



Specification Acknowledgement

(Customer Name) Shenzhen NIUZAI Technology Co., Ltd

(Specification) T300H antenna

(Customer P/N) _____

(Date) 2024-04-30

Band	GSM:2.3.5.8 /CDMA/WCDMA:1.2,4,5.8 LTE-1.2.3.4.5.7.8.12.13.17.18.19.20.25.26.28.34.38.39.40.41.66 WIFI / BT		
Version	A		
RF	Peng Wei	Confirm	
Structure	YangXuezhong		
Customer confirmation			
date			

Contents

1. Project picture

2. Test fixtures

3. Matching circuit

4. S11 test electrical performance

4.1 S11 Test Method Specification Standard

4.2 S11 parameters

4.3 S11 parameter image

5. Power and sensitivity testing

5.1 Test Data

5.2 Efficiency testing

5.3 Directional diagram

6. Structural drawings

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1. Project pictures (for reference only)

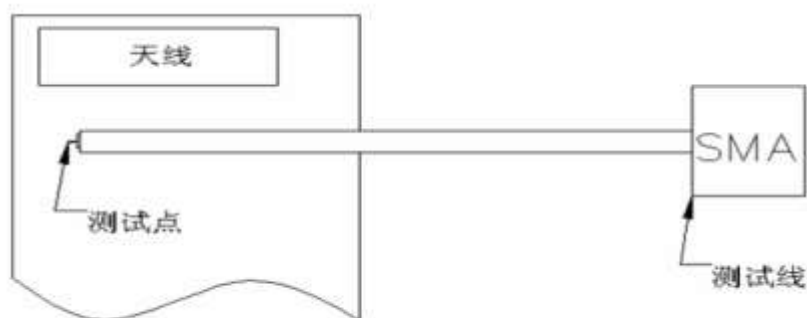


GSM Antenna

2. Passive testing

Purpose: To test the passive parameters of the antenna as accurately as possible.

Method: This fixture is connected to the test point at the back end of the matching circuit of the mobile phone motherboard (the front section of the RF test hole) with a 50 ohm coaxial cable, and the other section is connected to the SMA connector. The details are as follows:



The following table shows the performance test indicators for T300H mass-produced antennas:

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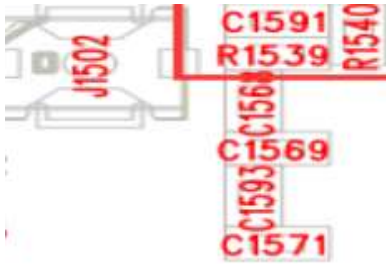
T300H GSM antennas:				
	Frequency (MHz)	VSWR	Frequency (MHz)	VSWR
Frequency band	Transmitting end		Receiving end	
GSM850	824-849	≤3.5	869-894	≤3.0
GSM900	880-915	≤3.5	925-960	≤3.5
DCS1800	1710-1785	≤3.0	1805-1880	≤2.5
PCS1900	1850-1910	≤2.8	1930-1990	≤3.2
WCDMA-850	824-849	≤3.5	869-894	≤3.5
WCDMA-900	880-915	≤3.5	925-960	≤3.5
WCDMA-1900	1850-1910	≤2.8	1930-1990	≤3.2
WCDMA-2100	1710-1755	≤3.5	2110-2155	≤3.5
LTE-FDD-B1	1920-1980	≤2.0	2110-2170	≤2.0
LTE-FDD-B2	1850-1910	≤2.8	1930-1990	≤3.2
LTE-TDD-B3	1710-1785	≤2.5	1805-1880	≤2.5
LTE-TDD-B4	1710-1785	≤2.5	1805-1880	≤2.5
LTE-TDD-B5	824-849	≤3.5	869-894	≤3.0
LTE-TDD-B7	2505-2565	≤2.0	2625-2685	≤2.0
LTE-FDD-B8	880-913	≤2.0	930-955	≤2.0
LTE-FDD-B12	703-710	≤2.5	733-740	≤3.5
LTE-FDD-B13	782	≤3.5	751	≤3.5
LTE-FDD-B17	709-711	≤3.0	739-741	≤3.0
LTE-FDD-B19	835-840	≤2.5	880-885	≤3.5
LTE-FDD-B20	837-857	≤3.5	796-816	≤3.0
LTE-FDD-B25	1855-1910	≤3.5	1935-1990	≤3.0
LTE-FDD-B26	819-844	≤3.5	864-889	≤3.0
LTE-FDD-B28	708-743	≤2.0	763-798	≤2.0
LTE-TDD-B38	2570-2620	≤2.0	2570-2620	≤2.0
LTE-TDD-B39	1880-1920	≤2.5	1880-1920	≤2.5
LTE-TDD-B40	2310-2390	≤2.0	2310-2390	≤2.0
LTE-TDD-B41	2550-2660	≤2.0	2550-2660	≤2.0
LTE-FDD-B66	1715-1775	≤3.5	2115-2175	≤3.0
WIFI 2.4G/BT	2400-2500	≤2.0	2400-2500	≤2.0
WIFI 5G	5150-5850	≤2.0	5150-5850	≤2.0

3. Matching circuits

Element	Match value
C1571	0.5PF
C1593	0 Ω
C1569	NC
C1568	0 Ω

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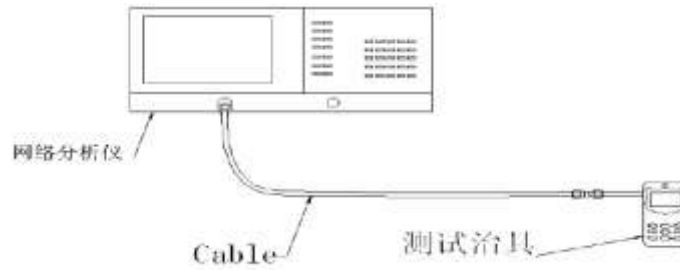
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4.S11 test

4.1 S11 Test Method Specification Standard VSWR The test devices are connected in turn as follows: HXB10F753ES Network Analyzer → 50 ohm coaxial Cable → 120mm Long copper tubes → Test fixtures.

Processing of the test fixture: A hard cable is used from the antenna 50 ohm test point on the PCB of the mobile phone to lead out the SMA-J connector, connect it with a copper tube with a choke, and then connect other devices in turn.



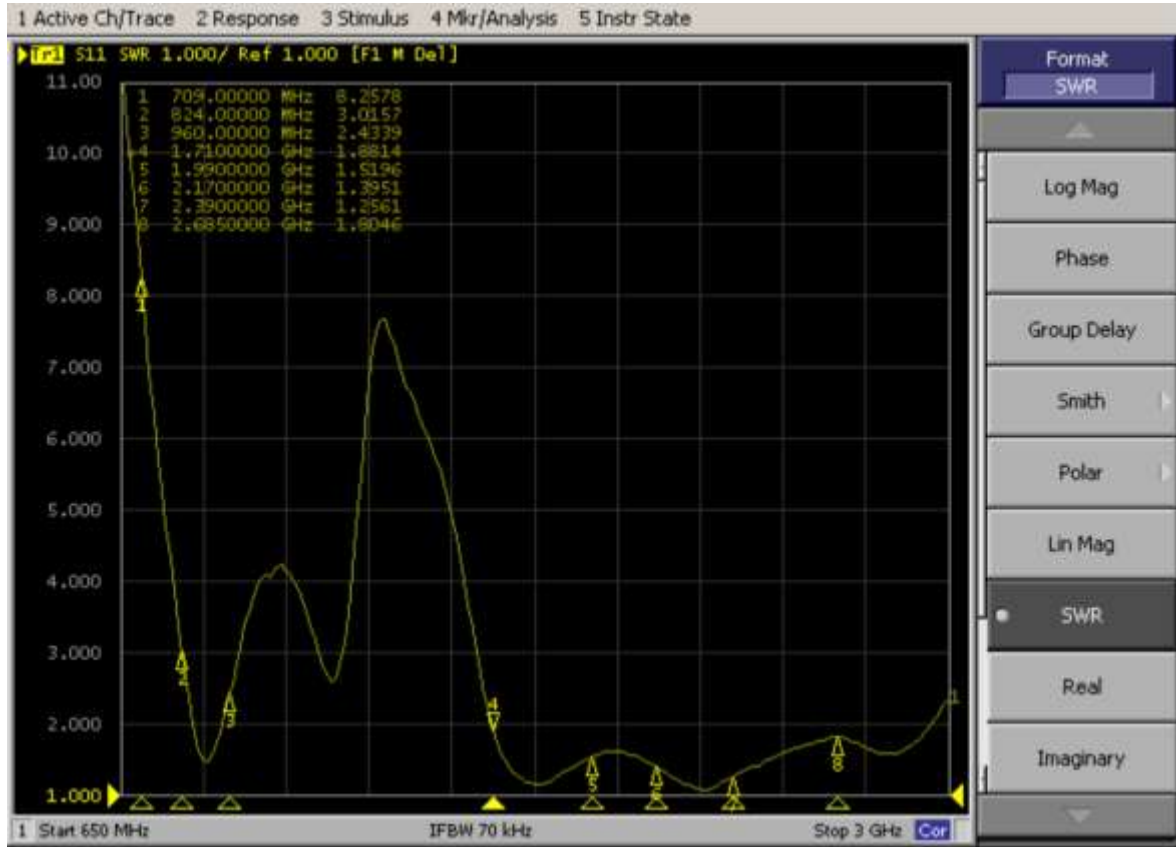
Test the schematic

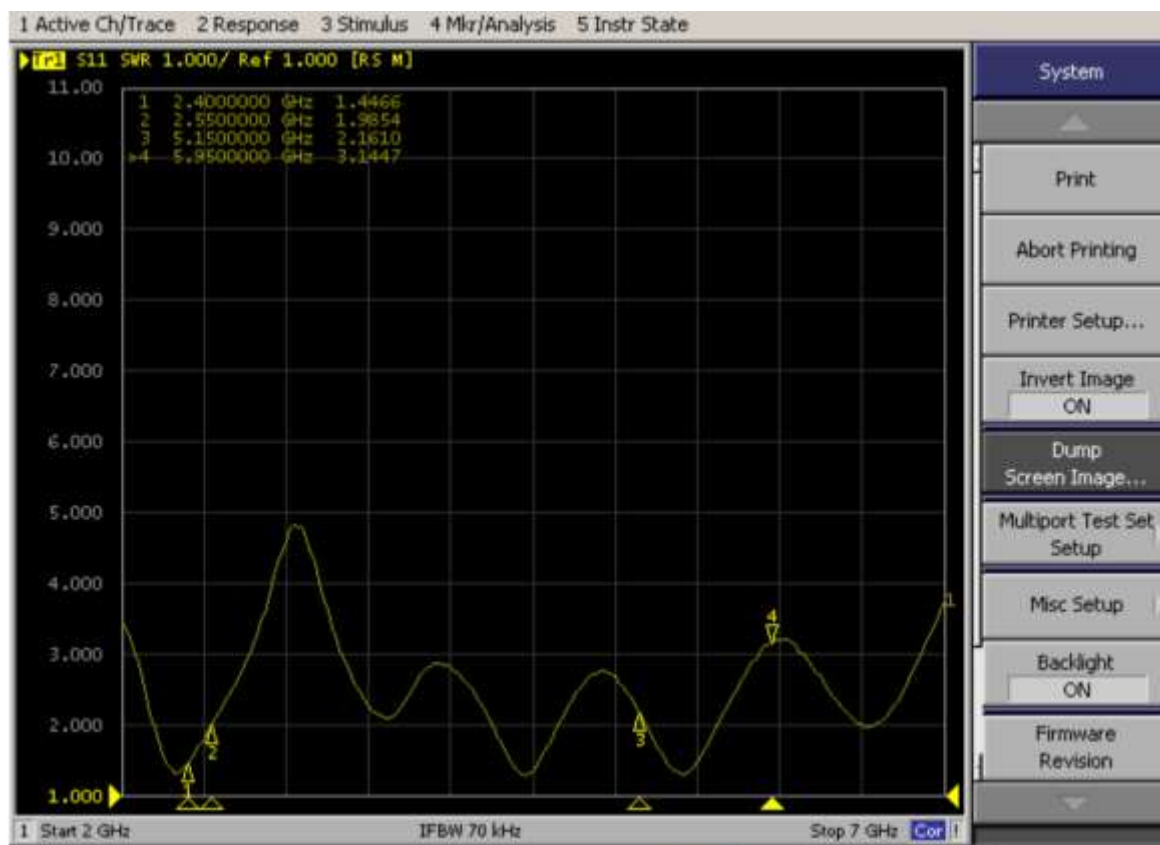
4.2 S11 parameters

The following table shows the standing wave ratio values at the edge frequency points of the T300H antenna operating frequency band. The waveform diagrams of Return Loss and VSWR obtained from the test are shown in the attachment.

	T300H Antenna				
Frequency(MHz)	700	900	1710	1990	2680
Free space	4.1	2.2	6.0	5.7	3.6

4.3 S11





5. Power and sensitivity testing

5.1 Test data

channel	GSM850			GSM900		
	CH128	CH192	CH251	CH1	CH62	CH124
TRP	28.49	28.58	28.02	28.09	28.19	28.17
TIS			-104.23			-104.17
channel	DCS1800			PCS1900		
	CH512	CH698	CH885	CH512	CH661	CH810
TRP	24.23	25.48	26.28	26.31	25.88	25.27
TIS			-104.92			-105.10
channel	WCDMA-2100			WCDMA-1900		
	CH10562	CH10730	CH10838	CH9663	CH9800	CH9938
TRP	18.81	18.40	18.15	18.60	18.71	18.55
TIS			-103.45			-104.58
channel	WCDMA-850			WCDMA-900		
	CH4357	CH4408	CH4458	CH2937	CH3013	CH3083
TRP	19.03	19.78	20.01	20.17	20.05	19.58
TIS			-104.83			-104.15

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channel	WCDMA-1700			CDMA		
	CH1537	CH1638	CH1738	CH283	CH384	CH777
TRP	19.23	19.38	19.28	18.38	18.82	18.98
TIS			-103.22			-102.15
channel	LTE-FDD-B1			LTE-FDD-B2		
	CH18050	CH18300	CH18550	CH27590	CH27600	CH27610
TRP	19.67	19.80	19.48	18.69	18.88	19.05
TIS			-90.31			-91.39
channel	LTE-FDD-B3			LTE-FDD-B4		
	CH19250	CH19575	CH19900	CH27590	CH27600	CH27610
TRP	19.14	19.09	18.52	19.18	19.27	19.09
TIS			-92.03			-92.40
channel	LTE-FDD-B5			LTE-FDD-B7		
	CH20450	CH20525	CH20600	CH20800	CH21100	CH21400
TRP	18.81	19.17	19.31	19.67	19.80	19.89
TIS			-93.50			-92.79

channel	LTE-FDD-B8			LTE-FDD-B12		
	CH21500	CH21625	CH21750	CH23060	CH23095	CH23130
TRP	19.39	19.32	19.40	17.06	17.26	17.81
TIS			-93.14			-90.25
channel	LTE-FDD-B13			LTE-FDD-B17		
		CH23230		CH2378	CH23790	CH23800
TRP		18.15		17.11	17.69	18.33
TIS		-91.03				-90.19
channel	LTE-FDD-B18			LTE-FDD-B19		
	CH23900	CH23925	CH23950	CH24050	CH24075	CH24100
TRP	19.07	18.92	19.13	19.44	18.92	19.14
TIS			-92.75			-92.94
channel	LTE-FDD-B20			LTE-FDD-B25		
	CH24200	CH24300	CH24400	CH260900	CH26365	CH26640
TRP	19.47	19.59	19.52	19.21	18.90	18.96
TIS			-92.43			-93.19
channel	LTE-FDD-B26			LTE-FDD-B28		
	CH26740	CH26865	CH26990	CH27260	CH27370	CH27610
TRP	19.35	19.26	19.44	17.62	18.02	18.00

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TIS			-93.45			-90.01
channel	LTE-FDD-B34			LTE-FDD-B66		
	CH36250	CH36275	CH36300	CH132022	CH132322	CH132622
TRP	19.58	19.62	19.71	18.84	19.27	18.83
TIS			-92.11			-92.87
channel	LTE-TDD-B38			LTE-TDD-B39		
	CH37850	CH38000	CH38150	CH38350	CH38450	CH38550
TRP	19.66	19.47	19.32	19.09	19.44	19.08
TIS			-90.71			-92.24
channel	LTE-TDD-B40			LTE-TDD-B41		
	CH38750	CH39150	CH39550	CH40340	CH40620	CH41140
TRP	19.21	19.05	19.11	19.32	19.28	19.18
TIS			-91.00			-90.35

5.2 Efficiency testing

GSM Passive radiation efficiency and maximum gain of antennas (dB)

Freq(MHz)	Efficiency(dB)	Gain(dBi)	Efficiency(%)
700	-6.07	-1.17	24.71
820	-5.04	-0.1	31.35
960	-4.76	0.24	33.42
1700	-4.76	-1.19	33.38
1800	-3.47	0.78	45
1900	-3.59	0.3	43.74
2000	-2.97	1.37	50.47
2100	-4.49	1.59	35.59
2200	-5.35	-0.1	29.15
2300	-5.11	-0.46	30.8
2400	-4.99	0.14	31.68
2500	-4.86	0.88	32.65
2600	-5.13	0.27	30.68
2700	-4.46	0.16	35.78

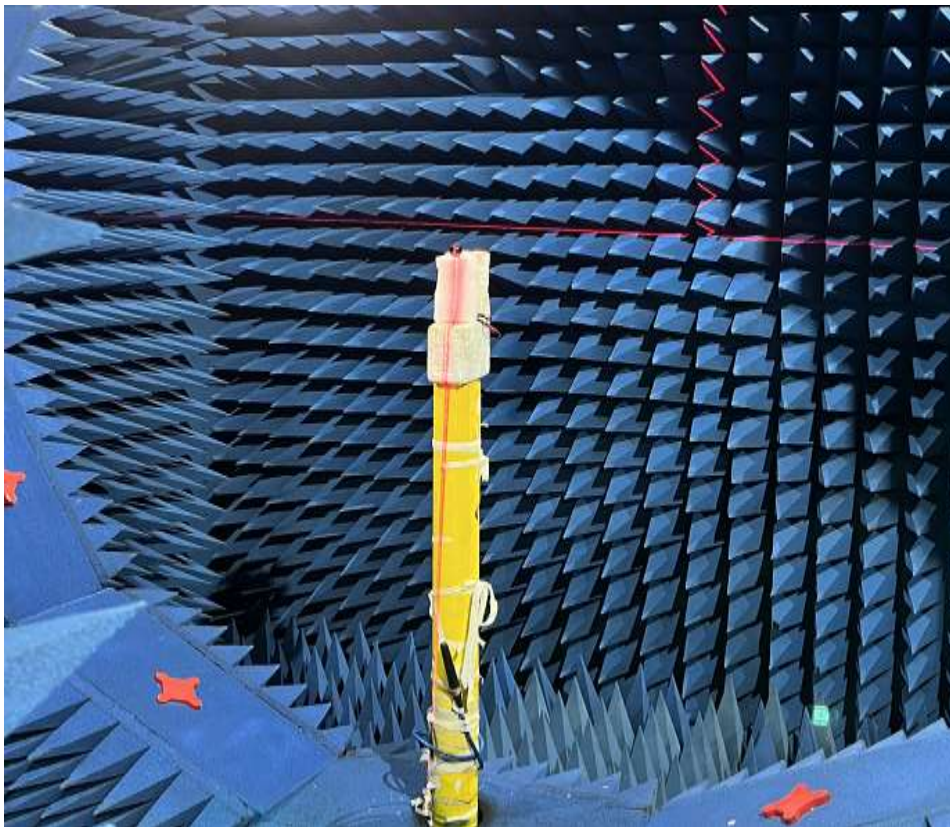
WiFi Passive radiation efficiency and maximum gain of antennas (dB)

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Freq(MHz)	Efficiency(dB)	Gain(dBi)	Efficiency(%)
2400	-4.92	-0.3	32.18
2420	-4.64	-0.24	32.85
2440	-4.59	-0.08	34.79
2460	-4.49	-0.14	35.58
2480	-4.43	0.05	36.04
2500	-4.29	0.54	37.22
5150	-3.54	1.67	44.26
5250	-4.07	1.01	39.17
5350	-5.51	-0.13	28.12
5450	-6.61	-1.26	21.83
5550	-6.94	-2.11	20.23
5650	-5.44	-1.97	28.58
5750	-4.32	0.37	37.01
5850	-3.27	1.7	47.04

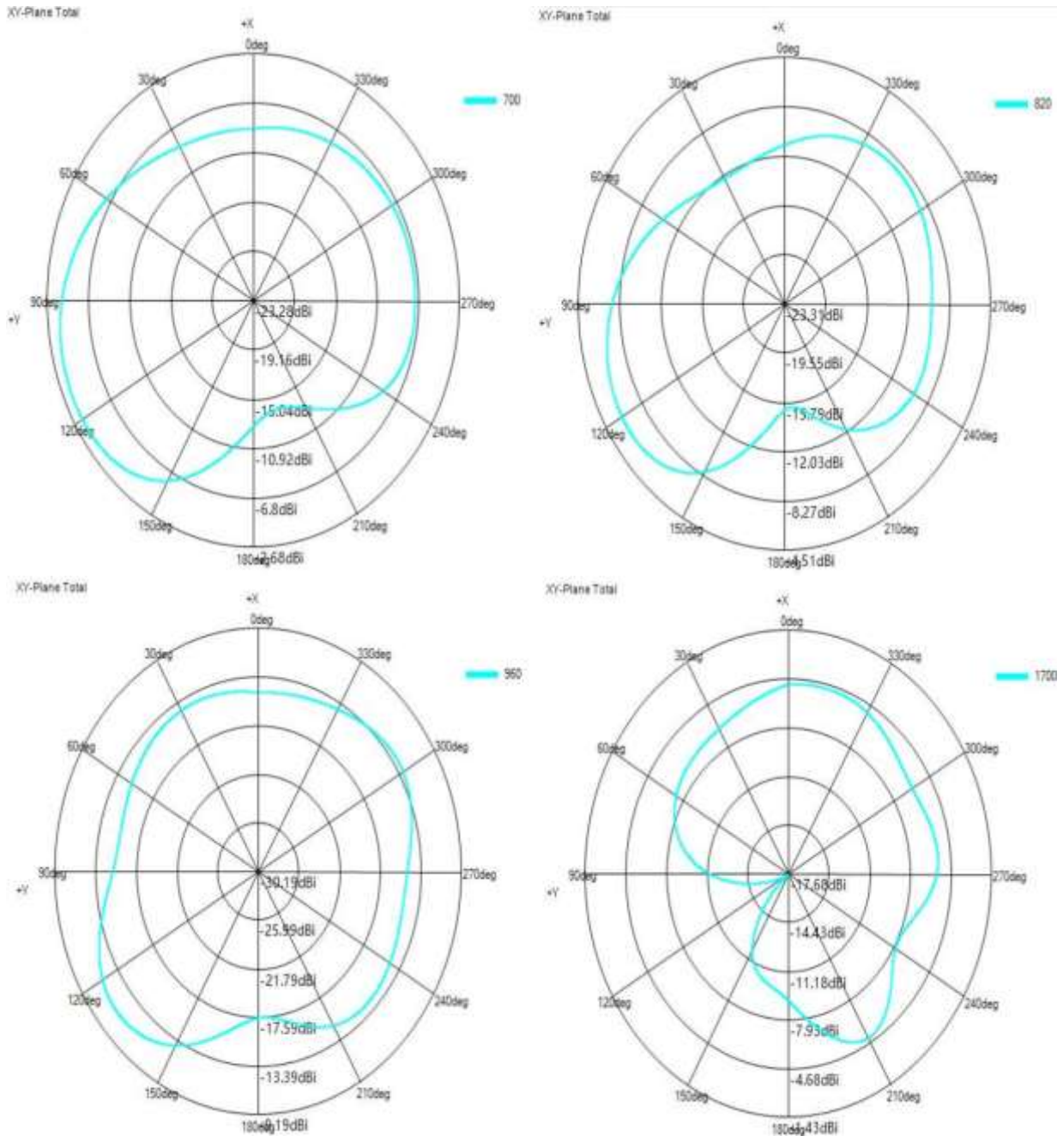
3D Test system



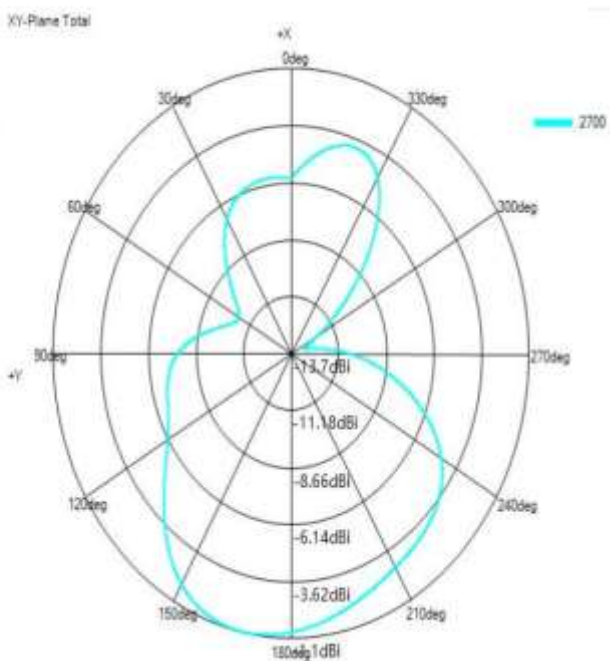
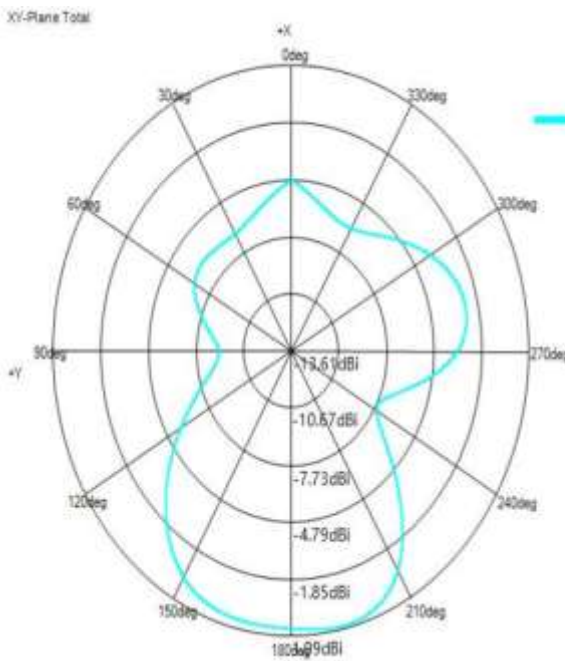
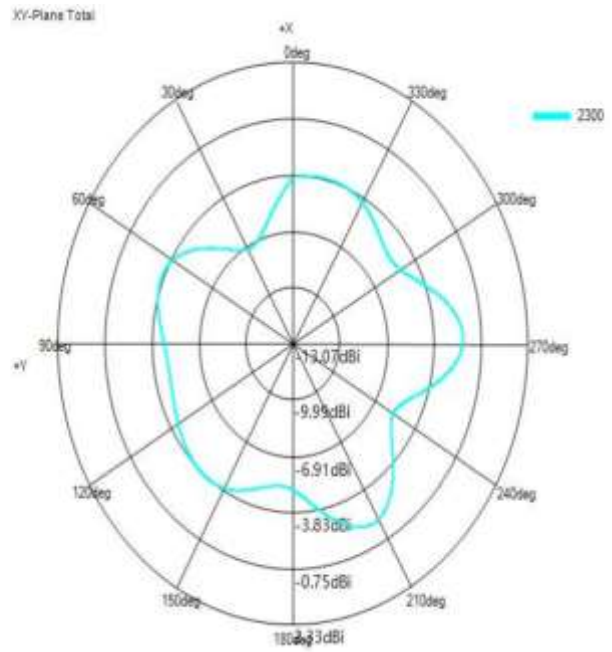
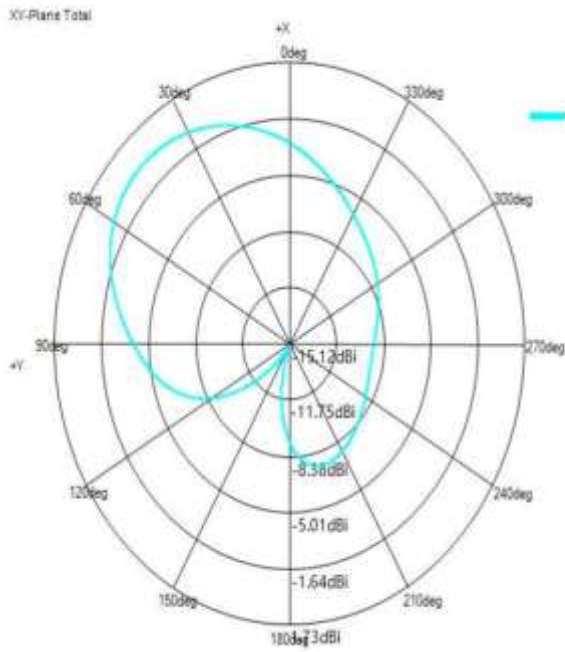
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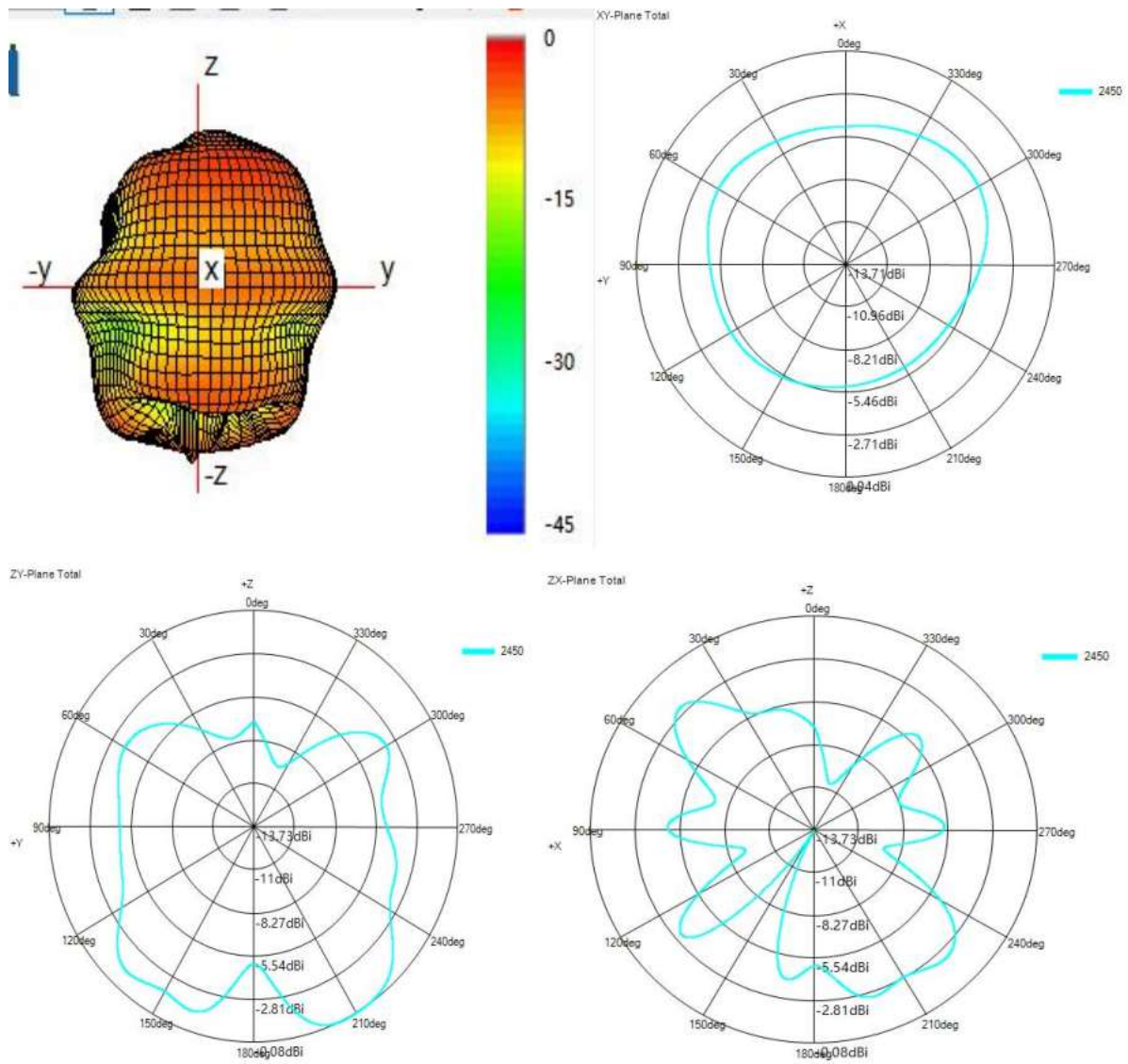
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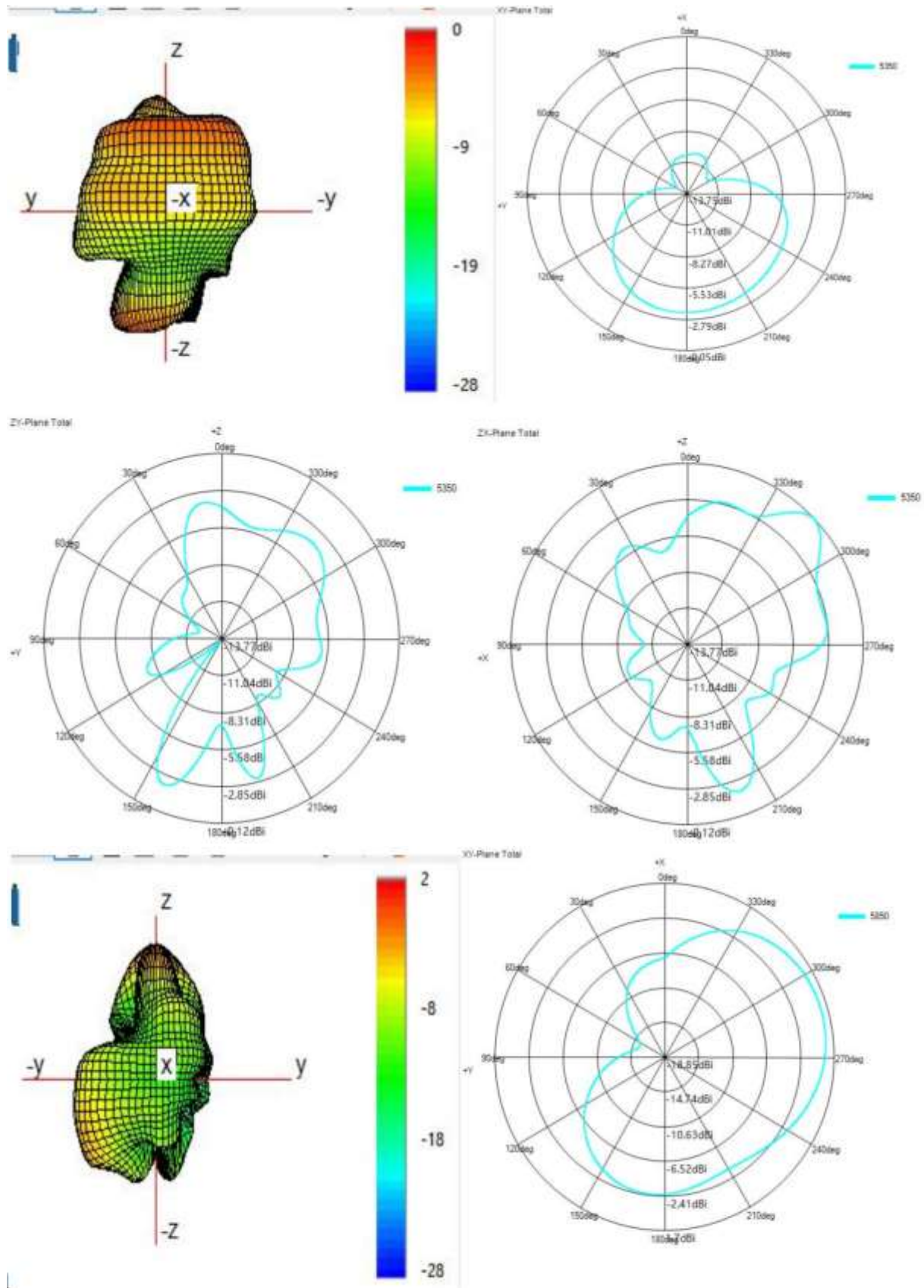
5.3 Directional diagram

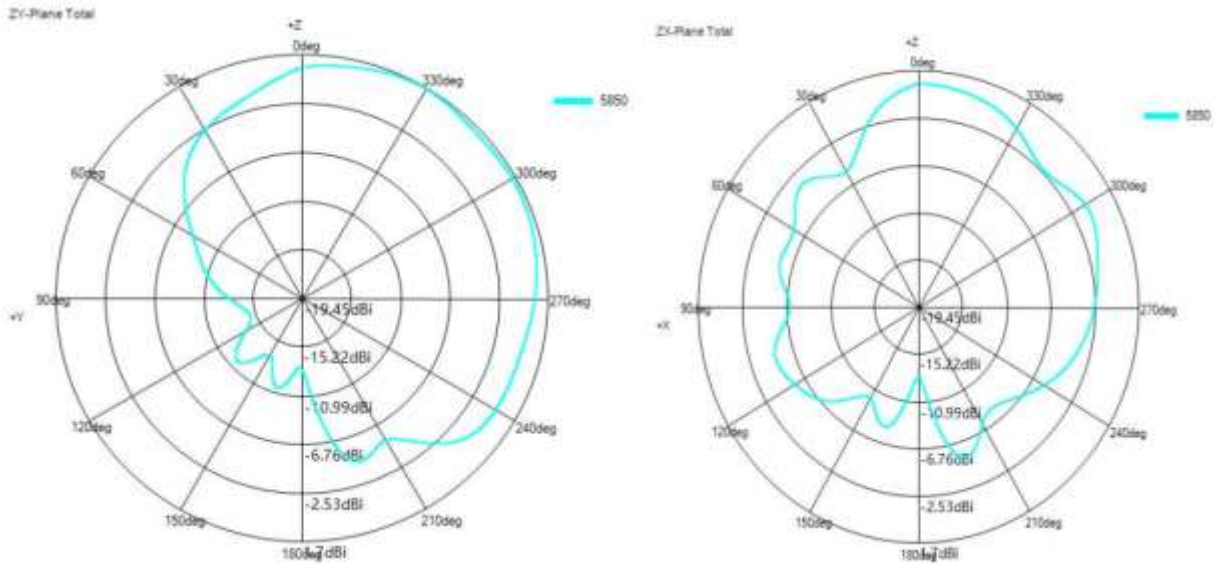


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6. Structural drawings:

