上海增信电子有限公司
Signal Plus Technology Co., Ltd.

规 格 承 认 书
SPECIFICATION FOR APPROVAL

日期
DATE: 2023.06.25

版本
REV.: A

客　　户
CUSTOMER: SHINING 3D Tech. Co., Ltd

客 户 料 号
CUSTOMER P/N:

品　　名
PART NAME: Internal PCB antenna 2.4G&5G 1.37 Black Low-loss cable L240mm with RF CONN foam tape for L6D

供 方 料 号
SUPPLIER P/N: 6081F00004

送样日期Date:　　送样数量Q'TY:　　Pcs

客户确认CUSTOMER APPROVED BY		
核准 Approvaled by	审核 Checked by	拟制 Prepared by

供方确认SUPPLIER SIGNATURE		
核准 Approvaled by	审核 Checked by	拟制 Prepared by
Jack		andy

ZX-QT-RD-0011-A1

Add:上海市徐汇区桂箐路69号30栋603室　Tel:021-54266190　Fax:021-54266191

Specification

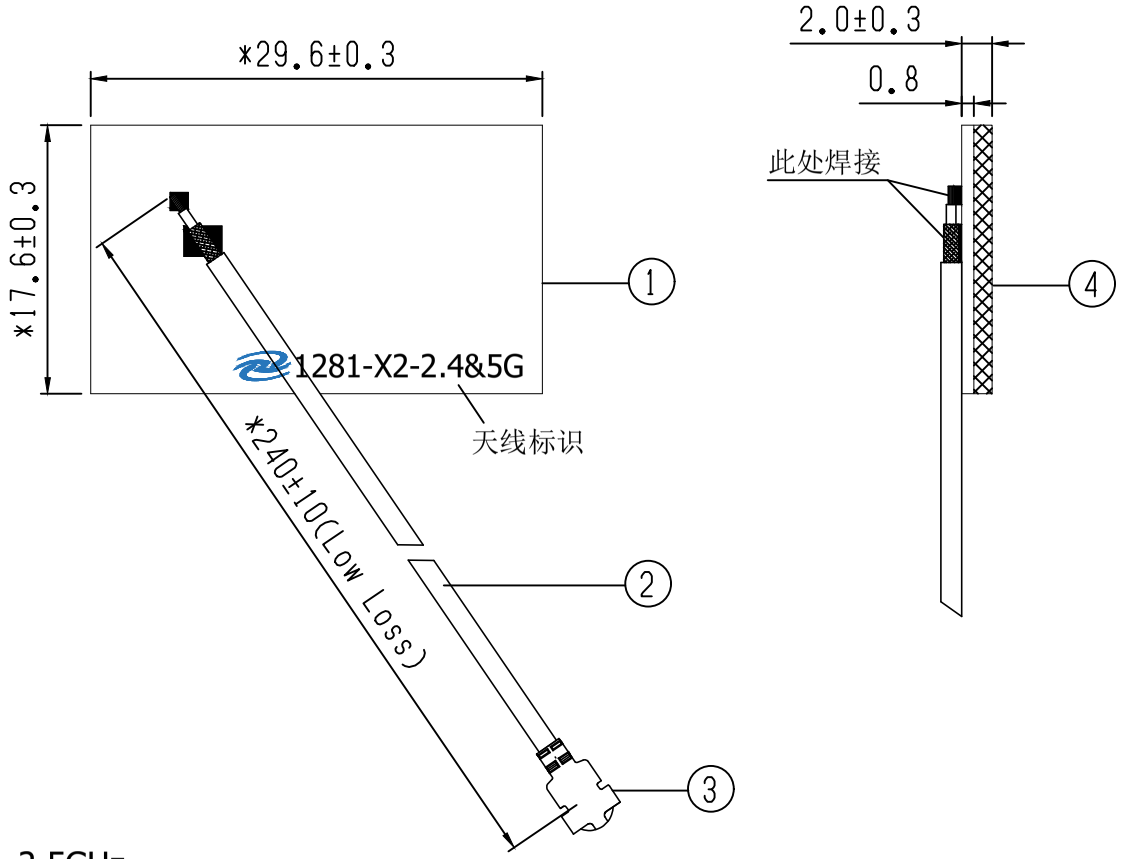
1

1 1 …… 2400~2500MHz&5150~5850MHz
1 2 …… 50Ω
1 3 …… ≤2. 0
1 5 …… 5

2

2 1 …… 1 37
2 2 …… 1
2 3 …… 20℃ ~ 5℃
2 4 …… 30℃ ~ 75℃

REV	DATE	DESCRIPTION
X1	06/21-2023	New Issue



1.ELECTRICAL PROPERTIES:

1.1 Frequency Range...2.4~2.5GHz

1.2 Impendance.....50 Ohm Nominal

1.3 VSWR.....2.0(Max)(Tested with housing)

2.These Products are in conformity with ROHS2.0

3.Strict sizes are marked with "*",and () for reference.

4.The product is complied with the 48-hour salt spray test

NO	DESCRIPTION		Q'TY	REMARK
4	泡棉双面胶	EVA,T=1.0mm&3M 9888T	1	
3	Connector	IPEX compatible;Gold Plated	1	
2	Cable	1.37 Coaxial cable;Low Loss;Black	1	
1	内置PCB板	FR4，单面板，表面覆盖黑油	1	501-1-1281-X2

CUSTOMER'S SINGATURE

XXX.	±2.0	APPROVED	
XX.	±1.0		
X.	±0.5	CHECKED	
.X	±0.3		
.XX	±0.2	DRAWING	

CUSTOMER:

PART NO:

PART NAME: 内置2.4G&5G天线 for L6D

Z&X P/NO: 6081F00004

REV	UNIT	FILE:
X1	mm	SHEET: 1/1

上海增信电子有限公司
Signal Plus Technology Co.,Ltd.

上海增信电子有限公司
Signal Plus Technology Co., Ltd.

Antenna Test Report

L6D

Signal Plus Technology Co., Ltd

List of contents

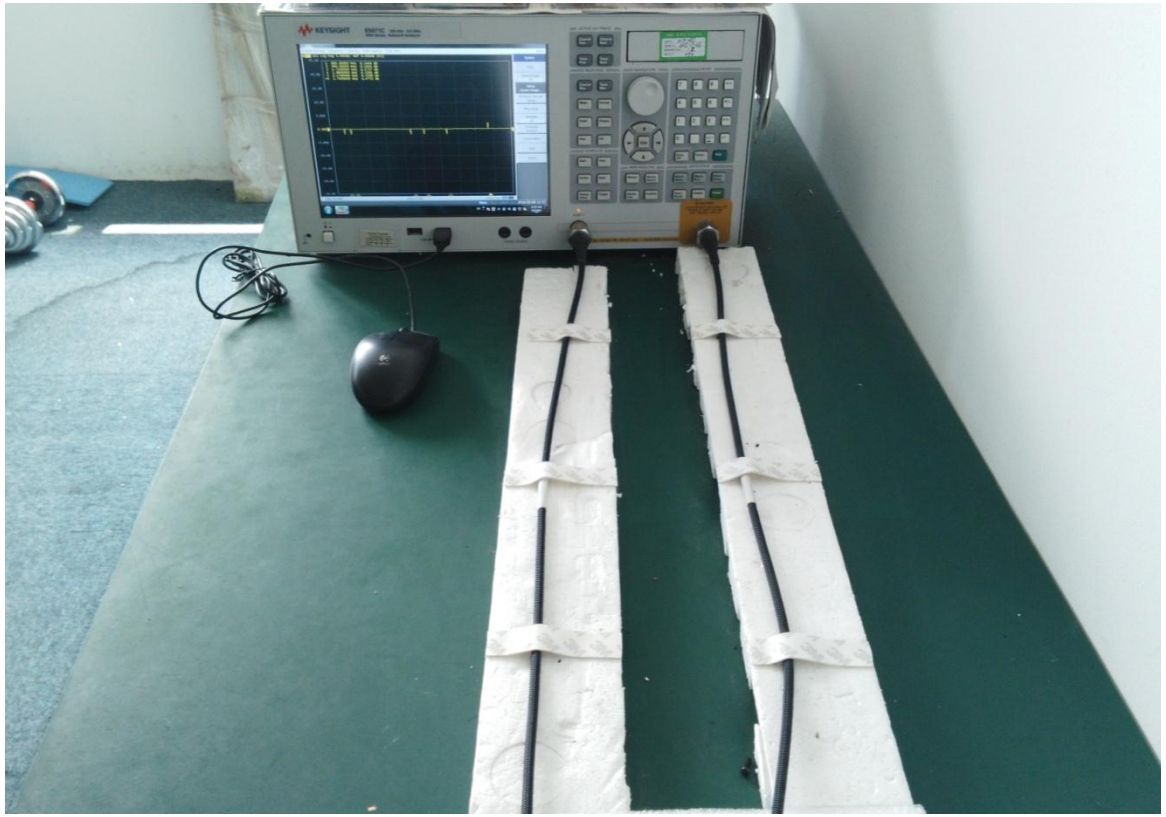
- Test setup
- Antenna Solution
- S Parameter --- Return Loss、Isolation
- Efficiency and Peak Gain
- Radiation Patterns
- Summary

1.Test system description---S Parameter

1.1.Test Setup

1.1.1 VNA Test Setup

S parameter measurements (S_{11}) were performed using an KeySight E5071C Network Analyzer and previously described tests fixtures. The isolation between antennas is also tested. The testing was performed with apparatus in free space.

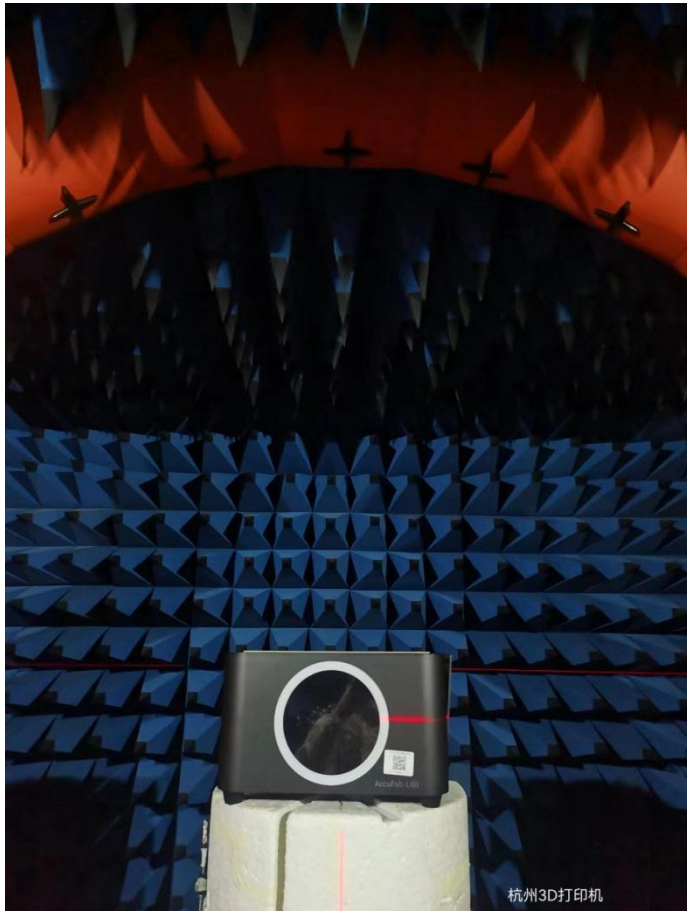


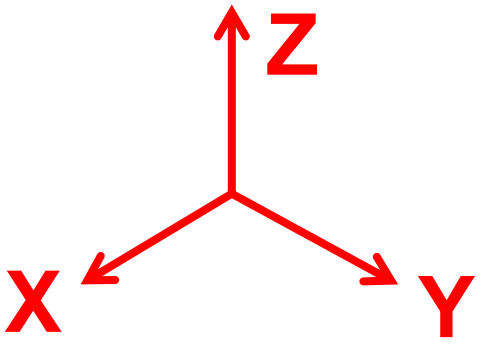
Signal Plus
Antennas

1.Test system description--- Anechoic Chamber Test Setup

1.1.2 Anechoic Chamber Test Setup

The gain of the antenna was measured in the anechoic chamber(ETS-3D). The chamber provides less than –30 dB reflectivity from 400 MHz through 6 GHz. The chamber size is:7m*4m*3m.The measurement results are calibrated using a leaky wave horn standard. We can measure the antenna gain and efficiency accurately.

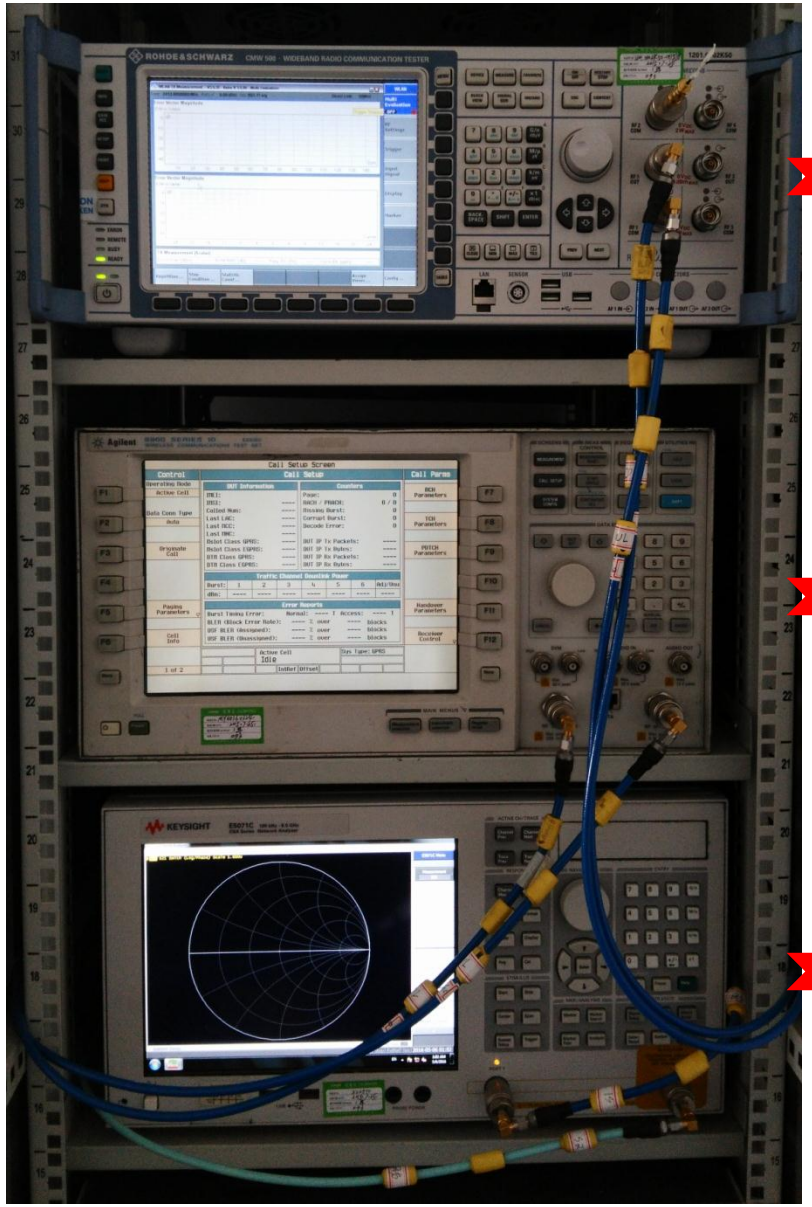




Signal Plus Antennas

1.Test system description--- Test Instruments

1.1.3 Instruments



R&S CMW500
4G/WIFI
（LTE/WIFI b/g/a）

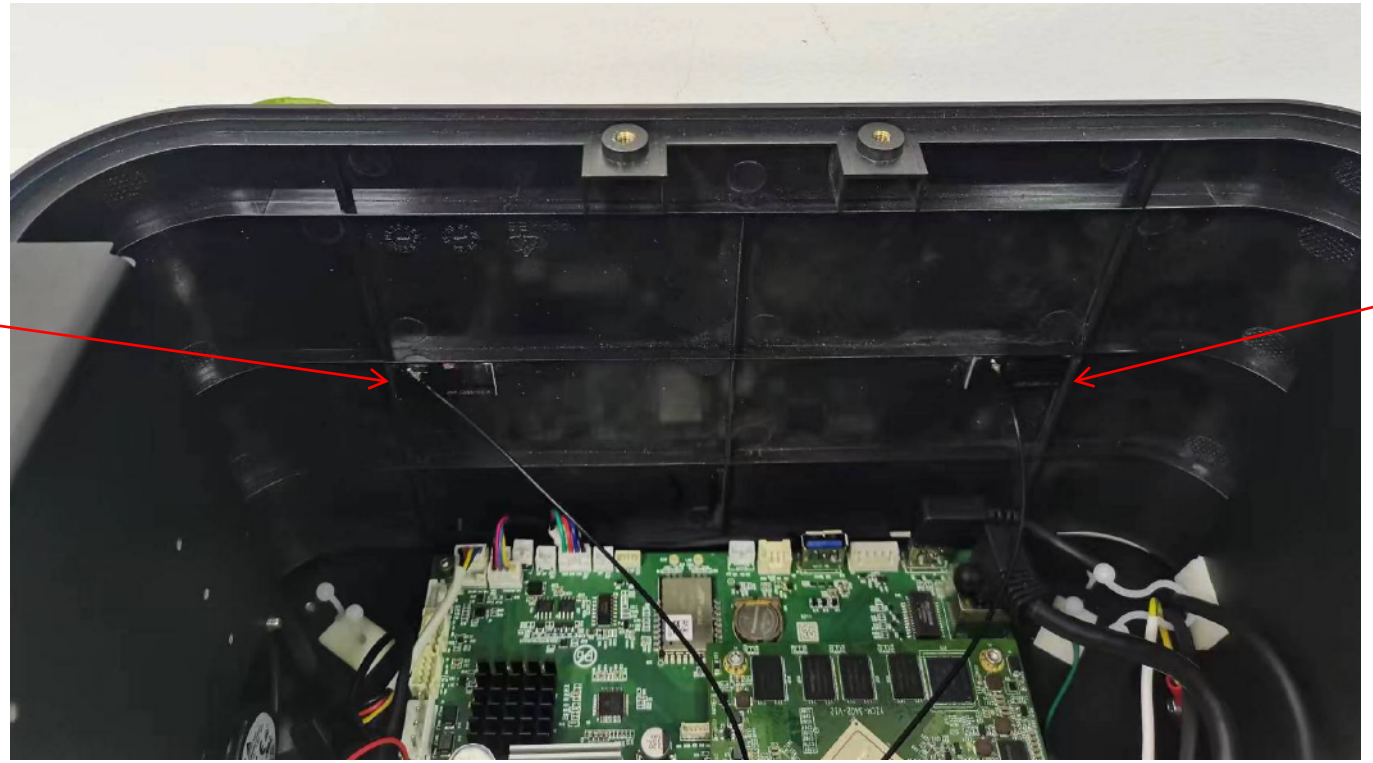
Agilent 8960
2G/3G
（GSM/CDMA/WCDMA）

KeySight E5071C
(400MHz~6GHz)

Signal Plus
Antennas

2. Antenna Solution

2.1 Antenna Location Pictures for passive

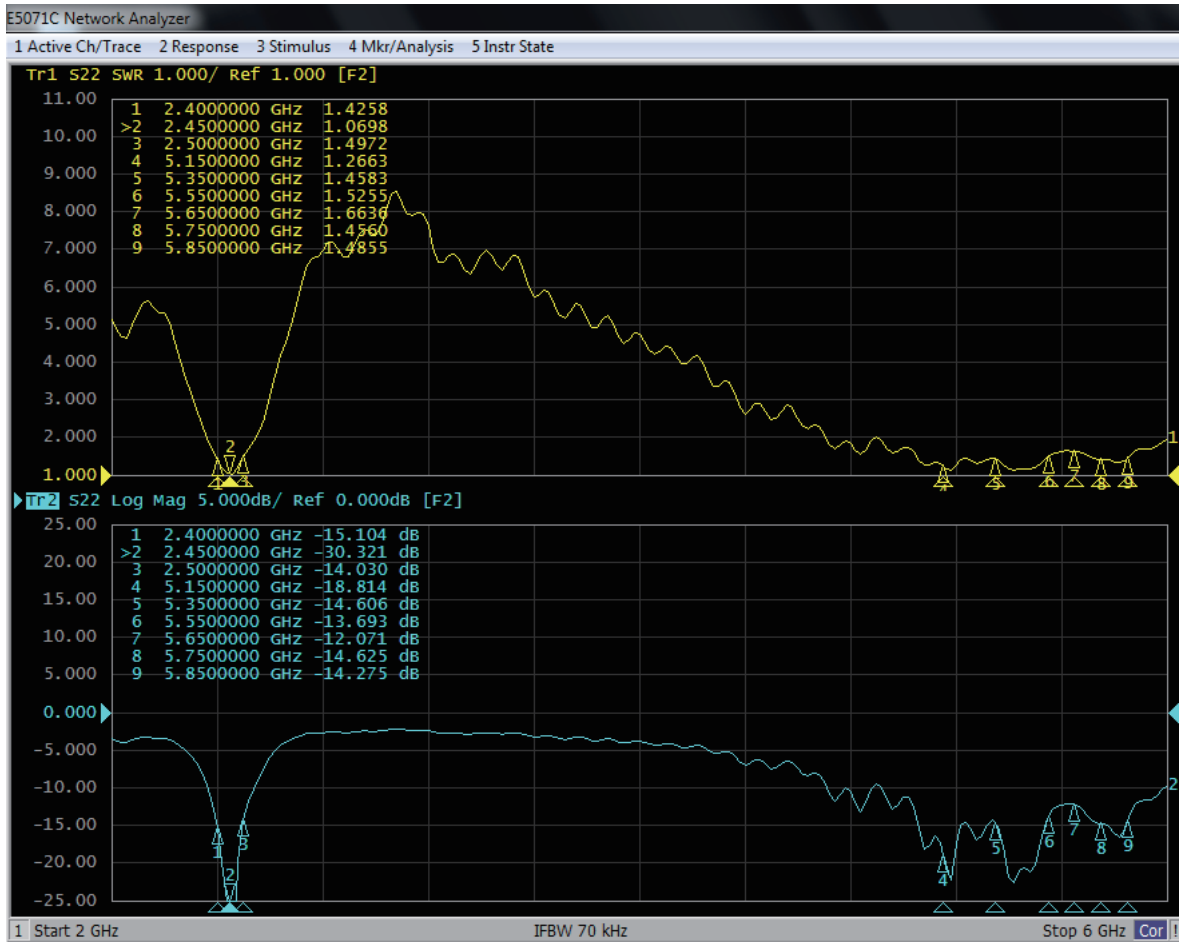


线长：240mm

Signal Plus
Antennas

3. Test Result--Return Loss

S11 （WIFI 1- Left):



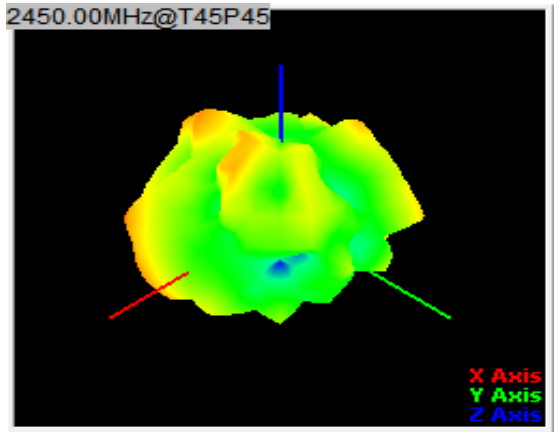
3. Test Result--Efficiency Gain

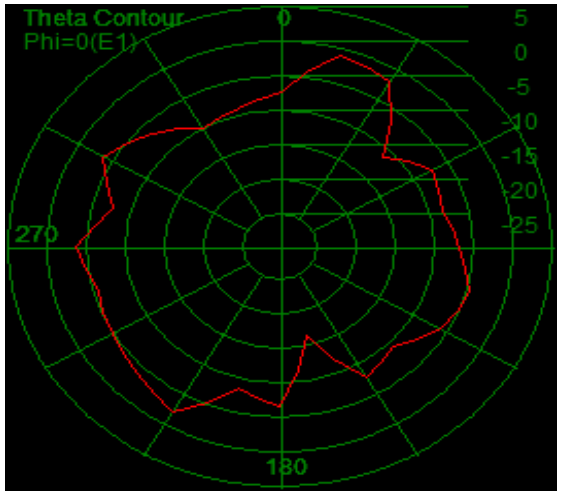
Data (WIFI 1- Left):

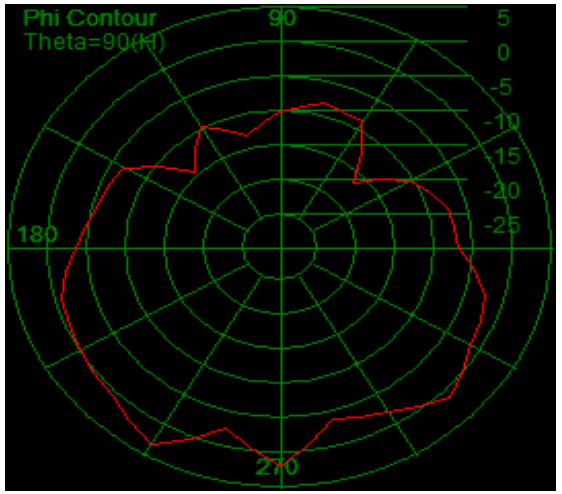
Freq. (MHz)	Gain (dBi)	Efficiency (%)
2400.0	3.17	52.9%
2450.0	4.68	55.0%
2500.0	5.39	55.3%
5150.0	2.94	55.4%
5250.0	2.54	54.1%
5350.0	3.13	56.8%
5450.0	3.72	56.1%
5550.0	3.26	55.9%
5650.0	4.11	55.0%
5750.0	3.74	56.8%
5850.0	4.30	56.1%

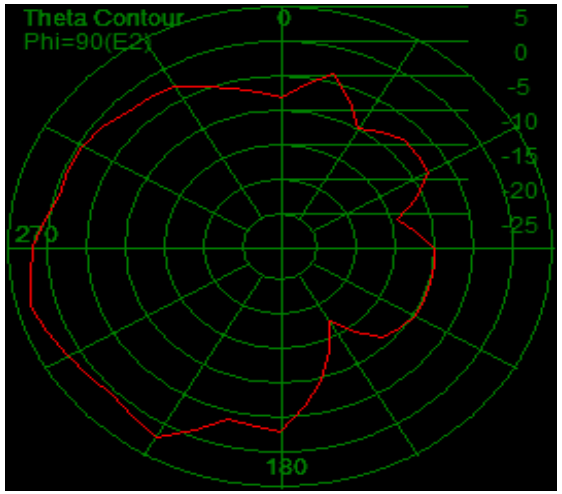
3.Test Result---Efficiency、Gain

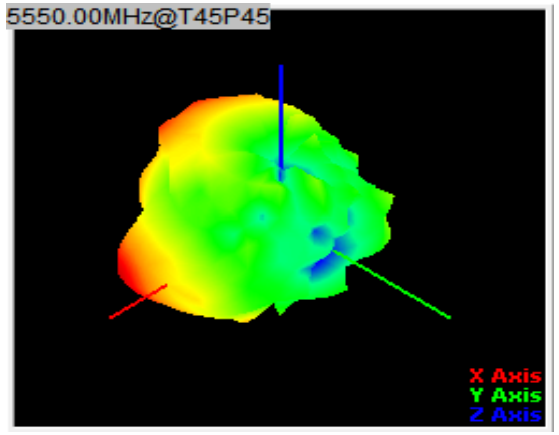
Radiation patterns:

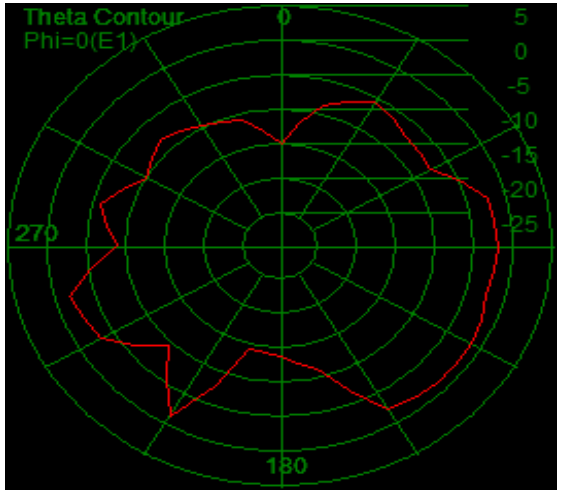


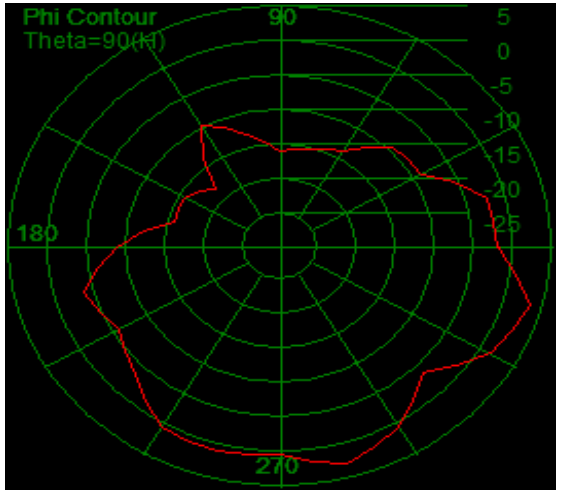


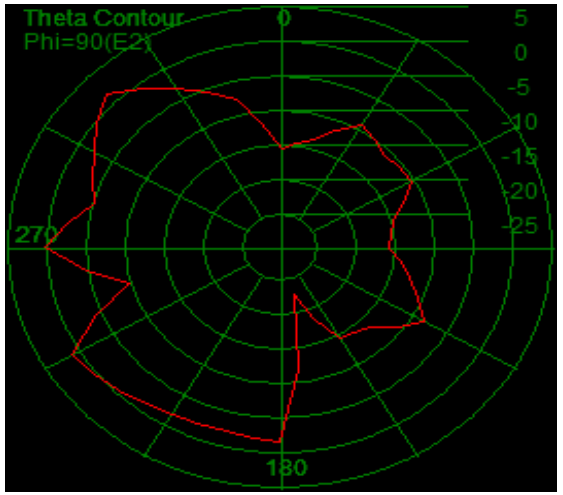








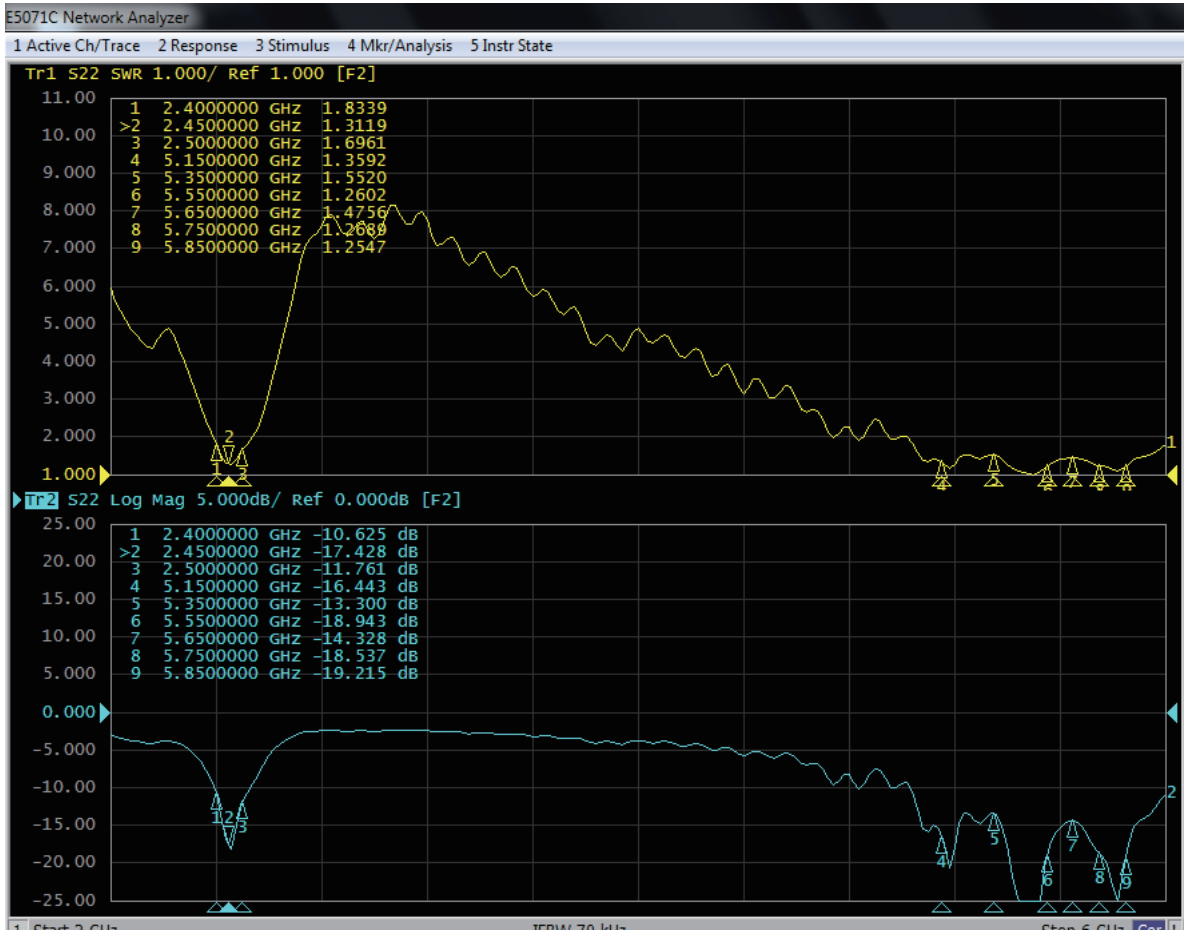




Signal Plus
Antennas

3. Test Result--Return Loss

S11 （WIFI 2-Right):



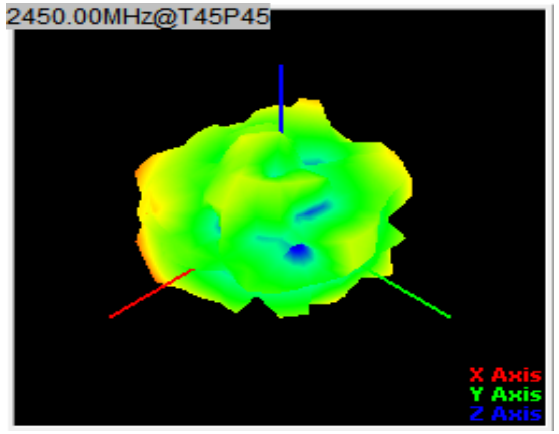
3. Test Result--Efficiency Gain

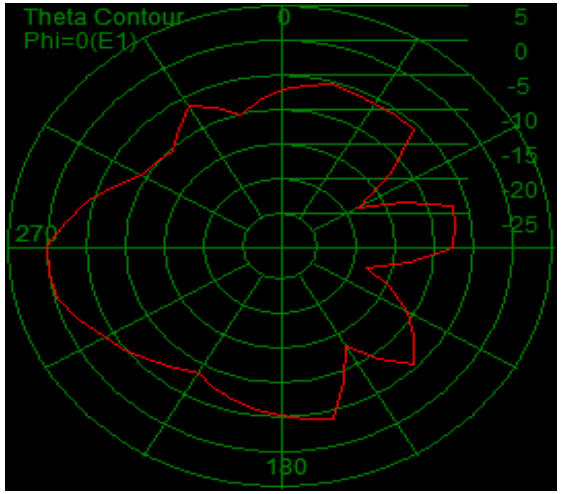
Data (WIFI 2-Right):

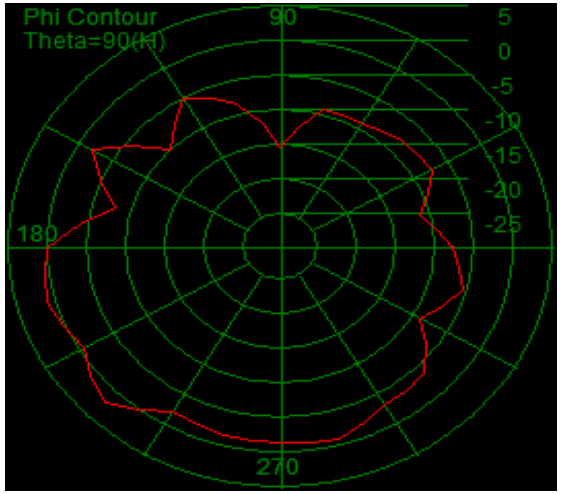
Freq. (MHz)	Gain (dBi)	Efficiency (%)
2400.0	3.23	51.2%
2450.0	2.91	51.8%
2500.0	2.33	53.5%
5150.0	4.65	55.6%
5250.0	3.15	55.2%
5350.0	3.24	56.0%
5450.0	3.90	55.8%
5550.0	3.17	53.3%
5650.0	5.72	52.9%
5750.0	4.62	52.0%
5850.0	5.63	54.5%

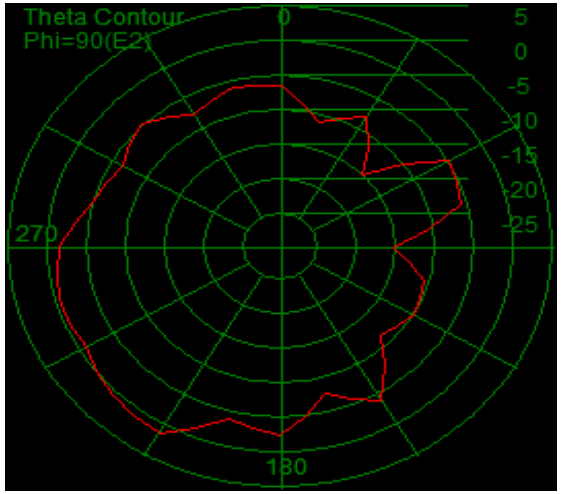
3.Test Result---Efficiency、Gain

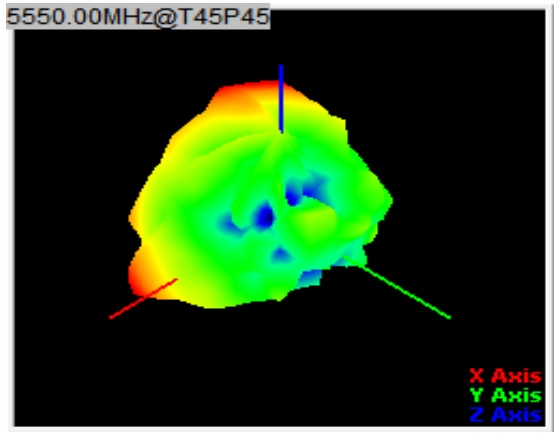
Radiation patterns:

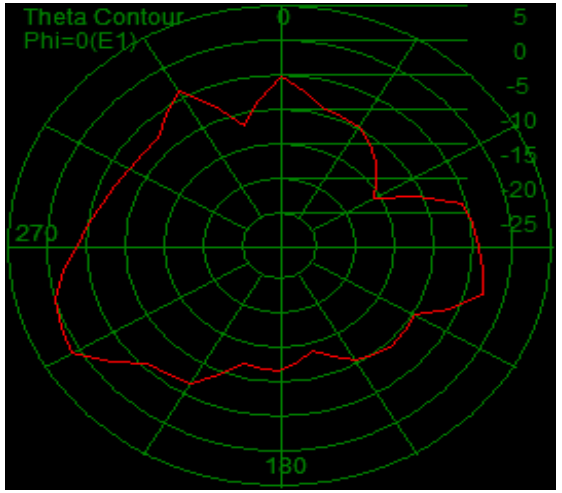


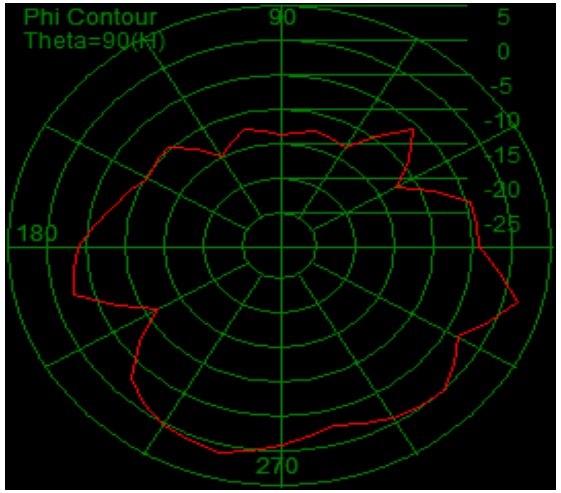


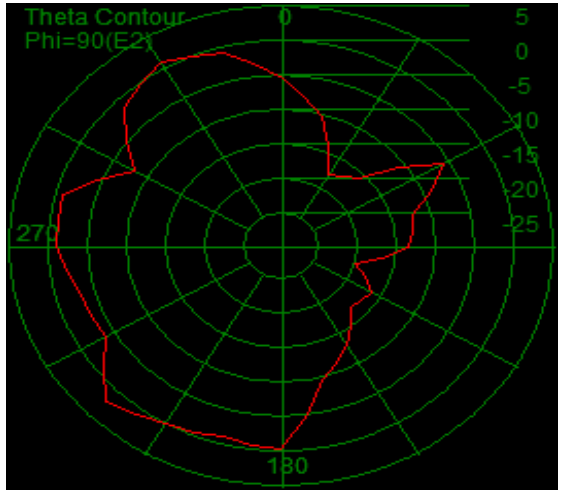




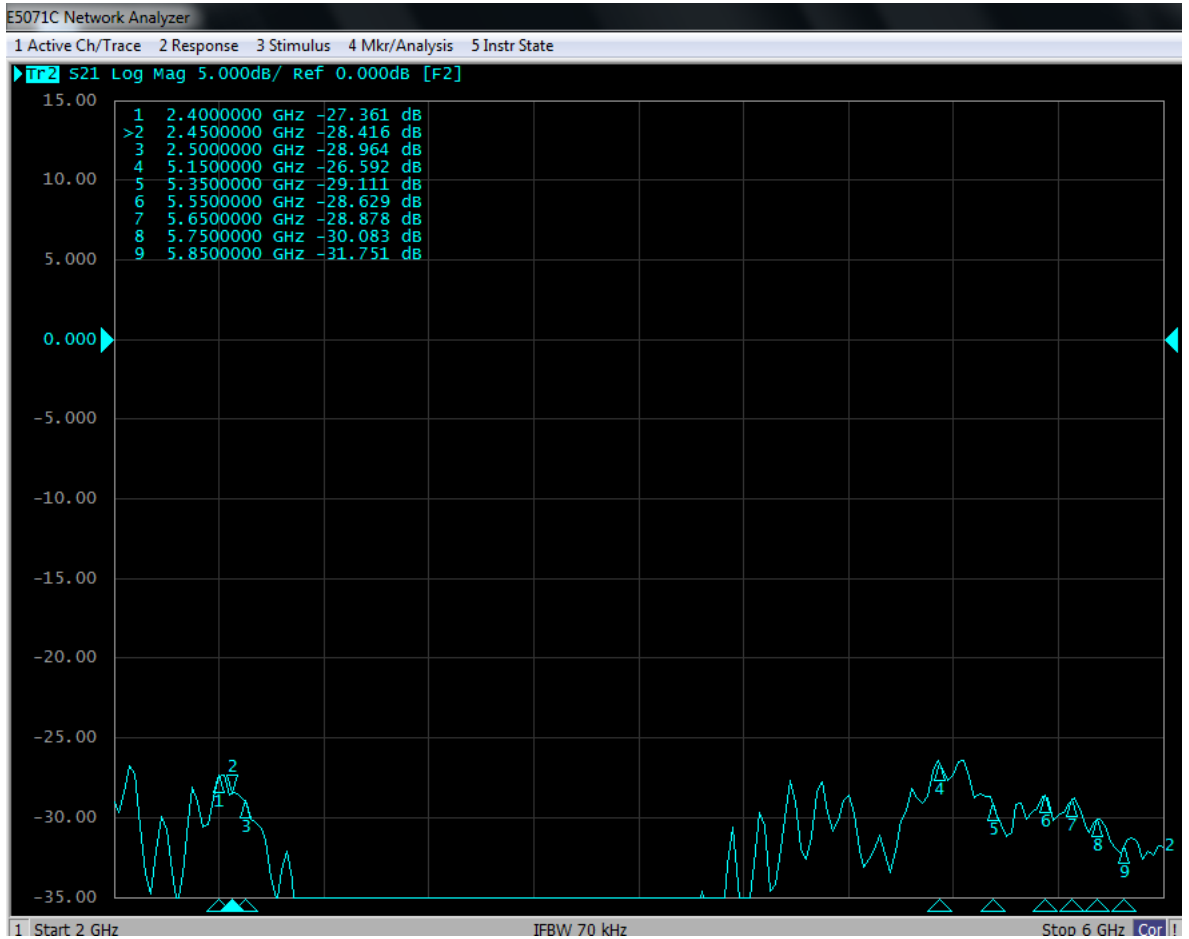








Signal Plus
Antennas

5.Isolation

S21: