# **FCC RF Test Report**

APPLICANT : Motorola Mobility LLC EQUIPMENT : Mobile Cellular Phone

BRAND NAME : Motorola

MODEL NAME : XT2153-1

FCC ID : IHDT56ZW2

STANDARD : 47 CFR Part 2, and 90(S)

**CLASSIFICATION**: PCS Licensed Transmitter Held to Ear (PCE)

TEST DATE(S) : Jun. 17, 2021

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

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Sporton International (Shenzhen) Inc.

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## **REVISION HISTORY**

| REPORT NO. | VERSION | DESCRIPTION             | ISSUED DATE   |
|------------|---------|-------------------------|---------------|
| FW151407   | Rev. 01 | Initial issue of report | Jun. 29, 2021 |
|            |         |                         |               |
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## **SUMMARY OF TEST RESULT**

| Report<br>Section | FCC Rule           | Description                           | Limit                               | Result | Remark                                     |
|-------------------|--------------------|---------------------------------------|-------------------------------------|--------|--------------------------------------------|
| 3.1               | §2.1046            | Conducted Output Power                | Reporting only                      | PASS   | -                                          |
| 3.2               | §2.1053<br>§90.691 | Field Strength of Spurious  Radiation | < 43+10log <sub>10</sub> (P[Watts]) | PASS   | Under limit<br>36.32 dB at<br>2443.500 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.

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# 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                      | XT2153-1                                      |
| FCC ID                          | IHDT56ZW2                                     |
|                                 | GSM/WCDMA/LTE/5G NR                           |
|                                 | WLAN 2.4GHz 802.11b/g/n/ac/ax HT20/VHT20/HE20 |
|                                 | WLAN 5GHz 802.11a/n HT20/HT40                 |
| EUT supports Radios application | WLAN 5GHz 802.11ac VHT20/VHT40/VHT80          |
|                                 | WLAN 5GHz 802.11ax HE20/HE40/HE80             |
|                                 | Bluetooth BR/EDR/LE                           |
|                                 | NFC and GNSS                                  |
| IMEI Code                       | Radiated: 356368690018156/356368690018164     |
| HW Version                      | DVT2                                          |
| SW Version                      | RRA31.43                                      |
| EUT Stage                       | Identical Prototype                           |

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**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

| Product Specification subjective to this standard |                                      |  |  |  |  |  |
|---------------------------------------------------|--------------------------------------|--|--|--|--|--|
| Tx Frequency                                      | 814 ~ 824 MHz                        |  |  |  |  |  |
| Rx Frequency                                      | 859 ~ 869 MHz                        |  |  |  |  |  |
| Bandwidth                                         | 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz |  |  |  |  |  |
| Maximum Output Power to Antenna                   | 22.72 dBm                            |  |  |  |  |  |
| Type of Modulation                                | QPSK / 16QAM / 64QAM                 |  |  |  |  |  |

### 1.5 Modification of EUT

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

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#### 1.6 Re-use of Measured Data

#### 1.6.1 Introduction Section

This application re-uses data collected on a similar device. The subject device of this application (Model: XT2153-1, FCC ID: IHDT56ZW2) is electrically identical to the reference device (Model: XT2125-4, FCC ID: IHDT56ZR1) for the portions of the circuitry corresponding to the data being re-used, as treated by KDB Publication 484596 D01.

#### 1.6.2 Difference Section

For details concerning the similarity with respect to component placement, mechanical/electrical design etc., please refer to the Product Equality Declaration.

The re-used RF data includes the following bands provided in Appendix C (Sporton RF Report No. FW0N0201 for the reference device Model: XT2125-4, FCC ID: IHDT56ZR1).

#### 1.6.3 Reference detail Section:

| Equipment Class | Reference FCC ID | Folder Test  | Report Title/Section     |
|-----------------|------------------|--------------|--------------------------|
|                 |                  | Part90s      | All Conducted sections   |
| PCE             | IHDT56ZR1        | (FW0N0201)   | applicable except Power, |
|                 |                  | (FVVOINOZOT) | and RSE                  |

#### 1.6.4 Spot Check Verification Data Section

In order to confirm hardware similarity of the subject device with the reference device, spot check measurements were performed on the subject device for the following test items, the test result were consistent with FCC ID: IHDT56ZR1.

Assertions concerning the similarity of these devices are based on representations by the applicant. The applicant accepts full responsibility for the validity of the similarity claim, and for the determination that verification test data are sufficient to support it.

| Test Item                              | Mode    | IHDT56ZR1<br>Worst Result | IHDT56ZW2<br>Worst Result | Difference (dB) |
|----------------------------------------|---------|---------------------------|---------------------------|-----------------|
| Average<br>Conducted<br>Power<br>(dBm) | LTE B26 | 22.71                     | 22.72                     | 0.01            |

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# 1.7 Maximum Conducted Power and Emission Designator

| FCC Rule | System      | Type of<br>Modulation | BW      | Frequency Tolerance (ppm) | Emission<br>Designator | Maximum Conducted power(W) |
|----------|-------------|-----------------------|---------|---------------------------|------------------------|----------------------------|
| Part 90S | LTE Band 26 | QPSK                  | 1.4 MHz | -                         | -                      | 0.1871                     |
| Part 90S | LTE Band 26 | 16QAM                 | 1.4 MHz | -                         | -                      | 0.1629                     |
| Part 90S | LTE Band 26 | 64QAM                 | 1.4 MHz | -                         | -                      | 0.1271                     |
| Part 90S | LTE Band 26 | QPSK                  | 3 MHz   | -                         | -                      | 0.1871                     |
| Part 90S | LTE Band 26 | 16QAM                 | 3 MHz   | -                         | -                      | 0.1644                     |
| Part 90S | LTE Band 26 | 64QAM                 | 3 MHz   | -                         | -                      | 0.1276                     |
| Part 90S | LTE Band 26 | QPSK                  | 5 MHz   | -                         | -                      | 0.1858                     |
| Part 90S | LTE Band 26 | 16QAM                 | 5 MHz   | -                         | -                      | 0.1637                     |
| Part 90S | LTE Band 26 | 64QAM                 | 5 MHz   | -                         | -                      | 0.1268                     |
| Part 90S | LTE Band 26 | QPSK                  | 10 MHz  | -                         | -                      | 0.1866                     |
| Part 90S | LTE Band 26 | 16QAM                 | 10 MHz  | -                         | -                      | 0.1652                     |
| Part 90S | LTE Band 26 | 64QAM                 | 10 MHz  | -                         | -                      | 0.1268                     |
| Part 90S | LTE Band 26 | QPSK                  | 15 MHz  | -                         | -                      | 0.1803                     |
| Part 90S | LTE Band 26 | 16QAM                 | 15 MHz  | -                         | -                      | 0.1521                     |
| Part 90S | LTE Band 26 | 64QAM                 | 15 MHz  | -                         | -                      | 0.1180                     |

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### 1.8 Testing Site

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

| Test Firm          | Sporton International (Shenzhen) Inc.                                                                                                                                        |                     |                                |  |  |  |  |  |  |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------------------|--|--|--|--|--|--|
| Test Site Location | 101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Feng Community, Fuyong Street, Baoan District, Shenzhen City Guangdong Pr. China 518103 TEL: +86-755-33202398 |                     |                                |  |  |  |  |  |  |
| Test Site No.      | Sporton Site No.                                                                                                                                                             | FCC Designation No. | FCC Test Firm Registration No. |  |  |  |  |  |  |
| 1001 0110 1101     | 03CH01-SZ                                                                                                                                                                    | CN1256              | 421272                         |  |  |  |  |  |  |

#### 1.9 Test Software

| Item | Site      | Manufacturer | Name | Version     |  |  |
|------|-----------|--------------|------|-------------|--|--|
| 1.   | 03CH01-SZ | AUDIX        | E3   | 6.2009-8-24 |  |  |

## 1.10 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:

- 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.

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# 1.11 Specification of Accessory

| Specification of Accessory |            |                      |            |                   |  |  |  |  |
|----------------------------|------------|----------------------|------------|-------------------|--|--|--|--|
| AC Adapter 1(US)           | Brand Name | Motorola (Acbel)     | Model Name | MC-301            |  |  |  |  |
| AC Adapter 1(EU)           | Brand Name | Motorola (Acbel)     | Model Name | MC-302            |  |  |  |  |
| AC Adapter 1(UK)           | Brand Name | Motorola (Acbel)     | Model Name | MC-303            |  |  |  |  |
| AC Adapter 1(IN)           | Brand Name | Motorola (Acbel)     | Model Name | MC-304            |  |  |  |  |
| AC Adapter 1(AU)           | Brand Name | Motorola (Acbel)     | Model Name | MC-305            |  |  |  |  |
| AC Adapter 1(AR)           | Brand Name | Motorola (Acbel)     | Model Name | MC-306            |  |  |  |  |
| AC Adapter 2(US)           | Brand Name | Motorola (Salom)     | Model Name | MC-301            |  |  |  |  |
| AC Adapter 2(EU)           | Brand Name | Motorola (Salom)     | Model Name | MC-302            |  |  |  |  |
| AC Adapter 2(UK)           | Brand Name | Motorola (Salom)     | Model Name | MC-303            |  |  |  |  |
| AC Adapter 2(AU)           | Brand Name | Motorola (Salom)     | Model Name | MC-305            |  |  |  |  |
| AC Adapter 2(AR)           | Brand Name | Motorola (Salom)     | Model Name | MC-306            |  |  |  |  |
| AC Adapter 2(BR)           | Brand Name | Motorola (Salom)     | Model Name | MC-307            |  |  |  |  |
| AC Adapter 2(BR)           | Brand Name | Motorola (flex)      | Model Name | MC-307            |  |  |  |  |
| Battery                    | Brand Name | Motorola (ATL)       | Model Name | MT45              |  |  |  |  |
| Earphone                   | Brand Name | Motorola (Lyand)     | Model Name | MD211(SH38D20195) |  |  |  |  |
| USB Cable 1                | Brand Name | Motorola (Luxshare)  | Model Name | SC18D13217        |  |  |  |  |
| USB Cable 2                | Brand Name | Motorola (Saibao)    | Model Name | SC18D13215        |  |  |  |  |
| USB Cable 3                | Brand Name | Motorola (Cabletech) | Model Name | SC18D13216        |  |  |  |  |
| HDMI Cable                 | Brand Name | Motorola (Linxee)    | Model Name | SC18D02146        |  |  |  |  |

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# 2 Test Configuration of Equipment Under Test

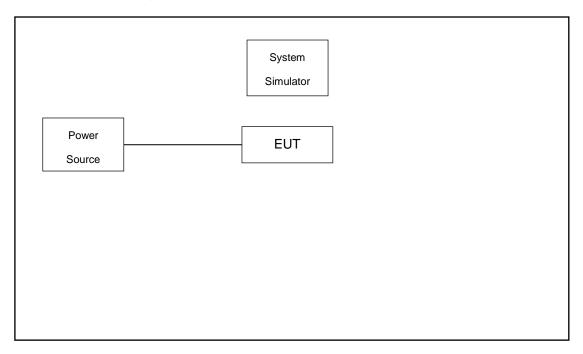
### 2.1 Test Mode

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.

|                                  |                                                                                                                                                                                                                                                                                                                                                                                                      | Bandwidth (MHz) |   |              | Modulation |    |    | RB#  |           |           | Test Channel |          |      |   |   |   |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---|--------------|------------|----|----|------|-----------|-----------|--------------|----------|------|---|---|---|
| Test Items                       | Band                                                                                                                                                                                                                                                                                                                                                                                                 | 1.4             | 3 | 5            | 10         | 15 | 20 | QPSK | 16QA<br>M | 64Q<br>AM | 1            | Hal<br>f | Full | L | М | Н |
| Max. Output<br>Power             | 26                                                                                                                                                                                                                                                                                                                                                                                                   | ٧               | ٧ | v            | v          | v  | •  | v    | v         | v         | v            | v        | v    | > | v | v |
| Radiated<br>Spurious<br>Emission | 26                                                                                                                                                                                                                                                                                                                                                                                                   |                 |   | Worse case 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



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# 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 |  |  |  |  |
| 45                                     | Channel                | 26765  | -      | -       |  |  |  |  |
| 15                                     | Frequency              | 821.5  | -      | -       |  |  |  |  |
| 10                                     | Channel                | -      | 26740  | -       |  |  |  |  |
|                                        | Frequency              | -      | 819    | -       |  |  |  |  |
| 5                                      | Channel                | 26715  | 26740  | 26765   |  |  |  |  |
|                                        | Frequency              | 816.5  | 819    | 821.5   |  |  |  |  |
| 2                                      | Channel                | 26705  | 26740  | 26775   |  |  |  |  |
| 3                                      | Frequency              | 815.5  | 819    | 822.5   |  |  |  |  |
| 4.4                                    | Channel                | 26697  | 26740  | 26783   |  |  |  |  |
| 1.4                                    | Frequency              | 814.7  | 819    | 823.3   |  |  |  |  |

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### 3 Test Result

## 3.1 Conducted Output Power Measurement

### 3.1.1 Description of the Conducted Output Power Measurement

A system simulator was used to establish communication with the EUT. Its parameters were set to enforce EUT transmitting at the maximum power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

#### 3.1.2 Test Result of Conducted Output Power

Please refer to Appendix A.

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### 3.2 Field Strength of Spurious Radiation Measurement

#### **Description of Field Strength of Spurious Radiated Measurement** 3.2.1

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+10log<sub>10</sub>(P[Watts]) dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

### 3.2.2 Measuring Instruments

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

#### 3.2.3 **Test Procedures**

- 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.
- Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, Sweep = 5. 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.
- Repeat step 7 to step 8 for another polarization.
- 10. EIRP (dBm) = S.G. Power Tx Cable Loss + Tx Antenna Gain
- 11. ERP (dBm) = 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 + 10log(P) dB below the transmitter power P(Watts)

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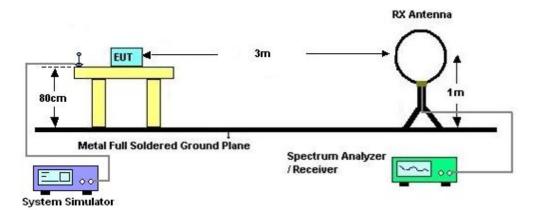
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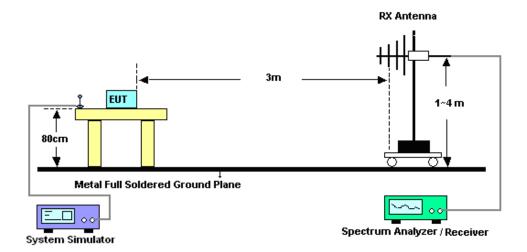
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#### 3.2.4 Test Setup

#### For radiated test from 30MHz

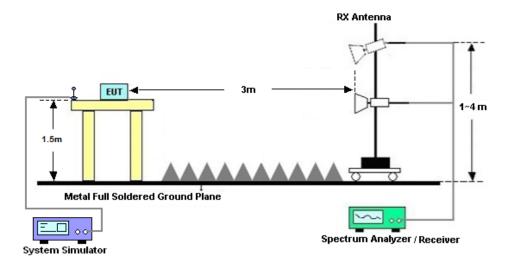


#### For radiated test from 30MHz to 1GHz



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### For radiated test above 1GHz



### 3.2.5 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 B.

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# 4 List of Measuring Equipment

| Instrument                   | Manufacturer | Model No.                        | Serial No.       | Characteristics    | Calibration<br>Date | Test Date     | Due Date      | Remark                   |
|------------------------------|--------------|----------------------------------|------------------|--------------------|---------------------|---------------|---------------|--------------------------|
| EMI Test<br>Receiver&SA      | Agilent      | N9038A                           | MY5226018<br>5   | 20Hz~26.5GHz       | Jul. 21, 2020       | Jun. 17, 2021 | Jul. 20, 2021 | Radiation<br>(03CH01-SZ) |
| Loop Antenna                 | R&S          | HFH2-Z2                          | 100354           | 9kHz~30MHz         | Jul. 22, 2020       | Jun. 17, 2021 | Jul. 21, 2021 | Radiation<br>(03CH01-SZ) |
| HF Amplifier                 | KEYSIGHT     | 83017A                           | MY5327010<br>5   | 0.5GHz~26.5Gh<br>z | Oct. 16, 2020       | Jun. 17, 2021 | Oct. 15, 2021 | Radiation<br>(03CH01-SZ  |
| Bilog Antenna                | TeseQ        | CBL6112D                         | 35407            | 30MHz-2GHz         | Jul. 15, 2020       | Jun. 17, 2021 | Jul. 14, 2021 | Radiation<br>(03CH01-SZ) |
| Double Ridge<br>Horn Antenna | ETS-Lindgren | 3117                             | 00119436         | 1GHz~18GHz         | Jul. 25, 2020       | Jun. 17, 2021 | Jul. 24, 2021 | Radiation<br>(03CH01-SZ) |
| SHF-EHF Horn                 | com-power    | AH-840                           | 101071           | 18Ghz-40GHz        | Apr. 23, 2021       | Jun. 17, 2021 | Apr. 22, 2022 | Radiation<br>(03CH01-SZ) |
| LF Amplifier                 | Burgeon      | BPA-530                          | 102209           | 0.01~3000Mhz       | Apr. 18, 2021       | Jun. 17, 2021 | Apr. 17, 2022 | Radiation<br>(03CH01-SZ) |
| HF Amplifier                 | MITEQ        | AMF-7D-00<br>101800-30-<br>10P-R | 1943528          | 1GHz~18GHz         | Oct. 17, 2020       | Jun. 17, 2021 | Oct. 16, 2021 | Radiation<br>(03CH01-SZ) |
| HF Amplifier                 | MITEQ        | TTA1840-35<br>-HG                | 1871923          | 18GHz~40GHz        | Jul. 21, 2020       | Jun. 17, 2021 | Jul. 20, 2021 | Radiation<br>(03CH01-SZ) |
| AC Power Source              | Chroma       | 61601                            | 6160100019<br>85 | N/A                | NCR                 | Jun. 17, 2021 | NCR           | Radiation<br>(03CH01-SZ) |
| Turn Table                   | EM           | EM1000                           | N/A              | 0~360 degree       | NCR                 | Jun. 17, 2021 | NCR           | Radiation<br>(03CH01-SZ) |
| Antenna Mast                 | EM           | EM1000                           | N/A              | 1 m~4 m            | NCR                 | Jun. 17, 2021 | NCR           | Radiation<br>(03CH01-SZ) |

NCR: No Calibration Required

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## 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 | 2.48dB |
| Confidence of 95% (U = 2Uc(y))       | 2.40UD |

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

| Measuring Uncertainty for a Level of | 3.53dB |
|--------------------------------------|--------|
| Confidence of 95% (U = 2Uc(y))       | 3.33ub |

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

|                                      | · · · · · · · · · · · · · · · · · · · |
|--------------------------------------|---------------------------------------|
| Measuring Uncertainty for a Level of | 4.02dB                                |
| Confidence of 95% (U = 2Uc(y))       | 4.02UD                                |

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# **Appendix A. Test Results of Conducted Test**

# **Conducted Output Power (Average power)**

| D)A/ [NALL ] | Madulation | DD 9'   | DD 011-11 | Power              | Power                 | Power               |
|--------------|------------|---------|-----------|--------------------|-----------------------|---------------------|
| BW [MHz]     | Modulation | RB Size | RB Offset | Low<br>Ch. / Freq. | Middle<br>Ch. / Freq. | High<br>Ch. / Freq. |
|              | Chan       | nal     |           | 26765              | Cii. / Fieq.          | OII. / Fleq.        |
|              | Frequency  |         | 821.5     |                    |                       |                     |
| 15           | QPSK       | 1       | 22.49     |                    |                       |                     |
| 15           | QPSK       | 1       | 0<br>37   | 22.56              |                       |                     |
| 15           | QPSK       | 1       | 74        | 22.44              |                       |                     |
| 15           | QPSK       | 36      | 0         | 21.51              |                       |                     |
| 15           | QPSK       | 36      | 20        | 21.62              |                       |                     |
| 15           | QPSK       | 36      | 39        | 21.47              |                       |                     |
| 15           | QPSK       | 75      | 0         | 21.49              |                       |                     |
| 15           | 16QAM      | 1       | 0         | 21.82              |                       |                     |
| 15           | 16QAM      | 1       | 37        | 21.72              |                       |                     |
| 15           | 16QAM      | 1       | 74        | 21.75              |                       |                     |
| 15           | 16QAM      | 36      | 0         | 20.46              |                       |                     |
| 15           | 16QAM      | 36      | 20        | 20.53              |                       |                     |
| 15           | 16QAM      | 36      | 39        | 20.47              |                       |                     |
| 15           | 16QAM      | 75      | 0         | 20.52              |                       |                     |
| 15           | 64QAM      | 1       | 0         | 20.72              |                       |                     |
| 15           | 64QAM      | 1       | 37        | 20.67              |                       |                     |
| 15           | 64QAM      | 1       | 74        | 20.63              |                       |                     |
| 15           | 64QAM      | 36      | 0         | 19.54              |                       |                     |
| 15           | 64QAM      | 36      | 20        | 19.62              |                       |                     |
| 15           | 64QAM      | 36      | 39        | 19.53              |                       |                     |
| 15           | 64QAM      | 75      | 0         | 19.50              |                       |                     |
|              | Chan       |         |           | 26740              |                       |                     |
|              | Frequenc   |         |           | 819                |                       |                     |
| 10           | QPSK       | 1       | 0         |                    | 22.71                 |                     |
| 10           | QPSK       | 1       | 25        |                    | 22.67                 |                     |
| 10           | QPSK       | 1       | 49        |                    | 22.63                 |                     |

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**QPSK** 25 21.73 21.73 **QPSK** 25 **QPSK** 25 25 21.62 **QPSK** 21.64 16QAM 22.18 16QAM 25 22.08 16QAM 49 22.04 16QAM 20.72 16QAM 20.74 25 16QAM 25 25 20.65 16QAM 20.66 64QAM 21.03 64QAM 20.99 64QAM 20.86 64QAM 19.74 25 64QAM 25 19.79 64QAM 19.68 64QAM 50 19.70 Channel 26715 26740 26765 Frequency (MHz) 816.5 819 821.5 **QPSK** 22.45 22.61 22.50 **QPSK** 22.43 22.69 22.46 QPSK 22.45 22.64 22.44 **QPSK** 21.51 21.88 21.55 **QPSK** 21.91 21.58 21.57 QPSK 21.55 21.85 21.51 **QPSK** 21.51 21.85 21.53 16QAM 21.80 22.03 21.89 16QAM 21.78 22.14 21.79 16QAM 24 21.78 22.06 21.72 16QAM 20.53 20.86 20.53 16QAM 20.57 20.90 20.59 16QAM 20.53 20.87 20.53 16QAM 20.54 20.85 20.53

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64QAM

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20.74

21.00

20.77



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| 5        |           |       |       |       |       |       |
|----------|-----------|-------|-------|-------|-------|-------|
| <u> </u> | 64QAM     | 1     | 12    | 20.71 | 21.03 | 20.71 |
| 5        | 64QAM     | 1     | 24    | 20.69 | 20.95 | 20.67 |
| 5        | 64QAM     | 12    | 0     | 19.56 | 19.91 | 19.60 |
| 5        | 64QAM     | 12    | 7     | 19.63 | 19.96 | 19.65 |
| 5        | 64QAM     | 12    | 13    | 19.57 | 19.92 | 19.57 |
| 5        | 64QAM     | 25    | 0     | 19.55 | 19.88 | 19.56 |
|          | Chanı     | nel   | 26705 | 26740 | 26775 |       |
|          | Frequency | (MHz) |       | 815.5 | 819   | 822.5 |
| 3        | QPSK      | 1     | 0     | 22.46 | 22.71 | 22.45 |
| 3        | QPSK      | 1     | 8     | 22.51 | 22.72 | 22.48 |
| 3        | QPSK      | 1     | 14    | 22.45 | 22.61 | 22.40 |
| 3        | QPSK      | 8     | 0     | 21.52 | 21.87 | 21.50 |
| 3        | QPSK      | 8     | 4     | 21.56 | 21.88 | 21.54 |
| 3        | QPSK      | 8     | 7     | 21.51 | 21.85 | 21.48 |
| 3        | QPSK      | 15    | 0     | 21.51 | 21.84 | 21.55 |
| 3        | 16QAM     | 1     | 0     | 21.78 | 22.14 | 21.80 |
| 3        | 16QAM     | 1     | 8     | 21.83 | 22.16 | 21.86 |
| 3        | 16QAM     | 1     | 14    | 21.82 | 22.12 | 21.77 |
| 3        | 16QAM     | 8     | 0     | 20.58 | 20.90 | 20.56 |
| 3        | 16QAM     | 8     | 4     | 20.61 | 20.95 | 20.59 |
| 3        | 16QAM     | 8     | 7     | 20.58 | 20.91 | 20.55 |
| 3        | 16QAM     | 15    | 0     | 20.57 | 20.91 | 20.53 |
| 3        | 64QAM     | 1     | 0     | 20.72 | 21.02 | 20.70 |
| 3        | 64QAM     | 1     | 8     | 20.76 | 21.06 | 20.72 |
| 3        | 64QAM     | 1     | 14    | 20.76 | 21.01 | 20.73 |
| 3        | 64QAM     | 8     | 0     | 19.56 | 19.90 | 19.57 |
| 3        | 64QAM     | 8     | 4     | 19.62 | 19.93 | 19.61 |
| 3        | 64QAM     | 8     | 7     | 19.58 | 19.93 | 19.57 |
| 3        | 64QAM     | 15    | 0     | 19.58 | 19.93 | 19.55 |
|          | Chani     | nel   | 26697 | 26740 | 26783 |       |
|          | Frequency | (MHz) | 814.7 | 819   | 823.3 |       |
| 1.4      | QPSK      | 1     | 0     | 22.35 | 22.71 | 22.36 |
| 1.4      | QPSK      | 1     | 3     | 22.42 | 22.72 | 22.41 |
| 1.4      | QPSK      | 1     | 5     | 22.35 | 22.69 | 22.33 |
| 1.4      | QPSK      | 3     | 0     | 22.40 | 22.61 | 22.37 |

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| 1.4 | QPSK  | 3 | 1 | 22.45 | 22.71 | 22.40 |
|-----|-------|---|---|-------|-------|-------|
| 1.4 | QPSK  | 3 | 3 | 22.39 | 22.69 | 22.36 |
| 1.4 | QPSK  | 6 | 0 | 21.47 | 21.86 | 21.43 |
| 1.4 | 16QAM | 1 | 0 | 21.71 | 22.07 | 21.66 |
| 1.4 | 16QAM | 1 | 3 | 21.78 | 22.12 | 21.76 |
| 1.4 | 16QAM | 1 | 5 | 21.74 | 22.09 | 21.72 |
| 1.4 | 16QAM | 3 | 0 | 21.51 | 21.90 | 21.47 |
| 1.4 | 16QAM | 3 | 1 | 21.54 | 21.95 | 21.50 |
| 1.4 | 16QAM | 3 | 3 | 21.50 | 21.92 | 21.48 |
| 1.4 | 16QAM | 6 | 0 | 20.55 | 20.92 | 20.51 |
| 1.4 | 64QAM | 1 | 0 | 20.64 | 20.98 | 20.63 |
| 1.4 | 64QAM | 1 | 3 | 20.68 | 21.04 | 20.65 |
| 1.4 | 64QAM | 1 | 5 | 20.63 | 20.99 | 20.58 |
| 1.4 | 64QAM | 3 | 0 | 20.59 | 20.95 | 20.57 |
| 1.4 | 64QAM | 3 | 1 | 20.66 | 21.00 | 20.61 |
| 1.4 | 64QAM | 3 | 3 | 20.58 | 20.97 | 20.56 |
| 1.4 | 64QAM | 6 | 0 | 19.46 | 19.88 | 19.46 |

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# **Appendix B. Test Results of Radiated Test**

# **Radiated Spurious Emission**

|            | LTE Band 26 / 10MHz / QPSK |              |                  |                         |                         |                          |                      |                             |                       |  |  |  |
|------------|----------------------------|--------------|------------------|-------------------------|-------------------------|--------------------------|----------------------|-----------------------------|-----------------------|--|--|--|
| Channel    | Frequency<br>(MHz)         | ERP<br>(dBm) | Limit<br>( dBm ) | Over<br>Limit<br>( dB ) | SPA<br>Reading<br>(dBm) | S.G.<br>Power<br>( dBm ) | TX Cable loss ( dB ) | TX Antenna<br>Gain<br>(dBi) | Polarization<br>(H/V) |  |  |  |
|            | 1629                       | -63.51       | -13              | -50.51                  | -74.98                  | -66.76                   | 4.00                 | 9.40                        | Н                     |  |  |  |
|            | 2443.5                     | -52.70       | -13              | -39.70                  | -71.07                  | -56.27                   | 4.88                 | 10.60                       | Н                     |  |  |  |
| NA: alalla | 3258                       | -57.08       | -13              | -44.08                  | -77.69                  | -62.01                   | 5.52                 | 12.60                       | Н                     |  |  |  |
| Middle     | 1629                       | -63.40       | -13              | -50.40                  | -75.47                  | -66.65                   | 4.00                 | 9.40                        | V                     |  |  |  |
|            | 2443.5                     | -49.32       | -13              | -36.32                  | -68.13                  | -52.89                   | 4.88                 | 10.60                       | V                     |  |  |  |
|            | 3258                       | -55.78       | -13              | -42.78                  | -77.66                  | -60.71                   | 5.52                 | 12.60                       | V                     |  |  |  |

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

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# Appendix D. Reference Report

Please refer to Sporton report number FW0N0201 which is issued separately.

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