

# Testing Report

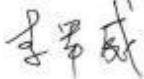
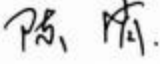
Customer Name: SHENZHEN SHIXINZHONGXIN TECHNOLOGY.CO.,LTD

Product Name: BT Antenna

Sample Model: F-6990

Reference Standard: *GB/T9410-2008; ANSI/IEEE Std 149-1979*

Issue Date: 2021.9.27

|           |                                                                                     |                 |
|-----------|-------------------------------------------------------------------------------------|-----------------|
| Engineer: |  | Date:2021.09.27 |
| Auditor:  |  | Date:2021.09.27 |
| Approver: |  | Date:2021.09.27 |

# 1. General Information

## 1.1 General Information of testing institutions

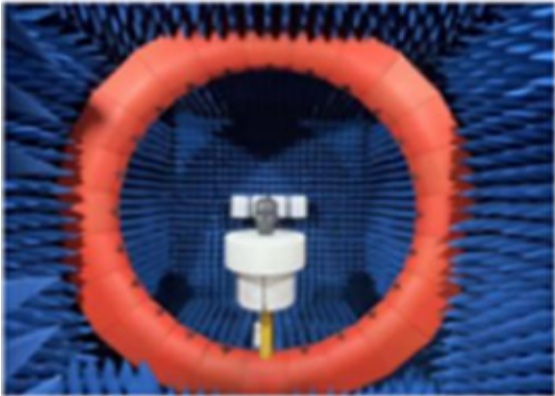
|           |                                                                                      |
|-----------|--------------------------------------------------------------------------------------|
| Name      | Shenzhen Hetuo Technology Co.,Ltd.                                                   |
| Address   | Room 1202B, Building C6, Hengfeng Industrial City, Xixiang, Baoan District, Shenzhen |
| Tel       | 18665849001                                                                          |
| E-mail    | 18665849001@163.com                                                                  |
| Equipment | Agilent 5071C                                                                        |

## 1.2 Testing principle

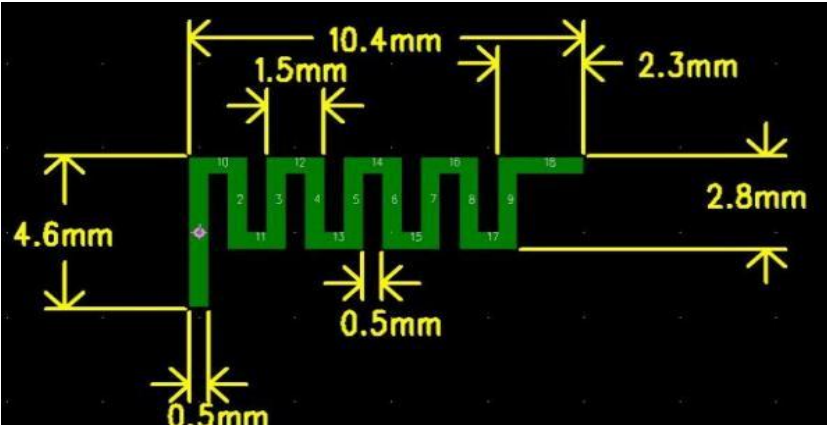
### 2. Test System

# Multi-probe OTA Measurement System

|                   |                   |                         |
|-------------------|-------------------|-------------------------|
| Gain & Efficiency | Gain & Efficiency | SATIMO<br>Agilent 5071C |
|-------------------|-------------------|-------------------------|



Antenna Photo & Lenght(mm)



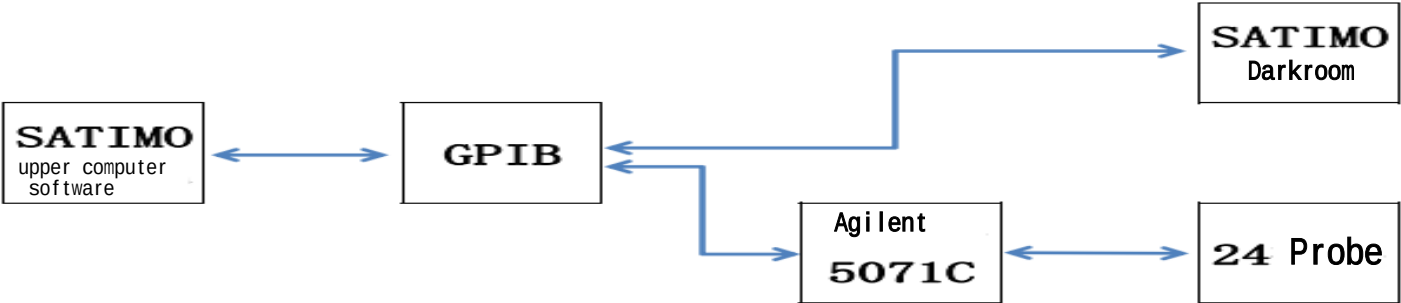
### 1.3 Test equipment

| Equipment                  | Model No. | Serial No. | Manufacturer | Calibration date | Next calibration date |
|----------------------------|-----------|------------|--------------|------------------|-----------------------|
| 24 probe microwave chamber | 4*3*3     | NA         | FEITU        | 2021.07.29       | 2021. 10.31           |
| Network Analyzer           | 5071C     | NA         | Agilent      | 2021.07.29       | 2021. 10.31           |

### 1.4 Test environment

|             |             |
|-------------|-------------|
| Temperature | 24°C ± 1.5C |
| Humidity    | 45%RH       |
| Pressure    | 101kPa      |

### 1.5 Brief summary of Procedure



1. SATIMO turn on the Upper Computer Software, Name: VeryView99.exe, Version No.: V1.10;
2. VeryView99 via GPIB (General Purpose Interface Bus) to control the shielding room (darkroom)'s SATIMO;
3. Meanwhiel, GPIB control the Agilent 5071C to read the Antenna data by 24 Probe;
4. Agilent 5071C will analyse the data and generate the result;
5. Agilent 5071C will feedback to VeryView99 software to generate the test report.

## 2. Sample Information

### 2.1 Client information

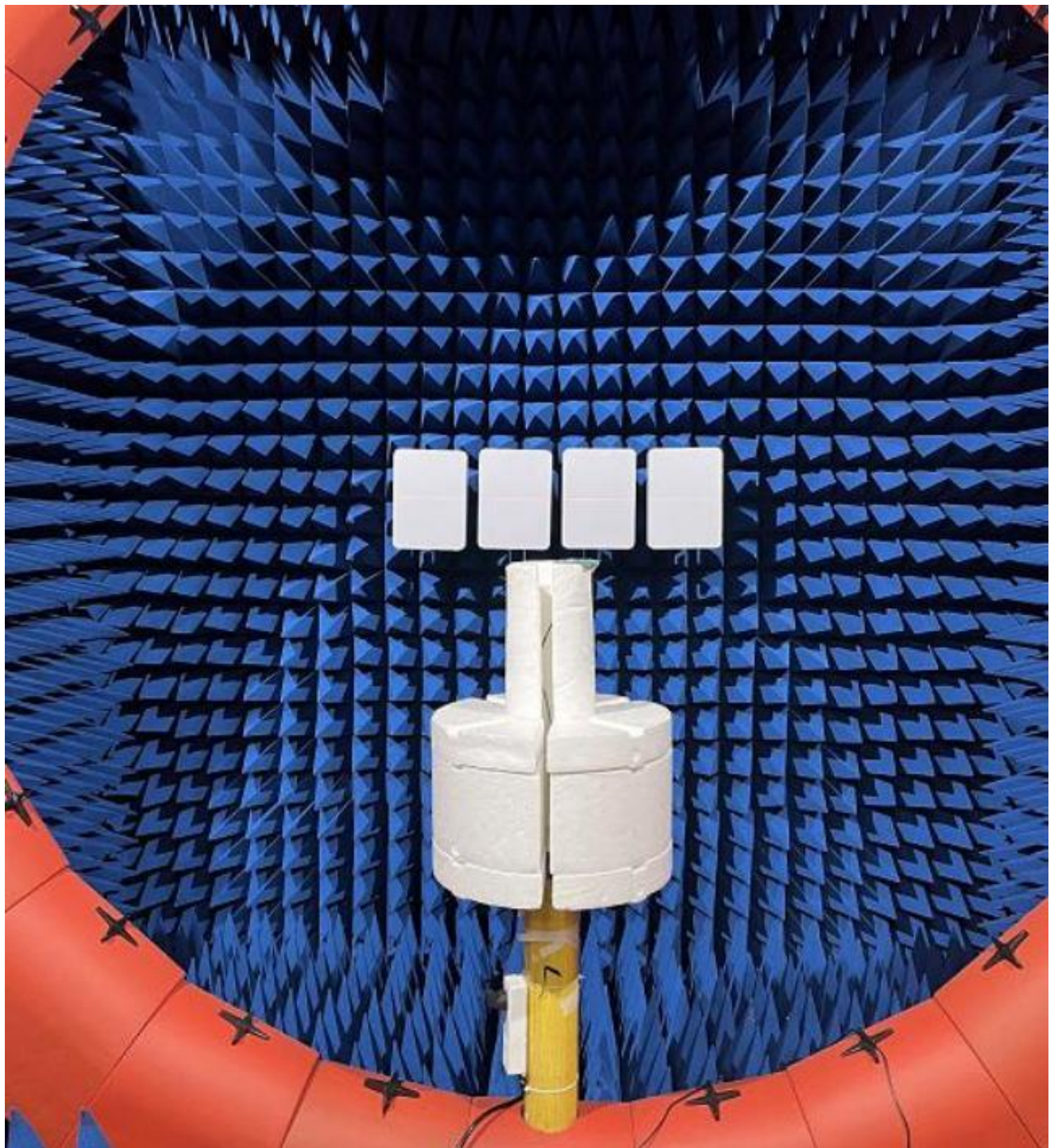
|          |                                                                     |
|----------|---------------------------------------------------------------------|
| Name     | SHENZHEN SHIXINZHONGXIN TECHNOLOGY CO.,LTD                          |
| Address  | A1 , Shajing Donghuan Industrial Zone , Bao 'an District , Shenzhen |
| Contacts | Ma Chao                                                             |
| Tel      | 18218809918                                                         |
| E-mail   | machao@c-chip.com.cn                                                |

### 2.2 Description of EUT(S)

|                 |                                    |
|-----------------|------------------------------------|
| Product Name    | BT Antenna                         |
| Sample Model    | F-6990                             |
| Antenna Size    | 4.6*10.4mm                         |
| Antenna Type    | PCB antenna                        |
| Serial No.      | /                                  |
| Test Item       | Antenna Gain, Radiation pattern    |
| Frequency Range | 2400-2500MHz                       |
| Received Date   | 2021.09.25                         |
| Test Date       | 2021.09.27                         |
| Remark          | The length of the RF cable is 50mm |



## The test photos





深圳市合拓科技有限公司

|                            |        |        |        |        |        |        |        |        |        |        |        |
|----------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Frequency ID               | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     | 11     |
| Frequency (MHz)            | 2400.0 | 2410.0 | 2420.0 | 2430.0 | 2440.0 | 2450.0 | 2460.0 | 2470.0 | 2480.0 | 2490.0 | 2500.0 |
| Efficiency (dBi)           | -3.70  | -3.54  | -3.47  | -3.32  | -3.27  | -3.24  | -3.33  | -3.40  | -3.59  | -3.76  | -3.90  |
| Gain (dBi)                 | 0.06   | 0.36   | 0.58   | 0.85   | 0.87   | 0.88   | 0.77   | 0.48   | 0.28   | 0.25   | 0.37   |
| Efficiency (%)             | 42.62  | 44.27  | 44.99  | 46.55  | 47.13  | 47.40  | 46.47  | 45.73  | 43.79  | 42.05  | 40.78  |
| Directivity (dB)           | 3.76   | 3.90   | 4.05   | 4.17   | 4.14   | 4.13   | 4.09   | 3.88   | 3.87   | 4.01   | 4.26   |
| Peak Gain Position (Theta) | 120.00 | 120.00 | 120.00 | 120.00 | 120.00 | 105.00 | 105.00 | 105.00 | 135.00 | 135.00 | 0.00   |
| Peak Gain Position (Phi)   | 285.00 | 285.00 | 285.00 | 285.00 | 285.00 | 285.00 | 285.00 | 285.00 | 270.00 | 270.00 | 90.00  |
| Efficiency ThetaPol (%)    | 11.37  | 11.71  | 11.53  | 11.53  | 11.59  | 11.52  | 11.56  | 11.83  | 11.80  | 11.70  | 11.60  |
| Efficiency PhiPol (%)      | 31.24  | 32.56  | 33.45  | 35.01  | 35.54  | 35.89  | 34.91  | 33.90  | 31.99  | 30.35  | 29.18  |
| Upper Hem. Efficiency (%)  | 22.82  | 23.44  | 23.72  | 24.38  | 24.66  | 24.69  | 24.26  | 23.98  | 23.57  | 22.84  | 22.39  |
| Lower Hem. Efficiency (%)  | 19.80  | 20.82  | 21.27  | 22.17  | 22.47  | 22.71  | 22.21  | 21.75  | 20.23  | 19.21  | 18.40  |

|                  |        |        |        |        |        |        |        |        |        |        |        |
|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| T90(H)圆度         | 16.45  | 15.21  | 13.15  | 11.50  | 10.10  | 9.70   | 9.25   | 8.79   | 8.65   | 11.29  | 14.35  |
| Gain 15deg (dBi) |        |        |        |        |        |        |        |        |        |        |        |
| E1(XZ)波瓣宽度       | 185.00 | 181.00 | 164.00 | 161.00 | 163.00 | 164.00 | 157.00 | 104.00 | 91.00  | 87.00  | 79.00  |
| E1(XZ)前后比        | 2.45   | 2.22   | 1.93   | 1.68   | 1.48   | 1.46   | 2.11   | 2.25   | 2.63   | 3.19   | 3.79   |
| E2(YZ)波瓣宽度       | 154.00 | 145.00 | 140.00 | 141.00 | 150.00 | 152.00 | 156.00 | 156.00 | 158.00 | 158.00 | 157.00 |
| E2(YZ)前后比        | 3.84   | 4.00   | 4.38   | 4.50   | 4.70   | 4.68   | 4.30   | 4.49   | 4.61   | 4.83   | 5.18   |
| 最大增益处轴比(P)       | 1.50   | 1.50   | 1.50   | 1.50   | 1.50   | 1.50   | 1.50   | 1.50   | 1.50   | 1.50   | 1.50   |
| 仰角10度最差(大)轴比(P)  | 1.50   | 1.50   | 1.50   | 1.50   | 1.50   | 1.50   | 1.50   | 1.50   | 1.50   | 1.50   | 1.50   |
| Hc(XY)波瓣宽度       | 77.00  | 78.00  | 79.00  | 79.00  | 80.00  | 81.00  | 85.00  | 87.00  | 87.00  | 78.00  | 72.00  |
| Hc(XY)前后比        | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   |
|                  |        |        |        |        |        |        |        |        |        |        |        |
|                  |        |        |        |        |        |        |        |        |        |        |        |
|                  |        |        |        |        |        |        |        |        |        |        |        |
|                  |        |        |        |        |        |        |        |        |        |        |        |
|                  |        |        |        |        |        |        |        |        |        |        |        |
| Empty            |        |        |        |        |        |        |        |        |        |        |        |

