



# FCC Test Report

**APPLICANT** : Motorola Mobility LLC  
**EQUIPMENT** : Mobile Cellular Phone  
**BRAND NAME** : Motorola  
**MODEL NAME** : XT1980-3  
**FCC ID** : IHDT56XS2  
**STANDARD** : 47 CFR Part 15 Subpart B  
**CLASSIFICATION** : Certification

The product was received on Dec. 28, 2018 and testing was completed on Jan. 15, 2019. 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.



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Approved by: James Huang / Manager

***Sporton International (Kunshan) Inc.***  
***No. 1098, Pengxi North Road, Kunshan Economic Development Zone,***  
***Jiangsu Province 215335, China***



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## REVISION HISTORY

| REPORT NO. | VERSION | DESCRIPTION             | ISSUED DATE   |
|------------|---------|-------------------------|---------------|
| FC8D2801   | Rev. 01 | Initial issue of report | Feb. 27, 2019 |
| FC8D2801   | Rev. 02 | Updated Test Modes.     | Mar. 01, 2019 |
|            |         |                         |               |
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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>7.92 dB at<br>0.198 MHz  |
| 3.2            | 15.109   | Radiated Emission     | < 15.109 limits | PASS   | Under limit<br>4.96 dB at<br>184.23 MHz |



## 1. General Description

### 1.1. Applicant

Motorola Mobility LLC  
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

### 1.2. Manufacturer

Motorola Mobility LLC  
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

### 1.3. Product Feature of Equipment Under Test

| Product Feature                 |                                                                                                                                                                                                                                                     |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Equipment                       | Mobile Cellular Phone                                                                                                                                                                                                                               |
| Brand Name                      | Motorola                                                                                                                                                                                                                                            |
| Model Name                      | XT1980-3                                                                                                                                                                                                                                            |
| FCC ID                          | IHDT56XS2                                                                                                                                                                                                                                           |
| EUT supports Radios application | CDMA/EVDO/GSM/GPRS/EGPRS/WCDMA/HSPA/<br>DC-HSDPA/HSPA+(16QAM is not supported)/LTE<br>WLAN 2.4GHz 802.11b/g/n HT20/HT40<br>WLAN 5GHz 802.11a/n HT20/HT40<br>WLAN 5GHz 802.11ac VHT20/VHT40/VHT80<br>Bluetooth BR / EDR / LE<br>NFC/GNSS/FM Receiver |
| IMEI Code                       | Conduction: 352156100009624<br>Radiation: N/A                                                                                                                                                                                                       |
| HW Version                      | DVT2                                                                                                                                                                                                                                                |
| SW Version                      | PPF29.58                                                                                                                                                                                                                                            |
| EUT Stage                       | Identical Prototype                                                                                                                                                                                                                                 |

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



## 1.4. Product Specification of Equipment Under Test

| Standards-related Product Specification |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tx Frequency</b>                     | GSM850: 824.2 MHz ~ 848.8 MHz<br>GSM1900: 1850.2 MHz ~ 1909.8MHz<br>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>CDMA2000 BC0: 824.70 MHz ~ 848.31 MHz<br>CDMA2000 BC1: 1851.25 MHz ~ 1908.75 MHz<br>CDMA2000 BC10: 817.9 MHz ~ 823.1 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 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 38 : 2572.5 MHz ~ 2617.5 MHz<br>LTE Band 41 : 2498.5 MHz ~ 2687.5 MHz<br>LTE Band 66 : 1710.7 MHz ~ 1779.3 MHz<br>LTE Band 71: 665.5 MHz ~ 695.5MHz<br>802.11b/g/n: 2412 MHz ~ 2462 MHz<br>802.11a/n/ac: 5180 MHz ~ 5240 MHz;<br>5260 MHz ~ 5320 MHz;<br>5500 MHz ~ 5700 MHz<br>5745 MHz ~ 5825 MHz<br>Bluetooth: 2402 MHz ~ 2480 MHz<br>NFC : 13.56 MHz |
| <b>Rx Frequency</b>                     | GSM850: 869.2 MHz ~ 893.8 MHz<br>GSM1900: 1930.2 MHz ~ 1989.8 MHz<br>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>CDMA2000 BC0: 869.70 MHz ~ 893.31 MHz<br>CDMA2000 BC1: 1931.25 MHz ~ 1988.75 MHz<br>CDMA2000 BC10: 862.9 MHz ~ 868.1 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 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 30 : 2352.5 MHz ~ 2357.5 MHz<br>LTE Band 38: 2572.5 MHz ~ 2617.5 MHz<br>LTE Band 41 : 2498.5 MHz ~ 2687.5 MHz<br>LTE Band 66 : 2110.7 MHz~ 2199.3 MHz<br>LTE Band 71: 619.5 MHz ~ 649.5MHz                                                                                                                                                                                                       |

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           | <p>802.11b/g/n: 2412 MHz ~ 2462 MHz<br/> 802.11a/n/ac: 5180 MHz ~ 5240 MHz;<br/> 5260 MHz ~ 5320 MHz;<br/> 5500 MHz ~ 5700 MHz<br/> 5745 MHz ~ 5825 MHz<br/> Bluetooth: 2402 MHz ~ 2480 MHz<br/> GNSS : 1559 MHz ~ 1610 MHz<br/> NFC : 13.56 MHz<br/> FM: 88 MHz - 108 MHz</p>                                                                                                                                                                                                                                                                                                                                                      |
| <b>Antenna Type</b>       | <p>WWAN : Dipole Antenna<br/> WLAN : Loop Antenna<br/> Bluetooth : Loop Antenna<br/> GNSS: Loop Antenna<br/> NFC : Loop Antenna<br/> FM : External Handset Antenna</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Type of Modulation</b> | <p>GSM: GMSK<br/> GPRS: GMSK<br/> EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK<br/> 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/> CDMA2000 1xRTT: QPSK<br/> CDMA2000 1xEV-DO: QPSK/8PSK<br/> 802.11b : DSSS (DBPSK / DQPSK / CCK)<br/> 802.11a/g/n/ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)<br/> Bluetooth LE : GFSK<br/> Bluetooth (1Mbps) : GFSK<br/> Bluetooth (2Mbps) : <math>\pi/4</math>-DQPSK<br/> Bluetooth (3Mbps) : 8-DPSK<br/> GNSS : BPSK<br/> FM<br/> NFC: ASK</p> |

## 1.5. Specification of Accessory

| Specification of Accessory |                  |                                                              |                       |
|----------------------------|------------------|--------------------------------------------------------------|-----------------------|
| AC Adapter 1(US)           | Brand Name       | Motorola (Salom)                                             | Model Name SC-51      |
|                            | Power Rating     | I/P: 100-240 Vac, 0.6A O/P: 5Vdc,3A or 9Vdc,2A or 12Vdc,1.5A |                       |
| AC Adapter 2(US)           | Brand Name       | Motorola (Chenyang)                                          | Model Name SC-51      |
|                            | Power Rating     | I/P: 100-240 Vac, 0.6A O/P: 5Vdc,3A or 9Vdc,2A or 12Vdc,1.5A |                       |
| Battery                    | Brand Name       | Amperex (Motorola)                                           | Model Name KZ40       |
|                            | Power Rating     | 3.8Vdc,3600mAh                                               | Type Li-ion Polymer   |
| USB Cable 1                | Brand Name       | Motorola (Cabletech)                                         | Model Name SC18C49697 |
|                            | Signal Line Type | 1.0 meter, shielded cable, without ferrite core              |                       |
| USB Cable 2                | Brand Name       | Motorola (Saibao)                                            | Model Name SC18C24367 |
|                            | Signal Line Type | 1.0 meter, shielded cable, without ferrite core              |                       |
| USB Cable 3                | Brand Name       | Motorola (Luxshare)                                          | Model Name SC18C24368 |
|                            | Signal Line Type | 1.0 meter, shielded cable, without ferrite core              |                       |

## 1.6. Modification of EUT

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

## 1.7. Test Location

Sporton International (Kunshan) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600155-0).

|                           |                                                                                                                                                     |                            |                                       |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------|
| <b>Test Site</b>          | Sporton International (Kunshan) Inc.                                                                                                                |                            |                                       |
| <b>Test Site Location</b> | No. 1098, Pengxi North Road, Kunshan Economic Development Zone,<br>Jiangsu Province 215335, 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                                                                                                                                | CN5013                     | 630927                                |

## 1.8. Applicable Standards

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

- ♦ FCC CFR Title 47 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

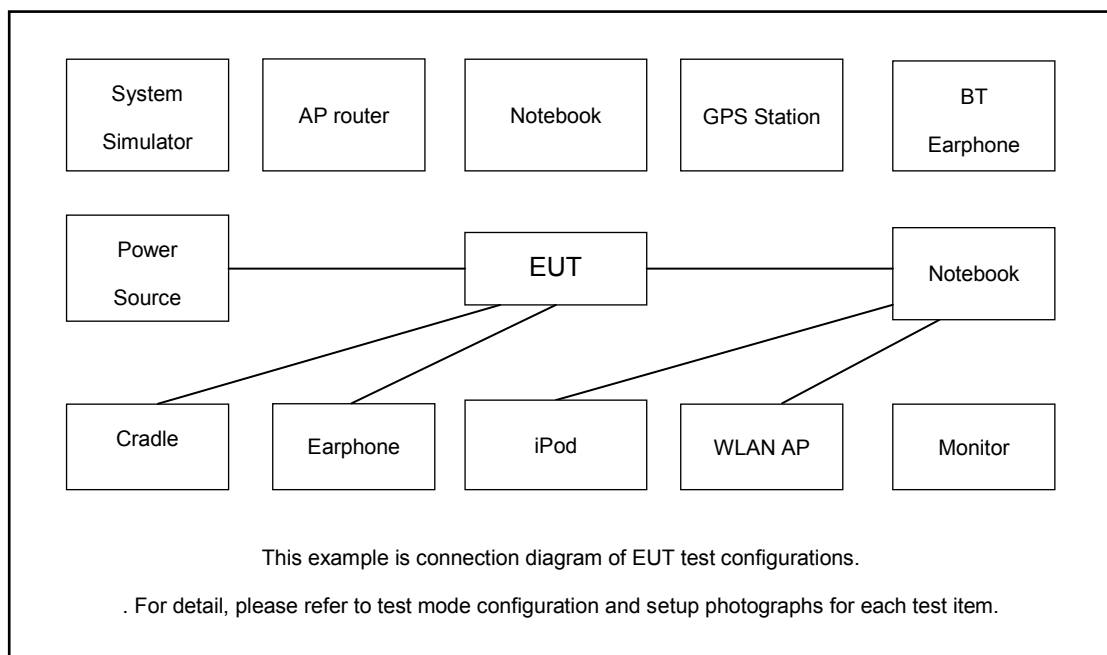
The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

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: GSM850 Rx(Middle) + Earphone + Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + USB Cable1 (Charging from Adapter1)     |
|                       | Mode 2: PCS1900 Rx + Earphone + Bluetooth Idle + WLAN (5G) Idle + Camera(Front) + USB Cable2 (Charging from Adapter2)             |
|                       | Mode 3: CDMA BC10 Rx(Low) + Earphone + Bluetooth Idle + WLAN (2.4G) Idle + MPEG4(Colur bar) + USB Cable3 (Charging from Adapter2) |
|                       | Mode 4: LTE Band 13 Rx(High) + Earphone + Bluetooth Idle + WLAN (5G) Idle + NFC On + USB Cable2 (Charging from Adapter2)          |
|                       | Mode 5: LTE Band 17 Rx(High) + Earphone + Bluetooth Idle + WLAN (2.4G) Idle + FM Rx(98MHz) + USB Cable2 (Charging from Adapter2)  |
|                       | Mode 6: LTE Band 26 Rx(Low) + Earphone + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + USB Cable1 (Data Link with Notebook)         |
|                       | Mode 7: LTE Band 12 Rx(Middle) + Earphone + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + USB Cable2 (Data Link with Notebook)    |
|                       | Mode 8: LTE Band 71 Rx(Middle) + Earphone + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + USB Cable3 (Data Link with Notebook)      |

|                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Radiated Emissions                                                                                                                                                                                                                                                                                                                                                                                       | <p>Mode 1: GSM850 Rx(Middle) + Earphone + Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + USB Cable1 (Charging from Adapter1)</p> <p>Mode 2: PCS1900 Rx + Earphone + Bluetooth Idle + WLAN (5G) Idle + Camera(Front) + USB Cable2 (Charging from Adapter2)</p> <p>Mode 3: CDMA BC10 Rx(Low) + Earphone + Bluetooth Idle + WLAN (2.4G) Idle + MPEG4(Colour bar) + USB Cable3 (Charging from Adapter1)</p> <p>Mode 4: LTE Band 13 Rx(High) + Earphone + Bluetooth Idle + WLAN (5G) Idle + NFC On + USB Cable1 (Charging from Adapter1)</p> <p>Mode 5: LTE Band 17 Rx(High) + Earphone + Bluetooth Idle + WLAN (2.4G) Idle + FM Rx(98MHz) + USB Cable1 (Charging from Adapter1)</p> <p>Mode 6: LTE Band 26 Rx(Low) + Earphone + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + USB Cable1 (Data Link with Notebook)</p> <p>Mode 7: LTE Band 12 Rx(Middle) + Earphone + Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + USB Cable2 (Data Link with Notebook)</p> <p>Mode 8: LTE Band 71 Rx(Middle) + Earphone + Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + USB Cable3 (Data Link with Notebook)</p> |
| <b>Remark:</b> <ol style="list-style-type: none"> <li>1. The worst case of AC is mode 4; only the test data of this mode is reported.</li> <li>2. The worst case of RE is mode 7; only the test data of this mode is reported.</li> <li>3. Pre-scanned Low/Middle/High channel for CDMA, GSM/WCDMA/LTE Band V, LTE Band 12/13/17/26/71, FM Rx, the worst channel was 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               | Trade Name | Model Name | FCC ID      | Data Cable      | Power Cord                                                 |
|------|-------------------------|------------|------------|-------------|-----------------|------------------------------------------------------------|
| 1.   | System Simulator        | Anritus    | MT8820C    | N/A         | N/A             | Unshielded,1.8m                                            |
| 2.   | System Simulator        | R&S        | CMU 200    | N/A         | N/A             | Unshielded,1.8m                                            |
| 3.   | Signal Generator        | R&S        | GSS7000    | NA          | NA              | Unshielded,1.8m                                            |
| 4.   | Vector Signal Generator | R&S        | SMBV100A   | 258305      | N/A             | N/A                                                        |
| 5.   | WLAN AP                 | D-Link     | DIR-855    | KA2DIR855A2 | N/A             | Unshielded,1.8m                                            |
| 6.   | WLAN AP                 | TP-LINK    | TL-WDR5600 | N/A         | N/A             | Unshielded,1.8m                                            |
| 7.   | Bluetooth Earphone      | Lenovo     | LBH308     | N/A         | N/A             | N/A                                                        |
| 8.   | Bluetooth Earphone      | Xiaomi     | LYEJ02LM   | N/A         | N/A             | N/A                                                        |
| 9.   | Notebook                | Lenovo     | G480       | PRC4        | N/A             | AC I/P:<br>Unshielded, 1.8 m<br>DC O/P:<br>Shielded, 1.8 m |
| 10.  | Notebook                | DELL       | MT320      | N/A         | N/A             | AC I/P:<br>Unshielded, 1.8 m<br>DC O/P:<br>Shielded, 1.8 m |
| 11.  | SD Card                 | SanDisk    | Uitra      | N/A         | N/A             | N/A                                                        |
| 12.  | USB HD                  | Lenovo     | LH310      | N/A         | Unshielded,1.2m | N/A                                                        |
| 13.  | Earphone                | Lenovo     | SH100      | N/A         | Unshielded,1.2m | N/A                                                        |

## **2.4. EUT Operation Test Setup**

The EUT was in GSM or WCDMA or LTE 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.

At the same time, the EUT was attached to the Bluetooth earphone or WLAN AP, and the following programs installed in the EUT were programmed during the test.

1. Data application is transferred between Notebook and EUT via USB cable.
2. Turn on GNSS function to make the EUT receive continuous signals from GNSS station.
3. Turn on camera to capture images.
4. Turn on MPEG4 function.
5. Turn on FM receiver function to make the EUT receive continuous signals from FM station
6. Turn on NFC function

### 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.

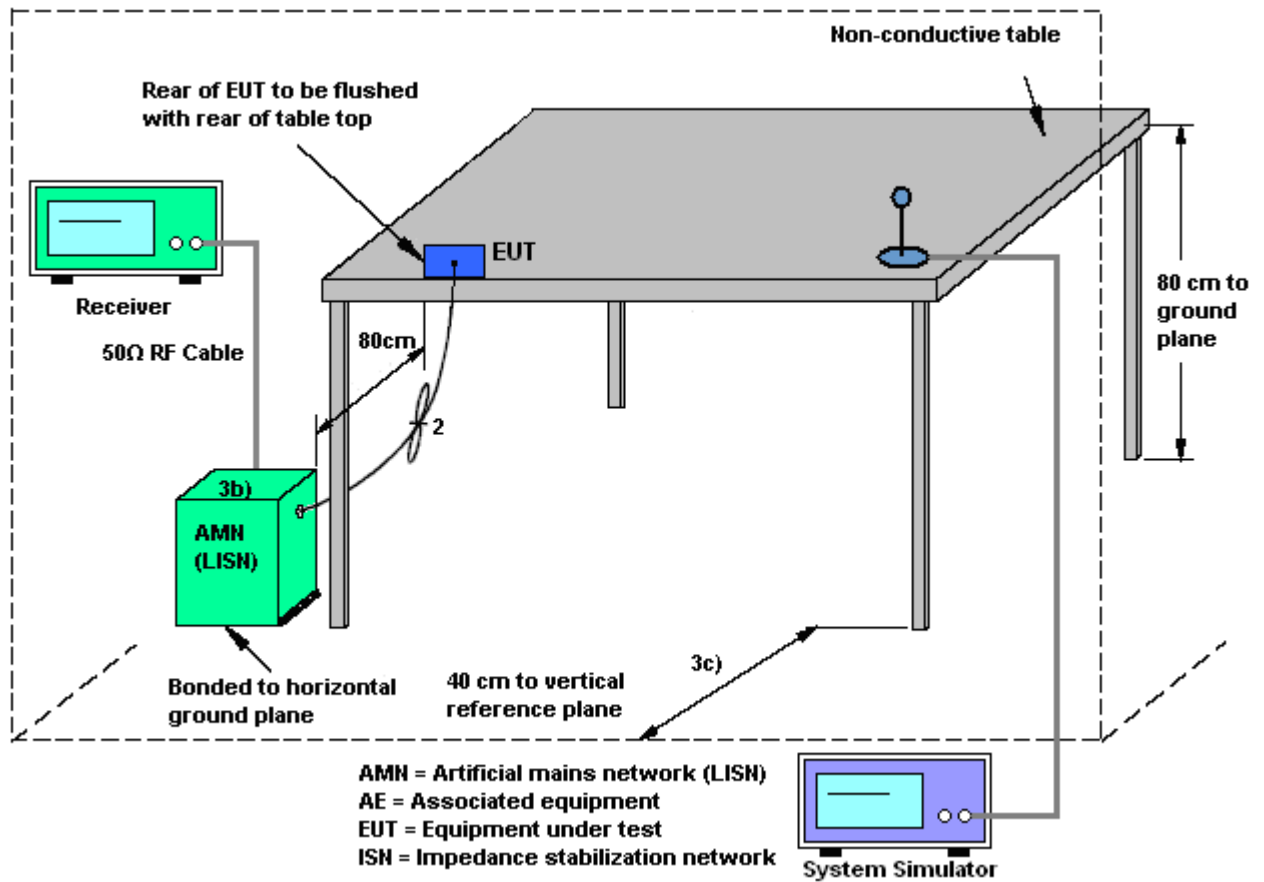
##### 3.1.2 Measuring Instruments

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

##### 3.1.3 Test Procedure

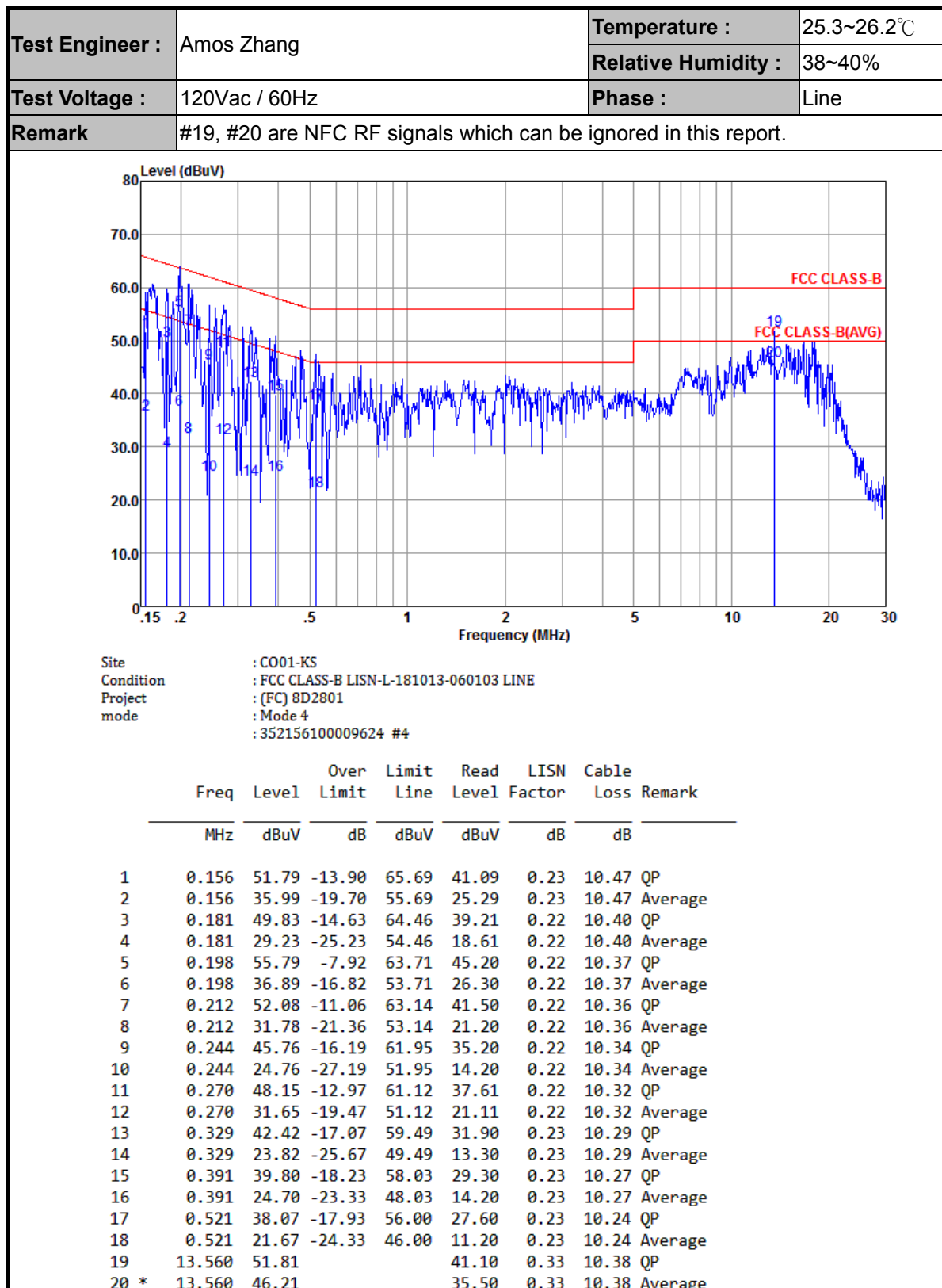
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
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



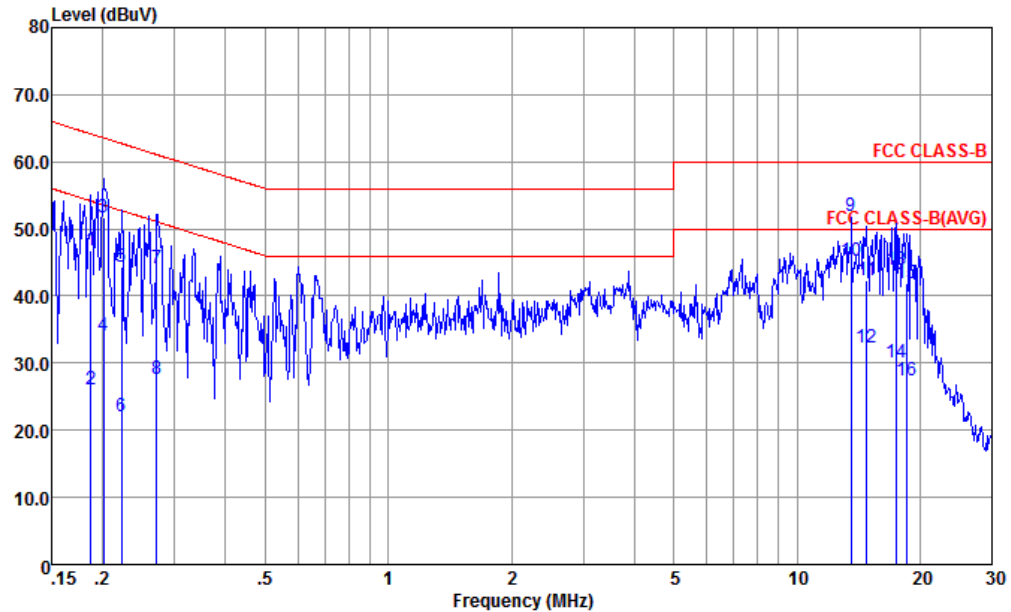


## 3.1.5 Test Result of AC Conducted Emission





|                 |                                                                 |                     |            |
|-----------------|-----------------------------------------------------------------|---------------------|------------|
| Test Engineer : | Amos Zhang                                                      | Temperature :       | 25.3~26.2℃ |
|                 |                                                                 | Relative Humidity : | 38~40%     |
| Test Voltage :  | 120Vac / 60Hz                                                   | Phase :             | Neutral    |
| Remark          | #9, #10 are NFC RF signals which can be ignored in this report. |                     |            |



Site : CO01-KS  
 Condition : FCC CLASS-B LISN-N-181013-060103 NEUTRAL  
 Project : (FC) 8D2801  
 mode : Mode 4  
 : 352156100009624 #4

|      | Freq   | Level | Over   | Limit | Read  | LISN   | Cable |         |
|------|--------|-------|--------|-------|-------|--------|-------|---------|
|      | MHz    | dBuV  | Limit  | Line  | Level | Factor | Loss  | Remark  |
|      |        |       | dB     | dBuV  | dBuV  | dB     | dB    |         |
| 1    | 0.187  | 46.69 | -17.46 | 64.15 | 36.10 | 0.20   | 10.39 | QP      |
| 2    | 0.187  | 26.09 | -28.06 | 54.15 | 15.50 | 0.20   | 10.39 | Average |
| 3    | 0.201  | 51.76 | -11.82 | 63.58 | 41.20 | 0.20   | 10.36 | QP      |
| 4    | 0.201  | 34.16 | -19.42 | 53.58 | 23.60 | 0.20   | 10.36 | Average |
| 5    | 0.222  | 44.25 | -18.49 | 62.74 | 33.70 | 0.20   | 10.35 | QP      |
| 6    | 0.222  | 22.05 | -30.69 | 52.74 | 11.50 | 0.20   | 10.35 | Average |
| 7    | 0.272  | 44.12 | -16.95 | 61.07 | 33.60 | 0.20   | 10.32 | QP      |
| 8    | 0.272  | 27.62 | -23.45 | 51.07 | 17.10 | 0.20   | 10.32 | Average |
| 9    | 13.560 | 51.84 |        |       | 41.20 | 0.26   | 10.38 | QP      |
| 10 * | 13.560 | 45.14 |        |       | 34.50 | 0.26   | 10.38 | Average |
| 11   | 14.828 | 42.27 | -17.73 | 60.00 | 31.60 | 0.28   | 10.39 | QP      |
| 12   | 14.828 | 32.27 | -17.73 | 50.00 | 21.60 | 0.28   | 10.39 | Average |
| 13   | 17.475 | 43.95 | -16.05 | 60.00 | 33.19 | 0.31   | 10.45 | QP      |
| 14   | 17.475 | 30.05 | -19.95 | 50.00 | 19.29 | 0.31   | 10.45 | Average |
| 15   | 18.524 | 41.99 | -18.01 | 60.00 | 31.20 | 0.32   | 10.47 | QP      |
| 16   | 18.524 | 27.39 | -22.61 | 50.00 | 16.60 | 0.32   | 10.47 | Average |

## 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

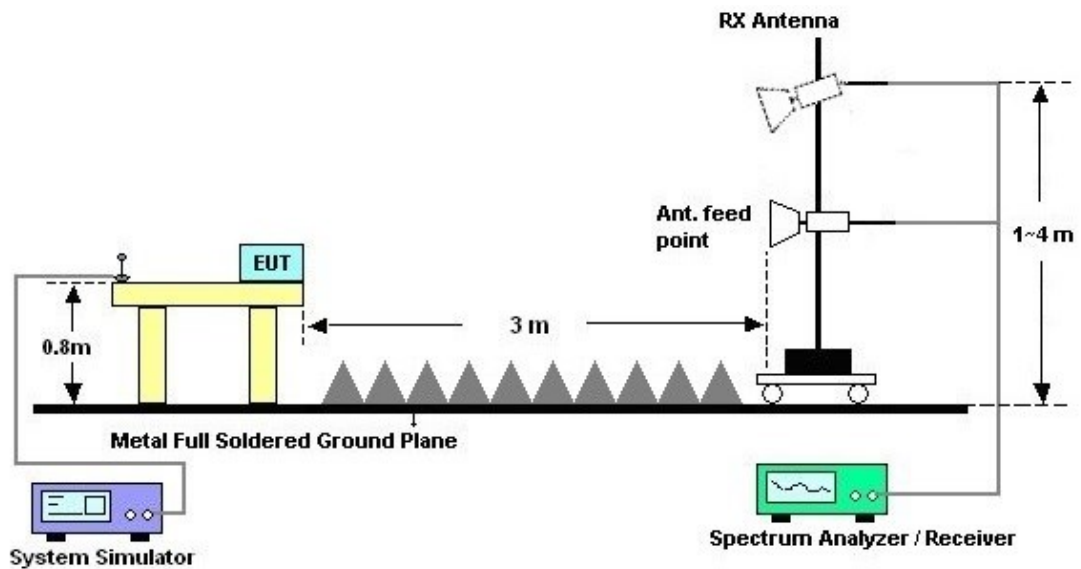
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna 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 (dB $\mu$ V/m) = 20 log Emission level ( $\mu$ V/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

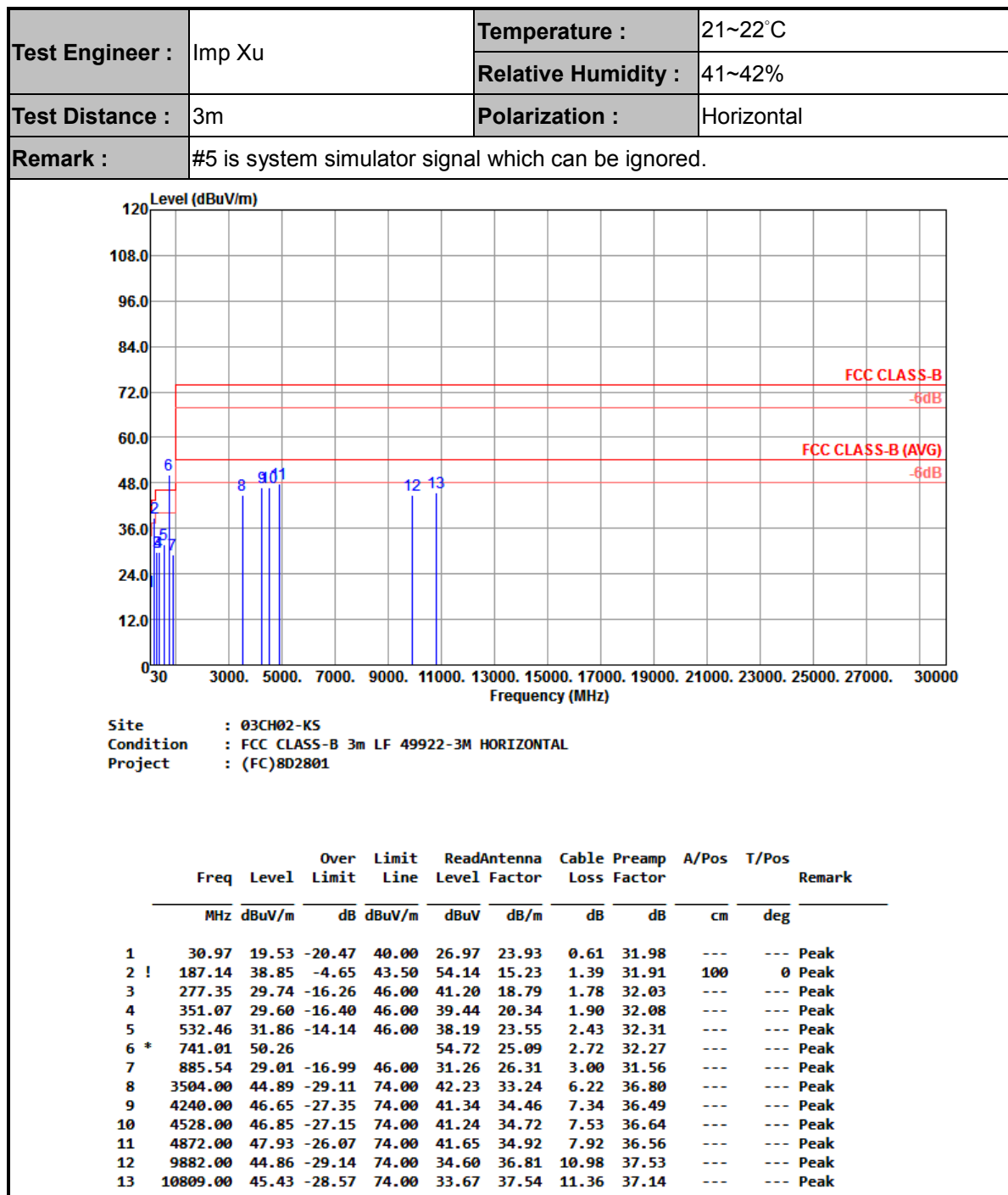


For radiated emissions above 1GHz



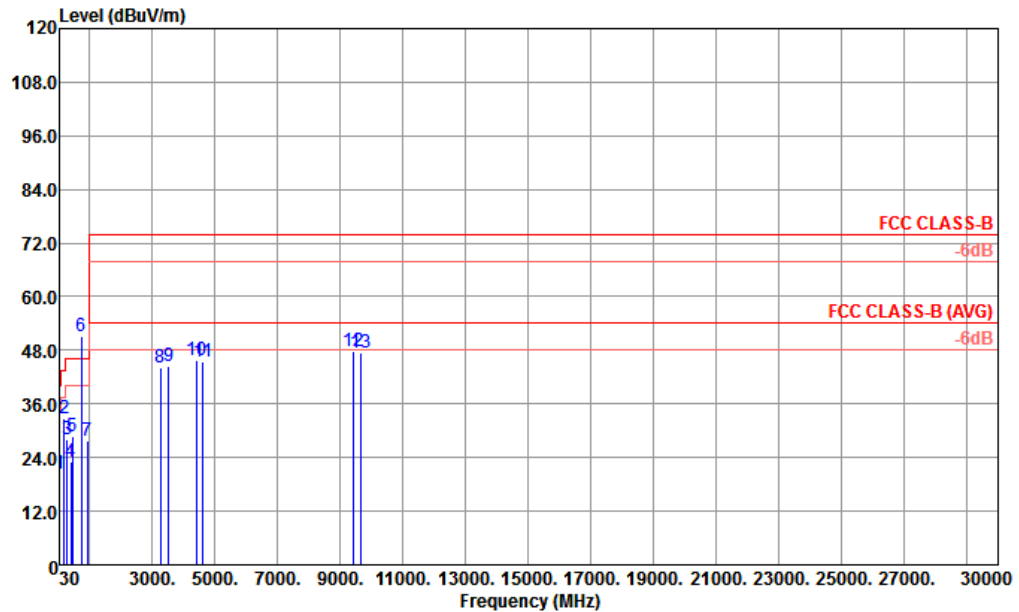


## 3.2.5. Test Result of Radiated Emission





|                 |                                                     |                     |          |
|-----------------|-----------------------------------------------------|---------------------|----------|
| Test Engineer : | Imp Xu                                              | 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 49922-3M VERTICAL  
Project : (FC)8D2801

|     | Freq    | Level  | Over Limit | Limit Line | ReadAntenna Level | Factor | Cable Loss | Preamp Factor | A/Pos | T/Pos | Remark |
|-----|---------|--------|------------|------------|-------------------|--------|------------|---------------|-------|-------|--------|
|     | MHz     | dBuV/m | dB         | dBuV/m     | dBuV              | dB/m   | dB         | dB            | cm    | deg   |        |
| 1   | 30.97   | 20.49  | -19.51     | 40.00      | 27.93             | 23.93  | 0.61       | 31.98         | ---   | ---   | Peak   |
| 2   | 185.20  | 32.90  | -10.60     | 43.50      | 48.20             | 15.23  | 1.38       | 31.91         | 100   | 0     | Peak   |
| 3   | 279.29  | 27.92  | -18.08     | 46.00      | 39.43             | 18.73  | 1.79       | 32.03         | ---   | ---   | Peak   |
| 4   | 397.63  | 22.92  | -23.08     | 46.00      | 31.46             | 21.55  | 2.02       | 32.11         | ---   | ---   | Peak   |
| 5   | 455.83  | 28.90  | -17.10     | 46.00      | 36.48             | 22.49  | 2.15       | 32.22         | ---   | ---   | Peak   |
| 6 * | 741.98  | 51.28  |            |            | 55.73             | 25.10  | 2.72       | 32.27         | ---   | ---   | Peak   |
| 7   | 925.31  | 27.59  | -18.41     | 46.00      | 29.07             | 26.68  | 3.06       | 31.22         | ---   | ---   | Peak   |
| 8   | 3248.00 | 44.01  | -29.99     | 74.00      | 42.54             | 32.47  | 6.10       | 37.10         | ---   | ---   | Peak   |
| 9   | 3512.00 | 44.32  | -29.68     | 74.00      | 41.61             | 33.27  | 6.22       | 36.78         | ---   | ---   | Peak   |
| 10  | 4424.00 | 45.91  | -28.09     | 74.00      | 40.64             | 34.62  | 7.25       | 36.60         | ---   | ---   | Peak   |
| 11  | 4616.00 | 45.54  | -28.46     | 74.00      | 39.52             | 34.77  | 7.87       | 36.62         | ---   | ---   | Peak   |
| 12  | 9432.00 | 47.75  | -26.25     | 74.00      | 37.34             | 0.00   | 10.41      | 0.00          | ---   | ---   | Peak   |
| 13  | 9675.00 | 47.45  | -26.55     | 74.00      | 36.60             | 0.00   | 10.85      | 0.00          | ---   | ---   | Peak   |



## 4. List of Measuring Equipment

| Instrument                        | Manufacturer | Model No.     | Serial No.   | Characteristics         | Calibration Date | Test Date     | Due Date      | Remark                |
|-----------------------------------|--------------|---------------|--------------|-------------------------|------------------|---------------|---------------|-----------------------|
| EMI Receiver                      | R&S          | ESC17         | 100768       | 9kHz~7GHz;              | Apr. 19, 2018    | Mar. 01, 2019 | Apr. 18, 2019 | Conduction (CO01-KS)  |
| AC LISN                           | MessTec      | AN3016        | 060103       | 9kHz~30MHz              | Oct. 12, 2018    | Mar. 01, 2019 | Oct. 11, 2019 | Conduction (CO01-KS)  |
| AC LISN (for auxiliary equipment) | MessTec      | AN3016        | 060105       | 9kHz~30MHz              | Nov. 22, 2018    | Mar. 01, 2019 | Nov. 21, 2019 | Conduction (CO01-KS)  |
| AC Power Source                   | Chroma       | 61602         | ABP000000811 | AC 0V~300V, 45Hz~1000Hz | Oct. 12, 2018    | Mar. 01, 2019 | Oct. 11, 2019 | Conduction (CO01-KS)  |
| EMI Test Receiver                 | R&S          | ESR7          | 101403       | 9kHz~7GHz;Max 30dBm     | Aug. 08, 2018    | Mar. 01, 2019 | Aug. 07, 2019 | Radiation (03CH02-KS) |
| EXA Spectrum Analyzer             | Keysight     | N9010A        | MY55150208   | 10Hz~44G,MAX 30dB       | Oct. 10, 2018    | Mar. 01, 2019 | Oct. 09, 2019 | Radiation (03CH02-KS) |
| Bilog Antenna                     | TeseQ        | CBL6112D      | 23182        | 30MHz~2GHz              | Dec. 29, 2018    | Mar. 01, 2019 | Dec. 28, 2019 | Radiation (03CH02-KS) |
| Double Ridge Horn Antenna         | ETS-Lindgren | 3117          | 75959        | 1GHz~18GHz              | Jan. 27, 2019    | Mar. 01, 2019 | Jan. 26, 2020 | Radiation (03CH02-KS) |
| SHF-EHF Horn                      | Com-power    | AH-840        | 101070       | 18GHz~40GHz             | Jan. 05, 2019    | Mar. 01, 2019 | Jan. 04, 2020 | Radiation (03CH02-KS) |
| Amplifier                         | SONOMA       | 310N          | 187289       | 9KHz-1GHz               | Aug. 06, 2018    | Mar. 01, 2019 | Aug. 05, 2019 | Radiation (03CH02-KS) |
| Amplifier                         | Keysight     | 83017A        | MY53270203   | 500MHz~26.5GHz          | Apr. 18, 2018    | Mar. 01, 2019 | Apr. 17, 2019 | Radiation (03CH02-KS) |
| Amplifier                         | MITEQ        | TTA1840-35-HG | 2014749      | 18~40GHz                | Feb. 02, 2019    | Mar. 01, 2019 | Feb. 01, 2020 | Radiation (03CH02-KS) |
| AC Power Source                   | Chroma       | 61601         | 616010002473 | N/A                     | NCR              | Mar. 01, 2019 | NCR           | Radiation (03CH02-KS) |
| Turn Table                        | MF           | MF7802        | N/A          | 0~360 degree            | NCR              | Mar. 01, 2019 | NCR           | Radiation (03CH02-KS) |
| Antenna Mast                      | MF           | MF7802        | N/A          | 1 m~4 m                 | NCR              | Mar. 01, 2019 | NCR           | Radiation (03CH02-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% ( $U = 2Uc(y)$ ) | 2.9 dB |
|-------------------------------------------------------------------------|--------|

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

|                                                                         |        |
|-------------------------------------------------------------------------|--------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 4.8 dB |
|-------------------------------------------------------------------------|--------|

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

|                                                                         |        |
|-------------------------------------------------------------------------|--------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 5.2 dB |
|-------------------------------------------------------------------------|--------|

### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 40000 MHz)

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