

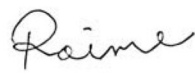
Shenzhen Xuhang Communication Technology Co., Ltd


Antenna Report


No.: PJXCE2101253

Date: Nov. 14, 2023

| | |
|--------------|---|
| CUSTOMER | GuangXi BeiLiu JinBao Electronic Co., Ltd. |
| CUSTOMER NO. | PJ580 |
| PART NAME | BT Antenna |
| SUPPLIER NO. | On board BT antenna |

Prepared by: 
Luo Yongshi, Raimo
Report Engineer

Reviewed by: 
Zeng Xingji, Tommy
Supervisor

Approved by: 
Shang wei, Cindy
Authorized signatory

DIRECTORY

Contents

| | |
|---|---|
| 1 . General Information | 3 |
| 1.1 General information of testing institutions | 3 |
| 1.2 Testing principle..... | 3 |
| 1.3 Test equipment..... | 4 |
| 1.4 Test environment..... | 4 |
| 1.5 Statement..... | 4 |
| 2. Sample Information | 5 |
| 2.1 Client information..... | 5 |
| 2.2 Description of EUT(S) | 5 |
| 2.3 Antenna Photo & Length (mm)..... | 6 |
| 3. Test Results | 6 |
| 3.1 Test standard | 6 |
| 3.2 Test uncertainty | 7 |
| 3.3 Test data..... | 7 |
| 3.3.1 Typical free space efficiency and gain | 7 |
| 3.3.2 Typical free space radiation pattern..... | 7 |

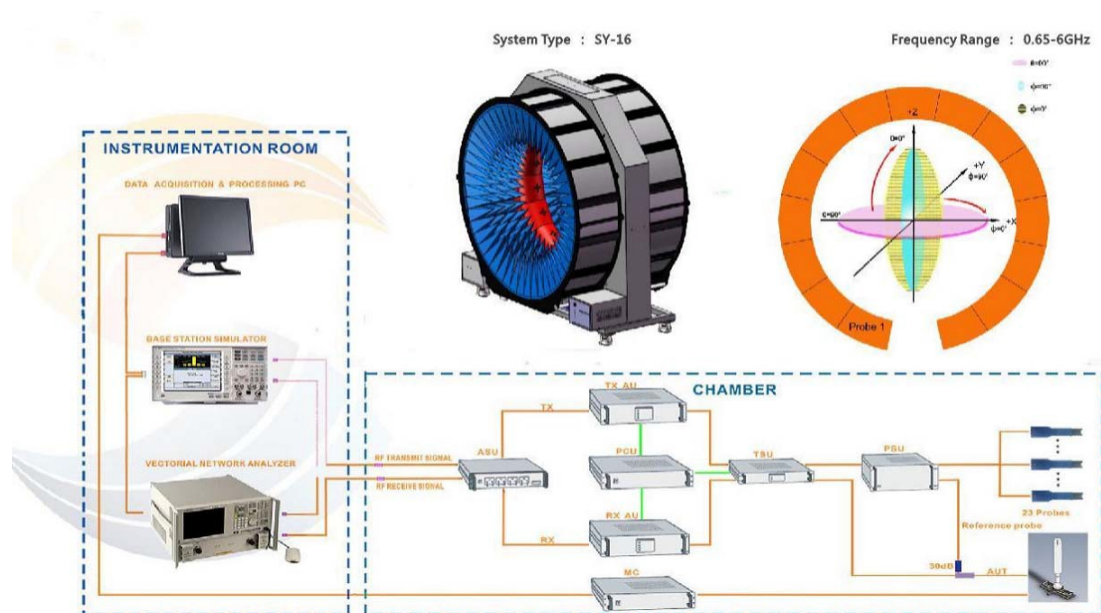
1. General Information

1.1 General information of testing institutions

| | |
|-----------|--|
| Name | Shenzhen Xuhang Communication Technology Co., Ltd. |
| Address | Room 213, 2nd Floor, Building 1, Huiyixin Maker Center, Longhua District, Shenzhen |
| Tel | 18588291966 |
| E-mail | 970307612@qq.com |
| Equipment | All equipment in this report is installed in Room 213, 2 nd Floor, Building 1, Huiyixin Maker Center, Longhua District, |

1.2 Testing principle

Xuhang Multi Probe Testing System



1.3 Test equipment

| Equipment | Model No. | Serial No. | Manufacturer | Calibration date | Next calibration date |
|----------------------------|-------------|---------------|--------------------|------------------|-----------------------|
| 16 probe microwave chamber | 5*3*3 | XH-LAB-RF-001 | Outhali Technology | 2023.2.27 | 2024.2.27 |
| Network Analyzer | PROTEK A338 | XH-LAB-RF-003 | Outhali Technology | 2023.2.27 | 2024.2.27 |
| Network Analyzer | 8753D | XH-LAB-RF-004 | Outhali Technology | 2023.2.27 | 2024.2.27 |

1.4 Test environment

| | |
|-------------|-----------|
| Temperature | 24.2°C |
| Humidity | 58%RH |
| Pressure | 100.23kPa |

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 Xuhang 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

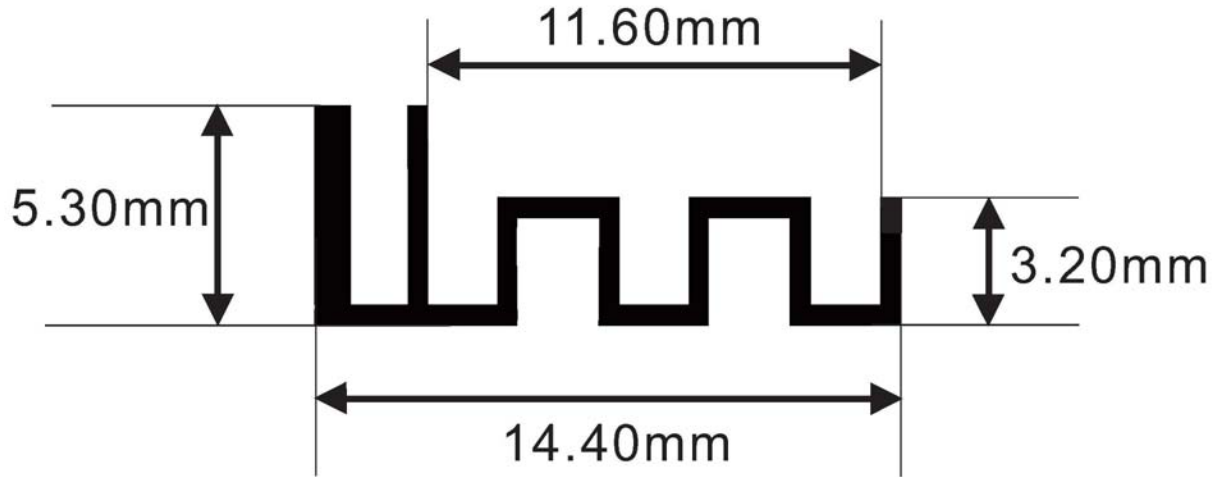
2.1 Client information

| | |
|-----------------|--|
| Name | GuangXi BeiLiu JinBao Electronic Co., Ltd. |
| Address | Xinshan Industrial Zone, Xiliang Town, Beiliu City, Yulin City, Guangxi, China |
| Contacts | Jim Wong |
| Tel | 13686493273 |
| E-mail | jimwongs@126.com |

2.2 Description of EUT(S)

| | |
|------------------------|---|
| Product Name | Projector |
| Sample Model | PJ580 |
| Size | Bluetooth |
| Serial No. | / |
| Test Item | Antenna gain; Efficiency; Radiation pattern |
| Frequency Range | 2400-2500MHz |
| Received Date | 2023.11.8 |
| Test Date | 2023.11.14 |
| Remark | Location of onboard antenna |

2.3 Antenna Photo & Length (mm)



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.

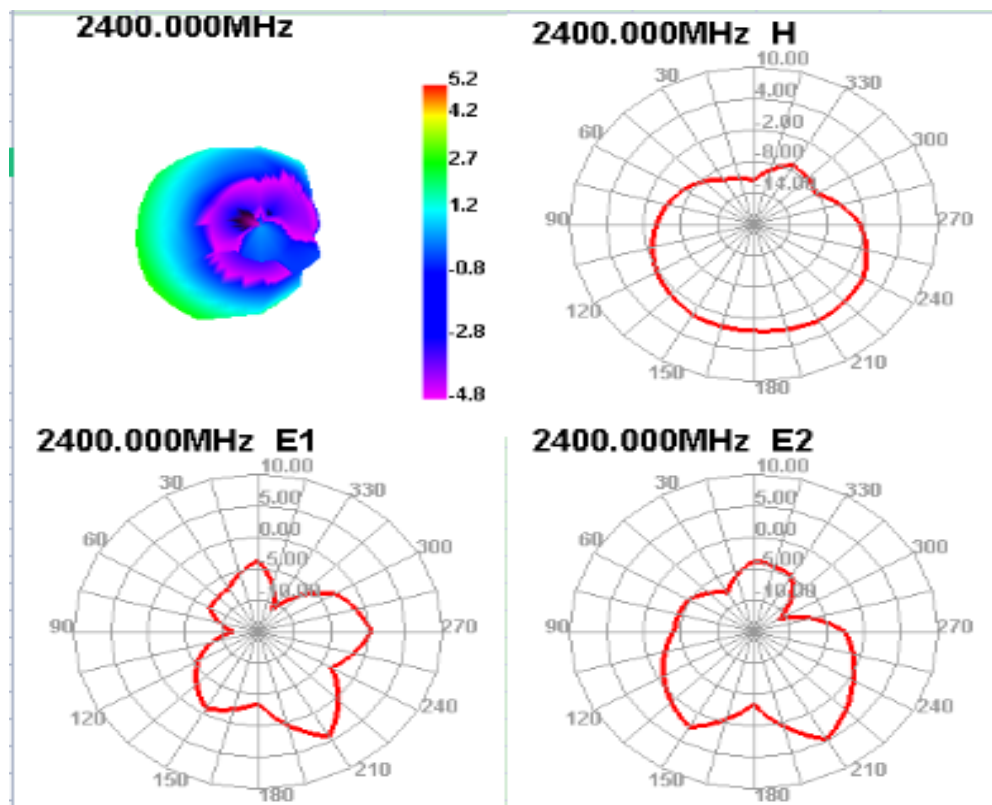
| Item | Uncertainty |
|----------------------|------------------|
| Antenna gain | $\pm 1\text{dB}$ |
| Radiation efficiency | $\pm 10\%$ |

3.3 Test data

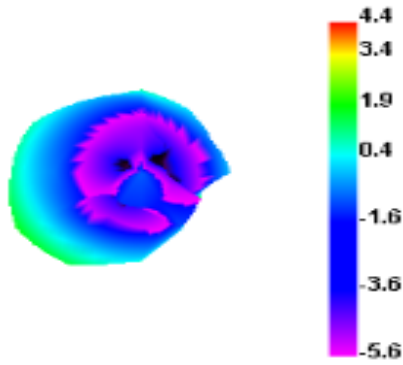
3.3.1 Typical free space efficiency and gain

| Frequency (MHz) | 2400 | 2410 | 2420 | 2430 | 2440 | 2450 | 2460 | 2470 | 2480 | 2490 | 2500 |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| Efficiency (%) | 62.27 | 54.73 | 58.95 | 54.84 | 55.63 | 47.87 | 41.89 | 41.13 | 41.65 | 39.81 | 35.6 |
| Peak Gain (dBi) | 3.24 | 2.77 | 3.08 | 2.84 | 2.93 | 2.35 | 1.83 | 1.75 | 1.86 | 1.68 | 1.27 |

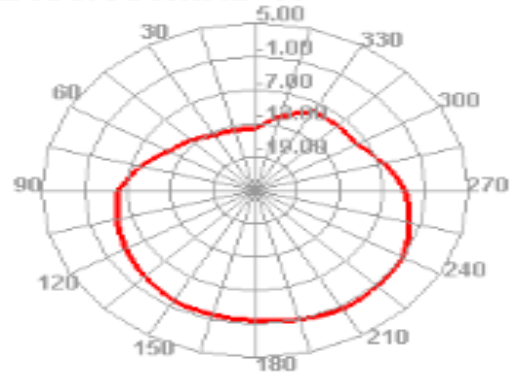
3.3.2 Typical free space radiation pattern



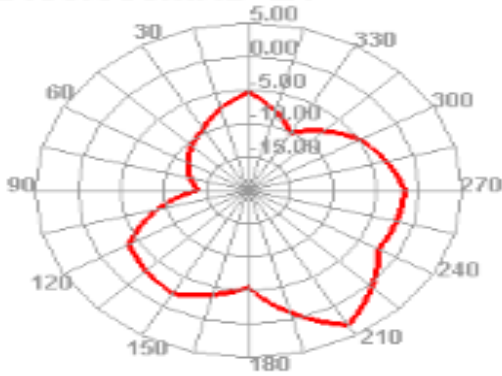
2450.000MHz



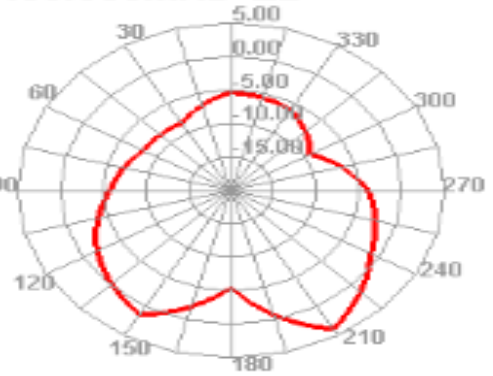
2450.000MHz H



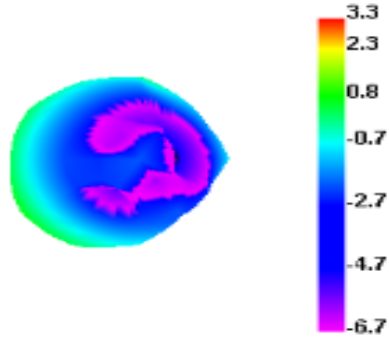
2450.000MHz E1



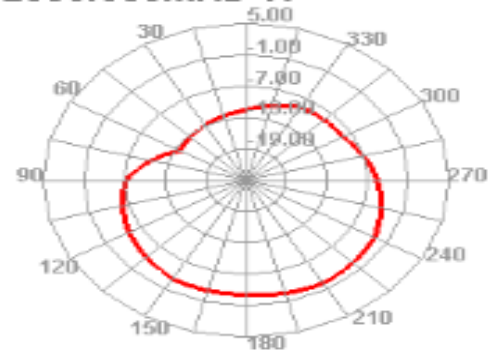
2450.000MHz E2



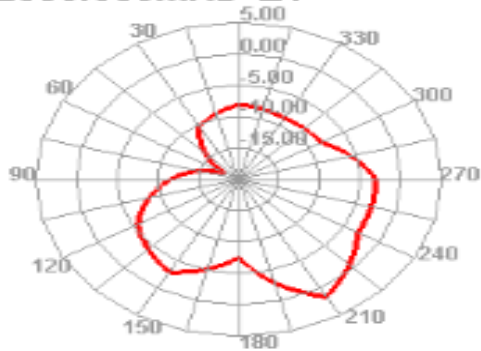
2500.000MHz



2500.000MHz H



2500.000MHz E1



2500.000MHz E2

