SGS Korea Co., Ltd.
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TEST REPORT

of

FCC Part 2 Subpart J, Part 22 Subpart C/H and Part 27 Subpart C
IC RSS-132 Issue 3, RSS-139 Issue 3,
RSS-199 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

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx.

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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
Rated Power	LTE Band 2, 7, 13, 14: 24 ㏈m LTE Band 4, 66: 23.5 ㏈m LTE Band 5, 12: 24.2 ㏈m
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	5B, 7C, 66B, 66C
Modulation Technique	QPSK, 16QAM, 64QAM
Antenna Type	External Antenna
Antenna Gain※	Refer to the clause 1.14
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
Power Meter	Anritsu	ML2495A	1223004	Nov. 29, 2022	Annual	Nov. 29, 2023
Power Sensor	Anritsu	MA2411B	1207272	May 27, 2022	Annual	May 27, 2023
Temperature Chamber	ESPEC CORP.	SH-662	93000533	Jun. 02, 2022	Annual	Jun. 02, 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
BRIDGE COUPLER	MARKI MICROWAVE INC	CBR16-0012	1542	May 06, 2022	Annual	May 06, 2023
Directional Coupler	KRYTAR	152613	122660	Jul. 06, 2022	Annual	Jul. 06, 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	MA4640/536/38330516/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	CO3000/963/38330516/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 and 27 / IC RSS-Gen Issue 5, RSS-132 Issue 3, RSS-139 Issue 3 and RSS-199 Issue 3			
Section in FCC	**Section in IC**	**Test Item(s)**	**Result**
§2.1046 §22.913(a)(5) §27.50(d)(4) §27.50(h)(2)	RSS-132 Issue 3 5.4 RSS-139 Issue 3 6.5 RSS-199 Issue 3 4.4	E.R.P. / E.I.R.P.	Complied
§22.917(a) §27.53(h)(1) §27.53(m)(4)	RSS-132 Issue 3 5.5 RSS-139 Issue 3 6.6 RSS-199 Issue 3 4.5	Radiated Spurious Emissions	Complied
§2.1046	RSS-Gen Issue 5 6.12	Conducted Output Power	Complied
§2.1049	RSS-Gen Issue 5 6.7	Occupied Bandwidth	Complied
§22.913(d) §27.50(d)(5)	RSS-132 Issue 3 5.4 RSS-139 Issue 3 6.5 RSS-199 Issue 3 4.4	Peak-Average Ratio	Complied
§22.917(a) §27.53(h)(1) §27.53(m)(4)	RSS-132 Issue 3 5.5 RSS-139 Issue 3 6.6 RSS-199 Issue 3 4.5	Spurious Emission at Antenna Terminal	Complied
§22.917(a) §27.53(h)(1) §27.53(m)(4)	RSS-132 Issue 3 5.5 RSS-139 Issue 3 6.6 RSS-199 Issue 3 4.5	Band Edge and Emission Mask	Complied
§2.1055 §22.355 §27.54	RSS-Gen Issue 5 6.11 RSS-132 Issue 3 5.3 RSS-139 Issue 3 6.4 RSS-199 Issue 3 4.3	Frequency Stability	Complied

1.7. Sample Calculation for Offset

Where relevant, the following sample calculation is provided:

1.7.1. Conducted Test

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

1.7.2. Radiation test

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

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. The Test Channel Details

The EUT supports with carrier aggregation uplink. Intra-Band contiguous specification as below

E-UTRA Intra-Band CA configuration / Bandwidth combination set			
E-UTRA CA Configuration	Channel bandwidth for carrier (㎒)	Channel bandwidth for carrier (㎒)	Maximum aggregated bandwidth (㎒)
CA_5B	3	5	8
	5	3	
	5	10	15
	10	5	
	10	10	20
CA_7C	10	20	30
	20	10	
	15	15	
	15	10	25
	15	20	35
	20	15	
	20	20	40
CA_66B	5	5	10
	5	10	15
	10	5	
	5	15	20
	15	5	
	10	10	
CA_66C	10	15	25
	15	10	
	10	20	30
	20	10	
	15	15	
	15	20	35
	20	15	
	20	5	25
	5	20	
	20	20	40

1.10. Worst Case Configuration and Mode

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

The peak to average ratio were tested only 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.

1.11. Measurement Configuration

Test Items	Band	Test Channel			Bandwidth (MHz)								Modulation			RB #		
		Low	Mid	High	8	10	15	20	25	30	35	40	QPSK	16QAM	64QAM	1	Half	Full
Conducted Output Power	5B	V	V	V	V		V	V					V	V	-	V	-	V
	7C	V	V	V					V	V	V	V	V	V	-	V	-	V
	66B	V	V	V		V	V	V					V	V	-	V	-	V
	66C	V	V	V					V	V	V	V	V	V	-	V	-	V
Frequency Stability	5B	-	V	-	V		V	V					V	–	–	-	-	V
	7C	-	V	-					V	V	V	V	V	–	–	-	-	V
	66B	-	V	-		V	V	V					V	–	–	-	-	V
	66C	-	V	-					V	V	V	V	V	–	–	-	-	V
Occupied Bandwidth	5B	-	V	-	V		V	V					V	V	–	-	-	V
	7C	-	V	-					V	V	V	V	V	V	–	-	-	V
	66B	-	V	-		V	V	V					V	V	–	-	-	V
	66C	-	V	-					V	V	V	V	V	V	–	-	-	V
Peak-to-Average Ratio	5B	-	V	-	V		V	V					-	-	V	-	-	V
	7C	-	V	-					V	V	V	V	-	-	V	-	-	V
	66B	-	V	-		V	V	V					-	-	V	-	-	V
	66C	-	V	-					V	V	V	V	-	-	V	-	-	V
Band edge	5B	V	-	V	V		V	V					V	V	–	–	–	V
	7C	V	-	V					V	V	V	V	V	V	–	–	–	V
	66B	V	-	V		V	V	V					V	V	–	–	–	V
	66C	V	-	V					V	V	V	V	V	V	–	–	–	V
Spurious at antenna terminal & Radiated Spurious Emissions	5B	V	V	V	Worst Case													
	7C	V	V	V	Worst Case													
	66B	V	V	V	Worst Case													
	66C	V	V	V	Worst Case													

1.12. Measurement Uncertainty

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

Parameter		Uncertainty
RF Output Power		0.32 dB
Occupied Bandwidth		3.90 ㎑
Conducted Spurious Emissions		0.61 dB
Peak to Average Ratio		0.60 dB
Frequency Stability		5.97 ㎑
Radiated Emission, 9 ㎑ to 30 ㎒	H	3.40 dB
	V	3.40 dB
Radiated Emission, below 1 ㎓	H	4.50 dB
	V	5.10 dB
Radiated Emission, above 1 ㎓	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.

1.13. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL003824	2023.02.16	Initial

1.14. Antenna Information

Band	Operating Frequency (㎒)	Antenna Peak Gain (dBi)
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

1.15. Emission Designator and Max Power

Band	Band width (㎒)	Modulation	Low Freq. (㎒)	Upper Freq. (㎒)	Conducted Average (dB m)	Ant. Gain (dB i)	E.R.P. / E.I.R.P. Average (dB m)	E.R.P. / E.I.R.P. Average (W)	Emission Designator
CA_5B	3+5	QPSK	825.6	846.5	24.48	0.37	22.70	0.186	7M41G7D
		16QAM			23.59		21.81	0.152	7M39D7D
	5+3	QPSK	825.6	847.4	24.22		22.44	0.175	7M45G7D
		16QAM			23.35		21.57	0.144	7M45D7D
	5+10	QPSK	826.8	844.0	24.51		22.73	0.187	13M8G7D
		16QAM			23.98		22.20	0.166	13M8D7D
	10+5	QPSK	829.0	846.2	24.75		22.97	0.198	14M0G7D
		16QAM			24.27		22.49	0.177	13M9D7D
	10+10	QPSK	829.0	844.0	24.55		22.77	0.189	18M7G7D
		16QAM			24.06		22.28	0.169	18M7D7D
CA_7C	10+20	QPSK	2 505.5	2 560.0	23.27	5.99	29.26	0.843	28M1G7D
		16QAM			22.39		28.38	0.689	28M1D7D
	20+10	QPSK	2 510.0	2 564.5	23.00		28.99	0.793	28M2G7D
		16QAM			21.53		27.52	0.565	28M1D7D
	15+15	QPSK	2 507.5	2 562.5	23.15		29.14	0.820	28M2G7D
		16QAM			22.11		28.10	0.646	28M2D7D
	15+10	QPSK	2 507.5	2 564.7	23.14		29.13	0.818	23M1G7D
		16QAM			22.30		28.29	0.675	23M1D7D
	15+20	QPSK	2 507.8	2 560.0	23.13		29.12	0.817	32M9G7D
		16QAM			22.18		28.17	0.656	32M9D7D
	20+15	QPSK	2 510.0	2 562.2	22.79		28.78	0.755	32M9G7D
		16QAM			21.49		27.48	0.560	32M8D7D
	20+20	QPSK	2 510	2 560	22.87		28.86	0.769	37M7G7D
		16QAM			21.53		27.52	0.565	37M6D7D
CA_66B	5+5	QPSK	1 712.5	1 777.5	22.63	5.54	28.17	0.656	9M17G7D
		16QAM			21.34		26.88	0.488	9M25D7D
	5+10	QPSK	1 712.8	1 775.0	22.71		28.25	0.668	13M9G7D
		16QAM			21.32		26.86	0.485	13M9D7D
	10+5	QPSK	1 715.0	1 777.2	22.58		28.12	0.649	13M9G7D
		16QAM			21.35		26.89	0.489	13M9D7D
	5+15	QPSK	1 713.0	1 772.5	22.68		28.22	0.664	18M2G7D
		16QAM			21.34		26.88	0.488	18M2D7D
	15+5	QPSK	1 717.5	1 777.0	22.75		28.29	0.675	18M2G7D
		16QAM			21.48		27.02	0.504	18M2D7D
	10+10	QPSK	1 715.0	1 775.0	22.66		28.20	0.661	18M8G7D
		16QAM			21.25		26.79	0.478	18M7D7D

Band	Band width (㎒)	Modulation	Low Freq. (㎒)	Upper Freq. (㎒)	Conducted Average (dB m)	Ant. Gain (dB i)	E.R.P. / E.I.R.P. Average (dB m)	E.R.P. / E.I.R.P. Average (W)	Emission Designator
CA_66C	10+15	QPSK	1 715.3	1 772.5	22.72	5.54	28.26	0.670	23M0G7D
		16QAM			21.63		27.17	0.521	23M0D7D
	15+10	QPSK	1 717.5	1 774.7	22.71		28.25	0.668	23M0G7D
		16QAM			21.32		26.86	0.485	23M0D7D
	10+20	QPSK	1 715.5	1 770.0	22.77		28.31	0.678	28M1G7D
		16QAM			21.64		27.18	0.522	27M9D7D
	20+10	QPSK	1 720.0	1 774.5	22.73		28.27	0.671	28M1G7D
		16QAM			21.18		26.72	0.470	27M9D7D
	15+15	QPSK	1 717.5	1 772.5	22.74		28.28	0.673	28M2G7D
		16QAM			21.36		26.90	0.490	28M2D7D
	15+20	QPSK	1 717.8	1 770.0	22.71		28.25	0.668	32M7G7D
		16QAM			21.43		26.97	0.498	32M7D7D
	20+15	QPSK	1 720.0	1 772.2	22.71		28.25	0.668	32M9G7D
		16QAM			21.32		26.86	0.485	32M7D7D
	20+5	QPSK	1 720.0	1 776.7	22.74		28.28	0.673	22M8G7D
		16QAM			21.12		26.66	0.463	22M8D7D
	5+20	QPSK	1 713.3	1 770.0	22.72		28.26	0.670	22M7G7D
		16QAM			21.51		27.05	0.507	22M7D7D
	20+20	QPSK	1 720.0	1 770.0	22.62		28.16	0.655	37M6G7D
		16QAM			21.56		27.10	0.513	37M6D7D

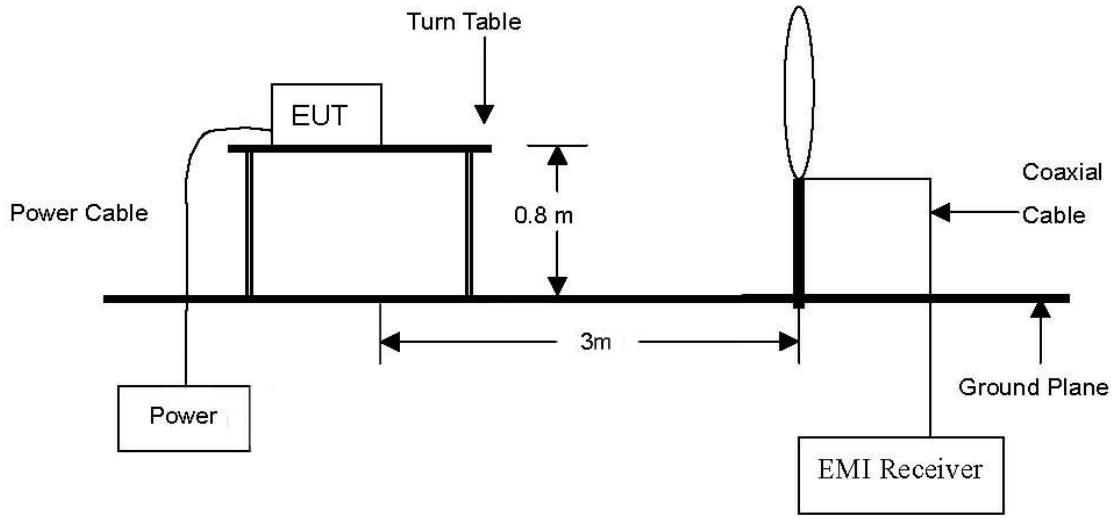
1.16. Information of Variant Model

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

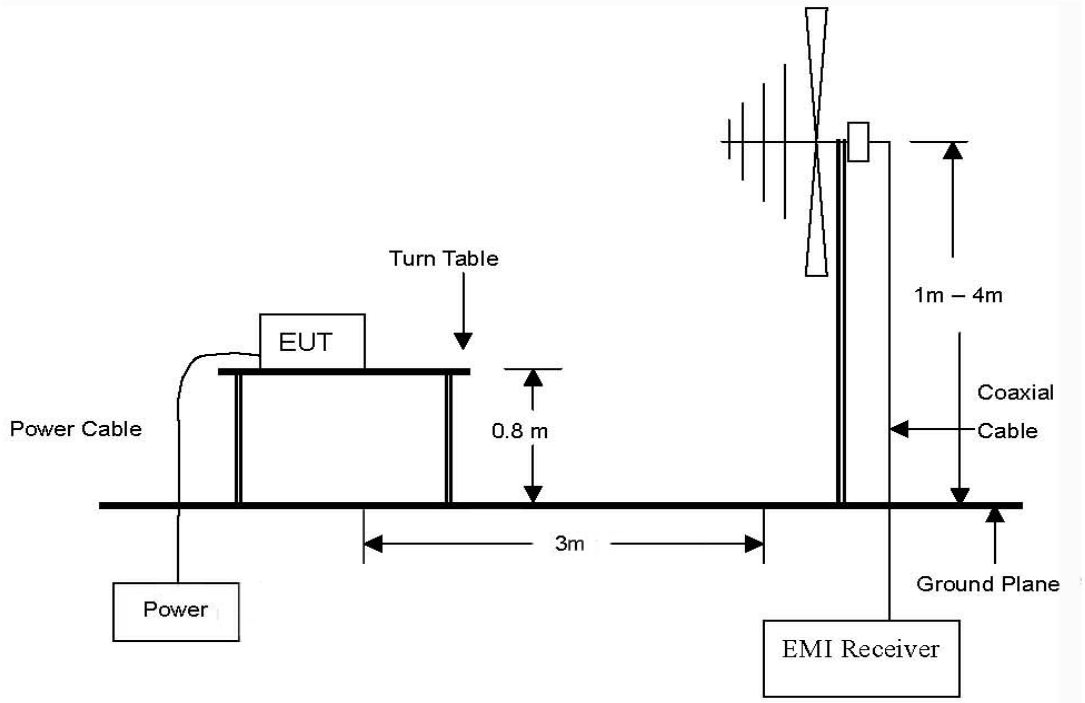
2. E.R.P. / E.I.R.P. & Radiated Spurious Emissions

2.1. Test setup

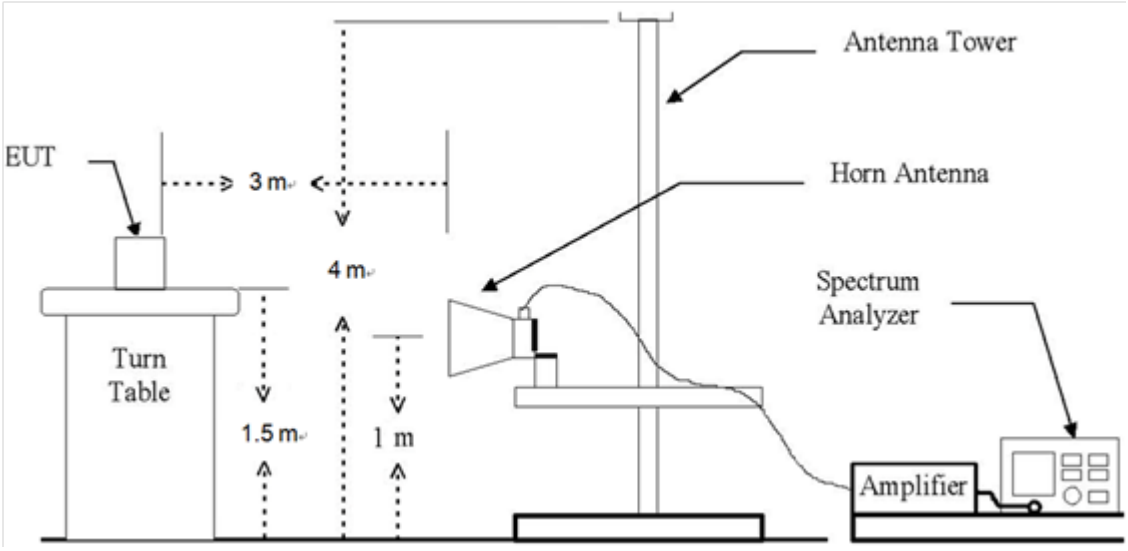
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 ㎑ to 30 ㎒.



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 26 ㎓ Emissions.



2.2. Limit

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

FCC
- §22.913(a)(5), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

- §27.50(d)(4), fixed, mobile, and portable (hand-held) stations operating in the 1 710-1 755 ㎒ band and mobile and portable stations operating in the 1 695-1 710 ㎒ and 1 755-1 780 ㎒ bands are limited to 1 watt EIRP.

- §27.50(h)(2), Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

IC
- RSS-132 Issue 3
5.4, the transmitter output power shall be measured in terms of average power. The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts. Refer to SRSP-503 for base station e.i.r.p. limits.

- RSS-139 Issue 3
6.5, the equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt. The e.i.r.p. for fixed and base stations in the band 1 710-1 780 ㎒ shall not exceed one watt.

- RSS-199 Issue 3
4.4, the transmitter output power shall be measured in terms of average value.
For base station equipment, refer to SRSP-517 for the maximum permissible e.i.r.p.
For mobile subscriber equipment, the e.i.r.p. shall not exceed 2 W. For fixed subscriber equipment, the transmitter output power shall not exceed 2 W and the e.i.r.p. shall be limited to 40 W.

2.2.2. Limit of Radiated Spurious Emissions

FCC

- §22.917(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(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) ㏈.

- §27.53(m)(4), for mobile digital stations, the attenuation factor shall be not less than 40 + 10 $\log_{10}$ (P) ㏈ on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 $\log_{10}$ (P) ㏈ on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 $\log_{10}$ (P) ㏈ 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) ㏈ on all frequencies between 2 490.5 ㎒ and 2 496 ㎒ and 55 + 10 $\log_{10}$ (P) ㏈ at or below 2 490.5 ㎒. Mobile Satellite Service licensees operating on frequencies below 2 495 ㎒ 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-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 dB) 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-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) ㏈.

- RSS-199 Issue 3
4.5, In the 1 ㎒ 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 ㎒ band, a resolution bandwidth of 1 ㎒ 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 ㎒, 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 ㏈) below the transmitter power, P (㏈ 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 ㏈) below the transmitter power, P (㏈ W), by at least:

i. 40 + 10 $\log_{10}$ p from the channel edges to 5 ㎒ away
ii. 43 + 10 $\log_{10}$ p between 5 ㎒ and X ㎒ from the channel edges, and
iii. 55 + 10 $\log_{10}$ p at X ㎒ 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 ㎒ and 2 496 ㎒, and 55 + 10 $\log_{10}$ p at or below 2 490.5 ㎒.

In (a) and (b), p is the transmitter power measured in watts and X is 6 ㎒ 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 ㎑ 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. E.R.P. / E.I.R.P.

Band	Frequency (㎒)	Maximum Conducted Power (dB m)	Maximum Conducted Power (W)	Antenna Gain (dB i)	Maximum E.I.R.P. (dB m)	Maximum E.I.R.P. (W)	Maximum E.R.P. (dB m)	Maximum E.R.P. (W)	Limit
5B	824 ~ 849	24.75	0.299	0.37	25.12	0.325	22.97	0.198	7 W E.R.P.
7C	2 500 ~ 2 570	23.27	0.212	5.99	29.26	0.843			2 W E.I.R.P.
66B	1 710 ~ 1 780	22.75	0.188	5.54	28.29	0.675			1 W E.I.R.P.
66C	1 710 ~ 1 780	22.77	0.189	5.54	28.31	0.678			1 W E.I.R.P.

Remark;

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

2.4.2. Radiated spurious emissions

ULCA_5B

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
PCC 10 ㎒ + SCC 5 ㎒_Low Channel (829 ㎒ + 836.2 ㎒)									
1 667.75	60.79	H	25.81	-38.67	47.93	-97.41	-49.48	-13	36.48
1 667.25	61.79	V	25.81	-38.67	48.93	-97.41	**-48.48**	-13	35.48
2 501.00	53.94	H	28.11	-37.20	44.85	-97.41	-52.56	-13	39.56
2 501.00	52.56	V	28.11	-37.20	43.47	-97.41	-53.94	-13	40.94
6 384.50	43.24	V	34.60	-33.51	44.33	-97.41	-53.08	-13	40.08
Above 6 400.00	Not detected	–	–	–	–	–	–	–	–
PCC 10 ㎒ + SCC 5 ㎒_ Middle Channel (834 ㎒ + 841.2 ㎒)									
1 677.00	55.16	H	25.92	-38.67	42.41	-97.41	-55.00	-13	42.00
1 677.00	60.42	V	25.92	-38.67	47.67	-97.41	-49.74	-13	36.74
2 516.00	47.89	V	28.20	-36.98	39.11	-97.41	-58.30	-13	45.30
6 378.50	44.85	V	34.60	-33.47	45.98	-97.41	-51.43	-13	38.43
Above 6 400.00	Not detected	–	–	–	–	–	–	–	–
PCC 10 ㎒ + SCC 5 ㎒_ High Channel (839 ㎒ + 846.2 ㎒)									
1 687.25	59.21	V	26.05	-38.73	46.53	-97.41	-50.88	-13	37.88
2 530.75	51.91	H	28.28	-36.77	43.42	-97.41	-53.99	-13	40.99
2 531.00	49.41	V	28.29	-36.77	40.93	-97.41	-56.48	-13	43.48
6 379.25	43.74	V	34.60	-33.48	44.86	-97.41	-52.55	-13	39.55
Above 6 400.00	Not detected	–	–	–	–	–	–	–	–

ULCA_7C

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
PCC 10 ㎒ + SCC 20 ㎒_Low Channel (2 505.5 ㎒ + 2 519.9 ㎒)									
5 028.30	48.71	V	33.00	-35.27	46.44	-95.26	-48.82	-25	23.82
7 544.10	49.14	H	35.90	-32.76	52.28	-95.26	-42.98	-25	17.98
7 542.20	56.76	V	35.90	-32.76	59.90	-95.26	-35.36	-25	10.36
Above 7 600.00	Not detected	–	–	–	–	–	–	–	–
PCC 10 ㎒ + SCC 20 ㎒_ Middle Channel (2 525.6 ㎒ + 2 540.0 ㎒)									
5 067.70	47.16	V	33.07	-35.28	44.95	-95.26	-50.31	-25	25.31
7 602.20	48.12	H	35.90	-32.62	51.40	-95.26	-43.86	-25	18.86
7 604.10	58.36	V	35.90	-32.62	61.64	-95.26	**-33.62**	-25	8.62
Above 7 700.00	Not detected	–	–	–	–	–	–	–	–
PCC 10 ㎒ + SCC 20 ㎒_ High Channel (2 545.6 ㎒ + 2 560.0 ㎒)									
5 108.00	46.30	V	33.22	-35.42	44.10	-95.26	-51.16	-25	26.16
6 383.40	42.91	V	34.60	-33.50	44.01	-95.26	-51.25	-25	26.25
7 662.20	47.45	H	35.92	-32.36	51.01	-95.26	-44.25	-25	19.25
7 663.60	56.51	V	35.93	-32.36	60.08	-95.26	-35.18	-25	10.18
Above 7 700.00	Not detected	–	–	–	–	–	–	–	–

ULCA_66B

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
PCC 15 ㎒ + SCC 5 ㎒_Low Channel (1 717.5 ㎒ + 1 726.8 ㎒)									
3 430.80	64.75	H	30.95	-36.88	58.82	-95.26	-36.44	-13	23.44
3 430.30	79.58	V	30.94	-36.88	73.64	-95.26	-21.62	-13	8.62
5 145.90	60.61	H	33.29	-35.48	58.42	-95.26	-36.84	-13	23.84
5 145.50	67.43	V	33.29	-35.48	65.24	-95.26	-30.02	-13	17.02
6 860.60	67.01	H	35.30	-33.82	68.49	-95.26	-26.77	-13	13.77
6 860.20	76.47	V	35.30	-33.82	77.95	-95.26	**-17.31**	-13	4.31
8 575.80	65.60	H	36.55	-33.47	68.68	-95.26	-26.58	-13	13.58
8 575.80	71.01	V	36.55	-33.47	74.09	-95.26	-21.17	-13	8.17
10 291.90	58.47	H	37.80	-31.28	64.99	-95.26	-30.27	-13	17.27
10 292.30	63.88	V	37.80	-31.28	70.40	-95.26	-24.86	-13	11.86
12 006.60	62.98	H	38.50	-31.35	70.13	-95.26	-25.13	-13	12.13
12 006.10	64.00	V	38.50	-31.37	71.13	-95.26	-24.13	-13	11.13
13 723.60	53.84	H	40.45	-28.26	66.03	-95.26	-29.23	-13	16.23
13 723.10	56.96	V	40.45	-28.25	69.16	-95.26	-26.10	-13	13.10
15 437.80	50.70	H	40.00	-25.84	64.86	-95.26	-30.40	-13	17.40
15 436.40	50.12	V	40.00	-25.87	64.25	-95.26	-31.01	-13	18.01
17 152.50	42.90	H	42.31	-23.06	62.15	-95.26	-33.11	-13	20.11
17 152.00	44.32	V	42.30	-23.06	63.56	-95.26	-31.70	-13	18.70
Above 17 200.00	Not detected	–	–	–	–	–	–	–	–

ULCA_66B

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
PCC 15 ㎒ + SCC 5 ㎒_ Middle Channel (1 752.6 ㎒ + 1 761.9 ㎒)									
3 500.60	61.39	H	31.10	-36.66	55.83	-95.26	-39.43	-13	26.43
3 500.60	74.73	V	31.10	-36.66	69.17	-95.26	-26.09	-13	13.09
5 250.50	46.89	H	33.60	-35.10	45.39	-95.26	-49.87	-13	36.87
5 250.50	57.13	V	33.60	-35.10	55.63	-95.26	-39.63	-13	26.63
7 001.30	56.00	H	35.50	-33.06	58.44	-95.26	-36.82	-13	23.82
7 000.80	71.41	V	35.50	-33.05	73.86	-95.26	-21.40	-13	8.40
8 751.60	60.30	H	37.00	-33.72	63.58	-95.26	-31.68	-13	18.68
8 752.00	67.48	V	37.00	-33.71	70.77	-95.26	-24.49	-13	11.49
10 501.90	45.75	H	37.70	-31.09	52.36	-95.26	-42.90	-13	29.90
10 501.90	54.79	V	37.70	-31.09	61.40	-95.26	-33.86	-13	20.86
12 252.20	53.06	H	38.40	-30.06	61.40	-95.26	-33.86	-13	20.86
12 252.20	54.82	V	38.40	-30.06	63.16	-95.26	-32.10	-13	19.10
14 003.00	41.28	H	40.81	-28.00	54.09	-95.26	-41.17	-13	28.17
14 002.50	42.98	V	40.81	-27.99	55.80	-95.26	-39.46	-13	26.46
15 753.30	42.58	H	40.20	-23.43	59.35	-95.26	-35.91	-13	22.91
15 753.30	40.50	V	40.20	-23.43	57.27	-95.26	-37.99	-13	24.99
Above 15 800.00	Not detected	–	–	–	–	–	–	–	–

ULCA_66B

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
PCC 15 ㎒ + SCC 5 ㎒_ High Channel (1 767.7 ㎒ + 1 777.0 ㎒)									
3 530.60	56.94	H	31.04	-36.87	51.11	-95.26	-44.15	-13	31.15
3 530.60	66.83	V	31.04	-36.87	61.00	-95.26	-34.26	-13	21.26
5 296.40	47.63	H	33.79	-34.81	46.61	-95.26	-48.65	-13	35.65
5 296.90	57.16	V	33.79	-34.81	56.14	-95.26	-39.12	-13	26.12
7 061.70	44.78	H	35.52	-33.09	47.21	-95.26	-48.05	-13	35.05
7 061.70	54.67	V	35.52	-33.09	57.10	-95.26	-38.16	-13	25.16
8 827.50	42.47	H	37.16	-32.94	46.69	-95.26	-48.57	-13	35.57
8 827.00	49.08	V	37.15	-32.94	53.29	-95.26	-41.97	-13	28.97
10 593.30	41.42	H	37.79	-30.78	48.43	-95.26	-46.83	-13	33.83
10 592.80	47.07	V	37.79	-30.78	54.08	-95.26	-41.18	-13	28.18
Above 10 600.00	Not detected	–	–	–	–	–	–	–	–

ULCA_66C

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
PCC 10 ㎒ + SCC 20 ㎒_Low Channel (1 715.5 ㎒ + 1 729.9 ㎒)									
3 440.60	64.96	H	31.02	-36.81	59.17	-95.26	-36.09	-13	23.09
3 439.20	77.58	V	31.01	-36.82	71.77	-95.26	-23.49	-13	10.49
5 161.40	55.89	H	33.35	-35.41	53.83	-95.26	-41.43	-13	28.43
5 159.50	64.32	V	33.34	-35.42	62.24	-95.26	-33.02	-13	20.02
6 879.40	62.05	H	35.30	-33.68	63.67	-95.26	-31.59	-13	18.59
6 880.30	73.82	V	35.30	-33.67	75.45	-95.26	**-19.81**	-13	6.81
8 599.20	62.53	H	36.60	-33.73	65.40	-95.26	-29.86	-13	16.86
8 600.20	67.31	V	36.60	-33.74	70.17	-95.26	-25.09	-13	12.09
10 320.90	56.87	H	37.80	-30.95	63.72	-95.26	-31.54	-13	18.54
10 320.00	64.49	V	37.80	-30.97	71.32	-95.26	-23.94	-13	10.94
12 039.80	59.55	H	38.50	-30.90	67.15	-95.26	-28.11	-13	15.11
12 041.30	61.49	V	38.50	-30.87	69.12	-95.26	-26.14	-13	13.14
13 761.60	49.02	H	40.50	-28.19	61.33	-95.26	-33.93	-13	20.93
13 759.70	52.39	V	40.50	-28.19	64.70	-95.26	-30.56	-13	17.56
15 481.90	48.86	H	40.00	-25.50	63.36	-95.26	-31.90	-13	18.90
15 480.90	45.72	V	40.00	-25.51	60.21	-95.26	-35.05	-13	22.05
17 201.70	37.13	H	42.40	-23.62	55.91	-95.26	-39.35	-13	26.35
17 202.20	38.93	V	42.40	-23.63	57.70	-95.26	-37.56	-13	24.56
Above 17 300.00	Not detected	–	–	–	–	–	–	–	–

ULCA_66C

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
PCC 10 ㎒ + SCC 20 ㎒_ Middle Channel (1 745.6 ㎒ + 1 760.0 ㎒)									
3 499.70	58.65	H	31.10	-36.66	53.09	-95.26	-42.17	-13	29.17
3 499.70	73.65	V	31.10	-36.66	68.09	-95.26	-27.17	-13	14.17
5 250.00	42.47	H	33.60	-35.10	40.97	-95.26	-54.29	-13	41.29
5 249.50	53.50	V	33.60	-35.10	52.00	-95.26	-43.26	-13	30.26
7 000.80	56.85	H	35.50	-33.05	59.30	-95.26	-35.96	-13	22.96
7 000.80	67.39	V	35.50	-33.05	69.84	-95.26	-25.42	-13	12.42
8 749.70	58.29	H	37.00	-33.74	61.55	-95.26	-33.71	-13	20.71
8 750.60	63.45	V	37.00	-33.73	66.72	-95.26	-28.54	-13	15.54
10 500.90	42.61	H	37.70	-31.10	49.21	-95.26	-46.05	-13	33.05
10 503.30	48.54	V	37.70	-31.09	55.15	-95.26	-40.11	-13	27.11
12 252.20	47.03	H	38.40	-30.06	55.37	-95.26	-39.89	-13	26.89
12 250.80	47.41	V	38.40	-30.02	55.79	-95.26	-39.47	-13	26.47
14 002.00	37.60	H	40.80	-27.99	50.41	-95.26	-44.85	-13	31.85
14 001.10	41.14	V	40.80	-27.98	53.96	-95.26	-41.30	-13	28.30
15 755.20	36.78	H	40.20	-23.44	53.54	-95.26	-41.72	-13	28.72
15 751.40	36.33	V	40.20	-23.41	53.12	-95.26	-42.14	-13	29.14
Above 15 800.00	Not detected	–	–	–	–	–	–	–	–

ULCA_66C

Frequency (㎒)	Measured Level (dB㎶)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB㎶/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
PCC 10 ㎒ + SCC 20 ㎒_ High Channel (1 755.6 ㎒ + 1 770.0 ㎒)									
3 519.80	54.36	H	31.06	-36.80	48.62	-95.26	-46.64	-13	33.64
3 519.80	67.85	V	31.06	-36.80	62.11	-95.26	-33.15	-13	20.15
5 280.00	44.68	H	33.72	-34.90	43.50	-95.26	-51.76	-13	38.76
5 280.90	51.57	V	33.72	-34.89	50.40	-95.26	-44.86	-13	31.86
7 039.20	44.42	H	35.50	-33.12	46.80	-95.26	-48.46	-13	35.46
7 040.60	53.47	V	35.50	-33.11	55.86	-95.26	-39.40	-13	26.40
8 801.30	42.12	H	37.10	-33.10	46.12	-95.26	-49.14	-13	36.14
8 800.80	48.03	V	37.10	-33.10	52.03	-95.26	-43.23	-13	30.23
10 562.30	40.74	H	37.72	-30.91	47.55	-95.26	-47.71	-13	34.71
10 560.00	48.54	V	37.72	-30.93	55.33	-95.26	-39.93	-13	26.93
Above 10 600.00	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.

3. Conducted Output Power

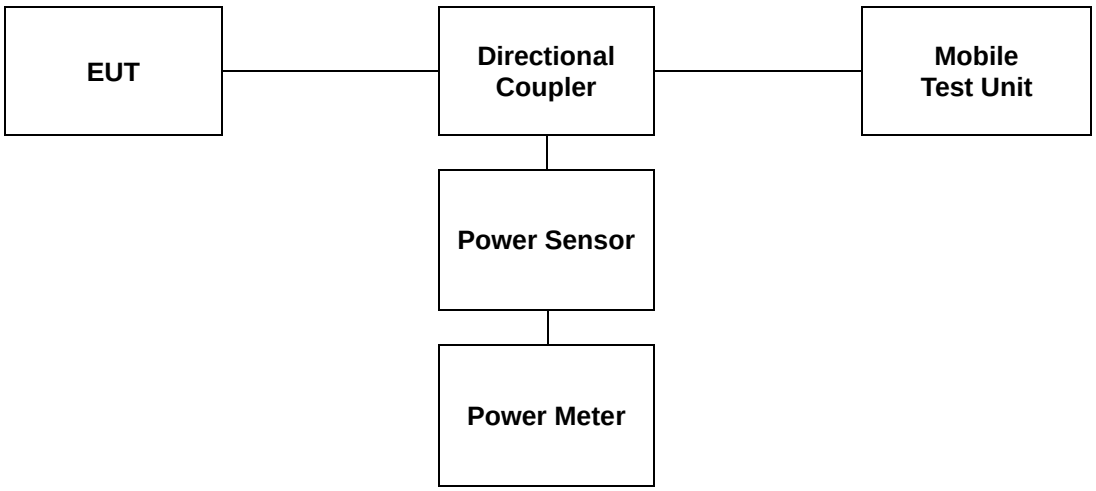
3.1. Limit

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

3.2. Test Procedure

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

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



3.3. Test Result

Ambient temperature : (23 ± 1) ℃

Relative humidity : 47 % R.H.

ULCA 5B												
Ch.	PCC					SCC					Power	
	BW [㎒]	Freq. [㎒]	Ch.	RB	RB Offset	BW [㎒]	Freq. [㎒]	Ch.	RB	RB Offset	(dB m)	(W)
Low	3	825.6	20416	1	14	5	825.6	20455	1	0	24.48	0.281
	5	826.5	20425	1	24	3	830.4	20464	1	0	24.22	0.264
	5	826.8	20428	1	24	10	834.0	20500	1	0	24.28	0.268
	10	829.0	20450	1	49	5	836.2	20522	1	0	**24.51**	0.282
	10	829.0	20450	1	49	10	838.9	20549	1	0	24.48	0.281
Middle	3	834.1	20501	1	14	5	838.0	20540	1	0	22.81	0.191
	5	835.0	20510	1	24	3	838.9	20549	1	0	23.50	0.224
	5	831.8	20478	1	24	10	839.0	20550	1	0	24.51	0.282
	10	834.0	20500	1	49	5	841.2	20572	1	0	**24.75**	0.298
	10	831.6	20476	1	49	10	841.5	20575	1	0	24.55	0.285
High	3	842.6	20586	1	14	5	846.5	20625	1	0	22.72	0.187
	5	843.5	20595	1	24	3	847.4	20634	1	0	21.81	0.152
	5	836.8	20528	1	24	10	844.0	20600	1	0	24.13	0.259
	10	839.0	20550	1	49	5	846.2	20622	1	0	**24.46**	0.279
	10	834.1	20501	1	49	10	844.0	20600	1	0	24.44	0.278

Note;

QPSK Modulation with 1 RB

ULCA 5B												
Ch.	PCC					SCC					Power	
	BW [㎒]	Freq. [㎒]	Ch.	RB	RB Offset	BW [㎒]	Freq. [㎒]	Ch.	RB	RB Offset	(㏈m)	(W)
Low	3	825.6	20416	1	14	5	825.6	20455	1	0	23.59	0.229
	5	826.5	20425	1	24	3	830.4	20464	1	0	23.35	0.216
	5	826.8	20428	1	24	10	834.0	20500	1	0	23.94	0.248
	10	829.0	20450	1	49	5	836.2	20522	1	0	**23.97**	0.249
	10	829.0	20450	1	49	10	838.9	20549	1	0	23.95	0.248
Middle	3	834.1	20501	1	14	5	838.0	20540	1	0	22.43	0.175
	5	835.0	20510	1	24	3	838.9	20549	1	0	23.00	0.199
	5	831.8	20478	1	24	10	839.0	20550	1	0	23.98	0.250
	10	834.0	20500	1	49	5	841.2	20572	1	0	**24.27**	0.268
	10	831.6	20476	1	49	10	841.5	20575	1	0	24.06	0.255
High	3	842.6	20586	1	14	5	846.5	20625	1	0	21.75	0.150
	5	843.5	20595	1	24	3	847.4	20634	1	0	21.59	0.144
	5	836.8	20528	1	24	10	844.0	20600	1	0	23.83	0.241
	10	839.0	20550	1	49	5	846.2	20622	1	0	**23.89**	0.245
	10	834.1	20501	1	49	10	844.0	20600	1	0	23.86	0.243

Note;

16QAM Modulation with 1 RB