

Antenna Testing Report

Customer: apical Technology

Project Name: KX349

Report Number: SZ25297IB77-
1/SZ25297IB77-2/SZ25297IA54

Manufacturer: Sunnyway Technology(CHINA)

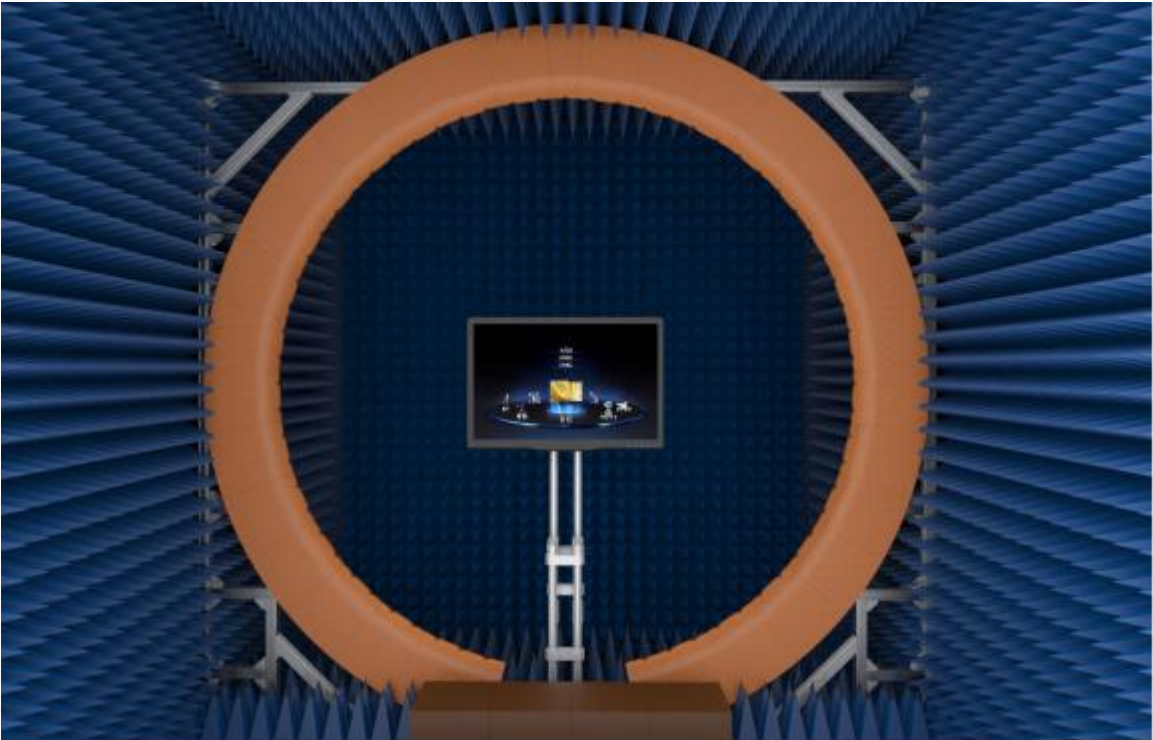
Address: Floor 6, Building 5, Nam Tai Inno Park, Guangming District, Shenzhen

Report version: 09.25, 2025
Author:

Version	Report date	Remark
A0	2025.09.25	Latest test data
A1		
A2		
A3		
A4		
A5		
A6		
A7		
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A9		

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Prototype status	Debugging machine
Device type	car recorder
Number of antennas	WIFI GPS antenna
Frequency band	WIFI 2.4 +5.8 BT2.4
	GPS
Structural style	FPC+Ceramics
Environment adjustment	No change
Matching modification	No change



The industry's top 64 sensors OTA chamber

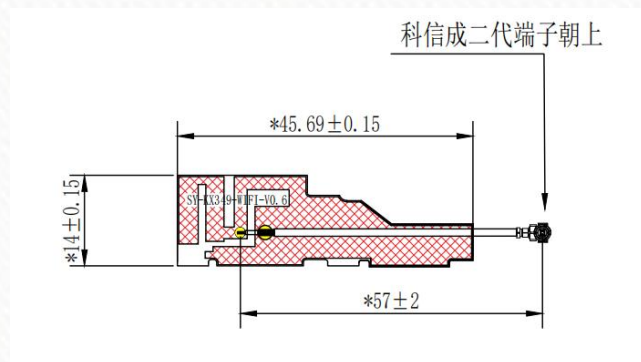
Frequency range: 400MHz-11GHz

Device Llimitation: 2M

Load-bearing limitation:100KG

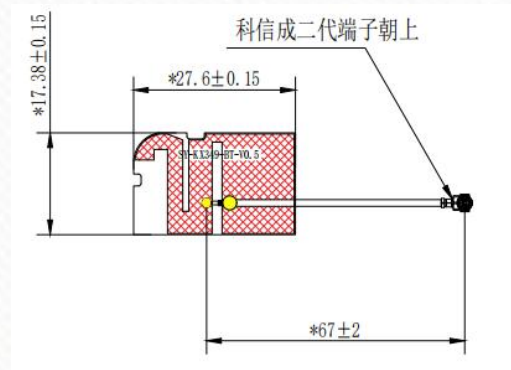
Equipments Items	Total Quantity	Quantity for Shanghai R&D	Quantity for Shenzhen R&D	Quantity for ChongQing R&D
OTA chamber	10	4	5	1
5G Tester（SP9500-CTS）	3	1	1	1
R&S Tester（high configuration CMW500）	6	3	2	1
Japan Anritsu Tester（Dual Channel 8820）	4	2	2	--
NB-IoT Tester (SP8315)	3	1	1	1
Agilent Tester（8960）	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

WIFI antenna/Antenna size

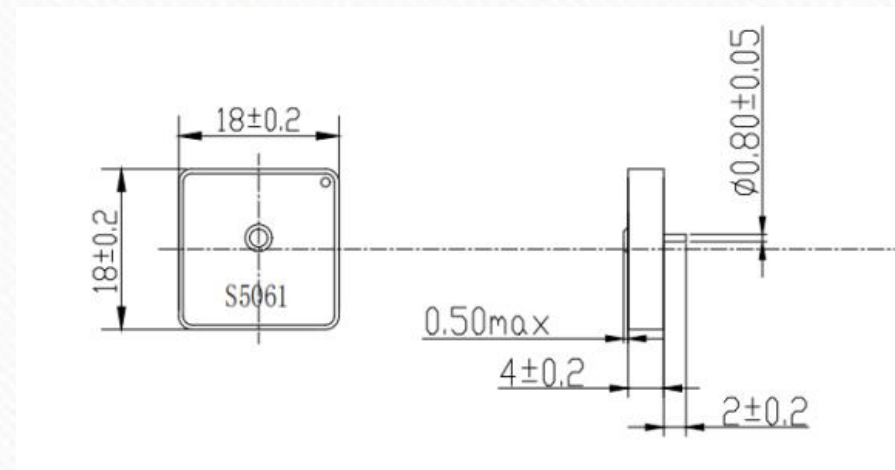


WIFI Antenna type: FPC

WIFI Antenna model: SZ25297IB77-1/SZ25297IB77-2

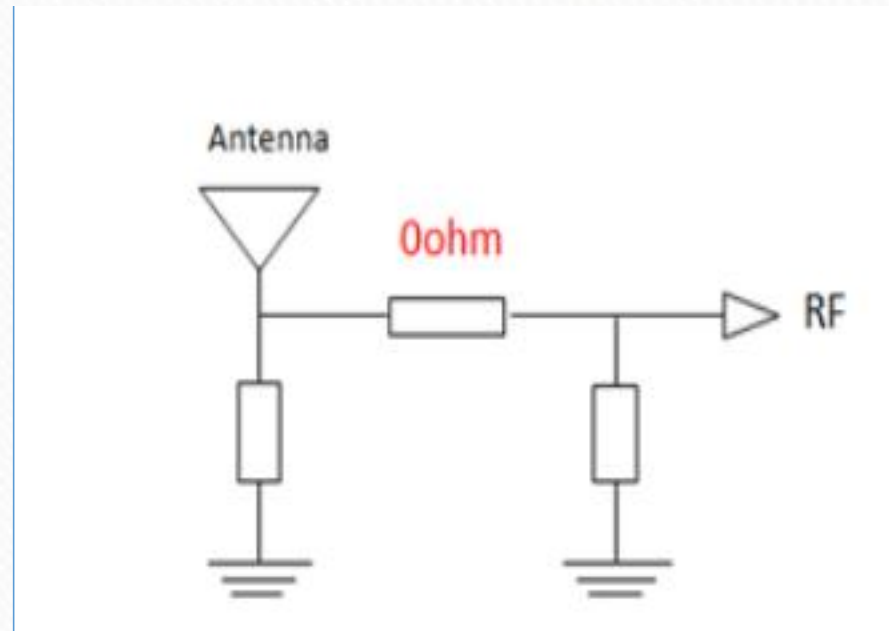


GPSantenna/Antenna size



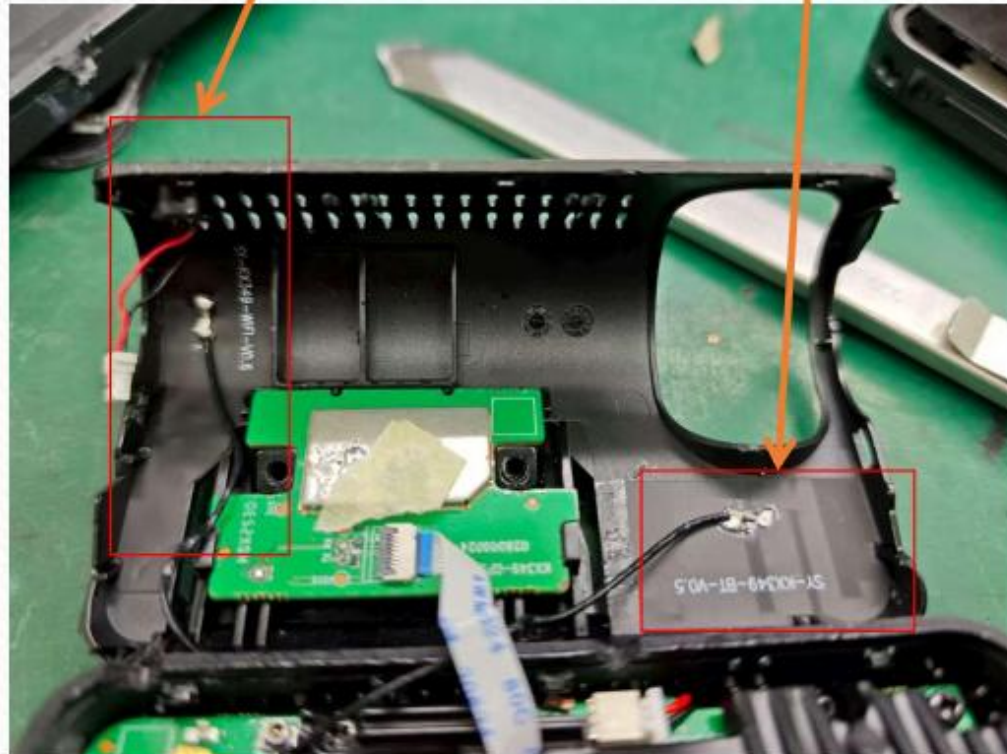
GPSAntenna type: Ceramics

GPS Antenna model: SZ25297IA54



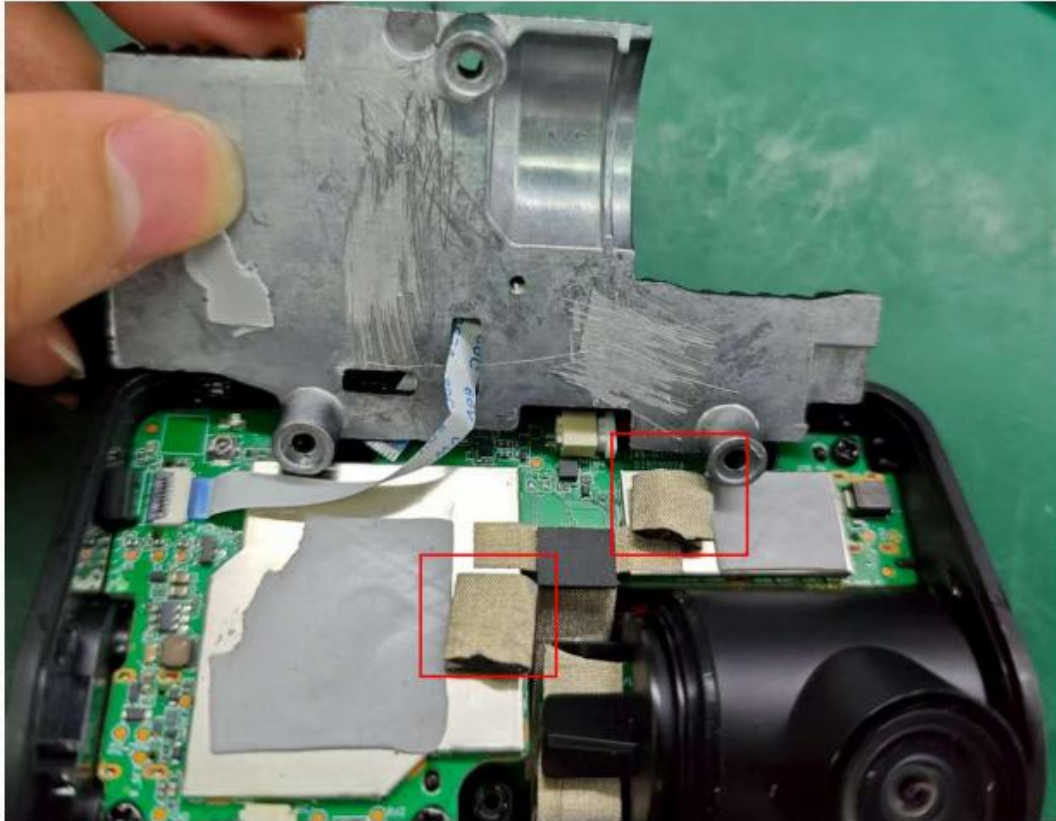
WIFI Antenna

BT Antenna



Gps Antenna

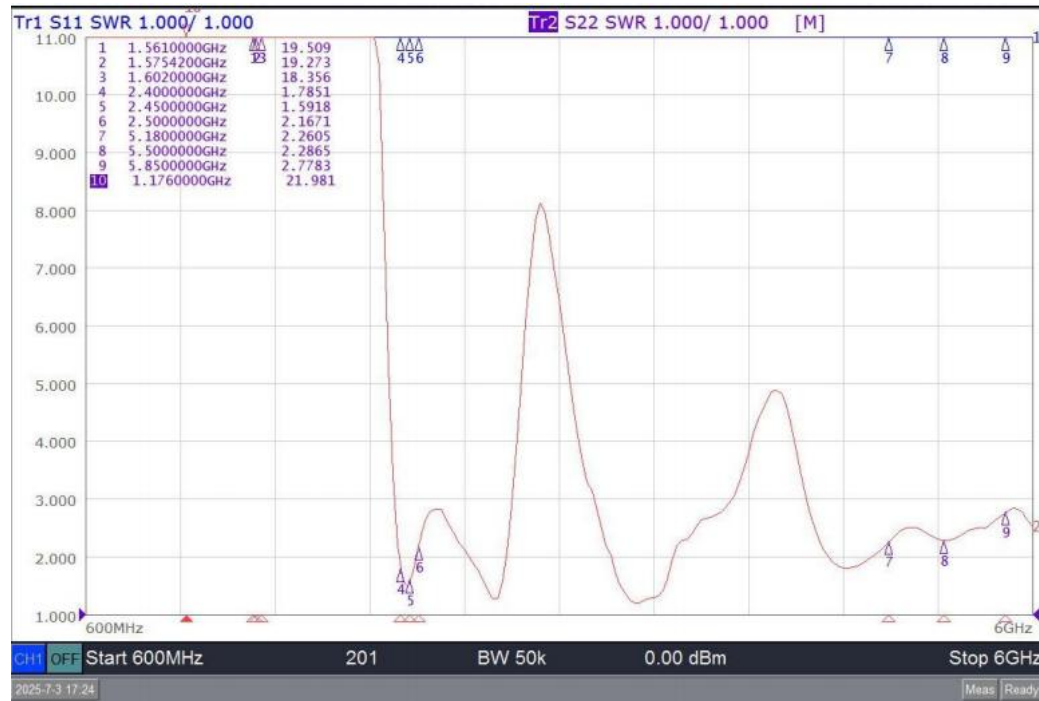




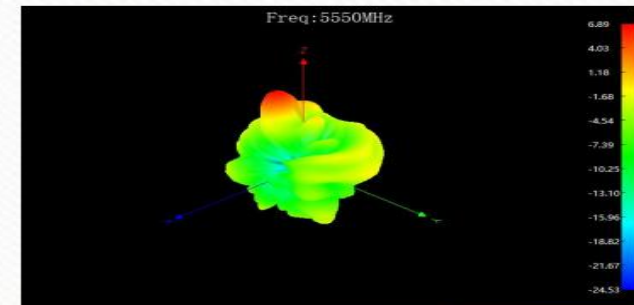
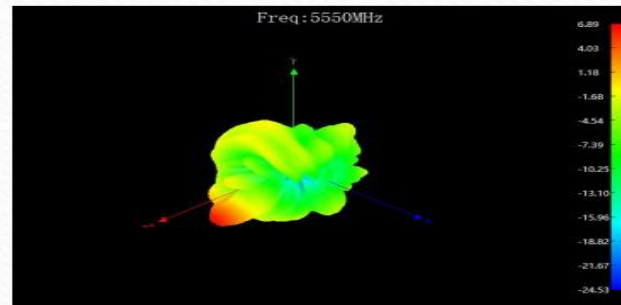
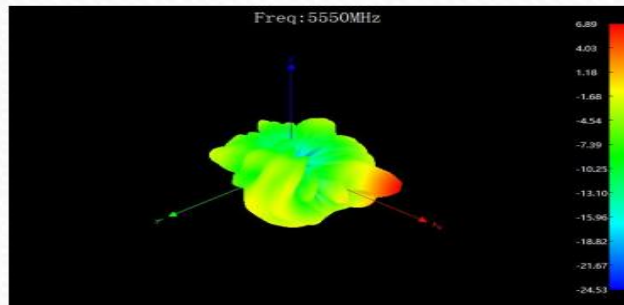
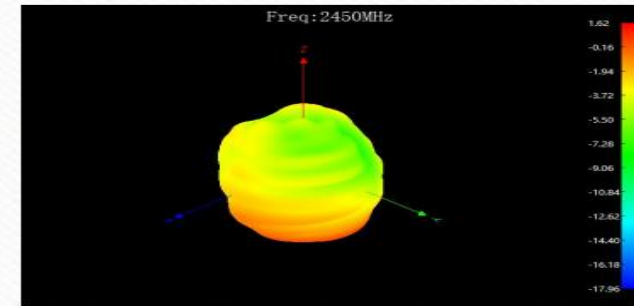
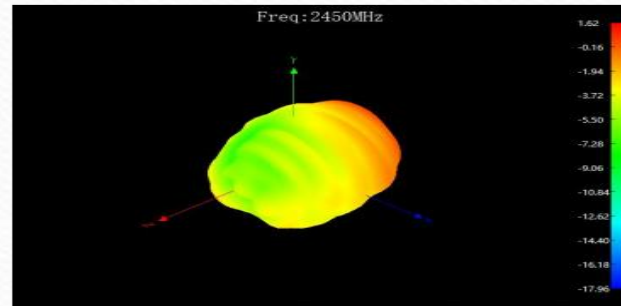
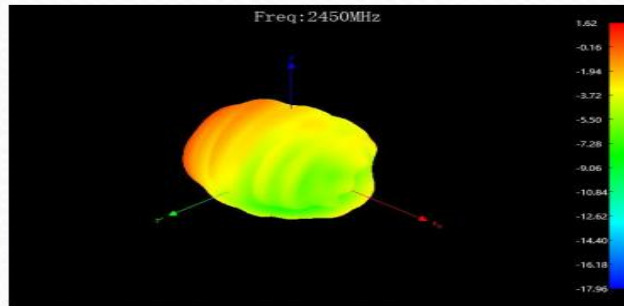
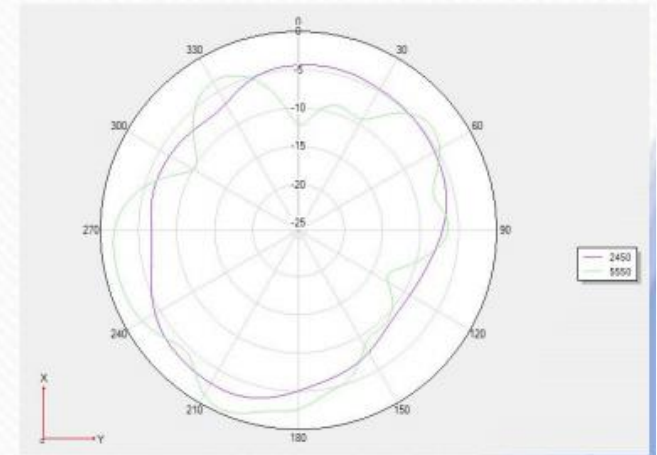
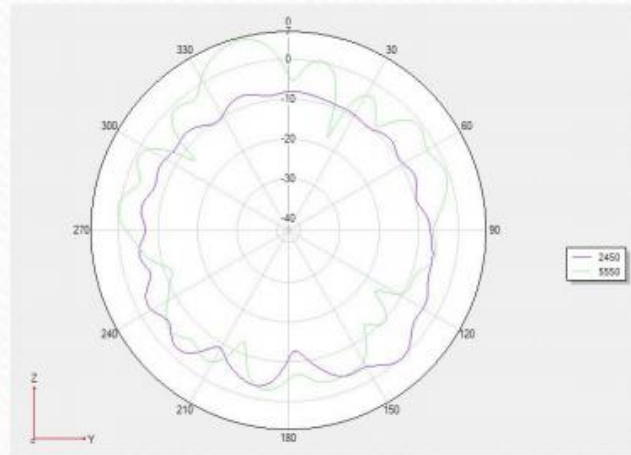
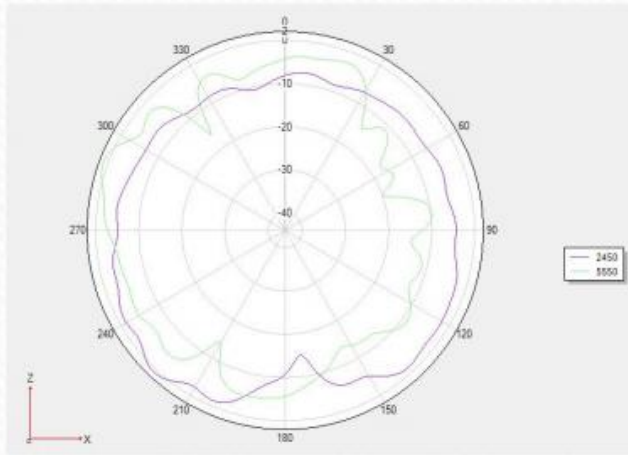
Add two conductive foam pads to connect the heat sink and the motherboard (as shown in the red box in the left image).

WIFI Passive data

S11-VSWR



Frequency/Mhz	MaxGain/dBi	Efficiency / %	Frequency/Mhz	MaxGain/dBi	Efficiency / %
2400	-0.14	39.17	5410	6.14	40.55
2410	0.34	41.21	5430	6.05	40.64
2420	-0.46	35.48	5450	6.17	41.21
2430	0.18	37.84	5470	6.41	41.69
2440	0.36	37.93	5490	6.59	41.11
2450	1.62	44.87	5510	6.79	41.59
2460	1.34	42.46	5530	7.03	42.17
2470	1.75	42.95	5550	6.89	41.02
2480	1.55	43.25	5570	6.52	39.45
2490	2.11	44.98	5590	6.28	39.63
2500	1.59	41.88	5610	5.84	38.82
5150	5.14	44.87	5630	5.55	39.26
5170	5.28	44.57	5650	5.23	39.36
5190	5.14	43.25	5670	4.9	39.9
5210	5.13	43.05	5690	4.6	40.36
5230	5.1	42.27	5710	4.54	41.11
5250	4.74	41.11	5730	4.44	40.93
5270	4.72	39.54	5750	4.38	41.21
5290	4.99	40.74	5770	4.45	41.78
5310	5.1	40.27	5790	4.48	41.3
5330	5.34	40.09	5810	4.61	41.5
5350	5.6	39.54	5830	4.99	42.36
5370	5.9	39.9	5850	5.48	42.66
5390	6.03	39.63			

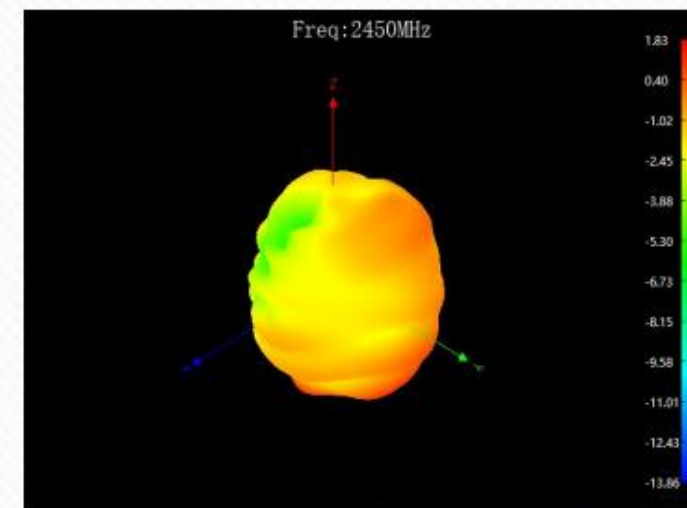
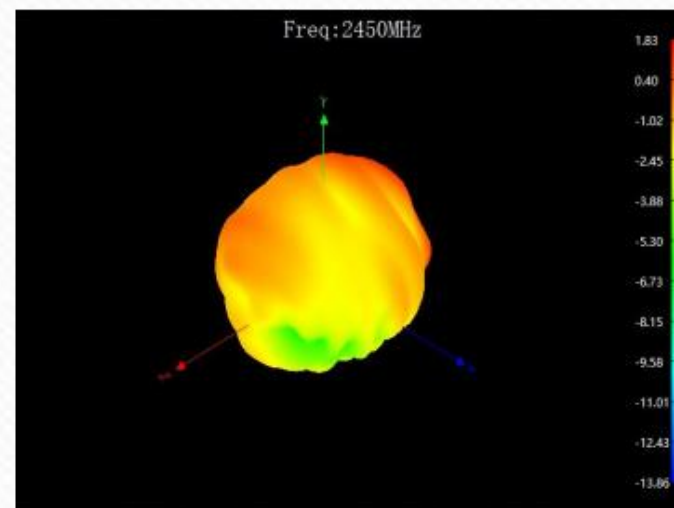
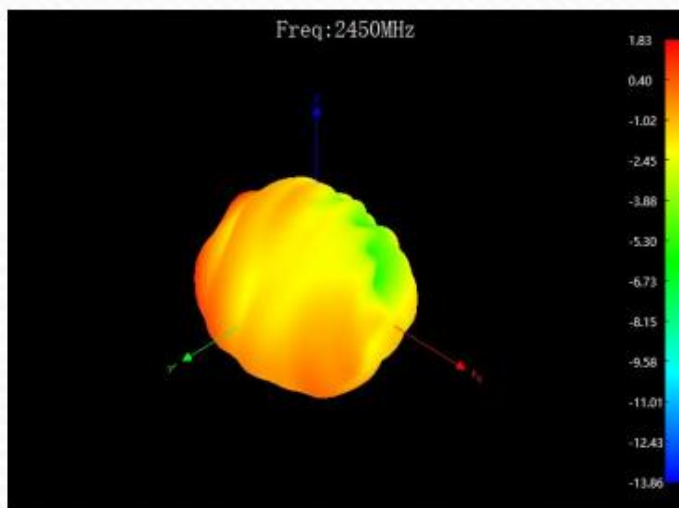
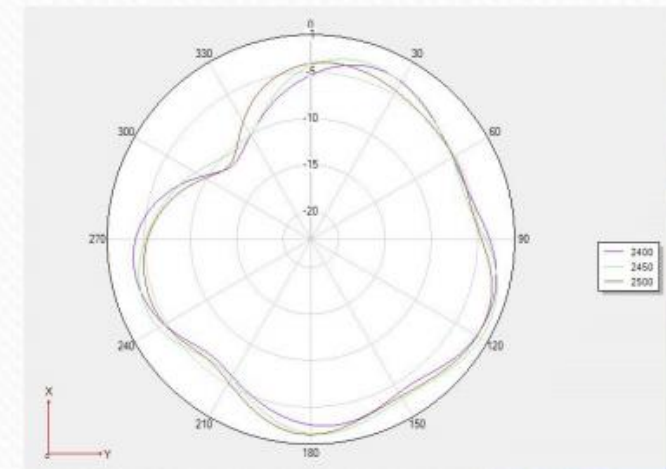
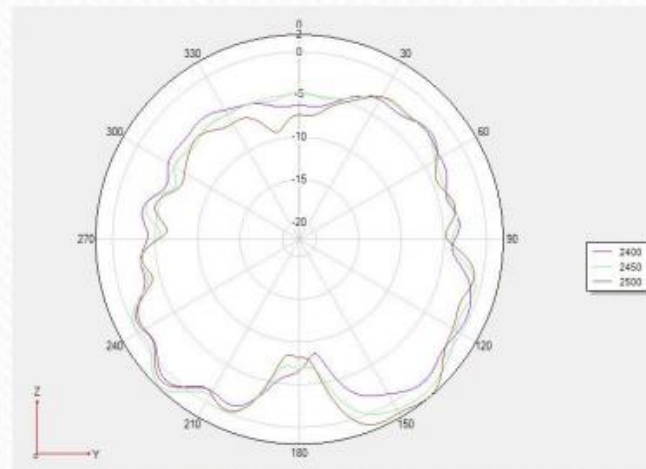
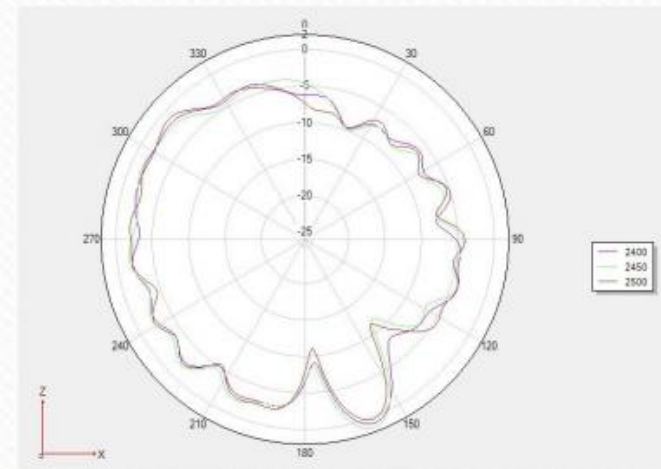


Measurement	Band	Channel	Total
TRP	WIFI_B (11M)	1	13.86
TRP	WIFI_B (11M)	7	13.51
TRP	WIFI_B (11M)	13	13.46
TIS(EIRP)	WIFI_B (11M)	13	-82.15
TRP	WIFI_G (54M)	1	14.25
TRP	WIFI_G (54M)	7	14.41
TRP	WIFI_G (54M)	13	13.46
TIS(EIRP)	WIFI_G (54M)	13	-70.06
TRP	WIFI_N_ISM (65M)	1	13.27
TRP	WIFI_N_ISM (65M)	7	12.63
TRP	WIFI_N_ISM (65M)	13	13.46
TIS(EIRP)	WIFI_N_ISM (65M)	13	-66.5
TRP	WIFI_A (54M)	36	12.35
TRP	WIFI_A (54M)	149	11.69
TRP	WIFI_A (54M)	165	11.81
TIS(EIRP)	WIFI_A (54M)	165	-71.27
TRP	WIFI_N_UNII (65M)	36	10.83
TRP	WIFI_N_UNII (65M)	149	9.49
TRP	WIFI_N_UNII (65M)	165	8.85
TIS(EIRP)	WIFI_N_UNII (6.5M)	165	-66.38

S11-VSWR



Frequency/Mhz	MaxGain/dBi	Efficiency / %
2400	0.98	51.49
2410	1.45	52.28
2420	0.19	43.75
2430	0.71	44.43
2440	0.65	45.23
2450	1.83	51.36
2460	1.62	49.7
2470	1.79	48.58
2480	2.05	48.58
2490	2.23	49.2
2500	2.13	45.58

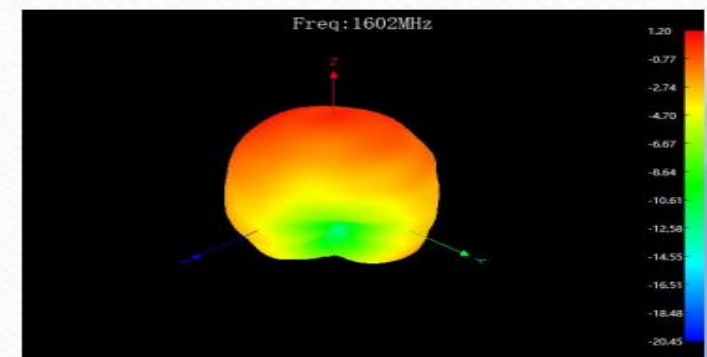
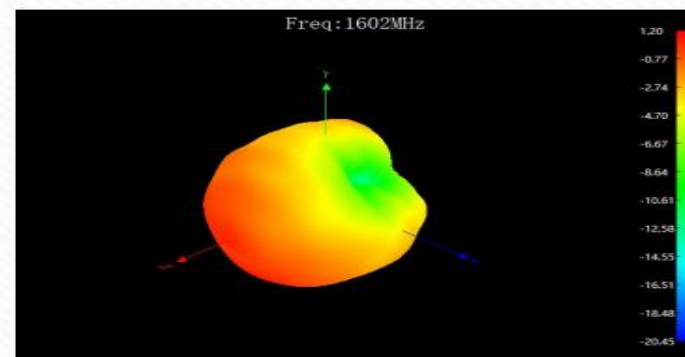
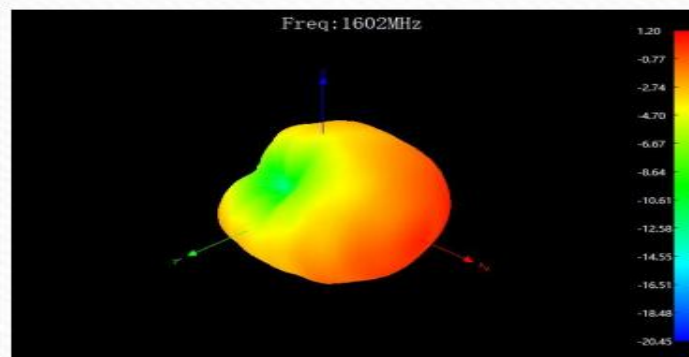
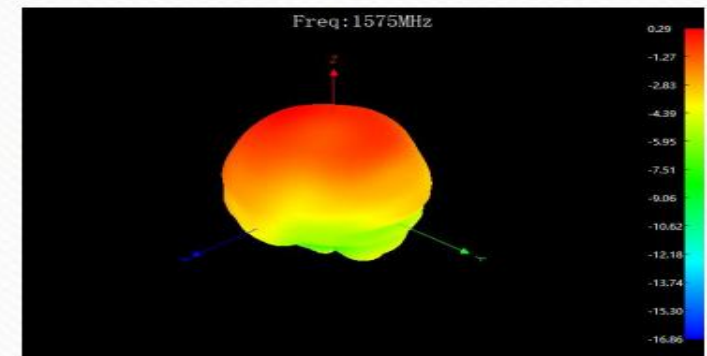
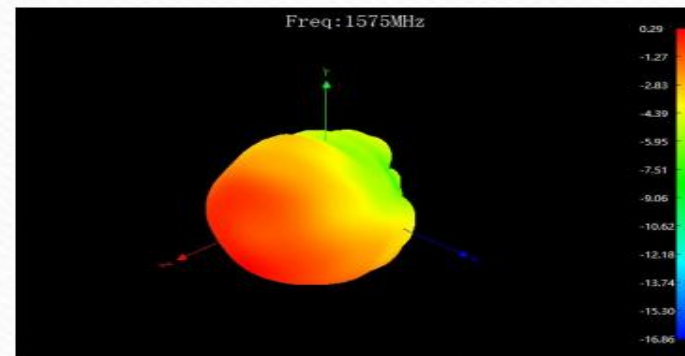
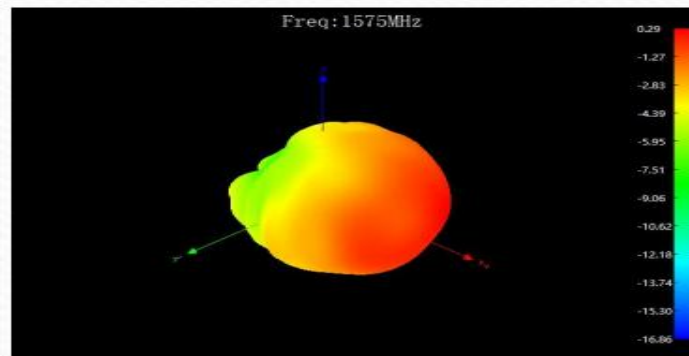
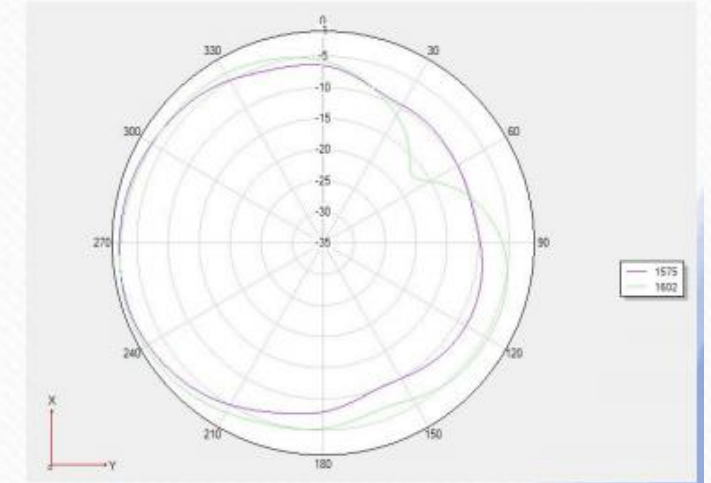
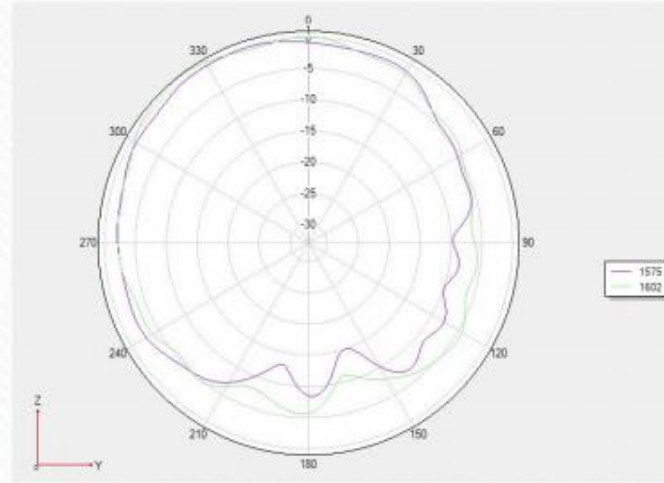
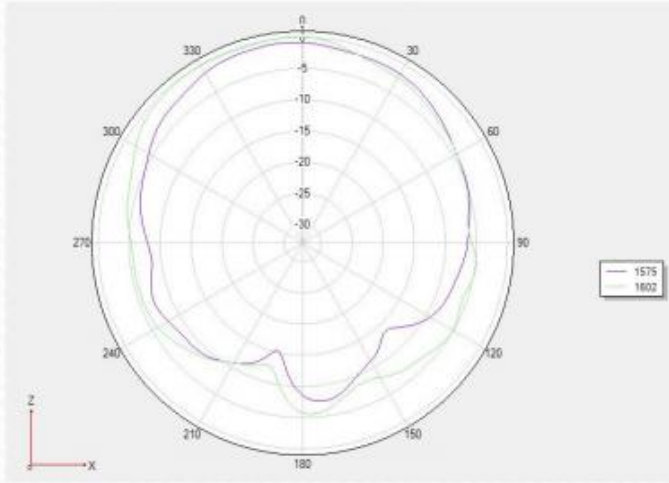


S11-VSWR



Frequency/Mhz	MaxGain/dBi	Efficiency / %
1570	0.33	48.42
1571	0.36	48.98
1572	0.28	48.75
1573	0.44	47.75
1574	0.45	46.56
1575	0.29	46.22
1576	0.15	45.39
1577	-0.08	45.6
1578	-0.04	46.24
1579	0.12	46.67
1580	0.19	46.45
1581	0.12	45.29
1582	-0.08	43.05
1583	-0.24	40.09
1584	-0.49	37.07
1585	-0.71	34.51
1586	-0.93	32.89
1587	-1.06	32.06
1588	-1.05	32.06
1589	-0.93	32.58
1590	-0.76	33.34
1591	-0.59	34.04
1592	-0.55	34.59
1593	-0.64	35.16
1594	-0.69	35.89
1595	-0.61	37.15
1596	-0.53	39.17
1597	-0.19	41.88
1598	0.26	41.29
1599	0.68	42.75
1600	0.99	43.64
1601	1.19	45.95
1602	1.2	47.27
1603	1.04	46.08
1604	0.77	44.6
1605	0.49	42.58

GPS Passive data





1. The antenna matching has not changed;
2. The environmental treatment has changed;
3. The sample verification data is not much different from before the sample production.

Thank You

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

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