



Antenna Test Report

天线调试报告

Customer Name(客户名称) : 安克

Project Name (项目名称) : D4112

Date (日期) : 2024. 03. 28

R & D Engineer (研发) : 莫振文

Directory(目录)

1.Company Introduction(公司简介)	3p
2.Project Overview(项目概况)	4p
3.Antenna Information(天线信息)	5p
4.Antenna Impedance Matching(天线阻抗匹配)	6p
5.Antenna Passive(天线无源相关数据)	7-12p
6.Antenna Radiation Pattern(天线辐射方向图)	13-19p
7.Summary总结	20p



公司简介

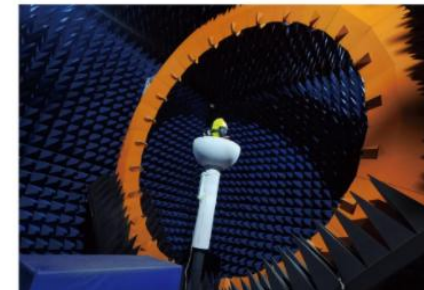
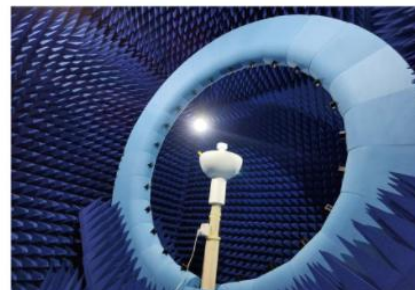
爱特恩科技（深圳）有限公司成立于2016年，公司位于深圳市，是一家专业的通讯电子产品配件的解决方案提供商和制造商。集天线研发、生产、销售于一体的高新科技企业。

公司主要从事与开发安防类、智能家居类的电子产品。目前拥有3座微波暗室、模拟人头手测试、网络分析仪等。

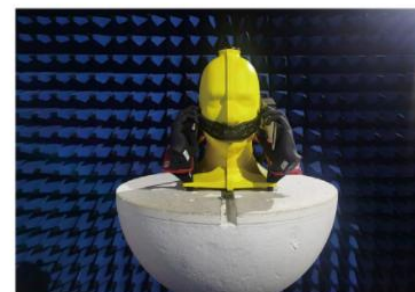
我们致力与客户建立长期稳定的商业合作关系，始终坚持“顾客至上，锐意进取”的经营理念，为我们的客户提供最具竞争力的价格，最好的质量和优质的服务。



专注品质 | 质量第一 | 共赢未来



拥有SATIMO原装实验室7M*5M*5M的24探头一座
 盖表3.5MX3.5MX3.5M的24探头一座
 频率范围均为400MHZ-8.5GHZ
 2/3/4/5G、
 WIFI A/B/G/N/AC/AX
 BT
 GPS
 NB-10T等有源测试，
 拥有模拟人头手测试设备



拥有AGILENT5071系列网络分析仪、AGILENT8960、RS CM W500、4438C等终端测试设备,提供天线性能测试。

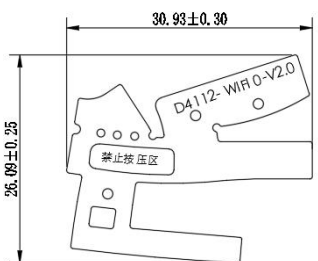


● D4112_Project Overview(项目概况)

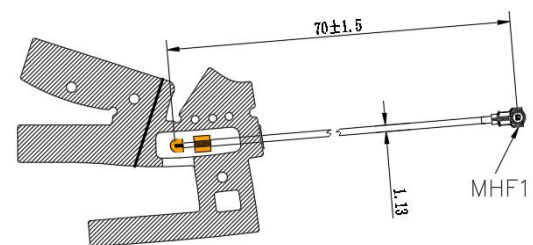
Prototype status (样机状态)	DVT
product type (产品类型)	Projector(投影仪)
Number of antennas (天线数量)	3pcs
Antenna frequency band (天线频段)	WIFI 0 802.11 a/b/g/n
	WIFI 1 802.11 a/b/g/n
	BT
structural style (结构形式)	FPC+CABLE线
environmental treatment (环境处理)	No changes (未做改动)
matching circuit (匹配电路)	No changes (未做改动)



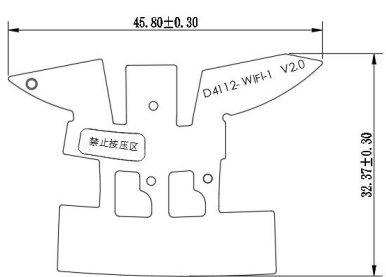
● D4112_Antenna Information(天线信息)



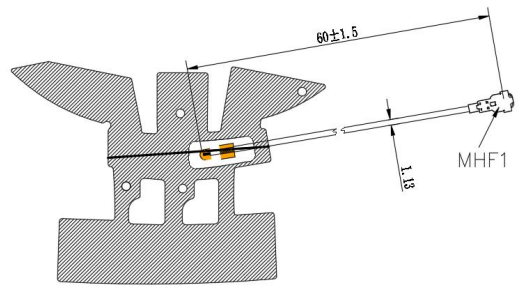
TOP



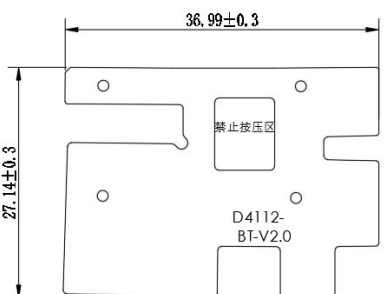
BOTTOM



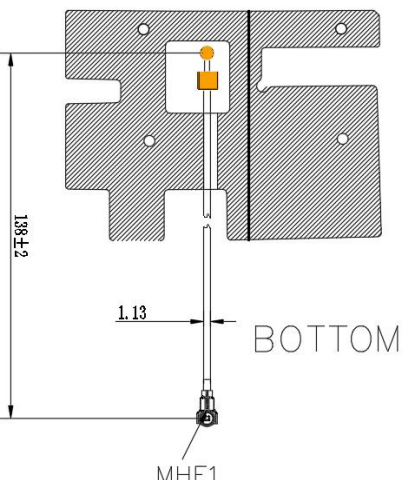
TOP



BOTTOM



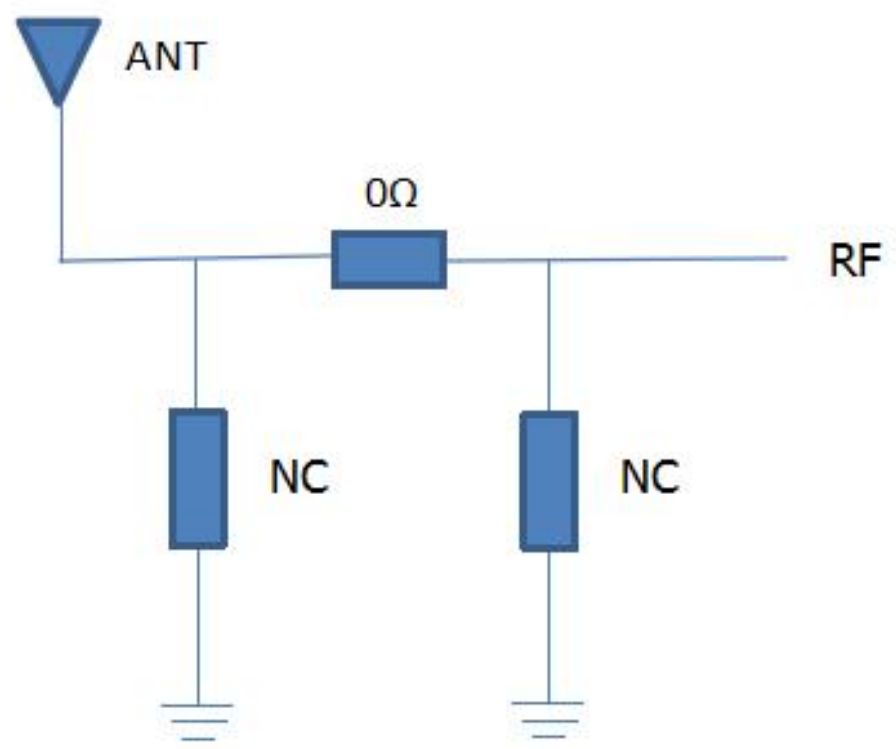
TOP



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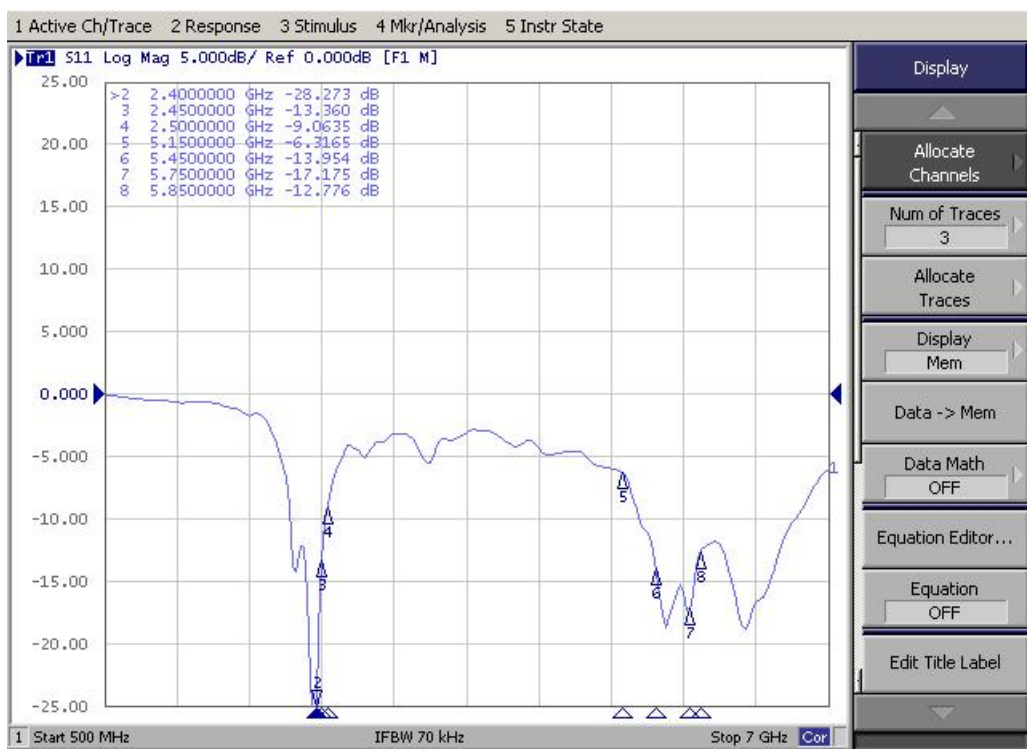
● D4112_Antenna Impedance Matching(天线阻抗匹配)

- 1. No changes were made to the matching of the three antennas(三个天线匹配均无更改)。

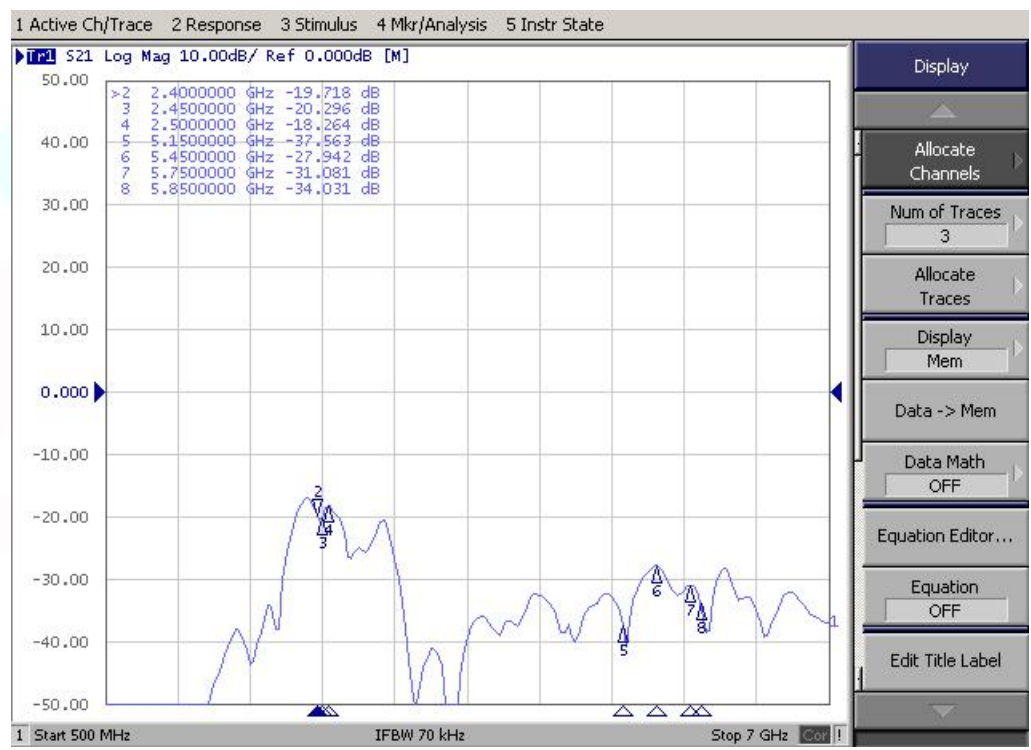


● D4112_WIFI 0_S11/VSWR (无源驻波比)

WIFI 0 antenna_VSWR (WIFI 0天线_VSWR)

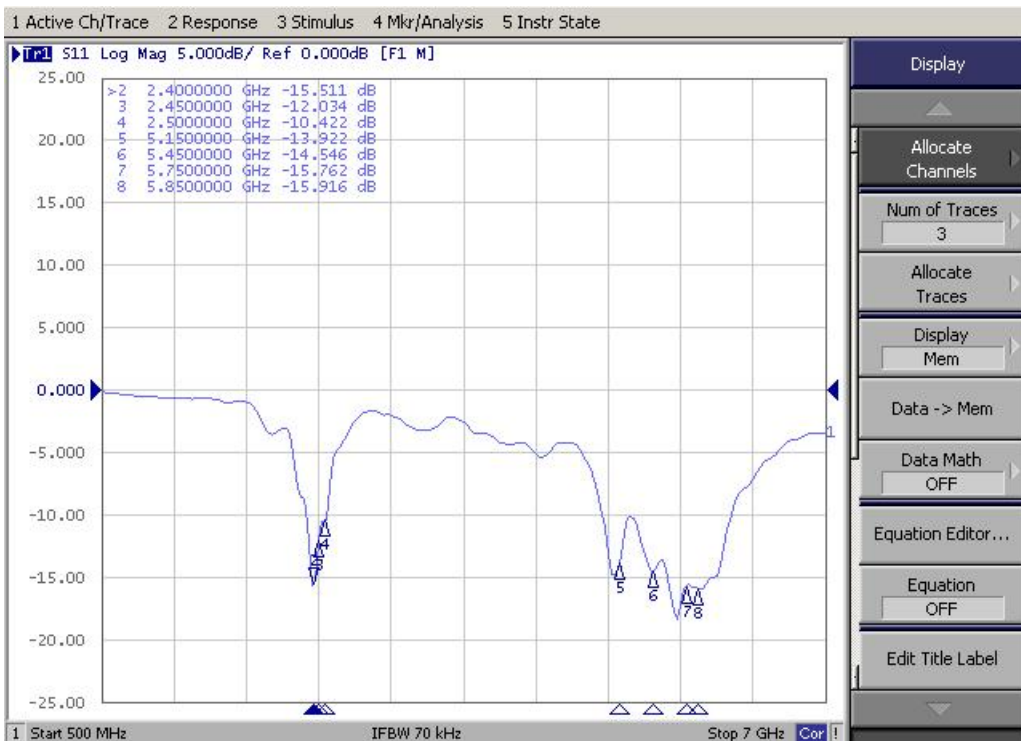


Isolation between WIFI 0 antenna and WIFI 1 antenna (WIFI 0天线与WIFI 1天线隔离度)

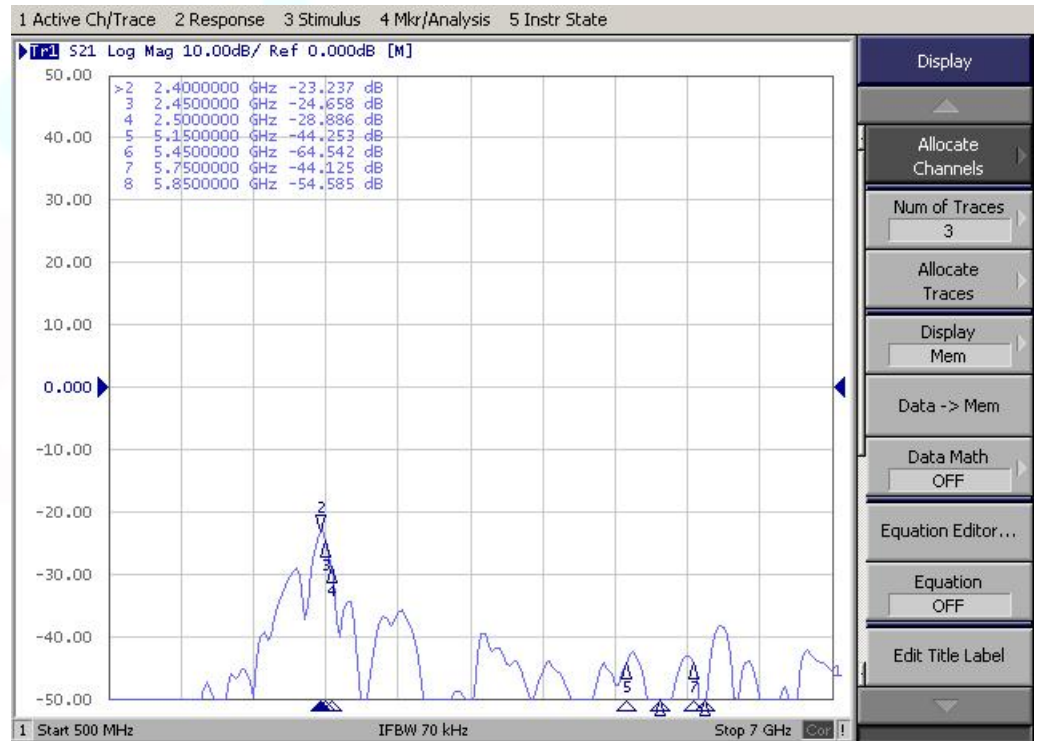


● D4112_WIFI 1_S11/VSWR (无源驻波比)

WIFI 1 antenna_VSWR (WIFI 1天线_VSWR)

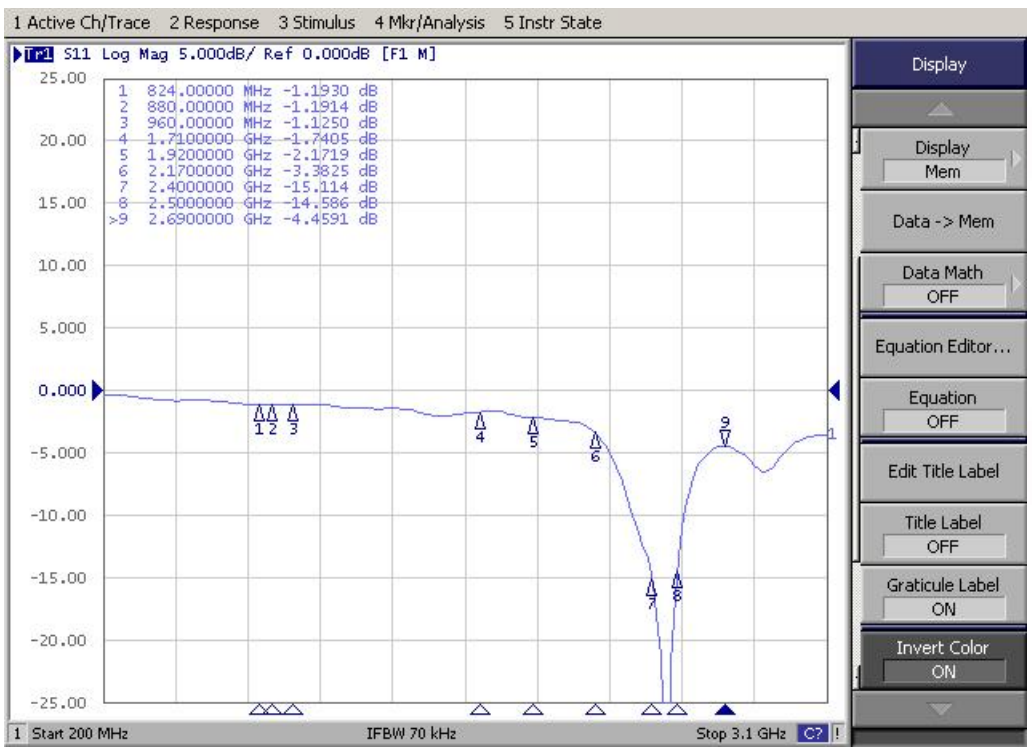


Isolation between WIFI 1 antenna and BT antenna (WIFI 1天线与BT天线隔离度)

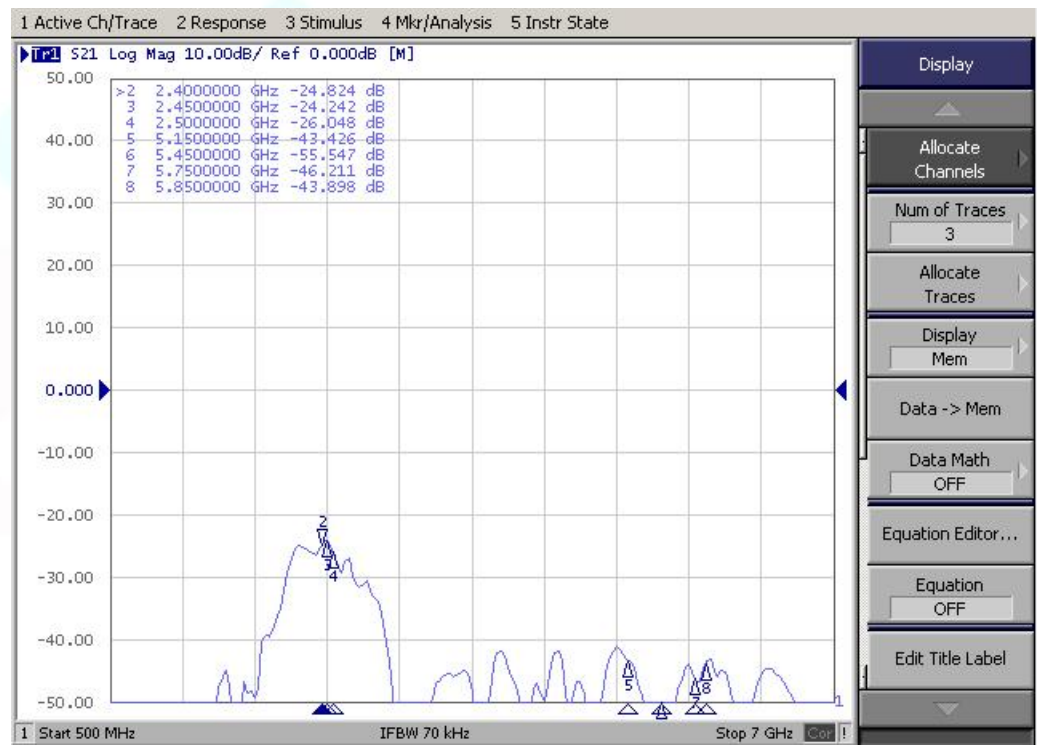


● D4112_BT_S11/VSWR (无源驻波比)

BT antenna_VSWR (BT天线_VSWR)



Isolation between WIFI 0 antenna and BT antenna (WIFI 0天线与BT天线隔离度)



● D4112 _WIFI 0_Efficiency & Gain (无源效率和增益)

2.4G

(2.4G) PassiveTestResults(无源测试结果)

Frequency (MHz)	Efficiency (%)	Efficiency (dB)	Max Gain (dBi)
2400	61.68%	-2.10	2.86
2420	63.27%	-1.99	2.88
2440	61.94%	-2.08	2.89
2460	64.24%	-1.92	3.05
2480	62.91%	-2.01	3.08
2500	62.41%	-2.05	3.05
AVG:	62.74%	-2.03	2.97

5G

(5G) PassiveTestResults(无源测试结果)

Frequency (MHz)	Efficiency (%)	Efficiency (dB)	Max Gain (dBi)
5150	42.69%	-3.70	3.08
5200	43.95%	-3.57	2.77
5250	47.69%	-3.22	4.13
5300	50.50%	-2.97	4.64
5350	49.98%	-3.01	4.46
5400	50.63%	-2.96	4.56
5450	54.11%	-2.67	4.87
5500	56.21%	-2.50	5.15
5550	54.22%	-2.66	4.67
5600	51.40%	-2.89	4.46
5650	54.13%	-2.67	4.93
5700	54.89%	-2.61	5.24
5750	54.83%	-2.61	4.98
5800	53.75%	-2.70	3.71
5850	56.16%	-2.51	2.63
5900	54.15%	-2.66	2.95
AVG:	51.83%	-2.87	4.20

● D4112 _WIFI 1_Efficiency & Gain (无源效率和增益)

2.4G

(2.4G) PassiveTestResults(无源测试结果)			
Frequency (MHz)	Efficiency (%)	Efficiency (dB)	Max Gain (dBi)
2400	51.86%	-2.85	2.20
2420	49.27%	-3.07	2.16
2440	47.29%	-3.25	1.66
2460	46.06%	-3.37	1.28
2480	45.52%	-3.42	0.87
2500	45.75%	-3.40	1.10
AVG:	47.62%	-3.23	1.54

5G

(5G) PassiveTestResults(无源测试结果)			
Frequency (MHz)	Efficiency (%)	Efficiency (dB)	Max Gain (dBi)
5150	44.19%	-3.55	2.96
5200	41.91%	-3.78	2.19
5250	43.18%	-3.65	2.85
5300	46.73%	-3.30	3.33
5350	48.99%	-3.10	3.46
5400	47.51%	-3.23	2.92
5450	48.24%	-3.17	2.44
5500	50.34%	-2.98	2.27
5550	51.87%	-2.85	2.53
5600	54.17%	-2.66	2.96
5650	56.58%	-2.47	2.93
5700	55.25%	-2.58	2.29
5750	55.32%	-2.57	2.77
5800	56.41%	-2.49	3.46
5850	61.17%	-2.13	3.75
5900	61.98%	-2.08	3.73
AVG:	51.49%	-2.91	2.93

● D4112 _BT_Efficiency & Gain (无源效率和增益)

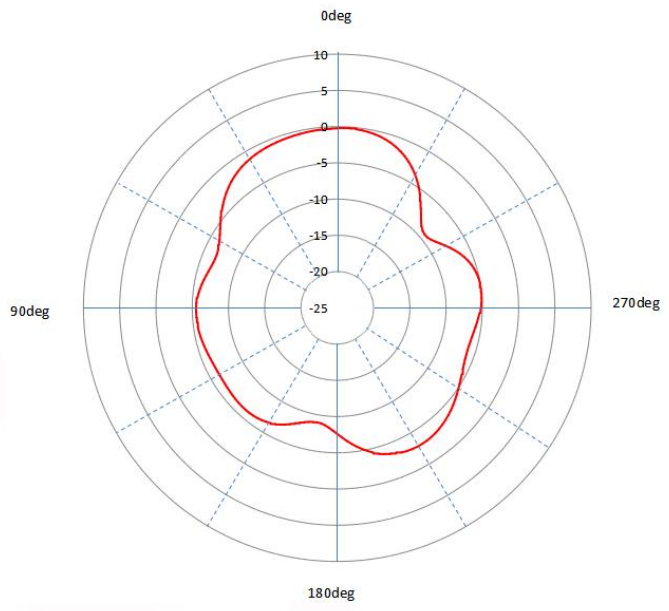
(2.4G) Passive Test Results(无源测试结果)			
Frequency (MHz)	Efficiency (%)	Efficiency (dB)	Max Gain (dBi)
2400	31.21%	-5.06	-1.41
2410	33.02%	-4.81	-1.26
2420	34.01%	-4.68	-1.23
2430	35.02%	-4.56	-1.06
2440	35.76%	-4.47	-1.11
2450	36.70%	-4.35	-1.31
2460	36.79%	-4.34	-1.39
2470	36.10%	-4.42	-1.31
2480	35.75%	-4.47	-1.10
2490	36.54%	-4.37	-0.81
2500	36.78%	-4.34	-0.64
AVG:	35.24%	-4.53	-1.15



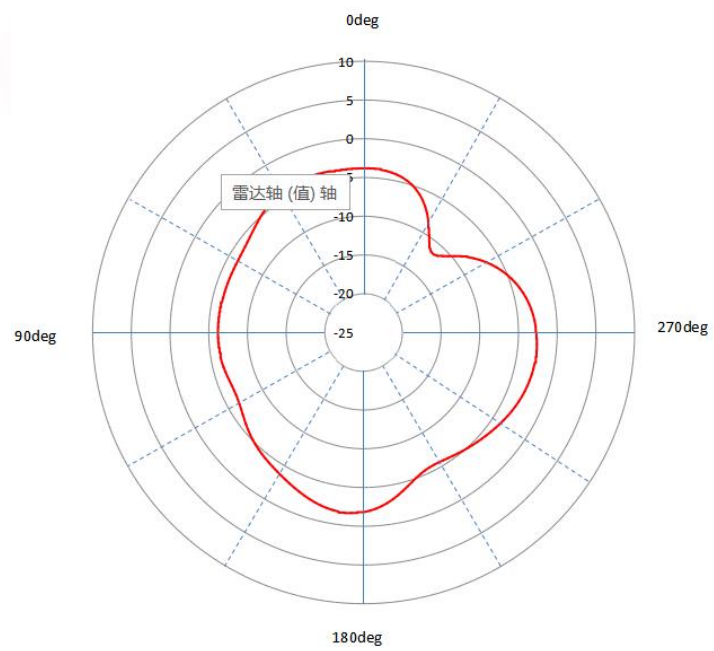
D4112_2.4G_2D Antenna Radiation Pattern(2D 天线辐射方向图)

- 1. The horizontal direction is the X-Y plane of the legend (水平方向为图例X-Y面)。

WIFI 0

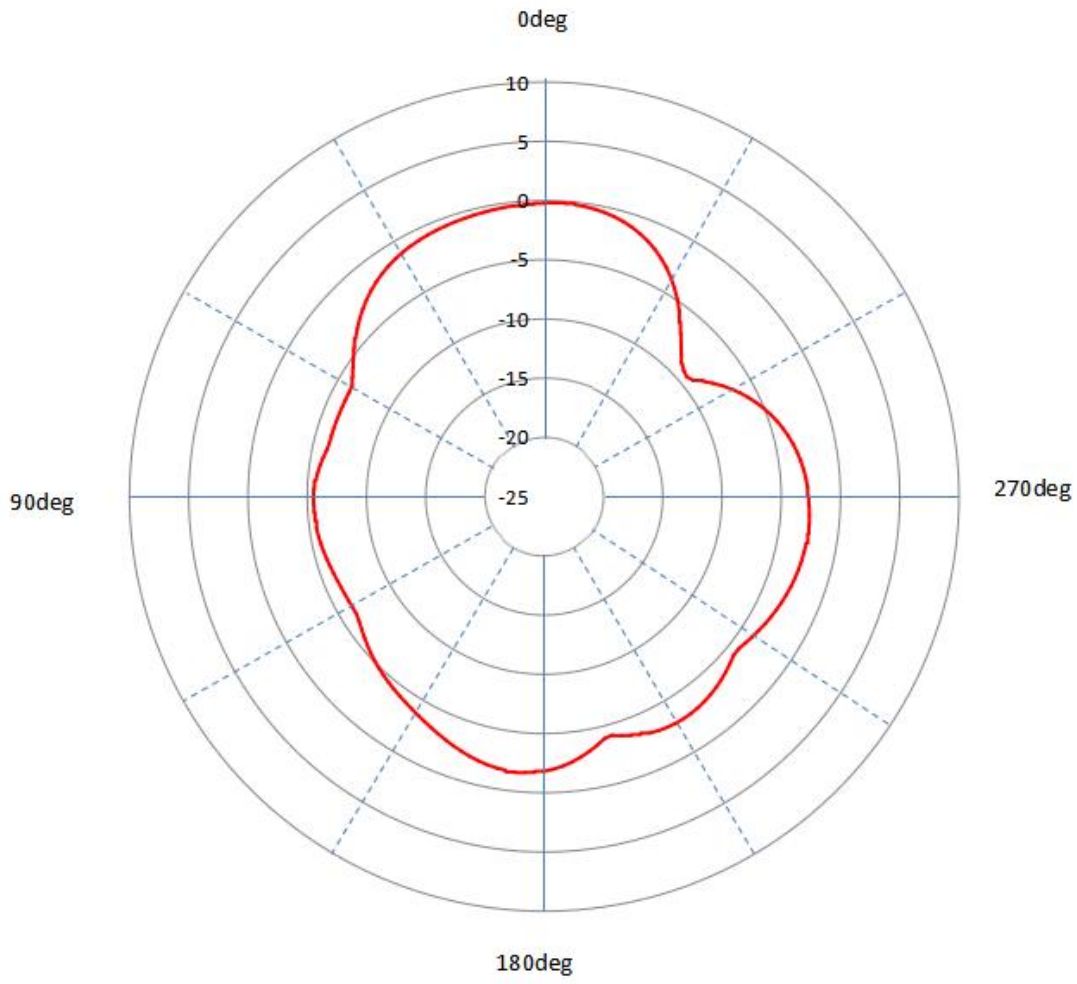


WIFI 1



● D4112_2.4G_2D Synthetic Direction Map(2D 合成方向图)

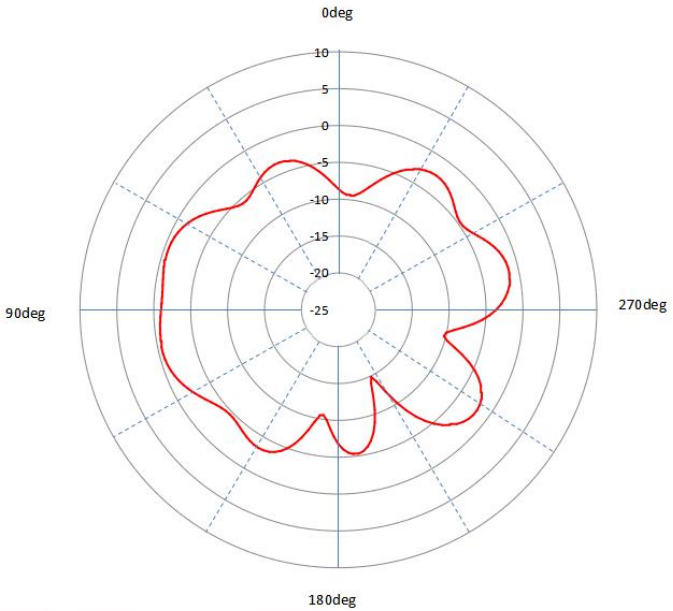
- 1. The horizontal direction is the X-Y plane of the legend(水平方向为图例X-Y面)。
- 2. The minimum value is -9.27(最小值为-9.27)。



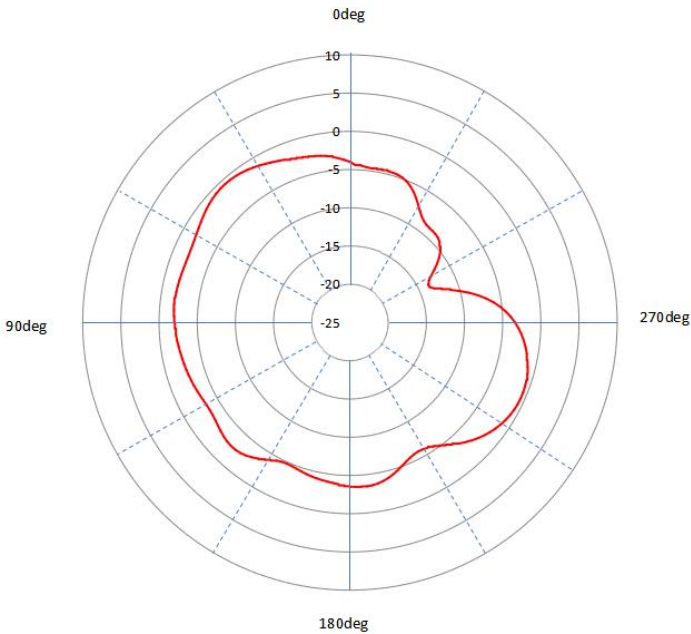
D4112_5G_2D Antenna Radiation Pattern(2D 天线辐射方向图)

- 1. The horizontal direction is the X-Y plane of the legend (水平方向为图例X-Y面)。

WIFI 0

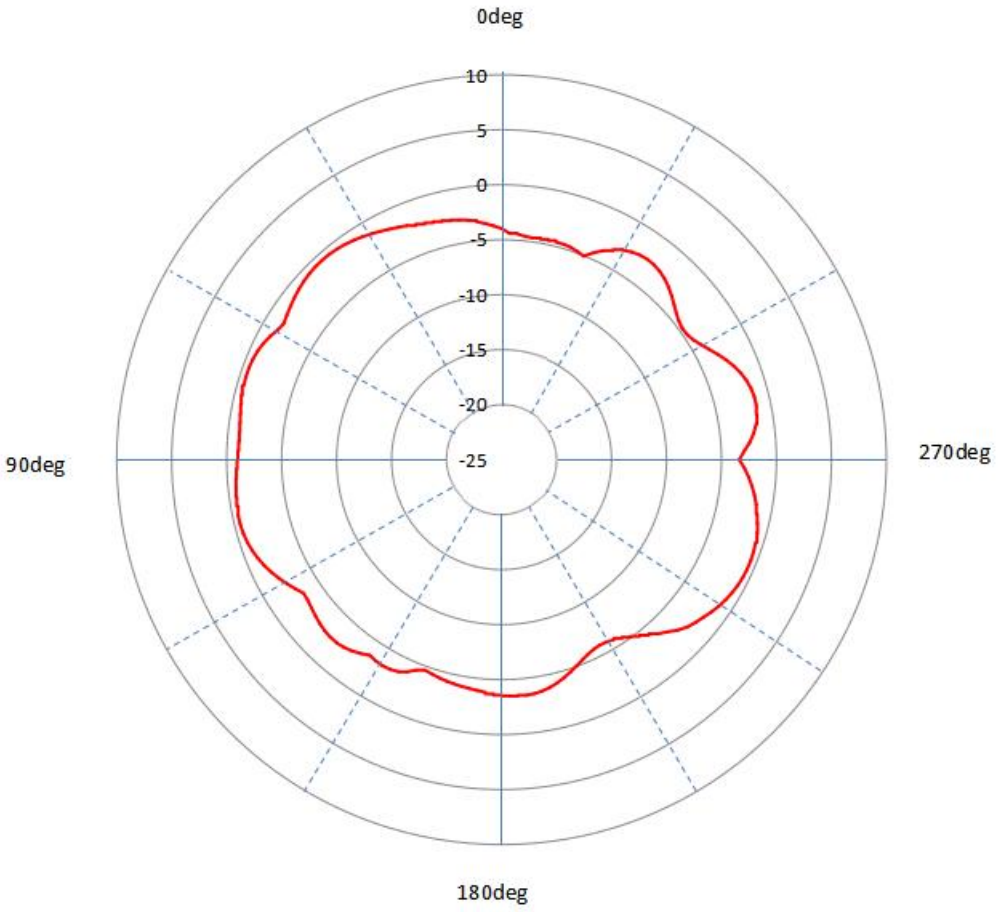


WIFI 1



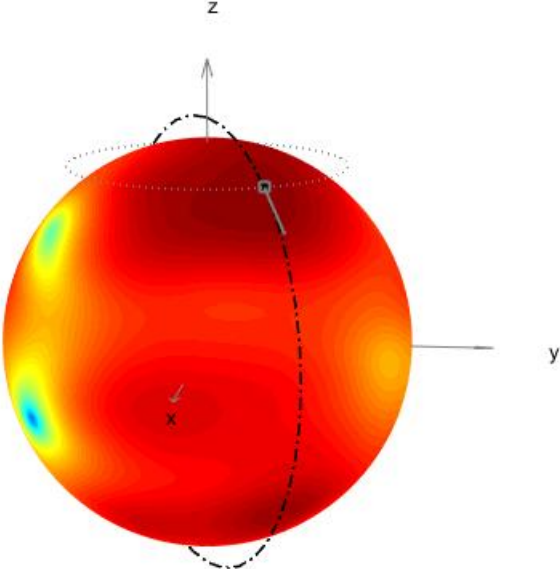
D4112_5G_2D Synthetic Direction Map(2D 合成方向图)

- 1. The horizontal direction is the X-Y plane of the legend(水平方向为图例X-Y面)。
- 2. The minimum value is -5.92(最小值为-5.92)。

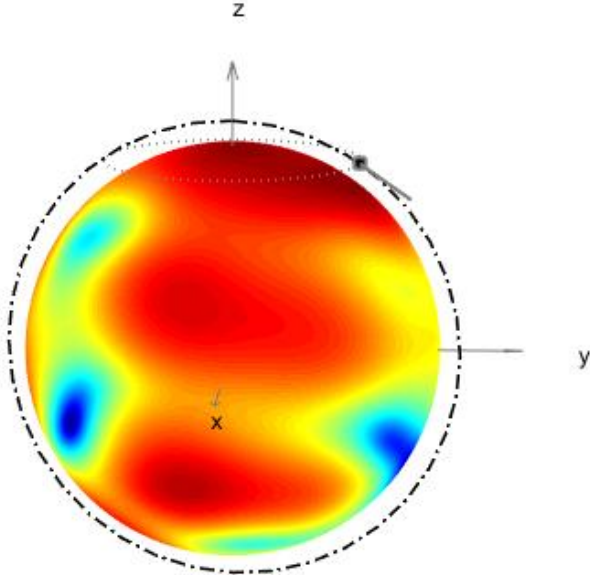


● D4112 _2.4G_ 3D Antenna Radiation Pattern(3D 天线辐射方向图)

WIFI 0 -2460MHz

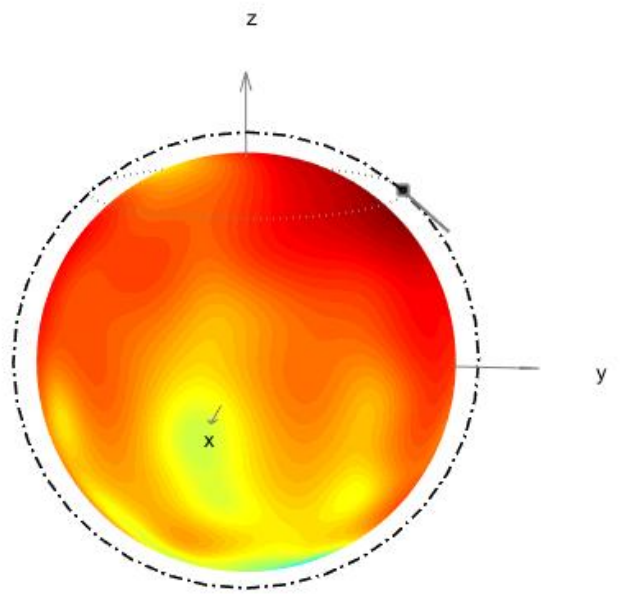


WIFI 1 -2460MHz

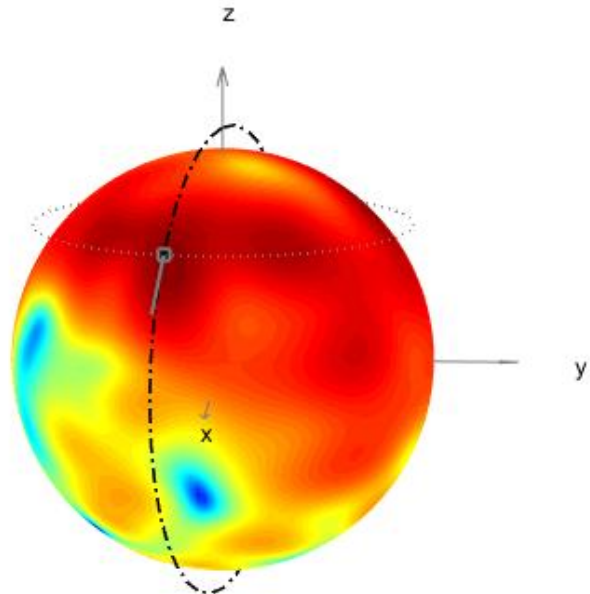


● D4112 _5G_ 3D Antenna Radiation Pattern(3D 天线辐射方向图)

WIFI 0 -5500MHz



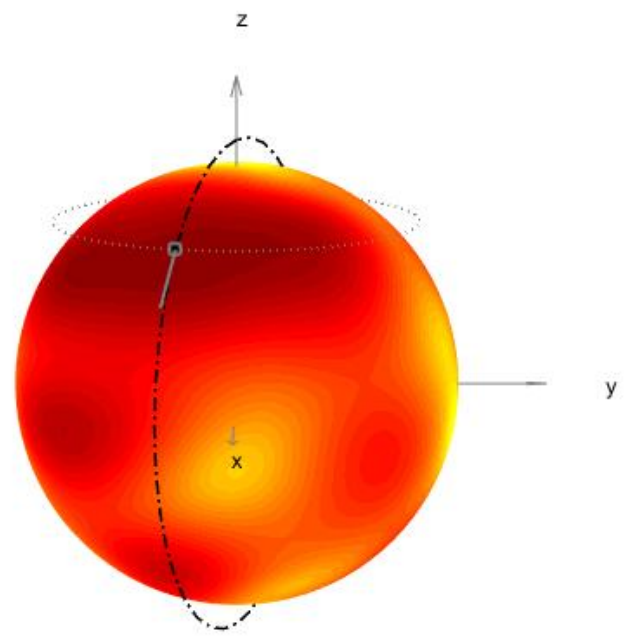
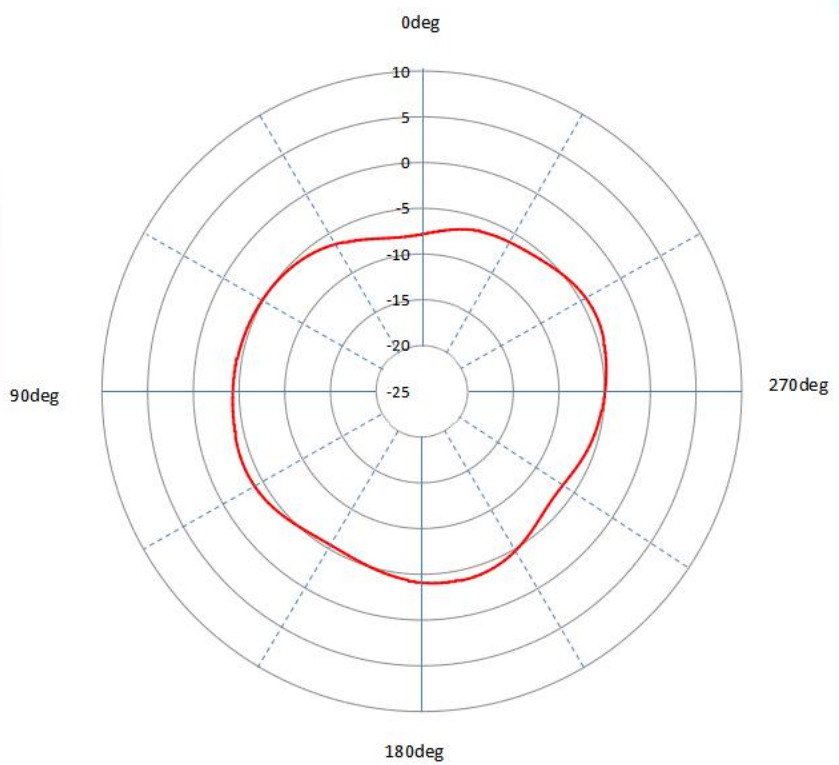
WIFI 1 -5500MHz



D4112_BT Antenna Radiation Pattern(天线辐射方向图)

- 1. The horizontal direction is the X-Y plane of the legend(水平方向为图例X-Y面)。
- 2. The minimum value is -7.97(最小值为-7.97)。

BT-2450MHz



● D4112 _Summary(总结)

- 1.The antenna matching has not changed, and the antenna performance is basically up to standard(天线匹配无更改，天线性能基本达标)。
2. During assembly, pay attention to the position of the FPC sticker and follow the instructions, as well as ensure consistency in the placement of the coaxial line and good grounding(组装时注意FPC贴的位置按标示进行作业，以及注意同轴线摆放一致性和接地的良好)。

***** (If there are any changes to the machine, please notify our company; if there are any problems, please communicate promptly) *****

***** (如果机器有变化，请通知我司；如果有任何问题，请及时沟通) *****

Thank You!!