

Antenna Testing Report

Customer : Shenzhen sangge'er Polytron Technologies Inc

Project Name : ML1

Antenna Manufacturer: Sunnyway Technology(CHINA)

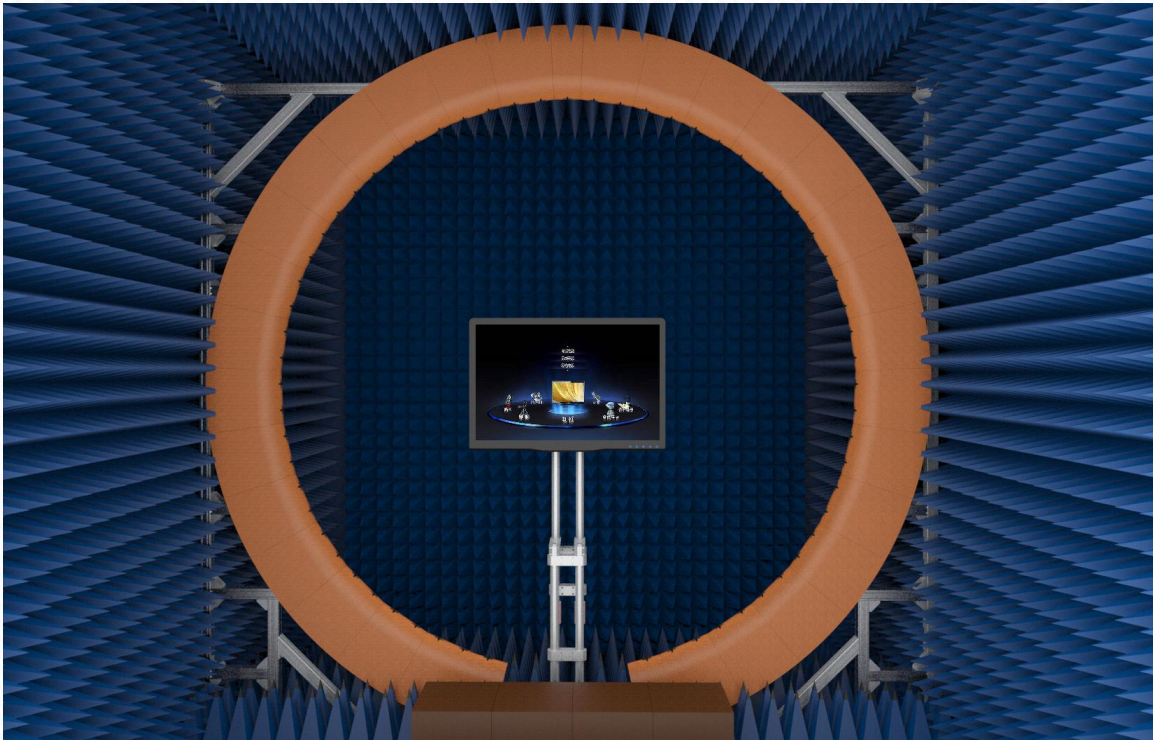
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Report version: 2024/6/18 A0
Research staff: Xu Jun

Version	Report date	Remark
A0	2024.7.31	Antenna test report
A1		
A2		
A3		
A4		
A5		
A6		
A7		
A8		
A9		

- 1.Record·····
- 2.Project Overview ·····
- 3.Equipment List·····
- 4. Antenna mounting position·····
- 5.Passive parameters ·····
- 6.Passive efficiency and gain ·····
- 7.OTA test data ·····
- 8.Directiona pattern ·····
- 9.Summary·····

Prototype status	Debugging machine	Project pictures 
Device type		
Number of antennas	Main antenna; diversity antenna; three-in-one antenna NFCantenna	
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

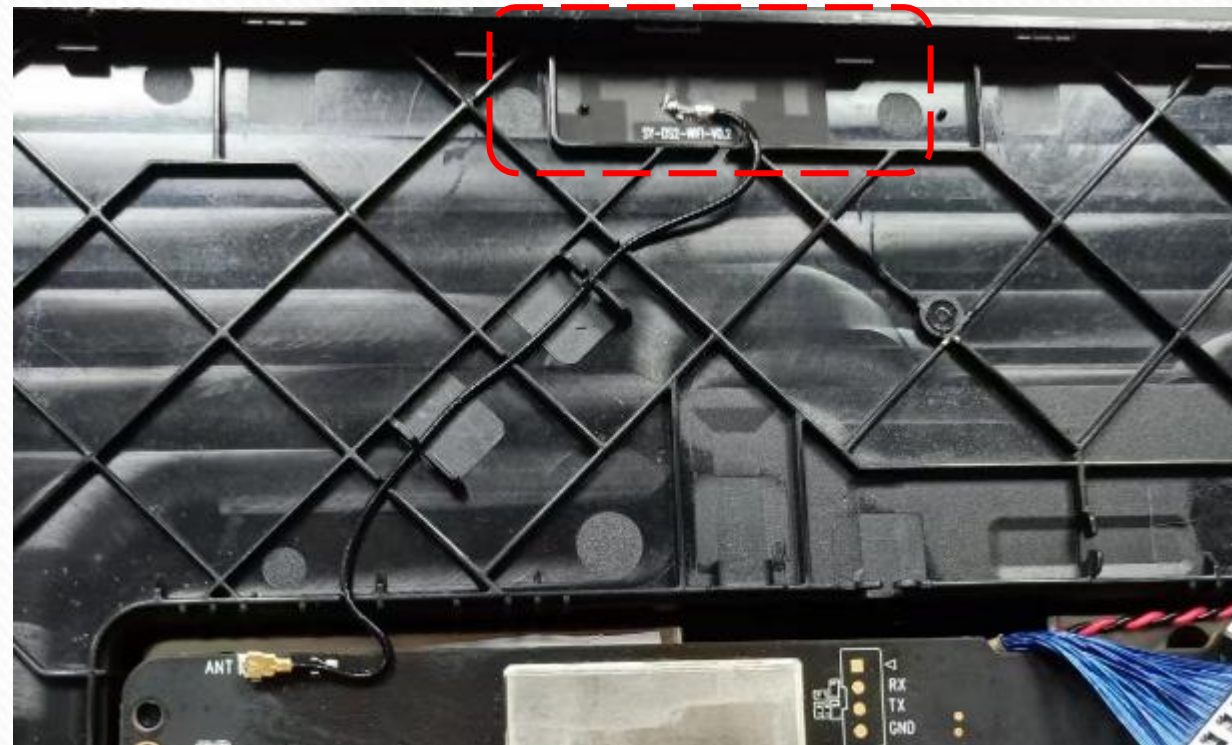
Device Llimitation: 2M

Load-bearing limitation:100KG

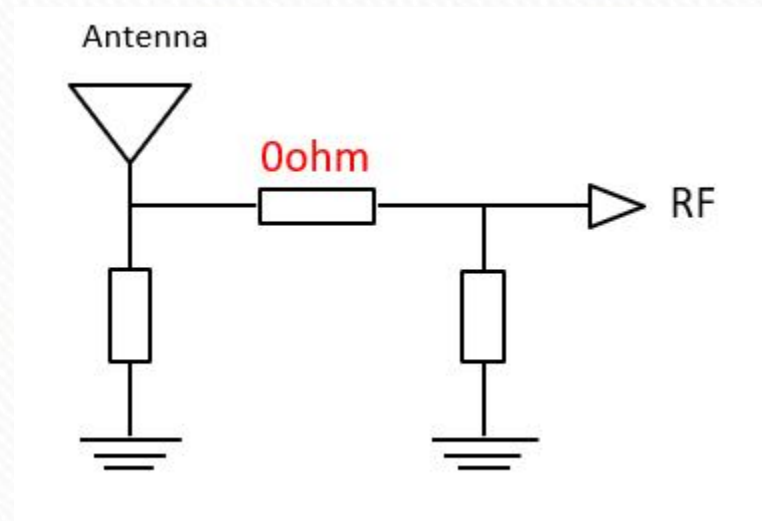
Equipments Items	Total Quantity	Quantity for Shanghai R&D	Quantity for Shenzhen R&D	Quantity for ChongQing R&D
OTA chamber	10	4	5	1
5G Tester (SP9500-CTS)	3	1	1	1
R&S Tester (high configuration CMW500)	6	3	2	1
Japan Anritsu Tester (Dual Channel 8820)	4	2	2	--
NB-IoT Tester (SP8315)	3	1	1	1
Agilent Tester (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

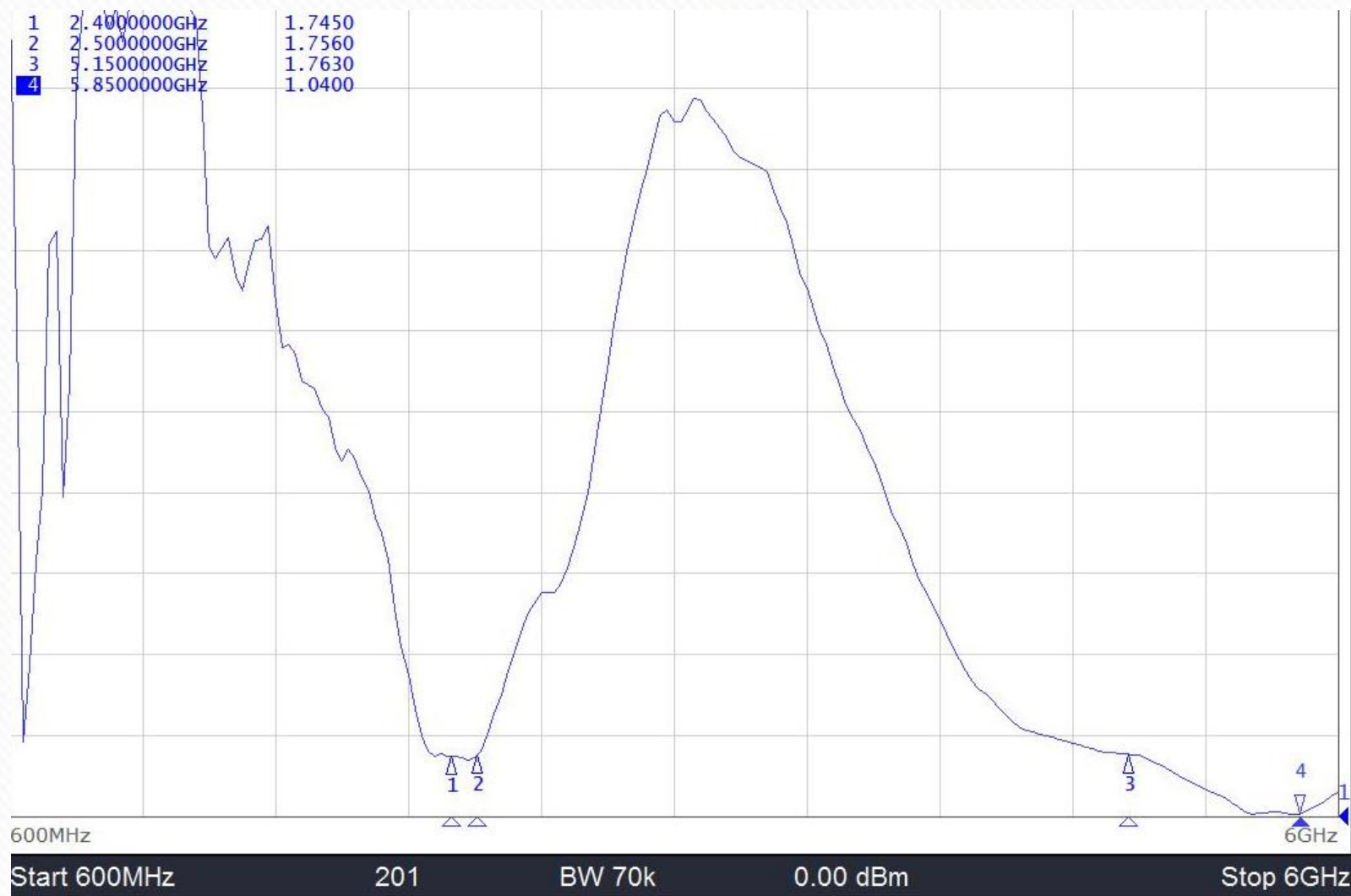
WIFI antenna



WIFI antenna :



S11-VSWR



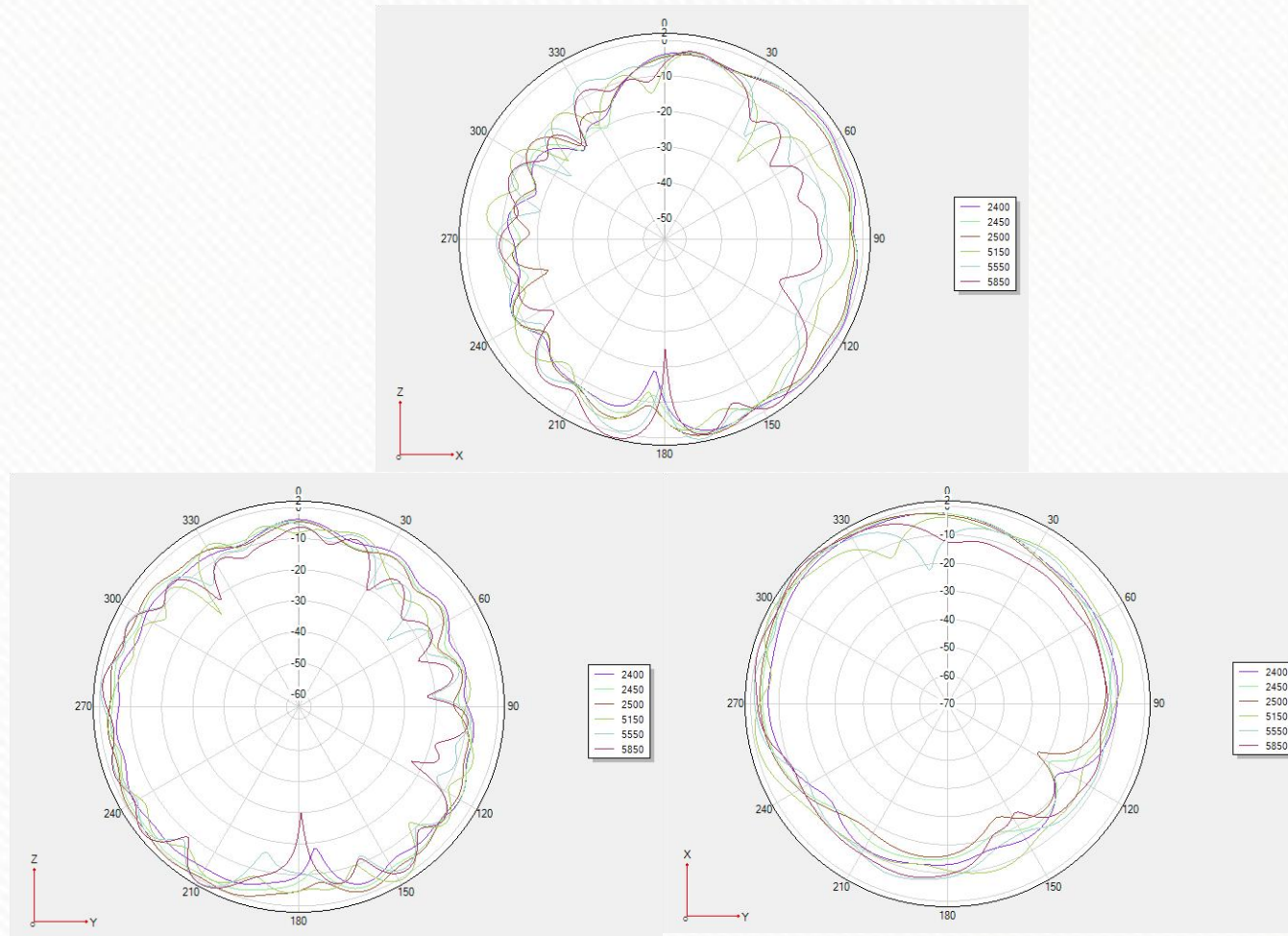
Three-in-one antenna efficiency and gain

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

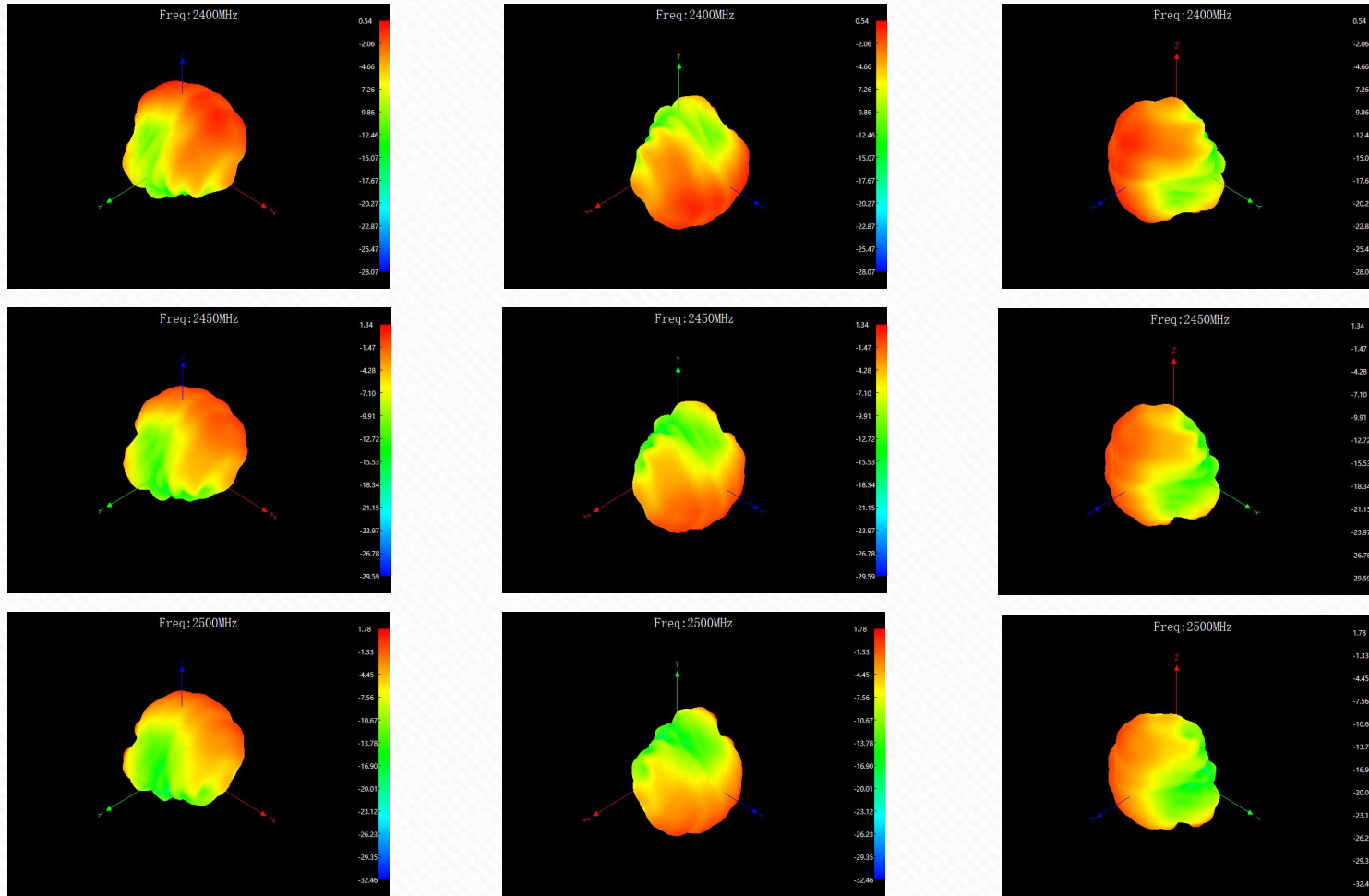
WIFI antenna OTA data

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

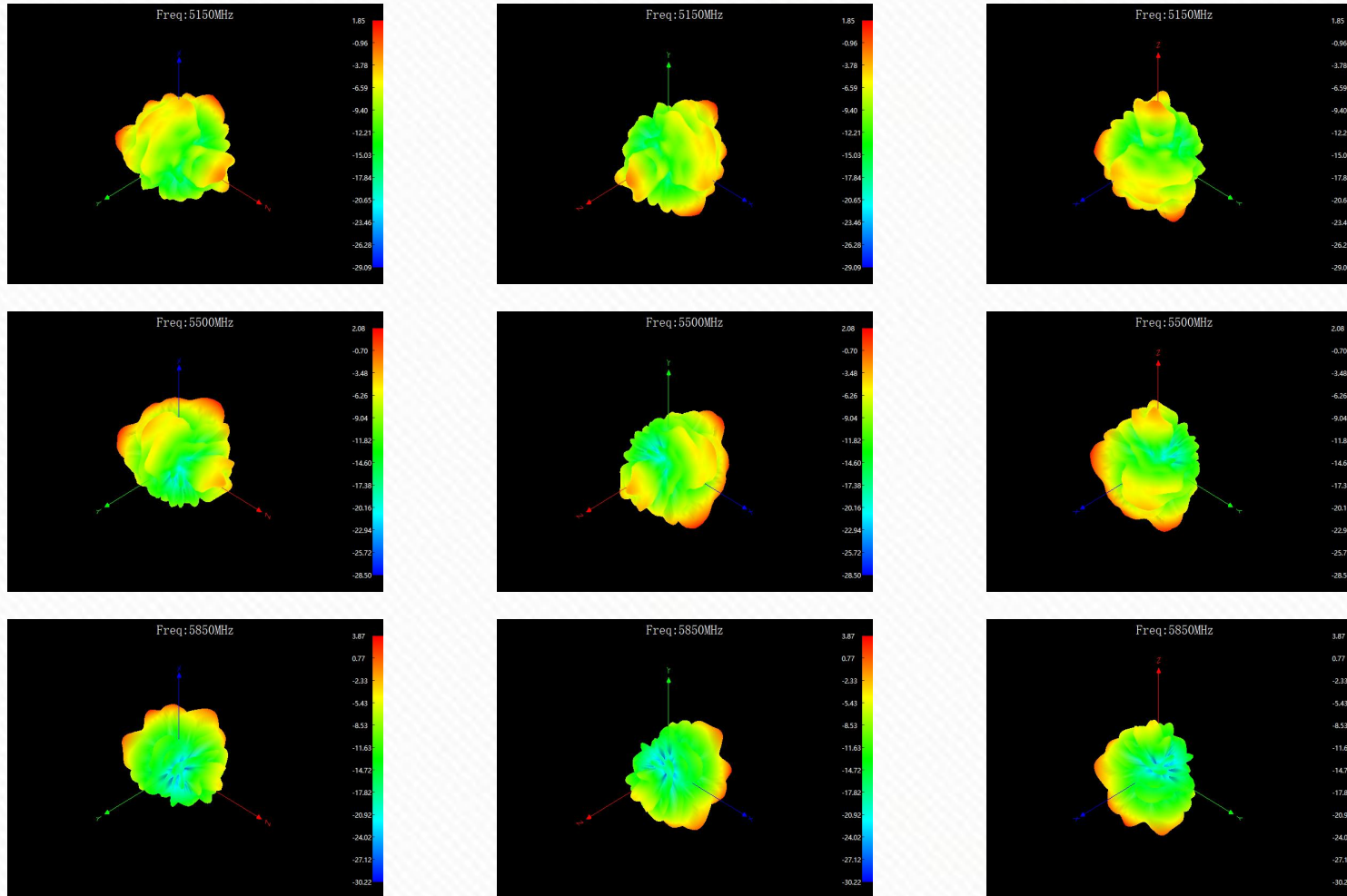
Three-in-one antenna directional pattern



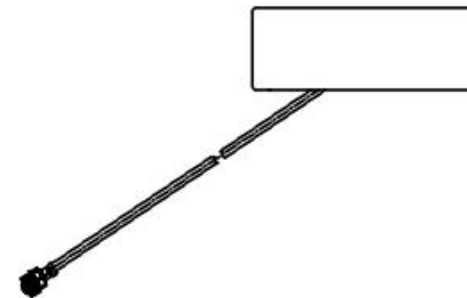
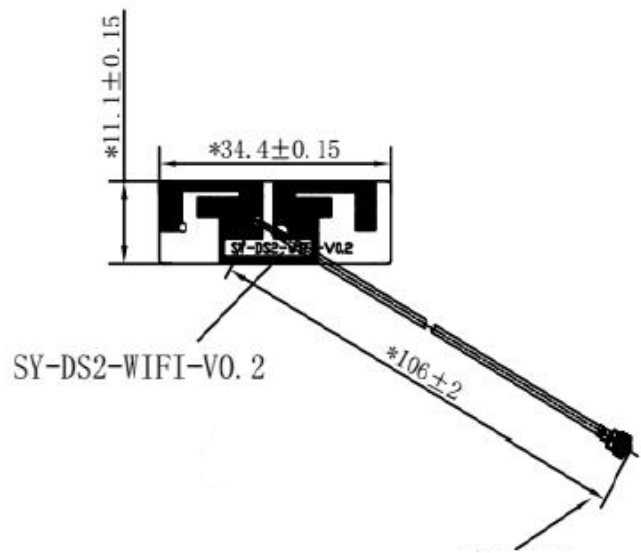
Three-in-one antenna directional pattern



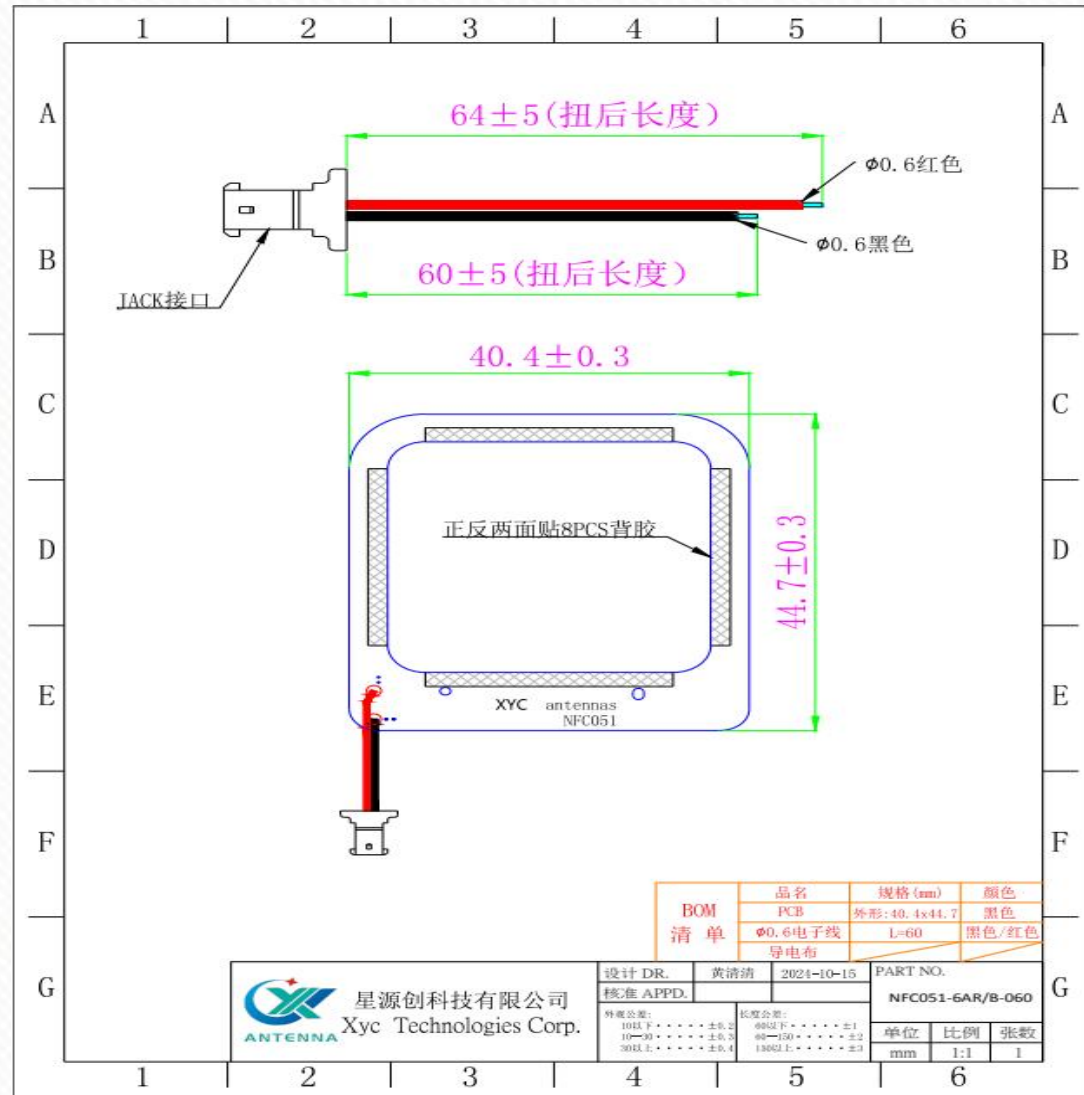
Three-in-one antenna directional pattern



BT/WLAN ANT

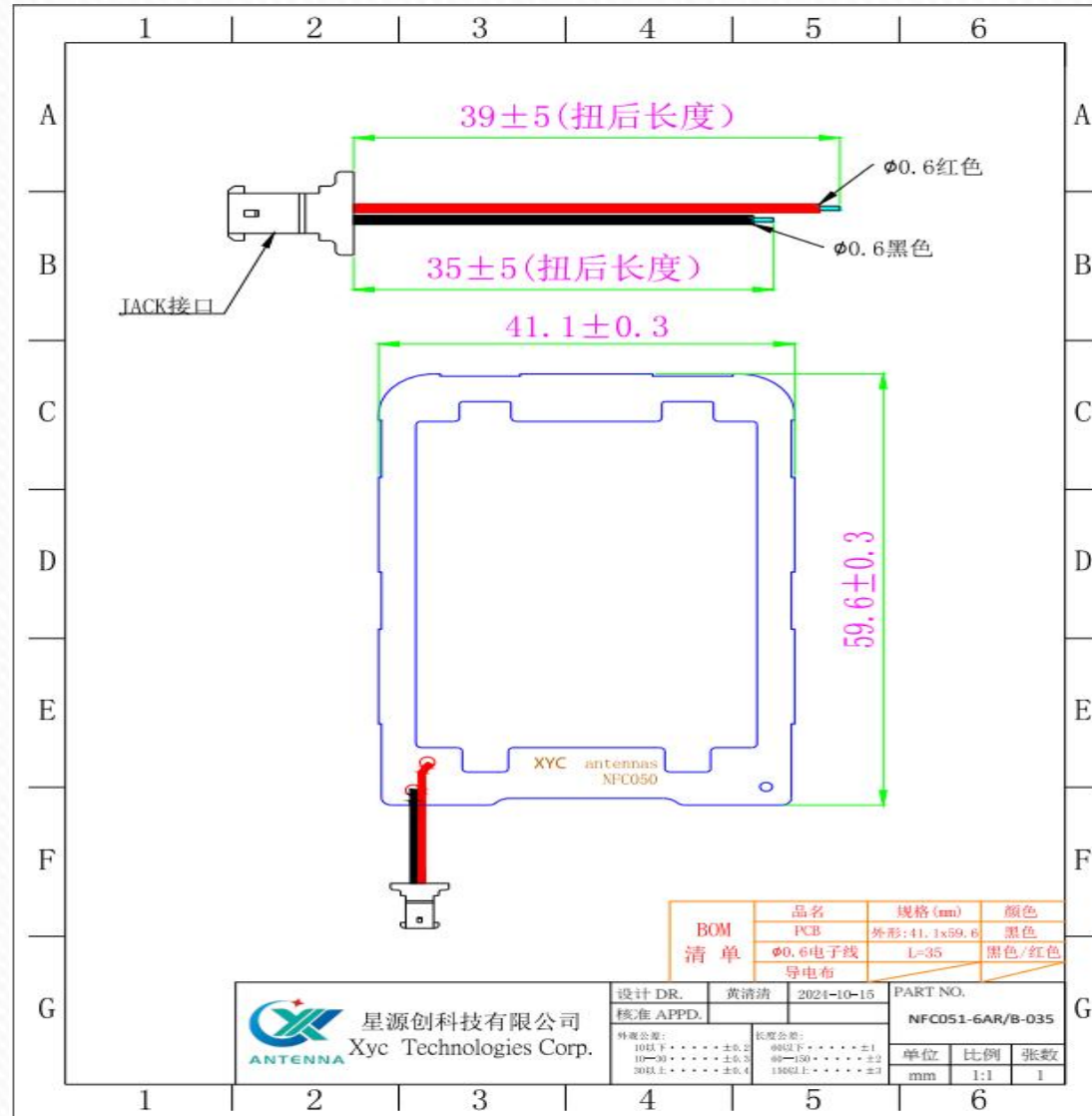


NFC ANT(DS2-51)



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

NFC ANT(DS2-52)



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