

# Testing Report

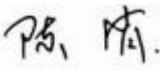
Customer Name: SHENZHEN SHIXINZHONGXIN TECHNOLOGY.CO.,LTD

Product Name: BT Antenna

Sample Model: F-6988

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

Issue Date: 2019.07. 10

|           |                                                                                     |                   |
|-----------|-------------------------------------------------------------------------------------|-------------------|
| Engineer: |  | Date: 2019.07. 10 |
| Auditor:  |  | Date: 2019.07. 10 |
| Approver: |  | Date: 2019.07. 10 |

# 1. General Information

## 1.1 General Information of testing institutions

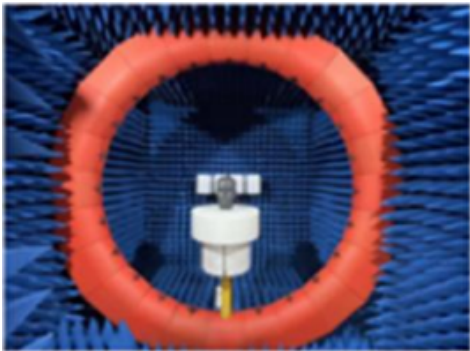
|           |                                                                                      |
|-----------|--------------------------------------------------------------------------------------|
| Name      | Shenzhen Hetuo Technology Co.,Ltd.                                                   |
| 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

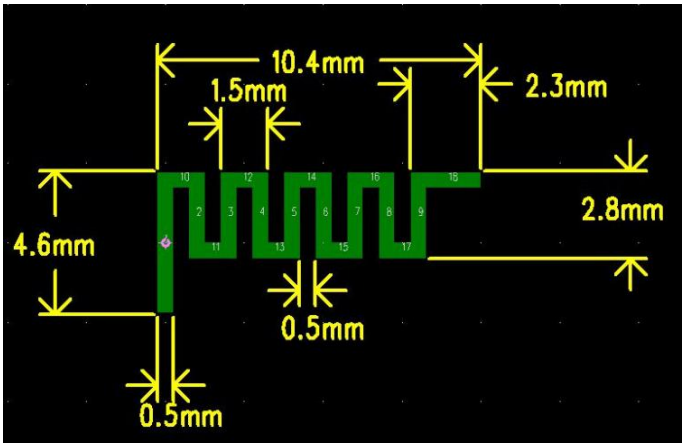
### 2. Test System

#### Multi-probe OTA Measurement System

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



Antenna Photo & Lenght(mm)



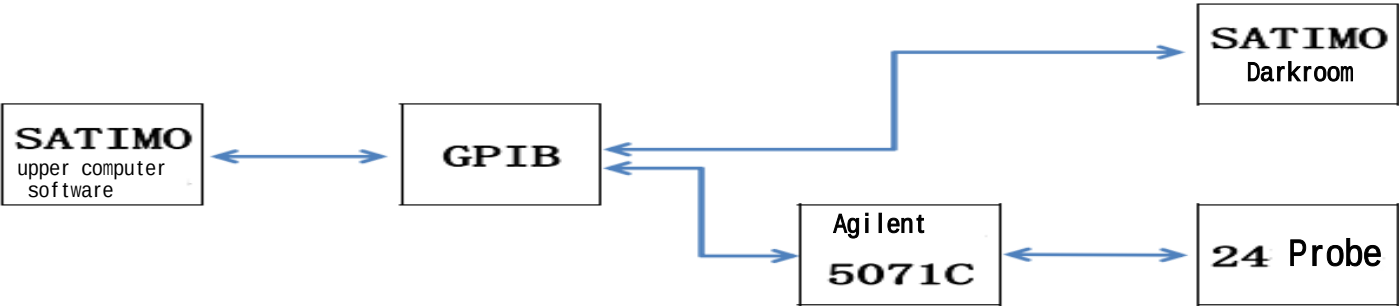
### 1.3 Test equipment

| Equipment                  | Model No. | Serial No. | Manufacturer | Calibration date | Next calibration date |
|----------------------------|-----------|------------|--------------|------------------|-----------------------|
| 24 probe microwave chamber | 4*3*3     | NA         | SATIMO       | 2019.05.29       | 2019.08.31            |
| Network Analyzer           | 5071C     | NA         | Agilent      | 2019.05.29       | 2019.08.31            |

### 1.4 Test environment

|             |              |
|-------------|--------------|
| Temperature | 24 C ± 1.5 C |
| 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

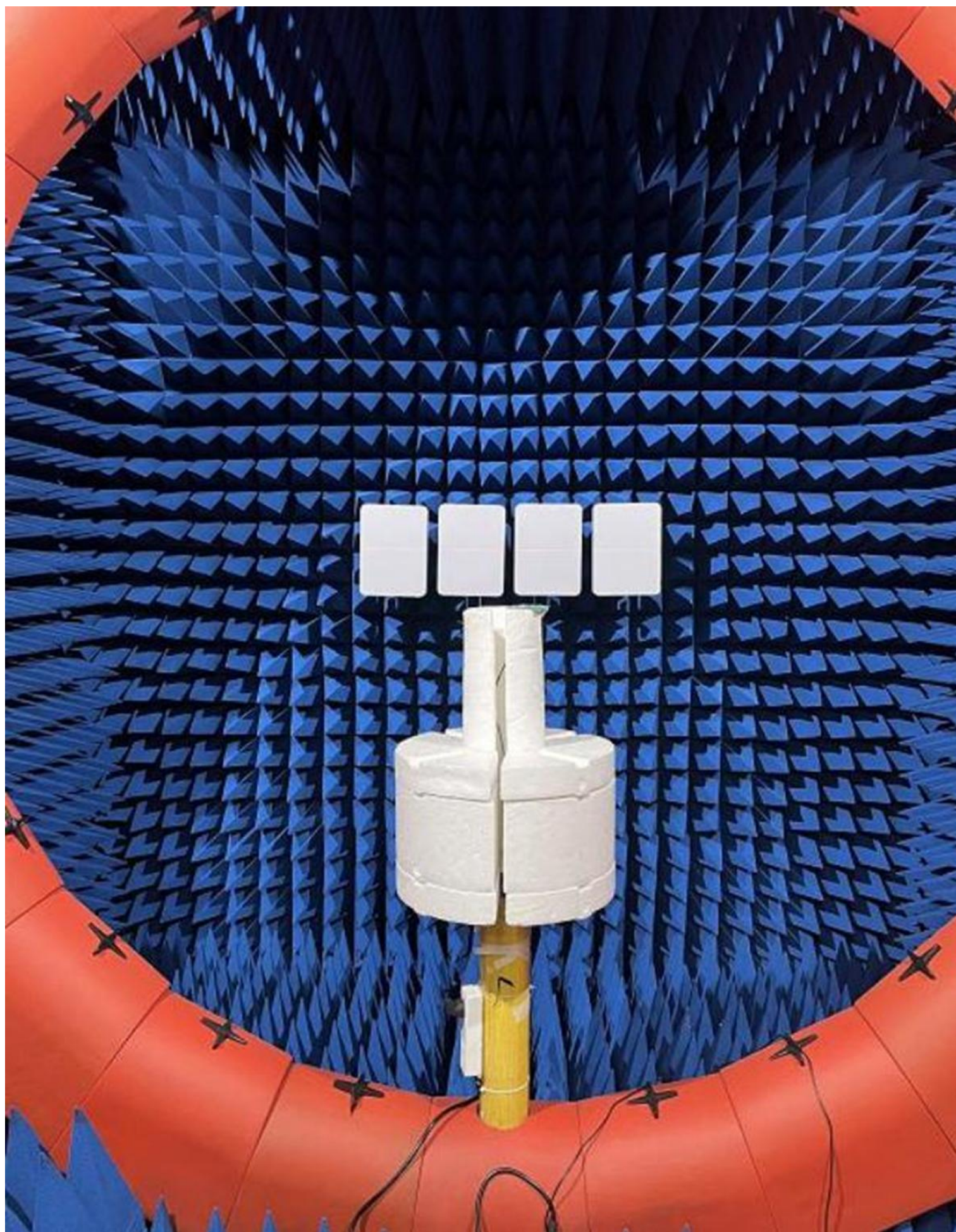
### 2.1 Client information

|          |                                                                     |
|----------|---------------------------------------------------------------------|
| Name     | SHENZHENSIXINZHONGXIN 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-6988                             |
| Antenna Size    | 4.6*10.4mm                         |
| Antenna Type    | PCB antenna                        |
| Serial No.      | /                                  |
| Test Item       | Antenna Gain,Radiation pattern     |
| Frequency Range | 2400-2500MHz                       |
| Received Date   | 2019.07.08                         |
| Test Date       | 2019.07. 10                        |
| Remark          | The length of the RF cable is 50mm |

The test photos



|                                                                                                                             |        |        |        |        |        |        |        |        |        |        |        |
|-----------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| <div><div></div><div>深圳市合拓科技有限公司</div></div> |        |        |        |        |        |        |        |        |        |        |        |
| 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)                                                                                                            | -6.12  | -6.19  | -6.13  | -6.21  | -6.11  | -5.93  | -5.80  | -5.59  | -5.40  | -5.03  | -4.75  |
| Gain (dBi)                                                                                                                  | -1.80  | -2.22  | -1.62  | -1.87  | -2.01  | -1.77  | -1.56  | -1.48  | -1.11  | -0.73  | -0.25  |
| Efficiency (%)                                                                                                              | 24.45  | 24.07  | 24.35  | 23.94  | 24.49  | 25.55  | 26.30  | 27.58  | 28.81  | 31.38  | 33.46  |
| Directivity (dB)                                                                                                            | 4.32   | 3.96   | 4.52   | 4.34   | 4.10   | 4.15   | 4.24   | 4.11   | 4.29   | 4.30   | 4.50   |
| Peak Gain Position (Theta)                                                                                                  | 126.00 | 124.00 | 124.00 | 124.00 | 123.00 | 119.00 | 123.00 | 122.00 | 126.00 | 124.00 | 31.00  |
| Peak Gain Position (Phi)                                                                                                    | 80.00  | 82.00  | 80.00  | 83.00  | 79.00  | 76.00  | 249.00 | 243.00 | 78.00  | 240.00 | 252.00 |
| Efficiency ThetaPol (%)                                                                                                     | 6.59   | 6.62   | 6.65   | 6.60   | 6.86   | 7.18   | 7.29   | 7.55   | 7.55   | 8.15   | 8.58   |
| Efficiency PhiPol (%)                                                                                                       | 17.86  | 17.45  | 17.71  | 17.33  | 17.63  | 18.36  | 19.01  | 20.02  | 21.26  | 23.23  | 24.88  |
| Upper Hem. Efficiency (%)                                                                                                   | 13.42  | 13.21  | 13.18  | 12.93  | 12.82  | 12.70  | 12.75  | 12.96  | 13.79  | 15.10  | 16.41  |
| Lower Hem. Efficiency (%)                                                                                                   | 11.03  | 10.86  | 11.18  | 11.01  | 11.67  | 12.85  | 13.55  | 14.62  | 15.02  | 16.28  | 17.05  |
| T90(H)圆度                                                                                                                    | 10.94  | 11.30  | 11.56  | 12.29  | 11.61  | 13.99  | 13.46  | 15.24  | 14.72  | 12.13  | 10.10  |
| Gain 15deg (dBi)                                                                                                            |        |        |        |        |        |        |        |        |        |        |        |
| E1(XZ)波瓣宽度                                                                                                                  | 61.00  | 91.00  | 85.00  | 93.00  | 87.00  | 84.00  | 85.00  | 81.00  | 80.00  | 84.00  | 83.00  |
| E1(XZ)前后比                                                                                                                   | 3.91   | 3.29   | 3.90   | 3.39   | 3.00   | 2.29   | 1.77   | 1.98   | 2.16   | 2.64   | 2.49   |
| E2(YZ)波瓣宽度                                                                                                                  | 37.00  | 35.00  | 34.00  | 35.00  | 219.00 | 208.00 | 160.00 | 160.00 | 199.00 | 57.00  | 84.00  |
| E2(YZ)前后比                                                                                                                   | 3.61   | 3.36   | 3.64   | 3.20   | 2.33   | 2.41   | 2.32   | 2.20   | 2.29   | 2.32   | 3.05   |
| 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                                                                                                                  | 94.00  | 92.00  | 96.00  | 100.00 | 109.00 | 112.00 | 118.00 | 135.00 | 119.00 | 116.00 | 126.00 |
| 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                                                                                                                       |        |        |        |        |        |        |        |        |        |        |        |

