

TEST REPORT

of

FCC Part 2 Subpart J, Part 22 Subpart C/H,
Part 24 Subpart E and Part 27 Subpart C
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: YZP-BK1100

IC Certification: 7414C-BK1100

Equipment Under Test : Telematics Modem
Model Name : LTD-BK1100
Variant Model Name(s) : -
FCC Applicant : LG Innotek Co., Ltd.
IC Applicant : LG Innotek Co., Ltd.
Manufacturer : LG Innotek Co., Ltd.
Date of Receipt : 2023.05.23
Date of Test(s) : 2023.05.24 ~ 2023.07.28
Date of Issue : 2023.07.28

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


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Tested by:


Murphy Kim

Technical
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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 Innotek Co., Ltd.
 FCC Address : 26, Hanamsandan 5beon-ro, Gwangsan-gu, Gwangju, South Korea, 506-731
 IC Applicant : LG Innotek Co., Ltd.
 IC Address : 26, Hanamsandan 5beon-ro, Gwangsan-gu, Gwangju, 506-731, Korea (Republic Of)
 Contact Person : Jeong, In-chang
 Phone No. : +82 62 950 0332

1.3. Details of Manufacturer

Company : LG Innotek Co., Ltd.
 Address : 30, Magokjungang 10-ro, Gangseo-gu, Seoul, Korea, 07796

1.4. Description of EUT

Kind of Product	Telematics Modem
Model Name	LTD-BK1100
Serial Number	CR1
Power Supply	DC 4 V
Rated Power	LTE Band 2, 4, 5, 7, 12, 17: 23 dB m
Frequency Range	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 17: 704 MHz ~ 716 MHz
Modulation Technique	QPSK, 16QAM
Antenna Type	Dipole Antenna
Antenna Gain*	Refer to the clause 1.13
H/W Version	B.0
S/W Version	01M_WCAN
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. 13, 2022	Annual	Oct. 13, 2023
Spectrum Analyzer	R&S	FSV30	103210	Dec. 07, 2022	Annual	Dec. 07, 2023
Spectrum Analyzer	Agilent	N9020A	MY53421758	Aug. 26, 2022	Annual	Aug. 26, 2023
Mobile Test Unit	R&S	CMW 500	144034	Feb. 17, 2023	Annual	Feb. 17, 2024
Communication Analyzer	Anritsu	MT8821C	6262192291	Oct. 11, 2022	Annual	Oct. 11, 2023
Power Meter	Anritsu	ML2495A	1223004	May 30, 2023	Annual	May 30, 2024
Power Sensor	Anritsu	MA2411B	1207272	May 30, 2023	Annual	May 30, 2024
Temperature Chamber	ESPEC CORP.	SH-662	93000533	Jun. 01, 2023	Annual	Jun. 01, 2024
Low Pass Filter	Mini-Circuits	NLP-1200+	V 8979400903-1	May 16, 2023	Annual	May 16, 2024
High Pass Filter	Wainwright Instrument GmbH	WHKX10-900-1000-18000-40SS	7	Mar. 02, 2023	Annual	Mar. 02, 2024
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	WHKX3.0/18G-6SS	21	Jun. 01, 2023	Annual	Jun. 01, 2024
High Pass Filter	Wainwright Instrument GmbH	WHNX7.5/26.5G-6SS	11	Oct. 24, 2022	Annual	Oct. 24, 2023
BRIDGE COUPLER	MARKI MICROWAVE INC	CBR16-0012	1542	May 16, 2023	Annual	May 16, 2024
Directional Coupler	KRYTAR	152613	122661	Mar. 02, 2023	Annual	Mar. 02, 2024
DC Power Supply	R&S	HMP2020	020089489	May 11, 2023	Annual	May 11, 2024
Preamplifier	H.P.	8447F	2944A03909	Aug. 04, 2022	Annual	Aug. 04, 2023
Preamplifier	R&S	SCU18F	100959	Jul. 13, 2023	Annual	Jul. 13, 2024
Preamplifier	TESTEK	TK-PA1840H	130016	Jan. 11, 2023	Annual	Jan. 11, 2024
Test Receiver	R&S	ESU26	100109	Jan. 18, 2023	Annual	Jan. 18, 2024
Loop Antenna	Schwarzbeck Mess-Elektronik	FMZB 1519	1519-039	Aug. 23, 2021	Biennial	Aug. 23, 2023
Bilog Antenna	Schwarzbeck Mess-Elektronik	VULB9163	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	MA4640-XP-ET	MA4640/536/383 30516/L	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 x W x H (9.6 m x 6.4 m x 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
Coaxial Cable	RADIALL	TESTPRO 3	182287	Apr. 14, 2023	Semi-Annual	Oct. 14, 2023
Coaxial Cable	RADIALL	TESTPRO 3	182288	Apr. 14, 2023	Semi-Annual	Oct. 14, 2023
Coaxial Cable	RADIALL	TESTPRO 3	182291	Apr. 14, 2023	Semi-Annual	Oct. 14, 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 and 27 / 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
§2.1046 §22.913(a)(5) §24.232(c) §27.50(c)(10) §27.50(d)(4) §27.50(h)(2)	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
§22.917(a) §24.238(a) §27.53(g) §27.53(h)(1) §27.53(m)(4)	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
§2.1046	RSS-Gen Issue 5 6.12	Conducted Output Power	Complied
§2.1049	RSS-Gen Issue 5 6.7	Occupied Bandwidth	Complied
§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 5.5 RSS-199 Issue 4 5.5	Peak-Average Ratio	Complied
§22.917(a) §24.238(a) §27.53(g) §27.53(h)(1) §27.53(m)(4)	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	Complied
§22.917(a) §24.238(a) §27.53(g) §27.53(h)(1) §27.53(m)(4)	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	Complied
§2.1055 §22.355 §24.235 §27.54	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	Complied

Note;

Due to the following changes, the test was performed for C2PC.
 - PCB layout, PAM, RF Filter, RF switch, Matching component

1.7. Sample Calculation for Offset

Where relevant, the following sample calculation is provided:

1.7.1. Conducted Test

Offset value (dB) = Directional Coupler (dB) + Cable loss (dB)

1.7.2. Radiation test

- E.I.R.P. (dB m) = Measured level (dB μ V) + Antenna factor (dB/m) + 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. Device Capabilities

This device contains the following capabilities;

LTE Band 17 (704 MHz ~ 716 MHz) is covered by LTE Band 12 (699 MHz ~ 716 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth. Therefore test data provided in this report covers LTE Band 17 as well as Band 12.

1.9. Worst Case Configuration and Mode

The worst-case is based on the conducted output power measurement investigation results. All testing was performed using QPSK and 16QAM modulations. However, the spurious radiated emission and spurious at antenna terminal were only performed on bandwidth and RB offset (with RB size 1) with the highest conducted power in QPSK.

The peak to average ratio were tested only 16QAM modulation as worst case.

The radiation test of the EUT was investigated in three orthogonal orientations X, Y, and Z, and the worst case data is reported.

1.10. Measurement Configuration

Test Items	Band	Test Channel			Bandwidth (MHz)						Modulation		RB #			
		Low	Mid	High	1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	
Conducted Output Power	2	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
	4	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
	5	V	V	V	V	V	V	V			V	V	V	V	V	V
	7	V	V	V			V	V	V	V	V	V	V	V	V	V
	12/17	V	V	V	V	V	V	V			V	V	V	V	V	V
Frequency Stability	2	-	V	-	-	-	V	-	-	-	V	-	-	-	-	V
	4	-	V	-	-	-	V	-	-	-	V	-	-	-	-	V
	5	-	V	-	-	-	V	-			V	-	-	-	-	V
	7	-	V	-			V	-	-	-	V	-	-	-	-	V
	12/17	-	V	-	-	-	V	-			V	-	-	-	-	V
Occupied Bandwidth	2	V	V	V	V	V	V	V	V	V	V	V	-	-	-	V
	4	V	V	V	V	V	V	V	V	V	V	V	-	-	-	V
	5	V	V	V	V	V	V	V			V	V	-	-	-	V
	7	V	V	V			V	V	V	V	V	V	-	-	-	V
	12/17	V	V	V	V	V	V	V			V	V	-	-	-	V
Peak-to-Average Ratio	2	V	V	V	V	V	V	V	V	V	-	V	-	-	-	V
	4	V	V	V	V	V	V	V	V	V	-	V	-	-	-	V
	5	V	V	V	V	V	V	V			-	V	-	-	-	V
	7	V	V	V			V	V	V	V	-	V	-	-	-	V
	12/17	V	V	V	V	V	V	V			-	V	-	-	-	V
Band edge	2	V	-	V	V	V	V	V	V	V	V	V	V	-	-	V
	4	V	-	V	V	V	V	V	V	V	V	V	V	-	-	V
	5	V	-	V	V	V	V	V			V	V	V	-	-	V
	7	V	-	V			V	V	V	V	V	V	V	-	-	V
	12/17	V	-	V	V	V	V	V			V	V	V	-	-	V
Spurious at antenna terminal & Radiated Spurious Emissions	2	V	V	V	Worst case											
	4	V	V	V	Worst case											
	5	V	V	V	Worst case											
	7	V	V	V	Worst case											
	12/17	V	V	V	Worst case											

*B17 is not supported 1.4M and 3M bandwidth.

1.11. Measurement Uncertainty

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

Parameter	Uncertainty	
Conducted Output Power	0.33 dB	
Occupied Bandwidth	0.04 MHz	
Conducted Spurious Emission	0.85 dB	
Peak to Average Ratio	0.66 dB	
Frequency Stability	0.11 kHz	
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.

1.12. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL004282	2023.07.28	Initial

1.13. Antenna Information

Band	Operating Frequency (MHz)	Antenna Peak Gain (dB i)
LTE 2	1 850 ~ 1 910	5.97
LTE 4	1 710 ~ 1 755	4.13
LTE 5	824 ~ 849	2.18
LTE 7	2 500 ~ 2 570	3.97
LTE 12/17	699 ~ 716	-1.74

1.14. Emission Designator and Max Power

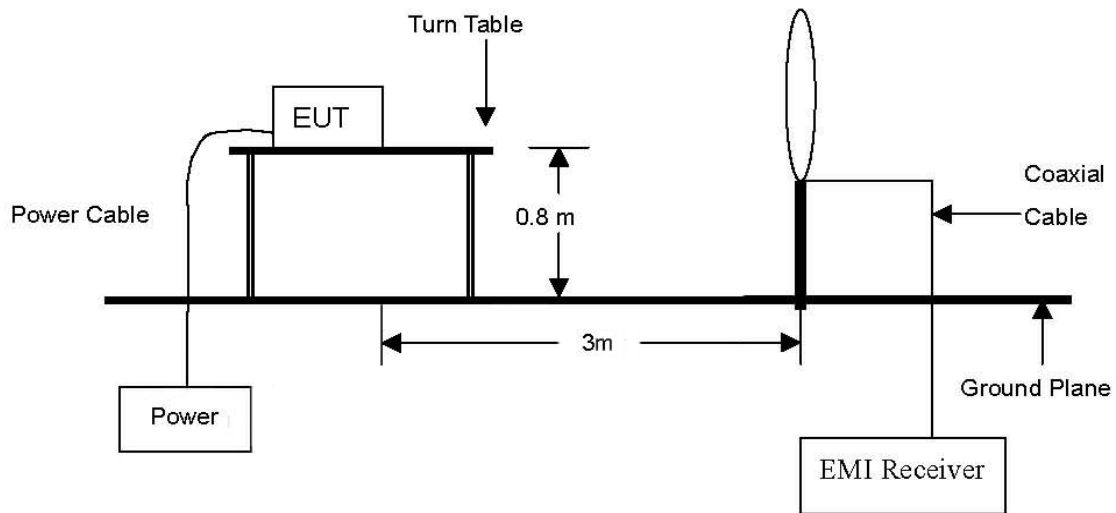
Band	Band width (MHz)	Modulation	Low Freq. (MHz)	Upper Freq. (MHz)	Conducted Average (dB m)	Ant. Gain (dB i)	E.R.P. / E.I.R.P. Average (dB m)	E.R.P. / E.I.R.P. Average (W)	Emission Designator
2	1.4	QPSK	1 850.7	1 909.3	22.96	5.97	28.93	0.782	1M10G7D
		16QAM			22.09		28.06	0.640	1M09W7D
	3	QPSK	1 851.5	1 908.5	23.04		29.01	0.796	2M69G7D
		16QAM			22.14		28.11	0.647	2M70W7D
	5	QPSK	1 852.5	1 907.5	23.06		29.03	0.800	4M51G7D
		16QAM			22.10		28.07	0.641	4M51W7D
	10	QPSK	1 855	1 905	23.15		29.12	0.817	8M92G7D
		16QAM			22.25		28.22	0.664	8M95W7D
	15	QPSK	1 857.5	1 902.5	23.20		29.17	0.826	13M4G7D
		16QAM			22.12		28.09	0.644	13M4W7D
	20	QPSK	1 860	1 900	23.22		29.19	0.830	17M8G7D
		16QAM			22.25		28.22	0.664	17M8W7D
4	1.4	QPSK	1 710.7	1 754.3	22.98	4.13	27.11	0.514	1M09G7D
		16QAM			21.61		25.74	0.375	1M09W7D
	3	QPSK	1 711.5	1 753.5	22.98		27.11	0.514	2M68G7D
		16QAM			21.86		25.99	0.397	2M70W7D
	5	QPSK	1 712.5	1 752.5	23.02		27.15	0.519	4M49G7D
		16QAM			22.07		26.20	0.417	4M49W7D
	10	QPSK	1 715	1 750	23.06		27.19	0.524	8M92G7D
		16QAM			21.81		25.94	0.393	8M92W7D
	15	QPSK	1 717.5	1 747.5	23.25		27.38	0.547	13M5G7D
		16QAM			22.01		26.14	0.411	13M4W7D
	20	QPSK	1 720	1 745	23.29		27.42	0.552	17M8G7D
		16QAM			22.06		26.19	0.416	17M8W7D
5	1.4	QPSK	824.7	848.3	23.26	2.18	23.29	0.213	1M10G7D
		16QAM			22.23		22.26	0.168	1M10W7D
	3	QPSK	825.5	847.5	23.27		23.30	0.214	2M69G7D
		16QAM			22.31		22.34	0.171	2M69W7D
	5	QPSK	826.5	846.5	23.36		23.39	0.218	4M49G7D
		16QAM			22.27		22.30	0.170	4M51W7D
	10	QPSK	829	844	23.36		23.39	0.218	8M95G7D
		16QAM			22.20		22.23	0.167	8M89W7D
7	5	QPSK	2 502.5	2 567.5	22.89	3.97	26.86	0.485	4M49G7D
		16QAM			21.73		25.70	0.372	4M51W7D
	10	QPSK	2 505	2 565	22.99		26.96	0.497	8M95G7D
		16QAM			21.83		25.80	0.380	8M92W7D
	15	QPSK	2 507.5	2 562.5	23.21		27.18	0.522	13M5G7D
		16QAM			22.15		26.12	0.409	13M5W7D
	20	QPSK	2 510	2 560	23.22		27.19	0.524	17M8G7D
		16QAM			22.29		26.26	0.423	17M9W7D

Band	Band width (MHz)	Modulation	Low Freq. (MHz)	Upper Freq. (MHz)	Conducted Average (dB m)	Ant. Gain (dB i)	E.R.P. / E.I.R.P. Average (dB m)	E.R.P. / E.I.R.P. Average (W)	Emission Designator
12/17	1.4	QPSK	699.7	715.3	22.59	-1.74	18.70	0.074	1M09G7D
		16QAM			21.68		17.79	0.060	1M09W7D
	3	QPSK	700.5	714.5	22.42		18.53	0.071	2M68G7D
		16QAM			21.14		17.25	0.053	2M68W7D
	5	QPSK	701.5	713.5	22.58		18.69	0.074	4M51G7D
		16QAM			21.47		17.58	0.057	4M49W7D
	10	QPSK	704	711	22.61		18.72	0.074	8M92G7D
		16QAM			21.40		17.51	0.056	8M92W7D

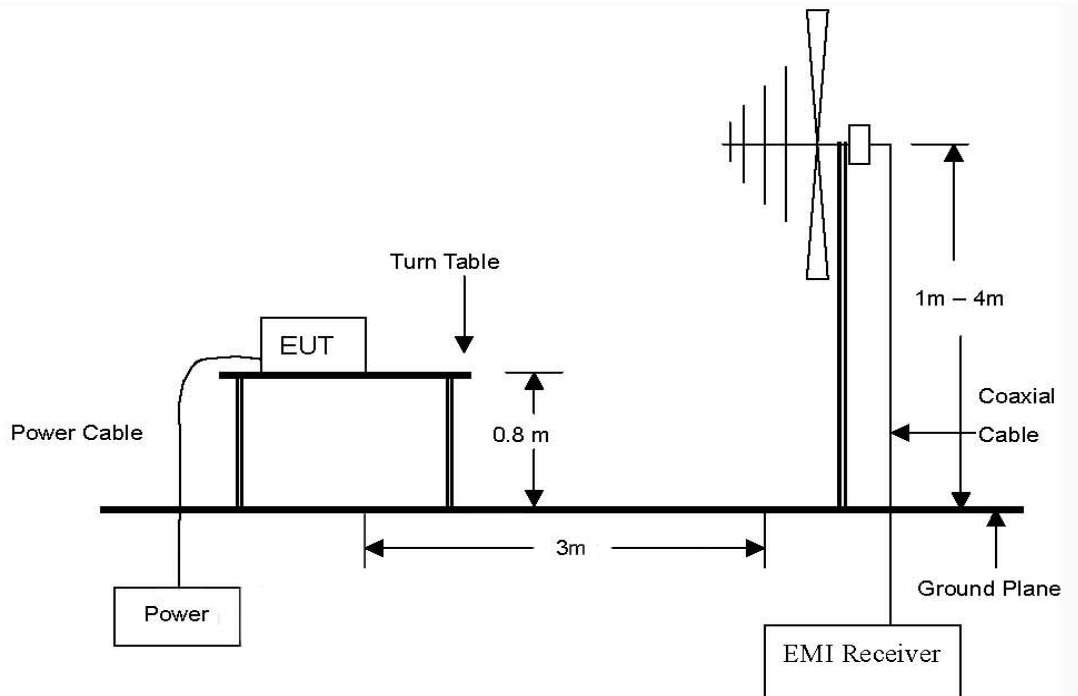
2. E.R.P. / E.I.R.P. & Radiated Spurious Emissions

2.1. Test setup

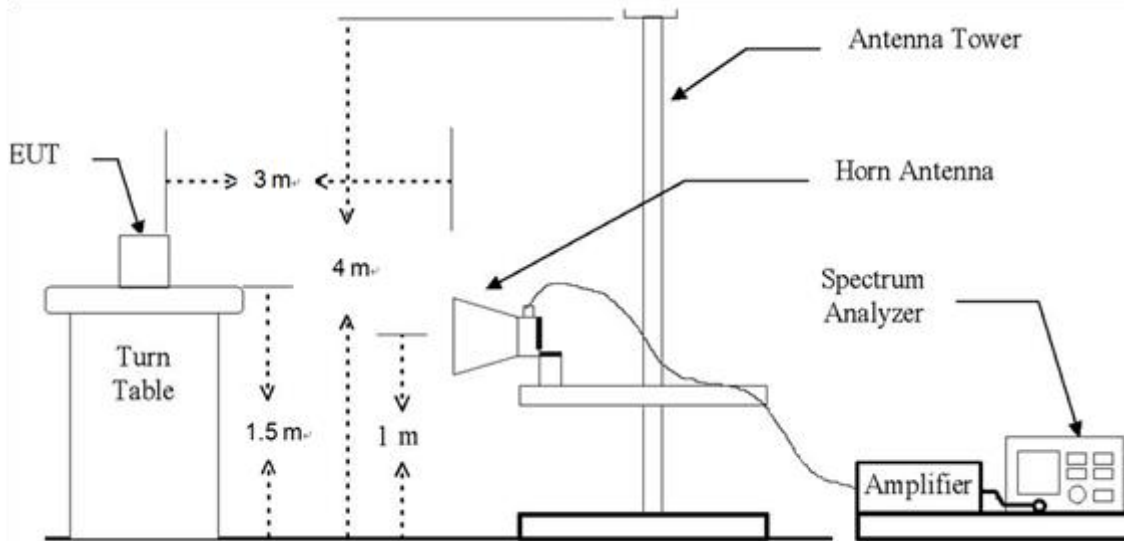
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 kHz to 30 MHz.



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



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 GHz to 26 GHz Emissions.



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(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.

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 radiated power (e.r.p.) shall not exceed 7 watts for mobile equipment and 3 watts for portable equipment. The effective isotropic radiated power (e.i.r.p.) shall not exceed the limits specified in SRSP-503 for base station equipment.

- 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. Mobile stations and hand-held portables are limited to 2 watts maximum e.i.r.p. The equipment shall employ means to limit the power to the minimum necessary for successful communication.

- 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. The limits in this RSS are specified for the purpose of certification and may not apply to all deployment scenarios. Consult SRSP-513 and SRSP-519 for more details on the bands 2 110-2 180 MHz and 2 180-2 200 MHz respectively.

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

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

2.2.2. Limit of Radiated Spurious Emissions

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(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 that $43 + 10 \log_{10} (P)$ dB on all frequencies between 2 490.5 MHz and 2 496 MHz and $55 + 10 \log_{10} (P)$ dB at or below 2 490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2 495 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.

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- 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 $43 + 10 \log_{10} p(\text{watts})$.

(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 $43 + 10 \log_{10} p(\text{watts})$. 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 limits
$\leq 1 \text{ MHz}$	-13 dB m/(1 % of OB*)
$> 1 \text{ MHz}$	-13 dB m/MHz

* 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 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 limits
0-1	-10 dBm/(2 % of OB*)
1-5	-10 dBm/MHz
5-X**	-13 dBm/MHz
≥ X	-25 dBm/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 dBm/MHz on all frequencies between 2 490.5 MHz and 2 496 MHz, and -25 dBm/MHz at or below 2 490.5 MHz.

2.3. Test Procedure: Based on ANSI/TIA 603E: 2016 and ANSI C63.26-2015 and 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 x RBW,
Detector = RMS, trace mode = max hold, per the guidelines of 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. Test results

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

2.4.1. E.R.P. / E.I.R.P.

Band	Frequency (MHz)	Maximum Conducted Power (dB m)	Maximum Conducted Power (W)	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
2	1 850 ~ 1 910	23.22	0.210	5.97	29.19	0.830			2 W E.I.R.P.
4	1 710 ~ 1 755	23.29	0.213	4.13	27.42	0.552			1 W E.I.R.P.
5	824 ~ 849	23.36	0.217	2.18	25.54	0.358	23.39	0.218	7 W E.R.P.
7	2 500 ~ 2 570	23.22	0.210	3.97	27.19	0.524			2 W E.I.R.P.
12/17	699 ~ 716	22.61	0.182	-1.74	20.87	0.122	18.72	0.074	30 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.

2.4.2. Radiated spurious emissions

LTE band 2 (20 MHz - QPSK)

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 (1 860 MHz)									
3 702.11	50.67	H	32.21	-33.16	49.72	-95.26	-45.54	-13	32.54
3 702.22	51.53	V	32.21	-33.16	50.58	-95.26	-44.68	-13	31.68
5 553.27	42.81	H	34.20	-30.90	46.11	-95.26	-49.15	-13	36.15
5 553.56	46.10	V	34.20	-30.91	49.39	-95.26	-45.87	-13	32.87
Above 5 600.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (1 880 MHz)									
3 742.11	47.78	H	32.37	-32.77	47.38	-95.26	-47.88	-13	34.88
3 742.22	47.56	V	32.37	-32.76	47.17	-95.26	-48.09	-13	35.09
5 613.15	46.61	H	34.17	-30.31	50.47	-95.26	-44.79	-13	31.79
5 613.32	52.51	V	34.17	-30.30	56.38	-95.26	-38.88	-13	25.88
Above 5 700.00	Not detected	-	-	-	-	-	-	-	-
High Channel (1 900 MHz)									
3 782.29	49.13	H	32.40	-32.96	48.57	-95.26	-46.69	-13	33.69
3 782.13	50.14	V	32.40	-32.96	49.58	-95.26	-45.68	-13	32.68
5 673.27	50.93	H	34.10	-30.08	54.95	-95.26	-40.31	-13	27.31
5 673.30	52.19	V	34.10	-30.08	56.21	-95.26	-39.05	-13	26.05
Above 5 700.00	Not detected	-	-	-	-	-	-	-	-

LTE band 4 (20 MHz - QPSK)

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 (1 720 MHz)									
3 422.07	46.83	H	31.09	-33.44	44.48	-95.26	-50.78	-13	37.78
3 422.00	46.75	V	31.09	-33.44	44.40	-95.26	-50.86	-13	37.86
5 133.19	50.45	V	33.60	-31.42	52.63	-95.26	-42.63	-13	29.63
Above 5 200.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (1 732.5 MHz)									
3 447.39	48.09	H	31.19	-33.56	45.72	-95.26	-49.54	-13	36.54
3 447.13	48.74	V	31.19	-33.56	46.37	-95.26	-48.89	-13	35.89
5 170.67	45.61	V	33.68	-31.28	48.01	-95.26	-47.25	-13	34.25
Above 5 200.00	Not detected	-	-	-	-	-	-	-	-
High Channel (1 745 MHz)									
3 472.20	44.41	H	31.24	-33.73	41.92	-95.26	-53.34	-13	40.34
3 472.14	45.16	V	31.24	-33.73	42.67	-95.26	-52.59	-13	39.59
5 208.29	43.06	V	33.78	-30.75	46.09	-95.26	-49.17	-13	36.17
Above 5 300.00	Not detected	-	-	-	-	-	-	-	-

LTE band 5 (5 MHz - QPSK)

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (826.5 MHz)									
1 649.17	60.42	H	25.70	-37.36	48.76	-97.41	-48.65	-13	35.65
1 649.20	58.19	V	25.70	-37.36	46.53	-97.41	-50.88	-13	37.88
4 122.99	47.34	V	32.15	-32.66	46.83	-97.41	-50.58	-13	37.58
Above 4 200.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (836.5 MHz)									
1 664.16	66.11	H	25.93	-37.48	54.56	-97.41	-42.85	-13	29.85
1 664.23	66.22	V	25.93	-37.48	54.67	-97.41	-42.74	-13	29.74
4 160.41	44.60	V	32.12	-32.59	44.13	-97.41	-53.28	-13	40.28
Above 4 200.00	Not detected	-	-	-	-	-	-	-	-
High Channel (846.5 MHz)									
1 679.22	61.26	H	26.17	-37.52	49.91	-97.41	-47.50	-13	34.50
1 679.14	58.54	V	26.17	-37.52	47.19	-97.41	-50.22	-13	37.22
4 197.95	43.68	V	32.20	-32.82	43.06	-97.41	-54.35	-13	41.35
Above 4 200.00	Not detected	-	-	-	-	-	-	-	-

LTE band 7 (20 MHz - QPSK)

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 MHz)									
5 002.27	42.87	H	33.21	-31.36	44.72	-95.26	-50.54	-25	25.54
5 002.19	51.08	V	33.21	-31.36	52.93	-95.26	-42.33	-25	17.33
Above 5 100.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (2 535 MHz)									
5 052.14	42.75	H	33.41	-31.64	44.52	-95.26	-50.74	-25	25.74
5 052.16	48.96	V	33.41	-31.64	50.73	-95.26	-44.53	-25	19.53
Above 5 100.00	Not detected	-	-	-	-	-	-	-	-
High Channel (2 560 MHz)									
5 102.26	43.81	H	33.60	-30.98	46.43	-95.26	-48.83	-25	23.83
5 102.18	47.41	V	33.60	-30.97	50.04	-95.26	-45.22	-25	20.22
Above 5 200.00	Not detected	-	-	-	-	-	-	-	-

LTE band 12/17(10 MHz - QPSK)

Frequency (MHz)	Measured Level (dB μ V)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB μ V/m)	CF (dB)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (704 MHz)									
1 399.21	64.37	H	25.30	-37.79	51.88	-97.41	-45.53	-13	32.53
1 399.04	59.61	V	25.30	-37.79	47.12	-97.41	-50.29	-13	37.29
Above 1 400.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (707.5 MHz)									
1 406.21	67.10	H	25.28	-37.86	54.52	-97.41	-42.89	-13	29.89
1 406.20	62.36	V	25.28	-37.86	49.78	-97.41	-47.63	-13	34.63
Above 1 500.00	Not detected	-	-	-	-	-	-	-	-
High Channel (711 MHz)									
1 412.94	58.72	H	25.25	-37.93	46.04	-97.41	-51.37	-13	38.37
1 413.29	55.78	V	25.25	-37.93	43.10	-97.41	-54.31	-13	41.31
Above 1 500.00	Not detected	-	-	-	-	-	-	-	-

Remark;

1. AF = Antenna Factor, CL = Cable Loss, CF = Conversion Factor.
2. E (dB μ V/m) = Measured Level (dB μ V) + Antenna Factor (dB/m) + AMP (dB) + Cable Loss (dB).
3. E.I.R.P. (dB m) = E (dB μ V/m) + CF (dB).
4. E.R.P. (dB m) = E (dB μ V/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 KDB 971168 D01 v03r01 5.8.4.
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.

3. Conducted Output Power

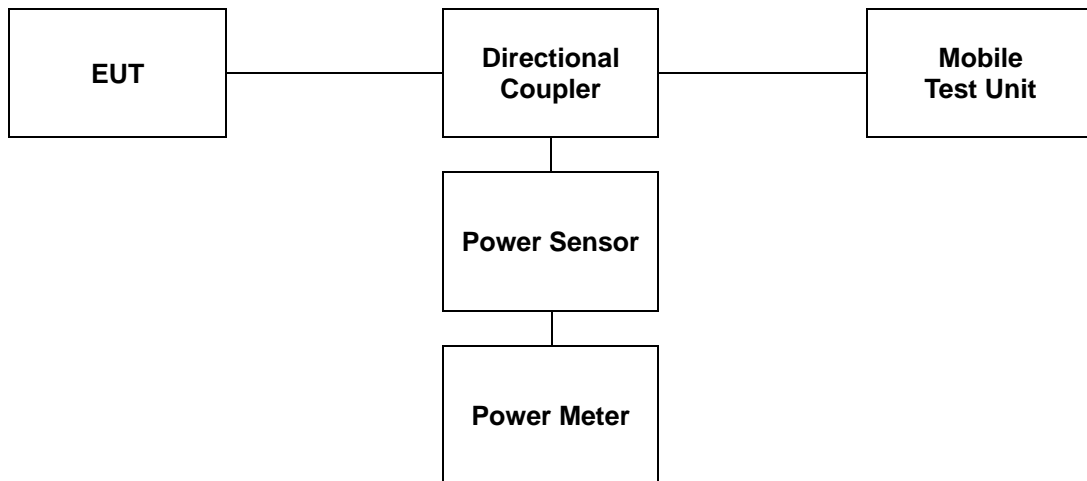
3.1. Limit

CFR 47, Section FCC §2.1046 and IC RSS-Gen Issue 5 6.12.

3.2. Test Procedure

Output power shall be measured at the RF output terminals for all configurations.

1. The RF output of the transmitter was connected to the input of the mobile test unit in order to establish communication with the EUT.
2. The EUT was set up for the max. output power with pseudo random data modulation by using mobile test unit parameters.
3. The measurement performed using a wideband RF power meter.
4. This EUT was tested under all configurations and the highest power was investigated and reported.



3.3. Test Result

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

LTE Band 2									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				18607 (1 850.7 MHz)		18900 (1 880.0 MHz)		19193 (1 909.3 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
1.4	QPSK	1	0	22.87	0.194	22.68	0.185	22.67	0.185
		1	3	22.96	0.198	22.76	0.189	22.65	0.184
		1	5	22.58	0.181	22.65	0.184	22.64	0.184
		3	0	22.94	0.197	22.76	0.189	22.71	0.187
		3	2	22.94	0.197	22.80	0.191	22.70	0.186
		3	3	22.96	0.198	22.80	0.191	22.69	0.186
	16QAM	6	0	21.88	0.154	22.74	0.188	22.57	0.181
		1	0	21.65	0.146	22.02	0.159	21.62	0.145
		1	3	21.76	0.150	22.09	0.162	21.39	0.138
		1	5	21.54	0.143	21.58	0.144	21.53	0.142
		3	0	21.64	0.146	21.56	0.143	21.57	0.144
		3	2	22.03	0.160	21.45	0.140	21.53	0.142
		3	3	21.94	0.156	21.51	0.142	21.58	0.144
		6	0	20.62	0.115	21.47	0.140	21.48	0.141

LTE Band 2									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				18615 (1 851.5 MHz)		18900 (1 880.0 MHz)		19185 (1 908.5 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
3	QPSK	1	0	22.57	0.181	22.91	0.195	22.71	0.187
		1	7	22.67	0.185	23.04	0.201	22.79	0.190
		1	14	22.68	0.185	22.69	0.186	22.87	0.194
		8	0	22.63	0.183	21.69	0.148	21.77	0.150
		8	4	22.56	0.180	21.75	0.150	21.77	0.150
		8	7	22.64	0.184	21.77	0.150	21.78	0.151
		15	0	21.91	0.155	21.73	0.149	21.66	0.147
	16QAM	1	0	22.14	0.164	21.62	0.145	21.50	0.141
		1	7	21.80	0.151	21.54	0.143	21.57	0.144
		1	14	21.69	0.148	21.51	0.142	21.60	0.145
		8	0	21.90	0.155	20.70	0.117	20.62	0.115
		8	4	21.71	0.148	20.77	0.119	20.74	0.119
		8	7	21.75	0.150	20.75	0.119	20.53	0.113
		15	0	20.64	0.116	20.69	0.117	20.74	0.119

LTE Band 2									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				18625 (1 852.5 MHz)		18900 (1 880.0 MHz)		19175 (1 907.5 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
5	QPSK	1	0	22.70	0.186	23.06	0.202	22.75	0.188
		1	12	22.91	0.195	23.05	0.202	22.99	0.199
		1	24	22.95	0.197	22.84	0.192	22.69	0.186
		12	0	22.87	0.194	22.83	0.192	21.69	0.148
		12	6	22.88	0.194	22.93	0.196	21.81	0.152
		12	13	22.89	0.195	22.78	0.190	21.76	0.150
		25	0	22.88	0.194	21.81	0.152	21.66	0.147
	16QAM	1	0	21.69	0.148	21.59	0.144	21.51	0.142
		1	12	21.80	0.151	21.73	0.149	21.40	0.138
		1	24	21.84	0.153	21.56	0.143	21.41	0.138
		12	0	22.04	0.160	21.81	0.152	20.57	0.114
		12	6	22.10	0.162	21.88	0.154	20.78	0.120
		12	13	21.79	0.151	21.92	0.156	20.60	0.115
		25	0	21.88	0.154	20.89	0.123	20.87	0.122

LTE Band 2									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				18650 (1 855.0 MHz)		18900 (1 880.0 MHz)		19150 (1 905.0 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
10	QPSK	1	0	23.07	0.203	23.15	0.207	22.89	0.195
		1	25	23.14	0.206	23.00	0.200	22.92	0.196
		1	49	23.13	0.206	22.95	0.197	23.12	0.205
		25	0	22.96	0.198	23.05	0.202	22.72	0.187
		25	12	23.02	0.200	22.93	0.196	22.75	0.188
		25	25	22.99	0.199	22.98	0.199	22.83	0.192
		50	0	23.08	0.203	21.90	0.155	21.73	0.149
	16QAM	1	0	21.89	0.155	21.83	0.152	21.53	0.142
		1	25	21.87	0.154	21.77	0.150	21.63	0.146
		1	49	21.74	0.149	21.69	0.148	21.53	0.142
		25	0	22.12	0.163	22.06	0.161	21.74	0.149
		25	12	21.88	0.154	22.10	0.162	21.86	0.153
		25	25	21.84	0.153	22.25	0.168	21.94	0.156
		50	0	21.86	0.153	20.86	0.122	20.80	0.120

LTE Band 2									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				18675 (1 857.5 MHz)		18900 (1 880.0 MHz)		19125 (1 902.5 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
15	QPSK	1	0	23.14	0.206	23.02	0.200	22.82	0.191
		1	36	23.06	0.202	23.10	0.204	22.98	0.199
		1	74	23.07	0.203	23.20	0.209	22.89	0.195
		36	0	23.18	0.208	22.90	0.195	22.70	0.186
		36	18	23.03	0.201	22.97	0.198	22.75	0.188
		36	37	23.04	0.201	23.00	0.200	22.78	0.190
		75	0	22.92	0.196	22.88	0.194	21.72	0.149
	16QAM	1	0	21.93	0.156	21.69	0.148	21.43	0.139
		1	36	21.90	0.155	21.73	0.149	21.53	0.142
		1	74	21.78	0.151	21.77	0.150	21.72	0.149
		36	0	21.94	0.156	21.87	0.154	21.70	0.148
		36	18	21.90	0.155	22.02	0.159	21.77	0.150
		36	37	21.95	0.157	22.12	0.163	21.71	0.148
		75	0	21.90	0.155	21.88	0.154	20.79	0.120

LTE Band 2									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				18700 (1 860.0 MHz)		18900 (1 880.0 MHz)		19100 (1 900.0 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
20	QPSK	1	0	23.14	0.206	22.94	0.197	22.69	0.186
		1	50	23.22	0.210	23.12	0.205	22.67	0.185
		1	99	23.15	0.207	23.03	0.201	22.81	0.191
		50	0	23.09	0.204	22.72	0.187	22.57	0.181
		50	25	23.05	0.202	22.90	0.195	22.58	0.181
		50	50	23.05	0.202	22.91	0.195	22.68	0.185
		100	0	23.04	0.201	22.88	0.194	21.57	0.144
	16QAM	1	0	22.25	0.168	21.49	0.141	21.37	0.137
		1	50	21.80	0.151	21.61	0.145	21.48	0.141
		1	99	21.78	0.151	21.74	0.149	21.55	0.143
		50	0	21.99	0.158	21.77	0.150	21.44	0.139
		50	25	22.02	0.159	21.95	0.157	21.53	0.142
		50	50	22.07	0.161	21.90	0.155	21.58	0.144
		100	0	21.93	0.156	21.72	0.149	20.64	0.116

LTE Band 4									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				19957 (1 710.7 MHz)		20175 (1 732.5 MHz)		20393 (1 754.3 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
1.4	QPSK	1	0	22.73	0.187	22.91	0.195	22.61	0.182
		1	3	22.86	0.193	22.89	0.195	22.59	0.182
		1	5	22.78	0.190	22.98	0.199	22.73	0.187
		3	0	22.63	0.183	22.97	0.198	22.72	0.187
		3	2	22.78	0.190	22.89	0.195	22.72	0.187
		3	3	22.57	0.181	22.89	0.195	22.72	0.187
	6	0	21.47	0.140	22.97	0.198	22.73	0.187	
	16QAM	1	0	21.19	0.132	21.43	0.139	21.22	0.132
		1	3	21.16	0.131	21.61	0.145	21.39	0.138
		1	5	21.34	0.136	21.48	0.141	21.32	0.136
		3	0	21.42	0.139	21.45	0.140	21.27	0.134
		3	2	21.46	0.140	21.45	0.140	21.35	0.136
		3	3	21.42	0.139	21.55	0.143	21.30	0.135
	6	0	20.41	0.110	21.55	0.143	21.40	0.138	

LTE Band 4									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				19965 (1 711.5 MHz)		20175 (1 732.5 MHz)		20385 (1 753.5 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
3	QPSK	1	0	22.79	0.190	22.86	0.193	22.66	0.185
		1	7	22.71	0.187	22.96	0.198	22.75	0.188
		1	14	22.68	0.185	22.98	0.199	22.77	0.189
		8	0	22.67	0.185	22.01	0.159	21.46	0.140
		8	4	22.64	0.184	21.91	0.155	21.37	0.137
		8	7	22.66	0.185	21.87	0.154	21.37	0.137
	15	0	21.44	0.139	21.89	0.155	21.47	0.140	
	16QAM	1	0	21.32	0.136	21.69	0.148	21.05	0.127
		1	7	21.27	0.134	21.67	0.147	21.25	0.133
		1	14	21.13	0.130	21.86	0.153	21.24	0.133
		8	0	21.64	0.146	20.58	0.114	20.32	0.108
		8	4	21.32	0.136	20.71	0.118	20.50	0.112
		8	7	21.67	0.147	20.66	0.116	20.52	0.113
	15	0	20.31	0.107	20.83	0.121	20.64	0.116	

LTE Band 4									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				19975 (1 712.5 MHz)		20175 (1 732.5 MHz)		20375 (1 752.5 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
5	QPSK	1	0	22.60	0.182	22.86	0.193	22.62	0.183
		1	12	22.64	0.184	23.02	0.200	22.86	0.193
		1	24	22.73	0.187	23.01	0.200	22.96	0.198
		12	0	22.58	0.181	22.86	0.193	21.63	0.146
		12	6	22.62	0.183	22.99	0.199	21.58	0.144
		12	13	22.57	0.181	22.98	0.199	21.58	0.144
		25	0	22.63	0.183	21.90	0.155	21.65	0.146
	16QAM	1	0	21.17	0.131	21.99	0.158	21.12	0.129
		1	12	21.11	0.129	21.68	0.147	20.95	0.124
		1	24	21.24	0.133	21.59	0.144	21.55	0.143
		12	0	21.43	0.139	21.56	0.143	20.57	0.114
		12	6	21.49	0.141	22.07	0.161	20.85	0.122
		12	13	21.32	0.136	22.07	0.161	20.92	0.124
		25	0	21.24	0.133	20.82	0.121	20.59	0.115

LTE Band 4									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				20000 (1 715.0 MHz)		20175 (1 732.5 MHz)		20350 (1 750.0 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
10	QPSK	1	0	22.68	0.185	22.97	0.198	22.87	0.194
		1	25	22.86	0.193	23.06	0.202	22.76	0.189
		1	49	22.95	0.197	22.95	0.197	22.58	0.181
		25	0	22.72	0.187	22.88	0.194	22.63	0.183
		25	12	22.75	0.188	22.92	0.196	22.59	0.182
		25	25	22.78	0.190	22.90	0.195	22.68	0.185
		50	0	22.74	0.188	21.77	0.150	21.48	0.141
	16QAM	1	0	21.79	0.151	21.46	0.140	21.41	0.138
		1	25	21.40	0.138	21.59	0.144	21.20	0.132
		1	49	21.40	0.138	21.73	0.149	21.33	0.136
		25	0	21.58	0.144	21.56	0.143	21.38	0.137
		25	12	21.64	0.146	21.78	0.151	21.67	0.147
		25	25	21.58	0.144	21.81	0.152	21.56	0.143
		50	0	21.29	0.135	20.80	0.120	20.62	0.115

LTE Band 4									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				20025 (1 717.5 MHz)		20175 (1 732.5 MHz)		20325 (1 747.5 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
15	QPSK	1	0	22.77	0.189	23.05	0.202	23.25	0.211
		1	36	22.84	0.192	23.03	0.201	23.15	0.207
		1	74	22.62	0.183	22.99	0.199	22.96	0.198
		36	0	22.57	0.181	22.91	0.195	23.06	0.202
		36	18	22.53	0.179	22.99	0.199	22.94	0.197
		36	37	22.47	0.177	22.80	0.191	22.68	0.185
		75	0	22.52	0.179	22.85	0.193	21.94	0.156
	16QAM	1	0	21.35	0.136	21.57	0.144	21.63	0.146
		1	36	21.36	0.137	21.56	0.143	21.80	0.151
		1	74	21.23	0.133	21.67	0.147	21.58	0.144
		36	0	21.50	0.141	22.01	0.159	21.92	0.156
		36	18	21.29	0.135	21.95	0.157	21.87	0.154
		36	37	21.27	0.134	21.89	0.155	21.81	0.152
		75	0	21.34	0.136	21.60	0.145	20.97	0.125

LTE Band 4									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				20050 (1 720.0 MHz)		20175 (1 732.5 MHz)		20300 (1 745.0 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
20	QPSK	1	0	22.82	0.191	23.21	0.209	23.02	0.200
		1	50	22.77	0.189	23.05	0.202	23.27	0.212
		1	99	22.66	0.185	23.04	0.201	23.29	0.213
		50	0	22.80	0.191	22.98	0.199	23.01	0.200
		50	25	22.44	0.175	22.99	0.199	23.07	0.203
		50	50	22.74	0.188	23.03	0.201	23.04	0.201
		100	0	22.57	0.181	22.96	0.198	21.92	0.156
	16QAM	1	0	21.24	0.133	21.70	0.148	21.80	0.151
		1	50	21.44	0.139	21.64	0.146	21.77	0.150
		1	99	21.15	0.130	21.64	0.146	21.76	0.150
		50	0	21.59	0.144	22.06	0.161	21.77	0.150
		50	25	21.37	0.137	21.89	0.155	21.93	0.156
		50	50	21.37	0.137	21.92	0.156	21.91	0.155
		100	0	21.21	0.132	21.72	0.149	21.05	0.127

LTE Band 5									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				20407 (824.7 MHz)		20525 (836.5 MHz)		20643 (848.3 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
1.4	QPSK	1	0	23.14	0.206	23.18	0.208	23.05	0.202
		1	3	23.24	0.211	23.14	0.206	23.12	0.205
		1	5	23.00	0.200	23.14	0.206	23.26	0.212
		3	0	23.06	0.202	23.13	0.206	23.25	0.211
		3	2	22.88	0.194	23.13	0.206	23.24	0.211
		3	3	22.94	0.197	23.17	0.207	23.04	0.201
	6	0	21.95	0.157	23.14	0.206	23.12	0.205	
	16QAM	1	0	21.92	0.156	22.08	0.161	21.94	0.156
		1	3	21.94	0.156	22.05	0.160	21.88	0.154
		1	5	21.92	0.156	22.07	0.161	21.73	0.149
		3	0	22.03	0.160	22.07	0.161	21.84	0.153
		3	2	21.72	0.149	21.88	0.154	21.99	0.158
		3	3	22.23	0.167	21.97	0.157	22.02	0.159
	6	0	20.95	0.124	22.07	0.161	21.84	0.153	

LTE Band 5									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				20415 (825.5 MHz)		20525 (836.5 MHz)		20635 (847.5 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
3	QPSK	1	0	23.12	0.205	23.27	0.212	23.11	0.205
		1	7	23.13	0.206	23.23	0.210	23.24	0.211
		1	14	23.02	0.200	23.13	0.206	23.19	0.208
		8	0	22.97	0.198	22.13	0.163	22.25	0.168
		8	4	22.98	0.199	22.07	0.161	22.25	0.168
		8	7	23.00	0.200	22.18	0.165	22.12	0.163
	15	0	21.89	0.155	22.16	0.164	22.12	0.163	
	16QAM	1	0	21.86	0.153	22.31	0.170	21.72	0.149
		1	7	22.04	0.160	21.95	0.157	21.90	0.155
		1	14	21.86	0.153	22.02	0.159	21.83	0.152
		8	0	21.89	0.155	21.07	0.128	21.06	0.128
		8	4	22.18	0.165	21.06	0.128	21.16	0.131
		8	7	21.87	0.154	21.26	0.134	21.05	0.127
	15	0	20.78	0.120	21.21	0.132	21.29	0.135	

LTE Band 5									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				20425 (826.5 MHz)		20525 (836.5 MHz)		20625 (846.5 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
5	QPSK	1	0	23.12	0.205	23.11	0.205	22.79	0.190
		1	12	23.18	0.208	23.36	0.217	23.06	0.202
		1	24	23.17	0.207	22.98	0.199	22.96	0.198
		12	0	23.09	0.204	23.16	0.207	21.96	0.157
		12	6	22.99	0.199	23.23	0.210	22.10	0.162
		12	13	23.05	0.202	23.16	0.207	22.05	0.160
		25	0	23.00	0.200	22.12	0.163	22.02	0.159
	16QAM	1	0	21.92	0.156	21.89	0.155	21.81	0.152
		1	12	22.02	0.159	21.95	0.157	21.85	0.153
		1	24	21.95	0.157	21.96	0.157	21.86	0.153
		12	0	21.86	0.153	22.27	0.169	20.90	0.123
		12	6	21.86	0.153	22.24	0.167	21.02	0.126
		12	13	21.96	0.157	22.24	0.167	21.08	0.128
		25	0	21.95	0.157	21.16	0.131	21.04	0.127

LTE Band 5									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				20450 (829.0 MHz)		20525 (836.5 MHz)		20600 (844.0 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
10	QPSK	1	0	23.27	0.212	23.16	0.207	23.12	0.205
		1	25	23.21	0.209	23.15	0.207	23.33	0.215
		1	49	23.19	0.208	23.29	0.213	23.36	0.217
		25	0	23.03	0.201	23.04	0.201	23.08	0.203
		25	12	23.08	0.203	23.19	0.208	23.25	0.211
		25	25	23.05	0.202	23.03	0.201	23.04	0.201
		50	0	23.14	0.206	22.03	0.160	22.12	0.163
	16QAM	1	0	22.04	0.160	21.67	0.147	21.85	0.153
		1	25	22.06	0.161	21.92	0.156	22.00	0.158
		1	49	21.99	0.158	22.00	0.158	21.75	0.150
		25	0	22.06	0.161	22.05	0.160	21.97	0.157
		25	12	22.11	0.163	22.20	0.166	22.14	0.164
		25	25	22.14	0.164	22.12	0.163	22.19	0.166
		50	0	22.13	0.163	20.95	0.124	21.18	0.131

LTE Band 7									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				20775 (2 502.5 MHz)		21100 (2 535.0 MHz)		21425 (2 567.5 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
5	QPSK	1	0	22.50	0.178	22.35	0.172	22.89	0.195
		1	12	22.71	0.187	22.34	0.171	22.62	0.183
		1	24	22.44	0.175	22.34	0.171	22.72	0.187
		12	0	21.44	0.139	21.39	0.138	22.61	0.182
		12	6	21.53	0.142	21.39	0.138	22.87	0.194
		12	13	21.40	0.138	21.39	0.138	22.79	0.190
		25	0	21.46	0.140	21.38	0.137	22.74	0.188
	16QAM	1	0	21.37	0.137	21.47	0.140	21.43	0.139
		1	12	20.97	0.125	21.14	0.130	21.73	0.149
		1	24	21.11	0.129	21.19	0.132	21.69	0.148
		12	0	20.49	0.112	20.46	0.111	21.65	0.146
		12	6	20.49	0.112	20.45	0.111	21.54	0.143
		12	13	20.56	0.114	20.56	0.114	21.60	0.145
		25	0	20.44	0.111	20.55	0.114	21.56	0.143

LTE Band 7									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				20800 (2 505.0 MHz)		21100 (2 535.0 MHz)		21400 (2 565.0 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
10	QPSK	1	0	22.82	0.191	22.52	0.179	22.99	0.199
		1	25	22.66	0.185	22.97	0.198	22.97	0.198
		1	49	22.61	0.182	22.47	0.177	22.87	0.194
		25	0	22.54	0.179	21.38	0.137	21.72	0.149
		25	12	22.42	0.175	21.36	0.137	21.76	0.150
		25	25	22.55	0.180	21.30	0.135	21.77	0.150
		50	0	21.45	0.140	21.36	0.137	21.74	0.149
	16QAM	1	0	21.36	0.137	21.13	0.130	21.83	0.152
		1	25	21.39	0.138	21.42	0.139	21.82	0.152
		1	49	21.45	0.140	21.13	0.130	21.48	0.141
		25	0	21.58	0.144	20.40	0.110	20.80	0.120
		25	12	21.46	0.140	20.47	0.111	20.82	0.121
		25	25	21.53	0.142	20.44	0.111	20.79	0.120
		50	0	20.57	0.114	20.35	0.108	20.84	0.121

LTE Band 7									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				20825 (2 507.5 MHz)		21100 (2 535.0 MHz)		21375 (2 562.5 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
15	QPSK	1	0	22.66	0.185	22.38	0.173	23.21	0.209
		1	36	22.49	0.177	22.57	0.181	22.97	0.198
		1	74	22.63	0.183	22.50	0.178	23.03	0.201
		36	0	22.30	0.170	21.38	0.137	22.11	0.163
		36	18	22.38	0.173	21.44	0.139	21.66	0.147
		36	37	22.23	0.167	21.39	0.138	21.75	0.150
		75	0	21.43	0.139	21.41	0.138	21.84	0.153
	16QAM	1	0	21.37	0.137	21.02	0.126	22.15	0.164
		1	36	21.21	0.132	21.30	0.135	21.72	0.149
		1	74	21.14	0.130	21.37	0.137	21.45	0.140
		36	0	21.58	0.144	20.35	0.108	21.04	0.127
		36	18	21.20	0.132	20.46	0.111	20.85	0.122
		36	37	21.37	0.137	20.40	0.110	20.79	0.120
		75	0	20.31	0.107	20.25	0.106	20.95	0.124

LTE Band 7									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				20850 (2 510.0 MHz)		21100 (2 535.0 MHz)		21350 (2 560.0 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
20	QPSK	1	0	22.71	0.187	22.44	0.175	23.16	0.207
		1	50	22.62	0.183	22.44	0.175	23.22	0.210
		1	99	22.47	0.177	22.52	0.179	22.86	0.193
		50	0	22.40	0.174	21.31	0.135	22.20	0.166
		50	25	22.41	0.174	21.24	0.133	22.10	0.162
		50	50	22.48	0.177	21.32	0.136	21.85	0.153
		100	0	21.35	0.136	21.36	0.137	21.95	0.157
	16QAM	1	0	21.33	0.136	20.84	0.121	22.29	0.169
		1	50	21.22	0.132	20.91	0.123	22.15	0.164
		1	99	21.36	0.137	21.08	0.128	21.82	0.152
		50	0	21.41	0.138	20.37	0.109	21.04	0.127
		50	25	21.65	0.146	20.36	0.109	21.31	0.135
		50	50	21.32	0.136	20.18	0.104	20.69	0.117
		100	0	20.48	0.112	20.37	0.109	21.03	0.127

LTE Band 12									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				23017 (699.7 MHz)		23095 (707.5 MHz)		23173 (715.3 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
1.4	QPSK	1	0	22.31	0.170	22.43	0.175	22.46	0.176
		1	3	22.34	0.171	22.32	0.171	22.59	0.182
		1	5	22.34	0.171	22.30	0.170	22.56	0.180
		3	0	22.58	0.181	22.31	0.170	22.50	0.178
		3	2	22.50	0.178	22.39	0.173	22.52	0.179
		3	3	22.47	0.177	22.39	0.173	22.47	0.177
	16QAM	6	0	21.55	0.143	22.29	0.169	22.44	0.175
		1	0	21.59	0.144	20.98	0.125	21.26	0.134
		1	3	21.24	0.133	21.10	0.129	21.32	0.136
		1	5	21.42	0.139	21.07	0.128	21.33	0.136
		3	0	21.31	0.135	21.03	0.127	21.34	0.136
		3	2	21.43	0.139	20.94	0.124	21.22	0.132
		3	3	21.68	0.147	20.86	0.122	21.33	0.136
		6	0	20.24	0.106	21.00	0.126	21.27	0.134

LTE Band 12									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				23025 (700.5 MHz)		23095 (707.5 MHz)		23165 (714.5 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
3	QPSK	1	0	22.26	0.168	22.32	0.171	22.37	0.173
		1	7	22.42	0.175	22.29	0.169	22.25	0.168
		1	14	22.26	0.168	21.90	0.155	22.08	0.161
		8	0	21.28	0.134	20.81	0.121	21.31	0.135
		8	4	21.11	0.129	20.79	0.120	21.05	0.127
		8	7	21.13	0.130	20.81	0.121	20.93	0.124
		15	0	21.14	0.130	20.87	0.122	21.02	0.126
	16QAM	1	0	20.99	0.126	20.83	0.121	21.14	0.130
		1	7	20.96	0.125	20.43	0.110	20.82	0.121
		1	14	20.78	0.120	20.42	0.110	20.23	0.105
		8	0	20.45	0.111	20.22	0.105	20.14	0.103
		8	4	20.39	0.109	20.10	0.102	20.36	0.109
		8	7	20.18	0.104	19.99	0.100	20.11	0.103
		15	0	20.26	0.106	19.82	0.096	20.16	0.104

LTE Band 12/17									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				23035 (701.5 MHz)		23095 (707.5 MHz)		23155 (713.5 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
5	QPSK	1	0	22.44	0.175	22.34	0.171	22.16	0.164
		1	12	22.52	0.179	22.15	0.164	22.52	0.179
		1	24	22.58	0.181	22.08	0.161	22.10	0.162
		12	0	22.29	0.169	22.19	0.166	21.33	0.136
		12	6	22.35	0.172	22.01	0.159	21.32	0.136
		12	13	22.49	0.177	22.08	0.161	21.15	0.130
		25	0	22.39	0.173	21.02	0.126	21.31	0.135
	16QAM	1	0	21.07	0.128	21.08	0.128	20.85	0.122
		1	12	21.19	0.132	20.95	0.124	21.10	0.129
		1	24	21.32	0.136	20.59	0.115	20.72	0.118
		12	0	21.22	0.132	21.17	0.131	20.33	0.108
		12	6	21.47	0.140	21.08	0.128	20.26	0.106
		12	13	21.06	0.128	20.95	0.124	20.21	0.105
		25	0	21.21	0.132	20.16	0.104	20.16	0.104

LTE Band 12/17									
Bandwidth (MHz)	Modulation	RB Size	RB Offset	Conducted Output Power					
				23060 (704.0 MHz)		23095 (707.5 MHz)		23130 (711.0 MHz)	
				(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
10	QPSK	1	0	22.46	0.176	22.61	0.182	22.23	0.167
		1	25	22.47	0.177	22.42	0.175	22.06	0.161
		1	49	22.50	0.178	22.30	0.170	22.29	0.169
		25	0	22.47	0.177	22.58	0.181	21.96	0.157
		25	12	22.45	0.176	22.36	0.172	21.96	0.157
		25	25	22.43	0.175	22.21	0.166	22.11	0.163
		50	0	22.31	0.170	21.22	0.132	20.95	0.124
	16QAM	1	0	20.94	0.124	21.19	0.132	20.69	0.117
		1	25	20.95	0.124	21.01	0.126	20.46	0.111
		1	49	21.02	0.126	20.96	0.125	20.90	0.123
		25	0	21.31	0.135	21.30	0.135	20.66	0.116
		25	12	21.40	0.138	21.35	0.136	21.09	0.129
		25	25	21.39	0.138	21.39	0.138	21.02	0.126
		50	0	20.42	0.110	20.34	0.108	20.04	0.101

4. Occupied Bandwidth

4.1. Limit

CFR 47, Section FCC §2.1049 and IC RSS-Gen Issue 5 6.7.

4.2. Test Procedure

FCC

The test follows section 5.4.4 of ANSI C63.26-2015.

- a. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation. products including the emission skirts (typically a span of $1.5 \times \text{OBW}$ is sufficient).
- b. The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1 % to 5 % of the anticipated OBW, and the VBW shall be set $\geq 3 \times \text{RBW}$.
- c. Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3.
- d. Set the detection mode to peak, and the trace mode to max-hold.
- e. If the instrument does not have a 99 % OBW function, recover the trace data points and sum directly in linear power terms. Place the recovered amplitude data points, beginning at the lowest frequency, in a running sum until 0.5 % of the total is reached. Record that frequency as the lower OBW frequency. Repeat the process until 99.5 % of the total is reached and record that frequency as the upper OBW frequency. The 99 % power OBW can be determined by computing the difference these two frequencies.
- f. The OBW shall be reported and plot(s) of the measuring instrument display shall be provided with the test report. The frequency and amplitude axis and scale shall be clearly labeled. Tabular data can be reported in addition to the plot(s).

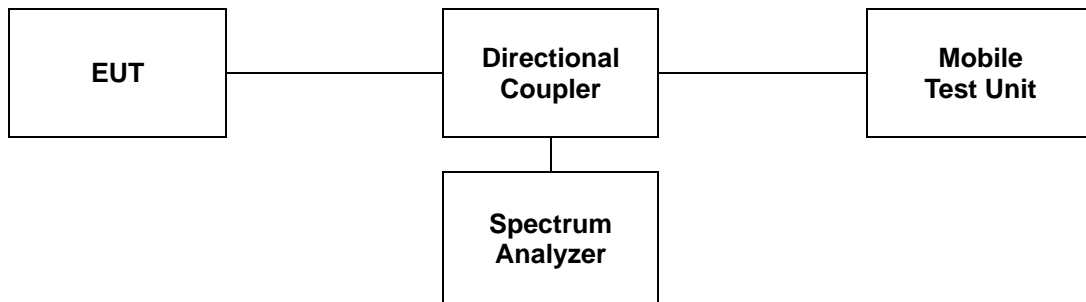
IC

The following conditions shall be observed for measuring the occupied bandwidth and x dB bandwidth:

- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.
- The detector of the spectrum analyzer shall be set to “Sample”. However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or “Max Hold”) may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.
- The resolution bandwidth (RBW) shall be in the range of 1 % to 5 % of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

For the 99 % emission bandwidth, the trace data points are recovered and directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99 % emission bandwidth).



4.3 Test Results

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

Band	Bandwidth (MHz)	Frequency (MHz)	Occupied Bandwidth (MHz)	
			QPSK	16QAM
2	1.4	1 880.0	1.098	1.093
	3		2.686	2.696
	5		4.509	4.509
	10		8.918	8.952
	15		13.428	13.428
	20		17.837	17.770
4	1.4	1 732.5	1.093	1.093
	3		2.676	2.696
	5		4.493	4.493
	10		8.918	8.918
	15		13.478	13.428
	20		17.837	17.837
5	1.4	836.5	1.098	1.098
	3		2.686	2.686
	5		4.493	4.509
	10		8.952	8.885
7	5	2 535.0	4.493	4.509
	10		8.952	8.918
	15		13.478	13.478
	20		17.837	17.903
12/17	1.4	707.5	1.093	1.093
	3		2.676	2.676
	5		4.509	4.493
	10		8.918	8.918

Note;

There is no limit required and power is the same for low, middle and high channel; therefore, All channels were tested but only middle was reported.

- Test plots

LTE band 2

