



Report No.: TW2209043E

File Reference No.: 2022-09-16

Applicant: Ningbo Allstar O&E Technology Co.,Ltd

Product: Wireless charger

Model No.: AST-WR193

Trademark: N/A

Test Standards: FCC Part 15 Subpart C

Test Result: It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4&FCC Part 15 Subpart C, for the evaluation of electromagnetic compatibility

Approved By

A handwritten signature in black ink that reads "Terry Tang".

Terry Tang

Manager

Dated: September 16, 2022

**Results appearing herein relate only to the sample tested**

**The technical reports is issued errors and omissions exempt and is subject to withdrawal at**

**SHENZHEN TIMEWAY TESTING LABORATORIES**

**Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China**

**Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com**



## Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

### **CNAS-LAB Code: L2292**

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of testing Laboratories.

### **FCC-Registration No.: 744189**

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 744189.

### **Industry Canada (IC) —Registration No.:5205A**

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

### **A2LA (Certification Number:5013.01)**

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



## Test Report Conclusion

### Content

|            |   |    |
|------------|---|----|
| <b>1.0</b> | <b>General Details</b>                    | 4  |
| 1.1        | Test Lab Details                          | 4  |
| 1.2        | Applicant Details                         | 4  |
| 1.3        | Description of EUT                        | 4  |
| 1.4        | Submitted Sample                          | 5  |
| 1.5        | Test Duration                             | 5  |
| 1.6        | Test Uncertainty                          | 5  |
| 1.7        | Test By                                   | 5  |
| <b>2.0</b> | <b>List of Measurement Equipment</b>      | 6  |
| <b>3.0</b> | <b>Technical Details</b>                  | 7  |
| 3.1        | Summary of Test Results                   | 7  |
| 3.2        | Test Standards                            | 7  |
| <b>4.0</b> | <b>EUT Modification</b>                   | 7  |
| <b>5.0</b> | <b>Power Line Conducted Emission Test</b> | 8  |
| 5.1        | Schematics of the Test                    | 8  |
| 5.2        | Test Method and Test Procedure            | 8  |
| 5.3        | Configuration of the EUT                  | 8  |
| <b>5.4</b> | <b>EUT Operating Condition</b>            | 9  |
| <b>5.5</b> | <b>Conducted Emission Limit</b>           | 9  |
| <b>5.6</b> | <b>Test Result</b>                        | 9  |
| <b>6.0</b> | <b>Radiated Emission test</b>             | 12 |
| 6.1        | Test Method and Test Procedure            | 12 |
| 6.2        | Configuration of the EUT                  | 13 |
| 6.3        | EUT Operation Condition                   | 13 |
| 6.4        | Radiated Emission Limit                   | 13 |
| 6.5        | Test Result                               | 14 |
| 7.0        | 20dB Bandwidth Test                       | 18 |
| 8.0        | Antenna Requirement                       | 20 |
| 9.0        | FCC Label                                 | 21 |
| 10.0       | Photo of Testing                          | 22 |

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



## 1.0 General Details

### 1.1 Test Lab Details

Name: SHENZHEN TIMEWAY TESTING LABORATORIES.  
Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China  
Telephone: +86 755 83448688  
Fax: +86 755 83442996  
Site on File with the Federal Communications Commission – United States  
Registration Number: 744189  
For 3m Anechoic Chamber

### 1.2 Applicant Details

Applicant: Ningbo Allstar O&E Technology Co.,Ltd  
Address: No. 19 Huijin Road, Luotuo Street, Zhenhai, Ningbo, China  
Telephone: 86307000  
Fax: --

### 1.3 Description of EUT

Product: Wireless charger  
Manufacturer: Ningbo Allstar O&E Technology Co.,Ltd  
Address: No. 19 Huijin Road, Luotuo Street, Zhenhai, Ningbo, China  
Trademark: N/A  
Model Number: AST-WR193  
Additional Model Name: N/A  
Additional Trade Name: N/A  
Rating: Input: DC5V/1.5A; Wireless Output: DC5V/ 1A.(5W),  
Hardware Version: AST-WR193  
Software Version: RHX9620S  
Serial No.: M000029791  
Operation Frequency: See below table

| Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|---------|-----------------|---------|-----------------|
| 01      | 0.1115          | 06      | 0.140           | 11      | 0.165           | 16      | 0.190           |
| 02      | 0.120           | 07      | 0.145           | 12      | 0.170           | 17      | 0.195           |
| 03      | 0.125           | 08      | 0.150           | 13      | 0.175           | 18      | 0.200           |

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



|              |       |                 |       |    |       |    |       |  |  |
|--------------|-------|-----------------|-------|----|-------|----|-------|--|--|
| 04           | 0.130 | 09              | 0.155 | 14 | 0.180 | 19 | 0.205 |  |  |
| 05           | 0.135 | 10              | 0.160 | 15 | 0.185 |    |       |  |  |
| Test channel |       | Frequency (MHz) |       |    |       |    |       |  |  |
| CH13         |       | 0.175 MHz       |       |    |       |    |       |  |  |

Modulation Type: MSK

Antenna Designation Inductive Loop Antenna with gain 0dBi Max

## 1.4 Submitted Sample

2 Samples

## 1.5 Test Duration

2022-09-05 to 2022-09-16

## 1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions below 9kHz-30MHz Uncertainty =4.3dB

Radiated Emissions below 30MHz-1GHz Uncertainty =4.7dB

Radiated Emissions above 1GHz Uncertainty =6.0dB

Conducted Power Uncertainty =6.0dB

Occupied Channel Bandwidth Uncertainty =5%

Note: 1. The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

2. The measurement uncertainty is not applied to the test results

## 1.7 Test Engineer

The sample tested by

A handwritten signature in black ink that reads "Andy Xing".

Print Name: Andy Xing

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



## 2.0 Test Equipment

| Instrument Type    | Manufacturer | Model            | Serial No.   | Date of Cal. | Due Date   |
|--------------------|--------------|------------------|--------------|--------------|------------|
| ESPI Test Receiver | R&S          | ESPI 3           | 100379       | 2022-07-15   | 2023-07-14 |
| LISN               | R&S          | EZH3-Z5          | 100294       | 2022-07-18   | 2023-07-17 |
| LISN               | R&S          | EZH3-Z5          | 100253       | 2022-07-18   | 2023-07-17 |
| Impuls-Begrenzer   | R&S          | ESH3-Z2          | 100281       | 2022-07-18   | 2023-07-17 |
| Loop Antenna       | EMCO         | 6507             | 00078608     | 2022-07-18   | 2025-07-17 |
| Spectrum           | R&S          | FSIQ26           | 100292       | 2022-07-15   | 2023-07-14 |
| Horn Antenna       | A-INFO       | LB-180400-KF     | J211060660   | 2022-07-18   | 2025-07-17 |
| Horn Antenna       | R&S          | BBHA 9120D       | 9120D-631    | 2022-07-18   | 2024-07-17 |
| Power meter        | Anritsu      | ML2487A          | 6K00003613   | 2022-07-18   | 2023-07-17 |
| Power sensor       | Anritsu      | MA2491A          | 32263        | 2022-07-18   | 2023-07-17 |
| Bilog Antenna      | Schwarebeck  | VULB9163         | 9163/340     | 2022-07-18   | 2025-07-17 |
| 9*6*6 Anechoic     | --           | --               | N/A          | 2022-07-26   | 2025-07-25 |
| EMI Test Receiver  | RS           | ESVB             | 826156/011   | 2022-07-15   | 2023-07-14 |
| EMI Test Receiver  | RS           | ESCS 30          | 834115/006   | 2022-07-15   | 2023-07-14 |
| Spectrum           | HP/Agilent   | E4407B           | MY50441392   | 2022-07-15   | 2023-07-14 |
| Spectrum           | RS           | FSP              | 1164.4391.38 | 2022-07-15   | 2023-07-14 |
| RF Cable           | Zhengdi      | ZT26-NJ-NJ-8M/FA | --           | 2022-07-15   | 2023-07-14 |
| RF Cable           | Zhengdi      | 7m               | --           | 2022-07-15   | 2023-07-14 |
| Pre-Amplifier      | Schwarebeck  | BBV9743          | #218         | 2022-07-15   | 2023-07-14 |
| Pre-Amplifier      | HP/Agilent   | 8449B            | 3008A00160   | 2022-07-15   | 2023-07-14 |
| LISN               | SCHAFFNER    | NNB42            | 00012        | 2022-08-18   | 2023-07-17 |

### 2.2 Automation Test Software

#### For Conducted Emission Test

| Name   | Version           |
|--------|-------------------|
| EZ-EMC | Ver.EMC-CON 3A1.1 |

#### For Radiated Emissions

| Name  | Version |
|---|---------|
| EMI Test Software BL410-EV18.91                 | V18.905 |
| EMI Test Software BL410-EV18.806 High Frequency | V18.06  |

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



### 3.0 Technical Details

#### 3.1 Summary of test results

**The EUT has been tested according to the following specifications:**

| Standard                              | Test Type               | Result      | Notes     |
|---------------------------------------|-------------------------|-------------|-----------|
| FCC Part 15, Paragraph 15.203         | Antenna requirements    | <b>Pass</b> | Compliant |
| FCC Part 15, Paragraph 15.207         | Conducted Emission Test | <b>Pass</b> | Compliant |
| FCC Part 15, Paragraph 15.209 (a) (f) | General Requirement     | <b>Pass</b> | Compliant |
| FCC Part 15, Paragraph 15.215         | 20dB Bandwidth Testing  | <b>Pass</b> | Compliant |

#### 3.2 Test Standards

**FCC Part 15 Subpart C , ANSI C63.4 :2014 and ANSI C63.10 :2013**

#### 4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES

The report refers only to the sample tested and does not apply to the bulk.

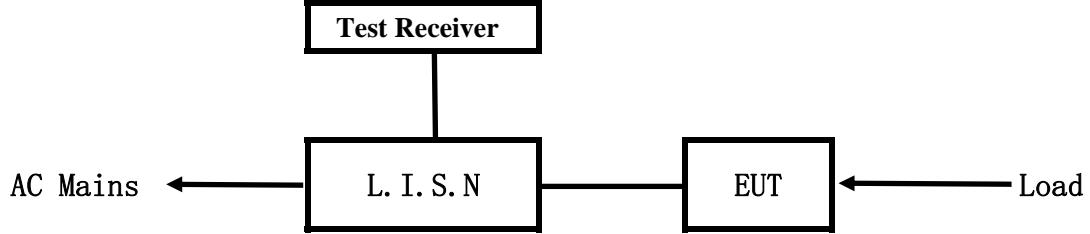
This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



## 5. Power Line Conducted Emission Test

### 5.1 Schematics of the test

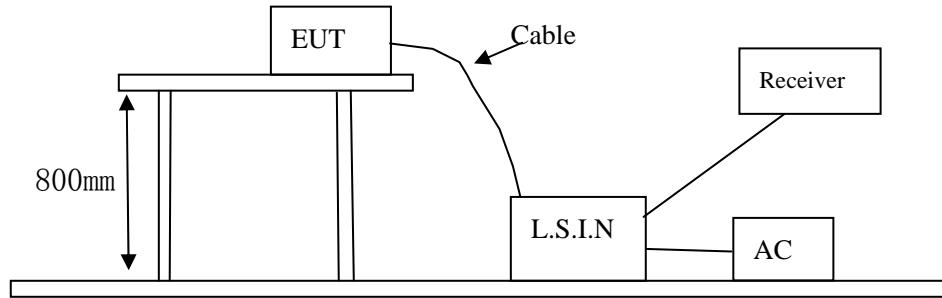


EUT: Equipment Under Test

### 5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10 -2013.

Block diagram of Test setup



### 5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2014. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

#### A. EUT

| Device           | Manufacturer                          | Model     | FCC ID          |
|------------------|---------------------------------------|-----------|-----------------|
| Wireless charger | Ningbo Allstar O&E Technology Co.,Ltd | AST-WR193 | 2AQJK-AST-WR193 |

#### B. Internal Device

| Device | Manufacturer | Model | FCC ID/DOC |
|--------|--------------|-------|------------|
| N/A    |              |       |            |

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



### C. Peripherals

| Device       | Manufacturer | Model  | Rating  |
|--------------|--------------|--------|---|
| Power Supply | Chenyang     | UP0920 | Input: 100-240V~, 50-60Hz, 0.5A;<br>Output: DC5V/3A or DC9V, 2A |

#### 5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10 -2013.

- A Setup the EUT and simulators as shown on follow
- B Enable AF signal and confirm EUT active to normal condition

#### 5.5 Power line conducted Emission Limit according to Paragraph 15.207

| Frequency<br>(MHz) | Limits (dB $\mu$ V) |               |
|--------------------|---------------------|---------------|
|                    | Quasi-peak Level    | Average Level |
| 0.15 ~ 0.50        | 66.0~56.0*          | 56.0~46.0*    |
| 0.50 ~ 5.00        | 56.0                | 46.0          |
| 5.00 ~ 30.00       | 60.0                | 50.0          |

Notes: 1. \*Decreasing linearly with logarithm of frequency.  
2. The tighter limit shall apply at the transition frequencies

#### 5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz. (The average detector is necessary when the Quasi-peak emission level beyond the average Limit.)

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



**A: Conducted Emission on Live Terminal (150kHz to 30MHz)**

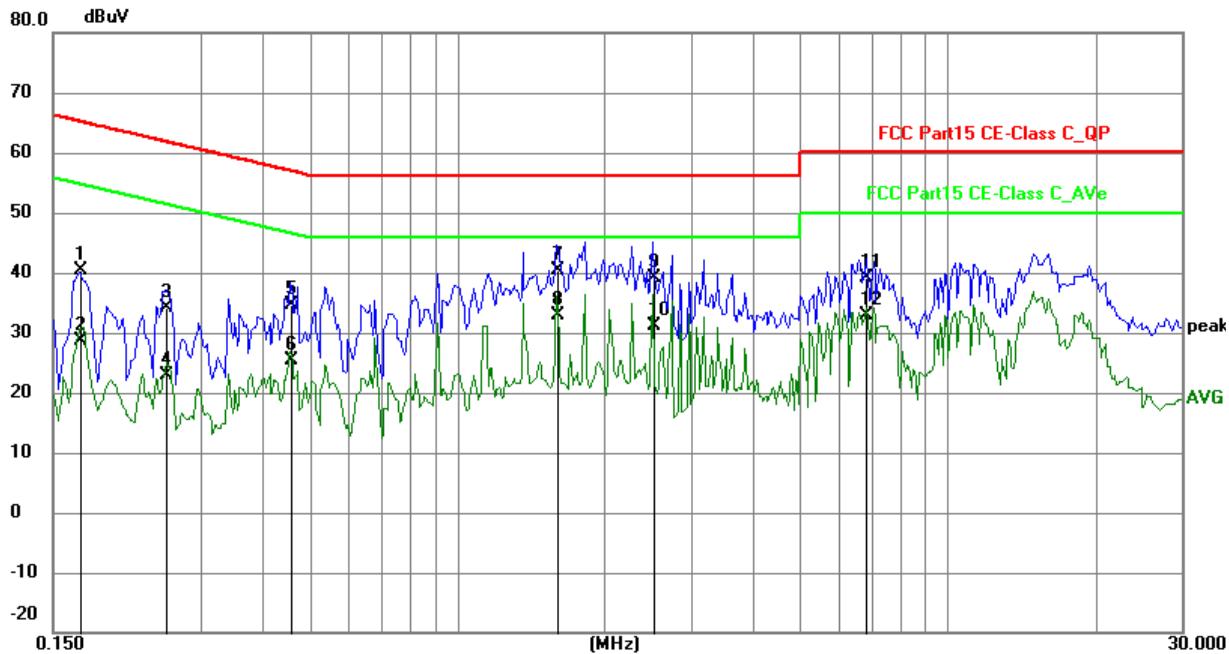
**EUT Operating Environment**

Temperature: 25°C      Humidity: 75%RH      Atmospheric Pressure: 101 kPa

**EUT set Condition: Keep Transmitting**

**Results: Pass**

Please refer to following diagram for individual



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | P/F |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|-----|
| 1   | 0.1695          | 30.70          | 9.77        | 40.47        | 64.98        | -24.51      | QP       | P   |
| 2   | 0.1695          | 18.85          | 9.77        | 28.62        | 54.98        | -26.36      | AVG      | P   |
| 3   | 0.2553          | 24.38          | 9.75        | 34.13        | 61.58        | -27.45      | QP       | P   |
| 4   | 0.2553          | 13.04          | 9.75        | 22.79        | 51.58        | -28.79      | AVG      | P   |
| 5   | 0.4581          | 24.77          | 9.77        | 34.54        | 56.73        | -22.19      | QP       | P   |
| 6   | 0.4581          | 15.49          | 9.77        | 25.26        | 46.73        | -21.47      | AVG      | P   |
| 7   | 1.5969          | 30.54          | 9.80        | 40.34        | 56.00        | -15.66      | QP       | P   |
| 8   | 1.5969          | 23.20          | 9.80        | 33.00        | 46.00        | -13.00      | AVG      | P   |
| 9   | 2.5095          | 29.43          | 9.82        | 39.25        | 56.00        | -16.75      | QP       | P   |
| 10  | 2.5095          | 21.29          | 9.82        | 31.11        | 46.00        | -14.89      | AVG      | P   |
| 11  | 6.8337          | 29.17          | 10.00       | 39.17        | 60.00        | -20.83      | QP       | P   |
| 12  | 6.8337          | 22.96          | 10.00       | 32.96        | 50.00        | -17.04      | AVG      | P   |

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



**B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)**

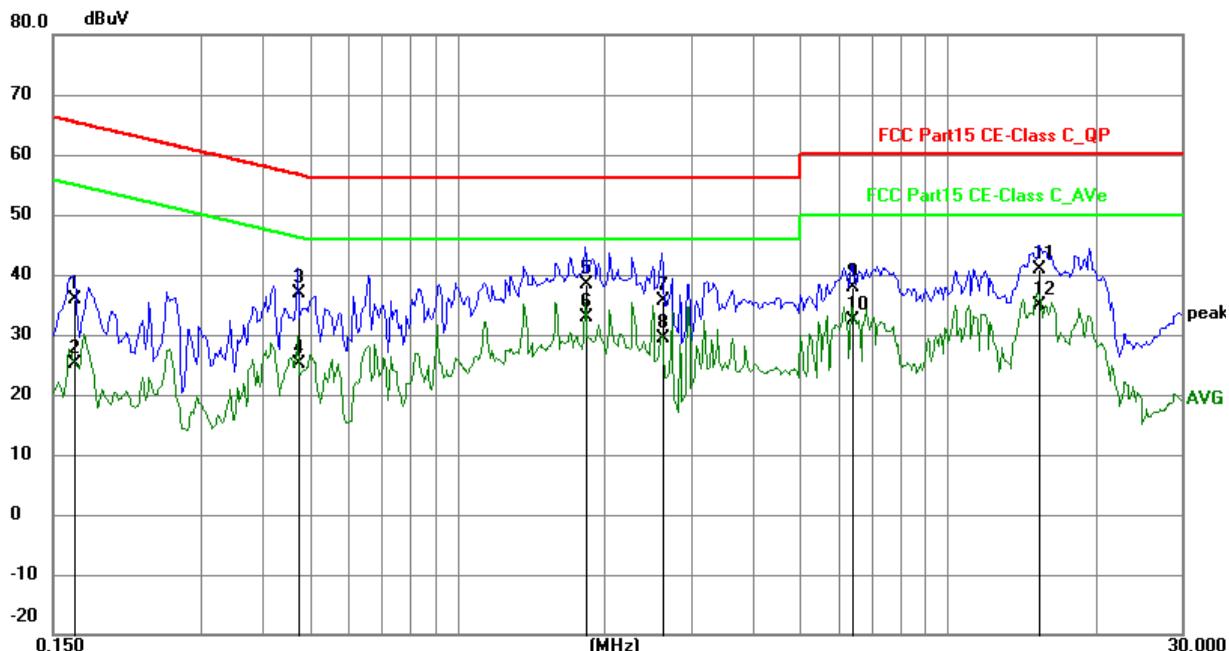
**EUT Operating Environment**

Temperature: 25°C      Humidity: 75% RH      Atmospheric Pressure: 101 kPa

**EUT set Condition: Keep Transmitting**

**Results: Pass**

Please refer to following diagram for individual



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | P/F |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|-----|
| 1   | 0.1655          | 26.07          | 9.77        | 35.84        | 65.18        | -29.34      | QP       | P   |
| 2   | 0.1655          | 15.47          | 9.77        | 25.24        | 55.18        | -29.94      | AVG      | P   |
| 3   | 0.4737          | 27.23          | 9.77        | 37.00        | 56.45        | -19.45      | QP       | P   |
| 4   | 0.4737          | 15.48          | 9.77        | 25.25        | 46.45        | -21.20      | AVG      | P   |
| 5   | 1.8192          | 28.63          | 9.80        | 38.43        | 56.00        | -17.57      | QP       | P   |
| 6   | 1.8192          | 23.13          | 9.80        | 32.93        | 46.00        | -13.07      | AVG      | P   |
| 7   | 2.6187          | 25.69          | 9.83        | 35.52        | 56.00        | -20.48      | QP       | P   |
| 8   | 2.6187          | 19.58          | 9.83        | 29.41        | 46.00        | -16.59      | AVG      | P   |
| 9   | 6.3773          | 27.98          | 9.98        | 37.96        | 60.00        | -22.04      | QP       | P   |
| 10  | 6.3773          | 22.46          | 9.98        | 32.44        | 50.00        | -17.56      | AVG      | P   |
| 11  | 15.3786         | 30.59          | 10.40       | 40.99        | 60.00        | -19.01      | QP       | P   |
| 12  | 15.3786         | 24.49          | 10.40       | 34.89        | 50.00        | -15.11      | AVG      | P   |

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



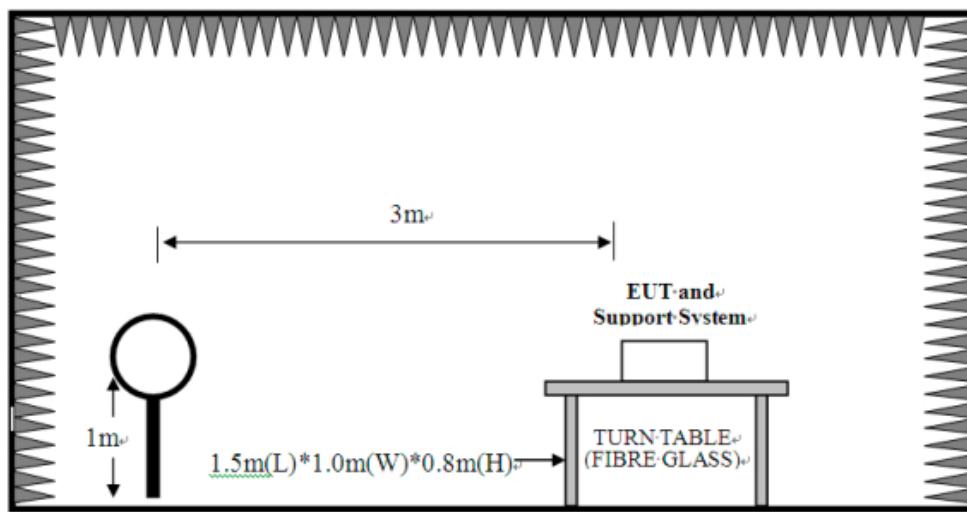
## 6 Radiated Emission Test

### 6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at TIMEWAY EMC Laboratory. This site is on file with the FCC laboratory division, Registration No.744189
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.
- (3) The frequency spectrum from 9 kHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with RBW=120 kHz/VBW=300 kHz; All readings from 9 kHz to 30 MHz are quasi-peak values with RBW=10 kHz/VBW=30 kHz. For the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz Radiated emission test in these three bands are based on measurements employing an average detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
- (6) The antenna polarization: Vertical polarization and Horizontal polarization.

### Block diagram of Test setup

#### 9kHz-30MHz



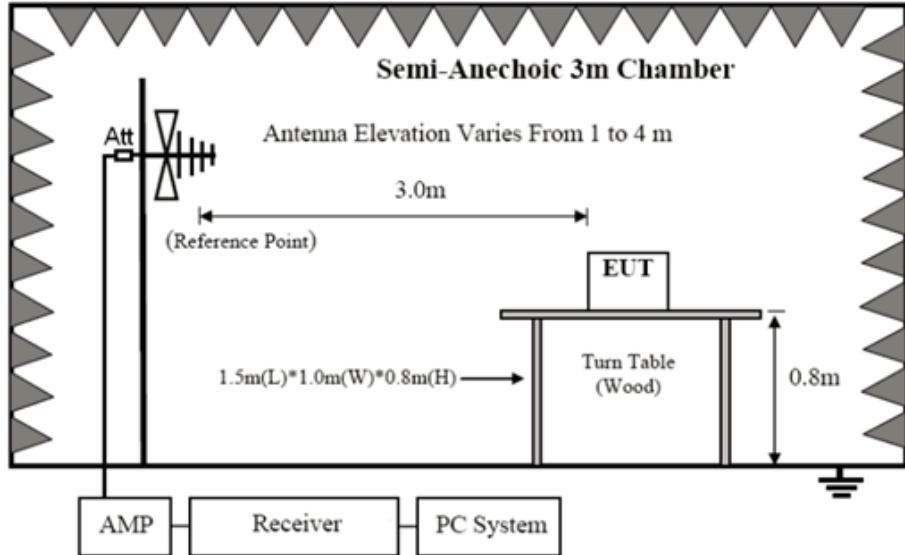
The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



### 30MHz-1000MHz



#### 6.2 Configuration of The EUT

Same as section 5.3 of this report

#### 6.3 EUT Operating Condition

Same as section 5.4 of this report.

#### 6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

#### B. Frequencies in restricted band are compiled to limit on Paragraph 15.209.

##### Limits for frequency below 30MHz

| Frequency Range (MHz) | Distance (m) | Field strength (V/m) |
|-----------------------|--------------|----------------------|
| 0.009-0.490           | 300          | 2400/F(kHz)          |
| 0.490-1.705           | 30           | 24000/F(kHz)         |
| 1.705-30              | 30           | 30                   |

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



#### Limits for frequency above 30MHz

| Frequency Range (MHz) | Distance (m) | Field strength (dB $\mu$ V/m) |
|-----------------------|--------------|-------------------------------|
| 30-88                 | 3            | 40.0                          |
| 88-216                | 3            | 43.5                          |
| 216-960               | 3            | 46.0                          |
| Above 960             | 3            | 54.0                          |

Note:

1. RF Voltage (dB<sub>u</sub>V) = 20 log RF Voltage (uV)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
4. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

#### 6.5 Test result

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



**Measurement data:**

**Note: Limit dBuV/m @3m = Limit dBuV/m @300m+ 80**

**Limit dBuV/m @3m = Limit dBuV/m @30m + 40**

**9 kHz~30 MHz**



| No. | Frequency (MHz) | Reading () | Factor (dB) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|------------|-------------|----------------|----------------|-------------|----------|
| 1   | 0.1753          | 66.56      | 9.77        | 76.33          | 102.68         | -26.35      | peak     |
| 2   | 0.1753          | 54.72      | 9.77        | 64.49          | 102.68         | -38.19      | AVG      |
| 3   | 0.0103          | 48.69      | 10.00       | 58.69          | 127.16         | -68.47      | peak     |
| 4   | 0.0171          | 42.87      | 10.25       | 53.12          | 122.78         | -69.66      | peak     |
| 5   | 0.0333          | 38.97      | 10.11       | 49.08          | 117.03         | -67.95      | peak     |
| 6   | 1.4334          | 26.20      | 9.79        | 35.99          | 64.50          | -28.51      | peak     |
| 7   | 4.5274          | 27.67      | 9.91        | 37.58          | 69.53          | -31.95      | peak     |
| 8   | 22.3125         | 28.61      | 10.82       | 39.43          | 69.59          | -30.16      | peak     |

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



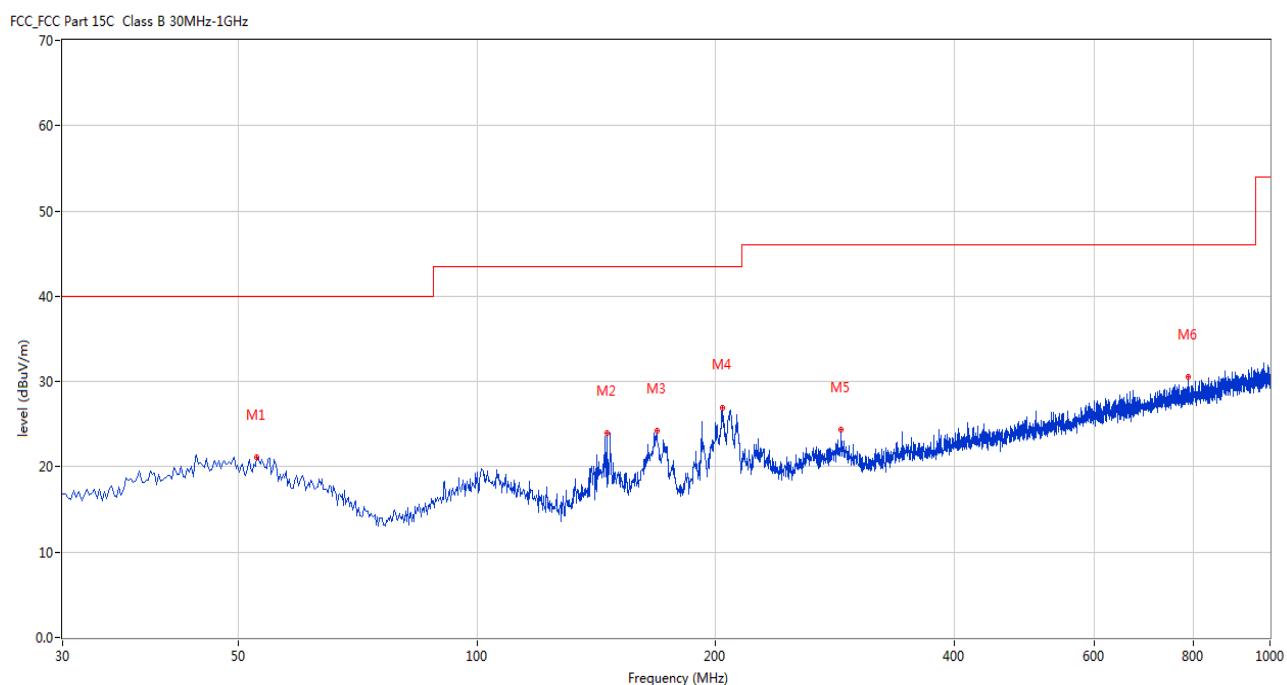
## A. General Radiated Emission Data

### Radiated Emission In Horizontal (30MHz---1000MHz)

EUT set Condition: Keep Transmitting

**Results:** Pass

Please refer to following diagram for individual



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Over Limit (dB) | Detector | Table (o) | Height (cm) | ANT        | Verdict |
|-----|-----------------|------------------|-------------|----------------|-----------------|----------|-----------|-------------|------------|---------|
| 1   | 52.789          | 21.17            | -11.48      | 40.0           | -18.83          | Peak     | 221.00    | 100         | Horizontal | Pass    |
| 2   | 145.886         | 23.91            | -17.30      | 43.5           | -19.59          | Peak     | 179.00    | 200         | Horizontal | Pass    |
| 3   | 168.433         | 24.27            | -16.13      | 43.5           | -19.23          | Peak     | 0.00      | 200         | Horizontal | Pass    |
| 4   | 204.071         | 26.97            | -13.51      | 43.5           | -16.53          | Peak     | 209.00    | 100         | Horizontal | Pass    |
| 5   | 287.956         | 24.41            | -11.27      | 46.0           | -21.59          | Peak     | 351.00    | 100         | Horizontal | Pass    |
| 6   | 788.108         | 30.52            | -3.06       | 46.0           | -15.48          | Peak     | 0.00      | 200         | Horizontal | Pass    |

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



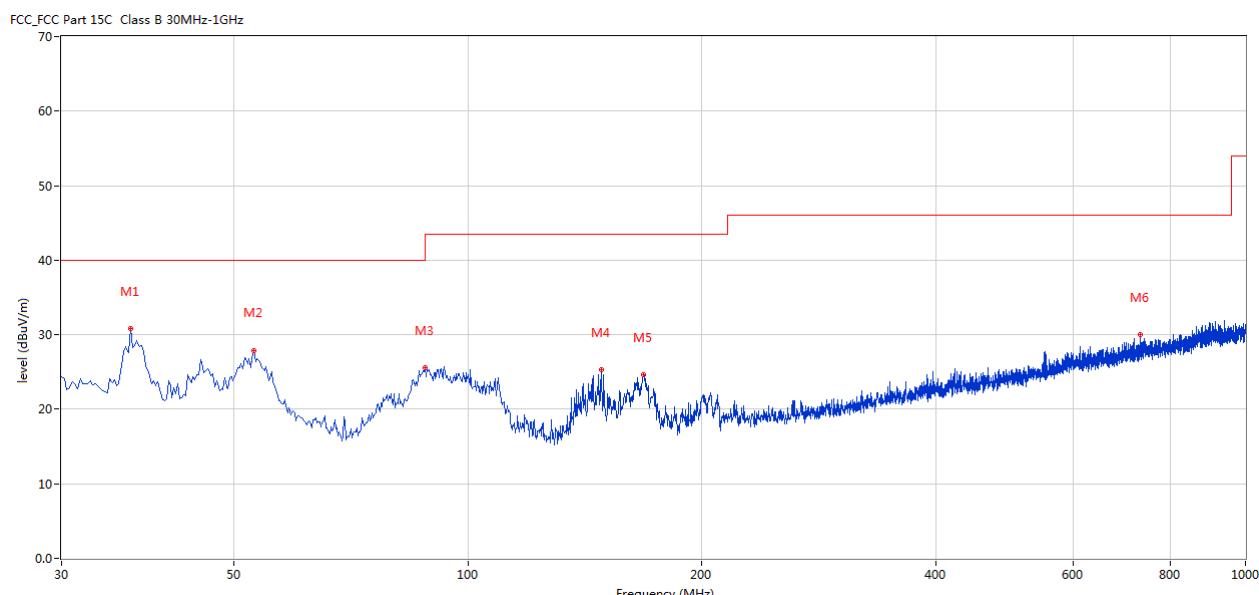
## B. General Radiated Emission Data

### Radiated Emission In Vertical (30MHz---1000MHz)

EUT set Condition: Keep Transmitting

Results: Pass

Please refer to following diagram for individual



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Over Limit (dB) | Detector | Table (o) | Height (cm) | ANT      | Verdict |
|-----|-----------------|------------------|-------------|----------------|-----------------|----------|-----------|-------------|----------|---------|
| 1   | 36.788          | 30.81            | -13.31      | 40.0           | -9.19           | Peak     | 226.00    | 100         | Vertical | Pass    |
| 2   | 53.032          | 27.93            | -11.50      | 40.0           | -12.07          | Peak     | 270.00    | 100         | Vertical | Pass    |
| 3   | 88.185          | 25.62            | -15.59      | 43.5           | -17.88          | Peak     | 112.00    | 100         | Vertical | Pass    |
| 4   | 148.310         | 25.24            | -17.16      | 43.5           | -18.26          | Peak     | 119.00    | 100         | Vertical | Pass    |
| 5   | 168.190         | 24.68            | -16.14      | 43.5           | -18.82          | Peak     | 62.00     | 100         | Vertical | Pass    |
| 6   | 731.862         | 30.01            | -3.67       | 46.0           | -15.99          | Peak     | 0.00      | 200         | Vertical | Pass    |

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



## 7.0 20dB Bandwidth Testing

### 7.1 Test Procedure

With the EUT's antenna attached, the EUT's 20dB Bandwidth was received by the test antenna which was connected to the spectrum analyzer with the START and STOP frequencies set to the EUT's operation band.

### 7.3 Test Data

| Frequency (MHz) | 20dB Bandwidth Emission (kHz) | Limit (kHz) | Result |
|-----------------|-------------------------------|-------------|--------|
| 0.175           | 3.382                         | --          | Pass   |

Refer to attached plots:

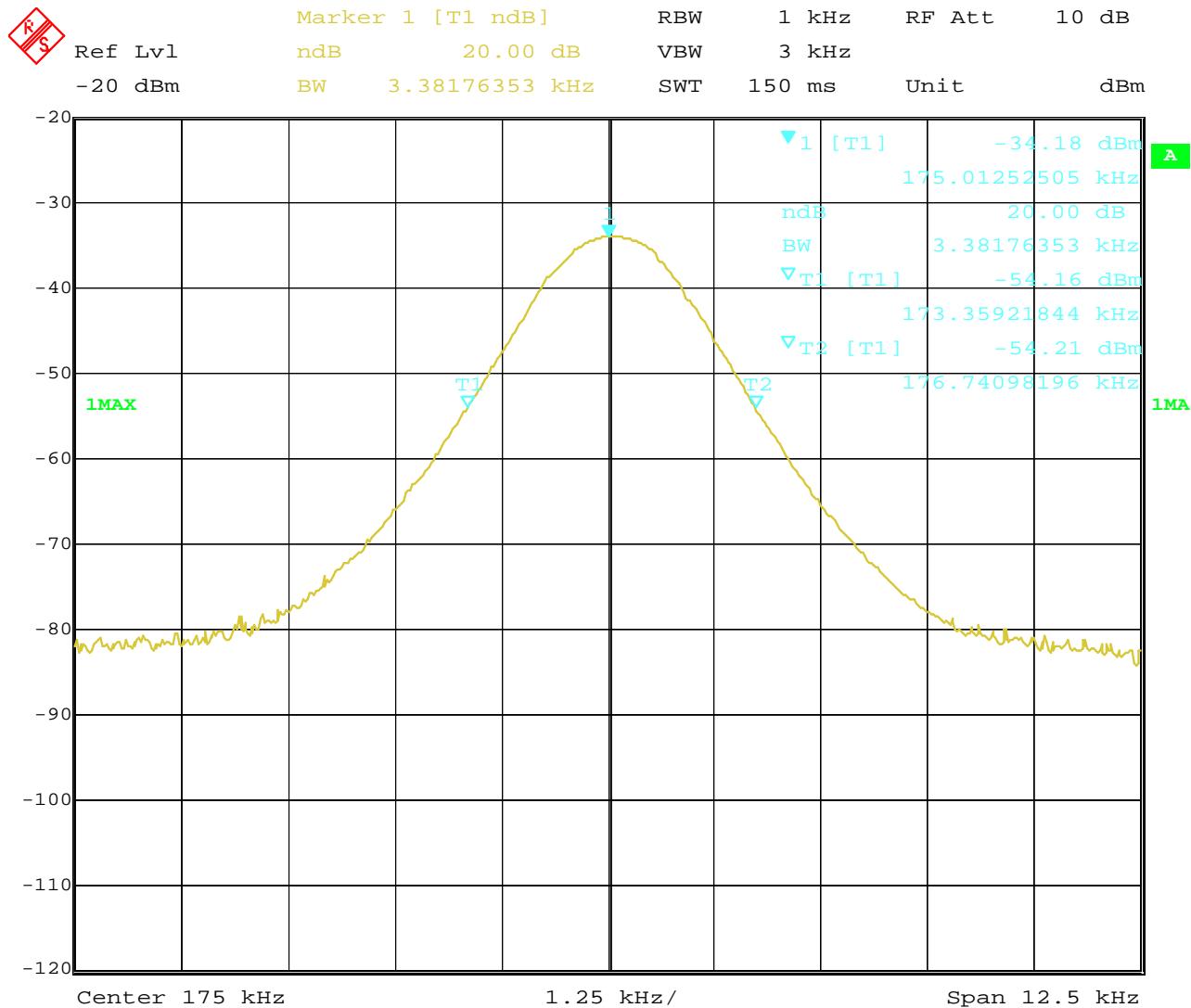
The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES to his customer, Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



20dB Bandwidth



Date: 16.SEP.2022 10:38:42

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES to his customer, Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



## 8.0 Antenna Requirement

### 8.1 Standard Applicable

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. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

### 8.2 Antenna Connected constructions

The antenna is Inductive Loop Antenna. The antenna gain is 0dBi. So it meets the requirement of 15.203

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



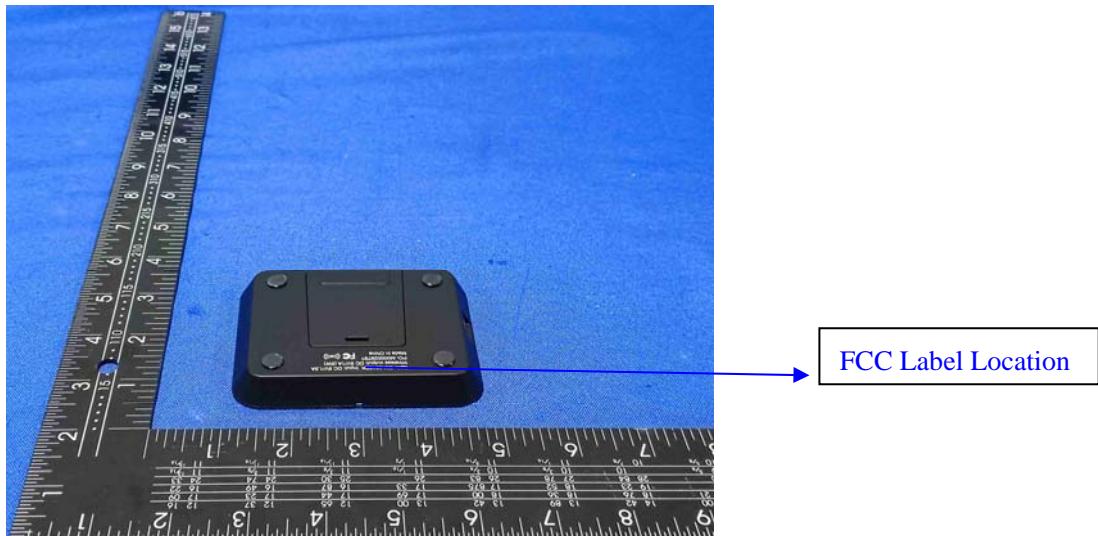
## 9.0 FCC ID Label

### FCC ID: 2AQJK-AST-WR193

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and  
(2) this device must accept any interference received, including interference that may cause undesired operation

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

#### Mark Location:



The report refers only to the sample tested and does not apply to the bulk.

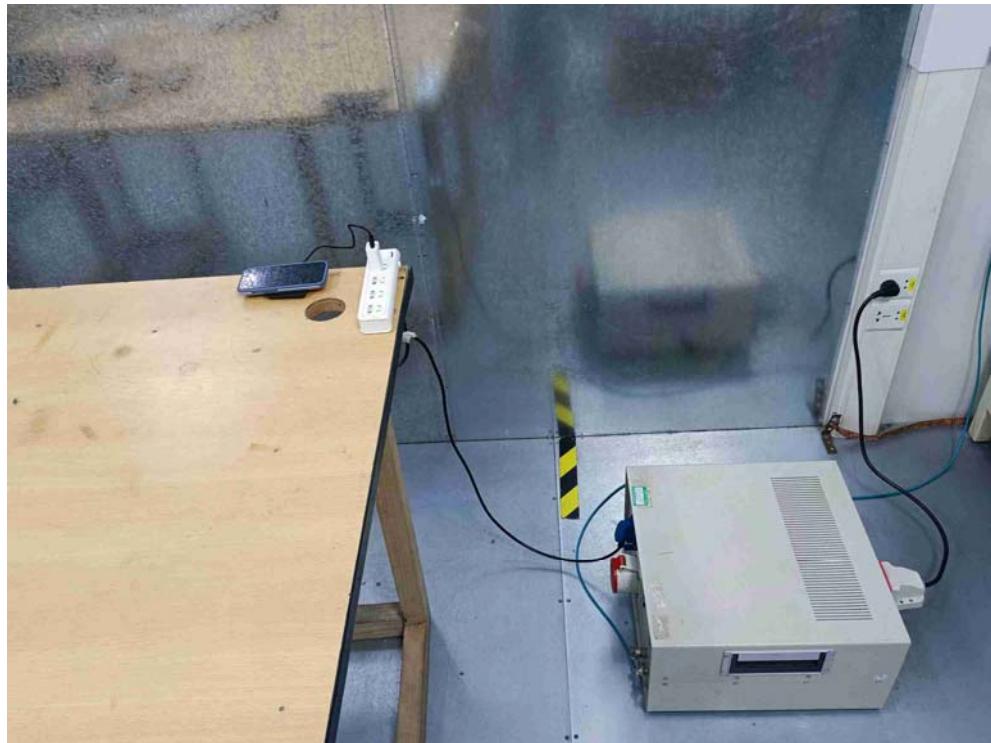
This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



## 10.0. Photo of testing

### 10.1 Conducted test View



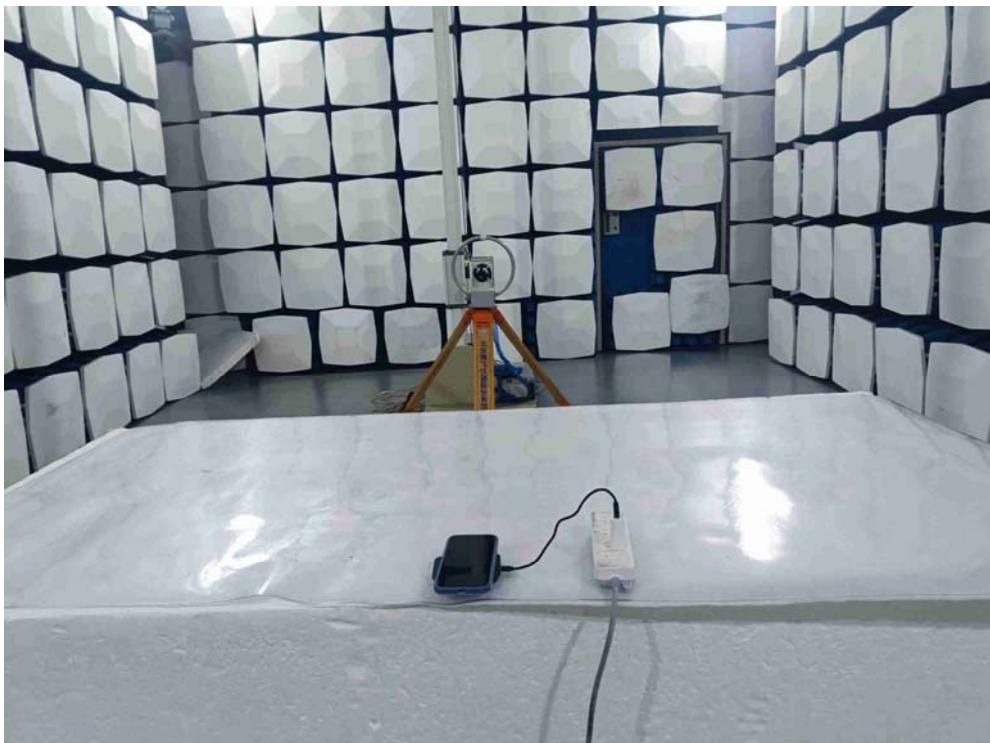
The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



10.2 Radiated emission test view



The report refers only to the sample tested and does not apply to the bulk.

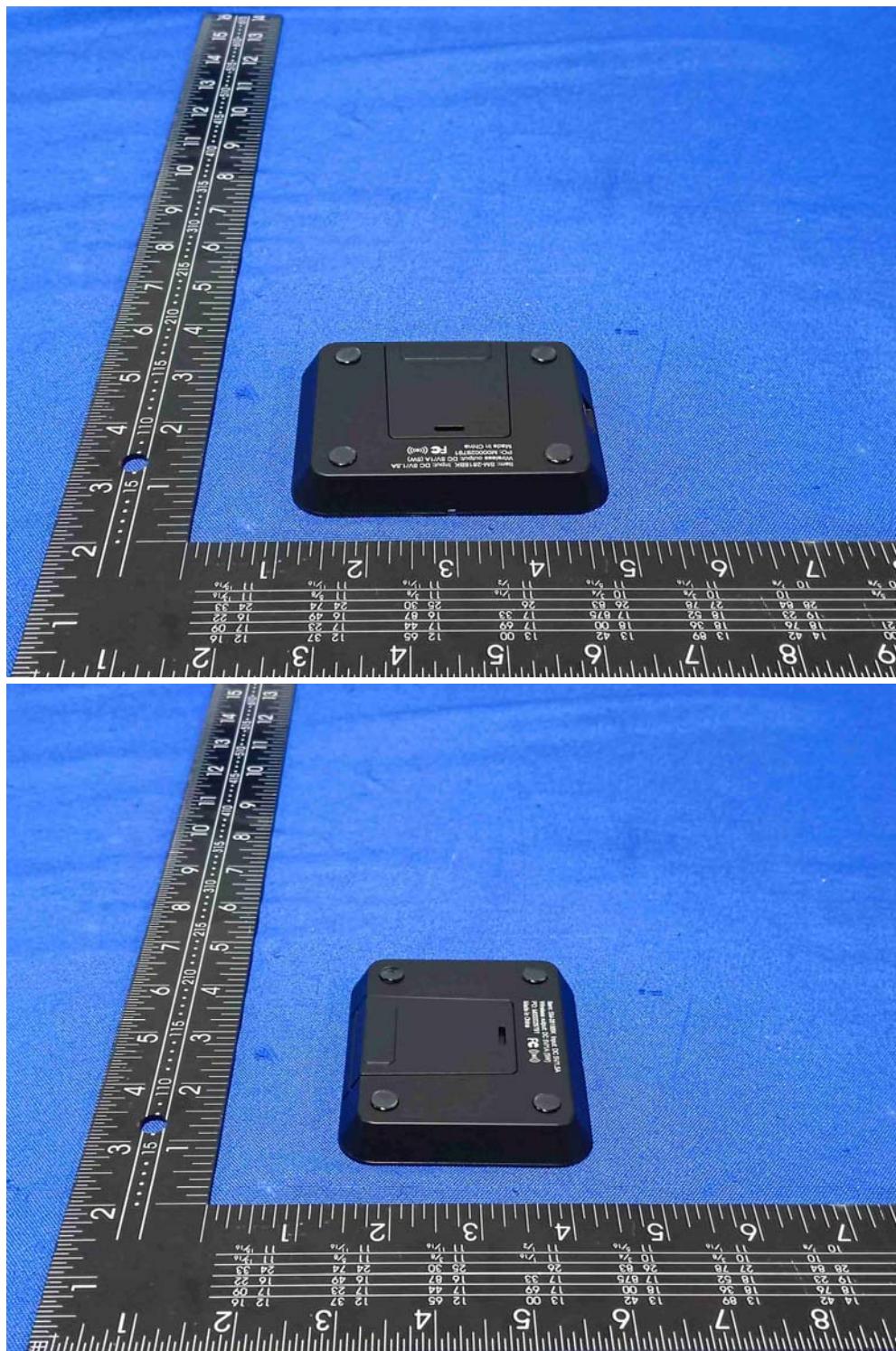
This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Photographs – EUT

Outside View



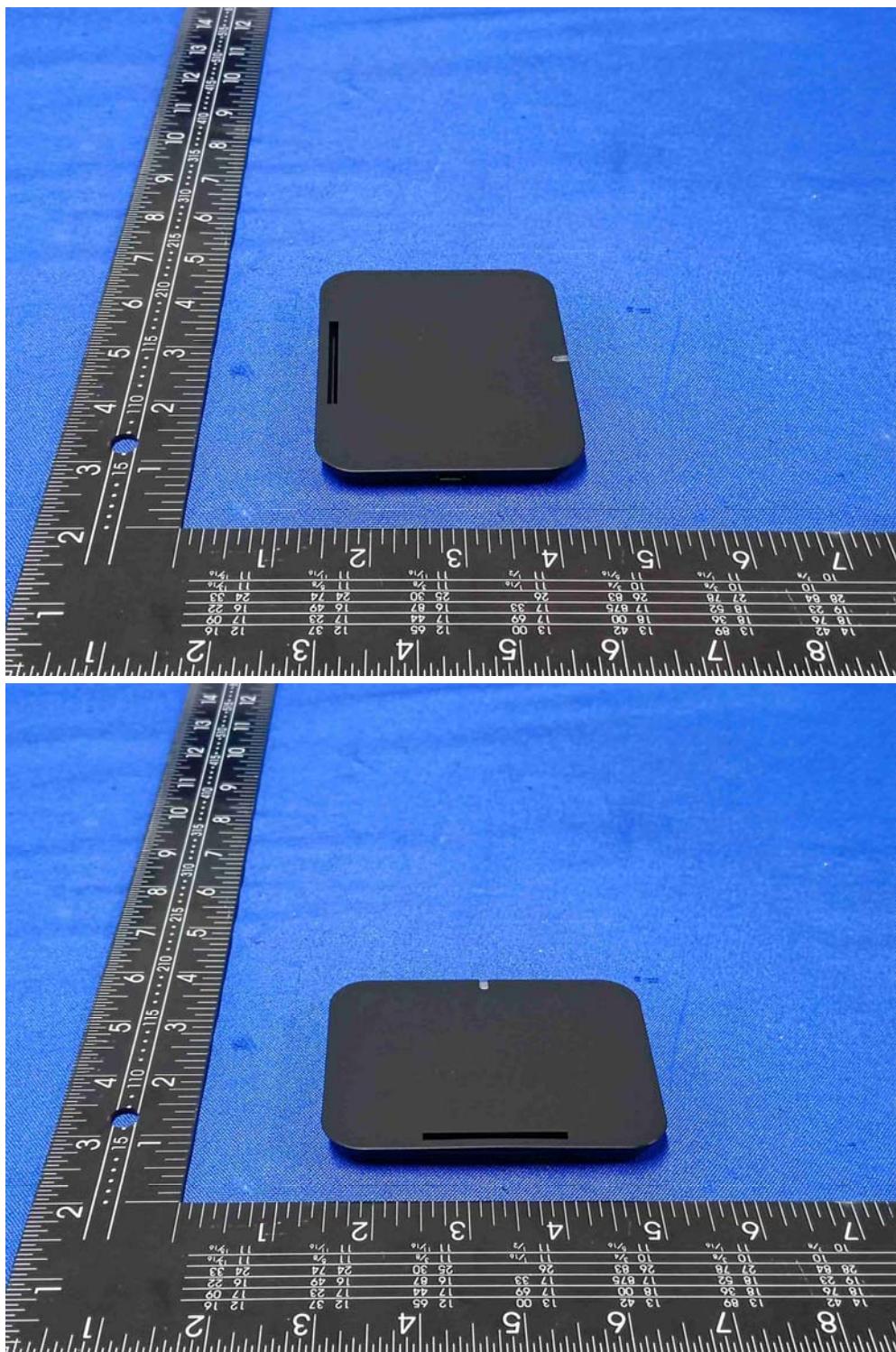
The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Outside View



The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Outside View



The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Outside View



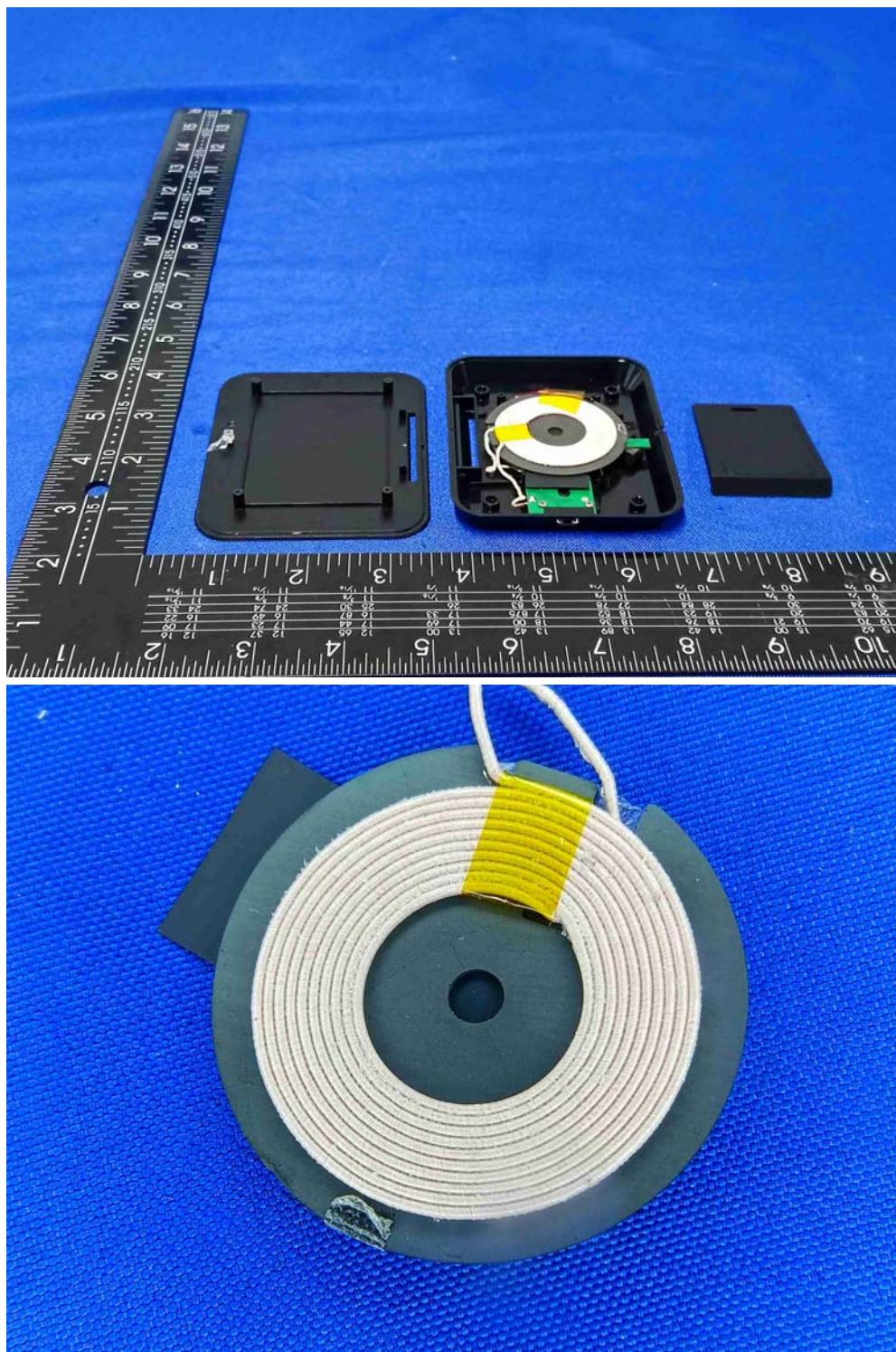
The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Inside View



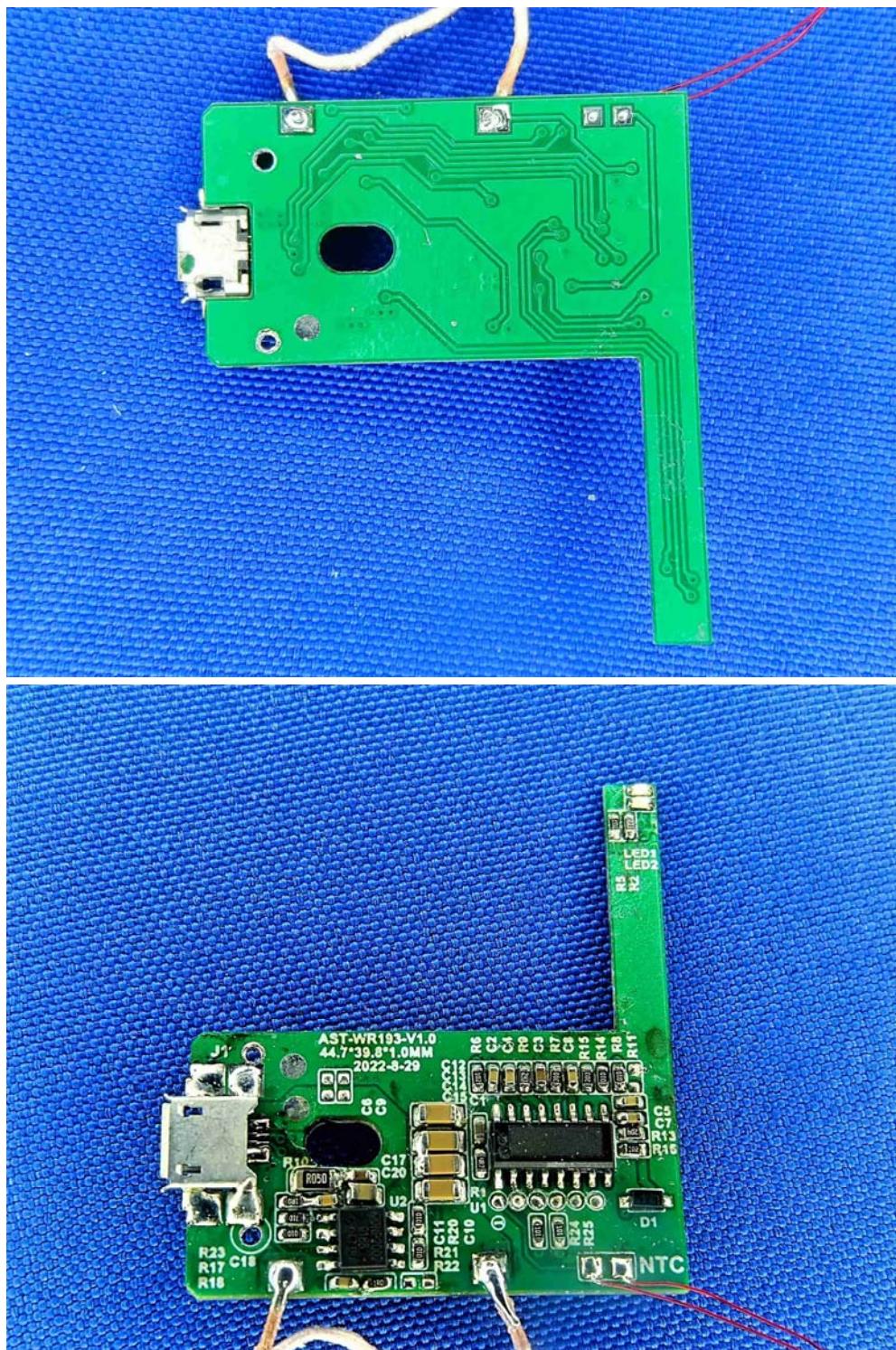
The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Inside View



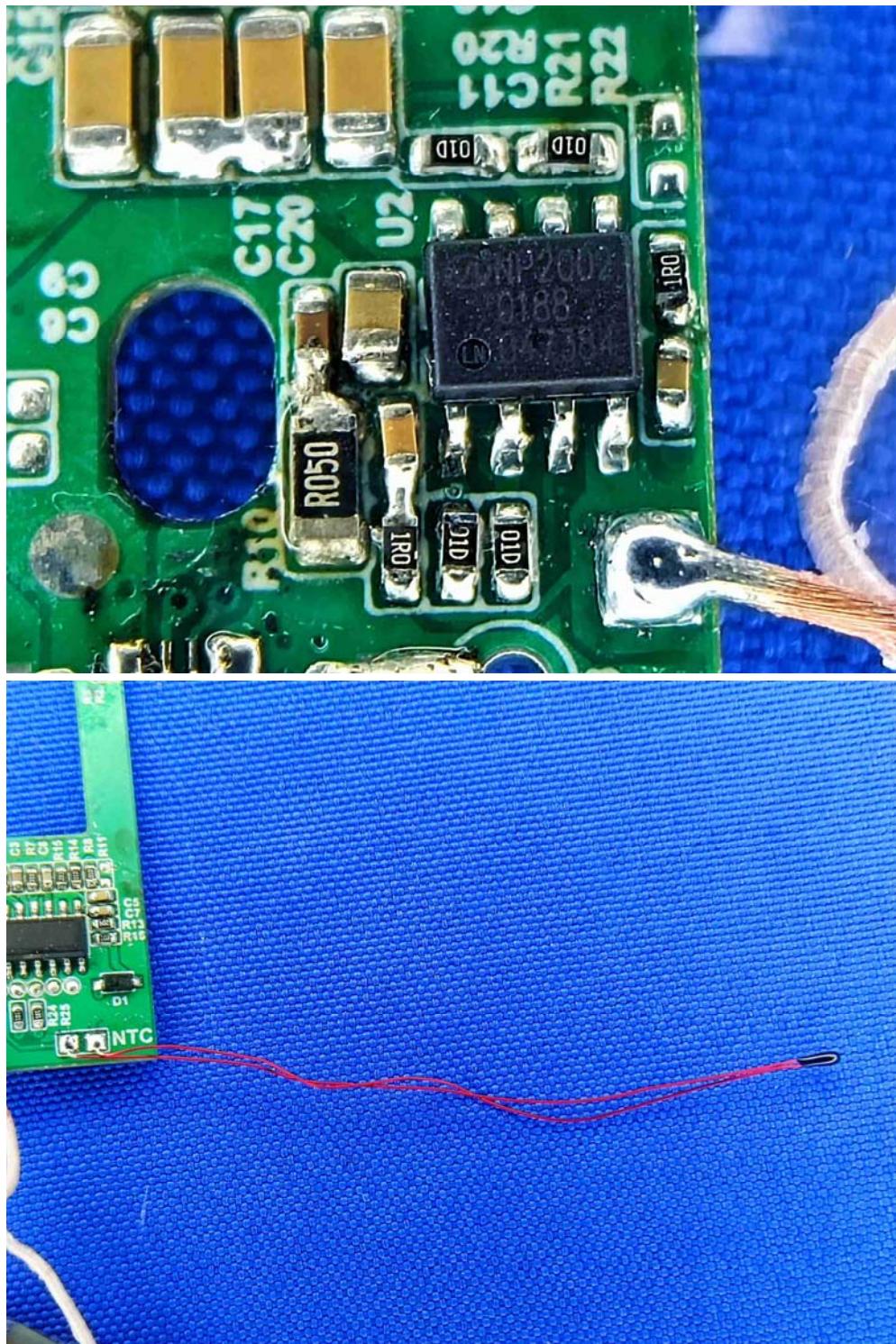
The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Inside View



**-End of the report-**

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.