

# Testing Report

Customer Name: Xiamen Hanin Electronic Technology Co.,Ltd.

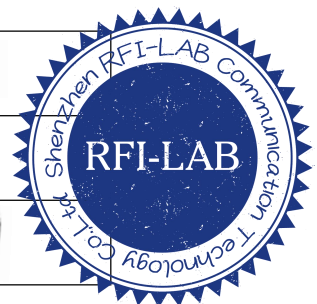
Product Name: Portable Label Printer, Portable Thermal Label Printer

Sample Model: HM-T3 Pro

Reference Standard: *GB/T 9410-2008; ANSI/IEEE Std 149-1979*

Issue Date: 2022.11.29

|                   |                  |
|-------------------|------------------|
| Engineer: Jackson | Date: 2022.11.28 |
| Auditor: Eason    | Date: 2022.11.29 |
| Approver: Janson  | Date: 2022.11.29 |



## Version

| Version No. | Date       | Description                   | Formulate | Approval |
|-------------|------------|-------------------------------|-----------|----------|
| A0          | 2022.11.29 | For the first time, formulate | Jackson   | Eason    |
|             |            |                               |           |          |
|             |            |                               |           |          |

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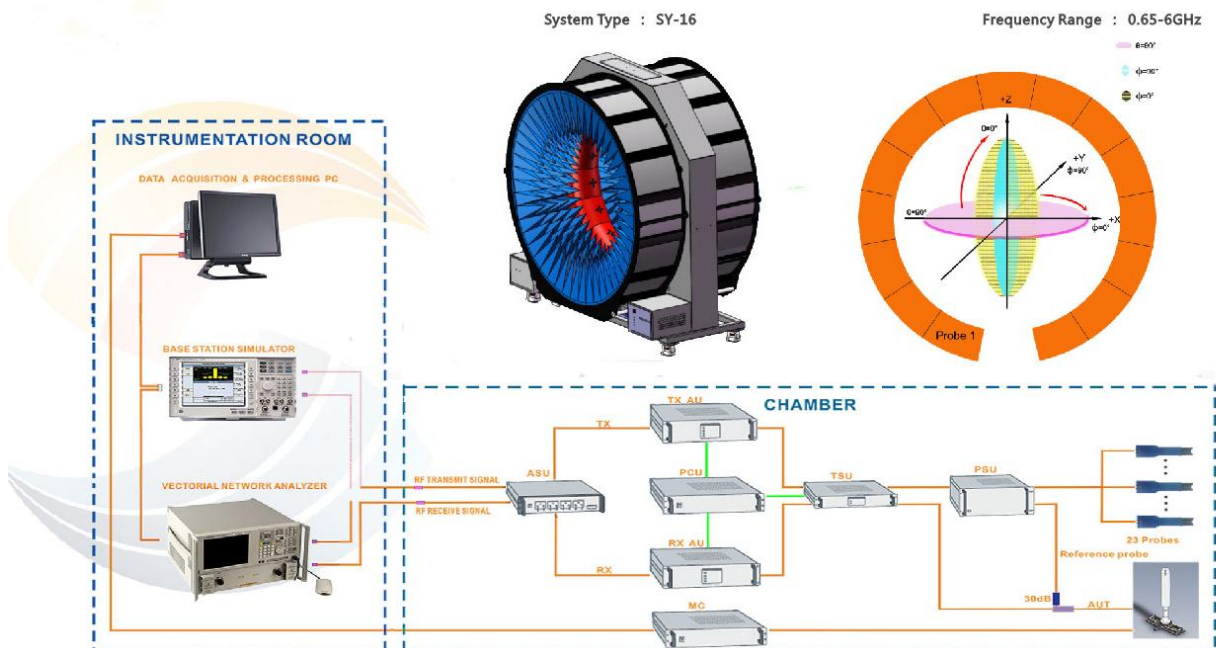
# 1.General Information

## 1.1 General information of testing institutions

|           |                                                                                                         |
|-----------|---------------------------------------------------------------------------------------------------------|
| Name      | Shenzhen RFI-LAB Communication Technology Co., Ltd.                                                     |
| Address   | 10/F A, Lingyun Bld, Liufang Rd, Baoan District, SZ                                                     |
| Tel       | 13682621346                                                                                             |
| E-mail    | rfi-lab@tech-now.com                                                                                    |
| Equipment | All the equipment used in the report is fixed in<br>10/F A, Lingyun Bld, Liufang Rd, Baoan District, SZ |

## 1.2 Testing principle

### Multi-Probe OTA Measurement System



### 1.3 Test equipment

| Equipment                  | Model No. | Serial No.     | Manufacturer | Calibration date | Next calibration date |
|----------------------------|-----------|----------------|--------------|------------------|-----------------------|
| 16 probe microwave chamber | 3*3*2.5   | RFI-LAB-RF-A00 | SUNYIELD     | 2021.3.15        | 2023.3.14             |
| Network Analyzer           | E5071C    | RFI-LAB-RF-A02 | Agilent      | 2022.5.13        | 2023.5.12             |

### 1.4 Test environment

|             |           |
|-------------|-----------|
| Temperature | 23.5℃     |
| Humidity    | 59%RH     |
| Pressure    | 100.18kPa |

### 1.5 Statement

- (1) The test results in the report are only applicable to the tested samples and the tested samples work under the environment described in the report.
- (2) Only Shenzhen RFI-LAB Communication Technology Co., Ltd. have the right to modify the report, and the modification information shall be annotated in the revision form.
- (3) Any objection to this report shall be raised within 30 days after formal confirmation of the report.
- (4) This report is invalid if there is any evidence that the sample information provided is falsified.
- (5) The report is invalid without the signature of the auditor and approver.

## 2.Sample Information

### 2.1 Client information

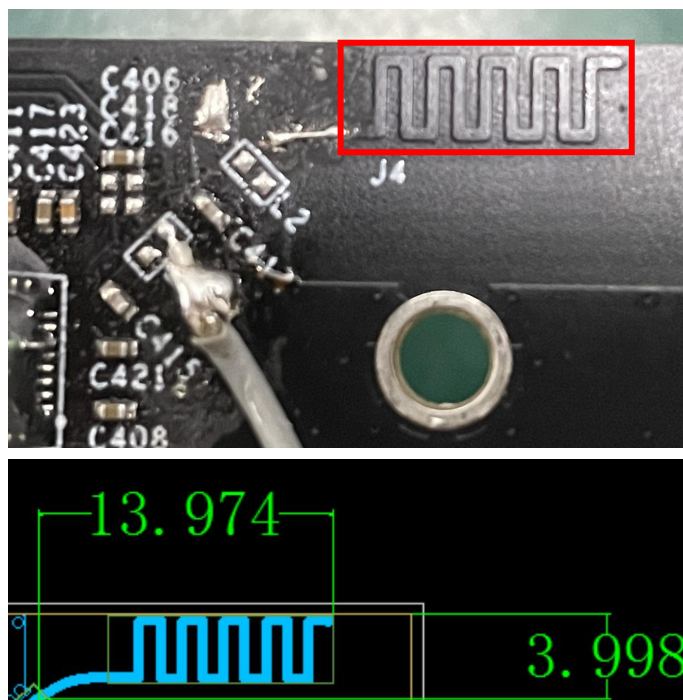
|                 |                                                                             |
|-----------------|-----------------------------------------------------------------------------|
| <b>Name</b>     | Xiamen Hanin Electronic Technology Co.,Ltd.                                 |
| <b>Address</b>  | Room 305A, Angye Building, Pioneering Park,<br>Torch High-tech Zone, Xiamen |
| <b>Contacts</b> | /                                                                           |
| <b>Tel</b>      | /                                                                           |
| <b>E-mail</b>   | /                                                                           |

### 2.2 Description of EUT(S)

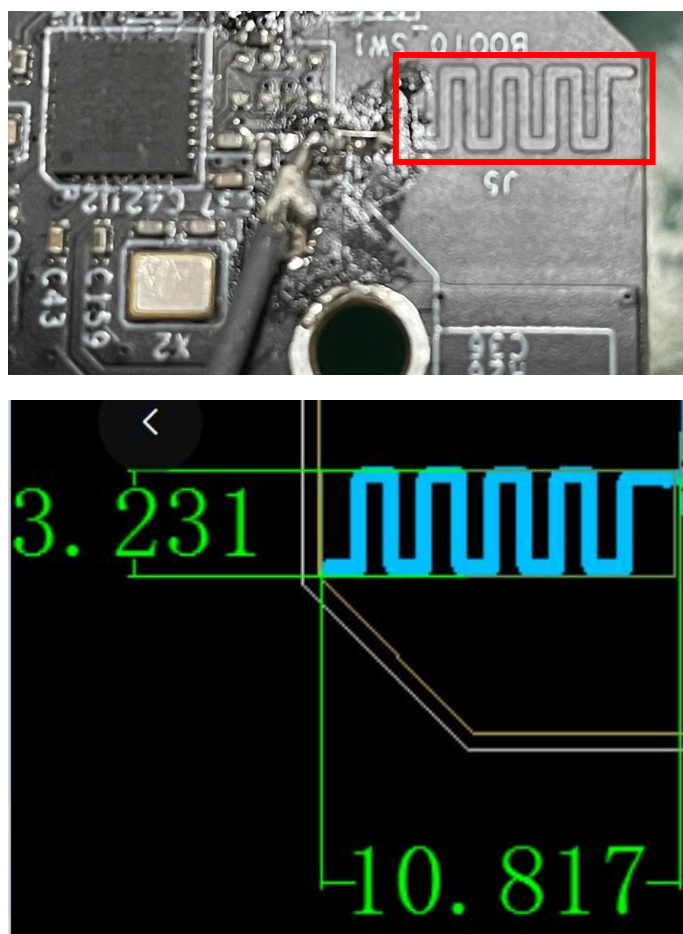
|                        |                                                        |
|------------------------|--------------------------------------------------------|
| <b>Product Name</b>    | Portable Label Printer, Portable Thermal Label Printer |
| <b>Sample Model</b>    | HM-T3 Pro                                              |
| <b>Size</b>            | /                                                      |
| <b>Serial No.</b>      | /                                                      |
| <b>Test Item</b>       | Antenna gain; Radiation pattern and efficiency         |
| <b>Frequency Range</b> | 2400MHz-2500MHz                                        |
| <b>Received Date</b>   | 2022.11.28                                             |
| <b>Test Date</b>       | 2022.11.28                                             |
| <b>Remark</b>          | The length of the RF cable is 80mm                     |

## 2.3 EUT appearance

Wi-Fi Antenna



BT Antenna

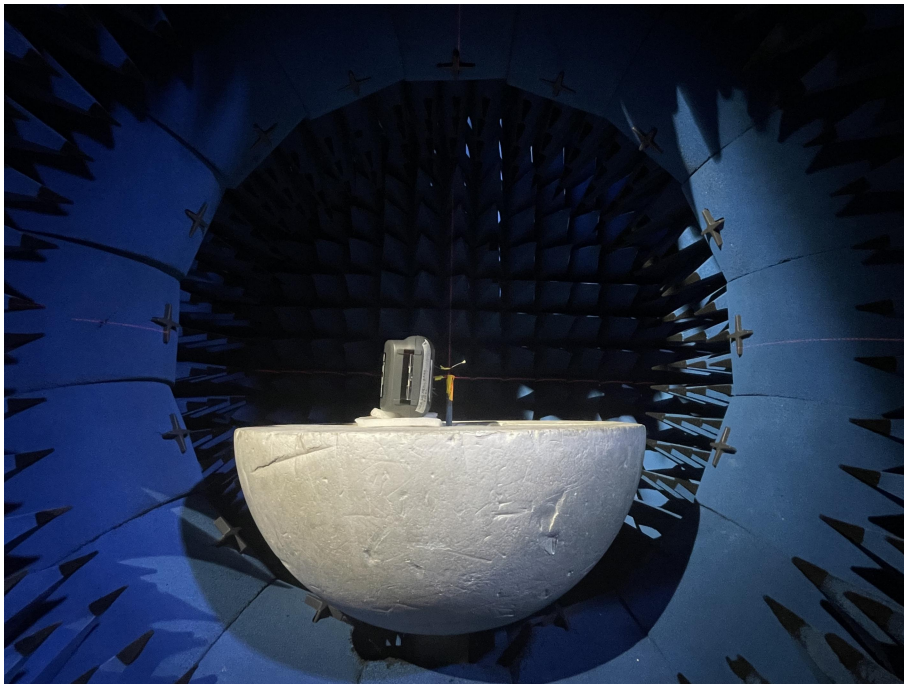


## 2.4 EUT setup photo of free space OTA testing

Planform



Front view



## 3. Test Results

### 3.1 Test standard

| Name                         | Parameter            | Method                                                               | Standard no.           |
|------------------------------|----------------------|----------------------------------------------------------------------|------------------------|
| Mobile communication antenna | Antenna gain         | Generic specification for antennas used in the mobile communications | GB/T 9410-2008         |
|                              | Radiation pattern    |                                                                      |                        |
| Antenna                      | Radiation efficiency | IEEE Standard Test Procedures for Antennas                           | ANSI/IEEE Std 149-1979 |
|                              | Gain and directivity |                                                                      |                        |

### 3.2 Test uncertainty

The uncertainty was calculated on the basis of the GUM published by ISO, using the inclusion factor of K=2 and the 95% confidence level to express the extended uncertainty.

| Item                 | Uncertainty      |
|----------------------|------------------|
| Antenna gain         | $\pm 1\text{dB}$ |
| Radiation efficiency | $\pm 10\%$       |

### 3.3 Test data

#### 3.3.1 Typical free space efficiency and gain

Wi-Fi Antenna:

| Frequency/MHz | 2400  | 2410  | 2420  | 2430  | 2440  | 2450  | 2460  | 2470  | 2480  | 2490  | 2500  |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Peak Gain/dBi | -0.62 | -0.74 | -0.56 | -0.61 | -0.46 | 0.22  | 0.41  | 0.77  | 1.11  | 1.43  | 1.48  |
| Efficiency/%  | 30.49 | 30.86 | 30.98 | 31.17 | 31.61 | 33.23 | 33.46 | 34.35 | 36.02 | 37.61 | 37.79 |

BT Antenna:

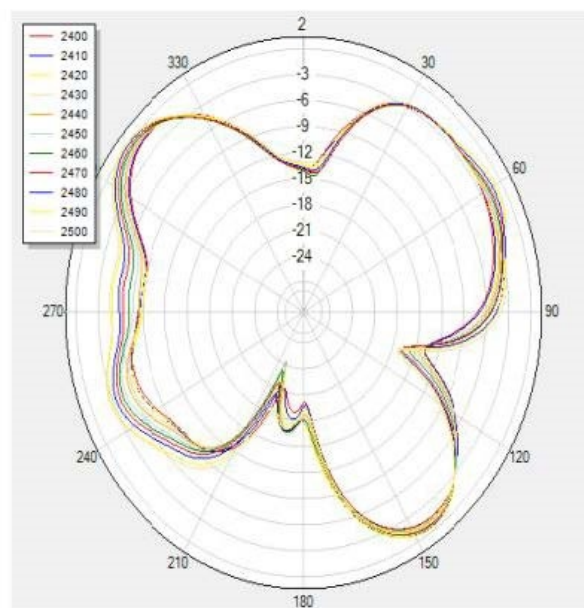
| Frequency/MHz | 2400  | 2410  | 2420  | 2430  | 2440  | 2450  | 2460  | 2470  | 2480  | 2490  | 2500  |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Peak Gain/dBi | 0.29  | 0.32  | 0.25  | 0.37  | 0.24  | 0.44  | 0.44  | 0.44  | 0.48  | 0.86  | 0.87  |
| Efficiency/%  | 32.59 | 32.30 | 31.94 | 31.90 | 31.21 | 32.26 | 31.57 | 30.50 | 29.69 | 30.27 | 29.49 |

#### 3.3.2 Typical free space radiation pattern

Wi-Fi Antenna:

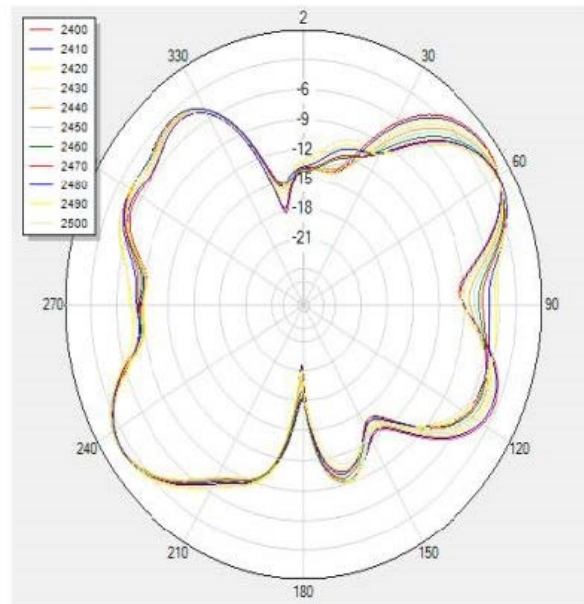
(1) X-Z Plane:

$\Phi = 0^\circ$



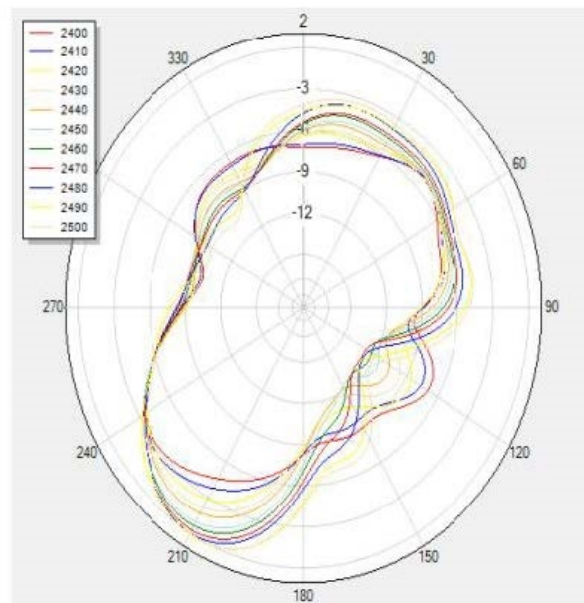
(2) Y-Z Plane:

**V Phi=90**

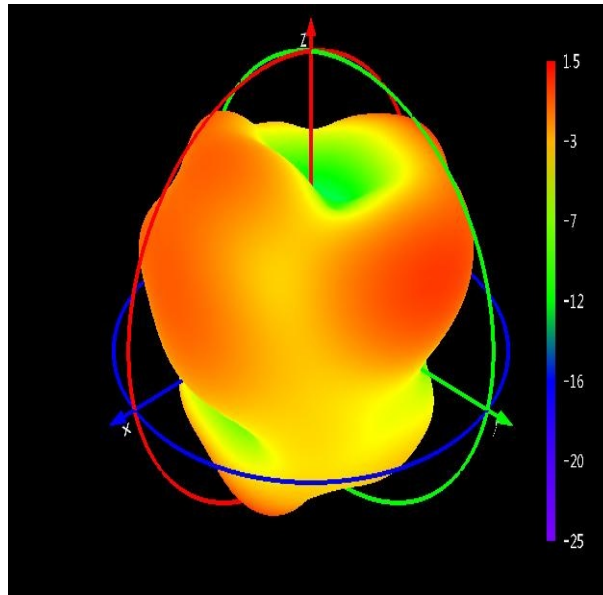


(3) X-Y Plane:

**H Theta=90**



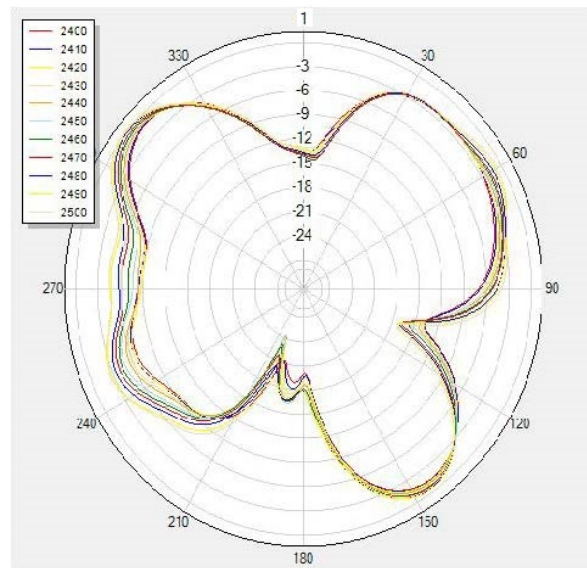
(4) Typical Free Space 3D Radiation Pattern at 2.45GHz:



BT Antenna:

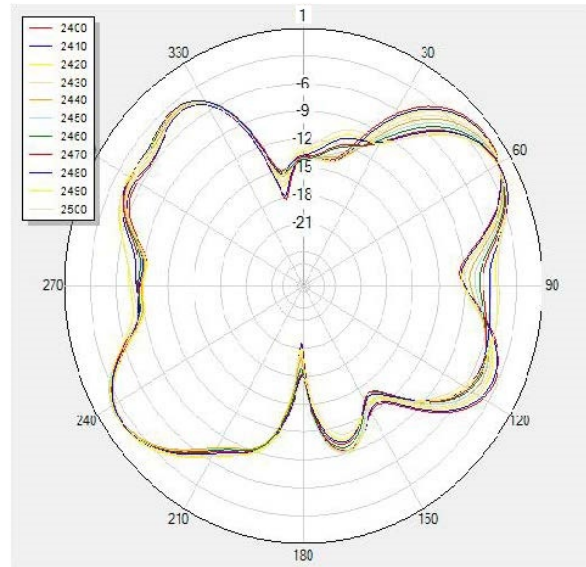
(5) X-Z Plane:

**V Phi=0**



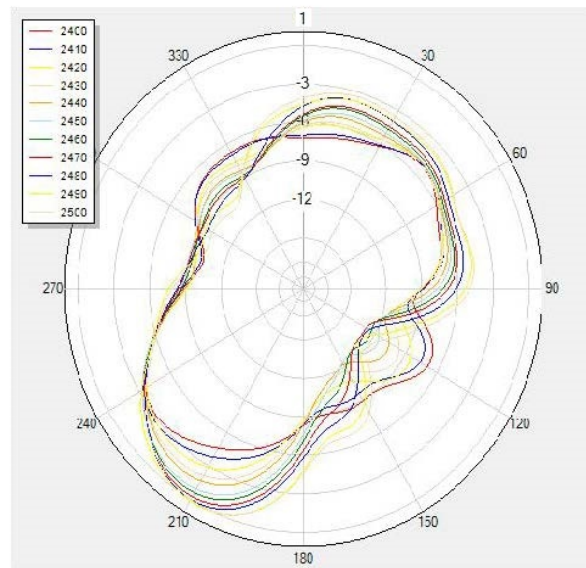
(6) Y-Z Plane:

**V Phi=90**

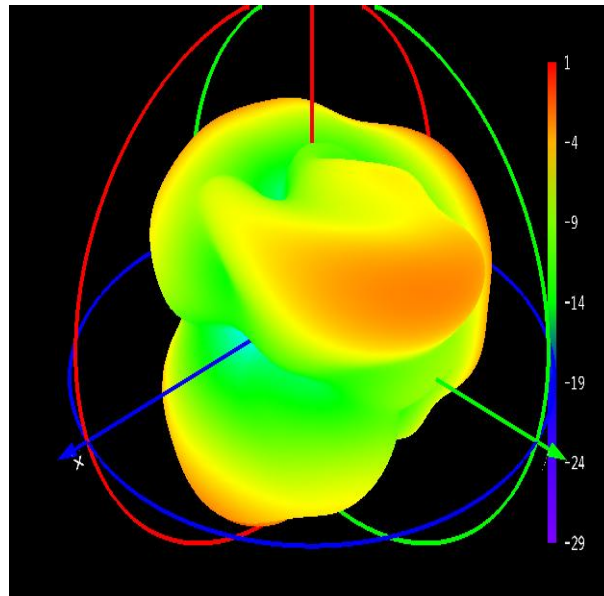


(7) X-Y Plane:

**H Theta=90**



(8) Typical Free Space 3D Radiation Pattern at 2.45GHz:



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