



# FCC RF Test Report

**APPLICANT** : Inseego Corp.  
**EQUIPMENT** : 5G Enterprise Gateway  
**BRAND NAME** : Inseego  
**MODEL NAME** : S2000e-3  
**FCC ID** : PKRISGS2000E3  
**STANDARD** : 47 CFR Part 2, 27(F), 27(H), 27(M), 27(N)  
**CLASSIFICATION** : PCS Licensed Transmitter (PCB)

The product was received on Dec. 16, 2020 and completely tested on Jan. 16, 2021. We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

This product installed a RF module (Brand Name: Inseego, Model Name: MD2000, FCC ID: PKRISGMD2000) during the test, only RSE test items are tested in this report, all the other test results are quoted in module RF report.

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

Reviewed by: Jason Jia / Supervisor

Approved by: Alex Wang / Manager



**Sporton International (Kunshan) Inc.**

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People's Republic of China**



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**APPENDIX A. TEST RESULTS OF RADIATED TEST**

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## SUMMARY OF TEST RESULT

| Report Section | FCC Rule  | Description   | Limit                               | Result | Remark                                    |
|----------------|---|---|-------------------------------------|--------|---|
| -              | §2.1046   | Conducted Output Power  | Reporting Only & §27.53(m) < 2Watt  | PASS   | 1   |
|                | §27.50(b)(9)<br>§27.50(c)(9)                      | Effective Radiated Power<br>(Band 12) (Band 13) (Band 17)<br>(Band 71)        | ERP < 30 Watt                       | PASS   | 1   |
|                | §27.50(h)(2)                                      | Equivalent Isotropic Radiated Power<br>(Band 7) (Band 38) (Band 41)           | -                                   | PASS   | 1   |
| -              | §24.232(d)  | Peak-to-Average Ratio   | <13 dB                              | PASS   | 1   |
| -              | §2.1049   | Occupied Bandwidth  | Reporting Only                      | PASS   | 1   |
| -              | §2.1051<br>§27.53(c)(2)(4)<br>§27.53(g)           | Conducted Band Edge Measurement<br>(Band 12) (Band 13) (Band 17)<br>(Band 71) | < 43+10log <sub>10</sub> (P[Watts]) | PASS   | 1   |
|                | §27.53(m)(4)                                      | Conducted Band Edge Measurement<br>(Band 7) (Band 38) (Band 41)               | §27.53(m)(4)                        |        |   |
| -              | §2.1051<br>§27.53(c)(2)<br>§27.53(g)              | Conducted Spurious Emission<br>(Band 12) (Band 13) (Band 17)<br>(Band 71)     | < 43+10log <sub>10</sub> (P[Watts]) | PASS   | 1   |
|                | §2.1051<br>§27.53(m)(4)                           | Conducted Spurious Emission<br>(Band 7) (Band 38) (Band 41)                   | < 55+10log <sub>10</sub> (P[Watts]) |        |   |
| -              | §2.1055<br>§27.54                                 | Frequency Stability<br>Temperature & Voltage                                  | Within Authorized Band              | PASS   | 1   |
| 3.4            | §2.1053<br>§27.53(c)(2)<br>§27.53(f)<br>§27.53(g) | Radiated Spurious Emission<br>(Band 12) (Band 13) (Band 17)<br>(Band 71)      | < 43+10log <sub>10</sub> (P[Watts]) | PASS   | Under limit<br>22.74 dB at<br>1560.00 MHz |
|                | §2.1053<br>§27.53(m)(4)                           | Radiated Spurious Emission<br>(Band 7) (Band 38) (Band 41)                    | < 55+10log <sub>10</sub> (P[Watts]) |        |   |

**Remark 1:**

All test results were leveraged from module RF report which can refer to Sporton Report No. FG090125B, and CA\_B38C/41C are referred to module RF report FG090125-01A.

**Declaration of Conformity:**

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

**Comments and Explanations:**

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



# 1 General Description

## 1.1 Applicant

Inseego Corp.

9710 Scranton Road Suite 200, San Diego,, CA 92121

## 1.2 Manufacturer

MeiG Smart Technology Co., Ltd

Floor 2, Office Building No.5, Lingxia Road, Fenghuang Community, Fuyong Street, Bao 'an District, Shenzhen

## 1.3 Product Feature of Equipment Under Test

| Product Feature                 |                                      |
|---------------------------------|--------------------------------------|
| Equipment                       | 5G Enterprise Gateway                |
| Brand Name                      | Inseego                              |
| Model Name                      | S2000e-3                             |
| FCC ID                          | PKRISGS2000E3                        |
| EUT supports Radios application | WCDMA/LTE/5G NR/GNSS<br>Bluetooth LE |
| HW Version                      | 1.01                                 |
| SW Version                      | 2.37                                 |
| EUT Stage                       | Identical Prototype                  |

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.



### 1.4 Product Specification of Equipment Under Test

| Standards-related Product Specification |  |
|---|--|
| <b>Tx Frequency</b>                     | LTE Band 7 : 2502.5 MHz ~ 2567.5 MHz<br>LTE Band 12 : 699.7 MHz ~ 715.3 MHz<br>LTE Band 13 : 779.5 MHz ~ 784.5 MHz<br>LTE Band 17 : 706.5 MHz ~ 713.5 MHz<br>LTE Band 38 : 2572.5MHz ~ 2617.5MHz<br>LTE Band 41 : 2498.5 MHz ~ 2687.5 MHz<br>LTE Band 71: 665.5 MHz ~ 695.5MHz               |
| <b>Rx Frequency</b>                     | LTE Band 7 : 2622.5MHz ~ 2687.5 MHz<br>LTE Band 12 : 729.7 MHz ~ 745.3 MHz<br>LTE Band 13 : 748.5 MHz ~ 753.5 MHz<br>LTE Band 17 : 736.5 MHz ~ 743.5 MHz<br>LTE Band 38 : 2572.5MHz ~ 2617.5MHz<br>LTE Band 41 : 2498.5 MHz ~ 2687.5 MHz<br>LTE Band 71: 619.5 MHz ~ 649.5MHz                |
| <b>Bandwidth</b>                        | LTE Band 7 : 5MHz/ 10MHz / 15MHz / 20MHz<br>LTE Band 12 : 1.4MHz / 3MHz / 5MHz / 10MHz<br>LTE Band 13 : 5MHz / 10MHz<br>LTE Band 17 : 5MHz / 10MHz<br>LTE Band 38 : 5MHz / 10MHz / 15MHz / 20MHz<br>LTE Band 41 : 5MHz / 10MHz / 15MHz / 20MHz<br>LTE Band 71 : 5MHz / 10MHz / 15MHz / 20MHz |
| <b>Type of Modulation</b>               | QPSK / 16QAM / 64QAM / 256QAM  |

Remark: LTE band 41 supports HPUE.

### 1.5 Modification of EUT

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



### 1.6 Testing Location

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

|                           |  |                            |                                       |
|---------------------------|--|----------------------------|---------------------------------------|
| <b>Test Firm</b>          | Sporton International (Kunshan) Inc.   |                            |                                       |
| <b>Test Site Location</b> | No. 1098, Pengxi North Road, Kunshan Economic Development Zone<br>Jiangsu Province 215300 People's Republic of China<br>TEL : +86-512-57900158<br>FAX : +86-512-57900958 |                            |                                       |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>  | <b>FCC Designation No.</b> | <b>FCC Test Firm Registration No.</b> |
|                           | 03CH06-KS  | CN1257                     | 314309                                |

### 1.7 Test Software

| Item | Site      | Manufacture | Name | Version       |
|------|-----------|-------------|------|---------------|
| 1.   | 03CH06-KS | AUDIX       | E3   | 6.2009-8-24al |

### 1.8 Applicable Standards

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

- 47 CFR Part 2, 27(F), 27(H), 27(M), 27(N)
- ANSI C63.26-2015
- FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01

**Remark:**

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



## 2 Test Configuration of Equipment Under Test

### 2.1 Test Mode

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

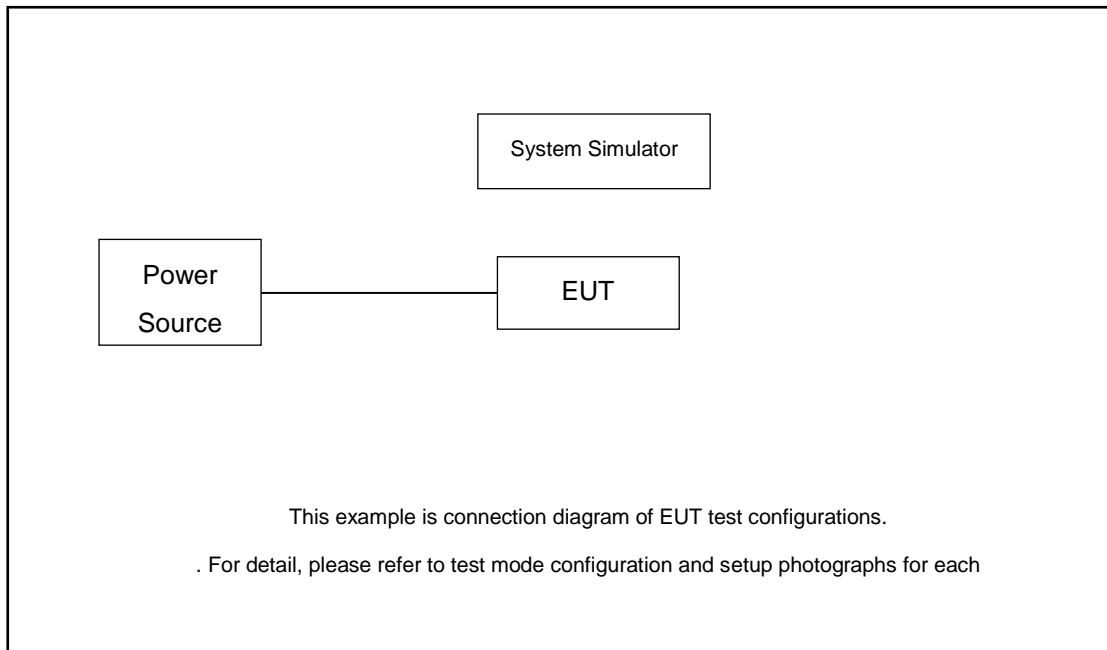
Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.

| Test Items                 | Band  | Bandwidth (MHz) |   |   |    |    |    | Modulation |       |       |        | RB # |      |      | Test Channel |   |   |   |  |
|----------------------------|---|-----------------|---|---|----|----|----|------------|-------|-------|--------|------|------|------|--------------|---|---|---|--|
|                            |   | 1.4             | 3 | 5 | 10 | 15 | 20 | QPSK       | 16QAM | 64QAM | 256QAM | 1    | Half | Full | L            | M | H |   |  |
| Radiated Spurious Emission | 7   | Worst Case      |   |   |    |    |    |            |       |       |        |      |      |      |              |   |   | v |  |
|                            | 12  | Worst Case      |   |   |    |    |    |            |       |       |        |      |      |      |              |   |   | v |  |
|                            | 13  | Worst Case      |   |   |    |    |    |            |       |       |        |      |      |      |              |   |   | v |  |
|                            | 41  | Worst Case      |   |   |    |    |    |            |       |       |        |      |      |      |              |   |   | v |  |
|                            | 71  | Worst Case      |   |   |    |    |    |            |       |       |        |      |      |      |              |   |   | v |  |
| Note                       | <ol style="list-style-type: none"> <li>The mark "v" means that this configuration is chosen for testing</li> <li>The mark "-" means that this bandwidth is not supported.</li> <li>The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.</li> <li>LTE Band 12 overlaps the entire frequency range of LTE Band 17. Therefore, the test results provided in this report covers Band 12 as well as Band 17.</li> <li>LTE Band 41 overlaps the entire frequency range of LTE Band 38. Therefore, the test results provided in this report covers Band 41 as well as Band 38.</li> </ol> |                 |   |   |    |    |    |            |       |       |        |      |      |      |              |   |   |   |  |

| Test Items                 | Band  | Bandwidth (MHz) |       |       |       |       |      |      |       |       |       | Modulation |       |       |         | RB # |      |      | Test Channel |   |   |  |
|----------------------------|---|-----------------|-------|-------|-------|-------|------|------|-------|-------|-------|------------|-------|-------|---------|------|------|------|--------------|---|---|--|
|                            |   | 20+20           | 20+15 | 15+20 | 20+10 | 10+20 | 20+5 | 5+20 | 15+15 | 15+10 | 10+15 | QPSK       | 16QAM | 64QAM | 256 QAM | 1    | Half | Full | L            | M | H |  |
| Radiated Spurious Emission | 41C_CA  | Worst Case      |       |       |       |       |      |      |       |       |       |            |       |       |         |      |      |      |              |   | v |  |
| Note                       | <ol style="list-style-type: none"> <li>The mark "v" means that this configuration is chosen for testing</li> <li>The mark "-" means that this bandwidth is not supported.</li> <li>The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.</li> <li>LTE Band 41_CA overlaps the entire frequency range of LTE Band 38_CA. Therefore, the test results provided in this report covers Band 41_CA as well as Band 38_CA.</li> </ol> |                 |       |       |       |       |      |      |       |       |       |            |       |       |         |      |      |      |              |   |   |  |



## 2.2 Connection Diagram of Test System



## 2.3 Support Unit used in test configuration and system

| Item | Equipment        | Trade Name | Model No.    | FCC ID | Data Cable | Power Cord        |
|------|------------------|------------|--------------|--------|------------|-------------------|
| 1.   | LTE Base Station | Anritsu    | MT8820C/8821 | N/A    | N/A        | Unshielded, 1.8 m |



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

| LTE Band 7 Channel and Frequency List |                        |        |        |         |
|---------------------------------------|------------------------|--------|--------|---------|
| BW [MHz]                              | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 20                                    | Channel                | 20850  | 21100  | 21350   |
|                                       | Frequency              | 2510   | 2535   | 2560    |
| 15                                    | Channel                | 20825  | 21100  | 21375   |
|                                       | Frequency              | 2507.5 | 2535   | 2562.5  |
| 10                                    | Channel                | 20800  | 21100  | 21400   |
|                                       | Frequency              | 2505   | 2535   | 2565    |
| 5                                     | Channel                | 20775  | 21100  | 21425   |
|                                       | Frequency              | 2502.5 | 2535   | 2567.5  |

| LTE Band 12 Channel and Frequency List |                        |        |        |         |
|--|------------------------|--------|--------|---------|
| BW [MHz]                               | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 10                                     | Channel                | 23060  | 23095  | 23130   |
|  | Frequency              | 704    | 707.5  | 711     |
| 5                                      | Channel                | 23035  | 23095  | 23155   |
|  | Frequency              | 701.5  | 707.5  | 713.5   |
| 3                                      | Channel                | 23025  | 23095  | 23165   |
|  | Frequency              | 700.5  | 707.5  | 714.5   |
| 1.4                                    | Channel                | 23017  | 23095  | 23173   |
|  | Frequency              | 699.7  | 707.5  | 715.3   |

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



| LTE Band 17 Channel and Frequency List |                        |        |        |         |
|--|------------------------|--------|--------|---------|
| BW [MHz]                               | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 10                                     | Channel                | 23780  | 23790  | 23800   |
|  | Frequency              | 709    | 710    | 711     |
| 5                                      | Channel                | 23755  | 23790  | 23825   |
|  | Frequency              | 706.5  | 710    | 713.5   |

| LTE Band 38 Channel and Frequency List |                        |        |        |         |
|--|------------------------|--------|--------|---------|
| BW [MHz]                               | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 20                                     | Channel                | 37850  | 38000  | 38150   |
|  | Frequency              | 2580   | 2595   | 2610    |
| 15                                     | Channel                | 37825  | 38000  | 38175   |
|  | Frequency              | 2577.5 | 2595   | 2612.5  |
| 10                                     | Channel                | 37800  | 38000  | 38200   |
|  | Frequency              | 2575   | 2595   | 2615    |
| 5                                      | Channel                | 37775  | 38000  | 38225   |
|  | Frequency              | 2572.5 | 2595   | 2617.5  |

| LTE Band 41 Channel and Frequency List |                        |        |        |         |
|--|------------------------|--------|--------|---------|
| BW [MHz]                               | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 20                                     | Channel                | 39750  | 40620  | 41490   |
|  | Frequency              | 2506   | 2593   | 2680    |
| 15                                     | Channel                | 39725  | 40620  | 41515   |
|  | Frequency              | 2503.5 | 2593   | 2682.5  |
| 10                                     | Channel                | 39700  | 40620  | 41540   |
|  | Frequency              | 2501   | 2593   | 2685    |
| 5                                      | Channel                | 39675  | 40620  | 41565   |
|  | Frequency              | 2498.5 | 2593   | 2687.5  |



| LTE Band 71 Channel and Frequency List |                        |        |        |         |
|--|------------------------|--------|--------|---------|
| BW [MHz]                               | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 20                                     | Channel                | 133222 | 133322 | 133372  |
|  | Frequency              | 673.0  | 680.5  | 688.0   |
| 15                                     | Channel                | 133197 | 133297 | 133397  |
|  | Frequency              | 670.5  | 680.5  | 690.5   |
| 10                                     | Channel                | 133172 | 133272 | 133422  |
|  | Frequency              | 668.0  | 678.0  | 693.0   |
| 5                                      | Channel                | 133147 | 133247 | 133447  |
|  | Frequency              | 665.5  | 675.5  | 695.5   |

| LTE Band 38C_CA Channel and Frequency List |                        |           |        |         |        |
|--|------------------------|-----------|--------|---------|--------|
| BW [MHz]                                   | Channel/Frequency(MHz) | Lowest    | Middle | Highest |        |
| 20 + 20                                    | PCC                    | Channel   | 37850  | 37901   | 37952  |
|  |                        | Frequency | 2580.0 | 2585.1  | 2590.2 |
|  | SCC                    | Channel   | 38048  | 38099   | 38150  |
|  |                        | Frequency | 2599.8 | 2604.9  | 2610.0 |
| 15+ 15                                     | PCC                    | Channel   | 37825  | 37925   | 38025  |
|  |                        | Frequency | 2577.5 | 2587.5  | 2597.5 |
|  | SCC                    | Channel   | 37975  | 38075   | 38175  |
|  |                        | Frequency | 2592.5 | 2602.5  | 2612.5 |



| LTE Band 41C_CA Channel and Frequency List |                        |           |        |        |         |
|--|------------------------|-----------|--------|--------|---------|
| BW [MHz]                                   | Channel/Frequency(MHz) |           | Lowest | Middle | Highest |
| 20 + 20                                    | PCC                    | Channel   | 39750  | 40521  | 41292   |
|  |                        | Frequency | 2506.0 | 2583.1 | 2660.2  |
|  | SCC                    | Channel   | 39948  | 40719  | 41490   |
|  |                        | Frequency | 2525.8 | 2602.9 | 2680.0  |
| 20 + 15                                    | PCC                    | Channel   | 39750  | 40546  | 41341   |
|  |                        | Frequency | 2506.0 | 2585.6 | 2665.1  |
|  | SCC                    | Channel   | 39921  | 40717  | 41512   |
|  |                        | Frequency | 2523.1 | 2602.7 | 2682.2  |
| 15 + 20                                    | PCC                    | Channel   | 39728  | 40523  | 41319   |
|  |                        | Frequency | 2503.8 | 2593.3 | 2662.9  |
|  | SCC                    | Channel   | 39899  | 40694  | 41490   |
|  |                        | Frequency | 2520.9 | 2600.4 | 2680.0  |
| 20 + 10                                    | PCC                    | Channel   | 39750  | 40571  | 41391   |
|  |                        | Frequency | 2506.0 | 2588.1 | 2670.1  |
|  | SCC                    | Channel   | 39894  | 40715  | 41535   |
|  |                        | Frequency | 2520.4 | 2602.5 | 2684.5  |
| 10 + 20                                    | PCC                    | Channel   | 39705  | 40526  | 41346   |
|  |                        | Frequency | 2501.5 | 2583.6 | 2665.6  |
|  | SCC                    | Channel   | 39849  | 40670  | 41490   |
|  |                        | Frequency | 2515.9 | 2598.0 | 2680.0  |



| LTE Band 41C_CA Channel and Frequency List |     |           |        |        |        |
|--|-----|-----------|--------|--------|--------|
| 20 + 5                                     | PCC | Channel   | 39750  | 40595  | 41440  |
|  |     | Frequency | 2506.0 | 2590.5 | 2675.0 |
|  | SCC | Channel   | 39867  | 40712  | 41557  |
|  |     | Frequency | 2517.7 | 2602.2 | 2686.7 |
| 5 + 20                                     | PCC | Channel   | 39683  | 40528  | 41373  |
|  |     | Frequency | 2499.3 | 2583.8 | 2668.3 |
|  | SCC | Channel   | 39800  | 40645  | 41490  |
|  |     | Frequency | 2511.0 | 2595.5 | 2680.0 |
| 15 + 15                                    | PCC | Channel   | 39725  | 40545  | 41365  |
|  |     | Frequency | 2503.5 | 2585.5 | 2667.5 |
|  | SCC | Channel   | 39875  | 40695  | 41515  |
|  |     | Frequency | 2518.5 | 2600.5 | 2682.5 |
| 10 + 15                                    | PCC | Channel   | 39703  | 40549  | 41395  |
|  |     | Frequency | 2501.3 | 2585.9 | 2670.5 |
|  | SCC | Channel   | 39823  | 40669  | 41515  |
|  |     | Frequency | 2513.3 | 2597.9 | 2682.5 |
| 15 + 10                                    | PCC | Channel   | 39725  | 40571  | 41417  |
|  |     | Frequency | 2503.5 | 2588.1 | 2672.7 |
|  | SCC | Channel   | 39845  | 40691  | 41537  |
|  |     | Frequency | 2515.5 | 2600.1 | 2684.7 |

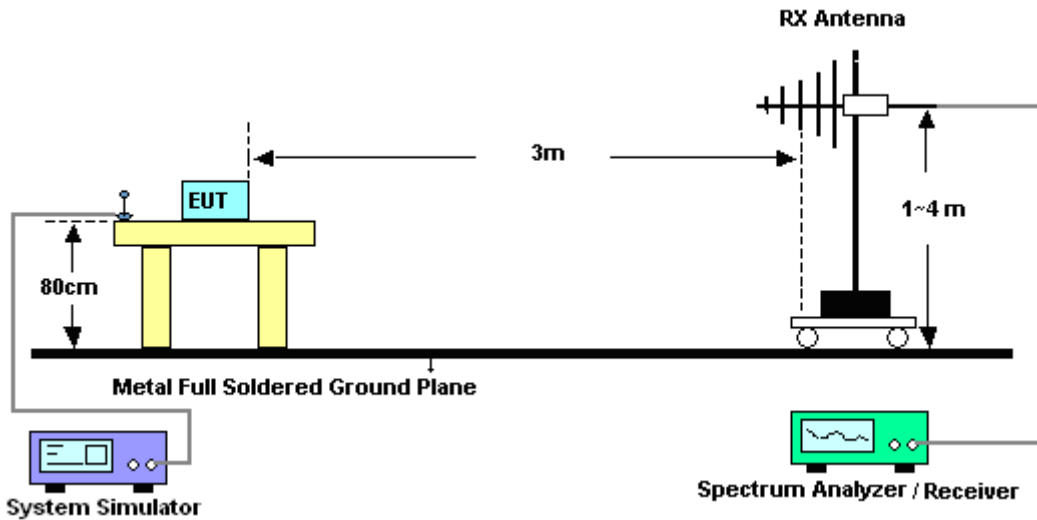
### 3 Radiated Test Items

#### 3.1 Measuring Instruments

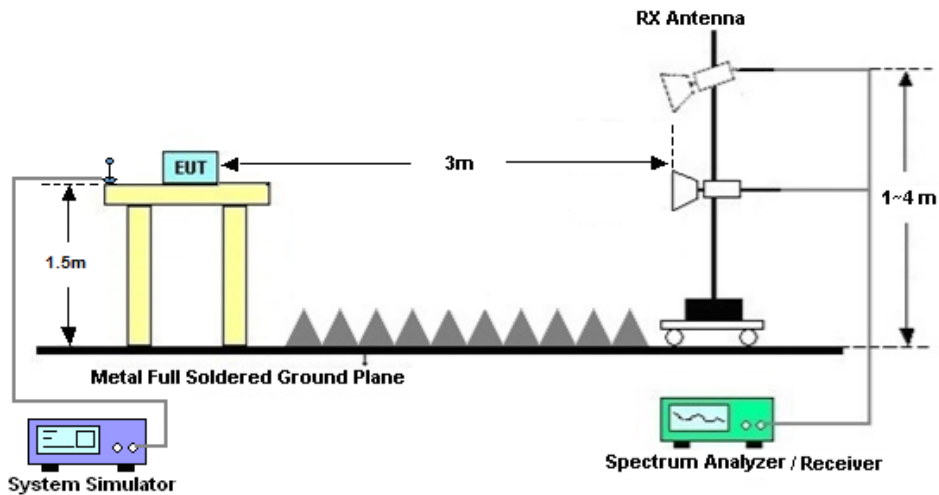
See list of measuring instruments of this test report.

#### 3.2 Test Setup

##### 3.2.1 For radiated test from 30MHz to 1GHz



##### 3.2.2 For radiated test above 1GHz



#### 3.3 Test Result of Radiated Test

Please refer to Appendix A.



## 3.4 Radiated Spurious Emission

### 3.4.1 Description of Radiated Spurious Emission

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

For LTE Band 13

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

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

### 3.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.5
2. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
6. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
7. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
8. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
9. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
10.  $EIRP (dBm) = S.G. Power - Tx Cable Loss + Tx Antenna Gain$
11.  $ERP (dBm) = EIRP - 2.15$
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.  
The limit line is derived from  $43 + 10\log(P)$ dB below the transmitter power P(Watts)  
 $= P(W) - [43 + 10\log(P)] (dB)$   
 $= [30 + 10\log(P)] (dBm) - [43 + 10\log(P)] (dB)$   
 $= -13dBm.$
13. For Band 7, 38, 41:  
The limit line is derived from  $55 + 10\log(P)$ dB below the transmitter power P(Watts)  
The Limit line lower than step 12.





## 4 List of Measuring Equipment

| Instrument                | Manufacturer | Model No.                | Serial No. | Characteristics | Calibration Date | Test Date     | Due Date      | Remark                |
|---------------------------|--------------|--------------------------|------------|-----------------|------------------|---------------|---------------|-----------------------|
| EXA Spectrum Analyzer     | Keysight     | N9010A                   | MY55150208 | 10Hz-44GHz      | Apr. 14, 2020    | Jan. 16, 2021 | Apr. 13, 2021 | Radiation (03CH06-KS) |
| Bilog Antenna             | TeseQ        | CBL6111D                 | 49921      | 30MHz-1GHz      | May 29, 2020     | Jan. 16, 2021 | May 28, 2021  | Radiation (03CH06-KS) |
| Double Ridge Horn Antenna | ETS-Lindgren | 3117                     | 00218652   | 1GHz~18GHz      | Apr. 27, 2020    | Jan. 16, 2021 | Apr. 26, 2021 | Radiation (03CH06-KS) |
| SHF-EHF Horn              | Com-power    | AH-840                   | 101115     | 18GHz~40GHz     | Nov. 06, 2020    | Jan. 16, 2021 | Nov. 05, 2021 | Radiation (03CH06-KS) |
| Amplifier                 | SONOMA       | 310N                     | 187289     | 9KHz ~1GHZ      | Apr. 14, 2020    | Jan. 16, 2021 | Apr. 13, 2021 | Radiation (03CH06-KS) |
| Amplifier                 | MITEQ        | EM18G40G GA              | 060728     | 18~40GHz        | Jan. 07, 2021    | Jan. 16, 2021 | Jan. 06, 2022 | Radiation (03CH06-KS) |
| high gain Amplifier       | MITEQ        | AMF-7D-00 101800-30-1 0P | 2025788    | 1Ghz-18Ghz      | Jan. 06, 2021    | Jan. 16, 2021 | Jan. 05, 2022 | Radiation (03CH06-KS) |
| Amplifier                 | Keysight     | 83017A                   | MY53270203 | 500MHz~26.5GHz  | Apr. 15, 2020    | Jan. 16, 2021 | Apr. 14, 2021 | Radiation (03CH06-KS) |
| AC Power Source           | Chroma       | 61601                    | F104090004 | N/A             | NCR              | Jan. 16, 2021 | NCR           | Radiation (03CH06-KS) |
| Turn Table                | ChamPro      | EM 1000-T                | 060762-T   | 0~360 degree    | NCR              | Jan. 16, 2021 | NCR           | Radiation (03CH06-KS) |
| Antenna Mast              | ChamPro      | EM 1000-A                | 060762-A   | 1 m~4 m         | NCR              | Jan. 16, 2021 | NCR           | Radiation (03CH06-KS) |

NCR: No Calibration Required



## 5 Uncertainty of Evaluation

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

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

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

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

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



### Appendix A. Test Results of Radiated Test

#### Radiated Spurious Emission

| LTE Band 7 / 20MHz / QPSK |                   |              |               |                   |                    |                      |                       |                    |
|---------------------------|-------------------|--------------|---------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel                   | Frequency ( MHz ) | EIRP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Middle                    | 5052              | -63.85       | -25           | -38.85            | -74.06             | 3.03                 | 13.24                 | H                  |
|                           | 7580              | -63.94       | -25           | -38.94            | -73.39             | 3.56                 | 13.01                 | H                  |
|                           | 10100             | -60.65       | -25           | -35.65            | -70.17             | 3.92                 | 13.44                 | H                  |
|                           | 5052              | -63.62       | -25           | -38.62            | -73.83             | 3.03                 | 13.24                 | V                  |
|                           | 7580              | -63.97       | -25           | -38.97            | -73.42             | 3.56                 | 13.01                 | V                  |
|                           | 10100             | -60.41       | -25           | -35.41            | -69.93             | 3.92                 | 13.44                 | V                  |

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

| LTE Band 12 / 10MHz / QPSK |                   |              |               |                   |                    |                      |                       |                    |
|----------------------------|-------------------|--------------|---------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel                    | Frequency ( MHz ) | EIRP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Middle                     | 1406              | -65.55       | -13           | -52.55            | -72.52             | 1.58                 | 10.70                 | H                  |
|                            | 2110              | -60.96       | -13           | -47.96            | -69.21             | 2.10                 | 12.50                 | H                  |
|                            | 2812              | -58.39       | -13           | -45.39            | -67.28             | 2.86                 | 13.90                 | H                  |
|                            | 1406              | -64.41       | -13           | -51.41            | -71.38             | 1.58                 | 10.70                 | V                  |
|                            | 2110              | -59.64       | -13           | -46.64            | -67.89             | 2.10                 | 12.50                 | V                  |
|                            | 2812              | -58.01       | -13           | -45.01            | -66.90             | 2.86                 | 13.90                 | V                  |

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

| LTE Band 13 / 5MHz / QPSK |                   |              |               |                   |                    |                      |                       |                    |
|---------------------------|-------------------|--------------|---------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel                   | Frequency ( MHz ) | EIRP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Middle                    | 1560              | -65.30       | -42.15        | -23.15            | -67.93             | 1.09                 | 5.87                  | H                  |
|                           | 2340              | -60.66       | -13           | -47.66            | -63.06             | 1.37                 | 5.92                  | H                  |
|                           | 3120              | -58.56       | -13           | -45.56            | -62.45             | 1.64                 | 7.68                  | H                  |
|                           | 1560              | -64.89       | -42.15        | -22.74            | -67.52             | 1.09                 | 5.87                  | V                  |
|                           | 2340              | -58.69       | -13           | -45.69            | -61.09             | 1.37                 | 5.92                  | V                  |
|                           | 3120              | -58.46       | -13           | -45.46            | -62.35             | 1.64                 | 7.68                  | V                  |

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



| LTE Band 13 / 10MHz / QPSK |                   |              |               |                   |                    |                      |                       |                    |
|----------------------------|-------------------|--------------|---------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel                    | Frequency ( MHz ) | EIRP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Middle                     | 1556              | -65.28       | -13           | -52.28            | -67.91             | 1.09                 | 5.87                  | H                  |
|                            | 2332              | -60.12       | -13           | -47.12            | -62.52             | 1.37                 | 5.92                  | H                  |
|                            | 3108              | -58.77       | -13           | -45.77            | -62.66             | 1.64                 | 7.68                  | H                  |
|                            | 1556              | -64.83       | -13           | -51.83            | -67.46             | 1.09                 | 5.87                  | V                  |
|                            | 2332              | -59.23       | -13           | -46.23            | -61.63             | 1.37                 | 5.92                  | V                  |
|                            | 3108              | -58.84       | -13           | -45.84            | -62.73             | 1.64                 | 7.68                  | V                  |

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

| LTE Band 71 / 20MHz / QPSK |                   |              |               |                   |                    |                      |                       |                    |
|----------------------------|-------------------|--------------|---------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel                    | Frequency ( MHz ) | EIRP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Middle                     | 1348              | -65.74       | -13           | -52.74            | -67.49             | 1.02                 | 4.92                  | H                  |
|                            | 2022              | -61.58       | -13           | -48.58            | -63.55             | 1.27                 | 5.39                  | H                  |
|                            | 2696              | -59.31       | -13           | -46.31            | -62.24             | 1.49                 | 6.57                  | H                  |
|                            | 3372              | -58.32       | -13           | -45.32            | -61.72             | 1.73                 | 7.28                  | H                  |
|                            | 1348              | -65.08       | -13           | -52.08            | -66.83             | 1.02                 | 4.92                  | V                  |
|                            | 2022              | -59.21       | -13           | -46.21            | -61.18             | 1.27                 | 5.39                  | V                  |
|                            | 2696              | -58.87       | -13           | -45.87            | -61.80             | 1.49                 | 6.57                  | V                  |
|                            | 3372              | -58.10       | -13           | -45.10            | -61.50             | 1.73                 | 7.28                  | V                  |

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

| LTE Band 41(HPUE) / 20MHz / QPSK |                   |              |               |                   |                    |                      |                       |                    |
|----------------------------------|-------------------|--------------|---------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel                          | Frequency ( MHz ) | EIRP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Middle                           | 5168              | -62.52       | -25           | -37.52            | -72.73             | 3.03                 | 13.24                 | H                  |
|                                  | 7752              | -64.10       | -25           | -39.10            | -73.55             | 3.56                 | 13.01                 | H                  |
|                                  | 10340             | -60.35       | -25           | -35.35            | -69.87             | 3.92                 | 13.44                 | H                  |
|                                  | 5168              | -62.74       | -25           | -37.74            | -72.95             | 3.03                 | 13.24                 | V                  |
|                                  | 7752              | -63.92       | -25           | -38.92            | -73.37             | 3.56                 | 13.01                 | V                  |
|                                  | 10340             | -60.58       | -25           | -35.58            | -70.10             | 3.92                 | 13.44                 | V                  |

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



| LTE Band 41C_CA / 20+20MHz / QPSK |                   |              |               |                   |                    |                      |                       |                    |
|-----------------------------------|-------------------|--------------|---------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel                           | Frequency ( MHz ) | EIRP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Middle                            | 5148              | -66.26       | -25           | -41.26            | -76.47             | 3.03                 | 13.24                 | H                  |
|                                   | 7722.57           | -63.75       | -25           | -38.75            | -73.20             | 3.56                 | 13.01                 | H                  |
|                                   | 10300             | -59.93       | -25           | -34.93            | -69.45             | 3.92                 | 13.44                 | H                  |
|                                   | 5148              | -65.93       | -25           | -40.93            | -76.14             | 3.03                 | 13.24                 | V                  |
|                                   | 7724              | -63.65       | -25           | -38.65            | -73.10             | 3.56                 | 13.01                 | V                  |
|                                   | 10300             | -60.25       | -25           | -35.25            | -69.77             | 3.92                 | 13.44                 | V                  |

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