



Shenzhen South Star Technology Co. Ltd.
Shanghai South Star Technology Co. Ltd.

SPECIFICATION FOR APPROVAL

CUSTOMER :	TUYA
PART NAME :	WBR3D PCB Antenna 2.4G- 5.8G
PART NO. :	
NDX NO. :	
REV. :	

Shenzhen southstar technology.co.,LTD

深圳市南斗星科技有限公司

Address: No.1606,Build C6,HengFeng industrial city,xixiang street,baoan district,Shenzhen

Shenzhen southstar technology co., LTD. Shanghai branch

深圳市南斗星科技有限公司上海分公司

103B, Build10, No.198 Zhang Heng Road , Pudong New Area,Shanghai

CONTENTS

Item	Description	Page
1.	Antenna Spec.	1
2.	Test Report	3~11

Antenna Assembly

Specification(With housing)

1.Electrical Properties

- 1.1 Frequecy range.....2.412~2.472GHz
- 1.2 Impedance.....50 Ω Norminal
- 1.3 VSWR <2
- 1.4 Radiation.....Omni
- 1.5 Gain(Peak).....1dBi
- 1.6 Polarization.....Linear
- 1.7 Admitted Power.....1W
- 1.8 Connector.....MHF

2.Physical Properties

- 2.1 Working Temperature.....-20°C~+65°C
- 2.2 Storage Temperature.....-30°C~+75°C



**South
star**

Shenzhen South Star Technology Co. Ltd.
103B, Build10, No.198 Zhang Heng Road ,
Pudong New Area, Shanghai

Antenna Design for 2.4G-5.8G

Document Number	NDX-1908020
Released Date	20/08/2019
Author	Mingchao Zhang
Review By	Zhongyi Zhao



Revised History

[illegible]

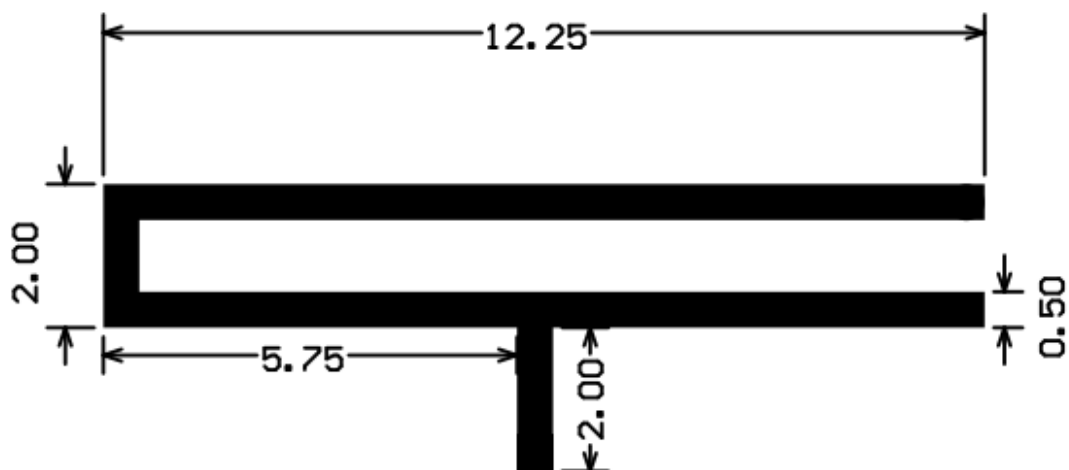


**South
star**

Shenzhen South Star Technology Co. Ltd.
103B, Build10, No.198 Zhang Heng Road ,
Pudong New Area, Shanghai

1. Antennas' setup and enviroment With housing

PCB Antenna 2.4G-5.8G



Top View

unit: mm

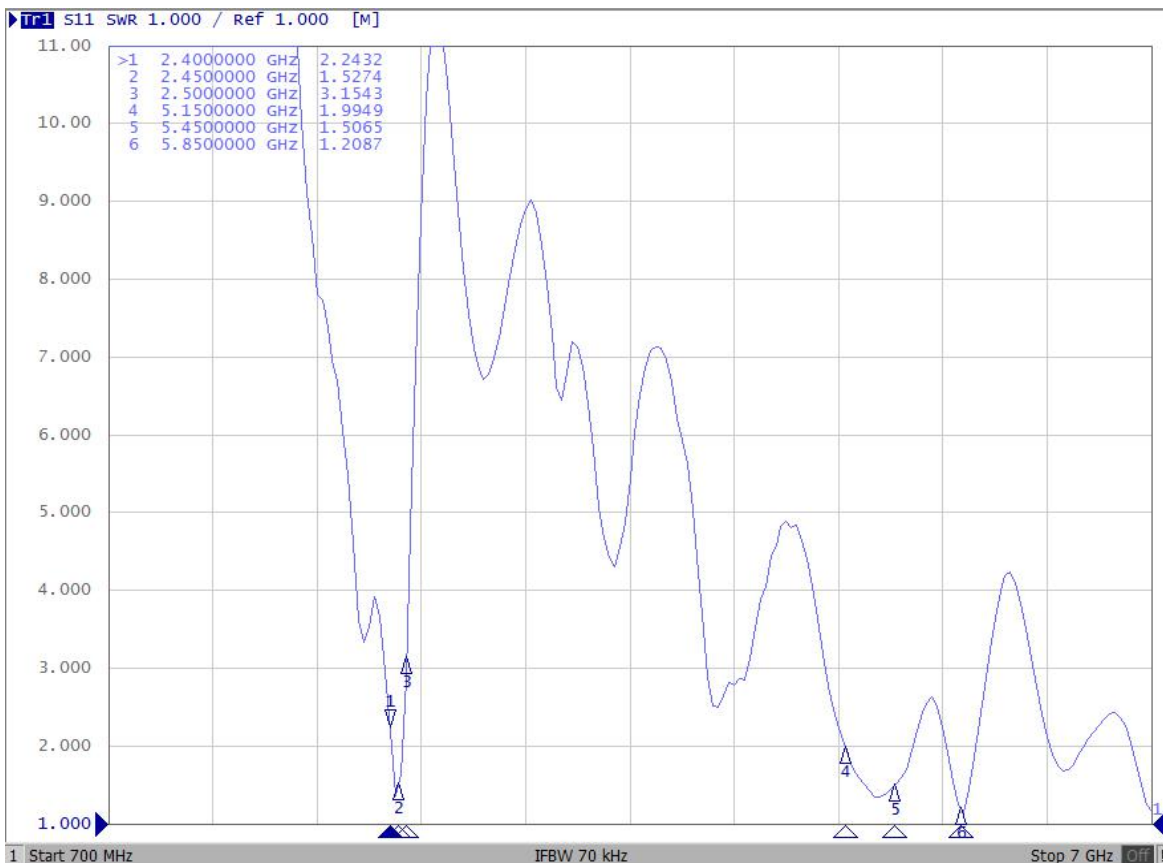
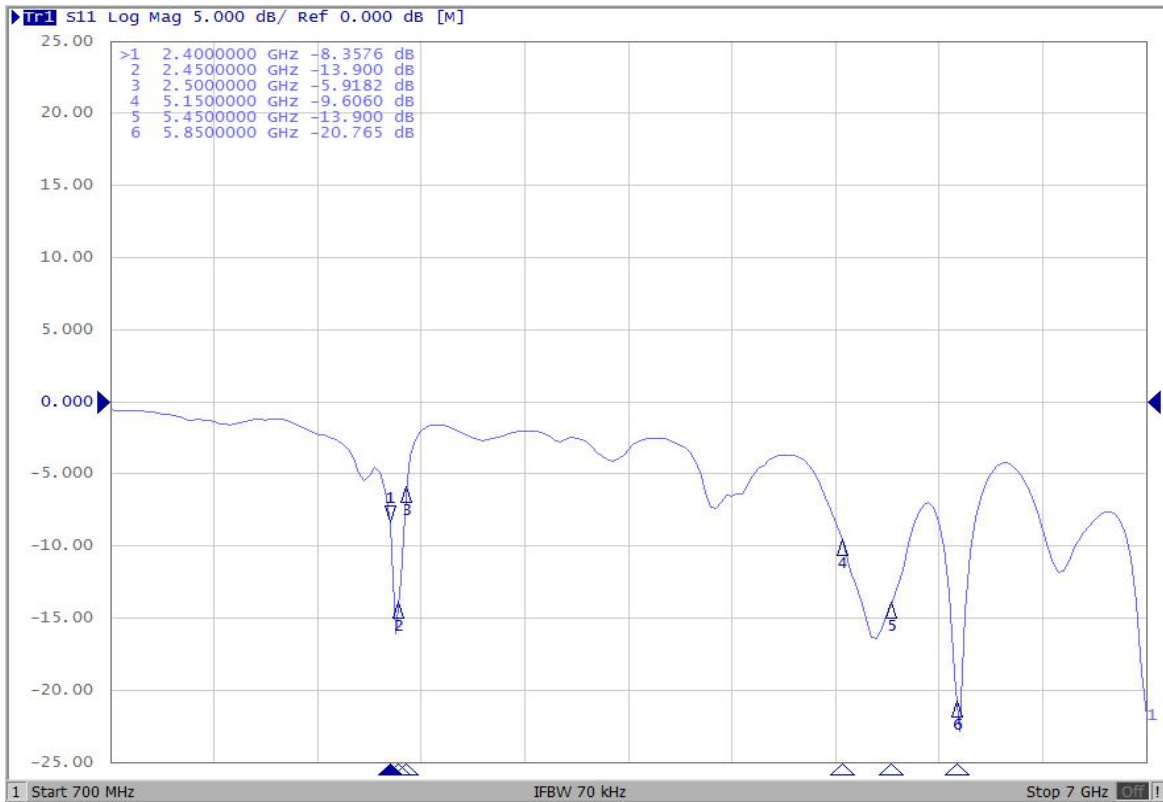


**South
star**

Shenzhen South Star Technology Co. Ltd.
103B, Build10, No.198 Zhang Heng Road ,
Pudong New Area, Shanghai

2. Analyzer Measurement

2.1 Ant 2.4G -5.8G S11 VSWR



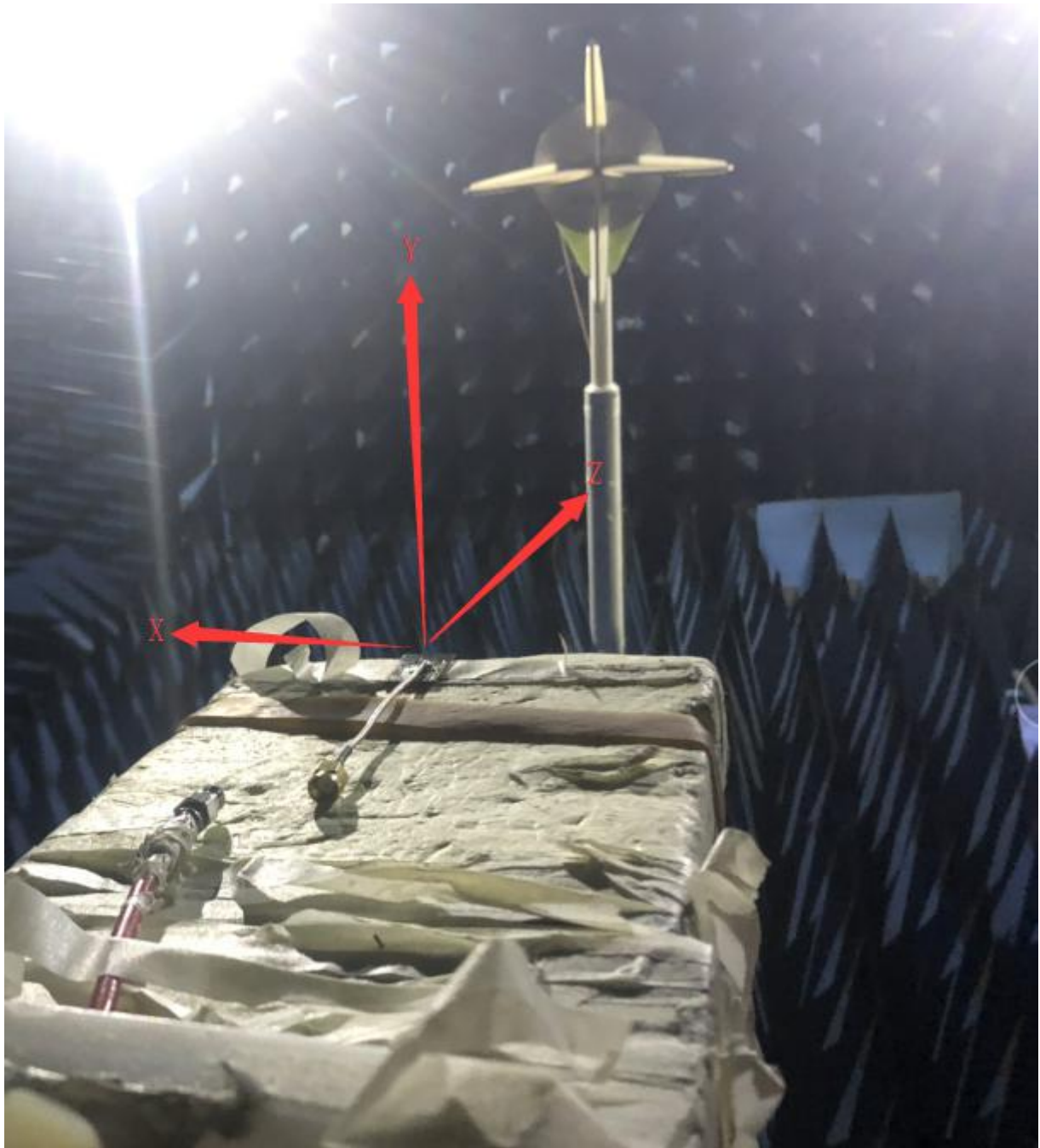


**South
star**

Shenzhen South Star Technology Co. Ltd.
103B, Build10, No.198 Zhang Heng Road ,
Pudong New Area, Shanghai

3. Gain & Patterns test results

3.1 Measurement setting X Y Z

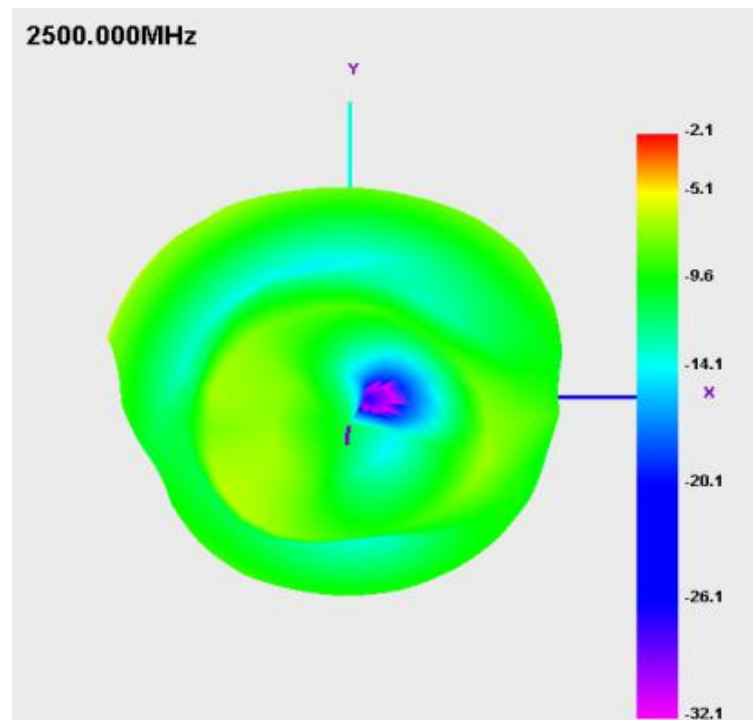
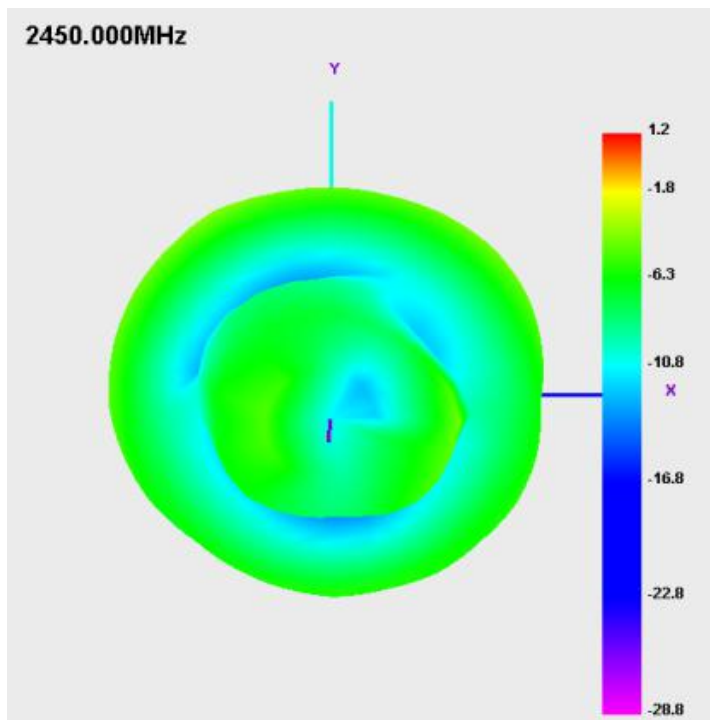
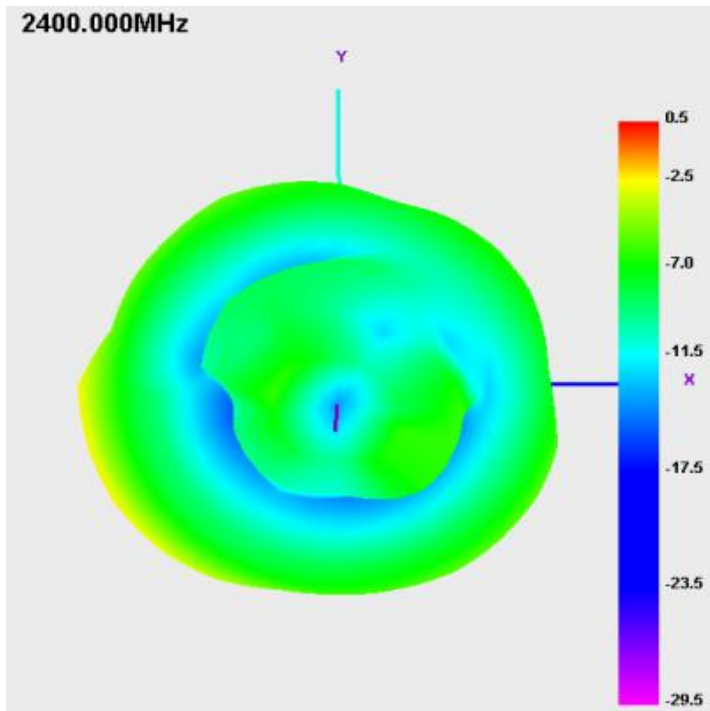




**South
star**

Shenzhen South Star Technology Co. Ltd.
103B, Build10, No.198 Zhang Heng Road ,
Pudong New Area, Shanghai

3.2 Ant 2.4G 3D Patterns

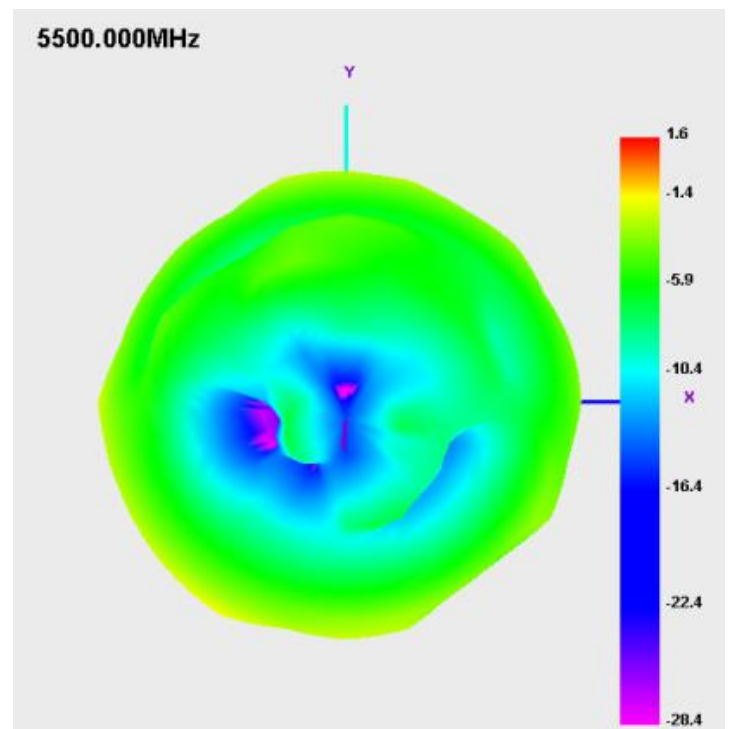
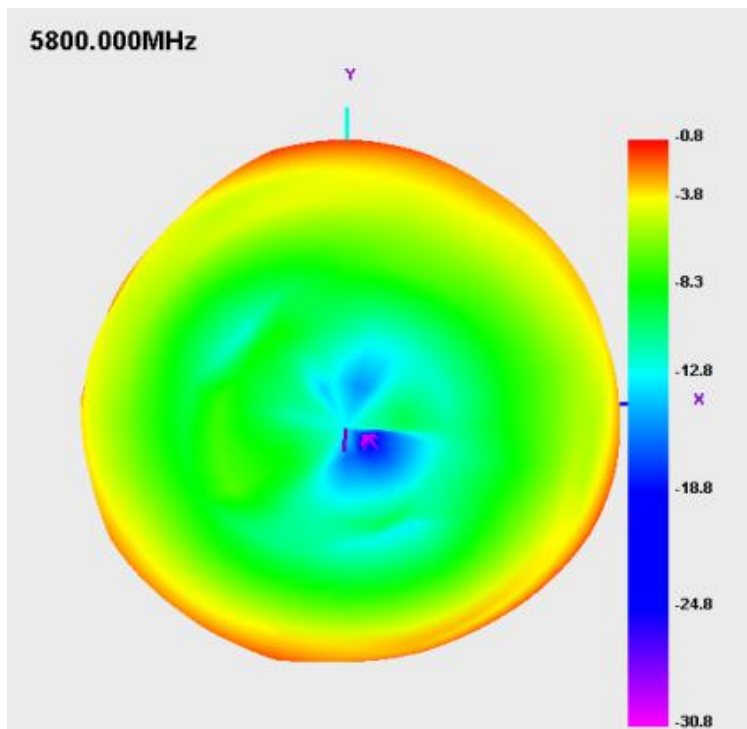
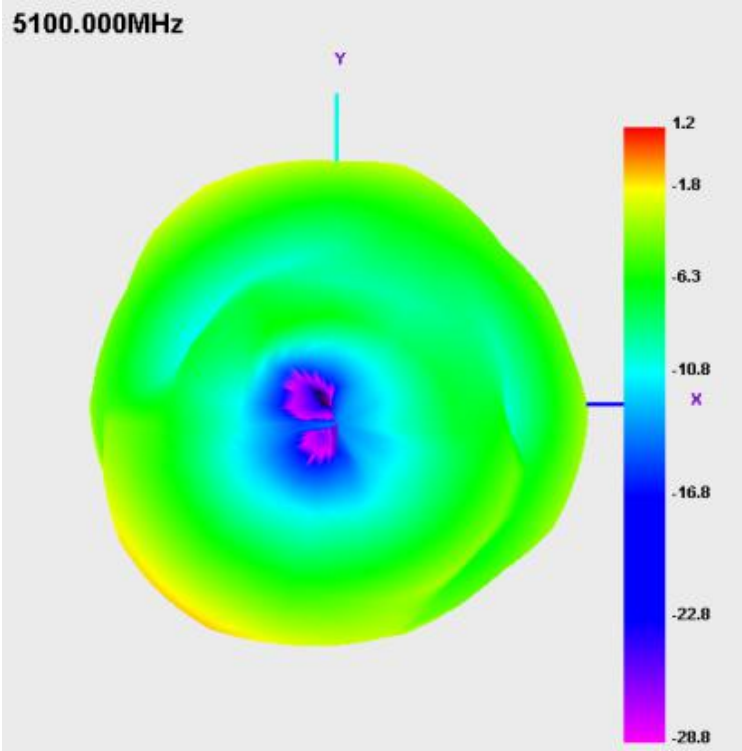




**South
star**

Shenzhen South Star Technology Co. Ltd.
103B, Build10, No.198 Zhang Heng Road ,
Pudong New Area, Shanghai

3.2 Ant 5.8G 3D Patterns





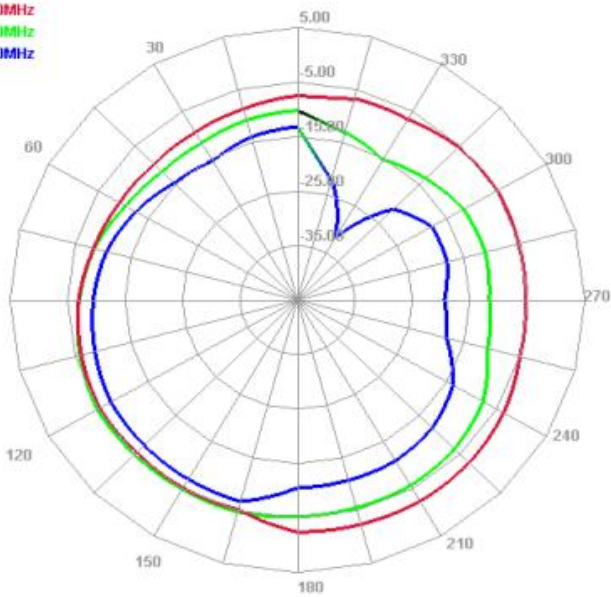
**South
star**

Shenzhen South Star Technology Co. Ltd.
103B, Build10, No.198 Zhang Heng Road ,
Pudong New Area, Shanghai

3.2 Ant 2.4G WIFI 2D Patterns

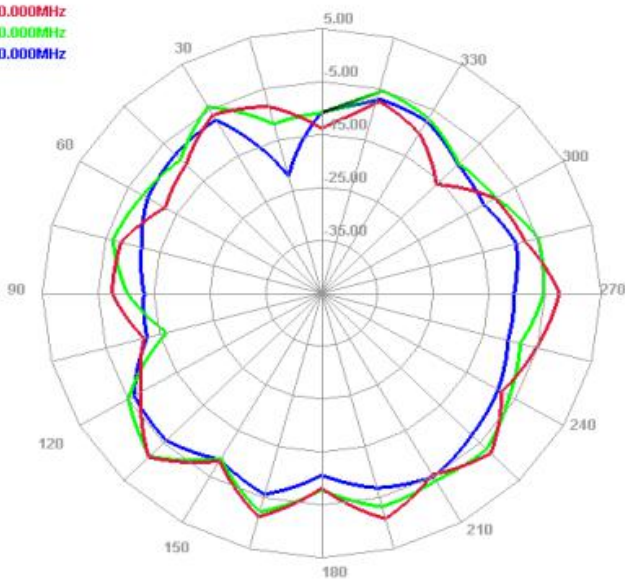
Horizontal

2400.000MHz
2450.000MHz
2500.000MHz



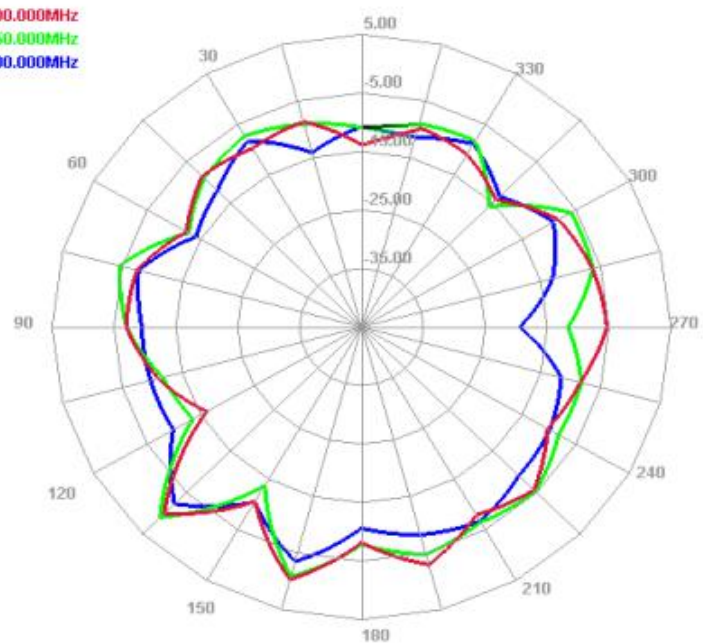
E1 Face

2400.000MHz
2450.000MHz
2500.000MHz



E2 Face

2400.000MHz
2450.000MHz
2500.000MHz



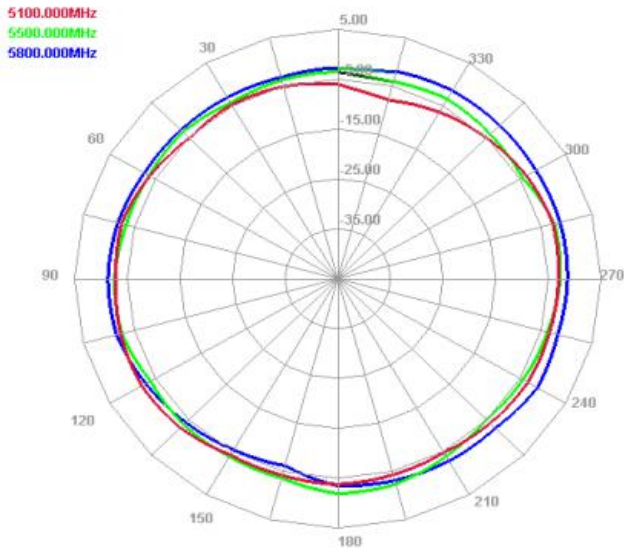


**South
star**

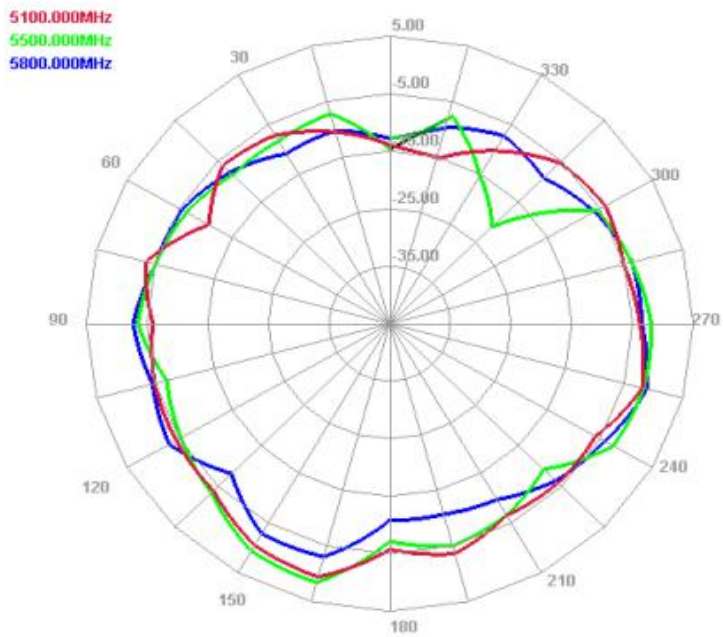
Shenzhen South Star Technology Co. Ltd.
103B, Build10, No.198 Zhang Heng Road ,
Pudong New Area, Shanghai

3.2 Ant 5.8G WIFI 2D Patterns

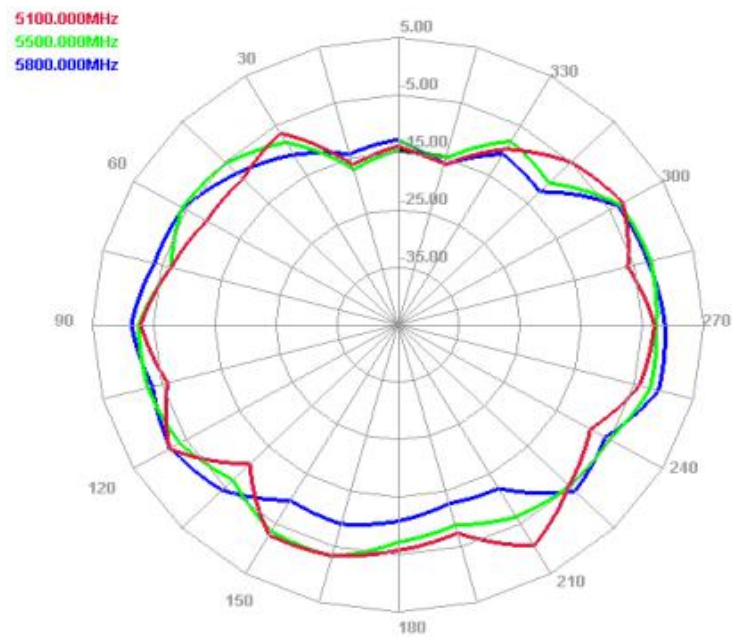
Horizontal



E1 Face



E2 Face





**South
star**

Shenzhen South Star Technology Co. Ltd.
103B, Build10, No.198 Zhang Heng Road ,
Pudong New Area, Shanghai

4. 2.4G WIFI Peak Gain & Efficiency

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	21.72	-6.63	0.47
2410	24.64	-6.08	1.17
2420	27.86	-5.55	1.95
2430	26.18	-5.82	1.71
2440	24.58	-6.09	1.5
2450	23.27	-6.33	1.17
2460	24.25	-6.15	1.22
2470	21.7	-6.63	0.55
2480	19.44	-7.11	-0.22
2490	16.86	-7.73	-1.02
5100	32.86	-4.83	1.22
5200	39.24	-4.06	1.97
5300	32.14	-4.93	1.08
5400	54.54	-2.63	2.64
5500	33.93	-4.69	1.6
5600	34.27	-4.65	0.65
5700	30.77	-5.12	-0.76
5800	35.7	-4.47	-0.84