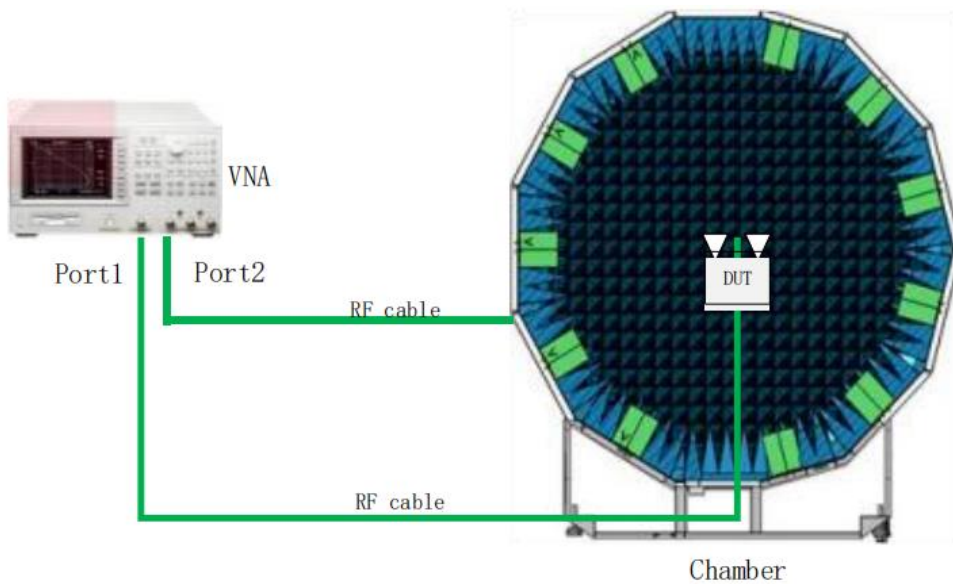


Type and shape of antenna	IFA Antenna
Directional characteristics	Omni-directional
Deflection Characteristics of Antenna	Linear
Type of connection with transmitter	antenna shrapnel
Manufacturer	Huizhou Speed Wireless Technology Co., LTD Kunshan Innowave Communication Technology Co., LTD
Measuring Organization	Huizhou Speed Wireless Technology Co., LTD Kunshan Innowave Communication Technology Co., LTD

1.EUT Reference Setup

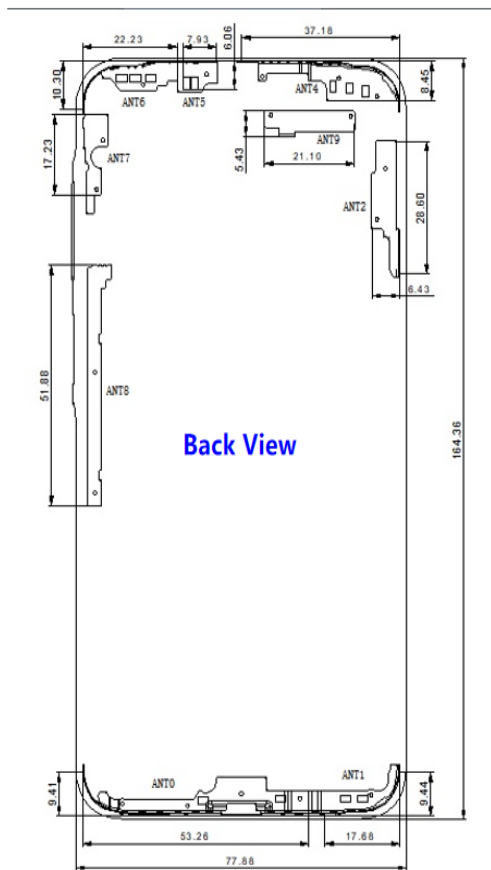


Tester	Fujunfei/XieQing
Actual date of testing	2024-07-31
Test description	Use an anechoic chamber to measure the radiation pattern and antenna gain. The GTS laboratory operates at 0.6-5.9GHz. The chamber's reflection level in the range of 0.6GHz to 5.9 GHz is typically ≤ 25 dB. Standard dipoles are used to calibrate for path loss and magnetic ring lines are used to suppress feeder emissions, so we can measure antenna gain.

Test Equipment List

Name of test equipment	Model	Manufacturer	Cal.Due Date	Calibtation Interval
Pattern Measurement Software	General Test	Ray Zone 1800	NA	NA
Network Analyzer	Agilent	E5071B	2025-05-09	One year

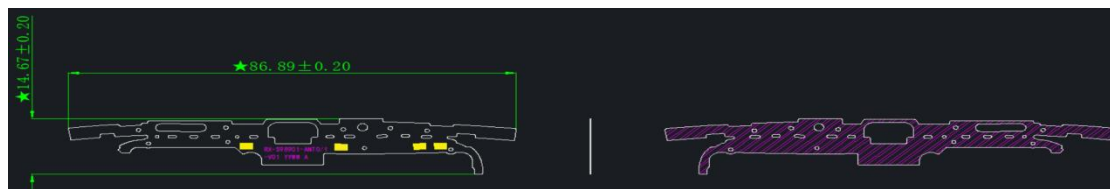
2. Antenna distribution



ANT		Single Band
ANT0	TX&RX	GSM 850/900, WCDMA B5/8 Single Band: LTE B5/8/12/17/20/26/28, NR n5/8/26/28 DL CA: LTE B5/7/8/12/17/20/26/28/38/40/41, NR n5/7/8/26/28/40 UL CA: LTE B8/20, NR n28 NSA: LTE B5/7/8/12/20/26/28/38/40/41, NR n5/8/26/28
	RX	LTE B7/38/40/41 NR n7/40/41
ANT1	TX&RX	GSM 1800/1900, WCDMA B1/2/4 Single Band: LTE B2/4/66, NR n66 DL CA: LTE B1/2/3/4/66, NR n1/3/66 UL CA: LTE B1/3 NSA: LTE B1/2/3/4/66
	RX	LTE B1/3 NR n1/3
ANT2	RX	LTE B1/3/4/7/38/41 NR n1/3/7/41/77/78
ANT4	TX&RX	Single Band: LTE B1/3/7/38/40/41, NR n1/3/7/40/41 DL CA: LTE B1/7/40/41, NR n3/41 UL CA: LTE B1/3/7, CA_3C/70/38C/40C, NR n41 NSA: LTE B1/2/3/4/7/20/38/40/41/66, NR n1/3/7/40/41/66
	RX	GSM 850/900/1800/1900, WCDMA B1/2/4/5/8 LTE B1/2/3/4/5/7/8/12/17/20/26/28/38/40/41/66 NR n1/3/5/7/8/26/28/40/41/66
ANT5	TX&RX	Single Band: NR n77/78 DL CA: NR n77/78 NSA: NR n77/78
ANT6	TX&RX	WiFi 2.4G/5G BT
	RX	GPS
ANT7	RX	LTE B1/3/4/7/38/41 NR n1/3/7/41/77/78
ANT8	RX	ENDC B20-n28:LTE B20 DRX/NR N28 DRX
ANT9	RX	NR n77/78

3. Antenna Pattern

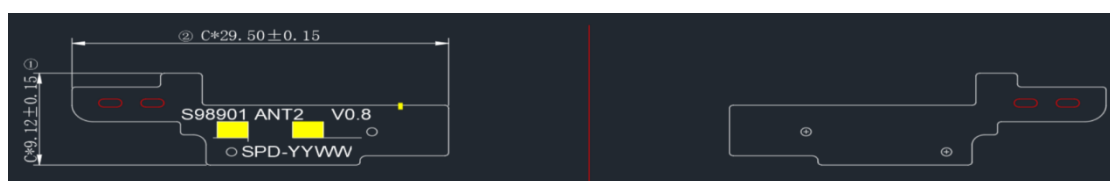
ANT0+1



Front

Back

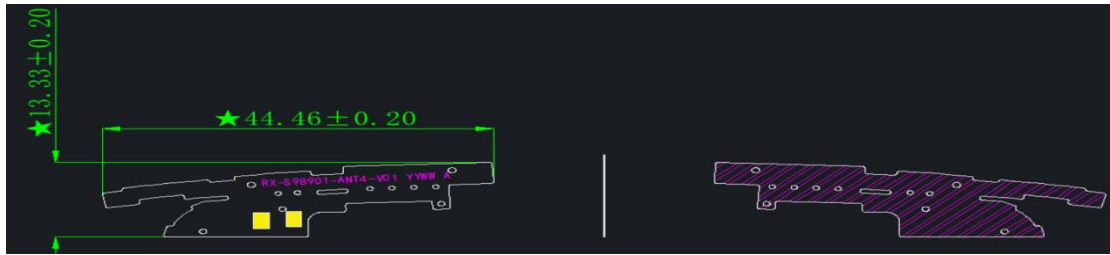
ANT2



Front

Back

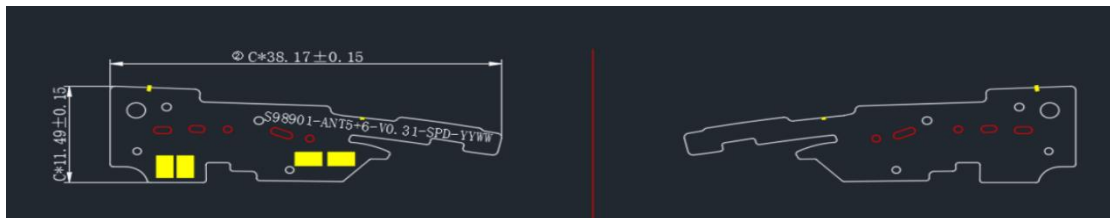
ANT4



Front

Back

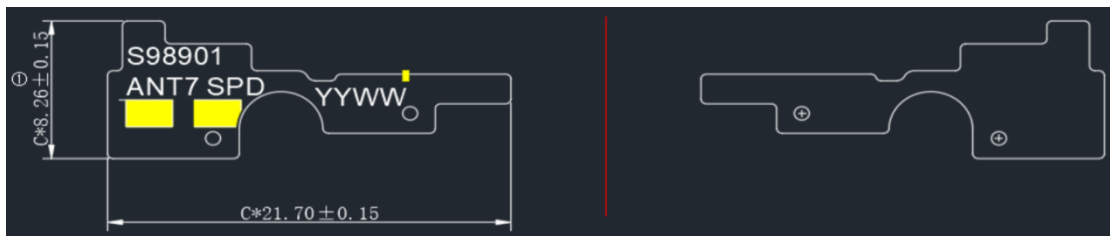
ANT5+6



Front

Back

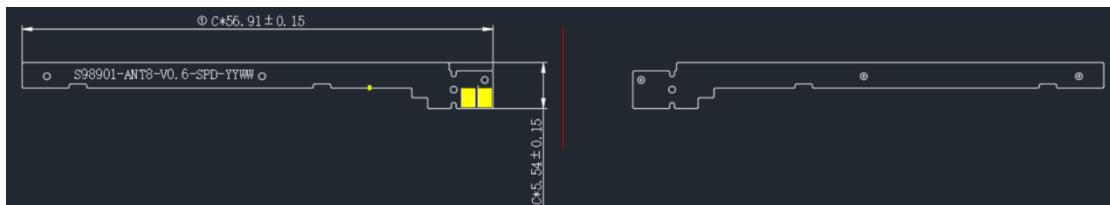
ANT7



Front

Back

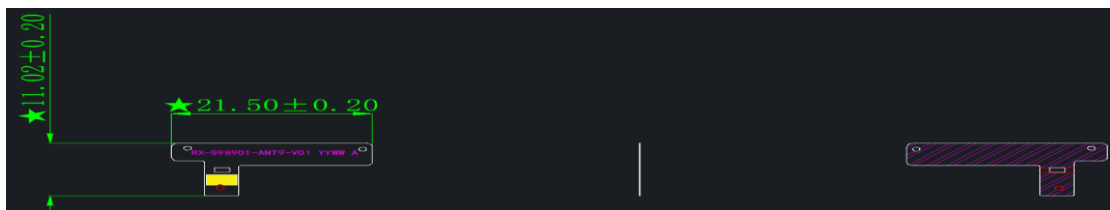
ANT8



Front

Back

ANT9



Front

Back

4. Antenna Gain

	Test band	Gain(ANT0)	Gain(ANT1)	Gain(ANT2)	Gain(ANT4)	Gain(ANT7)	Gain(ANT8)
GSM	B5(850)	-1.5	/	/	-2.3	/	/
	B8(900)	-1.4	/	/	-3.1	/	/
	B3(1800)	/	0.3	/	0.8	/	/
	B2(1900)	/	0.4	/	0.3	/	/
WCDMA	B1(W2100)	/	-0.5	/	-0.2	/	/
	B2(W1900)	/	0.4	/	0.3	/	/
	B4(W1700)	/	0.5	/	0.2	/	/
	B5(W850)	-1.5	/	/	-2.3	/	/
	B8(W900)	-1.4	/	/	-3.1	/	/
LTE	B1	/	0.5	-6.4	0.2	-3.8	/
	B2	/	0.4	/	0.3	/	/
	B3	/	0.3	-7.8	0.8	-4.3	/
	B4	/	0.5	-6.4	0.2	-3.8	/
	B5	-1.5	/	/	-2.3	/	/
	B7	0.5	/	-3.3	0.1	-1.1	/
	B8	-1.4	/	/	-3.1	/	/
	B12	-2.0	/	/	-3.7	/	/
	B17	-2.0	/	/	-3.7	/	/
	B20	-1.7	/	/	-3.8	/	-7.1
	B26	-1.5	/	/	-2.3	/	/
	B28	-2.0	/	/	-3.3	/	/
	B38	-0.5	/	-3.3	-0.1	-1.1	/
	B40	0.3	/	/	0.6	/	/
B41	0.5	/	-3.3	0.1	-1.1	/	
B66	/	0.5	/	0.2	/	/	

	Test band	Gain(ANT0)	Gain(ANT1)	Gain(ANT2)	Gain(ANT4)	Gain(ANT7)	Gain(ANT8)
NR	N1	/	0.5	-6.4	0.2	-3.8	/
	N3	/	0.3	-7.8	0.8	-4.3	/
	N5	-1.5	/	/	-2.3	/	/
	N7	0.5	/	-3.3	0.1	-1.1	/
	N8	-1.4	/	/	-3.1	/	/
	N26	-1.5	/	/	-2.3	/	/
	N28	-2.0	/	/	-3.3	/	-7.1
	N40	0.3	/	/	0.6	/	/
	N41	0.5	/	-3.3	0.1	-1.1	/
N66	/	0.5	/	0.2	/	/	

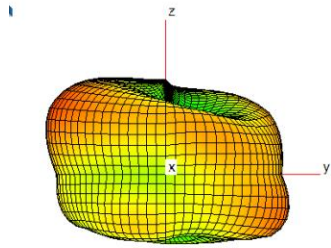
	Test band	Gain(ANT2)	Gain(ANT5)	Gain(ANT7)	Gain(ANT9)
NR	N77	-1.5	-0.5	-2.0	-3.3
	N78	-1.5	-0.5	-2.0	-3.3

	Test band	Gain(ANT6)
WIFI	2.4G	-1.9
BT	BT	-1.9
WIFI	5G	-2.0
GPS	GPS	0.6

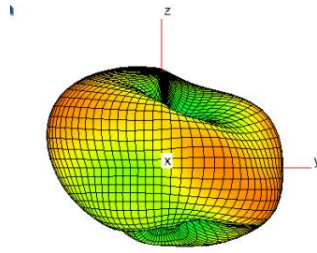
5.3D map

ANTO

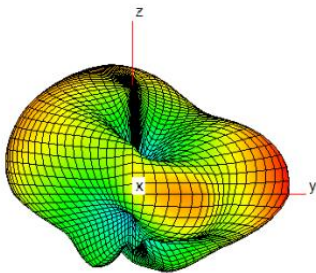
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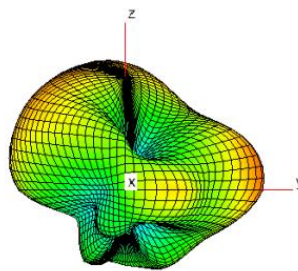
750MHz



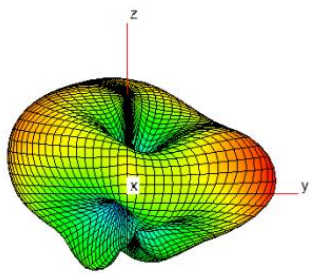
790MHz



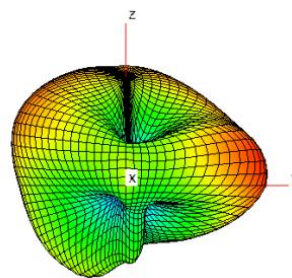
800MHz



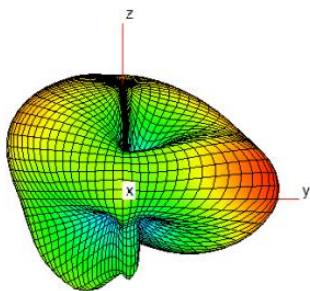
820MHz



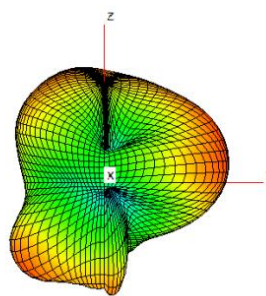
860MHz



880MHz

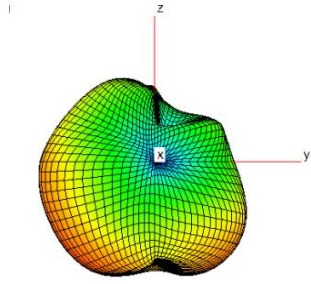


960MHz

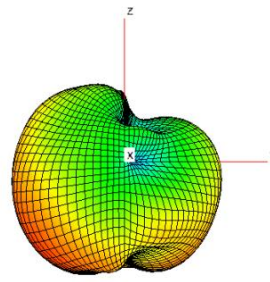


2300MHz

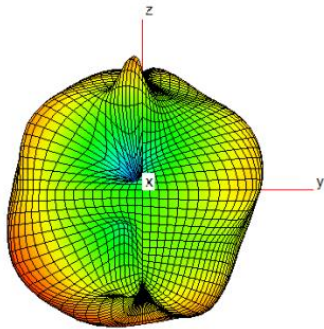
2400MHz



2500MHz

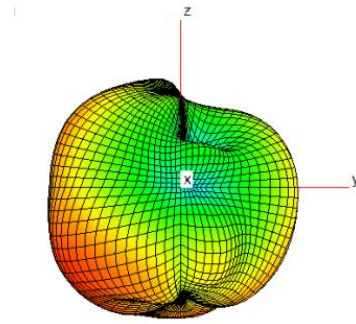


2700MHz

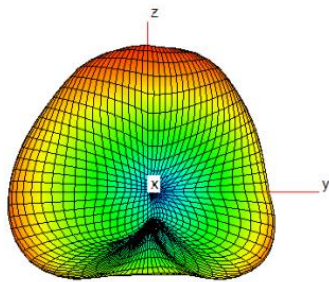


ANT1

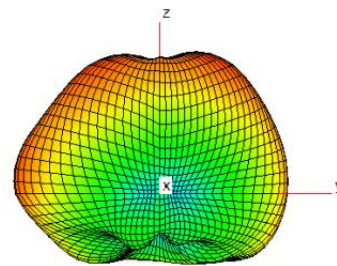
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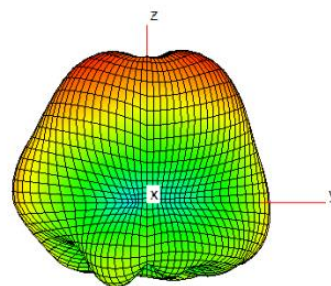
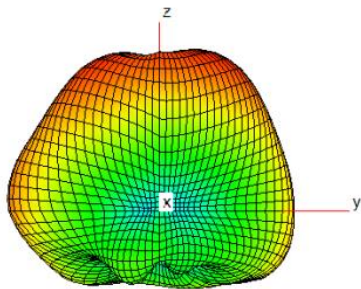
1850MHz



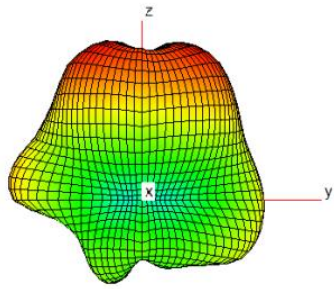
1880MHz



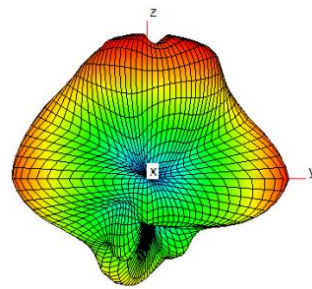
1920MHz



1990MHz

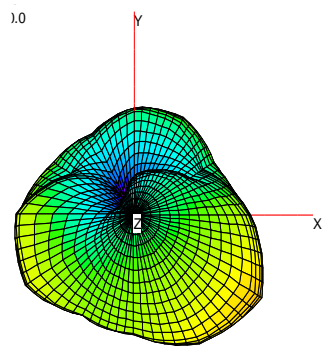


2200MHz

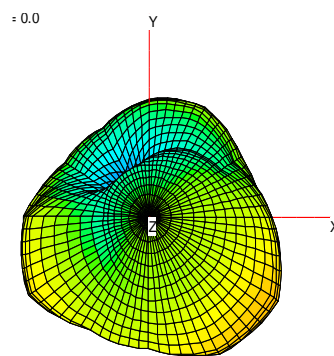


ANT2

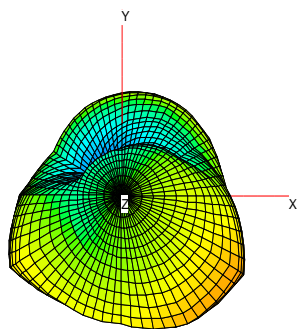
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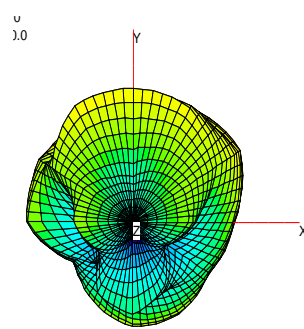
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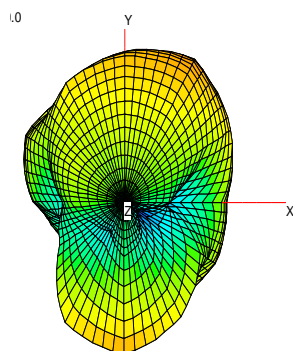
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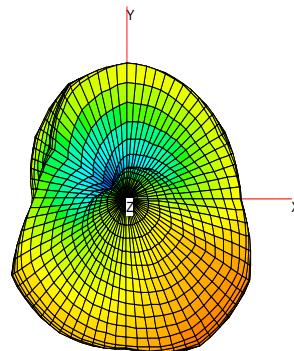
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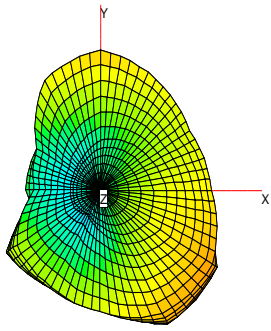
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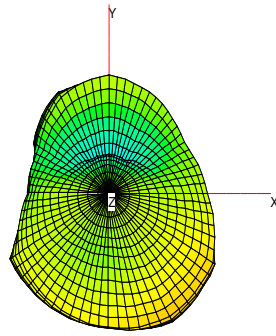
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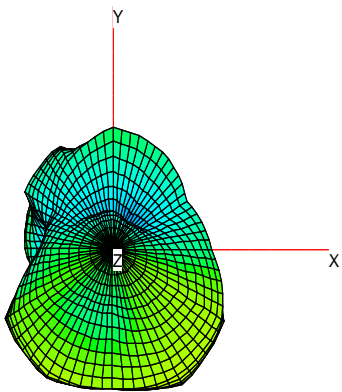
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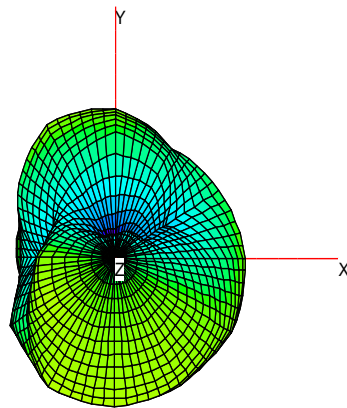
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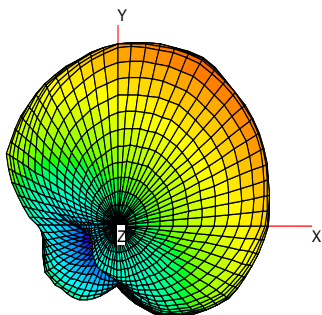
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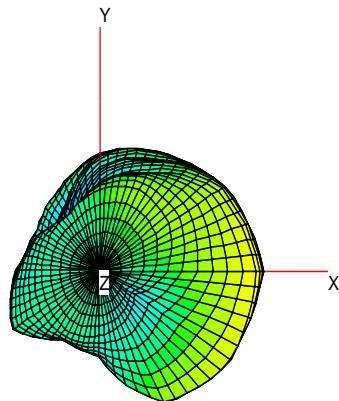
2690MHz



3300MHz

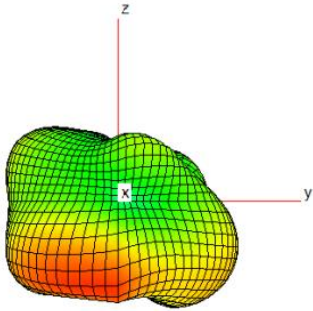


4200MHz

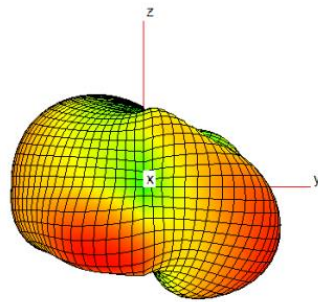


ANT4

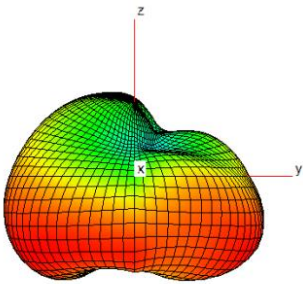
700MHz



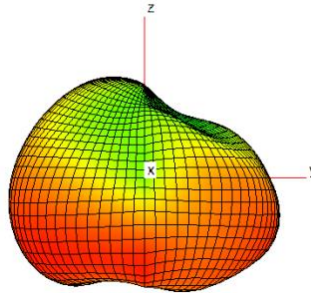
730MHz



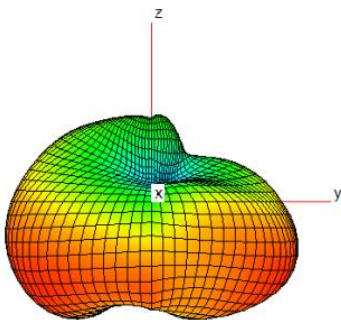
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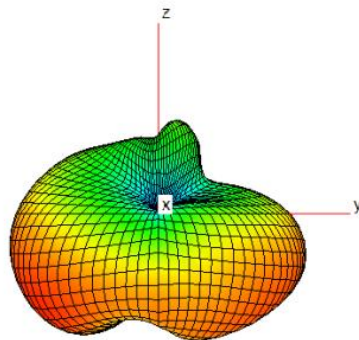
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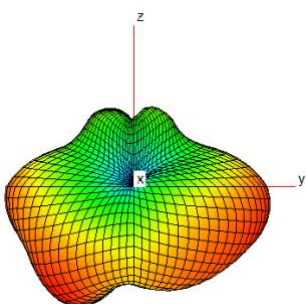
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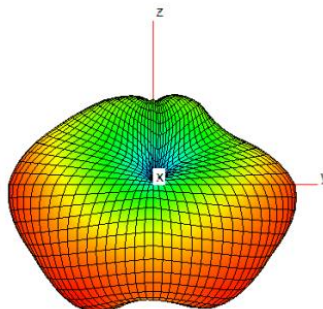
850MHz



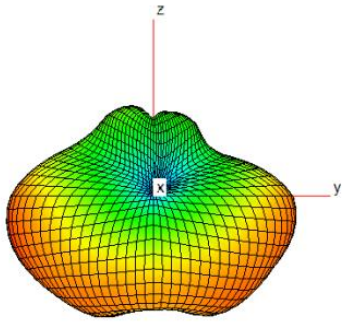
890MHz



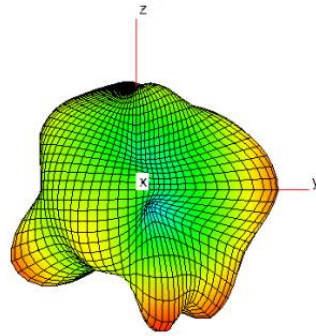
930MHz



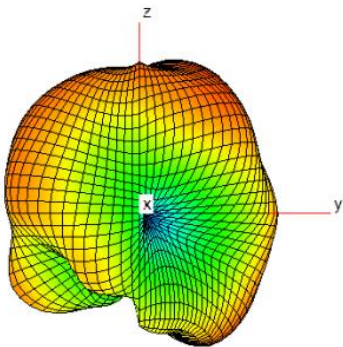
960MHz



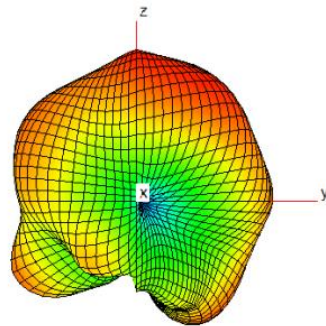
1710MHz



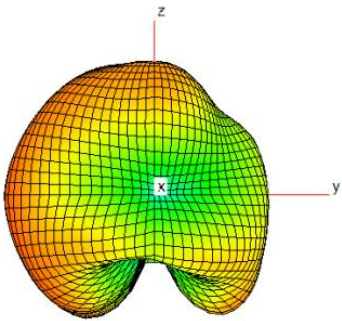
1850MHz



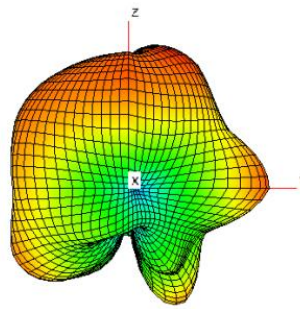
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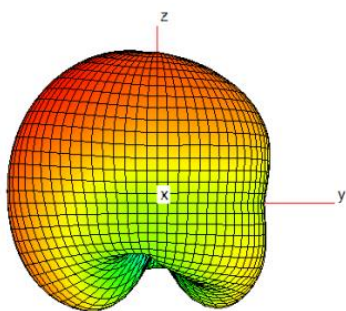
1920MHz



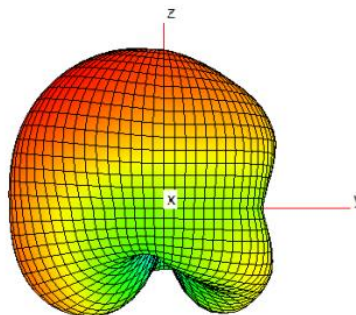
1990MHz



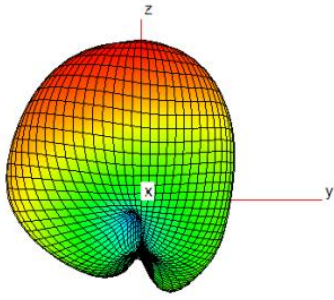
2170MHz



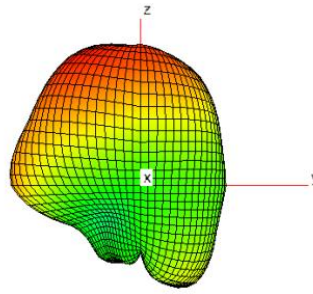
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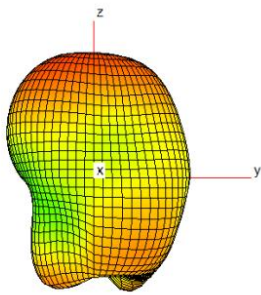
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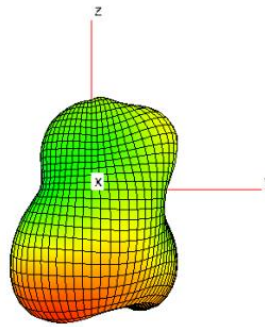
2400MHz



2500MHz

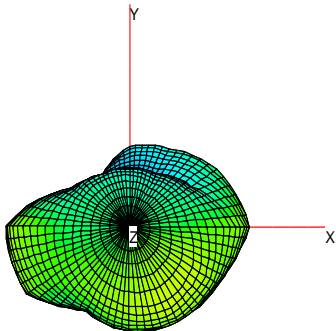


2700MHz

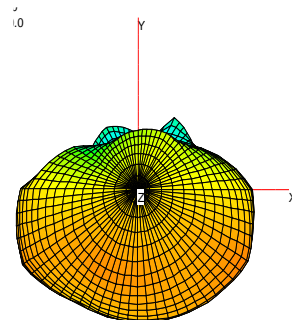


ANT5

3300MHz



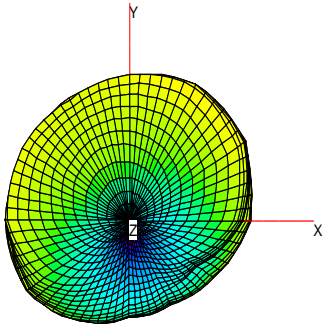
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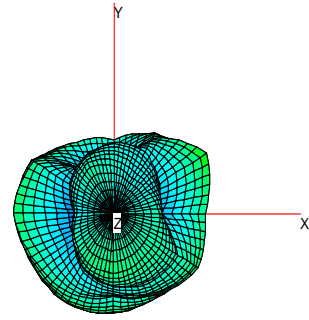
ANT6

1575MHz

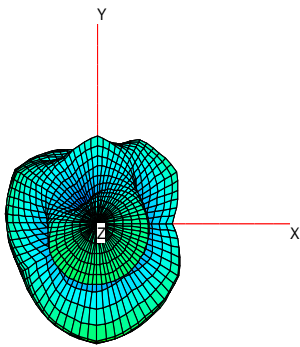
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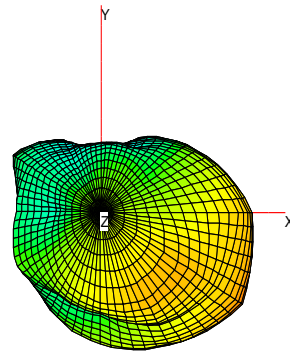
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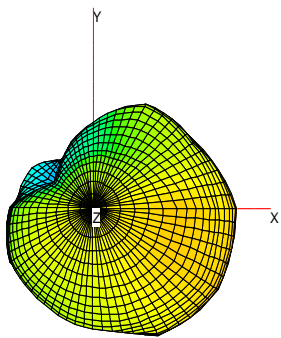
5150MHz



5500MHz



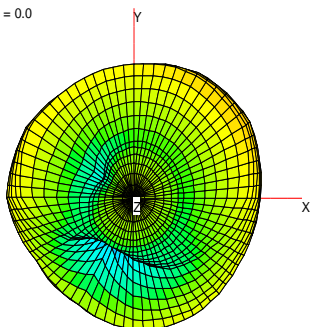
5850MHz



ANT7

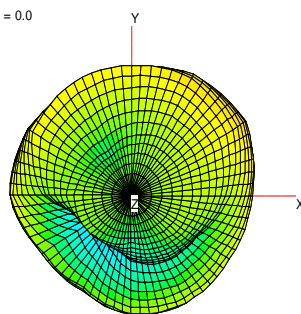
1805MHz

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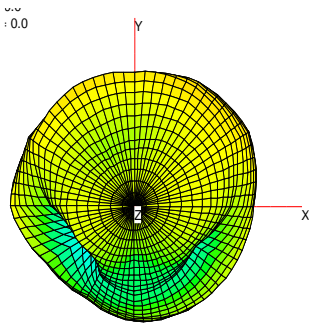


i = 0.0
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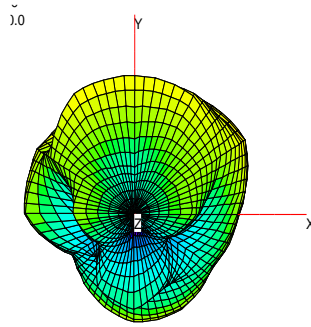
1880MHz



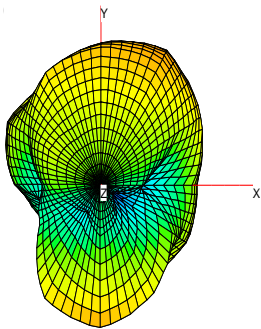
1930MHz



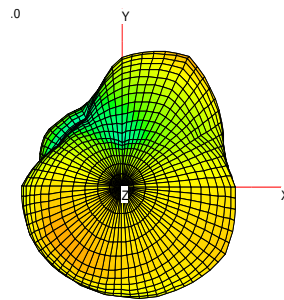
1990MHz



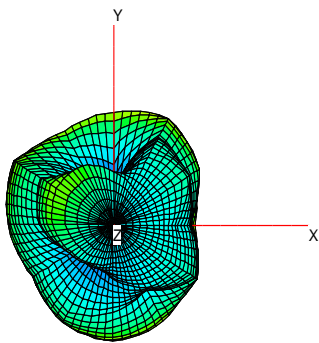
2110MHz



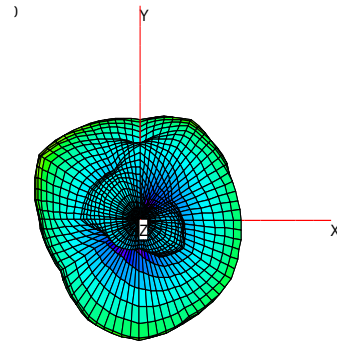
2200MHz



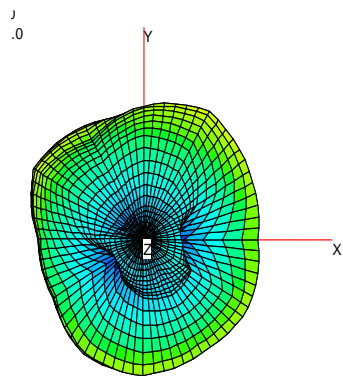
2500MHz



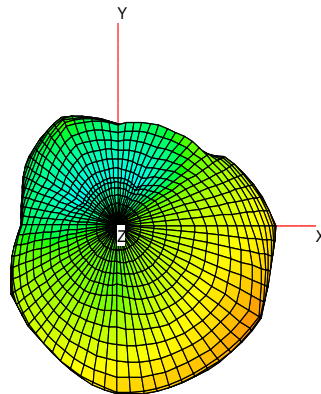
2580MHz



2690MHz

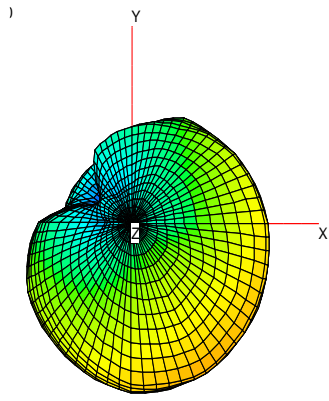


3300MHz



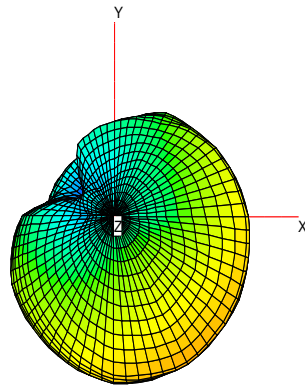
3750MHz

4200MHz

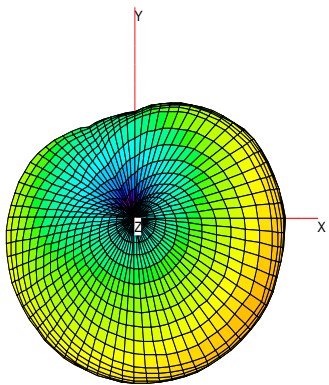


ANT8

740MHz

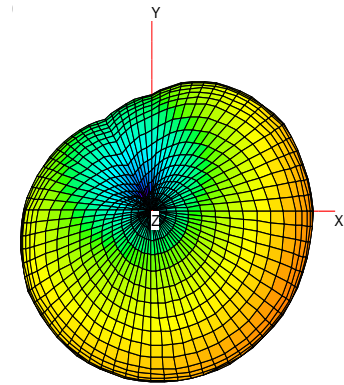


820MHz

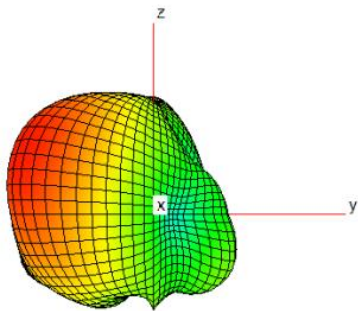


ANT9

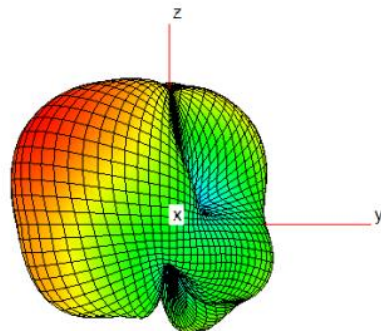
3300MHz



3500MHz



3800MHz



4200MHz

