CERTIFICATION TEST REPORT

Report Number. : 4789739083-E1V3

Applicant	:	SAMSUNG ELECTRONICS CO., LTD. 129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI, GYEONGGI-DO, 16677, KOREA
Model	:	SM-M625F/DS, SM-E625F/DS
FCC ID	:	A3LSMM625F
EUT Description	:	GSM/WCDMA/LTE Phone + BT/BLE, DTS/UNII a/b/g/n/ac and NFC
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART B

Date Of Issue:
January 14, 2021

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

IAS ACCREDITED
Testing Laboratory
TL-637

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	01/06/21	Initial issue	Hyunsik Yun
V2	01/11/21	Updated to address TCB's question	Hyunsik Yun
V3	01/14/21	Updated to address TCB's question	Hyunsik Yun

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15B(04)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS 4

2. TEST METHODOLOGY 5

3. FACILITIES AND ACCREDITATION 5

4. CALIBRATION AND UNCERTAINTY 6

4.1. MEASURING INSTRUMENT CALIBRATION 6

4.2. SAMPLE CALCULATION 6

4.3. MEASUREMENT UNCERTAINTY 6

4.4. DECISION RULE 6

5. EQUIPMENT UNDER TEST 7

5.1. DESCRIPTION OF EUT 7

5.2. TEST MODE 7

5.3. WORST-CASE ORIENTATION AND MODE 8

5.4. DESCRIPTION OF TEST SETUP 9

6. TEST AND MEASUREMENT EQUIPMENT 10

7. APPLICABLE LIMIYS AND TEST RESULTS 11

7.1. Above 1 GHz in the GSM850 12

7.2. Above 1 GHz in the WCDMA Band 5 15

7.3. Above 1 GHz in the LTE Band 12 16

7.4. Above 1 GHz in the LTE Band 26 19

7.5. Below 1 GHz in the GSM850 22

7.6. Below 1 GHz in the WCDMA Band 5 28

7.7. Below 1 GHz in the LTE Band 12 29

7.8. Below 1 GHz in the LTE Band 26 33

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15B(04)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

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 and NFC
MODEL NUMBER:	SM-M625F/DS, SM-E625F/DS
SERIAL NUMBER:	R38NB04CLGT (RADIATED)
DATE TESTED:	DEC 16, 2020 – DEC 21, 2020;

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:

Junwhan Lee
Suwon Lab Engineer
UL Korea, Ltd.

Tested By:

Hyunsik Yun
Suwon Lab Engineer
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 https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

EIRP = PSA reading with EUT worst orientation (dBm) + Path loss (dB) – cable loss(between the SG and substitution antenna) + Substitution Antenna Factor (dBi)

ERP = PSA reading with EUT worst orientation (dBm) + Path loss (dB) – cable loss(between the SG and substitution antenna)

(Path loss = Signal generator output – PSA reading with substitution antenna)

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Radiated Disturbance, 30 MHz to 1 GHz	4.26 dB
Radiated Disturbance, 1 GHz to 18 GHz	5.90 dB

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

4.4. DECISION RULE

Decision rule for statement(s) of conformity is based on Procedure 1, Clause 4.4.2 in IEC Guide 115:2007.

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15B(04)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

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 and NFC.
This test report addresses the WWAN receiver mode.

This report covers the Samsung models SM-M625F/DS and SM-E625F/DS.
These models are identical in hardware except SM-E625F/DS has other Software name.
With some pre-scan, model SM-M625F/DS was set for final test.

5.2. TEST MODE

Mode	Description
GSM850	Communicating with Call simulator(CMW500)
WCDMA BAND 5	Communicating with Call simulator(CMW500)
LTE BAND 12	Communicating with Call simulator(CMW500)
LTE BAND 26	Communicating with Call simulator(CMW500)

5.3. WORST-CASE ORIENTATION AND MODE

For GSM850 / WCDMA B5 / LTE B12 / LTE B26, EUT was investigated in three orthogonal orientations X, Y and Z it was determined that Z orientation was worst-case orientation.

Note : The EUT is continuously communicated with the call box during the tests. Also attached with travel adapter for the worst case condition.

LTE Band 5
LTE Band 5 (Rx Frequency range: 869-894 MHz) is covered by LTE Band 26 (Rx Frequency range: 859-894 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 17
LTE Band 17 (Rx Frequency range: 734-746 MHz) is covered by LTE Band 12 (Rx Frequency range: 729-746 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15B(04)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

5.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Charger	SAMSUNG	EP-TA800	R37MAVSOLC7DK3	N/A
Data Cable	SAMSUNG	EP-DA705BBE	N/A	N/A
Earphone	SAMSUNG	EHS61ASFBE	N/A	N/A

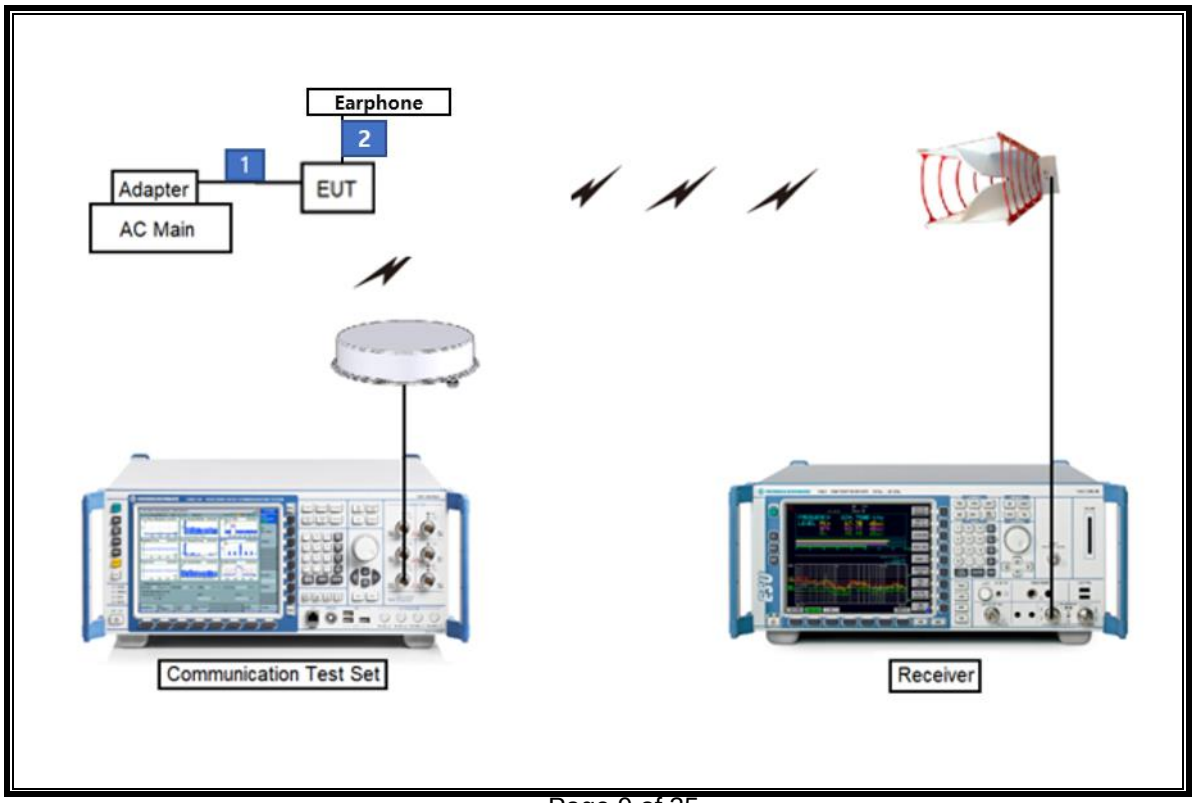
I/O CABLE

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	1.0 m	N/A
2	Audio	2	Mini-Jack	Unshielded	1.2 m	N/A

TEST SETUP

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

SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



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	01-31-21
Antenna, Horn, 40 GHz	ETS	3116C	00166155	08-04-22
Preamplifier	ETS	3116C-PA	00168841	08-06-21
Antenna, Horn, 40 GHz	ETS	3116C	00168645	08-04-22
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	750	08-19-22
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	845	08-13-22
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	08-13-22
Antenna, Horn, 18 GHz	ETS	3115	00167211	07-27-22
Antenna, Horn, 18 GHz	ETS	3115	00161451	08-15-22
Antenna, Horn, 18 GHz	ETS	3117	00168724	07-27-22
Antenna, Horn, 18 GHz	ETS	3117	00168717	08-15-22
Communications Test Set	R&S	CMW500	115331	08-03-21
Preamplifier, 1000 MHz	Sonoma	310N	341282	08-03-21
Preamplifier, 1000 MHz	Sonoma	310N	370599	08-06-21
Preamplifier, 1000 MHz	Sonoma	310N	351741	08-03-21
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1876511	08-03-21
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	08-04-21
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	08-03-21
EMI Test Receive, 40 GHz	R&S	ESU40	100439	08-03-21
EMI Test Receive, 40 GHz	R&S	ESU40	100457	08-03-21
Directional Antenna	Cobham	FPA3-0.8-6.0R/1329	80108-0004	N/A
Directional Antenna	Cobham	FPA3-0.8-6.0R/1329	110367-0003	N/A
High Pass Filter 1.2GHz	Micro-Tronics	HPM50108-02	G005	08-05-21
High Pass Filter 1.2GHz	Micro-Tronics	HPM50108-02	G006	08-05-21
High Pass Filter 2.8GHz	Micro-Tronics	HPM50111-02	010	08-05-21
High Pass Filter 2.8GHz	Micro-Tronics	HPM50111-02	011	08-05-21
High Pass Filter 4GHz	Micro-Tronics	HPM50118-02	G001	08-05-21
High Pass Filter 4GHz	Micro-Tronics	HPM50118-02	G002	08-05-21
Attenuator	PASTERNACK	PE7087-10	A009	08-05-21
Attenuator	PASTERNACK	PE7087-10	A001	08-03-21
Attenuator	PASTERNACK	PE7087-10	A008	08-03-21
Attenuator	PASTERNACK	PE7004-10	2	08-04-21
Attenuator	PASTERNACK	PE7395-10	A011	08-05-21
UL Software				
Description	**Manufacturer**	**Model**	**Version**	
Radiated software	UL	UL EMC	Ver 9.5	
AC Line Conducted software	UL	UL EMC	Ver 9.5	

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:

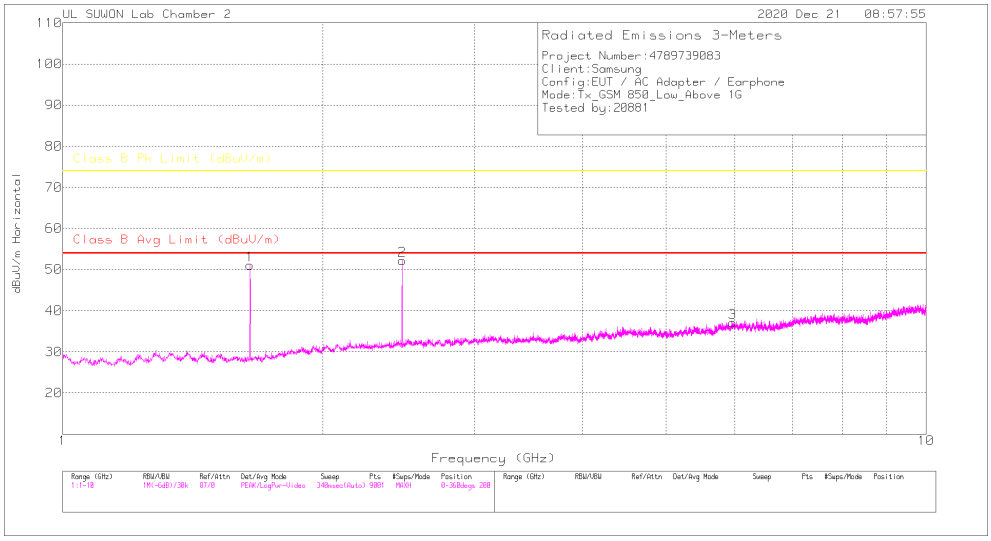
Limits for radiated disturbance of Class B ITE at measuring distance of 3 m	
Frequency range (MHz)	Quasi-peak limits (dBµV/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
Above 960 MHz	54
Note: The lower limit shall apply at the transition frequency.	

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15B(04)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

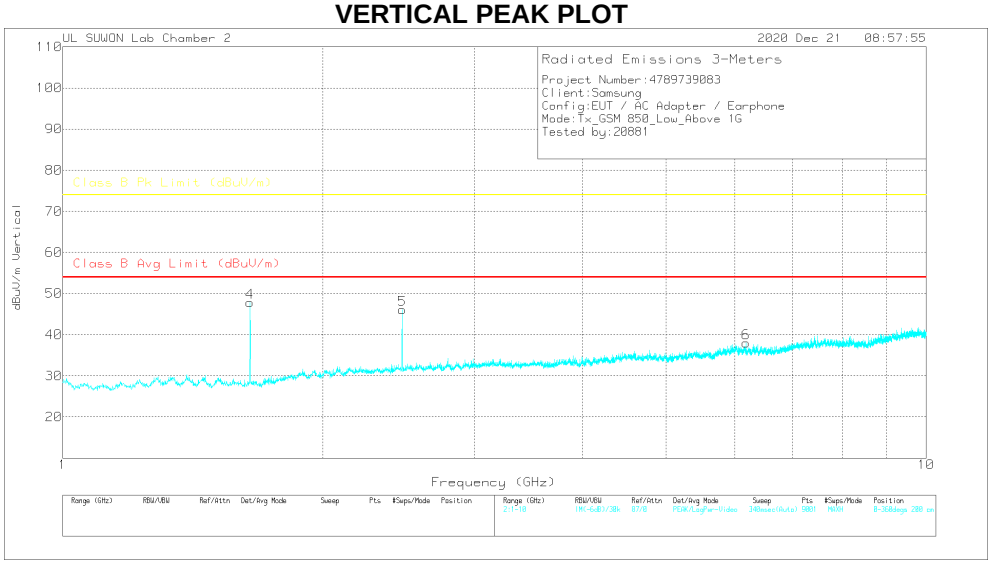
7.1. Above 1 GHz in the GSM850

LOW CHANNEL(869.2 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

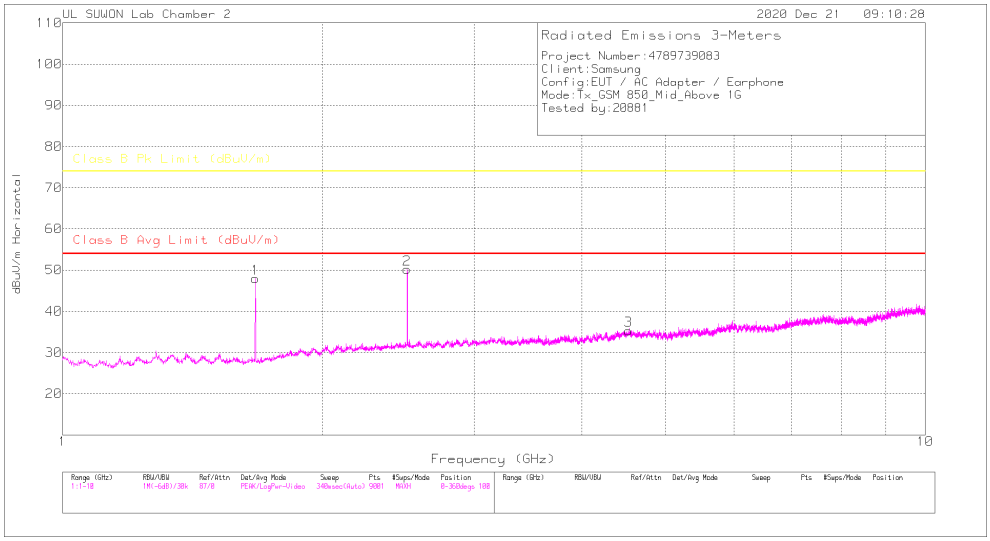
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HP[dB]	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.648	53.13	PK	28.6	-31.4	.7	51.03	-	-	74	-22.97	0-360	200	H
2	2.472	49.55	PK	32	-30	.7	52.25	-	-	74	-21.75	0-360	100	H
3	5.973	28.71	PK	35.1	-27.2	.5	37.11	-	-	74	-36.89	0-360	100	H
4	1.648	49.89	PK	28.6	-31.4	.7	47.79	-	-	74	-26.21	0-360	200	V
5	2.472	43.42	PK	32	-30	.7	46.12	-	-	74	-27.88	0-360	100	V
6	6.188	28.75	PK	35.3	-26.6	.5	37.95	-	-	74	-36.05	0-360	200	V

PK – Peak Detector

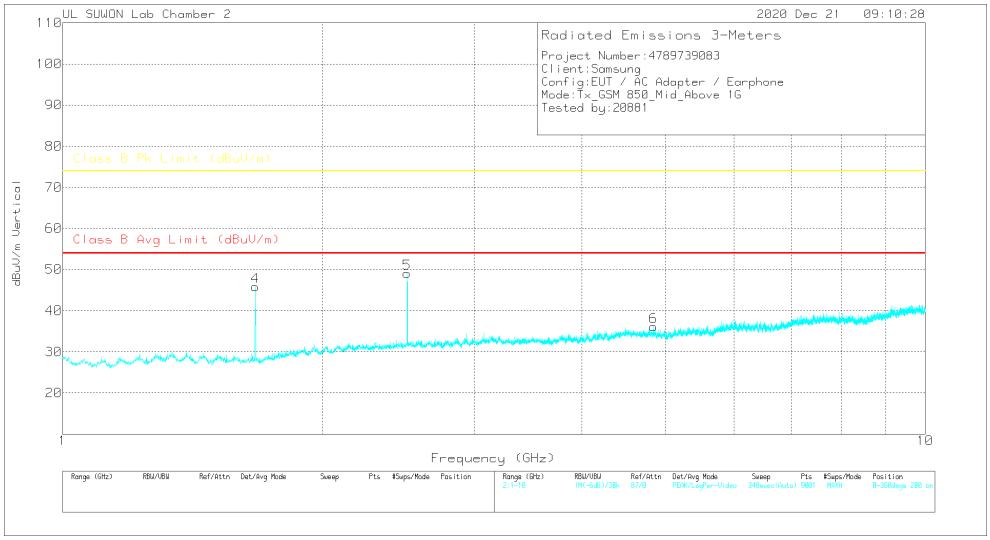
Only reporting peak data because the peak meets the average limit.

MID CHANNEL(881.6 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

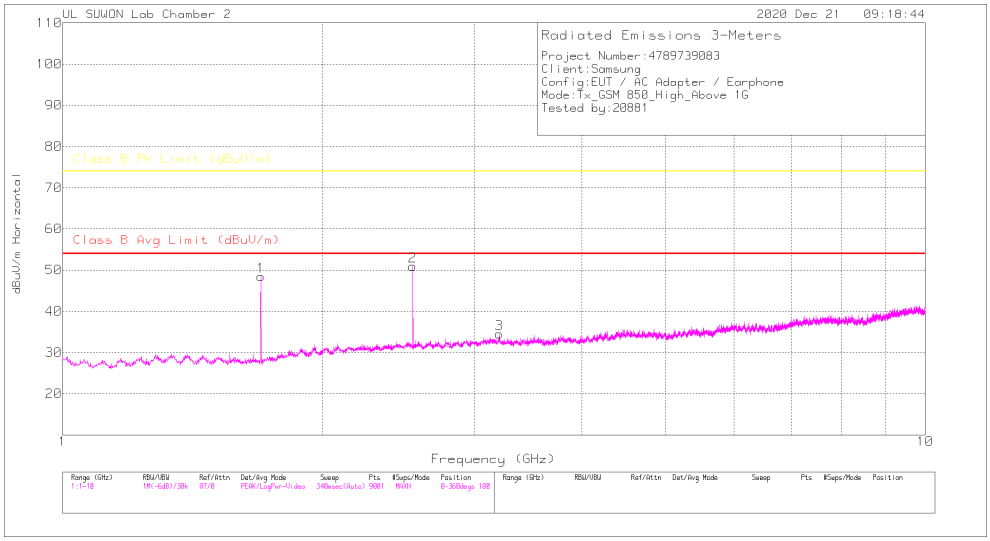
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HP[dB]	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.673	49.93	PK	28.6	-31.3	.7	47.93	-	-	74	-26.07	0-360	200	H
2	2.509	47.47	PK	32.1	-30.1	.7	50.17	-	-	74	-23.83	0-360	100	H
3	4.53	29.02	PK	34.1	-28.3	.5	35.32	-	-	74	-38.68	0-360	100	H
4	1.673	47.85	PK	28.6	-31.3	.7	45.85	-	-	74	-28.15	0-360	200	V
5	2.509	46.39	PK	32.1	-30.1	.7	49.09	-	-	74	-24.91	0-360	200	V
6	4.844	29.33	PK	34.1	-27.8	.5	36.13	-	-	74	-37.87	0-360	200	V

PK – Peak Detector

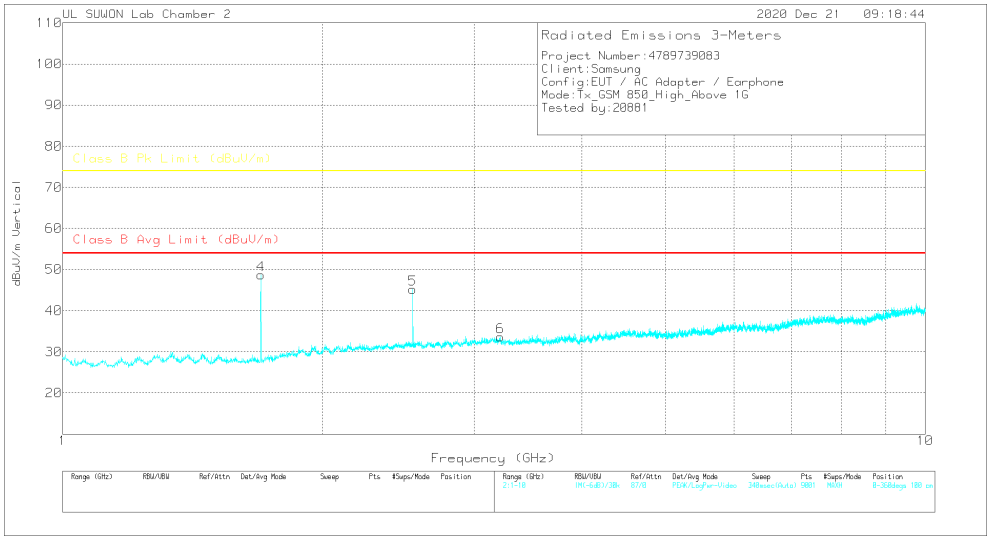
Only reporting peak data because the peak meets the average limit.

HIGH CHANNEL(893.8 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HP[dB]	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	50.21	PK	28.7	-31.2	.7	48.41	-	-	74	-25.59	0-360	200	H
2	2.546	47.9	PK	32.1	-29.8	.7	50.9	-	-	74	-23.1	0-360	100	H
3	3.206	30.56	PK	33	-29.7	.7	34.56	-	-	74	-39.44	0-360	200	H
4	1.697	50.54	PK	28.7	-31.2	.7	48.74	-	-	74	-25.26	0-360	100	V
5	2.546	42.23	PK	32.1	-29.8	.7	45.23	-	-	74	-28.77	0-360	200	V
6	3.215	29.71	PK	33	-29.8	.7	33.61	-	-	74	-40.39	0-360	200	V

PK – Peak Detector

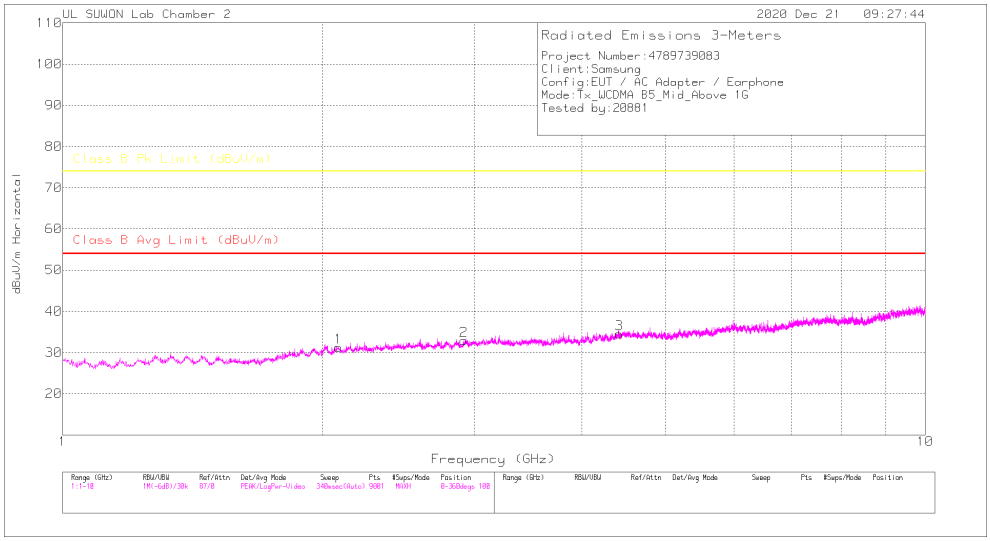
Only reporting peak data because the peak meets the average limit.

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

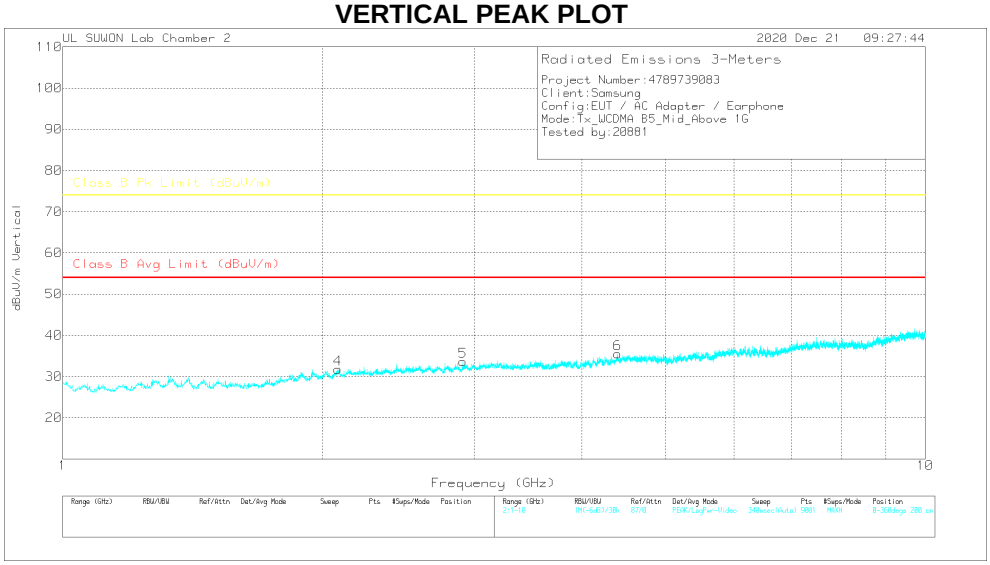
7.2. Above 1 GHz in the WCDMA Band 5

MID CHANNEL(881.6 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HP[dB]	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	2.087	29.82	PK	31.6	-30.8	.6	31.22	-	-	74	-42.78	0-360	100	H
2	2.917	29.55	PK	32.4	-29.8	.7	32.85	-	-	74	-41.15	0-360	200	H
3	4.417	28.67	PK	33.8	-28.5	.5	34.47	-	-	74	-39.53	0-360	100	H
4	2.084	30.28	PK	31.6	-30.7	.6	31.78	-	-	74	-42.22	0-360	200	V
5	2.911	30.36	PK	32.3	-29.7	.7	33.66	-	-	74	-40.34	0-360	200	V
6	4.399	29.86	PK	33.7	-28.5	.5	35.56	-	-	74	-38.44	0-360	100	V

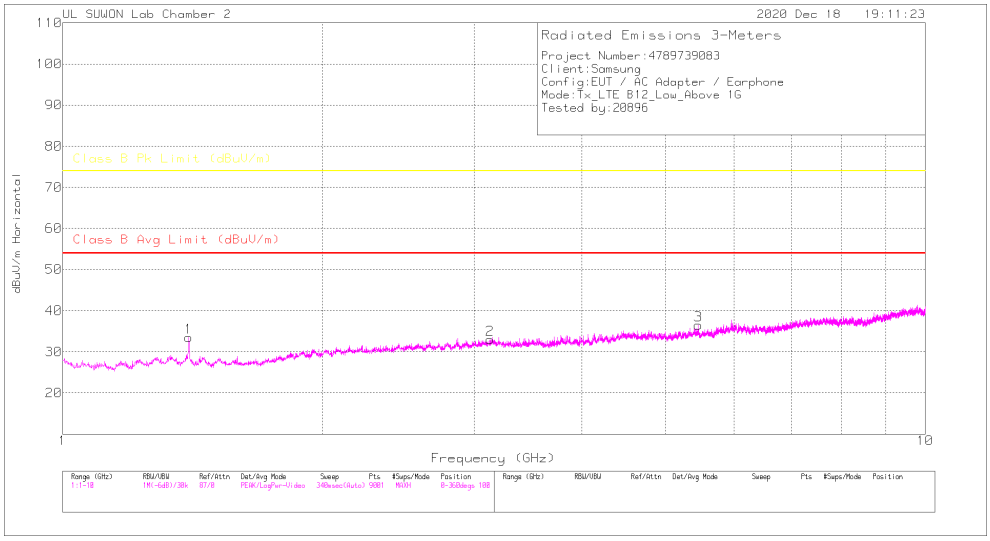
PK – Peak Detector

Only reporting peak data because the peak meets the average limit.

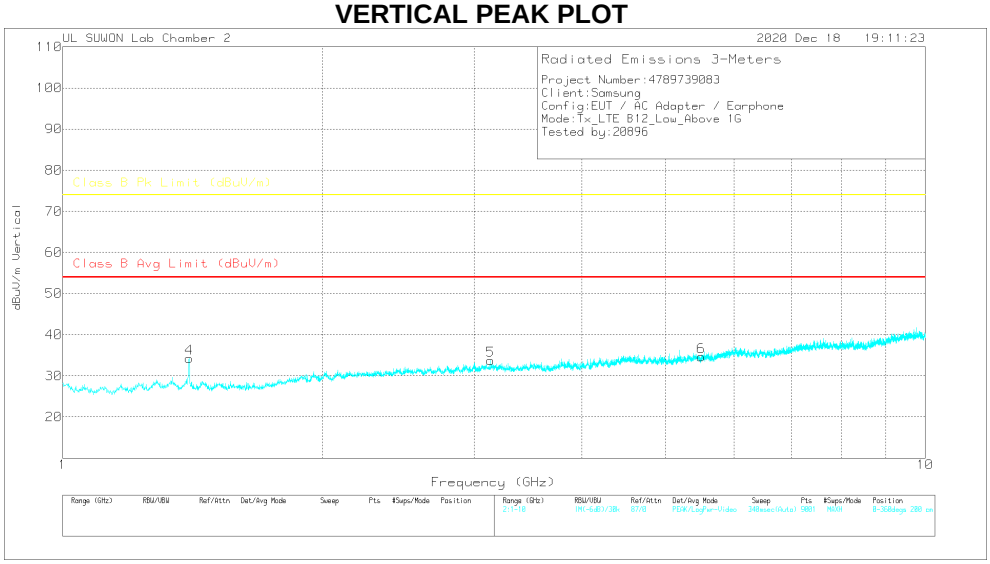
7.3. Above 1 GHz in the LTE Band 12

LOW CHANNEL(730.5 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

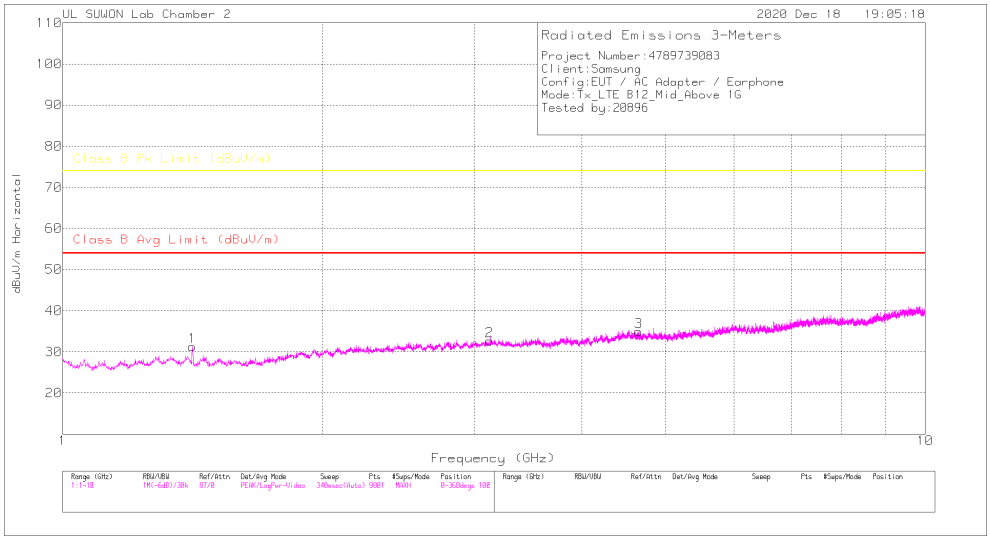
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HP[dB]	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.4	35.06	PK	29.4	-31.7	.7	33.46	-	-	74	-40.54	0-360	100	H
2	3.13	29.22	PK	33	-29.9	.7	33.02	-	-	74	-40.98	0-360	200	H
3	5.458	28.85	PK	34.6	-27.5	.5	36.45	-	-	74	-37.55	0-360	100	H
4	1.401	35.87	PK	29.4	-31.7	.7	34.27	-	-	74	-39.73	0-360	200	V
5	3.135	29.91	PK	33	-29.8	.7	33.81	-	-	74	-40.19	0-360	200	V
6	5.496	27.24	PK	34.5	-27.6	.5	34.64	-	-	74	-39.36	0-360	200	V

PK – Peak Detector

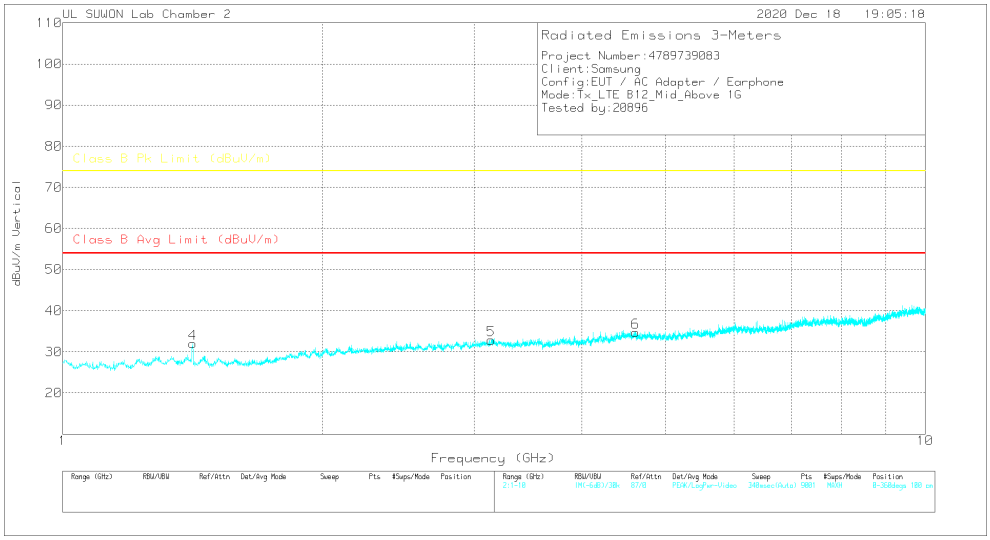
Only reporting peak data because the peak meets the average limit.

MID CHANNEL(737.5 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

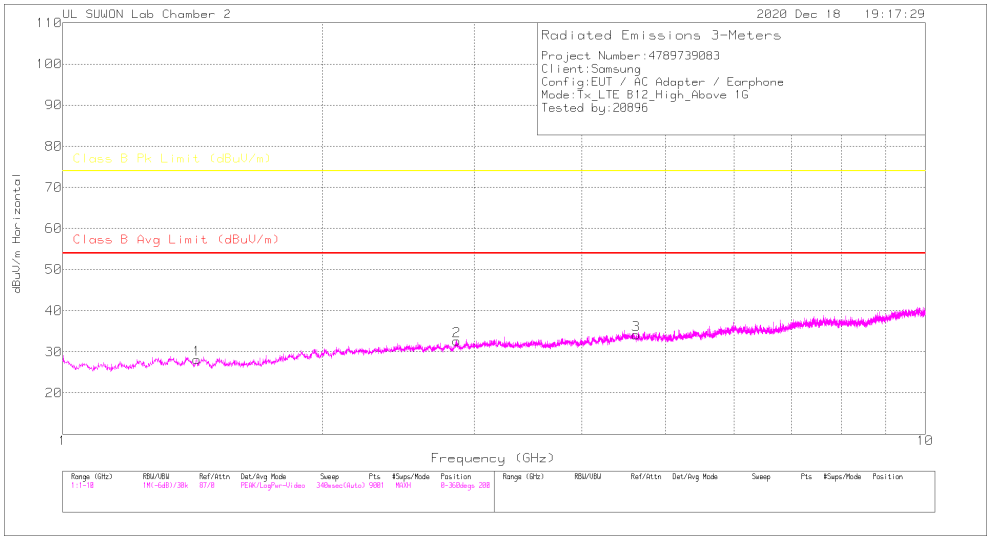
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HP[dB]	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.413	32.79	PK	29.4	-31.6	.7	31.29	-	-	74	-42.71	0-360	200	H
2	3.127	28.66	PK	33	-29.7	.7	32.66	-	-	74	-41.34	0-360	200	H
3	4.652	29.07	PK	34.1	-28.8	.5	34.87	-	-	74	-39.13	0-360	100	H
4	1.415	33.55	PK	29.4	-31.6	.7	32.05	-	-	74	-41.95	0-360	200	V
5	3.138	28.83	PK	33	-29.7	.7	32.83	-	-	74	-41.17	0-360	200	V
6	4.615	28.75	PK	34.1	-28.6	.5	34.75	-	-	74	-39.25	0-360	100	V

PK – Peak Detector

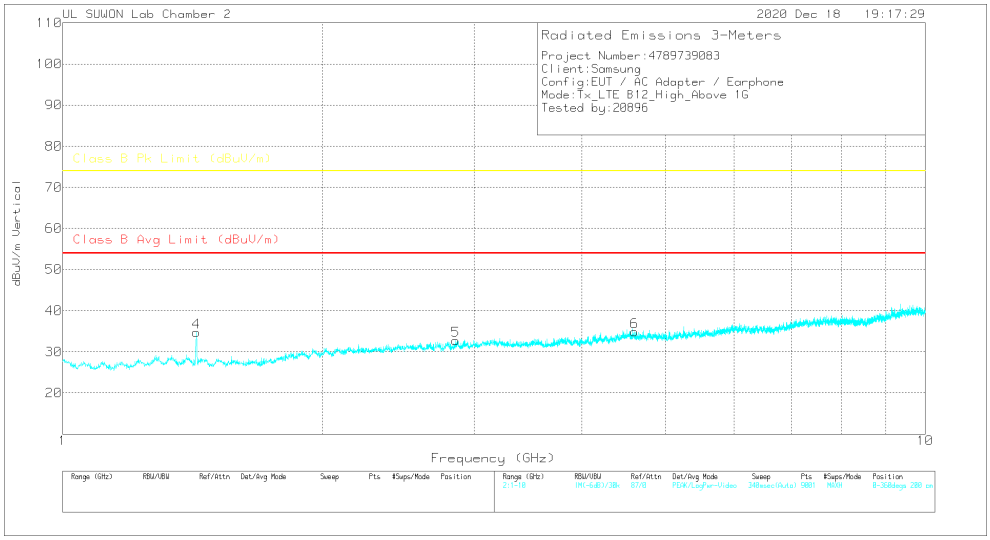
Only reporting peak data because the peak meets the average limit.

HIGH CHANNEL(744.5 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HP[dB]	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	1.43	29.89	PK	29.3	-31.7	.7	28.19	-	-	74	-45.81	0-360	200	H
2	2.865	29.65	PK	32.2	-29.9	.7	32.65	-	-	74	-41.35	0-360	200	H
3	4.625	28.18	PK	34.1	-28.7	.5	34.08	-	-	74	-39.92	0-360	100	H
4	1.429	36.5	PK	29.3	-31.7	.7	34.8	-	-	74	-39.2	0-360	200	V
5	2.856	29.65	PK	32.2	-29.9	.8	32.75	-	-	74	-41.25	0-360	100	V
6	4.602	28.83	PK	34.1	-28.5	.5	34.93	-	-	74	-39.07	0-360	100	V

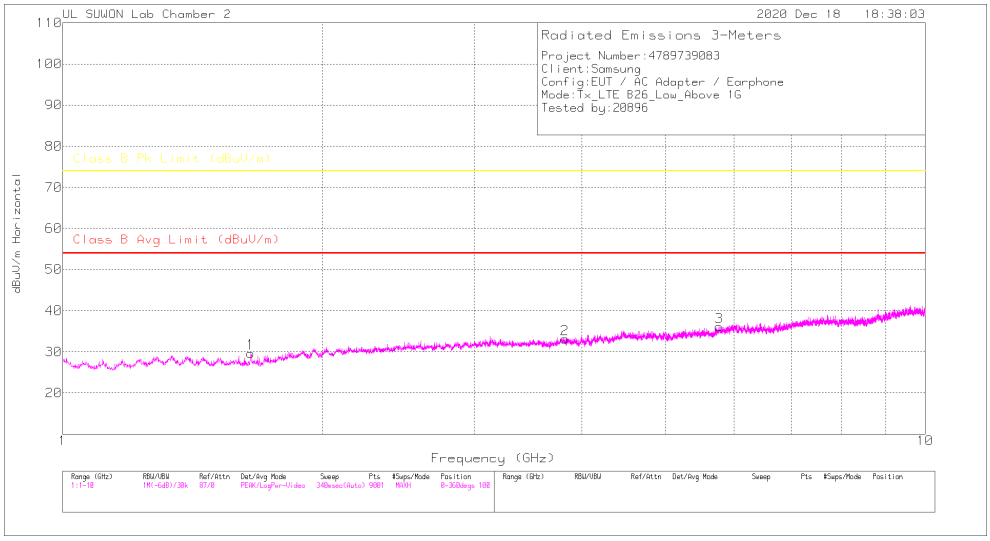
PK – Peak Detector

Only reporting peak data because the peak meets the average limit.

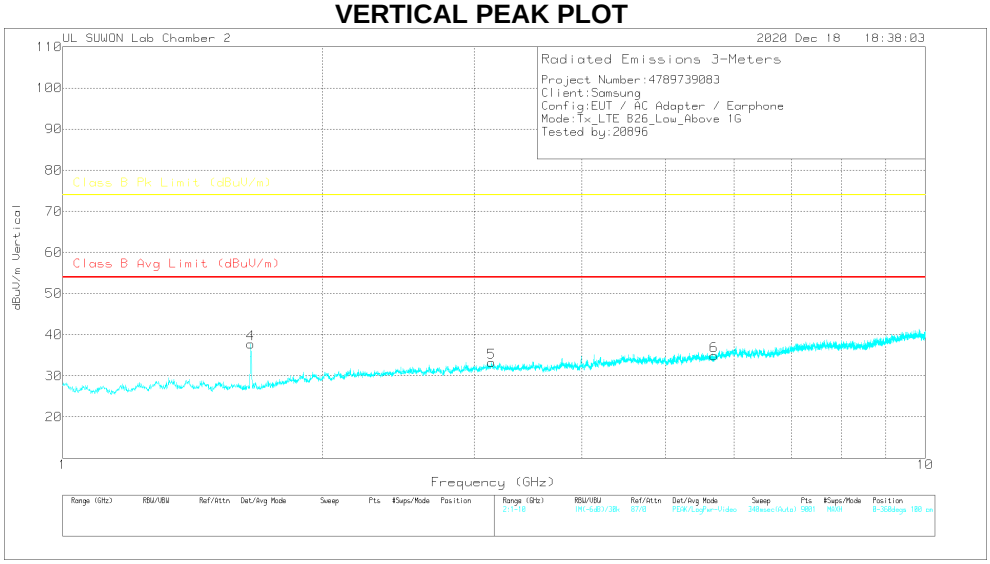
7.4. Above 1 GHz in the LTE Band 26

LOW CHANNEL(860.5 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

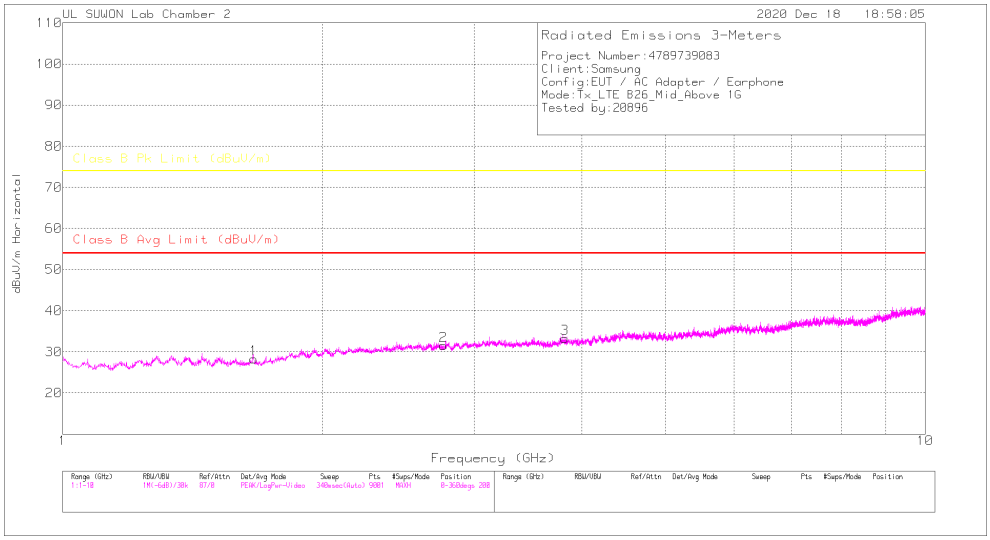
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HP[dB]	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.653	31.81	PK	28.6	-31.4	.7	29.71	-	-	74	-44.29	0-360	200	H
2	3.82	27.69	PK	33.4	-28.6	.6	33.09	-	-	74	-40.91	0-360	100	H
3	5.766	27.83	PK	34.8	-27	.5	36.13	-	-	74	-37.87	0-360	200	H
4	1.653	39.84	PK	28.6	-31.4	.7	37.74	-	-	74	-36.26	0-360	200	V
5	3.141	29.36	PK	33	-29.8	.7	33.26	-	-	74	-40.74	0-360	200	V
6	5.69	27.23	PK	34.7	-27.6	.5	34.83	-	-	74	-39.17	0-360	100	V

Pk - Peak detector

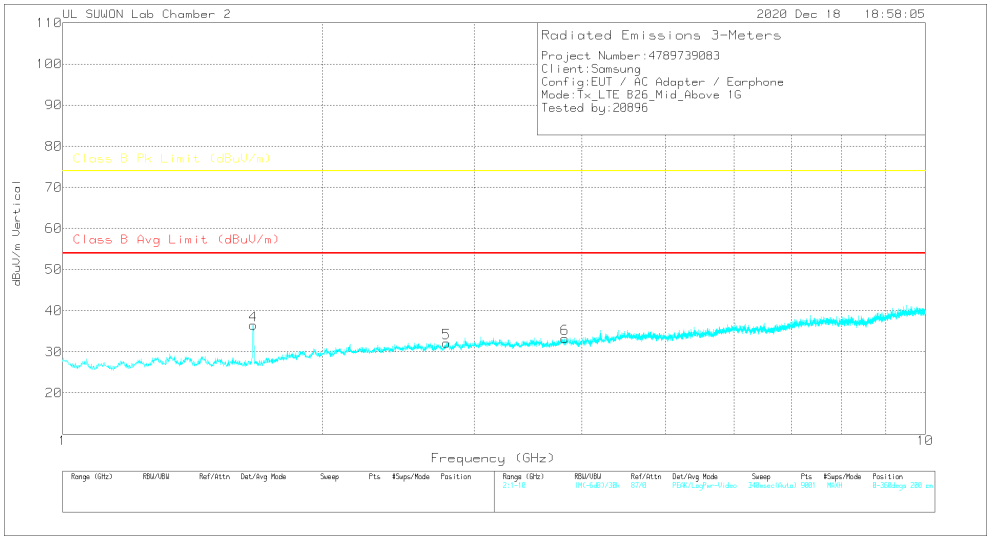
Only reporting peak data because the peak meets the average limit.

MID CHANNEL(876.5 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

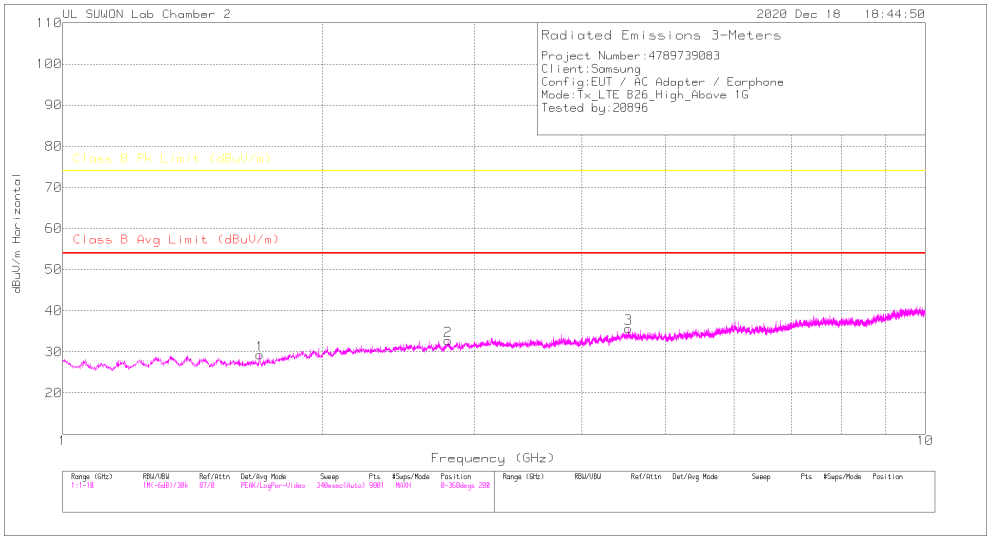
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HP[dB]	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.666	30.41	PK	28.6	-31.4	.7	28.31	-	-	74	-45.69	0-360	200	H
2	2.763	28.3	PK	32.2	-29.7	.7	31.5	-	-	74	-42.5	0-360	200	H
3	3.82	27.89	PK	33.4	-28.6	.6	33.29	-	-	74	-40.71	0-360	200	H
4	1.663	38.45	PK	28.6	-31.3	.7	36.45	-	-	74	-37.55	0-360	200	V
5	2.786	29.3	PK	32.2	-30	.7	32.2	-	-	74	-41.8	0-360	200	V
6	3.821	27.81	PK	33.4	-28.6	.6	33.21	-	-	74	-40.79	0-360	200	V

PK – Peak Detector

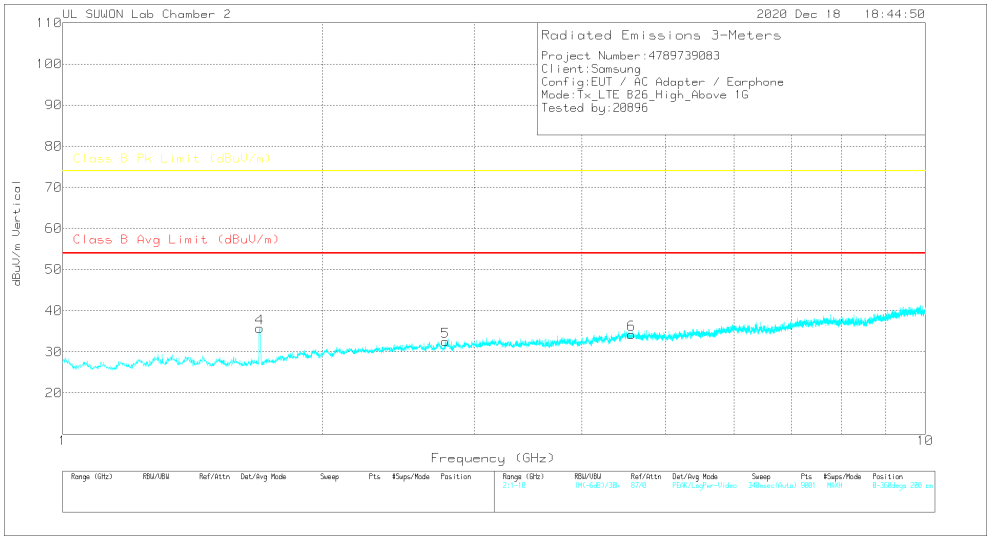
Only reporting peak data because the peak meets the average limit.

HIGH CHANNEL(892.5 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HP[dB]	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	1.693	31.09	PK	28.7	-31.2	.7	29.29	-	-	74	-44.71	0-360	200	H
2	2.799	29.81	PK	32.2	-30	.7	32.71	-	-	74	-41.29	0-360	200	H
3	4.531	29.39	PK	34.1	-28.3	.5	35.69	-	-	74	-38.31	0-360	200	H
4	1.692	37.5	PK	28.7	-31.2	.7	35.7	-	-	74	-38.3	0-360	200	V
5	2.78	29.33	PK	32.2	-29.7	.7	32.53	-	-	74	-41.47	0-360	100	V
6	4.564	28.22	PK	34.1	-28.6	.5	34.22	-	-	74	-39.78	0-360	100	V

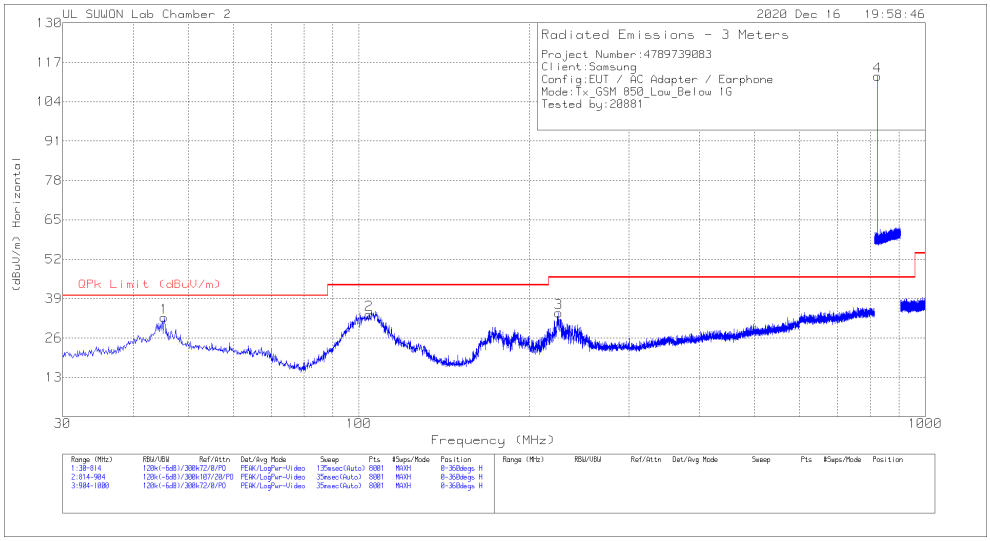
PK – Peak Detector

Only reporting peak data because the peak meets the average limit.

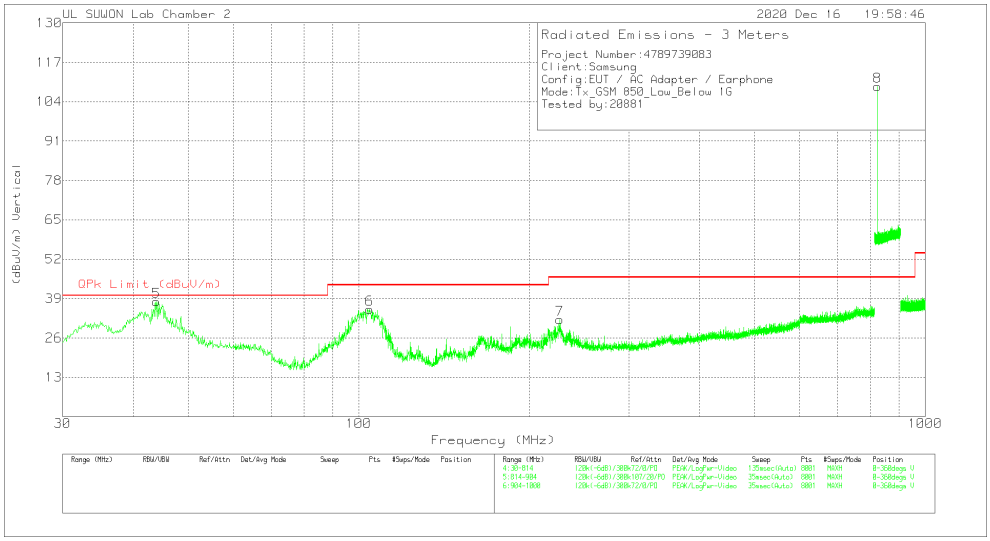
7.5. Below 1 GHz in the GSM850

LOW CHANNEL(869.2 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G_Bypass [dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	45.288	12.37	Pk	19.6	.8	32.77	40	-7.23	0-360	400	H
2	104.284	15.04	Pk	17.6	1.1	33.74	43.52	-9.78	0-360	200	H
3	225.412	15.44	Pk	17.3	1.6	34.34	46.02	-11.68	0-360	100	H
4	824.2038	82.52	Pk	26.7	3.2	112.42	**46.02**	**66.4**	0-360	100	H
5	43.916	17.65	Pk	19.5	.8	37.95	40	-2.05	0-360	100	V
6	104.382	16.82	Pk	17.6	1.1	35.52	43.52	-8	0-360	100	V
7	226.294	12.93	Pk	17.4	1.7	32.03	46.02	-13.99	0-360	200	V
8	824.1475	78.97	Pk	26.7	3.3	108.97	**46.02**	**62.95**	0-360	200	V

Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
43.916	12.62	Qp	19.5	.8	32.92	40	-7.08	114	102	V

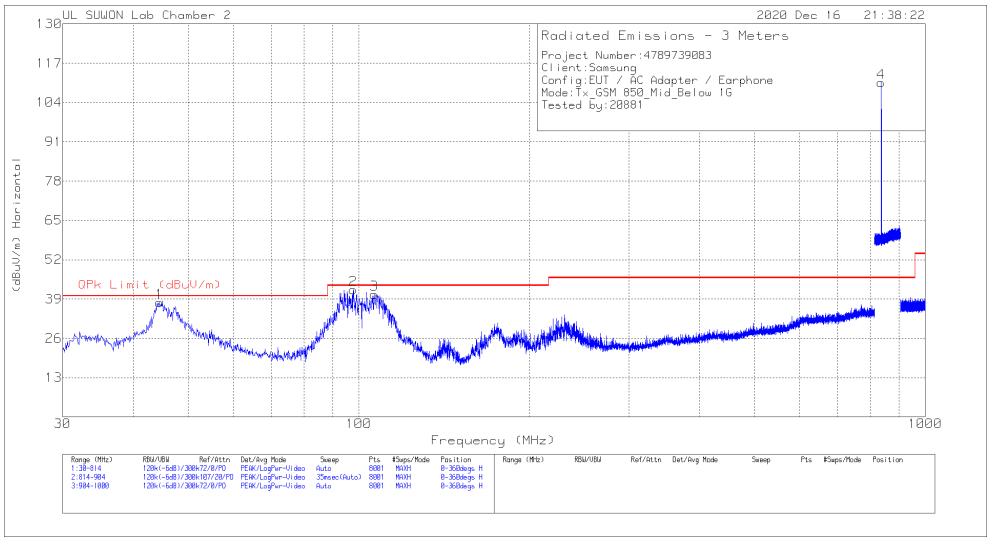
Qp - Quasi-Peak detector

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

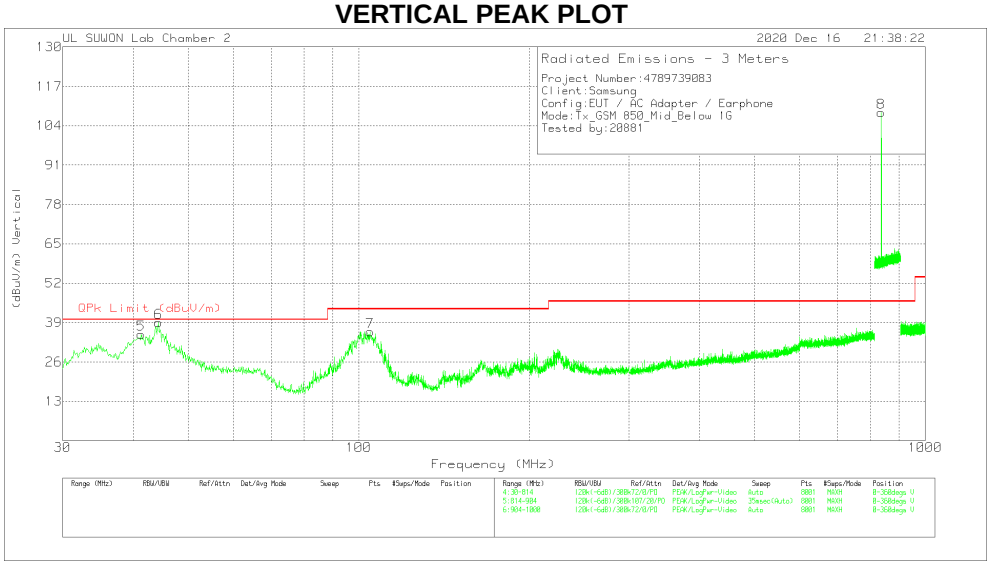
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15B(04)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

MID CHANNEL(881.6 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	44.504	17.45	Pk	19.6	.8	37.85	40	-2.15	0-360	400	H
2	97.816	23.85	Pk	17.2	1.1	42.15	43.52	-1.37	0-360	200	H
3	106.44	21.89	Pk	17.5	1.2	40.59	43.52	-2.93	0-360	300	H
4	836.5225	80.41	Pk	26.9	3.3	110.61	**46.02**	**64.59**	0-360	200	H
5	41.27	15.4	Pk	19	.7	35.1	40	-4.9	0-360	100	V
6	44.308	18.86	Pk	19.5	.7	39.06	40	-.94	0-360	100	V
7	104.676	17.24	Pk	17.6	1.2	36.04	43.52	-7.48	0-360	100	V
8	836.5338	78.14	Pk	26.9	3.3	108.34	**46.02**	**62.32**	0-360	100	V

Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
44.504	5.43	Qp	19.6	.8	25.83	40	-14.17	101	355	H
97.816	10.33	Qp	17.2	1.1	28.63	43.52	-14.89	118	272	H
106.44	11.45	Qp	17.5	1.2	30.15	43.52	-13.37	92	296	H
41.27	10.66	Qp	19	.7	30.36	40	-9.64	111	100	V
44.308	13.11	Qp	19.5	.7	33.31	40	-6.69	106	100	V

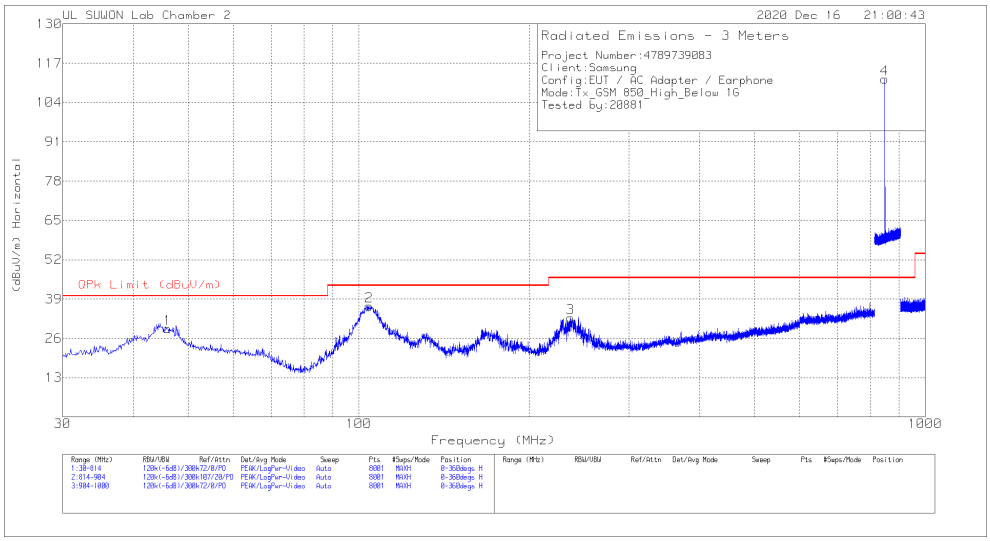
Qp - Quasi-Peak detector

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

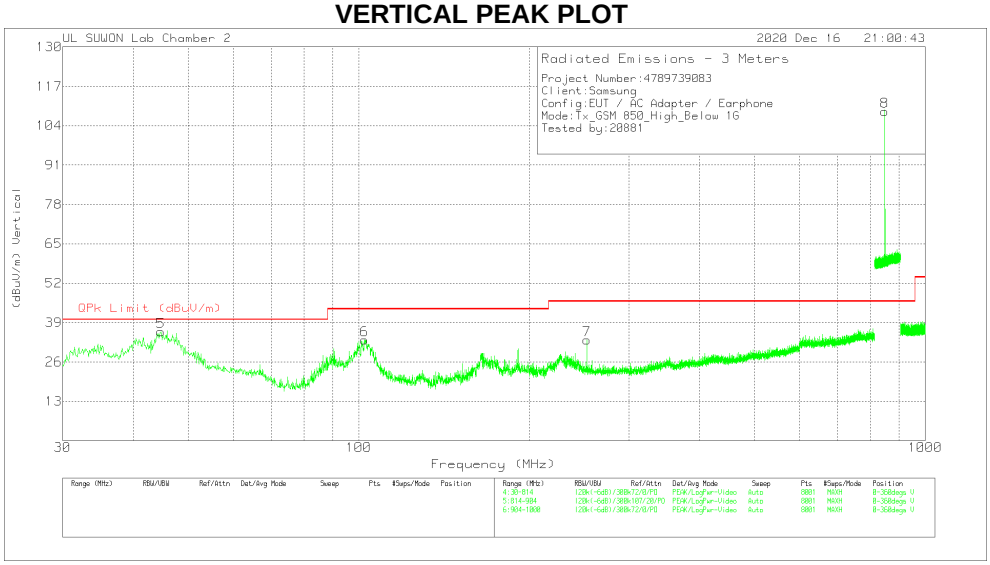
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15B(04)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

HIGH CHANNEL(893.8 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	45.974	8.74	Pk	19.7	.8	29.24	40	-10.76	0-360	400	H
2	104.186	18.01	Pk	17.6	1.1	36.71	43.52	-6.81	0-360	300	H
3	236.388	13.12	Pk	18	1.6	32.72	46.02	-13.3	0-360	100	H
4	848.8188	81.17	Pk	27.3	3.3	111.77	**46.02**	**65.75**	0-360	200	H
5	44.7	15.59	Pk	19.6	.8	35.99	40	-4.01	0-360	100	V
6	102.422	14.55	Pk	17.5	1.2	33.25	43.52	-10.27	0-360	100	V
7	252.852	12.98	Pk	18.4	1.9	33.28	46.02	-12.74	0-360	200	V
8	848.8525	78.14	Pk	27.3	3.3	108.74	**46.02**	**62.72**	0-360	100	V

Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
44.7	10.42	Qp	19.6	.8	30.82	40	-9.18	103	100	V

Qp - Quasi-Peak detector

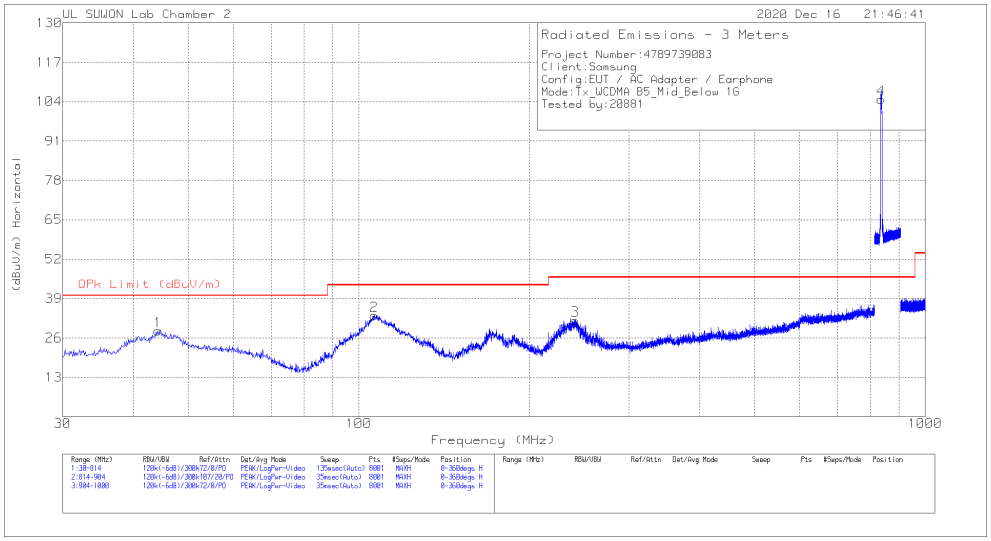
Note: Unwanted emissions captured from 824MHz to 849MHz and from 869MHz to 894MHz were the TX and RX signals generated from the call-simulator.

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15B(04)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

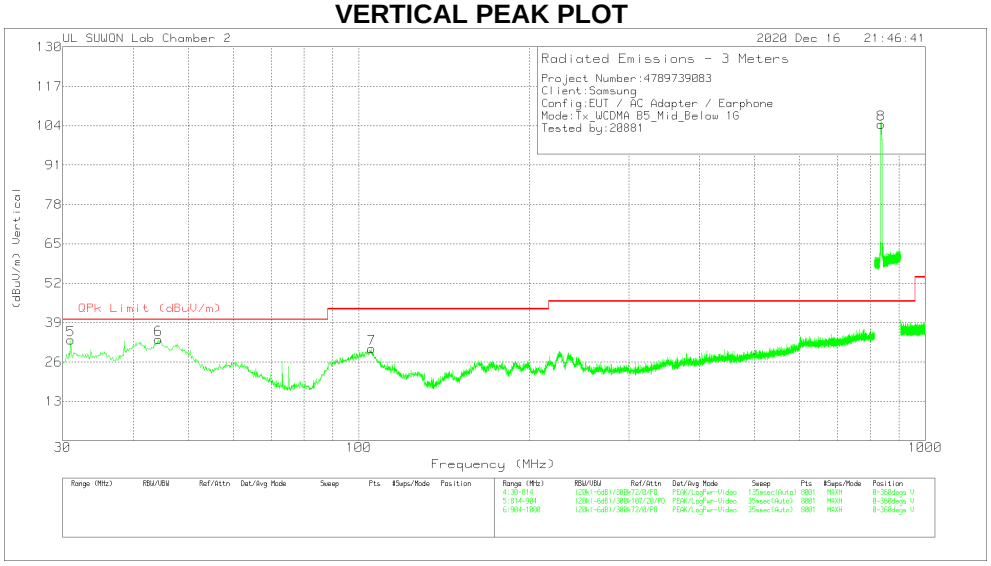
7.6. Below 1 GHz in the WCDMA Band 5

MID CHANNEL(881.6 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	44.21	8.11	Pk	19.5	.7	28.31	40	-11.69	0-360	400	H
2	106.44	14.77	Pk	17.5	1.2	33.47	43.52	-10.05	0-360	300	H
3	240.896	11.84	Pk	18.2	1.8	31.84	46.02	-14.18	0-360	100	H
4	836.5675	74.71	Pk	26.9	3.2	104.81	**46.02**	**58.79**	0-360	100	H
5	30.98	17.31	Pk	15.4	.6	33.31	40	-6.69	0-360	100	V
6	44.308	13.2	Pk	19.5	.7	33.4	40	-6.6	0-360	100	V
7	105.362	11.64	Pk	17.6	1.2	30.44	43.52	-13.08	0-360	100	V
8	836.5675	74.35	Pk	26.9	3.2	104.45	**46.02**	**58.43**	0-360	100	V

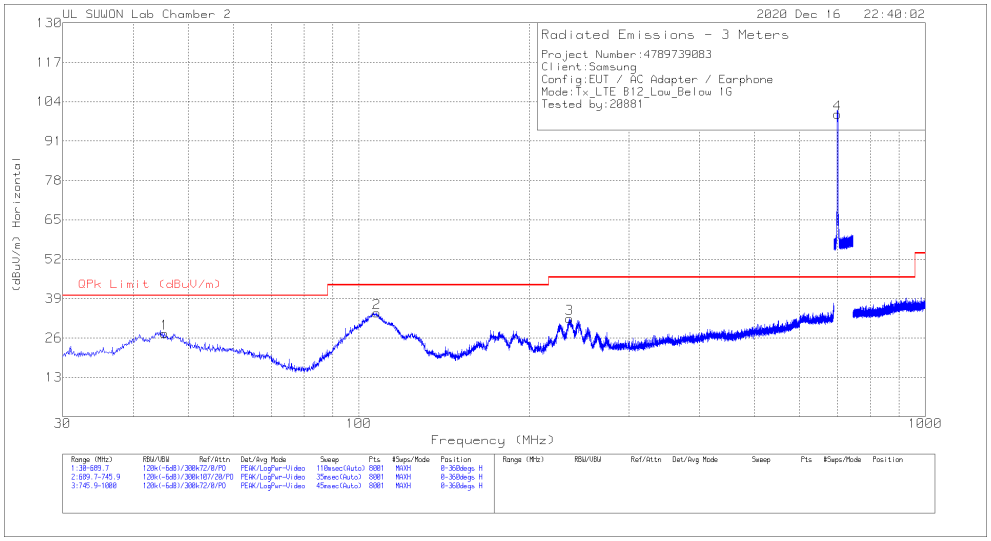
Pk - Peak detector

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

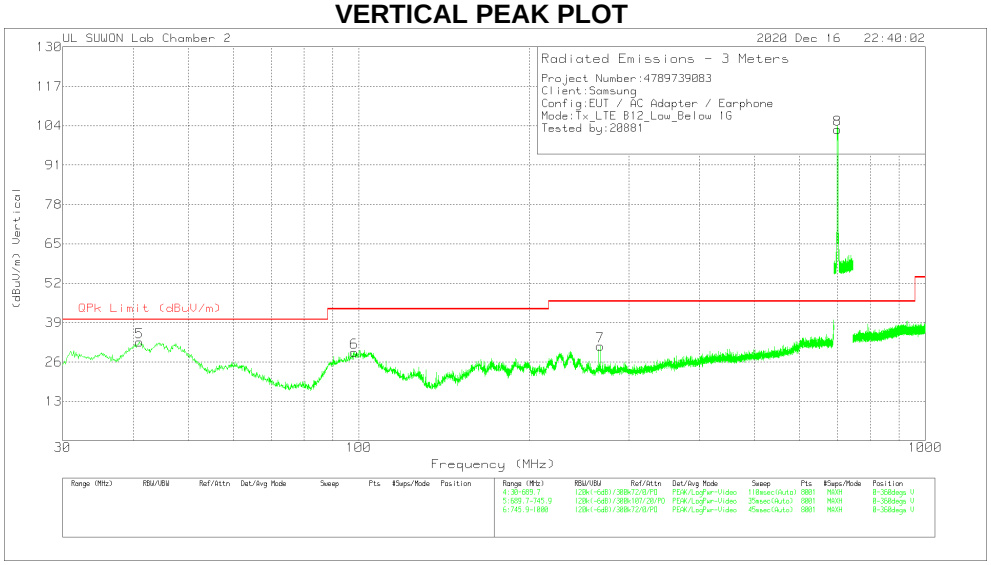
7.7. Below 1 GHz in the LTE Band 12

LOW CHANNEL(730.5 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

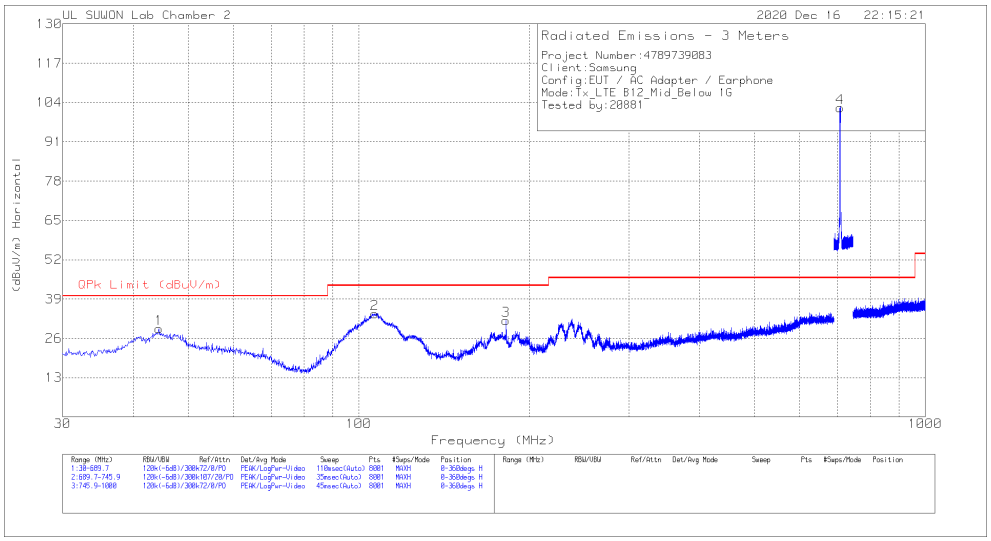
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G_Bypass [dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	45.4206	7.26	Pk	19.6	.7	27.56	40	-12.44	0-360	300	H
2	107.5152	15.69	Pk	17.3	1.3	34.29	43.52	-9.23	0-360	300	H
3	235.2504	12.9	Pk	17.9	1.7	32.5	46.02	-13.52	0-360	100	H
4	700.371	71.56	Pk	25.4	2.9	99.86	**46.02**	**53.84**	0-360	100	H
5	40.9676	12.84	Pk	18.9	.9	32.64	40	-7.36	0-360	100	V
6	98.1969	10.89	Pk	17.2	1.1	29.19	43.52	-14.33	0-360	100	V
7	266.6688	10.92	Pk	18.5	1.8	31.22	46.02	-14.8	0-360	100	V
8	700.652	74.31	Pk	25.4	3	102.71	**46.02**	**56.69**	0-360	100	V

Pk - Peak detector

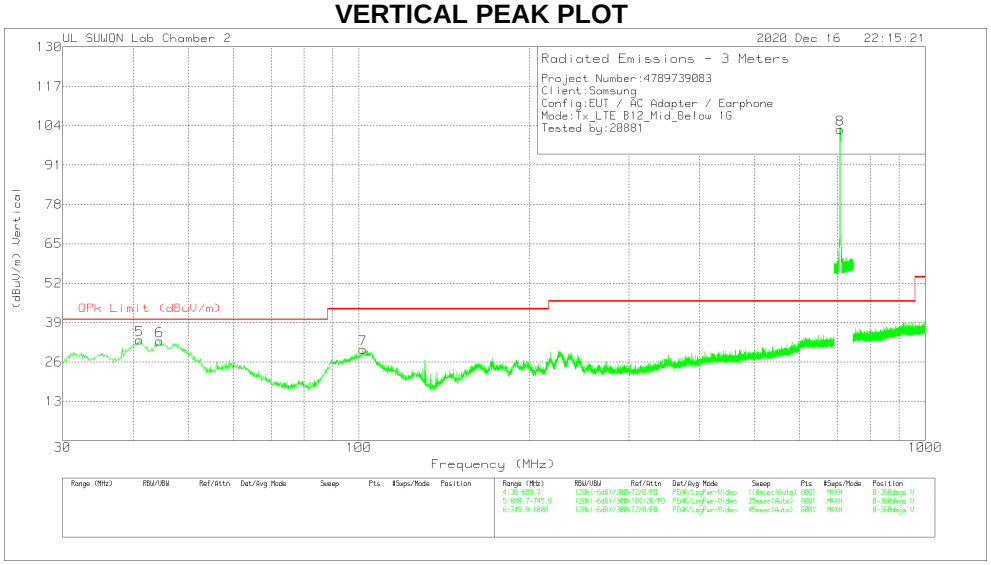
Note: Unwanted emissions captured from 699MHz to 716MHz and from 729MHz to 746MHz were the TX and RX signals generated from the call-simulator.

MID CHANNEL(737.5 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

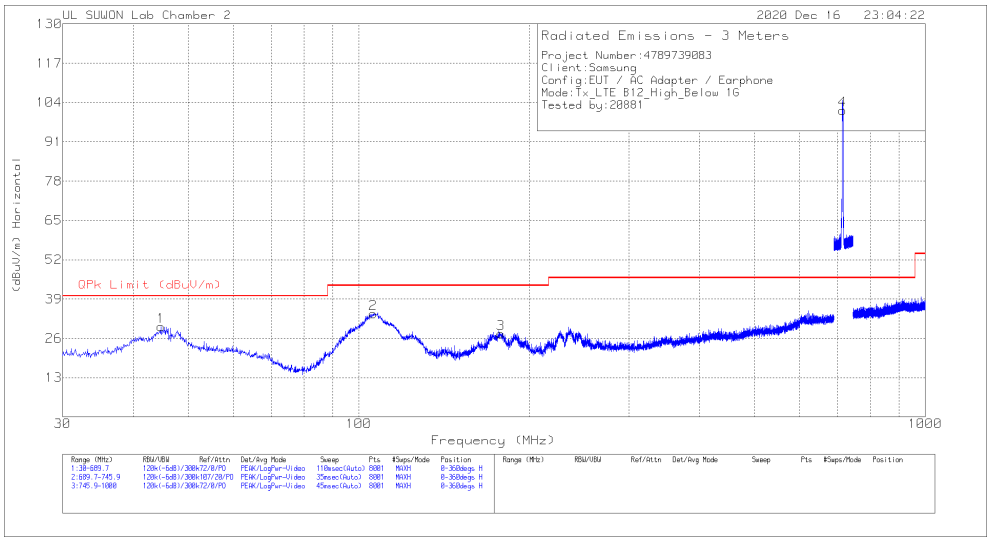
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G_Bypass [dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	44.3486	9.03	Pk	19.5	.7	29.23	40	-10.77	0-360	400	H
2	106.7731	15.53	Pk	17.4	1.2	34.13	43.52	-9.39	0-360	300	H
3	181.9793	14.98	Pk	15.5	1.5	31.98	43.52	-11.54	0-360	100	H
4	707.6419	73.69	Pk	25.6	3	102.29	**46.02**	**56.27**	0-360	100	H
5	40.9676	13.47	Pk	18.9	.9	33.27	40	-6.73	0-360	100	V
6	44.431	12.78	Pk	19.5	.7	32.98	40	-7.02	0-360	100	V
7	101.7428	11.52	Pk	17.5	1.2	30.22	43.52	-13.3	0-360	100	V
8	707.4733	74.23	Pk	25.5	3	102.73	**46.02**	**56.71**	0-360	100	V

Pk - Peak detector

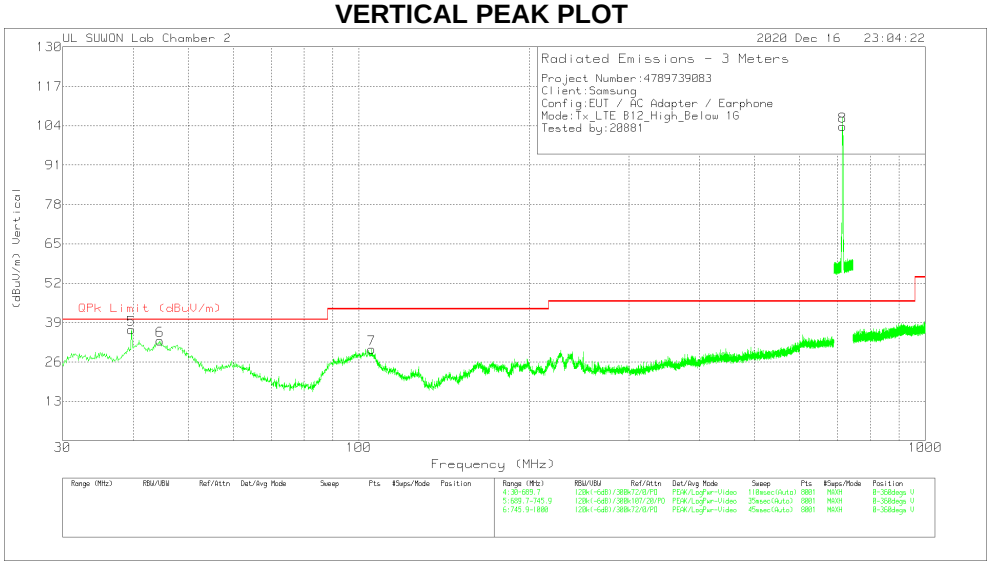
Note: Unwanted emissions captured from 699MHz to 716MHz and from 729MHz to 746MHz were the TX and RX signals generated from the call-simulator.

HIGH CHANNEL(744.5 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G_Bypass [dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	44.7609	9.64	Pk	19.6	.7	29.94	40	-10.06	0-360	200	H
2	106.1133	15.4	Pk	17.5	1.3	34.2	43.52	-9.32	0-360	300	H
3	178.2685	10.96	Pk	15.1	1.5	27.56	43.52	-15.96	0-360	200	H
4	714.5404	72.85	Pk	25.6	3	101.45	**46.02**	**55.43**	0-360	100	H
5	39.6482	17.44	Pk	18.5	.7	36.64	40	-3.36	0-360	100	V
6	44.596	12.53	Pk	19.6	.9	33.03	40	-6.97	0-360	100	V
7	105.4536	11.48	Pk	17.6	1.1	30.18	43.52	-13.34	0-360	100	V
8	714.6107	75.17	Pk	25.6	3	103.77	**46.02**	**57.75**	0-360	100	V

Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
39.6482	9.11	Qp	18.5	.7	28.31	40	-11.69	98	100	V

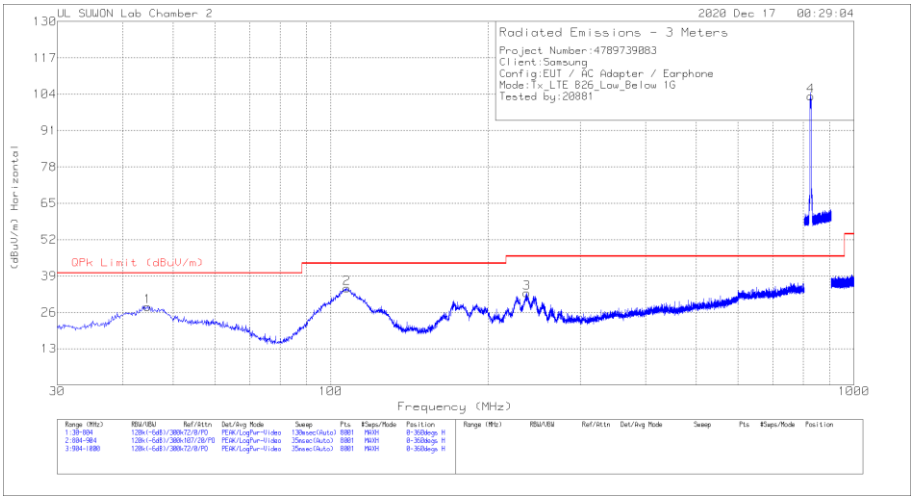
Qp - Quasi-Peak detector

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

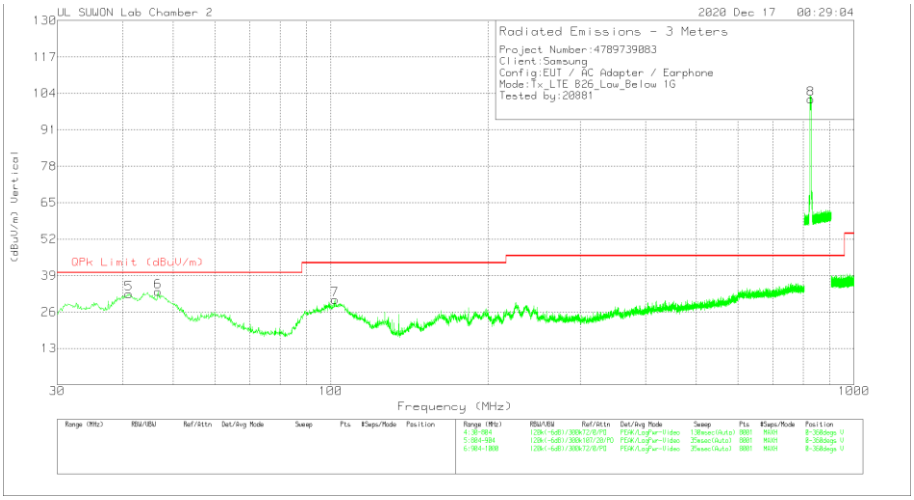
7.8. Below 1 GHz in the LTE Band 26

LOW CHANNEL(860.5 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

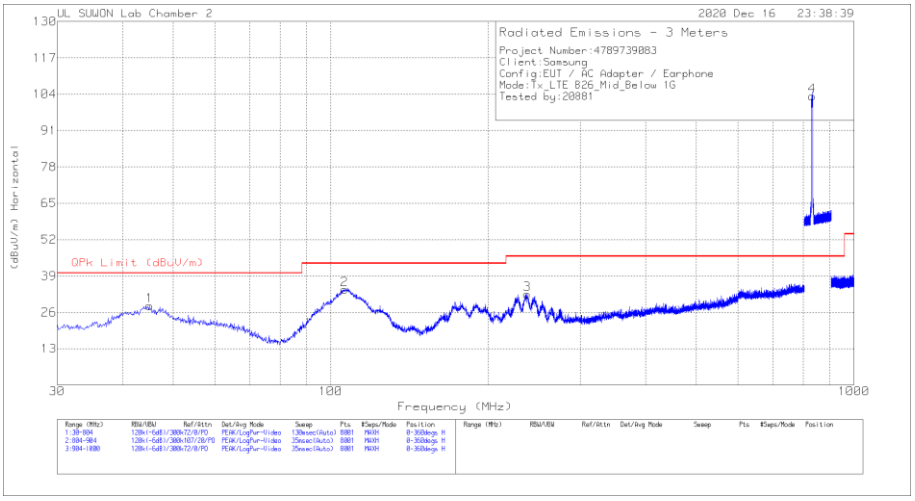
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G_Bypass [dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	44.6093	7.56	Pk	19.6	.9	28.06	40	-11.94	0-360	400	H
2	107.4	15.92	Pk	17.4	1.3	34.62	43.52	-8.9	0-360	300	H
3	237.045	13.33	Pk	18	1.6	32.93	46.02	-13.09	0-360	100	H
4	826.4625	73.4	Pk	26.7	3.2	103.3	**46.02**	**57.28**	0-360	100	H
5	41.1263	12.84	Pk	18.9	.7	32.44	40	-7.56	0-360	100	V
6	46.7378	12.66	Pk	19.8	.8	33.26	40	-6.74	0-360	200	V
7	101.982	11.81	Pk	17.5	1.1	30.41	43.52	-13.11	0-360	100	V
8	826.5625	71.96	Pk	26.7	3.3	101.96	**46.02**	**55.94**	0-360	200	V

Pk - Peak detector

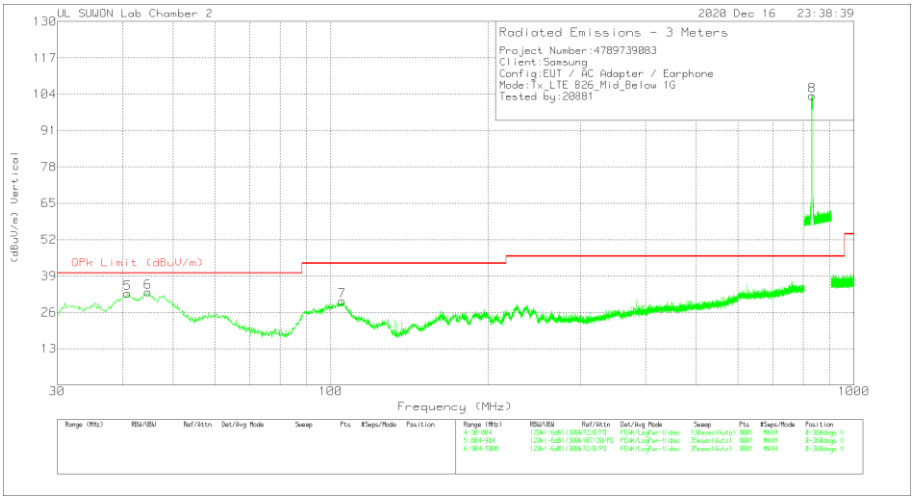
Note: Unwanted emissions captured from 814MHz to 849MHz and from 859MHz to 894MHz were the TX and RX signals generated from the call-simulator.

MID CHANNEL(876.5 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

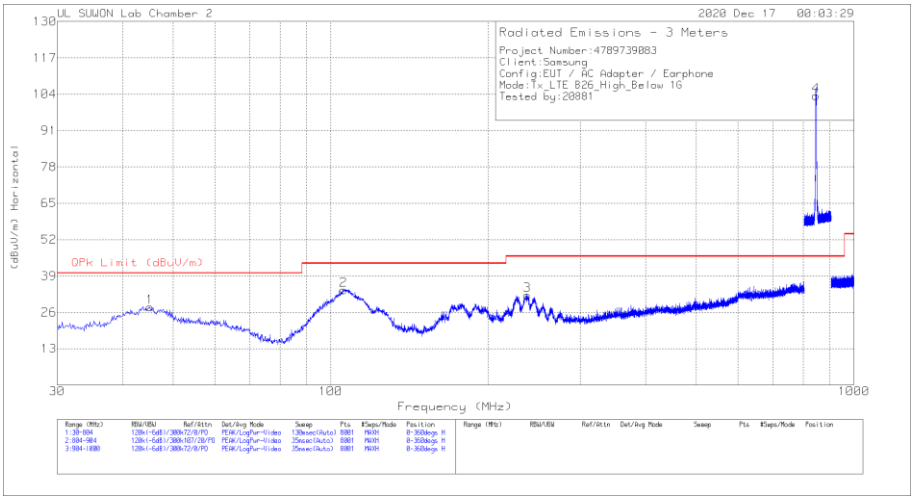
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G_Bypass [dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	44.9963	8.02	Pk	19.6	.7	28.32	40	-11.68	0-360	400	H
2	106.1423	15.46	Pk	17.5	1.2	34.16	43.52	-9.36	0-360	300	H
3	237.2385	12.77	Pk	18	1.6	32.37	46.02	-13.65	0-360	100	H
4	831.8375	73.27	Pk	26.8	3.2	103.27	**46.02**	**57.25**	0-360	200	H
5	40.9328	12.93	Pk	18.9	.9	32.73	40	-7.27	0-360	100	V
6	44.706	12.88	Pk	19.6	.8	33.28	40	-6.72	0-360	100	V
7	105.078	11.33	Pk	17.6	1.1	30.03	43.52	-13.49	0-360	100	V
8	831.6	73.41	Pk	26.8	3.3	103.51	**46.02**	**57.49**	0-360	200	V

Pk - Peak detector

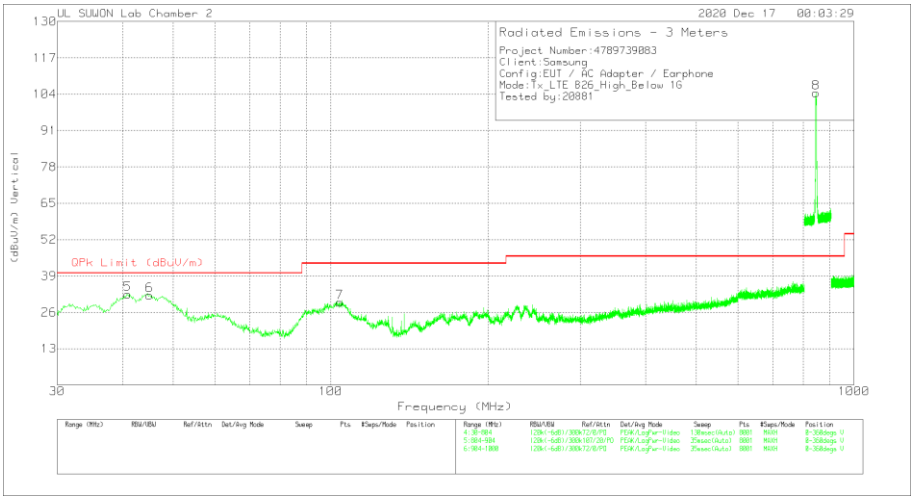
Note: Unwanted emissions captured from 814MHz to 849MHz and from 859MHz to 894MHz were the TX and RX signals generated from the call-simulator.

HIGH CHANNEL(892.5 MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G_Bypass [dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	45.093	7.44	Pk	19.6	.8	27.84	40	-12.16	0-360	400	H
2	105.852	15.4	Pk	17.5	1.1	34	43.52	-9.52	0-360	300	H
3	237.6255	12.26	Pk	18.1	1.7	32.06	46.02	-13.96	0-360	100	H
4	846.5375	72.96	Pk	27.2	3.3	103.46	**46.02**	**57.44**	0-360	100	H
5	40.9328	12.67	Pk	18.9	.9	32.47	40	-7.53	0-360	100	V
6	44.9963	11.8	Pk	19.6	.7	32.1	40	-7.9	0-360	100	V
7	104.0138	10.94	Pk	17.6	1	29.54	43.52	-13.98	0-360	100	V
8	846.65	73.98	Pk	27.2	3.3	104.48	**46.02**	**58.46**	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.

END OF TEST REPORT