

Antenna Testing Report

Customer: apical Technology

Project Name:ID500PRO

Report Number:SZ26041IB77

Manufacturer: Sunnyway Technology(CHINA)

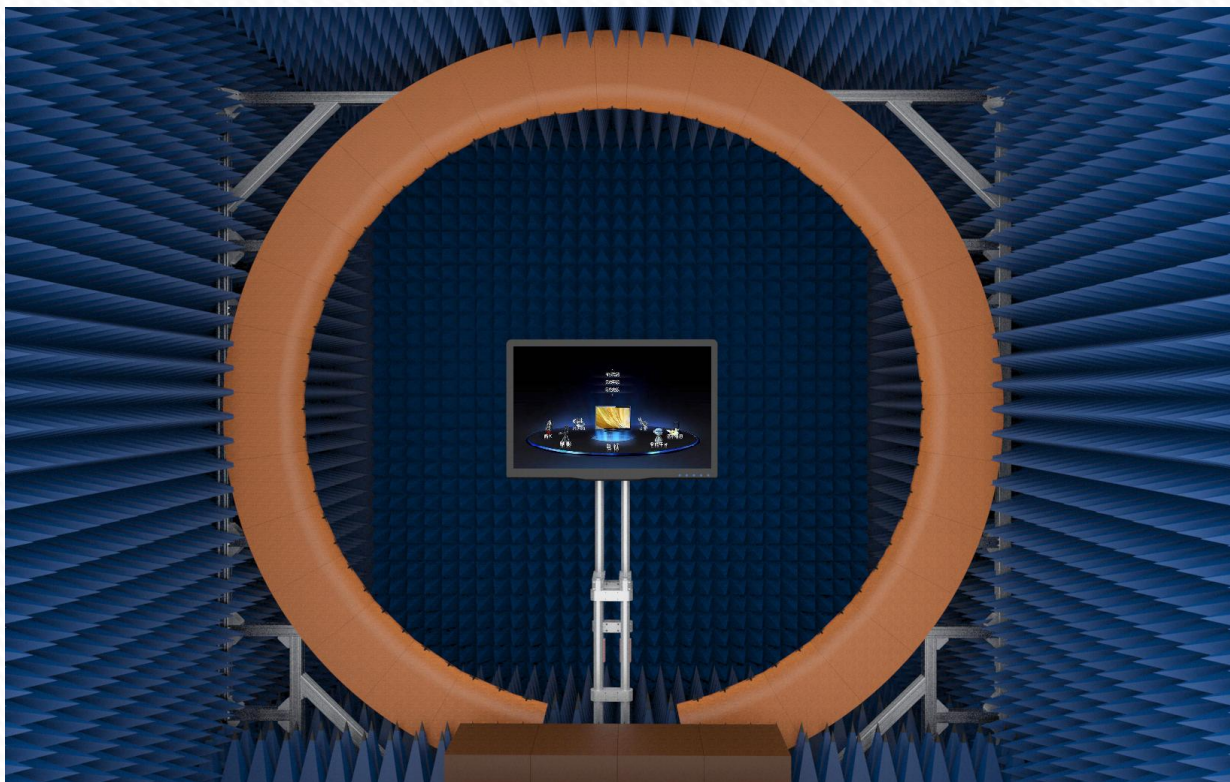
Address: Floor 6, Building 5, Nam Tai Inno Park, Guangming District,
Shenzhen

Report version: 2026/5/6

Version	Time	Update Notes
A0	2026/5/6	Latest test data
A1		
A2		
A3		
A4		
A5		
A6		
A7		
A8		
A9		

1. Resume.....	
2. Project Overview.....	
3. Company and Test Environment Introduction.....	
4. Matching circuit.....	
5. WiFi antenna-related data.....	
6. LORA antenna-related data.....	
7. Complete machine environmental handling.....	
8. Summary	

Prototype status	Active machine	Project Prototype Diagram: 
Product Type	Camera	
Number of antennas	WIFI Antenna	
Antenna frequency band		
	WIFI 2.4 5.8	
Structural form	Steel sheet	
Environmental management	No changes made	
Matching circuit	No changes 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

WI FI antenna/Antenna size

WI FI Antenna type: Steel sheet

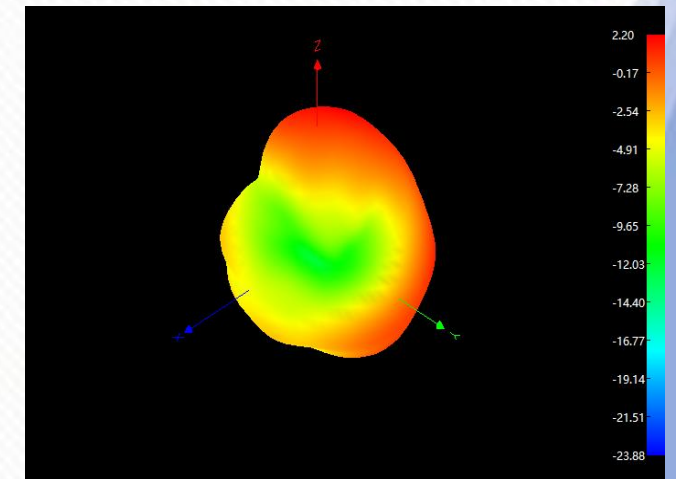
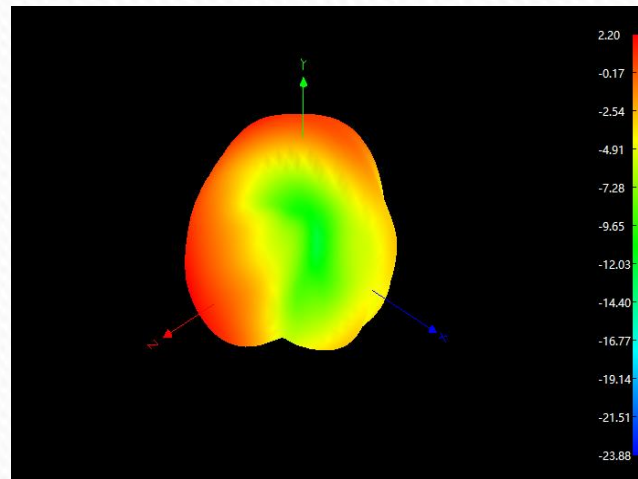
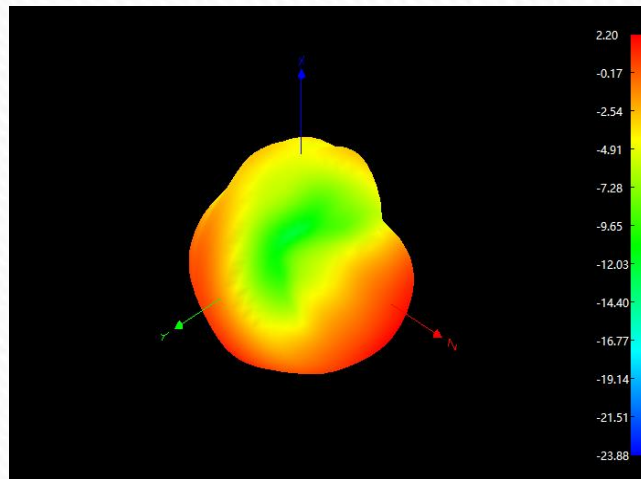
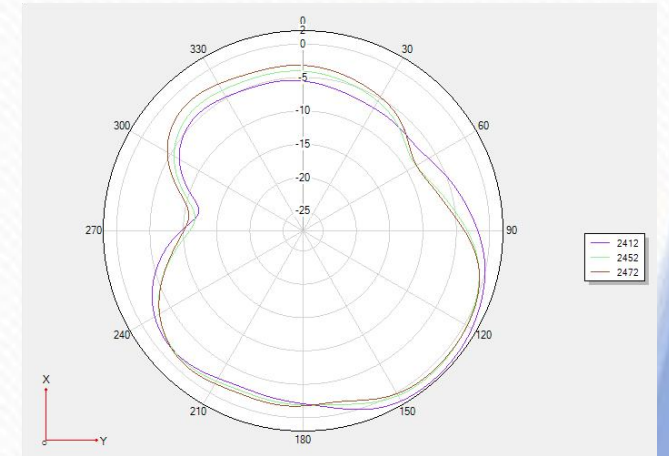
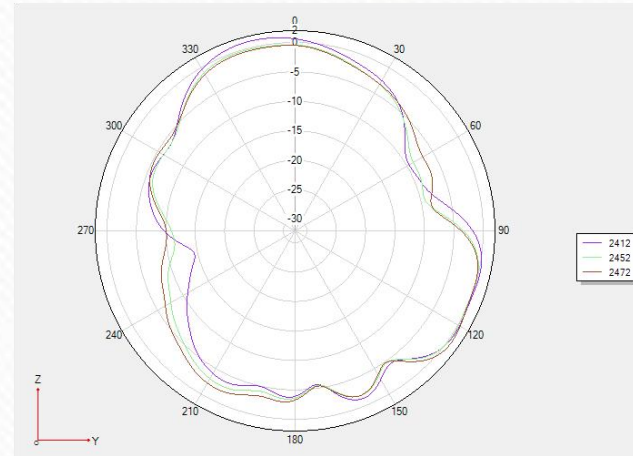
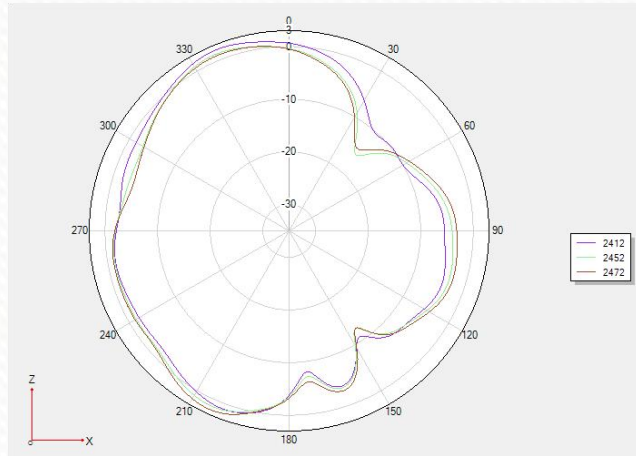
WI FI Antenna model:



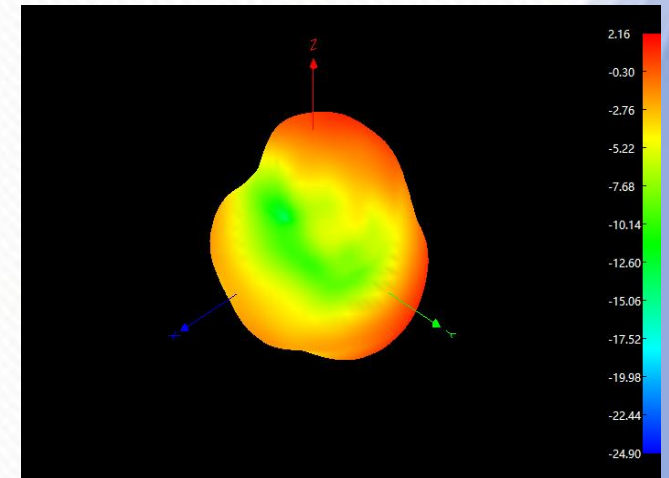
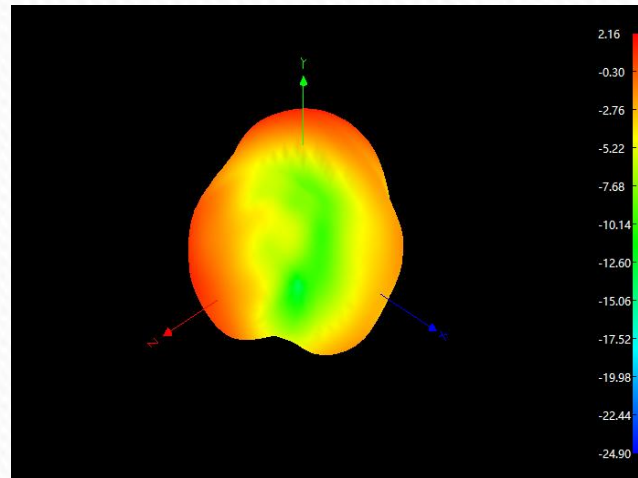
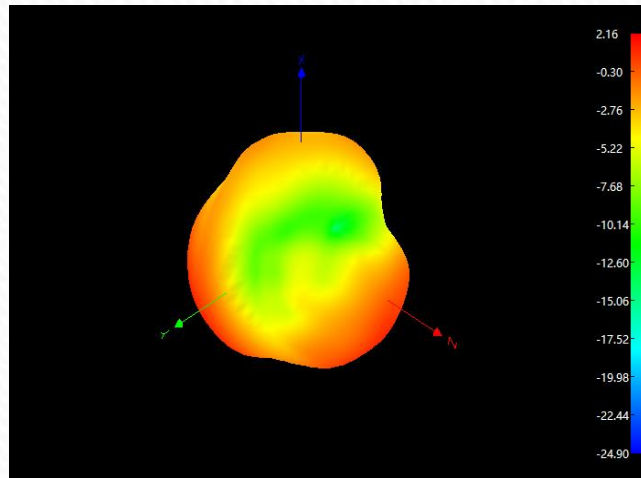
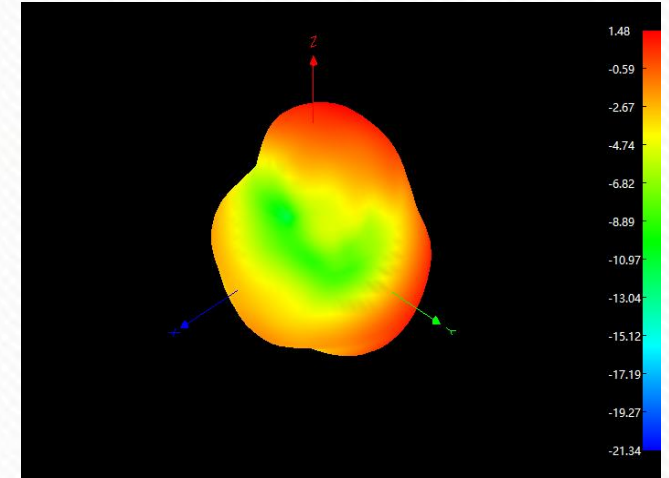
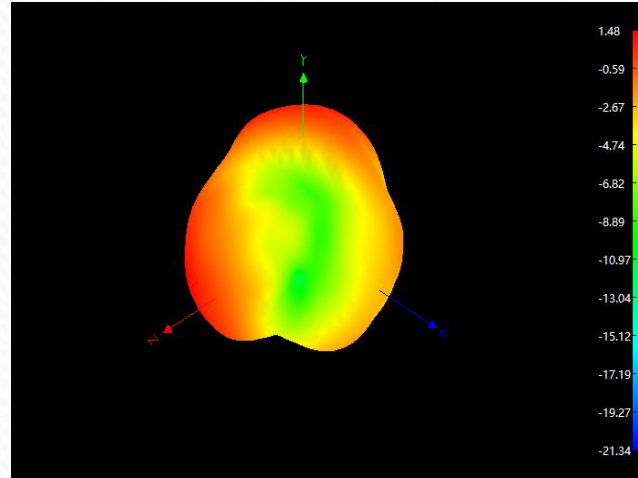
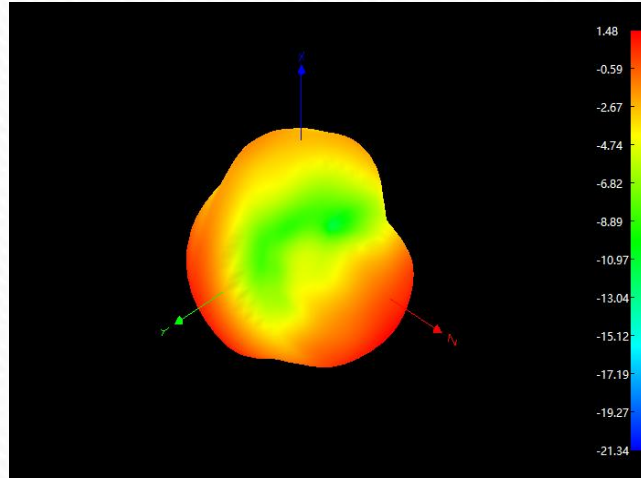
2.4G-WiFi Antenna efficiency

Frequency/Mhz	MaxGain/dBi	Efficiency / %
2412	2.2	50.6
2417	1.88	48.85
2422	1.66	47.46
2427	2.09	49.67
2432	2.08	48.35
2437	1.43	46.11
2442	1.65	46.59
2447	1.36	48.34
2452	1.48	58.55
2457	1.64	49.16
2462	1.86	48.61
2467	1.9	50.12
2472	2.16	56.37
2477	1.88	52.37
2482	2.26	48.48
2487	2.33	55.01
2492	2.16	52.78
2497	2.22	52.37

2.4G-WiFi Antenna Radiation Pattern



2.4G-WiFi Antenna Radiation Pattern

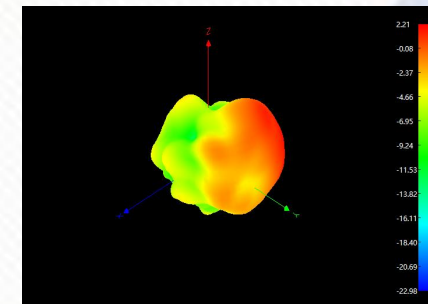
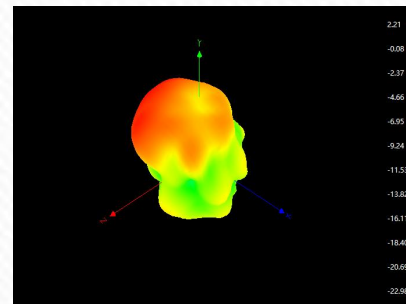
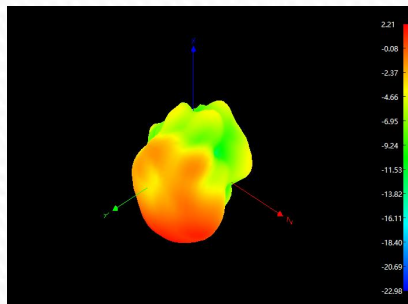
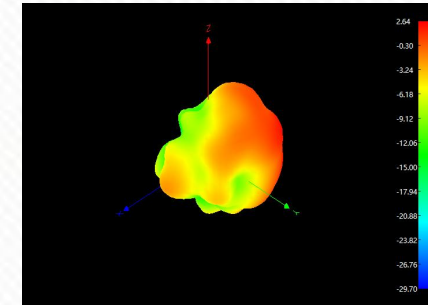
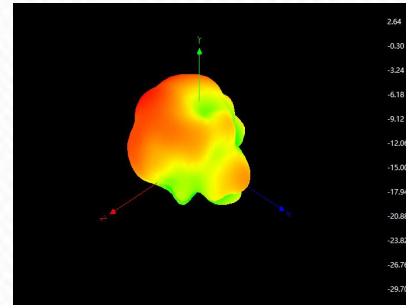
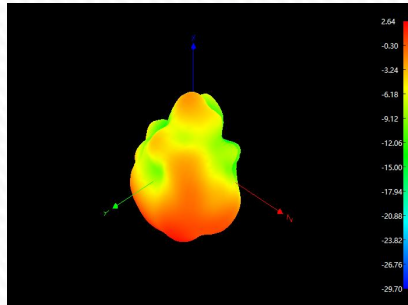
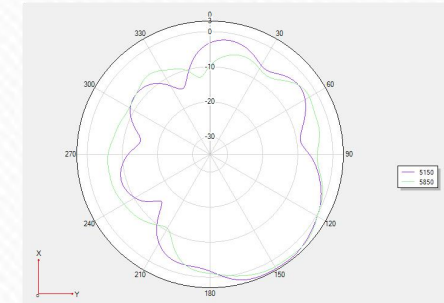
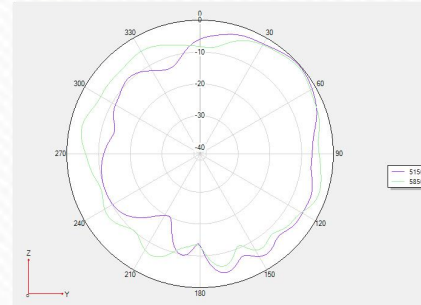
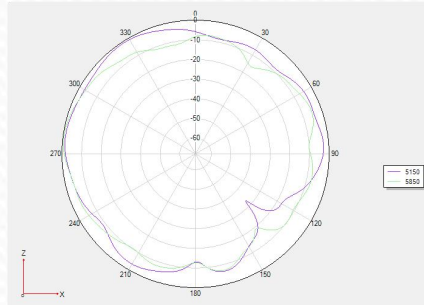




5.8G-WiFi Antenna efficiency

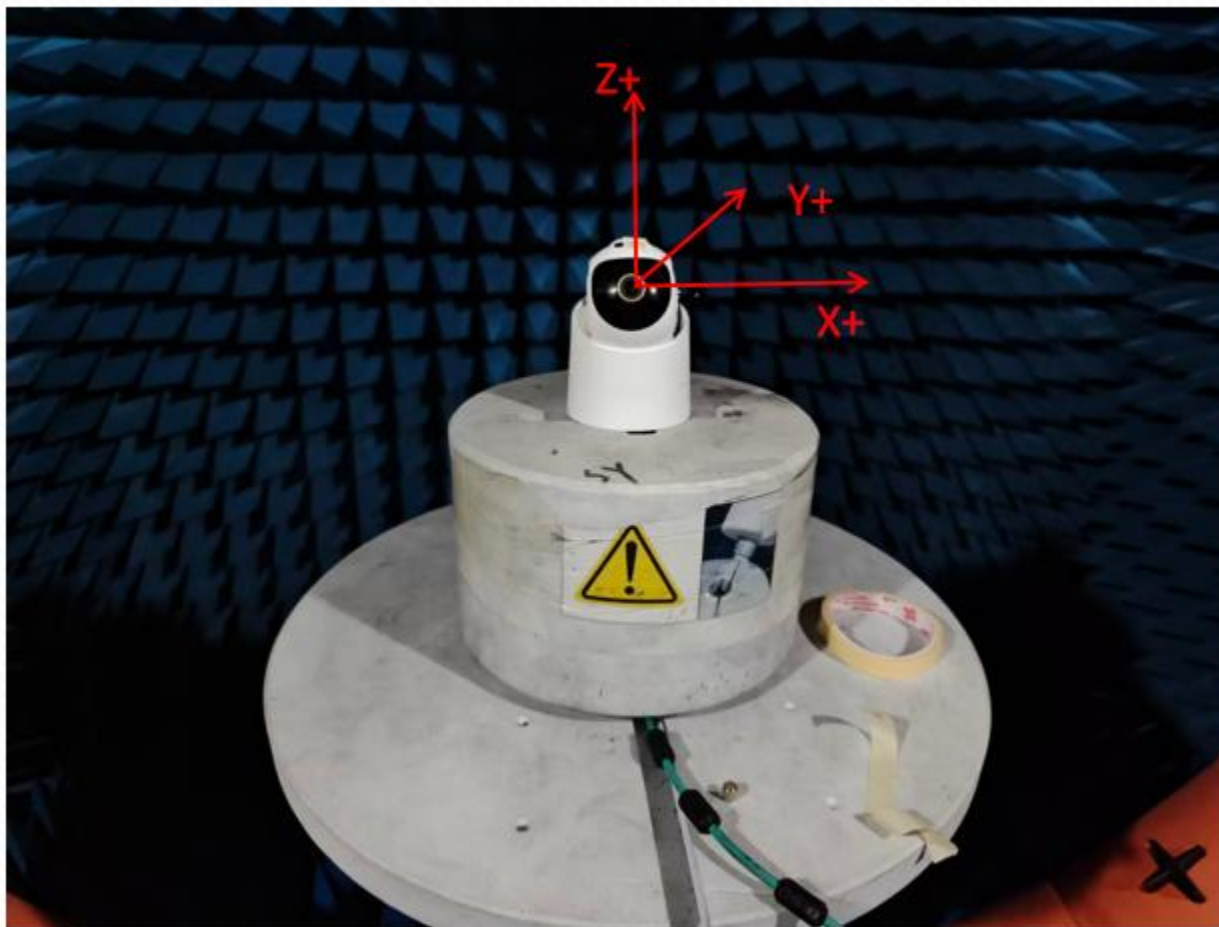
Frequency/Mhz	MaxGain/dBi	Efficiency / %	Frequency/Mhz	MaxGain/dBi	Efficiency / %
5150	2.64	60.1	5530	1.86	64.27
5170	2.43	61.8	5550	1.47	61.1
5190	2.71	61.24	5570	1.46	64.86
5210	2.59	62.68	5590	1.5	60.33
5230	2.75	60.21	5610	1.94	61.87
5250	2.77	62.54	5630	2.65	61.38
5270	2.72	61.8	5650	2.7	61.94
5290	2.84	62.15	5670	2.98	61.62
5310	2.55	61.89	5690	2.52	61.34
5330	3.1	64.16	5710	2.74	56.36
5350	2.93	60.26	5730	2.37	66.07
5370	2.37	63.48	5750	2.39	60.58
5390	2.59	64.98	5770	2.1	60.67
5410	3.04	61.64	5790	2.52	59.57
5430	3	60.39	5810	2.25	63.39
5450	2.61	62.68	5830	2.53	65.61
5470	2.72	61.62	5850	2.21	60.39
5490	2.62	60.34			
5510	2.12	60.72			

5.8G-WiFi Antenna Radiation Pattern



Antenna OTA test data

Measurement	Band	Channel	Total	Measurement	Band	Channel	Total
TRP	WIFI_B (1M)	1	19.57	TRP	WIFI_A (6M)	36	17.18
TRP	WIFI_B (1M)	6	19.71	TRP	WIFI_A (6M)	149	16.99
TRP	WIFI_B (1M)	11	18.51	TRP	WIFI_A (6M)	165	16.57
TIS(EIRP)	WIFI_B (11M)	1	-80.92	TIS(EIRP)	WIFI_A (54M)	36	-73.29
TIS(EIRP)	WIFI_B (11M)	6	-81.86	TIS(EIRP)	WIFI_A (54M)	149	-72.27
TIS(EIRP)	WIFI_B (11M)	11	-81.58	TIS(EIRP)	WIFI_A (54M)	165	-71.92
TRP	WIFI_G (6M)	1	18.95	TRP	WIFI_N_UNII (6.5M)	36	14.01
TRP	WIFI_G (6M)	6	18.88	TRP	WIFI_N_UNII (6.5M)	149	14.32
TRP	WIFI_G (6M)	11	18.48	TRP	WIFI_N_UNII (6.5M)	165	14.56
TIS(EIRP)	WIFI_G (54M)	1	-70.83	TIS(EIRP)	WIFI_N_UNII (65M)	36	-69.01
TIS(EIRP)	WIFI_G (54M)	6	-70.75	TIS(EIRP)	WIFI_N_UNII (65M)	149	-72.07
TIS(EIRP)	WIFI_G (54M)	11	-70.97	TIS(EIRP)	WIFI_N_UNII (65M)	165	-69.44
TRP	WIFI_N_ISM (6.5M)	1	18.2				
TRP	WIFI_N_ISM (6.5M)	6	18.73				
TRP	WIFI_N_ISM (6.5M)	11	18.01				
TIS(EIRP)	WIFI_N_ISM (65M)	1	-68.6				
TIS(EIRP)	WIFI_N_ISM (65M)	6	-71.16				
TIS(EIRP)	WIFI_N_ISM (65M)	11	-68.13				



- 1.No changes were made to the environmental handling.
- 2.The antenna matching was not adjusted.

Thank You

Shanghai R&D Center: 1F, Building 4, No.99, Lane 215, Gaoguang Road, Qingpu District, Shanghai, 201799, PRC

Shenzhen R&D Center: Floor 6, Building 5, Nam Tai Inno Park, Guangming District, Shenzhen, 518057, PRC

ChongQing R&D Center: 1F, ARM Ecological Industrial Park, 19 East Datugu Road, Xiantao, Yubei District, Chongqing, 401120, PRC

Huizhou Factory: F4-6, Building 8, Xiongtao Tech Park, No.15, Qingli 2nd Rd, Huicheng Dist, Huizhou City, 516255, PRC

TEL: 021-60835368 E-mail: sales@sunnyway-iot.com

www.sunnyway-iot.com

