

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 3 and RSS-Gen Issue 5

FCC ID: BEJTM05FNNAGM0
IC Certification: 2703H-TM05FNNAGM0

Equipment Under Test : Telematics Module
Model Name : TM05FNNAGM0
Variant Model Name(s) : TM05FNNAGM1
Applicant : FCC: LG Electronics USA
IC: LG ELECTRONICS INC.
Manufacturer : LG Electronics Inc.
Date of Receipt : 2022.07.22
Date of Test(s) : 2022.07.25 ~ 2023.02.16
Date of Issue : 2023.02.16

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

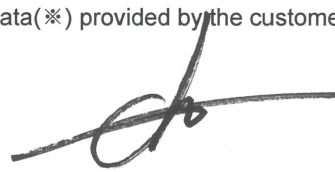
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- 2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.
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Tested by:


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Report Number: F690501-RF-RTL003822

Page: 2 of 30

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)

- 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

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	TM05FNNAGM0
Variant Model Name	TM05FNNAGM1
Serial Number	Conducted: 351015130056680 Radiated: 351015130065751
Power Supply	DC 3.90 V
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 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 66: 1 710 MHz ~ 1 780 MHz
Uplink CA Bands	2A-5A, 2A-12A, 2A-13A, 4A-12A, 5A-66A, 12A-66A, 13A-66A
Modulation Technique	QPSK, 16QAM, 64QAM
Antenna Type	External Antenna
Antenna Gain*	Refer to the clause 1.13
H/W Version	REV.D
S/W Version	SW168
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. 21, 2022	Annual	Feb. 21, 2023
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. 04, 2022	Annual	Mar. 04, 2023
High Pass Filter	Wainwright Instrument GmbH	WHKX2.2/12.75G-10SS	8	Mar. 04, 2022	Annual	Mar. 04, 2023
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	ESCI 7	100911	Feb. 23, 2022	Annual	Feb. 23, 2023
Loop Antenna	Schwarzbeck Mess-Elektronik	FMZB 1519	1519-039	Aug. 23, 2021	Biennial	Aug. 23, 2023
Bilog Antenna	Schwarzbeck Mess-Elektronik	VULB9163	01126	Feb. 07, 2022	Annual	Feb. 07, 2023
Horn Antenna	R&S	HF906	100326	Feb. 18, 2022	Annual	Feb. 18, 2023
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 × 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	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
Coaxial Cable	RADIALL	TESTPRO 3	182287	Aug. 18, 2022	Semi-Annual	Feb. 18, 2023
Coaxial Cable	RADIALL	TESTPRO 3	182288	Aug. 18, 2022	Semi-Annual	Feb. 18, 2023
Coaxial Cable	RADIALL	TESTPRO 3	182291	Aug. 18, 2022	Semi-Annual	Feb. 18, 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 3, RSS-133 Issue 6 and RSS-139 Issue 3			
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)	RSS-130 Issue 2 4.6 RSS-132 Issue 3 5.4 RSS-133 Issue 6 6.4 RSS-139 Issue 3 6.5	E.R.P. / E.I.R.P.	Complied ¹⁾
§22.917(a) §24.238(a) §27.53(c)(2) §27.53(f) §27.53(g) §27.53(h)(1)	RSS-130 Issue 2 4.7 RSS-132 Issue 3 5.5 RSS-133 Issue 6 6.5 RSS-139 Issue 3 6.6	Radiated Spurious Emissions	Complied ¹⁾
§2.1046	RSS-Gen Issue 5 6.12	Conducted Output Power	Complied ¹⁾
§2.1049	RSS-Gen Issue 5 6.7	Occupied Bandwidth	Complied 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 3 6.5	Peak-Average Ratio	Complied ¹⁾
§22.917(a) §24.238(a) §27.53(c)(2) §27.53(g) §27.53(h)(1)	RSS-130 Issue 2 4.7 RSS-132 Issue 3 5.5 RSS-133 Issue 6 6.5 RSS-139 Issue 3 6.6	Spurious Emission at Antenna Terminal	Complied ¹⁾
§22.917(a) §24.238(a) §27.53(c)(2) §27.53(c)(4) §27.53(g) §27.53(h)(1)	RSS-130 Issue 2 4.7 RSS-132 Issue 3 5.5 RSS-133 Issue 6 6.5 RSS-139 Issue 3 6.6	Band Edge and Emission Mask	Complied 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 3 6.4	Frequency Stability	Complied ¹⁾

Note;

- 1) The test items of inter band CA were cover by LTE single carrier due to the CA power is reduced according to 3GPP MPR.

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/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. Manufacturer Declaration

The EUT supports two ports and LTE, WCDMA and 5G NR FDD bands support only port 1.
 The 5G NR TDD (n41, n77, n78) band supports both port 1 and port 2.

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, 16QAM and 64QAM modulations. However, the radiated spurious 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 64QAM 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	64QAM	1	Half	Full
Radiated Spurious Emissions	2A-5A	V	V	V	Worst Case											
	2A-12A	V	V	V	Worst Case											
	2A-13A	V	V	V	Worst Case											
	4A-12A	V	V	V	Worst Case											
	5A-66A	V	V	V	Worst Case											
	12A-66A	V	V	V	Worst Case											
	13A-66A	V	V	V	Worst Case											

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.

1.12. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL003822	2023.02.16	Initial

1.13. Antenna Information

Band	Operating Frequency (MHz)	Antenna Peak Gain (dB i)
LTE 2	1 850 ~ 1 910	5.12
LTE 5	824 ~ 849	0.37
LTE 7	2 500 ~ 2 570	5.99
LTE 12	699 ~ 716	-1.05
LTE 13	777 ~ 787	-0.53
LTE 14	788 ~ 798	-0.53
LTE 66/4	1 710 ~ 1 780	5.54

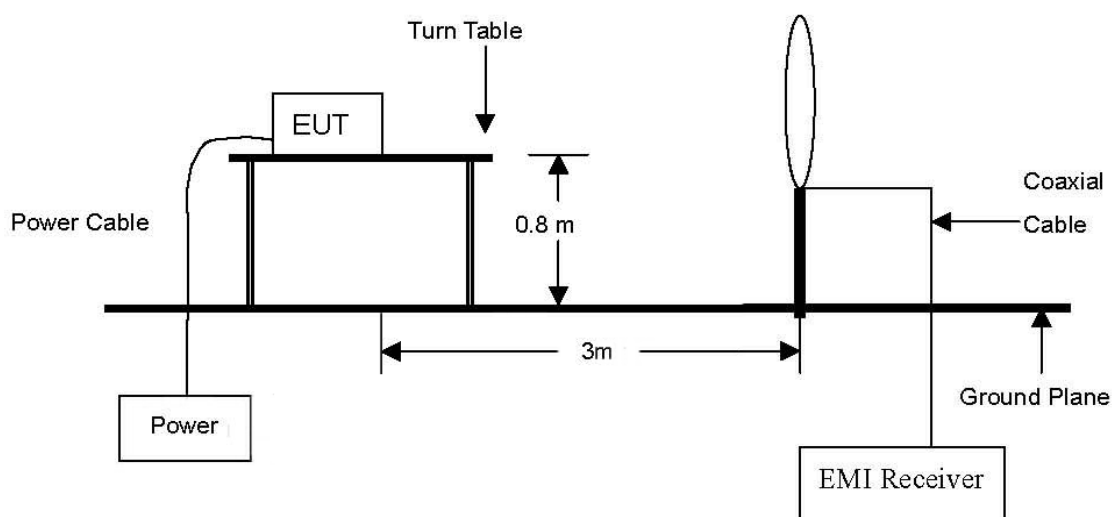
1.14. Information of Variant Model

Model Name		Description
Basic Model	TM05FNNAGM0	- Dual GNSS
Variant Model	TM05FNNAGM1	- Same RF circuit and PCB as basic model, except GNSS part - Single GNSS

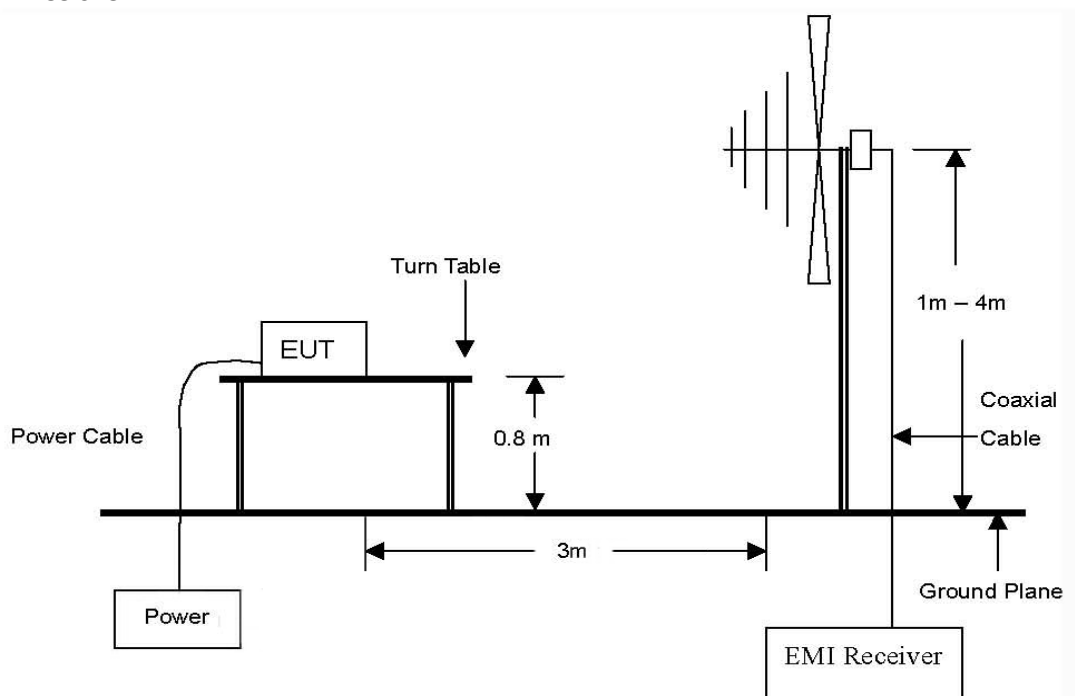
2. Radiated Spurious Emissions

2.1. Test setup

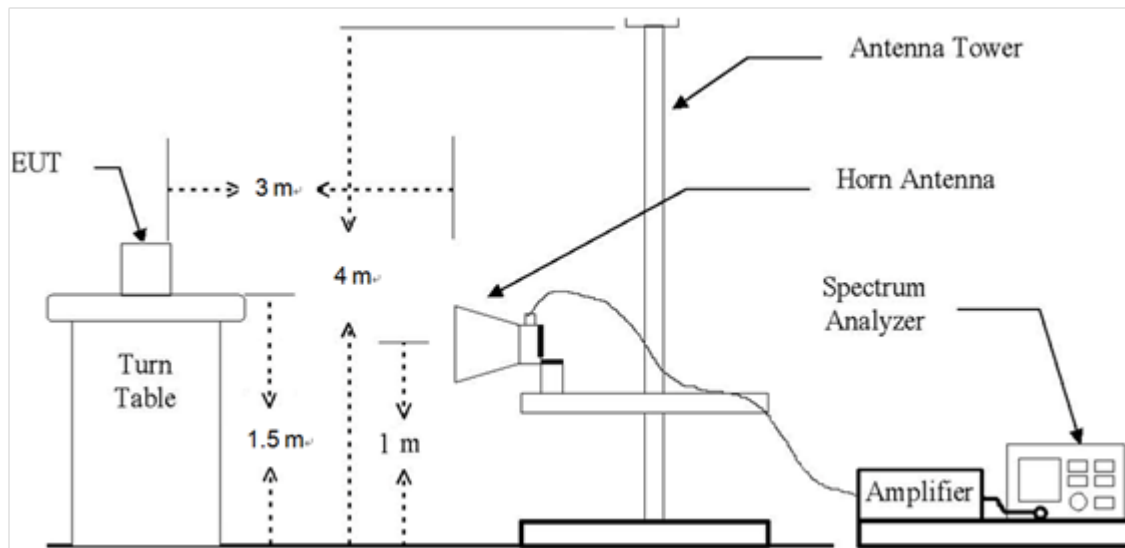
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 kHz to 30 MHz.



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 20 GHz Emissions.



2.2. Limit

2.2.1. 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(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 dB W /MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dB W 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), 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.

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 3

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

(ii) After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dB W) by at least $43 + 10 \log_{10} p$ (watts) dB.

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 $\geq 3 \times$ 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. Radiated Spurious emissions

ULCA_2A-5A

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B2 1.4 MHz Low channel 1RB, QPSK									
3 700.80	47.17	H	32.10	-36.60	42.67	-95.26	-52.59	-13	39.59
3 700.80	61.69	V	32.10	-36.60	57.19	-95.26	-38.07	-13	25.07
5 551.90	46.03	H	33.90	-34.20	45.73	-95.26	-49.53	-13	36.53
5 551.40	54.30	V	33.90	-34.21	53.99	-95.26	-41.27	-13	28.27
Above 5 600.00	Not detected	—	—	—	—	—	—	—	—
LTE B5 5 MHz Low channel 1RB, QPSK									
1 653.25	57.35	H	25.64	-38.67	44.32	-97.41	-53.09	-13	40.09
1 653.25	56.94	V	25.64	-38.67	43.91	-97.41	-53.50	-13	40.50
2 479.75	58.10	V	28.14	-36.92	49.32	-97.41	-48.09	-13	35.09
4 132.75	45.59	V	31.97	-36.18	41.38	-97.41	-56.03	-13	43.03
6 384.00	43.71	V	34.60	-33.51	44.80	-97.41	-52.61	-13	39.61
Above 6 400.00	Not detected	—	—	—	—	—	—	—	—
LTE B2 1.4 MHz Middle channel 1RB, QPSK									
3 750.90	52.67	V	32.20	-36.85	48.02	-95.26	-47.24	-13	34.24
5 626.40	50.16	V	33.90	-33.53	50.53	-95.26	-44.73	-13	31.73
6 383.90	42.23	V	34.60	-33.51	43.32	-95.26	-51.94	-13	38.94
Above 6 400.00	Not detected	—	—	—	—	—	—	—	—
LTE B5 5 MHz Middle channel 1RB, QPSK									
1 673.25	55.69	H	25.88	-38.66	42.91	-97.41	-54.50	-13	41.50
1 673.25	58.40	V	25.88	-38.66	45.62	-97.41	-51.79	-13	38.79
2 509.75	52.63	H	28.16	-37.07	43.72	-97.41	-53.69	-13	40.69
2 509.75	64.35	V	28.16	-37.07	55.44	-97.41	-41.97	-13	28.97
Above 2 600.00	Not detected	—	—	—	—	—	—	—	—

ULCA 2A-5A

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B2 1.4 MHz High channel 1RB, QPSK									
3 800.60	51.50	V	32.00	-36.64	46.86	-95.26	-48.40	-13	35.40
5 701.40	45.89	V	33.90	-33.56	46.23	-95.26	-49.03	-13	36.03
Above 5 800.00	Not detected	–	–	–	–	–	–	–	–
LTE B5 5 MHz High channel 1RB, QPSK									
1 693.25	53.43	H	26.12	-38.75	40.80	-97.41	-56.61	-13	43.61
1 693.25	58.87	V	26.12	-38.75	46.24	-97.41	-51.17	-13	38.17
2 539.75	55.78	H	28.34	-36.65	47.47	-97.41	-49.94	-13	36.94
2 539.75	67.75	V	28.34	-36.65	59.44	-97.41	<u>-37.97</u>	-13	24.97
4 232.75	45.18	V	31.77	-35.92	41.03	-97.41	-56.38	-13	43.38
6 384.25	46.80	V	34.60	-33.51	47.89	-97.41	-49.52	-13	36.52
Above 6 400.00	Not detected	–	–	–	–	–	–	–	–

ULCA 2A-12A

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B2 1.4 MHz Low channel 1RB, QPSK									
3 700.80	46.20	H	32.10	-36.60	41.70	-95.26	-53.56	-13	40.56
3 700.80	59.85	V	32.10	-36.60	55.35	-95.26	-39.91	-13	26.91
5 551.40	54.28	H	33.90	-34.21	53.97	-95.26	-41.29	-13	28.29
6 383.40	45.23	H	34.60	-33.50	46.33	-95.26	-48.93	-13	35.93
Above 6 400.00	Not detected	-	-	-	-	-	-	-	-
LTE B12 10 MHz Low channel 1RB, QPSK									
1 416.94	67.85	H	25.07	-39.14	53.78	-97.41	-43.63	-13	30.63
1 417.16	60.71	V	25.07	-39.14	46.64	-97.41	-50.77	-13	37.77
2 125.47	67.51	H	27.55	-37.02	58.04	-97.41	-39.37	-13	26.37
2 125.47	56.39	V	27.55	-37.02	46.92	-97.41	-50.49	-13	37.49
Above 2 200.00	Not detected	-	-	-	-	-	-	-	-
LTE B2 1.4 MHz Middle channel 1RB, QPSK									
3 750.90	54.80	V	32.20	-36.85	50.15	-95.26	-45.11	-13	32.11
5 626.40	45.59	H	33.90	-33.53	45.96	-95.26	-49.30	-13	36.30
5 626.40	52.91	V	33.90	-33.53	53.28	-95.26	-41.98	-13	28.98
6 383.90	43.22	V	34.60	-33.51	44.31	-95.26	-50.95	-13	37.95
Above 6 400.00	Not detected	-	-	-	-	-	-	-	-
LTE B12 10 MHz Middle channel 1RB, QPSK									
1 424.16	67.50	H	25.05	-39.14	53.41	-97.41	-44.00	-13	31.00
1 424.16	68.03	V	25.05	-39.14	53.94	-97.41	-43.47	-13	30.47
2 135.75	73.42	H	27.57	-36.91	64.08	-97.41	-33.33	-13	20.33
2 135.97	81.47	V	27.57	-36.90	72.14	-97.41	-25.27	-13	12.27
Above 2 200.00	Not detected	-	-	-	-	-	-	-	-

ULCA 2A-12A

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B2 1.4 MHz High channel 1RB, QPSK									
3 800.60	45.93	H	32.00	-36.64	41.29	-95.26	-53.97	-13	40.97
3 800.60	55.63	V	32.00	-36.64	50.99	-95.26	-44.27	-13	31.27
5 701.40	42.37	H	33.90	-33.56	42.71	-95.26	-52.55	-13	39.55
5 701.40	51.72	V	33.90	-33.56	52.06	-95.26	-43.20	-13	30.20
6 383.40	48.00	V	34.60	-33.50	49.10	-95.26	-46.16	-13	33.16
Above 6 400.00	Not detected	—	—	—	—	—	—	—	—
LTE B12 10 MHz High channel 1RB, QPSK									
1 431.16	65.64	H	25.04	-39.13	51.55	-97.41	-45.86	-13	32.86
1 431.16	66.34	V	25.04	-39.13	52.25	-97.41	-45.16	-13	32.16
2 146.26	72.89	H	27.59	-36.79	63.69	-97.41	-33.72	-13	20.72
2 146.47	81.38	V	27.59	-36.79	72.18	-97.41	-25.23	-13	12.23
Above 2 200.00	Not detected	—	—	—	—	—	—	—	—

ULCA 2A-13A

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B2 1.4 MHz Low channel 1RB, QPSK									
3 700.80	45.34	H	32.10	-36.60	40.84	-95.26	-54.42	-13	41.42
3 700.80	59.60	V	32.10	-36.60	55.10	-95.26	-40.16	-13	27.16
5 551.40	48.70	H	33.90	-34.21	48.39	-95.26	-46.87	-13	33.87
5 551.40	54.75	V	33.90	-34.21	54.44	-95.26	-40.82	-13	27.82
6 383.40	46.12	V	34.60	-33.50	47.22	-95.26	-48.04	-13	35.04
Above 6 400.00	Not detected	-	-	-	-	-	-	-	-
LTE B13 5 MHz Low channel 1RB, QPSK									
1 554.71	53.92	H	25.32	-38.80	40.44	-97.41	-56.97	-13	43.97
1 554.68	59.03	V	25.32	-38.80	45.55	-97.41	-51.86	-13	38.86
2 332.41	71.01	H	27.80	-36.45	62.36	-97.41	-35.05	-13	22.05
2 332.19	83.04	V	27.80	-36.45	74.39	-97.41	-23.02	-13	10.02
3 109.41	49.06	V	30.02	-36.65	42.43	-97.41	-54.98	-13	41.98
3 886.84	56.36	V	32.17	-36.07	52.46	-97.41	-44.95	-13	31.95
Above 3 900.00	Not detected	-	-	-	-	-	-	-	-
LTE B2 1.4 MHz Middle channel 1RB, QPSK									
3 750.90	53.80	V	32.20	-36.85	49.15	-95.26	-46.11	-13	33.11
5 626.40	44.12	H	33.90	-33.53	44.49	-95.26	-50.77	-13	37.77
5 626.40	52.95	V	33.90	-33.53	53.32	-95.26	-41.94	-13	28.94
Above 5 700.00	Not detected	-	-	-	-	-	-	-	-
LTE B13 5 MHz Middle channel 1RB, QPSK									
1 559.64	57.31	H	25.34	-38.77	43.88	-95.26	-51.38	-40	11.38
1 559.67	57.75	V	25.34	-38.77	44.32	-95.26	-50.94	-40	10.94
2 339.63	73.82	H	27.80	-36.39	65.23	-97.41	-32.18	-13	19.18
2 339.84	75.07	V	27.80	-36.39	66.48	-97.41	-30.93	-13	17.93
3 119.69	47.51	V	30.04	-36.65	40.90	-97.41	-56.51	-13	43.51
3 899.31	53.77	V	32.20	-36.02	49.95	-97.41	-47.46	-13	34.46
Above 3 900.00	Not detected	-	-	-	-	-	-	-	-

ULCA_2A-13A

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B2 1.4 MHz High channel 1RB, QPSK									
3 800.60	54.63	V	32.00	-36.64	49.99	-95.26	-45.27	-13	32.27
5 701.40	42.14	H	33.90	-33.56	42.48	-95.26	-52.78	-13	39.78
5 701.40	49.79	V	33.90	-33.56	50.13	-95.26	-45.13	-13	32.13
6 383.90	45.73	V	34.60	-33.51	46.82	-95.26	-48.44	-13	35.44
Above 6 400.00	Not detected	-	-	-	-	-	-	-	-
LTE B13 5 MHz High channel 1RB, QPSK									
1 564.69	57.67	H	25.36	-38.75	44.28	-95.26	-50.98	-40	10.98
1 564.71	58.96	V	25.36	-38.75	45.57	-95.26	-49.69	-40	9.69
2 347.28	70.65	H	27.80	-36.32	62.13	-97.41	-35.28	-13	22.28
2 347.28	71.56	V	27.80	-36.32	63.04	-97.41	-34.37	-13	21.37
Above 2 400.00	Not detected	-	-	-	-	-	-	-	-

ULCA 4A-12A

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B4 15 MHz Low channel 1RB, QPSK									
3 438.30	66.66	H	31.01	-36.83	60.84	-95.26	-34.42	-13	21.42
3 438.80	77.86	V	31.01	-36.82	72.05	-95.26	-23.21	-13	10.21
5 157.70	57.27	V	33.33	-35.44	55.16	-95.26	-40.10	-13	27.10
5 157.70	68.01	H	33.33	-35.44	65.90	-95.26	-29.36	-13	16.36
6 877.00	62.66	V	35.30	-33.70	64.26	-95.26	-31.00	-13	18.00
6 877.50	75.51	H	35.30	-33.70	77.11	-95.26	-18.15	-13	5.15
8 596.90	64.97	V	36.59	-33.71	67.85	-95.26	-27.41	-13	14.41
8 596.90	71.30	V	36.59	-33.71	74.18	-95.26	-21.08	-13	8.08
10 316.30	58.50	H	37.80	-31.03	65.27	-95.26	-29.99	-13	16.99
10 316.30	66.57	V	37.80	-31.03	73.34	-95.26	-21.92	-13	8.92
12 035.60	60.16	H	38.50	-30.98	67.68	-95.26	-27.58	-13	14.58
12 035.20	64.34	V	38.50	-30.99	71.85	-95.26	-23.41	-13	10.41
13 755.00	54.51	H	40.50	-28.19	66.82	-95.26	-28.44	-13	15.44
13 755.00	55.01	V	40.50	-28.19	67.32	-95.26	-27.94	-13	14.94
15 473.90	54.20	H	40.00	-25.58	68.62	-95.26	-26.64	-13	13.64
15 473.90	51.24	V	40.00	-25.58	65.66	-95.26	-29.60	-13	16.60
17 194.20	38.70	H	42.39	-23.49	57.60	-95.26	-37.66	-13	24.66
17 194.20	39.89	V	42.39	-23.49	58.79	-95.26	-36.47	-13	23.47
Above 17 200.00	Not detected	—	—	—	—	—	—	—	—
LTE B12 10 MHz Low channel 1RB, QPSK									
1 417.00	67.75	H	25.07	-39.14	53.68	-97.41	-43.73	-13	30.73
1 416.94	69.02	V	25.07	-39.14	54.95	-97.41	-42.46	-13	29.46
2 125.50	60.58	H	27.55	-37.02	51.11	-97.41	-46.30	-13	33.30
2 125.69	67.33	V	27.55	-37.02	57.86	-97.41	-39.55	-13	26.55
Above 2 200.00	Not detected	—	—	—	—	—	—	—	—

ULCA 4A-12A

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P./ E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B4 15 MHz Middle channel 1RB, QPSK									
3 473.40	63.66	H	31.10	-36.79	57.97	-95.26	-37.29	-13	24.29
3 473.40	76.84	V	31.10	-36.79	71.15	-95.26	-24.11	-13	11.11
5 210.20	53.81	H	33.52	-35.14	52.19	-95.26	-43.07	-13	30.07
5 210.20	67.59	V	33.52	-35.14	65.97	-95.26	-29.29	-13	16.29
6 947.30	62.34	H	35.39	-33.22	64.51	-95.26	-30.75	-13	17.75
6 947.30	74.70	V	35.39	-33.22	76.87	-95.26	-18.39	-13	5.39
8 684.50	63.76	H	36.84	-34.39	66.21	-95.26	-29.05	-13	16.05
8 684.50	70.78	V	36.84	-34.39	73.23	-95.26	-22.03	-13	9.03
10 421.30	52.80	H	37.80	-31.10	59.50	-95.26	-35.76	-13	22.76
10 421.30	59.36	V	37.80	-31.10	66.06	-95.26	-29.20	-13	16.20
12 158.00	56.04	H	38.40	-28.88	65.56	-95.26	-29.70	-13	16.70
12 157.50	60.43	V	38.40	-28.88	69.95	-95.26	-25.31	-13	12.31
13 895.20	48.45	H	40.60	-25.35	63.70	-95.26	-31.56	-13	18.56
13 894.70	50.91	V	40.60	-25.36	66.15	-95.26	-29.11	-13	16.11
15 631.90	48.48	H	40.16	-25.99	62.65	-95.26	-32.61	-13	19.61
15 631.90	43.52	V	40.16	-25.99	57.69	-95.26	-37.57	-13	24.57
17 368.60	38.32	H	42.87	-24.50	56.69	-95.26	-38.57	-13	25.57
Above 17 400.00	Not detected	-	-	-	-	-	-	-	-
LTE B12 10 MHz Middle channel 1RB, QPSK									
1 423.94	67.13	H	25.05	-39.14	53.04	-97.41	-44.37	-13	31.37
1 423.94	68.12	V	25.05	-39.14	54.03	-97.41	-43.38	-13	30.38
2 135.97	58.47	H	27.57	-36.90	49.14	-97.41	-48.27	-13	35.27
2 136.19	66.47	V	27.57	-36.90	57.14	-97.41	-40.27	-13	27.27
Above 2 200.00	Not detected	-	-	-	-	-	-	-	-

ULCA 4A-12A

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B4 15 MHz High channel 1RB, QPSK									
3 508.60	58.14	H	31.08	-36.71	52.51	-95.26	-42.75	-13	29.75
3 508.60	72.42	V	31.08	-36.71	66.79	-95.26	-28.47	-13	15.47
5 263.10	49.17	H	33.65	-35.01	47.81	-95.26	-47.45	-13	34.45
5 267.70	57.78	V	33.67	-34.97	56.48	-95.26	-38.78	-13	25.78
7 017.20	50.31	H	35.50	-33.12	52.69	-95.26	-42.57	-13	29.57
7 017.20	62.14	V	35.50	-33.12	64.52	-95.26	-30.74	-13	17.74
8 771.70	50.75	H	37.04	-33.43	54.36	-95.26	-40.90	-13	27.90
8 771.70	61.56	V	37.04	-33.43	65.17	-95.26	-30.09	-13	17.09
10 526.30	41.51	H	37.70	-30.98	48.23	-95.26	-47.03	-13	34.03
10 526.30	50.69	V	37.70	-30.98	57.41	-95.26	-37.85	-13	24.85
12 280.30	38.77	H	38.40	-30.48	46.69	-95.26	-48.57	-13	35.57
12 280.30	37.70	V	38.40	-30.48	45.62	-95.26	-49.64	-13	36.64
14 034.80	37.73	V	40.87	-28.28	50.32	-95.26	-44.94	-13	31.94
Above 14 100.00	Not detected	-	-	-	-	-	-	-	-
LTE B12 10 MHz High channel 1RB, QPSK									
1 430.94	65.78	H	25.04	-39.13	51.69	-97.41	-45.72	-13	32.72
1 430.94	66.74	V	25.04	-39.13	52.65	-97.41	-44.76	-13	31.76
2 146.47	59.17	H	27.59	-36.79	49.97	-97.41	-47.44	-13	34.44
2 146.47	68.00	V	27.59	-36.79	58.80	-97.41	-38.61	-13	25.61
2 988.88	49.52	V	29.57	-36.98	42.11	-97.41	-55.30	-13	42.30
Above 3 000.00	Not detected	-	-	-	-	-	-	-	-

ULCA_5A-66A

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B5 5 MHz Low channel 1RB, QPSK									
1 653.25	77.67	H	25.64	-38.67	64.64	-97.41	-32.77	-13	19.77
1 653.25	78.43	V	25.64	-38.67	65.40	-97.41	-32.01	-13	19.01
2 480.00	67.82	H	28.14	-36.92	59.04	-97.41	-38.37	-13	25.37
2 479.75	71.70	V	28.14	-36.92	62.92	-97.41	-34.49	-13	21.49
3 306.25	49.47	H	30.69	-37.09	43.07	-97.41	-54.34	-13	41.34
3 306.00	51.00	V	30.69	-37.09	44.60	-97.41	-52.81	-13	39.81
4 132.50	45.53	H	31.97	-36.18	41.32	-97.41	-56.09	-13	43.09
4 132.75	50.29	V	31.97	-36.18	46.08	-97.41	-51.33	-13	38.33
Above 4 200.00	Not detected	-	-	-	-	-	-	-	-
LTE B66 15 MHz Low channel 1RB, QPSK									
3 447.70	67.26	H	31.08	-36.76	61.58	-95.26	-33.68	-13	20.68
3 448.10	79.81	V	31.08	-36.76	74.13	-95.26	-21.13	-13	8.13
5 172.20	56.14	H	33.39	-35.33	54.20	-95.26	-41.06	-13	28.06
5 172.20	67.13	V	33.39	-35.33	65.19	-95.26	-30.07	-13	17.07
6 896.30	64.79	H	35.30	-33.52	66.57	-95.26	-28.69	-13	15.69
6 896.30	75.53	V	35.30	-33.52	77.31	-95.26	-17.95	-13	4.95
8 620.30	63.16	H	36.64	-33.89	65.91	-95.26	-29.35	-13	16.35
8 620.30	69.46	V	36.64	-33.89	72.21	-95.26	-23.05	-13	10.05
10 344.80	56.43	H	37.80	-30.66	63.57	-95.26	-31.69	-13	18.69
10 344.80	64.45	V	37.80	-30.66	71.59	-95.26	-23.67	-13	10.67
12 068.90	61.54	H	38.50	-29.87	70.17	-95.26	-25.09	-13	12.09
12 068.40	62.92	V	38.50	-29.90	71.52	-95.26	-23.74	-13	10.74
13 793.00	49.45	H	40.50	-28.51	61.44	-95.26	-33.82	-13	20.82
13 793.00	57.45	V	40.50	-28.51	69.44	-95.26	-25.82	-13	12.82
15 517.00	55.27	H	40.03	-25.47	69.83	-95.26	-25.43	-13	12.43
15 517.00	52.19	V	40.03	-25.47	66.75	-95.26	-28.51	-13	15.51
17 241.60	39.12	H	42.48	-24.26	57.34	-95.26	-37.92	-13	24.92
17 241.60	38.95	V	42.48	-24.26	57.17	-95.26	-38.09	-13	25.09
Above 17 300.00	Not detected	-	-	-	-	-	-	-	-

ULCA 5A-66A

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B5 5 MHz Middle channel 1RB, QPSK									
1 673.00	73.65	H	25.88	-38.66	60.87	-97.41	-36.54	-13	23.54
1 673.25	76.08	V	25.88	-38.66	63.30	-97.41	-34.11	-13	21.11
2 509.50	54.98	H	28.16	-37.07	46.07	-97.41	-51.34	-13	38.34
2 509.75	61.68	V	28.16	-37.07	52.77	-97.41	-44.64	-13	31.64
3 346.25	50.80	H	30.61	-36.99	44.42	-97.41	-52.99	-13	39.99
3 346.00	52.08	V	30.61	-36.99	45.70	-97.41	-51.71	-13	38.71
Above 3 400.00	Not detected	—	—	—	—	—	—	—	—
LTE B66 15 MHz Middle channel 1RB, QPSK									
3 503.00	58.78	H	31.09	-36.68	53.19	-95.26	-42.07	-13	29.07
3 503.00	73.92	V	31.09	-36.68	68.33	-95.26	-26.93	-13	13.93
5 254.70	46.98	H	33.62	-35.07	45.53	-95.26	-49.73	-13	36.73
5 254.70	54.10	V	33.62	-35.07	52.65	-95.26	-42.61	-13	29.61
7 005.90	52.18	H	35.50	-33.08	54.60	-95.26	-40.66	-13	27.66
7 005.90	64.46	V	35.50	-33.08	66.88	-95.26	-28.38	-13	15.38
8 757.70	54.52	H	37.02	-33.63	57.91	-95.26	-37.35	-13	24.35
8 757.70	63.23	V	37.02	-33.63	66.62	-95.26	-28.64	-13	15.64
10 509.80	45.01	H	37.70	-31.05	51.66	-95.26	-43.60	-13	30.60
10 509.80	51.44	V	37.70	-31.05	58.09	-95.26	-37.17	-13	24.17
12 261.10	45.41	H	38.40	-30.28	53.53	-95.26	-41.73	-13	28.73
12 261.10	47.13	V	38.40	-30.28	55.25	-95.26	-40.01	-13	27.01
14 012.80	38.13	H	40.83	-28.09	50.87	-95.26	-44.39	-13	31.39
14 012.80	43.33	V	40.83	-28.09	56.07	-95.26	-39.19	-13	26.19
15 764.50	40.07	H	40.20	-23.49	56.78	-95.26	-38.48	-13	25.48
15 764.50	36.56	V	40.20	-23.49	53.27	-95.26	-41.99	-13	28.99
Above 15 800.00	Not detected	—	—	—	—	—	—	—	—

ULCA_5A-66A

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. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B5 5 MHz High channel 1RB, QPSK									
2 539.50	68.21	V	28.34	-36.66	59.89	-97.41	-37.52	-13	24.52
3 386.00	49.90	H	30.67	-36.99	43.58	-97.41	-53.83	-13	40.83
3 386.25	49.02	V	30.67	-36.99	42.70	-97.41	-54.71	-13	41.71
Above 3 400.00	Not detected	-	-	-	-	-	-	-	-
LTE B66 15 MHz High channel 1RB, QPSK									
3 557.80	54.83	H	31.05	-36.98	48.90	-95.26	-46.36	-13	33.36
3 558.30	67.34	V	31.05	-36.98	61.41	-95.26	-33.85	-13	20.85
5 337.20	46.46	H	33.87	-34.70	45.63	-95.26	-49.63	-13	36.63
5 337.20	59.23	V	33.87	-34.70	58.40	-95.26	-36.86	-13	23.86
7 116.10	47.76	V	35.60	-32.98	50.38	-95.26	-44.88	-13	31.88
8 895.00	40.65	H	37.11	-33.12	44.64	-95.26	-50.62	-13	37.62
8 895.50	46.27	V	37.11	-33.12	50.26	-95.26	-45.00	-13	32.00
10 674.40	37.97	H	37.85	-30.85	44.97	-95.26	-50.29	-13	37.29
10 674.80	39.18	V	37.85	-30.84	46.19	-95.26	-49.07	-13	36.07
Above 10 700.00	Not detected	-	-	-	-	-	-	-	-

ULCA 12A-66A

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B12 10 MHz Low channel 1RB, QPSK									
1 416.72	66.19	H	25.07	-39.14	52.12	-97.41	-45.29	-13	32.29
1 417.38	67.99	V	25.07	-39.14	53.92	-97.41	-43.49	-13	30.49
3 542.09	49.47	H	31.02	-36.94	43.55	-97.41	-53.86	-13	40.86
6 384.09	48.70	V	34.60	-33.51	49.79	-97.41	-47.62	-13	34.62
Above 6 400.00	Not detected	-	-	-	-	-	-	-	-
LTE B66 15 MHz Low channel 1RB, QPSK									
3 448.10	65.68	H	31.08	-36.76	60.00	-95.26	-35.26	-13	22.26
3 448.10	79.30	V	31.08	-36.76	73.62	-95.26	-21.64	-13	8.64
5 172.20	56.98	H	33.39	-35.33	55.04	-95.26	-40.22	-13	27.22
5 172.20	66.01	V	33.39	-35.33	64.07	-95.26	-31.19	-13	18.19
6 896.70	63.75	H	35.30	-33.52	65.53	-95.26	-29.73	-13	16.73
6 896.30	74.46	V	35.30	-33.52	76.24	-95.26	-19.02	-13	6.02
8 620.30	60.75	H	36.64	-33.89	63.50	-95.26	-31.76	-13	18.76
8 620.30	68.00	V	36.64	-33.89	70.75	-95.26	-24.51	-13	11.51
10 344.80	55.21	H	37.80	-30.66	62.35	-95.26	-32.91	-13	19.91
10 344.80	65.56	V	37.80	-30.66	72.70	-95.26	-22.55	-13	9.55
12 068.40	61.37	H	38.50	-29.90	69.97	-95.26	-25.29	-13	12.29
12 068.90	61.28	V	38.50	-29.87	69.91	-95.26	-25.35	-13	12.35
13 793.00	49.97	H	40.50	-28.51	61.96	-95.26	-33.30	-13	20.30
13 793.00	53.98	V	40.50	-28.51	65.97	-95.26	-29.29	-13	16.29
15 517.00	54.17	H	40.03	-25.47	68.73	-95.26	-26.53	-13	13.53
15 517.00	52.26	V	40.03	-25.47	66.82	-95.26	-28.44	-13	15.44
17 241.60	39.19	H	42.48	-24.26	57.41	-95.26	-37.85	-13	24.85
17 241.10	38.82	V	42.48	-24.26	57.04	-95.26	-38.22	-13	25.22
Above 17 300.00	Not detected	-	-	-	-	-	-	-	-

ULCA 12A-66A

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B12 10 MHz Middle channel 1RB, QPSK									
1 423.94	64.64	H	25.05	-39.14	50.55	-97.41	-46.86	-13	33.86
1 424.16	68.47	V	25.05	-39.14	54.38	-97.41	-43.03	-13	30.03
3 559.59	50.24	H	31.06	-36.98	44.32	-97.41	-53.09	-13	40.09
6 384.31	47.63	V	34.60	-33.51	48.72	-97.41	-48.69	-13	35.69
Above 6 400.00	Not detected	-	-	-	-	-	-	-	-
LTE B66 15 MHz Middle channel 1RB, QPSK									
3 503.00	61.09	H	31.09	-36.68	55.50	-95.26	-39.76	-13	26.76
3 503.00	73.92	V	31.09	-36.68	68.33	-95.26	-26.93	-13	13.93
5 254.70	43.13	H	33.62	-35.07	41.68	-95.26	-53.58	-13	40.58
5 254.20	52.52	V	33.62	-35.07	51.07	-95.26	-44.19	-13	31.19
7 006.90	47.48	H	35.50	-33.08	49.90	-95.26	-45.36	-13	32.36
7 006.40	64.11	V	35.50	-33.08	66.53	-95.26	-28.73	-13	15.73
8 757.70	54.14	H	37.02	-33.63	57.53	-95.26	-37.73	-13	24.73
8 758.10	63.89	V	37.02	-33.62	67.29	-95.26	-27.97	-13	14.97
10 509.80	45.44	H	37.70	-31.05	52.09	-95.26	-43.17	-13	30.17
10 509.80	52.27	V	37.70	-31.05	58.92	-95.26	-36.34	-13	23.34
12 261.10	46.42	H	38.40	-30.28	54.54	-95.26	-40.72	-13	27.72
12 261.60	45.35	V	38.40	-30.29	53.46	-95.26	-41.80	-13	28.80
14 012.80	39.67	H	40.83	-28.09	52.41	-95.26	-42.85	-13	29.85
14 013.30	42.23	V	40.83	-28.09	54.97	-95.26	-40.29	-13	27.29
15 765.00	35.19	H	40.20	-23.50	51.89	-95.26	-43.37	-13	30.37
15 764.50	37.27	V	40.20	-23.49	53.98	-95.26	-41.28	-13	28.28
Above 15 800.00	Not detected	-	-	-	-	-	-	-	-

ULCA 12A-66A

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. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B12 10 MHz High channel 1RB, QPSK									
4 389.53	47.77	V	32.08	-36.06	43.79	-97.41	-53.62	-13	40.62
6 383.88	47.22	V	34.60	-33.51	48.31	-97.41	-49.10	-13	36.10
Above 6 400.00	Not detected	—	—	—	—	—	—	—	—
LTE B66 15 MHz High channel 1RB, QPSK									
3 557.80	54.88	H	31.05	-36.98	48.95	-95.26	-46.31	-13	33.31
3 557.80	68.72	V	31.05	-36.98	62.79	-95.26	-32.47	-13	19.47
5 337.20	47.05	H	33.87	-34.70	46.22	-95.26	-49.04	-13	36.04
5 337.20	59.93	V	33.87	-34.70	59.10	-95.26	-36.16	-13	23.16
7 116.10	47.50	V	35.60	-32.98	50.12	-95.26	-45.14	-13	32.14
8 895.50	45.35	V	37.11	-33.12	49.34	-95.26	-45.92	-13	32.92
10 674.80	41.37	V	37.85	-30.84	48.38	-95.26	-46.88	-13	33.88
Above 10 700.00	Not detected	—	—	—	—	—	—	—	—

ULCA 13A-66A

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P./ E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B13 5 MHz Low channel 1RB, QPSK									
1 554.75	77.62	H	25.32	-38.80	64.14	-97.41	-33.27	-13	20.27
1 554.75	77.57	V	25.32	-38.80	64.09	-97.41	-33.32	-13	20.32
2 332.19	71.35	H	27.80	-36.45	62.70	-97.41	-34.71	-13	21.71
2 332.19	79.61	V	27.80	-36.45	70.96	-97.41	-26.45	-13	13.45
3 887.06	52.74	V	32.17	-36.07	48.84	-97.41	-48.57	-13	35.57
6 384.09	46.32	V	34.60	-33.51	47.41	-97.41	-50.00	-13	37.00
Above 6 400.00	Not detected	-	-	-	-	-	-	-	-
LTE B66 15 MHz Low channel 1RB, QPSK									
3 448.60	68.01	H	31.09	-36.75	62.35	-95.26	-32.91	-13	19.91
3 448.60	77.96	V	31.09	-36.75	72.30	-95.26	-22.96	-13	9.96
5 173.10	61.17	H	33.39	-35.33	59.23	-95.26	-36.03	-13	23.03
5 172.70	69.68	V	33.39	-35.33	67.74	-95.26	-27.52	-13	14.52
6 896.70	65.68	H	35.30	-33.52	67.46	-95.26	-27.80	-13	14.80
6 896.70	77.12	V	35.30	-33.52	78.90	-95.26	-16.36	-13	3.36
8 621.30	67.79	H	36.64	-33.90	70.53	-95.26	-24.73	-13	11.73
8 620.80	73.02	V	36.64	-33.89	75.77	-95.26	-19.49	-13	6.49
10 344.80	53.24	H	37.80	-30.66	60.38	-95.26	-34.88	-13	21.88
10 345.30	60.37	V	37.80	-30.66	67.51	-95.26	-27.75	-13	14.75
12 068.90	61.56	H	38.50	-29.87	70.19	-95.26	-25.07	-13	12.07
12 068.90	61.96	V	38.50	-29.87	70.59	-95.26	-24.67	-13	11.67
13 793.40	50.23	H	40.50	-28.52	62.21	-95.26	-33.05	-13	20.05
13 793.40	56.03	V	40.50	-28.52	68.01	-95.26	-27.25	-13	14.25
15 517.50	52.65	H	40.04	-25.48	67.21	-95.26	-28.05	-13	15.05
15 517.50	50.85	V	40.04	-25.48	65.41	-95.26	-29.85	-13	16.85
17 242.00	41.76	H	42.48	-24.26	59.98	-95.26	-35.28	-13	22.28
17 241.60	42.04	V	42.48	-24.26	60.26	-95.26	-35.00	-13	22.00
Above 17 300.00	Not detected	-	-	-	-	-	-	-	-

ULCA 13A-66A

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B13 5 MHz Middle channel 1RB, QPSK									
1 559.64	57.31	H	25.34	-38.77	43.88	-95.26	-51.38	-40	11.38
1 559.67	57.75	V	25.34	-38.77	44.32	-95.26	-50.94	-40	10.94
2 339.41	73.24	H	27.80	-36.39	64.65	-97.41	-32.76	-13	19.76
2 339.19	74.72	V	27.80	-36.39	66.13	-97.41	-31.28	-13	18.28
3 899.31	54.59	V	32.20	-36.02	50.77	-97.41	-46.64	-13	33.64
Above 3 900.00	Not detected	—	—	—	—	—	—	—	—
LTE B66 15 MHz Middle channel 1RB, QPSK									
3 503.40	56.41	H	31.09	-36.68	50.82	-95.26	-44.44	-13	31.44
3 503.40	69.55	V	31.09	-36.68	63.96	-95.26	-31.30	-13	18.30
5 255.20	55.35	H	33.62	-35.06	53.91	-95.26	-41.35	-13	28.35
5 255.20	61.08	V	33.62	-35.06	59.64	-95.26	-35.62	-13	22.62
7 006.90	51.02	H	35.50	-33.08	53.44	-95.26	-41.82	-13	28.82
7 006.40	64.51	V	35.50	-33.08	66.93	-95.26	-28.33	-13	15.33
8 758.60	50.92	H	37.02	-33.62	54.32	-95.26	-40.94	-13	27.94
8 758.60	58.13	V	37.02	-33.62	61.53	-95.26	-33.73	-13	20.73
10 509.80	50.32	H	37.70	-31.05	56.97	-95.26	-38.29	-13	25.29
10 509.80	54.34	V	37.70	-31.05	60.99	-95.26	-34.27	-13	21.27
12 261.60	44.26	H	38.40	-30.29	52.37	-95.26	-42.89	-13	29.89
12 261.60	44.47	V	38.40	-30.29	52.58	-95.26	-42.68	-13	29.68
Above 12 300.00	Not detected	—	—	—	—	—	—	—	—

ULCA 13A-66A

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B13 5 MHz High channel 1RB, QPSK									
1 564.69	57.67	H	25.36	-38.75	44.28	-95.26	-50.98	-40	10.98
1 564.71	58.96	V	25.36	-38.75	45.57	-95.26	-49.69	-40	9.69
2 346.84	75.07	H	27.80	-36.33	66.54	-97.41	-30.87	-13	17.87
2 347.28	75.14	V	27.80	-36.32	66.62	-97.41	-30.79	-13	17.79
3 912.00	48.06	H	32.18	-35.97	44.27	-97.41	-53.14	-13	40.14
3 912.00	57.73	V	32.18	-35.97	53.94	-97.41	-43.47	-13	30.47
6 378.84	45.25	V	34.60	-33.48	46.37	-97.41	-51.04	-13	38.04
Above 6 400.00	Not detected	-	-	-	-	-	-	-	-
LTE B66 15 MHz High channel 1RB, QPSK									
3 558.30	52.03	H	31.05	-36.98	46.10	-95.26	-49.16	-13	36.16
3 558.30	63.44	V	31.05	-36.98	57.51	-95.26	-37.75	-13	24.75
5 337.70	53.54	H	33.88	-34.70	52.72	-95.26	-42.54	-13	29.54
5 337.20	59.06	V	33.87	-34.70	58.23	-95.26	-37.03	-13	24.03
7 116.60	49.83	V	35.60	-32.98	52.45	-95.26	-42.81	-13	29.81
8 895.50	44.00	V	37.11	-33.12	47.99	-95.26	-47.27	-13	34.27
Above 8 900.00	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 -