



# FCC RADIO TEST REPORT

**FCC ID** : O57FLEX5G14X05  
**Equipment** : Notebook Computer  
**Brand Name** : Lenovo  
**Model Name** : Lenovo Flex 5G 14Q8CX05\*\*\*\*\*, 82AK\*\*\*\*\*, Yoga 5G 14Q8CX05\*\*\*\*\*, 81XE\*\*\*\*\* (\* = 0~9, A~Z, a~z, “-“ or blank, for marketing use only, with no impact on RF compliance of the product)  
**Applicant** : Lenovo (Shanghai) Electronics Technology Co., Ltd.  
Section 304-305, Building No. 4, # 222, Meiyue Road,  
China (Shanghai) Pilot Free Trade Zone, Shanghai  
**Manufacturer** : Lenovo PC HK Limited  
23/F, Lincoln House, Taikoo Place, 979 King's Road,  
Quarry Bay, Hong Kong  
**Standard** : FCC 47 CFR Part 2, 22(H), 24(E), 27

Equipment: Murata LBDD5WV1US-575 and HON LIN T99W175 tested inside of Lenovo Notebook Computer.

The product was received on Sep. 23, 2020 and testing was started from Sep. 28, 2020 and completed on Oct. 02, 2020. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications 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. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

**SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**  
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan



## Table of Contents

|                                                              |           |
|--------------------------------------------------------------|-----------|
| <b>History of this test report.....</b>                      | <b>3</b>  |
| <b>Summary of Test Result.....</b>                           | <b>4</b>  |
| <b>1 General Description .....</b>                           | <b>6</b>  |
| 1.1 Product Feature of Equipment Under Test.....             | 6         |
| 1.2 Product Specification of Equipment Under Test.....       | 7         |
| 1.3 Modification of EUT .....                                | 7         |
| 1.4 Testing Location .....                                   | 8         |
| 1.5 Applicable Standards.....                                | 8         |
| <b>2 Test Configuration of Equipment Under Test .....</b>    | <b>9</b>  |
| 2.1 Test Mode.....                                           | 9         |
| 2.2 Connection Diagram of Test System.....                   | 10        |
| 2.3 Support Unit used in test configuration and system ..... | 10        |
| 2.4 Frequency List of Low/Middle/High Channels .....         | 11        |
| <b>3 Radiated Test Items .....</b>                           | <b>12</b> |
| 3.1 Measuring Instruments .....                              | 12        |
| 3.2 Radiated Spurious Emission Measurement .....             | 14        |
| <b>4 List of Measuring Equipment.....</b>                    | <b>15</b> |
| <b>5 Uncertainty of Evaluation.....</b>                      | <b>17</b> |
| <b>Appendix A. Test Results of Radiated Test</b>             |           |
| <b>Appendix B. Test Setup Photographs</b>                    |           |



## History of this test report

| Report No.   | Version | Description             | Issued Date   |
|--------------|---------|-------------------------|---------------|
| FG9N2705-01G | 01      | Initial issue of report | Oct. 14, 2020 |
|              |         |                         |               |
|              |         |                         |               |
|              |         |                         |               |
|              |         |                         |               |
|              |         |                         |               |
|              |         |                         |               |
|              |         |                         |               |
|              |         |                         |               |
|              |         |                         |               |
|              |         |                         |               |
|              |         |                         |               |
|              |         |                         |               |
|              |         |                         |               |
|              |         |                         |               |

## Summary of Test Result

| Report Clause | Ref Std. Clause                                                   | Test Items                                                  | Result (PASS/FAIL) | Remark   |
|---------------|-------------------------------------------------------------------|-------------------------------------------------------------|--------------------|----------|
| -             | §2.1046                                                           | Conducted Output Power                                      | -                  | See Note |
|               | §22.913 (a)(2)                                                    | Effective Radiated Power (n5)                               | -                  |          |
|               | §27.50 (c)(10)                                                    | Effective Radiated Power (n12) (n71)                        |                    |          |
|               | §24.232 (c)<br>§27.50 (h)(2)                                      | Equivalent Isotropic Radiated Power (n2) (n7) (n41)         |                    |          |
|               | §27.50 (d)(4)                                                     | Equivalent Isotropic Radiated Power (n66)                   |                    |          |
| -             | §24.232 (d)<br>§27.50 (d)(5)                                      | Peak-to-Average Ratio                                       | -                  | See Note |
| -             | §2.1049                                                           | Occupied Bandwidth                                          | -                  | See Note |
| -             | §2.1051<br>§22.917 (a)<br>§24.238 (a)<br>§27.53 (g)<br>§27.53 (h) | Conducted Band Edge Measurement (n2) (n5) (n12) (n66) (n71) | -                  | See Note |
|               | §2.1051<br>§27.53 (m)(4)                                          | Conducted Band Edge Measurement (n7) (n41)                  |                    |          |
| -             | §2.1051<br>§22.917 (a)<br>§24.238 (a)<br>§27.53 (g)<br>§27.53 (h) | Conducted Spurious Emission (n2) (n5) (n12) (n66) (n71)     | -                  | See Note |
|               | §2.1051<br>§27.53 (m)(4)                                          | Conducted Spurious Emission (n7) (n41)                      |                    |          |
| -             | §2.1055<br>§22.355<br>§24.235<br>§27.54                           | Frequency Stability<br>Temperature & Voltage                | -                  | See Note |



| Report Clause | Ref Std. Clause                                                   | Test Items                                                   | Result (PASS/FAIL) | Remark                                     |
|---------------|-------------------------------------------------------------------|--------------------------------------------------------------|--------------------|--------------------------------------------|
| 3.2           | §2.1053<br>§22.917 (a)<br>§24.238 (a)<br>§27.53 (g)<br>§27.53 (h) | Radiated Spurious Emission<br>(n2) (n5) (n12)<br>(n66) (n71) | Pass               | Under limit<br>15.40 dB at<br>5624.000 MHz |
|               | §2.1051<br>§27.53 (m)(4)                                          | Radiated Spurious Emission<br>(n7) (n41)                     |                    |                                            |

**Note:** The module (Model: T99W175) makes no difference after verifying output power, this report reuses test data from the module report.

**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.

**Reviewed by:** Wii Chang

**Report Producer:** Yimin Ho

# 1 General Description

## 1.1 Product Feature of Equipment Under Test

| Product Feature                 |                                                                                                                                                                                     |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Equipment                       | Notebook Computer                                                                                                                                                                   |
| Brand Name                      | Lenovo                                                                                                                                                                              |
| Model Name                      | Lenovo Flex 5G 14Q8CX05*****, 82AK*****, Yoga 5G 14Q8CX05*****, 81XE***** (* = 0~9, A~Z, a~z, "-" or blank, for marketing use only, with no impact on RF compliance of the product) |
| FCC ID                          | O57FLEX5G14X05                                                                                                                                                                      |
| EUT supports Radios application | WCDMA/HSPA/LTE/5G NR/GNSS<br>WLAN 11a/b/g/n HT20/HT40<br>WLAN 11ac VHT20/VHT40/VHT80<br>Bluetooth BR/EDR/LE                                                                         |
| EUT Stage                       | Production Unit                                                                                                                                                                     |

**Remark:**

1. The above EUT's information was declared by manufacturer.
2. Equipment: Murata LBDD5WV1US-575 and HON LIN T99W175 tested inside of Lenovo Notebook Computer.

| Antenna Information |                 |                               |                               |
|---------------------|-----------------|-------------------------------|-------------------------------|
| WWAN                | 3G&LTE (dBi)    |                               |                               |
| Notebook Mode       | Antenna Type    | Main: PIFA Antenna            | Aux: PIFA Antenna             |
|                     | Part number     | AUF6Y-100015<br>(DC33002DB00) | AUF6Y-100017<br>(DC33002DB30) |
|                     | Peak gain (dbi) | Main Antenna :<br>2.95        | Aux. Antenna :<br>2.85        |
| Tablet Mode         | Antenna Type    | Main: PIFA Antenna            | Aux: PIFA Antenna             |
|                     | Part number     | AUF6Y-100015<br>(DC33002DB00) | AUF6Y-100017<br>(DC33002DB30) |
|                     | Peak gain (dbi) | Main Antenna :<br>2.02        | Aux. Antenna :<br>0.92        |

## 1.2 Product Specification of Equipment Under Test

| Standards-related Product Specification |                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tx Frequency</b>                     | 5G NR n2: 1852.5 MHz ~ 1907.5 MHz<br>5G NR n5: 826.5 MHz ~ 846.5 MHz<br>5G NR n7: 2502.5 MHz ~ 2567.5 MHz<br>5G NR n12: 701.5 MHz ~ 713.5 MHz<br>5G NR n41: 2506.02 MHz ~ 2679.99 MHz<br>5G NR n66: 1712.5 MHz ~ 1777.5 MHz<br>5G NR n71: 668.0 MHz ~ 693.0 MHz                                                          |
| <b>Rx Frequency</b>                     | 5G NR n2: 1932.5 MHz ~ 1987.5 MHz<br>5G NR n5: 871.5 MHz ~ 891.5 MHz<br>5G NR n7: 2502.5 MHz ~ 2567.5 MHz<br>5G NR n12: 731.5 MHz ~ 743.5 MHz<br>5G NR n41: 2506.02 MHz ~ 2679.99 MHz<br>5G NR n66: 2112.5 MHz ~ 2197.5 MHz<br>5G NR n71: 668.0 MHz ~ 693.0 MHz                                                          |
| <b>Bandwidth</b>                        | 5G NR n2: 5MHz / 10MHz / 15MHz / 20MHz<br>5G NR n5: 5MHz / 10MHz / 15MHz / 20MHz<br>5G NR n7: 5MHz / 10MHz / 15MHz / 20MHz<br>5G NR n12: 5MHz / 10MHz / 15MHz<br>5G NR n41: 20MHz / 40MHz / 50MHz / 60MHz / 80MHz / 90MHz / 100MHz<br>5G NR n66: 5MHz / 10MHz / 15MHz / 20MHz<br>5G NR n71: 5MHz / 10MHz / 15MHz / 20MHz |
| <b>Type of Modulation</b>               | PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM                                                                                                                                                                                                                                                                                |

## 1.3 Modification of EUT

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



## 1.4 Testing Location

|                    |                                                                                |
|--------------------|--------------------------------------------------------------------------------|
| Test Site          | SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory            |
| Test Site Location | No.58 , Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City, Taiwan |
| Test Site No.      | <b>Sporton Site No.</b>                                                        |
|                    | 03CH13-HY                                                                      |
| Test Engineer      | Daniel Lee, Jacky Hong and Wilson Wu                                           |
| Temperature        | 21.5~25.5℃                                                                     |
| Relative Humidity  | 49.5~55.5%                                                                     |

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

FCC Designation No.: TW0007

## 1.5 Applicable 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, 22(H), 24(E), 27
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ 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

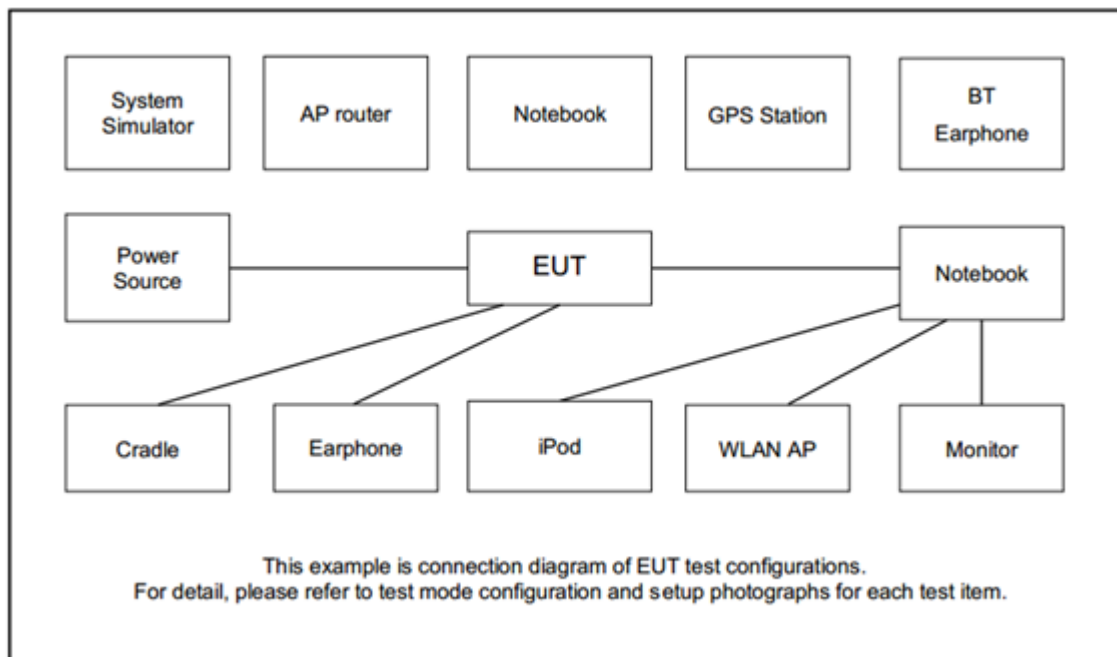
Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

For radiated measurement, pre-scanned in Tablet type (three orthogonal panels, X, Y, Z) and Notebook type. The worst cases (X Plane with Accessory for n66A, n41A and Notebook type with Accessory for n5A, n2A, n12A) were recorded in this report.

| Test Items                 | NR Band                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Bandwidth (MHz) |    |    |    |    |    | Modulation |      |       |       |        | RB # |      |      | Test Channel |   |   |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----|----|----|----|----|------------|------|-------|-------|--------|------|------|------|--------------|---|---|
|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5               | 10 | 15 | 20 | 40 | 50 | PI/2 BPSK  | QPSK | 16QAM | 64QAM | 256QAM | 1    | Half | Full | L            | M | H |
| Radiated Spurious Emission | n2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |    | v  |    | -  | -  | v          |      |       |       |        | v    |      |      | v            | v | v |
|                            | n5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |    | v  |    | -  | -  | v          |      |       |       |        | v    |      |      | v            | v | v |
|                            | n12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                 | v  |    | -  | -  | -  | v          |      |       |       |        | v    |      |      | v            | v | v |
|                            | n66                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                 |    | 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>Test combination is EN-DC 12A-n66A, EN-DC 2A-n12A, EN-DC 5A-n2A, EN-DC 66A-n5A.</li> <li>For radiated measurement, pre-scanned in two modes, DFT-s OFDM and CP OFDM. The worst cases (DFT-s OFDM) were recorded in this report.</li> </ol> |                 |    |    |    |    |    |            |      |       |       |        |      |      |      |              |   |   |

| Test Items                 | NR Band                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Bandwidth (MHz) |    |    |    |    |    |    |    |     | Modulation |      |       |       |        | RB # |      |      | Test Channel |   |   |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----|----|----|----|----|----|----|-----|------------|------|-------|-------|--------|------|------|------|--------------|---|---|
|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 10              | 15 | 20 | 40 | 50 | 60 | 80 | 90 | 100 | PI/2 BPSK  | QPSK | 16QAM | 64QAM | 256QAM | 1    | Half | Full | L            | M | H |
| Radiated Spurious Emission | n41                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |    | 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>Test combination is EN-DC 25A-n41A.</li> <li>For radiated measurement, pre-scanned in two modes, DFT-s OFDM and CP OFDM. The worst cases (DFT-s OFDM) were recorded in this report.</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    | MT8000A   | N/A    | N/A              | Unshielded, 1.8 m |
| 2.   | Earphone         | SONY       | MH750     | N/A    | Unshielded, 1.2m | N/A               |

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

| 5G NR Band n2 Channel and Frequency List |                        |        |        |         |
|------------------------------------------|------------------------|--------|--------|---------|
| BW [MHz]                                 | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 15                                       | Channel                | 371500 | 376000 | 380500  |
|                                          | Frequency              | 1857.5 | 1880   | 1902.5  |

| 5G NR Band n5 Channel and Frequency List |                        |        |        |         |
|------------------------------------------|------------------------|--------|--------|---------|
| BW [MHz]                                 | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 15                                       | Channel                | 166300 | 167300 | 168300  |
|                                          | Frequency              | 831.5  | 836.5  | 841.5   |

| 5G NR Band n12 Channel and Frequency List |                        |        |        |         |
|-------------------------------------------|------------------------|--------|--------|---------|
| BW [MHz]                                  | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 10                                        | Channel                | 140800 | 141500 | 142200  |
|                                           | Frequency              | 704    | 707.5  | 711     |

| 5G NR Band n41 Channel and Frequency List |                        |         |         |         |
|-------------------------------------------|------------------------|---------|---------|---------|
| BW [MHz]                                  | Channel/Frequency(MHz) | Lowest  | Middle  | Highest |
| 20                                        | Channel                | 501204  | 518598  | 535998  |
|                                           | Frequency              | 2506.02 | 2592.99 | 2679.99 |

| 5G NR Band n66 Channel and Frequency List |                        |        |        |         |
|-------------------------------------------|------------------------|--------|--------|---------|
| BW [MHz]                                  | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 15                                        | Channel                | 343500 | 349000 | 354500  |
|                                           | Frequency              | 1717.5 | 1745   | 1772.5  |

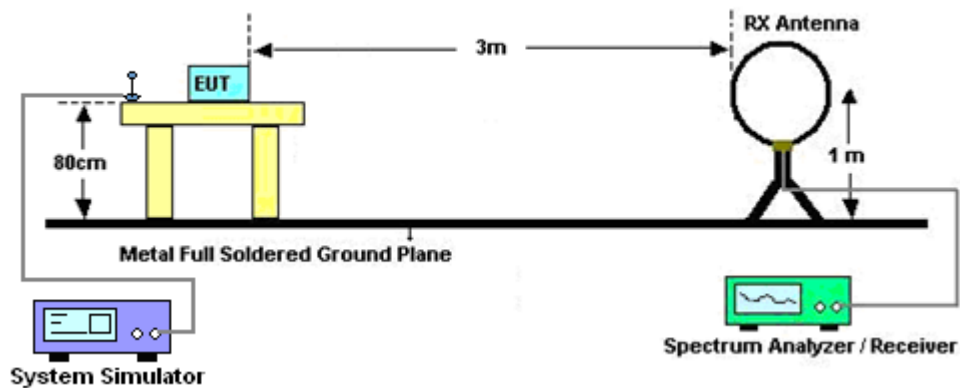
### 3 Radiated Test Items

#### 3.1 Measuring Instruments

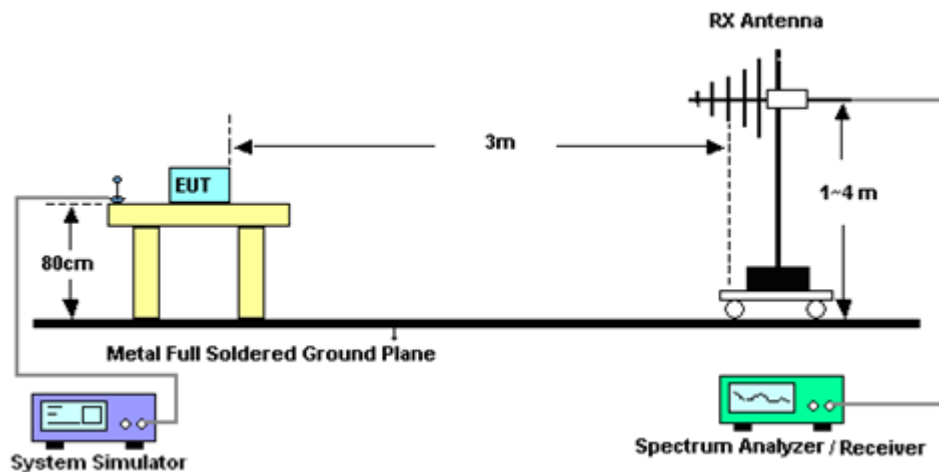
See list of measuring instruments of this test report.

##### 3.1.1 Test Setup

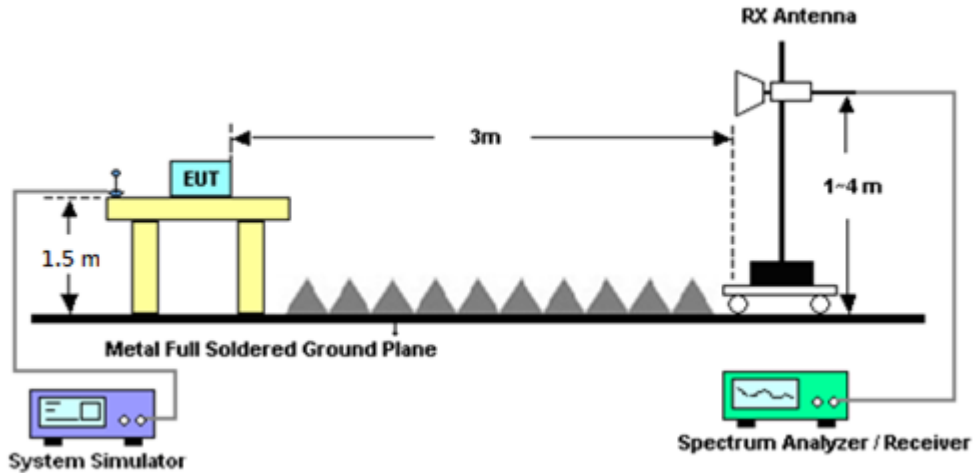
For radiated test below 30MHz



For radiated test from 30MHz to 1GHz



For radiated test above 1GHz



### 3.1.2 Test Result of Radiated Test

Please refer to Appendix A.

**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 a comparison data 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.

## 3.2 Radiated Spurious Emission Measurement

### 3.2.1 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  $43 + 10 \log (P)$  dB.

For 5G NR n41

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  $55 + 10 \log (P)$  dB.

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

### 3.2.2 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, 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.

The limit line is derived from  $43 + 10\log(P)$ dB below the transmitter power P(Watts)

For 5G NR n41

The limit line is derived from  $55 + 10\log(P)$ dB below the transmitter power P(Watts)

$EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$

$ERP \text{ (dBm)} = EIRP - 2.15$



## 4 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                     | Jul. 14, 2020    | Sep. 28, 2020~<br>Oct. 02, 2020 | Jul. 13, 2021 | Radiation<br>(03CH13-HY) |
| Amplifier            | Sonoma-Instrument | 310 N                           | 187282          | 9KHz~1GHz                        | Dec. 17, 2019    | Sep. 28, 2020~<br>Oct. 02, 2020 | Dec. 16, 2020 | Radiation<br>(03CH13-HY) |
| Bilog Antenna        | TESEQ             | CBL<br>6111D&00800<br>N1D01N-06 | 40103&07        | 30MHz to 1GHz                    | Apr. 29, 2020    | Sep. 28, 2020~<br>Oct. 02, 2020 | Apr. 28, 2021 | Radiation<br>(03CH13-HY) |
| Bilog Antenna        | TESEQ             | CBL<br>6111D&00800<br>N1D01N-06 | 41912 & 07      | 30MHz to 1GHz                    | Apr. 29, 2020    | Sep. 28, 2020~<br>Oct. 02, 2020 | Apr. 28, 2021 | Radiation<br>(03CH13-HY) |
| Horn Antenna         | SCHWARZBECK       | BBHA 9120 D                     | 9120D-1212      | 1GHz ~ 18GHz                     | May 20, 2020     | Sep. 28, 2020~<br>Oct. 02, 2020 | May 19, 2021  | Radiation<br>(03CH13-HY) |
| Horn Antenna         | SCHWARZBECK       | BBHA 9120 D                     | 9120D-1241      | 1GHz ~ 18GHz                     | Jul. 15, 2020    | Sep. 28, 2020~<br>Oct. 02, 2020 | Jul. 14, 2021 | Radiation<br>(03CH13-HY) |
| Preamplifier         | MITEQ             | AMF-7D-0010<br>1800-30-10P      | 1590074         | 1GHz~18GHz                       | May 19, 2020     | Sep. 28, 2020~<br>Oct. 02, 2020 | May 18, 2021  | Radiation<br>(03CH13-HY) |
| Preamplifier         | Keysight          | 83017A                          | MY53270147      | 1GHz~26.5GHz                     | Oct. 28, 2019    | Sep. 28, 2020~<br>Oct. 02, 2020 | Oct. 27, 2020 | Radiation<br>(03CH13-HY) |
| Signal Generator     | Anritsu           | MG3694C                         | 163401          | 0.1Hz~40GHz                      | Feb. 15, 2020    | Sep. 28, 2020~<br>Oct. 02, 2020 | Feb. 14, 2021 | Radiation<br>(03CH13-HY) |
| Spectrum Analyzer    | Keysight          | N9010A                          | MY55370526      | 10Hz~44GHz                       | Mar. 20, 2020    | Sep. 28, 2020~<br>Oct. 02, 2020 | Mar. 19, 2021 | Radiation<br>(03CH13-HY) |
| Controller           | EMEC              | EM1000                          | N/A             | Control Turn<br>table & Ant Mast | N/A              | Sep. 28, 2020~<br>Oct. 02, 2020 | N/A           | Radiation<br>(03CH13-HY) |
| Antenna Mast         | EMEC              | AM-BS-4500-B                    | N/A             | 1m~4m                            | N/A              | Sep. 28, 2020~<br>Oct. 02, 2020 | N/A           | Radiation<br>(03CH13-HY) |
| Turn Table           | EMEC              | TT2000                          | N/A             | 0~360 Degree                     | N/A              | Sep. 28, 2020~<br>Oct. 02, 2020 | N/A           | Radiation<br>(03CH13-HY) |
| Software             | Audix             | E3<br>6.2009-8-24               | RK-000992       | N/A                              | N/A              | Sep. 28, 2020~<br>Oct. 02, 2020 | N/A           | Radiation<br>(03CH13-HY) |
| Preamplifier         | EMEC              | EM18G40G                        | 060715          | 18GHz ~ 40GHz                    | Dec. 13, 2019    | Sep. 28, 2020~<br>Oct. 02, 2020 | Dec. 12, 2020 | Radiation<br>(03CH13-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK       | BBHA 9170                       | BBHA917058<br>4 | 18GHz- 40GHz                     | Dec. 10, 2019    | Sep. 28, 2020~<br>Oct. 02, 2020 | Dec. 09, 2020 | Radiation<br>(03CH13-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK       | BBHA 9170                       | BBHA917098<br>0 | 18GHz~40GHz                      | Jan. 10, 2020    | Sep. 28, 2020~<br>Oct. 02, 2020 | Jan. 09, 2021 | Radiation<br>(03CH13-HY) |



| Instrument | Brand Name     | Model No.                           | Serial No. | Characteristics            | Calibration Date | Test Date                       | Due Date      | Remark                   |
|------------|----------------|-------------------------------------|------------|----------------------------|------------------|---------------------------------|---------------|--------------------------|
| RF Cable   | HUBER + SUHNER | SUCOFLEX 126E                       | 0030/126E  | 30M-18G                    | Feb. 12, 2020    | Sep. 28, 2020~<br>Oct. 02, 2020 | Feb. 21, 2021 | Radiation<br>(03CH13-HY) |
| RF Cable   | HUBER + SUHNER | SUCOFLEX 104                        | 804793/4   | 30M-18G                    | Feb. 12, 2020    | Sep. 28, 2020~<br>Oct. 02, 2020 | Feb. 21, 2021 | Radiation<br>(03CH13-HY) |
| RF Cable   | HUBER + SUHNER | SUCOFLEX 102                        | 505134/2   | 30M~40GHz                  | Feb. 25, 2020    | Sep. 28, 2020~<br>Oct. 02, 2020 | Feb. 24, 2021 | Radiation<br>(03CH13-HY) |
| RF Cable   | HUBER + SUHNER | SUCOFLEX 102                        | MY4274/2   | 30M~40GHz                  | Mar. 12, 2020    | Sep. 28, 2020~<br>Oct. 02, 2020 | Mar. 11, 2021 | Radiation<br>(03CH13-HY) |
| RF Cable   | HUBER + SUHNER | SUCOFLEX 104                        | MY24961/4  | 30M-18G                    | Feb. 12, 2020    | Sep. 28, 2020~<br>Oct. 02, 2020 | Feb. 11, 2021 | Radiation<br>(03CH13-HY) |
| RF Cable   | HUBER + SUHNER | SUCOFLEX 104                        | MY9837/4PE | 9kHz~30MHz                 | Mar. 12, 2020    | Sep. 28, 2020~<br>Oct. 02, 2020 | Mar. 11, 2021 | Radiation<br>(03CH13-HY) |
| Filter     | Wainwright     | WHKX12-2700<br>-3000-18000-6<br>0SS | SN2        | 3GHz High Pass<br>Filter   | Jul. 13, 2020    | Sep. 28, 2020~<br>Oct. 02, 2020 | Jul. 12, 2021 | Radiation<br>(03CH13-HY) |
| Filter     | Wainwright     | WHKX12-1080<br>-1200-15000-6<br>0SS | SN3        | 1.2GHz High<br>Pass Filter | Jul. 02, 2020    | Sep. 28, 2020~<br>Oct. 02, 2020 | Jul. 01, 2021 | Radiation<br>(03CH13-HY) |
| Hygrometer | TECEPEL        | DTM-303A                            | TP190075   | N/A                        | Apr. 23, 2020    | Sep. 28, 2020~<br>Oct. 02, 2020 | Apr. 22, 2021 | Radiation<br>(03CH13-HY) |

## 5 Uncertainty of Evaluation

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

|                                                                          |      |
|--------------------------------------------------------------------------|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_c(y)$ ) | 3.10 |
|--------------------------------------------------------------------------|------|

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

|                                                                          |      |
|--------------------------------------------------------------------------|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_c(y)$ ) | 3.12 |
|--------------------------------------------------------------------------|------|

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

|                                                                          |      |
|--------------------------------------------------------------------------|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_c(y)$ ) | 3.77 |
|--------------------------------------------------------------------------|------|



## Appendix A. Test Results of Radiated Test

EN-DC 12A n66A

| EN-DC_12A_n66A / 15MHz / BPSK |                      |                 |                  |                         |                         |                          |                            |                             |                       |
|-------------------------------|----------------------|-----------------|------------------|-------------------------|-------------------------|--------------------------|----------------------------|-----------------------------|-----------------------|
| 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                        | 3422                 | -57.21          | -13              | -44.21                  | -76.2                   | -67.57                   | 1.81                       | 12.17                       | H                     |
|                               | 5132                 | -53.11          | -13              | -40.11                  | -76.6                   | -62.93                   | 2.31                       | 12.13                       | H                     |
|                               | 6843                 | -50.14          | -13              | -37.14                  | -76.43                  | -58.83                   | 2.37                       | 11.06                       | H                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                               | 3422                 | -56.72          | -13              | -43.72                  | -76.34                  | -67.08                   | 1.81                       | 12.17                       | V                     |
|                               | 5132                 | -52.45          | -13              | -39.45                  | -76.51                  | -62.27                   | 2.31                       | 12.13                       | V                     |
|                               | 6843                 | -49.72          | -13              | -36.72                  | -76.56                  | -58.41                   | 2.37                       | 11.06                       | V                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | V                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | V                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | V                     |
| Middle                        | 3476                 | -57.01          | -13              | -44.01                  | -76.52                  | -67.49                   | 1.85                       | 12.33                       | H                     |
|                               | 5215                 | -53.77          | -13              | -40.77                  | -77.34                  | -63.64                   | 2.27                       | 12.14                       | H                     |
|                               | 6953                 | -49.74          | -13              | -36.74                  | -76.32                  | -58.28                   | 2.40                       | 10.95                       | H                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                               | 3476                 | -56.07          | -13              | -43.07                  | -76.08                  | -66.55                   | 1.85                       | 12.33                       | V                     |
|                               | 5215                 | -53.18          | -13              | -40.18                  | -77.29                  | -63.05                   | 2.27                       | 12.14                       | V                     |
|                               | 6953                 | -49.08          | -13              | -36.08                  | -76.26                  | -57.62                   | 2.40                       | 10.95                       | V                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | V                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | V                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | V                     |



|         |      |        |     |        |        |        |      |       |   |
|---------|------|--------|-----|--------|--------|--------|------|-------|---|
| Highest | 3531 | -56.39 | -13 | -43.39 | -76.32 | -66.89 | 1.89 | 12.38 | H |
|         | 5297 | -53.80 | -13 | -40.80 | -77.41 | -63.72 | 2.24 | 12.16 | H |
|         | 7063 | -49.14 | -13 | -36.14 | -76.16 | -57.55 | 2.38 | 10.79 | H |
|         |      |        |     |        |        |        |      |       | H |
|         |      |        |     |        |        |        |      |       | H |
|         |      |        |     |        |        |        |      |       | H |
|         |      |        |     |        |        |        |      |       | H |
|         | 3531 | -56.02 | -13 | -43.02 | -76.44 | -66.52 | 1.89 | 12.38 | V |
|         | 5297 | -53.02 | -13 | -40.02 | -77.15 | -62.94 | 2.24 | 12.16 | V |
|         | 7063 | -48.58 | -13 | -35.58 | -76.18 | -56.99 | 2.38 | 10.79 | V |
|         |      |        |     |        |        |        |      |       | V |
|         |      |        |     |        |        |        |      |       | V |
|         |      |        |     |        |        |        |      |       | V |
|         |      |        |     |        |        |        |      |       | V |

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

**EN-DC 2A n12A**

| EN-DC_2A_n12A / 10MHz / BPSK |                      |                |                  |                         |                         |                          |                            |                             |                       |
|------------------------------|----------------------|----------------|------------------|-------------------------|-------------------------|--------------------------|----------------------------|-----------------------------|-----------------------|
| Channel                      | Frequency<br>( MHz ) | ERP<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                       | 1400                 | -49.22         | -13.00           | -36.22                  | -73.54                  | -53.66                   | 1.15                       | 7.74                        | H                     |
|                              | 2098                 | -48.57         | -13.00           | -35.57                  | -75.16                  | -55.22                   | 1.38                       | 10.18                       | H                     |
|                              | 2798                 | -47.80         | -13.00           | -34.80                  | -75.36                  | -54.94                   | 1.45                       | 10.74                       | H                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                              | 1400                 | -50.01         | -13.00           | -37.01                  | -73.76                  | -54.45                   | 1.15                       | 7.74                        | V                     |
|                              | 2098                 | -48.39         | -13.00           | -35.39                  | -75.23                  | -55.04                   | 1.38                       | 10.18                       | V                     |
|                              | 2798                 | -47.42         | -13.00           | -34.42                  | -75.39                  | -54.56                   | 1.45                       | 10.74                       | V                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | V                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | V                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | V                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | V                     |
| Middle                       | 1406                 | -49.38         | -13.00           | -36.38                  | -73.67                  | -53.85                   | 1.15                       | 7.77                        | H                     |
|                              | 2109                 | -48.58         | -13.00           | -35.58                  | -75.37                  | -55.24                   | 1.38                       | 10.19                       | H                     |
|                              | 5624                 | -28.40         | -13.00           | -15.40                  | -61.76                  | -36.50                   | 2.13                       | 12.37                       | H                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                              | 1406                 | -50.16         | -13.00           | -37.16                  | -73.89                  | -54.63                   | 1.15                       | 7.77                        | V                     |
|                              | 2109                 | -48.27         | -13.00           | -35.27                  | -75.34                  | -54.93                   | 1.38                       | 10.19                       | V                     |
|                              | 5624                 | -35.64         | -13.00           | -22.64                  | -69.63                  | -43.74                   | 2.13                       | 12.37                       | V                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | V                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | V                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | V                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | V                     |



|         |      |        |        |        |        |        |      |       |   |
|---------|------|--------|--------|--------|--------|--------|------|-------|---|
| Highest | 1414 | -49.70 | -13.00 | -36.70 | -73.95 | -54.20 | 1.15 | 7.80  | H |
|         | 2120 | -48.42 | -13.00 | -35.42 | -75.40 | -55.09 | 1.38 | 10.20 | H |
|         | 2826 | -47.97 | -13.00 | -34.97 | -75.60 | -55.13 | 1.45 | 10.76 | H |
|         |      |        |        |        |        |        |      |       | H |
|         |      |        |        |        |        |        |      |       | H |
|         |      |        |        |        |        |        |      |       | H |
|         |      |        |        |        |        |        |      |       | H |
|         | 1414 | -50.41 | -13.00 | -37.41 | -74.13 | -54.91 | 1.15 | 7.80  | V |
|         | 2120 | -48.00 | -13.00 | -35.00 | -75.29 | -54.67 | 1.38 | 10.20 | V |
|         | 2826 | -47.55 | -13.00 | -34.55 | -75.60 | -54.71 | 1.45 | 10.76 | V |
|         |      |        |        |        |        |        |      |       | V |
|         |      |        |        |        |        |        |      |       | V |
|         |      |        |        |        |        |        |      |       | V |
|         |      |        |        |        |        |        |      |       | V |

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

**EN-DC 25A n41A**

| EN-DC_25A_n41A / 20MHz / BPSK |                      |                 |                  |                         |                         |                          |                            |                             |                       |
|-------------------------------|----------------------|-----------------|------------------|-------------------------|-------------------------|--------------------------|----------------------------|-----------------------------|-----------------------|
| 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                        | 4995                 | -65.78          | -25              | -40.78                  | -58.74                  | -75.52                   | 2.36                       | 12.10                       | H                     |
|                               | 7494                 | -60.77          | -25              | -35.77                  | -59.28                  | -68.66                   | 2.12                       | 10.01                       | H                     |
|                               | 9986                 | -60.00          | -25              | -35.00                  | -62.27                  | -69.99                   | 1.81                       | 11.80                       | H                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                               | 4995                 | -65.50          | -25              | -40.50                  | -59.08                  | -75.24                   | 2.36                       | 12.10                       | V                     |
|                               | 7494                 | -61.22          | -25              | -36.22                  | -59.59                  | -69.11                   | 2.12                       | 10.01                       | V                     |
|                               | 9986                 | -60.89          | -25              | -35.89                  | -62.29                  | -70.88                   | 1.81                       | 11.80                       | V                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | V                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | V                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | V                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | V                     |
| Middle                        | 5170                 | -65.03          | -25              | -40.03                  | -58.57                  | -74.87                   | 2.29                       | 12.13                       | H                     |
|                               | 7752                 | -61.84          | -25              | -36.84                  | -60.26                  | -70.63                   | 2.11                       | 10.91                       | H                     |
|                               | 10330                | -59.87          | -25              | -34.87                  | -62.7                   | -69.48                   | 2.32                       | 11.93                       | H                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                               | 5170                 | -64.76          | -25              | -39.76                  | -58.86                  | -74.60                   | 2.29                       | 12.13                       | V                     |
|                               | 7752                 | -61.54          | -25              | -36.54                  | -60.02                  | -70.33                   | 2.11                       | 10.91                       | V                     |
|                               | 10330                | -60.14          | -25              | -35.14                  | -62.68                  | -69.75                   | 2.32                       | 11.93                       | V                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | V                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | V                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | V                     |
|                               |                      |                 |                  |                         |                         |                          |                            |                             | V                     |



|         |         |        |     |        |        |        |      |       |   |
|---------|---------|--------|-----|--------|--------|--------|------|-------|---|
| Highest | 5345    | -65.81 | -25 | -40.81 | -59.85 | -75.76 | 2.22 | 12.17 | H |
|         | 8012    | -60.91 | -25 | -35.91 | -60.78 | -70.62 | 2.11 | 11.82 | H |
|         | 10676.5 | -58.68 | -25 | -33.68 | -62.06 | -67.82 | 2.61 | 11.75 | H |
|         |         |        |     |        |        |        |      |       | H |
|         |         |        |     |        |        |        |      |       | H |
|         |         |        |     |        |        |        |      |       | H |
|         |         |        |     |        |        |        |      |       | H |
|         | 5345    | -65.47 | -25 | -40.47 | -60.02 | -75.42 | 2.22 | 12.17 | V |
|         | 8012    | -61.05 | -25 | -36.05 | -60.66 | -70.76 | 2.11 | 11.82 | V |
|         | 10676.5 | -58.92 | -25 | -33.92 | -62.33 | -68.06 | 2.61 | 11.75 | V |
|         |         |        |     |        |        |        |      |       | V |
|         |         |        |     |        |        |        |      |       | V |
|         |         |        |     |        |        |        |      |       | V |
|         |         |        |     |        |        |        |      |       | V |

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

**EN-DC 5A n2A**

| EN-DC_5A_n2A / 15MHz / BPSK |                      |                 |                  |                         |                         |                          |                            |                             |                       |
|-----------------------------|----------------------|-----------------|------------------|-------------------------|-------------------------|--------------------------|----------------------------|-----------------------------|-----------------------|
| 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                      | 3715                 | -45.77          | -13              | -32.77                  | -76.34                  | -56.06                   | 1.98                       | 12.27                       | H                     |
|                             | 5572                 | -43.47          | -13              | -30.47                  | -76.97                  | -53.63                   | 2.14                       | 12.30                       | H                     |
|                             | 7430                 | -37.45          | -13              | -24.45                  | -75.62                  | -45.42                   | 2.16                       | 10.13                       | H                     |
|                             |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                             |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                             |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                             |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                             | 3715                 | -45.58          | -13              | -32.58                  | -76.67                  | -55.87                   | 1.98                       | 12.27                       | V                     |
|                             | 5572                 | -42.90          | -13              | -29.90                  | -77.04                  | -53.06                   | 2.14                       | 12.30                       | V                     |
|                             | 7430                 | -38.20          | -13              | -25.20                  | -76.31                  | -46.17                   | 2.16                       | 10.13                       | V                     |
|                             |                      |                 |                  |                         |                         |                          |                            |                             | V                     |
|                             |                      |                 |                  |                         |                         |                          |                            |                             | V                     |
|                             |                      |                 |                  |                         |                         |                          |                            |                             | V                     |
|                             |                      |                 |                  |                         |                         |                          |                            |                             | V                     |
| Middle                      | 3749                 | -45.51          | -13              | -32.51                  | -76.16                  | -55.76                   | 2.00                       | 12.25                       | H                     |
|                             | 5618                 | -43.13          | -13              | -30.13                  | -76.65                  | -53.37                   | 2.13                       | 12.37                       | H                     |
|                             | 7494                 | -38.03          | -13              | -25.03                  | -76.05                  | -45.92                   | 2.12                       | 10.01                       | H                     |
|                             |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                             |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                             |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                             |                      |                 |                  |                         |                         |                          |                            |                             | H                     |
|                             | 3749                 | -44.99          | -13              | -31.99                  | -76.15                  | -55.24                   | 2.00                       | 12.25                       | V                     |
|                             | 5618                 | -40.71          | -13              | -27.71                  | -74.87                  | -50.95                   | 2.13                       | 12.37                       | V                     |
|                             | 7494                 | -38.00          | -13              | -25.00                  | -75.88                  | -45.89                   | 2.12                       | 10.01                       | V                     |
|                             |                      |                 |                  |                         |                         |                          |                            |                             | V                     |
|                             |                      |                 |                  |                         |                         |                          |                            |                             | V                     |
|                             |                      |                 |                  |                         |                         |                          |                            |                             | V                     |
|                             |                      |                 |                  |                         |                         |                          |                            |                             | V                     |



|         |      |        |     |        |        |        |      |       |   |
|---------|------|--------|-----|--------|--------|--------|------|-------|---|
| Highest | 3805 | -45.35 | -13 | -32.35 | -76.15 | -55.54 | 2.03 | 12.22 | H |
|         | 5707 | -43.19 | -13 | -30.19 | -77.16 | -53.57 | 2.11 | 12.49 | H |
|         | 7610 | -38.93 | -13 | -25.93 | -76.21 | -47.21 | 2.11 | 10.40 | H |
|         |      |        |     |        |        |        |      |       | H |
|         |      |        |     |        |        |        |      |       | H |
|         |      |        |     |        |        |        |      |       | H |
|         |      |        |     |        |        |        |      |       | H |
|         | 3805 | -44.65 | -13 | -31.65 | -75.92 | -54.84 | 2.03 | 12.22 | V |
|         | 5707 | -42.49 | -13 | -29.49 | -77.03 | -52.87 | 2.11 | 12.49 | V |
|         | 7610 | -38.77 | -13 | -25.77 | -76.09 | -47.05 | 2.11 | 10.40 | V |
|         |      |        |     |        |        |        |      |       | V |
|         |      |        |     |        |        |        |      |       | V |
|         |      |        |     |        |        |        |      |       | V |
|         |      |        |     |        |        |        |      |       | V |

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

**EN-DC 66A n5A**

| EN-DC_66A_n5A / 15MHz / BPSK |                      |                |                  |                         |                         |                          |                            |                             |                       |
|------------------------------|----------------------|----------------|------------------|-------------------------|-------------------------|--------------------------|----------------------------|-----------------------------|-----------------------|
| Channel                      | Frequency<br>( MHz ) | ERP<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                       | 1648                 | -52.12         | -13              | -39.12                  | -74.95                  | -57.51                   | 1.23                       | 8.76                        | H                     |
|                              | 2474                 | -48.54         | -13              | -35.54                  | -75.17                  | -55.43                   | 1.44                       | 10.48                       | H                     |
|                              | 3299                 | -47.39         | -13              | -34.39                  | -75.83                  | -55.33                   | 1.71                       | 11.80                       | H                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                              | 1648                 | -51.84         | -13              | -38.84                  | -74.55                  | -57.23                   | 1.23                       | 8.76                        | V                     |
|                              | 2474                 | -48.49         | -13              | -35.49                  | -75.4                   | -55.38                   | 1.44                       | 10.48                       | V                     |
|                              | 3299                 | -46.91         | -13              | -33.91                  | -75.75                  | -54.85                   | 1.71                       | 11.80                       | V                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | V                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | V                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | V                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | V                     |
| Middle                       | 1659                 | -51.80         | -13              | -38.80                  | -74.67                  | -57.22                   | 1.23                       | 8.80                        | H                     |
|                              | 2489                 | -48.66         | -13              | -35.66                  | -75.25                  | -55.56                   | 1.44                       | 10.49                       | H                     |
|                              | 3318                 | -47.41         | -13              | -34.41                  | -75.73                  | -55.39                   | 1.72                       | 11.85                       | H                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                              | 1659                 | -52.24         | -13              | -39.24                  | -74.99                  | -57.66                   | 1.23                       | 8.80                        | V                     |
|                              | 2489                 | -47.90         | -13              | -34.90                  | -74.72                  | -54.80                   | 1.44                       | 10.49                       | V                     |
|                              | 3318                 | -46.81         | -13              | -33.81                  | -75.58                  | -54.79                   | 1.72                       | 11.85                       | V                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | V                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | V                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | V                     |
|                              |                      |                |                  |                         |                         |                          |                            |                             | V                     |



|         |      |        |     |        |        |        |      |       |   |
|---------|------|--------|-----|--------|--------|--------|------|-------|---|
| Highest | 1670 | -51.63 | -13 | -38.63 | -74.53 | -57.09 | 1.23 | 8.85  | H |
|         | 2504 | -48.68 | -13 | -35.68 | -75.25 | -55.59 | 1.44 | 10.50 | H |
|         | 3339 | -47.00 | -13 | -34.00 | -75.18 | -55.03 | 1.74 | 11.92 | H |
|         |      |        |     |        |        |        |      |       | H |
|         |      |        |     |        |        |        |      |       | H |
|         |      |        |     |        |        |        |      |       | H |
|         |      |        |     |        |        |        |      |       | H |
|         | 1670 | -51.95 | -13 | -38.95 | -74.74 | -57.41 | 1.23 | 8.85  | V |
|         | 2504 | -47.95 | -13 | -34.95 | -74.71 | -54.86 | 1.44 | 10.50 | V |
|         | 3339 | -46.60 | -13 | -33.60 | -75.3  | -54.63 | 1.74 | 11.92 | V |
|         |      |        |     |        |        |        |      |       | V |
|         |      |        |     |        |        |        |      |       | V |
|         |      |        |     |        |        |        |      |       | V |
|         |      |        |     |        |        |        |      |       | V |

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