



# FCC RADIO TEST REPORT

**FCC ID** : 2AJN7-TP00144A  
**Equipment** : Notebook  
**Brand Name** : Lenovo  
**Model Name** : TP00144A  
**Applicant** : LC Future Center Limited Taiwan Branch  
7F., No.780, Beian Rd., Zhongshan Dist., Taipei 104, Taiwan  
**Manufacturer** : LCFC (HeFei) Electronics Technology Co., Ltd.  
No. 3188-1, Yungu Road (Hefei Export Processing Zone), Hefei  
Economics & Technology Development Area, Anhui, CHINA  
**Standard** : FCC 47 CFR Part 2, 90(R)

Equipment: Fibocom FM350-GL tested inside of Lenovo Notebook.

The product was received on Jul. 14, 2022 and testing was performed from Jul. 23, 2022 to Sep. 07, 2022. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

The test results in this partial report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Approved by: Louis Wu

*Sporton International Inc. Wensan Laboratory*



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### History of this test report

| Report No. | Version | Description             | Issue Date    |
|------------|---------|-------------------------|---------------|
| FG271304F  | 01      | Initial issue of report | Sep. 12, 2022 |
|            |         |                         |               |
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**Summary of Test Result**

| Report Clause | Ref Std. Clause                          | Test Items                                   | Result (PASS/FAIL) | Remark   |
|---------------|--|--|--------------------|--|
| 3.2           | §2.1046                                  | Conducted Output Power                       | Reporting only     | -  |
|               | §90.542 (a)(7)                           | Effective Radiated Power                     | Pass               | -  |
| -             | -  | Peak-to-Average Ratio                        | -                  | See Note                                       |
| -             | §2.1049                                  | Occupied Bandwidth                           | -                  | See Note                                       |
| -             | §2.1053<br>§90.543 (e)(2)                | Conducted Band Edge Measurement              | -                  | See Note                                       |
| -             | §2.1051<br>§90.210 (n)                   | Emission Mask                                | -                  | See Note                                       |
| -             | §2.1053<br>§90.543 (e)(3)                | Conducted Spurious Emission                  | -                  | See Note                                       |
| -             | §2.1055<br>§90.539 (e)                   | Frequency Stability<br>Temperature & Voltage | -                  | See Note                                       |
| -             | §90.542 (a)(7)                           | Effective Radiated Power                     | -                  | See Note                                       |
| 4.2           | §2.1053<br>§90.543 (e)(3)<br>§90.543 (f) | Radiated Spurious Emission                   | Pass               | 16.51 dB<br>under the limit at<br>1584.000 MHz |

**Note:**

1. The certified module (model: FM350-GL ) which supports normal mode and TX switching mode being integrated into a notebook computer. Spot check on both modes were performed and no degradation occur. Thus the module test results were leveraged in this report and additionally reporting the spot check results in this report.
2. In normal mode, Conducted power was verified to be consistent with the original modular approval, so the output power level in the original modular grant is referenced in this report for determining ERP of this host product, and verified the TX switching mode of Radiated Spurious Emission and Conducted power.

**Declaration of Conformity:**

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.  
It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
2. The measurement uncertainty please refer to report "Uncertainty of Evaluation".

**Comments and Explanations:**

The product specifications of the EUT presented in the report are declared by the manufacturer who shall take full responsibility for the authenticity.

**Reviewed by: Sheng Kuo**

**Report Producer: Clio Lo**

# 1 General Description

## 1.1 Product Feature of Equipment Under Test

| Product Feature                 |                           |
|---------------------------------|---------------------------|
| Equipment                       | Notebook                  |
| Brand Name                      | Lenovo                    |
| Model Name                      | TP00144A                  |
| FCC ID                          | 2AJN7-TP00144A            |
| EUT supports Radios application | WCDMA/HSPA/LTE/5G NR/GNSS |
| EUT Stage                       | Production Unit           |

**Remark:**

1. The above EUT's information was declared by manufacturer.
2. Equipment: Fibocom FM350-GL tested inside of Lenovo Notebook.

| Antenna Information |              |                 |                |              |
|---------------------|--------------|-----------------|----------------|--------------|
| Main Antenna        | Manufacturer | Amphenol        | Peak gain(dBi) | -0.88        |
|                     | Part number  | TKE427-12-000-R | Type           | PIFA Antenna |

**Remark:** The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.

|               | Normal mode   | TX switching mode  |
|---------------|---|--|
|               | TX/RX   | TX/RX  |
| Ant_0 (Main)  | WCDMA : 2/4/5<br>LTE : 2/4/5/7/12/13/14/17/25/26/30/38/66/71<br>NR : 2/5/7/25/30/38/66/71 | WCDMA : 5<br>LTE : 5/12/13/14/17/26/41/48/71<br>NR : 5/41/71/77/78 |
| Ant_2 (MIMO2) | LTE : 41/48<br>NR : 41/77/78  | WCDMA : 2/4<br>LTE : 2/4/7/25/30/38/66<br>NR : 2/7/25/30/38/66     |

## 1.2 Product Specification of Equipment Under Test

| Product Specification is subject to this standard |                               |
|---|-------------------------------|
| Tx Frequency                                      | 790.5 ~ 795.5 MHz             |
| Rx Frequency                                      | 760.5 ~ 765.5 MHz             |
| Bandwidth   | 5MHz / 10MHz                  |
| Maximum Output Power to Antenna                   | 23.72 dBm                     |
| Type of Modulation                                | QPSK / 16QAM / 64QAM / 256QAM |

## 1.3 Modification of EUT

No modifications made to the EUT during the testing.



### 1.4 Testing Site

|                       |   |
|-----------------------|---|
| Test Site             | Sporton International Inc. EMC & Wireless Communications Laboratory   |
| Test Site Location    | No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333   |
| Test Site No.         | <b>Sporton Site No.</b>   |
|                       | TH03-HY (TAF Code: 1190)  |
| Test Engineer         | Eric Chang  |
| Temperature (°C)      | 22.5~23.3   |
| Relative Humidity (%) | 52~55   |
| Remark                | The Conducted test item subcontracted to Sporton International Inc. EMC & Wireless Communications Laboratory. |

|                       |  |
|-----------------------|--|
| Test Site             | Sporton International Inc. Wensan Laboratory                                 |
| Test Site Location    | No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010 |
| Test Site No.         | <b>Sporton Site No.</b>  |
|                       | 03CH13-HY  |
| Test Engineer         | Rain Lee, Jacky Hong and Mancy Chou  |
| Temperature (°C)      | 20~25  |
| Relative Humidity (%) | 50~60  |

**Note:** The test site complies with ANSI C63.4 2014 requirement.

FCC Designation No.: TW1190 and TW3786

### 1.5 Applied Standards

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

- ♦ ANSI C63.26-2015
- ♦ FCC 47 CFR Part 2, Part 90(R)
- ♦ ANSI / TIA-603-E
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01

**Remark:**

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. The TAF code is not including all the FCC KDB listed without accreditation.



## 2 Test Configuration of Equipment Under Test

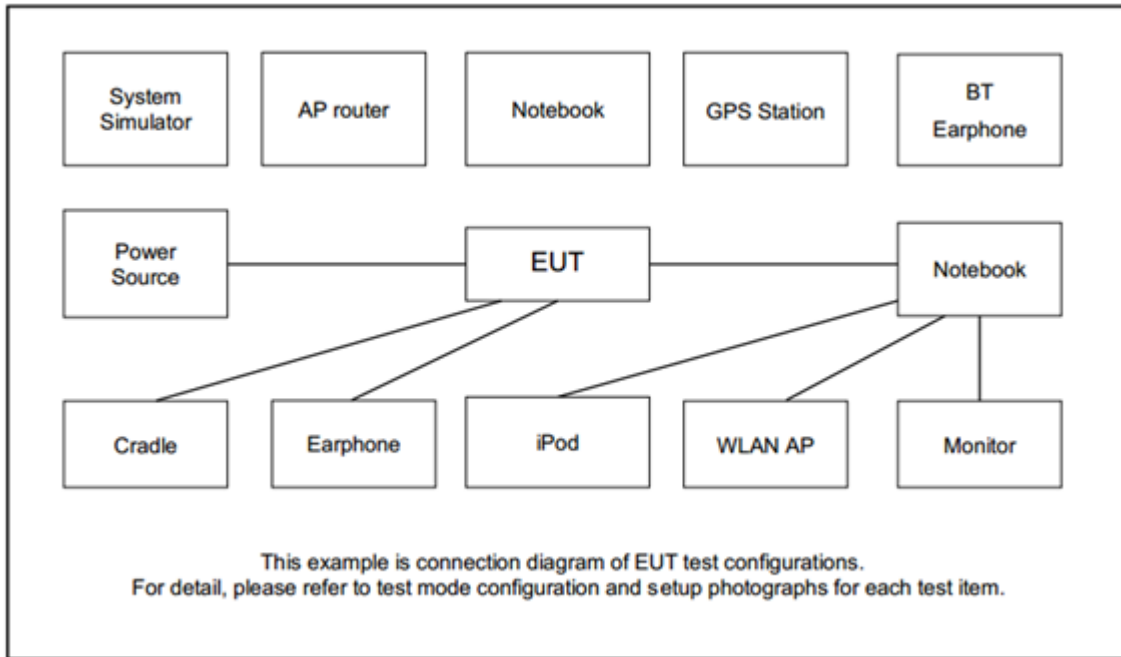
### 2.1 Test Mode

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.

For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in Tablet Type (three orthogonal axis (X: flat, Y: portrait, Z: landscape)) and Notebook Type, and adjusting the measurement antenna orientation, following C63.26 exploratory test procedures and only the worst case emissions were reported in this report.

| Conducted Test Cases       | Band   | Bandwidth (MHz) |   |   |    |    |    | Modulation |       |       |        | RB #       |      |      | Test Channel |   |   |
|----------------------------|--|-----------------|---|---|----|----|----|------------|-------|-------|--------|------------|------|------|--------------|---|---|
|                            |  | 1.4             | 3 | 5 | 10 | 15 | 20 | QPSK       | 16QAM | 64QAM | 256QAM | 1          | Half | Full | L            | M | H |
| Max. Output Power          | 14   | -               | - | v | v  | -  | -  | v          | v     | v     |        | v          | v    | v    | v            | v | v |
| E.R.P                      | 14   | -               | - | v | v  | -  | -  | v          | v     | v     |        | Max. Power |      |      |              |   |   |
| Radiated Spurious Emission | 14   | -               | - | v | v  | -  | -  | v          |       |       |        | v          |      |      | v            | v | v |
| Remark                     | <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>For modulation of 256QAM, the maximum power of 256QAM is lower than other modulation (QPSK/16QAM/64QAM), therefore, according to engineering evaluation, we choose higher power (QPSK/16QAM/64QAM) to perform all tests and show in the report.</li> <li>All the radiated test cases were performed with Battery 1.</li> </ol> |                 |   |   |    |    |    |            |       |       |        |            |      |      |              |   |   |

## 2.2 Connection Diagram of Test System



## 2.3 Support Unit used in test configuration and system

| Item | Equipment        | Brand Name | Model No. | FCC ID | Data Cable      | Power Cord        |
|------|------------------|------------|-----------|--------|-----------------|-------------------|
| 1.   | System Simulator | Anritsu    | MT8820C   | N/A    | N/A             | Unshielded, 1.8 m |
| 2.   | Earphone         | SONY       | MH750     | N/A    | Shielded, 1.2 m | N/A               |

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

| LTE Band 14 Channel and Frequency List |                        |        |        |         |
|--|------------------------|--------|--------|---------|
| BW [MHz]                               | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 10                                     | Channel                | -      | 23330  | -       |
|  | Frequency              | -      | 793    | -       |
| 5                                      | Channel                | 23305  | 23330  | 23355   |
|  | Frequency              | 790.5  | 793    | 795.5   |



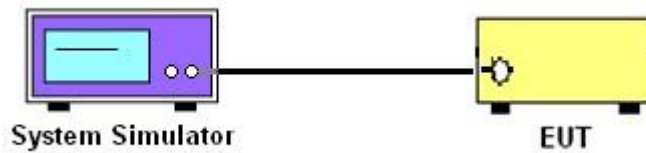
### 3 Conducted Test Items

#### 3.1 Measuring Instruments

See list of measuring instruments of this test report.

##### 3.1.1 Test Setup

##### 3.1.2 Conducted Output Power



##### 3.1.3 Test Result of Conducted Test

Please refer to Appendix A.



## 3.2 Conducted Output Power Measurement and ERP

### 3.2.1 Description of the Conducted Output Power Measurement and ERP Measurement

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

The ERP of mobile transmitters must not exceed 3 Watts for LTE Band 14.

According to KDB 412172 D01 Power Approach,

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

$P_T$  = transmitter output power in dBm

$G_T$  = gain of the transmitting antenna in dBi

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

### 3.2.2 Test Procedures

1. The transmitter output port was connected to base station.
2. Set EUT at maximum power through base station.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

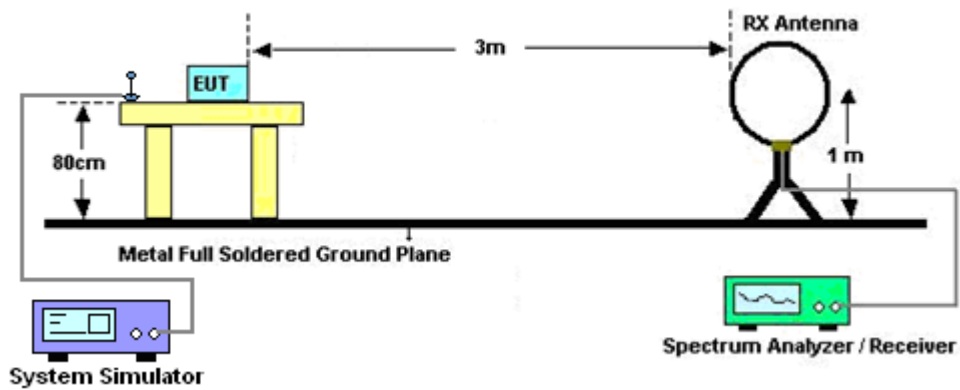
## 4 Radiated Test Items

### 4.1 Measuring Instruments

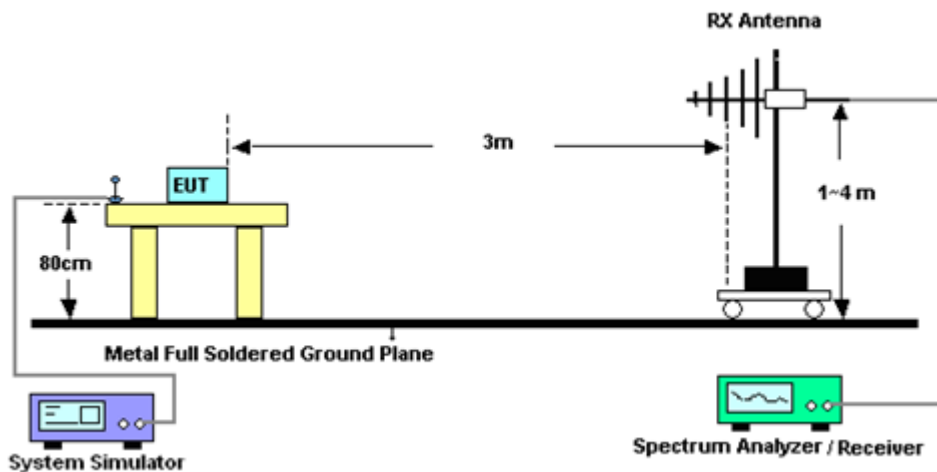
See list of measuring instruments of this test report.

#### 4.1.1 Test Setup

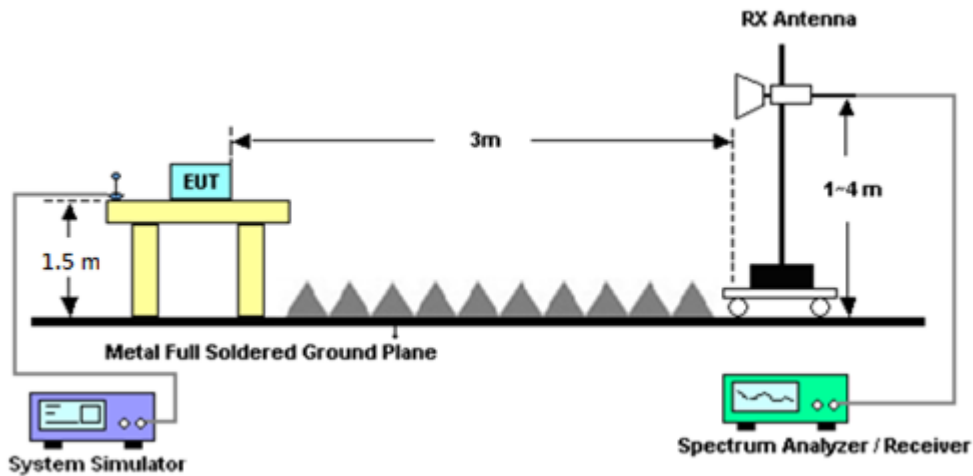
For radiated test below 30MHz



For radiated test from 30MHz to 1GHz



For radiated test above 1GHz



#### 4.1.2 Test Result of Radiated Test

Please refer to Appendix B.

**Note:**

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.



## 4.2 Radiated Spurious Emission

### 4.2.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI / TIA-603-E. 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 operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics 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.

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

### 4.2.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 7 and ANSI / TIA-603-E Section 2.2.12.

1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, Sweep = 500ms, Taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
11. The limit line is derived from  $43 + 10\log(P)$ dB below the transmitter power P(Watts)



## 5 List of Measuring Equipment

| Instrument                   | Brand Name        | Model No.                                 | Serial No.  | Characteristics                     | Calibration Date | Test Date                       | Due Date      | Remark                   |
|------------------------------|-------------------|---|-------------|-------------------------------------|------------------|---------------------------------|---------------|--------------------------|
| Loop Antenna                 | Rohde & Schwarz   | HFH2-Z2                                   | 100488      | 9 kHz~30 MHz                        | May 13, 2022     | Jul. 23, 2022~<br>Aug. 23, 2022 | May 12, 2023  | Radiation<br>(03CH13-HY) |
| Preamplifier                 | EMEC              | EM18G40G                                  | 060715      | 18GHz~40GHz                         | Dec. 24, 2021    | Jul. 23, 2022~<br>Aug. 23, 2022 | Dec. 23, 2022 | Radiation<br>(03CH13-HY) |
| RF Cable                     | HUBER +<br>SUHNER | SUCOFLEX<br>102                           | 505134/2    | 30MHz~40GHz                         | Feb. 21, 2022    | Jul. 23, 2022~<br>Aug. 23, 2022 | Feb. 20, 2023 | Radiation<br>(03CH13-HY) |
| Amplifier                    | SONOMA            | 310N                                      | 187282      | 9kHz~1GHz                           | Dec. 15, 2021    | Jul. 23, 2022~<br>Aug. 23, 2022 | Dec. 14, 2022 | Radiation<br>(03CH13-HY) |
| Bilog Antenna                | TESEQ             | CBL 6111D &<br>00800N1D01N<br>-06         | 40103 & 07  | 30MHz~1GHz                          | Apr. 24, 2022    | Jul. 23, 2022~<br>Aug. 23, 2022 | Apr. 23, 2023 | Radiation<br>(03CH13-HY) |
| Bilog Antenna                | TESEQ             | CBL 6111D &<br>00800N1D01N<br>-06         | 41912 & 05  | 30MHz~1GHz                          | Feb. 06, 2022    | Jul. 23, 2022~<br>Aug. 23, 2022 | Feb. 05, 2023 | Radiation<br>(03CH13-HY) |
| Hygrometer                   | TECPEL            | DTM-303B                                  | TP200889    | N/A                                 | Sep. 30, 2021    | Jul. 23, 2022~<br>Aug. 23, 2022 | Sep. 29, 2022 | Radiation<br>(03CH13-HY) |
| Preamplifier                 | MITEQ             | AMF-7D-00101<br>800-30-10P                | 1590074     | 1GHz~18GHz                          | May 17, 2022     | Jul. 23, 2022~<br>Aug. 23, 2022 | May 16, 2023  | Radiation<br>(03CH13-HY) |
| Preamplifier                 | Keysight          | 83017A                                    | MY53270147  | 1GHz~26.5GHz                        | Oct. 26, 2021    | Jul. 23, 2022~<br>Aug. 23, 2022 | Oct. 25, 2022 | Radiation<br>(03CH13-HY) |
| Spectrum Analyzer            | Keysight          | N9010A                                    | MY55370526  | 10Hz~44GHz                          | Mar. 18, 2022    | Jul. 23, 2022~<br>Aug. 23, 2022 | Mar. 17, 2023 | Radiation<br>(03CH13-HY) |
| Filter                       | Wainwright        | WLK4-1000-15<br>30-8000-40SS              | SN12        | 1.53GHz Low<br>Pass Filter          | Sep. 14, 2021    | Jul. 23, 2022~<br>Aug. 23, 2022 | Sep. 13, 2022 | Radiation<br>(03CH13-HY) |
| Filter                       | Wainwright        | WHKX12-1080<br>-1200-15000-6<br>0SS       | SN3         | 1.2GHz High<br>Pass Filter          | Jun. 30, 2022    | Jul. 23, 2022~<br>Aug. 23, 2022 | Jun. 29, 2023 | Radiation<br>(03CH13-HY) |
| Filter                       | Wainwright        | WHKX12-2700<br>-3000-18000-6<br>0SS       | SN2         | 3GHz High Pass<br>Filter            | Jul. 12, 2022    | Jul. 23, 2022~<br>Aug. 23, 2022 | Jul. 11, 2023 | Radiation<br>(03CH13-HY) |
| RF Cable                     | HUBER +<br>SUHNER | SUCOFLEX<br>126E                          | 0030/126E   | 30MHz~18GHz                         | Feb. 09, 2022    | Jul. 23, 2022~<br>Aug. 23, 2022 | Feb. 08, 2023 | Radiation<br>(03CH13-HY) |
| RF Cable                     | HUBER +<br>SUHNER | SUCOFLEX<br>104                           | 804793/4    | 30MHz~18GHz                         | Feb. 09, 2022    | Jul. 23, 2022~<br>Aug. 23, 2022 | Feb. 08, 2023 | Radiation<br>(03CH13-HY) |
| RF Cable                     | HUBER +<br>SUHNER | SUCOFLEX<br>104                           | MY9837/4PE  | 9 kHz~30 MHz                        | Mar. 10, 2022    | Jul. 23, 2022~<br>Aug. 23, 2022 | Mar. 09, 2023 | Radiation<br>(03CH13-HY) |
| RF Cable                     | HUBER +<br>SUHNER | SUCOFLEX<br>104                           | MY24961/4   | 30MHz~18GHz                         | Feb. 09, 2022    | Jul. 23, 2022~<br>Aug. 23, 2022 | Feb. 08, 2023 | Radiation<br>(03CH13-HY) |
| Controller                   | EMEC              | EM1000                                    | N/A         | Control Turn<br>table & Ant Mast    | N/A              | Jul. 23, 2022~<br>Aug. 23, 2022 | N/A           | Radiation<br>(03CH13-HY) |
| Antenna Mast                 | EMEC              | AM-BS-4500-B                              | N/A         | 1m~4m                               | N/A              | Jul. 23, 2022~<br>Aug. 23, 2022 | N/A           | Radiation<br>(03CH13-HY) |
| Turn Table                   | EMEC              | TT2000                                    | N/A         | 0~360 Degree                        | N/A              | Jul. 23, 2022~<br>Aug. 23, 2022 | N/A           | Radiation<br>(03CH13-HY) |
| Horn Antenna                 | SCHWARZBE<br>CK   | BBHA 9120 D                               | 9120D-02114 | 1-18GHz                             | Aug. 04, 2021    | Jul. 23, 2022~<br>Aug. 02, 2022 | Aug. 03, 2022 | Radiation<br>(03CH13-HY) |
| Horn Antenna                 | SCHWARZBE<br>CK   | BBHA 9120 D                               | 9120D-1241  | 1-18GHz                             | Jul. 25, 2022    | Aug. 03, 2022~<br>Aug. 23, 2022 | Jul. 24, 2023 | Radiation<br>(03CH13-HY) |
| Horn Antenna                 | SCHWARZBE<br>CK   | BBHA 9120 D                               | 9120D-1212  | 1GHz~18GHz                          | Mar. 10, 2022    | Jul. 23, 2022~<br>Aug. 23, 2022 | Mar. 09, 2023 | Radiation<br>(03CH13-HY) |
| Radio Communication Analyzer | Anritsu           | MT8821C                                   | 6262025280  | LTE FDD/TDD<br>LTE-2CC<br>DLCA/ULCA | Oct. 29, 2021    | Sep. 01, 2022~<br>Sep. 07, 2022 | Oct. 28, 2022 | Conducted<br>(TH03-HY)   |
| Coupler                      | Warison           | 20dB 25W<br>SMA<br>Directional<br>Coupler | #B          | 1-18GHz                             | Jan. 07, 2022    | Sep. 01, 2022~<br>Sep. 07, 2022 | Jan. 06, 2023 | Conducted<br>(TH03-HY)   |



## 6 Uncertainty of Evaluation

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

|   |        |
|---|--------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 3.4 dB |
|---|--------|

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

|   |         |
|---|---------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 3.81 dB |
|---|---------|



## Appendix A. Test Results of Conducted Test

### Conducted Output Power(Average power & ERP)

| LTE Band 14 Maximum Average Power [dBm] (GT - LC = -0.88 dB) |          |           |        |        |        |         |           |         |
|--|----------|-----------|--------|--------|--------|---------|-----------|---------|
| BW [MHz]   | RB Size  | RB Offset | Mod    | Lowest | Middle | Highest | ERP (dBm) | ERP (W) |
| 10   | 1        | 0         | QPSK   |        | 23.59  |         | 20.69     | 0.1172  |
| 10   | 1        | 25        |        |        | 23.65  |         |           |         |
| 10   | 1        | 49        |        |        | 23.72  |         |           |         |
| 10   | 25       | 0         |        |        | 22.67  |         |           |         |
| 10   | 25       | 12        |        |        | 22.51  |         |           |         |
| 10   | 25       | 25        |        |        | 22.53  |         |           |         |
| 10   | 50       | 0         |        |        | 22.57  |         |           |         |
| 10   | 1        | 0         | 16-QAM | -      | 22.90  | -       | 19.93     | 0.0984  |
| 10   | 1        | 25        |        |        | 22.44  |         |           |         |
| 10   | 1        | 49        |        |        | 22.96  |         |           |         |
| 10   | 25       | 0         |        |        | 21.54  |         |           |         |
| 10   | 25       | 12        |        |        | 21.56  |         |           |         |
| 10   | 25       | 25        |        |        | 21.56  |         |           |         |
| 10   | 50       | 0         |        |        | 21.41  |         |           |         |
| 10   | 1        | 0         | 64-QAM |        | 21.75  |         | 18.72     | 0.0745  |
| 10   | 1        | 25        |        |        | 21.50  |         |           |         |
| 10   | 1        | 49        |        |        | 21.49  |         |           |         |
| 10   | 25       | 0         |        |        | 20.41  |         |           |         |
| 10   | 25       | 12        |        |        | 20.53  |         |           |         |
| 10   | 25       | 25        |        |        | 20.55  |         |           |         |
| 10   | 50       | 0         |        |        | 20.51  |         |           |         |
| Limit  | ERP < 3W |           |        | Result |        |         | Pass      |         |





| LTE Band 14 Maximum Average Power [dBm] (GT - LC = -0.88 dB) |          |           |        |        |        |         |           |         |
|--|----------|-----------|--------|--------|--------|---------|-----------|---------|
| BW [MHz]   | RB Size  | RB Offset | Mod    | Lowest | Middle | Highest | ERP (dBm) | ERP (W) |
| 5  | 1        | 0         | QPSK   | 23.61  | 23.54  | 23.48   | 20.66     | 0.1164  |
| 5  | 1        | 12        |        | 23.54  | 23.69  | 23.44   |           |         |
| 5  | 1        | 24        |        | 23.50  | 23.47  | 23.43   |           |         |
| 5  | 12       | 0         |        | 22.50  | 22.55  | 22.50   |           |         |
| 5  | 12       | 7         |        | 22.51  | 22.48  | 22.49   |           |         |
| 5  | 12       | 13        |        | 22.45  | 22.51  | 22.50   |           |         |
| 5  | 25       | 0         |        | 22.48  | 22.51  | 22.50   |           |         |
| 5  | 1        | 0         | 16-QAM | 22.87  | 22.47  | 22.71   | 19.97     | 0.0993  |
| 5  | 1        | 12        |        | 22.61  | 22.55  | 23.00   |           |         |
| 5  | 1        | 24        |        | 22.78  | 22.62  | 22.61   |           |         |
| 5  | 12       | 0         |        | 21.50  | 21.41  | 21.39   |           |         |
| 5  | 12       | 7         |        | 21.59  | 21.49  | 21.42   |           |         |
| 5  | 12       | 13        |        | 21.51  | 21.49  | 21.39   |           |         |
| 5  | 25       | 0         |        | 21.50  | 21.46  | 21.56   |           |         |
| 5  | 1        | 0         | 64-QAM | 21.54  | 21.61  | 21.32   | 18.84     | 0.0766  |
| 5  | 1        | 12        |        | 21.63  | 21.87  | 21.76   |           |         |
| 5  | 1        | 24        |        | 21.81  | 21.67  | 21.67   |           |         |
| 5  | 12       | 0         |        | 20.47  | 20.44  | 20.40   |           |         |
| 5  | 12       | 7         |        | 20.51  | 20.62  | 20.40   |           |         |
| 5  | 12       | 13        |        | 20.50  | 20.46  | 20.54   |           |         |
| 5  | 25       | 0         |        | 20.45  | 20.42  | 20.58   |           |         |
| Limit  | ERP < 3W |           |        | Result |        |         | Pass      |         |



# Appendix B. Test Results of Radiated Test

## LTE Band 14

| LTE Band 14 / 5MHz / QPSK |                   |             |               |                   |                   |                    |                      |                       |                    |
|---------------------------|-------------------|-------------|---------------|-------------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel                   | Frequency ( MHz ) | ERP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | SPA Reading (dBm) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Lowest                    | 1576              | -60.04      | -42.15        | -17.89            | -75.32            | -60.56             | 6.27                 | 8.94                  | H                  |
|                           | 2365              | -57.99      | -13           | -44.99            | -75.79            | -58.08             | 7.59                 | 9.83                  | H                  |
|                           | 3153              | -56.90      | -13           | -43.90            | -76.58            | -57.29             | 8.87                 | 11.41                 | H                  |
|                           |                   |             |               |                   |                   |                    |                      |                       | H                  |
|                           |                   |             |               |                   |                   |                    |                      |                       | H                  |
|                           |                   |             |               |                   |                   |                    |                      |                       | H                  |
|                           |                   |             |               |                   |                   |                    |                      |                       | H                  |
|                           | 1576              | -60.37      | -42.15        | -18.22            | -75.63            | -60.89             | 6.27                 | 8.94                  | V                  |
|                           | 2365              | -58.00      | -13           | -45.00            | -75.72            | -58.09             | 7.59                 | 9.83                  | V                  |
|                           | 3153              | -56.88      | -13           | -43.88            | -76.59            | -57.27             | 8.87                 | 11.41                 | V                  |
|                           |                   |             |               |                   |                   |                    |                      |                       | V                  |
|                           |                   |             |               |                   |                   |                    |                      |                       | V                  |
|                           |                   |             |               |                   |                   |                    |                      |                       | V                  |
|                           |                   |             |               |                   |                   |                    |                      |                       | V                  |



|         |      |        |        |        |        |        |      |       |   |
|---------|------|--------|--------|--------|--------|--------|------|-------|---|
| Middle  | 1584 | -60.02 | -42.15 | -17.87 | -75.33 | -60.62 | 6.27 | 9.02  | H |
|         | 2372 | -58.82 | -13    | -45.82 | -76.6  | -58.93 | 7.60 | 9.86  | H |
|         | 3163 | -57.08 | -13    | -44.08 | -76.78 | -57.47 | 8.89 | 11.43 | H |
|         |      |        |        |        |        |        |      |       | H |
|         |      |        |        |        |        |        |      |       | H |
|         |      |        |        |        |        |        |      |       | H |
|         |      |        |        |        |        |        |      |       | H |
|         | 1584 | -58.66 | -42.15 | -16.51 | -73.97 | -59.26 | 6.27 | 9.02  | V |
|         | 2372 | -59.00 | -13    | -46.00 | -76.69 | -59.11 | 7.60 | 9.86  | V |
|         | 3163 | -56.64 | -13    | -43.64 | -76.4  | -57.03 | 8.89 | 11.43 | V |
|         |      |        |        |        |        |        |      |       | V |
|         |      |        |        |        |        |        |      |       | V |
|         |      |        |        |        |        |        |      |       | V |
|         |      |        |        |        |        |        |      |       | V |
| Highest | 1584 | -60.15 | -42.15 | -18.00 | -75.46 | -60.75 | 6.27 | 9.02  | H |
|         | 2380 | -58.89 | -13    | -45.89 | -76.63 | -59.03 | 7.61 | 9.90  | H |
|         | 3173 | -56.60 | -13    | -43.60 | -76.34 | -57.00 | 8.90 | 11.45 | H |
|         |      |        |        |        |        |        |      |       | H |
|         |      |        |        |        |        |        |      |       | H |
|         |      |        |        |        |        |        |      |       | H |
|         |      |        |        |        |        |        |      |       | H |
|         | 1584 | -59.97 | -42.15 | -17.82 | -75.28 | -60.57 | 6.27 | 9.02  | V |
|         | 2380 | -58.71 | -13    | -45.71 | -76.35 | -58.85 | 7.61 | 9.90  | V |
|         | 3173 | -56.62 | -13    | -43.62 | -76.45 | -57.02 | 8.90 | 11.45 | V |
|         |      |        |        |        |        |        |      |       | V |
|         |      |        |        |        |        |        |      |       | V |
|         |      |        |        |        |        |        |      |       | V |
|         |      |        |        |        |        |        |      |       | V |

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



| LTE Band 14 / 10MHz / QPSK |                   |             |               |                   |                   |                    |                      |                       |                    |
|----------------------------|-------------------|-------------|---------------|-------------------|-------------------|--------------------|----------------------|-----------------------|--------------------|
| Channel                    | Frequency ( MHz ) | ERP ( dBm ) | Limit ( dBm ) | Over Limit ( dB ) | SPA Reading (dBm) | S.G. Power ( dBm ) | TX Cable loss ( dB ) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Middle                     | 1555              | -60.39      | -13           | -47.39            | -75.6             | -60.67             | 6.28                 | 8.71                  | H                  |
|                            | 2332              | -58.32      | -13           | -45.32            | -76.24            | -58.29             | 7.54                 | 9.66                  | H                  |
|                            | 3110              | -57.33      | -13           | -44.33            | -76.87            | -57.69             | 8.81                 | 11.32                 | H                  |
|                            |                   |             |               |                   |                   |                    |                      |                       | H                  |
|                            |                   |             |               |                   |                   |                    |                      |                       | H                  |
|                            |                   |             |               |                   |                   |                    |                      |                       | H                  |
|                            |                   |             |               |                   |                   |                    |                      |                       | H                  |
|                            | 1555              | -60.62      | -13           | -47.62            | -75.77            | -60.90             | 6.28                 | 8.71                  | V                  |
|                            | 2332              | -58.69      | -13           | -45.69            | -76.59            | -58.66             | 7.54                 | 9.66                  | V                  |
|                            | 3110              | -56.75      | -13           | -43.75            | -76.19            | -57.11             | 8.81                 | 11.32                 | V                  |
|                            |                   |             |               |                   |                   |                    |                      |                       | V                  |
|                            |                   |             |               |                   |                   |                    |                      |                       | V                  |
|                            |                   |             |               |                   |                   |                    |                      |                       | V                  |
|                            |                   |             |               |                   |                   |                    |                      |                       | V                  |

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