

Sunnyway Technology (China) Co., Ltd.

Antenna SPEC

Customer name:Mobiletek	Project name:G601
OperatingBand:GSM850/900/1800/1900CATM1/CATNB:B1/2/3/4/5/8/12/13/18/19/20/25/26/27/28 GPS 1575.42+1602MHz, 2.4GWIFI, BT	
Motherboard version:G601-V1-230216	
Material specifications	

Change your resume			
Date of establishment/change	Change the content	Changers	Version

SUNNYWAY Will sign the box				
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	RF:	Audit:		
The customer will sign the bar				
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1. Project information

Machine Information



Antenna information



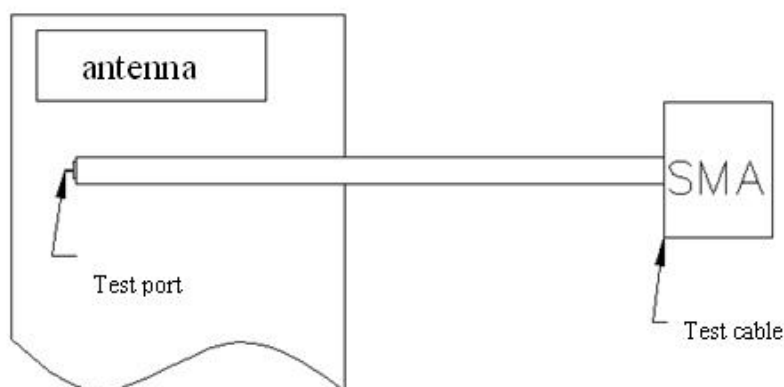
Motherboard	G601-V1-230216
The main antenna	SY-G601-MAIN-V0.1
433 Antenna	SY-G601-433-V0.1
Wifi Antenna	SY-G601-WIFI-V0.1
BT Antenna	SY-G601-BT-V0.1

The final verification antenna performance prototype is kept in our company for at least one year to facilitate the analysis and resolution of antenna production anomalies, Ensure the quality of antenna shipment

2. Test fixture

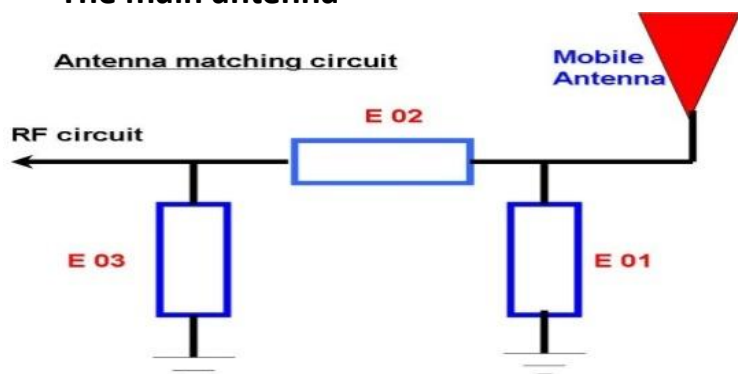
Purpose: To test antenna passive parameters as accurately as possible.

methods: the fixture is to use a 50 ohm coaxial cable, one end is connected to the pad after the antenna 's matching circuit (the front of the antenna switch) , and the other end is connected to the SMA connector.



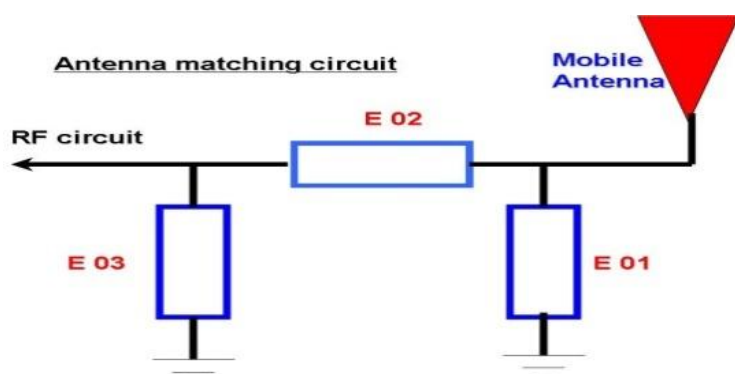
3. Matching circuit

The main antenna



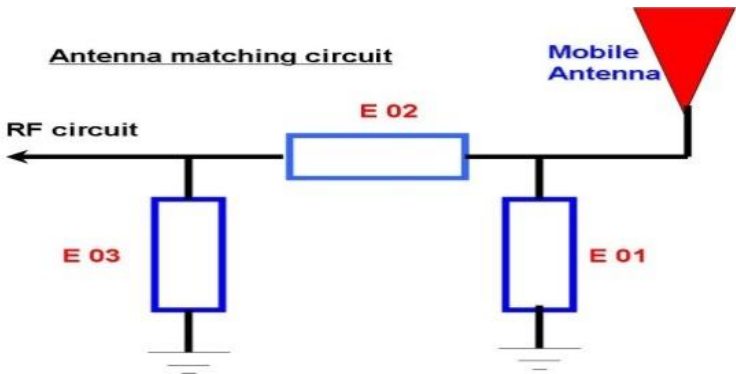
Element	Value
E1	N/A
E2	0 Ω
E3	N/A

BT antenna



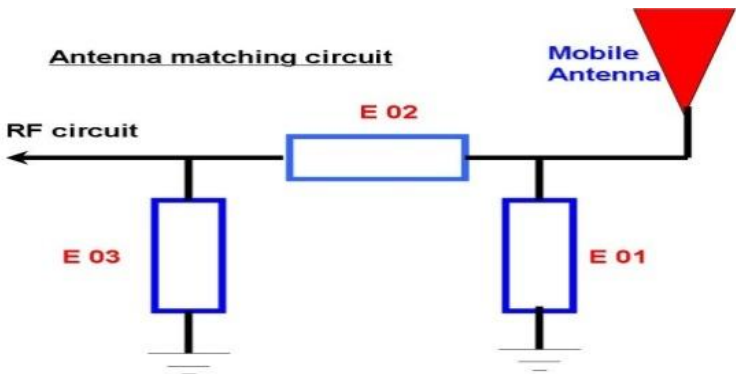
Element	Value
E1	N/A
E2	0 Ω
E3	N/A

Wi-fi antenna



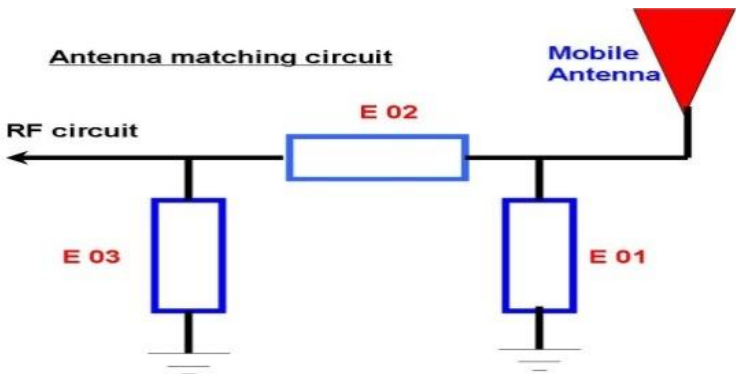
Element	Value
E1	N/A
E2	0 Ω
E3	N/A

GPS antenna



Element	Value
E1	N/A
E2	0 Ω
E3	N/A

433 Antenna



Element	Value
E1	N/A
E2	0 Ω
E3	N/A

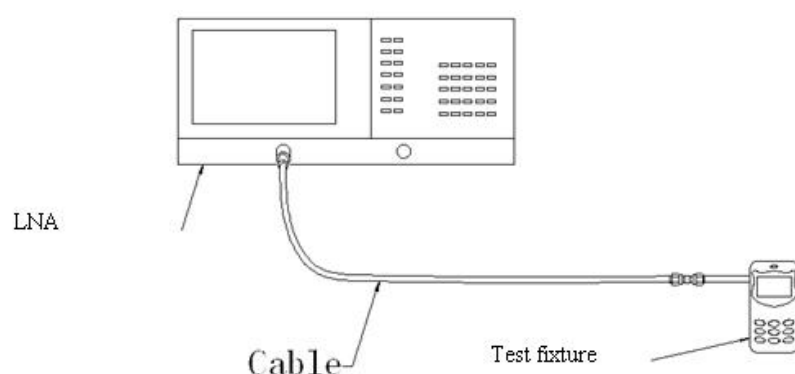
4. S11 Test

4.1 S11 test method instructions

Test equipment: LNA(E5062A)

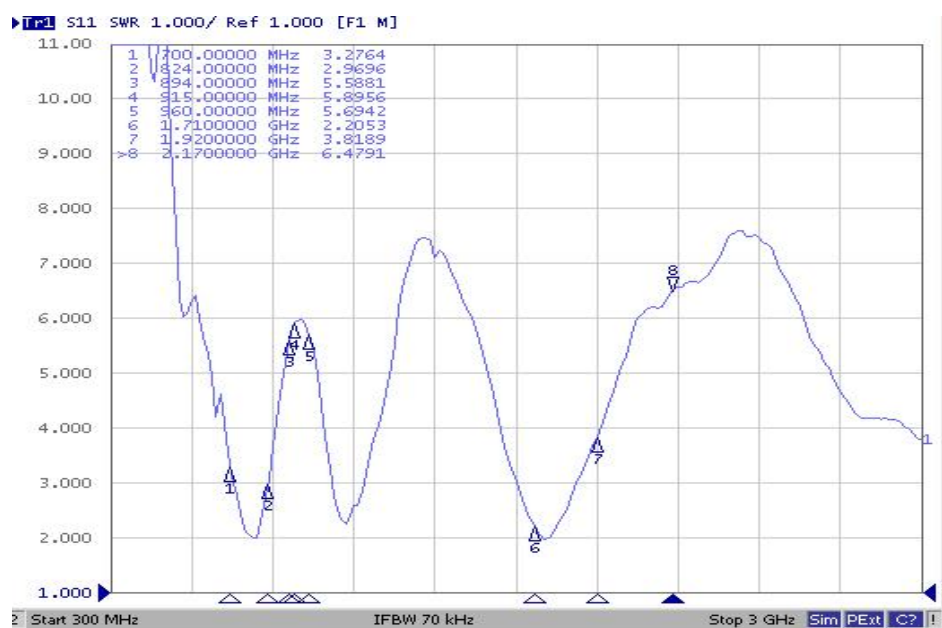
Test method: With a 50 ohm CABLE ,CABLE export from instrument testing port , After the calibration with calibration Key, connected to the SMA connector, Records the return loss and VSWR of the related frequency points.

Test schematic diagram is as follows:



4.2 S11 Parameter

The main antenna



FRq (MHz)	VSWR
700	3.27
824	2.96
894	5.58
960	5.69
1710	2.2
1920	3.81
2170	6.47

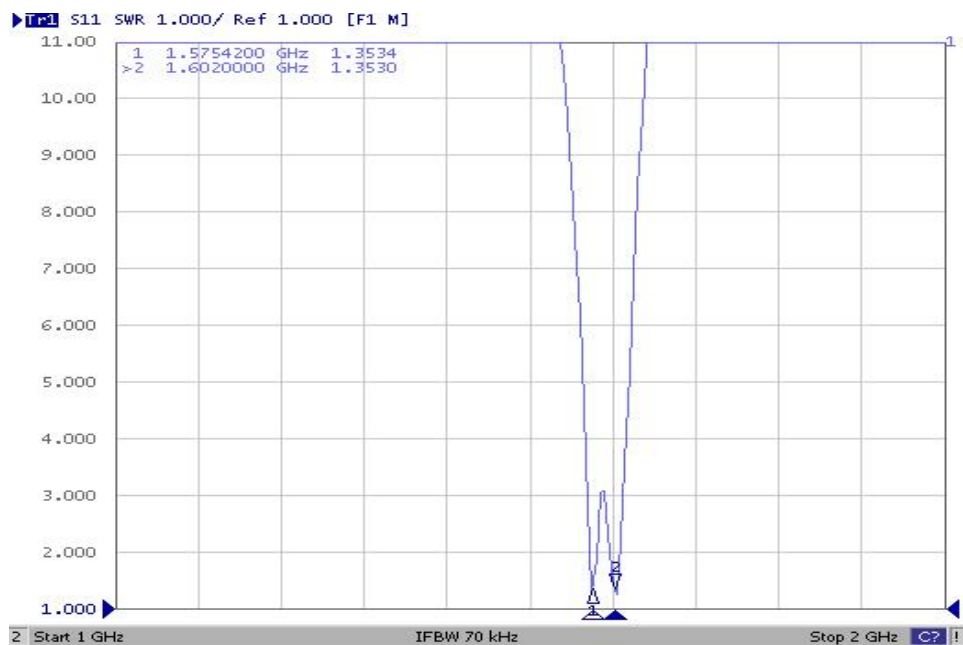
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BT antenna



FRq (MHz)	VSWR
2400	1.79
2500	1.86

GPS antenna



FRq (MHz)	VSWR
1575.42	1.35
1602	1.35

Wi-fi antenna



FRq (MHz)	VSWR
2400	1.78
2500	1.81

433 Antenna



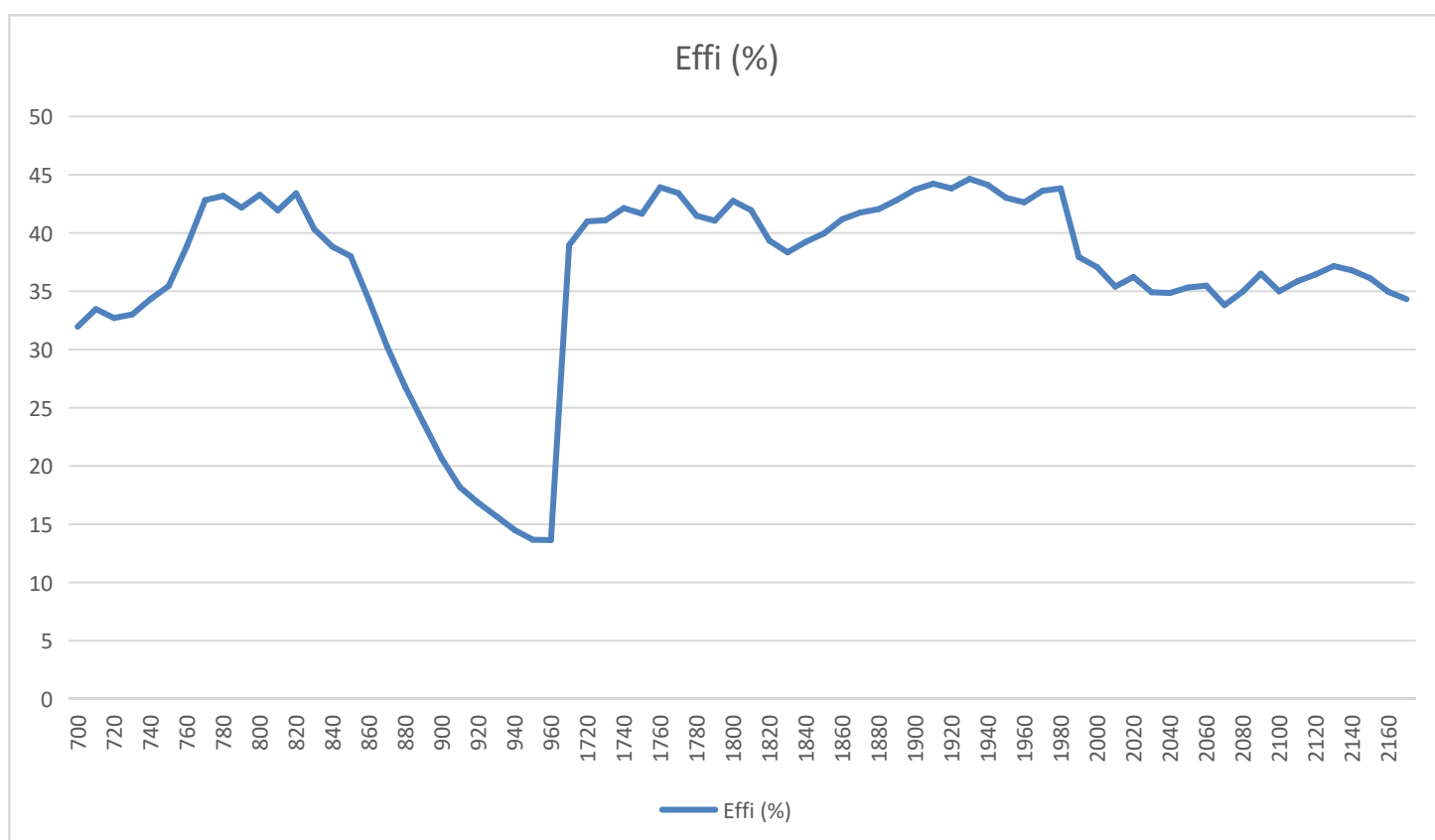
FRq (MHz)	VSWR
433	2.06

5. Anechoic Chamber test data test system: SHIELDED
ANECHOIC chamber test environment: temperature $22^{\circ}\text{C} \pm 3^{\circ}\text{C}$,
 humidity $50\% \pm 15\%$ test equipment: when testing passive data,
 when testing active data using Network analyzer Agilent
 E5062C, agilent 8960/CMW500/E4438C was used

5.1 Passive test data

Passive efficiency of WIFI antennas

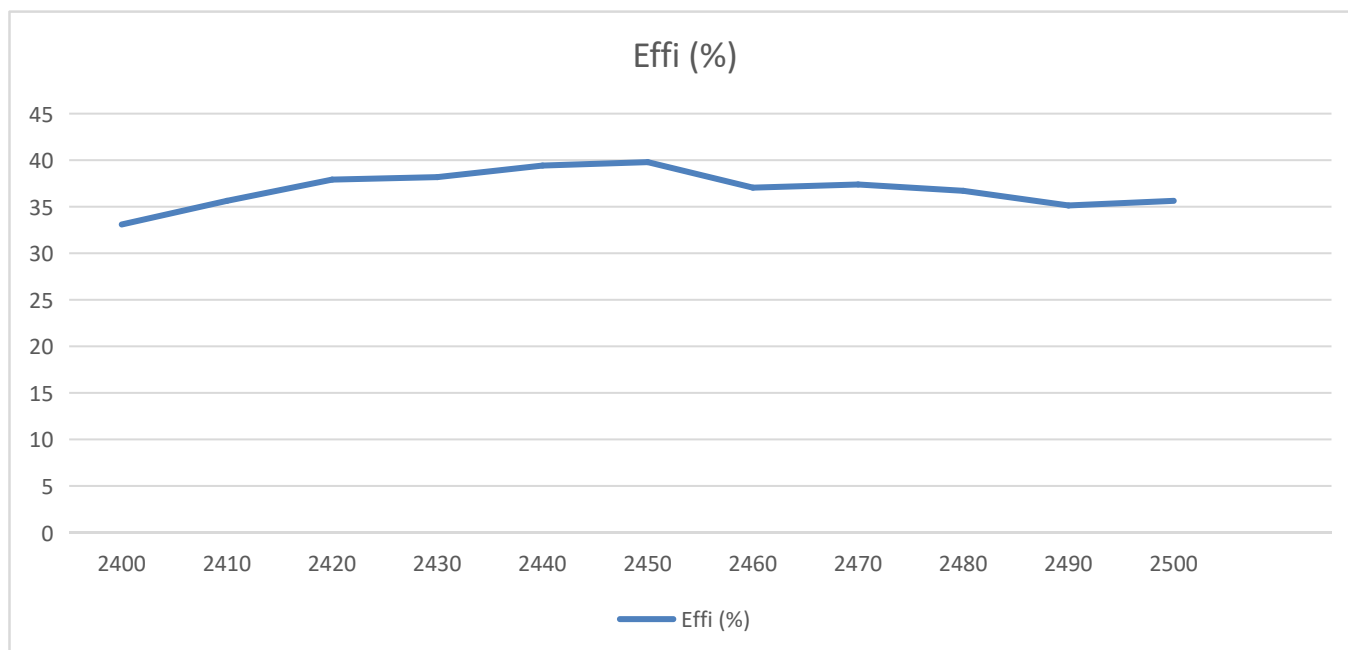
The main antenna



Freq. (MHz)	700-960			1710-2170		
	最小值	最大值	平均值	最小值	最大值	平均值
Effi (%)	13.63	43.4	31.17	33.81	44.64	39.5
Effi (dB)	-8.65	-3.63	-5.35	-4.71	-3.5	-4.04

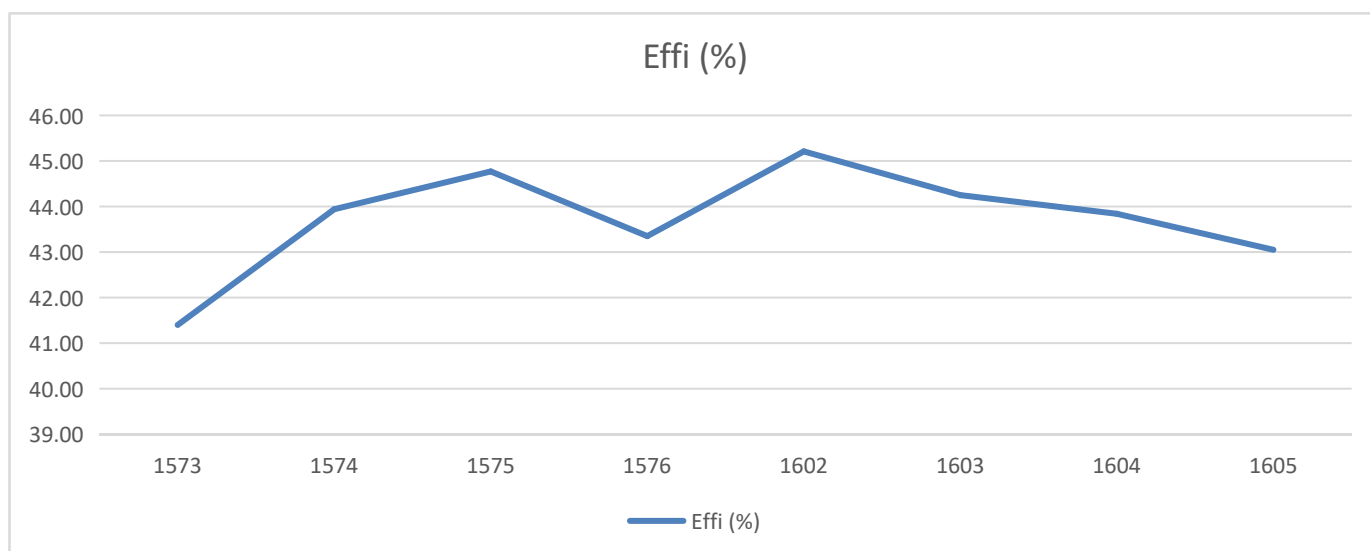
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BT antenna



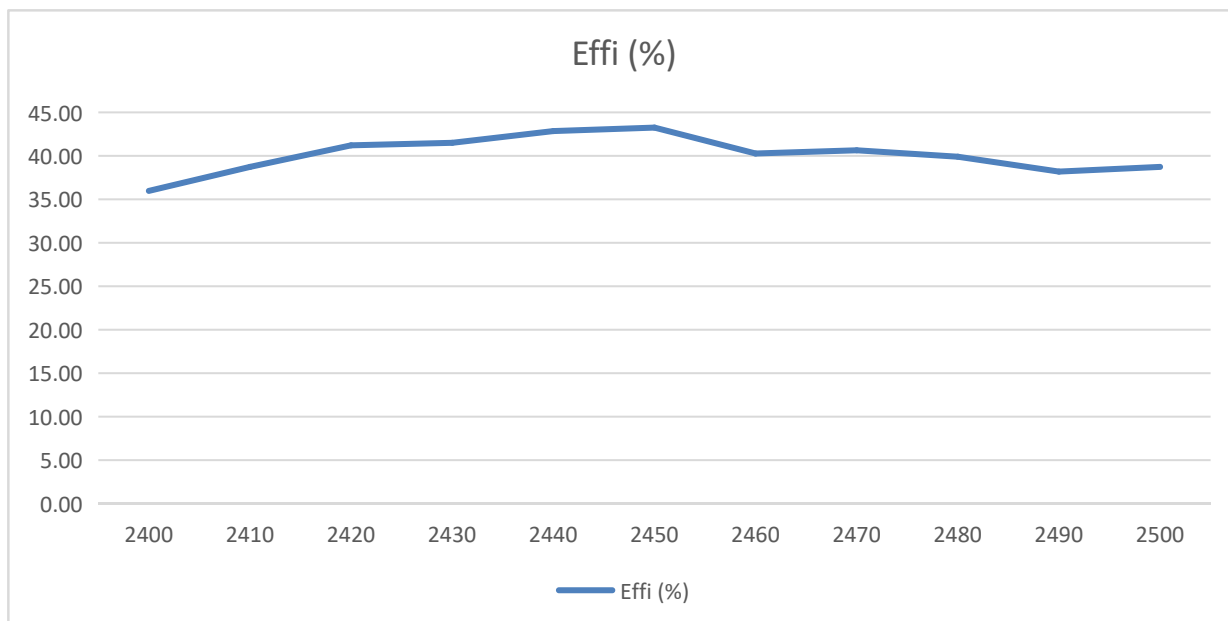
Freq. (MHz)	2400-2500		
	最小值	最大值	平均值
Effi (%)	33.09	39.79	36.9
Effi (dB)	-4.8	-4	-4.33

GPS antenna



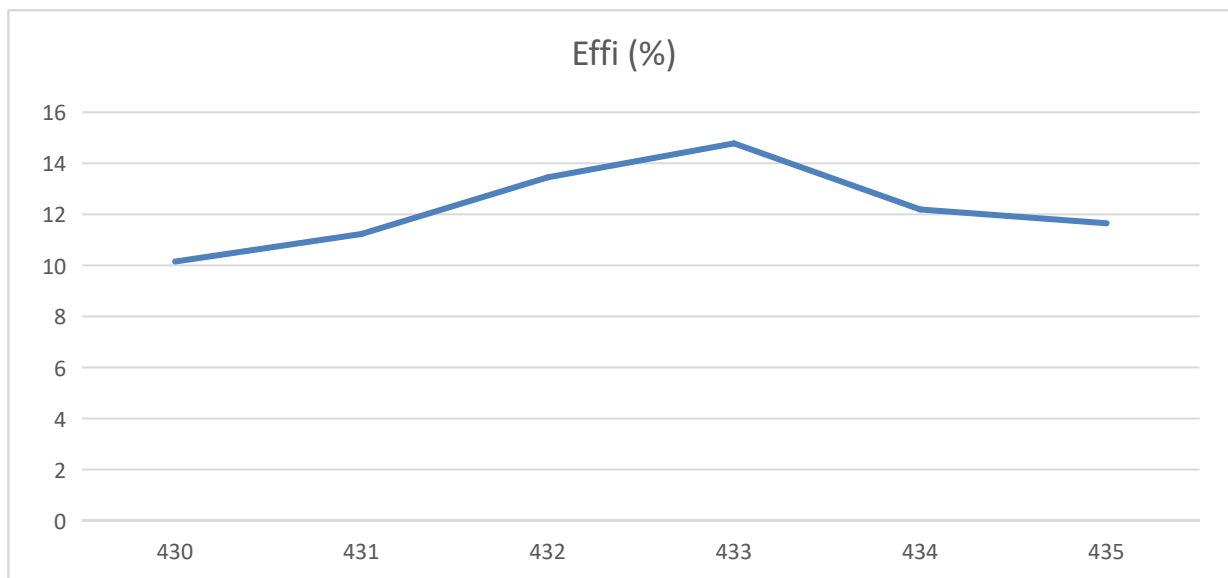
Freq. (MHz)	1573-1576			1602-1605		
	最小值	最大值	平均值	最小值	最大值	平均值
Effi (%)	41.4	44.77	43.36	43.05	45.21	44.08
Effi (dB)	-3.83	-3.49	-3.63	-3.66	-3.45	-3.55

Wi-fi antenna



Freq. (MHz)	2400-2500		
	最小值	最大值	平均值
Effi (%)	35.97	43.25	40.11
Effi (dB)	-4.44	-3.64	-3.97

433 Antenna



Freq. (MHz)	430-435		
	最小值	最大值	平均值
Effi (%)	10.15	14.78	12.24
Effi (dB)	-9.94	-8.3	-9.15

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5.2 Active test data

The main antenna active test data (free space, screen off)

EMTC

Band	Channel	OTA (dBm)		Band	Channel	OTA (dBm)	
		TRP (dB)	TIS (dB)			TRP (dB)	TIS (dB)
LTE FDD-B1 (5M)	L	15.43		LTE FDD-B13 (5M)	L	16.28	
	M	15.69			M		
	H	15.27	-94.71		H		-94.42
LTE FDD-B2 (5M)	L	15.62		LTE FDD-B18 (5M)	L	16.47	
	M	15.47			M	16.18	
	H	15.61	-91.59		H	16.71	-93.59
LTE FDD-B3 (5M)	L	15.56		LTE FDD-B19 (5M)	L	16.24	
	M	15.69			M	16.58	
	H	15.24	-93.28		H	16.37	-92.67
LTE FDD-B4 (5M)	L	16.13		LTE FDD-B20 (5M)	L	16.17	
	M	16.78			M	16.62	
	H	16.59	-90.21		H	16.2	-91.59
LTE FDD-B5 (5M)	L	16.21		LTE FDD-B26 (5M)	L	16.45	
	M	16.57			M	16.29	
	H	16.49	-92.63		H	16.53	-93.73
LTE FDD-B8 (5M)	L	13.25		LTE FDD-B27 (5M)	L	16.13	
	M	11.67			M	16.54	
	H	10.27	-90.52		H	16.27	-92.35
LTE FDD-B12 (5M)	L	15.54		LTE FDD-B28 (5M)	L	16.29	
	M	15.72			M	16.37	
	H	15.38	-94.79		H	16.73	-92.43

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NB

Band	Channel	OTA (dBm)		Band	Channel	OTA (dBm)	
		TRP (dB)	TIS (dB)			TRP (dB)	TIS (dB)
NB 1	L	15.68		NB 13	L	15.42	
	M	15.71			M	15.71	
	H	15.49	-104.92		H	15.68	-106.29
NB 2	L	15.43		NB 18	L	16.45	
	M	15.95			M	16.31	
	H	15.78	-102.93		H	16.37	-104.35
NB 3	L	15.2		NB 19	L	16.28	
	M	15.73			M	16.59	
	H	15.61	-105.9		H	16.71	-106.48
NB 4	L	15.69		NB 20	L	16.25	
	M	15.83			M	16.34	
	H	15.62	-103.78		H	16.18	-105.29
NB 5	L	16.39		NB 26	L	16.29	
	M	16.43			M	16.42	
	H	16.48	-105.9		H	16.33	-104.91
NB 8	L	12.79		NB 27	L	16.17	
	M	11.56			M	16.21	
	H	10.92	-102.49		H	16.45	-105.47
NB 12	L	15.43		NB 28	L	16.55	
	M	15.69			M	16.01	
	H	15.48	-105.25		H	16.48	-106.28

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GSM

Band	Channel	OTA (dBm)	
		TRP (dB)	TIS (dB)
850	L	26.87	
	M	27.02	
	H	26.49	-100.78
900	L	24.8	
	M	23.29	
	H	23.25	-96.19
1800	L	25.01	
	M	25.12	
	H	25.26	-105.14
1900	L	25.24	
	M	25.07	
	H	25.43	-103.52

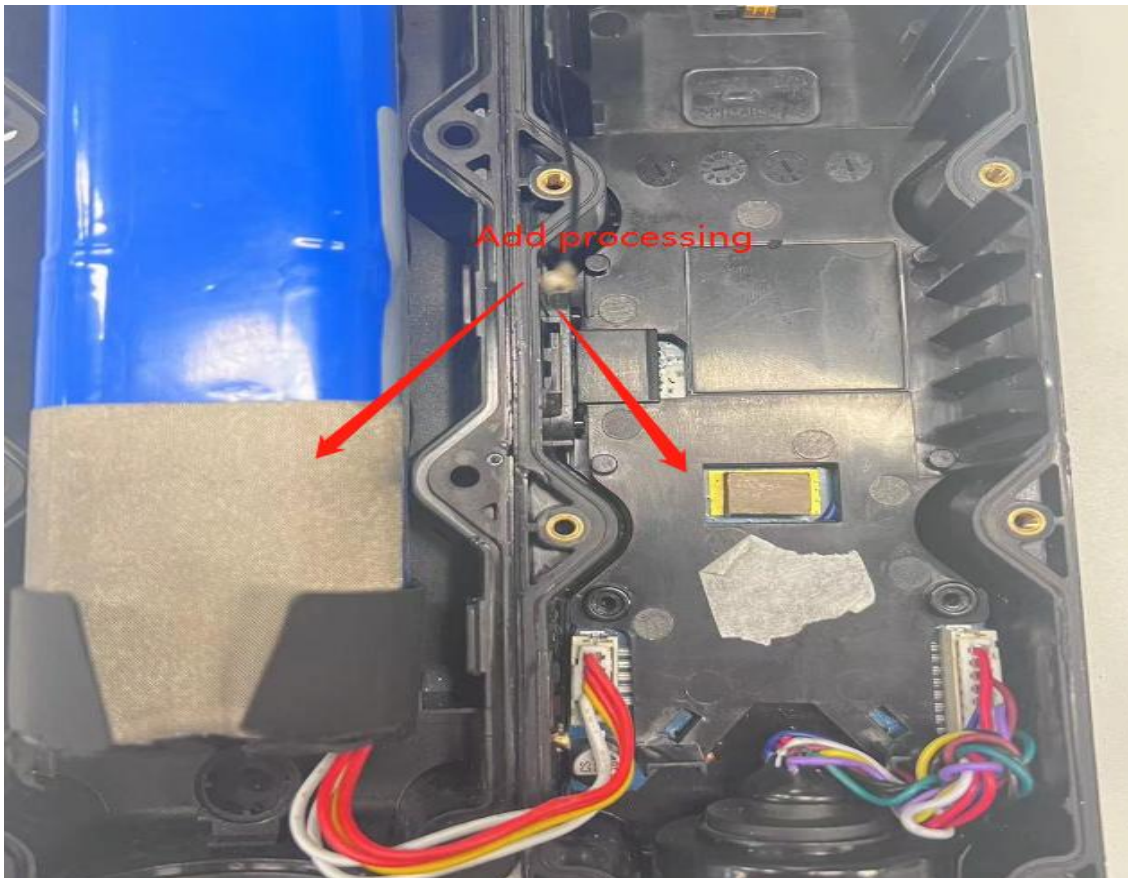
The main antenna gain

Band	Antenna gain (dbi)
Band2	-4
Band4	-4
Band12	-5
Band13	-5

433 antenna gain

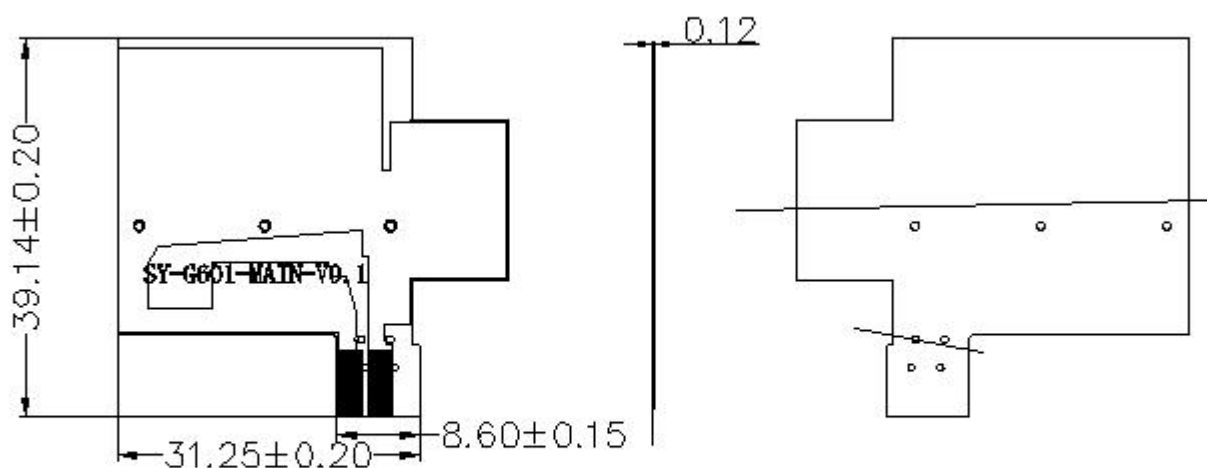
Band	Antenna gain (dbi)
433MHz	-8

6. Ground handling of the prototype

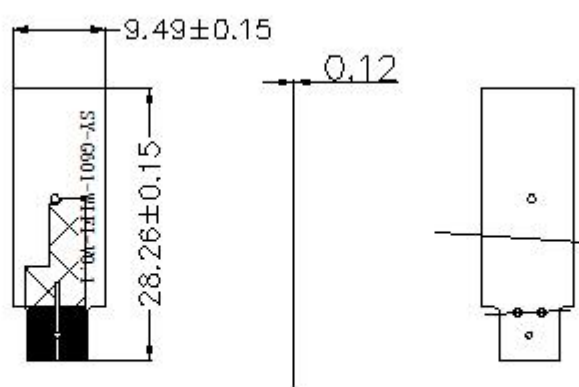


7. The standing wave ratio (SWR) is used as the test standard for antenna mass production. Based on the differences of the project itself, the following criteria are given:

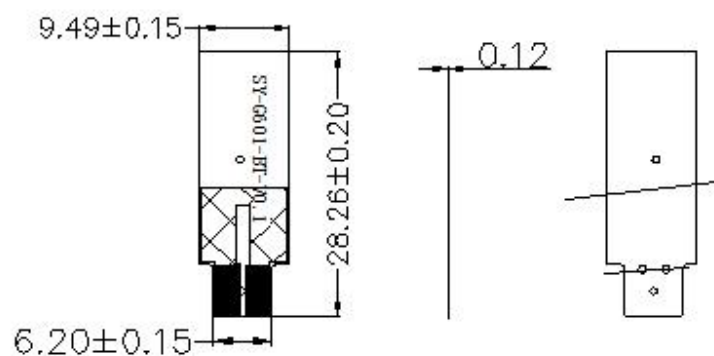
Frequence	SPEC ,Mass Production
700MHz--960MHz 1710MHz--2170MHz 1575.42&1602MHz 2400MHz--2500MHz	$V_{SWR} (MP \text{ performance}) < V_{SWR} (Verify \text{ performance}) + 1$



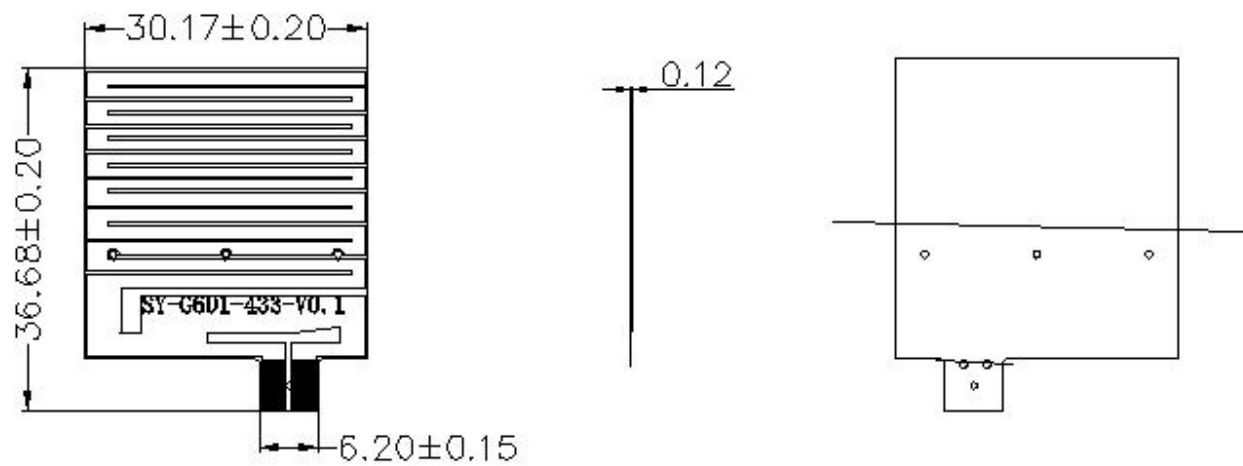
SH23010IB75-1



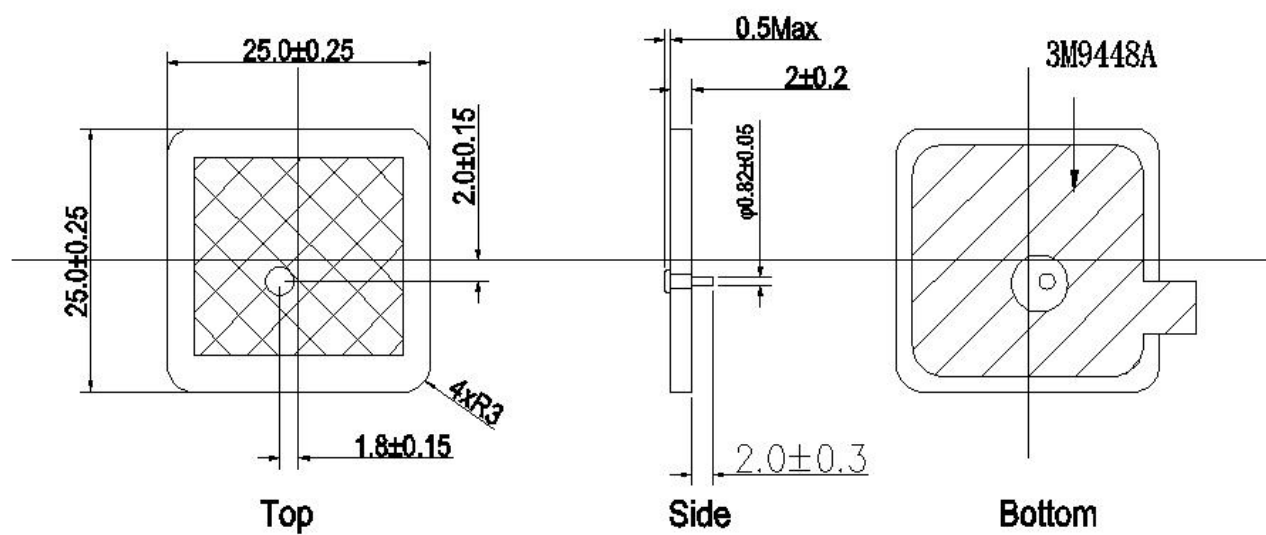
SH23010IB75-2



SH23010IB75-3



SH23010IB75-4



SH23010IA93