

# Antenna Testing Report

**Customer :** Shenzhen sangge'er Polytron Technologies Inc

**Project Name :** ML1

**Antenna Manufacturer:** Sunnyway Technology(CHINA)


**Address:** The 6th floor, Building 5, Nantaiyun Innovation Valley Center,  
Guangming District, Shenzhen City

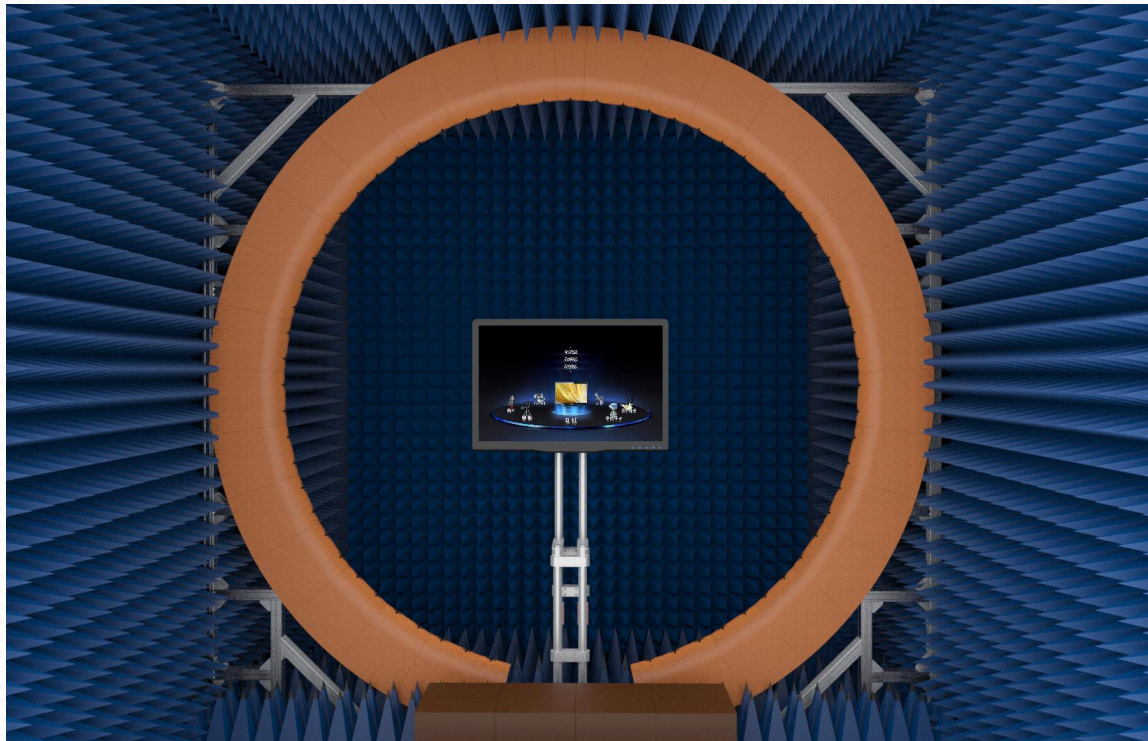
**Report version:** 2024/6/18 A0  
**Research staff:** Xu Jun

Version	Report date	Remark
A0	2024.7.31	Antenna test report
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Prototype status	Debugging machine	<p>Project pictures</p> 
Device type		
Number of antennas	Main antenna; diversity antenna; three-in-one antenna, NFC antenna	
Frequency band	WIFI/BT:2.4GHZ/5.8GHZ	
Structural style	FPC	
Environment adjustment	NO Change made	
Matching modification	NO Change made	



The industry's top 64 sensors OTA chamber

Frequency range: 400MHz-11GHz

Device Llimitation: 2M

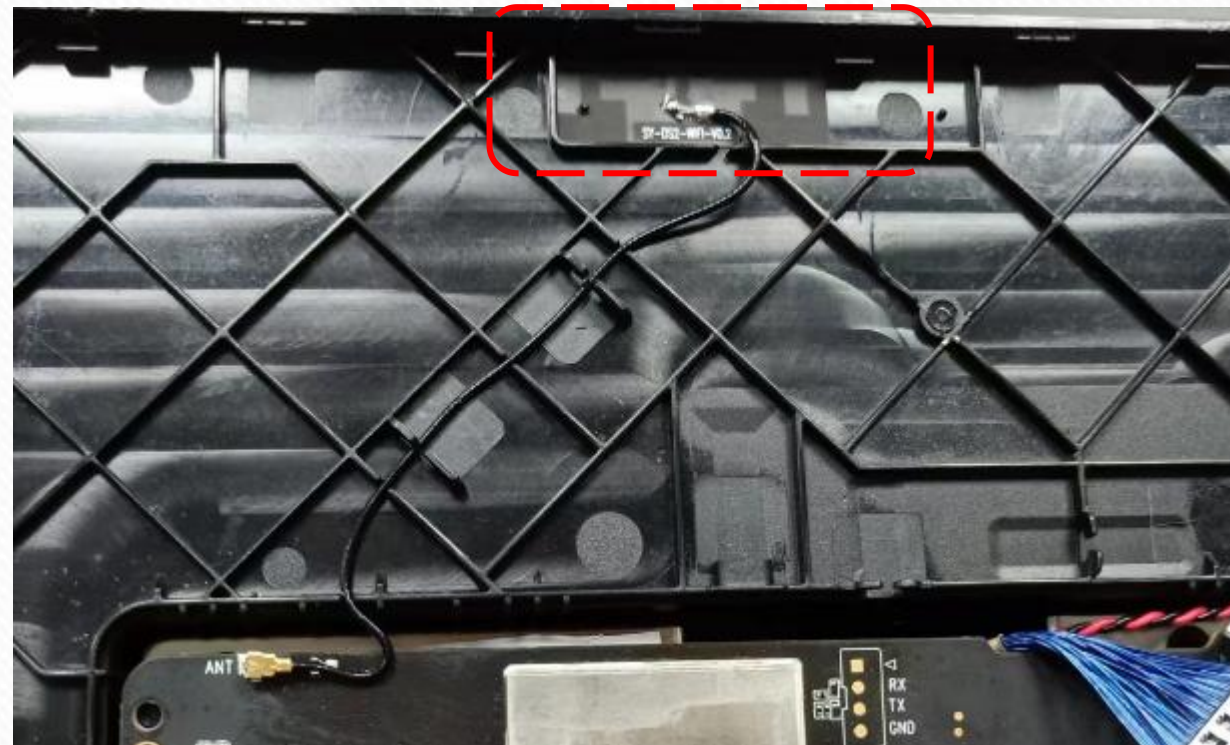
Load-bearing limitation:100KG

Equipments Items	Total Quantity	Quantity for Shanghai R&D	Quantity for Shenzhen R&D	Quantity for ChongQing R&D
OTA chamber	10	4	5	1
5G Tester (SP9500-CTS)	3	1	1	1
R&S Tester (high configuration CMW500)	6	3	2	1
Japan Anritsu Tester (Dual Channel 8820)	4	2	2	--
NB-IoT Tester (SP8315)	3	1	1	1
Agilent Tester (8960)	9	4	4	--
Agilent Network Analyzer (E5062A)	7	3	3	1
Agilent Network Analyzer (E5071C 8.5GHZ )	11	5	5	1
Agilent Network Analyzer (E5071B 8.5GHZ )	7	3	3	1
R&S Network Analyzer (ZND)	9	4	4	1
R&S Network Analyzer (ZVB)	3	1	1	1
OTA head hand / ear hand / arm hand	5	2	2	1
GPS/WIFI active test equipment	5	2	2	1

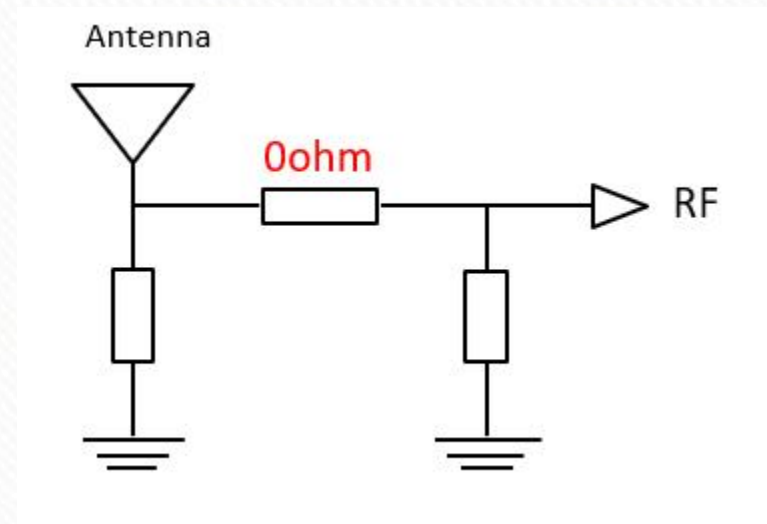


# Antenna mounting position

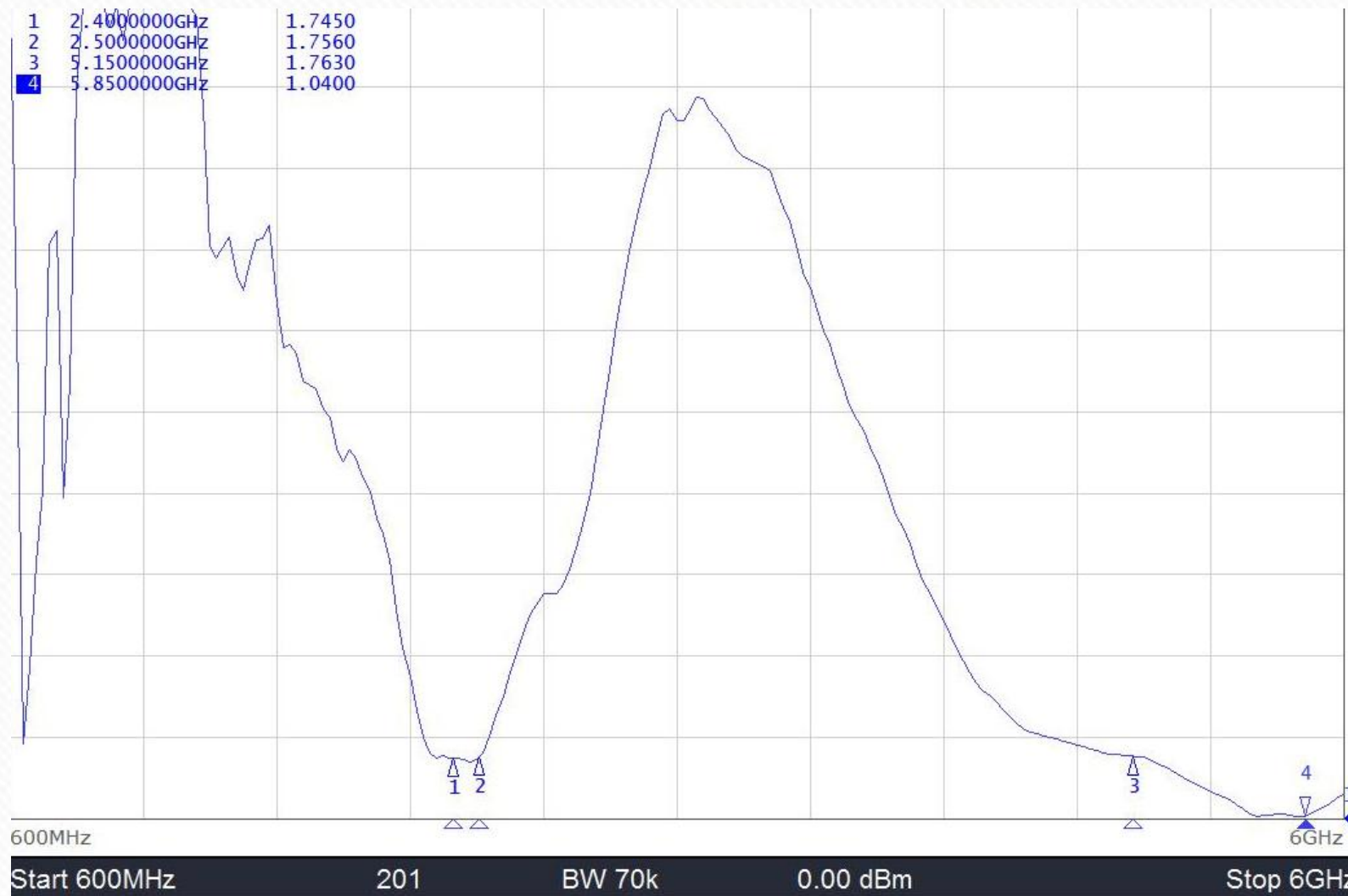
WIFI antenna



WiFi antenna :



## S11-VSWR





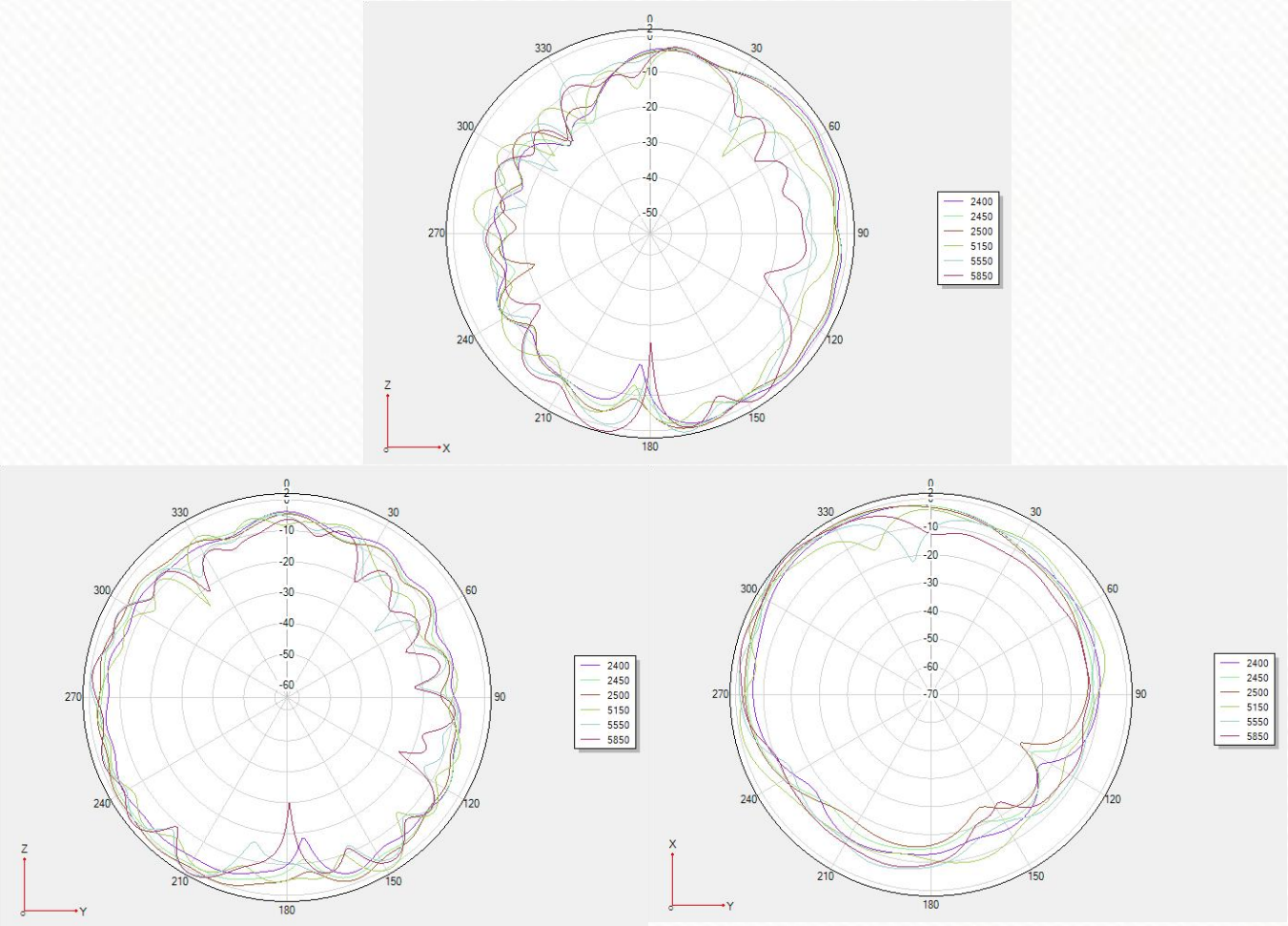
# Three-in-one antenna efficiency and gain

Frequency/Mhz	MaxGain/dBi	Efficiency / %
2400	0.54	29.38
2410	0.54	30.06
2420	0.56	29.51
2430	0.66	30.06
2440	1.02	31.62
2450	1.34	34.28
2460	1.41	34.12
2470	1.53	34.12
2480	1.8	35.48
2490	2.05	36.56
2500	1.78	36.14
5150	1.85	25
5200	1.88	25.88
5250	2.11	28.12
5300	2.03	28.18
5350	2.05	27.8
5400	1.98	27.48
5450	1.78	26.73
5500	2.08	26.73
5550	2.69	27.16
5600	3	25.29
5650	3.23	26.24
5700	3.37	28.05
5750	3.41	27.67
5800	3.19	26.12
5850	3.87	28.97

# WIFI antenna OTA data

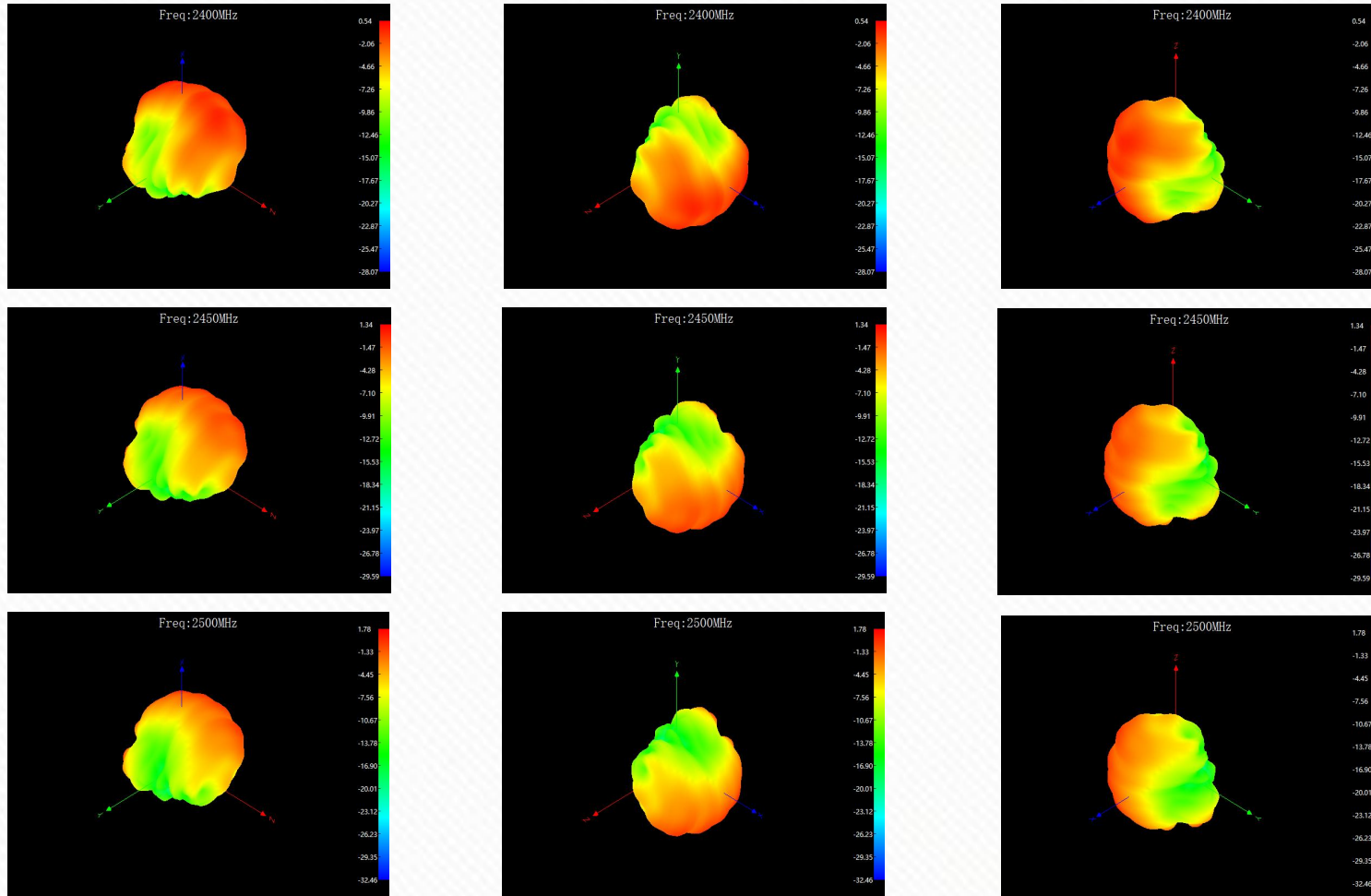
Item	Measurement	Band	Channel	Total
1	TRP	WIFI_B (1M)	1	11.79
2	TRP	WIFI_B (1M)	6	12.39
3	TRP	WIFI_B (1M)	13	12.45
4	TIS(EIRP)	WIFI_B (11M)	13	-82.12
5	TRP	WIFI_G (6M)	1	11.34
6	TRP	WIFI_G (6M)	6	11.21
7	TRP	WIFI_G (6M)	13	11.02
8	TIS(EIRP)	WIFI_G (54M)	13	-68.91
9	TRP	WIFI_N_ISM (6.5M)	1	10.22
10	TRP	WIFI_N_ISM (6.5M)	6	10.42
11	TRP	WIFI_N_ISM (6.5M)	13	10.63
12	TIS(EIRP)	WIFI_N_ISM (65M)	13	-66.64
13	TRP	WIFI_A (6M)	36	8.95
14	TRP	WIFI_A (6M)	149	8.91
15	TRP	WIFI_A (6M)	165	8.87
16	TIS(EIRP)	WIFI_A (54M)	165	-67.43
17	TRP	WIFI_N_UNII (6.5M)	36	7.23
18	TRP	WIFI_N_UNII (6.5M)	149	7.41
19	TRP	WIFI_N_UNII (6.5M)	165	7.12
20	TIS(EIRP)	WIFI_N_UNII (65M)	165	-60.89

# Three-in-one antenna directional pattern

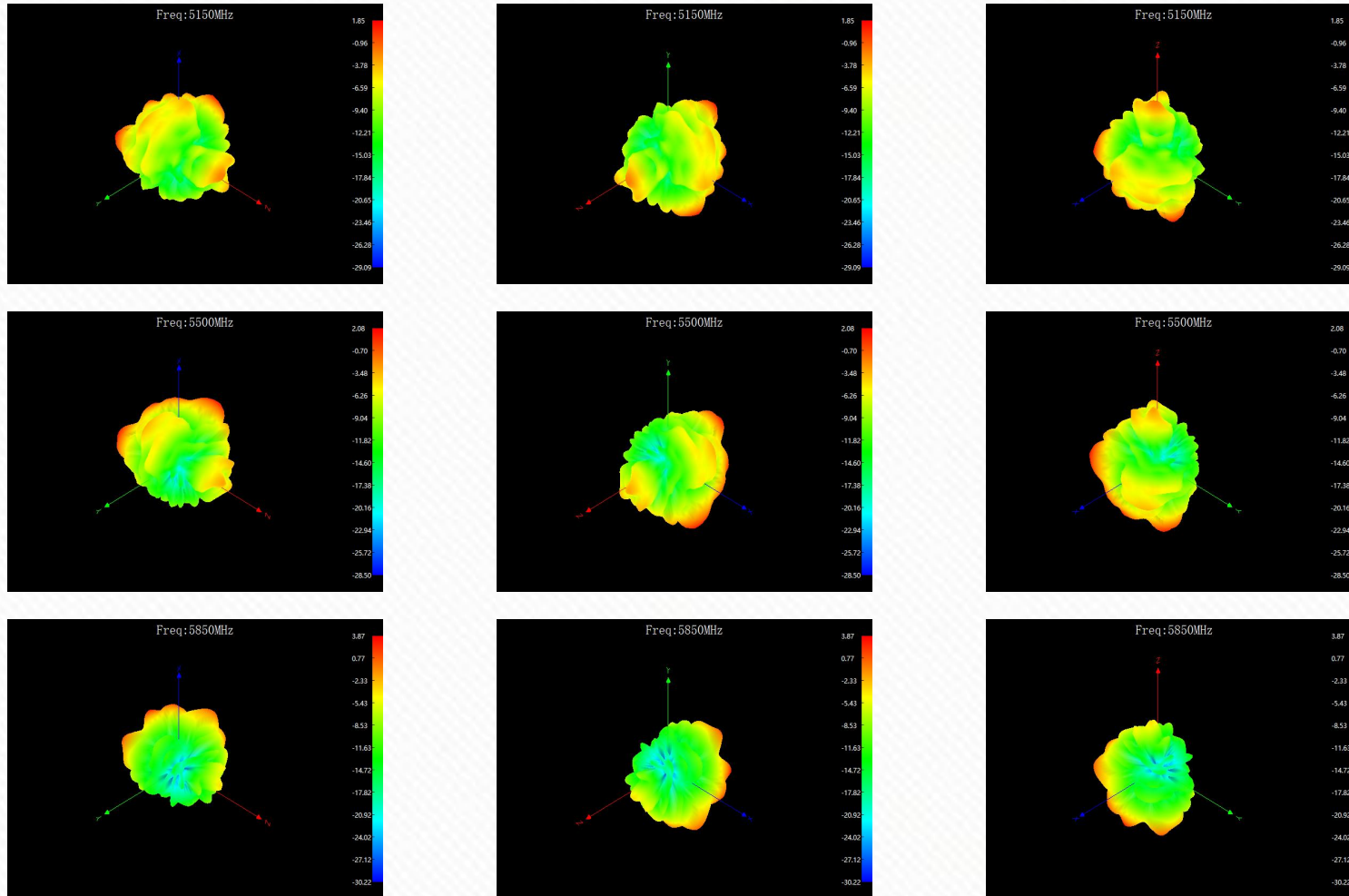




# Three-in-one antenna directional pattern

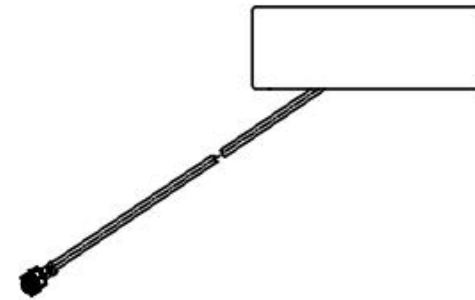
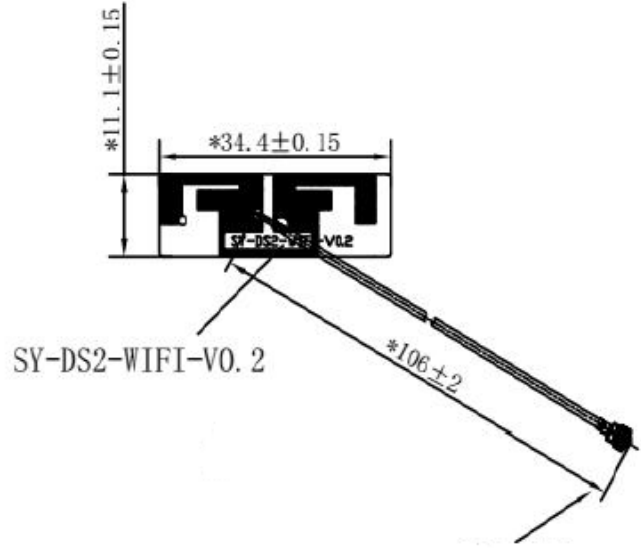


# Three-in-one antenna directional pattern



## BT/WLAN ANT

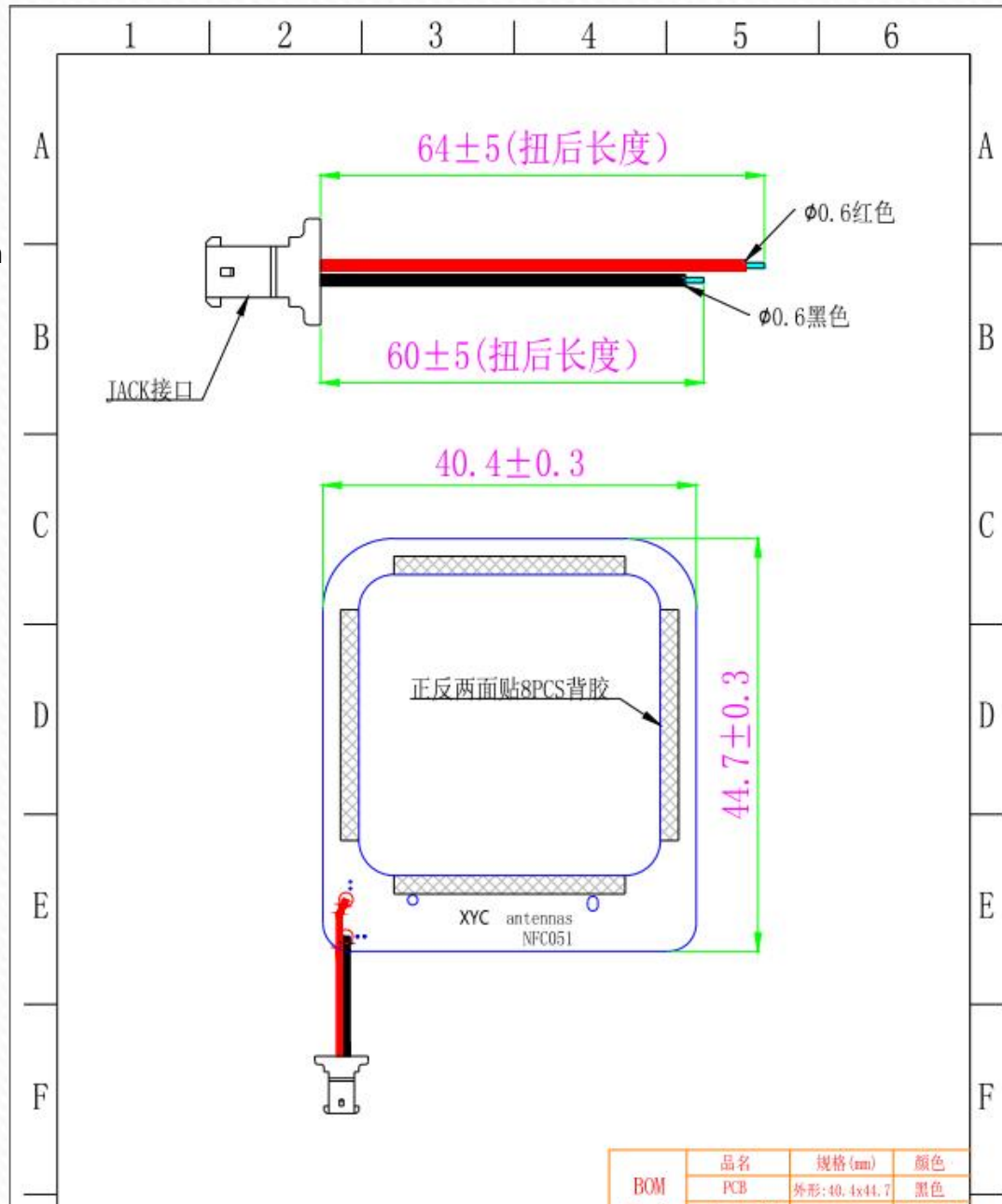
□





NFC ANT(DS2-51)

We statement that All measurements were performed radiated and therefore additional antenna gain documentation is not required.



BOM	品名	规格(mm)	颜色
	PCB	外形:40.4x44.7	黑色

NFC ANT(DS2-52)

We statement that All measurements were performed radiated and therefore additional antenna gain documentation is not required.

