



# FCC RF Test Report

APPLICANT : Fibocom Wireless Inc  
EQUIPMENT : LTE module  
BRAND NAME : Fibocom  
MODEL NAME : NL668-AM-00  
FCC ID : ZMONL668AM00  
STANDARD : FCC 47 CFR Part 2, 22(H), 24(E), 27(L)  
CLASSIFICATION : PCS Licensed Transmitter (PCB)

The product was received on Oct. 19, 2018 and completely tested on Dec. 12, 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.



Approved by: Eric Shih / Manager

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## REVISION HISTORY

| REPORT NO.   | VERSION | DESCRIPTION             | ISSUED DATE   |
|--------------|---------|-------------------------|---------------|
| FG8O1914-01A | Rev. 01 | Initial issue of report | Dec. 19, 2018 |
|              |         |                         |               |
|              |         |                         |               |
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|              |         |                         |               |
|              |         |                         |               |

## 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             | < 7 Watts                              | PASS   | -                                             |
|                | §24.232(c)                                       | Equivalent Isotropic Radiated Power  | < 2 Watts                              | PASS   | -                                             |
|                | §27.50(d)(4)                                     | Equivalent Isotropic Radiated Power  | < 1 Watts                              | PASS   | -                                             |
| 4.4            | §2.1053<br>§22.917(a)<br>§24.238(a)<br>§27.53(h) | Field Strength of Spurious Radiation | $< 43 + 10 \log_{10}(P[\text{Watts}])$ | PASS   | Under limit<br>35.70 dB at<br>3465.200<br>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-00                                                  |
| FCC ID                          | ZMONL668AM00                                                 |
| EUT supports Radios application | WCDMA/HSPA/DC-HSDPA/HSPA+(16QAM uplink is not supported)/LTE |
| IMEI Code                       | Radiation: 866857032754380                                   |
| HW Version                      | V1.0.1                                                       |
| SW Version                      | 19006.1000.00.02.77.07                                       |
| 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. The report is in accordance with C2PC and the product equality declaration as Appendix D. Based on the similarity between current and previous project, the test cases of Power/ERP/EIRP/RSE from original test report (Sporton Report Number FG8O1914A) were verified for the differences.

## 1.4 Product Specification of Equipment Under Test

| Standards-related Product Specification |                                                                                                                                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tx Frequency</b>                     | <b>WCDMA:</b><br>Band V: 826.4 MHz ~ 846.6 MHz<br>Band II: 1852.4 MHz ~ 1907.6 MHz<br>Band IV: 1712.4 MHz ~ 1752.6 MHz                          |
| <b>Rx Frequency</b>                     | <b>WCDMA:</b><br>Band V: 871.4 MHz ~ 891.6 MHz<br>Band II: 1932.4 MHz ~ 1987.6 MHz<br>Band IV: 2112.4 MHz ~ 2152.6 MHz                          |
| <b>Maximum Output Power to Antenna</b>  | <b>WCDMA:</b><br>Band V: 23.53 dBm<br>Band II: 24.17 dBm<br>Band IV: 23.74 dBm                                                                  |
| <b>Antenna Type</b>                     | Dipole Antenna                                                                                                                                  |
| <b>Antenna Gain</b>                     | Cellular Band: 4.00 dBi<br>PCS Band: 4.00 dBi<br>AWS Band: 4.50 dBi                                                                             |
| <b>Type of Modulation</b>               | WCDMA : BPSK (Uplink)<br>HSDPA/DC-HSDPA : QPSK (Uplink)<br>HSUPA : QPSK (Uplink)<br>HSPA+ : 16QAM (uplink is not supported)<br>DC-HSDPA : 64QAM |

## 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

| FCC Rule | System                     | Type of Modulation | Maximum ERP/EIRP (W) |
|----------|----------------------------|--------------------|----------------------|
| Part 22H | WCDMA Band V RMC 12.2Kbps  | BPSK               | 0.3451               |
| Part 24E | WCDMA Band II RMC 12.2Kbps | BPSK               | 0.6561               |
| Part 27L | WCDMA Band IV RMC 12.2Kbps | BPSK               | 0.6668               |

## 1.7 Testing Location

Sporton International (Shenzhen) Inc. 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<br>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)
- ♦ ANSI C63.26-2015
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01

**Remark:** All test items were verified and recorded according to the standards and without any deviation during the test.



## 2 Test Configuration of Equipment Under Test

### 2.1 Test Mode

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

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

Radiated emissions were investigated as following frequency range:

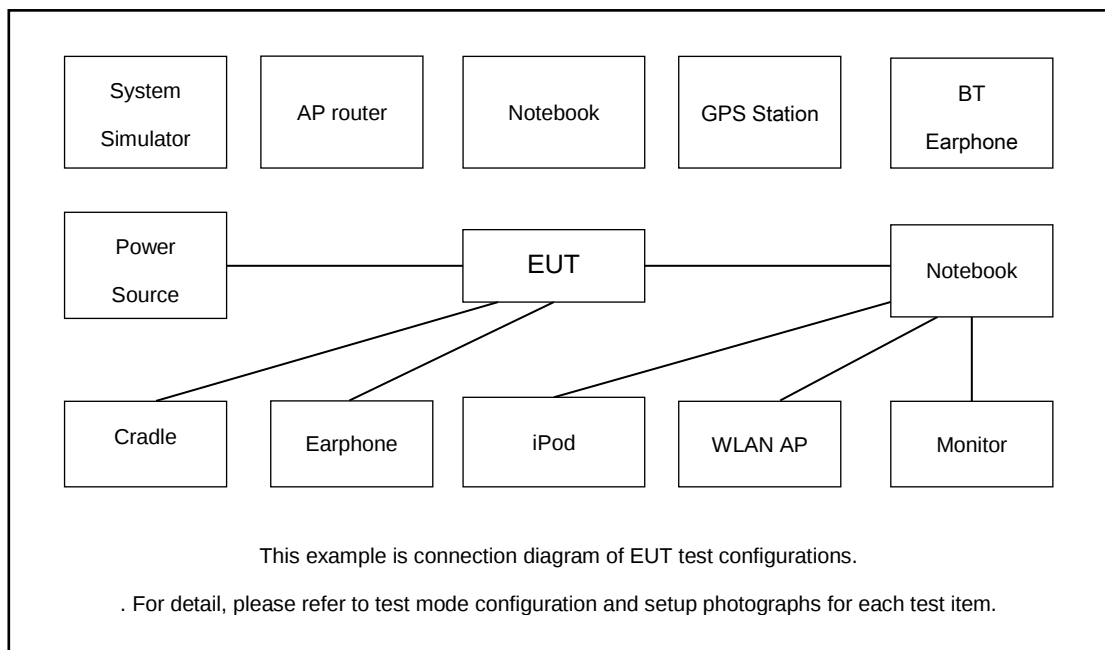
1. 30 MHz to 10th harmonic for WCDMA Band V.
2. 30 MHz to 10th harmonic for WCDMA Band IV.
3. 30 MHz to 10th harmonic for WCDMA Band II.

All modes and data rates and positions were investigated.

Test modes are chosen to be reported as the worst case configuration below:

| Test Modes    |                     |                     |
|---------------|---------------------|---------------------|
| Band          | Radiated TCs        | Conducted TCs       |
| WCDMA Band V  | ■ RMC 12.2Kbps Link | ■ RMC 12.2Kbps Link |
| WCDMA Band II | ■ RMC 12.2Kbps Link | ■ RMC 12.2Kbps Link |
| WCDMA Band IV | ■ RMC 12.2Kbps Link | ■ RMC 12.2Kbps Link |

## 2.2 Connection Diagram of Test System



## 2.3 Support Unit used in test configuration

| Item | Equipment        | Trade Name | Model No.       | FCC ID | Data Cable       | Power Cord       |
|------|------------------|------------|-----------------|--------|------------------|------------------|
| 1.   | System Simulator | R&S        | CMU 200         | N/A    | N/A              | Unshielded, 1.8m |
| 2.   | USB cable        | N/A        | N/A             | N/A    | Unshielded, 1.2m | N/A              |
| 3.   | Adapter          | N/A        | N/A             | N/A    | N/A              | N/A              |
| 4.   | Test Jig         | N/A        | N/A             | N/A    | N/A              | N/A              |
| 5.   | WWAN Antenna     | N/A        | HYT-690-2700H-3 | N/A    | N/A              | N/A              |

## 2.4 Frequency List of Low/Middle/High Channels

| Frequency List |                        |        |        |         |
|----------------|------------------------|--------|--------|---------|
| Band           | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| WCDMA Band V   | Channel                | 4132   | 4182   | 4233    |
|                | Frequency              | 826.4  | 836.4  | 846.6   |
| WCDMA Band II  | Channel                | 9262   | 9400   | 9538    |
|                | Frequency              | 1852.4 | 1880.0 | 1907.6  |
| WCDMA Band IV  | Channel                | 1312   | 1413   | 1513    |
|                | Frequency              | 1712.4 | 1732.6 | 1752.6  |

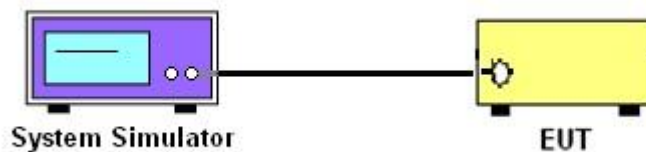
### 3 Conducted Test Result

#### 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 ERP/EIRP

##### 3.3.1 Description of the Conducted Output Power and ERP/EIRP

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

The ERP of mobile transmitters must not exceed 7 Watts for WCDMA Band V.

The EIRP of mobile transmitters must not exceed 2 Watts for WCDMA Band II.

The EIRP of mobile transmitters must not exceed 1 Watts for WCDMA Band IV.

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.

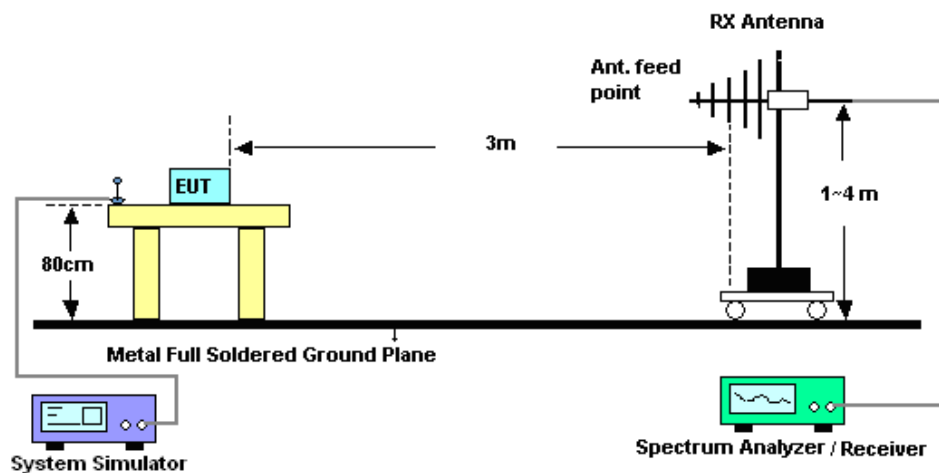
## 4 Radiated Test Items

### 4.1 Measuring Instruments

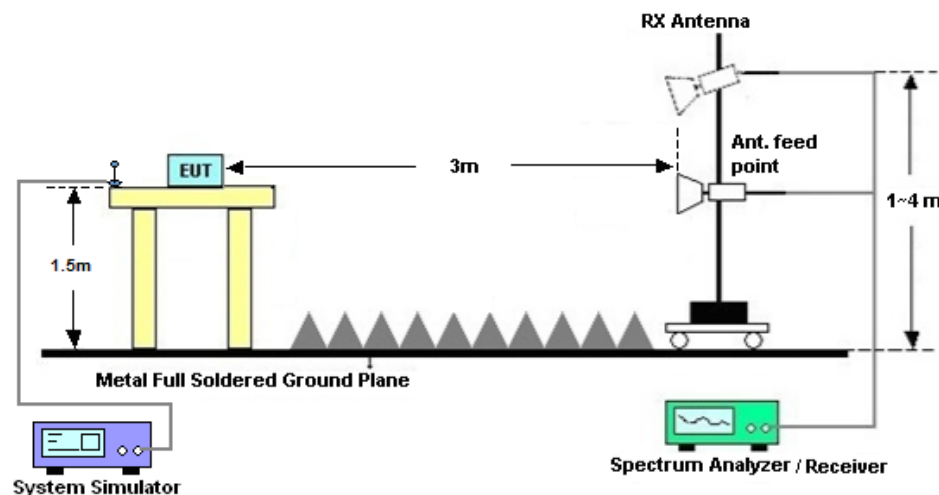
See list of measuring instruments of this test report.

### 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 Field Strength of Spurious Radiation Measurement**

### **4.4.1 Description of Field Strength of Spurious Radiated Measurement**

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. 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 rotatable wooden table 0.8 meters for frequency below 1GHz and 1.5 meter for frequency above 1GHz above the ground.
3. The EUT was set 3 meters from the receiving antenna, which was 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 one meter and four meters to search for the maximum spurious emission for both horizontal and vertical polarizations.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. Taking the record of output power at antenna port.
10. Repeat step 7 to step 8 for another polarization.
11.  $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
12.  $ERP \text{ (dBm)} = EIRP - 2.15$
13. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
14. The limit line is derived from  $43 + 10\log(P)$  dB below the transmitter power P(Watts)



## 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       | 10Hz~40GHz      | Oct. 20, 2018    | Dec. 12, 2018 | Oct. 19, 2019 | Radiation (03CH02-SZ) |
| Bilog Antenna             | TeseQ        | CBL6112D      | 35407        | 30MHz-2GHz      | May 10, 2018     | Dec. 12, 2018 | May 09, 2019  | Radiation (03CH02-SZ) |
| Double Ridge Horn Antenna | SCHWARZBECK  | BBHA 9120D    | 9120D-1285   | 1GHz~18GHz      | Dec. 13, 2017    | Dec. 12, 2018 | Dec. 12, 2018 | Radiation (03CH02-SZ) |
| HF Amplifier              | MITEQ        | TTA1840-35-HG | 1871923      | 18GHz~40GHz     | Jul. 30, 2018    | Dec. 12, 2018 | Jul. 29, 2019 | Radiation (03CH02-SZ) |
| SHF-EHF Horn              | com-power    | AH-840        | 101071       | 18Ghz-40GHz     | Mar. 30, 2018    | Dec. 12, 2018 | Mar. 29, 2019 | Radiation (03CH02-SZ) |
| LF Amplifier              | Burgeon      | BPA-530       | 102211       | 0.01~3000Mhz    | Oct. 20, 2018    | Dec. 12, 2018 | Oct. 19, 2019 | Radiation (03CH02-SZ) |
| HF Amplifier              | Agilent      | 8449B         | 3008A01023   | 1GHz~26.5GHz    | Oct. 20, 2018    | Dec. 12, 2018 | Oct. 19, 2019 | Radiation (03CH02-SZ) |
| AC Power Source           | Chroma       | 61601         | 616010002470 | N/A             | NCR              | Dec. 12, 2018 | NCR           | Radiation (03CH02-SZ) |
| Turn Table                | Chaintek     | T-200         | N/A          | 0~360 degree    | NCR              | Dec. 12, 2018 | NCR           | Radiation (03CH02-SZ) |
| Antenna Mast              | Chaintek     | MBS-400       | N/A          | 1 m~4 m         | NCR              | Dec. 12, 2018 | NCR           | Radiation (03CH02-SZ) |

NCR: No Calibration Required



## 6 Uncertainty of Evaluation

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

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

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

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_c(y)$ ) | 3.3dB |
|--------------------------------------------------------------------------|-------|

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

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_c(y)$ ) | 3.7dB |
|--------------------------------------------------------------------------|-------|



## Appendix A. Test Results of Conducted Test

### Conducted Output Power(Average power)

| Conducted Power (*Unit: dBm) |              |              |       |               |       |        |               |        |        |
|------------------------------|--------------|--------------|-------|---------------|-------|--------|---------------|--------|--------|
| Band                         | WCDMA Band V |              |       | WCDMA Band II |       |        | WCDMA Band IV |        |        |
| Channel                      | 4132         | 4182         | 4233  | 9262          | 9400  | 9538   | 1312          | 1413   | 1513   |
| Frequency                    | 826.4        | 836.4        | 846.6 | 1852.4        | 1880  | 1907.6 | 1712.4        | 1732.6 | 1752.6 |
| RMC 12.2K                    | 23.42        | <b>23.53</b> | 23.45 | <b>24.17</b>  | 24.02 | 23.78  | <b>23.74</b>  | 23.63  | 23.65  |
| HSDPA Subtest-1              | 22.58        | 22.52        | 22.49 | 22.87         | 22.76 | 22.89  | 22.38         | 22.44  | 22.41  |
| HSDPA Subtest-2              | 22.62        | 22.60        | 22.54 | 22.88         | 22.82 | 22.85  | 22.39         | 22.40  | 22.35  |
| HSDPA Subtest-3              | 22.12        | 22.12        | 22.04 | 22.40         | 22.35 | 22.47  | 21.92         | 21.93  | 21.88  |
| HSDPA Subtest-4              | 22.13        | 22.12        | 22.05 | 22.38         | 22.34 | 22.45  | 21.91         | 21.92  | 21.88  |
| DC-HSDPA Subtest-1           | 22.31        | 22.24        | 22.23 | 22.63         | 22.52 | 22.65  | 22.12         | 22.18  | 22.16  |
| DC-HSDPA Subtest-2           | 22.36        | 22.33        | 22.29 | 22.64         | 22.57 | 22.60  | 22.12         | 22.12  | 22.09  |
| DC-HSDPA Subtest-3           | 21.86        | 21.85        | 21.79 | 22.16         | 22.10 | 22.22  | 21.65         | 21.65  | 21.62  |
| DC-HSDPA Subtest-4           | 21.88        | 21.86        | 21.80 | 22.14         | 22.08 | 22.19  | 21.65         | 21.65  | 21.62  |
| HSUPA Subtest-1              | 22.12        | 22.15        | 21.90 | 22.16         | 22.24 | 22.18  | 21.64         | 21.84  | 21.66  |
| HSUPA Subtest-2              | 21.53        | 21.37        | 21.38 | 21.69         | 21.70 | 21.66  | 21.02         | 21.23  | 21.22  |
| HSUPA Subtest-3              | 21.23        | 20.92        | 20.96 | 21.40         | 21.31 | 21.59  | 20.93         | 20.81  | 20.93  |
| HSUPA Subtest-4              | 21.57        | 21.47        | 21.52 | 21.75         | 21.66 | 21.85  | 21.46         | 21.37  | 21.21  |
| HSUPA Subtest-5              | 22.50        | 22.20        | 22.40 | 22.80         | 22.80 | 22.90  | 22.30         | 22.30  | 22.30  |

**ERP/EIRP**

| WCDMA Band V ( $G_T - L_C = 4.00$ dBi) |        |        |        |
|----------------------------------------|--------|--------|--------|
| Channel                                | 4132   | 4182   | 4233   |
|                                        | (Low)  | (Mid)  | (High) |
| Frequency                              | 826.4  | 836.4  | 846.6  |
| (MHz)                                  |        |        |        |
| Conducted Power (dBm)                  | 23.42  | 23.53  | 23.45  |
| Conducted Power (Watts)                | 0.2198 | 0.2254 | 0.2213 |
| ERP(dBm)                               | 25.27  | 25.38  | 25.30  |
| ERP(Watts)                             | 0.3365 | 0.3451 | 0.3388 |

| WCDMA Band II ( $G_T - L_C = 4.00$ dBi) |        |        |        |
|-----------------------------------------|--------|--------|--------|
| Channel                                 | 9262   | 9400   | 9538   |
|                                         | (Low)  | (Mid)  | (High) |
| Frequency                               | 1852.4 | 1880   | 1907.6 |
| (MHz)                                   |        |        |        |
| Conducted Power (dBm)                   | 24.17  | 24.02  | 23.78  |
| Conducted Power (Watts)                 | 0.2612 | 0.2523 | 0.2388 |
| EIRP(dBm)                               | 28.17  | 28.02  | 27.78  |
| EIRP(Watts)                             | 0.6561 | 0.6339 | 0.5998 |

| WCDMA Band IV ( $G_T - L_C = 4.50$ dBi) |        |        |        |
|-----------------------------------------|--------|--------|--------|
| Channel                                 | 1312   | 1413   | 1513   |
|                                         | (Low)  | (Mid)  | (High) |
| Frequency                               | 1712.4 | 1732.6 | 1752.6 |
| (MHz)                                   |        |        |        |
| Conducted Power (dBm)                   | 23.74  | 23.63  | 23.65  |
| Conducted Power (Watts)                 | 0.2366 | 0.2307 | 0.2317 |
| EIRP(dBm)                               | 28.24  | 28.13  | 28.15  |
| EIRP(Watts)                             | 0.6668 | 0.6501 | 0.6531 |



## Appendix B. Test Results of Radiated Test

### Radiated Spurious Emission

| WCDMA Band V(RMC 12.2Kbps) |                   |             |               |                   |                   |                    |                      |                       |                    |
|----------------------------|-------------------|-------------|---------------|-------------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel                    | Frequency ( MHz ) | ERP ( 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                     | 1672.8            | -61.71      | -13           | -48.71            | -72.08            | -64.96             | 4.00                 | 9.40                  | H                  |
|                            | 2509.2            | -65.20      | -13           | -52.20            | -80.18            | -68.77             | 4.88                 | 10.60                 | H                  |
|                            | 3345.6            | -64.14      | -13           | -51.14            | -81.11            | -69.07             | 5.52                 | 12.60                 | H                  |
|                            | 1672.8            | -63.15      | -13           | -50.15            | -73.31            | -66.40             | 4.00                 | 9.40                  | V                  |
|                            | 2509.2            | -65.42      | -13           | -52.42            | -80.25            | -68.99             | 4.88                 | 10.60                 | V                  |
|                            | 3345.6            | -64.09      | -13           | -51.09            | -81.06            | -69.02             | 5.52                 | 12.60                 | V                  |

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

| WCDMA Band II(RMC 12.2Kbps) |                   |              |               |                   |                   |                    |                      |                       |                    |
|-----------------------------|-------------------|--------------|---------------|-------------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| 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                      | 3760              | -60.42       | -13           | -47.42            | -78.92            | -67.17             | 5.85                 | 12.60                 | H                  |
|                             | 5640              | -54.83       | -13           | -41.83            | -77.00            | -60.63             | 7.30                 | 13.10                 | H                  |
|                             | 7520              | -54.89       | -13           | -41.89            | -82.66            | -58.04             | 8.35                 | 11.50                 | H                  |
|                             | 3760              | -60.53       | -13           | -47.53            | -79.07            | -67.28             | 5.85                 | 12.60                 | V                  |
|                             | 5640              | -54.60       | -13           | -41.60            | -77.17            | -60.40             | 7.30                 | 13.10                 | V                  |
|                             | 7520              | -55.46       | -13           | -42.46            | -83.04            | -58.61             | 8.35                 | 11.50                 | V                  |

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



| WCDMA Band IV(RMC 12.2Kbps) |                      |                 |                  |                         |                         |                          |                            |                             |                       |
|-----------------------------|----------------------|-----------------|------------------|-------------------------|-------------------------|--------------------------|----------------------------|-----------------------------|-----------------------|
| Channel                     | Frequency<br>( MHz ) | EIRP<br>( dBm ) | Limit<br>( dBm ) | Over<br>Limit<br>( dB ) | SPA<br>Reading<br>(dBm) | S.G.<br>Power<br>( dBm ) | TX Cable<br>loss<br>( dB ) | TX Antenna<br>Gain<br>(dBi) | Polarization<br>(H/V) |
| Middle                      | 3465.2               | -48.70          | -13              | -35.70                  | -65.82                  | -55.55                   | 5.65                       | 12.50                       | H                     |
|                             | 5197.8               | -55.07          | -13              | -42.07                  | -76.74                  | -60.74                   | 7.13                       | 12.80                       | H                     |
|                             | 6930.4               | -56.77          | -13              | -43.77                  | -83.57                  | -60.17                   | 8.40                       | 11.80                       | H                     |
|                             | 3465.2               | -48.96          | -13              | -35.96                  | -66.11                  | -55.81                   | 5.65                       | 12.50                       | V                     |
|                             | 5197.8               | -56.54          | -13              | -43.54                  | -78.66                  | -62.21                   | 7.13                       | 12.80                       | V                     |
|                             | 6930.4               | -56.71          | -13              | -43.71                  | -83.62                  | -60.11                   | 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 19, 2018**

## Product Equality Declaration

We, Fibocom Wireless Inc., declare on our sole responsibility for the product of NL668-AM-00 as below:

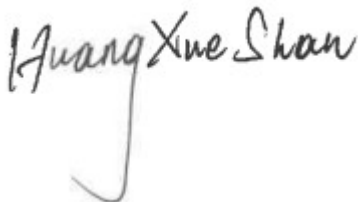
The differences between LCC and previous model, LCC are as below:

- 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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