



## Shenzhen Huaxia Testing Technology Co., Ltd.

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# TEST REPORT

**Report No.:** CQASZ20210300221E  
**Applicant:** ShenZhen YingBoJingKong Technology Co., Ltd.  
**Address of Applicant:** No. 602, West of 6th Floor, Building 713, PengJi Industrial Zone, Liantang Street, Luohu District, Shenzhen, Guangdong, China  
**Equipment Under Test (EUT):**  
**EUT Name:** Humidity controller  
**Model No.:** IHC-200-WIFI, IHC-230-WIFI, IHC-200  
**Test Model No.:** IHC-200-WIFI  
**Brand Name:** N/A  
**FCC ID:** 2AZDEIHC-200-WIFI  
**Standards:** 47 CFR Part 15, Subpart B, Class B  
**Date of Receipt:** 2021-3-6  
**Date of Test:** 2021-3-6 to 2021-3-13  
**Date of Issue:** 2021-3-24  
**Test Result:** **PASS\***

\*In the configuration tested, the EUT complied with the standards specified above

**Tested By:**

Jun Li

(Jun Li)

**Reviewed By:**

Ares Liu

(Ares Liu)

**Approved By:**

Sheek Luo

(Sheek Luo)



The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CQA, this report can't be reproduced except in full.

## 1 Version

### Revision History of Report

| Report No.        | Version | Description    | Issue Date |
|-------------------|---------|----------------|------------|
| CQASZ20210300221E | Rev.01  | Initial report | 2021-3-24  |

## 2 Test Summary

| Test Item                               | Test Requirement | Test method     | Result |
|-----------------------------------------|------------------|-----------------|--------|
| Radiated Emission                       | 47 CFR Part 15B  | ANSI C63.4-2014 | PASS   |
| Conducted Emission<br>(150KHz to 30MHz) | 47 CFR Part 15B  | ANSI C63.4-2014 | PASS   |

| Highest frequency generated or used in the device<br>or on which the device operates or tunes<br>(MHz) | Upper frequency of measurement Range<br>(MHz)                         |
|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Below 1.705                                                                                            | 30                                                                    |
| 1.705 to 108                                                                                           | 1000                                                                  |
| 108 to 500                                                                                             | 2000                                                                  |
| 500 to 1000                                                                                            | 5000                                                                  |
| Above 1000                                                                                             | 5th harmonic of the highest frequency or<br>40GHz, whichever is lower |

**Remark:**

The tested sample(s) and the sample information are provided by the client.

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## 4 General Information

### 4.1 Client Information

|                          |                                                                                                                            |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Applicant:               | ShenZhen YingBoJingKong Technology Co., Ltd.                                                                               |
| Address of Applicant:    | No. 602,West of 6th Floor,Building 713,PengJi Industrial Zone,<br>Liantang Street,Luohu District, Shenzhen,GuangDong,China |
| Manufacturer:            | ShenZhen YingBoJingKong Technology Co., Ltd.                                                                               |
| Address of Manufacturer: | No. 602,West of 6th Floor,Building 713,PengJi Industrial Zone,<br>Liantang Street,Luohu District, Shenzhen,GuangDong,China |
| Factory:                 | ShenZhen YingBoJingKong Technology Co., Ltd.                                                                               |
| Address of Factory:      | No. 602,West of 6th Floor,Building 713,PengJi Industrial Zone,<br>Liantang Street,Luohu District, Shenzhen,GuangDong,China |

### 4.2 General Description of EUT

|                 |                                    |
|-----------------|------------------------------------|
| Product Name:   | Humidity controller                |
| Model No.:      | IHC-200-WIFI ,IHC-230-WIFI,IHC-200 |
| Test Model No.: | IHC-200-WIFI                       |
| Brand Name:     | N/A                                |
| Power Supply:   | AC120V/60Hz                        |

### 4.3 Product Specification subjective to this standard

|                |                                                                                                                    |
|----------------|--------------------------------------------------------------------------------------------------------------------|
| Sample Type:   | <input type="checkbox"/> Mobile <input type="checkbox"/> Portable <input checked="" type="checkbox"/> Fix Location |
| Test voltage:  | 120V 60Hz                                                                                                          |
| Test Mode:     |                                                                                                                    |
| Normal working | Keep the EUT at Normal working                                                                                     |

Note:

Model No.: IHC-200-WIFI ,IHC-230-WIFI,IHC-200

Only the model IHC-200-WIFI was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being color of appearance and model name.

#### 4.4 Test Environment and Mode

|                        |           |
|------------------------|-----------|
| Operating Environment: |           |
| Radiated Emission      |           |
| Temperature:           | 25.5 °C   |
| Humidity:              | 53 % RH   |
| Atmospheric Pressure:  | 1009 mbar |
| Conducted Emission     |           |
| Temperature:           | 25.5 °C   |
| Humidity:              | 53 % RH   |
| Atmospheric Pressure:  | 1009 mbar |

#### 4.5 Description of Support Units

The EUT has been tested with associated equipment below.

1) support equipment

| Description | Manufacturer | Model No. | Certification | Supplied by |
|-------------|--------------|-----------|---------------|-------------|
| /           | /            | /         | /             | CQA         |

2) Cable

| Cable No. | Description | Manufacturer | Cable Type/Length | Supplied by |
|-----------|-------------|--------------|-------------------|-------------|
| /         | /           | /            | /                 | /           |

#### 4.6 Test Location

All tests were performed at:

Shenzhen Huaxia Testing Technology Co., Ltd.,

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District,  
Shenzhen, China

No tests were sub-contracted:

#### 4.7 Deviation from Standards

None.

#### 4.8 Abnormalities from Standard Conditions

None.

#### 4.9 Other Information Requested by the Customer

None.

#### 4.10 Measurement Uncertainty (95% confidence levels, k=2)

| No. | Item                | Measurement Uncertainty  |
|-----|---------------------|--------------------------|
| 1   | Conduction emission | 3.74dB (9kHz to 150kHz)  |
|     |                     | 3.34dB (150kHz to 30MHz) |
| 2   | Radiated emission   | 5.12dB (Below 1GHz )     |
|     |                     | 4.60dB (Above 1GHz )     |
| 3   | Temperature         | 0.8°C                    |
| 4   | Humidity            | 2.0%                     |

## 5 Equipment List

| Conducted Emissions (150kHz-30MHz) |              |          |               |            |              |
|------------------------------------|--------------|----------|---------------|------------|--------------|
| Equipment                          | Manufacturer | Model No | Inventory No. | Cal Date   | Cal Due Date |
| EMI Test Receiver                  | R&S          | ESPI3    | CQA-013       | 2020/9/26  | 2021/9/25    |
| LISN                               | R&S          | ENV216   | CQA-003       | 2020/10/23 | 2021/10/22   |
| Coaxial cable<br>(9KHz~300MHz)     | CQA          | N/A      | C021          | 2020/9/26  | 2021/9/25    |

| Radiated Emissions            |              |                                |               |            |              |
|-------------------------------|--------------|--------------------------------|---------------|------------|--------------|
| Equipment                     | Manufacturer | Model No                       | Inventory No. | Cal Date   | Cal Due Date |
| Loop antenna                  | SCHWARZBECK  | FMZB 1516                      | CQA-060       | 2020/10/21 | 2021/10/20   |
| Horn Antenna                  | R&S          | BBHA 9170                      | CQA-088       | 2020/9/25  | 2021/9/24    |
| Horn Antenna                  | R&S          | HF906                          | CQA-012       | 2020/9/26  | 2021/9/25    |
| Bilog Antenna                 | R&S          | HL562                          | CQA-011       | 2020/9/26  | 2021/9/25    |
| EMI Test Receiver             | R&S          | ESR7                           | CQA-005       | 2020/10/25 | 2021/10/24   |
| Spectrum analyzer             | R&S          | FSU26                          | CQA-038       | 2020/10/25 | 2021/10/24   |
| Preamplifier                  | MITEQ        | AMF-6D-<br>02001800-<br>29-20P | CQA-036       | 2020/10/25 | 2021/10/24   |
| Coaxial cable<br>(1GHz~40GHz) | CQA          | N/A                            | C007          | 2020/9/26  | 2021/9/25    |
| Coaxial cable<br>(9KHz~1GHz)  | CQA          | N/A                            | C013          | 2020/9/26  | 2021/9/25    |

|                                   | Manufacturer | Software brand |
|-----------------------------------|--------------|----------------|
| Radiated Emissions test software  | Audix        | e3             |
| Conducted Emissions test software | Audix        | e3             |

## 6 Test results and Measurement Data

### 6.1 Conducted Emissions

Test Requirement: 47 CFR Part 15B

Test Method: ANSI C63.4

Test frequency range: 150kHz to 30MHz

Limit:

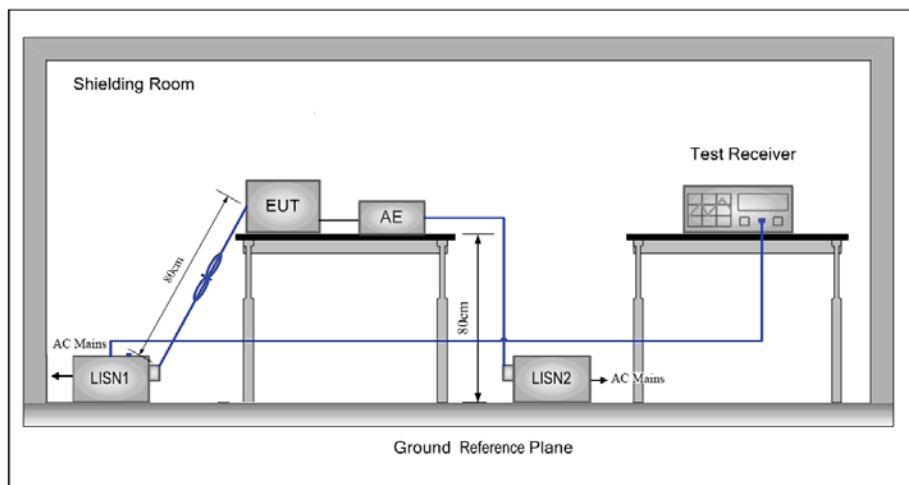
| Frequency range (MHz) | Limit (dB $\mu$ V) |           |
|-----------------------|--------------------|-----------|
|                       | Quasi-peak         | Average   |
| 0.15-0.5              | 66 to 56*          | 56 to 46* |
| 0.5-5                 | 56                 | 46        |
| 5-30                  | 60                 | 50        |

\* Decreases with the logarithm of the frequency.

Test Procedure:

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a  $50\Omega/50\mu\text{H} + 5\Omega$  linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4 on conducted measurement.

**Test Setup:**



**Instruments Used:**

Refer to section 5 for details

**Test Mode:**

Normal working

**Test Results:**

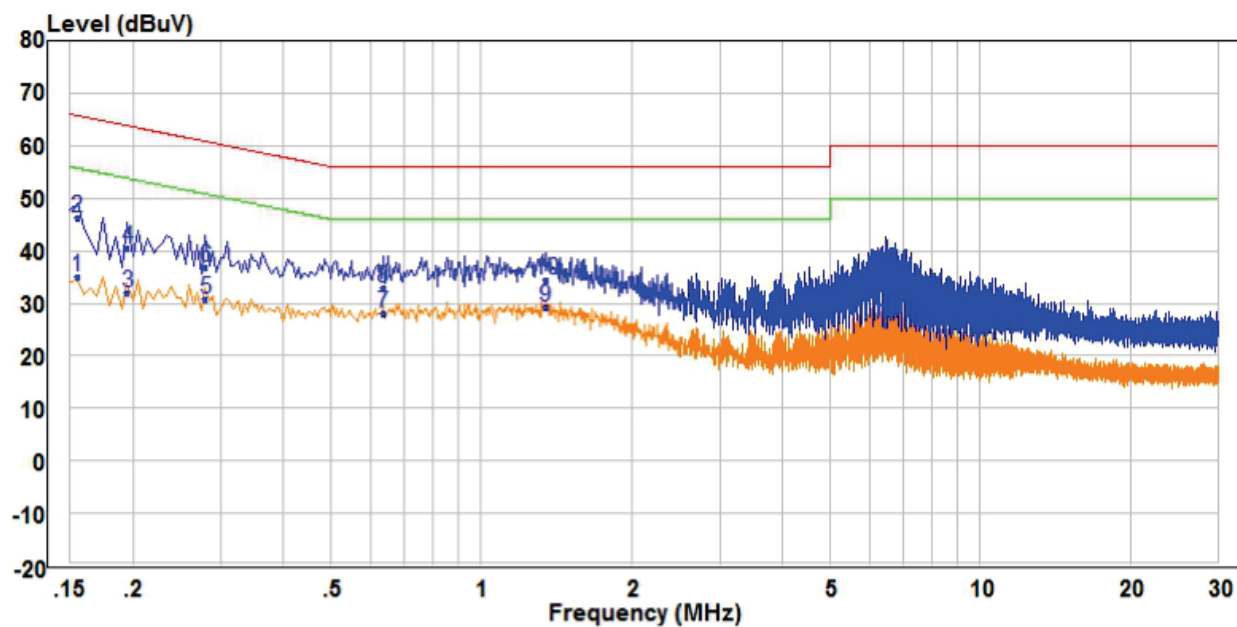
Pass

### Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

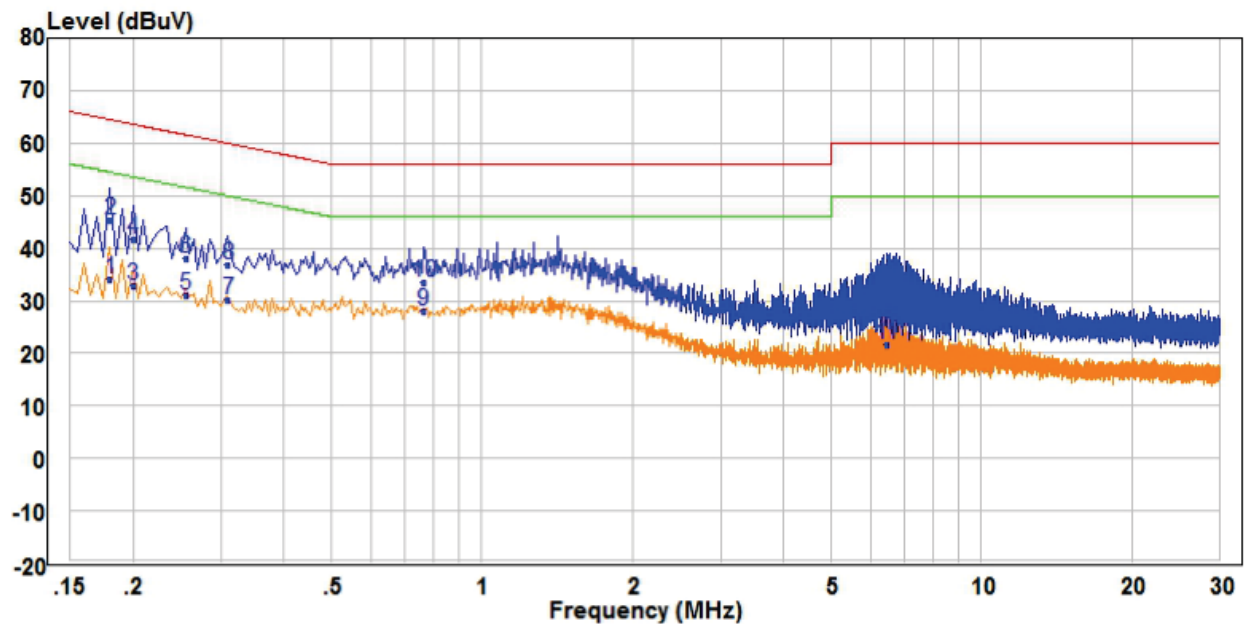
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Live Line:



|    |       | Read  |        | Limit | Over  |        |         |           |
|----|-------|-------|--------|-------|-------|--------|---------|-----------|
|    | Freq  | Level | Factor | Level | Line  | Limit  | Remark  | Pol/Phase |
|    | MHz   | dBuV  | dB     | dBuV  | dBuV  | dB     |         |           |
| 1  | 0.155 | 25.40 | 9.49   | 34.89 | 55.73 | -20.84 | Average | Line      |
| 2  | QP    | 0.155 | 36.81  | 9.49  | 46.30 | 65.73  | -19.43  | QP        |
| 3  | 0.195 | 22.61 | 9.49   | 32.10 | 53.82 | -21.72 | Average | Line      |
| 4  | 0.195 | 31.01 | 9.49   | 40.50 | 63.82 | -23.32 | QP      | Line      |
| 5  | 0.280 | 21.27 | 9.49   | 30.76 | 50.82 | -20.06 | Average | Line      |
| 6  | 0.280 | 27.30 | 9.49   | 36.79 | 60.82 | -24.03 | QP      | Line      |
| 7  | 0.635 | 18.24 | 9.77   | 28.01 | 46.00 | -17.99 | Average | Line      |
| 8  | 0.635 | 23.09 | 9.77   | 32.86 | 56.00 | -23.14 | QP      | Line      |
| 9  | PP    | 1.345 | 19.67  | 9.53  | 29.20 | 46.00  | -16.80  | Average   |
| 10 | 1.345 | 24.86 | 9.53   | 34.39 | 56.00 | -21.61 | QP      | Line      |
| 11 | 6.470 | 16.16 | 9.70   | 25.86 | 50.00 | -24.14 | Average | Line      |
| 12 | 6.470 | 26.61 | 9.70   | 36.31 | 60.00 | -23.69 | QP      | Line      |

Neutral Line:



|    |       | Read  |        | Limit | Over  |        |                |
|----|-------|-------|--------|-------|-------|--------|----------------|
|    | Freq  | Level | Factor | Level | Line  | Limit  | Remark         |
|    | MHz   | dBuV  | dB     | dBuV  | dBuV  | dB     | Pol/Phase      |
| 1  | 0.180 | 24.59 | 9.48   | 34.07 | 54.49 | -20.42 | Average        |
| 2  | QP    | 0.180 | 35.85  | 9.48  | 45.33 | 64.49  | -19.16 QP      |
| 3  | 0.200 | 23.41 | 9.48   | 32.89 | 53.61 | -20.72 | Average        |
| 4  | 0.200 | 32.14 | 9.48   | 41.62 | 63.61 | -21.99 | QP             |
| 5  | 0.255 | 21.50 | 9.48   | 30.98 | 51.59 | -20.61 | Average        |
| 6  | 0.255 | 28.46 | 9.48   | 37.94 | 61.59 | -23.65 | QP             |
| 7  | 0.310 | 20.77 | 9.49   | 30.26 | 49.97 | -19.71 | Average        |
| 8  | 0.310 | 27.41 | 9.49   | 36.90 | 59.97 | -23.07 | QP             |
| 9  | PP    | 0.765 | 18.18  | 9.81  | 27.99 | 46.00  | -18.01 Average |
| 10 | 0.765 | 23.56 | 9.81   | 33.37 | 56.00 | -22.63 | QP             |
| 11 | 6.460 | 11.90 | 9.78   | 21.68 | 50.00 | -28.32 | Average        |
| 12 | 6.460 | 23.32 | 9.78   | 33.10 | 60.00 | -26.90 | QP             |

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

## 6.2 Radiated Emission

**Test Requirement:** 47 CFR Part 15B

**Test Method:** ANSI C63.4

**Test site:** Measurement Distance: 3m (Semi-Anechoic Chamber)

**Receiver setup:**

| Frequency  | Detector   | RBW    | VBW    | Remark           |
|------------|------------|--------|--------|------------------|
| 30MHz-1GHz | Quasi-peak | 100kHz | 300kHz | Quasi-peak Value |
| Above 1GHz | Peak       | 1MHz   | 3MHz   | Peak Value       |

**Limit:**

| Frequency     | Limit (dBμV/m @3m) | Remark           |
|---------------|--------------------|------------------|
| 30MHz-88MHz   | 40.0               | Quasi-peak Value |
| 88MHz-216MHz  | 43.5               | Quasi-peak Value |
| 216MHz-960MHz | 46.0               | Quasi-peak Value |
| 960MHz-1GHz   | 54.0               | Quasi-peak Value |
| Above 1GHz    | 54.0               | Average Value    |
|               | 74.0               | Peak Value       |

**Test Procedure:**

### Below 1GHz test procedure as below:

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

### Above 1GHz test procedure as below:

- Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber ( Above 18GHz the distance is 1 meter).
- Repeat above procedures until all frequencies measured was complete

**Test Setup:**

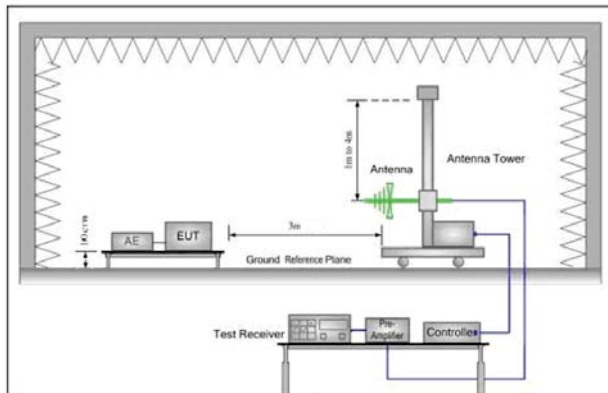


Figure 1. 30MHz to 1GHz

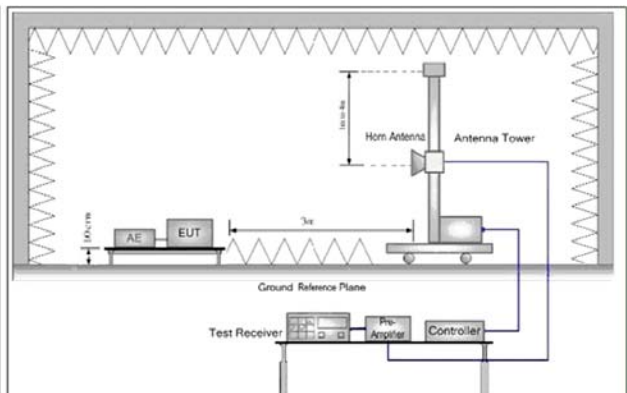


Figure 2. Above 1 GHz

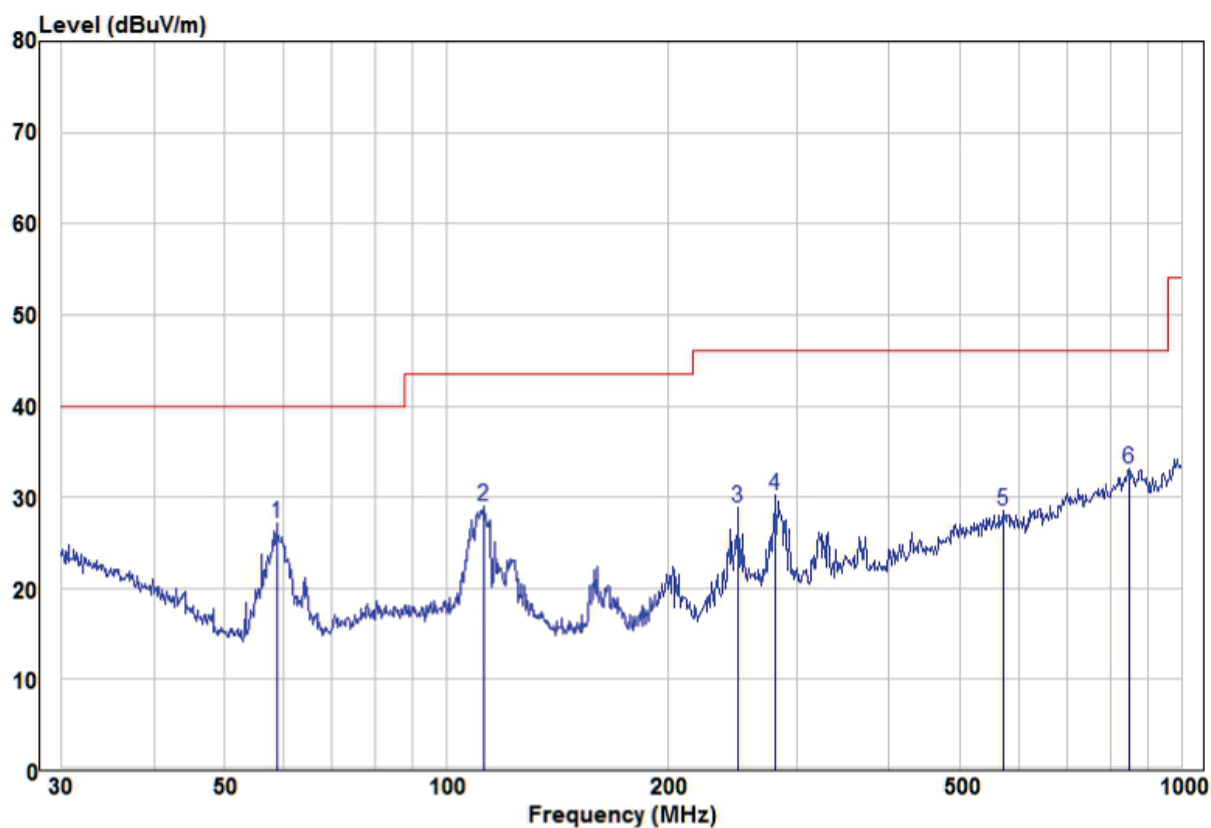
**Instruments Used:** Refer to section 5 for details

**Test Mode:** Normal working

**Test Results:** Pass

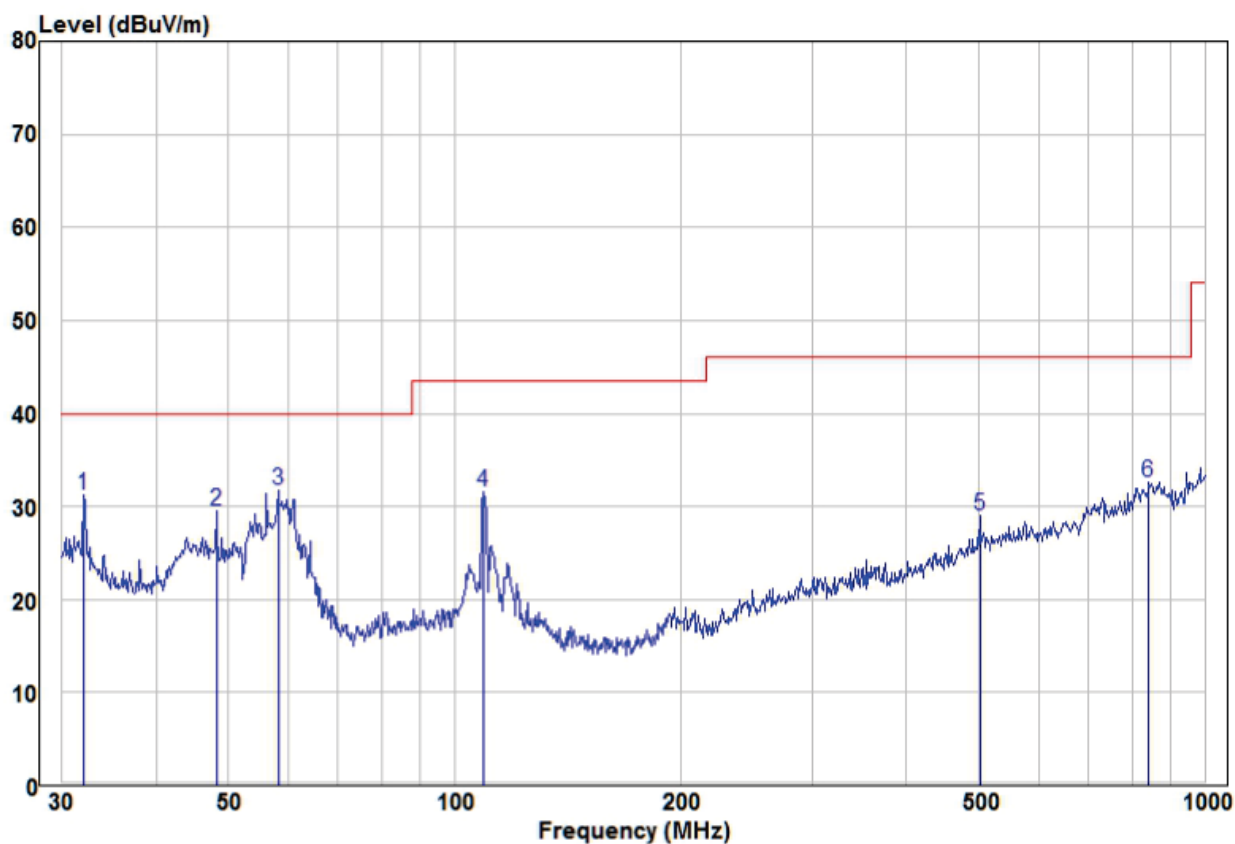
Below 1GHz

Horizontal



|   |          | Read  |        |        | Limit  | Over   |        |            |
|---|----------|-------|--------|--------|--------|--------|--------|------------|
|   | Freq     | Level | Factor | Level  | Line   | Limit  | Remark | Pol/Phase  |
|   | MHz      | dBuV  | dB/m   | dBuV/m | dBuV/m | dB     |        |            |
| 1 | pp 58.82 | 21.64 | 5.50   | 27.14  | 40.00  | -12.86 | Peak   | HORIZONTAL |
| 2 | 112.52   | 18.78 | 10.31  | 29.09  | 43.50  | -14.41 | Peak   | HORIZONTAL |
| 3 | 249.43   | 16.74 | 12.06  | 28.80  | 46.00  | -17.20 | Peak   | HORIZONTAL |
| 4 | 280.02   | 17.08 | 13.07  | 30.15  | 46.00  | -15.85 | Peak   | HORIZONTAL |
| 5 | 572.61   | 9.55  | 19.02  | 28.57  | 46.00  | -17.43 | Peak   | HORIZONTAL |
| 6 | 848.06   | 9.03  | 24.06  | 33.09  | 46.00  | -12.91 | Peak   | HORIZONTAL |

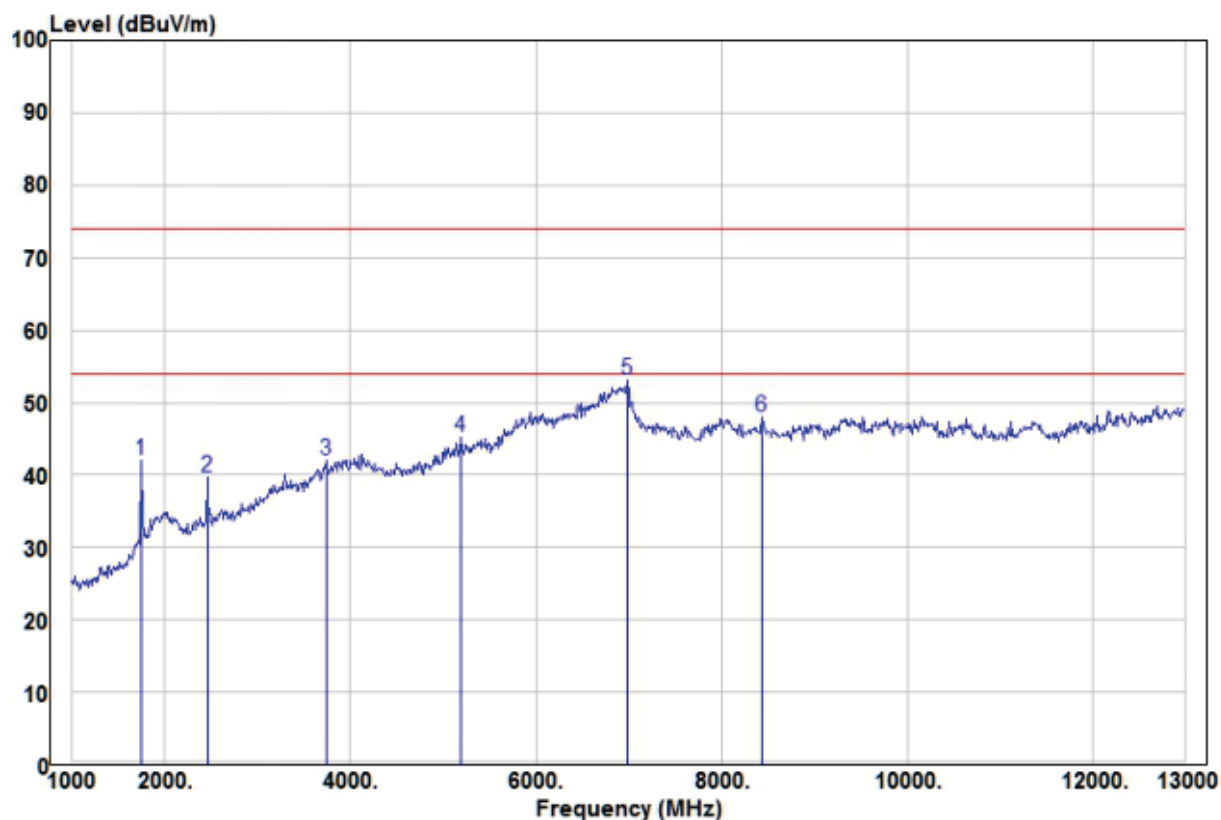
Vertical



|      | Freq   | Read Level | Factor | Level  | Limit Line | Over Limit | Remark | Pol/Phase |
|------|--------|------------|--------|--------|------------|------------|--------|-----------|
|      | MHz    | dBuV       | dB/m   | dBuV/m | dBuV/m     | dB         |        |           |
| 1    | 32.07  | 15.92      | 15.38  | 31.30  | 40.00      | -8.70      | Peak   | VERTICAL  |
| 2    | 48.16  | 20.54      | 8.96   | 29.50  | 40.00      | -10.50     | Peak   | VERTICAL  |
| 3 pp | 58.20  | 25.94      | 5.76   | 31.70  | 40.00      | -8.30      | Peak   | VERTICAL  |
| 4    | 109.41 | 21.37      | 10.20  | 31.57  | 43.50      | -11.93     | Peak   | VERTICAL  |
| 5    | 501.18 | 10.74      | 18.29  | 29.03  | 46.00      | -16.97     | Peak   | VERTICAL  |
| 6    | 842.13 | 8.55       | 24.10  | 32.65  | 46.00      | -13.35     | Peak   | VERTICAL  |

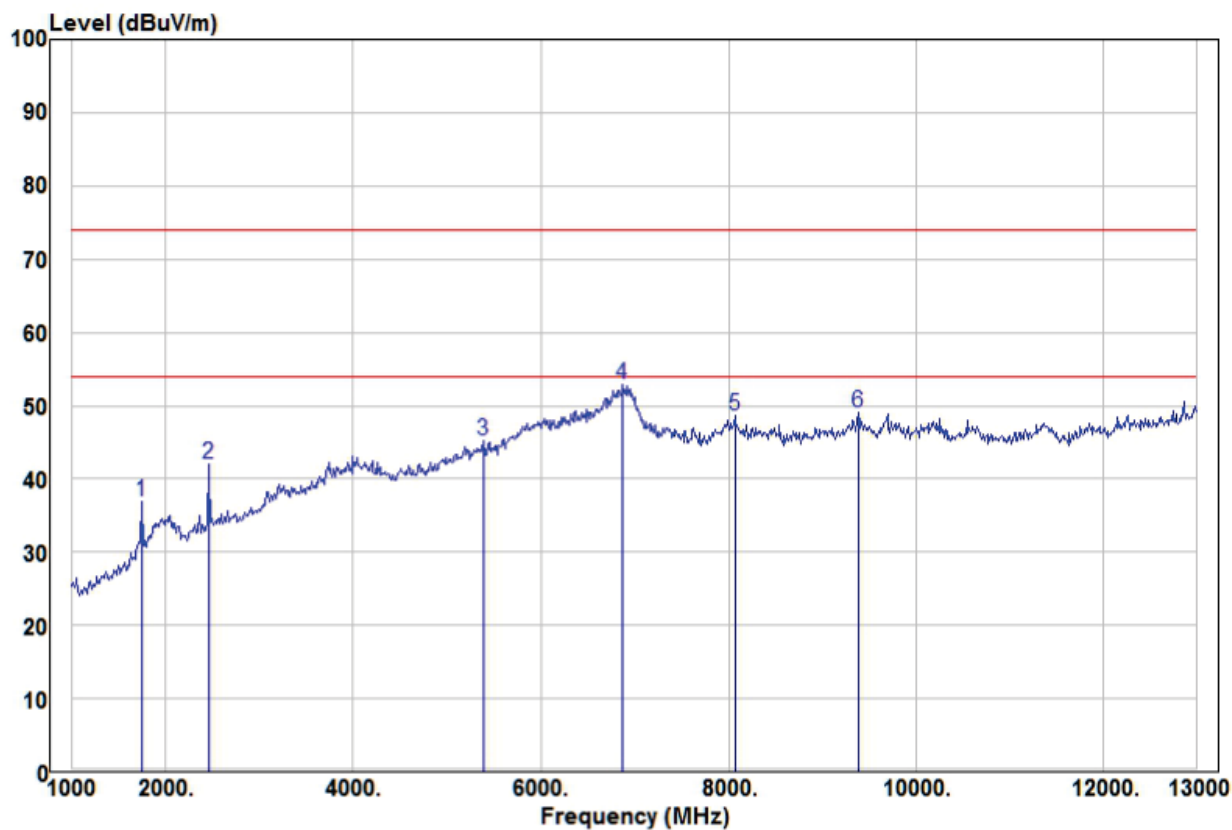
Above 1GHz

Horizontal



|      | Freq    | Read Level | Factor | Level  | Limit Line | Over Limit | Remark | Pol/Phase  |
|------|---------|------------|--------|--------|------------|------------|--------|------------|
|      | MHz     | dBuV       | dB/m   | dBuV/m | dBuV/m     | dB         |        |            |
| 1    | 1744.00 | 52.39      | -10.36 | 42.03  | 54.00      | -11.97     | Peak   | HORIZONTAL |
| 2    | 2452.00 | 48.48      | -8.82  | 39.66  | 54.00      | -14.34     | Peak   | HORIZONTAL |
| 3    | 3736.00 | 44.82      | -2.73  | 42.09  | 54.00      | -11.91     | Peak   | HORIZONTAL |
| 4    | 5188.00 | 44.24      | 0.96   | 45.20  | 54.00      | -8.80      | Peak   | HORIZONTAL |
| 5 pp | 6988.00 | 45.56      | 7.49   | 53.05  | 54.00      | -0.95      | Peak   | HORIZONTAL |
| 6    | 8440.00 | 40.77      | 7.21   | 47.98  | 54.00      | -6.02      | Peak   | HORIZONTAL |

Vertical

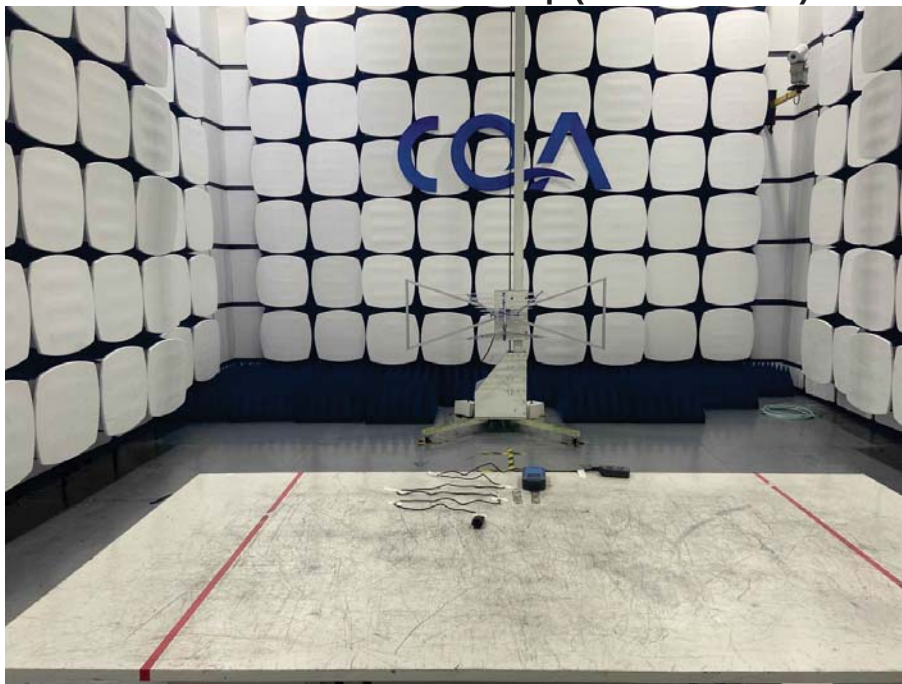


|      | Freq    | Read Level | Factor | Level  | Limit Line | Over Limit | Remark | Pol/Phase |
|------|---------|------------|--------|--------|------------|------------|--------|-----------|
|      | MHz     | dBuV       | dB/m   | dBuV/m | dBuV/m     | dB         |        |           |
| 1    | 1744.00 | 47.35      | -10.36 | 36.99  | 54.00      | -17.01     | Peak   | VERTICAL  |
| 2    | 2452.00 | 50.76      | -8.82  | 41.94  | 54.00      | -12.06     | Peak   | VERTICAL  |
| 3    | 5392.00 | 43.80      | 1.32   | 45.12  | 54.00      | -8.88      | Peak   | VERTICAL  |
| 4 pp | 6880.00 | 45.24      | 7.59   | 52.83  | 54.00      | -1.17      | Peak   | VERTICAL  |
| 5    | 8068.00 | 41.55      | 6.99   | 48.54  | 54.00      | -5.46      | Peak   | VERTICAL  |
| 6    | 9388.00 | 40.98      | 8.11   | 49.09  | 54.00      | -4.91      | Peak   | VERTICAL  |

## APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

Test Model No.: IHC-200-WIFI

**Radiated emission Test Setup (30MHz~1GHz)**



**Radiated emission Test Setup (Above 1GHz)**



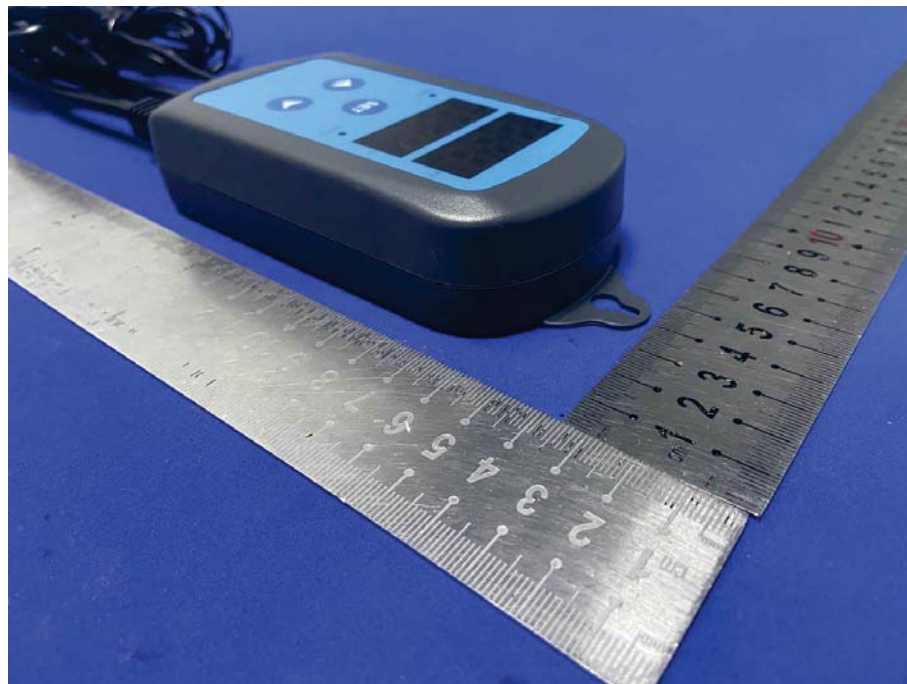
### Conducted Emissions Test Setup

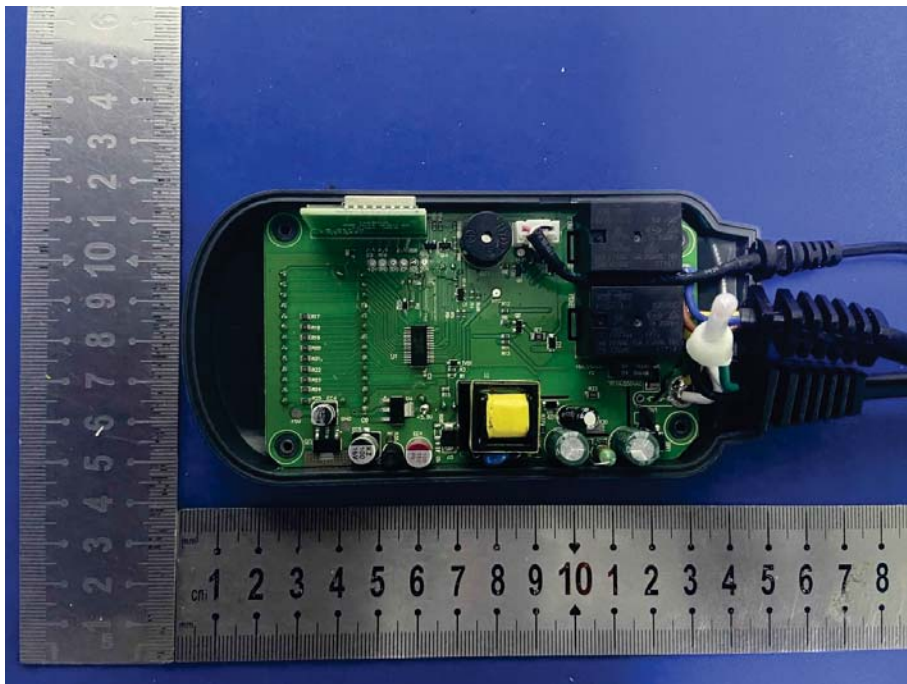
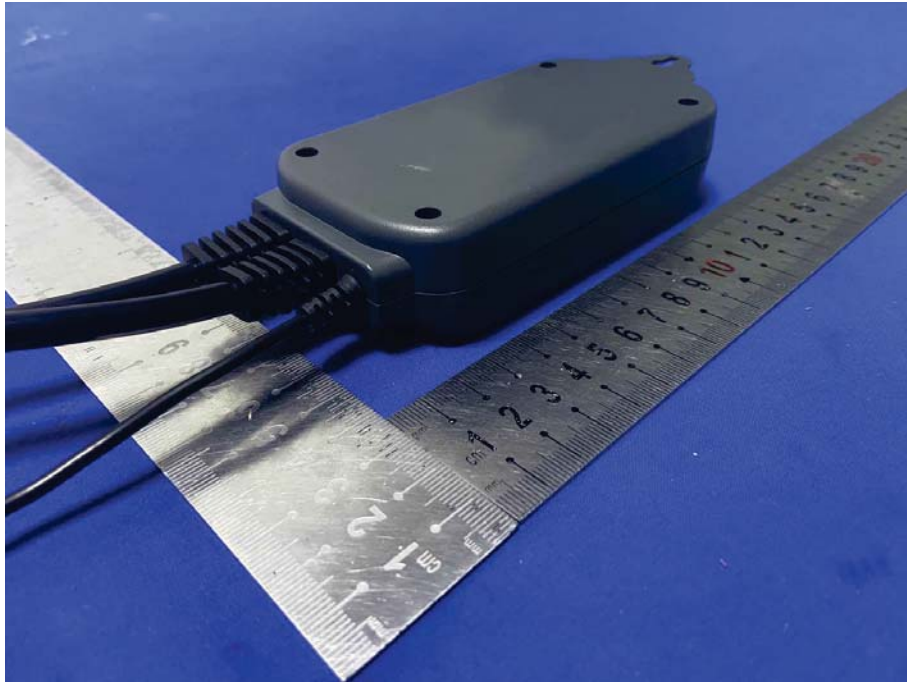


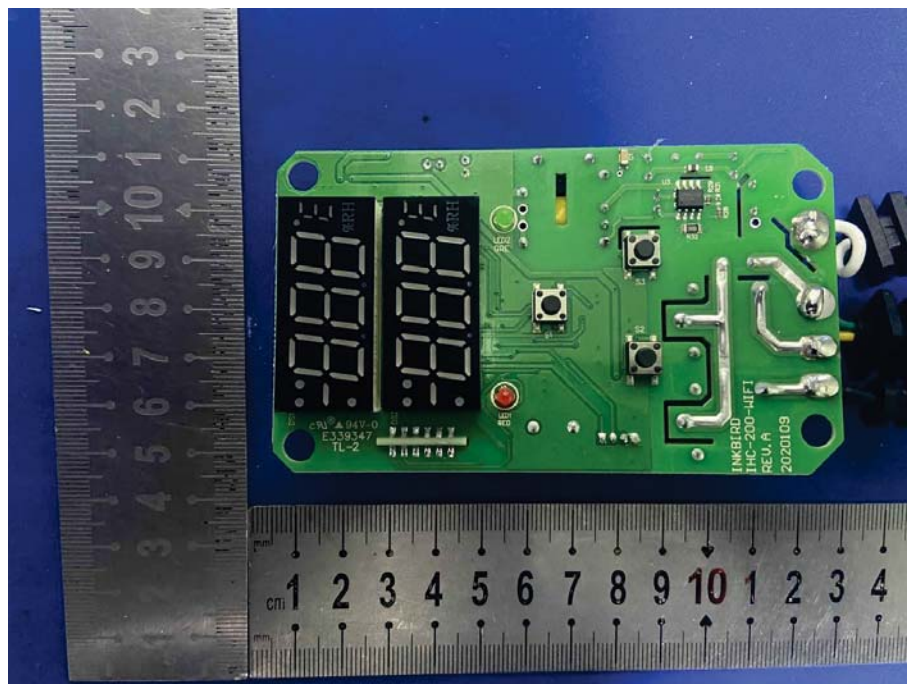
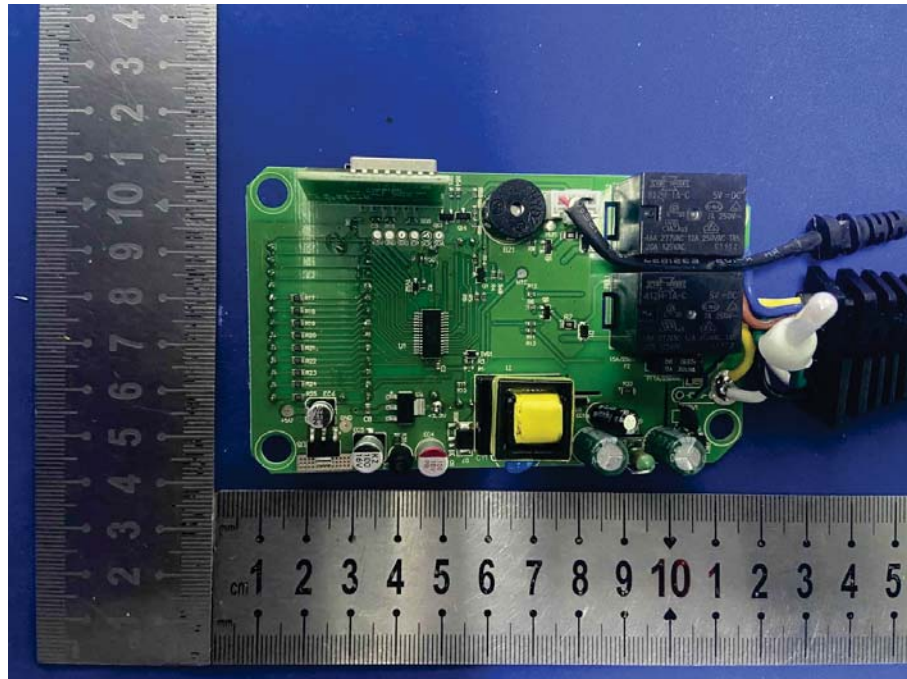
## APPENDIX 2 PHOTOGRAPHS OF EUT

Test Model No.: IHC-200-WIFI









\*\*\* End of Report \*\*\*