

# SWift-B-0001 Test report

# Test project and equipment system

## Test items

## Testing Parameters

## Test equipment

1、s-parameter

VSWR; Smith;

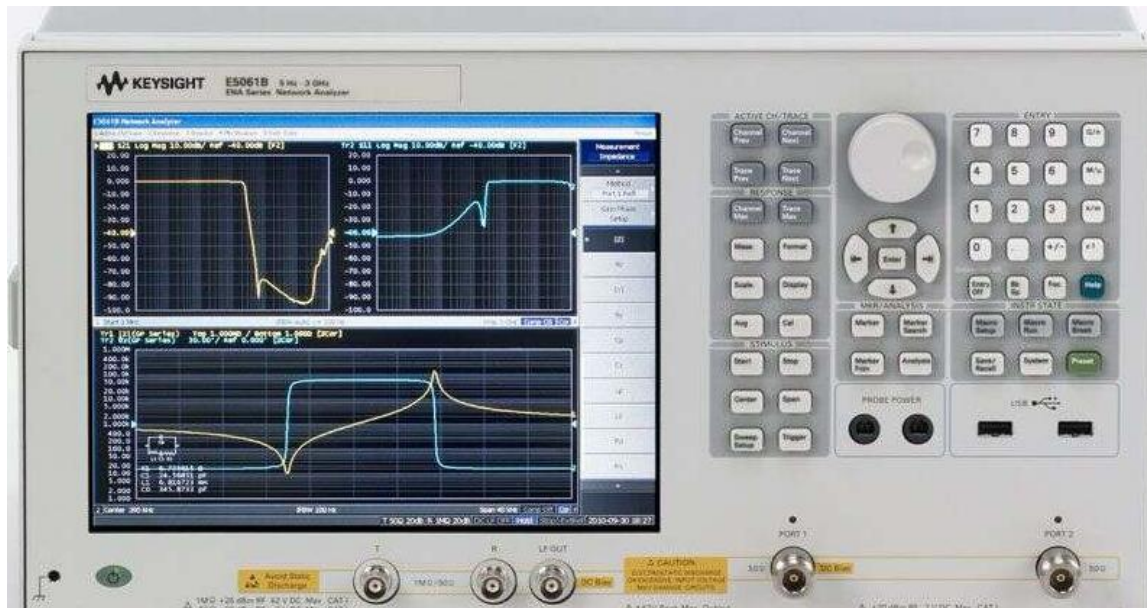
Network analyzer: Agilent 5071B

2、Passive Test

Efficiency and gain testing

Comprehensive tester: Network analyzer: Agilent 5071B

Microwave anechoic chamber: GTS Chamber



## Key terms:

**VSWR:** Short for voltage standing wave ratio, it refers to the ratio of reflected wave amplitude to incident wave amplitude. When the impedance is perfectly matched in an ideal situation, the value of the standing wave ratio is 1. In practical engineering, there is inevitably reflection, where the standing wave ratio is greater than 1. The greater the reflection, the greater the standing wave ratio. Therefore, for the technical parameter of standing wave ratio, the lower the value, the closer it is to 1, the better.

**Return Loss:** Return loss RL refers to the ratio of the reflected power of the RF input signal to the input signal power. It is measured in dB and is a negative number. In an ideal situation, the impedance of the antenna and the RF circuit perfectly match, with no reflected power at all, and the return loss is infinitely small. However, in engineering, impedance cannot be completely matched, so reflected power must exist. The worst case scenario is when the input power is completely reflected, and the return loss is 0. Therefore, for the technical parameter of return loss, the lower the value, the better the antenna performance.

**Effi:** Efficiency refers to the ratio of the power radiated by the antenna (i.e. the power that effectively converts electromagnetic waves) to the power input to the antenna. It is a value that is always less than 100%.

**Gain:** Antenna gain refers to the ratio of the power density of the signal generated by the actual antenna and the ideal radiation unit at the same point in space under the condition of equal input power. It quantitatively describes the degree to which an antenna concentrates input power for radiation. Generally, the unit is dBi.

## Key terms:

**Smith diagram:** Impedance circle diagram refers to a trajectory diagram that represents normalized impedance on the complex plane of reflection coefficient using the one-to-one correspondence between normalized impedance and reflection coefficient.

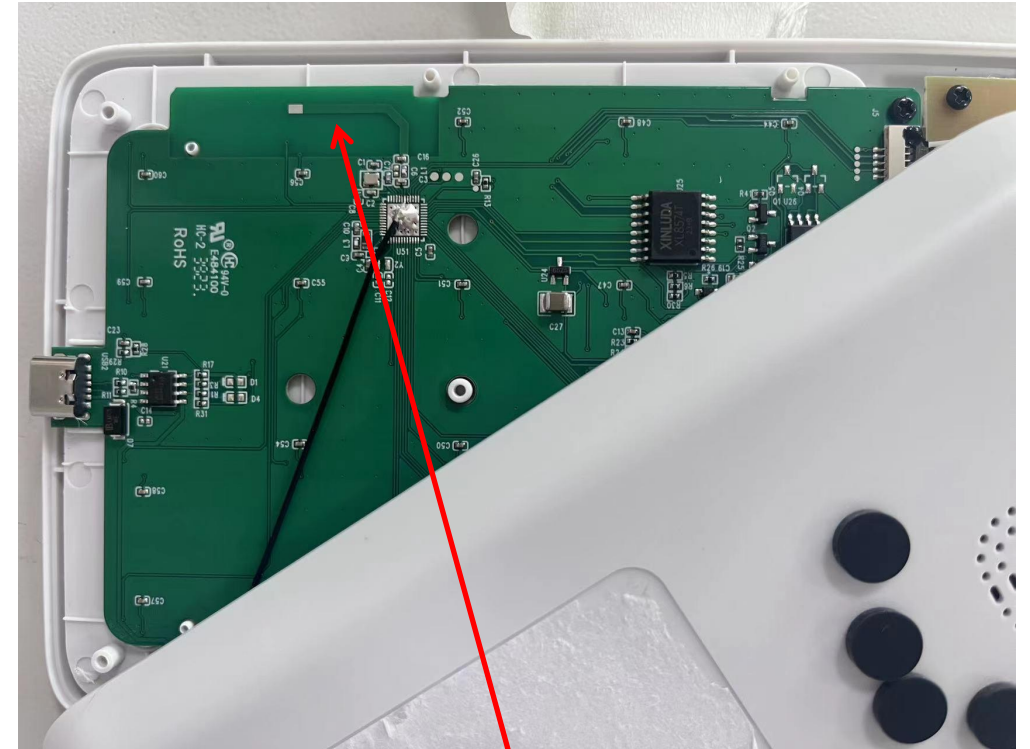
**TRP**, also known as Total Radiated Power, is the integral value (spherical average) of the effective radiation power EIRP of a mobile station in three-dimensional space, which reflects the emission characteristics of the mobile station in all directions.

**TIS**, also known as Total Isotropic Sensitivity, is the integral value (spherical average) of the effective radiation reception sensitivity EIS of a mobile station in three-dimensional space, which reflects the reception characteristics of the mobile station in all directions.

Machine diagram

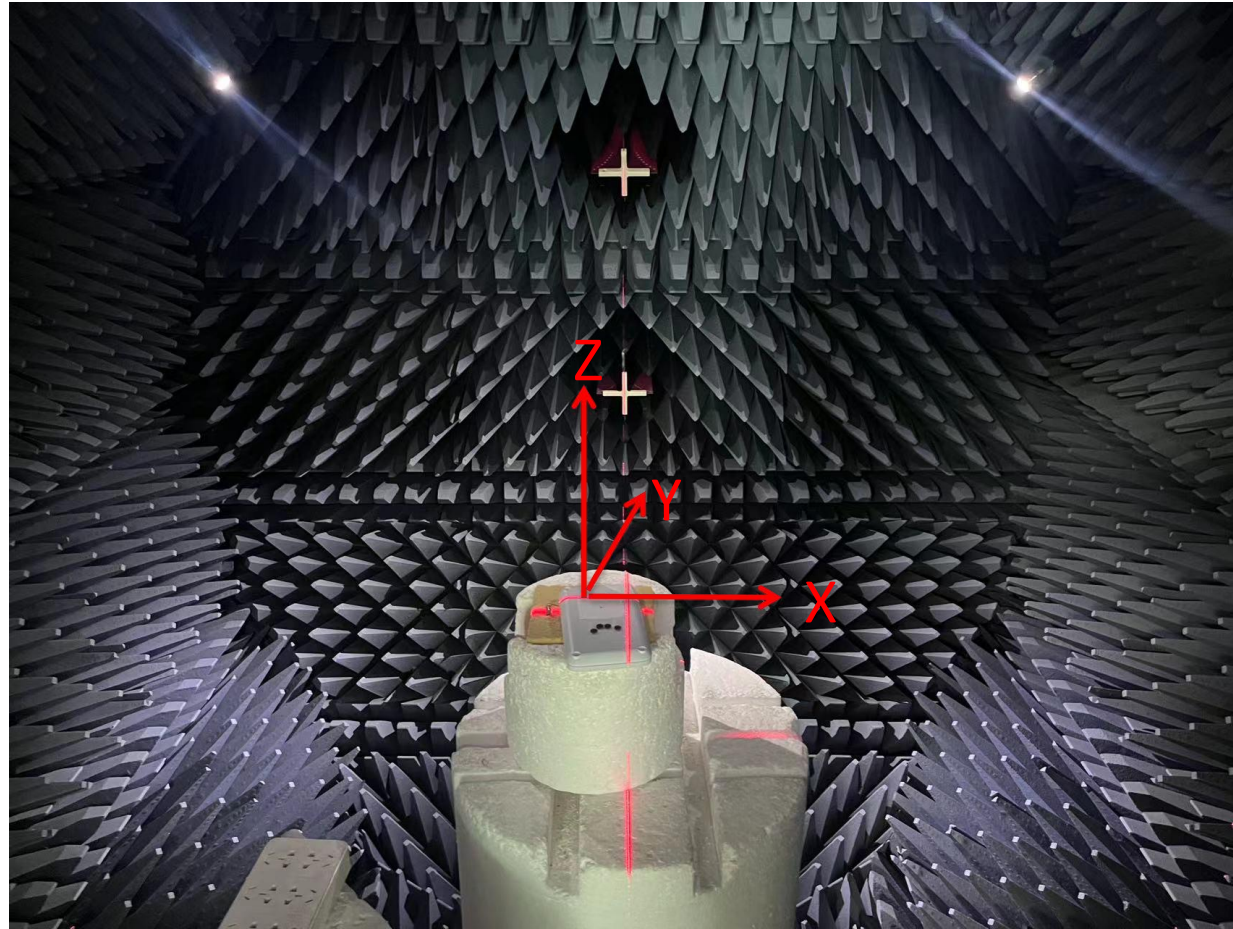


Antenna placement diagram

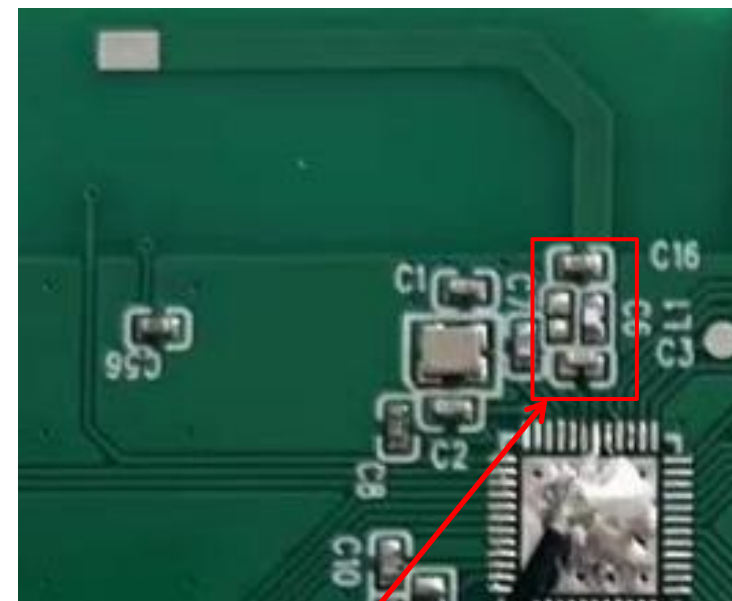
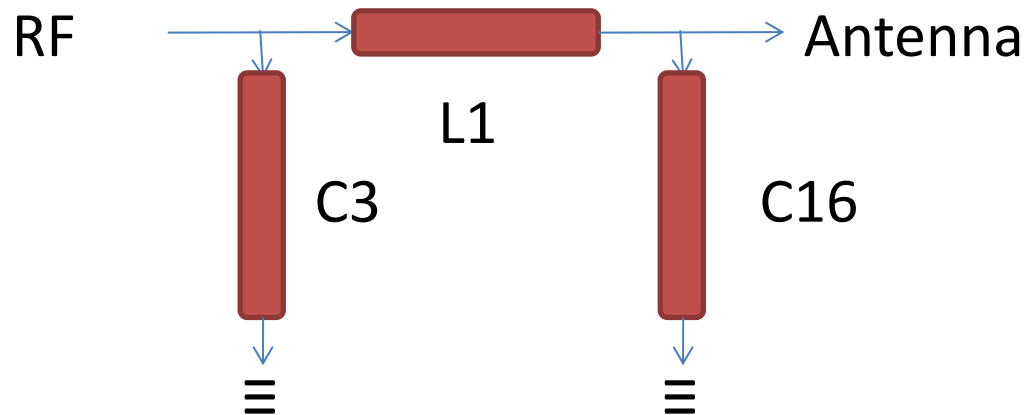


Bluetooth onboard layout antenna

## 2 / Testing environment

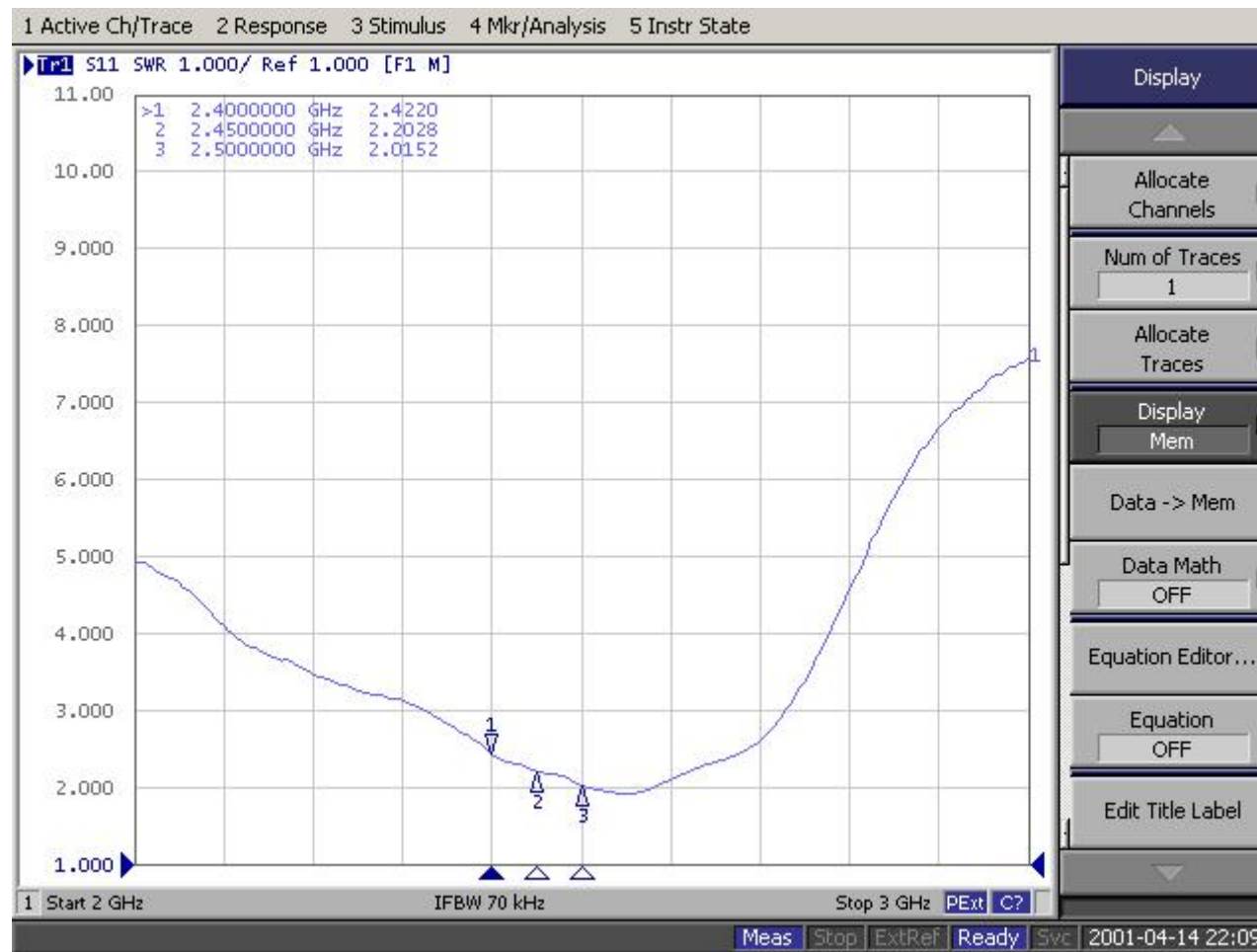


C3	L1	C16
0.8PF	3.9NH	1.2PF



Explanation: The matching circuit has not been modified

# 4 / Antenna standing wave diagram



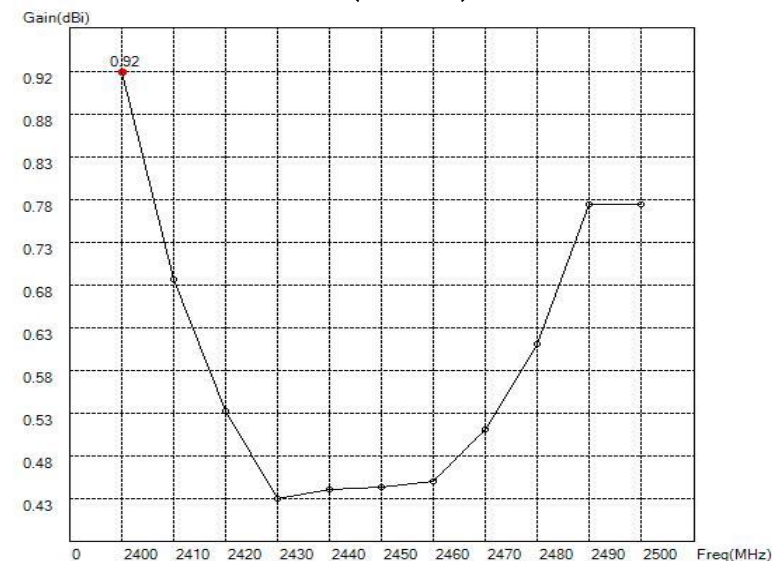


Freq (MHz)	Gain (dBi)	Efficiency (dB)	Efficiency (%)
2400	0.916400687	-4.41679183	36.16769378
2410	0.681312364	-4.577460362	34.8541073
2420	0.532012909	-4.603763998	34.64364664
2430	0.432422771	-4.542347548	35.13704584
2440	0.442618204	-4.452800976	35.86905231
2450	0.445779326	-4.438225343	35.98963695
2460	0.451775585	-4.439201376	35.98154956
2470	0.510561494	-4.430426787	36.05432102
2480	0.607734209	-4.374955152	36.51778983
2490	0.76640251	-4.286818165	37.2664637
2500	0.766599835	-4.235575704	37.70877546

Efficiency (%)

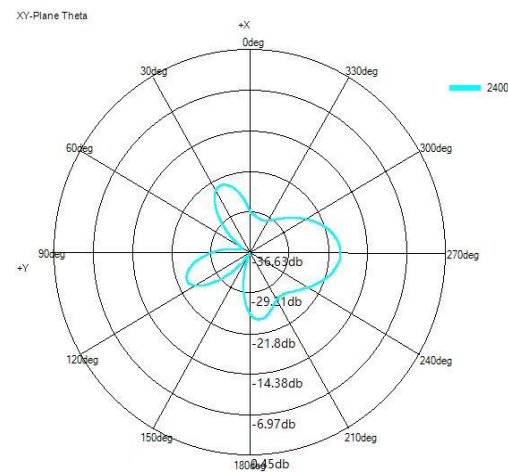
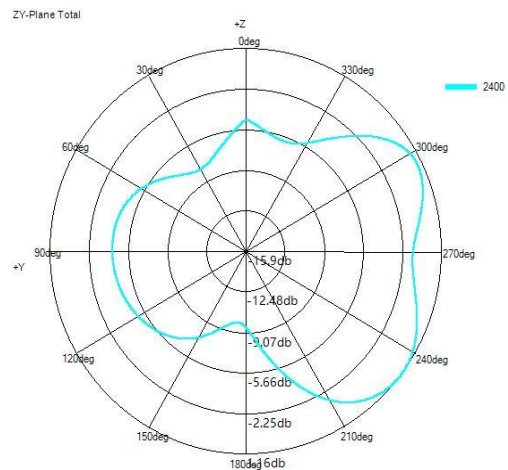
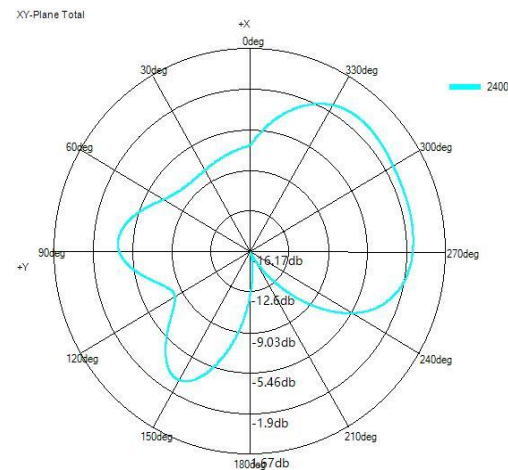
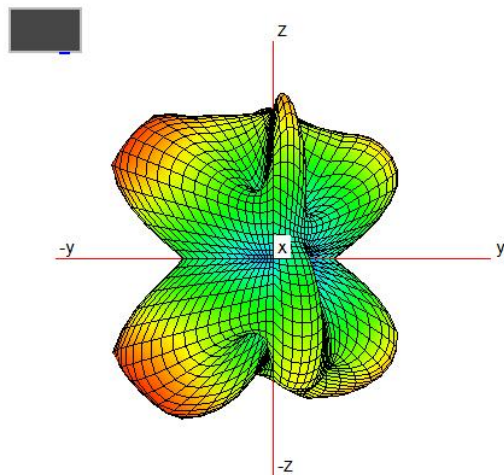


Gain (dBi)



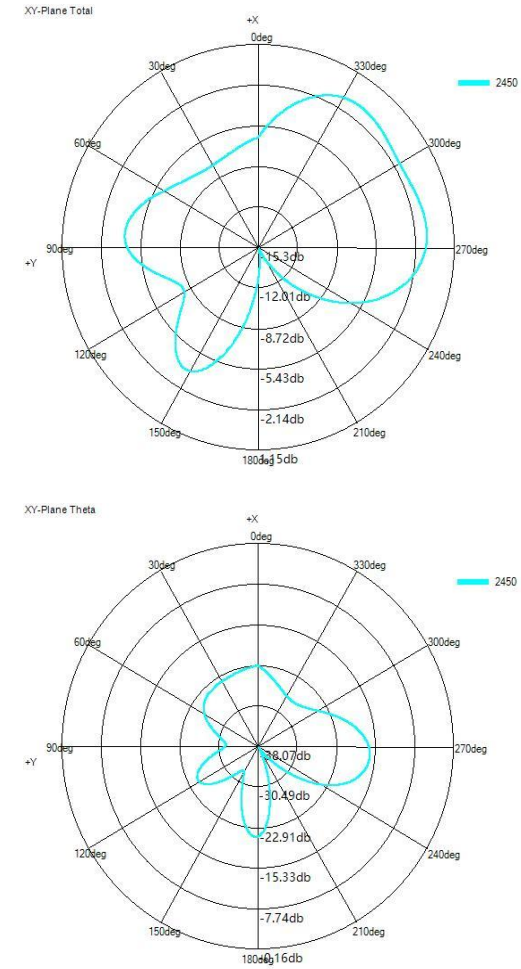
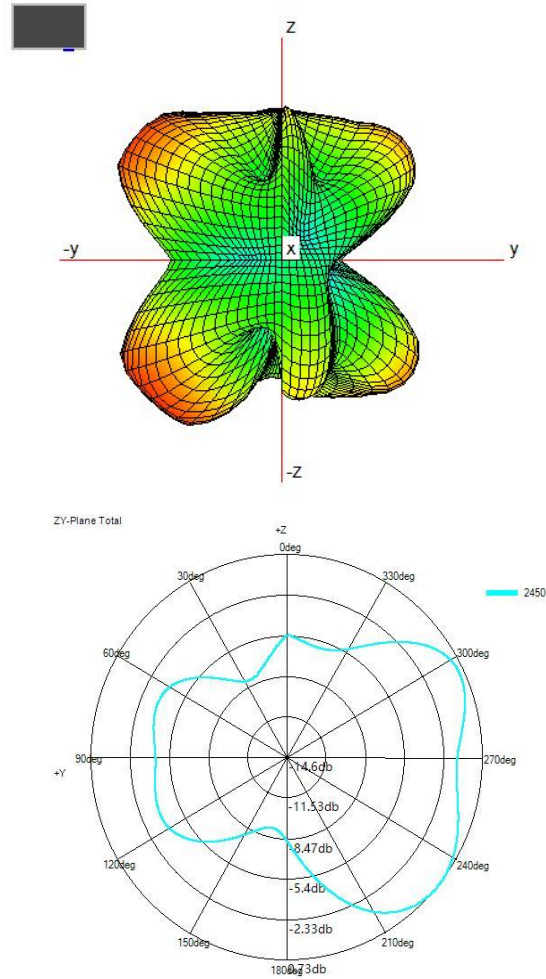
# 6 / Antenna passive test data

## 3D field diagram 2400Mhz



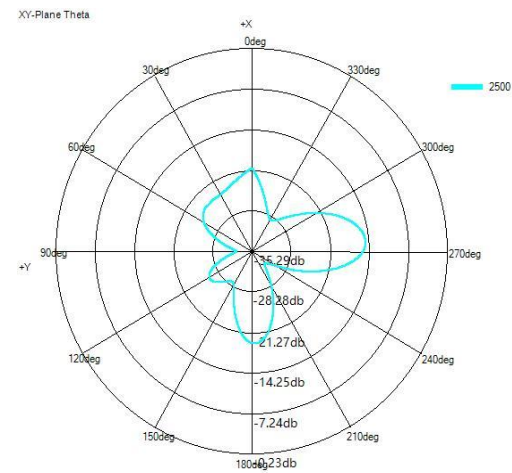
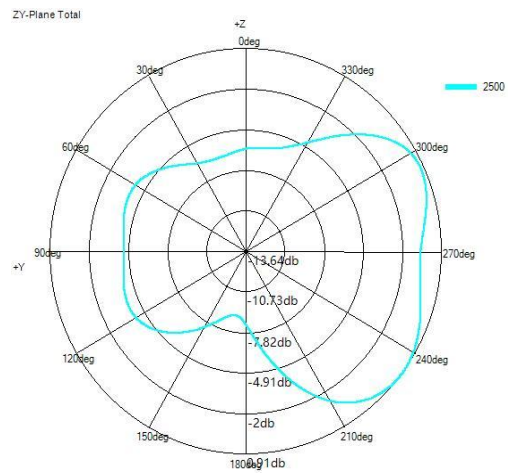
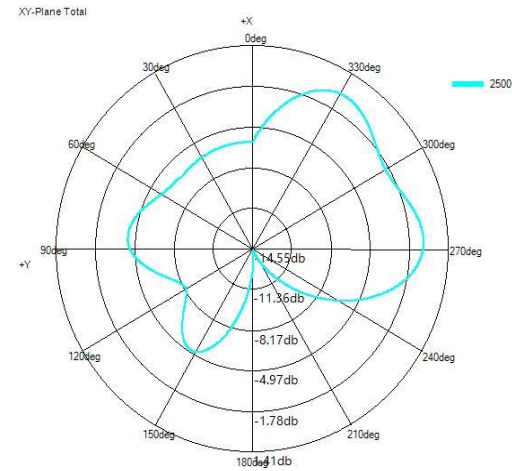
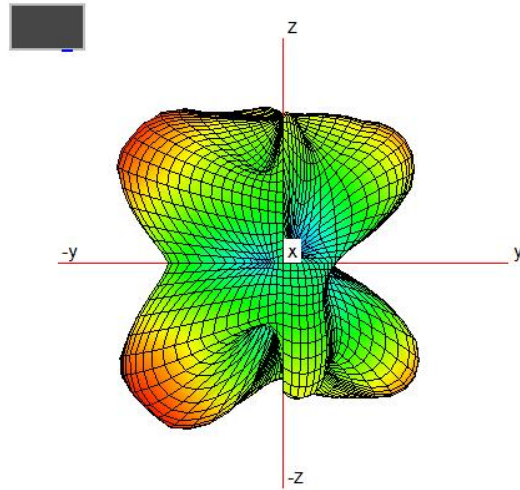
# 6 / Antenna passive test data

2450Mhz



# 6 / Antenna passive test data

2500Mhz



1. The above is the test data for Swift-B-0001

Please be aware of the above. If you have any questions, please contact us.  
Thank you!



THANKS FOR YOU

