



Material name T50

Sample color black

Sample type FPC: 4G MAIN

Customer model

R. A

Prepared	structure	character	ratify	Sample sending date
				2021. 5. 14



1. Customer antenna debugging design demand frequency band

frequency	frequency range
2G	GSM900 850 1800 1900
3G	WCDMA1/2/5/8 TD-A/F
4G	LTE-B1/2/3/4/5/7/8/17/20/28/38/39/40/41

2. Antenna diagram

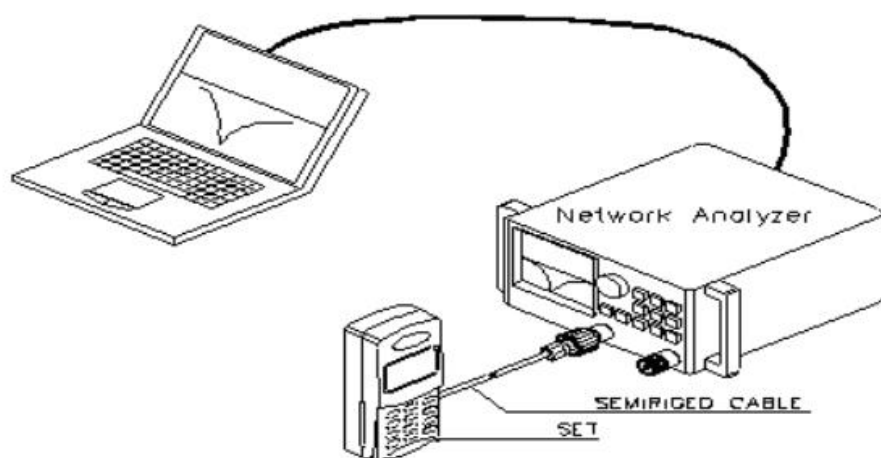


3. Electrical performance

3.1 Test method description and data

Name	
Vector Network Analyzer	S11/Impedance/ Passive Test
Agilent 8960 SP6010 R&S CMU200	GSM、 GPRS、 EDGE、 CDMA2000、 1xEV-DO、 TD-SCDMA、 WCDMA、 HSDPA
R&S CMW500 MT8820C	TD-SCDMA、 WCDMA、 HSDPA、 LTE、 WIFI、 GPS
Agilent E4438C	GPS
MVG Chamber	Passive Test / OTA active Test / Efficiency/Gain

3.2 Passive Test Report



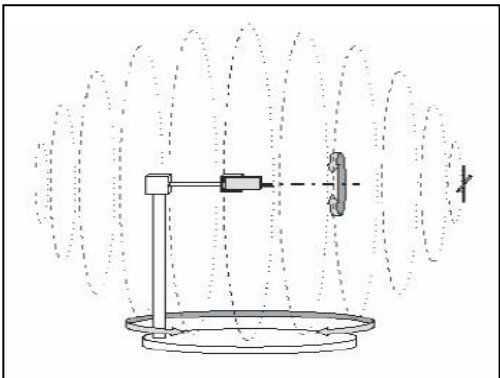
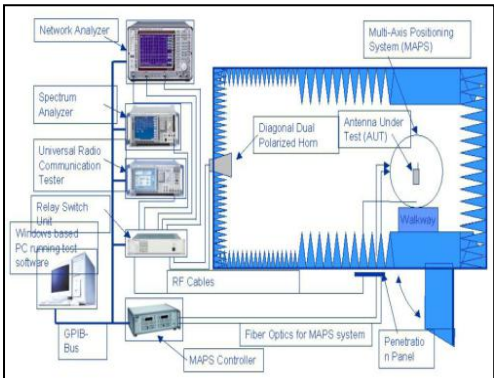
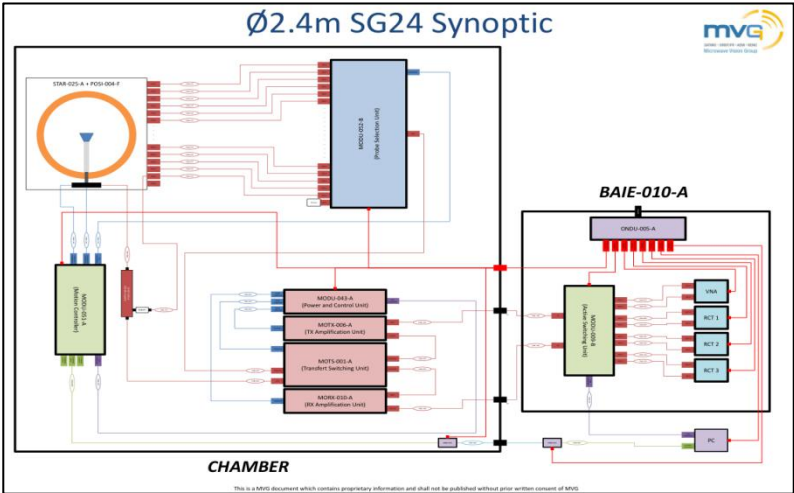
测试示意图

3.3 Active Test Report

TRP/TIS

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

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



3.4 OTA TRP/TIS

BAND	GSM900			DCS1800		
CHANNAL	1	62	124	512	698	885
TRP	27.2	27.1	26.9	25.3	25.4	25.6
TIS			-100.8			-101.3
TIS			-99.9			-100.4

BAND	GSM850			PCS1900		
CHANNAL	128	190	250	512	661	810
TRP	25.7	26.9	27.7	25.5	25.5	24.2
TIS			-103.16			-100.8
TIS			-93.8			-100.1

BAND	W1			W8		
CHANNAL	10562	10700	10838	2937	3012	3088
TRP	16.5	17.1	17.4	17.9	17.7	17.7
TIS			-104.1			-101.5
TIS			-104			-100.1
BAND	W2			W5		
CHANNAL	9662	9800	9938	4357	4408	4458
TRP	17.6	17.7	17.3	17.1	16.9	17.2
TIS			-103.8			-104.4
TIS			-103.2			-100.1

BAND	TD-A			TD-F		
CHANNAL	10054	10087	10121	9404	9500	9596
TRP	16.6	16.8	16.9	17.8	18.1	18.2
TIS			-104.1			-104.7
TIS			-103.8			-104.2

BAND	FDD-B1			FDD-B2		
CHANNEL	18050	18300	18550	18650	18900	19150
TRP	16.2	16.1	16.2	17.6	17.6	17.2
TIS			-90.9			-90.4
TIS			-90.4			-90.1
BAND	FDD-B3			FDD-B4		
CHANNEL	19250	19575	19900	20000	20175	20350
TRP	17.8	18.1	18.2	17.8	18.1	18.2
TIS			-87.6			-89.1
TIS			-87.1			-88.1

BAND	FDD-B5			FDD-B7		
CHANNEL	20450	20525	20600	20800	21100	21400
TRP	16.1	16.7	17.0	18.4	18.1	17.3
TIS			-90.2			-88.4
TIS			-84.4			-87.3
BAND	FDD-B8			FDD-B13		
CHANNEL	21500	21625	21750		28230	
TRP	18.2	17.7	17.3		14.3	
TIS			-87.5		-90.1	
TIS			-86.1		-85.6	

BAND	FDD-B17			FDD-B20		
CHANNEL	23780	23790	23800	24200	24300	24400
TRP	11.4	11.5	11.7	16.3	17.1	17.4
TIS			-89.5			-89.3
TIS			-87.2			-85.4
BAND	TDD-B28					
CHANNEL	27260	27435	27610			
TRP	11.4	11.6	11.6			
TIS			-89.1			
TIS			-88.2			

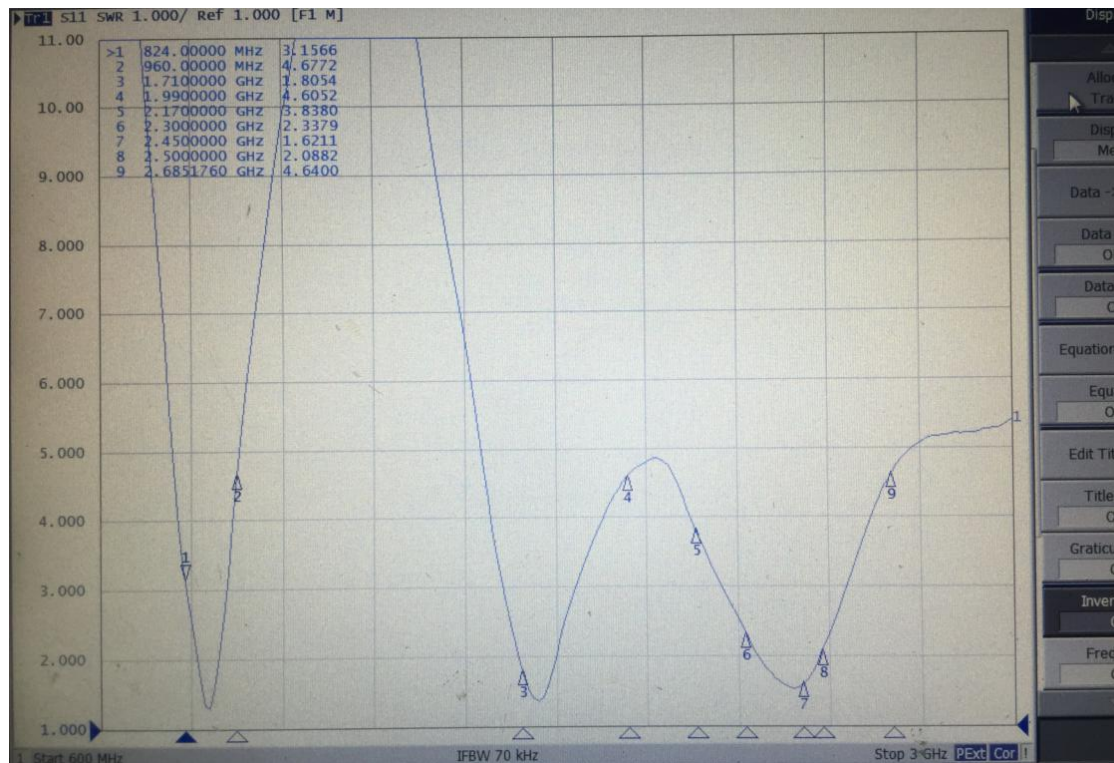
BAND	TDD-B38			TDD-B39		
CHANNAL	37850	38000	38150	38350	38450	38550
TRP	17.2	16.7	16.6	17.6	17.4	17.1
TIS			-87.3			-92.3
TIS			-87			-91.9
BAND	TDD-B40			TDD-B41		
CHANNAL	38750	39150	39550	40540	40620	40940
TRP	16.8	17.4	18.1	17.1	16.9	16.4
TIS			-87.2			-86.7
TIS			-86.7			-86.2

Frequency(Hz)	Gain(dBi)
171000000	-0.155839975
175950000	1.96522758
180900000	3.421337013
185850000	3.006790678
190800000	1.350903629
195750000	-0.384775819
200700000	-1.958935603
205650000	-3.124263689
210600000	-4.44111812
215550000	-4.773636952
220500000	-3.837852494
225450000	-2.218452428
230400000	-0.890343319
235350000	0.01346919
240300000	0.28649313
245250000	0.976547589
250200000	1.90167515
255150000	1.884605008
260100000	1.36422374
265050000	1.195267504
270000000	0.688432236

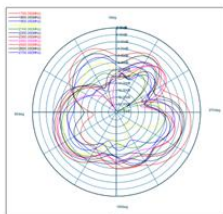
Frequency(Hz)	Gain(dBi)
824000000	-0.542519688
837600000	0.908545431
851200000	0.905102832
864800000	0.950396263
878400000	-0.250074968
892000000	-1.657050501
905600000	-1.600386526
919200000	-1.091816563
932800000	-0.660957417
946400000	-2.657758773
960000000	-3.252068113

3.5 Passive Test

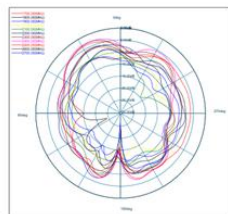
Diversity antenna	band(Mhz)	704	791	824	960	1710
	Performance	>12%	>12%	>12%	>12%	>15%
	Measured	22. 0%	23. 0%	24. 0%	25. 0%	24. 0%
	Determine	pass	pass	pass	pass	pass
Diversity antenna	band((Mhz)	1880	1990	2170	2300	2690
	Performance	>15%	>15%	>15%	>15%	>15%
	Measured	23. 0%	22. 0%	20. 0%	18. 0%	16. 0%
	Determine	pass	pass	pass	pass	pass



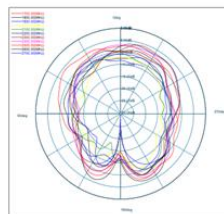
Azimuth 0°



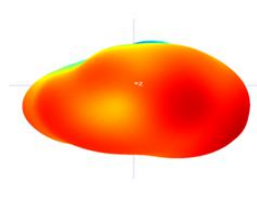
Azimuth 90°



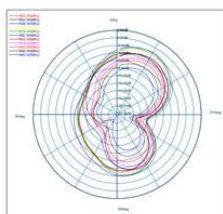
H-Plane (Elevation 90°)



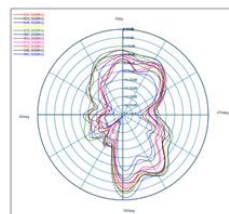
3D view Frequency
2200MHz



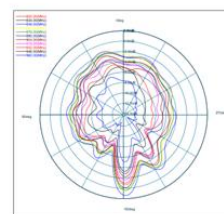
Azimuth 0°



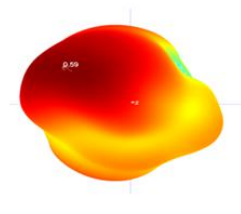
Azimuth 90°

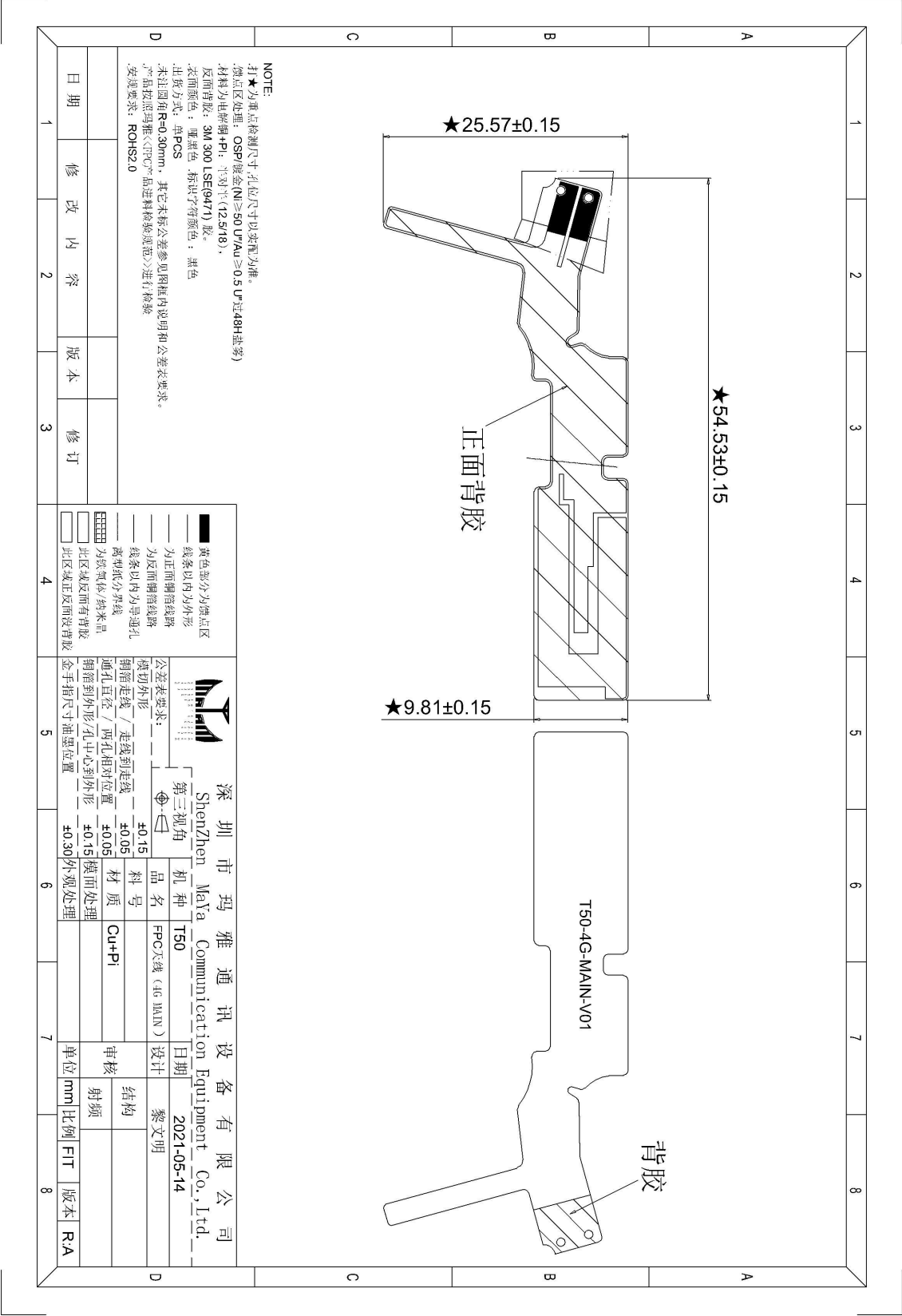


H-Plane (Elevation 90°)



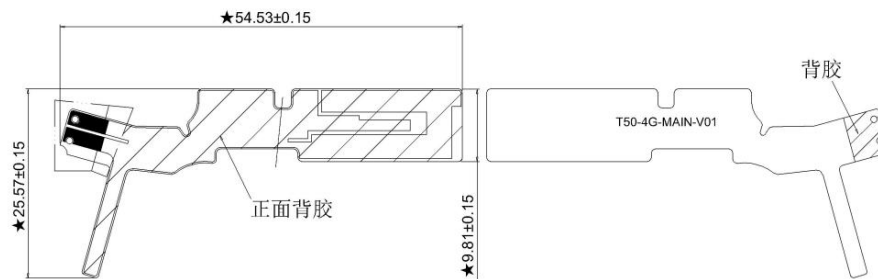
3D view Frequency
2200MHz





5. Dimensional inspection report

material	FPC
Project name	T50



	Base value (mm)	public errand + (mm)	public errand - (mm)	II	2	3	4	5	
1	54.53	0.15	0.15	54.63	54.65	54.45	54.53	54.50	OK
2	25.57	0.15	0.15	25.66	25.68	25.57	25.47	25.50	OK
3	9.81	0.15	0.15	9.90	9.92	9.82	9.71	9.75	OK
4									
5									
6									
7									
8									
9									
10									