



CE-EMC TEST REPORT

| | |
|-----------------|---|
| Prepared For: | |
| Product Name: | Wireless charger |
| Trade Mark: | N/A |
| Model: | LWC-F05, LWC-F01, LWC-F02, LWC-F03, LWC-F04, LWC-F06, LWC-F07, LWC-F08, LWC-F09 |
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| Receipt Date: | Dec., 16, 2017 |
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TEST REPORT DECLARATION

| | | |
|-----------------|---|--|
| Applicant | : | |
| Address | : | |
| EUT Description | : | Wireless charger |
| Model Number | : | LWC-F05, LWC-F01, LWC-F02, LWC-F03, LWC-F04, LWC-F06, LWC-F07, LWC-F08, LWC-F09 |

Test Standards:

EN55032:2015/AC:2016-07

EN55024:2010/A1:2015

EN61000-4-2:2009, EN61000-4-3:2006+A2:2010

The EUT described above is tested by Shenzhen United Testing Technology Co., Ltd. EMC Laboratory to determine the maximum emissions from the EUT and ensure the EUT to be compliance with the immunity requirements of the EUT. Shenzhen United Testing Technology Co., Ltd. EMC Laboratory is assumed full responsibility for the accuracy of the test results. Also, this report shows that the EUT technically complies with the 2014/30/EU directive and its amendment requirements. The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

Prepared by:


Kahn yang/Editor

Reviewer:


Shenwin Qin/Supervisor

Approved & Authorized Signer:


Liuze/Manager

1. TEST RESULTS SUMMARY

Table 1 Test Results Summary

| Test Items | Test Results |
|---------------------------------------|--------------|
| Radiated Emission | PASS |
| Electrostatic Discharge Test | PASS |
| RF Field Strength Susceptibility Test | PASS |

2. GENERAL INFORMATION

2.1. Report information

2.1.1.This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that UNI approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that UNI in any way guarantees the later performance of the product/equipment.

2.1.2.The sample/s mentioned in this report is/are supplied by Applicant, UNI therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

2.1.3.Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through UNI, unless the applicant has authorized UNI in writing to do so.

2.2. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

| Test | Parameters | Expanded Uncertainty (U_{Lab}) | Expanded Uncertainty (U_{Cispr}) |
|-----------------------------------|---|------------------------------------|--------------------------------------|
| Conducted Emission | Level Accuracy: 9kHz~150kHz 150kHz to 30MHz | ± 3.42 dB ± 3.42 dB | ± 4.0 dB ± 3.6 dB |
| Radiated Emission | Level Accuracy: 9kHz to 30 MHz | ± 4.60 dB | N/A |
| Radiated Emission | Level Accuracy: 30MHz to 1000 MHz | ± 4.40 dB | ± 5.2 dB |
| Radiated Emission | Level Accuracy: Above 1000MHz | ± 4.20 dB | N/A |
| Mains Harmonic | Voltage | $\pm 3.11\%$ | N/A |
| Voltage Fluctuations & Flicker | Voltage | $\pm 3.25\%$ | N/A |

3. PRODUCT DESCRIPTION

3.1. EUT Description

| | | |
|--------------|---|------------------|
| Description | : | Wireless charger |
| Applicant | : | |
| Manufacturer | : | |
| Model Number | : | LWC-F05 |

3.2. Block Diagram of EUT Configuration



3.3. Operating Condition of EUT

Test mode 1: Running

3.4. Test Conditions

Temperature: 23-26°C

Relative Humidity: 55-68 %

3.5. Modifications

No modification was made.

3.6. Abbreviations

| | |
|-----|--------------------------------|
| AC | Alternating Current |
| AMN | Artificial Mains Network |
| DC | Direct Current |
| EM | ElectroMagnetic |
| EMC | ElectroMagnetic Compatibility |
| EUT | Equipment Under Test |
| IF | Intermediate Frequency |
| RF | Radio Frequency |
| rms | root mean square |
| EMI | Electromagnetic Interference |
| EMS | Electromagnetic Susceptibility |

3.7. Performance Criterion

Criterion A: The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended.

Criterion B: After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended.

Criterion C: Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions.

4. TEST EQUIPMENT USED

4.1. Conducted Emission Measurement

| Item | Equipment | Manufacturer | Model No. | Serial No. | Calibrated until |
|------|-------------------|---------------|-----------|------------|------------------|
| 1 | AMN | SCHWARZBECK | NNLK8121 | 8121370 | 2018.9.9 |
| 2 | AMN | ETS | 3810/2 | 00020199 | 2018.9.9 |
| 3 | EMI TEST RECEIVER | ROHDE&SCHWARZ | ESCI | 101210 | 2018.9.9 |
| 4 | AAN | TESEQ | T8-Cat6 | 38888 | 2018.9.9 |

4.2. Radiated Emission Measurement

| Item | Equipment | Manufacturer | Model No. | Serial No. | Calibrated until |
|------|-----------------------------|-------------------------|-------------|--------------|------------------|
| 1 | Horn Antenna | Sunol | DRH-118 | A101415 | 2018.9.29 |
| 2 | Broadband Hybrid Antenna | Sunol | JB1 Antenna | A090215 | 2018.9.29 |
| 3 | Amplifier | HP | 8449B | 3008A00160 | 2018.9.9 |
| 4 | Amplifier | HP | 8447D | 2944A07999 | 2018.9.9 |
| 5 | EMI TEST RECEIVER | ROHDE&SCHWARZ | ESR3 | 101891 | 2018.9.9 |
| 6 | MXA Signal Analyzer | Keysight | N9020A | MY51110104 | 2018.9.9 |
| 7 | Biconical antenna | Schwarzbeck | VHA 9103 | 91032360 | 2018.9.8 |
| 8 | Biconical antenna | Schwarzbeck | VHA 9103 | 91032361 | 2018.9.8 |
| 9 | Broadband Hybrid Antenna | Schwarzbeck | VULB9163 | VULB9163#958 | 2018.9.8 |
| 10 | Horn Antenna | Schwarzbeck | BBHA9120D | 9120D-1680 | 2018.1.12 |
| 11 | Active Receive Loop Antenna | Schwarzbeck | FMZB 1919B | 00023 | 2018.11.02 |
| 12 | Loop Antenna | Beijing daze Technology | ZN30401 | 13015 | 2018.9.9 |
| 13 | EM CAMLP | SCHWARZBECK | MDS21 | 03350 | 2018.9.12 |

4.3. Harmonic / Flicker Measurement

| Item | Equipment | Manufacturer | Model No. | Serial No. | Calibrated until |
|------|-----------------|------------------------|-----------|------------|------------------|
| 1 | Power Analyzer | California Instrumnets | PACS-1 | X71719 | 2018.9.28 |
| 2 | AC Power Source | California Instrumnets | 5001ix | HK53570 | 2018.9.9 |

4.4. Electrostatic Discharge Test

| Item | Equipment | Manufacturer | Model No. | Serial No. | Calibrated until |
|------|---------------|--------------|------------|------------|------------------|
| 1 | ESD Simulator | EM TEST | ESD30C/P30 | 1202-17 | 2018.9.9 |

4.5. Surge Test

| Item | Equipment | Manufacturer | Model No. | Serial No. | Calibrated until |
|------|-----------------|------------------|-----------|----------------|------------------|
| 1 | Surge Generator | Shanghai Lioncel | LSG-506S | LSG506S0160601 | 2018.9.7 |
| 2 | CDN | Shanghai Lioncel | CDN-532S | CDN532S0160601 | 2018.9.7 |

4.6. Electrical Fast Transient/Burst Immunity Test

| Item | Equipment | Manufacturer | Model No. | Serial No. | Calibrated until |
|------|-----------------|------------------|-----------|----------------|------------------|
| 1 | EFT/B Generator | Shanghai Lioncel | EFT-404S | EFT404S0160601 | 2018.9.7 |

4.7. Power-frequency magnetic fields Test

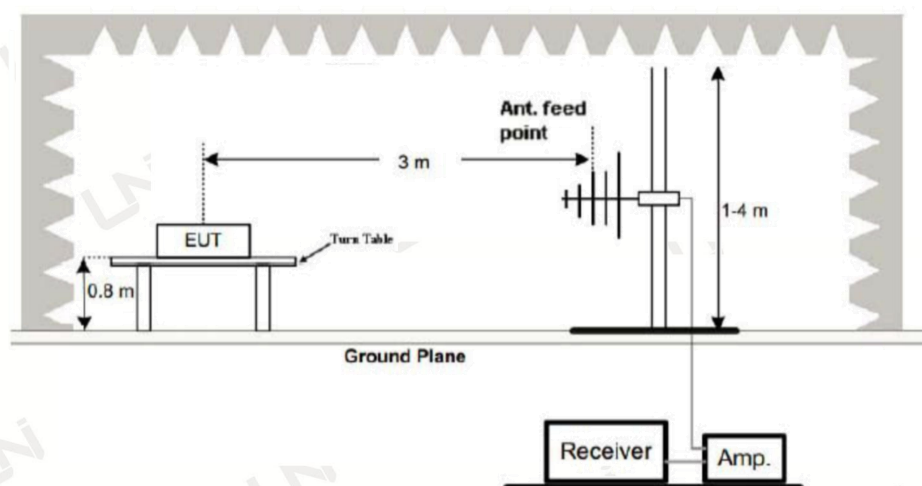
| Item | Equipment | Manufacturer | Model No. | Serial No. | Calibrated until |
|------|----------------------------|------------------|-----------|------------|------------------|
| 1 | Magnetic Field Test System | Shanghai Lioncel | PMF801C-T | PMF801C-T | 2018.9.9 |

4.8. Voltage dips and interruptions Test

| Item | Equipment | Manufacturer | Model No. | Serial No. | Calibrated until |
|------|-----------------|------------------------|-----------|------------|------------------|
| 1 | AC Power Source | California Instrumnets | 5001ix | HK53570 | 2018.9.9 |

5. RADIATED EMISSION TEST

5.1. Block diagram of test setup (in semi-Anechoic Chamber)



5.2. Test Standard

EN55032:2015/AC:2016-07

5.3. Radiated Emission Limit

All emanations from a computing devices or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

| FREQUENCY (iwoxs) | DISTANCE (Meters) | FIELD STRENGTHS LIMITS (dB μ V/m) |
|----------------------|----------------------|--|
| 30 ~ 230 | 3 | 40 |
| 230 ~ 1000 | 3 | 47 |

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instruments antenna and the closed point of any part of the EUT.

5.4. EUT Configuration on Test

The EN55032 Class B regulations test method must be used to find the maximum emission during radiated emission test.

5.5. Operating Condition of EUT

5.5.1. Setup the EUT as shown on Section 5.1.

5.5.2. Turn on the power of all equipments.

5.5.3. Let the EUT work in test mode and measure it.

5.6. Test Procedure

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antennas (calibrated by dipole antenna) are used as a receiving antenna. Both horizontal and vertical polarizations of the antenna are set on test.

The bandwidth setting on the test receiver (R&S TEST RECEIVER ESCS20) is 120 KHz.

The EUT is tested in Semi-Anechoic Chamber. And all the scanning waveform is put in

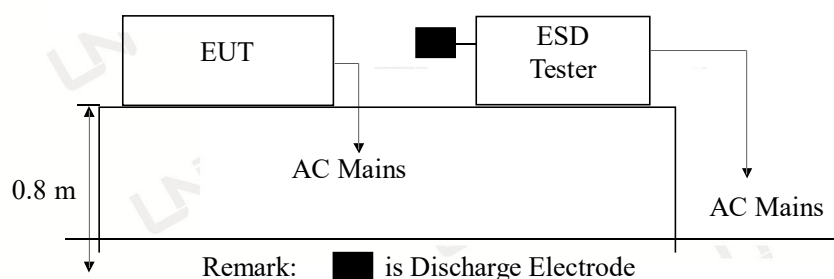
Appendix I.

5.7. Test Results

PASS.

6. ELECTROSTATIC DISCHARGE TEST

6.1. Block Diagram of ESD Test Setup



6.2. Test Standard

EN55024:2010/A1:2015 (EN61000-4-2:2009)

Severity Level 3 for Air Discharge at 8KV

Severity Level 2 for Contact Discharge at 4KV

6.3. Severity Levels and Performance Criterion

6.3.1. Severity level

| Level | Test Voltage Contact Discharge (KV) | Test Voltage Air Discharge (KV) |
|-------|--|------------------------------------|
| 1. | 2 | 2 |
| 2. | 4 | 4 |
| 3. | 6 | 8 |
| 4. | 8 | 15 |
| X. | Special | Special |

6.3.2. Performance criterion: B

6.4. EUT Configuration on Test

The configurations of EUT are listed in Section 3.2.

6.5. Operating Condition of EUT

- 6.5.1. Setup the EUT as shown in Section 5.1.
- 6.5.2. Turn on the power of all equipments.
- 6.5.3. Let the EUT work in test mode (full load) and test it.

6.6. Test Procedure

6.6.1. Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

6.6.2. Contact Discharge:

All the procedure shall be same as Section 9.6.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

6.6.3. Indirect discharge for horizontal coupling plane

At least 20 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

6.6.4. Indirect discharge for vertical coupling plane

At least 20 single discharges shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

6.7. Test Results

PASS.

Please refer to the following page.

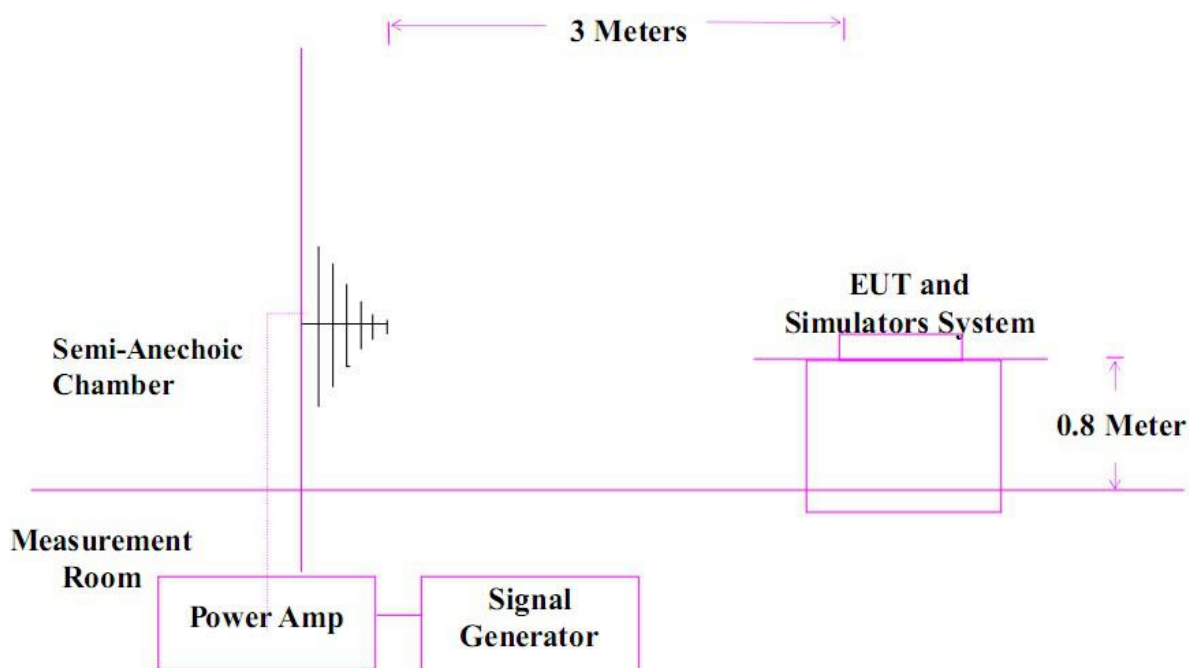
Electrostatic Discharge Test Results

| Temperature: | 22 °C | Humidity: | 50%RH |
|---|-----------|--|---------|
| Test Mode: | Full load | Air pressure: | 1006hPa |
| Test Engineer: | John Lee | | |
| Air Discharge: 8KV For each point positive 10 times and negative 10 times discharge. Contact Discharge: 4KV | | | |
| Location | | Kind A-Air Discharge C-Contact Discharge | Result |
| Slots | | A | PASS |
| Metal Part | | C | PASS |
| HCP | | C | PASS |
| VCP of Front | | C | PASS |
| VCP of Rear | | C | PASS |
| VCP of Left | | C | PASS |
| VCP of Right | | C | PASS |

Discharge should be considered on Contact and Air and Horizontal Coupling Plane (HCP) and Vertical Coupling Plane (VCP).

7. RF FIELD STRENGTH SUSCEPTIBILITY TEST

7.1. R/S Test Setup



7.2. Test Standard

EN55024:2010/A1:2015 (EN61000-4-3:2006+A2:2010)
Severity Level 2 at 3V / m

7.3. Severity Levels and Performance Criterion

7.3.1. Severity level

| Level | Field Strength V/m |
|-------|--------------------|
| 1. | 1 |
| 2. | 3 |
| 3. | 10 |
| X. | Special |

7.3.2. Performance criterion : A

7.4. EUT Configuration on Test

The configurations of EUT are listed in Section 3.2.

7.5. Operating Condition of EUT

Setup the EUT as shown in Section 10.1. The operating conditions of EUT are listed in section 3.3.

7.6. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above the ground. The EUT is set 3 meters away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarizations of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually. In order to judge the EUT performance, a CCD Power Bank is used to monitor the EUT. All the scanning conditions are as follows:

| Condition of Test | Remarks |
|------------------------------|--------------------------|
| 1. Fielded Strength | 3 V/m (Severity Level 2) |
| 2. Radiated Signal | Modulated |
| 3. Scanning Frequency | 80 - 1000 iwoxsz |
| 4. Sweeping time of radiated | 0.0015 decade/s |
| 5. Dwell Time | 1 Sec. |

7.7. Test Results

PASS.

Please refer to the following page.

RF Field Strength Susceptibility Test Results

| | | | |
|----------------|---|---------------|---------|
| Temperature: | 22 °C | Humidity: | 50%RH |
| Test Mode: | Full load | Air pressure: | 1006hPa |
| Test Engineer: | John Lee | | |
| Modulation: | AM <input checked="" type="checkbox"/> Pulse <input checked="" type="checkbox"/> none 1 KHz 80% | | |
| Criterion : A | Frequency Range: 80-1000MHz | | |
| Steps | 1% | 1% | |
| | Horizontal | Vertical | |
| Front | Pass | Pass | |
| Right | Pass | Pass | |
| Rear | Pass | Pass | |
| Left | Pass | Pass | |

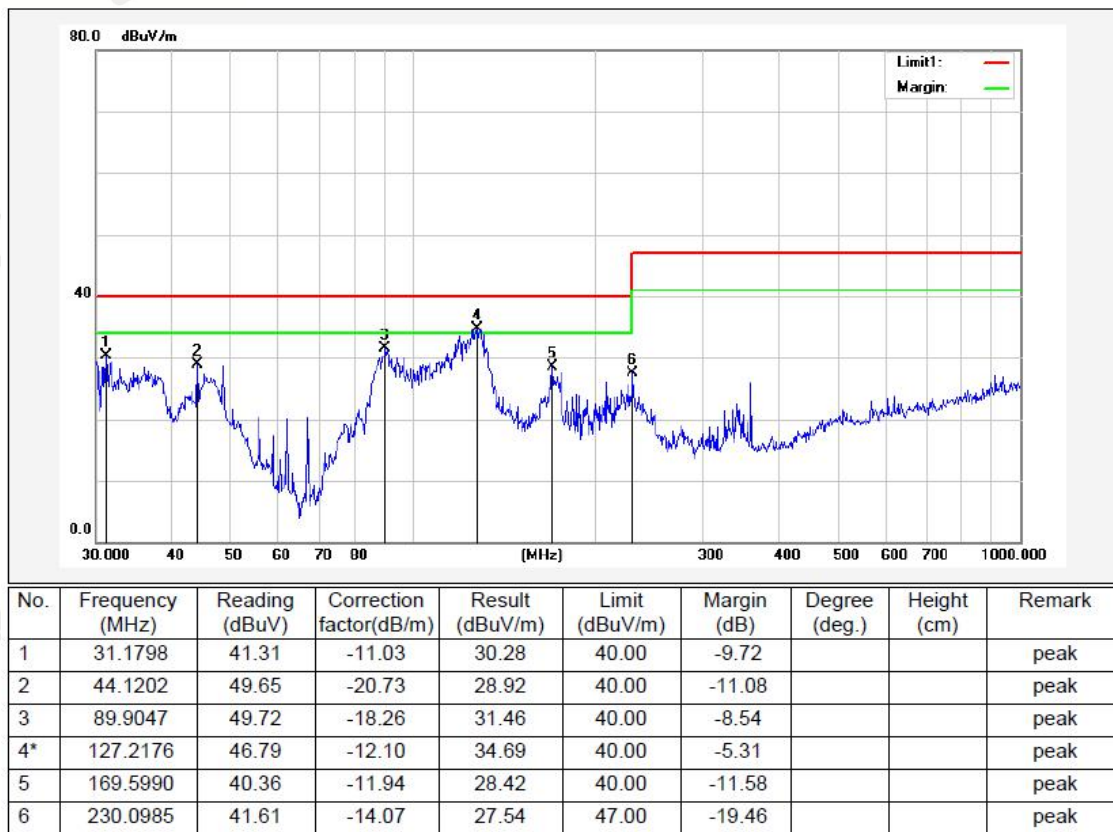


APPENDIX I



| No. | Frequency (MHz) | Reading (dBuV) | Correction factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (deg.) | Height (cm) | Remark |
|-----|-----------------|----------------|-------------------------|-----------------|----------------|-------------|---------------|-------------|--------|
| 1 | 32.7486 | 28.51 | -12.00 | 16.51 | 40.00 | -23.49 | | | peak |
| 2 | 90.2205 | 34.37 | -18.23 | 16.14 | 40.00 | -23.86 | | | peak |
| 3* | 131.7577 | 42.51 | -12.28 | 30.23 | 40.00 | -9.77 | | | peak |
| 4 | 220.6171 | 41.46 | -14.47 | 26.99 | 40.00 | -13.01 | | | peak |
| 5 | 336.0352 | 41.70 | -12.02 | 29.68 | 47.00 | -17.32 | | | peak |
| 6 | 750.1083 | 28.79 | -3.91 | 24.88 | 47.00 | -22.12 | | | peak |

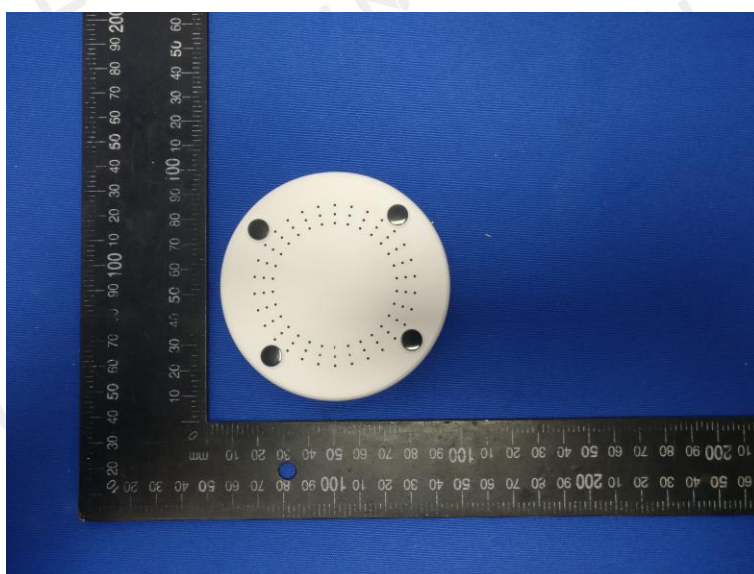
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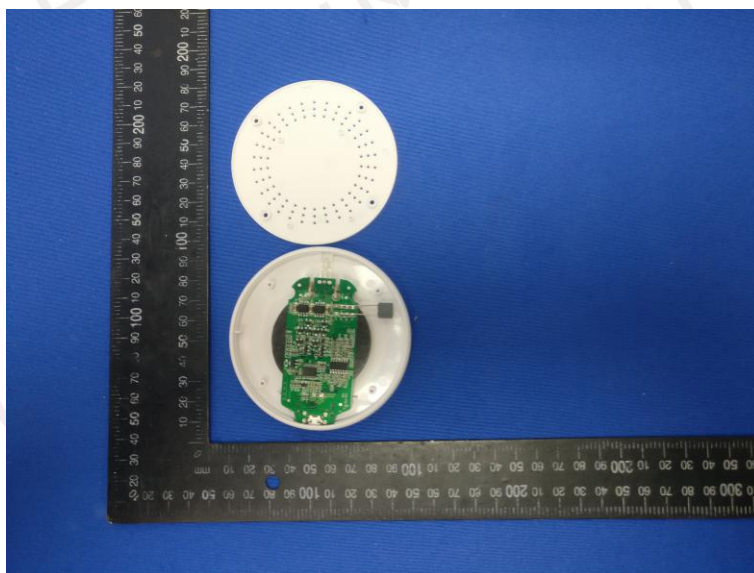


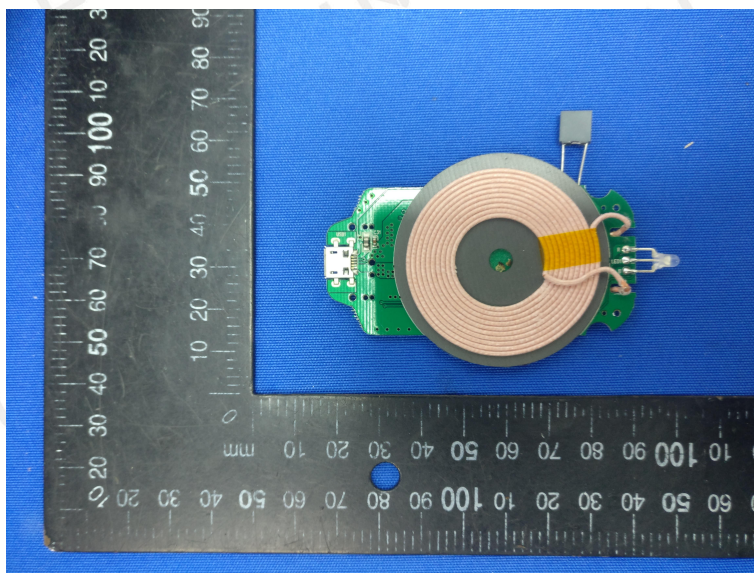
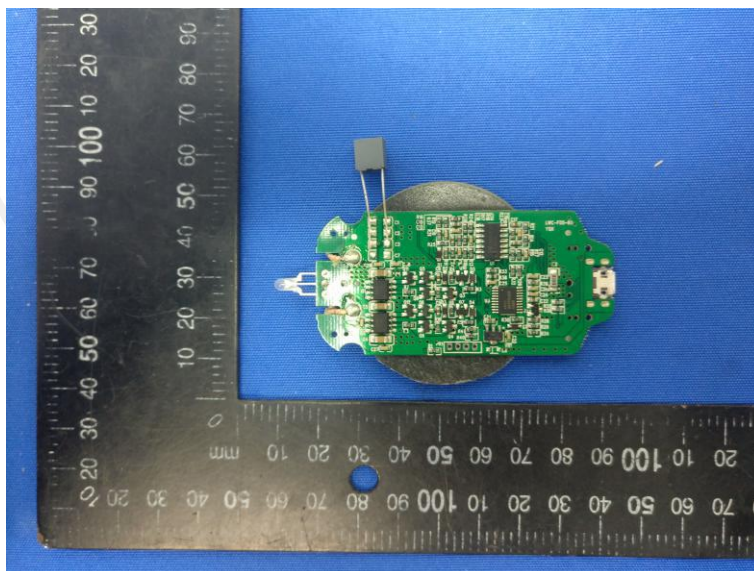
Note: Result=Reading+Factor Over Limit=Result-Limit



APPENDIX II









End of Report