

# **TEST REPORT**

**Applicant:** Eagle Wireless Holdings, Inc.  
**EUT Description:** LTE Cat M1 & Cat NB2 Module  
**Model:** I470  
**Brand:** Eagle  
**FCC ID:** 2BNX7I470A  
**Standards:** FCC CFR Title 47 Part 2  
FCC CFR Title 47 Part 22  
FCC CFR Title 47 Part 24  
FCC CFR Title 47 Part 27  
FCC CFR Title 47 Part 90  
**Date of Receipt:** 2025/12/25  
**Date of Test:** 2025/12/25 to 2026/01/26  
**Date of Issue:** 2026/01/27

TOWE. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

the results documented in this report apply only the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility assure that additional production units of the model are manufactured with identical electrical and mechanical components. All sample tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise. without written approval of TOWE, the test report shall not be reproduced except in full.



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**Jim Huang**  
**Approved By:**



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**Carey Chen**  
**Reviewed By:**

## Revision History

| Rev. | Issue Date | Description | Revised by |
|------|------------|-------------|------------|
| 01   | 2026/01/27 | Original    | Carey Chen |

## Summary of Test Results

| FCC Part                                                                                  | Test Band                                                                                                                      | Test Item                              | Test Result |
|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-------------|
| §2.1046<br>§22.913(a)(5)<br>§27.50(b)(9)<br>§27.50(c)(10)                                 | LTE Band 5/26(824 ~ 849MHz)<br>LTE Band 13<br>LTE Band 12/71/85                                                                | Effective Radiated Power               | Pass        |
| §2.1046<br>§24.232(c)<br>§27.50(d)(4)                                                     | LTE Band 2/25<br>LTE Band 4/66                                                                                                 | Effective Isotropic Radiated Power     | Pass        |
| §2.1046<br>§90.635(b)                                                                     | LTE Band 26(814 ~ 824MHz)                                                                                                      | Transmitter Conducted Output Power     | Pass        |
| §22.913(d)<br>§24.232(d)<br>§27.50(d)(5)                                                  | LTE Band 5/26(824 ~ 849MHz)<br>LTE Band 2/25<br>Others Band                                                                    | Peak-Average Ratio                     | Pass        |
| §2.1049                                                                                   | All Band                                                                                                                       | Occupied Bandwidth                     | Pass        |
| §2.1051<br>§90.691(a)                                                                     | LTE Band 26(814 ~ 824MHz)                                                                                                      | Emission Mask                          | Pass        |
| §2.1051<br>§22.917(a)<br>§24.238(a)<br>§27.53(c)<br>§27.53(g)<br>§27.53(h)                | LTE Band 5/26(824 ~ 849MHz)<br>LTE Band 2/25<br>LTE Band 13<br>LTE Band 12/71/85<br>LTE Band 4/66                              | Band Edge                              | Pass        |
| §2.1051<br>§22.917(a)<br>§24.238(a)<br>§27.53(c)<br>§27.53(g)<br>§27.53(h)<br>§90.691     | LTE Band 5/26(824 ~ 849MHz)<br>LTE Band 2/25<br>LTE Band 13<br>LTE Band 12/71/85<br>LTE Band 4/66<br>LTE Band 26(814 ~ 824MHz) | Spurious Emission at Antenna Terminals | Pass        |
| §2.1053<br>§22.917(a)<br>§24.238(a)<br>§27.53(c)&(f)<br>§27.53(g)<br>§27.53(h)<br>§90.691 | LTE Band 5/26(824 ~ 849MHz)<br>LTE Band 2/25<br>LTE Band 13<br>LTE Band 12/71/85<br>LTE Band 4/66<br>LTE Band 26(814 ~ 824MHz) | Field Strength of Spurious Radiation   | Pass        |
| §2.1055<br>§22.355<br>§24.235<br>§27.54<br>§90.213                                        | LTE Band 5/26(824 ~ 849MHz)<br>LTE Band 2/25<br>Others Band<br>LTE Band 26(814 ~ 824MHz)                                       | Frequency Stability                    | Pass        |
| Remark: Pass: Meet the requirement.                                                       |                                                                                                                                |                                        |             |

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# 1 General Description

## 1.1 Lab Information

### 1.1.1 Testing Location

These measurements tests were conducted at the Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. facility located at F401 and F101, Building E, Hongwei Industrial Zone, Liuxian 3rd Road, Bao'an District, Shenzhen, China. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014  
Tel.: +86-755-27212361  
Contact Email: info@towewireless.com

### 1.1.2 Test Facility / Accreditations

#### A2LA (Certificate Number: 7088.01)

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

#### FCC Designation No.: CN1353

Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. has been recognized as an accredited testing laboratory. Designation Number: CN1353.

#### ISED CAB identifier: CN0152

Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0152

Company Number: 31000

## 1.2 Client Information

### 1.2.1 Applicant

|            |                                                                             |
|------------|-----------------------------------------------------------------------------|
| Applicant: | Eagle Wireless Holdings, Inc.                                               |
| Address:   | 1974 E. 66th St., Suite 200-B Cleveland, OH 44103, United States Of America |

### 1.2.2 Manufacturer

|               |                                                                             |
|---------------|-----------------------------------------------------------------------------|
| Manufacturer: | Eagle Wireless Holdings, Inc.                                               |
| Address:      | 1974 E. 66th St., Suite 200-B Cleveland, OH 44103, United States Of America |

### 1.3 Product Information

|                            |                                   |                 |                 |           |
|----------------------------|-----------------------------------|-----------------|-----------------|-----------|
| EUT Description:           | LTE Cat M1 & Cat NB2 Module       |                 |                 |           |
| Model:                     | I470                              |                 |                 |           |
| Brand:                     | Eagle                             |                 |                 |           |
| Hardware Version:          | R1.0                              |                 |                 |           |
| Software Version:          | I470LAR02A01                      |                 |                 |           |
| SN.:                       | RF Conducted                      | MPC25JI1P009302 |                 |           |
|                            | RSE                               | MPC25JH02004184 |                 |           |
| Device Capabilities:       |                                   |                 |                 |           |
| Modulation Type:           | LTE Cat M1:                       | ☒ QPSK, ☒ 16QAM |                 |           |
|                            | LTE NB-IoT:                       | ☒ BPSK, ☒ QPSK  |                 |           |
| Operation Frequency Range: | Band                              | TX Frequency    | RX Frequency    |           |
|                            | Cat M1 Band 2                     | 1850 ~ 1910 MHz | 1930 ~ 1990 MHz |           |
|                            | Cat M1 Band 4                     | 1710 ~ 1755 MHz | 2110 ~ 2155 MHz |           |
|                            | Cat M1 Band 5                     | 824 ~ 849 MHz   | 869 ~ 894 MHz   |           |
|                            | Cat M1 Band 12                    | 699 ~ 716 MHz   | 729 ~ 746 MHz   |           |
|                            | Cat M1 Band 13                    | 777 ~ 787 MHz   | 746 ~ 756 MHz   |           |
|                            | Cat M1 Band 25                    | 1850 ~ 1915 MHz | 1930 ~ 1995 MHz |           |
|                            | Cat M1 Band 26<br>(814 ~ 824 MHz) | 814 ~ 824MHz    | 859 ~ 869 MHz   |           |
|                            | Cat M1 Band 26<br>(824 ~ 849 MHz) | 824 ~ 849 MHz   | 869 ~ 894 MHz   |           |
|                            | Cat M1 Band 66                    | 1710 ~ 1780 MHz | 2110 ~ 2180 MHz |           |
|                            | Cat M1 Band 85                    | 698 ~ 716 MHz   | 728 ~ 746 MHz   |           |
|                            | NB-IoT Band 2                     | 1850 ~ 1910 MHz | 1930 ~ 1990 MHz |           |
|                            | NB-IoT Band 4                     | 1710 ~ 1755 MHz | 2110 ~ 2155 MHz |           |
|                            | NB-IoT Band 5                     | 824 ~ 849 MHz   | 869 ~ 894 MHz   |           |
|                            | NB-IoT Band 12                    | 699 ~ 716 MHz   | 729 ~ 746 MHz   |           |
|                            | NB-IoT Band 13                    | 777 ~ 787 MHz   | 746 ~ 756 MHz   |           |
|                            | NB-IoT Band 25                    | 1850 ~ 1915 MHz | 1930 ~ 1995 MHz |           |
|                            | NB-IoT Band 66                    | 1710 ~ 1780 MHz | 2110 ~ 2180 MHz |           |
|                            | NB-IoT Band 71                    | 663 ~ 698 MHz   | 617 ~ 652 MHz   |           |
|                            | NB-IoT Band 85                    | 698 ~ 716 MHz   | 728 ~ 746 MHz   |           |
| Antenna Type:              | ☒ External, ☐ Integrated          |                 |                 |           |
| Antenna Gain:              | Band                              | Ant (dBi)       | Band            | Ant (dBi) |
|                            | Cat M1 Band 2                     | 1.59            | NB-IoT Band 2   | 1.59      |
|                            | Cat M1 Band 4                     | 2               | NB-IoT Band 4   | 2         |
|                            | Cat M1 Band 5                     | 2.53            | NB-IoT Band 5   | 2.53      |
|                            | Cat M1 Band 12                    | 3.95            | NB-IoT Band 12  | 3.95      |
|                            | Cat M1 Band 13                    | 4.45            | NB-IoT Band 13  | 4.45      |
|                            | Cat M1 Band 25                    | 1.59            | NB-IoT Band 25  | 1.59      |
|                            | Cat M1 Band 26                    | 3.19            | NB-IoT Band 66  | 2         |

|                                                                                                                                                 |                                   |      |                |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|------|----------------|------|
|                                                                                                                                                 | (814 ~ 824 MHz)                   |      |                |      |
|                                                                                                                                                 | Cat M1 Band 26<br>(824 ~ 849 MHz) | 2.53 | NB-IoT Band 71 | 1.66 |
|                                                                                                                                                 | Cat M1 Band 66                    | 2    | NB-IoT Band 85 | 3.95 |
|                                                                                                                                                 | Cat M1 Band 85                    | 3.95 |                |      |
| Remark: The above EUT's information was declared by applicant, please refer to the specifications or user manual for more detailed description. |                                   |      |                |      |

## 2 Test Configuration

### 2.1 Test Channel

| Band                  | Bandwidth | TX Frequency |         |            | RX Frequency |         |            |
|-----------------------|-----------|--------------|---------|------------|--------------|---------|------------|
|                       |           | Range        | Channel | Frequency  | Range        | Channel | Frequency  |
| LTE Cat M1<br>Band 2  | 1.4MHz    | Low          | 18607   | 1850.7 MHz | Low          | 607     | 1930.7 MHz |
|                       |           | Middle       | 18900   | 1880 MHz   | Middle       | 900     | 1960 MHz   |
|                       |           | High         | 19193   | 1909.3 MHz | High         | 1193    | 1989.3 MHz |
|                       | 3MHz      | Low          | 18615   | 1851.5 MHz | Low          | 615     | 1931.5 MHz |
|                       |           | Middle       | 18900   | 1880 MHz   | Middle       | 900     | 1960 MHz   |
|                       |           | High         | 19185   | 1908.5 MHz | High         | 1185    | 1988.5 MHz |
|                       | 5MHz      | Low          | 18625   | 1852.5 MHz | Low          | 625     | 1932.5 MHz |
|                       |           | Middle       | 18900   | 1880 MHz   | Middle       | 900     | 1960 MHz   |
|                       |           | High         | 19175   | 1907.5 MHz | High         | 1175    | 1987.5 MHz |
|                       | 10MHz     | Low          | 18650   | 1855 MHz   | Low          | 650     | 1935 MHz   |
|                       |           | Middle       | 18900   | 1880 MHz   | Middle       | 900     | 1960 MHz   |
|                       |           | High         | 19150   | 1905 MHz   | High         | 1150    | 1985 MHz   |
|                       | 15MHz     | Low          | 18675   | 1857.5 MHz | Low          | 675     | 1937.5 MHz |
|                       |           | Middle       | 18900   | 1880 MHz   | Middle       | 900     | 1960 MHz   |
|                       |           | High         | 19125   | 1902.5 MHz | High         | 1125    | 1982.5 MHz |
| LTE Cat M1<br>Band 4  | 1.4MHz    | Low          | 18700   | 1860 MHz   | Low          | 700     | 1940 MHz   |
|                       |           | Middle       | 18900   | 1880 MHz   | Middle       | 900     | 1960 MHz   |
|                       |           | High         | 19100   | 1900 MHz   | High         | 1100    | 1980 MHz   |
|                       | 3MHz      | Low          | 19957   | 1710.7 MHz | Low          | 1957    | 2110.7 MHz |
|                       |           | Middle       | 20175   | 1732.5 MHz | Middle       | 2175    | 2132.5MHz  |
|                       |           | High         | 20393   | 1754.3 MHz | High         | 2393    | 2154.3 MHz |
|                       | 5MHz      | Low          | 19965   | 1711.5 MHz | Low          | 1965    | 2111.5 MHz |
|                       |           | Middle       | 20175   | 1732.5 MHz | Middle       | 2175    | 2132.5MHz  |
|                       |           | High         | 20385   | 1753.5 MHz | High         | 2385    | 2153.5 MHz |
|                       | 10MHz     | Low          | 19975   | 1712.5 MHz | Low          | 1975    | 2112.5 MHz |
|                       |           | Middle       | 20175   | 1732.5 MHz | Middle       | 2175    | 2132.5MHz  |
|                       |           | High         | 20375   | 1752.5 MHz | High         | 2375    | 2152.5 MHz |
|                       | 15MHz     | Low          | 20000   | 1715 MHz   | Low          | 2115    | 2115 MHz   |
|                       |           | Middle       | 20175   | 1732.5 MHz | Middle       | 2175    | 2132.5MHz  |
|                       |           | High         | 20350   | 1750 MHz   | High         | 2350    | 2150 MHz   |
| LTE Cat M1<br>Band 5  | 1.4MHz    | Low          | 20025   | 1717.5 MHz | Low          | 2025    | 2117.5 MHz |
|                       |           | Middle       | 20175   | 1732.5 MHz | Middle       | 2175    | 2132.5MHz  |
|                       |           | High         | 20325   | 1747.5 MHz | High         | 2325    | 2147.5 MHz |
|                       | 3MHz      | Low          | 20050   | 1720 MHz   | Low          | 2050    | 2120 MHz   |
|                       |           | Middle       | 20175   | 1732.5 MHz | Middle       | 2175    | 2132.5MHz  |
|                       |           | High         | 20300   | 1745 MHz   | High         | 2300    | 2145 MHz   |
|                       | 5MHz      | Low          | 20407   | 824.7 MHz  | Low          | 2407    | 869.7 MHz  |
|                       |           | Middle       | 20525   | 836.5 MHz  | Middle       | 2525    | 881.5 MHz  |
|                       |           | High         | 20643   | 848.3 MHz  | High         | 2643    | 893.3 MHz  |
|                       | 10MHz     | Low          | 20415   | 825.5 MHz  | Low          | 2415    | 870.5 MHz  |
|                       |           | Middle       | 20525   | 836.5 MHz  | Middle       | 2525    | 881.5 MHz  |
|                       |           | High         | 20635   | 847.5 MHz  | High         | 2635    | 892.5 MHz  |
| LTE Cat M1<br>Band 12 | 1.4MHz    | Low          | 20425   | 826.5 MHz  | Low          | 2425    | 871.5 MHz  |
|                       |           | Middle       | 20525   | 836.5 MHz  | Middle       | 2525    | 881.5 MHz  |
|                       |           | High         | 20625   | 846.5 MHz  | High         | 2625    | 891.5 MHz  |
|                       | 3MHz      | Low          | 20450   | 829 MHz    | Low          | 2450    | 874 MHz    |
|                       |           | Middle       | 20525   | 836.5 MHz  | Middle       | 2525    | 881.5 MHz  |
|                       |           | High         | 20600   | 844 MHz    | High         | 2600    | 889 MHz    |
|                       | 5MHz      | Low          | 23017   | 699.7 MHz  | Low          | 5017    | 729.7 MHz  |
|                       |           | Middle       | 23095   | 707.5 MHz  | Middle       | 5095    | 737.5 MHz  |
|                       |           | High         | 23173   | 715.3 MHz  | High         | 5173    | 745.3 MHz  |
| LTE Cat M1<br>Band 12 | 3MHz      | Low          | 23025   | 700.5 MHz  | Low          | 5025    | 730.5 MHz  |
|                       |           | Middle       | 23095   | 707.5 MHz  | Middle       | 5095    | 737.5 MHz  |
|                       |           | High         | 23173   | 715.3 MHz  | High         | 5173    | 745.3 MHz  |

| Band                               | Bandwidth | TX Frequency |         |            | RX Frequency |         |            |
|------------------------------------|-----------|--------------|---------|------------|--------------|---------|------------|
|                                    |           | Range        | Channel | Frequency  | Range        | Channel | Frequency  |
|                                    | 5MHz      | High         | 23165   | 714.5 MHz  | High         | 5165    | 744.5 MHz  |
|                                    |           | Low          | 23035   | 701.5 MHz  | Low          | 5035    | 731.5 MHz  |
|                                    |           | Middle       | 23095   | 707.5 MHz  | Middle       | 5095    | 737.5 MHz  |
|                                    | 10MHz     | High         | 23155   | 713.5 MHz  | High         | 5155    | 743.5 MHz  |
|                                    |           | Low          | 23060   | 704 MHz    | Low          | 5060    | 734 MHz    |
|                                    |           | Middle       | 23095   | 707.5 MHz  | Middle       | 5095    | 737.5 MHz  |
|                                    |           | High         | 23130   | 711 MHz    | High         | 5130    | 741 MHz    |
| LTE Cat M1<br>Band 13              | 5MHz      | Low          | 23205   | 779.5 MHz  | Low          | 5205    | 748.5 MHz  |
|                                    |           | Middle       | 23230   | 782 MHz    | Middle       | 5230    | 751 MHz    |
|                                    |           | High         | 23255   | 784.5 MHz  | High         | 5255    | 753.5 MHz  |
|                                    | 10MHz     | Low          | 23230   | 782 MHz    | Low          | 5230    | 751 MHz    |
|                                    |           | Middle       | 23230   | 782 MHz    | Middle       | 5230    | 751 MHz    |
|                                    |           | High         | 23230   | 782 MHz    | High         | 5230    | 751 MHz    |
| LTE Cat M1<br>Band 25              | 1.4MHz    | Low          | 26047   | 1850.7 MHz | Low          | 8047    | 1930.7 MHz |
|                                    |           | Middle       | 26365   | 1882.5 MHz | Middle       | 8365    | 1962.5 MHz |
|                                    |           | High         | 26683   | 1914.3 MHz | High         | 8683    | 1994.3 MHz |
|                                    | 3MHz      | Low          | 26055   | 1851.5 MHz | Low          | 8055    | 1931.5 MHz |
|                                    |           | Middle       | 26365   | 1882.5 MHz | Middle       | 8365    | 1962.5 MHz |
|                                    |           | High         | 26675   | 1913.5 MHz | High         | 8675    | 1993.5 MHz |
|                                    | 5MHz      | Low          | 26065   | 1852.5 MHz | Low          | 8065    | 1932.5 MHz |
|                                    |           | Middle       | 26365   | 1882.5 MHz | Middle       | 8365    | 1962.5 MHz |
|                                    |           | High         | 26665   | 1912.5 MHz | High         | 8665    | 1992.5 MHz |
|                                    | 10MHz     | Low          | 26090   | 1855 MHz   | Low          | 8090    | 1935 MHz   |
|                                    |           | Middle       | 26365   | 1882.5 MHz | Middle       | 8365    | 1962.5 MHz |
|                                    |           | High         | 26640   | 1910 MHz   | High         | 8640    | 1990 MHz   |
|                                    | 15MHz     | Low          | 26115   | 1857.5 MHz | Low          | 8115    | 1937.5 MHz |
|                                    |           | Middle       | 26365   | 1882.5 MHz | Middle       | 8365    | 1962.5 MHz |
|                                    |           | High         | 26615   | 1907.5 MHz | High         | 8615    | 1987.5 MHz |
|                                    | 20MHz     | Low          | 26140   | 1860 MHz   | Low          | 8140    | 1940 MHz   |
|                                    |           | Middle       | 26365   | 1882.5 MHz | Middle       | 8365    | 1962.5 MHz |
|                                    |           | High         | 26590   | 1905 MHz   | High         | 8590    | 1985 MHz   |
| LTE Cat M1<br>Band 26<br>(814-824) | 1.4MHz    | Low          | 26697   | 814.7 MHz  | Low          | 8697    | 859.7 MHz  |
|                                    |           | Middle       | 26740   | 819 MHz    | Middle       | 8740    | 864MHz     |
|                                    |           | High         | 26783   | 823.3 MHz  | High         | 8783    | 868.3 MHz  |
|                                    | 3MHz      | Low          | 26705   | 815.5 MHz  | Low          | 8705    | 860.5 MHz  |
|                                    |           | Middle       | 26740   | 819 MHz    | Middle       | 8740    | 864MHz     |
|                                    |           | High         | 26775   | 822.5 MHz  | High         | 8775    | 867.5 MHz  |
|                                    | 5MHz      | Low          | 26715   | 816.5 MHz  | Low          | 8715    | 861.5 MHz  |
|                                    |           | Middle       | 26740   | 819 MHz    | Middle       | 8740    | 864MHz     |
|                                    |           | High         | 26765   | 821.5 MHz  | High         | 8765    | 866.5 MHz  |
|                                    | 10MHz     | Low          | 26740   | 819 MHz    | Low          | 8740    | 864MHz     |
|                                    |           | Middle       | 26740   | 819 MHz    | Middle       | 8740    | 864MHz     |
|                                    |           | High         | 26740   | 819 MHz    | High         | 8740    | 864MHz     |
| LTE Cat M1<br>Band 26<br>(824-849) | 1.4MHz    | Low          | 26797   | 824.7 MHz  | Low          | 8797    | 869.7 MHz  |
|                                    |           | Middle       | 26915   | 836.5 MHz  | Middle       | 8915    | 881.5 MHz  |
|                                    |           | High         | 27033   | 848.3 MHz  | High         | 9033    | 893.3 MHz  |
|                                    | 3MHz      | Low          | 26805   | 825.5 MHz  | Low          | 8805    | 870.5 MHz  |
|                                    |           | Middle       | 26915   | 836.5 MHz  | Middle       | 8915    | 881.5 MHz  |
|                                    |           | High         | 27025   | 847.5 MHz  | High         | 9025    | 892.5 MHz  |
|                                    | 5MHz      | Low          | 26815   | 826.5 MHz  | Low          | 8815    | 871.5 MHz  |
|                                    |           | Middle       | 26915   | 836.5 MHz  | Middle       | 8915    | 881.5 MHz  |
|                                    |           | High         | 27015   | 846.5 MHz  | High         | 9015    | 891.5 MHz  |
|                                    | 10MHz     | Low          | 26840   | 829 MHz    | Low          | 8840    | 844 MHz    |
|                                    |           | Middle       | 26915   | 836.5 MHz  | Middle       | 8915    | 881.5 MHz  |
|                                    |           | High         | 26990   | 844 MHz    | High         | 8990    | 889 MHz    |
|                                    | 15MHz     | Low          | 26865   | 831.5 MHz  | Low          | 8865    | 876.5 MHz  |
|                                    |           | Middle       | 26915   | 836.5 MHz  | Middle       | 8915    | 881.5 MHz  |

| Band                  | Bandwidth | TX Frequency |         |            | RX Frequency |         |            |
|-----------------------|-----------|--------------|---------|------------|--------------|---------|------------|
|                       |           | Range        | Channel | Frequency  | Range        | Channel | Frequency  |
| LTE Cat M1<br>Band 66 | 1.4MHz    | High         | 26965   | 841.5 MHz  | High         | 8965    | 886.5 MHz  |
|                       |           | Low          | 131979  | 1710.7 MHz | Low          | 66443   | 2110.7 MHz |
|                       |           | Middle       | 132322  | 1745 MHz   | Middle       | 66786   | 2145MHz    |
|                       | 3MHz      | High         | 132665  | 1779.3 MHz | High         | 67129   | 2179.3 MHz |
|                       |           | Low          | 131987  | 1711.5 MHz | Low          | 66451   | 2111.5 MHz |
|                       |           | Middle       | 132322  | 1745 MHz   | Middle       | 66786   | 2145MHz    |
|                       | 5MHz      | High         | 132657  | 1778.5MHz  | High         | 67121   | 2178.5MHz  |
|                       |           | Low          | 131997  | 1712.5 MHz | Low          | 66461   | 2112.5 MHz |
|                       |           | Middle       | 132322  | 1745 MHz   | Middle       | 66786   | 2145MHz    |
|                       | 10MHz     | High         | 132647  | 1777.5 MHz | High         | 67111   | 2177.5 MHz |
|                       |           | Low          | 132022  | 1715 MHz   | Low          | 66486   | 2115 MHz   |
|                       |           | Middle       | 132322  | 1745 MHz   | Middle       | 66786   | 2145MHz    |
|                       | 15MHz     | High         | 132622  | 1775 MHz   | High         | 67086   | 2175 MHz   |
|                       |           | Low          | 132047  | 1717.5 MHz | Low          | 66511   | 2117.5 MHz |
|                       |           | Middle       | 132322  | 1745 MHz   | Middle       | 66786   | 2145MHz    |
|                       | 20MHz     | High         | 132597  | 1772.5 MHz | High         | 67061   | 2172.5 MHz |
|                       |           | Low          | 132072  | 1720 MHz   | Low          | 66536   | 2120 MHz   |
|                       |           | Middle       | 132322  | 1745 MHz   | Middle       | 66786   | 2145MHz    |
| LTE Cat M1<br>Band 85 | 5MHz      | High         | 132572  | 1770 MHz   | High         | 67036   | 2170 MHz   |
|                       |           | Low          | 134027  | 700.5 MHz  | Low          | 70391   | 730.5 MHz  |
|                       |           | Middle       | 134092  | 707 MHz    | Middle       | 70456   | 737 MHz    |
|                       | 10MHz     | High         | 134157  | 713.5 MHz  | High         | 70521   | 743.5 MHz  |
|                       |           | Low          | 134052  | 703 MHz    | Low          | 70416   | 733 MHz    |
|                       |           | Middle       | 134092  | 707 MHz    | Middle       | 70456   | 737 MHz    |
|                       |           | High         | 134132  | 711 MHz    | High         | 70496   | 741 MHz    |

| Test mode:         | Sub Carrier Spacing (KHz) | RF Channel |            |          |
|--------------------|---------------------------|------------|------------|----------|
|                    |                           | Low (L)    | Middle (M) | High (H) |
|                    |                           | MHz        | MHz        | MHz      |
| LTE NB-IoT Band 2  | 3.75                      | 1850.2     | 1880.0     | 1909.8   |
|                    | 15                        | 1850.2     | 1880.0     | 1909.8   |
| Test mode:         | Sub Carrier Spacing (KHz) | RF Channel |            |          |
|                    |                           | Low (L)    | Middle (M) | High (H) |
|                    |                           | MHz        | MHz        | MHz      |
| LTE NB-IoT Band 4  | 3.75                      | 1710.2     | 1732.5     | 1754.8   |
|                    | 15                        | 1710.2     | 1732.5     | 1754.8   |
| Test mode:         | Sub Carrier Spacing (KHz) | RF Channel |            |          |
|                    |                           | Low (L)    | Middle (M) | High (H) |
|                    |                           | MHz        | MHz        | MHz      |
| LTE NB-IoT Band 5  | 3.75                      | 824.2      | 836.5      | 848.8    |
|                    | 15                        | 824.2      | 836.5      | 848.8    |
| Test mode:         | Sub Carrier Spacing (KHz) | RF Channel |            |          |
|                    |                           | Low (L)    | Middle (M) | High (H) |
|                    |                           | MHz        | MHz        | MHz      |
| LTE NB-IoT Band 12 | 3.75                      | 699.2      | 707.5      | 715.8    |
|                    | 15                        | 699.2      | 707.5      | 715.8    |
| Test mode:         | Sub Carrier Spacing (KHz) | RF Channel |            |          |
|                    |                           | Low (L)    | Middle (M) | High (H) |
|                    |                           | MHz        | MHz        | MHz      |
| LTE NB-IoT Band 13 | 3.75                      | 777.2      | 782.0      | 786.8    |
|                    | 15                        | 777.2      | 782.0      | 786.8    |
| Test mode:         | Sub Carrier Spacing (KHz) | RF Channel |            |          |
|                    |                           | Low (L)    | Middle (M) | High (H) |
|                    |                           | MHz        | MHz        | MHz      |
| LTE NB-IoT Band 25 | 3.75                      | 1850.2     | 1882.5     | 1914.8   |
|                    | 15                        | 1850.2     | 1882.5     | 1914.8   |
| Test mode:         | Sub Carrier Spacing (KHz) | RF Channel |            |          |
|                    |                           | Low (L)    | Middle (M) | High (H) |
|                    |                           | MHz        | MHz        | MHz      |
| LTE NB-IoT Band 66 | 3.75                      | 1710.2     | 1745.0     | 1779.8   |
|                    | 15                        | 1710.2     | 1745.0     | 1779.8   |
| Test mode:         | Sub Carrier Spacing (KHz) | RF Channel |            |          |
|                    |                           | Low (L)    | Middle (M) | High (H) |
|                    |                           | MHz        | MHz        | MHz      |
| LTE NB-IoT Band 71 | 3.75                      | 663.2      | 680.5      | 697.8    |
|                    | 15                        | 663.2      | 680.5      | 697.8    |
| Test mode:         | Sub Carrier Spacing       | RF Channel |            |          |
|                    |                           | Low (L)    | Middle (M) | High (H) |

|                    | (KHz) | MHz   | MHz   | MHz   |
|--------------------|-------|-------|-------|-------|
| LTE NB-IoT Band 85 | 3.75  | 698.2 | 707.0 | 715.8 |
|                    | 15    | 698.2 | 707.0 | 715.8 |

## 2.2 Test Mode

| Test Mode | Description                                                   |
|-----------|---------------------------------------------------------------|
| TM 1      | EUT communication with simulated station in Cat M1/QPSK mode  |
| TM 2      | EUT communication with simulated station in Cat M1/16QAM mode |
| TM 3      | EUT communication with simulated station in NB-IoT/BPSK mode  |
| TM 4      | EUT communication with simulated station in NB-IoT/QPSK mode  |

## 2.3 Support Unit used in test

| Description        | Manufacturer         | Model          | Serial Number |
|--------------------|----------------------|----------------|---------------|
| Development Board* | Eagle Wireless, Inc. | UMTS&LTE-EVB   | --            |
| Development Board* | Eagle Wireless, Inc. | BG77-TE-A_V1.3 | --            |

Remark: \*the information are provided by applicant.

## 2.4 Test Environment

|                    |                                                      |
|--------------------|------------------------------------------------------|
| Temperature:       | Normal: 15°C ~ 35°C, Extreme: -30°C ~ +50°C          |
| Relative Humidity: | 45 ~ 56 % RH Ambient                                 |
| Voltage:           | Nominal: 3.3 Vdc, Extreme: Low 2.6 Vdc, High 4.8 Vdc |

## 2.5 Test RF Cable

**For all conducted test items:** The offset level is set spectrum analyzer to compensate the RF cable loss and attenuator factor between RF conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level will be exactly the RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

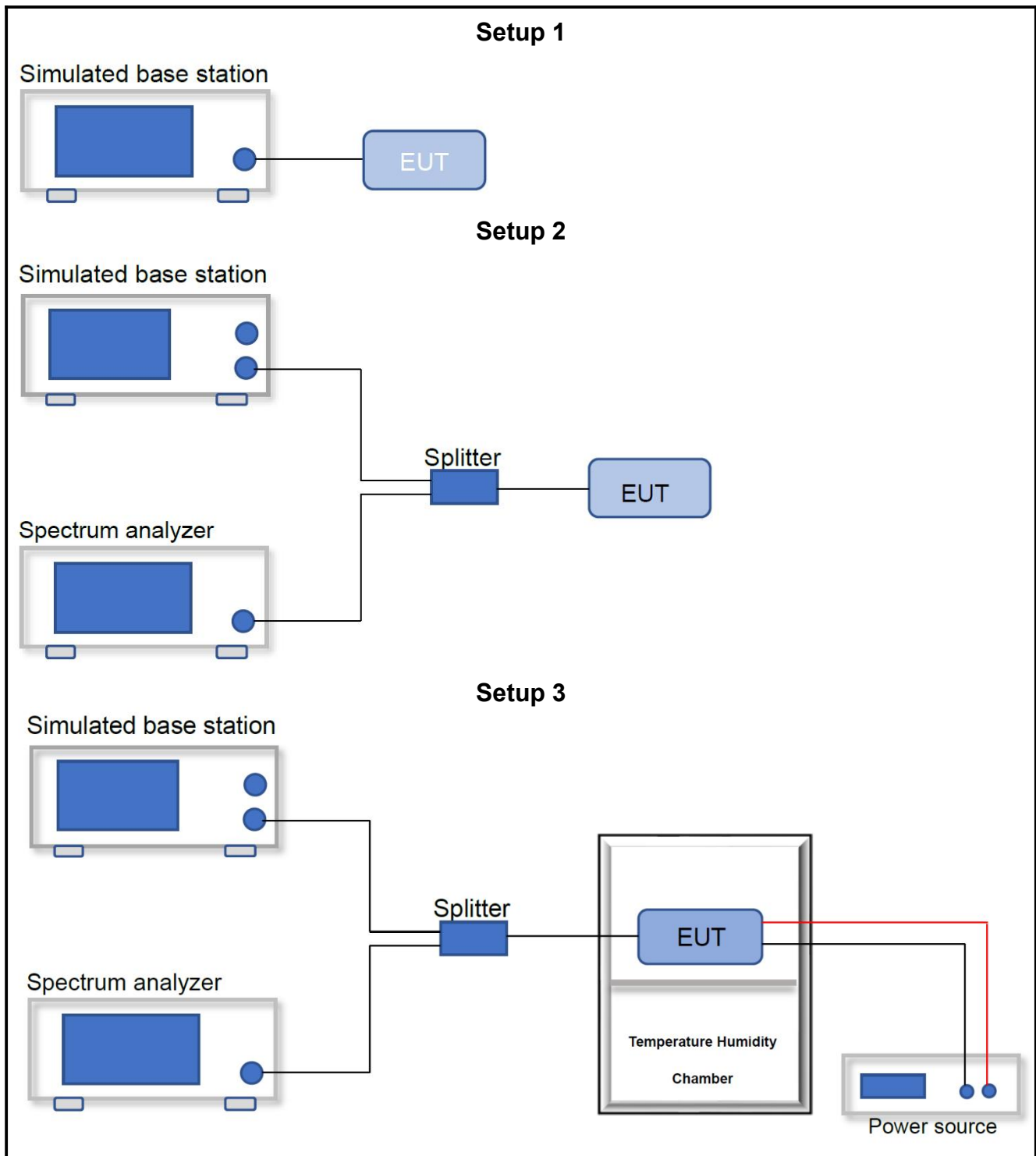
Offset = RF cable loss + attenuator factor.

## 2.6 Modifications

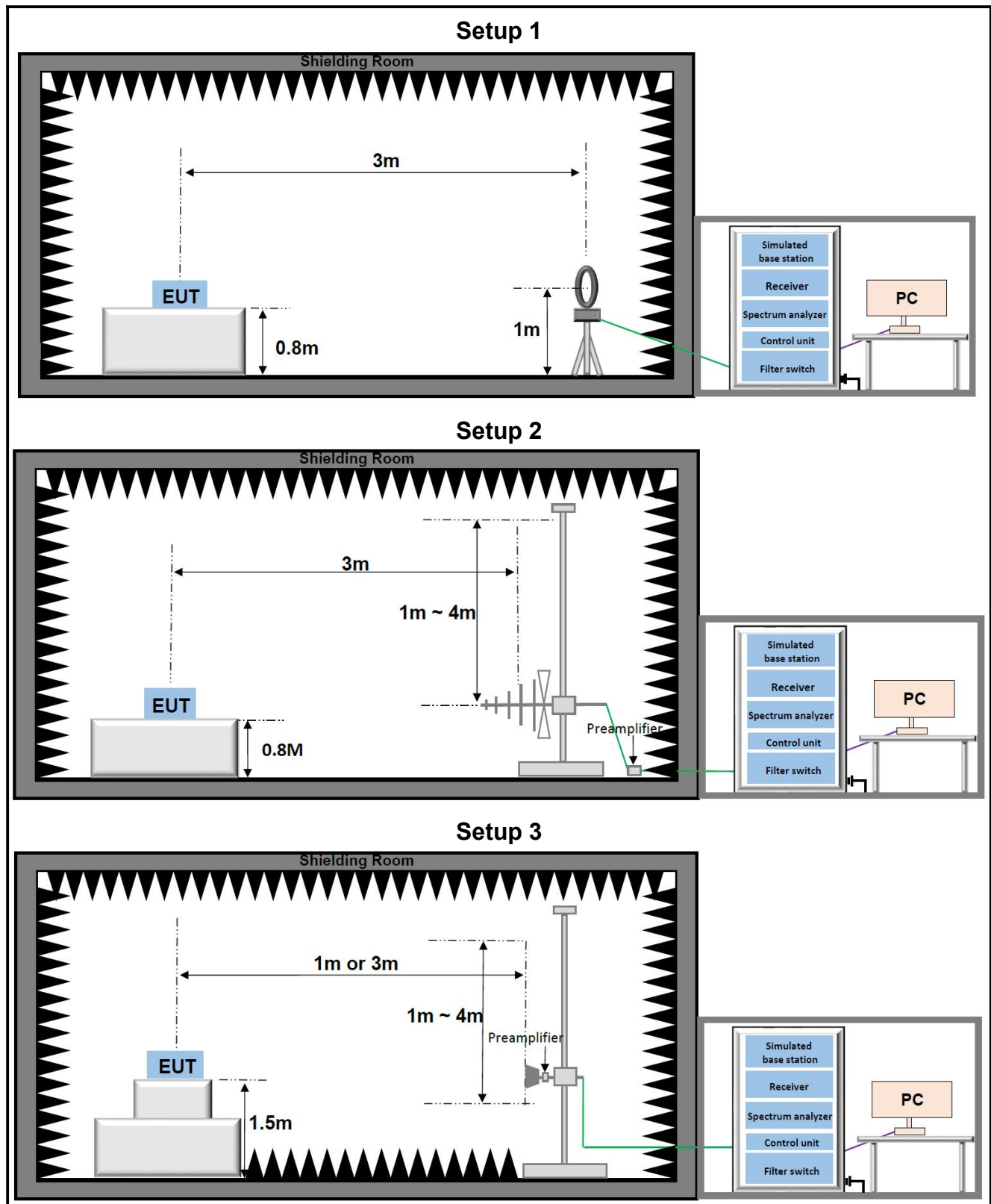
No modifications were made during testing.

## 2.7 Test Setup Diagram

### 2.7.1 Conducted Configuration



## 2.7.2 Radiated Configuration



### 3 Equipment and Measurement Uncertainty

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, whichever is less, and where applicable is traceable recognized national standards.

#### 3.1 Test Equipment List

| RF Conducted 04                  |              |                |             |            |            |
|----------------------------------|--------------|----------------|-------------|------------|------------|
| Description                      | Manufacturer | Model          | S.N.        | Last Due   | Cal Due    |
| Radio Communication Analyzer     | Anritsu      | MT8821C        | 6262170436  | 2025/03/14 | 2026/03/13 |
| Signal Analyzer                  | Keysight     | N9020A         | US46220152  | 2025/03/14 | 2026/03/13 |
| Signal Generator                 | Keysight     | N5182A         | MY49060761  | 2025/03/11 | 2026/03/10 |
| Signal Generator                 | R&S          | SMR20          | 101691      | 2025/03/11 | 2026/03/10 |
| Hygrometer                       | BingYu       | HTC-1          | N/A         | 2025/05/29 | 2027/05/28 |
| EXA Signal Analyzer, Multi-touch | Keysight     | N9010B         | MY63440541  | 2025/05/29 | 2026/05/28 |
| Band Reject Filter Group         | Tonscend     | JS0806-F       | 23B806F0662 | N/A        | N/A        |
| RF Control Unit                  | Tonscend     | JS0806-1       | 22L8060650  | N/A        | N/A        |
| Measurement Software             | Tonscend     | TS1120 V3.1.46 | 10636       | N/A        | N/A        |

| Radiated Emission                     |              |             |                |            |            |
|---------------------------------------|--------------|-------------|----------------|------------|------------|
| Description                           | Manufacturer | Model       | S.N.           | Last Due   | Cal Due    |
| Biconic Logarithmic Periodic Antennas | Schwarzbeck  | VULB9163    | 1643           | 2023/06/25 | 2026/06/24 |
| Double-Ridged Horn Antennas           | Schwarzbeck  | BBHA 9120D  | 2809           | 2023/06/25 | 2026/06/24 |
| Broad-Band Horn Antenna               | Schwarzbeck  | BBHA 9170   | 1290           | 2023/06/25 | 2026/06/24 |
| Loop Antenna                          | Schwarzbeck  | FMZB 1519C  | 1519C-028      | 2023/06/29 | 2026/06/28 |
| Signal Analyzer                       | Keysight     | N9020A      | MY49100252     | 2025/03/11 | 2026/03/10 |
| EXA Signal Analyzer, Multi-touch      | Keysight     | N9010B      | MY63440541     | 2025/05/29 | 2026/05/28 |
| Wideband Radio Communication Tester   | R&S          | CMW500      | 150645         | 2025/03/11 | 2026/03/10 |
| Low Noise Amplifier                   | Tonscend     | TAP9K3G40   | AP23A8060273   | 2025/03/11 | 2027/03/10 |
| Low Noise Amplifier                   | Tonscend     | TAP01018050 | AP22G806258    | 2025/03/11 | 2027/03/10 |
| Low Noise Amplifier                   | Tonscend     | TAP18040048 | AP22G806247    | 2025/03/11 | 2027/03/10 |
| Hygrometer                            | BINGYU       | HTC-1       | N/A            | 2025/07/25 | 2026/07/24 |
| Test Software                         | Tonscend     | TS+         | Version: 5.0.0 | N/A        | N/A        |

### 3.2 Measurement Uncertainty

| Parameter                         | U <sub>lab</sub> |
|-----------------------------------|------------------|
| Frequency error                   | 50.30Hz          |
| Output Power                      | 0.76dB           |
| Conducted spurious emissions      | 2.22dB           |
| Radiated Emissions(9kHz~30MHz)    | 2.40dB           |
| Radiated Emissions(30MHz~1000MHz) | 4.66dB           |
| Radiated Emissions(1GHz~18GHz)    | 5.42dB           |
| Radiated Emissions(18GHz~40GHz)   | 5.46dB           |

Uncertainty figures are valid to a confidence level of 95%

## 4 Test Results

### 4.1 Output Power (ERP / EIRP / Conducted Power)

#### Limits

| FCC Part      | Test Band                   | Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| §22.913(a)(5) | LTE Band 5/26(824 ~ 849MHz) | The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7watts.                                                                                                                                                                                                                                                                                                                                                                                          |
| §24.232(c)    | LTE Band 2/25               | Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.                                                                                                                                                                                                                                                                                                       |
| §27.50(d)(4)  | LTE Band 4/66               | Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780MHz bands are limited to 1watt EIRP. Fixed stations operating in the 1710-1755MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications. |
| §27.50(c)(10) | LTE Band 12/71/85           | Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3watts ERP.                                                                                                                                                                                                                                                                                                  |
| §27.50(b)(9)  | LTE Band 13                 | Control stations and mobile stations transmitting in the 746–757 MHz, 776–788 MHz, and 805–806 MHz bands and fixed stations transmitting in the 787–788 MHz and 805–806 MHz bands are limited to 30 watts ERP.                                                                                                                                                                                                                                                                  |
| §90.635(b)    | LTE Band 26(814~824MHz)     | The maximum output power of the transmitter for mobile stations is 100 watts (20dBw).                                                                                                                                                                                                                                                                                                                                                                                           |

#### Test Procedure

KDB 971168 D01 V03r01 Section 5.2.1, for Conducted Output Power

KDB 971168 D01 V03r01 Section 5.2, for Effective (Isotropic) Radiated Power

#### Test Settings

Conducted Output Power:

The transmitter output was connected to a calibrated attenuator, the other end of which was connected to the simulated base station. The simulated station was set to force the EUT to its maximum power setting, Transmitter output power was read off in dBm, read values have added cable loss and attenuation.

Radiated Power:

The formula for calculating ERP/EIRP based on conduction power is as follows:

$EIRP \text{ (dBm)} = \text{Conducted Power (dBm)} + \text{antenna gain (dBi)}$

$ERP = EIRP - 2.15\text{dB}$

#### Test Setup

Refer to section 2.7.1 Setup 1

### **Measuring Instruments**

The measuring equipment is listed in the section 3.1 of this test report.

### **Test Results**

The detailed test data see: **Appendix**.

## 4.2 Peak-Average Ratio

### Limits

§22.913(d): The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB.

§24.232(d): The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

§27.50(d)(5): The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

### Test Procedure

KDB 971168 D01 V03r01 Section 5.7.1

### Test Settings

The following guidelines are offered for performing a CCDF measurement.

1. Set resolution/measurement bandwidth  $\geq$  OBW or specified reference bandwidth.
2. Set the number of counts to a value that stabilizes the measured CCDF curve.
3. Set the measurement interval as follows:
  - a) For continuous transmissions, set to the greater of  $[10 \times (\text{number of points in sweep}) \times (\text{transmission symbol period})]$  or 1 ms.
  - b) For burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize. Set the measurement interval to a time that is less than or equal to the burst duration.
  - c) If there are several carriers in a single antenna port, the peak power shall be determined for each individual carrier (by disabling the other carriers while measuring the required carrier) and the total peak power calculated from the sum of the individual carrier peak powers.
4. Record the maximum PAPR level associated with a probability of 0.1%.
5. The peak power level is calculated from the sum of the PAPR value from step d) to the measured average power.

### Test Setup

Refer to section 2.7.1 Setup 2

### Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

### Test Result

The detailed test data see: **Appendix**.

## 4.3 Occupied Bandwidth

### Limits

For Reporting Purposes only

### Test Procedure

KDB 971168 D01 V03r01 Section 4.2 & 4.3

### Test Settings

1. The transmitter output was connected to a calibrated coaxial cable and coupler, The other end is connected to the spectrum analyzer and simulated station.
2. The signal analyzer automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by ant intermediate power nulls in the fundamental emission.
3. The simulated base station was set to force the EUT to its maximum transmitting power.
4. RBW = 1 - 5% of the expected OBW
5. VBW  $\geq$  3 times the RBW
6. Sweep = Auto
7. Detector = Peak
8. Trace = Max hold
9. The trace was allowed to stabilize

### Test Setup

Refer to section 2.7.1 Setup 2

### Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

### Test Result

The detailed test data see: **Appendix**.

## 4.4 Band Edge and Emission Mask

### Limits

| FCC part                                                        | Test Band                                                                                         | Limit                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| §22.917(a)<br>§24.238(a)<br>§27.53(c)<br>§27.53(g)<br>§27.53(h) | LTE Band 5/26(824 ~ 849MHz)<br>LTE Band 2/25<br>LTE Band 13<br>LTE Band 12/71/85<br>LTE Band 4/66 | 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.                                                                                                                                                                                                                                 |
| §90.691(a)                                                      | LTE Band 26(814 ~ 824MHz)                                                                         | On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $65 + 10 \log(P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.<br>On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log(P)$ dB.<br>in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of 30 kHz be employed. |

### Test Procedure

KDB 971168 D01 V03r01 Section 6.0

### Test Settings

1. The transmitter output was connected to a calibrated coaxial cable and coupler, The other end is connected to the spectrum analyzer and simulated station.
2. The simulated base station was set to force the EUT to its maximum transmitting power.
3. Start and stop frequency were set such that the band edge would be placed in the center of the plot.
4. RBW  $\geq 1\%$  of the emission bandwidth
5. VBW  $\geq 3$  times the RBW
6. Detector = RMS
7. Number of sweep point  $\geq 2$  times Span/RBW
8. Sweep = Auto
9. Trace = Max hold
10. The trace was allowed to stabilize

### Test Setup

Refer to section 2.7.1. Setup 2

### Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

### Test Result

The detailed test data see: **Appendix**.

## 4.5 Spurious Emission at Antenna Terminals

### Limits

| FCC part   | Test Band                   | Limit                                                                                                                                                                           |
|------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| §22.917(a) | LTE Band 5/26(824 ~ 849MHz) | 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.   |
| §24.238(a) | LTE Band 2/25               |                                                                                                                                                                                 |
| §27.53(c)  | LTE Band 13                 |                                                                                                                                                                                 |
| §27.53(g)  | LTE Band 12/71/85           |                                                                                                                                                                                 |
| §27.53(h)  | LTE Band 4/66               |                                                                                                                                                                                 |
| §90.691    | LTE Band 26(814~824MHz)     | The power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log (P) decibels or 80 decibels, whichever is the lesser attenuation. |

### Test Procedure

KDB 971168 D01 V03r01 Section 6.0

### Test Settings

1. The transmitter output was connected to a calibrated coaxial cable and coupler, The other end is connected to the spectrum analyzer and simulated station.
2. The simulated base station was set to force the EUT to its maximum transmitting power.
3. Start frequency was set to 9kHz and stop frequency was set to 10th harmonic.
4. RBW and VBW (see test notes)
5. Detector = RMS
6. Sweep = Auto
7. Sweep point = below 30MHz(1001pts); 30MHz – 1GHz(2001pts); above 1GHz(40001pts)
8. Trace = trace average for continuous emissions, max hold for pulse emissions
9. Allow trace to fully stabilize

### Test Notes

1. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth 100kHz or greater for measurements below 1GHz. However, in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission is attenuated at least 26dB below the transmitter power
2. 9kHz – 150kHz: RBW=1kHz, VBW≥3 times the RBW
3. 150kHz – 30MHz: RBW=10kHz, VBW≥3 times the RBW

### Test Setup

Refer to section 2.7.1. Setup 2

### Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

### Test Result

The detailed test data see: **Appendix**.

## 4.6 Field Strength of Spurious Radiation

### Limits

| FCC part                                                      | Test Band                                                                          | Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| §2.1053<br>§22.917(a)<br>§24.238(a)<br>§27.53(g)<br>§27.53(h) | LTE Band 5/26(824 ~ 849MHz)<br>LTE Band 2/25<br>LTE Band 12/71/85<br>LTE Band 4/66 | 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| §27.53(c)(f)                                                  | LTE Band 13                                                                        | On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;<br>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. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation. |
| §90.691                                                       | LTE Band 26(814~824MHz)                                                            | The power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log(P)$ decibels or 80 decibels, whichever is the lesser attenuation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

### Test Procedure

KDB 971168 D01 V03r01 Section 7

### Test Settings

- For radiated emissions measurements performed at frequencies less than or equal to 1GHz, the EUT shall be placed on a RF-transparent table or support at a nominal height of 80cm above the reference ground plane.
- For radiated emissions measurements performed at frequencies above 1GHz, the EUT shall be placed on a RF-transparent table or support at a nominal height of 150cm above the ground plane.
- Radiated measurements shall be made with the measurement antenna positioned in both horizontal and vertical polarization. The measurement antenna shall be varied from 1m to 4m in height above the reference ground in a search for the relative positioning that produces the maximum radiated signal level (i.e, field strength or received power), when orienting the measurement antenna in vertical polarization, the minimum height of the lowest element of the antenna shall clear the site reference ground plane by at least 25cm.
- For each suspected emission, the EUT was ranged its worst case and then tune the antenna tower(from 1~4m) and turntable(from 0~360°) find the maximum reading. Preamplifier and a high pass filter are used for the test in order get better signal level comply with the guidelines.
- The simulated base station was set to force the EUT to its maximum transmitting power.
- spectrum analyzer setting:  
Measurements 9kHz ~150kHz: RBW = 300Hz; VBW ≥ 3kHz; Detector = RMS  
Measurements 150kHz ~30MHz: RBW = 10kHz; VBW ≥ 30kHz; Detector = RMS  
Measurements 30MHz~1000MHz: RBW = 100kHz or 1MHz; VBW ≥ 1MHz or 3MHz; Detector = RMS  
Measurements Above 1000MHz: RBW = 1 MHz; VBW ≥ 3 MHz; Detector = RMS
- The field strength is calculated by adding the Antenna Factor, Cable Factor. The basic equation with a sample calculation is as follows:  
 $E(\text{dB}\mu\text{V/m}) = \text{Measured amplitude level (dB}\mu\text{V)} + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}.$   
 $E(\text{dB}\mu\text{V/m}) = \text{Measured amplitude level (dBm)} + 107 + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}.$   
 $E(\text{dB}\mu\text{V/m}) = \text{EIRP(dBm)} - 20\log(D) + 104.8;$  where D is the measurement distance(in the far field region) in m.

$EIRP(dBm) = E(dB\mu V/m) + 20\log(D) - 104.8$ ; where D is the measurement distance(in the far field region) in m.

*So, from d: The measuring distance is usually at 3m, then  $20*\log(3)=9.5424$*

*Then,  $EIRP(dBm) = E(dB\mu V/m) + 9.5424 - 104.8 = E(dB\mu V/m) - 95.2576$*

8. Repeat above procedures until all frequencies measured was complete.
9. Measure and record the results in the test report.

### **Test notes**

1. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst-case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
2. Emissions below 18GHz were measured at a 3-meter test distance while emissions above 18GHz were measured at a 1-meter test distance with the application of a distance correction factor.
3. Radiated spurious emissions were investigated from 9kHz to 30MHz, 30MHz-1GHz and above 1GHz. the disturbance between 9kHz to 30MHz, 30MHz-1GHz and 18GHz to 40GHz was very low. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be recorded, so only the harmonics had been displayed.
4. The "-" shown in the following RSE tables are used to denote a noise floor measurement.

### **Test Setup**

Refer to section 2.7.2 for details.

### **Measuring Instruments**

The measuring equipment is listed in the section 3.1 of this test report.

### **Test Result**

The detailed test data see: **Appendix**.

## 4.7 Frequency Stability V.S. Temperature, Voltage

### Limits

§22.355:

The carrier frequency shall not depart from the reference frequency in excess of  $\pm 2.5$  ppm for mobile stations.

§24.235 / §27.54 / §90.213:

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

### Test Procedure

KDB 971168 D01 V03r01 Section 9

### Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

### Test Notes

- a.) Temperature:  
The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) Primary Supply Voltage:  
The primary supply voltage is varied from 85% to 115% of the nominal value for non-hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

### Test Setup

Refer to section 2.7.1 Setup 3

### Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

### Test Result

The detailed test data see: **Appendix**.

## 5 Test Setup Photos

The detailed test data see: **Appendix-D WWAN Setup Photos**

# Appendix

## Appendix List:

|                                                 |
|-------------------------------------------------|
| Appendix-A LTE Cat M1 Band 2                    |
| Appendix-A LTE Cat M1 Band 4                    |
| Appendix-A LTE Cat M1 Band 5                    |
| Appendix-A LTE Cat M1 Band 12                   |
| Appendix-A LTE Cat M1 Band 13                   |
| Appendix-A LTE Cat M1 Band 25                   |
| Appendix-A LTE Cat M1 Band 26(814-824)          |
| Appendix-A LTE Cat M1 Band 26(824-849)          |
| Appendix-A LTE Cat M1 Band 66                   |
| Appendix-A LTE Cat M1 Band 85                   |
| Appendix-B LTE NB-IoT Band 2                    |
| Appendix-B LTE NB-IoT Band 4                    |
| Appendix-B LTE NB-IoT Band 5                    |
| Appendix-B LTE NB-IoT Band 12                   |
| Appendix-B LTE NB-IoT Band 13                   |
| Appendix-B LTE NB-IoT Band 25                   |
| Appendix-B LTE NB-IoT Band 66                   |
| Appendix-B LTE NB-IoT Band 71                   |
| Appendix-B LTE NB-IoT Band 85                   |
| Appendix-C Field Strength of Spurious Radiation |

~The End~