

ETSI EN 300 328 V2.2.2 (2019-07)

## TEST REPORT

For

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

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

**Tested Model: HY531WE WIFI**

|   |  |
|---|--|
| <b>Report Type:</b><br>Original Report  | <b>Product Name:</b><br>THERMOSTAT   |
| <b>Report Number:</b> 2507A04674E-RF-01 |  |
| <b>Report Date:</b> 2026-01-09          |  |
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REPORT REVISION HISTORY

| Number of Revisions | Report No.        | Version | Issue Date | Description     |
|---------------------|-------------------|---------|------------|-----------------|
| 0                   | 2507A04674E-RF-01 | R1V1    | 2026-01-09 | 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 |
| Power Supply:             | AC 90-240V, 50/60Hz  |
| Maximum EIRP:             | 18.2dBm  |
| RF Function:              | 2.4 G Wi-Fi  |
| Operating Band/Frequency: | 2412-2472 MHz(802.11b/g/n-HT20)  |
| Channel Number:           | 13(802.11b/g/n-HT20)   |
| Channel Separation:       | 5 MHz  |
| Modulation Type:          | DSSS, OFDM   |
| ★Antenna Gain:            | 2.5 dBi  |

*Note:*

1. The maximum antenna gain is provided by the applicant.
2. The test model is identify with the series model except for the model name and appearance, the details are as follows:

| 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. |

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: 3EQV-1 (Assigned by BACL (Xiamen). The EUT was received on 2025-12-17.)

## Objective

This report is prepared for *XIAMEN HYSEN CONTROL TECHNOLOGY CO., LTD* in accordance with ETSI EN 300 328 V2.2.2 (2019-07), Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz band; Harmonised Standard for access to radio spectrum.

The objective is to determine the compliance of EUT with ETSI EN 300 328 V2.2.2 (2019-07).

## Test Methodology

All measurements contained in this report were conducted with ETSI EN 300 328 V2.2.2 (2019-07).

## Measurement Uncertainty

| Item                       | Frequency Range | $U_{\text{cispr}}$ | $U_{\text{lab}} = 2 u_c(y)$<br>(Confidence of 95%) |
|----------------------------|-----------------|--------------------|--|
| Radiated Spurious Emission | 30MHz~200MHz    | 5.06 dB            | 3.47dB   |
|                            | 200MHz~1GHz     | 5.12 dB            | 4.86dB   |
|                            | 1GHz~6GHz       | 5.18 dB            | 4.88dB   |
|                            | 6GHz~18GHz      | 5.48 dB            | 4.95dB   |
| Temperature                |                 |                    | ±1°C   |
| Voltage (AC)               |                 |                    | ±1%  |
| Humidity                   |                 |                    | ±5%  |

## 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.

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

Channel list:

For 802.11b/g/n-HT20, EUT was tested with Channel 1, 7 and 13.

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|
| 1       | 2412            | 8       | 2447            |
| 2       | 2417            | 9       | 2452            |
| 3       | 2422            | 10      | 2457            |
| 4       | 2427            | 11      | 2462            |
| 5       | 2432            | 12      | 2467            |
| 6       | 2437            | 13      | 2472            |
| 7       | 2442            | /       | /               |

The worst-case data rates are determined to be as follows for each mode based upon investigation by measuring the average power and PSD across all data rates, bandwidths and modulations.

### Equipment Modifications

No modification was made to the EUT tested.

### Support Equipment List and Details

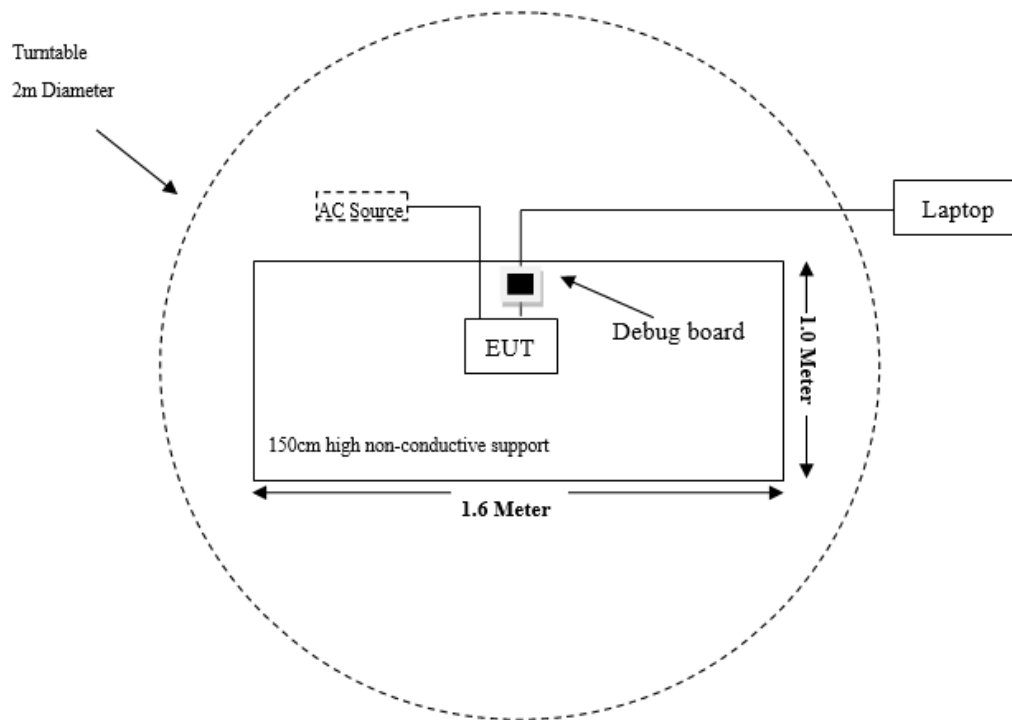
| Manufacturer | Description | Model   | Serial Number |
|--------------|-------------|---------|---------------|
| Lenovo       | Laptop      | T480    | PF1P5K4F      |
| Unknown      | Debug board | Unknown | Unknown       |

### External I/O Cable

| Cable Description | Length(m) | From Port   | To Port     |
|-------------------|-----------|-------------|-------------|
| Jumper Wire       | 0.1       | EUT         | Debug board |
| USB Cable         | 10        | Debug board | Laptop      |
| Power Cable       | 1.0       | EUT         | AC Source   |

## Block Diagram of Test Setup

### Radiated Spurious Emissions



**SUMMARY OF TEST RESULTS**

| <b>ETSI EN 300 328<br/>V2.2.2 (2019-07)</b> | <b>Description of Test</b>                               | <b>Result</b>                  | <b>Remark t</b> |
|---|--|--------------------------------|-----------------|
| Clause 4.3.2.2                              | RF output power  | -                              | See Note 3      |
| Clause 4.3.2.3                              | Power Spectral Density                                   | -                              | See Note 3      |
| Clause 4.3.2.4                              | Duty Cycle, Tx-sequence, Tx-gap                          | Not Applicable<br>(See Note 1) | -               |
| Clause 4.3.2.5                              | Medium Utilization (MU) factor                           | Not Applicable<br>(See Note 1) | -               |
| Clause 4.3.2.6                              | Adaptivity   | -                              | See Note 3      |
| Clause 4.3.2.7                              | Occupied Channel Bandwidth                               | -                              | See Note 3      |
| Clause 4.3.2.8                              | Transmitter unwanted emissions in the out-of-band domain | -                              | See Note 3      |
| Clause 4.3.2.9                              | Transmitter unwanted emissions in the spurious domain    | Compliant                      | -               |
| Clause 4.3.2.10                             | Receiver spurious emissions                              | Compliant                      | -               |
| Clause 4.3.2.11                             | Receiver Blocking  | -                              | See Note 3      |
| Clause 4.3.2.12                             | Geo-location capability                                  | Not Applicable<br>(See Note 2) | -               |

**Note:**

1. The EUT is adaptive equipment, while this item is only for non-adaptive mode.
2. The supplier declared that the equipment is unable to perform this function.
3. The test results please refer to the report of the certified RF module in the device, ★report No.: ER412211AA, which was released by Sporton International Inc. Hsinchu Laboratory.



**TEST EQUIPMENT LIST**

| Test Equipment                                     | Manufacturer    | Model         | Serial Number | Calibration Date | Calibration Due Date |
|--|-----------------|---------------|---------------|------------------|----------------------|
| <b>Radiated Spurious Emissions 30 MHz to 1 GHz</b> |                 |               |               |                  |                      |
| 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           |
| Dipole antenna                                     | EMCO            | 3121C         | 9209-860      | N/A              | N/A                  |
| 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           |
| Microwave Analog Signal Generator                  | Agilent         | N5183A        | MY47420335    | 2025/02/20       | 2026/02/19           |
| <b>Radiated Spurious Emissions Above 1 GHz</b>     |                 |               |               |                  |                      |
| Spectrum Analyzer                                  | Rohde & Schwarz | FSV40-N       | 102051        | 2025/02/20       | 2026/02/19           |
| Filter Switch Unit                                 | Decentest       | DT7220FSU     | DS79904       | 2025/02/21       | 2026/02/20           |
| Multiplex Switch Test Control Set                  | Decentest       | DT7220SCU     | DS79901       | 2025/02/21       | 2026/02/20           |
| Horn Antenna                                       | EMCO            | 3115          | 9002-3355     | 2024/11/19       | 2027/11/18           |
| Double Ridge Guide Horn Antenna                    | A.H.Systems     | SAS-571       | 1980          | 2023/07/28       | 2026/07/27           |
| Preamplifier                                       | GLOBAL          | 1313-A100M18G | 4121301       | 2025/01/16       | 2026/01/15           |
| Microwave Analog Signal Generator                  | Agilent         | N5183A        | MY47420335    | 2025/02/20       | 2026/02/19           |
| Coaxial Cable                                      | XINHANGWEIBO    | XH800A-N-6M   | CC003         | 2025/02/20       | 2026/02/19           |
| Coaxial Cable                                      | XINHANGWEIBO    | XH800A-N-1M   | CC005         | 2025/02/20       | 2026/02/19           |

**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).

## ETSI EN 300 328 V2.2.2 (2019-07) Clause 4.3.2.9 – TRANSMITTER UNWANTED EMISSION IN THE SPURIOUS DOMAIN

### Applicable Standard

Transmitter unwanted emissions in the spurious domain are emissions outside the allocated band and outside the Out-of-band Domain as indicated in figure 3 when the equipment is in Transmit mode.

The transmitter unwanted emissions in the spurious domain shall not exceed the values given in the following table.

**Transmitter limits for spurious emissions**

| Frequency Range     | Maximum power<br>e.r.p ( $\leq 1$ GHz)<br>e.i.r.p ( $> 1$ GHz) | Bandwidth |
|---------------------|--|-----------|
| 30 MHz to 47 MHz    | -36 dBm  | 100 kHz   |
| 47 MHz to 74 MHz    | -54 dBm  | 100 kHz   |
| 74 MHz to 87,5 MHz  | -36 dBm  | 100 kHz   |
| 87,5 MHz to 118 MHz | -54 dBm  | 100 kHz   |
| 118 MHz to 174 MHz  | -36 dBm  | 100 kHz   |
| 174 MHz to 230 MHz  | -54 dBm  | 100 kHz   |
| 230 MHz to 470 MHz  | -36 dBm  | 100 kHz   |
| 470 MHz to 694 MHz  | -54 dBm  | 100 kHz   |
| 694 MHz to 1 GHz    | -36 dBm  | 100 kHz   |
| 1 GHz to 12,75 GHz  | -30 dBm  | 1MHz      |

NOTE: In case of equipment with antenna connectors, these limits apply to emissions at the antenna port (conducted). For emissions radiated by the cabinet or emissions radiated by integral antenna equipment (without antenna connectors), these limits are e.r.p. for emissions up to 1 GHz and as e.i.r.p. for emissions above 1 GHz.

### Test Procedure

#### Pre-scan:

The procedure in step 1 to step 4 below shall be used to identify potential unwanted emissions of the UUT.

#### Step 1:

The sensitivity of the spectrum analyser should be such that the noise floor is at least 12 dB below the limits given in table 4 or table 12.

**Step 2:**

The emissions over the range 30 MHz to 1 000 MHz shall be identified.

Spectrum analyser settings:

- Resolution bandwidth: 100 kHz
- Video bandwidth: 300 kHz
- Filter type: 3 dB (Gaussian)
- Detector mode: Peak
- Trace Mode: Max Hold
- Sweep Points:  $\geq 19\,400$ ; for spectrum analysers not supporting this high number of sweep points, the frequency band may be segmented.
- Sweep time: For non continuous transmissions (duty cycle less than 100 %), the sweep time shall be sufficiently long, such that for each 100 kHz frequency step, the measurement time is greater than two transmissions of the UUT, on any channel.

Allow the trace to stabilize. Any emissions identified during the sweeps above and that fall within the 6 dB range below the applicable limit or above, shall be individually measured using the procedure in clause 5.4.9.2.1.3 and compared to the limits given in table 4 or table 12.

**Step 3:**

The emissions over the range 1 GHz to 12,75 GHz shall be identified.

Spectrum analyser settings:

- Resolution bandwidth: 1 MHz
- Video bandwidth: 3 MHz
- Filter type: 3 dB (Gaussian)
- Detector mode: Peak
- Trace Mode: Max Hold
- Sweep Points:  $\geq 23\,500$ ; for spectrum analysers not supporting this high number of sweep points, the frequency band may be segmented
- Sweep time: For non continuous transmissions (duty cycle less than 100 %), the sweep time shall be sufficiently long, such that for each 1 MHz frequency step, the measurement time is greater than two transmissions of the UUT, on any channel.

Allow the trace to stabilize. Any emissions identified during the sweeps above that fall within the 6 dB range below the applicable limit or above, shall be individually measured using the procedure in clause 5.4.9.2.1.3 and compared to the limits given in table 4 or table 12.

**Step 4:**

- In case of conducted measurements on smart antenna systems (equipment with multiple receive chains), step 2 and step 3 need to be repeated for each of the active receive chains ( $A_{ch}$ ). The limits used to identify emissions during this pre-scan need to be reduced by  $10 \times \log_{10}(A_{ch})$ .

**Measurement of the emissions identified during the pre-scan:**

The procedure in step 1 to step 4 below shall be used to accurately measure the individual unwanted emissions identified during the pre-scan measurements above. This method assumes the spectrum analyser has a Time Domain Power function.

**Step 1:**

The level of the emissions shall be measured using the following spectrum analyser settings:

- Measurement Mode: Time Domain Power
- Centre Frequency: Frequency of the emission identified during the pre-scan
- Resolution Bandwidth: 100 kHz (< 1 GHz) / 1 MHz (> 1 GHz)
- Video Bandwidth: 300 kHz (< 1 GHz) / 3 MHz (> 1 GHz)
- Frequency Span: Zero Span
- Sweep Mode: Single Sweep
- Sweep time: > 120 % of the duration of the longest burst detected during the measurement of the RF Output Power
- Sweep points: Sweep time [ $\mu$ s] / (1  $\mu$ s) with a maximum of 30 000
- Trigger: Video (burst signals) or Manual (continuous signals)
- Detector: RMS

**Step 2:**

Set a window where the start and stop indicators match the start and end of the burst with the highest level and record the value of the power measured within this window. If the spurious emission to be measured is a continuous transmission, the measurement window shall be set to match the start and stop times of the sweep.

**Step 3:**

In case of conducted measurements on smart antenna systems (equipment with multiple transmit chains), step 2 needs to be repeated for each of the active transmit chains ( $A_{ch}$ ).

Sum the measured power (within the observed window) for each of the active transmit chains.

**Step 4:**

The value defined in step 3 shall be compared to the limits defined in table 4 or table 12.

**Test Data**

|                   |              |                       |  |
|-------------------|--------------|-----------------------|--|
| <b>Test Mode:</b> | Transmitting | <b>Test Engineer:</b> | Wlif Wu                                      |
| <b>Test Date:</b> | 2025-12-26   | <b>Environment:</b>   | Temp.: 23.6°C<br>Humi.: 55%<br>Atm: 100.1kPa |

**Test Result:** Compliant**802.11b****30 MHz ~ 12.75 GHz:**

| Frequency<br>(MHz)    | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted                 |                              |                    | Absolute<br>Level<br>(dBm) | EN 300 328     |                |
|-----------------------|----------------|-------------------------------|-----------------------------|------------------------------|--------------------|----------------------------|----------------|----------------|
|                       |                |                               | Submitted<br>Level<br>(dBm) | Antenna<br>Gain<br>(dBd/dBi) | Cable Loss<br>(dB) |                            | Limit<br>(dBm) | Margin<br>(dB) |
| Low Channel(2412MHz)  |                |                               |                             |                              |                    |                            |                |                |
| 305.09                | H              | 41.89                         | -66.92                      | 0.00                         | 0.29               | -67.21                     | -36.00         | 31.21          |
| 286.37                | V              | 38.27                         | -66.13                      | 0.00                         | 0.29               | -66.42                     | -36.00         | 30.42          |
| 30.29                 | H              | 37.88                         | -58.37                      | -26.17                       | 0.11               | -84.65                     | -36.00         | 48.65          |
| 315.57                | V              | 38.65                         | -69.62                      | 0.00                         | 0.30               | -69.92                     | -36.00         | 33.92          |
| 4824.000              | H              | 48.34                         | -57.26                      | 11.80                        | 2.69               | -48.15                     | -30.00         | 18.15          |
| 4824.000              | V              | 47.45                         | -58.47                      | 11.80                        | 2.69               | -49.36                     | -30.00         | 19.36          |
| 7236.000              | H              | 46.26                         | -54.64                      | 9.00                         | 3.29               | -48.93                     | -30.00         | 18.93          |
| 7236.000              | V              | 46.71                         | -54.95                      | 9.00                         | 3.29               | -49.24                     | -30.00         | 19.24          |
| High Channel(2472MHz) |                |                               |                             |                              |                    |                            |                |                |
| 310.62                | H              | 43.31                         | -65.43                      | 0.00                         | 0.29               | -65.72                     | -36.00         | 29.72          |
| 288.62                | V              | 42.92                         | -62.14                      | 0.00                         | 0.29               | -62.43                     | -36.00         | 26.43          |
| 33.38                 | H              | 39.10                         | -59.20                      | -24.75                       | 0.12               | -84.07                     | -36.00         | 48.07          |
| 329.36                | V              | 39.08                         | -69.05                      | 0.00                         | 0.30               | -69.35                     | -36.00         | 33.35          |
| 4944.000              | H              | 49.49                         | -56.16                      | 10.70                        | 2.72               | -48.18                     | -30.00         | 18.18          |
| 4944.000              | V              | 48.24                         | -57.86                      | 10.70                        | 2.72               | -49.88                     | -30.00         | 19.88          |
| 7416.000              | H              | 47.52                         | -53.14                      | 8.24                         | 3.32               | -48.22                     | -30.00         | 18.22          |
| 7416.000              | V              | 47.62                         | -54.05                      | 8.24                         | 3.32               | -49.13                     | -30.00         | 19.13          |

## 802.11g

1GHz ~ 12.75 GHz:

| Frequency<br>(MHz)    | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted                 |                              |                    | Absolute<br>Level<br>(dBm) | EN 300 328     |                |
|-----------------------|----------------|-------------------------------|-----------------------------|------------------------------|--------------------|----------------------------|----------------|----------------|
|                       |                |                               | Submitted<br>Level<br>(dBm) | Antenna<br>Gain<br>(dBd/dBi) | Cable Loss<br>(dB) |                            | Limit<br>(dBm) | Margin<br>(dB) |
| Low Channel(2412MHz)  |                |                               |                             |                              |                    |                            |                |                |
| 4824.000              | H              | 48.48                         | -57.12                      | 11.80                        | 2.69               | -48.01                     | -30.00         | 18.01          |
| 4824.000              | V              | 47.83                         | -58.09                      | 11.80                        | 2.69               | -48.98                     | -30.00         | 18.98          |
| 7236.000              | H              | 47.31                         | -53.59                      | 9.00                         | 3.29               | -47.88                     | -30.00         | 17.88          |
| 7236.000              | V              | 46.86                         | -54.80                      | 9.00                         | 3.29               | -49.09                     | -30.00         | 19.09          |
| High Channel(2472MHz) |                |                               |                             |                              |                    |                            |                |                |
| 4944.000              | H              | 48.79                         | -56.86                      | 10.70                        | 2.72               | -48.88                     | -30.00         | 18.88          |
| 4944.000              | V              | 48.78                         | -57.32                      | 10.70                        | 2.72               | -49.34                     | -30.00         | 19.34          |
| 7416.000              | H              | 48.59                         | -52.07                      | 8.24                         | 3.32               | -47.15                     | -30.00         | 17.15          |
| 7416.000              | V              | 46.73                         | -54.94                      | 8.24                         | 3.32               | -50.02                     | -30.00         | 20.02          |

## 802.11n20

1GHz ~ 12.75 GHz:

| Frequency<br>(MHz)    | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted                 |                              |                    | Absolute<br>Level<br>(dBm) | EN 300 328     |                |
|-----------------------|----------------|-------------------------------|-----------------------------|------------------------------|--------------------|----------------------------|----------------|----------------|
|                       |                |                               | Submitted<br>Level<br>(dBm) | Antenna<br>Gain<br>(dBd/dBi) | Cable Loss<br>(dB) |                            | Limit<br>(dBm) | Margin<br>(dB) |
| Low Channel(2412MHz)  |                |                               |                             |                              |                    |                            |                |                |
| 4824.000              | H              | 48.32                         | -57.28                      | 11.80                        | 2.69               | -48.17                     | -30.00         | 18.17          |
| 4824.000              | V              | 48.38                         | -57.54                      | 11.80                        | 2.69               | -48.43                     | -30.00         | 18.43          |
| 7236.000              | H              | 48.35                         | -52.55                      | 9.00                         | 3.29               | -46.84                     | -30.00         | 16.84          |
| 7236.000              | V              | 46.20                         | -55.46                      | 9.00                         | 3.29               | -49.75                     | -30.00         | 19.75          |
| High Channel(2472MHz) |                |                               |                             |                              |                    |                            |                |                |
| 4944.000              | H              | 49.61                         | -56.04                      | 10.70                        | 2.72               | -48.06                     | -30.00         | 18.06          |
| 4944.000              | V              | 48.37                         | -57.73                      | 10.70                        | 2.72               | -49.75                     | -30.00         | 19.75          |
| 7416.000              | H              | 47.40                         | -53.26                      | 8.24                         | 3.32               | -48.34                     | -30.00         | 18.34          |
| 7416.000              | V              | 46.75                         | -54.92                      | 8.24                         | 3.32               | -50.00                     | -30.00         | 20.00          |

**Note:** The unit of antenna gain is dBd for frequency below 1GHz and dBi for frequency above 1GHz.

Absolute Level = Submitted Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

## ETSI EN 300 328 V2.2.2 (2019-07) Clause 4.3.2.10 – RECEIVER SPURIOUS EMISSIONS

### Applicable Standard

According to ETSI EN 300 328 V2.2.2 (2019-07) Clause 4.3.2.10.2, the receiver spurious emissions are emissions at any frequency when the equipment is in receive mode.

The spurious emissions of the receiver shall not exceed the values given in the following table

| Frequency range    | Maximum power, e.r.p. | Measurement bandwidth |
|--------------------|-----------------------|-----------------------|
| 30 MHz to 1 GHz    | -57 dBm               | 100 kHz               |
| 1 GHz to 12,75 GHz | -47 dBm               | 1 MHz                 |

NOTE: In case of equipment with antenna connectors, these limits apply to emissions at the antenna port (conducted). For emissions radiated by the cabinet or for emissions radiated by integral antenna equipment (without antenna connectors), these limits are e.r.p. for emissions up to 1 GHz and e.i.r.p. for emissions above 1 GHz.

### Test Procedure

#### Pre-scan:

The procedure in step 1 to step 4 below shall be used to identify potential unwanted emissions of the UUT.

#### Step 1:

The sensitivity of the spectrum analyser should be such that the noise floor is at least 12 dB below the limits given in table 5 or table 13.

#### Step 2:

The emissions over the range 30 MHz to 1 000 MHz shall be identified.

Spectrum analyser settings:

- Resolution bandwidth: 100 kHz
- Video bandwidth: 300 kHz
- Filter type: 3 dB (Gaussian)
- Detector mode: Peak
- Trace Mode: Max Hold
- Sweep Points:  $\geq 19\,400$
- Sweep time: Auto

**Note:** Wait for the trace to stabilize. Any emissions identified during the sweeps above and that fall within the 6 dB range below the applicable limit or above, shall be individually measured using the procedure in clause 5.4.10.2.1.3 and compared to the limits given in table 5 or table 13.

#### Step 3:

The emissions over the range 1 GHz to 12,75 GHz shall be identified.

Spectrum analyser settings:

- Resolution bandwidth: 1 MHz
- Video bandwidth: 3 MHz
- Filter type: 3 dB (Gaussian)
- Detector mode: Peak
- Trace Mode: Max Hold
- Sweep Points:  $\geq 23\,500$ ; for spectrum analysers not supporting this high number of sweep points, the frequency band may be segmented
- Sweep time: Auto

Wait for the trace to stabilize. Any emissions identified during the sweeps above that fall within the 6 dB range below the applicable limit or above, shall be individually measured using the procedure in clause 5.4.10.2.1.3 and compared to the limits given in table 5 or table 13.

Frequency Hopping equipment may generate a block (or several blocks) of spurious emissions anywhere within the spurious domain. If this is the case, only the highest peak of each block of emissions shall be measured using the procedure in clause 5.4.10.2.1.3.

#### Step 4:

In case of conducted measurements on smart antenna systems (equipment with multiple receive chains), step 2 and step 3 need to be repeated for each of the active receive chains  $A_{ch}$ . The limits used to identify emissions during this pre-scan need to be reduced by  $10 \times \log_{10} A_{ch}$ .

#### Measurement of the emissions identified during the pre-scan:

The procedure in step 1 to step 4 below shall be used to accurately measure the individual unwanted emissions identified during the pre-scan measurements above. This method assumes the spectrum analyser has a Time Domain Power function.

#### Step 1:

The level of the emissions shall be measured using the following spectrum analyser settings:

- Measurement Mode: Time Domain Power
- Centre Frequency: Frequency of the emission identified during the pre-scan
- Resolution Bandwidth: 100 kHz ( $< 1\text{ GHz}$ ) / 1 MHz ( $> 1\text{ GHz}$ )
- Video Bandwidth: 300 kHz ( $< 1\text{ GHz}$ ) / 3 MHz ( $> 1\text{ GHz}$ )
- Frequency Span: Zero Span
- Sweep mode: Single Sweep
- Sweep time: 30 ms
- Sweep points:  $\geq 30\,000$
- Trigger: Video (for burst signals) or Manual (for continuous signals)
- Detector: RMS

#### Step 2:

Set a window where the start and stop indicators match the start and end of the burst with the highest level and record the value of the power measured within this window. If the spurious emission to be measured is a continuous transmission, the measurement window shall be set to the start and stop times of the sweep.



**Step 3:**

In case of conducted measurements on smart antenna systems (equipment with multiple receive chains), step 2 needs to be repeated for each of the active receive chains  $A_{ch}$ .

Sum the measured power (within the observed window) for each of the active receive chains.

**Step 4:**

The value defined in step 3 shall be compared to the limits defined in table 5 and table 13.

**Test Data**

|                   |            |                       |  |
|-------------------|------------|-----------------------|--|
| <b>Test Mode:</b> | Receiving  | <b>Test Engineer:</b> | Wlif Wu                                      |
| <b>Test Date:</b> | 2025-12-26 | <b>Environment:</b>   | Temp.: 23.6°C<br>Humi.: 55%<br>Atm: 100.1kPa |

**Test Result:** Compliant

**802.11b****30 MHz ~ 12.75 GHz:**

| Frequency<br>(MHz)    | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted                 |                              |                    | Absolute<br>Level<br>(dBm) | EN 300 328     |                |
|-----------------------|----------------|-------------------------------|-----------------------------|------------------------------|--------------------|----------------------------|----------------|----------------|
|                       |                |                               | Submitted<br>Level<br>(dBm) | Antenna<br>Gain<br>(dBd/dBi) | Cable Loss<br>(dB) |                            | Limit<br>(dBm) | Margin<br>(dB) |
| Low Channel(2412MHz)  |                |                               |                             |                              |                    |                            |                |                |
| 325.18                | H              | 38.66                         | -69.91                      | 0.00                         | 0.30               | -70.21                     | -57.00         | 13.21          |
| 289.62                | V              | 39.04                         | -66.32                      | 0.00                         | 0.29               | -66.61                     | -57.00         | 9.61           |
| 1999.993              | H              | 54.46                         | -55.14                      | 3.10                         | 1.78               | -53.82                     | -47.00         | 6.82           |
| 1812.600              | V              | 57.14                         | -55.07                      | 6.70                         | 1.71               | -50.08                     | -47.00         | 3.08           |
| High Channel(2472MHz) |                |                               |                             |                              |                    |                            |                |                |
| 321.74                | H              | 39.08                         | -69.53                      | 0.00                         | 0.30               | -69.83                     | -57.00         | 12.83          |
| 293.64                | V              | 39.16                         | -67.39                      | 0.00                         | 0.29               | -67.68                     | -57.00         | 10.68          |
| 1660.350              | H              | 54.77                         | -59.01                      | 7.96                         | 1.64               | -52.69                     | -47.00         | 5.69           |
| 1808.400              | V              | 57.34                         | -54.92                      | 6.70                         | 1.70               | -49.92                     | -47.00         | 2.92           |

**802.11g****1GHz ~ 12.75 GHz:**

| Frequency<br>(MHz)    | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted                 |                              |                    | Absolute<br>Level<br>(dBm) | EN 300 328     |                |
|-----------------------|----------------|-------------------------------|-----------------------------|------------------------------|--------------------|----------------------------|----------------|----------------|
|                       |                |                               | Submitted<br>Level<br>(dBm) | Antenna<br>Gain<br>(dBd/dBi) | Cable Loss<br>(dB) |                            | Limit<br>(dBm) | Margin<br>(dB) |
| Low Channel(2412MHz)  |                |                               |                             |                              |                    |                            |                |                |
| 1808.400              | H              | 57.27                         | -54.69                      | 6.70                         | 1.70               | -49.69                     | -47.00         | 2.69           |
| 1816.625              | V              | 57.04                         | -55.11                      | 6.70                         | 1.71               | -50.12                     | -47.00         | 3.12           |
| High Channel(2472MHz) |                |                               |                             |                              |                    |                            |                |                |
| 1815.450              | H              | 57.04                         | -54.83                      | 6.70                         | 1.71               | -49.84                     | -47.00         | 2.84           |
| 1333.700              | V              | 56.24                         | -60.10                      | 7.50                         | 1.50               | -54.10                     | -47.00         | 7.10           |

**802.11n20****1GHz ~ 12.75 GHz:**

| Frequency<br>(MHz)    | Polar<br>(H/V) | Receiver<br>Reading<br>(dBμV) | Substituted                 |                              |                    | Absolute<br>Level<br>(dBm) | EN 300 328     |                |
|-----------------------|----------------|-------------------------------|-----------------------------|------------------------------|--------------------|----------------------------|----------------|----------------|
|                       |                |                               | Submitted<br>Level<br>(dBm) | Antenna<br>Gain<br>(dBd/dBi) | Cable Loss<br>(dB) |                            | Limit<br>(dBm) | Margin<br>(dB) |
| Low Channel(2412MHz)  |                |                               |                             |                              |                    |                            |                |                |
| 1809.575              | H              | 56.09                         | -55.86                      | 6.70                         | 1.70               | -50.86                     | -47.00         | 3.86           |
| 1661.525              | V              | 58.29                         | -55.86                      | 7.95                         | 1.64               | -49.55                     | -47.00         | 2.55           |
| High Channel(2472MHz) |                |                               |                             |                              |                    |                            |                |                |
| 1928.250              | H              | 55.84                         | -54.64                      | 4.89                         | 1.75               | -51.50                     | -47.00         | 4.50           |
| 1666.225              | V              | 58.59                         | -55.50                      | 7.94                         | 1.65               | -49.21                     | -47.00         | 2.21           |

**Note:** The unit of antenna gain is dBd for frequency below 1GHz and dBi for frequency above 1GHz.

Absolute Level = Submitted Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

---

**EXHIBIT A - E.2 INFORMATION AS REQUIRED BY ETSI EN 300 328  
V2.2.2, Clause 5.4.1**

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In accordance with EN 300 328, clause 5.4.1, the following information is provided by the manufacturer.

**a) The type of modulation used by the equipment:**

- ☐ FHSS  
☒ other forms of modulation

**b) In case of FHSS:**

In case of non-Adaptive Frequency Hopping equipment:

The number of Hopping Frequencies: N/A.

In case of Adaptive FHSS equipment:

The maximum number of Hopping Frequencies: \_\_\_\_\_;

The minimum number of Hopping Frequencies: \_\_\_\_\_;

The (average) Dwell Time: \_\_\_\_\_;

**c) Adaptive / non-adaptive equipment:**

- ☐ non-adaptive Equipment  
☒ adaptive Equipment without the possibility to switch to a non-adaptive mode  
☐ adaptive Equipment which can also operate in a non-adaptive mode

**d) In case of adaptive equipment:**

The maximum Channel Occupancy Time implemented by the equipment: 1.547 ms

- ☐ The equipment has implemented an LBT mechanism

In case of non-FHSS equipment:

- ☐ The equipment is Frame Based equipment  
☒ The equipment is Load Based equipment  
☐ The equipment can switch dynamically between Frame Based and Load Based equipment

The CCA time implemented by the equipment: 500  $\mu$ s

- ☐ The equipment has implemented a DAA mechanism  
☐ The equipment can operate in more than one adaptive mode

**e) In case of non-adaptive Equipment:**

The maximum RF Output Power (e.i.r.p.): N/A dBm

The maximum (corresponding) Duty Cycle: N/A %

Equipment with dynamic behaviour, that behaviour is described here. (e.g. the different combinations of duty cycle and corresponding power levels to be declared): N/A.

**f) The worst case operational mode for each of the following tests:**

RF Output Power: 18.2 dBm;  
Power Spectral Density 9.959 dBm/MHz;  
Duty cycle, Tx-Sequence, Tx-gap N/A;  
Accumulated Transmit time, Frequency Occupation & Hopping Sequence (only for FHSS equipment)  
N/A;  
Hopping Frequency Separation (only for FHSS equipment) N/A;  
Medium Utilisation N/A;  
Adaptivity Compliant;  
Receiver Blocking Compliant;  
Nominal Channel Bandwidth 20MHz;  
Transmitter unwanted emissions in the OOB domain Compliant;  
Transmitter unwanted emissions in the spurious domain -46.84dBm;  
Receiver spurious emissions -49.21dBm;

**g) The different transmit operating modes (tick all that apply):**

- ☒ Operating mode 1: Single Antenna Equipment  
☒ Equipment with only one antenna  
☐ Equipment with two diversity antennas but only one antenna active at any moment in time  
☐ Smart Antenna Systems with 2 or more antennas, but operating in a (legacy) mode where only 1 antenna is used. (e.g. IEEE 802.11™ legacy mode in smart antenna systems)
- ☐ Operating mode 2: Smart Antenna Systems - Multiple Antennas without beam forming  
☐ Single spatial stream / Standard throughput / (e.g. IEEE 802.11™ legacy mode)  
☐ High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 1  
☐ High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 2  
Note: Add more lines if more channel bandwidths are supported.
- ☐ Operating mode 3: Smart Antenna Systems - Multiple Antennas with beam forming  
☐ Single spatial stream / Standard throughput (e.g. IEEE 802.11™ legacy mode)  
☐ High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 1  
☐ High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 2  
Note: Add more lines if more channel bandwidths are supported.

**h) In case of Smart Antenna Systems:**

The number of Receive chains: \_\_\_\_\_;  
The number of Transmit chains: \_\_\_\_\_;

- ☐ symmetrical power distribution  
☐ asymmetrical power distribution

In case of beam forming, the maximum (additional) beam forming gain: N/A;

Note: The additional beam forming gain does not include the basic gain of a single antenna.

**i) Operating Frequency Range(s) of the equipment:**Operating Frequency Range 1: 2412 MHz to 2472 MHz

Operating Frequency Range 2: \_\_\_\_\_ MHz to \_\_\_\_\_ MHz

Note: Add more lines if more Frequency Ranges are supported.

**j) Nominal Channel Bandwidth(s):**Nominal Channel Bandwidth 1: 20 MHz

Nominal Channel Bandwidth 2: \_\_\_\_\_ MHz

Nominal Channel Bandwidth 3: \_\_\_\_\_ MHz

Nominal Channel Bandwidth 4: \_\_\_\_\_ MHz

Note: Add more lines if more channel bandwidths are supported.

**k) Type of Equipment (stand-alone, combined, plug-in radio device, etc.):**☒ Stand-alone☐ Combined Equipment☐ Plug-in radio device☐ Other \_\_\_\_\_;**l) The normal and extreme operating conditions that apply to the equipment:****Normal operating conditions (if applicable):**Operating temperature: 25 °COther (please specify if applicable): N/A**Extreme operating conditions:**Operating temperature range: Minimum: -10 °C Maximum: +60 °COther (please specify if applicable): N/A Minimum: N/A Maximum: N/ADetails provided are for the: ☒ stand-alone equipment☐ combined (or host) equipment☐ test jig**m) The intended combination(s) of the radio equipment power settings and one or more antenna assemblies and their corresponding e.i.r.p levels:**

Antenna Type:

☒ Integral Antenna (information to be provided in case of conducted measurements)Antenna Gain: 2.5 dBi

If applicable, additional beamforming gain (excluding basic antenna gain): \_\_\_\_\_ dB

- ☐ Temporary RF connector provided  
☐ No temporary RF connector provided  
☐ Dedicated Antennas (equipment with antenna connector)  
  
☐ Single power level with corresponding antenna(s)  
☐ Multiple power settings and corresponding antenna(s)

Number of different Power Levels: .....

Power Level 1: ..... dBm  
 Power Level 2: ..... dBm  
 Power Level 3: ..... dBm

Note 1: Add more lines in case the equipment has more power levels.

Note 2: These power levels are conducted power levels (at antenna connector).

For each of the Power Levels, provide the intended antenna assemblies, their corresponding gains (G) and the resulting e.i.r.p. levels also taking into account the beamforming gain (Y) if applicable

**Power Level 1:** ..... dBm

Number of antenna assemblies provided for this power level: .....

| Assembly # | Gain (dBi) | e.i.r.p.(dBm) | Part number or model name |
|------------|------------|---------------|---------------------------|
| 1          |            |               |                           |
| 2          |            |               |                           |
| 3          |            |               |                           |
| 4          |            |               |                           |

NOTE 3: Add more rows in case more antenna assemblies are supported for this power level.

**Power Level 2:** ..... dBm

Number of antenna assemblies provided for this power level: .....

| Assembly # | Gain (dBi) | e.i.r.p.(dBm) | Part number or model name |
|------------|------------|---------------|---------------------------|
| 1          |            |               |                           |
| 2          |            |               |                           |
| 3          |            |               |                           |
| 4          |            |               |                           |

NOTE 4: Add more rows in case more antenna assemblies are supported for this power level.

**Power Level 3:** ..... dBm

Number of antenna assemblies provided for this power level: .....

| Assembly # | Gain (dBi) | e.i.r.p.(dBm) | Part number or model name |
|------------|------------|---------------|---------------------------|
| 1          |            |               |                           |
| 2          |            |               |                           |
| 3          |            |               |                           |
| 4          |            |               |                           |

NOTE 5: Add more rows in case more antenna assemblies are supported for this power level.

**n) The nominal voltages of the stand-alone radio equipment or the nominal voltages of the combined (host)equipment or test jig in case of plug-in devices:**

Details provided are for the: ☒stand-alone equipment  
☐combined (or host) equipment  
☐test jig

Supply Voltage: ☒AC mains State AC voltage 90-240 V  
☐DC State DC voltage \_\_\_\_\_ V

In case of DC, indicate the type of power source

☐Internal Power Supply\_\_\_\_\_  
☒External Power Supply or AC/DC adapter:\_\_\_\_\_  
☐Battery:\_\_\_\_\_  
☐Other:\_\_\_\_\_.

**o) Describe the test modes available which can facilitate testing:**

Continuous transmitting&receiving and normal operation \_\_\_\_\_.

**p) The equipment type (e.g. Bluetooth®, IEEE 802.11™ [i.3], IEEE 802.15.4™ [i.4], proprietary, etc.):**

IEEE 802.11™ [i.3] \_\_\_\_\_.

**q) If applicable, the statistical analysis referred to in clause 5.4.1 q)**

(to be provided as separate attachment)

**r) If applicable, the statistical analysis referred to in clause 5.4.1 r)**

(to be provided as separate attachment)

**s) Geo-location capability supported by the equipment:**

☐Yes  
☐The geographical location determined by the equipment as defined in clause 4.3.1.13.2 or clause 4.3.2.12.2 is not accessible to the user.  
☒No

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## **EXHIBIT B - EUT PHOTOGRAPHS**

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Refer to Report No.: 2507A04674E-EM-02

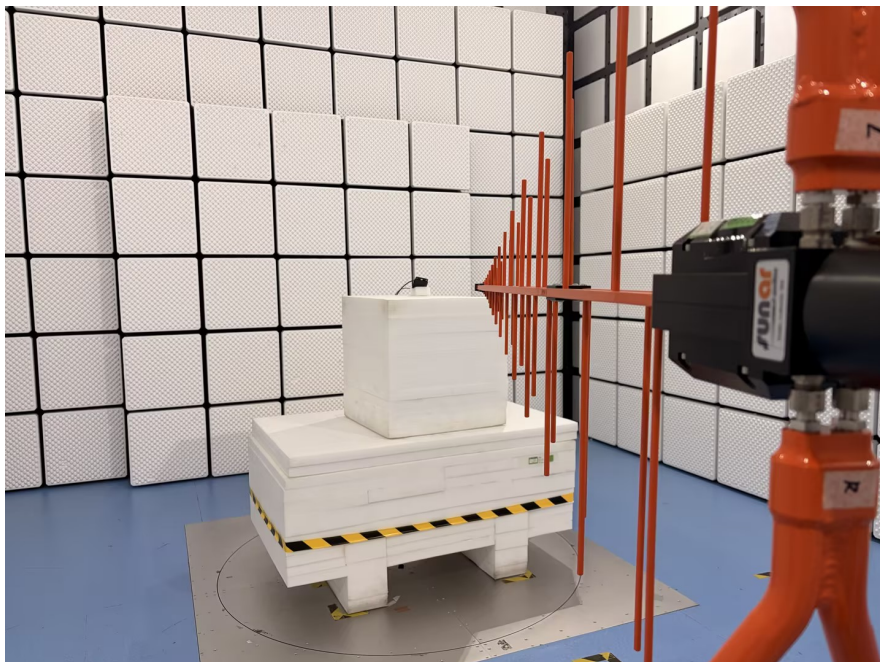


## EXHIBIT C - TEST SETUP PHOTOGRAPHS

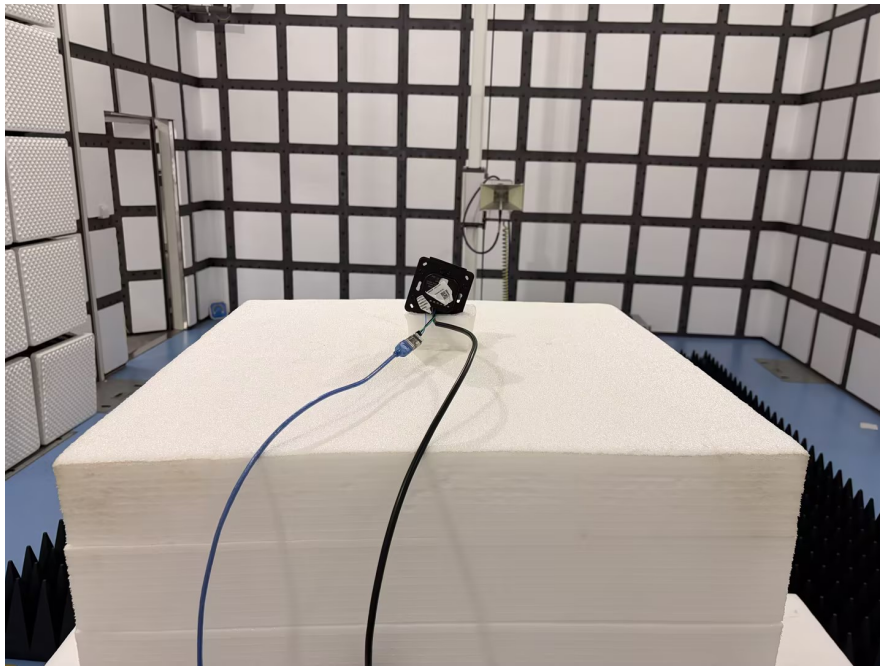
**Radiated Spurious Emissions Front View (Below 1GHz)**



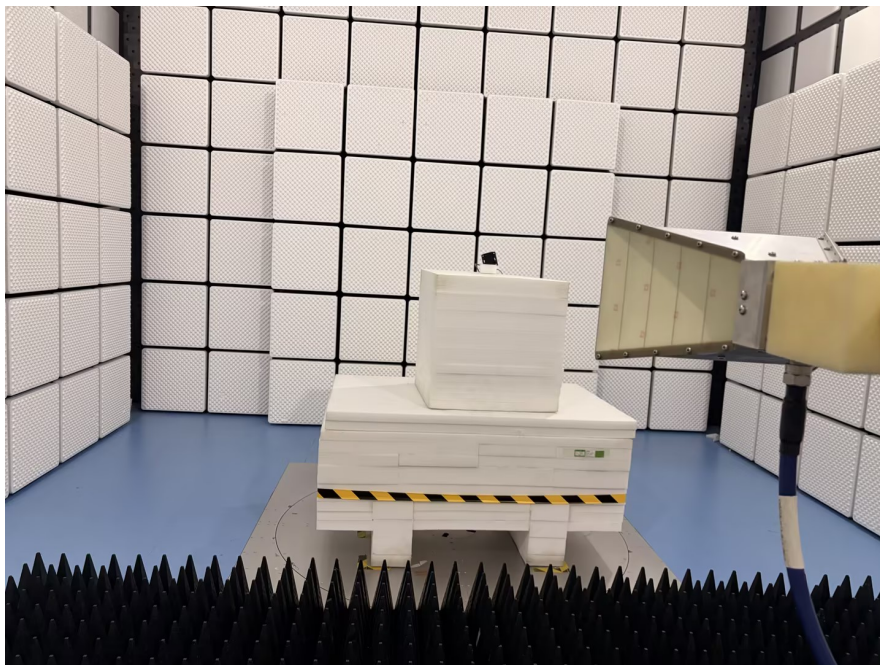
**Radiated Spurious Emissions Back View (Below 1GHz)**



**Radiated Spurious Emissions Front View (Above 1GHz)**



**Radiated Spurious Emissions Back View (Above 1GHz)**



## 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. Otherwise required by the applicant or Product Regulations, 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 with the 95% confidence interval.
5. This report cannot be reproduced except in full, without prior written approval of the Company.
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<br>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:

Deng:

Print Name: Deng

Title: Manager

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