TEST REPORT

Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-70-5008-1021 FAX: 82-505-299-8311 www.kctl.co.kr	Report No.: KR23-SRF0265 Page (1) of (25)	eurofins | KCTL

1. Client

- Name : Samsung Electronics Co., Ltd.
- Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
- Date of Receipt : 2023-09-05

2. Use of Report : Certification

3. Name of Product / Model : Tablet PC / SM-X308U

4. Manufacturer / Country of Origin : Samsung Electronics Co., Ltd. / Vietnam

5. FCC ID : A3LSMX308U

6. IC Certificate No. 649E-SMX308U

7. Date of Test : 2023-09-20 to 2023-11-22

8. Location of Test : ■ Permanent Testing Lab ☐ On Site Testing
(Address:65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea)

9. Test method used : FCC Part 15 Subpart C, 15.225
RSS-210 Issue 10 April 2020
RSS-Gen Issue 5 February 2021

10. Test Result : Refer to the test result in the test report

	Tested by	Technical Manager
Affirmation	Name : Kwonse Kim (Signature)	Name : Seungyong Kim (Signature)

2023-11-24

Eurofins KCTL Co.,Ltd.

REPORT REVISION HISTORY

Date	Revision	Page No
2023-11-24	Originally issued	-

General remarks for test reports

Statement concerning the uncertainty of the measurement systems used for the tests

(may be required by the product standard or client)

☐ **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**

Procedure number, issue date and title:

Calculations leading to the reported values are on file with the testing laboratory that conducted the testing.

☒ **Statement not required by the standard or client used for type testing**

CONTENTS

1. General information

Client	:	Samsung Electronics Co., Ltd.
Address	:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
Manufacturer	:	Samsung Electronics Co., Ltd.
Address	:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
Factory 1	:	Samsung Electronics Vietnam Thai Nguyen Co., Ltd
Address	:	Yen Binh Industrial Park, Dong Tien Ward, Pho Yen Town, Thai Nguyen Province, Vietnam
Factory 2	:	SAMSUNG ELECTRONICS VIETNAM CO.,LTD.
Address	:	Khu Cong nghiep Ten Phong 1, Yen Trung, Yen Phong, Bac Ninh, Vietnam
Laboratory	:	Eurofins KCTL Co.,Ltd.
Address	:	65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea
Accreditations	:	FCC Site Designation No: KR0040, FCC Site Registration No: 687132
		VCCI Registration No. : R-20080, G-20078, C-20059, T-20056
		CAB Identifier: KR0040
		ISED Number: 8035A
		KOLAS No.: KT231

2. Device information

Equipment under test	:	Tablet PC		
Model	:	SM-X308U		
Modulation technique	:	ASK (NFC)		
Number of channels	:	1 ch		
Power source	:	DC 3.85 V		
Antenna specification	:	NFC_FPCB Antenna		
Frequency range	:	13.56 ㎒ (NFC)		
Software version	:	X308U.001		
Hardware version	:	REV1.0		
Test device serial No.	:	Conducted	:	R32W9001ZZX
	:	Radiated	:	R32W90020FX
Operation temperature	:	0 ℃ ~ 35 ℃		

2.1. Frequency/channel operations

This device contains the following capabilities:
WLAN (11a/b/g/n/ac/ax), Bluetooth (BDR/EDR/BLE), NFC, Digitizer, WCDMA 850/1700/1900,
LTE B2/4/5/7/12/13/14/25/26/30/40/41(PC2/PC3)/48/66/71, ULCA 41C(PC2/PC3)/48C
NR n2/5/12/25/30/41(PC2/PC3)/48/66/71/77(PC2/PC3)/78(PC3), SRS n48/n77(PC2/PC3)/n78(PC3)

Ch.	Frequency (㎒)
01	13.56

Table 2.1-1. NFC

3. Antenna requirement

Requirement of FCC part section 15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

Requirement of RSS-Gen Section 6.8:

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in ㏈i) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.
For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).
When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.

The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.
Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in ㏈i) and the required impedance for each antenna type.

-The transmitter has permanently attached FPCB antenna (internal antenna) on board.

4. Summary of tests

FCC Part section(s)	IC Rule reference	Parameter	Test Condition	Test results
15.225(a)	RSS-210 B.6 (i)	In-band Fundamental Emission	Radiated	Pass
15.225(b)	RSS-210 B.6 (ii),(iii)	In-band Spurious Emission		Pass
15.225(c)		In-band Spurious Emission		Pass
15.225(d) 15.209	RSS-210 B.6 (iv) RSS-Gen Issue 9 (8.9)	Out-of–band Spurious Emission		Pass
15.225(e)	RSS-210 B.6 (b)	Frequency Stability Tolerance	Conducted	Pass
15.215(c) 2.1049	RSS-Gen Issue 5 (6.7)	20 dB Bandwidth & 99% Bandwidth		Pass Pass
15.207(a)	RSS-Gen Issue 5 (8.8)	AC Conducted emissions		Pass

Notes:

1. All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
2. These tests were performed other than open field site, adequate comparison measurements were confirmed against 30 m open field 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.
3. The fundamental 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
4. The test procedure(s) in this report were performed in accordance as following.
   - ANSI C63.10-2013
5. All configurations have been performed (Stand-alone, Stand-alone with TA, With accessories).
   Worst case: Stand-alone
6. Radiated (fundamental level and spurious emissions) tests were performed both without reading a passive tag condition [test mode] and with reading a passive tag condition
   - Worst case: Without passive tag

5. Measurement uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013.

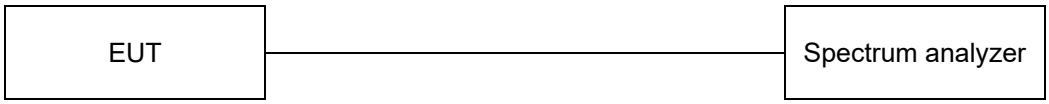
All measurement uncertainty values are shown with a coverage factor of k=2 to indicated a 95 % level of confidence. The measurement data shown herein meets of exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded uncertainty (±)	
Radiated spurious emissions	9 ㎑ ~ 30 ㎒:	2.3 dB
	30 ㎒ ~ 1 000 ㎒	2.5 dB
Conducted emissions	9 ㎑ ~ 150 ㎑	2.7 dB
	150 ㎑ ~ 30 ㎒	2.7 dB

6. Test results

6.1. 20 dB Bandwidth & 99% Bandwidth

Test setup



Limit

FCC

According to §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.

IC

According to RSS-Gen Issue 5 (6.7), The emission bandwidth (x dB) is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated x dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth.
When the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99% emission bandwidth, as calculated or measured.

Test procedure

ANSI C63.10 - Section 6.9.2

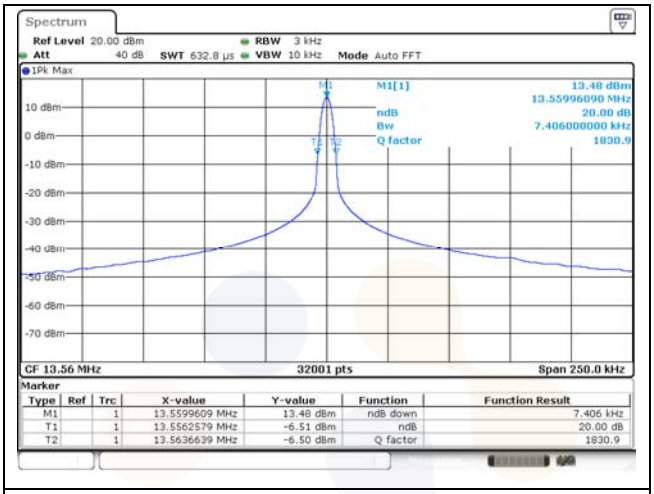
Test settings

The occupied bandwidth is measured as the width of the spectral envelope of the modulated signal, at an amplitude level reduced from a reference value by a specified ratio (or in decibels, a specified number of dB down from the reference value). Typical ratios, expressed in dB, are −6 dB, −20 dB, and −26 dB, corresponding to 6 dB BW, 20 dB BW, and 26 dB BW, respectively. In this subclause, the ratio is designated by "−xx dB." The reference value is either the level of the unmodulated carrier or the highest level of the spectral envelope of the modulated signal, as stated by the applicable requirement. Some requirements might specify a specific maximum or minimum value for the "−xx dB" bandwidth; other requirements might specify that the "−xx dB" bandwidth be entirely contained within the authorized or designated frequency band.

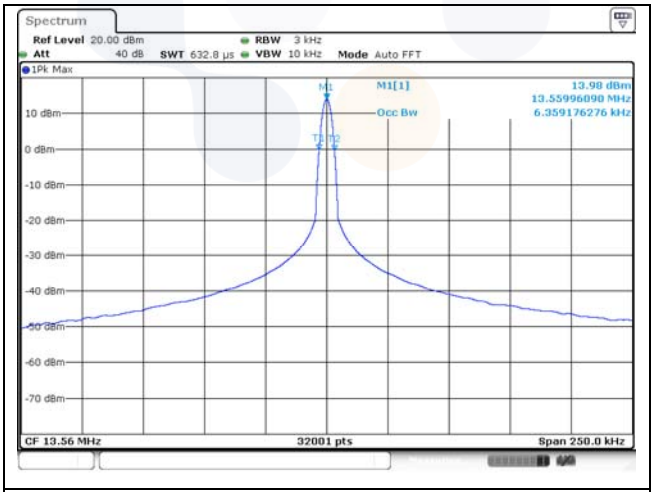
a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency.
b) Span: Two times and five times the OBW.
c) RBW = 1 % to 5 % of the OBW and VBW ≥ 3 x RBW
d) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation.
e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target "−xx dB down" requirement; that is, if the requirement calls for measuring the −20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value.
f) Detector: peak
g) Trace mode: max hold.
h) Allow the trace to stabilize.
i) Determine the "−xx dB down amplitude" using ((reference value) − xx). Alternatively, this calculation may be made by using the marker-delta function of the instrument.
j) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for step j).
k) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the "−xx dB down amplitude" determined in step h). If a marker is below this "−xx dB down amplitude" value, then it shall be as close as possible to this value. The occupied bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the "−xx dB down amplitude" determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth.

Test results

Frequency [㎒]	20 ㏈ Bandwidth [㎒]		Limit [㎒]	20 ㏈ Bandwidth [㎒]	Occupied Bandwidth [㎒]
13.56	Lowest Frequency	13.556	13.110	0.007	0.006
	Highest Frequency	13.564	14.010		



20 ㏈ Bandwidth



Occupied Bandwidth

Note:
Because the measured signal is CW/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

6.2. Frequency tolerance

Test setup

Limit

FCC/IC

According to 15.225 (e) and RSS-210 B.6.(b), The frequency tolerance of the carrier signal shall be maintained within ±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 C63.10-2013 - Section 6.8.1

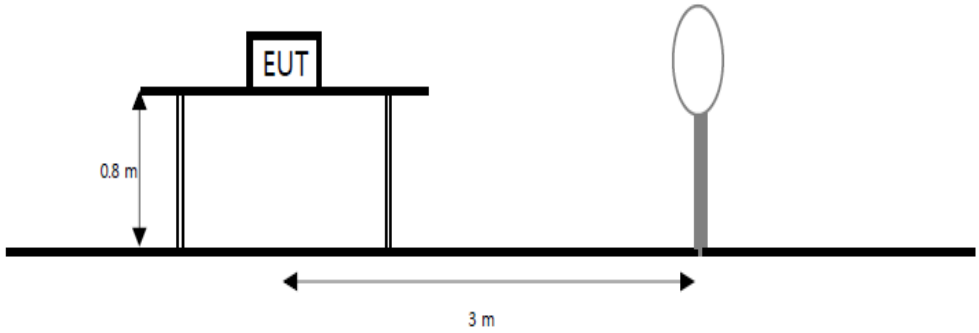
Test results

Voltage	Voltage	TEMP	Maintaining time	Measure frequency	Frequency deviation	Deviation
[%]	[V]	[℃]		[㎐]	[㎐]	[%]
100	3.85	20	Startup	13 559 928	-72.0	-0.000 53
			2 minutes	13 559 928	-72.0	-0.000 53
			5 minutes	13 559 928	-72.0	-0.000 53
			10 minutes	13 559 928	-72.0	-0.000 53
		-20	Startup	13 559 967	-33.0	-0.000 24
			2 minutes	13 559 967	-33.0	-0.000 24
			5 minutes	13 559 967	-33.0	-0.000 24
			10 minutes	13 559 967	-33.0	-0.000 24
		-10	Startup	13 559 945	-55.0	-0.000 41
			2 minutes	13 559 945	-55.0	-0.000 41
			5 minutes	13 559 945	-55.0	-0.000 41
			10 minutes	13 559 945	-55.0	-0.000 41
		0	Startup	13 559 937	-63.0	-0.000 47
			2 minutes	13 559 937	-63.0	-0.000 47
			5 minutes	13 559 937	-63.0	-0.000 47
			10 minutes	13 559 937	-63.0	-0.000 47
		10	Startup	13 559 882	-118.0	-0.000 87
			2 minutes	13 559 882	-118.0	-0.000 87
			5 minutes	13 559 882	-118.0	-0.000 87
			10 minutes	13 559 882	-118.0	-0.000 87
		30	Startup	13 559 892	-108.0	-0.000 80
			2 minutes	13 559 892	-108.0	-0.000 80
			5 minutes	13 559 892	-108.0	-0.000 80
			10 minutes	13 559 892	-108.0	-0.000 80
		40	Startup	13 559 887	-113.0	-0.000 83
			2 minutes	13 559 887	-113.0	-0.000 83
			5 minutes	13 559 887	-113.0	-0.000 83
			10 minutes	13 559 887	-113.0	-0.000 83
		50	Startup	13 559 887	-113.0	-0.000 83
			2 minutes	13 559 887	-113.0	-0.000 83
			5 minutes	13 559 887	-113.0	-0.000 83
			10 minutes	13 559 887	-113.0	-0.000 83
End Point	3.40	21.5	Startup	13 559 820	-180.0	-0.001 33
			2 minutes	13 559 820	-180.0	-0.001 33
			5 minutes	13 559 875	-125.0	-0.000 92
			10 minutes	13 559 875	-125.0	-0.000 92
115	4.43	21.5	Startup	13 559 861	-139.0	-0.001 03
			2 minutes	13 559 861	-139.0	-0.001 03
			5 minutes	13 559 861	-139.0	-0.001 03
			10 minutes	13 559 861	-139.0	-0.001 03

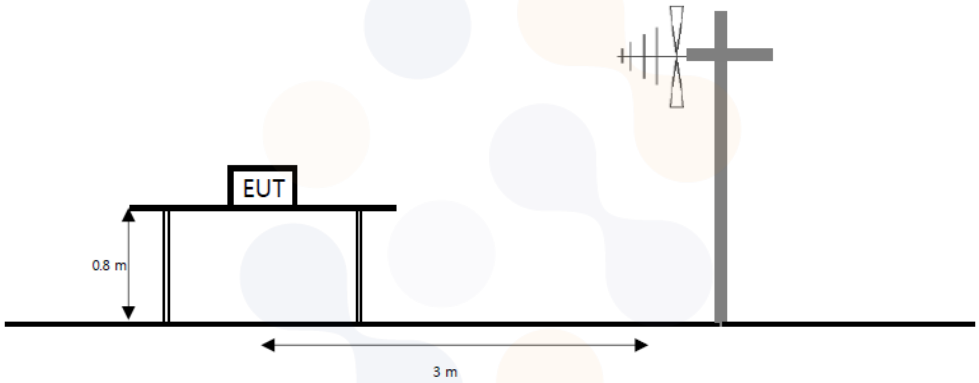
6.3. Radiated spurious emissions

Test setup

The diagram below shows the test setup that is utilized to make the measurements for emission from 9 ㎑ to 30 ㎒ Emissions



The diagram below shows the test setup that is utilized to make the measurements for emission from 30 ㎒ to 1 ㎓ emissions.



Limit

FCC

According to section 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:

Frequency (㎒)	Field strength (㎶/m)	Measurement distance (m)
0.009 - 0.490	2 400/F(㎑)	300
0.490 - 1.705	24 000/F(㎑)	30
1.705 - 30	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 ㎒, 76–88 ㎒, 174–216 ㎒ or 470–806 ㎒. However, operation within these frequency bands is permitted under other sections of this part, e.g., Section15.231 and 15.241.

According to section 15.225 (a), The field strength of any emission within the band 13.553-13.567 ㎒ shall not exceed 15, 848 microvolts/meter at 30 meters.

According to section 15.225 (b), With in the bands 13.410-13.553 ㎒ and 13.567-13.710 ㎒, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

According to section 15.225 (c), With in the bands 13.110-13.410 ㎒ and 13.710-14.010 ㎒, the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

According to section 15.225 (d), The Field Strength of any emissions appearing outside of the 13.110-14.010 ㎒ band shall not exceed the general radiated emission limits in 15.209.

IC

According to RSS-Gen(8.9), Except where otherwise indicated in the applicable RSS, radiated emissions shall comply with the field strength limits shown in table 5 and table 6. Additionally, the level of any transmitter unwanted emission shall not exceed the level of the transmitter's fundamental emission.

Table 5- General field strength limits at frequencies above 30 ㎒

Frequency(㎒)	Field strength (µV/m at 3 m)
30 to 88	100
88 to 216	150
216 to 960	200
Above 960	500

Table 6- General field strength limits at frequencies below 30 ㎒

Frequency	Magnetic field strength (H-Field) (㎂ A/m)	Measurement distance(m)
9 – 490 ㎑ 1)	6.37/F (F in ㎑)	300
490 – 1705 ㎑	63.7/F (F in ㎑)	30
1.705 - 30 ㎒	0.08	30

Note 1: The emission limits for the ranges 9-90 ㎑ and 110-490 ㎑ are based on measurements employing a linear average detector.

According to RSS-210 B.6.(a)(i), 15.848 ㎷/m (84 dB㎶/m) at 30m, within the band 13.553 - 13.567 ㎒.

According to RSS-210 B.6.(a)(ii), 334 ㎶/m(50.5 dB㎶/m) at 30m, within the bands 13.410 - 13.553 ㎒ and 13.567 - 13.710 ㎒.

According to RSS-210 B.6 (a)(iii), 106 ㎶/m(40.5 dB㎶/m) at 30m, within the bands 13.110 - 13.410 ㎒ and 13.710 - 14.010 ㎒.

According to RSS-Gen Issue5 (8.9), general field strength limits for frequencies outside the band 13.110 - 14.010 ㎒.

Test procedure

ANSI C63.10-2013 - Section 6.4, 6.5

Test settings

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = as specified in table
3. VBW ≥ 3 x RBW
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Table. RBW as a function of frequency

Frequency	RBW
9 ㎑ to 150 ㎑	200 ㎐ to 300 ㎐
0.15 ㎒ to 30 ㎒	9 ㎑ to 10 ㎑
30 ㎒ to 1 000 ㎒	100 ㎑ to 120 ㎑
> 1 000 ㎒	1 ㎒

Notes:

1. *f* <30 ㎒, extrapolation factor of 40 ㏈/decade of distance. F_d = 40log(D_m/Ds)
   f ≥30 ㎒, extrapolation factor of 20 ㏈/decade of distance. F_d = 20log(D_m/Ds)
   Where:
   F_d= Distance factor in ㏈
   D_m= Measurement distance in meters
   D_s= Specification distance in meters
2. Measurements were performed at 3m and the data was extrapolated to the specified measurement distance of 30m using the square of an inverse linear distance extrapolation factor (40 ㏈/decade) as specified in § 15.31(f)(2). Extrapolation Factor = 40 log10(30/3) = 40 ㏈.
3. Factors(㏈) = Antenna factor(㏈/m) + Cable loss(㏈) + or Amp. gain(㏈) + or F_d(㏈)
4. Result = Reading + Cable loss + Amp gain + Ant. factor - Distance factor
5. The worst-case emission are reported however emissions whose levels were not within 20 ㏈ of respective limits were not reported.
6. All measurements were recorded using a spectrum analyzer employing a quasi-peak detector.
7. Below 30 ㎒ frequency range, all orientations about parallel, perpendicular, and ground-parallel were investigated then reported and the worse orientations of Face-on and Face-off were set for final test.
8. Face-on = Parallel, Face-off = Perpendicular
9. [1)] means restricted band
10. The limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377Ω. For example, the measurement frequency X ㎑ resulted in a level of Y ㏈㎶/m, which is equivalent to Y - 51.5 = Z ㏈㎂/m, which has the same margin, W ㏈, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.

Test results for fundamental

15.225 (a) 13.553-13.567 ㎒

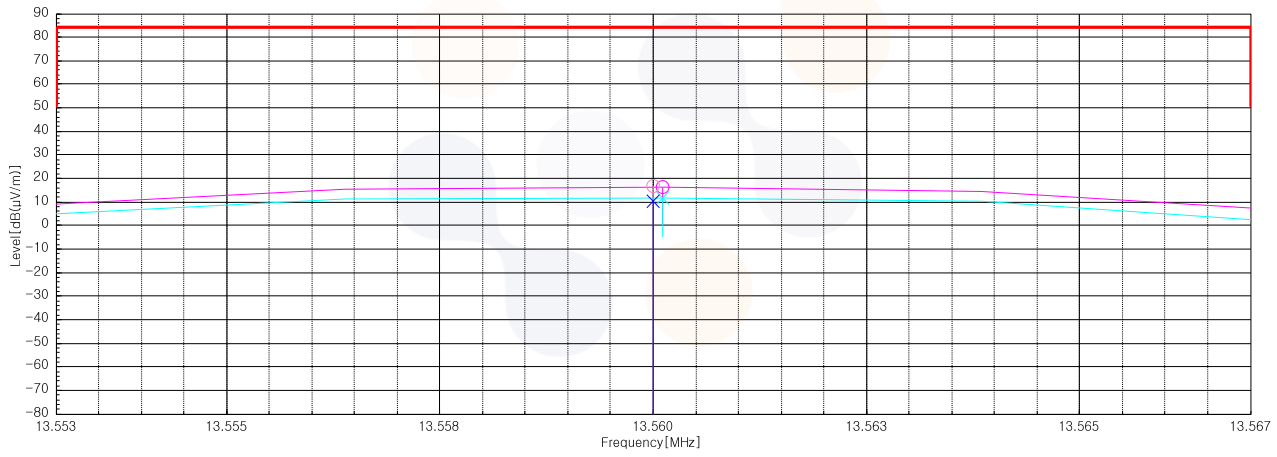
[Face-on]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data							
13.56	69.00	20.31	-32.63	40.00	16.68	84.00	67.32

[Face-off]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data							
13.56	62.70	20.31	-32.63	40.00	10.38	84.00	73.62

Face-on/Face-off



Test results for in-band & out-band (9 ㎑ to 30 ㎒)

15.225 (b,c) 13.110-14.010 ㎒

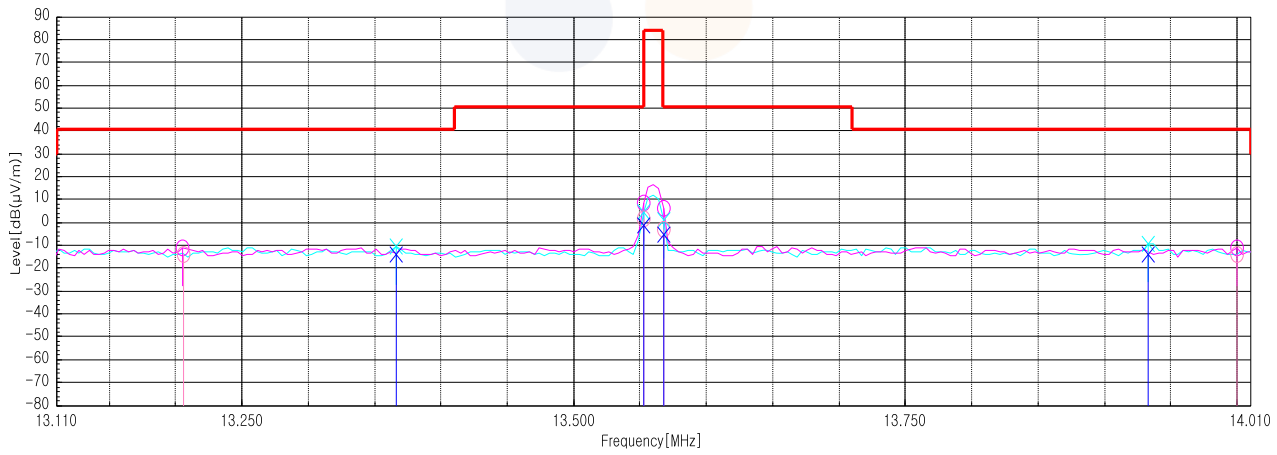
[Face-on]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data							
13.21	38.30	20.29	-32.65	40.00	-14.06	40.51	54.57
13.55	54.00	20.31	-32.63	40.00	1.68	50.47	48.79
13.57	49.40	20.31	-32.63	40.00	-2.92	50.47	53.39
14.00	38.30	20.34	-32.61	40.00	-13.97	40.51	54.48

[Face-off]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data							
13.37	38.10	20.30	-32.64	40.00	-14.24	40.51	54.75
13.55	50.80	20.31	-32.63	40.00	-1.52	50.47	51.99
13.57	46.70	20.31	-32.63	40.00	-5.62	50.47	56.09
13.93	38.30	20.34	-32.61	40.00	-13.97	40.51	54.48

Face-on/Face-off



Test results (9 ㎑ to 30 ㎒)

15.225 (d) 0.009-30 ㎒

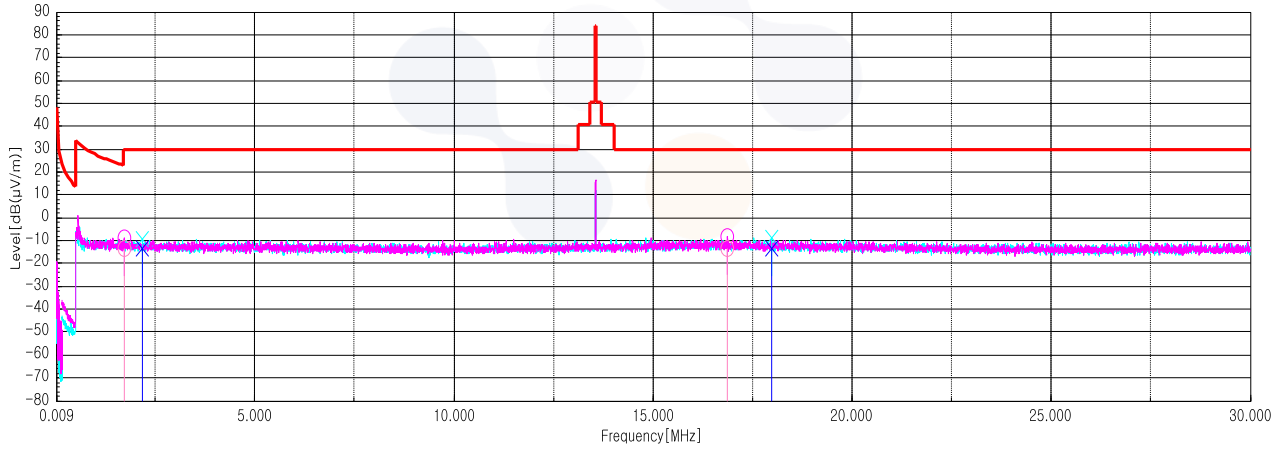
[Face-on]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data							
1.73	38.90	20.04	-32.67	40.00	-13.73	29.54	43.27
16.88	38.70	20.51	-32.56	40.00	-13.35	29.54	42.89

[Face-off]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data							
2.17	39.10	20.06	-32.68	40.00	-13.52	29.54	43.06
17.98	38.80	20.58	-32.57	40.00	-13.19	29.54	42.73

Face-on/Face-off

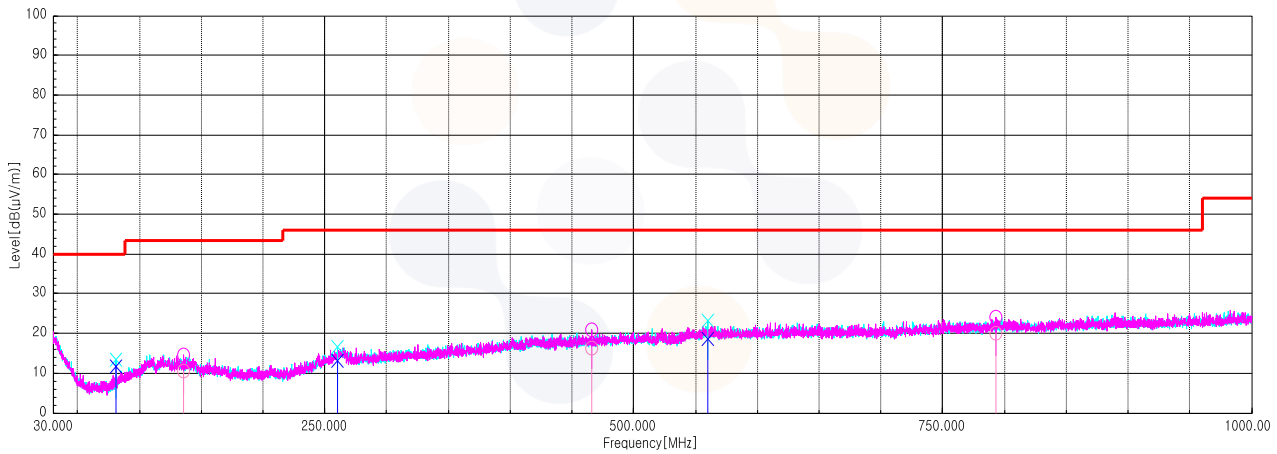


Test results (Below 1 000 ㎒)

15.225 (d) 30-1000 ㎒

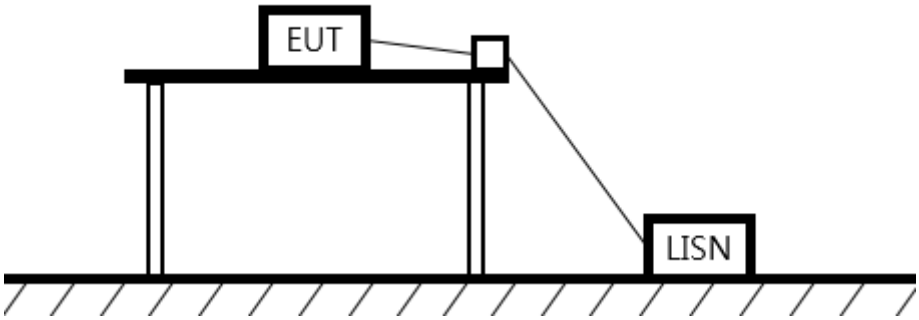
Frequency	Pol.	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data								
81.29	V	30.70	13.13	-32.29	-	11.54	40.00	28.46
135.73	H	25.00	17.70	-31.99	-	10.71	43.50	32.79
260.13	V	24.80	19.70	-31.63	-	12.87	46.00	33.13
466.02	H	24.90	22.90	-31.41	-	16.39	46.00	29.61
560.23	V	25.00	24.60	-31.10	-	18.50	46.00	27.50
793.39	H	24.70	25.84	-30.52	-	20.02	46.00	25.98

Horizontal/Vertical



6.4. AC Conducted emission

Test setup



Limit

According to 15.207(a) and RSS-Gen(8.8), 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 ㎑ to 30 ㎒, shall not exceed the limits in the following table, as measured using a 50uH/50 ohm line impedance stabilization network (LISN). Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequencies ranges.

Frequency of Emission (㎒)	Conducted limit (dB㎶/m)	
	Quasi-peak	Average
0.15 – 0.50	66 - 56*	56 - 46*
0.50 – 5.00	56	46
5.00 – 30.0	60	50

Measurement procedure

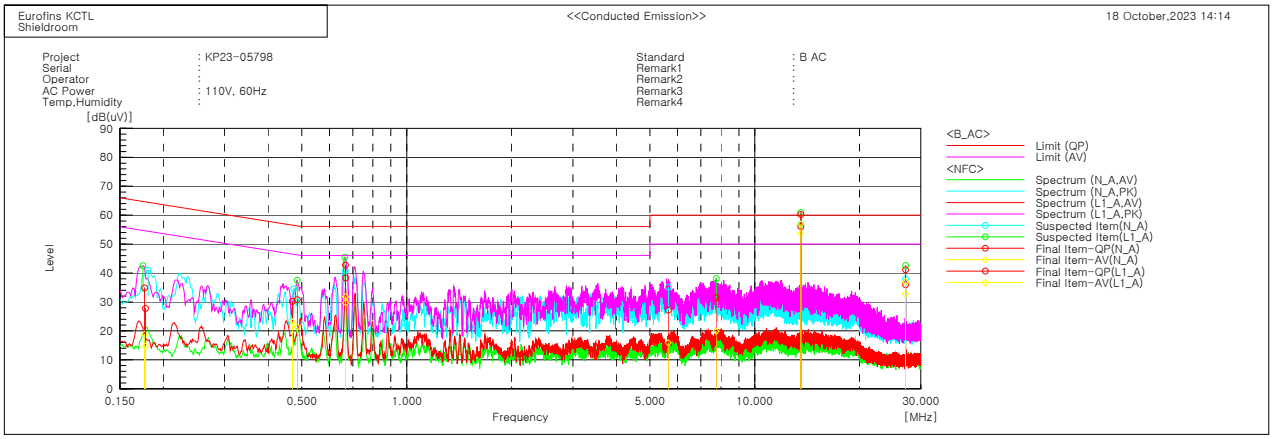
1. The EUT was placed on a wooden table of size, 1 m by 1.5 m, raised 80 ㎝ in which is located 40 ㎝ away from the vertical wall and 1.5m away from the side wall of the shielded room.
2. Each current-carrying conductor of the EUT power cord was individually connected through a 50Ω/50μH LISN, which is an input transducer to a spectrum analyzer or an EMI/Field Intensity ㅡ Meter, to the input power source.
3. Exploratory measurements were made to identify the frequency of the emission that had the highest amplitude relative to the limit by operating the EUT in a range of typical modes of operation, cable position, and with a typical system equipment configuration and arrangement. Based on the exploratory tests of the EUT, the one EUT cable configuration and arrangement and mode of operation that had produced the emission with the highest amplitude relative to the limit was selected for the final measurement.
4. The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment is the system) was then performed over the frequency range of 0.15 ㎒ to 30 ㎒.
5. The measurements were made with the detector set to peak amplitude within a bandwidth of 10 ㎑ or to quasi-peak and average within a bandwidth of 9 ㎑. The EUT was in transmitting mode during the measurements.

Notes:

According to KDB 174176 D01, For a device with a permanent or detachable antenna operating at or below 30 MHz, the FCC will accept measurements performed with a suitable dummy load in lieu of the antenna under the following conditions: (1) perform the AC power-line conducted tests with the antenna connected to determine compliance with Section 15.207 limits outside the transmitter's fundamental emission band; (2) retest with a dummy load in lieu of the antenna to determine compliance with Section 15.207 limits within the transmitter's fundamental emission band. For a detachable antenna, remove the antenna and connect a suitable dummy load to the antenna connector. For a permanent antenna, remove the antenna and terminate the RF output with a dummy load or network which simulates the antenna in the fundamental frequency band.

Test results

<Tests with the antenna connected>



Final Result

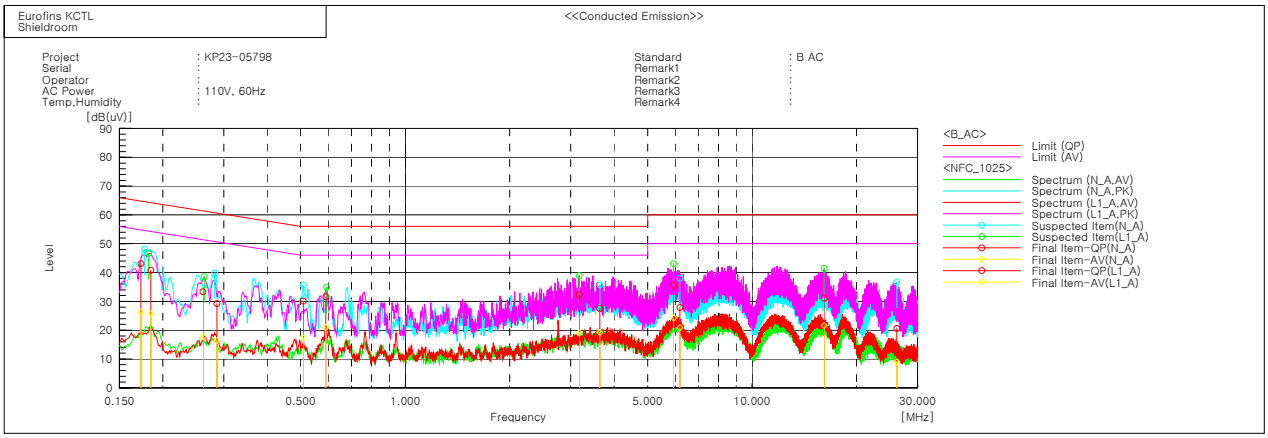
--- N_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.17653	24.7	8.7	10.2	34.9	18.9	64.6	54.6	29.7	35.7
2	0.46973	20.3	13.1	9.9	30.2	23.0	56.5	46.5	26.3	23.5
3	0.66753	28.4	19.8	9.9	38.3	29.7	56.0	46.0	17.7	16.3
4	5.64312	17.3	6.0	9.9	27.2	15.9	60.0	50.0	32.8	34.1
5	13.55996	45.5	43.0	10.6	56.1	53.6	60.0	50.0	3.9	-3.6
6	27.12063	24.7	21.6	11.2	35.9	32.8	60.0	50.0	24.1	17.2

--- L1_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.17774	17.5	4.5	10.2	27.7	14.7	64.6	54.6	36.9	39.9
2	0.48454	20.9	11.4	9.9	30.8	21.3	56.3	46.3	25.5	25.0
3	0.66691	32.8	21.9	9.9	42.7	31.8	56.0	46.0	13.3	14.2
4	7.74596	21.4	9.9	10.0	31.4	19.9	60.0	50.0	28.6	30.1
5	13.56001	49.5	46.2	10.7	60.2	56.9	60.0	50.0	-0.2	-6.9
6	27.12025	30.0	25.9	11.1	41.1	37.0	60.0	50.0	18.9	13.0

<Retest with a dummy load>



Final Result

--- N_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.17298	32.9	16.1	10.2	43.1	26.3	64.8	54.8	21.7	28.5
2	0.28646	19.5	6.7	9.7	29.2	16.4	60.6	50.6	31.4	34.2
3	0.5083	20.2	7.5	9.9	30.1	17.4	56.0	46.0	25.9	28.6
4	3.63871	17.8	9.4	9.8	27.6	19.2	56.0	46.0	28.4	26.8
5	6.19917	18.0	11.0	9.9	27.9	20.9	60.0	50.0	32.1	29.1
6	26.13761	9.5	-2.0	11.1	20.6	9.1	60.0	50.0	39.4	40.9

--- L1_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.18479	30.7	15.5	10.1	40.8	25.6	64.3	54.3	23.5	28.7
2	0.26099	23.6	8.1	9.7	33.3	17.8	61.4	51.4	28.1	33.6
3	0.59015	21.7	11.1	9.9	31.6	21.0	56.0	46.0	24.4	25.0
4	3.17317	22.5	9.3	9.8	32.3	19.1	56.0	46.0	23.7	26.9
5	5.94177	25.6	14.3	9.9	35.5	24.2	60.0	50.0	24.5	25.8
6	16.13568	20.3	10.8	10.8	31.1	21.6	60.0	50.0	28.9	28.4

7. Measurement equipment

Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date
Spectrum Analyzer	R&S	FSVA40	101574	24.03.28
EMI TEST RECEIVER	R&S	ESCI3	100001	24.08.18
Spectrum Analyzer	R&S	FSV40	100988	24.07.03
PSA Spectrum Analyzer	Agilent	E4440A	MY44303500	24.07.04
Signal Generator	R&S	SMB100A	176206	24.01.19
Vector Signal Generator	R&S	SMBV100A	257566	24.07.04
Amplifier	SONOMA INSTRUMENT	310N	421910	24.10.12**
Bilog Antenna	Teseq GmbH	CBL 6112D	61521	24.11.17**
Loop Antenna	R&S	HFH2-Z2	100355	24.08.10
TWO-LINE V - NETWORK	R&S	ENV216	101358	24.09.27*
DC Power Supply	AGILENT	E3632A	MY51220373	24.07.03
TEMP. & HUMIDITY TEST CHAMVER	HANYOUNG NUX	HY-LTH2	A33-080910	24.10.13**
Controller	INNCO SYSTEMS	CO3000	1442/54370322/P	-
Antenna Mast	INNCO SYSTEMS	MA4640-XP-ET	-	-
Turn Device	INNCO SYSTEMS	DS1200-S-1t	-	-

*This equipment was calibrated during the test period, and was used after calibration.
**This equipment was calibrated during the test period, and was used before calibration.

End of test report