

CERTIFICATION TEST REPORT

Report Number. : S-4792147575-E14V2

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

Model : SM-F971U, SM-F971U1

FCC ID : A3LSMF971U

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

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

Date Of Issue:

2026-04-24

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

Revision History

Rev.	Issue Date	Revisions	Presented By
V1	2026-04-17	Initial issue	Dexter(Hyunsik) Yun
V2	2026-04-24	Updated to address TCB's question	Dexter(Hyunsik) Yun

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	4
2. TEST METHODOLOGY	5
3. FACILITIES AND ACCREDITATION	5
4. CALIBRATION AND UNCERTAINTY	6
4.1. MEASURING INSTRUMENT CALIBRATION	6
4.2. SAMPLE CALCULATION	6
4.3. MEASUREMENT UNCERTAINTY.....	6
4.4. DECISION RULE.....	6
5. EQUIPMENT UNDER TEST.....	7
5.1. DESCRIPTION OF EUT	7
5.2. MAXIMUM E-FIELD STRENGTH	7
5.3. WORST-CASE CONFIGURATION AND MODE.....	7
5.4. DESCRIPTION OF TEST SETUP.....	9
6. TEST AND MEASUREMENT EQUIPMENT	10
7. 20dB BANDWIDTH	11
8. RADIATED EMISSION TEST RESULTS.....	12
8.1. LIMITS AND PROCEDURE	12
8.1.1. FUNDAMENTAL AND SPURIOUS EMISSIONS [EUT with passive TAG mode] .	14
8.1.2. SPURIOUS EMISSION 0.009 TO 30 MHz [EUT with passive TAG mode].....	15
8.1.3. TX SPURIOUS EMISSION 30 TO 1000 MHz [EUT with passive TAG mode]	16
8.1.4. FUNDAMENTAL AND SPURIOUS EMISSIONS) [EUT without passive TAG mode] 17	
8.1.5. SPURIOUS EMISSION 0.09 TO 30 MHz [EUT without passive TAG mode].....	18
8.1.6. TX SPURIOUS EMISSION 30 TO 1000 MHz [EUT without passive TAG mode] .	19
9. AC MAINS LINE CONDUCTED EMISSIONS.....	20
10. FREQUENCY STABILITY.....	23

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/be, NFC, WPT, UWB and NB-NTN

MODEL NUMBER: SM-F971U, SM-F971U1

SERIAL NUMBER: R3GL10KMFCP (RADIATED);

DATE TESTED: 2026-04-01 – 2026-04-17

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.

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 C63.10-2020.
4. KDB 414788 D01 Radiated Test Site v01r01

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:

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

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

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Occupied Bandwidth	0.04 %
Frequency Stability	7.6×10^{-8} Hz
Conducted Disturbance, 9 kHz to 30 MHz	1.84 dB
Radiated Disturbance, 9 kHz to 30 MHz	2.41 dB
Radiated Disturbance, 30 MHz to 1 GHz	3.78 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 Clause 4.4.3 in IEC Guide 115:2023.

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/be, NFC, WPT, UWB and NB-NTN. This test report addresses the DXX (NFC) operational mode.

Representative model	Comparison Criteria	Derivative model
		SM-F971U1
SM-F971U	Hardware	Identical
	Software	The UI changed according to Service Provider.

The SM-F971U model was used as the representative model for final testing. All test results in this report apply to both the representative model and its derivative variants.

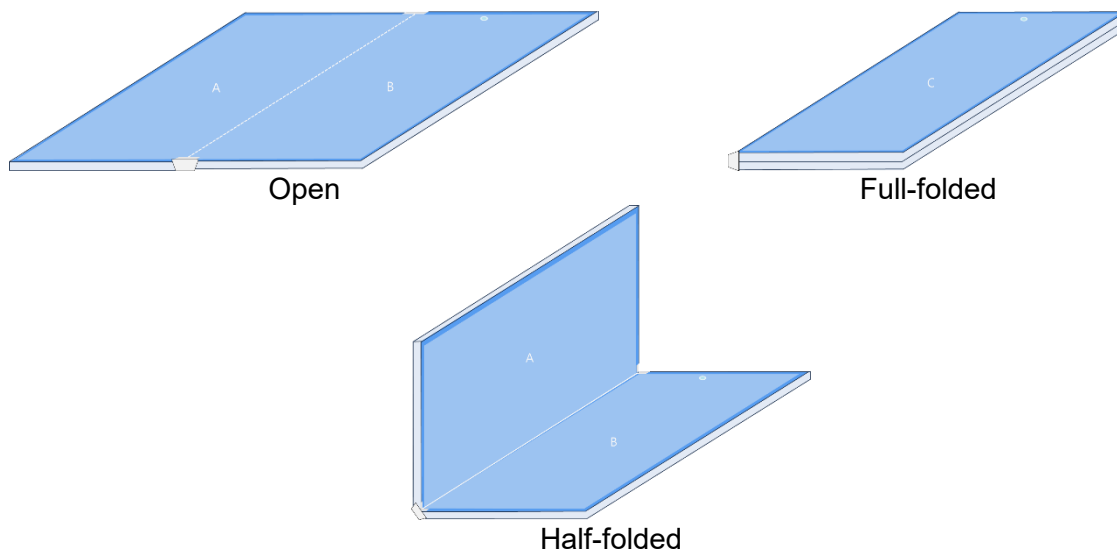
5.2. MAXIMUM E-FIELD STRENGTH

The testing was performed at 3 meter. The transmitter maximum E-field at 30m distance is 14.02 dBuV/m which convert from 3 meter data.

5.3. WORST-CASE CONFIGURATION AND MODE

The NFC function was tested at its' fundamental and only operational frequency of 13.56 MHz.

Worst case of antenna axis:



NFC with tag mode		NFC without tag mode	
Foldable condition	EUT axis	Foldable condition	EUT axis
Full-folded	Y	Full-folded	Y

The fundamental level of the EUT was investigated each type and bitrate.
All test was performed worst case condition.

- ISO/IEC 14443-A(Type A) and bit rate 106 kbps

Radiated(fundamental level and spurious emissions) tests were performed both without reading a passive tag condition and with reading a passive tag condition.

5.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

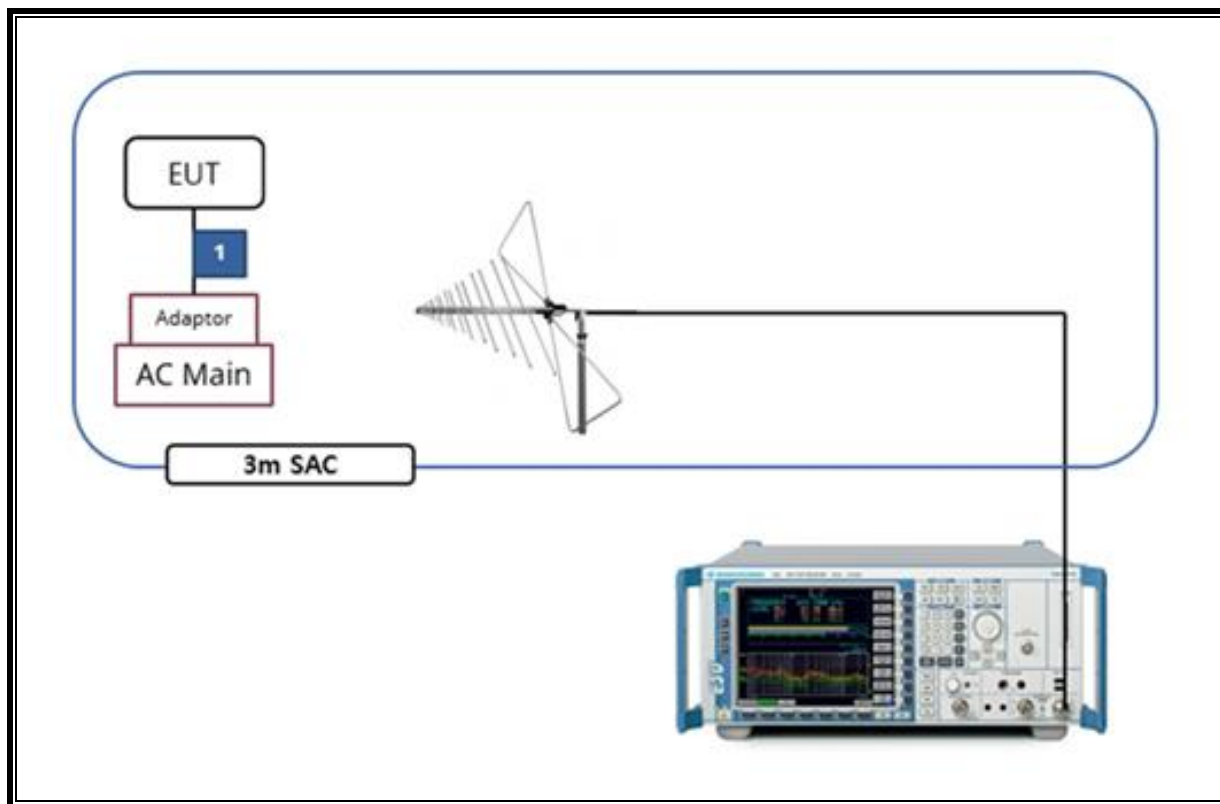
Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	EP-T2510	N/A	N/A
Data Cable	SAMSUNG	EP-DN980	N/A	N/A

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

The EUT is a stand-alone device configured and tested in a worst-case setup.

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, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB 9163	845	2026-07-30
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB 9163	749	2026-08-12
Preamplifier, 1000 MHz	Sonoma	310N	341282	2026-07-21
Preamplifier, 1000 MHz	Sonoma	310N	351741	2026-07-21
Spectrum Analyzer, 7 GHz	Agilent / HP	N9010A	MY54200580	2026-07-21
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9030A	MY54170614	2026-07-21
EMI Test Receiver, 40 GHz	R&S	ESU40	100439	2026-07-21
EMI Test Receiver, 40 GHz	R&S	ESU40	100457	2026-07-21
EMI Test Receiver, 3 GHz	R&S	ESR 3	101832	2026-11-11
DC Power Supply	Agilent / HP	E3640A	MY54226395	2026-07-23
Temperature Chamber	ESPEC	SH-642	93001109	2026-07-21
LISN	R&S	ENV216	101836	2026-07-22
LISN	R&S	ENV216	101837	2026-07-22
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2E	101308	2027-10-27
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. 20dB BANDWIDTH

LIMITS

§15.215

(c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated

§15.225

Operation within the band 13.110 – 14.010MHz

TEST PROCEDURE

The spectrum analyzer connected receive antenna and the EUT placed on near the receive antenna. The RBW is set to 1-5% of emission BW. The VBW is set to 3 times the RBW. The sweep time is coupled.

RESULTS

Frequency [MHz]	20 dB Bandwidth [kHz]
13.56	440

20dB Bandwidth Plot



8. RADIATED EMISSION TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMIT

§15.225

(a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/ meter at 30 meters.

(b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

(d) The field strength of any emissions appearing outside of the 13.110– 14.010 MHz and shall not exceed the general radiated emission limits in § 15.209 as follows:

§15.209 (a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Limits for radiated disturbance of an intentional radiator		
Frequency range (MHz)	Limits (µV/m)	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 - 216	150**	3
216 – 960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g. §§ 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

Formula for converting the field strength from µV/m to dBuV/m is:

Limit (dBuV/m) = 20 log limit (µV/m)

In addition:

§15.209 (d) The emission limits shown the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emissions limits in these three bands are based on measurements employing an average detector.

§15.209 (d) The provisions in §§ 15.225, measuring emissions at distances other than the distances specified in the above table, determining the frequency range over which radiated emissions are to be measured, and limiting peak emissions apply to all devices operated under this part.

TEST PROCEDURE

ANSI C63.10-2020

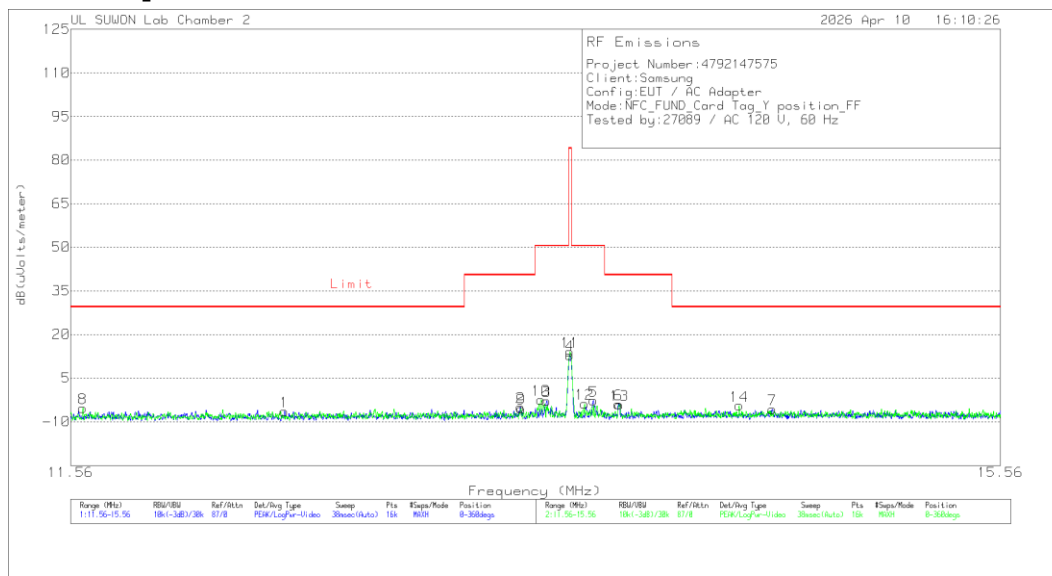
The EUT is an intentional radiator that incorporates a digital device. The highest fundamental frequency generated or used in the device is 13.56 MHz. The frequency range was investigated from 0.15 MHz to the 10th harmonic of the highest fundamental frequency, or 1000 MHz, whichever is greater (1000MHz)

- a) Set the RBW = 100 Hz for the emissions below 150kHz
9 kHz for the emissions between 150kHz and 30MHz
(The minimum RBW setting value for the Spectrum analyzer is 10 kHz)
100 kHz for the emissions between 30MHz and 1GHz
(The minimum RBW setting value for the Spectrum analyzer is 120 kHz)
- b) Set VBW $\geq 3 \times$ RBW;
- c) Sweep time = Auto;
- d) Detector = Peak;
- e) Trace mode = Max Hold;

RESULTS

No non-compliance noted:

8.1.1. FUNDAMENTAL AND SPURIOUS EMISSIONS [EUT with passive TAG mode]



Trace Markers Face on

Marker	Frequency [MHz]	Meter Reading [dBuV]	Det	Antenna Factor[dB/m]	Dist Corr 30m[dB]	Cable Loss [dB]	Corrected Reading [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Azimuth (Degs)
1	12.3775	11.93	Pk	21	-40	.6	-6.47	29.54	-36.01	0-360
2	13.34688	13.32	Pk	21.1	-40	.7	-4.88	40.51	-45.39	0-360
3	13.45938	15.45	Pk	21.1	-40	.7	-2.75	50.5	-53.25	0-360
**4	13.56	31.11	Pk	21.1	-40	.7	12.91	84	-71.09	0-360
5	13.66188	15.47	Pk	21.1	-40	.7	-2.73	50.5	-53.23	0-360
6	13.77113	14.17	Pk	21.1	-40	.7	-4.03	40.51	-44.54	0-360
7	14.46663	12.43	Pk	21.2	-40	.7	-5.67	29.54	-35.21	0-360

Face off

Marker	Frequency [MHz]	Meter Reading [dBuV]	Det	Antenna Factor[dB/m]	Dist Corr 30m[dB]	Cable Loss [dB]	Corrected Reading [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Azimuth (Degs)
8	11.60475	13.18	Pk	21	-40	.6	-5.22	29.54	-34.76	0-360
9	13.34963	12.77	Pk	21.1	-40	.7	-5.43	40.51	-45.94	0-360
10	13.43563	15.83	Pk	21.1	-40	.7	-2.37	50.5	-52.87	0-360
**11	13.56	32.22	Pk	21.1	-40	.7	14.02	84	-69.98	0-360
12	13.62388	14.41	Pk	21.1	-40	.7	-3.79	50.5	-54.29	0-360
13	13.77638	14.13	Pk	21.1	-40	.7	-4.07	40.51	-44.58	0-360
14	14.3135	13.66	Pk	21.2	-40	.7	-4.44	29.54	-33.98	0-360

Pk - Peak detector

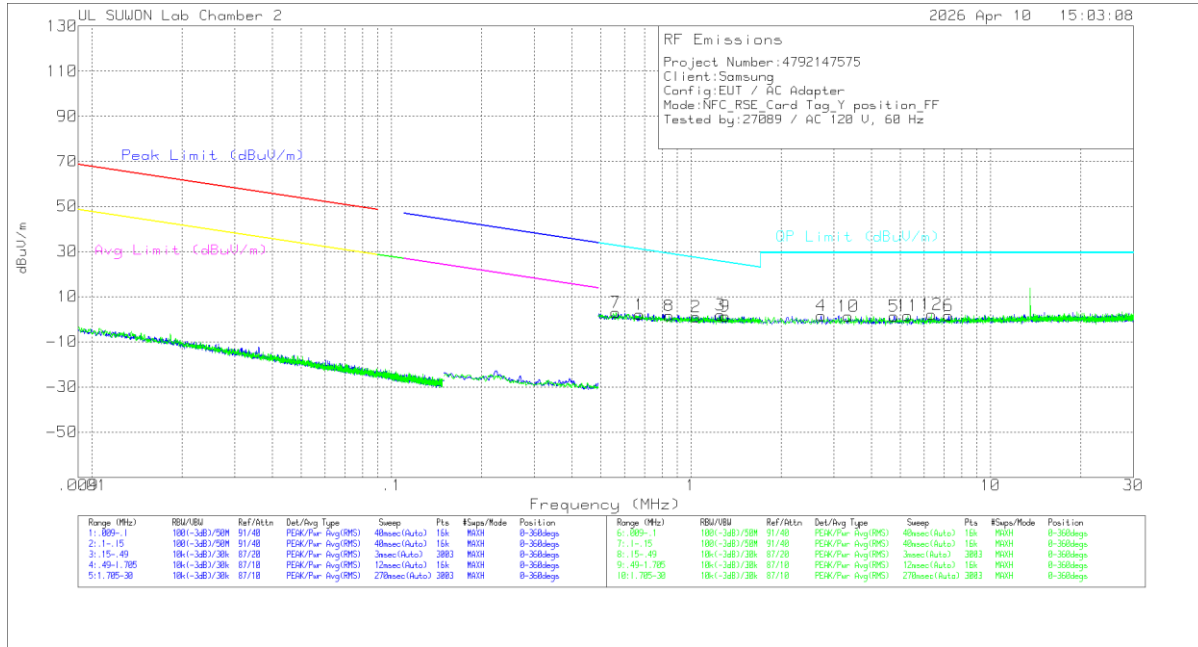
**Fundamental

Note 1 : Although these tests were performed other than open filed test site, adequate comparison measurements were confirmed against 30 m open are 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.

Note 2: 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.

8.1.2. SPURIOUS EMISSION 0.009 TO 30 MHz [EUT with passive TAG mode]



Trace Markers Face on

Marker	Frequency [MHz]	Meter Reading [dBuV]	Det	Antenna Factor [dB]	Cable Loss [dB]	Dist Corr 30m[dB]	Corrected Reading [dBuV/m]	QP Limit [dBuV/m]	Margin [dB]	Azimuth (Degs)
1	.67426	21.27	Pk	20.5	.3	-40	2.07	31.04	-28.97	0-360
2	1.04127	20.21	Pk	20.5	.3	-40	1.01	27.27	-26.26	0-360
3	1.2527	21.2	Pk	20.5	.3	-40	2	25.67	-23.67	0-360
4	2.7229	20.62	Pk	20.6	.4	-40	1.62	29.5	-27.88	0-360
5	4.76813	20.31	Pk	20.6	.4	-40	1.31	29.5	-28.19	0-360
6	7.25633	20.35	Pk	20.7	.5	-40	1.55	29.5	-27.95	0-360

Face off

Marker	Frequency [MHz]	Meter Reading [dBuV]	Det	Antenna Factor [dB]	Cable Loss [dB]	Dist Corr 30m[dB]	Corrected Reading [dBuV/m]	QP Limit [dBuV/m]	Margin [dB]	Azimuth (Degs)
7	.56163	22.18	Pk	20.5	.3	-40	2.98	32.62	-29.64	0-360
8	.84465	20.72	Pk	20.5	.3	-40	1.52	29.08	-27.56	0-360
9	1.30248	20.45	Pk	20.5	.3	-40	1.25	25.33	-24.08	0-360
10	3.35438	20.4	Pk	20.6	.4	-40	1.4	29.5	-28.1	0-360
11	5.29593	20.61	Pk	20.6	.4	-40	1.61	29.5	-27.89	0-360
12	6.36095	20.89	Pk	20.7	.5	-40	2.09	29.5	-27.41	0-360

Pk - Peak detector

Note 1: The data for marker number 7 and 14 are the fundamental signal.

Please refer to section 8.1.1 about the fundamental level.

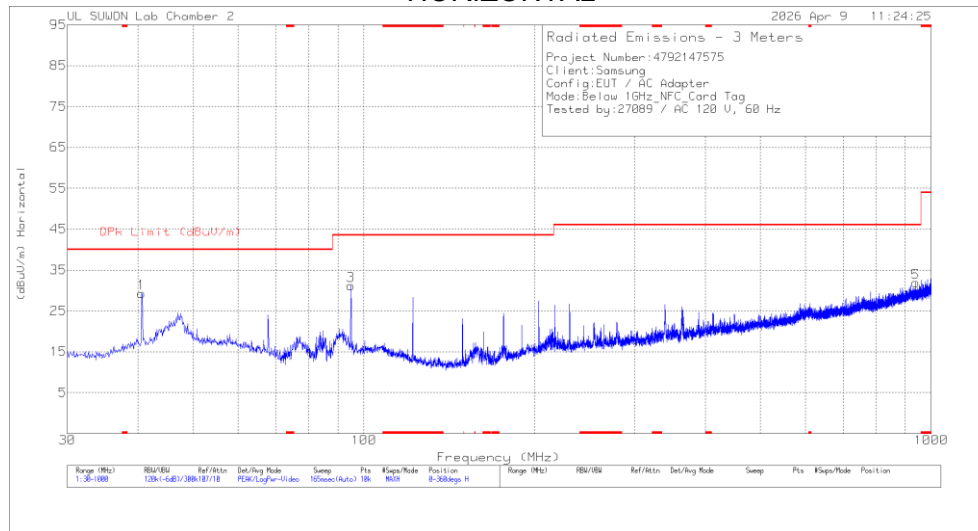
Frequency range 0.009MHz ~ 0.490MHz, only noise floor level and more than 20dB margin.

Note 2: 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.

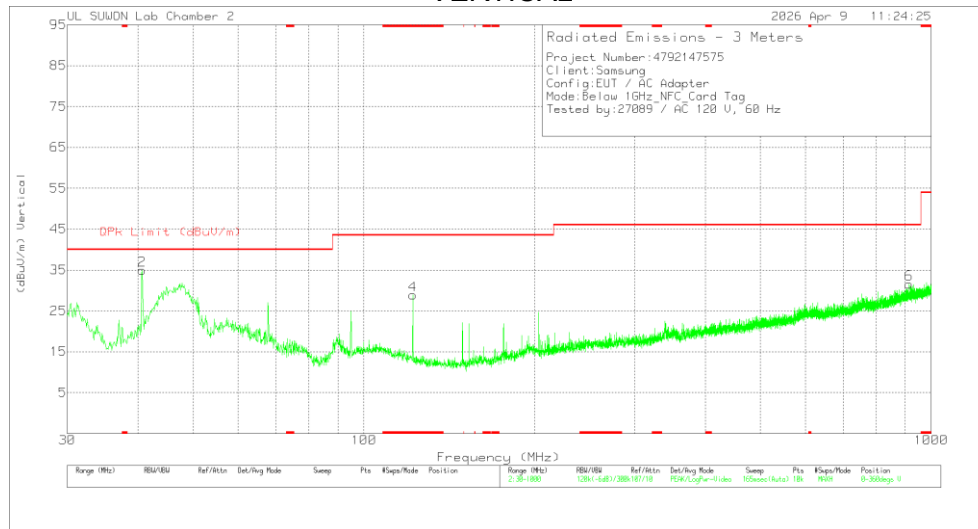
Note 3: For the 13.56 MHz fundamental frequency, refer to the fundamental measurement section.

8.1.3. TX SPURIOUS EMISSION 30 TO 1000 MHz [EUT with passive TAG mode]

HORIZONTAL



VERTICAL



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna Factor (dB/m)	Below_1G_Path Loss(dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	40.573	42.3	Pk	18.7	-31.7	29.3	40	-10.7	0-360	200	H
3	94.893	46.06	Pk	16.5	-31.4	31.16	43.52	-12.36	0-360	200	H
5	939.181	31.57	Pk	28	-27.7	31.87	46.02	-14.15	0-360	100	H
2	40.67	47.93	Pk	18.7	-31.7	34.93	40	-5.07	0-360	100	V
4	* 121.956	44.96	Pk	15.1	-31.2	28.86	43.52	-14.66	0-360	100	V
6	913.864	31.39	Pk	28.1	-27.9	31.59	46.02	-14.43	0-360	100	V

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

Pk - Peak detector

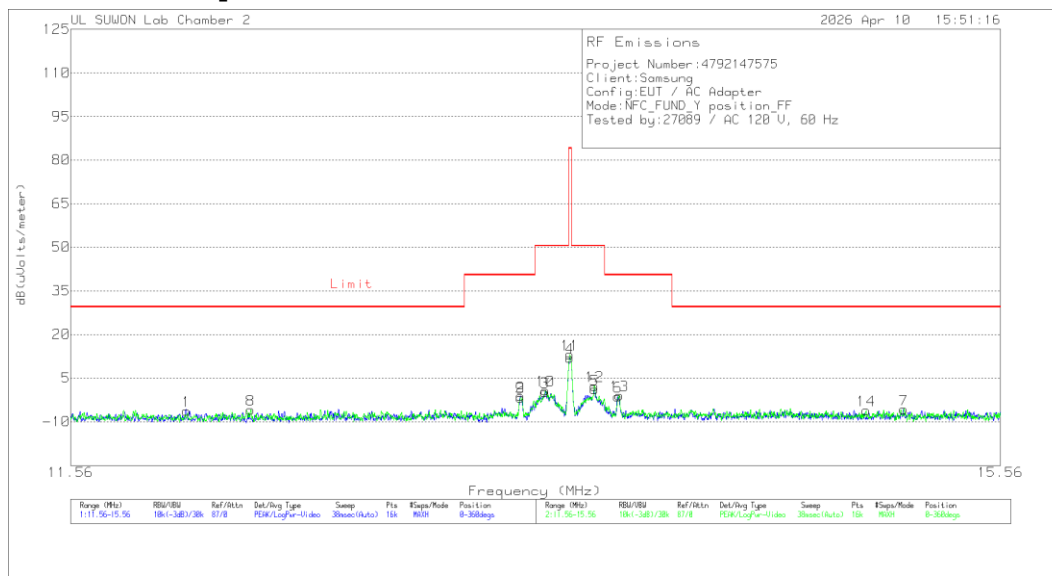
Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna Factor (dB/m)	Below_1G_Path Loss(dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
40.67	39.88	Qp	18.7	-31.7	26.88	40	-13.12	345	123	V

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

Qp - Quasi-Peak detector

8.1.4. FUNDAMENTAL AND SPURIOUS EMISSIONS) [EUT without passive TAG mode]



Trace Markers

Face on

Marker	Frequency [MHz]	Meter Reading [dBuV]	Det	Antenna Factor[dB/m]	Dist Corr 30m[dB]	Cable Loss [dB]	Corrected Reading [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Azimuth (Degs)
1	11.995	12.21	Pk	21	-40	.6	-6.19	29.54	-35.73	0-360
2	13.34763	16.99	Pk	21.1	-40	.7	-1.21	40.51	-41.72	0-360
3	13.452	18.38	Pk	21.1	-40	.7	.18	50.5	-50.32	0-360
**4	13.56	30.2	Pk	21.1	-40	.7	12	84	-72	0-360
5	13.66688	19.27	Pk	21.1	-40	.7	1.07	50.5	-49.43	0-360
6	13.76838	16.91	Pk	21.1	-40	.7	-1.29	40.51	-41.8	0-360
7	15.0855	12.34	Pk	21.2	-40	.7	-5.76	29.54	-35.3	0-360

Face off

Marker	Frequency [MHz]	Meter Reading [dBuV]	Det	Antenna Factor[dB/m]	Dist Corr 30m[dB]	Cable Loss [dB]	Corrected Reading [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Azimuth (Degs)
8	12.24488	12.6	Pk	21	-40	.6	-5.8	29.54	-35.34	0-360
9	13.34813	16.56	Pk	21.1	-40	.7	-1.64	40.51	-42.15	0-360
10	13.45413	18.93	Pk	21.1	-40	.7	.73	50.5	-49.77	0-360
**11	13.56	31.35	Pk	21.1	-40	.7	13.15	84	-70.85	0-360
12	13.66638	20.45	Pk	21.1	-40	.7	2.25	50.5	-48.25	0-360
13	13.77538	17.22	Pk	21.1	-40	.7	-.98	40.51	-41.49	0-360
14	14.90625	12.09	Pk	21.2	-40	.7	-6.01	29.54	-35.55	0-360

Pk - Peak detector

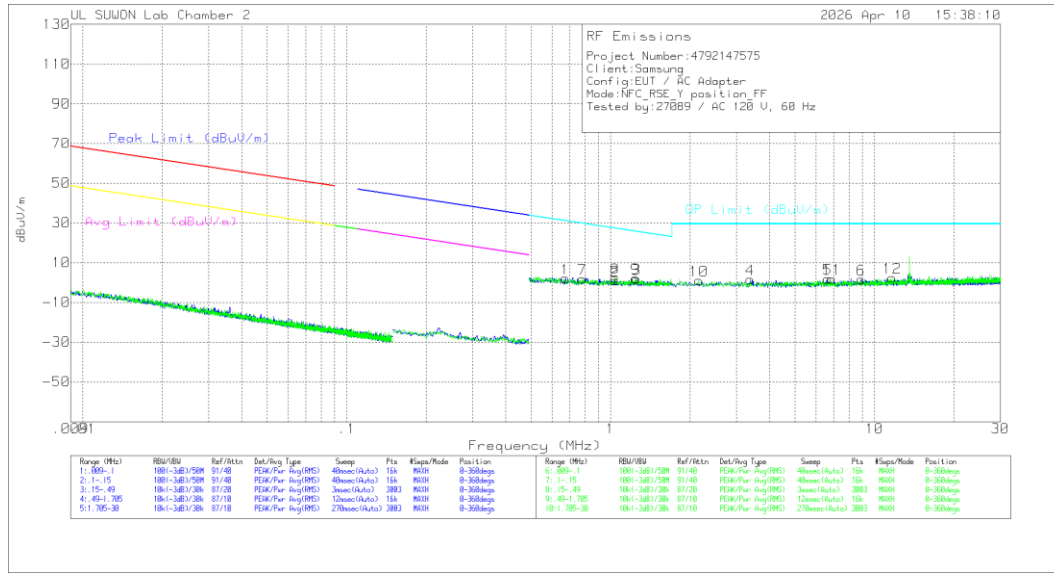
**Fundamental

Note 1: Although these tests were performed other than open filed test site, adequate comparison measurements were confirmed against 30 m open are 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.

Note 2: 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.

8.1.5. SPURIOUS EMISSION 0.09 TO 30 MHz [EUT without passive TAG mode]



Trace Markers

Face on

Marker	Frequency [MHz]	Meter Reading [dBuV]	Det	Antenna Factor [dB]	Cable Loss [dB]	Dist Corr 30m[dB]	Corrected Reading [dBuV/m]	QP Limit [dBuV/m]	Margin [dB]	Azimuth (Degs)
1	.67426	21.27	Pk	20.5	.3	-40	2.07	31.04	-28.97	0-360
2	1.04127	20.21	Pk	20.5	.3	-40	1.01	27.27	-26.26	0-360
3	1.2527	21.2	Pk	20.5	.3	-40	2	25.67	-23.67	0-360
4	3.38265	20.61	Pk	20.6	.4	-40	1.61	29.5	-27.89	0-360
5	6.62485	20.63	Pk	20.7	.5	-40	1.83	29.5	-27.67	0-360
6	8.88685	20.36	Pk	20.8	.5	-40	1.66	29.5	-27.84	0-360

Face off

Marker	Frequency [MHz]	Meter Reading [dBuV]	Det	Antenna Factor [dB]	Cable Loss [dB]	Dist Corr 30m[dB]	Corrected Reading [dBuV/m]	QP Limit [dBuV/m]	Margin [dB]	Azimuth (Degs)
7	.78317	21.09	Pk	20.5	.3	-40	1.89	29.74	-27.85	0-360
8	1.03975	21.54	Pk	20.5	.3	-40	2.34	27.28	-24.94	0-360
9	1.24107	21.31	Pk	20.5	.3	-40	2.11	25.75	-23.64	0-360
10	2.1574	20.18	Pk	20.6	.4	-40	1.18	29.5	-28.32	0-360
11	6.89818	20.61	Pk	20.7	.5	-40	1.81	29.5	-27.69	0-360
12	11.67665	20.94	Pk	21	.6	-40	2.54	29.5	-26.96	0-360

Pk - Peak detector

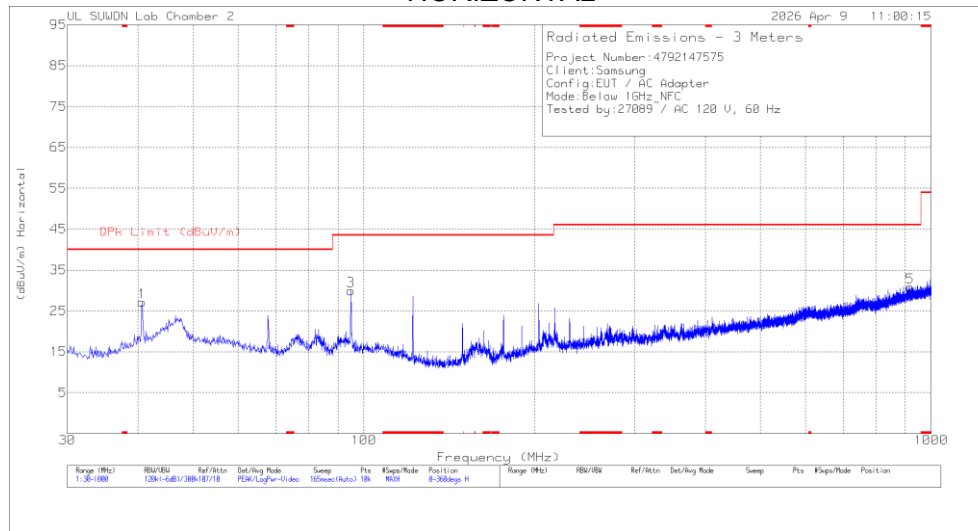
Note 1: The data for marker number 7 and 14 are the fundamental signal. Please refer to section 8.1.4 about the fundamental level. Frequency range 0.009MHz ~ 0.490MHz, only noise floor level and more than 20dB margin.

Note 2: 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.

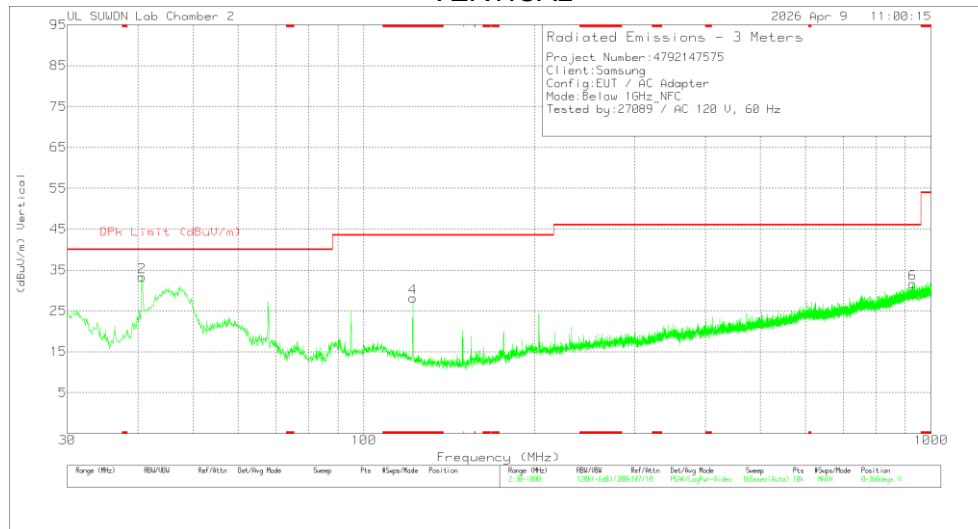
Note 3: For the 13.56 MHz fundamental frequency, refer to the fundamental measurement section.

8.1.6. TX SPURIOUS EMISSION 30 TO 1000 MHz [EUT without passive TAG mode]

HORIZONTAL



VERTICAL



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna Factor (dB/m)	Below 1G Path Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	40.67	40.13	Pk	18.7	-31.7	27.13	40	-12.87	0-360	400	H
3	94.893	44.78	Pk	16.5	-31.4	29.88	43.52	-13.64	0-360	400	H
5	918.229	30.47	Pk	28.1	-27.8	30.77	46.02	-15.25	0-360	400	H
2	40.67	46.33	Pk	18.7	-31.7	33.33	40	-6.67	0-360	100	V
4	* 122.053	44.24	Pk	15.1	-31.2	28.14	43.52	-15.38	0-360	100	V
6	926.862	31.32	Pk	28.1	-27.8	31.62	46.02	-14.4	0-360	200	V

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

Pk - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna Factor (dB/m)	Below 1G Path Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
40.67	42.06	Qp	18.7	-31.7	29.06	40	-10.94	0	100	V

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

Qp - Quasi-Peak detector

9. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

§15.207

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency range (MHz)	Limits (dB μ V)	
	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
Notes: 1. The lower limit shall apply at the transition frequencies 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

TEST PROCEDURE

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.

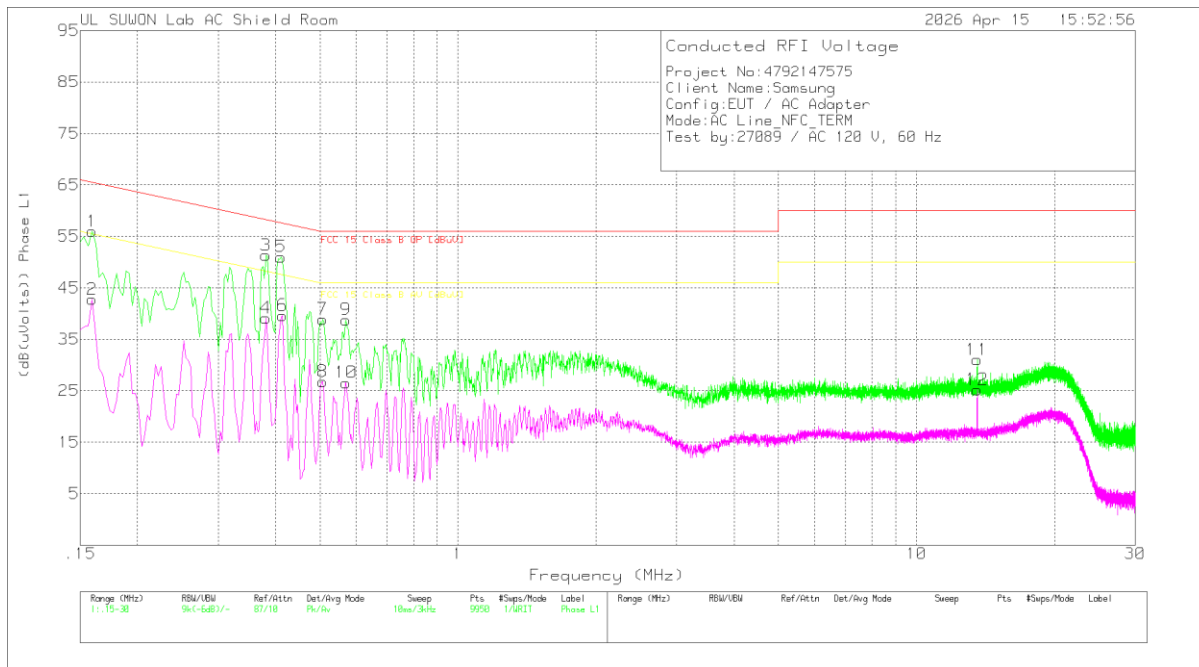
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

No non-compliance noted:

WORST EMISSIONS (TERMINATED)

LINE 1 PLOT



LINE 1 RESULTS

Trace Markers

Range 1: Phase L1 .15 - 30MHz

Marker	Frequency [MHz]	Meter Reading [dBuV]	Det	101836_Wit h EX_L1 [dB]	Cable Loss [dB]	Corrected Reading [dBuV]	FCC 15 Class B QP [dBuV]	Margin [dB]	FCC 15 Class B AV [dBuV]	Margin [dB]
1	.159	46.06	Pk	9.8	.1	55.96	65.52	-9.56	-	-
2	.159	32.86	Av	9.8	.1	42.76	-	-	55.52	-12.76
3	.381	41.43	Pk	9.8	.1	51.33	58.26	-6.93	-	-
4	.381	29.22	Av	9.8	.1	39.12	-	-	48.26	-9.14
5	.411	41.13	Pk	9.8	.1	51.03	57.63	-6.6	-	-
6	.414	29.73	Av	9.8	.1	39.63	-	-	47.57	-7.94
7	.507	28.93	Pk	9.9	.1	38.93	56	-17.07	-	-
8	.507	16.78	Av	9.9	.1	26.78	-	-	46	-19.22
9	.57	28.91	Pk	9.8	.1	38.81	56	-17.19	-	-
10	.57	16.68	Av	9.8	.1	26.58	-	-	46	-19.42
11	13.56	20.73	Pk	10	.3	31.03	60	-28.97	-	-
12	13.56	14.89	Av	10	.3	25.19	-	-	50	-24.81

Pk - Peak detector

Av - Average detection

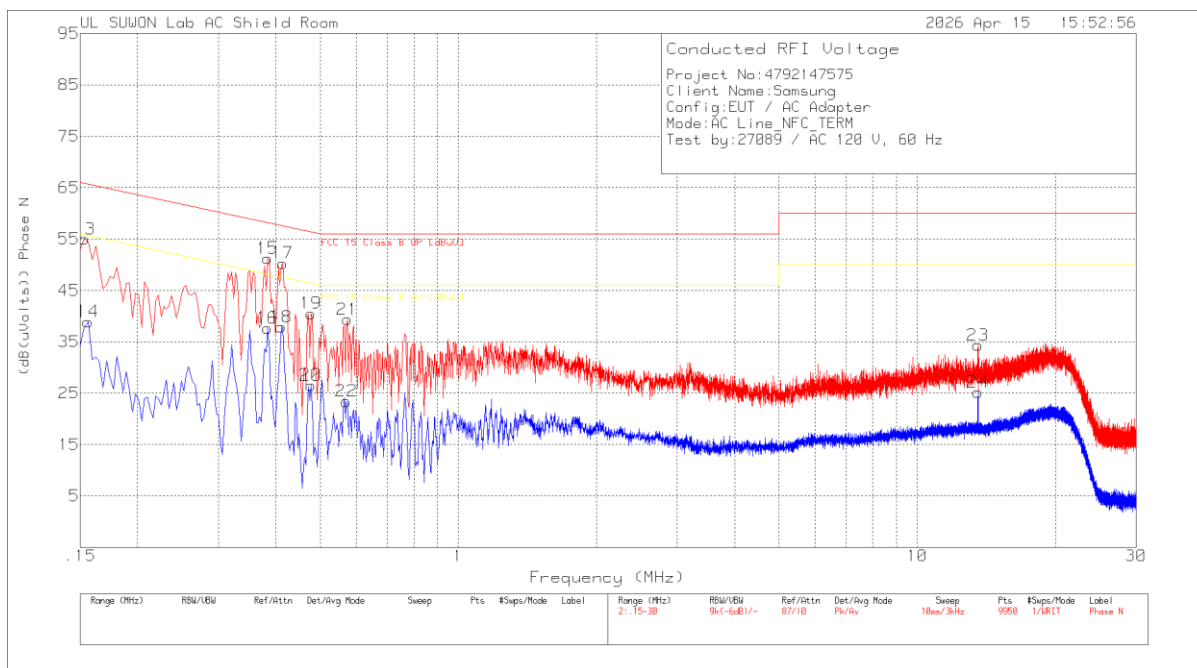
Quasi-Peak Emissions

Range 1: Phase L1 .15 - 30MHz

Frequency [MHz]	Meter Reading [dBuV]	Det	101836_Wit h EX_L1 [dB]	Cable Loss [dB]	Corrected Reading [dBuV]	FCC 15 Class B QP [dBuV]	Margin [dB]	FCC 15 Class B AV [dBuV]	Margin [dB]
.15825	40.88	Qp	9.8	.1	50.78	65.56	-14.78	-	-
.38175	39.8	Qp	9.8	.1	49.7	58.24	-8.54	-	-
.41175	39.45	Qp	9.8	.1	49.35	57.61	-8.26	-	-
.41325	39.38	Qp	9.8	.1	49.28	57.58	-8.3	-	-

Qp - Quasi-Peak detector

LINE 2 PLOT



LINE 2 RESULTS

Trace Markers

Range 2: Phase N .15 - 30MHz

Marker	Frequency [MHz]	Meter Reading [dBuV]	Det	101836_Wit h EX_N [dB]	Cable Loss [dB]	Corrected Reading [dBuV]	FCC 15 Class B QP [dBuV]	Margin [dB]	FCC 15 Class B AV [dBuV]	Margin [dB]
13	.153	45.11	Pk	9.8	.1	55.01	65.84	-10.83	-	-
14	.156	29	Av	9.8	.1	38.9	-	-	55.67	-16.77
15	.384	41.33	Pk	9.8	.1	51.23	58.19	-6.96	-	-
16	.384	27.76	Av	9.8	.1	37.66	-	-	48.19	-10.53
17	.414	40.4	Pk	9.8	.1	50.3	57.57	-7.27	-	-
18	.411	27.99	Av	9.8	.1	37.89	-	-	47.63	-9.74
19	.477	30.52	Pk	9.9	.1	40.52	56.39	-15.87	-	-
20	.477	16.55	Av	9.9	.1	26.55	-	-	46.39	-19.84
21	.573	29.46	Pk	9.8	.1	39.36	56	-16.64	-	-
22	.57	13.51	Av	9.8	.1	23.41	-	-	46	-22.59
23	13.56	24.02	Pk	10	.3	34.32	60	-25.68	-	-
24	13.56	14.92	Av	10	.3	25.22	-	-	50	-24.78

Pk - Peak detector

Av - Average detection

Quasi-Peak Emissions

Range 2: Phase N .15 - 30MHz

Frequency [MHz]	Meter Reading [dBuV]	Det	101836_Wit h EX_N [dB]	Cable Loss [dB]	Corrected Reading [dBuV]	FCC 15 Class B QP [dBuV]	Margin [dB]	FCC 15 Class B AV [dBuV]	Margin [dB]
.38325	39.48	Qp	9.8	.1	49.38	58.21	-8.83	-	-
.41415	38.98	Qp	9.8	.1	48.88	57.56	-8.68	-	-
.41175	38.38	Qp	9.8	.1	48.28	57.61	-9.33	-	-

Qp - Quasi-Peak detector

10. FREQUENCY STABILITY

LIMIT

§15.225 (e) The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency, over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

TEST PROCEDURE

ANSI C63.10 §6.8

RESULTS

Test Date	2026-04-01
Test Engineer	51078

Reference Frequency: EUT Channel 13.56 MHz @ 20°C Limit: ± 100 ppm = 1.356 kHz										
Power Supply (Vdc)	Envir. Temp (°C)	Frequency Deviation Measured with Time Elapse								
		Start up (MHz)	Delta (ppm)	@ 2mins (MHz)	Delta (ppm)	@ 5mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
3.89	50	13.559965721	-0.855	13.559963576	-1.013	13.559961700	-1.152	13.559961845	-1.141	100
3.89	40	13.559960977	-1.205	13.559960911	-1.210	13.559961981	-1.131	13.559963211	-1.040	100
3.89	30	13.559968679	-0.637	13.559972127	-0.383	13.559974975	-0.173	13.559974801	-0.185	100
3.89	20	13.559977315	0.000	13.559977163	-0.011	13.559976945	-0.027	13.559976814	-0.037	100
3.89	10	13.560006207	2.131	13.560017436	2.959	13.560021654	3.270	13.560029144	3.822	100
3.89	0	13.560045797	5.050	13.560052391	5.537	13.560056339	5.828	13.560059482	6.060	100
3.89	-10	13.560063494	6.355	13.560067194	6.628	13.560069093	6.768	13.560069679	6.812	100
3.89	-20	13.560063542	6.359	13.560060708	6.150	13.560058365	5.977	13.560056943	5.872	100
3.89	-30	13.560053034	5.584	13.560042115	4.779	13.560027730	3.718	13.560025031	3.519	100

Reference Frequency: EUT Channel 13.56 MHz @ 20°C Limit: ± 100 ppm = 1.356 kHz										
Power Supply (Vdc)	Envir. Temp (°C)	Frequency Deviation Measured with Time Elapse								
		Start up (MHz)	Delta (ppm)	@ 2mins (MHz)	Delta (ppm)	@ 5mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
3.70	20	13.559977212	-0.008	13.559977155	-0.012	13.559976884	-0.024	13.559976761	-0.041	100
3.89	20	13.559977315	0.000	13.559977163	-0.011	13.559976945	-0.027	13.559976814	-0.037	100
4.45	20	13.559972520	-0.354	13.559977140	-0.013	13.559976906	-0.030	13.559976742	-0.042	100

No non-compliance noted.

END OF TEST REPORT

Page 23 of 23