

FCC TEST REPORT  
FOR

Shenzhen Merrytek Technology Co., LTD

Motion Sensor

Test Model No.: MC079D RC2 A

Additional Model No.: MC079D RC2 B, MC628D RC

|                                |   |                                                                                                       |
|--------------------------------|---|-------------------------------------------------------------------------------------------------------|
| Prepared for                   | : | Shenzhen Merrytek Technology Co., LTD                                                                 |
| Address                        | : | 2nd and 3rd Floor, No.3 building, 380 Xiangshan Avenue, Luotian,<br>Yanluo, Baoan, Shenzhen, China    |
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| Date of receipt of test sample | : | May 27, 2020                                                                                          |
| Number of tested samples       | : | 1                                                                                                     |
| Sample number                  | : | 200527070A                                                                                            |
| Date of Test                   | : | May 27, 2020 ~ June 04, 2020                                                                          |
| Date of Report                 | : | June 09, 2020                                                                                         |

## FCC TEST REPORT

### FCC CFR 47 PART 15 C (15.249)

**Report Reference No. .... : LCS200527070AEA**
**Date of Issue..... : June 09, 2020**
**Testing Laboratory Name ..... : Shenzhen LCS Compliance Testing Laboratory Ltd.**
**Address..... : 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Shajing Street,  
Baoan District, Shenzhen, China**
**Testing Location/ Procedure ..... : Full application of Harmonised standards ■  
Partial application of Harmonised standards □  
Other standard testing method □**
**Applicant's Name ..... : Shenzhen Merrytek Technology Co., LTD**
**Address..... : 2nd and 3rd Floor, No.3 building, 380 Xiangshan Avenue, Luotian,  
Yanluo, Baoan, Shenzhen, China**
**Test Specification**
**Standard ..... : FCC CFR 47 PART 15 C (15.249) / ANSI C63.10**
**Test Report Form No..... : LCSEMC-1.0**
**TRF Originator..... : Shenzhen LCS Compliance Testing Laboratory Ltd.**
**Master TRF..... : Dated 2011-03**
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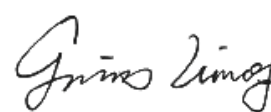
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**Test Item Description..... : Motion Sensor**
**Trade Mark ..... : **
**Test Model ..... : MC079D RC2 A**
**Ratings..... : Input : 12-24Vdc  
Output : 0-10Vdc**
**Result ..... : Positive**
**Compiled by:**


Linda He/ File administrators

**Supervised by:**


Jin Wang/ Technique principal

**Approved by:**


Gavin Liang/ Manager

## FCC -- TEST REPORT

|                   |                 |                                |
|-------------------|-----------------|--------------------------------|
| Test Report No. : | LCS200527070AEA | June 09, 2020<br>Date of issue |
|-------------------|-----------------|--------------------------------|

Test Model..... : MC079D RC2 A

EUT..... : Motion Sensor

**Applicant..... : Shenzhen Merrytek Technology Co., LTD**

Address..... : 2nd and 3rd Floor, No.3 building, 380 Xiangshan Avenue, Luotian,  
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Telephone..... : /

Fax..... : /

|             |          |
|-------------|----------|
| Test Result | Positive |
|-------------|----------|

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

## Revision History

| Revision | Issue Date    | Revisions     | Revised By  |
|----------|---------------|---------------|-------------|
| 000      | June 09, 2020 | Initial Issue | Gavin Liang |
|          |               |               |             |
|          |               |               |             |

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## 1. GENERAL INFORMATION

### 1.1 Description of Device (EUT)

EUT : Motion Sensor  
 Test Model : MC079D RC2 A  
 Additional Model No. : MC079D RC2 B, MC628D RC  
 Model Declaration : PCB board, structure and internal of these model(s) are the same, So no additional models were tested.  
 Power Supply : Input: 12-24Vdc  
 Output: 0-10Vdc  
 Hardware Version : A3  
 Software Version : REV01  
 SRD :  
 Frequency Range : 5800MHz ( $\pm 75$  MHz)  
 Channel number : 1 channels  
 Modulation Type : ASK  
 Antenna Description : Internal Antenna, 0dBi(max.)

### 1.2 Support equipment List

| Manufacturer | Description | Model | Serial Number | Certificate |
|--------------|-------------|-------|---------------|-------------|
| --           | --          | --    | --            | --          |

### 1.3 External I/O Cable

| I/O Port Description | Quantity | Cable |
|----------------------|----------|-------|
| --                   | --       | --    |

### 1.4 Description of Test Facility

FCC Registration Number is 254912.  
 Industry Canada Registration Number is 9642A.  
 EMSD Registration Number is ARCB0108.  
 UL Registration Number is 100571-492.  
 TUV SUD Registration Number is SCN1081.  
 TUV RH Registration Number is UA 50296516-001.  
 NVLAP Accreditation Code is 600167-0.  
 FCC Designation Number is CN5024  
 CAB identifier: CN0071

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.4:2014 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

### 1.5 Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of

the device.

## 1.6 Measurement Uncertainty

| Test Item              | Frequency Range | Uncertainty | Note |
|------------------------|-----------------|-------------|------|
| Radiation Uncertainty  | 9KHz~30MHz      | 3.10dB      | (1)  |
|                        | 30MHz~200MHz    | 2.96dB      | (1)  |
|                        | 200MHz~1000MHz  | 3.10dB      | (1)  |
|                        | 1GHz~26.5GHz    | 3.80dB      | (1)  |
|                        | 26.5GHz~40GHz   | 3.90dB      | (1)  |
| Conduction Uncertainty | 150kHz~30MHz    | 1.63dB      | (1)  |
| Power disturbance      | 30MHz~300MHz    | 1.60dB      | (1)  |

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 1.7 Description of Test Modes

The EUT operates in the unlicensed ISM band at 5.8GHz. The following operating modes were applied for the related test items.

All test modes were tested, only the result of the worst case was recorded in the report.

The EUT is considered a portable unit and was set to transmit at 100% duty cycle. It was pre-tested on the positioned of each 3 axis. The worst case was found positioned on X-plane.

| Mode of operations     | Transmitting frequency (MHz) |
|------------------------|------------------------------|
| ASK                    | 5761                         |
| For Conducted Emission |                              |
| Test Mode              | TX Mode                      |
| For Radiated Emission  |                              |
| Test Mode              | TX Mode                      |

Worst-case mode and channel used for 150 KHz-30 MHz power line conducted emissions was the mode and channel with the highest output power that was determined to be TX (3Mbps).

Worst-case mode and channel used for 9 KHz-1000 MHz radiated emissions was the mode and channel with the highest output power, which was determined to be TX-5725MHz.

Pre-test AC conducted emission at both voltage AC 120V/60Hz and AC 240V/50Hz, recorded worst case.

\*\*\*Note: Using a temporary antenna connector for the EUT when the conducted measurements are performed.

## 1.8. Channel List and Frequency:

| Test Mode | Channel | Frequency Range (MHz) |
|-----------|---------|-----------------------|
| TX        | 1       | 5761                  |
| Standby   | --      | --                    |

## **2. TEST METHODOLOGY**

All measurements contained in this report were conducted with ANSI C63.10: 2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

The radiated testing was performed at an antenna-to-EUT distance of 3 meters. All radiated and conducted emissions measurement was performed at Shenzhen LCS Compliance Testing Laboratory Ltd.

### **2.1 EUT Configuration**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

### **2.2 EUT Exercise**

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.203, 15.205, 15.207, 15.209 and 15.249 under the FCC Rules Part 15 Subpart C.

### **2.3 General Test Procedures**

#### **2.3.1 Conducted Emissions**

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in FCC ANSI C63.10 for Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

#### **2.3.2 Radiated Emissions**

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in FCC MP-5 for radiated emission.



### **3. SYSTEM TEST CONFIGURATION**

#### **3.1 Justification**

The system was configured for testing in a continuous transmit condition. Continuous transmitting.  
The EUT After the power is switched on, the hand is placed over the microwave module, and the continuous transmit signal.

#### **3.2 EUT Exercise Software**

N/A.

#### **3.3. Special Accessories**

N/A.

#### **3.4 Block Diagram/Schematics**

Please refer to the related document.

#### **3.5 Equipment Modifications**

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

#### **3.6 Test Setup**

Please refer to the test setup photo.

#### 4. SUMMARY OF TEST RESULT

| FCC Rules                                         | Description Of Test            | Result    |
|---------------------------------------------------|--------------------------------|-----------|
| §15.203                                           | Antenna Requirement            | Compliant |
| §15.207(a)                                        | Power Line Conducted Emissions | N/A       |
| §15.205(a), §15.209(a),<br>§15.249(a), §15.249(c) | Radiated Emissions Measurement | Compliant |
| §15.205                                           | Band Edges Measurement         | Compliant |
| §15.249, §15.215                                  | 20 dB Bandwidth                | Compliant |

Remark;

\*\* - Restricted bands far away from fundamental frequency, results within radiated emission;

## 5. SUMMARY OF TEST EQUIPMENT

| Item | Equipment                      | Manufacturer       | Model No.    | Serial No.      | Cal Date   | Due Date   |
|------|--------------------------------|--------------------|--------------|-----------------|------------|------------|
| 1    | MXA Signal Analyzer            | Agilent            | N9020A       | MY49100060      | 2019-11-15 | 2020-11-14 |
| 2    | DC Power Supply                | Agilent            | E3642A       | N/A             | 2019-11-15 | 2020-11-14 |
| 3    | Temperature & Humidity Chamber | GUANGZHOU GOGN WEN | GDS-100      | 70932           | 2019-10-10 | 2020-10-09 |
| 4    | EMI Test Software              | EZ                 | EZ-EMC       | /               | N/A        | N/A        |
| 5    | 3m Semi Anechoic Chamber       | SIDT FRANKONIA     | SAC-3M       | 03CH03-HY       | 2019-06-12 | 2020-06-11 |
| 6    | Positioning Controller         | MF                 | MF-7082      | /               | 2019-06-12 | 2020-06-11 |
| 7    | Active Loop Antenna            | SCHWARZBECK        | FMZB 1519B   | 00005           | 2019-07-26 | 2020-07-25 |
| 8    | By-log Antenna                 | SCHWARZBECK        | VULB9163     | 9163-470        | 2019-07-26 | 2020-07-25 |
| 9    | Horn Antenna                   | SCHWARZBECK        | BBHA 9120D   | 9120D-1925      | 2019-07-02 | 2020-07-01 |
| 10   | EMI Test Receiver              | R&S                | ESR 7        | 101181          | 2019-06-12 | 2020-06-11 |
| 11   | RS SPECTRUM ANALYZER           | R&S                | FSP40        | 100503          | 2019-11-15 | 2020-11-14 |
| 12   | Broadband Preamplifier         | /                  | BP-01M18G    | P190501         | 2019-07-01 | 2020-06-30 |
| 13   | RF Cable-R03m                  | Jye Bao            | RG142        | CB021           | 2019-06-12 | 2020-06-11 |
| 14   | RF Cable-HIGH                  | SUHNER             | SUCOFLEX 106 | 03CH03-HY       | 2019-06-12 | 2020-06-11 |
| 15   | EMI Test Receiver              | R&S                | ESPI         | 101840          | 2019-06-11 | 2020-06-10 |
| 16   | Artificial Mains               | R&S                | ENV216       | 101288          | 2019-06-12 | 2020-06-11 |
| 17   | 10dB Attenuator                | SCHWARZBECK        | MTS-IMP-136  | 261115-001-0032 | 2019-06-11 | 2020-06-10 |

Note: All equipment is calibrated through CHINA CEPREI LABORATORY and GUANGZHOU LISAI CALIBRATION AND TEST CO., LTD.

## **6. ANTENNA REQUIREMENT**

### **6.1. Standard Applicable**

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

### **6.2. Antenna Connected Construction**

The directional gains of Internal antenna used for transmitting is 0dBi, and the antenna is connect to PCB board and no consideration of replacement, meet FCC §15.203 antenna requirement.

### **6.3. Result**

Compliance.

## 7. RADIATED EMISSION MEASUREMENT

### 7.1. Standard Applicable

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) and 15.249 limit in the table below has to be followed.

| Fundamental Frequency | Field Strength of fundamental<br>(millivolts/meter) | Field Strength of harmonics<br>(microvolts/meter) |
|-----------------------|-----------------------------------------------------|---------------------------------------------------|
| 902-928 MHz           | 50                                                  | 500                                               |
| 2400-2483.5 MHz       | 50                                                  | 500                                               |
| 5725-5875 MHz         | 50                                                  | 500                                               |
| 24.0-24.25 GHz        | 250                                                 | 2500                                              |

| Frequencies<br>(MHz) | Field Strength<br>(microvolts/meter) | Measurement Distance<br>(meters) |
|----------------------|--------------------------------------|----------------------------------|
| 0.009~0.490          | 2400/F(KHz)                          | 300                              |
| 0.490~1.705          | 24000/F(KHz)                         | 30                               |
| 1.705~30.0           | 30                                   | 30                               |
| 30~88                | 100                                  | 3                                |
| 88~216               | 150                                  | 3                                |
| 216~960              | 200                                  | 3                                |
| Above 960            | 500                                  | 3                                |

### 7.2. Instruments Setting

Please refer to equipment list in this report. The following table is the setting of spectrum analyzer and receiver.

| Spectrum Parameter                        | Setting                                           |
|-------------------------------------------|---------------------------------------------------|
| Attenuation                               | Auto                                              |
| Start Frequency                           | 1000 MHz                                          |
| Stop Frequency                            | 10 <sup>th</sup> carrier harmonic                 |
| RB / VB (Emission in restricted band)     | 1MHz / 1MHz for Peak, 1 MHz / 1/T kHz for Average |
| RB / VB (Emission in non-restricted band) | 1MHz / 1MHz for Peak, 1 MHz / 1/T kHz for Average |

| Receiver Parameter     | Setting                                    |
|------------------------|--------------------------------------------|
| Attenuation            | Auto                                       |
| Start ~ Stop Frequency | 9kHz~150kHz / RB/VB 200Hz/1KHz for QP/AVG  |
| Start ~ Stop Frequency | 150kHz~30MHz / RB/VB 9kHz/30KHz for QP/AVG |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB/VB 120kHz/1MHz for QP   |

### 7.3. Test Procedure

#### 1) Sequence of testing 9 kHz to 30 MHz

##### Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.
- If the EUT is a floor standing device, it is placed on the ground.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

##### Premeasurement:

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna height is 0.8 meter.
- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

##### Final measurement:

- Identified emissions during the premeasurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).
- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

## 2) Sequence of testing 30 MHz to 1 GHz

### Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

### Premeasurement:

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height changes from 1 to 3 meter.
- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

### Final measurement:

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position ( $\pm 45^\circ$ ) and antenna movement between 1 and 4 meter.
- The final measurement will be done with QP detector with an EMI receiver.
- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

### 3) Sequence of testing 1 GHz to 18 GHz

#### Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

#### Premeasurement:

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height scan range is 1 meter to 2.5 meter.
- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

#### Final measurement:

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position ( $\pm 45^\circ$ ) and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.
- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.



#### **4) Sequence of testing above 18 GHz**

##### **Setup:**

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 1 meter.
- The EUT was set into operation.

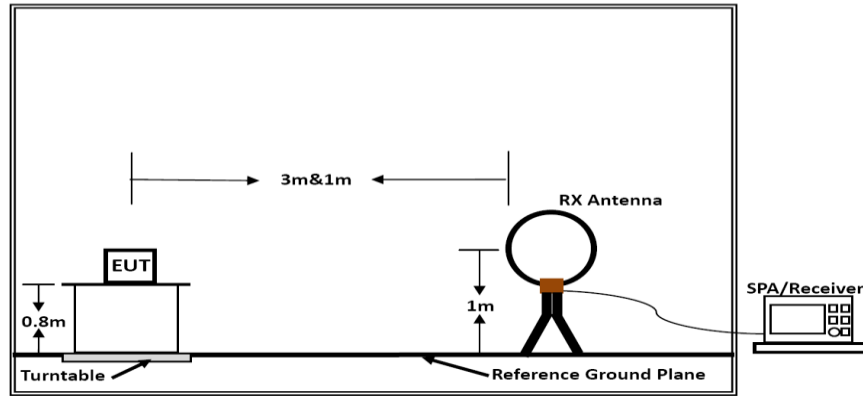
##### **Premeasurement:**

- The antenna is moved spherical over the EUT in different polarizations of the antenna.

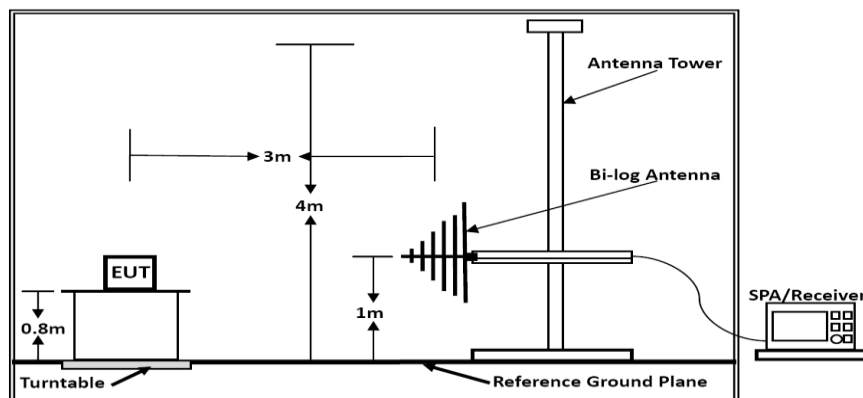
##### **Final measurement:**

- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.
- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

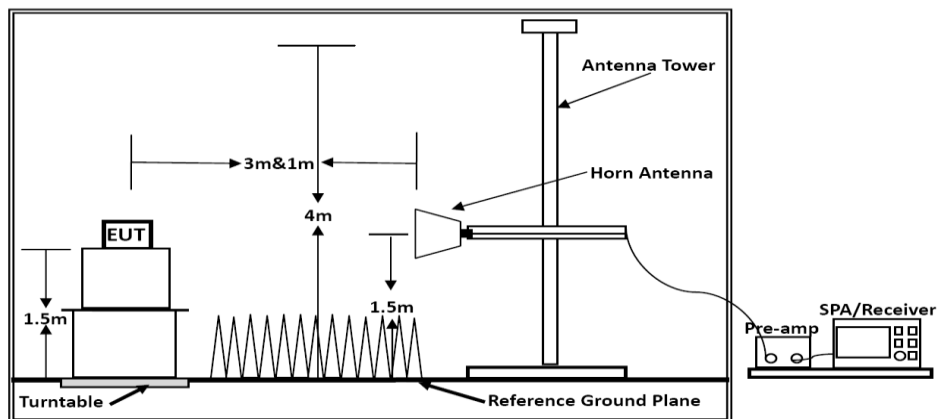
## 7.4. Block Diagram of Test Setup



**Below 30MHz**



**Below 1GHz**



**Above 1GHz**

Above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1m.

Distance extrapolation factor =  $20 \log (\text{specific distance [3m]} / \text{test distance [1m]})$  (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

## 7.5. Test Results of Radiated Emissions (9 KHz~30MHz)

| Frequency (MHz) | Level (dBuV) | Over Limit (dB) | Over Limit (dBuV) | Remark   |
|-----------------|--------------|-----------------|-------------------|----------|
| -               | -            | -               | -                 | See Note |

Note:

The radiated emissions from 9 KHz to 30 MHz are at least 20dB below the official limit and no need to report.

Distance extrapolation factor =  $40 \log (\text{specific distance} / \text{test distance})$  (dB);

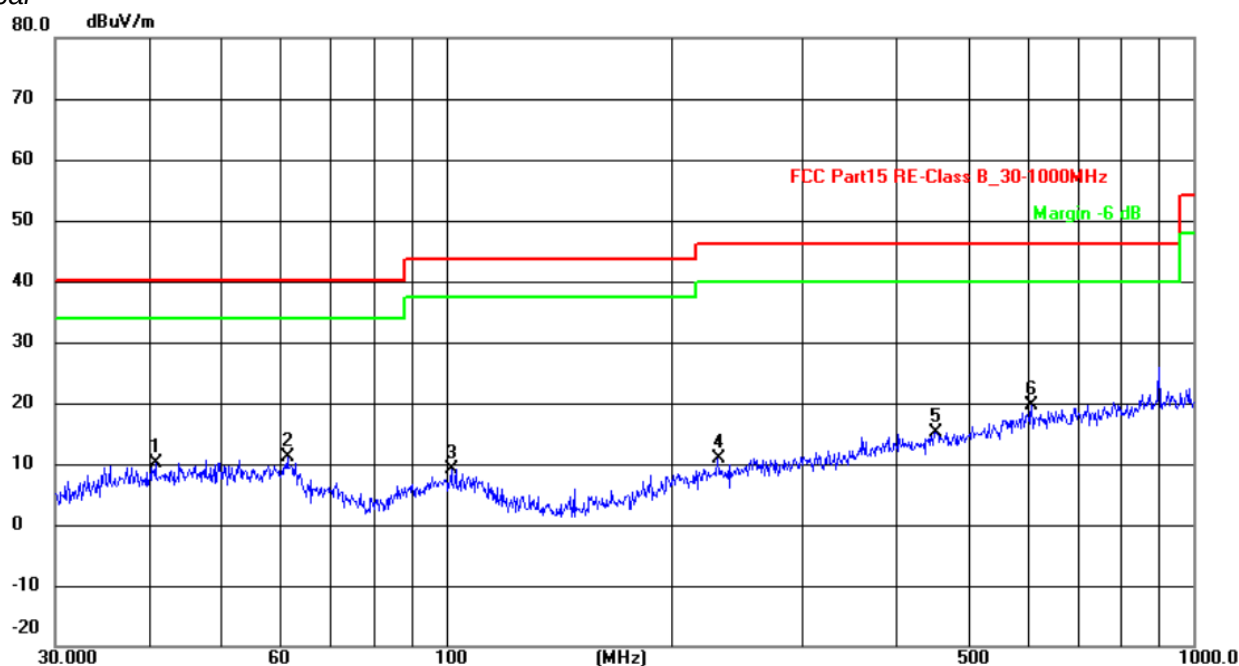
Limit line = specific limits (dBuV) + distance extrapolation factor.

## 7.6. Results of Radiated Emissions (30 MHz – 1000 MHz)

|               |            |           |       |
|---------------|------------|-----------|-------|
| Temperature   | 22.2°C     | Humidity  | 53.3% |
| Test Engineer | Diamond Lu | Test Mode | TX    |

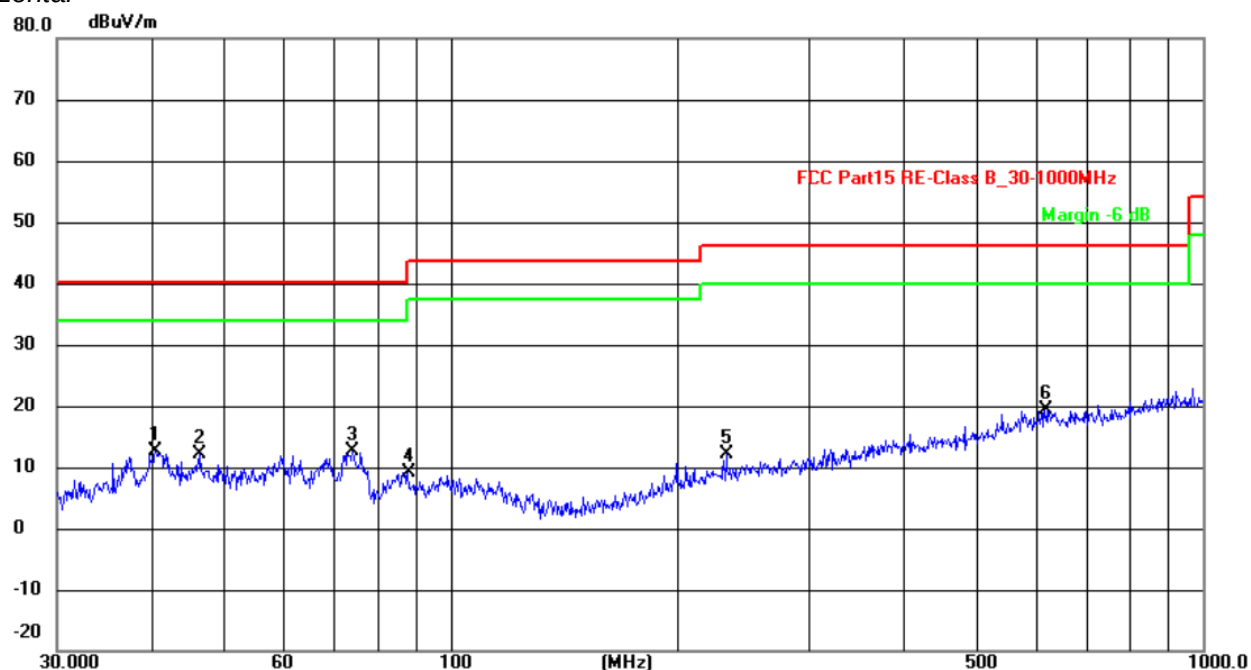
For MC079D RC2 A

Vertical



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 40.8446         | 26.34          | -16.27        | 10.07          | 40.00          | -29.93      | QP       |
| 2   | 61.3463         | 28.43          | -17.23        | 11.20          | 40.00          | -28.80      | QP       |
| 3   | 101.6443        | 26.48          | -17.38        | 9.10           | 43.50          | -34.40      | QP       |
| 4   | 230.9068        | 27.13          | -16.21        | 10.92          | 46.00          | -35.08      | QP       |
| 5   | 452.7197        | 26.70          | -11.57        | 15.13          | 46.00          | -30.87      | QP       |
| 6   | 607.7867        | 28.03          | -8.31         | 19.72          | 46.00          | -26.28      | QP       |

## Horizontal



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 40.5591         | 28.91          | -16.31        | 12.60          | 40.00          | -27.40      | QP       |
| 2   | 46.5030         | 27.72          | -15.60        | 12.12          | 40.00          | -27.88      | QP       |
| 3   | 74.1351         | 33.37          | -20.75        | 12.62          | 40.00          | -27.38      | QP       |
| 4   | 87.7248         | 28.89          | -19.79        | 9.10           | 40.00          | -30.90      | QP       |
| 5   | 232.5318        | 28.26          | -16.15        | 12.11          | 46.00          | -33.89      | QP       |
| 6   | 616.3718        | 27.82          | -8.33         | 19.49          | 46.00          | -26.51      | QP       |

## Note:

- 1). Pre-scan all modes and recorded the worst case results in this report.
- 2). Emission level (dBuV/m) = 20 log Emission level (uV/m).
- 3). Level=Reading level + Factor  
Margin=Level - Limit

## 7.7. Results for Radiated Emissions (1 – 26 GHz)

| Field Strength of Fundamental (TX-5761MHz) |      |                             |                              |                     |                    |        |
|--------------------------------------------|------|-----------------------------|------------------------------|---------------------|--------------------|--------|
| Frequency (MHz)                            | Pol. | Measure Result (PK, dBuV/m) | Measure Result (AVG, dBuV/m) | Peak Limit (dBuV/m) | AVG Limit (dBuV/m) | Result |
| 5761                                       | H    | 87.33                       | 75.10                        | 114.00              | 94.00              | PASS   |
| 5761                                       | V    | 82.15                       | 70.48                        | 114.00              | 94.00              | PASS   |

| Freq. MHz | Reading dBuV | Ant. Fac dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark  | Pol.       |
|-----------|--------------|---------------|--------------|--------------|-----------------|--------------|-----------|---------|------------|
| 11522     | 59.50        | 33.26         | 35.14        | 3.98         | 61.60           | 74.00        | -12.40    | Peak    | Horizontal |
| 11522     | 42.38        | 33.26         | 35.14        | 3.98         | 44.48           | 54.00        | -9.52     | Average | Horizontal |
| 11522     | 54.55        | 33.26         | 35.14        | 3.98         | 56.65           | 74.00        | -17.35    | Peak    | Vertical   |
| 11522     | 43.11        | 33.26         | 35.14        | 3.98         | 45.21           | 54.00        | -8.79     | Average | Vertical   |

Notes:

1). Measuring frequencies from 9 KHz - 10<sup>th</sup> harmonic (ex. 40GHz), No emission found between lowest internal used/generated frequency to 30 MHz.

2). Radiated emissions measured in frequency range from 9 KHz - 10<sup>th</sup> harmonic (ex. 40GHz) were made with an instrument using Peak detector mode.

3). 18~40GHz at least have 20dB margin. No recording in the test report.

Measured=Reading level - Pre.factor + Ant. Factor + cable loss

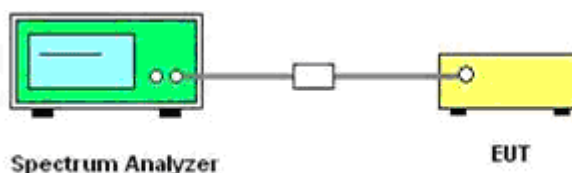
Margin=measured - limited

## 8. 99% AND 20 DB BANDWIDTH MEASUREMENT

### 8.1. Standard Applicable

No Limit

### 8.2. Block Diagram of Test Setup



### 8.3. Test Procedure

Use the following spectrum analyzer settings:

Span = 50 MHz

RBW = 1 MHz

VBW = 1 MHz

Sweep = auto

Detector function = peak

Trace = max hold

The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).

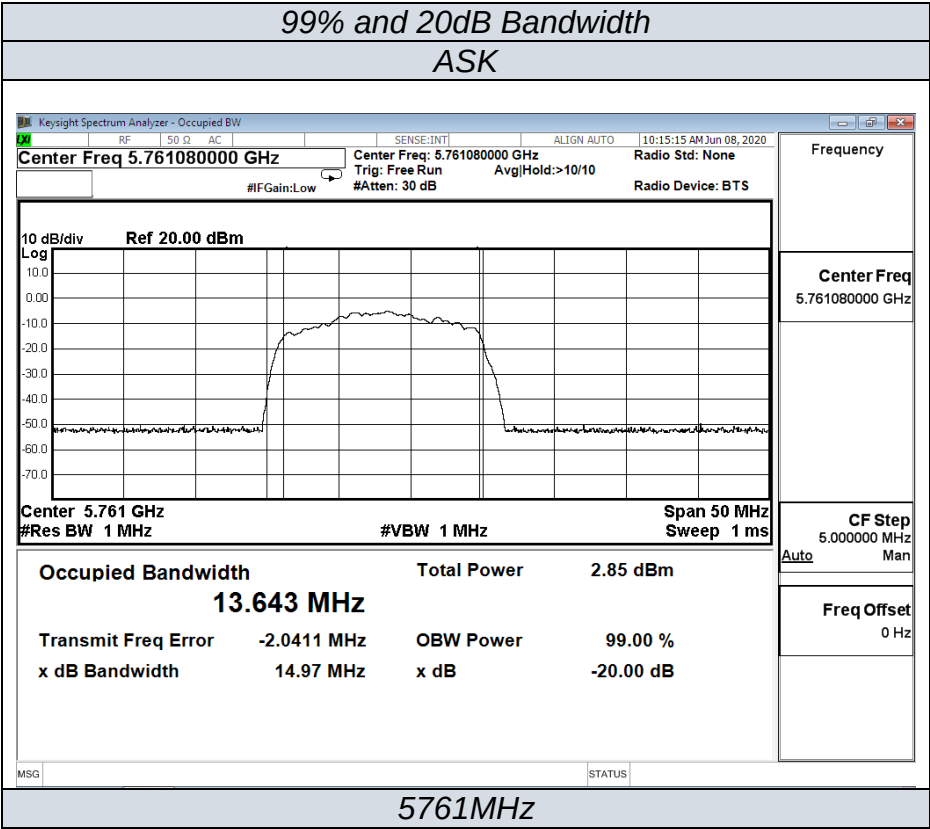
### 8.4. Test Results

|               |            |           |       |
|---------------|------------|-----------|-------|
| Temperature   | 23.5℃      | Humidity  | 52.4% |
| Test Engineer | Diamond Lu | Test Mode | TX    |

| 99% and 20dB Bandwidth |                     |                      |               |
|------------------------|---------------------|----------------------|---------------|
| Test Frequency (MHz)   | 99% Bandwidth (MHz) | 20dB Bandwidth (MHz) | Limit (MHz)   |
| 5761                   | 13.643              | 14.97                | Non-Specified |

Remark:

1. Test results including cable loss;
2. Please refer to following plots;



## 9. AC POWER LINE CONDUCTED EMISSIONS

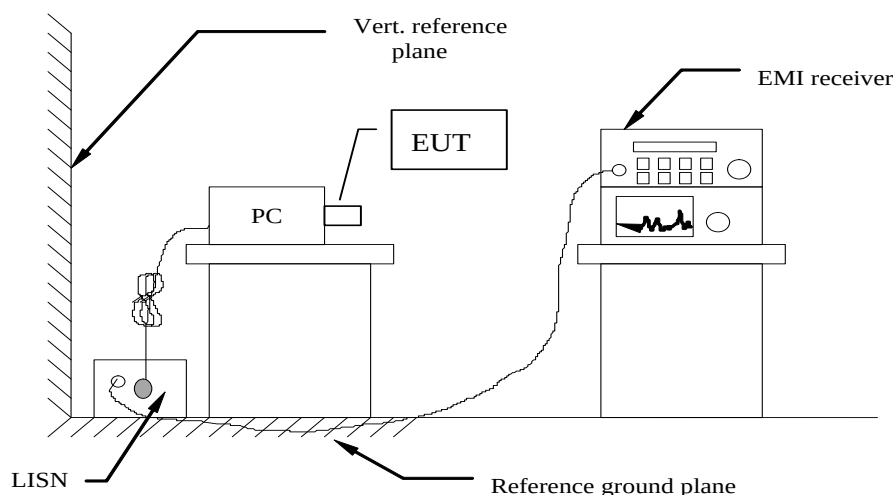
### 9.1 Standard Applicable

According to §15.207 (a): For an intentional radiator which 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 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range are listed as follows:

| Frequency Range (MHz) | Limits (dBμV) |          |
|-----------------------|---------------|----------|
|                       | Quasi-peak    | Average  |
| 0.15 to 0.50          | 66 to 56      | 56 to 46 |
| 0.50 to 5             | 56            | 46       |
| 5 to 30               | 60            | 50       |

\* Decreasing linearly with the logarithm of the frequency

### 9.2 Block Diagram of Test Setup



### 9.3 Test Results

**N/A. The EUT powered by DC.**



## **10. TEST SETUP PHOTOGRAPHS**

Please refer to separated files for Test Setup Photos of the EUT.

## **11. EXTERIOR PHOTOGRAPHS OF THE EUT**

Please refer to separated files for External Photos of the EUT.

## **12. INTERIOR PHOTOGRAPHS OF THE EUT**

Please refer to separated files for Internal Photos of the EUT.

-----THE END OF REPORT-----