

# MEASUREMENT REPORT

## FCC PART 22 & 24 & 27 & 90

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**Application:** Suzhou Story Network Technology Co., Ltd.

**Address:** Building 2, Zhongxuxin Park, No.91 Weixin Road,  
Industrial Park, Suzhou City, Jiangsu, China

**Application Type:** Class II Permissive Change

**Product:** LTE Modem

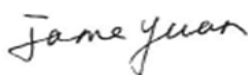
**Model No.:** EG25-G

**FCC Rule Part(s):** Part 22 Subpart H, Part 24 Subpart E,  
Part 27 Subpart C, Part 90 Subpart S

**Test Procedure(s):** ANSI C63.26-2015, KDB 971168 D01v03r01

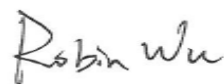
**Test Date:** April 13 ~ 17, 2020

Reviewed By:



( Jame Yuan )

Approved By:



( Robin Wu )



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.26-2015. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

## Revision History

| Report No.    | Version | Description    | Issue Date | Note  |
|---------------|---------|----------------|------------|-------|
| 2003RSU045-U1 | Rev. 01 | Initial Report | 05-06-2020 | Valid |
|               |         |                |            |       |

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## General Information

|                              |                                                                                              |
|------------------------------|----------------------------------------------------------------------------------------------|
| <b>Applicant:</b>            | Suzhou Story Network Technology Co., Ltd.                                                    |
| <b>Applicant Address:</b>    | Building 2, Zhongxuxin Park, No.91 Weixin Road, Industrial Park, Suzhou City, Jiangsu, China |
| <b>Manufacturer:</b>         | Suzhou Story Network Technology Co., Ltd.                                                    |
| <b>Manufacturer Address:</b> | Building 2, Zhongxuxin Park, No.91 Weixin Road, Industrial Park, Suzhou City, Jiangsu, China |
| <b>Test Site:</b>            | MRT Technology (Suzhou) Co., Ltd                                                             |
| <b>Test Site Address:</b>    | D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China           |

## Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- MRT facility is a FCC registered (MRT Designation No. CN1166) test facility with the site description report on file and has met all the requirements specified in ANSI C63.4-2014.
- MRT facility is an IC registered (MRT Reg. No. 11384A-1) test laboratory with the site description on file at Industry Canada.
- MRT facility is a VCCI registered (R-20025, G-20034, C-20020, T-20020) test laboratory with the site description on file at VCCI Council.
- MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LA Cert. No. 3628.01) in EMC, Telecommunications, Radio and SAR testing.



## 1. INTRODUCTION

### 1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

### 1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taihu Lake. These measurement tests were conducted at the MRT Technology (Suzhou) Co., Ltd. Facility located at D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2009 on September 30, 2013.



## 2. PRODUCT INFORMATION

### 2.1. Equipment Description

|                           |                                              |
|---------------------------|----------------------------------------------|
| Product:                  | LTE Modem                                    |
| Model No.:                | EG25-G                                       |
| GSM Band (s):             | 850/1900                                     |
| WCDMA Operation Band (s): | Band 2/4/5                                   |
| LTE Operation Band (s):   | FDD Band 2/4/5/7/12/13/25/26, TDD Band 38/41 |

### 2.2. Product Specification Subjective to this Report

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequency Range:       | GSM 850: 824~850<br>GSM 1900: 1850~1910<br>WCDMA Band 2: 1850~1910 MHz<br>WCDMA Band 4: 1710~1755 MHz<br>WCDMA Band 5: 820~850 MHz<br>LTE Band 2: 1850~1910 MHz<br>LTE Band 4: 1710~1755 MHz<br>LTE Band 5: 824~849 MHz<br>LTE Band 7: 2500~2570 MHz<br>LTE Band 12: 699~716 MHz<br>LTE Band 13: 777~787 MHz<br>LTE Band 25: 1850~1915 MHz<br>LTE Band 26: 814~849 MHz<br>LTE Band 38: 2570~2620 MHz<br>LTE Band 41: 2496~2690 MHz |
| Multi-slot Class:      | GPRS/EGPRS Class 33                                                                                                                                                                                                                                                                                                                                                                                                                |
| Type of Modulation:    | LTE: QPSK, 16QAM                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Product Category:      | LTE: Category 4                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Antenna Specification: | MAIN Antenna: WCDMA/LTE (1Tx, 1Rx)<br>AUX Antenna: WCDMA/LTE (Rx only)                                                                                                                                                                                                                                                                                                                                                             |
| Antenna Type:          | FPC Antenna                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Antenna Gain:          | 2dBi                                                                                                                                                                                                                                                                                                                                                                                                                               |

Note: For other features of this EUT, test report will be issued separately.

### 2.3. Description of Host

|                    |                     |
|--------------------|---------------------|
| Product Name:      | LTE Modem           |
| Model No.:         | GT25-G              |
| Contain one module |                     |
| Module:            | FCC ID: 2AWAF-GT25G |

#### **2.4. EMI Suppression Device(s)/Modifications**

No EMI suppression device(s) were added and/or no modifications were made during testing.

#### **2.5. Labeling Requirements**

Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlets supplied to the user and be readily visible to the purchaser at the time of purchase.

However, when the device is so small wherein placement of the label with specified statement is not practical, only the FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.

### **3. DESCRIPTION of TEST**

#### **3.1. Evaluation Procedure**

The measurement procedure described in the document titled “American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services” (ANSI C63.26-2015) was used in the measurement.

#### **3.2. Radiated Emissions**

The radiated test facilities consisted of an indoor 3 meters semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. A turntable is used for radiated measurement. It is a continuously rotatable, remote controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm high PVC support structure is placed on top of the turntable.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up for frequencies below 1GHz was placed on top of the 0.8 meter high, 1 x 1.5 meter table; and test set-up for frequencies 1-40GHz was placed on top of the 1.5 meter high, 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, if applicable, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst-case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna

was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, which produced the worst-case emissions. According to 3dB Beam-Width of horn antenna, the horn antenna should be always directed to the EUT when rising height.

#### 4. TEST EQUIPMENT CALIBRATION DATE

##### Radiated Emissions - AC1

| Instrument                 | Manufacturer | Type No.    | Asset No.   | Cali. Interval | Cali. Due Date |
|----------------------------|--------------|-------------|-------------|----------------|----------------|
| EMI Test Receiver          | R&S          | ESR7        | MRTSUE06001 | 1 year         | 2020/08/01     |
| PXA Signal Analyzer        | Keysight     | 9030B       | MRTSUE06395 | 1 year         | 2020/09/03     |
| Loop Antenna               | Schwarzbeck  | FMZB 1519   | MRTSUE06025 | 1 year         | 2020/11/10     |
| Bilog Period Antenna       | Schwarzbeck  | VULB 9168   | MRTSUE06172 | 1 year         | 2021/03/31     |
| Broad Band Horn Antenna    | Schwarzbeck  | BBHA 9120D  | MRTSUE06023 | 1 year         | 2020/10/13     |
| Broad Band Horn Antenna    | Schwarzbeck  | BBHA 9170   | MRTSUE06597 | 1 year         | 2021/02/23     |
| Microwave System Amplifier | Agilent      | 83017A      | MRTSUE06076 | 1 year         | 2020/11/15     |
| Preamplifier               | Schwarzbeck  | BBV 9721    | MRTSUE06121 | 1 year         | 2020/06/11     |
| Thermohygrometer           | Testo        | 608-H1      | MRTSUE06403 | 1 year         | 2020/08/08     |
| Anechoic Chamber           | TDK          | Chamber-AC1 | MRTSUE06212 | 1 year         | 2020/04/30     |

##### Radiated Emission - AC2

| Instrument                     | Manufacturer | Type No.    | Asset No.   | Cali. Interval | Cali. Due Date |
|--------------------------------|--------------|-------------|-------------|----------------|----------------|
| Spectrum Analyzer              | Keysight     | N9038A      | MRTSUE06125 | 1 year         | 2020/08/01     |
| Loop Antenna                   | Schwarzbeck  | FMZB 1519   | MRTSUE06025 | 1 year         | 2020/11/10     |
| Bilog Period Antenna           | Schwarzbeck  | VULB 9162   | MRTSUE06022 | 1 year         | 2020/10/13     |
| Horn Antenna                   | Schwarzbeck  | BBHA9120D   | MRTSUE06171 | 1 year         | 2020/10/27     |
| Broad Band Horn Antenna        | Schwarzbeck  | BBHA 9170   | MRTSUE06597 | 1 year         | 2021/02/23     |
| Broadband Coaxial Preamplifier | Schwarzbeck  | BBV 9718    | MRTSUE06176 | 1 year         | 2020/11/15     |
| Preamplifier                   | Schwarzbeck  | BBV 9721    | MRTSUE06121 | 1 year         | 2020/06/11     |
| Temperature/Humidity Meter     | Minggao      | ETH529      | MRTSUE06170 | 1 year         | 2020/12/15     |
| Anechoic Chamber               | RIKEN        | Chamber-AC2 | MRTSUE06213 | 1 year         | 2020/04/30     |

| Software     | Version | Function          |
|--------------|---------|-------------------|
| EMI Software | V3      | EMI Test Software |

## 5. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k = 2$ .

### AC Conducted Emission Measurement - SR2

The maximum measurement uncertainty is evaluated as:

9kHz~150kHz: 3.84dB

150kHz~30MHz: 3.46dB

### Radiated Emission Measurement - AC1

The maximum measurement uncertainty is evaluated as:

Horizontal: 30MHz~300MHz: 4.07dB

300MHz~1GHz: 3.63dB

1GHz~18GHz: 4.16dB

Vertical: 30MHz~300MHz: 4.18dB

300MHz~1GHz: 3.60dB

1GHz~18GHz: 4.76dB

### Radiated Emission Measurement - AC2

The maximum measurement uncertainty is evaluated as:

Horizontal: 30MHz~300MHz: 3.75dB

300MHz~1GHz: 3.53dB

1GHz~18GHz: 4.28dB

Vertical: 30MHz~300MHz: 3.86dB

300MHz~1GHz: 3.53dB

1GHz~18GHz: 4.33dB

## 6. TEST RESULT

### 6.1. Summary

| FCC Part<br>Section(s)                                                          | Test<br>Description                                                                                          | Test<br>Limit                                                                   | Test<br>Condition | Test<br>Result | Reference   |
|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-------------------|----------------|-------------|
| 2.1053, 22.917,<br>24.238, 27.53(c),<br>27.53(f), 27.53(g),<br>27.53(h), 90.691 | Radiated Spurious<br>Emissions<br>(GSM850, 1900, WCDMA<br>Band 2, 4, 5, LTE Band 2,<br>4, 5, 12, 13, 25, 26) | $> 43 + 10\log_{10}$<br>( $P_{\text{Watts}}$ ) for all<br>out-of-band emissions | Radiated          | Pass           | Section 6.2 |
| 27.53(m)                                                                        | Radiated Spurious<br>Emissions<br>(LTE Band 7, 38, 41)                                                       | Undesirable<br>emissions must meet<br>the limits detailed in<br>27.53(m)        |                   |                |             |

#### Notes:

- 1) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- 2) All supported modulation types were evaluated. The worst-case emission of modulation was selected.

## **6.2. Transmitter Spurious Emissions Measurements**

### **6.2.1. Test Limit**

Out of band emissions: The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. The emission limit equal to -13dBm.

For Band 7, 38, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $55 + 10 \log(P)$  dB. The emission limit equal to -25dBm

$E \text{ (dB}\mu\text{V/m)} = \text{EIRP (dBm)} - 20 \log D + 104.8$ ; where D is the measurement distance in meters. The emission limit equal to 82.2dB $\mu$ V/m or 70.2dB $\mu$ V/m.

### **6.2.2. Test Procedure Used**

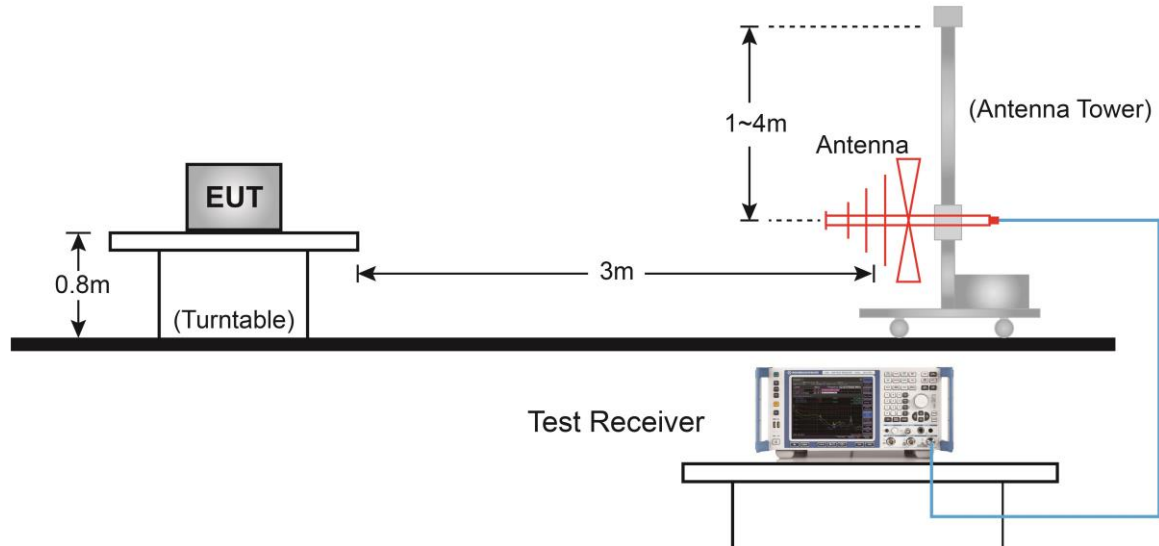
ANSI C63.26-2015 - Section 5.2.7 & 5.5

### **6.2.3. Test Setting**

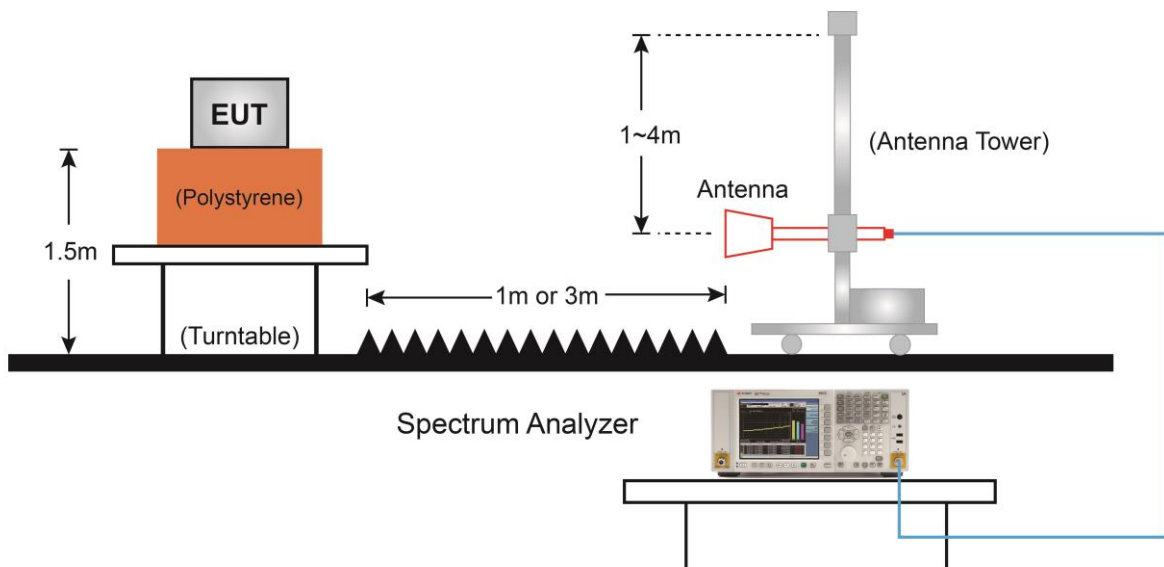
1. RBW = 100kHz or 1MHz
2. VBW  $\geq 3 \times$  RBW
3. Sweep time  $\geq 10 \times$  (number of points in sweep)  $\times$  (transmission symbol period)
4. Detector = Peak
5. Trace mode = max hold
6. The trace was allowed to stabilize

#### 6.2.4. Test Setup

##### Below 1GHz Test Setup:



##### Above 1GHz Test Setup:



### 6.2.5. Test Result

|               |           |                   |            |
|---------------|-----------|-------------------|------------|
| Product       | LTE Modem | Temperature       | 25°C       |
| Test Engineer | Larry Yan | Relative Humidity | 56%        |
| Test Site     | AC1       | Test Date         | 2020/04/16 |
| Test Mode     | GSM850    |                   |            |

| Frequency<br>(MHz) | Reading Level<br>(dBμV) | Factor<br>(dB) | Measure Level<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector | Polarization |
|--------------------|-------------------------|----------------|---------------------------|-------------------|----------------|----------|--------------|
| High Channel       |                         |                |                           |                   |                |          |              |
| 161.9              | 1.4                     | 14.0           | 15.4                      | 82.2              | -66.8          | Peak     | Horizontal   |
| 258.0              | 7.0                     | 13.1           | 20.1                      | 82.2              | -62.1          | Peak     | Horizontal   |
| 40.2               | 5.8                     | 14.5           | 20.3                      | 82.2              | -61.9          | Peak     | Vertical     |
| 238.6              | 6.4                     | 11.4           | 17.8                      | 82.2              | -64.4          | Peak     | Vertical     |
| 5071.5             | 38.2                    | 6.3            | 44.5                      | 82.2              | -37.7          | Peak     | Horizontal   |
| 10571.0            | 36.5                    | 17.4           | 53.9                      | 82.2              | -28.3          | Peak     | Horizontal   |
| 2283.5             | 42.0                    | -1.1           | 40.9                      | 82.2              | -41.3          | Peak     | Vertical     |
| 7256.0             | 37.0                    | 11.6           | 48.6                      | 82.2              | -33.6          | Peak     | Vertical     |

Note: Only exhibited the worst-case data of test channel based on the original module report.

|               |           |                   |            |
|---------------|-----------|-------------------|------------|
| Product       | LTE Modem | Temperature       | 25°C       |
| Test Engineer | Larry Yan | Relative Humidity | 56%        |
| Test Site     | AC1       | Test Date         | 2020/04/16 |
| Test Mode     | PCS1900   |                   |            |

| Frequency<br>(MHz) | Reading Level<br>(dBμV) | Factor<br>(dB) | Measure Level<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector | Polarization |
|--------------------|-------------------------|----------------|---------------------------|-------------------|----------------|----------|--------------|
| High Channel       |                         |                |                           |                   |                |          |              |
| 240.0              | 27.8                    | 12.8           | 40.6                      | 82.2              | -41.6          | Peak     | Horizontal   |
| 338.5              | 12.9                    | 15.2           | 28.1                      | 82.2              | -54.1          | Peak     | Horizontal   |
| 38.7               | 16.0                    | 14.4           | 30.4                      | 82.2              | -51.8          | Peak     | Vertical     |
| 240.0              | 28.1                    | 12.8           | 40.9                      | 82.2              | -41.3          | Peak     | Vertical     |
| 6695.0             | 36.5                    | 9.6            | 46.1                      | 82.2              | -36.1          | Peak     | Horizontal   |
| 7995.5             | 37.0                    | 12.5           | 49.5                      | 82.2              | -32.7          | Peak     | Horizontal   |
| 8029.5             | 37.4                    | 12.7           | 50.1                      | 82.2              | -32.1          | Peak     | Vertical     |
| 9780.5             | 35.3                    | 16.6           | 51.9                      | 82.2              | -30.3          | Peak     | Vertical     |

Note: Only exhibited the worst-case data of test channel based on the original module report.

|               |              |                   |            |
|---------------|--------------|-------------------|------------|
| Product       | LTE Modem    | Temperature       | 25°C       |
| Test Engineer | Larry Yan    | Relative Humidity | 56%        |
| Test Site     | AC1          | Test Date         | 2020/04/16 |
| Test Mode     | WCDMA Band 2 |                   |            |

| Frequency<br>(MHz) | Reading Level<br>(dBμV) | Factor<br>(dB) | Measure Level<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector | Polarization |
|--------------------|-------------------------|----------------|---------------------------|-------------------|----------------|----------|--------------|
| High Channel       |                         |                |                           |                   |                |          |              |
| 240.0              | 29.2                    | 12.8           | 42.0                      | 82.2              | -40.2          | Peak     | Horizontal   |
| 343.3              | 14.8                    | 15.3           | 30.1                      | 82.2              | -52.1          | Peak     | Horizontal   |
| 31.5               | 18.5                    | 13.7           | 32.2                      | 82.2              | -50.0          | Peak     | Vertical     |
| 240.0              | 28.2                    | 12.8           | 41.0                      | 82.2              | -41.2          | Peak     | Vertical     |
| 6720.5             | 36.9                    | 9.5            | 46.4                      | 82.2              | -35.8          | Peak     | Horizontal   |
| 8080.5             | 36.9                    | 12.7           | 49.6                      | 82.2              | -32.6          | Peak     | Horizontal   |
| 8097.5             | 36.8                    | 12.7           | 49.5                      | 82.2              | -32.7          | Peak     | Vertical     |
| 10605.0            | 36.5                    | 17.3           | 53.8                      | 82.2              | -28.4          | Peak     | Vertical     |

Note: Only exhibited the worst-case data of test channel based on the original module report.

|               |              |                   |            |
|---------------|--------------|-------------------|------------|
| Product       | LTE Modem    | Temperature       | 25°C       |
| Test Engineer | Larry Yan    | Relative Humidity | 56%        |
| Test Site     | AC1          | Test Date         | 2020/04/16 |
| Test Mode     | WCDMA Band 4 |                   |            |

| Frequency<br>(MHz) | Reading Level<br>(dBμV) | Factor<br>(dB) | Measure Level<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector | Polarization |
|--------------------|-------------------------|----------------|---------------------------|-------------------|----------------|----------|--------------|
| High Channel       |                         |                |                           |                   |                |          |              |
| 240.0              | 28.3                    | 12.8           | 41.1                      | 82.2              | -41.1          | Peak     | Horizontal   |
| 341.4              | 14.7                    | 15.3           | 30.0                      | 82.2              | -52.2          | Peak     | Horizontal   |
| 32.4               | 20.1                    | 13.7           | 33.8                      | 82.2              | -48.4          | Peak     | Vertical     |
| 240.0              | 28.9                    | 12.8           | 41.7                      | 82.2              | -40.5          | Peak     | Vertical     |
| 4357.5             | 40.5                    | 4.1            | 44.6                      | 82.2              | -37.6          | Peak     | Horizontal   |
| 7281.5             | 35.4                    | 11.7           | 47.1                      | 82.2              | -35.1          | Peak     | Horizontal   |
| 4289.5             | 40.0                    | 4.0            | 44.0                      | 82.2              | -38.2          | Peak     | Vertical     |
| 8131.5             | 37.4                    | 12.7           | 50.1                      | 82.2              | -32.1          | Peak     | Vertical     |

Note: Only exhibited the worst-case data of test channel based on the original module report.

|               |              |                   |            |
|---------------|--------------|-------------------|------------|
| Product       | LTE Modem    | Temperature       | 25°C       |
| Test Engineer | Larry Yan    | Relative Humidity | 56%        |
| Test Site     | AC1          | Test Date         | 2020/04/16 |
| Test Mode     | WCDMA Band 5 |                   |            |

| Frequency<br>(MHz) | Reading Level<br>(dBμV) | Factor<br>(dB) | Measure Level<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector | Polarization |
|--------------------|-------------------------|----------------|---------------------------|-------------------|----------------|----------|--------------|
| Low Channel        |                         |                |                           |                   |                |          |              |
| 294.8              | 4.8                     | 14.1           | 18.9                      | 82.2              | -63.3          | Peak     | Horizontal   |
| 329.7              | 4.4                     | 15.0           | 19.4                      | 82.2              | -62.8          | Peak     | Horizontal   |
| 31.0               | 10.4                    | 13.7           | 24.1                      | 82.2              | -58.1          | Peak     | Vertical     |
| 648.4              | 1.5                     | 21.3           | 22.8                      | 82.2              | -59.4          | Peak     | Vertical     |
| 2122.0             | 42.7                    | -1.9           | 40.8                      | 82.2              | -41.4          | Peak     | Horizontal   |
| 5964.0             | 37.2                    | 7.2            | 44.4                      | 82.2              | -37.8          | Peak     | Horizontal   |
| 2411.0             | 41.6                    | -1.1           | 40.5                      | 82.2              | -41.7          | Peak     | Vertical     |
| 8012.5             | 37.7                    | 12.5           | 50.2                      | 82.2              | -32.0          | Peak     | Vertical     |

Note: Only exhibited the worst-case data of test channel based on the original module report.

|               |            |                   |            |
|---------------|------------|-------------------|------------|
| Product       | LTE Modem  | Temperature       | 25°C       |
| Test Engineer | Larry Yan  | Relative Humidity | 56%        |
| Test Site     | AC1        | Test Date         | 2020/04/16 |
| Test Mode     | LTE Band 2 |                   |            |

| Frequency<br>(MHz) | Reading Level<br>(dBμV) | Factor<br>(dB) | Measure Level<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector | Polarization |
|--------------------|-------------------------|----------------|---------------------------|-------------------|----------------|----------|--------------|
| High Channel       |                         |                |                           |                   |                |          |              |
| 240.0              | 27.2                    | 12.8           | 40.0                      | 82.2              | -42.2          | Peak     | Horizontal   |
| 300.1              | 22.5                    | 14.3           | 36.8                      | 82.2              | -45.4          | Peak     | Horizontal   |
| 36.8               | 16.1                    | 14.1           | 30.2                      | 82.2              | -52.0          | Peak     | Vertical     |
| 240.0              | 27.2                    | 12.8           | 40.0                      | 82.2              | -42.2          | Peak     | Vertical     |
| 4332.0             | 39.0                    | 4.1            | 43.1                      | 82.2              | -39.1          | Peak     | Horizontal   |
| 10783.5            | 35.7                    | 17.7           | 53.4                      | 82.2              | -28.8          | Peak     | Horizontal   |
| 5088.5             | 38.0                    | 6.4            | 44.4                      | 82.2              | -37.8          | Peak     | Vertical     |
| 9415.0             | 36.0                    | 15.8           | 51.8                      | 82.2              | -30.4          | Peak     | Vertical     |

Note: Only exhibited the worst-case data of test channel based on the original module report.

|               |            |                   |            |
|---------------|------------|-------------------|------------|
| Product       | LTE Modem  | Temperature       | 25°C       |
| Test Engineer | Larry Yan  | Relative Humidity | 56%        |
| Test Site     | AC1        | Test Date         | 2020/04/16 |
| Test Mode     | LTE Band 4 |                   |            |

| Frequency<br>(MHz) | Reading Level<br>(dBμV) | Factor<br>(dB) | Measure Level<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector | Polarization |
|--------------------|-------------------------|----------------|---------------------------|-------------------|----------------|----------|--------------|
| High Channel       |                         |                |                           |                   |                |          |              |
| 240.0              | 27.2                    | 12.8           | 40.0                      | 82.2              | -42.2          | Peak     | Horizontal   |
| 300.1              | 23.8                    | 14.3           | 38.1                      | 82.2              | -44.1          | Peak     | Horizontal   |
| 31.9               | 14.6                    | 13.7           | 28.3                      | 82.2              | -53.9          | Peak     | Vertical     |
| 240.0              | 22.7                    | 12.8           | 35.5                      | 82.2              | -46.7          | Peak     | Vertical     |
| 3201.5             | 40.3                    | 1.2            | 41.5                      | 82.2              | -40.7          | Peak     | Horizontal   |
| 6958.5             | 37.3                    | 10.4           | 47.7                      | 82.2              | -34.5          | Peak     | Horizontal   |
| 4502.0             | 38.8                    | 4.6            | 43.4                      | 82.2              | -38.8          | Peak     | Vertical     |
| 8055.0             | 36.9                    | 12.6           | 49.5                      | 82.2              | -32.7          | Peak     | Vertical     |

Note: Only exhibited the worst-case data of test channel based on the original module report.

|               |            |                   |            |
|---------------|------------|-------------------|------------|
| Product       | LTE Modem  | Temperature       | 25°C       |
| Test Engineer | Larry Yan  | Relative Humidity | 56%        |
| Test Site     | AC1        | Test Date         | 2020/04/16 |
| Test Mode     | LTE Band 5 |                   |            |

| Frequency<br>(MHz) | Reading Level<br>(dBμV) | Factor<br>(dB) | Measure Level<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector | Polarization |
|--------------------|-------------------------|----------------|---------------------------|-------------------|----------------|----------|--------------|
| Mid Channel        |                         |                |                           |                   |                |          |              |
| 300.1              | 7.7                     | 14.3           | 22.0                      | 82.2              | -60.2          | Peak     | Horizontal   |
| 466.0              | 3.9                     | 16.1           | 20.0                      | 82.2              | -62.2          | Peak     | Horizontal   |
| 30.5               | 9.0                     | 13.6           | 22.6                      | 82.2              | -59.6          | Peak     | Vertical     |
| 112.0              | 8.2                     | 11.3           | 19.5                      | 82.2              | -62.7          | Peak     | Vertical     |
| 1680.0             | 47.3                    | -4.8           | 42.5                      | 82.2              | -39.7          | Peak     | Horizontal   |
| 7417.5             | 37.0                    | 11.7           | 48.7                      | 82.2              | -33.5          | Peak     | Horizontal   |
| 1680.0             | 48.2                    | -4.8           | 43.4                      | 82.2              | -38.8          | Peak     | Vertical     |
| 2419.5             | 44.7                    | -1.1           | 43.6                      | 82.2              | -38.6          | Peak     | Vertical     |

Note: Only exhibited the worst-case data of test channel based on the original module report.

|               |            |                   |            |
|---------------|------------|-------------------|------------|
| Product       | LTE Modem  | Temperature       | 25°C       |
| Test Engineer | Larry Yan  | Relative Humidity | 56%        |
| Test Site     | AC1        | Test Date         | 2020/04/16 |
| Test Mode     | LTE Band 7 |                   |            |

| Frequency<br>(MHz) | Reading Level<br>(dBμV) | Factor<br>(dB) | Measure Level<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector | Polarization |
|--------------------|-------------------------|----------------|---------------------------|-------------------|----------------|----------|--------------|
| Mid Channel        |                         |                |                           |                   |                |          |              |
| 294.8              | 6.2                     | 12.7           | 18.9                      | 70.2              | -51.3          | Peak     | Horizontal   |
| 657.6              | 4.6                     | 19.2           | 23.8                      | 70.2              | -46.4          | Peak     | Horizontal   |
| 573.7              | 4.1                     | 17.8           | 21.9                      | 70.2              | -48.3          | Peak     | Vertical     |
| 961.2              | 4.8                     | 22.2           | 27.0                      | 70.2              | -43.2          | Peak     | Vertical     |
| 7995.5             | 45.7                    | 3.7            | 49.4                      | 70.2              | -20.8          | Peak     | Horizontal   |
| 11013.0            | 46.1                    | 7.7            | 53.8                      | 70.2              | -16.4          | Peak     | Horizontal   |
| 8131.5             | 46.4                    | 3.8            | 50.2                      | 70.2              | -20.0          | Peak     | Vertical     |
| 9559.5             | 45.7                    | 6.4            | 52.1                      | 70.2              | -18.1          | Peak     | Vertical     |

Note: Only exhibited the worst-case data of test channel based on the original module report.

|               |             |                   |            |
|---------------|-------------|-------------------|------------|
| Product       | LTE Modem   | Temperature       | 25°C       |
| Test Engineer | Larry Yan   | Relative Humidity | 56%        |
| Test Site     | AC1         | Test Date         | 2020/04/16 |
| Test Mode     | LTE Band 12 |                   |            |

| Frequency<br>(MHz) | Reading Level<br>(dBμV) | Factor<br>(dB) | Measure Level<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector | Polarization |
|--------------------|-------------------------|----------------|---------------------------|-------------------|----------------|----------|--------------|
| Low Channel        |                         |                |                           |                   |                |          |              |
| 30.0               | 1.6                     | 13.2           | 14.8                      | 82.2              | -67.4          | Peak     | Horizontal   |
| 112.0              | 8.2                     | 11.3           | 19.5                      | 82.2              | -62.7          | Peak     | Horizontal   |
| 39.7               | 8.0                     | 14.5           | 22.5                      | 82.2              | -59.7          | Peak     | Vertical     |
| 469.9              | 3.2                     | 18.0           | 21.2                      | 82.2              | -61.0          | Peak     | Vertical     |
| 1416.5             | 55.8                    | -4.2           | 51.6                      | 82.2              | -30.6          | Peak     | Horizontal   |
| 7239.0             | 35.7                    | 11.5           | 47.2                      | 82.2              | -35.0          | Peak     | Horizontal   |
| 1408.0             | 60.7                    | -4.2           | 56.5                      | 82.2              | -25.7          | Peak     | Vertical     |
| 3728.5             | 40.3                    | 2.4            | 42.7                      | 82.2              | -39.5          | Peak     | Vertical     |

Note: Only exhibited the worst-case data of test channel based on the original module report.

|               |             |                   |            |
|---------------|-------------|-------------------|------------|
| Product       | LTE Modem   | Temperature       | 25°C       |
| Test Engineer | Larry Yan   | Relative Humidity | 56%        |
| Test Site     | AC1         | Test Date         | 2020/04/16 |
| Test Mode     | LTE Band 13 |                   |            |

| Frequency<br>(MHz) | Reading Level<br>(dBμV) | Factor<br>(dB) | Measure Level<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector | Polarization |
|--------------------|-------------------------|----------------|---------------------------|-------------------|----------------|----------|--------------|
| Low Channel        |                         |                |                           |                   |                |          |              |
| 118.3              | 1.4                     | 13.0           | 14.4                      | 82.2              | -67.8          | Peak     | Horizontal   |
| 300.1              | 6.2                     | 14.3           | 20.5                      | 82.2              | -61.7          | Peak     | Horizontal   |
| 31.0               | 9.1                     | 13.7           | 22.8                      | 82.2              | -59.4          | Peak     | Vertical     |
| 619.3              | 2.8                     | 20.9           | 23.7                      | 82.2              | -58.5          | Peak     | Vertical     |
| 1561.0             | 53.5                    | -4.7           | 48.8                      | 82.2              | -33.4          | Peak     | Horizontal   |
| 7145.5             | 36.5                    | 11.2           | 47.7                      | 82.2              | -34.5          | Peak     | Horizontal   |
| 1561.0             | 55.6                    | -4.7           | 50.9                      | 82.2              | -31.3          | Peak     | Vertical     |
| 2428.0             | 43.5                    | -1.1           | 42.4                      | 82.2              | -39.8          | Peak     | Vertical     |

Note: Only exhibited the worst-case data of test channel based on the original module report.

|               |             |                   |            |
|---------------|-------------|-------------------|------------|
| Product       | LTE Modem   | Temperature       | 25°C       |
| Test Engineer | Larry Yan   | Relative Humidity | 56%        |
| Test Site     | AC1         | Test Date         | 2020/04/16 |
| Test Mode     | LTE Band 25 |                   |            |

| Frequency<br>(MHz) | Reading Level<br>(dBμV) | Factor<br>(dB) | Measure Level<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector | Polarization |
|--------------------|-------------------------|----------------|---------------------------|-------------------|----------------|----------|--------------|
| High Channel       |                         |                |                           |                   |                |          |              |
| 240.0              | 26.8                    | 12.8           | 39.6                      | 82.2              | -42.6          | Peak     | Horizontal   |
| 300.1              | 21.8                    | 14.3           | 36.1                      | 82.2              | -46.1          | Peak     | Horizontal   |
| 32.4               | 16.7                    | 13.7           | 30.4                      | 82.2              | -51.8          | Peak     | Vertical     |
| 240.0              | 27.2                    | 12.8           | 40.0                      | 82.2              | -42.2          | Peak     | Vertical     |
| 4476.5             | 39.2                    | 4.5            | 43.7                      | 82.2              | -38.5          | Peak     | Horizontal   |
| 9440.5             | 35.0                    | 16.0           | 51.0                      | 82.2              | -31.2          | Peak     | Horizontal   |
| 3337.5             | 41.0                    | 1.0            | 42.0                      | 82.2              | -40.2          | Peak     | Vertical     |
| 7885.0             | 37.1                    | 12.1           | 49.2                      | 82.2              | -33.0          | Peak     | Vertical     |

Note: Only exhibited the worst-case data of test channel based on the original module report.

|               |             |                   |            |
|---------------|-------------|-------------------|------------|
| Product       | LTE Modem   | Temperature       | 25°C       |
| Test Engineer | Larry Yan   | Relative Humidity | 56%        |
| Test Site     | AC1         | Test Date         | 2020/04/16 |
| Test Mode     | LTE Band 26 |                   |            |

| Frequency<br>(MHz) | Reading Level<br>(dBμV) | Factor<br>(dB) | Measure Level<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector | Polarization |
|--------------------|-------------------------|----------------|---------------------------|-------------------|----------------|----------|--------------|
| Low Channel        |                         |                |                           |                   |                |          |              |
| 147.4              | 0.2                     | 15.0           | 15.2                      | 82.2              | -67.0          | Peak     | Horizontal   |
| 300.1              | 5.8                     | 14.3           | 20.1                      | 82.2              | -62.1          | Peak     | Horizontal   |
| 39.7               | 7.7                     | 14.5           | 22.2                      | 82.2              | -60.0          | Peak     | Vertical     |
| 699.3              | 2.7                     | 22.0           | 24.7                      | 82.2              | -57.5          | Peak     | Vertical     |
| 1637.5             | 49.2                    | -4.9           | 44.3                      | 82.2              | -37.9          | Peak     | Horizontal   |
| 8021.0             | 37.4                    | 12.6           | 50.0                      | 82.2              | -32.2          | Peak     | Horizontal   |
| 1637.5             | 48.9                    | -4.9           | 44.0                      | 82.2              | -38.2          | Peak     | Vertical     |
| 3915.5             | 39.2                    | 3.0            | 42.2                      | 82.2              | -40.0          | Peak     | Vertical     |

Note: Only exhibited the worst-case data of test channel based on the original module report.

|               |             |                   |            |
|---------------|-------------|-------------------|------------|
| Product       | LTE Modem   | Temperature       | 25°C       |
| Test Engineer | Larry Yan   | Relative Humidity | 56%        |
| Test Site     | AC1         | Test Date         | 2020/04/16 |
| Test Mode     | LTE Band 38 |                   |            |

| Frequency<br>(MHz) | Reading Level<br>(dBμV) | Factor<br>(dB) | Measure Level<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector | Polarization |
|--------------------|-------------------------|----------------|---------------------------|-------------------|----------------|----------|--------------|
| Mid Channel        |                         |                |                           |                   |                |          |              |
| 240.0              | 28.2                    | 12.8           | 41.0                      | 70.2              | -29.2          | Peak     | Horizontal   |
| 300.1              | 20.4                    | 14.3           | 34.7                      | 70.2              | -35.5          | Peak     | Horizontal   |
| 36.8               | 17.5                    | 14.1           | 31.6                      | 70.2              | -38.6          | Peak     | Vertical     |
| 240.0              | 27.0                    | 12.8           | 39.8                      | 70.2              | -30.4          | Peak     | Vertical     |
| 4468.0             | 39.7                    | 4.5            | 44.2                      | 70.2              | -26.0          | Peak     | Horizontal   |
| 7944.5             | 36.4                    | 12.5           | 48.9                      | 70.2              | -21.3          | Peak     | Horizontal   |
| 4510.5             | 39.0                    | 4.6            | 43.6                      | 70.2              | -26.6          | Peak     | Vertical     |
| 7978.5             | 37.4                    | 12.4           | 49.8                      | 70.2              | -20.4          | Peak     | Vertical     |

Note: Only exhibited the worst-case data of test channel based on the original module report.

|               |             |                   |            |
|---------------|-------------|-------------------|------------|
| Product       | LTE Modem   | Temperature       | 25°C       |
| Test Engineer | Larry Yan   | Relative Humidity | 56%        |
| Test Site     | AC1         | Test Date         | 2020/04/16 |
| Test Mode     | LTE Band 41 |                   |            |

| Frequency<br>(MHz) | Reading Level<br>(dBμV) | Factor<br>(dB) | Measure Level<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector | Polarization |
|--------------------|-------------------------|----------------|---------------------------|-------------------|----------------|----------|--------------|
| Mid Channel        |                         |                |                           |                   |                |          |              |
| 240.0              | 26.7                    | 12.8           | 39.5                      | 70.2              | -30.7          | Peak     | Horizontal   |
| 300.1              | 22.4                    | 14.3           | 36.7                      | 70.2              | -33.5          | Peak     | Horizontal   |
| 31.9               | 20.5                    | 13.7           | 34.2                      | 70.2              | -36.0          | Peak     | Vertical     |
| 240.0              | 27.6                    | 12.8           | 40.4                      | 70.2              | -29.8          | Peak     | Vertical     |
| 4391.5             | 39.3                    | 4.4            | 43.7                      | 70.2              | -26.5          | Peak     | Horizontal   |
| 6924.5             | 37.1                    | 10.2           | 47.3                      | 70.2              | -22.9          | Peak     | Horizontal   |
| 5071.5             | 37.6                    | 6.3            | 43.9                      | 70.2              | -26.3          | Peak     | Vertical     |
| 7936.0             | 36.7                    | 12.4           | 49.1                      | 70.2              | -21.1          | Peak     | Vertical     |

Note: Only exhibited the worst-case data of test channel based on the original module report.

## 7. CONCLUSION

The data collected relate only the item(s) tested and show that unit is in compliance with FCC Rules.

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The End

## **Appendix A - Test Setup Photograph**

Refer to “2003RSU045-UT” file.

## **Appendix B - EUT Photograph**

Refer to “2003RSU045-UE” file.