

Manufacturer	SUNNYWAY
Address	6/F, Building 5, South Taiyun Chuanggu Center, Guangming District, Shenzhen
Antenna type	Internal antenna
SPECIFICATION	W28Pro
Antenna Gain	3.66dBi for BT, 3.13dBi for 2.4GWLAN, 1.76dBi for 5GWLAN

1.Test equipment and conditions:

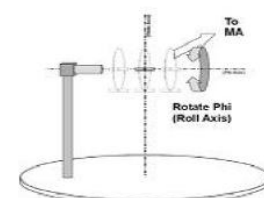
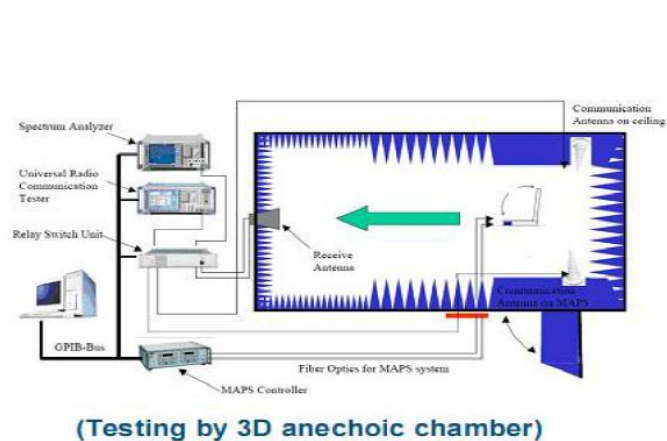
1.1.Network Analyzer

Agilent 8753D Agilent 5071B

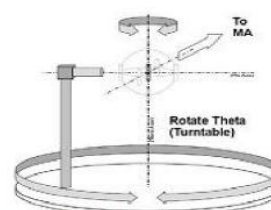
1.2.Communication test equipment

Agilent E5515C R&S CMW500

1.3.Test system

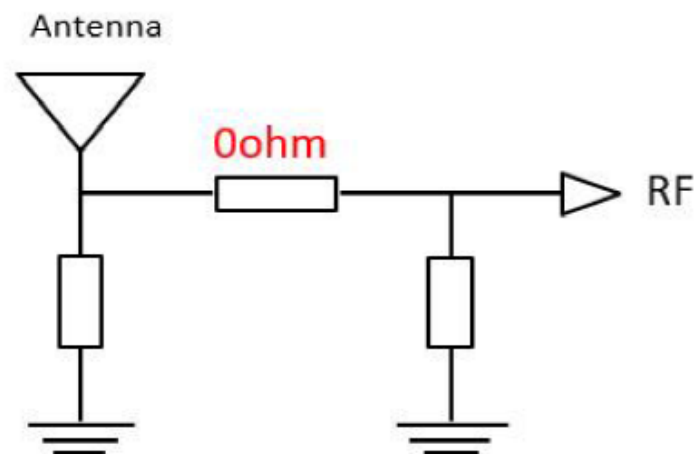


Phi axis test



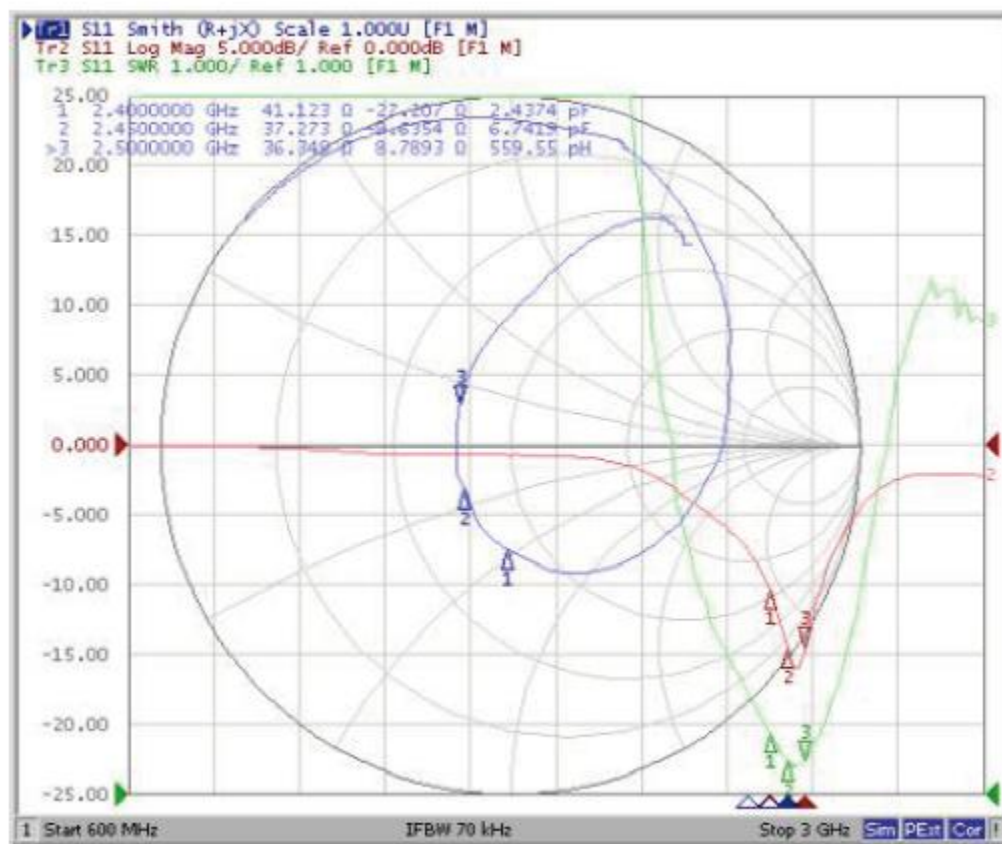
Theta axis test

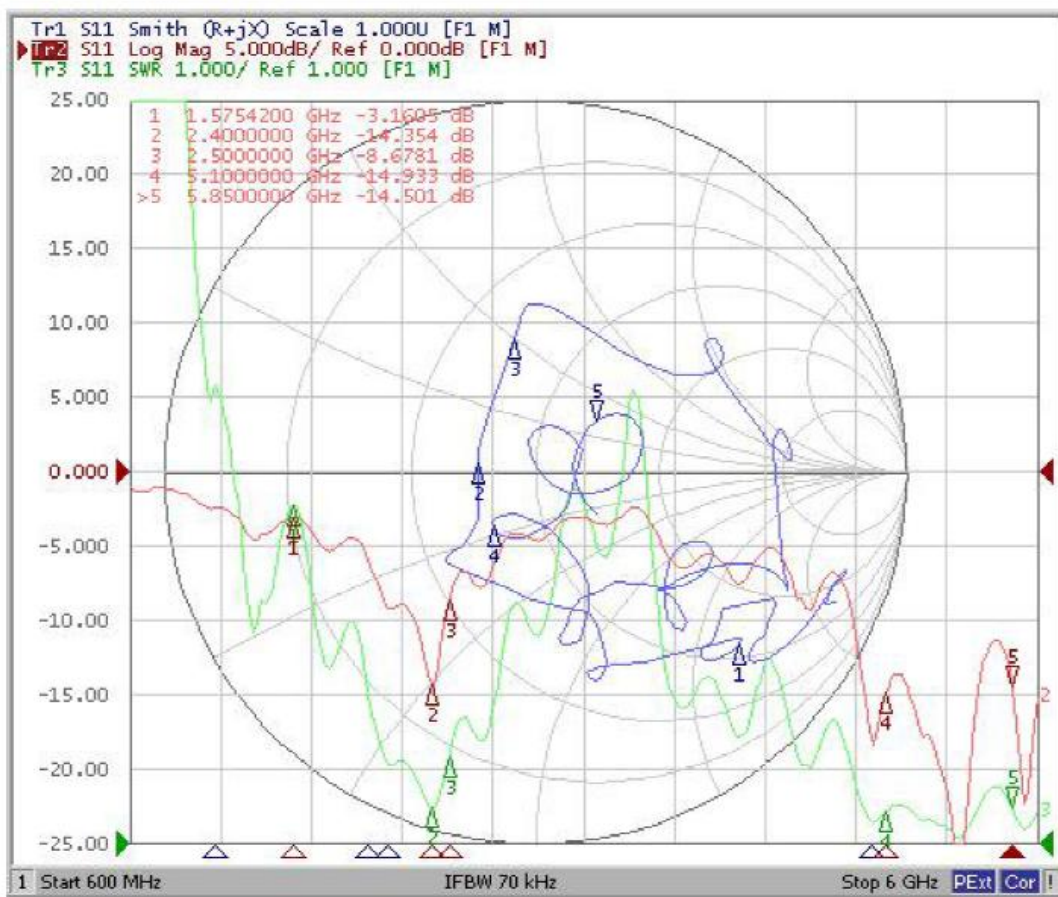
1.4. Matching circuit



2. Test Data:

2.1. Standing wave ratio





2.2.Efficiency BT

Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi
2400	-4.33	36.9	3.66
2410	-4.25	37.58	3.59
2420	-4.27	37.41	3.45
2430	-4.26	37.5	3.37
2440	-4.29	37.24	3.45
2450	-4.39	36.39	3.4
2460	-4.49	35.56	3.38
2470	-4.63	34.43	3.22
2480	-4.75	33.5	3.07
2490	-4.78	33.27	3.39
2500	-4.74	33.57	3.7

WLAN ANT 0

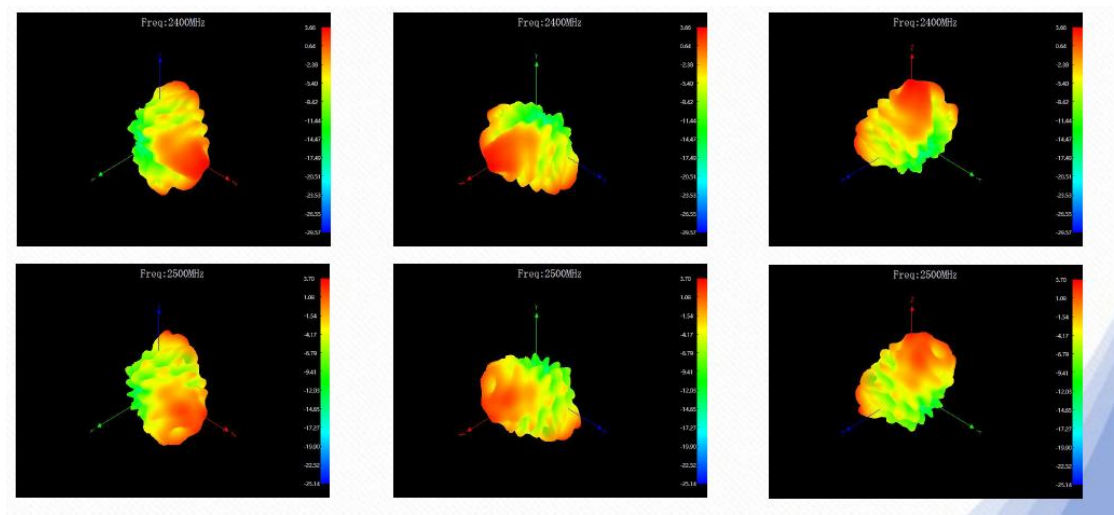
Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi	Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi
2400	-5.87	25.86	2.83	5150	-5.85	26.03	1.66
2410	-5.84	26.05	3.13	5200	-5.77	26.49	0.25
2420	-5.65	27.24	2.94	5250	-6.50	22.38	-0.93
2430	-5.63	27.36	2.22	5300	-6.17	24.18	-1.28
2440	-5.61	27.49	1.63	5350	-6.72	21.29	-1.41
2450	-5.64	27.32	1.06	5400	-6.00	25.14	-1.28
2460	-5.76	26.56	0.65	5450	-6.30	23.42	-1.12
2470	-5.56	27.82	0.23	5500	-5.68	27.06	-1.03
2480	-5.63	27.36	0.75	5550	-6.23	23.83	0.75
2490	-5.68	27.03	1.15	5600	-5.60	27.56	0.37
2500	-5.78	26.40	1.26	5650	-6.15	24.26	0.15
				5700	-5.86	25.94	0.71
				5750	-5.43	28.63	1.76
				5800	-5.51	28.15	1.31
				5850	-5.48	28.32	1.13

WLAN ANT 1

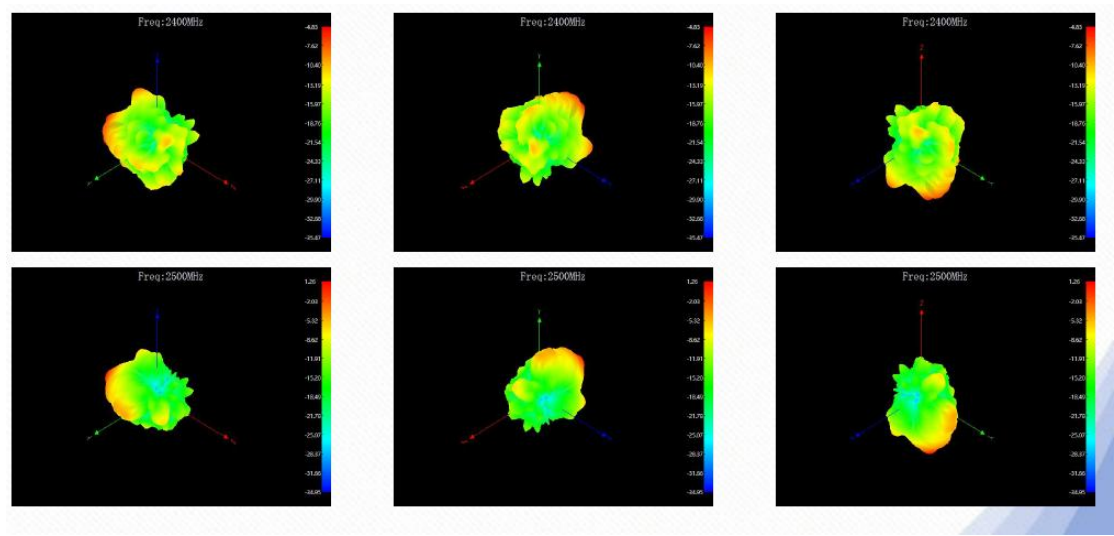
Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi	Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi
2400	-6.35	23.18	2.64	5150	-6.03	24.94	1.65
2410	-6.22	23.88	2.87	5200	-6.45	22.64	0.68
2420	-6.02	25.03	2.63	5250	-6.22	23.87	0.60
2430	-5.96	25.33	3.13	5300	-5.73	26.72	1.18
2440	-5.92	25.56	1.86	5350	-6.36	23.12	1.79
2450	-6.01	25.06	1.45	5400	-6.76	21.09	0.17
2460	-6.07	24.69	0.91	5450	-6.53	22.21	0.52
2470	-6.10	24.55	0.73	5500	-6.14	24.32	0.36
2480	-6.16	24.21	0.31	5550	-6.57	22.01	0.69
2490	-6.24	23.75	0.15	5600	-7.02	19.84	1.13
2500	-6.29	23.52	0.39	5650	-7.14	19.32	1.10
				5700	-6.89	20.45	0.42
				5750	-6.47	22.52	0.64
				5800	-6.75	21.11	0.20
				5850	-6.69	21.41	1.76

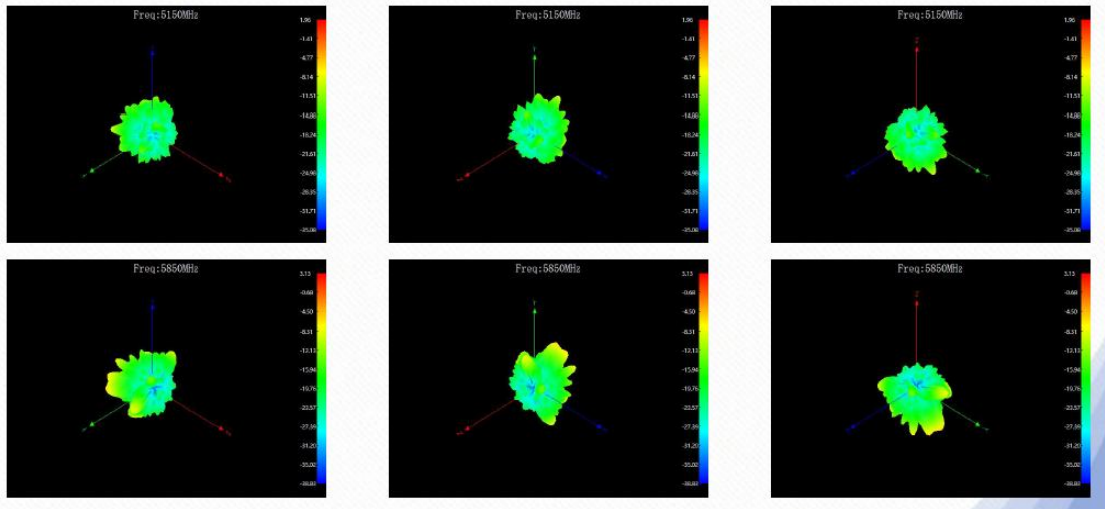
2.3.Directivity diagram

BT

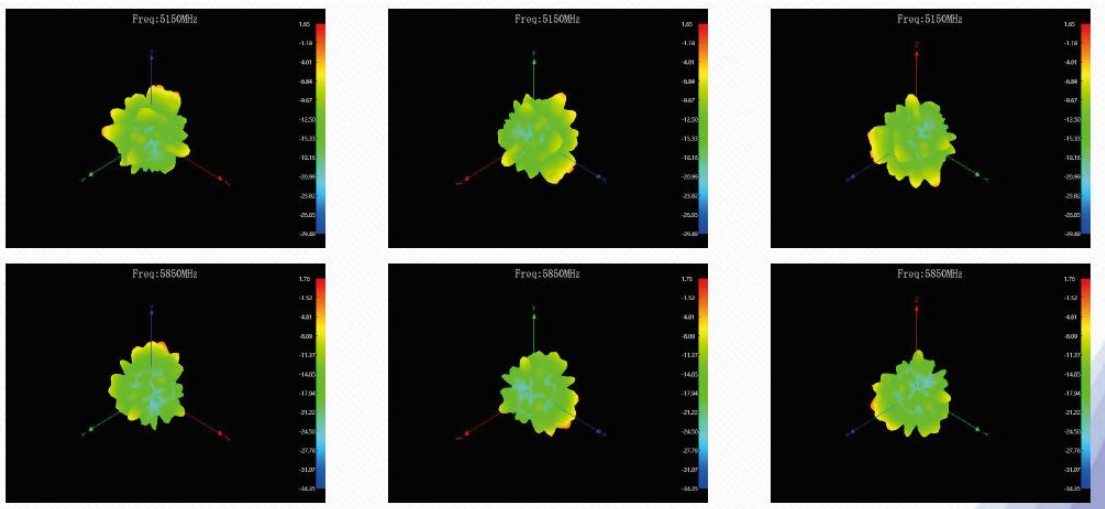
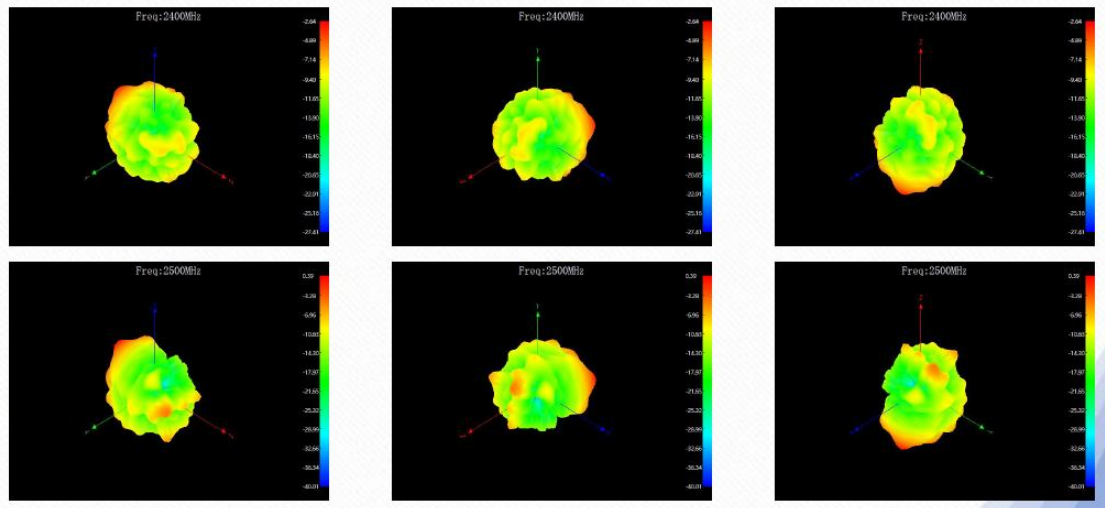


WLAN ANT 0



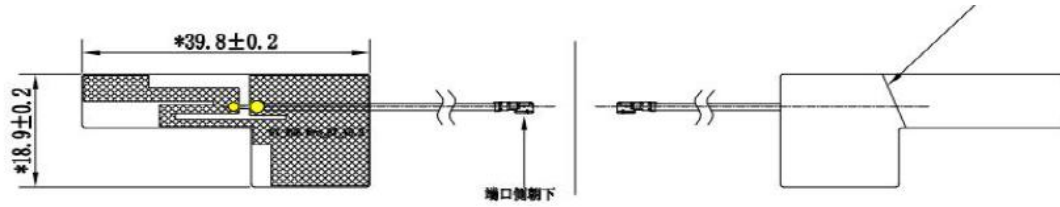


WLAN ANT 1

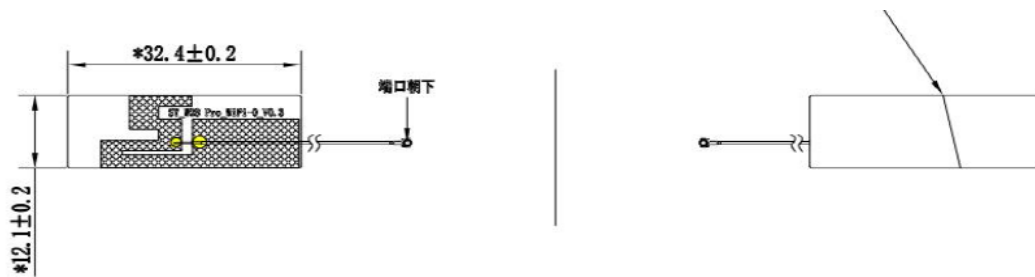


3. Antenna drawing(MM):

BT



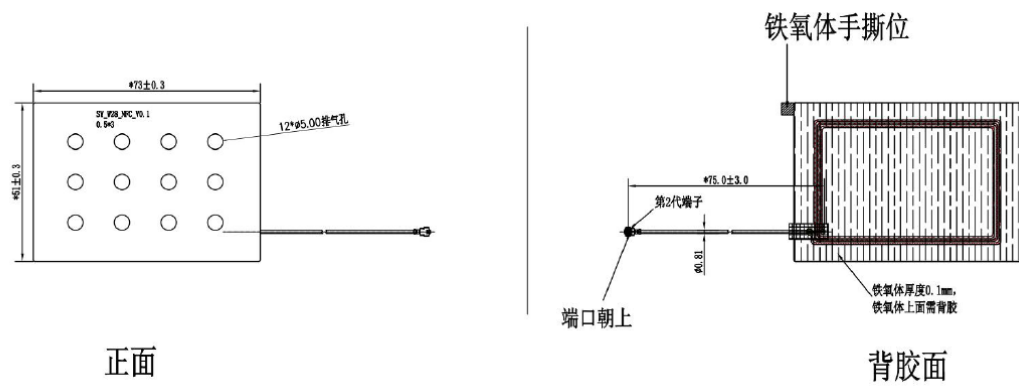
WLAN ANT 0



WLAN ANT 1



NFC



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