

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 3, RSS-133 Issue 6,
RSS-139 Issue 4, RSS-199 Issue 3 and RSS-Gen Issue 5

FCC ID: BEJTM04ANNABM2

IC Certification: 2703H-TM04ANNABM2

Equipment Under Test : Telematics Module
Model Name : TM04ANNABM2
Variant Model Name(s) : -
Applicant : FCC: LG Electronics USA
IC: LG ELECTRONICS INC.
Manufacturer : LG Electronics Inc.
Date of Receipt : 2022.11.04
Date of Test(s) : 2023.02.13 ~ 2023.03.02
Date of Issue : 2023.03.30

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

- 1) The results of this test report are effective only to the items tested.
- 2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.
- 3) This test report cannot be reproduced, except in full, without prior written permission of the Company.
- 4) The data marked ※ in this report was provided by the customer and may affect the validity of the test results.

We are responsible for all the information of this test report except for the data(※) provided by the customer.

Tested by:



Teo Kim

Technical
Manager:



Jinhyoung Cho

SGS Korea Co., Ltd. Gunpo Laboratory



INDEX

<u>Table of Contents</u>	Page
1. General Information	3
2. Radiated Spurious Emissions	8

1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

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- 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

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. : +1 201 470 2696

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	Telematics Module
Model Name	TM04ANNABM2
Serial Number	Conducted Sample: 00400152020000 Radiated Sample: Radio#01
Power Supply	DC 12.5 V
Rated Power	GSM 850: 33 dB m GSM 1 900: 30 dB m WCDMA II, IV, V: 24 dB m LTE Band 2, 4, 5, 7, 12, 13, 17, 25, 41, 66, 71: 23 dB m
Frequency Range	GSM 850: 824 MHz ~ 849 MHz GSM 1 900: 1 850 MHz ~ 1 910 MHz WCDMA II: 1 850 MHz ~ 1 910 MHz WCDMA IV: 1 710 MHz ~ 1 755 MHz WCDMA V: 824 MHz ~ 849 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 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
Modulation Technique	GMSK, 8PSK, QPSK, 16QAM
Antenna Type	Planar Inverted F Antenna
Antenna Gain*	663 MHz ~ 698 MHz: -5.07 dB i 699 MHz ~ 716 MHz: -5.07 dB i 777 MHz ~ 787 MHz: -4.35 dB i 824 MHz ~ 849 MHz: -4.35 dB i 1 710 MHz ~ 1 780 MHz: 3.41 dB i 1 850 MHz ~ 1 915 MHz: 2.02 dB i 2 496 MHz ~ 2 690 MHz: 2.10 dB i
H/W Version	004.000.000
S/W Version	012.014.126
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
Signal Generator	R&S	SMBV100A	255834	May 25, 2022	Annual	May 25, 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
Low Pass Filter	Mini-Circuits	NLP-1200+	V 8979400903-1	May 13, 2022	Annual	May 13, 2023
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. 09, 2022	Annual	Jun. 09, 2023
High Pass Filter	Wainwright Instrument GmbH	WHNX7.5/26.5G-6SS	11	Oct. 24, 2022	Annual	Oct. 24, 2023
DC Power Supply	Agilent	U8002A	MY49030063	Jan. 20, 2023	Annual	Jan. 20, 2024
Preamplifier	H.P.	8447F	2944A03909	Aug. 04, 2022	Annual	Aug. 04, 2023
Preamplifier	R&S	SCU 18	10117	Jun. 13, 2022	Annual	Jun. 13, 2023
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	HF907	102270	Mar. 09, 2023	Annual	Mar. 09, 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	Oct. 04, 2022	Semi-Annual	Apr. 04, 2023
Coaxial Cable	Qualwave Inc.	QA500-18-NN-10 (10 m)	22200114	Oct. 04, 2022	Semi-Annual	Apr. 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 and 27 / IC Part RSS-130 Issue 2, RSS-132 Issue 3, RSS-133 Issue 6, RSS-139 Issue 4, RSS-199 Issue 3 and RSS-Gen Issue 5			
Section in FCC	Section in IC	Test Item(s)	Result
§22.913(a)(5) §24.232(c) §27.50(b)(10) §27.50(c)(10) §27.50(d)(4) §27.50(h)(2)	RSS-130 Issue 2 4.6 RSS-132 Issue 3 5.4 RSS-133 Issue 6 6.4 RSS-139 Issue 4 5.5 RSS-199 Issue 3 4.4	E.R.P. / E.I.R.P.	N/A ¹⁾
§22.917(a) §24.238(a) §27.53(c)(2) §27.53(f) §27.53(g) §27.53(h)(1) §27.53(m)(4)	RSS-130 Issue 2 4.7 RSS-132 Issue 3 5.5 RSS-133 Issue 6 6.5 RSS-139 Issue 4 5.6 RSS-199 Issue 3 4.5	Radiated Spurious Emissions	Complied
§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 3 5.4 RSS-133 Issue 6 6.4 RSS-139 Issue 4 5.5 RSS-199 Issue 3 4.4	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)	RSS-130 Issue 2 4.7 RSS-132 Issue 3 5.5 RSS-133 Issue 6 6.5 RSS-139 Issue 4 5.6 RSS-199 Issue 3 4.5	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)	RSS-130 Issue 2 4.7 RSS-132 Issue 3 5.5 RSS-133 Issue 6 6.5 RSS-139 Issue 4 5.6 RSS-199 Issue 3 4.5	Band Edge and Emission Mask	N/A ¹⁾
§2.1055 §22.355 §24.235 §27.54	RSS-Gen Issue 5 6.11 RSS-130 Issue 2 4.5 RSS-132 Issue 3 5.3 RSS-133 Issue 6 6.3 RSS-139 Issue 4 5.4 RSS-199 Issue 3 4.3	Frequency Stability	N/A ¹⁾

1) Due to change of antenna PCB pattern, only performed radiated spurious emissions test for the bands with the affected and the bands with lowest margin of original test result.

1.7. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL003960	2023.04.03	Initial

1.8. Worst Case Selection

The radiated spurious emissions were tested for the bands with the antenna change affected and the bands with the lowest margin of previously data and selected respectively below 1 GHz and above 1 GHz.

Frequency Range	Worst Case	Remark
Below 1 GHz	GSM 850	Lowest margin
Above 1 GHz	LTE Band 25/2	Lowest margin
2 500 ~ 2 570 MHz	LTE Band 7	Antenna change affected
2 496 ~ 2 690 MHz	LTE Band 41	Antenna change affected

1.9. Sample Calculation for Offset

Where relevant, the following sample calculation is provided:

1.9.1. 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)

1.10. Device Capabilities

This device contains the following capabilities;

LTE Band 2 (1 850 MHz ~ 1 910 MHz) is covered by LTE Band 25 (1 850 MHz ~ 1 915 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 2 as well as Band 25.

1.11. Measurement Uncertainty

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

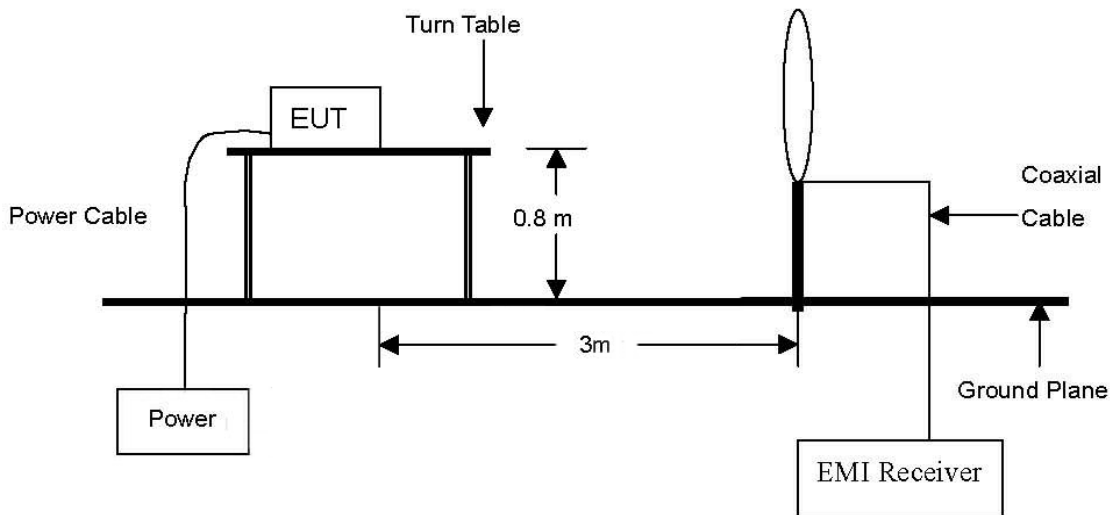
Parameter	Uncertainty	
Radiated Emission, 9 kHz to 30 MHz	H	3.40 dB
	V	3.40 dB
Radiated Emission, below 1 GHz	H	4.50 dB
	V	5.10 dB
Radiated Emission, above 1 GHz	H	3.70 dB
	V	3.90 dB

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

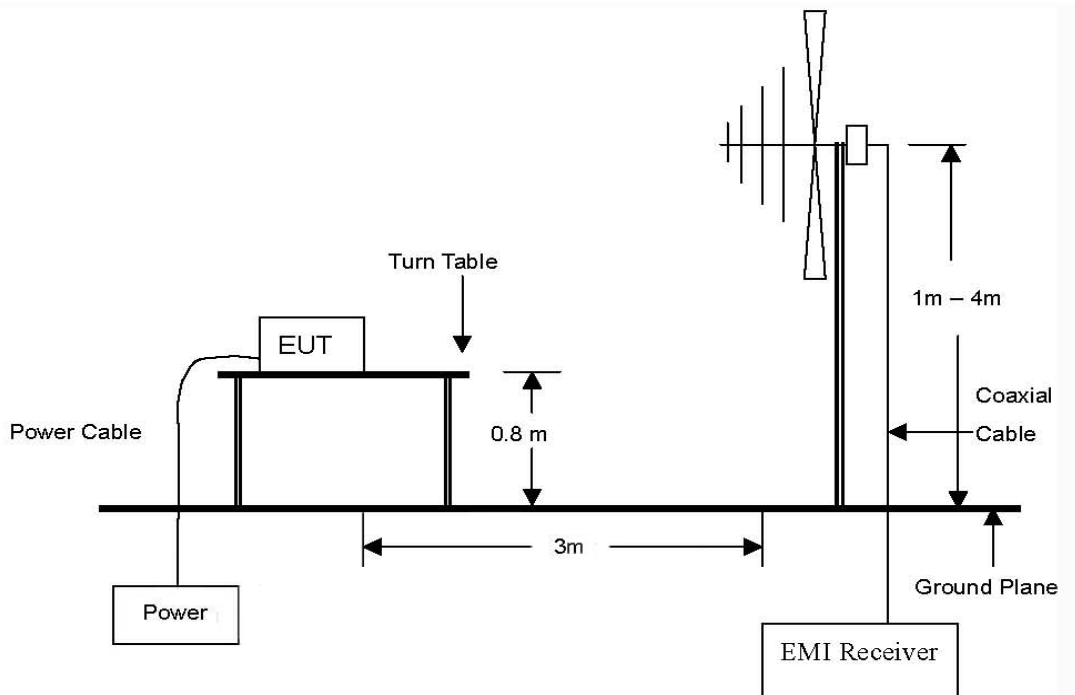
2. Radiated Spurious Emissions

2.1. Test setup

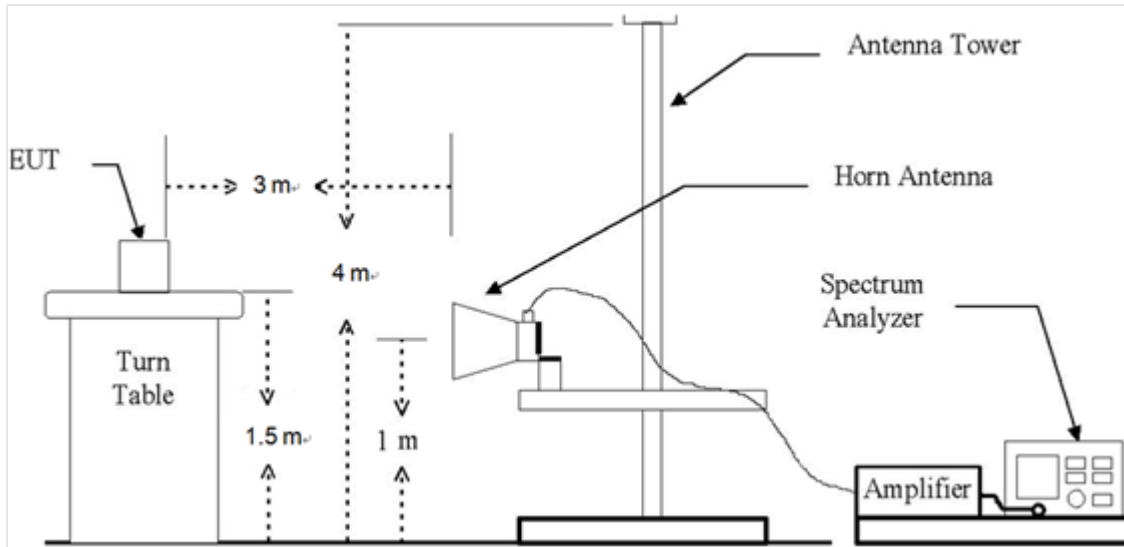
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 kHz to 30 MHz.



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 27 GHz Emissions.



2.2. Limit

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(f), for operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1 559-1 610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.
- §27.53(g), for operations in the 600 MHz band and the 698-746 MHz band, 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. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.
- §27.53(h)(1), except as otherwise specified below, 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.

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.

4.7.2, In addition to the limit outlined in section 4.7.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

a) The power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dB W), by at least:

(i) $76 + 10 \log_{10} p$ (watts), dB, for base and fixed equipment, and

(ii) $65 + 10 \log_{10} p$ (watts), dB, for mobile and portable equipment.

b) The e.i.r.p. in the band 1 559-1 610 MHz shall not exceed -70 dB W/MHz for wideband signal and -80 dB W for discrete emission with bandwidth less than 700 Hz.

- RSS-132 Issue 3

5.5, Mobile and base station equipment shall comply with the limits in (i) and (ii) 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 (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 immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz 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 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 limits
1 MHz	-13 dB m/(1% of OB*)
>1 MHz	-13 dB m

*OB is the occupied bandwidth

- RSS-199 Issue 3

4.5, In the 1 MHz band immediately outside and adjacent to the channel edge, the unwanted emission power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth for base station and fixed subscriber equipment, and 2% for mobile subscriber equipment. Beyond the 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.

Equipment shall comply with the following unwanted emission limits:

for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dB W), by at least $43 + 10 \log_{10} p$ for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dB W), by at least:

- i. $40 + 10 \log_{10} p$ from the channel edges to 5 MHz away
- ii. $43 + 10 \log_{10} p$ between 5 MHz and X MHz from the channel edges, and
- iii. $55 + 10 \log_{10} p$ at X MHz and beyond from the channel edges

In addition, the attenuation shall not be less than $43 + 10 \log_{10} p$ on all frequencies between 2 490.5 MHz and 2 496 MHz, and $55 + 10 \log_{10} p$ at or below 2 490.5 MHz.

In (a) and (b), p is the transmitter power measured in watts and X is 6 MHz or the equipment occupied bandwidth, whichever is greater.

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.

GSM 850 (VOICE)

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 (824.2 MHz)									
1 648.37	63.63	H	26.60	-38.67	51.56	-97.41	-45.85	-13	32.85
1 648.35	69.36	V	26.60	-38.67	57.29	-97.41	-40.12	-13	27.12
2 472.71	63.02	V	29.28	-36.80	55.50	-97.41	-41.91	-13	28.91
Above 2 500.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (836.6 MHz)									
1 673.33	57.66	H	26.69	-38.66	45.69	-97.41	-51.72	-13	38.72
1 673.04	62.55	V	26.69	-38.66	50.58	-97.41	-46.83	-13	33.83
2 509.63	58.42	V	29.54	-37.07	50.89	-97.41	-46.52	-13	33.52
Above 2 600.00	Not detected	-	-	-	-	-	-	-	-
High Channel (848.8 MHz)									
1 697.84	53.77	H	26.79	-38.77	41.79	-97.41	-55.62	-13	42.62
1 697.71	56.60	V	26.79	-38.77	44.62	-97.41	-52.79	-13	39.79
2 546.21	55.86	V	29.68	-36.57	48.97	-97.41	-48.44	-13	35.44
Above 2 600.00	Not detected	-	-	-	-	-	-	-	-

LTE band 7 (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 (2 510 MHz)									
5 002.09	58.34	H	34.80	-35.26	57.88	-95.26	-37.38	-25	12.38
5 002.18	60.73	V	34.80	-35.26	60.27	-95.26	-34.99	-25	9.99
7 503.33	40.36	H	36.31	-32.96	43.71	-95.26	-51.55	-25	26.55
7 503.28	45.02	V	36.31	-32.96	48.37	-95.26	-46.89	-25	21.89
10 004.51	51.92	H	37.71	-31.90	57.73	-95.26	-37.53	-25	12.53
10 004.36	51.97	V	37.71	-31.90	57.78	-95.26	-37.48	-25	12.48
17 508.10	44.59	H	43.00	-23.31	64.28	-95.26	-30.98	-25	5.98
Above 17 600.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (2 535 MHz)									
5 052.19	59.57	H	34.70	-35.18	59.09	-95.26	-36.17	-25	11.17
5 052.07	59.18	V	34.70	-35.18	58.70	-95.26	-36.56	-25	11.56
7 578.27	47.71	H	36.56	-32.63	51.64	-95.26	-43.62	-25	18.62
7 578.36	52.24	V	36.56	-32.63	56.17	-95.26	-39.09	-25	14.09
10 104.40	54.95	H	37.79	-31.56	61.18	-95.26	-34.08	-25	9.08
10 104.44	57.09	V	37.79	-31.56	63.32	-95.26	-31.94	-25	6.94
12 630.69	38.11	H	39.36	-29.42	48.05	-95.26	-47.21	-25	22.21
17 682.53	40.06	H	43.10	-22.92	60.24	-95.26	-35.02	-25	10.02
Above 17 700.00	Not detected	-	-	-	-	-	-	-	-
High Channel (2 560 MHz)									
5 102.20	57.19	H	34.59	-35.42	56.36	-95.26	-38.90	-25	13.90
5 102.22	57.60	V	34.59	-35.42	56.77	-95.26	-38.49	-25	13.49
10 204.58	45.60	H	37.69	-31.55	51.74	-95.26	-43.52	-25	18.52
10 204.44	45.99	V	37.69	-31.56	52.12	-95.26	-43.14	-25	18.14
Above 10 300.00	Not detected	-	-	-	-	-	-	-	-

LTE band 25/2 (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)									
3 702.32	49.65	H	32.91	-36.61	45.95	-95.26	-49.31	-13	36.31
3 702.16	59.33	V	32.91	-36.61	55.63	-95.26	-39.63	-13	26.63
5 000.21	40.61	H	34.80	-35.26	40.15	-95.26	-55.11	-13	42.11
5 000.06	45.85	V	34.80	-35.26	45.39	-95.26	-49.87	-13	36.87
5 553.20	52.45	H	34.99	-34.19	53.25	-95.26	-42.01	-13	29.01
5 553.20	61.41	V	34.99	-34.19	62.21	-95.26	-33.05	-13	20.05
9 255.35	46.73	H	37.51	-32.67	51.57	-95.26	-43.69	-13	30.69
9 255.49	52.27	V	37.51	-32.67	57.11	-95.26	-38.15	-13	25.15
Above 9 300.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (1 882.5 MHz)									
3 746.94	48.68	H	33.09	-36.83	44.94	-95.26	-50.32	-13	37.32
3 747.15	60.50	V	33.09	-36.83	56.76	-95.26	-38.50	-13	25.50
4 999.95	39.96	H	34.80	-35.26	39.50	-95.26	-55.76	-13	42.76
5 000.02	46.06	V	34.80	-35.26	45.60	-95.26	-49.66	-13	36.66
5 620.75	44.92	H	34.86	-33.58	46.20	-95.26	-49.06	-13	36.06
5 620.81	53.76	V	34.86	-33.58	55.04	-95.26	-40.22	-13	27.22
9 367.81	44.06	H	37.64	-32.33	49.37	-95.26	-45.89	-13	32.89
9 367.96	50.95	V	37.64	-32.34	56.25	-95.26	-39.01	-13	26.01
Above 9 400.00	Not detected	-	-	-	-	-	-	-	-
High Channel (1 905 MHz)									
3 792.20	54.87	H	33.27	-36.73	51.41	-95.26	-43.85	-13	30.85
3 792.13	58.16	V	33.27	-36.73	54.70	-95.26	-40.56	-13	27.56
4 999.65	41.00	H	34.80	-35.26	40.54	-95.26	-54.72	-13	41.72
5 000.00	46.32	V	34.80	-35.26	45.86	-95.26	-49.40	-13	36.40
5 688.31	44.48	H	34.72	-33.44	45.76	-95.26	-49.50	-13	36.50
5 688.23	49.27	V	34.72	-33.44	50.55	-95.26	-44.71	-13	31.71
9 480.45	53.22	H	37.60	-32.12	58.70	-95.26	-36.56	-13	23.56
9 480.45	57.67	V	37.60	-32.12	63.15	-95.26	-32.11	-13	19.11
Above 9 500.00	Not detected	-	-	-	-	-	-	-	-

LTE band 41_FCC (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 (2 506 MHz)									
4 994.15	48.36	H	34.80	-35.31	47.85	-95.26	-47.41	-25	22.41
4 994.11	47.12	V	34.80	-35.31	46.61	-95.26	-48.65	-25	23.65
7 491.27	52.30	H	36.28	-32.94	55.64	-95.26	-39.62	-25	14.62
7 491.14	53.33	V	36.28	-32.94	56.67	-95.26	-38.59	-25	13.59
9 988.61	44.38	H	37.70	-32.08	50.00	-95.26	-45.26	-25	20.26
9 988.30	52.43	V	37.70	-32.08	58.05	-95.26	-37.21	-25	12.21
12 485.56	44.32	H	39.07	-28.64	54.75	-95.26	-40.51	-25	15.51
12 485.65	43.49	V	39.07	-28.64	53.92	-95.26	-41.34	-25	16.34
Above 12 500.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (2 593 MHz)									
5 168.17	56.01	H	34.36	-35.36	55.01	-95.26	-40.25	-25	15.25
5 168.25	66.01	V	34.36	-35.36	65.01	-95.26	-30.25	-25	5.25
7 752.30	51.38	H	36.60	-32.54	55.44	-95.26	-39.82	-25	14.82
7 752.41	52.03	V	36.60	-32.54	56.09	-95.26	-39.17	-25	14.17
10 336.90	50.31	H	37.60	-30.75	57.16	-95.26	-38.10	-25	13.10
10 336.47	54.66	V	37.60	-30.76	61.50	-95.26	-33.76	-25	8.76
12 920.31	47.22	H	39.80	-29.55	57.47	-95.26	-37.79	-25	12.79
12 920.62	45.46	V	39.80	-29.55	55.71	-95.26	-39.55	-25	14.55
Above 13 000.00	Not detected	-	-	-	-	-	-	-	-
High Channel (2 680 MHz)									
5 340.21	66.91	H	34.56	-34.71	66.76	-95.26	-28.50	-25	3.50
5 340.16	62.46	V	34.56	-34.71	62.31	-95.26	-32.95	-25	7.95
8 010.44	56.83	H	36.60	-33.09	60.34	-95.26	-34.92	-25	9.92
8 010.50	59.28	V	36.60	-33.09	62.79	-95.26	-32.47	-25	7.47
10 680.34	53.67	H	37.70	-30.81	60.56	-95.26	-34.70	-25	9.70
10 680.50	52.13	V	37.70	-30.81	59.02	-95.26	-36.24	-25	11.24
13 350.50	42.66	H	40.30	-27.63	55.33	-95.26	-39.93	-25	14.93
13 350.12	51.04	V	40.30	-27.63	63.71	-95.26	-31.55	-25	6.55
Above 13 400.00	Not detected	-	-	-	-	-	-	-	-

LTE band 41_IC (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 (2 510 MHz)									
5 002.24	53.86	H	34.80	-35.26	53.40	-95.26	-41.86	-25	16.86
5 002.15	50.03	V	34.80	-35.26	49.57	-95.26	-45.69	-25	20.69
7 503.36	54.13	H	36.31	-32.96	57.48	-95.26	-37.78	-25	12.78
7 503.32	55.15	V	36.31	-32.96	58.50	-95.26	-36.76	-25	11.76
10 004.52	50.52	H	37.71	-31.90	56.33	-95.26	-38.93	-25	13.93
10 004.37	46.19	V	37.71	-31.90	52.00	-95.26	-43.26	-25	18.26
12 505.40	37.42	H	39.11	-28.53	48.00	-95.26	-47.26	-25	22.26
12 505.17	42.55	V	39.11	-28.54	53.12	-95.26	-42.14	-25	17.14
Above 12 600.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (2 595 MHz)									
5 172.20	58.20	H	34.36	-35.33	57.23	-95.26	-38.03	-25	13.03
5 172.20	64.38	V	34.36	-35.33	63.41	-95.26	-31.85	-25	6.85
7 758.52	49.10	H	36.60	-32.60	53.10	-95.26	-42.16	-25	17.16
7 758.19	51.77	V	36.60	-32.60	55.77	-95.26	-39.49	-25	14.49
10 344.41	51.64	H	37.60	-30.67	58.57	-95.26	-36.69	-25	11.69
10 344.27	49.82	V	37.60	-30.67	56.75	-95.26	-38.51	-25	13.51
12 930.50	42.44	H	39.80	-29.56	52.68	-95.26	-42.58	-25	17.58
12 930.68	47.04	V	39.80	-29.56	57.28	-95.26	-37.98	-25	12.98
Above 13 000.00	Not detected	-	-	-	-	-	-	-	-
High Channel (2 680 MHz)									
5 342.15	64.17	H	34.57	-34.71	64.03	-95.26	-31.23	-25	6.23
5 342.34	60.07	V	34.57	-34.71	59.93	-95.26	-35.33	-25	10.33
8 013.47	55.70	H	36.60	-33.16	59.14	-95.26	-36.12	-25	11.12
8 013.18	58.48	V	36.60	-33.16	61.92	-95.26	-33.34	-25	8.34
10 684.36	51.02	H	37.70	-30.80	57.92	-95.26	-37.34	-25	12.34
10 684.44	57.29	V	37.70	-30.80	64.19	-95.26	-31.07	-25	6.07
13 355.21	43.60	H	40.31	-27.59	56.32	-95.26	-38.94	-25	13.94
13 355.86	52.37	V	40.31	-27.58	65.10	-95.26	-30.16	-25	5.16
Above 13 400.00	Not detected	-	-	-	-	-	-	-	-

Remark;

1. AF = Antenna Factor, CL = Cable Loss, CF = Conversion Factor.
2. $E \text{ (dB}\mu\text{V/m)} = \text{Measured Level (dB}\mu\text{V)} + \text{Antenna Factor (dB/m)} + \text{AMP (dB)} + \text{Cable Loss (dB)}$.
3. $\text{E.I.R.P. (dB m)} = E \text{ (dB}\mu\text{V/m)} + \text{CF (dB)}$.
4. $\text{E.R.P. (dB m)} = E \text{ (dB}\mu\text{V/m)} + \text{CF (dB)} - 2.15 \text{ (dB)}$; where E.R.P. and E.I.R.P. are expressed in consistent units.
5. $\text{CF (dB)} = 20 \log D - 104.8$; 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.

- End of the Test Report -