





TEST REPORT

Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-31-285-0894 FAX: 82-505-299-8311 www.kctl.co.kr	Report No.: KR23-SRF0030-A Page (1) of (19)	 KCTL
<p>1. Client</p> <ul style="list-style-type: none"> ◦ Name : Samsung Electronics Co., Ltd. ◦ Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea ◦ Date of Receipt : 2022-10-17 <p>2. Use of Report : Certification</p> <p>3. Name of Product / Model : Mobile phone / SM-A346B/DSN</p> <p>4. Manufacturer / Country of Origin : Samsung Electronics Co., Ltd. / Vietnam</p> <p>5. FCC ID : A3LSMA346B</p> <p>6. Date of Test : 2022-11-09 to 2023-01-04</p> <p>7. Location of Test : <input checked="" type="checkbox"/> Permanent Testing Lab <input type="checkbox"/> On Site Testing (Address:65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea)</p> <p>8. Test method used : FCC Part 2 FCC Part 22 Subpart H FCC Part 24 Subpart E FCC Part 27 Subpart C</p> <p>9. Test Result : Refer to the test result in the test report</p>		
Affirmation	Tested by Name : Sunghyun Yoon (Signature)	Technical Manager Name : Seungyong Kim (Signature)
<p style="text-align: right;">2023-01-20</p> <p style="text-align: center;">Eurofins KCTL Co.,Ltd.</p> <p>As a test result of the sample which was submitted from the client, this report does not guarantee the whole product quality. This test report should not be used and copied without a written agreement by Eurofins KCTL Co.,Ltd.</p>		

<p>Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-31-285-0894 FAX: 82-505-299-8311 www.kctl.co.kr</p>	<p>Report No.: KR23-SRF0030-A Page (2) of (19)</p>	
---	--	---

REPORT REVISION HISTORY

Date	Revision	Page No
2023-01-17	Originally issued	-
2023-01-20	Updated to TCB comment	6 ~ 7

This report shall not be reproduced except in full, without the written approval of Eurofins KCTL Co.,Ltd. This document may be altered or revised by Eurofins KCTL Co.,Ltd. personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by Eurofins KCTL Co.,Ltd. will constitute fraud and shall nullify the document. This test report is a general report that does not use the KOLAS accreditation mark and is not related to KS Q ISO/IEC 17025 and KOLAS accreditation.

Note. The report No. KR23-SRF0030 is superseded by the report No. KR23-SRF0030-A.

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	4
2.	Device information	4
2.1.	Frequency/channel operations.....	5
3.	Introduction	6
3.1	Difference	6
3.2	Spot check verification data (ERP/EIRP & Spurious emission)	6
3.3	Reference Detail	7
4.	Maximum ERP/EIRP power	8
5.	Summary of tests	9
5.1.	Worst case orientation	9
6.	Measurement uncertainty	10
7.	Test results	11
7.1.	Radiated Power (ERP/EIRP)	11
7.2.	Radiated Spurious Emissions	15
8.	Measurement equipment	19

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 : Samsung Electronics Vietnam Thai Nguyen Co., Ltd
 Address : Yen Binh Industrial Park, Dong Tien Ward, Pho Yen Town, Thai Nguyen Province, 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 : Mobile phone
 Model : SM-A346B/DSN
 Modulation technique : QPSK (WCDMA), GMSK, 8-PSK (GSM)
 Power source : DC 3.88 V
 Antenna specification : Metal Antenna (WCDMA/GSM)
 Frequency range : GSM 850 : 824.2 MHz ~ 848.8 MHz
 GSM 1900 : 1 850.2 MHz ~ 1 909.8 MHz
 WCDMA 850 : 826.4 MHz ~ 846.6 MHz
 WCDMA 1700 : 1 712.4 MHz ~ 1 752.6 MHz
 WCDMA 1900 : 1 852.4 MHz ~ 1 907.6 MHz
 Software version : A346B.001
 Hardware version : REV1.0
 Test device serial No. : Conducted : R3CTA0N869H
 Radiated : R3CTA0N84EX
 Operation temperature : -20 °C ~ 60 °C

2.1. Frequency/channel operations

This device contains the following capabilities:

WLAN (11a/b/g/n/ac), Bluetooth (BDR/EDR/BLE), LTE B2/4/5/12/17/26/41/66, GSM 850/1900, WCDMA 850/1700/1900, NFC

GSM 850

Ch.	Frequency (MHz)
128	824.2
190	836.6
251	848.8

Table 2.1.1.
 GSM/GPRS/EDGE

GSM 1900

Ch.	Frequency (MHz)
512	1 850.2
661	1 880.0
810	1 909.8

Table 2.1.2.
 GSM/GPRS/EDGE

WCDMA 850

Ch.	Frequency (MHz)
4132	826.4
4183	836.6
4233	846.6

Table 2.1.3.
 RMC/HSDPA/HSUPA/
 DC-HSDPA

WCDMA 1700

Ch.	Frequency (MHz)
1312	1 712.4
1412	1 732.4
1513	1 752.6

Table 2.1.4.
 RMC/HSDPA/HSUPA/
 DC-HSDPA

WCDMA 1900

Ch.	Frequency (MHz)
9262	1 852.4
9400	1 880.0
9538	1 907.6

Table 2.1.5.
 RMC/HSDPA/HSUPA/
 DC-HSDPA

3. Introduction

This report referenced from the FCC ID : A3LSMA346M PCE WWAN (FCC CFR 47 Part 22, 24, 27). And the applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID.

3.1 Difference

The FCC ID: A3LSMA346B shares the same enclosure and circuit board as FCC ID: A3LSMA346M. The WIFI/BT/BLE/NFC/GSM/WCDMA/LTE antenna and surrounding circuitry and layout are identical between these two units.

As for all bands, they have been verified and the parent model test results under FCC ID: A3LSMA346M shall remain representative of FCC ID: A3LSMA346B.

Note. The difference between the parent and variant is that the RF circuit for NR/LTE Bands (13/n5/n66), ULCA Band 4 and EN-DC for Band 2/66 in the parent model A3LSMA346M is removed from the variant model A3LSMA346B.

3.2 Spot check verification data (ERP/EIRP & Spurious emission)

Test band	Test item	Test mode	Channel	Measured frequency (MHz)	SM-A346M /DSN	SM-A346B /DSN	Deviation (dB)	Remark
GSM 850	ERP	Voice	128	824.20	30.31	29.97	-0.34	-
	RSE	Voice	128	2 472.49	-38.00	-50.20	-12.20	3rd Harmonic
GSM 1900	EIRP	Voice	661	1 880.00	28.89	26.21	-2.68	-
	RSE	Voice	810	3 819.00	-40.10	-44.40	-4.30	2nd Harmonic
WCDMA 850	ERP	RMC	4132	826.40	20.05	20.33	0.28	-
	RSE	RMC	4233	4 230.52	-57.50	-59.30	-1.80	5th Harmonic
WCDMA 1700	EIRP	RMC	1312	1 712.40	19.88	20.58	0.70	-
	RSE	RMC	1513	8 763.75	-51.20	-56.10	-4.90	5th Harmonic
WCDMA 1900	EIRP	RMC	9400	1 880.00	22.14	21.86	-0.28	-
	RSE	RMC	9400	9 400.50	-53.40	-53.20	0.20	5th Harmonic

Notes:

1. For FCC ID: A3LSMA346B has been verified the performance as for PCE WWAN identical with the FCC ID: A3LSMA346M.
2. Comparison of two models, the variant model emissions are less than 3 dB higher than the parent model, and all test results are under FCC technical limits.
3. The test procedure(s) in this report were performed in accordance as following.
 - ◆ KDB 484596 D01 v01

3.3 Reference Detail

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

Equipment Class	Reference FCC ID	Application Type	Reference Test report Number	Exhibit Type	Variant Test Report Number	Date Re-used
DTS	A3LSMA346M	Original	KR23-SRF0005 (802.11b/g/n)	Test report	KR23-SRF0027	All
			KR23-SRF0004 (Bluetooth LE)	Test report	KR23-SRF0026	All
DSS	A3LSMA346M	Original	KR23-SRF0003 (Bluetooth)	Test report	KR23-SRF0025	All
NII	A3LSMA346M	Original	KP23-SRF0006 (802.11a/n/ac)	Test report	KR23-SRF0028	All
DXX	A3LSMA346M	Original	KP23-SRF0012 (NFC)	Test report	KR23-SRF0033	All
PCE	A3LSMA346M	Original	KR23-SRF0008 (2G, 3G)	Test report	KR23-SRF0030	All
			KR23-SRF0009 (LTE)	Test report	KR23-SRF0031	Partial ^{1),2)}
			KR23-SRF0010 (LTE Part90)	Test report	KR23-SRF0032	All

Notes:

1. This device does not support the LTE Band 13.
2. This device does not support sub antenna for usage of ULCA (LTE B4) and EN-DC (LTE B2/66).
3. This device does not support the 5G NR Bands of n5/n66.

4. Maximum ERP/EIRP power

GSM 850

Mode	Tx frequency (MHz)	Emission designator	ERP	
			Max. power (dBm)	Max. power (W)
GSM 850 (Voice)	824.2 ~ 848.8	246KGXW	30.31	1.074
GSM 850 (EDGE)	824.2 ~ 848.8	248KG7W	23.12	0.205

GSM 1900

Mode	Tx frequency (MHz)	Emission designator	EIRP	
			Max. power (dBm)	Max. power (W)
GSM 1900 (Voice)	1 850.2 ~ 1 909.8	248KGXW	28.89	0.774
GSM 1900 (EDGE)	1 850.2 ~ 1 909.8	246KG7W	23.36	0.217

WCDMA 850

Mode	Tx frequency (MHz)	Emission designator	ERP	
			Max. power (dBm)	Max. power (W)
WCDMA 850	826.4 ~ 846.6	4M17F9W	20.05	0.101

WCDMA 1700 / WCDMA 1900

Mode	Tx frequency (MHz)	Emission designator	EIRP	
			Max. power (dBm)	Max. power (W)
WCDMA 1700	1 712.4 ~ 1 752.6	4M15F9W	19.88	0.097
WCDMA 1900	1 852.4 ~ 1 907.6	4M17F9W	22.14	0.164

5. Summary of tests

FCC Part Section(s)	Parameter	Test Limit	Test Condition	Test results
22.913(a)(5)	Effective Radiated Power	< 7 Watts max. ERP	Radiated	Pass
24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP		Pass
27.50(d)(4)		< 1 Watts max. EIRP		Pass
2.1053 22.917(a) 24.238(a) 27.53(h)	Radiated Spurious Emissions	<43 + 10Log ₁₀ (P) dB		Pass

Notes:

- The test procedure(s) in this report were performed in accordance as following.
 - ◆ ANSI C63.26-2015
 - ◆ ANSI/TIA-603-E-2016
 - ◆ KDB 971168 D01 v03r01
 - ◆ KDB 971168 D02 v02r01

5.1. Worst case orientation

- All modes of operation were investigated and the worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations in the test data.
- All the radiated tests have been performed several case. (Stand-alone, with accessories (DLC Cable etc.))
Worst case: stand-alone
- 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.
- Test Condition

Band	Test condition
	Radiated
GSM 850, 1900	GSM (Voice)
WCDMA 850, 1700, 1900	RMC (12.2 kbps)

6. Measurement uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014.

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 or 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 (\pm)	
Conducted RF power	0.9 dB	
Conducted spurious emissions	1.1 dB	
Radiated spurious emissions	Below 1 000 MHz	4.3 dB
	1 000 MHz ~ 18 000 MHz	3.8 dB
	Above 1 8000 MHz	5.9 dB

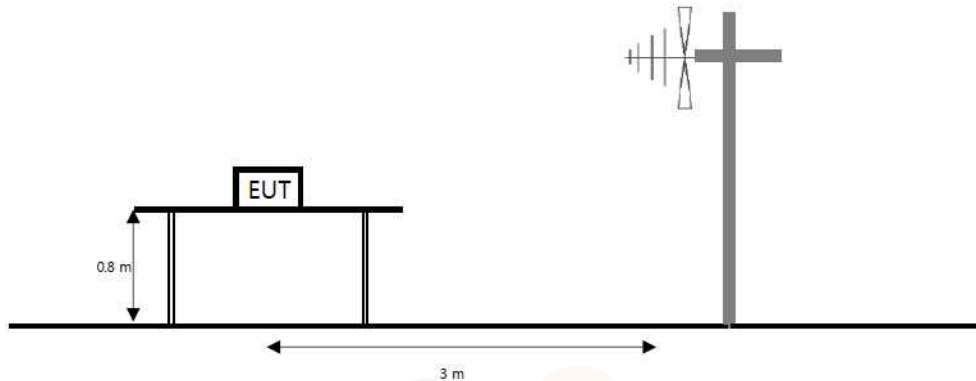


7. Test results

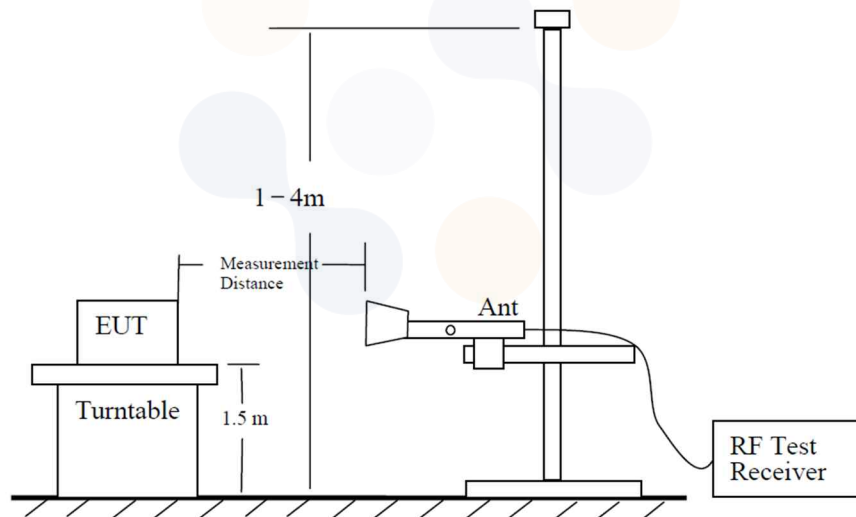
7.1. Radiated Power (ERP/EIRP)

Test setup

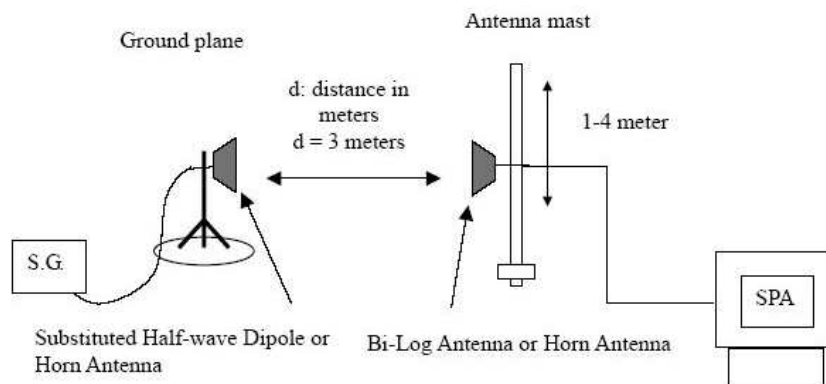
The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz emissions.





The diagram below shows the test setup that is utilized to make the measurements for emission from 1 GHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz emissions, whichever is lower.



The diagram below shows the test setup for substituted method.



<p>Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-31-285-0894 FAX: 82-505-299-8311 www.kctl.co.kr</p>	<p>Report No.: KR23-SRF0030-A Page (12) of (19)</p>	 
---	---	---

Limit

According to §22.913(a)(5), the ERP of transmitters in the cellular radiotelephone service must not exceed the limits in this section. The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to §24.232(c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.



According to §27.50(d)(4), fixed, mobile, and portable (hand-held) stations operating in the 1710~1755 MHz band and mobile and portable stations operating in the 1695~1710 MHz and 1755~1780 MHz bands are 1 watt EIRP.

Test procedure

971168 D01 v03r01 - Section 5.2.2
ANSI 63.26-2015 – Section 5.2.4.4.1
ANSI/TIA-603-E-2016 - Section 2.2.17

Test settings

- 1) RBW = 1 % to 5 % of the OBW.
- 2) VBW $\geq 3 \times$ RBW.
- 3) SPAN = 2 \times to 3 \times the OBW.
- 4) Number of measurement points in sweep $\geq 2 \times$ span / RBW.
- 5) Sweep time :
 - 1) Auto couple, or
 - 2) $\geq [10 \times (\text{number of points in sweep}) \times (\text{transmission period})]$ for single sweep (automation-compatible) measurement. Transmission period is the on and off time of the transmitter.
- 6) Detector = RMS
- 7) If the EUT can be configured to transmit continuously, then set the trigger to free run.
- 8) If the EUT cannot be configured to transmit continuously, then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep. Verify that the sweep time is less than or equal to the transmission burst duration. Time gating can also be used under similar constraints (i.e., configured such that measurement data is collected only during active full-power transmissions).
- 9) Trace mode = trace averaging (RMS) over 100 sweeps.
- 10) Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band or channel power measurement function, with the band/channel limits set equal to the OBW band edges. If the instrument does not have a band or channel power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
- 11) Allow trace to fully stabilize.

<p>Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-31-285-0894 FAX: 82-505-299-8311 www.kctl.co.kr</p>	<p>Report No.: KR23-SRF0030-A Page (13) of (19)</p>	 
---	---	---

Notes:

1. On a test site, the EUT shall be placed at 80 cm or 1.5 m height on a turn table, and in the position close to normal use as declared by the applicant.
2. The test antenna shall be oriented initially for vertical polarization located 3 m from EUT to correspond to the fundamental frequency of the transmitter.
3. The turntable is rotated through 360°, and the receiving antenna scans in order to determine the Level of the maximized emission.
4. The test antenna shall be raised and lowered again through the specified range of height until the maximum signal level is detected by the measuring receiver.
5. The maximum signal level detected by the measuring receiver shall be noted.
6. The EUT was replaced by half-wave dipole (1 GHz below) or horn antenna (1 GHz above) connected to a signal generator.
The power is calculated by the following formula;
 $P_d(\text{dBm}) = P_g(\text{dBm}) - \text{Cable loss (dB)} + \text{Antenna gain (dB)}$
Note. Pd is the dipole equivalent power and Pg is the generator output power into the substitution antenna.
7. The test antenna shall be raised and lowered through the specified range of height to ensure that The maximum signal is received.
8. The input signal to the substitution antenna shall be adjusted to the level that produces a level Detected by the measuring corrected for the change of input attenuator setting of the measuring Receiver.
9. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for Any change of input attenuator setting of the measuring receiver.
10. The measurement shall be repeated with the test antenna and the substitution antenna Orientated for horizontal polarization.

Test results

Test mode: GSM 850

Mode	Channel	Frequency	Pol.	Antenna Gain	C.L	Substitute Level	ERP	
		[MHz]		[V/H]		[dBd]	[dB]	[dB m]
Voice	128	824.2	H	0.08	4.87	34.76	29.97	0.993

Test mode: GSM 1900

Mode	Channel	Frequency	Pol.	Antenna Gain	C.L	Substitute Level	EIRP	
		[MHz]		[V/H]		[dBi]	[dB]	[dB m]
Voice	661	1880.0	H	4.94	7.21	28.48	26.21	0.418

Test mode: WCDMA 850

Mode	Channel	Frequency	Pol.	Antenna Gain	C.L	Substitute Level	ERP	
		[MHz]		[V/H]		[dBd]	[dB]	[dB m]
RMC	4132	826.4	H	0.13	4.89	25.09	20.33	0.108

Test mode: WCDMA 1700

Mode	Channel	Frequency	Pol.	Antenna Gain	C.L	Substitute Level	EIRP	
		[MHz]		[V/H]		[dBi]	[dB]	[dB m]
RMC	1312	1712.4	H	5.41	6.88	22.06	20.58	0.114

Test mode: WCDMA 1900

Mode	Channel	Frequency	Pol.	Antenna Gain	C.L	Substitute Level	EIRP	
		[MHz]		[V/H]		[dBi]	[dB]	[dB m]
RMC	9400	1880.0	H	4.94	7.21	24.13	21.86	0.153

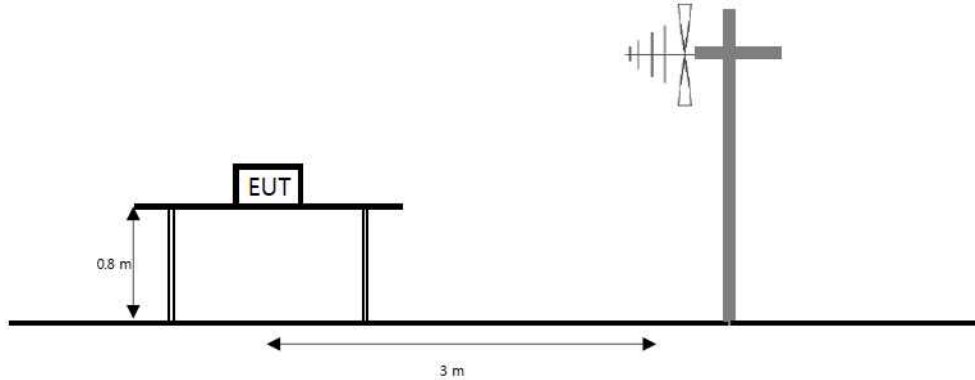
Note.

1. E.R.P & E.I.R.P(dBm) = Substitute Level(dB) + Antenna gain(dBd&dBi) - C.L(Cable loss) (dB)

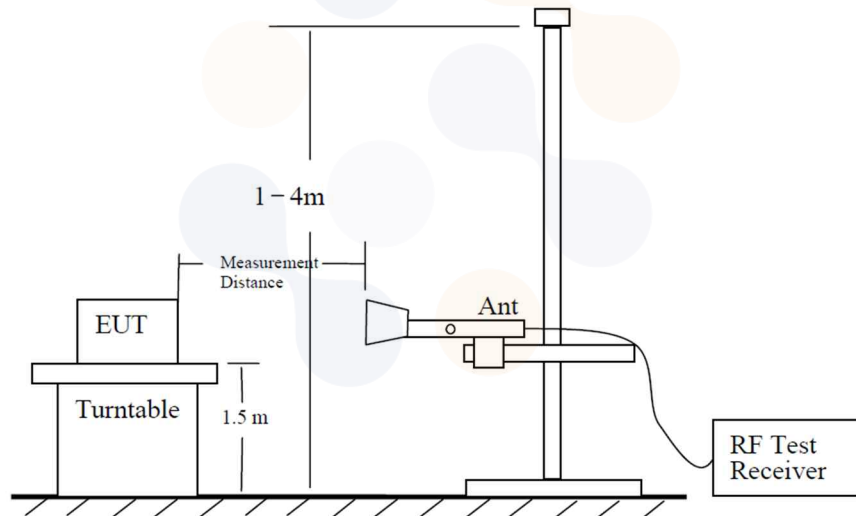
7.2. Radiated Spurious Emissions

Test setup

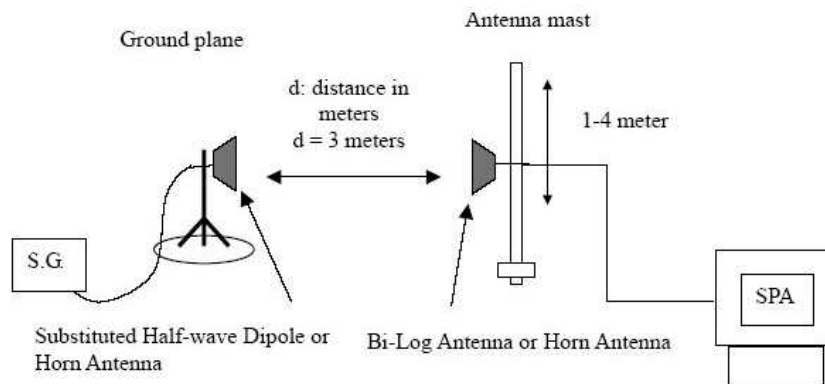
The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz emissions.





The diagram below shows the test setup that is utilized to make the measurements for emission from 1 GHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz emissions, whichever is lower.



The diagram below shows the test setup for substituted method.



<p align="center">Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-31-285-0894 FAX: 82-505-299-8311 www.kctl.co.kr</p>	<p align="center">Report No.: KR23-SRF0030-A Page (16) of (19)</p>	 
--	--	---

Limit

According to §22.917(a), §24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.

According to §27.53(h), the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10\log(P_{\text{[Watts]}})$ dB.

Test procedure

971168 D01 v03r01 - Section 5.8

ANSI 63.26-2015 – Section 5.5

ANSI/TIA-603-E-2016 - Section 2.2.12

Test settings

- 1) RBW = 1 kHz for below 1 GHz and 1 MHz for above 1 GHz.
- 2) VBW $\geq 3 \times$ RBW.
- 3) Detector = RMS
- 4) Trace mode = Max hold
- 5) Sweep time = Auto couple
- 6) Number of sweep points $\geq 2 \times$ span / RBW
- 7) Allow trace to fully stabilize.

Notes:

1. On a test site, the EUT shall be placed at 80 cm or 1.5 m height on a turn table, and in the position close to normal use as declared by the applicant.
2. The test antenna shall be oriented initially for vertical polarization located 3 m from EUT to correspond to the fundamental frequency of the transmitter.
3. The turntable is rotated through 360° , and the receiving antenna scans in order to determine the Level of the maximized emission.
4. The test antenna shall be raised and lowered again through the specified range of height until the maximum signal level is detected by the measuring receiver.
5. The maximum signal level detected by the measuring receiver shall be noted.
6. The EUT was replaced by half-wave dipole (1 GHz below) or horn antenna (1 GHz above) connected to a signal generator.
7. The test antenna shall be raised and lowered through the specified range of height to ensure that The maximum signal is received.
8. The input signal to the substitution antenna shall be adjusted to the level that produces a level Detected by the measuring corrected for the change of input attenuator setting of the measuring Receiver.
9. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for Any change of input attenuator setting of the measuring receiver.
10. The measurement shall be repeated with the test antenna and the substitution antenna Orientated for horizontal polarization.

Test results (Above 1 000 MHz)

Test mode : GSM 850

Frequency(MHz) : 824.2

Channel : 128

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[MHz]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
Voice	1 648.40	H	5.58	6.76	-50.42	-51.60	-13.00	38.60
	2 472.40	H	6.02	8.33	-47.89	-50.20	-13.00	37.20
	3 296.40	H	7.69	10.11	-55.58	-58.00	-13.00	45.00
	4 120.80	H	8.97	11.61	-56.76	-59.40	-13.00	46.40

Test mode : GSM 1900

Frequency(MHz) : 1 909.8

Channel : 810

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[MHz]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
Voice	3 819.00	H	8.61	11.34	-41.67	-44.40	-13.00	31.40
	5 729.25	V	10.39	13.44	-50.25	-53.30	-13.00	40.30
	7 638.75	V	11.92	16.11	-52.11	-56.30	-13.00	43.30
	9 549.00	V	12.99	17.86	-39.73	-44.60	-13.00	31.60

Test mode : WCDMA 850

Frequency(MHz) : 846.6

Channel : 4233

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[MHz]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
RMC	1 692.80	H	5.46	6.78	-62.18	-63.50	-13.00	50.50
	2 538.00	H	6.18	8.45	-58.73	-61.00	-13.00	48.00
	3 385.60	V	7.87	10.31	-57.16	-59.60	-13.00	46.60
	4 234.40	V	9.04	11.61	-56.73	-59.30	-13.00	46.30

Note.

1. Limit Calculation(dBm)= 43 + 10log(P_[Watts])

2. E.R.P & E.I.R.P(dB m) = Substitute Level(dB) + Antenna gain(dB d&dB i) - C.L(Cable loss) (dB)

Test mode : WCDMA 1700

Frequency(MHz) : 1 752.6

Channel : 1513

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[MHz]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
RMC	3 507.00	V	8.11	10.58	-55.43	-57.90	-13.00	44.90
	5 259.75	H	10.06	13.09	-55.27	-58.30	-13.00	45.30
	7 011.00	H	11.60	15.44	-53.96	-57.80	-13.00	44.80
	8 761.50	H	12.90	17.33	-51.67	-56.10	-13.00	43.10

Test mode : WCDMA 1900

Frequency(MHz) : 1 880.0



Channel : 9400

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[MHz]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
RMC	3 759.00	H	8.51	10.85	-58.66	-61.00	-13.00	48.00
	5 637.75	V	10.36	13.53	-55.83	-59.00	-13.00	46.00
	7 517.25	H	11.73	15.83	-52.60	-56.70	-13.00	43.70
	9 404.25	V	12.98	17.59	-48.59	-53.20	-13.00	40.20

Note.

1. Limit Calculation(dBm)= 43 + 10log(P_{Watts})

2. E.R.P & E.I.R.P(dBm) = Substitute Level(dB) + Antenna gain(dBd&dBi) - C.L(Cable loss) (dB)

<p>Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-31-285-0894 FAX: 82-505-299-8311 www.kctl.co.kr</p>	<p>Report No.: KR23-SRF0030-A Page (19) of (19)</p>	 
---	---	---

8. Measurement equipment

Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date
Spectrum Analyzer	AGILENT	N9040B	MY57010132	23.10.14
Wideband Radio Communication Tester	R&S	CMW500	141780	23.03.28
Signal Generator	R&S	SMB100A	176206	23.01.19
Bilog Antenna	Teseq GmbH	CBL 6143A	35039	23.05.12
Bilog Antenna	ETS.LINDGREN	3143B	00228420	23.09.28
Horn Antenna	ETS.LINDGREN	3117	161225	23.05.04
Horn Antenna	ETS.LINDGREN	3117	00227509	23.09.20
Horn Antenna	ETS.lindgren	3116	00086632	23.01.25
Horn Antenna	Steatite Antennas	QMS-00225	17790	23.07.14
Horn Antenna	Steatite Antennas	QMS-00238	17791	23.07.14
High Pass Filter	Wainwright Instruments GmbH	WHKX10-900-1000-15000-40SS	11	23.08.10
High Pass Filter	Wainwright Instruments GmbH	WHKX12-2805-3000-18000-40SS	32	23.08.10
Broadband Amplifier	SONOMA INSTRUMENT	315	300314	23.01.19
Low Noise Amplifier	TESTEK	TK-PA18H	220123-L	23.12.02*
Amplifier	L-3 Narda-MITEQ	JS44-18004000-33-8P	2000996	23.01.21
Antenna Stand	innco systems GmbH	AS1500-EP-10kg	-	-
Antenna Stand	innco systems GmbH	AS1500-EP-10kg	-	-
Compact Table	innco systems GmbH	CT1000	-	-

*Tests related to this equipment were progressed after the calibration was completed

End of test report