

EN IEC 55014-1:2021
EN IEC 55014-2:2021
EN IEC 61000-3-2:2019+A2:2024
EN 61000-3-3:2013+A2:2021+AC:2022-01

TEST REPORT

For

**XIAMEN HYSEN CONTROL TECHNOLOGY CO.,
LTD**

No.888 Yuan long Industrial Park,Haicang District,Xiamen,Fujian,China

Tested Model: HY531WE WIFI

| | |
|--|--|
| Report Type: Original Report | Product Name: THERMOSTAT |
| Report Number: | 2507A04674E-EM-01 |
| Report Date: | 2025-12-15 |
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REPORT REVISION HISTORY

| Number of Revisions | Report No. | Version | Issue Date | Description |
|---------------------|-------------------|---------|------------|-----------------|
| 0 | 2507A04674E-EM-01 | R1 V1 | 2025-12-15 | Initial Release |

GENERAL INFORMATION**Product Description for Equipment under Test (EUT)**

| | |
|---------------------------|--|
| Applicant: | XIAMEN HYSEN CONTROL TECHNOLOGY CO., LTD |
| Applicant Address: | No.888 Yuan long Industrial Park,Haicang District,Xiamen,Fujian,China |
| Manufacturer: | XIAMEN HYSEN CONTROL TECHNOLOGY CO., LTD |
| Manufacturer Address: | No.888 Yuan long Industrial Park,Haicang District,Xiamen,Fujian,China |
| Product Name: | THERMOSTAT |
| Tested Model: | HY531WE WIFI |
| Multiple Model(s): | HY531, HY531WW WIFI, HY531LD WIFI, HY531AC WIFI, HY531WE, HY531WW, HY531LD, HY531AC, HY131, HY131WE WIFI, HY131WW WIFI, HY131LD WIFI, HY131AC WIFI, HY131WE, HY131WW, HY131LD, HY131AC |
| Trade Mark: | N/A |
| Power Supply: | AC 90-240V, 50/60Hz, 16A, 3520W |
| ★Highest Clock Frequency: | 25.8 MHz |
| EUT Received Status: | Good |

Note:

1. The highest clock frequency is provided by the applicant.

2. The test model is identify with the series model as below:

| Tested Model | Series Models | Differences Items | Others |
|-----------------|---|---------------------------|--|
| HY531WE WIFI | HY531, HY531WW WIFI, HY531LD WIFI, HY531AC WIFI, HY531WE, HY531WW, HY531LD, HY531AC | Model name | All are the same except model name. (Each model comes in two colors: black and white.) |
| | HY131WE WIFI, HY131, HY131WW WIFI, HY131LD WIFI, HY131AC WIFI, HY131WE, HY131WW, HY131LD, HY131AC | Model name and Appearance | All are the same except model name and appearance (The appearance widths of the products vary). Each models is available in black and white. |

Based on the description above, the appearance differences do not affect the test results. Therefore, model HY531WE WIFI has been selected for testing.

3. All measurement and test data in this report was gathered from production sample serial number:

3DU1-1 (Assigned by the BACL (Fujian). The EUT supplied by the applicant was received on 2025-12-02).

Objective

The test report is prepared for XIAMEN HYSEN CONTROL TECHNOLOGY CO., LTD in accordance with

EN IEC 55014-1, Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission.

EN IEC 55014-2, Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 2: Immunity - Product family standard.

EN IEC 61000-3-2, Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase).

EN 61000-3-3, Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection.

The objective of the manufacturer is to determine the compliance of the EUT with EN IEC 55014-1, EN IEC 55014-2, EN IEC 61000-3-2 and EN 61000-3-3.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Fujian) to collect test data is located on the Unit 302, No. 902, Meifeng South Road, Tong'an District, Xiamen City.

Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the product as specified in CISPR 16-4-2. This uncertainty represents expanded uncertainty expressed at 95% confidence level using a coverage factor of k=2.

If U_{lab} is less than or equal to U_{cispr} , then compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit.

$$u_c(y) = \sqrt{\sum_i c_i^2 u^2(x_i)}$$

| Item | Frequency Range | U_{cispr} | $U_{\text{lab}} = 2 u_c(y)$ (Confidence of 95%) |
|----------------------|-----------------|--------------------|--|
| Conducted Emissions | 150kHz-30MHz | 3.44 dB | 2.45 dB |
| Radiated Disturbance | 30MHz~200MHz | 5.06 dB | 3.47 dB |
| | 200MHz~1GHz | 5.12 dB | 4.86 dB |

SYSTEM TEST CONFIGURATION

Test Mode and Voltage

| | |
|---|------------------------------------|
| The system was configured for testing in a typical mode (as normally used by a typical user). | |
| Test mode: | Test Mode 1: Operation + WIFI Link |
| Test voltage: | AC 230V/50Hz |

EUT Exercise Software

No exercise software was used to test.

Special Accessories

No special accessory was used.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

| Manufacturer | Description | Model | Serial Number |
|--------------|-------------|---------|---------------|
| Unknown | Load | Unknown | Unknown |

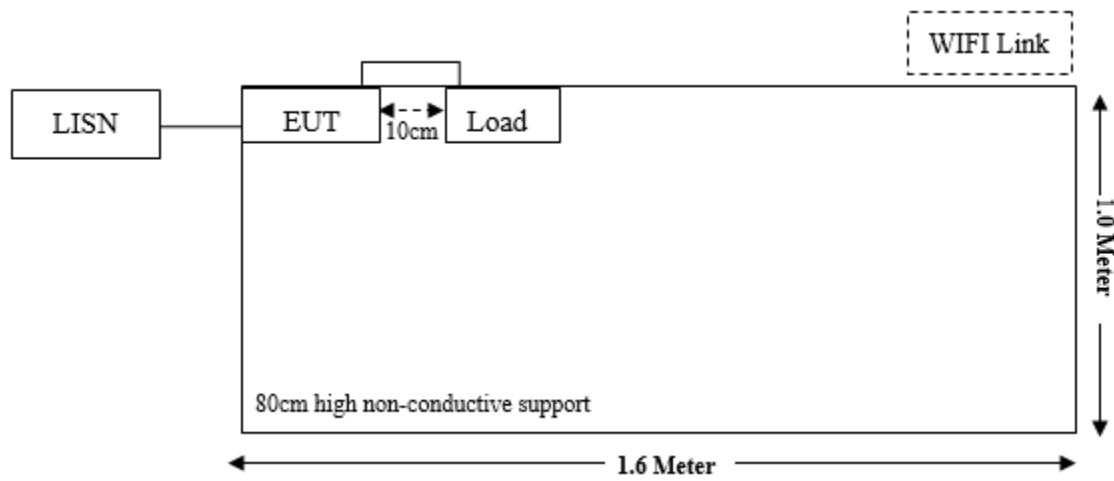
External I/O Cable

| Cable Description | Length (m) | From | To |
|-------------------|------------|------|------|
| Power cable | 0.5 | EUT | Load |

Block Diagram of Test Setup

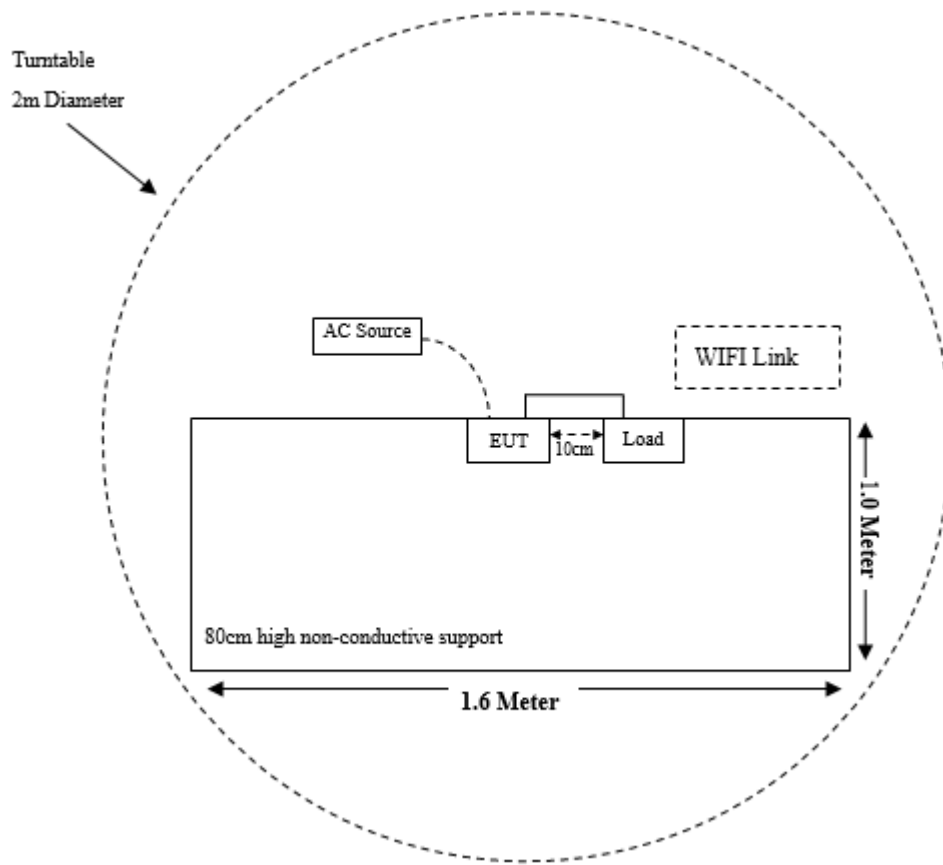
Disturbance voltage:

Test Mode 1:



Radiated Emissions:

Test Mode 1:



SUMMARY OF TEST REPORT

| EN IEC 55014-1 | | |
|------------------------------------|--|--------------------------------|
| Clause | Description | Results |
| §4.3.3 | Disturbance voltage | Compliant |
| §4.4 | Discontinuous disturbance | Not Applicable (See Note 1) |
| §4.3.4 | Radiated disturbances in frequency range 30 MHz to 1 000 MHz | Compliant |
| §4.3.5 | Radiated disturbances in frequency range above 1 GHz | Not Applicable (See Note 2) |
| EN IEC 61000-3-2 | | |
| Clause | Description | Results |
| §6, §7 | Harmonic current Emissions | Compliant |
| EN 61000-3-3 | | |
| Clause | Description | Results |
| §5, §6 | Voltage fluctuation and flicker | Compliant |
| EN IEC 55014-2(Category IV) | | |
| Clause | Description | Results (See Note 3) |
| §5.1 | Electrostatic discharge (IEC 61000-4-2) | Compliant |
| §5.5 | Radio frequency electromagnetic fields (IEC 61000-4-3) | Compliant |
| §5.2 | Electric fast transients (IEC 61000-4-4) | Compliant |
| §5.6 | Surges (IEC 61000-4-5) | Compliant |
| §5.4 | Injected currents (0.15MHz to 80MHz) (IEC 61000-4-6) | Compliant |
| §5.7 | Voltage dips and interruptions (IEC 61000-4-11) | Compliant |

Note:

1. Applicable only to thermostatically controlled appliances, automatically programmed machines, and appliances with intermittent disturbances caused by switching operations.
2. The item applies only to equipment with highest clock frequency greater than 108 MHz.
3. Immunity test performance criteria refer to EN IEC 55014-2 §6.

TEST EQUIPMENT LIST

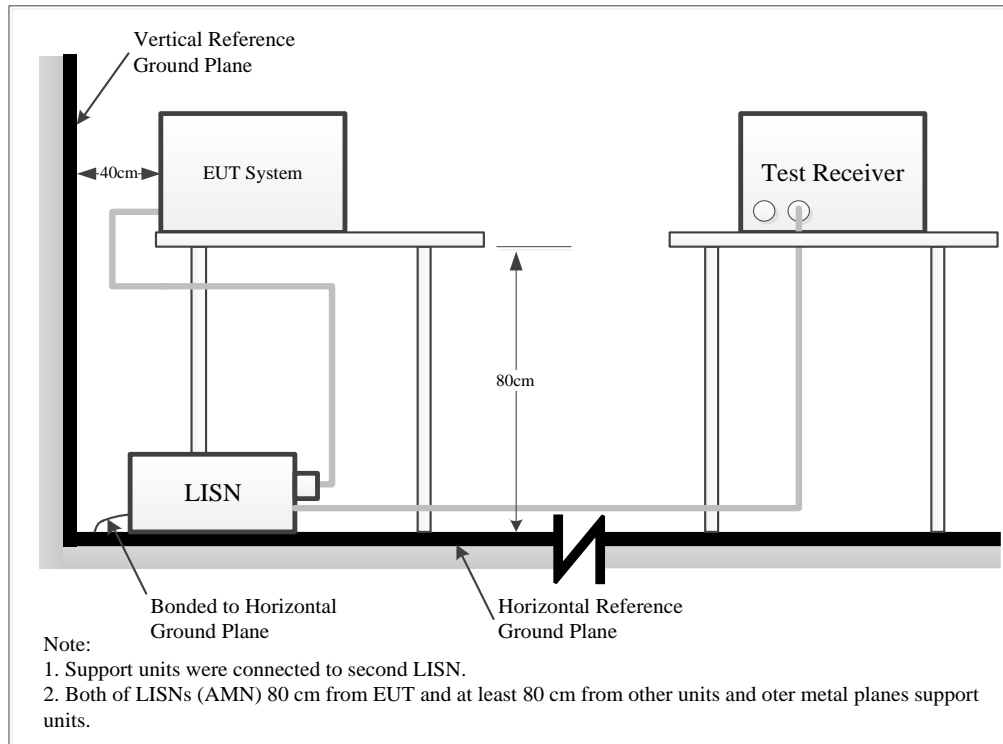
| Test Equipment | Manufacturer | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|-----------------------|--------------|---------------|------------------|----------------------|
| Conducted Emissions | | | | | |
| EMI Test Receiver | Rohde & Schwarz | ESR | 103105 | 2025/02/20 | 2026/02/19 |
| LISN | Rohde & Schwarz | ENV216 | 100129 | 2025/02/20 | 2026/02/19 |
| Pulse Limiter | Rohde & Schwarz | ESH3-Z2 | 0357.8810.54 | 2025/02/20 | 2026/02/19 |
| Coaxial Cable | XINHANGWEIBO | XH400T-N-4M | CC001 | 2025/02/20 | 2026/02/19 |
| Test Software | Audix | E3 | 18621a | N/A | N/A |
| Radiated Emissions 30 MHz to 1 GHz | | | | | |
| EMI Test Receiver | Rohde & Schwarz | ESR | 103103 | 2025/02/20 | 2026/02/19 |
| Antenna | Sunol Sciences | JB6 | A122022-5 | 2023/07/27 | 2026/07/26 |
| Amplifier | Sonoma | 310B | 120903 | 2025/02/20 | 2026/02/19 |
| Coaxial Cable | XINHANGWEIBO | XH400T-N-4M | CC002 | 2025/02/20 | 2026/02/19 |
| Coaxial Cable | XINHANGWEIBO | XH460B-N-2M | CC006 | 2025/02/20 | 2026/02/19 |
| Coaxial Cable | XINHANGWEIBO | XH460B-N-12M | CC007 | 2025/02/20 | 2026/02/19 |
| Test Software | Audix | E3 | 18621a | N/A | N/A |
| Harmonic & Flicker | | | | | |
| Harmonic & Flicker Analyzer | TESEQ | CCN1000-1 | 72676 | 2025/02/20 | 2026/02/19 |
| Harmonic & Flicker power source | TESEQ | NSG1007 | 58835 | 2025/02/20 | 2026/02/19 |
| Test Software | California Instrument | CTS4 | V 4.29.0 | N/A | N/A |
| Electrostatic discharge (ESD) | | | | | |
| ESD Simulator | TESEQ | NSG 438 | 724 | 2025/02/20 | 2026/02/19 |
| Test Software | TESEQ | Pistol | V 01.00 | N/A | N/A |
| Injected currents | | | | | |
| CS Test System | EMTEST | CWS 500N | P1409132219 | 2025/02/20 | 2026/02/19 |
| CDN | ETEST | ES-CDN-M2 | 231119 | 2025/02/20 | 2026/02/19 |
| Attenuator | EMTEST | ATT6-75 | 1012-72 | 2025/09/08 | 2026/09/07 |
| Test Software | EMTEST | icd. control | V 5.2.9 | N/A | N/A |
| Radio Frequency Electromagnetic Fields | | | | | |
| Log Periodic Antenna | Amplifier Research | ATL80M1G | 583474 | N/A | N/A |
| RF Power Amplifier | Amplifier Research | 150W1000MS | 303367 | 2025/02/20 | 2026/02/19 |
| High Power Directional Coupler | WERLATONE | 06934 | 11947 | 2025/02/20 | 2026/02/19 |
| Microwave Analog Signal Generator | Agilent | N5181A | MY48180319 | 2025/02/20 | 2026/02/19 |
| Power meter | Agilent | E4419B | MY45100315 | 2025/02/20 | 2026/02/19 |
| Power Sensor | Agilent | E9301A | MY52010003 | 2025/02/20 | 2026/02/19 |
| Test Software | BACL | VEE PRO | V 2.7.6 | N/A | N/A |

| Test Equipment | Manufacturer | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|--------------|--------------|---------------|------------------|----------------------|
| Electrical fast transients/burst & Surges & Voltage dips and interruptions | | | | | |
| Voltage Regulator | EMTEST | MV2616 | V0834104173 | 2025/02/20 | 2026/02/19 |
| Communication surge generator | EMTEST | Tsurge 6.1 | V0834104174 | 2025/02/20 | 2026/02/19 |
| Anti-interference signal simulator | EMTEST | UCS500N6 | V0834104170 | 2025/02/20 | 2026/02/19 |
| Test Software | EMTEST | iec. control | V 5.0.9.0 | N/A | N/A |

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Fujian) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

EN IEC 55014-1 §4.3.3 Disturbance voltage

Test System Setup



The setup of EUT is according with CISPR 16-2-1:2014+COR1:2020 measurement procedures. The specification used was with the EN IEC 55014-1: 2021 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz

During the conducted emission test, the EMI test receiver was set with the following configurations:

| Frequency Range | IF B/W |
|------------------|--------|
| 150 kHz - 30 MHz | 9 kHz |

Test Procedure

During the conducted emission test, the EUT was connected to the outlet of the first LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode. If the maximum peak value of the emissions is below the average limit, the QP value and average value measurement will not need to be performed and only record the maximum peak measured value to meet the requirements.

Result & Margin Calculation

The Result is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation from the Meter Reading. The basic equation is as follows:

$$\text{Factor (dB)} = \text{LISN VDF (dB)} + \text{Cable Loss (dB)} + \text{Transient Limiter Attenuation (dB)}$$

$$\text{Result (dB}\mu\text{V)} = \text{Reading (dB}\mu\text{V)} + \text{Factor (dB)}$$

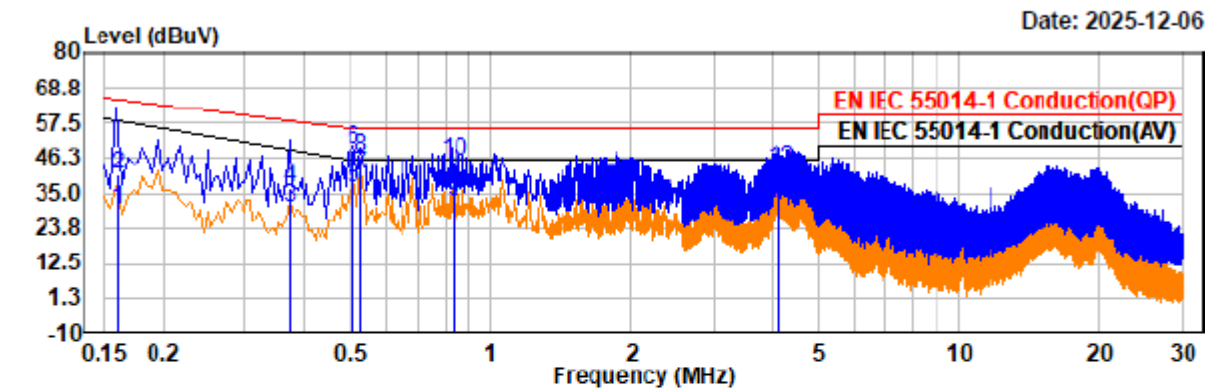
The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin (dB)} = \text{Limit (dB}\mu\text{V/m)} - \text{Result (dB}\mu\text{V/m)}$$

Test Data

Project No.: 2507A04674E-EM
Test Mode: Mode1
EUT Model: HY531WE WIFI

Temp/Humi/ATM: 24.2℃/41%/100.1kPa
Tested by: Spike Gao
Power Source: AC 230V/50Hz



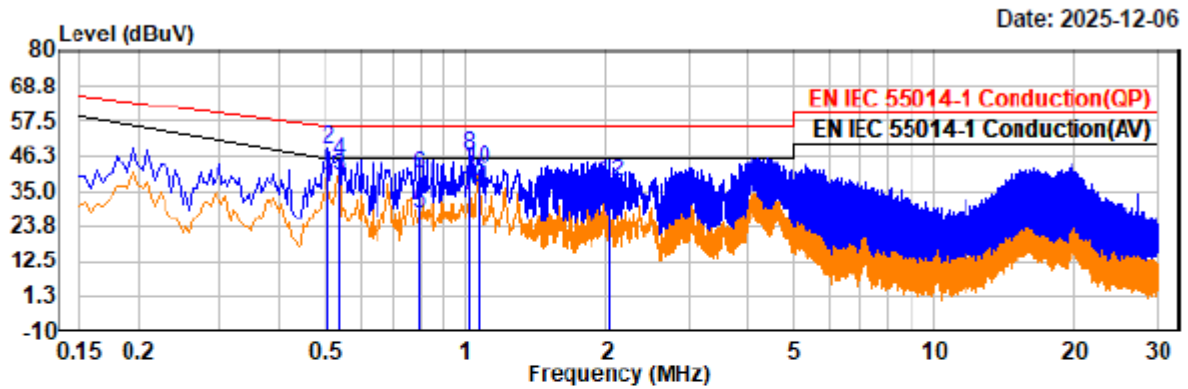
Trace: 1

Condition: IF B/W 9kHz PK/AV

| Freq MHz | Reading dBuV | Factor dB | Result dBuV | Limit dBuV | Margin dB | Phase | Remark |
|-------------|-----------------|--------------|----------------|---------------|--------------|-------|---------|
| 0.160 | 9.51 | 20.27 | 29.78 | 58.31 | 28.53 | Line | Average |
| 0.160 | 20.64 | 20.27 | 40.91 | 65.47 | 24.56 | Line | QP |
| 0.373 | 10.35 | 20.18 | 30.53 | 49.16 | 18.63 | Line | Average |
| 0.373 | 16.44 | 20.18 | 36.62 | 58.43 | 21.81 | Line | QP |
| 0.509 | 16.45 | 20.11 | 36.56 | 46.00 | 9.44 | Line | Average |
| 0.509 | 28.58 | 20.11 | 48.69 | 56.00 | 7.31 | Line | QP |
| 0.528 | 20.99 | 20.12 | 41.11 | 46.00 | 4.89 | Line | Average |
| 0.528 | 26.49 | 20.12 | 46.61 | 56.00 | 9.39 | Line | QP |
| 0.837 | 12.33 | 20.17 | 32.50 | 46.00 | 13.50 | Line | Average |
| 0.837 | 25.02 | 20.17 | 45.19 | 56.00 | 10.81 | Line | QP |
| 4.146 | 11.60 | 20.01 | 31.61 | 46.00 | 14.39 | Line | Average |
| 4.146 | 22.91 | 20.01 | 42.92 | 56.00 | 13.08 | Line | QP |

Project No.: 2507A04674E-EM
Test Mode: Mode1
EUT Model: HY531WE WIFI

Temp/Humi/ATM: 24.2°C/41%/100.1kPa
Tested by: Spike Gao
Power Source: AC 230V/50Hz



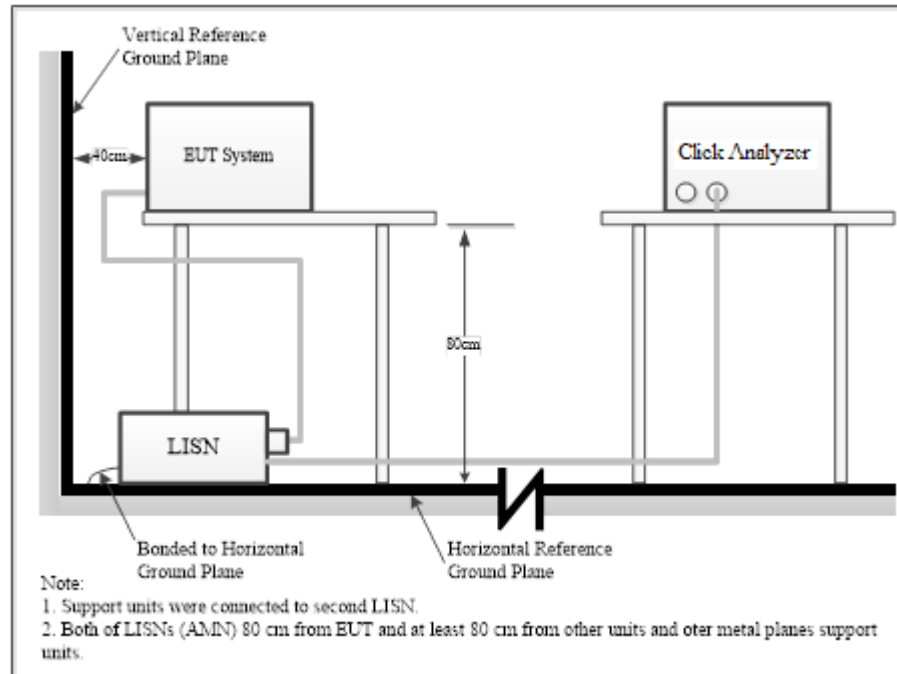
Trace: 1

Condition: IF B/W 9kHz PK/AV

| Freq MHz | Reading dBuV | Factor dB | Result dBuV | Limit dBuV | Margin dB | Phase | Remark |
|-------------|-----------------|--------------|----------------|---------------|--------------|---------|---------|
| 0.509 | 15.94 | 20.16 | 36.10 | 46.00 | 9.90 | Neutral | Average |
| 0.509 | 28.28 | 20.16 | 48.44 | 56.00 | 7.56 | Neutral | QP |
| 0.537 | 19.52 | 20.16 | 39.68 | 46.00 | 6.32 | Neutral | Average |
| 0.537 | 24.52 | 20.16 | 44.68 | 56.00 | 11.32 | Neutral | QP |
| 0.797 | 7.54 | 20.13 | 27.67 | 46.00 | 18.33 | Neutral | Average |
| 0.797 | 20.19 | 20.13 | 40.32 | 56.00 | 15.68 | Neutral | QP |
| 1.017 | 13.03 | 20.11 | 33.14 | 46.00 | 12.86 | Neutral | Average |
| 1.017 | 26.13 | 20.11 | 46.24 | 56.00 | 9.76 | Neutral | QP |
| 1.062 | 16.05 | 20.11 | 36.16 | 46.00 | 9.84 | Neutral | Average |
| 1.062 | 22.18 | 20.11 | 42.29 | 56.00 | 13.71 | Neutral | QP |
| 2.040 | 5.37 | 20.10 | 25.47 | 46.00 | 20.53 | Neutral | Average |
| 2.040 | 17.54 | 20.10 | 37.64 | 56.00 | 18.36 | Neutral | QP |

EN IEC 55014-1 §4.4 Discontinuous disturbance

Test System Setup



The setup of EUT is according with CISPR 16-2-1:2014+COR1:2020 measurement procedures. The specification used was with the EN IEC 55014-1: 2021 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

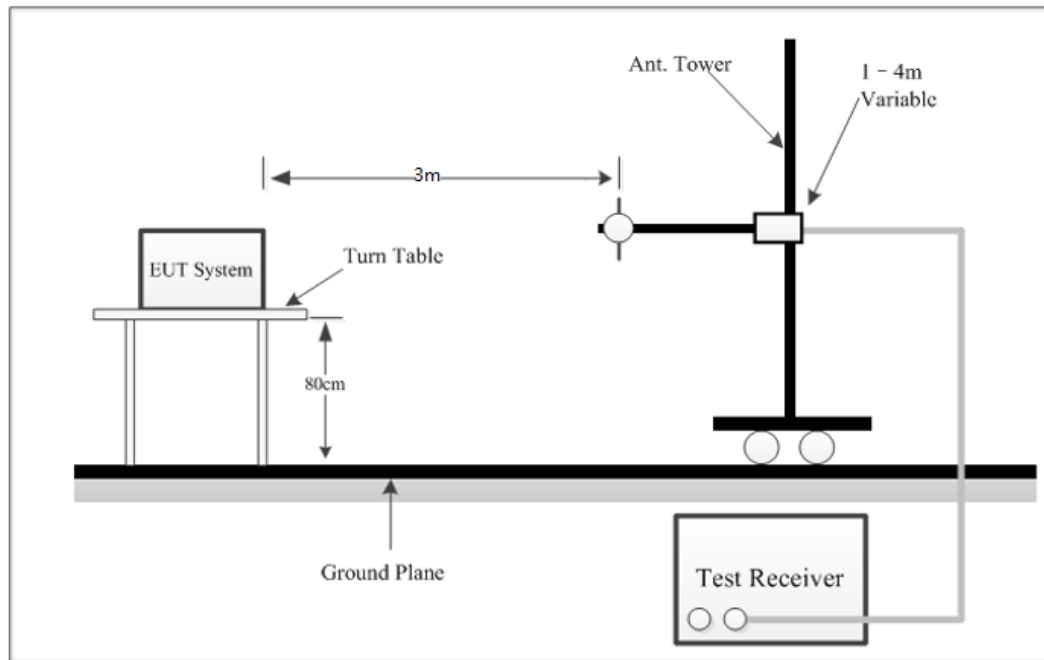
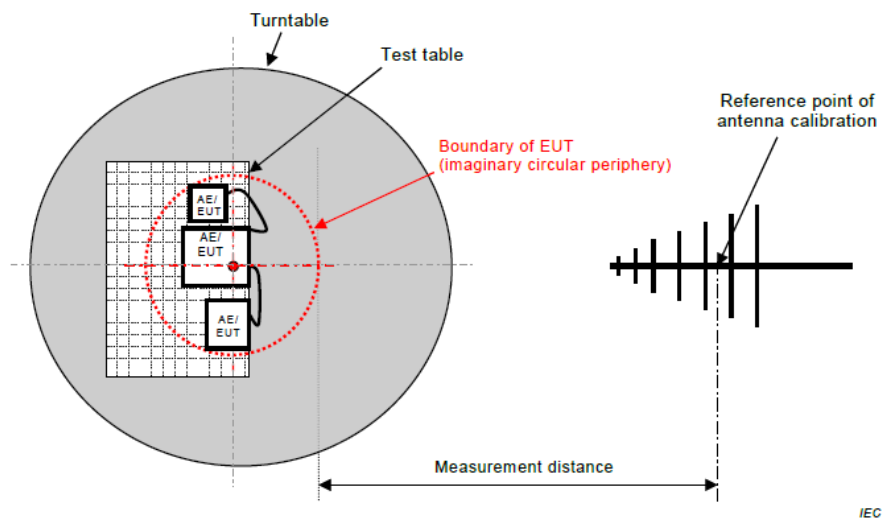
Test Procedure

This test is done when switch operations in thermostatically controlled appliances, automatic program controlled machines and other electrically controlled or operated appliances may generate discontinuous disturbance (Click). The measurement of disturbance shall be performed at the following restricted number of frequencies: 150kHz, 500kHz, 1.4MHz and 30MHz. At each frequency, for appliances, which stop automatically, duration of the minimum number of complete programs necessary to produce 40 counted clicks or, where relevant, 40 counted clicks have not been produced, the test is stopped at the end of the program in course. The relevant click rate N. The appliance under test shall be deemed to comply with the limit if not more than a quarter of the number of the counted click registered during the observation time.

Test Data

Test Result: N/A.

Note: Applicable only to thermostatically controlled appliances, automatically programmed machines, and appliances with intermittent disturbances caused by switching operations.

EN IEC 55014-1 §4.3.4 Radiated disturbances (30 MHz to 1 GHz)**Test System Setup****Radiated Top View:****Figure C.1 – Measurement distance**

The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with CISPR 16-1-4:2019+A1:2020, CISPR 16-2-3:2016+A1:2019. The specification used was EN IEC 55014-1:2021 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 1 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

| Frequency Range | RBW | VBW | Measurement | Detector |
|-------------------|---------|---------|-------------|----------|
| 30 MHz – 1000 MHz | 100 kHz | 300 kHz | PK | PK |
| | 120 kHz | / | QP | QP |

Test Procedure

Maximizing procedure was performed on the six (6) highest emissions to ensure that the EUT complied with all installation combinations.

If the measured peak level of the emissions that the measuring receiver reading level plus corrected factor is at least 10 dB below the QP emission limit, there's no need to record the measured QP level of the emissions in the report.

Result & Margin Calculation

The Result is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Result (dB}\mu\text{V/m)} = \text{Reading (dB}\mu\text{V)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} - \text{Amplifier Gain (dB)}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin (dB)} = \text{Limit (dB}\mu\text{V/m)} - \text{Result (dB}\mu\text{V/m)}$$

Test Data

Project No.: 2507A04674E-EM

Test Mode: Mode1

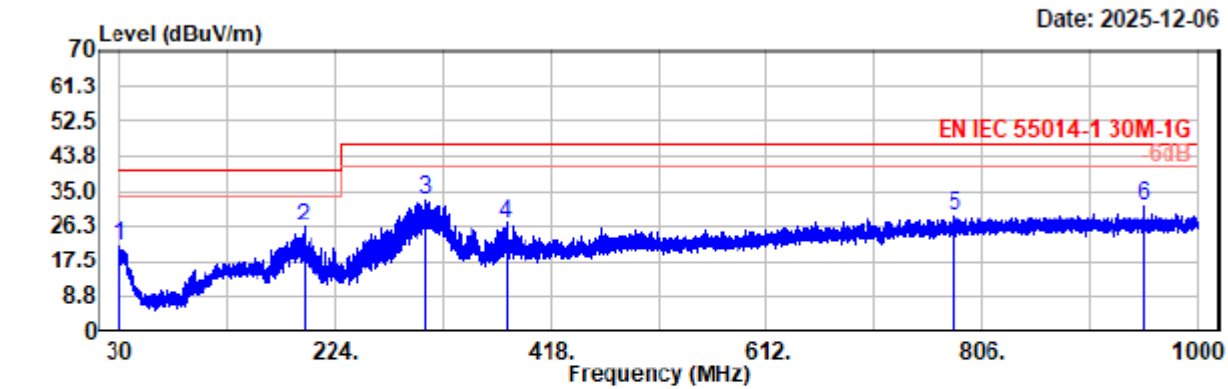
EUT Model: HY531WE WIFI

Test distance: 3m

Temp/Humi/ATM: 20.1°C/50%/100.1kPa

Tested by: Zane Zhang

Power Source: AC 230V/50Hz

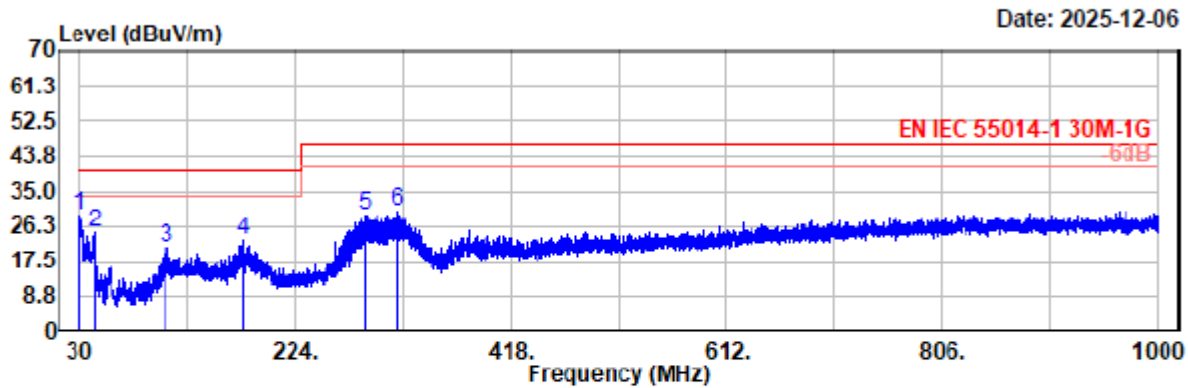


Condition: PK RBW:100kHz VBW:300kHz SWT:auto

| Freq MHz | Reading dBuV | Factor dB/m | Result dBuV/m | Limit dBuV/m | Margin dB | Polarity | Remark |
|-------------|-----------------|----------------|------------------|-----------------|--------------|------------|--------|
| 30.29 | 26.68 | -5.68 | 21.00 | 40.00 | 19.00 | Horizontal | Peak |
| 195.58 | 37.88 | -11.95 | 25.93 | 40.00 | 14.07 | Horizontal | Peak |
| 305.09 | 41.89 | -9.14 | 32.75 | 47.00 | 14.25 | Horizontal | Peak |
| 377.84 | 34.31 | -7.17 | 27.14 | 47.00 | 19.86 | Horizontal | Peak |
| 780.78 | 27.70 | 1.08 | 28.78 | 47.00 | 18.22 | Horizontal | Peak |
| 951.60 | 28.40 | 3.18 | 31.58 | 47.00 | 15.42 | Horizontal | Peak |

Project No.: 2507A04674E-EM
Test Mode: Mode1
EUT Model: HY531WE WIFI
Test distance: 3m

Temp/Humi/ATM: 20.1°C/50%/100.1kPa
Tested by: Zane Zhang
Power Source: AC 230V/50Hz

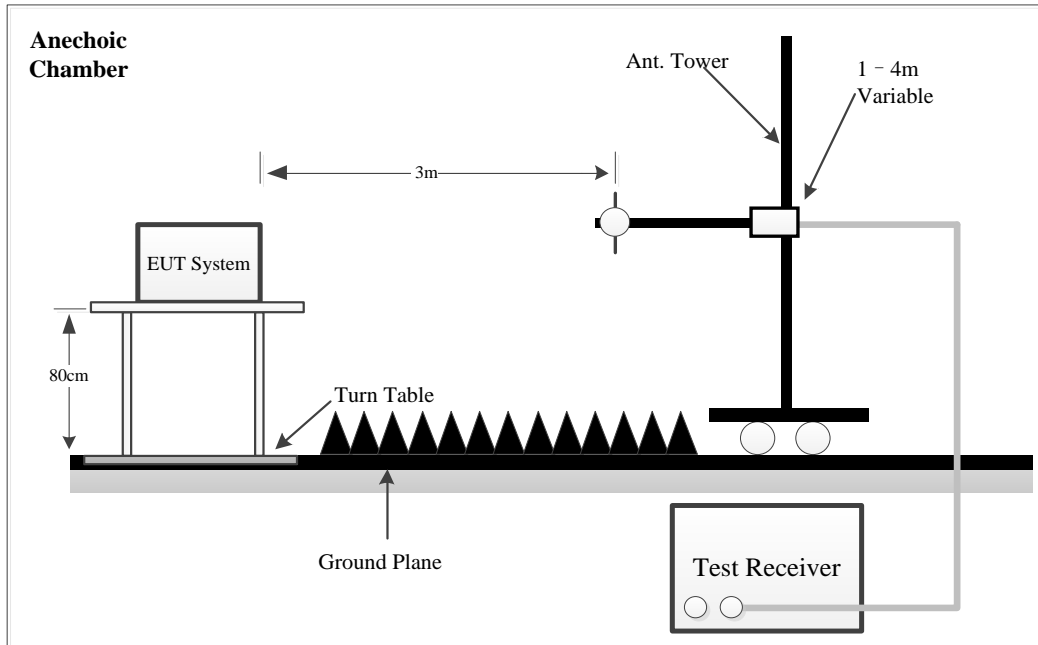


Condition: PK RBW:100kHz VBW:300kHz SWT:auto

| Freq MHz | Reading dBuV | Factor dB/m | Result dBuV/m | Limit dBuV/m | Margin dB | Polarity | Remark |
|-------------|-----------------|----------------|------------------|-----------------|--------------|----------|--------|
| 30.49 | 34.59 | -5.73 | 28.86 | 40.00 | 11.14 | Vertical | Peak |
| 43.10 | 38.62 | -13.97 | 24.65 | 40.00 | 15.35 | Vertical | Peak |
| 107.70 | 33.45 | -12.51 | 20.94 | 40.00 | 19.06 | Vertical | Peak |
| 176.76 | 35.05 | -12.18 | 22.87 | 40.00 | 17.13 | Vertical | Peak |
| 286.37 | 38.27 | -9.26 | 29.01 | 47.00 | 17.99 | Vertical | Peak |
| 315.57 | 38.65 | -8.88 | 29.77 | 47.00 | 17.23 | Vertical | Peak |

EN IEC 55014-1 §4.3.5 Radiated disturbances (Above 1 GHz)

Test System Setup



The radiated emission tests were performed in the 3 meters, using the setup accordance with the CISPR 16-1-4:2019+A1:2020, CISPR 16-2-3:2016+A1:2019. The specification used was EN IEC 55014-1:2021 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The system was investigated above 1 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

| Frequency Range | RBW | VBW | Measurement | Detector |
|-----------------|-------|-------|-------------|----------|
| Above 1 GHz | 1 MHz | 3 MHz | PK | PK |
| | 1 MHz | 10 Hz | AV | PK |

Test Procedure

Maximizing procedure was performed on the six (6) highest emissions to ensure that the EUT complied with all installation combinations.

If the maximum peak value of the emissions is below the average limit, the average value measurement will not need to be performed and only record the maximum peak measured value to meet the requirements.

Result & Margin Calculation

The Result is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Result (dB}\mu\text{V/m)} = \text{Reading (dB}\mu\text{V)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} - \text{Amplifier Gain (dB)}$$

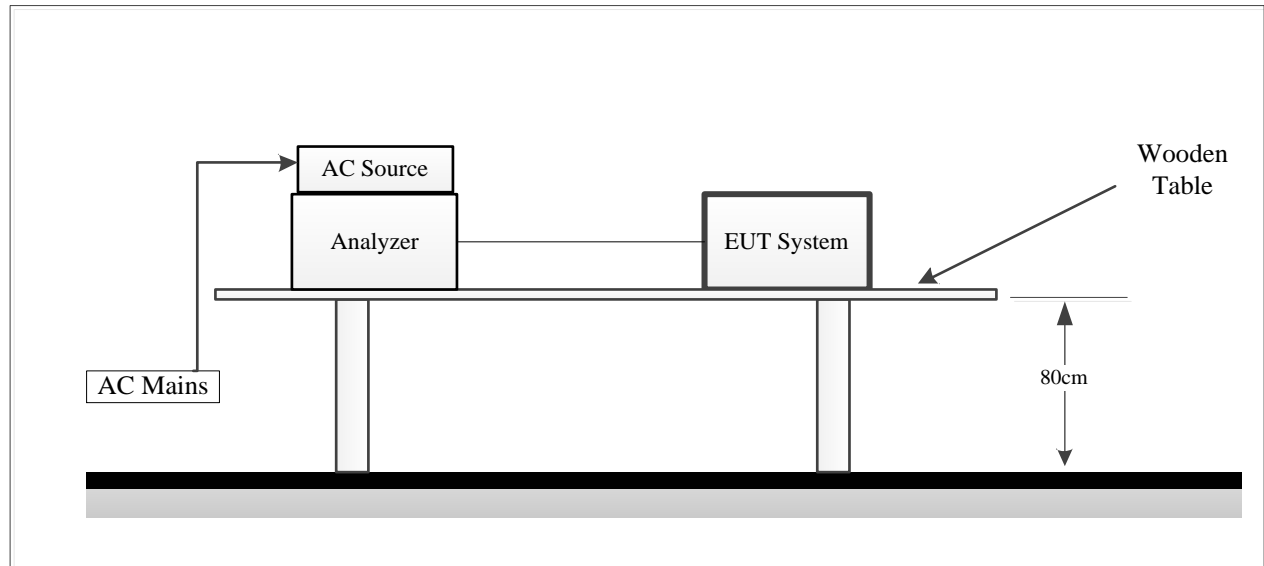
The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin (dB)} = \text{Limit (dB}\mu\text{V/m)} - \text{Result (dB}\mu\text{V/m)}$$

Test Data

Test Result: N/A.

Notes: The item applies only to equipment with highest clock frequency greater than 108 MHz.

EN IEC 61000-3-2 Harmonic Current Emissions**Test System Setup****Test Standard**

EN IEC 61000-3-2:2019+A2:2024

Test procedure and Classification of equipment

The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under Mode 1 conditions for each successive harmonic component in turn. The classification of EUT is according to section 5 of EN IEC 61000-3-2.

The EUT is classified as follows:

Class A:

Equipment not specified as belonging to Class B, C or D shall be considered as Class A equipment.

Some examples of Class A equipment are:

- balanced three-phase equipment;
- household appliances, excluding those specified as belonging to Class B, C or D;
- vacuum cleaners;
- high pressure cleaners;
- tools, excluding portable tools;
- independent phase control dimmers;
- audio equipment;
- professional luminaires for stage lighting and studios.

Class B:

- portable tools;
- arc welding equipment which is not professional equipment.

Class C:

- lighting equipment.

Class D:

Equipment having a specified power less than or equal to 600 W, of the following type:

- personal computer and personal computer monitors;
- television receivers;
- refrigerators and freezers having one or more variable-speed drives to control compressor motor(s).

Application of limits

Limits for Class A equipment:

The harmonics of the input current shall not exceed the values given in Table 1.

Table 1 – Limits for Class A equipment

| Harmonic order h | Maximum permissible harmonic current A |
|-----------------------|--|
| Odd harmonics | |
| 3 | 2,30 |
| 5 | 1,14 |
| 7 | 0,77 |
| 9 | 0,40 |
| 11 | 0,33 |
| 13 | 0,21 |
| $15 \leq h \leq 39$ | $0,15 \frac{15}{h}$ |
| Even harmonics | |
| 2 | 1,08 |
| 4 | 0,43 |
| 6 | 0,30 |
| $8 \leq h \leq 40$ | $0,23 \frac{8}{h}$ |

Limits for Class B equipment:

For Class B equipment, the harmonics of the input current shall not exceed the values given in Table 1 multiplied by a factor of 1.5.

Limits for Class C equipment:

Rated power > 25 W

For luminaires with incandescent lamps and built-in phase control dimming having a rated power greater than 25 W, the harmonics of the input current shall not exceed the limits given in Table 1.

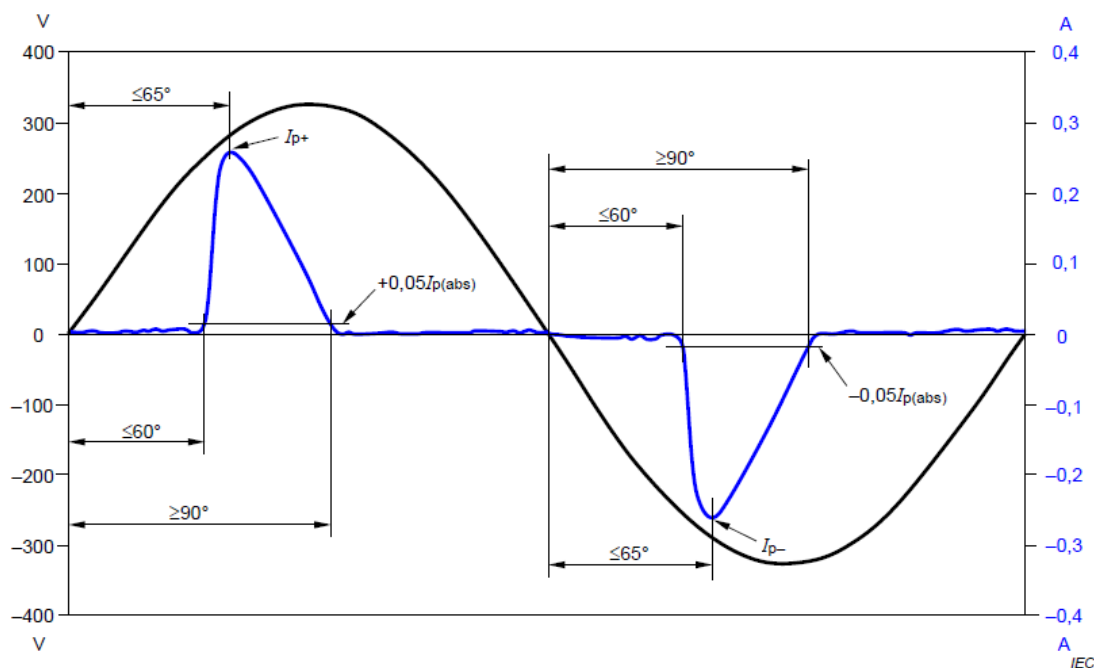
For any other lighting equipment having a rated power greater than 25 W, the harmonics of the input current shall not exceed the relative limits given in Table 2. For those types that include means for control (e.g. dimming, colour), the harmonics of the input current shall not exceed the harmonic current values derived from the percentage limits given in Table 2 for the maximum active input power (P_{\max}) condition when tested in both following conditions:

- with the means for control set to obtain P_{\max} ;
- with the means for control set to the position expected to produce the maximum total harmonic current (THC) within the active input power range [P_{\min} , P_{\max}], where
 - $P_{\min} = 5 \text{ W}$, if $P_{\max} \leq 50 \text{ W}$;
 - $P_{\min} = 10 \%$ of P_{\max} , if $50 \text{ W} < P_{\max} \leq 250 \text{ W}$;
 - $P_{\min} = 25 \text{ W}$, if $P_{\max} > 250 \text{ W}$.

Table 2 – Limits for Class C equipment ^a

| Harmonic order h | Maximum permissible harmonic current expressed as a percentage of the input current at the fundamental frequency % |
|---|--|
| 2 | 2 |
| 3 | 27 ^b |
| 5 | 10 |
| 7 | 7 |
| 9 | 5 |
| $11 \leq h \leq 39$ (odd harmonics only) | 3 |

^a For some Class C products, other emission limits apply (see 7.4).
^b The limit is determined based on the assumption of modern lighting technologies having power factors of 0,90 or higher.

Rated power ≥ 5 W and ≤ 25 W

NOTE $I_{p(abs)}$ is the higher absolute value of I_{p+} and I_{p-} .

Lighting equipment having a rated power greater than or equal to 5 W and less than or equal to 25 W shall comply with one of the following three sets of requirements:

- the harmonic currents shall not exceed the power-related limits of Table 3, column 2;
- the third harmonic current, expressed as a percentage of the fundamental current, shall not exceed 86 % and the fifth harmonic current shall not exceed 61 %. In addition, the waveform of the input current shall be such that it reaches the 5 % current threshold before or at 60° , has its peak value before or at 65° and

does not fall below the 5 % current threshold before 90°, referenced to any zero crossing of the fundamental supply voltage. The current threshold is 5 % of the highest absolute peak value that occurs in the measurement window, and the phase angle measurements are made on the cycle that includes this absolute peak value (see Figure 2). Components of current with frequencies above 9 kHz shall not influence this evaluation (a filter similar to the one described in 5.3 of IEC 61000-4-7:2002 and IEC 61000-4-7:2002/AMD1:2008 may be used);

- the *THD* shall not exceed 70 %. The third order harmonic current, expressed as a percentage of the fundamental current, shall not exceed 35 %, the fifth order current shall not exceed 25 %, the seventh order current shall not exceed 30 %, the ninth and eleventh order currents shall not exceed 20 % and the second order current shall not exceed 5 %.

Limits for Class D equipment:

Table 3 – Limits for Class D equipment

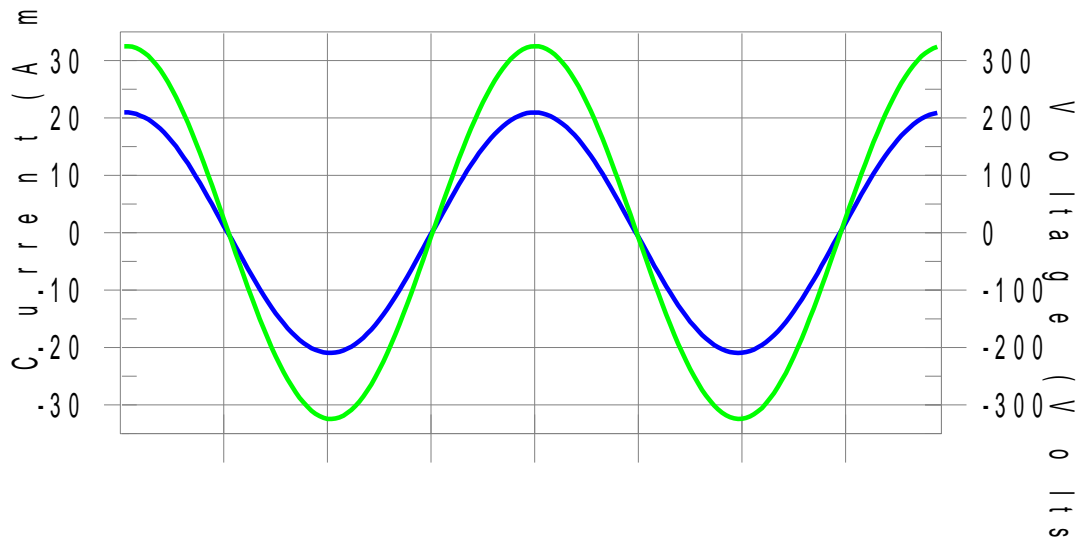
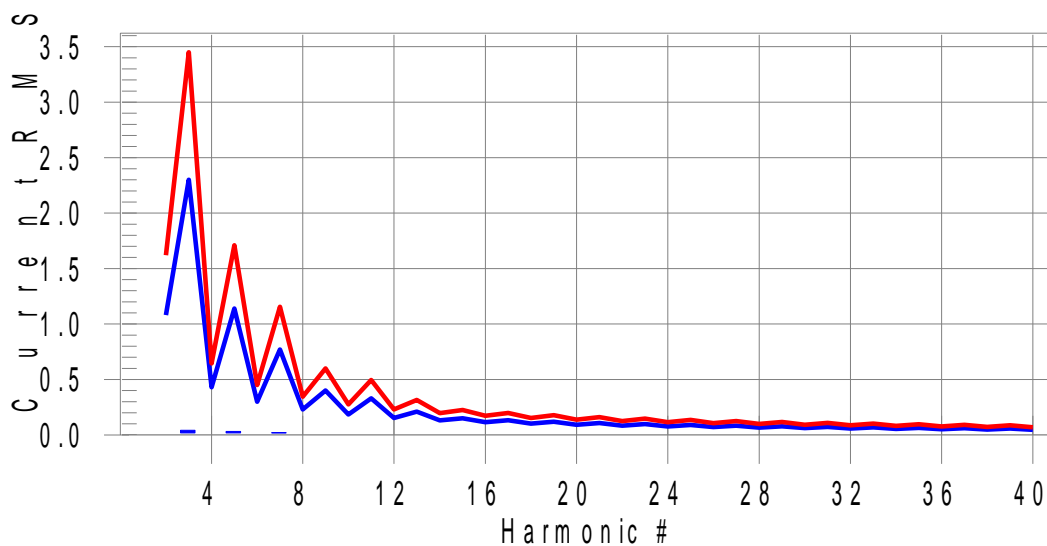
| Harmonic order | Maximum permissible harmonic current per watt | Maximum permissible harmonic current |
|---|---|---|
| h | mA/W | A |
| 3 | 3,4 | 2,30 |
| 5 | 1,9 | 1,14 |
| 7 | 1,0 | 0,77 |
| 9 | 0,5 | 0,40 |
| 11 | 0,35 | 0,33 |
| $13 \leq h \leq 39$ (odd harmonics only) | $\frac{3,85}{h}$ | See Table 1 |

Test Data

| | | | |
|-----------------------|--------------|---------------------|--|
| Test Model: | HY531WE WIFI | Test Mode: | Mode 1 |
| Test Engineer: | Toby Chen | Test Date: | 2025-12-08 |
| Test Voltage: | AC 230V/50Hz | Environment: | Temp.: 23.3°C Humi.: 51% Press.: 99.9kPa |

HARMONICS – CLASS-A PER IEC 61000-3-2 (RUN TIME)

Test Result: Pass Source qualification: Normal

Current & voltage waveformsHarmonics and Class A limit lineEuropean Limits

Test result: Pass Worst harmonics H0-0.0% of 150% limit, H0-0% of 100% limit

Current Test Result Summary

Test Result: Pass Source qualification: Normal

THC(A): 0.063 I-THD(%): 0.4 POHC(A): 0.009 POHC Limit(A): 0.251

Highest parameter values during test:

| | | | |
|----------------|--------|----------------|--------|
| V_RMS (Volts): | 229.92 | Frequency(Hz): | 50.00 |
| I_Peak (Amps): | 21.071 | I_RMS (Amps): | 14.838 |
| I_Fund (Amps): | 14.837 | Crest Factor: | 1.424 |
| Power (Watts): | 3410.9 | Power Factor: | 1.000 |

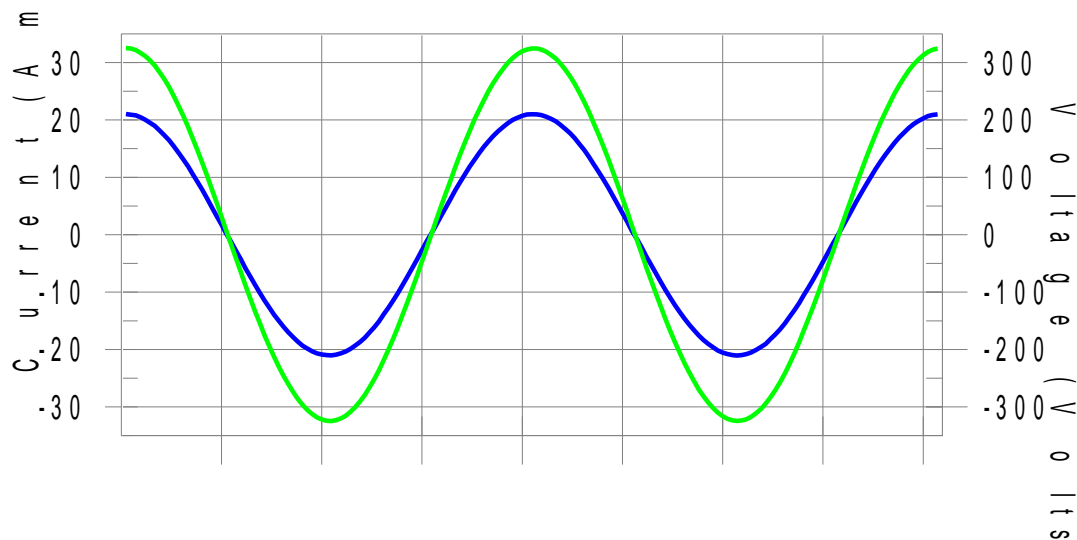
| Harm# | Harms(avg) | 100%Limit | %of Limit | Harms(max) | 150%Limit | %of Limit | Status |
|-------|------------|-----------|-----------|------------|-----------|-----------|--------|
| 2 | 0.006 | 1.080 | N/A | 0.010 | 1.620 | N/A | Pass |
| 3 | 0.042 | 2.300 | N/A | 0.047 | 3.450 | N/A | Pass |
| 4 | 0.006 | 0.430 | N/A | 0.007 | 0.645 | N/A | Pass |
| 5 | 0.032 | 1.140 | N/A | 0.033 | 1.710 | N/A | Pass |
| 6 | 0.001 | 0.300 | N/A | 0.003 | 0.450 | N/A | Pass |
| 7 | 0.021 | 0.770 | N/A | 0.022 | 1.155 | N/A | Pass |
| 8 | 0.001 | 0.230 | N/A | 0.002 | 0.345 | N/A | Pass |
| 9 | 0.013 | 0.400 | N/A | 0.014 | 0.600 | N/A | Pass |
| 10 | 0.002 | 0.184 | N/A | 0.003 | 0.276 | N/A | Pass |
| 11 | 0.012 | 0.330 | N/A | 0.012 | 0.495 | N/A | Pass |
| 12 | 0.001 | 0.153 | N/A | 0.001 | 0.230 | N/A | Pass |
| 13 | 0.010 | 0.210 | N/A | 0.011 | 0.315 | N/A | Pass |
| 14 | 0.001 | 0.131 | N/A | 0.001 | 0.197 | N/A | Pass |
| 15 | 0.007 | 0.150 | N/A | 0.008 | 0.225 | N/A | Pass |
| 16 | 0.001 | 0.115 | N/A | 0.001 | 0.173 | N/A | Pass |
| 17 | 0.007 | 0.132 | N/A | 0.007 | 0.198 | N/A | Pass |
| 18 | 0.001 | 0.102 | N/A | 0.001 | 0.153 | N/A | Pass |
| 19 | 0.007 | 0.118 | N/A | 0.007 | 0.178 | N/A | Pass |
| 20 | 0.001 | 0.092 | N/A | 0.001 | 0.138 | N/A | Pass |
| 21 | 0.005 | 0.107 | N/A | 0.005 | 0.161 | N/A | Pass |
| 22 | 0.000 | 0.084 | N/A | 0.001 | 0.125 | N/A | Pass |
| 23 | 0.004 | 0.098 | N/A | 0.004 | 0.147 | N/A | Pass |
| 24 | 0.001 | 0.077 | N/A | 0.001 | 0.115 | N/A | Pass |
| 25 | 0.004 | 0.090 | N/A | 0.004 | 0.135 | N/A | Pass |
| 26 | 0.000 | 0.071 | N/A | 0.001 | 0.107 | N/A | Pass |
| 27 | 0.003 | 0.083 | N/A | 0.004 | 0.125 | N/A | Pass |
| 28 | 0.000 | 0.066 | N/A | 0.001 | 0.099 | N/A | Pass |
| 29 | 0.003 | 0.078 | N/A | 0.003 | 0.116 | N/A | Pass |
| 30 | 0.000 | 0.061 | N/A | 0.001 | 0.092 | N/A | Pass |
| 31 | 0.002 | 0.073 | N/A | 0.003 | 0.109 | N/A | Pass |
| 32 | 0.000 | 0.058 | N/A | 0.001 | 0.086 | N/A | Pass |
| 33 | 0.002 | 0.068 | N/A | 0.002 | 0.102 | N/A | Pass |
| 34 | 0.000 | 0.054 | N/A | 0.001 | 0.081 | N/A | Pass |
| 35 | 0.002 | 0.064 | N/A | 0.002 | 0.096 | N/A | Pass |
| 36 | 0.000 | 0.051 | N/A | 0.001 | 0.077 | N/A | Pass |
| 37 | 0.001 | 0.061 | N/A | 0.001 | 0.091 | N/A | Pass |
| 38 | 0.000 | 0.048 | N/A | 0.001 | 0.073 | N/A | Pass |
| 39 | 0.001 | 0.058 | N/A | 0.001 | 0.087 | N/A | Pass |
| 40 | 0.000 | 0.046 | N/A | 0.001 | 0.069 | N/A | Pass |

| | | | |
|----------------|--------------|--------------|--|
| Test Model: | HY531WE WIFI | Test Mode: | Mode 1 |
| Test Engineer: | Toby Chen | Test Date: | 2025-12-08 |
| Test Voltage: | AC 230V/60Hz | Environment: | Temp.: 23.3°C Humi.: 51% Press.: 99.9kPa |

HARMONICS – CLASS-A PER IEC 61000-3-2 (RUN TIME)

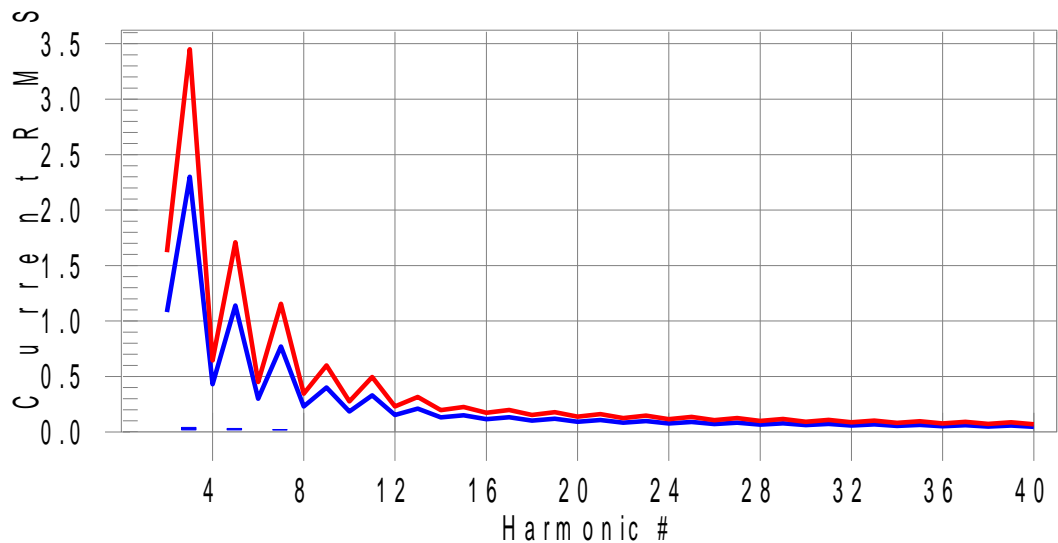
Test Result: Pass Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line

European Limits



Test result: Pass Worst harmonics H0-0.0% of 150% limit, H0-0% of 100% limit

Current Test Result Summary

Test Result: Pass Source qualification: Normal

THC(A): 0.061 I-THD(%): 0.4 POHC(A): 0.009 POHC Limit(A): 0.251

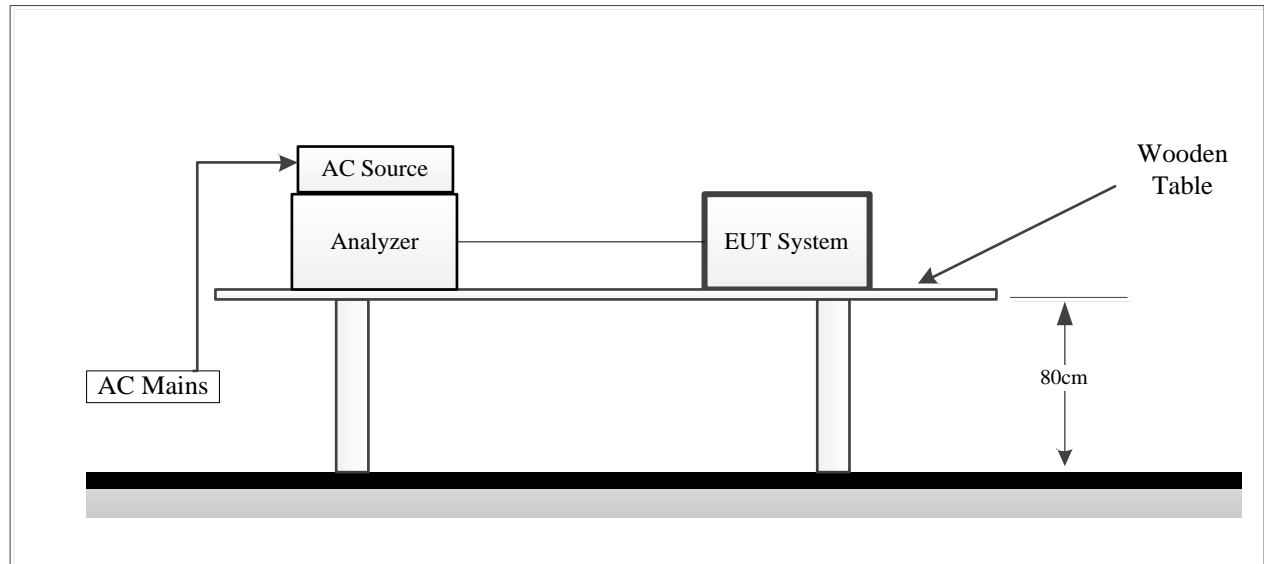
Highest parameter values during test:

| | | | |
|----------------|--------|----------------|--------|
| V_RMS (Volts): | 229.88 | Frequency(Hz): | 60.00 |
| I_Peak (Amps): | 21.118 | I_RMS (Amps): | 14.852 |
| I_Fund (Amps): | 14.851 | Crest Factor: | 1.424 |
| Power (Watts): | 3413.3 | Power Factor: | 1.000 |

| Harm# | Harms(avg) | 100%Limit | % of Limit | Harms(max) | 150%Limit | % of Limit | Status |
|-------|------------|-----------|------------|------------|-----------|------------|--------|
| 2 | 0.004 | 1.080 | N/A | 0.005 | 1.620 | N/A | Pass |
| 3 | 0.041 | 2.300 | N/A | 0.043 | 3.450 | N/A | Pass |
| 4 | 0.001 | 0.430 | N/A | 0.002 | 0.645 | N/A | Pass |
| 5 | 0.032 | 1.140 | N/A | 0.033 | 1.710 | N/A | Pass |
| 6 | 0.001 | 0.300 | N/A | 0.001 | 0.450 | N/A | Pass |
| 7 | 0.020 | 0.770 | N/A | 0.021 | 1.155 | N/A | Pass |
| 8 | 0.001 | 0.230 | N/A | 0.001 | 0.345 | N/A | Pass |
| 9 | 0.013 | 0.400 | N/A | 0.013 | 0.600 | N/A | Pass |
| 10 | 0.002 | 0.184 | N/A | 0.002 | 0.276 | N/A | Pass |
| 11 | 0.012 | 0.330 | N/A | 0.012 | 0.495 | N/A | Pass |
| 12 | 0.001 | 0.153 | N/A | 0.001 | 0.230 | N/A | Pass |
| 13 | 0.010 | 0.210 | N/A | 0.010 | 0.315 | N/A | Pass |
| 14 | 0.001 | 0.131 | N/A | 0.001 | 0.197 | N/A | Pass |
| 15 | 0.007 | 0.150 | N/A | 0.007 | 0.225 | N/A | Pass |
| 16 | 0.001 | 0.115 | N/A | 0.001 | 0.173 | N/A | Pass |
| 17 | 0.007 | 0.132 | N/A | 0.007 | 0.198 | N/A | Pass |
| 18 | 0.001 | 0.102 | N/A | 0.001 | 0.153 | N/A | Pass |
| 19 | 0.007 | 0.118 | N/A | 0.007 | 0.178 | N/A | Pass |
| 20 | 0.001 | 0.092 | N/A | 0.001 | 0.138 | N/A | Pass |
| 21 | 0.005 | 0.107 | N/A | 0.005 | 0.161 | N/A | Pass |
| 22 | 0.000 | 0.084 | N/A | 0.001 | 0.125 | N/A | Pass |
| 23 | 0.004 | 0.098 | N/A | 0.004 | 0.147 | N/A | Pass |
| 24 | 0.001 | 0.077 | N/A | 0.001 | 0.115 | N/A | Pass |
| 25 | 0.003 | 0.090 | N/A | 0.004 | 0.135 | N/A | Pass |
| 26 | 0.001 | 0.071 | N/A | 0.002 | 0.107 | N/A | Pass |
| 27 | 0.003 | 0.083 | N/A | 0.003 | 0.125 | N/A | Pass |
| 28 | 0.001 | 0.066 | N/A | 0.001 | 0.099 | N/A | Pass |
| 29 | 0.003 | 0.078 | N/A | 0.003 | 0.116 | N/A | Pass |
| 30 | 0.001 | 0.061 | N/A | 0.002 | 0.092 | N/A | Pass |
| 31 | 0.002 | 0.073 | N/A | 0.002 | 0.109 | N/A | Pass |
| 32 | 0.001 | 0.058 | N/A | 0.001 | 0.086 | N/A | Pass |
| 33 | 0.001 | 0.068 | N/A | 0.002 | 0.102 | N/A | Pass |
| 34 | 0.001 | 0.054 | N/A | 0.002 | 0.081 | N/A | Pass |
| 35 | 0.002 | 0.064 | N/A | 0.002 | 0.096 | N/A | Pass |
| 36 | 0.001 | 0.051 | N/A | 0.002 | 0.077 | N/A | Pass |
| 37 | 0.001 | 0.061 | N/A | 0.002 | 0.091 | N/A | Pass |
| 38 | 0.001 | 0.048 | N/A | 0.001 | 0.073 | N/A | Pass |
| 39 | 0.001 | 0.058 | N/A | 0.001 | 0.087 | N/A | Pass |
| 40 | 0.000 | 0.046 | N/A | 0.001 | 0.069 | N/A | Pass |

EN 61000-3-3 Voltage Fluctuations and Flicker

Test System Setup



Test Standard

EN 61000-3-3:2013+A2:2021+AC:2022-01

Test procedure

The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the most unfavorable sequence of voltage changes under Mode 1 conditions.

During the flick measurement, the measure time shall include that part of whole operation cycle in which the EUT produce the most unfavorable sequence of voltage changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.

Flicker Test Limits

The limits shall be applicable to voltage fluctuations and flicker at the supply terminals of the equipment under test, measured or calculated according to clause 4 under test conditions described in clause 6 and annex A. Tests made to prove compliance with the limits are considered to be type tests.

The following limits apply:

- the value of P_{st} shall not be greater than 1,0;
- the value of P_{lt} shall not be greater than 0,65;
- T_{max} , the accumulated time value of $d(t)$ with a deviation exceeding 3,3 % during a single voltage change at the EUT terminals, shall not exceed 500 ms;
- the relative steady-state voltage change, dc , shall not exceed 3,3 %;
- the maximum relative voltage change d_{max} , shall not exceed
 - a) 4 % without additional conditions;
 - b) 6 % for equipment which is:
 - Switched manually, or
 - switched automatically more frequently than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds), or manual restart, after a power supply interruption.

Note: The cycling frequency will be further limited by the P_{st} and P_{lt} limit. For example: a d_{max} of 6 % producing a rectangular voltage change characteristic twice per hour will give a P_{lt} of about 0,65.

c) 7 % for equipment which is - attended whilst in use (for example: hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as lawn mowers, portable tools such as electric drills), or – switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds) or manual restart, after a power supply interruption.

In the case of equipment having several separately controlled circuits in accordance with 6.6, limits b) and c) shall apply only if there is delayed or manual restart after a power supply interruption; for all equipment with automatic switching which is energized immediately on restoration of supply after a power supply interruption, limits a) shall apply; for all equipment with manual switching, limits b) or c) shall apply depending on the rate of switching. Pst and Plt requirements shall not be applied to voltage changes caused by manual switching. The limits shall not be applied to voltage changes associated with emergency switching or emergency interruptions.

Test Data

| | | | |
|----------------|--------------|--------------|--|
| Test Model: | HY531WE WIFI | Test Mode: | Mode 1 |
| Test Engineer: | Toby Chen | Test Date: | 2025-12-08 |
| Test Voltage: | AC 230V/50Hz | Environment: | Temp.: 23.3°C Humi.: 51% Press.: 99.9kPa |

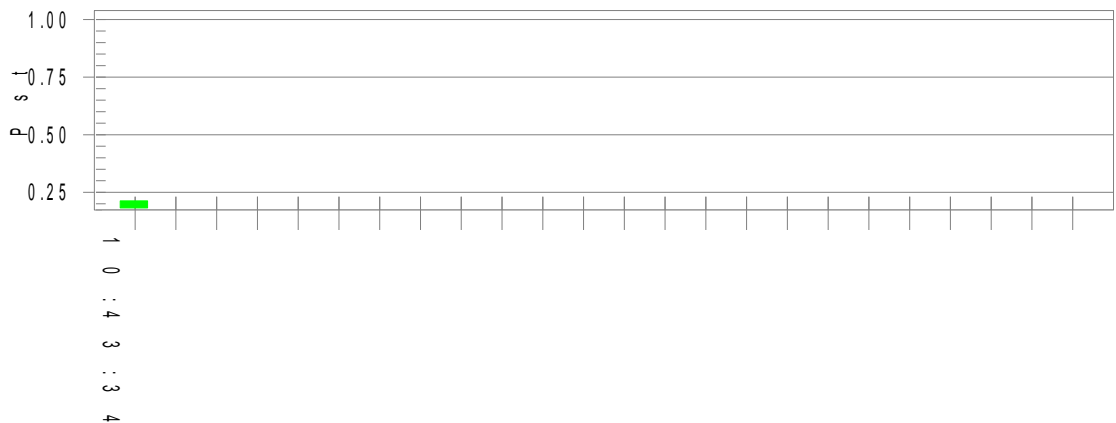
Flicker Test Summary per IEC 61000-3-3 (Run time)

Test Result: Pass

Status: Test Completed

Pst_i and limit line

European Limits



Parameter values recorded during the test:

Vrms at the end of test (Volt): 227.91

Highest dt (%):

T-max (mS): 0

Highest dc (%): 0.00

Highest dmax (%): 0.00

Highest dmax (%): 0.00

Highest Pst (10 min. period): 0.213

Test limit (%):

Test limit (mS): 500.0 Pass

Test limit (%): 3.30 Pass

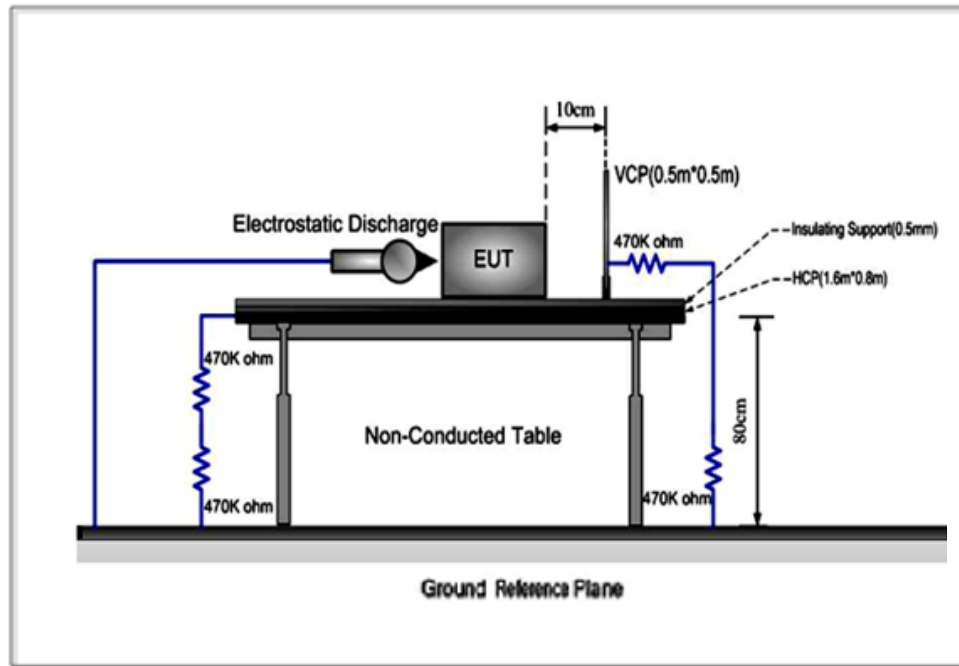
Test limit (%): 4.00 Pass

Test limit (%): 4.00 Pass

Test limit: 1.000 Pass

EN IEC 55014-2 §5.1 Electrostatic discharge (IEC 61000-4-2)

Test System Setup



IEC 61000-4-2 specifies that a tabletop EUT shall be placed on a non-conducting table which is 80 centimeters above a ground reference plane and that floor mounted equipment shall be placed on a insulating support approximately 10 centimeters above a ground plane. During the tests, the EUT is positioned over a ground reference plane in conformance with this requirement.

For tabletop equipment, a 1.6m*0.8m metal sheet (HCP) is placed on the table and connected to the ground plane via a metal strap with two 470kΩ resistors in series. The EUT and attached cables are isolated from this metal sheet by 0.5mm thick insulating material. A Vertical Coupling Plane (VCP) grounded on the ground plane through the same configuration as in the HCP is used.

Test Specification

| | |
|-------------------------------|--|
| Basic Standard: | EN IEC 55014-2: 2021 / IEC 61000-4-2 |
| Discharge Impedance: | 330 ohm / 150 pF |
| Discharge Voltage: | Air Discharge: ±8 kV (Direct) Contact Discharge: ±4 kV (Direct) |
| Polarity: | Positive & Negative |
| Number of Discharge: | Minimum 20 times at each test point |
| Discharge Mode: | Single Discharge |
| Discharge Period: | 1 second minimum |
| Performance Criterion: | B |

Test Procedure

The basic test procedure was in accordance with IEC 61000-4-2:

Electrostatic discharges were applied only to those points and surfaces of the EUT that are accessible to users during normal operation.

The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.

The time interval between two successive single discharges was at least 1 second.

The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meters from the EUT.

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.

Contact Discharge: All the procedure shall be same as Section 8.3.1 of IEC 61000-4-2, except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

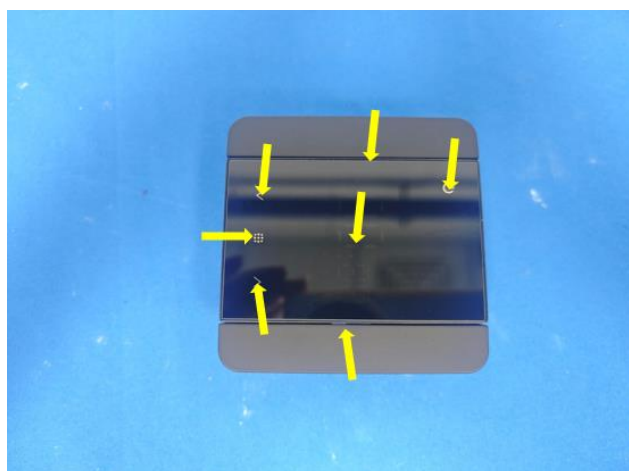
Indirect discharge for horizontal coupling plane: At least 20 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling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

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 * 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.

Test Data

| | | | | | | | | | |
|--|--------------|-------|-------|--------------|-------|--|--------|--------|---|
| Test Model: | HY531WE WIFI | | | Test Mode: | | Mode 1 | | | |
| Test Engineer: | Toby Chen | | | Test Date: | | 2025-12-08 | | | |
| Test Voltage: | AC 230V/50Hz | | | Environment: | | Temp.: 23.3°C Humi.: 51% Press.: 99.9kPa | | | |
| Electrostatic Discharge Immunity (Air Discharge) | | | | | | | | | |
| Test Levels | | | | | | | | | |
| Test Points Location | -2 kV | +2 kV | -4 kV | +4 kV | -8 kV | +8 kV | -15 kV | +15 kV | X |
| Front side (7 points) | / | / | / | / | A | A | / | / | / |
| Top side (2 points) | / | / | / | / | A | A | / | / | / |
| Left side (1 point) | / | / | / | / | A | A | / | / | / |
| Right side (1 point) | / | / | / | / | A | A | / | / | / |
| Down side (3 points) | / | / | / | / | A | A | / | / | / |
| Electrostatic Discharge Immunity (Contact Discharge) | | | | | | | | | |
| Test Levels | | | | | | | | | |
| Test Points Location | -2 kV | +2 kV | -4 kV | +4 kV | -6 kV | +6 kV | -8 kV | +8 kV | X |
| / | / | / | / | / | / | / | / | / | / |
| Electrostatic Discharge Immunity (Indirect Contact HCP) | | | | | | | | | |
| Test Levels | | | | | | | | | |
| Test Points Location | -2 kV | +2 kV | -4 kV | +4 kV | -6 kV | +6 kV | -8 kV | +8 kV | X |
| Front Side | / | / | A | A | / | / | / | / | / |
| Back Side | / | / | A | A | / | / | / | / | / |
| Left Side | / | / | A | A | / | / | / | / | / |
| Right Side | / | / | A | A | / | / | / | / | / |
| Electrostatic Discharge Immunity (Indirect Contact VCP) | | | | | | | | | |
| Test Levels | | | | | | | | | |
| Test Points Location | -2 kV | +2 kV | -4 kV | +4 kV | -6 kV | +6 kV | -8 kV | +8 kV | X |
| Front Side | / | / | A | A | / | / | / | / | / |
| Back Side | / | / | A | A | / | / | / | / | / |
| Left Side | / | / | A | A | / | / | / | / | / |
| Right Side | / | / | A | A | / | / | / | / | / |
| Note: “A” stands for, during the test, the apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. | | | | | | | | | |

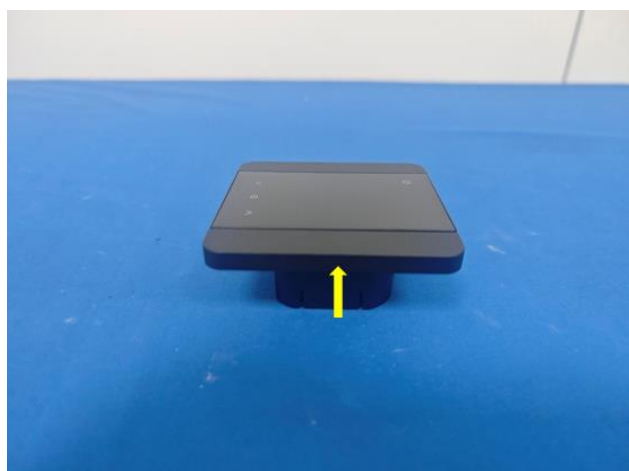
Test point as follows:



Front side



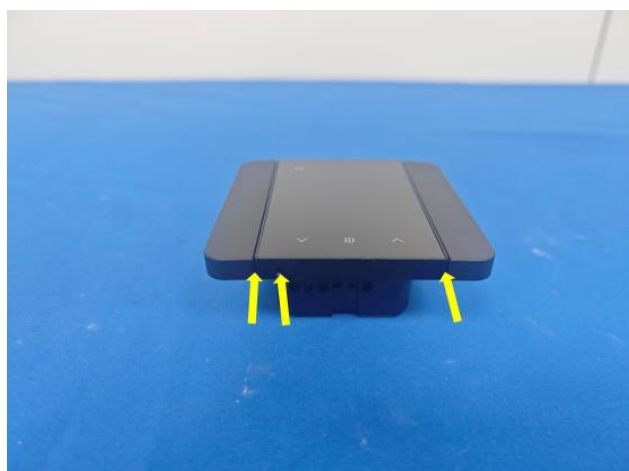
Left side



Right side

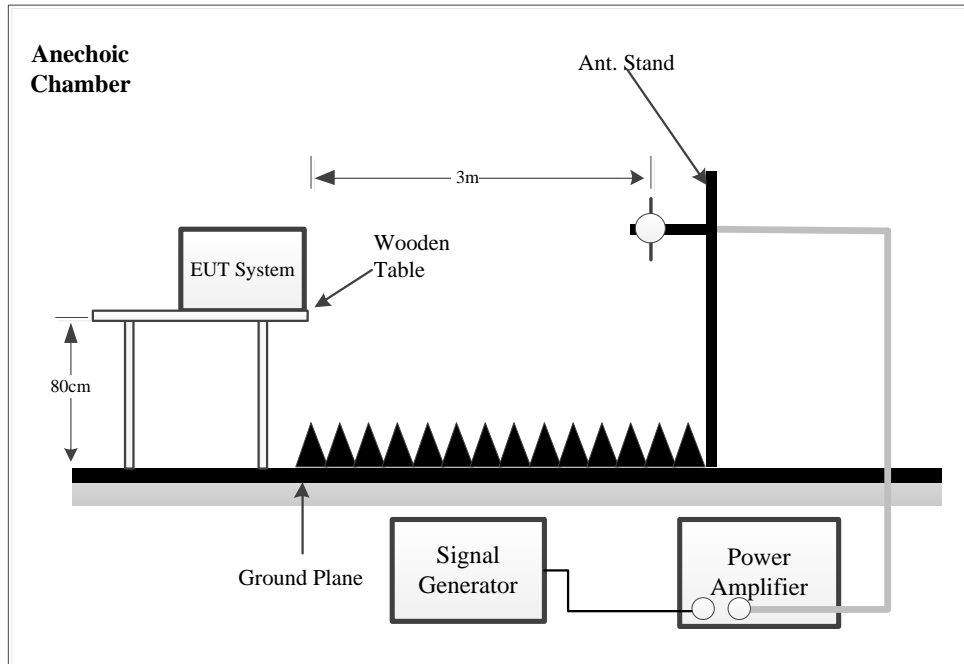


Top side



Down side

Note: ➡ represents air discharge, ➡ represents direct contact

EN IEC 55014-2 §5.5 Radio frequency electromagnetic fields (IEC 61000-4-3)**Test System Setup****Test Specification**

| | |
|-------------------------------|-------------------------------------|
| Basic Standard: | EN IEC 55014-2:2021 / IEC 61000-4-3 |
| Frequency Range: | 80 MHz - 1000 MHz |
| Field Strength: | 3 V/m |
| Modulation: | 1kHz Sine Wave, 80%, AM Modulation |
| Frequency Step: | 1 % of fundamental |
| Polarity of Antenna: | Horizontal and Vertical |
| Antenna Height: | 1.5m |
| Dwell Time: | 3seconds |
| Performance Criterion: | A |

Test Procedure

The testing was performed in a fully-anechoic chamber.

The frequency range is swept from 80 MHz to 1000 MHz, with the signal 80% amplitude modulated with a 1kHz sinewave.

The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised and to respond, but shall in no case be less than 0.5s.

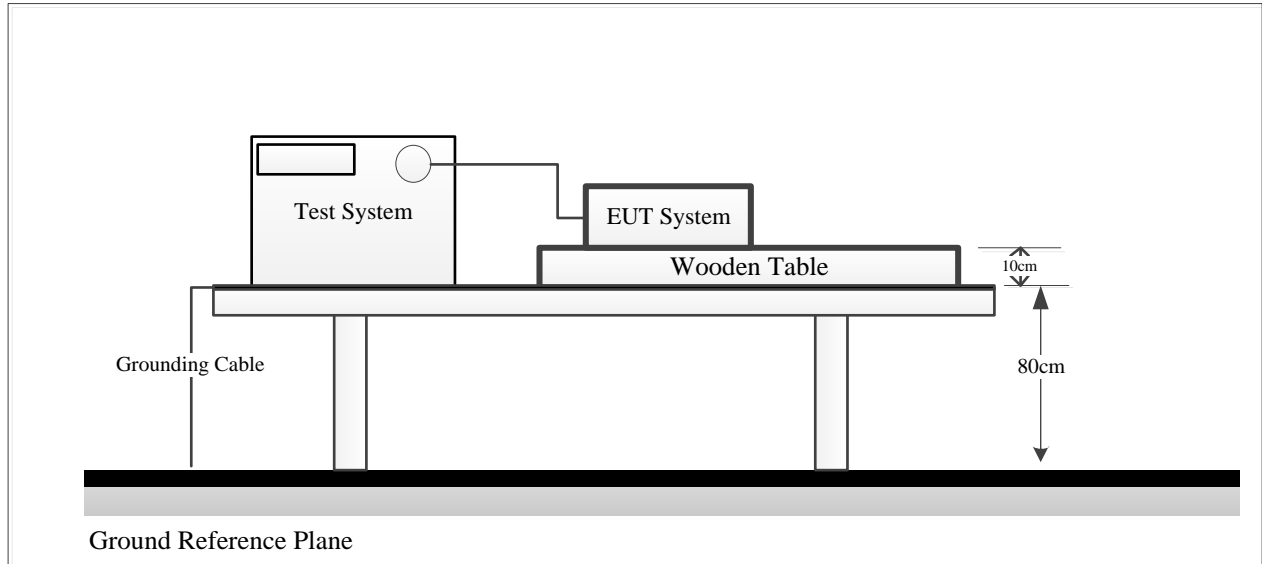
The field strength level was 3V/m.

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 camera is used to monitor the EUT.

Test Data

| Test Model: | HY531WE WIFI | | | Test Mode: | Mode 1 | |
|--|----------------|--|-------------------------|--------------|--|--|
| Test Engineer: | Toby Chen | | | Test Date: | 2025-12-08 | |
| Test Voltage: | AC 230V/50Hz | | | Environment: | Temp.: 23.3°C Humi.: 51% Press.: 99.9kPa | |
| Frequency [MHz] | Level [V/m] | Modulation | Antenna Polarization | EUT Face | Observations (Performance Criterion) | |
| 80 - 1000 | 3 | 1 kHz, 80 % Amp. Mod, 1 % increment, dwell time=3seconds | V | Front | A | |
| | | | H | | A | |
| | | | V | Left | A | |
| | | | H | | A | |
| | | | V | Right | A | |
| | | | H | | A | |
| | | | V | Top | A | |
| | | | H | | A | |
| | | | V | Bottom | A | |
| | | | H | | A | |
| Note: “A” stands for, during the test, the apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. | | | | | | |

EN IEC 55014-2 §5.2 Electric Fast transients (IEC 61000-4-4)**Test System Setup****Test Specification**

| | |
|-------------------------------|---|
| Basic Standard: | EN IEC 55014-2:2021 / IEC 61000-4-4 |
| Test Voltage: | Input and output AC power ports: 1 kV Input and output DC power ports: 0.5 kV Signal ports, control ports and wired network ports: 0.5 kV |
| Polarity: | Positive & Negative |
| Impulse Frequency: | 5 kHz |
| Impulse Wave Shape : | 5/50 ns |
| Burst Duration: | 15 ms |
| Burst Period: | 300 ms |
| Test Duration: | 2 min. |
| Performance Criterion: | B |

Test Procedure

The EUT was arranged for Power Line Coupling and for I/O Line Coupling through a capacitive clamp, where applicable. (Note: The I/O coupling test using a capacitive clamp is performed on the I/O interface cables that are longer in length than 3 meters.) A metal ground plane is connected to the earth by a ground rod. The ground rod is connected to the test facility's electrical earth.

Both positive and negative polarity discharges were applied.

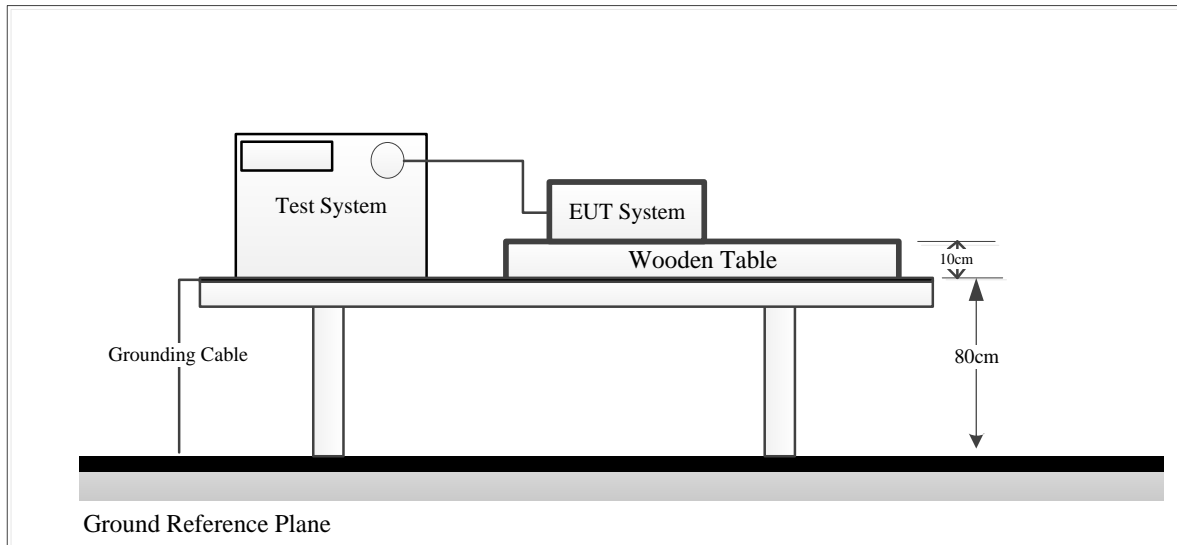
The length of the “hot wire” from the coaxial output of the EFT generator to the terminals on the EUT should not exceed 0.5 meter \pm 0.05 meter.

The duration time of each test sequential was 2 minute.

The transient/burst waveform was in accordance with IEC 61000-4-4, 5/50ns.

Test Data

| Test Model: | HY531WE WIFI | Test Mode: | Mode 1 | | | | | | |
|--|--------------|--|--|------|------|------|------|------|------|
| Test Engineer: | Toby Chen | Test Date: | 2025-12-08 | | | | | | |
| Test Voltage: | AC 230V/50Hz | Environment: | Temp.: 23.3°C Humi.: 51% Press.: 99.9kPa | | | | | | |
| Test Ports | | Test Levels (kV); Repetition frequency(5kHz) | | | | | | | |
| | | +0.5 | -0.5 | +1.0 | -1.0 | +2.0 | -2.0 | +4.0 | -4.0 |
| AC mains power input ports | L | / | / | A | A | / | / | / | / |
| | N | / | / | A | A | / | / | / | / |
| | PE | / | / | / | / | / | / | / | / |
| | L-N | / | / | A | A | / | / | / | / |
| | L-PE | / | / | / | / | / | / | / | / |
| | N-PE | / | / | / | / | / | / | / | / |
| | L-N-PE | / | / | / | / | / | / | / | / |
| Signal ports | | / | / | / | / | / | / | / | / |
| Note: “A” stands for, during the test, the apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. | | | | | | | | | |

EN IEC 55014-2 §5.6 Surges (IEC 61000-4-5)**Test System Setup****Test Specification**

| | |
|-------------------------------|--|
| Basic Standard: | EN IEC 55014-2:2021 / IEC 61000-4-5 |
| Wave-Shape: | Combination Wave 1.2/50 μ s Open Circuit Voltage 8 /20 μ s Short Circuit Current |
| Test Voltage: | Power Line : Line - line: 1kV, Line - earth: 2kV. |
| Generator Source | 2 ohm between networks |
| Impedance: | 12 ohm between network and ground |
| Polarity: | Positive & Negative |
| Phase Angle: | 5 positive for 90°, 5 negative for 270° |
| Pulse Repetition Rate: | 1 time / 60 Sec. |
| Performance Criterion: | B |

Test Procedure

For input a.c. power ports, provide a 1.2/50 μ s voltage surge (at open-circuit condition) and a 8/20 μ s current surge into a short circuit.

For telecommunication port, provide a 10/700 μ s voltage surge (at open-circuit condition) and a 5/320 μ s current surge into a short circuit.

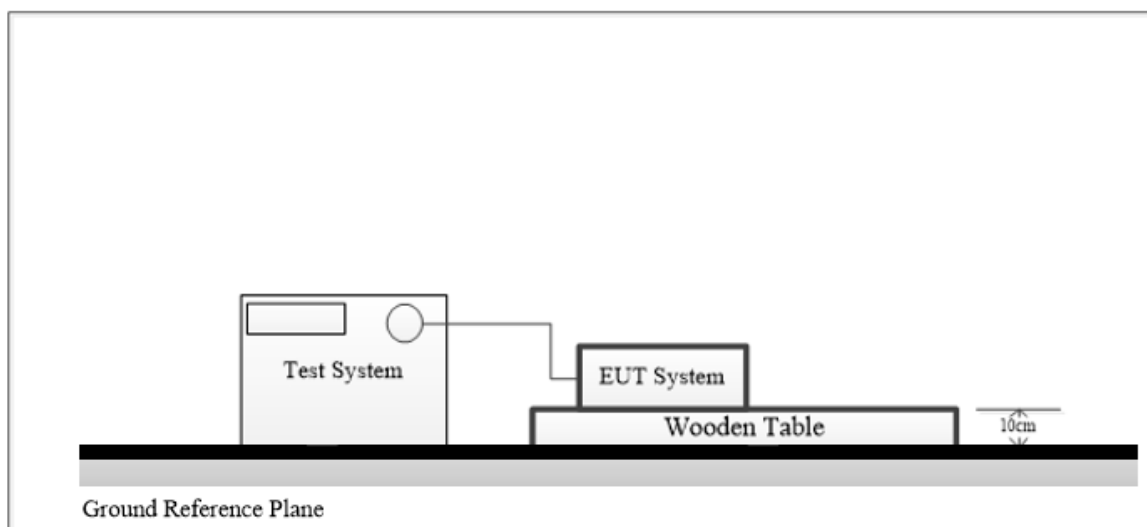
At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.

Different phase angles are done individually.

Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

Test Data

| | | | | | | | |
|--|----------------|--------------|-----------|--------------|---|--|--|
| Test Model: | | HY531WE WIFI | | Test Mode: | | Mode 1 | |
| Test Engineer: | | Toby Chen | | Test Date: | | 2025-12-08 | |
| Test Voltage: | | AC 230V/50Hz | | Environment: | | Temp.: 23.3°C Humi.: 51% Press.: 99.9kPa | |
| Location | Surge Interval | Pulse No | Level(kV) | Phase(deg) | Observations (Performance Criterion) | | |
| L-N | 60s | 5 | + 1 | 90° | A | | |
| | | | - 1 | 270° | A | | |
| L-PE | 60s | 5 | + 2 | 90° | / | | |
| | | | - 2 | 270° | / | | |
| N-PE | 60s | 5 | + 2 | 90° | / | | |
| | | | - 2 | 270° | / | | |
| Note: “A” stands for, during the test, the apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. | | | | | | | |

EN IEC 55014-2 §5.4 Injected currents (IEC 61000-4-6)**Test System Setup****Test Specification**

| | |
|-------------------------------|--|
| Basic Standard: | EN IEC 55014-2:2021 / IEC 61000-4-6 |
| Frequency Range: | 0.15 MHz - 80 MHz |
| Field Strength: | Input and output AC power ports: 3 V _{r.m.s} Input and output DC power ports: 1 V _{r.m.s} Signal ports, control ports, wired network ports: 1 V _{r.m.s} |
| Modulation: | 1 kHz Sine Wave, 80%, AM Modulation |
| Frequency Step: | 1 % of fundamental |
| Dwell Time: | 1 second |
| Performance Criterion: | A |

Test Procedure

The EUT was placed on an insulating support of 0.1m height above a ground reference Plane, arranged and connected to satisfy its functional requirement.

All relevant cables were provided with the appropriate coupling and decoupling devices at a distance between 0.1m and 0.3m from the projected geometry of the EUT on an insulating support of 0.03m height above the ground reference plane.

The test shall be performed with the test generator connected to each of the coupling and decoupling devices in turn, while the other non-excited RF input ports of the coupling devices are terminated by a 50-ohm load resistor.

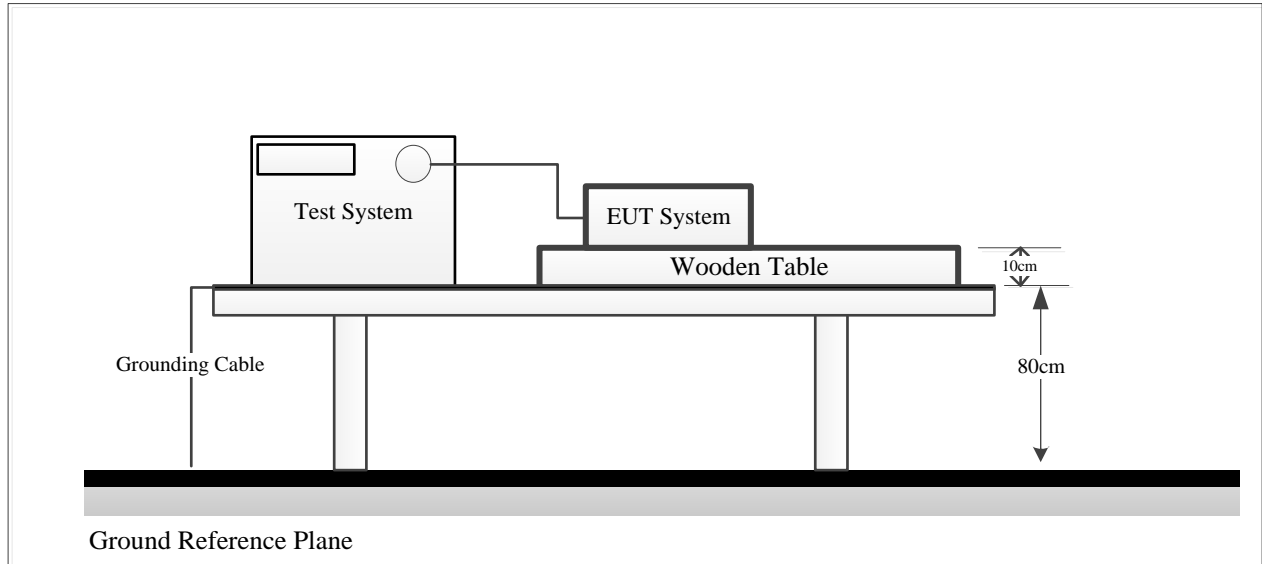
The frequency range is swept from 150 kHz to 80 MHz, using the signal level established during the setting process and with a disturbance signal of 80 % amplitude. The signal is modulated with a 1 kHz sine wave, pausing to adjust the RF signal level or the switch coupling devices as necessary. Where the frequency is swept incrementally, the step size shall not exceed 1 % of the preceding frequency value.

The dwell time of the amplitude modulated carrier at each frequency shall not be less than the time necessary for the EUT to be exercised and to respond, but shall in no case be less than 0.5 s. The sensitive frequencies (e.g. clock frequencies) shall be analyzed separately.

Attempts should be made to fully exercise the EUT during testing, and to fully interrogate all exercise modes selected for susceptibility.

Test Data

| Test Model: | HY531WE WIFI | | Test Mode: | Mode 1 | | |
|--|---------------------------------|----------------|---------------------|--|------------|--------------------------------------|
| Test Engineer: | Toby Chen | | Test Date: | 2025-12-08 | | |
| Test Voltage: | AC 230V/50Hz | | Environment: | Temp.: 23.3°C Humi.: 51% Press.: 99.9kPa | | |
| Frequency (MHz) | Injected Position | Test Level (V) | Modulation | Step Size | Dwell Time | Observations (Performance Criterion) |
| 0.15 - 80 | Input and output AC power ports | 3 | 80%, 1kHz Amp. Mod. | 1% | 1s | A |
| 0.15 - 80 | Input and output DC power ports | 1 | | | | / |
| 0.15 - 80 | Signal ports | 1 | | | | / |
| 0.15 - 80 | control ports | 1 | | | | / |
| 0.15 - 80 | wired network ports | 1 | | | | / |
| Note: “A” stands for, during the test, the apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. | | | | | | |

EN IEC 55014-2 §5.7 Voltage dips and interruptions (IEC 61000-4-11)**Test System Setup****Test Specification**

| | | | | |
|--------------------------------|---------------------------------------|----------------------------|--------------------|------------------------------|
| Basic Standard: | EN IEC 55014-2:2021 / IEC 61000-4-11 | | | |
| Test Duration Time: | Minimum three test events in sequence | | | |
| Interval between Event: | Minimum ten seconds | | | |
| Phase Angle: | 0°/180° | | | |
| Numbers of dropout: | 3 times | | | |
| Performance Criterion: | Test Level | Cycle | Phase Angle | Performance criterion |
| | 0 % | 0.5 | 0°/180° | C |
| | 40 % | 10 for 50Hz 12 for 60Hz | 0°/180° | C |
| | 70 % | 25 for 50Hz 30 for 60Hz | 0°/180° | C |

Test Procedure

The EUT shall be tested for each selected combination of test levels and duration with a sequence of three dips/interruptions with intervals of 10 s minimum (between each test event). Each representative mode of operation shall be tested. Abrupt changes in supply voltage shall occur at zero crossings of the voltage waveform.

Test Data

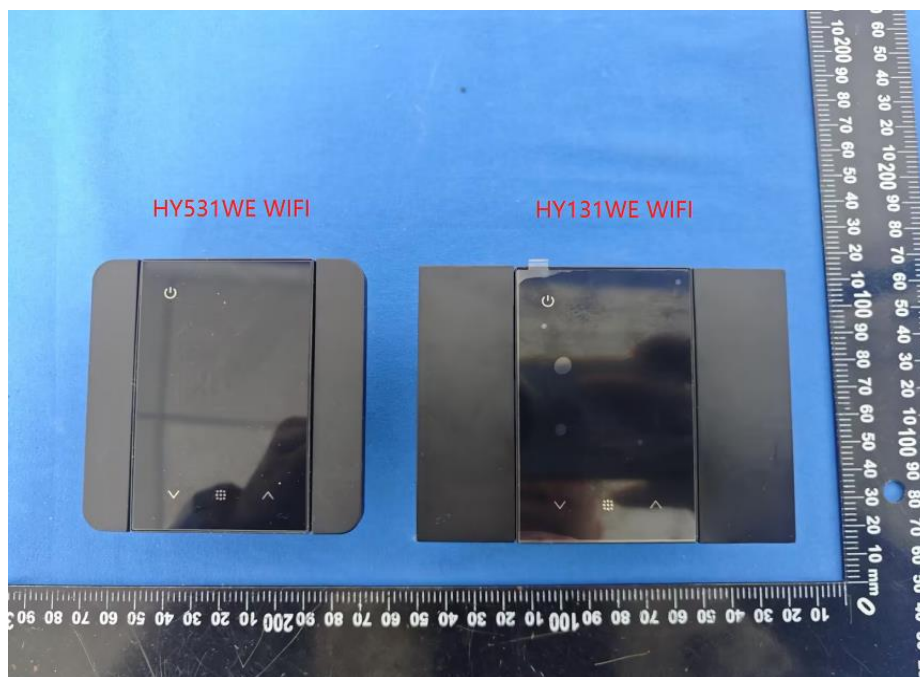
| Test Model: | HY531WE WIFI | | Test Mode: | Mode 1 | |
|-----------------------|--------------------------------|-------|---------------------|--|---|
| Test Engineer: | Toby Chen | | Test Date: | 2025-12-08 | |
| Test Voltage: | AC 230V/50Hz or AC 90V/60Hz | | Environment: | Temp.: 23.3°C Humi.: 51% Press.: 99.9kPa | |
| Test Level % U_T | Durations (Period) | | Phase angle | Numbers of dropout | Observations (Performance Criterion) |
| | 50 Hz | 60 Hz | | | |
| 0 | 0.5 | 0.5 | 0°,180° | 3 | A |
| 40 | 10 | 12 | 0°,180° | 3 | A |
| 70 | 25 | 30 | 0°,180° | 3 | B |

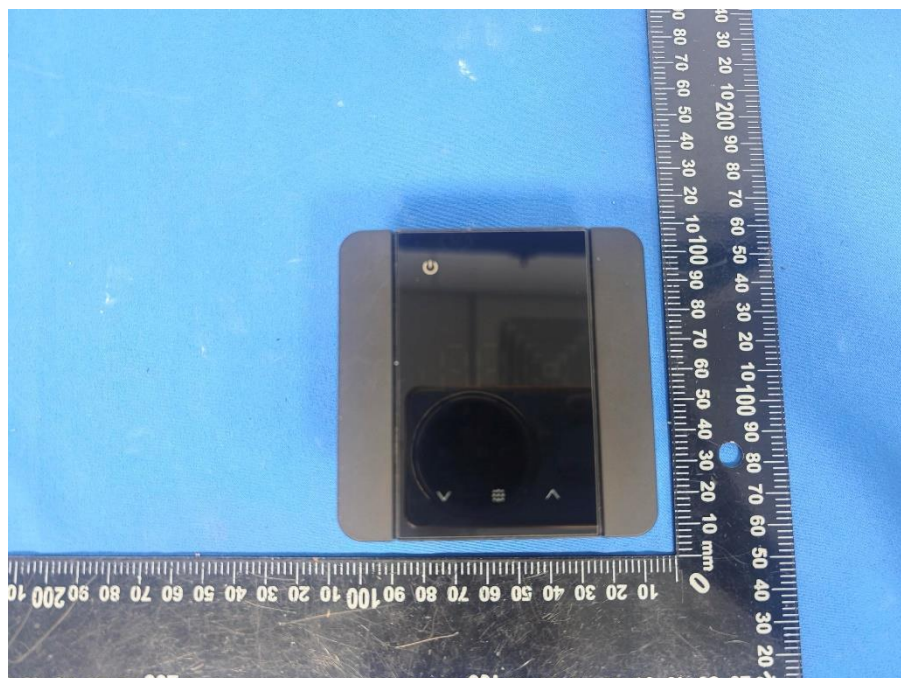
Note: 1. “A” stands for, during the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended.

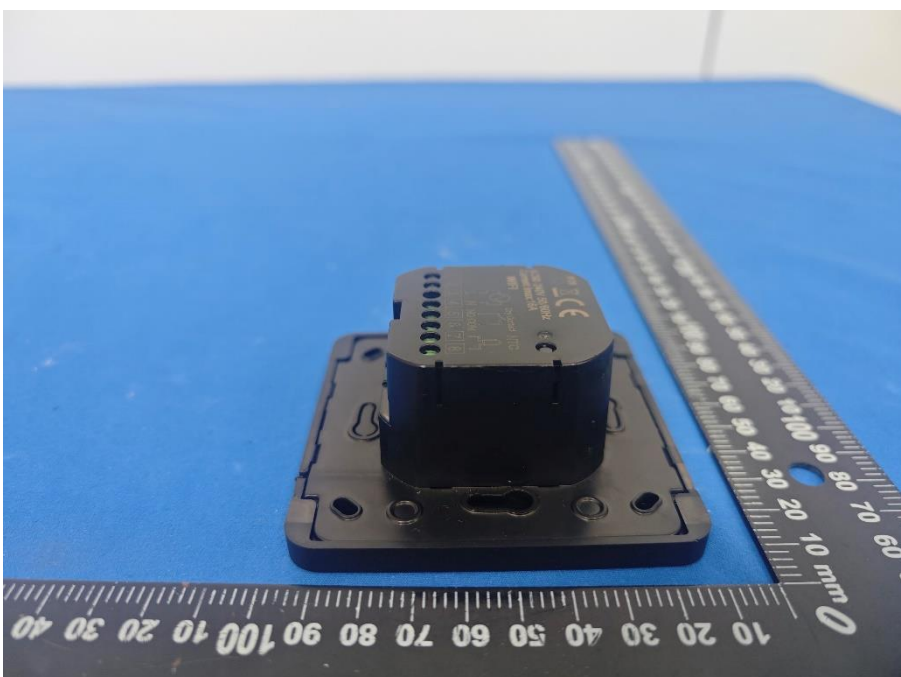
“B” indicates the situation where the bulb of the equipment flashes abnormally during the test. During the testing process, the equipment was able to automatically resume normal operation after recovery.

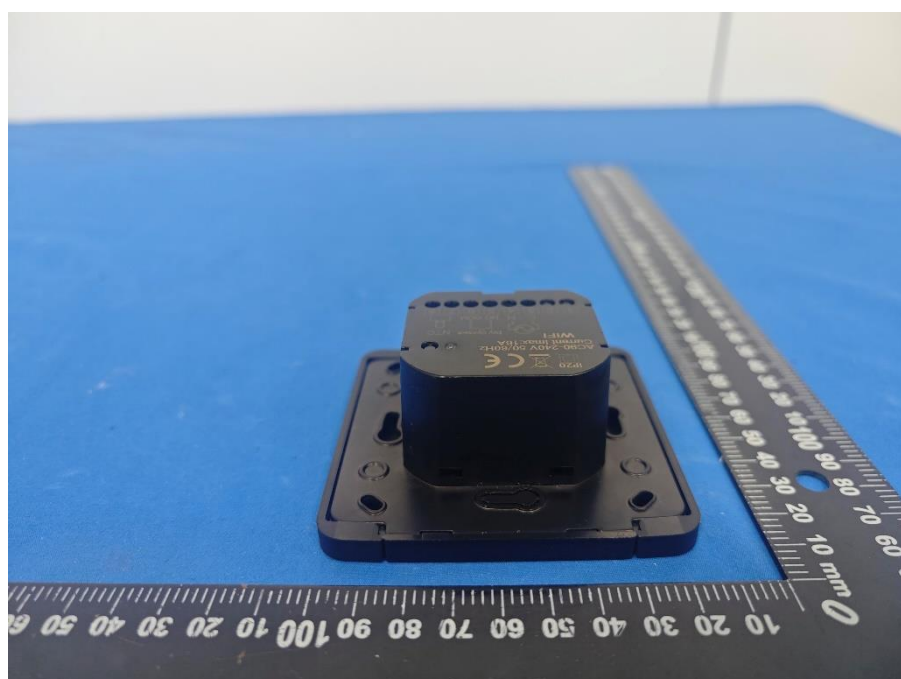
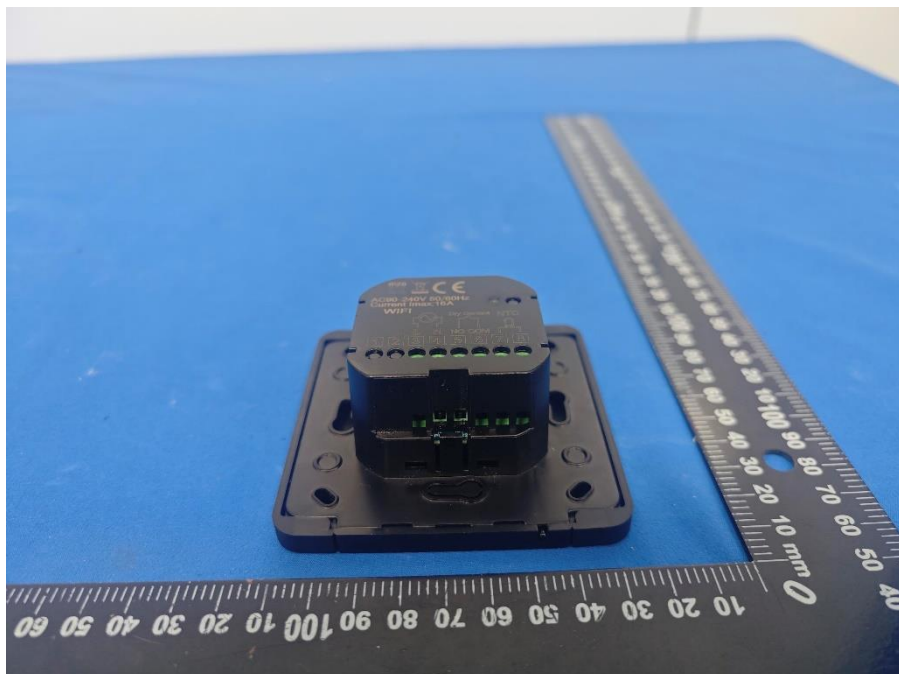
EXHIBIT A - EUT PHOTOGRAPHS

External Photos

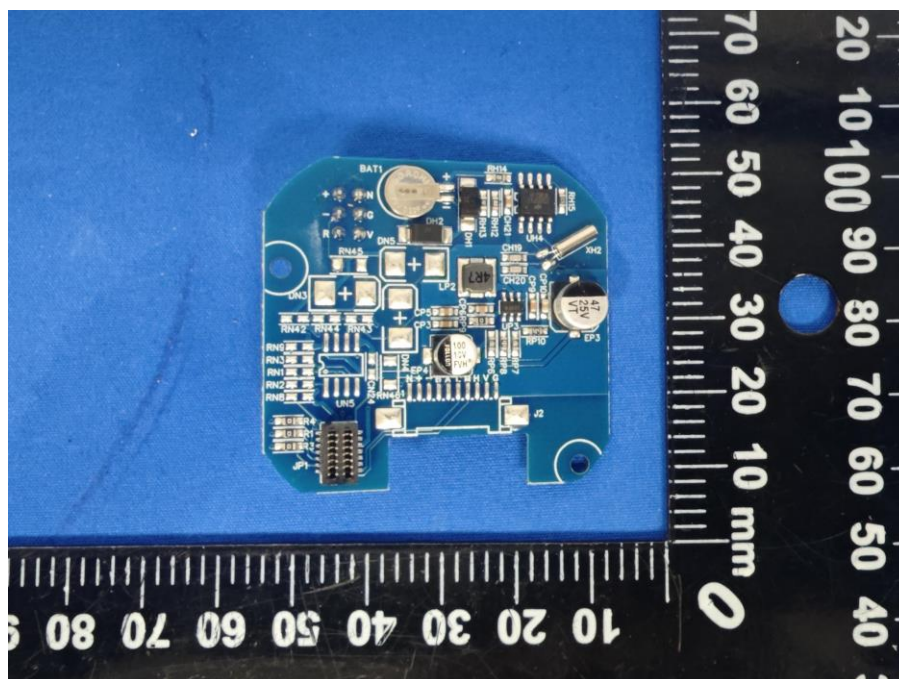
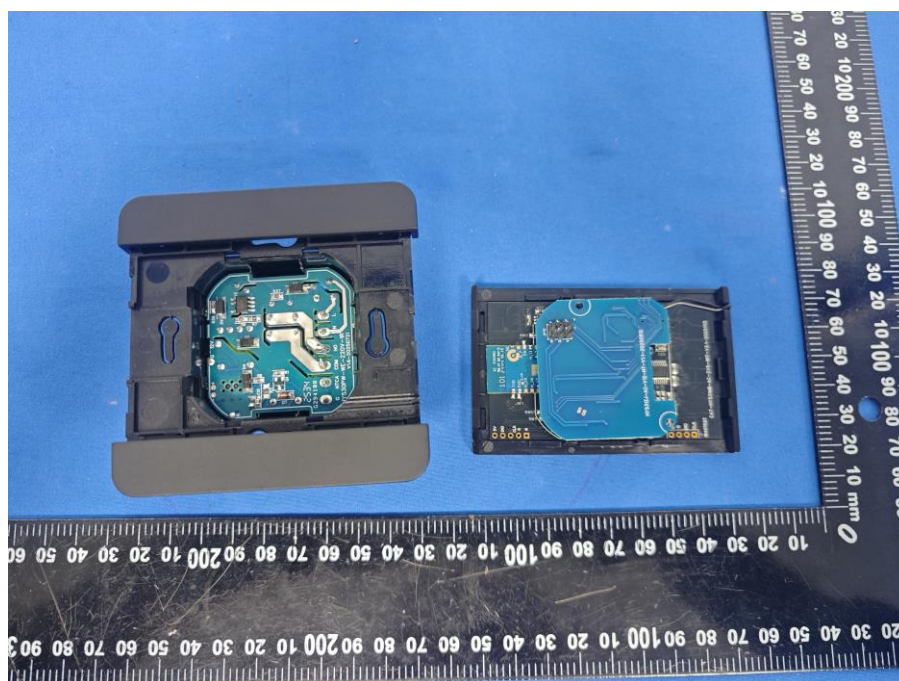


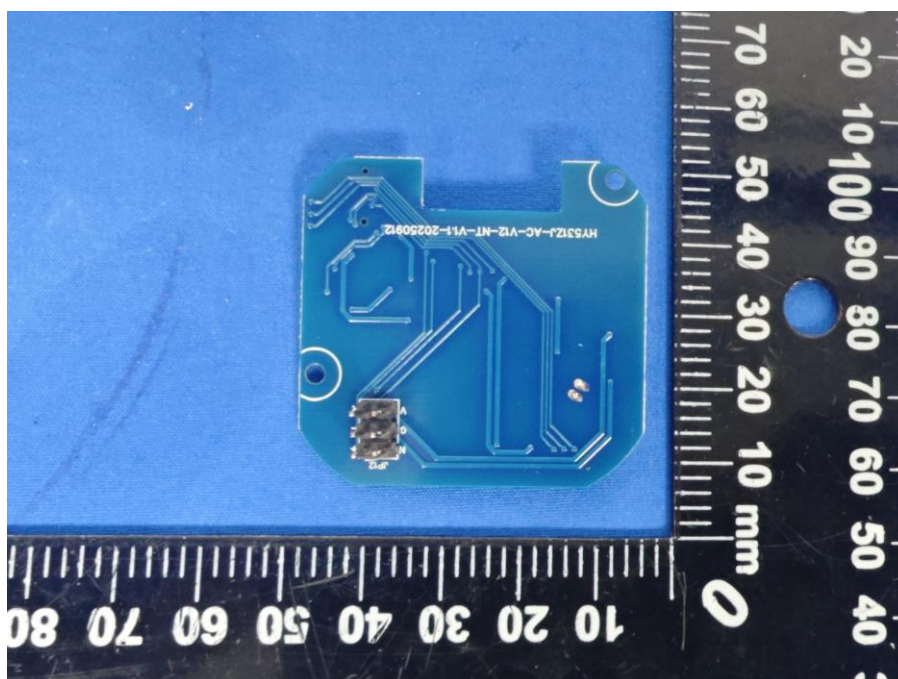
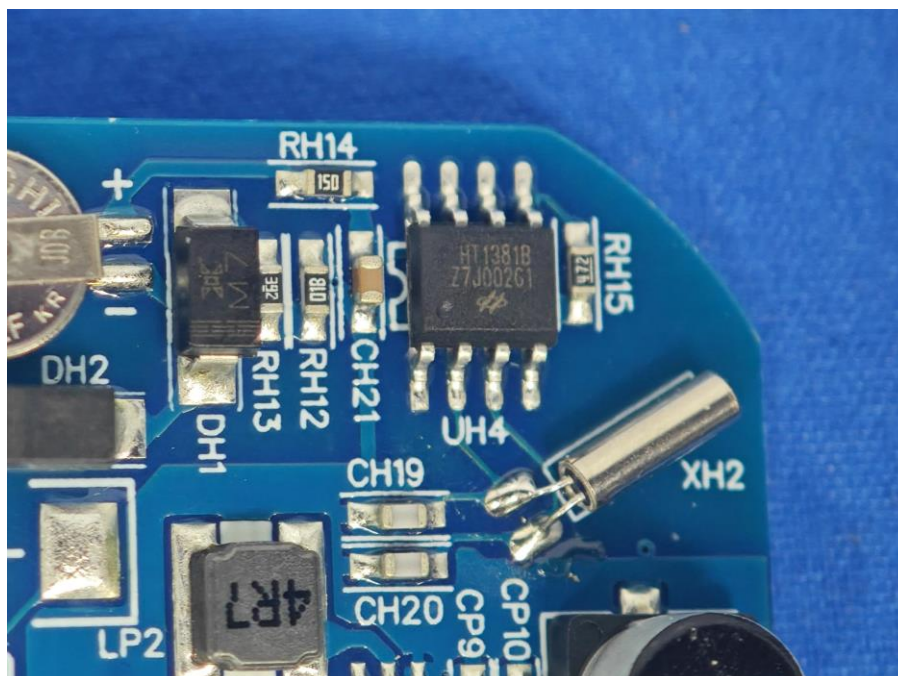


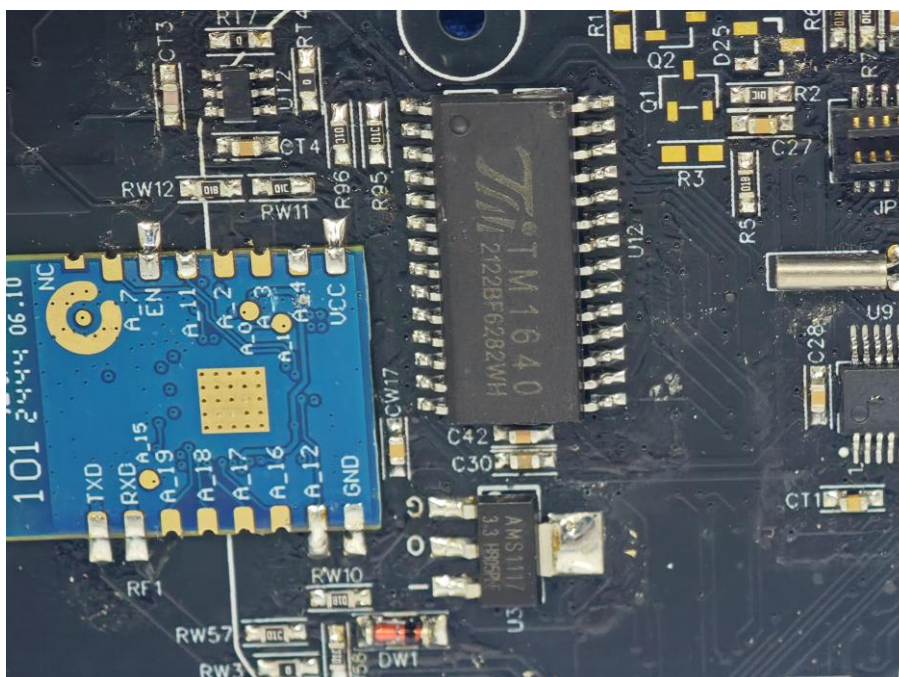
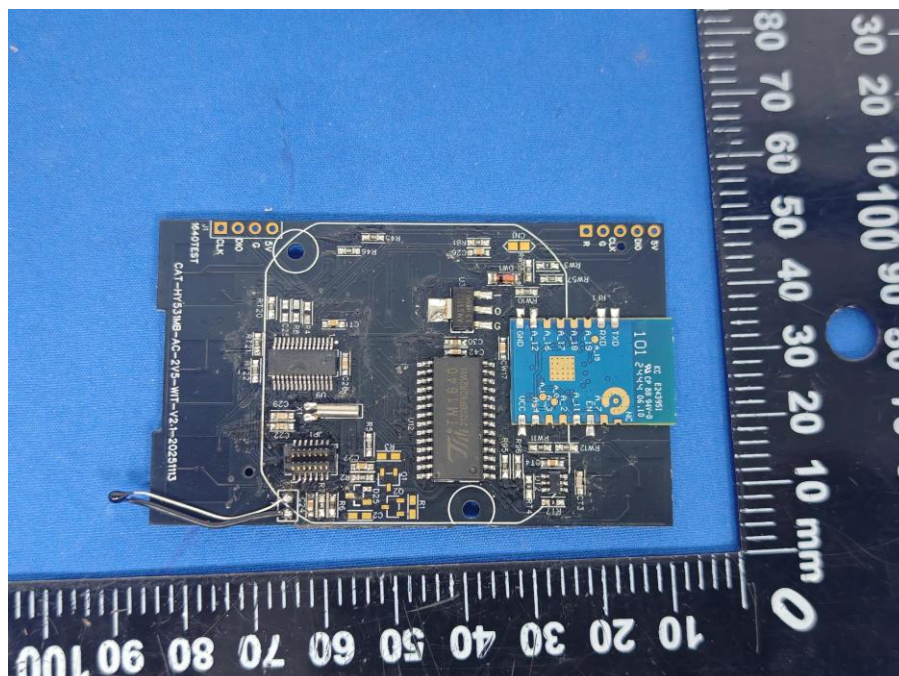


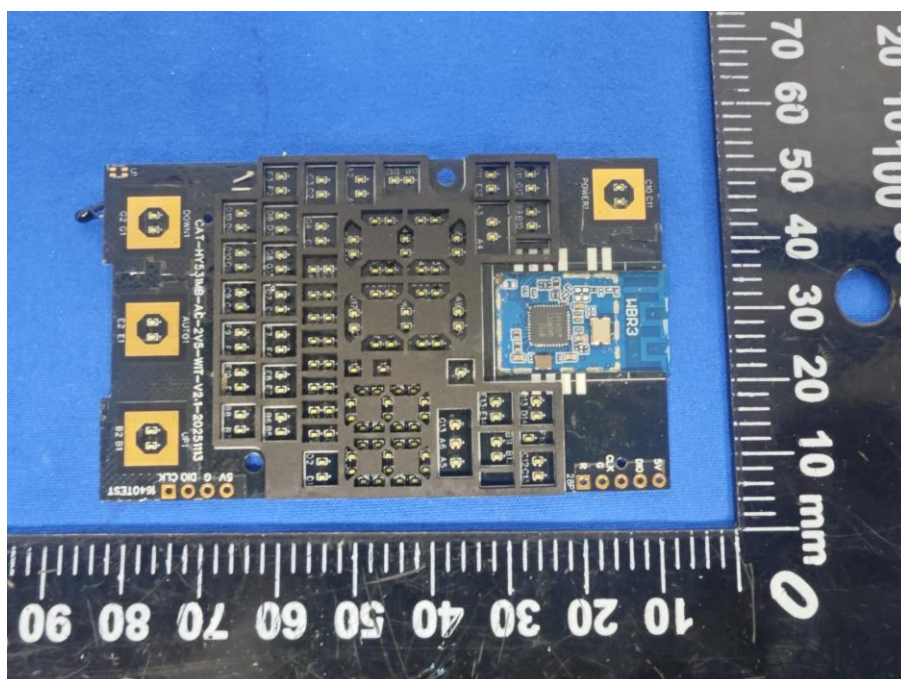
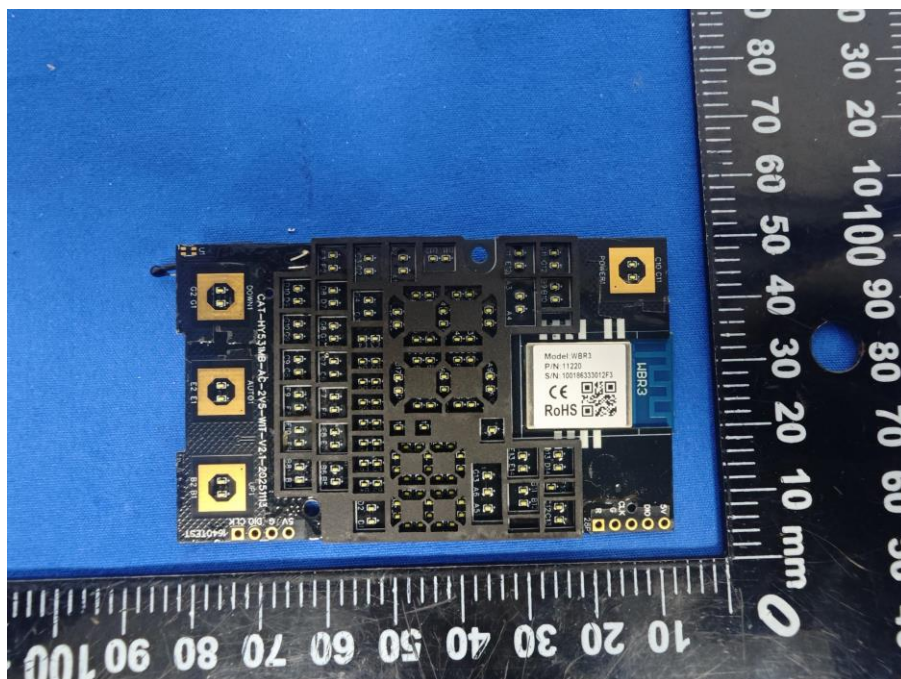


Internal Photos

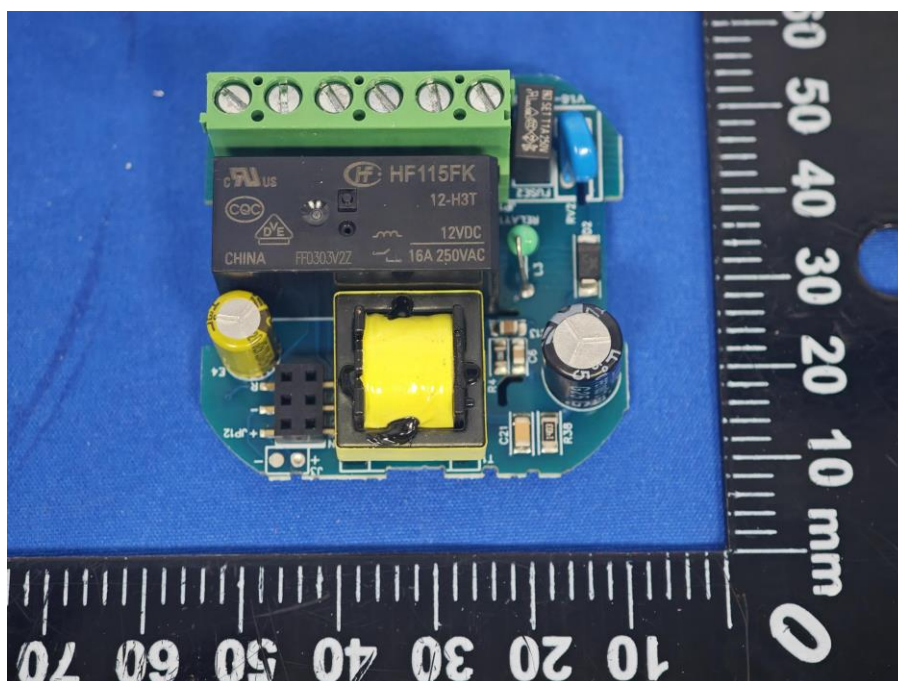
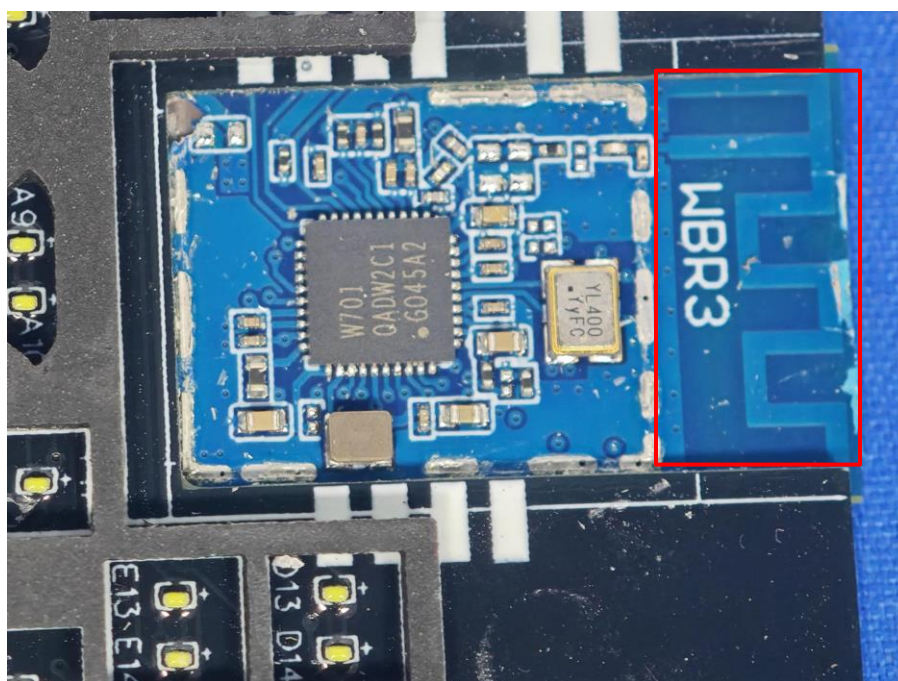








WIFI Antenna



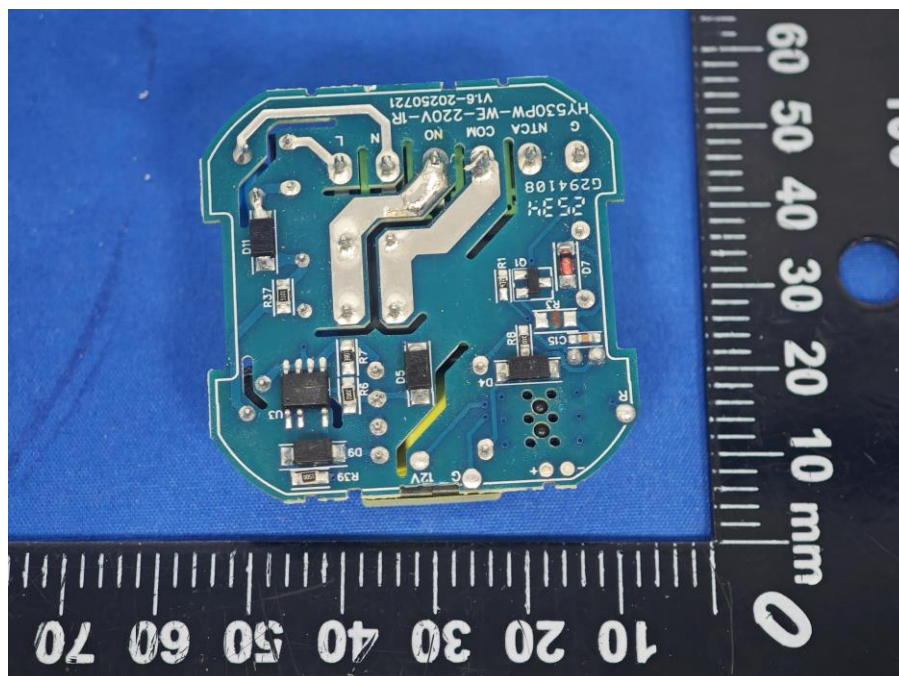
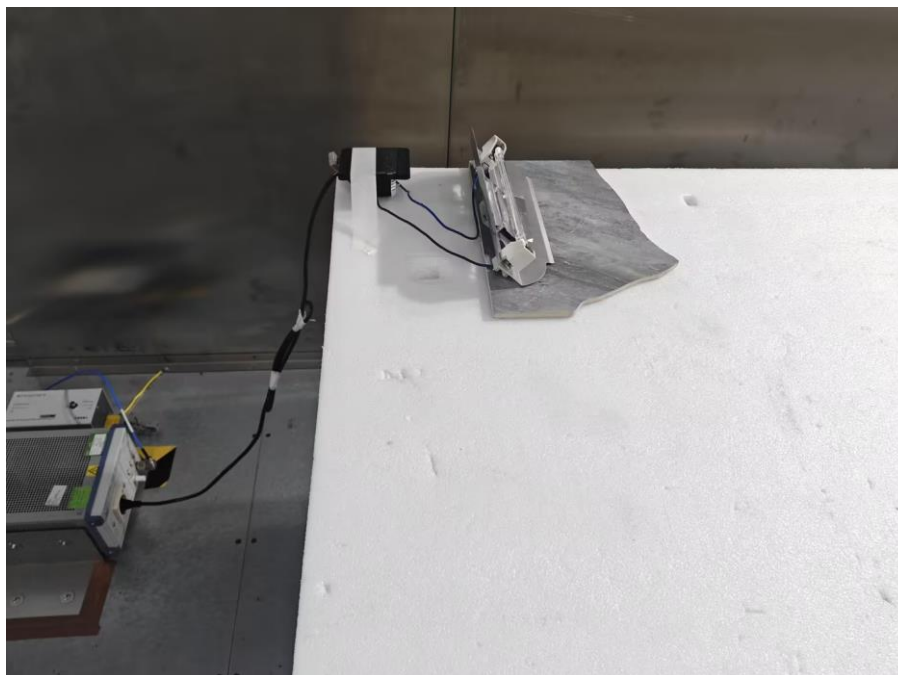


EXHIBIT B - TEST SETUP PHOTOGRAPHS

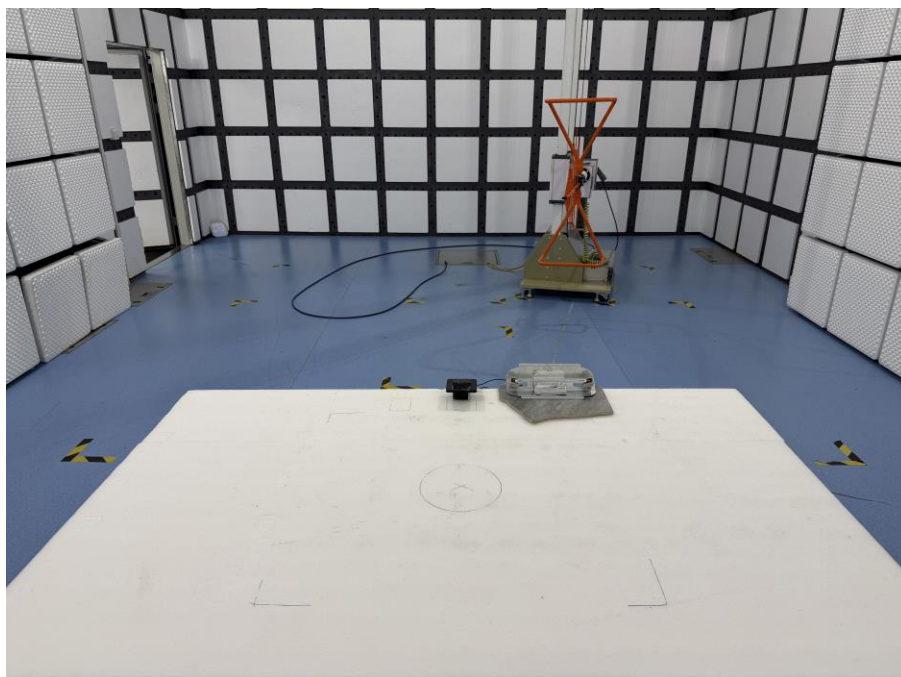
CE - Front View



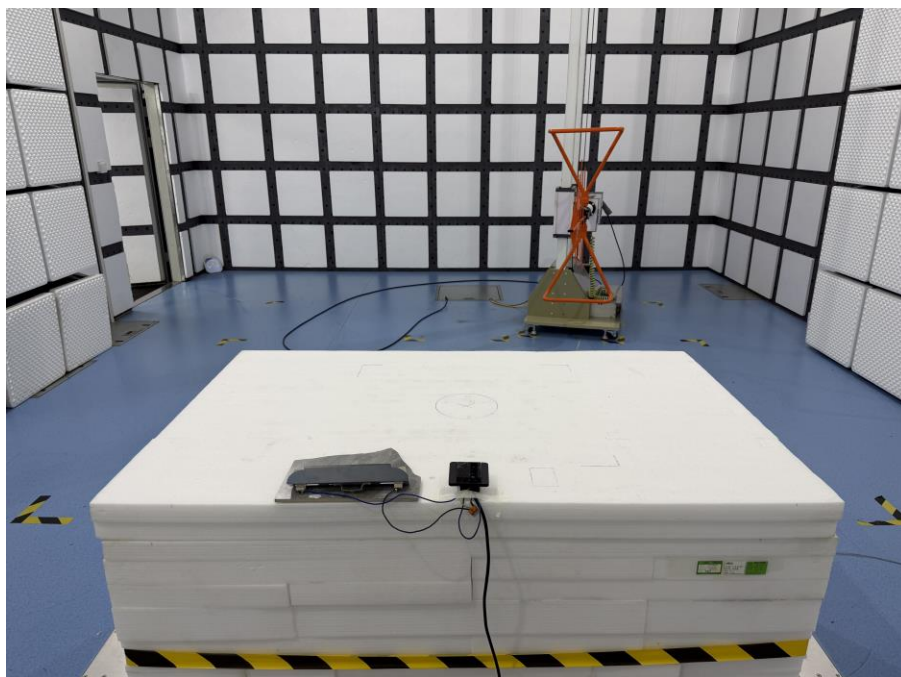
CE - Left View



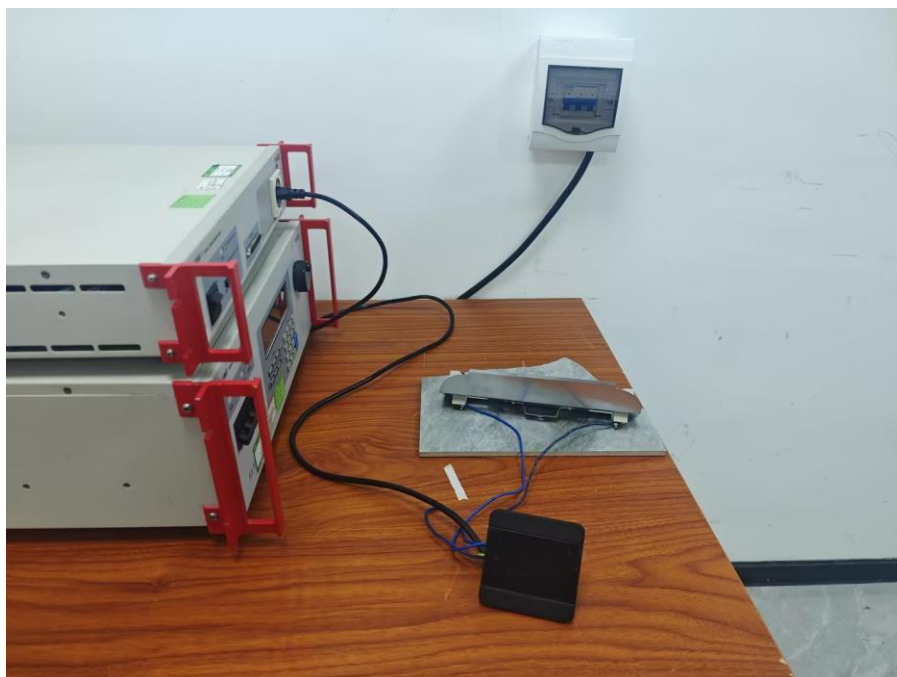
RE - Front View(30MHz-1000MHz)



RE - Rear View(30MHz-1000MHz)



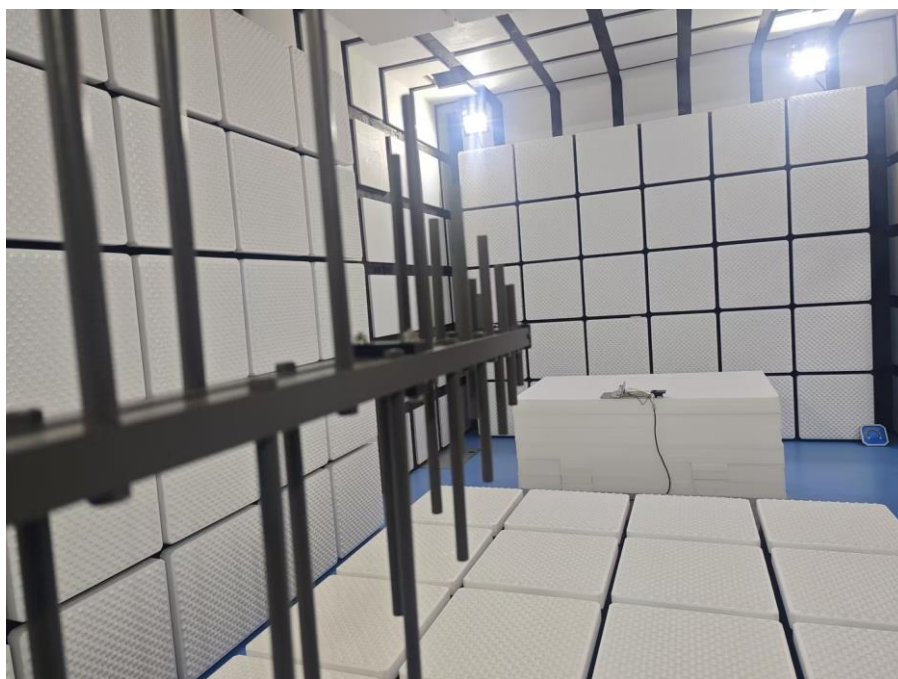
Harmonic & Flicker



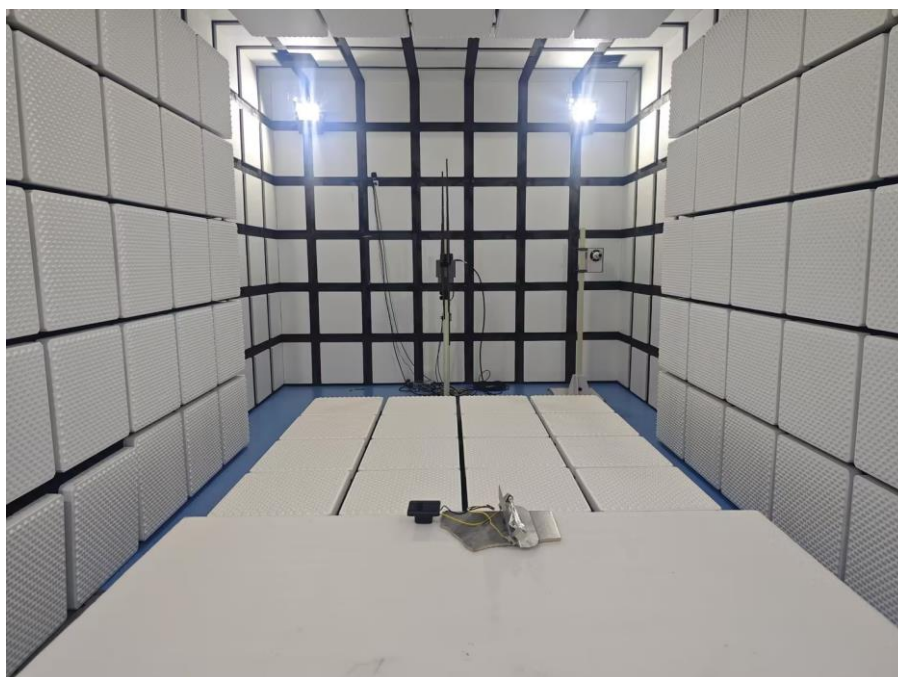
Electrostatic Discharge



RS - Front View (Below 1GHz)



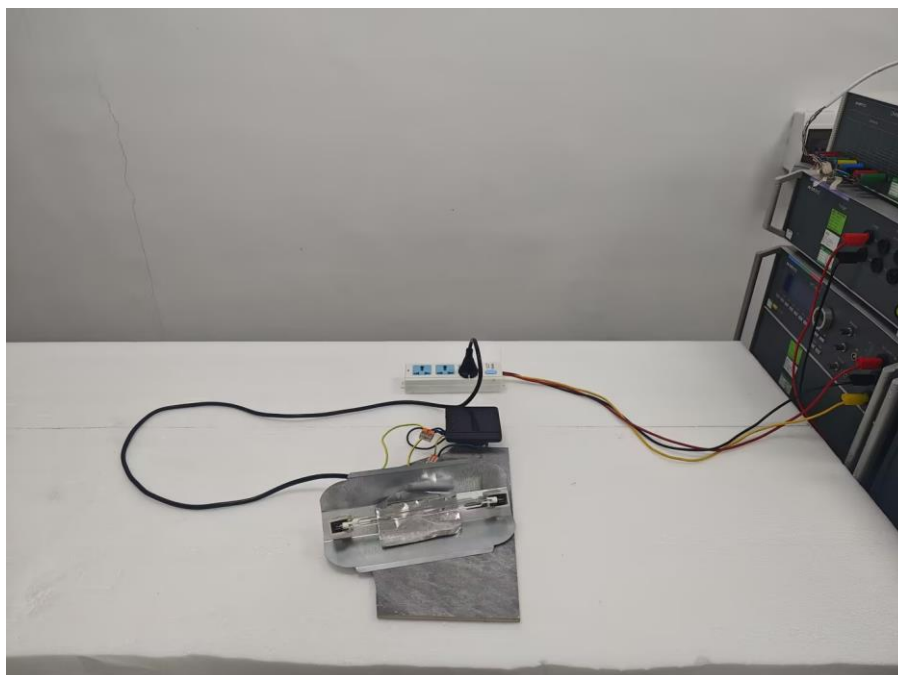
RS - Back View (Below 1GHz)



Injected Currents



Electrical fast transients & Surges & Voltage dips



Declarations

1. Bay Area Compliance Laboratories Corp. (Fujian) is not responsible for authenticity of any information provided by the applicant. Information from the applicant that may affect test results are marked with an asterisk “★”.
2. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested.
3. Unless required by the rule provided by the applicant or product regulations, then decision rule in this report did not consider the uncertainty.
4. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor $k=2$ with the 95% confidence interval.
5. This report cannot be reproduced except in full, without prior written approval of Bay Area Compliance Laboratories Corp. (Fujian).
6. This report is valid only with a valid digital signature. The digital signature may be available only under the adobe software above version 7.0.

PRODUCT SIMILARITY DECLARATION LETTER

XIAMEN HYSEN CONTROL TECHNOLOGY CO., LTD
No.888 Yuan long Industrial Park, HaicangDistrict, Xiamen, Fujian, China

Declaration of Model Difference

To Whom It May Concern,

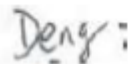
We XIAMEN HYSEN CONTROL TECHNOLOGY CO., LTD hereby declare that there are some differences between series models and tested model(s). Details are as below:

| | | | |
|-------------------------|---|--|---|
| Products Description | Name: | THERMOSTAT | |
| | Brand: | N/A | |
| | Manufacturer: | XIAMEN HYSEN CONTROL TECHNOLOGY CO., LTD | |
| | Project No.: | 2507A04674E-EM、 2507A04674E-RF | |
| Differences Description | | | |
| Tested Model(s) | Series Models | Differences Items | Details |
| HY531WE WIFI | HY531, HY531WW WIFI, HY531LD WIFI, HY531AC WIFI, HY531WE, HY531WW, HY531LD, HY531AC | Model Name | All are the same except model name. (Each model comes in two colors: black and white.) |
| | HY131WE WIFI, HY131, HY131WW WIFI, HY131LD WIFI, HY131AC WIFI, HY131WE, HY131WW, HY131LD, HY131AC | Model Name and appearance | All are the same except model name and appearance (The appearance widths of the products vary). Each models is available in black and white. |

Note: Tested Model(s) mean the models have been tested by Bay Area Compliance Laboratories Corp.(Fujian).

Except for the differences in above table, we declare the products are identical in every other way. We guarantee all the information provided above is true, and notice that we'll bear all the consequences caused by any false information or concealing.

Best Regards,

Signature: 
Print Name: Deng
Title: Manager

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