



Antenna Test Report

天线调试报告

Customer Name(客户名称): 安克

Project Name (项目名称): D2351

Date (日期): 2024. 12. 09

R & D Engineer (研发): 莫振文

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公司简介

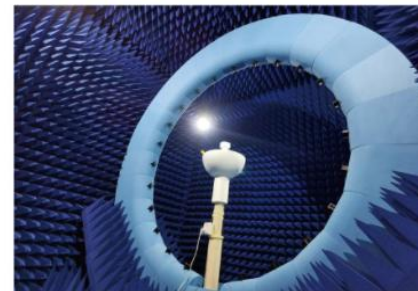
爱特恩科技（深圳）有限公司成立于2016年，公司位于深圳市，是一家专业的通讯电子产品配件的解决方案提供商和制造商。集天线研发、生产、销售于一体的高新科技企业。

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。

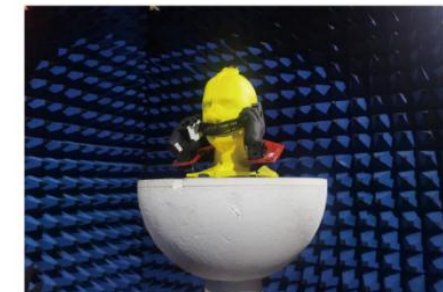
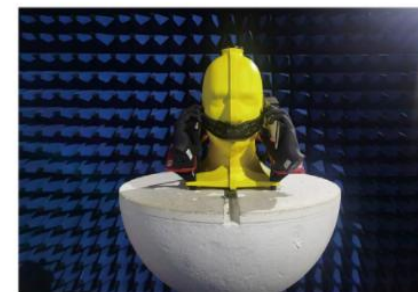
我们致力与客户建立长期稳定的商业合作关系，始终坚持“顾客至上，锐意进取”的经营理念，为我们的客户提供最具竞争力的价格，最好的质量和优质的服务。

AT&C

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
 益麦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



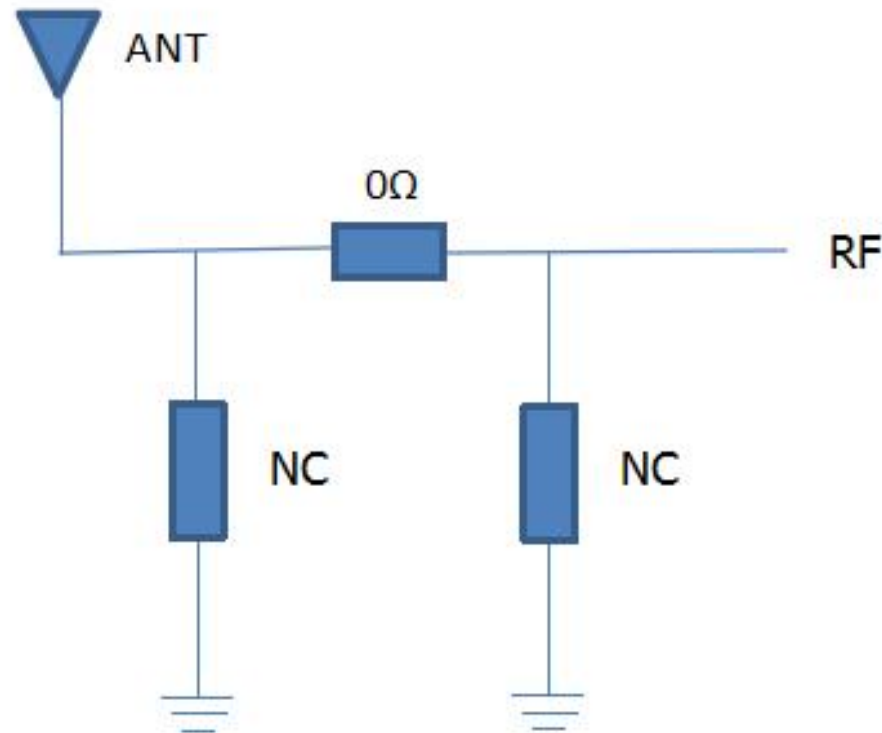
拥有AGILENT5071系列网络分析仪、AGILENT8960、RS CM W500、4438C等终端测试设备，提供天线性能测试。

● D2351_Project Overview(项目概况)

Prototype status (样机状态)	EVT
product type (产品类型)	Projector(投影仪)
Number of antennas (天线数量)	4pcs
Antenna frequency band (天线频段)	WIFI0 802.11 a/b/g/n
	WIFI1 802.11 a/b/g/n
	WIFI2 802.11 a BLE
	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)

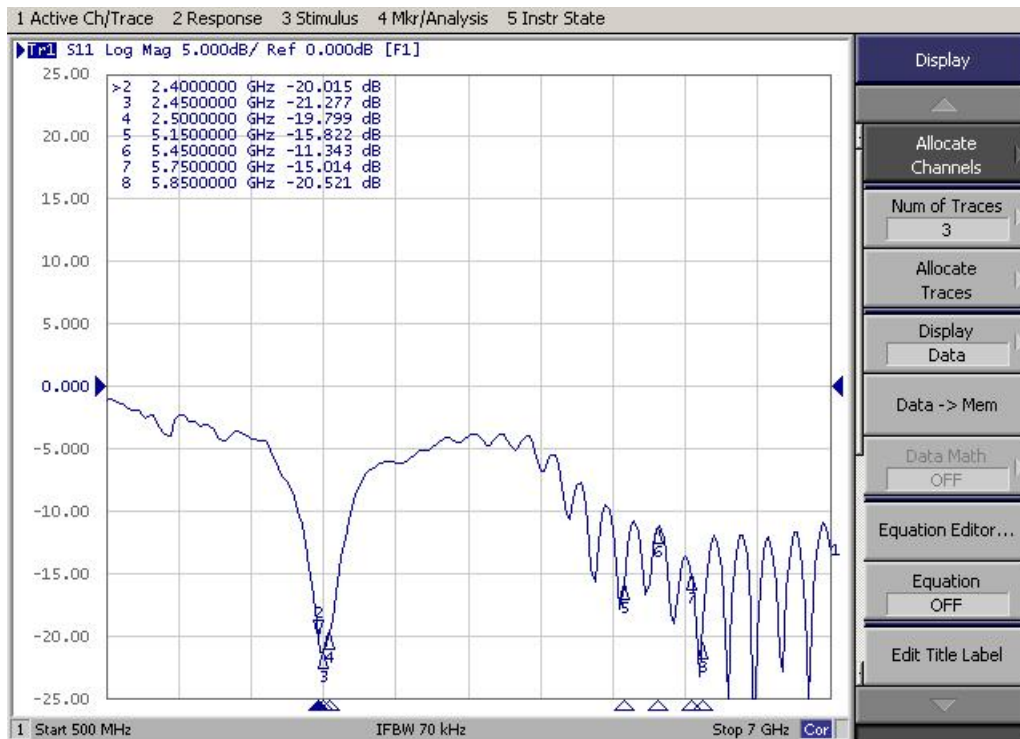
● D2351_Antenna Impedance Matching(天线阻抗匹配)

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

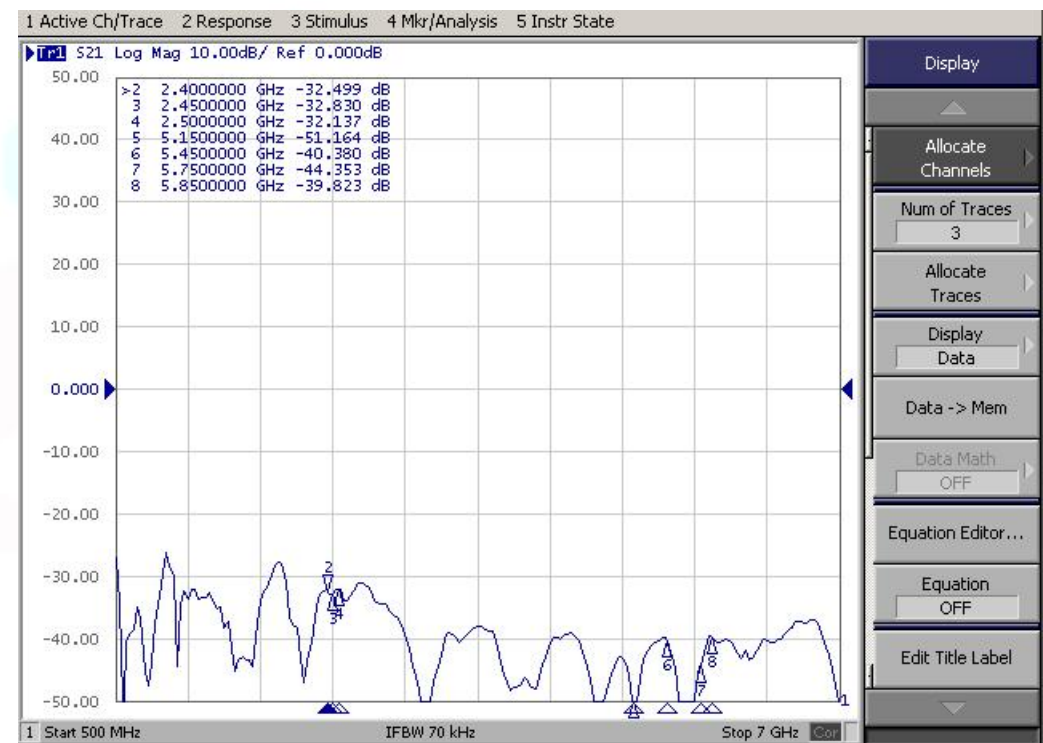


● D2351_WIFI 0_S11/VSWR (无源驻波比)

WIFI 0 antenna_ VSWR (WIFI 0天线_VSWR)

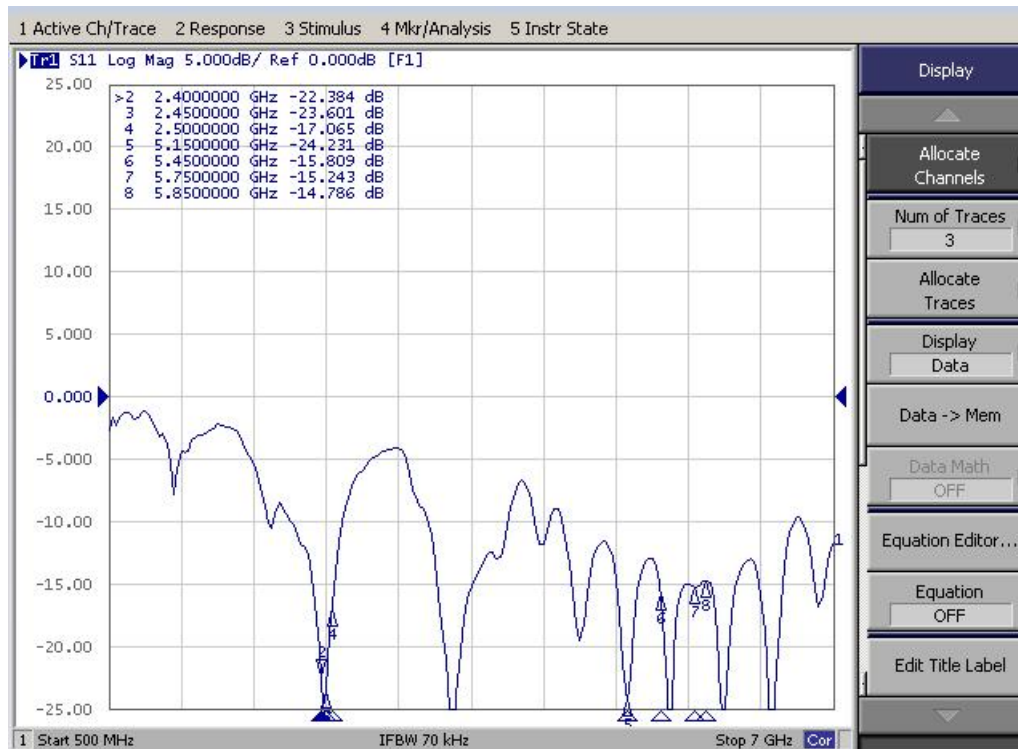


Isolation between WIFI 0 antenna and WIFI 1 antenna (WIFI 0天线与WIFI 1天线隔离度)

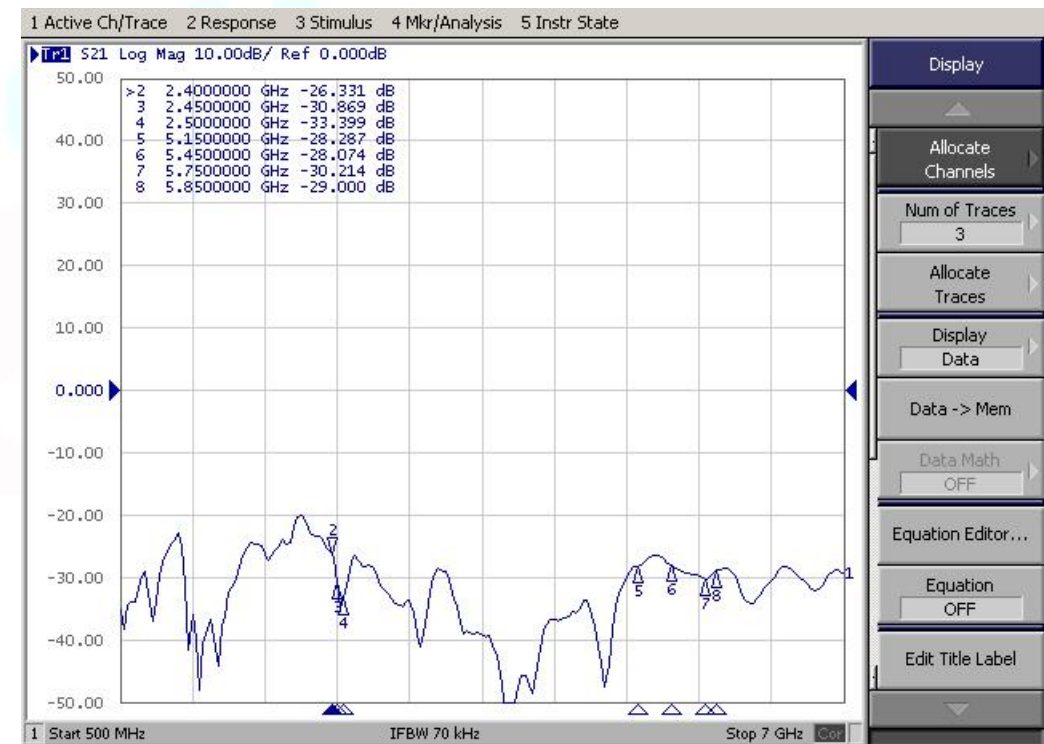


● D2351_WIFI 1_S11/VSWR (无源驻波比)

WIFI 1 antenna_VSWR (WIFI 1天线_VSWR)

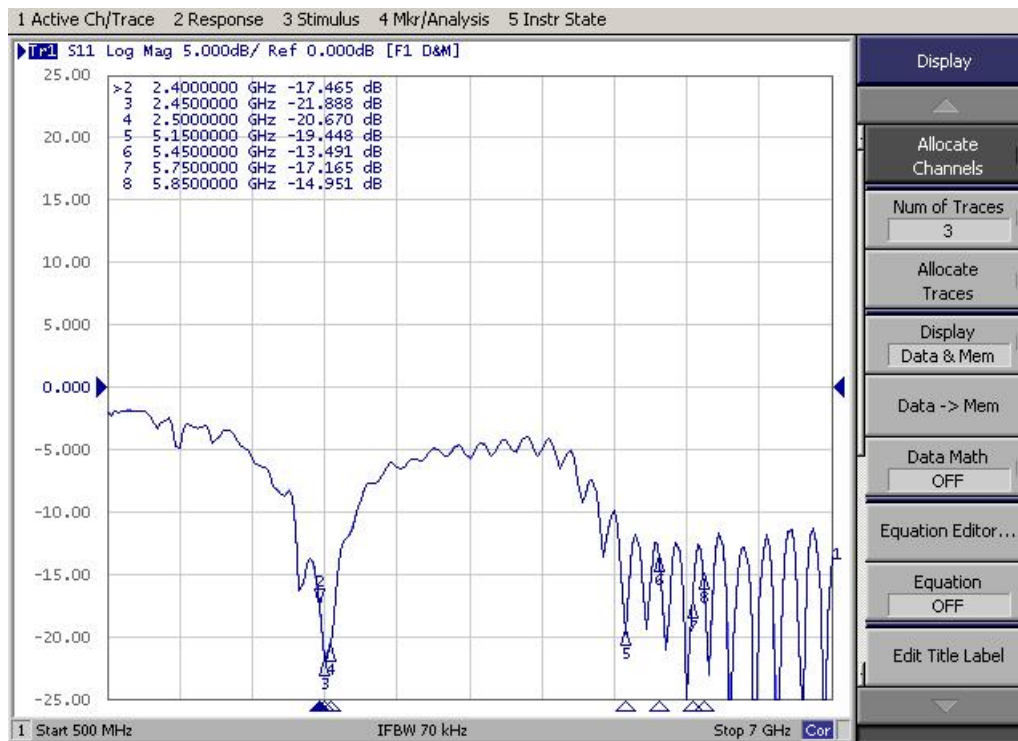


Isolation between WIFI 1 antenna and BT antenna (WIFI 1天线与BT天线隔离度)



● D2351_WIFI 2_S11/VSWR (无源驻波比)

WIFI 2 antenna_VSWR (WIFI 2天线_VSWR)

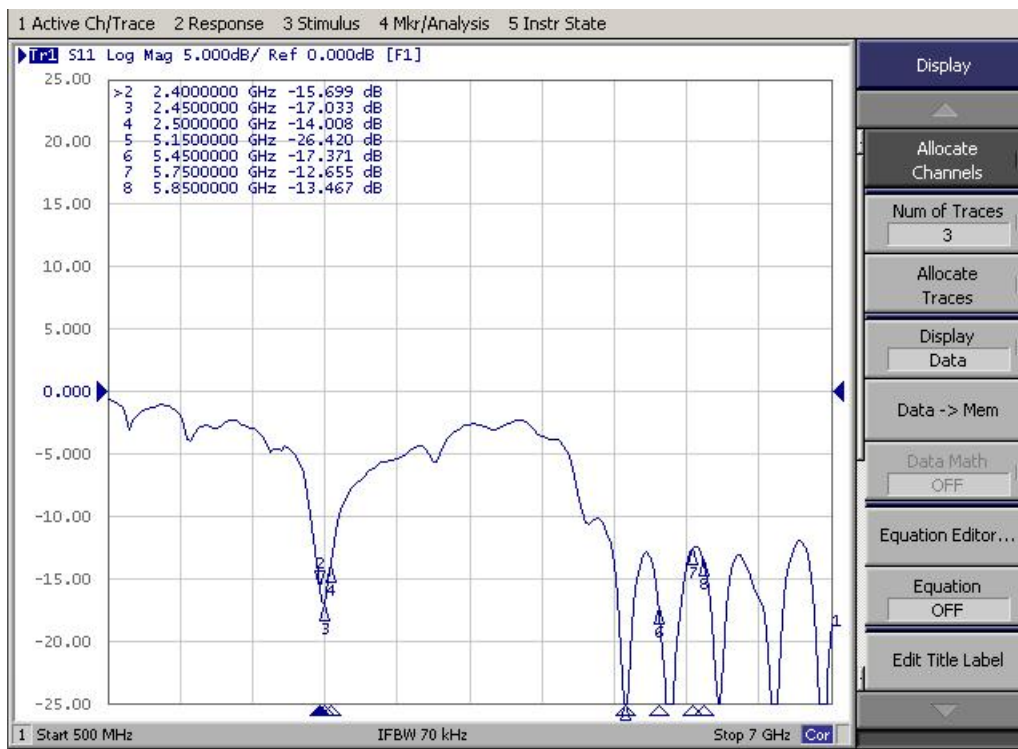


Isolation between WIFI 0 antenna and WIFI 2 antenna (WIFI 0天线与WIFI 2天线隔离度)

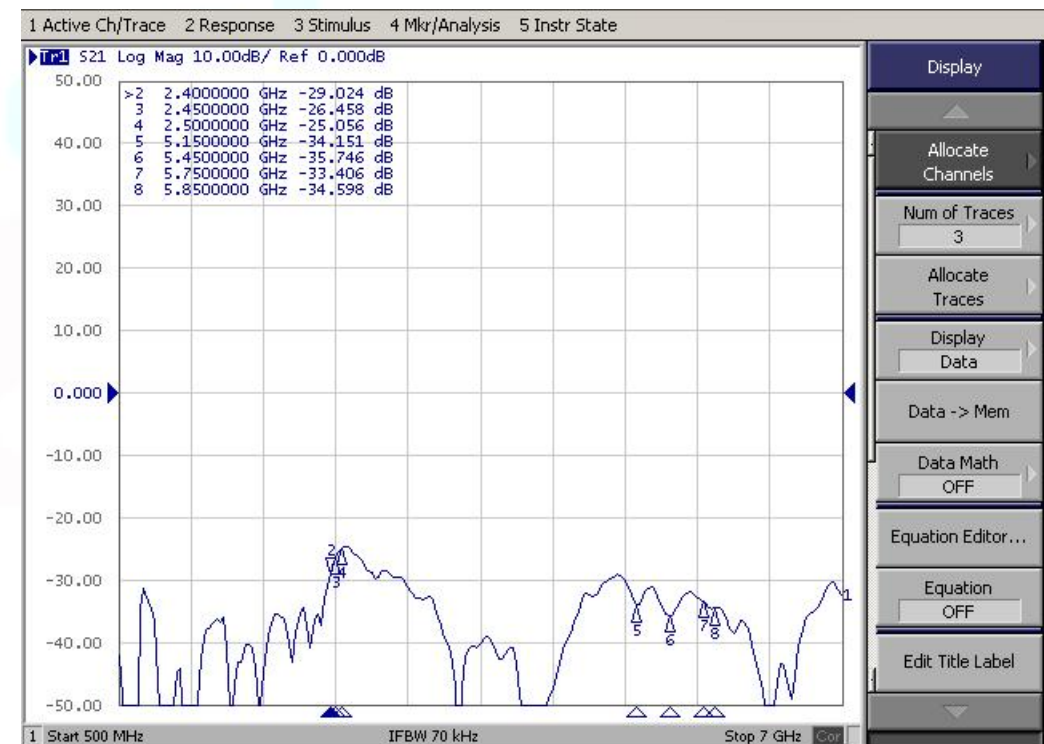


● D2351_BT_S11/VSWR (无源驻波比)

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)



● D2351 _WIFI 0_Efficiency & Gain (无源效率和增益)

2.4G

(2.4G) Passive Test Results(无源测试结果)

Frequency (MHz)	Efficiency (%)	Efficiency (dB)	Max Gain (dBi)
2400	49.59%	-3.05	4.60
2410	50.72%	-2.95	4.55
2420	51.45%	-2.89	4.37
2430	52.46%	-2.80	4.39
2440	52.60%	-2.79	4.26
2450	53.00%	-2.76	4.35
2460	52.64%	-2.79	4.10
2470	52.29%	-2.82	3.97
2480	51.89%	-2.85	3.58
2490	50.87%	-2.94	3.32
2500	49.97%	-3.01	3.22
AVG:	51.59%	-2.88	4.06

5G

(5G) Passive Test Results(无源测试结果)

Frequency (MHz)	Efficiency (%)	Efficiency (dB)	Max Gain (dBi)
5150	33.96%	-4.69	5.88
5200	31.41%	-5.03	5.94
5250	29.71%	-5.27	5.45
5300	30.34%	-5.18	5.42
5350	31.26%	-5.05	5.30
5400	30.62%	-5.14	4.97
5450	32.28%	-4.91	5.49
5500	32.14%	-4.93	5.51
5550	33.73%	-4.72	5.81
5600	36.56%	-4.37	6.16
5650	35.08%	-4.55	6.29
5700	34.36%	-4.64	6.76
5750	35.73%	-4.47	7.47
5800	37.41%	-4.27	7.12
5850	37.58%	-4.25	7.30
AVG:	33.48%	-4.76	6.06

● D2351 _WIFI 1_Efficiency & Gain（无源效率和增益）

2.4G

(2.4G) Passive Test Results(无源测试结果)			
Frequency(MHz)	Efficiency(%)	Efficiency(dB)	Max Gain(dBi)
2400	66.15%	-1.79	3.93
2410	67.61%	-1.70	4.41
2420	68.45%	-1.65	4.23
2430	69.12%	-1.60	4.81
2440	70.15%	-1.54	4.52
2450	69.82%	-1.56	4.59
2460	69.66%	-1.57	4.67
2470	70.15%	-1.54	4.49
2480	69.18%	-1.60	4.87
2490	69.82%	-1.56	4.68
2500	66.22%	-1.79	4.76
AVG:	68.76%	-1.63	4.54

5G

(5G) Passive Test Results(无源测试结果)			
Frequency(MHz)	Efficiency(%)	Efficiency(dB)	Max Gain(dBi)
5150	50.72%	-2.95	6.54
5200	49.77%	-3.03	6.66
5250	46.67%	-3.31	6.58
5300	44.77%	-3.49	6.28
5350	41.98%	-3.77	6.23
5400	41.40%	-3.83	6.30
5450	45.29%	-3.44	6.95
5500	46.13%	-3.36	7.28
5550	45.60%	-3.41	7.60
5600	45.60%	-3.41	7.40
5650	43.75%	-3.59	7.28
5700	42.66%	-3.70	7.10
5750	44.98%	-3.47	7.44
5800	45.60%	-3.41	7.40
5850	47.75%	-3.21	7.23
AVG:	45.51%	-3.43	6.95

● D2351 _WIFI 2_Efficiency & Gain (无源效率和增益)

2.4G

(2.4G) Passive Test Results(无源测试结果)			
Frequency (MHz)	Efficiency (%)	Efficiency (dB)	Max Gain (dBi)
2400	50.48%	-2.97	2.88
2410	50.61%	-2.96	2.51
2420	51.29%	-2.90	2.48
2430	50.08%	-3.00	2.39
2440	51.16%	-2.91	2.34
2450	49.41%	-3.06	2.32
2460	49.68%	-3.04	2.52
2470	50.61%	-2.96	2.97
2480	50.34%	-2.98	3.20
2490	49.41%	-3.06	3.07
2500	49.68%	-3.04	3.45
AVG:	50.25%	-2.99	2.74

5G

(5G) Passive Test Results(无源测试结果)			
Frequency (MHz)	Efficiency (%)	Efficiency (dB)	Max Gain (dBi)
5150	29.99%	-5.23	3.25
5200	28.25%	-5.49	2.80
5250	25.35%	-5.96	1.52
5300	25.59%	-5.92	1.00
5350	24.66%	-6.08	1.25
5400	22.54%	-6.47	0.77
5450	23.66%	-6.26	1.42
5500	24.27%	-6.15	1.93
5550	24.43%	-6.12	2.46
5600	23.50%	-6.29	2.51
5650	24.10%	-6.18	3.33
5700	25.12%	-6.00	4.06
5750	24.55%	-6.10	4.30
5800	23.33%	-6.32	4.06
5850	24.83%	-6.05	4.25
AVG:	24.94%	-6.04	2.59

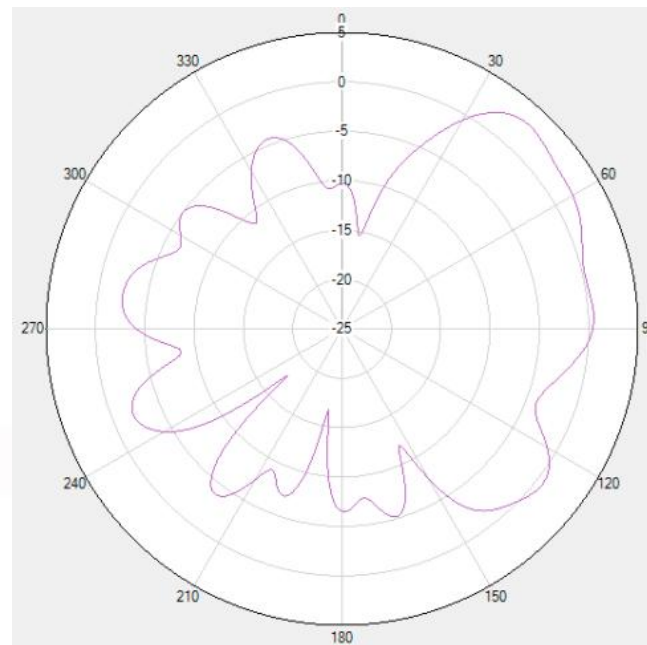
D2351_BT_Efficiency & Gain（无源效率和增益）

(2.4G) Passive Test Results(无源测试结果)			
Frequency(MHz)	Efficiency(%)	Efficiency(dB)	Max Gain(dBi)
2400	59.12%	-2.28	4.63
2410	60.71%	-2.17	4.59
2420	60.97%	-2.15	4.70
2430	61.39%	-2.12	4.58
2440	61.53%	-2.11	4.54
2450	61.80%	-2.09	4.63
2460	62.23%	-2.06	4.46
2470	62.03%	-2.07	4.63
2480	61.52%	-2.11	4.49
2490	60.53%	-2.18	4.45
2500	59.16%	-2.28	4.42
AVG:	61.00%	-2.15	4.56

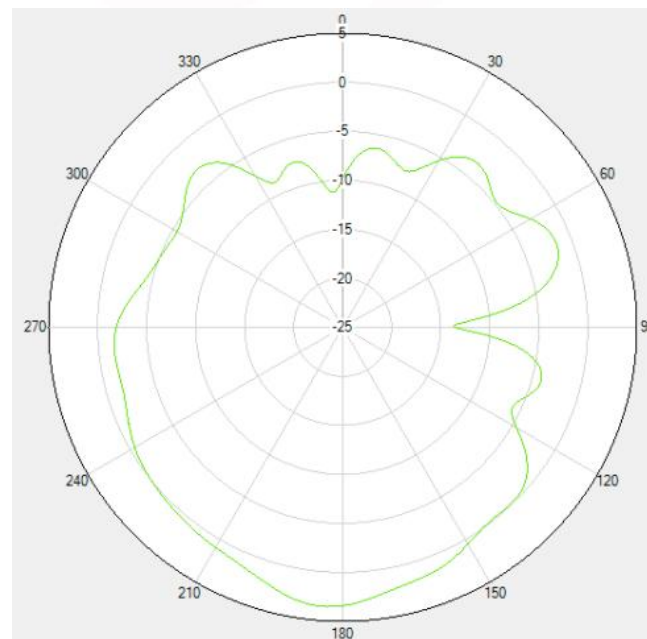
● D2351_2.4G_2D Antenna Radiation Pattern(2D 天线辐射方向图)

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

WIFI 0

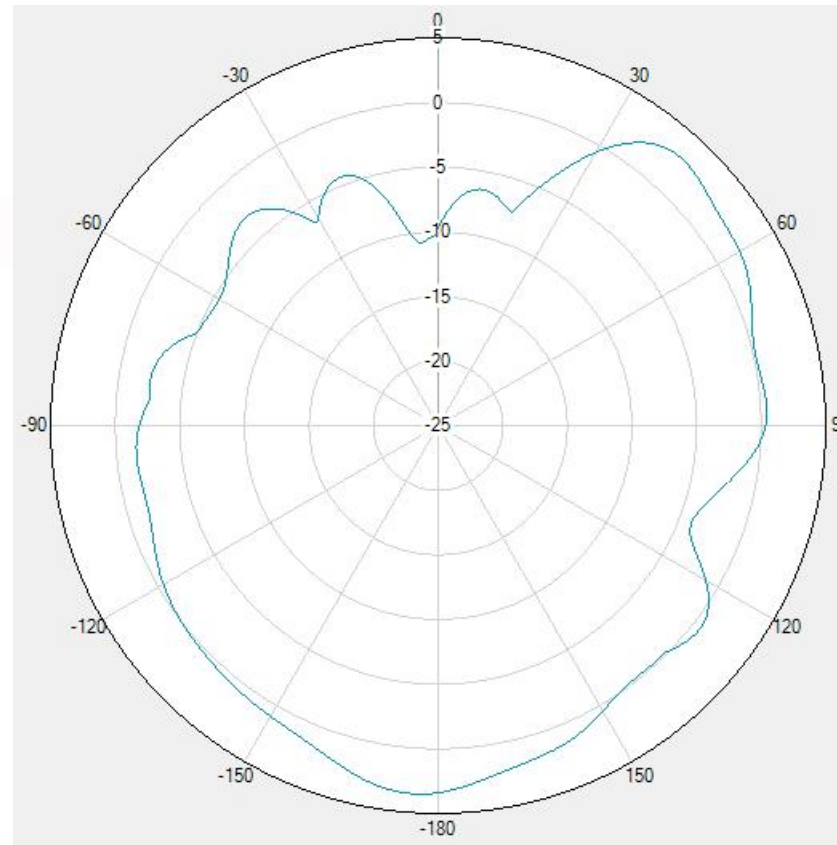


WIFI 1



● D2351_2.4G_2D Synthetic Direction Map(2D 合成方向图)

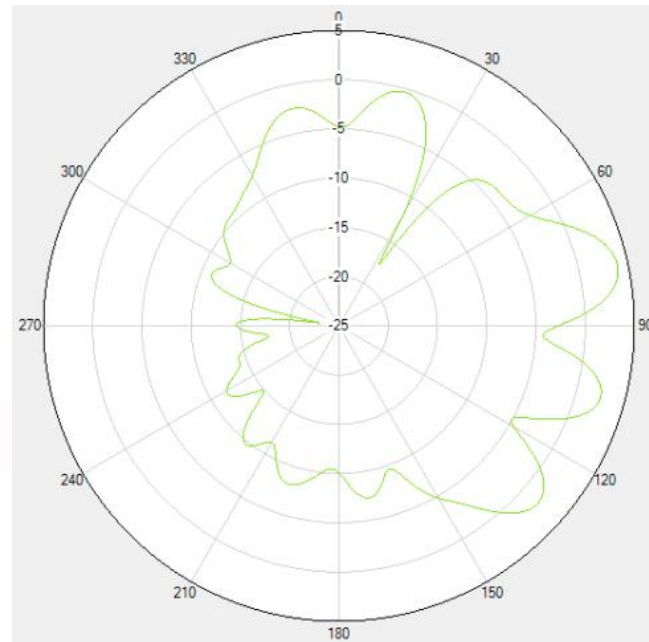
1. The horizontal direction is the X-Y plane of the legend(水平方向为图例X-Y面)。
2. The minimum value is -10.07(最小值为-10.07)。



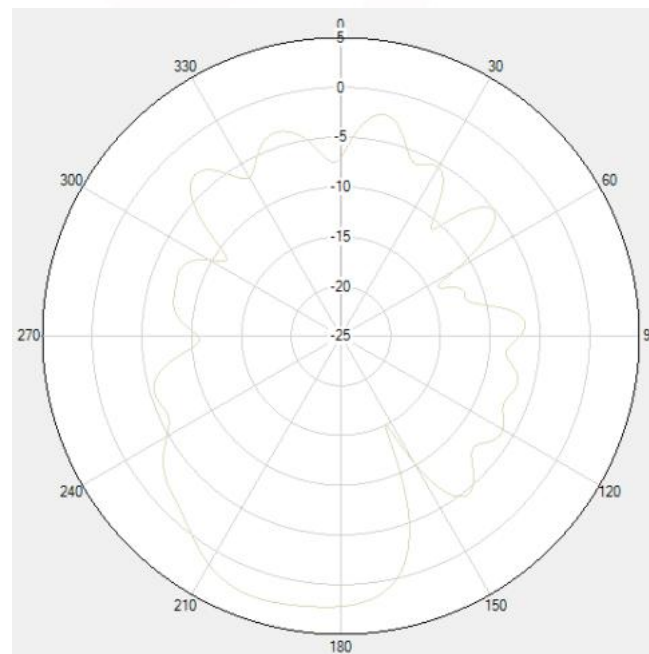
● D2351_5G_2D Antenna Radiation Pattern(2D 天线辐射方向图)

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

WIFI 0

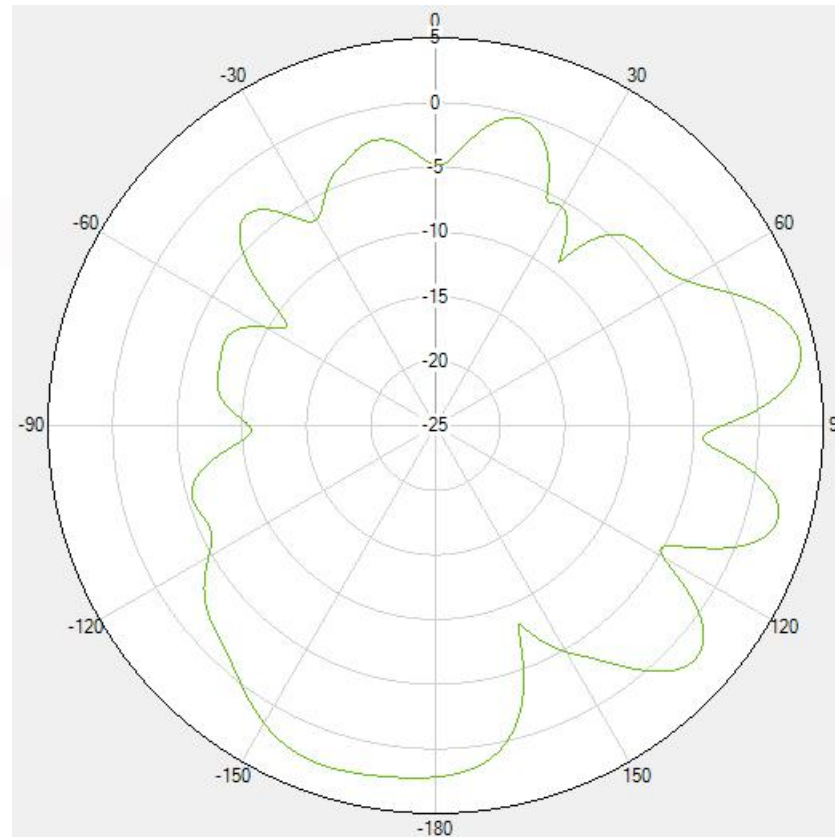


WIFI 1



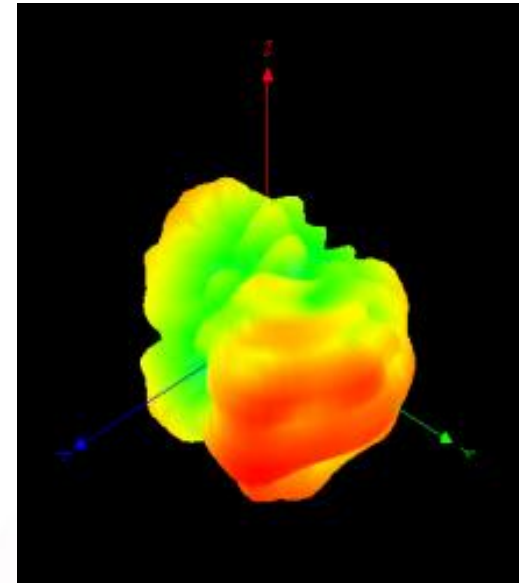
● D2351_5G_2D Synthetic Direction Map(2D 合成方向图)

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 -11.09(最小值为-11.09)。

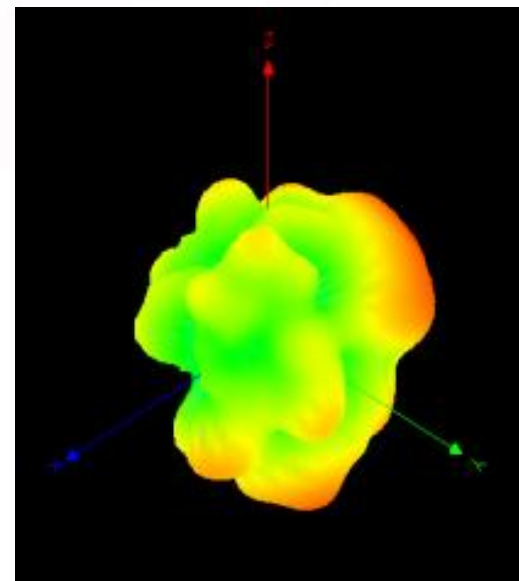


● D2351 _2.4G_ 3D Antenna Radiation Pattern(3D 天线辐射方向图)

WIFI 0 -2450MHz



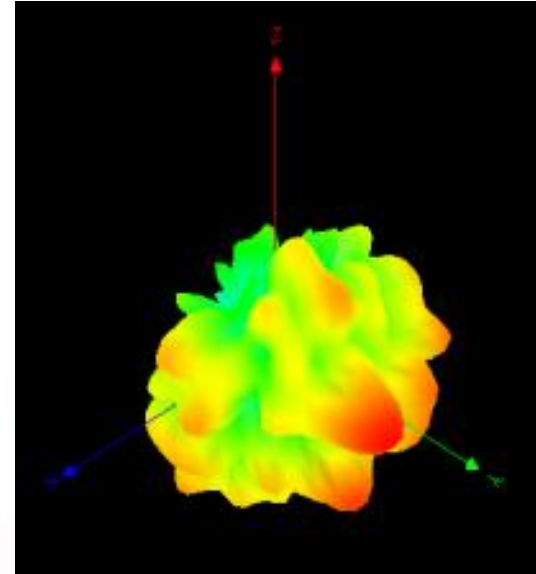
WIFI 1 -2450MHz



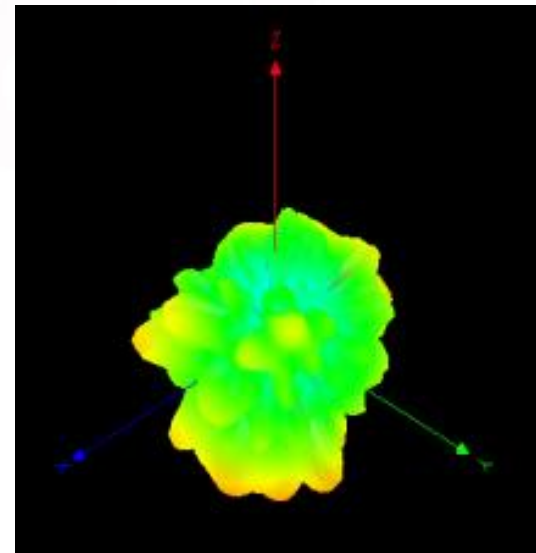
AT&C

● D2351 _5G_ 3D Antenna Radiation Pattern(3D 天线辐射方向图)

WIFI 0 -5500MHz



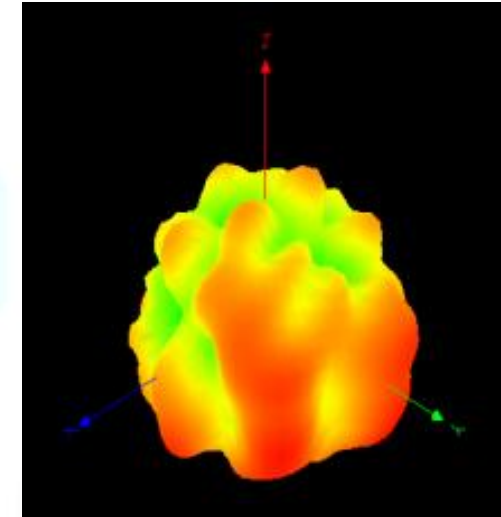
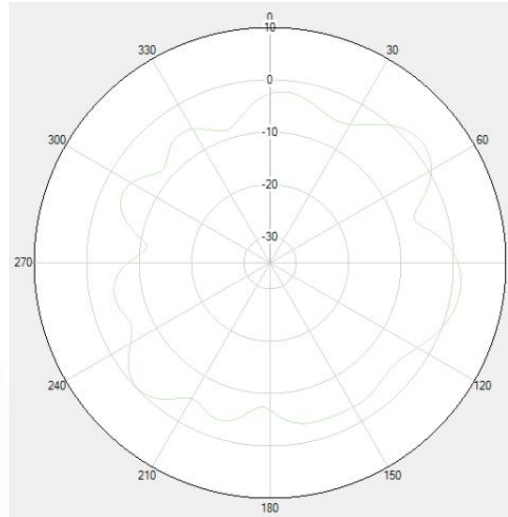
WIFI 1 -5500MHz



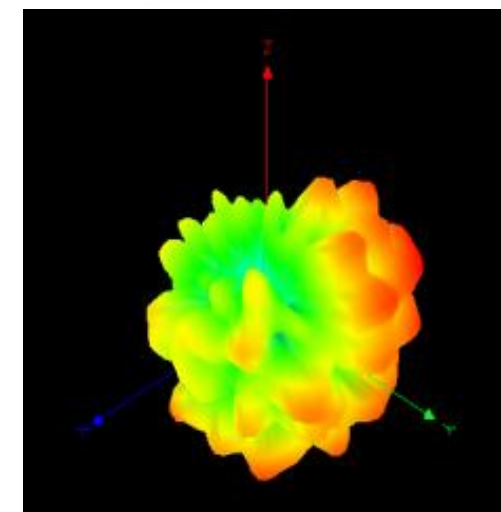
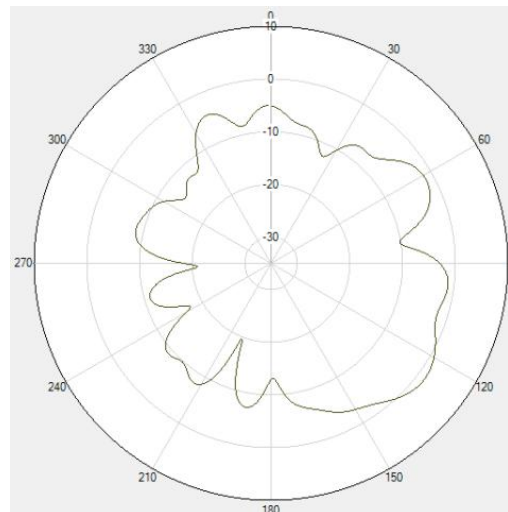
● D2351 _WIFI 2 Antenna Radiation Pattern(天线辐射方向图)

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 for 2.4G is -11.14, and the minimum value for 5G is -20.94.(2.4G最小值为-11.14, 5G最小值为-20.94)。

2450MHz



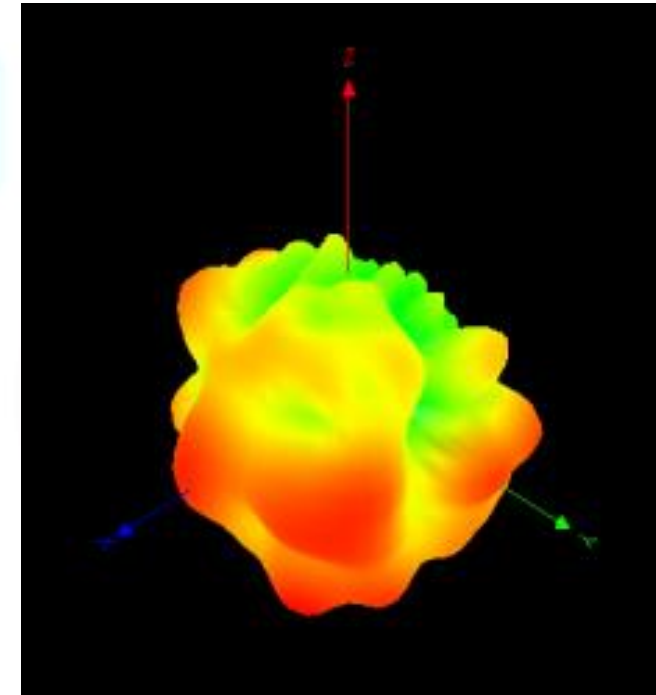
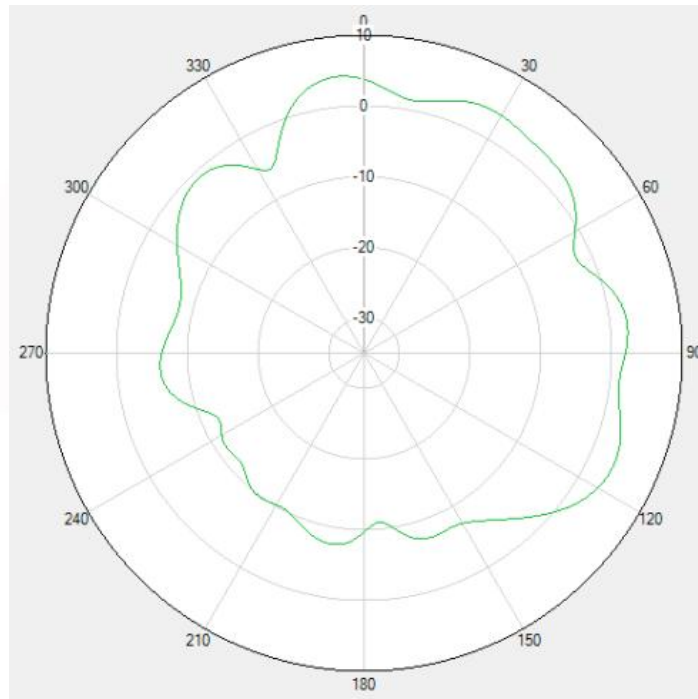
5500MHz



● D2351 _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 -12.42(最小值为-12.42)。

BT-2450MHz



● D2351 _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 pay attention to the consistency of the coaxial line placement(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)。

*** (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!!