

SUNNYWAY TECHNOLOGY(CHINA)

ANTENNA SPEC

Customer name: Hot pepper	Entry name: A85D
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Working band: GSM Band2/3/5/8+WCDMA Band2/4/5+LTE Band2/4/5/12/17/25/26/66/71
GPS L1 (1575.42MHz) +WIFI 2.4G&5G+BT

Sunnyway Material specification

Specification type	Sunnyway number	Customer number
MAIN Antenna	SZ24296IB75-1	HJ-20-A85D-001
DIV Antenna	SZ24296IB75-2	HJ-20-A85D-002
GWB Antenna	SZ24296IB75-3	HJ-20-A85D-003

Revision history

Date of preparation/change	Change content	Altered person	Edition
2024.06.21	New issue	Xu Wei	A

Sunnyway Countersign column

R&D	ME:	To examine:	QE:	Approval:
	RF:	To examine:		

Customer will sign the column

Electronic Engineer	Project manager	Structural Engineer	Quality Engineer

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Directory

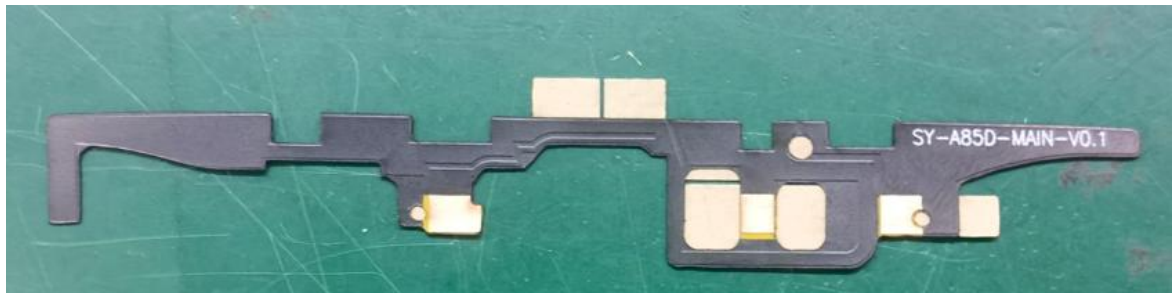
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1. Project information

1.1 Mockup picture

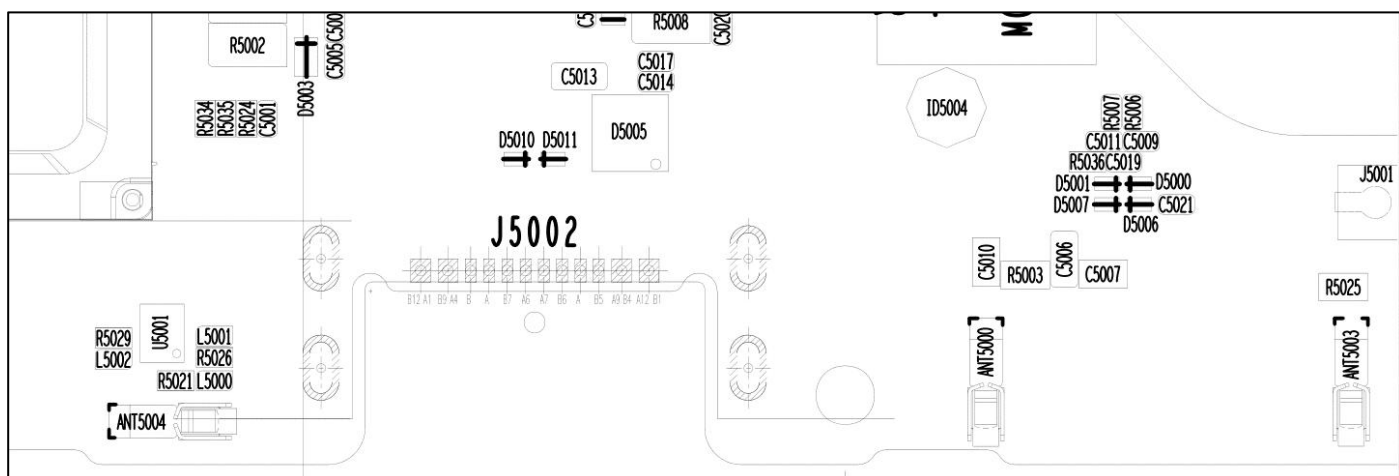


1.2 Antenna product picture





2. Matching circuit

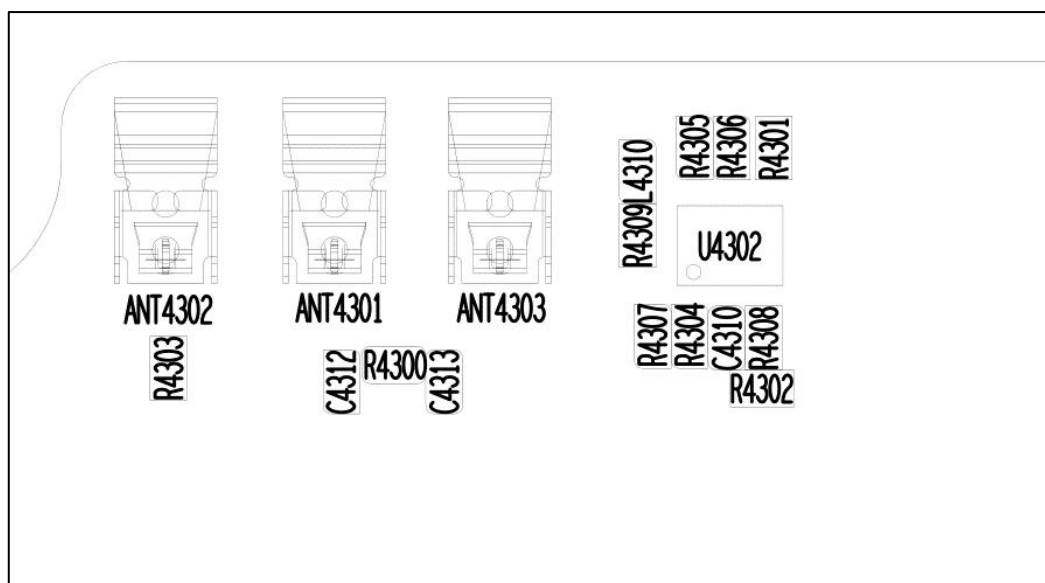


MAIN ANT Matching circuit

Element	Value	Element	Value	Element	Value
ANT500	Reserve	C5010	0.5pF	R5025	0ohm
ANT5003	Reserve	R5003	1.5nH	R5021	0ohm
ANT5004	Reserve	C5006	12nH		
		C5007	0ohm		

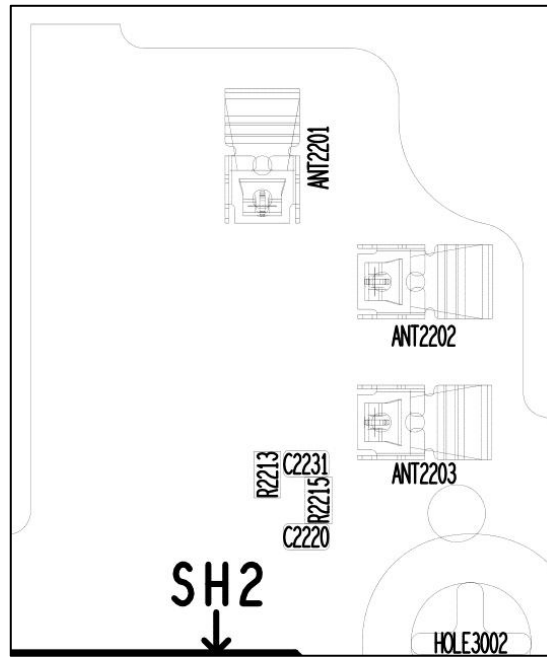
MAIN ANT Matching circuit For Tuner

Route	Element	Value	Band
RF1	R5026	0ohm	GSM900/1800/1900+W2/4+LTE B2/4/25/66
RF2	L5001	6.8nH	GSM850+LTE Band5/26+W5
RF3	L5002	22nH	LTE B12/17
RF4	R5029	N/A	LTE B71
公共端	L5000	27nH	



DIV ANT Matching circuit			
Element	Value	Element	Value
ANT4301	Reserve	C4312	10nH
ANT4302	N/A	R4300	33PF
ANT4303	Reserve	C4313	N/A
		R4303	N/A
		R4309	0ohm

DIV ANT Matching circuit For Tuner			
Route	Element	Value	Band
RF1	R4307	0ohm	GSM900/1800/1900+W2/4/8+LTE B2/4/7/8/66/41
RF2	R4304	4.7nH	GSM850+W5+LTE Band5
RF3	R4305	18nH	LTE B12/17/28A&B
RF4	R4306	N/A	LTE B71
公共端	L4310	22nH	



GWB ANT Matching circuit			
Element	Value	Element	Value
ANT2201	Reserve	C2220	N/A
ANT2202	Reserve	R2215	0ohm
ANT2203	Reserve	C2231	N/A
		R2213	0ohm

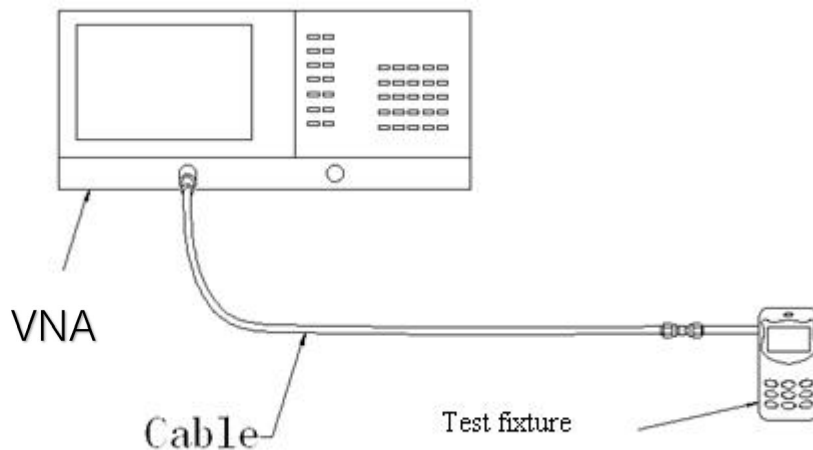
3. Antenna passive testing data

3.1 S11 Description of the test method

Test the equipment: Vector network analyzer (Agilent E5071C)

Test methodology: Use a 50 ohm CABLE cable to export from the instrument test port, use the calibration piece to calibrate and connect the SMA connector of the test fixture, and record the return loss and standing wave ratio corresponding to the relevant frequency point.

Below is a schematic picture of the test:



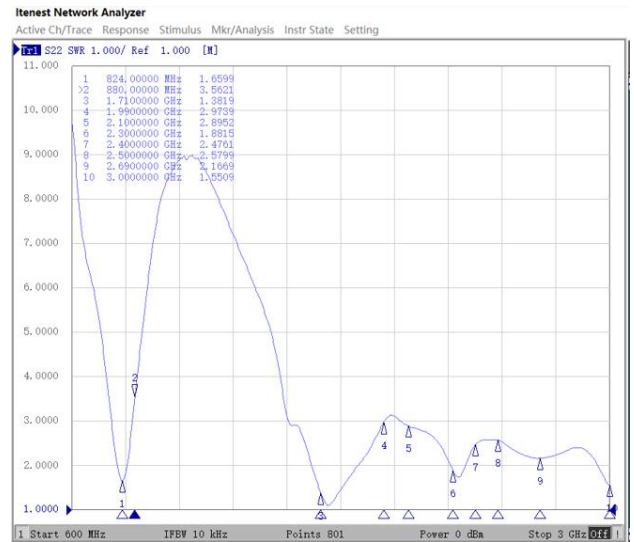
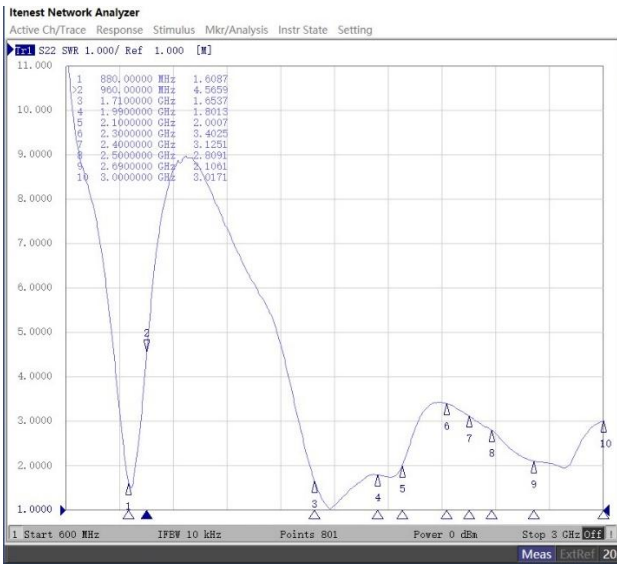
Test schematic diagram

3.2 S11 Test parameters

MAIN VSWR

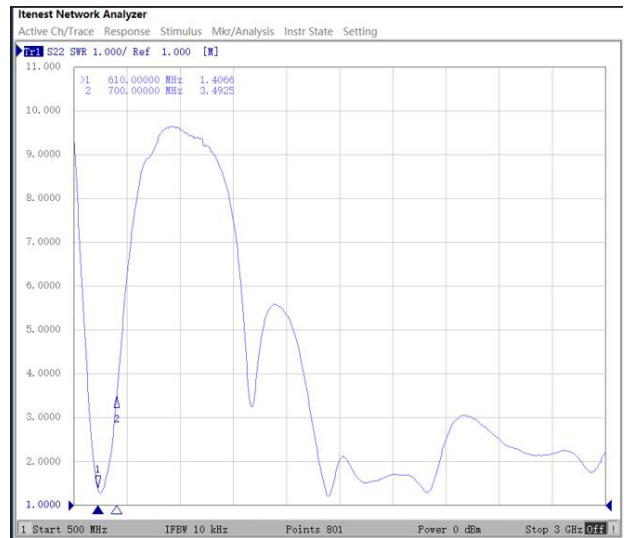
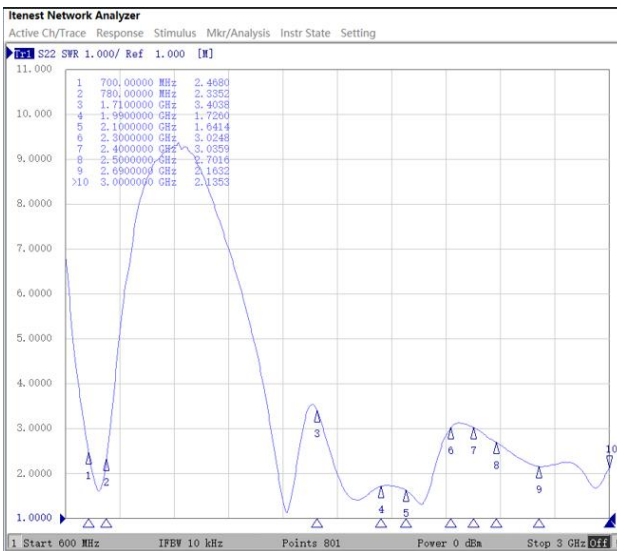
Antenna tuner works in RF1 channel

Antenna tuner works in RF2 channel

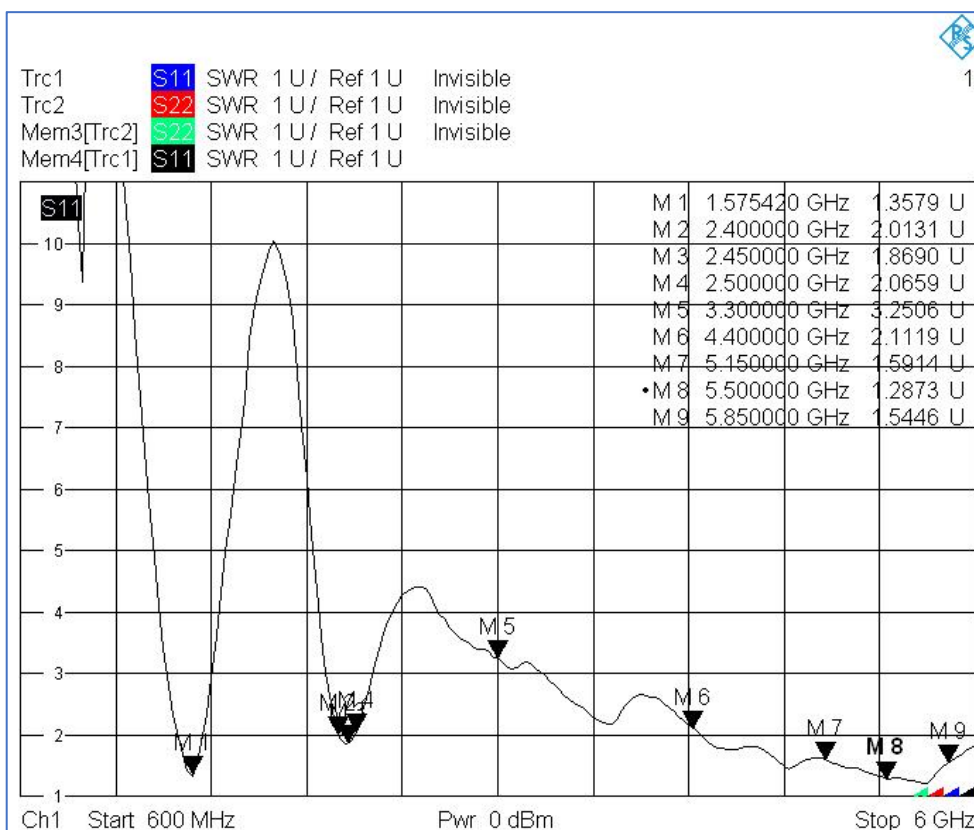


Antenna tuner works in RF3 channel

Antenna tuner works in RF4 channel



GWB VSWR

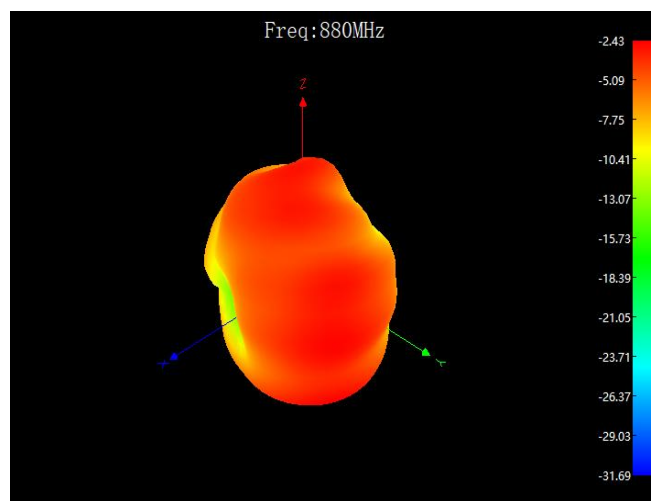
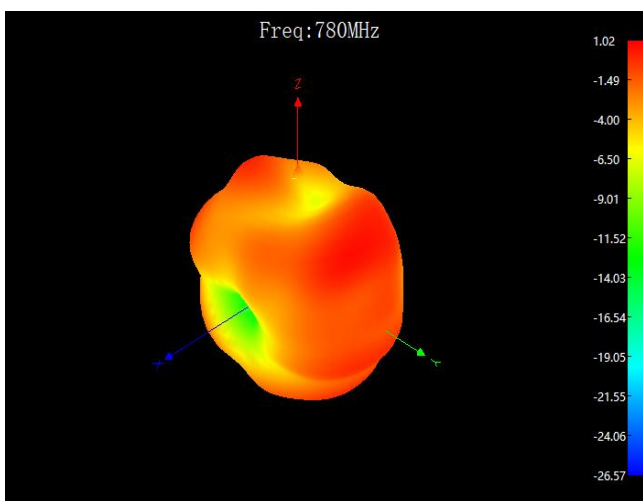
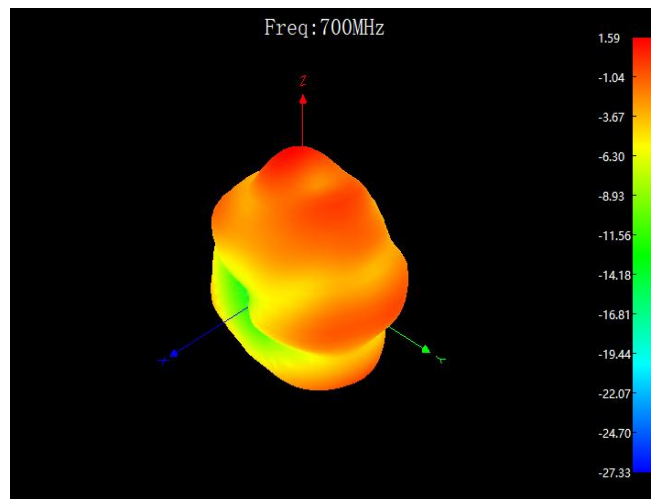
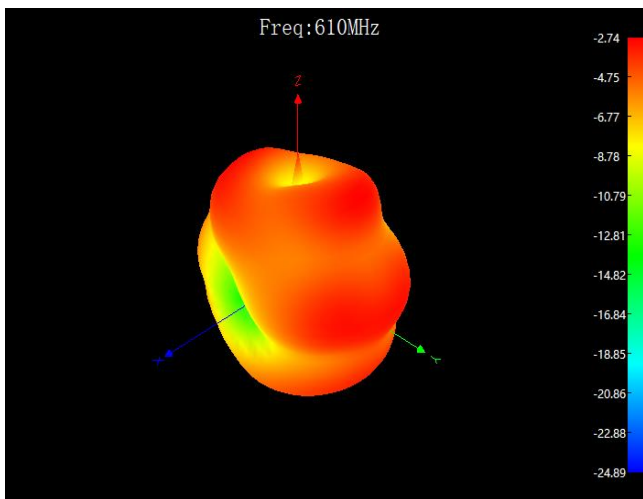


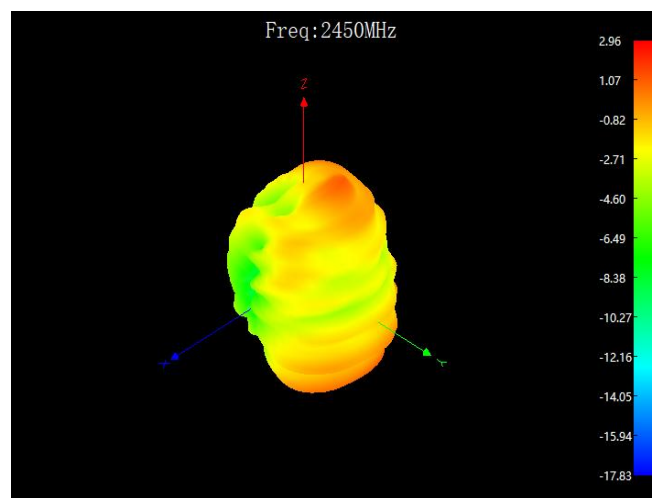
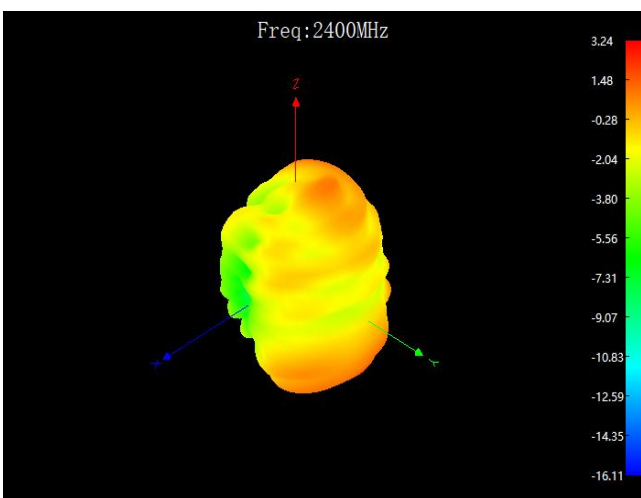
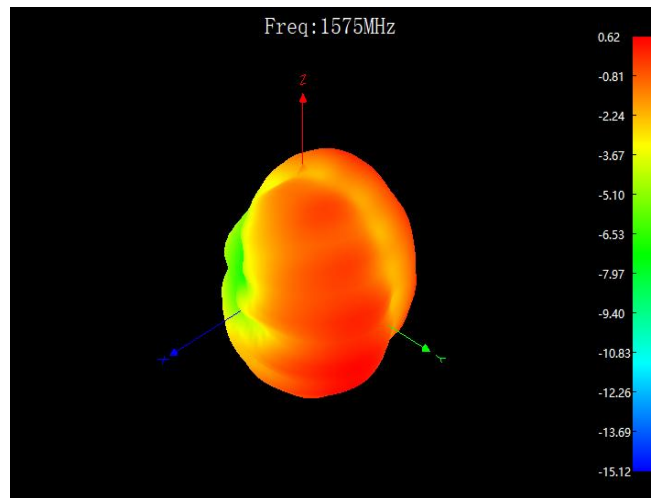
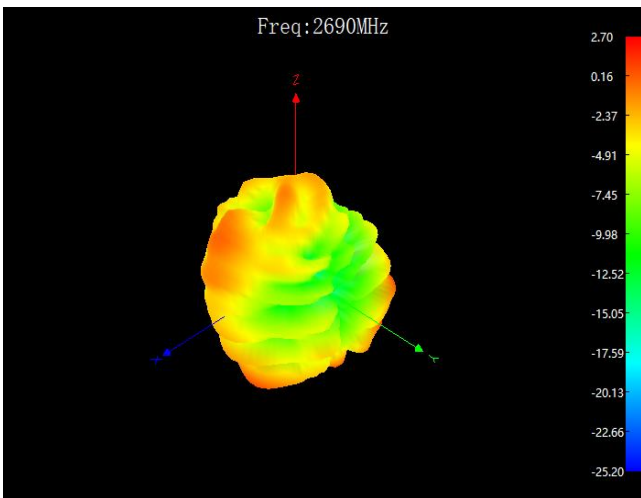
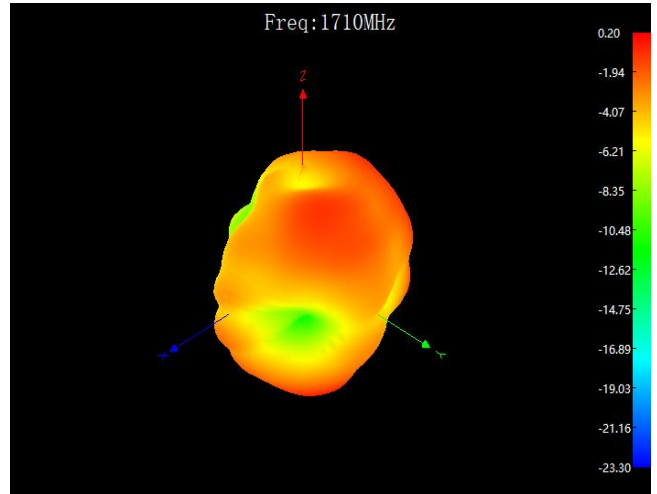
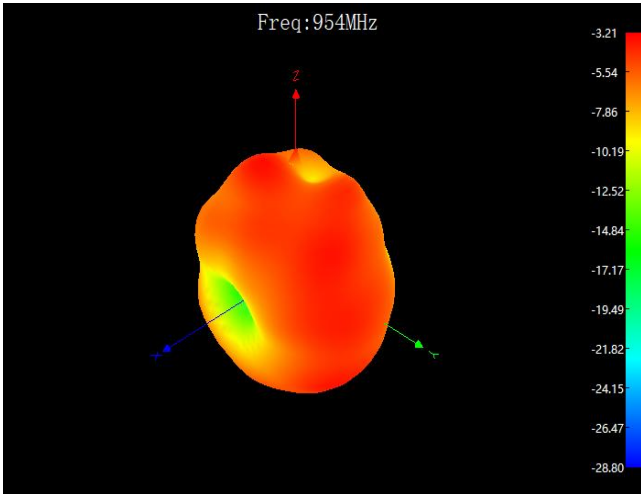
3.3 Antenna gain

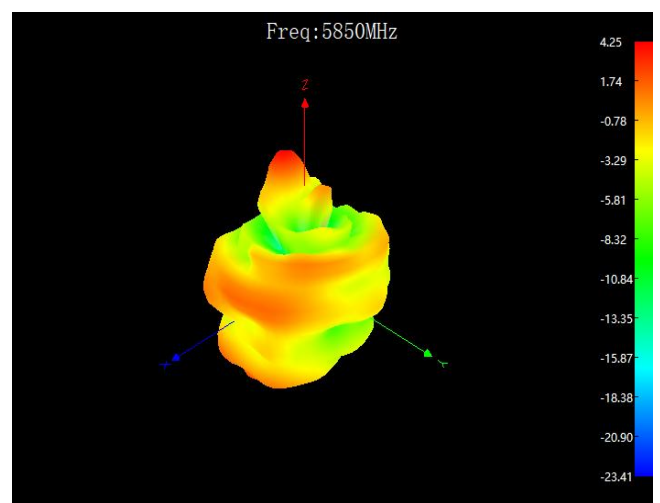
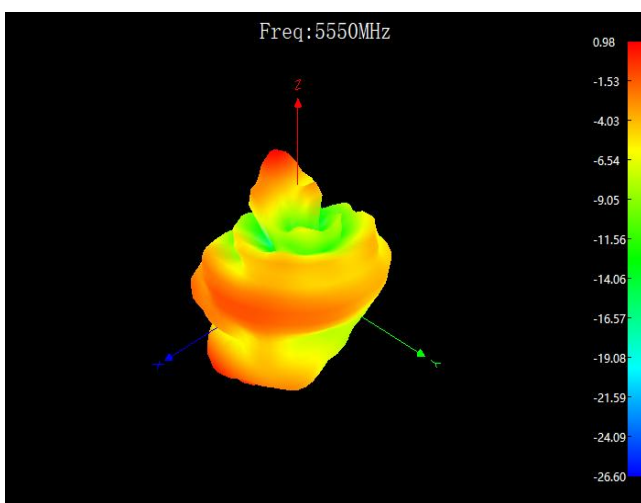
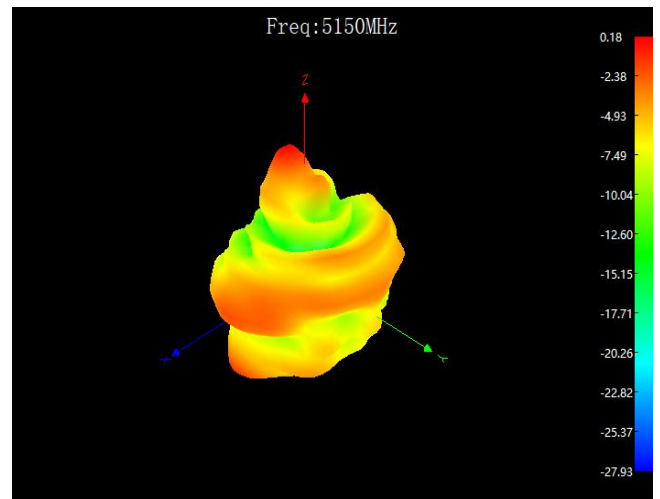
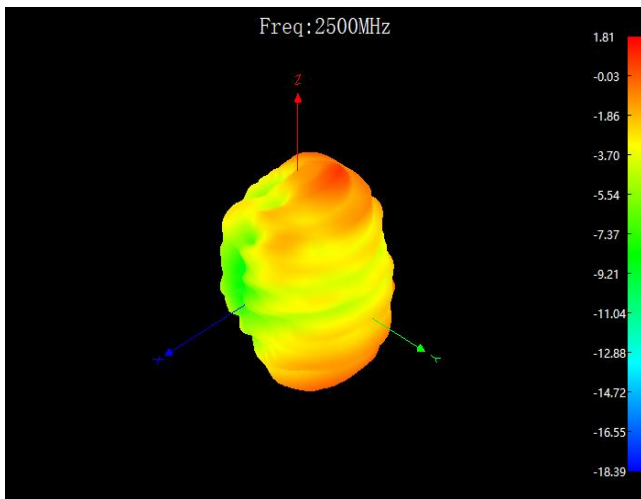
Band	Frequency	Gain	Band	Frequency	Gain
		(dBi)			(dBi)
GSM850	TX:824-849MHz	-1.1	LTE B2	TX:1845-1915MHz	0.8
	RX:869-894MHz			RX:1925-1995MHz	
GSM900	TX:880-915MHz	-1.2	LTE B4	TX:1710-1785MHz	1.5
	RX:925-960MHz			RX:2110-2155MHz	
DCS1800	TX:1710-1785MHz	0.6	LTE B5	TX:824-849MHz	-1.1
	RX:1850-1880MHz			RX:869-894MHz	
PCS1900	TX:1850-1910MHz	0.8	LTE B12	TX:700-716MHz	-1.5
	RX:1930-1990MHz			RX:729-746MHz	
WCDMA B2	TX:1845-1915MHz	0.8	LTE B17	TX:704-715MHz	-1.5
	RX:1925-1995MHz			RX:734-746MHz	
WCDMA B4	TX:1710-1785MHz	1.5	LTE B25	TX:1850-1915MHz	1.5
	RX:2110-2155MHz			RX:1930-1995MHz	
WCDMA B5	TX:824-849MHz	-1.1	LTE B26	TX:814-844MHz	-1.1
	RX:869-894MHz			RX:864-889MHz	
			LTE B66	TX:1710-1785MHz RX:2110-2155MHz	1.5
			LTE B71	TX:617-656MHz RX:663-698MHz	-2

Band	Frequency	Gain
		(dBi)
wifi2.4G/BT	2.4GHz-2.4835GHz	1.8
WIFI5G	5.150GHz-5.350GHz	2.5
	5.725GHz-5.850GHz	
GPS	1.57542GHz	1.8

3.4 Radiation pattern







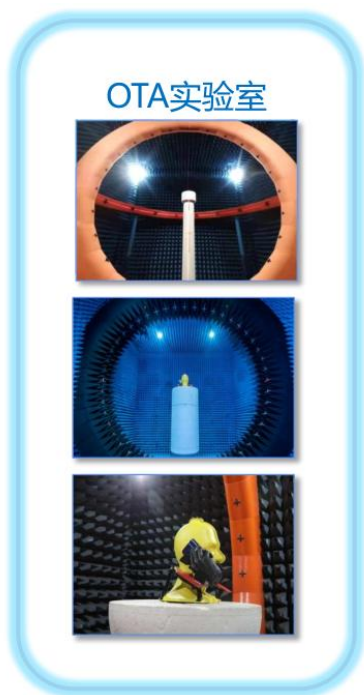
4. Antenna active testing data

4.1 Test the environment

Test the system: Multi-probe OTA measurement system (XH-IoT)

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

Test the equipment: When testing passive data, use the network analyzer R&S ZND/ Agilent E5071C
When testing active data, use the Agilent 8960/CMW500/SP9500E/SP8315



4.2 OTA Active test data

MAIN+DIV Test Data:

Measurement	Band	Channel	Total	Measurement	Band	Channel	Total
TRP	GSM850	128	27.43	TRP	FDD_B2(10MHz)	18650	19.95
TRP	GSM850	190	26.99	TRP	FDD_B2(10MHz)	18900	20.54
TRP	GSM850	251	26.17	TRP	FDD_B2(10MHz)	19150	20.23
TIS(RSSI)	GSM850	251	-102.2	TIS(RSSI)	FDD_B2(10MHz)	1150	-93.61
TRP	GSM900	975	26.91	TRP	FDD_B4(10MHz)	20000	17.61
TRP	GSM900	38	27.12	TRP	FDD_B4(10MHz)	20175	17.55
TRP	GSM900	124	26.95	TRP	FDD_B4(10MHz)	20350	18.23
TIS(RSSI)	GSM900	124	-103.53	TIS(RSSI)	FDD_B4(10MHz)	2350	-92.97
TRP	DCS1800	512	25.11	TRP	FDD_B5(10MHz)	20450	20.19
TRP	DCS1800	699	25.62	TRP	FDD_B5(10MHz)	20525	19.7
TRP	DCS1800	885	25.35	TRP	FDD_B5(10MHz)	20600	18.94
TIS(RSSI)	DCS1800	885	-104.55	TIS(RSSI)	FDD_B5(10MHz)	2600	-90.71
TRP	PCS1900	512	25.78	TRP	FDD_B25(10MHz)	26090	20.64
TRP	PCS1900	661	26.06	TRP	FDD_B25(10MHz)	26365	20.94
TRP	PCS1900	810	26.15	TRP	FDD_B25(10MHz)	26640	21.08
TIS(RSSI)	PCS1900	810	-104.41	TIS(RSSI)	FDD_B25(10MHz)	8640	-96.55
TRP	WCDMA_B2	9262	19.71	TRP	FDD_B26(10MHz)	26740	19.56
TRP	WCDMA_B2	9400	19.81	TRP	FDD_B26(10MHz)	26865	19.41
TRP	WCDMA_B2	9538	20.03	TRP	FDD_B26(10MHz)	26990	17.84
TIS(RSSI)	WCDMA_B2	9938	-107.34	TIS(RSSI)	FDD_B26(10MHz)	8990	-94.65
TRP	WCDMA_B4	1312	17.62	TRP	FDD_B12(10MHz)	23060	16.8

TRP	WCDMA_B4	1413	17.78	TRP	FDD_B12(10MHz)	23095	17.28
TRP	WCDMA_B4	1513	18.18	TRP	FDD_B12(10MHz)	23130	17.45
TIS(RSSI)	WCDMA_B4	1738	-105.66	TIS(RSSI)	FDD_B12(10MHz)	5130	-93.5
TRP	WCDMA_B5	4132	20.04	TRP	FDD_B17(10MHz)	23780	17.09
TRP	WCDMA_B5	4183	19.26	TRP	FDD_B17(10MHz)	23790	17.22
TRP	WCDMA_B5	4233	18.17	TRP	FDD_B17(10MHz)	23800	17.47
TIS(RSSI)	WCDMA_B5	4458	-103.97	TIS(RSSI)	FDD_B17(10MHz)	5800	-91.5
				TRP	FDD_B66(10MHz)	132022	18.28
				TRP	FDD_B66(10MHz)	132322	18.61
				TRP	FDD_B66(10MHz)	132622	18.87
				TIS(RSSI)	FDD_B66(10MHz)	67036	-94.81
				TRP	FDD_B71(10MHz)	133172	16.74
				TRP	FDD_B71(10MHz)	133297	17.3
				TRP	FDD_B71(10MHz)	133422	17.9
				TIS(RSSI)	FDD_B71(10MHz)	68836	-90.01

WIFI Test Data:

Measurement	Band	Channel	Total	Measurement	Band	Channel	Total
TRP	WIFI_B (1M)	1	15.66	TRP	WIFI_A (6M)	36	10.4
TRP	WIFI_B (1M)	6	13.22	TRP	WIFI_A (6M)	149	12.39
TRP	WIFI_B (1M)	11	13.71	TRP	WIFI_A (6M)	165	10.9
TIS(EIRP)	WIFI_B (11M)	11	-82.47	TIS(EIRP)	WIFI_A (54M)	165	-69.62
TRP	WIFI_G (6M)	1	14.94	TRP	WIFI_N_UNII (6.5M)	36	10.23
TRP	WIFI_G (6M)	6	13.24	TRP	WIFI_N_UNII (6.5M)	149	11.01
TRP	WIFI_G (6M)	11	14.43	TRP	WIFI_N_UNII (6.5M)	165	11.03
TIS(EIRP)	WIFI_G (54M)	11	-70.18	TIS(EIRP)	WIFI_N_UNII (65M)	165	-68.34
TRP	WIFI_N_ISM (6.5M)	1	13.87				
TRP	WIFI_N_ISM (6.5M)	6	12.43				
TRP	WIFI_N_ISM (6.5M)	11	12.18				
TIS(EIRP)	WIFI_N_ISM (65M)	11	-68.65				

GPS Test Data:

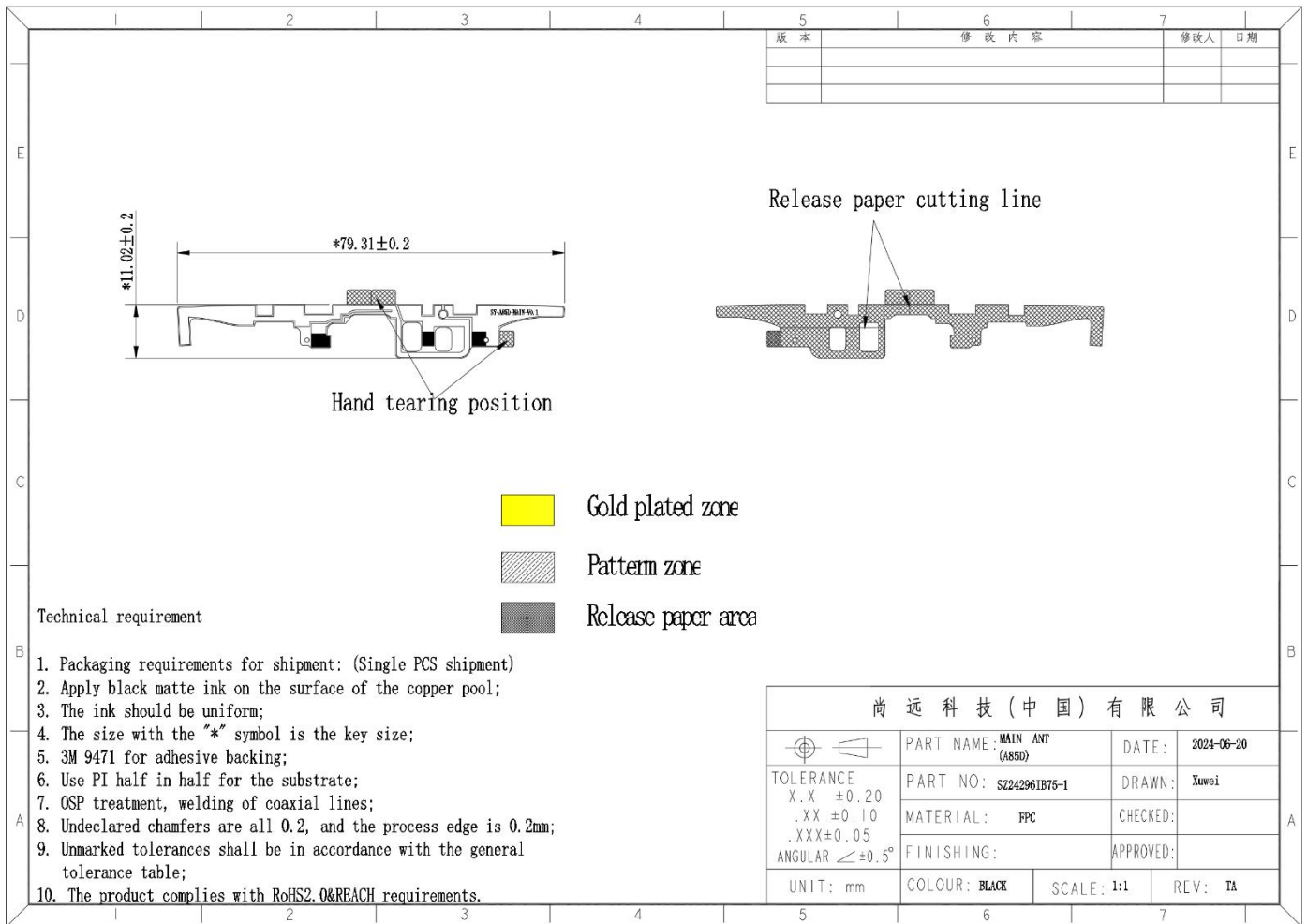
Type	Measurement	FixedMode	CNO	UHS	PIGS	Tis
Gps	EstimateSensMulSatellite	None	28.59	141.62	143.33	-145.16

5. Environmental treatment methods

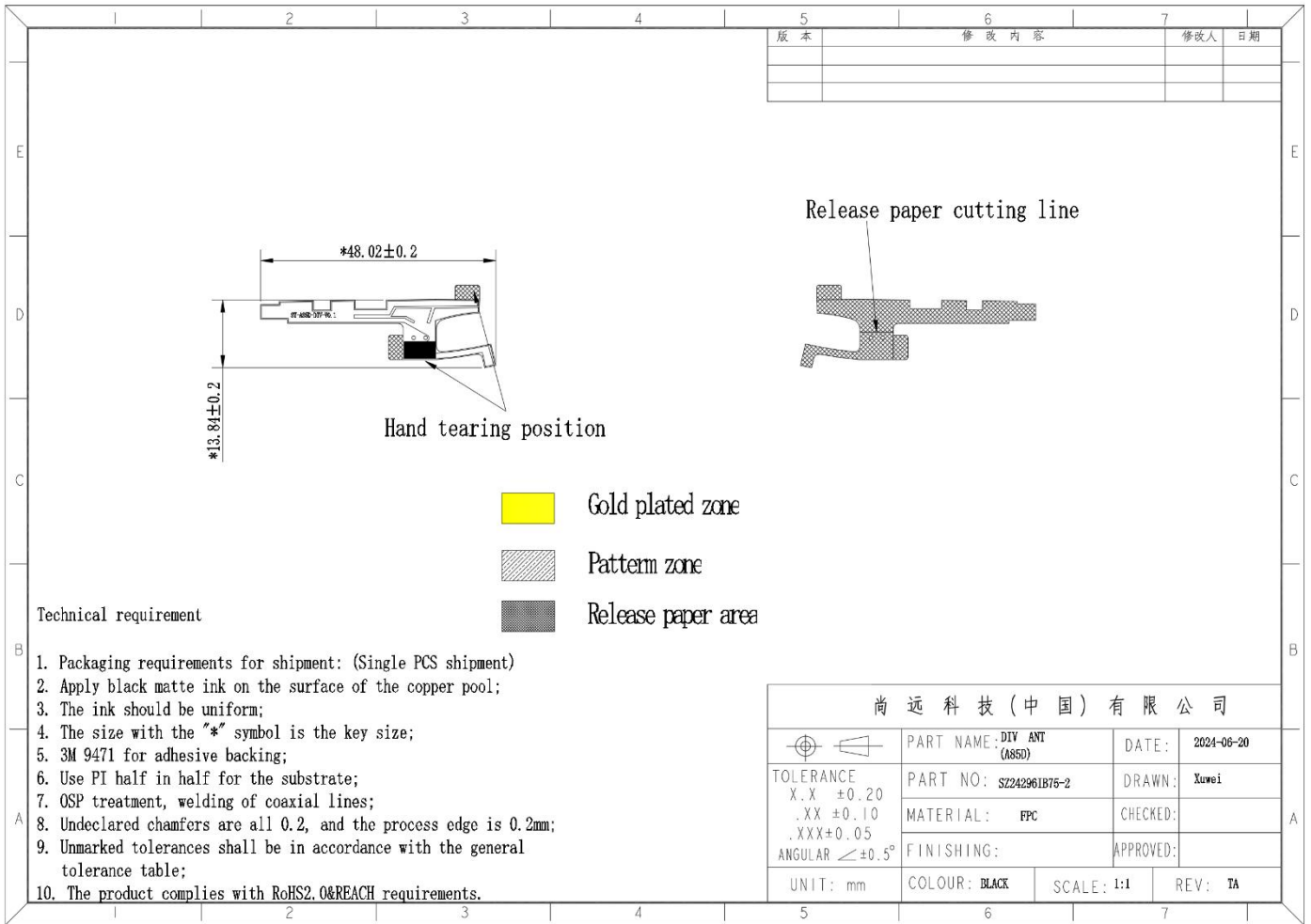


6. Engineering drawings

MAIN ANT:



DIV ANT:



GWB ANT:

