

- **Manufacturer:** Shenzhen Xinbinuo
Communication Technology Co., Ltd.
- **Customer:** Duoke
- **Project:** DK 126
- **ME:** Xiao Xiang
TEL-13316888409
- **RF:** Chen Kai
TEL- 13145925658
- **Date:** 08.06.2026
- **Add.:** Building 25, Feipeng Industrial Park, Ping'an
Avenue, Pinghu Sub-district, Longgang District,
Shenzhen, Area A, Third Floor

Catalogue

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1.Basic information

Frequency band:

GSM:850/900/1800/1900.

WCDMA:B1/B2/B4/B5/B8.

FDD LTE: B1/B2/B3/B4/B5/B7/B8/B18/B19/B20/B26/B28B/B28A/B66

TDD LTE: B40/B41.

Others:

GPS/Beidou/GLONASS/Galileo,802.11.a/b/g/n/ac/AX

2.4G/5G,Bluetooth.

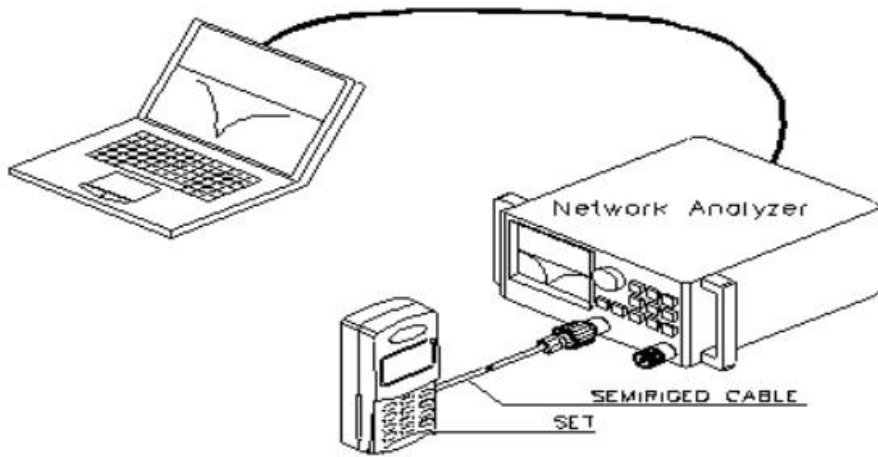
2.1 Test Method Description and Data

Device Name	Purpose
Vector Network Analyzer	S11/Impedance/ Passive Test
Agilent 8960 SP6010 R&S CMU200	Testing of mobile communication devices including GSM, GPRS, EDGE, CDMA2000, 1xEV-DO, TD-SCDMA, WCDMA, and HSDPA
R&S CMW500 MT8820C	Testing of mobile communication devices including TD-SCDMA, WCDMA, HSDPA, LTE, WIFI, and GPS
Agilent E4438C	Test GPS
MVG Chamber	Passive Test / OTA active Test / Efficiency/Gain
MT8000A	Testing of 5G NR mobile communication devices

2 Passive Test Report

Test equipment: Network analyzer

Test method: Use a 50 ohm cable to lead out from the instrument test port, calibrate it with a calibration piece, then connect it to the SMA connector of the mobile phone device. Record the echo loss or standing wave ratio corresponding to relevant frequency points.



测试示意图

3 Active Test Report

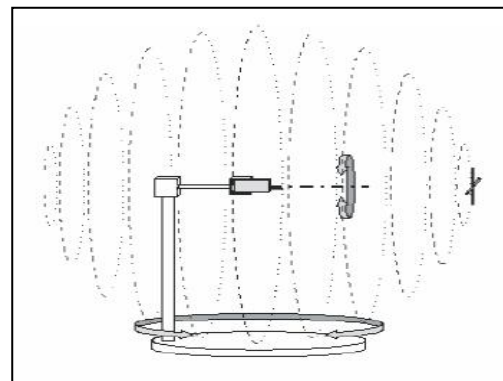
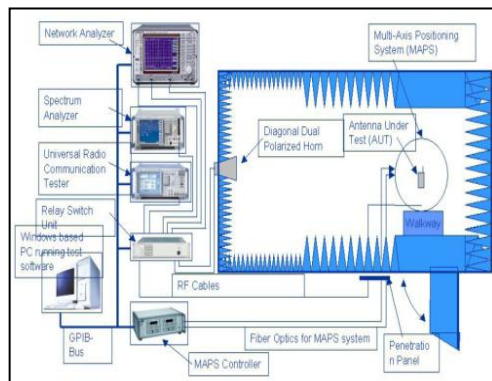
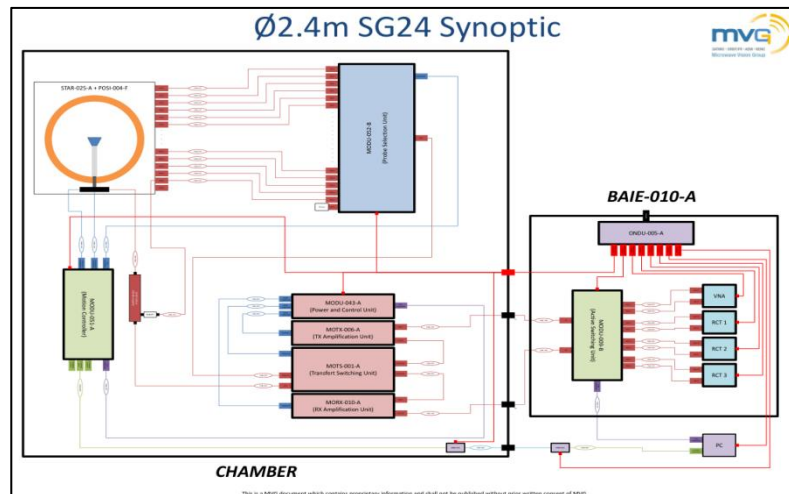
TRP/TIS

Testing Tools: Comprehensive Tester, Network Analyzer, Full-wave Far-field ETS, French MVG SG24LT (Satmio) near-field 3D microwave anechoic chamber, high-precision positioning system and its controller, and a computer test environment with automatic testing procedures: Temperature $22^{\circ}\text{C} \pm 3^{\circ}\text{C}$, humidity $60\% \pm 15\%$. Testing Method: The testing method and calculations using the EST or Satimo 24LT system software TRP are carried out. During TRP testing, the DUT (Device Under Test) is in its maximum transmission power state. Three channels, high, medium, and low, are selected for testing. The position of the DUT is controlled by the positioning system, with a step size of 15 degrees, to measure the effective radiated power (EIRP) at each point in three-dimensional space. The average value on the spherical surface is calculated by integration, and the formula is as follows:

$$TRP \cong \frac{\pi}{2NM} \sum_{i=1}^{N-1} \sum_{j=0}^{M-1} [EiRP_{\theta}(\theta_i, \phi_j) + EiRP(\theta_i, \phi_j)] \sin(\theta_i)$$

During the TIS test, the DUT is in its maximum transmission power state. Three channels, high, medium, and low, are selected for testing. By controlling the position of the DUT and measuring the received sensitivity at each point in three-dimensional space with a step size of 30 degrees, the average value on the spherical surface is calculated through integration. The calculation formula is as follows:

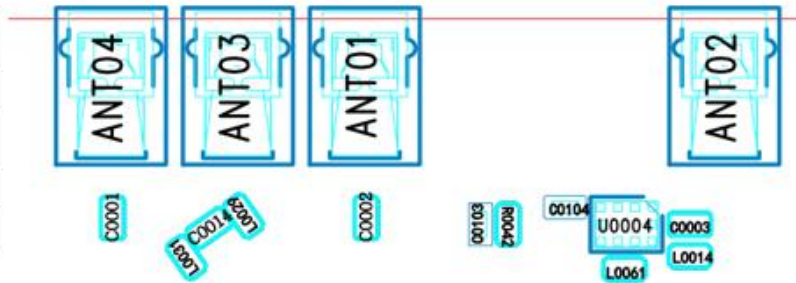
$$TIS \cong \frac{2NM}{\pi \sum_{i=1}^{N-1} \sum_{j=0}^{M-1} \left[\frac{1}{EIS_{\theta}(\theta_i, \phi_j)} + \frac{1}{EIS_{\phi}(\theta_i, \phi_j)} \right] \sin(\theta_i)}$$



2. Matching circuit

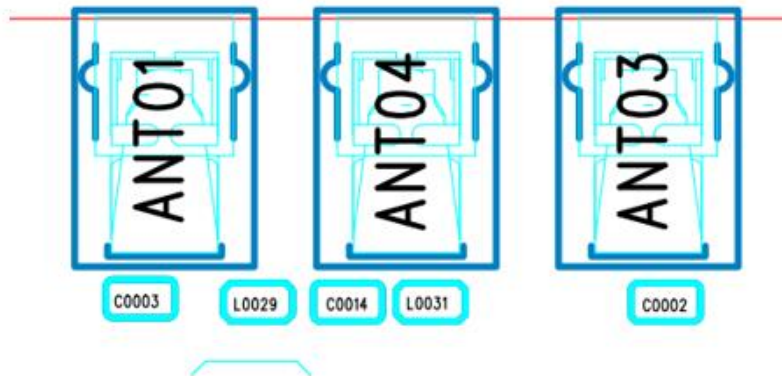
Main antenna

Q201 specifications		
Element	Value	PCB
E1 (Q201)	OR	C0001
E2 (Q201)	OR	C0002
E3 (Q201)	NC	L0029
E4 (Q201)	OR	C0014
E5 (Q201)	NC	L0031
Antenna switch		
RF1 (Q201)	NC	C0103
RF2 (Q201)	NC	R0042
RF3 (Q201)	8.2NH	L0014
RF4 (Q201)	18NH	L0061
E1 (Q201)	NC	C0003



Div antenna

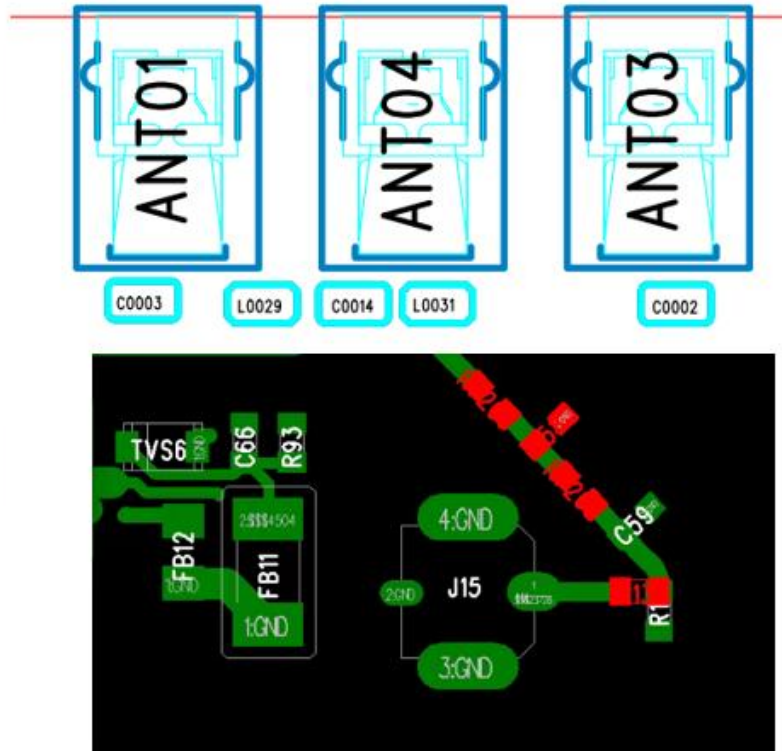
Q201 specifications		
Element	Value	PCB
E1 (Q201)	OR	C0002
E2 (Q201)	OR	C0003
E3 (Q201)	NC	L0029
E4 (Q201)	OR	C0014
E5 (Q201)	NC	L0031



Three in one antenna

0201 specifications		
Element	Value	PCB
E1 (0201)	OR	C0002
E2 (0201)	OR	C0003
E3 (0201)	NC	L0029
E4 (0201)	OR	C0014
E5 (0201)	NC	L0031

Motherboard test port		
Element	Value	PCB
E1 (0201)	OR	R13
E2 (0201)	OR	R7202
E3 (0201)	NC	C58
E4 (0201)	OR	R7203
E4 (0201)	NC	C59



Main antenna switch logic			
Switch position	PVB	Value	Antenna frequency band
RF1	C0103	NC	
RF2	R0042	NC	TX LTE-FDD: 28A/28B
RF3	L0014	8. 2NH	TX GSM:900 TX WCDMA: 8 TX LTE-FDD: 8 RX WCDMA: 1/2/4 RX LTE-FDD:1/2/3/4/7/66 RX LTE-TDD:40/41
RF4	L0061	18NH	TX GSM:850 TX WCDMA: 5 TX FDD-LTE: 5/18/19/20/26

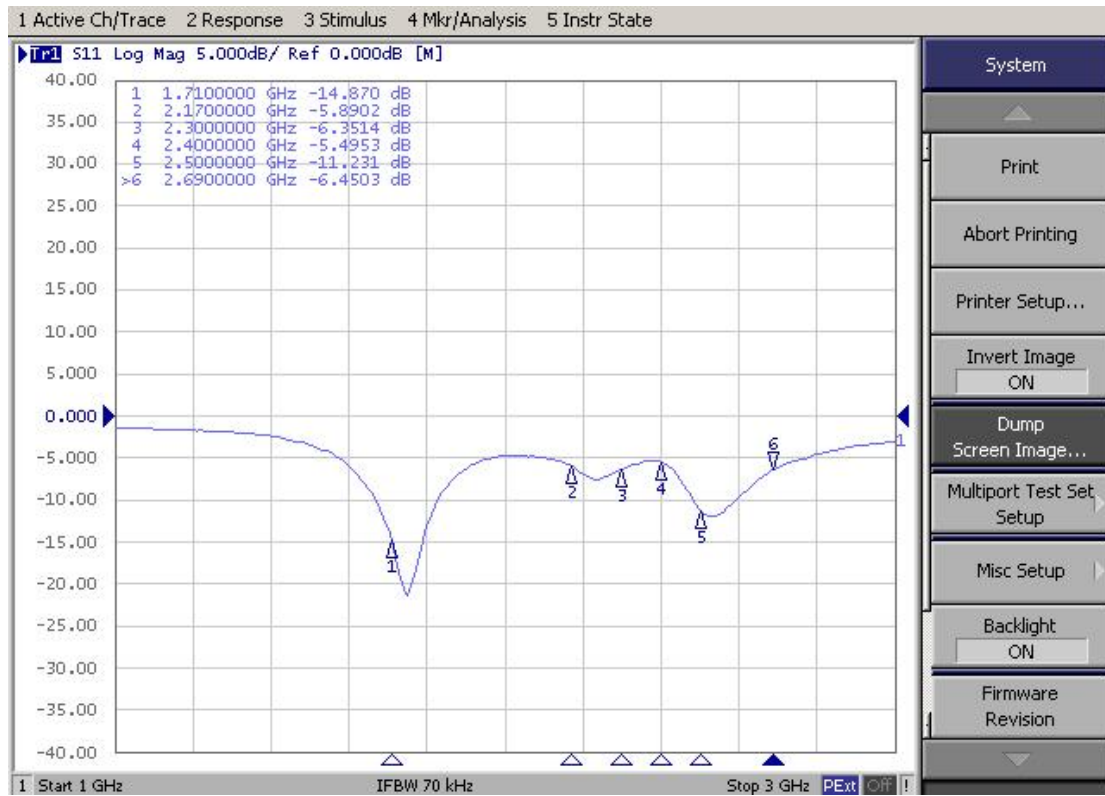
Div antenna switch logic			
Switch position	PCB	Value	Antenna frequency band
Resident bit			TX GSM:1800/1900 TX WCDMA: 1/2/4 TX LTE-FDD: 1/2/3/4/7/66 TX LTE-TDD: 40/41 RX LTE_FDD: 5/8/18/19/20/26/28A/28B/66 RX WCDMA: 5/8

4. Antenna return loss

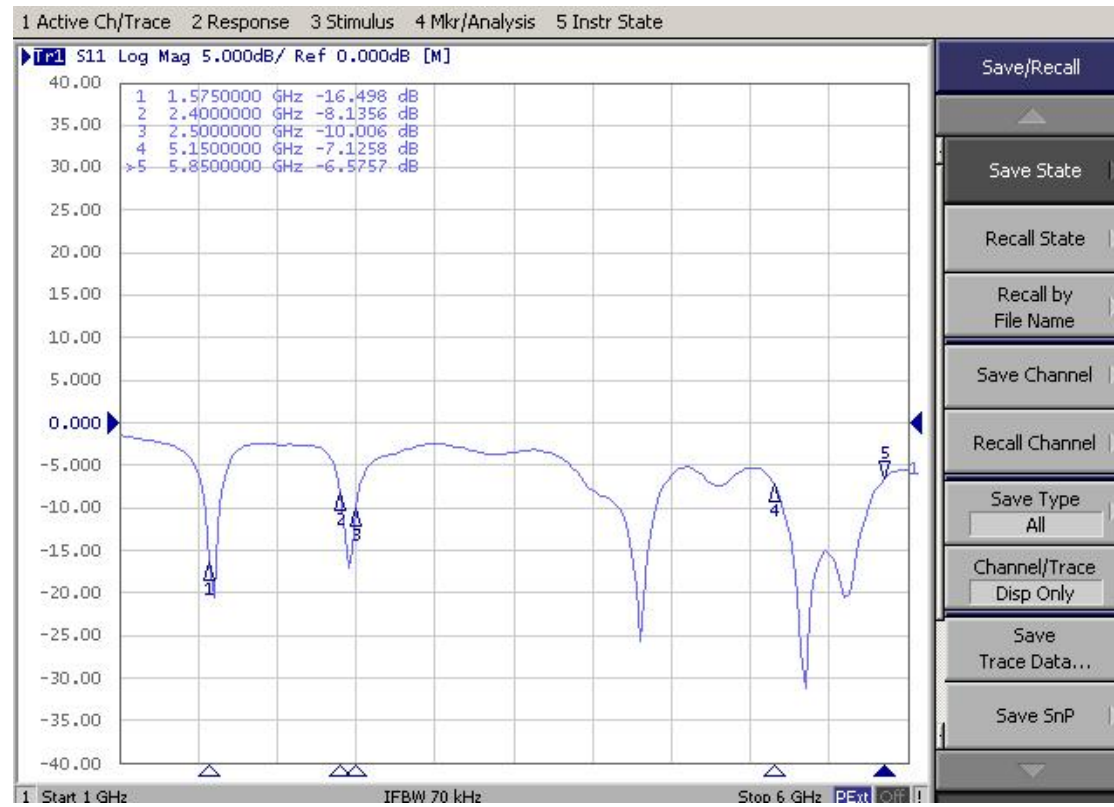
Main antenna LOSS



Div LOSS



Three in one LOSS



5.Gain

Band	Peak Gain/dBi	Band	Peak Gain/dBi
GSM850	-2.7	FDD-B8	-2.9
GSM900	-2.9	FDD-B18	-2.7
DCS1800	0.7	FDD-B19	-2.7
PCS1900	0.9	FDD-B20	-2.7
WCDMA B1	0.8	FDD-B26	-2.7
WCDMA B2	0.9	FDD-B28A	-3.8
WCDMA B4	0.7	FDD-B28B	-3.8
WCDMA B5	-2.7	FDD-B66	0.7
WCDMA B8	-2.9	TDD- B40	0.6
FDD-B1	0.8	TDD-B41	0.7
FDD-B2	0.9	GPS	0.5
FDD-B3	0.7	2.4G WIFI	0.7
FDD-B4	0.7	5.2GWIFI	3.19
FDD-B5	-2.7	5.8GWIFI	3.3
FDD-B7	0.9	BT	0.7

6. OTA

6.1 Antenna OTA

OTA			
Band	Channel	TRP	RTIS
GSM850	128	22.5	
	190	23.3	
	251	23.2	-96.1
EGSM	1	24.2	
	62	24.8	
	124	25.2	-96.9
DCS	512	25.3	
	698	25.6	
	885	25.8	-104.5
PCS	512	26.2	
	661	25.6	
	810	25.4	-103.2

OTA			
Band	Channel	TRP	ƳTIS
WCDMA Band 1	10562	17.7	
	10700	17.3	
	10838	17.4	-103.3
WCDMA Band 2	9662	17.8	
	9800	17.7	
	9938	17.5	-103.2
WCDMA Band 4	1537	16.7	
	1638	17.5	
	1738	17.6	-102.7
WCDMA Band 5	4357	14.5	
	4410	14.5	
	4458	14.6	-98.7
WCDMA Band 8	5900	13.3	
	5900	14.4	
	5900	14.6	-97.4

OTA			
Band	Channel	TRP	ƳTIS
E1 (10M)	50	17.6	
	300	17.3	
	550	17.0	-92.0
E2 (10M)	650	17.7	
	900	17.9	
	1150	17.8	-92.0
E3 (10M)	1250	17.4	
	1575	17.7	
	1900	18.4	-92.5
E4 (10M)	2000	17.0	
	2175	17.3	
	2350	17.7	-92.0

OTA			
Band	Channel	TRP	天TIS
B5 (10M)	2450	14.7	
	2525	15.0	
	2600	15.2	-86.7
B7 (10M)	2800	16.3	
	3100	16.4	
	3400	16.5	-90.1
B8 (10M)	3500	14.0	
	3625	14.7	
	3750	15.0	-84.2

OTA			
Band	Channel	TRP	天TIS
B18 (10M)	5850	15.0	
	5925	15.1	
	5999	15.4	-87.8
B19 (10M)	6050	15.3	
	6075	15.2	
	6100	15.0	-87.5
B20 (10M)	6200	15.5	
	6300	14.7	
	6400	14.6	-85.2

OTA			
Band	Channel	TRP	ƳTIS
B26 (10M)	8740	16.3	
	8865	16.7	
	8990	16.5	-86.0
B28A (10M)	9310	12.7	
	9360	12.1	
	9410	12.4	-83.5
B28B (10M)	9460	12.3	
	9510	11.8	
	9560	12.1	-84.0
B66 (10M)	66536	17.1	
	66786	17.3	
	67036	17.7	-91.4

OTA			
Band	Channel	TRP	ƳTIS
B40 (20M)	38750	17.6	
	39150	18.1	
	39550	18.1	-88.7
B41 (20M)	40620		
	40140	17.4	-87.5
	41240		

OTA					OTA				
2.4G	Band	Channel	TRP/dBm	TIS/dBm (亮)	5.8G	Band	Channel	TRP/dBm	TIS/dBm (亮)
	b(11M)	1	10.0			a(54M)	36	12.6	
		6	10.7				149	12.3	
		13	11.5	-80.3			165	12.3	-70.5
	g(54M)	1	9.2			n(MCS7)	36	11.7	
		6	10.0				149	11.8	
		13	11.0	-68.6			165	11.8	-65.5
	n(MCS7)	1	8.0			ac(MCS8)	36	12.2	
		6	9.2				149	11.3	
		13	10.0	-64.0			165	11.3	-64.7
	n(MCS8)	1	8.0			ax(MCS8)	36	9.2	
		6	9.2				149	9.5	
		13	10.0	-64.0			165	9.3	-64.0

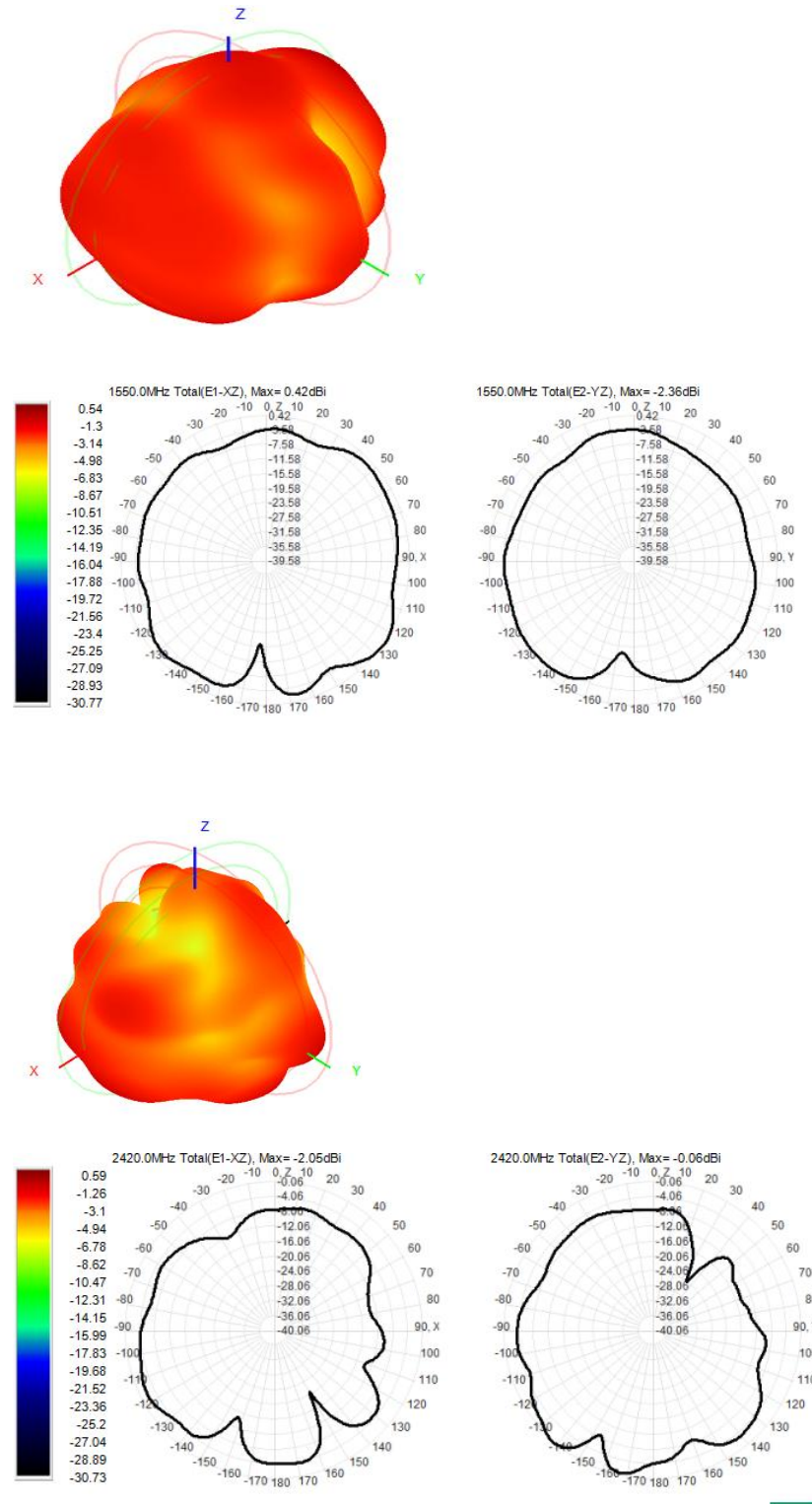
6.2 GPS testing

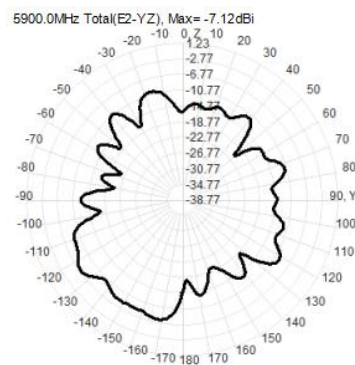
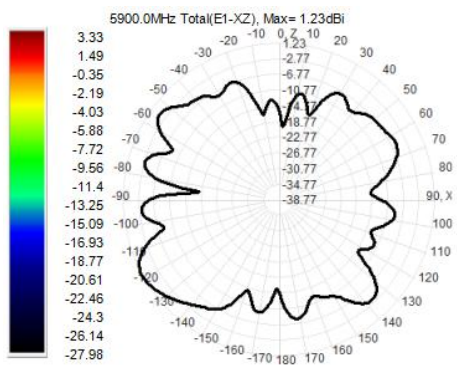
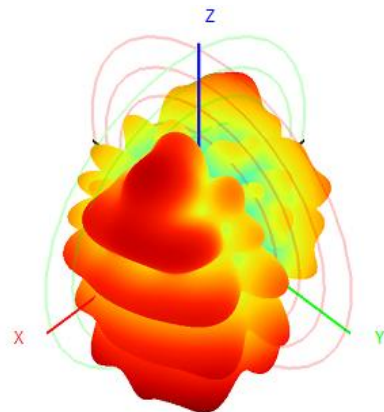
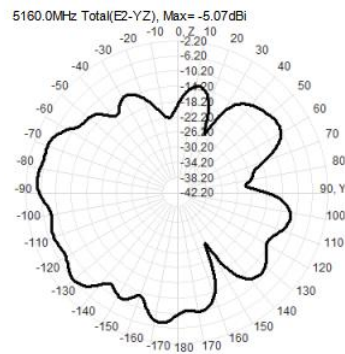
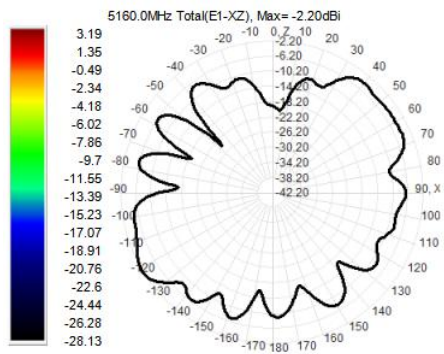
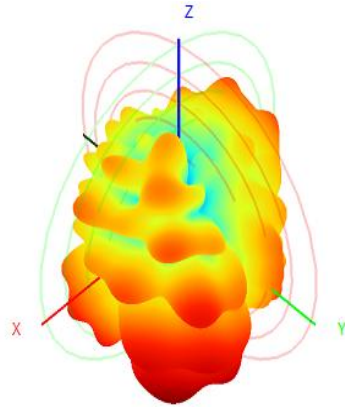
Measured positioning



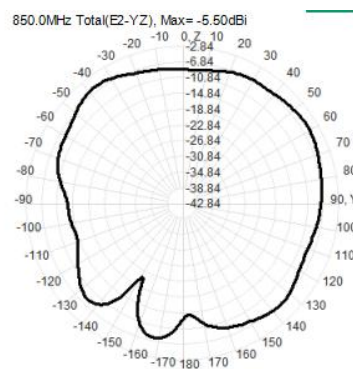
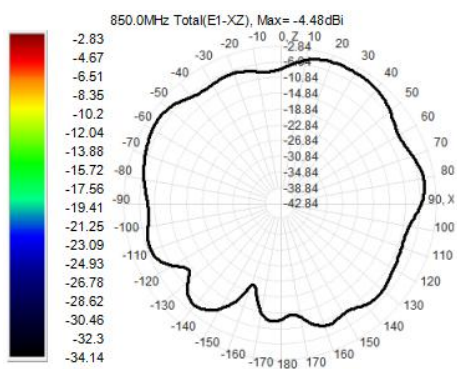
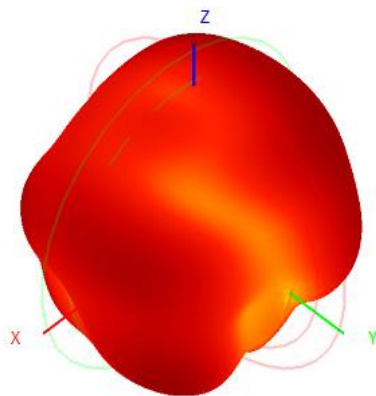
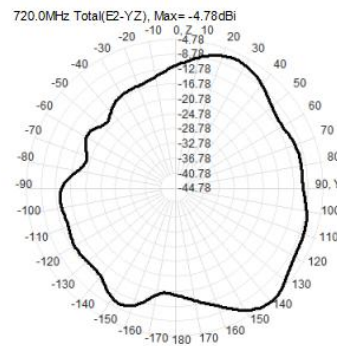
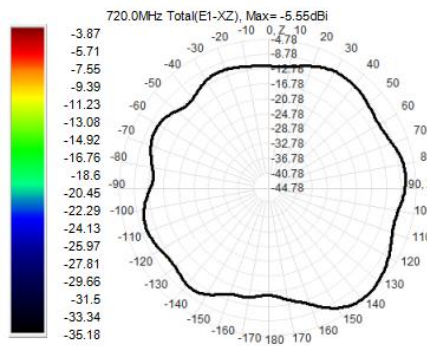
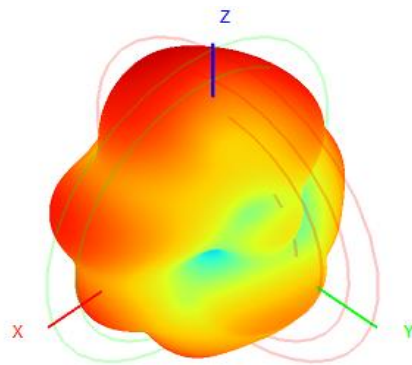
7.1 Antenna radiation pattern

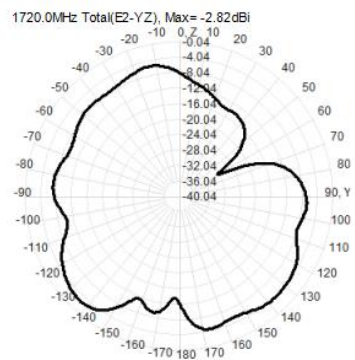
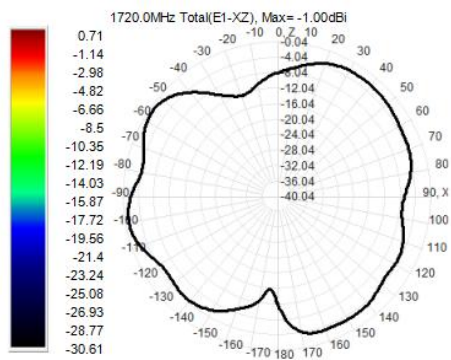
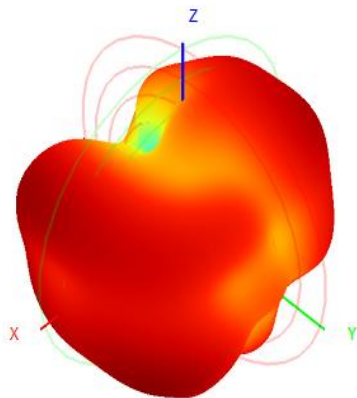
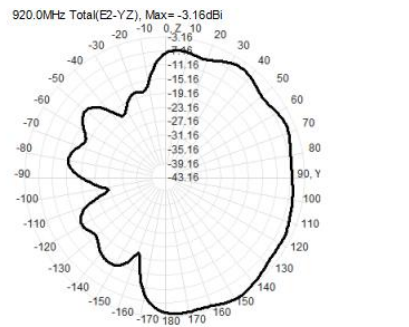
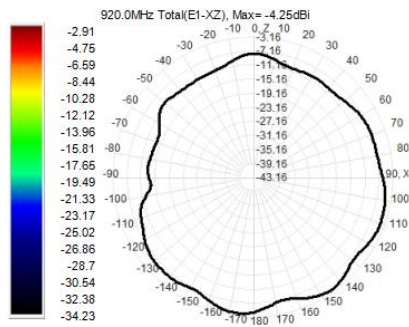
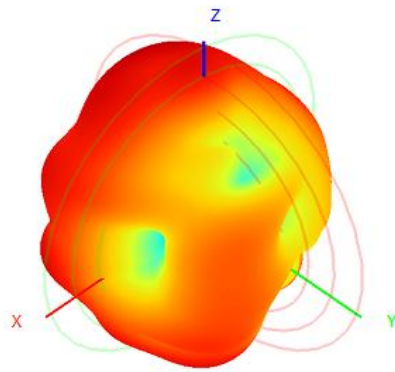
7.2 GPS/WIFI/BT

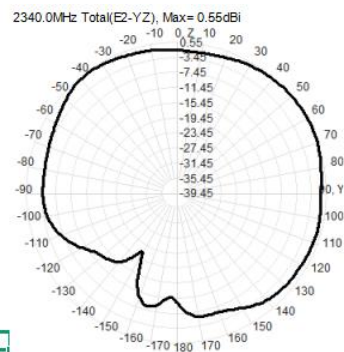
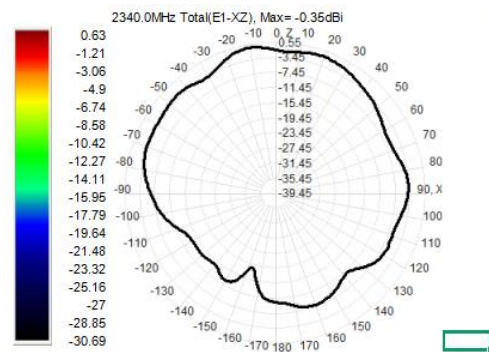
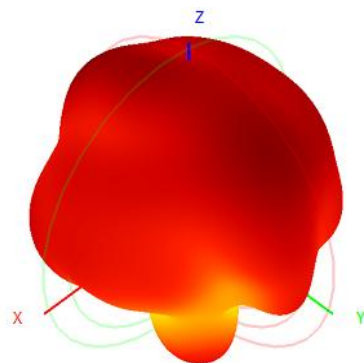
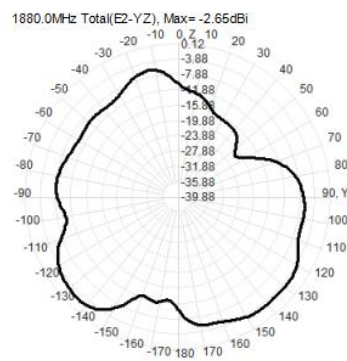
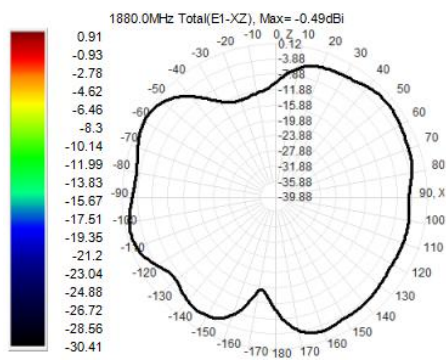
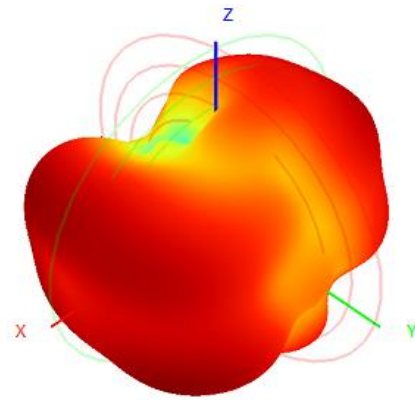


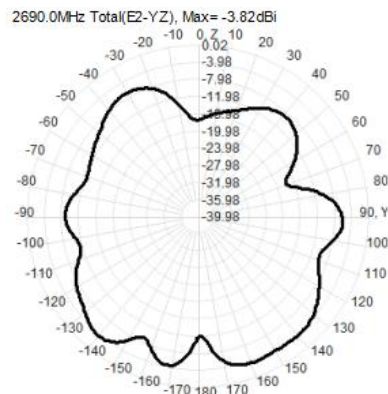
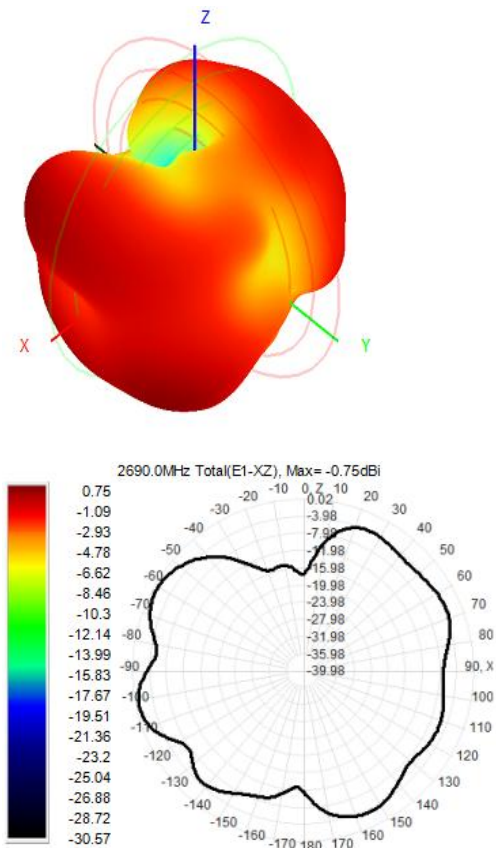
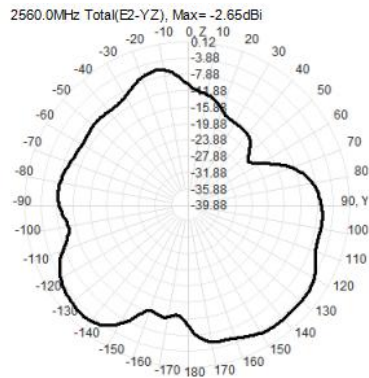
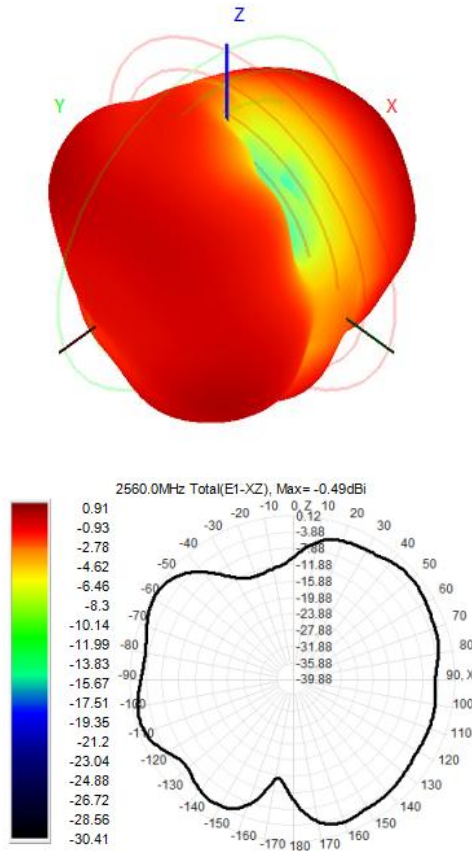


7.3.2 GSM/WCDMA/LTE









9.Dimension Inspection Report

