Appendix B : Cellular receiver Part15B test results

1. 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

2. EQUIPMENT UNDER TEST

2.1. 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/LTE B12/LTE B13/LTE B26)

2.2. 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)
LTE BAND 12	Communicating with Call simulator(CMW500)
LTE BAND 13	Communicating with Call simulator(CMW500)
LTE BAND 26	Communicating with Call simulator(CMW500)

.

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.

2.3. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Charger	SAMSUNG	EP-TA800	R37M1E50KV1SE3	N/A
Data Cable	SAMSUNG	EP-DA905BBE	N/A	N/A
Earphone	SAMSUNG	GHSS028-W4	N/A	N/A

I/O CABLE

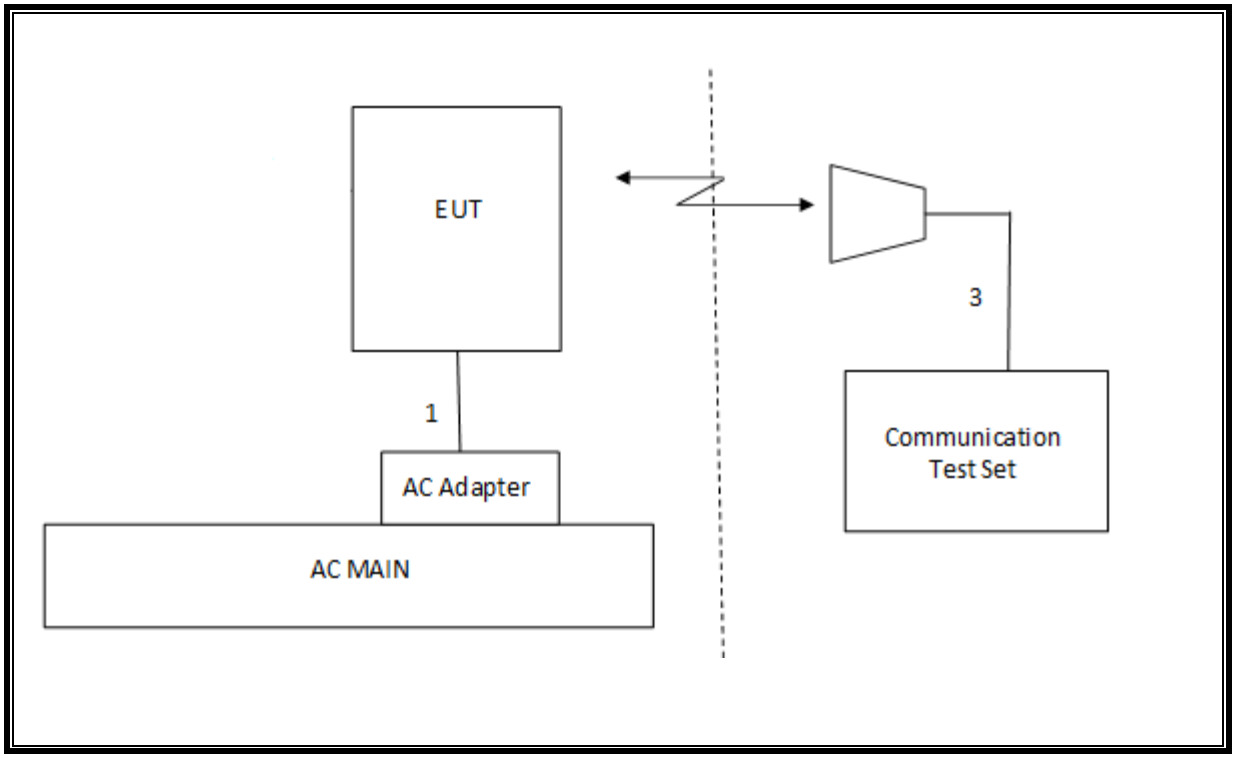
I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	DC Power	1	C Type	Shielded	1.1m	N/A
2	Audio	2	C Type	Unshielded	1.2m	N/A

TEST SETUP

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

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.

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.

3. 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	08-14-20
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.

4. APPLICABLE LIMIYS AND TEST RESULTS (SM-A805F/DS)

. 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:

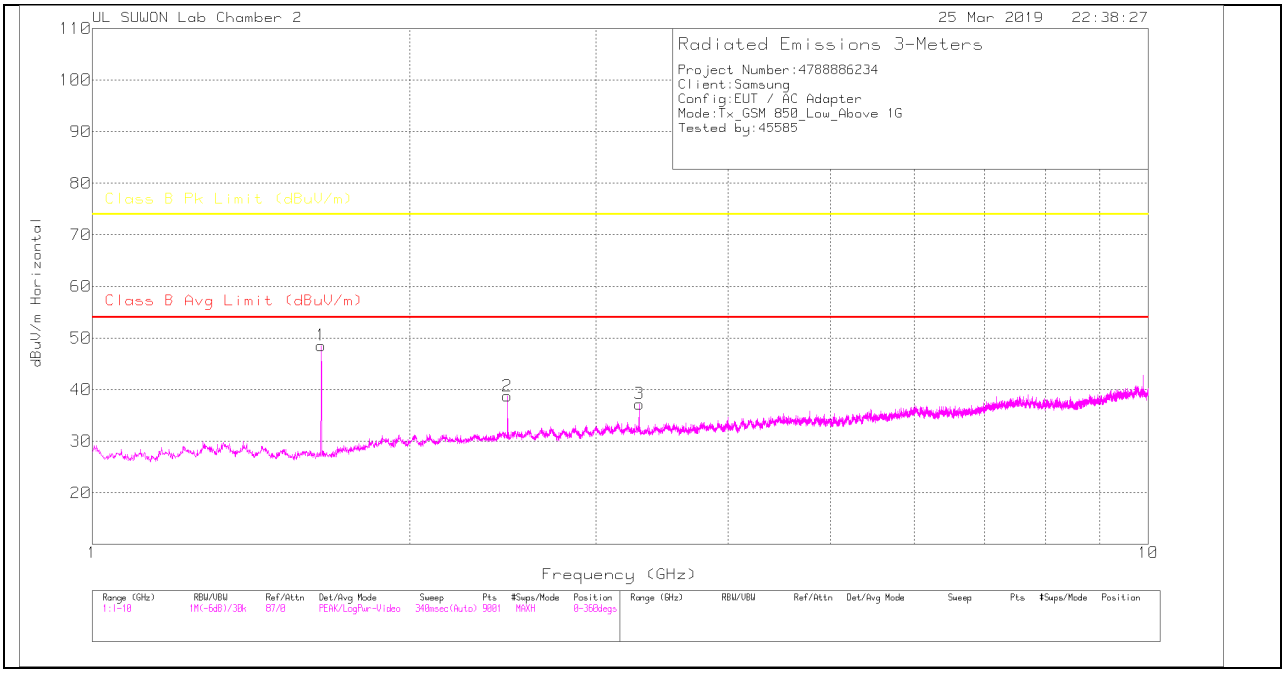
Limits for radiated disturbance of Class B ITE at measuring distance of 3 m	
Frequency range (MHz)	Quasi-peak limits (dBµV/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
Above 960 MHz	54
Note: The lower limit shall apply at the transition frequency.	

UL Korea, Ltd. 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.

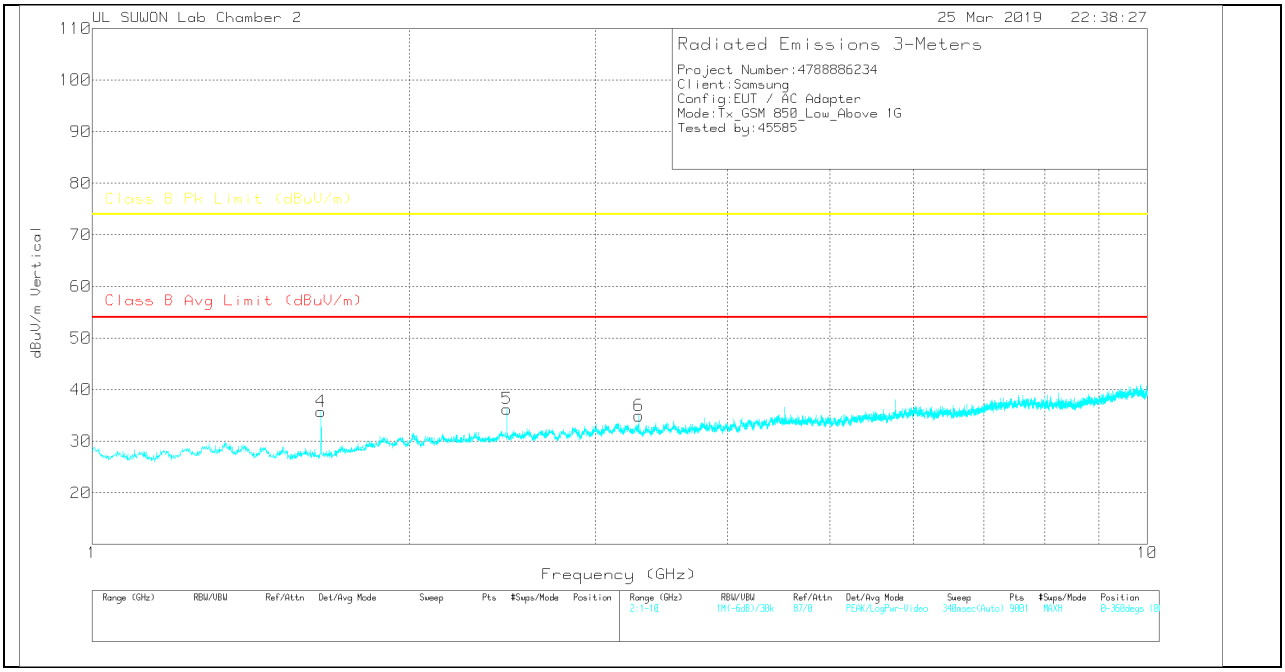
4.1. Above 1 GHz in the GSM850

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	51.07	PK	28.3	-31.4	.6	48.57	-	-	74	-25.43	0-360	200	H
2	2.472	36.44	PK	31.8	-30.2	.7	38.74	-	-	74	-35.26	0-360	100	H
3	3.297	33.95	PK	32.6	-30	.7	37.25	-	-	74	-36.75	0-360	100	H
4	1.648	38.27	PK	28.3	-31.4	.6	35.77	-	-	74	-38.23	0-360	200	V
5	2.472	33.97	PK	31.8	-30.2	.7	36.27	-	-	74	-37.73	0-360	200	V
6	3.297	31.66	PK	32.6	-30	.7	34.96	-	-	74	-39.04	0-360	200	V

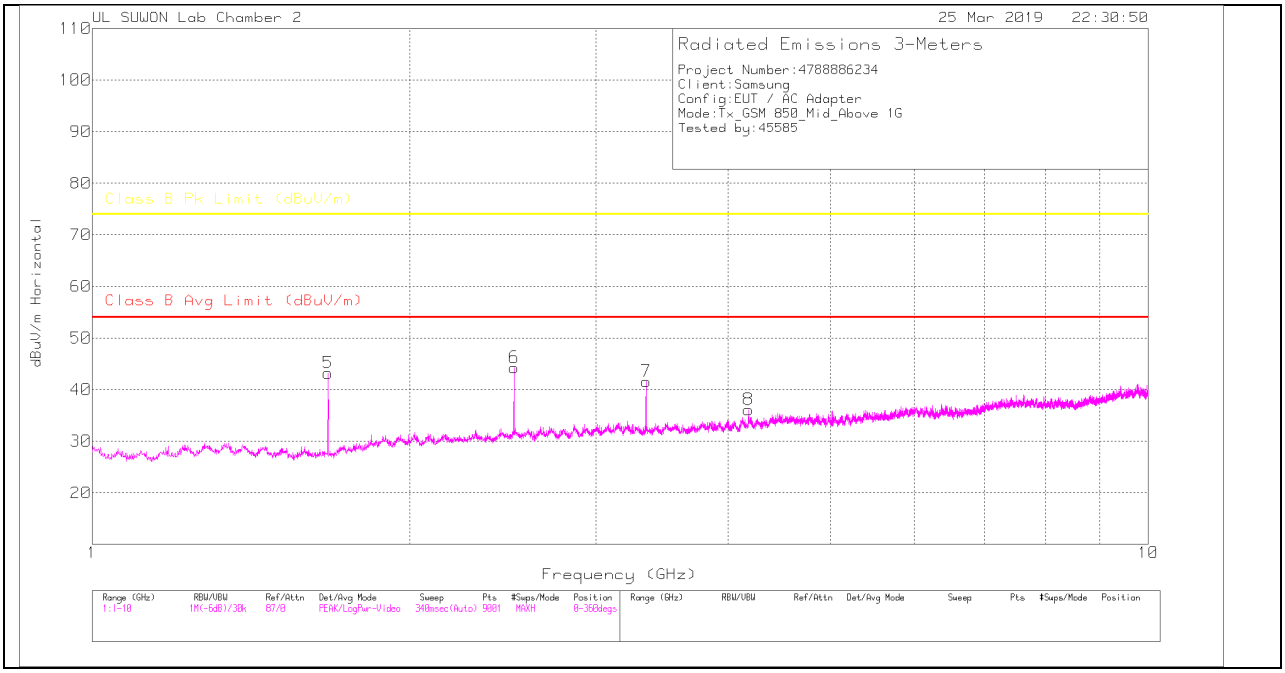
PK – Peak Detector

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

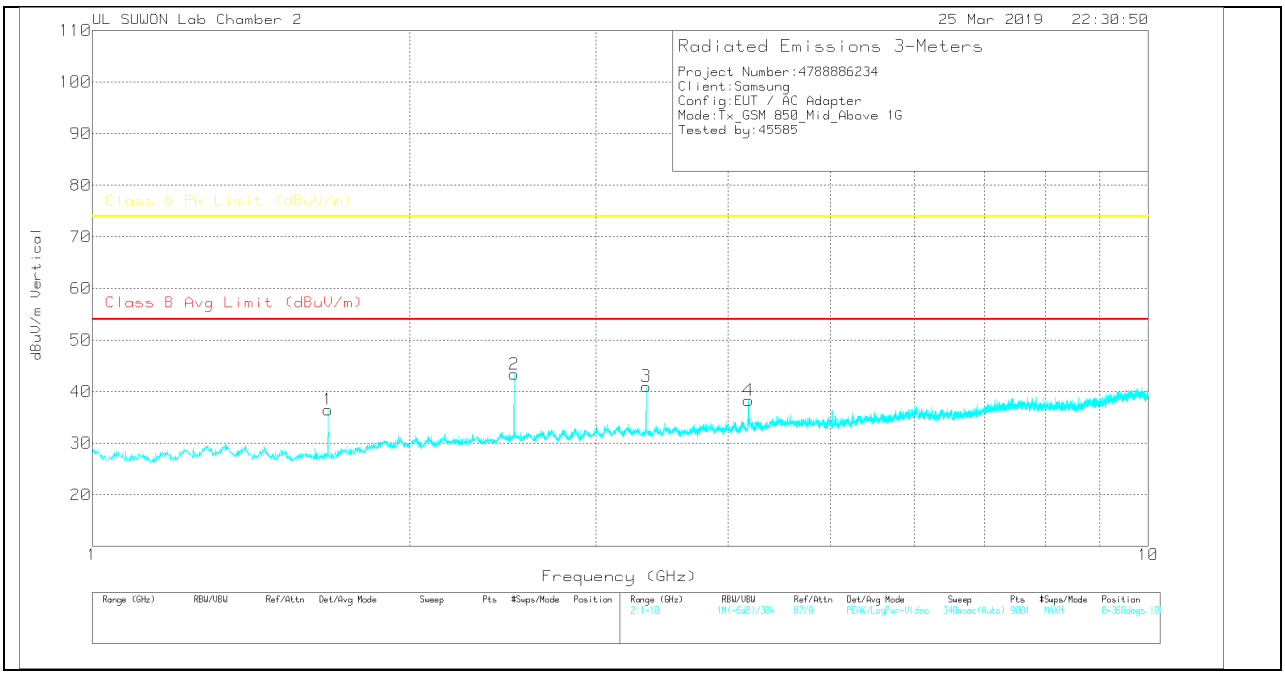
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL(881.6MHz)

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 (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
5	1.673	45.52	PK	28.5	-31.3	.5	43.22	-	-	74	-30.78	0-360	100	H
6	2.509	42.18	PK	31.9	-30.3	.5	44.28	-	-	74	-29.72	0-360	200	H
7	3.346	38.31	PK	32.6	-29.8	.5	41.61	-	-	74	-32.39	0-360	200	H
8	4.183	30.54	PK	33.4	-28.2	.4	36.14	-	-	74	-37.86	0-360	100	H
1	1.673	38.81	PK	28.5	-31.3	.5	36.51	-	-	74	-37.49	0-360	100	V
2	2.51	41.3	PK	31.9	-30.3	.5	43.4	-	-	74	-30.6	0-360	200	V
3	3.346	37.71	PK	32.6	-29.8	.5	41.01	-	-	74	-32.99	0-360	200	V
4	4.183	32.7	PK	33.4	-28.2	.4	38.3	-	-	74	-35.7	0-360	200	V

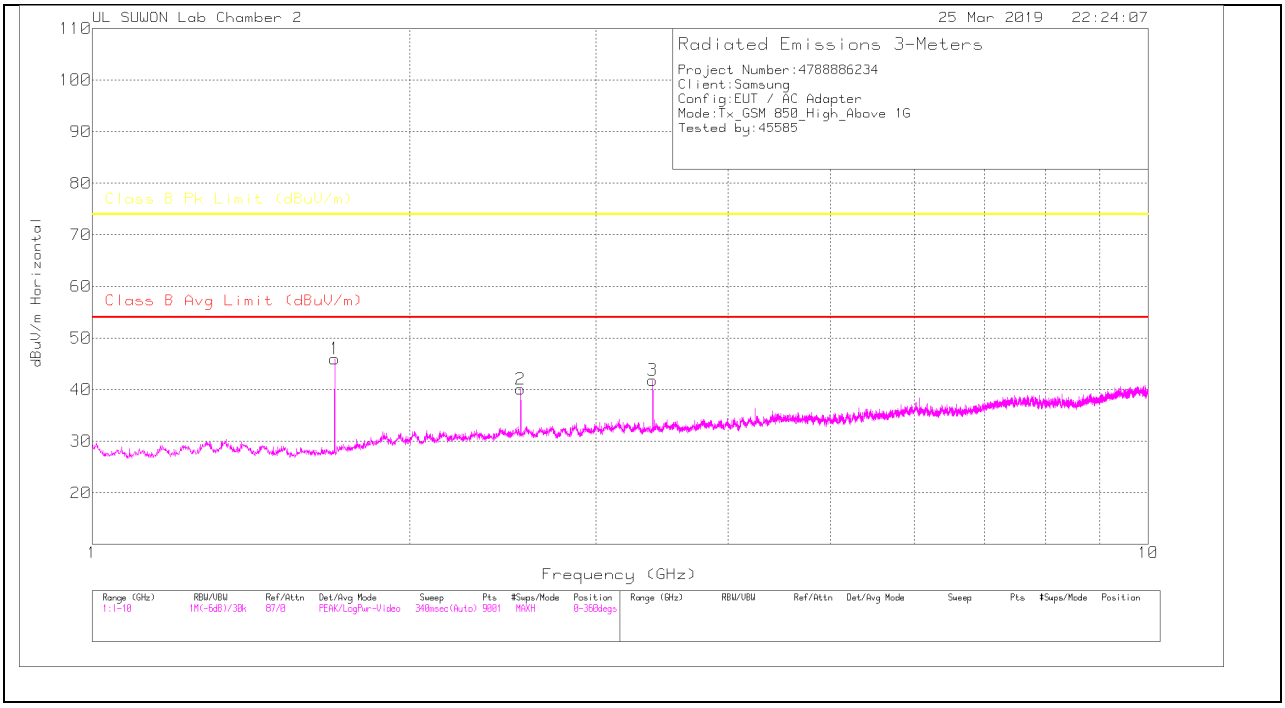
PK – Peak detector

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

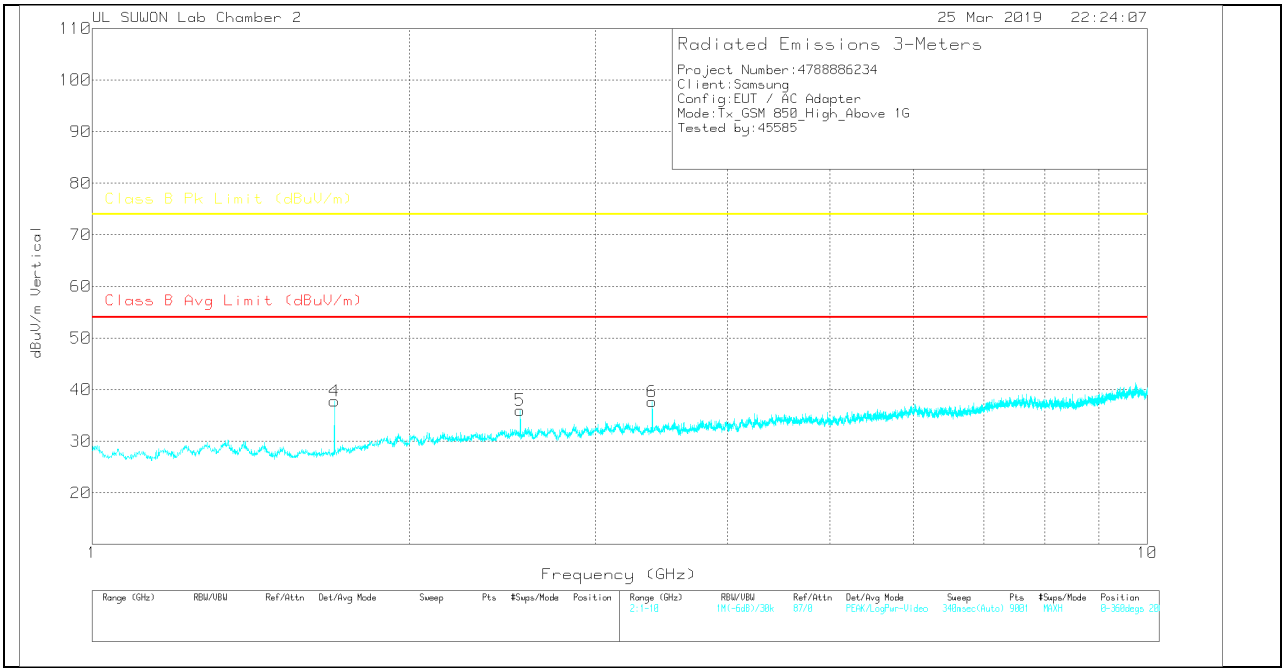
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

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 (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	48.1	PK	28.6	-31.3	.6	46	-	-	74	-28	0-360	200	H
2	2.546	37.58	PK	32	-30.2	.7	40.08	-	-	74	-33.92	0-360	200	H
3	3.395	37.95	PK	32.6	-29.4	.7	41.85	-	-	74	-32.15	0-360	200	H
4	1.697	39.9	PK	28.6	-31.3	.6	37.8	-	-	74	-36.2	0-360	100	V
5	2.546	33.49	PK	32	-30.2	.7	35.99	-	-	74	-38.01	0-360	200	V
6	3.395	33.77	PK	32.6	-29.4	.7	37.67	-	-	74	-36.33	0-360	100	V

PK – Peak Detector

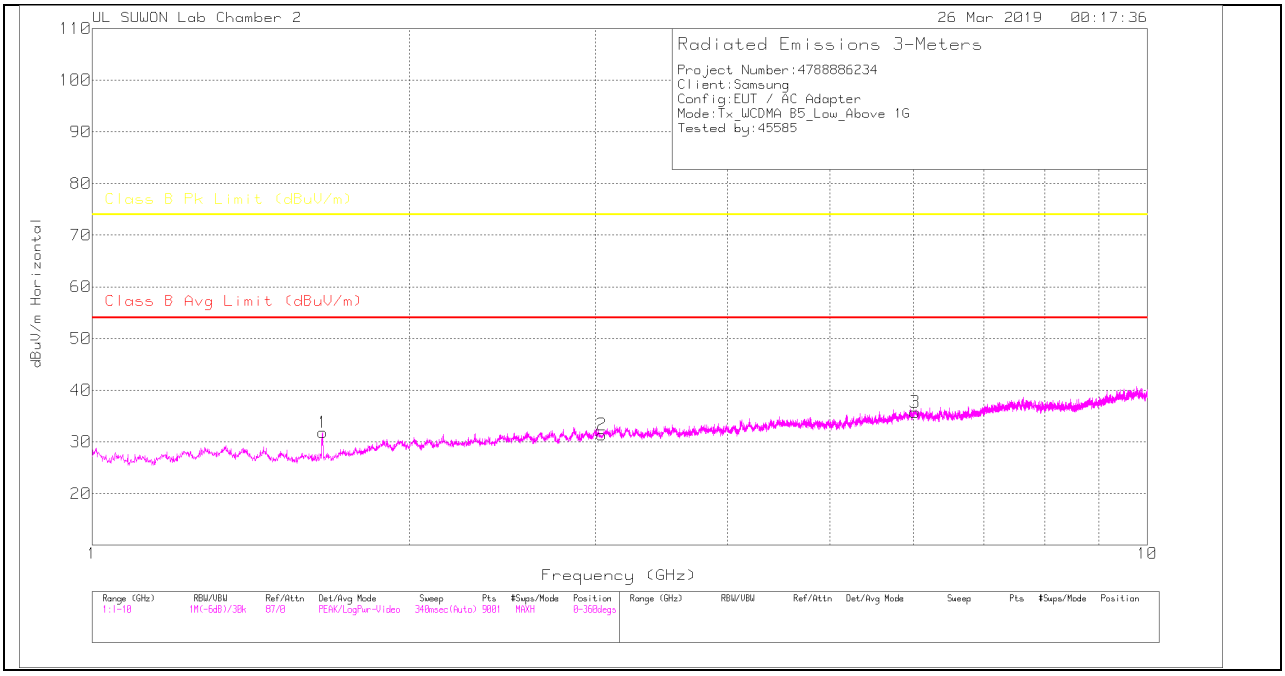
Note: Unwanted emissions on the harmonic frequency were generated from the call-simulator with the TX and RX signals.

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.

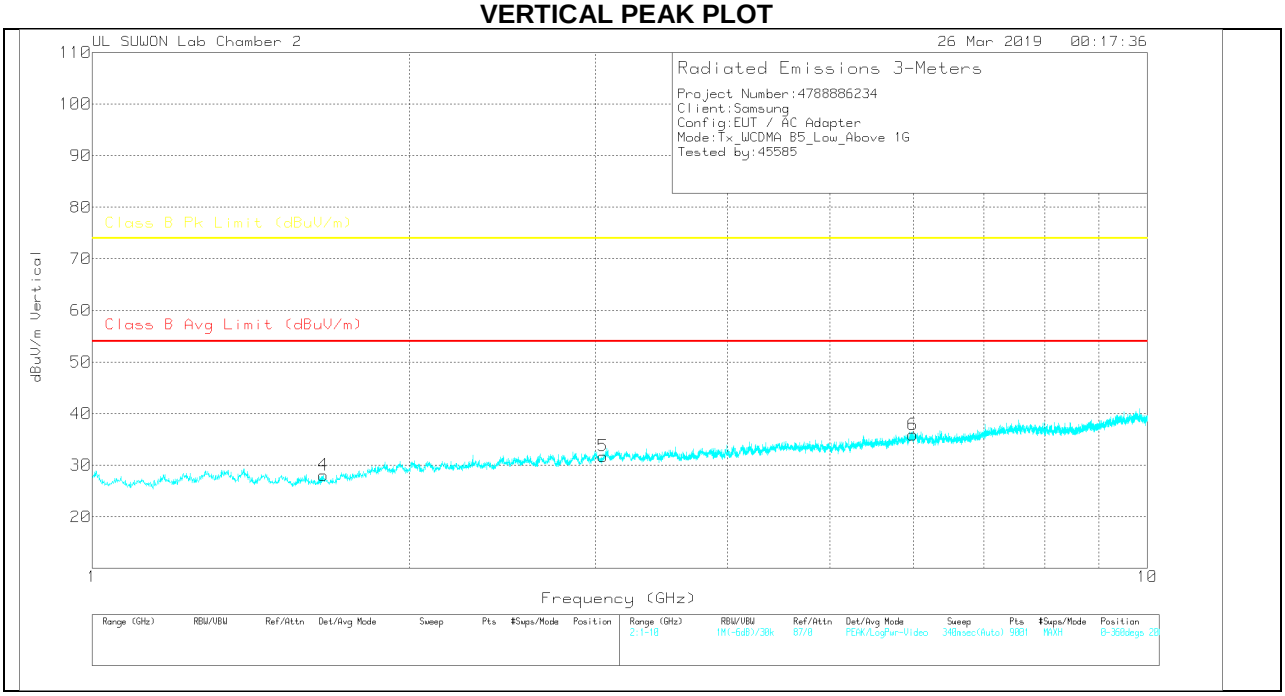
4.2. Above 1 GHz in the WCDMA Band 5

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 (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	34.54	PK	28.3	-31.5	.5	31.84	-	-	74	-42.16	0-360	100	H
2	3.041	28.29	PK	32.6	-30.1	.6	31.39	-	-	74	-42.61	0-360	200	H
3	6.024	27.66	PK	35	-27.4	.5	35.76	-	-	74	-38.24	0-360	200	H
4	1.657	30.6	PK	28.4	-31.4	.5	28.1	-	-	74	-45.9	0-360	100	V
5	3.05	28.57	PK	32.6	-30	.6	31.77	-	-	74	-42.23	0-360	200	V
6	5.996	28.02	PK	35	-27.5	.4	35.92	-	-	74	-38.08	0-360	200	V

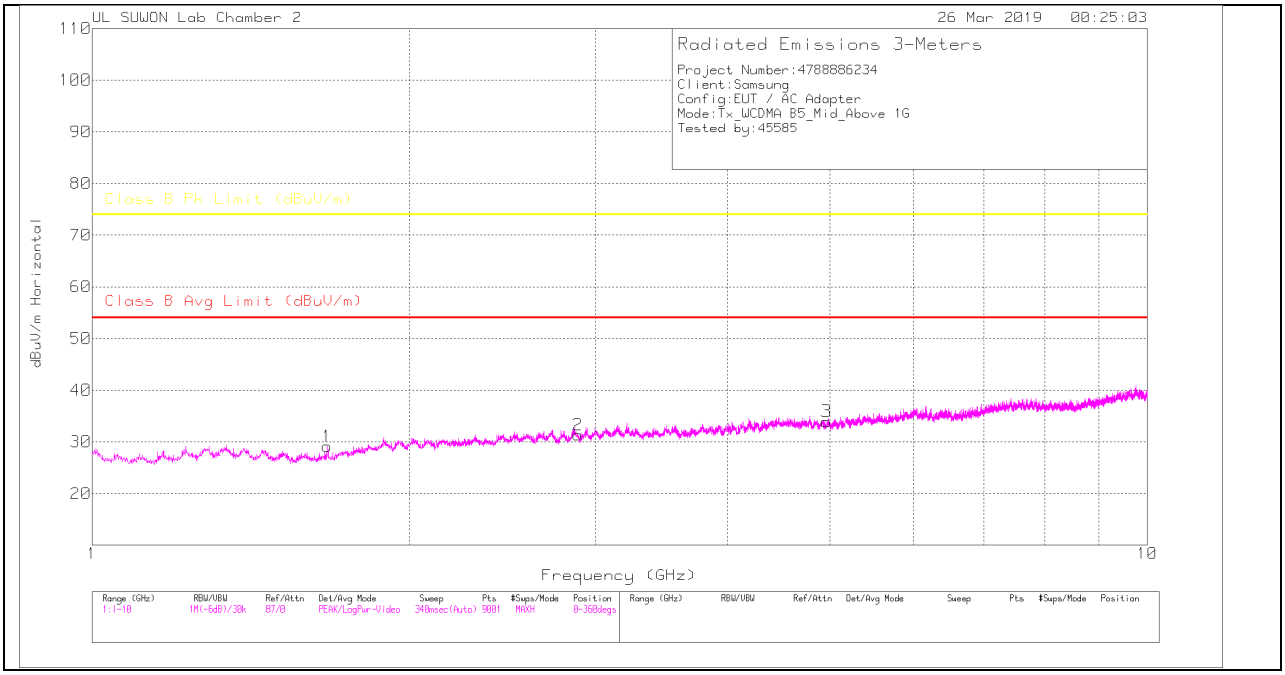
PK – Peak Detector

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

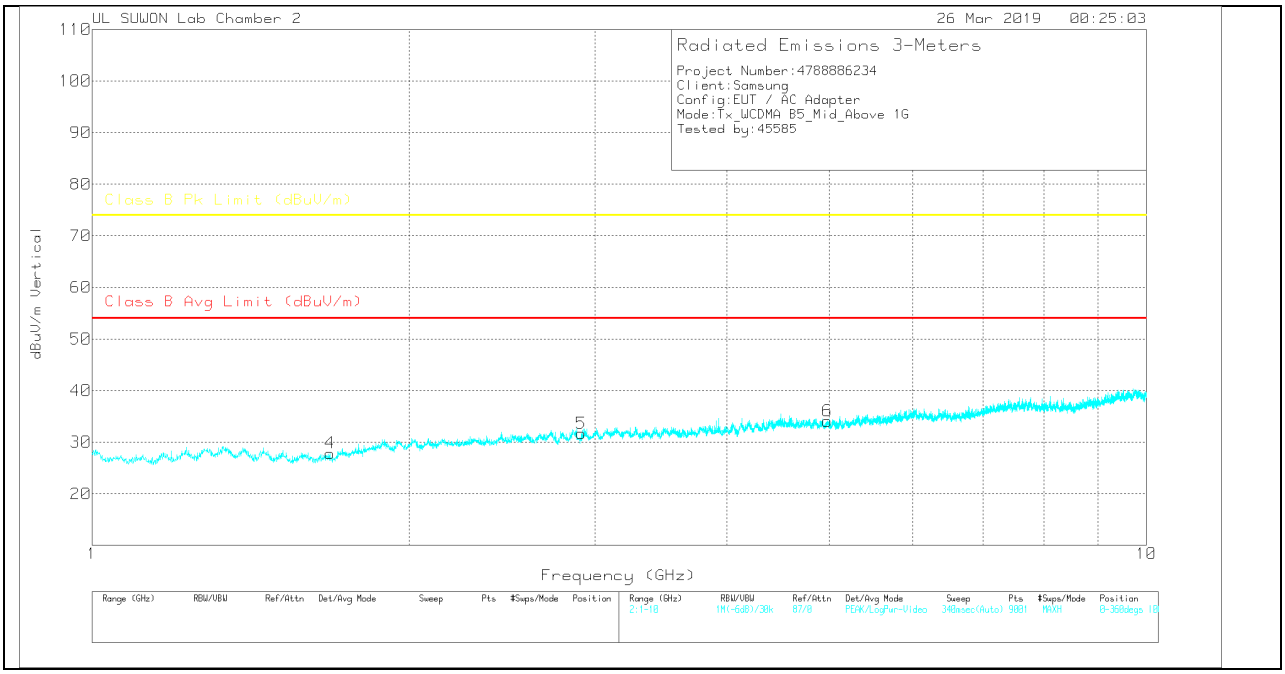
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL(881.6MHz)

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 (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	1.67	31.54	PK	28.5	-31.4	.5	29.14	-	-	74	-44.86	0-360	100	H
2	2.888	28.52	PK	32.1	-30	.7	31.32	-	-	74	-42.68	0-360	100	H
3	4.965	27.74	PK	34.1	-28.3	.4	33.94	-	-	74	-40.06	0-360	200	H
4	1.681	30.18	PK	28.5	-31.3	.5	27.88	-	-	74	-46.12	0-360	100	V
5	2.912	28.79	PK	32.2	-29.9	.6	31.69	-	-	74	-42.31	0-360	100	V
6	4.982	27.9	PK	34.1	-28.3	.4	34.1	-	-	74	-39.9	0-360	100	V

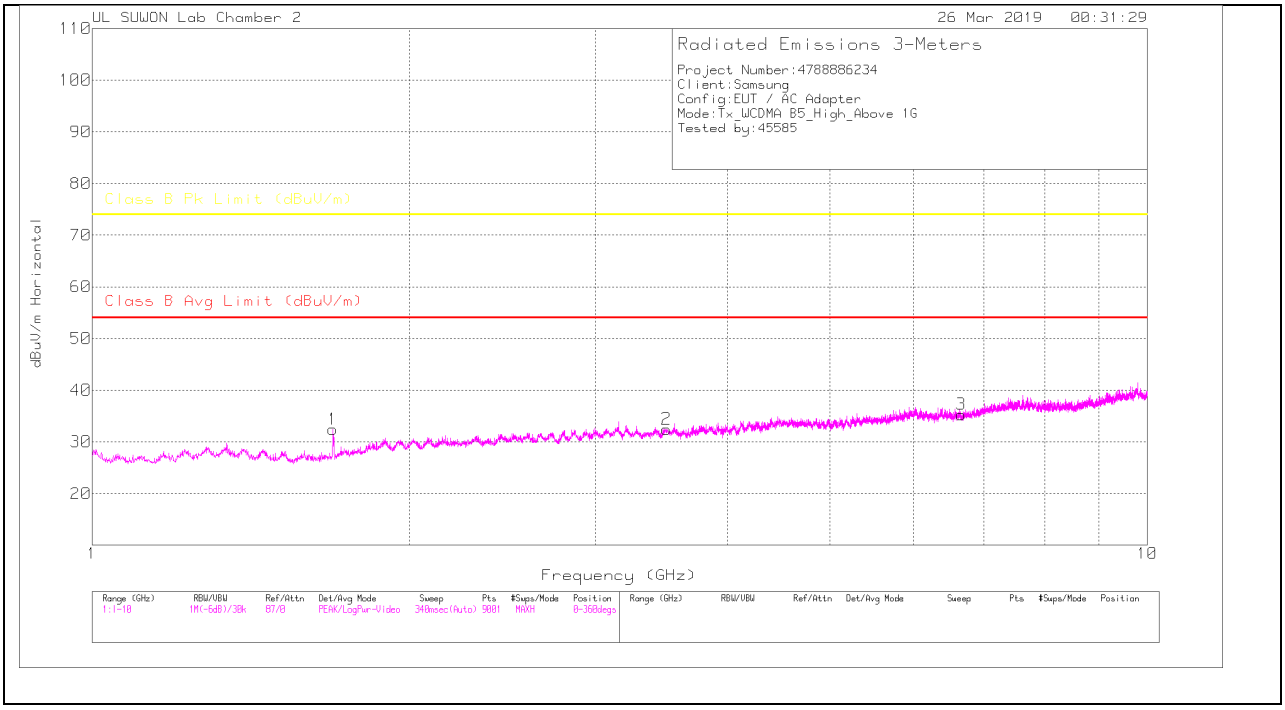
PK – Peak Detector

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

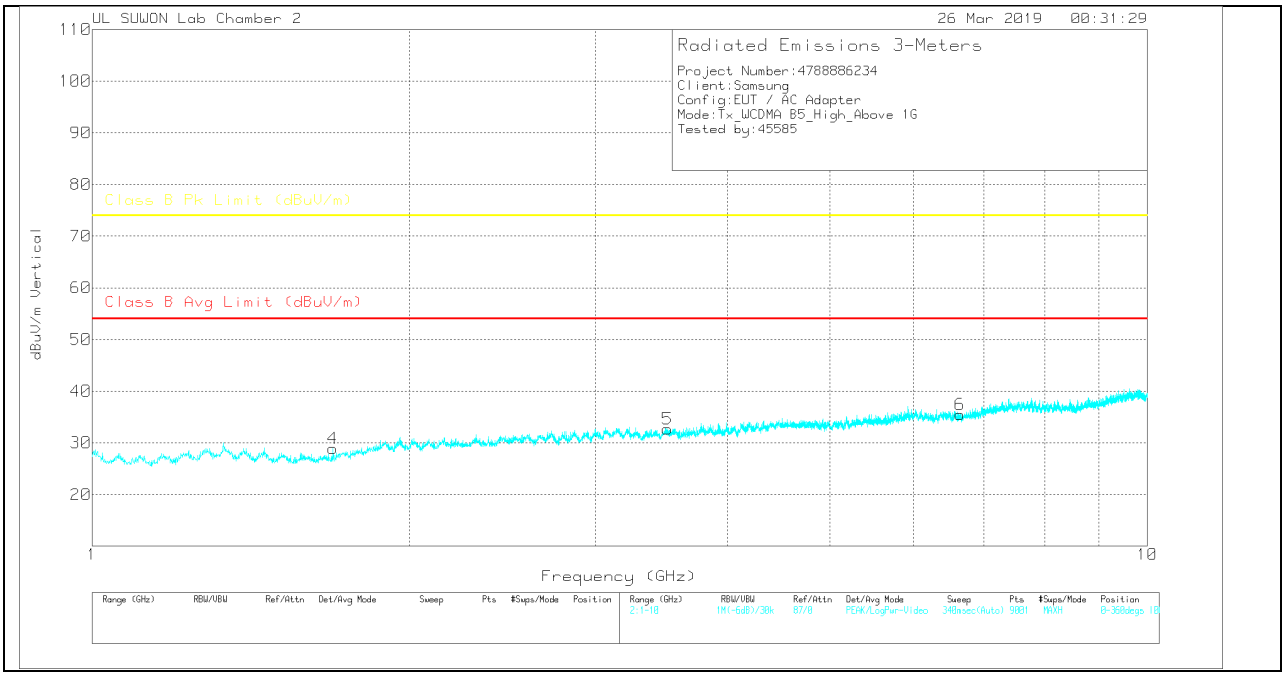
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

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 (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	1.691	34.44	PK	28.6	-31.2	.6	32.44	-	-	74	-41.56	0-360	100	H
2	3.501	28.09	PK	32.7	-28.9	.6	32.49	-	-	74	-41.51	0-360	200	H
3	6.661	26.1	PK	35.4	-26.6	.4	35.3	-	-	74	-38.7	0-360	100	H
4	1.691	30.91	PK	28.6	-31.2	.6	28.91	-	-	74	-45.09	0-360	200	V
5	3.51	28.36	PK	32.7	-29	.6	32.66	-	-	74	-41.34	0-360	100	V
6	6.647	26.29	PK	35.4	-26.6	.4	35.49	-	-	74	-38.51	0-360	200	V

PK – Peak Detector

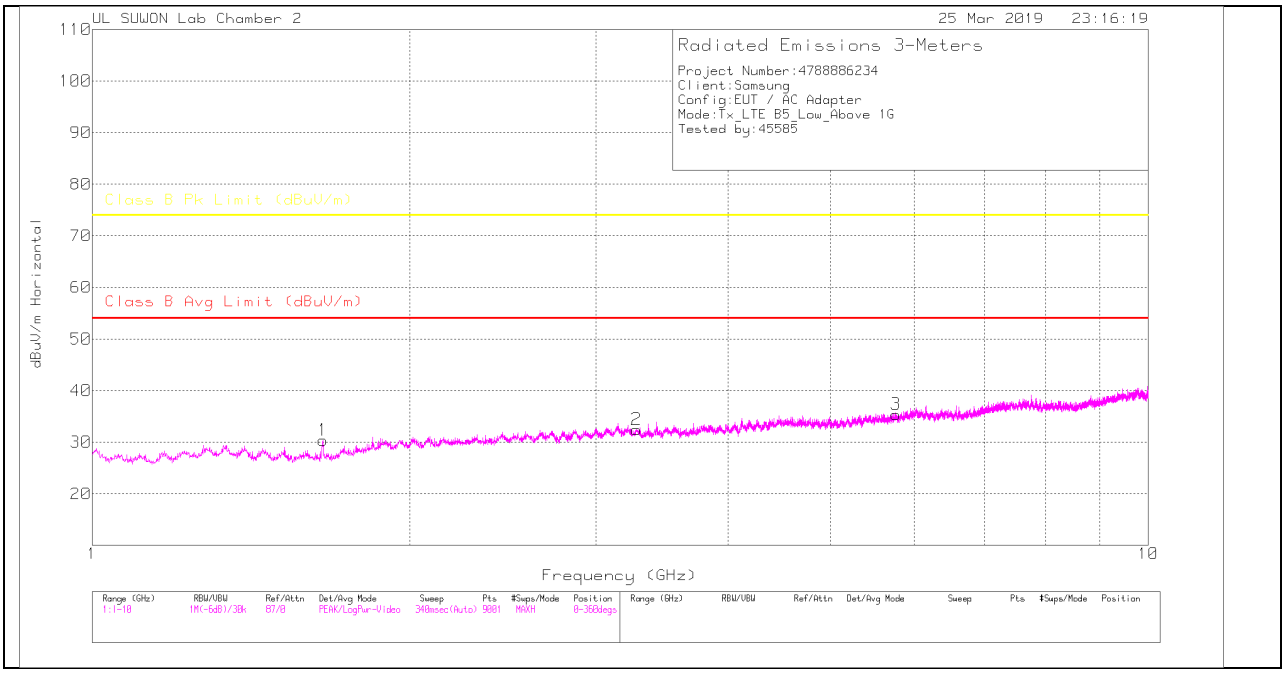
Note: Unwanted emissions on the harmonic frequency were generated from the call-simulator with the TX and RX signals.

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.

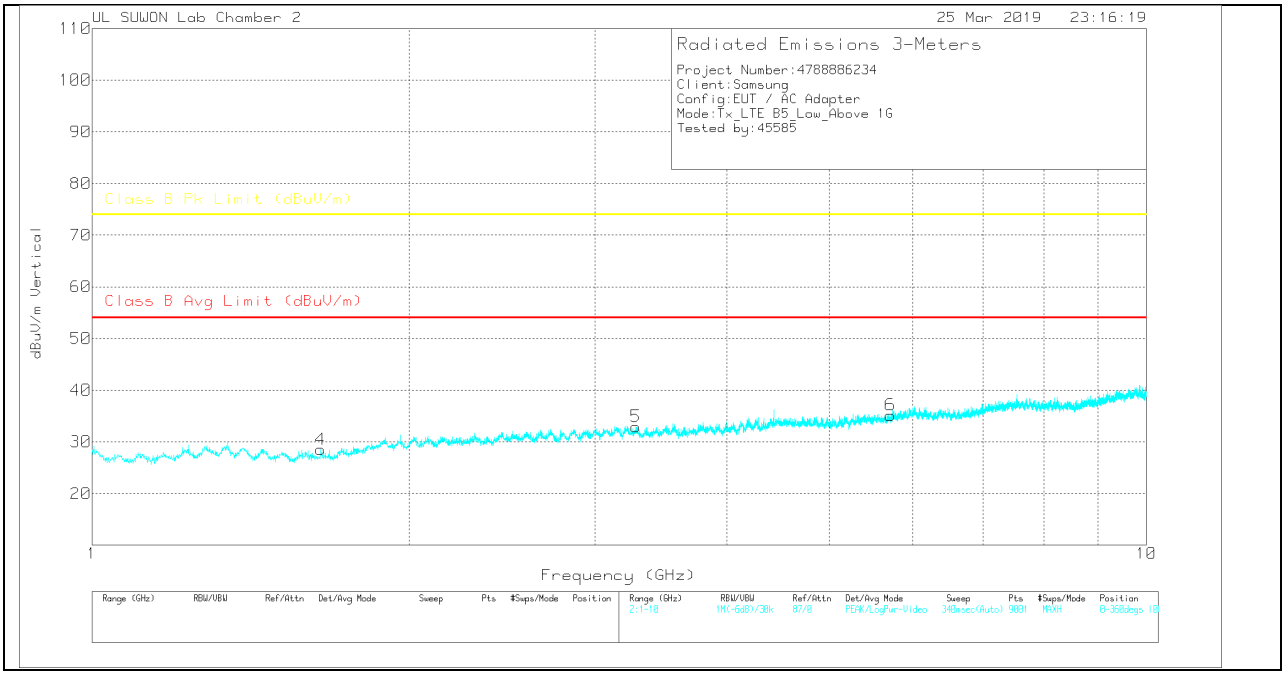
4.3. Above 1 GHz in the LTE Band 5

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 (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	1.655	33.01	PK	28.3	-31.4	.5	30.41	-	-	74	-43.59	0-360	100	H
2	3.277	28.98	PK	32.7	-29.9	.7	32.48	-	-	74	-41.52	0-360	100	H
3	5.767	27.61	PK	34.7	-27.3	.4	35.41	-	-	74	-38.59	0-360	200	H
4	1.648	31.03	PK	28.3	-31.4	.6	28.53	-	-	74	-45.47	0-360	100	V
5	3.28	29.45	PK	32.7	-29.9	.7	32.95	-	-	74	-41.05	0-360	200	V
6	5.718	27.67	PK	34.7	-27.7	.5	35.17	-	-	74	-38.83	0-360	200	V

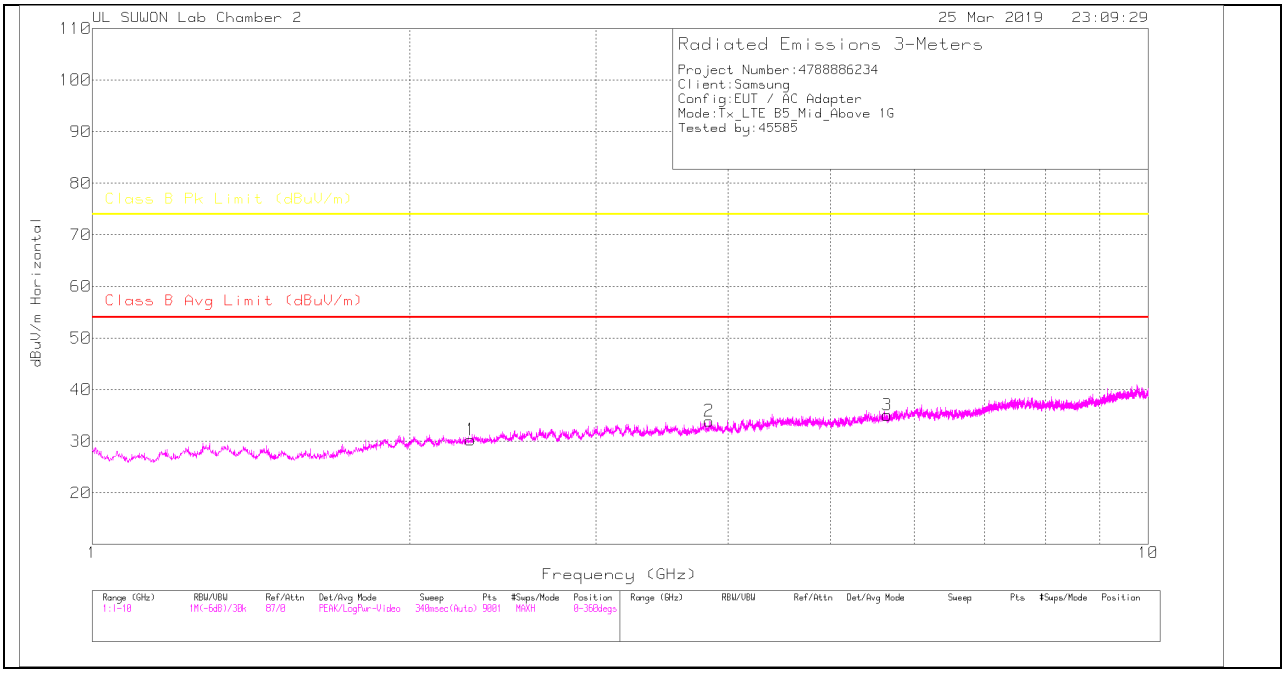
PK – Peak Detector

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

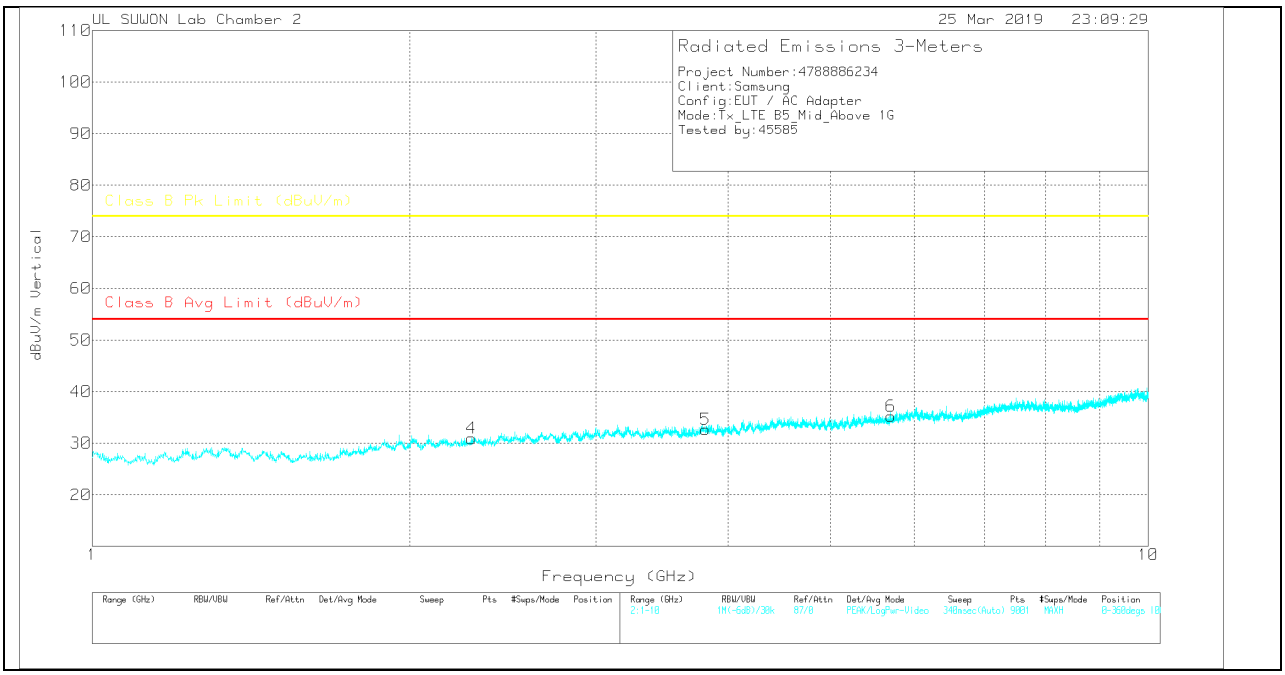
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL(881.5MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



UL Korea, Ltd. 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	2.282	28.9	PK	31.4	-30.8	.8	30.3	-	-	74	-43.7	0-360	200	H
2	3.84	29.35	PK	33.3	-29.1	.4	33.95	-	-	74	-40.05	0-360	200	H
3	5.662	27.98	PK	34.6	-28	.5	35.08	-	-	74	-38.92	0-360	200	H
4	2.286	29.43	PK	31.5	-30.8	.8	30.93	-	-	74	-43.07	0-360	100	V
5	3.808	27.96	PK	33.3	-29.1	.5	32.66	-	-	74	-41.34	0-360	100	V
6	5.709	27.81	PK	34.7	-27.8	.5	35.21	-	-	74	-38.79	0-360	200	V

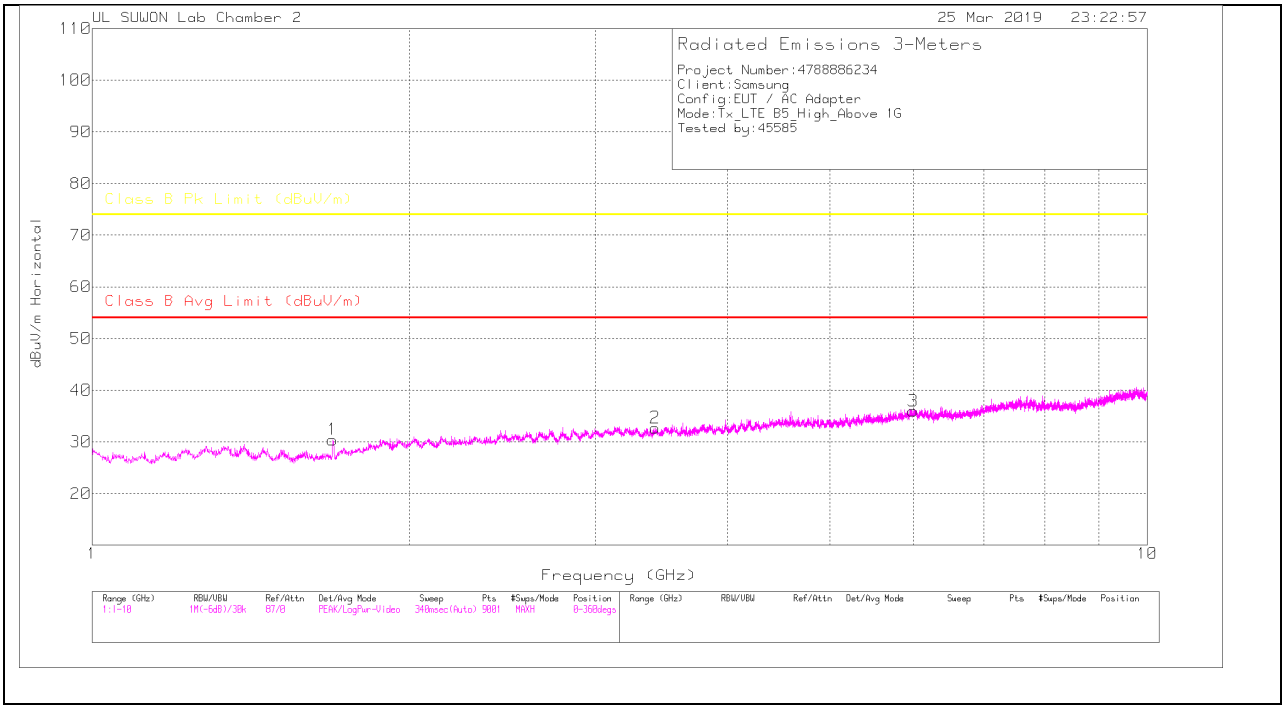
PK – Peak Detector

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

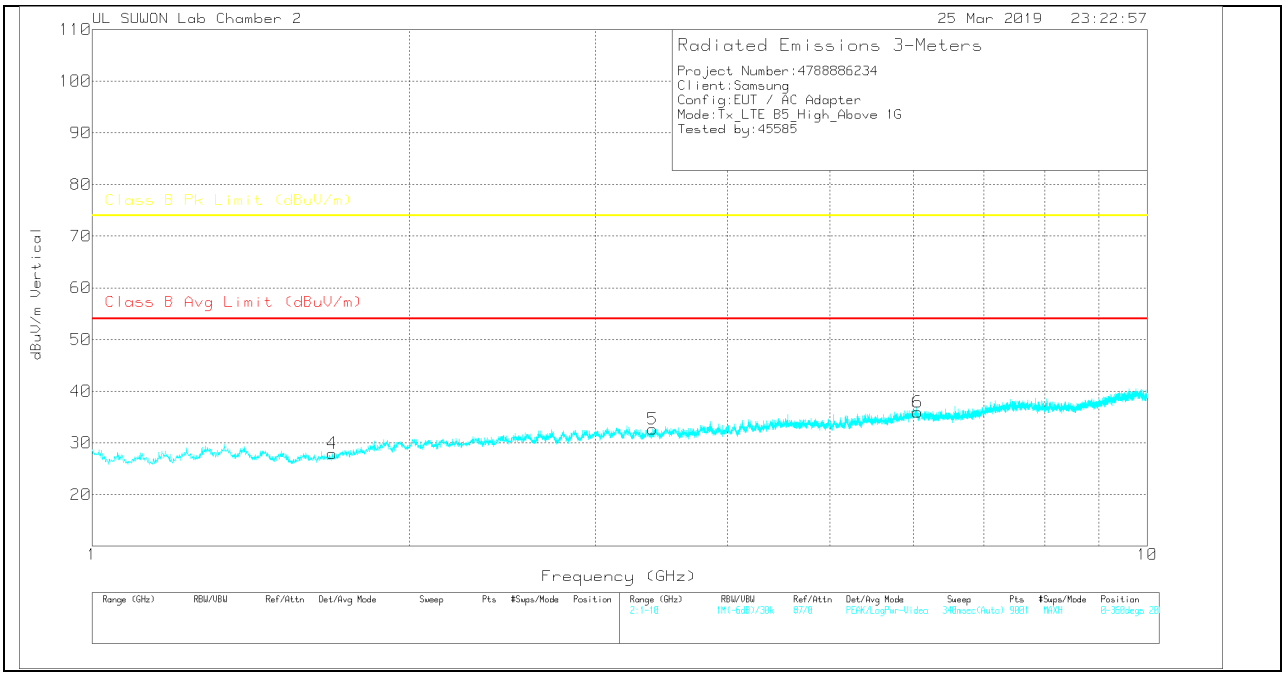
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

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 (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	1.69	32.53	PK	28.6	-31.3	.6	30.43	-	-	74	-43.57	0-360	100	H
2	3.416	28.71	PK	32.6	-29.3	.7	32.71	-	-	74	-41.29	0-360	200	H
3	6	28.04	PK	35	-27.5	.4	35.94	-	-	74	-38.06	0-360	200	H
4	1.689	30.16	PK	28.6	-31.3	.5	27.96	-	-	74	-46.04	0-360	100	V
5	3.4	28.79	PK	32.6	-29.4	.7	32.69	-	-	74	-41.31	0-360	100	V
6	6.058	27.64	PK	35.1	-27.3	.5	35.94	-	-	74	-38.06	0-360	200	V

PK – Peak Detector

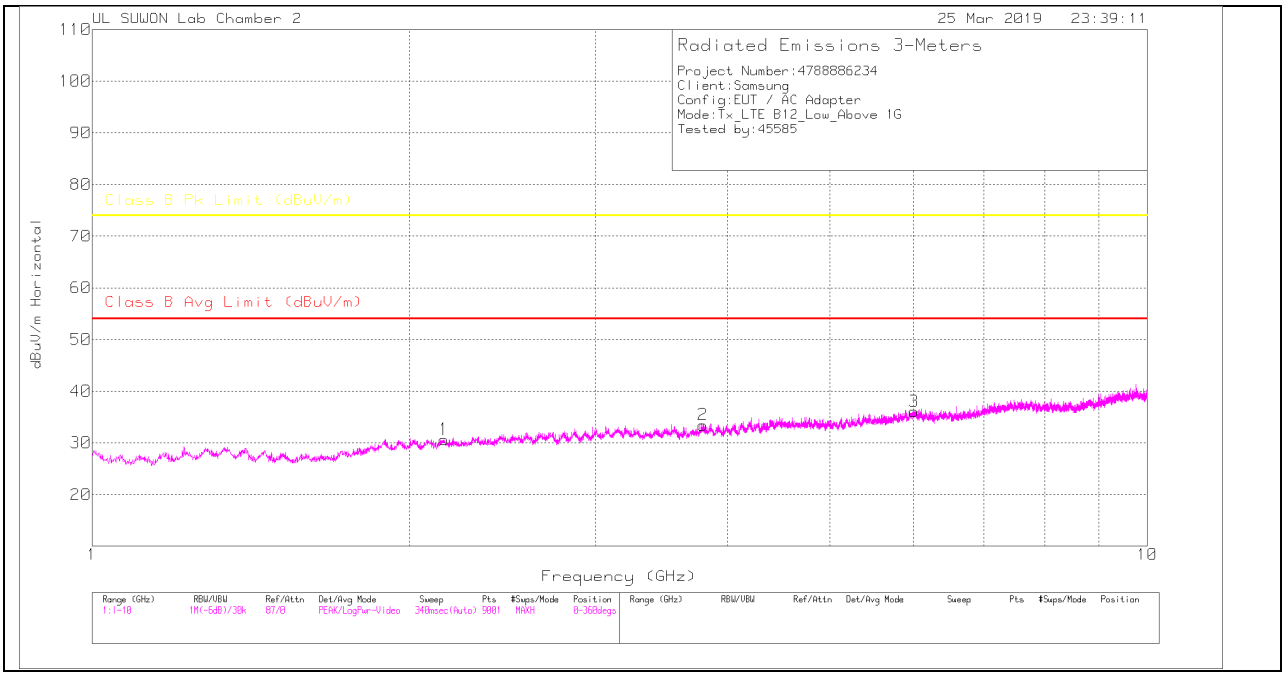
Note: Unwanted emissions on the harmonic frequency were generated from the call-simulator with the TX and RX signals.

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.

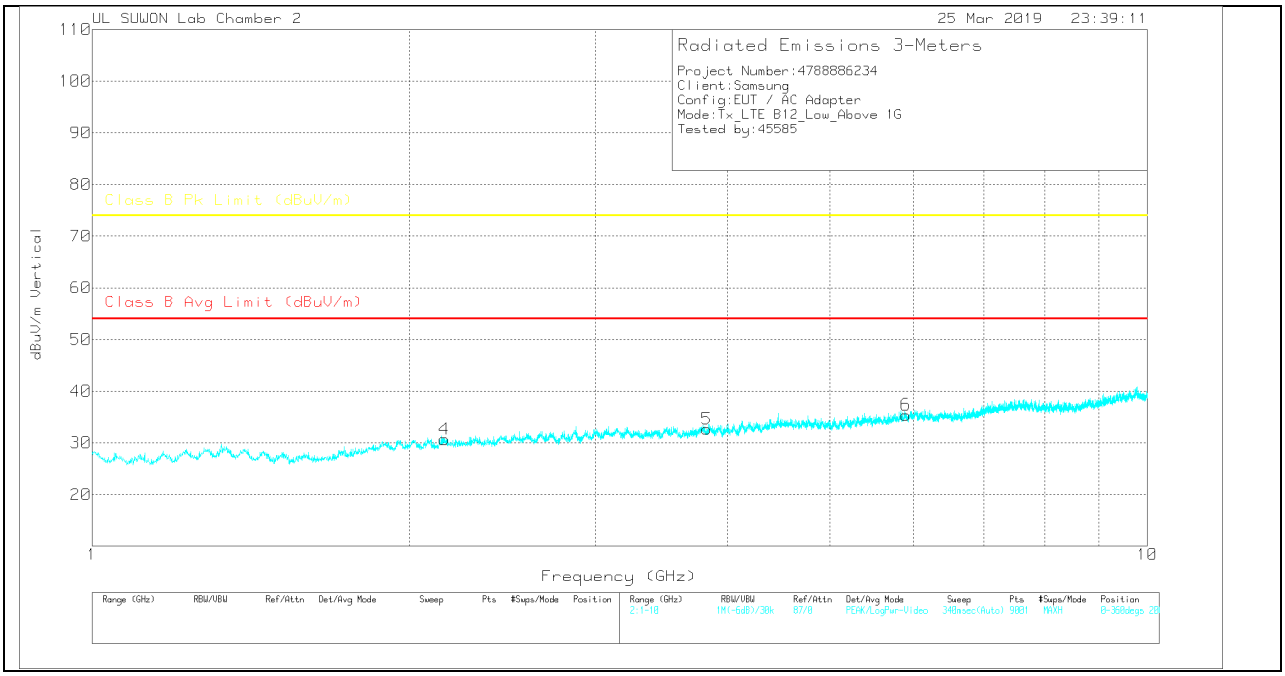
4.4. Above 1 GHz in the LTE Band 12

LOW CHANNEL(730.5MHz)

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 (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	2.155	29.36	PK	31.3	-30.7	.7	30.66	-	-	74	-43.34	0-360	200	H
2	3.793	28.97	PK	33.2	-29.2	.5	33.47	-	-	74	-40.53	0-360	100	H
3	6.013	28.06	PK	35	-27.5	.5	36.06	-	-	74	-37.94	0-360	200	H
4	2.157	29.4	PK	31.3	-30.7	.7	30.7	-	-	74	-43.3	0-360	100	V
5	3.822	27.95	PK	33.3	-29.1	.5	32.65	-	-	74	-41.35	0-360	200	V
6	5.903	27.51	PK	34.9	-27.5	.5	35.41	-	-	74	-38.59	0-360	200	V

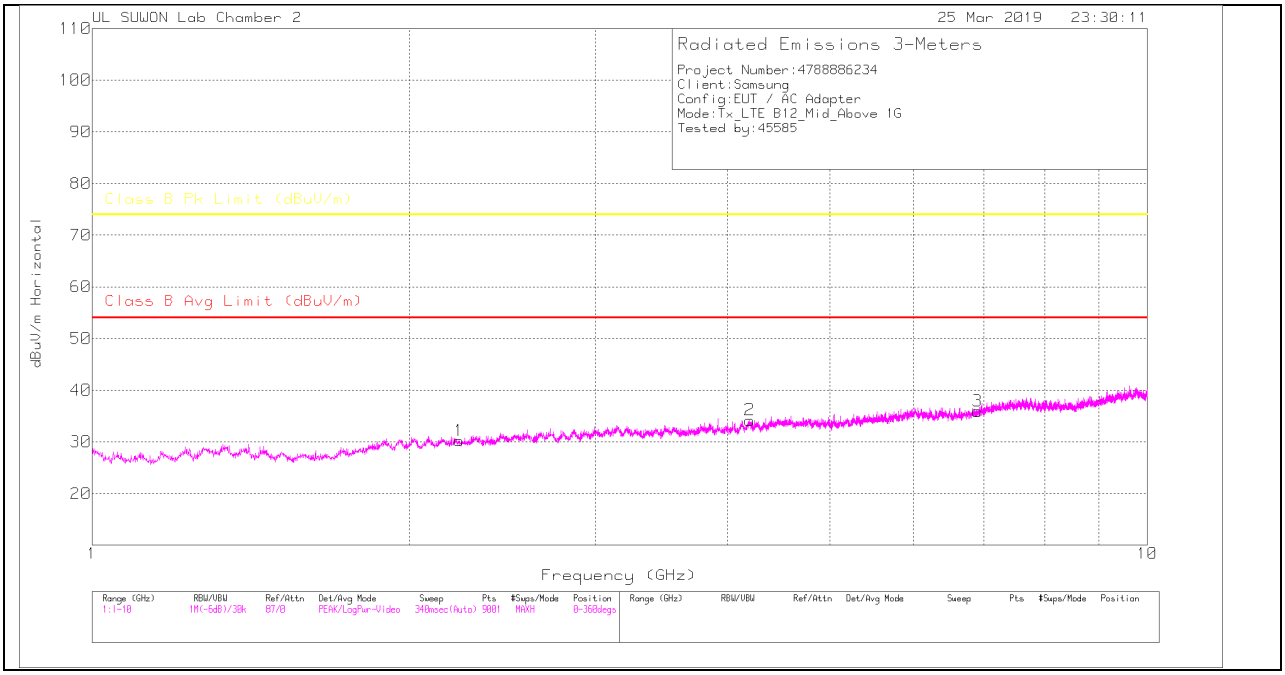
PK – Peak Detector

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

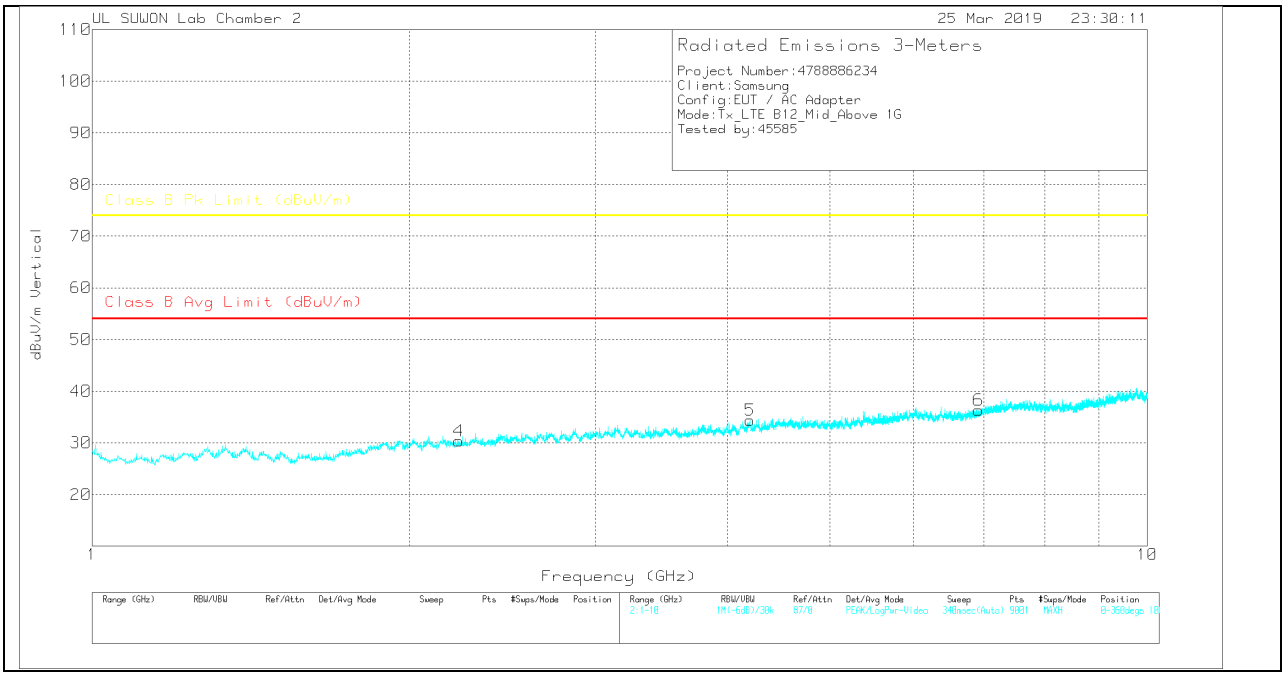
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL(737.5MHz)

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 (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	2.227	29.25	PK	31.4	-30.8	.4	30.25	-	-	74	-43.75	0-360	200	H
2	4.2	28.6	PK	33.4	-28.2	.4	34.2	-	-	74	-39.8	0-360	200	H
3	6.904	25.82	PK	35.7	-26.1	.5	35.92	-	-	74	-38.08	0-360	200	H
4	2.226	29.36	PK	31.4	-30.8	.4	30.36	-	-	74	-43.64	0-360	100	V
5	4.202	28.76	PK	33.4	-28.2	.4	34.36	-	-	74	-39.64	0-360	100	V
6	6.919	26.31	PK	35.7	-26.2	.5	36.31	-	-	74	-37.69	0-360	100	V

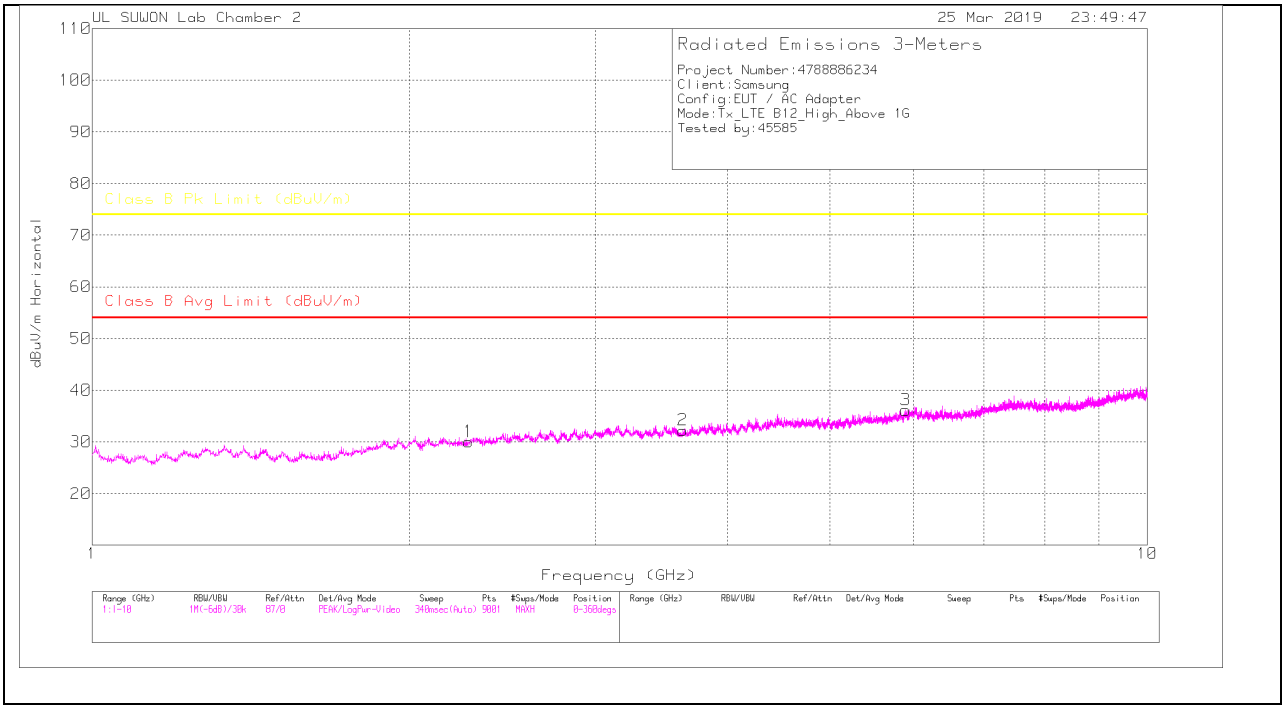
PK – Peak Detector

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

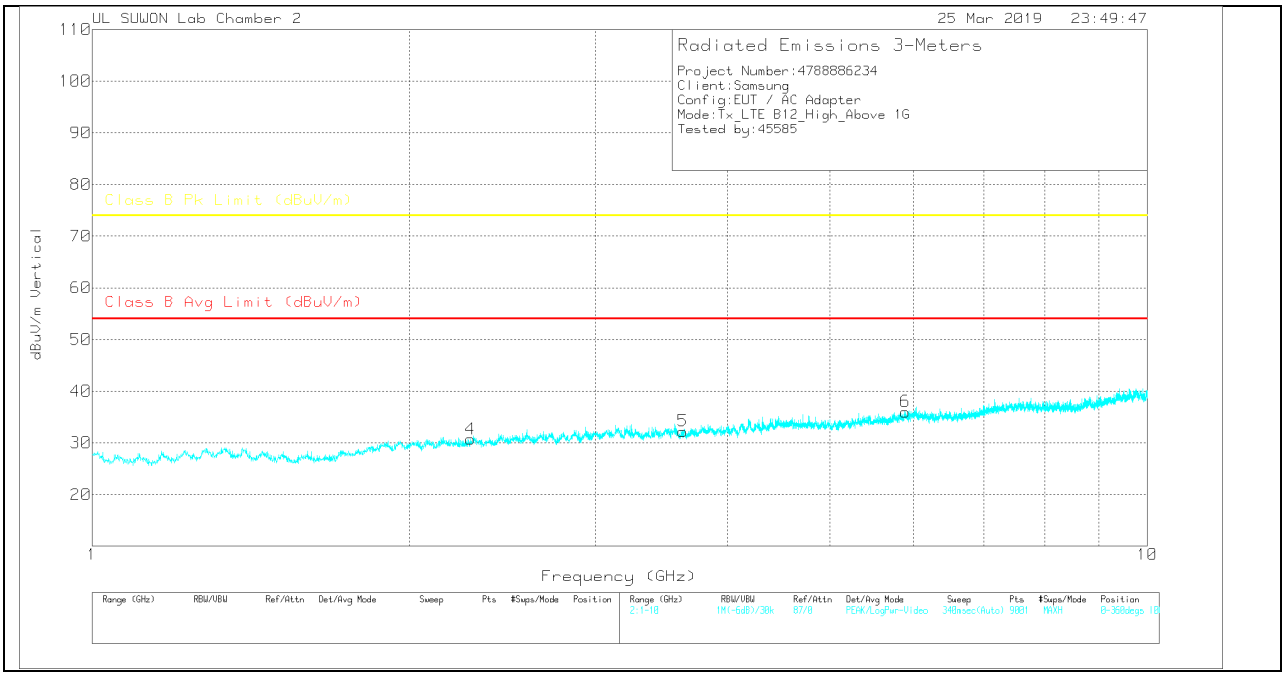
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

HIGH CHANNEL(744.5MHz)

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 (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	2.275	28.75	PK	31.4	-30.8	.7	30.05	-	-	74	-43.95	0-360	200	H
2	3.63	28.46	PK	32.8	-29.5	.5	32.26	-	-	74	-41.74	0-360	100	H
3	5.901	28.27	PK	34.9	-27.5	.5	36.17	-	-	74	-37.83	0-360	200	H
4	2.284	29.32	PK	31.4	-30.8	.8	30.72	-	-	74	-43.28	0-360	200	V
5	3.63	28.45	PK	32.8	-29.5	.5	32.25	-	-	74	-41.75	0-360	200	V
6	5.899	28.13	PK	34.9	-27.5	.5	36.03	-	-	74	-37.97	0-360	100	V

PK – Peak Detector

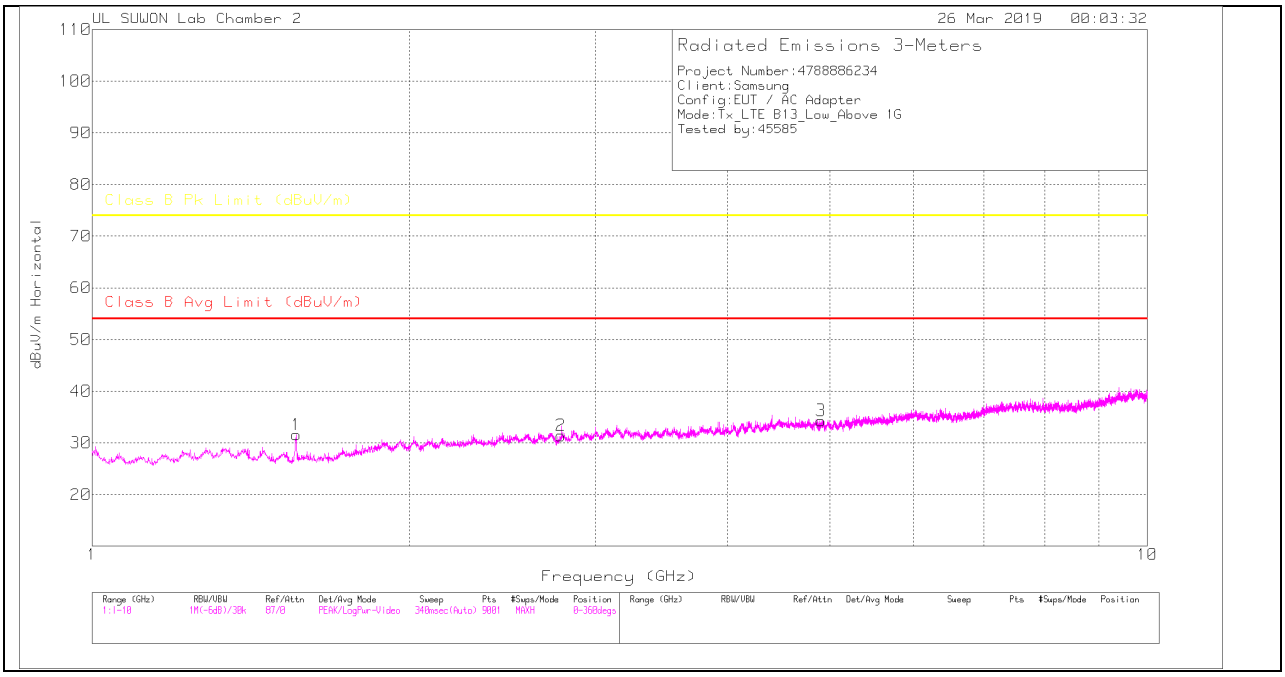
Note: Unwanted emissions on the harmonic frequency were generated from the call-simulator with the TX and RX signals.

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.

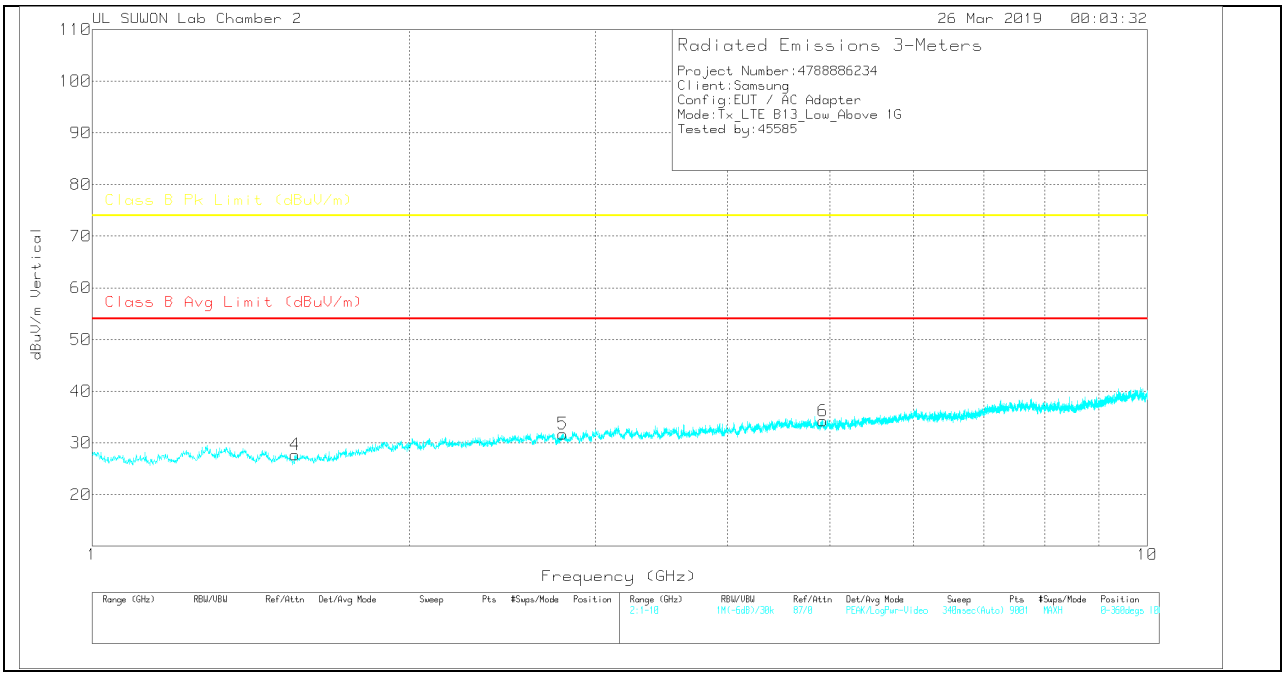
4.5. Above 1 GHz in the LTE Band 13

LOW CHANNEL(748.5MHz)

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 (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	1.561	34.1	PK	28.3	-31.4	.6	31.6	-	-	74	-42.4	0-360	200	H
2	2.782	28.81	PK	32.1	-29.9	.4	31.41	-	-	74	-42.59	0-360	100	H
3	4.906	28.18	PK	34	-28.3	.4	34.28	-	-	74	-39.72	0-360	100	H
4	1.557	30.21	PK	28.3	-31.4	.6	27.71	-	-	74	-46.29	0-360	100	V
5	2.792	28.96	PK	32.1	-29.8	.5	31.76	-	-	74	-42.24	0-360	200	V
6	4.928	28.14	PK	34	-28.3	.4	34.24	-	-	74	-39.76	0-360	200	V

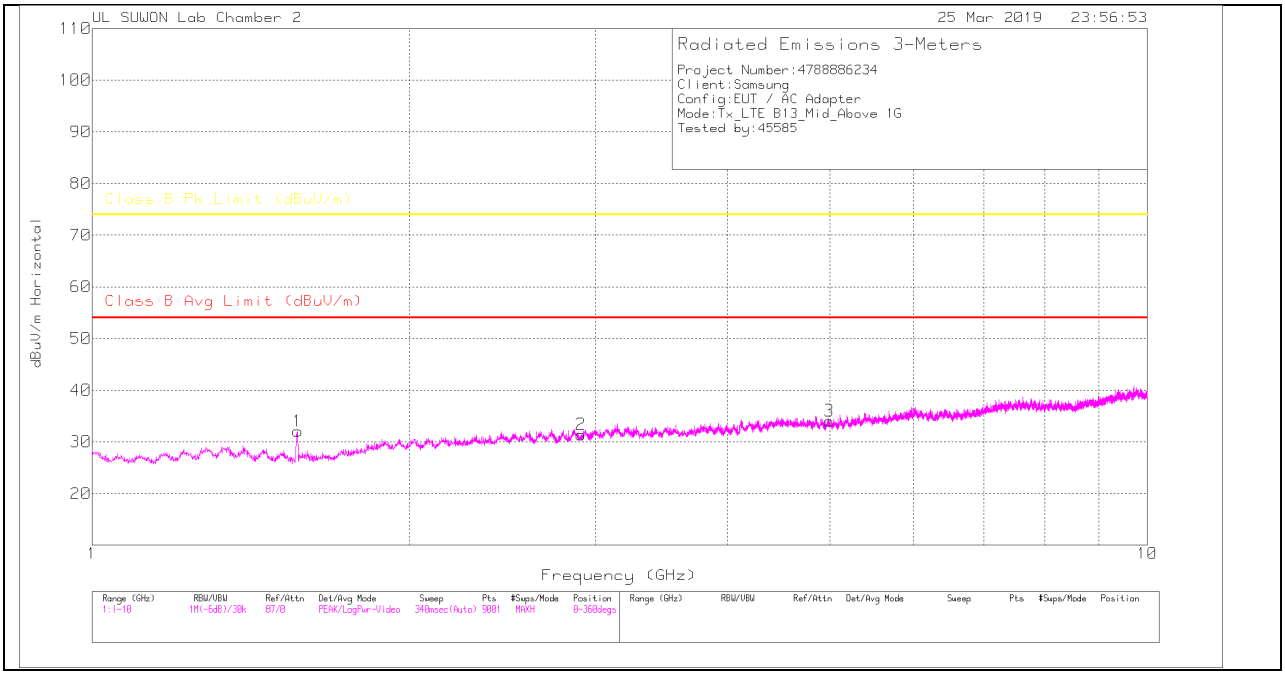
PK – Peak Detector

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

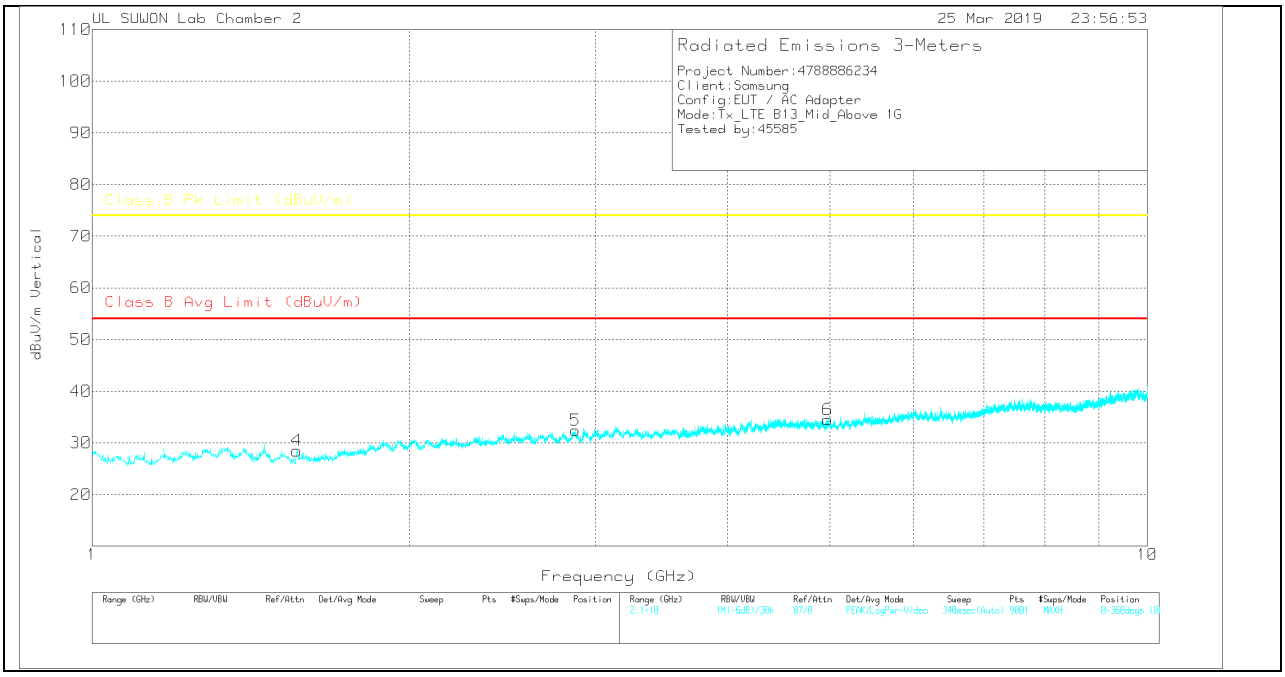
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL(751.0MHz)

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	1.567	34.58	PK	28.3	-31.4	.6	32.08	-	-	74	-41.92	0-360	100	H
2	2.907	28.6	PK	32.2	-30	.6	31.4	-	-	74	-42.6	0-360	200	H
3	4.997	27.84	PK	34.1	-28.3	.4	34.04	-	-	74	-39.96	0-360	100	H
4	1.563	30.99	PK	28.3	-31.4	.6	28.49	-	-	74	-45.51	0-360	100	V
5	2.871	29.43	PK	32.1	-29.9	.8	32.43	-	-	74	-41.57	0-360	100	V
6	4.979	28.3	PK	34.1	-28.3	.4	34.5	-	-	74	-39.5	0-360	200	V

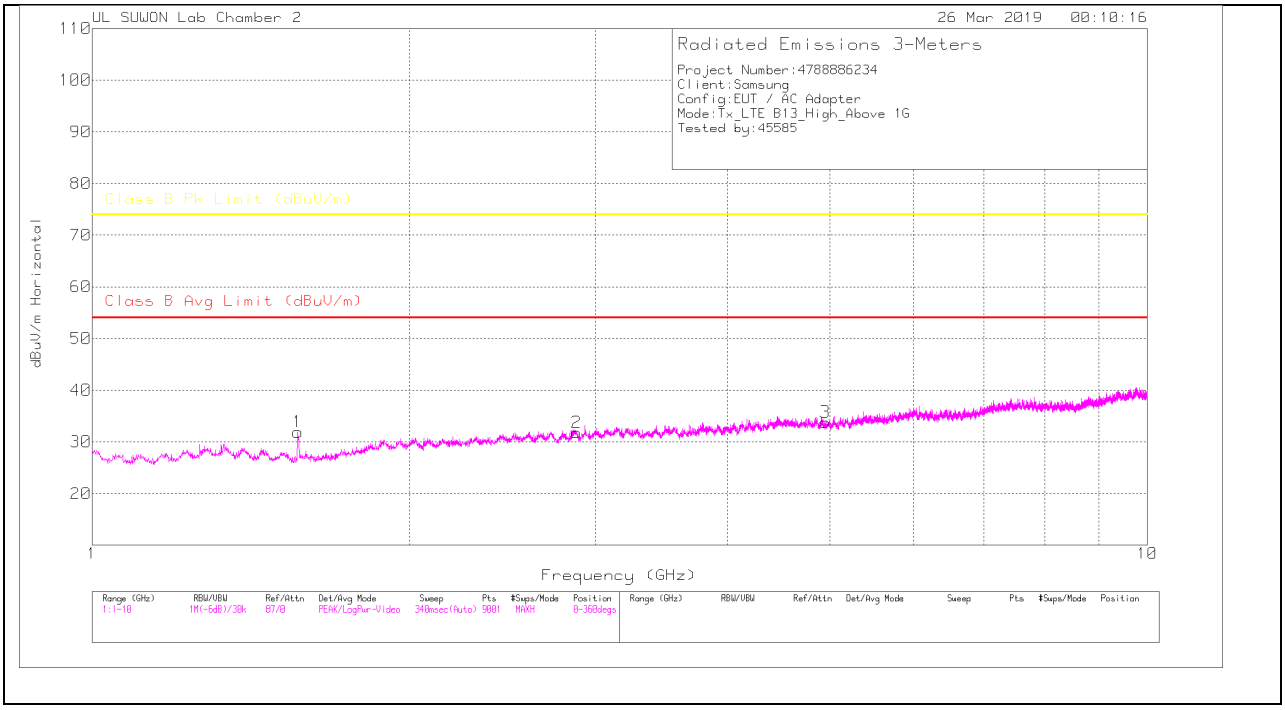
PK – Peak Detector

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

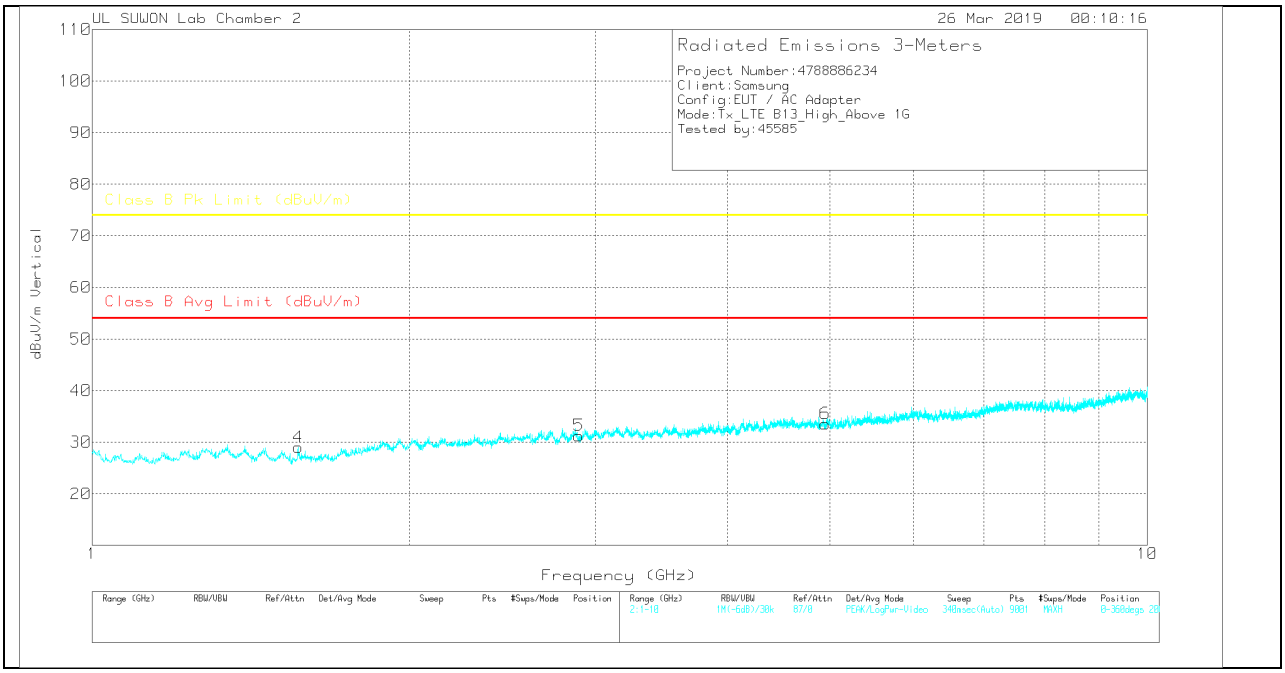
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

HIGH CHANNEL(753.5MHz)

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 (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	1.567	34.41	PK	28.3	-31.4	.6	31.91	-	-	74	-42.09	0-360	200	H
2	2.879	29.04	PK	32.1	-30	.7	31.84	-	-	74	-42.16	0-360	200	H
3	4.952	27.7	PK	34.1	-28.4	.4	33.8	-	-	74	-40.2	0-360	100	H
4	1.568	31.5	PK	28.3	-31.4	.6	29	-	-	74	-45	0-360	100	V
5	2.893	28.48	PK	32.1	-30	.7	31.28	-	-	74	-42.72	0-360	100	V
6	4.952	27.5	PK	34.1	-28.4	.4	33.6	-	-	74	-40.4	0-360	200	V

PK – Peak Detector

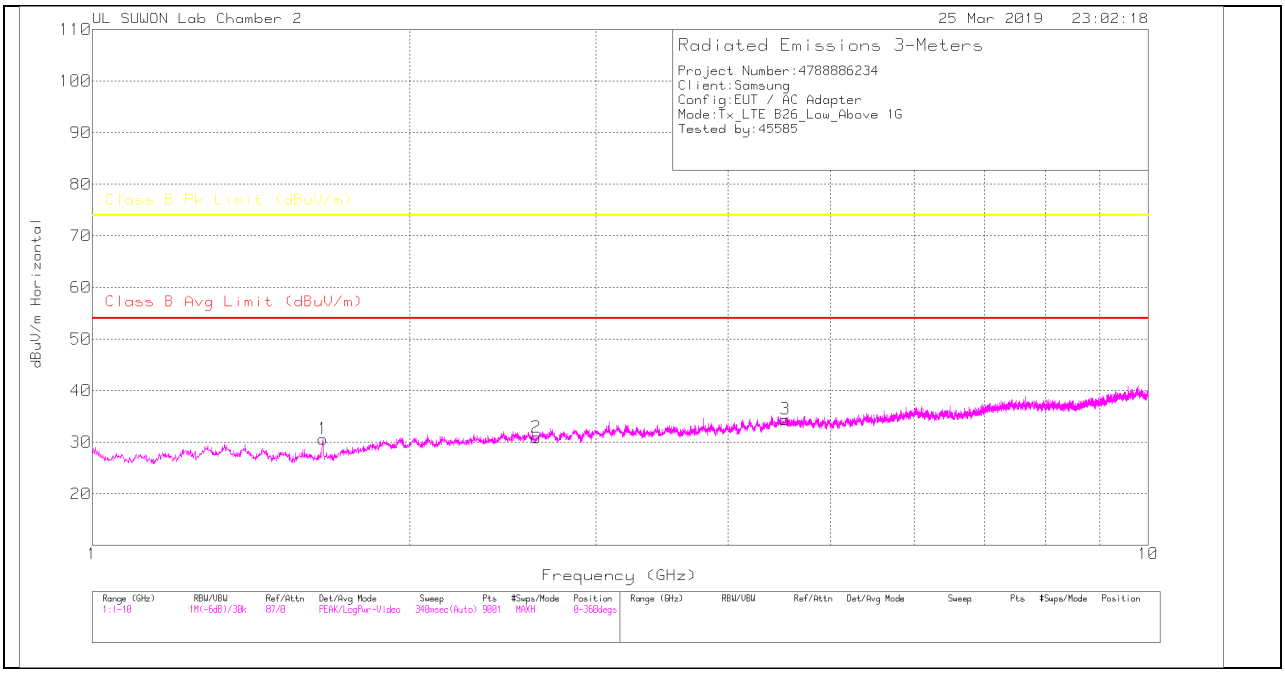
Note: Unwanted emissions on the harmonic frequency were generated from the call-simulator with the TX and RX signals.

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.

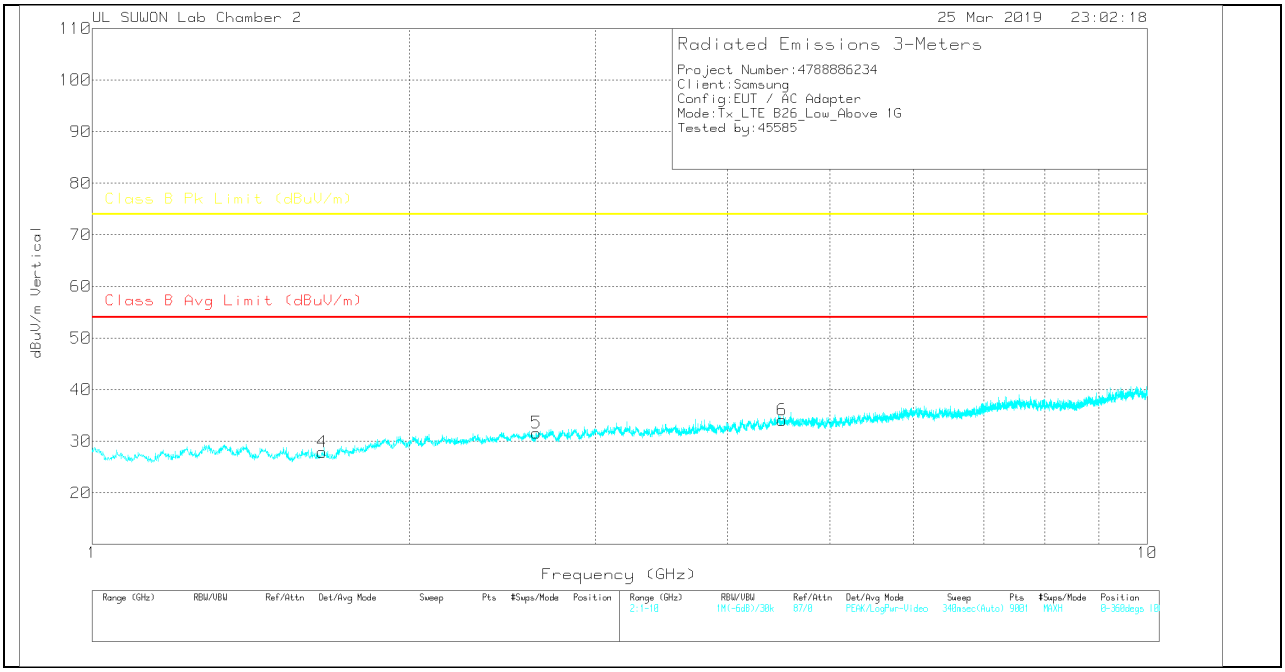
4.6. Above 1 GHz in the LTE Band 26

LOW CHANNEL(860.5MHz)

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 (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	33.35	PK	28.3	-31.5	.5	30.65	-	-	74	-43.35	0-360	100	H
2	2.634	28.73	PK	32.1	-30.4	.5	30.93	-	-	74	-43.07	0-360	100	H
3	4.533	28.85	PK	33.9	-28.7	.4	34.45	-	-	74	-39.55	0-360	100	H
4	1.652	30.4	PK	28.3	-31.4	.6	27.9	-	-	74	-46.1	0-360	200	V
5	2.638	29.33	PK	32.1	-30.3	.5	31.63	-	-	74	-42.37	0-360	200	V
6	4.507	28.4	PK	33.8	-28.5	.4	34.1	-	-	74	-39.9	0-360	100	V

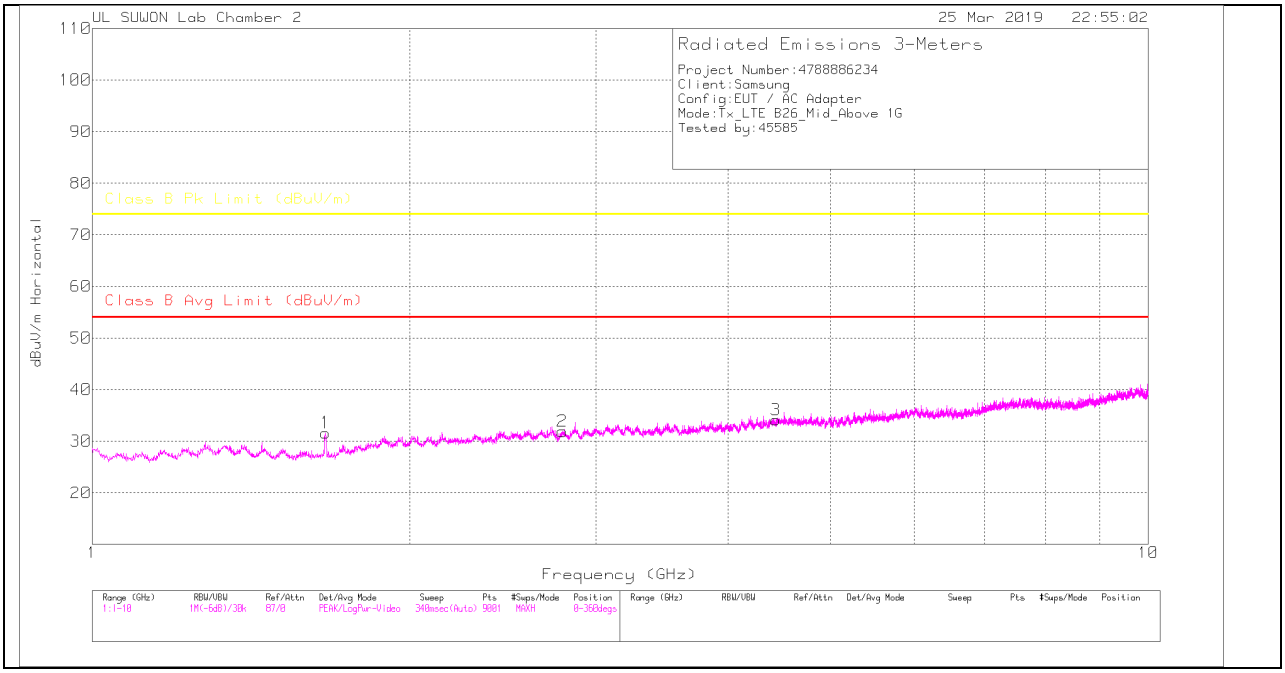
PK – Peak Detector

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

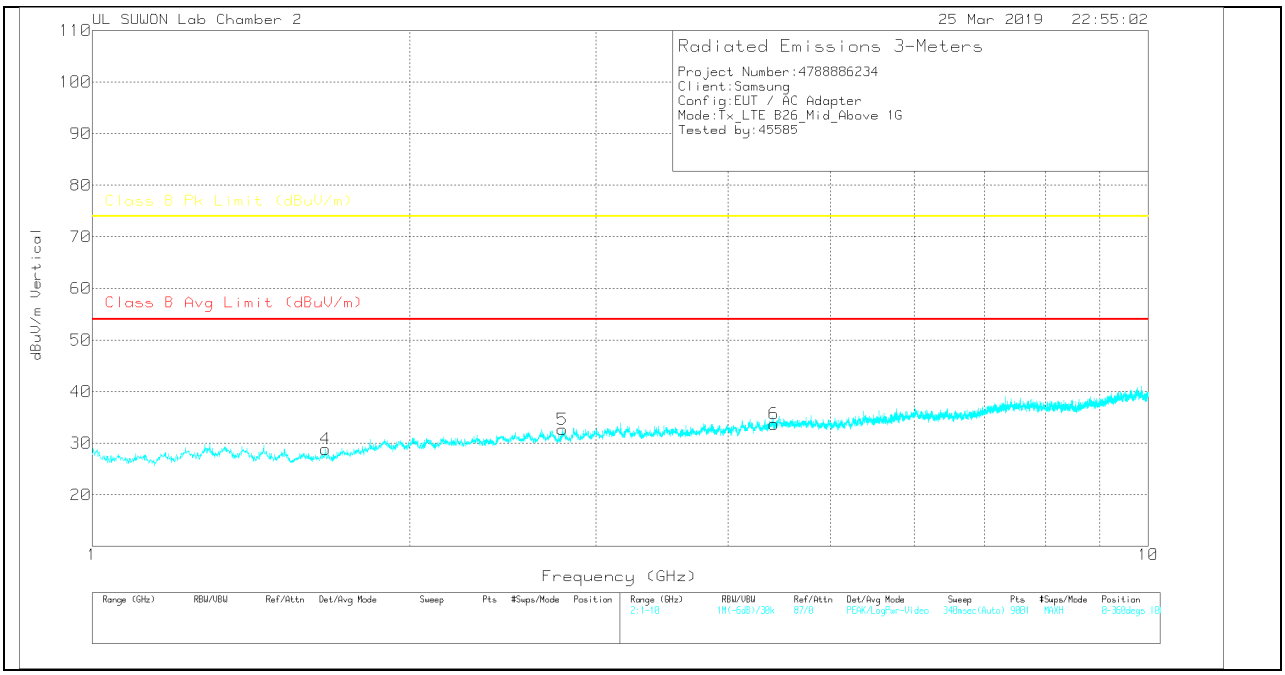
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL(876.5MHz)

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 (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	1.663	34.14	PK	28.4	-31.4	.5	31.64	-	-	74	-42.36	0-360	100	H
2	2.788	29.41	PK	32.1	-30	.4	31.91	-	-	74	-42.09	0-360	100	H
3	4.438	28.34	PK	33.8	-28.4	.4	34.14	-	-	74	-39.86	0-360	200	H
4	1.664	31.37	PK	28.4	-31.4	.5	28.87	-	-	74	-45.13	0-360	200	V
5	2.788	30.19	PK	32.1	-30	.4	32.69	-	-	74	-41.31	0-360	200	V
6	4.42	28.13	PK	33.7	-28.5	.4	33.73	-	-	74	-40.27	0-360	100	V

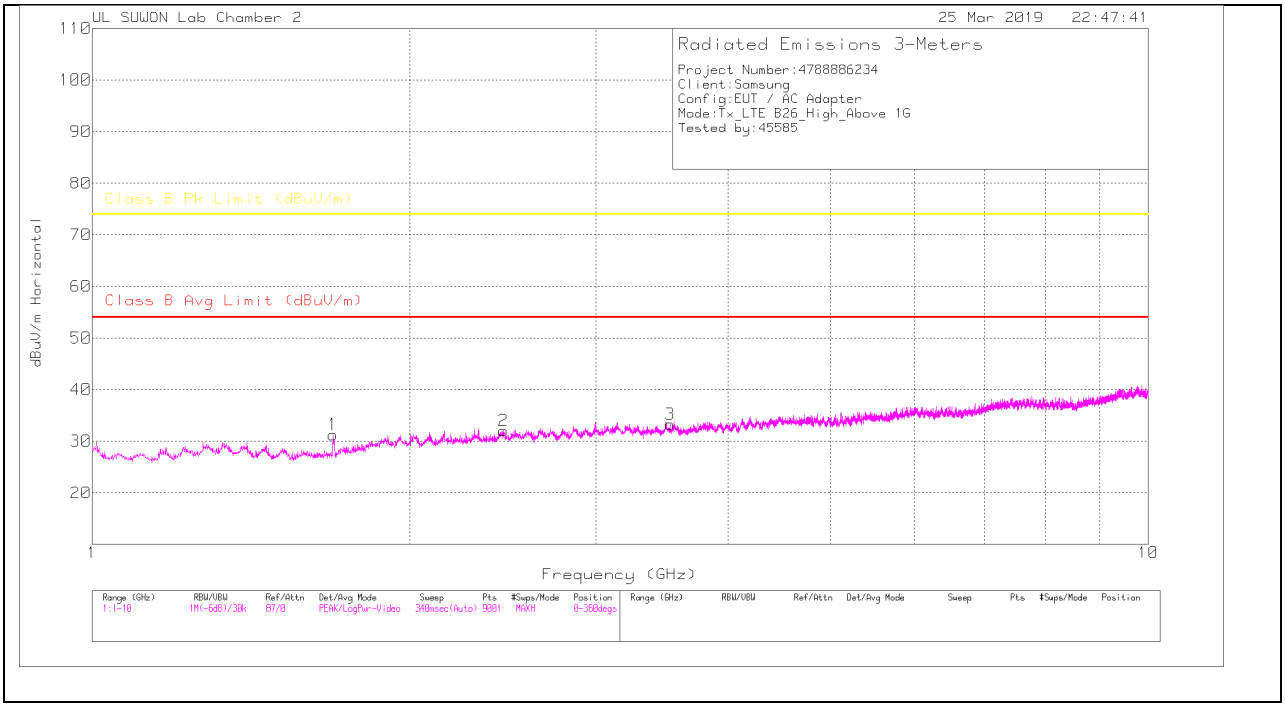
PK – Peak Detector

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

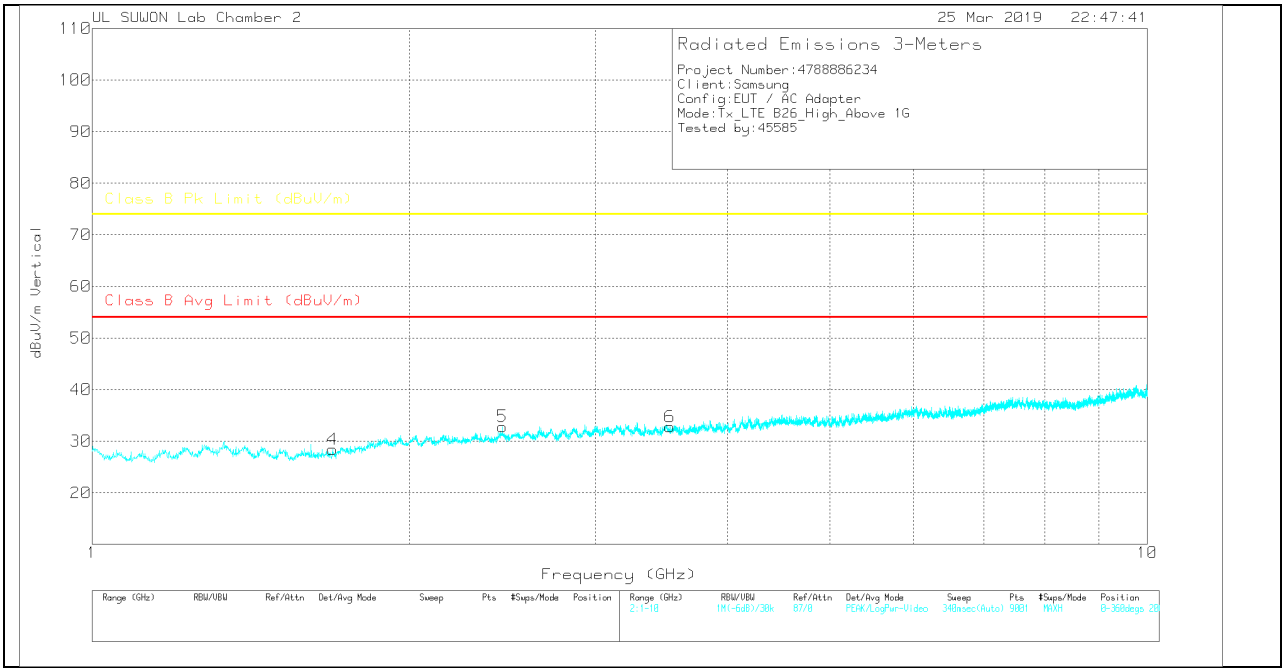
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

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 (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	1.691	33.25	PK	28.6	-31.2	.6	31.25	-	-	74	-42.75	0-360	100	H
2	2.452	29.86	PK	31.8	-30.4	.8	32.06	-	-	74	-41.94	0-360	200	H
3	3.525	29.06	PK	32.7	-29.1	.6	33.26	-	-	74	-40.74	0-360	200	H
4	1.69	30.52	PK	28.6	-31.3	.6	28.42	-	-	74	-45.58	0-360	100	V
5	2.449	30.72	PK	31.8	-30.5	.8	32.82	-	-	74	-41.18	0-360	100	V
6	3.529	28.51	PK	32.7	-29	.6	32.81	-	-	74	-41.19	0-360	200	V

PK – Peak Detector

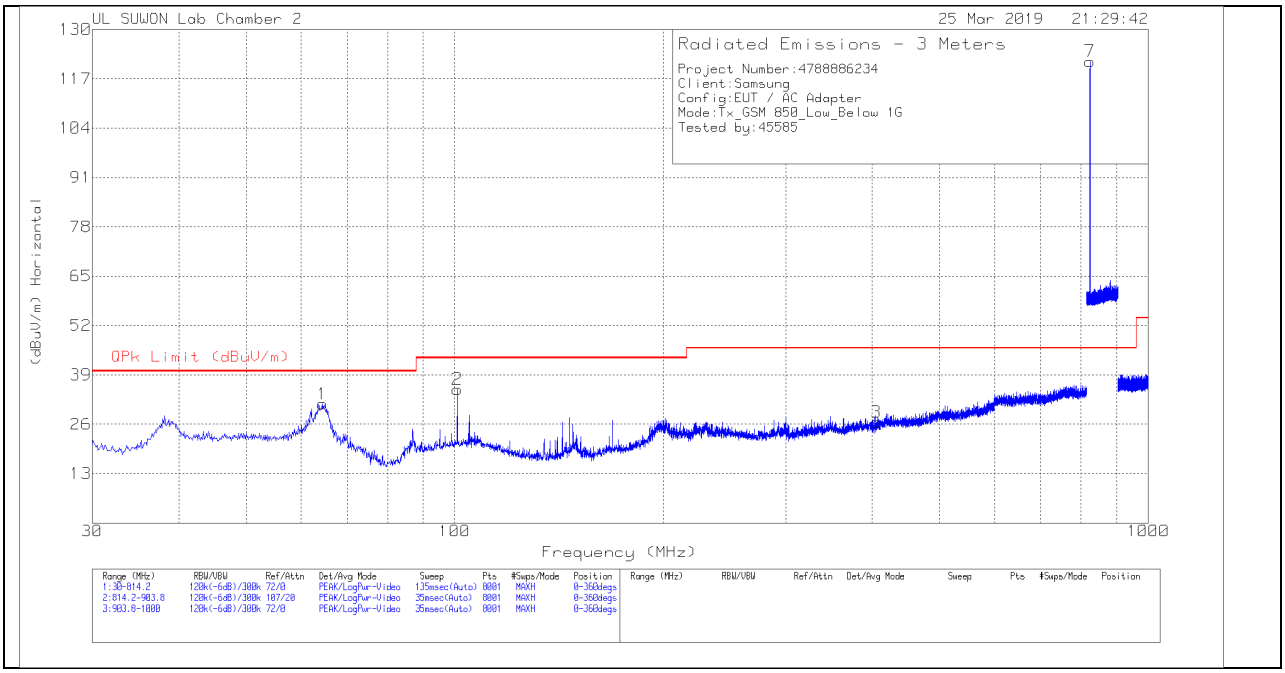
Note: Unwanted emissions on the harmonic frequency were generated from the call-simulator with the TX and RX signals.

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.

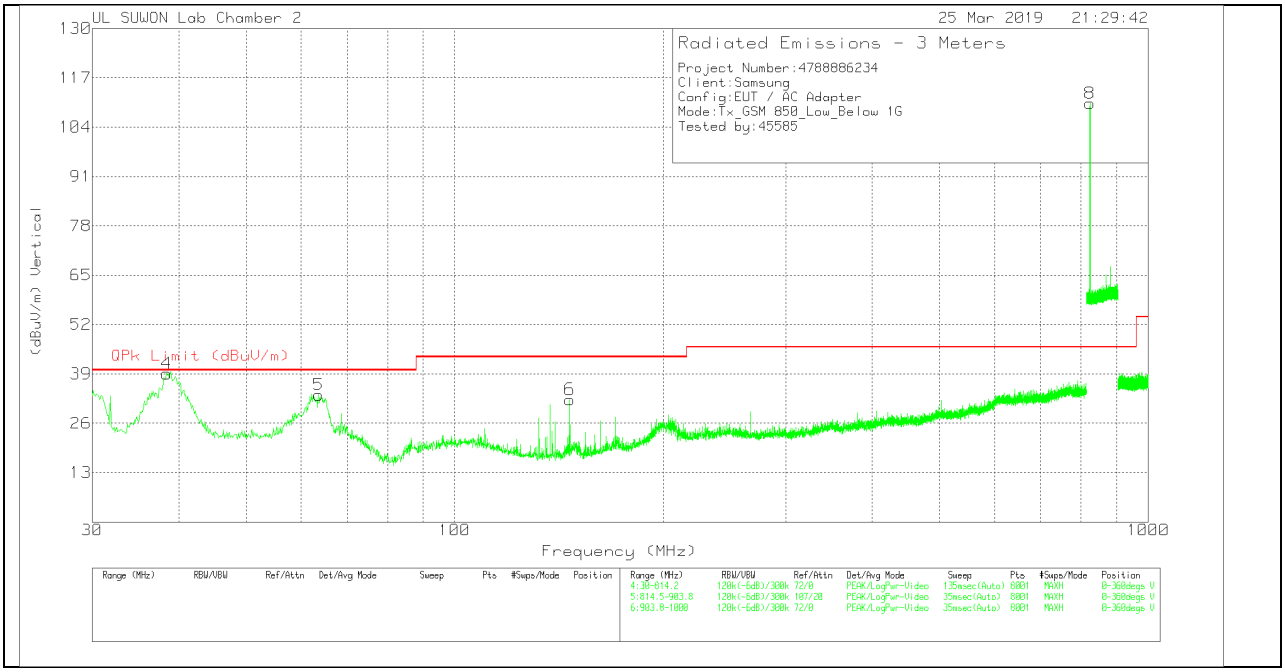
4.7. Below 1 GHz in the GSM850

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	64.5048	13.05	Pk	17.4	.9	31.35	40	-8.65	0-360	200	H
2	100.8721	16.4	Pk	17.7	1.1	35.2	43.52	-8.32	0-360	300	H
3	405.9259	2.86	Pk	21.5	2.2	26.56	46.02	-19.46	0-360	400	H
7	824.2576	91.56	Pk	26.9	3.1	121.56	**46.02**	**75.54**	0-360	100	H
4	38.4302	20.37	Pk	18.1	.6	39.07	40	-.93	0-360	100	V
5	63.6226	14.86	Pk	17.7	.9	33.46	40	-6.54	0-360	100	V
6	146.5517	16.83	Pk	14.1	1.3	32.23	43.52	-11.29	0-360	100	V
8	824.1951	80.23	Pk	26.9	3.1	110.23	**46.02**	**64.21**	0-360	200	V

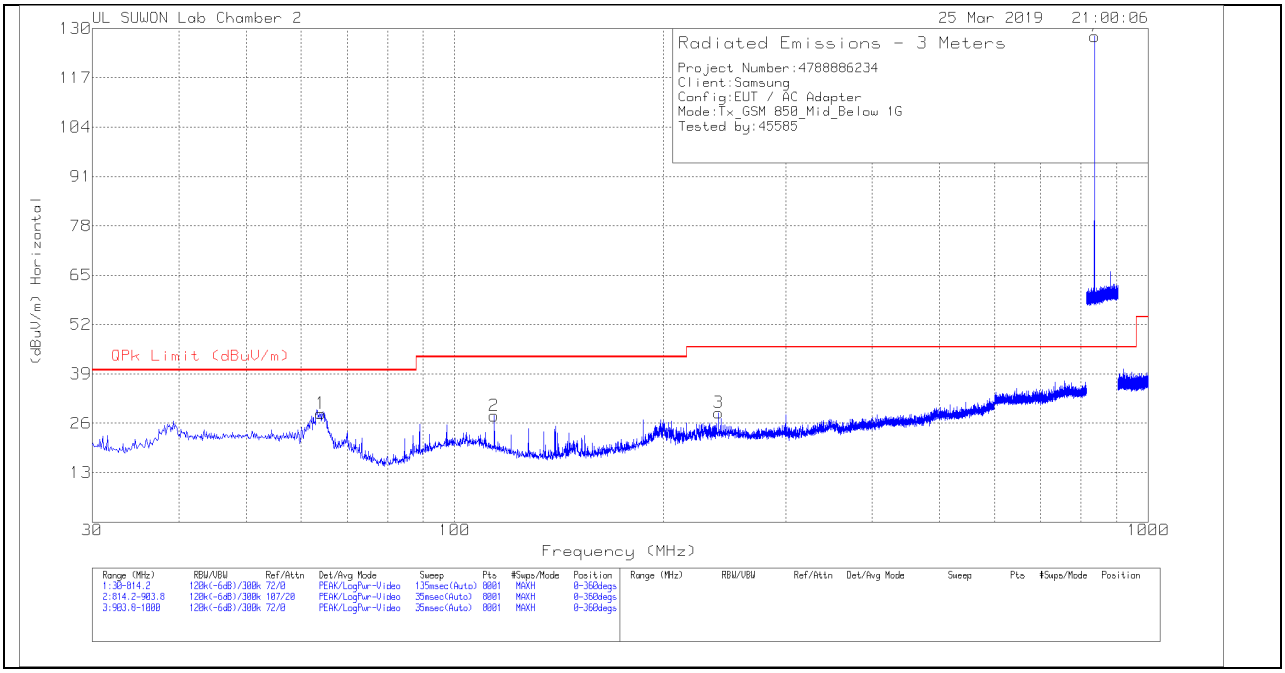
Pk - Peak detector

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

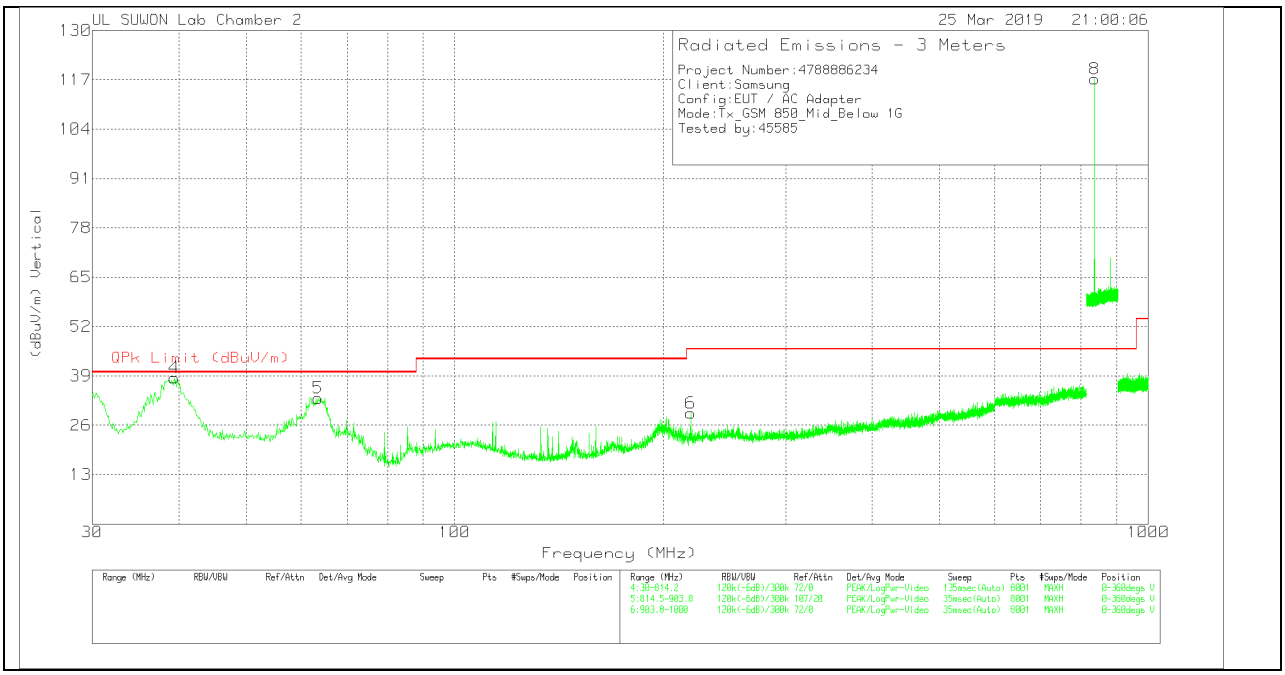
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

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	64.1127	10.2	Pk	17.5	.9	28.6	40	-11.4	0-360	300	H
2	114.0074	10.5	Pk	16.4	1.1	28	43.52	-15.52	0-360	300	H
3	240.1656	8.59	Pk	18.5	1.7	28.79	46.02	-17.23	0-360	200	H
7	836.6112	97.71	Pk	27.1	3.1	127.91	**46.02**	**81.89**	0-360	100	H
4	39.4104	19.3	Pk	18.5	.7	38.5	40	-1.5	0-360	100	V
5	63.5246	14.51	Pk	17.7	.9	33.11	40	-6.89	0-360	100	V
6	218.8942	10.3	Pk	17.3	1.6	29.2	46.02	-16.82	0-360	100	V
8	836.5134	87.01	Pk	27.1	3.1	117.21	**46.02**	**71.19**	0-360	200	V

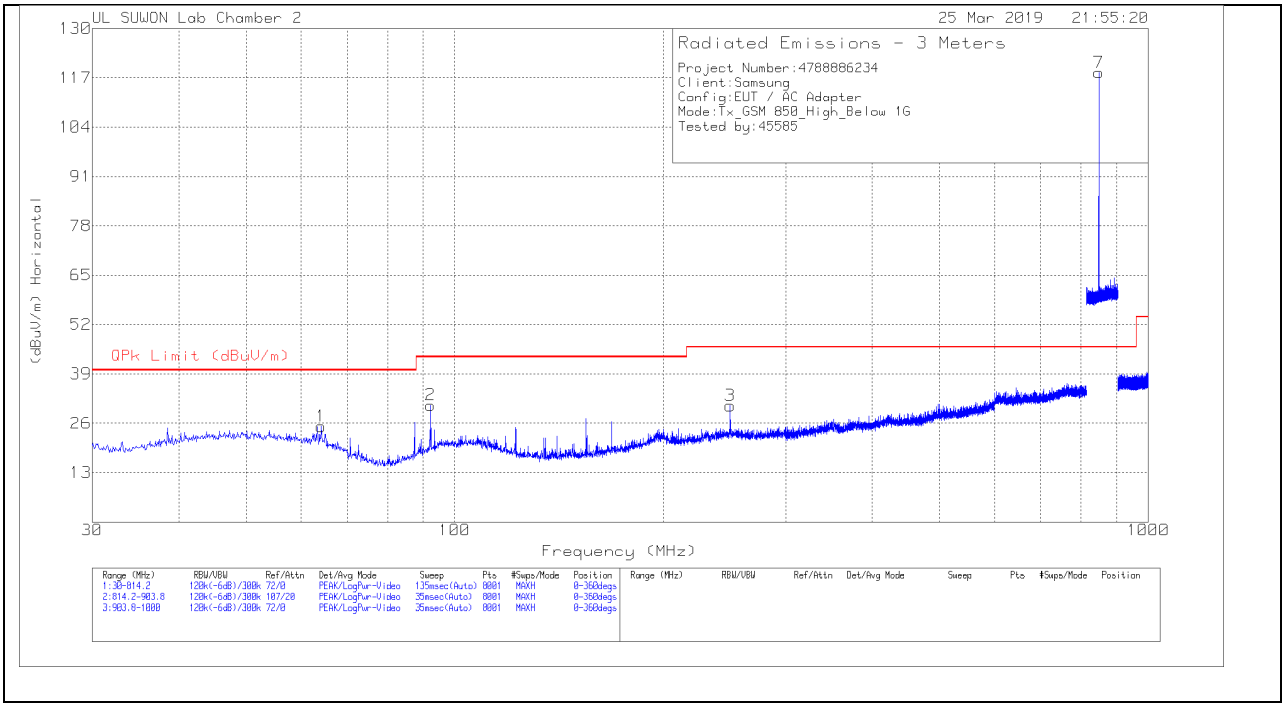
Pk - Peak detector

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

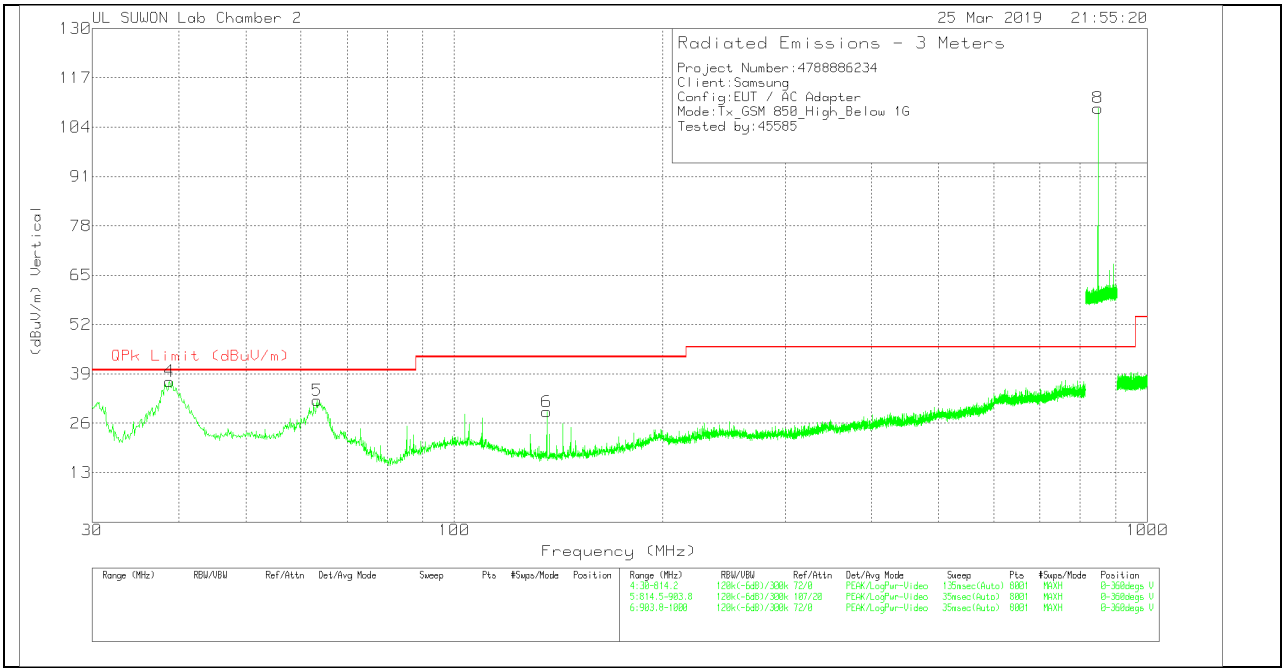
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

HIGH CHANNEL(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	64.2107	6.77	Pk	17.5	.9	25.17	40	-14.83	0-360	300	H
2	92.3439	13.28	Pk	16.5	1	30.78	43.52	-12.74	0-360	400	H
3	249.576	9.93	Pk	19	1.7	30.63	46.02	-15.39	0-360	200	H
7	848.7744	87.74	Pk	27.4	3.2	118.34	**46.02**	**72.32**	0-360	100	H
4	38.8223	18.05	Pk	18.3	.7	37.05	40	-2.95	0-360	200	V
5	63.3285	13.48	Pk	17.7	.8	31.98	40	-8.02	0-360	300	V
6	135.965	13.83	Pk	14	1.2	29.03	43.52	-14.49	0-360	100	V
8	848.8039	78.43	Pk	27.4	3.2	109.03	**46.02**	**63.01**	0-360	100	V

Pk - Peak detector

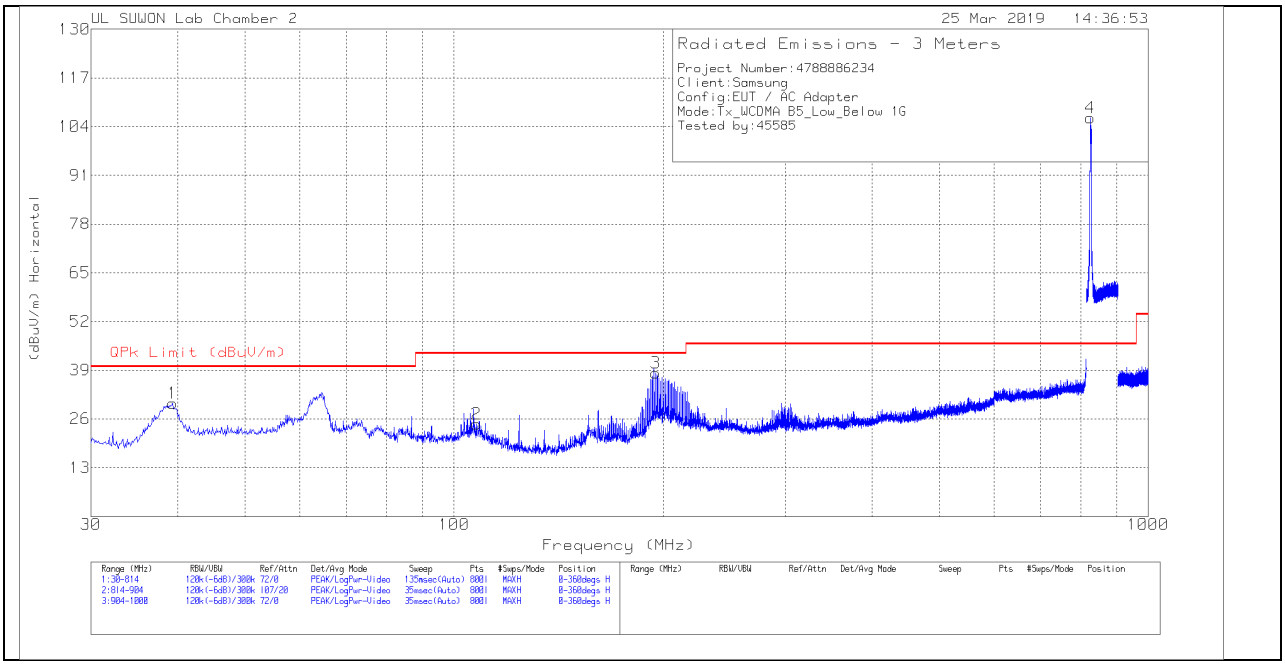
Note: Unwanted emissions captured from 824MHz to 849MHz and from 869MHz to 894MHz were the TX and RX signals generated from the call-simulator.

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.

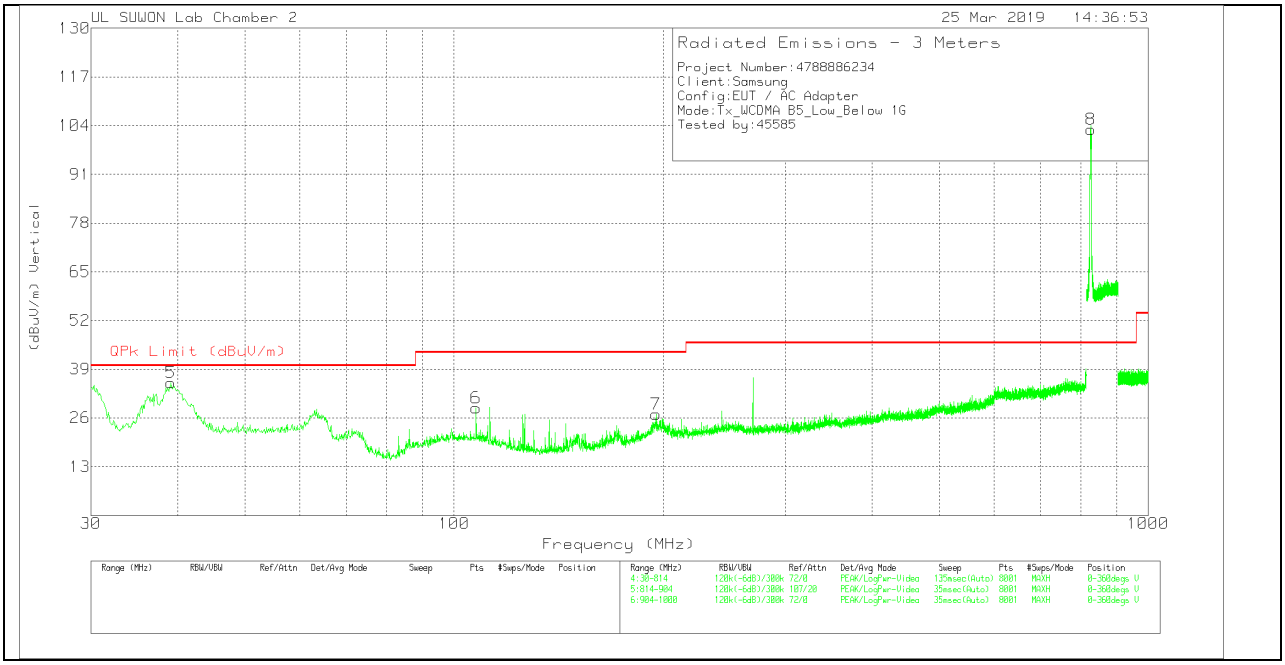
4.8. Below 1 GHz in the WCDMA Band 5

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	39.31	11	Pk	18.5	.7	30.2	40	-9.8	0-360	300	H
2	107.714	6.17	Pk	17.4	1.1	24.67	43.52	-18.85	0-360	300	H
3	195.13	18.7	Pk	18	1.5	38.2	43.52	-5.32	0-360	100	H
4	825.5425	76.29	Pk	27	3.1	106.39	**46.02**	**60.37**	0-360	100	H
5	39.114	16.3	Pk	18.4	.7	35.4	40	-4.6	0-360	100	V
6	107.616	10.12	Pk	17.4	1.1	28.62	43.52	-14.9	0-360	200	V
7	195.424	7.33	Pk	18.1	1.5	26.93	43.52	-16.59	0-360	100	V
8	826.4313	72.95	Pk	27	3.1	103.05	**46.02**	**57.03**	0-360	100	V

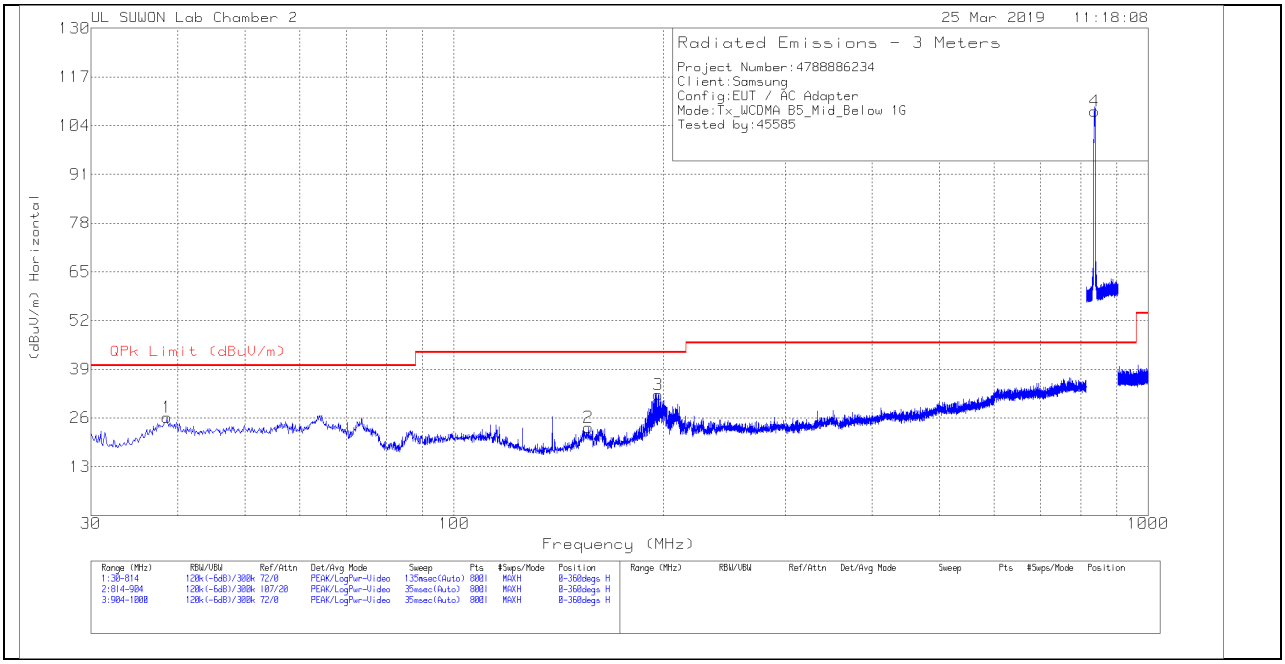
Pk - Peak detector

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

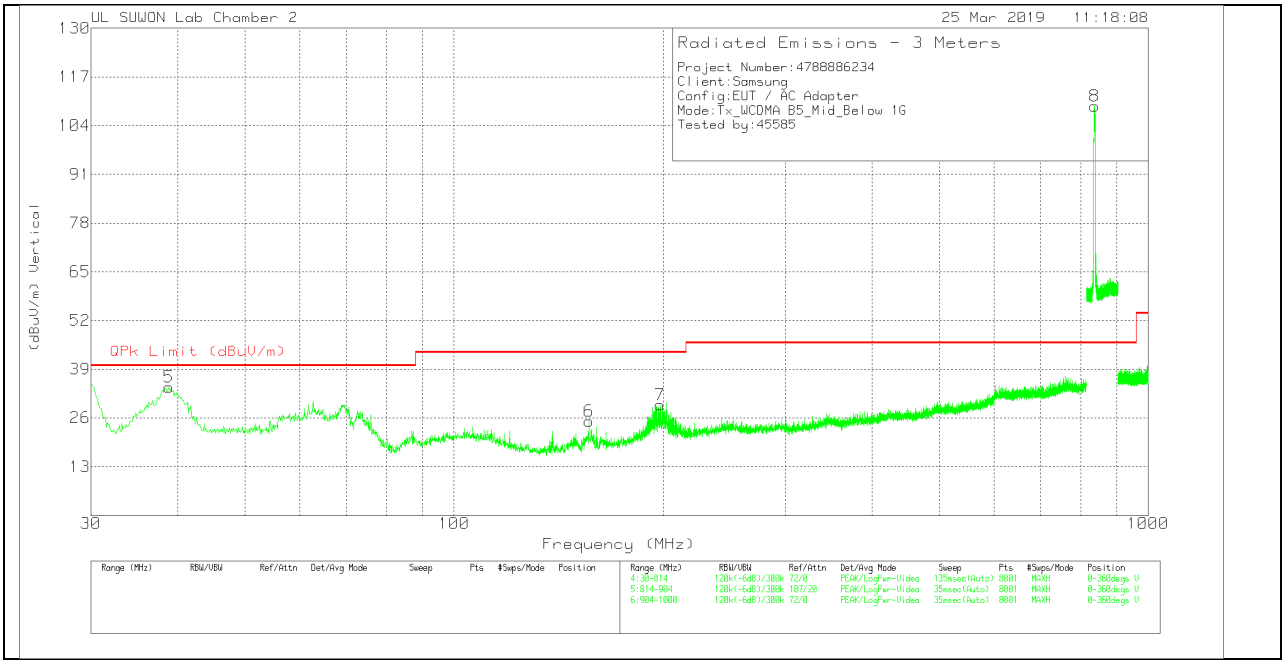
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

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	38.624	7.31	Pk	18.2	.7	26.21	40	-13.79	0-360	400	H
2	156.224	7.79	Pk	14.3	1.3	23.39	43.52	-20.13	0-360	200	H
3	196.796	12.43	Pk	18.3	1.5	32.23	43.52	-11.29	0-360	200	H
4	836.635	77.7	Pk	27.1	3.1	107.9	**46.02**	**61.88**	0-360	100	H
5	38.82	15.22	Pk	18.3	.7	34.22	40	-5.78	0-360	100	V
6	156.42	9.4	Pk	14.3	1.4	25.1	43.52	-18.42	0-360	100	V
7	197.972	9.6	Pk	18.4	1.5	29.5	43.52	-14.02	0-360	100	V
8	836.6913	79.04	Pk	27.1	3.1	109.24	**46.02**	**63.22**	0-360	100	V

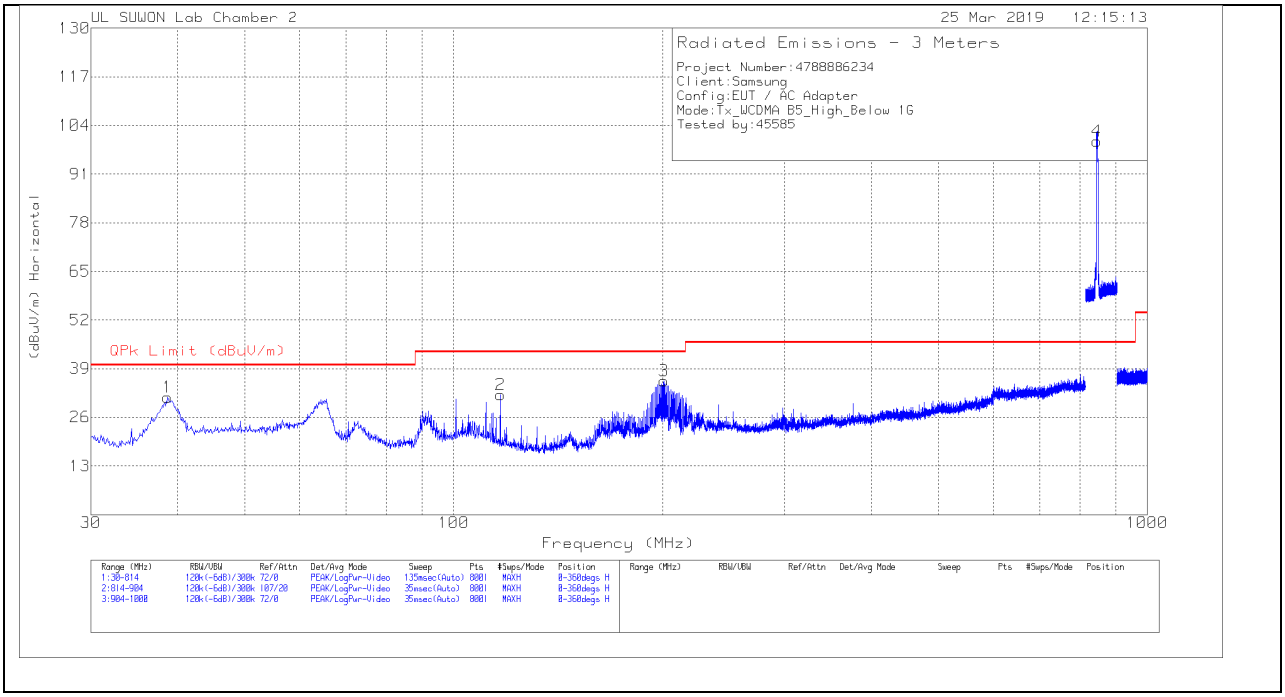
Pk - Peak detector

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

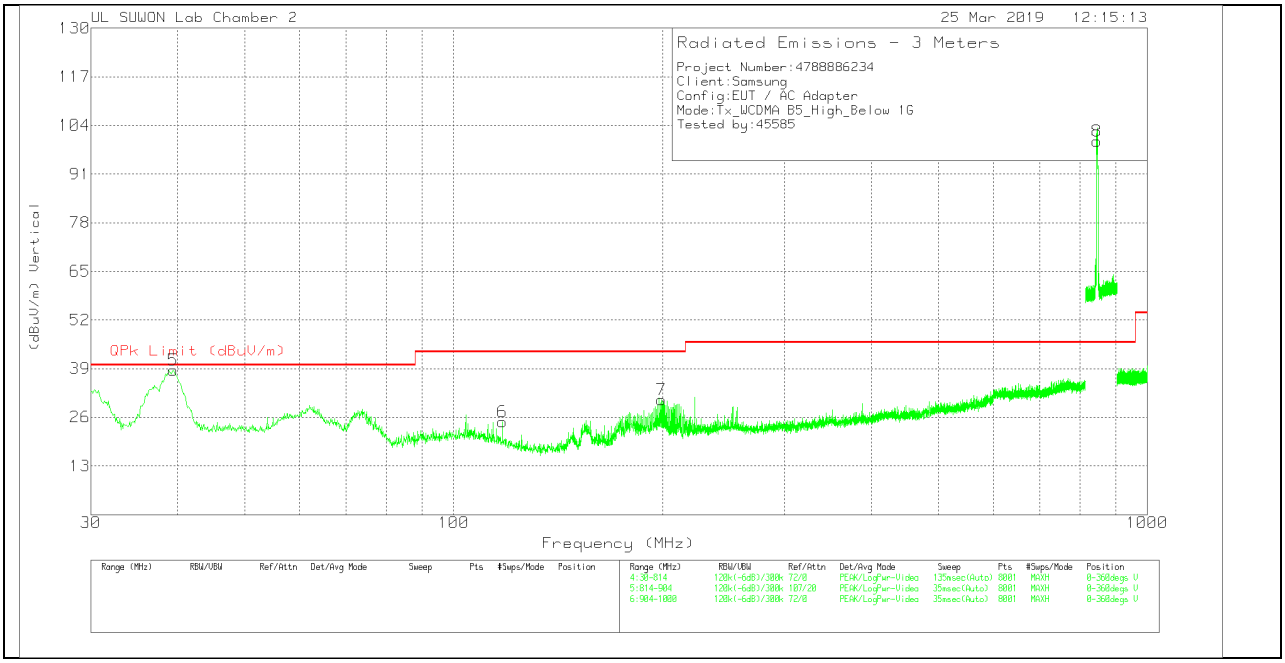
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

HIGH CHANNEL(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	38.722	12.43	Pk	18.3	.7	31.43	40	-8.57	0-360	300	H
2	116.828	15	Pk	15.9	1.2	32.1	43.52	-11.42	0-360	300	H
3	200.814	16.29	Pk	17.9	1.5	35.69	43.52	-7.83	0-360	200	H
4	846.715	69.3	Pk	27.3	3.2	99.8	**46.02**	**53.78**	0-360	100	H
5	39.408	19.45	Pk	18.5	.7	38.65	40	-1.35	0-360	100	V
6	117.612	7.85	Pk	15.8	1.1	24.75	43.52	-18.77	0-360	200	V
7	199.148	10.94	Pk	18.2	1.5	30.64	43.52	-12.88	0-360	300	V
8	846.8613	69.26	Pk	27.3	3.2	99.76	**46.02**	**53.74**	0-360	100	V

Pk - Peak detector

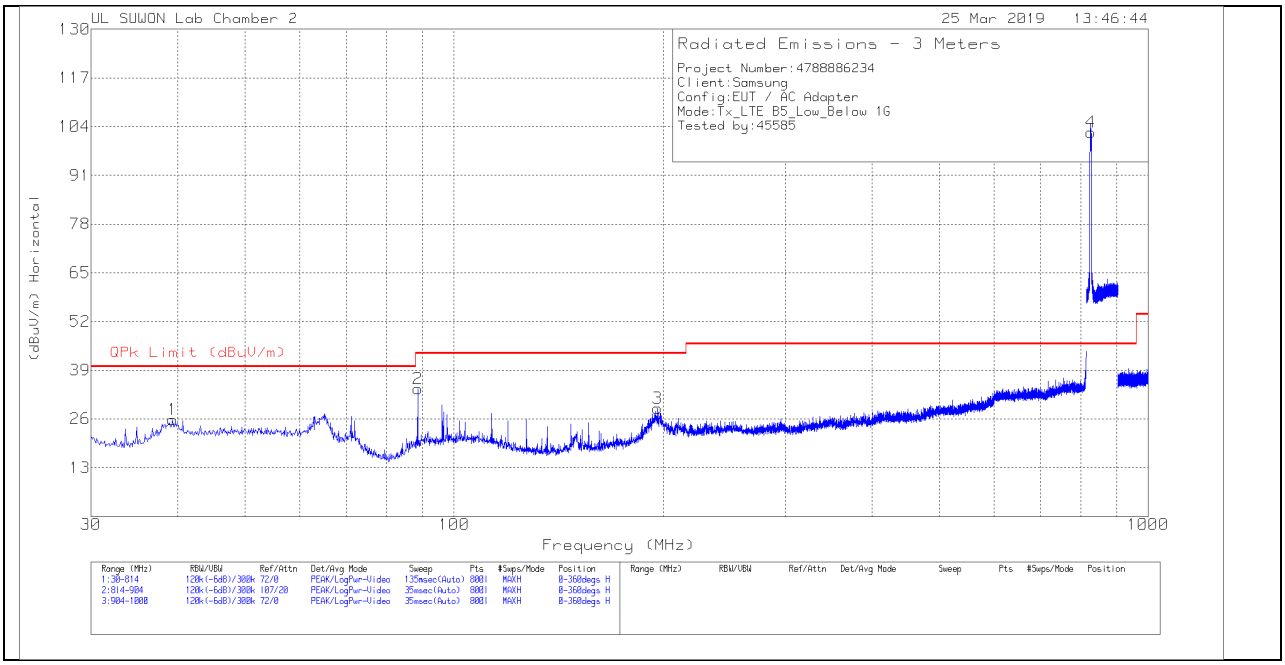
Note: Unwanted emissions captured from 824MHz to 849MHz and from 869MHz to 894MHz were the TX and RX signals generated from the call-simulator.

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.

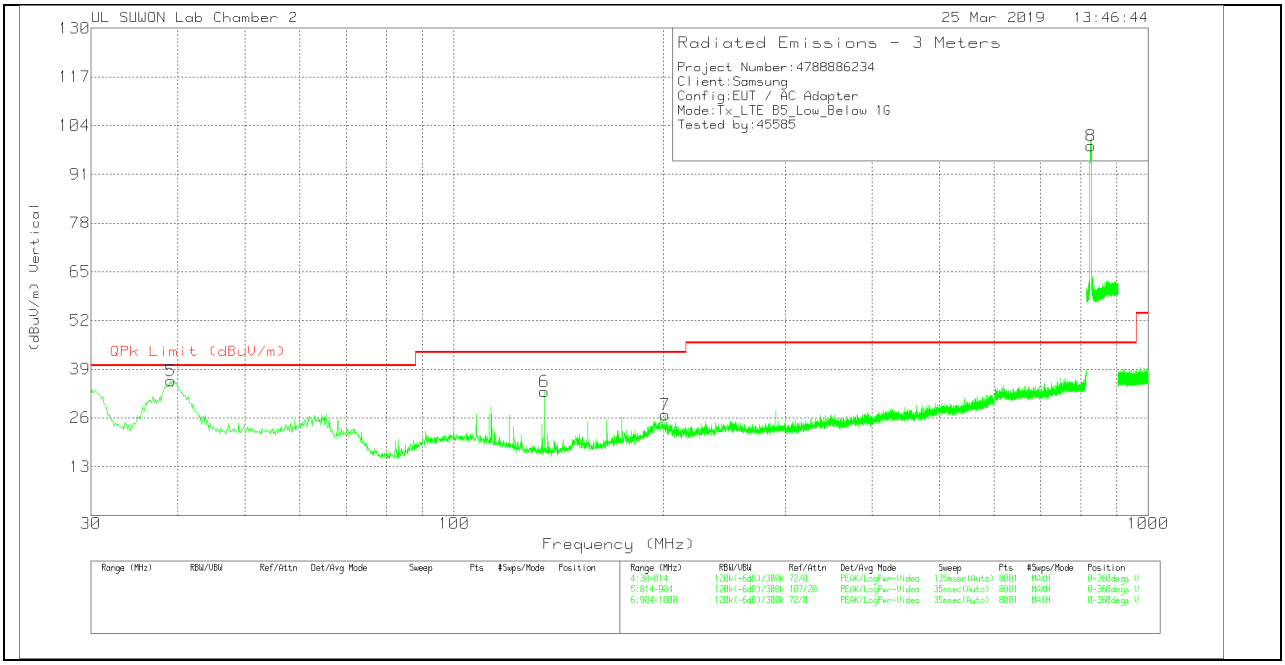
4.9. Below 1 GHz in the LTE Band 5

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	39.31	6.57	Pk	18.5	.7	25.77	40	-14.23	0-360	200	H
2	88.702	18	Pk	15.1	1	34.1	43.52	-9.42	0-360	400	H
3	196.6	9.02	Pk	18.3	1.5	28.82	43.52	-14.7	0-360	100	H
4	826.24	72.33	Pk	27	3.1	102.43	**46.02**	**56.41**	0-360	100	H
5	39.114	16.77	Pk	18.4	.7	35.87	40	-4.13	0-360	100	V
6	134.958	17.67	Pk	14.1	1.3	33.07	43.52	-10.45	0-360	100	V
7	201.5	7.59	Pk	17.8	1.5	26.89	43.52	-16.63	0-360	100	V
8	826.2288	68.46	Pk	27	3.1	98.56	**46.02**	**52.54**	0-360	100	V

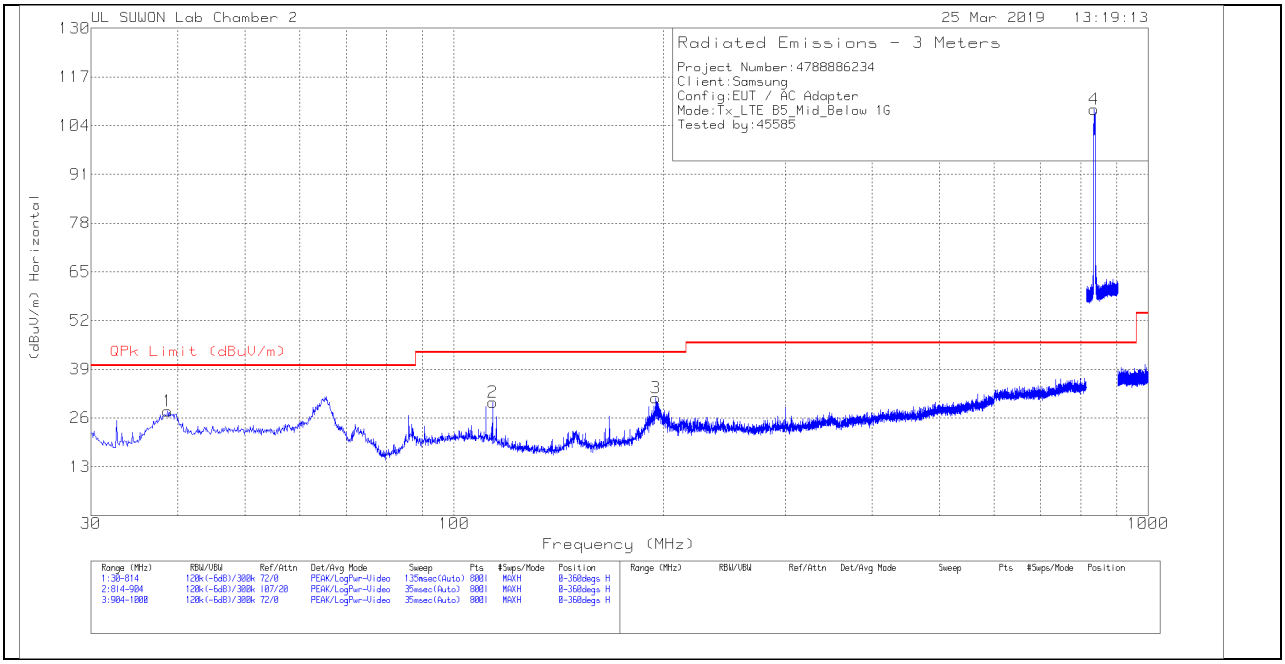
Pk - Peak detector

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

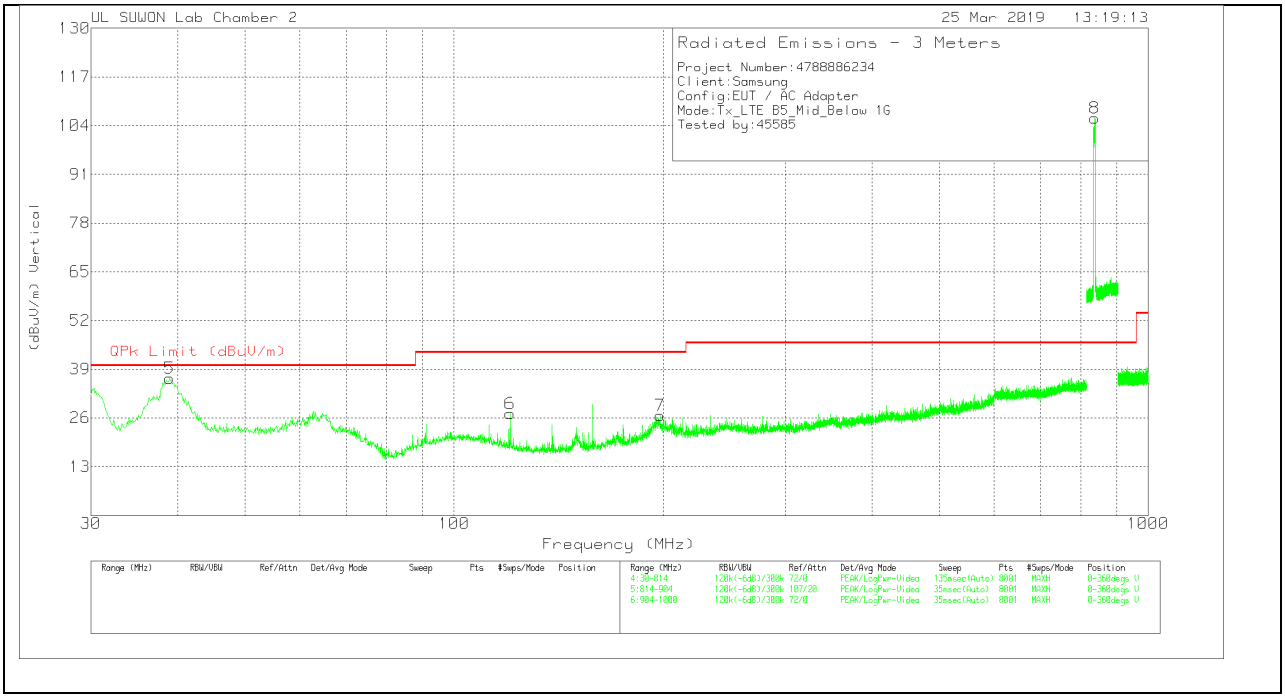
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

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	38.722	8.86	Pk	18.3	.7	27.86	40	-12.14	0-360	300	H
2	113.692	12.64	Pk	16.4	1.1	30.14	43.52	-13.38	0-360	300	H
3	195.326	11.75	Pk	18.1	1.5	31.35	43.52	-12.17	0-360	200	H
4	836.14	78.13	Pk	27.1	3.1	108.33	**46.02**	**62.31**	0-360	100	H
5	38.918	17.52	Pk	18.4	.7	36.62	40	-3.38	0-360	100	V
6	120.454	10.61	Pk	15.3	1.2	27.11	43.52	-16.41	0-360	200	V
7	197.972	6.82	Pk	18.4	1.5	26.72	43.52	-16.8	0-360	100	V
8	837.4	75.7	Pk	27.1	3.2	106	**46.02**	**59.98**	0-360	100	V

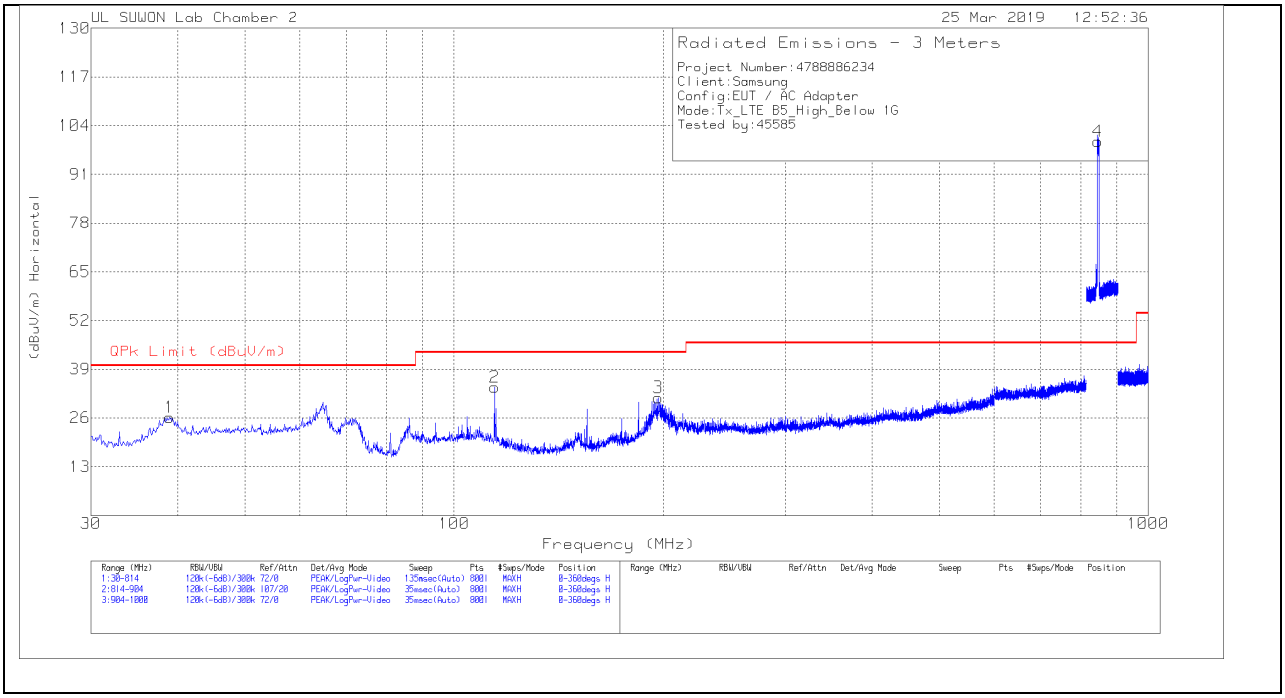
Pk - Peak detector

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

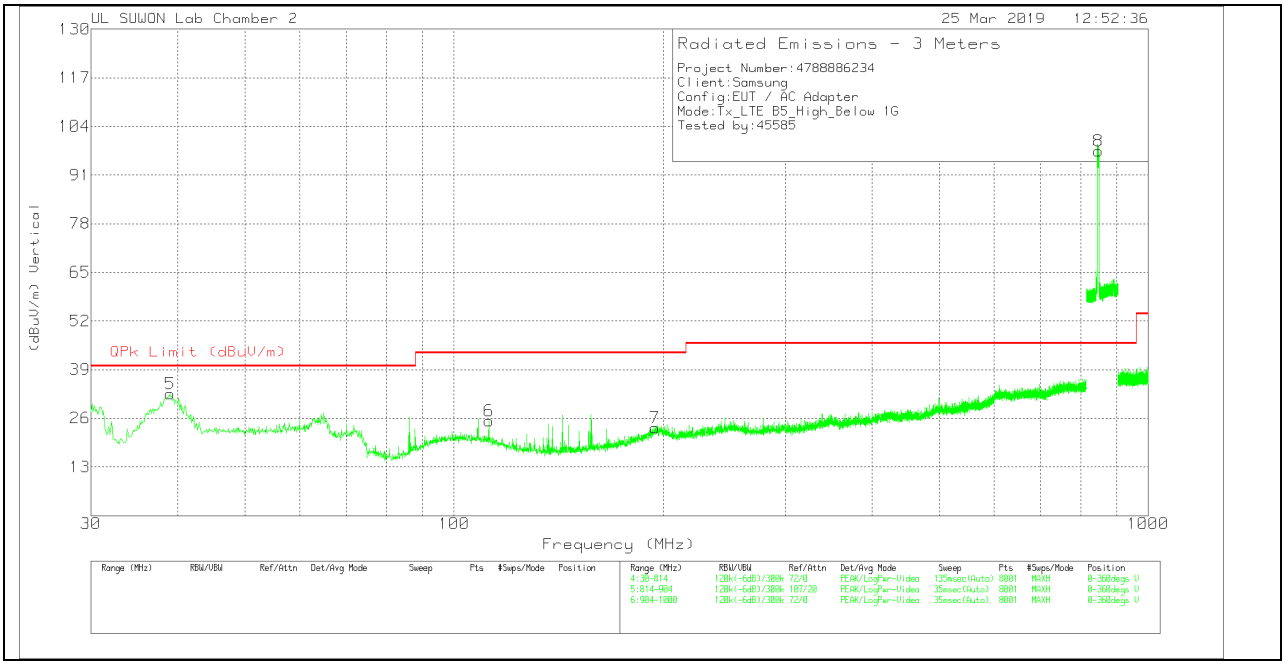
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

HIGH CHANNEL(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	38.918	7.03	Pk	18.4	.7	26.13	40	-13.87	0-360	200	H
2	114.378	16.87	Pk	16.3	1.1	34.27	43.52	-9.25	0-360	200	H
3	196.796	11.64	Pk	18.3	1.5	31.44	43.52	-12.08	0-360	200	H
4	846.5013	69.3	Pk	27.3	3.2	99.8	**46.02**	**53.78**	0-360	100	H
5	39.016	13.36	Pk	18.4	.7	32.46	40	-7.54	0-360	300	V
6	112.222	7.52	Pk	16.7	1.1	25.32	43.52	-18.2	0-360	200	V
7	194.836	4.03	Pk	18	1.5	23.53	43.52	-19.99	0-360	300	V
8	847.0525	67	Pk	27.3	3.2	97.5	**46.02**	**51.48**	0-360	100	V

Pk - Peak detector

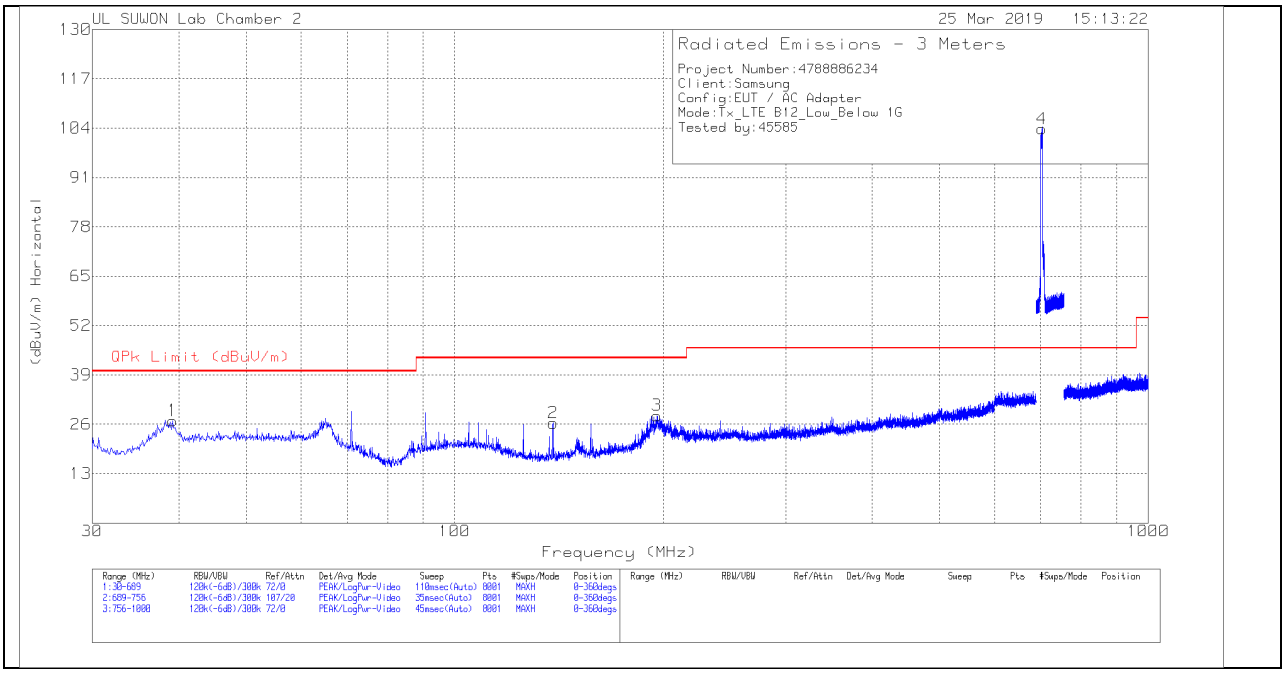
Note: Unwanted emissions captured from 824MHz to 849MHz and from 869MHz to 894MHz were the TX and RX signals generated from the call-simulator.

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.

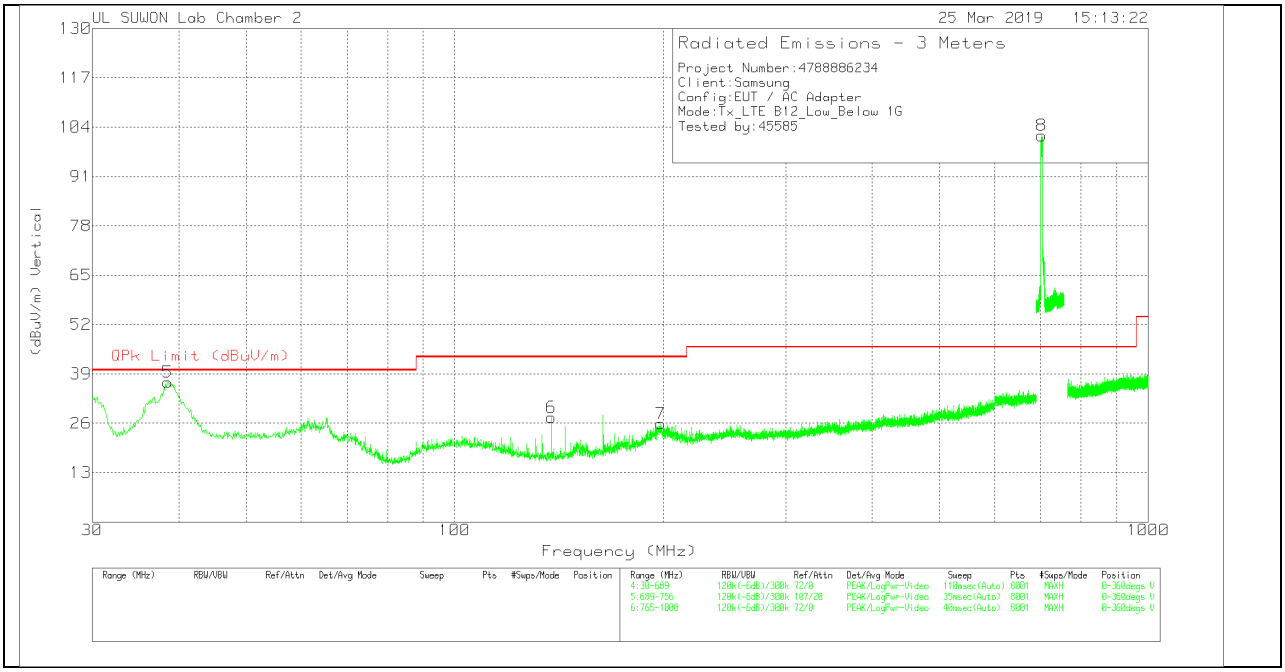
4.10. Below 1 GHz in the LTE Band 12

LOW CHANNEL(730.5MHz)

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	39.226	7.74	Pk	18.5	.7	26.94	40	-13.06	0-360	200	H
2	138.5703	10.95	Pk	14.1	1.3	26.35	43.52	-17.17	0-360	300	H
3	195.5738	8.69	Pk	18.1	1.5	28.29	43.52	-15.23	0-360	100	H
4	702.3581	75.32	Pk	25.6	2.9	103.82	**46.02**	**57.8**	0-360	200	H
5	38.567	17.9	Pk	18.2	.7	36.8	40	-3.2	0-360	100	V
6	137.7465	12.14	Pk	14.1	1.3	27.54	43.52	-15.98	0-360	100	V
7	198.045	5.99	Pk	18.4	1.5	25.89	43.52	-17.63	0-360	100	V
8	701.8808	73.29	Pk	25.6	2.9	101.79	**46.02**	**55.77**	0-360	100	V

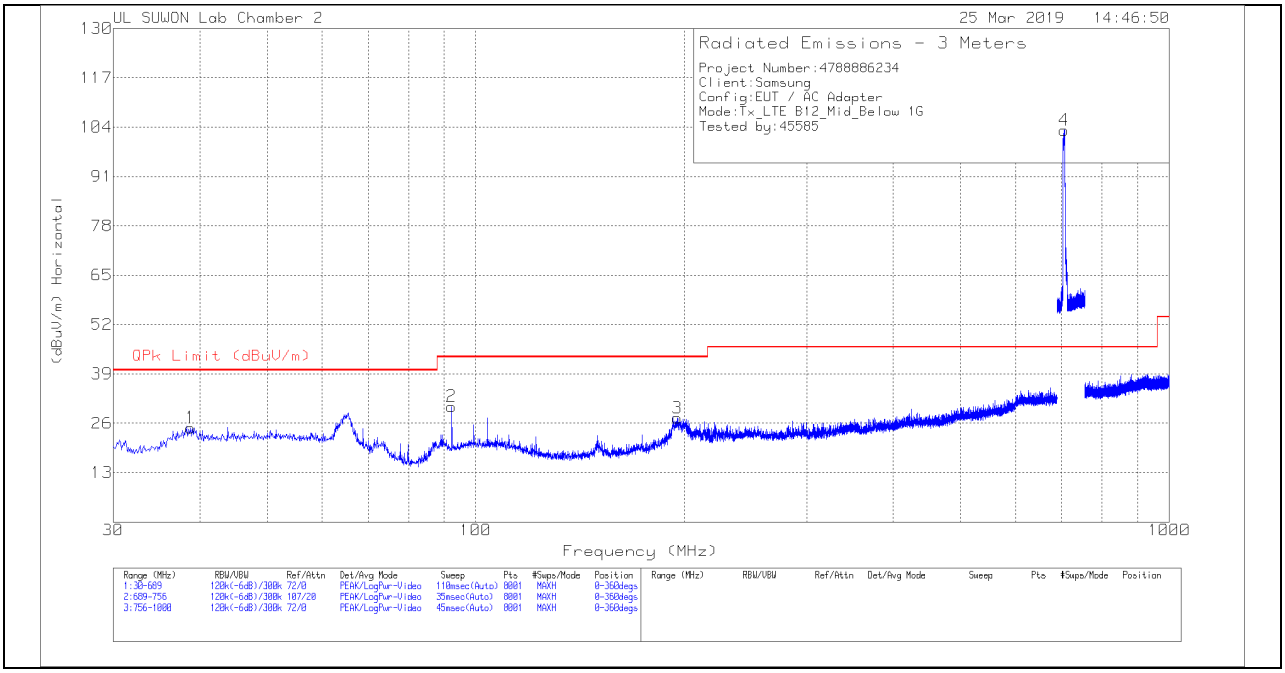
Pk - Peak detector

Note: Unwanted emissions captured from 699MHz to 716MHz and from 729MHz to 746MHz were the TX and RX signals generated from the call-simulator.

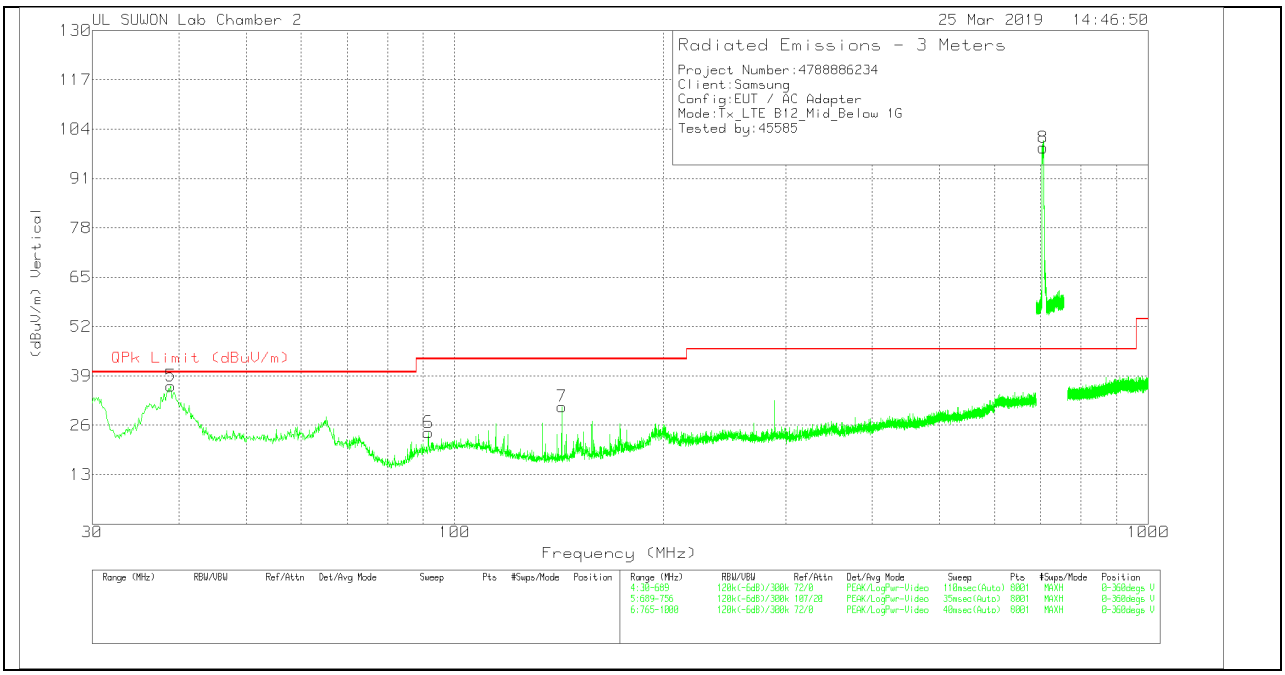
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL(737.5MHz)

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	38.8141	5.81	Pk	18.3	.7	24.81	40	-15.19	0-360	300	H
2	92.3579	12.93	Pk	16.5	1	30.43	43.52	-13.09	0-360	200	H
3	195.2443	7.75	Pk	18.1	1.5	27.35	43.52	-16.17	0-360	100	H
4	705.6411	74.79	Pk	25.5	2.9	103.19	**46.02**	**57.17**	0-360	100	H
5	38.9789	17.29	Pk	18.4	.7	36.39	40	-3.61	0-360	100	V
6	91.6165	6.81	Pk	16.3	1	24.11	43.52	-19.41	0-360	200	V
7	142.689	15.54	Pk	14.1	1.3	30.94	43.52	-12.58	0-360	100	V
8	705.3815	70.74	Pk	25.5	2.9	99.14	**46.02**	**53.12**	0-360	200	V

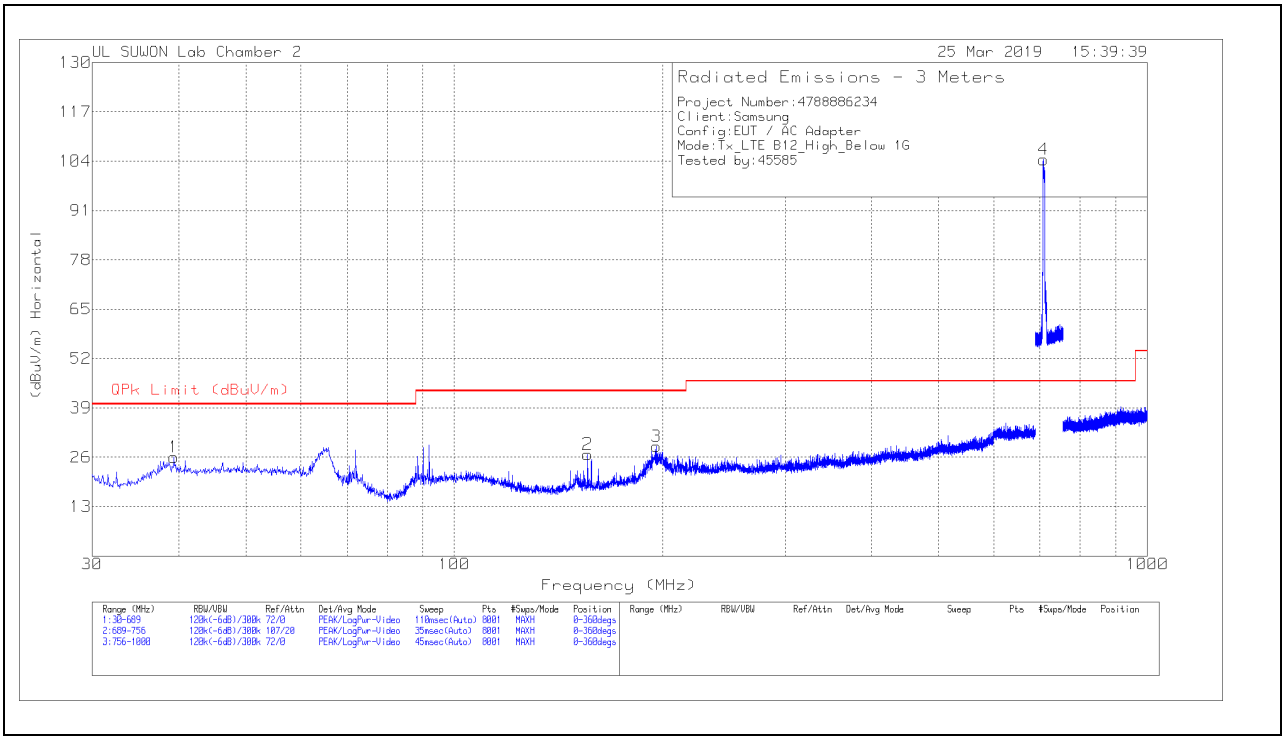
Pk - Peak detector

Note: Unwanted emissions captured from 699MHz to 716MHz and from 729MHz to 746MHz were the TX and RX signals generated from the call-simulator.

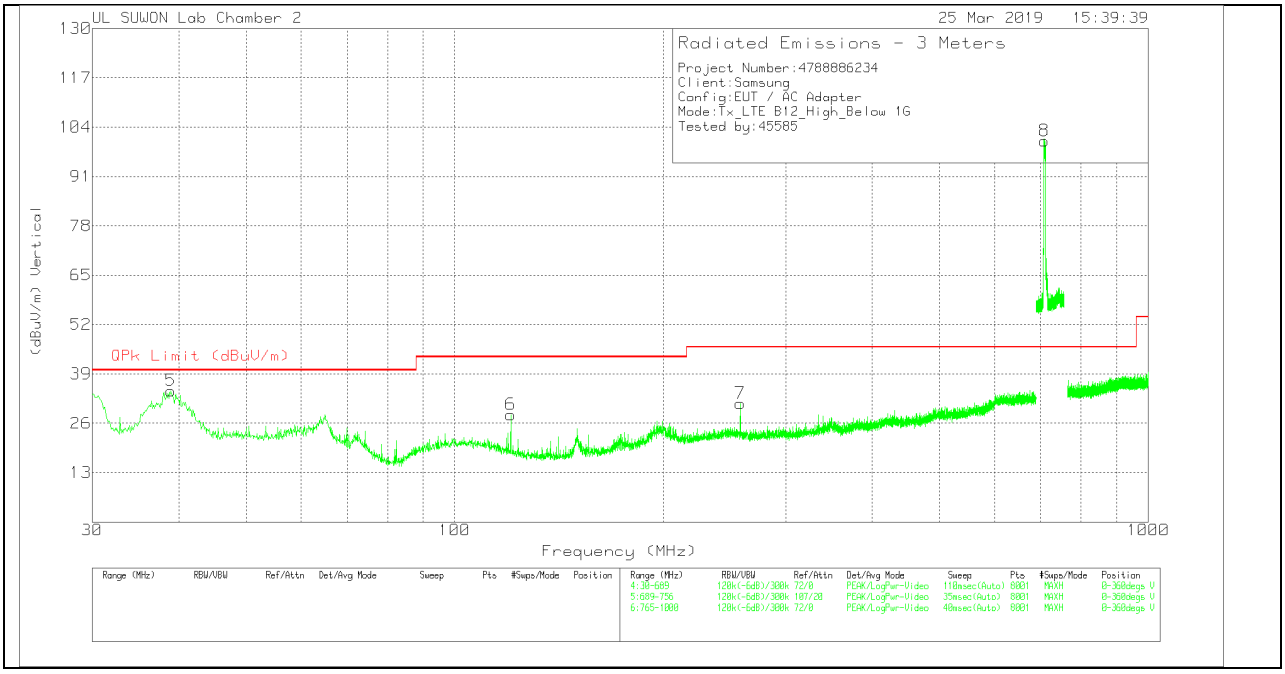
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

HIGH CHANNEL(744.5MHz)

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	39.3908	6.8	Pk	18.5	.7	26	40	-14	0-360	400	H
2	155.7043	11.16	Pk	14.3	1.3	26.76	43.52	-16.76	0-360	100	H
3	195.5738	9.25	Pk	18.1	1.5	28.85	43.52	-14.67	0-360	200	H
4	708.5473	76.02	Pk	25.5	2.9	104.42	**46.02**	**58.4**	0-360	200	H
5	38.9789	15.49	Pk	18.4	.7	34.59	40	-5.41	0-360	100	V
6	120.4478	11.8	Pk	15.3	1.2	28.3	43.52	-15.22	0-360	100	V
7	258.0964	10.54	Pk	19	1.7	31.24	46.02	-14.78	0-360	100	V
8	708.5933	72	Pk	25.5	2.9	100.4	**46.02**	**54.38**	0-360	200	V

Pk - Peak detector

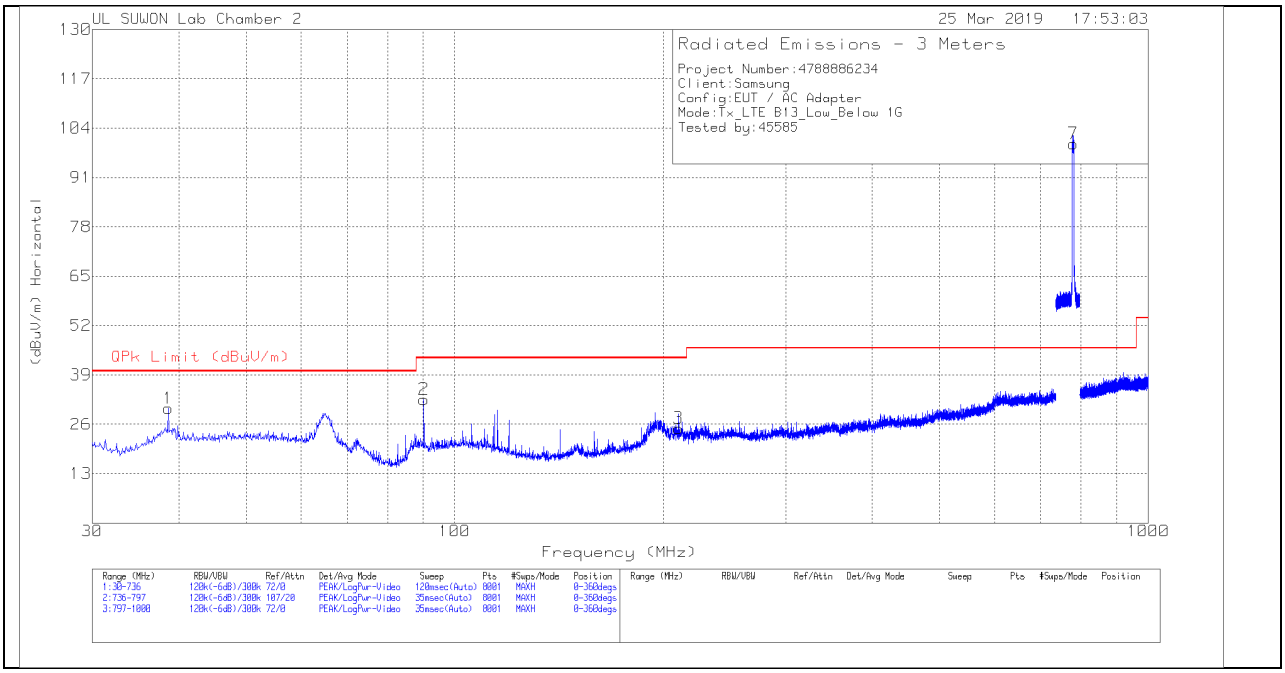
Note: Unwanted emissions captured from 699MHz to 716MHz and from 729MHz to 746MHz were the TX and RX signals generated from the call-simulator.

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.

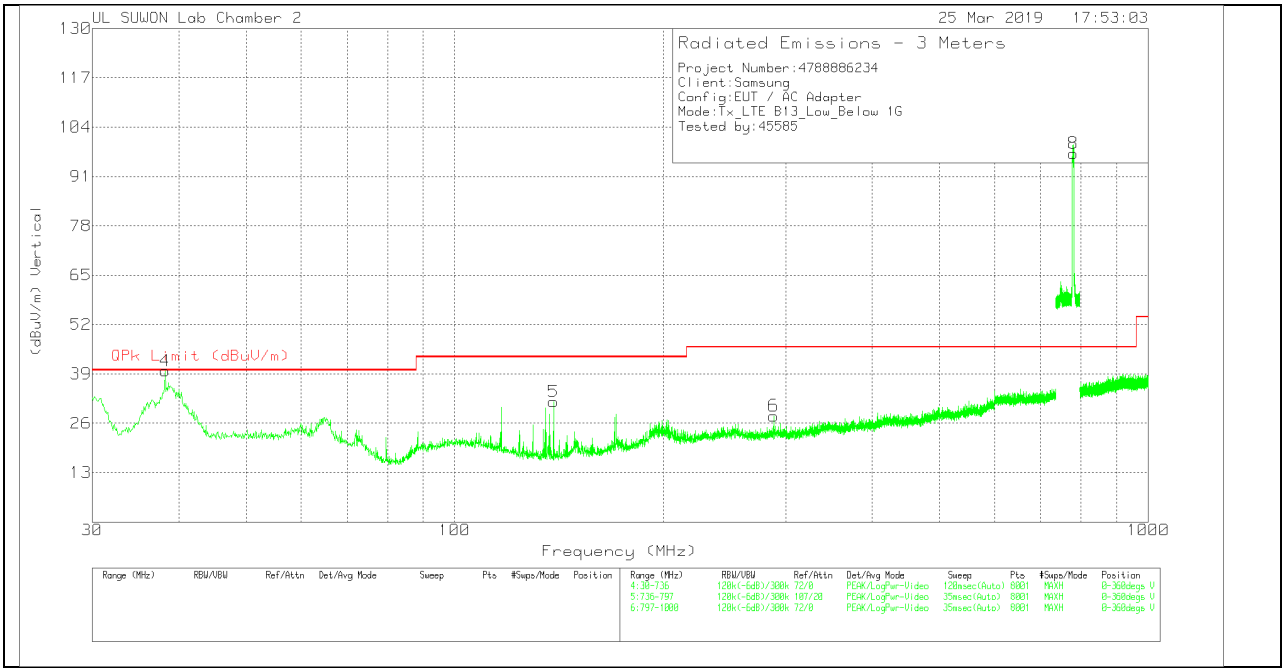
4.11. Below 1 GHz in the LTE Band 13

LOW CHANNEL(748.5MHz)

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	38.6485	11.3	Pk	18.2	.7	30.2	40	-9.8	0-360	200	H
2	90.2748	15.87	Pk	15.7	1	32.57	43.52	-10.95	0-360	200	H
3	210.03	6.37	Pk	17	1.6	24.97	43.52	-18.55	0-360	200	H
7	779.4168	70.21	Pk	26.7	3	99.91	**46.02**	**53.89**	0-360	200	H
4	38.2073	21.18	Pk	18	.6	39.78	40	-.22	0-360	100	V
5	138.8123	16.28	Pk	14.1	1.3	31.68	43.52	-11.84	0-360	100	V
6	288.3078	7.05	Pk	19.1	1.8	27.95	46.02	-18.07	0-360	100	V
8	779.8895	67.37	Pk	26.7	3	97.07	**46.02**	**51.05**	0-360	100	V

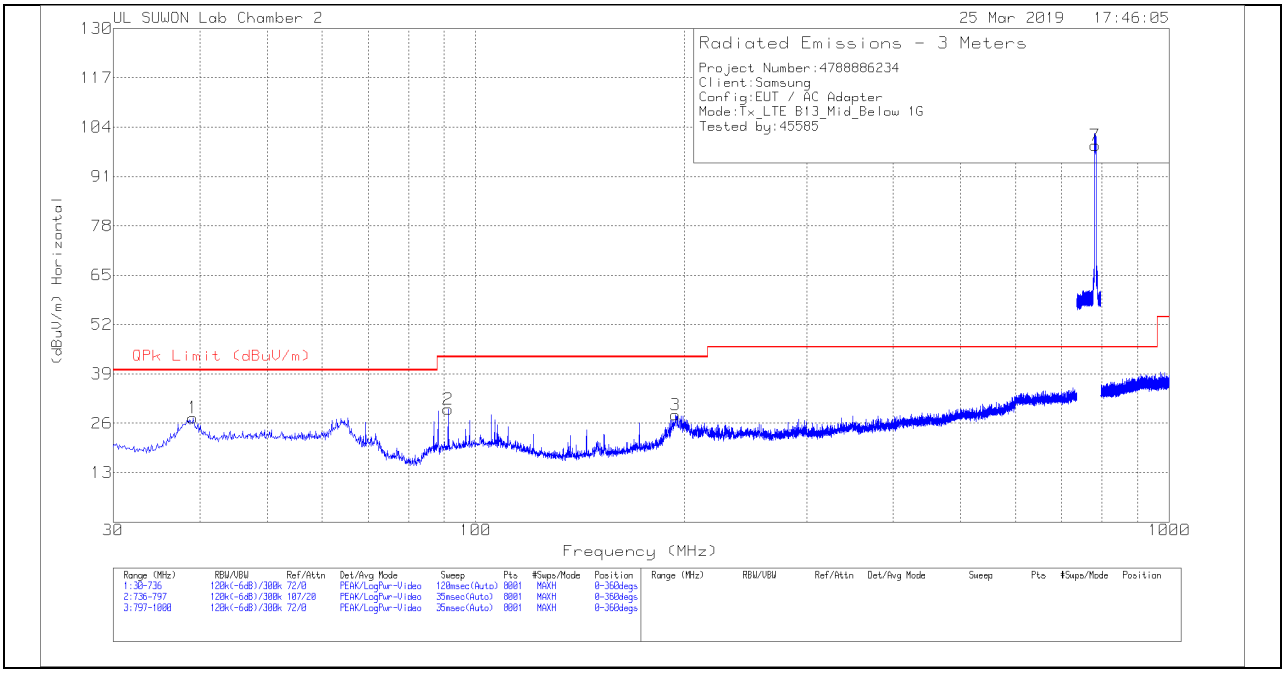
Pk - Peak detector

Note: Unwanted emissions captured from 777MHz to 787MHz and from 746MHz to 756MHz were the TX and RX signals generated from the call-simulator.

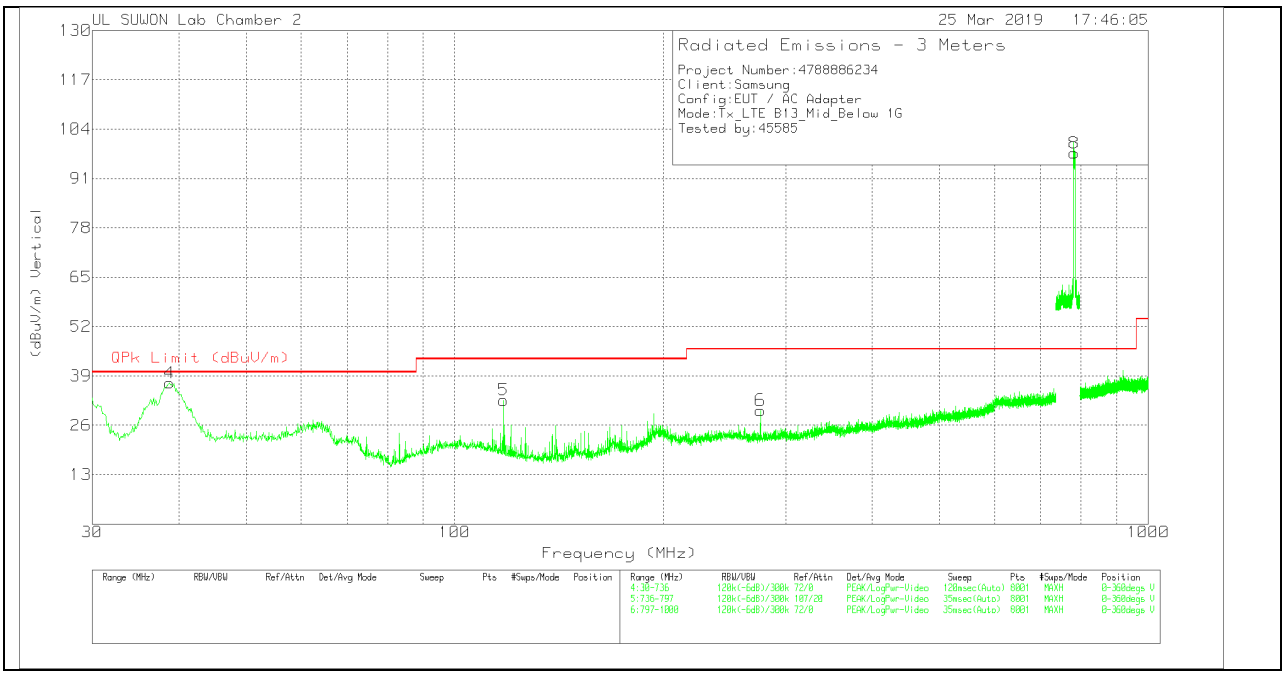
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL(751.0MHz)

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	39.0898	8.33	Pk	18.4	.7	27.43	40	-12.57	0-360	200	H
2	91.2455	12.58	Pk	16.1	1	29.68	43.52	-13.84	0-360	200	H
3	194.145	8.9	Pk	17.8	1.5	28.2	43.52	-15.32	0-360	200	H
7	782.2228	69.48	Pk	26.7	3	99.18	**46.02**	**53.16**	0-360	100	H
4	38.825	18.11	Pk	18.3	.7	37.11	40	-2.89	0-360	100	V
5	117.6323	15.71	Pk	15.8	1.1	32.61	43.52	-10.91	0-360	200	V
6	275.9528	9.41	Pk	18.7	1.8	29.91	46.02	-16.11	0-360	200	V
8	782.1236	67.99	Pk	26.7	3	97.69	**46.02**	**51.67**	0-360	100	V

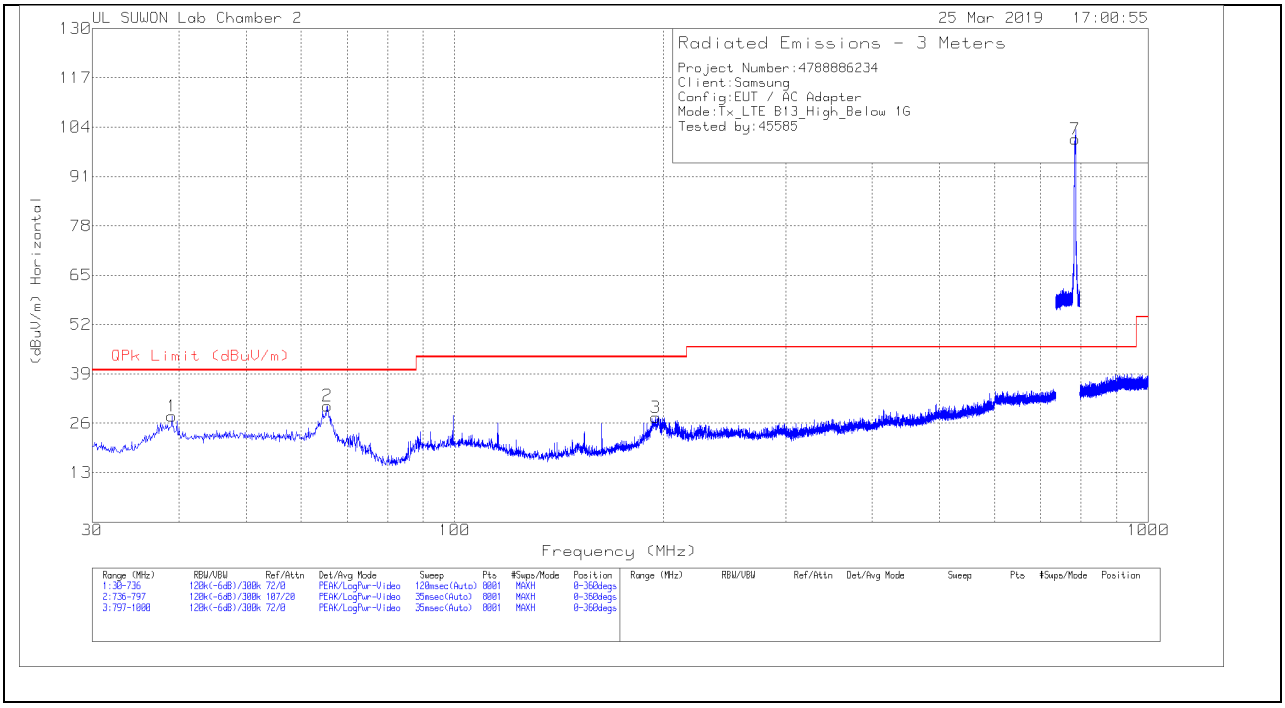
Pk - Peak detector

Note: Unwanted emissions captured from 777MHz to 787MHz and from 746MHz to 756MHz were the TX and RX signals generated from the call-simulator.

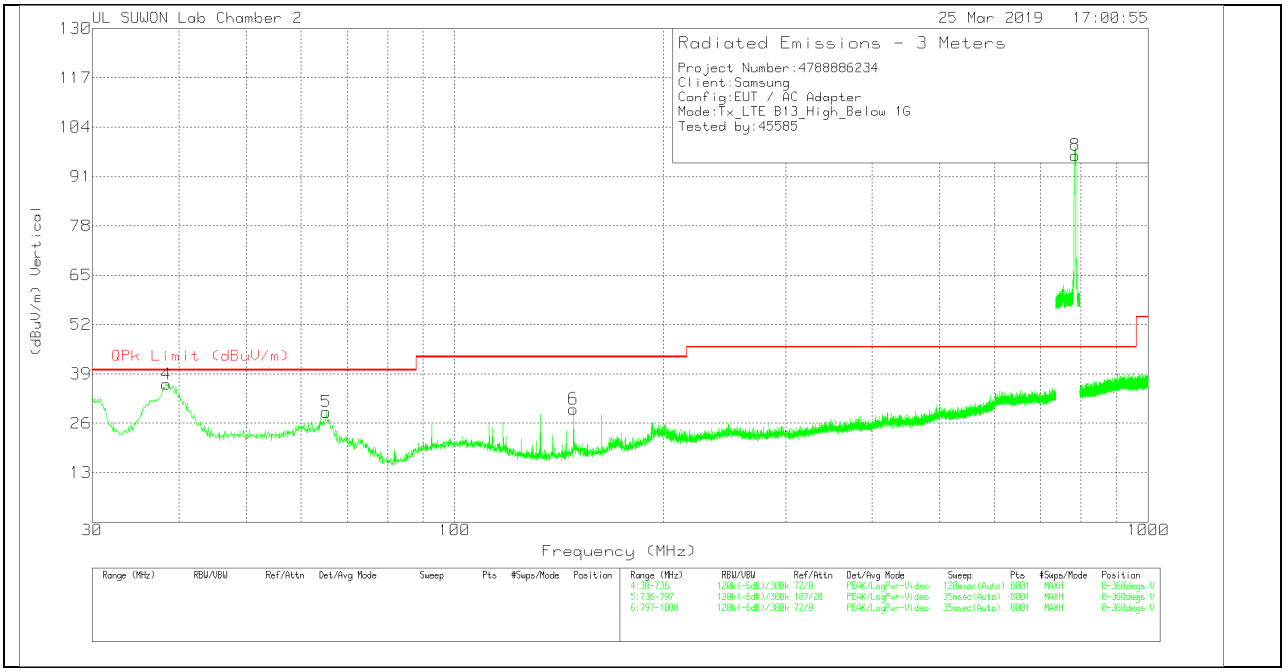
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

HIGH CHANNEL(753.5MHz)

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	39.0898	8.75	Pk	18.4	.7	27.85	40	-12.15	0-360	200	H
2	65.4765	12.6	Pk	17.1	.9	30.6	40	-9.4	0-360	200	H
3	194.9393	8.05	Pk	18	1.5	27.55	43.52	-15.97	0-360	200	H
7	784.5789	71.13	Pk	26.7	3	100.83	**46.02**	**54.81**	0-360	100	H
4	38.3838	17.6	Pk	18.1	.6	36.3	40	-3.7	0-360	100	V
5	65.3	11.08	Pk	17.1	.8	28.98	40	-11.02	0-360	100	V
6	148.3433	14.47	Pk	14	1.3	29.77	43.52	-13.75	0-360	100	V
8	784.4683	66.91	Pk	26.7	3	96.61	**46.02**	**50.59**	0-360	100	V

Pk - Peak detector

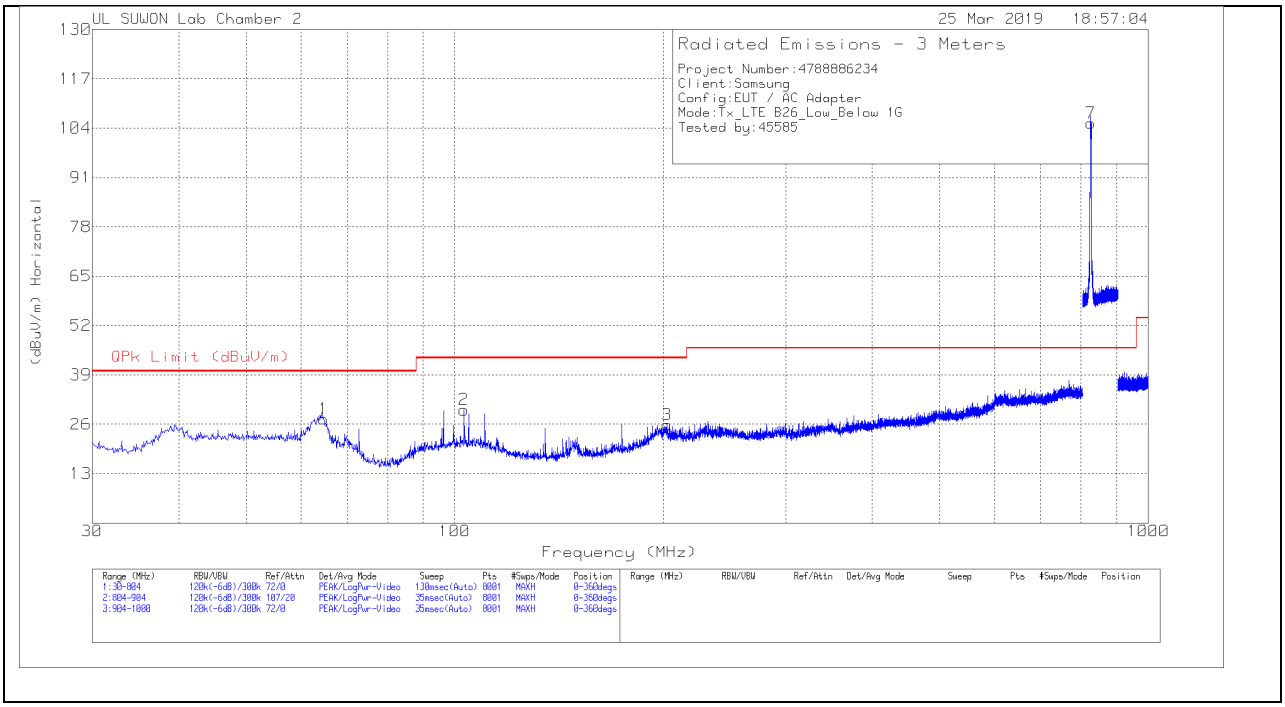
Note: Unwanted emissions captured from 777MHz to 787MHz and from 746MHz to 756MHz were the TX and RX signals generated from the call-simulator.

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.

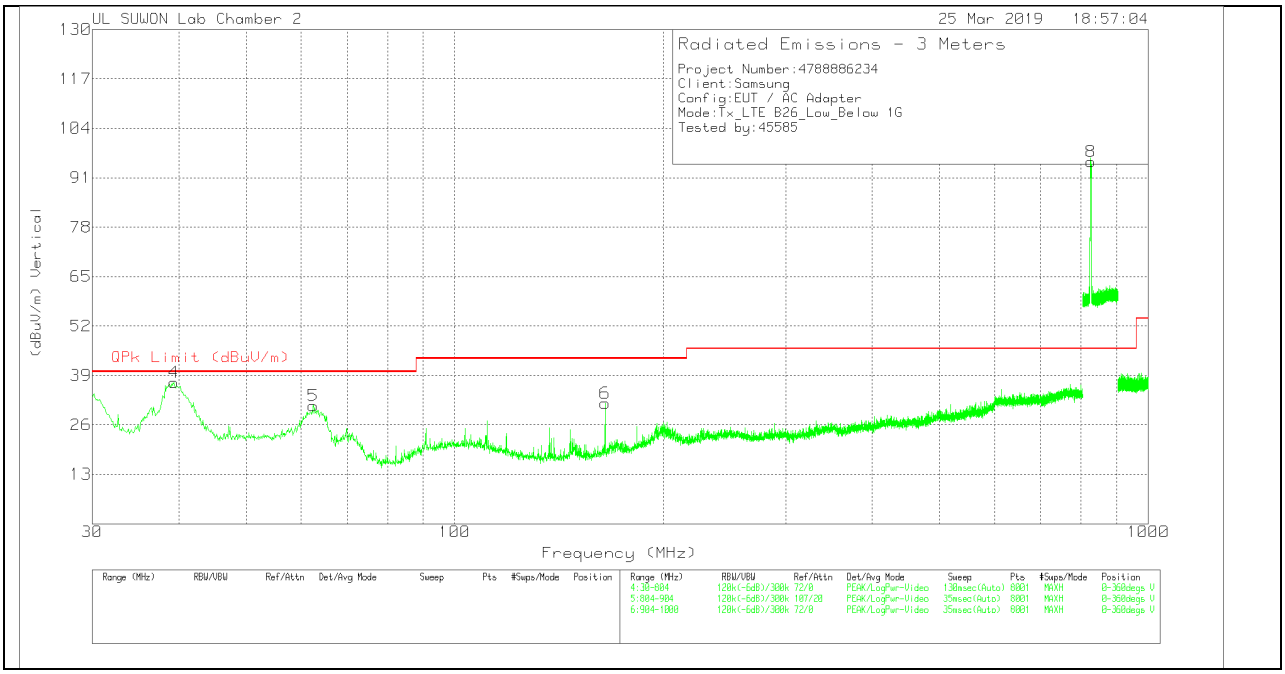
4.12. Below 1 GHz in the LTE Band 26

LOW CHANNEL(860.5MHz)

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	64.7333	9.18	Pk	17.3	.9	27.38	40	-12.62	0-360	200	H
2	103.143	11.01	Pk	17.7	1.1	29.81	43.52	-13.71	0-360	100	H
3	202.3118	6.78	Pk	17.6	1.5	25.88	43.52	-17.64	0-360	100	H
7	826.3125	75.17	Pk	27	3.1	105.27	**46.02**	**59.25**	0-360	100	H
4	39.3848	17.96	Pk	18.5	.7	37.16	40	-2.84	0-360	100	V
5	62.508	12.2	Pk	17.9	.9	31	40	-9	0-360	100	V
6	164.7728	15.5	Pk	14.8	1.4	31.7	43.52	-11.82	0-360	100	V
8	826.7875	65.08	Pk	27	3.1	95.18	**46.02**	**49.16**	0-360	100	V

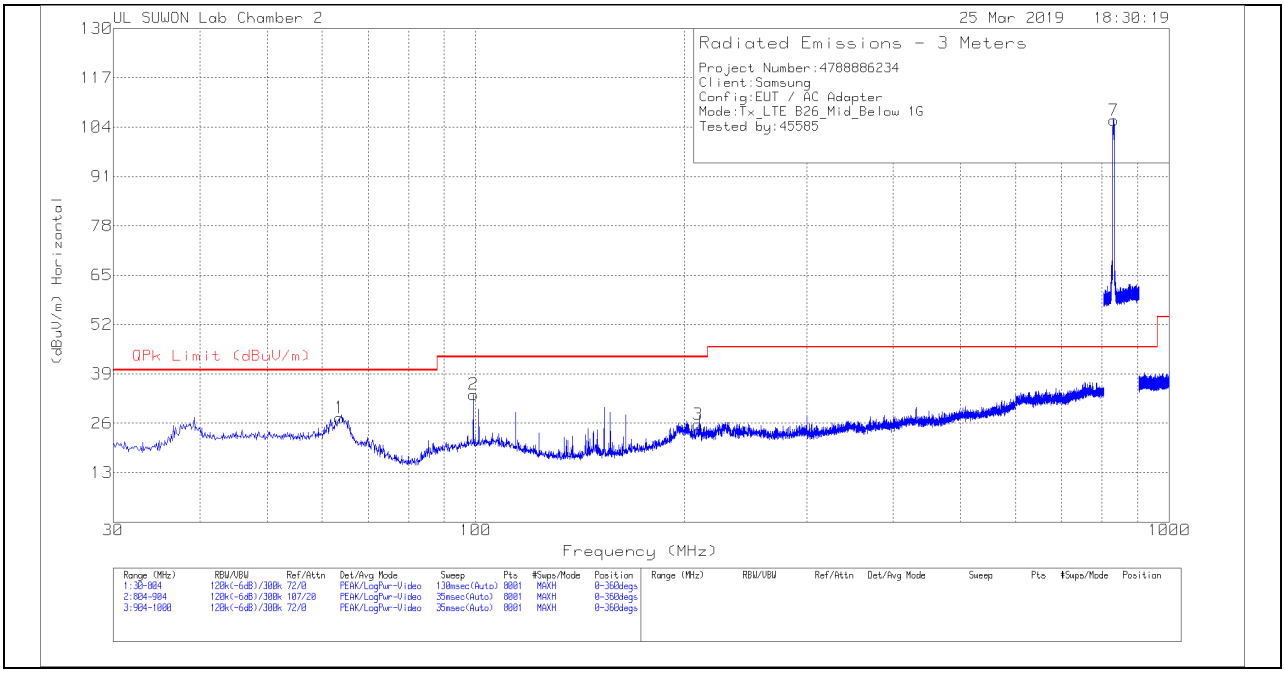
Pk - Peak detector

Note: Unwanted emissions captured from 814MHz to 849MHz and from 859MHz to 894MHz were the TX and RX signals generated from the call-simulator.

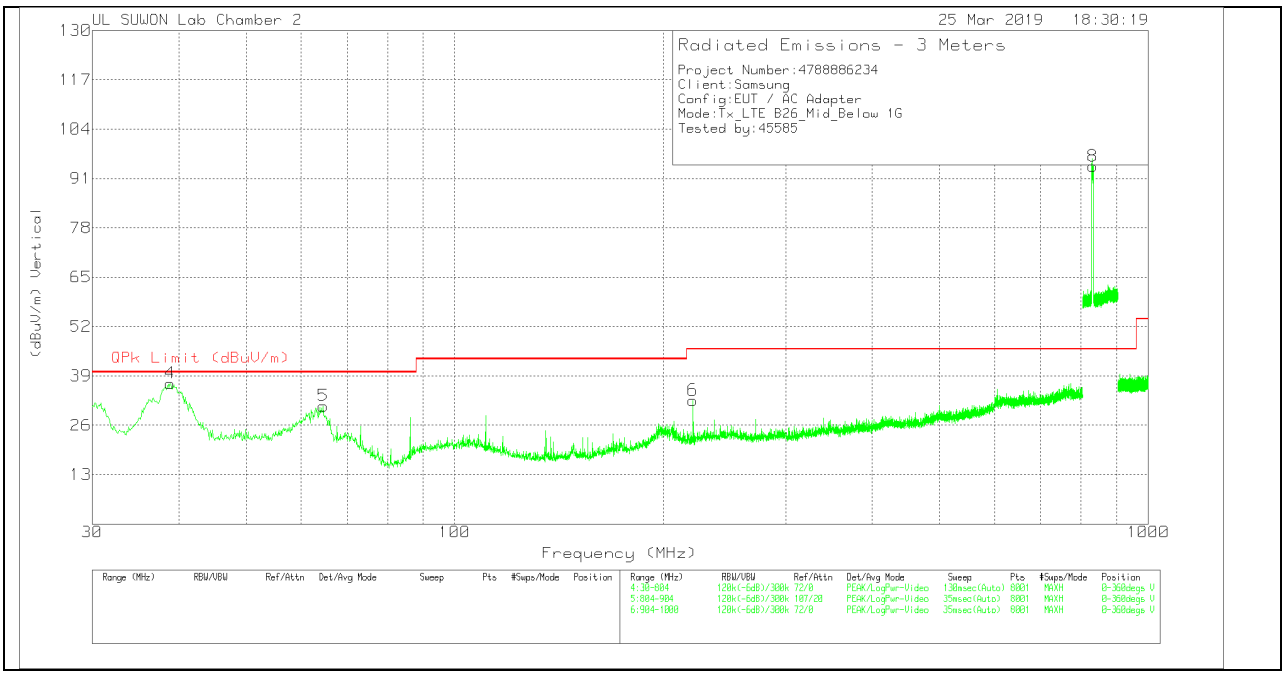
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL(876.5MHz)

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	63.669	8.94	Pk	17.6	.9	27.44	40	-12.56	0-360	400	H
2	99.273	14.9	Pk	17.7	1	33.6	43.52	-9.92	0-360	300	H
3	209.181	7.06	Pk	17	1.6	25.66	43.52	-17.86	0-360	200	H
7	831.575	75.59	Pk	27.1	3.1	105.79	**46.02**	**59.77**	0-360	100	H
4	38.901	18.06	Pk	18.3	.7	37.06	40	-2.94	0-360	100	V
5	64.6365	12.91	Pk	17.3	.9	31.11	40	-8.89	0-360	100	V
6	220.5975	13.58	Pk	17.4	1.6	32.58	46.02	-13.44	0-360	100	V
8	832.1875	64.05	Pk	27.1	3.1	94.25	**46.02**	**48.23**	0-360	100	V

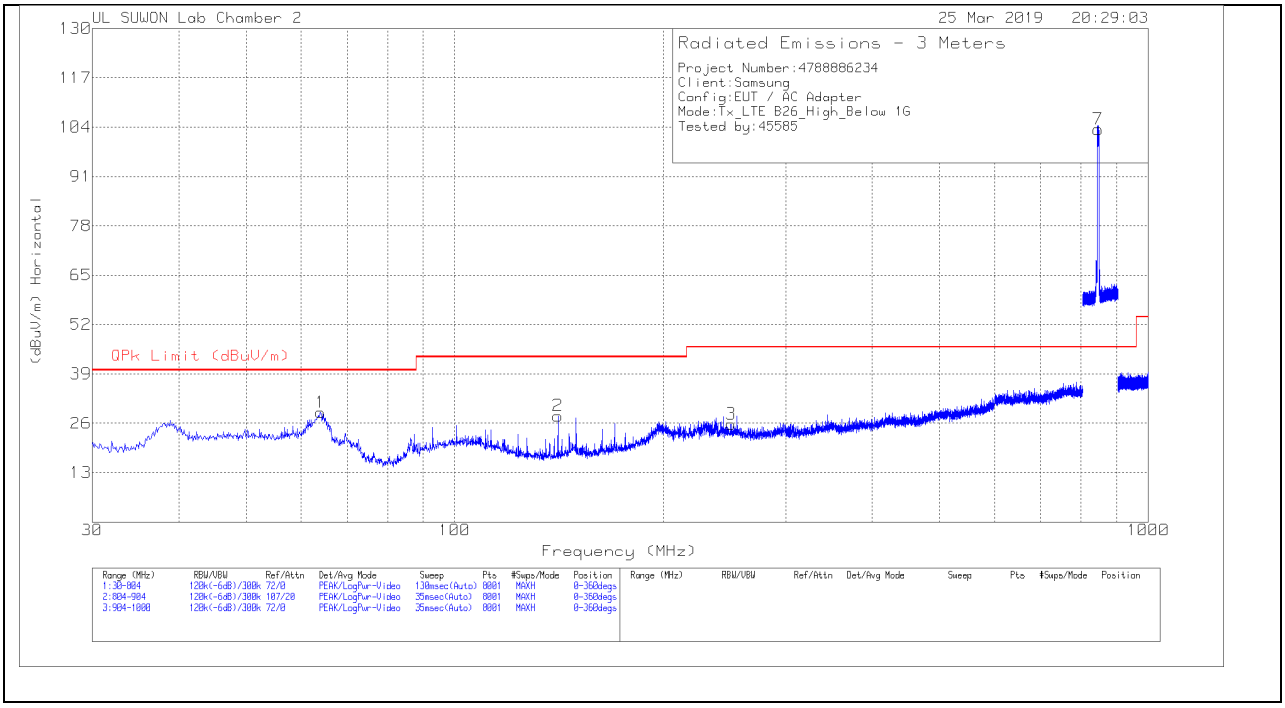
Pk - Peak detector

Note: Unwanted emissions captured from 814MHz to 849MHz and from 859MHz to 894MHz were the TX and RX signals generated from the call-simulator.

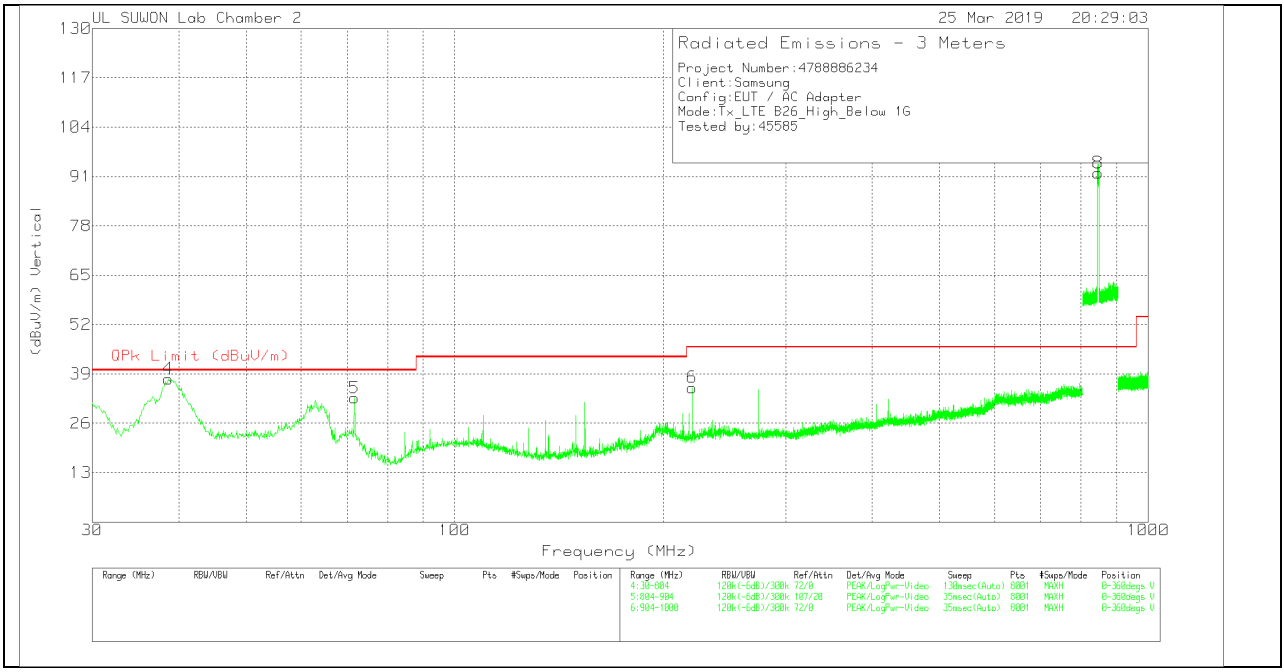
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

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	64.056	10.44	Pk	17.5	.9	28.84	40	-11.16	0-360	100	H
2	140.8755	12.67	Pk	14	1.3	27.97	43.52	-15.55	0-360	100	H
3	250.3965	5.1	Pk	19	1.7	25.8	46.02	-20.22	0-360	300	H
7	846.775	72.92	Pk	27.3	3.2	103.42	**46.02**	**57.4**	0-360	100	H
4	38.6108	18.8	Pk	18.2	.7	37.7	40	-2.3	0-360	100	V
5	71.6993	16.89	Pk	14.9	.9	32.69	40	-7.31	0-360	200	V
6	220.1138	16.52	Pk	17.3	1.6	35.42	46.02	-10.6	0-360	100	V
8	846.75	61.47	Pk	27.3	3.2	91.97	**46.02**	**45.95**	0-360	200	V

Pk - Peak detector

Note: Unwanted emissions captured from 814MHz to 849MHz and from 859MHz 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.