CERTIFICATION TEST REPORT

Report Number. : 4789354096-E1V2

Applicant	:	SAMSUNG ELECTRONICS CO., LTD. 129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI, GYEONGGI-DO, 16677, KOREA
Model	:	SM-P615
FCC ID	:	A3LSMP615
EUT Description	:	GSM/WCDMA/LTE Tablet + BT/BLE, DTS/UNII a/b/g/n/ac and ANT+
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART B

Date Of Issue:
March 10, 2020

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	03/05/20	Initial issue	Sungeun Lee
V2	03/10/20	Updated to address TCB's question	Sungeun Lee

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

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

MODEL NUMBER: SM-P615

SERIAL NUMBER: R32N1003QNP(RADIATED);

DATE TESTED: FEB 21, 2020 – MAR 02, 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:

Sungeun Lee
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 http://www.iasonline.org/wp-content/uploads/2017/05/TL-637.pdf.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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
Conducted Disturbance, 0.15 to 30 MHz	2.35 dB
Radiated Disturbance, 30 MHz to 1 GHz	3.49 dB
Radiated Disturbance, 1 GHz to 18 GHz	5.82 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.

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The The EUT is a GSM/WCDMA/LTE Tablet + BT/BLE, DTS/UNII a/b/g/n/ac and ANT+.
This test report addresses the WWAN operational mode.

5.2. TEST MODE

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

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5.3. WORST-CASE ORIENTATION AND MODE

For GSM850 / WCDMA B5 / LTE Band 5, EUT was investigated in three orthogonal orientations X, Y and Z it was determined that Y orientation was worst-case orientation.

For LTE Band 12, EUT was investigated in three orthogonal orientations X, Y and Z it was determined that X 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 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.

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5.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	EP-TA50EWE	EP-DT725BWE	N/A
Data Cable	SAMSUNG	EP-DR140AWE	N/A	N/A
Earphone	SAMSUNG	EHS64AVFWE	N/A	N/A

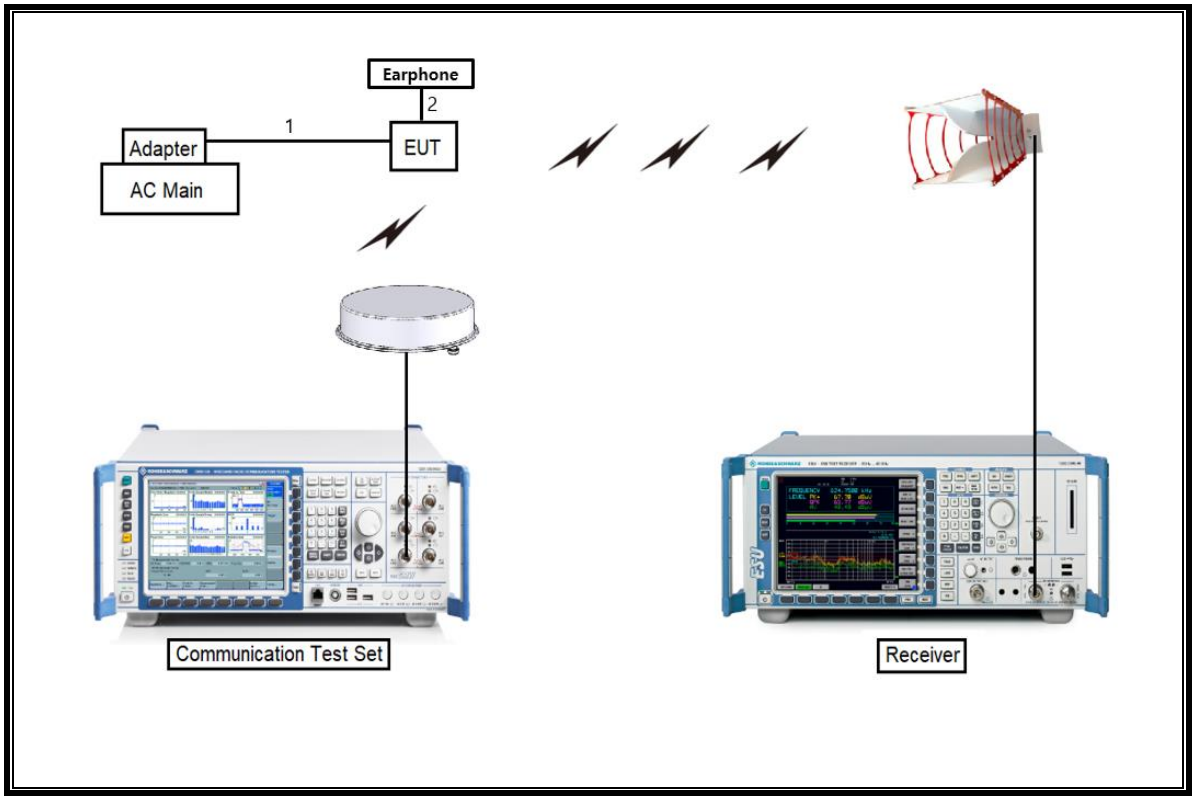
I/O CABLE

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	1.0m	N/A
2	Audio	2	Mini-Jack	Unshielded	1.2m	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, 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	08-05-20
Preamplifier, 1000 MHz	Sonoma	310N	341282	08-05-20
Preamplifier, 1000 MHz	Sonoma	310N	370599	08-05-20
Preamplifier, 1000 MHz	Sonoma	310N	351741	08-05-20
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1876511	08-06-20
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	08-06-20
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	08-06-20
EMI Test Receive, 40 GHz	R&S	ESU40	100439	08-06-20
EMI Test Receive, 40 GHz	R&S	ESU40	100457	08-06-20
EMI Test Receive, 44 GHz	R&S	ESW40	101590	08-05-20
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	08-05-20
High Pass Filter 1.2GHz	Micro-Tronics	HPM50108-02	G006	08-05-20
High Pass Filter 2.8GHz	Micro-Tronics	HPM50111-02	010	08-05-20
High Pass Filter 2.8GHz	Micro-Tronics	HPM50111-02	011	08-05-20
High Pass Filter 4GHz	Micro-Tronics	HPM50118-02	G001	08-05-20
High Pass Filter 4GHz	Micro-Tronics	HPM50118-02	G002	08-05-20
Attenuator	PASTERNACK	PE7087-10	A009	08-08-20
Attenuator	PASTERNACK	PE7087-10	A001	08-08-20
Attenuator	PASTERNACK	PE7087-10	A008	08-08-20
Attenuator	PASTERNACK	PE7087-10	2	08-08-20
Attenuator	PASTERNACK	PE7395-10	A011	08-08-20
UL Software				
Description	**Manufacturer**	**Model**	**Version**	
Radiated 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.	

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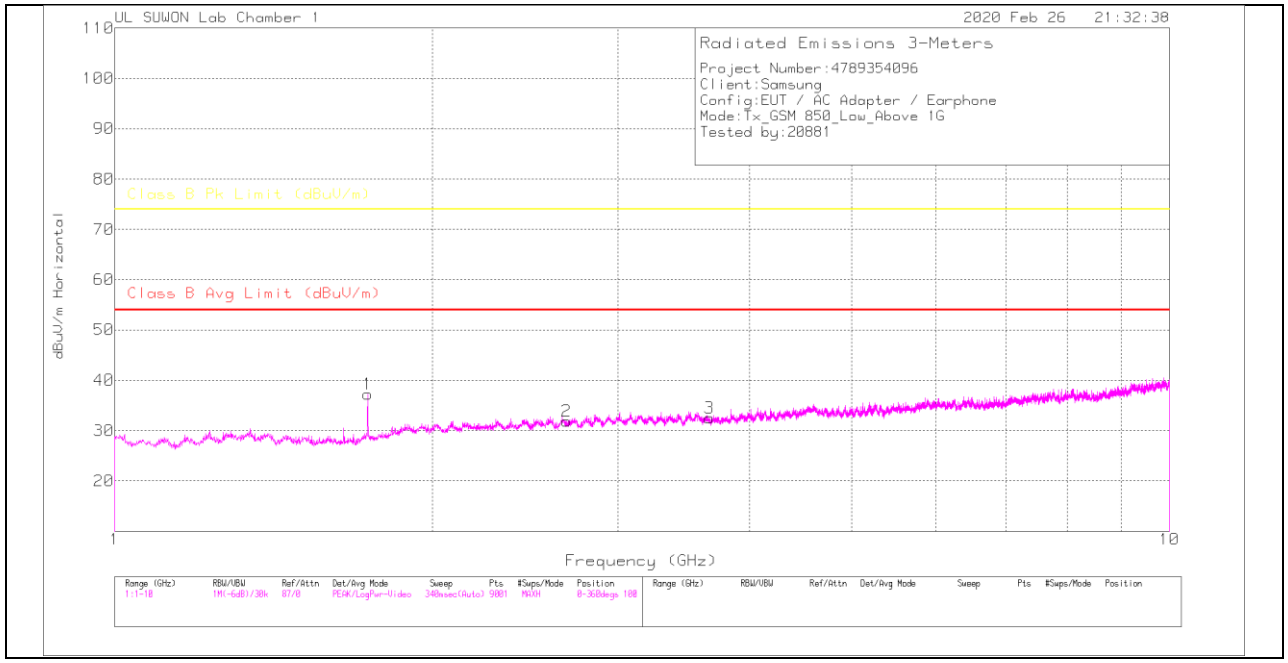
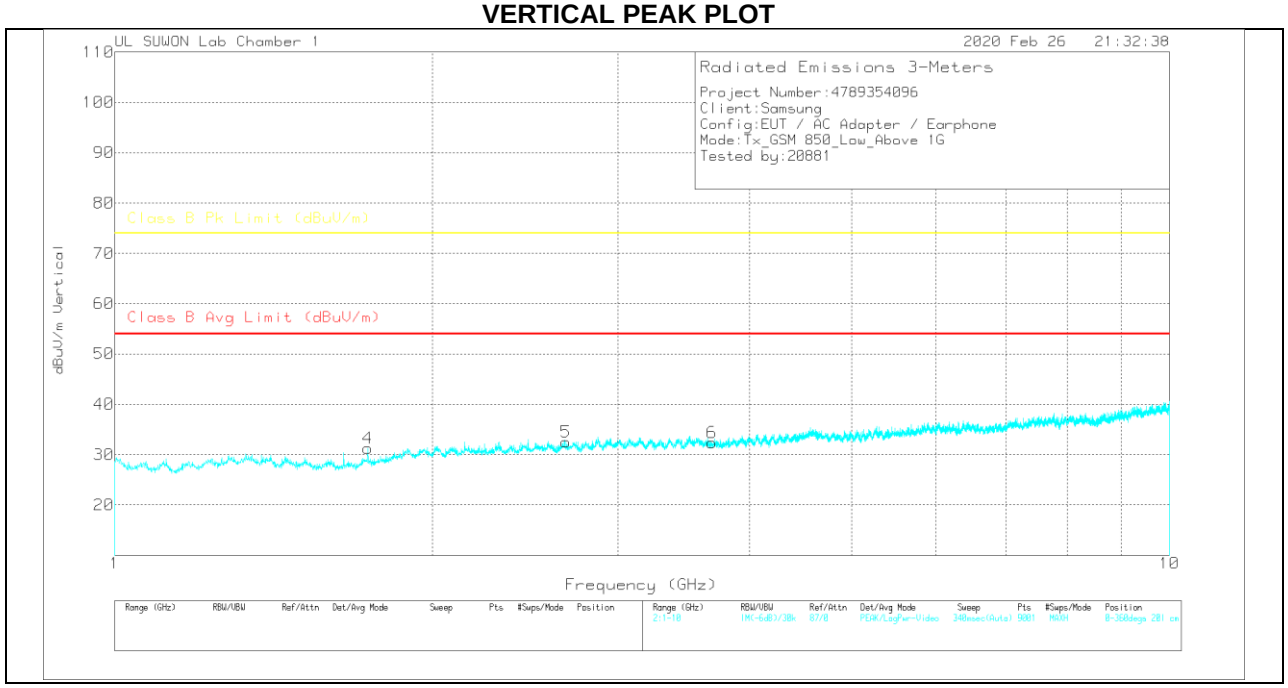
7.1. Above 1 GHz in the GSM850

LOW CHANNEL(869.2MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	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	1.737	43.58	PK	28.9	-36	.8	37.28	-	-	74	-36.72	0-360	100	H
2	2.68	33.32	PK	32.1	-34.3	.8	31.92	-	-	74	-42.08	0-360	100	H
3	3.662	32.14	PK	33.1	-33.3	.6	32.54	-	-	74	-41.46	0-360	100	H
4	1.738	37.57	PK	28.9	-36	.8	31.27	-	-	74	-42.73	0-360	201	V
5	2.679	33.93	PK	32.1	-34.3	.8	32.53	-	-	74	-41.47	0-360	201	V
6	3.681	31.88	PK	33.1	-33.1	.5	32.38	-	-	74	-41.62	0-360	201	V

PK – Peak Detector

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

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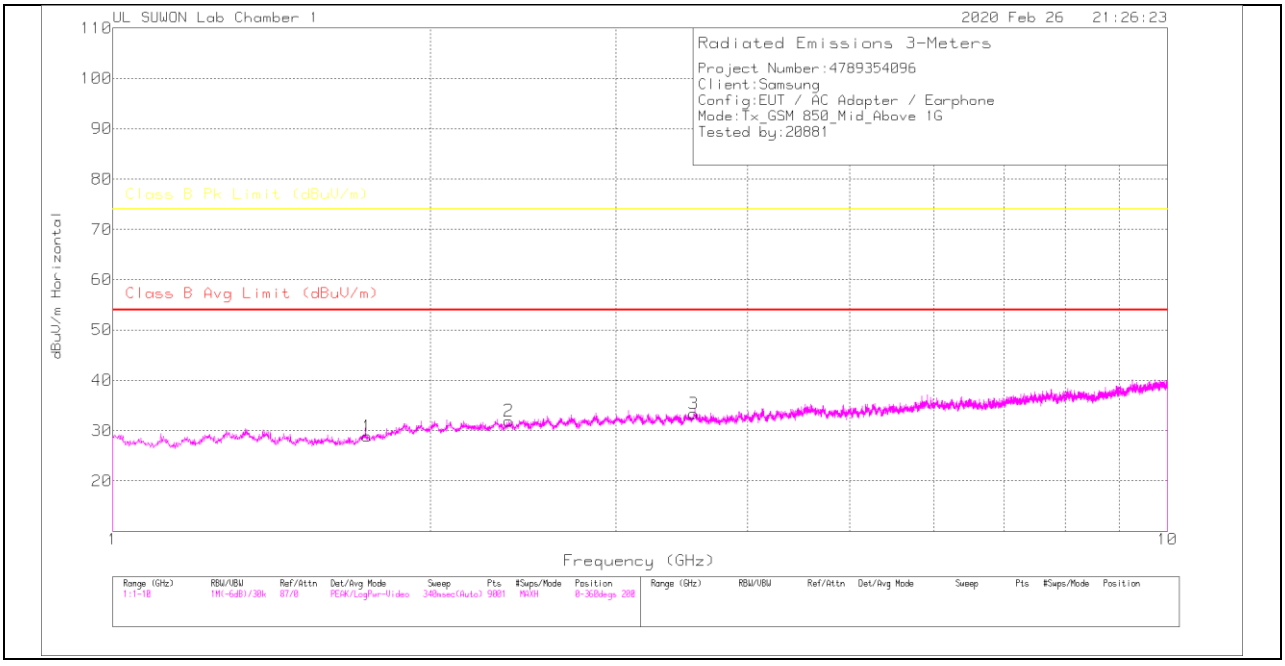
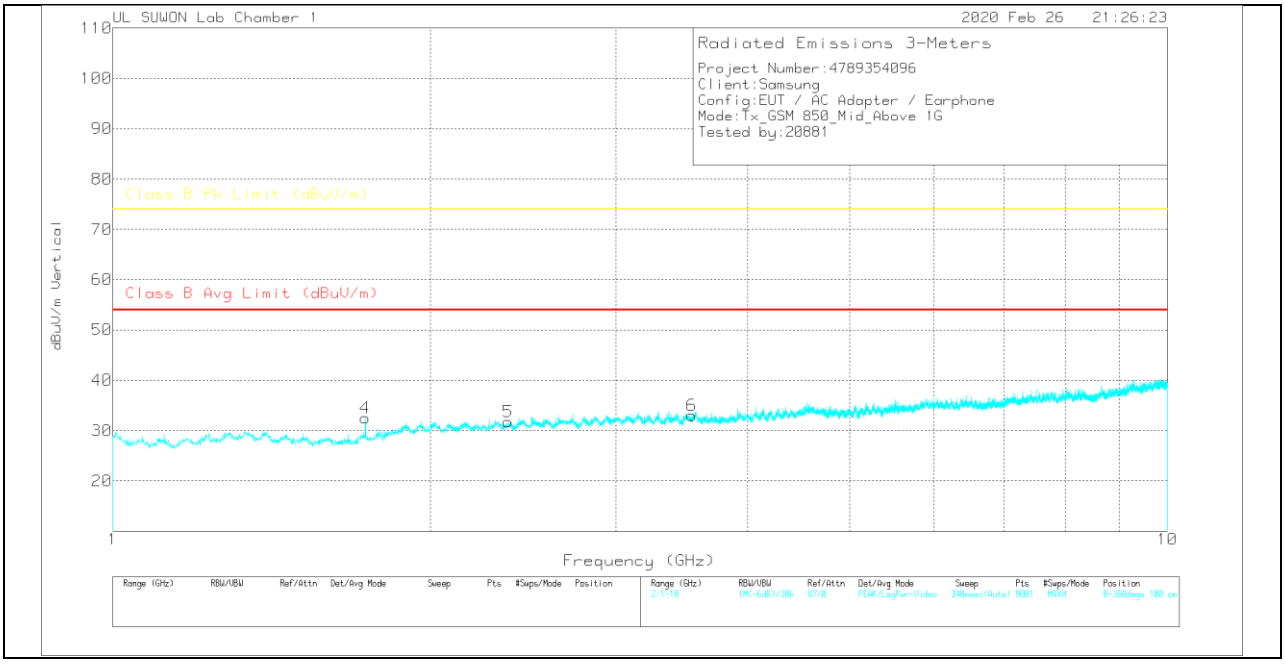
MID CHANNEL(881.6MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

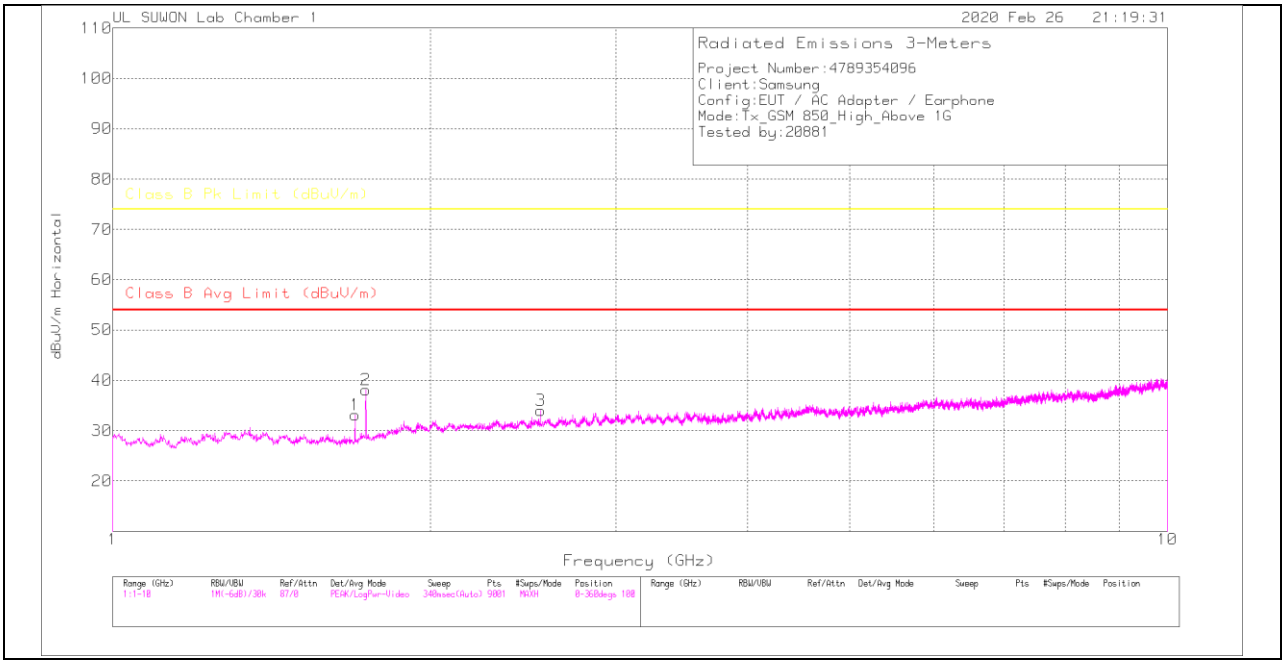
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	1-18GHz[dB]	1GHz_HPF	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.743	35.19	PK	28.9	-36	.8	28.89	-	-	74	-45.11	0-360	200	H
2	2.375	35.05	PK	31.6	-35	.3	31.95	-	-	74	-42.05	0-360	100	H
3	3.556	33.07	PK	33	-33.3	.6	33.37	-	-	74	-40.63	0-360	100	H
4	1.736	38.76	PK	28.9	-36	.8	32.46	-	-	74	-41.54	0-360	100	V
5	2.372	34.76	PK	31.6	-35	.4	31.76	-	-	74	-42.24	0-360	100	V
6	3.539	32.7	PK	33	-33.3	.6	33	-	-	74	-41	0-360	100	V

PK – Peak Detector

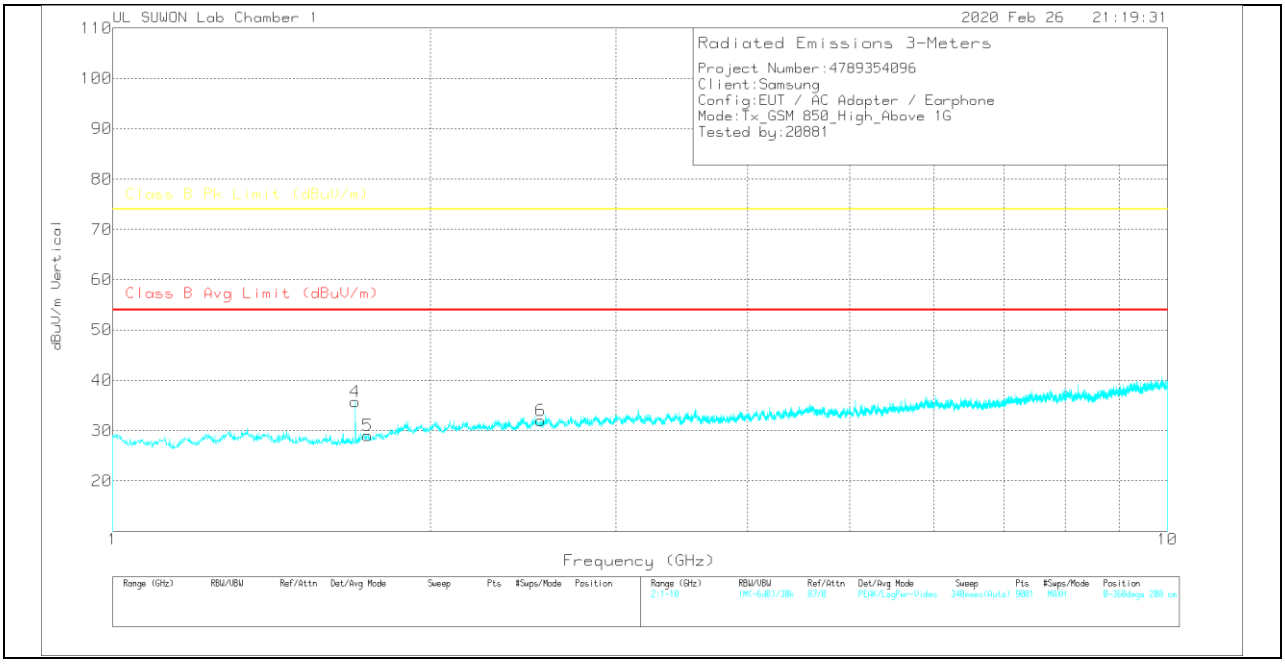
Note: Unwanted emissions on the harmonic frequency were generated from the call-simulator with the TX and RX signals.

HIGH CHANNEL(893.8MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	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	40	PK	28.6	-36.1	.6	33.1	-	-	74	-40.9	0-360	200	H
2	1.737	44.38	PK	28.9	-36	.8	38.08	-	-	74	-35.92	0-360	100	H
3	2.546	35.87	PK	32	-34.6	.7	33.97	-	-	74	-40.03	0-360	200	H
4	1.697	42.67	PK	28.6	-36.1	.6	35.77	-	-	74	-38.23	0-360	200	V
5	1.745	35.14	PK	29	-35.9	.8	29.04	-	-	74	-44.96	0-360	200	V
6	2.546	33.95	PK	32	-34.6	.7	32.05	-	-	74	-41.95	0-360	200	V

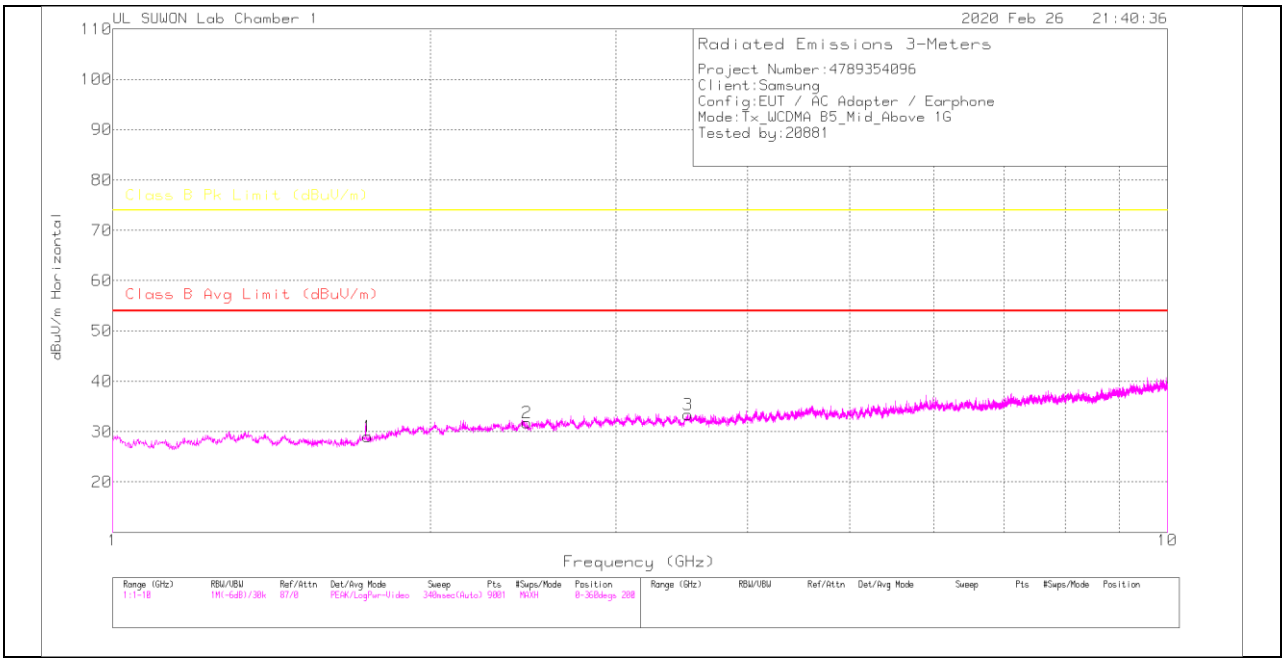
PK – Peak Detector

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

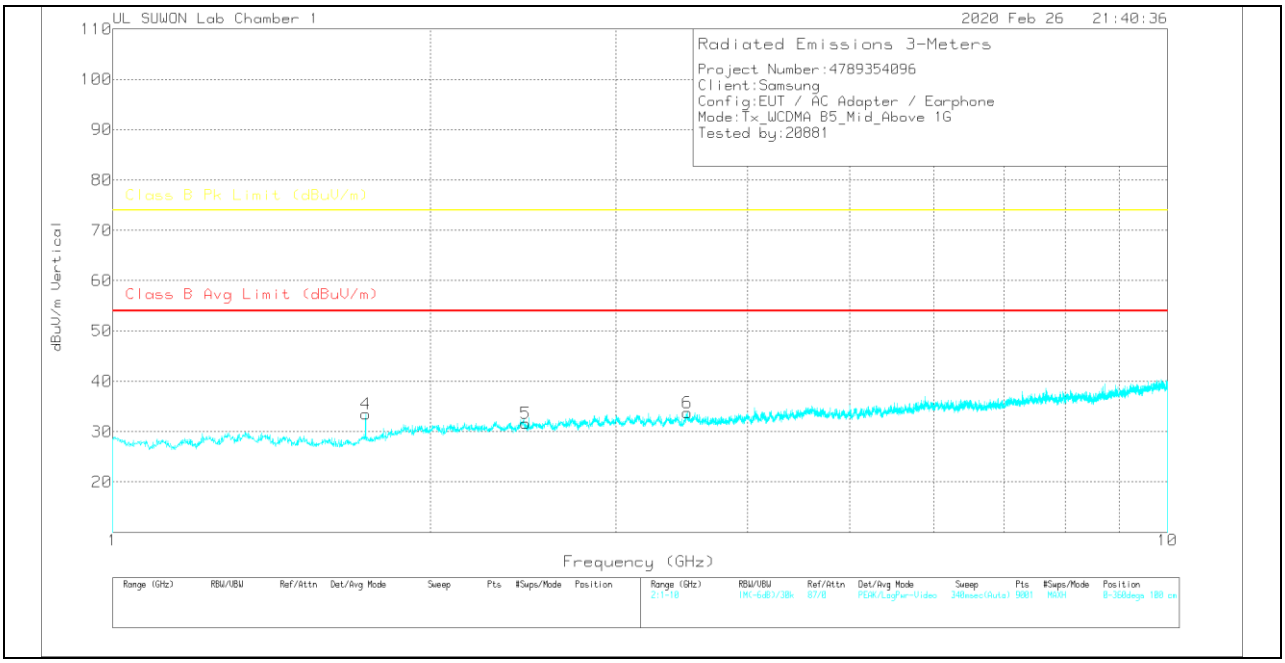
7.2. Above 1 GHz in the WCDMA Band 5

MID CHANNEL(881.6MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	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	1.744	35.23	PK	29	-36	.8	29.03	-	-	74	-44.97	0-360	100	H
2	2.471	33.79	PK	31.9	-34.6	.7	31.79	-	-	74	-42.21	0-360	100	H
3	3.511	33.04	PK	32.9	-33.1	.6	33.44	-	-	74	-40.56	0-360	200	H
4	1.737	39.84	PK	28.9	-36	.8	33.54	-	-	74	-40.46	0-360	100	V
5	2.464	33.63	PK	31.9	-34.7	.8	31.63	-	-	74	-42.37	0-360	200	V
6	3.505	33.44	PK	32.8	-33.1	.6	33.74	-	-	74	-40.26	0-360	200	V

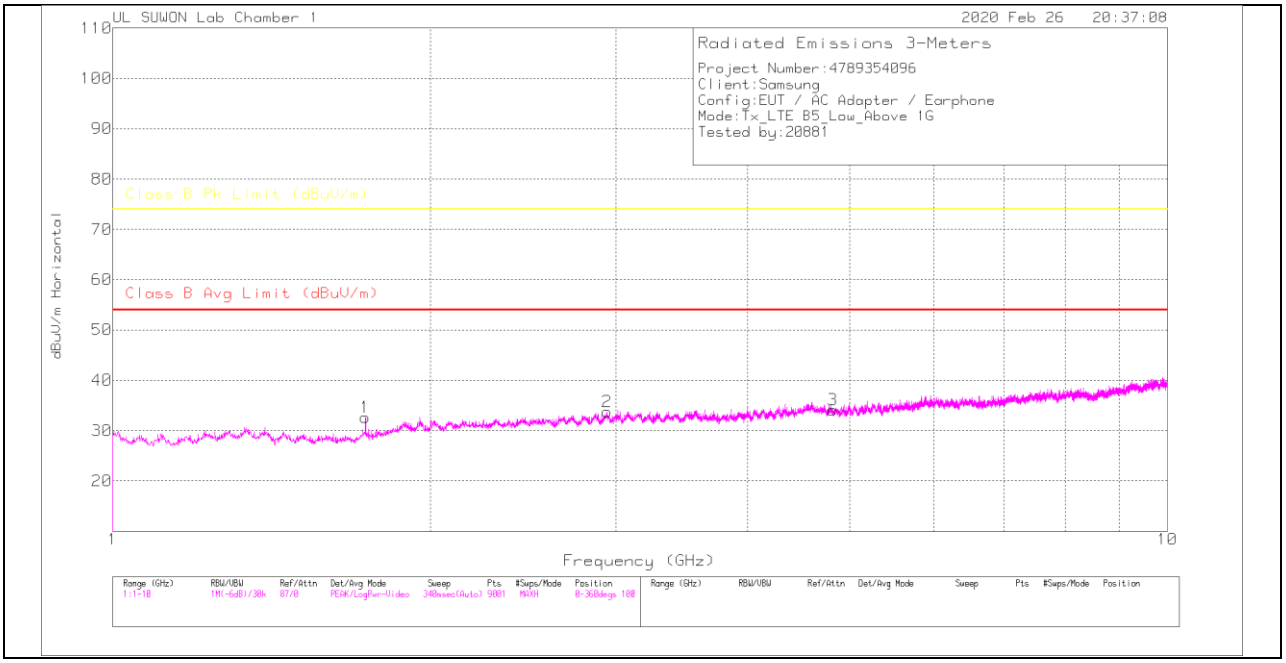
PK – Peak Detector

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

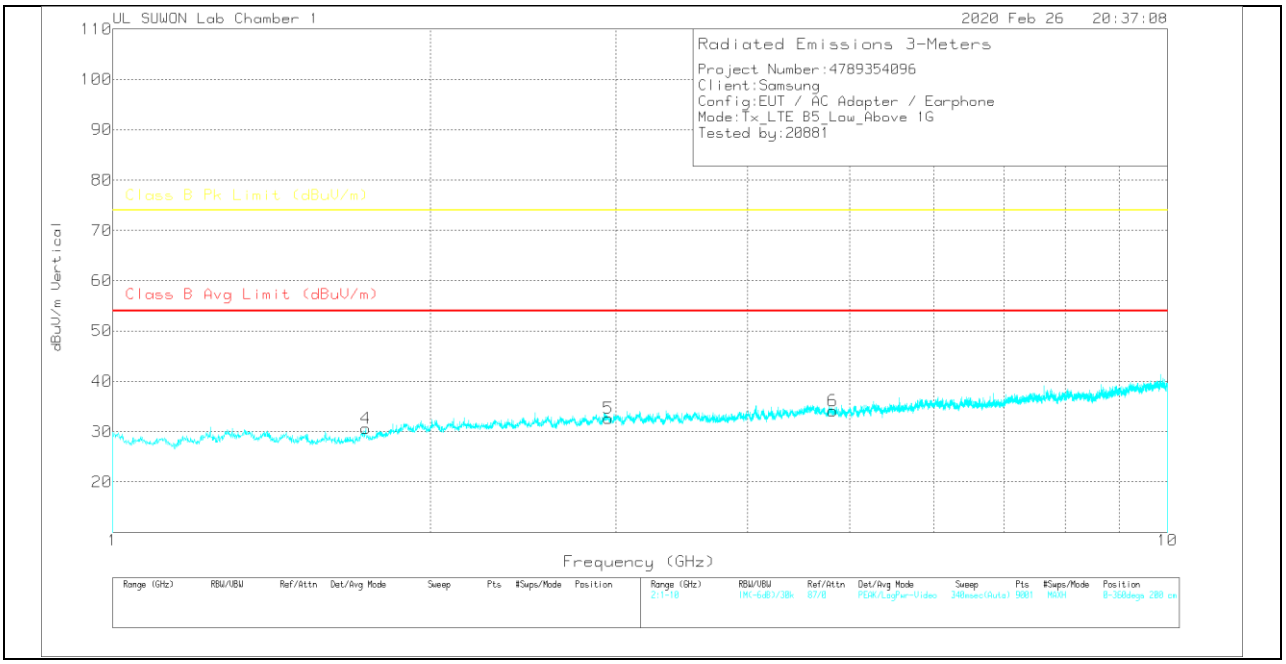
7.3. Above 1 GHz in the LTE Band 5

LOW CHANNEL(870.5MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

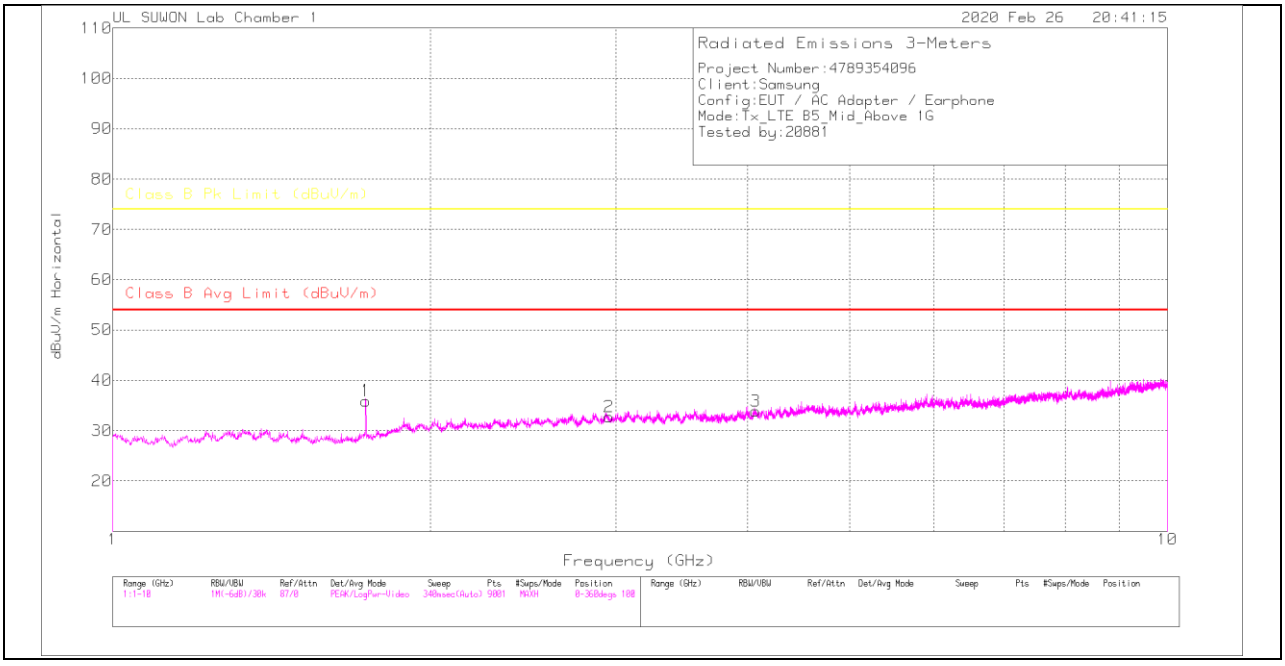
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	1-18GHz[dB]	1GHz_HPF	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.736	38.9	PK	28.9	-36	.8	32.6	-	-	74	-41.4	0-360	200	H
2	2.943	34.68	PK	32.4	-33.9	.6	33.78	-	-	74	-40.22	0-360	100	H
3	4.819	31.41	PK	34.2	-31.9	.4	34.11	-	-	74	-39.89	0-360	200	H
4	1.737	37	PK	28.9	-36	.8	30.7	-	-	74	-43.3	0-360	200	V
5	2.952	33.61	PK	32.4	-34	.6	32.61	-	-	74	-41.39	0-360	200	V
6	4.814	31.49	PK	34.2	-31.9	.4	34.19	-	-	74	-39.81	0-360	100	V

PK – Peak Detector

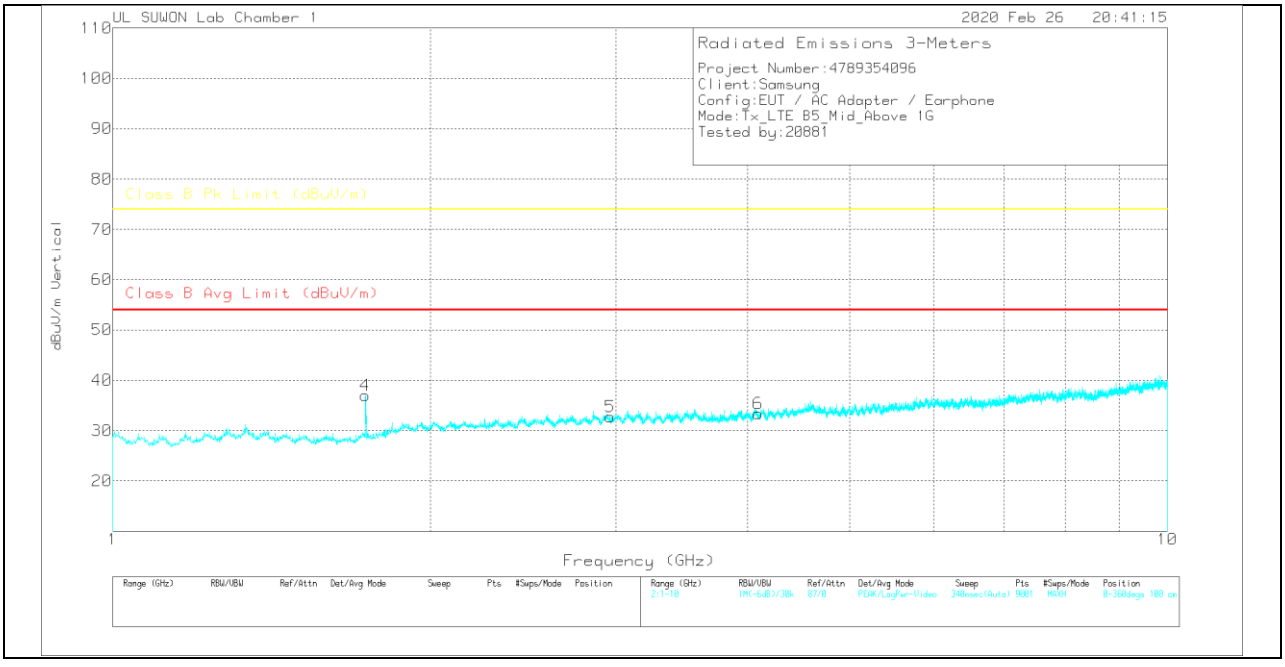
Note: Unwanted emissions on the harmonic frequency were generated from the call-simulator with the TX and RX signals.

MID CHANNEL(881.5MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

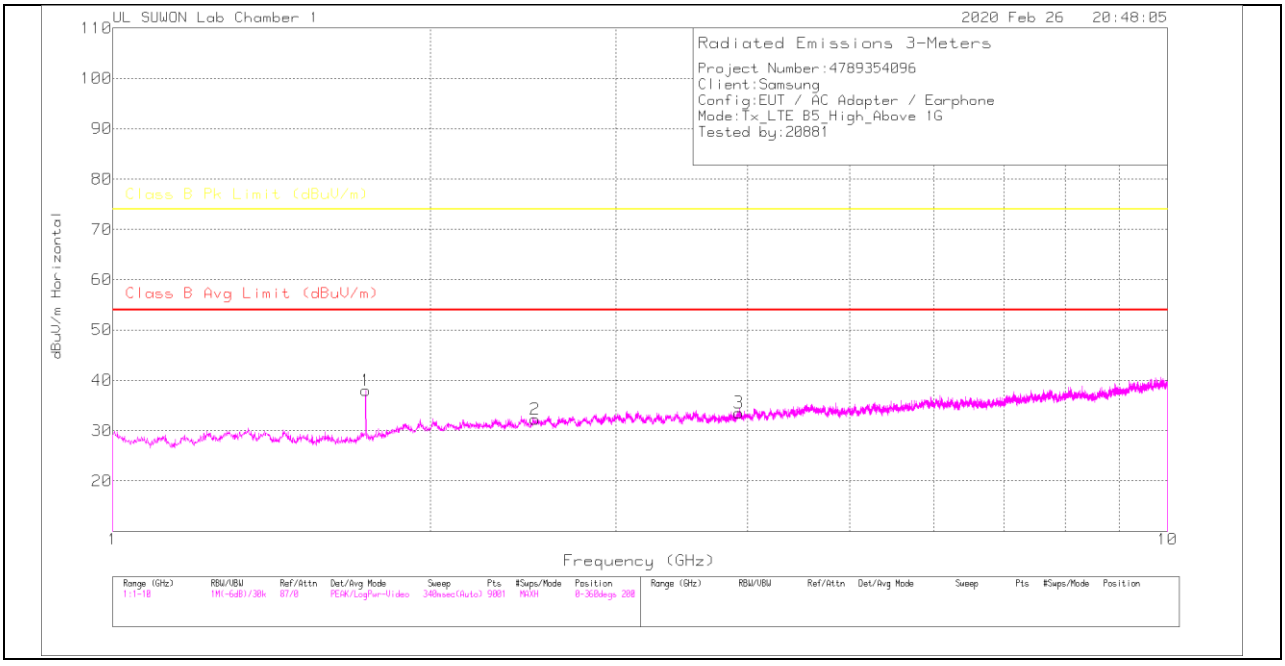
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	1-18GHz[dB]	1GHz_HPF	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.738	42.24	PK	28.9	-36	.8	35.94	-	-	74	-38.06	0-360	100	H
2	2.953	33.8	PK	32.4	-34	.6	32.8	-	-	74	-41.2	0-360	200	H
3	4.07	32.33	PK	33.6	-32.4	.4	33.93	-	-	74	-40.07	0-360	100	H
4	1.736	43.29	PK	28.9	-36	.8	36.99	-	-	74	-37.01	0-360	100	V
5	2.962	33.6	PK	32.4	-33.9	.7	32.8	-	-	74	-41.2	0-360	200	V
6	4.093	31.89	PK	33.6	-32.5	.4	33.39	-	-	74	-40.61	0-360	200	V

PK – Peak Detector

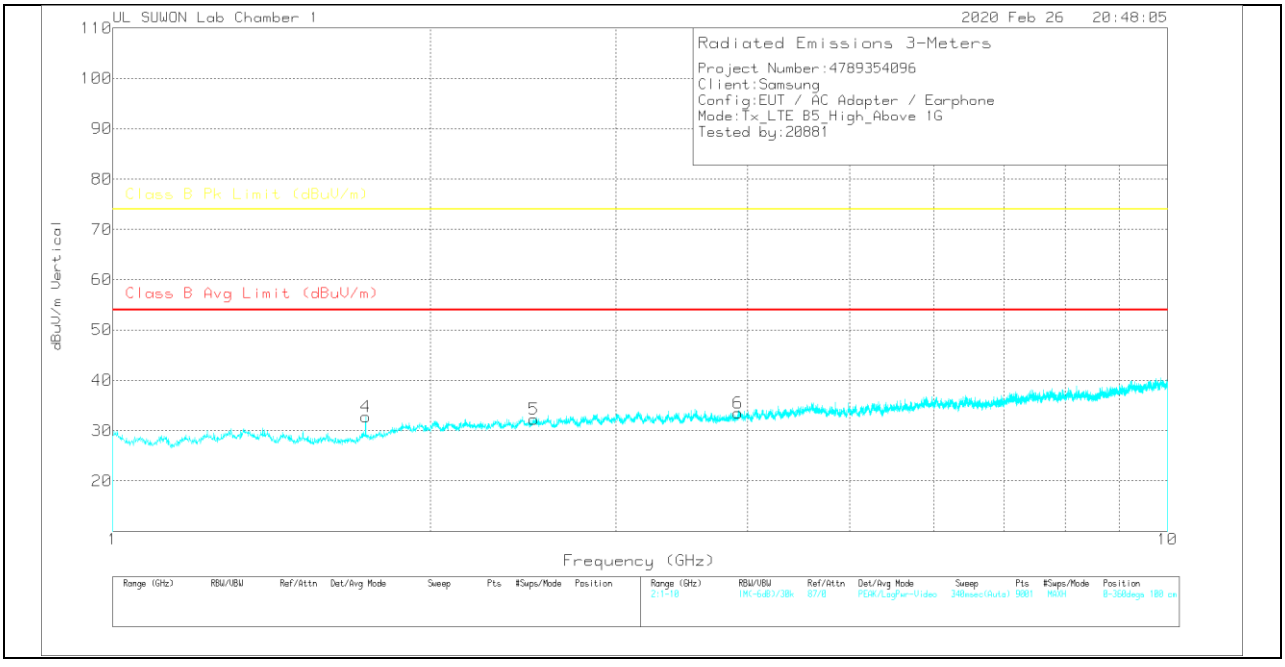
Note: Unwanted emissions on the harmonic frequency were generated from the call-simulator with the TX and RX signals.

HIGH CHANNEL(892.5MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	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	1.737	44.29	PK	28.9	-36	.8	37.99	-	-	74	-36.01	0-360	100	H
2	2.516	34.38	PK	32	-34.6	.5	32.28	-	-	74	-41.72	0-360	200	H
3	3.92	32.27	PK	33.5	-32.7	.5	33.57	-	-	74	-40.43	0-360	100	H
4	1.737	39.09	PK	28.9	-36	.8	32.79	-	-	74	-41.21	0-360	100	V
5	2.506	34.41	PK	32	-34.7	.5	32.21	-	-	74	-41.79	0-360	200	V
6	3.916	32.23	PK	33.5	-32.7	.5	33.53	-	-	74	-40.47	0-360	200	V

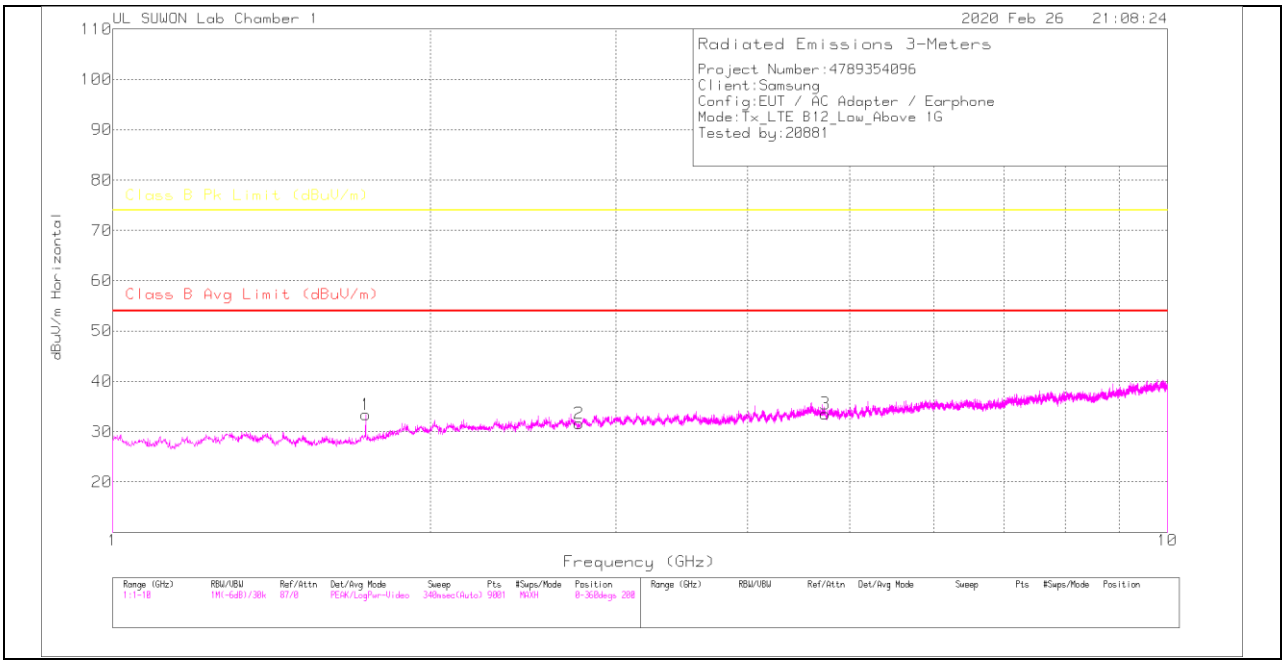
PK – Peak Detector

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

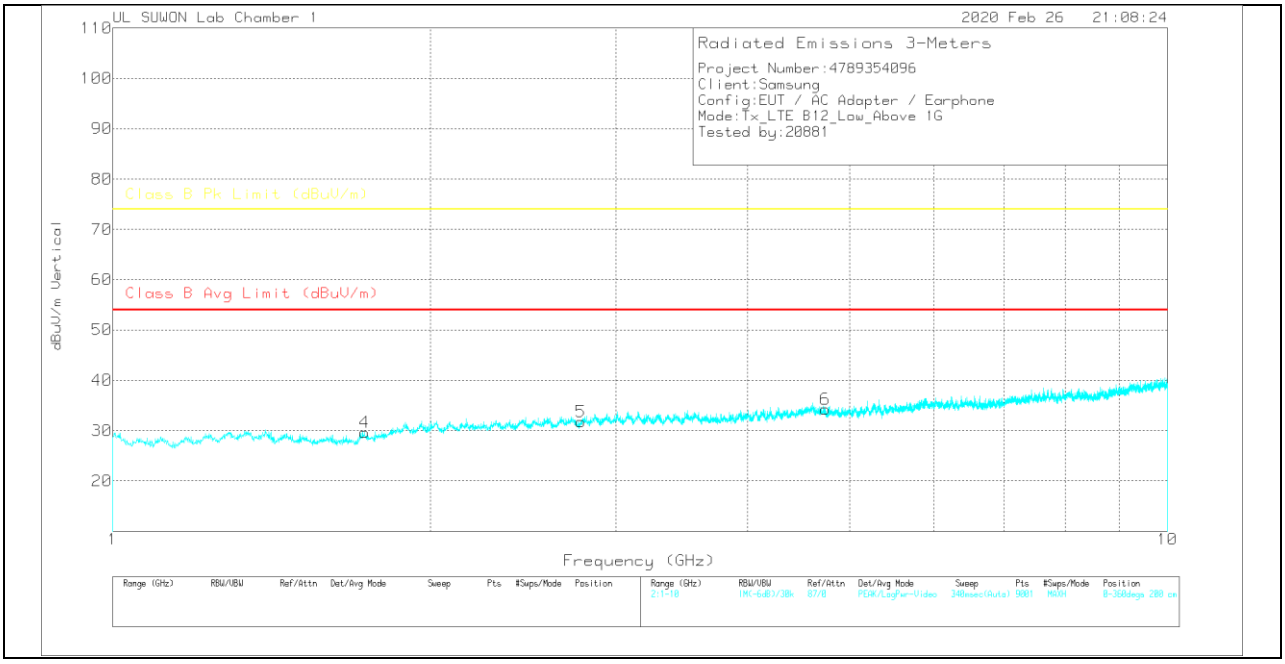
7.4. Above 1 GHz in the LTE Band 12

LOW CHANNEL(870.5MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

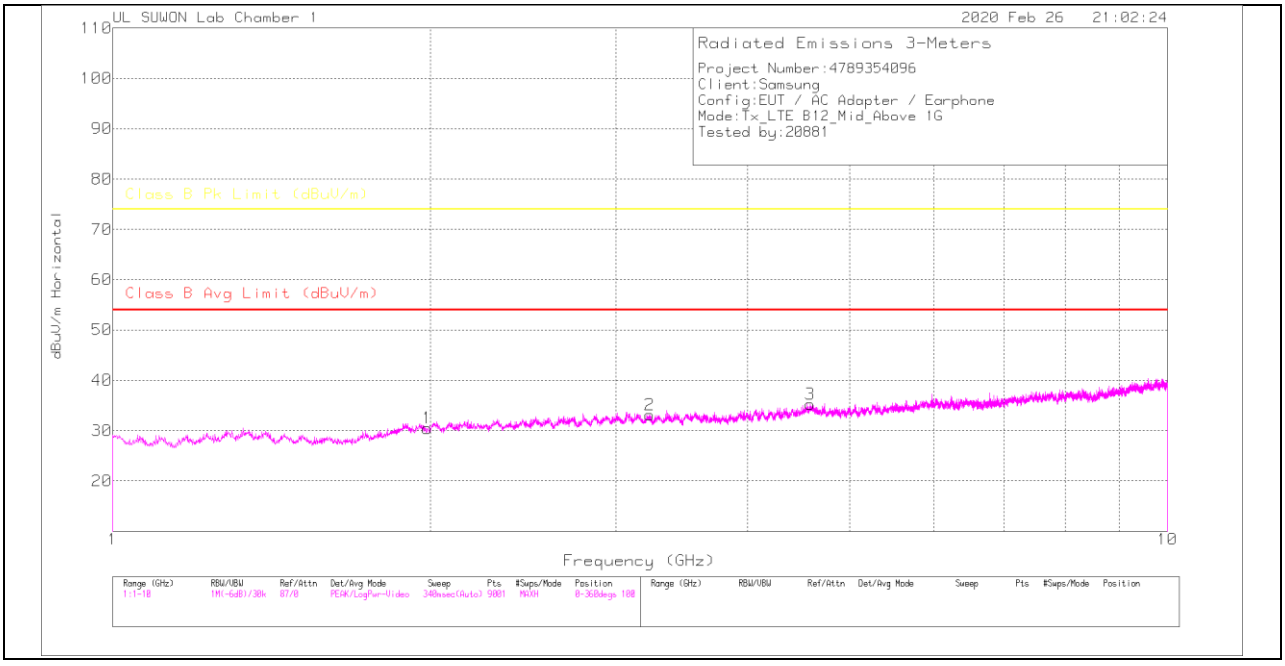
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	1-18GHz[dB]	1GHz_HPF	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.737	39.65	PK	28.9	-36	.8	33.35	-	-	74	-40.65	0-360	100	H
2	2.766	33.11	PK	32.2	-34.1	.4	31.61	-	-	74	-42.39	0-360	100	H
3	4.74	30.97	PK	34.2	-32	.4	33.57	-	-	74	-40.43	0-360	100	H
4	1.733	35.9	PK	28.9	-36	.8	29.6	-	-	74	-44.4	0-360	100	V
5	2.777	33.14	PK	32.2	-34	.4	31.74	-	-	74	-42.26	0-360	200	V
6	4.737	31.61	PK	34.2	-32	.4	34.21	-	-	74	-39.79	0-360	100	V

PK – Peak Detector

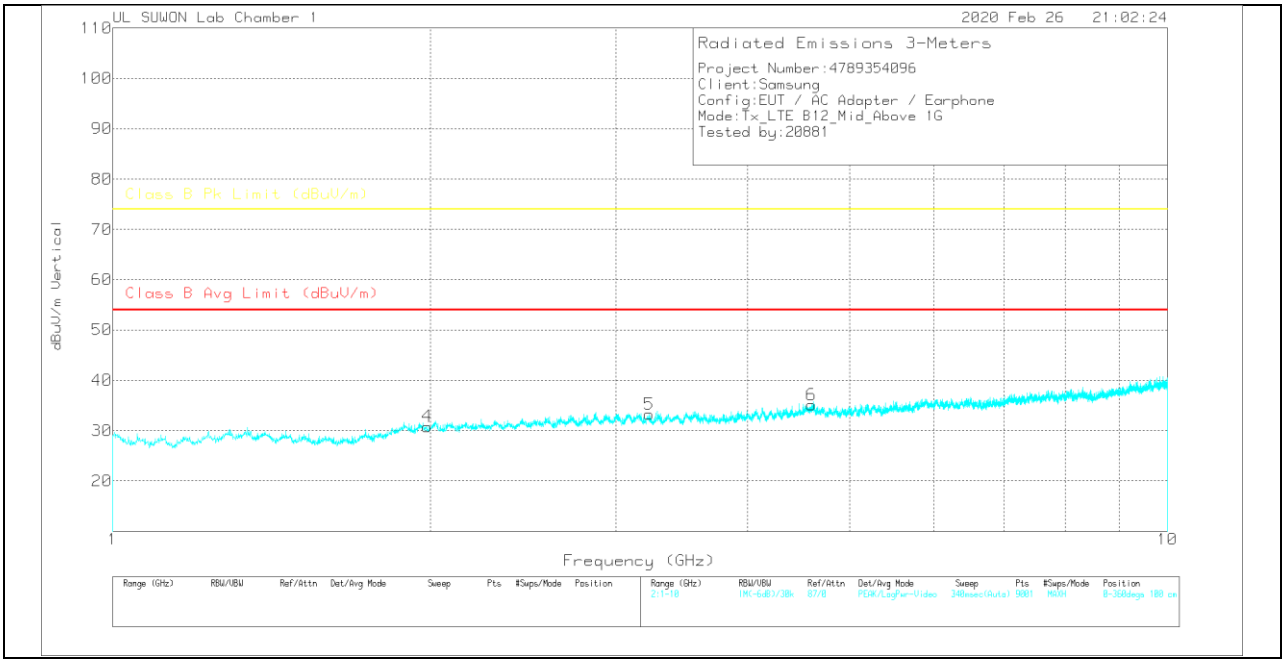
Note: Unwanted emissions on the harmonic frequency were generated from the call-simulator with the TX and RX signals.

MID CHANNEL(881.5MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

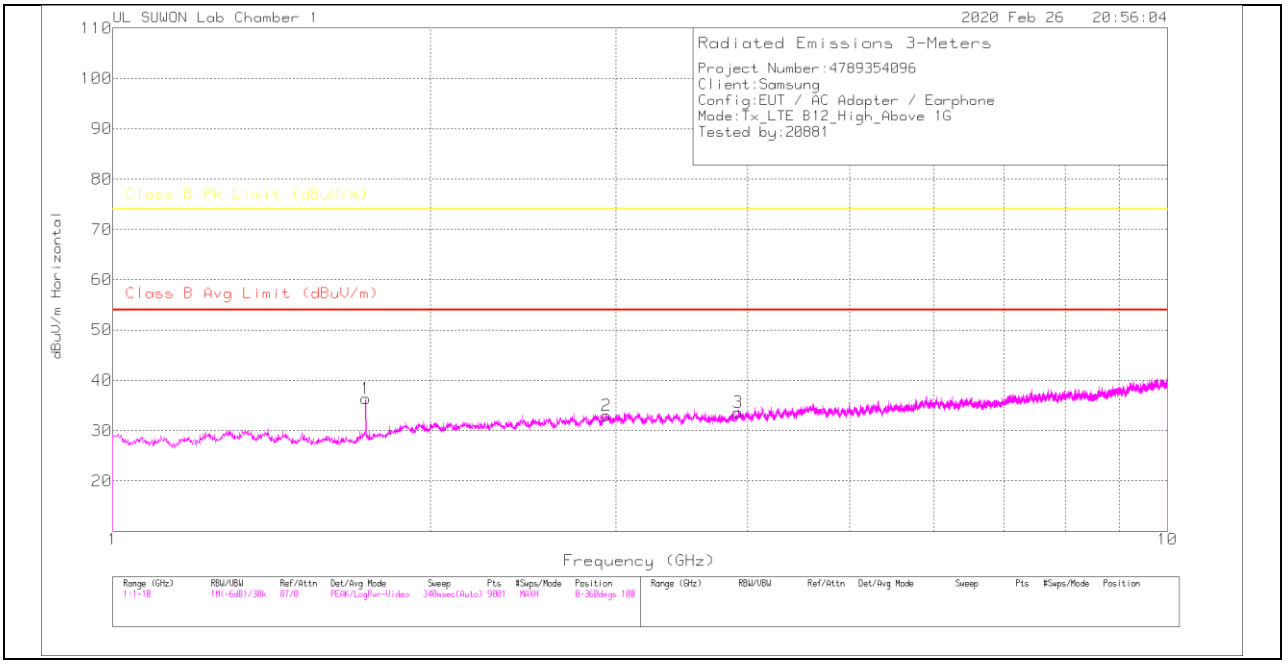
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	1-18GHz[dB]	1GHz_HPF	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.987	34.26	PK	31.2	-35.5	.5	30.46	-	-	74	-43.54	0-360	100	H
2	3.231	33.5	PK	32.7	-33.7	.6	33.1	-	-	74	-40.9	0-360	100	H
3	4.584	32.61	PK	34.2	-31.9	.4	35.31	-	-	74	-38.69	0-360	100	H
4	1.987	34.63	PK	31.2	-35.5	.5	30.83	-	-	74	-43.17	0-360	100	V
5	3.225	33.73	PK	32.7	-33.8	.6	33.23	-	-	74	-40.77	0-360	200	V
6	4.594	32.43	PK	34.2	-31.9	.4	35.13	-	-	74	-38.87	0-360	100	V

PK – Peak Detector

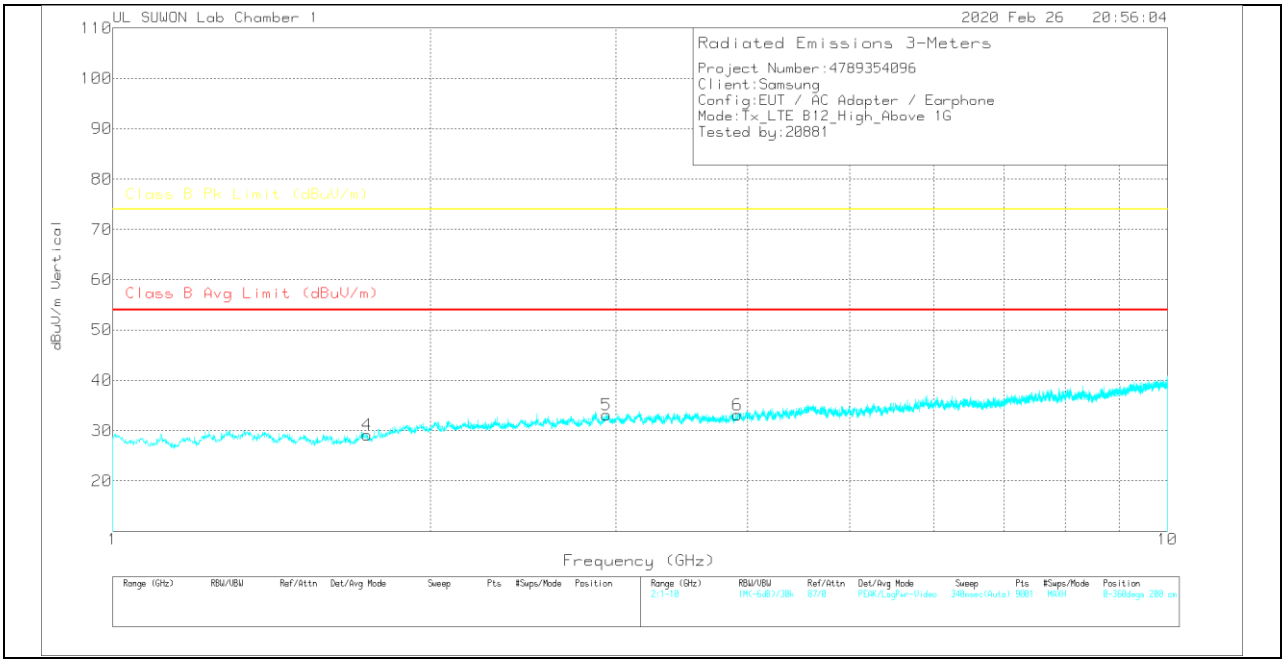
Note: Unwanted emissions on the harmonic frequency were generated from the call-simulator with the TX and RX signals.

HIGH CHANNEL(892.5MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	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	1.737	42.73	PK	28.9	-36	.8	36.43	-	-	74	-37.57	0-360	100	H
2	2.94	33.77	PK	32.4	-33.8	.6	32.97	-	-	74	-41.03	0-360	100	H
3	3.916	32.33	PK	33.5	-32.7	.5	33.63	-	-	74	-40.37	0-360	200	H
4	1.742	35.46	PK	28.9	-36	.8	29.16	-	-	74	-44.84	0-360	200	V
5	2.938	34.09	PK	32.4	-33.9	.6	33.19	-	-	74	-40.81	0-360	100	V
6	3.912	31.79	PK	33.5	-32.7	.5	33.09	-	-	74	-40.91	0-360	100	V

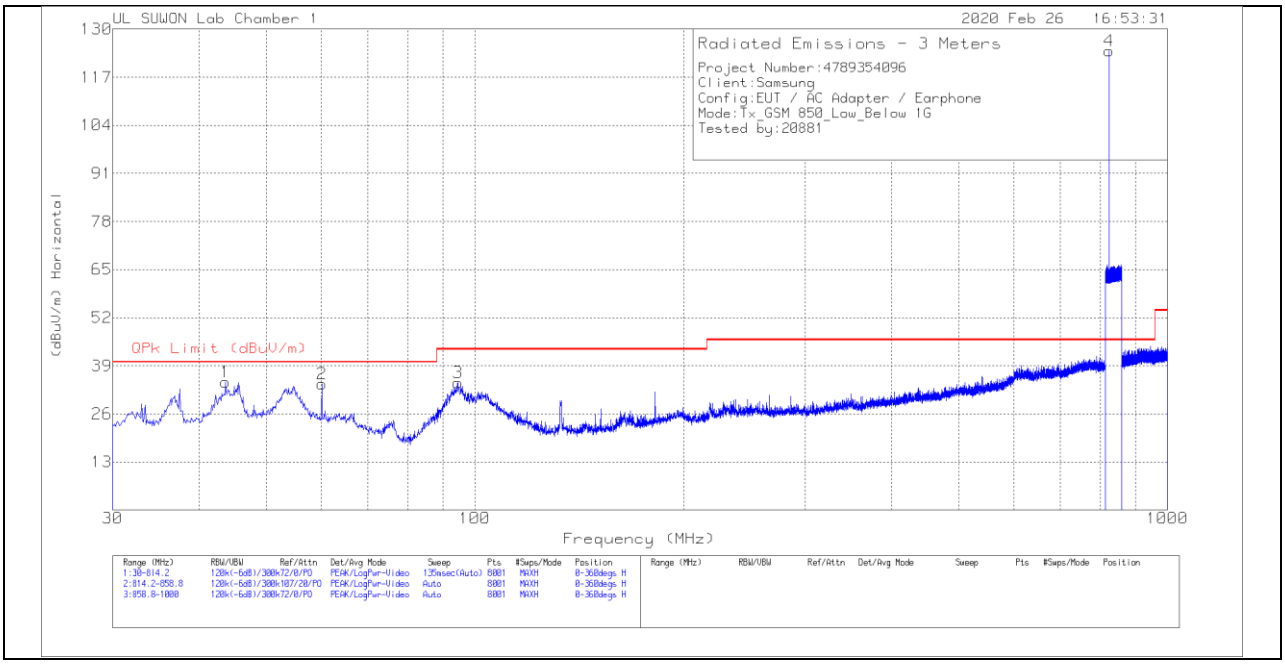
PK – Peak Detector

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

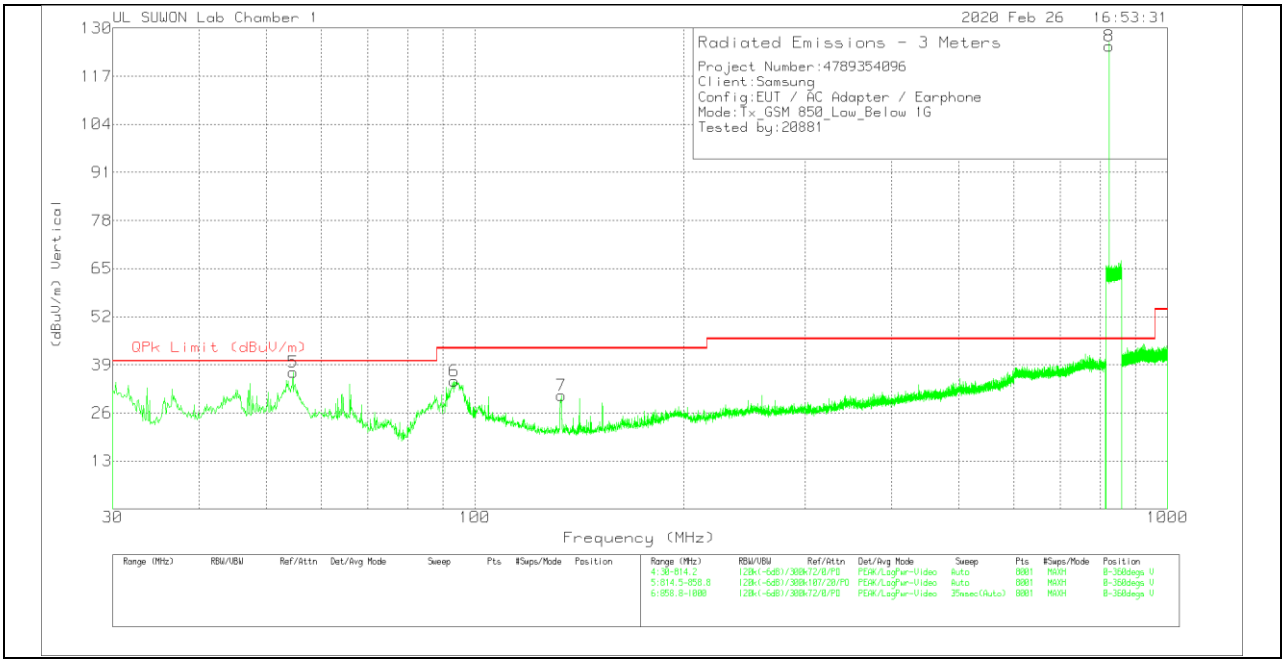
7.5. Below 1 GHz in the GSM850

LOW CHANNEL(869.2MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	43.6255	11.94	Pk	19.5	3.2	34.64	40	-5.36	0-360	100	H
2	60.0937	12.19	Pk	18.5	3.5	34.19	40	-5.81	0-360	100	H
3	94.5005	13.29	Pk	17.2	3.9	34.39	43.52	-9.13	0-360	300	H
4	824.2685	89.51	Pk	27	7.6	124.11	**46.02**	**78.09**	0-360	200	H
5	54.6043	14.05	Pk	19.4	3.5	36.95	40	-3.05	0-360	400	V
6	93.3242	13.83	Pk	16.9	3.9	34.63	43.52	-8.89	0-360	100	V
7	133.2203	12.29	Pk	14.2	4.2	30.69	43.52	-12.83	0-360	300	V
8	824.1306	90.47	Pk	27	7.6	125.07	**46.02**	**79.05**	0-360	200	V

Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
54.6043	5.18	Qp	19.4	3.5	28.08	40	-11.92	42	337	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.

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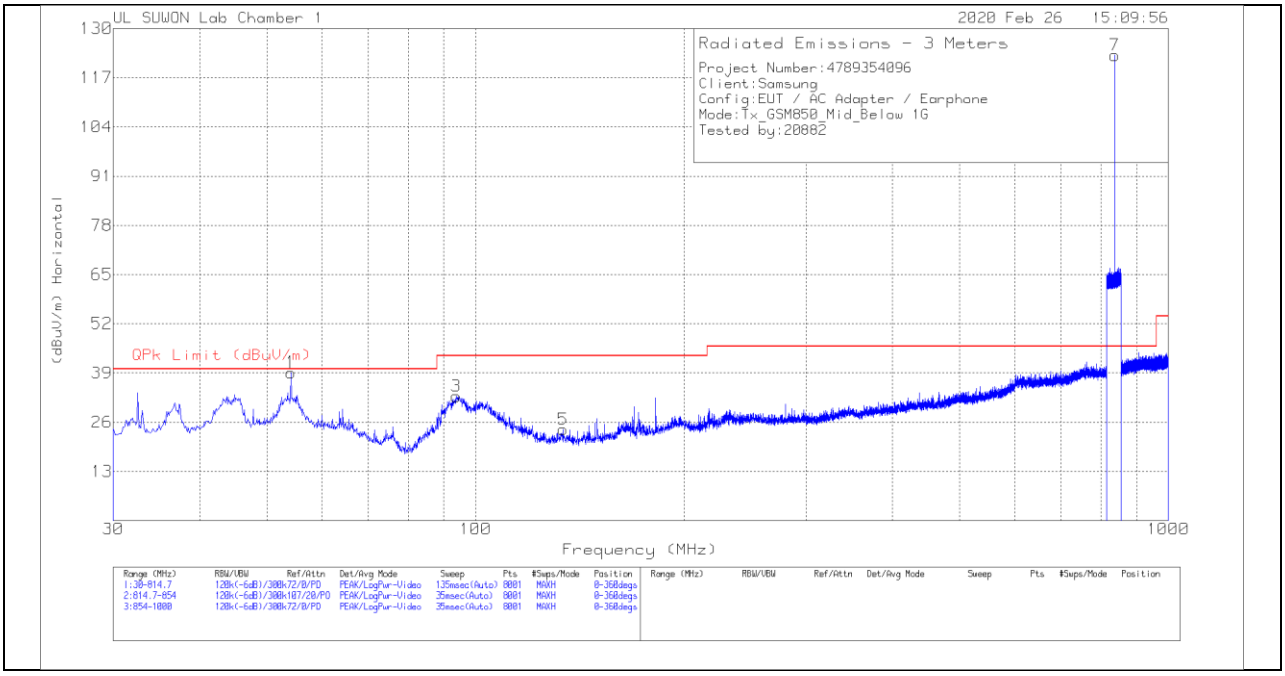
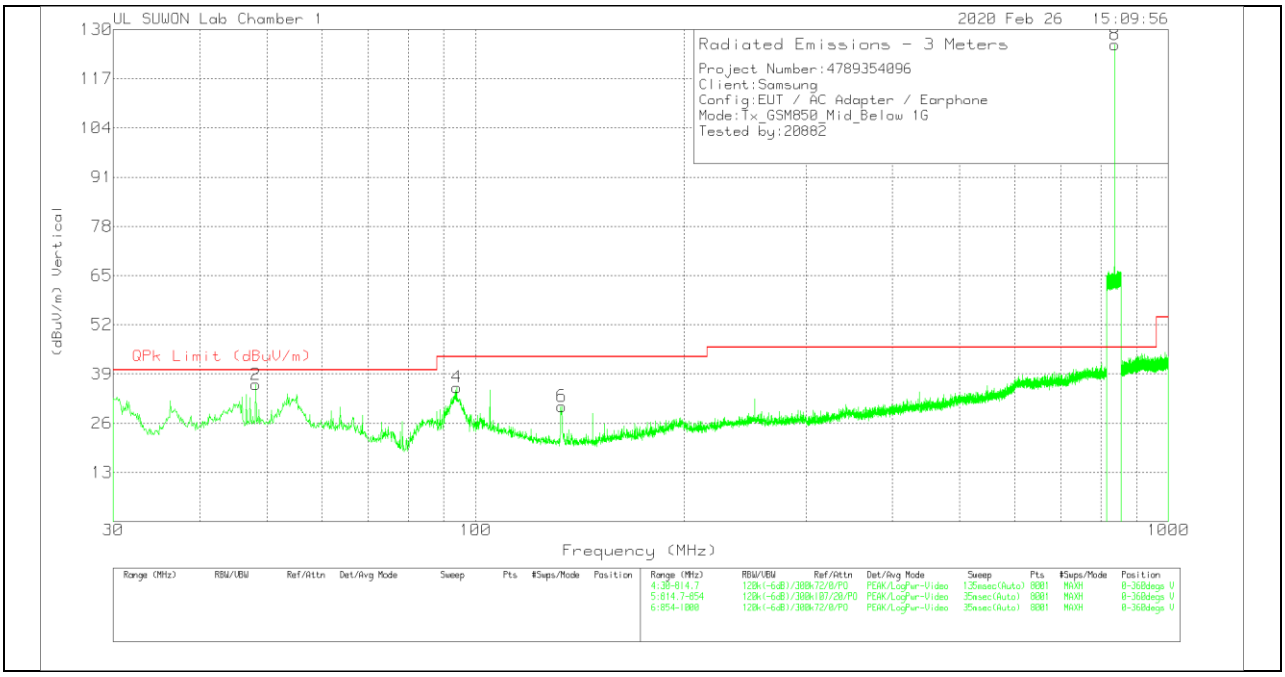
MID CHANNEL(881.6MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	54.1296	16.17	Pk	19.5	3.4	39.07	40	-.93	0-360	400	H
3	93.7572	11.93	Pk	17	3.9	32.83	43.52	-10.69	0-360	300	H
5	133.7771	5.68	Pk	14.2	4.2	24.08	43.52	-19.44	0-360	300	H
7	836.6562	88.04	Pk	27.2	7.7	122.94	**46.02**	**76.92**	0-360	100	H
2	48.1463	13.12	Pk	19.8	3.3	36.22	40	-3.78	0-360	100	V
4	93.9534	14.56	Pk	17	3.9	35.46	43.52	-8.06	0-360	100	V
6	133.1886	12.06	Pk	14.2	4.2	30.46	43.52	-13.06	0-360	400	V
8	836.6758	91.14	Pk	27.2	7.7	126.04	**46.02**	**80.02**	0-360	100	V

Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
54.1296	4.82	Qp	19.5	3.4	27.72	40	-12.28	29	227	H

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.

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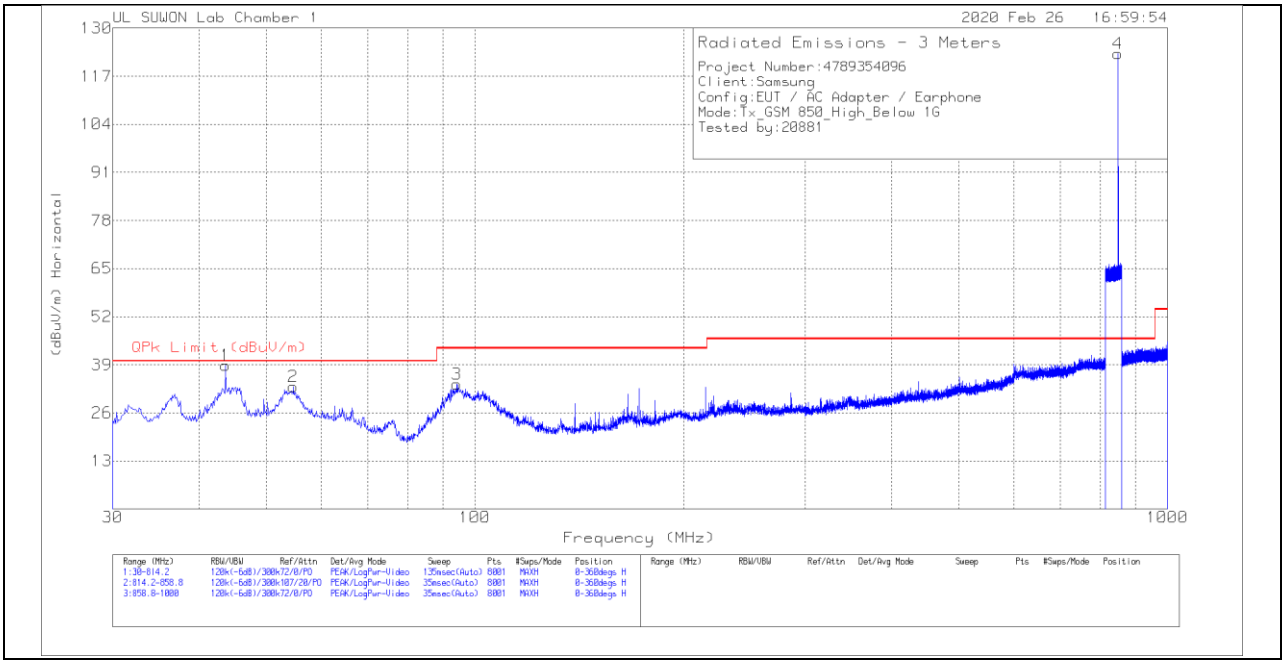
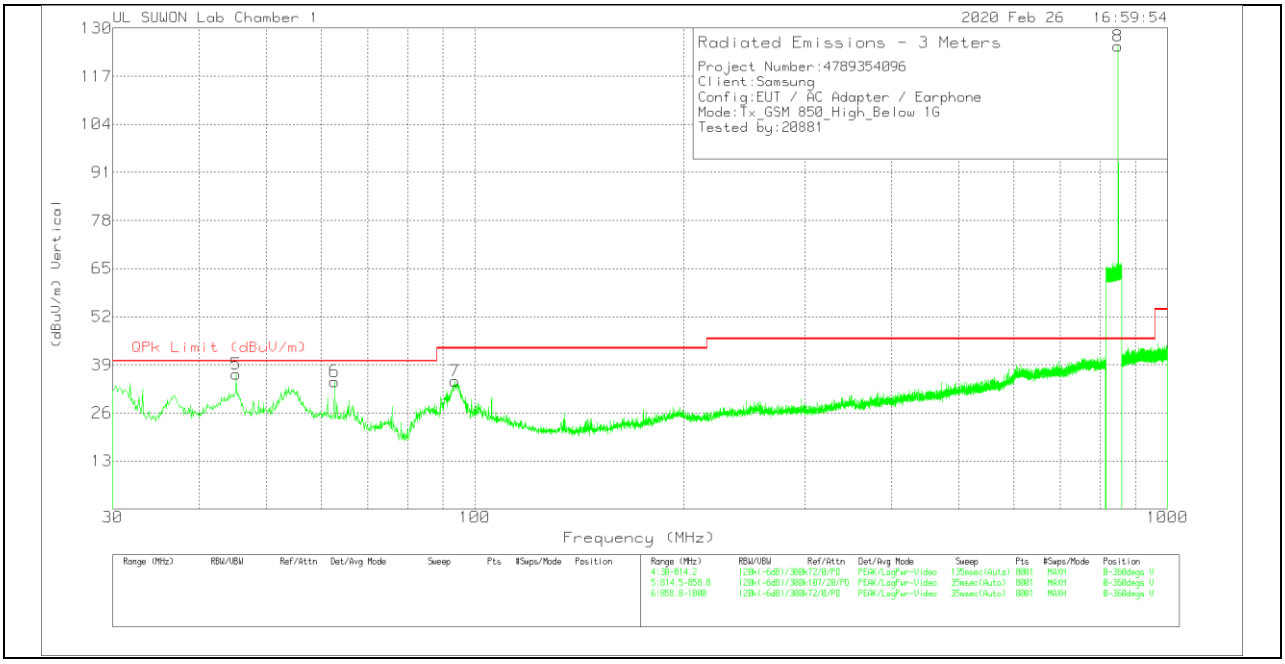
HIGH CHANNEL(893.8MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	43.6255	16.23	Pk	19.5	3.2	38.93	40	-1.07	0-360	100	H
2	54.7023	10.16	Pk	19.4	3.5	33.06	40	-6.94	0-360	100	H
3	94.2064	12.84	Pk	17.1	3.9	33.84	43.52	-9.68	0-360	200	H
4	848.8654	87.74	Pk	27.5	7.8	123.04	**46.02**	**77.02**	0-360	200	H
5	45.1939	13.68	Pk	19.6	3.2	36.48	40	-3.52	0-360	300	V
6	62.7404	13.25	Pk	17.9	3.4	34.55	40	-5.45	0-360	100	V
7	93.6182	13.7	Pk	17	3.9	34.6	43.52	-8.92	0-360	100	V
8	848.819	89.88	Pk	27.5	7.8	125.18	**46.02**	**79.16**	0-360	100	V

Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
43.6255	4.87	Qp	19.5	3.2	27.57	40	-12.43	257	244	H
45.1939	4.49	Qp	19.6	3.2	27.29	40	-12.71	7	381	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.

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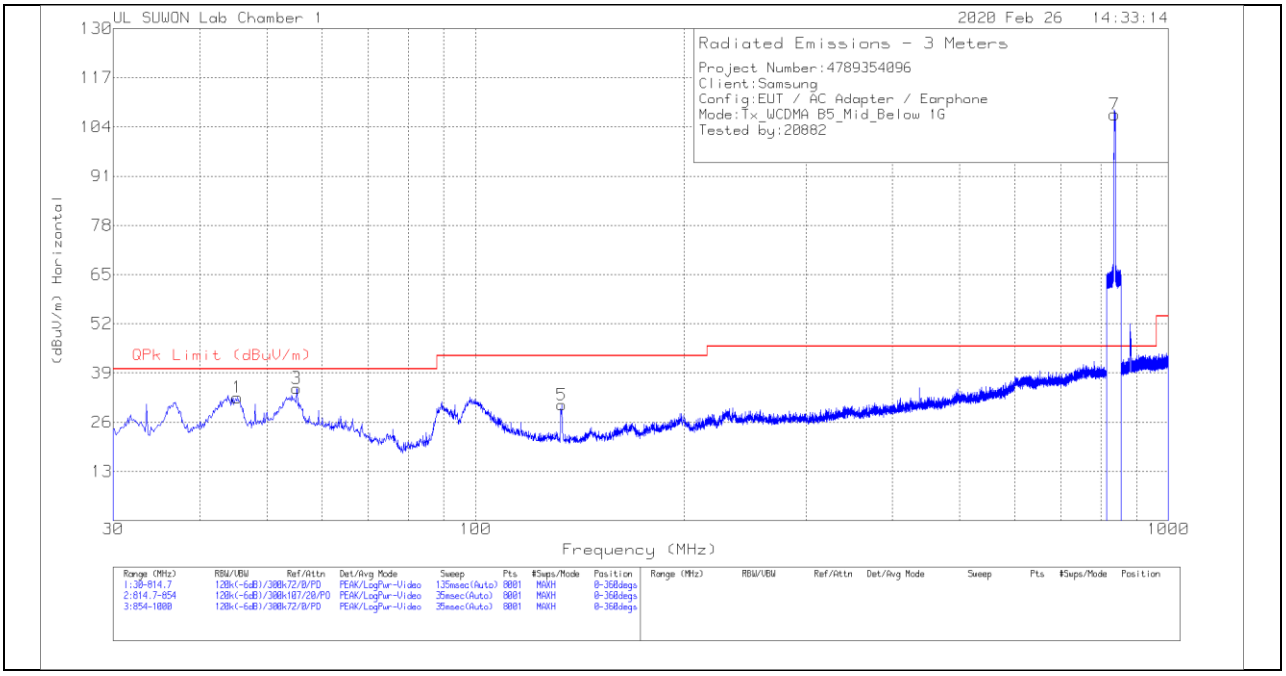
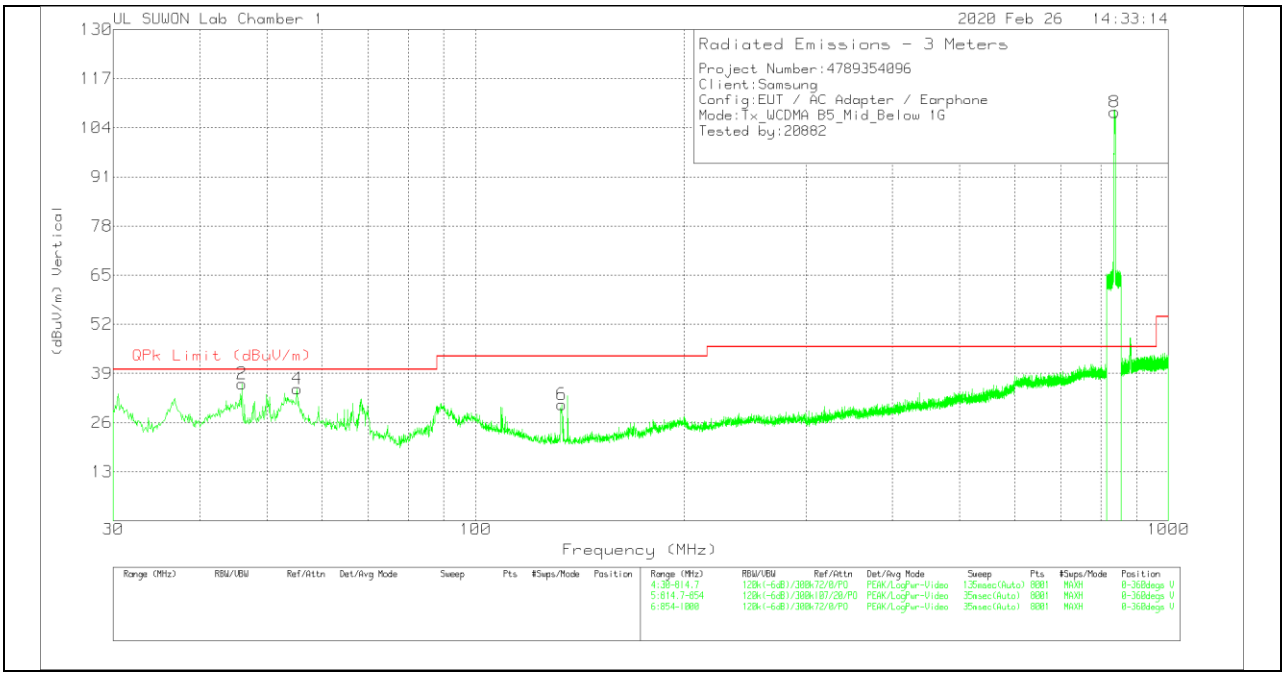
7.6. Below 1 GHz in the WCDMA Band 5

MID CHANNEL(881.6MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass [dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	45.3017	9.7	Pk	19.6	3.2	32.5	40	-7.5	0-360	300	H
3	55.2086	12.12	Pk	19.3	3.5	34.92	40	-5.08	0-360	200	H
5	133.1886	12.17	Pk	14.2	4.2	30.57	43.52	-12.95	0-360	100	H
7	836.4155	72.42	Pk	27.2	7.7	107.32	**46.02**	**61.3**	0-360	100	H
2	45.9883	13.37	Pk	19.7	3.2	36.27	40	-3.73	0-360	200	V
4	55.3067	12.15	Pk	19.3	3.5	34.95	40	-5.05	0-360	400	V
6	133.1886	12.37	Pk	14.2	4.2	30.77	43.52	-12.75	0-360	400	V
8	836.4597	73.26	Pk	27.2	7.7	108.16	**46.02**	**62.14**	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.

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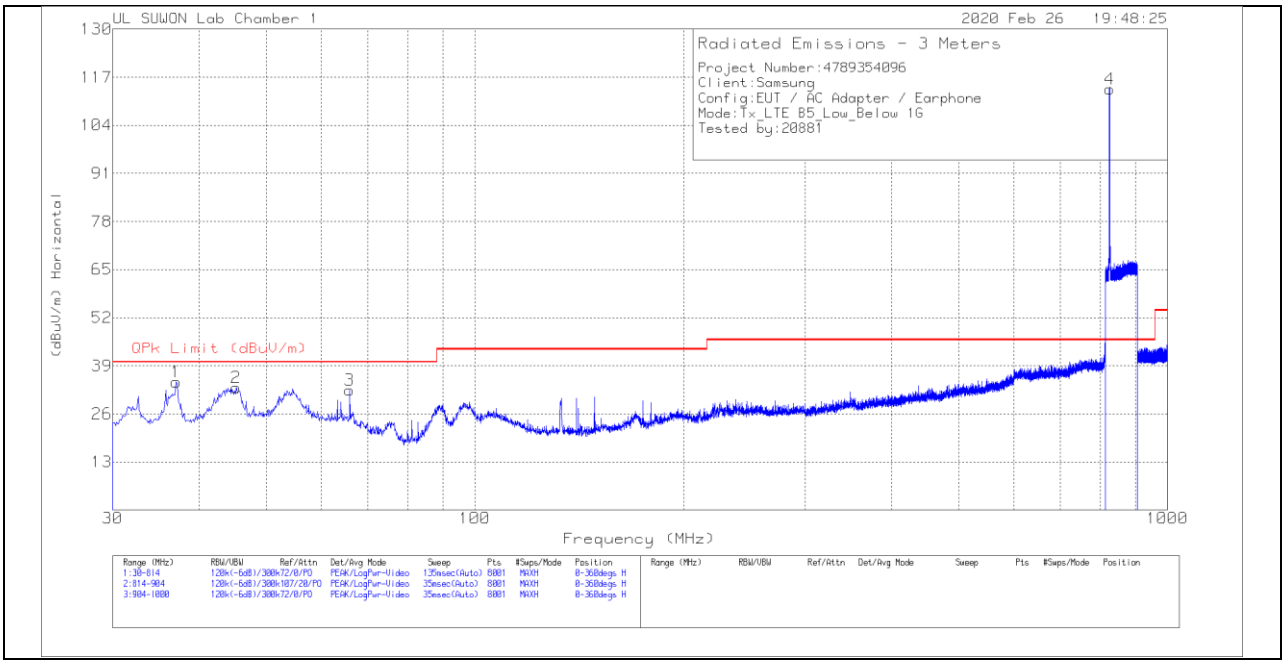
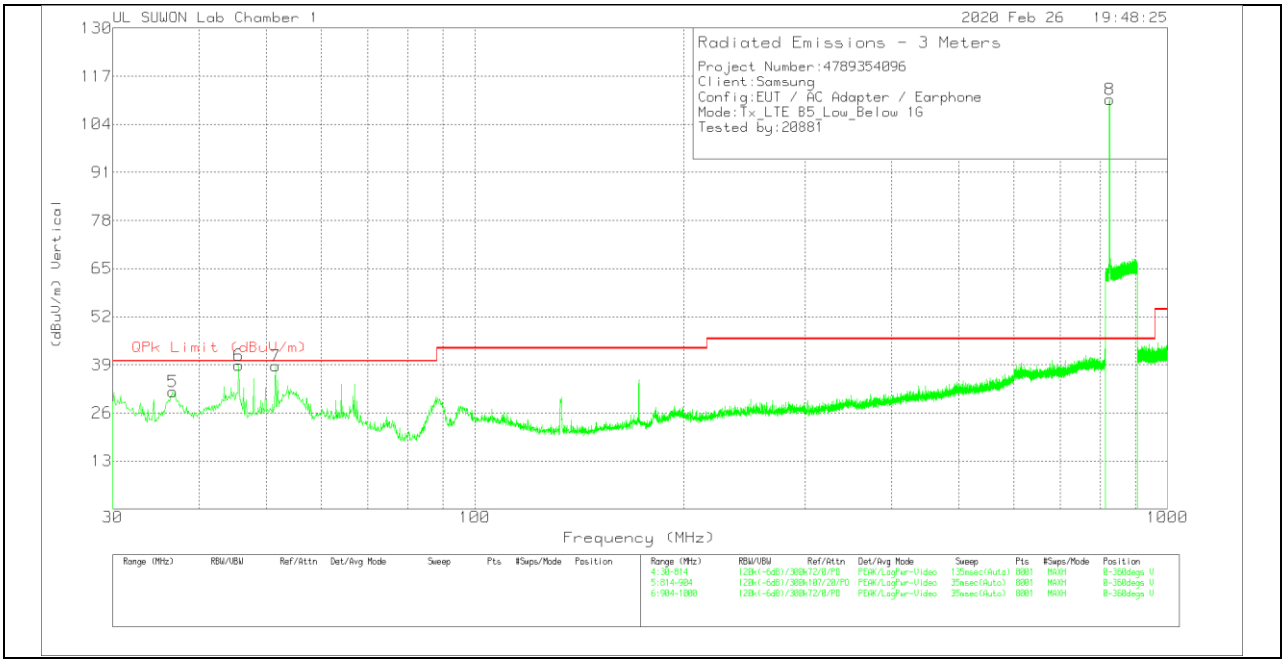
7.7. Below 1 GHz in the LTE Band 5

LOW CHANNEL(871.4MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	37.056	14.01	Pk	17.5	3.1	34.61	40	-5.39	0-360	300	H
2	45.19	10.34	Pk	19.6	3.2	33.14	40	-6.86	0-360	400	H
3	65.966	12.08	Pk	17	3.4	32.48	40	-7.52	0-360	400	H
4	824.9013	79.15	Pk	27	7.6	113.75	**46.02**	**67.73**	0-360	100	H
5	36.664	11.42	Pk	17.3	3.1	31.82	40	-8.18	0-360	400	V
6	45.582	16.01	Pk	19.6	3.2	38.81	40	-1.19	0-360	200	V
7	51.56	15.74	Pk	19.7	3.2	38.64	40	-1.36	0-360	400	V
8	825.0588	76.13	Pk	27	7.6	110.73	**46.02**	**64.71**	0-360	100	V

Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
45.582	3.07	Qp	19.6	3.2	25.87	40	-14.13	358	400	V
51.56	.18	Qp	19.7	3.2	23.08	40	-16.92	187	376	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.

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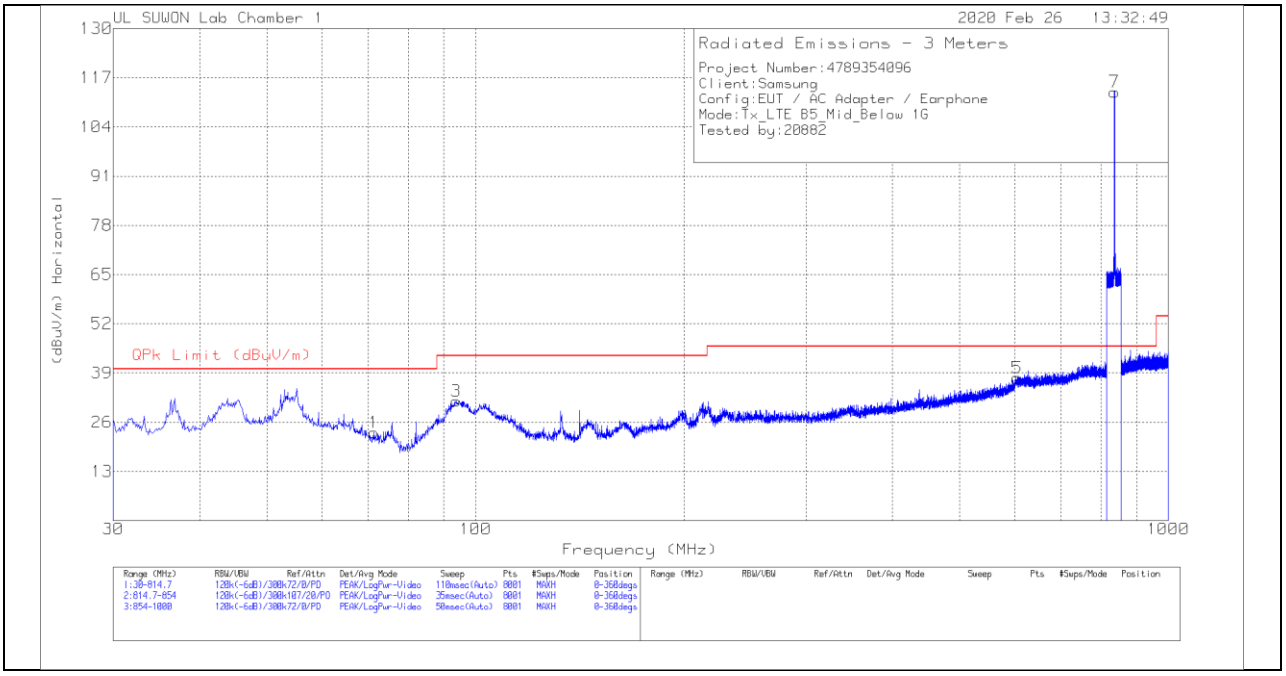
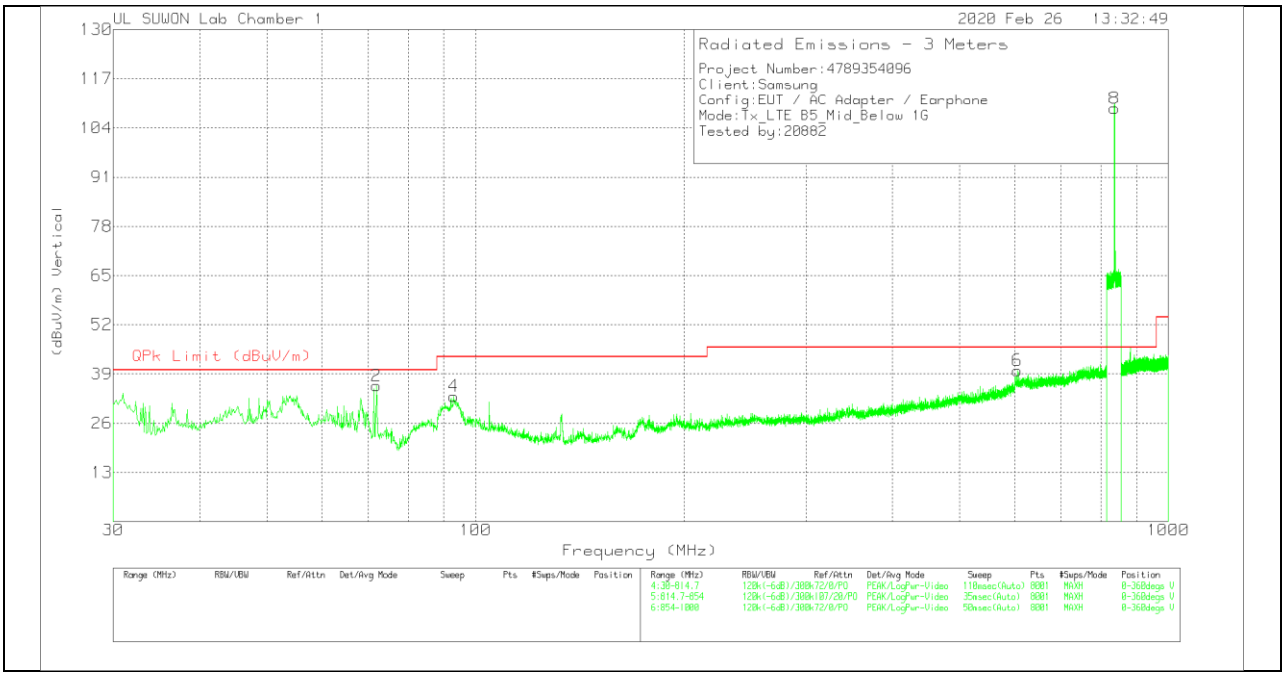
MID CHANNEL(881.6MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	71.3931	4.62	Pk	15	3.6	23.22	40	-16.78	0-360	300	H
3	93.8553	10.66	Pk	17	3.9	31.56	43.52	-11.96	0-360	200	H
5	605.0899	5.55	Pk	25.4	6.7	37.65	46.02	-8.37	0-360	100	H
7	836.4302	78.32	Pk	27.2	7.7	113.22	**46.02**	**67.2**	0-360	100	H
2	71.9817	17.48	Pk	14.8	3.6	35.88	40	-4.12	0-360	400	V
4	93.0706	12.4	Pk	16.8	3.9	33.1	43.52	-10.42	0-360	100	V
6	605.5804	7.8	Pk	25.4	6.7	39.9	46.02	-6.12	0-360	100	V
8	836.4449	74.26	Pk	27.2	7.7	109.16	**46.02**	**63.14**	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.

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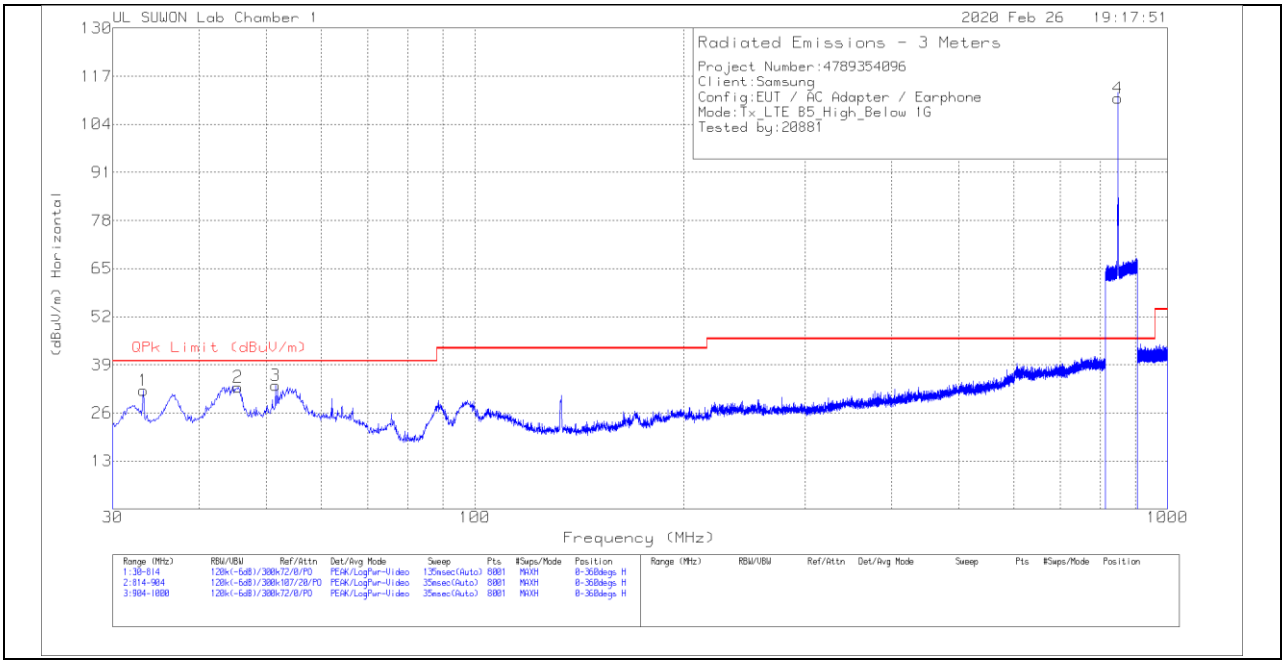
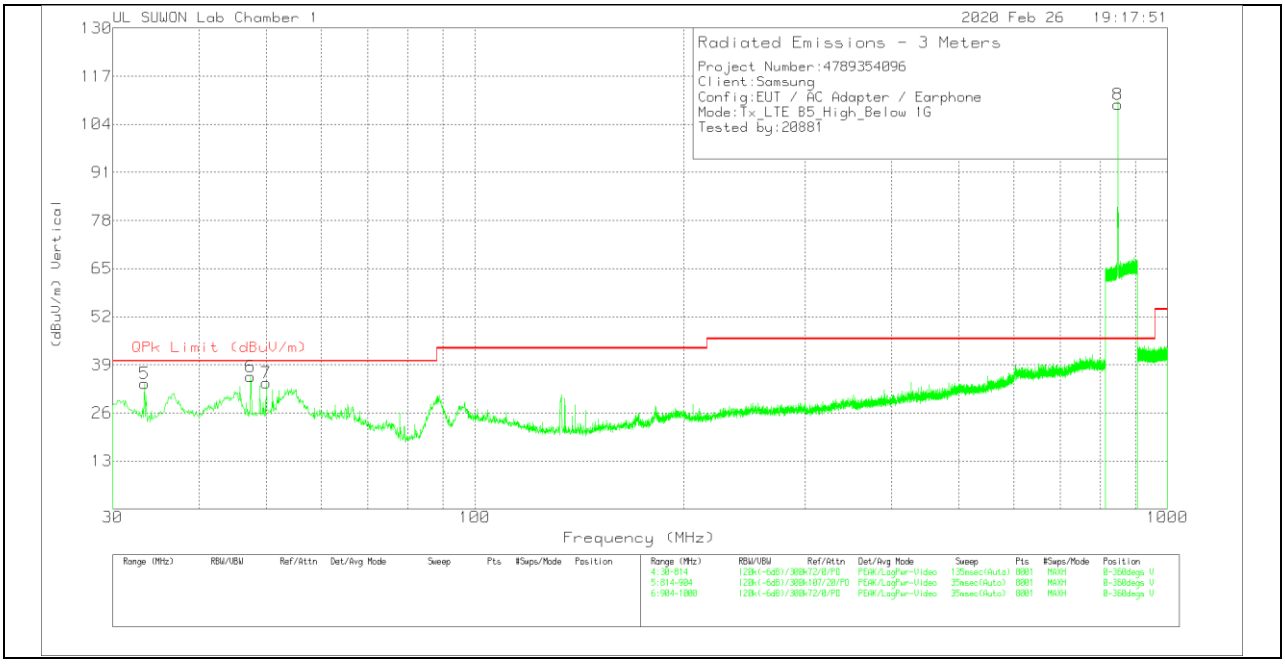
HIGH CHANNEL(891.6MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	33.234	13.33	Pk	15.8	3	32.13	40	-7.87	0-360	300	H
2	45.484	10.22	Pk	19.6	3.2	33.02	40	-6.98	0-360	100	H
3	51.56	10.55	Pk	19.7	3.2	33.45	40	-6.55	0-360	200	H
4	848.5488	75.74	Pk	27.5	7.8	111.04	**46.02**	**65.02**	0-360	100	H
5	33.332	15.11	Pk	15.9	3	34.01	40	-5.99	0-360	200	V
6	47.444	12.79	Pk	19.8	3.3	35.89	40	-4.11	0-360	200	V
7	49.992	11.11	Pk	19.7	3.3	34.11	40	-5.89	0-360	100	V
8	848.56	74.04	Pk	27.5	7.8	109.34	**46.02**	**63.32**	0-360	100	V

Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
47.444	-2.17	Qp	19.8	3.3	20.93	40	-19.07	229	354	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.

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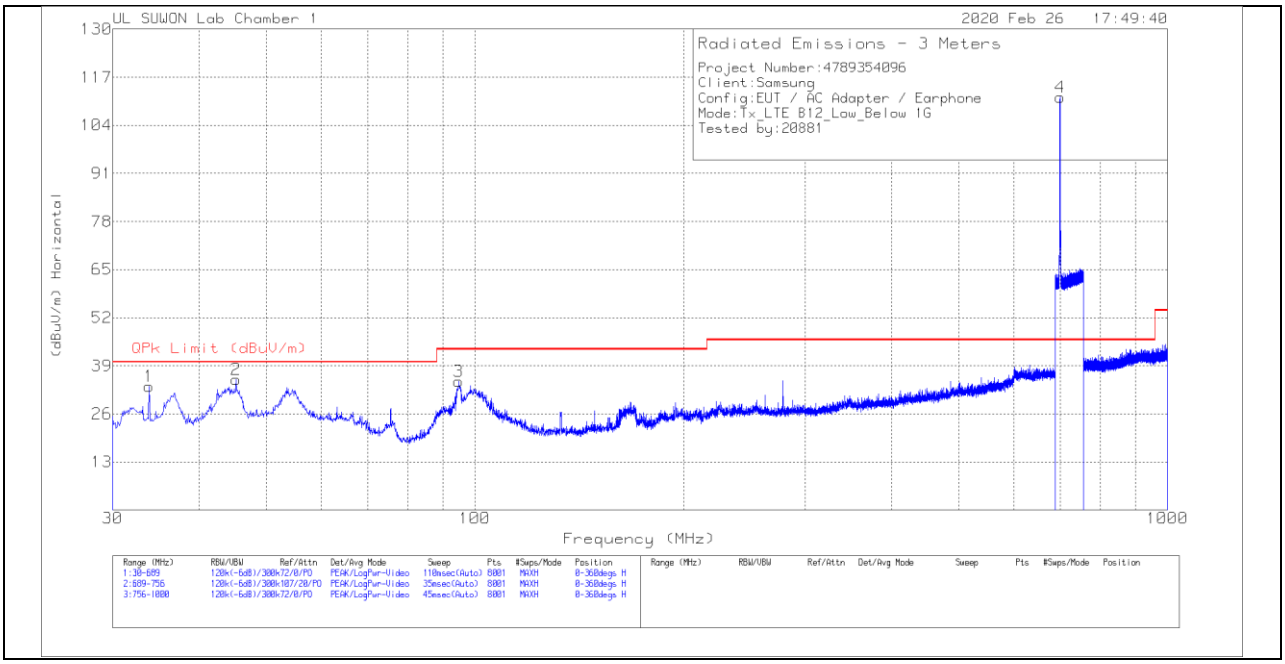
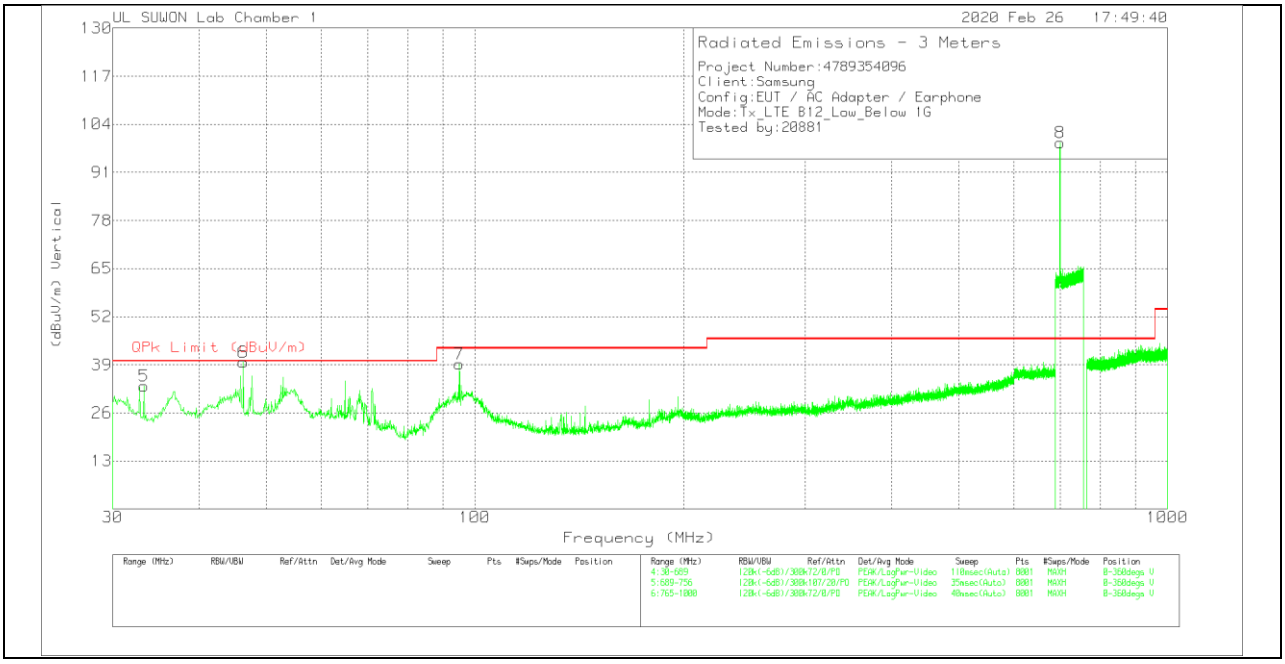
7.8. Below 1 GHz in the LTE Band 12

LOW CHANNEL(730.5MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	33.8716	14.38	Pk	16.1	3	33.48	40	-6.52	0-360	100	H
2	45.2394	12.57	Pk	19.6	3.2	35.37	40	-4.63	0-360	400	H
3	94.7468	13.65	Pk	17.2	3.9	34.75	43.52	-8.77	0-360	300	H
4	699.6195	78.95	Pk	25.6	7.1	111.65	**46.02**	**65.63**	0-360	100	H
5	33.295	14.52	Pk	15.8	3	33.32	40	-6.68	0-360	300	V
6	46.3103	16.83	Pk	19.7	3.2	39.73	40	-.27	0-360	200	V
7	94.9939	17.94	Pk	17.3	3.9	39.14	43.52	-4.38	0-360	100	V
8	699.5358	66.27	Pk	25.6	7.1	98.97	**46.02**	**52.95**	0-360	100	V

Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
45.2394	5.54	Qp	19.6	3.2	28.34	40	-11.66	279	252	H
46.3103	-.91	Qp	19.7	3.2	21.99	40	-18.01	299	400	V
94.9939	2.52	Qp	17.3	3.9	23.72	43.52	-19.8	267	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.

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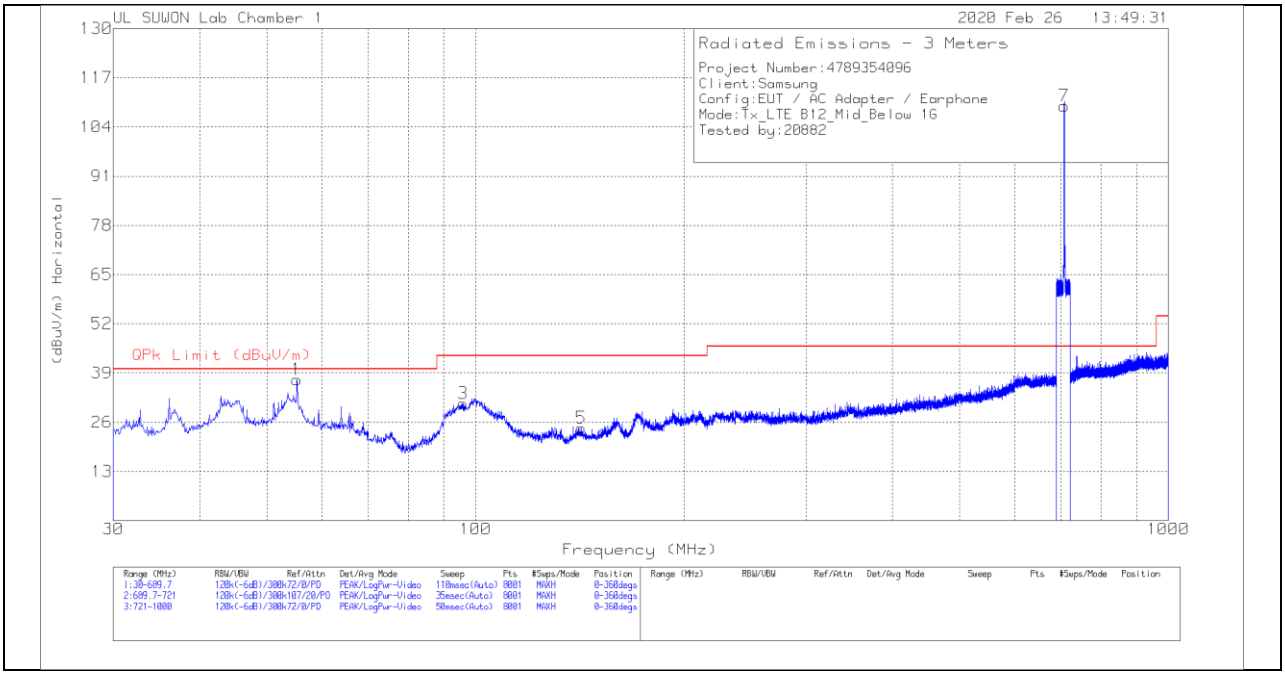
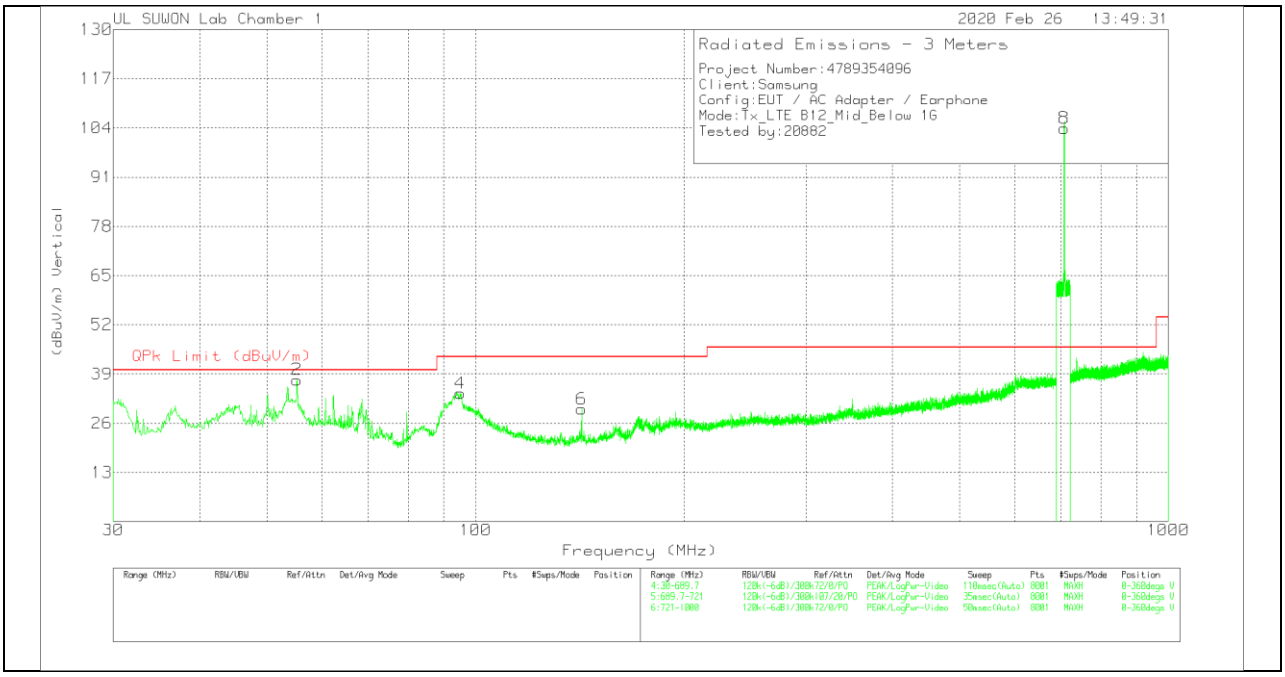
MID CHANNEL(737.5MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	55.2337	14.46	Pk	19.3	3.5	37.26	40	-2.74	0-360	300	H
3	95.9704	9.63	Pk	17.4	3.9	30.93	43.52	-12.59	0-360	300	H
5	142.2321	5.84	Pk	14.2	4.4	24.44	43.52	-19.08	0-360	200	H
7	707.5002	76.75	Pk	25.6	7.2	109.55	**46.02**	**63.53**	0-360	100	H
2	55.2337	14.66	Pk	19.3	3.5	37.46	40	-2.54	0-360	400	V
4	95.0633	12.69	Pk	17.3	3.9	33.89	43.52	-9.63	0-360	100	V
6	142.3146	11.1	Pk	14.2	4.4	29.7	43.52	-13.82	0-360	200	V
8	707.5472	71.13	Pk	25.6	7.2	103.93	**46.02**	**57.91**	0-360	200	V

Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
55.2961	8.92	Qp	19.3	3.5	31.72	40	-8.28	317	205	H
55.2961	8.95	Qp	19.3	3.5	31.75	40	-8.25	56	398	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.

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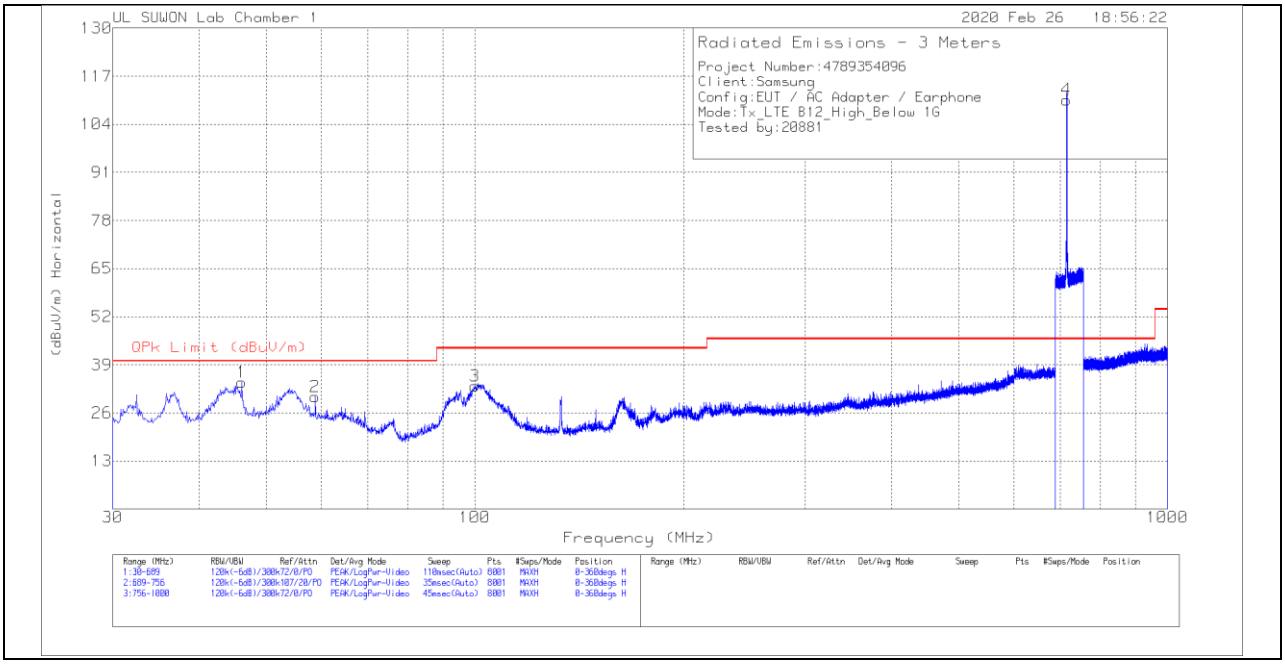
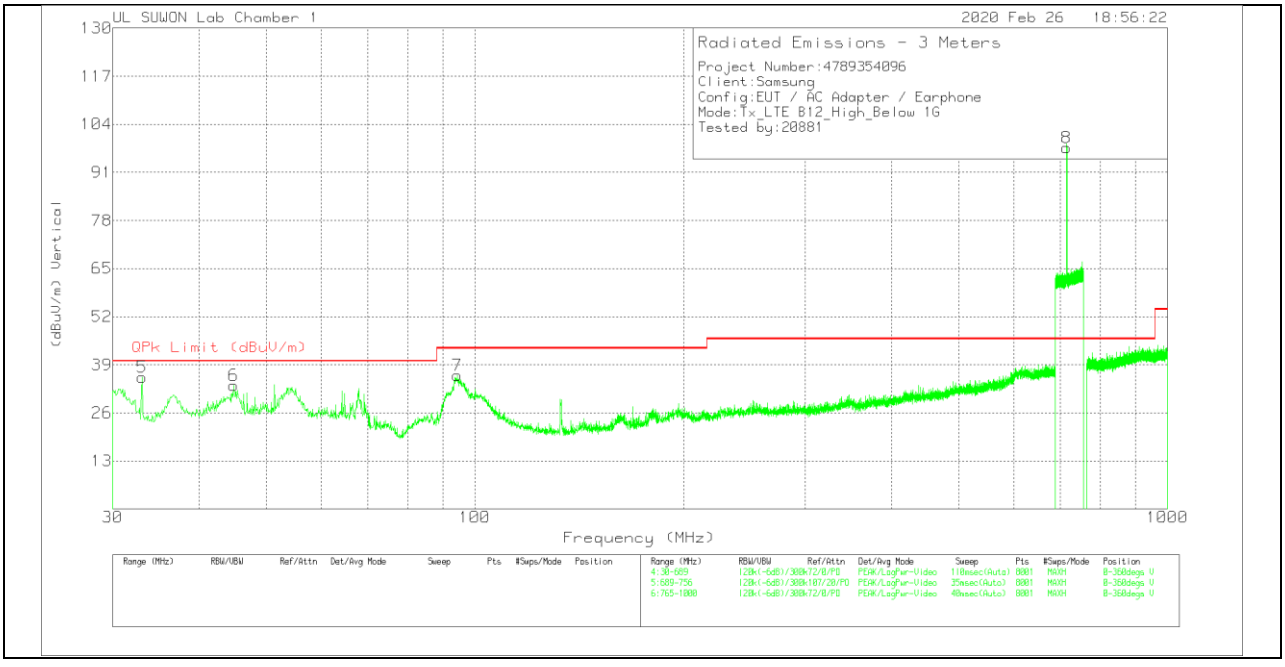
HIGH CHANNEL(744.5MHz)

HORIZONTAL PEAK PLOT



VERTICAL PEAK PLOT



DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	46.0631	11.41	Pk	19.7	3.2	34.31	40	-5.69	0-360	300	H
2	58.8313	8.07	Pk	18.8	3.5	30.37	40	-9.63	0-360	200	H
3	100.0188	11.64	Pk	17.8	3.9	33.34	43.52	-10.18	0-360	300	H
4	715.3394	77.74	Pk	25.7	7.2	110.64	**46.02**	**64.62**	0-360	100	H
5	33.0479	16.94	Pk	15.7	3	35.64	40	-4.36	0-360	100	V
6	44.8275	10.6	Pk	19.6	3.2	33.4	40	-6.6	0-360	400	V
7	94.4173	15.02	Pk	17.2	3.9	36.12	43.52	-7.4	0-360	100	V
8	715.2473	64.85	Pk	25.7	7.2	97.75	**46.02**	**51.73**	0-360	200	V

Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
33.0479	2.36	Qp	15.7	3	21.06	40	-18.94	304	170	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.

END OF REPORT

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