



FCC Test Report

APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : XT2027-1
FCC ID : IHDT56YH1
STANDARD : 47 CFR Part 15 Subpart B
CLASSIFICATION : Certification

The product was received on Aug. 15, 2019 and testing was completed on Sep. 26, 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.

Jason Jia

Reviewed by: Jason Jia / Supervisor

James Huang

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 |
|------------|---------|-------------------------|---------------|
| FC981517 | Rev. 01 | Initial issue of report | Oct. 22, 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 3.93 dB at 0.206 MHz |
| 3.2 | 15.109 | Radiated Emission | < 15.109 limits | PASS | Under limit 3.20 dB at 40.670 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 | XT2027-1 |
| FCC ID | IHDT56YH1 |
| EUT supports Radios application | GSM/GPRS/EGPRS/WCDMA/HSPA/ DC-HSDPA/HSPA+(16QAM uplink is not supported) /LTE/NFC WLAN 2.4GHz 802.11b/g/n HT20 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR / EDR/ LE FM Receiver and GNSS |
| IMEI Code | Conduction: 357226100002971 for Sample1 357225100029091/357225100029109 for Sample2 Radiation: 357226100002930 for Sample1 357225100029075/357225100029083 for Sample2 |
| HW Version | DVT2 |
| SW Version | QPF30.71 |
| 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 | |
|---|---|
| Tx Frequency | GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV : 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz LTE Band 2 : 1850.7 MHz ~ 1909.3 MHz LTE Band 4 : 1710.7 MHz ~ 1754.3 MHz LTE Band 5 : 824.7 MHz ~ 848.3 MHz LTE Band 7 : 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 17 : 706.5 MHz ~ 713.5 MHz LTE Band 66 : 1710.7 MHz ~ 1779.3 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n/ac: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz |
| Rx Frequency | GSM850: 869.2 MHz ~ 893.8 MHz GSM1900: 1930.2 MHz ~ 1989.8 MHz WCDMA Band V: 871.4 MHz ~ 891.6 MHz WCDMA Band IV : 2112.4 MHz ~ 2152.6 MHz WCDMA Band II: 1932.4 MHz ~ 1987.6 MHz LTE Band 2 : 1930.7 MHz ~ 1989.3 MHz LTE Band 4 : 2110.7 MHz ~ 2154.3 MHz LTE Band 5 : 869.7 MHz ~ 893.3 MHz LTE Band 7 : 2622.5 MHz ~ 2687.5 MHz LTE Band 12 : 729.7 MHz ~ 745.3 MHz LTE Band 17 : 736.5 MHz ~ 743.5 MHz LTE Band 66 : 2110.7 MHz~ 2199.3 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n/ac: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz GNSS : 1559 MHz ~ 1610 MHz NFC : 13.56 MHz FM : 87.5MHz ~ 108MHz |
| Antenna Type | WWAN : Fixed Internal Antenna WLAN : Loop Antenna Bluetooth : Loop Antenna GNSS: Loop Antenna FM : External Headset Antenna NFC: Ferrite FPC Antenna |
| Type of Modulation | GSM: GMSK GPRS: GMSK EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK WCDMA : BPSK (Uplink) |



| | |
|--|---|
| | HSDPA/DC-HSDPA : QPSK (Uplink) HSUPA : QPSK (Uplink) HSPA+ : 16QAM (16QAM uplink is not supported) DC-HSDPA : 64QAM LTE: QPSK / 16QAM / 64QAM 802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n/ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM) Bluetooth LE : GFSK Bluetooth (1Mbps) : GFSK Bluetooth (2Mbps) : $\pi/4$ -DQPSK Bluetooth (3Mbps) : 8-DPSK GNSS : BPSK NFC: ASK FM |
|--|---|

Note:

- (1) WLAN operation in 5600 MHz ~ 5650 MHz is notched.
- (2) GNSS Rx = Galileo Rx + Glonass Rx + GPS Rx

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.

| | | | |
|---------------------------|--|----------------------------|---------------------------------------|
| Test Firm | Sporton International (Kunshan) Inc. | | |
| Test Site Location | No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958 | | |
| Test Site No. | Sporton Site No. | FCC Designation No. | FCC Test Firm Registration No. |
| | CO01-KS 03CH06-KS | CN1257 | 314309 |



1.7. 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.

1.8. 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 , 600mA; O/P: 5/9/12Vdc, 3000/2000/1500mA | |
| AC Adapter 1(EU) | Brand Name | Motorola(Salom) | Model Name SC-52 |
| | Power Rating | I/P: 100-240 Vac , 600mA; O/P: 5/9/12Vdc, 3000/2000/1500mA | |
| AC Adapter 1(UK) | Brand Name | Motorola(Salom) | Model Name SC-53 |
| | Power Rating | I/P: 100-240 Vac , 600mA; O/P: 5/9/12Vdc, 3000/2000/1500mA | |
| AC Adapter 1(AU) | Brand Name | Motorola(Salom) | Model Name SC-55 |
| | Power Rating | I/P: 100-240 Vac , 600mA; O/P: 5/9/12Vdc, 3000/2000/1500mA | |
| AC Adapter 1(AR) | Brand Name | Motorola(Salom) | Model Name SC-56 |
| | Power Rating | I/P: 100-240 Vac , 600mA; O/P: 5/9/12Vdc, 3000/2000/1500mA | |
| AC Adapter 1(BR) | Brand Name | Motorola(Salom) | Model Name SC-57 |
| | Power Rating | I/P: 100-240 Vac , 600mA; O/P: 5/9/12Vdc, 3000/2000/1500mA | |
| AC Adapter 1(Chile) | Brand Name | Motorola(Salom) | Model Name SC-52 |
| | Power Rating | I/P: 100-240 Vac , 600mA; O/P: 5/9/12Vdc, 3000/2000/1500mA | |
| AC Adapter 1(BR) Local Build | Brand Name | Motorola(Flex) | Model Name SC-57 |
| | Power Rating | I/P: 100-240 Vac , 600mA; O/P: 5/9/12Vdc, 3000/2000/1500mA | |
| AC Adapter 2(US) | Brand Name | Motorola(Chenyang) | Model Name SC-51 |
| | Power Rating | I/P: 100-240 Vac , 600mA; O/P: 5/9/12Vdc, 3000/2000/1500mA | |
| AC Adapter 2(EU) | Brand Name | Motorola(Chenyang) | Model Name SC-52 |
| | Power Rating | I/P: 100-240 Vac , 600mA; O/P: 5/9/12Vdc, 3000/2000/1500mA | |
| AC Adapter 2(UK) | Brand Name | Motorola(Chenyang) | Model Name SC-53 |
| | Power Rating | I/P: 100-240 Vac , 600mA; O/P: 5/9/12Vdc, 3000/2000/1500mA | |
| AC Adapter 2(AU) | Brand Name | Motorola(Chenyang) | Model Name SC-55 |
| | Power Rating | I/P: 100-240 Vac , 600mA; O/P: 5/9/12Vdc, 3000/2000/1500mA | |
| AC Adapter 2(AR) | Brand Name | Motorola(Chenyang) | Model Name SC-56 |
| | Power Rating | I/P: 100-240 Vac , 600mA; O/P: 5/9/12Vdc, 3000/2000/1500mA | |
| AC Adapter 3(BR) Cliptech Local Build | Brand Name | Motorola(Cliptech) | Model Name SC-57 |
| | Power Rating | I/P: 100-240 Vac , 600mA; O/P: 5/9/12Vdc, 3000/2000/1500mA | |



| | | | | |
|------------------|------------------|---|------------|-----------------|
| AC Adapter 4(US) | Brand Name | Motorola(Chenyang) | Model Name | SC-81 |
| | Power Rating | I/P: 100-240 Vac , 1.2A; O/P: 5/9/15/20Vdc, 4000/4000/3000/2250mA | | |
| AC Adapter 4(EU) | Brand Name | Motorola(Chenyang) | Model Name | SC-82 |
| | Power Rating | I/P: 100-240 Vac , 1.2A; O/P: 5/9/15/20Vdc, 4000/4000/3000/2250mA | | |
| AC Adapter 4(BR) | Brand Name | Motorola(Chenyang) | Model Name | SC-87 |
| | Power Rating | I/P: 100-240 Vac , 1.2A; O/P: 5/9/15/20Vdc, 4000/4000/3000/2250mA | | |
| AC Adapter 5(AR) | Brand Name | Motorola(Salom) | Model Name | SC-36 |
| | Power Rating | I/P: 100-240 Vac , 800mA; O/P: 5/9Vdc, 3000/3000mA | | |
| AC Adapter 6(AR) | Brand Name | Motorola(Acbel) | Model Name | SC-36 |
| | Power Rating | I/P: 100-240 Vac , 800mA; O/P: 5/9Vdc, 3000/3000mA | | |
| Battery | Brand Name | Motorola(ATL) | Model Name | KG50 |
| | Power Rating | 3.8Vdc, 3790/4000mAh | Type | Li-ion; Polymer |
| Earphone 1 | Brand Name | Motorola(Lianyun) | Model Name | SH38C37773 |
| | Signal Line Type | 1.11 meter, non-shielded cable, without ferrite core | | |
| Earphone 2 | Brand Name | Motorola (Cosonic) | Model Name | SH38C44959 |
| | Signal Line Type | 1.11 meter, non-shielded cable, without ferrite core | | |
| USB Cable 1 | Brand Name | Motorola(Saibao) | Model Name | SC18C24367 |
| | Signal Line Type | 1.0 meter, shielded cable, without ferrite core | | |
| USB Cable 2 | Brand Name | Motorola(Luxshare) | Model Name | SC18C24368 |
| | Signal Line Type | 1.0 meter, shielded cable, without ferrite core | | |
| USB Cable 3 | Brand Name | Motorola(I SHENG) | Model Name | SC18C28955 |
| | Signal Line Type | 1.0 meter, shielded cable, without ferrite core | | |
| USB Cable 4 | Brand Name | Motorola(Saibao) | Model Name | SC18C57604 |
| | Signal Line Type | 1.0 meter, shielded cable, without ferrite core | | |



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.

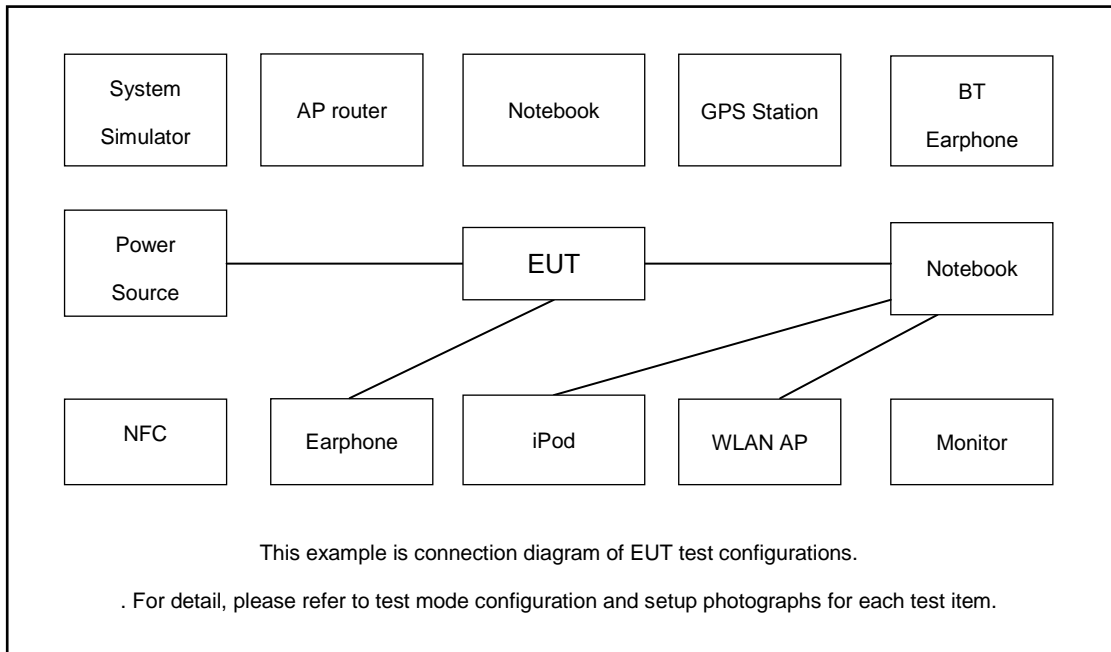
Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

| Test Items | Function Type |
|-----------------------|--|
| AC Conducted Emission | Mode 1: GSM 850 Rx(Middle) + BT Idle + Earphone1 + USB Cable1(Charging from Adapter1) + WLAN Idle(2.4G) + Camera(Rear) for Sample1 |
| | Mode 2: PCS 1900 Rx + BT Idle + Earphone2 + USB Cable2(Charging from Adapter2) + WLAN Idle(5G) + Camera(Front) for Sample1 |
| | Mode 3: WCDMA Band 5 Rx(Low) + BT Idle + Earphone2 + USB Cable3(Charging from Adapter3) + WLAN Idle(2.4G) + MPEG4 for Sample1 |
| | Mode 4: LTE Band 5 Rx(Low) + BT Idle + Earphone2 + USB Cable2(Charging from Adapter2) + WLAN Idle(5G) + NFC On for Sample1 |
| | Mode 5: LTE Band 12 Rx(High) + BT Idle + Earphone2 + USB Cable2(Charging from Adapter2) + WLAN Idle(2.4G) + FM Rx(98MHZ) for Sample1 |
| | Mode 6: LTE Band 17 Rx(High) + BT Idle + Earphone2 + USB Cable 1(Data Link with Notebook) + WLAN Idle(5G) + GNSS Rx for Sample1 |
| | Mode 7: LTE Band 4 Rx + BT Idle + Earphone2 + USB Cable 2(Data Link with Notebook) + WLAN Idle(2.4G) + GNSS Rx for Sample1 |
| | Mode 8: LTE Band 7 Rx + BT Idle + Earphone2 + USB Cable 3(Data Link with Notebook) + WLAN Idle(5G) + GNSS Rx for Sample1 |
| | Mode 9: PCS 1900 Rx + BT Idle + Earphone2 + USB Cable2(Charging from Adapter2) + WLAN Idle(5G) + Camera(Front) for Sample 2 |
| | Mode 10 : PCS 1900 Rx + BT Idle + Earphone2 + USB Cable4(Charging from Adapter4) + WLAN Idle(5G) + Camera(Front) for Sample1 |
| | Mode 11 : LTE Band 17 Rx(High) + BT Idle + Earphone2 + USB Cable 4(Data Link with Notebook) + WLAN Idle(5G) + GNSS Rx for Sample1 |
| | Mode 12 : PCS 1900 Rx + BT Idle + Earphone2 + USB Cable4(Charging from Adapter5) + WLAN Idle(5G) + Camera(Front) for Sample1 |
| | Mode 13 : PCS 1900 Rx + BT Idle + Earphone2 + USB Cable4(Charging from Adapter6) + WLAN Idle(5G) + Camera(Front) for Sample1 |



| | |
|--|--|
| Radiated Emissions | <p>Mode 1: GSM 850 Rx(Middle) + BT Idle + Earphone1 + WLAN Idle(2.4G) + Camera(Rear) + USB Cable1(Charging from Adapter1) for Sample1</p> <p>Mode 2: PCS 1900 Rx + BT Idle + Earphone2 + WLAN Idle(5G) + Camera(Front) + USB Cable2(Charging from Adapter2) for Sample1</p> <p>Mode 3: WCDMA Band 5 Rx(Low) + BT Idle + Earphone1 + WLAN Idle(2.4G) + MPEG4 + USB Cable3(Charging from Adapter3) for Sample1</p> <p>Mode 4: LTE Band 5 Rx(Low) + BT Idle + Earphone1 + WLAN Idle(5G) + NFC On + USB Cable3(Charging from Adapter3) for Sample1</p> <p>Mode 5: LTE Band 12 Rx(High) + BT Idle + Earphone1 + WLAN Idle(2.4G) + FM(88) + USB Cable3(Charging from Adapter3) for Sample1</p> <p>Mode 6: LTE Band 17 Rx(High) + BT Idle + Earphone1 + WLAN Idle(5G) + GNSS Rx + USB Cable 1(Data Link with Notebook) for Sample1</p> <p>Mode 7: LTE Band 4 Rx + BT Idle + Earphone1 + WLAN Idle(2.4G) + GNSS Rx + USB Cable 2(Data Link with Notebook) for Sample1</p> <p>Mode 8: LTE Band 7 Rx + BT Idle + Earphone1 + WLAN Idle(5G) + GNSS Rx + USB Cable 3(Data Link with Notebook) for Sample1</p> <p>Mode 9: LTE Band 5 Rx(Low) + BT Idle + Earphone1 + WLAN Idle(5G) + NFC On + USB Cable3(Charging from Adapter3) for Sample2</p> <p>Mode 10: LTE Band 5 Rx(Low) + BT Idle + Earphone1 + WLAN Idle(5G) + Earphone1 + USB Cable4(Charging from Adapter4) for Sample2</p> <p>Mode 11: LTE Band 4 Rx + BT Idle + Earphone1 + WLAN Idle(2.4G) + GNSS Rx + USB Cable 4(Data Link with Notebook) for Sample2</p> <p>Mode 12: LTE Band 5 Rx(Low) + BT Idle + Earphone1 + WLAN Idle(5G) + NFC On + USB Cable4(Charging from Adapter5) for Sample2</p> <p>Mode 13: LTE Band 5 Rx(Low) + BT Idle + Earphone1 + WLAN Idle(5G) + NFC On + USB Cable4(Charging from Adapter6) for Sample2</p> |
| Remark: | |
| <ol style="list-style-type: none"> 1. The worst case of AC is mode 2; only the test data of this mode is reported. 2. The worst case of RE is mode 9; only the test data of this mode is reported. 3. Data Link with Notebook means data application transferred mode between EUT and Notebook. | |

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. | LTE Base Station | Anritsu | MT8820C | N/A | N/A | Unshielded,1.8m |
| 2. | LTE Base Station | Anritus | MT8821C | N/A | N/A | Unshielded,1.8m |
| 3. | Base Station | R&S | CMU 200 | N/A | N/A | Unshielded,1.8m |
| 4. | Bluetooth Earphone | Lenovo | LBH308 | N/A | N/A | N/A |
| 5. | Bluetooth Earphone | XiaoMi | LYEJ02LM | N/A | N/A | N/A |
| 6. | Notebook | Lenovo | Yoga S730 | N/A | N/A | shielded cable DC O/P 1.8m , Unshielded AC I/P cable 1.8m |
| 7. | Notebook | Lenovo | G480 | QDS-BRCM1050I | N/A | shielded cable DC O/P 1.8m , Unshielded AC I/P cable 1.8m |
| 8. | Notebook | Dell | Latitude3440 | N/A | N/A | shielded cable DC O/P 1.8m , Unshielded AC I/P cable 1.8m |
| 9. | WLAN AP | D-link | DIR-655 | KA21R655B1 | N/A | Unshielded,1.8m |
| 10. | WLAN AP | TP-Link | TL-WDR5600 | N/A | N/A | Unshielded,1.8m |
| 11. | WLAN AP | ASUS | AC66U | N/A | N/A | Unshielded,1.8m |
| 12. | Earphone | Lenovo | P121 | N/A | N/A | Unshielded,1.2m |
| 13. | Earphone | Lenovo | N/A | N/A | N/A | N/A |
| 14. | U Disk | SanDisk | SDCZ50-008G | N/A | N/A | N/A |
| 15. | Hard Disk | Lenovo | F310 | DoC | Shielded, 1.2m | N/A |
| 16. | SD Card | Kingston | 8GB | N/A | N/A | N/A |
| 17. | SD Card | SanDisk | Uitra | N/A | N/A | N/A |
| 18. | Hard disk | Lenovo | FH310 | Fcc DoC | Shielded, 1.2m | N/A |
| 19. | Signal Generator | R&S | SMBV100A | N/A | N/A | Unshielded,1.8m |
| 20. | Vector Signal Generator | R&S | SMBV100A | 258305 | 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.

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 camera to capture images.
3. Turn on MPEG4 function.
4. Turn on FM function.
5. Turn on NFC function.
6. Turn on GNSS function to make the EUT receive continuous signals from GNSS 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 (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.

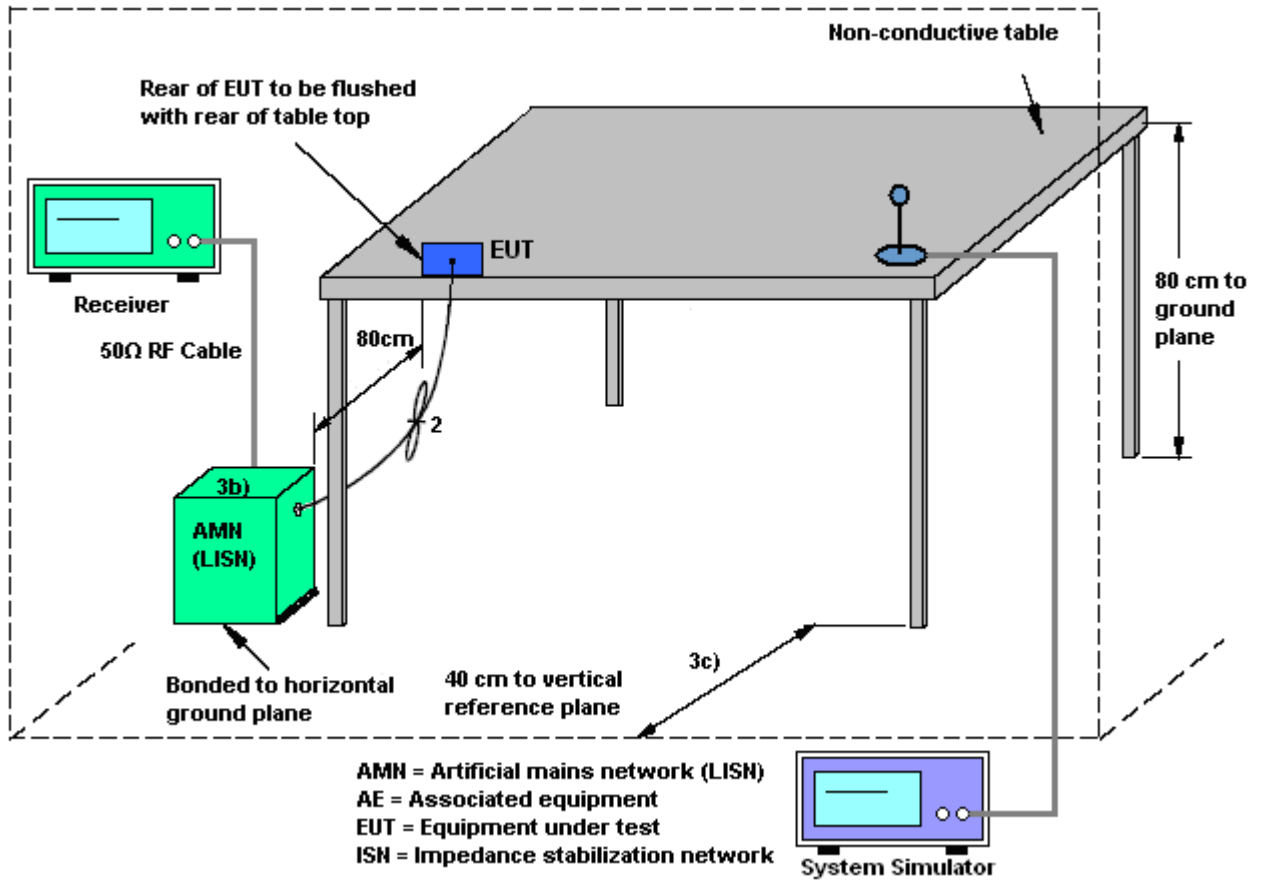
3.1.2 Measuring Instruments

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

3.1.3 Test Procedure

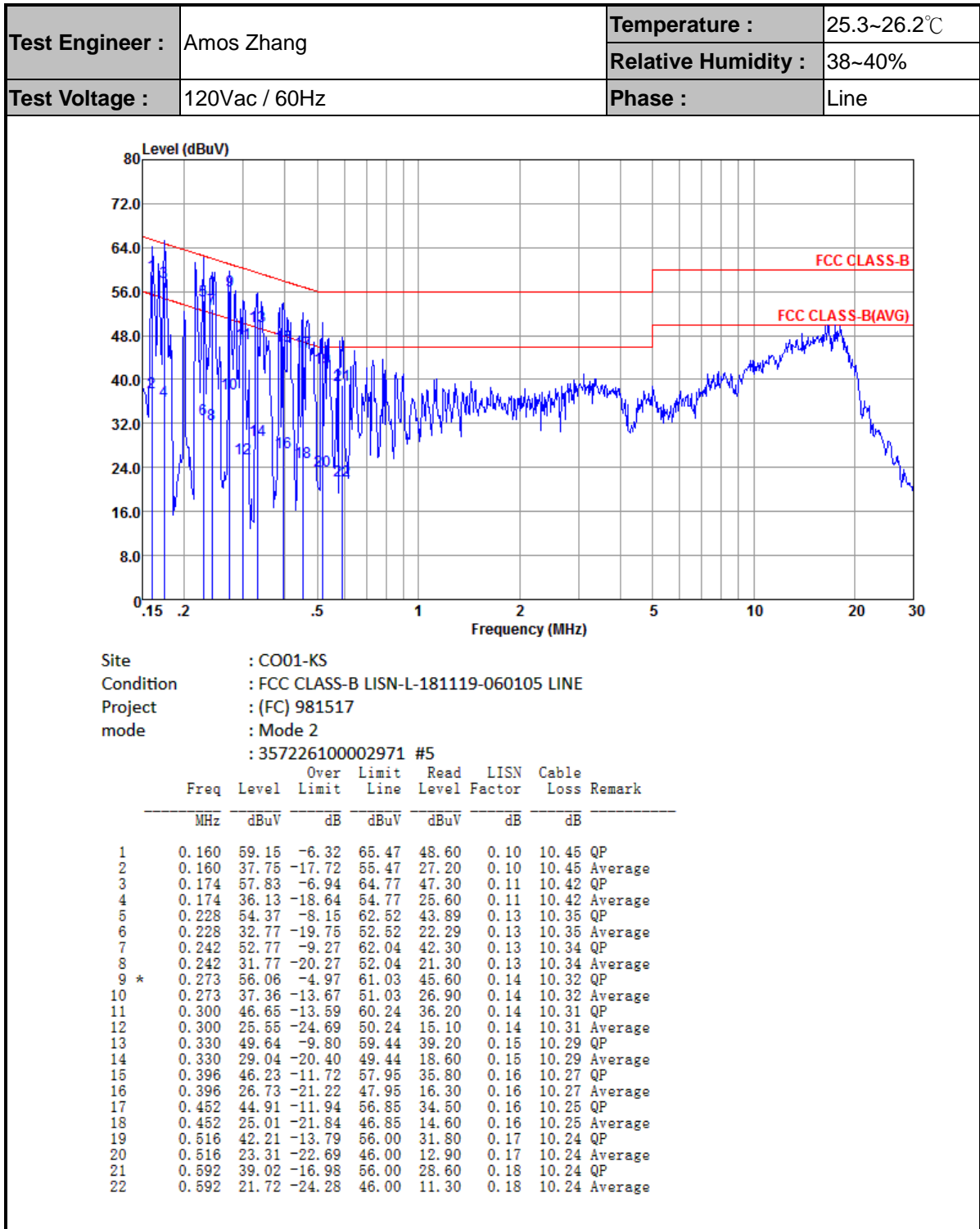
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.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



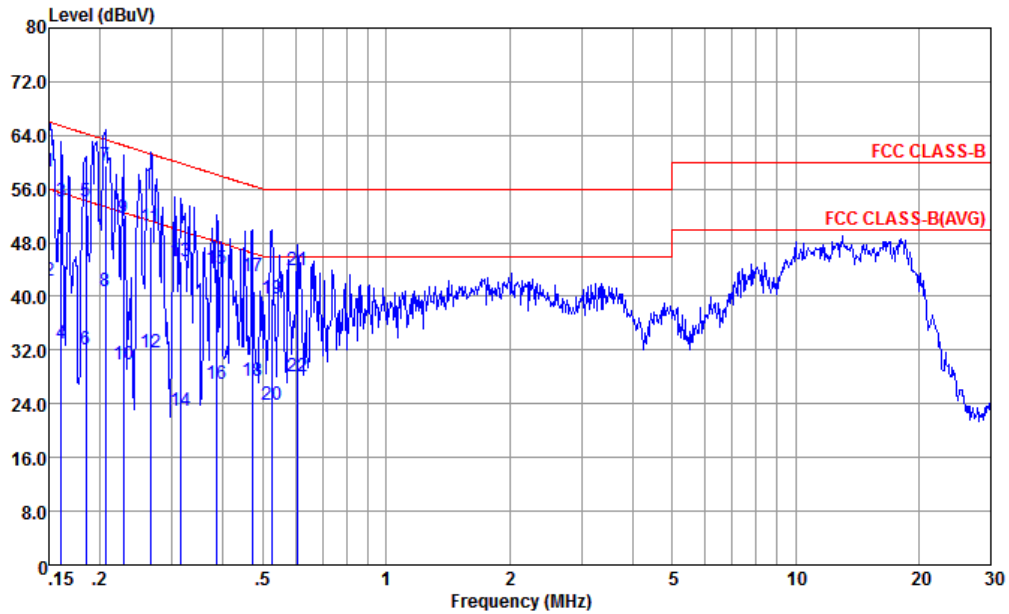


3.1.5 Test Result of AC Conducted Emission





| | | | |
|-----------------|---------------|---------------------|-------------|
| Test Engineer : | Amos Zhang | Temperature : | 25.3~26.2°C |
| | | Relative Humidity : | 38~40% |
| Test Voltage : | 120Vac / 60Hz | Phase : | Neutral |



Site : CO01-KS
 Condition : FCC CLASS-B LISN-N-181119-060105 NEUTRAL
 Project : (FC) 981517
 mode : Mode 2
 : 357226100002971 #5

| | Freq | Level | Over | Limit | Read | LISN | Cable | Remark |
|-----|-------|-------|--------|-------|-------|--------|-------|---------|
| | MHz | dBuV | Limit | Line | Level | Factor | Loss | |
| | | | dB | dBuV | dBuV | dB | dB | |
| 1 | 0.150 | 58.56 | -7.44 | 66.00 | 47.90 | 0.18 | 10.48 | QP |
| 2 | 0.150 | 42.26 | -13.74 | 56.00 | 31.60 | 0.18 | 10.48 | Average |
| 3 | 0.161 | 54.23 | -11.20 | 65.43 | 43.60 | 0.18 | 10.45 | QP |
| 4 | 0.161 | 32.93 | -22.50 | 55.43 | 22.30 | 0.18 | 10.45 | Average |
| 5 | 0.184 | 54.17 | -10.11 | 64.28 | 43.60 | 0.17 | 10.40 | QP |
| 6 | 0.184 | 32.07 | -22.21 | 54.28 | 21.50 | 0.17 | 10.40 | Average |
| 7 * | 0.206 | 59.43 | -3.93 | 63.36 | 48.90 | 0.17 | 10.36 | QP |
| 8 | 0.206 | 40.73 | -12.63 | 53.36 | 30.20 | 0.17 | 10.36 | Average |
| 9 | 0.228 | 51.72 | -10.80 | 62.52 | 41.20 | 0.17 | 10.35 | QP |
| 10 | 0.228 | 29.82 | -22.70 | 52.52 | 19.30 | 0.17 | 10.35 | Average |
| 11 | 0.266 | 50.39 | -10.86 | 61.25 | 39.91 | 0.16 | 10.32 | QP |
| 12 | 0.266 | 31.69 | -19.56 | 51.25 | 21.21 | 0.16 | 10.32 | Average |
| 13 | 0.315 | 45.26 | -14.58 | 59.84 | 34.80 | 0.16 | 10.30 | QP |
| 14 | 0.315 | 23.06 | -26.78 | 49.84 | 12.60 | 0.16 | 10.30 | Average |
| 15 | 0.385 | 44.03 | -14.14 | 58.17 | 33.60 | 0.16 | 10.27 | QP |
| 16 | 0.385 | 27.03 | -21.14 | 48.17 | 16.60 | 0.16 | 10.27 | Average |
| 17 | 0.471 | 42.99 | -13.50 | 56.49 | 32.60 | 0.15 | 10.24 | QP |
| 18 | 0.471 | 27.49 | -19.00 | 46.49 | 17.10 | 0.15 | 10.24 | Average |
| 19 | 0.527 | 39.58 | -16.42 | 56.00 | 29.19 | 0.15 | 10.24 | QP |
| 20 | 0.527 | 23.88 | -22.12 | 46.00 | 13.49 | 0.15 | 10.24 | Average |
| 21 | 0.608 | 43.98 | -12.02 | 56.00 | 33.60 | 0.14 | 10.24 | QP |
| 22 | 0.608 | 28.08 | -17.92 | 46.00 | 17.70 | 0.14 | 10.24 | 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 (MHz) | Field Strength (microvolts/meter) | Measurement Distance (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.

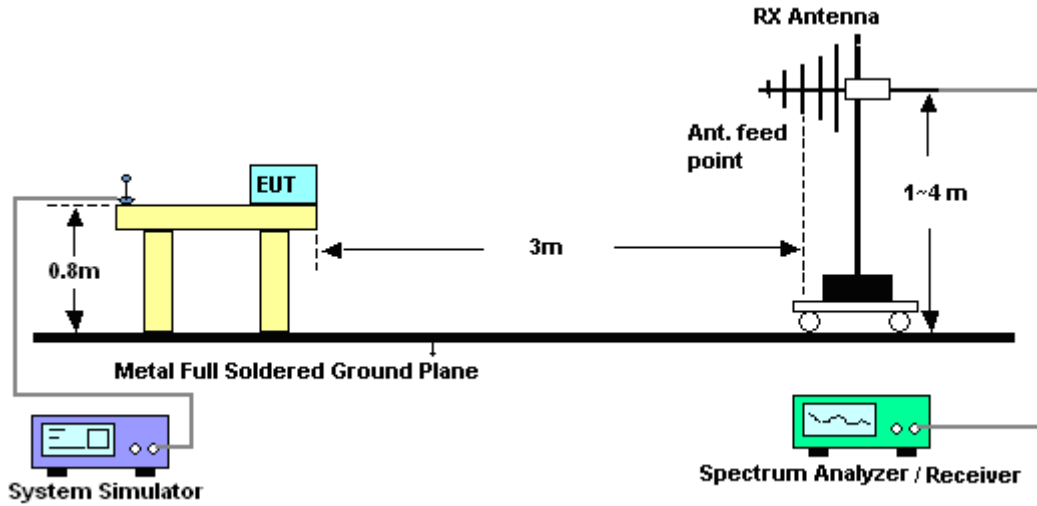


3.2.3. Test Procedures

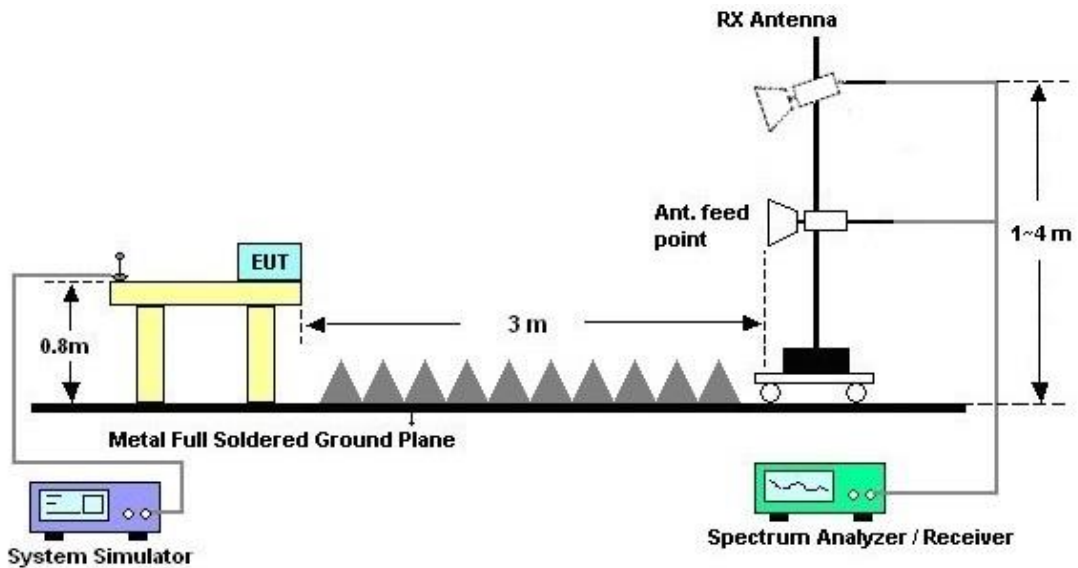
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna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



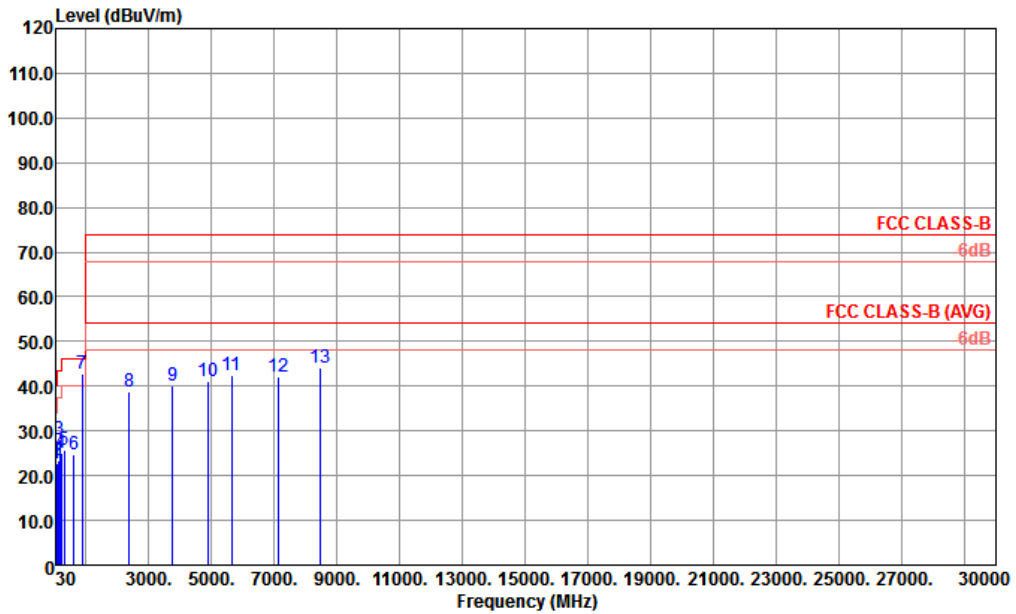
For radiated emissions above 1GHz





3.2.5. Test Result of Radiated Emission

| | | | |
|-----------------|---|---------------------|------------|
| Test Engineer : | Carl Ni | Temperature : | 21~22°C |
| | | Relative Humidity : | 41~42% |
| Test Distance : | 3m | Polarization : | Horizontal |
| Remark | #7 is system simulator signal which can be ignored. | | |

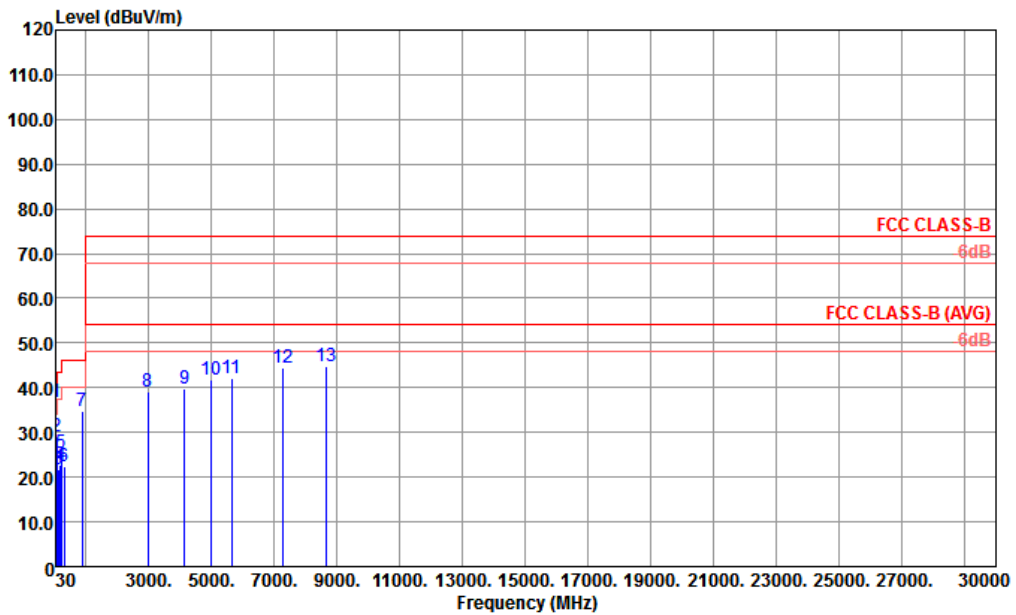


Site : 03CH06-KS
 Condition : FCC CLASS-B 3m LF 49922-3M HORIZONTAL

| | Freq | Level | Over Limit | Limit Line | ReadAntenna Level | Antenna Factor | Cable Loss | Preamp Factor | A/Pos | T/Pos | Remark |
|-----|---------|--------|------------|------------|-------------------|----------------|------------|---------------|-------|-------|--------|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 67.83 | 22.72 | -17.28 | 40.00 | 41.23 | 12.44 | 0.98 | 31.93 | --- | --- | Peak |
| 2 | 105.66 | 23.35 | -20.15 | 43.50 | 37.77 | 16.32 | 1.19 | 31.93 | --- | --- | Peak |
| 3 | 168.71 | 27.98 | -15.52 | 43.50 | 41.97 | 16.42 | 1.52 | 31.93 | 100 | 0 | Peak |
| 4 | 210.42 | 25.08 | -18.42 | 43.50 | 39.45 | 15.86 | 1.68 | 31.91 | --- | --- | Peak |
| 5 | 298.69 | 25.67 | -20.33 | 46.00 | 36.48 | 19.29 | 1.98 | 32.08 | --- | --- | Peak |
| 6 | 607.15 | 24.69 | -21.31 | 46.00 | 28.25 | 26.08 | 2.76 | 32.40 | --- | --- | Peak |
| 7 ! | 874.00 | 42.69 | | | 41.67 | 29.25 | 3.40 | 31.63 | --- | --- | Peak |
| 8 | 2368.00 | 38.71 | -35.29 | 74.00 | 34.94 | 31.18 | 5.56 | 32.97 | --- | --- | Peak |
| 9 | 3768.00 | 40.22 | -33.78 | 74.00 | 31.43 | 33.61 | 7.20 | 32.02 | --- | --- | Peak |
| 10 | 4880.00 | 41.16 | -32.84 | 74.00 | 30.53 | 33.77 | 8.20 | 31.34 | --- | --- | Peak |
| 11 | 5632.00 | 42.33 | -31.67 | 74.00 | 29.71 | 34.68 | 8.94 | 31.00 | --- | --- | Peak |
| 12 | 7112.00 | 42.15 | -31.85 | 74.00 | 28.00 | 35.52 | 10.04 | 31.41 | --- | --- | Peak |
| 13 | 8456.00 | 44.02 | -29.98 | 74.00 | 28.34 | 36.47 | 11.17 | 31.96 | --- | --- | Peak |



| | | | |
|-----------------|---|---------------------|----------|
| Test Engineer : | Carl Ni | Temperature : | 21~22°C |
| | | Relative Humidity : | 41~42% |
| Test Distance : | 3m | Polarization : | Vertical |
| Remark | #7 is system simulator signal which can be ignored. | | |



Site : 03CH06-KS
 Condition : FCC CLASS-B 3m LF 49922-3M VERTICAL

| | Freq | Level | Over Limit | Limit Line | ReadAntenna Level | Antenna Factor | Cable Loss | Preamp Factor | A/Pos | T/Pos | Remark |
|-----|---------|--------|------------|------------|-------------------|----------------|------------|---------------|-------|-------|--------|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 ! | 40.67 | 36.80 | -3.20 | 40.00 | 48.89 | 19.16 | 0.71 | 31.96 | 100 | 30 | QP |
| 2 | 67.83 | 29.09 | -10.91 | 40.00 | 47.60 | 12.44 | 0.98 | 31.93 | --- | --- | Peak |
| 3 | 104.69 | 21.69 | -21.81 | 43.50 | 36.14 | 16.30 | 1.18 | 31.93 | --- | --- | Peak |
| 4 | 176.47 | 22.86 | -20.64 | 43.50 | 37.16 | 16.09 | 1.53 | 31.92 | --- | --- | Peak |
| 5 | 207.51 | 25.42 | -18.08 | 43.50 | 40.00 | 15.65 | 1.68 | 31.91 | --- | --- | Peak |
| 6 | 300.63 | 22.42 | -23.58 | 46.00 | 33.12 | 19.32 | 1.98 | 32.00 | --- | --- | Peak |
| 7 | 874.87 | 34.66 | | | 33.64 | 29.25 | 3.40 | 31.63 | --- | --- | Peak |
| 8 | 2976.00 | 39.03 | -34.97 | 74.00 | 32.25 | 32.72 | 6.28 | 32.22 | --- | --- | Peak |
| 9 | 4136.00 | 39.92 | -34.08 | 74.00 | 30.50 | 33.78 | 7.58 | 31.94 | --- | --- | Peak |
| 10 | 4968.00 | 41.76 | -32.24 | 74.00 | 30.84 | 33.85 | 8.34 | 31.27 | --- | --- | Peak |
| 11 | 5648.00 | 42.19 | -31.81 | 74.00 | 29.53 | 34.70 | 8.95 | 30.99 | --- | --- | Peak |
| 12 | 7296.00 | 44.39 | -29.61 | 74.00 | 30.09 | 35.83 | 10.14 | 31.67 | --- | --- | Peak |
| 13 | 8664.00 | 44.68 | -29.32 | 74.00 | 28.58 | 36.40 | 11.48 | 31.78 | --- | --- | Peak |



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 | Aug .06, 2019 | Sep. 19, 2019 | Aug. 05, 2020 | Radiation (03CH02-KS) |
| EXA Spectrum Analyzer | Keysight | N9010A | MY55150208 | 10Hz-44G,MAX 30dB | Apr. 15, 2019 | Sep. 19, 2019 | Apr. 16, 2020 | Radiation (03CH02-KS) |
| Bilog Antenna | TeseQ | CBL6112D | 23182 | 30MHz-2GHz | Dec. 29, 2018 | Sep. 19, 2019 | Dec. 28, 2019 | Radiation (03CH02-KS) |
| Double Ridge Horn Antenna | ETS-Lindgren | 3117 | 75959 | 1GHz~18GHz | Jan. 27, 2019 | Sep. 19, 2019 | Jan. 26, 2020 | Radiation (03CH02-KS) |
| SHF-EHF Horn | Com-power | AH-840 | 101070 | 18GHz~40GHz | Jan. 05, 2019 | Sep. 19, 2019 | Jan. 04, 2020 | Radiation (03CH02-KS) |
| Amplifier | MITEQ | TTA1840-35-HG | 1887435 | 18~40GHz | Jan. 14, 2019 | Sep. 19, 2019 | Jan. 13, 2020 | Radiation (03CH02-KS) |
| Amplifier | SONOMA | 310N | 187289 | 9KHz-1GHz | Aug. 06, 2019 | Sep. 19, 2019 | Aug. 05, 2020 | Radiation (03CH02-KS) |
| Amplifier | Keysight | 83017A | MY57280106 | 500MHz~26.5GHz | Apr. 15, 2019 | Sep. 19, 2019 | Apr. 14, 2020 | Radiation (03CH02-KS) |
| AC Power Source | Chroma | 61601 | 616010002473 | N/A | NCR | Sep. 19, 2019 | NCR | Radiation (03CH02-KS) |
| Turn Table | MF | MF7802 | N/A | 0~360 degree | NCR | Sep. 19, 2019 | NCR | Radiation (03CH02-KS) |
| Antenna Mast | MF | MF7802 | N/A | 1 m~4 m | NCR | Sep. 19, 2019 | NCR | Radiation (03CH02-KS) |
| EMI Receiver | R&S | ESC17 | 100768 | 9kHz~7GHz; | Apr. 16, 2019 | Sep. 26, 2019 | Apr. 15, 2020 | Conduction (CO01-KS) |
| AC LISN | MessTec | AN3016 | 060103 | 9kHz~30MHz | Oct. 12, 2018 | Sep. 26, 2019 | Oct. 11, 2019 | Conduction (CO01-KS) |
| AC LISN (for auxiliary equipment) | MessTec | AN3016 | 060105 | 9kHz~30MHz | Nov. 19, 2018 | Sep. 26, 2019 | Nov. 18, 2019 | Conduction (CO01-KS) |
| AC Power Source | Chroma | 61602 | ABP000000811 | AC 0V~300V, 45Hz~1000Hz | Oct. 12, 2018 | Sep. 26, 2019 | Oct. 11, 2019 | 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% ($U = 2Uc(y)$) | 5.0dB |
|---|-------|

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% ($U = 2Uc(y)$) | 5.0dB |
|---|-------|