

Shenzhen Qixin Tongda Technology Co., Ltd

Antenna test data report

Client: TIAN RUI XIANG

project: R01

G2/3/5/8+W1/2/4/5/8+

FDD-1/2/3/4/5/7/8/12/17/18/19/20/25/26/28/66+TDD-38/40/41

Engineering: Horsemen (134 1821 8312)

date: 2025-07-30

Factory address: Bao'an District, Shenzhen, Shajing Street, Shayi North

Yongfa Science and Technology Park, the first third floor

1. Test Project

	Test Project	Equipment
1. S Parameter	1. Return Loss (RL) 2. VSWR	Network Analyzer: Agilent 5071B
2. RF Test (2/3/4G)	1. power 2. level 3. TRP/TIS	Comprehensive Test: SP9500/CMW500/8960 Test Environment: Anechoic Chamber

2. Test Equipment



Agilent 5071B (S Parameter (RL/VSWR) Test Equipment)



Agilent 8960 (2G/3G Test Equipment)

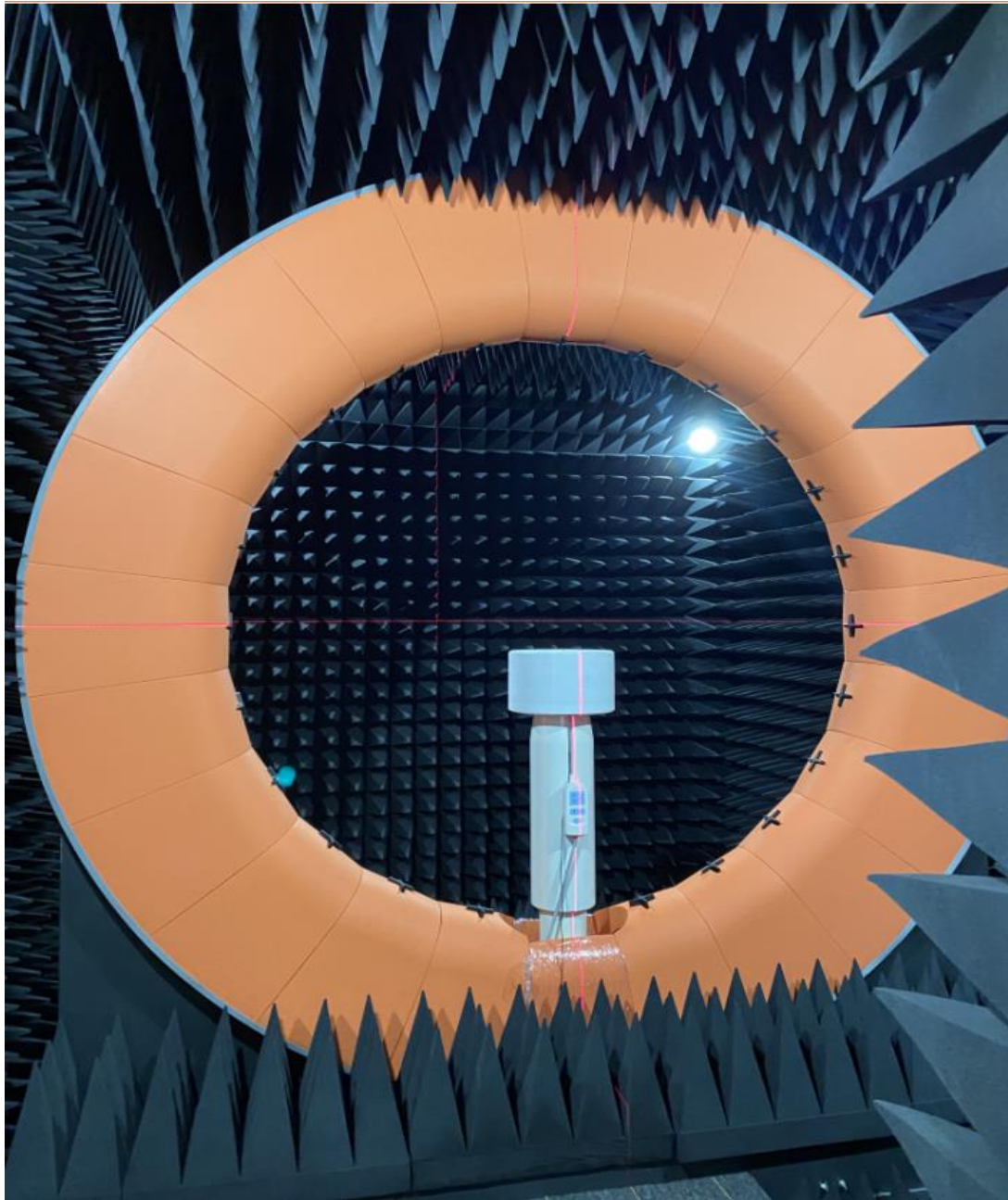


CMW 500 (2G/3G/4G Test Equipment)



SP9500 (5G Test Equipment)

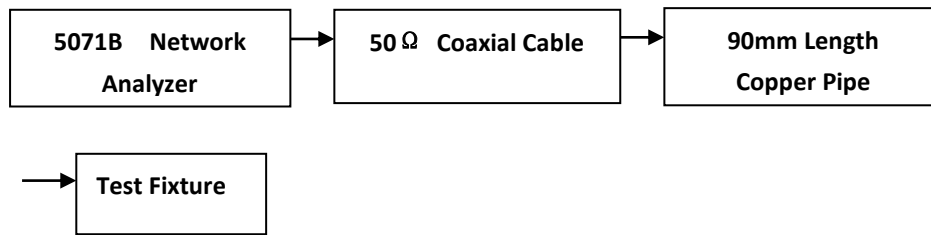
3. TestEnvironment



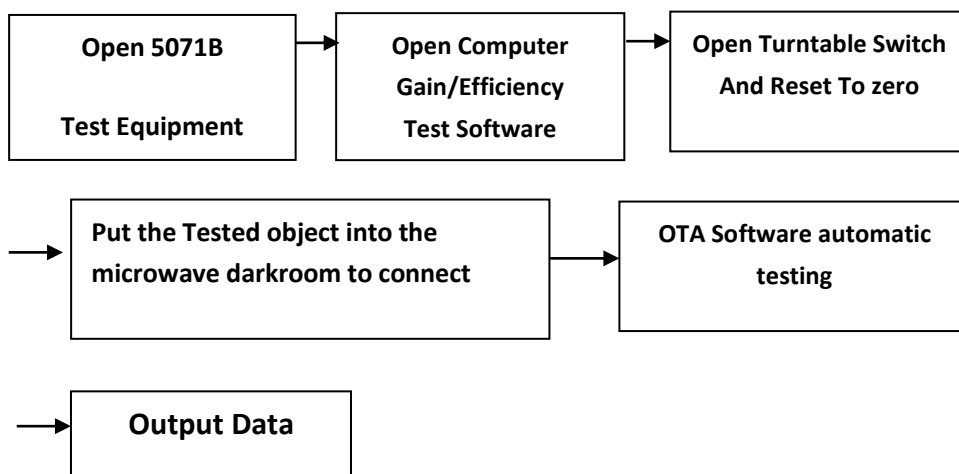
Microwave Anechoic Chamber

4.Test Steps

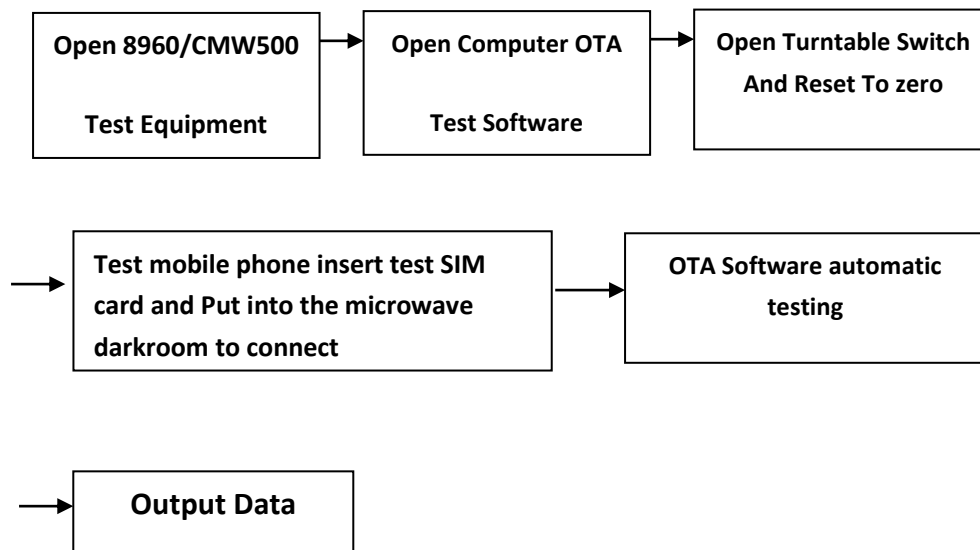
Passive VSWR/RL Test Steps:



Gain/Efficiency Test Steps:



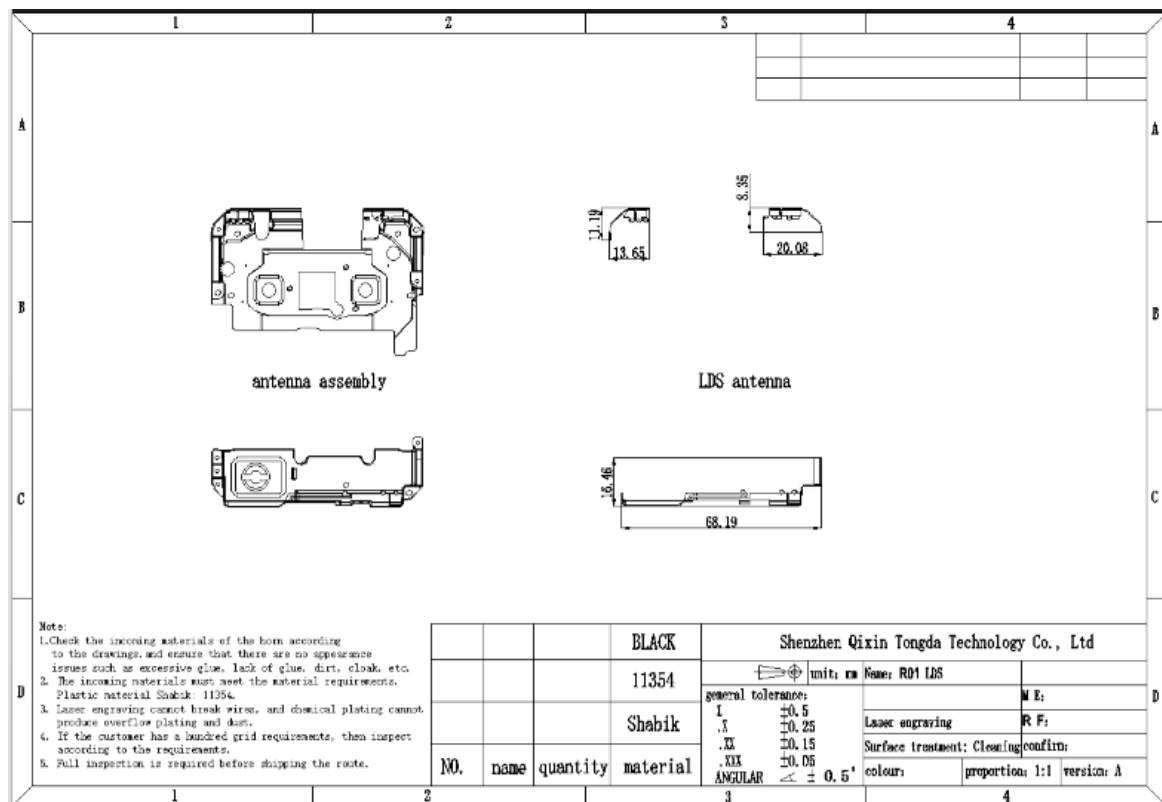
Active TRP/TIS Test Steps:



5. Antenna distribution diagram



6. Antenna size diagram

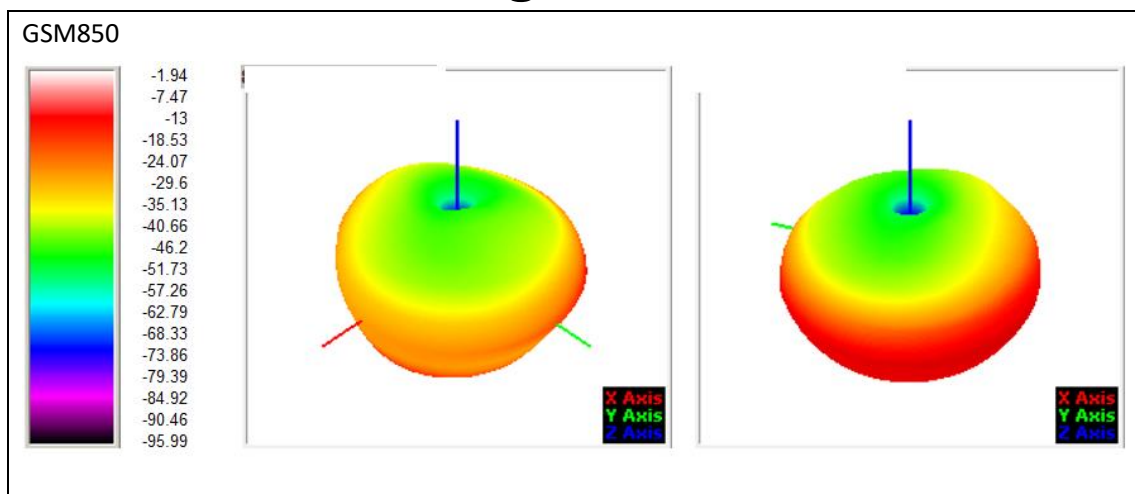


7. Antenna Gain

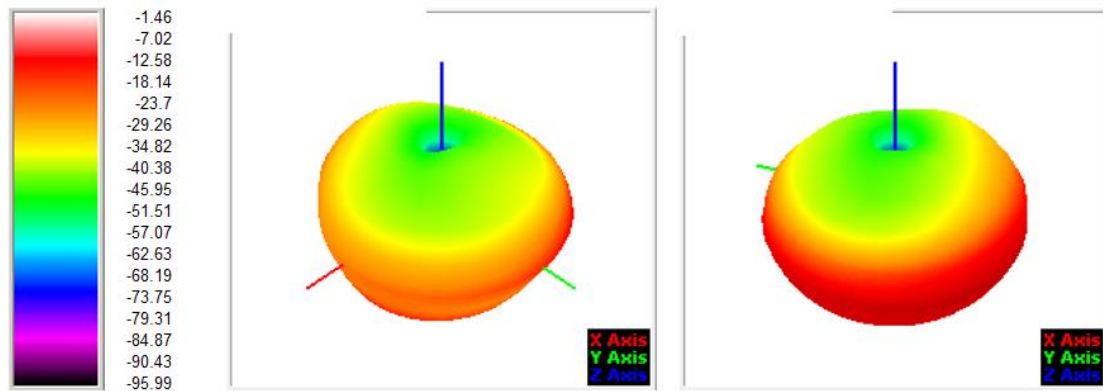
Band	Efficiency (%)	Gain (dBi)
GSM850 (824-894MHZ)	25.3	-1.94
GSM900 (880-960MHZ)	27.6	-1.46
DCS1800 (1710-1880MHZ)	34.1	-0.65
PCS1900 (1850-1990MHZ)	32.5	-1.02
WCDMA1 (1920-2170MHZ)	37.8	0.33
WCDMA2 (1950-1990MHZ)	32.5	-1.02
WCDMA4 (1710-2155MHZ)	34.1	-0.65
WCDMA5 (824-894MHZ)	25.3	-1.94
WCDMA8 (880-960MHZ)	27.6	-1.46
LTE-B1 (1920-2170MHZ)	37.8	0.33
LTE-B2 (1850-1990MHZ)	32.5	-1.02
LTE-B3 (1710-1880MHZ)	34.1	-0.65
LTE-B4 (1710-2155MHZ)	34.1	-0.65

LTE-B5 (824-894MHZ)	25.3	-1.94
LTE-B7 (2500-2690MHZ)	33.1	-0.27
LTE-B8 (880-960MHZ)	27.6	-1.46
LTE-B12 (699-746MHZ)	23.8	-2.41
LTE-B17 (704-746MHZ)	23.8	-2.41
LTE-B18 (815-875MHZ)	25.3	-1.94
LTE-B19 (830-8790MHZ)	25.3	-1.94
LTE-B20 (791-862MHZ)	25.3	-1.94
LTE-B25 (1850-1995MHZ)	32.5	-1.02
LTE-B26 (814-894MHZ)	25.3	-1.94
LTE-B28 (703-803MHZ)	23.8	-2.41
LTE-B66 (1715-2170MHZ)	34.1	-0.65
LTE-B38 (2570-2620MHZ)	33.1	-0.27
LTE-B40 (2300-2400MHZ)	36.5	0.08
LTE-B41 (2496-2690MHZ)	33.1	-0.27
GPS (1575.4MHZ)	38.1	1.08
Bluetooth (2400-2483.5MHZ)	35.5	0.3
WIFI-2.4G (2400-2495MHZ)	35.5	0.3
WIFI-5G (5.17-5.84GHZ)	36.8	0.77

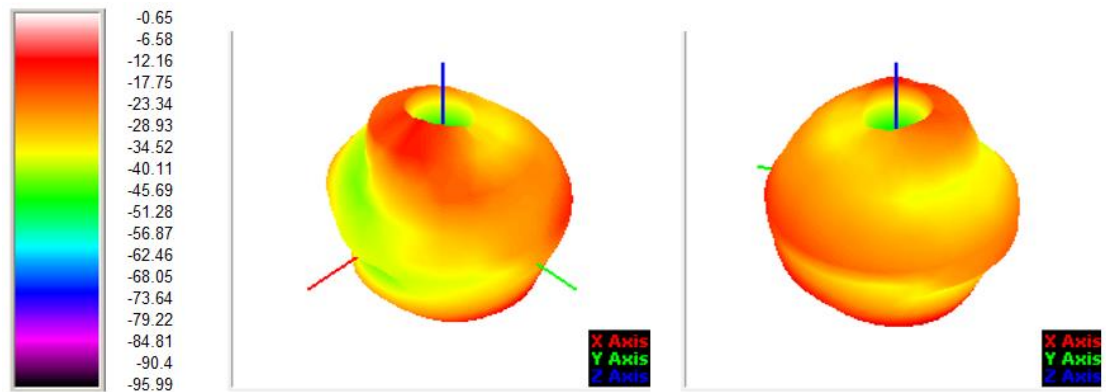
8.2D&3D Lobe Diagram



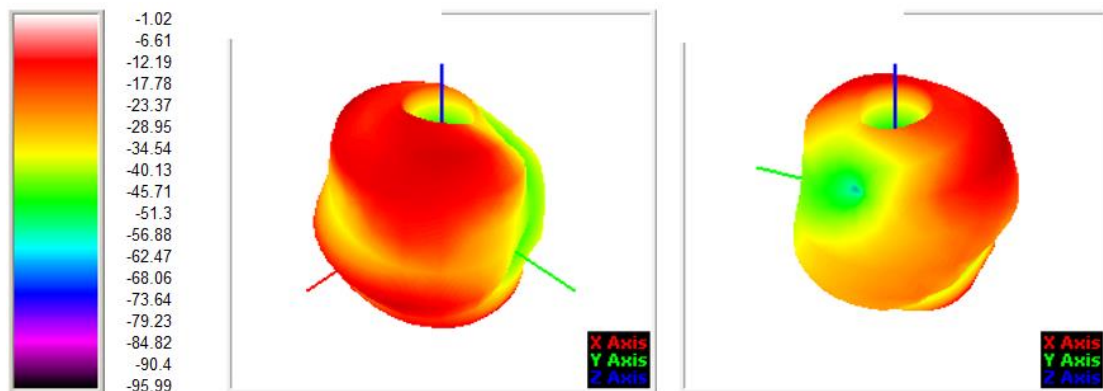
GSM900



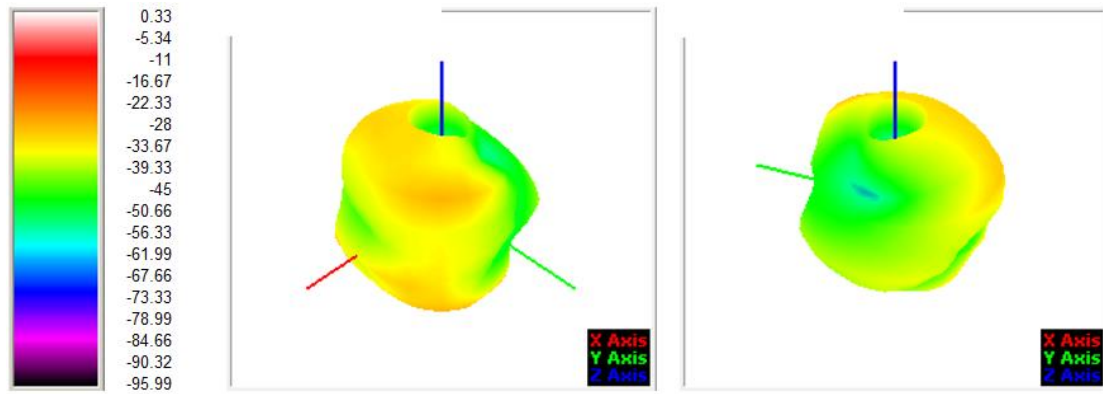
DSC1800



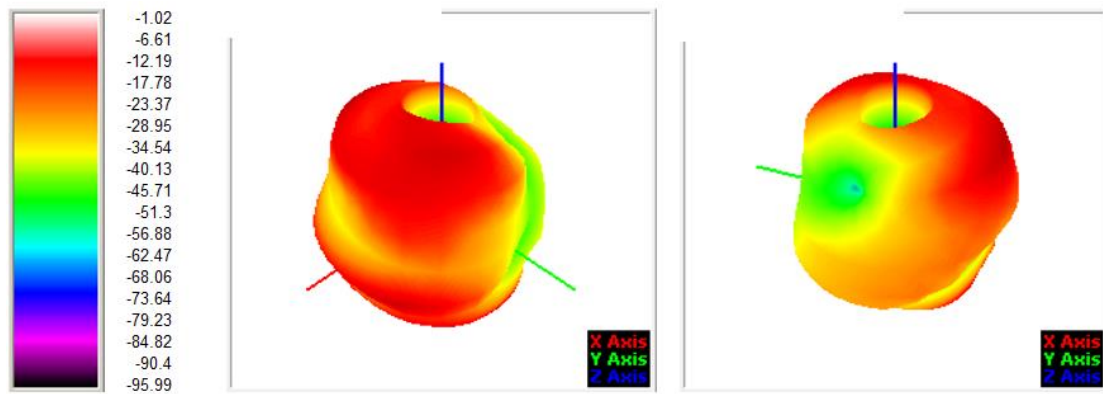
PCS1900



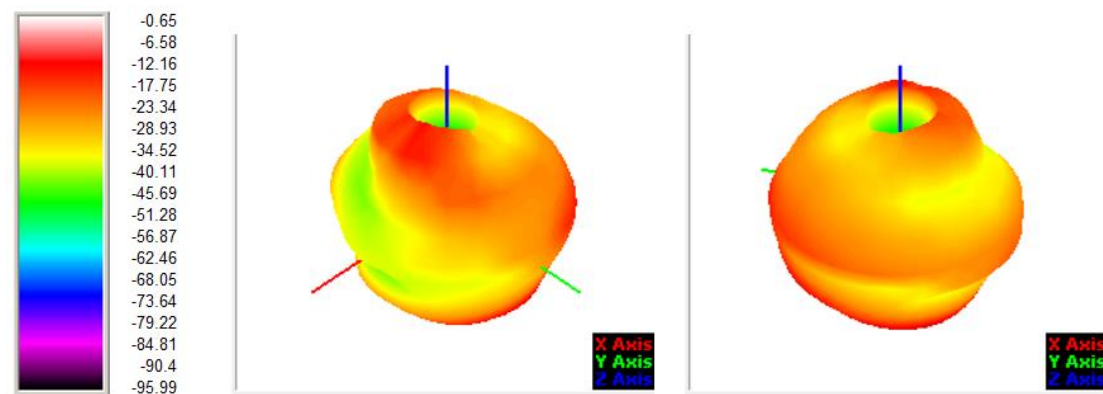
W1



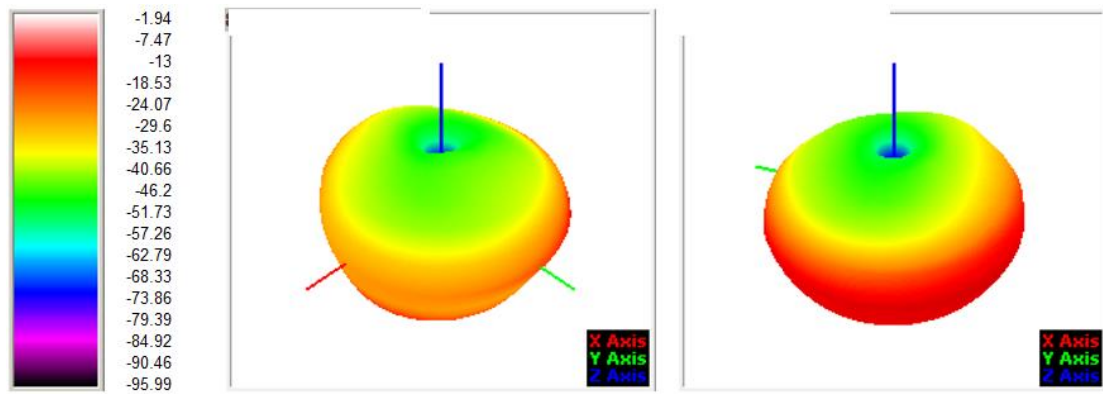
W2



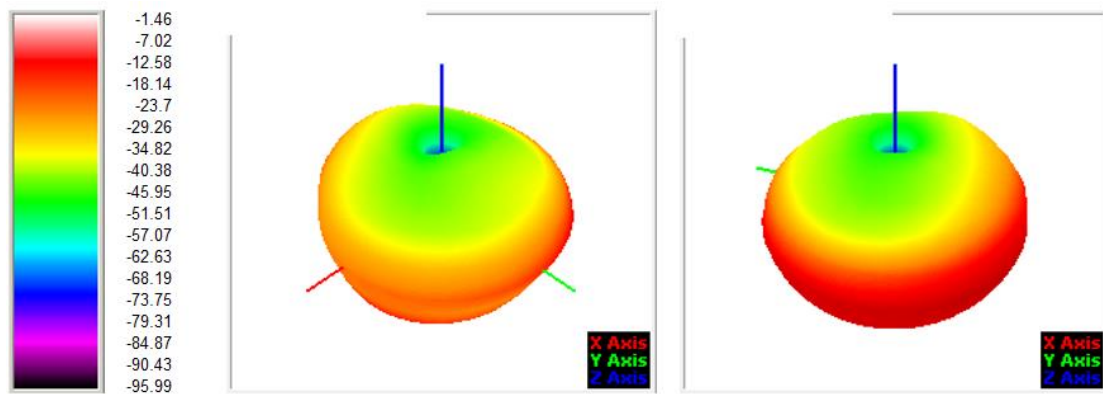
W4



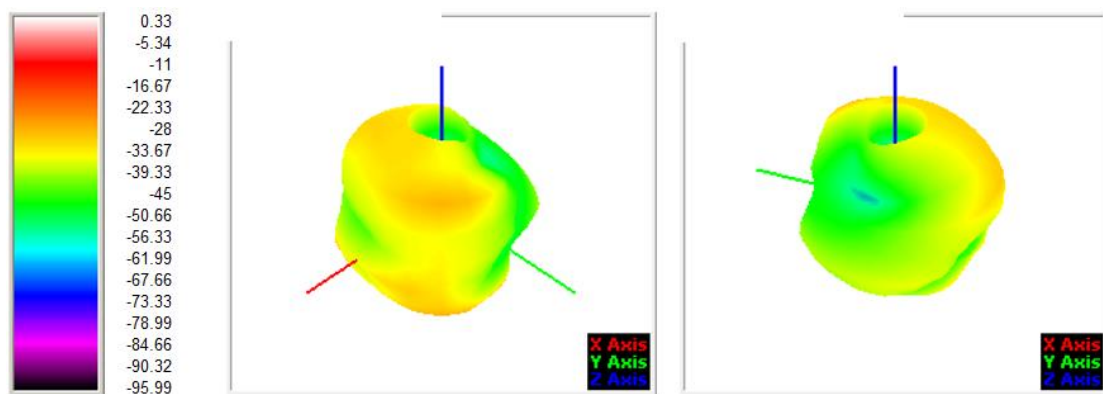
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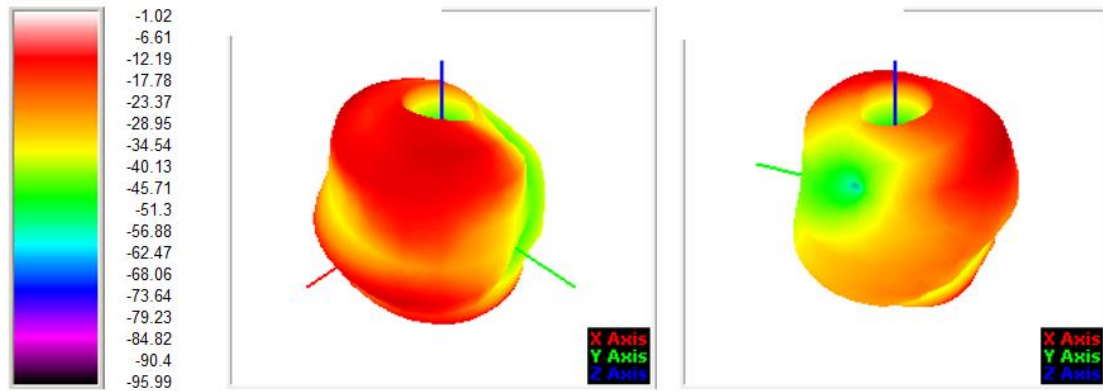
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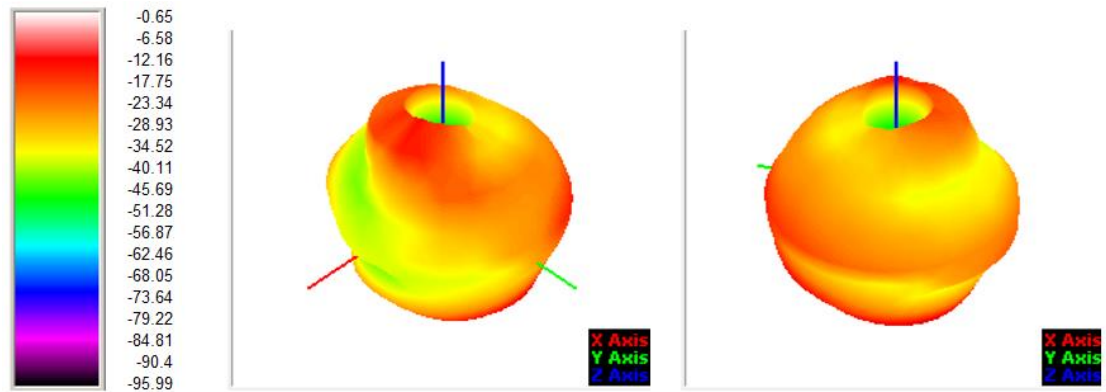
FDD-B1



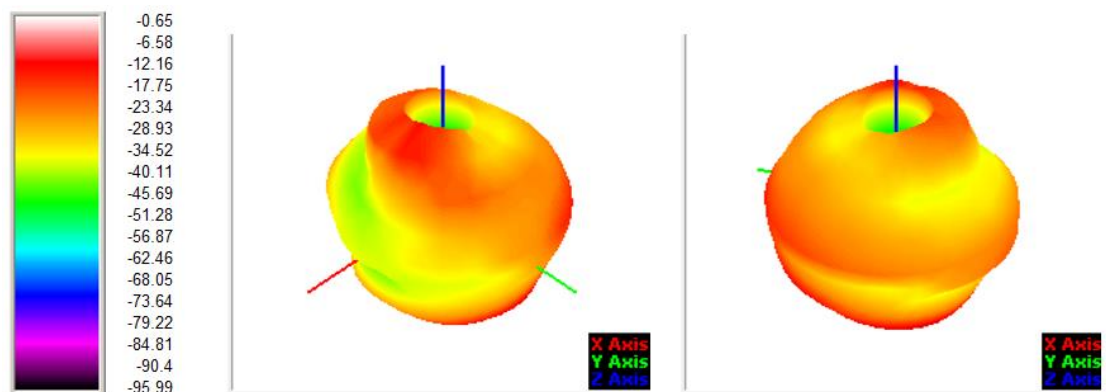
FDD-B2



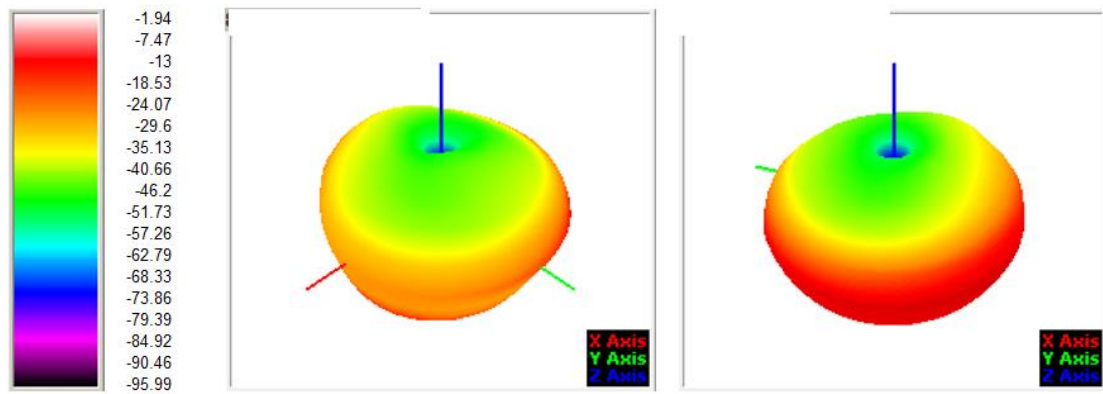
FDD-B3



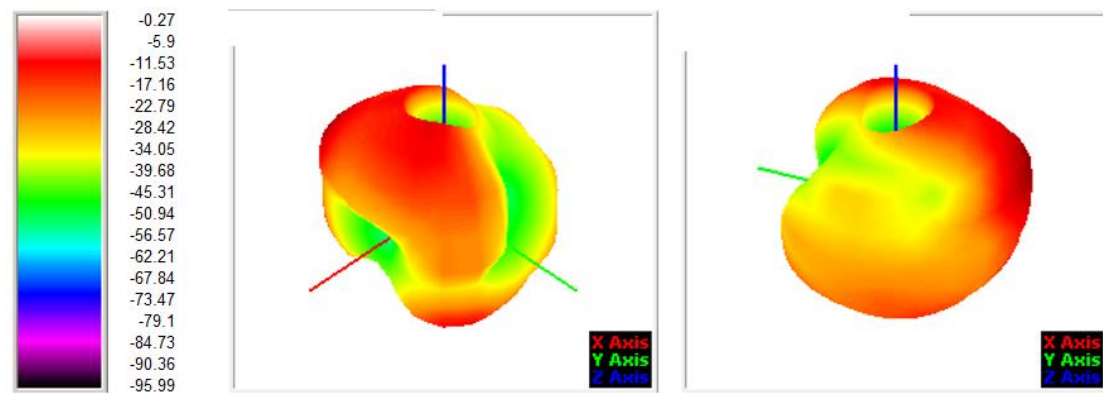
FDD-B4



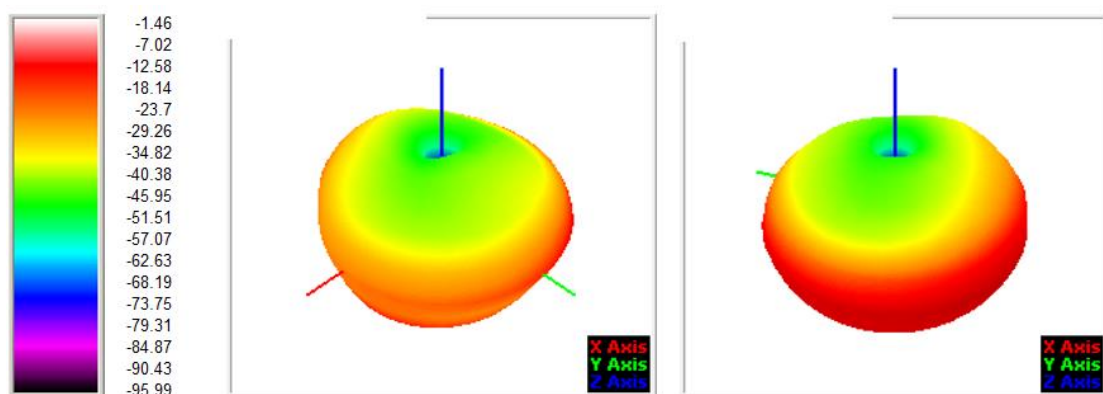
FDD-B5



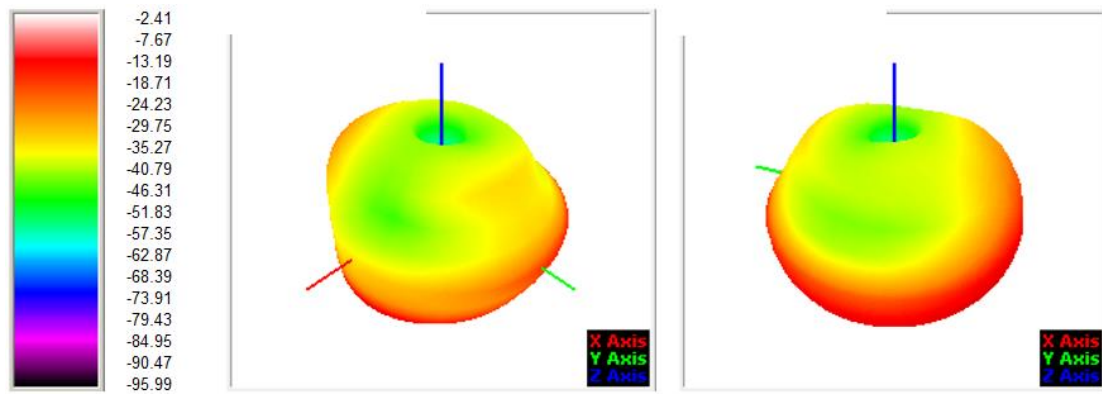
FDD-B7



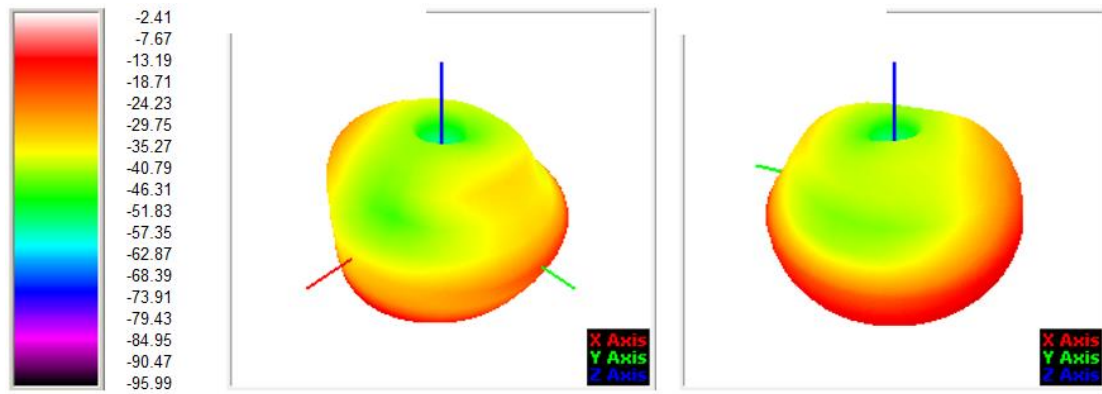
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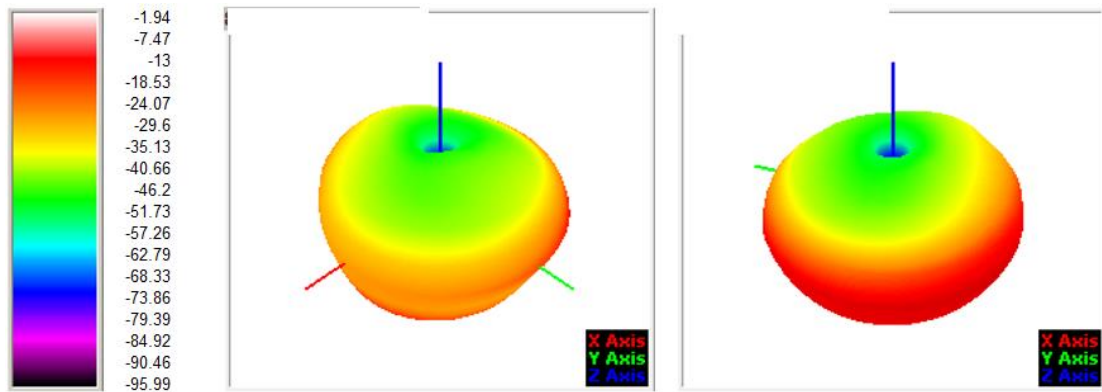
FDD-B12



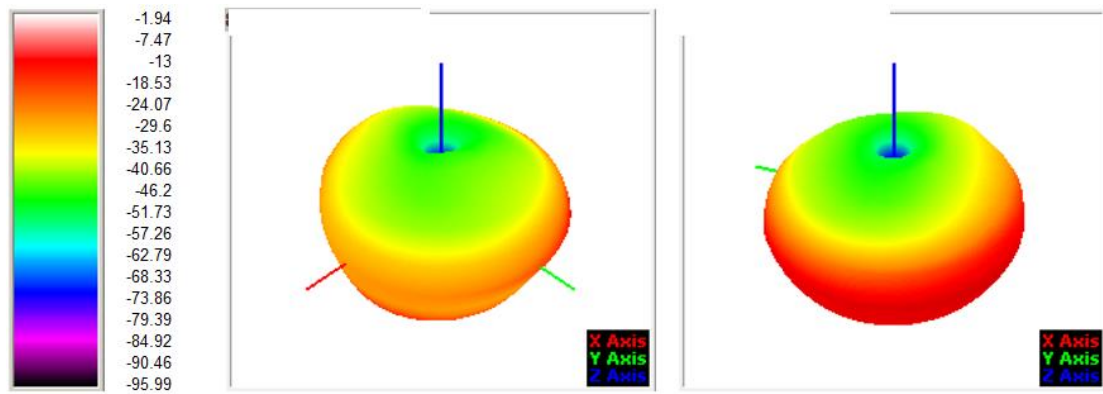
FDD-B17



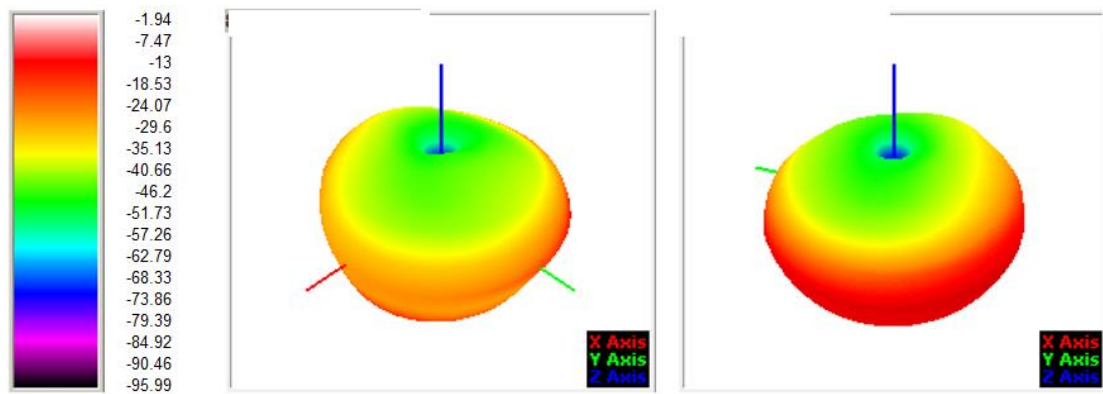
FDD-B18



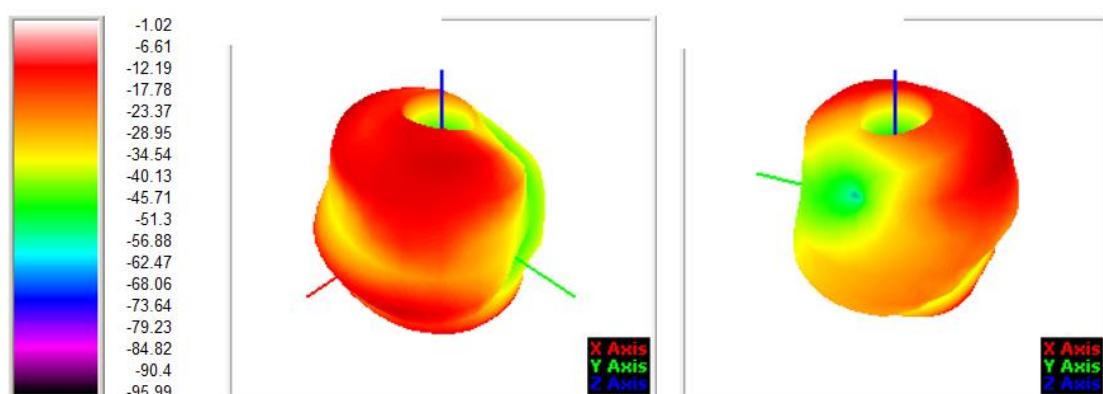
FDD-B19



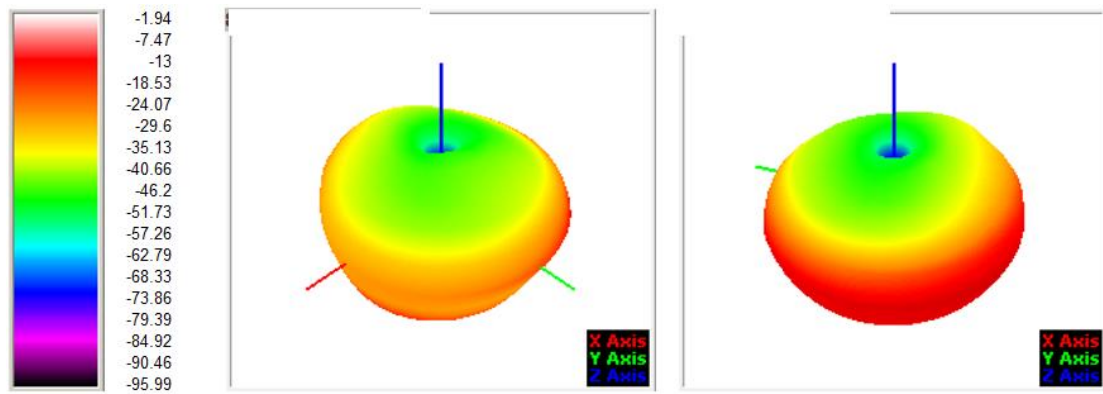
FDD-B20



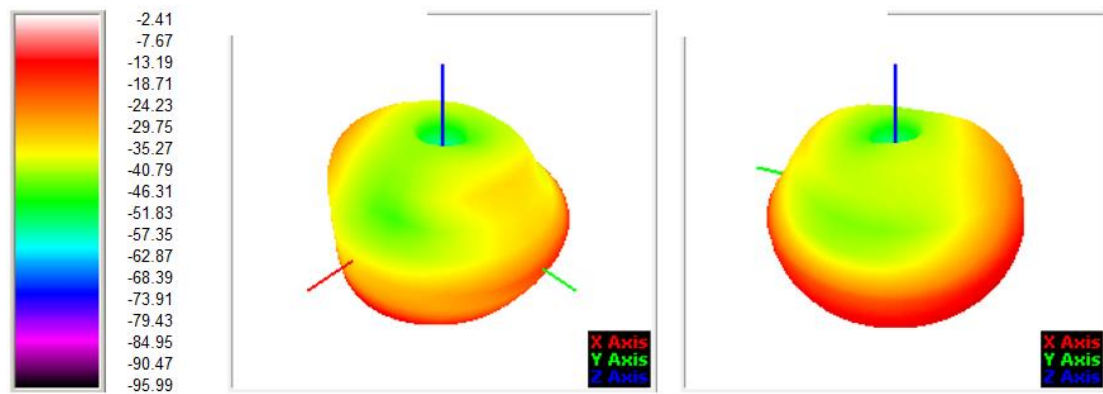
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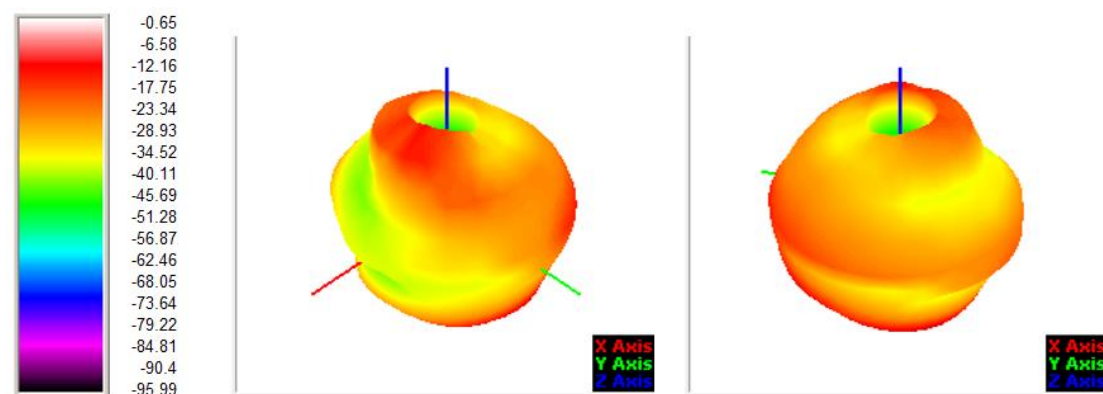
FDD-B26



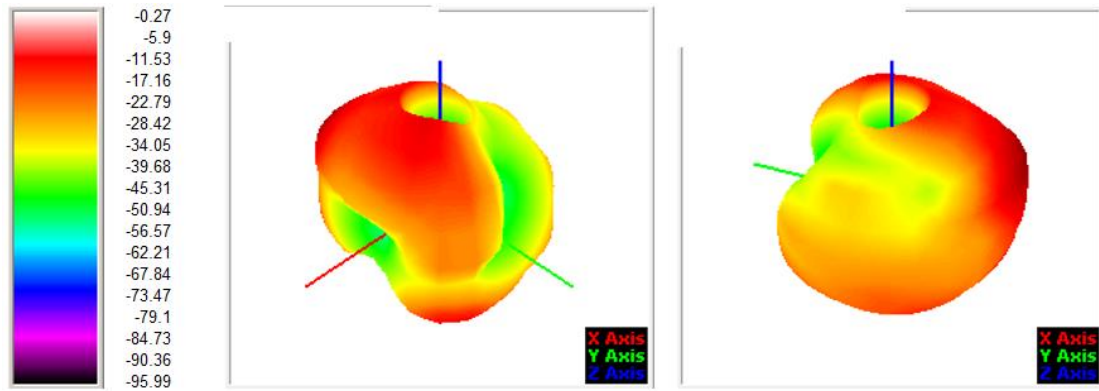
FDD-B28



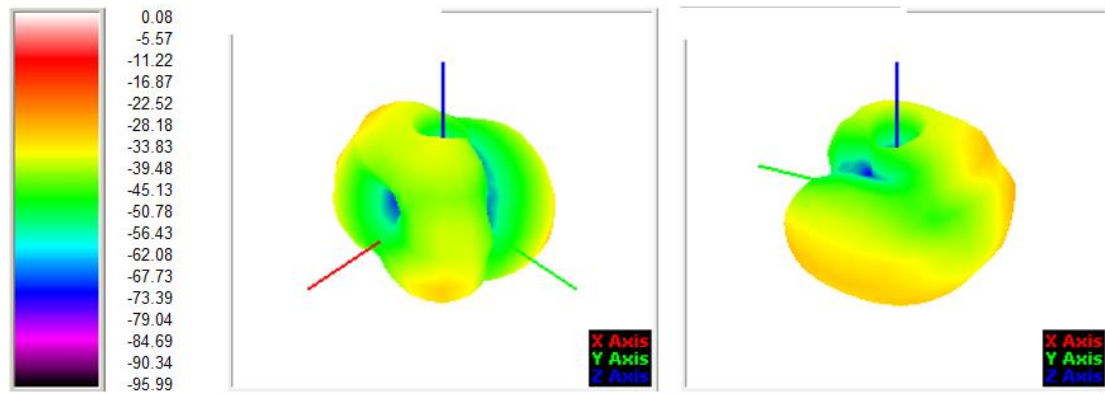
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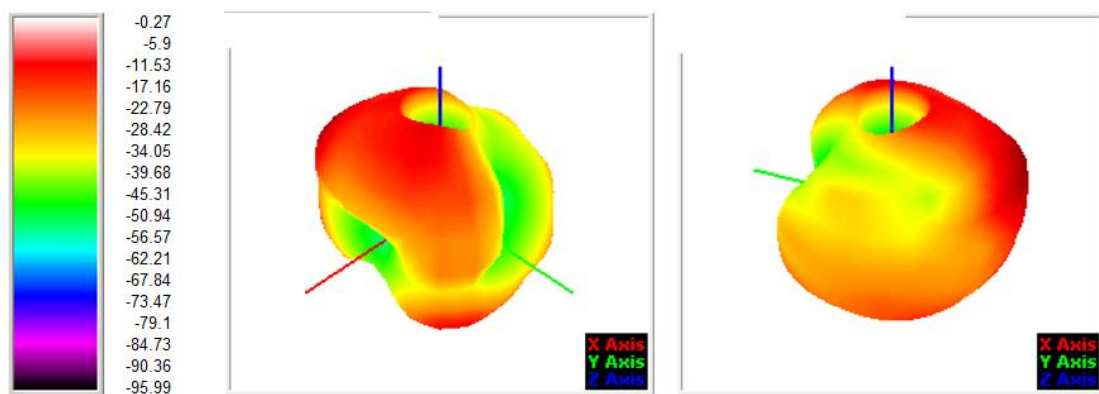
TDD-B38



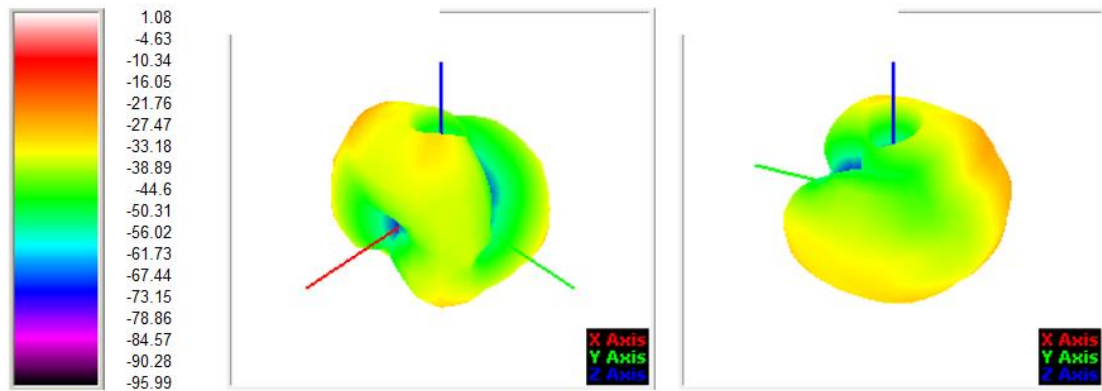
TDD-B40



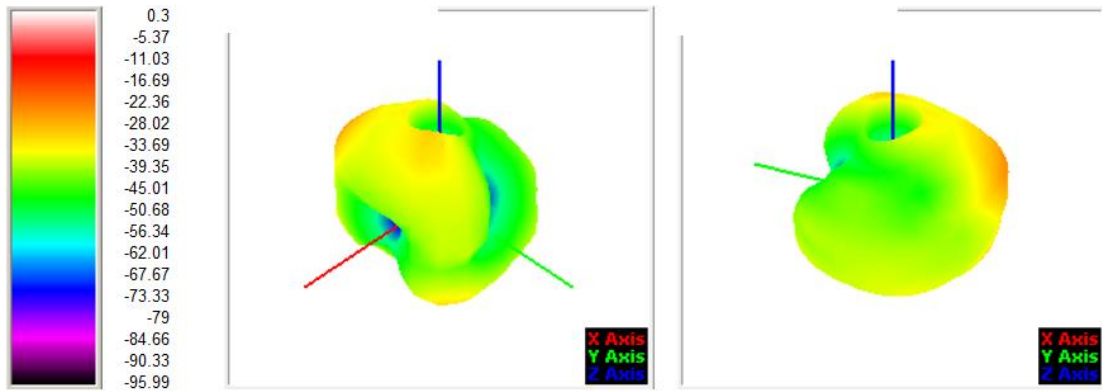
TDD-B41



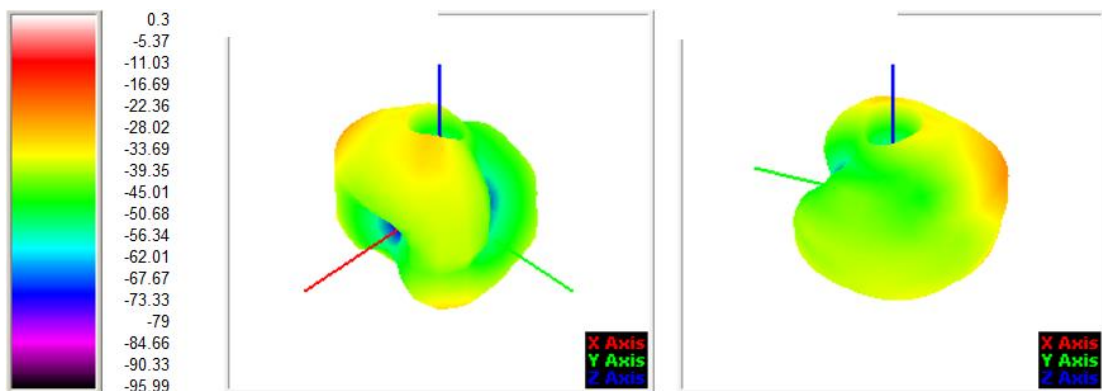
GPS-L5

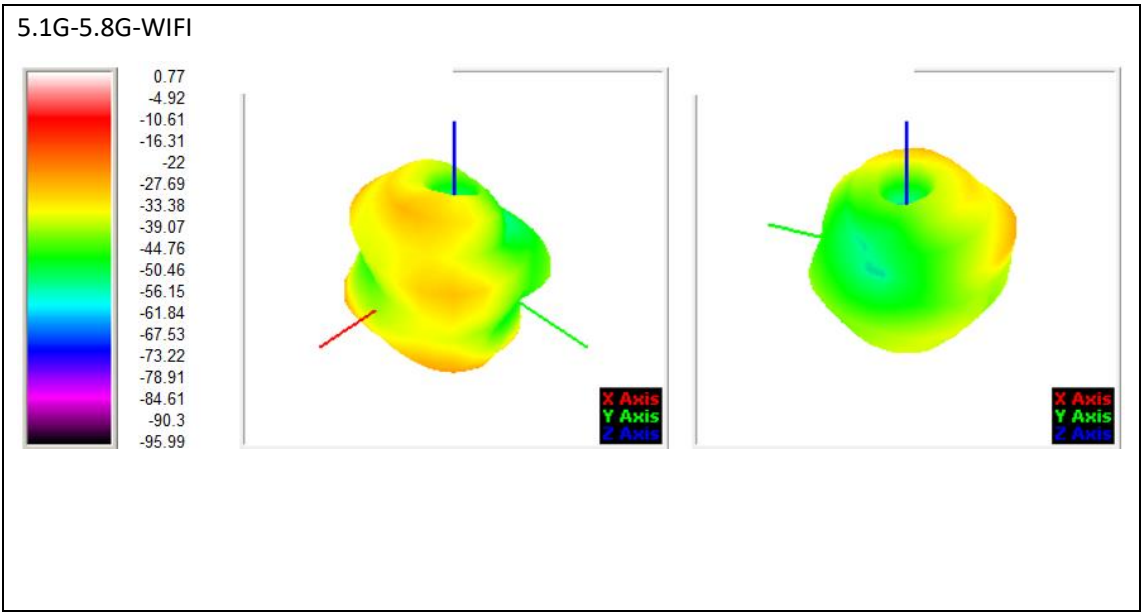


BT



2.4G-WIFI





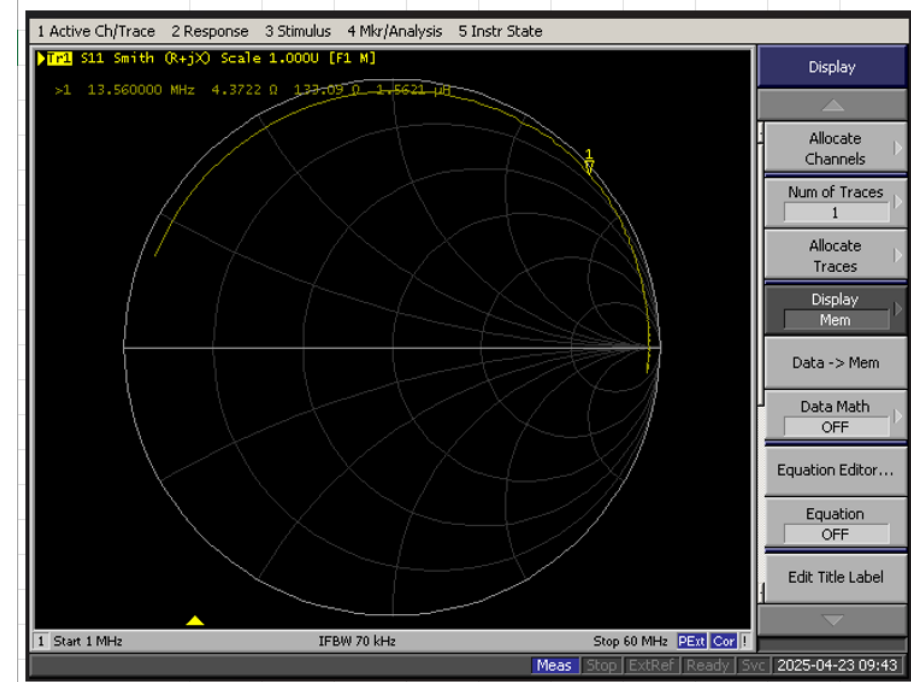
9: NFC

NFC调试

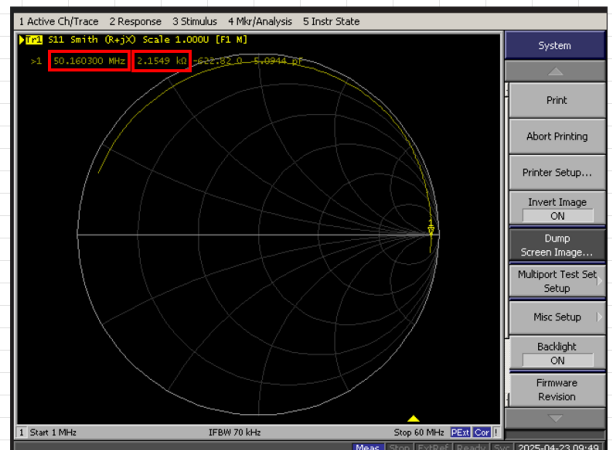
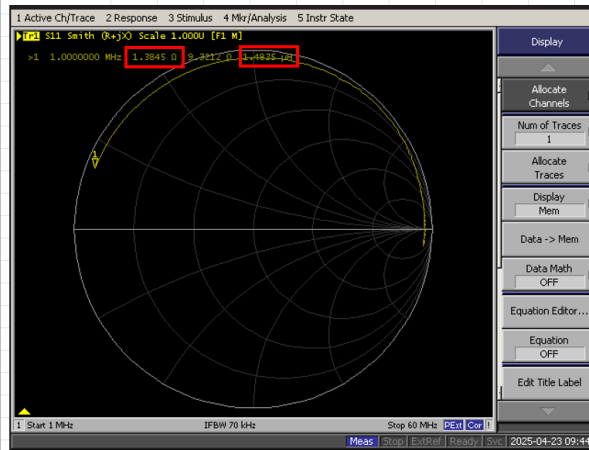
1、天线本体物理参数

物理特性	尺寸
W	0.5mm
G	0.5mm
T	0.04mm
N	4
SIZE	40mm*35mm

2、电感量

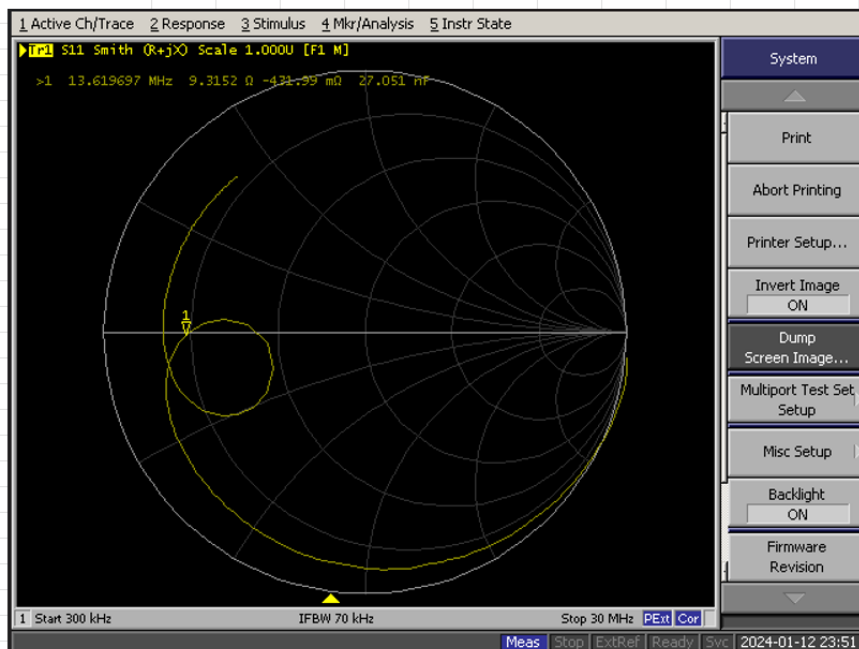


3. Q值换算



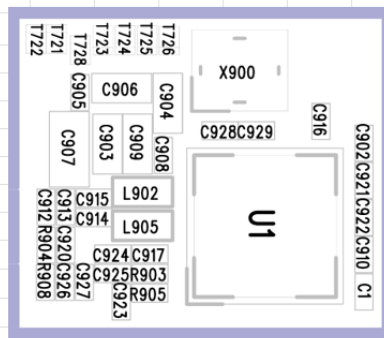
1 st Iteration: Measurement of Antenna parameter L_s , R_s , R_p , f_{ra}			
Antenna:	linear view	unit	annotation
L_s	$1.484E-06$	[H]	antenna inductance measured at 13.56MHz
R_s	$1.385E+00$	[Ω]	antenna serial resistance measured at 13.56MHz
R_p	$2.155E+03$	[Ω]	antenna parallel resistance measured at self resonance frequency of the antenna
f_{ra}	$5.016E+07$	[Hz]	self resonance frequency of the antenna
R_p (13.56MHz)	$4.145E+03$	[Ω]	parallel resistance calculated at 13.56MHz based on self resonance frequency measurement
R_s	5.239	[Ω]	serial and parallel resistor of antenna at 13.56MHz
C_s	$6.786E-12$	[F]	parallel capacitance of antenna
Q_s	24.125		calculated quality factor of antenna
Target Q	35		Fill out target quality factor of antenna
R_Q	-0.814	[Ω]	Resistance needed for Target Q

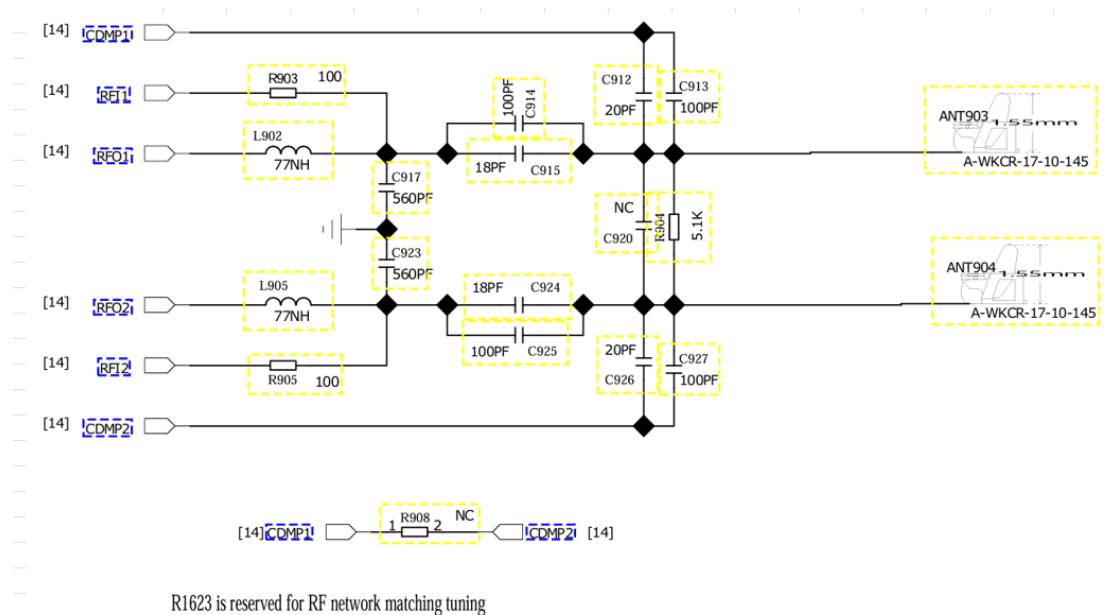
4. 阻抗调试



5. 匹配调整

位号	默认数值	调试后数值
L902/L905	77NH	未更改
C917/C923	560PF	1NF
C914/C925	100PF	68PF
C913/C927	100PF	56PF
C920	NC	未更改
C915/C924	18PF	未更改
C912/C926	20PF	未更改
R904	5.1K	未更改
R908	NC	未更改





6、NFC实测

	NFC测试卡	原状态的感应距离	修改后感应距离
Reader mode	Type1	24mm	29mm
	Type2	12mm	29mm
	Type3	14mm	30mm
	Type4	7mm	18mm
	Type5	22mm	24mm

9.Introduction to Antenna Information

R01	
Antenna type and frequency band	MAIN ANTENNA(PIFA):2G/3G/4G DIV ANTENNA(PIFA):2G/3G/4G GPS/WIFI/BT ANTENNA(PIFA):L5/2.4GWIFI/5G WIFI/BT
Antenna materia	Radium carving