FCC RF Test Report

APPLICANT	:	Fibocom Wireless Inc
EQUIPMENT	:	LTE module
BRAND NAME	:	Fibocom
MODEL NAME	:	NL668-AM-01
FCC ID	:	ZMONL668AM01
STANDARD	:	47 CFR Part 2, 22(H), 24(E), 27(L), 27(F), 27(H)
CLASSIFICATION	:	PCS Licensed Transmitter (PCB)

The product was received on Dec. 11, 2018 and completely tested on Dec. 22, 2018. We, Sporton International (Shenzhen) 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 (Shenzhen) Inc., the test report shall not be reproduced except in full.

Eric Shih

NVLAP TESTING
NVLAP LAB CODE 600156-0

Approved by: Eric Shih / Manager

Sporton International (Shenzhen) Inc.
1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen City, Guangdong Province 518055, China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG8O1914-03B	Rev. 01	Initial issue of report	Dec. 28, 2018

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.3	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§22.913(a)(5)	Effective Radiated Power (Band 5)	ERP < 7 Watt	PASS	-
	§27.50(b)(10) §27.50(c)(10)	Effective Radiated Power (Band 12) (Band 13) (Band 17)	ERP < 3 Watt	PASS	-
	§24.232(c) §27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 2)]	EIRP < 2Watt	PASS	-
	§27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4) (Band 66)	EIRP < 1Watt	PASS	-
4.4	§2.1053 §22.917(a) §24.238(a) §27.53(c)(2) §27.53(f) §27.53(g) §27.53(h)	Radiated Spurious Emission (Band 2) (Band 4) (Band 5) (Band 12) (Band 13) (Band 17) (Band 66)	< $43+10\log_{10}$(P[Watts])	PASS	Under limit 27.33 dB at 1559.50 MHz

1 General Description

1.1 Applicant

Fibocom Wireless Inc

5/F, Tower A, Technology Building II, 1057 Nanhai Avenue, Shenzhen, China

1.2 Manufacturer

Fibocom Wireless Inc

5/F, Tower A, Technology Building II, 1057 Nanhai Avenue, Shenzhen, China

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	LTE module
Brand Name	Fibocom
Model Name	NL668-AM-01
FCC ID	ZMONL668AM01
EUT supports Radios application	WCDMA/HSPA/DC-HSDPA/ HSPA+(16QAM uplink is not supported)/LTE
IMEI Code	Radiation: 866857033443116
HW Version	V1.0.1
SW Version	19006.1000.00.02.79.02
EUT Stage	Production Unit

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. This is a variant report for NL668-AM-01. The product equality declaration could be referred to Appendix D. Based on the similarity between current and previous project, only the Output Power and Radiation Spurious Emission were verified for the differences, all the other test cases are quoted on original test report (Sporton Report Number FG8O1914-02B).

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 13 : 779.5 MHz ~ 784.5 MHz LTE Band 17 : 706.5 MHz ~ 713.5 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 13 : 748.5 MHz ~ 753.5 MHz LTE Band 17 : 736.5 MHz ~ 743.5 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 13 : 5MHz / 10MHz LTE Band 17 : 5MHz / 10MHz LTE Band 66 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz
Maximum Output Power to Antenna	LTE Band 2 : 23.31 dBm LTE Band 4 : 23.07 dBm LTE Band 5 : 22.86 dBm LTE Band 12 : 23.54 dBm LTE Band 13 : 23.24 dBm LTE Band 17 : 23.50 dBm LTE Band 66 : 23.63 dBm
Antenna Gain	LTE Band 2 : 4.00 dBi LTE Band 4 : 4.50 dBi LTE Band 5 : 4.00 dBi LTE Band 12 : 3.00 dBi LTE Band 13 : 3.50 dBi LTE Band 17 : 3.00 dBi LTE Band 66 : 4.50 dBi
Type of Modulation	QPSK / 16QAM

1.5 Modification of EUT

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

1.6 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator

LTE Band 2		QPSK	16QAM
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Maximum EIRP(W)
1.4	1850.7 ~ 1909.3	0.5200	0.4102
3	1851.5 ~ 1908.5	0.5176	0.4246
5	1852.5 ~ 1907.5	0.5272	0.3899
10	1855.0 ~ 1905.0	0.5212	0.4266
15	1857.5 ~ 1902.5	0.5272	0.4315
20	1860.0 ~ 1900.0	0.5383	0.4102
LTE Band 4		QPSK	16QAM
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Maximum EIRP(W)
1.4	1710.7 ~ 1754.3	0.5534	0.4446
3	1711.5 ~ 1753.5	0.5623	0.4150
5	1712.5 ~ 1752.5	0.5623	0.4140
10	1715.0 ~ 1750.0	0.5662	0.4560
15	1717.5 ~ 1747.5	0.5702	0.4169
20	1720.0 ~ 1745.0	0.5715	0.4355
LTE Band 5		QPSK	16QAM
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Maximum ERP(W)
1.4	824.7 ~ 848.3	0.2931	0.2388
3	825.5 ~ 847.5	0.2891	0.2163
5	826.5 ~ 846.5	0.2884	0.2360
10	829.0 ~ 844.0	0.2958	0.2270
LTE Band 12		QPSK	16QAM
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Maximum ERP(W)
1.4	699.7 ~ 715.3	0.2559	0.2075
3	700.5 ~ 714.5	0.2588	0.1954
5	701.5 ~ 713.5	0.2570	0.1897
10	704.0 ~ 711.0	0.2748	0.2193

LTE Band 13		QPSK	16QAM
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Maximum ERP(W)
5	779.5 ~ 784.5	0.2851	0.2307
10	782.0	0.2877	0.2193
LTE Band 17		**QPSK**	**16QAM**
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Maximum ERP(W)
5	706.5 ~ 713.5	0.2710	0.2168
10	709.0 ~ 711.0	0.2723	0.2153
LTE Band 66		**QPSK**	**16QAM**
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Maximum EIRP(W)
1.4	1710.7 ~ 1779.3	0.6109	0.4932
3	1711.5 ~ 1778.5	0.6209	0.4909
5	1712.5 ~ 1777.5	0.5970	0.4688
10	1715.0 ~ 1775.0	0.6109	0.5309
15	1717.5 ~ 1772.5	0.5861	0.4634
20	1720.0 ~ 1770.0	0.6501	0.4864

1.7 Testing Location

Sporton Lab is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600156-0).

Test Site	Sporton International (Shenzhen) Inc.		
Test Site Location	No. 3 Bldg the third floor of south, Shahe River west, Fengzeyuan Warehouse, Nanshan District, Shenzhen City, Guangdong Province 518055, China TEL: +86-755- 3320-2398		
Test Site No.	**Sporton Site No.**	**FCC designation No.**	**FCC Test Firm Registration No.**
	03CH02-SZ	CN5019	577730

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(H), 24(E), 27(L) , 27(F) , 27(H).
- 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

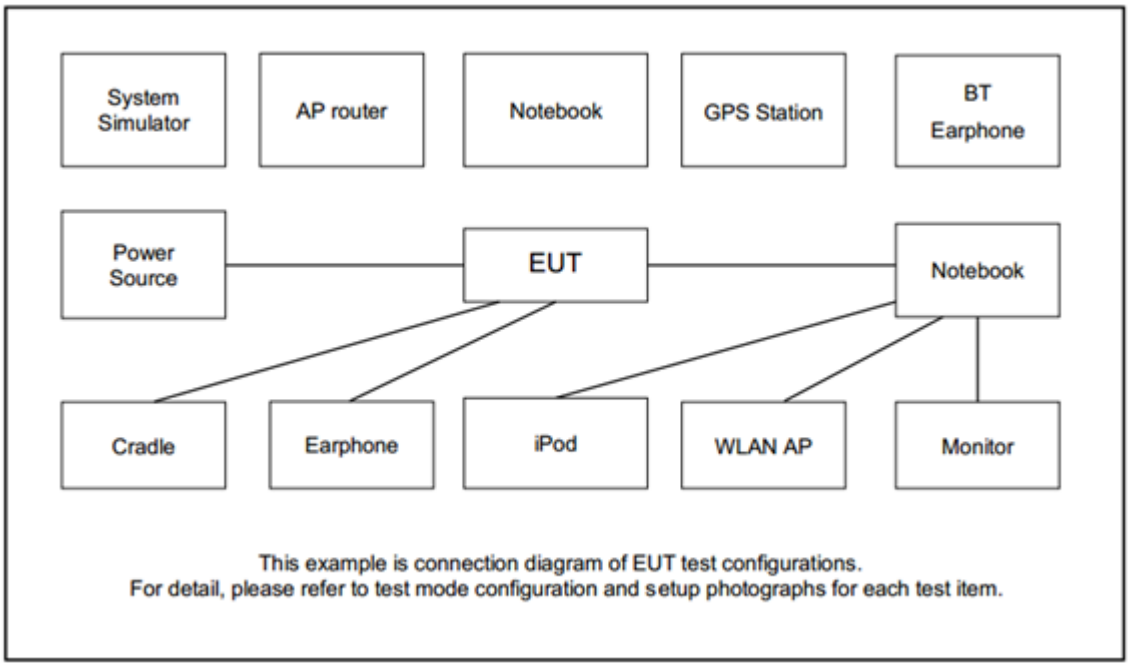
2.1 Test Mode

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		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Max. Output Power	2	v	v	v	v	v	v	v	v	-	v	v	v	v	v	v
	4	v	v	v	v	v	v	v	v	-	v	v	v	v	v	v
	5	v	v	v	v	-	-	v	v	-	v	v	v	v	v	v
	12	v	v	v	v	-	-	v	v	-	v	v	v	v	v	v
	13	-	-	v	v	-	-	v	v	-	v	v	v	v	v	v
	17	-	-	v	v	-	-	v	v	-	v	v	v	v	v	v
	66	v	v	v	v	v	v	v	v	-	v	v	v	v	v	v
E.R.P / E.I.R.P	2	v	v	v	v	v	v	v	v	-	v			v	v	v
	4	v	v	v	v	v	v	v	v	-	v			v	v	v
	5	v	v	v	v	-	-	v	v	-	v			v	v	v
	12	v	v	v	v	-	-	v	v	-	v			v	v	v
	13	-	-	v	v	-	-	v	v	-	v			v	v	v
	17	-	-	v	v	-	-	v	v	-	v			v	v	v
	66	v	v	v	v	v	v	v	v	-	v			v	v	v
Radiated Spurious Emission	2	v	v	v	v	v	v	v		-	v				v	
	4	v	v	v	v	v	v	v		-	v				v	
	5	v	v	v	v	-	-	v		-	v				v	
	12	v	v	v	v	-	-	v		-	v				v	
	13	-	-	v	v	-	-	v		-	v				v	
	17	-	-	v	v	-	-	v		-	v				v	
	66	v	v	v	v	v	v	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.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	Adapter	Motorola	SC-22	Fcc DoC	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
3	Channel	18615	18900	19185
	Frequency	1851.5	1880	1908.5
1.4	Channel	18607	18900	19193
	Frequency	1850.7	1880	1909.3

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
3	Channel	19965	20175	20385
	Frequency	1711.5	1732.5	1753.5
1.4	Channel	19957	20175	20393
	Frequency	1710.7	1732.5	1754.3

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
3	Channel	23025	23095	23165
	Frequency	700.5	707.5	714.5
1.4	Channel	23017	23095	23173
	Frequency	699.7	707.5	715.3

LTE Band 13 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	-	23230	-
	Frequency	-	782	-
5	Channel	23205	23230	23255
	Frequency	779.5	782	784.5

LTE Band 17 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
10	Channel	23780	23790	23800
	Frequency	709	710	711
5	Channel	23755	23790	23825
	Frequency	706.5	710	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	Channel	131987	132322	132657
	Frequency	1711.5	1745	1778.5
1.4	Channel	131979	132322	132665
	Frequency	1710.7	1745	1779.3

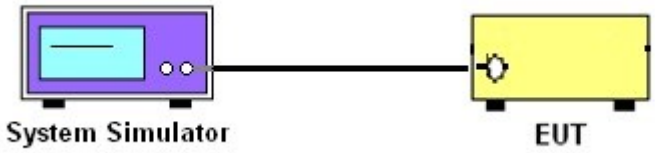
3 Conducted Test Items

3.1 Measuring Instruments

See list of measuring instruments of this test report.

3.2 Test Setup

3.2.1 Conducted Output Power



3.3 Conducted Output Power and EIRP

3.3.1 Description of the Conducted Output Power Measurement and EIRP Measurement

A system simulator was used to establish communication with the EUT. Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The EIRP of mobile transmitters must not exceed 2 Watts for Band 7

According to KDB 412172 D01 Power Approach,

EIRP = $P_T + G_T – L_C$, ERP = EIRP -2.15, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

3.3.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.2
2. The transmitter output port was connected to the system simulator.
3. Set EUT at maximum power through the system simulator.
4. Select lowest, middle, and highest channels for each band and different modulation.
5. Measure and record the power level from the system simulator.

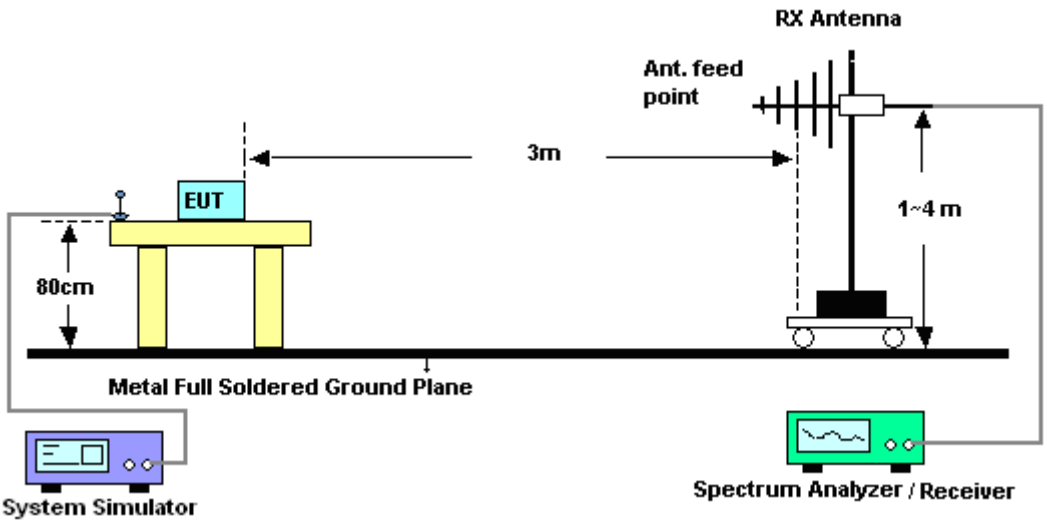
4 Radiated Test Items

4.1 Measuring Instruments

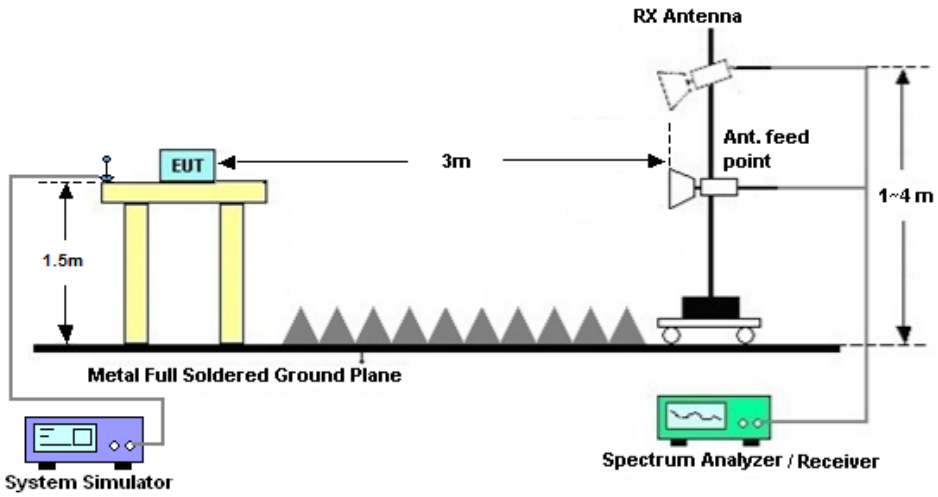
See list of measuring instruments of this test report.

4.2 Test Setup

4.2.1 For radiated test from 30MHz to 1GHz



4.2.2 For radiated test above 1GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

4.4 Radiated Spurious Emission

4.4.1 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.

4.4.2 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 (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
11. ERP (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 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101041	10kHz~40GHz;Max 30dBm	Oct. 20, 2018	Dec. 21, 2018~ Dec. 22, 2018	Oct. 19, 2019	Radiation (03CH02-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz-2GHz	May 10, 2018	Dec. 21, 2018~ Dec. 22, 2018	May 09, 2019	Radiation (03CH02-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1474	1GHz~18GHz	Feb. 07, 2018	Dec. 21, 2018~ Dec. 22, 2018	Feb. 06, 2019	Radiation (03CH02-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Mar. 30, 2018	Dec. 21, 2018~ Dec. 22, 2018	Mar. 29, 2019	Radiation (03CH02-SZ)
LF Amplifier	Burgeon	BPA-530	102211	0.01~3000Mhz	Oct. 20, 2018	Dec. 21, 2018~ Dec. 22, 2018	Oct. 19, 2019	Radiation (03CH02-SZ
HF Amplifier	Agilent	8449B	3008A01023	1GHz~26.5GHz	Oct. 20, 2018	Dec. 21, 2018~ Dec. 22, 2018	Oct. 19, 2019	Radiation (03CH02-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 30, 2018	Dec. 21, 2018~ Dec. 22, 2018	Jul. 29, 2019	Radiation (03CH02-SZ
AC Power Source	Chroma	61601	616010002470	N/A	NCR	Dec. 21, 2018~ Dec. 22, 2018	NCR	Radiation (03CH02-SZ)
Turn Table	Chaintek	T-200	N/A	0~360 degree	NCR	Dec. 21, 2018~ Dec. 22, 2018	NCR	Radiation (03CH02-SZ)
Antenna Mast	Chaintek	MBS-400	N/A	1 m~4 m	NCR	Dec. 21, 2018~ Dec. 22, 2018	NCR	Radiation (03CH02-SZ)

6 Uncertainty of Evaluation

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

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

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.3 dB**

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.7 dB**

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)

LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
20	1	0	QPSK	23.08	23.17	23.11
20	1	49		23.01	23.31	23.06
20	1	99		22.95	23.12	22.91
20	50	0		22.06	22.17	22.10
20	50	24		22.00	22.10	22.02
20	50	50		21.85	22.05	21.86
20	100	0		21.92	22.11	21.95
20	1	0	16-QAM	22.10	22.10	21.89
20	1	49		21.91	22.13	21.96
20	1	99		21.83	21.78	21.84
20	50	0		20.98	21.18	21.04
20	50	24		20.93	21.14	21.15
20	50	50		20.88	21.17	20.98
20	100	0		21.03	21.22	21.16
15	1	0	QPSK	23.21	23.22	23.14
15	1	37		23.16	23.22	23.04
15	1	74		22.85	23.04	22.61
15	36	0		22.09	21.94	22.11
15	36	20		21.94	22.13	21.91
15	36	39		22.01	22.10	21.86
15	75	0		22.08	22.08	21.94
15	1	0	16-QAM	22.34	22.23	21.90
15	1	37		22.19	22.35	21.60
15	1	74		21.89	21.94	21.96
15	36	0		21.09	21.05	21.11
15	36	20		21.04	21.15	21.03
15	36	39		21.02	21.22	21.00
15	75	0		21.08	21.28	21.05

LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK	22.98	23.17	23.16
10	1	25		22.91	23.10	23.02
10	1	49		22.83	22.91	22.71
10	25	0		22.14	22.00	21.99
10	25	12		21.93	22.16	22.02
10	25	25		21.93	22.09	21.88
10	50	0		21.99	22.00	21.91
10	1	0	16-QAM	22.30	22.04	22.11
10	1	25		22.23	21.98	21.93
10	1	49		21.91	21.98	21.99
10	25	0		21.19	21.12	21.11
10	25	12		20.99	21.24	21.14
10	25	25		21.05	21.22	21.33
10	50	0		21.14	21.28	21.04
5	1	0	QPSK	23.05	22.99	23.11
5	1	12		23.08	23.22	23.11
5	1	24		22.91	22.96	23.02
5	12	0		22.05	21.91	21.97
5	12	7		21.93	21.92	21.93
5	12	13		21.87	21.96	21.94
5	25	0		22.00	22.02	21.95
5	1	0	16-QAM	21.88	21.84	21.67
5	1	12		21.91	21.65	21.67
5	1	24		21.75	21.82	21.91
5	12	0		21.07	20.84	20.95
5	12	7		20.94	20.94	21.16
5	12	13		20.87	20.88	20.99
5	25	0		21.12	21.15	20.95

LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
3	1	0	QPSK	23.00	22.78	23.14
3	1	8		23.03	22.90	22.97
3	1	14		22.92	22.95	23.05
3	8	0		21.95	21.81	22.07
3	8	4		21.97	21.91	21.95
3	8	7		21.92	21.84	21.97
3	15	0		21.89	21.92	21.94
3	1	0	16-QAM	21.68	21.73	21.84
3	1	8		21.65	21.49	21.77
3	1	14		22.28	21.80	21.88
3	8	0		21.03	21.01	21.09
3	8	4		20.86	21.09	21.07
3	8	7		21.00	21.14	21.09
3	15	0		21.05	21.00	20.80
1.4	1	0	QPSK	23.02	22.88	23.05
1.4	1	3		22.79	22.91	22.99
1.4	1	5		22.70	22.70	23.16
1.4	3	0		22.95	22.92	22.94
1.4	3	1		22.99	23.05	22.94
1.4	3	3		22.97	23.03	23.10
1.4	6	0		21.88	21.92	21.88
1.4	1	0	16-QAM	21.88	21.84	21.85
1.4	1	3		21.83	21.76	21.83
1.4	1	5		21.76	21.74	21.88
1.4	3	0		21.77	21.84	21.83
1.4	3	1		21.91	22.13	21.97
1.4	3	3		21.91	22.13	21.86
1.4	6	0		20.81	21.06	21.05

LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
20	1	0	QPSK	22.59	22.87	22.78
20	1	49		22.77	23.07	22.87
20	1	99		22.63	22.82	22.71
20	50	0		21.81	21.98	21.93
20	50	24		21.71	21.86	21.80
20	50	50		21.52	21.68	21.53
20	100	0		21.70	21.83	21.74
20	1	0	16-QAM	21.62	21.80	21.89
20	1	49		21.51	21.75	21.54
20	1	99		21.65	21.55	21.51
20	50	0		20.90	20.87	20.95
20	50	24		20.91	20.85	20.78
20	50	50		20.82	20.77	20.64
20	100	0		20.81	20.81	20.74
15	1	0	QPSK	22.87	23.06	22.87
15	1	37		22.89	22.89	22.89
15	1	74		22.70	22.49	22.71
15	36	0		21.70	21.78	21.63
15	36	20		21.73	21.66	21.54
15	36	39		21.72	21.64	21.60
15	75	0		21.73	21.72	21.52
15	1	0	16-QAM	21.70	21.57	21.70
15	1	37		21.67	21.61	21.67
15	1	74		21.53	21.50	21.53
15	36	0		20.79	20.88	20.64
15	36	20		20.80	20.71	20.66
15	36	39		20.85	20.85	20.55
15	75	0		20.87	20.84	20.62

LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK	22.58	22.81	22.80
10	1	25		22.85	22.60	23.03
10	1	49		22.46	22.49	22.71
10	25	0		21.64	21.72	21.61
10	25	12		21.74	21.64	21.74
10	25	25		21.71	21.73	21.58
10	50	0		21.73	21.82	21.67
10	1	0	16-QAM	21.89	21.89	21.57
10	1	25		21.56	21.89	22.09
10	1	49		21.46	21.72	21.96
10	25	0		20.69	20.80	20.74
10	25	12		20.81	20.75	20.87
10	25	25		20.73	20.68	20.71
10	50	0		20.72	20.82	20.91
5	1	0	QPSK	22.58	22.91	22.79
5	1	12		22.75	22.88	23.00
5	1	24		22.75	22.73	22.70
5	12	0		21.56	21.73	21.75
5	12	7		21.63	21.77	21.71
5	12	13		21.64	21.66	21.72
5	25	0		21.65	21.62	21.64
5	1	0	16-QAM	21.48	21.57	21.57
5	1	12		21.56	21.43	21.41
5	1	24		21.54	21.63	21.67
5	12	0		20.52	20.75	20.72
5	12	7		20.66	20.65	20.74
5	12	13		20.67	20.85	20.92
5	25	0		20.82	20.82	20.78

LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
3	1	0	QPSK	22.72	22.85	22.69
3	1	8		23.00	22.81	22.84
3	1	14		22.78	22.84	22.58
3	8	0		21.67	21.80	21.79
3	8	4		21.53	21.80	21.68
3	8	7		21.66	21.78	21.64
3	15	0		21.77	21.76	21.63
3	1	0	16-QAM	21.45	21.61	21.48
3	1	8		21.65	21.53	21.28
3	1	14		21.51	21.68	21.62
3	8	0		20.83	20.84	20.71
3	8	4		20.82	20.74	20.74
3	8	7		20.73	20.81	20.76
3	15	0		20.61	20.78	20.77
1.4	1	0	QPSK	22.48	22.73	22.63
1.4	1	3		22.77	22.77	22.78
1.4	1	5		22.66	22.70	22.83
1.4	3	0		22.70	22.93	22.80
1.4	3	1		22.73	22.83	22.83
1.4	3	3		22.72	22.74	22.82
1.4	6	0		21.68	21.79	21.80
1.4	1	0	16-QAM	21.71	21.93	21.48
1.4	1	3		21.81	21.98	21.57
1.4	1	5		21.68	21.56	21.50
1.4	3	0		21.54	21.75	21.85
1.4	3	1		21.64	21.94	21.84
1.4	3	3		21.64	21.94	21.86
1.4	6	0		20.64	20.66	20.90

LTE Band 5 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK	22.45	22.54	22.50
10	1	25		22.59	22.81	22.64
10	1	49		22.67	22.86	22.70
10	25	0		21.54	21.61	21.58
10	25	12		21.61	21.73	21.71
10	25	25		21.51	21.57	21.52
10	50	0		21.57	21.59	21.57
10	1	0	16-QAM	21.58	21.71	21.29
10	1	25		21.28	21.26	21.60
10	1	49		21.25	21.25	21.46
10	25	0		20.58	20.60	20.83
10	25	12		20.66	20.51	20.75
10	25	25		20.66	20.55	20.76
10	50	0		20.72	20.65	20.57
5	1	0	QPSK	22.39	22.46	22.52
5	1	12		22.68	22.70	22.75
5	1	24		22.75	22.74	22.32
5	12	0		21.46	21.63	21.62
5	12	7		21.72	21.57	21.65
5	12	13		21.58	21.59	21.68
5	25	0		21.72	21.72	21.67
5	1	0	16-QAM	21.66	21.42	21.34
5	1	12		21.88	21.37	21.21
5	1	24		21.34	21.34	21.45
5	12	0		20.66	20.71	20.65
5	12	7		20.57	20.65	20.76
5	12	13		20.62	20.67	20.54
5	25	0		20.76	20.61	20.53

LTE Band 5 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
3	1	0	QPSK	22.47	22.64	22.44
3	1	8		22.69	22.76	22.63
3	1	14		22.72	22.41	22.36
3	8	0		21.49	21.66	21.66
3	8	4		21.61	21.65	21.72
3	8	7		21.74	21.64	21.68
3	15	0		21.76	21.65	21.67
3	1	0	16-QAM	21.39	21.43	21.40
3	1	8		21.32	21.35	21.43
3	1	14		21.43	21.35	21.50
3	8	0		20.61	20.68	20.66
3	8	4		20.79	20.69	20.64
3	8	7		20.92	20.76	20.69
3	15	0		20.82	20.75	20.74
1.4	1	0	QPSK	22.75	22.59	22.78
1.4	1	3		22.64	22.66	22.68
1.4	1	5		22.69	22.66	22.55
1.4	3	0		22.65	22.63	22.74
1.4	3	1		22.73	22.81	22.82
1.4	3	3		22.80	22.82	22.69
1.4	6	0		21.57	21.67	21.63
1.4	1	0	16-QAM	21.39	21.50	21.39
1.4	1	3		21.41	21.57	21.50
1.4	1	5		21.38	21.43	21.29
1.4	3	0		21.77	21.93	21.80
1.4	3	1		21.63	21.75	21.89
1.4	3	3		21.67	21.72	21.89
1.4	6	0		20.64	20.71	20.61

LTE Band 12 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK	23.10	23.24	23.16
10	1	25		23.21	23.54	23.45
10	1	49		23.07	23.17	23.12
10	25	0		22.07	22.14	22.10
10	25	12		22.14	22.25	22.18
10	25	25		22.31	22.46	22.36
10	50	0		22.15	22.35	22.17
10	1	0	16-QAM	22.56	22.18	22.37
10	1	25		22.20	22.10	22.02
10	1	49		22.15	22.28	22.10
10	25	0		21.12	21.28	21.13
10	25	12		21.20	21.19	21.22
10	25	25		21.14	21.20	21.17
10	50	0		21.22	21.09	21.22
5	1	0	QPSK	23.24	22.87	22.83
5	1	12		23.08	23.25	23.00
5	1	24		22.63	22.83	22.68
5	12	0		22.09	22.04	22.06
5	12	7		22.11	22.05	22.02
5	12	13		22.12	22.05	21.99
5	25	0		22.07	22.07	22.07
5	1	0	16-QAM	21.93	21.91	21.77
5	1	12		21.71	21.79	21.62
5	1	24		21.57	21.68	21.62
5	12	0		21.01	20.89	21.00
5	12	7		20.99	20.91	20.89
5	12	13		21.00	21.00	20.98
5	25	0		21.04	21.22	21.04

LTE Band 12 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
3	1	0	QPSK	22.98	23.14	23.16
3	1	8		22.99	23.28	22.97
3	1	14		22.80	22.81	23.05
3	8	0		22.15	22.17	22.16
3	8	4		22.19	22.18	22.10
3	8	7		22.15	22.10	22.11
3	15	0		22.10	22.13	22.19
3	1	0	16-QAM	21.93	21.68	22.06
3	1	8		21.61	21.72	21.83
3	1	14		21.76	21.90	21.92
3	8	0		21.23	21.16	21.28
3	8	4		21.20	20.88	21.22
3	8	7		21.25	21.27	21.33
3	15	0		20.97	21.09	21.18
1.4	1	0	QPSK	23.09	23.02	22.74
1.4	1	3		23.12	23.14	22.96
1.4	1	5		22.96	23.00	22.85
1.4	3	0		23.13	23.23	23.03
1.4	3	1		23.13	23.12	23.12
1.4	3	3		23.03	23.07	23.09
1.4	6	0		22.11	22.08	22.13
1.4	1	0	16-QAM	22.08	22.25	22.29
1.4	1	3		21.93	21.91	21.91
1.4	1	5		21.98	21.89	22.32
1.4	3	0		22.10	22.00	22.12
1.4	3	1		22.19	22.17	22.16
1.4	3	3		21.94	22.03	22.26
1.4	6	0		21.14	20.90	21.00

LTE Band 13 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK		23.02	
10	1	25			22.79	
10	1	49			23.24	
10	25	0			22.11	
10	25	12			21.99	
10	25	25			22.05	
10	50	0			22.00	
10	1	0	16-QAM		22.06	
10	1	25			21.95	
10	1	49			21.69	
10	25	0			21.12	
10	25	12			20.99	
10	25	25			21.06	
10	50	0			21.02	
5	1	0	QPSK	22.97	23.05	22.88
5	1	12		22.89	23.07	23.00
5	1	24		22.64	23.20	22.61
5	12	0		22.08	22.05	21.91
5	12	7		22.15	21.96	22.05
5	12	13		22.07	21.96	22.03
5	25	0		22.03	21.94	21.98
5	1	0	16-QAM	22.04	21.92	21.89
5	1	12		21.78	21.62	21.65
5	1	24		21.91	21.81	22.28
5	12	0		20.81	20.91	20.98
5	12	7		20.97	20.81	21.04
5	12	13		20.96	20.83	20.82
5	25	0		21.07	21.09	20.97

LTE Band 17 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK	23.03	22.97	23.06
10	1	25		23.38	23.50	23.31
10	1	49		23.18	23.07	23.05
10	25	0		22.55	22.48	22.38
10	25	12		22.44	22.32	22.24
10	25	25		22.38	22.25	22.26
10	50	0		22.47	22.32	22.35
10	1	0	16-QAM	22.29	22.01	22.27
10	1	25		22.12	22.47	22.26
10	1	49		22.48	22.17	21.69
10	25	0		21.51	21.30	21.40
10	25	12		21.66	21.33	21.29
10	25	25		21.54	21.46	21.33
10	50	0		21.27	21.29	21.36
5	1	0	QPSK	23.10	23.18	23.10
5	1	12		23.38	23.25	23.22
5	1	24		23.48	23.26	23.02
5	12	0		22.25	22.31	22.32
5	12	7		22.31	22.21	22.28
5	12	13		22.41	22.25	22.16
5	25	0		22.40	22.26	22.21
5	1	0	16-QAM	22.05	21.98	21.99
5	1	12		22.51	22.09	21.94
5	1	24		21.99	22.27	21.87
5	12	0		21.01	21.38	21.23
5	12	7		21.13	21.29	21.22
5	12	13		21.56	21.23	21.19
5	25	0		21.31	21.51	21.35

LTE Band 66 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
20	1	0	QPSK	22.86	23.11	23.00
20	1	49		23.02	22.86	23.63
20	1	99		22.88	22.75	22.85
20	50	0		21.78	22.45	22.16
20	50	24		22.03	22.12	22.16
20	50	50		22.10	22.29	22.09
20	100	0		22.14	22.02	22.17
20	1	0	16-QAM	22.09	22.36	22.37
20	1	49		21.92	21.90	22.24
20	1	99		21.66	21.89	22.31
20	50	0		20.85	21.17	21.16
20	50	24		21.11	21.10	21.17
20	50	50		21.20	21.06	21.20
20	100	0		21.25	21.07	20.81
15	1	0	QPSK	22.85	23.16	23.15
15	1	37		22.86	23.07	23.18
15	1	74		22.90	23.02	23.10
15	36	0		21.99	22.28	21.89
15	36	20		21.98	22.03	22.03
15	36	39		21.90	22.07	22.14
15	75	0		21.95	22.14	22.15
15	1	0	16-QAM	21.91	21.98	21.93
15	1	37		21.95	21.74	22.16
15	1	74		21.93	21.57	21.92
15	36	0		20.89	21.21	20.96
15	36	20		20.99	21.06	21.17
15	36	39		20.92	21.04	21.13
15	75	0		21.00	21.09	21.20

LTE Band 66 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK	22.97	23.12	23.00
10	1	25		23.34	23.08	23.36
10	1	49		23.30	23.00	22.94
10	25	0		22.22	22.27	22.19
10	25	12		22.31	22.07	22.18
10	25	25		22.17	22.21	22.24
10	50	0		22.17	22.25	22.32
10	1	0	16-QAM	22.26	22.75	22.32
10	1	25		22.31	22.58	22.25
10	1	49		22.23	21.93	21.80
10	25	0		21.30	21.37	21.30
10	25	12		21.36	21.10	21.14
10	25	25		21.41	21.36	21.16
10	50	0		21.32	20.97	21.22
5	1	0	QPSK	22.88	22.90	23.26
5	1	12		23.09	23.11	23.17
5	1	24		23.00	22.93	23.04
5	12	0		21.94	21.91	22.16
5	12	7		22.02	21.97	22.09
5	12	13		22.03	21.85	22.02
5	25	0		22.00	21.90	22.21
5	1	0	16-QAM	21.31	21.92	22.21
5	1	12		21.29	21.39	22.03
5	1	24		21.63	21.90	22.10
5	12	0		20.98	21.00	21.27
5	12	7		20.86	20.83	21.24
5	12	13		21.02	20.78	21.10
5	25	0		21.01	20.96	21.20

LTE Band 66 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
3	1	0	QPSK	23.01	23.27	23.20
3	1	8		22.95	23.12	23.33
3	1	14		22.98	23.04	23.43
3	8	0		21.84	21.86	22.04
3	8	4		22.00	21.90	22.03
3	8	7		21.91	21.86	22.00
3	15	0		21.95	21.85	22.04
3	1	0	16-QAM	22.41	22.08	22.20
3	1	8		22.38	21.89	22.07
3	1	14		22.34	21.92	22.21
3	8	0		20.72	20.75	21.21
3	8	4		20.85	20.99	21.01
3	8	7		20.77	21.09	21.06
3	15	0		20.77	20.70	21.01
1.4	1	0	QPSK	23.08	22.90	23.36
1.4	1	3		23.21	22.89	23.31
1.4	1	5		23.04	22.84	23.17
1.4	3	0		23.25	23.14	23.34
1.4	3	1		23.28	23.22	23.26
1.4	3	3		23.19	23.22	23.26
1.4	6	0		22.18	22.13	22.16
1.4	1	0	16-QAM	21.80	21.80	21.76
1.4	1	3		21.93	22.04	22.32
1.4	1	5		21.74	21.66	21.56
1.4	3	0		21.71	22.04	22.43
1.4	3	1		21.89	21.98	22.43
1.4	3	3		22.12	22.06	22.39
1.4	6	0		20.87	20.79	20.90

ERP/EIRP

LTE Band 2 (GT - LC = 4.00 dBi) QPSK									
Bandwidth	1.4M			3M			5M		
Channel	18607	18900	19193	18615	18900	19185	18625	18900	19175
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1850.7	1880	1909.3	1851.5	1880	1908.5	1852.5	1880	1907.5
Conducted Power (dBm)	22.70	22.70	23.16	23.00	22.78	23.14	23.08	23.22	23.11
Conducted Power (Watts)	0.1862	0.1862	0.2070	0.1995	0.1897	0.2061	0.2032	0.2099	0.2046
EIRP(dBm)	26.70	26.70	27.16	27.00	26.78	27.14	27.08	27.22	27.11
EIRP(Watts)	0.4677	0.4677	0.5200	0.5012	0.4764	0.5176	0.5105	0.5272	0.5140

LTE Band 2 (GT - LC = 4.00 dBi) QPSK									
Bandwidth	10M			15M			20M		
Channel	18650	18900	19150	18675	18900	19125	18650	18900	19100
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1855	1880	1905	1857.5	1880	1902.5	1860	1880	1900
Conducted Power (dBm)	22.98	23.17	23.16	23.21	23.22	23.14	23.01	23.31	23.06
Conducted Power (Watts)	0.1986	0.2075	0.2070	0.2094	0.2099	0.2061	0.2000	0.2143	0.2023
EIRP(dBm)	26.98	27.17	27.16	27.21	27.22	27.14	27.01	27.31	27.06
EIRP(Watts)	0.4989	0.5212	0.5200	0.5260	0.5272	0.5176	0.5023	0.5383	0.5082

LTE Band 2 (GT - LC = 4.00 dBi) 16QAM									
Bandwidth	1.4M			3M			5M		
Channel	18607	18900	19193	18615	18900	19185	18625	18900	19175
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1850.7	1880	1909.3	1851.5	1880	1908.5	1852.5	1880	1907.5
Conducted Power (dBm)	21.91	22.13	21.97	22.28	21.80	21.88	21.91	21.65	21.67
Conducted Power (Watts)	0.1552	0.1633	0.1574	0.1690	0.1514	0.1542	0.1552	0.1462	0.1469
EIRP(dBm)	25.91	26.13	25.97	26.28	25.80	25.88	25.91	25.65	25.67
EIRP(Watts)	0.3899	0.4102	0.3954	0.4246	0.3802	0.3873	0.3899	0.3673	0.3690

LTE Band 2 (GT - LC = 4.00 dBi) 16QAM									
Bandwidth	10M			15M			20M		
Channel	18650	18900	19150	18675	18900	19125	18650	18900	19100
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1855	1880	1905	1857.5	1880	1902.5	1860	1880	1900
Conducted Power (dBm)	22.30	22.04	22.11	22.19	22.35	21.60	21.91	22.13	21.96
Conducted Power (Watts)	0.1698	0.1600	0.1626	0.1656	0.1718	0.1445	0.1552	0.1633	0.1570
EIRP(dBm)	26.30	26.04	26.11	26.19	26.35	25.60	25.91	26.13	25.96
EIRP(Watts)	0.4266	0.4018	0.4083	0.4159	0.4315	0.3631	0.3899	0.4102	0.3945

LTE Band 4 (GT - LC = 4.50 dB) QPSK									
Bandwidth	1.4M			3M			5M		
Channel	19957	20175	20393	19965	20175	20385	19975	20175	20375
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1710.7	1732.5	1754.3	1711.5	1732.5	1753.5	1712.5	1732.5	1752.5
Conducted Power (dBm)	22.70	22.93	22.80	23.00	22.81	22.84	22.75	22.88	23.00
Conducted Power (Watts)	0.1862	0.1963	0.1905	0.1995	0.1910	0.1923	0.1884	0.1941	0.1995
EIRP(dBm)	27.20	27.43	27.30	27.50	27.31	27.34	27.25	27.38	27.50
EIRP(Watts)	0.5248	0.5534	0.5370	0.5623	0.5383	0.5420	0.5309	0.5470	0.5623

LTE Band 4 (GT - LC = 4.50 dB) QPSK									
Bandwidth	10M			15M			20M		
Channel	20000	20175	20350	20025	20175	20325	20050	20175	20300
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1715	1732.5	1750	1717.5	1732.5	1747.5	1720	1732.5	1745
Conducted Power (dBm)	22.85	22.60	23.03	22.87	23.06	22.87	22.77	23.07	22.87
Conducted Power (Watts)	0.1928	0.1820	0.2009	0.1936	0.2023	0.1936	0.1892	0.2028	0.1936
EIRP(dBm)	27.35	27.10	27.53	27.37	27.56	27.37	27.27	27.57	27.37
EIRP(Watts)	0.5433	0.5129	0.5662	0.5458	0.5702	0.5458	0.5333	0.5715	0.5458

LTE Band 4 (GT - LC = 4.50 dB) 16QAM									
Bandwidth	1.4M			3M			5M		
Channel	19957	20175	20393	19965	20175	20385	19975	20175	20375
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1710.7	1732.5	1754.3	1711.5	1732.5	1753.5	1712.5	1732.5	1752.5
Conducted Power (dBm)	21.81	21.98	21.57	21.51	21.68	21.62	21.54	21.63	21.67
Conducted Power (Watts)	0.1517	0.1578	0.1435	0.1416	0.1472	0.1452	0.1426	0.1455	0.1469
EIRP(dBm)	26.31	26.48	26.07	26.01	26.18	26.12	26.04	26.13	26.17
EIRP(Watts)	0.4276	0.4446	0.4046	0.3990	0.4150	0.4093	0.4018	0.4102	0.4140

LTE Band 4 (GT - LC = 4.50 dB) 16QAM									
Bandwidth	10M			15M			20M		
Channel	20000	20175	20350	20025	20175	20325	20050	20175	20300
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1715	1732.5	1750	1717.5	1732.5	1747.5	1720	1732.5	1745
Conducted Power (dBm)	21.56	21.89	22.09	21.70	21.57	21.70	21.62	21.80	21.89
Conducted Power (Watts)	0.1432	0.1545	0.1618	0.1479	0.1435	0.1479	0.1452	0.1514	0.1545
EIRP(dBm)	26.06	26.39	26.59	26.20	26.07	26.20	26.12	26.30	26.39
EIRP(Watts)	0.4036	0.4355	0.4560	0.4169	0.4046	0.4169	0.4093	0.4266	0.4355

LTE Band 5 (GT - LC = 4.00 dBi) QPSK									
Bandwidth	1.4M			3M			5M		
Channel	20407	20525	20643	20415	20525	20635	20425	20525	20625
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	824.7	836.5	848.3	825.5	836.5	847.5	826.5	836.5	846.5
Conducted Power (dBm)	22.80	22.82	22.69	22.69	22.76	22.63	22.68	22.70	22.75
Conducted Power (Watts)	0.1905	0.1914	0.1858	0.1858	0.1888	0.1832	0.1854	0.1862	0.1884
ERP(dBm)	24.65	24.67	24.54	24.54	24.61	24.48	24.53	24.55	24.60
ERP(Watts)	0.2917	0.2931	0.2844	0.2844	0.2891	0.2805	0.2838	0.2851	0.2884

LTE Band 5 (GT - LC = 4.00 dBi) QPSK			
Bandwidth	10M		
Channel	20450	20525	20600
	(Low)	(Mid)	(High)
Frequency (MHz)	829	836.5	844
Conducted Power (dBm)	22.67	22.86	22.70
Conducted Power (Watts)	0.1849	0.1932	0.1862
ERP(dBm)	24.52	24.71	24.55
ERP(Watts)	0.2831	0.2958	0.2851

LTE Band 5 (GT - LC = 4.00 dBi) 16QAM									
Bandwidth	1.4M			3M			5M		
Channel	20407	20525	20643	20415	20525	20635	20425	20525	20625
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	824.7	836.5	848.3	825.5	836.5	847.5	826.5	836.5	846.5
Conducted Power (dBm)	21.77	21.93	21.80	21.43	21.35	21.50	21.88	21.37	21.21
Conducted Power (Watts)	0.1503	0.1560	0.1514	0.1390	0.1365	0.1413	0.1542	0.1371	0.1321
ERP(dBm)	23.62	23.78	23.65	23.28	23.20	23.35	23.73	23.22	23.06
ERP(Watts)	0.2301	0.2388	0.2317	0.2128	0.2089	0.2163	0.2360	0.2099	0.2023

LTE Band 5 (GT - LC = 4.00 dBi) 16QAM			
Bandwidth	10M		
Channel	20450	20525	20600
	(Low)	(Mid)	(High)
Frequency (MHz)	829	836.5	844
Conducted Power (dBm)	21.58	21.71	21.29
Conducted Power (Watts)	0.1439	0.1483	0.1346
ERP(dBm)	23.43	23.56	23.14
ERP(Watts)	0.2203	0.2270	0.2061

LTE Band 12 (GT - LC = 3.00 dBi) QPSK									
Bandwidth	1.4M			3M			5M		
Channel	23017	23095	23173	23025	23095	23165	23035	23095	23155
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	699.7	707.5	715.3	700.5	707.5	714.5	701.5	707.5	713.5
Conducted Power (dBm)	23.13	23.23	23.03	22.99	23.28	22.97	23.08	23.25	23.00
Conducted Power (Watts)	0.2056	0.2104	0.2009	0.1991	0.2128	0.1982	0.2032	0.2113	0.1995
ERP(dBm)	23.98	24.08	23.88	23.84	24.13	23.82	23.93	24.10	23.85
ERP(Watts)	0.2500	0.2559	0.2443	0.2421	0.2588	0.2410	0.2472	0.2570	0.2427

LTE Band 12 (GT - LC = 3.00 dBi) QPSK			
Bandwidth	10M		
Channel	23060	23095	23130
	(Low)	(Mid)	(High)
Frequency (MHz)	704	707.5	711
Conducted Power (dBm)	23.21	23.54	23.45
Conducted Power (Watts)	0.2094	0.2259	0.2213
ERP(dBm)	24.06	24.39	24.30
ERP(Watts)	0.2547	0.2748	0.2692

LTE Band 12 (GT - LC = 3.00 dBi) 16QAM									
Bandwidth	1.4M			3M			5M		
Channel	23017	23095	23173	23025	23095	23165	23035	23095	23155
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	699.7	707.5	715.3	700.5	707.5	714.5	701.5	707.5	713.5
Conducted Power (dBm)	21.98	21.89	22.32	21.93	21.68	22.06	21.93	21.91	21.77
Conducted Power (Watts)	0.1578	0.1545	0.1706	0.1560	0.1472	0.1607	0.1560	0.1552	0.1503
ERP(dBm)	22.83	22.74	23.17	22.78	22.53	22.91	22.78	22.76	22.62
ERP(Watts)	0.1919	0.1879	0.2075	0.1897	0.1791	0.1954	0.1897	0.1888	0.1828

LTE Band 12 (GT - LC = 3.00 dBi) 16QAM			
Bandwidth	10M		
Channel	23060	23095	23130
	(Low)	(Mid)	(High)
Frequency (MHz)	704	707.5	711
Conducted Power (dBm)	22.56	22.18	22.37
Conducted Power (Watts)	0.1803	0.1652	0.1726
ERP(dBm)	23.41	23.03	23.22
ERP(Watts)	0.2193	0.2009	0.2099

LTE Band 13 (GT - LC = 3.50 dBi) QPSK						
Bandwidth	**5M**			**10M**		
Channel	**23205**	**23230**	**23255**	**23230**		
	(Low)	**(Mid)**	**(High)**	**-**	**(Mid)**	**-**
Frequency (MHz)	**779.5**	**782**	**784.5**	**-**	**782**	**-**
Conducted Power (dBm)	22.64	23.20	22.61		23.24	-
Conducted Power (Watts)	0.1837	0.2089	0.1824		0.2109	-
ERP(dBm)	23.99	24.55	23.96		24.59	-
ERP(Watts)	0.2506	0.2851	0.2489		0.2877	-

LTE Band 13 (GT - LC = 3.50 dBi) 16QAM						
Bandwidth	**5M**			**10M**		
Channel	**23205**	**23230**	**23255**	**23230**		
	(Low)	**(Mid)**	**(High)**	**-**	**(Mid)**	**-**
Frequency (MHz)	**779.5**	**782**	**784.5**	**-**	**782**	**-**
Conducted Power (dBm)	21.91	21.81	22.28		22.06	**-**
Conducted Power (Watts)	0.1552	0.1517	0.1690		0.1607	**-**
ERP(dBm)	23.26	23.16	23.63		23.41	**-**
ERP(Watts)	0.2118	0.2070	0.2307		0.2193	**-**

LTE Band 17 (GT - LC = 3.00 dB) QPSK						
Bandwidth	5M			10M		
Channel	23755	23790	23825	23780	23790	23800
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	706.5	710	713.5	709	710	711
Conducted Power (dBm)	23.48	23.26	23.02	23.38	23.50	23.31
Conducted Power (Watts)	0.2228	0.2118	0.2004	0.2178	0.2239	0.2143
ERP(dBm)	24.33	24.11	23.87	24.23	24.35	24.16
ERP(Watts)	0.2710	0.2576	0.2438	0.2649	0.2723	0.2606

LTE Band 17 (GT - LC = 3.00 dB) 16QAM						
Bandwidth	5M			10M		
Channel	23755	23790	23825	23780	23790	23800
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	706.5	710	713.5	709	710	711
Conducted Power (dBm)	22.51	22.09	21.94	22.48	22.17	21.69
Conducted Power (Watts)	0.1782	0.1618	0.1563	0.1770	0.1648	0.1476
ERP(dBm)	23.36	22.94	22.79	23.33	23.02	22.54
ERP(Watts)	0.2168	0.1968	0.1901	0.2153	0.2004	0.1795

LTE Band 66 (GT - LC = 4.50 dBi) QPSK									
Bandwidth	1.4M			3M			5M		
Channel	131979	132322	132665	131987	132322	132657	131997	132322	132647
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1710.7	1745	1779.3	1711.5	1745	1778.5	1712.5	1745	1777.5
Conducted Power (dBm)	23.08	22.90	23.36	22.98	23.04	23.43	22.88	22.90	23.26
Conducted Power (Watts)	0.2032	0.1950	0.2168	0.1986	0.2014	0.2203	0.1941	0.1950	0.2118
EIRP(dBm)	27.58	27.40	27.86	27.48	27.54	27.93	27.38	27.40	27.76
EIRP(Watts)	0.5728	0.5495	0.6109	0.5598	0.5675	0.6209	0.5470	0.5495	0.5970

LTE Band 66 (GT - LC = 4.50 dBi) QPSK									
Bandwidth	10M			15M			20M		
Channel	132022	132322	132622	132047	132322	132597	132072	132322	132572
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(Mid)
Frequency (MHz)	1715	1745	1775	1717.5	1745	1772.5	1720	1745	1770
Conducted Power (dBm)	23.34	23.08	23.36	22.86	23.07	23.18	23.02	22.86	23.63
Conducted Power (Watts)	0.2158	0.2032	0.2168	0.1932	0.2028	0.2080	0.2004	0.1932	0.2307
EIRP(dBm)	27.84	27.58	27.86	27.36	27.57	27.68	27.52	27.36	28.13
EIRP(Watts)	0.6081	0.5728	0.6109	0.5445	0.5715	0.5861	0.5649	0.5445	0.6501

LTE Band 66 (GT - LC = 4.50 dBi) 16QAM									
Bandwidth	1.4M			3M			5M		
Channel	131979	132322	132665	131987	132322	132657	131997	132322	132647
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1710.7	1745	1779.3	1711.5	1745	1778.5	1712.5	1745	1777.5
Conducted Power (dBm)	21.71	22.04	22.43	22.41	22.08	22.20	21.31	21.92	22.21
Conducted Power (Watts)	0.1483	0.1600	0.1750	0.1742	0.1614	0.1660	0.1352	0.1556	0.1663
EIRP(dBm)	26.21	26.54	26.93	26.91	26.58	26.70	25.81	26.42	26.71
EIRP(Watts)	0.4178	0.4508	0.4932	0.4909	0.4550	0.4677	0.3811	0.4385	0.4688

LTE Band 66 (GT - LC = 4.50 dBi) 16QAM									
Bandwidth	10M			15M			20M		
Channel	132022	132322	132622	132047	132322	132597	132072	132322	132572
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(Mid)
Frequency (MHz)	1715	1745	1775	1717.5	1745	1772.5	1720	1745	1770
Conducted Power (dBm)	22.26	22.75	22.32	21.95	21.74	22.16	22.09	22.36	22.37
Conducted Power (Watts)	0.1683	0.1884	0.1706	0.1567	0.1493	0.1644	0.1618	0.1722	0.1726
EIRP(dBm)	26.76	27.25	26.82	26.45	26.24	26.66	26.59	26.86	26.87
EIRP(Watts)	0.4742	0.5309	0.4808	0.4416	0.4207	0.4634	0.4560	0.4853	0.4864

Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

LTE Band 2 / 1.4MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3758.92	-58.24	-13	-45.24	-76.74	-64.99	5.85	12.60	H
	5638.38	-46.92	-13	-33.92	-69.09	-52.72	7.30	13.10	H
	7517.84	-55.40	-13	-42.40	-83.24	-58.55	8.35	11.50	H
	3758.92	-57.26	-13	-44.26	-75.8	-64.01	5.85	12.60	V
	5638.38	-45.96	-13	-32.96	-68.53	-51.76	7.30	13.10	V
	7517.84	-54.21	-13	-41.21	-81.83	-57.36	8.35	11.50	V

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

LTE Band 4 / 20MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3447.18	-59.31	-13	-46.31	-76.28	-66.16	5.65	12.50	H
	5170.77	-57.10	-13	-44.10	-78.73	-62.77	7.13	12.80	H
	6894.36	-57.16	-13	-44.16	-83.79	-60.56	8.40	11.80	H
	3447.18	-53.38	-13	-40.38	-70.38	-60.23	5.65	12.50	V
	5170.77	-53.59	-13	-40.59	-75.67	-59.26	7.13	12.80	V
	6894.36	-56.89	-13	-43.89	-83.68	-60.29	8.40	11.80	V

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

LTE Band 5 / 5 MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1668.68	-66.49	-13	-53.49	-76.98	-69.74	4.00	9.40	H
	2503.02	-65.31	-13	-52.31	-80.31	-68.88	4.88	10.60	H
	3337.36	-64.63	-13	-51.63	-81.63	-69.56	5.52	12.60	H
	1668.68	-66.80	-13	-53.80	-77.01	-70.05	4.00	9.40	V
	2503.02	-65.05	-13	-52.05	-79.94	-68.62	4.88	10.60	V
	3337.36	-64.51	-13	-51.51	-81.54	-69.44	5.52	12.60	V

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

LTE Band 12 / 10 MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1406	-54.48	-13	-41.48	-65.49	-57.73	4.00	9.40	H
	2109	-62.99	-13	-49.99	-77.22	-66.56	4.88	10.60	H
	2812	-65.28	-13	-52.28	-80.69	-70.21	5.52	12.60	H
	1406	-54.89	-13	-41.89	-65.86	-58.14	4.00	9.40	V
	2109	-63.97	-13	-50.97	-78.13	-67.54	4.88	10.60	V
	2812	-64.52	-13	-51.52	-80.54	-69.45	5.52	12.60	V

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

LTE Band 13 / 5 MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1559.5	-67.33	-40	-27.33	-78.30	-70.58	4.00	9.40	H
	2339.25	-63.64	-13	-50.64	-78.85	-67.21	4.88	10.60	H
	3119	-63.99	-13	-50.99	-81.25	-68.92	5.52	12.60	H
	1559.5	-65.95	-40	-25.95	-76.42	-69.20	4.00	9.40	V
	2339.25	-64.10	-13	-51.10	-79.36	-67.67	4.88	10.60	V
	3119	-63.58	-13	-50.58	-80.77	-68.51	5.52	12.60	V

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

LTE Band 17 / 10 MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1411.18	-57.65	-13	-44.65	-68.66	-60.90	4.00	9.40	H
	2116.77	-63.10	-13	-50.10	-77.56	-66.67	4.88	10.60	H
	2822.36	-65.42	-13	-52.42	-80.83	-70.35	5.52	12.60	H
	1411.18	-58.01	-13	-45.01	-68.98	-61.26	4.00	9.40	V
	2116.77	-62.39	-13	-49.39	-76.76	-65.96	4.88	10.60	V
	2822.36	-64.46	-13	-51.46	-80.48	-69.39	5.52	12.60	V

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

LTE Band 66 / 3 MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3487.3	-41.36	-13	-28.36	-58.62	-48.21	5.65	12.50	H
	5230.95	-53.51	-13	-40.51	-74.83	-59.18	7.13	12.80	H
	6974.6	-56.35	-13	-43.35	-83.30	-59.75	8.40	11.80	H
	3487.3	-56.46	-13	-43.46	-73.76	-63.31	5.65	12.50	V
	5230.95	-48.60	-13	-35.60	-70.08	-54.27	7.13	12.80	V
	6974.6	-55.42	-13	-42.42	-82.44	-58.82	8.40	11.80	V

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

Appendix D. Product Equality Declaration

Fibocom Wireless Inc.

5/F, Tower A, Technology Building II, 1057# Nanhai Avenue, Shenzhen

Date: December 24, 2018

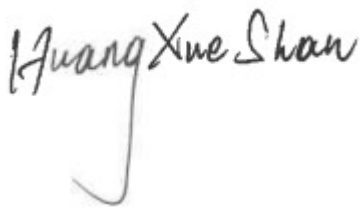
Product Equality Declaration

We, Fibocom Wireless Inc., declare on our sole responsibility for the product of NL668-AM-01 as below:

The differences between LCC and previous model, LCC are as below:
1,The power supply is different between LCC and previous model, LCC's power supply is DC power source by the ADP substrate , previous model's power supply is MiniPCIe interface
2,The I/O interface is different between LCC and previous model, LCC's I/O interface is ADP substrate. previous model's I/O interface is MiniPCIe interface
3,The RF antenna trace is different between LCC and previous model, LCC's RF antenna trace is ADP substrate. previous model's RF antenna trace is MiniPCIe RF antenna trace

Except listings above, the others are all the same as previous version.
Should you have any questions or comments regarding this matter, please have my best attention.

Sincerely yours,



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