CERTIFICATION TEST REPORT

Report Number. : 4790841160-E11V3

Applicant	:	SAMSUNG ELECTRONICS CO., LTD. 129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI, GYEONGGI-DO, 16677, KOREA
Model	:	SC-55D, SCG22
FCC ID	:	A3LSMF946JPN
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:
2023-07-10

Prepared by:
UL KOREA LTD.
26th floor, 152, Teheran-ro, Gangnam-gu Seoul, 06236, Korea

Suwon Test Site: UL KOREA LTD. Suwon Laboratory
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Suwon-si, Gyeonggi-do, 16675, Korea
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IAS ACCREDITED
Testing Laboratory
TL-637

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2023-06-30	Initial issue	Dexter(Hyunsik) Yun
V2	2023-07-07	Updated to address TCB's question	Dexter(Hyunsik) Yun
V3	2023-07-10	Updated to address TCB's question	Dexter(Hyunsik) Yun

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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:	SC-55D, SCG22
SERIAL NUMBER:	R3CW30K681J (RADIATED, Original); R3CW408V0DL, R3CW408V1CV (RADIATED, Spot-check);
DATE TESTED:	2023-04-12 ~ 2023-05-22 (Original); 2023-06-12 ~ 2023-06-30 (Spot-check);

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
47 CFR Part 15 Subpart C	Complies

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:

Seokhwan Hong
Suwon Lab Engineer
UL KOREA LTD.

Tested By:

Dexter(Hyunsik) Yun
Suwon Lab Engineer
UL KOREA LTD.

1.1. INTRODUCTION OF TEST DATA REUSE

This report referenced from the FCC ID: A3LSMF946U DSS Bluetooth (FCC CFR 47 Part 15C). And the applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID.

1.2. DIFFERENCE

The A3LSMF946JPN model shares the same enclosure and circuit board as A3LSMF946U. The WPT antennas and surrounding circuitry and layout are identical between these two units.

After confirming through preliminary radiated emissions that the performance of the A3LSMF946JPN remains representative of A3LSMF946U. The test data of A3LSMF946U being submitted for this application to cover WPT features.

1.3. SPOT CHECK VERIFICATION DATA

(Worst case of the radiated fundamental and radiated spurious emissions)

Band	Test Item	Mode	Frequency	Test Limit	Original model	Spot check model	Deviation	Remark
					SM-F946U Results	SM-F946D Results		
					FCC ID : A3LSMF946U	FCC ID : A3LSMF946JPN		
WPT (Power sharing and Digitizer)	Fundmental	WPT_Phone_Across_HF_Y	0.113 MHz	46.55 dBuV/m	3.25 dBuV/m	5.05 dBuV/m	1.80 dB	
	RSE	WPT_Phone_Across_HF_Y	1.025 MHz	27.41 dBuV/m	11.87 dBuV/m	9.59 dBuV/m	-2.28 dB	
	Fundmental	WPT_Digitizer_Adapter_Z	0.593 MHz	32.11 dBuV/m	6.29 dBuV/m	6.28 dBuV/m	-0.01 dB	
	RSE	WPT_Digitizer_Adapter_Z	1.631 MHz	23.38 dBuV/m	0.97 dBuV/m	1.76 dBuV/m	0.79 dB	

Comparison of two models, upper deviation is within 3 dB range and all test results are under FCC Technical Limits.

1.4. REFERENCE DETAIL

Reference application that contains the reused reference data in the individual test reports:

Equipment Class	Reference FCC ID (Parent)	Application Type	Reference Test report number	Exhibit Type	Variant Test Report Number	Data Re-used
DTS	A3LSMF946U	Original Grant	4790748041-E8 (802.11b/g/n/ax)	Test Report	4790841160-E7 (802.11b/g/n/ax)	All
DSS	A3LSMF946U	Original Grant	4790748041-E10 (Bluetooth)	Test Report	4790841160-E6 (Bluetooth)	All
NII	A3LSMF946U	Original Grant	4790748041-E11 (802.11a/n/ac/ax)	Test Report	4790841160-E8 (802.11a/n/ac/ax)	All
6CD	A3LSMF946U	Original Grant	4790748041-E12 (802.11a/n/ac/ax)	Test Report	4790841160-E9 (802.11a/n/ac/ax)	All
DCD	A3LSMF946U	Original Grant	4790748041-E14 (WPT)	Test Report	4790841160-E11 (WPT)	All
UWB	A3LSMF946U	Original Grant	4790748041-E15 (UWB)	Test Report	4790841160-E12 (UWB)	All

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2. TEST METHODOLOGY

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

1. FCC 47 CFR Part 2.
2. FCC 47 CFR Part 15.
3. ANSI C63.10-2013.
4. KDB 680106 D01 RF Exposure Wireless Charging Apps v03.
5. KDB 484596 D01 Referencing Test Data v01

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:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

Corrected Reading (dBuV) = Meter Reading (dBuV) + External Cable (dB) + Cableloss (dB)
46.62 dBuV + 9.8 dB + 0.1 dB = 56.52 dBuV

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	2.80 dB
Radiated Disturbance, 9 kHz to 30 MHz	1.69 dB
Radiated Disturbance, 30 MHz to 1 GHz	3.92 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 115:2021.

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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.

Representative model	Difference	Derivative model
		SCG22
SC-55D	Hardware	SC-55D BT/WIFI IC and layout is same as SM-F946U.
	Software	Supported WWAN Band is different.

Thus, SC-55D was set for final test.

5.2. MAXIMUM E-FIELD STRENGTH

- Mode 1

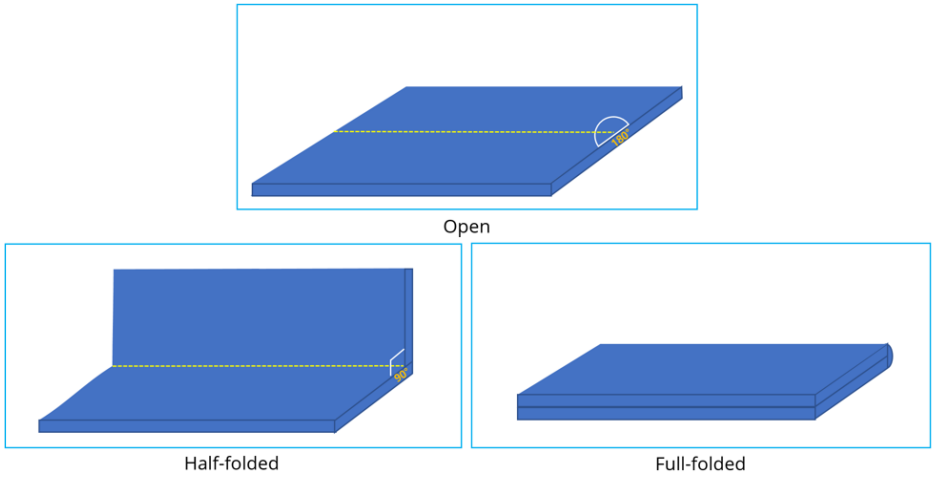
Fundamental Frequency (kHz)	Test Case	E-Field (30m distance) FCC (dBuV/m)
110 - 148	**3**	**3.25**

- Mode 2

Fundamental Frequency (kHz)	Test Case	E-Field (30m distance) FCC (dBuV/m)
531 - 593	**8**	**6.29**

5.3. PRELIMINARY TEST CONFIGURATIONS

	Power sharing mode	Digitizer
Worst case of antenna axis	Y	Z
Foldable condition	Half-folded	Half-folded



5.4. WORST-CASE CONFIGURATION AND MODE

Mode 1	Test Case	Description
Power sharing mode	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
Digitizer	7	Charging from EUT to S-Pen through Display Scan
	8	**Charging from EUT (with TA) to S-Pen through Display Scan**

For radiated test, test case 1/3/5/7, 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, 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 3 is worst case and Digitizer mode, test results of case 8 is worst, so this test report described test case 3 and test case 8.

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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	R37N9QP4SL9DK3	N/A
Data Cable	SAMSUNG	WBR0062M	GH39-02112A	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

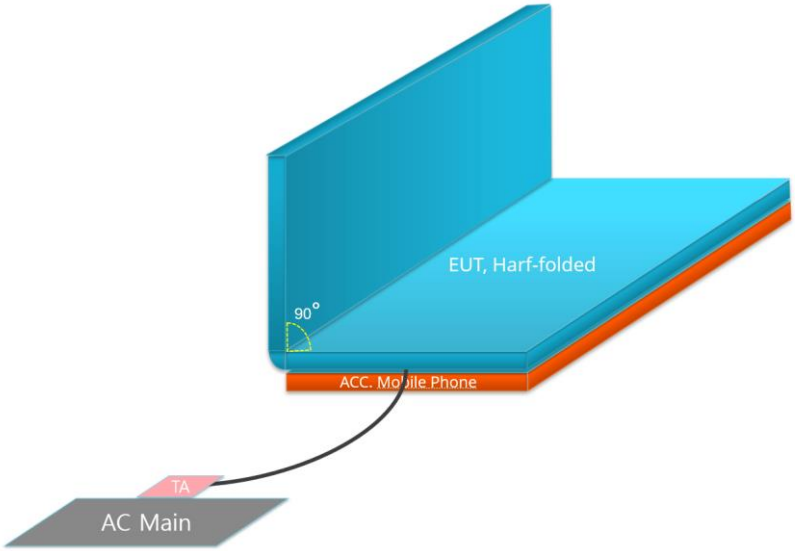
TEST SETUP

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

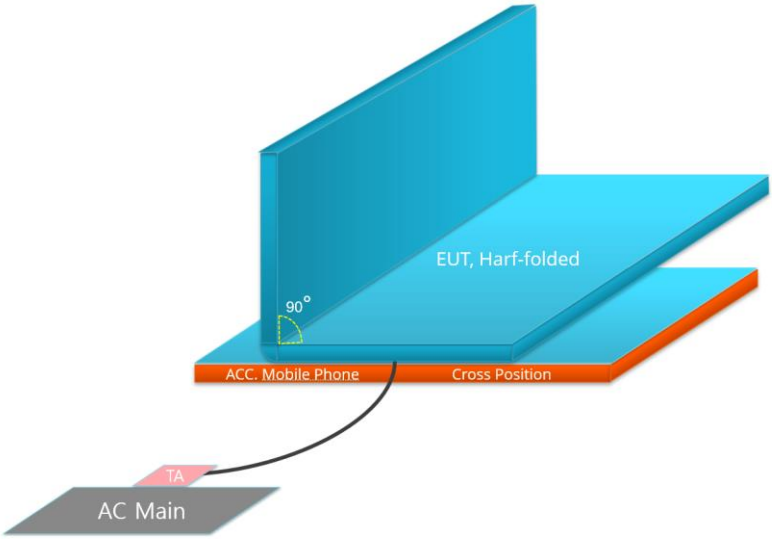
TEST SETUP DIAGRAM

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

- Test Case1 and 2 : Charging Phone



- Test Case 3 and 4 : Charging Phone(Cross position)



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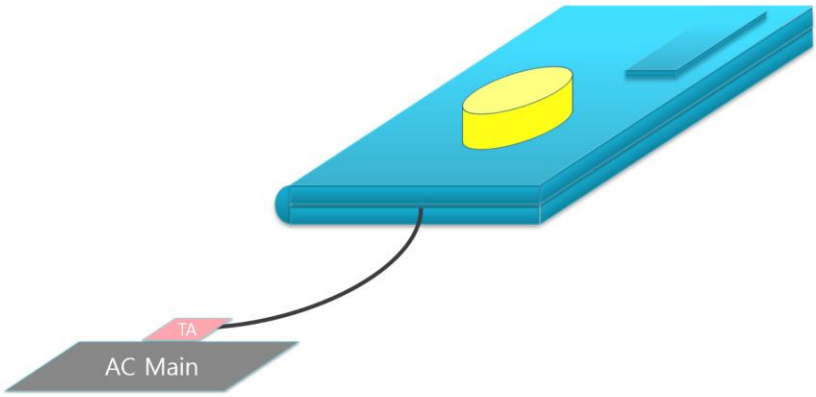
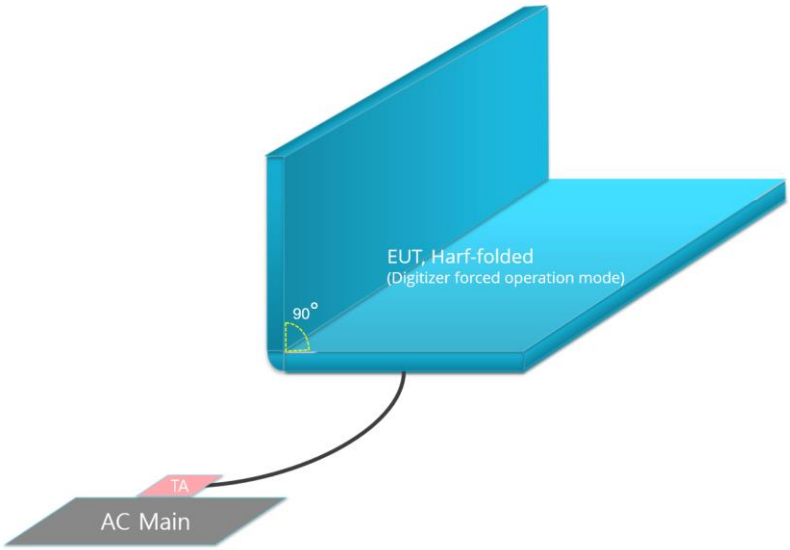
- Test Case 5 and 6 : Charging Wearable device



- Test case 7 and 8 : Digitizer



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, 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
EMI Test Receive, 40 GHz	R&S	ESU40	100457	2023-07-29
EMI Test Receive, 3 GHz	R&S	ESR3	101832	2023-08-01
Spectrum Analyzer, 7 GHz	Agilent / HP	N9010A	MY54200580	2023-08-01
LISN	R&S	ENV-216	101837	2023-08-04
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	2023-10-06
UL Software				
Description	**Manufacturer**	**Model**	**Version**	
Radiated software	UL	UL EMC	Ver 9.5	
AC Line Conducted software	UL	UL EMC	Ver 9.5	

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7. APPLICABLE LIMITS AND TEST RESULTS

7.1. 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 3 and 8.

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.

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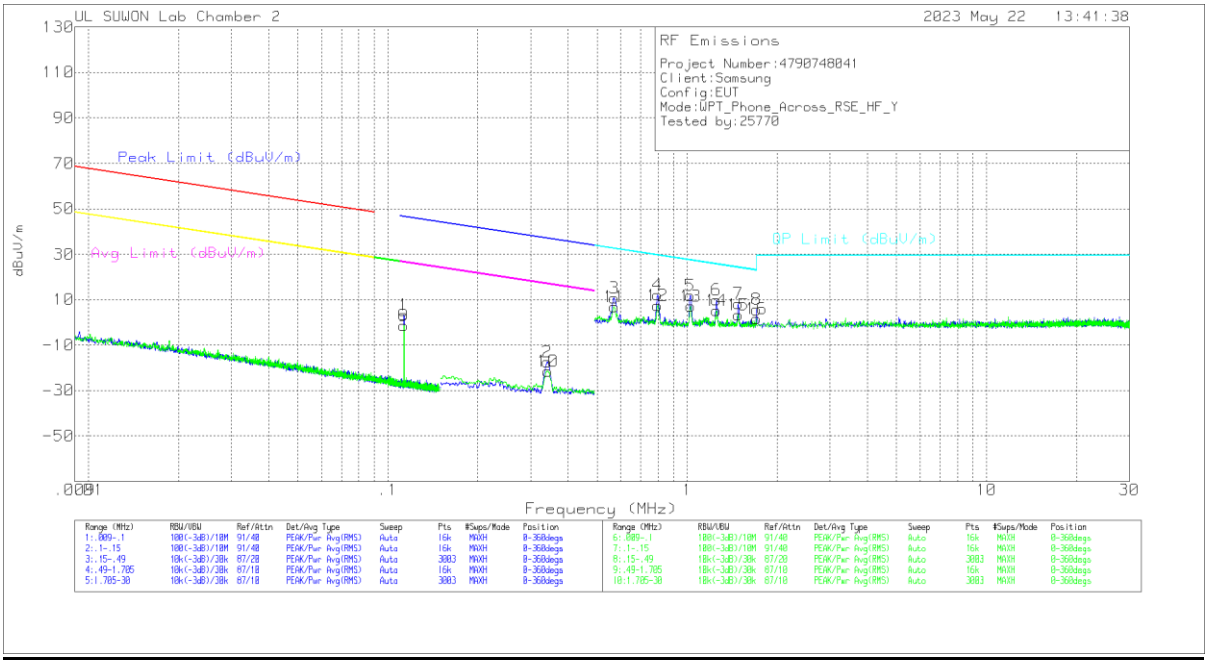
RADIATED EMISSIONS 9 KHz to 30 MHz(Power sharing mode Test Case 3)



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	.11323	63.15	Pk	20	.1	-80	3.25	46.55	-43.3	26.55	-23.3	0-360
2	.34125	42.52	Pk	19.9	.1	-80	-17.48	36.95	-54.43	16.95	-34.43	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	.57079	30.55	Pk	20	.1	-40	10.65	32.48	-21.83	0-360
4	.79609	31.83	Pk	20	.2	-40	12.03	29.6	-17.57	0-360
5	1.02462	31.67	Pk	20	.2	-40	11.87	27.41	-15.54	0-360
6	1.25285	29.7	Pk	20	.2	-40	9.9	25.67	-15.77	0-360
7	1.48146	28.14	Pk	20	.2	-40	8.34	24.22	-15.88	0-360
8	1.705	25.36	Pk	20.1	.2	-40	5.66	23	-17.34	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)
**9	.11324	58.56	Pk	20	.1	-80	-1.34	46.55	-47.89	26.55	-27.89	0-360
10	.34238	38.51	Pk	19.9	.1	-80	-21.49	36.92	-58.41	16.92	-38.41	0-360

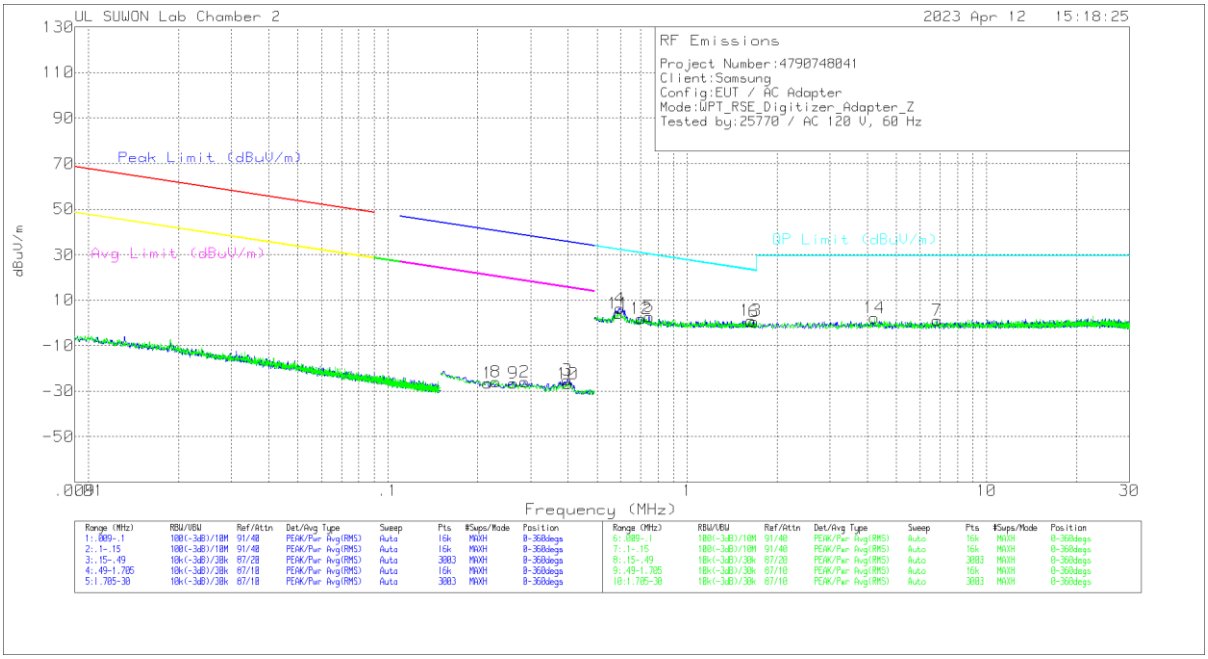
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	HFH2-Z2_Loop Antenna	Cable Loss	Dist Corr 30m	Corrected Reading dBuV/m	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
11	.56976	26.83	Pk	20	.1	-40	6.93	32.49	-25.56	0-360
12	.79643	27.28	Pk	20	.2	-40	7.48	29.59	-22.11	0-360
13	1.02527	26.86	Pk	20	.2	-40	7.06	27.41	-20.35	0-360
14	1.25391	25.01	Pk	20	.2	-40	5.21	25.66	-20.45	0-360
15	1.48005	23.2	Pk	20	.2	-40	3.4	24.23	-20.83	0-360
16	1.705	21.38	Pk	20.1	.2	-40	1.68	23	-21.32	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(Digitizer mode_Test case 8)



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	.21554	33.64	Pk	19.9	.1	-80	-26.36	40.95	-67.31	20.95	-47.31	0-360
2	.28633	34.2	Pk	19.9	.1	-80	-25.8	38.48	-64.28	18.48	-44.28	0-360
3	.39832	34.92	Pk	19.9	.1	-80	-25.08	35.6	-60.68	15.6	-40.68	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)
**4	.59579	26.19	Pk	20	.1	-40	6.29	32.11	-25.82	0-360
5	.74601	22.65	Pk	20	.2	-40	2.85	30.16	-27.31	0-360
6	1.66982	20.33	Pk	20.1	.2	-40	.63	23.18	-22.55	0-360
7	6.84163	20.45	Pk	20.2	.4	-40	1.05	29.5	-28.45	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	.22916	34.1	Pk	19.9	.1	-80	-25.9	40.41	-66.31	20.41	-46.31	0-360
9	.26249	33.66	Pk	19.9	.1	-80	-26.34	39.23	-65.57	19.23	-45.57	0-360
10	.39973	33.35	Pk	19.9	.1	-80	-26.65	35.57	-62.22	15.57	-42.22	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)
**11	.59138	24.07	Pk	20	.1	-40	4.17	32.17	-28	0-360
12	.7031	21.78	Pk	20	.1	-40	1.88	30.67	-28.79	0-360
13	1.63148	20.67	Pk	20.1	.2	-40	.97	23.38	-22.41	0-360
14	4.22148	21.68	Pk	20.2	.3	-40	2.18	29.5	-27.32	0-360

Pk - Peak detector
**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.

7.1. 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.		

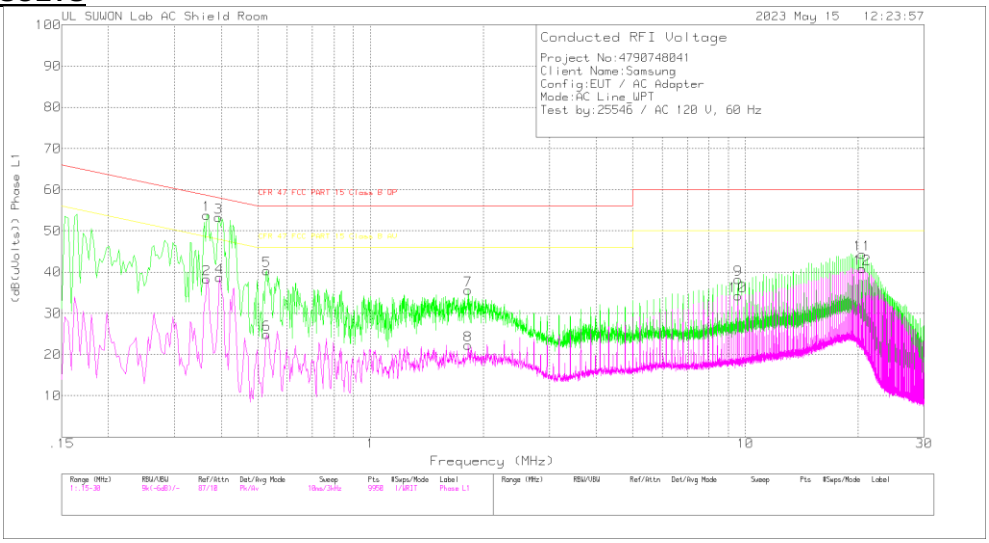
RESULTS

The EUT belongs to Test Case 4 and 8.

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]	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	.366	43.86	Pk	9.8	.2	53.86	58.59	-4.73	-	-
2	.366	28.36	Av	9.8	.2	38.36	-	-	48.59	-10.23
3	.393	43.32	Pk	9.8	.2	53.32	58	-4.68	-	-
4	.396	28.74	Av	9.8	.2	38.74	-	-	47.94	-9.2
5	.528	30.23	Pk	9.9	.2	40.33	56	-15.67	-	-
6	.528	14.79	Av	9.9	.2	24.89	-	-	46	-21.11
7	1.821	25.56	Pk	9.7	.3	35.56	56	-20.44	-	-
8	1.821	12.23	Av	9.7	.3	22.23	-	-	46	-23.77
9	9.552	27.97	Pk	9.8	.4	38.17	60	-21.83	-	-
10	9.552	24.06	Av	9.8	.4	34.26	-	-	50	-15.74
11	20.469	33.74	Pk	10.2	.4	44.34	60	-15.66	-	-
12	20.469	30.26	Av	10.2	.4	40.86	-	-	50	-9.14

Pk - Peak detector
Av - Average detection

Quasi-Peak Emissions

Range 1: Phase L1 .15 - 30MHz

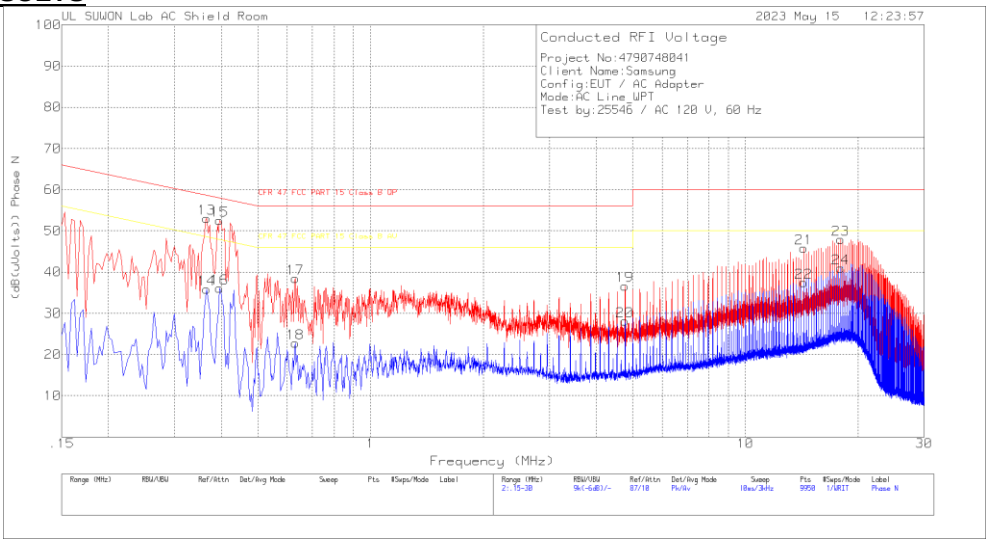
Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With EX_L1[dB]	CABLELOSS(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
.36525	28.91	Qp	9.8	.2	38.91	58.61	-19.7	-	-
.39225	39.74	Qp	9.8	.2	49.74	58.02	-8.28	-	-
.39525	38.09	Qp	9.8	.2	48.09	57.95	-9.86	-	-
20.4683	27.22	Qp	10.2	.4	37.82	60	-22.18	-	-

Qp - Quasi-Peak detector

UL KOREA LTD. Suwon Laboratory FORM ID: FCC_15C(04)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

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]	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	.366	43.04	Pk	9.8	.2	53.04	58.59	-5.55	-	-
14	.366	25.87	Av	9.8	.2	35.87	-	-	48.59	-12.72
15	.396	42.52	Pk	9.8	.2	52.52	57.94	-5.42	-	-
16	.396	26.1	Av	9.8	.2	36.1	-	-	47.94	-11.84
17	.63	28.45	Pk	9.8	.2	38.45	56	-17.55	-	-
18	.63	12.77	Av	9.8	.2	22.77	-	-	46	-23.23
19	4.776	26.66	Pk	9.7	.3	36.66	56	-19.34	-	-
20	4.776	18.09	Av	9.7	.3	28.09	-	-	46	-17.91
21	14.328	35.43	Pk	10	.4	45.83	60	-14.17	-	-
22	14.328	27.05	Av	10	.4	37.45	-	-	50	-12.55
23	17.967	37.31	Pk	10.2	.4	47.91	60	-12.09	-	-
24	17.967	30.32	Av	10.2	.4	40.92	-	-	50	-9.08

Pk - Peak detector
Av - Average detection

Quasi-Peak Emissions

Range 2: Phase N .15 - 30MHz

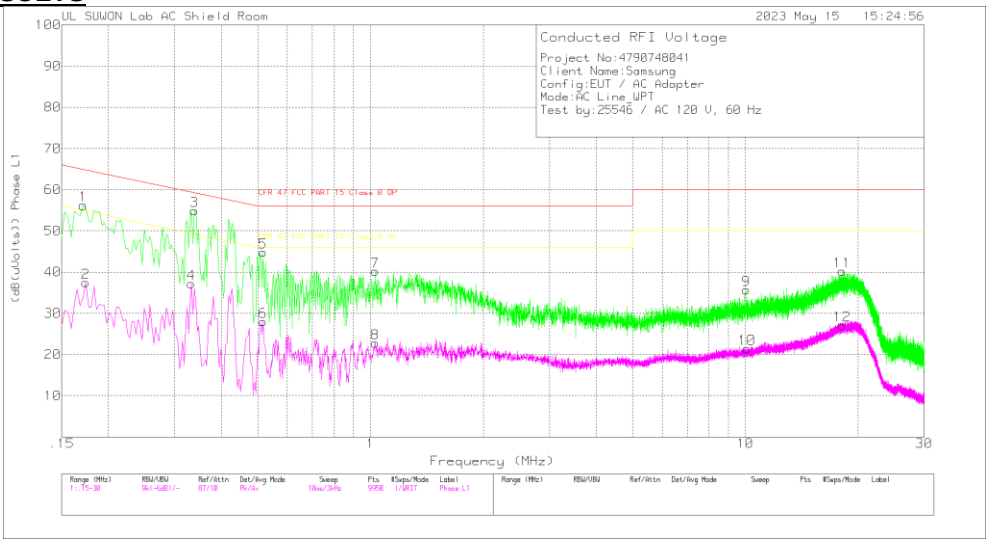
Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With EX_N[dB]	CABLELOSS(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
.36675	41.15	Qp	9.8	.2	51.15	58.57	-7.42	-	-
.39675	40.18	Qp	9.8	.2	50.18	57.92	-7.74	-	-
17.9663	30.72	Qp	10.2	.4	41.32	60	-18.68	-	-

Qp - Quasi-Peak detector

WORST EMISSIONS (Digitizer mode_Test case 8)

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]	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	.171	46.03	Pk	10	.2	56.23	64.91	-8.68	-	-
2	.174	27.27	Av	10	.2	37.47	-	-	54.77	-17.3
3	.339	44.95	Pk	9.8	.2	54.95	59.23	-4.28	-	-
4	.333	27.27	Av	9.8	.2	37.27	-	-	49.38	-12.11
5	.516	34.68	Pk	9.9	.2	44.78	56	-11.22	-	-
6	.516	17.89	Av	9.9	.2	27.99	-	-	46	-18.01
7	1.029	30.25	Pk	9.7	.3	40.25	56	-15.75	-	-
8	1.029	12.78	Av	9.7	.3	22.78	-	-	46	-23.22
9	10.062	25.43	Pk	9.9	.4	35.73	60	-24.27	-	-
10	10.092	11.15	Av	9.9	.4	21.45	-	-	50	-28.55
11	18.105	29.72	Pk	10.1	.4	40.22	60	-19.78	-	-
12	18.102	16.64	Av	10.1	.4	27.14	-	-	50	-22.86

Pk - Peak detector
Av - Average detection

Quasi-Peak Emissions

Range 1: Phase L1 .15 - 30MHz

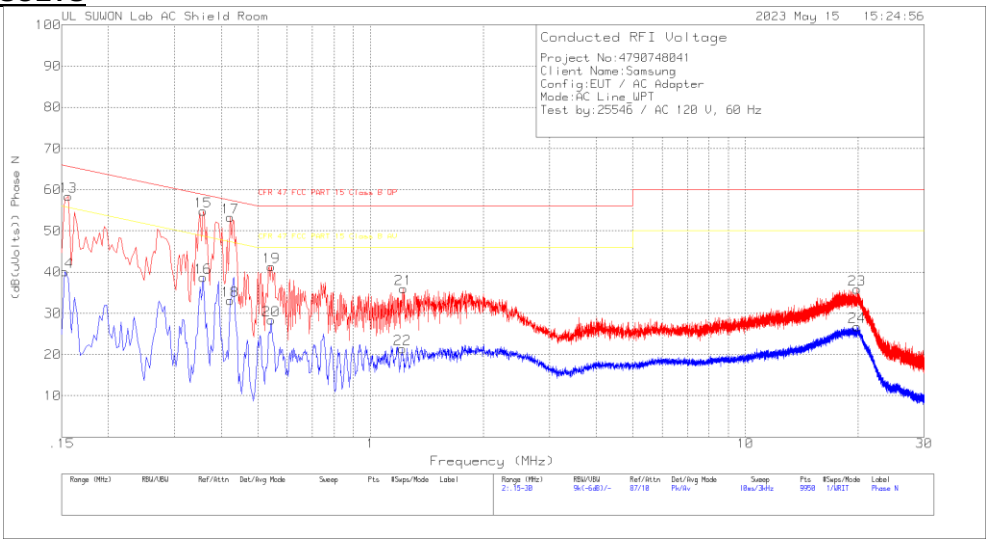
Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With EX_L1[dB]	CABLELOSS(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
.17025	39.37	Qp	10	.2	49.57	64.95	-15.38	-	-
.17325	36.4	Qp	10	.2	46.6	64.8	-18.2	-	-
.33825	32.61	Qp	9.8	.2	42.61	59.25	-16.64	-	-
.33375	34.58	Qp	9.8	.2	44.58	59.36	-14.78	-	-

Qp - Quasi-Peak detector

UL KOREA LTD. Suwon Laboratory FORM ID: FCC_15C(04)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

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]	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	48.54	Pk	9.8	.1	58.44	65.67	-7.23	-	-
14	.153	30.18	Av	9.8	.1	40.08	-	-	55.84	-15.76
15	.357	44.84	Pk	9.8	.2	54.84	58.8	-3.96	-	-
16	.357	28.74	Av	9.8	.2	38.74	-	-	48.8	-10.06
17	.423	43.25	Pk	9.8	.2	53.25	57.39	-4.14	-	-
18	.423	23.06	Av	9.8	.2	33.06	-	-	47.39	-14.33
19	.543	31.23	Pk	9.9	.2	41.33	56	-14.67	-	-
20	.543	18.29	Av	9.9	.2	28.39	-	-	46	-17.61
21	1.224	26	Pk	9.7	.3	36	56	-20	-	-
22	1.218	11.43	Av	9.7	.3	21.43	-	-	46	-24.57
23	19.848	25.22	Pk	10.2	.4	35.82	60	-24.18	-	-
24	19.848	16.21	Av	10.2	.4	26.81	-	-	50	-23.19

Pk - Peak detector
Av - Average detection

Quasi-Peak Emissions

r

Range 2: Phase N .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With EX_N[dB]	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)
.15675	38.65	Qp	9.8	.1	48.55	65.63	-17.08	-	-
.15375	38.27	Qp	9.8	.1	48.17	65.79	-17.62	-	-
.35775	22.09	Qp	9.8	.2	32.09	58.78	-26.69	-	-
.42225	37.33	Qp	9.8	.2	47.33	57.4	-10.07	-	-

Qp - Quasi-Peak detector

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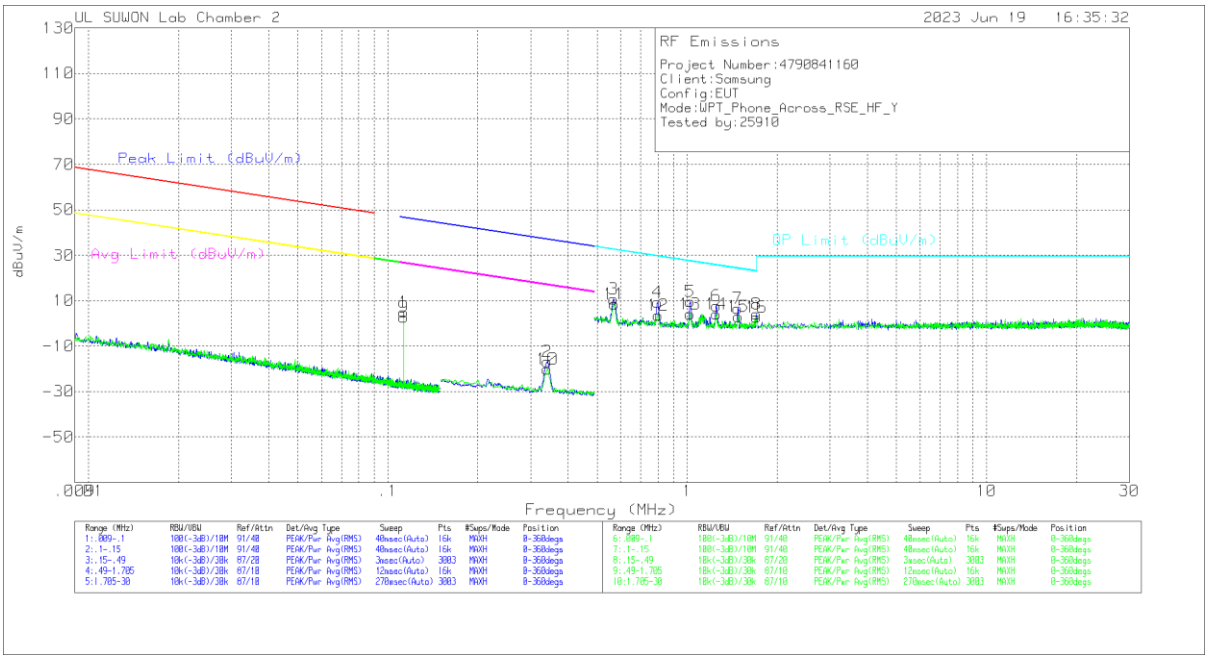
8. SPOT-CHECK THEST RESULT

FUNDAMENTAL & SPURIOUS EMISSIONS(Power sharing mode)

FUNDAMENTAL& SPURIOUS EMISSION 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	.11304	64.95	Pk	20	.1	-80	5.05	46.56	-41.51	26.56	-21.51	0-360
2	.34114	43.13	Pk	19.9	.1	-80	-16.87	36.95	-53.82	16.95	-33.82	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	.56801	30.69	Pk	20	.1	-40	10.79	32.52	-21.73	0-360
4	.79624	29.12	Pk	20	.2	-40	9.32	29.59	-20.27	0-360
5	1.02325	29.39	Pk	20	.2	-40	9.59	27.42	-17.83	0-360
6	1.25205	27.48	Pk	20	.2	-40	7.68	25.67	-17.99	0-360
7	1.47735	26.52	Pk	20	.2	-40	6.72	24.24	-17.52	0-360
8	1.705	23.73	Pk	20.1	.2	-40	4.03	23	-18.97	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)
**9	.11303	62.75	Pk	20	.1	-80	2.85	46.56	-43.71	26.56	-23.71	0-360
10	.34148	39.96	Pk	19.9	.1	-80	-20.04	36.94	-56.98	16.94	-36.98	0-360

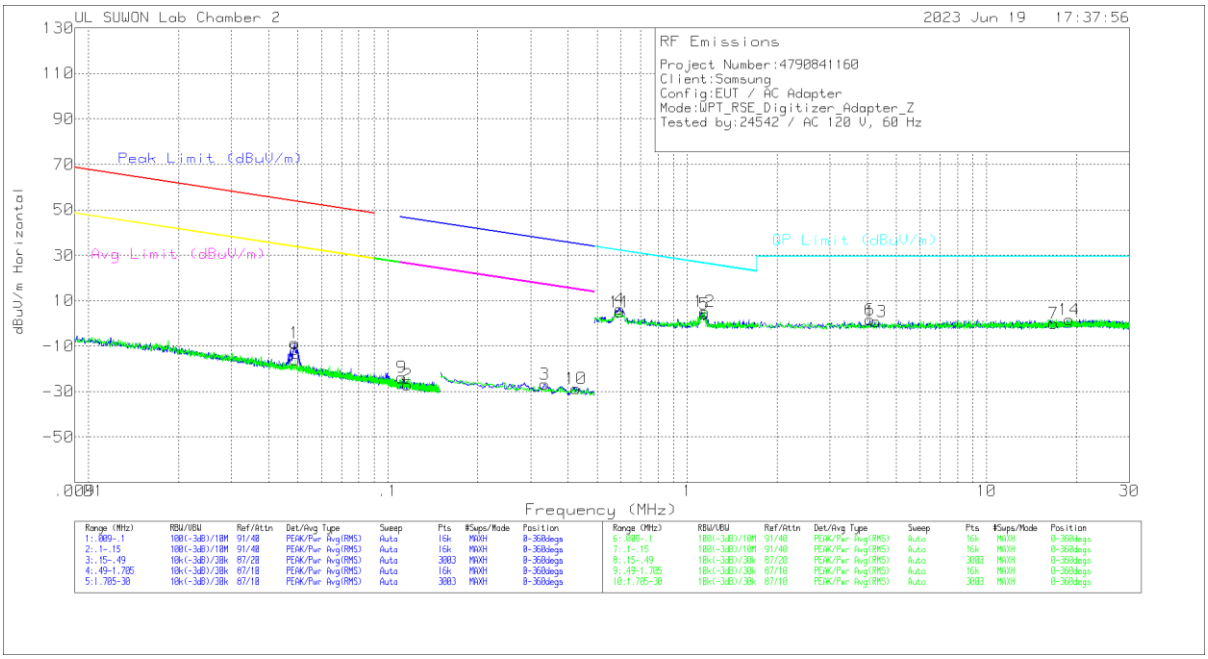
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	HFH2-Z2_Loop Antenna	Cable Loss	Dist Corr 30m	Corrected Reading dBuV/m	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
11	.56938	28.47	Pk	20	.1	-40	8.57	32.5	-23.93	0-360
12	.79784	23.46	Pk	20	.2	-40	3.66	29.58	-25.92	0-360
13	1.02295	24.01	Pk	20	.2	-40	4.21	27.42	-23.21	0-360
14	1.25239	23.87	Pk	20	.2	-40	4.07	25.67	-21.6	0-360
15	1.47861	22.94	Pk	20	.2	-40	3.14	24.23	-21.09	0-360
16	1.70433	22.54	Pk	20.1	.2	-40	2.84	23	-20.16	0-360

Pk - Peak detector

** Fundamental

FUNDAMENTAL & SPURIOUS EMISSIONS(Digitizer)

FUNDAMENTAL& SPURIOUS EMISSION 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	.04888	51.33	Pk	20.1	.1	-80	-8.47	53.8	-62.27	33.8	-42.27	0-360
2	.11621	32.94	Pk	20	.1	-80	-26.96	46.32	-73.28	26.32	-53.28	0-360
3	.33487	33.18	Pk	19.9	.1	-80	-26.82	37.11	-63.93	17.11	-43.93	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)
**4	.59503	26.18	Pk	20	.1	-40	6.28	32.12	-25.84	0-360
5	1.14045	24	Pk	20	.2	-40	4.2	26.48	-22.28	0-360
6	4.07068	21.26	Pk	20.2	.3	-40	1.76	29.5	-27.74	0-360
7	16.71903	19.28	Pk	20.2	.6	-40	.08	29.5	-29.42	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	.04903	43.7	Pk	20.1	.1	-80	-16.1	53.78	-69.88	33.78	-49.88	0-360
9	.11135	36.07	Pk	20	.1	-80	-23.83	46.69	-70.52	26.69	-50.52	0-360
10	.42459	31.19	Pk	20	.1	-80	-28.71	35.05	-63.76	15.05	-43.76	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)
**11	.59575	24.85	Pk	20	.1	-40	4.95	32.11	-27.16	0-360
12	1.14189	25.06	Pk	20	.2	-40	5.26	26.47	-21.21	0-360
13	4.27803	20.21	Pk	20.2	.3	-40	.71	29.5	-28.79	0-360
14	18.8585	20.63	Pk	20.4	.7	-40	1.73	29.5	-27.77	0-360

Pk - Peak detector
**Fundamental

END OF TEST REPORT