-	-	74	-39.35	0-360	100	H
3	6.3	27.94	PK	35.2	-27.1	.3	36.34	-	-	74	-37.66	0-360	200	H
4	1.648	34.29	PK	28.3	-31.4	.6	31.79	-	-	74	-42.21	0-360	100	V
5	3.501	28.69	PK	32.7	-28.9	.6	33.09	-	-	74	-40.91	0-360	200	V
6	6.266	27.8	PK	35.2	-27.1	.5	36.4	-	-	74	-37.6	0-360	100	V

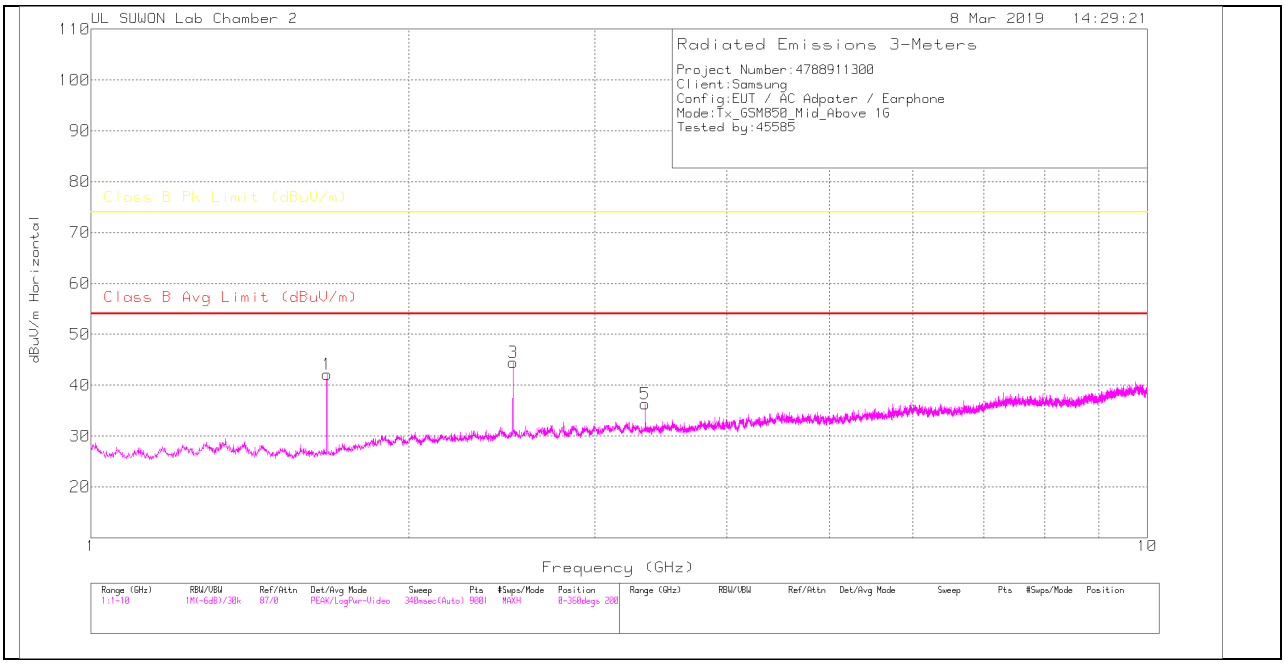
PK – Peak Detector

Note: Unwanted emissions on the harmonic frequency were generated from the call-simulator with the TX and RX signals.

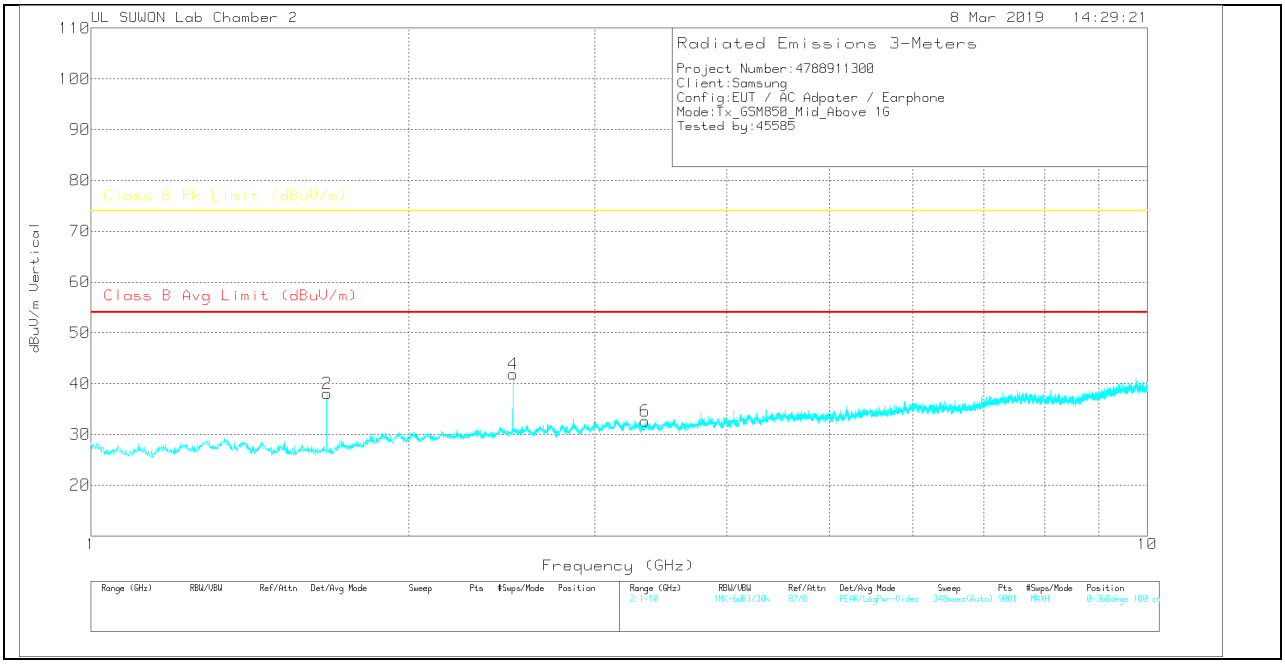
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL(881.6MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HPF	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.673	44.4	PK	28.5	-31.3	.5	42.1	-	-	74	-31.9	0-360	200	H
3	2.509	42.35	PK	31.9	-30.3	.5	44.45	-	-	74	-29.55	0-360	200	H
5	3.346	33.06	PK	32.6	-29.8	.5	36.36	-	-	74	-37.64	0-360	200	H
2	1.673	40.37	PK	28.5	-31.3	.5	38.07	-	-	74	-35.93	0-360	100	V
4	2.51	39.73	PK	31.9	-30.3	.5	41.83	-	-	74	-32.17	0-360	100	V
6	3.345	29.46	PK	32.6	-29.9	.5	32.66	-	-	74	-41.34	0-360	100	V

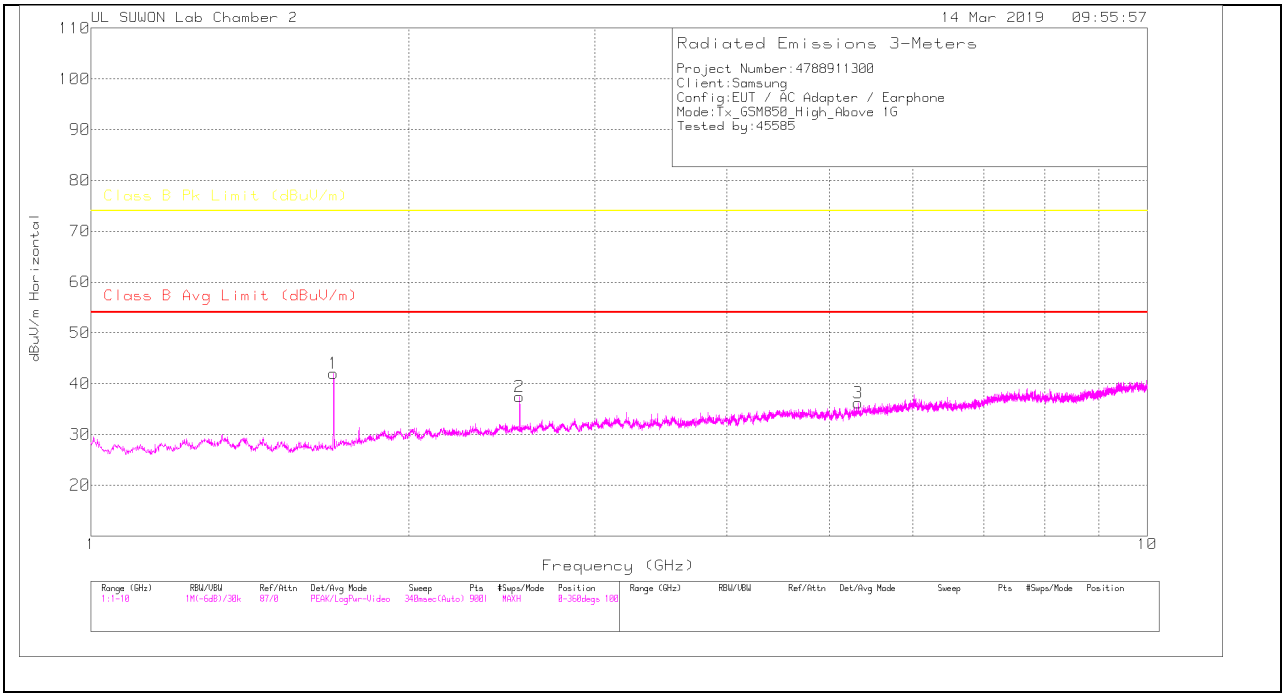
PK – Peak Detector

Note: Unwanted emissions on the harmonic frequency and marker pointed were generated from the call-simulator with the TX and RX signals.

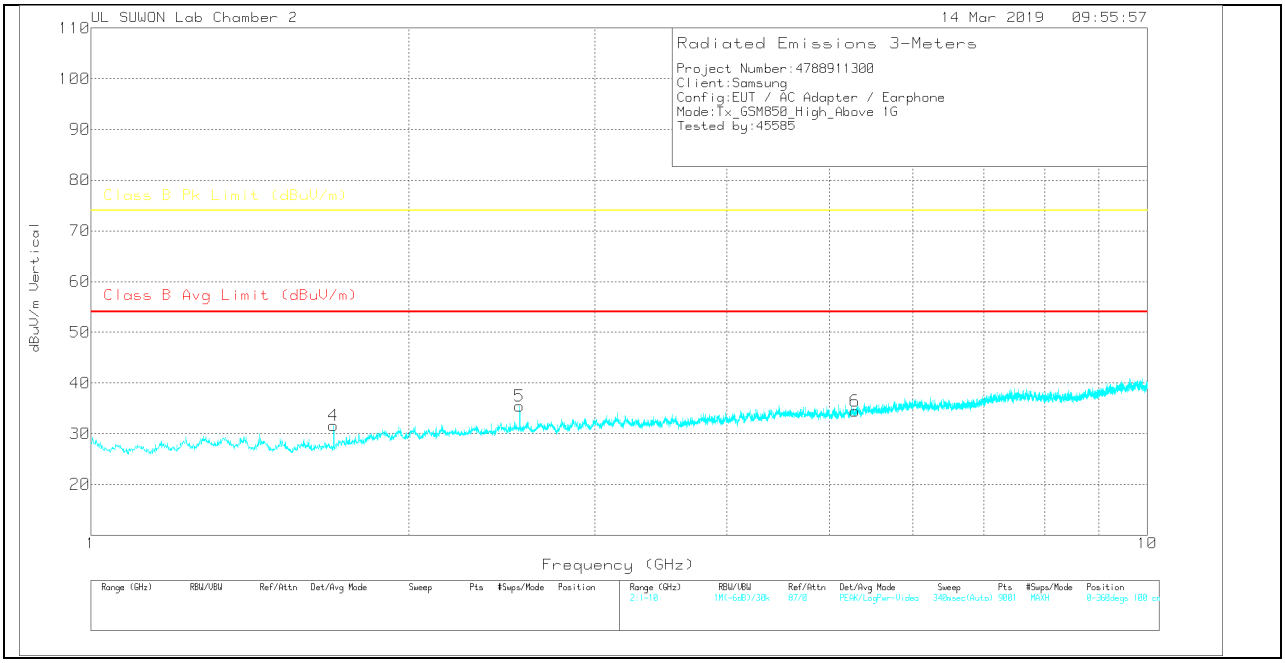
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

HIGH CHANNEL(893.8MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HPF	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.697	44.14	PK	28.6	-31.3	.6	42.04	-	-	74	-31.96	0-360	200	H
2	2.546	34.94	PK	32	-30.2	.7	37.44	-	-	74	-36.56	0-360	200	H
3	5.327	29.82	PK	34.5	-28.5	.4	36.22	-	-	74	-37.78	0-360	200	H
4	1.697	33.75	PK	28.6	-31.3	.6	31.65	-	-	74	-42.35	0-360	100	V
5	2.546	32.9	PK	32	-30.2	.7	35.4	-	-	74	-38.6	0-360	200	V
6	5.289	28.12	PK	34.4	-28.5	.4	34.42	-	-	74	-39.58	0-360	100	V

PK – Peak Detector

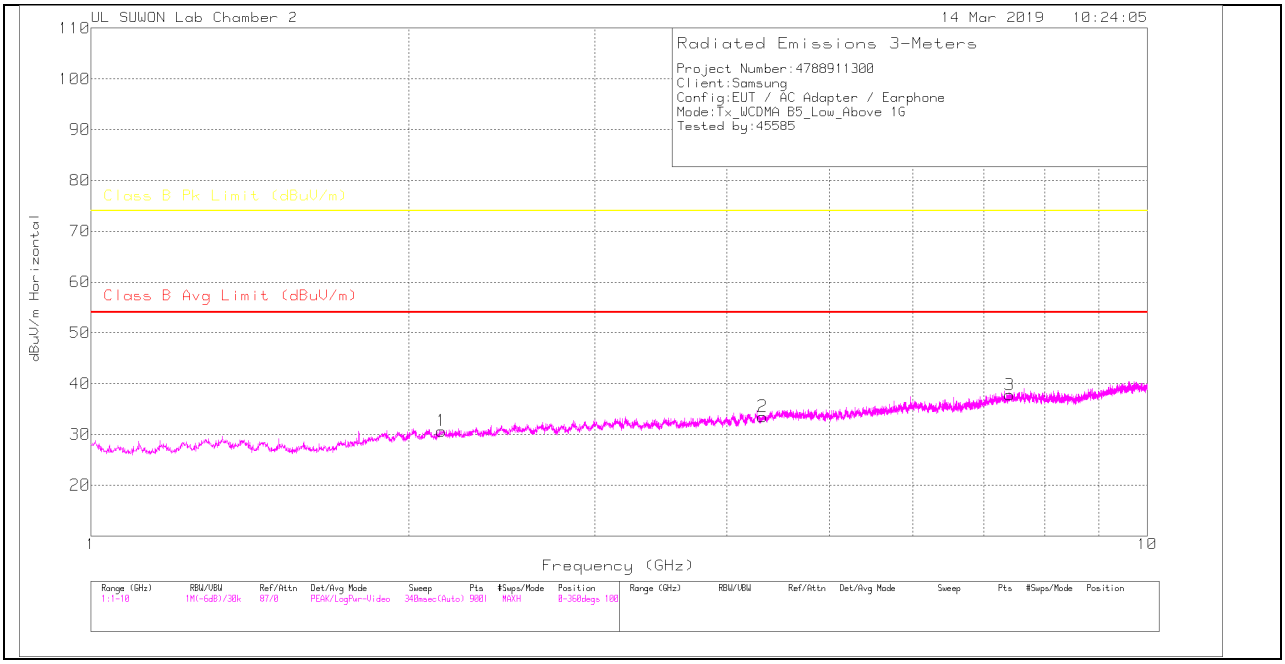
Note: Unwanted emissions on the harmonic frequency were generated from the call-simulator with the TX and RX signals.

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

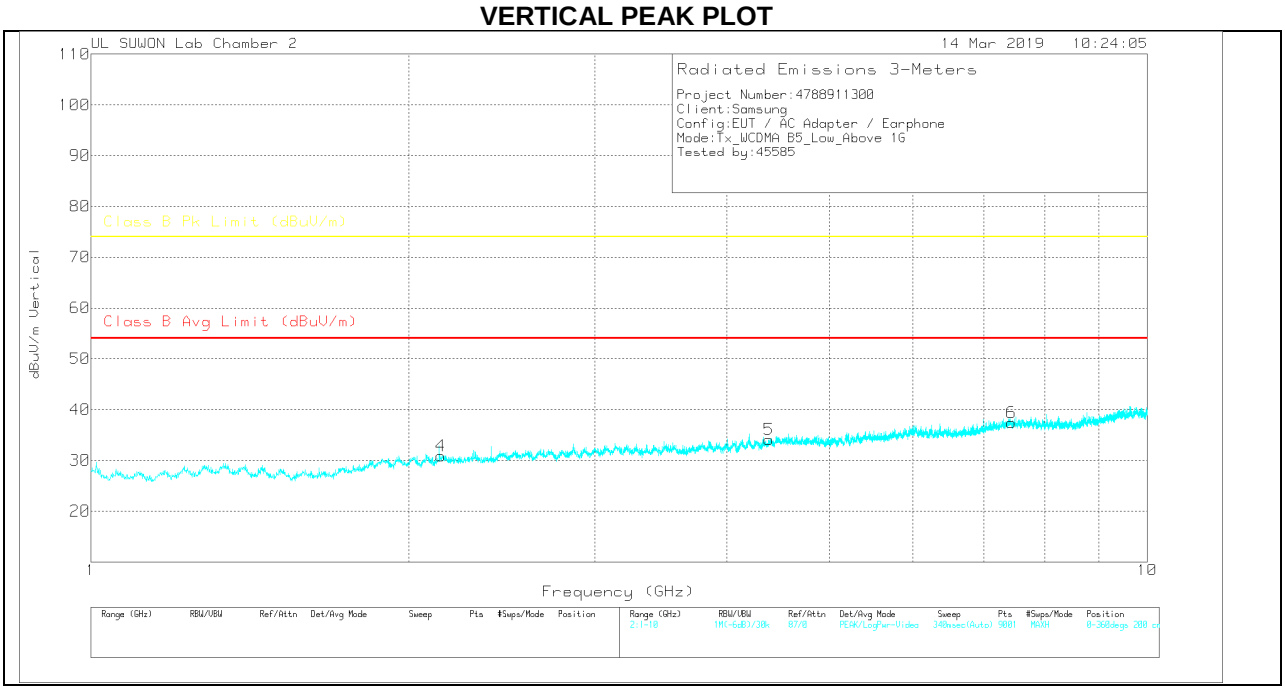
7.2. Above 1 GHz in the WCDMA Band 5

LOW CHANNEL(871.4MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HPF	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.148	29.39	PK	31.3	-30.7	.7	30.69	-	-	74	-43.31	0-360	200	H
2	4.322	28.73	PK	33.5	-29.1	.4	33.53	-	-	74	-40.47	0-360	100	H
3	7.41	26.27	PK	36.2	-25.3	.6	37.77	-	-	74	-36.23	0-360	100	H
4	2.145	29.6	PK	31.3	-30.7	.7	30.9	-	-	74	-43.1	0-360	100	V
5	4.381	28.78	PK	33.7	-28.8	.4	34.08	-	-	74	-39.92	0-360	100	V
6	7.441	25.95	PK	36.2	-25.1	.4	37.45	-	-	74	-36.55	0-360	100	V

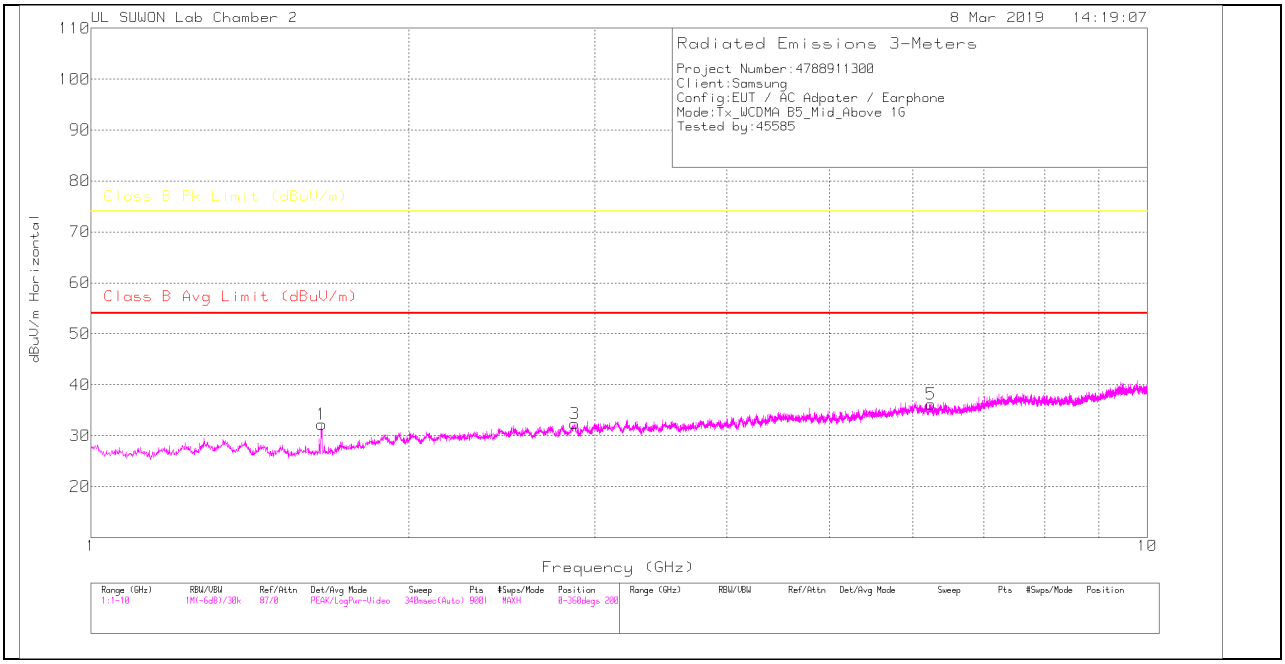
PK – Peak Detector

Note: Unwanted emissions on the harmonic frequency were generated from the call-simulator with the TX and RX signals.

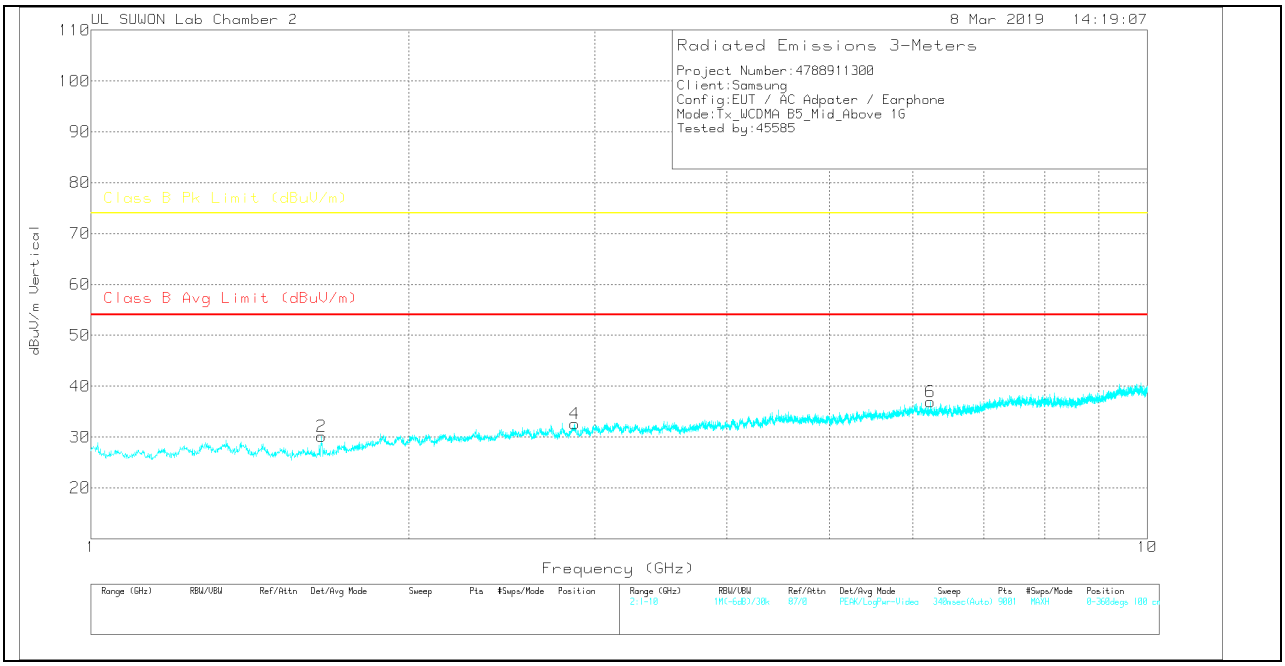
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL(881.6MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HPF	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.654	34.96	PK	28.3	-31.5	.5	32.26	-	-	74	-41.74	0-360	200	H
3	2.872	29.49	PK	32.1	-30	.8	32.39	-	-	74	-41.61	0-360	100	H
5	6.244	27.64	PK	35.2	-27.1	.5	36.24	-	-	74	-37.76	0-360	200	H
2	1.653	32.7	PK	28.3	-31.4	.5	30.1	-	-	74	-43.9	0-360	200	V
4	2.869	29.61	PK	32.1	-29.9	.8	32.61	-	-	74	-41.39	0-360	200	V
6	6.235	28.22	PK	35.2	-27	.5	36.92	-	-	74	-37.08	0-360	200	V

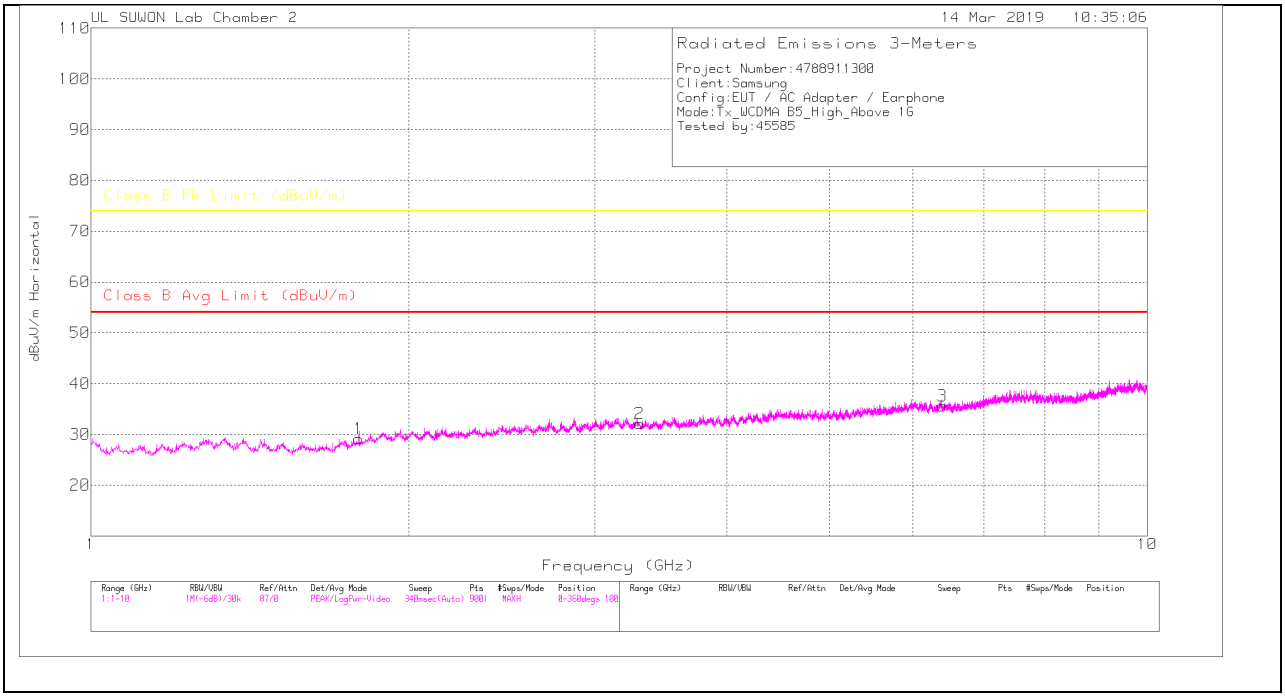
PK – Peak Detector

Note: Unwanted emissions on the harmonic frequency and marker pointed were generated from the call-simulator with the TX and RX signals.

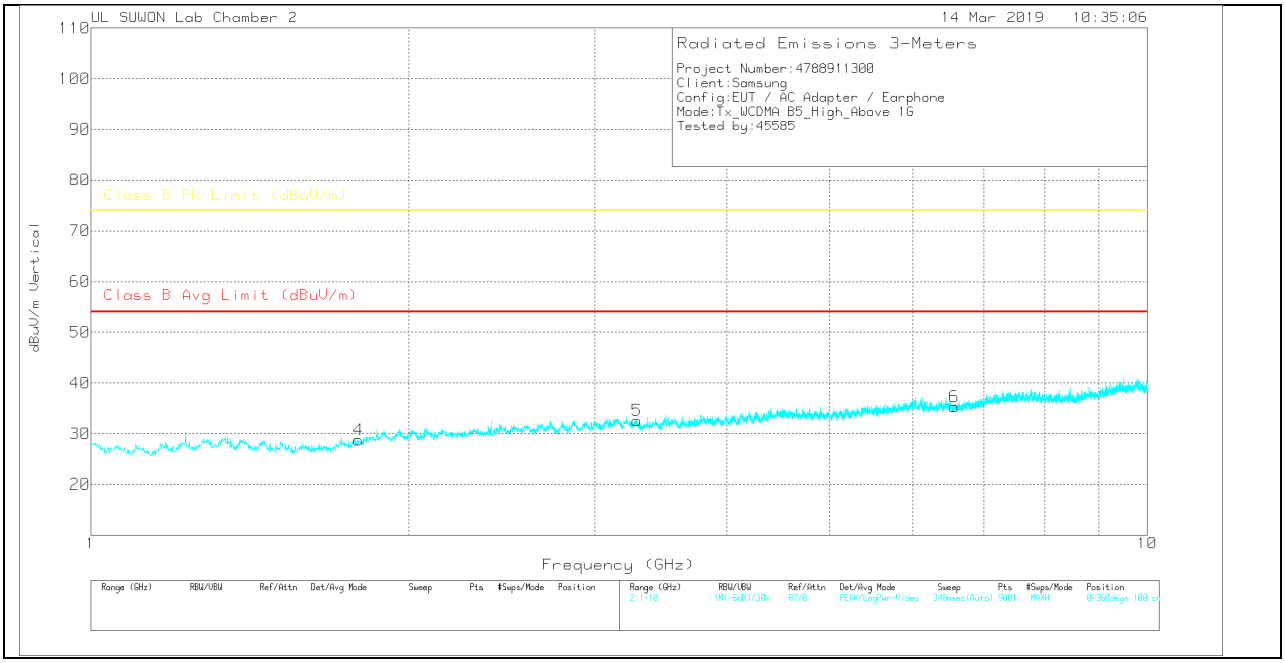
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

HIGH CHANNEL(891.6MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HPF	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.792	30.25	PK	29.7	-31.3	.5	29.15	-	-	74	-44.85	0-360	200	H
2	3.305	28.93	PK	32.6	-30	.6	32.13	-	-	74	-41.87	0-360	200	H
3	6.401	26.51	PK	35.2	-26.6	.5	35.61	-	-	74	-38.39	0-360	100	H
4	1.793	29.86	PK	29.7	-31.3	.5	28.76	-	-	74	-45.24	0-360	100	V
5	3.286	29.07	PK	32.7	-29.9	.7	32.57	-	-	74	-41.43	0-360	200	V
6	6.568	26.35	PK	35.3	-26.7	.4	35.35	-	-	74	-38.65	0-360	100	V

PK – Peak Detector

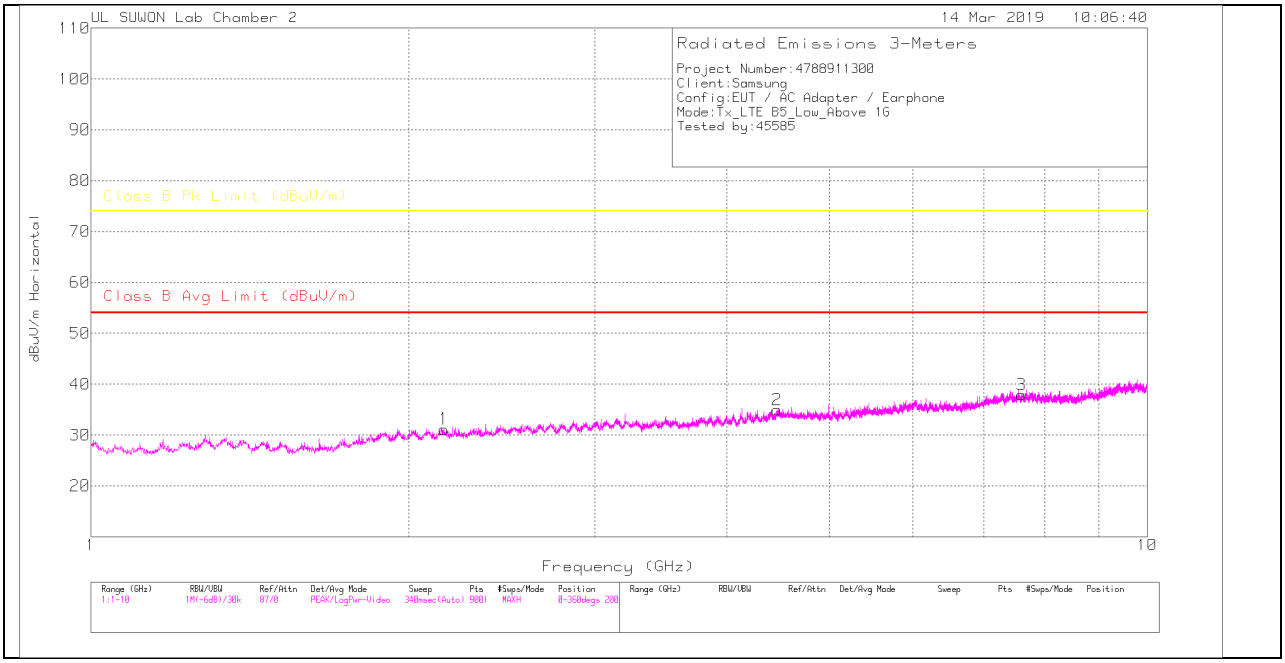
Note: Unwanted emissions on the harmonic frequency were generated from the call-simulator with the TX and RX signals.

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

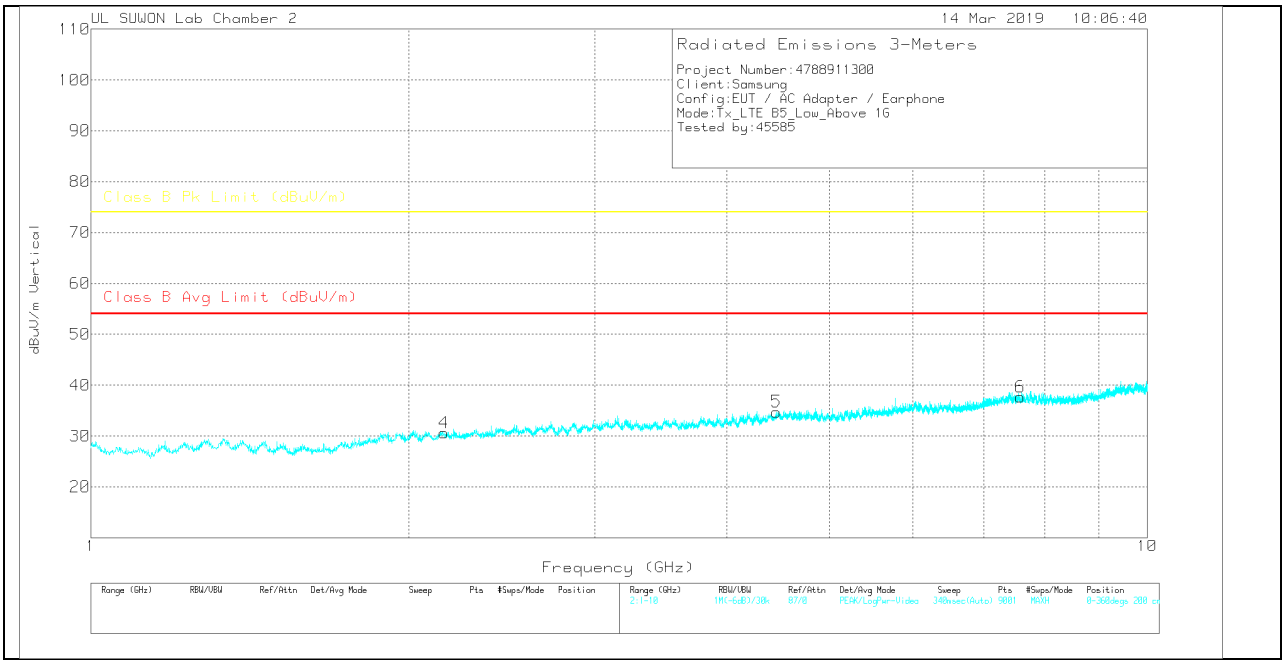
7.3. Above 1 GHz in the LTE Band 5

LOW CHANNEL(870.5MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HPF	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.158	29.88	PK	31.3	-30.7	.7	31.18	-	-	74	-42.82	0-360	100	H
2	4.461	29.05	PK	33.8	-28.3	.4	34.95	-	-	74	-39.05	0-360	100	H
3	7.606	26.57	PK	36.1	-25.2	.4	37.87	-	-	74	-36.13	0-360	100	H
4	2.16	29.32	PK	31.3	-30.7	.7	30.62	-	-	74	-43.38	0-360	100	V
5	4.457	28.87	PK	33.8	-28.3	.4	34.77	-	-	74	-39.23	0-360	100	V
6	7.581	26.16	PK	36.1	-25.2	.6	37.66	-	-	74	-36.34	0-360	200	V

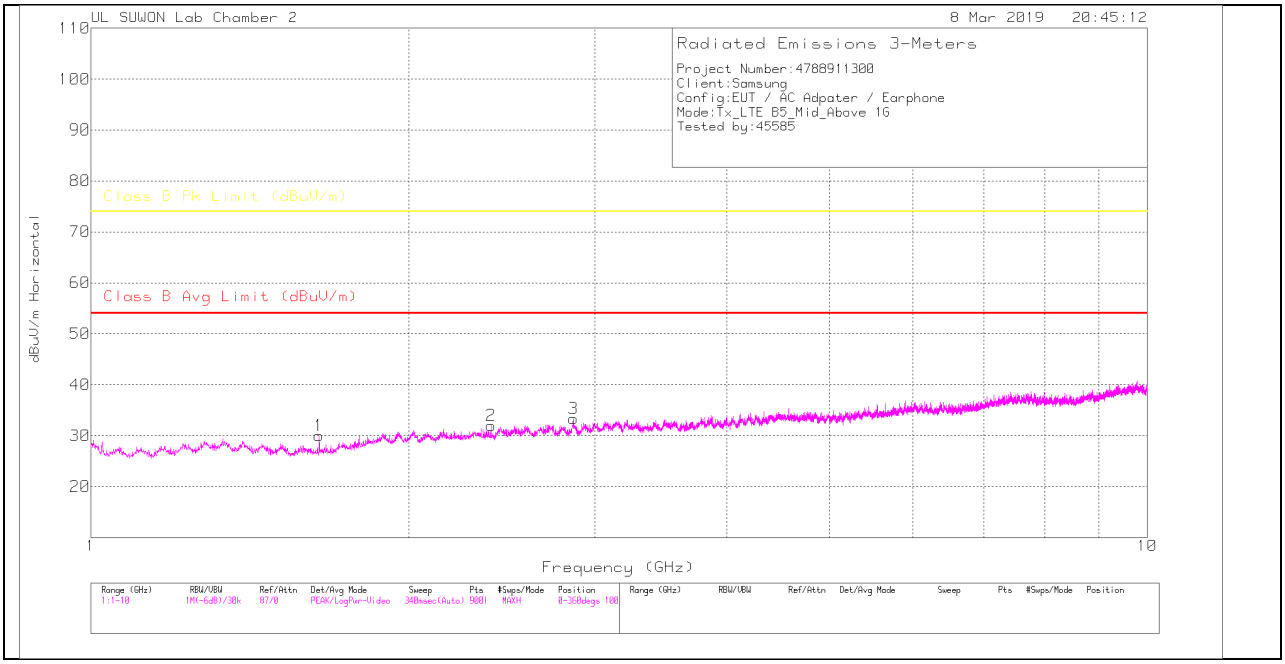
PK – Peak Detector

Note: Unwanted emissions on the harmonic frequency were generated from the call-simulator with the TX and RX signals.

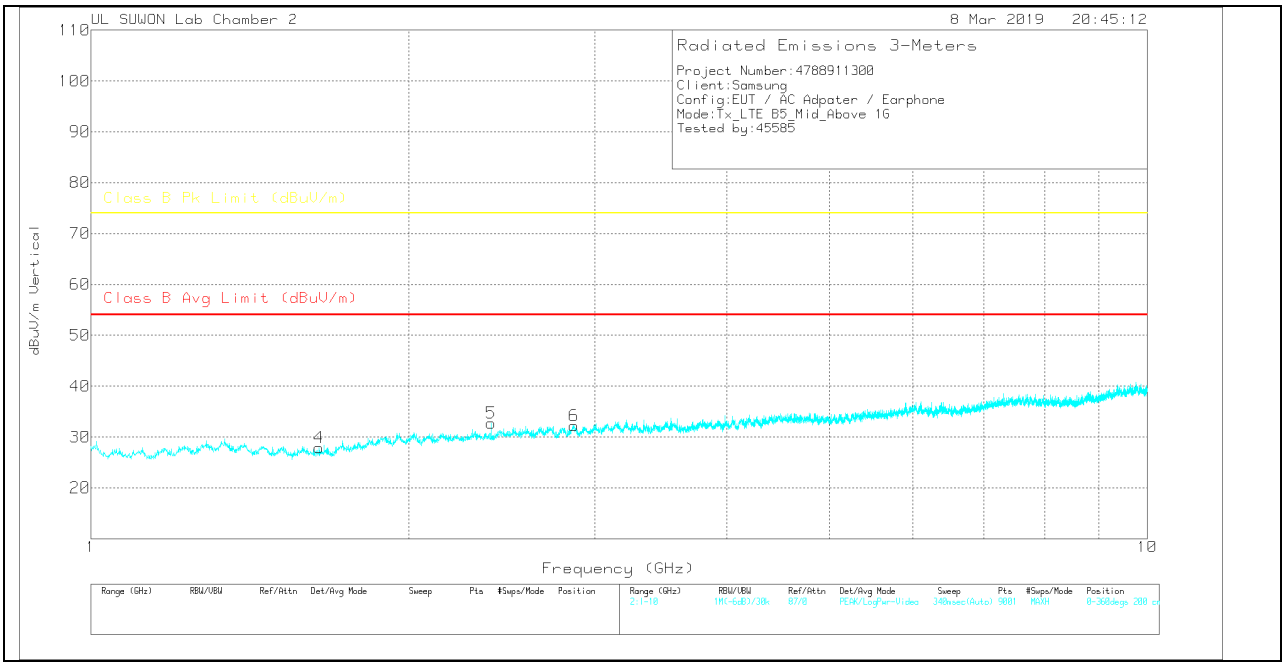
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL(881.5MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HPF	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.644	32.48	PK	28.3	-31.4	.6	29.98	-	-	74	-44.02	0-360	100	H
2	2.391	30.7	PK	31.6	-30.7	.4	32	-	-	74	-42	0-360	200	H
3	2.861	30.35	PK	32.1	-29.9	.8	33.35	-	-	74	-40.65	0-360	200	H
4	1.644	30.45	PK	28.3	-31.4	.6	27.95	-	-	74	-46.05	0-360	200	V
5	2.392	31.4	PK	31.6	-30.7	.4	32.7	-	-	74	-41.3	0-360	200	V
6	2.868	29.39	PK	32.1	-30	.8	32.29	-	-	74	-41.71	0-360	200	V

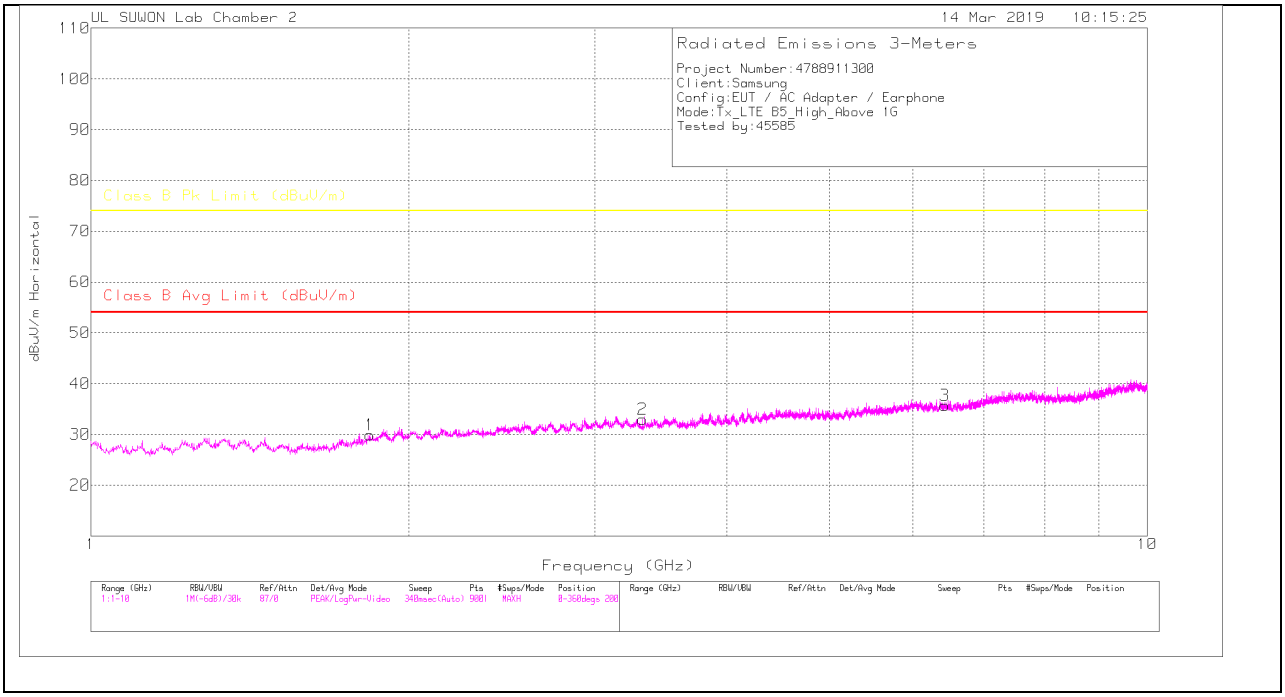
PK – Peak Detector

Note: Unwanted emissions on the harmonic frequency and marker pointed were generated from the call-simulator with the TX and RX signals.

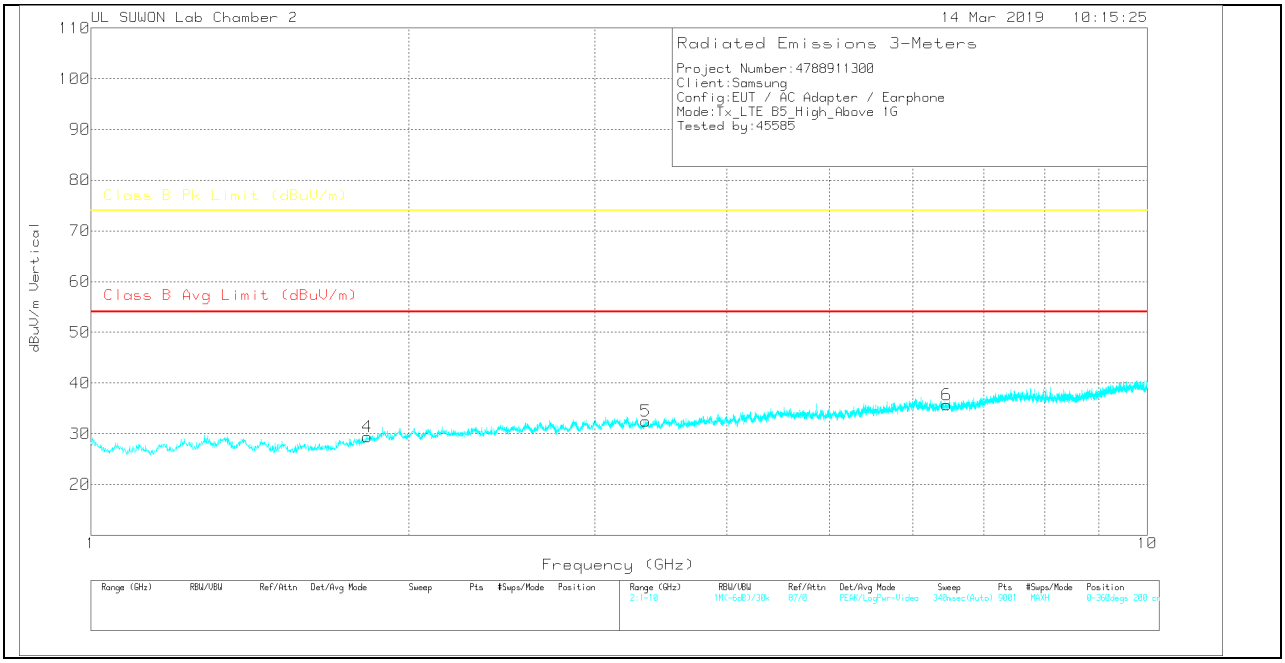
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

HIGH CHANNEL(892.5MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HPF	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.836	30.34	PK	30.2	-31.1	.5	29.94	-	-	74	-44.06	0-360	100	H
2	3.328	29.78	PK	32.6	-29.9	.5	32.98	-	-	74	-41.02	0-360	100	H
3	6.436	26.65	PK	35.3	-26.6	.4	35.75	-	-	74	-38.25	0-360	200	H
4	1.827	29.86	PK	30.1	-31.1	.5	29.36	-	-	74	-44.64	0-360	100	V
5	3.349	29.27	PK	32.6	-29.9	.5	32.47	-	-	74	-41.53	0-360	100	V
6	6.455	26.63	PK	35.3	-26.6	.4	35.73	-	-	74	-38.27	0-360	200	V

PK – Peak Detector

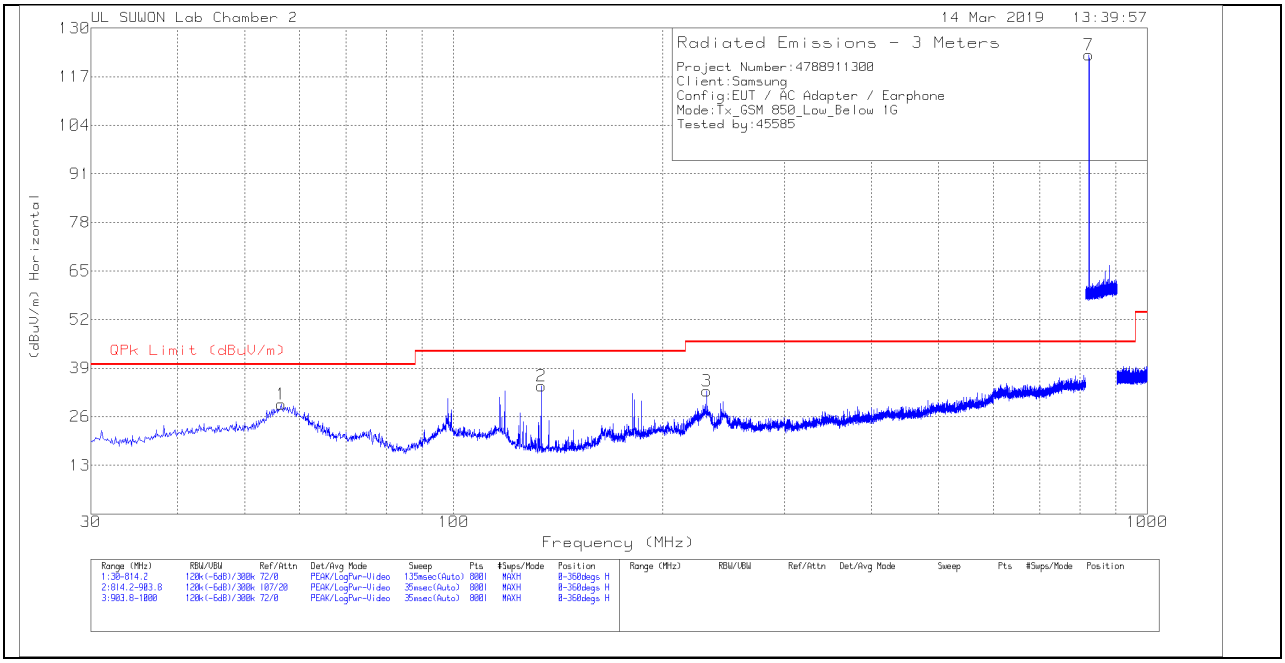
Note: Unwanted emissions on the harmonic frequency were generated from the call-simulator with the TX and RX signals.

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

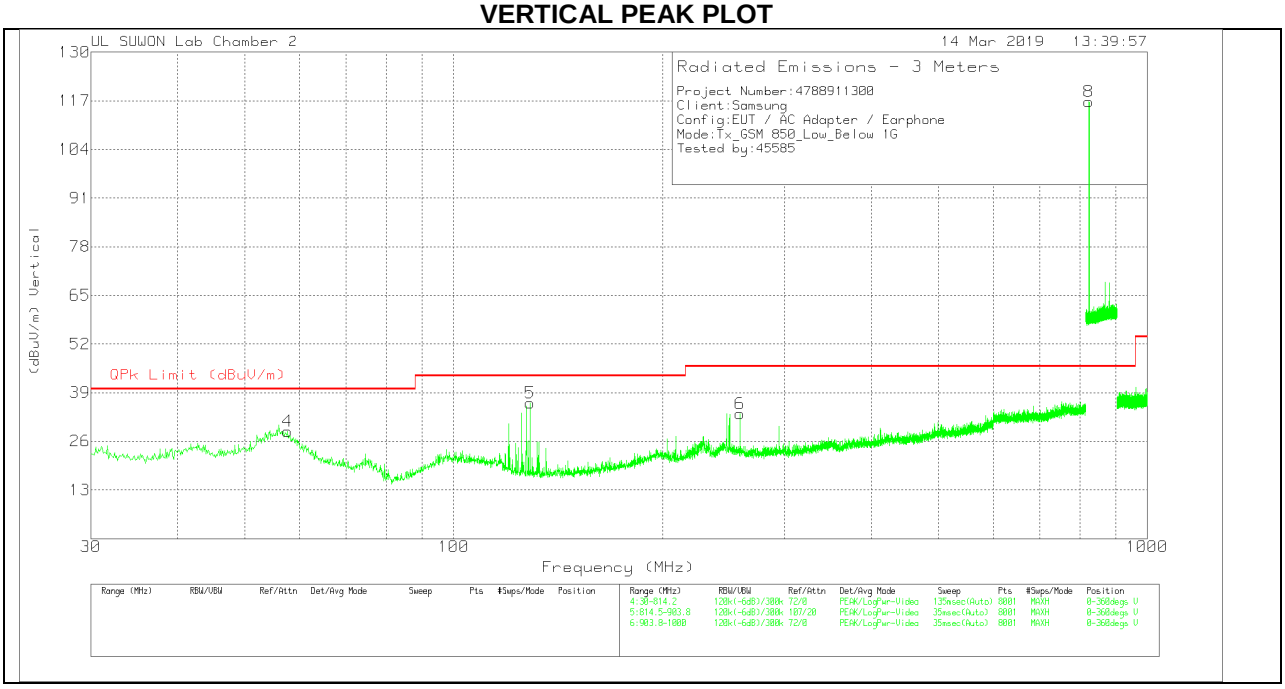
7.4. Below 1 GHz in the GSM850

LOW CHANNEL(869.2MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Bypass_Below_1G[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	56.4668	9.4	Pk	19.1	.8	29.3	40	-10.7	0-360	400	H
2	133.7105	18.84	Pk	14.1	1.2	34.14	43.52	-9.38	0-360	100	H
3	231.7355	12.95	Pk	18.3	1.6	32.85	46.02	-13.17	0-360	200	H
7	824.1344	92.75	Pk	26.9	3.1	122.75	**46.02**	**76.73**	0-360	100	H
4	57.6431	9.04	Pk	18.9	.8	28.74	40	-11.26	0-360	300	V
5	128.9072	20.67	Pk	14.4	1.2	36.27	43.52	-7.25	0-360	100	V
6	258.6923	12.73	Pk	18.9	1.7	33.33	46.02	-12.69	0-360	300	V
8	824.1783	86.73	Pk	26.9	3.1	116.73	**46.02**	**70.71**	0-360	200	V

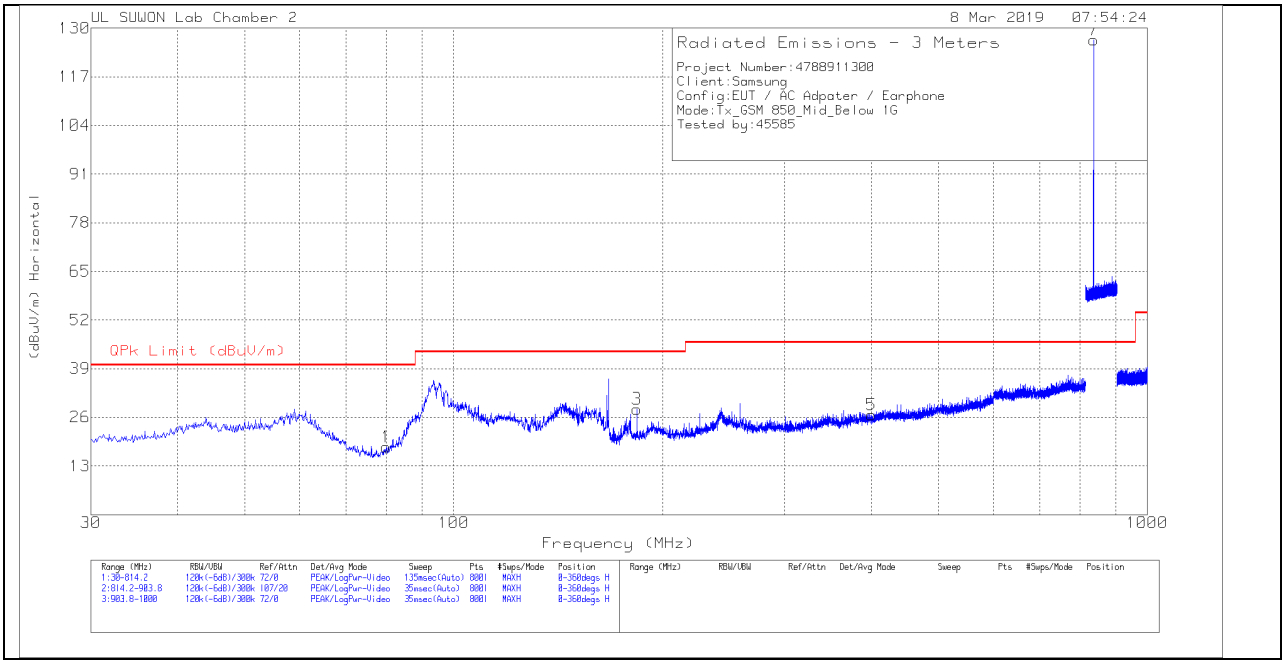
Pk - Peak detector

Note: Unwanted emissions captured from 824MHz to 849MHz and from 869MHz to 894MHz were the TX and RX signals generated from the call-simulator.

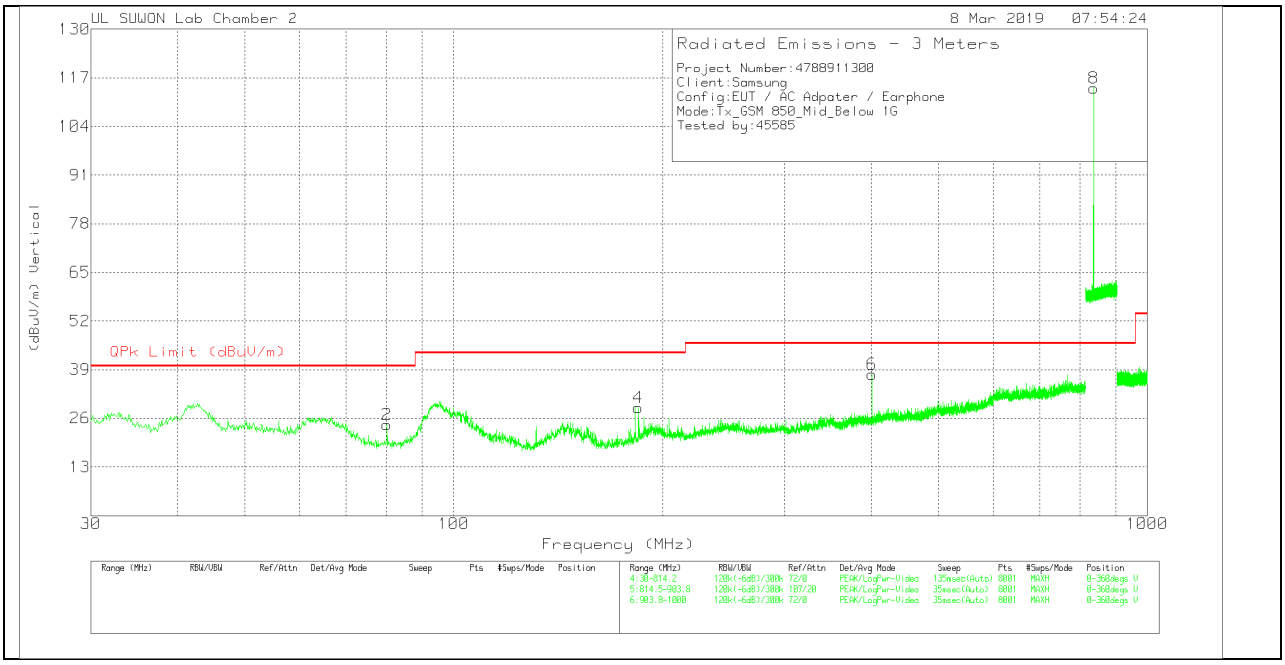
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL(881.6MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Bypass_Below_1G[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	79.8947	4.55	Pk	12.6	.9	18.05	40	-21.95	0-360	300	H
3	183.7032	10.54	Pk	16.2	1.5	28.24	43.52	-15.28	0-360	200	H
5	399.9464	3.18	Pk	21.2	2.2	26.58	46.02	-19.44	0-360	100	H
7	836.5888	96.66	Pk	27.1	3.1	126.86	**46.02**	**80.84**	0-360	100	H
2	80.1888	10.76	Pk	12.6	1	24.36	40	-15.64	0-360	200	V
4	184.6835	11.08	Pk	16.3	1.5	28.88	43.52	-14.64	0-360	200	V
6	400.9266	14.22	Pk	21.3	2.2	37.72	46.02	-8.3	0-360	200	V
8	836.5581	84.05	Pk	27.1	3.1	114.25	**46.02**	**68.23**	0-360	100	V

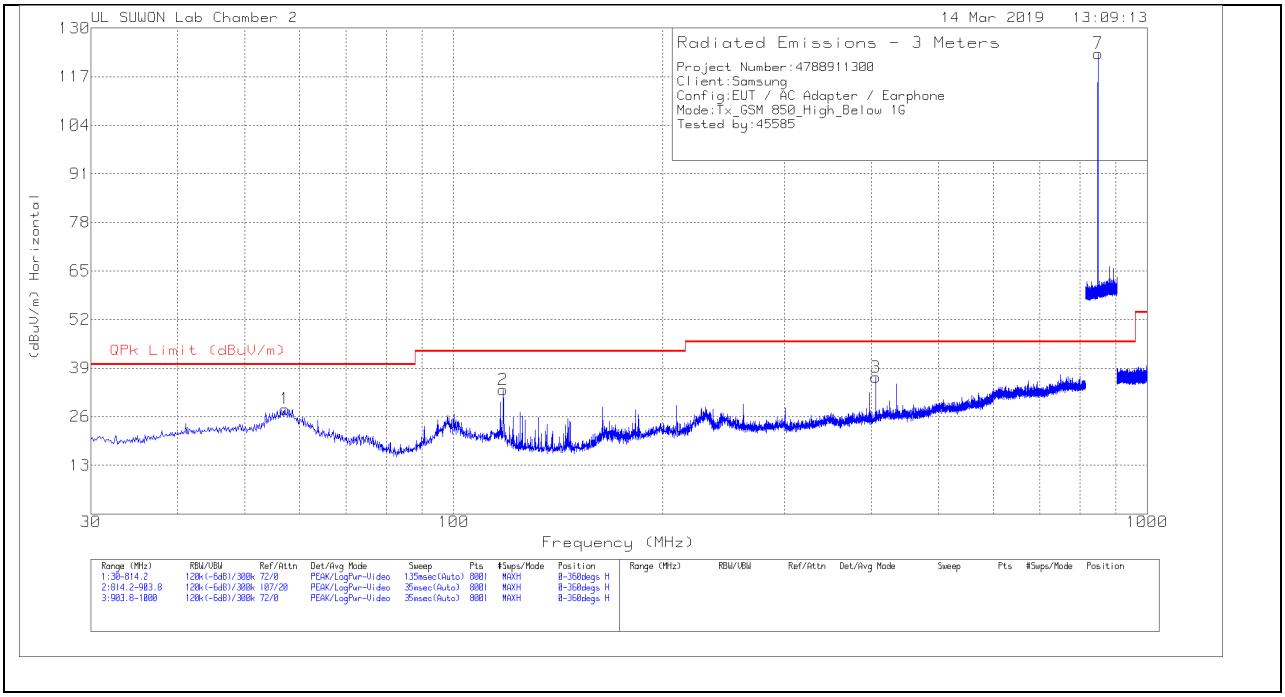
Pk - Peak detector

Note: Unwanted emissions captured from 824MHz to 849MHz and from 869MHz to 894MHz were the TX and RX signals generated from the call-simulator.

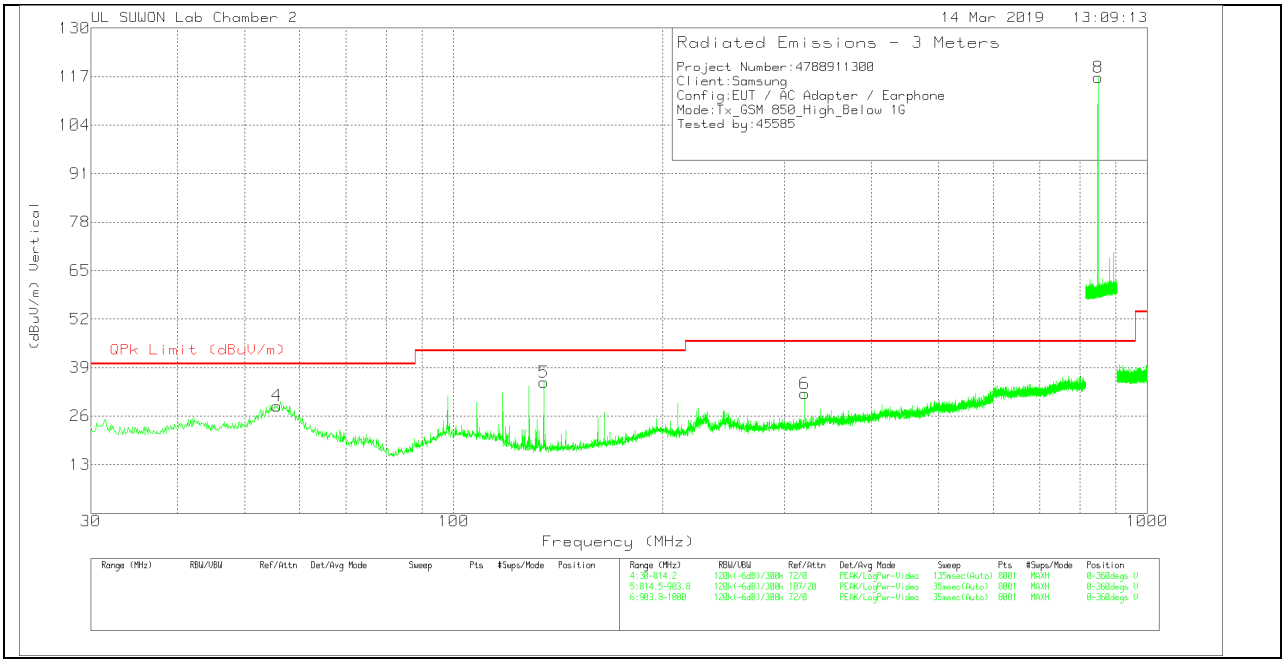
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

HIGH CHANNEL(893.8MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Bypass_Below_1G[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	57.1529	8.28	Pk	19	.8	28.08	40	-11.92	0-360	400	H
2	117.9284	16.25	Pk	15.7	1.2	33.15	43.52	-10.37	0-360	200	H
3	406.1219	12.9	Pk	21.5	2.2	36.6	46.02	-9.42	0-360	300	H
7	848.7408	92.63	Pk	27.4	3.2	123.23	**46.02**	**77.21**	0-360	100	H
4	55.5845	8.75	Pk	19.2	.8	28.75	40	-11.25	0-360	100	V
5	134.8868	19.82	Pk	14.1	1.2	35.12	43.52	-8.4	0-360	100	V
6	320.6441	10.28	Pk	19.8	1.9	31.98	46.02	-14.04	0-360	200	V
8	848.7258	86.15	Pk	27.4	3.2	116.75	**46.02**	**70.73**	0-360	100	V

Pk - Peak detector

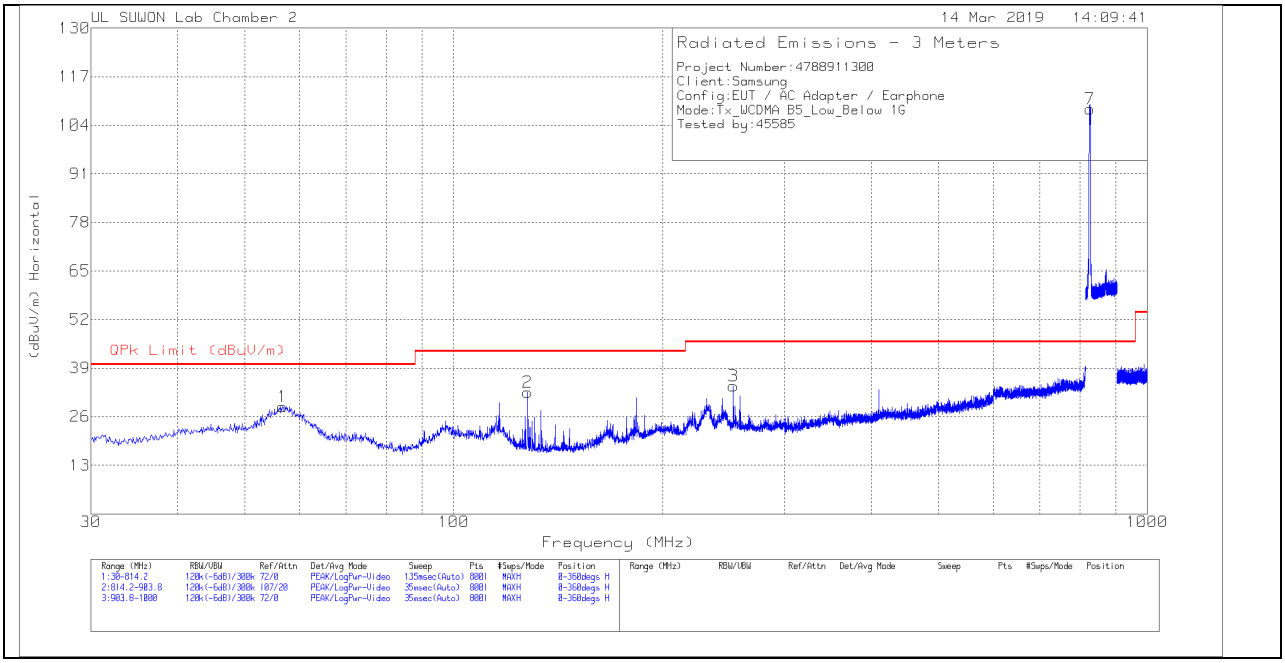
Note: Unwanted emissions captured from 824MHz to 849MHz and from 869MHz to 894MHz were the TX and RX signals generated from the call-simulator.

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

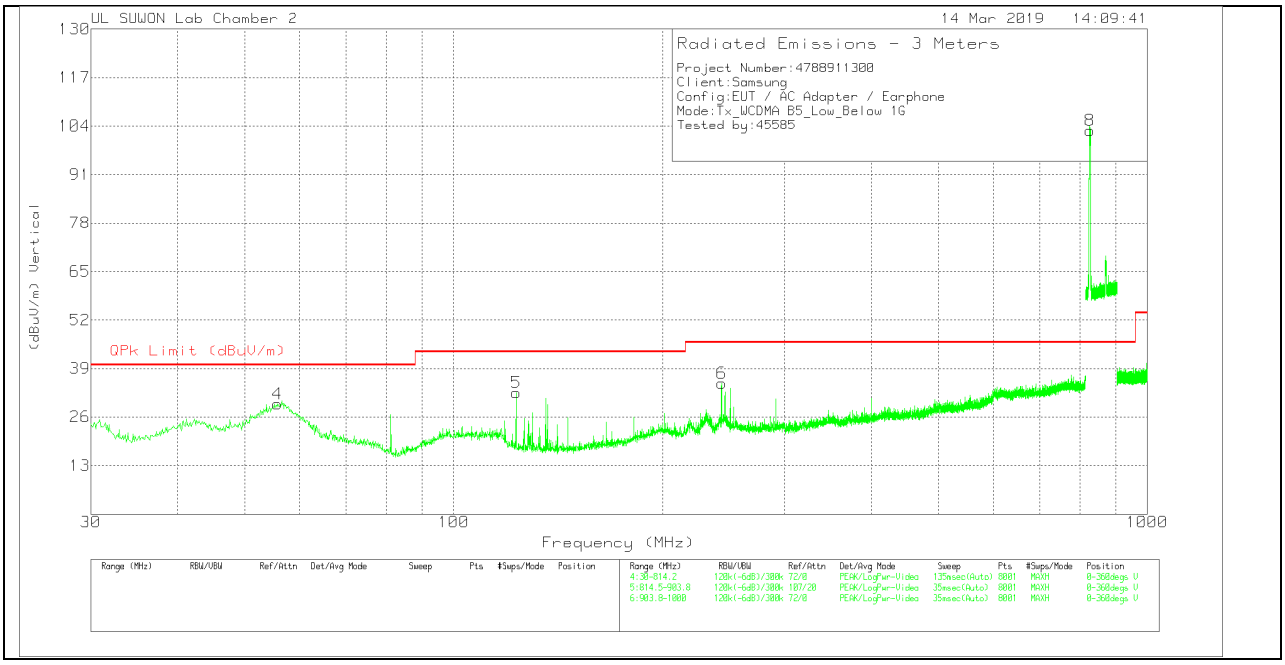
7.5. Below 1 GHz in the WCDMA Band 5

LOW CHANNEL(871.4MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Bypass_Below_1G[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	56.6628	8.74	Pk	19.1	.8	28.64	40	-11.36	0-360	400	H
2	127.829	16.85	Pk	14.5	1.2	32.55	43.52	-10.97	0-360	400	H
3	253.1049	13.49	Pk	19.1	1.7	34.29	46.02	-11.73	0-360	100	H
7	826.4304	78.21	Pk	27	3.1	108.31	**46.02**	**62.29**	0-360	100	H
4	55.6826	9.45	Pk	19.2	.8	29.45	40	-10.55	0-360	300	V
5	123.0257	16.5	Pk	14.8	1.2	32.5	43.52	-11.02	0-360	100	V
6	243.3024	14.73	Pk	18.7	1.7	35.13	46.02	-10.89	0-360	100	V
8	826.6677	72.73	Pk	27	3.1	102.83	**46.02**	**56.81**	0-360	200	V

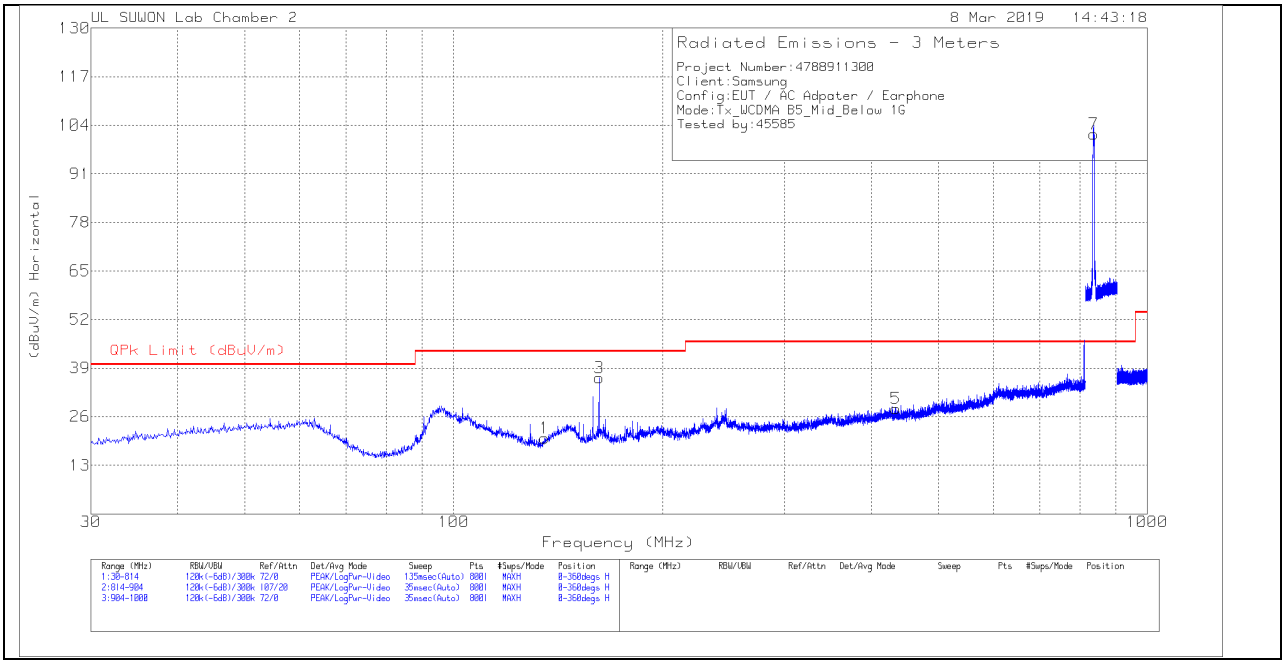
Pk - Peak detector

Note: Unwanted emissions captured from 824MHz to 849MHz and from 869MHz to 894MHz were the TX and RX signals generated from the call-simulator.

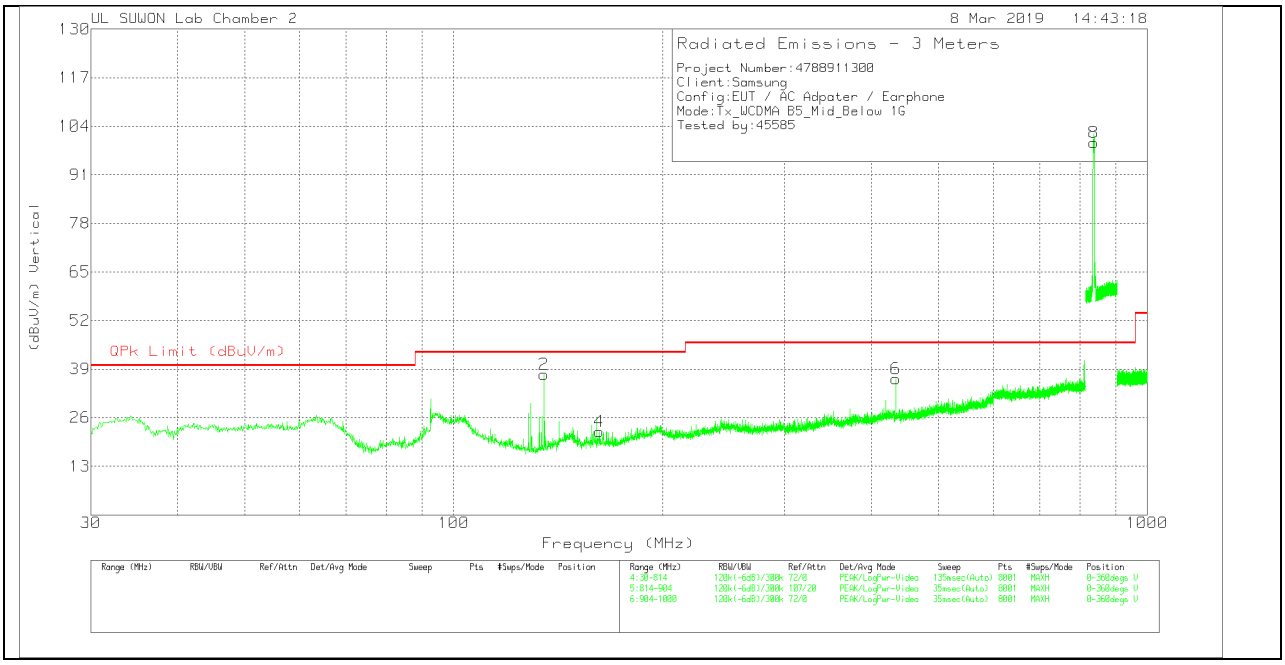
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL(881.6MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Bypass_Below_1G[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	135.252	4.8	Pk	14.1	1.3	20.2	43.52	-23.32	0-360	200	H
3	162.006	20.32	Pk	14.7	1.4	36.42	43.52	-7.1	0-360	200	H
5	433.662	3.87	Pk	22.1	2.2	28.17	46.02	-17.85	0-360	200	H
7	836.6913	71.41	Pk	27.1	3.1	101.61	**46.02**	**55.59**	0-360	200	H
2	134.958	22.15	Pk	14.1	1.3	37.55	43.52	-5.97	0-360	100	V
4	162.3	6.12	Pk	14.7	1.4	22.22	43.52	-21.3	0-360	100	V
6	433.76	12.1	Pk	22.1	2.2	36.4	46.02	-9.62	0-360	100	V
8	836.6463	69.43	Pk	27.1	3.1	99.63	**46.02**	**53.61**	0-360	200	V

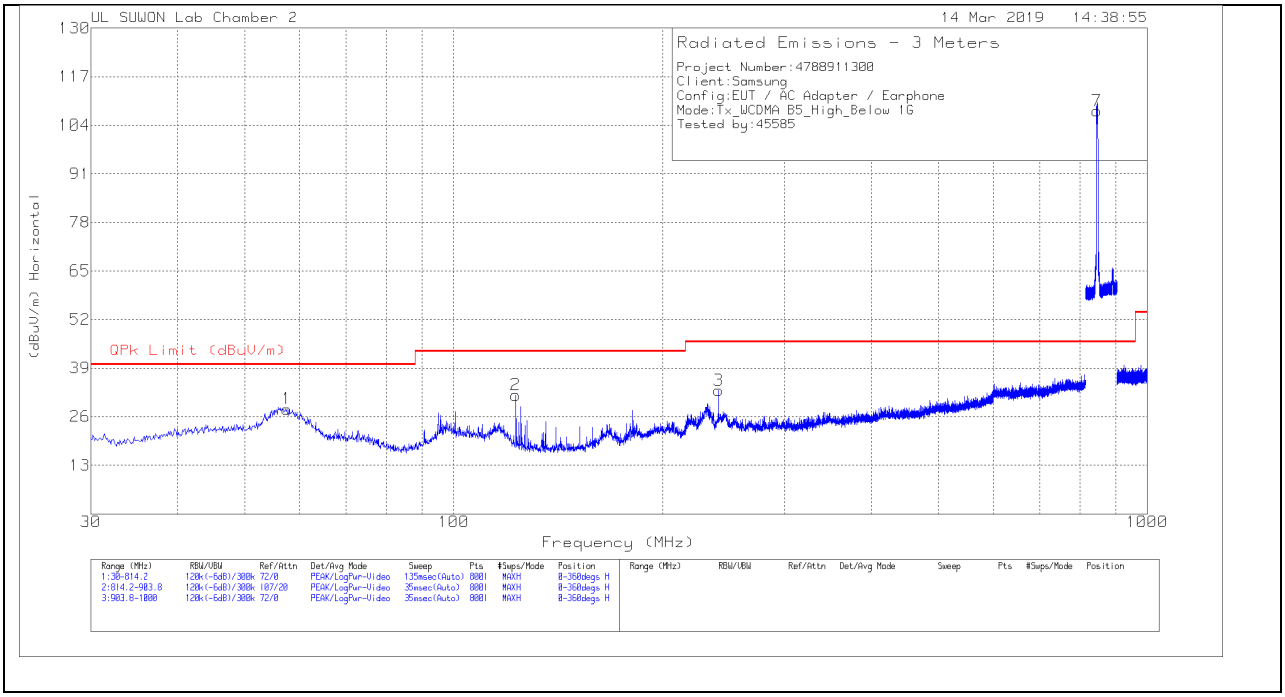
Pk - Peak detector

Note: Unwanted emissions captured from 824MHz to 849MHz and from 869MHz to 894MHz were the TX and RX signals generated from the call-simulator.

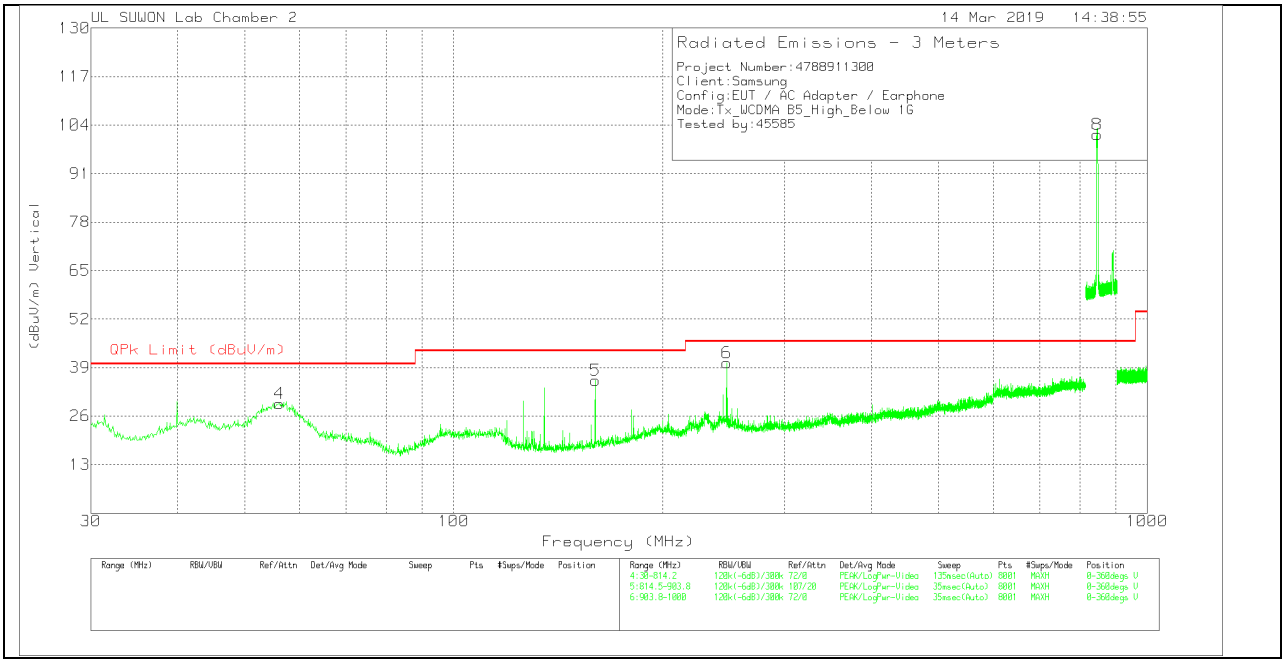
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

HIGH CHANNEL(891.6MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Bypass_Below_1G[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	57.447	8.38	Pk	18.9	.8	28.08	40	-11.92	0-360	400	H
2	122.9277	15.68	Pk	14.9	1.2	31.78	43.52	-11.74	0-360	200	H
3	241.0478	12.78	Pk	18.6	1.7	33.08	46.02	-12.94	0-360	100	H
7	846.8704	77.41	Pk	27.3	3.2	107.91	**46.02**	**61.89**	0-360	100	H
4	56.0747	9.4	Pk	19.2	.8	29.4	40	-10.6	0-360	300	V
5	159.9812	19.54	Pk	14.6	1.4	35.54	43.52	-7.98	0-360	100	V
6	247.4195	19.63	Pk	18.9	1.7	40.23	46.02	-5.79	0-360	100	V
8	846.8839	70.91	Pk	27.3	3.2	101.41	**46.02**	**55.39**	0-360	200	V

Pk - Peak detector

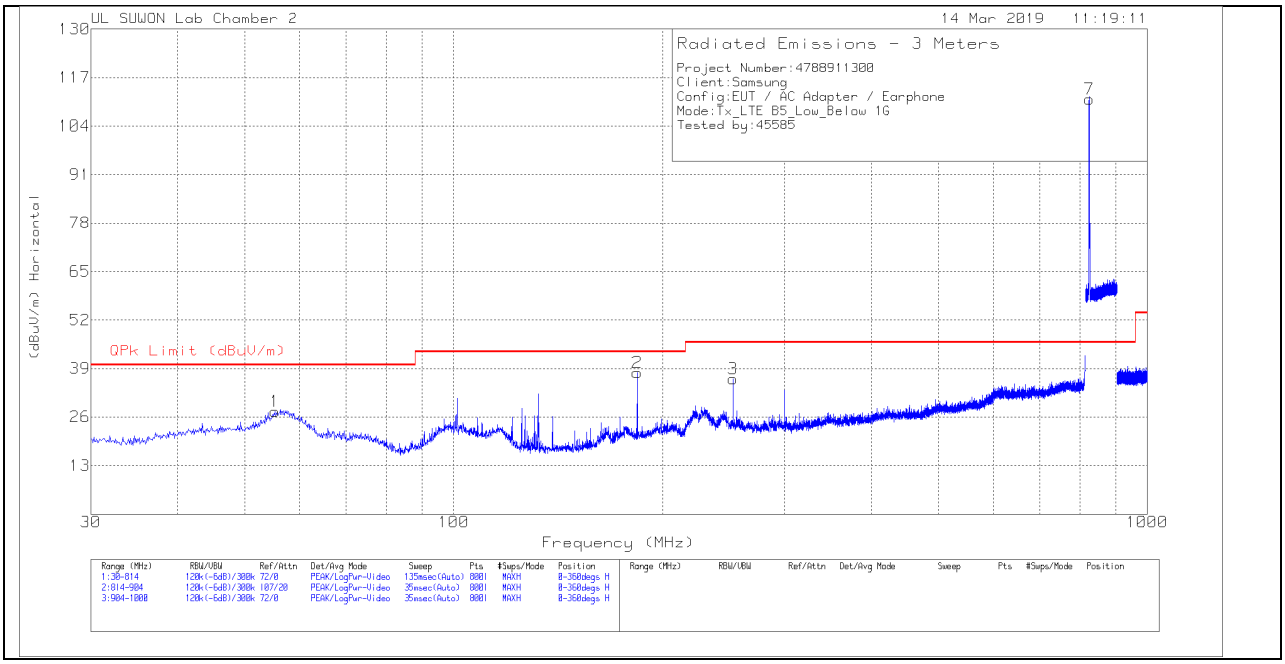
Note: Unwanted emissions captured from 824MHz to 849MHz and from 869MHz to 894MHz were the TX and RX signals generated from the call-simulator.

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

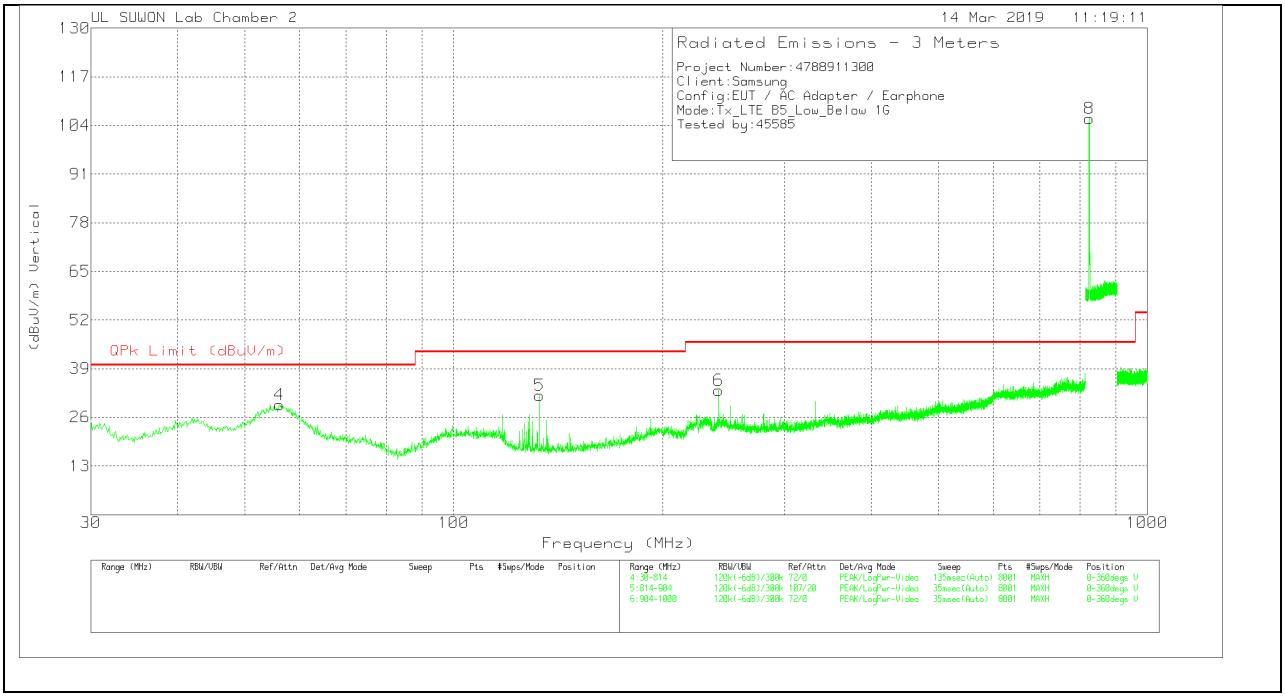
7.6. Below 1 GHz in the LTE Band 5

LOW CHANNEL(870.5MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Bypass_Below_1G[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	55.284	7.36	Pk	19.3	.8	27.46	40	-12.54	0-360	400	H
2	183.958	20.18	Pk	16.2	1.5	37.88	43.52	-5.64	0-360	200	H
3	252.95	15.49	Pk	19.1	1.7	36.29	46.02	-9.73	0-360	100	H
7	824.8675	81.23	Pk	26.9	3.1	111.23	**46.02**	**65.21**	0-360	100	H
4	56.068	9.3	Pk	19.2	.8	29.3	40	-10.7	0-360	100	V
5	132.998	16.54	Pk	14.1	1.2	31.84	43.52	-11.68	0-360	100	V
6	240.994	13.04	Pk	18.6	1.6	33.24	46.02	-12.78	0-360	100	V
8	824.8225	75.91	Pk	26.9	3.1	105.91	**46.02**	**59.89**	0-360	200	V

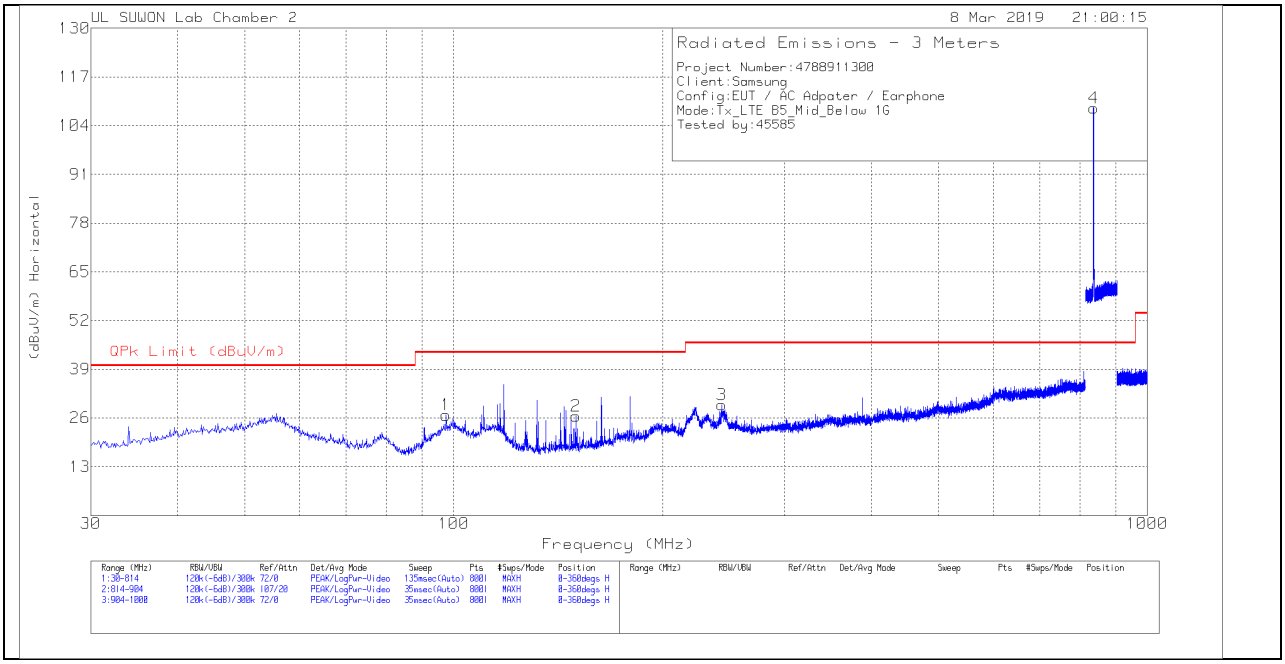
Pk - Peak detector

Note: Unwanted emissions captured from 824MHz to 849MHz and from 869MHz to 894MHz were the TX and RX signals generated from the call-simulator.

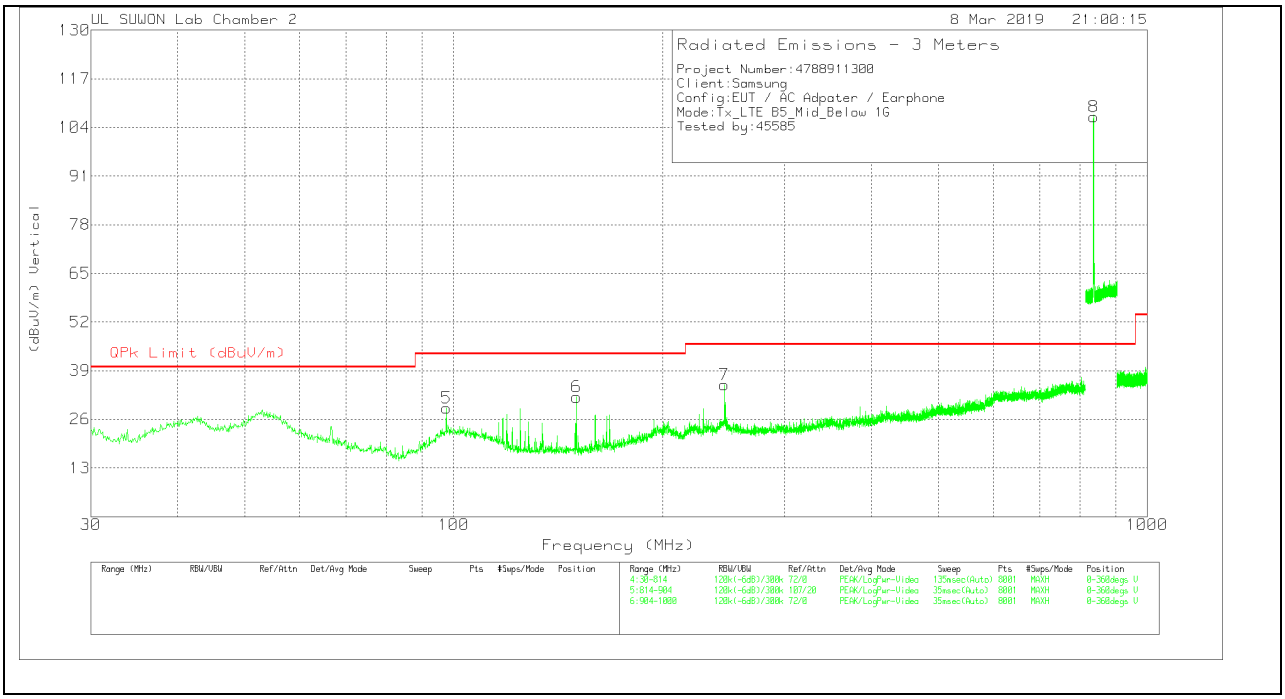
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL(881.5MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Bypass_Below_1G[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	97.522	8.24	Pk	17.5	1	26.74	43.52	-16.78	0-360	400	H
2	149.952	11.13	Pk	14.1	1.3	26.53	43.52	-16.99	0-360	300	H
3	243.738	9.04	Pk	18.7	1.7	29.44	46.02	-16.58	0-360	100	H
4	836.4213	78.47	Pk	27.1	3.1	108.67	**46.02**	**62.65**	0-360	100	H
5	97.62	10.4	Pk	17.5	1.1	29	43.52	-14.52	0-360	300	V
6	150.344	16.55	Pk	14.1	1.3	31.95	43.52	-11.57	0-360	100	V
7	245.698	14.67	Pk	18.8	1.7	35.17	46.02	-10.85	0-360	200	V
8	836.4888	76.59	Pk	27.1	3.1	106.79	**46.02**	**60.77**	0-360	200	V

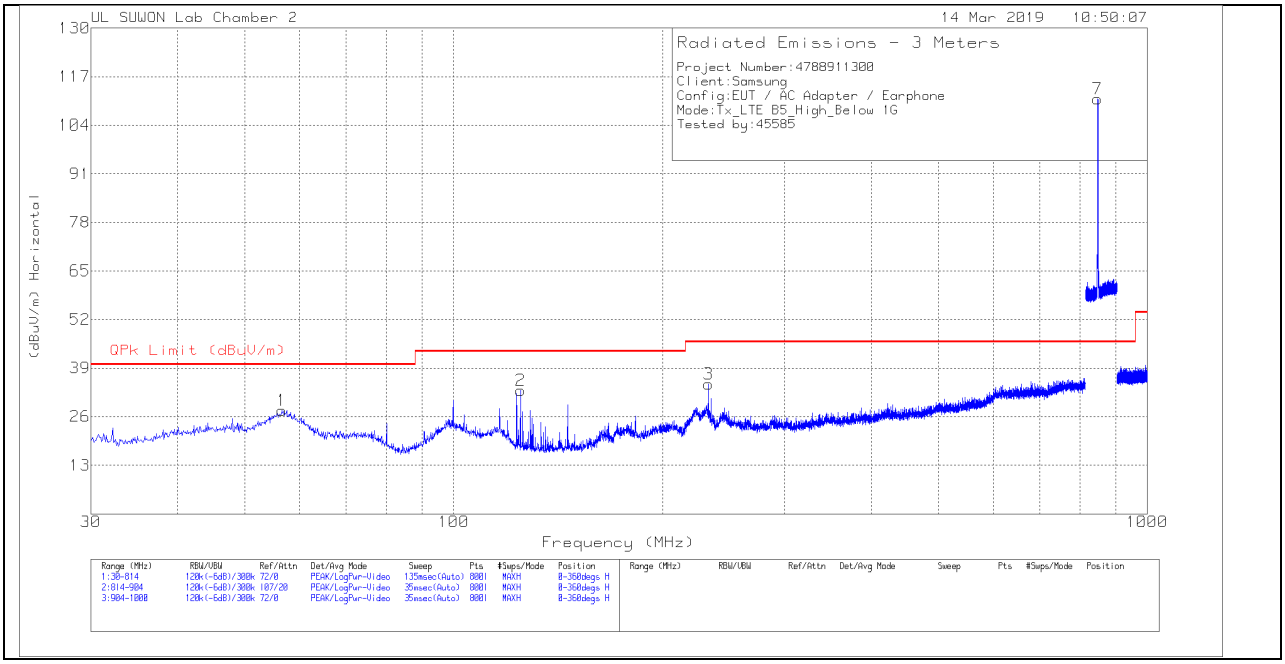
Pk - Peak detector

Note: Unwanted emissions captured from 824MHz to 849MHz and from 869MHz to 894MHz were the TX and RX signals generated from the call-simulator.

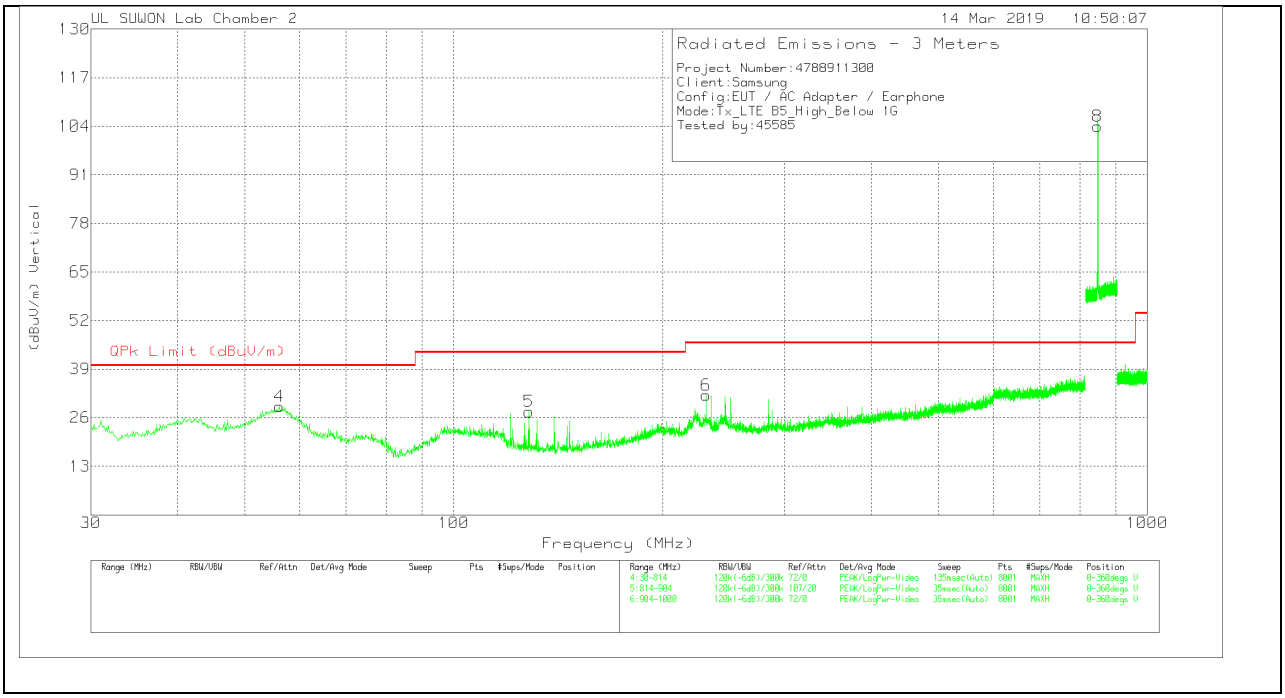
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

HIGH CHANNEL(892.5MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Bypass_Below_1G[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	56.558	7.78	Pk	19.1	.8	27.68	40	-12.32	0-360	400	H
2	124.864	17.17	Pk	14.7	1.2	33.07	43.52	-10.45	0-360	100	H
3	232.958	14.84	Pk	18.3	1.6	34.74	46.02	-11.28	0-360	200	H
7	848.4138	80.44	Pk	27.4	3.2	111.04	**46.02**	**65.02**	0-360	100	H
4	56.068	9	Pk	19.2	.8	29	40	-11	0-360	100	V
5	128.294	11.98	Pk	14.4	1.2	27.58	43.52	-15.94	0-360	200	V
6	231.292	12.09	Pk	18.3	1.7	32.09	46.02	-13.93	0-360	200	V
8	848.245	73.4	Pk	27.4	3.2	104	**46.02**	**57.98**	0-360	200	V

Pk - Peak detector

Note: Unwanted emissions captured from 824MHz to 849MHz and from 869MHz to 894MHz were the TX and RX signals generated from the call-simulator.

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.