



NP3081GB Antenna information

Record for version modification

Date	Revision	Modify Content	Author
2024-9-12	V1.0	1 st Version	Yin Feijie

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Website: www.sdmctech.com

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1. Project information

Model No.	NP3081GB
HW Version	V1
SW Version	10.3.3.1
Antenna type	Metal built-in antenna
Installation mode	Internal
WIFI Model	MT7916AN+MT7976DN
Antenna supplier	Shenzhen Yingjiachuang Electronic Technology Co. LTD
Tester	Yin Feijie
Acceptance	Fang Wenfeng
Reviewer	Xiao Han
wDate	2024/9/12

Address: Building C, Hongyu Guangming Valley, No. 11, Youma Gang Road, Ma Tian Street, Guangming District, Shenzhen

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Hangzhou Office: 509, Building 1, Binrun Science and Technology Park, No. 5 Zhren Street, Puyan Street, Binjiang District, Hangzhou

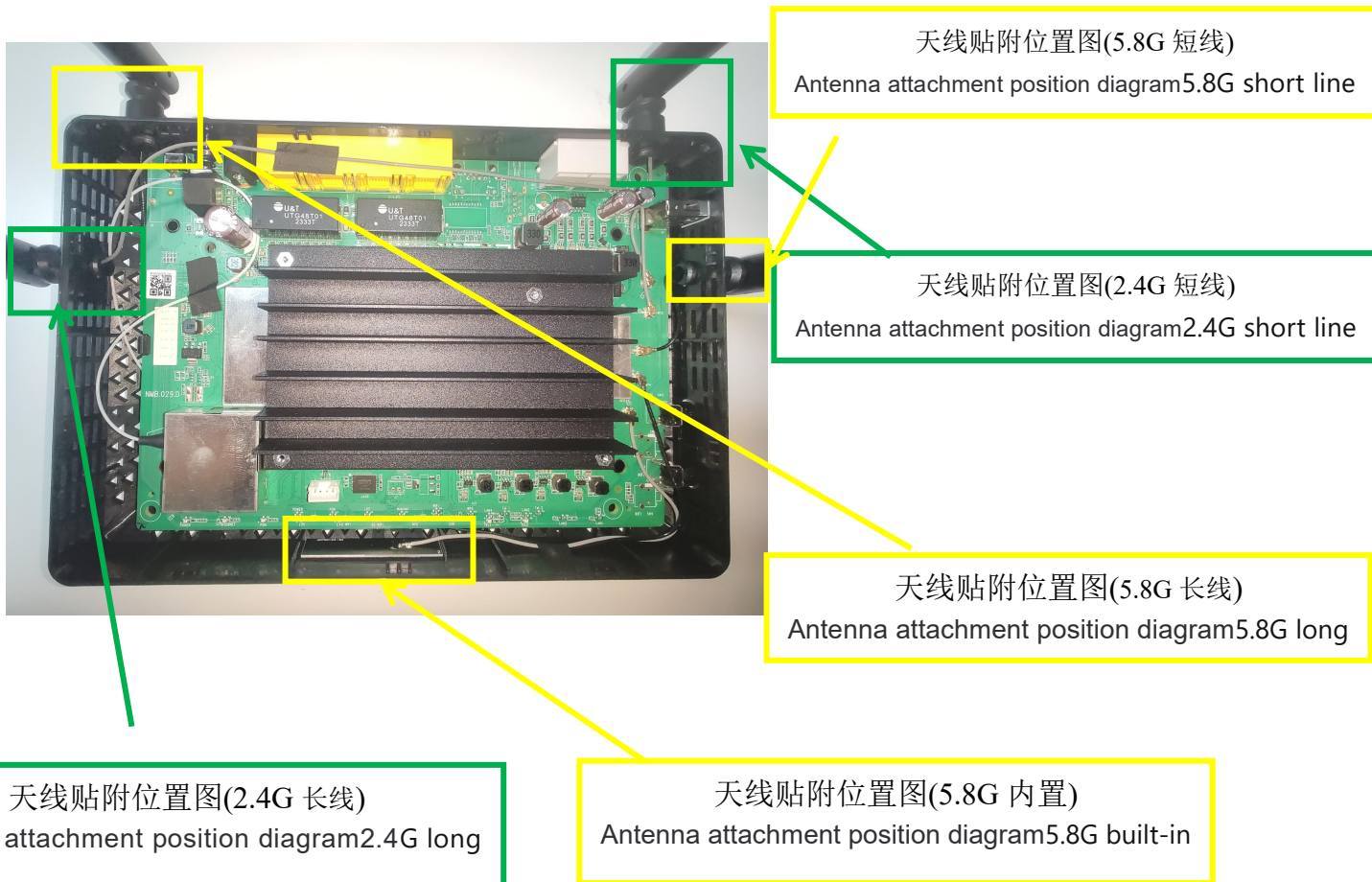
Mianyang Office: No. 4F-34 Wanxiang High-tech International, No. 35 Mianxing East Road, Mianyang High-tech Zone, Sichuan Province

Tel: 0755-27810060

Fax: 0755-27810057

Website: <http://www.szsyjc.com>

2. Appearance and specification

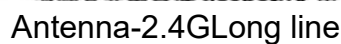


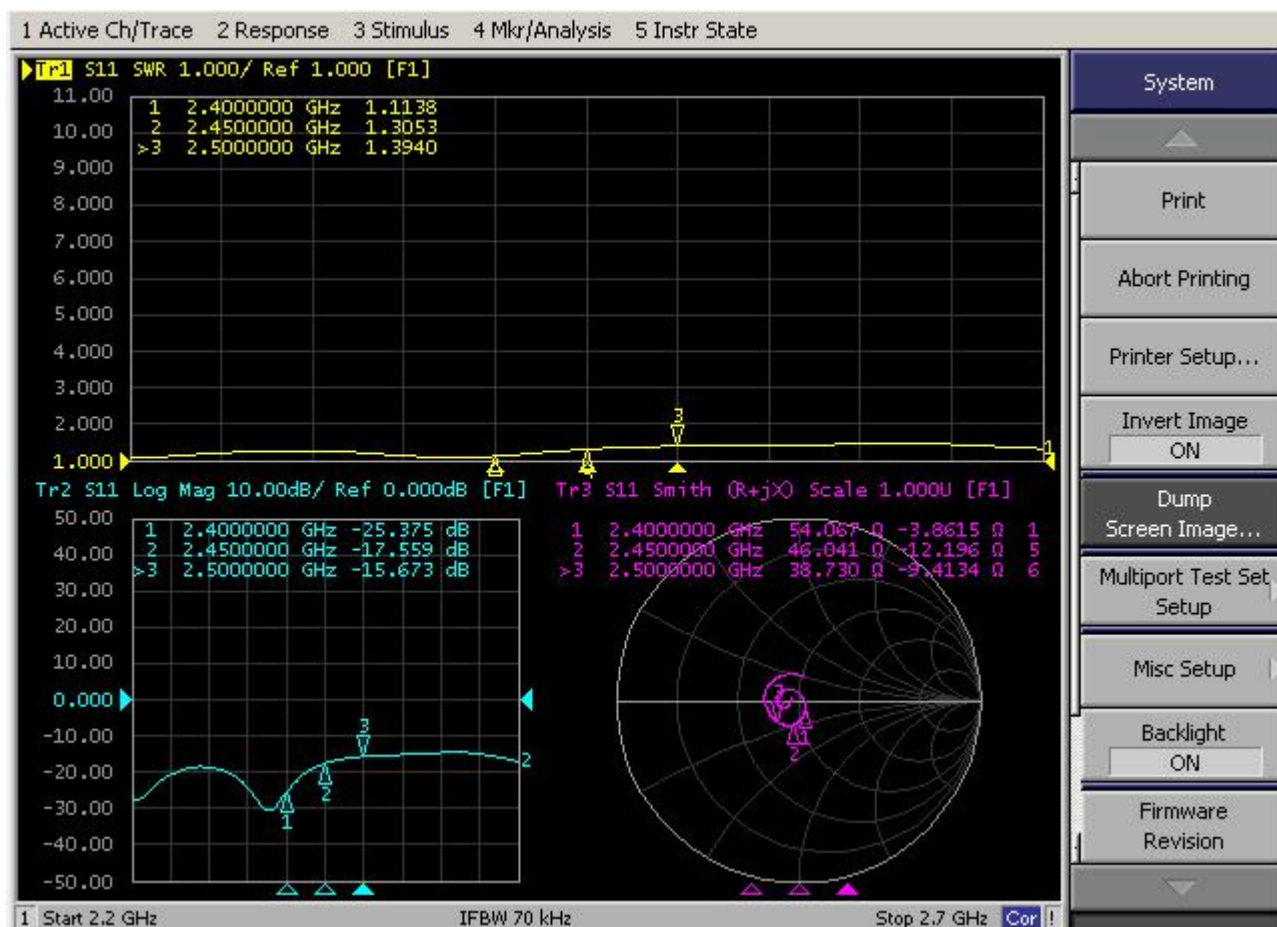
3. Performance parameter

3.1 Antenna passive test

Frequency	2400Mhz~2500Mhz/5150Mhz~5850Mhz
Impedance	50Ω
Antenna Gain	2.4Glong ≤5.05dBi, 2.4Gshort ≤5.08dBi 5.8Glong ≤5.04dBi, 5.8Gshort≤5.02dBi, 5.8Gbuilt-in≤4.66dBi
Power capacity	<10w
Radiation	Omni-directional

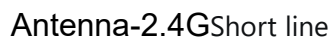
Standard: Reflection loss $\leq$ -10db V.S.W.R $\leq$ 1.92

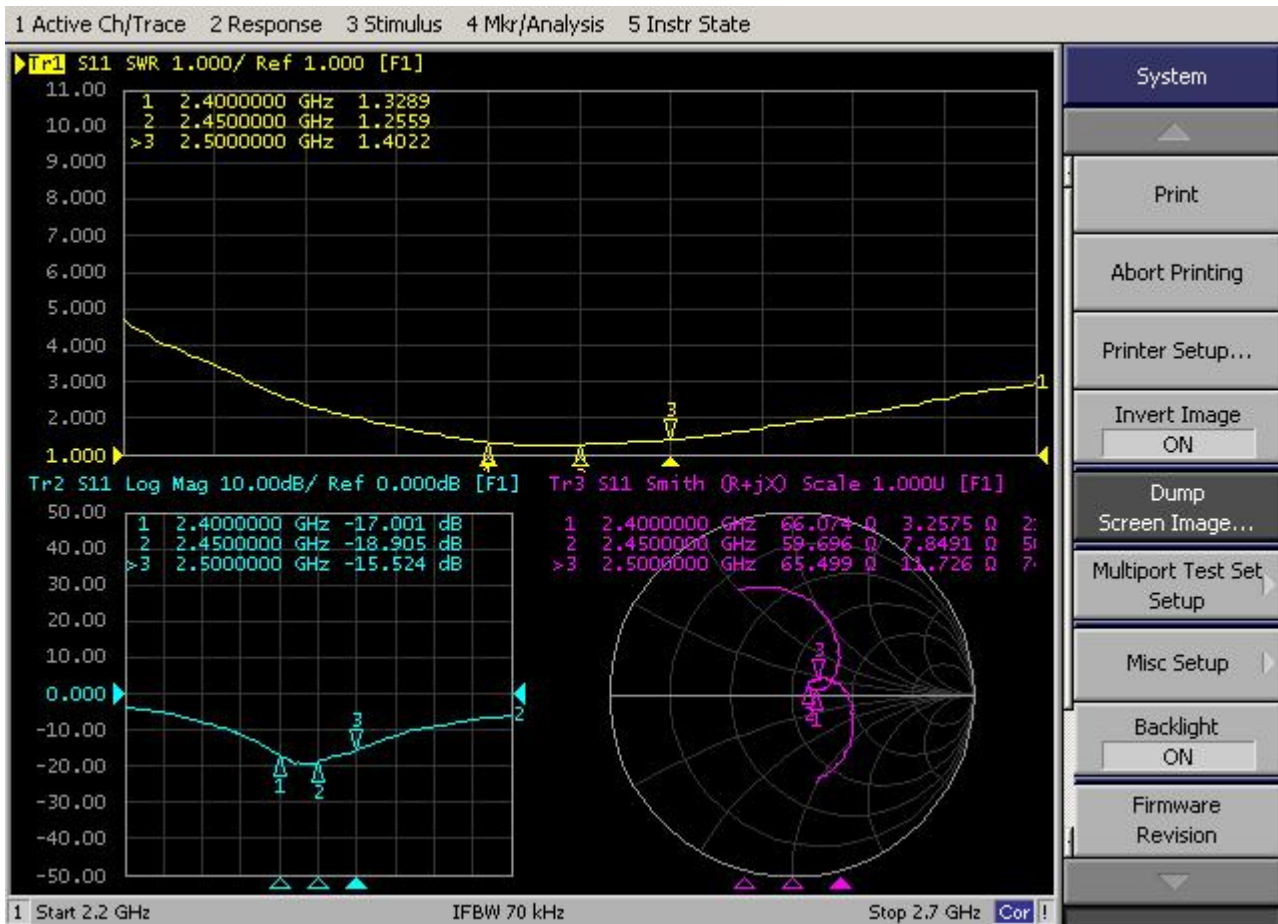




V.S.W.R

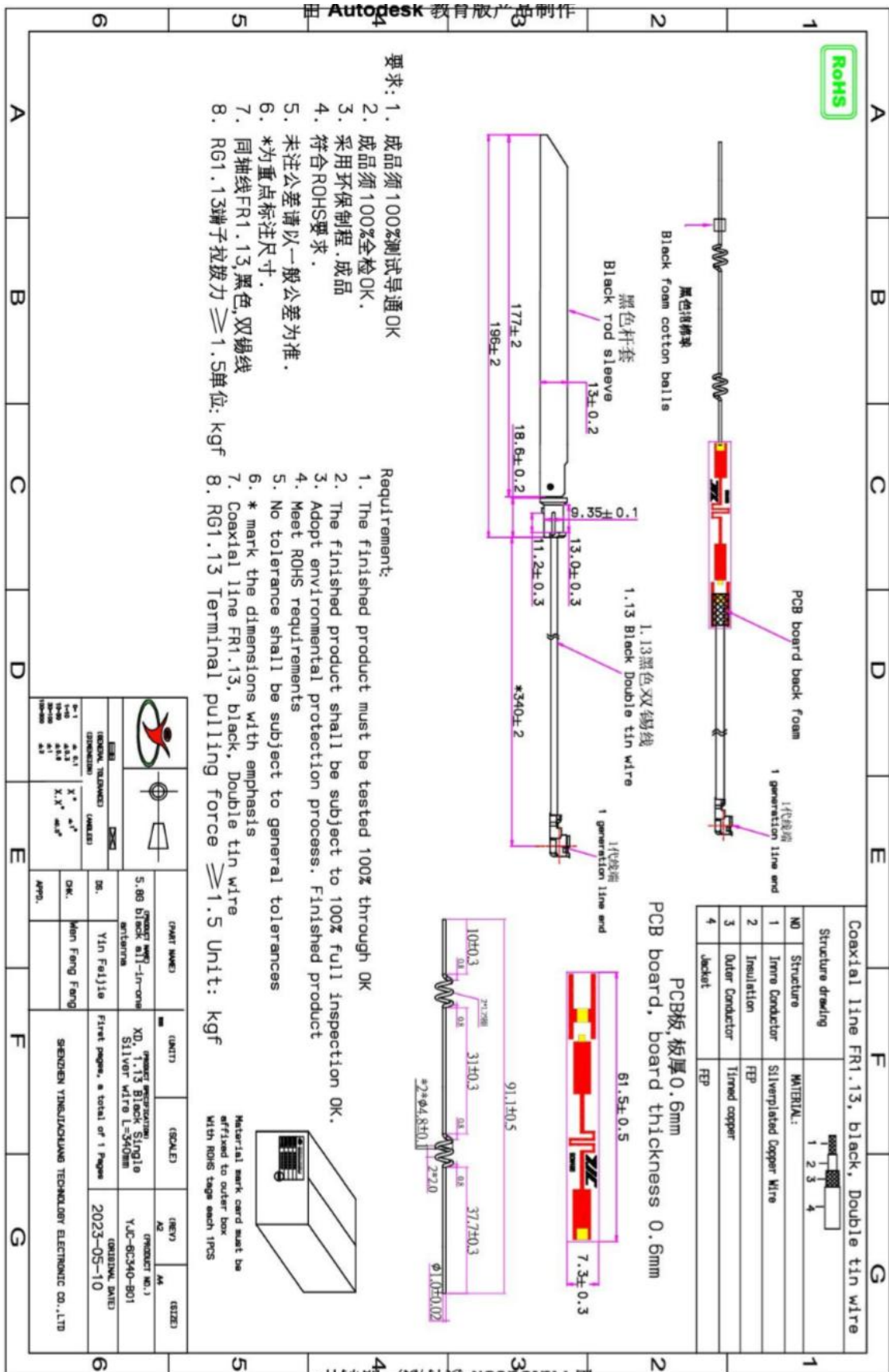
Freq/GHz	2.4	2.45	2.5
VSWR	1.11	1.30	1.39



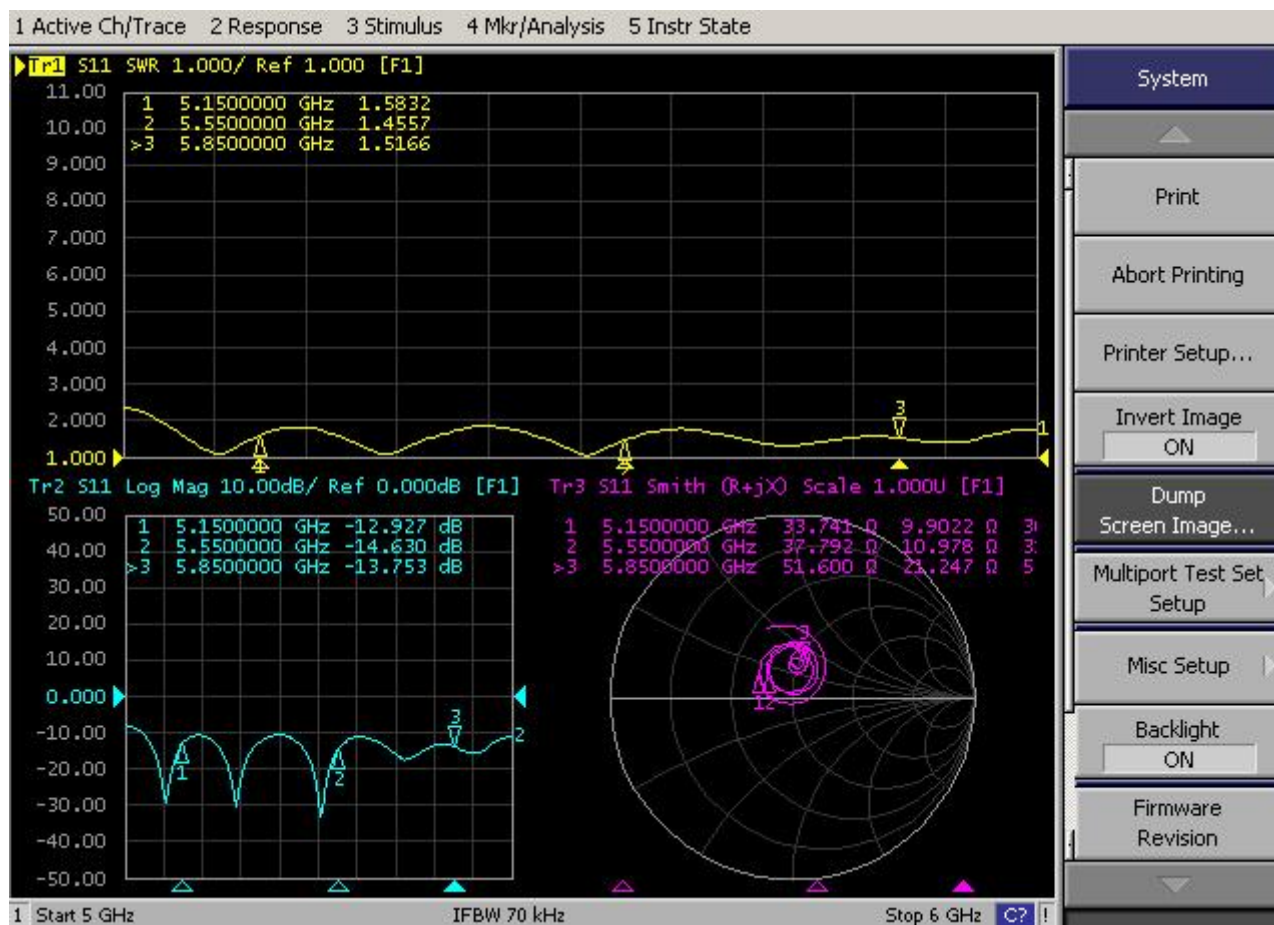


V.S.W.R

Freq/GHz	2.4	2.45	2.5
VSWR	1.32	1.25	1.40

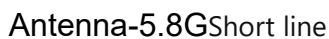


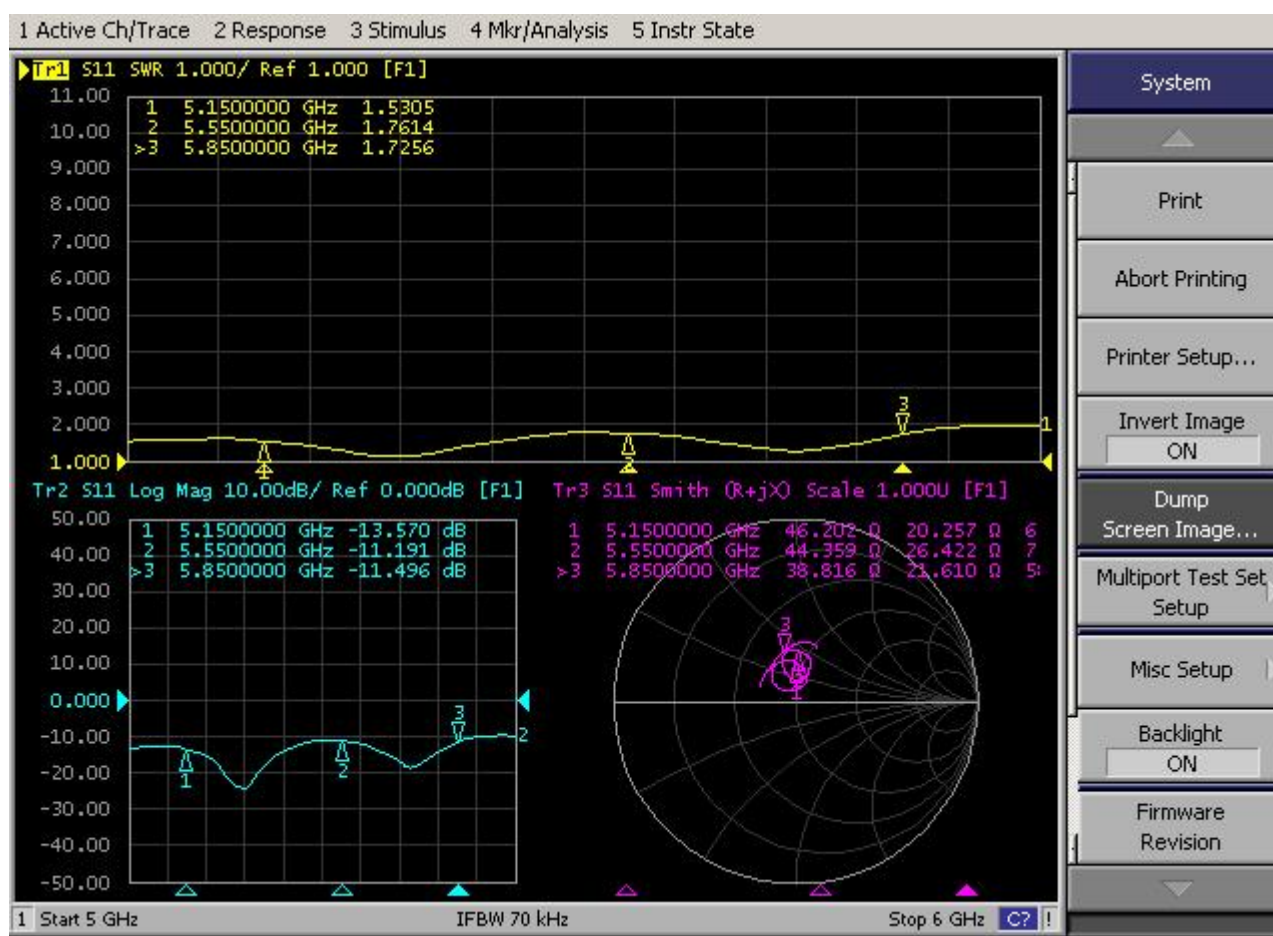
Antenna-5.8GLong line



V.S.W.R

Freq/GHz	5.15	5.72	5.85
VSWR	1.58	1.45	1.51

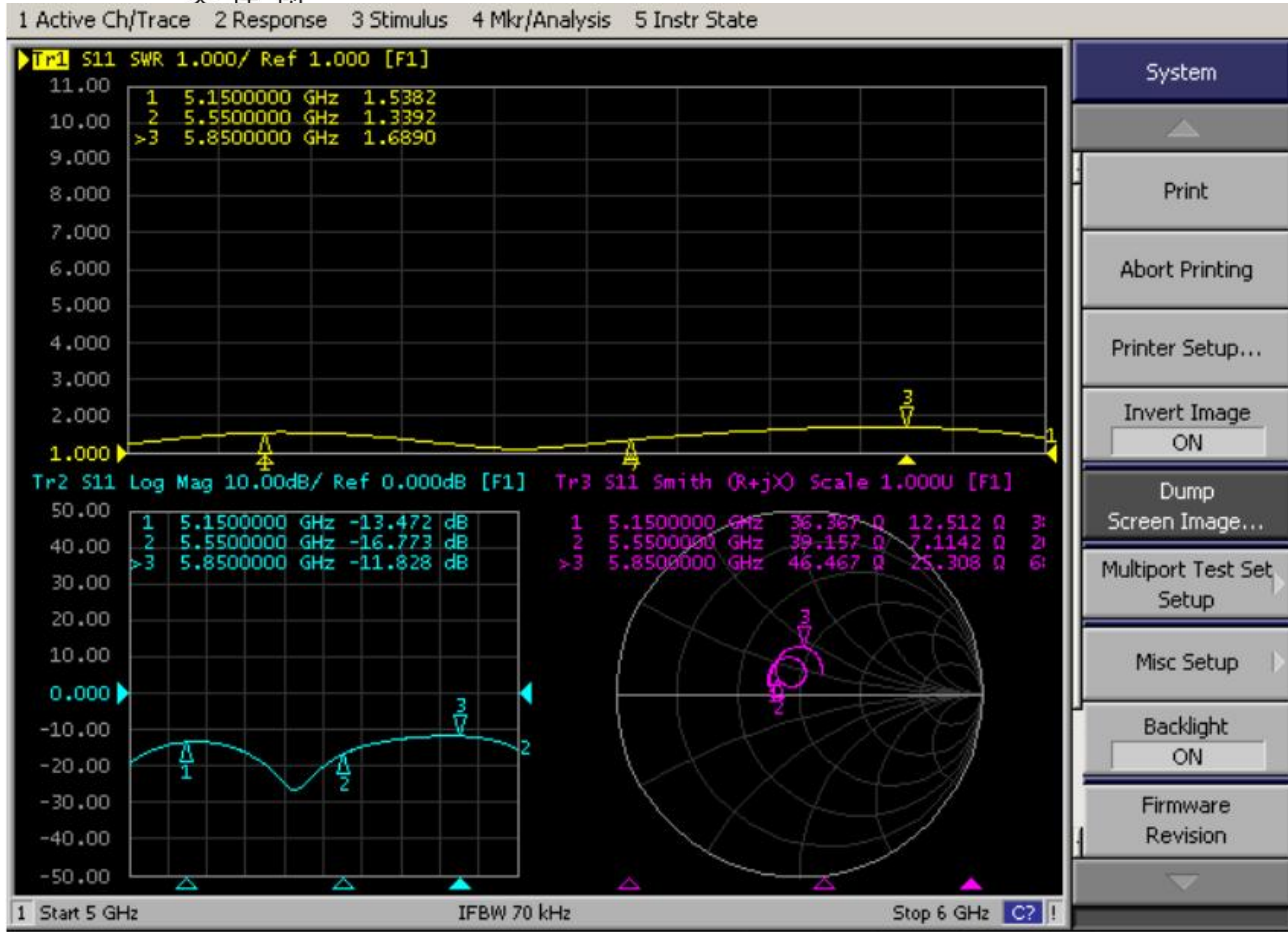




V.S.W.R

Freq/GHz	5.15	5.72	5.85
VSWR	1.53	1.76	1.72





V.S.W.R

Freq/GHz	5.15	5.72	5.85
VSWR	1.53	1.33	1.68

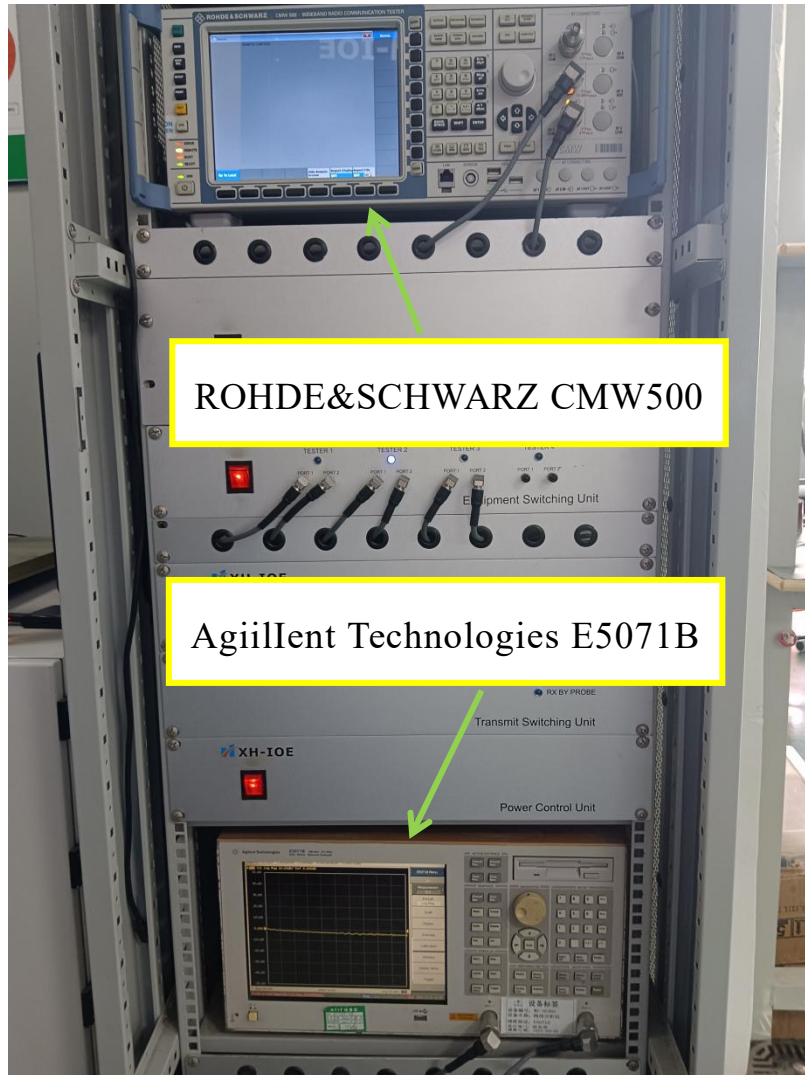
3.1.2 Gain & Efficiency

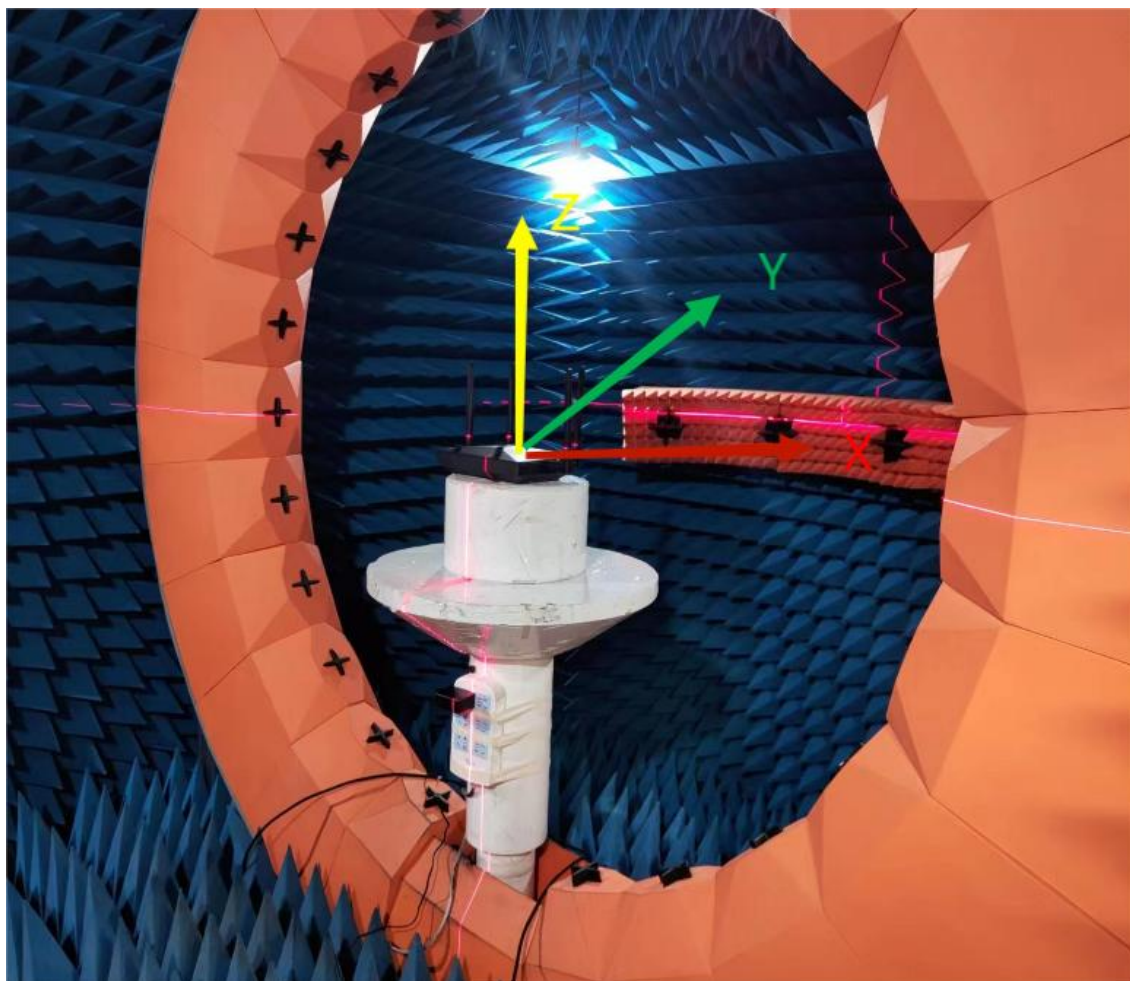
Test tools: Microwave Anechoic Chamber+Agilent Technologies E5071B

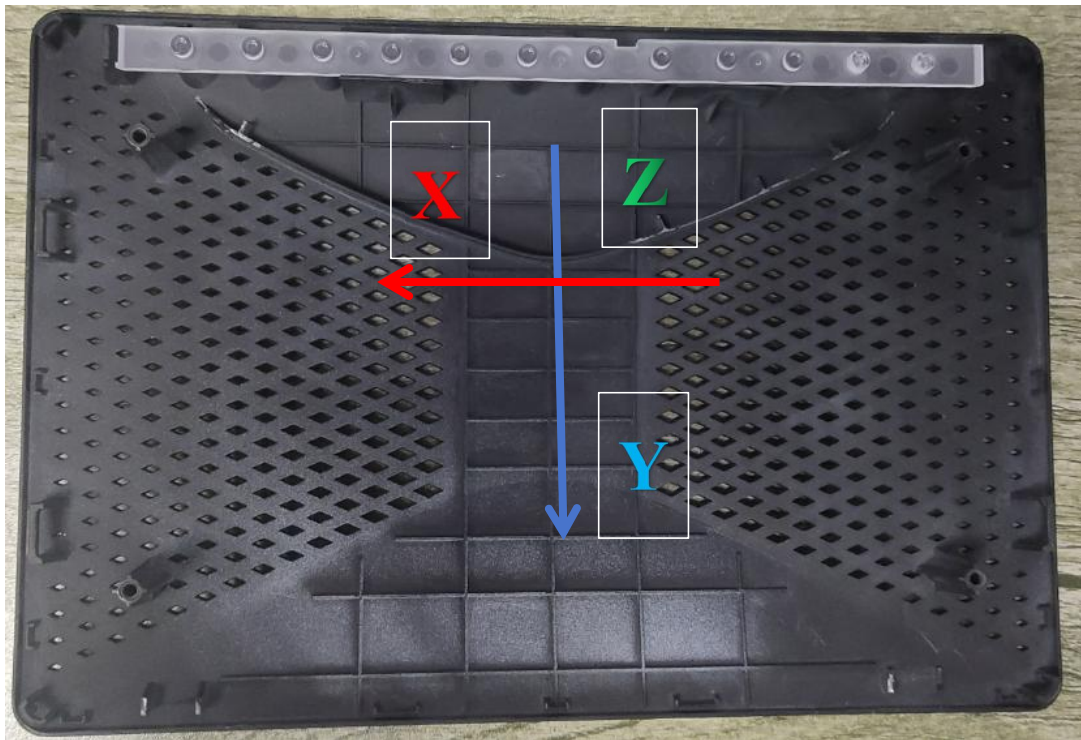
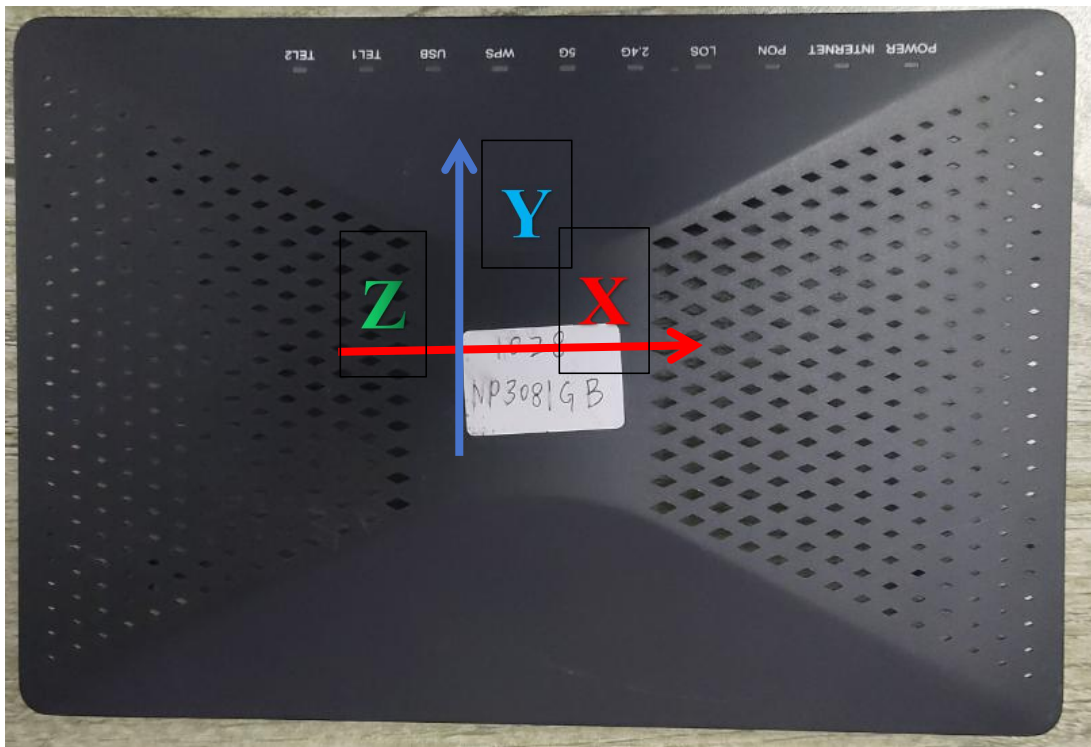
Standard: 2.4G $1.5\text{dBi} \leq \text{Gain} \leq 6\text{dBi}$ Efficiency $\geq 55\%$

5G $1.7\text{dBi} \leq \text{Gain} \leq 6\text{dBi}$ Efficiency $\geq 60\%$

Testing Environment: As shown in the figure





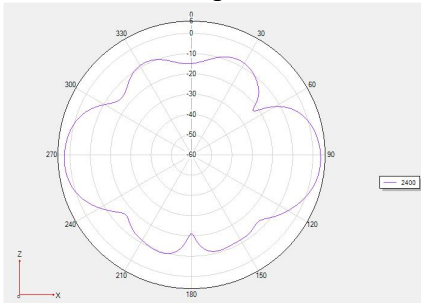


Antenna test data

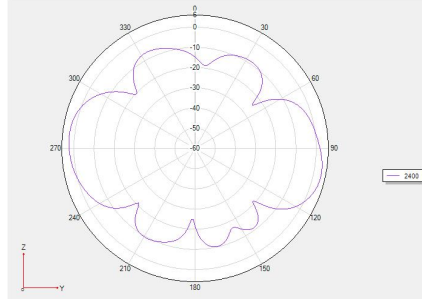
2.4GShort line		
2.4G		
Frequency / MHz	Gain/ dBi	Efficiency / %
2400	4.89	66.32
2450	5.08	65.89
2500	4.91	66.53

2.4GShort line 天线方向图-2.4G(Antenna direction diagram - 2.4G)

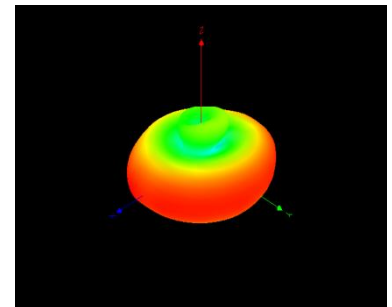
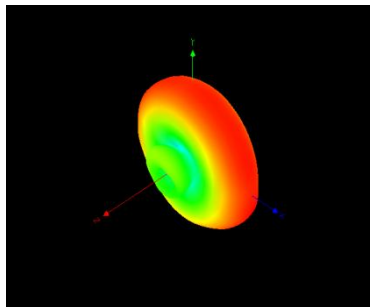
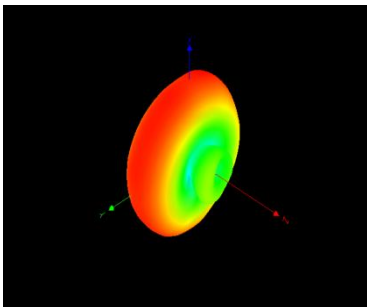
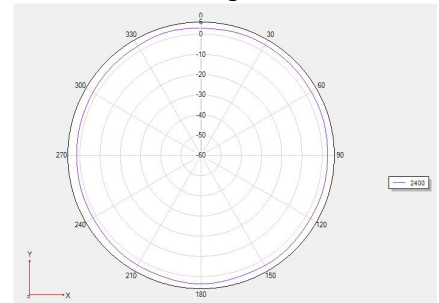
Phi =0 freq=2400MHz



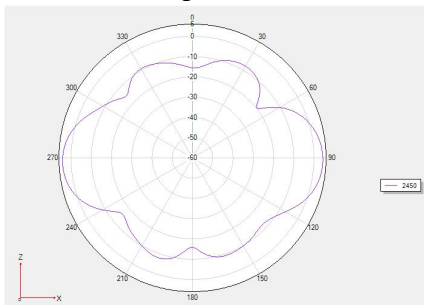
Phi =90 freq=2400MHz



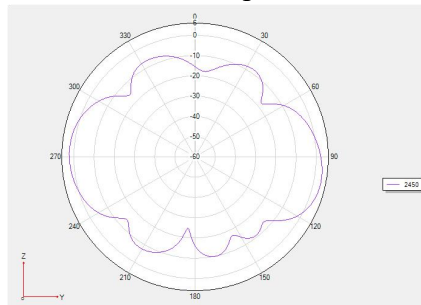
Theta =90 freq=2400MHz



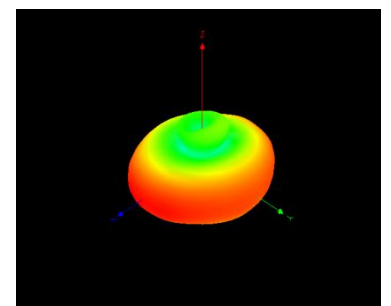
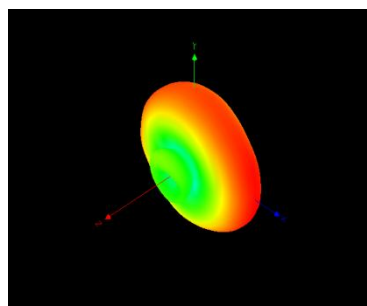
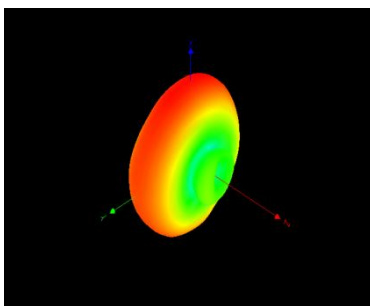
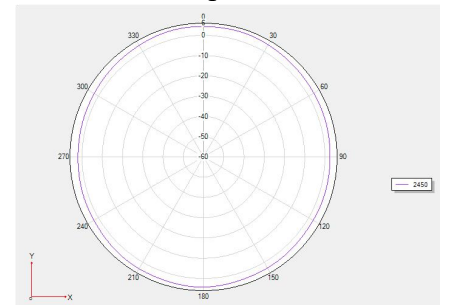
Phi =0 freq=2450MHz



Phi =90 freq=2450MHz

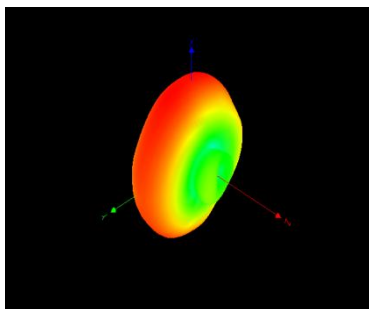
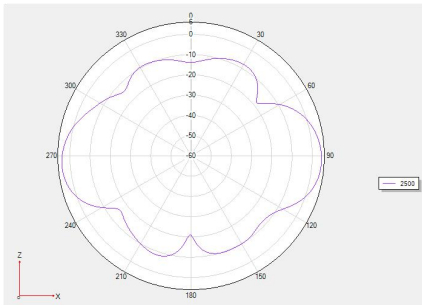


Theta =90 freq=2450MHz

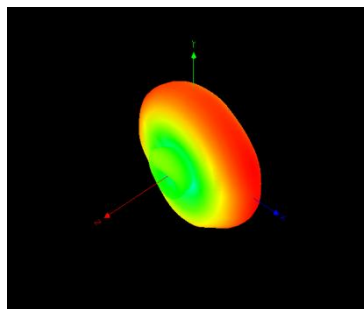
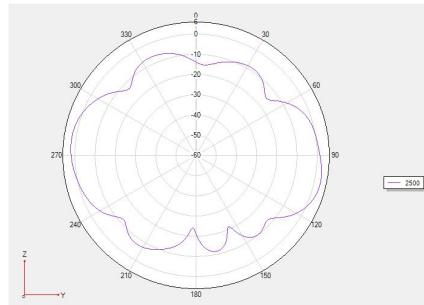




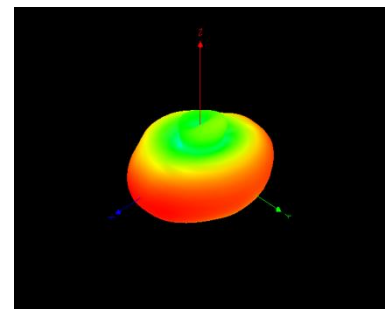
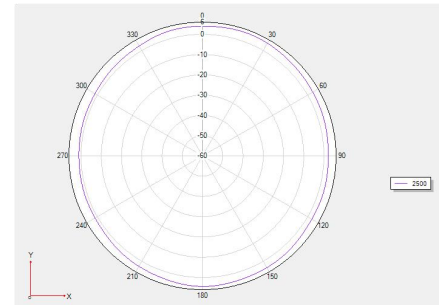
Phi =0 freq=2500MHz



Phi =90 freq=2500MHz



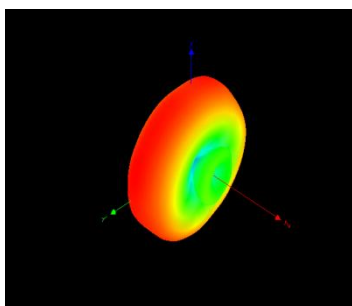
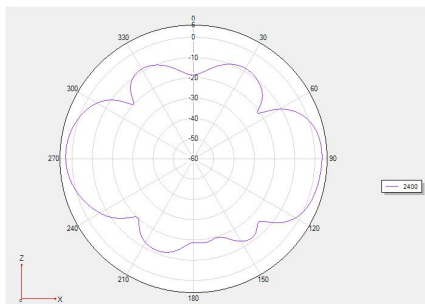
Theta =90 freq=2500MHz



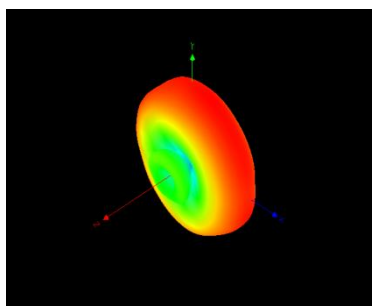
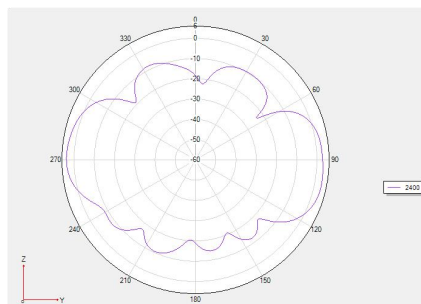
2.4GLong line		
2.4G		
Frequency / MHz	Gain/ dBi	Efficiency / %
2400	5.05	66.32
2450	4.86	66.61
2500	4.97	66.85

2.4GLong line 天线方向图-2.4G(Antenna direction diagram - 2.4G)

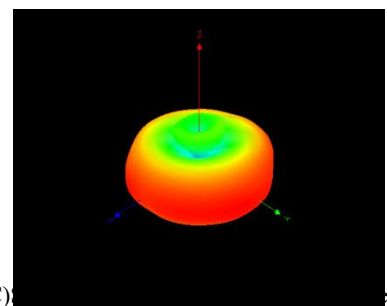
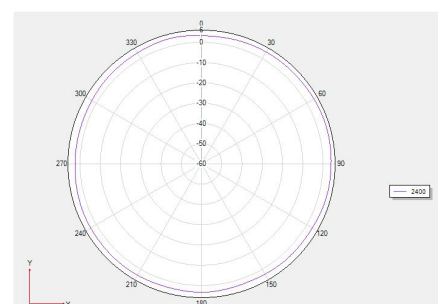
Phi =0 freq=2400MHz



Phi =90 freq=2400MHz

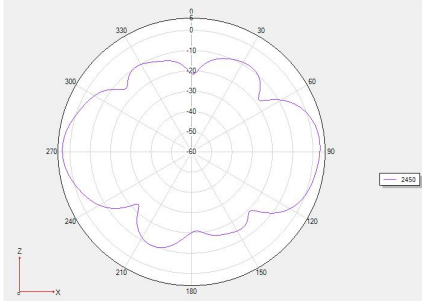


Theta =90 freq=2400MHz

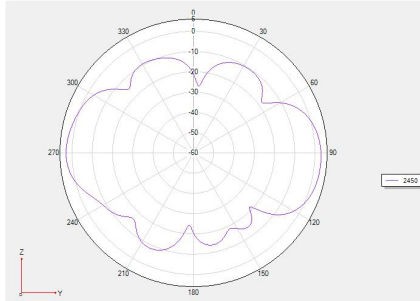




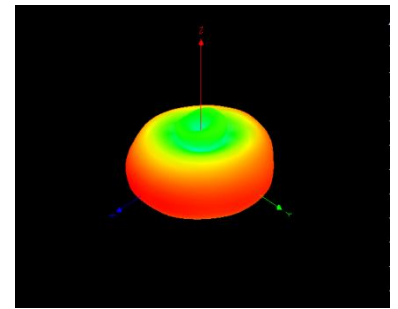
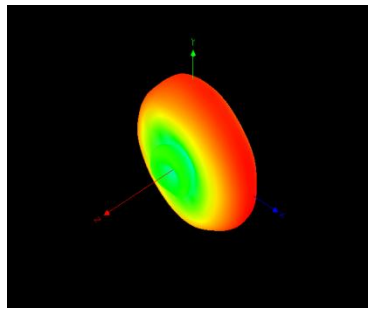
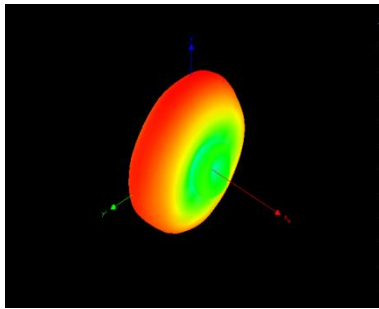
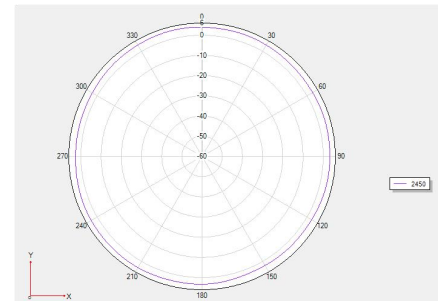
Phi =0 freq=2450MHz



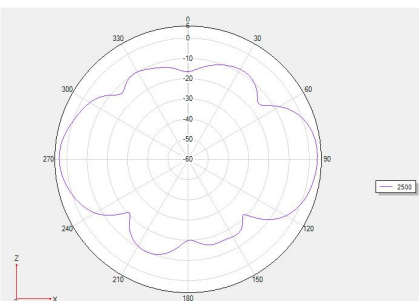
Phi =90 freq=2450MHz



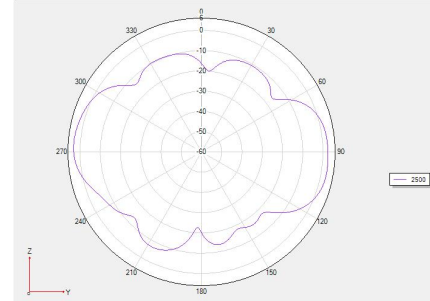
Theta =90 freq=2450MHz



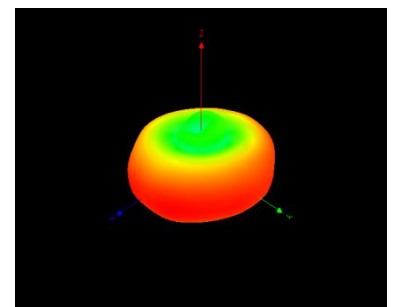
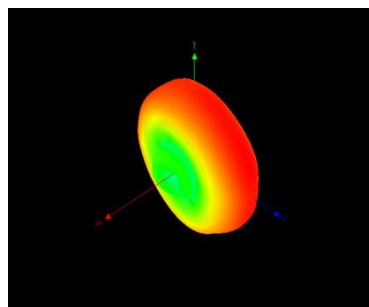
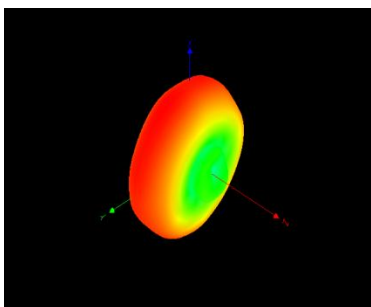
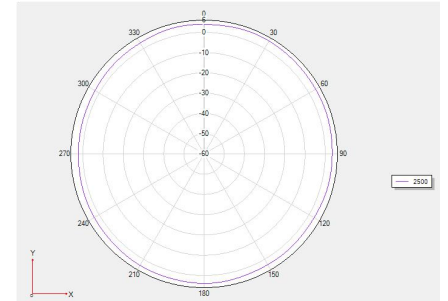
Phi =0 freq=2500MHz



Phi =90 freq=2500MHz



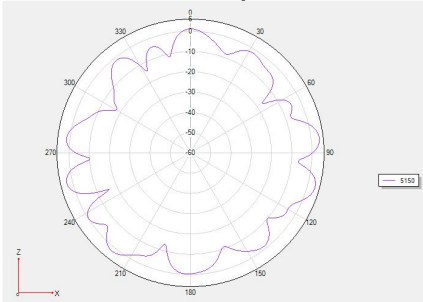
Theta =90 freq=2500MHz



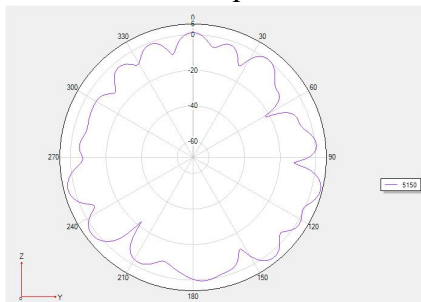
5.8GShort line		
5.8G		
Frequency / MHz	Gain/ dBi	Efficiency / %
5150	5.02	66.31
5550	4.98	65.85
5850	4.91	66.10

5.8GShort line 天线方向图-5.8G(Antenna direction diagram -5.8G)

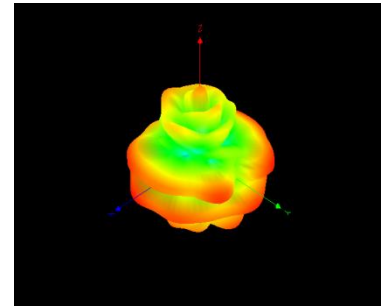
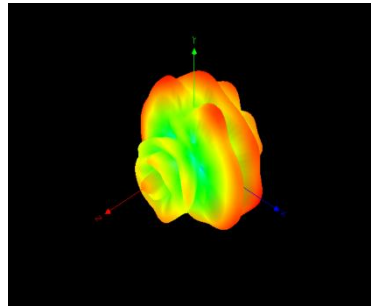
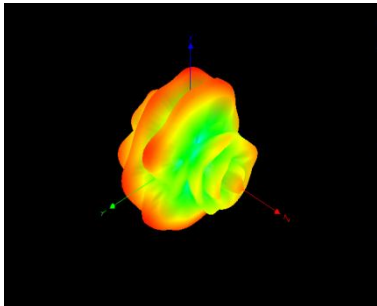
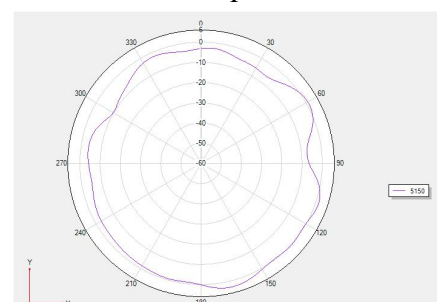
Phi =0 freq=5150MHz



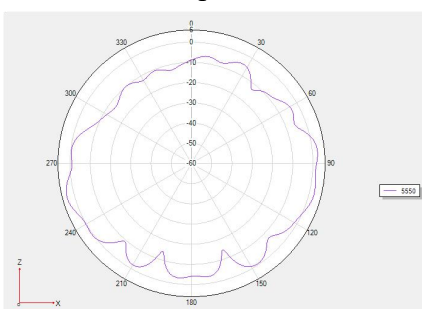
Phi =90 freq=5150MHz



Theta =90 freq=5150MHz



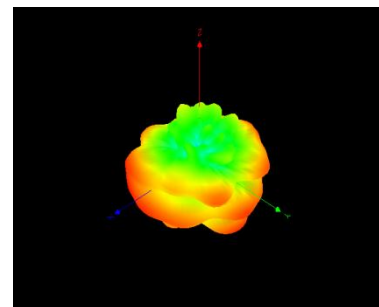
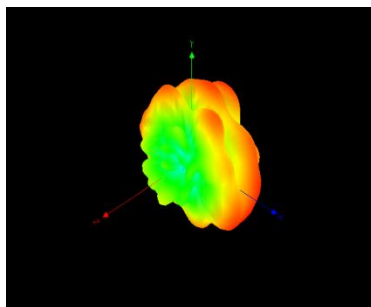
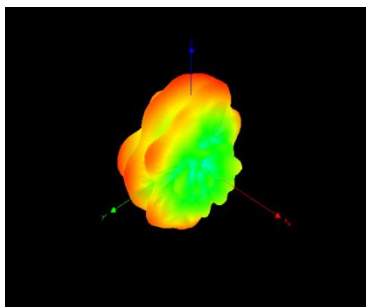
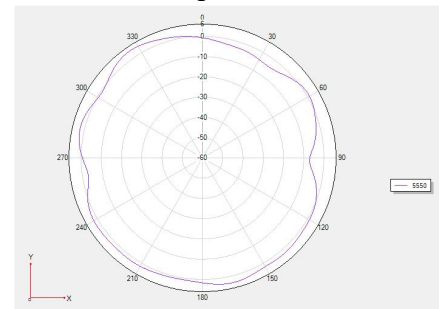
Phi =0 freq=5550MHz



Phi =90 freq=5550MHz

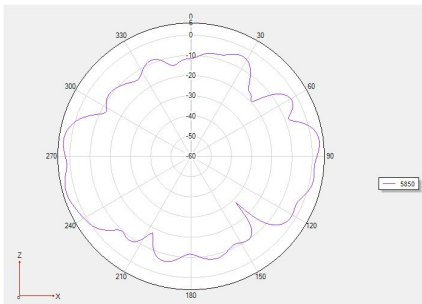


Theta =90 freq=5550MHz

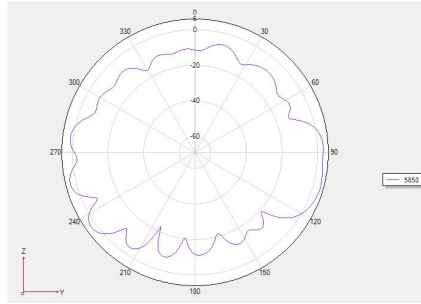




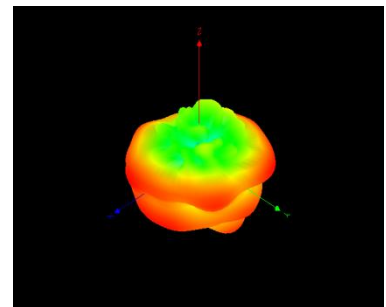
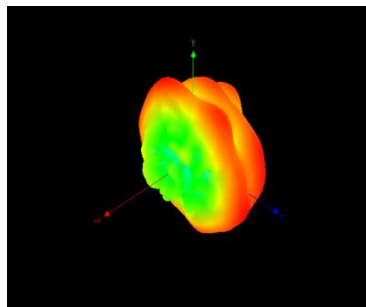
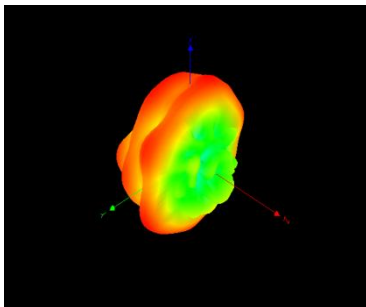
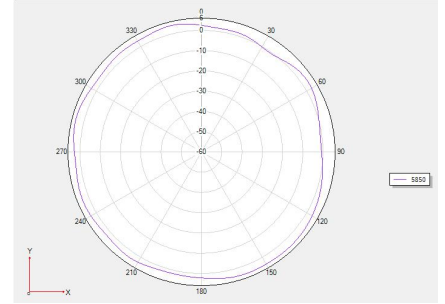
Phi =0 freq=5850MHz



Phi =90 freq=5850MHz



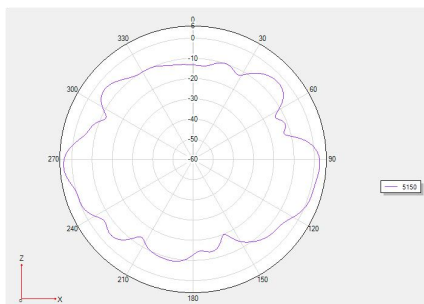
Theta =90 freq=5850MHz



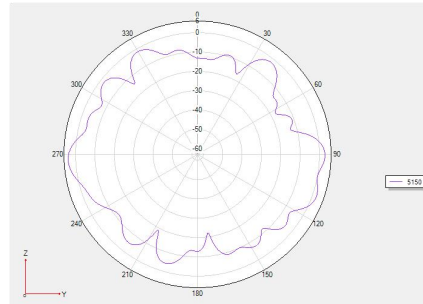
5.8G Long line		
5.8G		
Frequency / MHz	Gain/ dBi	Efficiency / %
5150	4.75	66.13
5550	5.04	65.32
5850	4.89	66.78

5.8G Long line 天线方向图-5.8G(Antenna direction diagram -5.8G)

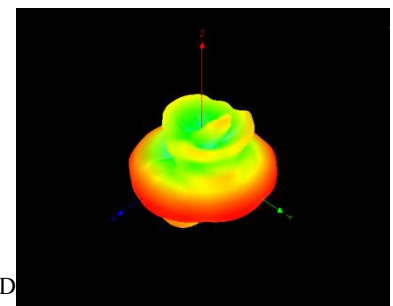
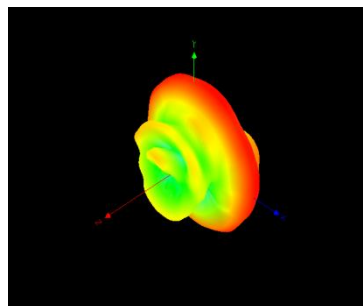
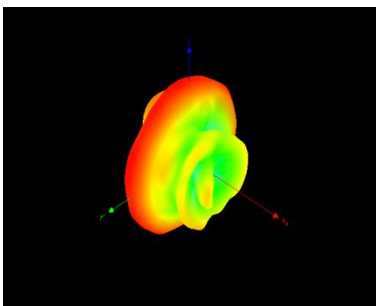
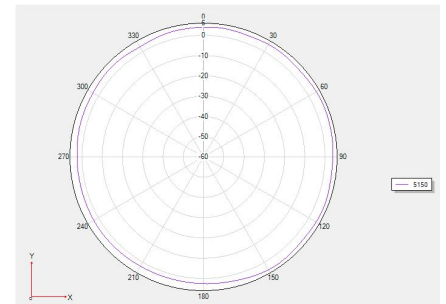
Phi =0 freq=5150MHz



Phi =90 freq=5150MHz

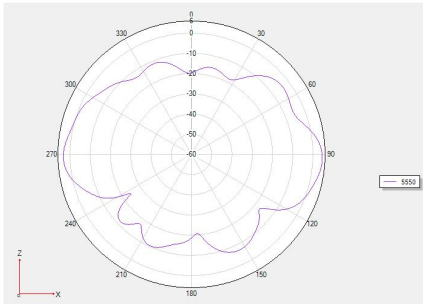


Theta =90 freq=5150MHz

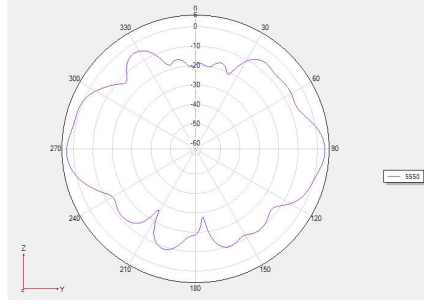


(C)SD

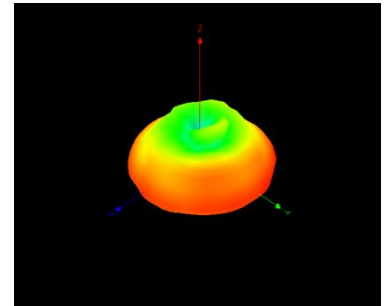
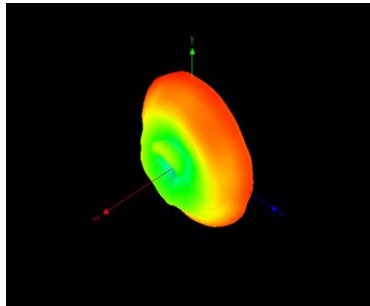
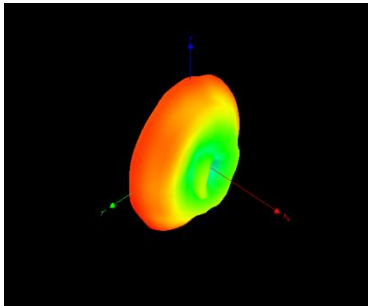
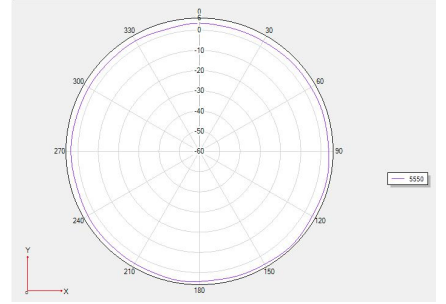
Phi =0 freq=5550MHz



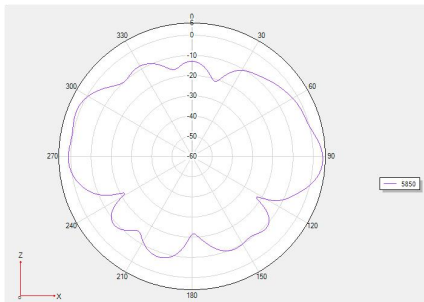
Phi =90 freq=5550MHz



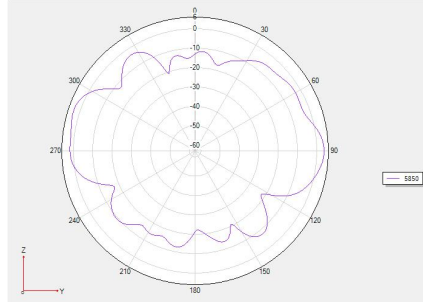
Theta =90 freq=5550MHz



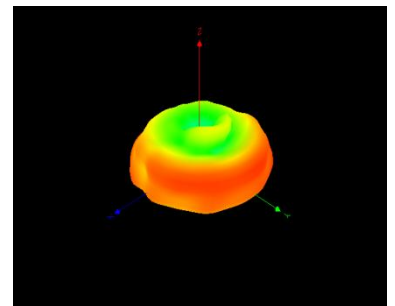
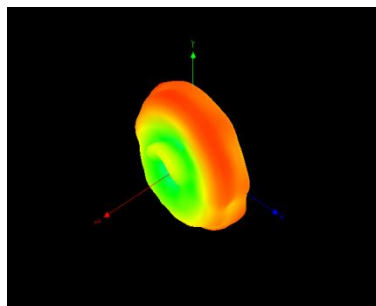
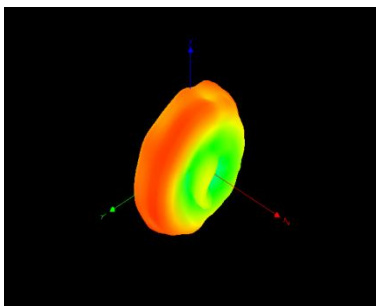
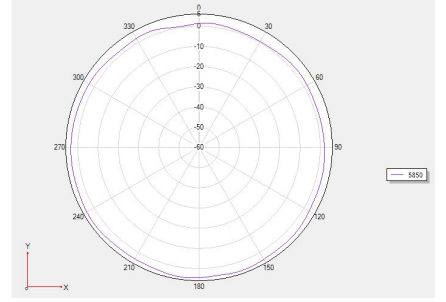
Phi =0 freq=5850MHz



Phi =90 freq=5850MHz



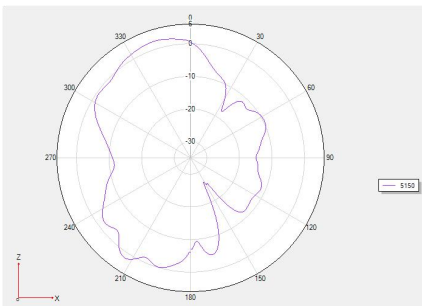
Theta =90 freq=5850MHz



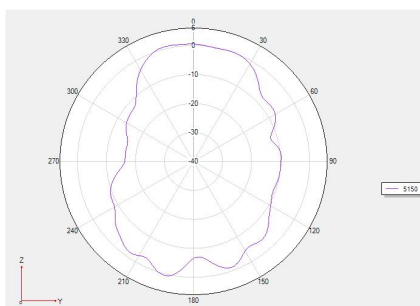
5.8GBuilt-in antenna		
5.8G		
Frequency / MHz	Gain/ dBi	Efficiency / %
5150	4.3	57.42
5550	4.49	54.83
5850	4.66	51.29

5.8GBuilt-in antenna 天线方向图-5.8G(Antenna direction diagram -5.8G)

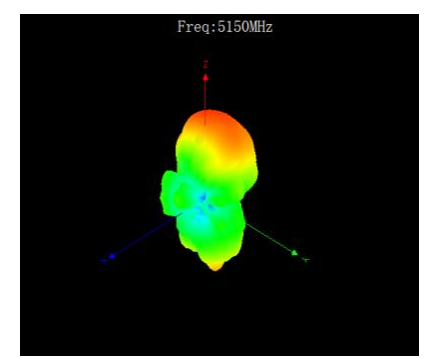
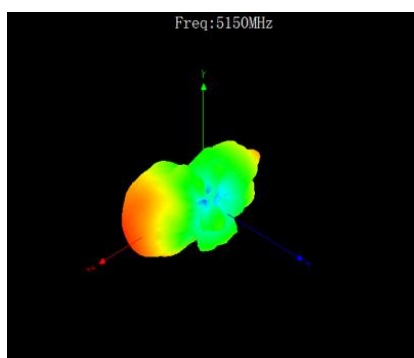
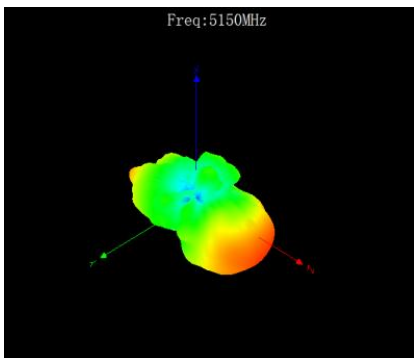
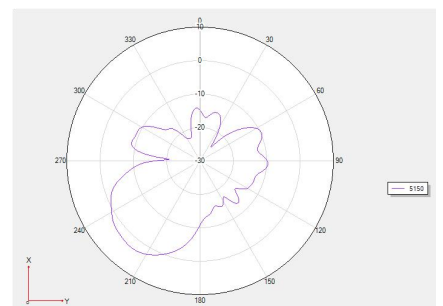
Phi =0 freq=5150MHz



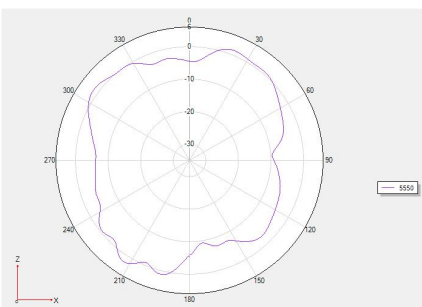
Phi =90 freq=5150MHz



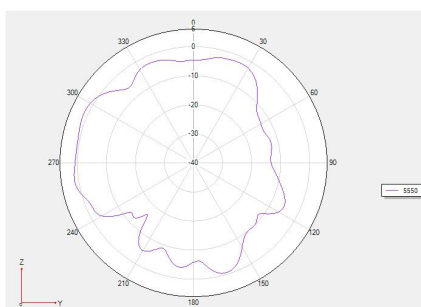
Theta =90 freq=5150MHz



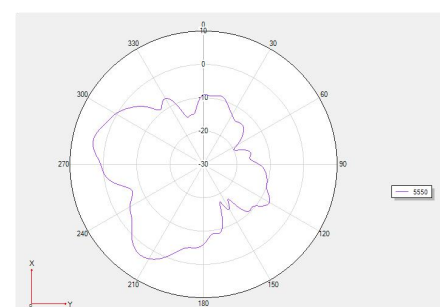
Phi =0 freq=5550MHz

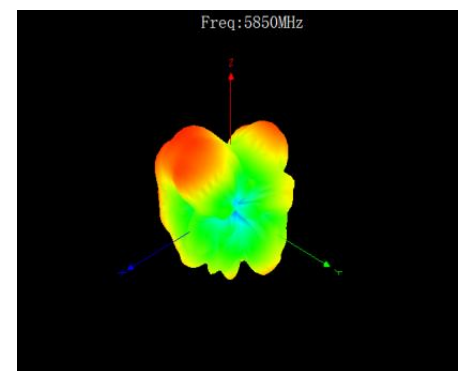
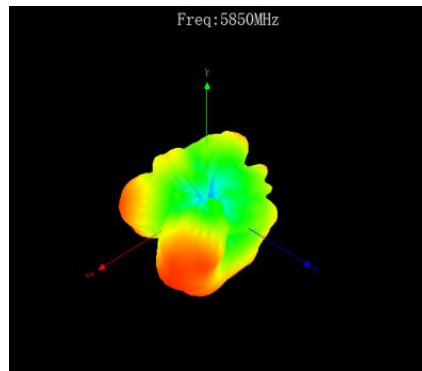
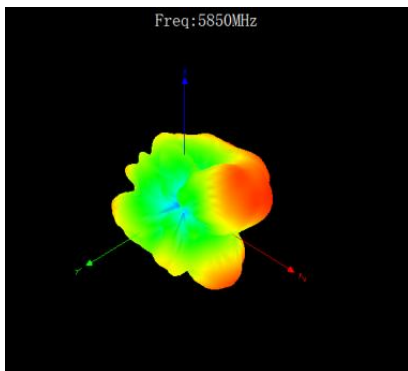
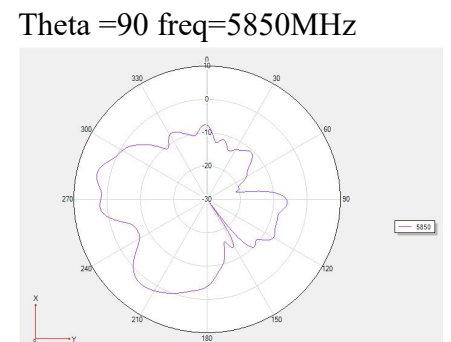
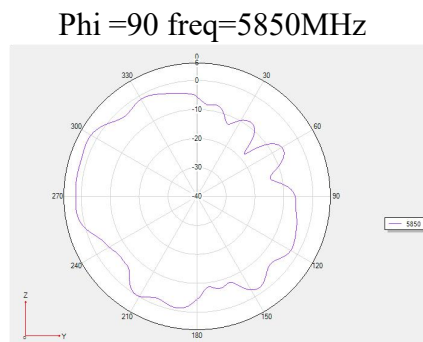
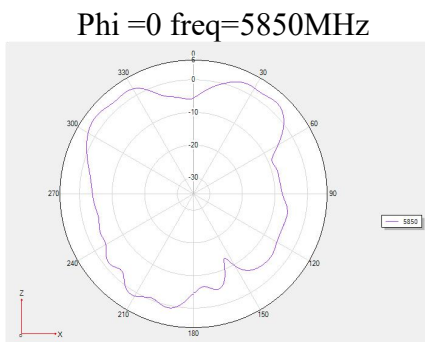
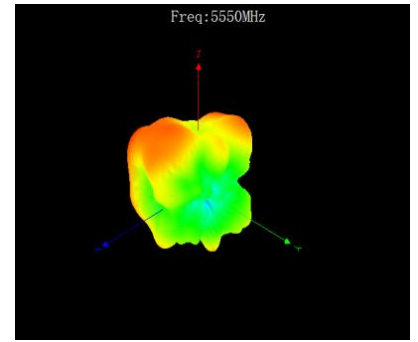
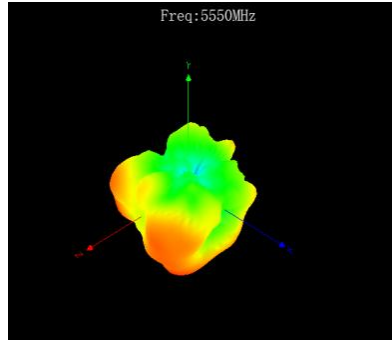
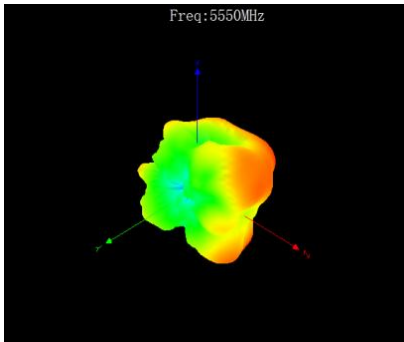


Phi =90 freq=5550MHz



Theta =90 freq=5550MHz

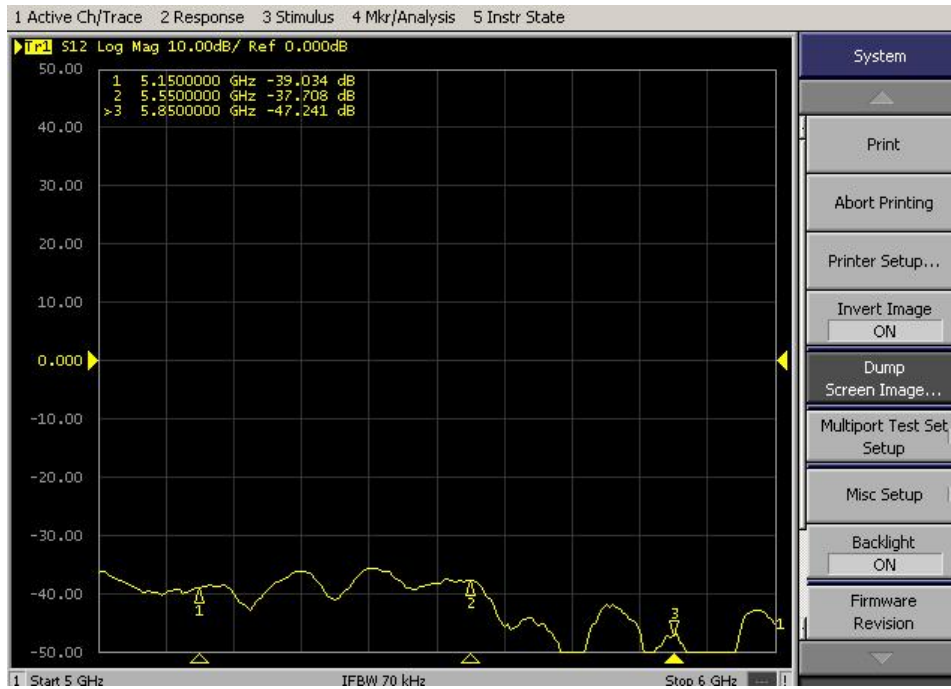




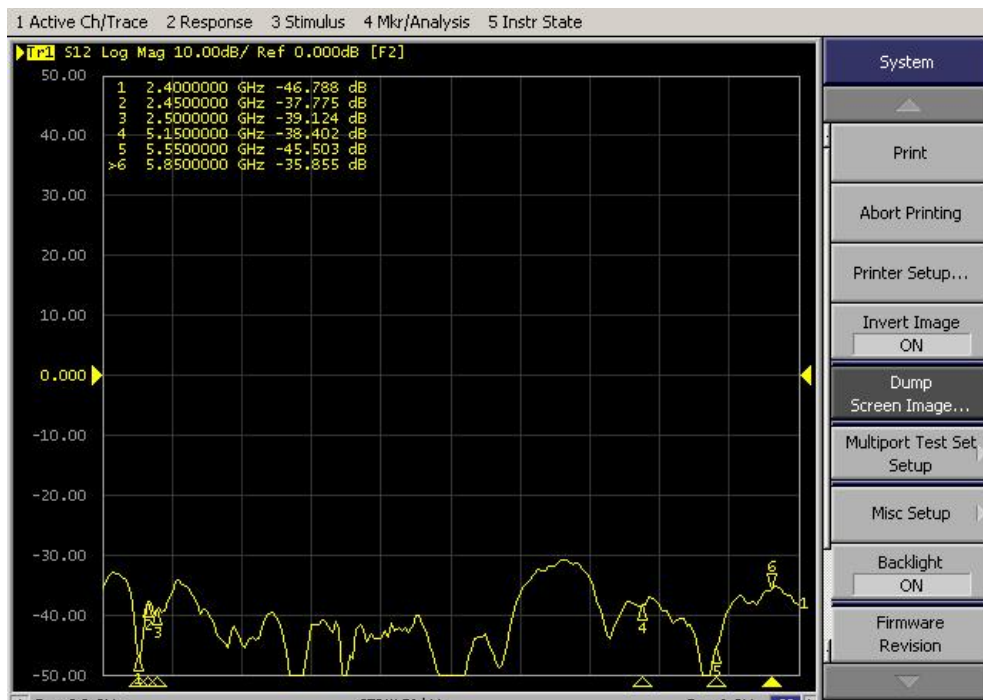
3.1.3 Antenna isolation

Test tools: network analyzer: (E5017B)

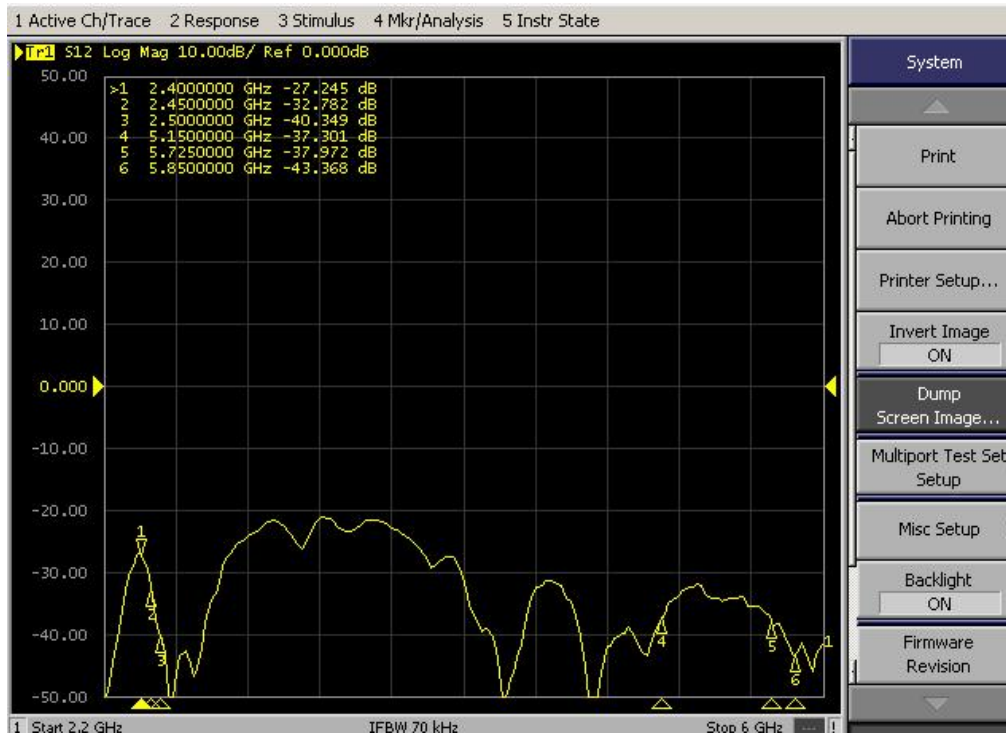
Standard: Isolation $\leq$ -20dB



5.8G 长线--5.8G 短线 隔离度(5.8G(Long line)- 5.8G(Short line) isolation)



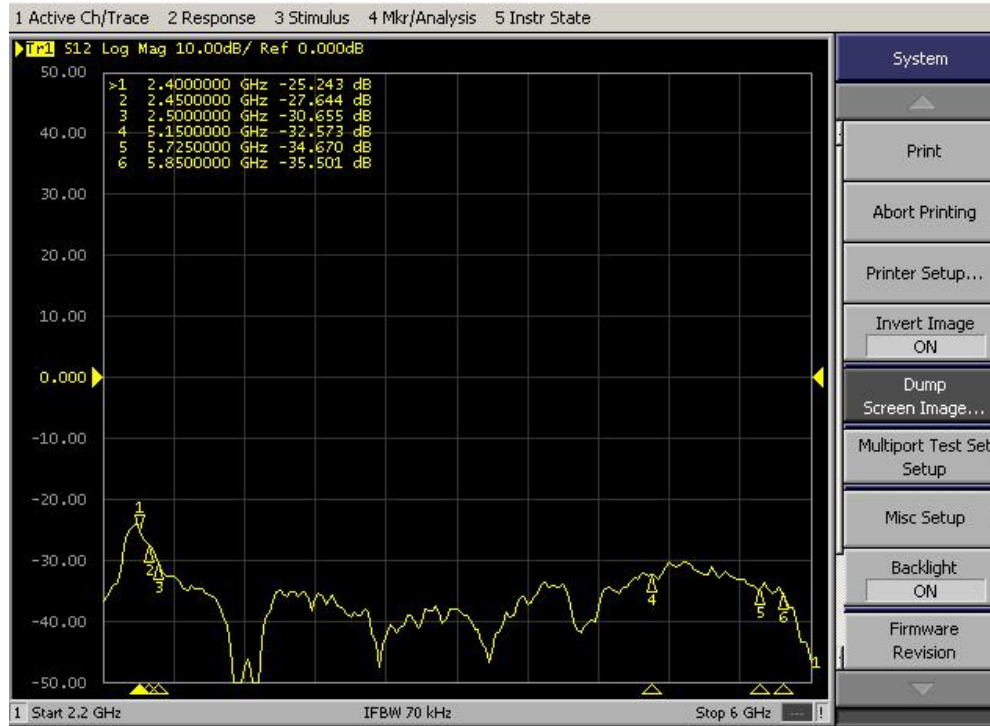
5.8G 长线--5.8G 内置 隔离度(5.8G (Long line) - 5.8G (built-in) isolation)



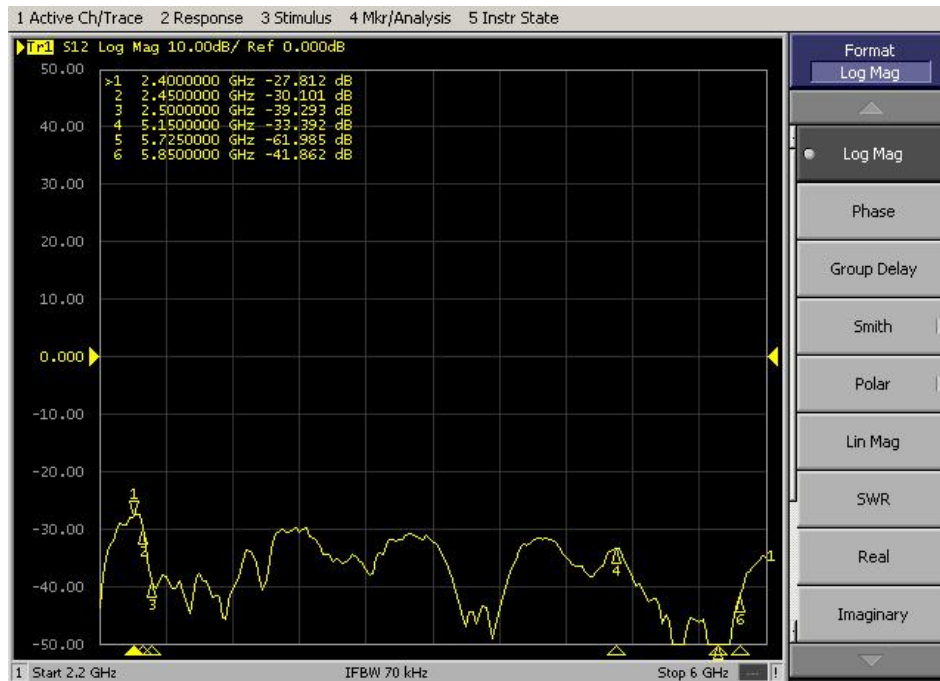
5.8G 长线--2.4G 长线 隔离度(5.8G (Long line) - 2.4G (Long line) isolation)



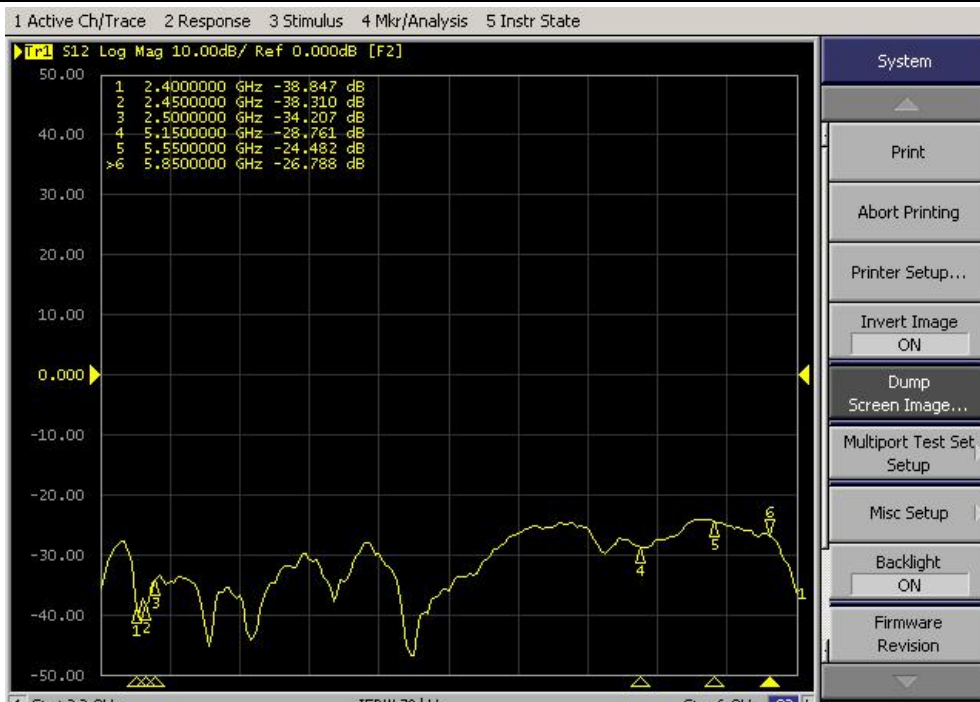
5.8G 长线--2.4G 短线 隔离度(5.8G(Long line)- 2.4G(Short line) isolation)



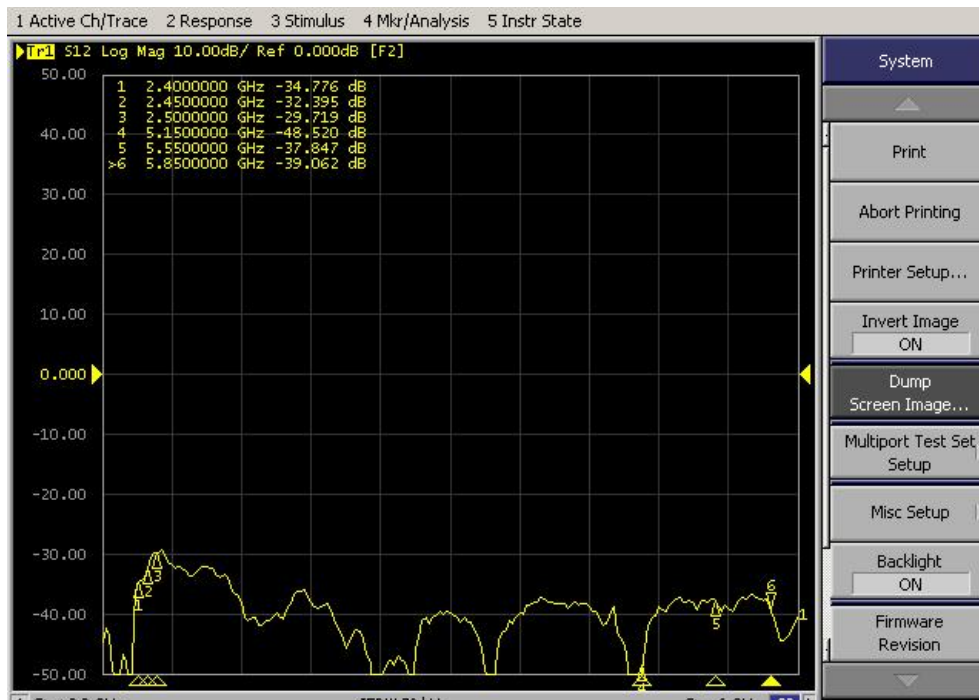
5.8G 短线--2.4G 长线 隔离度(5.8G(Short line)- 2.4G(Long line) isolation)



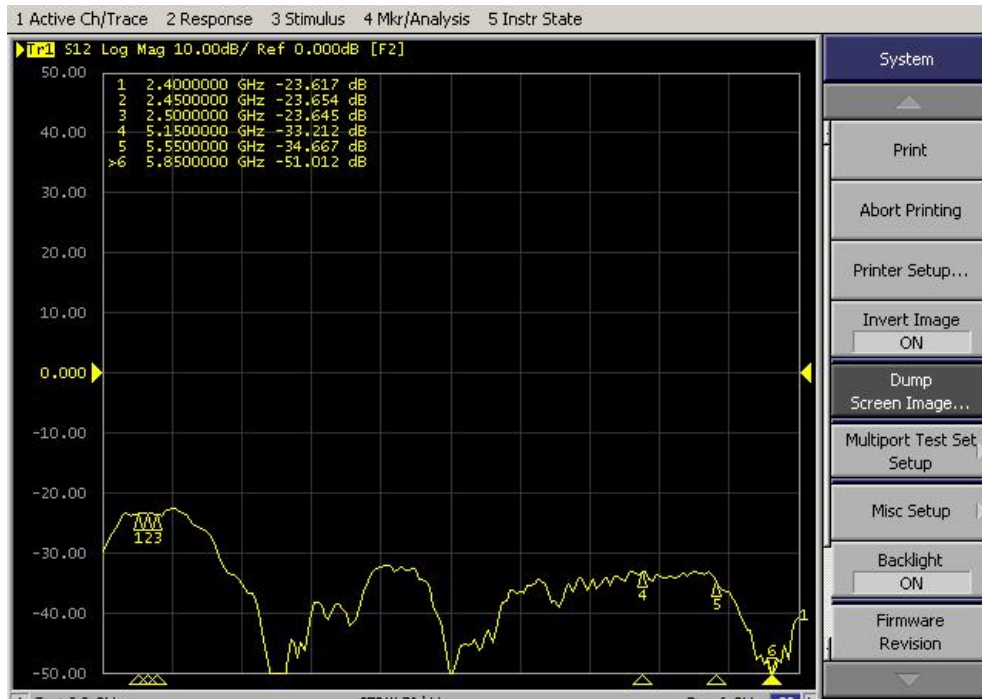
5.8G 短线--2.4G 短线 隔离度(5.8G(Short line)- 2.4G(Short line) isolation)



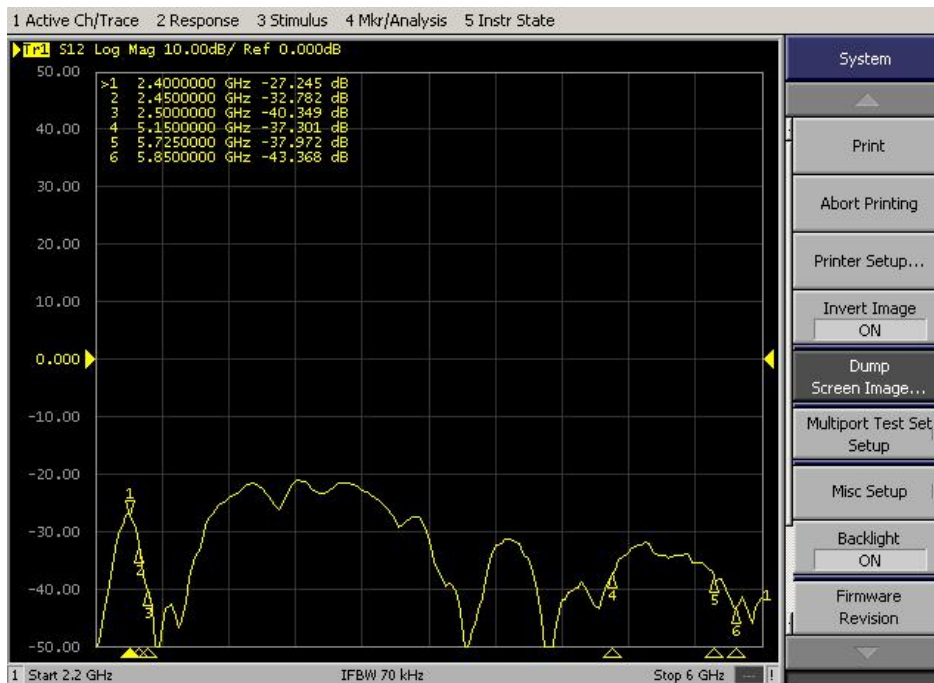
5.8G 短线--5.8G 内置 隔离度(5.8G(built-in)- 5.8G(Center line) isolation)



5.8G 内置--2.4G 长线 隔离度(5.8G(built-in)- 2.4G(Center line) isolation)



5.8G 内置--2.4G 短线 隔离度(5.8G(built-in)- 2.4G(Center line) isolation)



2.4G 长线--2.4G 短线 隔离度(2.4G(Long line)- 2.4G(Short line) isolation)

3.2 Antenna active test

Test tools: Microwave Anechoic Chamber+ROHDE&SCHWARZ CMW 500

Standard: As shown in the table

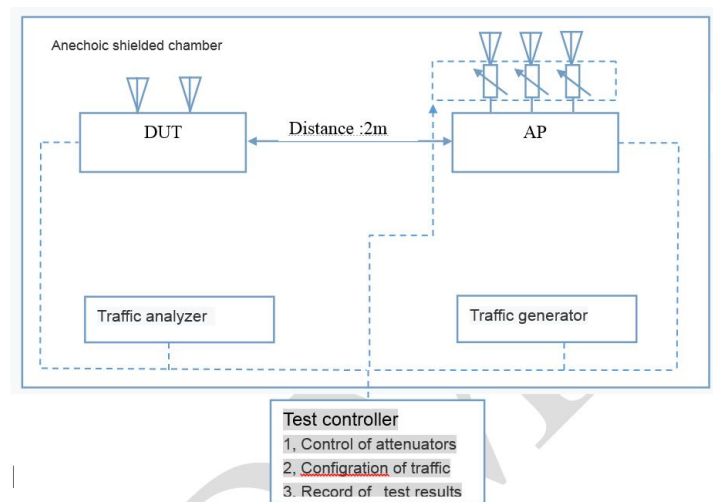
Testing Environment: Same as passive test

OTA active test data statistics:

Item	Measurement	Band	Channel	Frequency	Total
1	TRP	WIFI_AX_ISM (135M)	1	2412	20.74
2	TRP	WIFI_AX_ISM (135M)	6	2437	21.54
3	TRP	WIFI_AX_ISM (135M)	11	2462	21.77
4	TIS(EIRP)	WIFI_AX_ISM (135M)	1	2412	-62.87
5	TIS(EIRP)	WIFI_AX_ISM (135M)	6	2437	-59.85
6	TIS(EIRP)	WIFI_AX_ISM (135M)	11	2462	-59.41
7	TRP	WIFI_AX_UNII (135M)	36	5180	24.47
8	TRP	WIFI_AX_UNII (135M)	149	5745	22.6
9	TRP	WIFI_AX_UNII (135M)	165	5825	22.86
10	TIS(EIRP)	WIFI_AX_UNII (135M)	36	5180	-64.85
11	TIS(EIRP)	WIFI_AX_UNII (135M)	149	5745	-60.7
12	TIS(EIRP)	WIFI_AX_UNII (135M)	165	5825	-61.11

4.Throughput Test

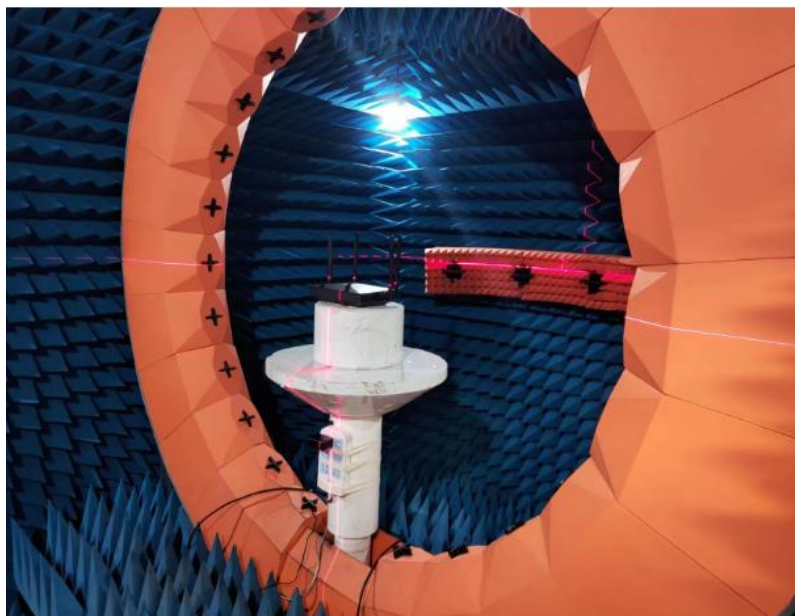
4.1 Test Setup



1. The test setup SHALL locate in the anechoic shielded chamber.
2. A Traffic Generator/Analyzer, sending the Ethernet packets, connects to the LAN interface of the AP. The peer AP antenna is located in 1.5M meter to the DUT.
3. Additional attenuation is added in each RF chain of AP to simulate the incremental distance.
4. The host SHALL send the Ethernet packet at the maximum rate which the DUT can achieve theoretically.
5. TCP connection SHALL be used for Ethernet packet transmission in the test.

4.2 Testing Environment





4.3 Test data



WiFi throughput
test record table.;