

Date: 2025-0515

Test Report of VK-F1DA-4G Project

project	Radio frequency director	Head of structure	frequency band
F1DA-4G	Li Xin	Cengong	GSM:850/900/1800/1900 WCDMA:850/900/1700/1900/2100 LTE:B1/2/3/4/5/7/8/12/17/20/28/38/39/40/41/66 GPS/WIFI/BT
Remarks: Screen printed F36-F1DA-GSM-T-V1.0 antenna.			

Our company has reviewed and met the requirements of applicable clauses of GB/T 19001-2016/ISO 9001: 2015 quality management system standards.

corporate name: Shenzhen Tianyutong electronic technology co., ltd

Company address: Room 701, Building 212, Tairan Science Park, Tairan 4th Road, Futian District, Shenzhen

Directory:

- 1, test environment
- 2, matching circuit design
3. Antenna test report
4. Suggestions on environmental treatment



天宇通天线

深圳市天宇通电子科技有限公司

专心，专业，专注做最好的天线

1. Test environment

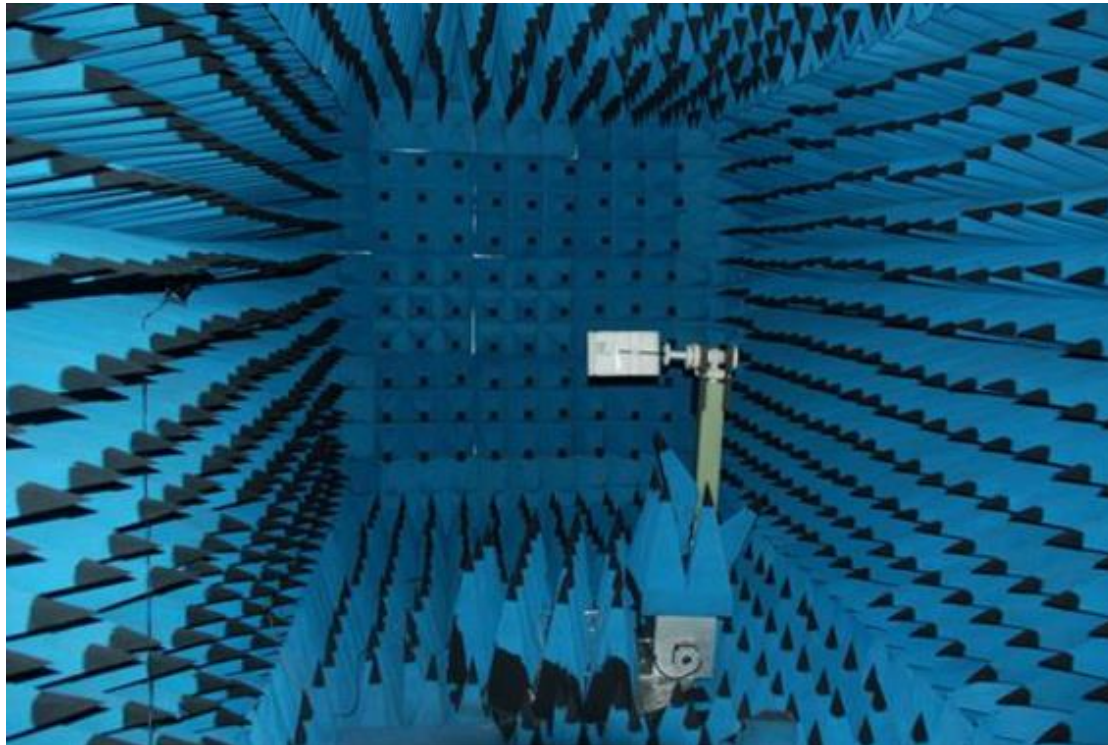
Test system: ETS 3D shielded darkroom

Test environment: temperature 22°C 3°C and humidity 50% 15%.

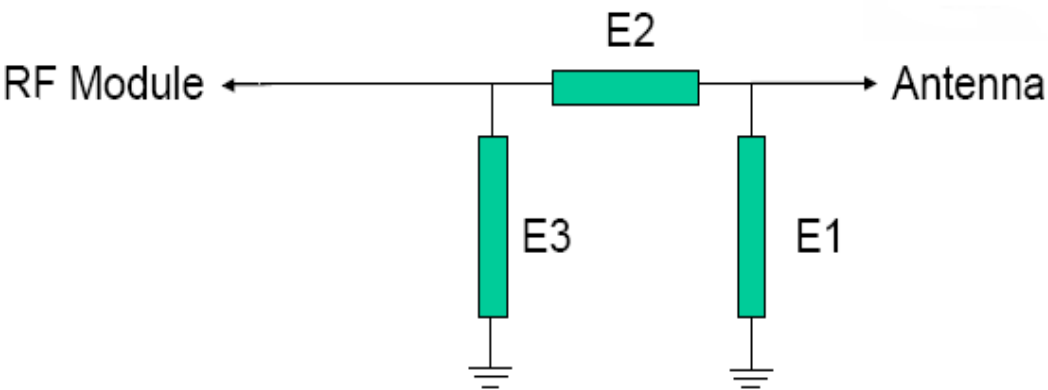
Test equipment: when testing passive data, use HP 8753E network analyzer.

When testing active data, use E5515C-8960 3G full-function comprehensive tester.

When testing active data, use 8820C 4G full-function comprehensive tester.



2. Matching circuit design



Element	Value
E1(0402)	/
E2(0402)	/
E3(0402)	/

3. 12G test report

	EGSM900			Remarks	DCS1800			Remarks
Channel	one	62	120		512	698	885	
MaxPower (dBm)	28.8	28.6	28.5		28.3	28.5	28.6	
TRP(dBm)	25.6	25.5	25.3		24.2	24.3	24.5	
MaxSensitivity (dBm)			-104.3				-106.3	
TIS(dBm)			-101.2				-102.2	
	EGSM850			Remarks	PCS1900			Remarks
Channel	128	190	250		512	661	810	
MaxPower (dBm)	29.5	29.6	29.9		28.6	28.8	28.5	
TRP(dBm)	26.2	26.3	26.5		24.5	24.6	24.3	
MaxSensitivity (dBm)			-104.5				-106.5	
TIS(dBm)			-101.3				-102.3	

3. 23G test report

	WCDMA2100			Remarks	WCDMA1900			Remarks
Channel	10562	10700	10838		9662	9800	9938	
MaxPower (dBm)	22.0	21.8	21.6		21.5	21.6	21.8	
TRP(dBm)	17.8	17.6	17.5		17.3	17.5	17.6	
MaxSensitivity (dBm)			-106.3				-106.5	
TIS(dBm)			-102.2				-102.3	
	WCDMA850			Remarks	WCDMA900			Remarks
Channel	4357	4408	4458		2938	3013	3087	
MaxPower (dBm)	20.6	20.8	20.5		20.5	20.3	19.8	
TRP(dBm)	17.5	17.6	17.3		17.3	17.2	16.6	
MaxSensitivity (dBm)			-104.8				-104.5	
TIS(dBm)			-101.6				-101.3	

3. 23G test report

	WCDMA1700			Remarks
Channel	1548	1638	1738	
MaxPower (dBm)	21.5	21.6	21.8	
TRP(dBm)	17.3	17.5	17.6	
MaxSensitivity (dBm)			-106.3	
TIS(dBm)			-102.2	

3.3.14G test report

	LTE-B1			Remarks	LTE-B2			Remarks
Channel	18100	18300	18500		18650	18900	19150	
MaxPower (dBm)	21.9	21.8	21.6		21.6	21.8	22.0	
TRP(dBm)	17.8	17.6	17.5		17.5	17.6	17.8	
MaxSensitivity (dBm)			-95.3				-95.5	
TIS(dBm)			-91.1				-91.3	
	LTE-B3			Remarks	LTE-B4			Remarks
Channel	19250	19575	19900		20000	20175	20350	
MaxPower (dBm)	21.8	21.9	22.0		21.5	21.6	21.8	
TRP(dBm)	17.6	17.7	17.8		17.3	17.5	17.6	
MaxSensitivity (dBm)			-95.8				-94.6	
TIS(dBm)			-91.6				-90.5	

3.3.14G test report

	LTE-B5			Remarks	LTE-B7			Remarks
Channel	20450	20525	20600		20850	21100	21350	
MaxPower (dBm)	20.6	20.7	20.8		20.8	21.0	21.5	
TRP(dBm)	17.5	17.6	17.7		16.6	16.8	17.2	
MaxSensitivity (dBm)			-91.8				-94.3	
TIS(dBm)			-88.6				-90.2	
	LTE-B8			Remarks	LTE-B12			Remarks
Channel	21500	21625	21750		23060	23095	23130	
MaxPower (dBm)	20.5	20.3	19.9		17.5	17.6	17.9	
TRP(dBm)	17.3	17.2	16.8		14.6	14.8	15.2	
MaxSensitivity (dBm)			-92.5				-90.5	
TIS(dBm)			-89.3				-87.6	

3.3.14G test report

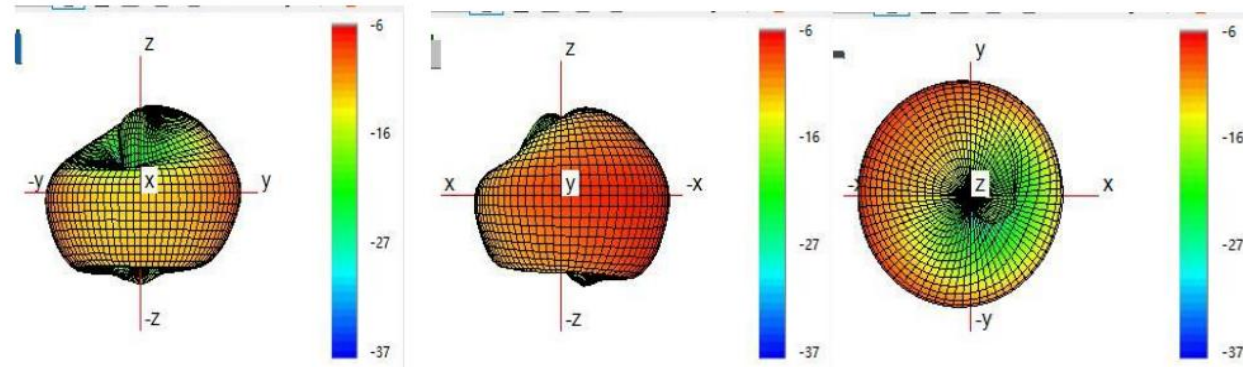
	LTE-B17			Remarks	LTE-B20			Remarks
Channel	23780	23790	23800		24200	24300	24400	
MaxPower (dBm)	17.6	17.9	18.0		20.6	20.8	20.9	
TRP(dBm)	14.8	15.2	15.3		17.5	17.6	17.8	
MaxSensitivity (dBm)			-90.2				-92.3	
TIS(dBm)			-87.3				-89.2	
	LTE-B28			Remarks	LTE-B38			Remarks
Channel	27260	27435	27610		37850	38000	38150	
MaxPower (dBm)	17.5	18.1	18.3		21.7	21.5	21.2	
TRP(dBm)	14.7	15.3	15.5		17.6	17.5	17.2	
MaxSensitivity (dBm)			-90.6				-94.5	
TIS(dBm)			-87.8				-90.2	

3.3.14G test report

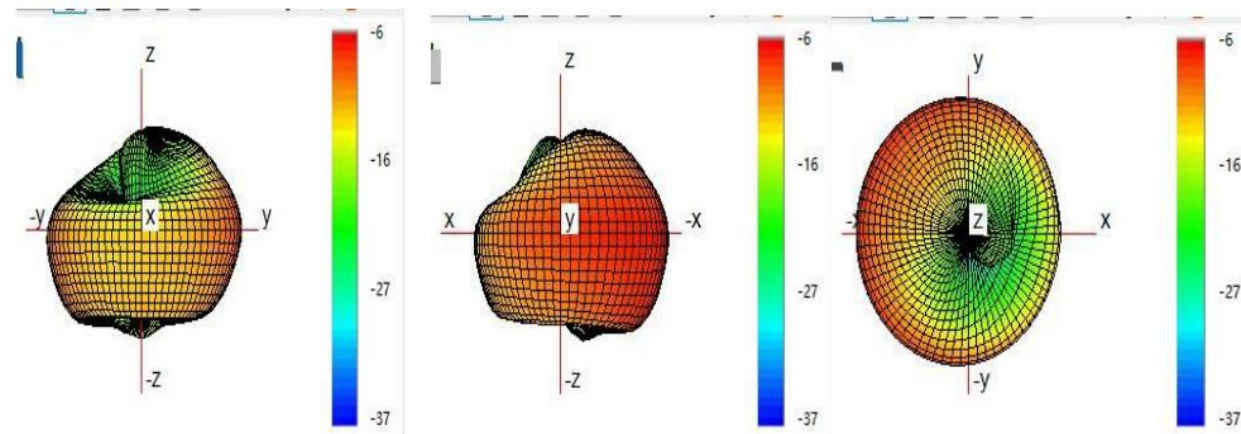
	LTE-B39			Remarks	LTE-B40			Remarks
Channel	38350	38450	38550		38750	39150	39550	
MaxPower (dBm)	21.8	21.6	21.5		21.1	21.0	20.8	
TRP(dBm)	17.6	17.5	17.3		17.0	16.8	16.6	
MaxSensitivity (dBm)			-94.8				-93.5	
TIS(dBm)			-90.6				-89.3	
	LTE-B41			Remarks	LTE-B66			Remarks
Channel	40240	40620	40625		132022	132322	132622	
MaxPower (dBm)	21.5	21.3	21.0		21.3	21.6	21.8	
TRP(dBm)	17.3	17.2	16.8		17.2	17.5	17.6	
MaxSensitivity (dBm)			-93.3				-94.3	
TIS(dBm)			-89.2				-90.2	

3.4 antenna apple diagram:

710MHz

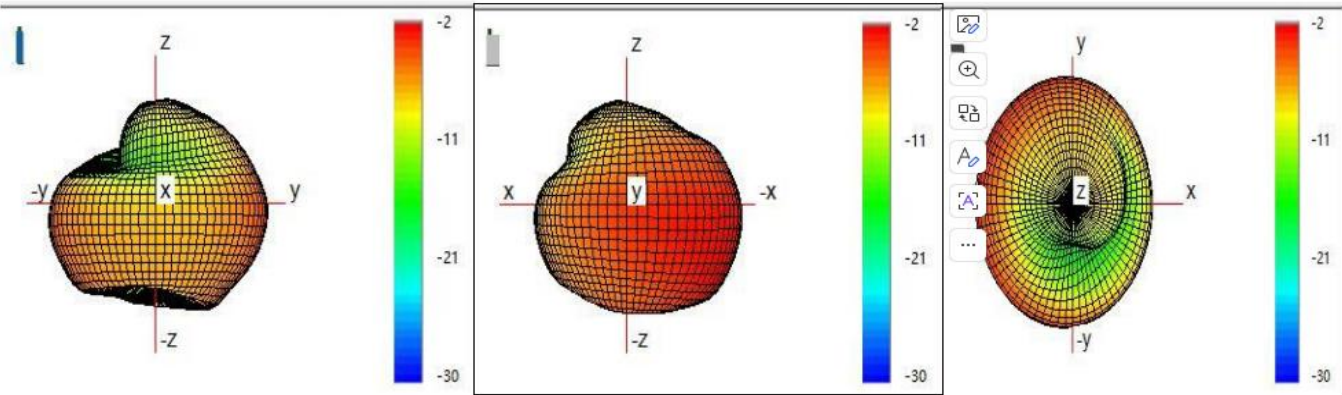


800MHz

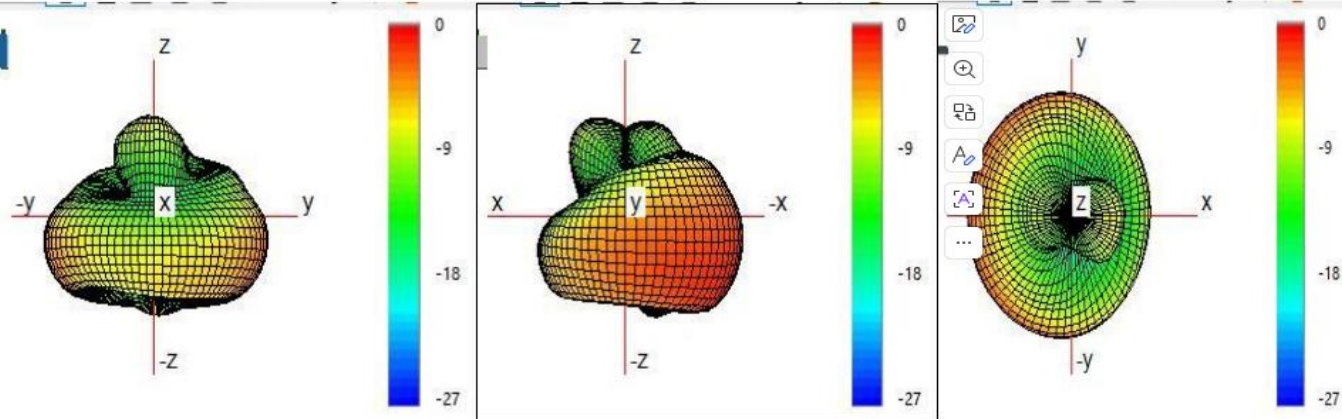


3.4 Apple Diagram of Main Antenna:

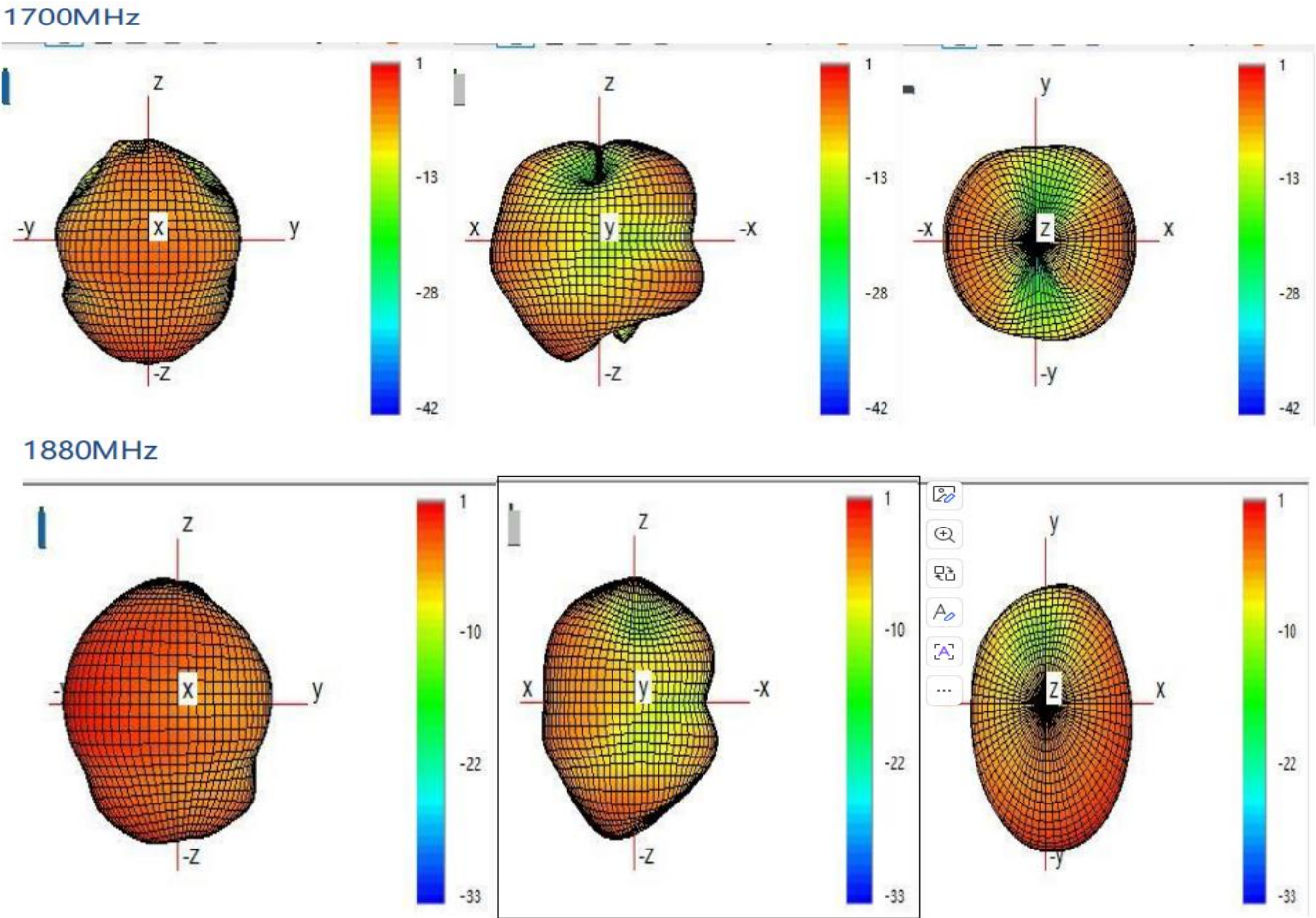
860MHz



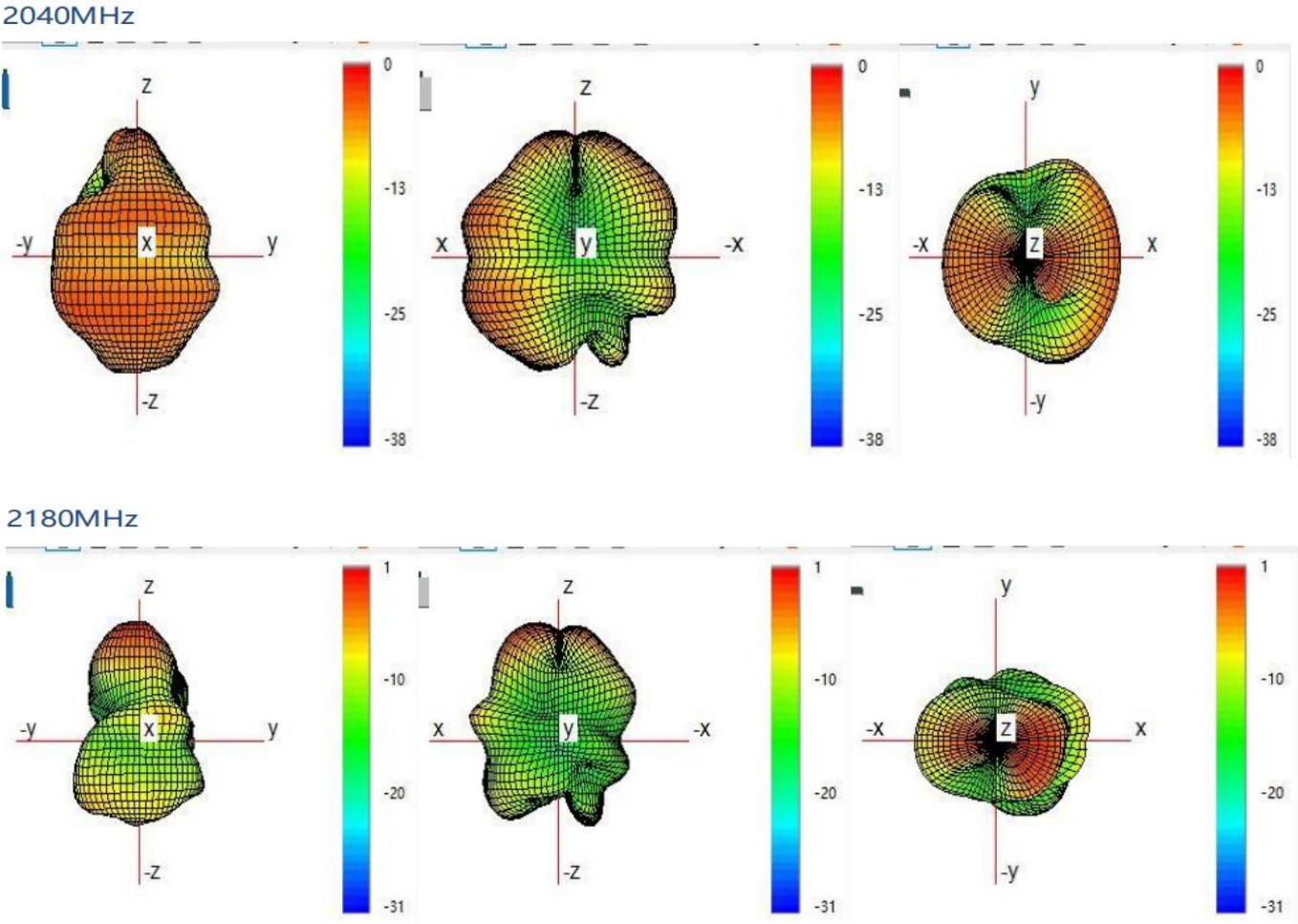
920MHz



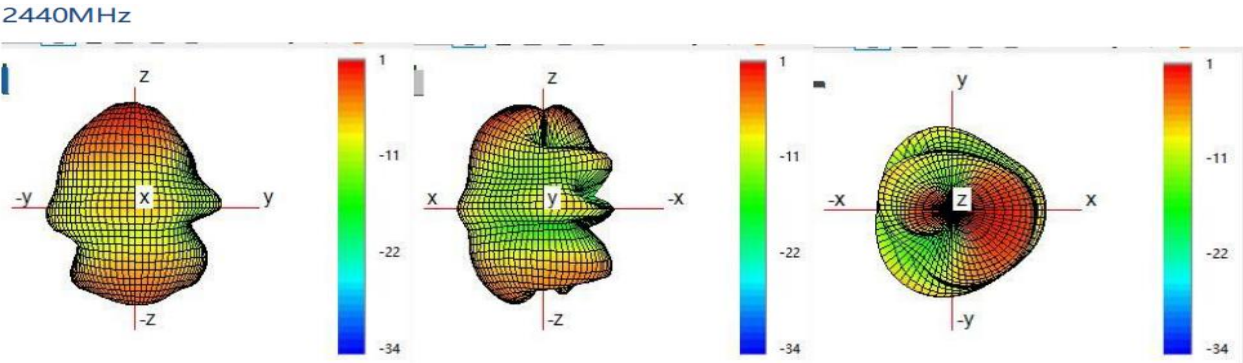
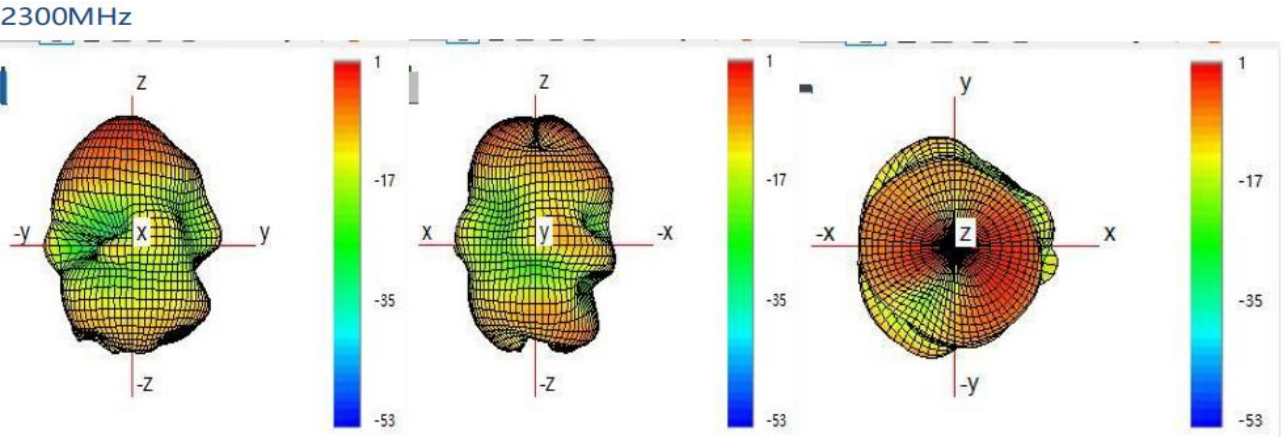
3.4 Apple Diagram of Main Antenna:



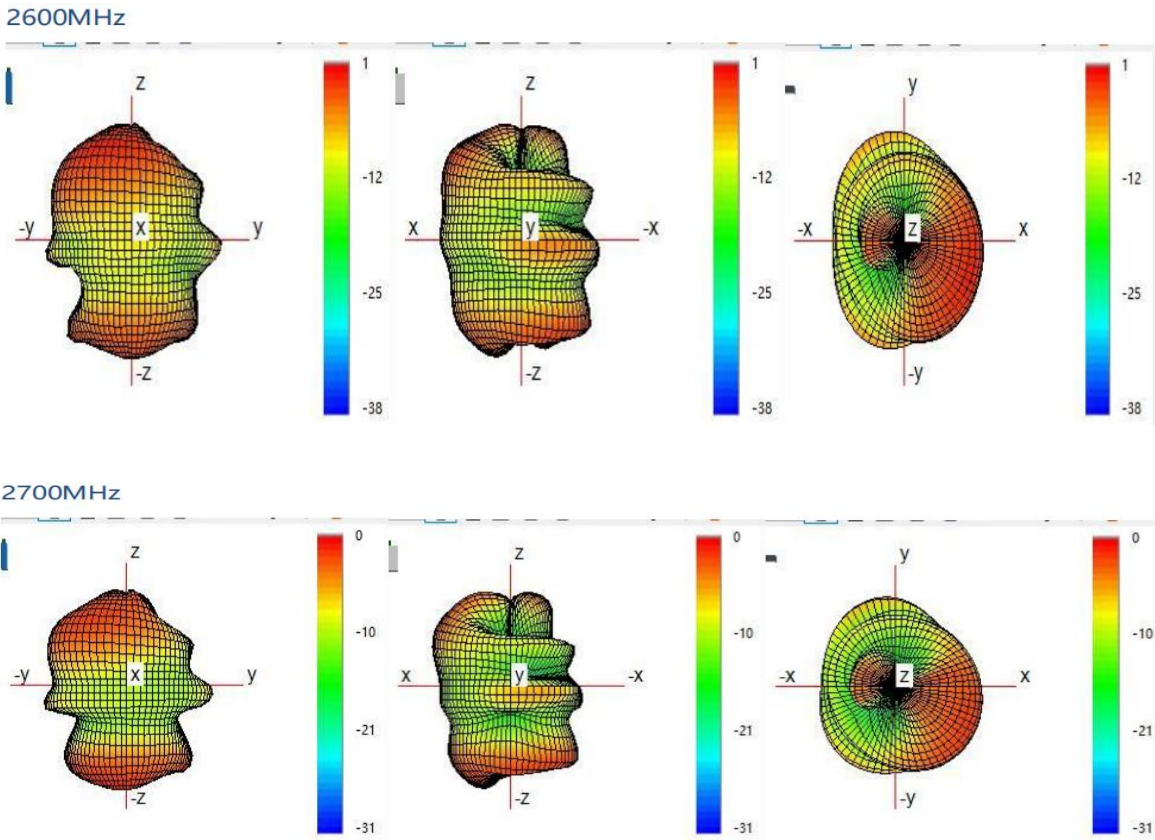
3.4 Apple Diagram of Main Antenna:



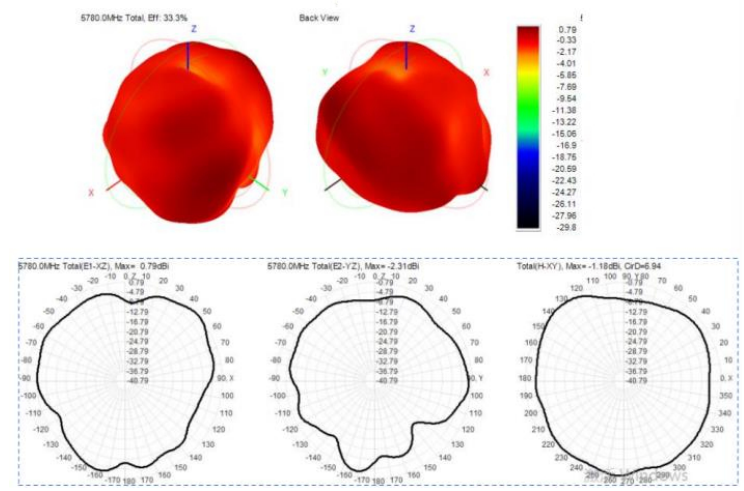
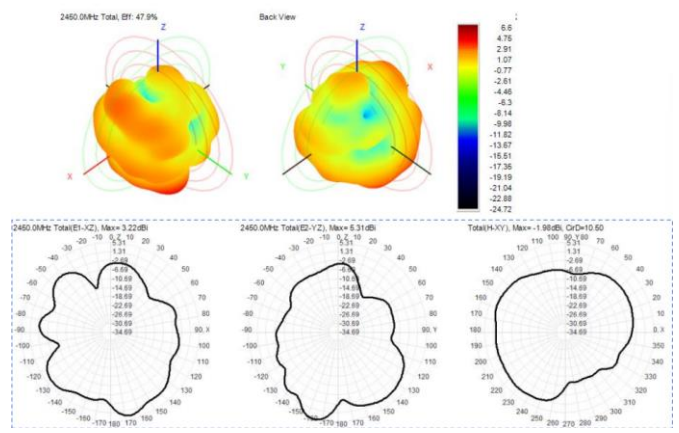
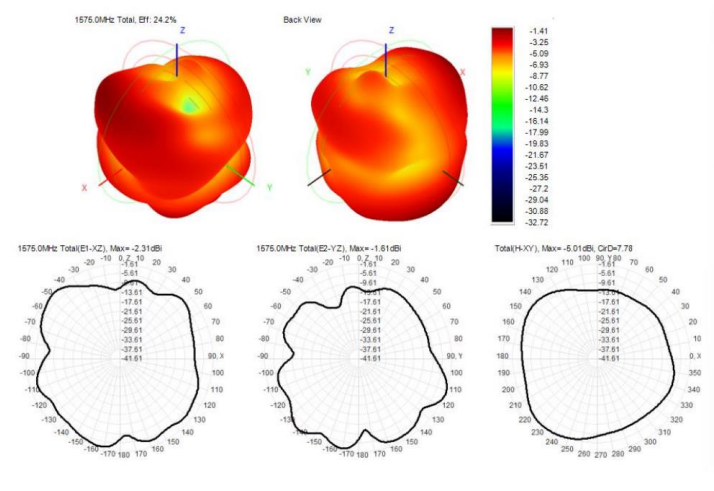
3.4 Apple Diagram of Main Antenna:



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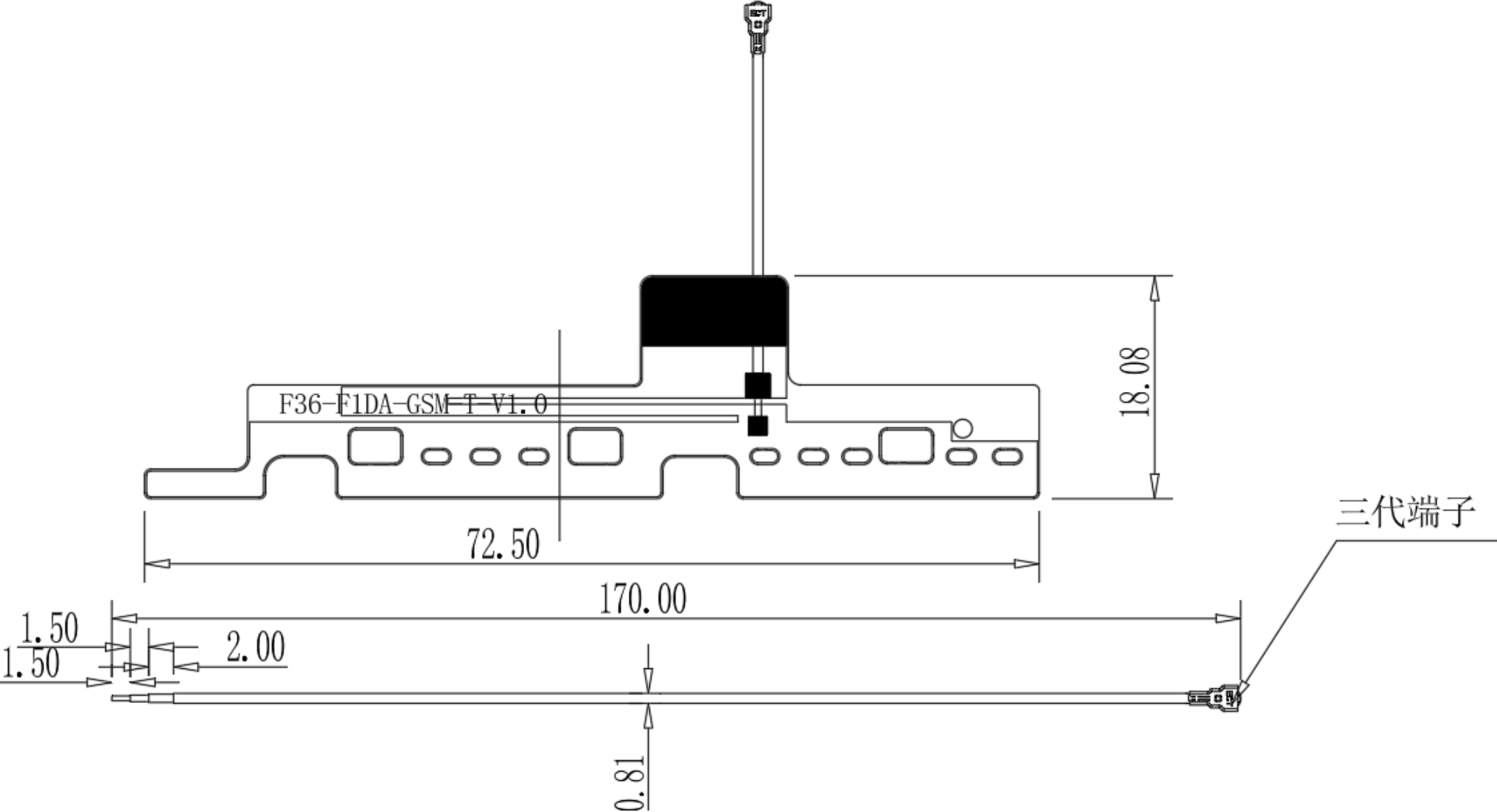
3.5 Three-in-one Antenna:



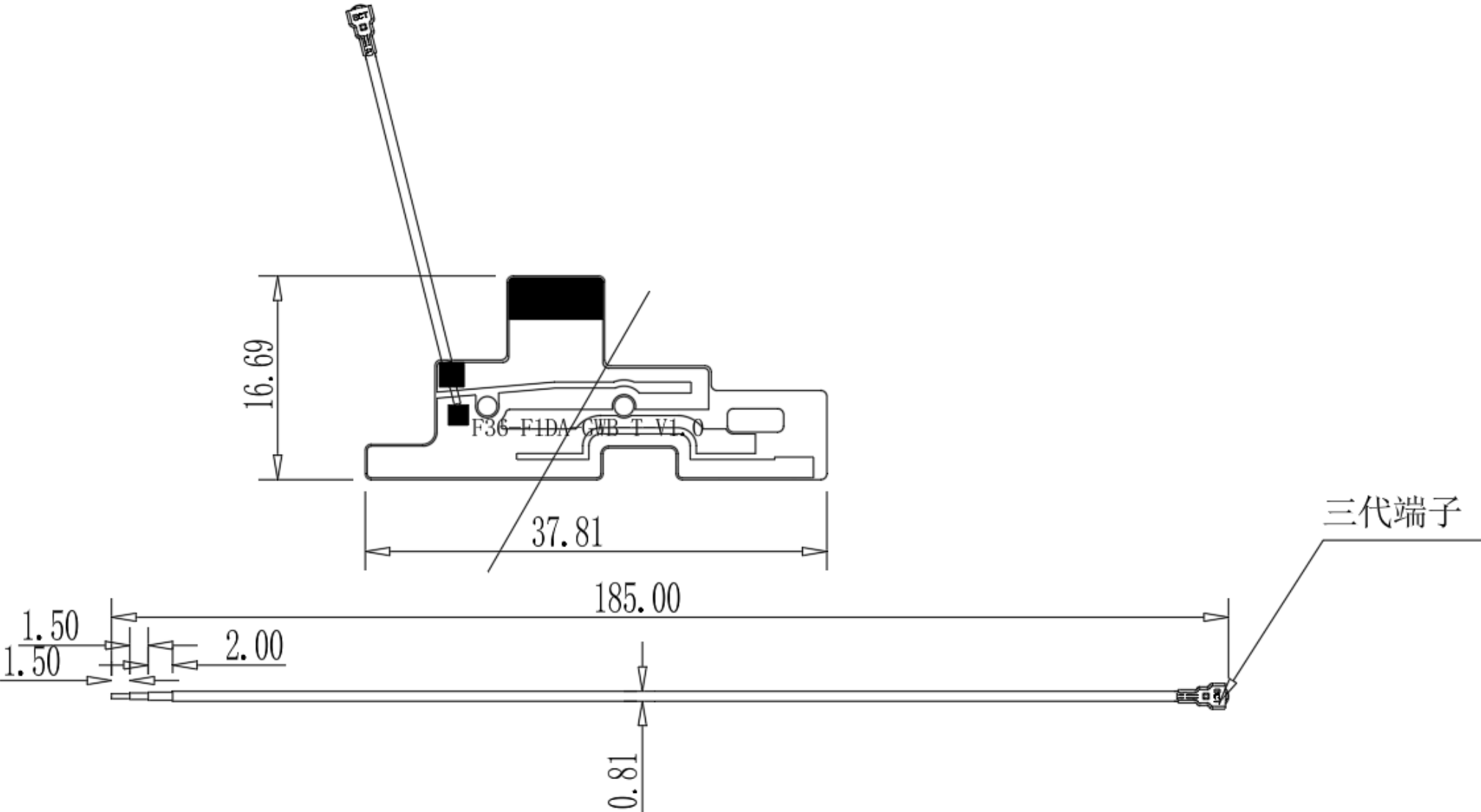
3. 4. 1Antenna gain

2G Antenna gain	2G:GSM850: 0.2dBi GSM900: 0.3dBi DCS1800: 0.6dBi PCS1900:0.7dBi
3G Antenna gain	B1: 0.8dBi B2:0.7dBi B4:0.6dBi B5: 0.2dBi B8: 0.3dBi
4G Antenna gain	B1: 0.8dBi B2:0.7dBi B3:0.6dBiB4:0.6dBi B5: 0.2dBi B7: 0.7dBi B8: 0.3dBi B20: 0.2dBi B12:-0.1dBi B17:-0.1dBi B28AB:-0.1dBiB38:0.7dBiB40:0.6dBiB41:0.7dBi B66:0.6dBi
GPSAntenna gain	0.8dBi
WIFIAntenna gain	2.4G:0.9dBi 5G:0.7dBi
BTAntenna gain	0.9dBi

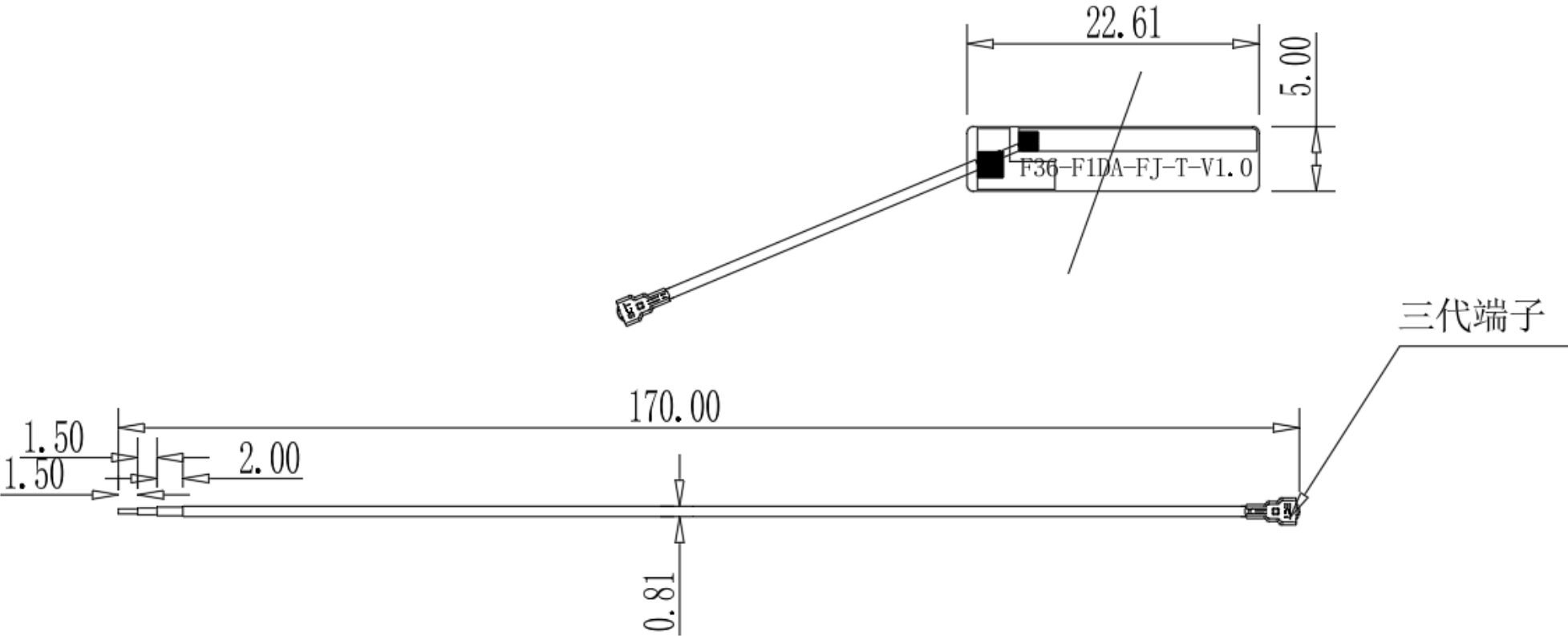
3. 4. 1Antenna size(Unit:mm)



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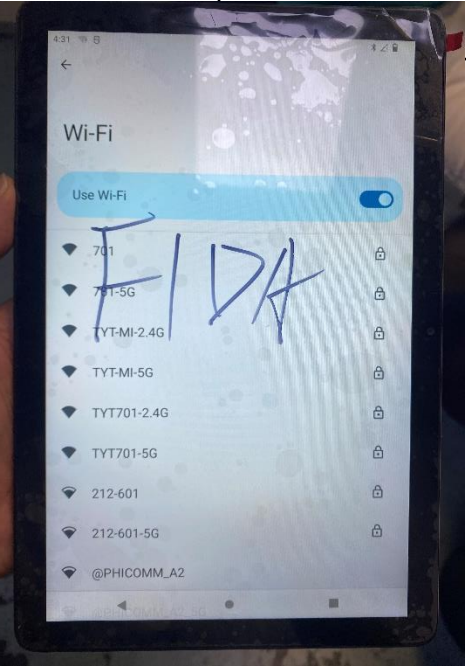
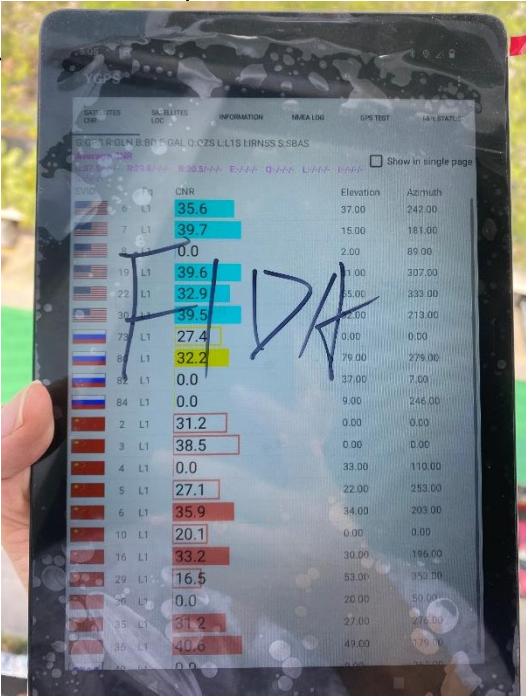


3. 4. 1Antenna size (Unit:mm)

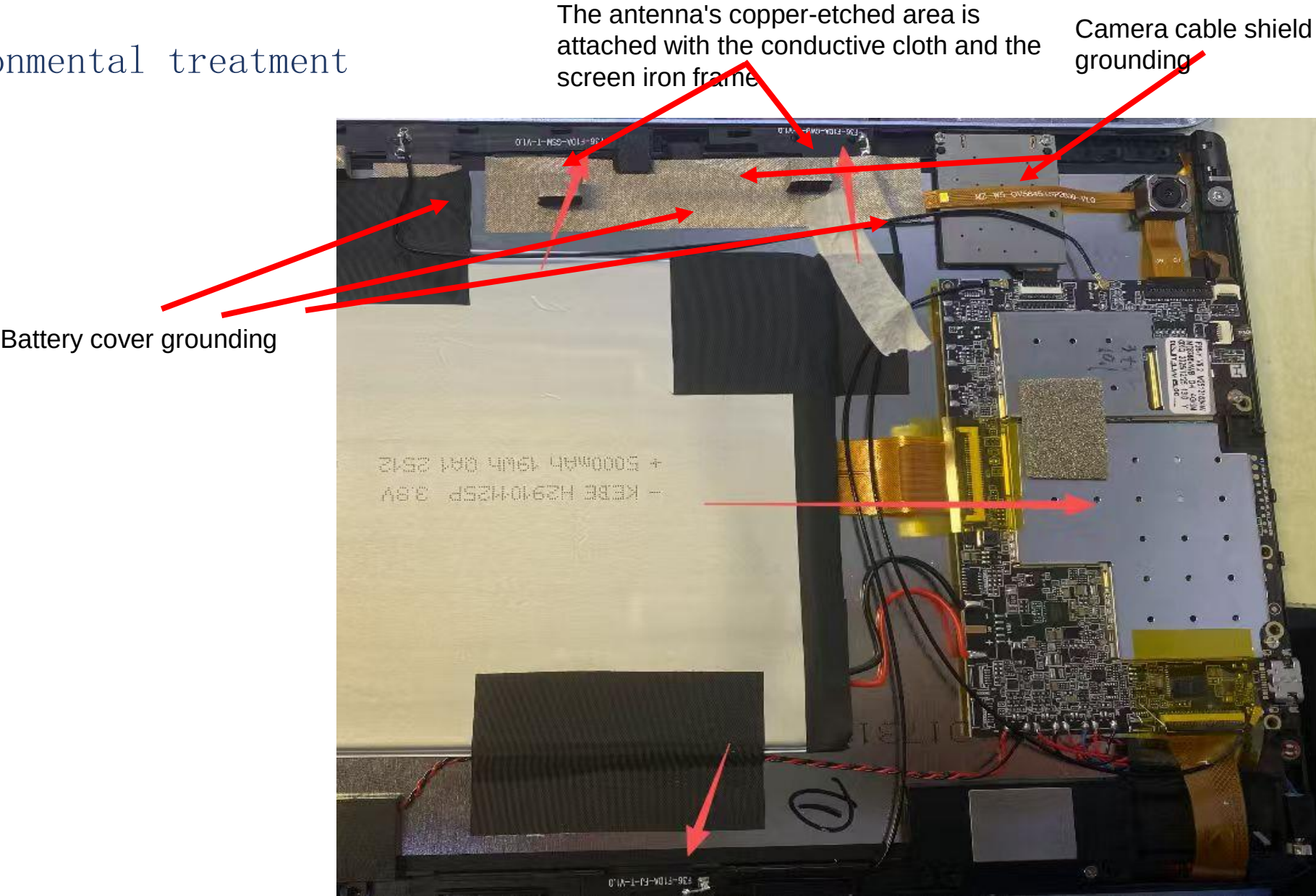


3. 4GPS/WIFI/BT test report

GPS	Maximum signal strength	Number of search stars	Cold start positioning time	weather regime
	40	11	110S	fine
WIFI	Full grid distance from router WIFI signal		Barrier-free normal internet access distance	
	5m		10m	
BT	Barrier-free call distance		Barrier-free playback audio distance	
	8m		10m	



4.2 Environmental treatment



4.1 Suggestions on environmental treatment



Main board and screen iron frame are grounded.