Shenzhen Qianmu Communication Technology Co.,Ltd.

Antenna Acknowledgement

Applicable model	H106T-2	
Customer	Shenzhen Zhiteng Yongsheng Technology Co., Ltd.	
Specification description		
	Product content	**Specifications**
Specification description	4G antenna	FPC/Black/Character QM-H106T-2-MAIN + fourth-generation terminal Φ0.81*103mm+conductive cloth
	GPS/WiFi/BT antenna	FPC/Black/Character QM-H106T-2-W/G/B + fourth-generation terminal Φ0.81*142mm+conductive cloth

Change the resume

Serial number	**Date**	**Edition**	**Brief description of the content of the change**
One	2025-04-16	V1.0	New project
Two			
Three			

Supplier sample confirmation

Research and develop	**Organization**	**Check**	**Decide**
			PASS☑ FAIL☐

Customer sample confirmation

Electron	**Organization**	**Project**	**Purchase**	**Character**	**Check**

Reasons for rejection or other notes:

1. Electrical performance test report of the main antenna

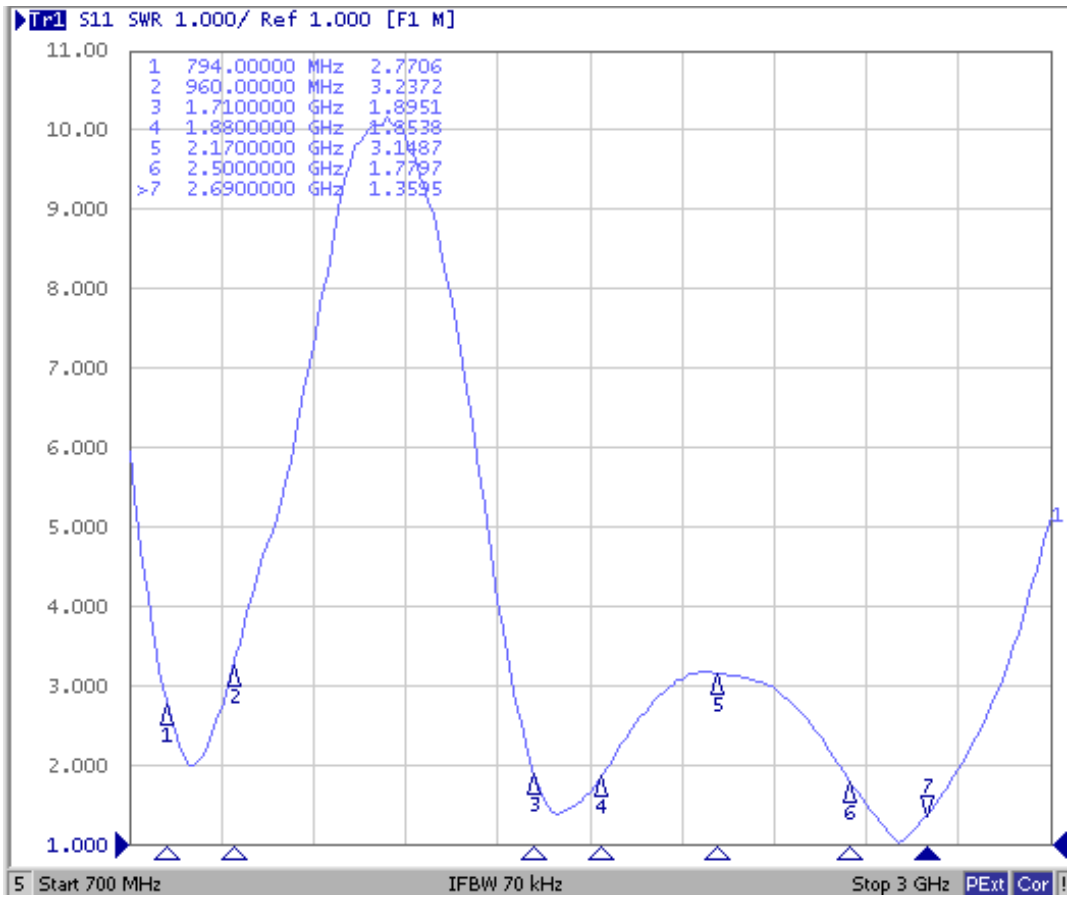
One .1 Test items and equipment

	Test items	Equipment
A passive test	One. VSWR parameters Two. Return loss parameter	Network analyzer: HP8753D 3D darkroom antenna test system (ETS test system, network analyzer, comprehensive tester)
Active test	One. Transmission power Two. Receiving level Three. Receiving sensitivity	Comprehensive tester: Agilent E5515C 3D darkroom antenna test system (ETS test system, comprehensive tester)

1.2 GSM passive test report

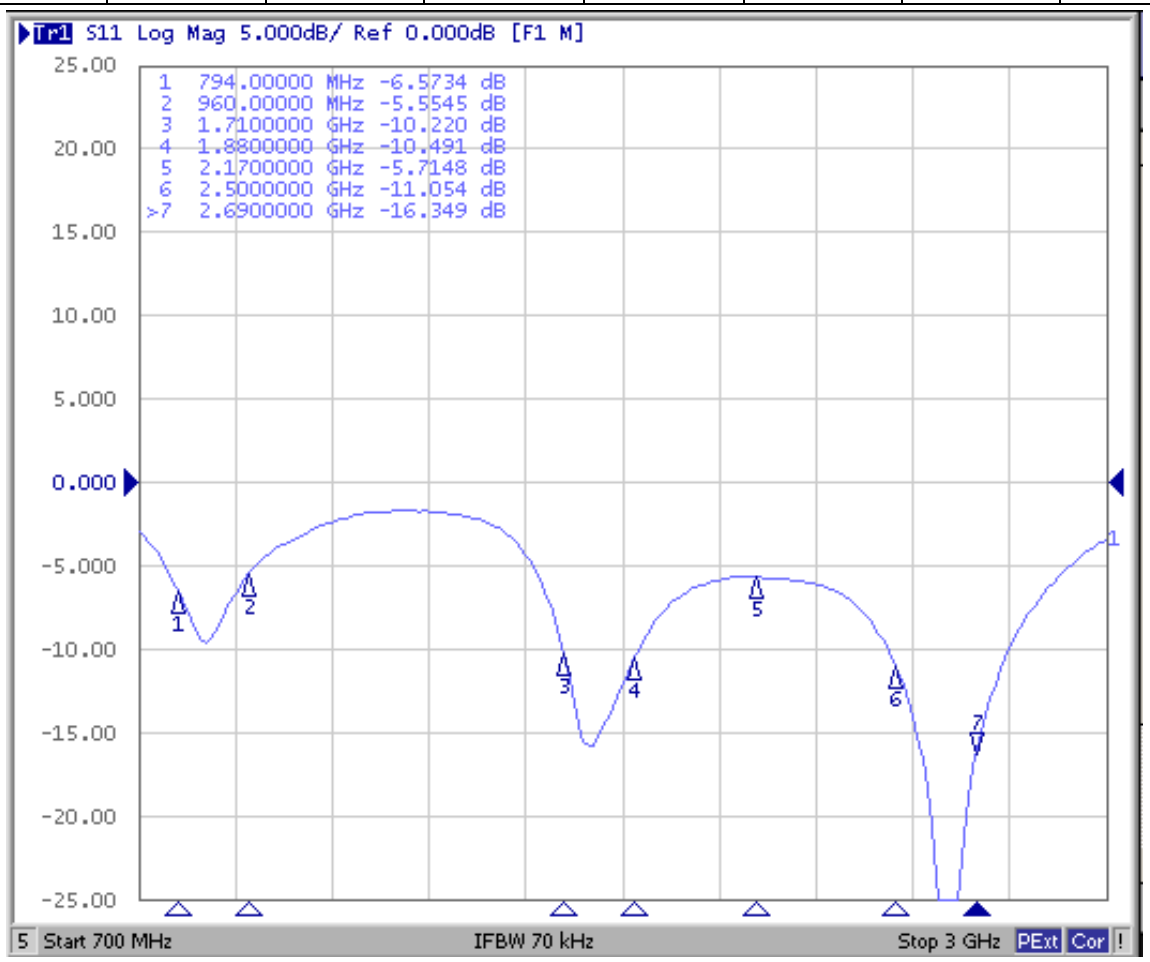
VSWR parameter value

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 value

Frequency (MHZ)	794	960	1710	1880	2170	2500	2690
RL(dBm)	-6.5	-5.5	-10.2	-10.4	-5.7 ULZ 000105 -11	-11	-16.3



2. Matching circuit description

According to your company's original matching circuit, no changes have been made.

3. Test report

	GSM900				PCS1900		
Channel	1	62	120		512	661	810
TRP(dBm)	17.64	17.52	17.39		23.42	23.56	22.46
TIS(dBm)			-92.88				-102.19
	GSM850						
Channel	128	190	251				
TRP(dBm)	19.11	18.98	19.16				
TIS(dBm)			-94.36				

	W1				W2		
Channel	9612	9750	9888		9262	9400	9538
TRP(dBm)	17.24	17.15	16.94		17.55	17.17	17.01
TIS(dBm)			-102.17				-102.74
	W5				W8		
Channel	4132	4185	4233		2712	2788	2863
TRP(dBm)	11.38	11.29	11.18		10.73	10.58	10.49
TIS(dBm)			-93.81				-93.34

	B1				B2		
Channel	18050	18300	18550		18650	18900	19150
TRP(dBm)	16.71	16.68	17.17		17.35	17.46	17.24
TIS(dBm)			-90.61				-89.68
	B4				B5		
Channel	20000	20175	20350		20450	20525	20600
TRP(dBm)	17.33	17.61	17.42		11.29	11.22	11.11
TIS(dBm)			-89.86				-83.29

	B7				B12		
Channel	20800	21100	21400		23060	23095	23130
TRP(dBm)	17.66	17.2	16.94		11.24	11.45	12.59
TIS(dBm)			-90.51				-82.39
	B13				B17		
Channel	23205	23230	23255		23780	23790	23800
TRP(dBm)	11.61	11.73	12.01		11.21	11.59	11.92
TIS(dBm)			-82.49				-83.42

	B25				B26		
Channel	26090	26365	26640		26740	26865	26990
TRP(dBm)	17.05	16.97	17.14		12.23	11.31	11.12

TIS			-89.71				-82.25
	B28				B66		
Channel	27260	27435	27610		132022	132322	132622
TRP(dBm)	11.58	11.74	12.01		17.52	17.59	16.97
TIS(dBm)			-84.21				-89.12

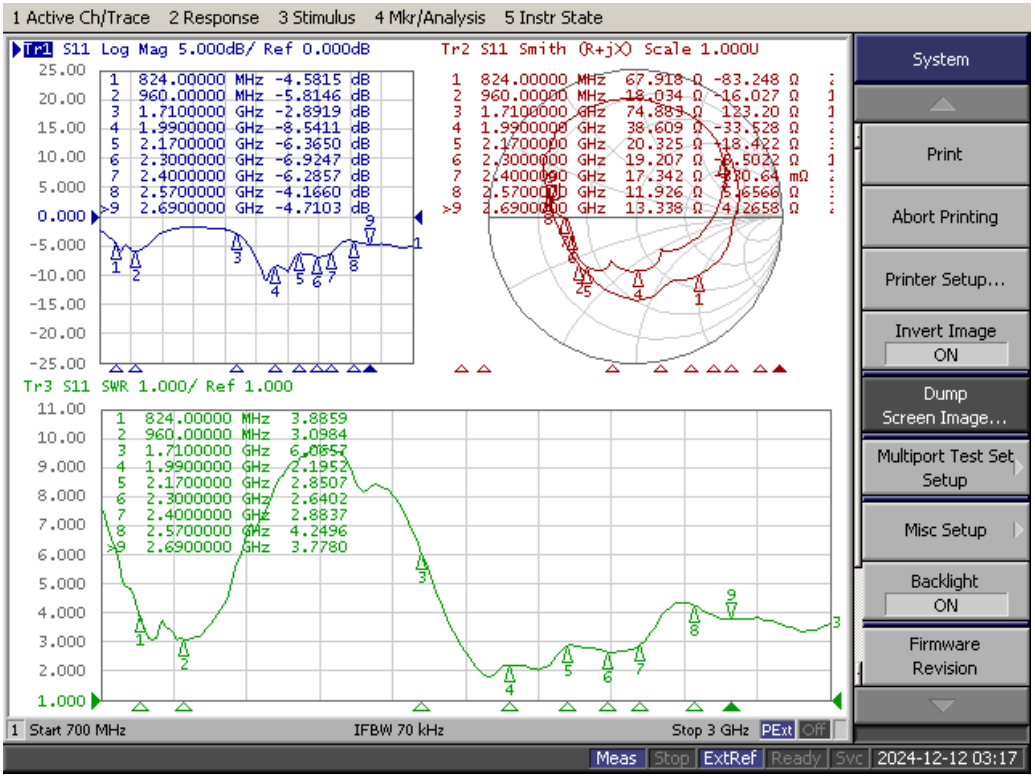
	B34				B38		
Channel	36250	36275	36300		37850	38000	38150
TRP(dBm)	17.38	17.65	17.26		17.26	17.14	16.98
TIS(dBm)			-90.12				-89.78
	B39				B40		
Channel	38350	38450	38550		38750	39150	39550
TRP(dBm)	17.23	17.29	17.19		16.87	16.94	17.02
TIS(dBm)			-90.31				89.33

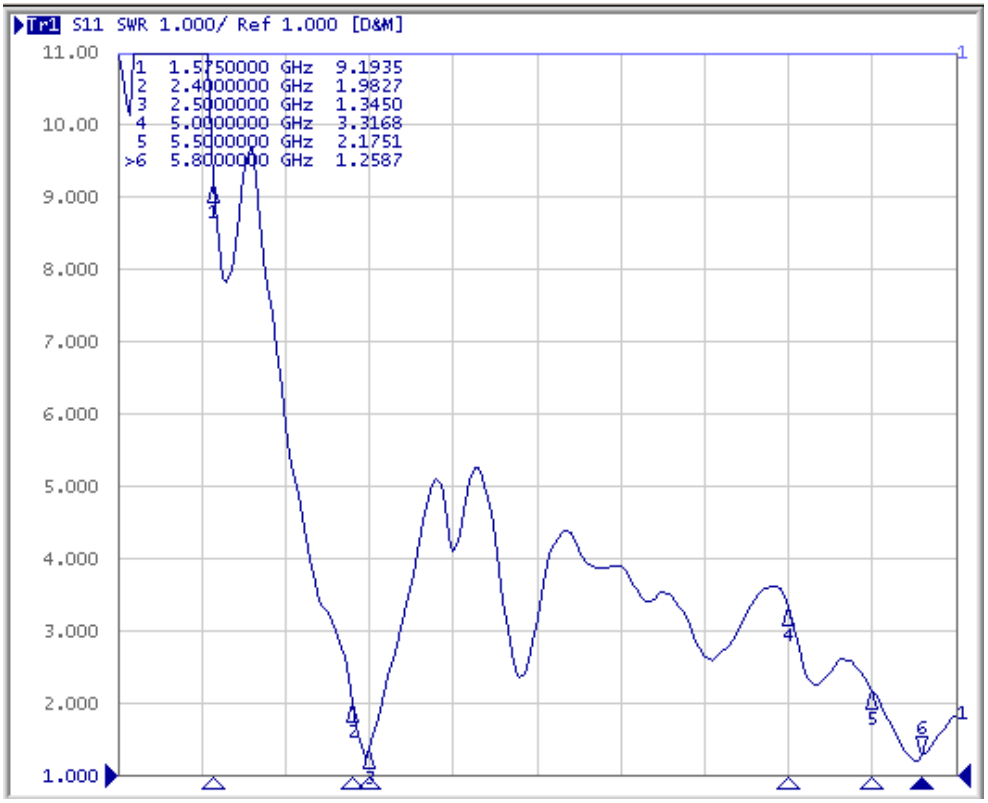
	B41		
Channel	40340	40740	41140
TRP(dBm)	16.98	17.04	16.85
TIS(dBm)			-89.68

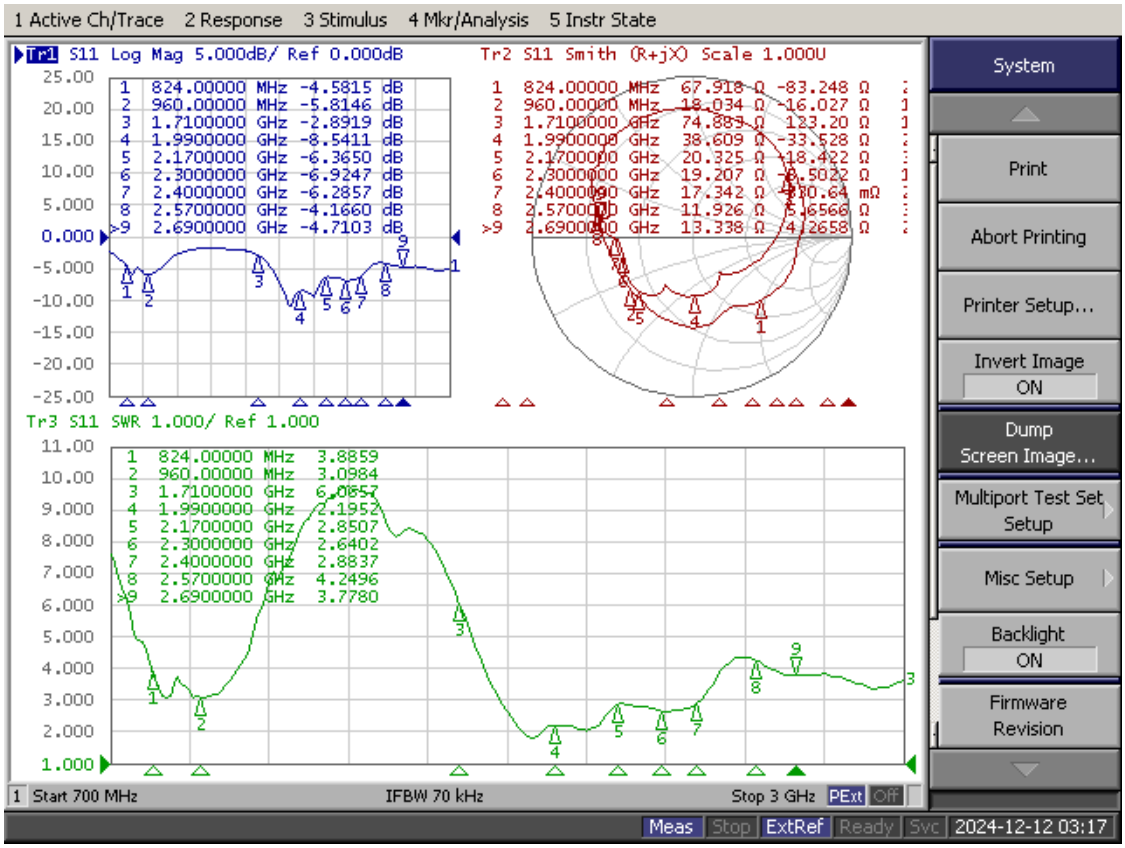
4.Wi-Fi report

2.4G 2400-2500MHz 802.11b 11MBps			
Channel	1	6	11
TRP (dBm)	12.54	12.79	12.61
TIS (dBm)	-78.83	-78.88	-79.29
5G 5000-5800MHz 802.11a 54MBps			
Channel	64	161	165
TRP(dBm)	8.98	8.77	9.15
TIS (dBm)	-68.82	-69.88	-69.16

5. Percesive-Log Mag/Smith/SWR






1 Active Ch/Trace
2 Response
3 Stimulus
4 Mkr/Analysis
5 Instr State
Tr1 S11 Log Mag 5.000dB/ Ref 0.000dB
1 824.00000 MHz -4.5815 dB
2 960.00000 MHz -5.8146 dB
3 1.7100000 GHz -2.8919 dB
4 1.9900000 GHz -8.5411 dB
5 2.1700000 GHz -6.3650 dB
6 2.3000000 GHz -6.9247 dB
7 2.4000000 GHz -6.2857 dB
8 2.5700000 GHz -4.1660 dB
>9 2.6900000 GHz -4.7103 dB
Tr2 S11 Smith (R+jX) Scale 1.000U
1 824.00000 MHz 67.918 Ω -83.248 Ω
2 960.00000 MHz 18.034 Ω -16.027 Ω
3 1.7100000 GHz 74.883 Ω 123.20 Ω
4 1.9900000 GHz 38.609 Ω -33.528 Ω
5 2.1700000 GHz 20.325 Ω -18.422 Ω
6 2.3000000 GHz 19.207 Ω -8.5022 Ω
7 2.4000000 GHz 17.342 Ω -810.64 mΩ
8 2.5700000 GHz 11.926 Ω 5.6566 Ω
>9 2.6900000 GHz 13.338 Ω 4.2658 Ω
Tr3 S11 SWR 1.000/ Ref 1.000
1 824.00000 MHz 3.8859
2 960.00000 MHz 3.0984
3 1.7100000 GHz 6.0857
4 1.9900000 GHz 2.1952
5 2.1700000 GHz 2.8507
6 2.3000000 GHz 2.6402
7 2.4000000 GHz 2.8837
8 2.5700000 GHz 4.2496
>9 2.6900000 GHz 3.7780
1 Start 700 MHz
IFBW 70 kHz
Stop 3 GHz
PExt
Off
System
Print
Abort Printing
Printer Setup...
Invert Image
ON
Dump Screen Image...
Multiport Test Set Setup
Misc Setup
Backlight
ON
Firmware Revision
Meas
Stop
ExtRef
Ready
Svc
2024-12-12 03:17

6. Antenna gain efficiency

Efficiency/Gain

Frequency ID	1	2	3	4	5	6	7	8	9	10	11
Frequency (MHz)	2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0	2490.0	2500.0
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
Tot. Rad. Pwr. (dBm)	-4.18	-4.10	-4.00	-4.06	-3.98	-3.92	-3.78	-3.79	-3.81	-3.78	-3.71
Peak EIRP (dBm)	3.19	3.26	3.34	3.29	3.39	3.45	3.62	3.65	3.71	3.85	4.07
Directivity (dBi)	7.37	7.36	7.35	7.35	7.36	7.37	7.40	7.45	7.52	7.63	7.78
Efficiency (dB)	-4.18	-4.10	-4.00	-4.06	-3.98	-3.92	-3.78	-3.79	-3.81	-3.78	-3.71
Efficiency (%)	38.20	38.90	39.80	39.30	40.00	40.50	41.90	41.80	41.60	41.90	42.60
Gain (dBi)	3.19	3.26	3.34	3.29	3.39	3.45	3.62	3.65	3.71	3.85	4.07
NHPRP ±Pi/4 (dBm)	-5.26	-5.21	-5.14	-5.21	-5.13	-5.08	-4.94	-4.96	-4.98	-4.95	-4.88
NHPRP ±Pi/6 (dBm)	-6.64	-6.58	-6.51	-6.56	-6.48	-6.43	-6.30	-6.33	-6.35	-6.32	-6.23
NHPRP ±Pi/8 (dBm)	-7.73	-7.67	-7.59	-7.64	-7.55	-7.51	-7.39	-7.43	-7.44	-7.40	-7.30
Upper Hem. PRP (dBm)	-8.08	-8.04	-7.98	-8.04	-7.92	-7.83	-7.65	-7.66	-7.71	-7.72	-7.67
Lower Hem. PRP (dBm)	-6.45	-6.34	-6.23	-6.28	-6.21	-6.19	-6.07	-6.08	-6.08	-6.02	-5.94
Upper Hem. PRP (%)	15.54	15.70	15.94	15.70	16.13	16.50	17.18	17.12	16.95	16.89	17.11
Lower Hem. PRP (%)	22.66	23.20	23.84	23.56	23.91	24.05	24.73	24.65	24.67	24.98	25.45

Efficiency/Gain

Frequency ID	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Frequency (MHz)	5150.0	5200.0	5250.0	5300.0	5350.0	5400.0	5450.0	5500.0	5550.0	5600.0	5650.0	5700.0	5750.0	5800.0	5850.0
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)	-6.90	-6.97	-6.56	-6.29	-6.79	-6.98	-6.96	-6.80	-6.33	-5.96	-5.95	-5.93	-6.11	-6.53	-6.58
Peak EIRP (dBm)	2.53	2.14	2.43	2.08	1.10	0.73	0.44	1.12	2.38	2.99	2.94	3.06	3.20	2.70	2.11
Directivity (dBi)	9.43	9.11	8.98	8.37	7.89	7.71	7.40	7.92	8.71	8.95	8.89	8.99	9.31	9.23	8.69
Efficiency (dB)	-6.90	-6.97	-6.56	-6.29	-6.79	-6.98	-6.96	-6.80	-6.33	-5.96	-5.95	-5.93	-6.11	-6.53	-6.58
Efficiency (%)	20.40	20.10	22.10	23.50	20.90	20.00	20.20	20.90	23.30	25.30	25.40	25.50	24.50	22.20	22.00
Gain (dBi)	2.53	2.14	2.43	2.08	1.10	0.73	0.44	1.12	2.38	2.99	2.94	3.06	3.20	2.70	2.11
NHPRP ±Pi/4 (dBm)	-8.29	-8.48	-8.10	-7.72	-8.24	-8.52	-8.43	-8.34	-8.01	-7.60	-7.65	-7.68	-7.92	-8.42	-8.51
NHPRP ±Pi/6 (dBm)	-9.99	-10.23	-9.86	-9.36	-9.90	-10.26	-10.05	-10.03	-9.85	-9.42	-9.55	-9.71	-10.05	-10.63	-10.75
NHPRP ±Pi/8 (dBm)	-11.48	-11.73	-11.34	-10.69	-11.27	-11.70	-11.35	-11.35	-11.21	-10.74	-10.98	-11.27	-11.67	-12.32	-12.48
Upper Hem. PRP (dBm)	-11.98	-11.98	-11.69	-11.35	-11.55	-11.84	-11.95	-11.83	-11.60	-11.52	-11.54	-11.73	-12.06	-12.11	-12.03
Lower Hem. PRP (dBm)	-8.51	-8.62	-8.15	-7.91	-8.56	-8.70	-8.61	-8.44	-7.86	-7.38	-7.35	-7.25	-7.38	-7.93	-8.04
Upper Hem. PRP (%)	6.35	6.34	6.78	7.33	7.00	6.54	6.38	6.57	6.93	7.05	7.02	6.71	6.23	6.15	6.26
Lower Hem. PRP (%)	14.09	13.73	15.32	16.18	13.94	13.50	13.77	14.32	16.37	18.29	18.39	18.82	18.29	16.10	15.71

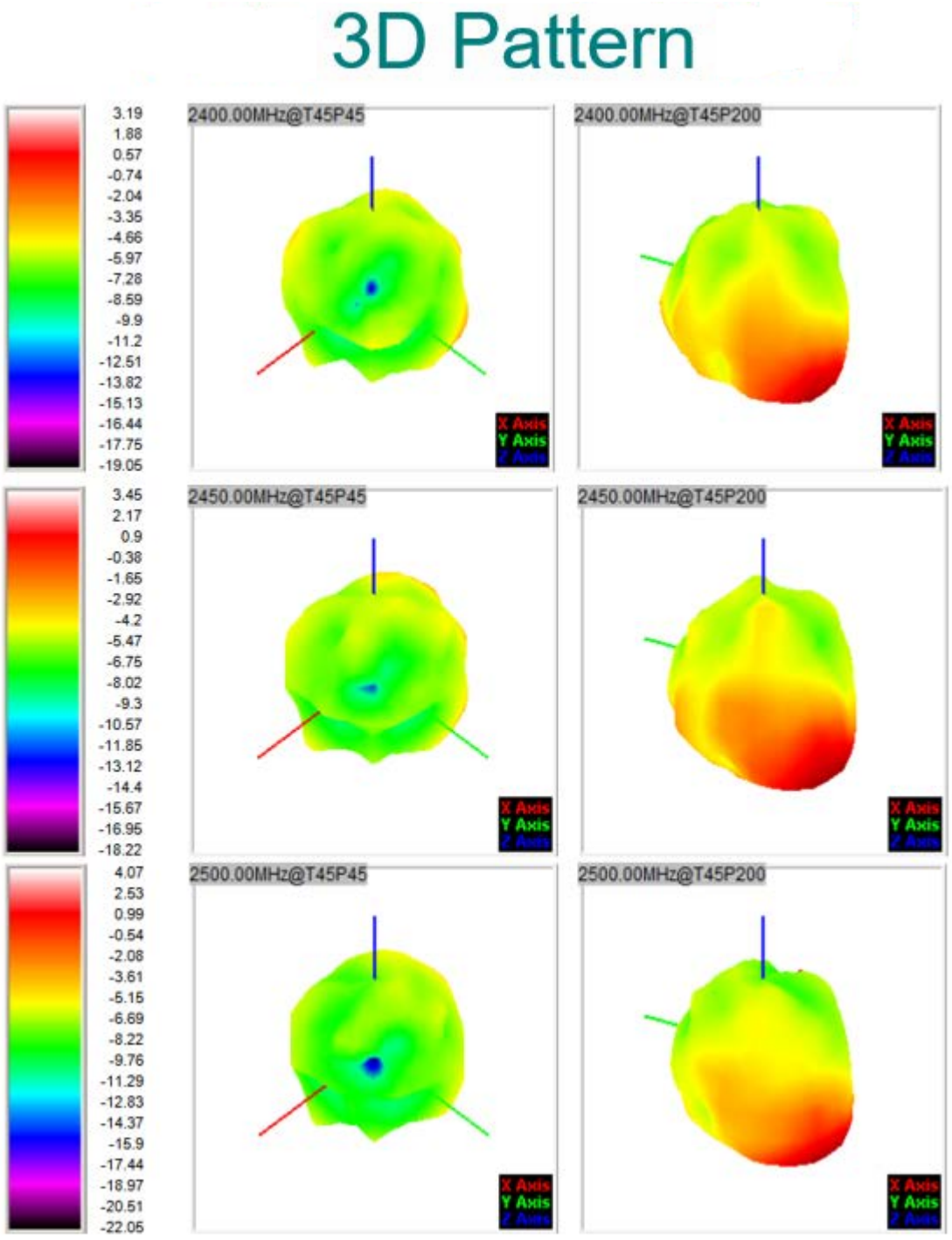
Efficiency/Gain

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
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)	-6.39	-6.01	-5.98	-5.76	-5.57	-5.69	-5.57	-5.63	-5.80	-5.64	-5.57	-5.54	-5.31	-5.11	-5.27
Peak EIRP (dBm)	-2.97	-2.63	-2.29	-1.65	-1.45	-2.02	-2.35	-2.10	-1.95	-1.57	-1.44	-1.30	-1.18	-1.10	-1.50
Directivity (dBi)	3.42	3.38	3.69	4.11	4.12	3.67	3.22	3.54	3.84	4.07	4.13	4.23	4.13	4.01	3.77
Efficiency (dB)	-6.39	-6.01	-5.98	-5.76	-5.57	-5.69	-5.57	-5.63	-5.80	-5.64	-5.57	-5.54	-5.31	-5.11	-5.27
Efficiency (%)	15.00	17.20	17.20	19.50	18.70	19.00	18.70	19.30	18.30	19.30	19.80	19.90	20.40	20.80	20.70
Gain (dBi)	-2.97	-2.63	-2.29	-1.65	-1.45	-2.02	-2.35	-2.10	-1.95	-1.57	-1.44	-1.30	-1.18	-1.10	-1.50
NHPRP ±Pi/4 (dBm)	-7.63	-7.29	-7.29	-7.12	-6.99	-7.17	-7.09	-7.14	-7.27	-7.04	-6.88	-6.79	-6.51	-6.28	-6.43
NHPRP ±Pi/6 (dBm)	-9.11	-8.83	-8.89	-8.78	-8.65	-8.81	-8.70	-8.71	-8.81	-8.54	-8.37	-8.29	-8.03	-7.79	-7.90
NHPRP ±Pi/8 (dBm)	-10.21	-9.94	-10.06	-10.00	-9.86	-9.96	-9.83	-9.82	-9.93	-9.66	-9.48	-9.43	-9.20	-8.98	-9.07
Upper Hem. PRP (dBm)	-9.77	-9.25	-9.11	-8.78	-8.49	-8.49	-8.33	-8.46	-8.72	-8.70	-8.72	-8.68	-8.43	-8.25	-8.34
Lower Hem. PRP (dBm)	-9.06	-8.80	-8.87	-8.76	-8.68	-8.92	-8.85	-8.83	-8.89	-8.60	-8.44	-8.42	-8.21	-8.00	-8.23
Upper Hem. PRP (%)	10.54	11.88	12.27	13.25	14.17	14.14	14.69	14.26	13.43	13.48	13.44	13.55	14.34	14.97	14.67
Lower Hem. PRP (%)	12.43	13.19	12.96	13.29	13.55	12.83	13.02	13.08	12.90	13.80	14.32	14.39	15.10	15.87	15.04

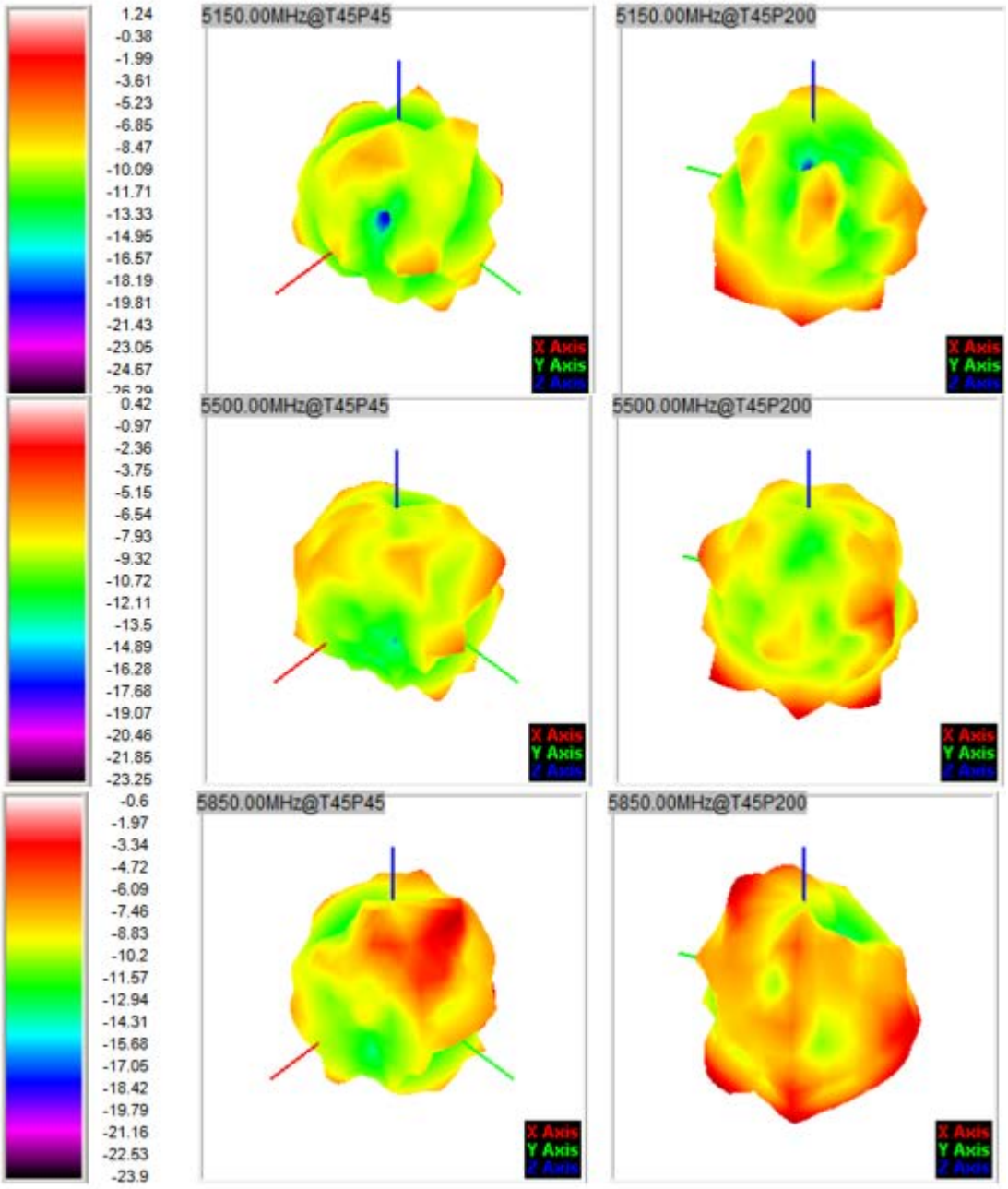
Efficiency/Gain

Frequency ID	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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	2010.0
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	0.00
Tot. Rad. Pwr. (dBm)	-10.97	-10.05	-9.20	-8.42	-7.99	-7.66	-7.12	-6.53	-6.11	-5.78	-5.62	-5.81	-5.72	-5.64	-5.49	-5.42
Peak EIRP (dBm)	-6.82	-6.20	-5.34	-4.86	-4.41	-3.98	-3.47	-3.40	-3.15	-2.19	-1.63	-1.95	-2.10	-1.64	-1.31	-1.19
Directivity (dBi)	4.15	3.85	3.86	3.56	3.59	3.68	3.65	3.13	2.96	3.59	3.99	3.86	3.61	4.01	4.18	4.23
Efficiency (dB)	-10.97	-10.05	-9.20	-8.42	-7.99	-7.66	-7.12	-6.53	-6.11	-5.78	-5.62	-5.81	-5.72	-5.64	-5.49	-5.42
Efficiency (%)	28.00	29.90	32.00	34.40	35.90	37.10	39.40	32.20	34.50	36.40	37.40	36.20	36.80	37.30	38.30	38.70
Gain (dBi)	-6.82	-6.20	-5.34	-4.86	-4.41	-3.98	-3.47	-3.40	-3.15	-2.19	-1.63	-1.95	-2.10	-1.64	-1.31	-1.19
NHPRP ±Pi/4 (dBm)	-12.50	-11.49	-10.62	-9.83	-9.39	-9.03	-8.47	-7.92	-7.55	-7.22	-7.07	-7.27	-7.19	-7.14	-7.02	-6.94
NHPRP ±Pi/6 (dBm)	-14.11	-13.01	-12.14	-11.38	-10.95	-10.57	-10.00	-9.43	-9.03	-8.73	-8.66	-8.93	-8.75	-8.67	-8.61	-8.52
NHPRP ±Pi/8 (dBm)	-15.41	-14.18	-13.30	-12.54	-12.08	-11.70	-11.15	-10.56	-10.12	-9.90	-9.93	-10.26	-9.98	-9.89	-9.94	-9.85
Upper Hem. PRP (dBm)	-14.54	-13.53	-12.58	-11.69	-11.21	-10.85	-10.26	-9.52	-8.97	-8.55	-8.19	-8.41	-8.53	-8.61	-8.51	-8.26
Lower Hem. PRP (dBm)	-13.48	-12.63	-11.87	-11.19	-10.81	-10.50	-10.00	-9.55	-9.28	-9.03	-9.12	-9.29	-8.94	-8.69	-8.49	-8.60
Upper Hem. PRP (%)	3.51	4.43	5.52	6.78	7.57	8.23	9.41	11.16	12.69	13.96	15.19	14.43	14.04	13.76	14.11	14.91
Lower Hem. PRP (%)	4.48	5.46	6.51	7.61	8.30	8.90	10.00	11.08	11.79	12.49	12.24	11.78	12.77	13.51	14.14	13.80

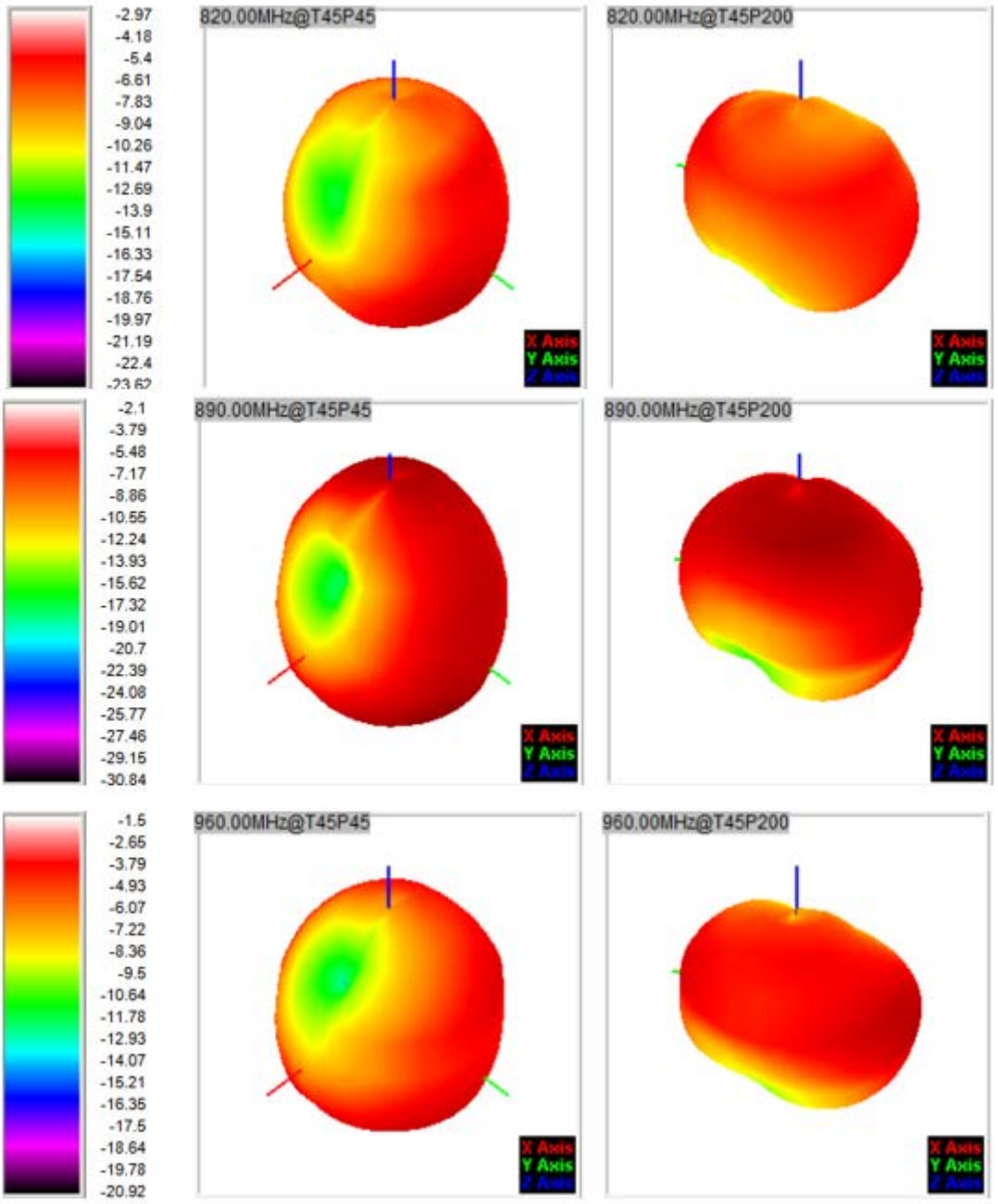
7、Direction diagram



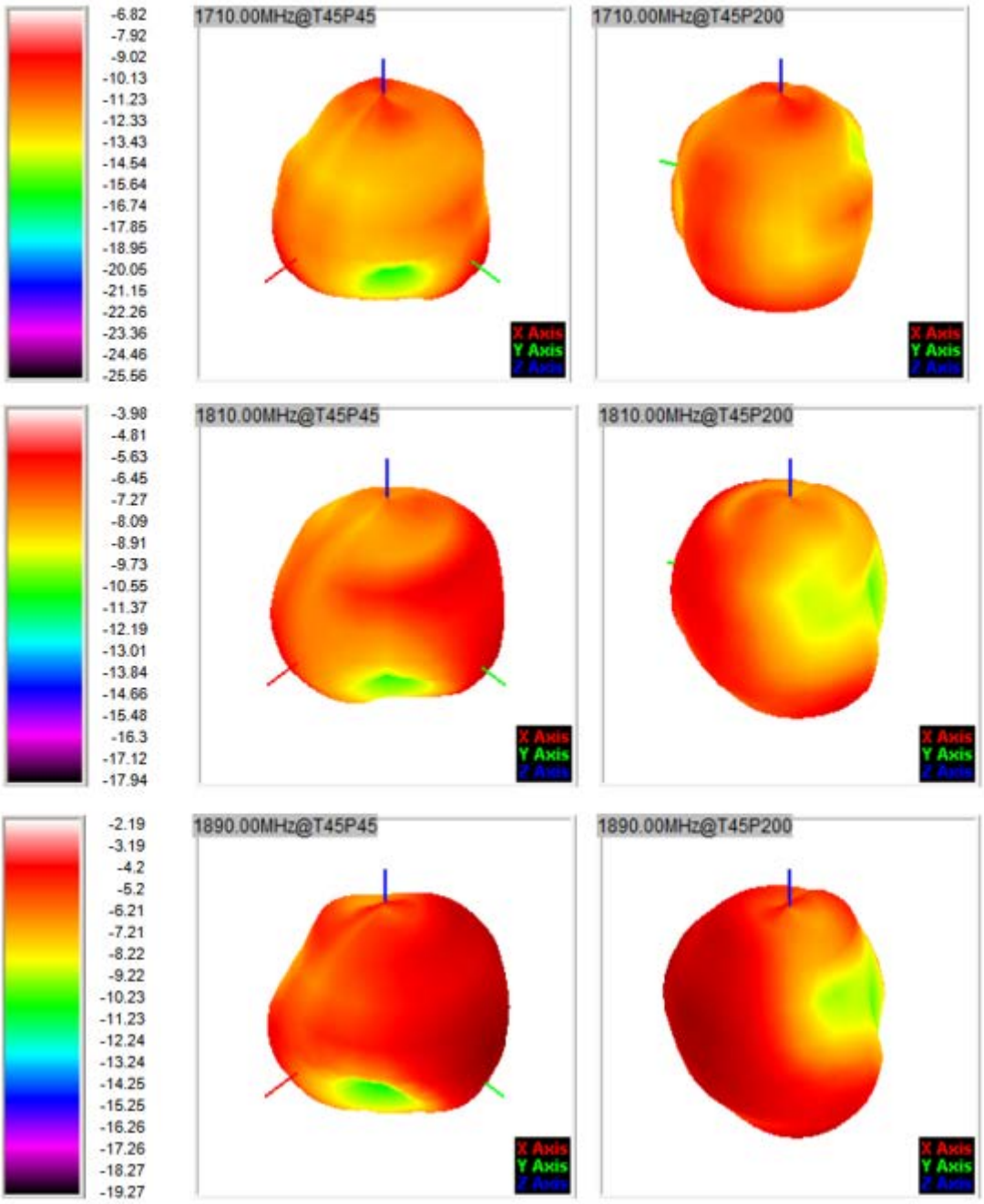
3D Pattern


1.24
-0.38
-1.99
-3.61
-5.23
-6.85
-8.47
-10.09
-11.71
-13.33
-14.95
-16.57
-18.19
-19.81
-21.43
-23.05
-24.67
5150.00MHz@T45P45
X Axis
Y Axis
5150.00MHz@T45P200
X Axis
Y Axis
0.42
-0.97
-2.36
-3.75
-5.15
-6.54
-7.93
-9.32
-10.72
-12.11
-13.5
-14.89
-16.28
-17.68
-19.07
-20.46
-21.85
-23.25
5500.00MHz@T45P45
X Axis
Y Axis
5500.00MHz@T45P200
X Axis
Y Axis
-0.6
-1.97
-3.34
-4.72
-6.09
-7.46
-8.83
-10.2
-11.57
-12.94
-14.31
-15.68
-17.05
-18.42
-19.79
-21.16
-22.53
-23.9
5850.00MHz@T45P45
X Axis
Y Axis
5850.00MHz@T45P200
X Axis
Y Axis

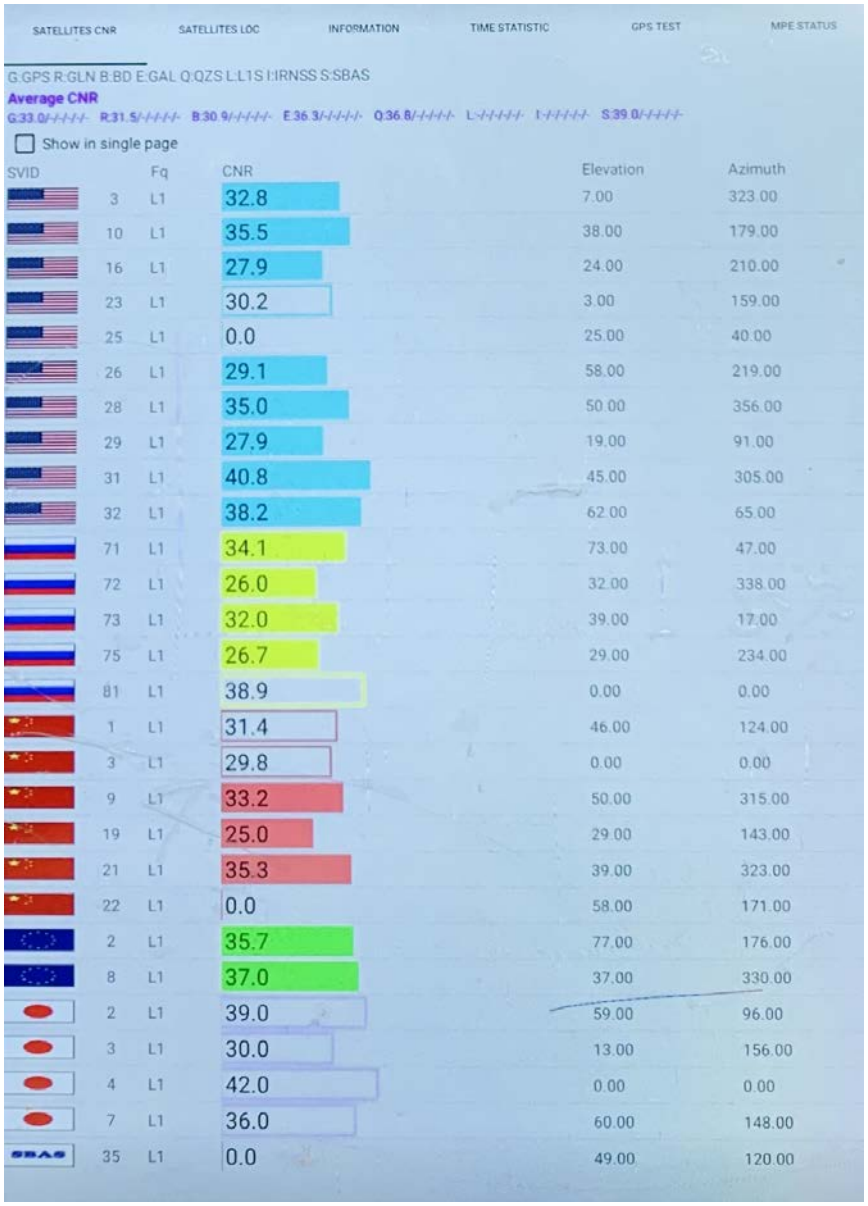
3D Pattern


-2.97
-4.18
-5.4
-6.61
-7.83
-9.04
-10.26
-11.47
-12.69
-13.9
-15.11
-16.33
-17.54
-18.76
-19.97
-21.19
-22.4
820.00MHz@T45P45
820.00MHz@T45P200
X Axis
Y Axis
-2.1
-3.79
-5.48
-7.17
-8.86
-10.55
-12.24
-13.93
-15.62
-17.32
-19.01
-20.7
-22.39
-24.08
-25.77
-27.46
-29.15
-30.84
890.00MHz@T45P45
890.00MHz@T45P200
-1.5
-2.65
-3.79
-4.93
-6.07
-7.22
-8.36
-9.5
-10.64
-11.78
-12.93
-14.07
-15.21
-16.35
-17.5
-18.64
-19.78
-20.92
960.00MHz@T45P45
960.00MHz@T45P200

3D Pattern


-6.82
-7.92
-9.02
-10.13
-11.23
-12.33
-13.43
-14.54
-15.64
-16.74
-17.85
-18.95
-20.05
-21.15
-22.26
-23.36
-24.46
-25.56
1710.00MHz@T45P45
1710.00MHz@T45P200
X Axis
Y Axis
-3.98
-4.81
-5.63
-6.45
-7.27
-8.09
-8.91
-9.73
-10.55
-11.37
-12.19
-13.01
-13.84
-14.66
-15.48
-16.3
-17.12
-17.94
1810.00MHz@T45P45
1810.00MHz@T45P200
-2.19
-3.19
-4.2
-5.2
-6.21
-7.21
-8.22
-9.22
-10.23
-11.23
-12.24
-13.24
-14.25
-15.25
-16.26
-17.26
-18.27
-19.27
1890.00MHz@T45P45
1890.00MHz@T45P200

8、GPS actual measurement



SATELLITES CNR | SATELLITES LOC | INFORMATION | TIME STATISTIC | GPS TEST | MPE STATUS

G:GPS R:GLN B:BD E:GAL Q:QZS L:L1S I:IRNSS S:SBAS

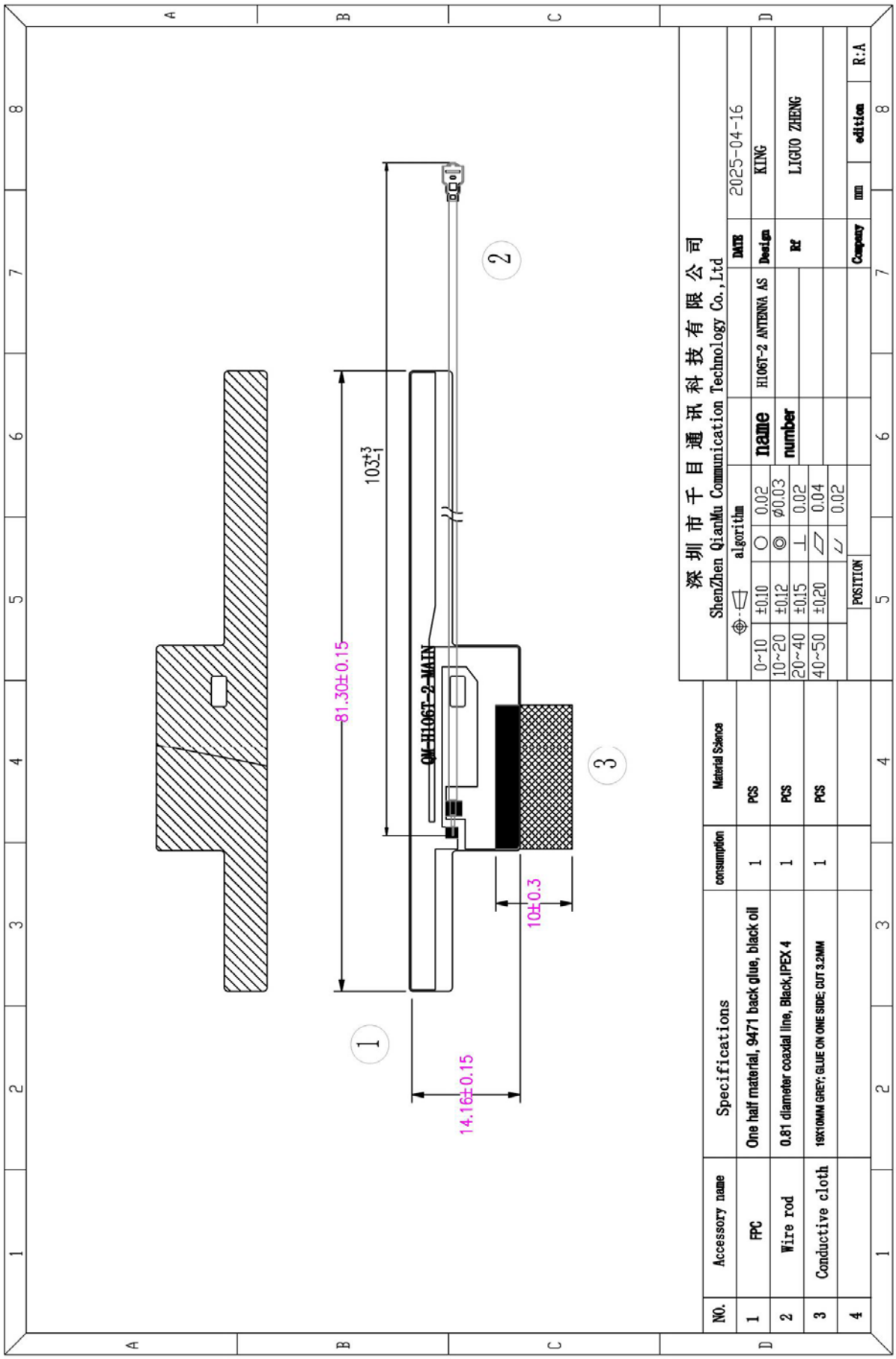
Average CNR

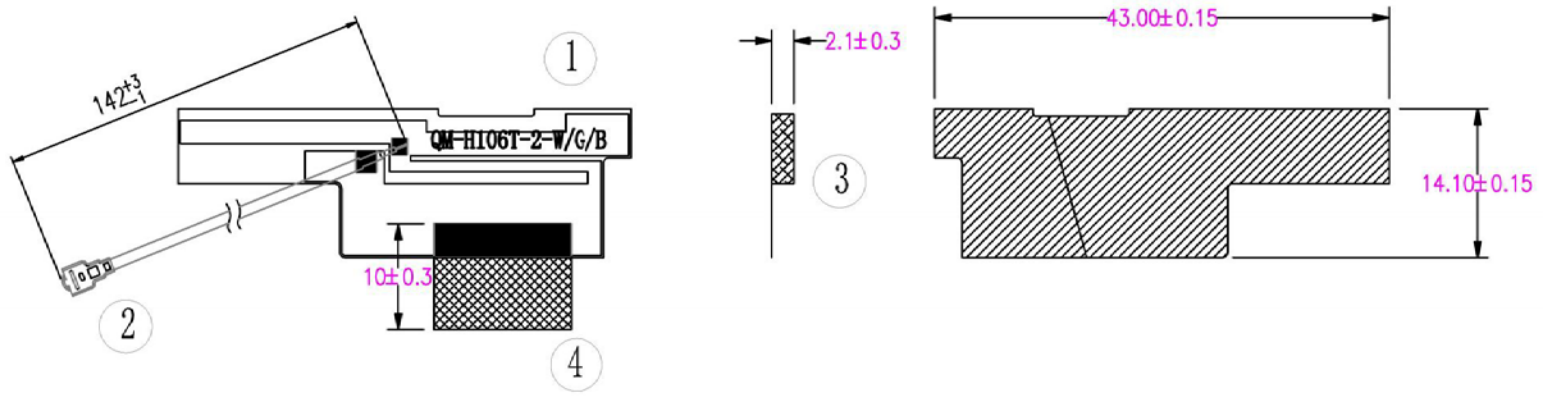
G:33.0/-/-/-/- R:31.5/-/-/-/- B:30.9/-/-/-/- E:36.3/-/-/-/- Q:36.8/-/-/-/- L:-/-/-/-/- I:-/-/-/-/- S:39.0/-/-/-/-

Show in single page

SVID		Fq	CNR	Elevation	Azimuth
	3	L1	32.8	7.00	323.00
	10	L1	35.5	38.00	179.00
	16	L1	27.9	24.00	210.00
	23	L1	30.2	3.00	159.00
	25	L1	0.0	25.00	40.00
	26	L1	29.1	58.00	219.00
	28	L1	35.0	50.00	356.00
	29	L1	27.9	19.00	91.00
	31	L1	40.8	45.00	305.00
	32	L1	38.2	62.00	65.00
	71	L1	34.1	73.00	47.00
	72	L1	26.0	32.00	338.00
	73	L1	32.0	39.00	17.00
	75	L1	26.7	29.00	234.00
	81	L1	38.9	0.00	0.00
	1	L1	31.4	46.00	124.00
	3	L1	29.8	0.00	0.00
	9	L1	33.2	50.00	315.00
	19	L1	25.0	29.00	143.00
	21	L1	35.3	39.00	323.00
	22	L1	0.0	58.00	171.00
	2	L1	35.7	77.00	176.00
	8	L1	37.0	37.00	330.00
	2	L1	39.0	59.00	96.00
	3	L1	30.0	13.00	156.00
	4	L1	42.0	0.00	0.00
	7	L1	36.0	60.00	148.00
SBAS	35	L1	0.0	49.00	120.00

10. Engineering drawings





NO.	Accessory name	Specifications	consumption	Material Science
1	FPC	One half material, 9471 back glue, black oil	1	PCS
2	Wire rod	0.81 diameter coaxial line, Black,IPEX 4	1	PCS
3	Conductive cloth	13X10MM GREY; GLUE ON ONE SIDE; CUT 3.2MM	1	PCS
4				

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

algorithm							
0~10	±0.10	○	0.02	name	H106T-2 ANTENNA AS	DATE	2025-04-16
10~20	±0.12	◎	ø0.03	number		Design	KING
20~40	±0.15	⊥	0.02			RF	LIGUO ZHENG
40~50	±0.20	▱	0.04				
		⌓	0.02				
	POSITION					Company	mm edition R:A