



# CERTIFICATION TEST REPORT

**Report Number.** : 4789746830-E1V2

**Applicant** : SAMSUNG ELECTRONICS CO., LTD.  
129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI,  
GYEONGGI-DO, 16677, KOREA

**Model** : SM-A525M/DS, SM-A525M

**FCC ID** : A3LSMA525M

**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:**

February 01, 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



ACCREDITED

**Testing Laboratory**

**TL-637**

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	01/26/21	Initial issue	Hyunsik Yun
V2	02/01/21	Updated to address TCB's question	Hyunsik Yun

## TABLE OF CONTENTS

<b>1. ATTESTATION OF TEST RESULTS .....</b>	<b>4</b>
<b>2. TEST METHODOLOGY .....</b>	<b>5</b>
<b>3. FACILITIES AND ACCREDITATION .....</b>	<b>5</b>
<b>4. CALIBRATION AND UNCERTAINTY .....</b>	<b>6</b>
4.1. MEASURING INSTRUMENT CALIBRATION.....	6
4.2. SAMPLE CALCULATION.....	6
4.3. MEASUREMENT UNCERTAINTY .....	6
4.4. DECISION RULE .....	6
<b>5. EQUIPMENT UNDER TEST .....</b>	<b>7</b>
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
<b>6. TEST AND MEASUREMENT EQUIPMENT .....</b>	<b>10</b>
<b>7. APPLICABLE LIMITS AND TEST RESULTS .....</b>	<b>11</b>
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 13 .....	19
7.5. Above 1 GHz in the LTE Band 26 .....	20
7.6. Below 1 GHz in the GSM850.....	23
7.7. Below 1 GHz in the WCDMA Band 5.....	29
7.8. Below 1 GHz in the LTE Band 12.....	30
7.9. Below 1 GHz in the LTE Band 13.....	34
7.10. Below 1 GHz in the LTE Band 26.....	36

# 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-A525M/DS, SM-A525M  
**SERIAL NUMBER:** R38NB02RCPB (RADIATED)  
**DATE TESTED:** DEC 18, 2020 – DEC 23, 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	
<input checked="" type="checkbox"/>	Chamber 1
<input checked="" type="checkbox"/>	Chamber 2
<input type="checkbox"/>	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:

$EIRP = \text{PSA reading with EUT worst orientation (dBm)} + \text{Path loss (dB)} - \text{cable loss (between the SG and substitution antenna)} + \text{Substitution Antenna Factor (dBi)}$

$ERP = \text{PSA reading with EUT worst orientation (dBm)} + \text{Path loss (dB)} - \text{cable loss (between the SG and substitution antenna)}$

(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.

## 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-A525M/DS and SM-A525M.  
These models are identical in hardware except SM-A525M has single SIM tray.  
With some pre-scan, model SM-A525M/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 13	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 B13 / 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.



## 5.4. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	EP-TA200	R37N6KYPMH2SE3	N/A
Data Cable	SAMSUNG	EP-DR140AWE	N/A	N/A
Earphone	SAMSUNG	EHS64AVFWE	N/A	N/A

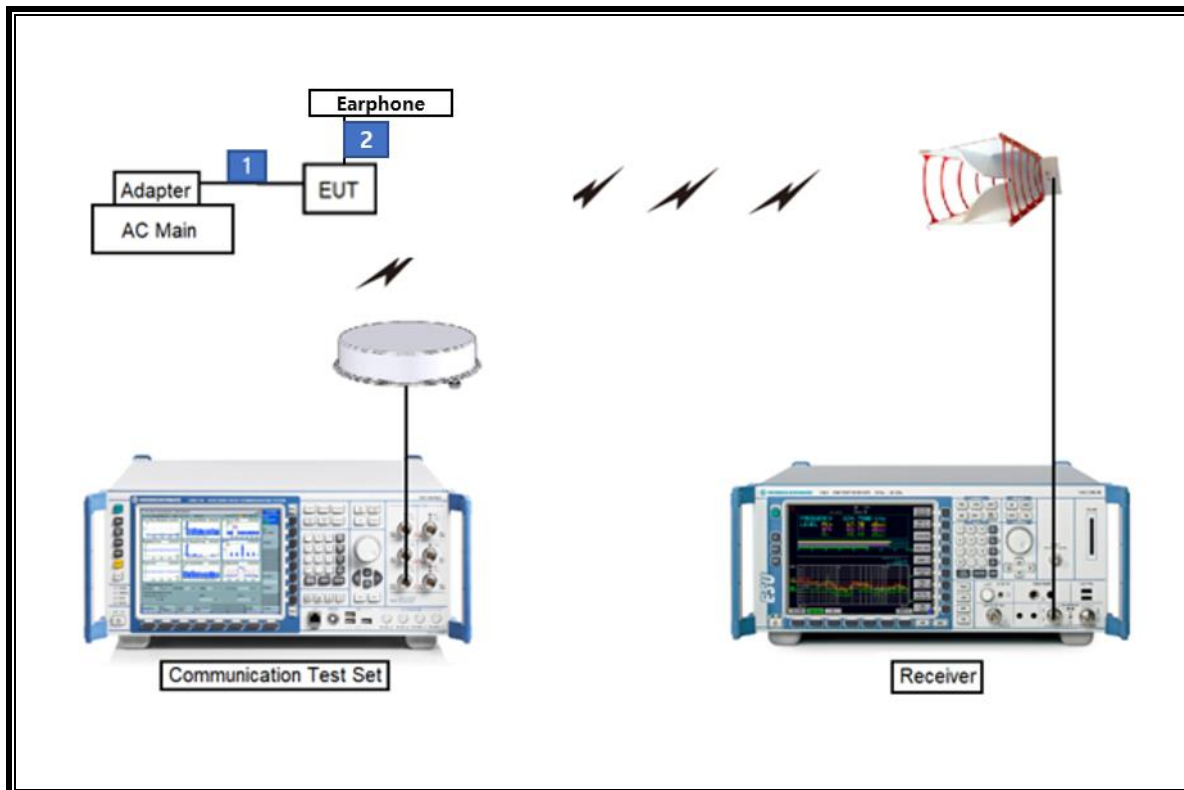
### I/O CABLE

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	1.0 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	PASTERNAK	PE7087-10	A009	08-05-21
Attenuator	PASTERNAK	PE7087-10	A001	08-03-21
Attenuator	PASTERNAK	PE7087-10	A008	08-03-21
Attenuator	PASTERNAK	PE7004-10	2	08-04-21
Attenuator	PASTERNAK	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 LIMITS 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:

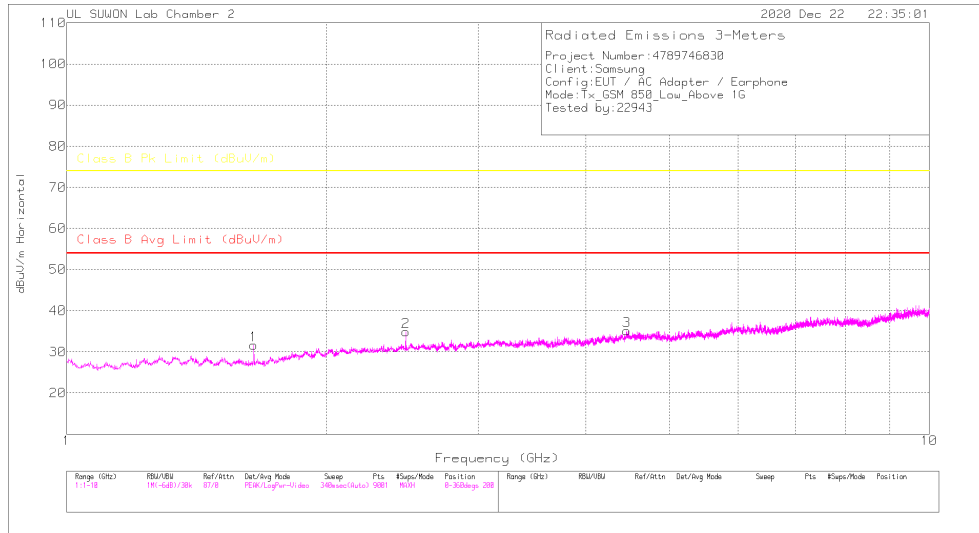
Limits for radiated disturbance of Class B ITE at measuring distance of 3 m	
Frequency range (MHz)	Quasi-peak limits (dB $\mu$ V/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
Above 960 MHz	54

Note: The lower limit shall apply at the transition frequency.

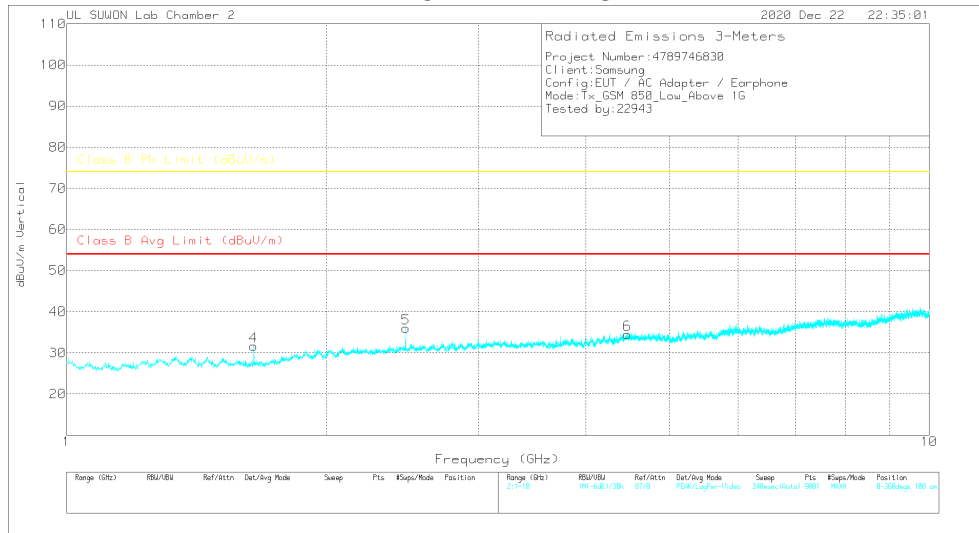
### 7.1. Above 1 GHz in the GSM850

#### LOW CHANNEL(869.2 MHz)

#### HORIZONTAL PEAK PLOT



#### VERTICAL PEAK PLOT



#### DATA

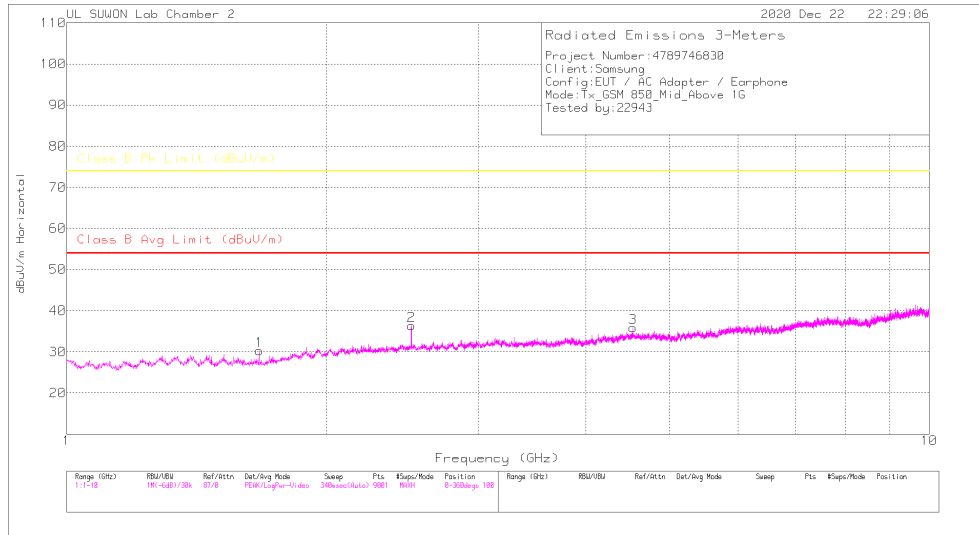
##### Trace Markers

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	33.74	PK	28.6	-31.4	.7	31.64	-	-	74	-42.36	0-360	100	H
2	2.472	32.18	PK	32	-30	.7	34.88	-	-	74	-39.12	0-360	200	H
3	4.459	28.83	PK	33.9	-28.1	.5	35.13	-	-	74	-38.87	0-360	100	H
4	1.648	33.71	PK	28.6	-31.4	.7	31.61	-	-	74	-42.39	0-360	200	V
5	2.472	33.29	PK	32	-30	.7	35.99	-	-	74	-38.01	0-360	100	V
6	4.467	28.19	PK	33.9	-28.1	.5	34.49	-	-	74	-39.51	0-360	200	V

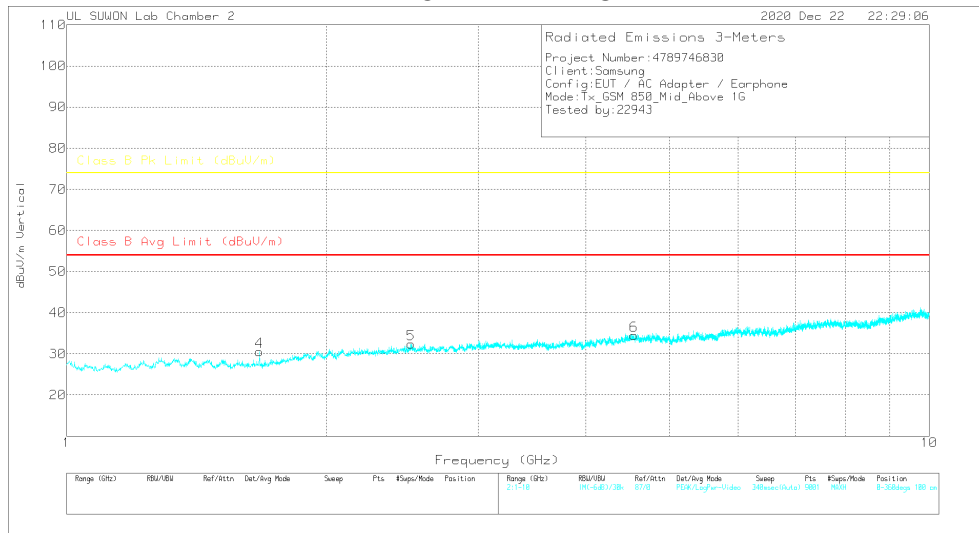
##### PK-Peak Detector

**MID CHANNEL(881.6 MHz)**

**HORIZONTAL PEAK PLOT**



**VERTICAL PEAK PLOT**



**DATA**

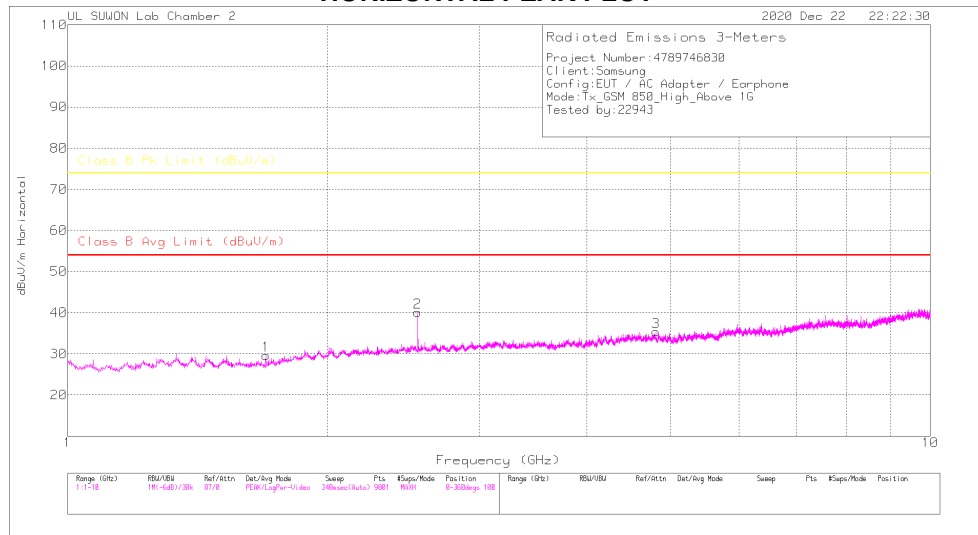
**Trace Markers**

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	32.31	PK	28.6	-31.3	.7	30.31	-	-	74	-43.69	0-360	200	H
2	2.51	33.64	PK	32.1	-30.1	.7	36.34	-	-	74	-37.66	0-360	100	H
3	4.536	29.63	PK	34.1	-28.4	.5	35.83	-	-	74	-38.17	0-360	100	H
4	1.673	32.58	PK	28.6	-31.3	.7	30.58	-	-	74	-43.42	0-360	200	V
5	2.509	29.71	PK	32.1	-30.1	.7	32.41	-	-	74	-41.59	0-360	100	V
6	4.546	28.27	PK	34.1	-28.4	.5	34.47	-	-	74	-39.53	0-360	200	V

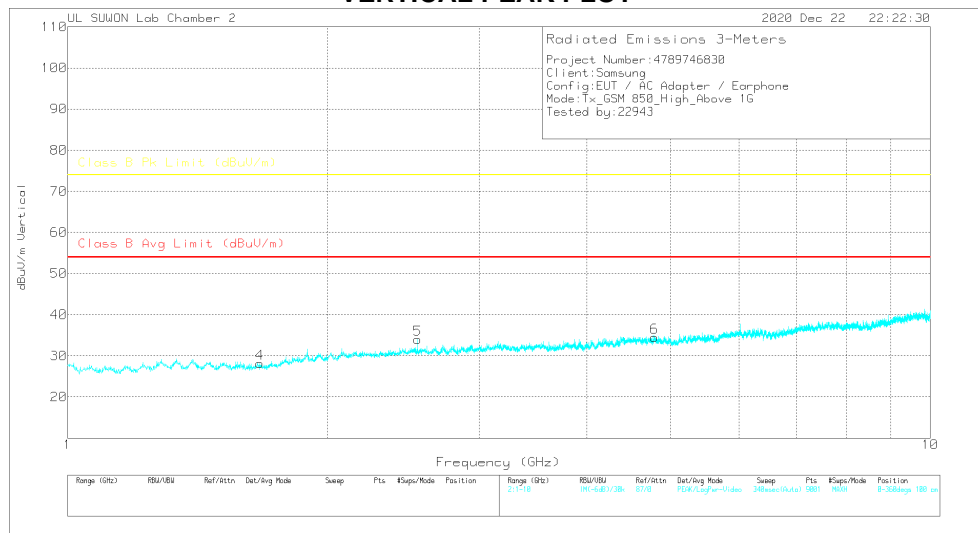
**PK – Peak Detector**

**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	31.47	PK		-31.2	.7	29.67	-	-	74	-44.33	0-360	100	H
2	2.546	37.17	PK		-29.8	.7	40.17	-	-	74	-33.83	0-360	100	H
3	4.81	28.51	PK		-27.7	.5	35.41	-	-	74	-38.59	0-360	200	H
4	1.671	30.1	PK		-31.3	.7	28.1	-	-	74	-45.9	0-360	100	V
5	2.546	30.98	PK		-29.8	.7	33.98	-	-	74	-40.02	0-360	200	V
6	4.789	27.71	PK		-27.8	.5	34.51	-	-	74	-39.49	0-360	200	V

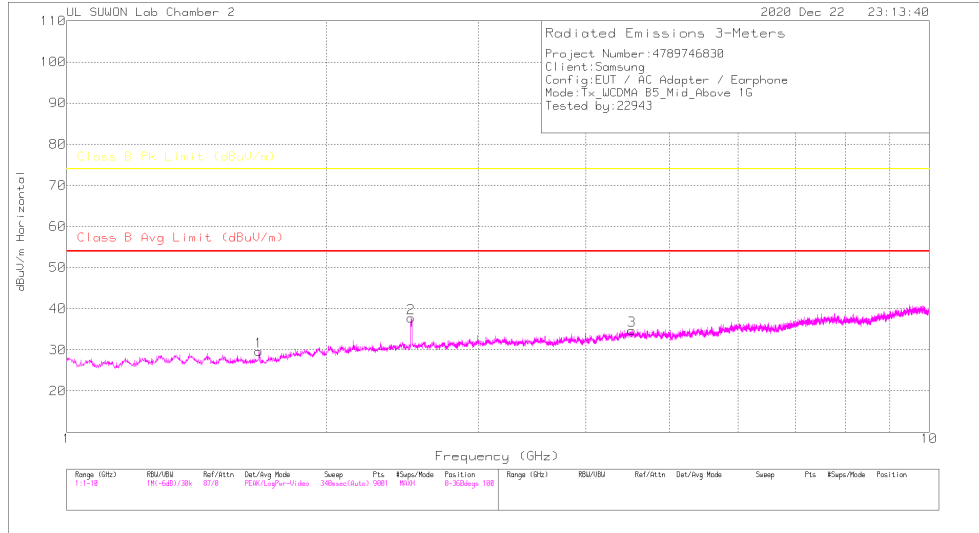
**PK – Peak Detector**

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

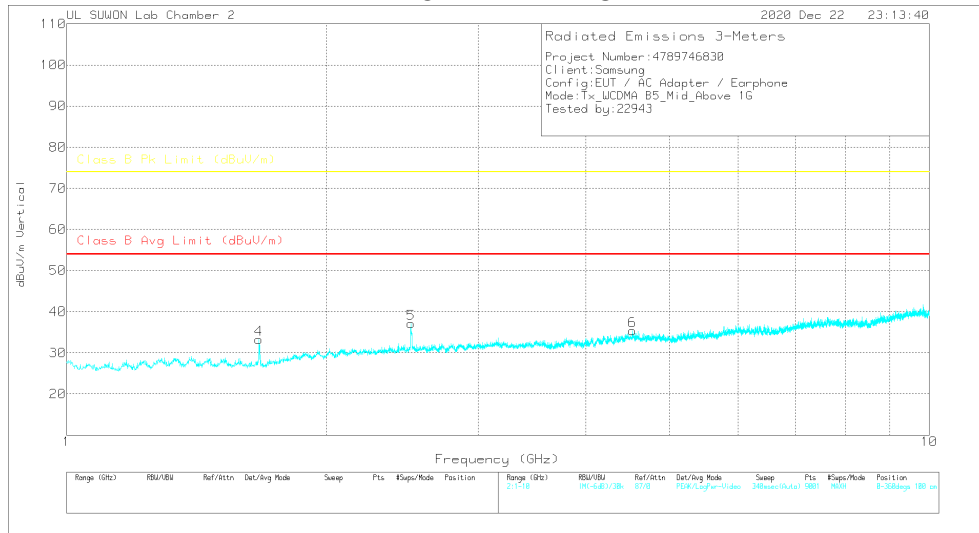
## 7.2. Above 1 GHz in the WCDMA Band 5

### MID CHANNEL(881.6 MHz)

#### HORIZONTAL PEAK PLOT



#### VERTICAL PEAK PLOT



#### DATA

##### Trace Markers

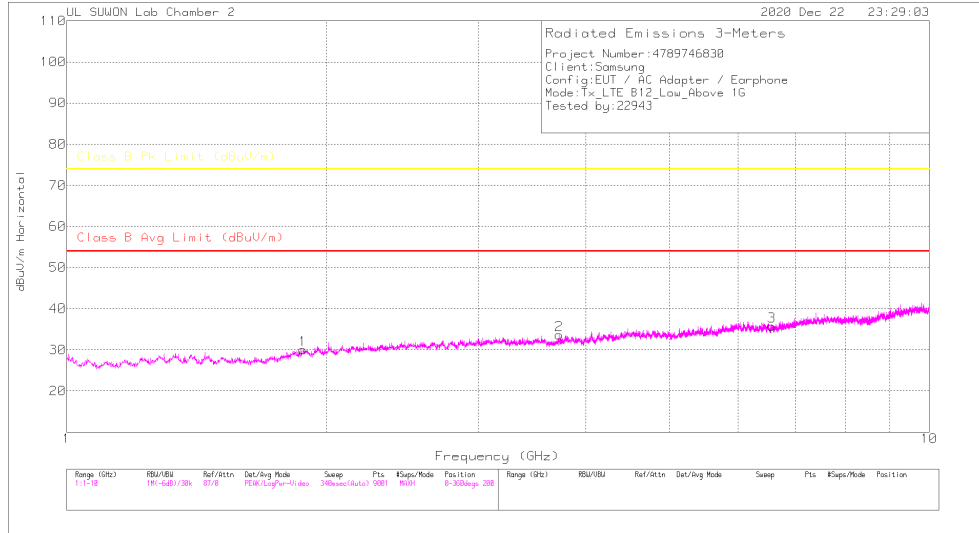
Marker	Frequency (GHz)	Marker Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HP[dB]	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.671	31.68	PK	28.6	-31.3	.7	29.68	-	-	74	-44.32	0-360	200	H
2	2.507	35.01	PK	32.1	-30.1	.7	37.71	-	-	74	-36.29	0-360	100	H
3	4.52	28.41	PK	34.1	-28.3	.5	34.71	-	-	74	-39.29	0-360	100	H
4	1.671	35.28	PK	28.6	-31.3	.7	33.28	-	-	74	-40.72	0-360	100	V
5	2.507	34.37	PK	32.1	-30.1	.7	37.07	-	-	74	-36.93	0-360	100	V
6	4.526	28.93	PK	34.1	-28.2	.5	35.33	-	-	74	-38.67	0-360	100	V

PK – Peak Detector

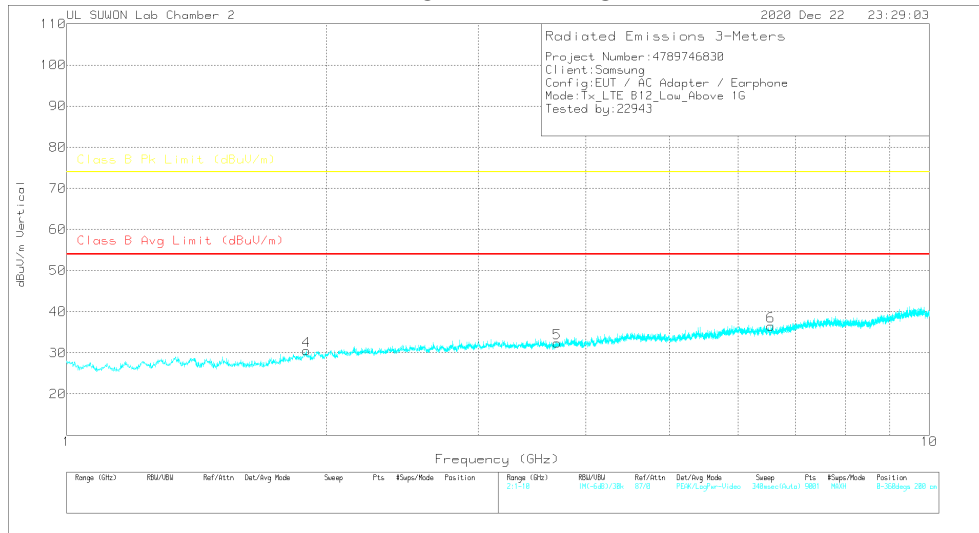
### 7.3. Above 1 GHz in the LTE Band 12

#### LOW CHANNEL(730.5 MHz)

#### HORIZONTAL PEAK PLOT



#### VERTICAL PEAK PLOT



#### DATA

##### Trace Markers

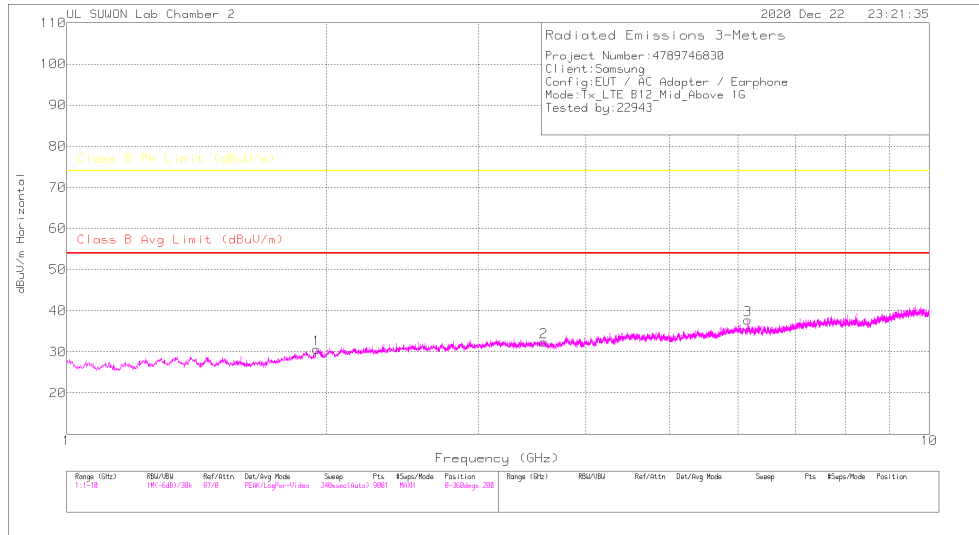
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HIP[dB]	Corrected Reading (dBuV/m)	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.879	29.67	PK	30.6	-31	.7	29.97	-	-	74	-44.03	0-360	200	H
2	3.724	29.29	PK	33.1	-29.3	.6	33.69	-	-	74	-40.31	0-360	100	H
3	6.569	26.2	PK	35.4	-26.3	.5	35.8	-	-	74	-38.2	0-360	100	H
4	1.896	29.97	PK	30.7	-30.9	.7	30.47	-	-	74	-43.53	0-360	100	V
5	3.705	28.35	PK	33.1	-29.7	.6	32.35	-	-	74	-41.65	0-360	200	V
6	6.551	27.13	PK	35.4	-26.5	.5	36.53	-	-	74	-37.47	0-360	200	V

PK – Peak Detector

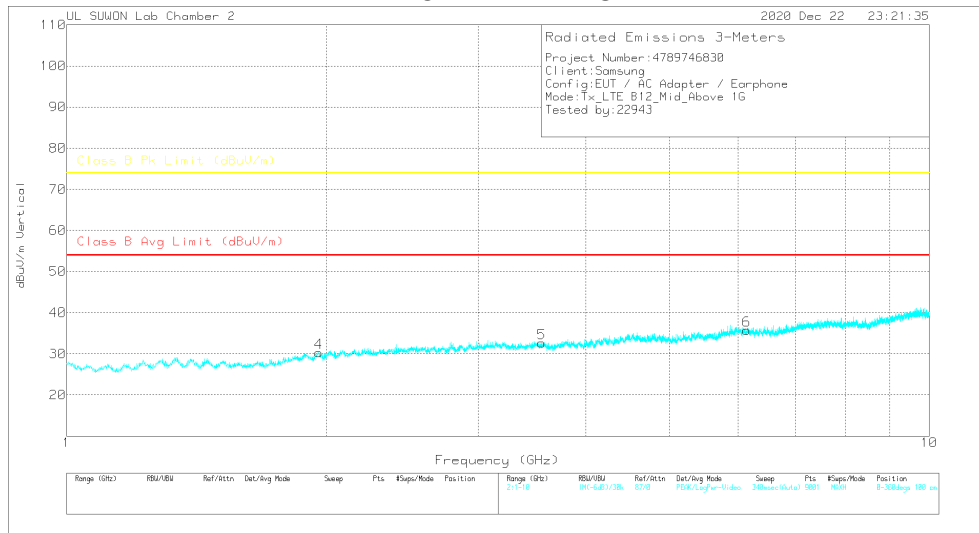


**MID CHANNEL(737.5 MHz)**

**HORIZONTAL PEAK PLOT**



**VERTICAL PEAK PLOT**



**DATA**

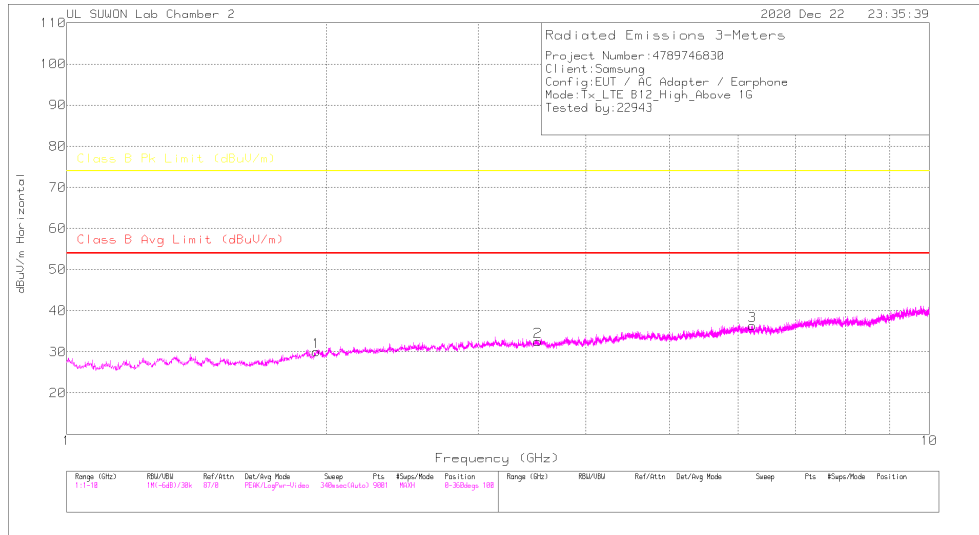
**Trace Markers**

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	1.95	30	PK	31	-30.9	.6	30.7	-	-	74	-43.3	0-360	100	H
2	3.574	28.27	PK	32.8	-29.3	.6	32.37	-	-	74	-41.63	0-360	200	H
3	6.161	28.48	PK	35.3	-26.5	.5	37.78	-	-	74	-36.22	0-360	100	H
4	1.961	29.63	PK	31	-30.9	.6	30.33	-	-	74	-43.67	0-360	200	V
5	3.555	28.37	PK	32.8	-29.1	.6	32.67	-	-	74	-41.33	0-360	200	V
6	6.142	26.41	PK	35.3	-26.5	.5	35.71	-	-	74	-38.29	0-360	200	V

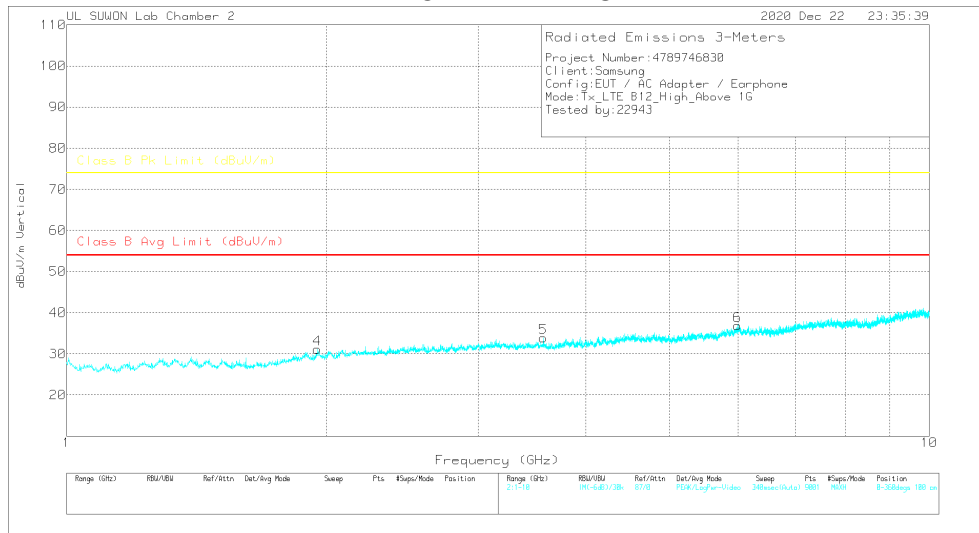
**PK – Peak Detector**

**HIGH CHANNEL(744.5 MHz)**

**HORIZONTAL PEAK PLOT**



**VERTICAL PEAK PLOT**



**DATA**

**Trace Markers**

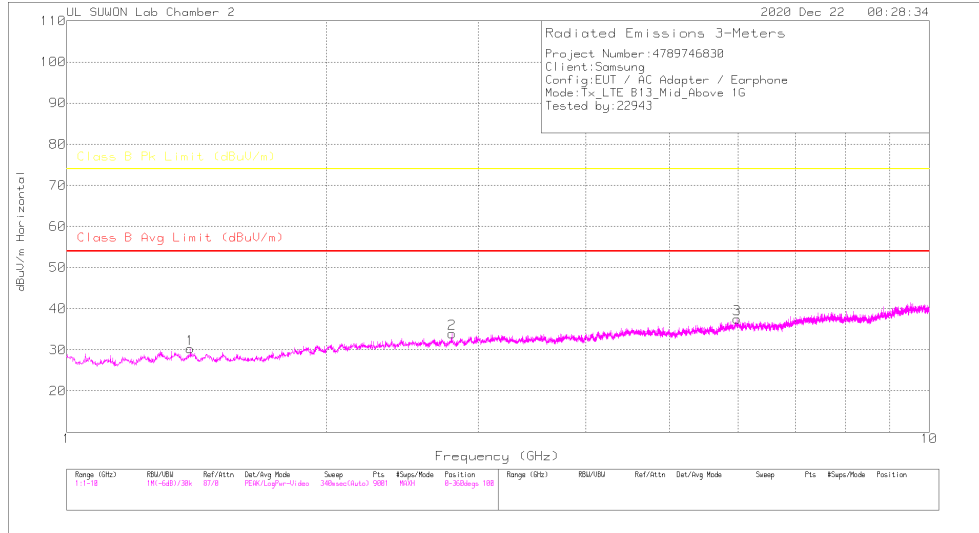
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HP[dB]	Corrected Reading dBuV/m	Class B Avg Limit (dBUV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBUV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.947	29.3	PK	31	-30.9	.6	30	-	-	74	-44	0-360	200	H
2	3.518	27.93	PK	32.8	-28.8	.6	32.53	-	-	74	-41.47	0-360	100	H
3	6.241	27.26	PK	35.3	-26.7	.5	36.36	-	-	74	-37.64	0-360	100	H
4	1.953	30.41	PK	31	-30.9	.6	31.11	-	-	74	-42.89	0-360	200	V
5	3.571	29.83	PK	32.8	-29.3	.6	33.93	-	-	74	-40.07	0-360	100	V
6	5.998	28.31	PK	35.2	-27.1	.5	36.91	-	-	74	-37.09	0-360	100	V

PK – Peak Detector

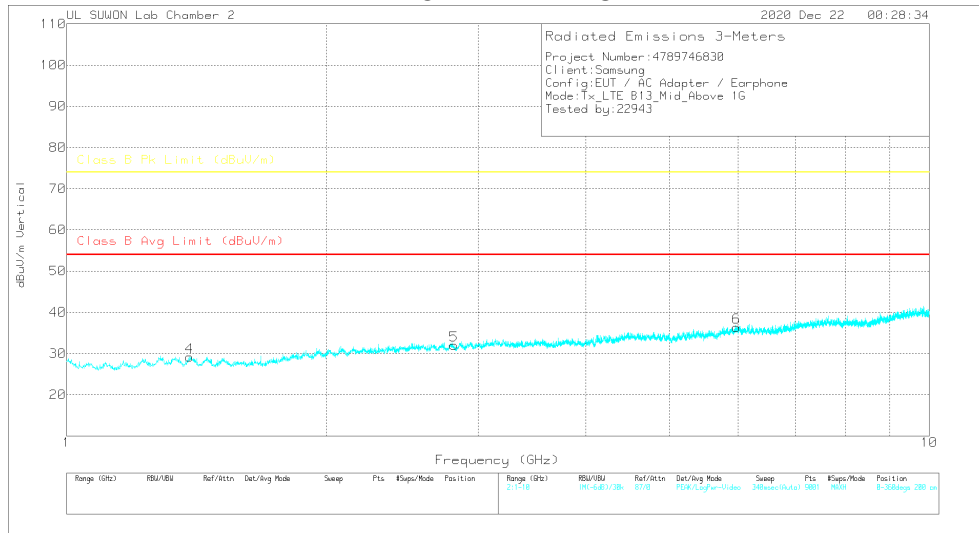
### 7.4. Above 1 GHz in the LTE Band 13

#### MID CHANNEL(751.0 MHz)

#### HORIZONTAL PEAK PLOT



#### VERTICAL PEAK PLOT



#### DATA

##### Trace Markers

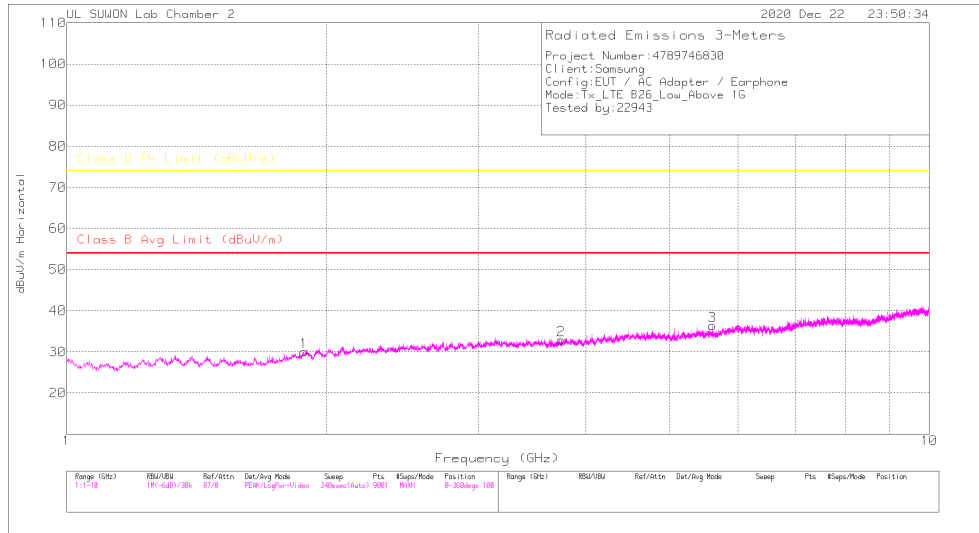
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HP[dB]	Corrected Reading (dBuV/m)	Class B Avg Limit (dBuV/m)	AvCISPR(Margin (dB))	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.391	31.72	PK	29.5	-31.7	.7	30.22	-	-	74	-43.78	0-360	100	H
2	2.796	31.05	PK	32.2	-30	.7	33.95	-	-	74	-40.05	0-360	100	H
3	5.988	29.08	PK	35.1	-27.2	.5	37.48	-	-	74	-36.52	0-360	100	H
4	1.389	30.66	PK	29.5	-31.7	.7	29.16	-	-	74	-44.84	0-360	100	V
5	2.811	29.01	PK	32.2	-29.9	.7	32.01	-	-	74	-41.99	0-360	200	V
6	5.977	27.98	PK	35.1	-27.2	.5	36.38	-	-	74	-37.62	0-360	100	V

PK – Peak Detector

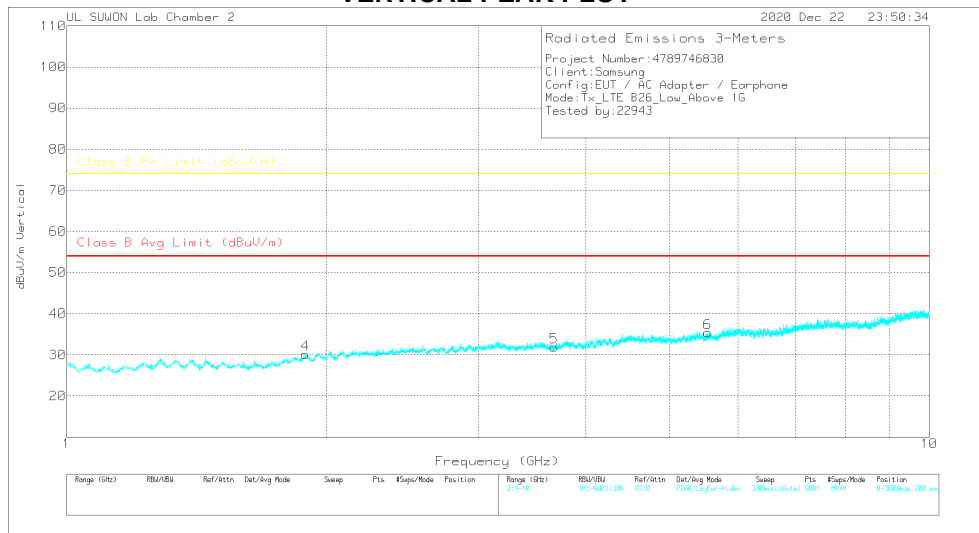
### 7.5. Above 1 GHz in the LTE Band 26

#### LOW CHANNEL(860.5 MHz)

#### HORIZONTAL PEAK PLOT



#### VERTICAL PEAK PLOT



#### DATA

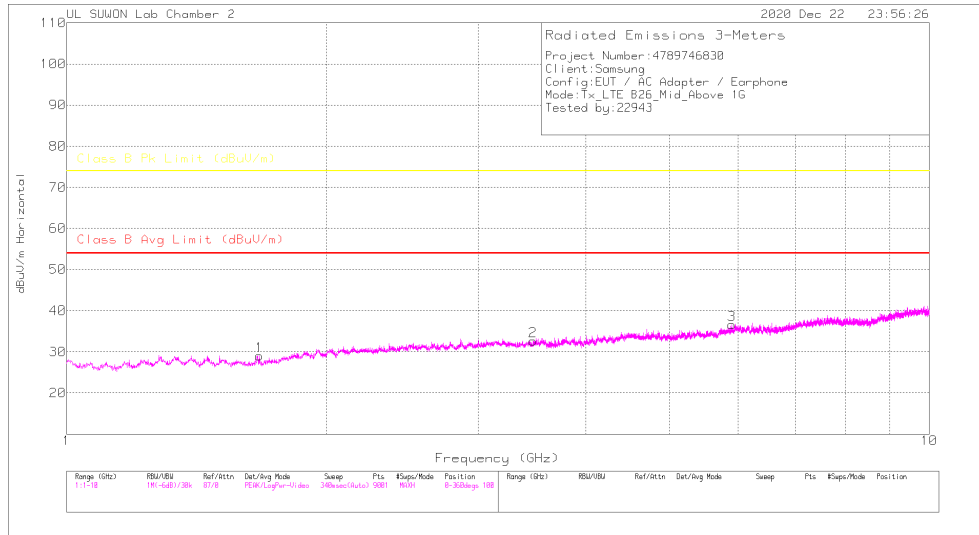
##### Trace Markers

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	1.884	29.73	PK	30.6	-31	.7	30.03	-	-	74	-43.97	0-360	100	H
2	3.743	28.33	PK	33.2	-29.2	.6	32.93	-	-	74	-41.07	0-360	100	H
3	5.603	28.63	PK	34.6	-27.4	.5	36.33	-	-	74	-37.67	0-360	100	H
4	1.892	29.65	PK	30.7	-30.9	.7	30.15	-	-	74	-43.85	0-360	200	V
5	3.675	27.85	PK	33	-29.5	.6	31.95	-	-	74	-42.05	0-360	200	V
6	5.534	28.03	PK	34.5	-27.6	.5	35.43	-	-	74	-38.57	0-360	200	V

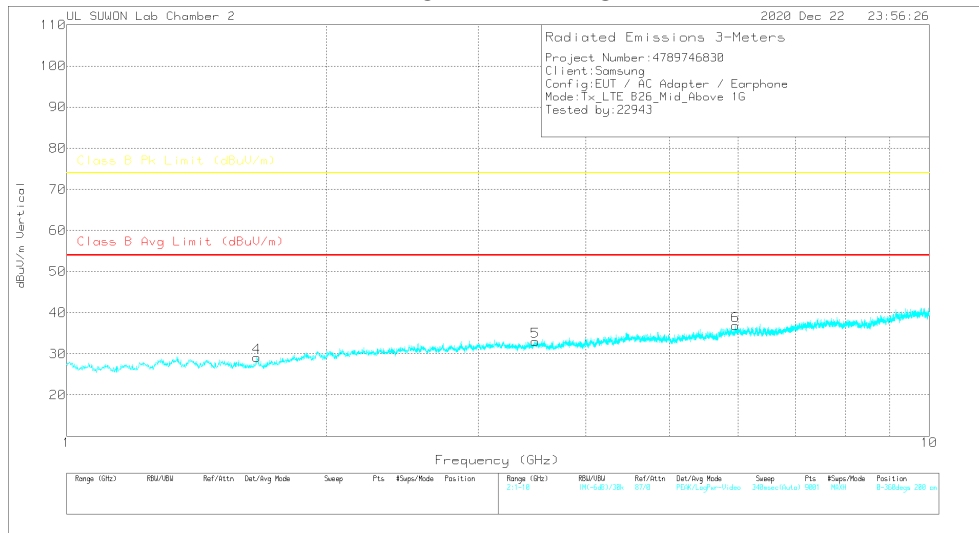
Pk - Peak detector

**MID CHANNEL(876.5 MHz)**

**HORIZONTAL PEAK PLOT**



**VERTICAL PEAK PLOT**



**DATA**

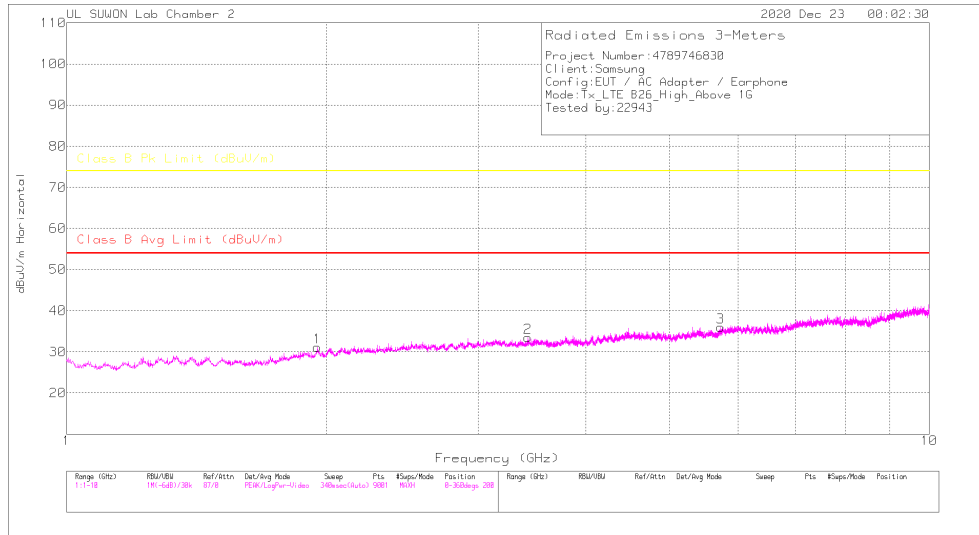
**Trace Markers**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HP[dB]	Corrected Reading dBu/m	Class B Avg Limit (dBu/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBu/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.673	31	PK	28.6	-31.3	.7	29	-	-	74	-45	0-360	100	H
2	3.473	28.04	PK	32.8	-28.8	.6	32.64	-	-	74	-41.36	0-360	200	H
3	5.901	28.28	PK	35	-27.2	.5	36.58	-	-	74	-37.42	0-360	200	H
4	1.662	31.17	PK	28.6	-31.3	.7	29.17	-	-	74	-44.83	0-360	100	V
5	3.494	28.66	PK	32.8	-29	.6	33.06	-	-	74	-40.94	0-360	100	V
6	5.965	28.49	PK	35.1	-27.2	.5	36.89	-	-	74	-37.11	0-360	200	V

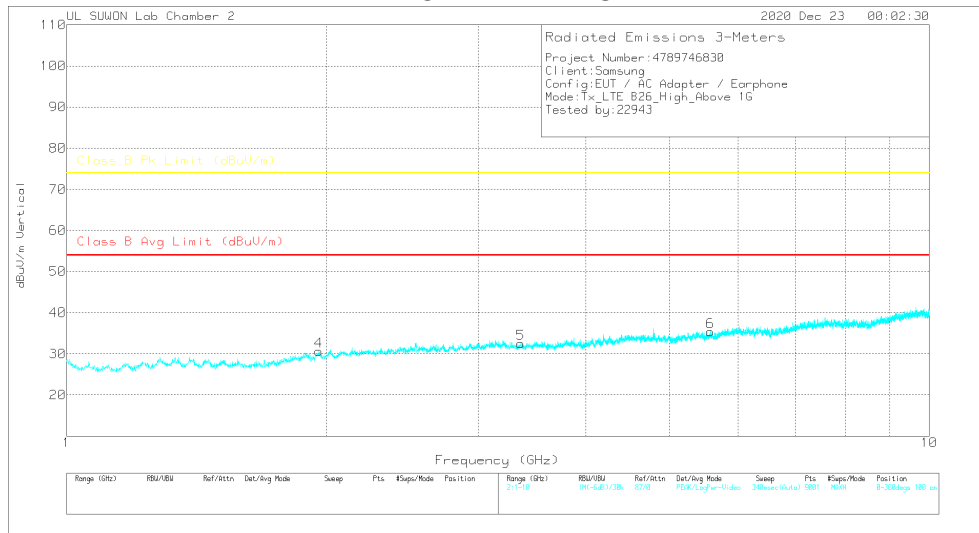
**PK – Peak Detector**

**HIGH CHANNEL(892.5 MHz)**

**HORIZONTAL PEAK PLOT**



**VERTICAL PEAK PLOT**



**DATA**

**Trace Markers**

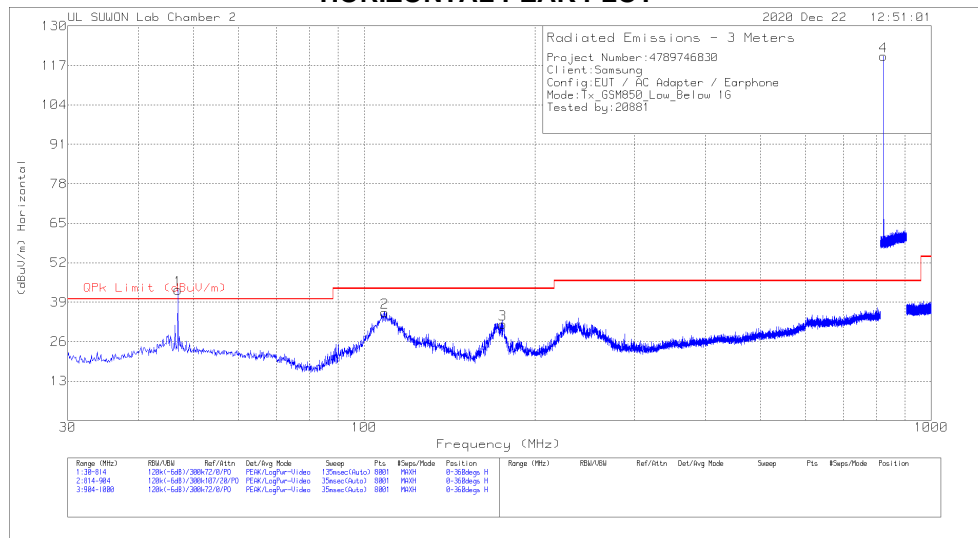
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	1-18GHz[dB]	1GHz_HP[dB]	Corrected Reading dBuV/m	Class B Avg Limit (dBuV/m)	Av(CISPR)Margin (dB)	Class B Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.952	30.41	PK	31	-30.9	.8	31.11	-	-	74	-42.89	0-360	200	H
2	3.426	29.49	PK	32.7	-29.3	.6	33.49	-	-	74	-40.51	0-360	200	H
3	5.726	27.96	PK	34.7	-27.2	.5	35.96	-	-	74	-38.04	0-360	100	H
4	1.959	29.9	PK	31	-30.9	.6	30.6	-	-	74	-43.4	0-360	100	V
5	3.359	28.87	PK	32.7	-29.8	.7	32.47	-	-	74	-41.53	0-360	100	V
6	5.576	27.7	PK	34.6	-27.4	.5	35.4	-	-	74	-38.6	0-360	200	V

**PK – Peak Detector**

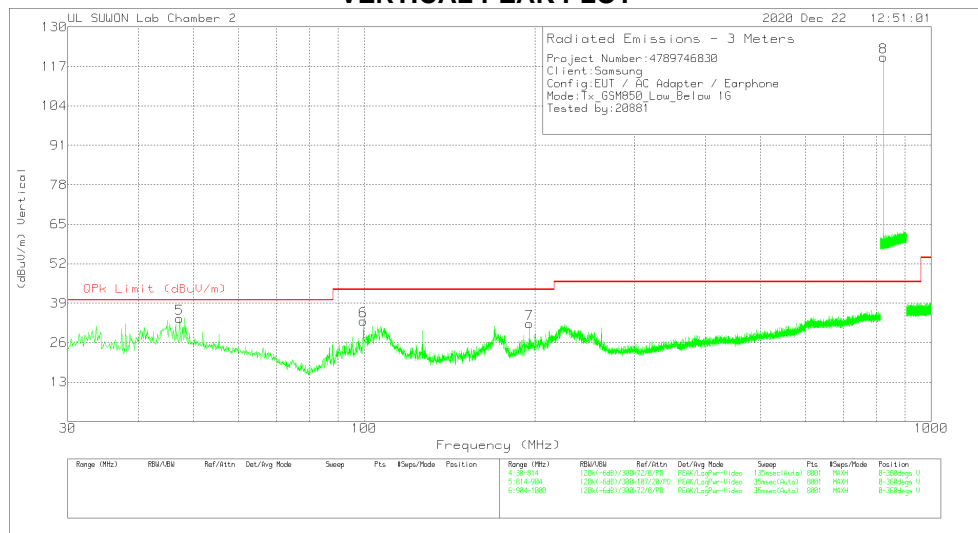
## 7.6. Below 1 GHz in the GSM850

### 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	46.954	22.33	Pk	19.8	.9	43.03	40	3.03	0-360	100	H
2	108.694	17.33	Pk	17.2	1.1	35.63	43.52	-7.89	0-360	300	H
3	175.432	15.39	Pk	14.8	1.5	31.69	43.52	-11.83	0-360	100	H
4	824.2038	90.13	Pk	26.7	3.2	120.03	46.02	74.01	0-360	100	H
5	47.248	13.43	Pk	19.8	.8	34.03	40	-5.97	0-360	100	V
6	99.678	14.65	Pk	17.4	1.1	33.15	43.52	-10.37	0-360	200	V
7	195.522	13.4	Pk	17.4	1.5	32.3	43.52	-11.22	0-360	300	V
8	824.1475	90.01	Pk	26.7	3.3	120.01	46.02	73.99	0-360	100	V

Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_74 9	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
46.954	-83	Qp	19.8	.9	19.87	40	-20.13	321	298	H

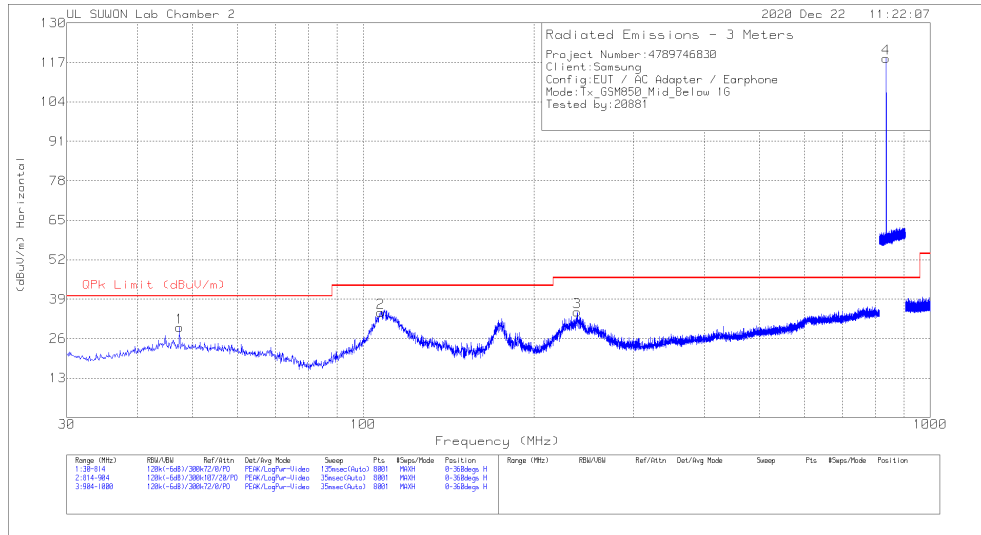
Qp - Quasi-Peak detector

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

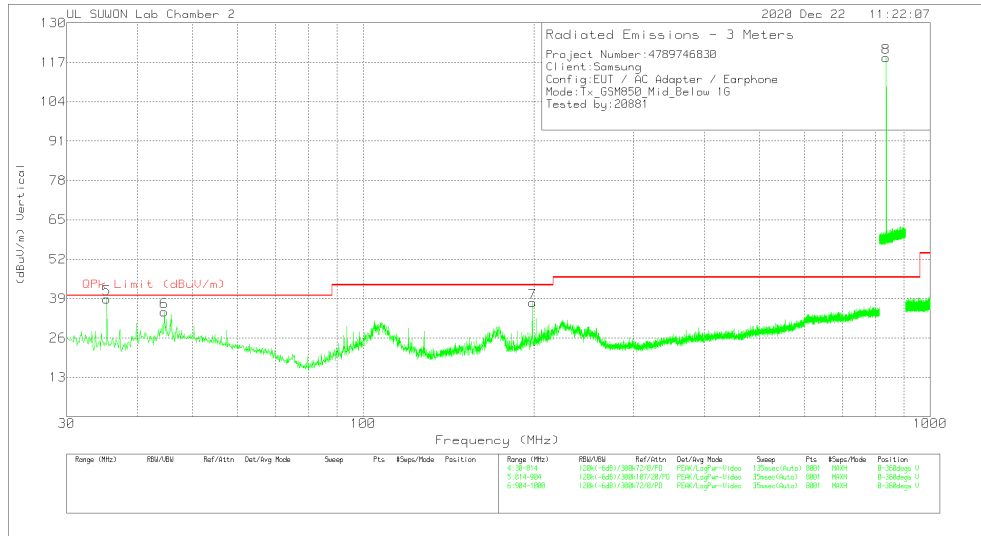


**MID CHANNEL(881.6 MHz)**

**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	47.444	9.23	Pk	19.8	.7	29.73	40	-10.27	0-360	300	H
2	107.322	15.97	Pk	17.4	1.2	34.57	43.52	-8.95	0-360	300	H
3	238.642	14.96	Pk	18.1	1.7	34.76	46.02	-11.26	0-360	100	H
4	836.6575	88.22	Pk	26.9	3.3	118.42	46.02	72.4	0-360	100	H
5	35.292	21.4	Pk	16.6	.9	38.9	40	-1.1	0-360	100	V
6	44.602	14.08	Pk	19.6	.9	34.58	40	-5.42	0-360	200	V
7	198.756	18.81	Pk	17.3	1.5	37.61	43.52	-5.91	0-360	200	V
8	836.5338	88.36	Pk	26.9	3.3	118.56	46.02	72.54	0-360	100	V

Pk - Peak detector

Radiated Emissions

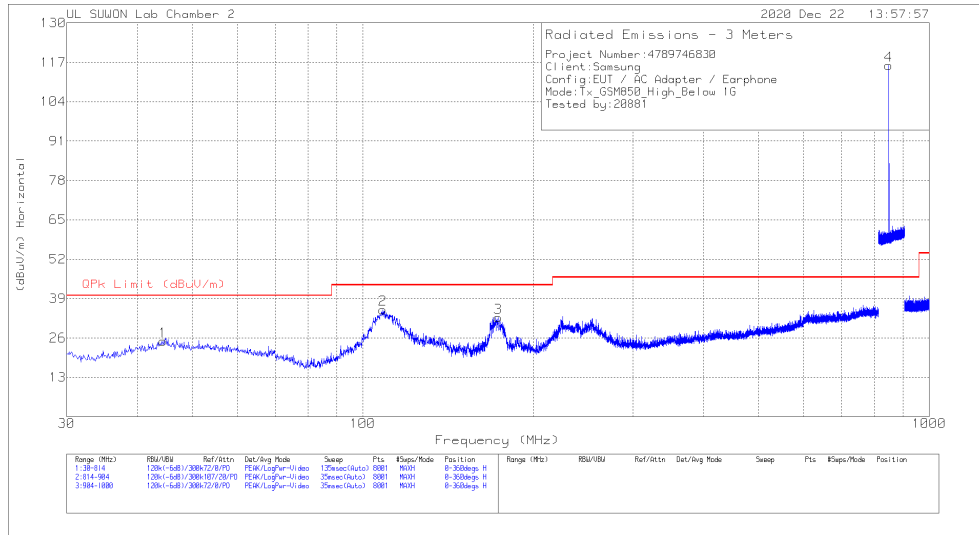
Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_74 9	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
35.292	3.47	Qp	16.6	.9	20.97	40	-19.03	110	104	V

Qp - Quasi-Peak detector

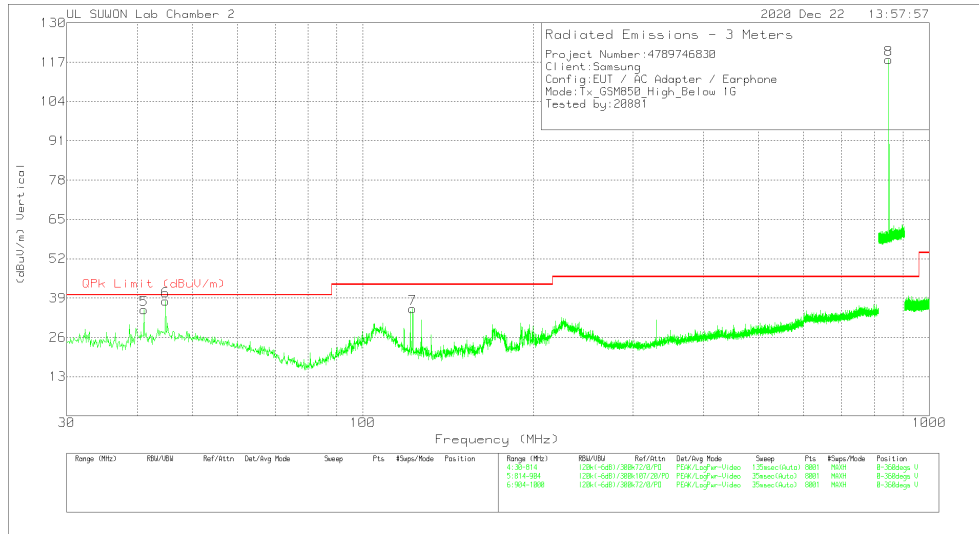
Note: Unwanted emissions captured from 824MHz to 849MHz and from 869MHz to 894MHz were the TX and RX signals generated from the call-simulator.

**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	44.406	4.81	Pk	19.5	.7	25.01	40	-14.99	0-360	300	H
2	108.498	16.9	Pk	17.3	1.2	35.4	43.52	-8.12	0-360	300	H
3	173.276	16.56	Pk	14.6	1.6	32.76	43.52	-10.76	0-360	100	H
4	848.8638	85.4	Pk	27.3	3.3	116	46.02	69.98	0-360	200	H
5	41.074	15.53	Pk	18.9	.7	35.13	40	-4.87	0-360	300	V
6	44.798	17.71	Pk	19.6	.7	38.01	40	-1.99	0-360	100	V
7	122.512	19.24	Pk	15	1.2	35.44	43.52	-8.08	0-360	100	V
8	848.8075	87.3	Pk	27.3	3.3	117.9	46.02	71.88	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
41.074	3.28	Qp	18.9	.7	22.88	40	-17.12	102	100	V
44.798	3.45	Qp	19.6	.7	23.75	40	-16.25	113	100	V

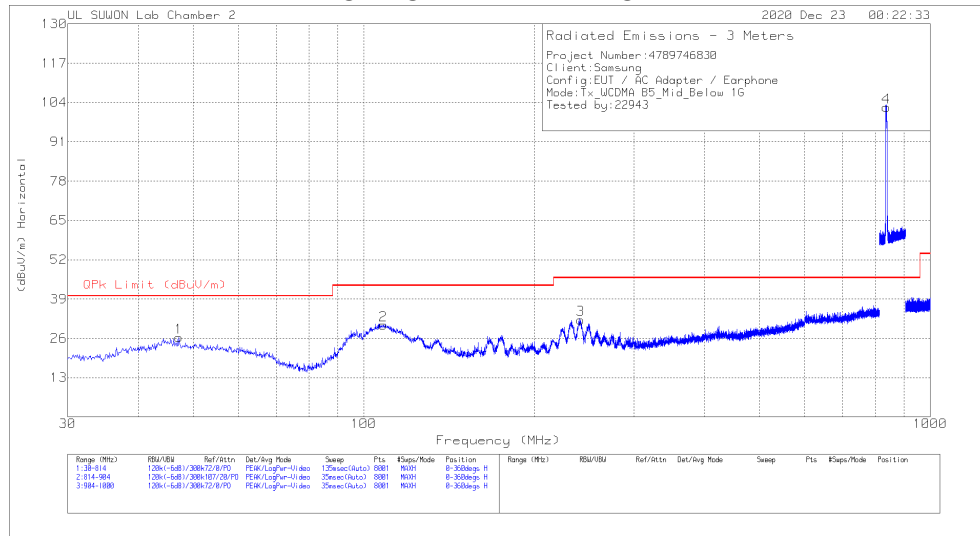
Qp - Quasi-Peak detector

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

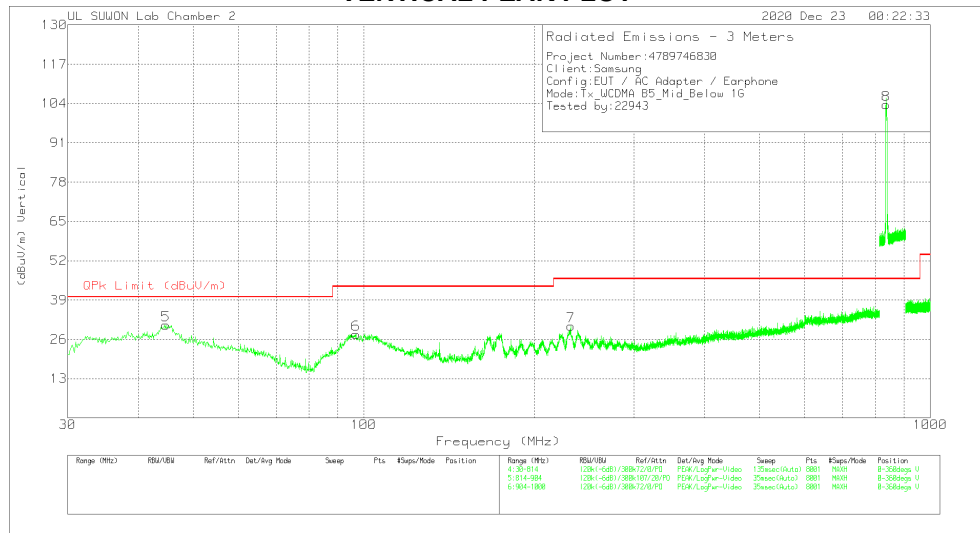
## 7.7. Below 1 GHz in the WCDMA Band 5

### 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	47.15	5.75	Pk	19.8	.8	26.35	40	-13.65	0-360	400	H
2	108.351	11.76	Pk	17.3	1.3	30.36	43.52	-13.16	0-360	300	H
3	241.288	12.18	Pk	18.3	1.7	32.18	46.02	-13.84	0-360	100	H
4	836.7813	72.22	Pk	26.9	3.3	102.42	46.02	56.4	0-360	100	H
5	44.7	10.37	Pk	19.6	.8	30.77	40	-9.23	0-360	100	V
6	96.836	9.64	Pk	17	1.1	27.74	43.52	-15.78	0-360	100	V
7	231.978	10.93	Pk	17.7	1.7	30.33	46.02	-15.69	0-360	100	V
8	836.5675	73.47	Pk	26.9	3.2	103.57	46.02	57.55	0-360	100	V

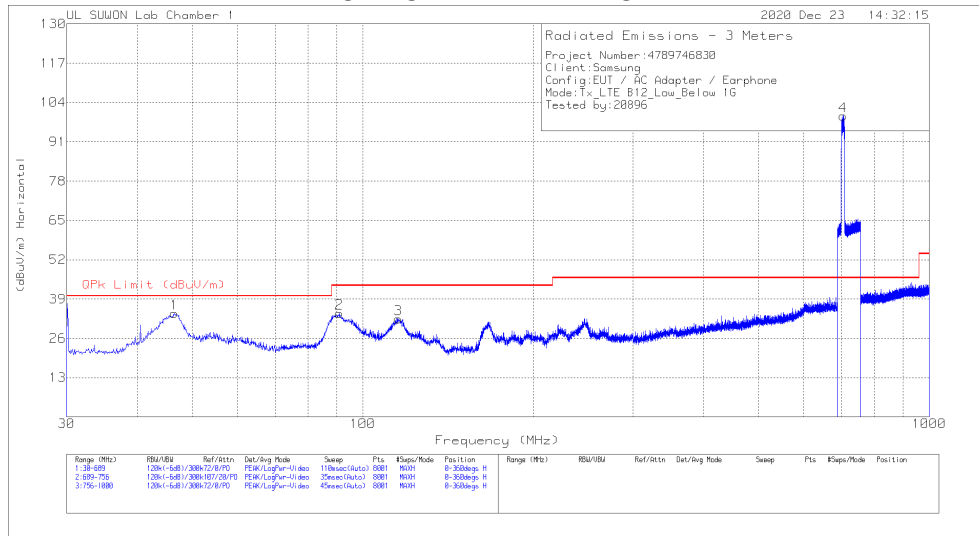
Pk - Peak detector

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

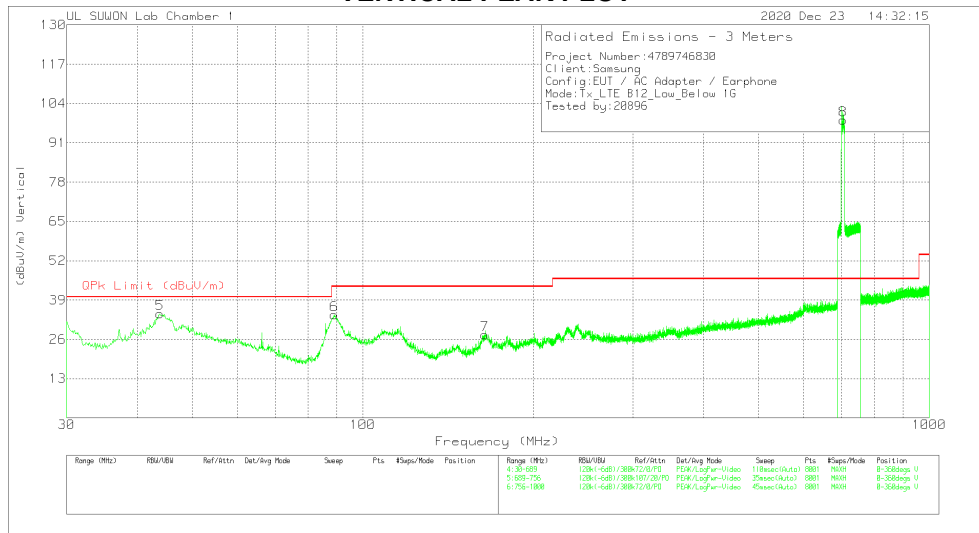
## 7.8. Below 1 GHz in the LTE Band 12

### LOW CHANNEL(730.5 MHz)

#### HORIZONTAL PEAK PLOT



#### VERTICAL PEAK PLOT



#### DATA

##### Trace Markers

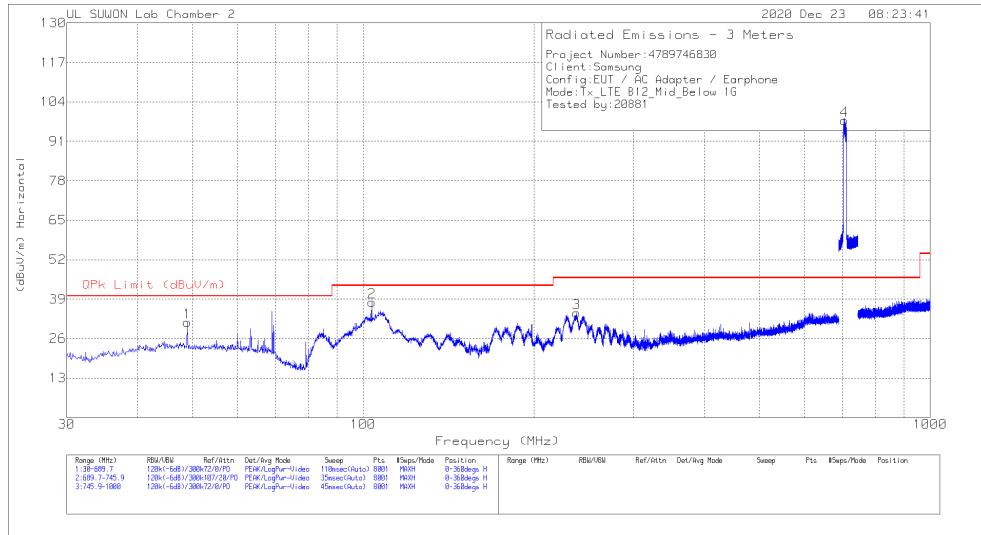
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass[ dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	46.475	12.43	Pk	19.9	1.9	34.23	40	-5.77	0-360	300	H
2	90.9575	15.78	Pk	16	2.6	34.38	43.52	-9.14	0-360	200	H
3	115.5876	13.29	Pk	16.2	2.9	32.39	43.52	-11.13	0-360	300	H
4	704.3011	67	Pk	25.6	6.9	99.5	46.02	53.48	0-360	100	H
5	43.839	13.15	Pk	19.5	1.8	34.45	40	-5.55	0-360	100	V
6	88.9805	16.12	Pk	15.5	2.5	34.12	43.52	-9.4	0-360	100	V
7	164.2713	9.58	Pk	14.4	3.5	27.48	43.52	-16.04	0-360	100	V
8	704.343	66.08	Pk	25.6	6.9	98.58	46.02	52.56	0-360	100	V

Pk - Peak detector

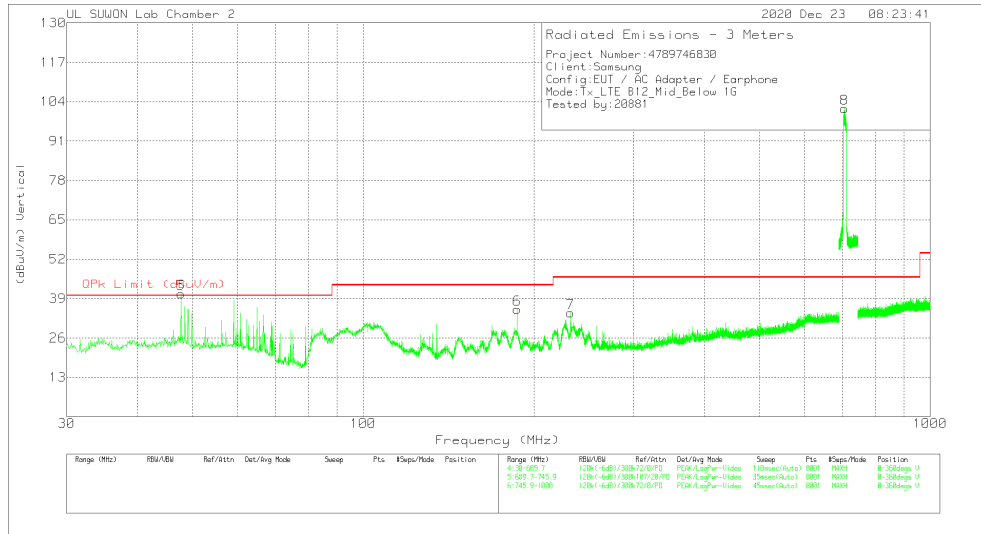
Note: Unwanted emissions captured from 699MHz to 716MHz and from 729MHz to 746MHz were the TX and RX signals generated from the call-simulator.

**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	48.9665	10.78	Pk	19.9	.8	31.48	40	-8.52	0-360	400	H
2	103.557	19.4	Pk	17.6	1.1	38.1	43.52	-5.42	0-360	300	H
3	238.1366	14.66	Pk	18.1	1.7	34.46	46.02	-11.56	0-360	100	H
4	705.984	69.37	Pk	25.5	3	97.87	46.02	51.85	0-360	100	H
5	47.7295	19.9	Pk	19.9	.8	40.6	40	.6	0-360	100	V
6	186.8446	17.77	Pk	16.1	1.6	35.47	43.52	-8.05	0-360	100	V
7	232.2817	14.86	Pk	17.7	1.7	34.26	46.02	-11.76	0-360	200	V
8	705.9137	73.22	Pk	25.5	3	101.72	46.02	55.7	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
47.7295	-86	Qp	19.9	.8	19.84	40	-20.16	104	391	H

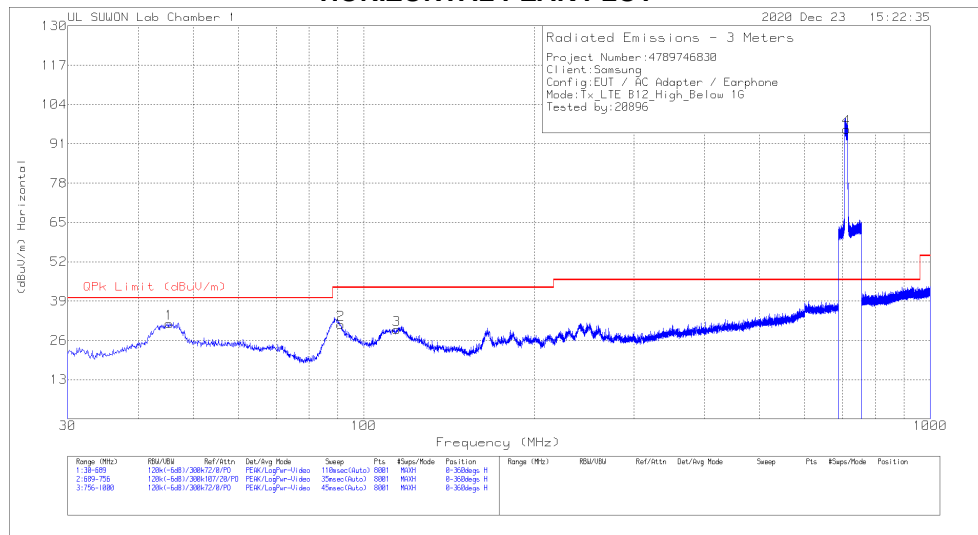
Qp - Quasi-Peak detector

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

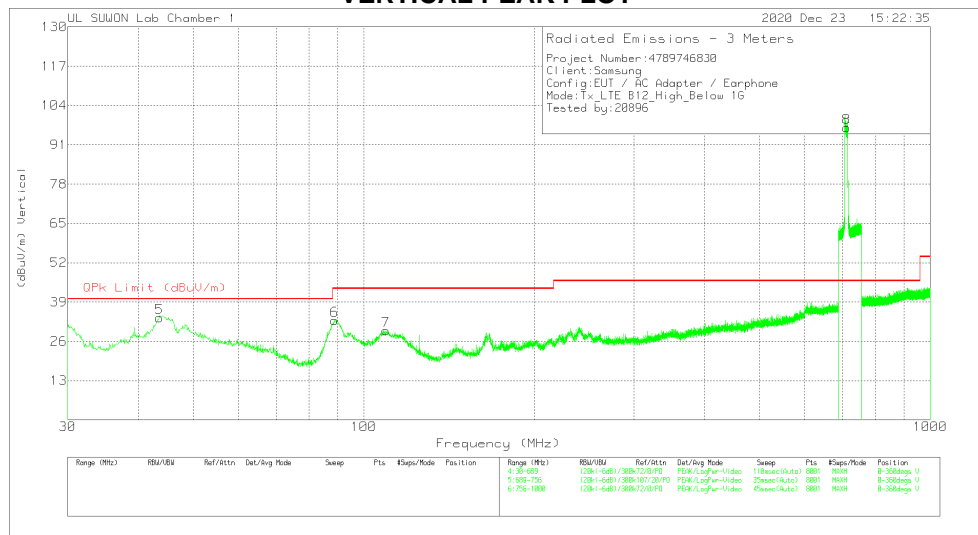


**HIGH CHANNEL(744.5 MHz)**

**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	45.3218	9.85	Pk	19.8	2	31.65	40	-8.35	0-360	400	H
2	91.1223	12.71	Pk	16	2.6	31.31	43.52	-12.21	0-360	200	H
3	114.1873	10.23	Pk	16.3	3	29.53	43.52	-13.99	0-360	300	H
4	711.311	63.3	Pk	25.7	6.9	95.9	46.02	49.88	0-360	100	H
5	43.5095	12.72	Pk	19.4	1.7	33.82	40	-6.18	0-360	100	V
6	88.8158	15.06	Pk	15.4	2.5	32.96	43.52	-10.56	0-360	100	V
7	109.4919	9.43	Pk	17.3	2.8	29.53	43.52	-13.99	0-360	200	V
8	711.2859	64.01	Pk	25.7	6.9	96.61	46.02	50.59	0-360	100	V

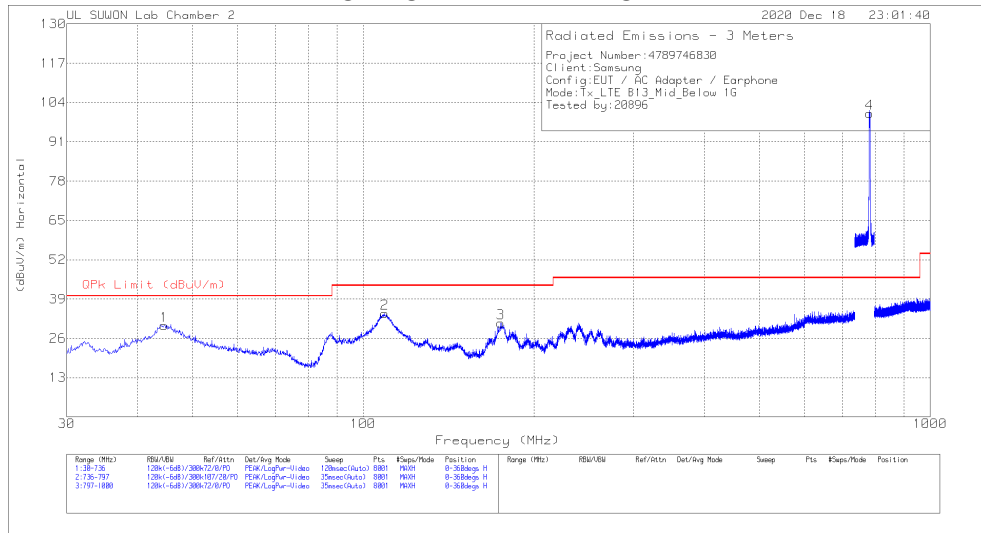
Pk - Peak detector

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

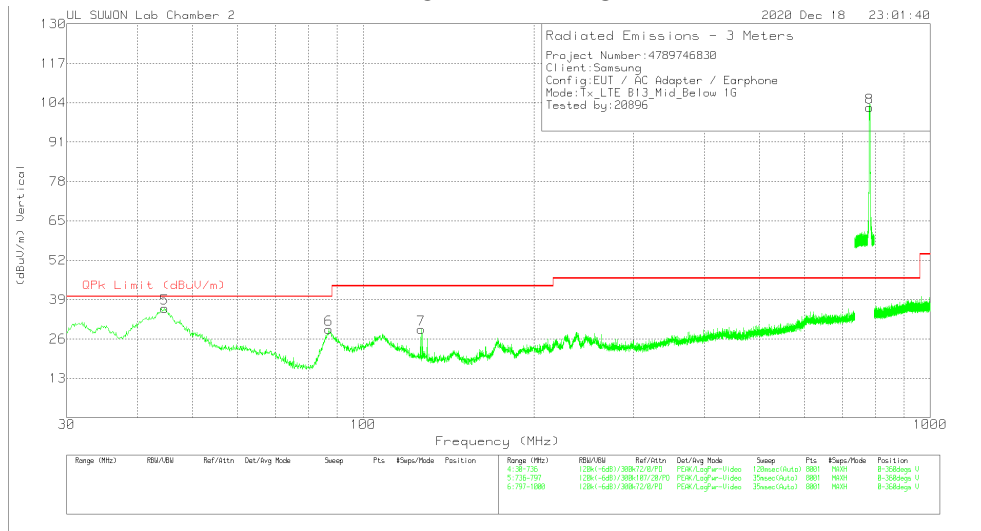
### 7.9. Below 1 GHz in the LTE Band 13

#### MID CHANNEL(751.0 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	44.5613	9.67	Pk	19.6	.9	30.17	40	-9.83	0-360	400	H
2	109.1603	15.85	Pk	17.2	1.3	34.35	43.52	-9.17	0-360	300	H
3	174.9065	14.9	Pk	14.8	1.4	31.1	43.52	-12.42	0-360	200	H
4	781.8873	70.78	Pk	26.5	3.1	100.38	46.02	54.36	0-360	100	H
5	44.6495	15.7	Pk	19.6	.8	36.1	40	-3.9	0-360	100	V
6	86.9213	13.48	Pk	14.7	1.1	29.28	40	-10.72	0-360	100	V
7	126.5455	13.55	Pk	14.5	1.2	29.25	43.52	-14.27	0-360	100	V
8	782.0779	72.72	Pk	26.5	3.2	102.42	46.02	56.4	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
44.6495	13.29	Qp	19.6	.8	33.69	40	-6.31	98	100	V

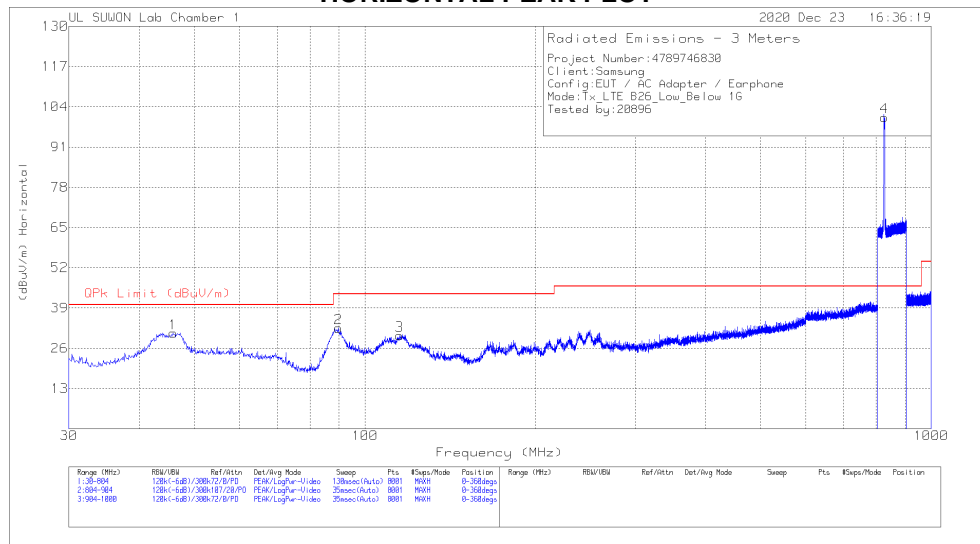
Qp - Quasi-Peak detector

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

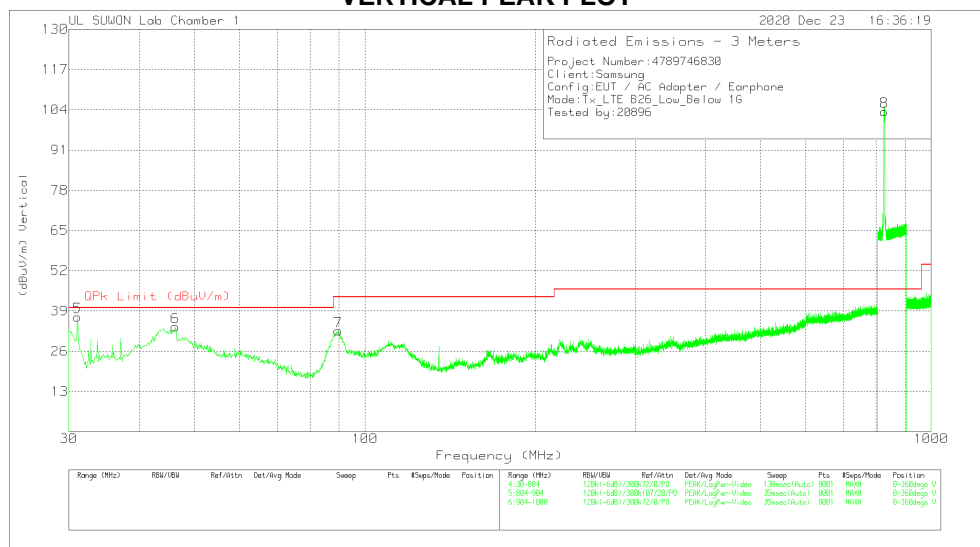
### 7.10. Below 1 GHz in the LTE Band 26

#### LOW CHANNEL(860.5 MHz)

#### HORIZONTAL PEAK PLOT



#### VERTICAL PEAK PLOT



#### DATA

#### Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass [dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	45.867	9.08	Pk	19.9	1.9	30.88	40	-9.12	0-360	300	H
2	89.7915	14.3	Pk	15.7	2.5	32.5	43.52	-11.02	0-360	200	H
3	115.14	10.89	Pk	16.3	2.9	30.09	43.52	-13.43	0-360	300	H
4	826.8125	65.93	Pk	27.1	7.6	100.63	46.02	54.61	0-360	100	H
5	31.0643	20.31	Pk	15.7	1.1	37.11	40	-2.89	0-360	100	V
6	46.254	12.18	Pk	19.9	1.8	33.88	40	-6.12	0-360	100	V
7	89.6948	14.33	Pk	15.7	2.5	32.53	43.52	-10.99	0-360	100	V
8	826.5813	68.71	Pk	27.1	7.6	103.41	46.02	57.39	0-360	200	V

Pk - Peak detector

Radiated Emissions

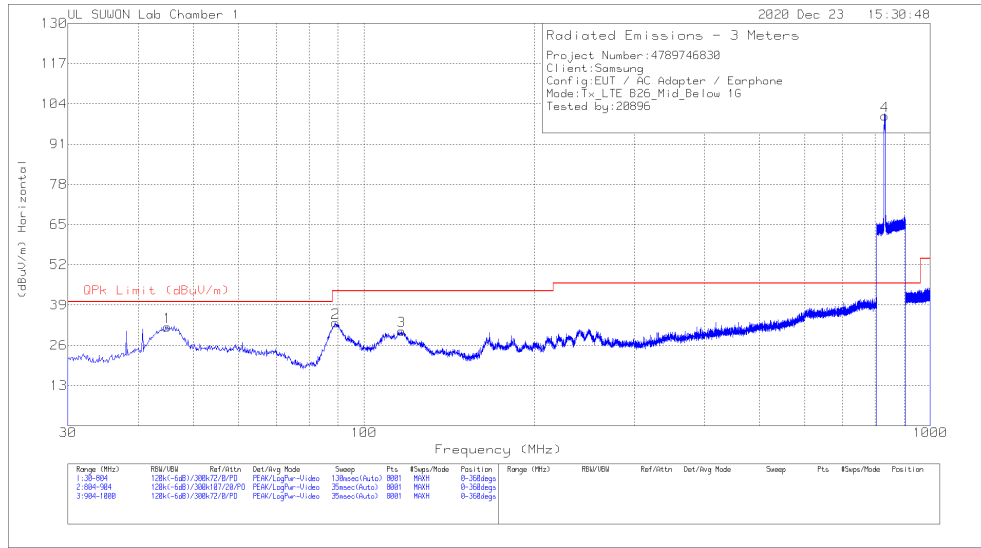
Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_75 0	Below_1G_Bypass[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
31.0643	8.93	Qp	15.7	1.1	25.73	40	-14.27	232	109	V

Qp - Quasi-Peak detector

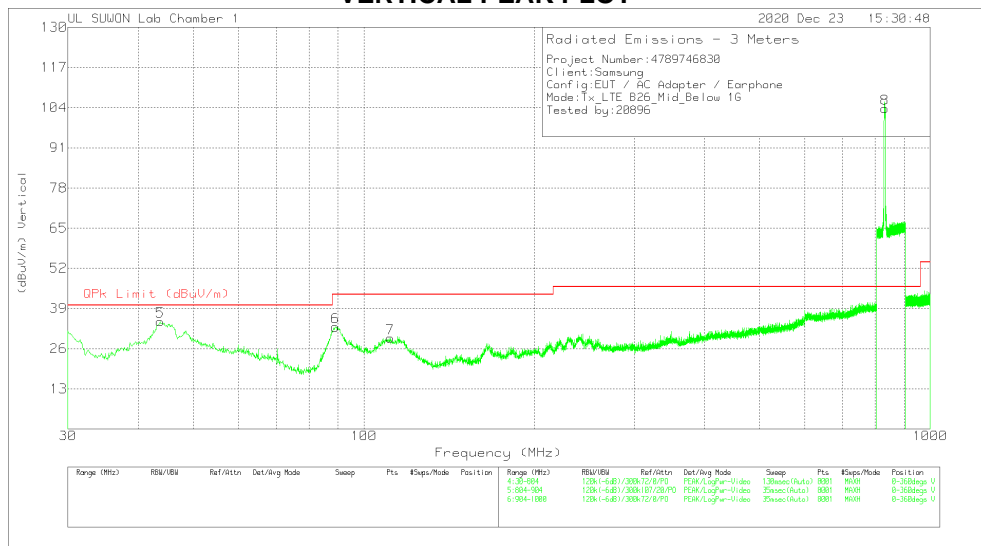
Note: Unwanted emissions captured from 814MHz to 849MHz and from 859MHz to 894MHz were the TX and RX signals generated from the call-simulator.

**MID CHANNEL(876.5 MHz)**

**HORIZONTAL PEAK PLOT**



**VERTICAL PEAK PLOT**



**DATA**

**Trace Markers**

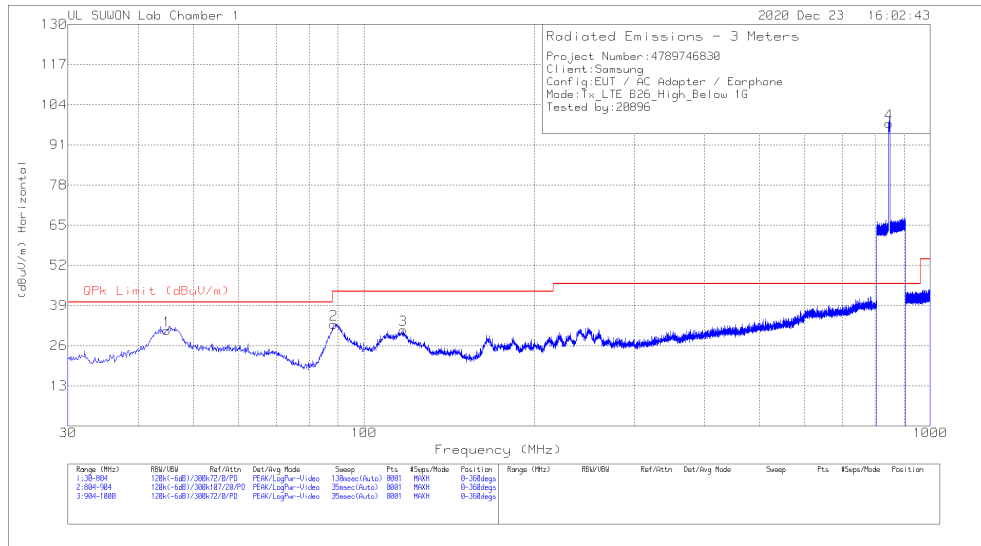
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass [dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	44.9963	10.55	Pk	19.7	1.7	31.95	40	-8.05	0-360	400	H
2	89.1143	15.26	Pk	15.5	2.5	33.26	43.52	-10.26	0-360	200	H
3	116.5913	11.55	Pk	16.1	3	30.65	43.52	-12.87	0-360	300	H
4	831.35	65.47	Pk	27	7.6	100.07	46.02	54.05	0-360	100	H
5	43.6418	13.59	Pk	19.4	1.8	34.79	40	-5.21	0-360	100	V
6	89.0175	14.92	Pk	15.5	2.6	33.02	43.52	-10.5	0-360	100	V
7	111.3668	9.77	Pk	16.8	2.8	29.37	43.52	-14.15	0-360	200	V
8	831.3375	69.1	Pk	27	7.6	103.7	46.02	57.68	0-360	200	V

Pk - Peak detector

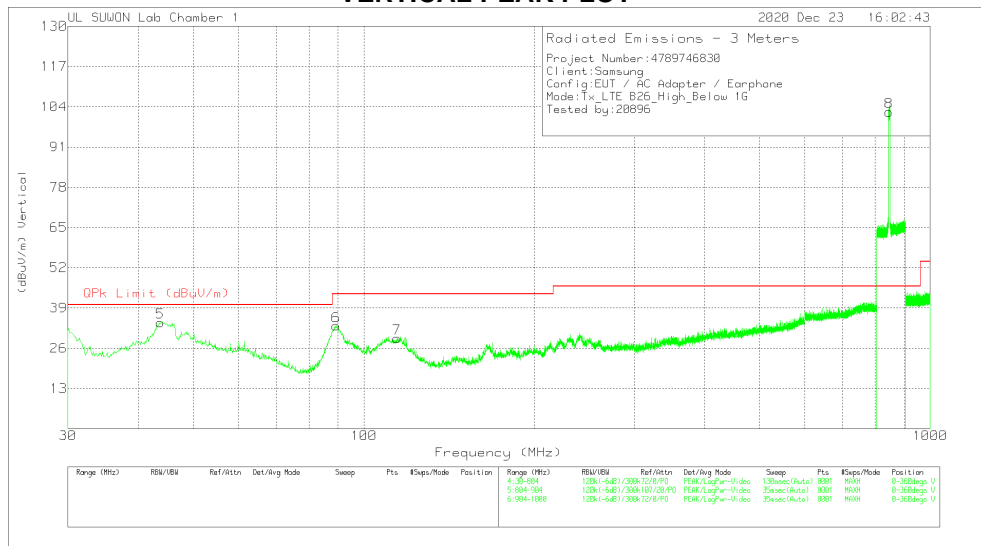
Note: Unwanted emissions captured from 814MHz to 849MHz and from 859MHz to 894MHz were the TX and RX signals generated from the call-simulator.

**HIGH CHANNEL(892.5 MHz)**

**HORIZONTAL PEAK PLOT**



**VERTICAL PEAK PLOT**



**DATA**

**Trace Markers**

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G_Bypass [dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	44.8511	9.52	Pk	19.7	1.7	30.92	40	-9.08	0-360	400	H
2	88.437	15.13	Pk	15.3	2.5	32.93	43.52	-10.59	0-360	200	H
3	117.2685	12.14	Pk	16	3	31.14	43.52	-12.38	0-360	300	H
4	846.25	62.92	Pk	27.3	7.7	97.92	46.02	51.9	0-360	100	H
5	43.6418	13.1	Pk	19.4	1.8	34.3	40	-5.7	0-360	100	V
6	89.3078	14.99	Pk	15.6	2.6	33.19	43.52	-10.33	0-360	100	V
7	114.4628	10.23	Pk	16.3	2.7	29.23	43.52	-14.29	0-360	200	V
8	846.6	67.41	Pk	27.3	7.6	102.31	46.02	56.29	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.

**END OF TEST REPORT**