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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.

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

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1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)
- 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- Designation number: KR0150

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1.2. Details of Applicant

FCC Applicant : LG Electronics USA
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 ㎒ ~ 1 910 ㎒ LTE Band 4: 1 710 ㎒ ~ 1 755 ㎒ LTE Band 5: 824 ㎒ ~ 849 ㎒ LTE Band 7: 2 500 ㎒ ~ 2 570 ㎒ LTE Band 12: 699 ㎒ ~ 716 ㎒ LTE Band 13: 777 ㎒ ~ 787 ㎒ LTE Band 14: 788 ㎒ ~ 798 ㎒ LTE Band 66: 1 710 ㎒ ~ 1 780 ㎒
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 (dBμV) + 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 ㎑ to 30 ㎒	H	3.40 ㏈
	V	3.40 ㏈
Radiated Emission, below 1 ㎓	H	4.50 ㏈
	V	5.10 ㏈
Radiated Emission, above 1 ㎓	H	3.70 ㏈
	V	3.90 ㏈

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 (㎒)	Antenna Peak Gain (㏈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

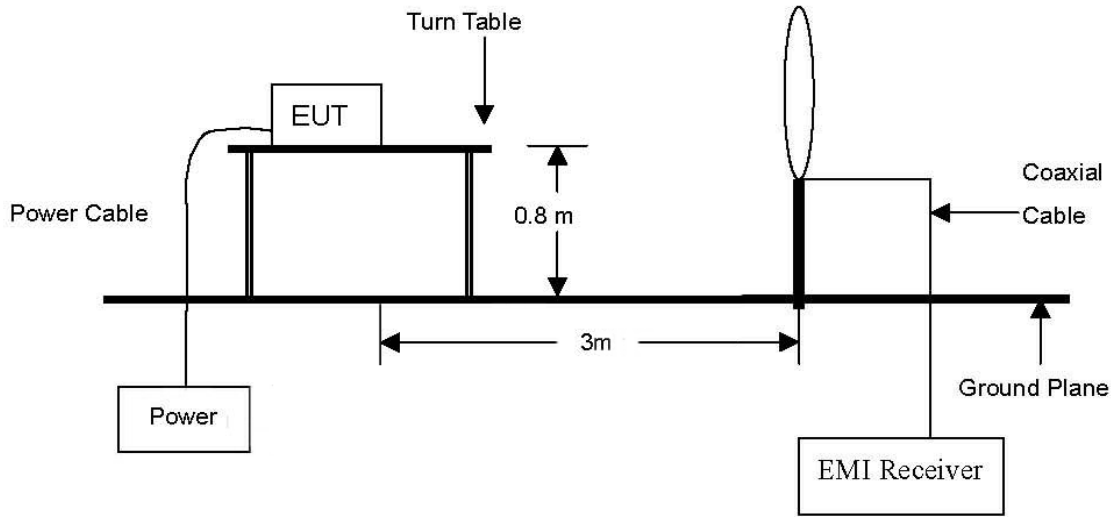
1.14. Information of Variant Model

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

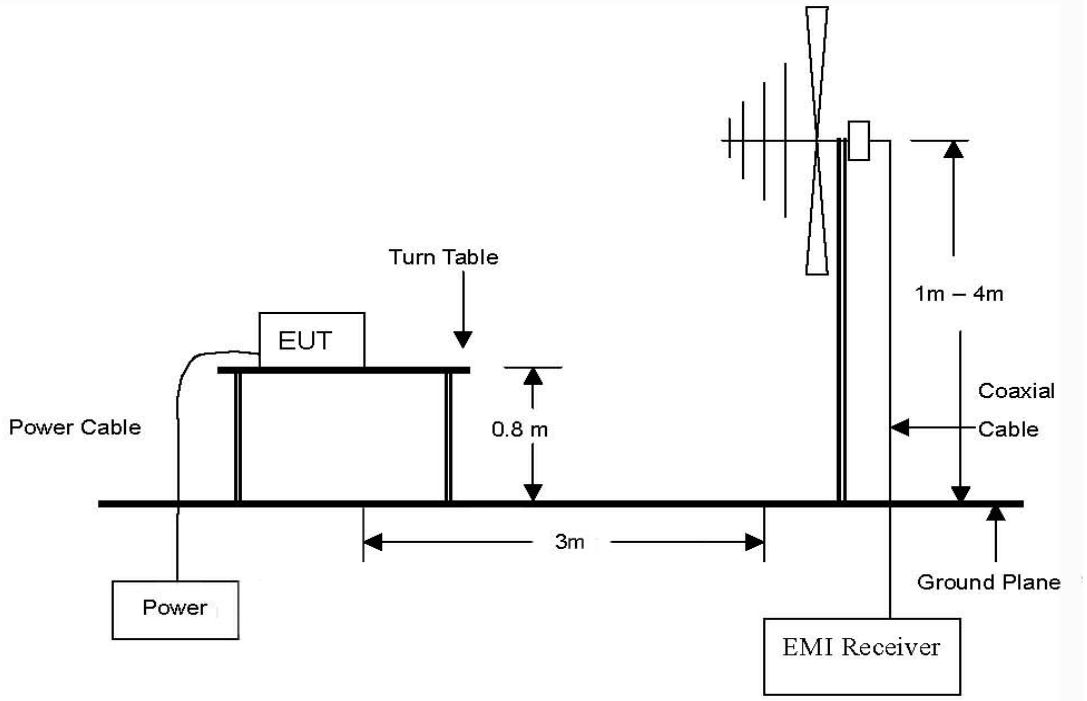
2. Radiated Spurious Emissions

2.1. Test setup

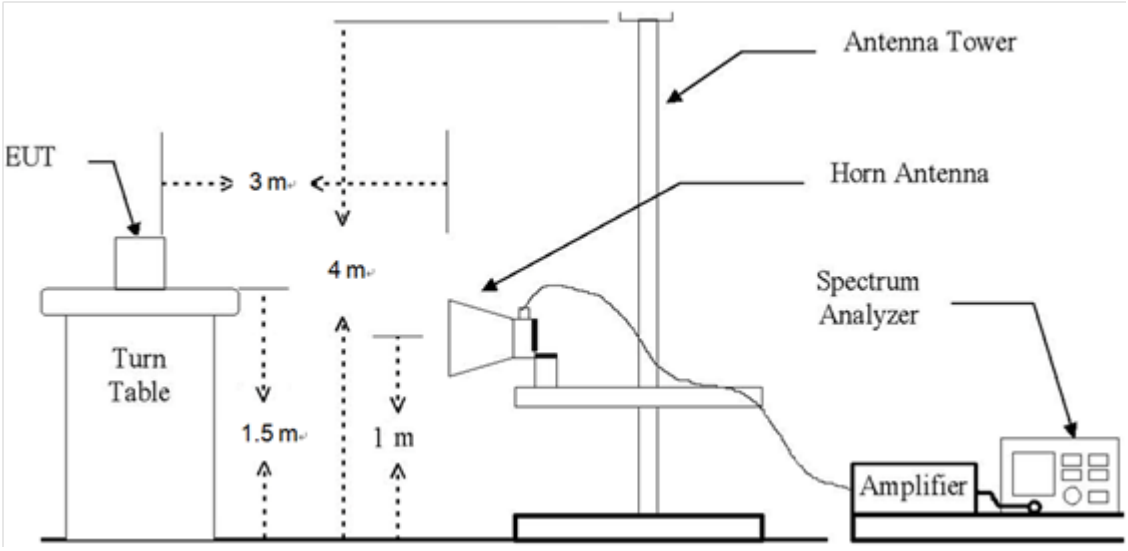
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 ㎑ to 30 ㎒.



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



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 ㎓ to 20 ㎓ 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 + 10log(P) ㏈.

- §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) ㏈.

- §27.53(c)(2), on any frequency outside the 776-788 ㎒ band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) ㏈.

- §27.53(f), for operations in the 746-758 ㎒, 775-788 ㎒, and 805-806 ㎒ bands, emissions in the band 1 559-1 610 ㎒ shall be limited to -70 ㏈ W /㎒ equivalent isotropically radiated power (EIRP) for wideband signals, and -80 ㏈ W EIRP for discrete emissions of less than 700 ㎐ 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) ㏈.

- §27.53(h)(1), for operations in the 1 695-1 710 ㎒, 1 710-1 755 ㎒, 1 755-1 780 ㎒, 1 915-1 920 ㎒, 1 995-2 000 ㎒, 2 000-2 020 ㎒, 2 110-2 155 ㎒, 2 155-2 180 ㎒, 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) ㏈.

IC

- RSS-130 Issue 2

4.7.1, the unwanted emissions in any 100 ㎑ 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 (㏈ W), by at least 43 + 10 $\log_{10}$ p (watts), ㏈. However, in the 100 ㎑ band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 ㎑ 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 ㎒ and 777-787 ㎒ shall also comply with the following restrictions:
a) The power of any unwanted emissions in any 6.25 ㎑ bandwidth for all frequencies between 763-775 ㎒ and 793-806 ㎒ shall be attenuated below the transmitter power, P (㏈ W), by at least:

(i) 76 + 10 $\log_{10}$ p (watts), ㏈, for base and fixed equipment, and
(ii) 65 + 10 $\log_{10}$ p (watts), ㏈, for mobile and portable equipment.

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

- 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 ㎒ 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 ㏈) below the transmitter output power P (㏈ W) by at least 43 + 10 $\log_{10}$ p (watts).

(ii) After the first 1.0 ㎒ immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 ㎑ bandwidth shall be attenuated (in ㏈) below the transmitter output power P (㏈ 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 ㎑ is required.

- RSS-133 Issue 6

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

(i) In the 1.0 ㎒ 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 ㏈) below the transmitter output power P (㏈ W) by at least 43 + 10 $\log_{10}$ p(watts).

(ii) After the first 1.0 ㎒, the emission power in any 1 ㎒ bandwidth shall be attenuated (in ㏈) below the transmitter output power P (㏈ 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 ㎒ is required.

- RSS-139 Issue 3

6.6, (i) In the first 1.0 ㎒ 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 ㏈ W) by at least 43 + 10 $\log_{10}$ p (watts) ㏈.

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

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 ㎑ for emissions below 1 ㎓ and 1 ㎒ for emissions above 1 ㎓, VBW ≥ 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) ℃
Relative humidity : 47 % R.H.

2.4.1. Radiated Spurious emissions

ULCA_2A-5A

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B2 1.4 ㎒ 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 ㎒ 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 ㎒ 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 (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B2 1.4 ㎒ 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 ㎒ 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	**-37.97**	-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 (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B2 1.4 ㎒ 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 ㎒ 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 ㎒ 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 ㎒ 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 (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B2 1.4 ㎒ 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 ㎒ 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 (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B2 1.4 ㎒ 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 ㎒ 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 ㎒ 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 ㎒ 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 (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B2 1.4 ㎒ 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 ㎒ 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 (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B4 15 ㎒ 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 ㎒ 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 (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P./ E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B4 15 ㎒ 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 ㎒ 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 (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B4 15 ㎒ 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 ㎒ 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 (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B5 5 ㎒ 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 ㎒ 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 (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B5 5 ㎒ 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 ㎒ 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 (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B5 5 ㎒ 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 ㎒ 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 (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B12 10 ㎒ 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 ㎒ 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 (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B12 10 ㎒ 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 ㎒ 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 (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B12 10 ㎒ 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 ㎒ 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 (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P./ E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B13 5 ㎒ 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 ㎒ 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 (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B13 5 ㎒ 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 ㎒ 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 (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
LTE B13 5 ㎒ 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 ㎒ 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 (dB㎶/m) = Measured Level (dB㎶) + Antenna Factor (dB/m) + AMP (dB) + Cable Loss (dB).
3. E.I.R.P. (dB m) = E (dB㎶/m) + CF (dB).
4. E.R.P. (dB m) = E (dB㎶/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 ㎑ 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 -