SUNNYWAY TECHNOLOGY(CHINA)

ANTENNA SPEC

Customer name: VACTORY	Entry name: NA_GW
Working band: 915MHz 1560MHz-1580MHz 1710MHz-2690MHz 2400MHz-2500MHz	
Motherboard version:	

Sunnyway Material specification

Specification type	Sunnyway number	Customer number
Five-in-one antenna	SZ23312WB56	J1YLH003200

Revision history

Date of preparation/change	Change content	Altered person	Edition
2024.1.2	New issue	Chen Mien	A

Sunnyway Countersign column

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

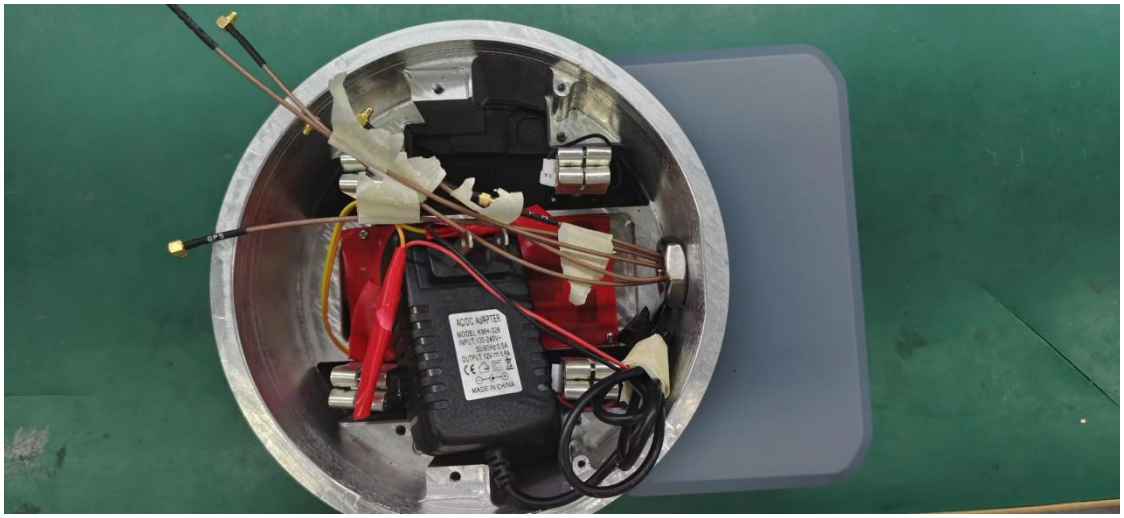
Customer will sign the column

Electronic Engineer	Project manager	Structural Engineer	Quality Engineer

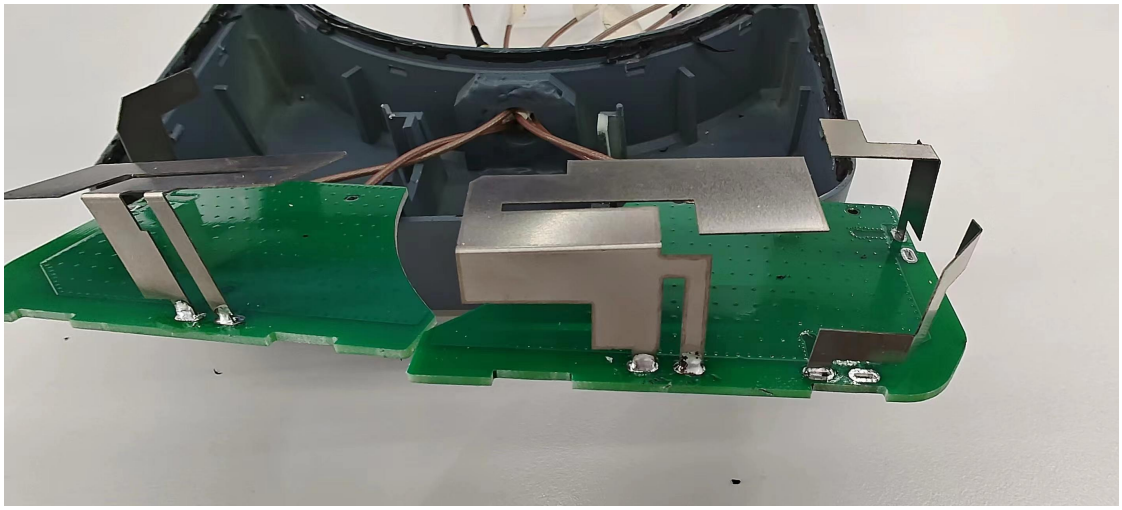
Directory

1. Project information

1.1 Mockup picture



1.2 Antenna product picture



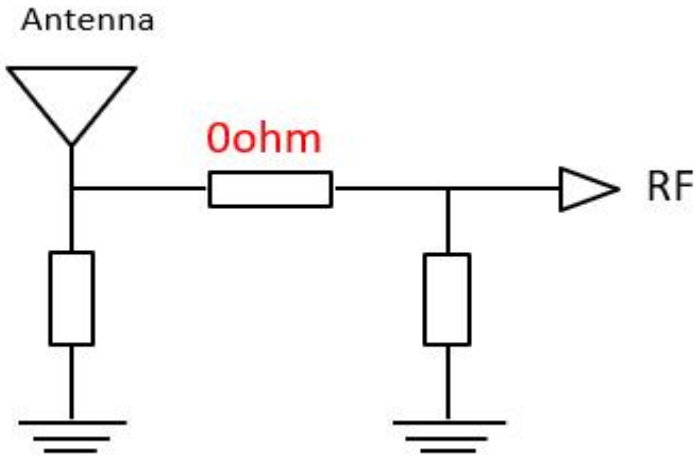
2.Electrical Specification

Standard	
Frequency range (MHz)	915MHz 1560MHz-1580MHz 1710MHz-2690MHz 2400MHz-2500MHz
Peak Gain (dBi)	4.92dBi
Average Gain (dB)	1.88dB
VSWR	< 6.0 （ in-device ）
Return Loss	> -5 dB （ in-device ）
Efficiency (%)	50%
Polarization mode	linear
Radiation pattern	omni-directional
Output impedance (Ω)	50
Max. Input Power(W)	25

3. Mechanical and Environmental Specification

Mounting Type	**SCREW**
Connector Type	MMCX splice
Antenna size(mm)	
Material	Hardware shrapnel
Operating Temperature	- 40 ˚C ~ + 85 ˚C
Storage Temperature(˚C)	- 40 ˚C ~ + 85 ˚C

4. Matching circuit



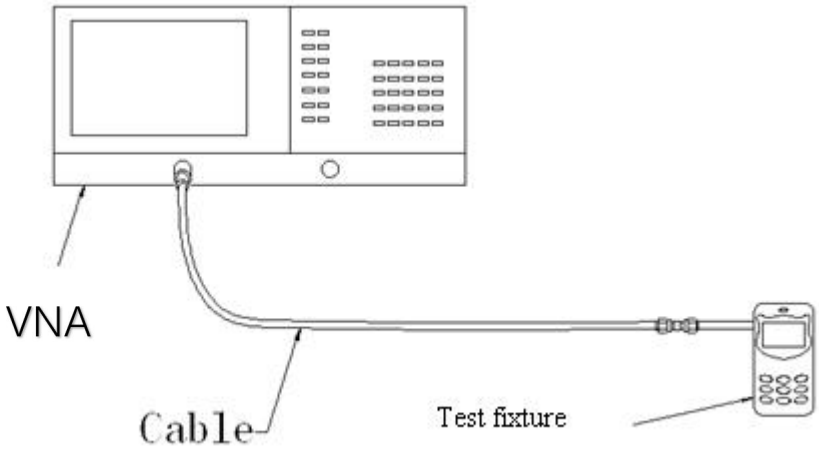
5. Antenna passive testing data

5.1 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

5.2 Test the environment

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

Test the environment：Temperature 22°C±3°C, humidity 50%±15%

Test the equipment：When testing passive data, use the network analyzer R&S ZND/ Agilent E5071C

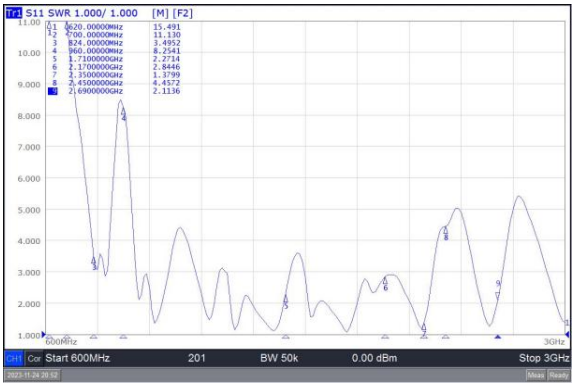
When testing active data, use the Agilent 8960/CMW500/SP9500E/SP8315

5.3 S11 Test parameters

(Freq.) MHz	824	960	1575	1710	2450	2690
VSWR	3.1	4.8	3.3	2.27	2.16	2.1

VSWR

LTE2/4



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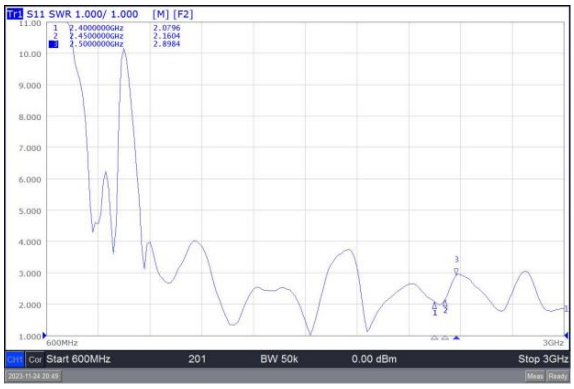
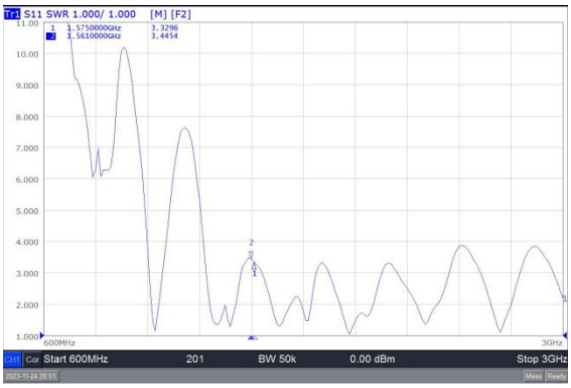


GPS



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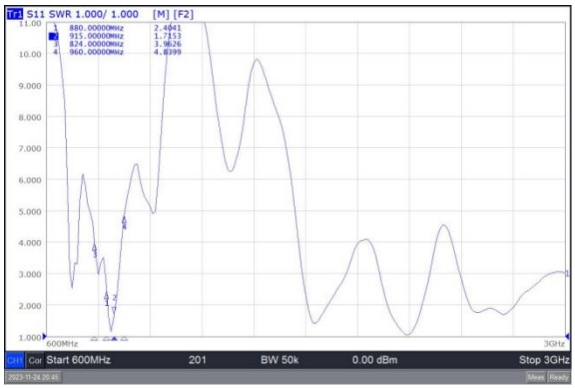
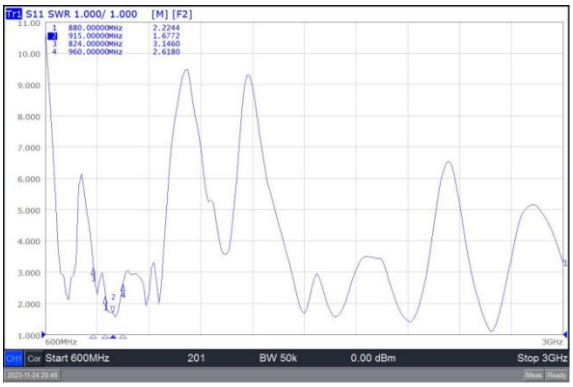
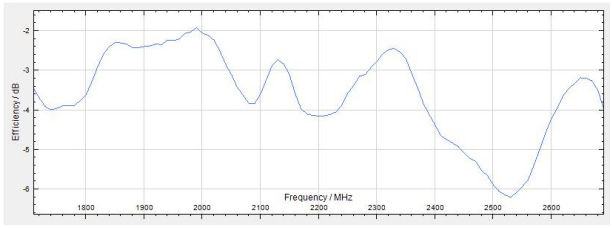


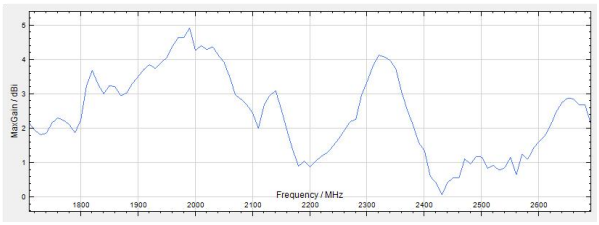
LSM-2



5.4 Antenna efficiency and gain

LTE2/4





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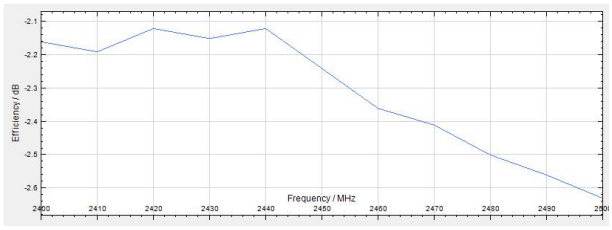

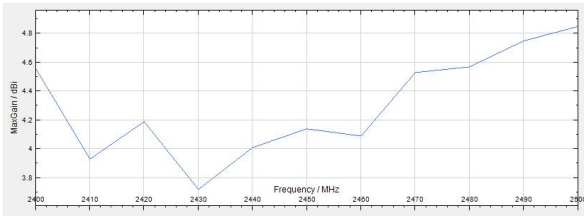

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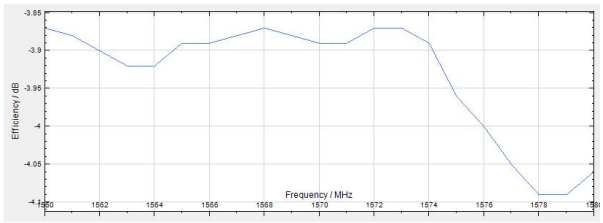
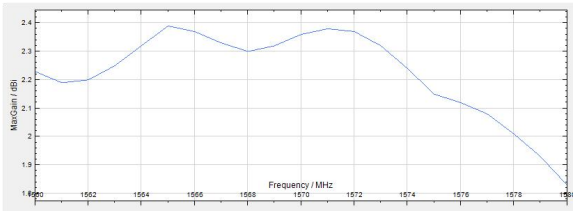
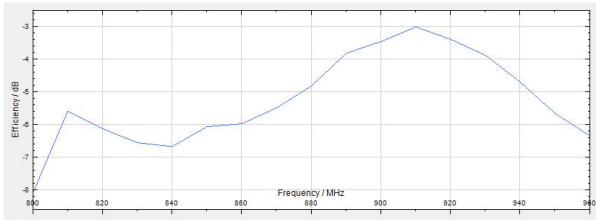
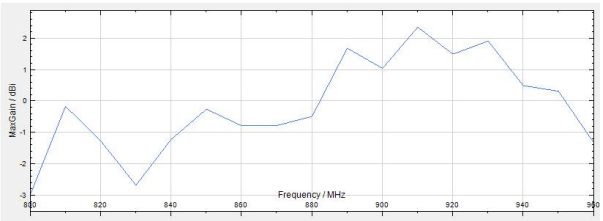




LSM-1





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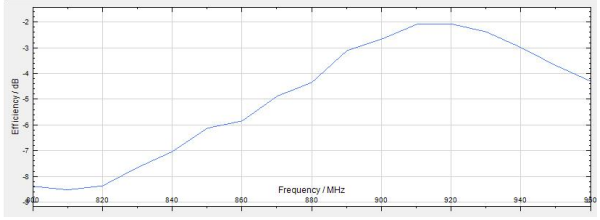
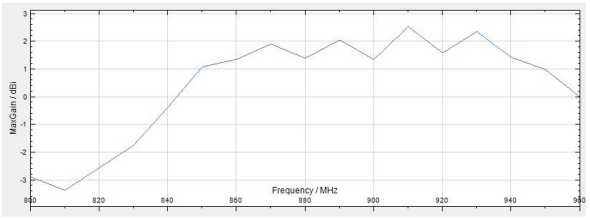
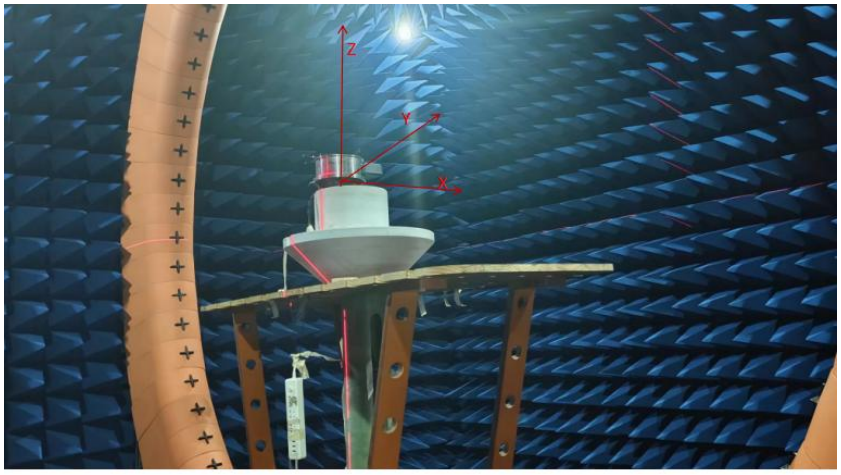


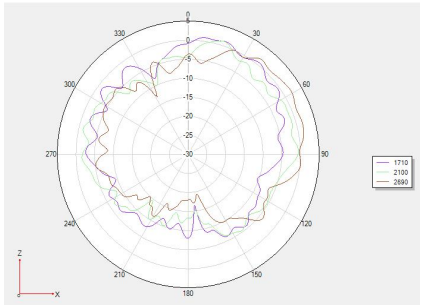


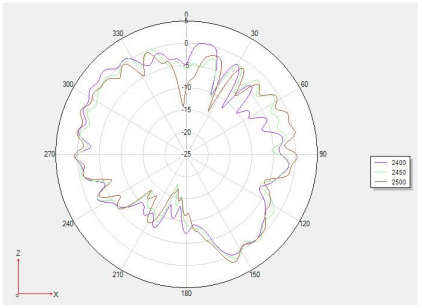
Freq.(MHz)	824-960			1710-2170			1560-1580		
	Min	Max	AVG	Min	Max	AVG	Min	Max	AVG
Effi(%)	11.27%	49.78%	28.5%	23.99%	64.42%	45.05%	38.99%	41.02%	40.45%
Gain(dBi)	-3.36	2.54	0.13	0.08	4.92	2.43	1.83	2.39	2.2

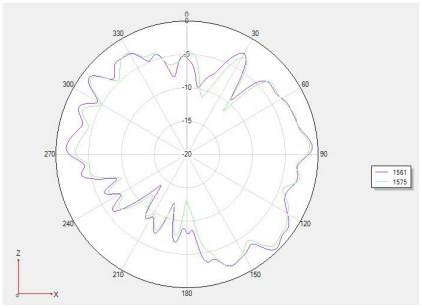
Freq.(MHz)	2400-2500		
	Min	Max	AVG
Effi(%)	46.39%	52.17%	49.9%
Gain(dBi)	1.72	2.85	2.3

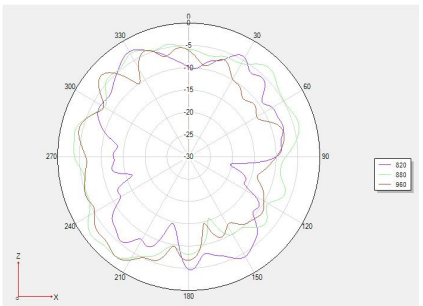
5.5 Radiation pattern

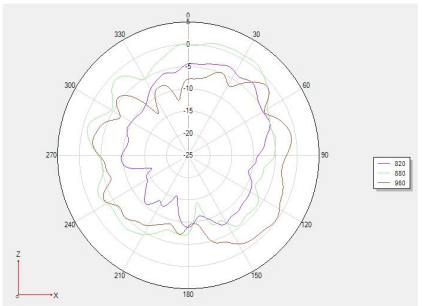








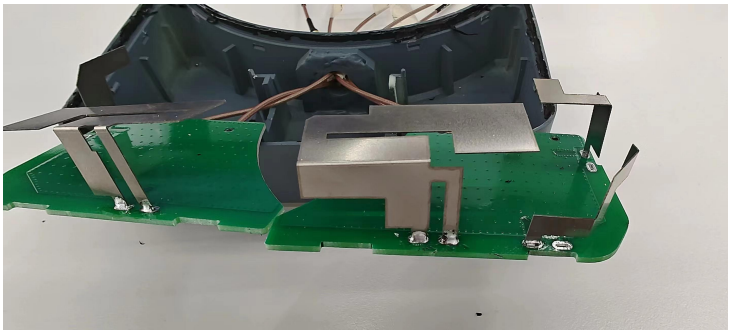




6. Environmental treatment methods

No antenna environmental treatment added

7. Antenna mounting position



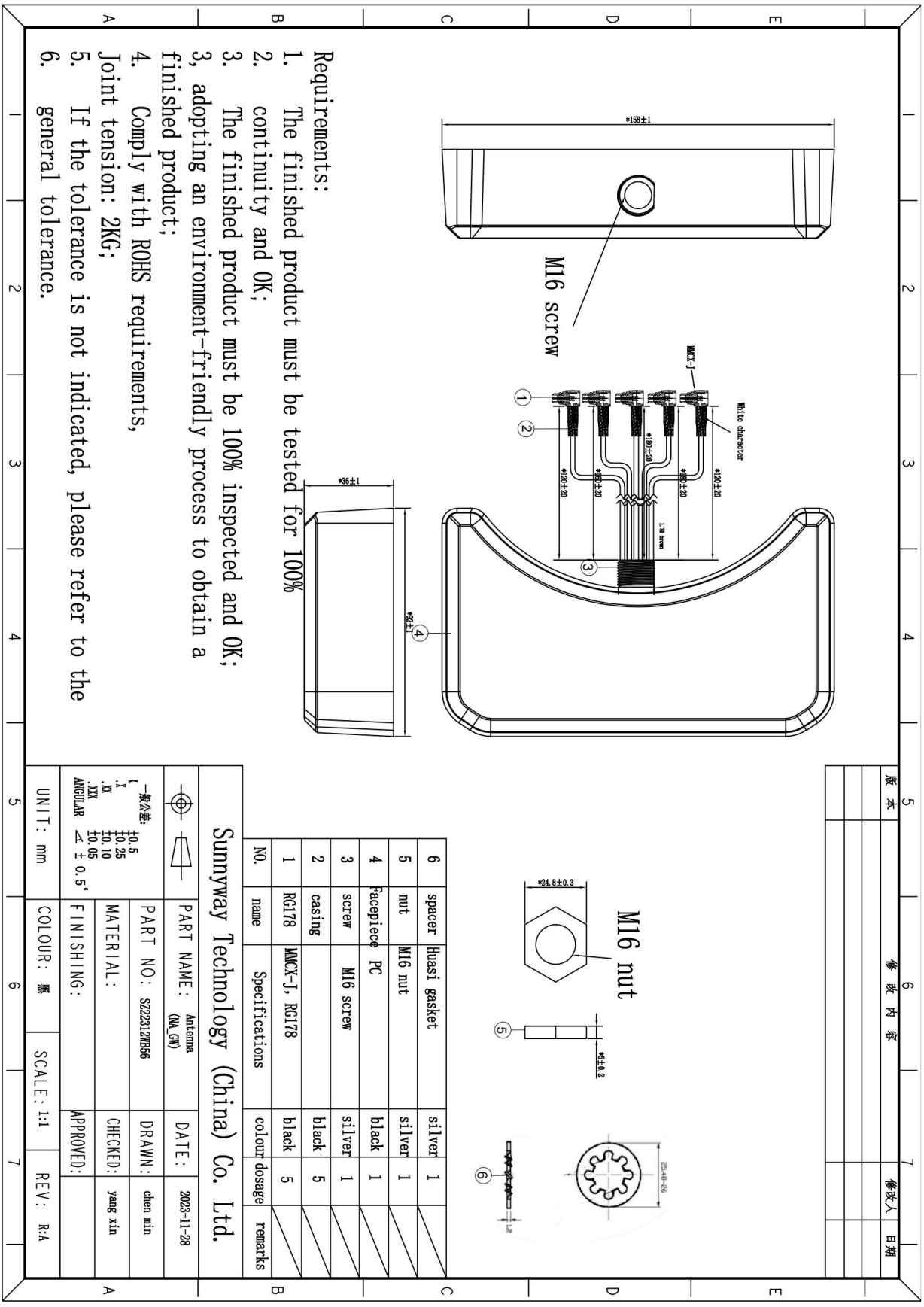
8. Standard for mass production antennas

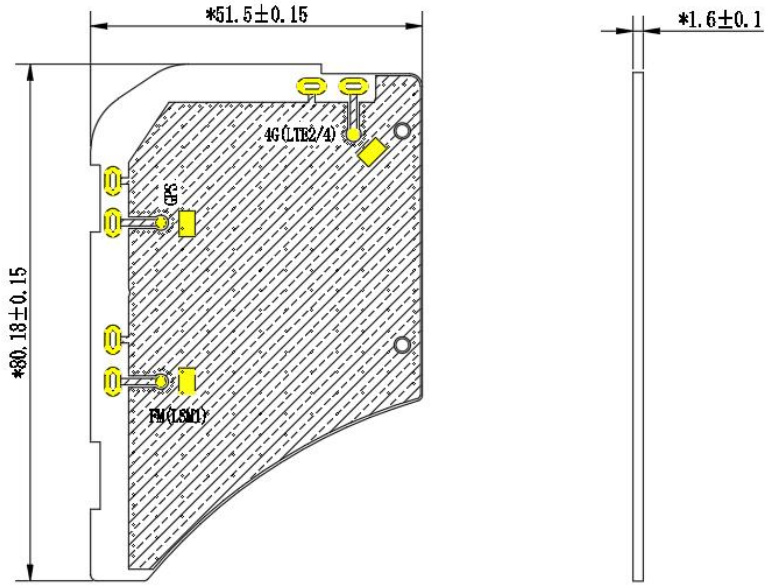
When the antenna is mass-produced, the VSWR is used as the mass production test standard.

According to the differences in the project itself, the following criteria are given:

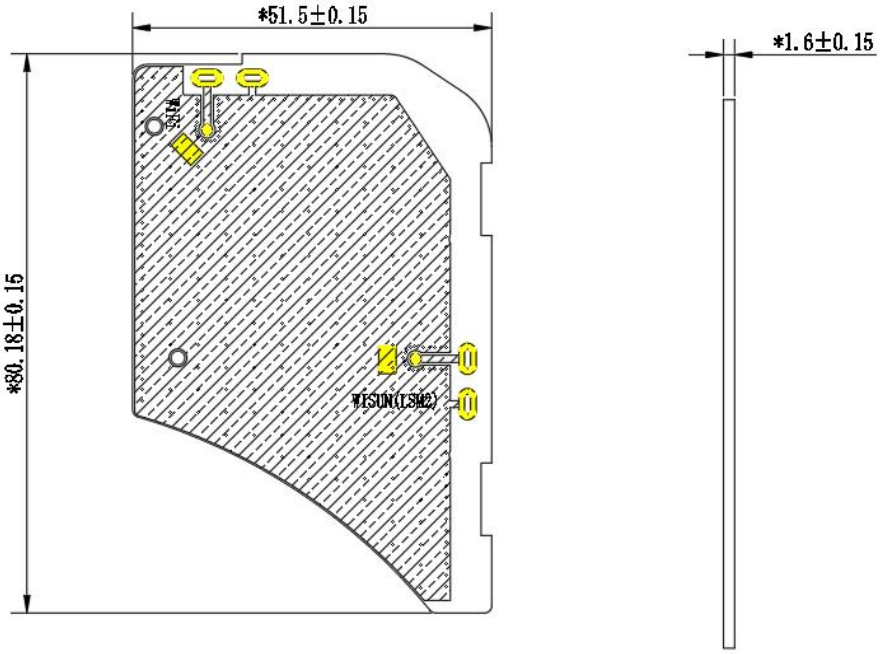
Frequency (MHz)	Mass production standard
800MHz-2690MHz	VSWR (Mass production performance) <VSWR(Acknowledged performance)+0.5

9. Engineering drawings

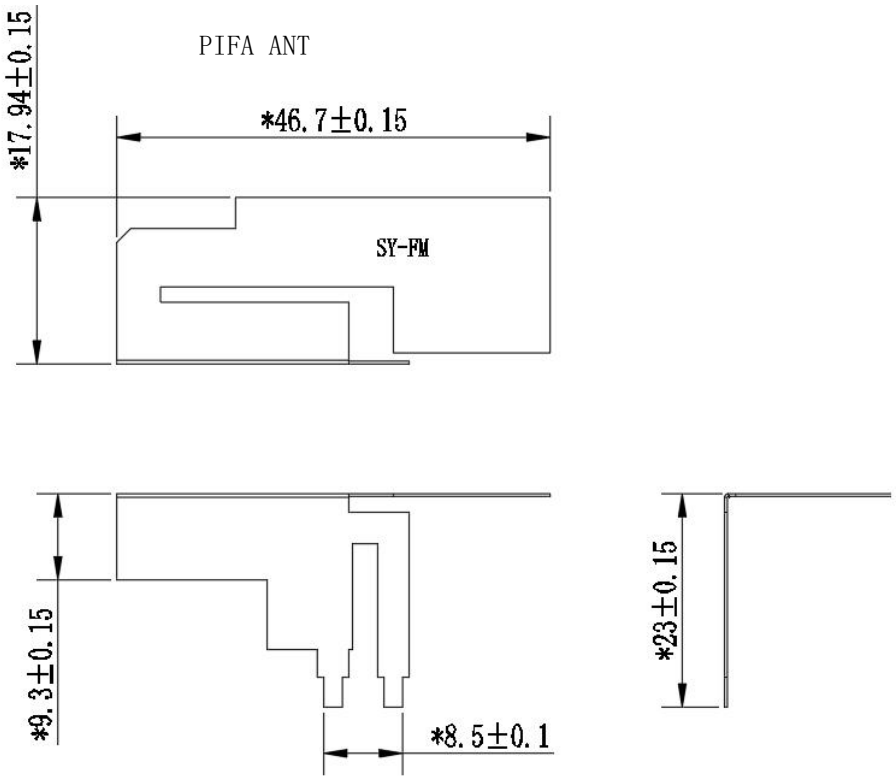




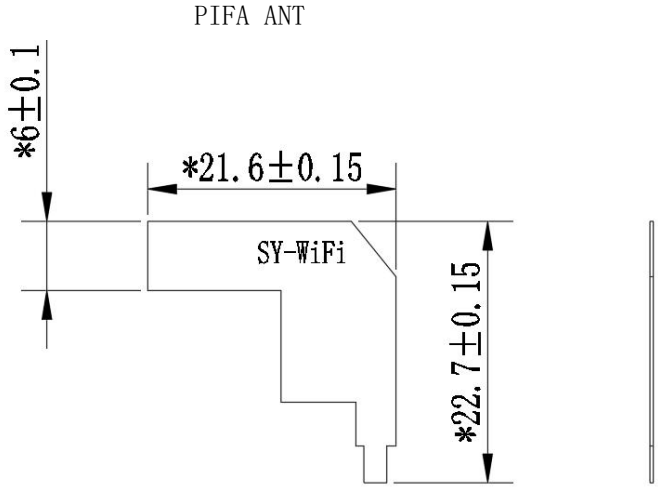
PCB:FR-4



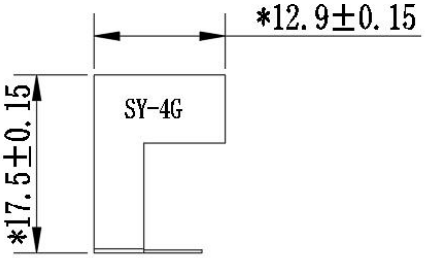
PCB:FR-4



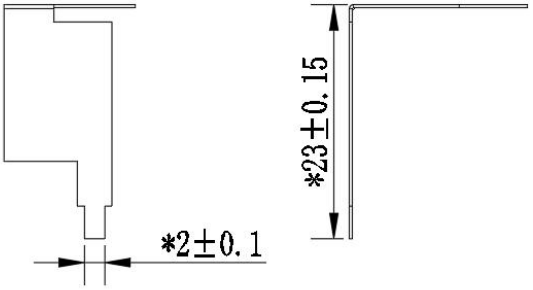
FM:SUS304, H=0.3mm



WIFI:SUS304, H=0.3mm

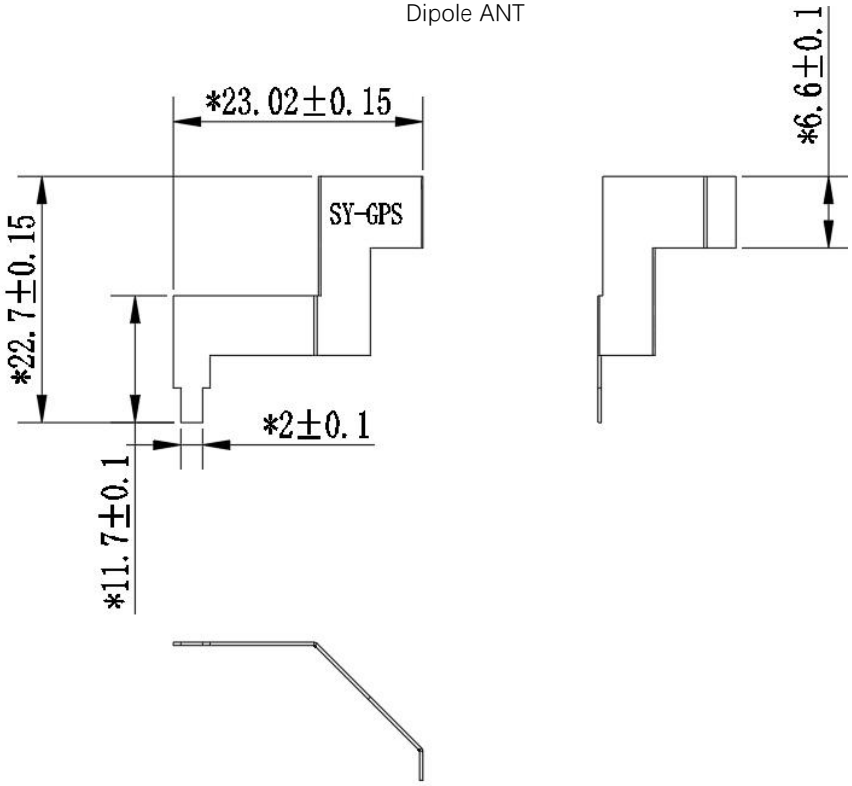


Dipole ANT



4G:SUS304, H=0.3mm

Dipole ANT



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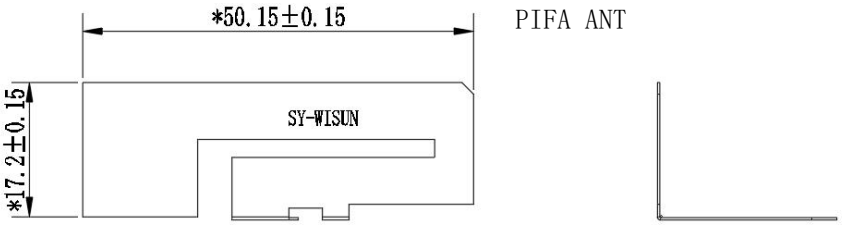

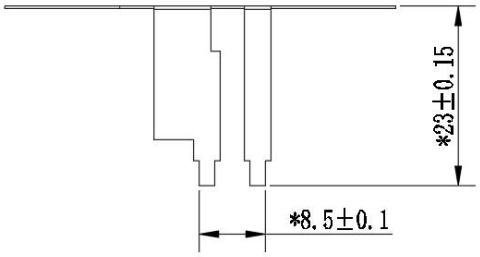

WISUN:SUS304, H=0.3mm