

TEST REPORT

of

FCC Part 2 Subpart J, Part 22 Subpart C/H,
Part 24 Subpart E, Part 27 Subpart C and Part 90 Subpart S
IC RSS-130 Issue 2, RSS-132 Issue 4, RSS-133 Issue 6,
RSS-139 Issue 4, RSS-199 Issue 4 and RSS-Gen Issue 5

FCC ID: BEJTM05NNNABM0
IC Certification: 2703H-TM05NNNABM0

Equipment Under Test : Module
Model Name : TM05NNNABM0
Variant Model Name(s) : -
FCC Applicant : LG Electronics USA, Inc.
IC Applicant : LG ELECTRONICS INC.
Manufacturer : LG Electronics Inc.
Date of Receipt : 2023.08.02
Date of Test(s) : 2023.08.07 ~ 2023.09.27
Date of Issue : 2023.09.27

In the configuration tested, the EUT complied with the standards specified above. This test report does not assure KOLAS accreditation.

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- 2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.
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Tested by:


Murphy Kim

Technical
Manager:


Jinhyoung Cho

SGS Korea Co., Ltd. Gunpo Laboratory

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1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

- 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807

- 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807

- Designation number: KR0150

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1.2. Details of Applicant

FCC Applicant : LG Electronics USA, Inc.

FCC Address : 111 Sylvan Avenue, North Building, Englewood Cliffs, New Jersey, United States, 07632

IC Applicant : LG ELECTRONICS INC.

IC Address : 222, LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, Korea (Republic of), 451-713

Contact Person : Cho, Hee-jae

Phone No. : +1 201 266 2215

1.3. Details of Manufacturer

Company : LG Electronics Inc.

Address : 10, Magokjungang 10-ro, Gangseo-gu, Seoul, Korea, 07796

1.4. Description of EUT

Kind of Product		Module
Model Name		TM05NNNABM0
Serial Number		359547290102133
Power Supply		DC 12.5 V
Rated Power	SIM 1	WCDMA II, IV, V: 24 dB m GSM850: 33 dB m GSM1900: 30 dB m LTE Band 2, 4, 5, 7, 12, 13, 17, 25, 26, 66, 71: 23 dB m LTE Band 41: 26 dB m NR Band 2, 5, 25, 41, 66, 71: 23 dB m
	SIM 2	GSM850: 32 dB m GSM1900: 30 dB m LTE Band 2, 4, 5, 7, 12, 13, 17, 25, 26, 66, 71: 23 dB m LTE Band 41: 26 dB m NR Band 25, 41, 66, 71: 23 dB m
Frequency Range	SIM 1	WCDMA II: 1 850 MHz ~ 1 910 MHz WCDMA IV: 1 710 MHz ~ 1 755 MHz WCDMA V: 824 MHz ~ 849 MHz GSM 850: 824 MHz ~ 849 MHz GSM 1 900: 1 850 MHz ~ 1 910 MHz LTE Band 2: 1 850 MHz ~ 1 910 MHz LTE Band 4: 1 710 MHz ~ 1 755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2 500 MHz ~ 2 570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1 850 MHz ~ 1 915 MHz LTE Band 26(FCC Only): 814 MHz ~ 824 MHz LTE Band 26: 824 MHz ~ 849 MHz LTE Band 41(FCC): 2 496 MHz ~ 2 690 MHz LTE Band 41(IC): 2 500 MHz ~ 2 690 MHz LTE Band 66: 1 710 MHz ~ 1 780 MHz LTE Band 71: 663 MHz ~ 698 MHz NR Band 2(only NSA): 1 850 MHz ~ 1 910 MHz NR Band 5(only NSA): 824 MHz ~ 849 MHz NR Band 25: 1 850 MHz ~ 1 915 MHz NR Band 41(FCC): 2 496 MHz ~ 2 690 MHz NR Band 41(IC): 2 500 MHz ~ 2 690 MHz NR Band 66: 1 710 MHz ~ 1 780 MHz NR Band 71: 663 MHz ~ 698 MHz
	SIM 2	GSM 850: 824 MHz ~ 849 MHz GSM 1 900: 1 850 MHz ~ 1 910 MHz LTE Band 2: 1 850 MHz ~ 1 910 MHz LTE Band 4: 1 710 MHz ~ 1 755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2 500 MHz ~ 2 570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1 850 MHz ~ 1 915 MHz LTE Band 26(FCC Only): 814 MHz ~ 824 MHz LTE Band 26: 824 MHz ~ 849 MHz LTE Band 41(FCC): 2 496 MHz ~ 2 690 MHz LTE Band 41(IC): 2 500 MHz ~ 2 690 MHz LTE Band 66: 1 710 MHz ~ 1 780 MHz LTE Band 71: 663 MHz ~ 698 MHz NR Band 25: 1 850 MHz ~ 1 915 MHz NR Band 41(FCC): 2 496 MHz ~ 2 690 MHz NR Band 41(IC): 2 500 MHz ~ 2 690 MHz NR Band 66: 1 710 MHz ~ 1 780 MHz NR Band 71: 663 MHz ~ 698 MHz
Modulation Technique		GMSK, 8PSK, BPSK, QPSK, 16QAM, 64QAM, 256QAM
Antenna Type		External Antenna (Refer to the clause 1.10)
Antenna Gain ※		Refer to the clause 1.10
H/W Version		Rev.D2
S/W Version		v004.147.065
FVIN		N/A

1.5. Test Equipment List

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Interval	Cal. Due
Signal Generator	R&S	SMA100B	106887	Oct. 23, 2022	Annual	Oct. 23, 2023
Spectrum Analyzer	Agilent	N9030A	US51350132	Nov. 11, 2022	Annual	Nov. 11, 2023
Mobile Test Unit	R&S	CMW500	144035	Feb. 10, 2023	Annual	Feb. 10, 2024
Communication test station	Anritsu	MT8000A	6261949671	Oct. 12, 2022	Annual	Oct. 12, 2023
Communication Analyzer	Anritsu	MT8821C	6262192291	Oct. 11, 2022	Annual	Oct. 11, 2023
High Pass Filter	Wainwright Instrument GmbH	WHKX2.2/12.75G-10SS	8	Mar. 02, 2023	Annual	Mar. 02, 2024
High Pass Filter	Wainwright Instrument GmbH	WHK3.0/18G-10SS	344	May 16, 2023	Annual	May 16, 2024
High Pass Filter	Wainwright Instrument GmbH	WHNX7.5/26.5G-6SS	15	Jun. 02, 2023	Annual	Jun. 02, 2024
DC Power Supply	Agilent	U8002A	MY49030063	Jan. 20, 2023	Annual	Jan. 20, 2024
Preamplifier	H.P.	8447F	2944A03909	Aug. 04, 2023	Annual	Aug. 04, 2024
Preamplifier	R&S	SCU 18	10117	Jun. 15, 2023	Annual	Jun. 15, 2024
Preamplifier	TESTEK	TK-PA1840H	130016	Jan. 11, 2023	Annual	Jan. 11, 2024
Loop Antenna	Schwarzbeck Mess-Elektronik	FMZB 1519	1519-039	Aug. 21, 2023	Biennial	Aug. 21, 2025
Bilog Antenna	Schwarzbeck Mess-Elektronik	VULB 9163	01126	Feb. 09, 2023	Annual	Feb. 09, 2024
Horn Antenna	R&S	HF906	100326	Feb. 28, 2023	Annual	Feb. 28, 2024
Horn Antenna	Schwarzbeck Mess-Elektronik	BBHA 9170	9170-540	Nov. 30, 2022	Annual	Nov. 30, 2023
Antenna Master	Innco systems GmbH	MM4000	N/A	N.C.R.	N/A	N.C.R.
Turn Table	Innco systems GmbH	DS 1200S	N/A	N.C.R.	N/A	N.C.R.
Controller	Innco systems GmbH	CONTROLLER CO3000-4P	CO3000/963/383 30516/L	N.C.R.	N/A	N.C.R.
Anechoic Chamber	SY Corporation	L × W × H (9.6 m × 6.4 m × 6.6 m)	N/A	N.C.R.	N/A	N.C.R.
Coaxial Cable	RFONE	MWX221-NMSNMS (4 m)	J1023142	Apr. 04, 2023	Semi-Annual	Oct. 04, 2023
Coaxial Cable	Qualwave Inc.	QA500-18-NN-10 (10 m)	22200114	Apr. 04, 2023	Semi-Annual	Oct. 04, 2023

Note;

- For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

1.6. Summary of Test Results

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 2, 22, 24, 27 and 90 / IC RSS-Gen Issue 5, RSS-130 Issue 2, RSS-132 Issue 4, RSS-133 Issue 6, RSS-139 Issue 4 and RSS-199 Issue 4			
Section in FCC	Section in IC	Test Item(s)	Result
§22.913(a)(5) §24.232(c) §27.50(b)(9) §27.50(c)(9) §27.50(c)(10) §27.50(d)(4) §27.50(h)(2) §90.635(b)	RSS-130 Issue 2 4.6 RSS-132 Issue 4 5.4 RSS-133 Issue 6 6.4 RSS-139 Issue 4 5.5 RSS-199 Issue 4 5.5	E.R.P. / E.I.R.P.	Complied ²⁾
§22.917(a) §24.238(a) §27.53(c)(2) §27.53(g) §27.53(h)(1) §27.53(m)(4) §90.691(a)	RSS-130 Issue 2 4.7 RSS-132 Issue 4 5.5 RSS-133 Issue 6 6.5 RSS-139 Issue 4 5.6 RSS-199 Issue 4 5.6	Radiated Spurious Emissions	Complied ²⁾
§2.1046	RSS-Gen Issue 5 6.12	Conducted Output Power	N/A ¹⁾
§2.1049	RSS-Gen Issue 5 6.7	Occupied Bandwidth	N/A ¹⁾
§22.913(d) §24.232(d) §27.50(d)(5)	RSS-130 Issue 2 4.6 RSS-132 Issue 4 5.4 RSS-133 Issue 6 6.4 RSS-139 Issue 4 5.6 RSS-199 Issue 4 5.5	Peak-Average Ratio	N/A ¹⁾
§22.917(a) §24.238(a) §27.53(c)(2) §27.53(g) §27.53(h)(1) §27.53(m)(4) §90.691(a)	RSS-130 Issue 2 4.7 RSS-132 Issue 4 5.5 RSS-133 Issue 6 6.5 RSS-139 Issue 4 5.6 RSS-199 Issue 4 5.6	Spurious Emission at Antenna Terminal	N/A ¹⁾
§22.917(a) §24.238(a) §27.53(c)(2) §27.53(g) §27.53(h)(1) §27.53(m)(4) §90.691(a)	RSS-130 Issue 2 4.7 RSS-132 Issue 4 5.5 RSS-133 Issue 6 6.5 RSS-139 Issue 4 5.6 RSS-199 Issue 4 5.6	Band Edge and Emission Mask	N/A ¹⁾
§2.1055 §22.355 §24.235 §27.54 §90.213(a)	RSS-Gen Issue 5 6.11 RSS-130 Issue 2 4.5 RSS-132 Issue 4 5.3 RSS-133 Issue 6 6.3 RSS-139 Issue 4 5.4 RSS-199 Issue 4 5.4	Frequency Stability	N/A ¹⁾

Note;

- 1) The test items were used the results from original test report.
- 2) This product is a C2PC case due to the addition of antenna on SIM 2. So only radiation test were performed and the rules for E.R.P. / E.I.R.P. and spurious radiated emission were satisfied.

1.7. Sample Calculation for Offset

Where relevant, the following sample calculation is provided:

1.7.1. Radiation Test

- E.I.R.P. (dB m) = Measured level (dB μ V) + Antenna factor (dB) + Cable loss (dB) + 20 Log D - 104.8; where D is the measurement distance in meters.
- E.R.P. (dB m) = E.I.R.P. (dB m) - 2.15 (dB)

1.8. Measurement Uncertainty

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

Parameter	Uncertainty	
Radiated Emission, 9 kHz to 30 MHz	H	3.40 dB
	V	3.40 dB
Radiated Emission, below 1 GHz	H	4.50 dB
	V	5.10 dB
Radiated Emission, above 1 GHz	H	3.70 dB
	V	3.90 dB

All measurement uncertainty values are shown with a coverage factor of $k=2$ to indicate a 95 % level of confidence.

1.9. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL004347	2023.08.31	Initial
1	F690501-RF-RTL004347-1	2023.09.27	Revised the antenna gain and cable loss of SIM2

1.10. Antenna Information

SIM 1

Antenna Type	Antenna No.	Antenna Name	Antenna Part Number
Trunk	1	Antenna Box (basic)	8705921
	2	MSA TEL	920631001
	3	MSA TEL SDARS	920361002
Roof	4	DA WAVE HAF 5G-US	8705914-05
	5	DA WAVE High 5G-US	5A09D90-03

Operating Frequency (MHz)		Antenna Peak Gain (dB i)			
		Ant. No	Ant. Gain	Cable Loss	Final Gain
LTE Band 71 NR Band 71	663 ~ 698	Ant. 1	-3.00	0.22	-3.22
		Ant. 2	2.20	0.52	1.68
		Ant. 3	2.50	0.52	1.98
		Ant. 4	-3.80	-	-3.80
		Ant. 5	-3.40	-	-3.40
LTE Band 12/17	669 ~ 716	Ant. 1	3.00	0.22	2.78
		Ant. 2	2.60	0.52	2.08
		Ant. 3	2.50	0.52	1.98
		Ant. 4	-3.00	-	-3.00
		Ant. 5	-3.10	-	-3.10
LTE Band 13	777 ~ 787	Ant. 1	3.00	0.22	2.78
		Ant. 2	2.60	0.52	2.08
		Ant. 3	2.50	0.52	1.98
		Ant. 4	-3.00	-	-3.00
		Ant. 5	-3.10	-	-3.10
GSM 850 WCDMA V LTE Band 26/5 NR Band 5	824 ~ 849	Ant. 1	3.00	0.22	2.78
		Ant. 2	2.10	0.52	1.58
		Ant. 3	2.30	0.52	1.78
		Ant. 4	-0.40	-	-0.40
		Ant. 5	-0.20	-	-0.20
LTE Band 26	814 ~ 824	Ant. 1	3.00	0.22	2.78
		Ant. 2	2.10	0.52	1.58
		Ant. 3	2.30	0.52	1.78
		Ant. 4	-0.30	-	-0.30
		Ant. 5	0.00	-	0.00
WCDMA IV LTE Band 66/4 NR Band 66	1 710 ~ 1 780	Ant. 1	5.00	0.30	4.70
		Ant. 2	5.40	0.73	4.67
		Ant. 3	5.80	0.73	5.07
		Ant. 4	2.70	-	2.70
		Ant. 5	3.00	-	3.00
GSM 1900 WCDMA II LTE Band 25/2 NR Band 25/2	1 850 ~ 1 915	Ant. 1	5.00	0.34	4.66
		Ant. 2	6.20	0.82	5.38
		Ant. 3	5.90	0.82	5.08
		Ant. 4	2.80	-	2.80
		Ant. 5	2.30	-	2.30
LTE Band 7/41 NR Band 41	2 496 ~ 2 690	Ant. 1	5.00	0.40	4.60
		Ant. 2	6.60	0.96	5.64
		Ant. 3	6.50	0.96	5.54
		Ant. 4	3.30	-	3.30
		Ant. 5	3.00	-	3.00

- The Roof type antennas are directly connected to the EUT, so there is no cable loss.

SIM 2

Antenna Type	Antenna No.	Antenna Name	Antenna Part Number
Trunk	1	Antenna Box	8705921
	2	FSA WAVE 5G (left/right)	8705919/8705920
	3	HKL Mobilradioantenna (basic)	5A2D602
	4	ZB Spoilerantenna	5A0C5B0
	5	F66 Roof-top Antenna (Additional Antenna)	920-747-018

Operating Frequency (MHz)		Antenna Peak Gain (dB i)			
		Ant. No	Ant. Gain	Cable Loss	Final Gain
LTE Band 71 NR Band 71	663 ~ 698	Ant. 1	-3.00	0.57	-3.57
		Ant. 2	4.00	0.57	3.43
		Ant. 3	5.00	0.57	4.43
		Ant. 4	4.00	0.57	3.43
		Ant. 5 (Additional)	2.40	2.89	-0.49
LTE Band 12/17	669 ~ 716	Ant. 1	3.00	0.57	2.43
		Ant. 2	4.00	0.57	3.43
		Ant. 3	5.00	0.57	4.43
		Ant. 4	3.00	0.57	2.43
		Ant. 5 (Additional)	2.70	2.90	-0.20
LTE Band 13	777 ~ 787	Ant. 1	3.00	0.57	2.43
		Ant. 2	4.00	0.57	3.43
		Ant. 3	5.00	0.57	4.43
		Ant. 4	3.00	0.57	2.43
		Ant. 5 (Additional)	2.80	3.00	-0.20
GSM 850 LTE Band 26/5	814 ~ 849	Ant. 1	3.00	0.57	2.43
		Ant. 2	4.00	0.57	3.43
		Ant. 3	5.00	0.57	4.43
		Ant. 4	3.00	0.57	2.43
		Ant. 5 (Additional)	1.90	3.06	-1.16
LTE Band 66/4 NR Band 66	1 710 ~ 1 780	Ant. 1	5.00	0.79	4.21
		Ant. 2	4.00	0.79	3.21
		Ant. 3	5.00	0.79	4.21
		Ant. 4	4.00	0.79	3.21
		Ant. 5 (Additional)	2.60	4.18	-1.58
GSM 1 900 LTE Band 25/2 NR Band 25	1 850 ~ 1 915	Ant. 1	5.00	0.89	4.11
		Ant. 2	4.00	0.89	3.11
		Ant. 3	5.00	0.89	4.11
		Ant. 4	4.00	0.89	3.11
		Ant. 5 (Additional)	6.00	4.70	1.30
LTE Band 7/41 NR Band 41	2 496 ~ 2 690	Ant. 1	5.00	1.04	3.96
		Ant. 2	5.00	1.04	3.96
		Ant. 3	5.00	1.04	3.96
		Ant. 4	4.00	1.04	2.96
		Ant. 5 (Additional)	7.30	5.40	1.90

1.11. Radiated Spurious Emissions Test Case

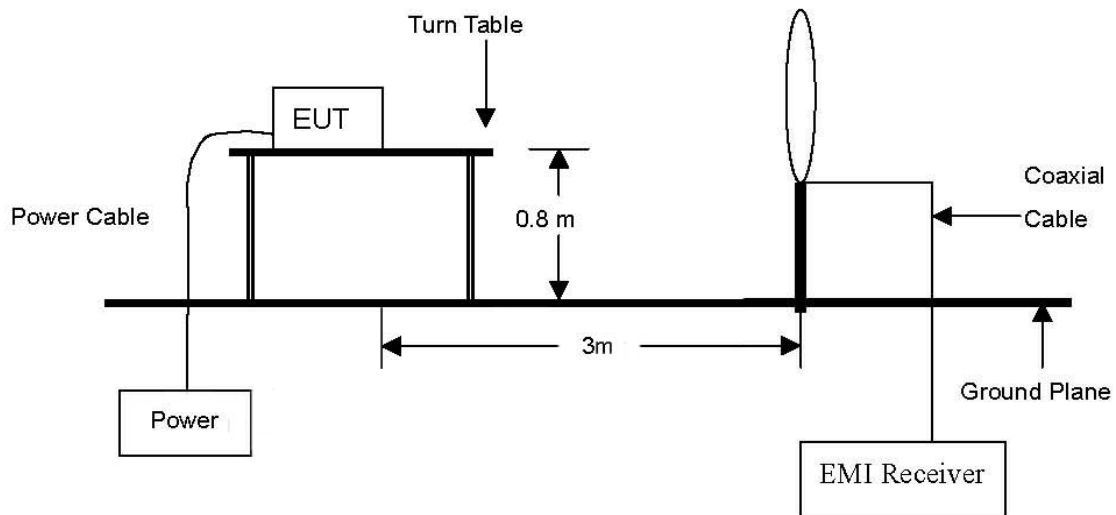
The Radiated spurious emissions were tested with additional antenna on SIM 2.
 Although the additional antenna gain is not higher than the original antenna gain, the radiated spurious emissions were tested some bands for verification.

Operating Frequency (MHz)		Test Case
GSM 1 900	1 850 ~ 1 910	GSM 1 900 (Voice)
LTE Band 7	2 500 ~ 2 570	LTE Band 7 (10 MHz – QPSK)
LTE Band 25/2	1 850 ~ 1 915	LTE Band 25 (5 MHz – QPSK)
LTE Band 41	2 496 ~ 2 690	LTE Band 41 (20 MHz – QPSK)
NR Band 25	1 850 ~ 1 915	NR Band 25 (20 MHz – QPSK)
NR Band 41	2 496 ~ 2 690	NR Band 41 (30 MHz – BPSK)

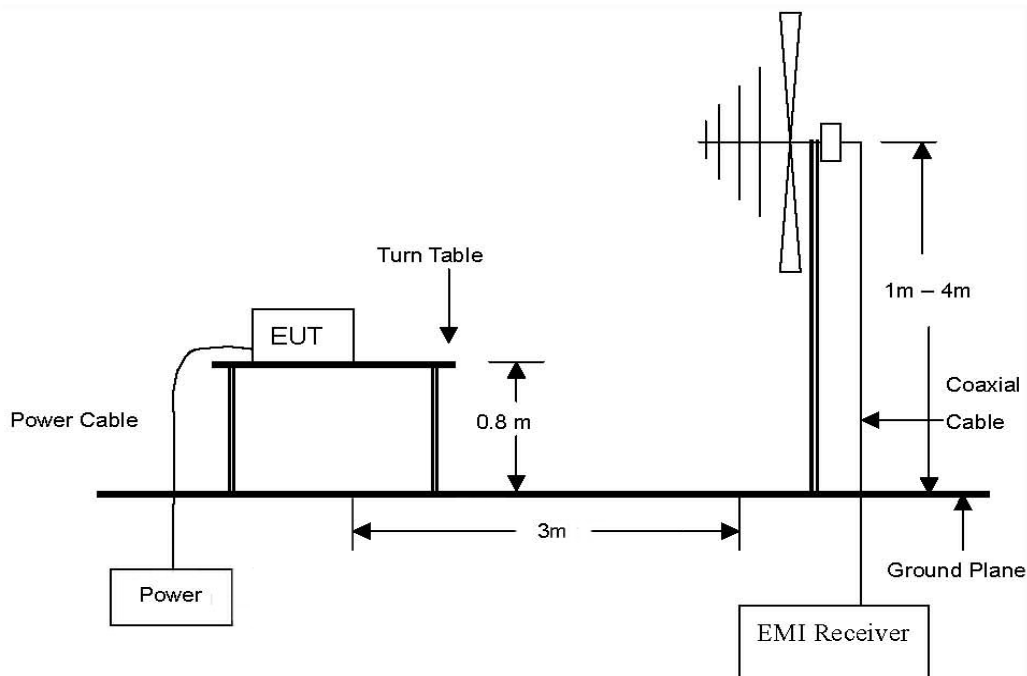
2. E.R.P. / E.I.R.P. & Radiated Spurious Emissions

2.1. Test Setup

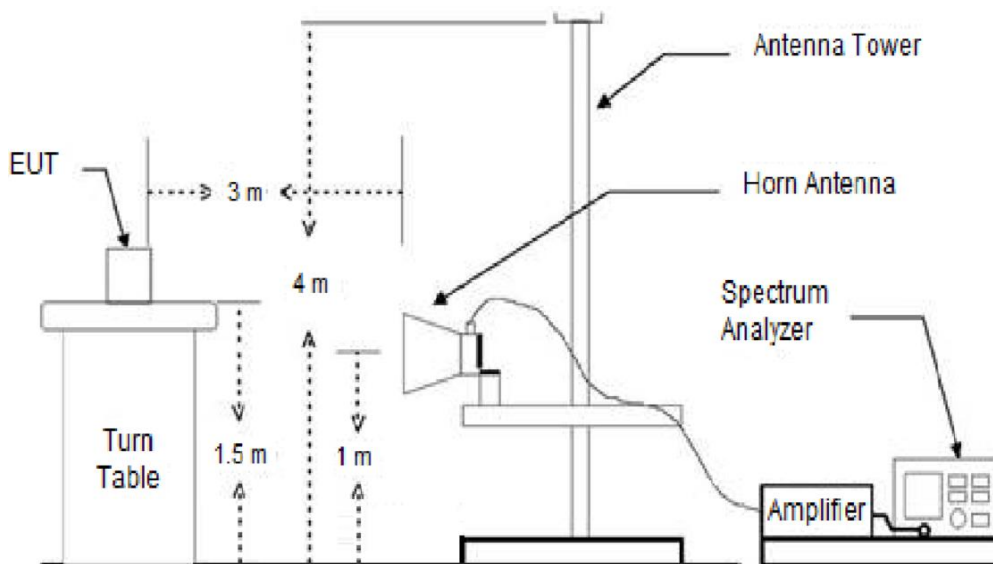
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 kHz to 30 MHz.



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



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 GHz to 27 GHz.



2.2. Limit

2.2.1. Limit of E.R.P. / E.I.R.P.

FCC

- §22.913(a)(5), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.
- §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.
- §27.50(b)(9), control stations and mobile stations transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands and fixed stations transmitting in the 787-788 MHz and 805-806 MHz bands are limited to 30 watts ERP.
- §27.50(c)(9), control and mobile stations in the 698-746 MHz band are limited to 30 watts ERP.
- §27.50(c)(10), portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.
- §27.50(d)(4), fixed, mobile, and portable (hand-held) stations operating in the 1 710-1 755 MHz band and mobile and portable stations operating in the 1 695-1 710 MHz and 1 755-1 780 MHz bands are limited to 1 watt EIRP.
- §27.50(h)(2), Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.
- §90.635(b), the maximum output power of the transmitter for mobile stations is 100 watts (20 dBW).

IC

- RSS-130 Issue 2

4.6.3, the e.r.p. shall not exceed 30 watts for mobile equipment and outdoor fixed subscriber equipment. The e.r.p. shall not exceed 3 watts for portable equipment and indoor fixed subscriber equipment.

For base and fixed equipment other than fixed subscriber equipment, refer to SRSP-518 for the e.i.r.p. limits.

- RSS-132 Issue 4

5.4, the transmitter output power shall be measured in terms of average power.

The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts.

Refer to SRSP-503 for base station e.i.r.p. limits.

- RSS-133 Issue 6

6.4, the equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510. Moreover, base station transmitters operating in the band 1 930-1 995 MHz shall not have output power exceeding 100 watts.

- RSS-139 Issue 4

5.5, The maximum output power of the equipment shall comply with the limits specified below. In the tables, maximum power refers to the equivalent isotropically radiated power (e.i.r.p.) or total radiated power (TRP), measured in terms of average values.

Table 3: Maximum power of equipment in the band 1 710-1 780 MHz

Equipment type	Maximum power
Fixed station and base station	30 dBm e.i.r.p./ channel bandwidth
Subscriber equipment	30 dBm e.i.r.p./ channel bandwidth

- RSS-199 Issue 4

5.5, the maximum output power of the equipment shall comply with the limits specified in table 3. In this table, maximum power refers to the equivalent isotropically radiated power (e.i.r.p.) or total radiated power (TRP), measured in terms of average values.

Subscriber equipment other than fixed subscriber equipment shall not exceed an e.i.r.p. of 2W per channel bandwidth.

Fixed subscriber equipment shall not exceed the following:

I. conducted power of 2W per channel bandwidth for all ports

II. e.i.r.p. of 40 W per channel bandwidth

The maximum power limits for fixed station and base station are provided in Table 3. The limits in this RSS are specified for the purpose of certification and may not apply to all deployment scenarios. Consult SRSP-517 for more deployment details in the band 2 500-2 690 MHz.

Table 3: Maximum power of fixed station and base station in the band 2 500-2 690 MHz

Equipment type	Maximum power
Non-AAS fixed station and base station	e.i.r.p. of 1 640 W / MHz
AAS fixed station and base station	TRP of 43 dBm / MHz

2.2.2. Limit of Spurious Radiated Emission

FCC

- §22.917(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.
- §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.
- §27.53(c)(2), on any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB.
- §27.53(g), the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB.
- §27.53(h)(1), for operations in the 1 695-1 710 MHz, 1 710-1 755 MHz, 1 755-1 780 MHz, 1 915-1 920 MHz, 1 995-2 000 MHz, 2 000-2 020 MHz, 2 110-2 155 MHz, 2 155-2 180 MHz, and 2 180-2 200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB.
- §27.53(m)(4), for mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log_{10} (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log_{10} (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log_{10} (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log_{10} (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log_{10} (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.
- §90.691(a), out-of-band emission requirement shall apply only to the "outer" channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:
 - (1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10} (f / 6.1)$ decibels or $50 + 10 \log_{10} (P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.
 - (2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

IC

- RSS-130 Issue 2

4.7.1, the unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dB W), by at least $43 + 10 \log_{10} p$ (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

- RSS-132 Issue 4

5.5, Equipment shall meet the unwanted emission limits specified below.

(i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1 % of the occupied bandwidth shall be attenuated below the transmitter output power P (dB W) by at least $43 + 10 \log(p)$ dB.

(ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated below the transmitter output power P (dB W) by at least $43 + 10 \log(p)$ dB. If the measurement is performed using 1 % of the occupied bandwidth, power integration over 100 kHz is required.

- RSS-133 Issue 6

6.5, Equipment shall comply with the limits in (i) and (ii) below.

(i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1 % of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least $43 + 10 \log_{10} p$ (watts).

(ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least $43 + 10 \log_{10} p$ (watts). If the measurement is performed using 1 % of the emission bandwidth, power integration over 1.0 MHz is required.

- RSS-139 Issue 4

5.6, Unwanted emissions shall be measured in terms of average values.

For all equipment, the TRP or total conducted power (sum of conducted power across all antenna connectors) of the unwanted emissions outside the frequency block or frequency block group shall not exceed the limits shown in table 6.

Table 6: Unwanted emission limits

Offset from the edge of the frequency block or frequency block group	Unwanted emission limit
≤ 1 MHz	-13 dB m/(1% of OB)*
> 1 MHz	-13 dB m

* OB is the occupied bandwidth

- RSS-199 Issue 4

5.6, unwanted emissions shall be measured in terms of average values when the transmitter is operating at the manufacturer's rated power and modulated as specified in RSS-Gen.

Equipment shall meet the unwanted emission limits, specified below, outside each frequency block group. For each channel bandwidth supported by the equipment under test, the unwanted emissions shall be measured and reported for two channel frequencies: one located as close as possible to the low end and one located as close as possible to the high end of the equipment's operating frequency range.

For the unwanted emission limits, in the 1 MHz band immediately outside and adjacent to the frequency block group, the power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth for fixed stations, base stations, and fixed subscriber equipment, and 2 % for subscriber equipment other than fixed subscriber equipment. Beyond this 1 MHz band, a resolution bandwidth of 1 MHz shall be used. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz, or 1 % or 2 % of the occupied bandwidth, as applicable.

For all equipment, the TRP or total conducted power (sum of conducted power across all antenna connectors), where applicable, of the unwanted emissions outside the frequency block or frequency block group shall not exceed the limits shown in the tables below.

Table 4: Unwanted emission limits for fixed station, base station and fixed subscriber equipment

Offset from the edge of the frequency block or frequency block group (MHz)	Unwanted emission limit
≤1	-13 dB m/(1% of OB*)
>1	-13 dB m/MHz

* OB is the occupied bandwidth

Table 5: Unwanted emission limits for subscriber equipment other than fixed subscriber equipment

Offset from the edge of the frequency block or frequency block group (MHz)	Unwanted emission limit
0-1	-10 dB m/(2% of OB*)
1-5	-10 dB m/MHz
5-X**	-13 dB m/MHz
≥X	-25 dB m/MHz

* OB is the occupied bandwidth

** X is 6 MHz or the equipment occupied bandwidth, whichever is greater

In addition to complying with the limits in table 5, subscriber equipment other than fixed subscriber equipment shall not exceed -13 dB m/MHz on all frequencies between 2 490.5 MHz and 2 496 MHz, and -25 dB m/MHz at or below 2 490.5 MHz.

2.3. Test Procedure: Based on ANSI/TIA 603E: 2016 and ANSI C63.26-2015, KDB 971168 D01 Power Meas License Digital Systems v03r01.

1. On a test site, the EUT shall be placed at 0.8 m 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 output of the test antenna shall be connected to the measuring receiver and the peak detector is used for the measurement.
4. Radiated spurious emissions measurement method was set as follows:
RBW = 100 kHz for emissions below 1 GHz and 1 MHz for emissions above 1 GHz, VBW $\geq 3 \times$ RBW,
Detector = RMS, trace mode = max hold, per the guidelines of ANSI C63.26-2015 and KDB 971168 D01 Power Meas License Digital Systems v03r01.
5. The transmitter shall be switched on, the measuring receiver shall be tuned to the frequency of the transmitter under test.
6. The test antenna shall be raised and lowered through the specified range of height until the maximum signal level is detected by the measuring receiver.
7. The transmitter shall be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
8. 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.
9. The maximum signal level detected by the measuring receiver shall be noted.
10. In necessary, the input attenuator setting on the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
11. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
12. The measurement shall be repeated with the test antenna orientated for horizontal polarization.

2.4. E.R.P. / E.I.R.P.

Ambient temperature : (23 ± 1) °C
 Relative humidity : 47 % R.H.

SIM 1

WCDMA

Band	Frequency (MHz)	Maximum Conducted Power (dB m)	Maximum Conducted Power (W)	Worst Antenna Gain (dB i)	Maximum E.I.R.P. (dB m)	Maximum E.I.R.P. (W)	Maximum E.R.P. (dB m)	Maximum E.R.P. (W)	Limit
II	1 850 ~ 1 910	23.15	0.207	5.38	28.53	0.713			2 W E.I.R.P.
IV	1 710 ~ 1 755	22.64	0.184	5.07	27.71	0.590			1 W E.I.R.P.
V	824 ~ 849	23.49	0.223	2.78	26.27	0.424	24.12	0.258	7 W E.R.P.

GSM

Band	Frequency (MHz)	Maximum Conducted Power (dB m)	Maximum Conducted Power (W)	Duty Cycle (%)	Worst Antenna Gain (dB i)	Maximum E.I.R.P. (dB m)	Maximum E.I.R.P. (W)	Maximum E.R.P. (dB m)	Maximum E.R.P. (W)	Limit
850	824 ~ 849	32.48	1.770	25	2.78	29.24	0.839	27.09	0.512	7 W E.R.P.
1 900	1 850 ~ 1 910	28.53	0.713	25	5.38	27.89	0.615			2 W E.I.R.P.

LTE

Band	Frequency (MHz)	Maximum Conducted Power (dB m)	Maximum Conducted Power (W)	Worst Antenna Gain (dB i)	Maximum E.I.R.P. (dB m)	Maximum E.I.R.P. (W)	Maximum E.R.P. (dB m)	Maximum E.R.P. (W)	Limit
7	2 500 ~ 2 570	23.05	0.202	5.64	28.69	0.740			2 W E.I.R.P.
12/17	699 ~ 716	22.60	0.182	2.78	23.23	0.210	21.08	0.128	30 W E.R.P.
13	777 ~ 787	23.09	0.204	2.78	23.72	0.236	21.57	0.144	30 W E.R.P.
25/2	1 850 ~ 1 915	22.61	0.182	5.38	27.99	0.630			2 W E.I.R.P.
26/5 Part 22	824 ~ 849	22.59	0.182	2.78	23.22	0.210	21.07	0.128	7 W E.R.P.
26 Part 90	814 ~ 824	22.83	0.192	2.78	23.46	0.222	21.31	0.135	100 W
41 FCC	2 496 ~ 2 690	25.85	0.385	5.64	31.49	1.409			2 W E.I.R.P.
41 IC	2 500 ~ 2 690	25.53	0.357	5.64	31.17	1.309			2 W E.I.R.P.
66/4	1 710 ~ 1 755	22.78	0.190	5.07	27.85	0.610			1 W E.I.R.P.
71	663 ~ 698	22.97	0.198	1.98	24.95	0.313	22.80	0.191	3 W E.R.P.

5G NR

Band	Frequency (MHz)	Maximum Conducted Power (dB m)	Maximum Conducted Power (W)	Worst Antenna Gain (dB i)	Maximum E.I.R.P. (dB m)	Maximum E.I.R.P. (W)	Maximum E.R.P. (dB m)	Maximum E.R.P. (W)	Limit
n2	1 850 ~ 1 915	23.28	0.213	5.38	28.66	0.735			2 W E.I.R.P.
n5	824 ~ 849	23.91	0.246	2.78	26.69	0.467	24.54	0.284	7 W E.R.P.
n25	1 850 ~ 1 915	23.51	0.224	5.38	28.89	0.774			2 W E.I.R.P.
n41 FCC	2 496 ~ 2 690	22.34	0.171	5.64	27.98	0.628			2 W E.I.R.P.
n41 IC	2 500 ~ 2 690	22.38	0.173	5.64	28.02	0.634			2 W E.I.R.P.
n66	1 710 ~ 1 755	22.73	0.187	5.07	27.80	0.603			1 W E.I.R.P.
n71	663 ~ 698	22.55	0.180	1.98	24.53	0.284	22.38	0.173	3 W E.R.P.

SIM 2

GSM

Band	Frequency (MHz)	Maximum Conducted Power (dB m)	Maximum Conducted Power (W)	Duty Cycle (%)	Worst Antenna Gain (dB i)	Maximum E.I.R.P. (dB m)	Maximum E.I.R.P. (W)	Maximum E.R.P. (dB m)	Maximum E.R.P. (W)	Limit
850	824 ~ 849	32.10	1.622	25	4.43	30.51	1.124	28.36	0.685	7 W E.R.P.
1 900	1 850 ~ 1 910	28.20	0.661	25	4.11	26.29	0.426			2 W E.I.R.P.

LTE

Band	Frequency (MHz)	Maximum Conducted Power (dB m)	Maximum Conducted Power (W)	Worst Antenna Gain (dB i)	Maximum E.I.R.P. (dB m)	Maximum E.I.R.P. (W)	Maximum E.R.P. (dB m)	Maximum E.R.P. (W)	Limit
7	2 500 ~ 2 570	22.85	0.193	3.96	26.81	0.480			2 W E.I.R.P.
12/17	699 ~ 716	23.16	0.207	4.43	25.44	0.350	23.29	0.213	30 W E.R.P.
13	777 ~ 787	23.64	0.231	4.43	25.92	0.391	23.77	0.238	30 W E.R.P.
25/2	1 850 ~ 1 915	22.76	0.189	4.11	26.87	0.486			2 W E.I.R.P.
26/5 Part 22	824 ~ 849	22.97	0.198	4.43	25.25	0.335	23.10	0.204	7 W E.R.P.
26 Part 90	814 ~ 824	22.62	0.183	4.43	24.90	0.309	22.75	0.188	100 W
41 FCC	2 496 ~ 2 690	25.54	0.358	3.96	29.50	0.891			2 W E.I.R.P.
41 IC	2 500 ~ 2 690	25.54	0.358	3.96	29.50	0.891			2 W E.I.R.P.
66/4	1 710 ~ 1 755	22.93	0.196	4.21	27.14	0.518			1 W E.I.R.P.
71	663 ~ 698	22.54	0.179	4.43	26.97	0.498	24.82	0.303	3 W E.R.P.

5G NR

Band	Frequency (MHz)	Maximum Conducted Power (dB m)	Maximum Conducted Power (W)	Worst Antenna Gain (dB i)	Maximum E.I.R.P. (dB m)	Maximum E.I.R.P. (W)	Maximum E.R.P. (dB m)	Maximum E.R.P. (W)	Limit
n25	1 850 ~ 1 915	23.69	0.234	4.11	27.80	0.603			2 W E.I.R.P.
n41 FCC	2 496 ~ 2 690	22.31	0.170	3.96	26.27	0.424			2 W E.I.R.P.
n41 IC	2 500 ~ 2 690	21.98	0.158	3.96	25.94	0.393			2 W E.I.R.P.
n66	1 710 ~ 1 755	23.19	0.208	4.21	27.40	0.550			1 W E.I.R.P.
n71	663 ~ 698	23.48	0.223	4.43	27.91	0.618	25.76	0.377	3 W E.R.P.

Remark;

1. E.I.R.P. (dB m) = Maximum Conducted Power (dB m) + Antenna Gain (dB i)
2. E.R.P. (dB m) = E.I.R.P. (dB m) - 2.15 (dB); where E.R.P. and E.I.R.P. are expressed in consistent units.

2.5. Radiated Spurious Emissions

SIM 2

GSM 1900_VOICE_Ant. 5

Frequency (MHz)	Measured Level (dB μ V)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB μ V/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 850.2 MHz)									
3 700.30	59.13	H	32.20	-37.11	54.22	-95.26	-41.04	-13	28.04
3 700.36	59.03	V	32.20	-37.11	54.12	-95.26	-41.14	-13	28.14
5 550.69	55.33	H	34.20	-35.21	54.32	-95.26	-40.94	-13	27.94
5 550.58	59.20	V	34.20	-35.21	58.19	-95.26	-37.07	-13	24.07
12 950.98	35.07	V	39.20	-28.59	45.68	-95.26	-49.58	-13	36.58
14 801.28	39.77	H	40.79	-27.55	53.01	-95.26	-42.25	-13	29.25
14 801.22	36.62	V	40.80	-27.55	49.87	-95.26	-45.39	-13	32.39
Above 14 900.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (1 880.0 MHz)									
3 759.85	66.23	H	32.40	-36.67	61.96	-95.26	-33.30	-13	20.30
3 759.86	65.10	V	32.40	-36.67	60.83	-95.26	-34.43	-13	21.43
5 640.19	59.13	H	34.12	-34.21	59.04	-95.26	-36.22	-13	23.22
5 640.24	59.00	V	34.12	-34.21	58.91	-95.26	-36.35	-13	23.35
9 400.12	41.63	H	37.50	-32.43	46.70	-95.26	-48.56	-13	35.56
9 399.88	40.75	V	37.50	-32.43	45.82	-95.26	-49.44	-13	36.44
11 280.32	41.29	H	38.24	-30.35	49.18	-95.26	-46.08	-13	33.08
11 280.50	43.85	V	38.24	-30.34	51.75	-95.26	-43.51	-13	30.51
13 159.94	41.05	H	39.14	-28.39	51.80	-95.26	-43.46	-13	30.46
13 160.06	43.35	V	39.14	-28.39	54.10	-95.26	-41.16	-13	28.16
15 040.82	42.66	H	40.32	-27.26	55.72	-95.26	-39.54	-13	26.54
15 040.26	40.32	V	40.32	-27.26	53.38	-95.26	-41.88	-13	28.88
16 919.96	41.01	H	41.90	-26.03	56.88	-95.26	-38.38	-13	25.38
Above 17 000.00	Not detected	-	-	-	-	-	-	-	-

Frequency (MHz)	Measured Level (dB μ V)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB μ V/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
High Channel (1 909.8 MHz)									
3 819.55	61.15	H	32.36	-36.97	56.54	-95.26	-38.72	-13	25.72
3 819.50	63.33	V	32.36	-36.97	58.72	-95.26	-36.54	-13	23.54
5 729.64	58.88	H	34.22	-34.47	58.63	-95.26	-36.63	-13	23.63
5 729.36	65.16	V	34.22	-34.47	64.91	-95.26	-30.35	-13	17.35
9 548.78	41.32	H	37.70	-31.50	47.52	-95.26	-47.74	-13	34.74
9 549.02	41.33	V	37.70	-31.49	47.54	-95.26	-47.72	-13	34.72
11 458.60	42.25	V	38.60	-30.68	50.17	-95.26	-45.09	-13	32.09
11 459.22	42.87	V	38.60	-30.69	50.78	-95.26	-44.48	-13	31.48
13 369.18	46.80	H	39.84	-27.98	58.66	-95.26	-36.60	-13	23.60
13 369.28	43.49	V	39.84	-27.98	55.35	-95.26	-39.91	-13	26.91
15 277.72	44.57	H	40.00	-27.57	57.00	-95.26	-38.26	-13	25.26
15 277.80	40.82	V	40.00	-27.57	53.25	-95.26	-42.01	-13	29.01
17 187.96	37.53	H	42.35	-26.26	53.62	-95.26	-41.64	-13	28.64
Above 17 200.00	Not detected	-	-	-	-	-	-	-	-

LTE band 7 (10 MHz - QPSK) Ant. 5

Frequency (MHz)	Measured Level (dB μ V)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB μ V/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (2 505.0 MHz)									
Below 1 000.00	Not detected	-	-	-	-	-	-	-	-
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (2 535.0 MHz)									
Below 1 000.00	Not detected	-	-	-	-	-	-	-	-
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-
High Channel (2 565.0 MHz)									
Below 1 000.00	Not detected	-	-	-	-	-	-	-	-
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

LTE band 25/2 (5 MHz - QPSK) Ant. 5

Frequency (MHz)	Measured Level (dB μ V)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB μ V/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 852.5 MHz)									
3 700.62	47.45	H	32.20	-37.11	42.54	-95.26	-52.72	-13	39.72
3 700.73	49.65	V	32.20	-37.11	44.74	-95.26	-50.52	-13	37.52
5 550.93	46.10	H	34.20	-35.21	45.09	-95.26	-50.17	-13	37.17
5 550.99	46.66	V	34.20	-35.21	45.65	-95.26	-49.61	-13	36.61
Above 5 600.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (1 882.5 MHz)									
3 760.59	56.20	H	32.40	-36.68	51.92	-95.26	-43.34	-13	30.34
3 760.69	60.00	V	32.40	-36.68	55.72	-95.26	-39.54	-13	26.54
5 641.11	53.05	H	34.12	-34.21	52.96	-95.26	-42.30	-13	29.30
5 641.03	56.93	V	34.12	-34.21	56.84	-95.26	-38.42	-13	25.42
Above 5 700.00	Not detected	-	-	-	-	-	-	-	-
High Channel (1 912.5 MHz)									
3 820.71	51.98	H	32.36	-36.98	47.36	-95.26	-47.90	-13	34.90
3 820.57	55.99	V	32.36	-36.98	51.37	-95.26	-43.89	-13	30.89
5 731.01	53.52	H	34.22	-34.48	53.26	-95.26	-42.00	-13	29.00
5 731.05	56.41	V	34.22	-34.48	56.15	-95.26	-39.11	-13	26.11
Above 5 800.00	Not detected	-	-	-	-	-	-	-	-

LTE band 41 FCC (20 MHz - QPSK) Ant. 5

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (2 506.0 MHz)									
4 994.58	42.47	H	33.20	-35.46	40.21	-95.26	-55.05	-25	30.05
4 994.10	44.58	V	33.20	-35.45	42.33	-95.26	-52.93	-25	27.93
Above 5 000.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (2 593.0 MHz)									
5 168.46	39.97	H	33.67	-35.55	38.09	-95.26	-57.17	-25	32.17
5 168.19	42.16	V	33.67	-35.55	40.28	-95.26	-54.98	-25	29.98
Above 5 200.00	Not detected	-	-	-	-	-	-	-	-
High Channel (2 680.0 MHz)									
5 342.14	43.02	H	34.07	-35.53	41.56	-95.26	-53.70	-25	28.70
5 342.06	47.16	V	34.07	-35.54	45.69	-95.26	-49.57	-25	24.57
Above 5 400.00	Not detected	-	-	-	-	-	-	-	-

LTE band 41 IC (20 MHz - QPSK) Ant. 5

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (2 510.0 MHz)									
5 002.44	40.94	H	33.21	-35.56	38.59	-95.26	-56.67	-25	31.67
5 002.37	42.89	V	33.21	-35.56	40.54	-95.26	-54.72	-25	29.72
Above 5 100.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (2 595.0 MHz)									
5 172.18	40.17	H	33.69	-35.51	38.35	-95.26	-56.91	-25	31.91
5 172.19	42.13	V	33.69	-35.51	40.31	-95.26	-54.95	-25	29.95
Above 5 200.00	Not detected	-	-	-	-	-	-	-	-
High Channel (2 680.0 MHz)									
5 342.28	43.20	H	34.07	-35.53	41.74	-95.26	-53.52	-25	28.52
5 342.02	46.86	V	34.07	-35.54	45.39	-95.26	-49.87	-25	24.87
Above 5 400.00	Not detected	-	-	-	-	-	-	-	-

NR Band 25 (20 MHz - DFTS-OFDM QPSK) Ant. 5

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 860.0 MHz)									
3 716.07	53.55	H	32.26	-37.07	48.74	-95.26	-46.52	-13	33.52
3 716.13	53.07	V	32.26	-37.07	48.26	-95.26	-47.00	-13	34.00
5 574.13	44.08	H	34.20	-35.52	42.76	-95.26	-52.50	-13	39.50
5 573.82	47.51	V	34.20	-35.52	46.19	-95.26	-49.07	-13	36.07
Above 5 600.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (1 882.5 MHz)									
3 761.14	58.64	H	32.40	-36.69	54.35	-95.26	-40.91	-13	27.91
3 761.08	58.80	V	32.40	-36.69	54.51	-95.26	-40.75	-13	27.75
5 641.50	52.55	H	34.12	-34.21	52.46	-95.26	-42.80	-13	29.80
5 641.50	59.16	V	34.12	-34.21	59.07	-95.26	-36.19	-13	23.19
Above 5 700.00	Not detected	-	-	-	-	-	-	-	-
High Channel (1 905.0 MHz)									
3 806.11	58.57	H	32.39	-36.88	54.08	-95.26	-41.18	-13	28.18
3 806.14	59.77	V	32.39	-36.88	55.28	-95.26	-39.98	-13	26.98
5 709.14	57.02	H	34.14	-35.03	56.13	-95.26	-39.13	-13	26.13
5 708.97	59.90	V	34.14	-35.04	59.00	-95.26	-36.26	-13	23.26
Above 5 800.00	Not detected	-	-	-	-	-	-	-	-

NR Band 41 FCC (30 MHz - DFTS-OFDM BPSK) Ant. 5

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (2 511.00 MHz)									
4 994.82	41.49	V	33.20	-35.46	39.23	-95.26	-56.03	-25	31.03
Above 5 000.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (2 592.99 MHz)									
5 158.58	41.77	V	33.63	-35.66	39.74	-95.26	-55.52	-25	30.52
Above 5 200.00	Not detected	-	-	-	-	-	-	-	-
High Channel (2 674.98 MHz)									
5 322.76	43.28	V	33.99	-35.56	41.71	-95.26	-53.55	-25	28.55
Above 5 400.00	Not detected	-	-	-	-	-	-	-	-

NR Band 41 IC (30 MHz - DFTS-OFDM BPSK) Ant. 5

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (2 515.02 MHz)									
5 003.08	41.30	H	33.21	-35.57	38.94	-95.26	-56.32	-25	31.32
5 002.90	44.22	V	33.21	-35.56	41.87	-95.26	-53.39	-25	28.39
Above 5 100.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (2 595.00 MHz)									
5 162.76	42.71	H	33.65	-35.61	40.75	-95.26	-54.51	-25	29.51
5 162.80	46.02	V	33.65	-35.61	44.06	-95.26	-51.20	-25	26.20
Above 5 200.00	Not detected	-	-	-	-	-	-	-	-
High Channel (2 674.98 MHz)									
5 323.04	42.90	V	33.99	-35.56	41.33	-95.26	-53.93	-25	28.93
Above 5 400.00	Not detected	-	-	-	-	-	-	-	-

Remark;

1. AF = Antenna Factor, CL = Cable Loss, CF = Conversion Factor.
2. E (dBμV/m) = Measured Level (dBμV) + Antenna Factor (dB/m) + Cable Loss (dB) + AMP (dB).
3. E.I.R.P. (dB m) = E (dBμV/m) + CF (dB).
4. E.R.P. (dB m) = E (dBμV/m) + CF (dB) - 2.15 (dB); where E.R.P. and E.I.R.P. are expressed in consistent units.
5. CF (dB) = 20 log D - 104.8; where D is the measurement distance in meters, According to ANSI C63.26-2015 5.2.7
6. The frequency spectrum is examined from 9 kHz to the 10th harmonic of the fundamental frequency of the transmitter. No other spurious and harmonic emissions were reported greater than listed emissions above table.

- End of the Test Report -