

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:

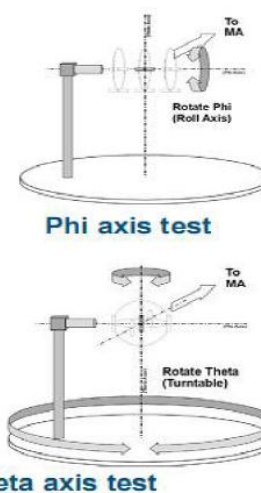
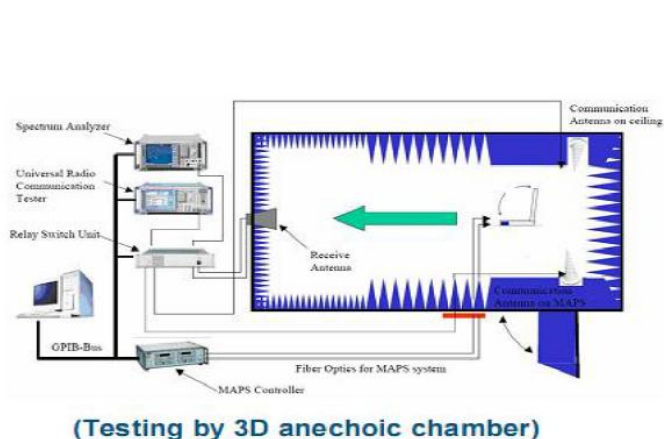
1.1. Network Analyzer

Agilent 8753D Agilent 5071B

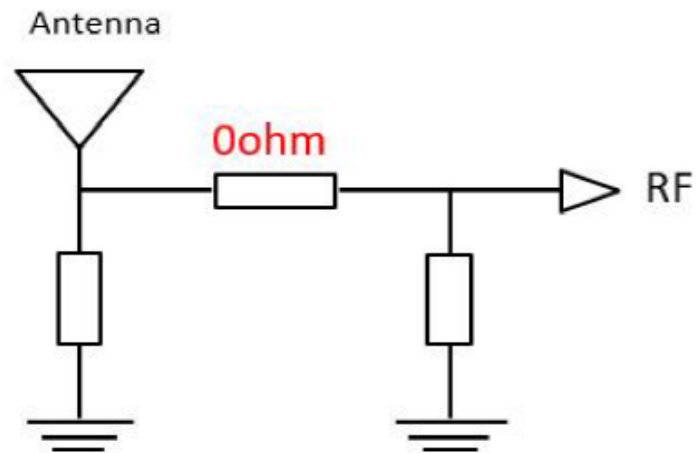
1.2. Communication test equipment

Agilent E5515C R&S CMW500

1.3. Test system

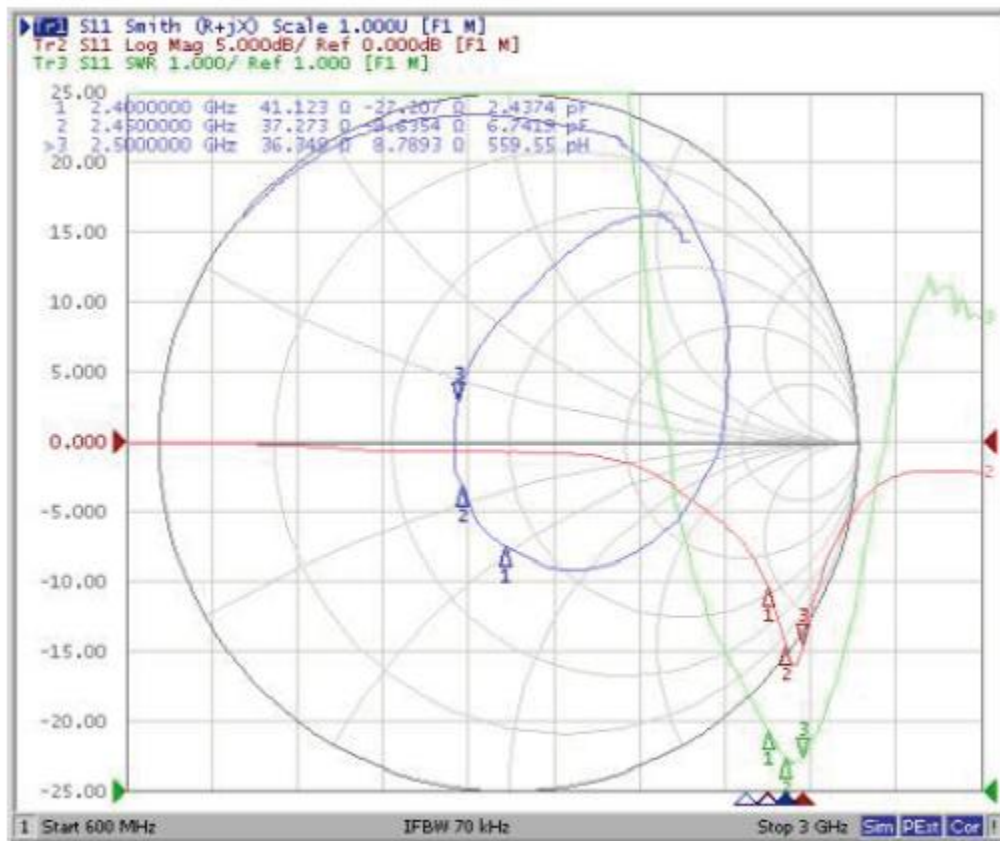


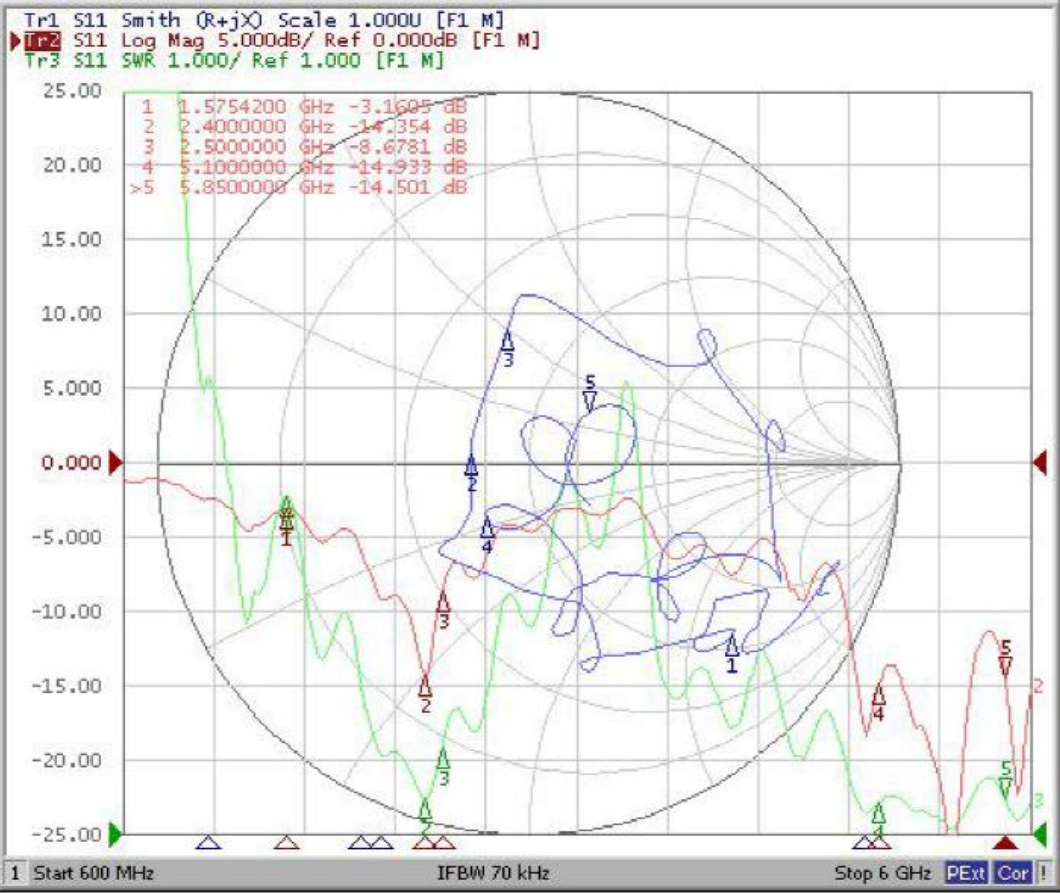
1.4. Matching circuit



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

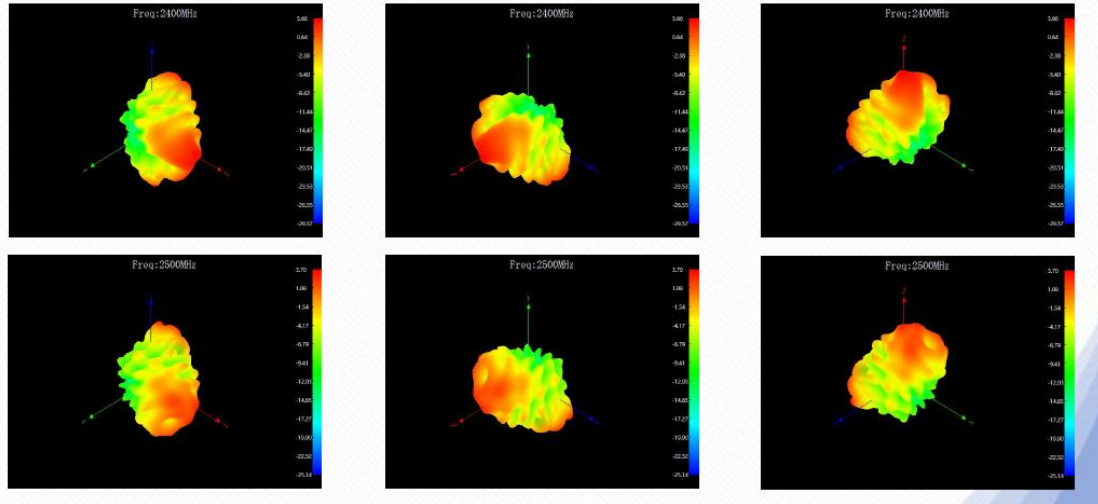
Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi	Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi
2400	-5.87	25.86	2.83	5150	-5.85	26.03	1.66
2410	-5.84	26.05	3.13	5200	-5.77	26.49	0.25
2420	-5.65	27.24	2.94	5250	-6.50	22.38	-0.93
2430	-5.63	27.36	2.22	5300	-6.17	24.18	-1.28
2440	-5.61	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

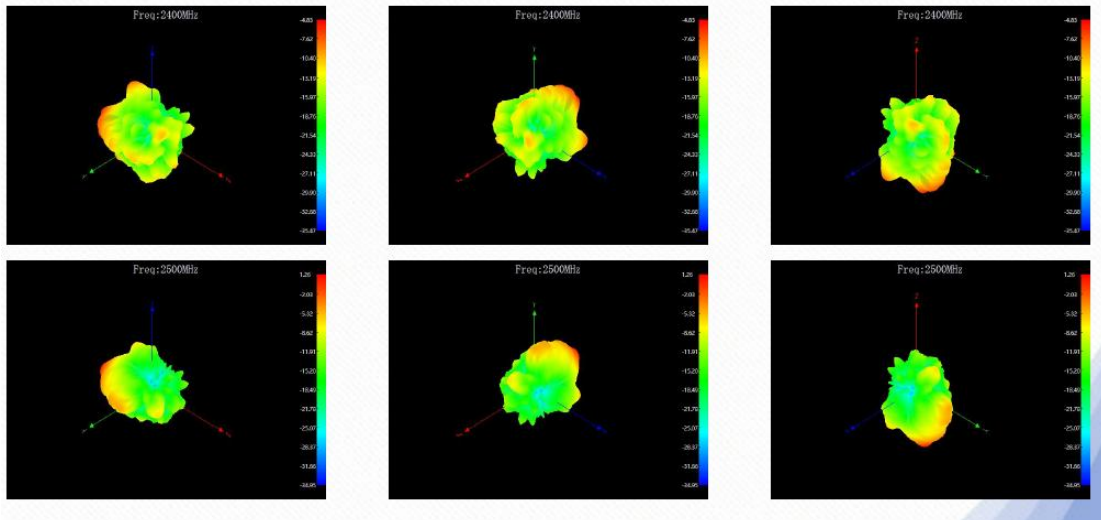
Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi	Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi
2400	-6.35	23.18	2.64	5150	-6.03	24.94	1.65
2410	-6.22	23.88	2.87	5200	-6.45	22.64	0.68
2420	-6.02	25.03	2.63	5250	-6.22	23.87	0.60
2430	-5.96	25.33	3.13	5300	-5.73	26.72	1.18
2440	-5.92	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

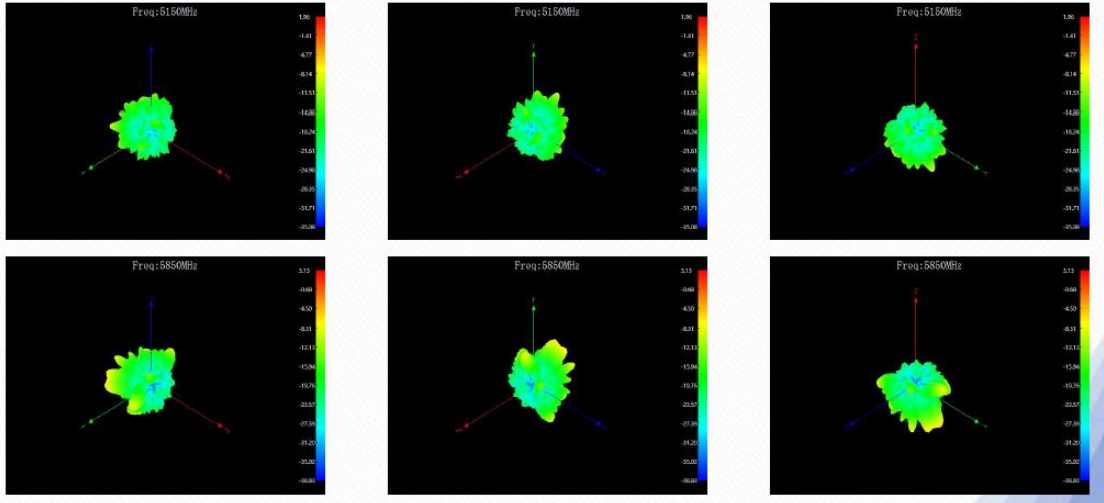
2.3.Directivity diagram

BT

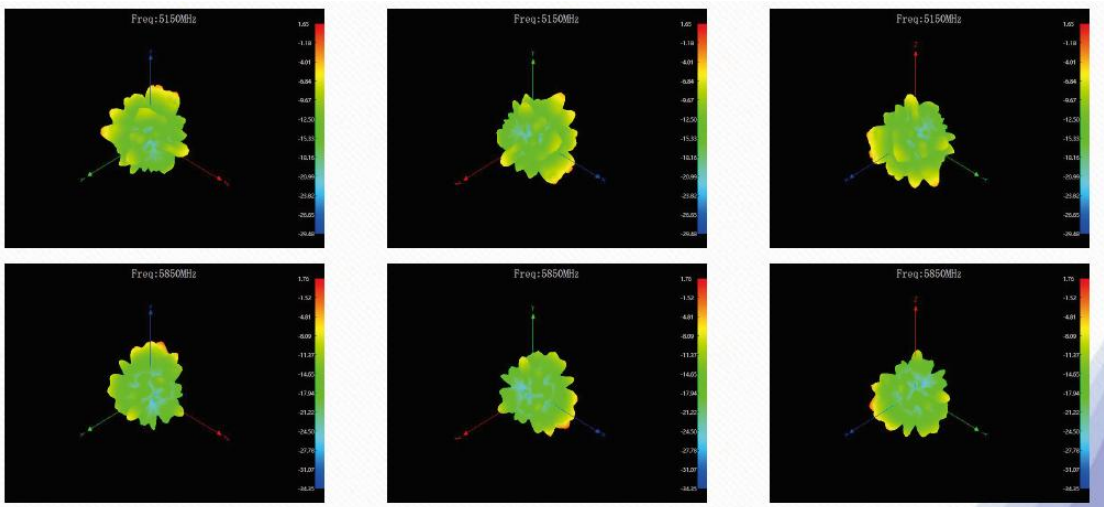
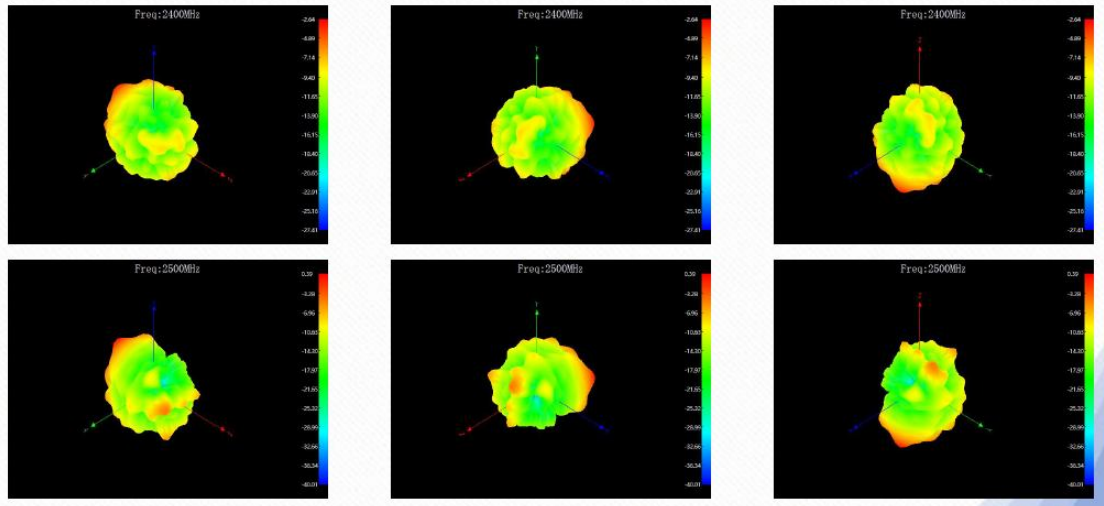


WLAN ANT 0



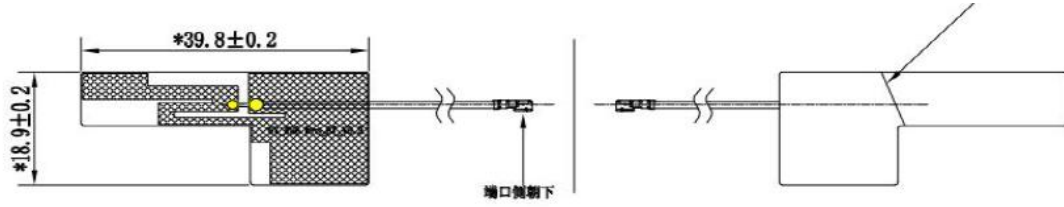


WLAN ANT 1

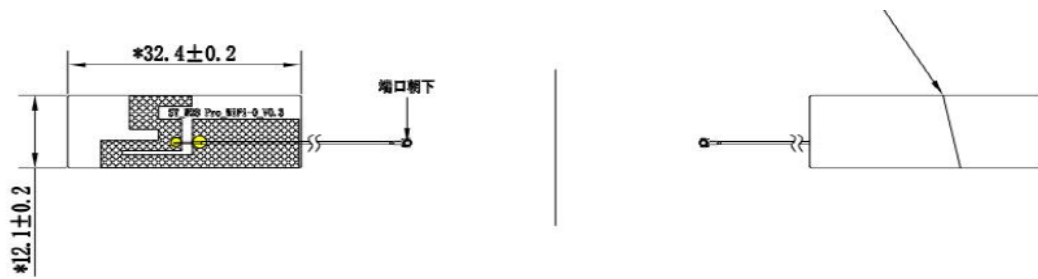


3. Antenna drawing(MM):

BT



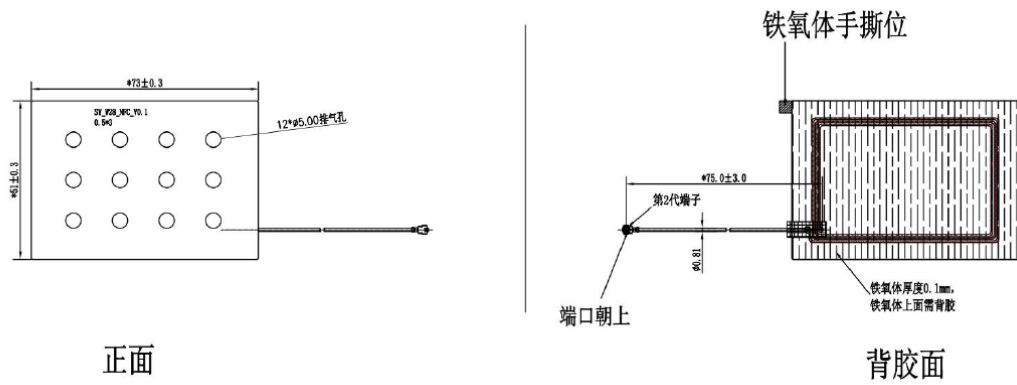
WLAN ANT 0



WLAN ANT 1



NFC



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