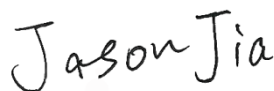


FCC RF Test Report

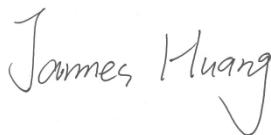
APPLICANT : Fibocom Wireless Inc.
EQUIPMENT : 5G Module
BRAND NAME : Fibocom
MODEL NAME : FM150-NA
FCC ID : ZMOFM150NA
STANDARD : 47 CFR Part 2, 22, 24, 27
CLASSIFICATION : PCS Licensed Transmitter (PCB)

The product was received on May 14, 2020 and completely tested on Aug. 10, 2020. We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.



Reviewed by: Jason Jia / Supervisor



Approved by: James Huang / Manager



Sporton International (Kunshan) Inc.

**No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China**



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG051416-03C	Rev. 01	Initial issue of report	Mar. 12, 2021



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
-	§2.1046	Conducted Output Power	Reporting Only	PASS	1
	§22.913(a)(5)	Effective Radiated Power (Band 5)	ERP < 7 Watt	PASS	1
	§27.50(c)(10)	Effective Radiated Power (Band 12)	ERP < 3 Watt	PASS	1
	§24.232(c)	Equivalent Isotropic Radiated Power (Band 2)	EIRP < 2Watt	PASS	1
	§27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4) (Band 66)	EIRP < 1Watt	PASS	1
-	§24.232(d)	Peak-to-Average Ratio	<13 dB	PASS	1
-	§2.1049	Occupied Bandwidth	Reporting Only	PASS	1
-	§2.1051 §22.917(a) §24.238(a) §27.53(g) §27.53(h)	Conducted Band Edge Measurement (Band 2) (Band 4) (Band 5) (Band 12) (Band 66)	< 43+10log ₁₀ (P[Watts])	PASS	1
-	§2.1051 §22.917(a) §24.238(a) §27.53(g) §27.53(h)	Conducted Spurious Emission (Band 2) (Band 4) (Band 5) (Band 12) (Band 66)	< 43+10log ₁₀ (P[Watts])	PASS	1
-	§2.1055 §22.355	Frequency Stability Temperature & Voltage	< 2.5 ppm for Part 22	PASS	1
	§2.1055 §24.235 §27.54		Within Authorized Band		
3.4	§2.1053 §22.917(a) §24.238(a) §27.53(g) §27.53(h)	Radiated Spurious Emission (Band 2) (Band 4) (Band 5) (Band 12) (Band 66)	< 43+10log ₁₀ (P[Watts])	PASS	Under limit 29.15 dB at 7560.000 MHz

Remark 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.

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.



1 General Description

1.1 Applicant

Fibocom Wireless Inc.

1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China

1.2 Manufacturer

Fibocom Wireless Inc.

1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	5G Module
Brand Name	Fibocom
Model Name	FM150-NA
FCC ID	ZMOFM150NA
EUT supports Radios application	WCDMA/LTE/5G NR/GNSS
IMEI Code	RSE: 867654040317451
HW Version	V1.0.1
SW Version	89601.1000.00.03.04.33
EUT Stage	Identical Prototype

Remark: This is a variant report for FM150-NA. For change note, please refer the product equality declaration exhibit separately. Since the change has no influence on the test results, all the test results are leveraged from original report which can be referred to Sporton Report Number FG051416E.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	LTE Band 2 : 1850.7 MHz ~ 1909.3 MHz LTE Band 4 : 1710.7 MHz ~ 1754.3 MHz LTE Band 5 : 824.7 MHz ~ 848.3 MHz LTE Band 12 : 699.7 MHz ~ 715.3 MHz LTE Band 66 : 1710.7 MHz ~ 1779.3 MHz
Rx Frequency	LTE Band 2 : 1930.7 MHz ~ 1989.3 MHz LTE Band 4 : 2110.7 MHz ~ 2154.3 MHz LTE Band 5 : 869.7 MHz ~ 893.3 MHz LTE Band 12 : 729.7 MHz ~ 745.3 MHz LTE Band 66 : 2110.7 MHz ~ 2199.3 MHz
Bandwidth	LTE Band 2 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 4 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 5 : 1.4MHz / 3MHz / 5MHz / 10MHz LTE Band 12 : 1.4MHz / 3MHz / 5MHz / 10MHz LTE Band 66 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz
Uplink CA Bands	2A-4A, 2A-5A, 2A-12A, 2A-66A, 4A-12A, 5A-66A, 12A-66A
Type of Modulation	QPSK / 16QAM / 64QAM / 256QAM

Remark: This module is limited to installation in fixed applications.

WWAN ANTENNA GAIN (dBi)		
Frequency Band	ANT.1: GHT-019A	ANT.2: AN0750-64S01BSM
LTE Band 2	1.93	1.46
LTE Band 4	2.86	0.13
LTE Band 5	1.32	1.12
LTE Band 12	1.58	-0.52
LTE Band 66	3.53	0.13

Remark: Between the two type of antennas, only the worst antenna gain evaluated test is shown in bold.

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Testing Location

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	03CH02-KS	CN1257	314309

1.7 Test Software

Item	Site	Manufacture	Name	Version
1.	03CH02-KS	AUDIX	E3	6.2009-8-24a

1.8 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 2, 22, 24, 27
- ANSI C63.26-2015
- FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



2 Test Configuration of Equipment Under Test

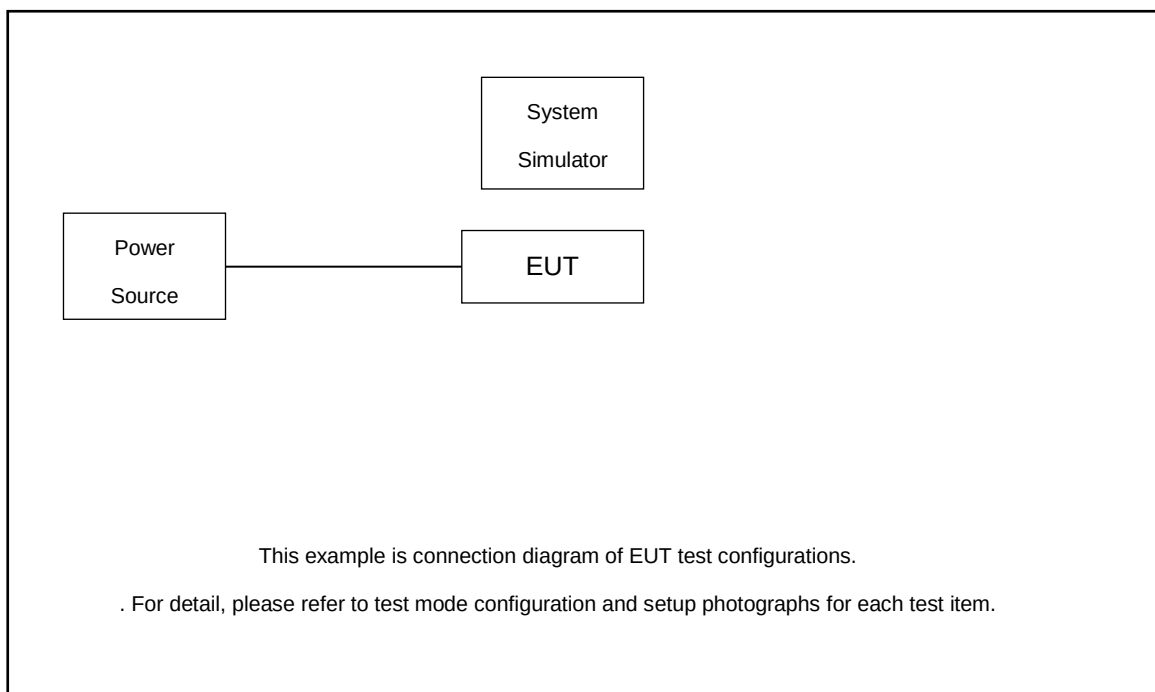
2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas License Digital Systems v03r01 with maximum output power.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.

Test Items	Band	Bandwidth (MHz)					Modulation				RB #			Test Channel		
		-	5	10	15	20	QPSK	16QAM	64QAM	256 QAM	1	Half	Full	L	M	H
Radiated Spurious Emission	2A-4A	Worst Case												v	v	v
	2A-5A	Worst Case												v	v	v
	2A-12A	Worst Case												v	v	v
	2A-66A	Worst Case												v	v	v
	4A-12A	Worst Case												v	v	v
	5A-66A	Worst Case												v	v	v
	12A-66A	Worst Case												v	v	v
Note	1. The mark “v ” means that this configuration is chosen for testing 2. The mark “-“ means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.															

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	Power Supply	GWINSTEK	PSS-2002	N/A	N/A	Unshielded, 1.8 m
2.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
3.	Antenna	N/A	N/A	N/A	N/A	N/A
4.	Adapter	N/A	N/A	N/A	N/A	N/A
5.	Test jig	N/A	N/A	N/A	N/A	N/A



2.4 Frequency List of Low/Middle/High Channels

LTE Band 2 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	18700	18900	19100
	Frequency	1860	1880	1900
15	Channel	18675	18900	19125
	Frequency	1857.5	1880	1902.5
10	Channel	18650	18900	19150
	Frequency	1855	1880	1905
5	Channel	18625	18900	19175
	Frequency	1852.5	1880	1907.5

LTE Band 4 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	20050	20175	20300
	Frequency	1720	1732.5	1745
15	Channel	20025	20175	20325
	Frequency	1717.5	1732.5	1747.5
10	Channel	20000	20175	20350
	Frequency	1715	1732.5	1750
5	Channel	19975	20175	20375
	Frequency	1712.5	1732.5	1752.5

LTE Band 5 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	20450	20525	20600
	Frequency	829	836.5	844
5	Channel	20425	20525	20625
	Frequency	826.5	836.5	846.5
3	Channel	20415	20525	20635
	Frequency	825.5	836.5	847.5
1.4	Channel	20407	20525	20643
	Frequency	824.7	836.5	848.3

LTE Band 12 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	23060	23095	23130
	Frequency	704	707.5	711
5	Channel	23035	23095	23155
	Frequency	701.5	707.5	713.5

LTE Band 66 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	132072	132322	132572
	Frequency	1720	1745	1770
15	Channel	132047	132322	132597
	Frequency	1717.5	1745	1772.5
10	Channel	132022	132322	132622
	Frequency	1715	1745	1775
5	Channel	131997	132322	132647
	Frequency	1712.5	1745	1777.5

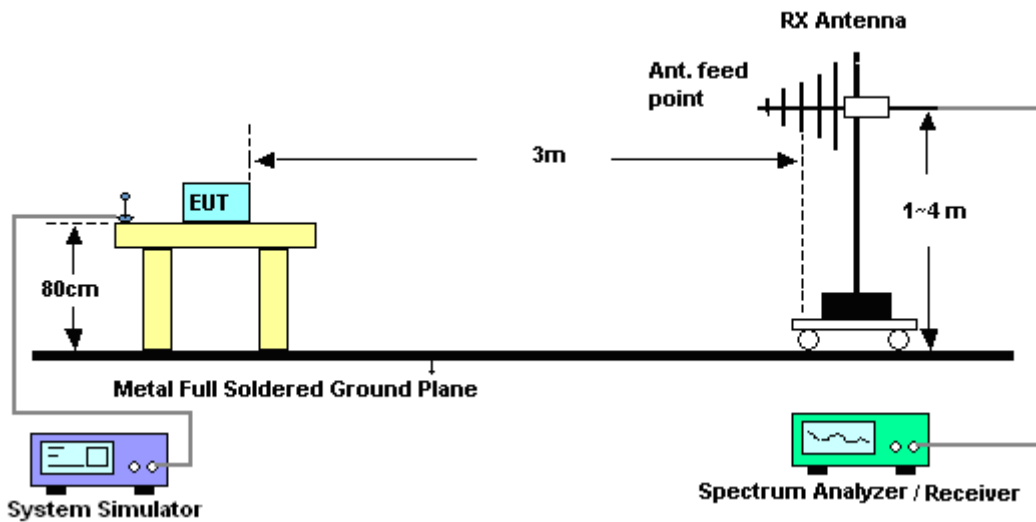
3 Radiated Test Items

3.1 Measuring Instruments

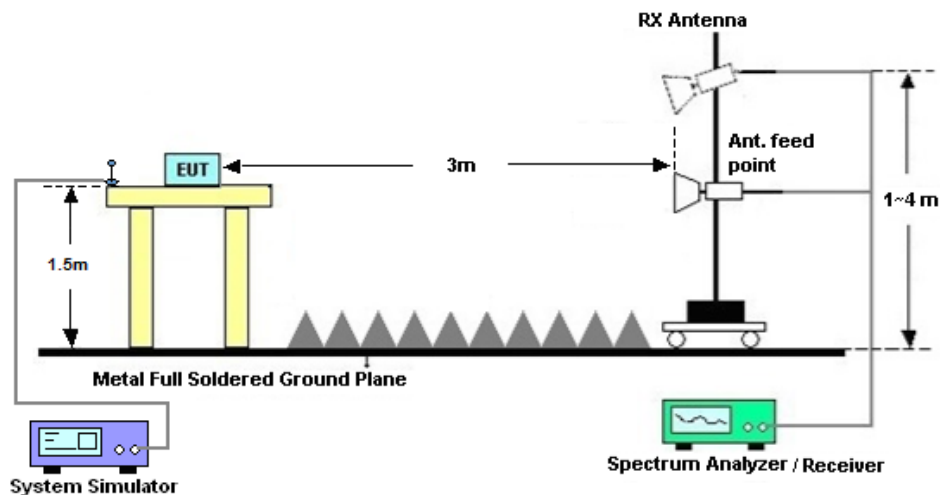
See list of measuring instruments of this test report.

3.2 Test Setup

3.2.1 For radiated test from 30MHz to 1GHz



3.2.2 For radiated test above 1GHz



3.3 Test Result of Radiated Test

Please refer to Appendix B.



3.4 Radiated Spurious Emission

3.4.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI C63.26. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.

For LTE Band 13

For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

3.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.5
2. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
6. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
7. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
8. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
9. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
10. $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
11. $ERP \text{ (dBm)} = EIRP - 2.15$
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
= $P(W) - [43 + 10\log(P)] \text{ (dB)}$
= $[30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$
= -13dBm .



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Max 30dBm	Oct. 18, 2019	Aug. 10, 2020	Oct. 17, 2020	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55370528	10Hz~44G,MAX 30dB	Oct. 18, 2019	Aug. 10, 2020	Oct. 17, 2020	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6111D	44483	30MHz~1GHz	Dec. 30, 2019	Aug. 10, 2020	Dec. 29, 2020	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Nov. 10, 2019	Aug. 10, 2020	Nov. 09, 2020	Radiation (03CH02-KS)
high gain Amplifier	MITEQ	AMF-7D-00 101800-30-1 0P	2025788	100MHz~18GHz	Jan. 03, 2020	Aug. 10, 2020	Jan. 02, 2021	Radiation (03CH02-KS)
SHF-EHF Horn	Com-power	AH-840	101115	18GHz~40GHz	Nov. 10, 2019	Aug. 10, 2020	Nov. 09, 2020	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	187289	9KHz~1GHz	Jan. 03, 2020	Aug. 10, 2020	Jan. 02, 2021	Radiation (03CH02-KS)
Amplifier	Keysight	83017A	MY53270316	500MHz~26.5GHz	Oct. 18, 2019	Aug. 10, 2020	Oct. 17, 2020	Radiation (03CH02-KS)
Amplifier	MITEQ	EM18G40G GA	060728	18~40GHz	Jan. 08, 2020	Aug. 10, 2020	Jan. 07, 2021	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Aug. 10, 2020	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Aug. 10, 2020	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Aug. 10, 2020	NCR	Radiation (03CH02-KS)

NCR: No Calibration Required

5 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. All the measurement uncertainty value were shown with a coverage $K=2$ to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.5dB
---	-------

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.1dB
---	-------



Appendix A. Test Results of Radiated Test

Radiated Spurious Emission

ULCA_2A-4A								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
LTE B2 BW 20MHz Lowest 1RB49,QPSK	3702	-52.44	-13	-39.44	-64.30	2.94	14.80	H
	5553	-45.74	-13	-32.74	-56.48	2.604	13.34	H
	7404	-42.69	-13	-29.69	-52.89	3.271	13.47	H
	3702	-52.43	-13	-39.43	-64.29	2.94	14.80	V
	5553	-45.99	-13	-32.99	-56.73	2.604	13.34	V
	7404	-43.09	-13	-30.09	-53.29	3.271	13.47	V
LTE B4 BW 20MHz Lowest 1RB24,QPSK	3422	-55.29	-13	-42.29	-67.55	2.64	14.90	H
	5133	-46.68	-13	-33.68	-56.45	3.39	13.16	H
	6844	-43.80	-13	-30.80	-54.31	3.011	13.52	H
	3422	-55.01	-13	-42.01	-67.27	2.64	14.90	V
	5133	-47.16	-13	-34.16	-56.93	3.39	13.16	V
	6844	-43.98	-13	-30.98	-54.49	3.011	13.52	V
LTE B2 BW 20MHz Middle 1RB49,QPSK	3741	-52.4	-13	-39.40	-64.26	2.94	14.80	H
	5613	-45.41	-13	-32.41	-56.15	2.604	13.34	H
	7488	-42.35	-13	-29.35	-52.55	3.271	13.47	H
	3741	-52.12	-13	-39.12	-63.98	2.94	14.80	V
	5613	-45.58	-13	-32.58	-56.32	2.604	13.34	V
	7488	-43.06	-13	-30.06	-53.26	3.271	13.47	V
LTE B4 BW 20MHz Middle 1RB24,QPSK	3447	-54.84	-13	-41.84	-67.10	2.64	14.90	H
	5172	-46.06	-13	-33.06	-55.83	3.39	13.16	H
	6888	-43.85	-13	-30.85	-54.36	3.011	13.52	H
	3447	-54.31	-13	-41.31	-66.57	2.64	14.90	V
	5172	-46.8	-13	-33.80	-56.57	3.39	13.16	V
	6888	-43.82	-13	-30.82	-54.33	3.011	13.52	V
LTE B2 BW 20MHz Highest 1RB49,QPSK	3783	-52.98	-13	-39.98	-64.84	2.94	14.80	H
	5673	-46.82	-13	-33.82	-57.56	2.604	13.34	H
	7560	-42.60	-13	-29.60	-52.80	3.271	13.47	H
	3783	-52.08	-13	-39.08	-63.94	2.94	14.80	V
	5673	-46.16	-13	-33.16	-56.90	2.604	13.34	V
	7560	-42.73	-13	-29.73	-52.93	3.271	13.47	V
LTE B4 BW 20MHz Highest 1RB24,QPSK	3471	-55.49	-13	-42.49	-67.75	2.64	14.90	H
	5208	-46.18	-13	-33.18	-55.95	3.39	13.16	H
	6948	-44.23	-13	-31.23	-54.74	3.011	13.52	H
	3471	-54.8	-13	-41.80	-67.06	2.64	14.90	V
	5208	-45.88	-13	-32.88	-55.65	3.39	13.16	V
	6948	-43.28	-13	-30.28	-53.79	3.011	13.52	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



ULCA_2A-5A								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
LTE B2 BW 20MHz Lowest 1RB49,QPSK	3702	-53.55	-13	-40.55	-65.81	2.64	14.90	H
	5553	-46.22	-13	-33.22	-58.08	2.94	14.80	H
	7404	-42.64	-13	-29.64	-52.41	3.39	13.16	H
	3702	-52.66	-13	-39.66	-64.92	2.64	14.90	V
	5553	-46.13	-13	-33.13	-57.99	2.94	14.80	V
	7404	-43.14	-13	-30.14	-52.91	3.39	13.16	V
LTE B5 BW 10MHz Lowest 1RB12,QPSK	1648	-61.11	-13	-48.11	-68.08	1.58	10.70	H
	2474	-58.26	-13	-45.26	-66.51	2.102	12.50	H
	3297	-56.61	-13	-43.61	-65.50	2.856	13.90	H
	1648	-60.97	-13	-47.97	-67.94	1.58	10.70	V
	2474	-58.12	-13	-45.12	-66.37	2.10	12.50	V
	3297	-56.00	-13	-43.00	-64.89	2.86	13.90	V
LTE B2 BW 20MHz Middle 1RB49,QPSK	3741	-52.28	-13	-39.28	-64.54	2.64	14.90	H
	5613	-45.52	-13	-32.52	-57.38	2.94	14.80	H
	7488	-42.18	-13	-29.18	-51.95	3.39	13.16	H
	3741	-52.24	-13	-39.24	-64.50	2.64	14.90	V
	5613	-45.85	-13	-32.85	-57.71	2.94	14.80	V
	7488	-42.91	-13	-29.91	-52.68	3.39	13.16	V
LTE B5 BW 10MHz Middle 1RB12,QPSK	1664	-60.92	-13	-47.92	-67.89	1.58	10.70	H
	2496	-58.40	-13	-45.40	-66.65	2.102	12.50	H
	3327	-55.44	-13	-42.44	-64.33	2.856	13.90	H
	1664	-60.54	-13	-47.54	-67.51	1.58	10.70	V
	2496	-58.00	-13	-45.00	-66.25	2.10	12.50	V
	3327	-55.78	-13	-42.78	-64.67	2.86	13.90	V
LTE B2 BW 20MHz Highest 1RB49,QPSK	3783	-52.33	-13	-39.33	-64.59	2.64	14.90	H
	5673	-45.55	-13	-32.55	-57.41	2.94	14.80	H
	7560	-42.20	-13	-29.20	-51.97	3.39	13.16	H
	3783	-51.82	-13	-38.82	-64.08	2.64	14.90	V
	5673	-45.87	-13	-32.87	-57.73	2.94	14.80	V
	7560	-43.52	-13	-30.52	-53.29	3.39	13.16	V
LTE B5 BW 10MHz Highest 1RB12,QPSK	1680	-60.72	-13	-47.72	-67.69	1.58	10.70	H
	2518	-58.37	-13	-45.37	-66.62	2.102	12.50	H
	3357	-55.78	-13	-42.78	-64.67	2.856	13.90	H
	1680	-60.32	-13	-47.32	-67.29	1.58	10.70	V
	2518	-57.85	-13	-44.85	-66.10	2.10	12.50	V
	3357	-55.67	-13	-42.67	-64.56	2.86	13.90	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



ULCA_2A-12A								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
LTE B2 BW 20MHz Lowest 1RB49,QPSK	3702	-52.47	-13	-39.47	-64.73	2.64	14.90	H
	5553	-45.79	-13	-32.79	-57.65	2.94	14.80	H
	7404	-42.53	-13	-29.53	-52.30	3.39	13.16	H
	3702	-52.34	-13	-39.34	-64.60	2.64	14.90	V
	5553	-45.86	-13	-32.86	-57.72	2.94	14.80	V
	7404	-43.13	-13	-30.13	-52.90	3.39	13.16	V
LTE B12 BW 10MHz Lowest 1RB49,QPSK	1400	-63.59	-13	-50.59	-70.56	1.58	10.70	H
	2098	-56.42	-13	-43.42	-64.67	2.102	12.50	H
	2798	-56.93	-13	-43.93	-65.82	2.856	13.90	H
	1399	-63.26	-13	-50.26	-70.23	1.58	10.70	V
	2098	-55.91	-13	-42.91	-64.16	2.10	12.50	V
	2798	-57.10	-13	-44.10	-65.99	2.86	13.90	V
LTE B2 BW 20MHz Middle 1RB49,QPSK	3741	-52.07	-13	-39.07	-64.33	2.64	14.90	H
	5613	-45.12	-13	-32.12	-56.98	2.94	14.80	H
	7488	-42.42	-13	-29.42	-52.19	3.39	13.16	H
	3741	-52.11	-13	-39.11	-64.37	2.64	14.90	V
	5613	-45.53	-13	-32.53	-57.39	2.94	14.80	V
	7488	-43.02	-13	-30.02	-52.79	3.39	13.16	V
LTE B12 BW 10MHz Middle 1RB49,QPSK	1406	-63.15	-13	-50.15	-70.12	1.58	10.70	H
	2110	-55.33	-13	-42.33	-63.58	2.102	12.50	H
	2812	-56.95	-13	-43.95	-65.84	2.856	13.90	H
	1406	-62.93	-13	-49.93	-69.90	1.58	10.70	V
	2110	-55.68	-13	-42.68	-63.93	2.10	12.50	V
	2812	-57.09	-13	-44.09	-65.98	2.86	13.90	V
LTE B2 BW 20MHz Highest 1RB49,QPSK	3783	-52.32	-13	-39.32	-64.58	2.64	14.90	H
	5673	-45.67	-13	-32.67	-57.53	2.94	14.80	H
	7560	-42.15	-13	-29.15	-51.92	3.39	13.16	H
	3783	-51.94	-13	-38.94	-64.20	2.64	14.90	V
	5673	-45.76	-13	-32.76	-57.62	2.94	14.80	V
	7560	-42.93	-13	-29.93	-52.70	3.39	13.16	V
LTE B12 BW 10MHz Highest 1RB49,QPSK	1412	-63.15	-13	-50.15	-70.12	1.58	10.70	H
	2119.5	-58.12	-13	-45.12	-66.37	2.102	12.50	H
	2826	-57.08	-13	-44.08	-65.97	2.856	13.90	H
	1412	-63.13	-13	-50.13	-70.10	1.58	10.70	V
	2119.5	-57.80	-13	-44.80	-66.05	2.10	12.50	V
	2826	-57.26	-13	-44.26	-66.15	2.86	13.90	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



ULCA_2A-66A								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
LTE B2 BW 20MHz Lowest 1RB49,QPSK	3702	-52.51	-13	-39.51	-64.77	2.64	14.90	H
	5553	-45.76	-13	-32.76	-57.62	2.94	14.80	H
	7404	-42.57	-13	-29.57	-52.34	3.39	13.16	H
	3702	-52.44	-13	-39.44	-64.70	2.64	14.90	V
	5553	-45.98	-13	-32.98	-57.84	2.94	14.80	V
	7404	-43.05	-13	-30.05	-52.82	3.39	13.16	V
LTE B66 BW 20MHz Lowest 1RB0,QPSK	3423	-54.99	-13	-41.99	-65.73	2.604	13.34	H
	5133	-46.47	-13	-33.47	-56.98	3.011	13.52	H
	6844	-43.78	-13	-30.78	-53.98	3.271	13.47	H
	3422	-55.45	-13	-42.45	-66.19	2.604	13.34	V
	5133	-47.39	-13	-34.39	-57.90	3.011	13.52	V
	6844	-43.97	-13	-30.97	-54.17	3.271	13.47	V
LTE B2 BW 20MHz Middle 1RB49,QPSK	3741	-52.15	-13	-39.15	-64.41	2.64	14.90	H
	5613	-45.55	-13	-32.55	-57.41	2.94	14.80	H
	7488	-42.33	-13	-29.33	-52.10	3.39	13.16	H
	3742	-51.85	-13	-38.85	-64.11	2.64	14.90	V
	5613	-45.72	-13	-32.72	-57.58	2.94	14.80	V
	7488	-43.25	-13	-30.25	-53.02	3.39	13.16	V
LTE B66 BW 20MHz Middle 1RB0,QPSK	3471	-54.77	-13	-41.77	-65.51	2.604	13.34	H
	5208	-45.18	-13	-32.18	-55.69	3.011	13.52	H
	6948	-43.60	-13	-30.60	-53.80	3.271	13.47	H
	3471	-54.65	-13	-41.65	-65.39	2.604	13.34	V
	5208	-45.52	-13	-32.52	-56.03	3.011	13.52	V
	6948	-43.89	-13	-30.89	-54.09	3.271	13.47	V
LTE B2 BW 20MHz Highest 1RB49,QPSK	3782	-52.10	-13	-39.10	-64.36	2.64	14.90	H
	5673	-45.67	-13	-32.67	-57.53	2.94	14.80	H
	7564	-42.24	-13	-29.24	-52.01	3.39	13.16	H
	3782	-51.87	-13	-38.87	-64.13	2.64	14.90	V
	5673	-45.84	-13	-32.84	-57.70	2.94	14.80	V
	7564	-42.92	-13	-29.92	-52.69	3.39	13.16	V
LTE B66 BW 20MHz Highest 1RB0,QPSK	3522	-53.97	-13	-40.97	-64.71	2.604	13.34	H
	5283	-44.96	-13	-31.96	-55.47	3.011	13.52	H
	7044	-43.38	-13	-30.38	-53.58	3.271	13.47	H
	3522	-54.25	-13	-41.25	-64.99	2.604	13.34	V
	5283	-45.14	-13	-32.14	-55.65	3.011	13.52	V
	7044	-43.67	-13	-30.67	-53.87	3.271	13.47	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



ULCA_4A-12A								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
LTE B4 BW 20MHz Lowest 1RB24,QPSK	3422	-52.43	-13	-39.43	-64.689	2.64	14.90	H
	5133	-46.42	-13	-33.42	-58.279	2.94	14.80	H
	6844	-43.64	-13	-30.64	-53.407	3.39	13.16	H
	3422	-54.95	-13	-41.95	-67.21	2.64	14.90	V
	5135	-47.08	-13	-34.08	-58.94	2.94	14.80	V
	6844	-44.16	-13	-31.16	-53.93	3.39	13.16	V
LTE B12 BW 10MHz Lowest 1RB49,QPSK	1399	-63.82	-13	-50.82	-70.79	1.58	10.70	H
	2098.5	-57.74	-13	-44.74	-65.99	2.102	12.50	H
	2798	-56.38	-13	-43.38	-65.27	2.856	13.90	H
	1399	-63.62	-13	-50.62	-70.59	1.58	10.70	V
	2098.5	-57.15	-13	-44.15	-65.40	2.10	12.50	V
	2798	-56.40	-13	-43.40	-65.29	2.86	13.90	V
LTE B4 BW 20MHz Middle 1RB24,QPSK	3447	-54.76	-13	-41.76	-67.019	2.64	14.90	H
	5170.5	-45.79	-13	-32.79	-57.649	2.94	14.80	H
	6894	-43.57	-13	-30.57	-53.337	3.39	13.16	H
	3447	-55.31	-13	-42.31	-67.57	2.64	14.90	V
	5170.5	-46.71	-13	-33.71	-58.57	2.94	14.80	V
	6894	-43.91	-13	-30.91	-53.68	3.39	13.16	V
LTE B12 BW 10MHz Middle 1RB49,QPSK	1406	-63.77	-13	-50.77	-70.74	1.58	10.70	H
	2109	-57.34	-13	-44.34	-65.59	2.102	12.50	H
	2812	-56.27	-13	-43.27	-65.16	2.856	13.90	H
	1406	-63.61	-13	-50.61	-70.58	1.58	10.70	V
	2109	-57.23	-13	-44.23	-65.48	2.10	12.50	V
	2812	-56.55	-13	-43.55	-65.44	2.86	13.90	V
LTE B4 BW 20MHz Highest 1RB24,QPSK	3470	-51.47	-13	-38.47	-63.729	2.64	14.90	H
	5210	-44.87	-13	-31.87	-56.729	2.94	14.80	H
	6948	-43.08	-13	-30.08	-52.847	3.39	13.16	H
	3470	-53.26	-13	-40.26	-65.52	2.64	14.90	V
	5210	-45.53	-13	-32.53	-57.39	2.94	14.80	V
	6948	-43.37	-13	-30.37	-53.14	3.39	13.16	V
LTE B12 BW 10MHz Highest 1RB49,QPSK	1415	-63.43	-13	-50.43	-70.40	1.58	10.70	H
	2120	-56.65	-13	-43.65	-64.90	2.102	12.50	H
	2825	-55.43	-13	-42.43	-64.32	2.856	13.90	H
	1415	-62.97	-13	-49.97	-69.94	1.58	10.70	V
	2120	-56.30	-13	-43.30	-64.55	2.10	12.50	V
	2825	-55.77	-13	-42.77	-64.66	2.86	13.90	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



ULCA_5A-66A								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
LTE B5 BW 20MHz Lowest 1RB12,QPSK	1650	-61.50	-13	-48.50	-68.47	1.58	10.70	H
	2475	-58.57	-13	-45.57	-66.82	2.102	12.50	H
	3300	-55.35	-13	-42.35	-64.24	2.856	13.90	H
	1650	-61.02	-13	-48.02	-67.99	1.58	10.70	V
	2475	-57.87	-13	-44.87	-66.12	2.10	12.50	V
	3300	-55.26	-13	-42.26	-64.15	2.86	13.90	V
LTE B66 BW 10MHz Lowest 1RB0,QPSK	3420	-54.92	-13	-41.92	-65.66	2.604	13.34	H
	5135	-46.37	-13	-33.37	-56.88	3.011	13.52	H
	6840	-43.61	-13	-30.61	-53.81	3.271	13.47	H
	3420	-54.93	-13	-41.93	-65.67	2.604	13.34	V
	5135	-47.08	-13	-34.08	-57.59	3.011	13.52	V
	6840	-44.13	-13	-31.13	-54.33	3.271	13.47	V
LTE B5 BW 20MHz Middle 1RB12,QPSK	1664	-60.98	-13	-47.98	-67.95	1.58	10.70	H
	2496	-57.87	-13	-44.87	-66.12	2.102	12.50	H
	3327	-55.15	-13	-42.15	-64.04	2.856	13.90	H
	1664	-60.58	-13	-47.58	-67.55	1.58	10.70	V
	2496	-57.64	-13	-44.64	-65.89	2.10	12.50	V
	3327	-55.72	-13	-42.72	-64.61	2.86	13.90	V
LTE B66 BW 10MHz Middle 1RB0,QPSK	3471	-54.77	-13	-41.77	-65.51	2.604	13.34	H
	5208	-44.87	-13	-31.87	-55.38	3.011	13.52	H
	6948	-43.30	-13	-30.30	-53.50	3.271	13.47	H
	3471	-54.89	-13	-41.89	-65.63	2.604	13.34	V
	5208	-45.62	-13	-32.62	-56.13	3.011	13.52	V
	6948	-43.58	-13	-30.58	-53.78	3.271	13.47	V
LTE B5 BW 20MHz Highest 1RB12,QPSK	1680	-60.78	-13	-47.78	-67.75	1.58	10.70	H
	2520	-57.96	-13	-44.96	-66.21	2.102	12.50	H
	3360	-55.17	-13	-42.17	-64.06	2.856	13.90	H
	1680	-60.76	-13	-47.76	-67.73	1.58	10.70	V
	2520	-57.76	-13	-44.76	-66.01	2.10	12.50	V
	3360	-54.68	-13	-41.68	-63.57	2.86	13.90	V
LTE B66 BW 10MHz Highest 1RB0,QPSK	3520	-54.12	-13	-41.12	-64.86	2.604	13.34	H
	5285	-45.18	-13	-32.18	-55.69	3.011	13.52	H
	7044	-43.22	-13	-30.22	-53.42	3.271	13.47	H
	3520	-54.25	-13	-41.25	-64.99	2.604	13.34	V
	5285	-45.51	-13	-32.51	-56.02	3.011	13.52	V
	7044	-43.67	-13	-30.67	-53.87	3.271	13.47	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



ULCA_12A-66A								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
LTE B12 BW 10MHz Lowest 1RB49,QPSK	1400	-63.29	-13	-50.29	-70.26	1.58	10.70	H
	2100	-57.93	-13	-44.93	-66.18	2.102	12.50	H
	2800	-57.21	-13	-44.21	-66.10	2.856	13.90	H
	1400	-63.15	-13	-50.15	-70.12	1.58	10.70	V
	2100	-57.74	-13	-44.74	-65.99	2.10	12.50	V
	2800	-57.03	-13	-44.03	-65.92	2.86	13.90	V
LTE B66 BW 20MHz Lowest 1RB0,QPSK	3470	-54.19	-13	-41.19	-64.93	2.604	13.34	H
	5210	-45.15	-13	-32.15	-55.66	3.011	13.52	H
	6948	-43.65	-13	-30.65	-53.85	3.271	13.47	H
	3470	-54.85	-13	-41.85	-65.59	2.604	13.34	V
	5210	-45.58	-13	-32.58	-56.09	3.011	13.52	V
	6948	-43.73	-13	-30.73	-53.93	3.271	13.47	V
LTE B12 BW 10MHz Middle 1RB49,QPSK	1405	-63.54	-13	-50.54	-70.51	1.58	10.70	H
	2110	-58.19	-13	-45.19	-66.44	2.102	12.50	H
	2810	-57.08	-13	-44.08	-65.97	2.856	13.90	H
	1405	-63.43	-13	-50.43	-70.40	1.58	10.70	V
	2110	-57.73	-13	-44.73	-65.98	2.10	12.50	V
	2810	-57.12	-13	-44.12	-66.01	2.86	13.90	V
LTE B66 BW 20MHz Middle 1RB0,QPSK	3470	-54.55	-13	-41.55	-65.29	2.604	13.34	H
	5210	-45.15	-13	-32.15	-55.66	3.011	13.52	H
	6948	-43.65	-13	-30.65	-53.85	3.271	13.47	H
	3470	-54.53	-13	-41.53	-65.27	2.604	13.34	V
	5210	-45.83	-13	-32.83	-56.34	3.011	13.52	V
	6948	-43.49	-13	-30.49	-53.69	3.271	13.47	V
LTE B12 BW 10MHz Highest 1RB49,QPSK	1415	-63.47	-13	-50.47	-70.44	1.58	10.70	H
	2120	-58.16	-13	-45.16	-66.41	2.102	12.50	H
	2825	-57.20	-13	-44.20	-66.09	2.856	13.90	H
	1415	-63.38	-13	-50.38	-70.35	1.58	10.70	V
	2120	-58.18	-13	-45.18	-66.43	2.10	12.50	V
	2825	-56.85	-13	-43.85	-65.74	2.86	13.90	V
LTE B66 BW 20MHz Highest 1RB0,QPSK	3520	-54.44	-13	-41.44	-65.18	2.604	13.34	H
	5285	-45.04	-13	-32.04	-55.55	3.011	13.52	H
	7044	-43.35	-13	-30.35	-53.55	3.271	13.47	H
	3520	-54.20	-13	-41.20	-64.94	2.604	13.34	V
	5285	-45.68	-13	-32.68	-56.19	3.011	13.52	V
	7044	-43.45	-13	-30.45	-53.65	3.271	13.47	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.