



Antenna Debugging Report

Customer: Duoke

Project: N90

Structure: Xiao Xiang-13316888409

Radio Frequency: Long Yaobin-15874137313

Date: 2025-10-9



Antenna Debugging Report

Report Type:

Version: V1.0

Machine Status: Trial Production Machine

Debugging frequency band:

GSM:B2/B3/B5/B8

WCDMA:W1/W8

FDD-LTE: B1/B3/B7/B8/B19/B20/B28B/B28A

TDD-LTE: B40/B41

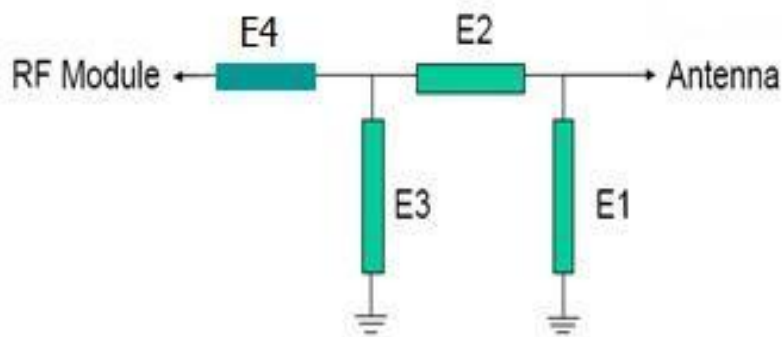
GPS and other satellite positioning antennas

2.4G/5G WIFI

BT

PCB small board (ant0):

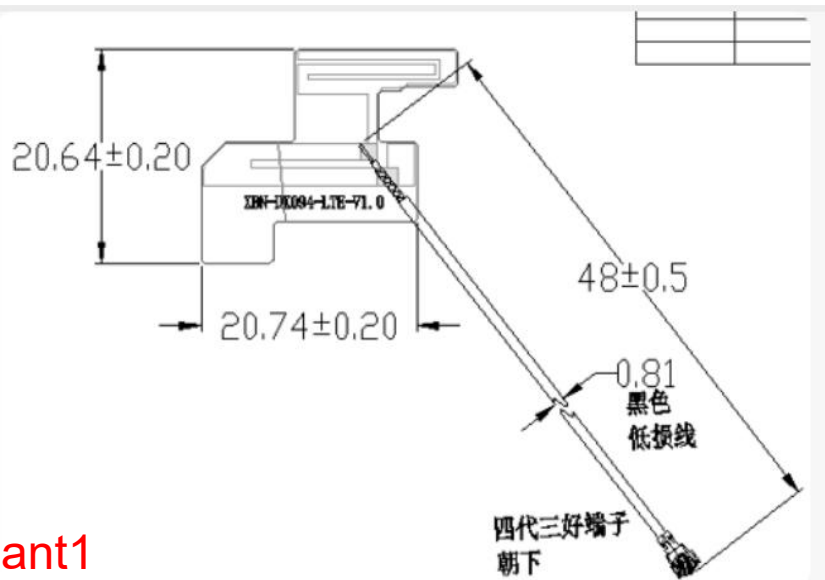
0201specs		
Element	Value	PCB Designator
E1 (0201)	33nH	C1
E2 (0201)	2. 2pF	R3
E3 (0201)	15nH	C2
E4 (0201)	0 Ω	R1



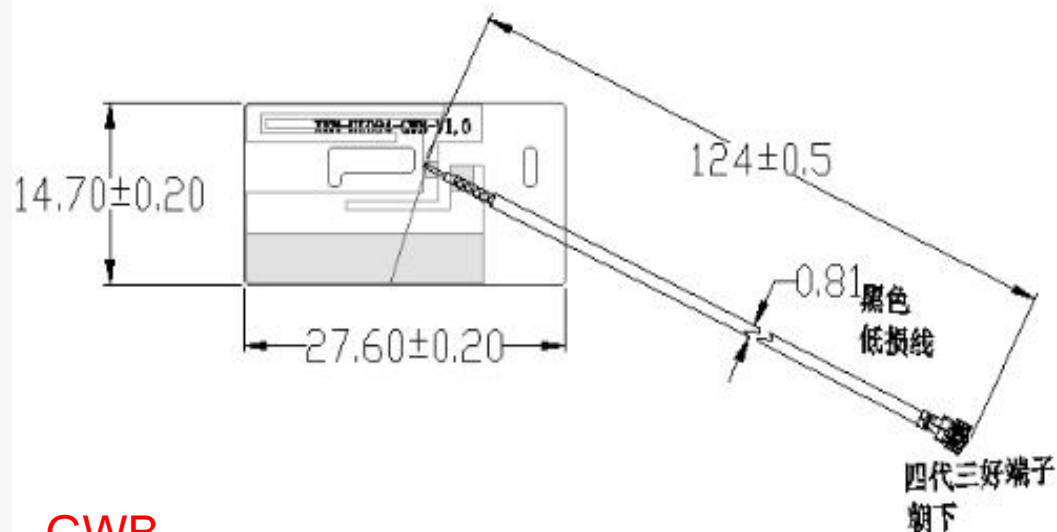
Antenna Specifications



ant0



ant1

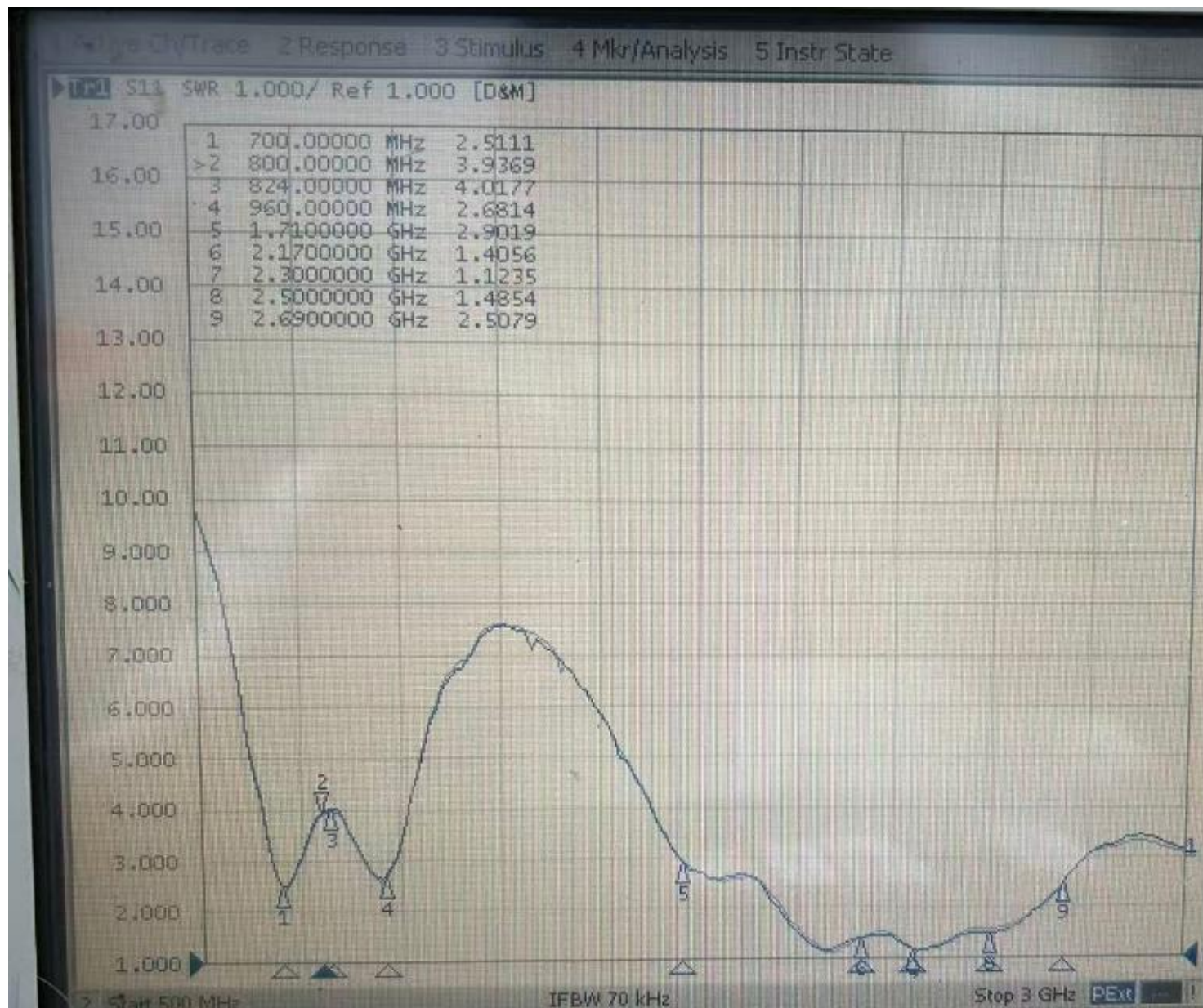


GWB

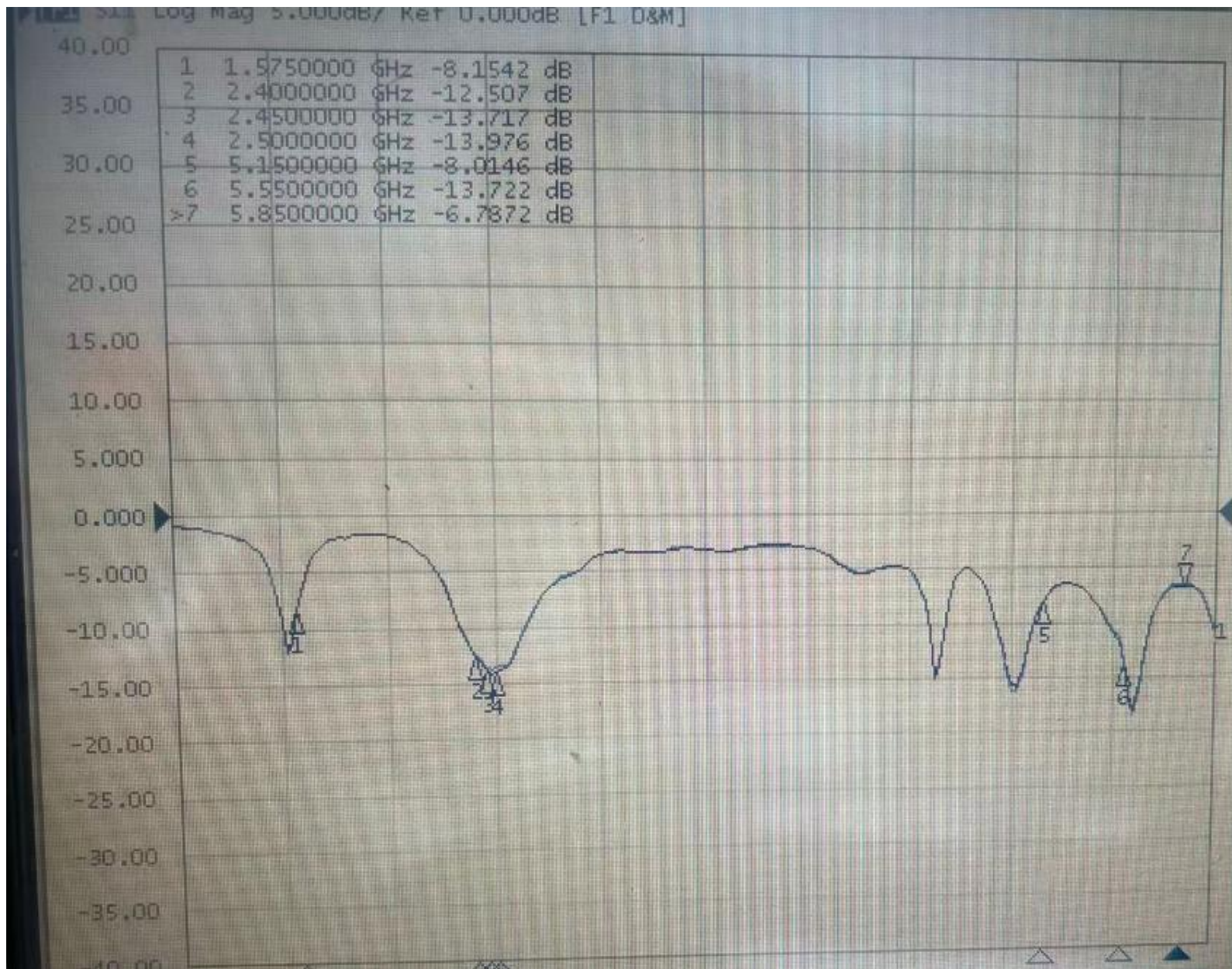
Passive main antenna LOG MAG

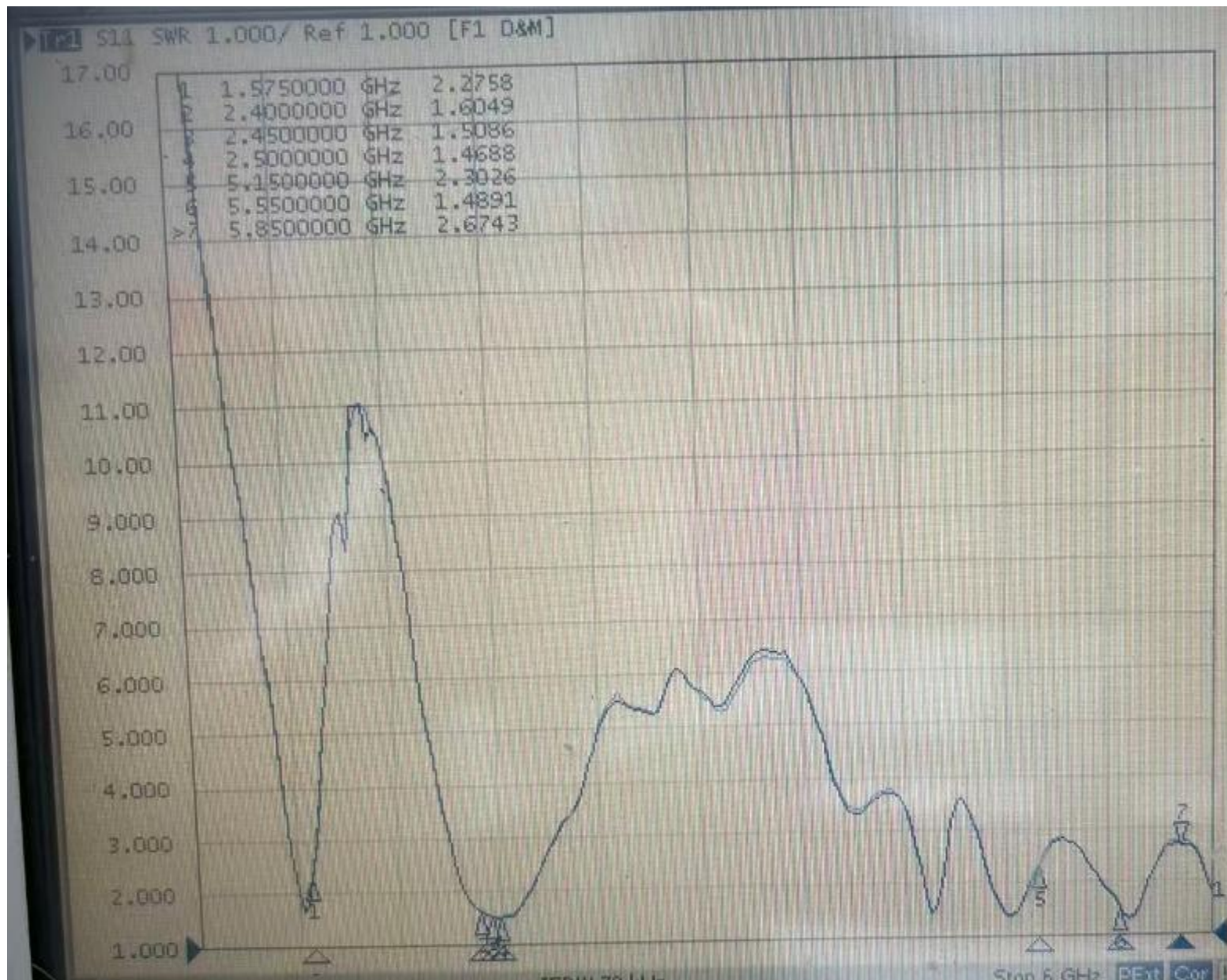


Passive main antenna SWR



GPS/Wifi/BT antenna LOG MAG





Diversity antenna LOG MAG



Diversity antenna SWR





Antenna gain

Frequency (MHZ)	Average Gain(dBi)	Peak Gain(dBi)
GSM850	-7.9	-4.5
GSM900	-6.2	-3.3
DCS1800	-5.2	0.7
PCS1900	-4.1	1.3
WCDMA B1	-4.3	1
WCDMA B8	-6.2	-3.3
LTE B1	-4.3	1
LTE B3	-5.2	0.7
LTE B7	-5.5	0.2
LTE B8	-6.2	-3.3
LTE B19	-7.2	-4.1
LTE B20	-7.1	-3.9
LTE B28A	-7.7	-4.5
LTE B28B	-7.5	-4.3
LTE B40	-3.9	1.5
LTE B41	-6.1	-2.8
WIFI 2.4G/BT	-4.5	0.5
WIFI 5.8G	-5.6	0.8
GPS	-3.8	0.5



Antenna Test Data

OTA Testing				
GSM	Band	Channal	TRP	Screen-off TIS
	GSM850	128	23.6	
		190	23.6	
		251	24.1	-100.4
	EGSM	1	25.1	
		62	24.6	
		124	24.5	-100.7
	DCS	512	23.5	
		698	22.5	
		885	22.3	-102.1
	PCS	512	23.1	
		661	23.7	
		810	24.1	-102.4



Antenna Test Data

OTA Testing				
WCDMA	Band	Channal	TRP	Screen-off TIS
	WCDMA Band 1	10562	15.7	
		10700	15.9	
		10838	16.3	-103.1
	WCDMA Band 8	2937	15.3	
		3013	15.9	
		3088	15.5	-102.7



Antenna Test Data

OTA Testing				
FDD-LTE (10M)	Band	Channal	TRP	Screen-off TIS
	FDD-B1-10M	50	18.1	
		300	17.2	
		550	17.9	-93.7
	FDD-B3-10M	1250	17.6	
		1575	17.2	
		1900	17.2	-91.6
	FDD-B7-10M	2800	18.7	
		3100	18.9	
		3400	17.5	-91.7
	FDD-B8-10M	3500	15.7	
		3625	16.5	
		3750	16.3	-91.2



Antenna Test Data

OTA Testing				
FDD-LTE (10M)	Band	Channal	TRP	Screen-off TIS
	FDD-B19-10M	6050	15.5	
		6075	15.4	
		6100	15.5	-91.3
	FDD-B20-10M	6200	15.8	
		6300	16.2	
		6400	15.4	-89.6
	FDD-B28A-10M	9310	15.1	
		9360	14.9	
		9410	15.1	-88.1
	FDD-B28B-10M	9460	14.8	
		9510	15.1	
		9560	16.1	-88.1



Antenna Test Data

OTA Testing				
TDD-LTE (20M)	Band	Channal	TRP	Screen-off TIS
	B40	38750	18.1	
		39150	18.8	
		39550	17.8	-90.5
	B41	40620		
		40140	16.6	-89.1
		41240		



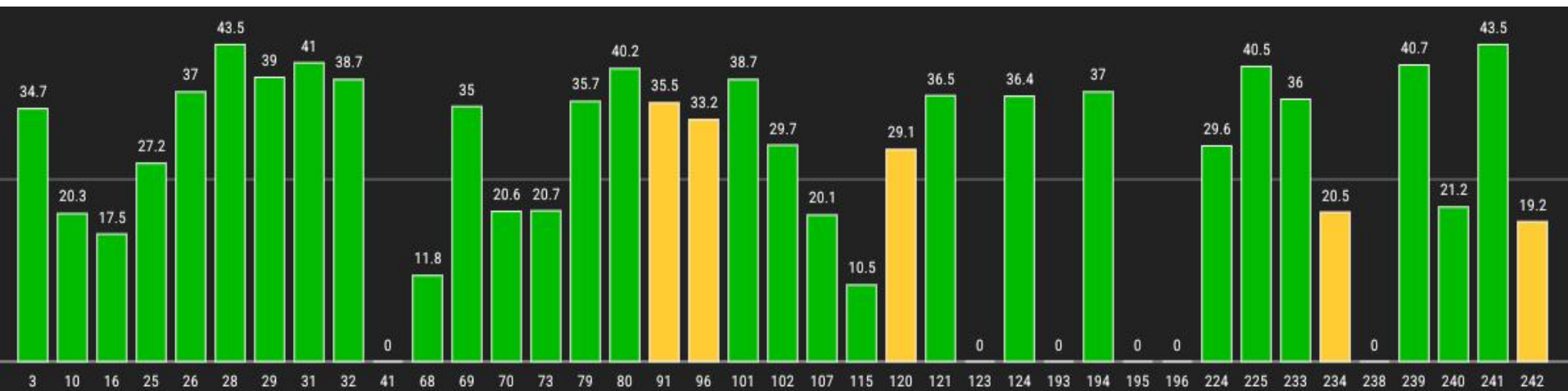
Antenna Test Data

OTA Testing				
2.4G	Band	Channel	TRP	Screen-off TIS
	b (11M)	1	12.5	
		6	12.4	
		13	13.5	-81.8
	g (54M)	1	10.7	
		6	10.5	
		13	11.2	-68.9
	n (MCS7)	1	11.5	
		6	10.9	
		13	11.5	-63.7
5.8G	a (54M)	36	11.3	
		149	12.4	
		165	12.1	-71.2
	n (MCS7)	36	10.4	
		149	11.9	
		165	11.6	-66.3
	AC (MCS8)	36	10.2	
		149	11.7	
		165	11.8	-65.1

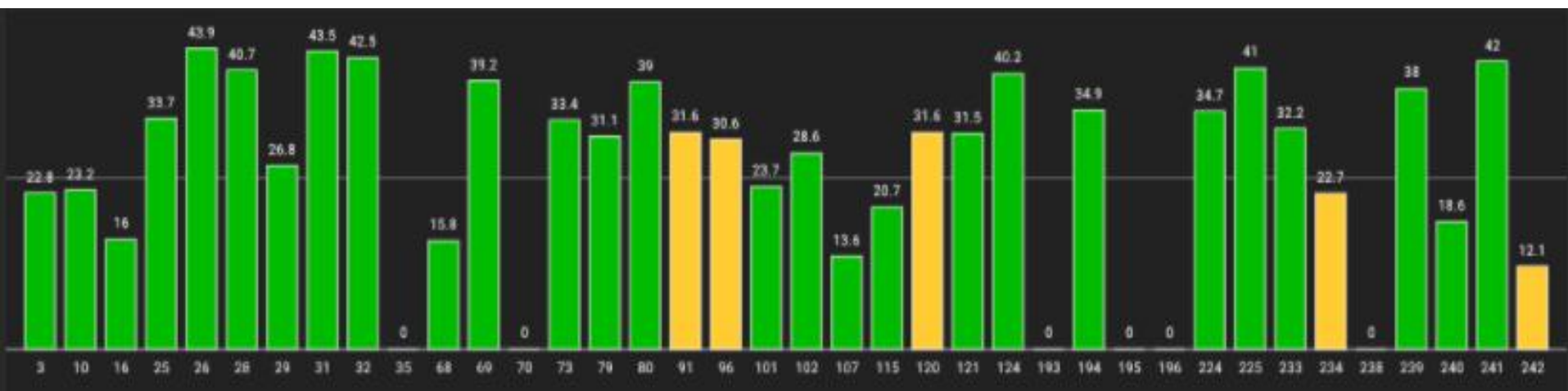
GPS antenna field test, location: rooftop of Xinbinuo Company

Weather: Sunny

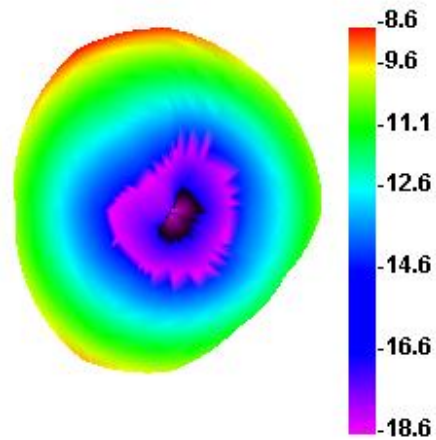
Front



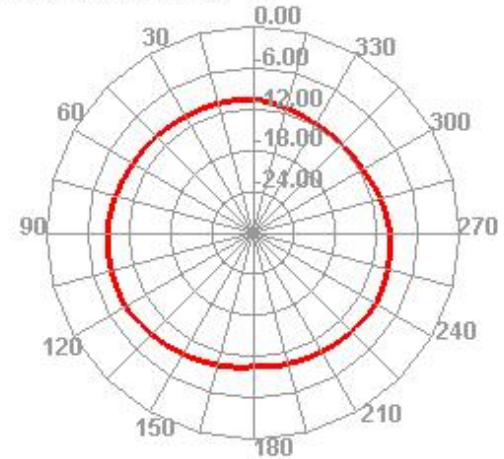
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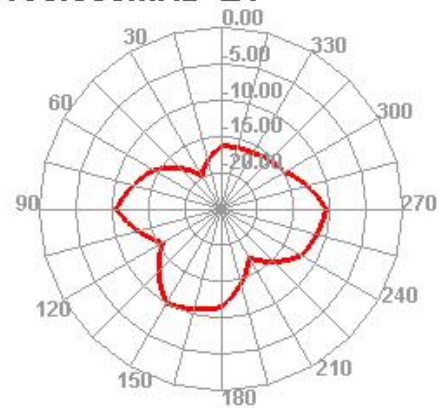
690.000MHz



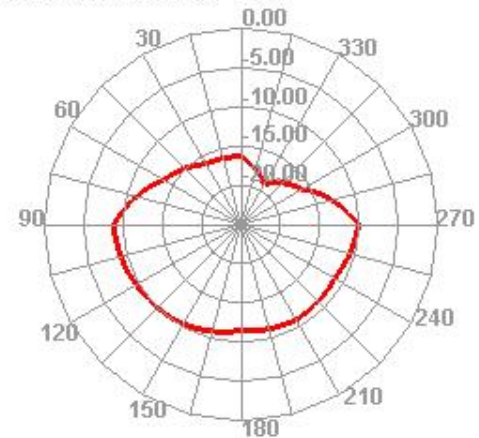
690.000MHz H



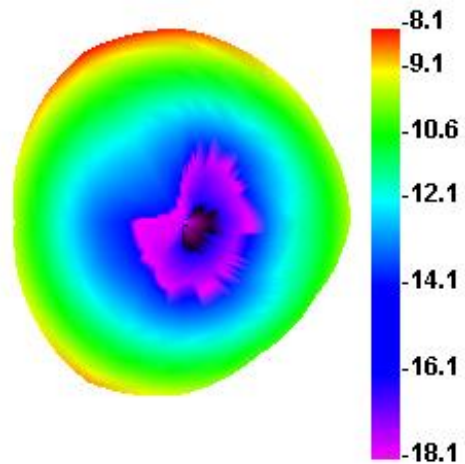
690.000MHz E1



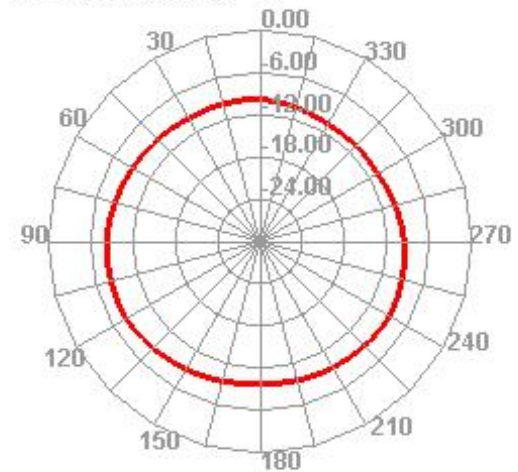
690.000MHz E2



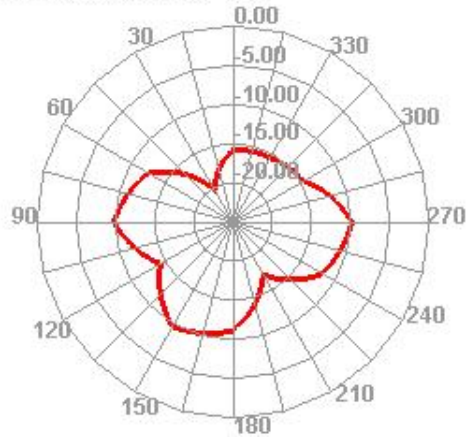
700.000MHz



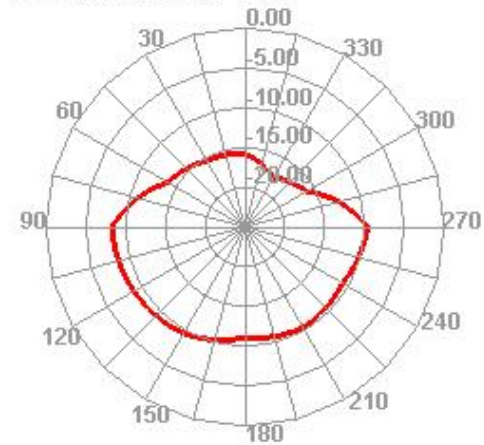
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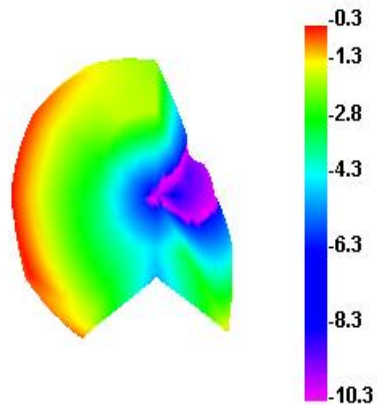
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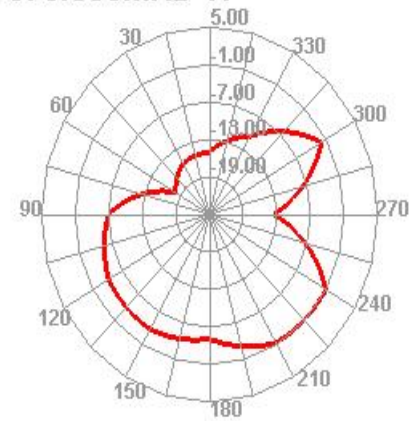
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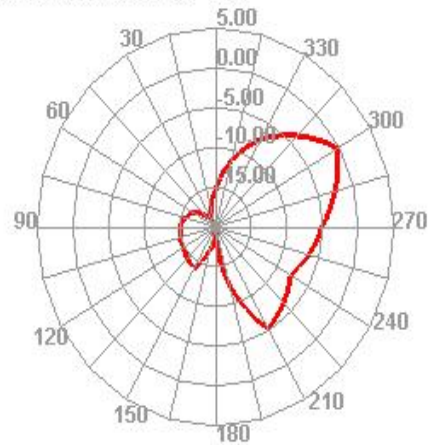
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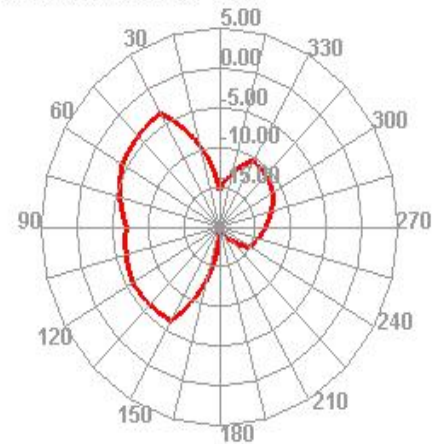
870.000MHz H



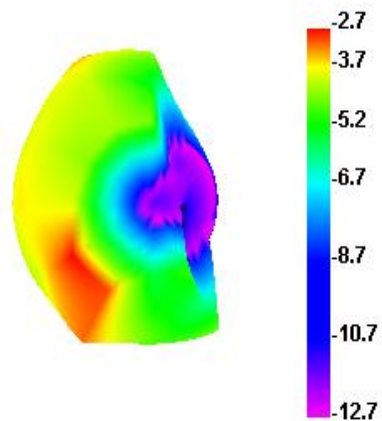
870.000MHz E1



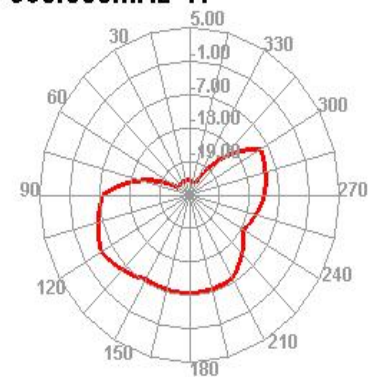
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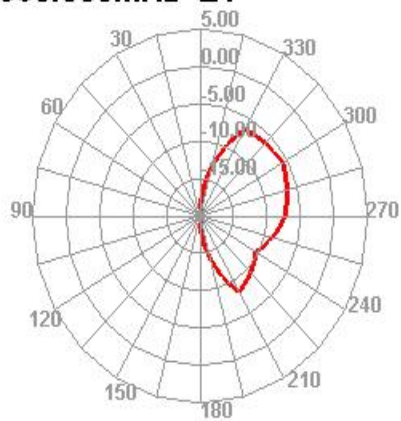
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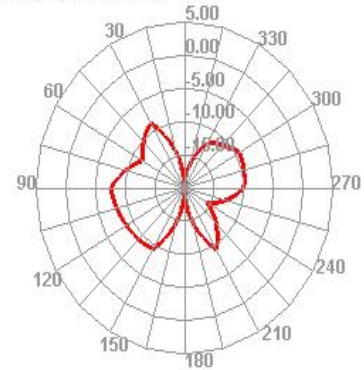
960.000MHz H



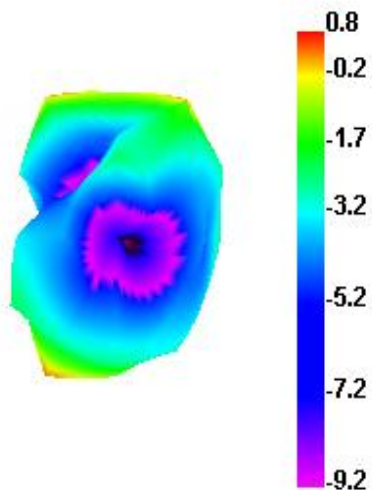
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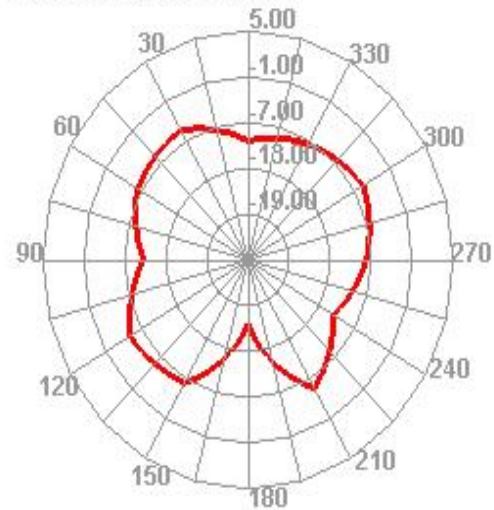
960.000MHz E2



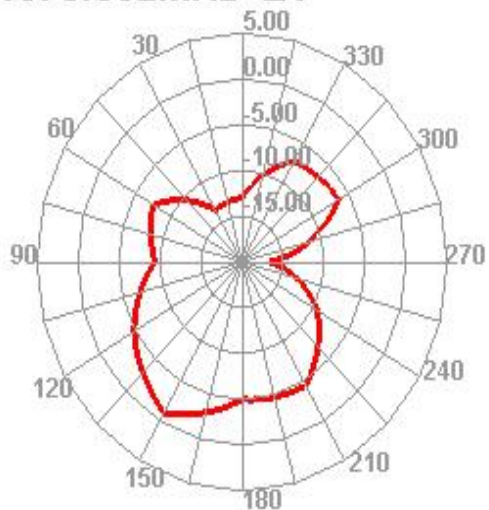
1573.332MHz



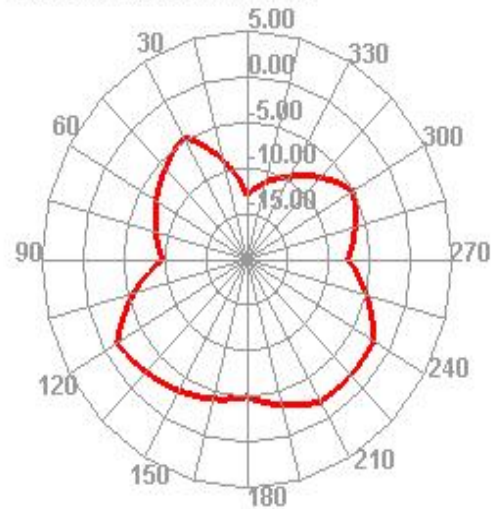
1573.332MHz H



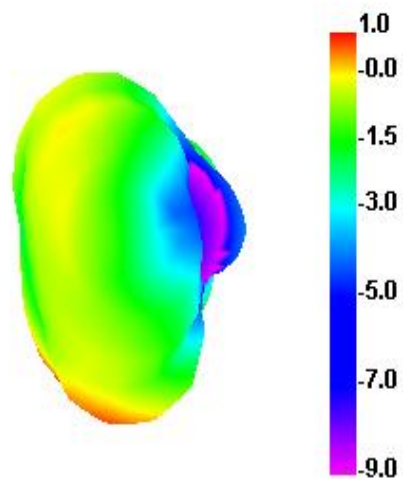
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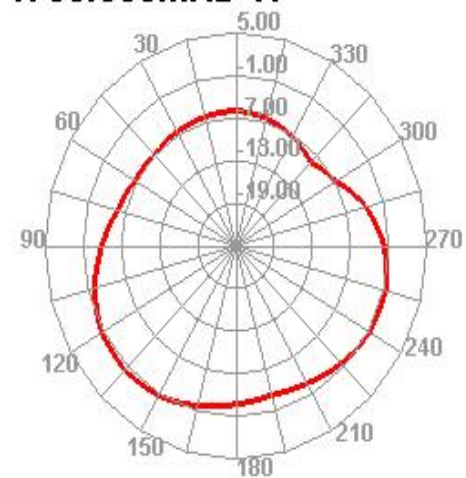
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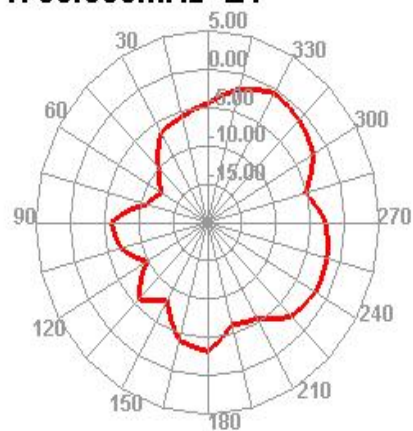
1700.000MHz



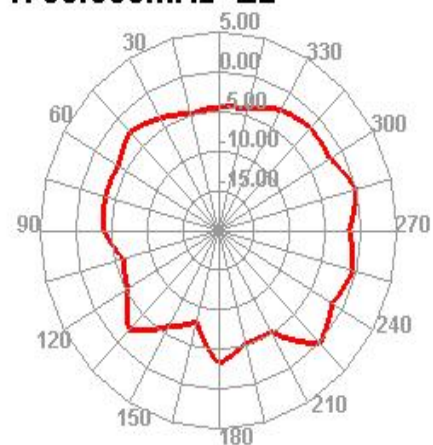
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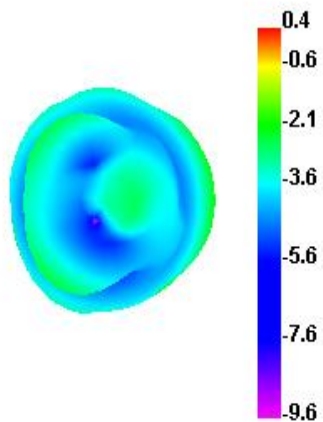
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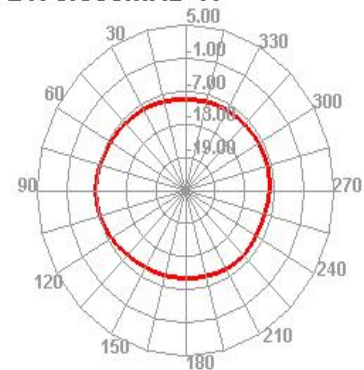
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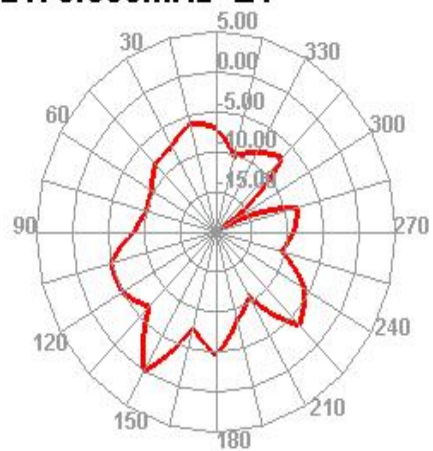
2170.000MHz



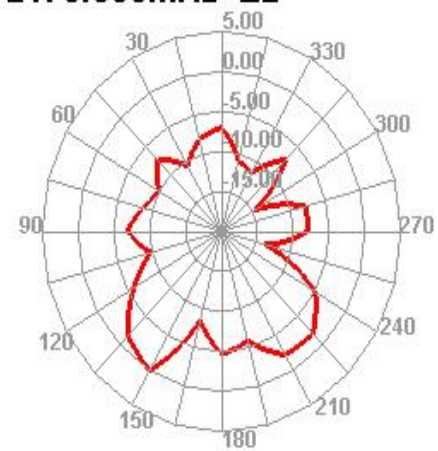
2170.000MHz H



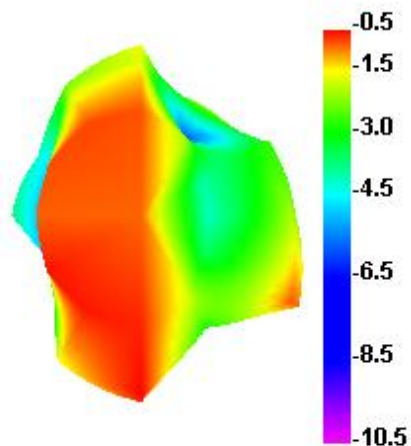
2170.000MHz E1



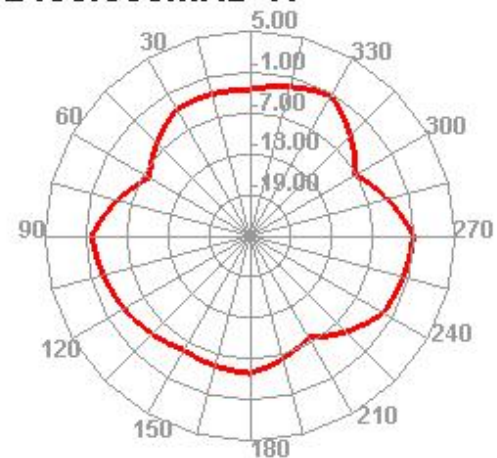
2170.000MHz E2



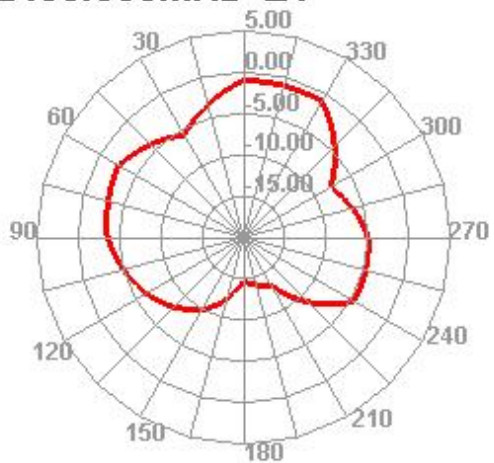
2400.000MHz



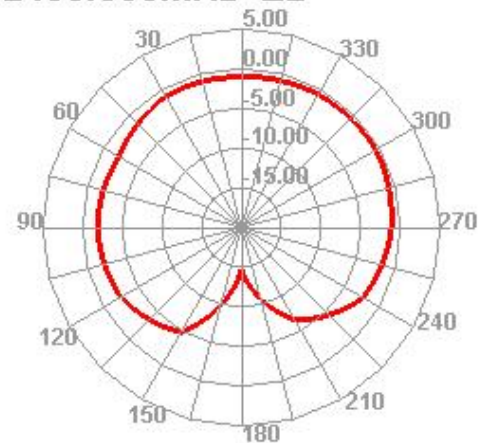
2400.000MHz H



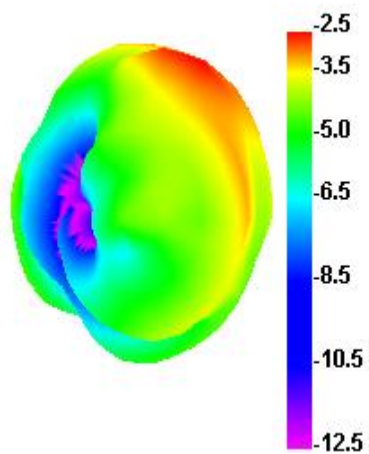
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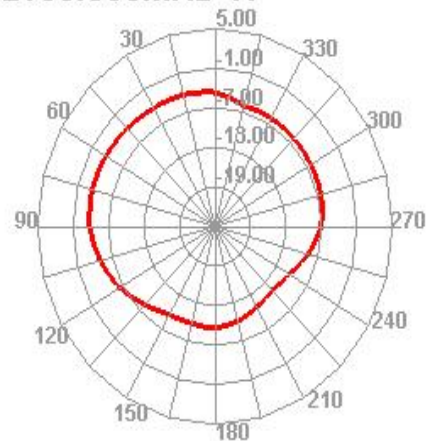
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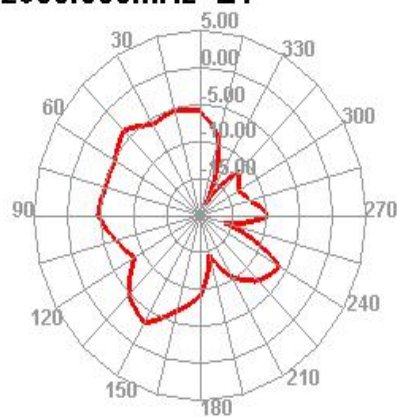
2650.000MHz



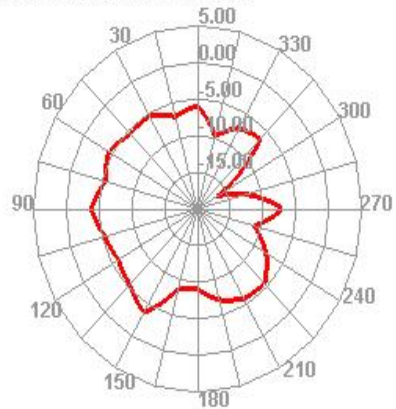
2650.000MHz H



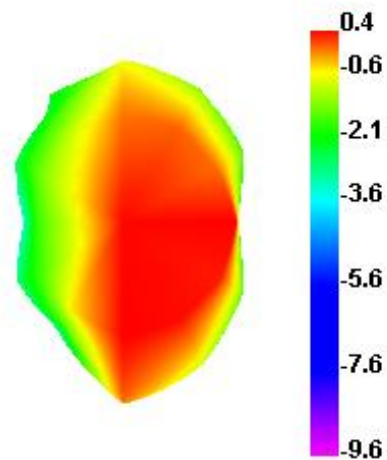
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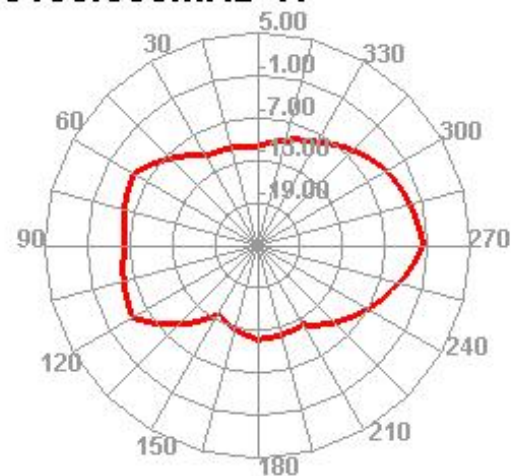
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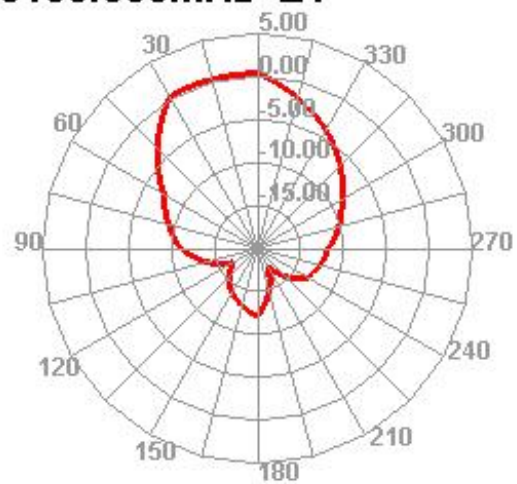
5100.000MHz



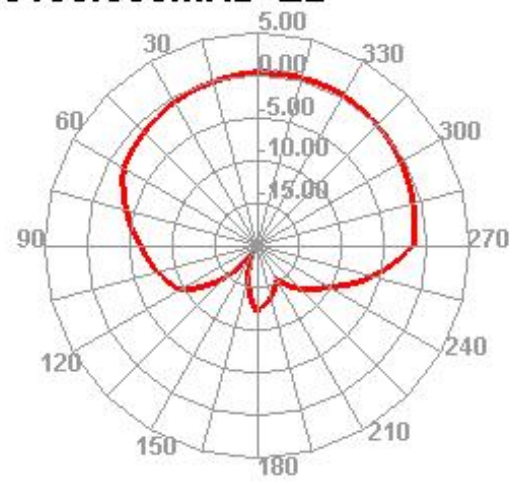
5100.000MHz H



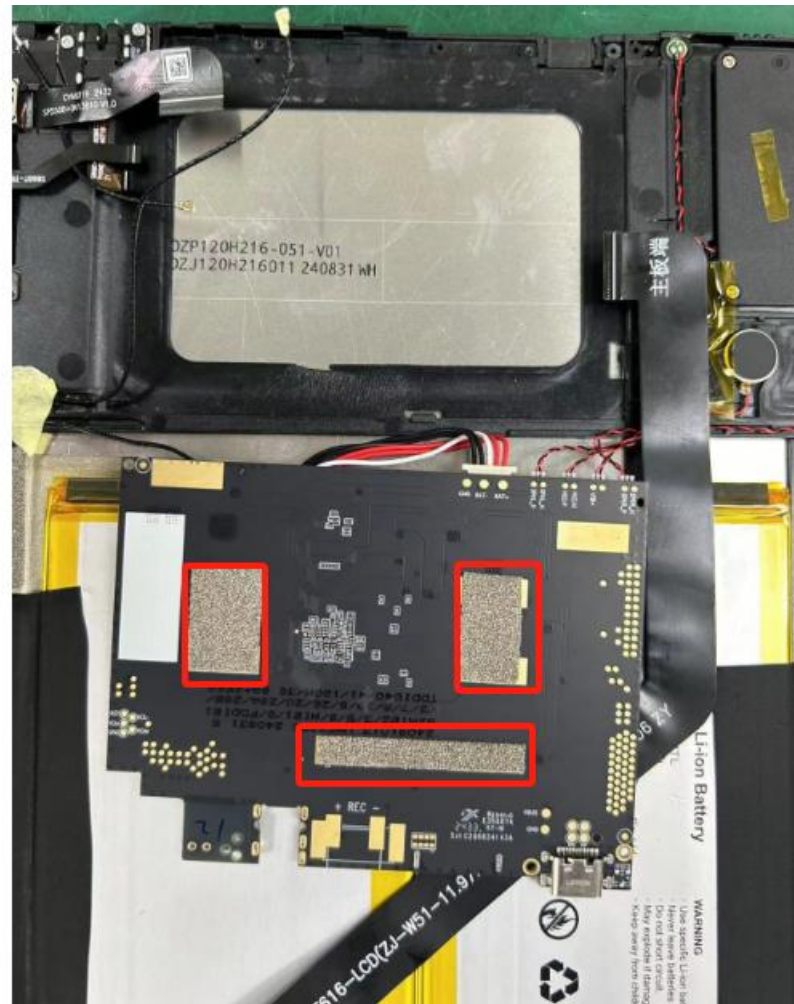
5100.000MHz E1



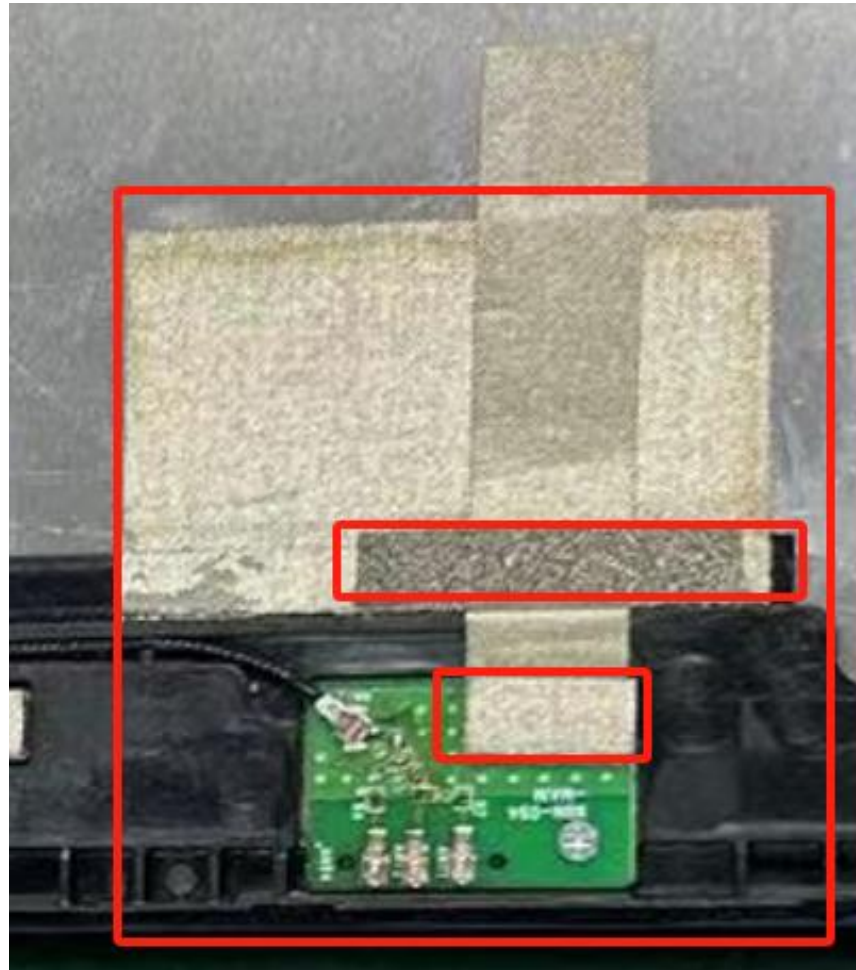
5100.000MHz E2



As shown in the red box in the figure: attach conductive foam with a height of 1mm to the back of the motherboard to fully ground it with the screen metal.



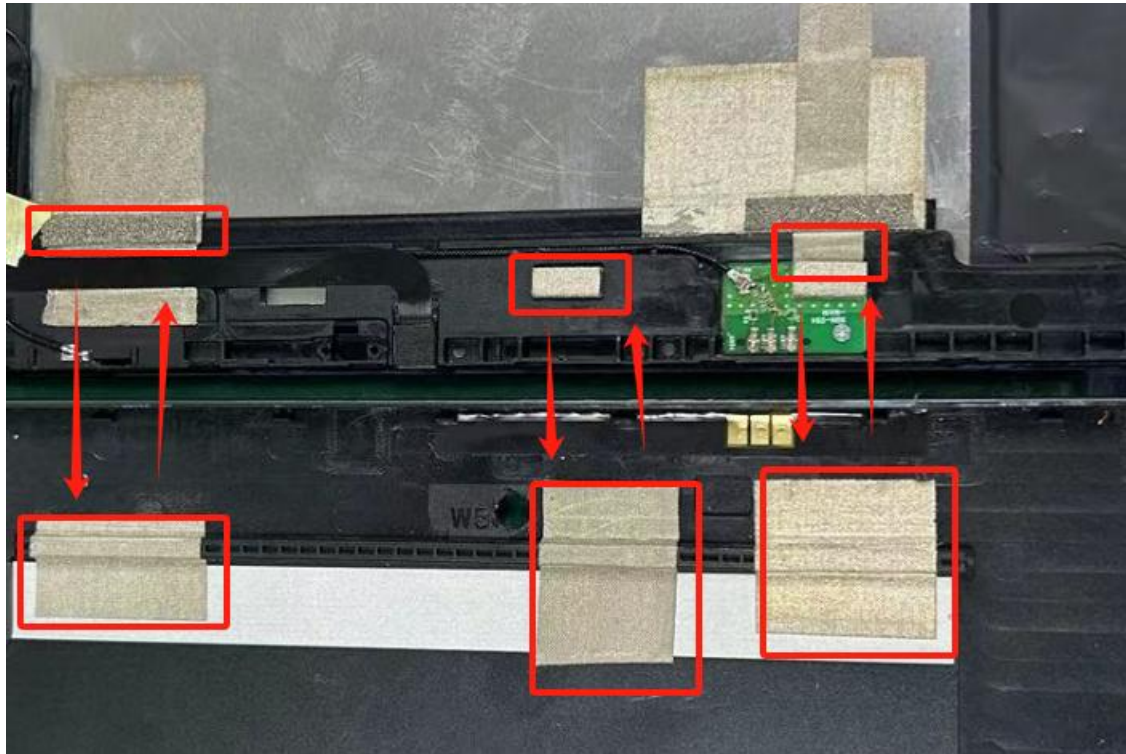
As shown in the red box in the figure: extend a large strip of conductive fabric from the metal part of the screen to the exposed copper area on the small board. Then, attach conductive foam with sufficient height above the small board to ensure full grounding with the metal casing.



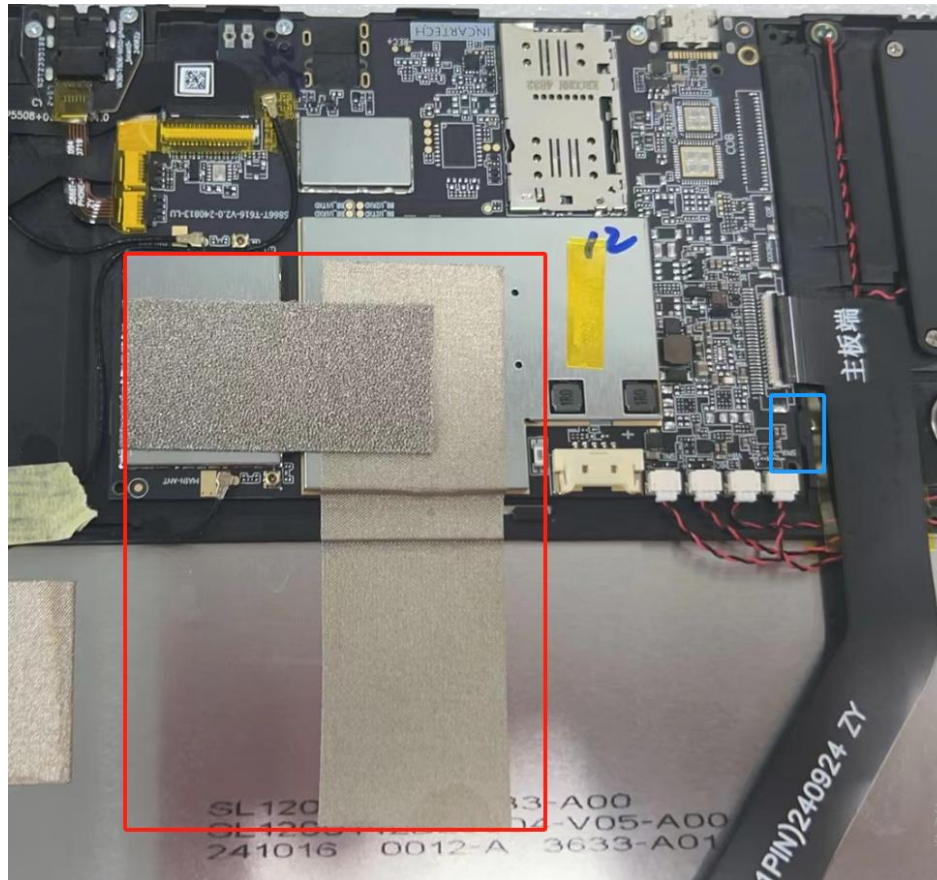
As shown in the red box in the figure: The triple-band antenna extends a large strip of conductive fabric from the metal part of the screen to the exposed copper of the antenna for grounding. At the green box, a 0.5mm conductive sponge is attached and grounded to the metal casing.



As shown in the red box in the figure: extend a large piece of conductive cloth from the laser-engraved metal bottom case to above the plastic bracket, ensuring full grounding with the main antenna sub-board, the shield metal, and the tri-band antenna.



The plastic clip in the blue frame cannot secure the motherboard, causing the motherboard to lift, which significantly affects the antenna TIS. The motherboard environment treatment has been changed as shown in the red frame: first, pull a large strip of conductive fabric from the motherboard shield extending under the battery to press down the motherboard and prevent it from lifting. Then, attach a 1.5mm high conductive sponge to make full grounding contact with the metal case at the laser-engraved area.



Add new environment handling

As shown in the figure: First, apply insulating tape above the backlight IC circuit on the motherboard and the screen flexible cable (as shown in Figure 1#), then extend a large piece of conductive cloth from the shielding cover to shield the motherboard backlight circuit and the screen flexible cable (as shown in Figure 2#). This reduces screen brightness interference in the device.

