

# FCC Test Report

APPLICANT : Motorola Mobility LLC  
EQUIPMENT : Mobile Cellular Phone  
BRAND NAME : Motorola  
MODEL NAME : XT2229-2  
FCC ID : IHDT56AC6  
STANDARD : 47 CFR Part 15 Subpart B  
CLASSIFICATION : Certification  
TEST DATE(S) : Jan. 14, 2022 ~ Jan. 19, 2022

We, Sporton International Inc. (Shenzhen), 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 Inc. (Shenzhen), the test report shall not be reproduced except in full.



Reviewed by: Derreck Chen / Supervisor



Approved by: Eric Shih / Manager



**Sporton International Inc. (ShenZhen)**

**1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan Shenzhen, 518055  
People's Republic of China**



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## REVISION HISTORY

| REPORT NO.  | VERSION | DESCRIPTION             | ISSUED DATE   |
|-------------|---------|-------------------------|---------------|
| FC1N1011-03 | Rev. 01 | Initial issue of report | Mar. 15, 2022 |
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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>5.64 dB at<br>11.560 MHz                    |
| 3.2            | 15.109   | Radiated Emission     | < 15.109 limits | PASS   | Under limit<br>3.67 dB at<br>167.740 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

Motorola Mobility LLC  
222 W,Merchandise Mart Plaza,Chicago,IL60654 USA

### 1.2. Manufacturer

Motorola Mobility LLC  
222 W,Merchandise Mart Plaza,Chicago,IL60654 USA

### 1.3. Product Feature of Equipment Under Test

| Product Feature                 |                                                                                                                                                                                                                           |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Equipment                       | Mobile Cellular Phone                                                                                                                                                                                                     |
| Brand Name                      | Motorola                                                                                                                                                                                                                  |
| Model Name                      | XT2229-2                                                                                                                                                                                                                  |
| FCC ID                          | IHDT56AC6                                                                                                                                                                                                                 |
| EUT supports Radios application | GSM/WCDMA/LTE<br>WLAN 2.4GHz 802.11b/g/n HT20<br>WLAN 5GHz 802.11a/n HT20/HT40<br>WLAN 5GHz 802.11ac VHT20/VHT40/VHT80<br>Bluetooth BR/EDR/LE, GNSS, FM                                                                   |
| IMEI Code                       | Conduction:<br>352303500007010/352303500010915 for sample 1<br>352303500018249/352303500020740 for sample 2<br>Radiation:<br>352303500007499/352303500011392 for sample 1<br>352303500018082/352303500020583 for sample 2 |
| HW Version                      | DVT2                                                                                                                                                                                                                      |
| SW Version                      | STA32.48                                                                                                                                                                                                                  |
| 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. There are two types of EUT, the difference could be referred to the XT2229-2\_Operational Description of Product Equality Declaration which is exhibit separately. According to the difference, we evaluate the sample 1 to perform full test and the sample 2 verified worse cases.

## 1.4. Product Specification of Equipment Under Test

| Standards-related Product Specification |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tx Frequency</b>                     | GSM850: 824 MHz ~ 849 MHz<br>GSM1900: 1850MHz ~ 1910MHz<br>WCDMA Band II: 1850 MHz ~ 1910 MHz<br>WCDMA Band V: 824 MHz ~ 849 MHz<br>LTE Band 5 : 824 MHz ~ 849 MHz<br>LTE Band 7 : 2500 MHz ~ 2570 MHz<br>LTE Band 38 : 2570 MHz ~ 2620 MHz<br>LTE Band 41 : 2535 MHz ~ 2655 MHz<br>802.11b/g/n: 2400 MHz ~ 2483.5 MHz<br>802.11a/n/ac: 5180 MHz ~ 5240 MHz;<br>5260 MHz ~ 5320 MHz;<br>5500 MHz ~ 5720 MHz<br>5745 MHz ~ 5825 MHz<br>Bluetooth: 2400 MHz ~ 2483.5 MHz                                                         |
| <b>Rx Frequency</b>                     | GSM850: 869 MHz ~ 894 MHz<br>GSM1900: 1930 MHz ~ 1990 MHz<br>WCDMA Band II: 1930 MHz ~ 1990 MHz<br>WCDMA Band V: 869 MHz ~ 894 MHz<br>LTE Band 5 : 869 MHz ~ 894 MHz<br>LTE Band 7 : 2620 MHz ~ 2690 MHz<br>LTE Band 38: 2570 MHz ~ 2620 MHz<br>LTE Band 41 : 2535 MHz ~ 2655 MHz<br>802.11b/g/n: 2400 MHz ~ 2483.5 MHz<br>802.11a/n/ac: 5180 MHz ~ 5240 MHz;<br>5260 MHz ~ 5320 MHz;<br>5500 MHz ~ 5720 MHz<br>5745 MHz ~ 5825 MHz<br>Bluetooth: 2400 MHz ~ 2483.5 MHz<br>GNSS : 1559 MHz ~ 1610 MHz<br>FM : 88 MHz ~ 108 MHz |
| <b>Antenna Type</b>                     | WWAN : PIFA Antenna<br>WLAN : PIFA Antenna<br>Bluetooth : PIFA Antenna<br>GNSS: PIFA Antenna<br>FM : External Earphone Antenna                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Type of Modulation</b>               | GSM/GPRS: GMSK<br>EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK<br>WCDMA : BPSK<br>HSDPA/DC-HSDPA : QPSK<br>HSUPA : QPSK<br>HSPA+ : 16QAM (uplink is not supported)<br>DC-HSDPA : 64QAM<br>LTE: QPSK / 16QAM / 64QAM<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) : $\pi/4$ -DQPSK                                                                                                                  |



|  |                                                 |
|--|-------------------------------------------------|
|  | Bluetooth (3Mbps) : 8-DPSK<br>GNSS : BPSK<br>FM |
|--|-------------------------------------------------|

## 1.5. Modification of EUT

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

## 1.6. Specification of Accessory

| Specification of Accessory |            |                    |            |        |
|----------------------------|------------|--------------------|------------|--------|
| AC Adapter 1(US)           | Brand Name | Motorola(Chenyang) | Model Name | MC-201 |
| AC Adapter 1(EU)           | Brand Name | Motorola(Chenyang) | Model Name | MC-202 |
| AC Adapter 1(AR)           | Brand Name | Motorola(Chenyang) | Model Name | MC-206 |
| AC Adapter 2(US)           | Brand Name | Motorola(Acbel)    | Model Name | MC-201 |
| AC Adapter 2(EU)           | Brand Name | Motorola(Acbel)    | Model Name | MC-202 |
| AC Adapter 2(AR)           | Brand Name | Motorola(Acbel)    | Model Name | MC-206 |
| AC Adapter 2(CHILE)        | Brand Name | Motorola(Acbel)    | Model Name | MC-209 |
| AC Adapter 3(IN)           | Brand Name | Motorola(Chenyang) | Model Name | MC-204 |
| AC Adapter 4(IN)           | Brand Name | Motorola(Aohai)    | Model Name | MC-204 |
| AC Adapter 5(BR)           | Brand Name | Motorola(Flex)     | Model Name | MC-207 |
| AC Adapter 6(BR)           | Brand Name | Motorola(Salcomp)  | Model Name | MC-207 |
| AC Adapter 7(US)           | Brand Name | Motorola(Chenyang) | Model Name | MC-101 |
| AC Adapter 7(EU)           | Brand Name | Motorola(Chenyang) | Model Name | MC-102 |
| AC Adapter 7(UK)           | Brand Name | Motorola(Chenyang) | Model Name | MC-103 |
| AC Adapter 7(AU)           | Brand Name | Motorola(Chenyang) | Model Name | MC-105 |
| AC Adapter 8(US)           | Brand Name | Motorola(Salcomp)  | Model Name | MC-101 |
| AC Adapter 8(EU)           | Brand Name | Motorola(Salcomp)  | Model Name | MC-102 |
| AC Adapter 8(UK)           | Brand Name | Motorola(Salcomp)  | Model Name | MC-103 |
| AC Adapter 8(AU)           | Brand Name | Motorola(Salcomp)  | Model Name | MC-105 |
| AC Adapter 9(US)           | Brand Name | Motorola(Aohai)    | Model Name | MC-101 |
| AC Adapter 9(EU)           | Brand Name | Motorola(Aohai)    | Model Name | MC-102 |
| AC Adapter 9(UK)           | Brand Name | Motorola(Aohai)    | Model Name | MC-103 |
| AC Adapter 10(IN)          | Brand Name | Motorola(Chenyang) | Model Name | MC-104 |
| AC Adapter 11(IN)          | Brand Name | Motorola(Aohai)    | Model Name | MC-104 |
| AC Adapter 12(AU)          | Brand Name | Motorola(Aohai)    | Model Name | MC-105 |
| AC Adapter 13(EU)          | Brand Name | Motorola(Salom)    | Model Name | SC-42  |
| AC Adapter 14(UK)          | Brand Name | Motorola(Chenyang) | Model Name | SC-43  |

|             |            |                      |            |                 |
|-------------|------------|----------------------|------------|-----------------|
| Earphone 1  | Brand Name | Motorola(Lyand)      | Model Name | LYM239-76C-003  |
| Earphone 2  | Brand Name | Motorola(LCHSE)      | Model Name | MEND1432B875000 |
| Earphone 3  | Brand Name | Motorola(New Leader) | Model Name | MH202           |
| USB Cable 1 | Brand Name | Motorola(Yihuaxing)  | Model Name | T365-011B       |
| USB Cable 2 | Brand Name | Motorola (SUNTOPS)   | Model Name | 336258          |
| USB Cable 3 | Brand Name | Motorola (SUNTOPS)   | Model Name | 336281          |
| USB Cable 4 | Brand Name | Motorola (I SHENG)   | Model Name | SC18D33506      |
| USB Cable 5 | Brand Name | Motorola (Yihuaxing) | Model Name | T365-012B       |
| Battery 1   | Brand Name | Motorola(Sunwoda)    | Model Name | NH50            |
| Battery 2   | Brand Name | Motorola (SCUD)      | Model Name | NH50            |

## 1.7. Test Location

Sporton International Inc. (Shenzhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

|                           |                                                                                                                                                                         |                            |                                       |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------|
| <b>Test Firm</b>          | Sporton International Inc. (Shenzhen)                                                                                                                                   |                            |                                       |
| <b>Test Site Location</b> | 1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China<br>TEL: +86-755-86379589<br>FAX: +86-755-86379595 |                            |                                       |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>                                                                                                                                                 | <b>FCC Designation No.</b> | <b>FCC Test Firm Registration No.</b> |
|                           | CO01-SZ                                                                                                                                                                 | CN1256                     | 421272                                |

|                           |                                                                                                                                                                                           |                            |                                       |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------|
| <b>Test Firm</b>          | Sporton International Inc. (Shenzhen)                                                                                                                                                     |                            |                                       |
| <b>Test Site Location</b> | 101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City Guangdong Province China 518103<br>TEL: +86-755-33202398 |                            |                                       |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>                                                                                                                                                                   | <b>FCC Designation No.</b> | <b>FCC Test Firm Registration No.</b> |
|                           | 03CH05-SZ                                                                                                                                                                                 | CN1256                     | 421272                                |

## 1.8. Test Software

| Item | Site      | Manufacturer | Name | Version     |
|------|-----------|--------------|------|-------------|
| 1.   | 03CH05-SZ | AUDIX        | E3   | 6.2009-8-24 |
| 2.   | CO01-SZ   | AUDIX        | E3   | 6.120613b   |

## 1.9. 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 frequency or to 40 GHz, whichever is lower).



| Test Items            | Function Type                                                                                                                                    |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| AC Conducted Emission | Mode 1: GSM 850 Idle(Middle CH)+USB Cable 1(Charging from Adapter 1)+Earphone 1+Battery 1+Camera(Rear)+SD Card Load+SIM 1 for sample 1           |
|                       | Mode 2: WCDMA Band 2 Idle(Low CH)+USB Cable 2(Charging from Adapter 2)+Earphone 2+Battery 1+Camera(Front)+SD Card Load+SIM 2 for sample 1        |
|                       | Mode 3: WCDMA Band 5 Idle(High CH)+USB Cable 3 (Charging from Adapter 3)+Earphone 4+Battery 1+MPEG4(Colour bar)+SD Card Link+SIM 1 for sample 1  |
|                       | Mode 4: LTE Band 5 Idle(Low CH)+ USB Cable 4(Charging from Adapter 4)+ Earphone1+ Battery 1+ FM Rx ( 98MHz ) + SD Card Load+ SIM 2 for Ssample 1 |
|                       | Mode 5: LTE Band 7 Idle(High CH)+USB Cable 5 (Charging from Adapter 5)+Earphone 1+Battery 1+Camera(Rear)+SD Card Load+SIM 1 for sample 1         |
|                       | Mode 6: LTE Band 38 Idle(Middle CH)+USB Cable 1(Charging from Adapter 6)+Earphone 1+Battery 1+Camera(Rear)+SD Card Load+SIM 2 for sample 1       |
|                       | Mode 7: LTE Band 41 Idle(Low CH)+USB Cable1(Charging from Adapter 7)+Earphone 1+Battery 1+Camera(Rear)+SD Card Load+SIM 1 for sample 1           |
|                       | Mode 8: GSM 850 Idle(Middle CH)+USB Cable1(Charging from Adapter 8)+Earphone 1+Battery 1+Camera(Rear)+SD Card Load+SIM 2 for sample 1            |
|                       | Mode 9: GSM 850 Idle(Middle CH)+USB Cable1(Charging from Adapter 9)+Earphone 1+Battery 1+Camera(Rear)+SD Card Load+SIM 1 for sample 1            |
|                       | Mode 10 :GSM 850 Idle(Middle CH)+USB Cable1(Charging from Adapter 10)+Earphone 1+Battery 1+Camera(Rear)+SD Card Load+SIM 2 for sample 1          |
|                       | Mode 11 :GSM 850 Idle(Middle CH)+USB Cable1(Charging from Adapter 11)+Earphone 1+Battery 1+Camera(Rear)+SD Card Load+SIM 1 for sample 1          |
|                       | Mode 12 :GSM 850 Idle(Middle CH)+USB Cable1(Charging from Adapter 12)+Earphone 1+Battery 1+Camera(Rear)+SD Card Load+SIM 2 for sample 1          |
|                       | Mode 13 :GSM 850 Idle(Middle CH)+USB Cable1(Charging from Adapter 13)+Earphone 1+Battery 1+Camera(Rear)+SD Card Load+SIM 1 for sample 1          |
|                       | Mode 14 :GSM 850 Idle(Middle CH)+USB Cable1(Charging from Adapter 14)+Earphone 1+Battery 1+Camera(Rear)+SD Card Load+SIM 2 for sample 1          |
|                       | Mode 15 :GSM 850 Idle(Middle CH)+ USB Cable 1(Data Link with Notebook)+ Earphone 1+ Battery 1+H-Pattern+SD Card Link+SIM 1 for sample 1          |
|                       | Mode 16 :GSM 850 Idle(Middle CH)+ USB Cable 2(Data Link with Notebook)+ Earphone 1+ Battery 1+H-Pattern+SD Card Link+SIM 1 for sample 1          |
|                       | Mode 17 :GSM 850 Idle(Middle CH)+ USB Cable 3(Data Link with Notebook)+ Earphone 1+ Battery 1+H-Pattern+SD Card Link+SIM 1 for sample 1          |
|                       | Mode 18 :GSM 850 Idle(Middle CH)+ USB Cable 4(Data Link with Notebook)+ Earphone 1+ Battery 1+H-Pattern+SD Card Link+SIM 2 for sample 1          |
|                       | Mode 19 :GSM 850 Idle(Middle CH)+ USB Cable 5(Data Link with Notebook)+ Earphone 1+ Battery 1+H-Pattern+SD Card Link+SIM 1 for sample 1          |
|                       | Mode 20 :GSM 850 Idle(Middle CH)+USB Cable 1(Charging from Adapter 6)+Earphone 1+Battery 2+Camera(Rear)+SD Card Load+SIM 2 for sample 2          |



## Radiated Emissions

Mode 1: GSM 850 Idle(Middle CH)+USB Cable 1(Charging from Adapter 1)+Earphone 1+Battery 1+Camera(Rear)+SD Card Load+SIM 1 for sample 1

Mode 2: WCDMA Band 2 Idle(Low CH)+USB Cable 2(Charging from Adapter 2)+Earphone 2+Battery 1+Camera(Front)+SD Card Load+SIM 2 for sample 1

Mode 3: WCDMA Band 5 Idle(High CH)+USB Cable 3 (Charging from Adapter 3)+Earphone 4+Battery 1+MPEG4(Colour bar)+SD Card Link+SIM 1 for sample 1

Mode 4: LTE Band 5 Idle(Low CH)+ USB Cable 4(Charging from Adapter 4)+ Earphone2+ Battery 1+ FM Rx ( 98MHz ) + SD Card Load+ SIM 2 for Ssample 1

Mode 5: LTE Band 7 Idle(High CH)+USB Cable 5 (Charging from Adapter 5)+Earphone 2+Battery 1+Camera(Front)+SD Card Load+SIM 1 for sample 1

Mode 6: LTE Band 38 Idle(Middle CH)+USB Cable 2(Charging from Adapter 6)+Earphone 2+Battery 1+Camera(Front)+SD Card Load+SIM 2 for sample 1

Mode 7: LTE Band 41 Idle(Low CH)+USB Cable2(Charging from Adapter 7)+Earphone 2+Battery 1+Camera(Front)+SD Card Load+SIM 1 for sample 1

Mode 8: WCDMA Band 2 Idle(Low CH) +USB Cable2(Charging from Adapter 8)+Earphone 2+Battery 1+Camera(Front) +SD Card Load+SIM 2 for sample 1

Mode 9: WCDMA Band 2 Idle(Low CH) +USB Cable2(Charging from Adapter 9)+Earphone 2+Battery 1+Camera(Front) +SD Card Load+SIM 1 for sample 1

Mode 10 :WCDMA Band 2 Idle(Low CH) +USB Cable2(Charging from Adapter 10)+Earphone 2+Battery 1+Camera(Front) +SD Card Load+SIM 2 for sample 1

Mode 11 :WCDMA Band 2 Idle(Low CH) +USB Cable2(Charging from Adapter 11)+Earphone 2+Battery 1+Camera(Front) +SD Card Load+SIM 1 for sample 1

Mode 12 :WCDMA Band 2 Idle(Low CH) +USB Cable2(Charging from Adapter 12)+Earphone 2+Battery 1+Camera(Front) +SD Card Load+SIM 2 for sample 1

Mode 13 :WCDMA Band 2 Idle(Low CH) +USB Cable2(Charging from Adapter 13)+Earphone 2+Battery 1+Camera(Front) +SD Card Load+SIM 1 for sample 1

Mode 14 :WCDMA Band 2 Idle(Low CH) +USB Cable2(Charging from Adapter 14)+Earphone 2+Battery 1+Camera(Front) +SD Card Load+SIM 2 for sample 1

Mode 15 :WCDMA Band 2 Idle(Low CH) + USB Cable 1(Data Link with Notebook)+ Earphone 2+ Battery 1+H-Pattern+SD Card Link+SIM 1 for sample 1

Mode 16 :WCDMA Band 2 Idle(Low CH) + USB Cable 2(Data Link with Notebook)+ Earphone 2+ Battery 1+H-Pattern+SD Card Link+SIM 2 for sample 1

Mode 17 :WCDMA Band 2 Idle(Low CH) + USB Cable 3(Data Link with Notebook)+ Earphone 2+ Battery 1+H-Pattern+SD Card Link+SIM 1 for sample 1

Mode 18 :WCDMA Band 2 Idle(Low CH) + USB Cable 4(Data Link with Notebook)+ Earphone 2+ Battery 1+H-Pattern+SD Card Link+SIM 2 for sample 1

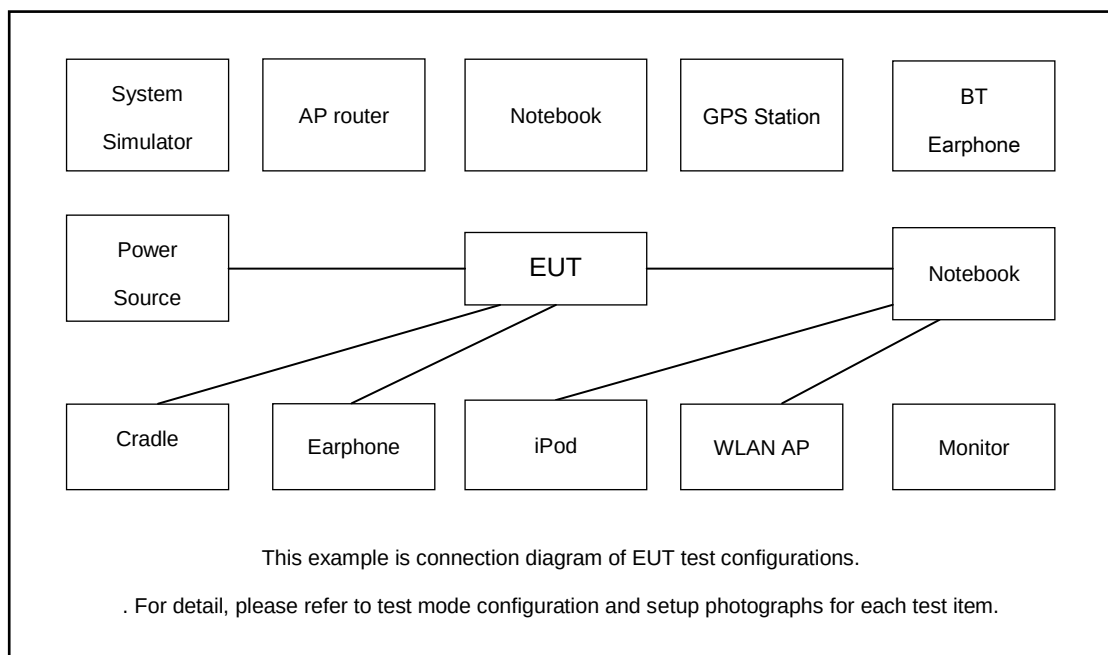
Mode 19 :WCDMA Band 2 Idle(Low CH) + USB Cable 5(Data Link with Notebook)+ Earphone 2+ Battery 1+H-Pattern+SD Card Link+SIM 1 for sample 1

Mode 20 :WCDMA Band 2 Idle(Low CH)+USB Cable1(Data Link with Notebook)+Earphone 2+Battery 2+H-Pattern+SD Card Link+SIM 2 for sample 2

## Remark:

1. The worst case of AC is mode 6; only the test data of this mode is reported.
2. The worst case of RE is mode 15; only the test data of this mode is reported.
3. Data Link with Notebook means data application transferred mode between EUT and Notebook.
4. Pre-scanned Low/Middle/High channel, the worst channel was recorded in this report.

## 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.   | Base Station | Anritsu    | MT8820C          | N/A         | N/A            | Unshielded,1.8m                                      |
| 2.   | FM Station   | R&S        | SMB100A          | N/A         | N/A            | Unshielded,1.8m                                      |
| 3.   | WLAN AP      | D-Link     | DIR-820L         | KA2IR820LA1 | N/A            | Unshielded,1.8m                                      |
| 4.   | WLAN AP      | ASUSTek    | RT-AC66U         | MSQ-RTAC66U | N/A            | Unshielded,2.7m with Core                            |
| 5.   | Notebook     | Lenovo     | E540             | FCC DoC     | Lenovo         | AC I/P: Unshielded, 1.2 m<br>DC O/P: Shielded, 1.8 m |
| 6.   | Notebook     | DELL       | Inspiron 15-7570 | FCC DoC     | N/A            | AC I/P: Unshielded, 1.8 m<br>DC O/P: Shielded, 1.8 m |
| 7.   | iPod         | Apple      | MC69029/A        | N/A         | Shielded, 1.0m | N/A                                                  |
| 8.   | iPod         | Apple      | MC525 ZP/A       | N/A         | Shielded, 1.0m | N/A                                                  |
| 9.   | SD Card      | N/A        | MicroSD HC       | FCC DoC     | N/A            | 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.

1. Data application is transferred between notebook and EUT via USB cable.
2. Turn on camera to capture images.
3. Turn on MPEG4 function.
4. Execute "H Pattern" to show H Pattern via USB Cable on the Notebook.
5. Turn on FM function to make the EUT receive continuous signals from FM station.

### 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.

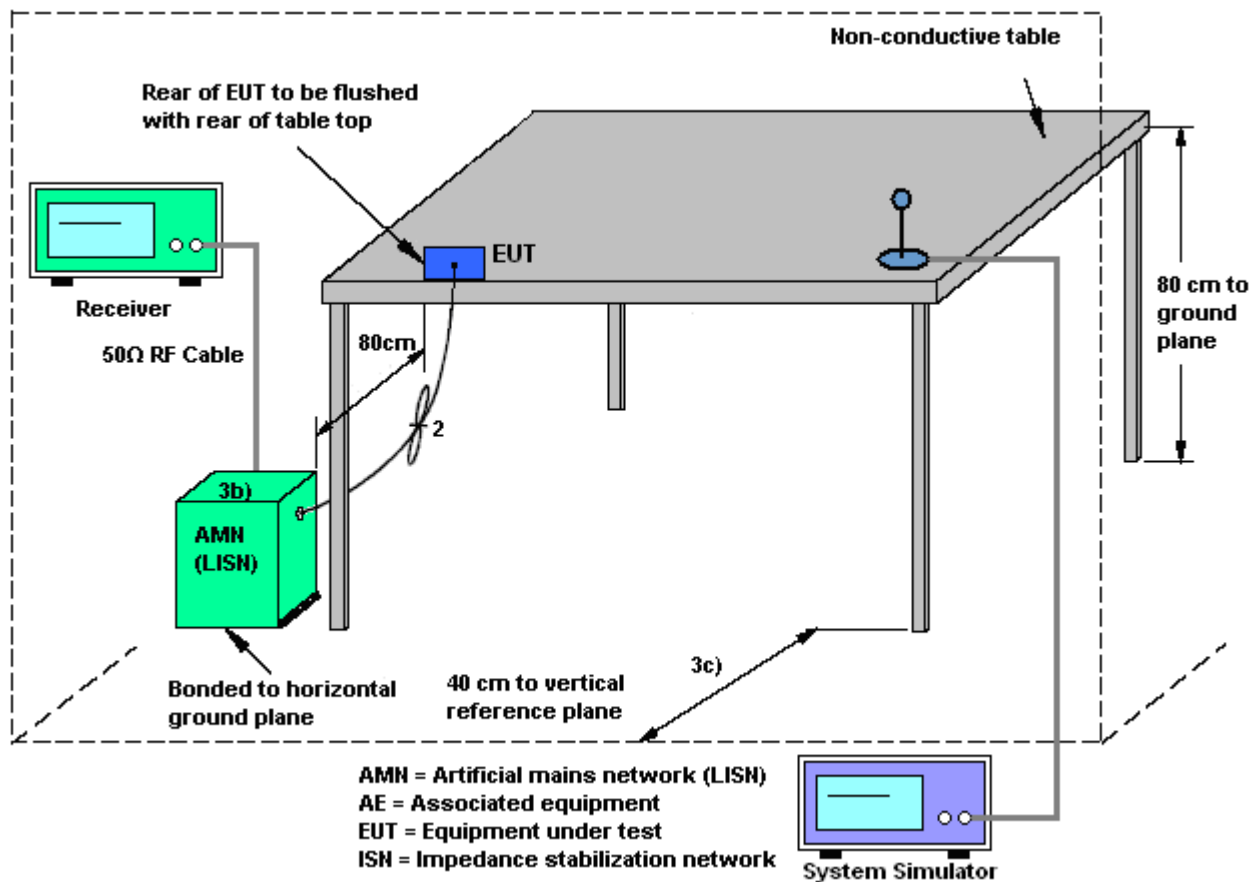
##### 3.1.2 Measuring Instruments

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.

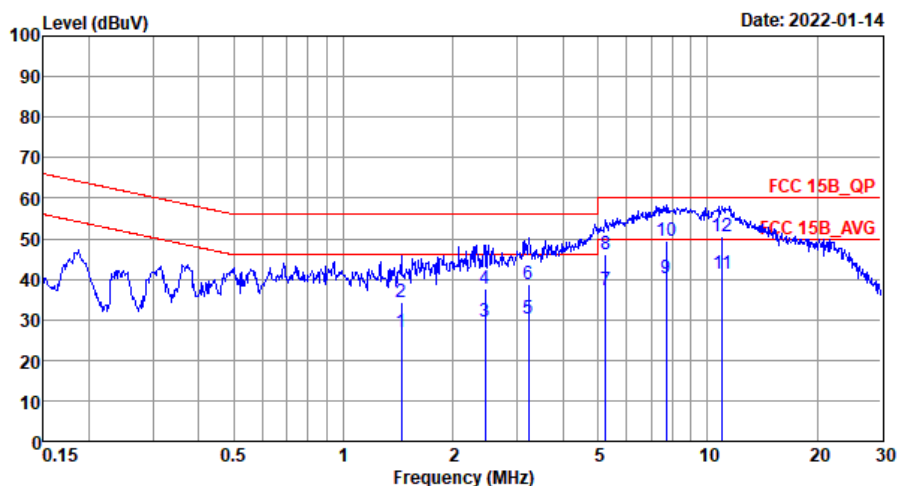
### 3.1.4 Test Setup





## 3.1.5 Test Result of AC Conducted Emission

|                 |                                                                                 |                     |         |
|-----------------|---------------------------------------------------------------------------------|---------------------|---------|
| Test Engineer : | Xie YuQiang                                                                     | Temperature :       | 22~25°C |
|                 |                                                                                 | Relative Humidity : | 50~55%  |
| Test Voltage :  | 120Vac / 60Hz                                                                   | Phase :             | Line    |
| Remark :        | All emissions not reported here are more than 10 dB below the prescribed limit. |                     |         |

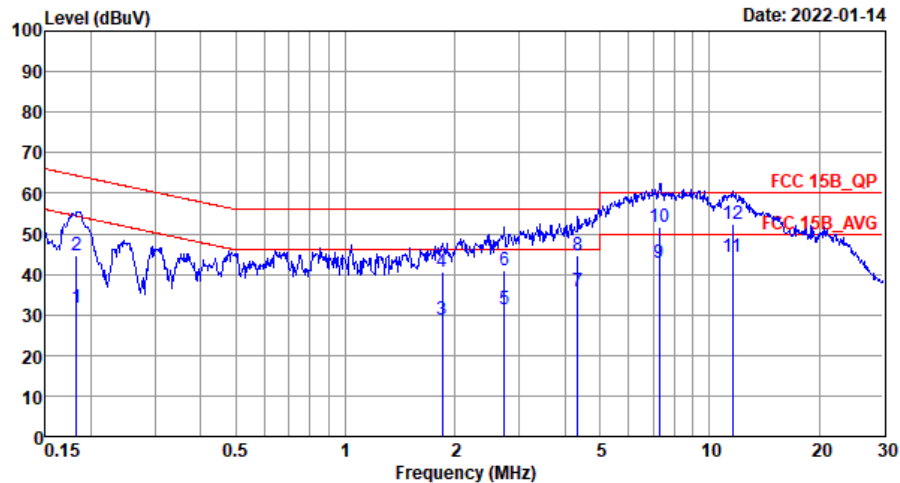


Site : CO01-SZ  
Condition: FCC 15B\_QP LISN\_20210901\_L LINE

|      | Freq  | Level | Over   | Limit | Read  | LISN   | Cable |         |
|------|-------|-------|--------|-------|-------|--------|-------|---------|
|      | MHz   | dBuV  | Limit  | Line  | Level | Factor | Loss  | Remark  |
|      |       |       | dB     | dBuV  | dBuV  | dB     | dB    |         |
| 1    | 1.44  | 26.97 | -19.03 | 46.00 | 6.60  | 10.13  | 10.24 | Average |
| 2    | 1.44  | 34.27 | -21.73 | 56.00 | 13.90 | 10.13  | 10.24 | QP      |
| 3    | 2.45  | 29.39 | -16.61 | 46.00 | 9.10  | 10.05  | 10.24 | Average |
| 4    | 2.45  | 37.69 | -18.31 | 56.00 | 17.40 | 10.05  | 10.24 | QP      |
| 5    | 3.22  | 30.11 | -15.89 | 46.00 | 9.79  | 10.08  | 10.24 | Average |
| 6    | 3.22  | 38.62 | -17.38 | 56.00 | 18.30 | 10.08  | 10.24 | QP      |
| 7    | 5.25  | 37.13 | -12.87 | 50.00 | 16.91 | 9.98   | 10.24 | Average |
| 8    | 5.25  | 46.23 | -13.77 | 60.00 | 26.01 | 9.98   | 10.24 | QP      |
| 9    | 7.69  | 40.19 | -9.81  | 50.00 | 20.00 | 9.91   | 10.28 | Average |
| 10   | 7.69  | 49.39 | -10.61 | 60.00 | 29.20 | 9.91   | 10.28 | QP      |
| 11 * | 10.96 | 41.44 | -8.56  | 50.00 | 21.30 | 9.83   | 10.31 | Average |
| 12   | 10.96 | 50.44 | -9.56  | 60.00 | 30.30 | 9.83   | 10.31 | QP      |



|                 |                                                                                 |                     |         |
|-----------------|---------------------------------------------------------------------------------|---------------------|---------|
| Test Engineer : | Xie YuQiang                                                                     | Temperature :       | 22~25°C |
|                 |                                                                                 | Relative Humidity : | 50~55%  |
| Test Voltage :  | 120Vac / 60Hz                                                                   | Phase :             | Neutral |
| Remark :        | All emissions not reported here are more than 10 dB below the prescribed limit. |                     |         |



Site : CO01-SZ  
Condition: FCC 15B\_QP LISN\_20210901\_N NEUTRAL

|      | Freq  | Level | Over   | Limit | Read  | LISN   | Cable |         |
|------|-------|-------|--------|-------|-------|--------|-------|---------|
|      | MHz   | dBuV  | Limit  | Line  | Level | Factor | Loss  | Remark  |
|      | MHz   | dBuV  | dB     | dBuV  | dBuV  | dB     | dB    |         |
| 1    | 0.18  | 31.76 | -22.61 | 54.37 | 11.10 | 10.29  | 10.37 | Average |
| 2    | 0.18  | 44.76 | -19.61 | 64.37 | 24.10 | 10.29  | 10.37 | QP      |
| 3    | 1.85  | 28.94 | -17.06 | 46.00 | 8.50  | 10.20  | 10.24 | Average |
| 4    | 1.85  | 40.54 | -15.46 | 56.00 | 20.10 | 10.20  | 10.24 | QP      |
| 5    | 2.74  | 31.39 | -14.61 | 46.00 | 11.00 | 10.15  | 10.24 | Average |
| 6    | 2.74  | 40.99 | -15.01 | 56.00 | 20.60 | 10.15  | 10.24 | QP      |
| 7    | 4.34  | 35.78 | -10.22 | 46.00 | 15.40 | 10.14  | 10.24 | Average |
| 8    | 4.34  | 44.78 | -11.22 | 56.00 | 24.40 | 10.14  | 10.24 | QP      |
| 9    | 7.29  | 42.79 | -7.21  | 50.00 | 22.50 | 10.02  | 10.27 | Average |
| 10   | 7.29  | 51.79 | -8.21  | 60.00 | 31.50 | 10.02  | 10.27 | QP      |
| 11 * | 11.56 | 44.36 | -5.64  | 50.00 | 24.10 | 9.95   | 10.31 | Average |
| 12   | 11.56 | 52.46 | -7.54  | 60.00 | 32.20 | 9.95   | 10.31 | QP      |

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

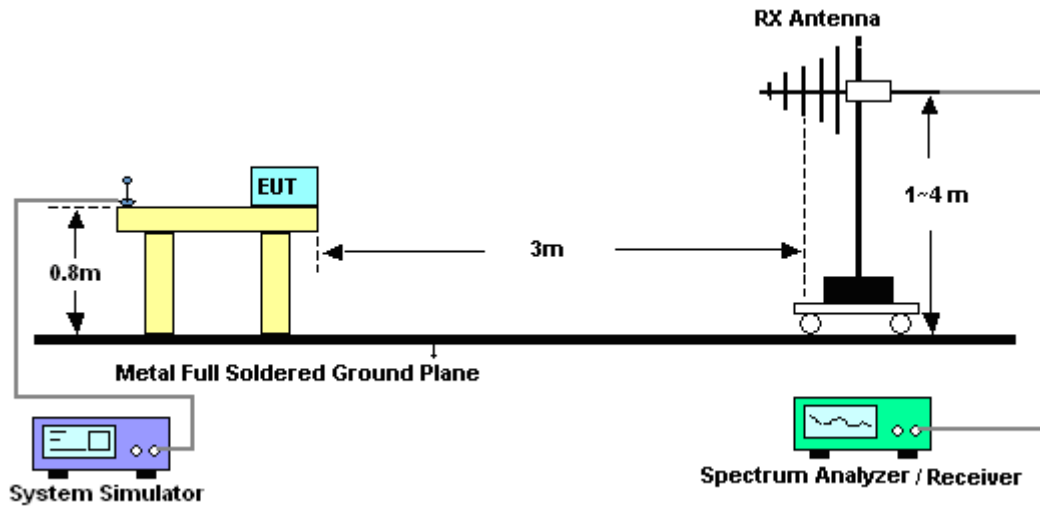
The measuring equipment is listed in the section 4 of this test report.

### 3.2.3. Test Procedures

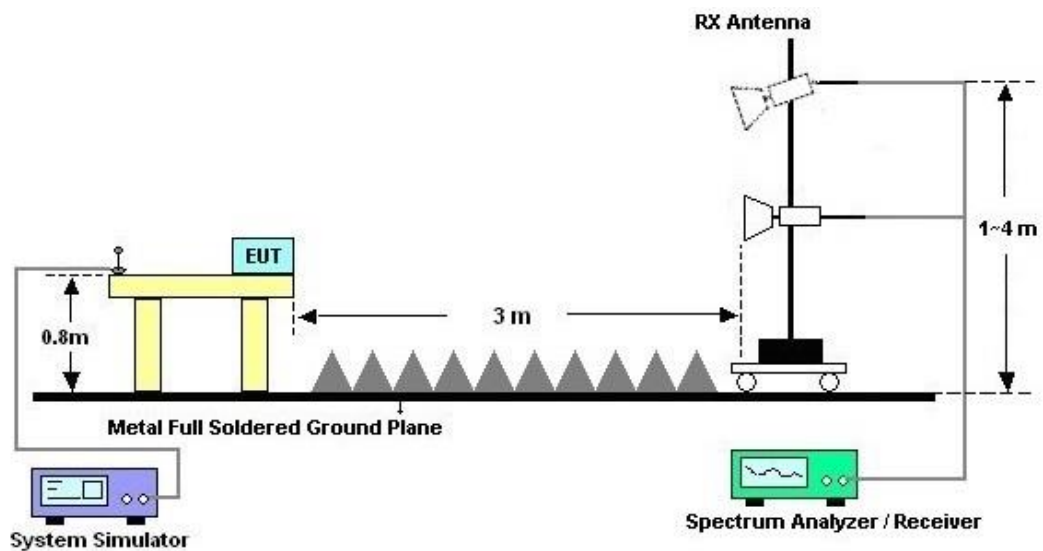
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna 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 (dB $\mu$ V/m) = 20 log Emission level ( $\mu$ V/m)
9. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
10. Exploratory radiated emissions testing of handheld and/or body-worn devices shall include rotation of the EUT through three orthogonal axes (X/Y/Z Plane) to determine the orientation (attitude) that maximizes the emissions.

### 3.2.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz

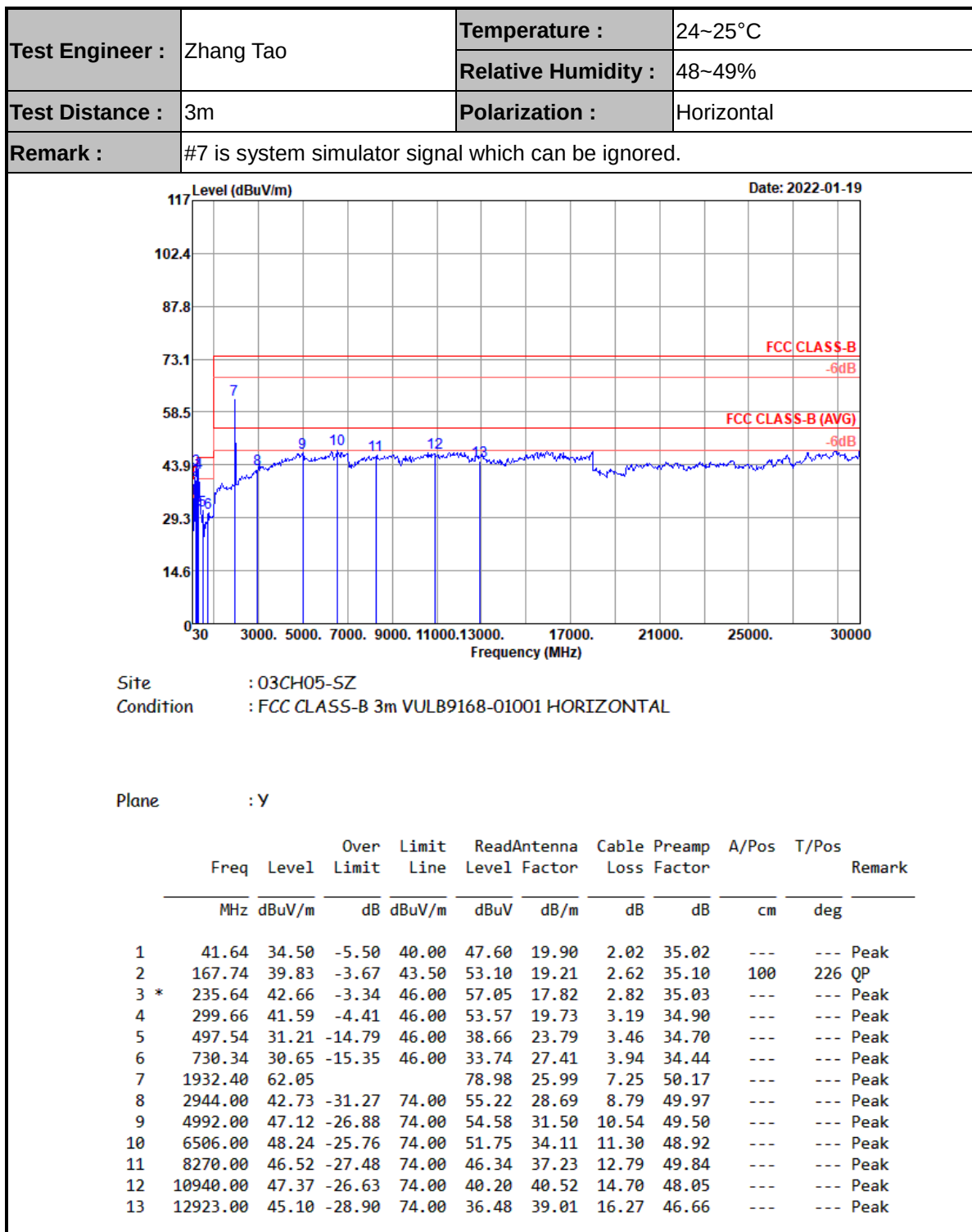


For radiated emissions above 1GHz



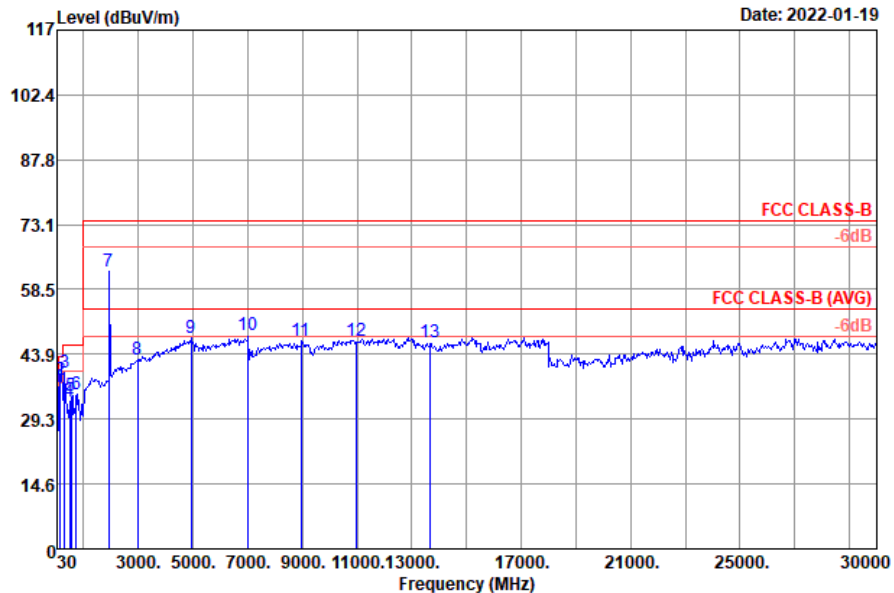


## 3.2.5. Test Result of Radiated Emission





|                 |                                                     |                     |          |
|-----------------|-----------------------------------------------------|---------------------|----------|
| Test Engineer : | Zhang Tao                                           | Temperature :       | 24~25°C  |
|                 |                                                     | Relative Humidity : | 48~49%   |
| Test Distance : | 3m                                                  | Polarization :      | Vertical |
| Remark :        | #7 is system simulator signal which can be ignored. |                     |          |



Site : 03CH05-SZ  
Condition : FCC CLASS-B 3m VULB9168-01001 VERTICAL

Plane : Y

|     | Freq     | Level  | Over<br>Limit | Limit<br>Line | ReadAntenna<br>Level | Factor | Cable<br>Loss | Preamp<br>Factor | A/Pos | T/Pos | Remark |
|-----|----------|--------|---------------|---------------|----------------------|--------|---------------|------------------|-------|-------|--------|
|     | MHz      | dBuV/m | dB            | dBuV/m        | dBuV                 | dB/m   | dB            | dB               | cm    | deg   |        |
| 1 * | 41.64    | 36.53  | -3.47         | 40.00         | 49.63                | 19.90  | 2.02          | 35.02            | ---   | ---   | Peak   |
| 2   | 159.98   | 38.11  | -5.39         | 43.50         | 51.30                | 19.32  | 2.59          | 35.10            | 100   | 341   | QP     |
| 3   | 298.69   | 39.77  | -6.23         | 46.00         | 51.78                | 19.71  | 3.18          | 34.90            | ---   | ---   | Peak   |
| 4   | 504.33   | 33.12  | -12.88        | 46.00         | 40.39                | 23.93  | 3.49          | 34.69            | ---   | ---   | Peak   |
| 5   | 551.86   | 34.46  | -11.54        | 46.00         | 40.61                | 24.79  | 3.66          | 34.60            | ---   | ---   | Peak   |
| 6   | 720.64   | 34.88  | -11.12        | 46.00         | 38.31                | 27.07  | 3.96          | 34.46            | ---   | ---   | Peak   |
| 7   | 1932.00  | 62.50  | ---           | ---           | 79.43                | 25.99  | 7.25          | 50.17            | ---   | ---   | Peak   |
| 8   | 2980.00  | 42.67  | -31.33        | 74.00         | 55.09                | 28.64  | 8.86          | 49.92            | ---   | ---   | Peak   |
| 9   | 4934.00  | 47.55  | -26.45        | 74.00         | 55.13                | 31.44  | 10.49         | 49.51            | ---   | ---   | Peak   |
| 10  | 6998.00  | 48.36  | -25.64        | 74.00         | 51.57                | 35.20  | 11.78         | 50.19            | ---   | ---   | Peak   |
| 11  | 8952.00  | 47.08  | -26.92        | 74.00         | 46.08                | 37.63  | 12.89         | 49.52            | ---   | ---   | Peak   |
| 12  | 10986.00 | 46.84  | -27.16        | 74.00         | 39.33                | 40.58  | 14.94         | 48.01            | ---   | ---   | Peak   |
| 13  | 13688.00 | 46.64  | -27.36        | 74.00         | 39.48                | 40.31  | 14.11         | 47.26            | ---   | ---   | 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 Receiver                         | R&S            | ESR7      | 101630       | 9kHz~7GHz;      | Mar. 08, 2021    | Jan. 14, 2022 | Mar. 07, 2022 | Conduction (CO01-SZ)  |
| AC LISN                              | R&S            | ENV216    | 100063       | 9kHz~30MHz      | Sep. 01, 2021    | Jan. 14, 2022 | Aug. 31, 2022 | Conduction (CO01-SZ)  |
| AC LISN<br>(for auxiliary equipment) | EMCO           | 3816/2SH  | 00103892     | 9kHz~30MHz      | Oct. 28, 2021    | Jan. 14, 2022 | Oct. 27, 2022 | Conduction (CO01-SZ)  |
| AC Power Source                      | Chroma         | 61602     | 616020000891 | 100Vac~250Vac   | Jul. 14, 2021    | Jan. 14, 2022 | Jul. 13, 2022 | Conduction (CO01-SZ)  |
| EMI Test Receiver                    | R&S            | ESR7      | 102261       | 9kHz~7GHz       | May 21, 2021     | Jan. 19, 2022 | May 20, 2022  | Radiation (03CH05-SZ) |
| EXA Spectrum Analyzer                | KEYSIGHT       | N9010B    | MY59071191   | 10Hz~44GHz      | Apr. 07, 2021    | Jan. 19, 2022 | Apr. 06, 2022 | Radiation (03CH05-SZ) |
| Log-periodic Antenna                 | SCHWARZBECK    | VULB 9168 | 01001        | 20MHz~1.5GHz    | Mar. 25, 2021    | Jan. 19, 2022 | Mar. 24, 2022 | Radiation (03CH05-SZ) |
| Amplifier                            | EM Electronics | EM330     | 060756       | 0.01Hz~3000MHz  | Apr. 07, 2021    | Jan. 19, 2022 | Apr. 06, 2022 | Radiation (03CH05-SZ) |
| Double Ridge Horn Antenna            | SCHWARZBECK    | BBHA9120D | 9120D-2206   | 1GHz~18GHz      | Apr. 11, 2021    | Jan. 19, 2022 | Apr. 10, 2022 | Radiation (03CH05-SZ) |
| HF Amplifier                         | EM Electronics | EM01G18GA | 060781       | 1GHz~18GHz      | Apr. 07, 2021    | Jan. 19, 2022 | Apr. 06, 2022 | Radiation (03CH05-SZ) |
| HF Amplifier                         | EM Electronics | EM18G40G  | 060778       | 18GHz~40GHz     | Apr. 07, 2021    | Jan. 19, 2022 | Apr. 06, 2022 | Radiation (03CH05-SZ) |
| Horn Antenna                         | SCHWARZBECK    | BBHA9170  | 00983        | 15GHz~40GHz     | Apr. 11, 2021    | Jan. 19, 2022 | Apr. 10, 2022 | Radiation (03CH05-SZ) |
| AC Power Source                      | APC            | AFV-S-600 | F119050013   | N/A             | NCR              | Jan. 19, 2022 | NCR           | Radiation (03CH05-SZ) |
| Turn Table                           | EMEC           | T-200-S-1 | 060925-T     | 0~360 degree    | NCR              | Jan. 19, 2022 | NCR           | Radiation (03CH05-SZ) |
| Antenna Mast                         | EMEC           | MBS-400-1 | 060927       | 1 m~4 m         | NCR              | Jan. 19, 2022 | NCR           | Radiation (03CH05-SZ) |

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% ( $U = 2Uc(y)$ ) | 2.2dB |
|-------------------------------------------------------------------------|-------|

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

|                                                                         |       |
|-------------------------------------------------------------------------|-------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 4.2dB |
|-------------------------------------------------------------------------|-------|

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

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

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

|                                                                         |       |
|-------------------------------------------------------------------------|-------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 4.1dB |
|-------------------------------------------------------------------------|-------|