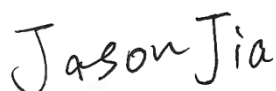


# FCC Test Report

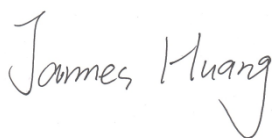
APPLICANT : Fibocom Wireless Inc.  
EQUIPMENT : 5G Module  
BRAND NAME : Fibocom  
MODEL NAME : FM150-NA  
FCC ID : ZMOFM150NA  
STANDARD : 47 CFR Part 15 Subpart B  
CLASSIFICATION : Certification

The product was received on May 14, 2020 and testing was completed on Jul. 20, 2020. We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI C63.4-2014 and has been in compliance with the applicable technical standards.

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



Reviewed by: Jason Jia / Supervisor



Approved by: James Huang / Manager



**Sporton International (Kunshan) Inc.**

No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300  
People's Republic of China



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## REVISION HISTORY

| REPORT NO. | VERSION | DESCRIPTION             | ISSUED DATE   |
|------------|---------|-------------------------|---------------|
| FC051416   | Rev. 01 | Initial issue of report | Sep. 11, 2020 |
|            |         |                         |               |
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## SUMMARY OF TEST RESULT

| Report Section | FCC Rule | Description           | Limit           | Result | Remark                                                    |
|----------------|----------|-----------------------|-----------------|--------|-----------------------------------------------------------|
| 3.1            | 15.107   | AC Conducted Emission | < 15.107 limits | PASS   | Under limit<br>11.41 dB at<br>0.654 MHz                   |
| 3.2            | 15.109   | Radiated Emission     | < 15.109 limits | PASS   | Under limit<br>8.77 dB at<br>72.680 MHz<br>for Quasi-Peak |

**Declaration of Conformity:**

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

**Comments and Explanations:**

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

## 1. General Description

### 1.1. Applicant

Fibocom Wireless Inc.

5/F, Tower A, Technology Building II, 1057 Nanhai Avenue, Shenzhen, China

### 1.2. Manufacturer

Fibocom Wireless Inc.

5/F, Tower A, Technology Building II, 1057 Nanhai Avenue, Shenzhen, China

### 1.3. Product Feature of Equipment Under Test

| Product Feature                 |                                                           |
|---------------------------------|-----------------------------------------------------------|
| Equipment                       | 5G Module                                                 |
| Brand Name                      | Fibocom                                                   |
| Model Name                      | FM150-NA                                                  |
| FCC ID                          | ZMOFM150NA                                                |
| EUT supports Radios application | WCDMA/LTE/5G NR/GNSS                                      |
| IMEI Code                       | Conduction: 867654040222792<br>Radiation: 867654040222792 |
| HW Version                      | V1.0.1                                                    |
| SW Version                      | 89601.1000.00.02.11.20                                    |
| EUT Stage                       | Identical Prototype                                       |

**Remark:**

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. This module is limited to installation in fixed applications.



## 1.4. Product Specification of Equipment Under Test

| Standards-related Product Specification |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tx Frequency                            | WCDMA Band V: 826.4 MHz ~ 846.6 MHz<br>WCDMA Band IV : 1712.4 MHz ~ 1752.6 MHz<br>WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz<br>LTE Band 2 : 1850.7 MHz ~ 1909.3 MHz<br>LTE Band 4 : 1710.7 MHz ~ 1754.3 MHz<br>LTE Band 5 : 824.7 MHz ~ 848.3 MHz<br>LTE Band 7 : 2502.5 MHz ~ 2567.5 MHz<br>LTE Band 12 : 699.7 MHz ~ 715.3 MHz<br>LTE Band 13 : 779.5 MHz ~ 784.5 MHz<br>LTE Band 14 : 790.5 MHz ~ 795.5 MHz<br>LTE Band 17 : 706.5 MHz ~ 713.5 MHz<br>LTE Band 25 : 1850.7 MHz ~ 1914.3 MHz<br>LTE Band 26 : 814.7 MHz ~ 848.3 MHz<br>LTE Band 30 : 2307.5 MHz ~ 2312.5 MHz<br>LTE Band 41 : 2498.5 MHz ~ 2687.5 MHz<br>LTE Band 42 : 3402.5 MHz ~ 3597.5 MHz<br>LTE Band 43 : 3602.5 MHz ~ 3797.5 MHz<br>LTE Band 48 : 3552.5 MHz ~ 3697.5 MHz<br>LTE Band 66 : 1710.7 MHz ~ 1779.3 MHz<br>LTE Band 71: 665.5 MHz ~ 695.5MHz<br>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 n25: 1852.5 MHz ~ 1912.5 MHz<br>5G NR n41: 2506.02 MHz ~ 2679.99 MHz<br>5G NR n48: 3560 MHz ~ 3690 MHz<br>5G NR n66: 1712.5 MHz ~ 1777.5 MHz<br>5G NR n71: 665.5 MHz ~ 695.5MHz<br>5G NR n78: 3310.005 MHz ~ 3789.66 MHz |
| Rx Frequency                            | WCDMA Band V: 871.4 MHz ~ 891.6 MHz<br>WCDMA Band IV : 2112.4 MHz ~ 2152.6 MHz<br>WCDMA Band II: 1932.4 MHz ~ 1987.6 MHz<br>LTE Band 2 : 1930.7 MHz ~ 1989.3 MHz<br>LTE Band 4 : 2110.7 MHz ~ 2154.3 MHz<br>LTE Band 5 : 869.7 MHz ~ 893.3 MHz<br>LTE Band 7 : 2622.5 MHz ~ 2687.5 MHz<br>LTE Band 12 : 729.7 MHz ~ 745.3 MHz<br>LTE Band 13 : 748.5 MHz ~ 753.5 MHz<br>LTE Band 14 : 760.5 MHz ~ 765.5 MHz<br>LTE Band 17 : 736.5 MHz ~ 743.5 MHz<br>LTE Band 25 : 1930.7 MHz ~ 1994.3 MHz<br>LTE Band 26 : 859.7 MHz ~ 893.3 MHz<br>LTE Band 29 : 718.5 MHz ~ 726.5 MHz<br>LTE Band 30 : 2352.5 MHz ~ 2357.5 MHz<br>LTE Band 41 : 2498.5 MHz ~ 2687.5 MHz<br>LTE Band 42 : 3402.5 MHz ~ 3597.5 MHz<br>LTE Band 43 : 3602.5 MHz ~ 3797.5 MHz<br>LTE Band 46 : 5160 MHz ~ 5905 MHz<br>LTE Band 48 : 3552.5 MHz ~ 3697.5 MHz                                                                                                                                                                                                                                                                                                                                                                                      |

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           | LTE Band 66 : 2110.7 MHz~ 2199.3 MHz<br>LTE Band 71: 619.5 MHz ~ 649.5MHz<br>5G NR n2: 1932.5 MHz ~ 1987.5 MHz<br>5G NR n5: 871.5 MHz ~ 891.5 MHz<br>5G NR n7: 2622.5 MHz ~ 2687.5 MHz<br>5G NR n12: 731.5 MHz ~ 743.5 MHz<br>5G NR n25: 1932.5 MHz ~ 1992.5 MHz<br>5G NR n41: 2506.02 MHz ~ 2679.99 MHz<br>5G NR n48: 3552.5 MHz ~ 3697.5 MHz<br>5G NR n66: 2112.5 MHz~ 2197.5 MHz<br>5G NR n71: 619.5 MHz ~ 649.5 MHz<br>5G NR n78: 3310.005 MHz ~ 3789.66 MHz<br>GNSS : 1559 MHz ~ 1610 MHz |
| <b>Antenna Number</b>     | WWAN ANT.1: GHT-019A<br>WWAN ANT.2: AN0750-64S01BSM                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Antenna Type</b>       | WWAN : Monopole Antenna<br>GNSS: Monopole Antenna                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Type of Modulation</b> | WCDMA : BPSK (Uplink)<br>HSDPA/DC-HSDPA : QPSK (Uplink)<br>HSUPA : QPSK (Uplink)<br>HSPA+ : 16QAM (16QAM uplink is not supported)<br>DC-HSDPA : 64QAM<br>LTE: QPSK / 16QAM / 64QAM<br>5G NR:<br>CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM<br>DFT-s-OFDM: QPSK / 16QAM / 64QAM / 256QAM<br>GNSS : BPSK                                                                                                                                                                                             |

Note: GNSS = BDS + Galileo + GLONASS + GPS

## 1.5. Modification of EUT

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

## 1.6. Test Location

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

|                           |                                                                                                                                                                          |                            |                                       |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------|
| <b>Test Firm</b>          | Sporton International (Kunshan) Inc.                                                                                                                                     |                            |                                       |
| <b>Test Site Location</b> | No. 1098, Pengxi North Road, Kunshan Economic Development Zone<br>Jiangsu Province 215300 People's Republic of China<br>TEL : +86-512-57900158<br>FAX : +86-512-57900958 |                            |                                       |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>                                                                                                                                                  | <b>FCC Designation No.</b> | <b>FCC Test Firm Registration No.</b> |
|                           | CO01-KS<br>03CH02-KS                                                                                                                                                     | CN1257                     | 314309                                |

## 1.7. Test Software

| Item | Site      | Manufacture | Name | Version      |
|------|-----------|-------------|------|--------------|
| 1.   | 03CH02-KS | AUDIX       | E3   | 6.2009-8-24a |
| 2.   | CO01-KS   | AUDIX       | E3   | 6.2009-8-24  |

## 1.8. Applicable Standards

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

- ♦ 47 CFR Part 15 Subpart B
- ♦ ANSI C63.4-2014

**Remark:** All test items were verified and recorded according to the standards and without any deviation during the test.

## 2. Test Configuration of Equipment Under Test

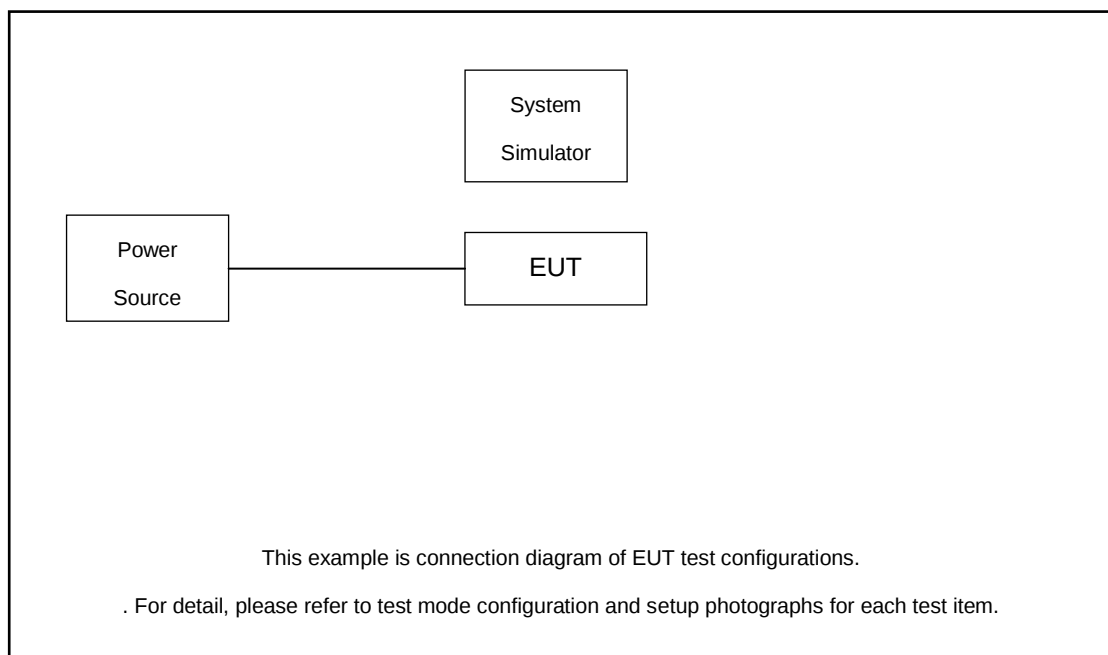
### 2.1. Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

| Test Items                                                                                                                                                                                                                                                                                                                                                                   | Function Type                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AC Conducted Emission                                                                                                                                                                                                                                                                                                                                                        | Mode 1: WCDMA Band V Rx(Middle) + Adapter<br>Mode 2: LTE Band 12 Rx(Middle) + Adapter<br>Mode 3: LTE Band 13 Rx(High) + Adapter<br>Mode 4: LTE Band 14 Rx(High) + Adapter<br>Mode 5: LTE Band 17 Rx(mid) + Adapter<br>Mode 6: LTE Band 71 Rx(Low) + Adapter<br>Mode 7: 5G NR n5 Rx(Low) + Adapter<br>Mode 8: 5G NR n71 Rx(High) + Adapter |
| Radiated Emissions                                                                                                                                                                                                                                                                                                                                                           | Mode 1: WCDMA Band V Rx(Middle) + Adapter<br>Mode 2: LTE Band 12 Rx(Middle) + Adapter<br>Mode 3: LTE Band 13 Rx(High) + Adapter<br>Mode 4: LTE Band 14 Rx(High) + Adapter<br>Mode 5: LTE Band 17 Rx(mid) + Adapter<br>Mode 6: LTE Band 71 Rx(Low) + Adapter<br>Mode 7: 5G NR n5 Rx(Low) + Adapter<br>Mode 8: 5G NR n71 Rx(High) + Adapter |
| <b>Remark:</b> <ol style="list-style-type: none"> <li>1. The worst case of AC is mode 7; only the test data of this mode is reported.</li> <li>2. The worst case of RE is mode 3; only the test data of this mode is reported.</li> <li>3. Pre-scanned Low/Middle/High channel of all the below 1G frequency band, the worst channel was recorded in this report.</li> </ol> |                                                                                                                                                                                                                                                                                                                                           |

## 2.2.Connection Diagram of Test System



The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 and configuration operated in a manner tended to maximize its emission characteristics in a typical application

## 2.3. Support Unit used in test configuration and system

| Item | Equipment          | Trade Name | Model Name | FCC ID | Data Cable | Power Cord      |
|------|--------------------|------------|------------|--------|------------|-----------------|
| 1.   | LTE Base Station   | Anritus    | MT8821C    | N/A    | N/A        | Unshielded,1.8m |
| 2.   | 5G NR Base Station | Anritus    | MT8000A    | N/A    | N/A        | Unshielded,1.8m |
| 3.   | LTE Base Station   | Anritus    | MT8820C    | N/A    | N/A        | Unshielded,1.8m |
| 4.   | Antenna            | N/A        | N/A        | N/A    | N/A        | N/A             |
| 5.   | Adapter            | N/A        | N/A        | N/A    | N/A        | N/A             |
| 6.   | Test jig           | N/A        | N/A        | N/A    | N/A        | N/A             |

## 2.4. EUT Operation Test Setup

The EUT was in WCDMA or LTE or 5G NR idle mode during the testing. The EUT was synchronized to the BCCH, and is in continuous receiving mode by setting system simulator's paging reorganization.

### 3. Test Result

#### 3.1. Test of AC Conducted Emission Measurement

##### 3.1.1 Limits of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

<Class B Limit>

| Frequency of emission<br>(MHz) | Conducted limit (dBuV) |           |
|--------------------------------|------------------------|-----------|
|                                | Quasi-peak             | Average   |
| 0.15-0.5                       | 66 to 56*              | 56 to 46* |
| 0.5-5                          | 56                     | 46        |
| 5-30                           | 60                     | 50        |

\*Decreases with the logarithm of the frequency.

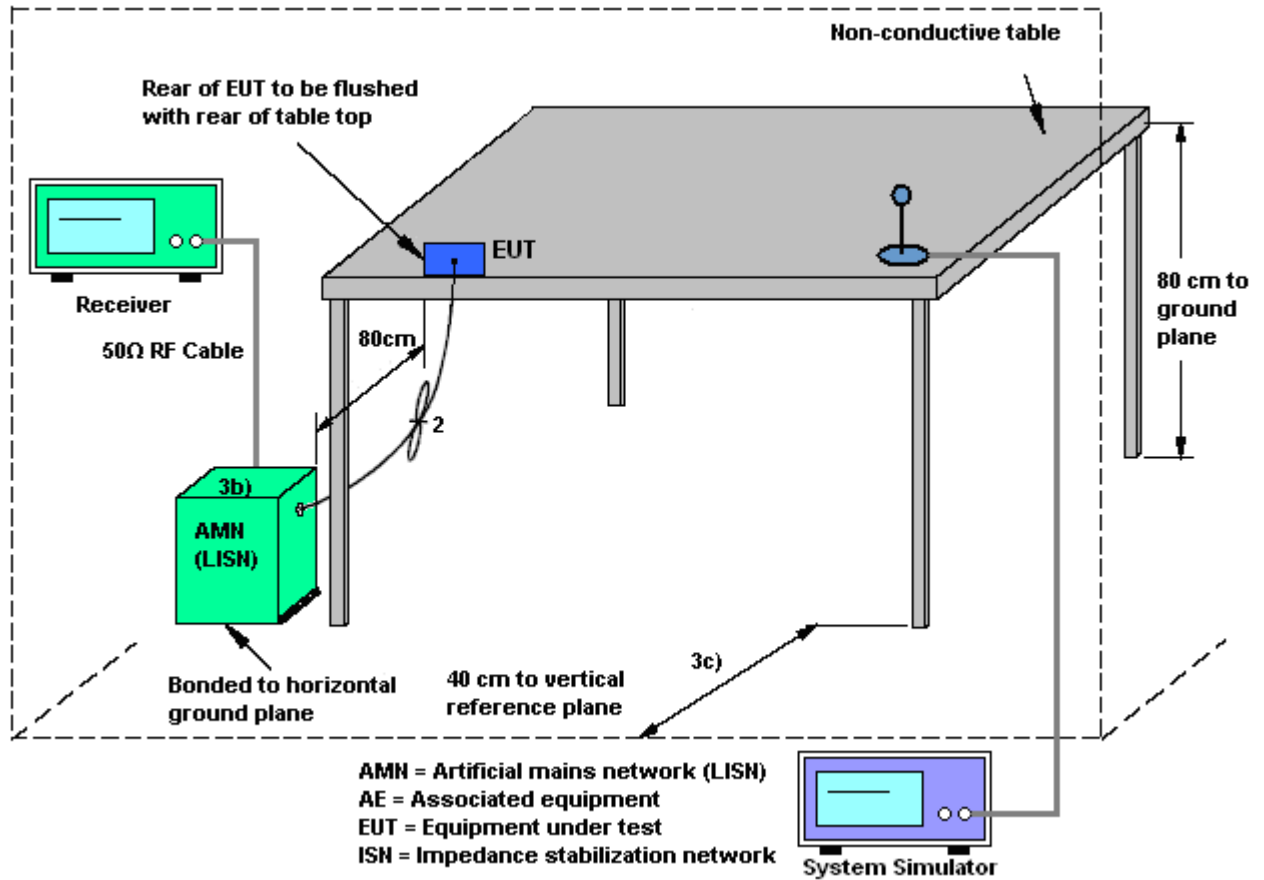
##### 3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

##### 3.1.3 Test Procedure

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

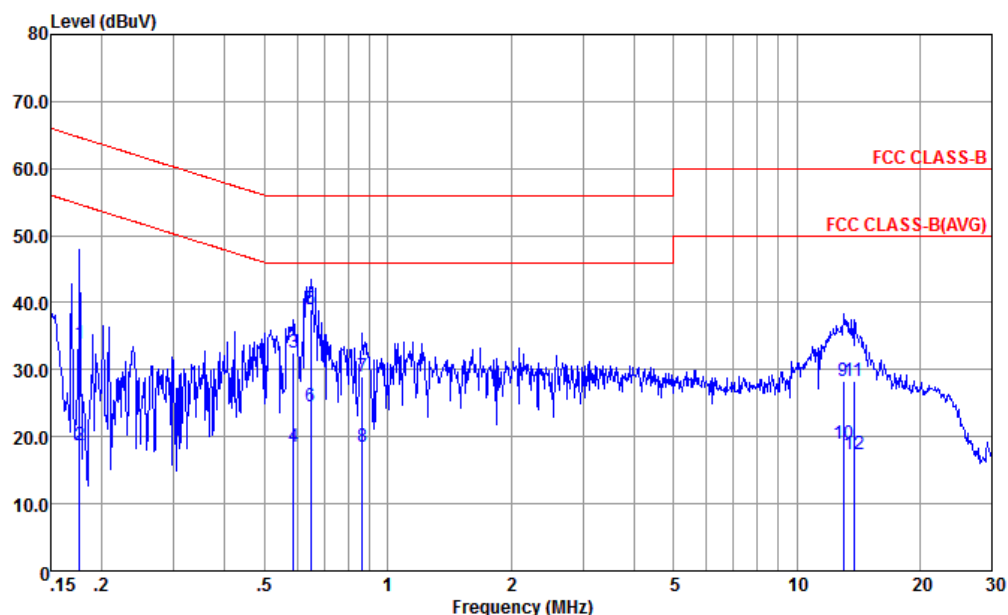
### 3.1.4 Test Setup





## 3.1.5 Test Result of AC Conducted Emission

|                 |                                                                                 |                     |            |
|-----------------|---------------------------------------------------------------------------------|---------------------|------------|
| Test Engineer : | Amos Zhang                                                                      | Temperature :       | 25.3~26.2℃ |
|                 |                                                                                 | Relative Humidity : | 38~40%     |
| Test Voltage :  | 120Vac / 60Hz                                                                   | Phase :             | Line       |
| Remark :        | All emissions not reported here are more than 10 dB below the prescribed limit. |                     |            |

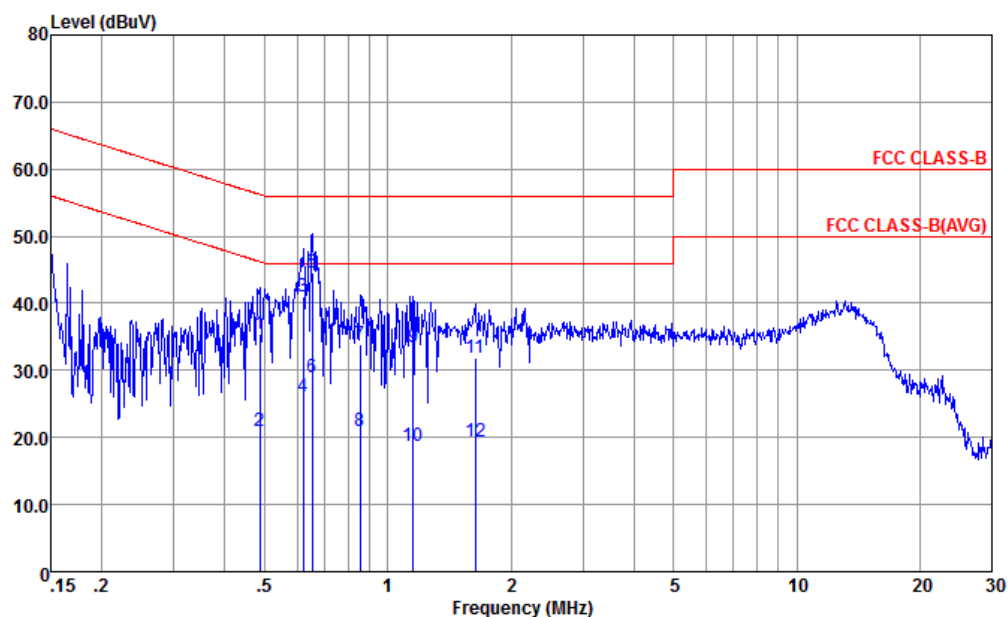


Site : CO01-KS  
Condition : FCC CLASS-B LISN-L-191028-CN02 LINE

|     | Freq   | Level | Over   | Limit | Read  | LISN   | Cable | Remark  |
|-----|--------|-------|--------|-------|-------|--------|-------|---------|
|     | MHz    | dBuV  | Limit  | Line  | Level | Factor | Loss  |         |
|     |        |       | dB     | dBuV  | dBuV  | dB     | dB    |         |
| 1   | 0.177  | 33.79 | -30.85 | 64.64 | 23.30 | 0.08   | 10.41 | QP      |
| 2   | 0.177  | 18.69 | -35.95 | 54.64 | 8.20  | 0.08   | 10.41 | Average |
| 3   | 0.589  | 32.48 | -23.52 | 56.00 | 22.10 | 0.14   | 10.24 | QP      |
| 4   | 0.589  | 18.58 | -27.42 | 46.00 | 8.20  | 0.14   | 10.24 | Average |
| 5 * | 0.647  | 38.99 | -17.01 | 56.00 | 28.60 | 0.15   | 10.24 | QP      |
| 6   | 0.647  | 24.59 | -21.41 | 46.00 | 14.20 | 0.15   | 10.24 | Average |
| 7   | 0.866  | 28.91 | -27.09 | 56.00 | 18.50 | 0.17   | 10.24 | QP      |
| 8   | 0.866  | 18.61 | -27.39 | 46.00 | 8.20  | 0.17   | 10.24 | Average |
| 9   | 12.988 | 28.32 | -31.68 | 60.00 | 16.60 | 1.34   | 10.38 | QP      |
| 10  | 12.988 | 19.02 | -30.98 | 50.00 | 7.30  | 1.34   | 10.38 | Average |
| 11  | 13.768 | 28.41 | -31.59 | 60.00 | 16.60 | 1.43   | 10.38 | QP      |
| 12  | 13.768 | 17.41 | -32.59 | 50.00 | 5.60  | 1.43   | 10.38 | Average |



|                 |                                                                                 |                     |            |
|-----------------|---------------------------------------------------------------------------------|---------------------|------------|
| Test Engineer : | Amos Zhang                                                                      | Temperature :       | 25.3~26.2℃ |
|                 |                                                                                 | Relative Humidity : | 38~40%     |
| Test Voltage :  | 120Vac / 60Hz                                                                   | Phase :             | Neutral    |
| Remark :        | All emissions not reported here are more than 10 dB below the prescribed limit. |                     |            |



Site : CO01-KS  
Condition : FCC CLASS-B LISN-N-191028-CN02 NEUTRAL

|     | Freq  | Level | Over   | Limit | Read  | LISN   | Cable |         |
|-----|-------|-------|--------|-------|-------|--------|-------|---------|
|     | MHz   | dBuV  | Limit  | Line  | Level | Factor | Loss  | Remark  |
|     |       |       | dB     | dBuV  | dBuV  | dB     | dB    |         |
| 1   | 0.486 | 35.37 | -20.86 | 56.23 | 24.90 | 0.23   | 10.24 | QP      |
| 2   | 0.486 | 20.97 | -25.26 | 46.23 | 10.50 | 0.23   | 10.24 | Average |
| 3   | 0.621 | 41.11 | -14.89 | 56.00 | 30.62 | 0.25   | 10.24 | QP      |
| 4   | 0.621 | 25.98 | -20.02 | 46.00 | 15.49 | 0.25   | 10.24 | Average |
| 5 * | 0.654 | 44.59 | -11.41 | 56.00 | 34.10 | 0.25   | 10.24 | QP      |
| 6   | 0.654 | 28.99 | -17.01 | 46.00 | 18.50 | 0.25   | 10.24 | Average |
| 7   | 0.857 | 33.81 | -22.19 | 56.00 | 23.30 | 0.27   | 10.24 | QP      |
| 8   | 0.857 | 21.01 | -24.99 | 46.00 | 10.50 | 0.27   | 10.24 | Average |
| 9   | 1.153 | 33.47 | -22.53 | 56.00 | 22.90 | 0.34   | 10.23 | QP      |
| 10  | 1.153 | 18.77 | -27.23 | 46.00 | 8.20  | 0.34   | 10.23 | Average |
| 11  | 1.636 | 31.78 | -24.22 | 56.00 | 21.10 | 0.45   | 10.23 | QP      |
| 12  | 1.636 | 19.28 | -26.72 | 46.00 | 8.60  | 0.45   | 10.23 | Average |

Note:

1. Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
2. Over Limit(dB) = Level(dBμV) – Limit Line(dBμV)

## 3.2. Test of Radiated Emission Measurement

### 3.2.1. Limit of Radiated Emission

The emissions from an unintentional radiator shall not exceed the field strength levels specified in the following table:

<Class B Limit>

| Frequency<br>(MHz) | Field Strength<br>(microvolts/meter) | Measurement Distance<br>(meters) |
|--------------------|--------------------------------------|----------------------------------|
| 30 – 88            | 100                                  | 3                                |
| 88 – 216           | 150                                  | 3                                |
| 216 - 960          | 200                                  | 3                                |
| Above 960          | 500                                  | 3                                |

### 3.2.2. Measuring Instruments

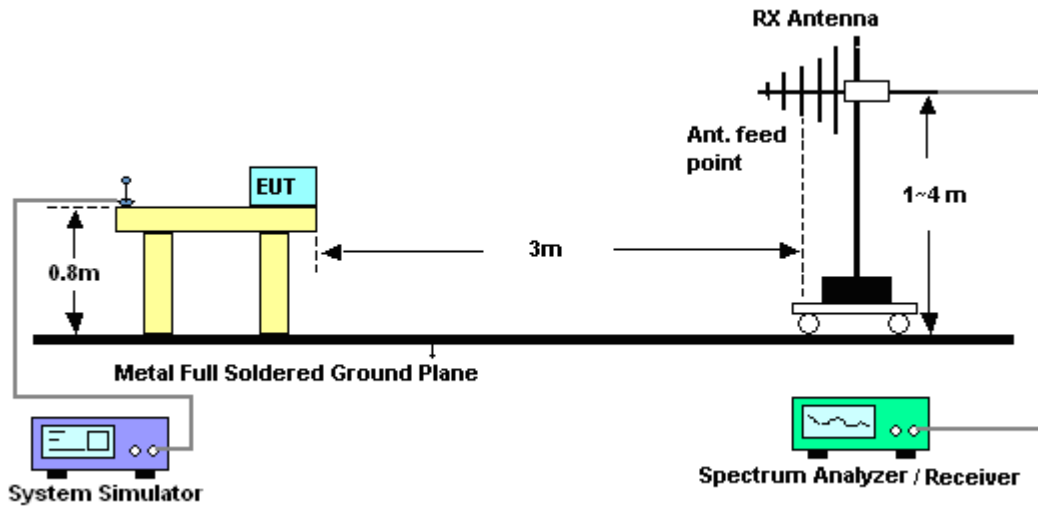
The measuring equipment is listed in the section 4 of this test report.

### 3.2.3. Test Procedures

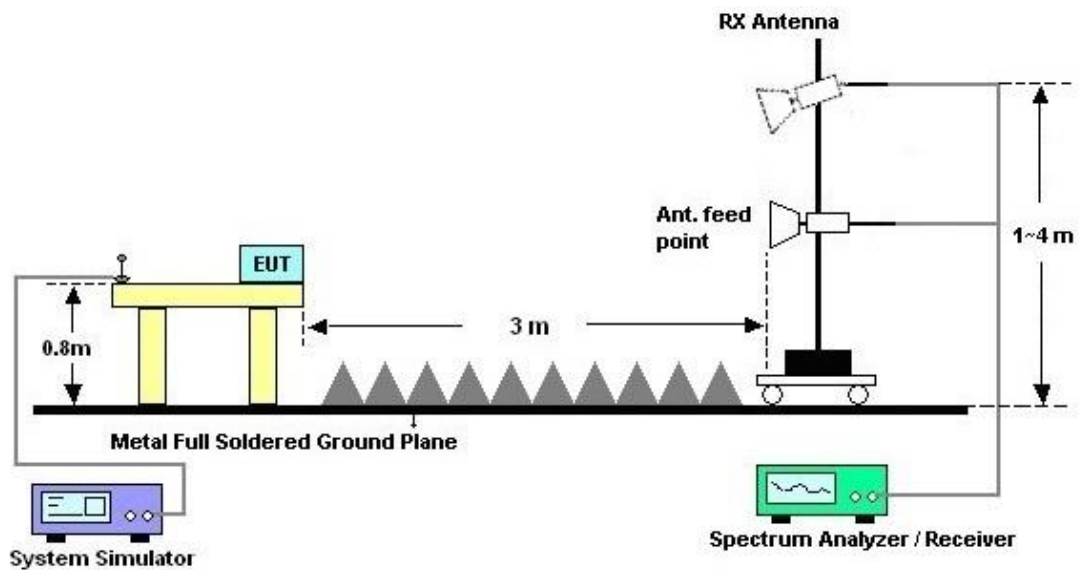
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a Bi-Log antenna and its height is adjusted between one to four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode (RBW=120kHz/VBW=300kHz for frequency below 1GHz; RBW=1MHz VBW=3MHz (Peak), RBW=1MHz/VBW=10Hz (Average) for frequency above 1GHz).
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, peak values of EUT will be reported. Otherwise, the emission will be repeated by using the quasi-peak method and reported.
8. Emission level (dBμV/m) = 20 log Emission level (μV/m)
9. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

### 3.2.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz



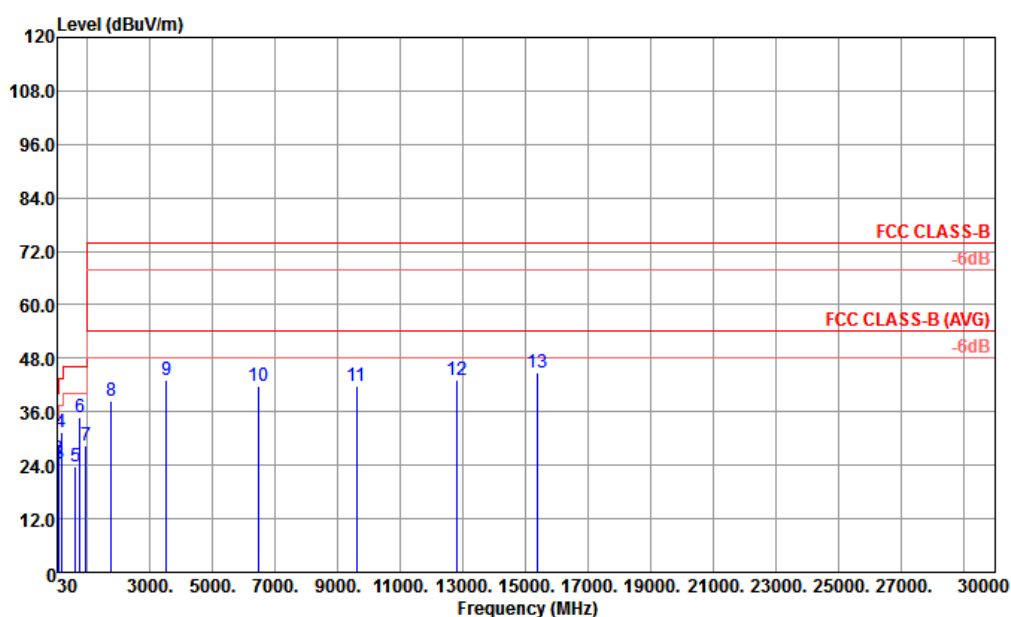
For radiated emissions above 1GHz





## 3.2.5. Test Result of Radiated Emission

|                 |                                                     |                     |            |
|-----------------|-----------------------------------------------------|---------------------|------------|
| Test Engineer : | Winter Zhang                                        | Temperature :       | 21~22°C    |
|                 |                                                     | Relative Humidity : | 41~42%     |
| Test Distance : | 3m                                                  | Polarization :      | Horizontal |
| Remark :        | #6 is system simulator signal which can be ignored. |                     |            |

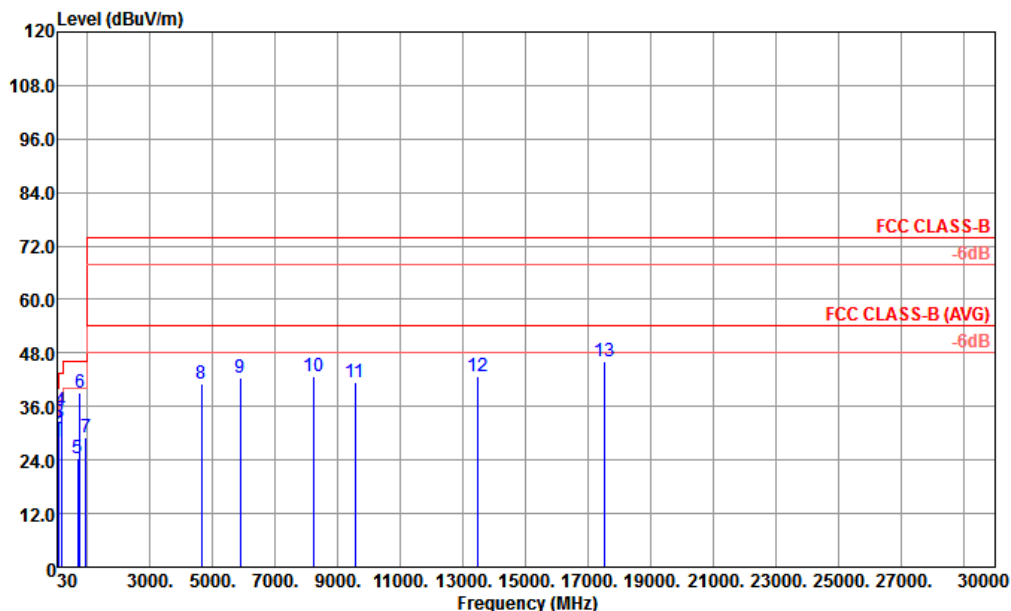


Site : 03CH02-KS  
Condition : FCC CLASS-B 3m LF 44483-3M HORIZONTAL

|    | Freq     | Level  | Over   | Limit  | ReadAntenna | Cable | Preamp | A/Pos | T/Pos | Remark |
|----|----------|--------|--------|--------|-------------|-------|--------|-------|-------|--------|
|    | MHz      | dBuV/m | dB     | dBuV/m | dBuV        | dB/m  | dB     | dB    | cm    | deg    |
| 1  | 50.37    | 24.19  | -15.81 | 40.00  | 40.74       | 14.40 | 0.99   | 31.94 | ---   | Peak   |
| 2  | 72.68    | 25.46  | -14.54 | 40.00  | 43.33       | 12.80 | 1.24   | 31.91 | ---   | Peak   |
| 3  | 81.41    | 24.33  | -15.67 | 40.00  | 41.21       | 13.72 | 1.33   | 31.93 | ---   | Peak   |
| 4  | 155.13   | 31.40  | -12.10 | 43.50  | 44.66       | 16.80 | 1.88   | 31.94 | 100   | Peak   |
| 5  | 621.70   | 23.58  | -22.42 | 46.00  | 26.15       | 26.10 | 3.72   | 32.39 | ---   | Peak   |
| 6  | 749.74   | 34.69  |        |        | 34.67       | 28.20 | 4.07   | 32.25 | ---   | Peak   |
| 7  | 954.41   | 28.55  | -17.45 | 46.00  | 23.95       | 30.96 | 4.58   | 30.94 | ---   | Peak   |
| 8  | 1752.00  | 38.52  | -35.48 | 74.00  | 64.00       | 28.57 | 6.22   | 60.27 | ---   | Peak   |
| 9  | 3520.00  | 43.10  | -30.90 | 74.00  | 61.39       | 32.60 | 8.94   | 59.83 | ---   | Peak   |
| 10 | 6440.00  | 41.89  | -32.11 | 74.00  | 54.97       | 35.18 | 12.28  | 60.54 | ---   | Peak   |
| 11 | 9603.00  | 41.92  | -32.08 | 74.00  | 51.03       | 36.88 | 15.21  | 61.20 | ---   | Peak   |
| 12 | 12816.00 | 43.16  | -30.84 | 74.00  | 47.04       | 38.59 | 18.13  | 60.60 | ---   | Peak   |
| 13 | 15354.00 | 44.72  | -29.28 | 74.00  | 44.55       | 40.64 | 19.94  | 60.41 | ---   | Peak   |



|                 |                                                     |                     |          |
|-----------------|-----------------------------------------------------|---------------------|----------|
| Test Engineer : | Winter Zhang                                        | Temperature :       | 21~22°C  |
|                 |                                                     | Relative Humidity : | 41~42%   |
| Test Distance : | 3m                                                  | Polarization :      | Vertical |
| Remark :        | #6 is system simulator signal which can be ignored. |                     |          |



Site : 03CH02-KS  
Condition : FCC CLASS-B 3m LF 44483-3M VERTICAL

|    | Freq     | Level  | Over   | Limit  | ReadAntenna | Cable | Preamp | A/Pos | T/Pos | Remark |
|----|----------|--------|--------|--------|-------------|-------|--------|-------|-------|--------|
|    | MHz      | dBuV/m | Limit  | Line   | Level       | Loss  | Factor | cm    | deg   |        |
|    |          |        | dB     | dBuV/m | dBuV        | dB/m  | dB     | dB    |       |        |
| 1  | 45.52    | 28.06  | -11.94 | 40.00  | 42.21       | 16.85 | 0.94   | 31.94 | ---   | Peak   |
| 2  | 72.68    | 31.23  | -8.77  | 40.00  | 49.10       | 12.80 | 1.24   | 31.91 | 200   | 183 QP |
| 3  | 80.44    | 32.41  | -7.59  | 40.00  | 49.42       | 13.60 | 1.32   | 31.93 | ---   | Peak   |
| 4  | 156.10   | 35.01  | -8.49  | 43.50  | 48.33       | 16.74 | 1.88   | 31.94 | ---   | Peak   |
| 5  | 681.84   | 24.41  | -21.59 | 46.00  | 26.21       | 26.63 | 3.92   | 32.35 | ---   | Peak   |
| 6  | 751.68   | 38.99  |        |        | 38.96       | 28.20 | 4.08   | 32.25 | ---   | Peak   |
| 7  | 952.47   | 28.92  | -17.08 | 46.00  | 24.32       | 30.98 | 4.58   | 30.96 | ---   | Peak   |
| 8  | 4640.00  | 41.11  | -32.89 | 74.00  | 57.22       | 33.53 | 10.35  | 59.99 | ---   | Peak   |
| 9  | 5872.00  | 42.45  | -31.55 | 74.00  | 55.69       | 34.91 | 11.79  | 59.94 | ---   | Peak   |
| 10 | 8248.00  | 42.78  | -31.22 | 74.00  | 53.65       | 36.29 | 13.97  | 61.13 | ---   | Peak   |
| 11 | 9549.00  | 41.58  | -32.42 | 74.00  | 50.72       | 36.89 | 15.19  | 61.22 | ---   | Peak   |
| 12 | 13455.00 | 42.93  | -31.07 | 74.00  | 46.48       | 38.50 | 18.48  | 60.53 | ---   | Peak   |
| 13 | 17523.00 | 46.12  | -27.88 | 74.00  | 41.48       | 40.86 | 21.45  | 57.67 | ---   | Peak   |

Note:

- Level(dBμV/m) = Read Level(dBμV) + Antenna Factor(dB/m) + Cable Loss(dB) - Preamp Factor(dB)
- Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)



## 4. List of Measuring Equipment

| Instrument                        | Manufacturer | Model No.  | Serial No.   | Characteristics         | Calibration Date | Test Date     | Due Date      | Remark                |
|-----------------------------------|--------------|------------|--------------|-------------------------|------------------|---------------|---------------|-----------------------|
| EMI Test Receiver                 | R&S          | ESR7       | 101403       | 9kHz~7GHz;Max 30dBm     | Oct. 18, 2019    | Jul. 19, 2020 | Oct. 17, 2020 | Radiation (03CH02-KS) |
| EXA Spectrum Analyzer             | Keysight     | N9010A     | MY55370528   | 10Hz-44G,MAX 30dB       | Oct. 18, 2019    | Jul. 19, 2020 | Oct. 17, 2020 | Radiation (03CH02-KS) |
| Bilog Antenna                     | TeseQ        | CBL6111D   | 44483        | 30MHz-1GHz              | Dec. 30, 2019    | Jul. 19, 2020 | Dec. 29, 2020 | Radiation (03CH02-KS) |
| Double Ridge Horn Antenna         | ETS-Lindgren | 3117       | 75957        | 1GHz~18GHz              | Nov. 10, 2019    | Jul. 19, 2020 | Nov. 09, 2020 | Radiation (03CH02-KS) |
| SHF-EHF Horn                      | Com-power    | AH-840     | 101115       | 18GHz~40GHz             | Nov. 10, 2019    | Jul. 19, 2020 | Nov. 09, 2020 | Radiation (03CH02-KS) |
| Amplifier                         | MITEQ        | EM18G40GGA | 060728       | 18~40GHz                | Jan. 08, 2020    | Jul. 19, 2020 | Jan. 07, 2021 | Radiation (03CH02-KS) |
| Amplifier                         | SONOMA       | 310N       | 187289       | 9KHz-1GHz               | Aug. 06, 2019    | Jul. 19, 2020 | Aug. 05, 2020 | Radiation (03CH02-KS) |
| Amplifier                         | Keysight     | 83017A     | MY53270316   | 500MHz~26.5GHz          | Oct. 18, 2019    | Jul. 19, 2020 | Oct. 17, 2020 | Radiation (03CH02-KS) |
| AC Power Source                   | Chroma       | 61601      | 616010002473 | N/A                     | NCR              | Jul. 19, 2020 | NCR           | Radiation (03CH02-KS) |
| Turn Table                        | MF           | MF7802     | N/A          | 0~360 degree            | NCR              | Jul. 19, 2020 | NCR           | Radiation (03CH02-KS) |
| Antenna Mast                      | MF           | MF7802     | N/A          | 1 m~4 m                 | NCR              | Jul. 19, 2020 | NCR           | Radiation (03CH02-KS) |
| EMI Receiver                      | R&S          | ESC17      | 100768       | 9kHz~7GHz;              | Apr. 14, 2020    | Jul. 20, 2020 | Apr. 13, 2021 | Conduction (CO01-KS)  |
| AC LISN (for auxiliary equipment) | MessTec      | AN3016     | 060103       | 9kHz~30MHz              | Oct. 18, 2019    | Jul. 20, 2020 | Oct. 17, 2020 | Conduction (CO01-KS)  |
| AC LISN                           | MessTec      | AN3016     | 060105       | 9kHz~30MHz              | Oct. 28, 2019    | Jul. 20, 2020 | Oct. 27, 2020 | Conduction (CO01-KS)  |
| AC Power Source                   | Chroma       | 61602      | ABP000000811 | AC 0V~300V, 45Hz~1000Hz | Oct. 18, 2019    | Jul. 20, 2020 | Oct. 17, 2020 | Conduction (CO01-KS)  |

NCR: No Calibration Required

## 5. Uncertainty of Evaluation

### Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

|                                                                         |       |
|-------------------------------------------------------------------------|-------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 2.9dB |
|-------------------------------------------------------------------------|-------|

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

|                                                                         |       |
|-------------------------------------------------------------------------|-------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 4.9dB |
|-------------------------------------------------------------------------|-------|

### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

|                                                                         |       |
|-------------------------------------------------------------------------|-------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 5.0dB |
|-------------------------------------------------------------------------|-------|

### Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

|                                                                         |       |
|-------------------------------------------------------------------------|-------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 5.1dB |
|-------------------------------------------------------------------------|-------|