



# FCC RADIO TEST REPORT

**FCC ID** : 2AJN7-TP00141AUC  
**Equipment** : Notebook Computer  
**Brand Name** : Lenovo  
**Model Name** : TP00141A  
**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, 96

Equipment: Fibocom L860-GL-16 tested inside of Lenovo Notebook Computer.

The product was received on Mar. 08, 2022 and testing was performed from Mar. 18, 2022 to Mar. 29, 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 of Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

*Sporton International Inc. Wensan Laboratory*



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## History of this test report

| Report No.   | Version | Description             | Issued Date   |
|--------------|---------|-------------------------|---------------|
| FG1D0801-03G | 01      | Initial issue of report | Apr. 11, 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     | -                                          |
| -             | §96.41            | Peak-to-Average Ratio                         | -                  | See Note                                   |
| 3.3           | §96.41            | Effective Isotropic Radiated Power            | Pass               | -                                          |
| -             | §2.1049<br>§96.41 | Occupied Bandwidth                            | -                  | See Note                                   |
| -             | §2.1051<br>§96.41 | Conducted Band Edge Measurement               | -                  | See Note                                   |
| -             | §2.1051<br>§96.41 | Conducted Spurious Emission                   | -                  | See Note                                   |
| -             | §2.1055           | Frequency Stability for Temperature & Voltage | -                  | See Note                                   |
| 4.4           | §2.1051<br>§96.41 | Radiated Spurious Emission                    | Pass               | Under limit<br>0.86 dB at<br>11070.000 MHz |

**Note:**

- The module (Model: L860-GL-16) makes no difference after verifying output power, this report reuses test data from the module report.
- 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 EIRP of this host product

**Declaration of Conformity:**

- 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.
- The measurement uncertainty please refer to this 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: Lucy Wu**

# 1 General Description

## 1.1 Product Feature of Equipment Under Test

| Product Feature                 |                                                                                                                                             |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Equipment                       | Notebook Computer                                                                                                                           |
| Brand Name                      | Lenovo                                                                                                                                      |
| Model Name                      | TP00141A                                                                                                                                    |
| FCC ID                          | 2AJN7-TP00141AUC                                                                                                                            |
| Sample 1                        | EUT with ICT Antenna                                                                                                                        |
| Sample 2                        | EUT with Speed Antenna                                                                                                                      |
| EUT supports Radios application | WCDMA/HSPA/LTE/GNSS<br>802.11a/b/g/n HE20/HT40<br>802.11ac VHT20/VHT40/VHT80/VHT160<br>802.11ax HE20/HE40/HE80/HE160<br>Bluetooth BR/EDR/LE |
| EUT Stage                       | Production Unit                                                                                                                             |

**Remark:**

1. The above EUT's information was declared by manufacturer.
2. Equipment: Fibocom L860-GL-16 tested inside of Lenovo Notebook Computer.

| WWAN Antenna Information for Host |              |             |                 |                    |
|-----------------------------------|--------------|-------------|-----------------|--------------------|
| Main Antenna                      | Manufacturer | ICT         | Peak gain (dBi) | LTE Band 48: -5.40 |
|                                   | Part number  | DC33001XA00 | Type            | PIFA               |
|                                   | Manufacturer | Speed       | Peak gain (dBi) | LTE Band 48: -2.14 |
|                                   | Part number  | DC33001X900 | Type            | PIFA               |

**Remark:**

1. The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.
2. The output power measurement was performed with "ICT Antenna", and performed with "Speed Antenna" in radiated spurious emission test as representative.

## 1.2 Product Specification of Equipment Under Test

| Product Specification is subject to this standard |                                  |
|---------------------------------------------------|----------------------------------|
| Tx Frequency                                      | 3552.5 MHz ~ 3697.5 MHz          |
| Rx Frequency                                      | 3552.5 MHz ~ 3697.5 MHz          |
| Bandwidth                                         | 5 MHz / 10 MHz / 15 MHz / 20 MHz |
| Maximum Output Power to Antenna                   | LTE Band 48: 20.88 dBm           |
| Type of Modulation                                | QPSK / 16QAM / 64QAM             |

## 1.3 Modification of EUT

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

## 1.4 Testing Location

|                              |                                                                                                               |
|------------------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Test Site</b>             | Sporton International Inc. EMC & Wireless Communications Laboratory                                           |
| <b>Test Site Location</b>    | No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333                                                         |
| <b>Test Site No.</b>         | <b>Sporton Site No.</b>                                                                                       |
|                              | TH03-HY (TAF Code: 1190)                                                                                      |
| <b>Test Engineer</b>         | HaoEn Zhang                                                                                                   |
| <b>Temperature (°C)</b>      | 22.1~23.4                                                                                                     |
| <b>Relative Humidity (%)</b> | 51.8~55.6                                                                                                     |
| <b>Remark</b>                | The Conducted test item subcontracted to Sporton International Inc. EMC & Wireless Communications Laboratory. |

|                              |                                                                              |
|------------------------------|------------------------------------------------------------------------------|
| <b>Test Site</b>             | Sporton International Inc. Wensan Laboratory                                 |
| <b>Test Site Location</b>    | No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010 |
| <b>Test Site No.</b>         | <b>Sporton Site No.</b>                                                      |
|                              | 03CH20-HY                                                                    |
| <b>Test Engineer</b>         | Bill Chang, JC Liang and Bigshow Wang                                        |
| <b>Temperature (°C)</b>      | 18~21                                                                        |
| <b>Relative Humidity (%)</b> | 68~70                                                                        |

**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 of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ ANSI C63.26-2015
- ♦ ANSI / TIA-603-E
- ♦ FCC 47 CFR Part 2, 96
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 940660 D01 Part 96 CBRS Eqpt v01
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01

### Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. The TAF code is not including all the FCC KDB listed without accreditation.

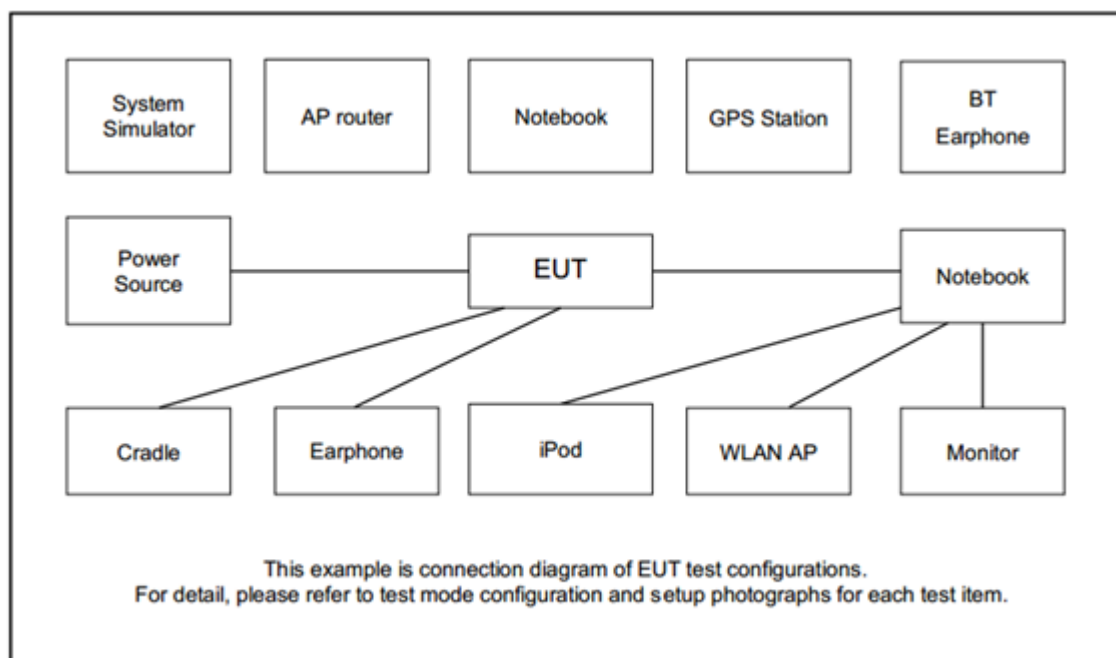
## 2 Test Configuration of Equipment Under Test

### 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.

| Test Items                 | Band                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Bandwidth (MHz) |   |   |    |    |    | Modulation |       |       | RB #       |      |      | Test Channel |   |   |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---|---|----|----|----|------------|-------|-------|------------|------|------|--------------|---|---|
|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1.4             | 3 | 5 | 10 | 15 | 20 | QPSK       | 16QAM | 64QAM | 1          | Half | Full | L            | M | H |
| Max. Output Power          | 48                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | -               | - | v | v  | v  | v  | v          | v     | v     | v          | v    | v    | v            | v | v |
| E.R.P / E.I.R.P            | 48                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | -               | - | v | v  | v  | v  | v          | v     | v     | Max. Power |      |      |              |   |   |
| Radiated Spurious Emission | 48                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | -               | - |   | 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>All the radiated test cases were performed with Battery 2.</li> </ol> |                 |   |   |    |    |    |            |       |       |            |      |      |              |   |   |

### 2.2 Connection Diagram of Test System



## 2.3 Support Unit used in test configuration

| Item | Equipment        | Brand Name | Model No. | FCC ID       | Data Cable        | Power Cord        |
|------|------------------|------------|-----------|--------------|-------------------|-------------------|
| 1.   | iPod Earphone    | Apple      | N/A       | Verification | Unshielded, 1.0 m | N/A               |
| 2.   | System Simulator | Anritsu    | MT8820C   | N/A          | N/A               | Unshielded, 1.8 m |

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

| LTE Band 48 Channel and Frequency List |                        |        |        |         |
|----------------------------------------|------------------------|--------|--------|---------|
| BW [MHz]                               | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 20                                     | Channel                | 55340  | 55990  | 56640   |
|                                        | Frequency              | 3560.0 | 3625.0 | 3690.0  |
| 15                                     | Channel                | 55315  | 55990  | 56665   |
|                                        | Frequency              | 3557.5 | 3625.0 | 3692.5  |
| 10                                     | Channel                | 55290  | 55990  | 56690   |
|                                        | Frequency              | 3555.0 | 3625.0 | 3695.0  |
| 5                                      | Channel                | 55265  | 55990  | 56715   |
|                                        | Frequency              | 3552.5 | 3625.0 | 3697.5  |

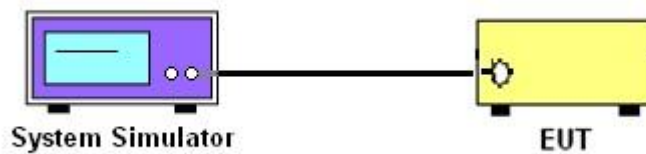
### 3 Conducted Test Items

#### 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**

### **3.2.1 Description of the Conducted Output Power Measurement**

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

### **3.2.2 Test Procedures**

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

### 3.3 EIRP

#### 3.3.1 Description of the EIRP Measurement

The EIRP of mobile transmitters must not exceed 23 dBm /10 megahertz.

The testing follows ANSI C63.26-2015 Section 5.2.5.5

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$ , 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

| Device          | Maximum EIRP<br>(dBm/10 MHz) | Maximum PSD<br>(dBm/MHz) |
|-----------------|------------------------------|--------------------------|
| End User Device | 23                           | n/a                      |

**Remark:** Total channel power is complied with EIRP limit 23dBm/10MHz.

#### 3.3.1 Test Procedures

The testing follows procedure in Section 5.2 of ANSI C63.26-2015 and KDB 940660 D01 Part 96 CBRS Eqpt v03 Section 3.2(b)(2)

Determine the EIRP by adding the effective antenna gain to the measured average conducted power level.

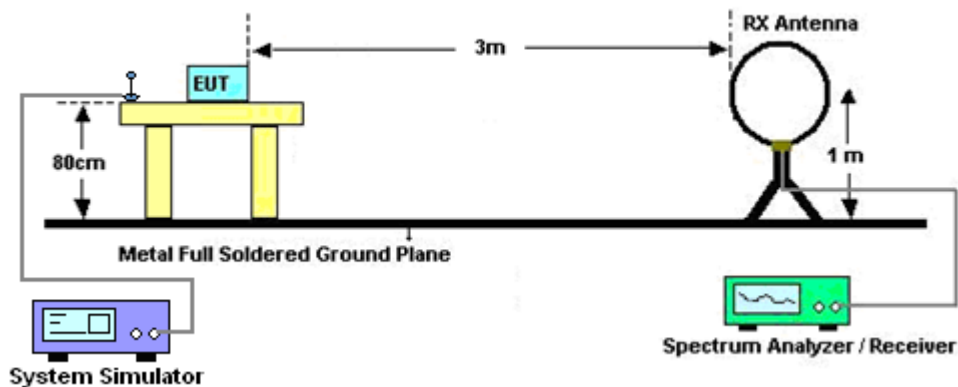
## 4 Radiated Test Items

### 4.1 Measuring Instruments

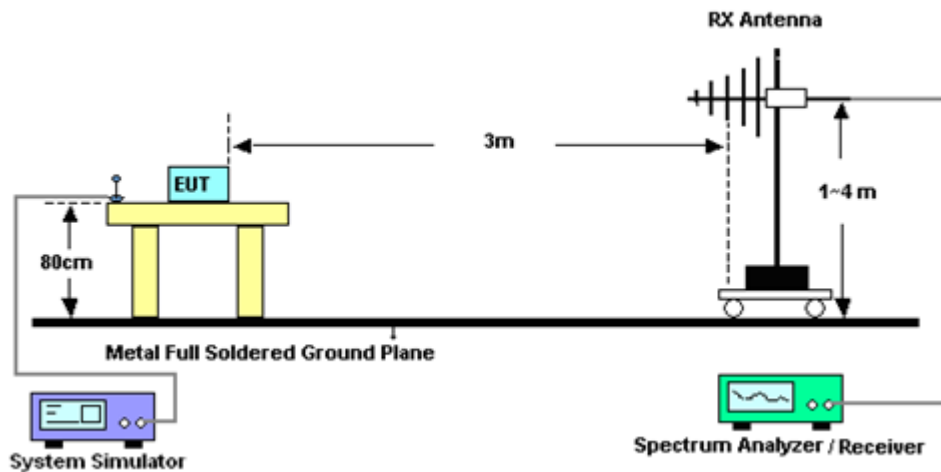
See list of measuring instruments of this test report.

### 4.2 Test Setup

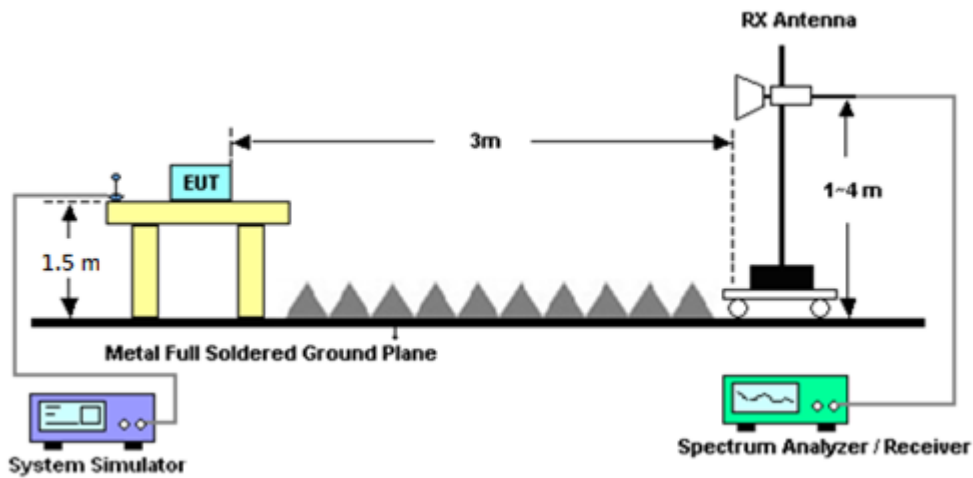
For radiated emissions below 30MHz



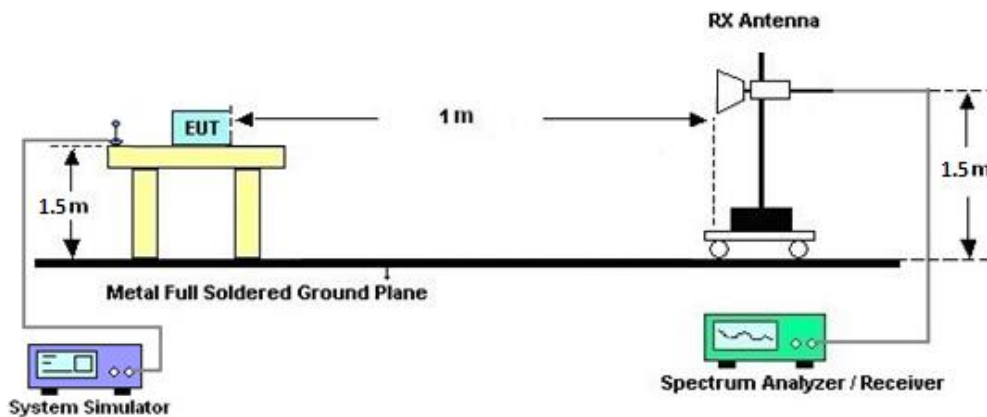
For radiated emissions from 30MHz to 1GHz



For radiated emissions from 1GHz to 18GHz



For radiated test above 18GHz



### 4.3 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.

## 4.4 Radiated Spurious Emission

### 4.4.1 Description of Radiated Spurious Emission Measurement

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 -40dBm / MHz .

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

### 4.4.2 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 height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna 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 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
5. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.  
$$\text{EIRP (dBm)} = \text{S.G. Power} - \text{Tx Cable Loss} + \text{Tx Antenna Gain}$$
$$\text{ERP (dBm)} = \text{EIRP} - 2.15$$
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.  
The limit line is -40dBm/MHz



## 5 List of Measuring Equipment

| Instrument                   | Brand Name        | Model No.                                 | Serial No.                         | Characteristics                     | Calibration Date | Test Date                       | Due Date      | Remark                   |
|------------------------------|-------------------|-------------------------------------------|------------------------------------|-------------------------------------|------------------|---------------------------------|---------------|--------------------------|
| EMI Test Receiver            | Keysight          | N9010B                                    | MY60241055                         | 10Hz~44GHz                          | Jul. 12, 2021    | Mar. 26, 2022~<br>Mar. 29, 2022 | Jul. 11, 2022 | Radiation<br>(03CH20-HY) |
| Preamplifier                 | COM-POWER         | PAM-103                                   | 18020201                           | 1MHz-1000MHz                        | Jan. 03, 2022    | Mar. 26, 2022~<br>Mar. 29, 2022 | Jan. 02, 2023 | Radiation<br>(03CH20-HY) |
| Amplifier                    | EMCI              | EMC118A45S<br>E                           | 980792                             | N/A                                 | Nov. 15, 2021    | Mar. 26, 2022~<br>Mar. 29, 2022 | Nov. 14, 2022 | Radiation<br>(03CH20-HY) |
| Preamplifier                 | EMEC              | EM18G40G                                  | 060715                             | 18GHz~40GHz                         | Dec. 24, 2021    | Mar. 26, 2022~<br>Mar. 29, 2022 | Dec. 23, 2022 | Radiation<br>(03CH20-HY) |
| Loop Antenna                 | Rohde & Schwarz   | HFH2-Z2                                   | 100315                             | 9 kHz~30 MHz                        | Jan. 07, 2022    | Mar. 26, 2022~<br>Mar. 29, 2022 | Jan. 06, 2023 | Radiation<br>(03CH20-HY) |
| Bilog Antenna                | TESEQ             | CBL<br>6111D&00802<br>N1D01N-06           | 55606 & 08                         | 30MHz~1GHz                          | Oct. 17, 2021    | Mar. 26, 2022~<br>Mar. 29, 2022 | Oct. 16, 2022 | Radiation<br>(03CH20-HY) |
| Bilog Antenna                | TESEQ             | CBL<br>6111D&00802<br>N1D01N-06           | 37059 & 01                         | 30MHz~1GHz                          | Oct. 09, 2021    | Mar. 26, 2022~<br>Mar. 29, 2022 | Oct. 08, 2022 | Radiation<br>(03CH20-HY) |
| Horn Antenna                 | SCHWARZBE<br>CK   | BBHA 9120 D                               | 9120D-0229<br>4                    | 1GHz~18GHz                          | Jun. 23, 2021    | Mar. 26, 2022~<br>Mar. 29, 2022 | Jun. 22, 2022 | Radiation<br>(03CH20-HY) |
| Horn Antenna                 | SCHWARZBE<br>CK   | BBHA 9120 D                               | 02360                              | 1GHz~18GHz                          | Nov. 02, 2021    | Mar. 26, 2022~<br>Mar. 29, 2022 | Nov. 01, 2022 | Radiation<br>(03CH20-HY) |
| SHF-EHF Horn Antenna         | SCHWARZBE<br>CK   | BBHA9170                                  | 00991                              | 18GHz-40GHz                         | May 12, 2021     | Mar. 26, 2022~<br>Mar. 29, 2022 | May 11, 2022  | Radiation<br>(03CH20-HY) |
| SHF-EHF Horn Antenna         | SCHWARZBE<br>CK   | BBHA9170                                  | 00993                              | 18GHz-40GHz                         | Nov. 30, 2021    | Mar. 26, 2022~<br>Mar. 29, 2022 | Nov. 29, 2022 | Radiation<br>(03CH20-HY) |
| Hygrometer                   | TECPEL            | DTM-303B                                  | TP200879                           | N/A                                 | Sep. 30, 2021    | Mar. 26, 2022~<br>Mar. 29, 2022 | Sep. 29, 2022 | Radiation<br>(03CH20-HY) |
| RF Cable                     | HUBER +<br>SUHNER | SUCOFLEX<br>102                           | 519229/2,80<br>4015/2,8040<br>27/2 | N/A                                 | Jan. 19, 2022    | Mar. 26, 2022~<br>Mar. 29, 2022 | Jan. 18, 2023 | Radiation<br>(03CH20-HY) |
| RF Cable                     | HUBER +<br>SUHNER | SUCOFLEX<br>102                           | 519229/2,80<br>4015/2,8040<br>27/2 | N/A                                 | Jan. 19, 2022    | Mar. 26, 2022~<br>Mar. 29, 2022 | Jan. 18, 2023 | Radiation<br>(03CH20-HY) |
| Software                     | Audix             | E3<br>6.2009-8-24                         | RK-002156                          | N/A                                 | N/A              | Mar. 26, 2022~<br>Mar. 29, 2022 | N/A           | Radiation<br>(03CH20-HY) |
| Antenna Mast                 | EMEC              | AM-BS-4500-<br>B                          | N/A                                | 1m~4m                               | N/A              | Mar. 26, 2022~<br>Mar. 29, 2022 | N/A           | Radiation<br>(03CH20-HY) |
| Turn Table                   | EMEC              | TT2000                                    | N/A                                | 0~360 Degree                        | N/A              | Mar. 26, 2022~<br>Mar. 29, 2022 | N/A           | Radiation<br>(03CH20-HY) |
| Controller                   | EMEC              | EM1000                                    | N/A                                | Control Turn<br>table & Ant Mast    | N/A              | Mar. 26, 2022~<br>Mar. 29, 2022 | N/A           | Radiation<br>(03CH20-HY) |
| Signal Generator             | Rohde & Schwarz   | SMF100A                                   | 101107                             | 100kHz~40GHz                        | Dec. 08, 2021    | Mar. 26, 2022~<br>Mar. 29, 2022 | Dec. 07, 2022 | Radiation<br>(03CH20-HY) |
| Radio Communication Analyzer | Anritsu           | MT8821C                                   | 6262025341                         | LTE FDD/TDD<br>LTE-2CC<br>ULCA/DLCA | Oct. 05, 2021    | Mar. 18, 2022~<br>Mar. 25, 2022 | Oct. 04, 2022 | Conducted<br>(TH03-HY)   |
| Base Station (Measure)       | Rohde & Schwarz   | CMU200                                    | 117995                             | GSM / GPRS /<br>WCDMA /<br>CDMA     | Jul. 13, 2021    | Mar. 18, 2022~<br>Mar. 25, 2022 | Jul. 12, 2022 | Conducted<br>(TH03-HY)   |
| Coupler                      | Warison           | 20dB 25W<br>SMA<br>Directional<br>Coupler | #B                                 | 1-18GHz                             | Jan. 07, 2022    | Mar. 18, 2022~<br>Mar. 25, 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<br>Confidence of 95% ( $U = 2Uc(y)$ ) | 3.33 dB |
|----------------------------------------------------------------------------|---------|

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

|                                                                            |         |
|----------------------------------------------------------------------------|---------|
| Measuring Uncertainty for a Level of<br>Confidence of 95% ( $U = 2Uc(y)$ ) | 3.40 dB |
|----------------------------------------------------------------------------|---------|

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

|                                                                            |         |
|----------------------------------------------------------------------------|---------|
| Measuring Uncertainty for a Level of<br>Confidence of 95% ( $U = 2Uc(y)$ ) | 4.43 dB |
|----------------------------------------------------------------------------|---------|



## Appendix A. Test Results of Conducted Test

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

| LTE Band 48 Maximum Average Power [dBm] (GT - LC = -2.14 dB) |                    |           |        |        |        |         |            |          |
|--------------------------------------------------------------|--------------------|-----------|--------|--------|--------|---------|------------|----------|
| BW [MHz]                                                     | RB Size            | RB Offset | Mod    | Lowest | Middle | Highest | EIRP (dBm) | EIRP (W) |
| 20                                                           | 1                  | 0         | QPSK   | 20.65  | 20.77  | 20.70   | 18.74      | 0.0748   |
| 20                                                           | 1                  | 99        |        | 20.60  | 20.88  | 20.64   |            |          |
| 20                                                           | 100                | 0         |        | 19.50  | 19.75  | 19.60   |            |          |
| 20                                                           | 1                  | 0         | 16-QAM | 19.88  | 19.96  | 19.85   | 17.82      | 0.0605   |
| 20                                                           | 1                  | 0         | 64-QAM | 18.60  | 18.91  | 18.85   | 16.77      | 0.0475   |
| Limit                                                        | EIRP < 23dBm/10MHz |           |        | Result |        |         | Pass       |          |

| LTE Band 48 Maximum Average Power [dBm] (GT - LC = -2.14 dB) |                    |           |        |        |        |         |            |          |
|--------------------------------------------------------------|--------------------|-----------|--------|--------|--------|---------|------------|----------|
| BW [MHz]                                                     | RB Size            | RB Offset | Mod    | Lowest | Middle | Highest | EIRP (dBm) | EIRP (W) |
| 15                                                           | 1                  | 0         | QPSK   | 20.63  | 20.75  | 20.66   | 18.61      | 0.0726   |
| 15                                                           | 1                  | 0         | 16-QAM | 19.76  | 20.08  | 19.78   | 17.94      | 0.0622   |
| 15                                                           | 1                  | 0         | 64-QAM | 18.52  | 18.86  | 18.82   | 16.72      | 0.0470   |
| Limit                                                        | EIRP < 23dBm/10MHz |           |        | Result |        |         | Pass       |          |

| LTE Band 48 Maximum Average Power [dBm] (GT - LC = -2.14 dB) |                    |           |        |        |        |         |            |          |
|--------------------------------------------------------------|--------------------|-----------|--------|--------|--------|---------|------------|----------|
| BW [MHz]                                                     | RB Size            | RB Offset | Mod    | Lowest | Middle | Highest | EIRP (dBm) | EIRP (W) |
| 10                                                           | 1                  | 0         | QPSK   | 20.65  | 20.80  | 20.62   | 18.66      | 0.0735   |
| 10                                                           | 1                  | 0         | 16-QAM | 19.60  | 19.73  | 19.77   | 17.63      | 0.0579   |
| 10                                                           | 1                  | 0         | 64-QAM | 18.85  | 19.14  | 18.85   | 17.00      | 0.0501   |
| Limit                                                        | EIRP < 23dBm/10MHz |           |        | Result |        |         | Pass       |          |

| LTE Band 48 Maximum Average Power [dBm] (GT - LC = -2.14 dB) |                    |           |        |        |        |         |            |          |
|--------------------------------------------------------------|--------------------|-----------|--------|--------|--------|---------|------------|----------|
| BW [MHz]                                                     | RB Size            | RB Offset | Mod    | Lowest | Middle | Highest | EIRP (dBm) | EIRP (W) |
| 5                                                            | 1                  | 0         | QPSK   | 20.53  | 20.69  | 20.59   | 18.55      | 0.0716   |
| 5                                                            | 1                  | 0         | 16-QAM | 19.95  | 19.85  | 19.82   | 17.81      | 0.0604   |
| 5                                                            | 1                  | 0         | 64-QAM | 19.52  | 19.21  | 19.06   | 17.38      | 0.0547   |
| Limit                                                        | EIRP < 23dBm/10MHz |           |        | Result |        |         | Pass       |          |

**Remark:** Total EIRP power is less than partial EIRP limit 23 dBm/10MHz.



## Appendix B. Test Results of Radiated Test

### LTE Band 48

| LTE Band 48 / 10MHz / QPSK |                      |                 |                  |                         |                         |                          |                            |                             |                       |
|----------------------------|----------------------|-----------------|------------------|-------------------------|-------------------------|--------------------------|----------------------------|-----------------------------|-----------------------|
| Channel                    | Frequency<br>( MHz ) | EIRP<br>( dBm ) | Limit<br>( dBm ) | Over<br>Limit<br>( dB ) | SPA<br>Reading<br>(dBm) | S.G.<br>Power<br>( dBm ) | TX Cable<br>loss<br>( dB ) | TX Antenna<br>Gain<br>(dBi) | Polarization<br>(H/V) |
| Lowest                     | 7100                 | -54.83          | -40              | -14.83                  | -81.54                  | -55.38                   | 10.45                      | 11.00                       | H                     |
|                            | 10650                | -48.94          | -40              | -8.94                   | -78.16                  | -47.66                   | 12.93                      | 11.65                       | H                     |
|                            | 14200                | -50.53          | -40              | -10.53                  | -81.24                  | -48.84                   | 14.99                      | 13.30                       | H                     |
|                            | 21300                | -64.00          | -40              | -24.00                  | -78.29                  | -63.75                   | 18.63                      | 18.38                       | H                     |
|                            | 24850                | -60.84          | -40              | -20.84                  | -80.05                  | -59.41                   | 20.13                      | 18.70                       | H                     |
|                            | 28400                | -59.95          | -40              | -19.95                  | -80.53                  | -57.71                   | 21.68                      | 19.44                       | H                     |
|                            | 7100                 | -54.14          | -40              | -14.14                  | -81.48                  | -54.69                   | 10.45                      | 11.00                       | V                     |
|                            | 10650                | -42.18          | -40              | -2.18                   | -70.76                  | -40.90                   | 12.93                      | 11.65                       | V                     |
|                            | 14200                | -49.98          | -40              | -9.98                   | -81.08                  | -48.29                   | 14.99                      | 13.30                       | V                     |
|                            | 21300                | -63.71          | -40              | -23.71                  | -78.3                   | -63.46                   | 18.63                      | 18.38                       | V                     |
|                            | 24850                | -60.22          | -40              | -20.22                  | -79.7                   | -58.79                   | 20.13                      | 18.70                       | V                     |
|                            | 28400                | -60.11          | -40              | -20.11                  | -80.77                  | -57.87                   | 21.68                      | 19.44                       | V                     |
| Middle                     | 7240                 | -54.28          | -40              | -14.28                  | -81.37                  | -54.32                   | 10.56                      | 10.60                       | H                     |
|                            | 10860                | -48.44          | -40              | -8.44                   | -77.94                  | -47.15                   | 13.03                      | 11.74                       | H                     |
|                            | 14480                | -50.46          | -40              | -10.46                  | -81.02                  | -48.92                   | 15.18                      | 13.64                       | H                     |
|                            | 18110                | -64.82          | -40              | -24.82                  | -74.8                   | -65.18                   | 17.04                      | 17.40                       | H                     |
|                            | 21720                | -64.13          | -40              | -24.13                  | -78.77                  | -63.51                   | 18.83                      | 18.21                       | H                     |
|                            | 25340                | -60.51          | -40              | -20.51                  | -80.26                  | -59.18                   | 20.34                      | 19.02                       | H                     |
|                            | 7240                 | -52.90          | -40              | -12.90                  | -80.47                  | -52.94                   | 10.56                      | 10.60                       | V                     |
|                            | 10860                | -41.31          | -40              | -1.31                   | -70.32                  | -40.02                   | 13.03                      | 11.74                       | V                     |
|                            | 14480                | -49.74          | -40              | -9.74                   | -80.92                  | -48.20                   | 15.18                      | 13.64                       | V                     |
|                            | 18110                | -64.67          | -40              | -24.67                  | -74.84                  | -65.03                   | 17.04                      | 17.40                       | V                     |
|                            | 21720                | -62.91          | -40              | -22.91                  | -77.8                   | -62.29                   | 18.83                      | 18.21                       | V                     |
|                            | 25340                | -60.28          | -40              | -20.28                  | -80.32                  | -58.95                   | 20.34                      | 19.02                       | V                     |



|         |       |        |     |        |        |        |       |       |   |
|---------|-------|--------|-----|--------|--------|--------|-------|-------|---|
| Highest | 7380  | -55.21 | -40 | -15.21 | -82.04 | -55.67 | 10.66 | 11.12 | H |
|         | 11070 | -45.02 | -40 | -5.02  | -74.65 | -44.05 | 13.14 | 12.17 | H |
|         | 14760 | -50.26 | -40 | -10.26 | -80.84 | -48.87 | 15.29 | 13.90 | H |
|         | 18450 | -65.60 | -40 | -25.60 | -76.13 | -65.49 | 17.27 | 17.16 | H |
|         | 22140 | -63.08 | -40 | -23.08 | -78.13 | -62.07 | 19.02 | 18.01 | H |
|         | 25830 | -59.43 | -40 | -19.43 | -79.23 | -58.20 | 20.42 | 19.20 | H |
|         | 7380  | -54.62 | -40 | -14.62 | -81.81 | -55.08 | 10.66 | 11.12 | V |
|         | 11070 | -40.86 | -40 | -0.86  | -70.1  | -39.89 | 13.14 | 12.17 | V |
|         | 14760 | -50.31 | -40 | -10.31 | -81.11 | -48.92 | 15.29 | 13.90 | V |
|         | 18450 | -65.57 | -40 | -25.57 | -76.32 | -65.46 | 17.27 | 17.16 | V |
|         | 22140 | -63.52 | -40 | -23.52 | -78.67 | -62.51 | 19.02 | 18.01 | V |
|         | 25830 | -59.76 | -40 | -19.76 | -79.79 | -58.53 | 20.42 | 19.20 | V |

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