

Manufacturer	Shenzhen Bilian Electronic Co.,Ltd
Antenna type	External antenna
Antenna Gain	5.00dBi for 2.4G, 5.00dBi for 5G

## 1. Test equipment and conditions:

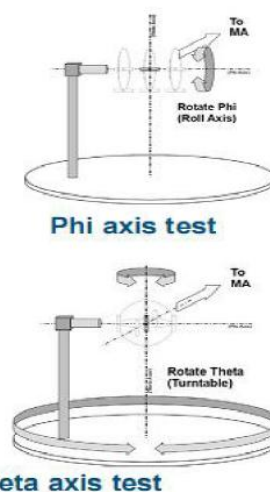
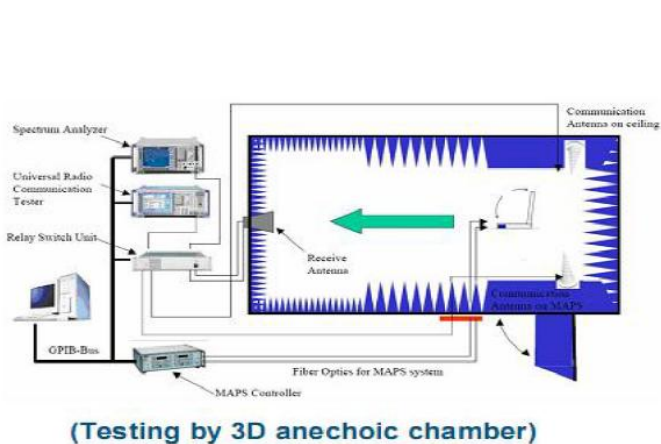
### 1.1. Network Analyzer

Agilent 8753D Agilent 5071B

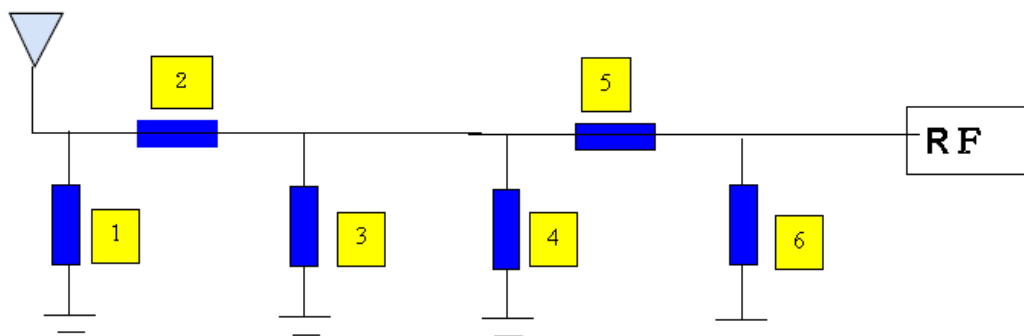
### 1.2. Communication test equipment

Agilent E5515C R&S CMW500

### 1.3. Test system

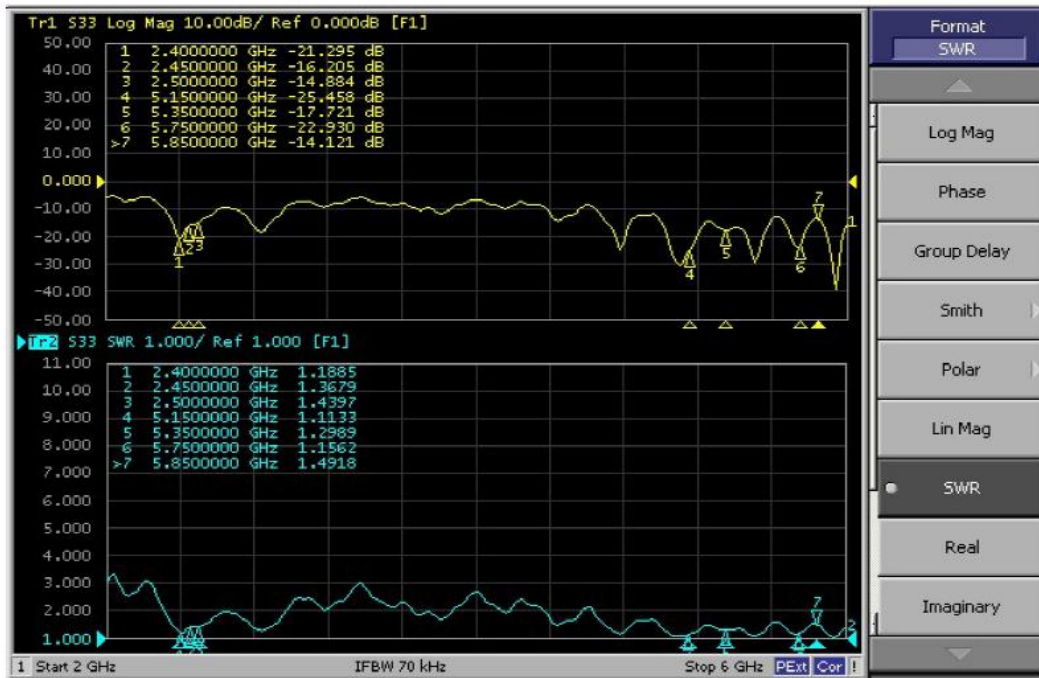


### 1.4. Matching circuit



## 2. Test Data:

### 2.1. Standing wave ratio

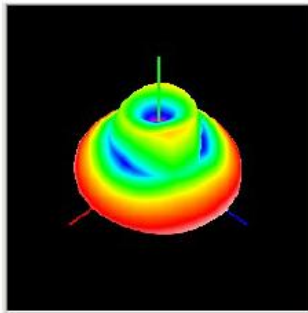


## 2.2.Efficiency

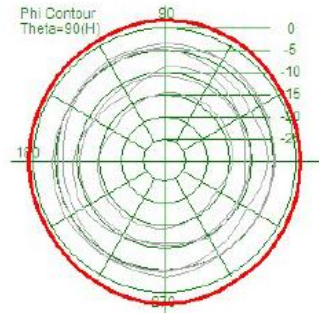
2.4G										
Fred (MHz)	Effi (%)	Effi (%)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Attenut (Hor)	Attenut (Ver)
2400	44.38	-2.79	4.82	2.68	40.28	13.32	2.29	-23.79	48.26	49.33
2410	44.63	-2.46	4.01	1.87	42.42	13.54	2.46	-21.29	48.66	49.58
2420	44.94	-2.12	4.78	2.64	40.96	14.77	2.68	-20.97	48.71	49.88
2430	44.27	-2.70	4.63	2.49	43.24	15.23	2.29	-22.77	48.21	49.35
2440	44.75	-2.39	4.08	1.94	40.71	15.79	2.53	-25.39	48.58	49.56
2450	44.82	-1.83	4.84	2.70	41.19	16.18	3.15	-21.98	49.11	49.99
2460	44.28	-2.63	4.14	2.00	42.39	18.25	2.31	-25.62	48.37	49.22
2470	44.49	-2.34	4.96	2.82	41.78	18.80	2.50	-24.31	48.50	49.54
2480	45.08	-2.23	4.87	2.73	40.89	19.05	3.14	-23.23	48.98	49.99
2490	44.21	-2.68	4.55	2.41	43.21	19.23	2.35	-21.77	48.24	49.20
2500	44.46	-2.32	4.99	2.85	40.44	19.62	2.48	-20.30	48.48	49.61

5G										
Fred (MHz)	Effi (%)	Effi (%)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Attenut (Hor)	Attenut (Ver)
4900	60.30	-0.78	4.70	2.56	49.26	35.28	3.29	-19.67	63.32	61.32
5000	60.53	-0.44	4.26	2.12	51.69	37.77	4.68	-22.38	65.59	62.75
5100	60.61	-0.25	5.00	2.86	52.92	34.93	3.92	-21.31	64.12	64.84
5200	60.27	-0.69	4.17	2.03	48.24	39.31	3.29	-19.74	63.35	62.37
5300	60.49	-0.35	4.89	2.75	46.80	30.79	2.76	-18.23	64.73	63.76
5400	60.96	-0.35	4.55	2.41	50.15	30.89	3.81	-25.32	64.01	60.93
5500	60.30	-0.75	4.87	2.73	51.34	29.28	4.22	-23.61	66.30	62.24
5600	60.73	-0.58	4.81	2.67	49.59	26.70	3.76	-16.47	63.78	61.77
5700	60.76	0.16	4.11	1.97	53.11	26.16	4.78	-17.26	64.16	61.86
5800	60.21	-0.63	5.00	2.86	45.22	34.40	3.21	-15.65	62.26	63.31
5900	60.47	-0.28	4.59	2.45	49.45	35.48	3.56	-18.42	63.54	62.65

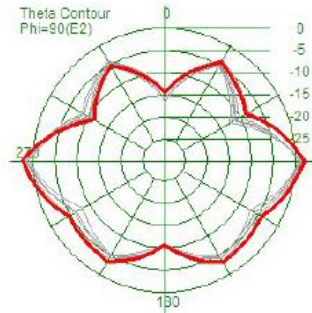
### 2.3.Directivity diagram



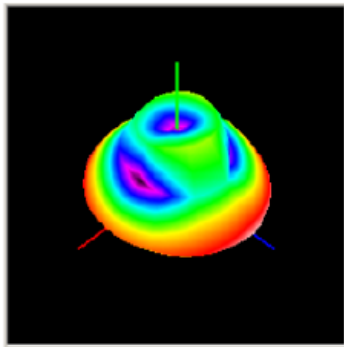
2.4GHz



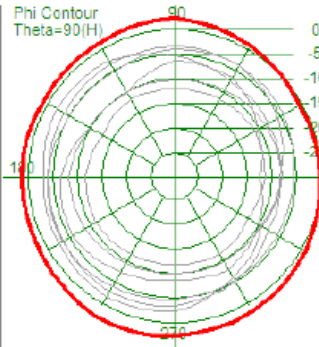
Gain: 4.82dBi



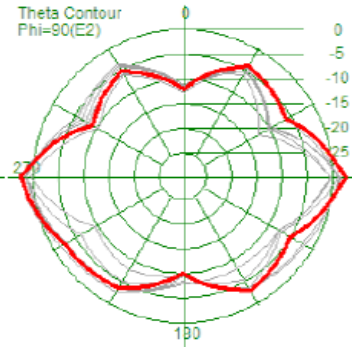
Efficiency:70.15%



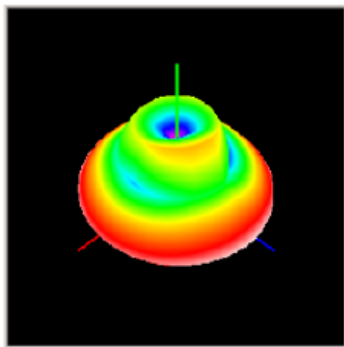
2.45GHz



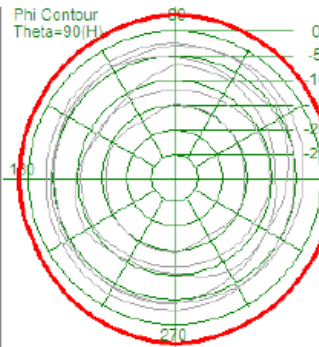
Gain: 4.84dBi



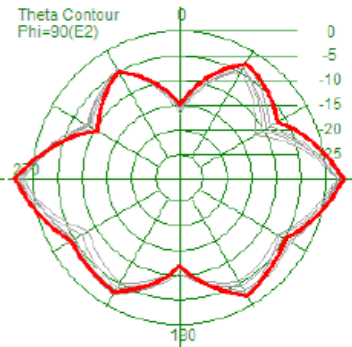
Efficiency: 73.23%



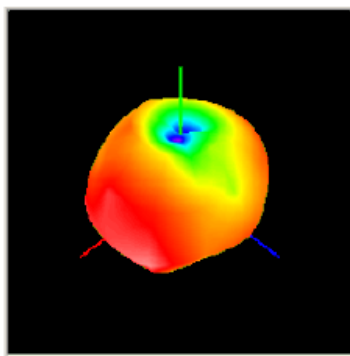
2.5GHz



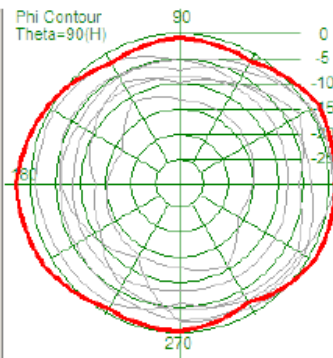
Gain: 4.99dBi



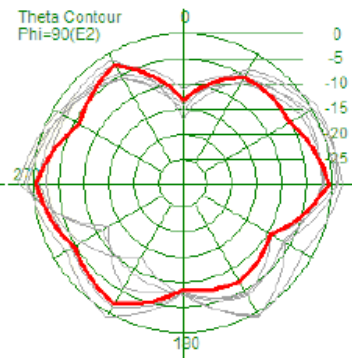
Efficiency: 74.09%



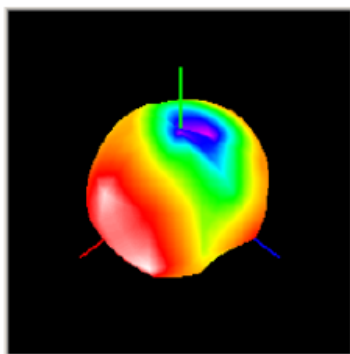
5.15GHz



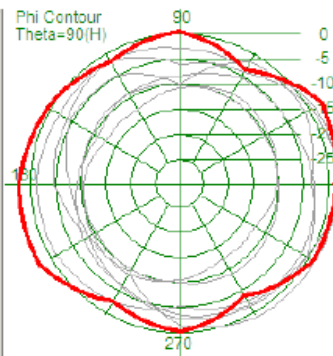
Gain: 5.00dBi



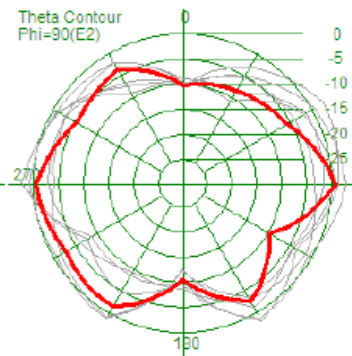
Efficiency: 70.86%



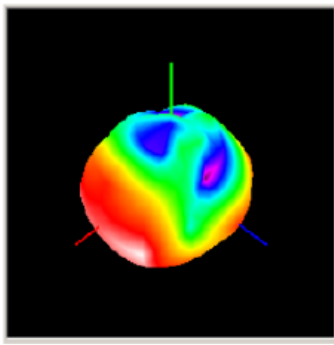
5.35GHz



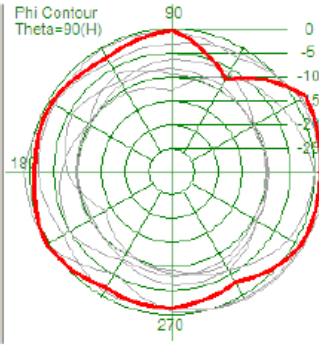
Gain: 4.95dBi



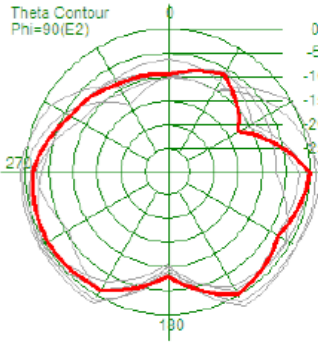
Efficiency: 70.49%



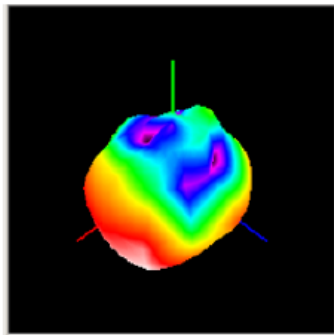
5.75GHz



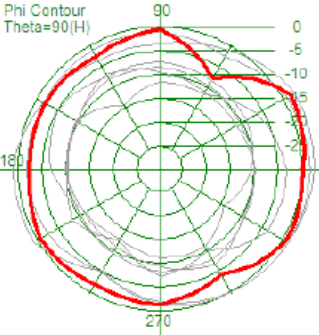
Gain: 4.93dBi



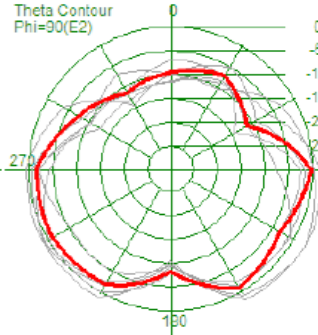
Efficiency: 71.61%



5.825GHz



Gain: 5.01dBi



Efficiency: 72.37%

### 3. Antenna drawing:

