



# FCC TEST REPORT

## FCC ID: 2A3H3-DY001

|   |   |  |
|---|---|--|
| Product   | : | Smart Door Lock  |
| Model Name  | : | DY001/DY001G/DY002B/DY002BG/DY003B/DY003BG/DY004B/DY004BG/DY005B/DY005BG |
| Brand   | : | SECUSTONE  |
| Report No.  | : | PTC21072800901E-FC02   |
| <b>Prepared for</b>   |   |  |
| Shenzhen Chitongda Security Technology Co., Ltd.  |   |  |
| 701 Block C, Shenzhen Virtual University Park, No. 2, Yuxing 3rd Road, Nanshan District, Shenzhen |   |  |
| <b>Prepared by</b>  |   |  |
| Precise Testing & Certification Corp., Ltd.   |   |  |
| Building 1, No.6 Tongxin Road, Dongcheng Street, Dongguan, China                                  |   |  |
|   |   |  |



## 1 TEST RESULT CERTIFICATION

Applicant's name : Shenzhen Chitongda Security Technology Co., Ltd.  
Address : 701 Block C, Shenzhen Virtual University Park, No. 2, Yuexing 3rd Road, Nanshan District, Shenzhen  
Manufacture's name : Shenzhen Chitongda Security Technology Co., Ltd.  
Address : 701 Block C, Shenzhen Virtual University Park, No. 2, Yuexing 3rd Road, Nanshan District, Shenzhen  
Product name : Smart Door Lock  
Model name : DY001/DY001G/DY002B/DY002BG/DY003B/DY003BG/DY004B/DY004BG/DY005B/DY005BG  
Serial Model :  
Standards : FCC CFR47 Part 15 Subpart C  
Test procedure : ANSI C63.10:2013  
Test Date : Aug. 28, 2021 to Sept.13, 2021  
Date of Issue : Sept.14, 2021  
Test Result : Pass

This device described above has been tested by PTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Test Engineer:

Leo Yang / Engineer

Technical Manager:

Chris Du / Manager



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## 2 Summary of test results

| Description of Test Item         | Standard   | Results |
|----------------------------------|--|---------|
| 20dB Bandwidth and 99% Bandwidth | FCC Part 15: 15.215<br>ANSI C63.10:2013                        | PASS    |
| Frequency tolerance              | FCC Part 15:15.225<br>ANSI C63.10:2013                         | PASS    |
| Radiated Emission                | FCC Part 15: 15.209<br>FCC Part 15: 15.225<br>ANSI C63.10:2013 | PASS    |
| Power Line Conducted Emissions   | FCC Part 15: 15.207<br>ANSI C63.10:2013                        | N/A     |
| Antenna requirement              | FCC Part 15: 15.203<br>ANSI C63.10:2013                        | PASS    |

Note: N/A is an abbreviation for Not Applicable.



### 3 General test information

#### 3.1 Description of EUT

|                      |   |  |
|----------------------|---|--|
| Product Name         | : | Smart Door Lock  |
| Model Name           | : | DY001/DY001G/DY002B/DY002BG/DY003B/DY003BG/DY004B/DY004BG/DY005B/DY005BG |
| Operation Frequency  | : | 13.56MHz   |
| Type of Modulation   | : | ASK  |
| Antenna installation | : | Inductive loop coil antenna  |
| Power supply         | : | DC 6V(4*1.5v dry battery)  |
| Hardware Version     | : | 1.0  |
| Software Version     | : | 1.0  |



### **3.2 Test laboratory**

Precise Testing & Certification Corp., Ltd.

Building 1, No.6 Tongxin Road, Dongcheng Street, Dongguan,China

FCC Registration Number: 790290

A2LA Certificate No.: 4408.01

IC Registration Number: 12191A-1



## 4 Measurement uncertainty

### 4.1 Equipments List

#### RF Conducted Test

| Name of Equipment   | Manufacturer | Model   | Serial No. | Characteristics | Calibration Due | Interval time |
|---------------------|--------------|---------|------------|-----------------|-----------------|---------------|
| MXG Signal Analyzer | Agilent      | N9020A  | MY56070279 | 10Hz-30GHz      | Sep.18, 2022    | 1 Year        |
| Coaxial Cable       | CDS          | 79254   | 46107086   | 10Hz-30GHz      | Sep.18, 2022    | 1 Year        |
| Power Meter         | Anritsu      | ML2495A | 0949003    | 300MHz-40GHz    | Sep.18, 2022    | 1 Year        |
| Power Sensor        | Anritsu      | MA2411B | 0917017    | 300MHz-40GHz    | Sep.18, 2022    | 1 Year        |

Remark: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

#### Radiated Emissions

| Name of Equipment            | Manufacturer  | Model      | Serial No.   | Characteristics | Calibration Due | Interval time |
|------------------------------|---------------|------------|--------------|-----------------|-----------------|---------------|
| EMI Test Receiver            | Rohde&Schwarz | ESCI       | 101417       | 9KHz-3GHz       | Sep.18, 2022    | 1 Year        |
| Active Loop antenna          | Schwarzbeck   | FMZB-1519  | 1519-038     | 9K-30MHz        | Sep.18, 2022    | 1 Year        |
| Bilog Antenna                | SCHWARZBECK   | VULB9160   | 9160-3355    | 25MHz-2GHz      | Sep.18, 2022    | 1 Year        |
| Preamplifier (low frequency) | SCHWARZBECK   | BBV 9475   | 9745-0013    | 1MHz-1GHz       | Sep.18, 2022    | 1 Year        |
| Cable                        | Schwarzbeck   | PLF-100    | 549489       | 9KHz-3GHz       | Sep.18, 2022    | 1 Year        |
| Spectrum Analyzer            | Agilent       | E4407B     | MY45109572   | 9KHz-40GHz      | Sep.18, 2022    | 1 Year        |
| Horn Antenna                 | SCHWARZBECK   | 9120D      | 9120D-1246   | 1GHz-18GHz      | Sep.18, 2022    | 1 Year        |
| Power Amplifier              | LUNAR EM      | LNA1G18-40 | J10100000081 | 1GHz-26.5GHz    | Sep.18, 2022    | 1 Year        |
| Horn Antenna                 | SCHWARZBECK   | BBHA 9170  | 9170-181     | 14GHz-40GHz     | Sep.18, 2022    | 1 Year        |
| Amplifier                    | SCHWARZBECK   | BBV 9721   | 9721-205     | 18GHz-40GHz     | Sep.18, 2022    | 1 Year        |
| Cable                        | H+S           | CBL-26     | N/A          | 1GHz-26.5GHz    | Sep.18, 2022    | 1 Year        |
| RF Cable                     | R&S           | R204       | R21X         | 1GHz-40GHz      | Sep.18, 2022    | 1 Year        |



### Conducted Emissions

| Name of Equipment        | Manufacturer  | Model  | Serial No. | Characteristics | Calibration Due | Interval time |
|--------------------------|---------------|--------|------------|-----------------|-----------------|---------------|
| EMI Test Receiver        | Rohde&Schwarz | ESCI   | 101417     | 9KHz-3GHz       | Sep.18, 2022    | 1 Year        |
| Artificial Mains Network | Rohde&Schwarz | L2-16B | 000WX31025 | 9KHz-300MHz     | Sep.18, 2022    | 1 Year        |
| Artificial Mains Network | Rohde&Schwarz | ENV216 | 101342     | 9KHz-300MHz     | Sep.18, 2022    | 1 Year        |

### 4.2 Measurement Uncertainty

| Parameter                          | Uncertainty              |
|------------------------------------|--------------------------|
| RF output power, conducted         | ±1.0dB                   |
| Power Spectral Density, conducted  | ±2.2dB                   |
| Radio Frequency                    | ± 1 x 10 <sup>-6</sup>   |
| Bandwidth                          | ± 1.5 x 10 <sup>-6</sup> |
| Time                               | ±2%                      |
| Duty Cycle                         | ±2%                      |
| Temperature                        | ±1°C                     |
| Humidity                           | ±5%                      |
| DC and low frequency voltages      | ±3%                      |
| Conducted Emissions (150kHz~30MHz) | ±3.64dB                  |
| Radiated Emission(9KHz~30MHz)      | ±2.42dB                  |
| Radiated Emission(30MHz~1GHz)      | ±5.03dB                  |
| Radiated Emission(1GHz~25GHz)      | ±4.74dB                  |

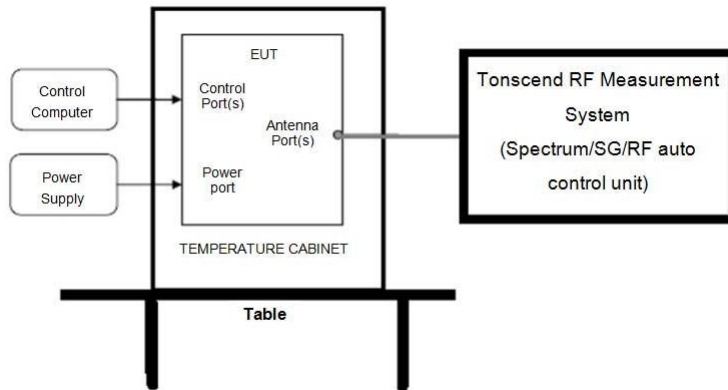
### 4.3 Test environment conditions

| /  | Normal Conditions | Extreme Conditions  |
|--|-------------------|---------------------|
| Temperature range:   | 21-25°C           | 0°C and 50°C        |
| Humidity range:  | 40-75%            | 40-75%              |
| Pressure range:  | 86-106kPa         | 86-106kPa           |
| Power supply   | DC 6V             | DC 5.4V and DC 6.9V |
| Note: The Extreme temperature range and extreme voltages are declared by the manufacturer. |                   |                     |



## 5 20dB Bandwidth and 99% Bandwidth

### 5.1 Block diagram of test setup



### 5.2 Limits

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

### 5.3 Test Procedure

- (1) Connect EUT's antenna output to spectrum analyzer by RF cable.
- (2) Set the spectrum analyzer as follows:
 

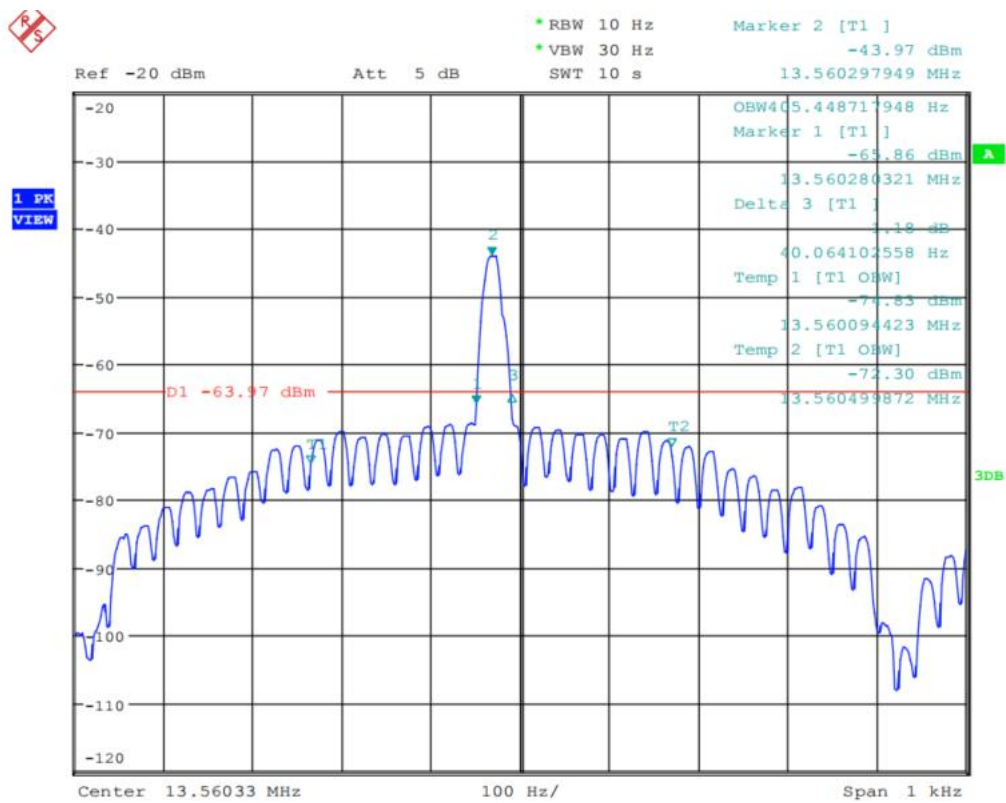
|                |          |
|----------------|----------|
| RBW:           | 10Hz     |
| VBW:           | 30Hz     |
| Detector Mode: | Peak     |
| Sweep time:    | auto     |
| Trace mode     | Max hold |
- (3) Allow the trace to stabilize, measure the 20dB and 99% bandwidth of signal.

### 5.4 Test Result

| Mode | Freq. (MHz) | 20dB bandwidth Result (Hz) | 99% bandwidth Result (Hz) | Conclusion |
|------|-------------|----------------------------|---------------------------|------------|
| ASK  | 13.56       | 40.064                     | 405.449                   | PASS       |



5.5 Original test data

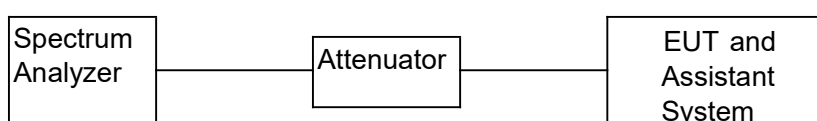


## 6 Frequency Tolerance

### 6.1 Limit

As contained in § 15.225 the frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  of the operating frequency over a temperature variation of  $-20$  degrees to  $+50$  degrees C at normal supply Voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

### 6.2 Block diagram of test setup



### 6.3 Test Procedure

(1) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the

Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the channel under test.

Resolution BW: 10 KHz.

Video BW: 10 KHz.

Span: 1MHz.

Detector: Peak.

Trace Mode: Max Hold.

(2) When the trace is complete, find the peak value of the power envelope and record the frequency.

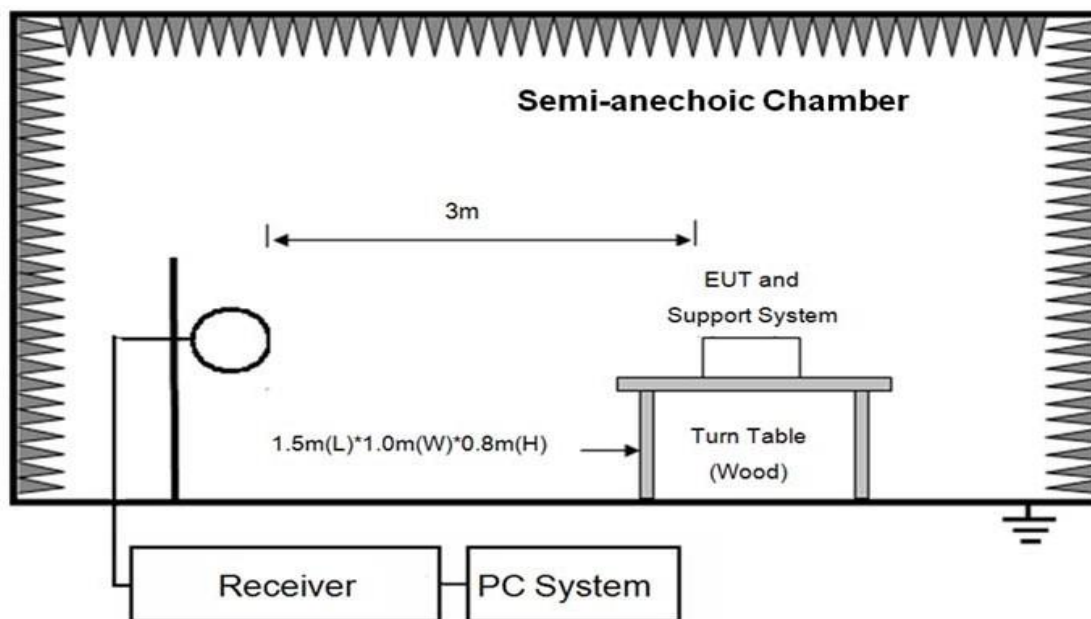
### 6.4 Test result

| Mode            | Condition         |             | Result         |                 |                 | Limit |
|-----------------|-------------------|-------------|----------------|-----------------|-----------------|-------|
|                 | Temperature (°C ) | Voltage (V) | Measured (MHz) | Tolerance (kHz) | Tolerance (ppm) | ppm   |
| Carrier Tx Mode | -20               | 6           | 13.5604        | 0.4             | 29.50           | 100   |
|                 | -10               | 6           | 13.5604        | 0.4             | 29.50           | 100   |
|                 | 0                 | 6           | 13.5604        | 0.4             | 29.50           | 100   |
|                 | +10               | 6           | 13.5604        | 0.4             | 29.50           | 100   |
|                 | +20               | 6           | 13.5604        | 0.4             | 29.50           | 100   |
|                 | +30               | 6           | 13.5605        | 0.5             | 36.87           | 100   |
|                 | +40               | 6           | 13.5608        | 0.8             | 59.00           | 100   |
|                 | +50               | 6           | 13.5605        | 0.5             | 36.87           | 100   |
|                 | +20               | 6.9         | 13.5604        | 0.4             | 29.50           | 100   |
|                 | +20               | 5.1         | 13.5605        | 0.5             | 36.87           | 100   |

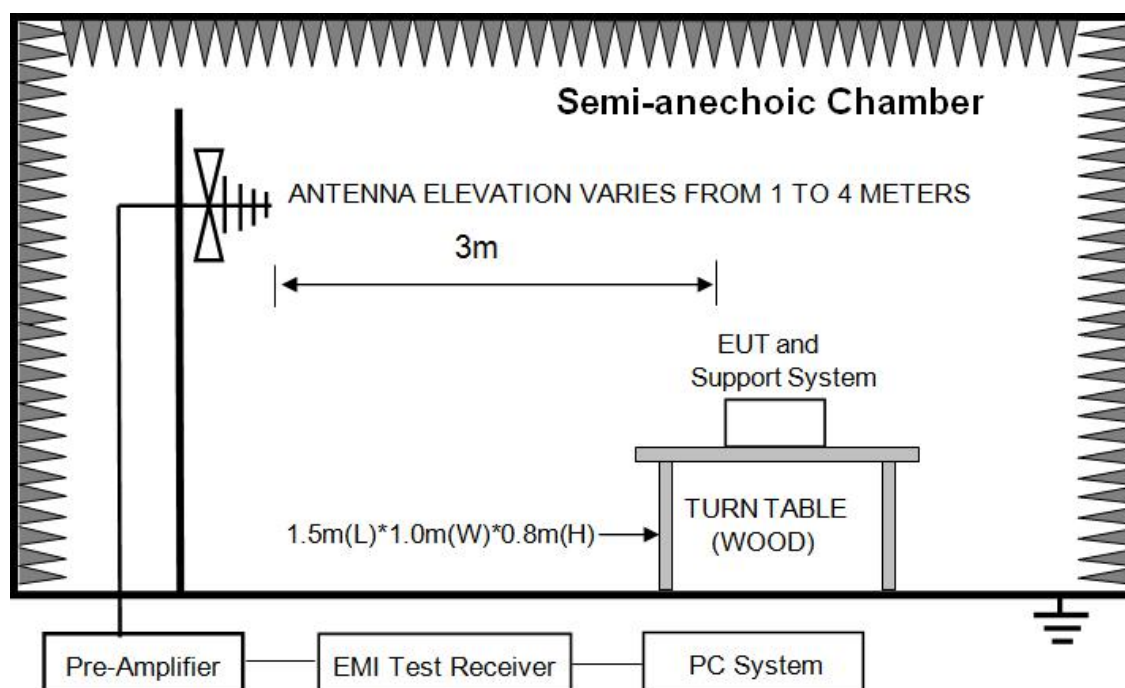
## 7 Radiated emission

### 7.1 Block diagram of test setup

In 3m Anechoic Chamber Test Setup Diagram for 9kHz~30MHz



In 3m Anechoic Chamber Test Setup Diagram for 30MHz~1GHz



## 7.2 Limit

Operation within the band 13.110-14.010 MHz as contained in §15.225:

- (a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.
- (b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.
- (c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.
- (d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

| FREQUENCY<br>MHz | DISTANCE<br>Meters | FIELD STRENGTHS LIMIT        |                                   |
|------------------|--------------------|------------------------------|-----------------------------------|
|                  |                    | $\mu\text{V/m}$              | $\text{dB}(\mu\text{V})/\text{m}$ |
| 0.009 ~ 0.490    | 300                | $2400/\text{F}(\text{KHz})$  | $67.6-20\log(\text{F})$           |
| 0.490 ~ 1.705    | 30                 | $24000/\text{F}(\text{KHz})$ | $87.6-20\log(\text{F})$           |
| 1.705 ~ 13.110   | 30                 | 30                           | 29.54                             |
| 13.110 ~ 13.410  | 30                 | 106                          | 40.51                             |
| 13.410 ~ 13.553  | 30                 | 334                          | 50.47                             |
| 13.553 ~ 13.567  | 30                 | 15848                        | 84.00                             |
| 13.567 ~ 13.710  | 30                 | 334                          | 50.47                             |
| 13.710 ~ 14.010  | 30                 | 106                          | 40.51                             |
| 14.010 ~ 30      | 30                 | 30                           | 29.54                             |
| 30 ~ 88          | 3                  | 100                          | 40.0                              |
| 88 ~ 216         | 3                  | 150                          | 43.5                              |
| 216 ~ 960        | 3                  | 200                          | 46.0                              |
| 960 ~ 1000       | 3                  | 500                          | 54.0                              |

Note: (1) The emission limits shown in the above table are based on measurements employing a CISPR QP detector except for the frequency bands 9-90KHz, 110-490KHz and above 1000MHz. Radiated emissions limits in these three bands are based on measurements employing an average detector.

(2) At frequencies below 30MHz, measurement may be performed at a distance closer than that specified, and the limit at closer measurement distance can be extrapolated by below formula:

$$\text{Limit}_{3\text{m}}(\text{dB}\mu\text{V/m}) = \text{Limit}_{300\text{m}}(\text{dB}\mu\text{V/m}) + 40\log(300\text{m}/3\text{m}) = \text{Limit}_{300\text{m}}(\text{dB}\mu\text{V/m}) + 80$$

$$\text{Limit}_{3\text{m}}(\text{dB}\mu\text{V/m}) = \text{Limit}_{30\text{m}}(\text{dB}\mu\text{V/m}) + 40\log(30\text{m}/3\text{m}) = \text{Limit}_{30\text{m}}(\text{dB}\mu\text{V/m}) + 40$$

| FREQUENCY<br>MHz | DISTANCE<br>Meters | FIELD STRENGTHS<br>LIMIT<br>$\text{dB}(\mu\text{V})/\text{m}$ |
|------------------|--------------------|---|
| 0.009 ~ 0.490    | 3                  | $147.6-20\log(\text{F})$                                      |
| 0.490 ~ 1.705    | 3                  | $127.6-20\log(\text{F})$                                      |
| 1.705 ~ 13.110   | 3                  | 69.54   |
| 13.110 ~ 13.410  | 3                  | 80.51   |
| 13.410 ~ 13.553  | 3                  | 90.47   |
| 13.553 ~ 13.567  | 3                  | 124.00  |
| 13.567 ~ 13.710  | 3                  | 90.47   |

|                 |   |       |
|-----------------|---|-------|
| 13.710 ~ 14.010 | 3 | 80.51 |
| 14.010 ~ 30     | 3 | 69.54 |
| 30 ~ 88         | 3 | 40.00 |
| 88 ~ 216        | 3 | 43.50 |
| 216 ~ 960       | 3 | 46.00 |
| 960 ~ 1000      | 3 | 54.00 |

### 7.3 Test Procedure

(1) EUT was placed on a non-metallic table, 100 cm above the ground plane inside a semi-anechoic chamber.

(2) Test antenna was located 3m from the EUT on an adjustable mast, and the antenna used as below table.

| Test frequency range | Test antenna used        | Test antenna distance |
|----------------------|--------------------------|-----------------------|
| 9KHz-30MHz           | Active Loop antenna      | 3m                    |
| 30MHz-1GHz           | Trilog Broadband Antenna | 3m                    |

According ANSI C63.10:2013 clause 6.4.4.2 and 6.5.3, for measurements below 30 MHz, the loop antenna was positioned with its plane vertical from the EUT and rotated about its vertical axis for maximum response at each azimuth position around the EUT. And the loop antenna also be positioned with its plane horizontal at the specified distance from the EUT. The center of the loop is 1 m above the ground. for measurement above 30MHz, the Trilog Broadband Antenna or Horn Antenna was located 3m from EUT, Measurements were made with the antenna positioned in both the horizontal and vertical planes of Polarization, and the measurement antenna was varied from 1 m to 4 m. in height above the reference ground plane to obtain the maximum signal strength.

(3) Below pre-scan procedure was first performed in order to find prominent frequency spectrum radiated emissions from 9KHz to 1GHz:

(a) Scanning the peak frequency spectrum with the antenna specified in step (3), and the EUT was rotated 360 degree, the antenna height was varied from 1m to 4m(Except loop antenna, it's fixed 1m above ground.)

(b) Change work frequency or channel of device if practicable.

(c) Change modulation type of device if practicable.

(d) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions. Spectrum frequency from 9KHz to 1GHz (tenth harmonic of fundamental frequency) was investigated.

(4) For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10 2013 on Radiated Emission test.

(5) The emissions from 9KHz to 1GHz were measured based on CISPR QP detector except for the frequency bands 9-90KHz, 110-490KHz, for emissions from 9KHz-90KHz,110KHz-490KHz and above 1GHz were measured based on average detector, for emissions above 1GHz, peak emissions also be measured and need comply with Peak limit.

(6) The emissions from 9KHz to 1GHz, QP or average values were measured with EMI receiver with below RBW.

| Frequency band | RBW    |
|----------------|--------|
| 9KHz-150KHz    | 200Hz  |
| 150KHz-30MHz   | 9KHz   |
| 30MHz-1GHz     | 120KHz |

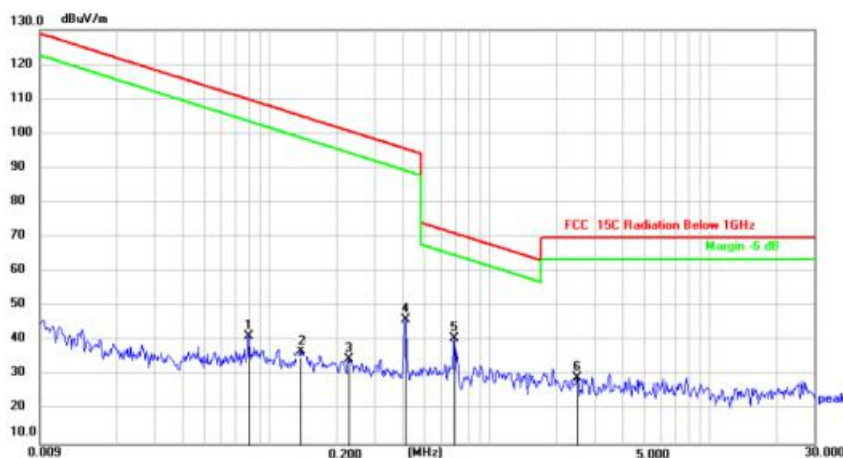
(7) The conducted emission at DC 6V. The data is recorded on the following page. Other modulation methods are not Limit Exceeded.

## 7.4 Test result

**PASS.** (See below detailed test

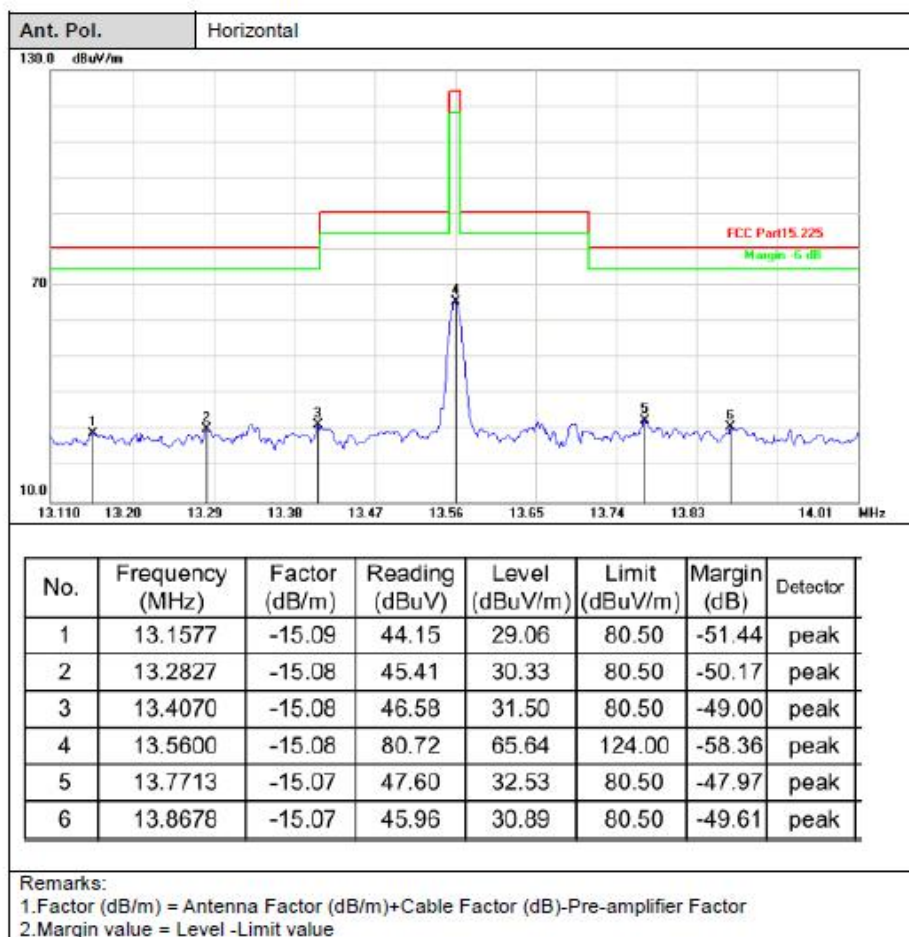
**result, detector: PK>QP>AV)**

**Below 30MHz:**



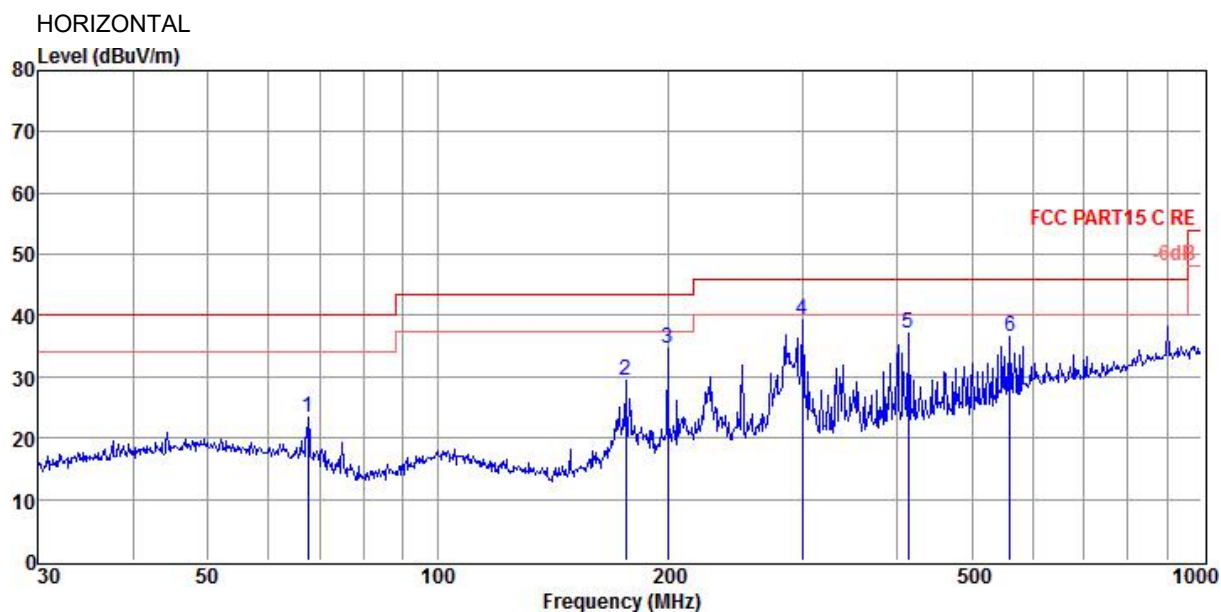
| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 0.0803          | 20.88          | 20.61         | 41.49          | 109.51         | -68.02      | peak     |
| 2   | 0.1374          | 18.25          | 20.11         | 38.36          | 104.84         | -66.48      | peak     |
| 3   | 0.2290          | 14.49          | 20.17         | 34.66          | 100.41         | -65.75      | peak     |
| 4   | 0.4140          | 25.95          | 20.29         | 46.24          | 95.26          | -49.02      | peak     |
| 5 * | 0.6902          | 20.45          | 20.44         | 40.89          | 70.83          | -29.94      | peak     |
| 6   | 2.5068          | 9.03           | 20.31         | 29.34          | 69.50          | -40.16      | peak     |







## Above 30MHz:



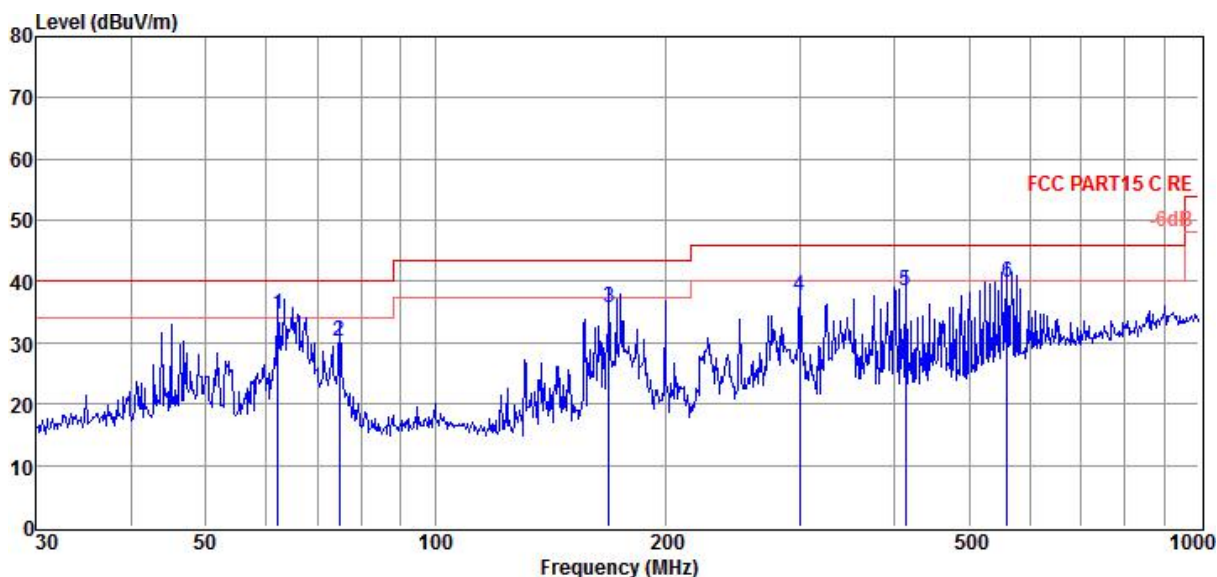
| Item<br>(Mark) | Freq.<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|----------------|-------------------------|-----------------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 67.68          | 9.57                    | 9.68                        | 4.16                | 23.41                       | 40.00                     | -16.59                | QP       | HORIZONTAL   |
| 2              | 176.27         | 14.91                   | 9.50                        | 4.91                | 29.32                       | 43.50                     | -14.18                | QP       | HORIZONTAL   |
| 3              | 199.99         | 18.18                   | 11.50                       | 5.02                | 34.70                       | 43.50                     | -8.80                 | QP       | HORIZONTAL   |
| 4              | 300.37         | 20.37                   | 13.31                       | 5.52                | 39.20                       | 46.00                     | -6.80                 | QP       | HORIZONTAL   |
| 5              | 413.27         | 15.62                   | 15.54                       | 5.86                | 37.02                       | 46.00                     | -8.98                 | QP       | HORIZONTAL   |
| 6              | 560.69         | 11.64                   | 18.69                       | 6.17                | 36.50                       | 46.00                     | -9.50                 | QP       | HORIZONTAL   |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

# VERTICAL



| Item<br>(Mark) | Freq.<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|----------------|-------------------------|-----------------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 62.21          | 19.67                   | 10.88                       | 4.11                | 34.66                       | 40.00                     | -5.34                 | QP       | VERTICAL     |
| 2              | 74.92          | 17.78                   | 8.39                        | 4.21                | 30.38                       | 40.00                     | -9.62                 | QP       | VERTICAL     |
| 3              | 169.01         | 21.78                   | 9.11                        | 4.87                | 35.76                       | 43.50                     | -7.74                 | QP       | VERTICAL     |
| 4              | 300.37         | 18.88                   | 13.31                       | 5.52                | 37.71                       | 46.00                     | -8.29                 | QP       | VERTICAL     |
| 5              | 413.27         | 17.20                   | 15.54                       | 5.86                | 38.60                       | 46.00                     | -7.40                 | QP       | VERTICAL     |
| 6              | 560.69         | 14.92                   | 18.69                       | 6.17                | 39.78                       | 46.00                     | -6.22                 | QP       | VERTICAL     |

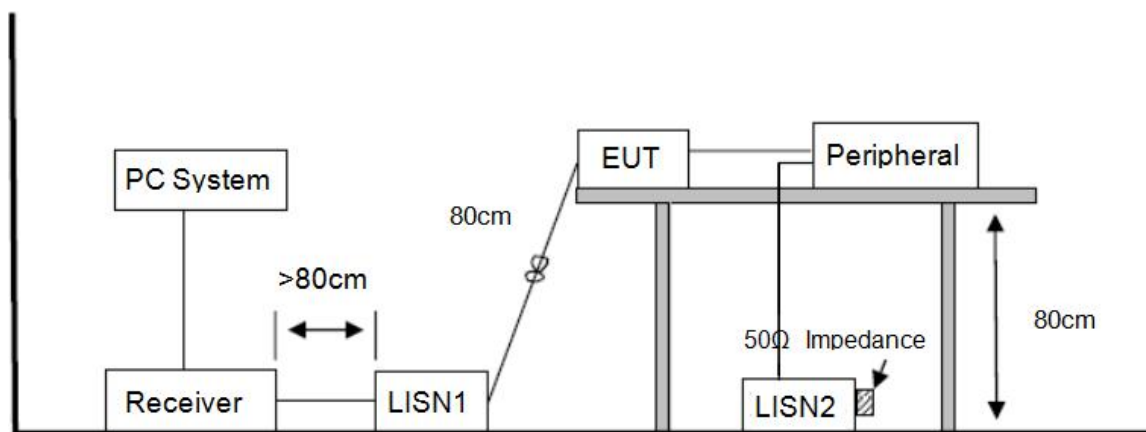
Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

## 8 Power Line Conducted Emission

### 8.1 Block diagram of test setup



### 8.2 Power Line Conducted Emission Limits

| Frequency       | Quasi-Peak Level<br>dB( $\mu$ V) | Average Level<br>dB( $\mu$ V) |
|-----------------|----------------------------------|-------------------------------|
| 150kHz ~ 500kHz | 66 ~ 56*                         | 56 ~ 46*                      |
| 500kHz ~ 5MHz   | 56                               | 46                            |
| 5MHz ~ 30MHz    | 60                               | 50                            |

Note 1: \* Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.



### **8.3 Test Procedure**

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.4 and test equipment as described in clause 102 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI

C63.10. All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes. During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.4 were scanned during the preliminary test. After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The bandwidth of test receiver is set at 9 KHz.

### **8.4 Test Result**

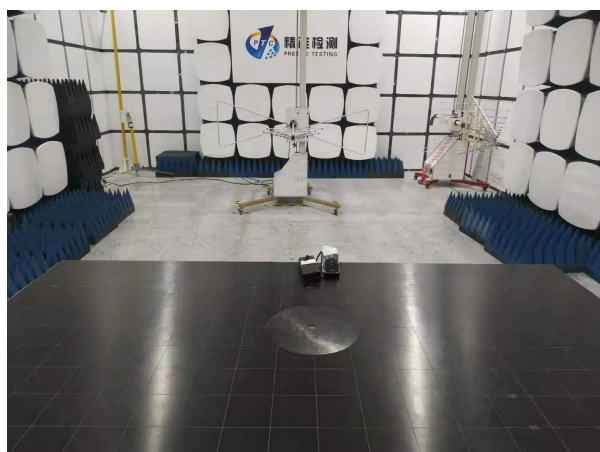
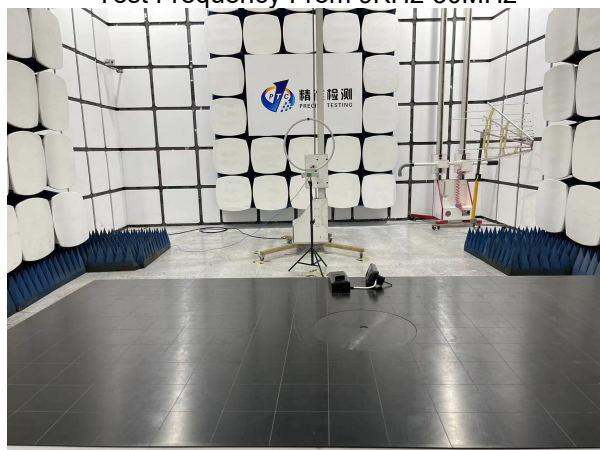
The EUT was power by DC 6V (dry battery 1.5V \* 4pcs), no need required.

## **9 Antenna Requirements**

For intentional device, according to FCC 47 CFR Section 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.

## 10 Test Setup

Radiated Spurious Emissions  
Test Frequency From 9KHz-30MHz



## 11 EUT Photos

Please reference Report No.: PTC21072800901E-FC01.

\*\*\*\*\*END OF REPORT\*\*\*\*\*