
Shenzhen Qianmu Communication Technology Co.,Ltd.

Specification description			
	Product	specification	Material code
Specification description	4G ANT	QM-W86G-MAIN-V1.1	
	BT ANT	QM-W86G-WIFI+IPEX III 0.81*55mm	
Change resume			
Num	Date	Version	Change description
1	2024-05-10	V1.0	New project
2			
3			

Contacts : Zhiqiang Wang Phone : 13760153961 Fax : 0755-21633541
No. 425, 443, 4th Floor, Block A, Huafeng Zhigu-Hangcheng High-tech Industrial Park, Hangcheng
Street, Sanwei Community, Baoan District, Shenzhen

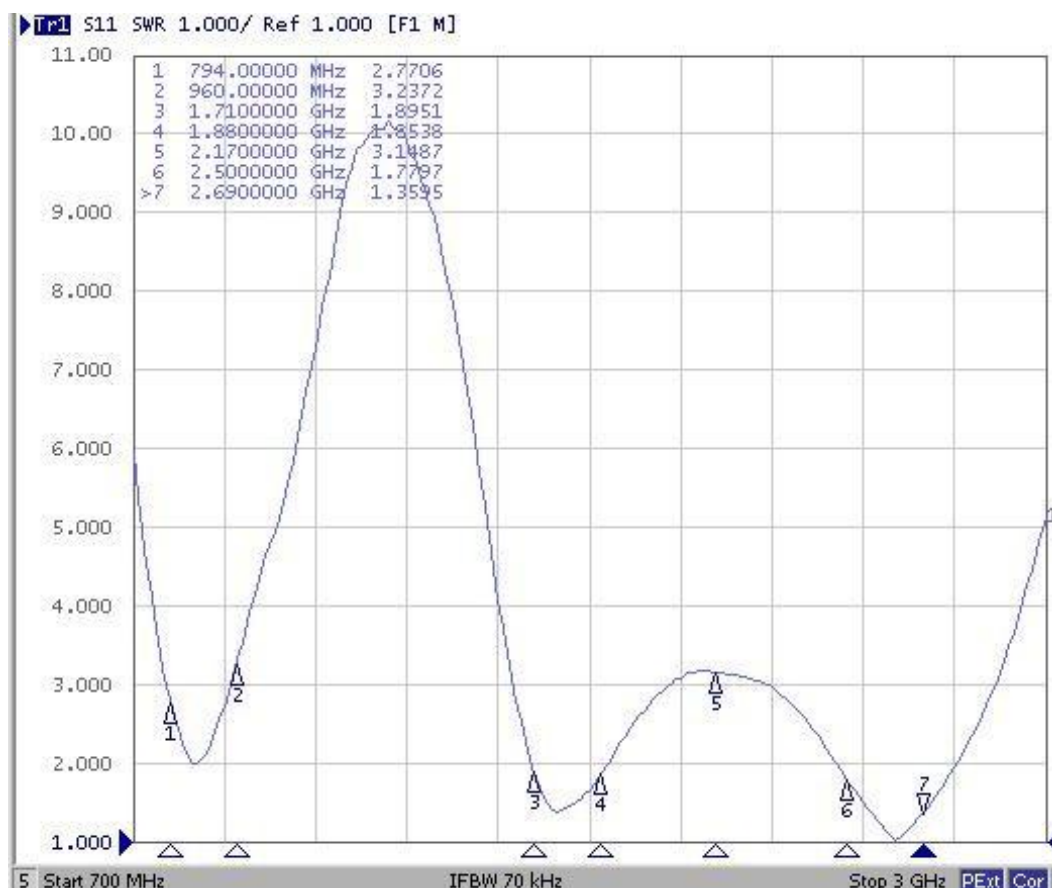
1、Electrical performance test report of main antenna

1.1 Test items and equipment

	Test item	Device
Passive testing	①.VSWR parameter ②.Return loss parameter	Network analyzer: HP8753D 3D Darkroom antenna Test System (ETS Test system, network analyzer, comprehensive tester)
Active test	①. Transmit power ②. Receiving level ③. Receiving sensitivity	Comprehensive tester: Agilent E5515C 3D darkroom antenna test system (ETS test system, comprehensive tester)

1.2 GSM passive test report VSWR parameter values

frequency (MHZ)	794	960	1710	1880	2170	2500	2690
RL	2.7	1.71	1.8	1.8	3.1	1.7	1.3



Return loss parameter values

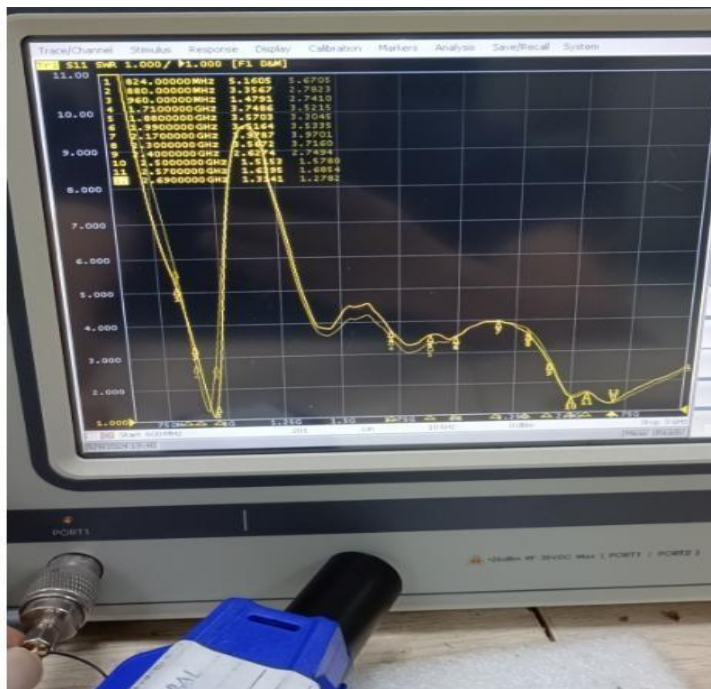
frequency (MHZ)	794	960	1710	1880	2170	2500	2690
RL	-6.5	-5.5	-10.2	-10.4	-5.7	-11	-16.3



2、match circuit

No changes have been made to your original motherboard matching circuit.

3、 antenna standing wave ratio



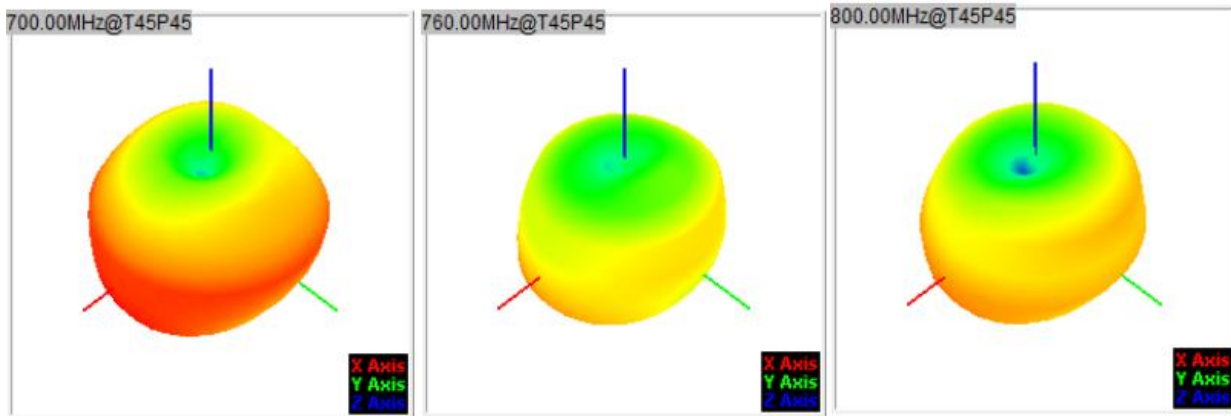
4、 test report

	B1			B3		
Channel	18050	18300	18550	19250	19575	19900
TRP	17.42	16.17	16.09	17.37	17.26	17.72
TIS			-87.12			-91.23
	B5			B8		
Channel	20450	20525	20600	21500	21625	21750
TRP	15.31	16.23	16.56	17.37	17.42	17.21
TIS			-70.35			-73.64

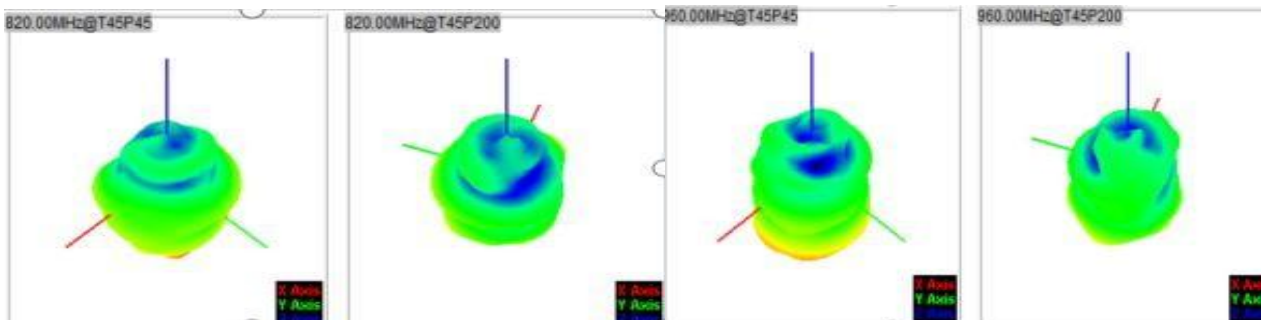
	B38			B39		
Channel	37850	38000	38150	38350	38450	38550
TRP	17.93	17.15	17.66	17.54	17.51	17.85
TIS			-90.44			-90.27
	B40			B41		
Channel	38750	39150	39550	40340	40740	41140
TRP	17.04	17.87	17.18	17.54	17.36	17.24
TIS			-90.12			-90.25

5. Antenna gain efficiency

FEITUKEJI						
Frequency ID	1	2	3	4	5	15
Frequency (MHz)	700.0	720.0	740.0	760.0	780.0	800
Point Values						
Ant. Port Input Pwr. (dBm)	0.00	0.00	0.00	0.00	0.00	0.00
Tot. Rad. Pwr. (dBm)	-8.78	-8.06	-7.30	-6.44	-5.90	-5.87
Peak EIRP (dBm)	-5.44	-4.87	-4.20	-3.57	-2.99	-2.37
Directivity (dBi)	3.34	3.19	3.10	2.87	2.91	3.50
Efficiency (dB)	-8.78	-8.06	-7.30	-6.44	-5.90	-5.87
Efficiency (%)	13.20	15.60	18.60	22.70	25.70	25.90
Gain (dBi)	-5.44	-4.87	-4.20	-3.57	-2.99	-2.37
NHPRP $\pm\pi/4$ (dBm)	-9.47	-8.72	-7.98	-7.15	-6.65	-6.63
NHPRP $\pm\pi/6$ (dBm)	-10.57	-9.78	-9.06	-8.27	-7.79	-7.89
NHPRP $\pm\pi/8$ (dBm)	-11.52	-10.66	-9.94	-9.16	-8.70	-8.97
Upper Hem. PRP (dBm)	-12.26	-11.36	-10.39	-9.37	-8.81	-9.51
Lower Hem. PRP (dBm)	-11.38	-10.79	-10.24	-9.54	-9.02	-8.33
Lower Hem. PRP (%)	7.28	8.34	9.47	11.12	12.54	14.69



FEITUKEJI															
Frequency ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Frequency (MHz)	820.0	830.0	840.0	850.0	860.0	870.0	880.0	890.0	900.0	910.0	920.0	930.0	940.0	950.0	960.0
Point Values															
Ant. Port Input Pwr. (dBm)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tot. Rad. Pwr. (dBm)	-7.88	-7.56	-7.76	-7.67	-7.52	-7.71	-7.36	-7.29	-7.35	-7.31	-7.24	-7.00	-6.85	-6.88	-6.93
Peak EIRP (dBm)	0.74	0.94	-0.30	-0.32	0.14	-0.18	0.66	0.99	1.28	1.44	0.87	1.00	0.97	0.98	1.30
Directivity (dBi)	8.63	8.50	7.46	7.34	7.66	7.53	8.02	8.27	8.63	8.75	8.11	7.99	7.82	7.86	8.23
Efficiency (dB)	-7.88	-7.56	-7.76	-7.67	-7.52	-7.71	-7.36	-7.29	-7.35	-7.31	-7.24	-7.00	-6.85	-6.88	-6.93
Efficiency (%)	16.30	17.50	16.80	17.10	17.70	17.00	18.40	18.70	18.40	18.60	18.90	20.00	20.70	20.50	20.30
Gain (dBi)	0.74	0.94	-0.30	-0.32	0.14	-0.18	0.66	0.99	1.28	1.44	0.87	1.00	0.97	0.98	1.30
NHPRP $\pm\pi/4$ (dBm)	-10.07	-9.78	-9.94	-9.84	-9.79	-10.15	-9.94	-9.93	-9.99	-9.79	-9.75	-9.54	-9.33	-9.27	-9.28
NHPRP $\pm\pi/6$ (dBm)	-11.71	-11.48	-11.65	-11.54	-11.43	-11.76	-11.59	-11.75	-11.92	-11.75	-11.73	-11.78	-11.80	-11.79	-11.73
NHPRP $\pm\pi/8$ (dBm)	-13.09	-12.96	-13.13	-12.95	-12.65	-12.77	-12.46	-12.67	-12.96	-12.90	-12.82	-13.07	-13.45	-13.71	-13.76
Upper Hem. PRP (dBm)	-14.59	-14.45	-14.69	-14.66	-14.65	-14.88	-14.52	-14.51	-14.55	-14.55	-14.74	-14.44	-14.27	-14.31	-14.30
Lower Hem. PRP (dBm)	-8.93	-8.56	-8.74	-8.63	-8.45	-8.63	-8.28	-8.20	-8.27	-8.21	-8.09	-7.86	-7.71	-7.75	-7.81
Upper Hem. PRP (%)	3.48	3.59	3.40	3.42	3.43	3.25	3.53	3.54	3.51	3.50	3.35	3.60	3.74	3.70	3.72
Lower Hem. PRP (%)	12.80	13.94	13.37	13.69	14.29	13.71	14.86	15.14	14.90	15.10	15.53	16.38	16.93	16.80	16.54

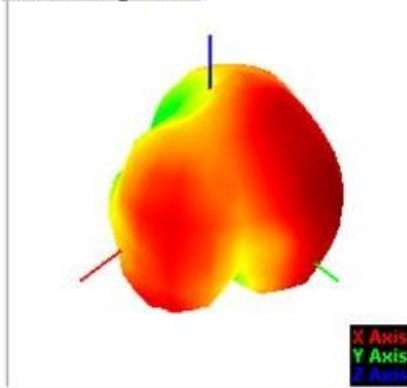


FEITUKEJI															
Frequency ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Frequency (MHz)	1710.0	1730.0	1750.0	1770.0	1790.0	1810.0	1830.0	1850.0	1870.0	1890.0	1910.0	1930.0	1950.0	1970.0	1990.0
Point Values															
Ant. Port Input Pwr. (dBm)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tot. Rad. Pwr. (dBm)	-4.49	-4.36	-4.28	-4.18	-4.32	-4.34	-4.28	-4.35	-4.48	-4.52	-4.42	-4.46	-4.34	-4.41	-4.54
Peak EIRP (dBm)	1.96	1.68	1.41	1.46	0.80	0.73	0.90	0.68	0.72	1.17	1.36	1.32	1.25	1.10	0.91
Directivity (dBi)	6.44	6.04	5.69	5.64	5.12	5.07	5.18	5.03	5.21	5.69	5.78	5.78	5.59	5.51	5.45
Efficiency (dB)	-4.49	-4.36	-4.28	-4.18	-4.32	-4.34	-4.28	-4.35	-4.48	-4.52	-4.42	-4.46	-4.34	-4.41	-4.54
Efficiency (%)	35.60	36.60	37.30	38.20	37.00	36.80	37.30	36.70	35.60	35.30	36.10	35.80	36.80	36.20	35.20
Gain (dBi)	1.96	1.68	1.41	1.46	0.80	0.73	0.90	0.68	0.72	1.17	1.36	1.32	1.25	1.10	0.91
NHPRP $\pm\pi/4$ (dBm)	-5.71	-5.64	-5.51	-5.40	-5.61	-5.69	-5.61	-5.68	-5.83	-5.91	-5.85	-5.92	-5.86	-6.02	-6.27
NHPRP $\pm\pi/6$ (dBm)	-7.26	-7.22	-7.10	-6.99	-7.23	-7.35	-7.26	-7.32	-7.50	-7.62	-7.55	-7.60	-7.52	-7.70	-7.97
NHPRP $\pm\pi/8$ (dBm)	-8.51	-8.51	-8.41	-8.30	-8.53	-8.65	-8.55	-8.61	-8.82	-9.00	-8.94	-8.97	-8.88	-9.04	-9.31
Upper Hem. PRP (dBm)	-6.56	-6.46	-6.41	-6.31	-6.50	-6.56	-6.47	-6.51	-6.65	-6.74	-6.64	-6.62	-6.40	-6.28	-6.18
Lower Hem. PRP (dBm)	-8.69	-8.53	-8.40	-8.31	-8.35	-8.32	-8.30	-8.42	-8.53	-8.50	-8.39	-8.52	-8.58	-8.97	-9.56
Upper Hem. PRP (%)	22.09	22.59	22.88	23.40	22.38	22.10	22.52	22.33	21.61	21.17	21.66	21.78	22.93	23.53	24.12
Lower Hem. PRP (%)	13.51	14.02	14.46	14.77	14.64	14.72	14.77	14.38	14.02	14.13	14.48	14.07	13.88	12.67	11.07

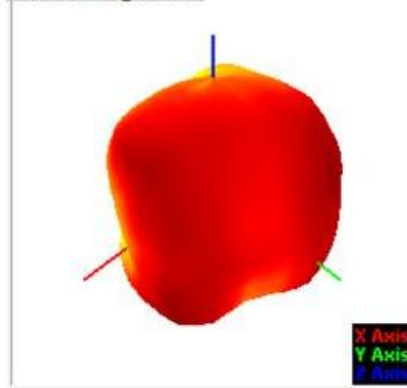
100.00

Efficiency (%)

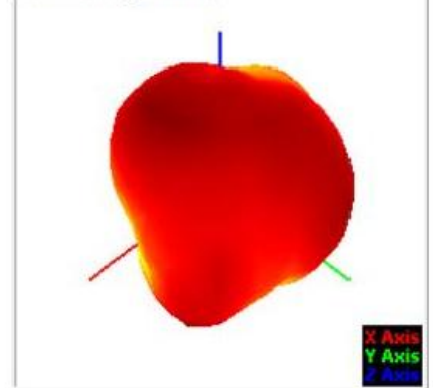
1710.00MHz@T45P45



1850.00MHz@T45P45

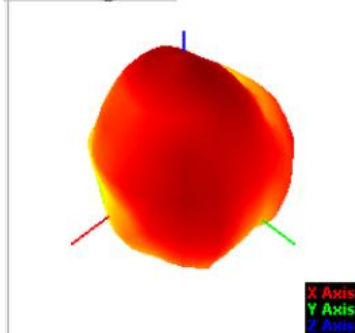


1990.00MHz@T45P45

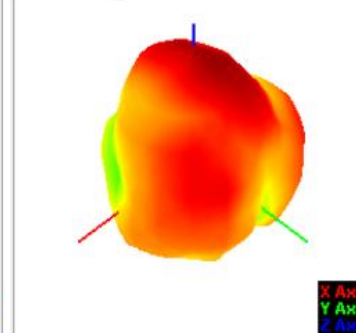


FEITUKEJI								
Frequency ID	1	2	3	4	5	6	7	8
Frequency (MHz)	2300.0	2315.0	2330.0	2345.0	2360.0	2375.0	2390.0	2405.0
Point Values	-4.92	-4.85	-4.80	-4.89	-5.02	-5.08	-5.13	-5.05
Ant. Port Input Pwr. (dBm)	0.77	0.94	1.32	1.49	1.42	1.17	1.03	1.30
Tot. Rad. Pwr. (dBm)	5.69	5.79	6.12	6.38	6.44	6.25	6.16	6.35
Peak EIRP (dBm)	-4.92	-4.85	-4.80	-4.89	-5.02	-5.08	-5.13	-5.05
Directivity (dBi)	32.20	32.80	33.10	32.40	31.50	31.10	30.70	31.30
Efficiency (dB)	0.77	0.94	1.32	1.49	1.42	1.17	1.03	1.30
Efficiency (%)	-6.61	-6.56	-6.53	-6.61	-6.73	-6.77	-6.79	-6.71
Gain (dBi)	-8.08	-8.00	-7.95	-8.03	-8.16	-8.21	-8.21	-8.10
NHPRP $\pm\pi/4$ (dBm)	-9.24	-9.14	-9.08	-9.16	-9.30	-9.35	-9.33	-9.19
NHPRP $\pm\pi/6$ (dBm)	-6.44	-6.43	-6.49	-6.72	-6.93	-7.07	-7.19	-7.12
NHPRP $\pm\pi/8$ (dBm)	-10.19	-10.00	-9.71	-9.52	-9.49	-9.42	-9.35	-9.26
Upper Hem. PRP (dBm)	22.68	22.75	22.42	21.28	20.26	19.62	19.09	19.41
Lower Hem. PRP (dBm)	9.57	10.00	10.69	11.16	11.24	11.43	11.61	11.87
Upper Hem. PRP (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lower Hem. PRP (%)	-4.92	-4.85	-4.80	-4.89	-5.02	-5.08	-5.13	-5.05

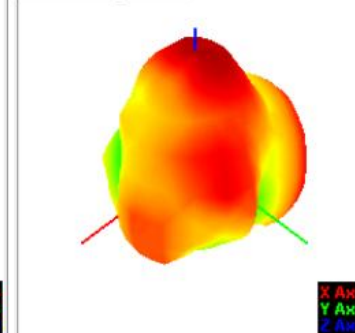
2300.00MHz@T45P45



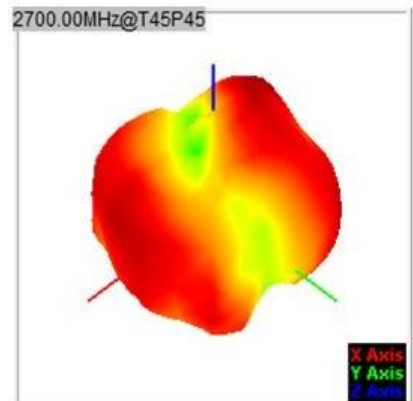
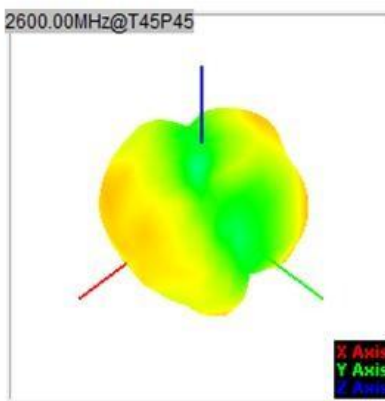
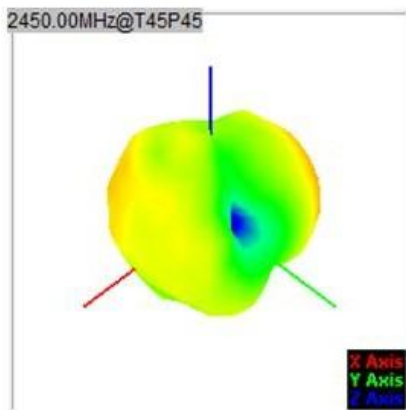
2345.00MHz@T45P45



2405.00MHz@T45P45



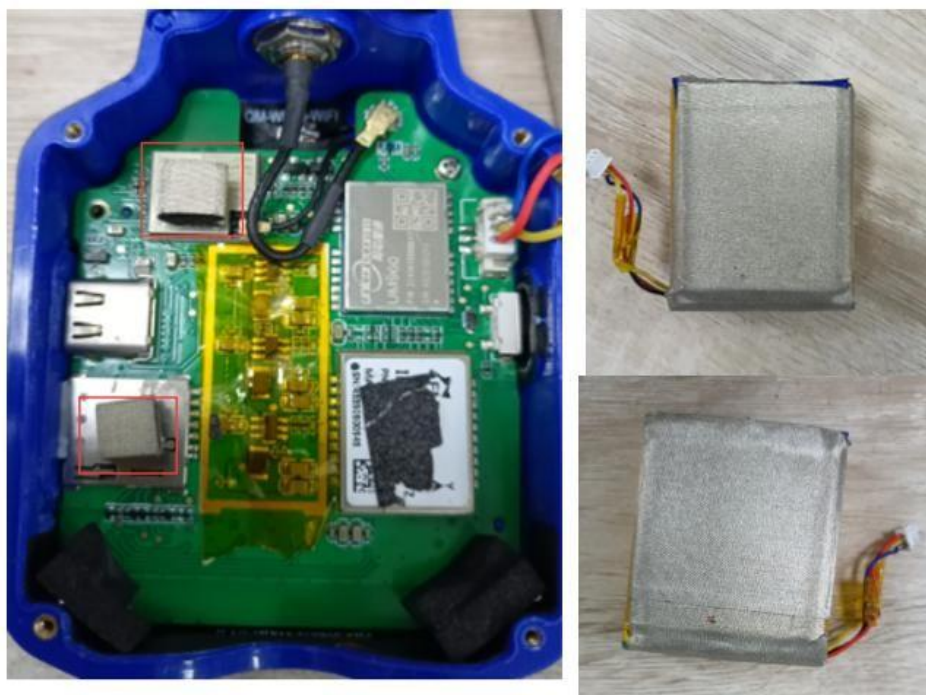
FETUKEJI						
Frequency ID	1	2	3	4	5	6
Frequency (MHz)	2450.0	2500.0	2550.0	2600.0	2650.0	2700.0
Point Values						
Ant. Port Input Pwr. (dBm)	0.00	0.00	0.00	0.00	0.00	0.00
Tot. Rad. Pwr. (dBm)	-4.78	-4.76	-4.56	-4.42	-4.83	-4.70
Peak EIRP (dBm)	0.93	0.58	1.08	1.00	-0.02	-0.31
Directivity (dBi)	5.71	5.35	5.64	5.42	4.81	4.39
Efficiency (dB)	-4.78	-4.76	-4.56	-4.42	-4.83	-4.70
Efficiency (%)	33.30	33.40	35.00	36.10	32.90	33.90
Gain (dBi)	0.93	0.58	1.08	1.00	-0.02	-0.31
NHPRP $\pm\pi/4$ (dBm)	-6.13	-6.09	-5.84	-5.70	-6.08	-6.04
NHPRP $\pm\pi/6$ (dBm)	-7.73	-7.65	-7.41	-7.20	-7.55	-7.51
NHPRP $\pm\pi/8$ (dBm)	-9.00	-8.88	-8.65	-8.39	-8.72	-8.68
Upper Hem. PRP (dBm)	-7.69	-7.77	-7.45	-7.46	-7.70	-7.25
Lower Hem. PRP (dBm)	-7.90	-7.77	-7.69	-7.40	-8.00	-8.22
Upper Hem. PRP (%)	17.04	16.70	18.00	17.94	17.00	18.84
Lower Hem. PRP (%)	16.23	16.70	17.01	18.18	15.87	15.07



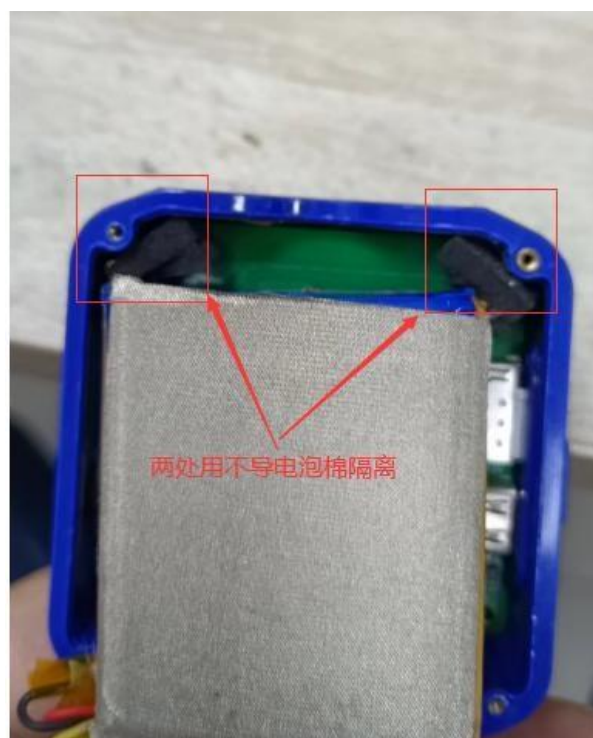
6、 Antenna placement



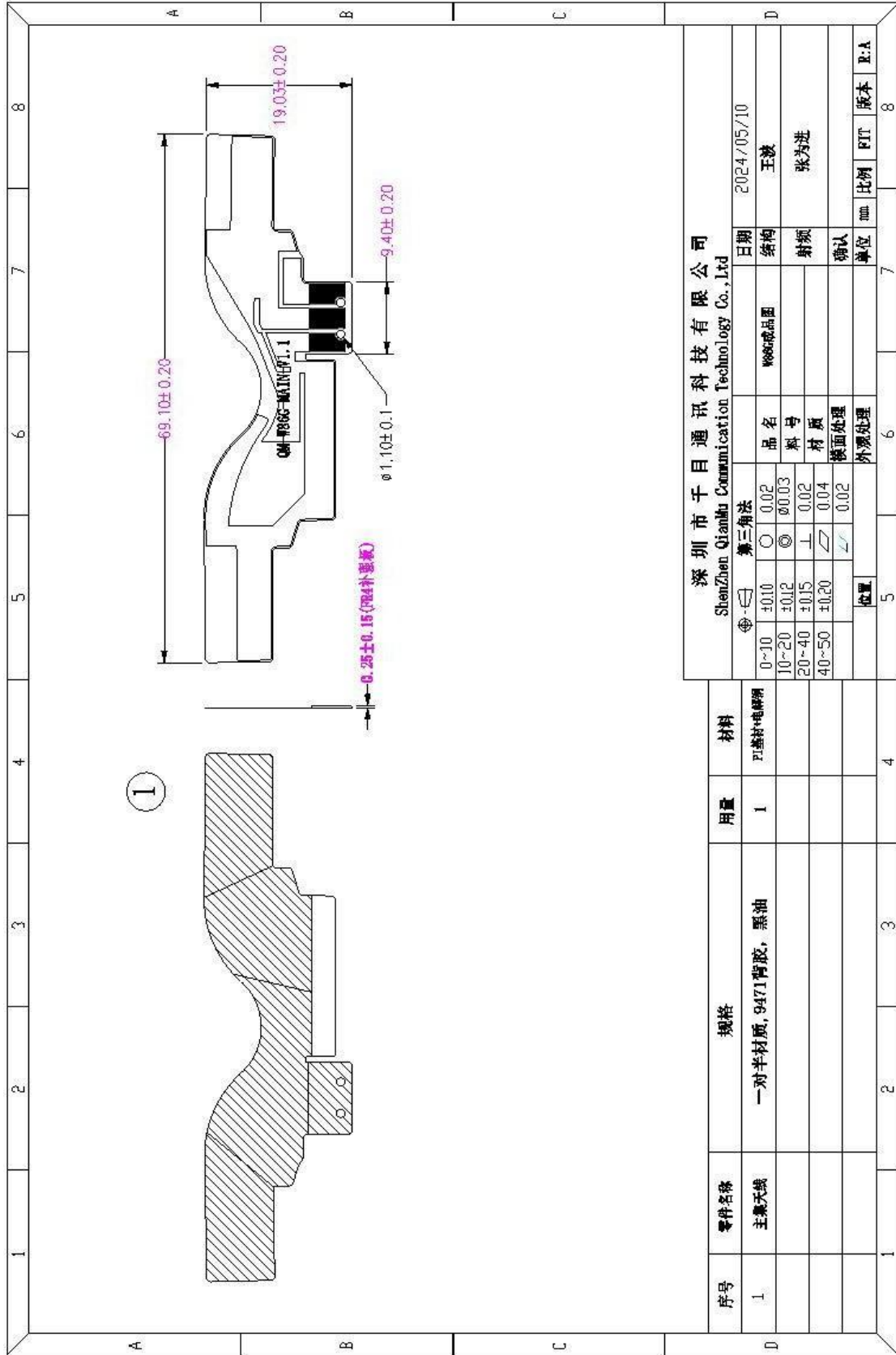
7、Environmental treatment specification

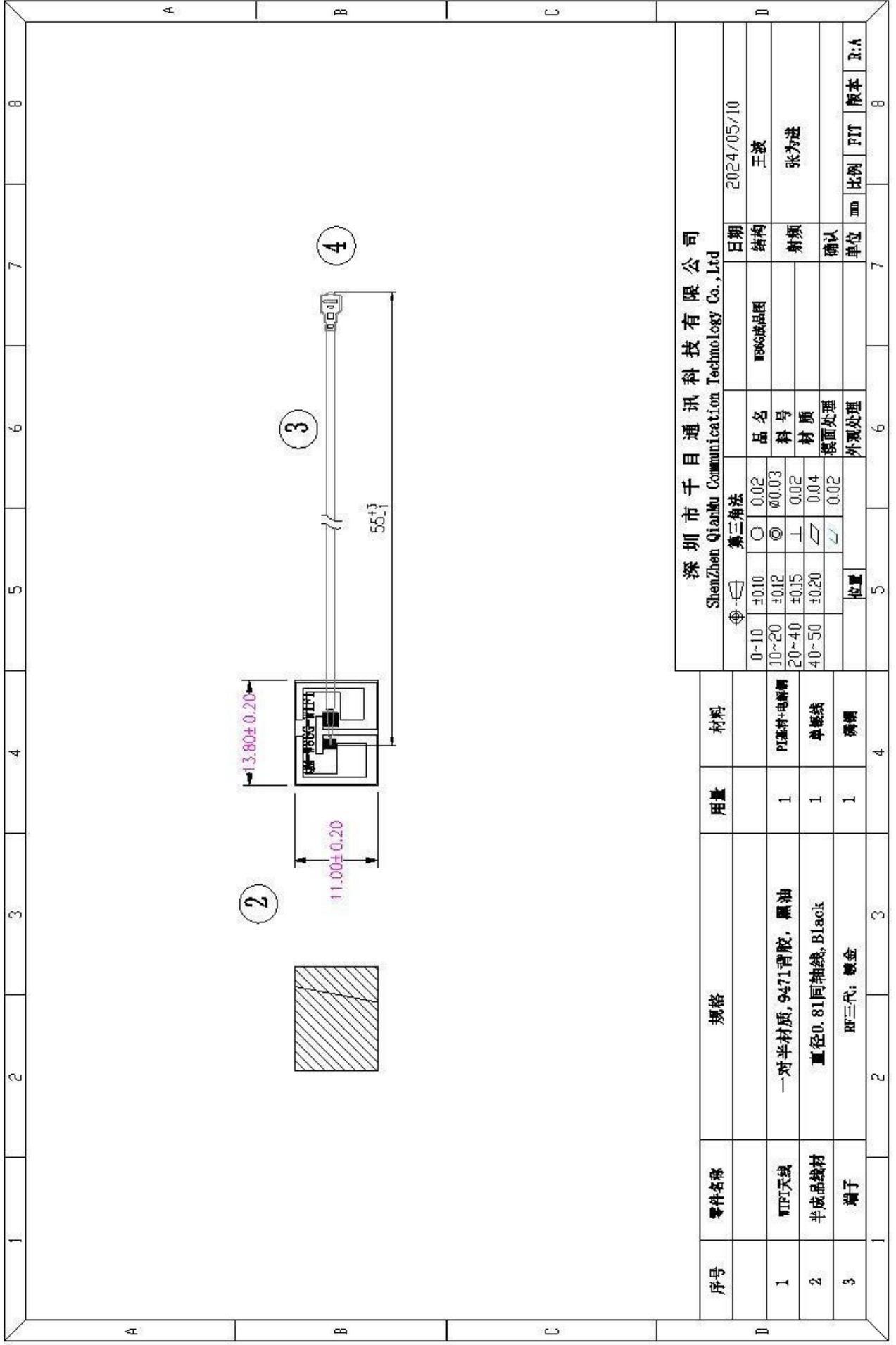


电池用导电布包裹起来并与主板接地



8、 structural drawings





深圳市千目通讯科技有限公司
ShenZhen Qianmu Communication Technology Co., Ltd

序号	零件名称	规格	用量	材料	第三角法	品名	日期	结构	比例	版本	R:A
1	WIFI天线	一对半材质, 9471背胶, 黑油	1	PI基材+电铸铜	0~10 10~20 20~40 40~50	0.02 0.03 0.02 0.04	2024/05/10	王波	张为进		
2	半成品线材	直径0.81同轴线, Black	1	单根线	位置	模面处理	确认	单位	mm		
3	端子	RF三代: 镀金	1	磷铜	外观处理						
					5	6	7	8			