

Yi Hua acknowledged that the book countersign form

number:

Applicable model		T86L		delivery mode	☐ Machine ☐ SKD	The nature of the supplier	☐ New Suppliers ☐ Qualified Suppliers	
material code		GWB antenna FPC				supplier	Renesola communication	
Material name and description		GWB antenna						
material properties	☐ Structural parts ☐ electronic components ☐ motor parts ☐ packaging material ☐ accessories ☐ others							
Number of samples sent	5	Send sample date		purchasing cycle		Day / week	purchase department	
Sample test status	Check items	Inspection content / test results					Signature / Date	
	surface	Confirm materials: exterior structural parts (screen printing, color) / accessories / labeling / packaging, etc					ID Design Validation accessory validation	
		Confirm content: screen printing / color / label / packaging materials meet the design requirements					Sales confirmation	
	structure	Confirm material: All materials / accessories on the nose Confirmation content: key structural dimensions / drawings / assembly accessories / mutual match verification					MD design confirmation	
	hardware	Confirmation material: LCD / TP / CAM / horn / antenna / antenna / accessories / T card / Confirm content: function / effect					HW test confirmation	
	character	Confirmation Item: All items in the BOM Confirmation content: reliability test / appearance standard / drawing / supplier test report					Quality Manager confirmation	
	Reliability test report							
project department Confirm opinion	Make a comprehensive treatment opinion for the certified materials project manager:					Confirmation material: LCD / TP / CAM / FPC / antenna / battery Confirm content: Key dimensions / drawing / function / process Project Director:		
Sample storage department	quantity	Receiver / Date	Sample storage department	quantity	Receiver / Date	Sample storage department	quantity	Receiver / Date
project department	A		purchase department	A		quality department	A	
fabricating plant	A		other					
remarks								

Material requirement specification for T86L project antenna

Customer name: Yihua Intelligence

Customer name: T86L

product name: Three-in-one antenna

Change Content CV:

order number	edition	state	availability date	person liable	page number	remarks
1	R:A	editio princeps	2024-6-17	Li Jieyi	14	
2						

The Supplier acknowledges the signature of the following documents:

Responsible person / date		IQC/ date	Review / Date	Approval / Date
MD				
RF				

The Demander acknowledges the signature (please send it back after the confirmation):

The demander's judgment result: ☐ qualified ☐ unqualified			
Development & Design Engineer / Date	SQE Engineer / Date	Purchasing Leader / Date	Development Manager approval / date

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1. Overview

1.1 Scope of application

This requirement specifies the antenna technical requirements and material requirements specifications for T86L products.

This requirement applies to **T86L** Antenna type selection, test, and acceptance.

1.2 Project basic information

Antenna name:	T86L
Antenna band:	2G: GSM850/900/1800/1900 3G: WCDMA B1/5/8 4G: LTE B1/3/5/7/8/20/38/40/41 GWB: 1575.42MHz/2.45GHz/5.8GHz DRX: 1700MHz-2700MHz
Antenna material:	FPC+ coaxial cable

2. Technical index requirements

2.1 Introduction of test items and equipment

inventory	test item	equipment
Active test	TRP, TIS	Integrated tester, microwave darkroom

2.2 Active Reporting

2.2.1 Test instructions

Test tools: Agilent8960 instrument, R & S CMW500, full wave far field ETS dark room, high precision positioning system and its controller and computer with automatic test program

Test environment: temperature $22^{\circ}\text{C} \pm 3^{\circ}\text{C}$, humidity $50\% \pm 15\%$

Test method: DUT is fixed in the center of the turntable with H plane, on the same horizontal line as the center of the horn antenna.

The positioning system enables the DUT to rotate in the whole sphere to satisfy the high-precision 3 D positioning. Each RF instrument and turntable controller communicate with the PC with automatic test software through the GPIB interface.

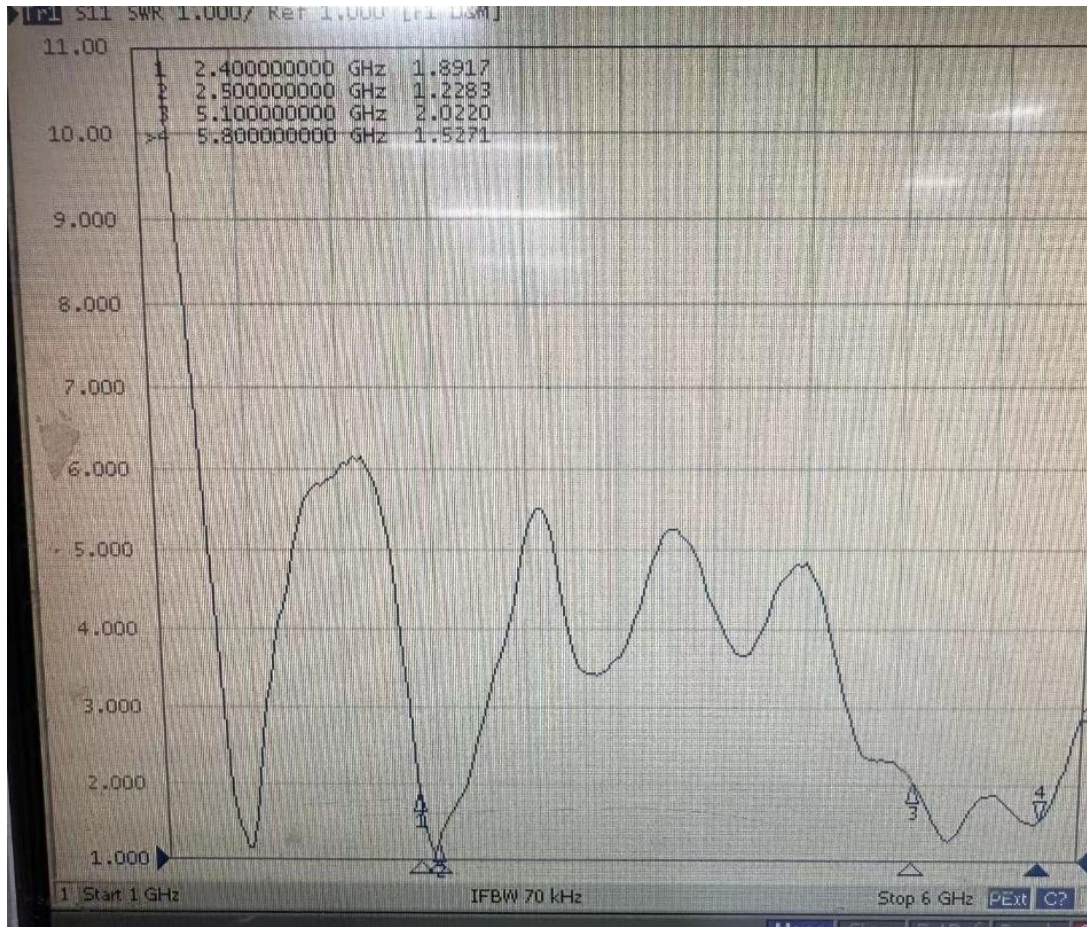
2.2.2 Antenna active parameters

			Out of the screen	
	802.11	channel number	TRP (db)	TIS (dbm)
WIFI	11B	CH1	11.17	
		CH7	11.46	
		CH13	11.57	-83.76
	11G	CH1	10.55	
		CH7	10.62	
		CH13	10.78	-69.14
	11N	CH1	10.36	
		CH7	10.45	
		CH13	10.58	-66.46
	11A	CH36	8.12	
		CH64	8.34	
		CH165	8.25	-68.25

2.2.3GPS test data



2.2.4 The GWB antenna has no passive parameters



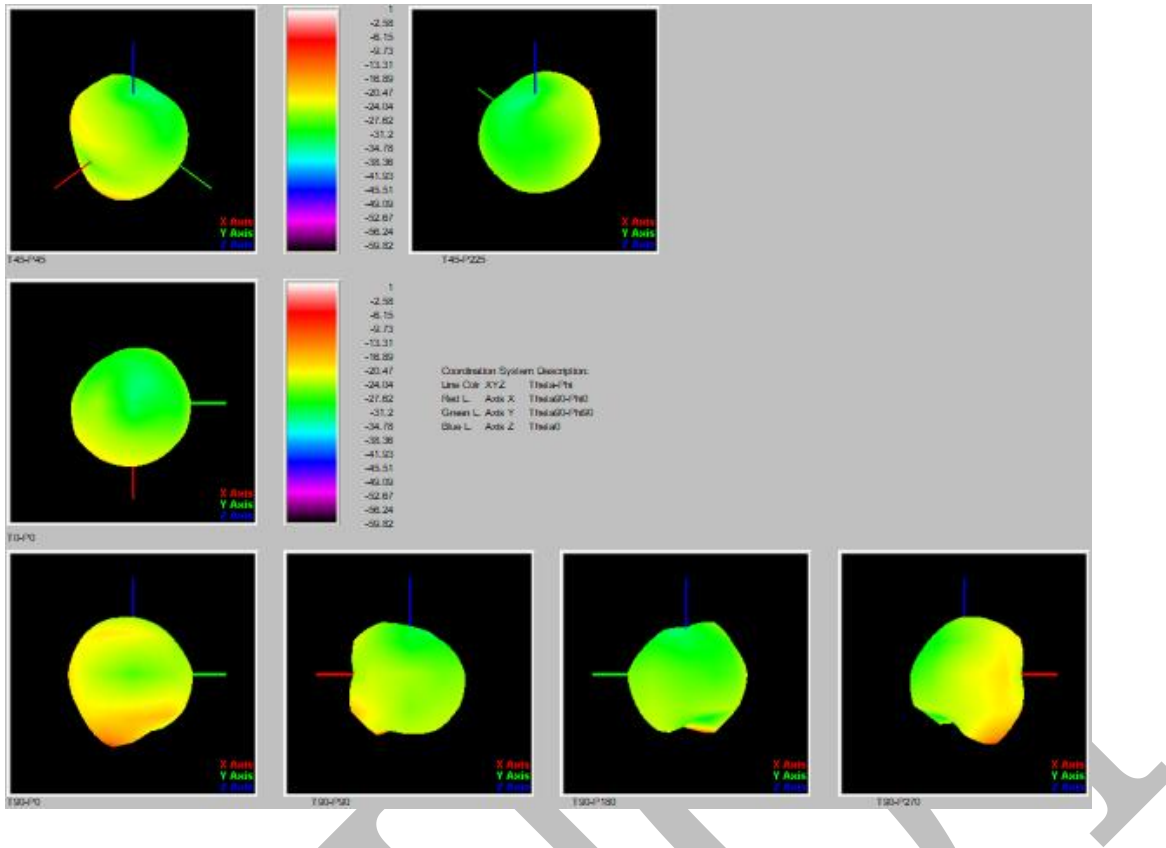
Freq	Effi (%)	Gain (dBi)
1550.0	32.7%	0.12
1560.0	33.5%	0.61
1570.0	34.6%	1.00
1580.0	33.2%	0.89
1590.0	32.5%	0.26
1600.0	31.7%	0.15

Freq	Effi (%)	Gain (dBi)
5100.0	30.2%	-4.72
5120.0	31.3%	-3.75
5140.0	31.6%	-3.35
5160.0	32.4%	-3.06
5180.0	32.5%	-3.01
5200.0	33.4%	-2.91
5220.0	34.9%	-2.11
5240.0	35.5%	-1.20
5260.0	34.4%	-0.87
5280.0	33.8%	-0.22
5300.0	32.7%	-1.29
5320.0	34.5%	-0.78
5340.0	34.8%	-1.07
5360.0	35.8%	0.37
5380.0	35.2%	0.48
5400.0	34.7%	-0.21
5420.0	34.1%	0.30
5440.0	33.7%	0.46

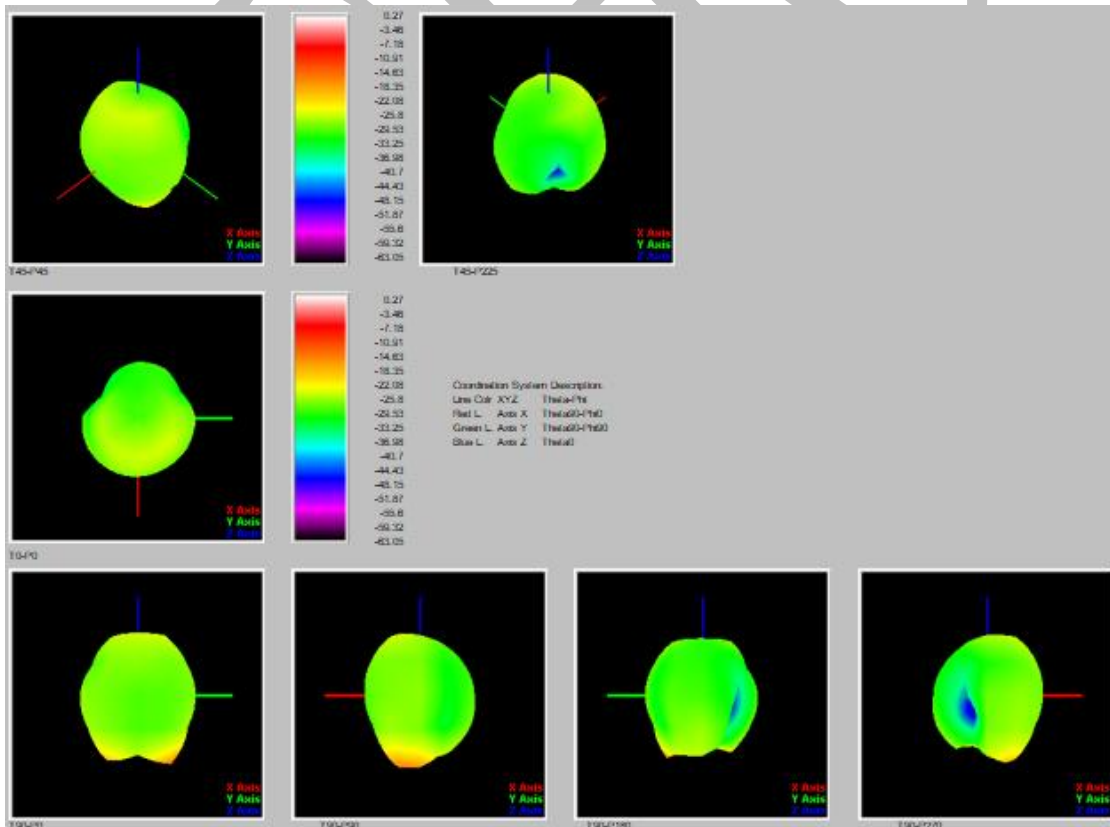
Freq	Effi (%)	Gain (dBi)
5460.0	36.4%	1.56
5480.0	35.8%	1.54
5500.0	34.1%	1.72
5520.0	35.7%	1.09
5540.0	37.6%	1.56
5560.0	38.4%	1.58
5580.0	39.7%	1.83
5600.0	40.1%	2.12
5620.0	41.3%	2.23
5640.0	40.6%	2.25
5660.0	40.2%	2.37
5680.0	39.7%	1.95
5700.0	38.9%	1.86
5720.0	37.5%	1.80
5740.0	36.8%	1.65
5760.0	35.8%	1.54
5780.0	35.5%	1.43
5800.0	34.6%	1.24

Freq	Effi (%)	Gain (dBi)
2400.0	22.3%	-1.49
2410.0	24.7%	-0.89
2420.0	25.9%	-0.48
2430.0	26.7%	-0.15
2440.0	27.5%	0.12
2450.0	28.6%	0.27
2460.0	27.2%	0.46
2470.0	25.5%	-0.21
2480.0	25.2%	-0.06
2490.0	24.8%	-0.35
2500.0	22.9%	-0.82

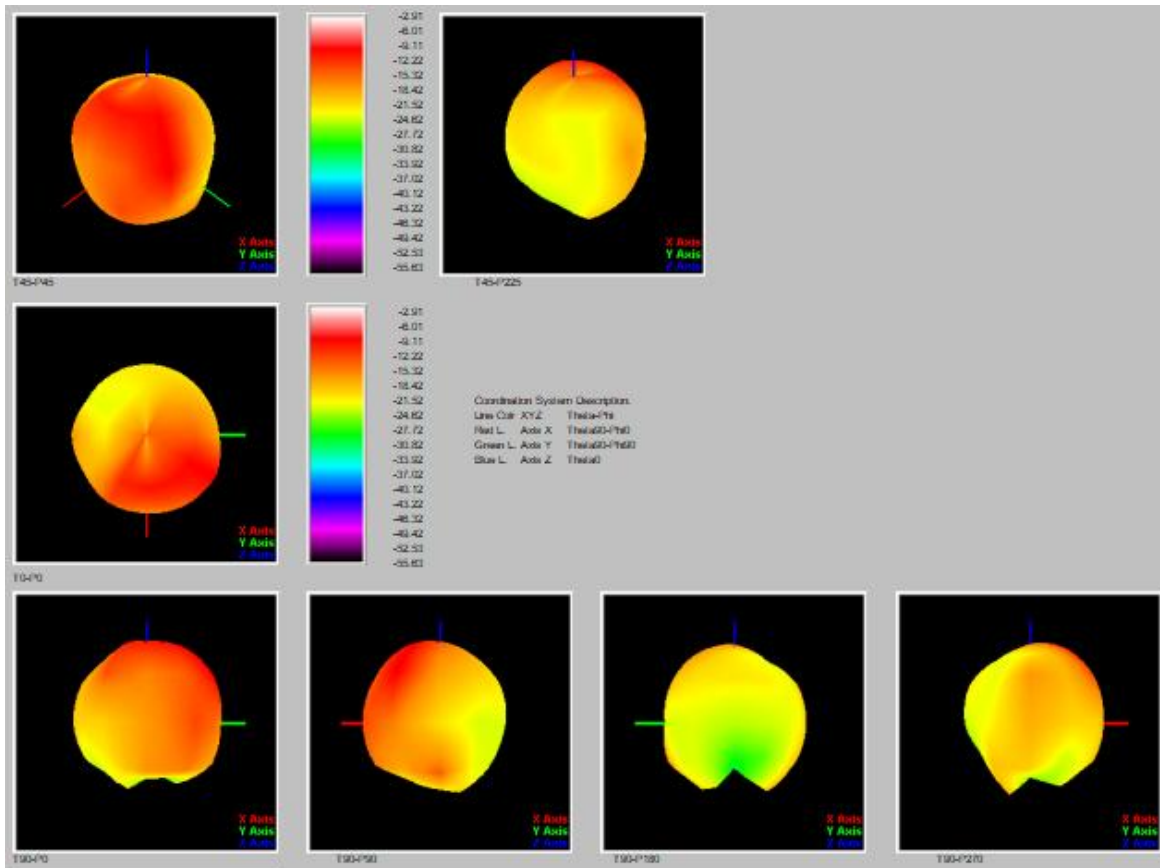
2.2.5 Antenna passive parameters-orientation diagram-1575 MHZ



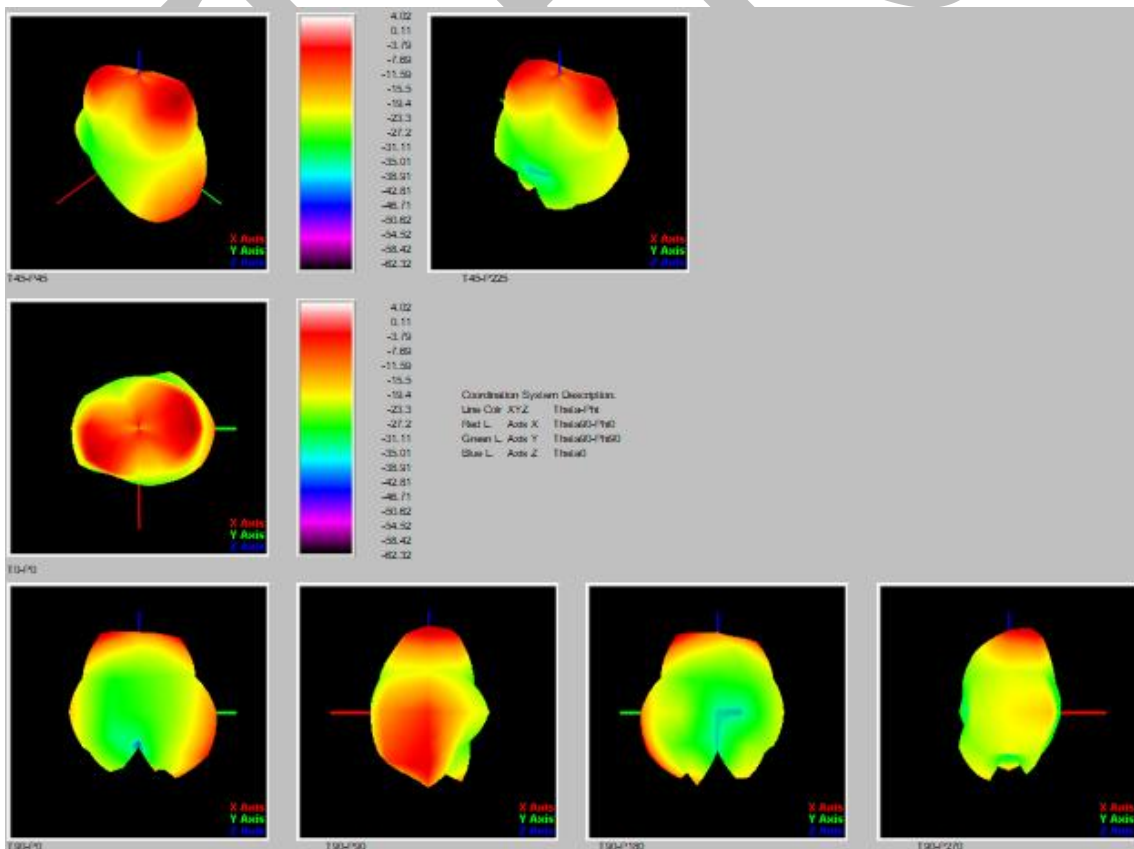
2.2.6 Antenna passive parameters-orientation diagram-2450 MHZ



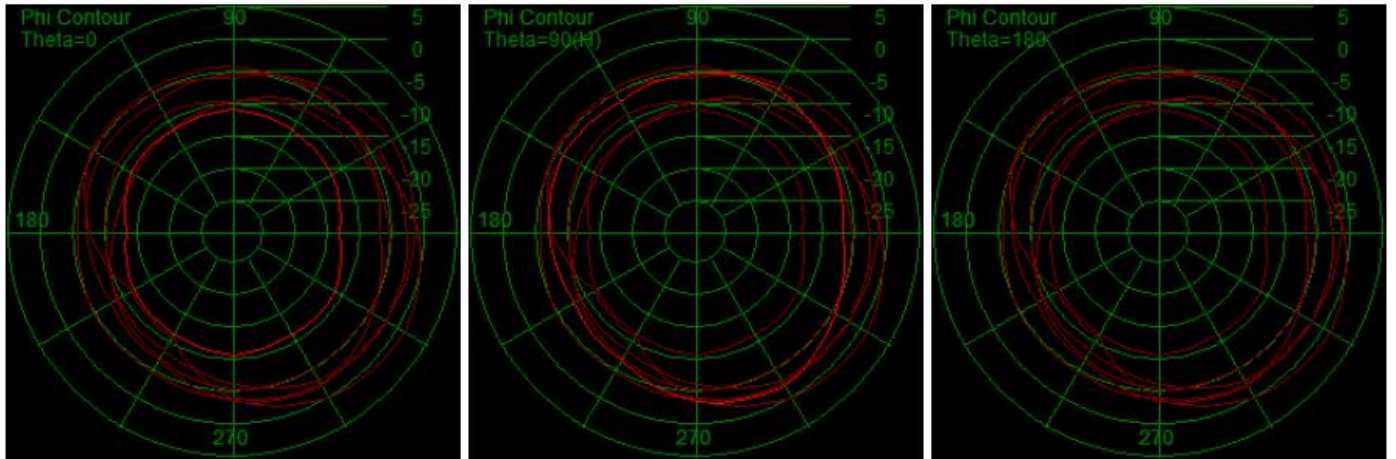
2.2.7 Antenna passive parameters-orientation diagram-5200 MHZ



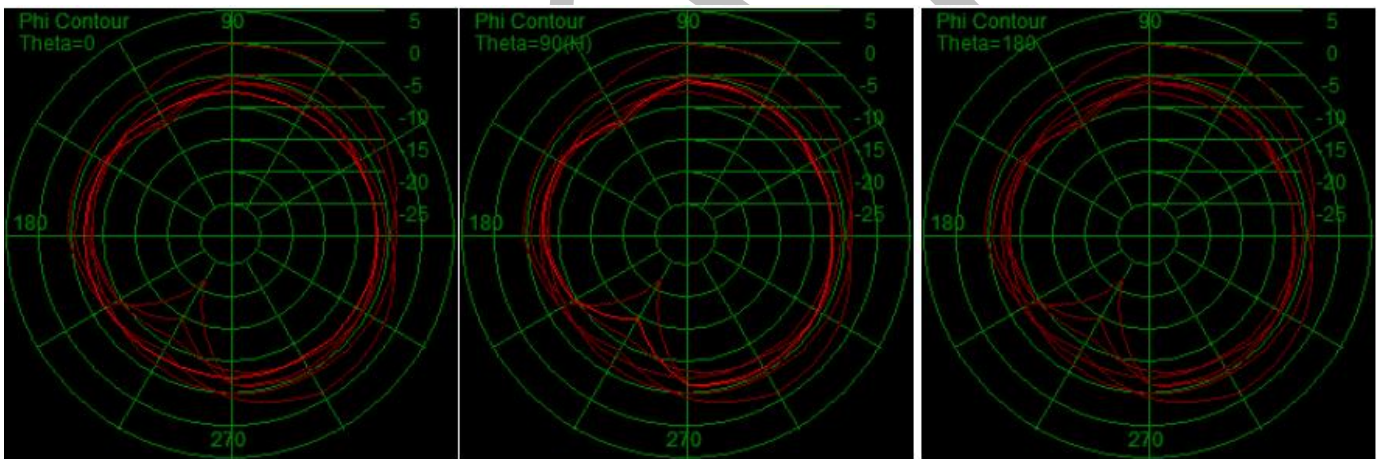
2.2.8 Antenna passive parameters-direction diagram-5700 MHZ



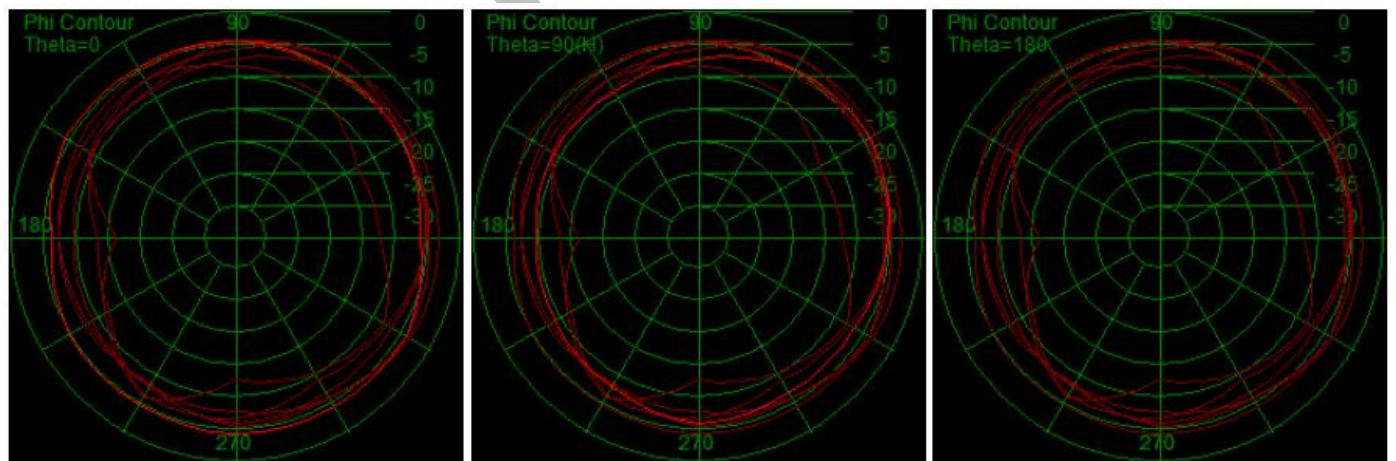
2.2.9 Antenna passive parameters-plan plan-1575 MHZ



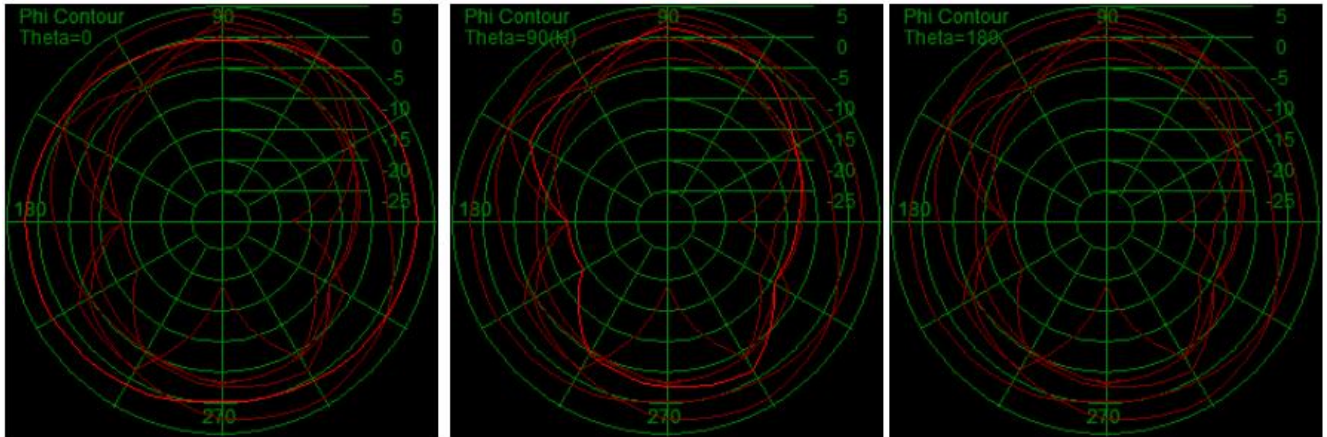
2.2.10 Antenna passive parameters-plan-2450 MHZ



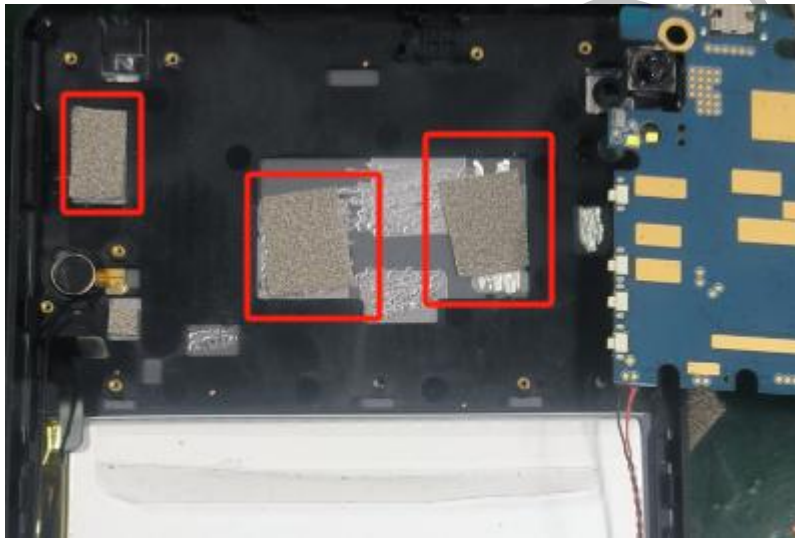
2.2.11 Antenna passive parameters-plan plan-5200 MHZ



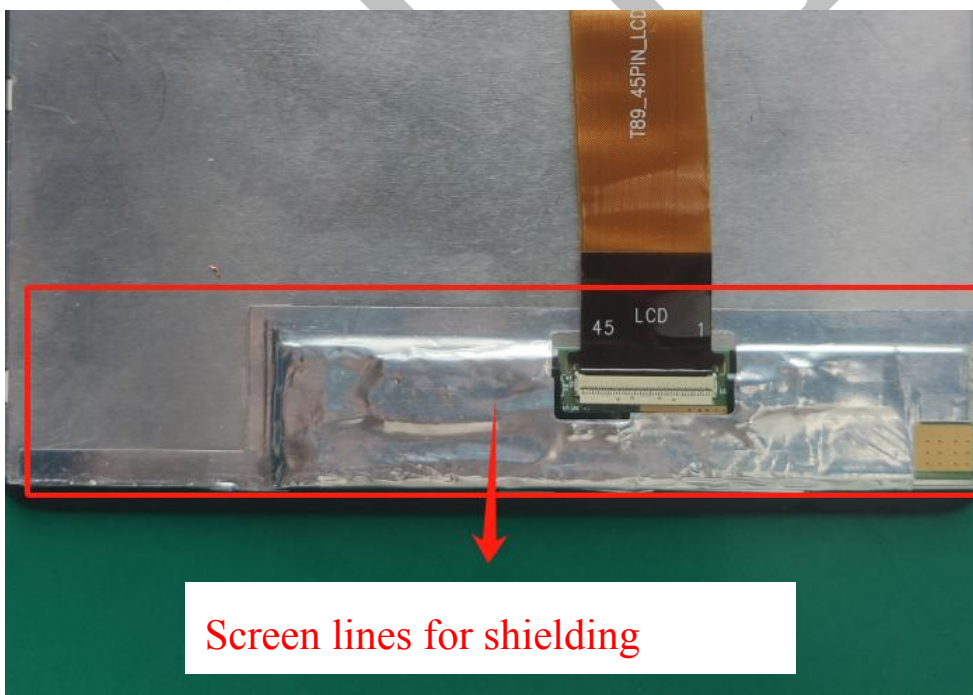
2.2.11 Antenna passive parameters-plan plan-5700 MHZ



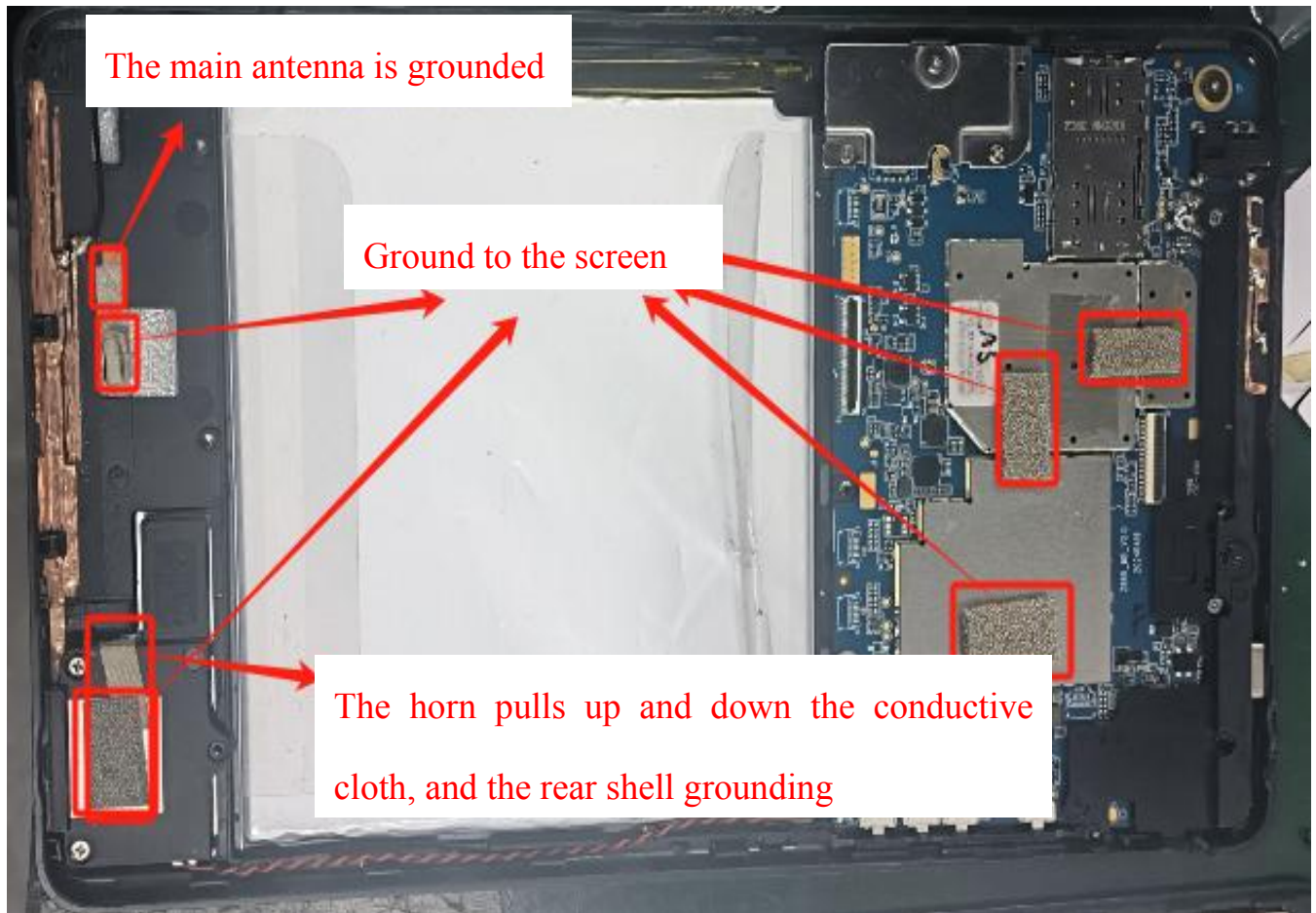
2.2.12, the treatment of the antenna environment



The rear shell is grounded to the motherboard



Screen lines for shielding



3. Engineering drawings

GWB antenna

[illegible]

4. Bill Of Material

619012 (T86L) -BOM

edition: T:A

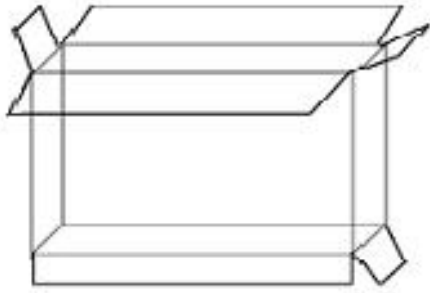
client: 619

Type of aircraft: 619012

Set a date: 2024/6/17

Item	*Material code	*Material name	name	*Machine type	Specification and model	colour	*UNIT	dosage	remark
1	619012-IA-TA	GSM antenna		T86L	GSM-FPC+CABLE+weld	black	PCS	1	
1.1	619012-IA-01-TA	FPC		T86L	GSM-FPC Electrolytic copper 73.47*14.58*0.12 mm	black	PCS	1	
1.2	619012-IA-02-TA	CABLE		T86L	Fourth generation terminal Ø 0.81*120.5mm	black	PCS	1	
1.3	619012-IA-04-TA	assemble		T86L	weld	black	PCS	1	
2	619012-IB-TA	DIV antenna		T86L	DIV-FPC Electrolytic copper 22.45*12.68*0.12 mm	black	PCS	1	
2.1	619012-IB-01-TA	FPC		T86L	DIV-FPC Electrolytic copper 22.45*12.68*0.12 mm	black	PCS	1	
3	619012-IC-TA	BGW antenna		T86L	BGW-FPC 30.20*17.25*0.12 mm	black	PCS	1	
3.1	619012-IC-01-TA	FPC		T86L	BGW-FPC 30.20*17.25*0.12 mm	black	PCS	1	
verify:			examine:			manufacture: BYZ			

5. Packaging diagram

Packaging method diagram		
product name	Three-in-one antenna	
Project model	T86L	
File details	Carton Size 1: 35*25*24.5cm Carton Size 2: Depending on the order quantity / volume	
	Boating method	Packaging by order quantity
	Total number of binning	Packaging by order quantity
labeling requirement	Tag Size 1: Universal use 100 * 100mm Tag Size 2: According to customer requirements	
matters need attention		
1. Due to the limitation of order quantity, the packing method of each material is the size of the box according to the total quantity of the order or the physical volume		
2. Storage temperature: room temperature		
3. Preservation conditions: store them in a cool and dry place		