



CERTIFICATION TEST REPORT

Report Number. : 4790541052-E9V4

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

Model : SM-S918B/DS, SM-S918B

FCC ID : A3LSMS918B

EUT Description : GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax,
NFC, WPT and UWB

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C

Date Of Issue:

2022-11-10

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Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2022-10-28	Initial issue	Yeonhee Lim
V2	2022-11-09	Updated to address TCB's question	Yeonhee Lim
V3	2022-11-10	Updated to address TCB's question	Yeonhee Lim
V4	2022-11-10	Updated to address TCB's question	Yeonhee Lim

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

EUT DESCRIPTION: GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, NFC, WPT and UWB

MODEL NUMBER: SM-S918B/DS, SM-S918B

SERIAL NUMBER: R3CT90EXXCN (RADIATED);

DATE TESTED: 2022-10-14 ~ 2022-10-25

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	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:



Junwhan Lee
Suwon Lab Engineer
UL Korea, Ltd.

Tested By:



Yeonhee Lim
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 C63.10-2013.
4. KDB 680106 D01 RF Exposure Wireless Charging Apps v03.

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(3m semi-anechoic chamber)
☒	Chamber 2(3m semi-anechoic chamber)
☐	Chamber 3(3m semi-anechoic chamber)
☐	Chamber 4(3m Full-anechoic chamber)
☐	Chamber 5(3m Full-anechoic chamber)

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:

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

$$\begin{aligned} \text{Corrected Reading (dBuV)} &= \text{Meter Reading (dBuV)} + \text{External Cable (dB)} + \\ &\text{Cableloss (dB)} \\ 46.62 \text{ dBuV} + 9.8 \text{ dB} + 0.1 \text{ dB} &= 56.52 \text{ dBuV} \end{aligned}$$

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	3.02 dB
Radiated Disturbance, 9 kHz to 30 MHz	1.72 dB
Radiated Disturbance, 30 MHz to 1 GHz	4.05 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 2, Clause 4.4.3 in IEC Guide 115:2007.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, NFC, WPT and UWB. This test report addresses the wireless low power transmitter(DCD) operational mode.

This report covers the Samsung models SM-S918B/DS and SM-S918B.
These models are identical in hardware except SM-S918B has single SIM tray.
With some pre-scan, model SM-S918B/DS was set for final test.

5.2. MAXIMUM E-FIELD STRENGTH

- Mode 1

Fundamental Frequency (kHz)	Test Case	E-Field (30m distance) FCC (dBuV/m)
110 - 148	4	-5.54

- Mode 2

Fundamental Frequency (kHz)	Test Case	E-Field (30m distance) FCC (dBuV/m)
562.5	7	13.56

- Mode 3

Fundamental Frequency (kHz)	Test Case	E-Field (30m distance) FCC (dBuV/m)
562.5	10	15.18

- Mode 4

Fundamental Frequency (kHz)	Test Case	E-Field (30m distance) FCC (dBuV/m)
530 - 593	12	11.6

5.3. PRELIMINARY TEST CONFIGURATIONS

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

The S-Pen charging mode of the EUT was investigated in three orthogonal orientations X, Y and Z it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

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

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

5.4. WORST-CASE CONFIGURATION AND MODE

Mode 1	Test Case	Description
Power sharing mode (S-pen is fully charged condition)	1	Charging from EUT to Phone
	2	Charging from EUT(Charging from TA) to Phone
	3	Charging from EUT to Phone (Cross position)
	4	Charging from EUT(Charging from TA) to Phone (Cross position)
	5	Charging from EUT to Wearable device
	6	Charging from EUT(Charging from TA) to Wearable device

Mode 2	Test Case	Description
S-pen Charging mode	7	Charging from EUT to S-Pen
	8	Charging from EUT(Charging from TA) to S-Pen

Mode 3	Test Case	Description
Simutaneous charging mode(Power sharing and S-pen charging)	9	Charging from EUT to Phone (Cross position) and Charging from EUT to S-Pen
	10	Charging from EUT to Phone (Cross position) and Charging from EUT to S-Pen(EUT was Charging from TA)

Mode 4	Test Case	Description
Digitizer	11	Charging from EUT to S-Pen through Display Scan
	12	Charging from EUT (with TA) to S-Pen through Display Scan

For radiated test, test case 1/3/5/7/9/11, the EUT can operate the power sharing mode when battery level is over 30%. Because test results are not different between fully charged status and battery level 30% status(EUT condition), test were performed fully charged condition.

Also according to current client device's(Phone and Wearable device) battery level, test results are different. Because the test results were worst when the battery level was 1%~20%, tests were performed when the battery level was 1%~20%. (Client device)

For S-pen, both fully charged and non-fully charged condition were investigated, test case 7/8/9 were performed non-fully charged condition as worst case.

During radiated test for test case 1/3/5/7/9/11, the EUT didn't connected AC adapter, but for AC line conducted test for all test case was performed with connected with AC adapter.

For power sharing mode, test results of case 4 is worst and S-pen Charging mode, test results of case 7 is worst, and Simutaneous charging mode, test results of case 10 is worst, and Digitizer mode, test results of case 12 is worst, so this test report described test case 2, test case 7, and test case 10, and test case 12.

5.5. MODIFICATIONS

No modifications were made during testing.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT & PERIPHERALS

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	EP-TA800	R37R38J4A28SE3	N/A
Data Cable	SAMSUNG	EP-DN980	GH39-02111ABBE	N/A

I/O CABLES

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

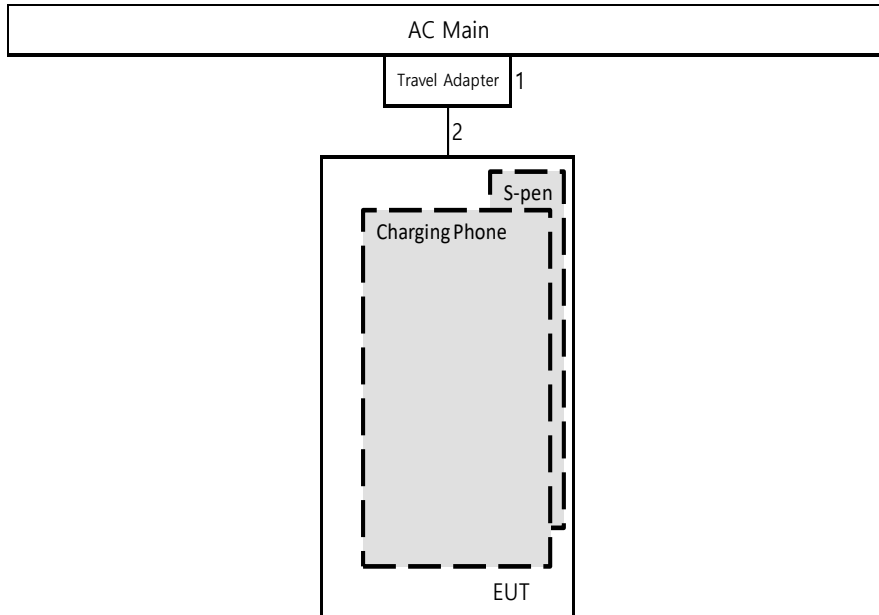
TEST SETUP

The EUT is installed in a typical configuration. Charging from EUT.

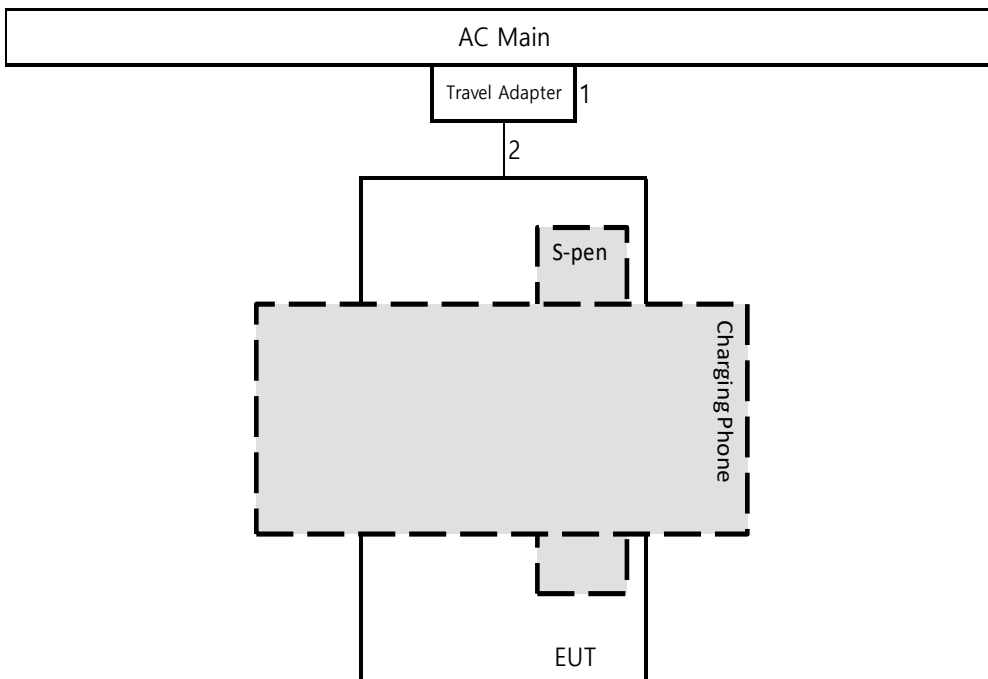
TEST SETUP DIAGRAM

NOTE : Test case 1/3/5/7/9/11, EUT did not connected with Travel adapter(AC Main) in below set-up diagram for radiated test.

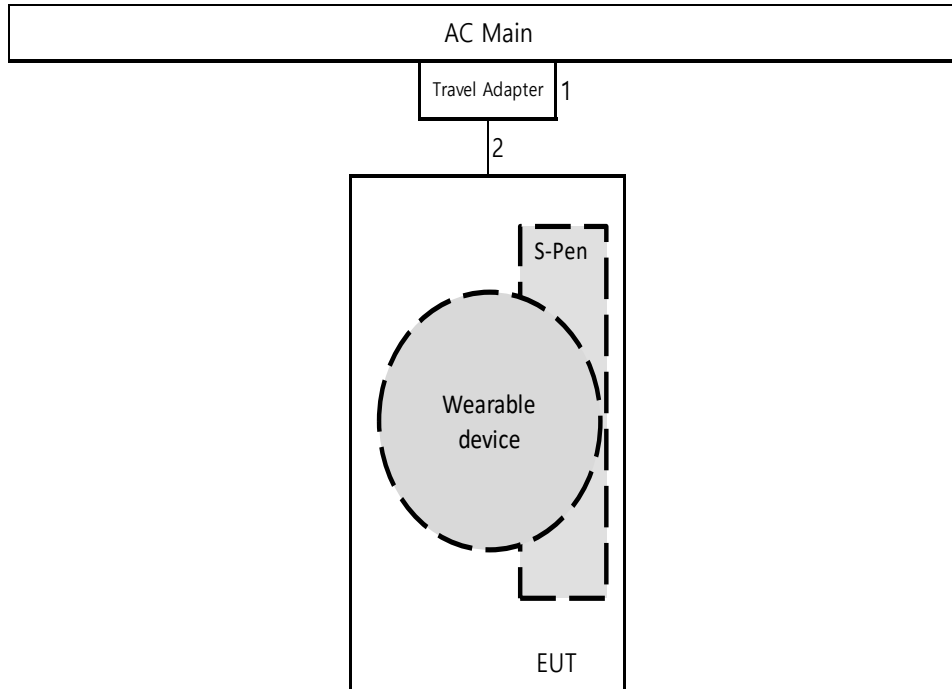
- Test Case1 and 2 : Charging Phone(S-pen is fully charged condition)



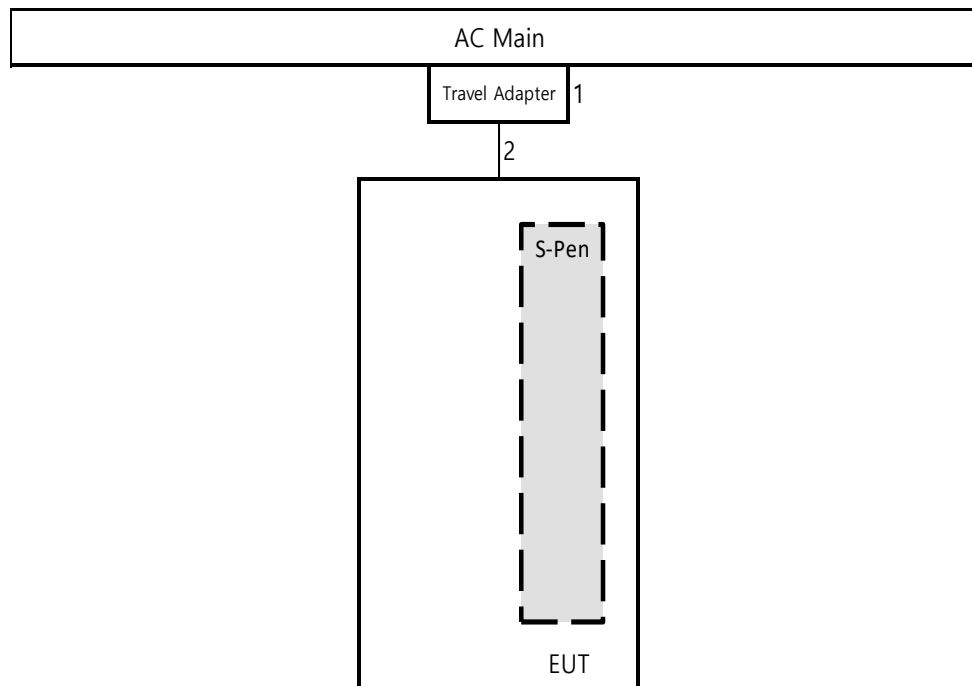
- Test Case 3 and 4 : Charging Phone(Cross position, S-pen is fully charged condition)



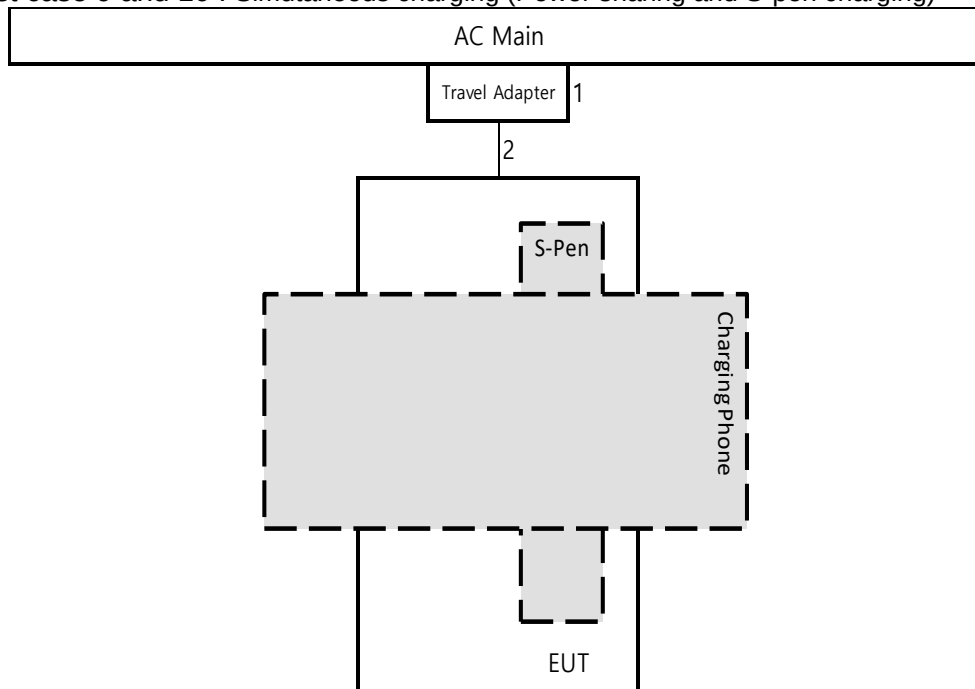
- Test Case 5 and 6 : Charging Wearable device(S-pen is fully charged condition)



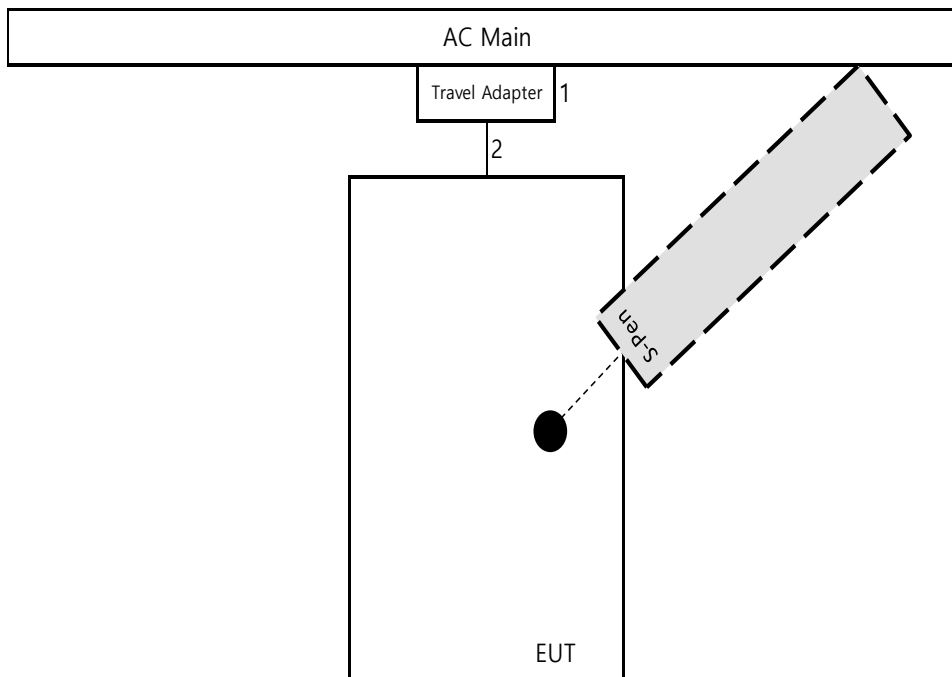
- Test Case 7 and 8 : S-Pen Charging



- Test case 9 and 10 : Simutaneous charging (Power sharing and S-pen charging)



- Test case 11 and 12 : Digitizer



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	845	2024-08-15
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	2024-08-15
Preamplifier, 1000 MHz	Sonoma	310N	341282	2023-08-02
Preamplifier, 1000 MHz	Sonoma	310N	351741	2023-08-02
Spectrum Analyzer, 7 GHz	Agilent / HP	N9010A	MY54200580	2023-08-01
EMI Test Receive, 3 GHz	R&S	ESR3	101832	2023-08-01
DC Power Supply	Agilent / HP	E3640A	MY54226395	2023-08-02
Temperature Chamber	ESPEC	SH-642	93001109	2023-08-01
LISN	R&S	ENV216	101837	2023-08-04
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	2023-10-06
Spectrum Analyzer	R&S	FSW50	101538	2023-01-18
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. RADIATED EMISSIONS

TEST PROCEDURE

ANSI C63.10: 2013

The highest clock frequency generated or used in the EUT is 600 kHz therefore the frequency range was investigated from 9 kHz to 30 MHz.

LIMIT

FCC §15.209 (a)

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

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.		

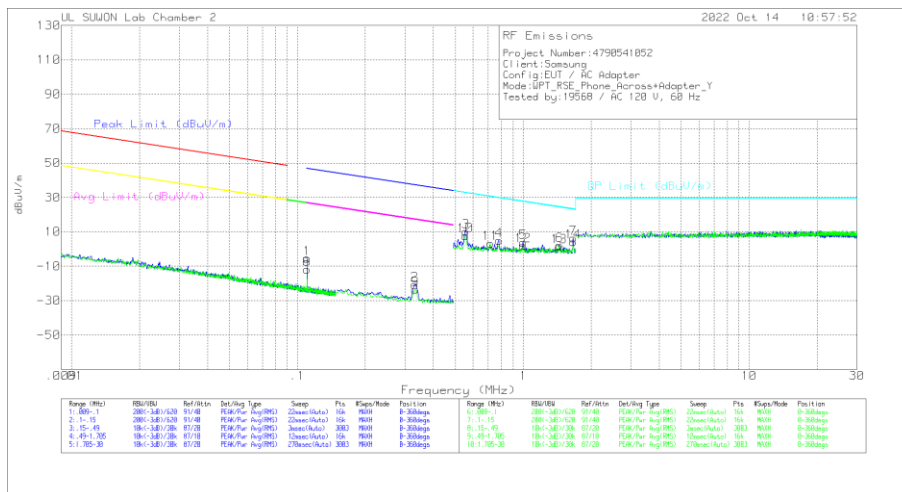
RESULTS

The EUT belongs to Test Case 4 and 7 and 10 and 12.

Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 300 m open field 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.

RADIATED EMISSIONS 9 KHz to 30 MHz(Power sharing mode Test Case 4)



TEST DATA

Trace Markers [Face-On]

Marker	Frequenc y (MHz)	Meter Reading (dBuV)	Det	HFH2-Z2_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	.1104	54.56	Pk	19.8	.1	-80	-5.54	46.77	-52.31	26.77	-32.31	0-360
2	.33057	39.53	Pk	19.7	.1	-80	-20.67	37.22	-57.89	17.22	-37.89	0-360

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	HFH2-Z2_Loop Antenna	Cable Loss	Dist Corr 30m	Corrected Reading dBuV/m	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
3	.55711	30.39	Pk	19.7	.1	-40	10.19	32.69	-22.5	0-360
4	.77937	24.99	Pk	19.8	.2	-40	4.99	29.78	-24.79	0-360
5	.9962	23.75	Pk	19.8	.2	-40	3.75	27.65	-23.9	0-360
6	1.44551	22.31	Pk	19.8	.2	-40	2.31	24.43	-22.12	0-360
7	1.66196	26.44	Pk	19.8	.2	-40	6.44	23.22	-16.78	0-360

[Face-Off]

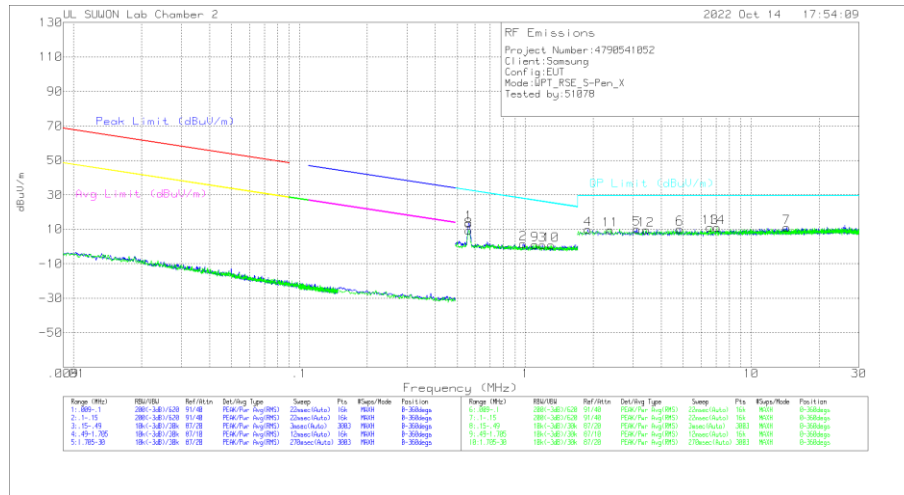
Marker	Frequenc y (MHz)	Meter Reading (dBuV)	Det	HFH2-Z2_Loop Antenna	Cable Loss	Dist Corr 300m	Corrected Reading dBuV/m	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
**8	.11038	48.18	Pk	19.8	.1	-80	-11.92	46.77	-58.69	26.77	-38.69	0-360
9	.33238	36.65	Pk	19.7	.1	-80	-23.55	37.18	-60.73	17.18	-40.73	0-360

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	HFH2-Z2_Loop Antenna	Cable Loss	Dist Corr 30m	Corrected Reading dBuV/m	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
10	.55441	27.95	Pk	19.7	.1	-40	7.75	32.73	-24.98	0-360
11	.71424	23.45	Pk	19.7	.1	-40	3.25	30.54	-27.29	0-360
12	.99688	21.83	Pk	19.8	.2	-40	1.83	27.65	-25.82	0-360
13	1.4427	21.47	Pk	19.8	.2	-40	1.47	24.45	-22.98	0-360
14	1.66378	24.02	Pk	19.8	.2	-40	4.02	23.21	-19.19	0-360

Pk - Peak detector
** Fundamental

Note : Radiated test were investigated with three receiving antenna axes: Face-on, Face-off and horizontal (parallel to the ground plane) and the worse orientations of Face-on and Face-off were set for final test.

RADIATED EMISSIONS 9 KHz to 30 MHz(S-pen charging mode Test case 7)



TEST DATA

Trace Markers
[Face On]

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	HFH2-Z2_Loop Antenna	Cable Loss	Dist Corr 30m	Corrected Reading dBuV/m	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
**1	.56239	33.76	Pk	19.7	.1	-40	13.56	32.61	-19.05	0-360
2	.97781	21.54	Pk	19.8	.2	-40	1.54	27.82	-26.28	0-360
3	1.19167	20.86	Pk	19.8	.2	-40	.86	26.1	-25.24	0-360
4	1.8935	29.94	Pk	19.8	.2	-40	9.94	29.5	-19.56	0-360
5	3.11875	30	Pk	19.9	.3	-40	10.2	29.5	-19.3	0-360
6	4.8341	30.23	Pk	19.8	.3	-40	10.33	29.5	-19.17	0-360
7	14.37691	30.42	Pk	20	.6	-40	11.02	29.5	-18.48	0-360

[Face Off]

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	HFH2-Z2_Loop Antenna	Cable Loss	Dist Corr 30m	Corrected Reading dBuV/m	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
**8	.56334	29.51	Pk	19.7	.1	-40	9.31	32.59	-23.28	0-360
9	1.10457	21.15	Pk	19.8	.2	-40	1.15	26.76	-25.61	0-360
10	1.29868	20.81	Pk	19.8	.2	-40	.81	25.36	-24.55	0-360
*11	2.37418	29.48	Pk	19.9	.2	-40	9.58	29.5	-19.92	0-360
*12	3.42035	29.42	Pk	19.9	.3	-40	9.62	29.5	-19.88	0-360
*13	6.58715	30.77	Pk	19.9	.4	-40	11.07	29.5	-18.43	0-360
*14	7.07725	30.84	Pk	19.9	.4	-40	11.14	29.5	-18.36	0-360

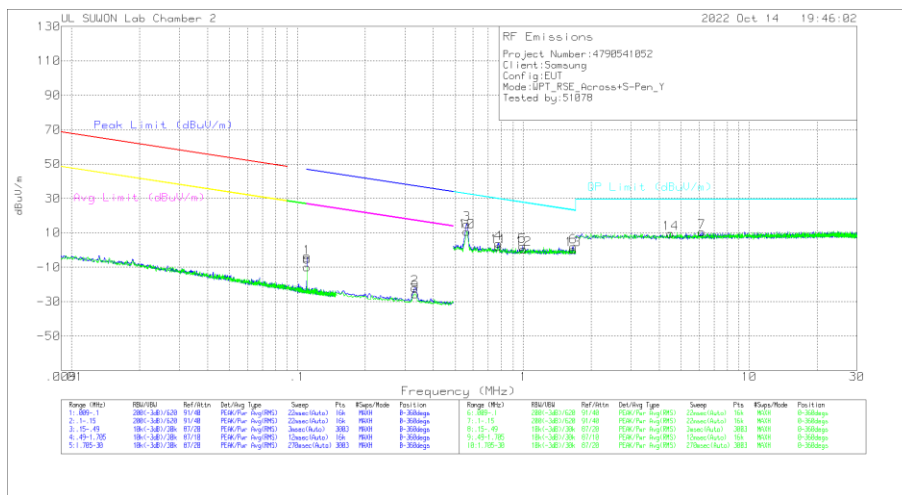
Pk - Peak detector

** Fundamental

* Marker is the noise floor.

Note 1: Radiated test were investigated with three receiving antenna axes: Face-on, Face-off and horizontal (parallel to the ground plane) and the worse orientations of Face-on and Face-off were set for final test.

RADIATED EMISSIONS 9 KHz to 30 MHz(Simutaneous charging mode Test case 10)



TEST DATA

Trace Markers

[Face On]

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	HFH2-Z2_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	.11023	55.58	Pk	19.8	.1	-80	-4.52	46.78	-51.3	26.78	-31.3	0-360
2	.33052	38.2	Pk	19.7	.1	-80	-22	37.23	-59.23	17.23	-39.23	0-360

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	HFH2-Z2_Loop Antenna	Cable Loss	Dist Corr 30m	Corrected Reading dBuV/m	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
*3	.56186	35.38	Pk	19.7	.1	-40	15.18	32.61	-17.43	0-360
4	.77549	23.91	Pk	19.8	.2	-40	3.91	29.82	-25.91	0-360
5	.9943	22.28	Pk	19.8	.2	-40	2.28	27.67	-25.39	0-360
6	1.66257	21.97	Pk	19.8	.2	-40	1.97	23.22	-21.25	0-360
7	6.16303	30.2	Pk	19.8	.4	-40	10.4	29.5	-19.1	0-360

[Face Off]

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	HFH2-Z2_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)
**8	.11025	50.23	Pk	19.8	.1	-80	-9.87	46.78	-56.65	26.78	-36.65	0-360
9	.33221	34.72	Pk	19.7	.1	-80	-25.48	37.18	-62.66	17.18	-42.66	0-360

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	HFH2-Z2_Loop Antenna	Cable Loss	Dist Corr 30m	Corrected Reading dBuV/m	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
*10	.56239	30.94	Pk	19.7	.1	-40	10.74	32.61	-21.87	0-360
11	.77542	21.87	Pk	19.8	.2	-40	1.87	29.82	-27.95	0-360
12	1.00304	20.66	Pk	19.8	.2	-40	.66	27.6	-26.94	0-360
13	1.66583	20.25	Pk	19.8	.2	-40	.25	23.2	-22.95	0-360
14	4.48538	29.5	Pk	19.8	.3	-40	9.6	29.5	-19.9	0-360

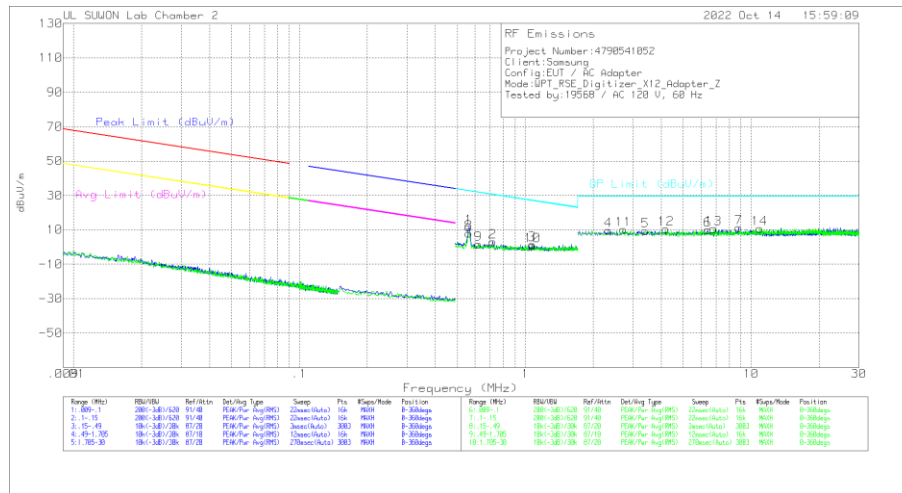
Pk - Peak detector

** Power sharing Fundamental

* S-Pen Fundamental

Note 1: Radiated test were investigated with three receiving antenna axes: Face-on, Face-off and horizontal (parallel to the ground plane) and the worse orientations of Face-on and Face-off were set for final test.

RADIATED EMISSIONS 9 KHz to 30 MHz(Digitizer mode Test Case 12)



TEST DATA

Trace Markers

[Face-On]

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	HFH2-Z2_Loop Antenna	Cable Loss	Dist Corr 30m	Corrected Reading dBuV/m	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
**1	.56239	31.8	Pk	19.7	.1	-40	11.6	32.61	-21.01	0-360
2	.71743	23.25	Pk	19.7	.1	-40	3.05	30.5	-27.45	0-360
3	1.07524	21.51	Pk	19.8	.2	-40	1.51	26.99	-25.48	0-360
4	2.32705	29.42	Pk	19.9	.2	-40	9.52	29.5	-19.98	0-360
5	3.39208	29.16	Pk	19.9	.3	-40	9.36	29.5	-20.14	0-360
6	6.40808	29.59	Pk	19.9	.4	-40	9.89	29.5	-19.61	0-360
7	8.80203	30.85	Pk	20	.4	-40	11.25	29.5	-18.25	0-360

[Face-Off]

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	HFH2-Z2_Loop Antenna	Cable Loss	Dist Corr 30m	Corrected Reading dBuV/m	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
**8	.56307	28.33	Pk	19.7	.1	-40	8.13	32.6	-24.47	0-360
9	.61901	21.93	Pk	19.7	.1	-40	1.73	31.78	-30.05	0-360
10	1.07676	20.75	Pk	19.8	.2	-40	.75	26.98	-26.23	0-360
*11	2.7229	29.89	Pk	19.9	.3	-40	10.09	29.5	-19.41	0-360
*12	4.1932	30.26	Pk	19.8	.3	-40	10.36	29.5	-19.14	0-360
*13	6.81335	30.32	Pk	19.9	.4	-40	10.62	29.5	-18.88	0-360
*14	10.92265	30.24	Pk	20	.5	-40	10.74	29.5	-18.76	0-360

Pk - Peak detector

** Fundamental

* Marker is the noise floor.

Note 1 : Radiated test were investigated with three receiving antenna axes: Face-on, Face-off and horizontal (parallel to the ground plane) and the worse orientations of Face-on and Face-off were set for final test.

6.2. 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.		

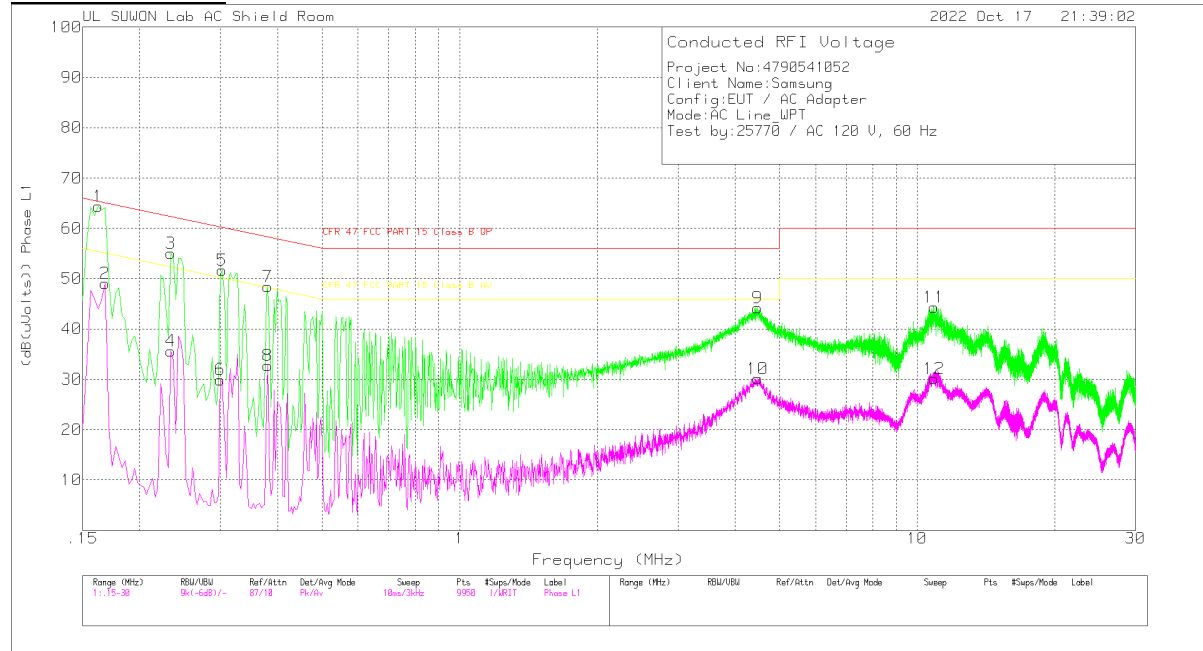
RESULTS

The EUT belongs to Test Case 4 and 10 and 12.

WORST EMISSIONS (Power sharing mode Test Case 4)

Line-L1 .15 - 30MHz

LINE 1 RESULTS



Trace Markers

Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With EX_L1[dB]	CABLELOS S(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	.162	54.38	Pk	9.9	.1	64.38	65.36	-9.98	-	-
2	.168	38.97	Av	10	.1	49.07	-	-	55.06	-5.99
3	.234	45.19	Pk	9.7	.2	55.09	62.31	-7.22	-	-
4	.234	25.76	Av	9.7	.2	35.66	-	-	52.31	-16.65
5	.303	41.83	Pk	9.7	.2	51.73	60.16	-8.43	-	-
6	.3	20.03	Av	9.7	.2	29.93	-	-	50.24	-20.31
7	.381	38.4	Pk	9.8	.2	48.4	58.26	-9.86	-	-
8	.381	22.71	Av	9.8	.2	32.71	-	-	48.26	-15.55
9	4.476	34.17	Pk	9.7	.3	44.17	56	-11.83	-	-
10	4.476	20.15	Av	9.7	.3	30.15	-	-	46	-15.85
11	10.893	34.15	Pk	9.9	.3	44.35	60	-15.65	-	-
12	10.887	19.94	Av	9.9	.3	30.14	-	-	50	-19.86

Pk - Peak detector

Av - Average detection

Quasi-Peak Emissions

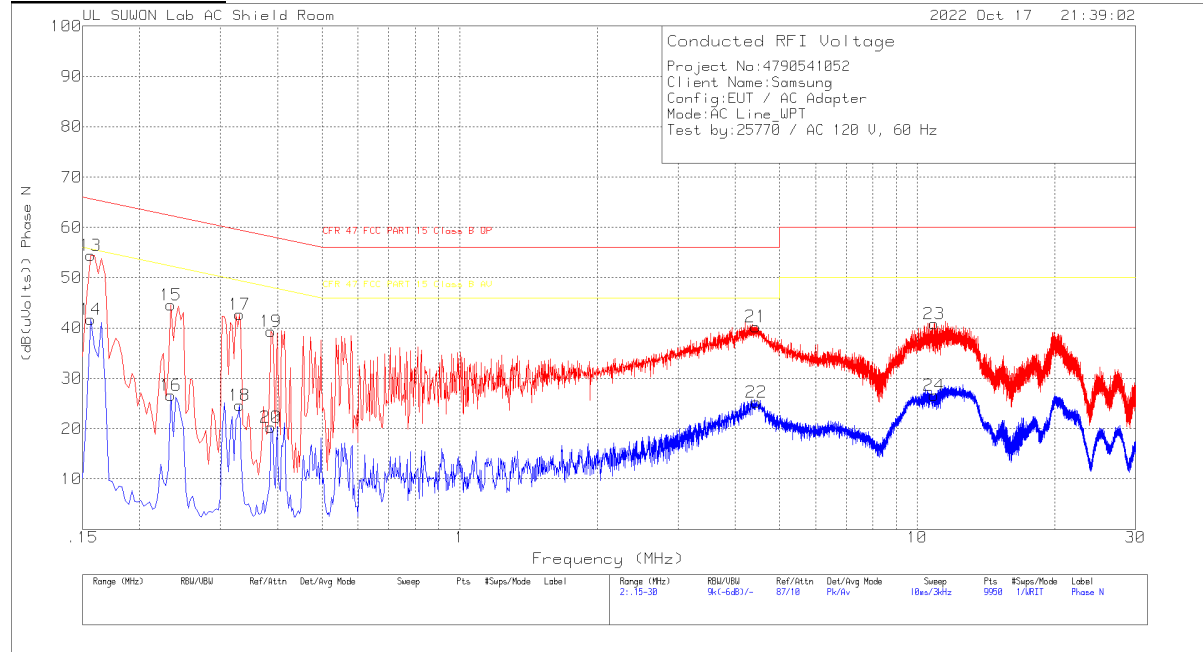
Range 1: Phase L1 .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With EX_L1[dB]	CABLELOS S(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)
.16125	38.46	Qp	9.9	.1	48.46	65.4	-16.94	-	-
.23325	28.07	Qp	9.7	.2	37.97	62.33	-24.36	-	-
.30375	25.2	Qp	9.7	.2	35.1	60.14	-25.04	-	-
.38115	19.97	Qp	9.8	.2	29.97	58.25	-28.28	-	-

Qp - Quasi-Peak detector

Line-L2 .15 - 30MHz

LINE 2 RESULTS



Trace Markers

Range 2: Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_N[dB]	CABLELOS S(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	44.56	Pk	9.8	.1	54.46	65.67	-11.21	-	-
14	.156	31.82	Av	9.8	.1	41.72	-	-	55.67	-13.95
15	.234	34.71	Pk	9.7	.2	44.61	62.31	-17.7	-	-
16	.234	16.67	Av	9.7	.2	26.57	-	-	52.31	-25.74
17	.33	32.66	Pk	9.8	.2	42.66	59.45	-16.79	-	-
18	.33	14.67	Av	9.8	.2	24.67	-	-	49.45	-24.78
19	.387	29.38	Pk	9.8	.2	39.38	58.13	-18.75	-	-
20	.387	10.24	Av	9.8	.2	20.24	-	-	48.13	-27.89
21	4.437	30.27	Pk	9.7	.3	40.27	56	-15.73	-	-
22	4.449	15.29	Av	9.7	.3	25.29	-	-	46	-20.71
23	10.872	30.69	Pk	9.9	.3	40.89	60	-19.11	-	-
24	10.875	16.43	Av	9.9	.3	26.63	-	-	50	-23.37

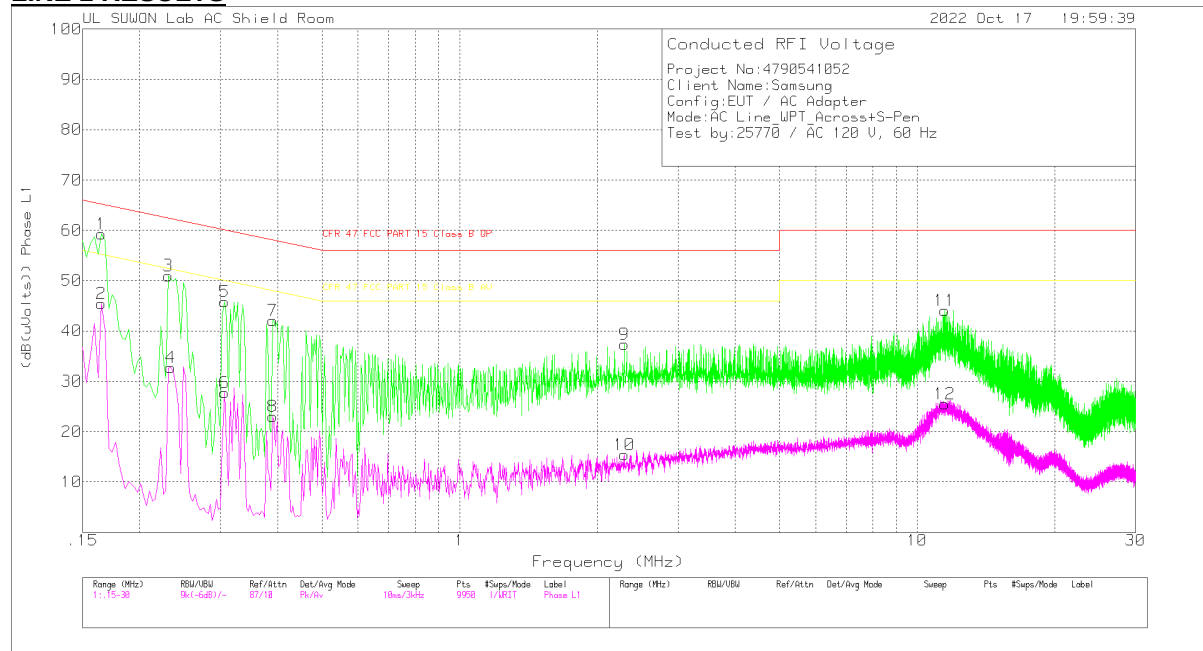
Pk - Peak detector

Av - Average detection

WORST EMISSIONS (Simutaneous charging mode Test case 10)

Line-L1 .15 - 30MHz

LINE 1 RESULTS



Trace Markers

Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_L1[dB]	CABLELOS S(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	.165	49.28	Pk	9.9	.1	59.28	65.21	-5.93	-	-
2	.165	35.39	Av	9.9	.1	45.39	-	-	55.21	-9.82
3	.231	41.09	Pk	9.7	.2	50.99	62.41	-11.42	-	-
4	.234	22.86	Av	9.7	.2	32.76	-	-	52.31	-19.55
5	.306	35.9	Pk	9.7	.2	45.8	60.08	-14.28	-	-
6	.306	17.83	Av	9.7	.2	27.73	-	-	50.08	-22.35
7	.39	32.05	Pk	9.8	.2	42.05	58.06	-16.01	-	-
8	.39	13.04	Av	9.8	.2	23.04	-	-	48.06	-25.02
9	2.289	27.3	Pk	9.7	.3	37.3	56	-18.7	-	-
10	2.289	5.43	Av	9.7	.3	15.43	-	-	46	-30.57
11	11.49	33.92	Pk	9.9	.3	44.12	60	-15.88	-	-
12	11.49	15.27	Av	9.9	.3	25.47	-	-	50	-24.53

Pk - Peak detector

Av - Average detection

Quasi-Peak Emissions

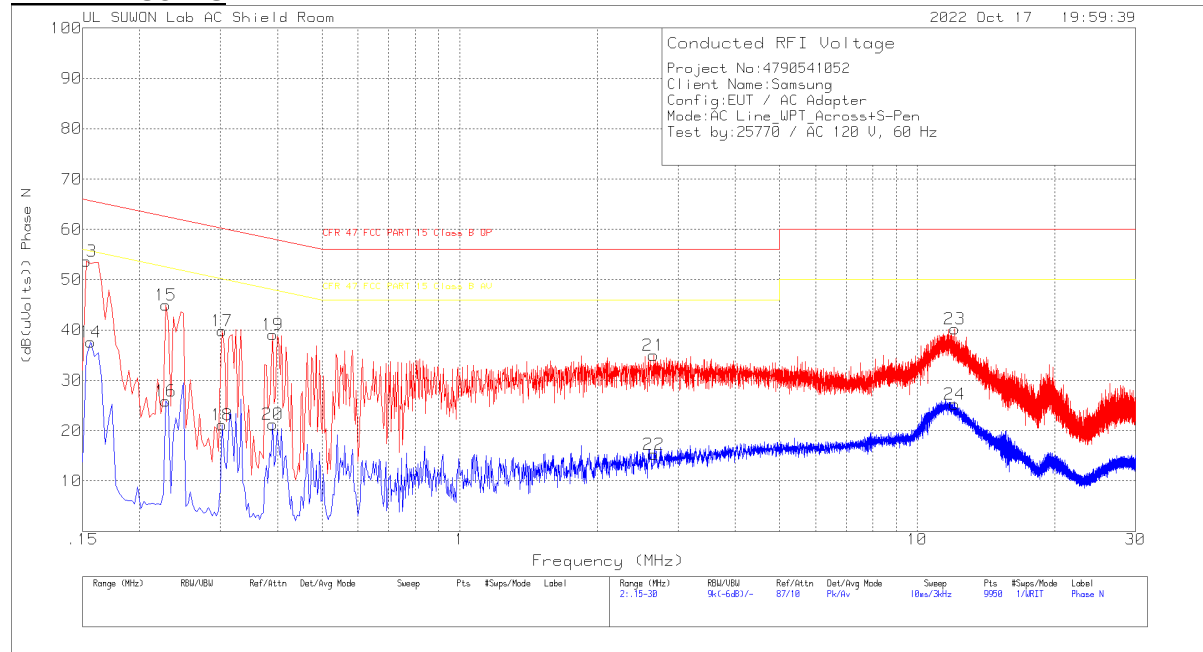
Range 1: Phase L1 .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_L1[dB]	CABLELOS S(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)
.16425	37.96	Qp	9.9	.1	47.96	65.25	-17.29	-	-

Qp - Quasi-Peak detector

Line-L2 .15 - 30MHz

LINE 2 RESULTS



Trace Markers

Range 2: Phase N .15 – 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_N[dB]	CABLELOS S(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	.153	43.81	Pk	9.8	.1	53.71	65.84	-12.13	-	-
14	.156	27.75	Av	9.8	.1	37.65	-	-	55.67	-18.02
15	.228	35.04	Pk	9.7	.2	44.94	62.52	-17.58	-	-
16	.228	15.96	Av	9.7	.2	25.86	-	-	52.52	-26.66
17	.303	29.97	Pk	9.7	.2	39.87	60.16	-20.29	-	-
18	.303	11.19	Av	9.7	.2	21.09	-	-	50.16	-29.07
19	.39	29.09	Pk	9.8	.2	39.09	58.06	-18.97	-	-
20	.39	11.31	Av	9.8	.2	21.31	-	-	48.06	-26.75
21	2.652	24.93	Pk	9.7	.3	34.93	56	-21.07	-	-
22	2.655	5.24	Av	9.7	.3	15.24	-	-	46	-30.76
23	12.069	29.89	Pk	10	.3	40.19	60	-19.81	-	-
24	12.063	14.99	Av	10	.3	25.29	-	-	50	-24.71

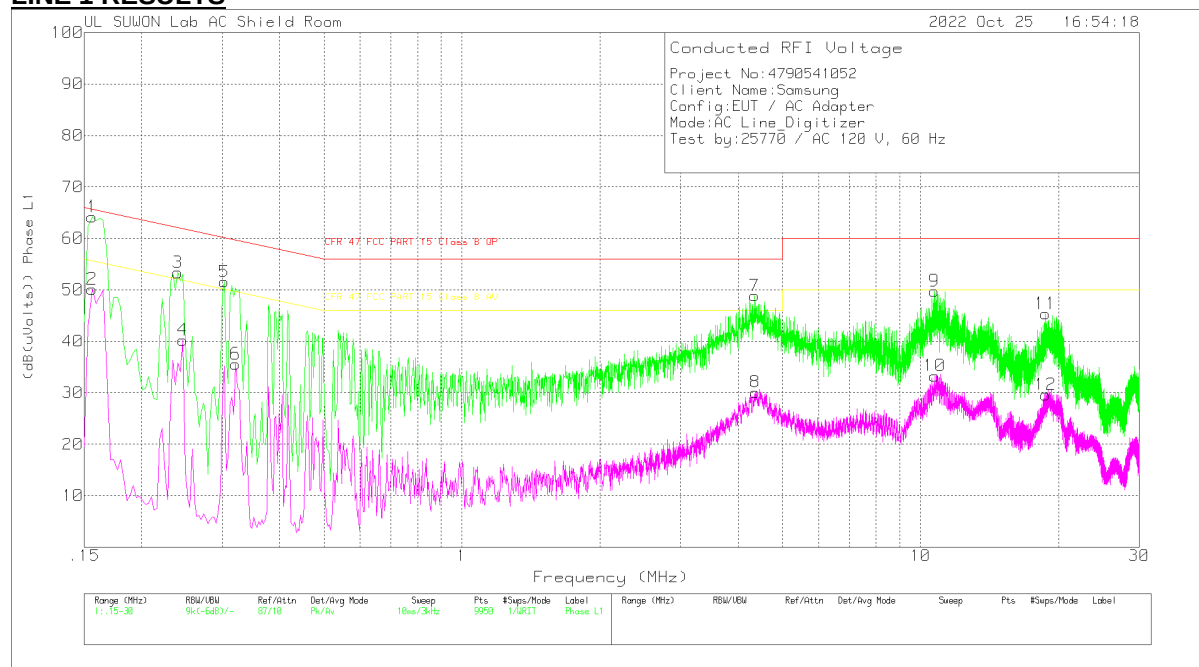
Pk - Peak detector

Av - Average detection

WORST EMISSIONS (Digitizer mode Test Case 12)

Line-L1 .15 - 30MHz

LINE 1 RESULTS



Trace Markers

Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_L1[dB]	CABLELOS S(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	.156	54.27	Pk	9.8	.1	64.17	65.67	-1.5	-	-
2	.156	40.23	Av	9.8	.1	50.13	-	-	55.67	-5.54
3	.24	43.46	Pk	9.7	.2	53.36	62.1	-8.74	-	-
4	.246	30.44	Av	9.6	.2	40.24	-	-	51.89	-11.65
5	.303	41.65	Pk	9.7	.2	51.55	60.16	-8.61	-	-
6	.321	25.68	Av	9.7	.2	35.58	-	-	49.68	-14.1
7	4.347	38.88	Pk	9.7	.3	48.88	56	-7.12	-	-
8	4.362	20.11	Av	9.7	.3	30.11	-	-	46	-15.89
9	10.716	39.56	Pk	9.9	.3	49.76	60	-10.24	-	-
10	10.74	23.09	Av	9.9	.3	33.29	-	-	50	-16.71
11	18.726	34.86	Pk	10.1	.4	45.36	60	-14.64	-	-
12	18.726	19.13	Av	10.1	.4	29.63	-	-	50	-20.37

Pk - Peak detector

Av - Average detection

Quasi-Peak Emissions

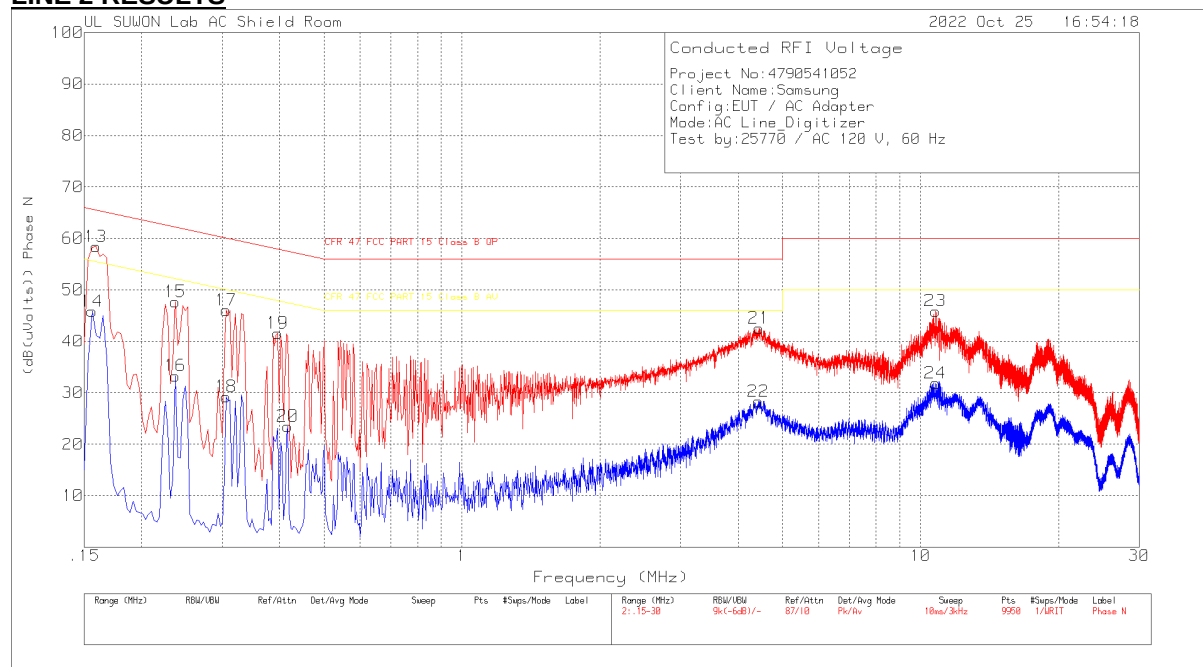
Range 1: Phase L1 .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With EX_L1[dB]	CABLELOS S(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)
.15525	40.04	Qp	9.8	.1	49.94	65.71	-15.77	-	-
.23925	28.34	Qp	9.7	.2	38.24	62.12	-23.88	-	-
.30375	26.48	Qp	9.7	.2	36.38	60.14	-23.76	-	-
4.34715	29.87	Qp	9.7	.3	39.87	56	-16.13	-	-

Qp - Quasi-Peak detector

Line-L2 .15 - 30MHz

LINE 2 RESULTS



Trace Markers

Range 2: Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With EX_N[dB]	CABLELOS S(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	.159	48.49	Pk	9.8	.1	58.39	65.52	-7.13	-	-
14	.156	35.9	Av	9.8	.1	45.8	-	-	55.67	-9.87
15	.237	37.77	Pk	9.7	.2	47.67	62.2	-14.53	-	-
16	.237	23.39	Av	9.7	.2	33.29	-	-	52.2	-18.91
17	.306	36.12	Pk	9.7	.2	46.02	60.08	-14.06	-	-
18	.306	19.32	Av	9.7	.2	29.22	-	-	50.08	-20.86
19	.396	31.57	Pk	9.8	.2	41.57	57.94	-16.37	-	-
20	.417	13.46	Av	9.8	.2	23.46	-	-	47.51	-24.05
21	4.443	32.55	Pk	9.7	.3	42.55	56	-13.45	-	-
22	4.428	18.29	Av	9.7	.3	28.29	-	-	46	-17.71
23	10.776	35.68	Pk	9.9	.3	45.88	60	-14.12	-	-
24	10.776	21.63	Av	9.9	.3	31.83	-	-	50	-18.17

Pk - Peak detector

Av - Average detection

Quasi-Peak Emissions

Range 2: Phase N .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With EX_N[dB]	CABLELOS S(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)
.15825	38.72	Qp	9.8	.1	48.62	65.56	-16.94	-	-
.23625	27.82	Qp	9.7	.2	37.72	62.23	-24.51	-	-

Qp - Quasi-Peak detector

END OF TEST REPORT