



**FCC 47 CFR PART 15 SUBPART C
ISED RSS-216 ISSUE 2
ISED RSS-GEN ISSUE 4**

CERTIFICATION TEST REPORT

FOR

WIRELESS CHARGER

MODEL NUMBER : EP-OR500

FCC ID: A3LEPOR500

IC ID : 649E-EPOR500

REPORT NUMBER: 4788842808-E1V1

ISSUE DATE: JAN 14, 2019

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

Prepared by
**UL Korea, Ltd.
26th floor, 152, Teheran-ro, Gangnam-gu Seoul, 06236, Korea**

**Suwon Test Site: UL Korea, Ltd. Suwon Laboratory
218 Maeyeong-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16675, Korea
TEL: (031) 337-9902
FAX: (031) 213-5433**



ACCREDITED*

Testing
Laboratory

TL-637

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	08/01/19	Initial issue	Sangyun Kim
V2	14/01/19	Updated to address TCB 's question	Sangyun Kim

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	4
2. TEST METHODOLOGY	5
FACILITIES AND ACCREDITATION	5
3. CALIBRATION AND UNCERTAINTY	5
3.1. MEASURING INSTRUMENT CALIBRATION.....	5
3.2. SAMPLE CALCULATION.....	5
3.3. MEASUREMENT UNCERTAINTY	6
4. EQUIPMENT UNDER TEST	7
4.1. DESCRIPTION OF EUT.....	7
4.2. MAXIMUM OUTPUT POWER.....	7
4.3. PRELIMINARY TEST CONFIGURATIONS.....	7
4.1. WORST-CASE CONFIGURATION AND MODE	8
4.2. MODIFICATIONS.....	8
4.3. DETAILS OF TESTED SYSTEM.....	9
5. TEST AND MEASUREMENT EQUIPMENT	11
6. APPLICABLE LIMITS AND TEST RESULTS	12
6.1. OCCUPIED BANDWIDTH.....	12
6.2. RADIATED EMISSIONS	14
6.3. AC MAINS LINE CONDUCTED EMISSIONS.....	32
7. SETUP PHOTOS.....	41

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

EUT DESCRIPTION: WIRELESS CHARGER

MODEL NUMBER: EP-OR500

SERIAL NUMBER: RF7K90PGTNITYS

DATE TESTED: JAN 02, 2019 - JAN 08, 2019

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-216 Issue 2	Pass
INDUSTRY CANADA RSS-GEN Issue 4	Pass

UL Verification Services Inc. 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 Verification Services Inc. 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 Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. 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 NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL Korea, Ltd. By:



Changyoung Choi
Suwon Lab Engineer
UL Korea, Ltd.

Tested By:



Sangyun Kim
Suwon Lab Engineer
UL Korea, Ltd.

2. TEST METHODOLOGY

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

1. ANSI C63.10: 2013
2. CISPR 11:04

FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea. Line conducted emissions are measured only at the 218 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

218 Maeyeong-ro	
☒	Chamber 1
☒	Chamber 2
☐	Chamber 3

UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at <http://www.iasonline.org/PDF/TL/TL-637.pdf>.

3. CALIBRATION AND UNCERTAINTY

3.1. 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.

3.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

3.3. 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	2.32 dB
Radiated Disturbance, Below 1GHz	3.86 dB
Radiated Disturbance, Above 1 GHz	5.97 dB

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

4. EQUIPMENT UNDER TEST

4.1. DESCRIPTION OF EUT

The EUT is a wireless charger.

4.2. MAXIMUM OUTPUT POWER

Fundamental Frequency (KHz)	Mode	E field (300m distance) FCC (dBuV/m)	H field (3m distance) IC (dBuA/m)
110 - 190	Standby	-11.98	-16.77

4.3. PRELIMINARY TEST CONFIGURATIONS

The EUT was investigated in three orthogonal orientations X, Y, Z it was determined that X orientation with data transfer was worst-case; therefore, all final radiated testing was performed with the EUT in X orientation with data transfer.

4.1. WORST-CASE CONFIGURATION AND MODE

The EUT is a single frequency magnetic charger enclosed in a plastic case. For the entire radiated emissions test, the EUT was examining on the following configuration.

Configuration	Mode	Descriptions
1	Standby	EUT Alone powered by travel adapter
2	Operating (With wearable device)	EUT and real wearable device powered by travel adapter

AC power line conducted emissions were also investigated on the following configurations.

Configuration	Mode	Descriptions
1	Standby	EUT Alone powered by travel adapter
2	Operating (With wearable device)	EUT and real wearable device powered by travel adapter

Note that the EUT was tested as standby and operation modes.

Each charging mode with client device(1-20%, 40-60% and 90-100% of battery was tested. As worst condition, charging mode with client device 1-20% is reported.

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 300 m open area test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788 D01.

4.2. MODIFICATIONS

No modifications were made during testing.

4.3. DETAILS OF TESTED SYSTEM

SUPPORT EQUIPMENT & PERIPHERALS

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID/DoC
Wearable device	Samsung	SM-R500	R3AKC0086YR	A3LSMR500
Travel Adapter	Samsung	EP-TA50KWK	DK5K820VS/A-E	-

I/O CABLES

[Configuration 1]

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length(m)	Remarks
1	AC Power	1	Power	Unshielded	-	From Travel Adapter to AC Main
2	USB	1	USB	Shielded	0.8m	From EUT to PC

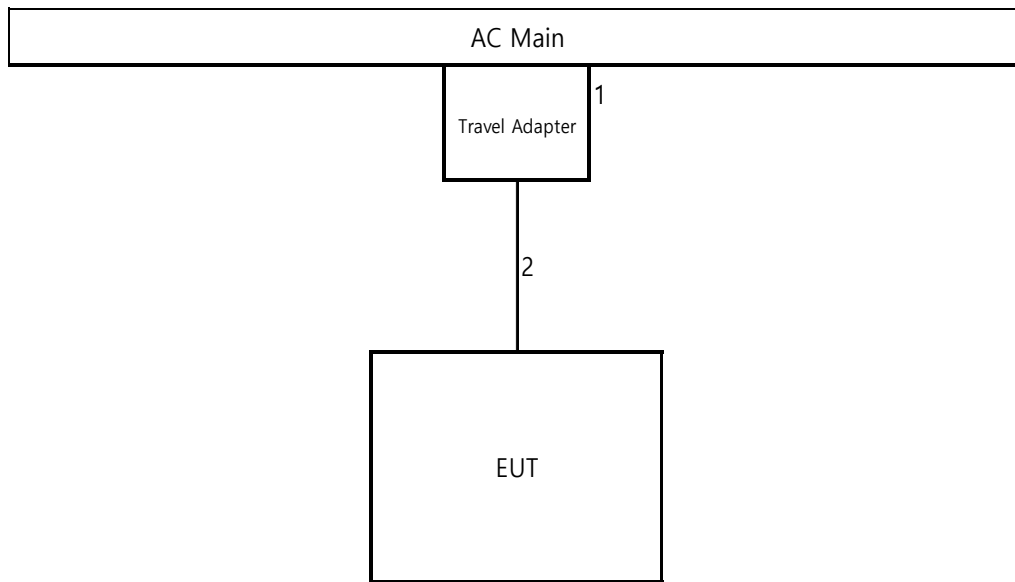
[Configuration 2]

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length(m)	Remarks
1	AC Power	1	Power	Unshielded	-	From Travel Adapter to AC Main
2	USB	1	USB	Shielded	0.8m	From EUT to PC
3	Wireless	1	Wireless	-	-	From EUT to Wearable Device

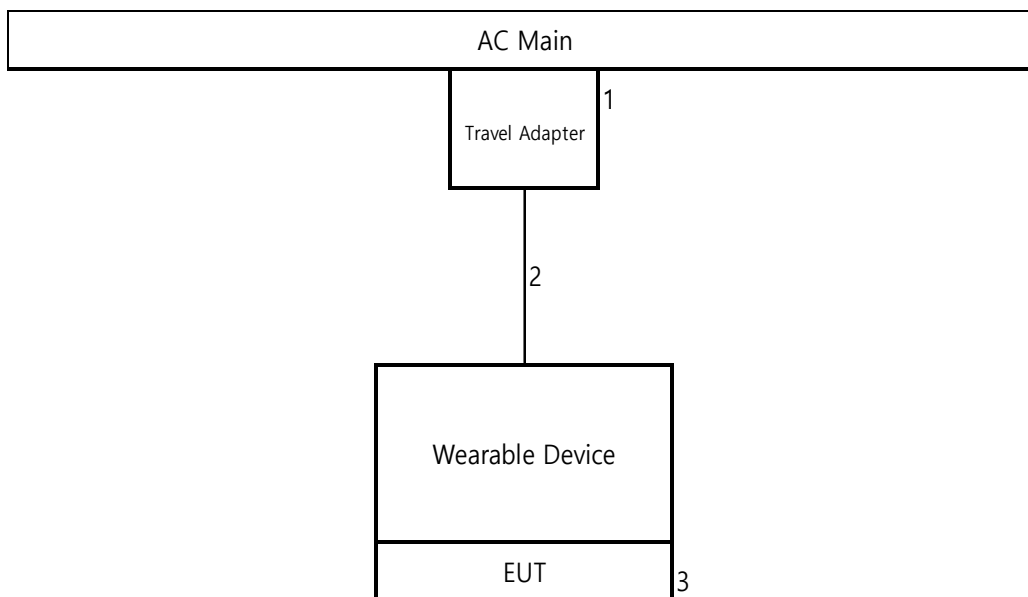
TEST SETUP

The EUT is installed in a typical configuration.

CONFIGURATION 1: STANDBY MODE



CONFIGURATION 2: OPERATING MODE



5. 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, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	750	08-04-20
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	08-04-20
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	845	08-04-20
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	10-26-19
Preamplifier, 1000 MHz	Sonoma	310N	341282	08-07-19
Preamplifier, 1000 MHz	Sonoma	310N	351741	08-07-19
Preamplifier, 1000 MHz	Sonoma	310N	370599	08-07-19
EMI Test Receive, 40 GHz	R&S	ESU40	100439	08-06-19
EMI Test Receive, 40 GHz	R&S	ESU40	100457	08-06-19
EMI Test Receive, 44 GHz	R&S	ESW44	101590	08-06-19
EMI Test Receive, 3 GHz	R&S	ESR3	101832	08-06-19
Spectrum Analyzer, 7 GHz	Agilent / HP	N9010A	MY54200580	08-07-19
LISN	R&S	ENV-216	101837	08-09-19
LISN	R&S	ENV-216	101837	08-09-19
Preamplifier, 1000 MHz	Sonoma	310N	351741	08-07-19
Preamplifier, 1000 MHz	Sonoma	310N	370599	08-07-19
UL Software				
Description	Manufacturer	Model	Version	
Radiated software	UL	UL EMC	Ver 9.5	
AC Line Conducted software	UL	UL EMC	Ver 9.5	

6. APPLICABLE LIMITS AND TEST RESULTS

6.1. OCCUPIED BANDWIDTH

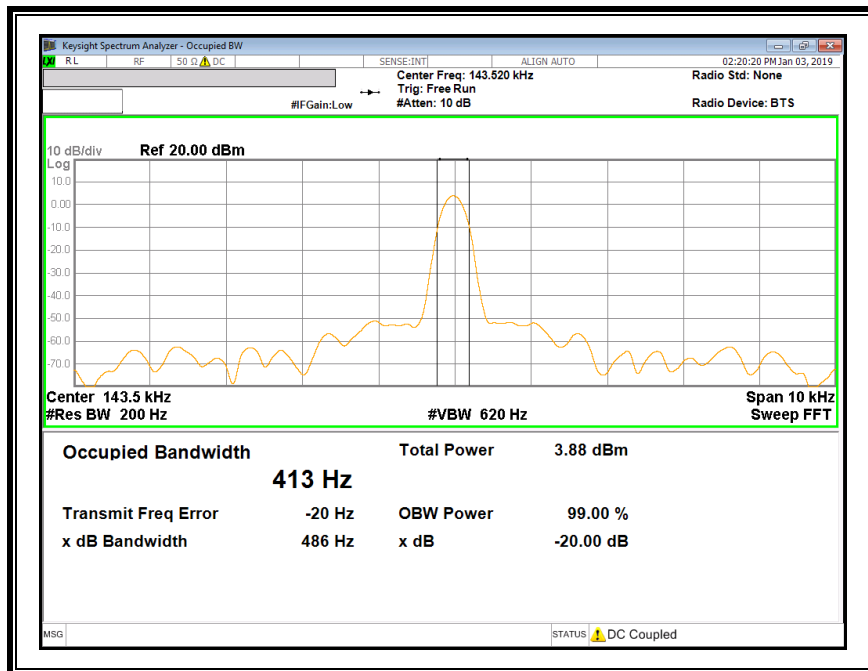
TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 200Hz. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

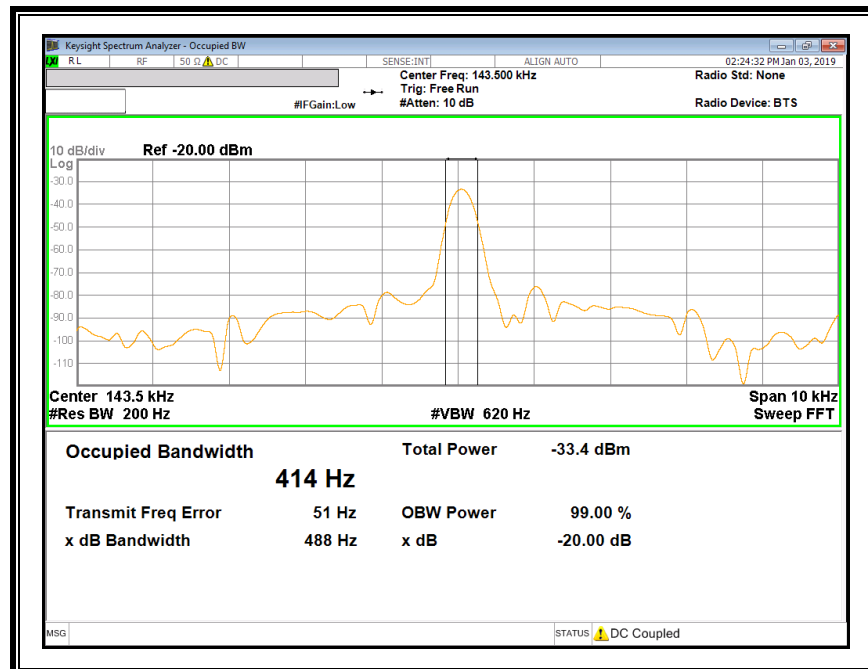
Note: Because the measured signal is CW-like, adjusting the RBW per C63.10 would not be practical since measured bandwidth will always follow the RBW and the result will be approximately twice the RBW.

RESULTS

CONFIGURATION 1: STANDBY MODE



CONFIGURATION 2: OPERATING MODE



6.2. RADIATED EMISSIONS

TEST PROCEDURE

ANSI C63.10: 2013

The highest clock frequency generated or used in the EUT is 190 KHz therefore the frequency range was investigated from 30 MHz to 1 GHz.

LIMITS

FCC §15.209 (a)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (m)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100	3
88 to 216	150	3
216 to 960	200	3
Above 960 MHz	500	3
Note: The lower limit shall apply at the transition frequency.		

IC §ICES-001 Section 6.2, IC RSS-216 6.2.2, and IC RSS-GEN Sections 8.9 and 8.10.

CISPR 11:04

Electromagnetic radiation disturbance limits for class B group 2 equipment measured on a test site

**Table 12 – Limits of the magnetic field strength
for induction cooking appliances intended for commercial use**

Frequency range MHz	Limits at 3 m distance Quasi-peak dB(μA/m)
0,009 – 0,070	69
0,070 – 0,148 5	69 Decreasing linearly with logarithm of frequency to 39
0,148 5 – 4,0	39 Decreasing linearly with logarithm of frequency to 3
4,0 – 30	3
The limits of this table apply to induction cooking appliances intended for commercial use and those for domestic use with a diagonal diameter of more than 1,6 m. The measurements are performed at 3 m distance with a 0,6 m loop antenna as described in 4.2.1 of CISPR 16-1-4. The antenna shall be vertically installed, with the lower edge of the loop at 1 m height above the floor.	

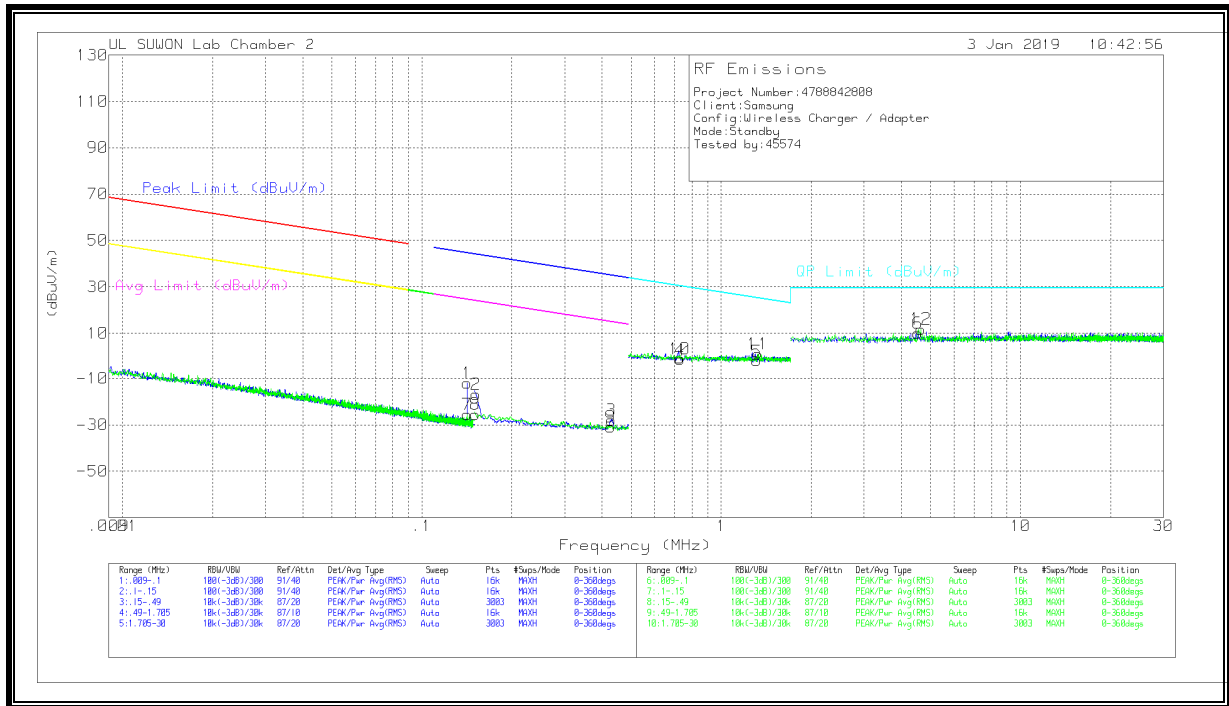
Frequency Range (MHz)	Electric Field Strength Limit Class B Group 2 @ 3m Distance (dBuV/m)	
	Quasi-peak	Average
30 – 80,872	40	35
80,872 – 81,848	60	55
81,848 – 134,786	40	35
134,786 – 136,414	60	55
136,414 – 230	40	35
230 – 1 000	47	42

[Remark]

The EUT belongs to Type 3 (Category I Radio Apparatus).

RESULTS

FCC RADIATED EMISSIONS FUNDAMENTAL AND SPURIOUS
CONFIGURATION 1: STANDBY MODE 9 KHz to 30 MHz



Face On and Face Off DATA

Trace Markers

[Face-On]

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna	Cable Loss	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
**1	.14177	48.22	Pk	19.7	.1	-80	-11.98	44.59	-56.57	24.59	-36.57	0-360
2	.15158	43.59	Pk	19.6	.1	-80	-16.71	44.01	-60.72	24.01	-40.72	0-360
3	.42888	32.36	Pk	19.6	.1	-80	-27.94	34.96	-62.9	14.96	-42.9	0-360

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna	Cable Loss	Dist Corr 30m	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
4	.73122	18.67	Pk	19.7	.1	-40	-1.53	30.33	-31.86	0-360
5	1.31422	18.01	Pk	19.7	.2	-40	-2.09	25.25	-27.34	0-360
6	4.54193	29.99	Pk	19.8	.3	-40	10.09	29.5	-19.41	0-360

[Face-Off]

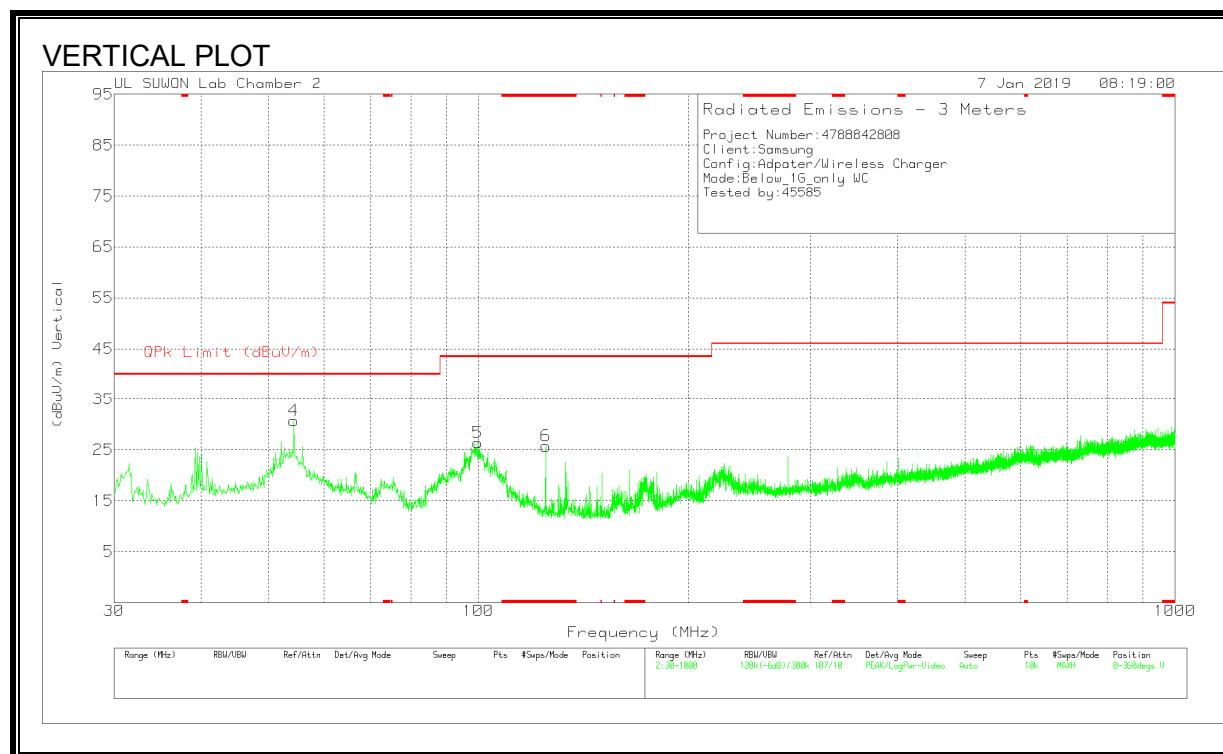
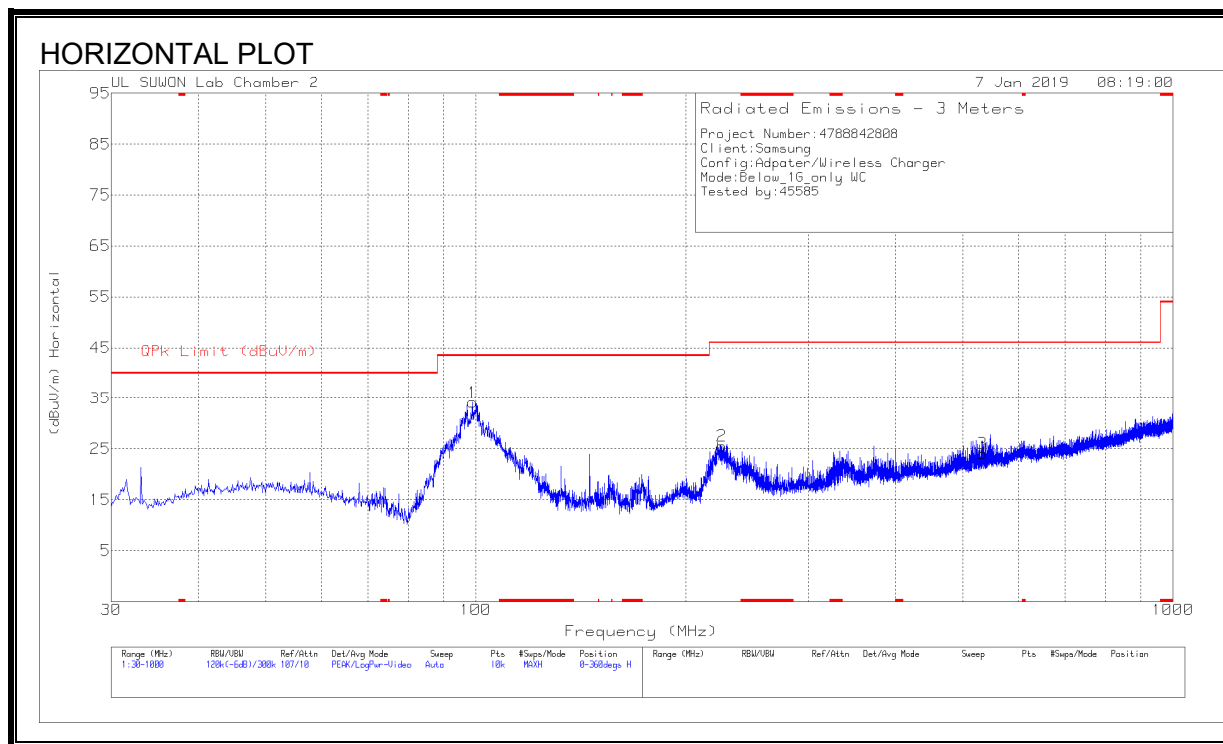
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna	Cable Loss	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
**7	.14177	34.77	Pk	19.7	.1	-80	-25.43	44.59	-70.02	24.59	-50.02	0-360
8	.15102	34.94	Pk	19.6	.1	-80	-25.36	44.04	-69.4	24.04	-49.4	0-360
9	.42826	29.41	Pk	19.6	.1	-80	-30.89	34.97	-65.86	14.97	-45.86	0-360

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna	Cable Loss	Dist Corr 30m	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
10	.72495	19.02	Pk	19.7	.1	-40	-1.18	30.41	-31.59	0-360
11	1.32357	21.07	Pk	19.7	.2	-40	.97	25.19	-24.22	0-360
12	4.63618	31.67	Pk	19.8	.3	-40	11.77	29.5	-17.73	0-360

Pk - Peak detector

**Fundamental

CONFIGURATION 1: STANDBY MODE 30 MHz to 1 GHz



HORIZONTAL AND VERTICAL DATA

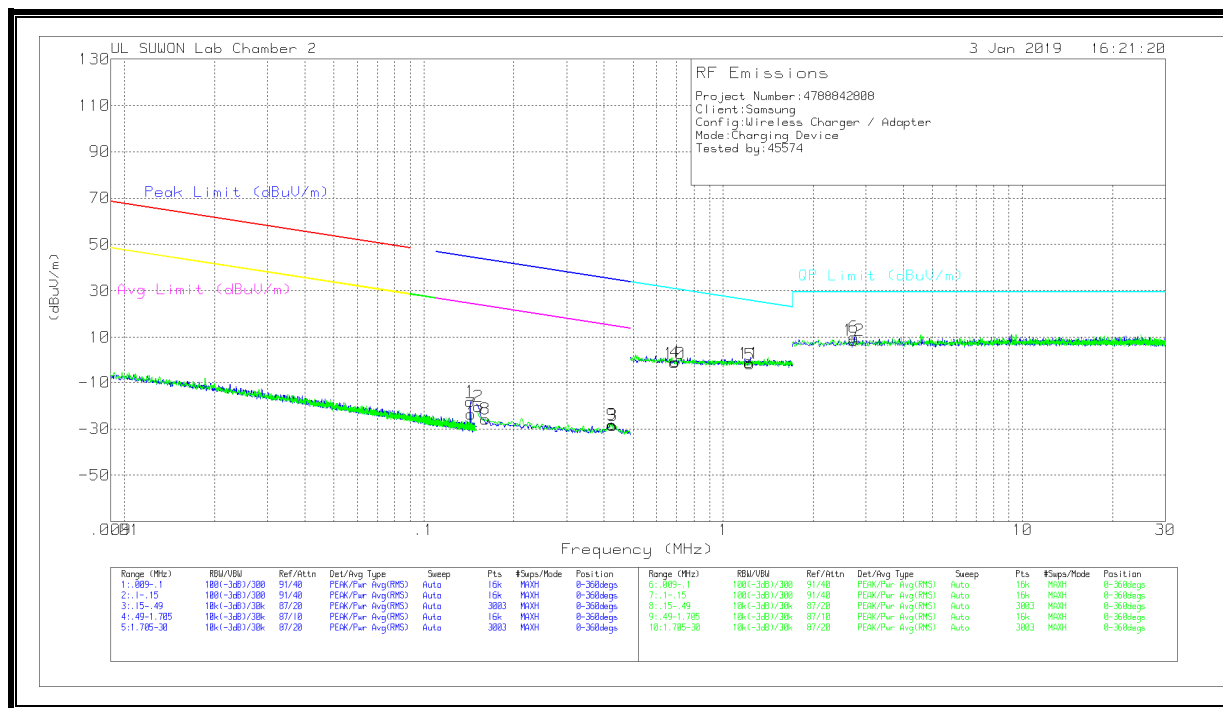
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	98.967	47.85	Pk	17.7	-31.4	34.15	43.52	-9.37	0-360	300	H
2	225.261	38.41	Pk	17.9	-30.8	25.51	46.02	-20.51	0-360	100	H
3	532.654	30.67	Pk	23.3	-29.9	24.07	46.02	-21.95	0-360	200	H
4	54.347	43.12	Pk	19.4	-31.8	30.72	40	-9.28	0-360	100	V
5	99.84	40.11	Pk	17.7	-31.4	26.41	43.52	-17.11	0-360	300	V
6	* 124.866	42.31	Pk	14.7	-31.3	25.71	43.52	-17.81	0-360	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

CONFIGURATION 2: OPERATING MODE 9 KHz to 30 MHz



Face On and Face Off DATA

Trace Markers

[Face-On]

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna	Cable Loss	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
**1	.14279	42.09	Pk	19.7	.1	-80	-18.11	44.53	-62.64	24.53	-42.64	0-360
2	.15203	39.96	Pk	19.6	.1	-80	-20.34	43.98	-64.32	23.98	-44.32	0-360
3	.42645	31.72	Pk	19.6	.1	-80	-28.58	35.01	-63.59	15.01	-43.59	0-360

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna	Cable Loss	Dist Corr 300m	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
4	.69258	19.34	Pk	19.7	.1	-40	-.86	30.8	-31.66	0-360
5	1.22792	18.22	Pk	19.7	.2	-40	-1.88	25.84	-27.72	0-360
6	2.73704	29.86	Pk	19.8	.3	-40	9.96	29.5	-19.54	0-360

[Face-Off]

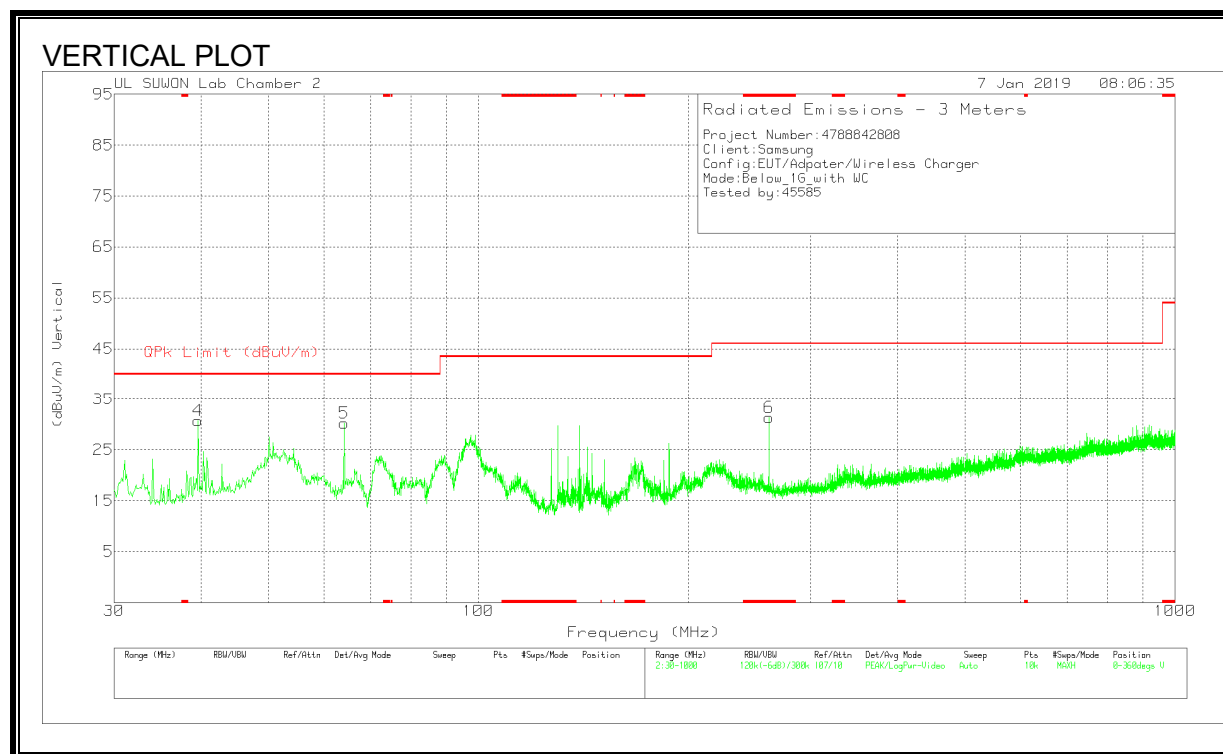
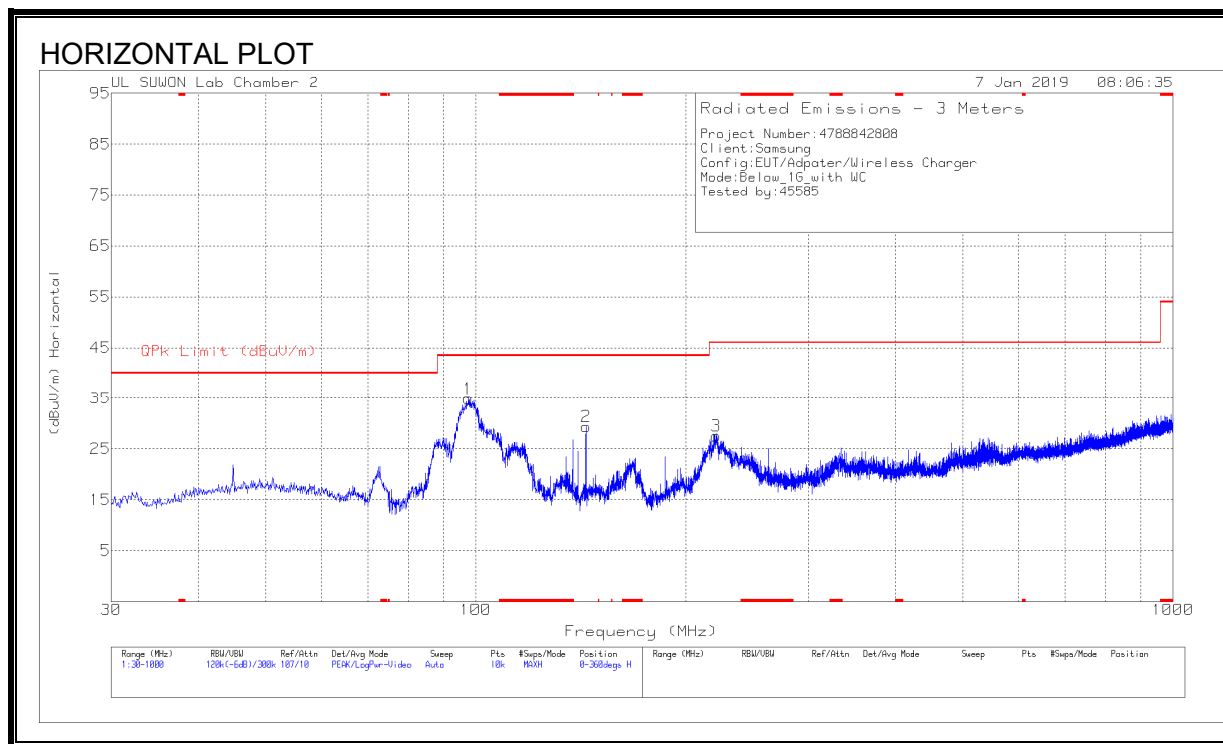
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna	Cable Loss	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
**7	.1441	36.69	Pk	19.7	.1	-80	-23.51	44.45	-67.96	24.45	-47.96	0-360
8	.16068	34.44	Pk	19.6	.1	-80	-25.86	43.5	-69.36	23.5	-49.36	0-360
9	.42521	32.08	Pk	19.6	.1	-80	-28.22	35.03	-63.25	15.03	-43.25	0-360

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna	Cable Loss	Dist Corr 300m	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
10	.68927	18.94	Pk	19.7	.1	-40	-1.26	30.84	-32.1	0-360
11	1.22401	18.8	Pk	19.7	.2	-40	-1.3	25.87	-27.17	0-360
12	2.73233	28.65	Pk	19.8	.3	-40	8.75	29.5	-20.75	0-360

Pk - Peak detector

**Fundamental

CONFIGURATION 2: OPERATING MODE 30 MHz to 1 GHz



HORIZONTAL AND VERTICAL DATA

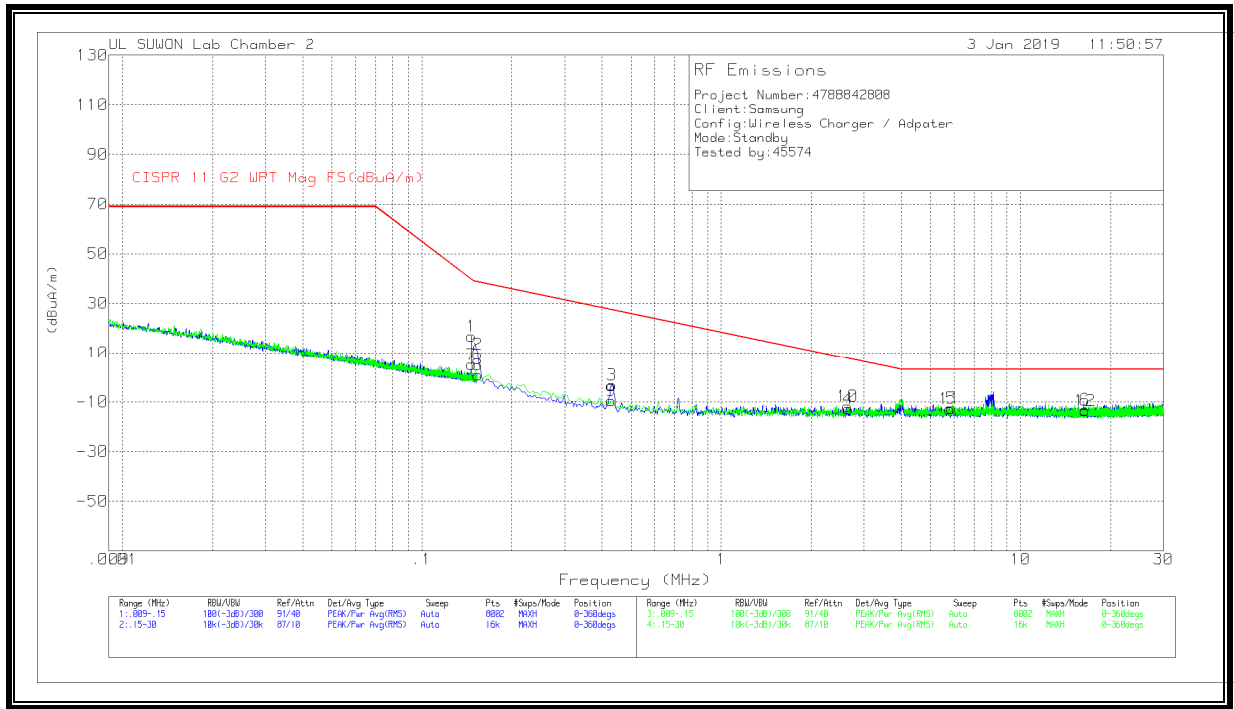
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	97.609	48.8	Pk	17.5	-31.4	34.9	43.52	-8.62	0-360	300	H
2	143.975	46.43	Pk	14.1	-31.2	29.33	43.52	-14.19	0-360	200	H
3	221.381	40.84	Pk	17.5	-30.8	27.54	46.02	-18.48	0-360	100	H
4	39.603	44.05	Pk	18.6	-31.9	30.75	40	-9.25	0-360	200	V
5	64.144	44.44	Pk	17.5	-31.7	30.24	40	-9.76	0-360	100	V
6	* 261.442	43.18	Pk	18.8	-30.6	31.38	46.02	-14.64	0-360	400	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

IC / CISPR RADIATED EMISSIONS FUNDAMENTAL AND SPURIOUS
CONFIGURATION 1: STANDBY MODE 9 KHz to 30 MHz



Face On and Face Off DATA

Trace Markers

[Face-On]

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna	Cable Loss	Corrected Reading (dBuA/m)	CISPR 11 G2 WPT Mag FS(dBuA/m)	Margin (dB)	Azimuth (Degs)
**1	.14639	48.37	Pk	-31.7	.1	16.77	39.57	-22.8	0-360
2	.15373	41.12	Pk	-31.7	.1	9.52	38.62	-29.1	0-360
3	.43177	28.41	Pk	-31.8	.1	-3.29	27.33	-30.62	0-360
4	2.65977	18.8	Pk	-31.8	.3	-12.7	7.46	-20.16	0-360
5	5.86929	18.63	Pk	-31.7	.4	-12.67	3	-15.67	0-360
6	16.44578	18.5	Pk	-32.3	.6	-13.2	3	-16.2	0-360

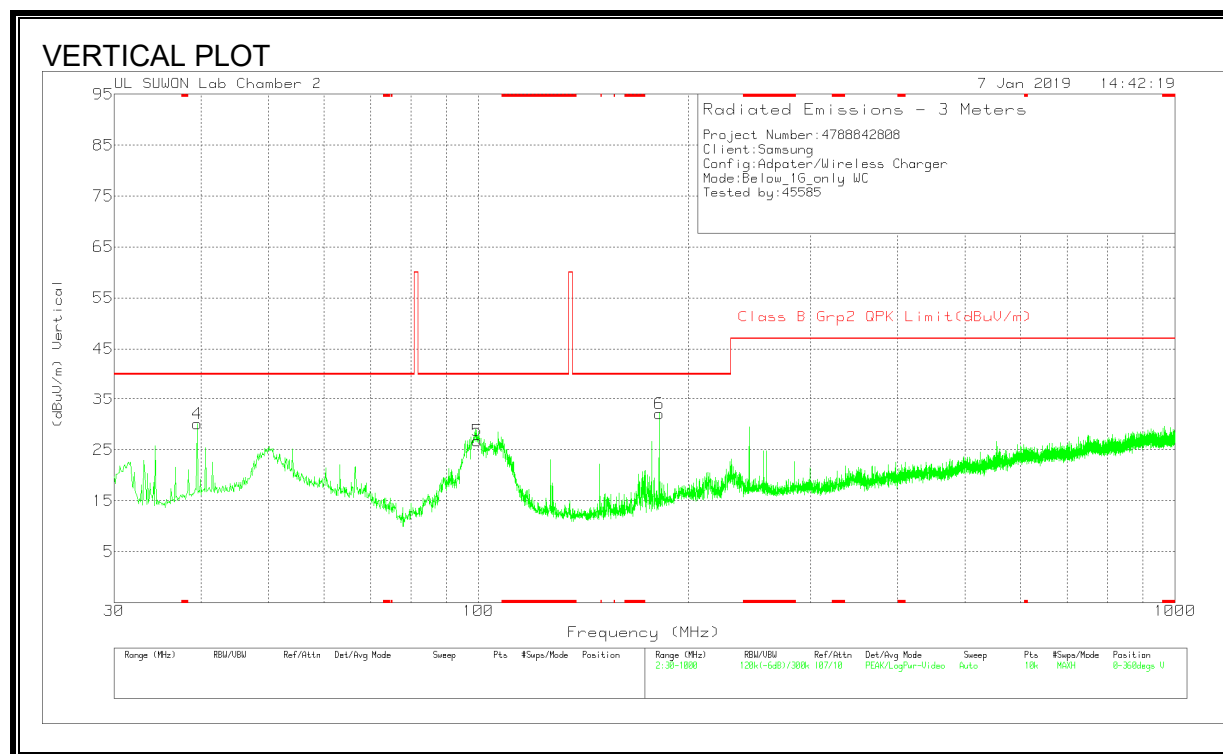
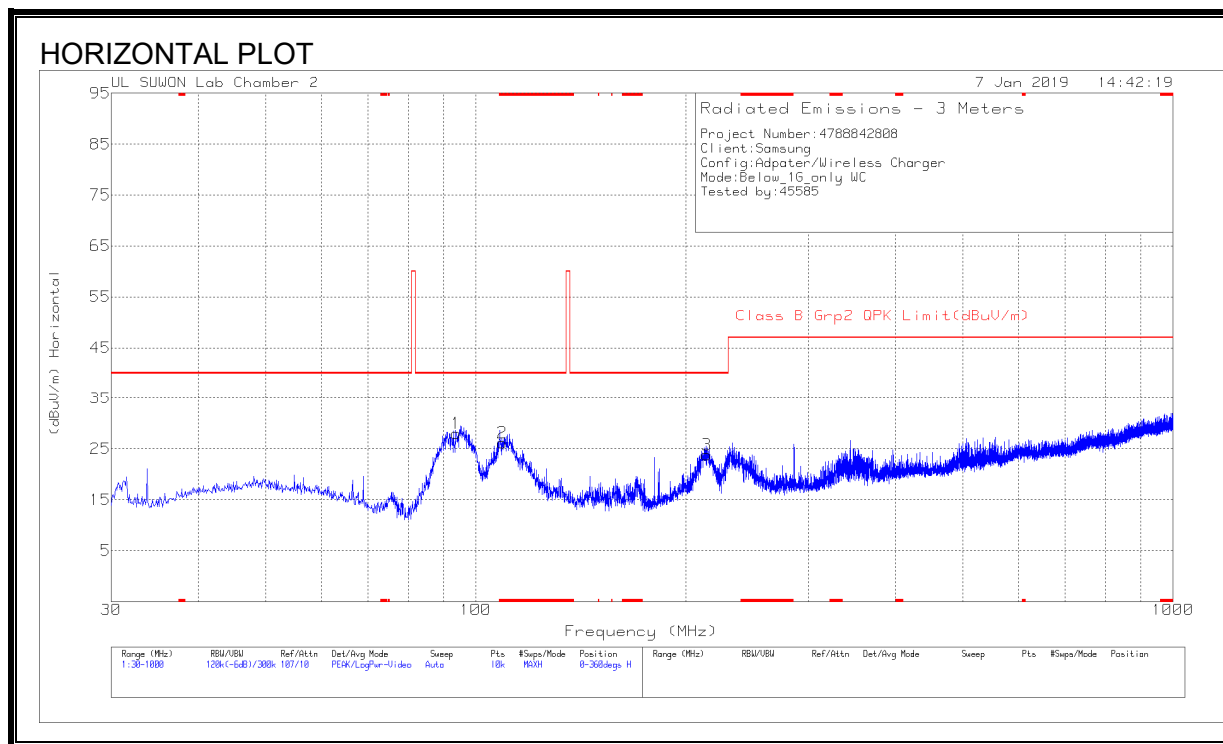
[Face-Off]

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna	Cable Loss	Corrected Reading (dBuA/m)	CISPR 11 G2 WPT Mag FS(dBuA/m)	Margin (dB)	Azimuth (Degs)
**7	.14639	36.82	Pk	-31.7	.1	5.22	39.57	-34.35	0-360
8	.15373	32.42	Pk	-31.7	.1	.82	38.62	-37.8	0-360
9	.4299	22.09	Pk	-31.8	.1	-9.61	27.38	-36.99	0-360
10	2.64484	19.64	Pk	-31.8	.3	-11.86	7.52	-19.38	0-360
11	5.79838	18.41	Pk	-31.7	.4	-12.89	3	-15.89	0-360
12	16.3842	18.13	Pk	-32.3	.6	-13.57	3	-16.57	0-360

Pk - Peak detector

**Fundamental

CONFIGURATION 1: STANDBY MODE 30 MHz to 1 GHz



HORIZONTAL AND VERTICAL DATA

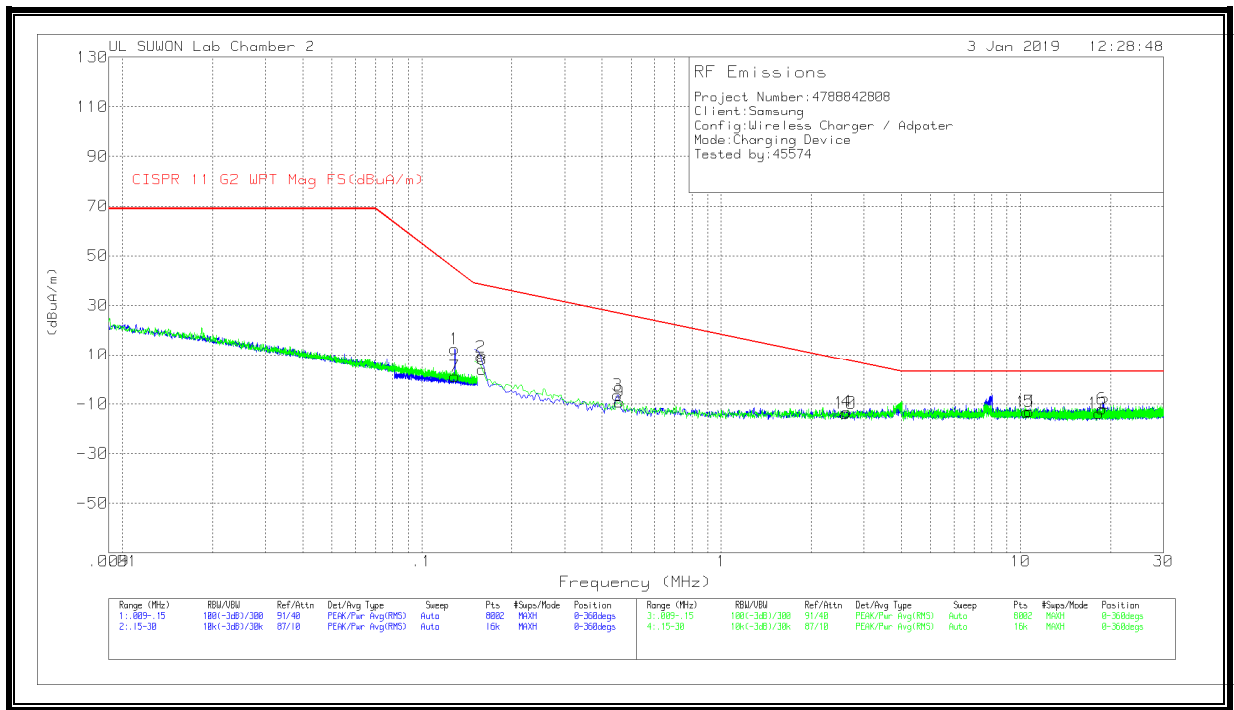
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G[dB]	Corrected Reading (dBuV/m)	Class B Grp2 QPK Limit(dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	93.729	42.5	Pk	16.9	-31.4	28	40	-12	0-360	300	H
2	* 109.055	40.32	Pk	17.2	-31.4	26.12	40	-13.88	0-360	200	H
3	214.591	37.46	Pk	17.1	-30.8	23.76	40	-16.24	0-360	200	H
4	39.506	43.44	Pk	18.6	-31.9	30.14	40	-9.86	0-360	100	V
5	99.646	40.47	Pk	17.7	-31.4	26.77	40	-13.23	0-360	100	V
6	181.805	47.06	Pk	16	-31	32.06	40	-7.94	0-360	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

CONFIGURATION 2: OPERATING MODE 9 KHz to 30 MHz



Face On and Face Off DATA

Trace Markers

[Face-On]

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna	Cable Loss	Corrected Reading (dBuA/m)	CISPR 11 G2 WPT Mag FS(dBuA/m)	Margin (dB)	Azimuth (Degs)
**1	.12897	44.07	Pk	-31.7	.1	12.47	44.62	-32.15	0-360
2	.15746	40.8	Pk	-31.7	.1	9.2	38.36	-29.16	0-360
3	.45043	25.26	Pk	-31.8	.1	-6.44	26.87	-33.31	0-360
4	2.63178	18.31	Pk	-31.8	.3	-13.19	7.58	-20.77	0-360
5	10.70596	18.23	Pk	-31.8	.5	-13.07	3	-16.07	0-360
6	18.71857	19.55	Pk	-32.3	.7	-12.05	3	-15.05	0-360

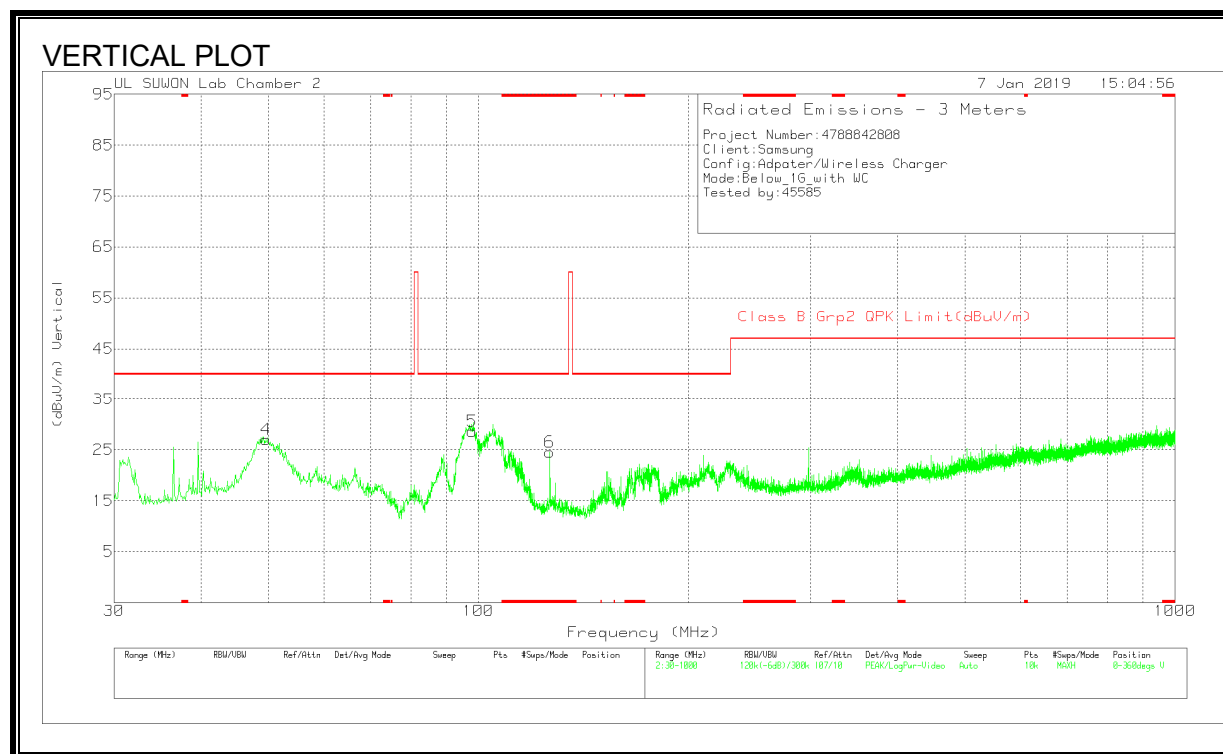
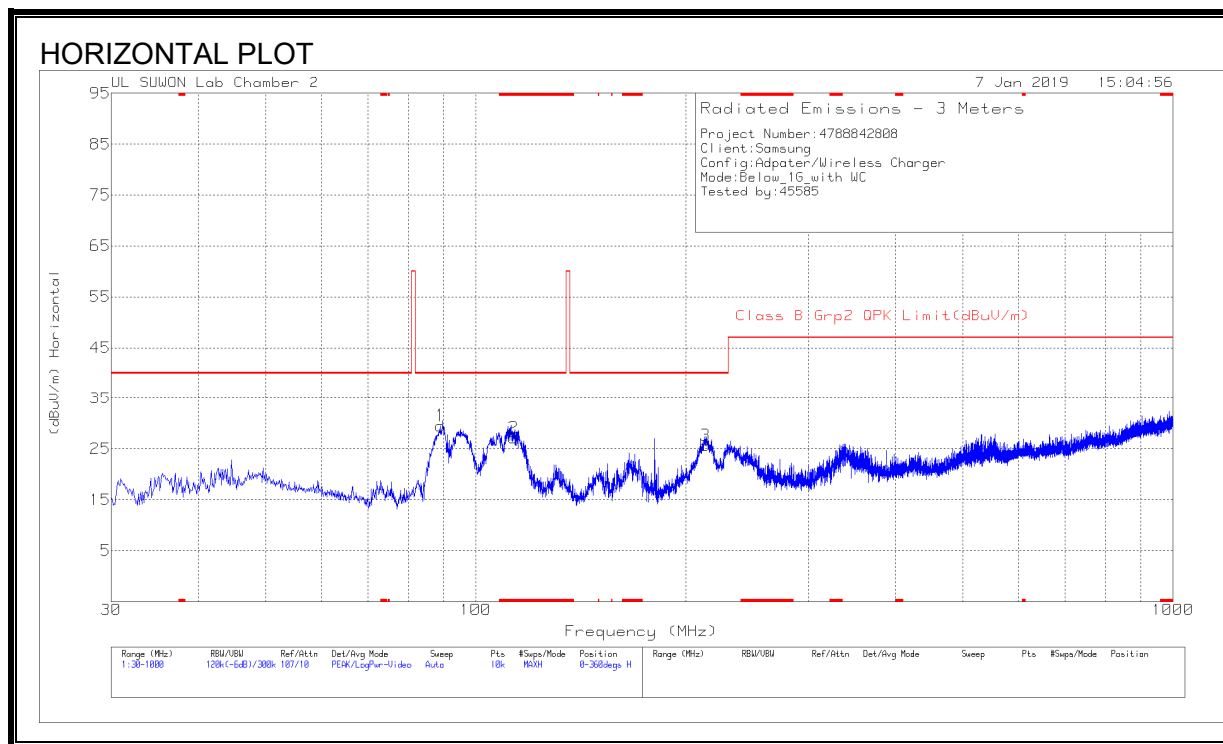
[Face-Off]

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna	Cable Loss	Corrected Reading (dBuA/m)	CISPR 11 G2 WPT Mag FS(dBuA/m)	Margin (dB)	Azimuth (Degs)
**7	.12899	32.74	Pk	-31.7	.1	1.14	44.62	-43.48	0-360
8	.15933	35.47	Pk	-31.7	.1	3.87	38.23	-34.36	0-360
9	.45789	22.48	Pk	-31.8	.1	-9.22	26.69	-35.91	0-360
10	2.59819	17.8	Pk	-31.8	.3	-13.7	7.72	-21.42	0-360
11	10.49137	17.97	Pk	-31.8	.5	-13.33	3	-16.33	0-360
12	18.25953	17.67	Pk	-32.3	.7	-13.93	3	-16.93	0-360

Pk - Peak detector

**Fundamental

CONFIGURATION 2: OPERATING MODE 30 MHz to 1 GHz



HORIZONTAL AND VERTICAL DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G[dB]	Corrected Reading (dBuV/m)	Class B Grp2 QPK Limit(dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	89.073	45.84	Pk	15.2	-31.5	29.54	40	-10.46	0-360	300	H
2	* 113.226	41.94	Pk	16.5	-31.3	27.14	40	-12.86	0-360	300	H
3	213.524	39.38	Pk	17.1	-30.8	25.68	40	-14.32	0-360	100	H
4	49.594	39.05	Pk	19.7	-31.8	26.95	40	-13.05	0-360	100	V
5	97.9	42.41	Pk	17.6	-31.4	28.61	40	-11.39	0-360	100	V
6	* 126.612	41.25	Pk	14.6	-31.3	24.55	40	-15.45	0-360	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

6.3. AC MAINS LINE CONDUCTED EMISSIONS

TEST PROCEDURE

ANSI C63.10: 2013

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

LIMIT

FCC §15.207 (a)

Frequency range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50
*Decreases with the logarithm of the frequency.		

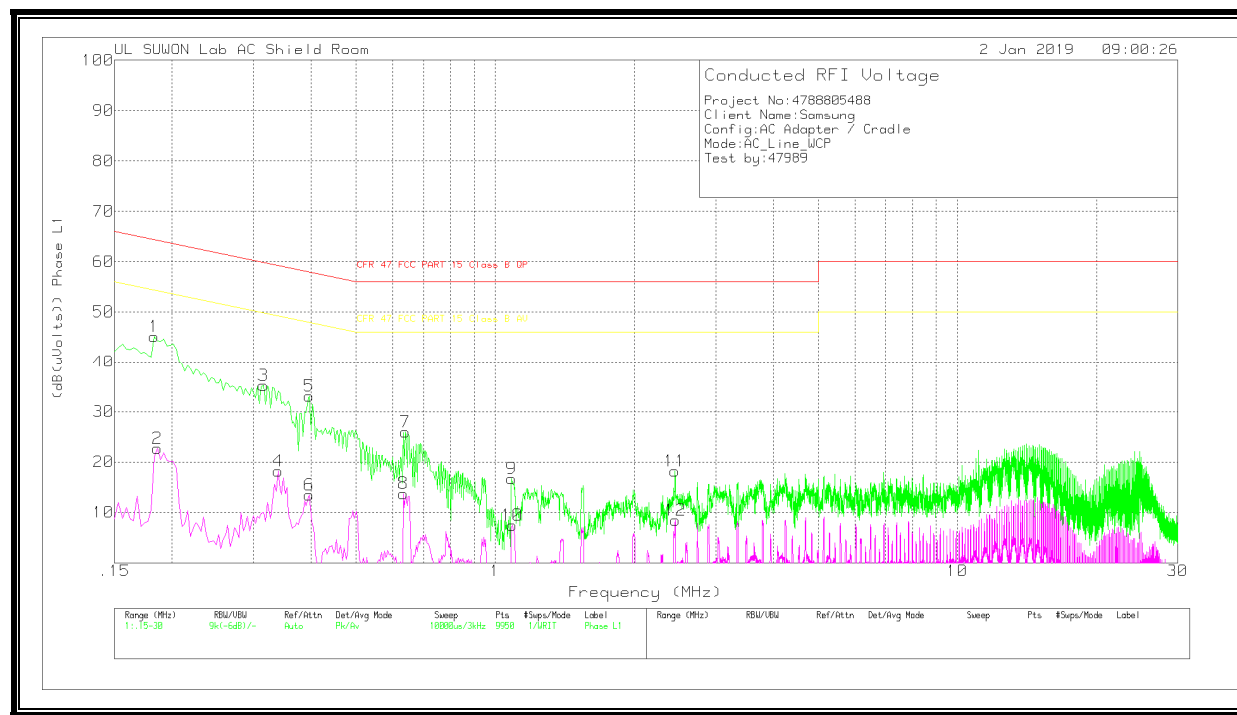
RESULTS

The EUT belongs to Power Sharing Case 4.

6 WORST EMISSIONS

CONFIGURATION 1: STANDBY MODE

Line-L1 .15 - 30MHz



LINE 1 RESULTS

Trace Markers

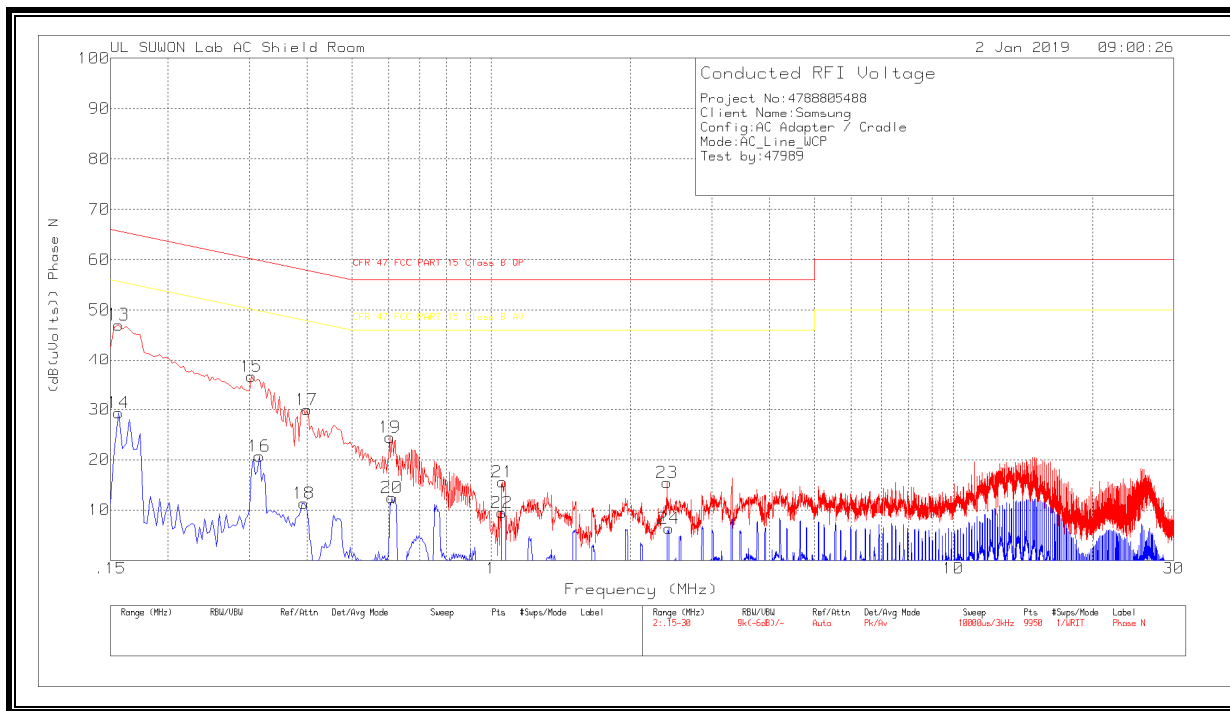
Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	ENV216_10183 6_With ex- cord_L1	CABLELOSS(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
1	.183	34.87	Pk	10	.2	45.07	64.35	-19.28	-	-
2	.186	12.57	Av	10	.2	22.77	-	-	54.21	-31.44
3	.315	25.25	Pk	9.8	.2	35.25	59.84	-24.59	-	-
4	.339	8.16	Av	9.8	.2	18.16	-	-	49.23	-31.07
5	.396	23.04	Pk	9.9	.2	33.14	57.94	-24.8	-	-
6	.396	3.38	Av	9.9	.2	13.48	-	-	47.94	-34.46
7	.639	15.91	Pk	9.9	.2	26.01	56	-29.99	-	-
8	.633	3.67	Av	9.9	.2	13.77	-	-	46	-32.23
9	1.086	6.66	Pk	9.8	.3	16.76	56	-39.24	-	-
10	1.089	-2.69	Av	9.8	.3	7.41	-	-	46	-38.59
11	2.451	7.97	Pk	10	.3	18.27	56	-37.73	-	-
12	2.454	-1.79	Av	10	.3	8.51	-	-	46	-37.49

Pk - Peak detector

Av - Average detection

Line-L2 .15 - 30MHz



LINE 2 RESULTS

Trace Markers

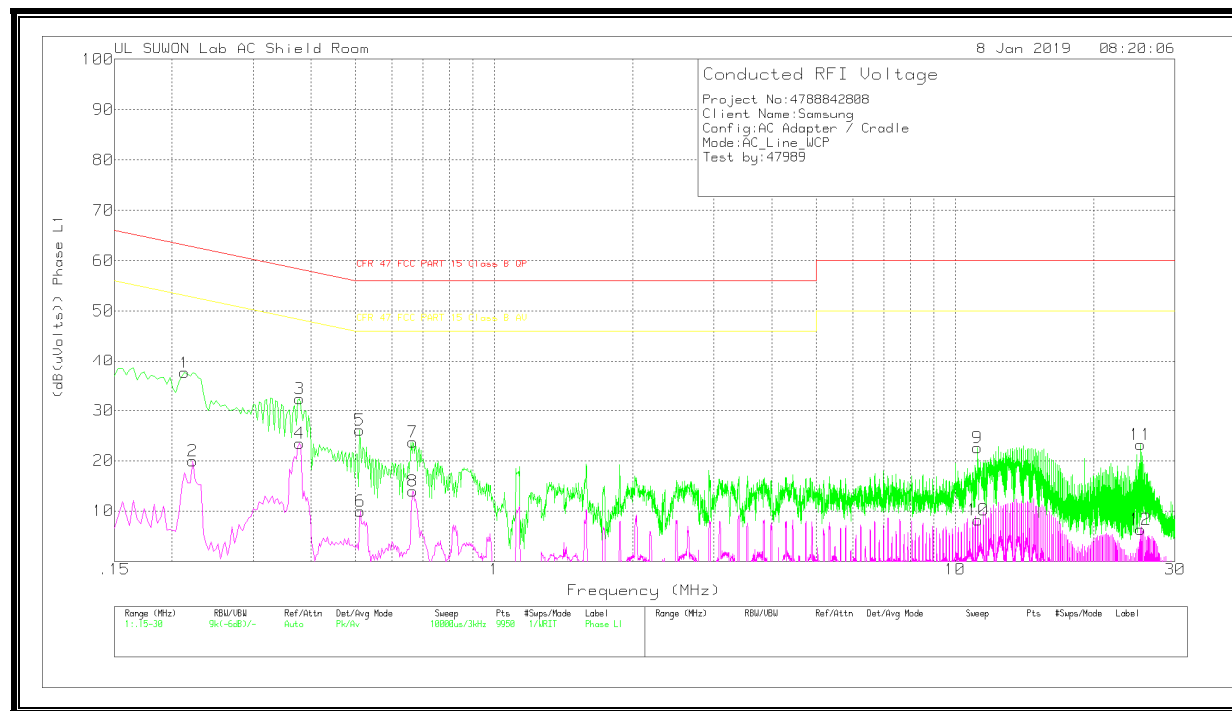
Range 2: Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	ENV216_10183 6_With ex- cord_N	CABLELOSS(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
13	.156	37.15	Pk	9.8	.1	47.05	65.67	-18.62	-	-
14	.156	19.4	Av	9.8	.1	29.3	-	-	55.67	-26.37
15	.303	26.75	Pk	9.7	.2	36.65	60.16	-23.51	-	-
16	.315	10.68	Av	9.8	.2	20.68	-	-	49.84	-29.16
17	.399	20.77	Pk	9	.2	29.97	57.87	-27.9	-	-
18	.393	2.08	Av	9.1	.2	11.38	-	-	48	-36.62
19	.603	14.4	Pk	9.9	.2	24.5	56	-31.5	-	-
20	.609	2.36	Av	9.9	.2	12.46	-	-	46	-33.54
21	1.059	5.52	Pk	9.8	.3	15.62	56	-40.38	-	-
22	1.056	-.65	Av	9.8	.3	9.45	-	-	46	-36.55
23	2.4	5.51	Pk	9.7	.3	15.51	56	-40.49	-	-
24	2.421	-3.69	Av	9.7	.3	6.31	-	-	46	-39.69

Pk - Peak detector

Av - Average detection

CONFIGURATION 2: OPERATING MODE
Line-L1 .15 - 30MHz



LINE 1 RESULTS

Trace Markers

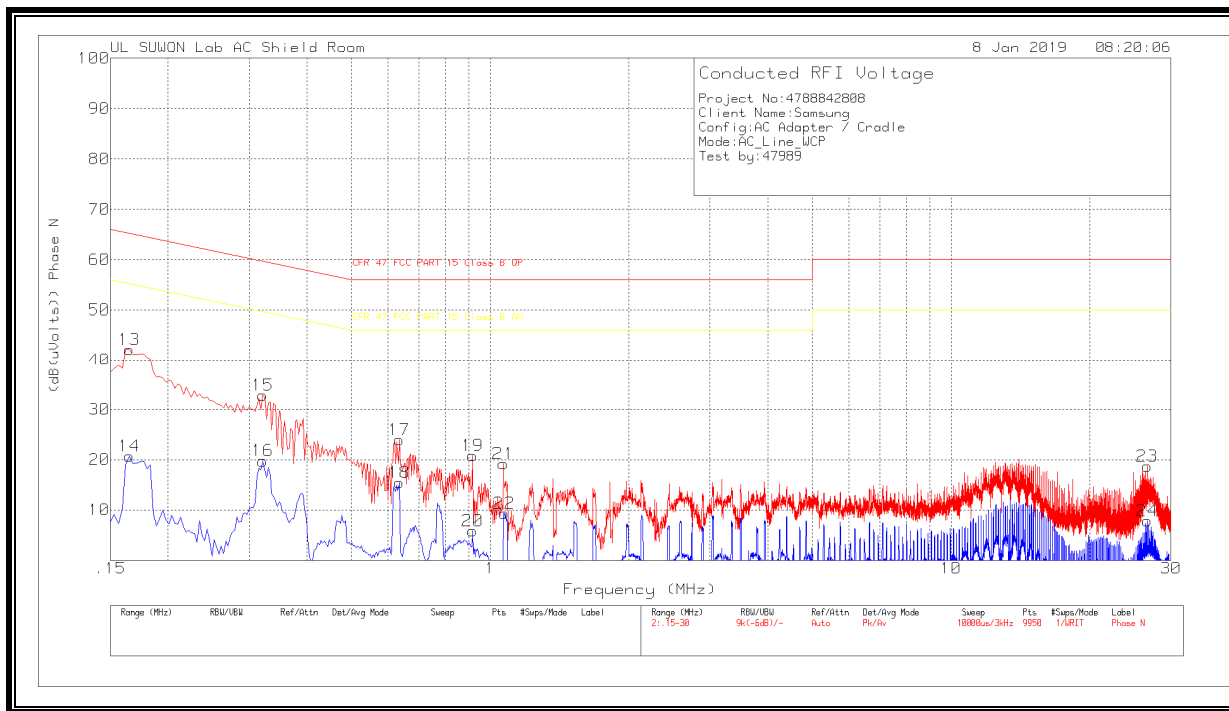
Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	ENV216_10183 6_With ex- cord_L1	CABLELOSS(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
1	.213	27.55	Pk	9.9	.2	37.65	63.09	-25.44	-	-
2	.222	10.02	Av	9.8	.2	20.02	-	-	52.74	-32.72
3	.378	22.27	Pk	9.9	.2	32.37	58.32	-25.95	-	-
4	.378	13.32	Av	9.9	.2	23.42	-	-	48.32	-24.9
5	.51	16.02	Pk	9.9	.2	26.12	56	-29.88	-	-
6	.513	-.17	Av	9.9	.2	9.93	-	-	46	-36.07
7	.666	13.67	Pk	9.9	.2	23.77	56	-32.23	-	-
8	.666	3.87	Av	9.9	.2	13.97	-	-	46	-32.03
9	11.199	12.2	Pk	10.1	.3	22.6	60	-37.4	-	-
10	11.214	-2.2	Av	10.1	.3	8.2	-	-	50	-41.8
11	25.233	12.12	Pk	10.7	.4	23.22	60	-36.78	-	-
12	25.233	-4.72	Av	10.7	.4	6.38	-	-	50	-43.62

Pk - Peak detector

Av - Average detection

Line-L2 .15 - 30MHz



LINE 2 RESULTS

Trace Markers

Range 2: Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	ENV216_10183 6_With ex- cord_N	CABLELOSS(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
13	.165	32.04	Pk	10	.1	42.14	65.21	-23.07	-	-
14	.165	10.56	Av	10	.1	20.66	-	-	55.21	-34.55
15	.321	22.87	Pk	9.8	.2	32.87	59.68	-26.81	-	-
16	.321	9.78	Av	9.8	.2	19.78	-	-	49.68	-29.9
17	.636	13.83	Pk	9.9	.2	23.93	56	-32.07	-	-
18	.636	5.41	Av	9.9	.2	15.51	-	-	46	-30.49
19	.915	10.71	Pk	9.8	.3	20.81	56	-35.19	-	-
20	.915	-4.28	Av	9.8	.3	5.82	-	-	46	-40.18
21	1.068	9.12	Pk	9.8	.3	19.22	56	-36.78	-	-
22	1.074	-.74	Av	9.8	.3	9.36	-	-	46	-36.64
23	26.685	7.65	Pk	10.8	.3	18.75	60	-41.25	-	-
24	26.685	-3.32	Av	10.8	.3	7.78	-	-	50	-42.22

Pk - Peak detector

Av - Average detection