



Antenna Performance Description

Applicant: Xiaomi Communications Co., Ltd

Product description: Mobile Phone

Model Name:2312DRAABG

FCC ID: 2AFZZAABG



1. Antenna information

Antenna	Model Name	Antenna Pattern	Antenna Type	Manufacturer	Test party of Antenna gain
ANT1	AN6752A	MDA	IFA Antenna	Kun Shan Innowave Communication Technology Co., Ltd.	Kun Shan Innowave Communication Technology Co., Ltd.
ANT4	AN6752A	MDA	IFA Antenna	AAC Technologies	AAC Technologies
ANT2	AN6752A	MDA	IFA Antenna	AAC Technologies	AAC Technologies
ANT6	AN6752A	MDA	IFA Antenna	Kun Shan Innowave Communication Technology Co., Ltd.	Kun Shan Innowave Communication Technology Co., Ltd.
ANT3	AN6752A	MDA	IFA Antenna	AAC Technologies	AAC Technologies



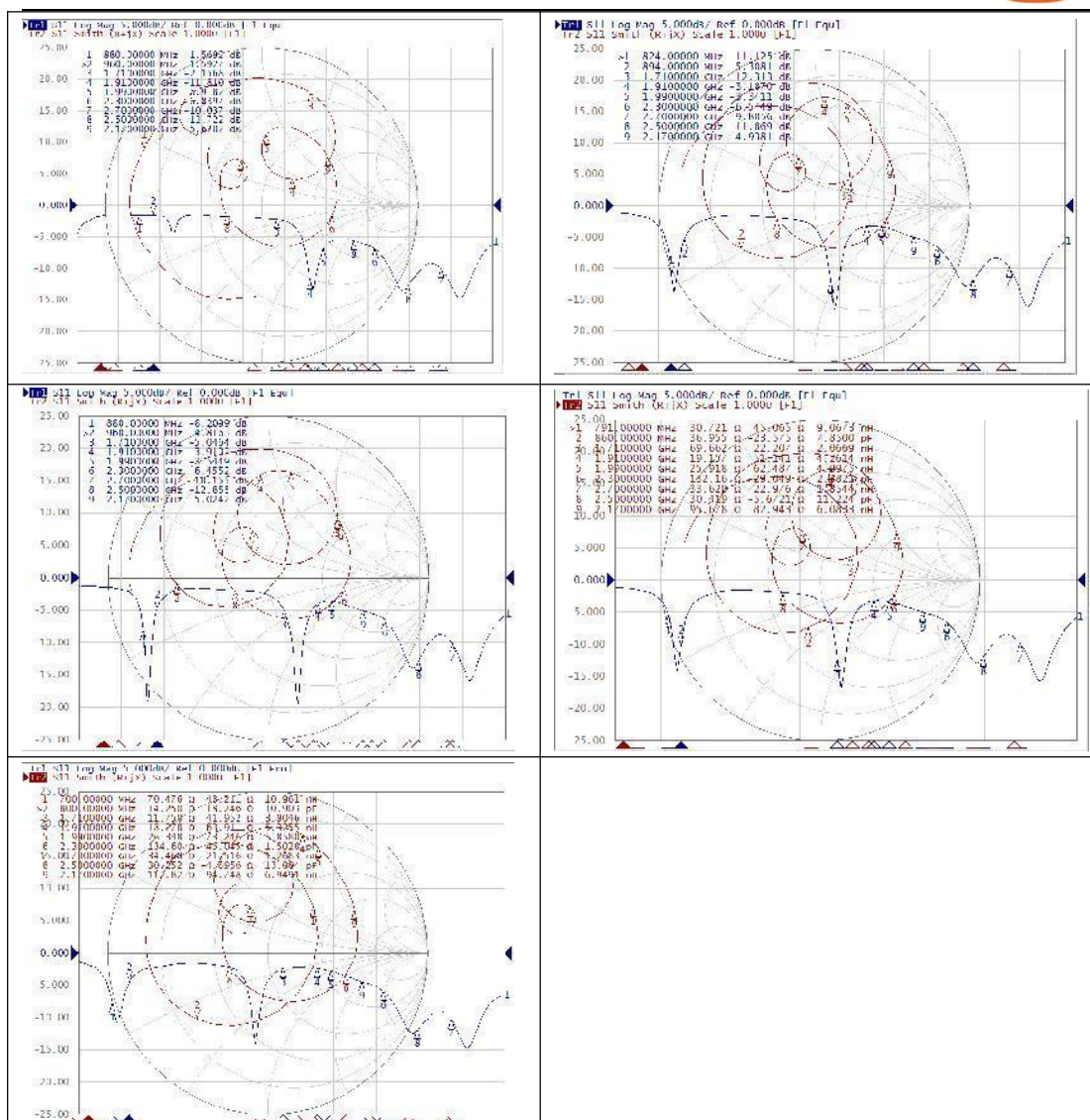
ANT5	AN6752A	MDA+FPC	IFA Antenna	Kun Shan Innowave Communication Technology Co., Ltd.	Kun Shan Innowave Communication Technology Co., Ltd.
ANT7	AN6752A	MDA+FPC	IFA Antenna	AAC Technologies	AAC Technologies

2、Test data

(ANT1)	Band	Efficient	Gain
2G	GSM850 (824-849, 869-894)	-9	-5.1
	GSM900 (880-915, 925-960)	-8.9	-4.2
	GSM1800 (1710-1785, 1905-1880)	-7.1	0.5
	GSM1900 (1850-1910, 1930-1990)	-7	-1.4
3G	WCDMA B1 (1920-1980, 2110-2170)	-6.3	-1.4
	WCDMA B2 (1850-1910, 1930-1990)	-7	-1.4
	WCDMA B4 (1710-1785, 2110-2155)	-6.5	0.5
	WCDMA B5 (824-849, 869-894)	-9	-5.1
	WCDMA B8 (880-915, 925-960)	-8.9	-4.2
4G	TTE FDD 1: (1920-1980, 2110-2170)	-6.3	-1.4
	TTE FDD 2: (1850-1910, 1930-1990)	-7	-1.4



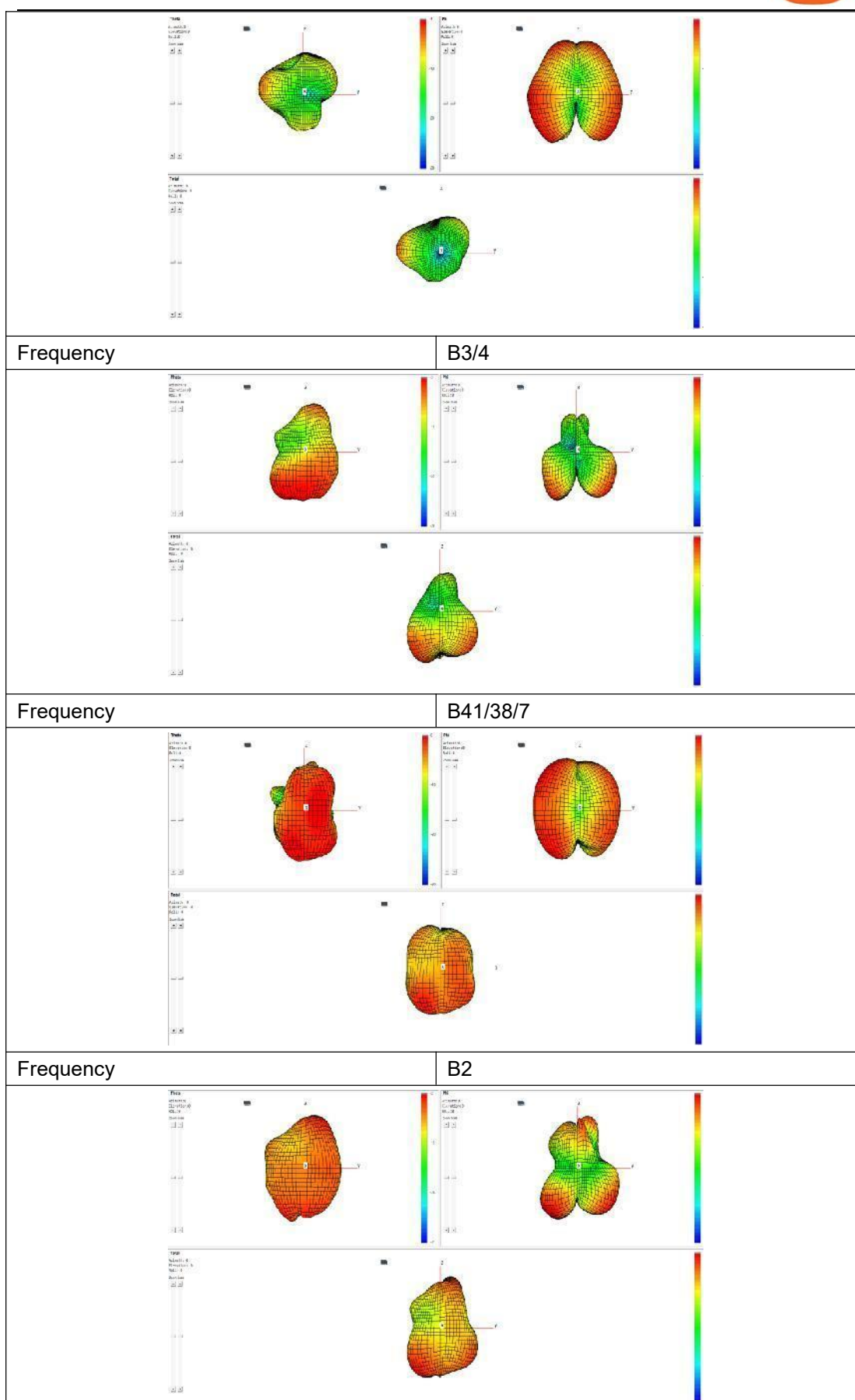
	TTE FDD 3: (1710-1785, 1905-1880)	-7.1	0.5
	TTE FDD 4: (1710-1785, 2110-2155)	-6.5	0.5
	TTE FDD 5: (824-849, 869-894)	-9	-5.1
	TTE FDD 7: (2500-2570, 2620-2690)	-3.8	1.4
	TTE FDD 8: (880-915, 925-960)	-8.9	-4.2
	TTE FDD 20: (832-862, 791-821)	-9.2	-4.8
	TTE FDD 28: (703-748,758-803)	-9	-5.5
	TTE TDD 38: (2570-2620)	-4.1	1.3
	TTE TDD 40: (2300-2400)	-5.7	-0.8
	TTE TDD 41: (2496-2690)	-4	1.4
5G	N1 (1920-1980, 2110-2170)	-6.3	-1.4
	N3 (1710-1785, 1905-1880)	-7.1	0.5
	N5 (824-849, 869-894)	-9	-5.1
	N7 (2500-2570, 2620-2690)	-3.8	1.4
	N8 (880-915, 925-960)	-8.9	-4.2
	N20 (832-862, 791-821)	-9.2	-4.8
	N28 (703-748,758-803)	-9	-5.5
	N38 (2570-2620)	-4.1	1.3
	N40 (2300-2400)	-5.7	-0.8
	N41 (2496-2690)	-4	1.4

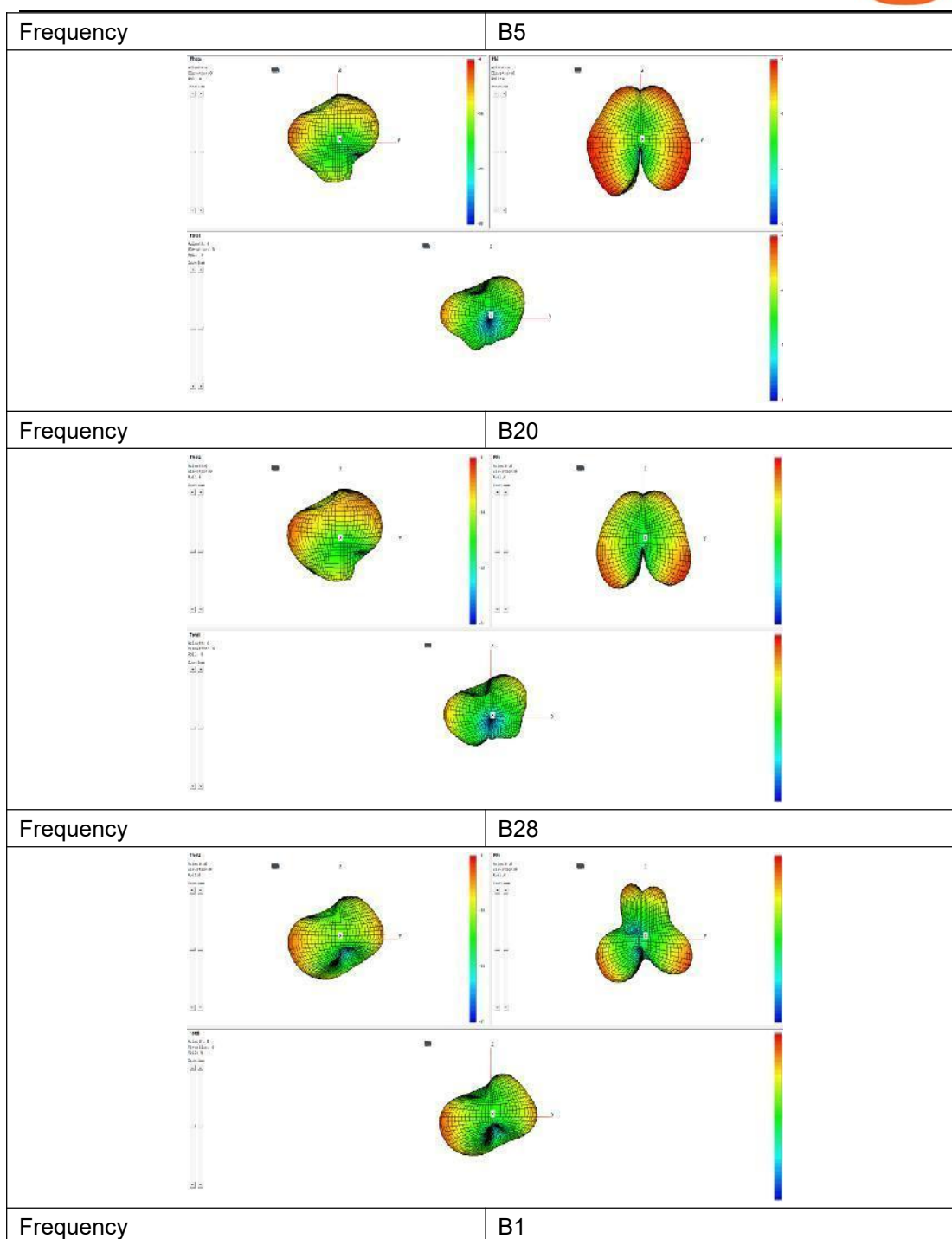


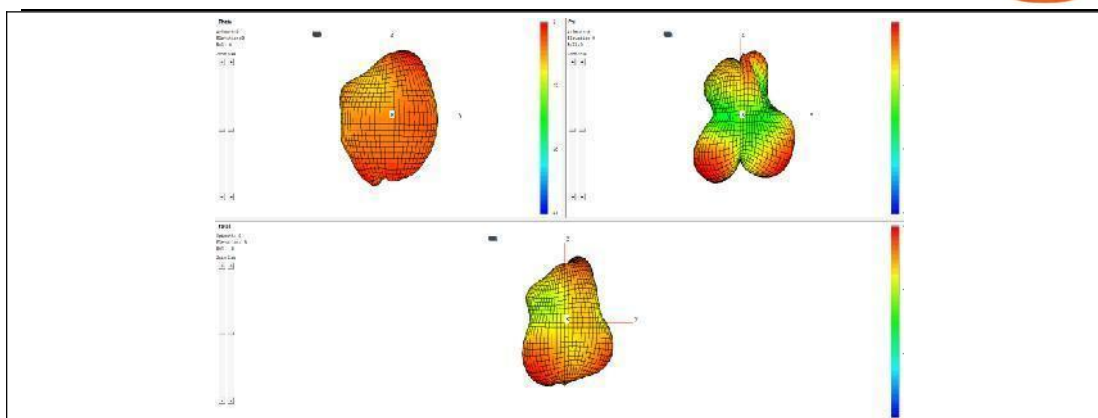
ANT1

Frequency

B8

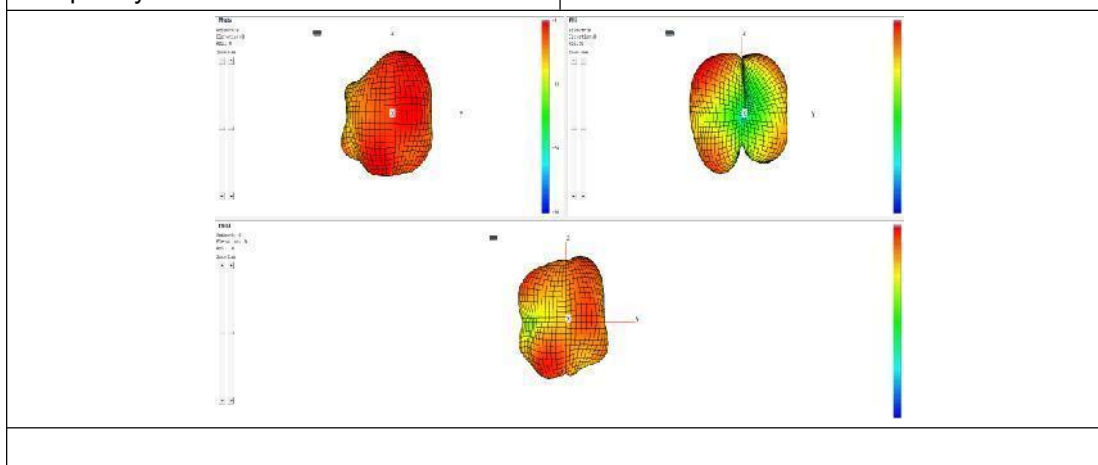






Frequency

B40



ANT4	Band	Efficient	Gain
2G	GSM850 (824-849, 869-894)	-10.5	-5.5
	GSM900 (880-915, 925-960)	-11.1	-5.6
	GSM1800 (1710-1785, 1905-1880)	-5.3	-0.11
	GSM1900 (1850-1910, 1930-1990)	-5.3	-1.6
3G	WCDMA B1 (1920-1980, 2110-2170)	-5.5	-2.8
	WCDMA B2 (1850-1910, 1930-1990)	-5.3	-1.6
	WCDMA B4 (1710-1785, 2110-2155)	-5.3	-0.1
	WCDMA B5 (824-849, 869-894)	-10.5	-5.5
	WCDMA B8 (880-915, 925-960)	-11.1	-5.6



4G	TTE FDD 1: (1920-1980, 2110-2170)	-5.5	-2.8
	TTE FDD 2: (1850-1910, 1930-1990)	-5.3	-1.6
	TTE FDD 3: (1710-1785, 1905-1880)	-5.3	-0.1
	TTE FDD 4: (1710-1785, 2110-2155)	-5.3	-0.1
	TTE FDD 5: (824-849, 869-894)	-10.5	-5.5
	TTE FDD 7: (2500-2570, 2620-2690)	-6.5	-1.6
	TTE FDD 8: (880-915, 925-960)	-11.1	-5.6
	TTE FDD 20: (832-862, 791-821)	-10.2	-5.5
	TTE FDD 28: (703-748,758-803)	-11.5	-5.3
	TTE TDD 38: (2570-2620)	-6.8	-1.9
	TTE TDD 40: (2300-2400)	-5.3	-1.5
5G	TTE TDD 41: (2496-2690)	-7.4	-1.5
	N1 (1920-1980, 2110-2170)	-5.5	-2.8
	N3 (1710-1785, 1905-1880)	-5.3	-0.1
	N5 (824-849, 869-894)	-10.5	-5.5
	N7 (2500-2570, 2620-2690)	-6.5	-1.6
	N8 (880-915, 925-960)	-11.1	-5.6
	N20 (832-862, 791-821)	-10.2	-5.5
	N28 (703-748,758-803)	-11.5	-5.3
	N38 (2570-2620)	-7.5	-1.9
	N40 (2300-2400)	-5.3	-1.1



Chart 1: Initial Load Impedances

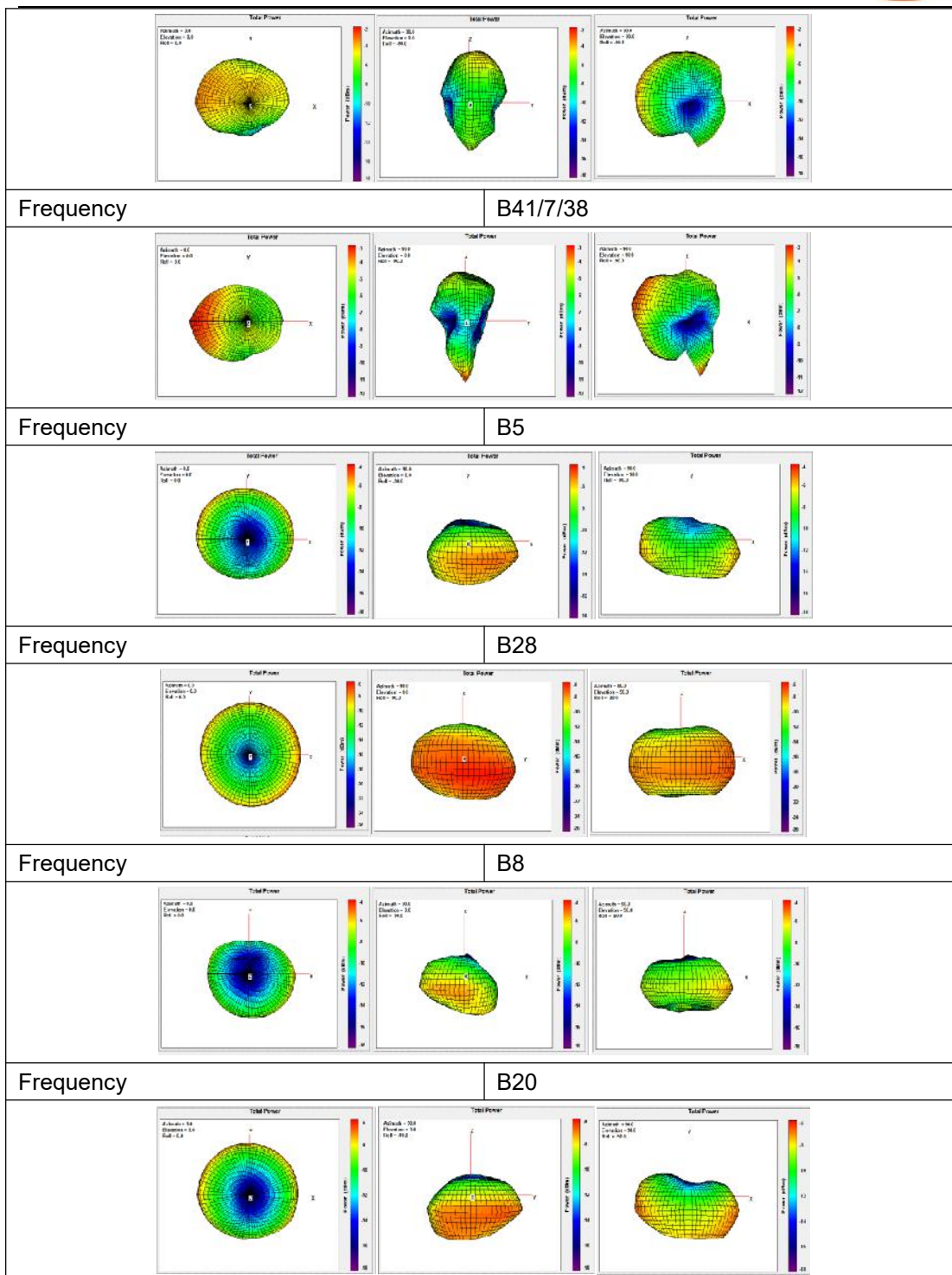
Legend: S1: 1st Mag 5.0dB Baln 0dB, C1: Caln 0dB, T=0, S1: Smith, 300 mil Bal 1:1, C2: Caln 0dB

Port	Impedance	Value
M1	700.000000 Ohm	1.5700 j
M2	800.000000 Ohm	1.2700 j
M3	900.000000 Ohm	1.0000 j
M4	1.700000 Ohm	4.2700 j
M5	2.000000 Ohm	4.1600 j
M6	2.800000 Ohm	3.8900 j
M7	2.000000 Ohm	4.3800 j
M8	2.000000 Ohm	3.8800 j
M9	900.000000 Ohm	10.0000 j
M10	700.000000 Ohm	10.0000 j
M11	800.000000 Ohm	10.0000 j
M12	900.000000 Ohm	10.0000 j
M13	1.700000 Ohm	10.0000 j
M14	2.000000 Ohm	10.0000 j
M15	2.800000 Ohm	10.0000 j
M16	2.000000 Ohm	10.0000 j
M17	2.000000 Ohm	10.0000 j
M18	2.000000 Ohm	10.0000 j
M19	900.000000 Ohm	10.0000 j
M20	700.000000 Ohm	10.0000 j
M21	800.000000 Ohm	10.0000 j
M22	900.000000 Ohm	10.0000 j
M23	1.700000 Ohm	10.0000 j
M24	2.000000 Ohm	10.0000 j
M25	2.800000 Ohm	10.0000 j
M26	2.000000 Ohm	10.0000 j
M27	2.000000 Ohm	10.0000 j
M28	2.000000 Ohm	10.0000 j
M29	900.000000 Ohm	10.0000 j
M30	700.000000 Ohm	10.0000 j
M31	800.000000 Ohm	10.0000 j
M32	900.000000 Ohm	10.0000 j
M33	1.700000 Ohm	10.0000 j
M34	2.000000 Ohm	10.0000 j
M35	2.800000 Ohm	10.0000 j
M36	2.000000 Ohm	10.0000 j
M37	2.000000 Ohm	10.0000 j
M38	2.000000 Ohm	10.0000 j
M39	900.000000 Ohm	10.0000 j
M40	700.000000 Ohm	10.0000 j
M41	800.000000 Ohm	10.0000 j
M42	900.000000 Ohm	10.0000 j
M43	1.700000 Ohm	10.0000 j
M44	2.000000 Ohm	10.0000 j
M45	2.800000 Ohm	10.0000 j
M46	2.000000 Ohm	10.0000 j
M47	2.000000 Ohm	10.0000 j
M48	2.000000 Ohm	10.0000 j
M49	900.000000 Ohm	10.0000 j
M50	700.000000 Ohm	10.0000 j
M51	800.000000 Ohm	10.0000 j
M52	900.000000 Ohm	10.0000 j
M53	1.700000 Ohm	10.0000 j
M54	2.000000 Ohm	10.0000 j
M55	2.800000 Ohm	10.0000 j
M56	2.000000 Ohm	10.0000 j
M57	2.000000 Ohm	10.0000 j
M58	2.000000 Ohm	10.0000 j
M59	900.000000 Ohm	10.0000 j
M60	700.000000 Ohm	10.0000 j
M61	800.000000 Ohm	10.0000 j
M62	900.000000 Ohm	10.0000 j
M63	1.700000 Ohm	10.0000 j
M64	2.000000 Ohm	10.0000 j
M65	2.800000 Ohm	10.0000 j
M66	2.000000 Ohm	10.0000 j
M67	2.000000 Ohm	10.0000 j
M68	2.000000 Ohm	10.0000 j
M69	900.000000 Ohm	10.0000 j
M70	700.000000 Ohm	10.0000 j
M71	800.000000 Ohm	10.0000 j
M72	900.000000 Ohm	10.0000 j
M73	1.700000 Ohm	10.0000 j
M74	2.000000 Ohm	10.0000 j
M75	2.800000 Ohm	10.0000 j
M76	2.000000 Ohm	10.0000 j
M77	2.000000 Ohm	10.0000 j
M78	2.000000 Ohm	10.0000 j
M79	900.000000 Ohm	10.0000 j
M80	700.000000 Ohm	10.0000 j
M81	800.000000 Ohm	10.0000 j
M82	900.000000 Ohm	10.0000 j
M83	1.700000 Ohm	10.0000 j
M84	2.000000 Ohm	10.0000 j
M85	2.800000 Ohm	10.0000 j
M86	2.000000 Ohm	10.0000 j
M87	2.000000 Ohm	10.0000 j
M88	2.000000 Ohm	10.0000 j
M89	900.000000 Ohm	10.0000 j
M90	700.000000 Ohm	10.0000 j
M91	800.000000 Ohm	10.0000 j
M92	900.000000 Ohm	10.0000 j
M93	1.700000 Ohm	10.0000 j
M94	2.000000 Ohm	10.0000 j
M95	2.800000 Ohm	10.0000 j

Frequency

B3

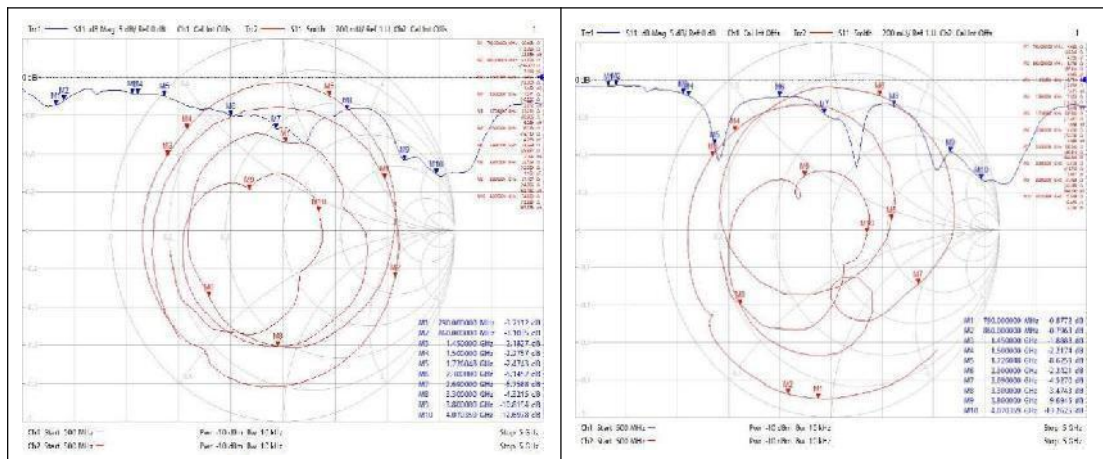
Three 3D surface plots showing the radiation pattern for B3. The plots are labeled 'Total Power', '10dB Power', and '1dB Power'. Each plot includes a color bar indicating Power (dBm) from -10 to 2. The plots show a circular antenna structure with a central feed and a surrounding ring of elements. The Total Power plot shows a uniform distribution. The 10dB Power plot shows a more concentrated distribution. The 1dB Power plot shows a very concentrated distribution at the center.

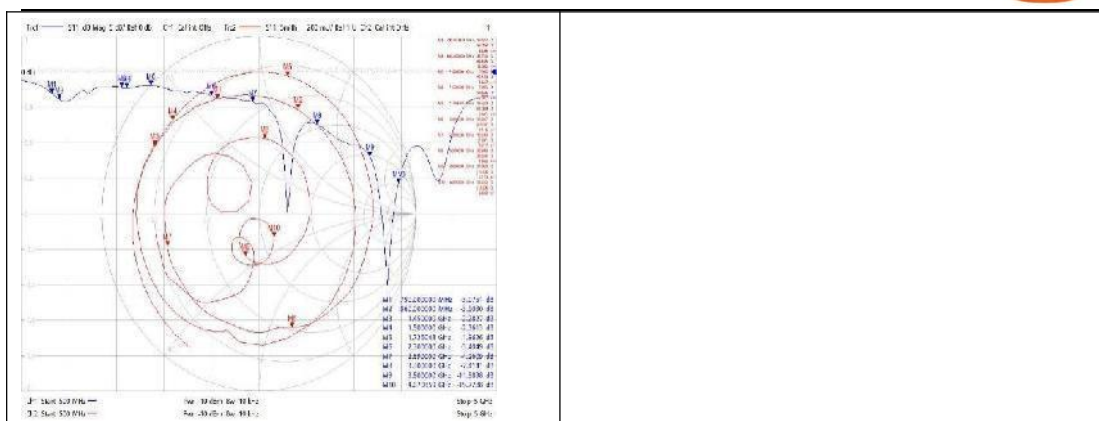




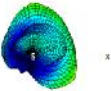
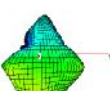
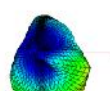
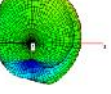
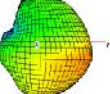
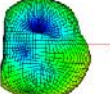
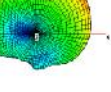
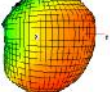
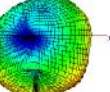
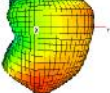
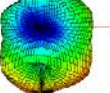
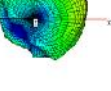
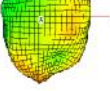
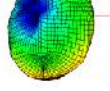
ANT2	Band	Efficient	Gain
4G	TTE FDD 1: (1920-1980, 2110-2170)	-7.5	-3
	TTE FDD 2: (1850-1910, 1930-1990)	-4.3	1.6
	TTE FDD 3: (1710-1785, 1905-1880)	-4	1.3
	TTE FDD 7: (2500-2570, 2620-2690)	-8.4	-3.4
	TTE FDD 20: (832-862, 791-821)	-14	-10.3
	TTE TDD 38: (2570-2620)	-8.6	-3.4
	TTE TDD 40: (2300-2400)	-7.5	-2
	TTE TDD 41: (2496-2690)	-8.5	-3.4
5G	N38 (2570-2620)	-8.6	-3.4
	N41 (2496-2690)	-8.5	-3.4
	N77 (3300-4200)	-7	0.5
	N78 (3300-3800)	-6.8	-1.4

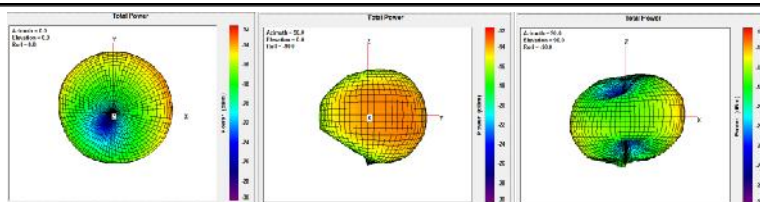
ANT2S11&SMITH





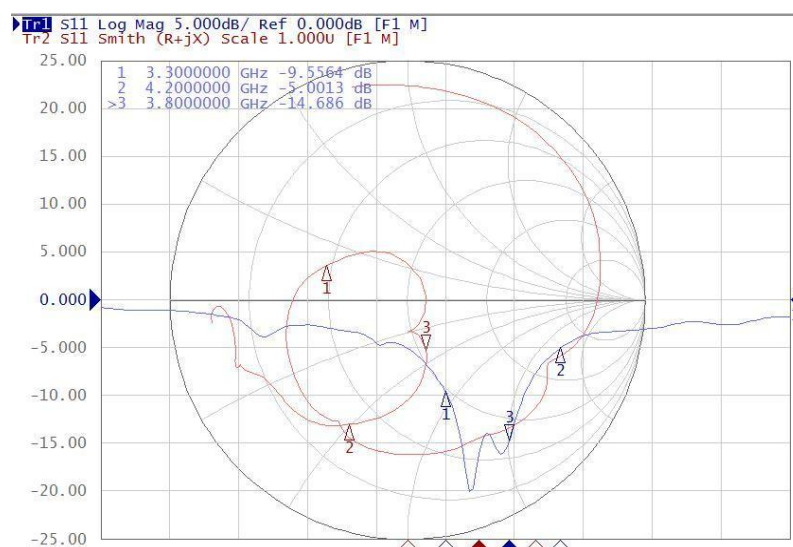
ANT2 方向图

Frequency	B3
Total Power Acoustic = 100 Elasticity = 10 Bul = 10  Power (dBm) 0 10 20 30 Total Power Acoustic = 100 Elasticity = 10 Bul = 10  Power (dBm) 0 10 20 30 Total Power Acoustic = 100 Elasticity = 10 Bul = 10  Power (dBm) 0 10 20 30	
Frequency	B1
Total Power Acoustic = 100 Elasticity = 10 Bul = 10  Power (dBm) 0 10 20 30 Total Power Acoustic = 100 Elasticity = 10 Bul = 10  Power (dBm) 0 10 20 30 Total Power Acoustic = 100 Elasticity = 10 Bul = 10  Power (dBm) 0 10 20 30	
Frequency	B40
Total Power Acoustic = 100 Elasticity = 10 Bul = 10  Power (dBm) 0 10 20 30 Total Power Acoustic = 100 Elasticity = 10 Bul = 10  Power (dBm) 0 10 20 30 Total Power Acoustic = 100 Elasticity = 10 Bul = 10  Power (dBm) 0 10 20 30	
Frequency	B41
Total Power Acoustic = 100 Elasticity = 10 Bul = 10  Power (dBm) 0 10 20 30 Total Power Acoustic = 100 Elasticity = 10 Bul = 10  Power (dBm) 0 10 20 30 Total Power Acoustic = 100 Elasticity = 10 Bul = 10  Power (dBm) 0 10 20 30	
Frequency	B77/78
Total Power Acoustic = 100 Elasticity = 10 Bul = 10  Power (dBm) 0 10 20 30 Total Power Acoustic = 100 Elasticity = 10 Bul = 10  Power (dBm) 0 10 20 30 Total Power Acoustic = 100 Elasticity = 10 Bul = 10  Power (dBm) 0 10 20 30	
Frequency	B20

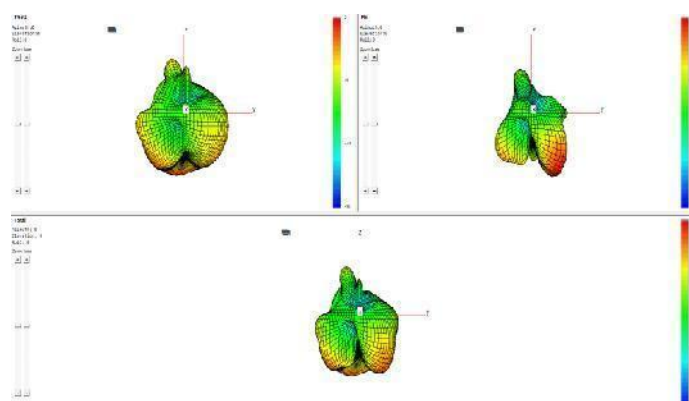


ANT6	Band	Efficient	Gain
	N77 (3300-4200)	-5.3	2.1
	N78 (3300-3800)	-6	2.1

ANT6S11&SMITH



ANT6 方向图

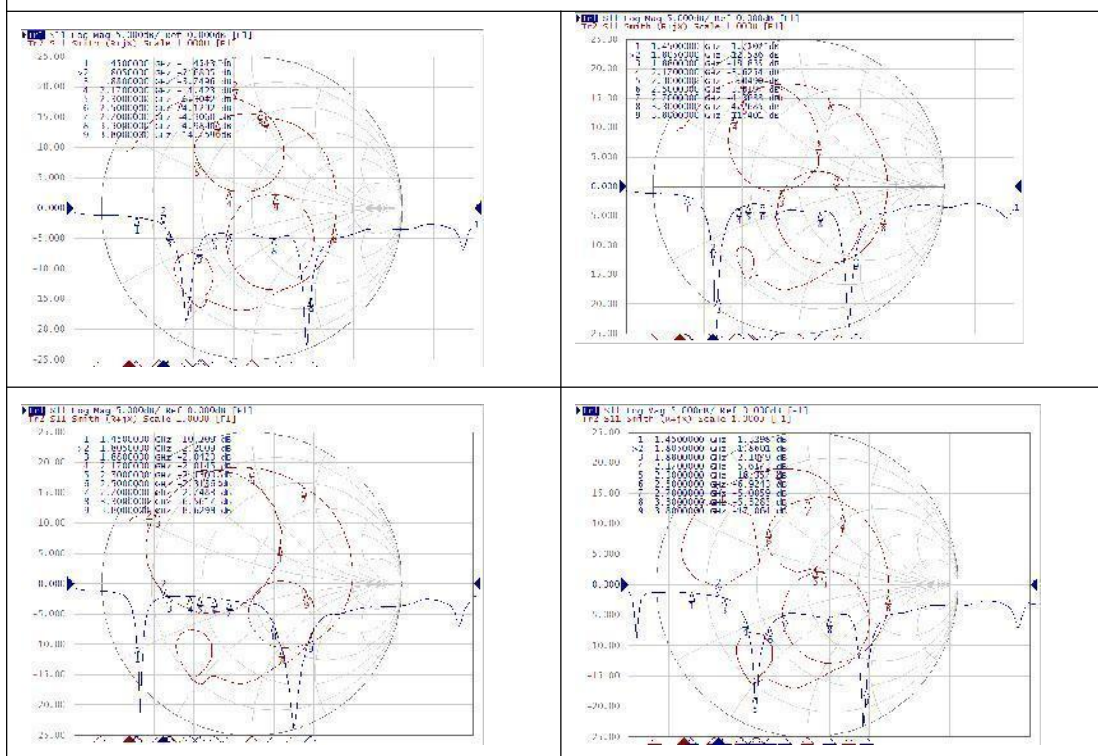


ANT5	Band	Efficient	Gain
5G	N38 (2570-2620)	-7.8	-6.4
	N41 (2496-2690)	-8.5	-5.6

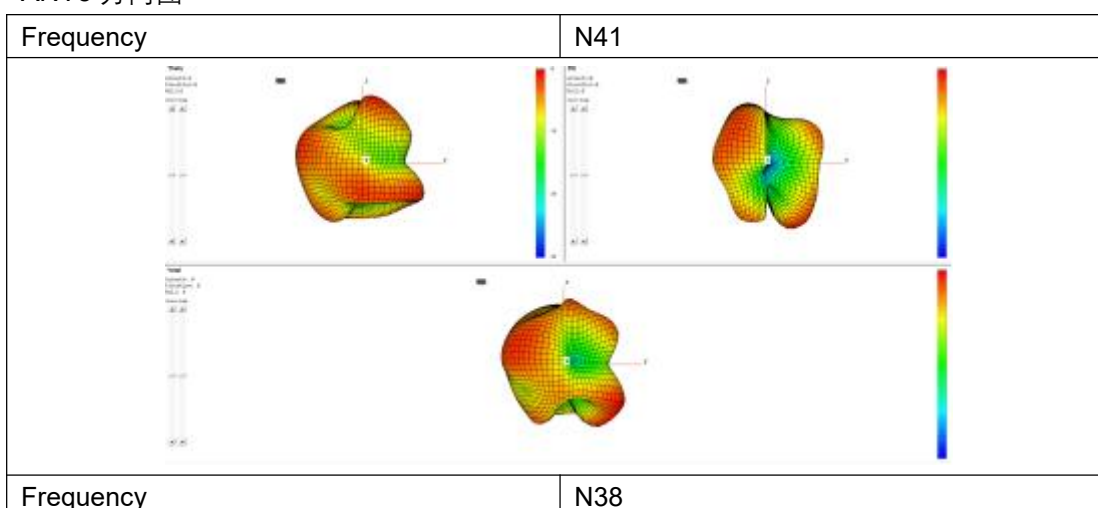


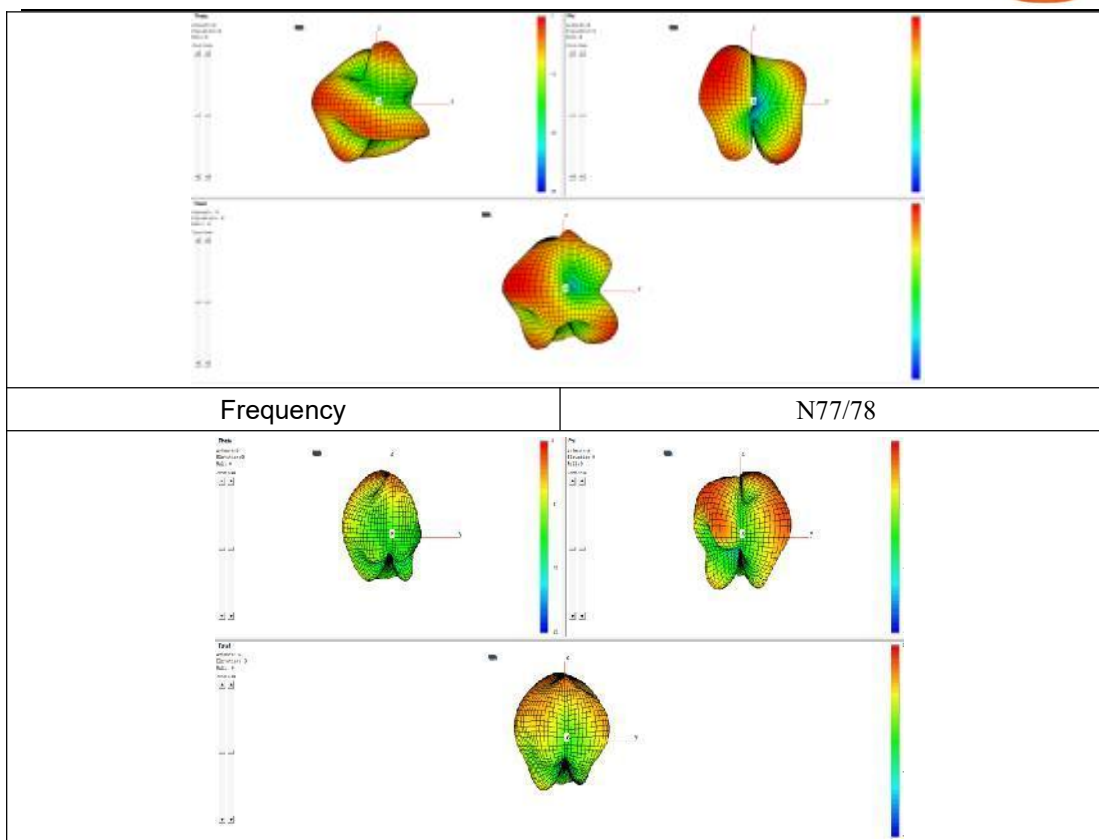
N77 (3300-4200)	-6.6	-0.8
N78 (3300-3800)	-7	-0.8

ANT5S11&SMITH



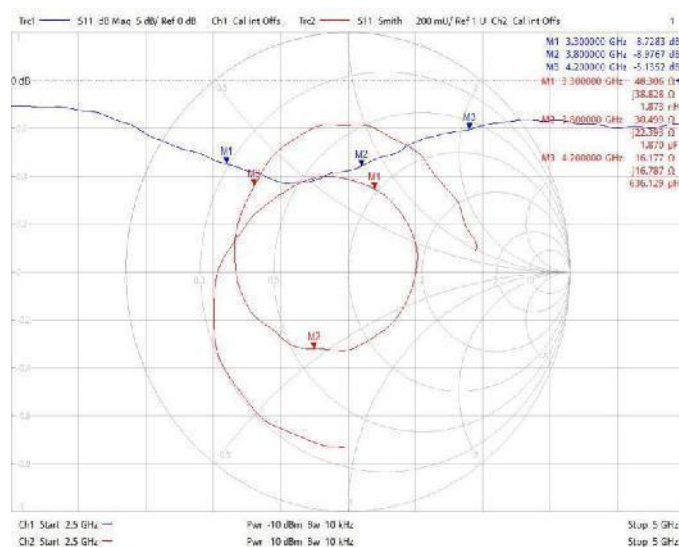
ANT5 方向图

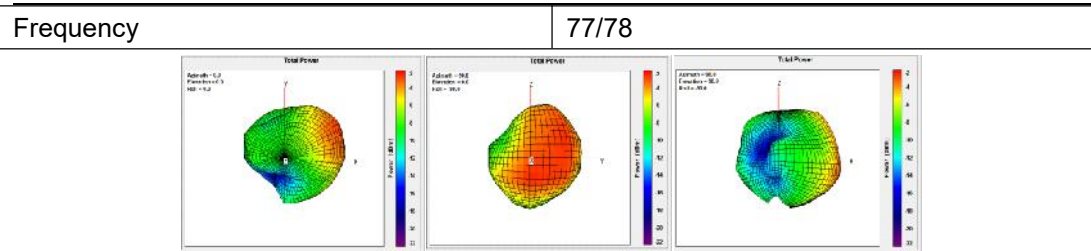




ANT3	Band	Efficient	Gain
5G	N77 (3300-4200)	-7.5	-1
	N78 (3300-3800)	-6.8	-1

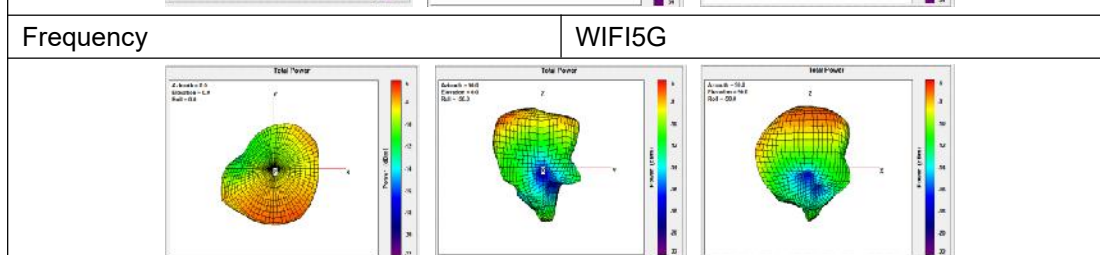
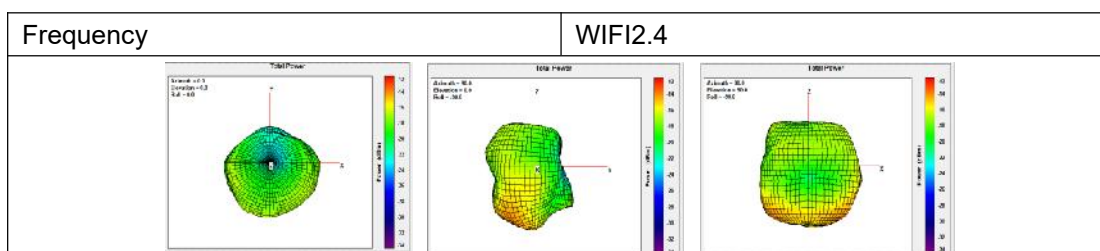
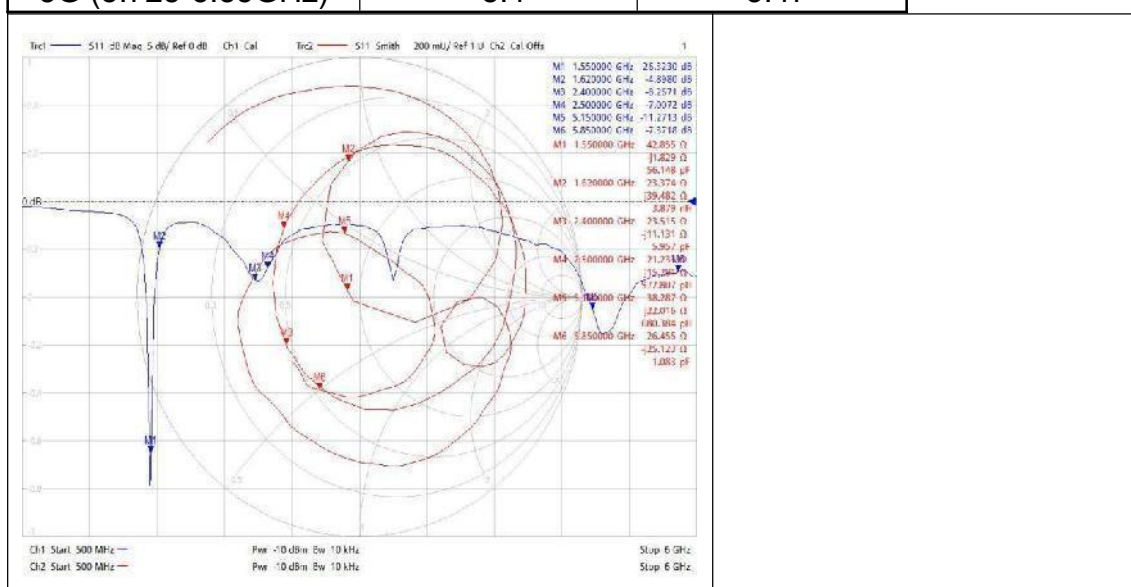
ANT3 S11&SMITH





ANT7

Band	Efficient	Gain
2.4G(2.4-2.5GHZ)	-6.2	-0.1
5G (5.15-5.25GHz)	-6.9	-3.22
5G (5.25-5.35GHz)	-7	-2.98
5G (5.47-5.725GHz)	-7.8	-3.37
5G (5.725-5.85GHz)	-8.4	-3.47



3、 Main Test Instruments

Name	Manufacturer	Model name	Serial Number	Cal., Date	Exp., Date
E5071B	KEYSIGHT	E5071B	EQ60215	2022-4-21	2023-4-20

4、 Test Site

Shanghai



End of Test Report