



FCC RF Test Report

APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : XT2211-1, XT2211-2, XT2211DL
FCC ID : IHDT56AA2
STANDARD : 47 CFR Part 2, and 90(S)
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)
TEST DATE(S) : Nov. 10, 2021

We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown 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

Alex Wang

Approved by: Alex Wang / Manager



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REVISION HISTORY

| REPORT NO. | VERSION | DESCRIPTION | ISSUED DATE |
|-------------|---------|-------------------------|---------------|
| FW181714-02 | Rev. 01 | Initial issue of report | Nov. 11, 2021 |
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SUMMARY OF TEST RESULT

| Report Section | FCC Rule | Description | Limit | Result | Remark |
|----------------|--------------------|--------------------------------------|--|--------|---|
| 3.1 | §2.1053 §90.691 | Field Strength of Spurious Radiation | $< 43 + 10 \log_{10}(P[\text{Watts}])$ | PASS | Under limit 48.15 dB at 2444.00 MHz |

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 IL 60654 USA

1.2 Manufacturer

Motorola Mobility LLC

222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

1.3 Feature of Equipment Under Test

| Product Feature | |
|-----------------|------------------------------|
| Equipment | Mobile Cellular Phone |
| Brand Name | Motorola |
| Model Name | XT2211-1, XT2211-2, XT2211DL |
| FCC ID | IHDT56AA2 |
| IMEI Code | Radiation: 358116610026462 |
| HW Version | PVT |
| SW Version | RRDE31.Q3-58 |
| EUT Stage | Identical Prototype |

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. This is a variant report for XT2211-1, XT2211-2, XT2211DL. The change note could be referred to the XT2211-1, XT2211-2, XT2211DL_Operational Description of Product Equality Declaration which is exhibit separately. Based on the similarity between current and previous project, only the worst case RSE from original test report (Sporton Report Number FW181714) were verified for the differences.

1.4 Product Specification of Equipment Under Test

| Product Specification subjective to this standard | |
|---|--------------------------------------|
| Tx Frequency | 814 ~ 824 MHz |
| Rx Frequency | 859 ~ 869 MHz |
| Bandwidth | 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz |
| Antenna Gain | -3.86 dBi |
| Type of Modulation | QPSK / 16QAM / 64QAM |

1.5 Modification of EUT

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

1.6 Testing Site

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. |
| | 03CH04-KS | CN1257 | 314309 |

1.7 Test Software

| Item | Site | Manufacturer | Name | Version |
|------|-----------|--------------|------|--------------|
| 1. | 03CH04-KS | AUDIX | E3 | 6.2009-8-24a |

1.8 Applied Standards

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

- 47 CFR Part 2, 90(S)
- ANSI C63.26-2015
- FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- FCC KDB 971168 D02 Misc Rev Approv License Devices v02r01

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

1.9 Specification of Accessory

| Specification of Accessory | | | | |
|----------------------------|------------|---------------------|------------|-----------------|
| AC Adapter 1 | Brand Name | Motorola(Salcomp) | Model Name | MC-101 |
| AC Adapter 2 | Brand Name | Motorola(AOHAI) | Model Name | MC-101 |
| AC Adapter 3 | Brand Name | Motorola(Chenyang) | Model Name | MC-101 |
| Battery | Brand Name | Motorola(SCUD) | Model Name | MD50 |
| USB Cable 1 | Brand Name | Motorola(Saibao) | Model Name | SC18D22297 |
| USB Cable 2 | Brand Name | Motorola(Cabletech) | Model Name | SC18D22298 |
| USB Cable 3 | Brand Name | Motorola(Luxshare) | Model Name | SC18D22299 |
| Earphone | Brand Name | Motorola (NLD) | Model Name | NLD-EM313A-05SF |

2 Test Configuration of Equipment Under Test

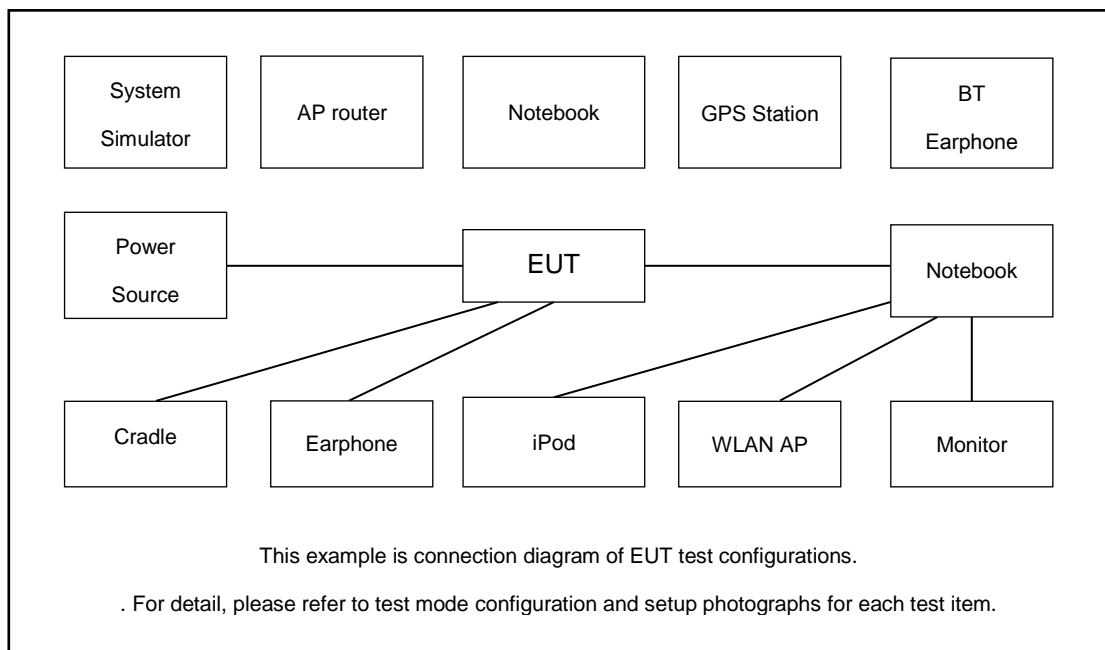
2.1 Test Mode

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

Frequency range investigated for radiated emission is 30 MHz to 9000 MHz.

| Test Items | Band | Bandwidth (MHz) | | | | | | Modulation | | | RB # | | | Test Channel | | |
|----------------------------|---|-----------------|---|---|----|----|----|------------|-------|-------|------|------|------|--------------|---|---|
| | | 1.4 | 3 | 5 | 10 | 15 | 20 | QPSK | 16QAM | 64QAM | 1 | Half | Full | L | M | H |
| Radiated Spurious Emission | 26 | | | | v | | - | v | | | v | | | | v | |
| Note | 1. The mark "v" means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. LTE Band26 transmit frequency for part22 rule is 824MHz-849MHz, for part90 rule is 814MHz-824MHz. ERP over 15MHz bandwidth complies the ERP limit line of part22 rule, therefore ERP of the partial frequency spectrum which falls within part 22 also complies. | | | | | | | | | | | | | | | |

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

| Item | Equipment | Trade Name | Model No. | FCC ID | Data Cable | Power Cord |
|------|------------------|------------|-----------|--------|------------|-------------------|
| 1. | System Simulator | Anritsu | MT8820C | N/A | N/A | Unshielded, 1.8 m |

2.4 Frequency List of Low/Middle/High Channels

| LTE Band 26 Channel and Frequency List | | | | |
|--|------------------------|--------|--------|---------|
| BW [MHz] | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| 15 | Channel | 26765 | - | - |
| | Frequency | 821.5 | - | - |
| 10 | Channel | - | 26740 | - |
| | Frequency | - | 819 | - |
| 5 | Channel | 26715 | 26740 | 26765 |
| | Frequency | 816.5 | 819 | 821.5 |
| 3 | Channel | 26705 | 26740 | 26775 |
| | Frequency | 815.5 | 819 | 822.5 |
| 1.4 | Channel | 26697 | 26740 | 26783 |
| | Frequency | 814.7 | 819 | 823.3 |

3 Test Result

3.1 Field Strength of Spurious Radiation Measurement

3.1.1 Description of Field Strength of Spurious Radiated Measurement

The radiated spurious emission was measured by substitution method according to ANSI/TIA-603-E. The power of any emission FCC Part 90.691 on any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth at least $43 + 10 \log (P)$ dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log_{10}(P[\text{Watts}])$ dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

3.1.2 Measuring Instruments

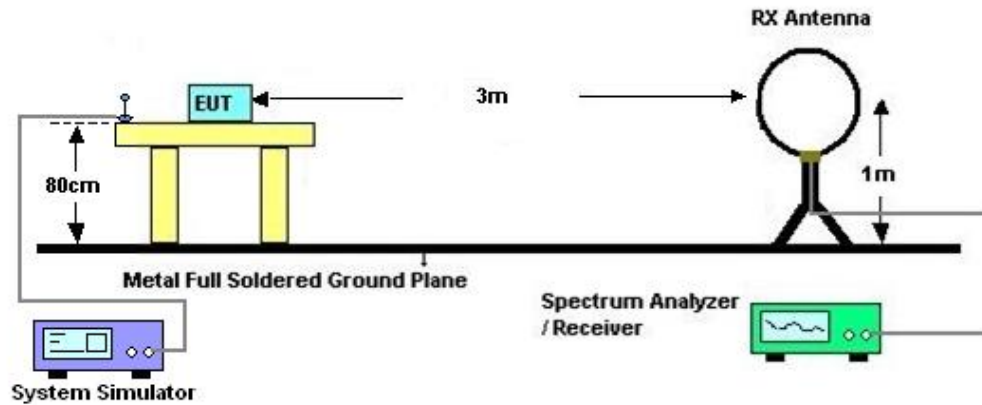
The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

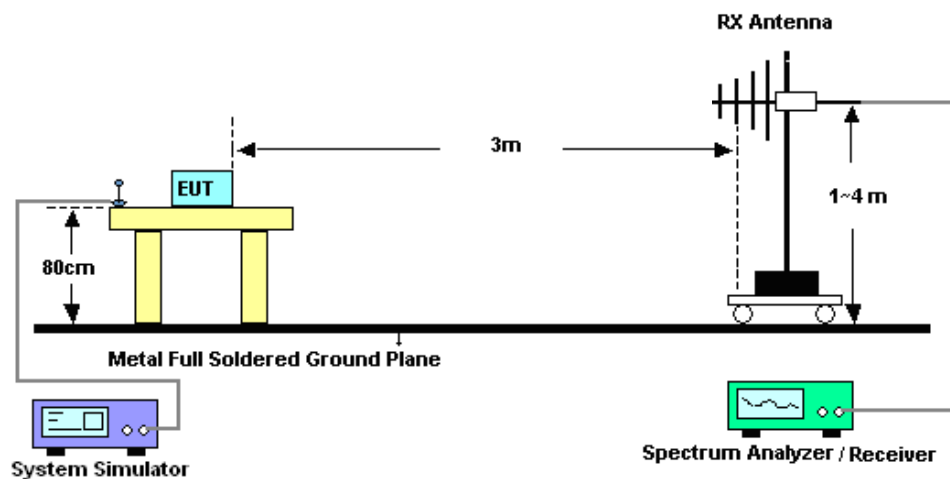
1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, Sweep = 500ms, Taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. $\text{EIRP (dBm)} = \text{S.G. Power} - \text{Tx Cable Loss} + \text{Tx Antenna Gain}$
11. $\text{ERP (dBm)} = \text{EIRP} - 2.15$
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
13. The limit line is derived from $43 + 10 \log(P)$ dB below the transmitter power P(Watts)

3.1.4 Test Setup

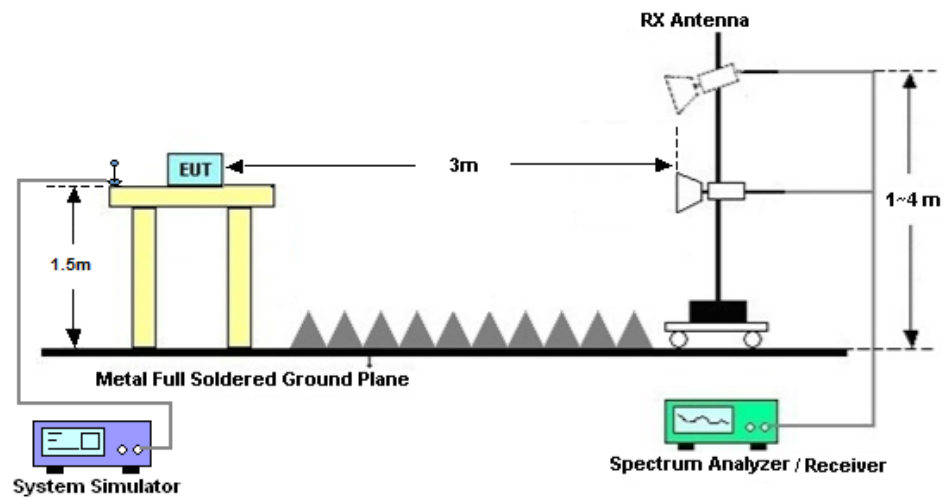
For radiated test from 30MHz



For radiated test from 30MHz to 1GHz



For radiated test above 1GHz



3.1.5 Test Result of Field Strength of Spurious Radiated

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

Please refer to Appendix A.



4 List of Measuring Equipment

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---------------------------|--------------|--------------------------|------------|-------------------|------------------|---------------|---------------|-----------------------|
| EXA Spectrum Analyzer | Keysight | N9010A | MY55150244 | 10Hz-44G,MAX 30dB | Apr. 13, 2021 | Nov. 10, 2021 | Apr. 12, 2022 | Radiation (03CH04-KS) |
| Bilog Antenna | TeseQ | CBL6111D | 49922 | 30MHz-1GHz | May 30, 2021 | Nov. 10, 2021 | May 29, 2022 | Radiation (03CH04-KS) |
| Double Ridge Horn Antenna | ETS-Lindgren | 3117 | 75957 | 1GHz~18GHz | Oct. 30, 2021 | Nov. 10, 2021 | Oct. 29, 2022 | Radiation (03CH04-KS) |
| SHF-EHF Horn | Com-power | AH-840 | 101070 | 18GHz~40GHz | Jan. 06, 2021 | Nov. 10, 2021 | Jan. 05, 2022 | Radiation (03CH04-KS) |
| Amplifier | SONOMA | 310N | 187289 | 9KHz-1GHz | Jan. 06, 2021 | Nov. 10, 2021 | Jan. 05, 2022 | Radiation (03CH04-KS) |
| Amplifier | MITEQ | EM18G40G GA | 060728 | 18~40GHz | Jan. 07, 2021 | Nov. 10, 2021 | Jan. 06, 2022 | Radiation (03CH04-KS) |
| high gain Amplifier | MITEQ | AMF-7D-00 101800-30-1 0P | 2025788 | 1Ghz-18Ghz | Jan. 06, 2021 | Nov. 10, 2021 | Jan.05, 2022 | Radiation (03CH04-KS) |
| Amplifier | Keysight | 83017A | MY57280106 | 500MHz~26.5GHz | Oct. 13, 2021 | Nov. 10, 2021 | Oct. 12, 2022 | Radiation (03CH04-KS) |
| AC Power Source | Chroma | 61601 | F104090004 | N/A | NCR | Nov. 10, 2021 | NCR | Radiation (03CH04-KS) |
| Turn Table | ChamPro | EM 1000-T | 060762-T | 0~360 degree | NCR | Nov. 10, 2021 | NCR | Radiation (03CH04-KS) |
| Antenna Mast | ChamPro | EM 1000-A | 060762-A | 1 m~4 m | NCR | Nov. 10, 2021 | NCR | Radiation (03CH04-KS) |

NCR: No Calibration Required

5 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. All the measurement uncertainty value were shown with a coverage $K=2$ to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

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

| | |
|---|-------|
| Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$) | 3.3dB |
|---|-------|

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

| | |
|---|-------|
| Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$) | 2.8dB |
|---|-------|

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

| | |
|---|-------|
| Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$) | 2.8dB |
|---|-------|

———— THE END ————



Appendix A. Test Results of Radiated Test

Radiated Spurious Emission

| LTE Band 26 / 10MHz / 16QAM | | | | | | | | |
|-----------------------------|----------------------|----------------|------------------|-------------------------|--------------------------|----------------------------|-----------------------------|-----------------------|
| Channel | Frequency (MHz) | ERP (dBm) | Limit (dBm) | Over Limit (dB) | S.G. Power (dBm) | TX Cable loss (dB) | TX Antenna Gain (dBi) | Polarization (H/V) |
| Middle | 1630 | -66.67 | -13 | -53.67 | -73.64 | 1.58 | 10.70 | H |
| | 2444 | -62.92 | -13 | -49.92 | -71.17 | 2.102 | 12.50 | H |
| | 3258 | -61.18 | -13 | -48.18 | -70.07 | 2.856 | 13.90 | H |
| | 1630 | -65.22 | -13 | -52.22 | -72.19 | 1.58 | 10.70 | V |
| | 2444 | -61.15 | -13 | -48.15 | -69.40 | 2.10 | 12.50 | V |
| | 3258 | -61.45 | -13 | -48.45 | -70.34 | 2.86 | 13.90 | V |

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