

Sunnyway Technology (China) Co., Ltd.

Antenna SPEC

Customer name:Mobiletek		Project name:PT102A
Operating Band: LTE B2/B4/B12&GPS&WIFI&433		
Motherboard version:PT102_V2_221102A		
Material specifications		
Specifications and models	Material No	Customer data
Main antenna	SH22396IB89	

Change your resume				
Date of establishment/change	Change the content	Changers	Version	
23.3.21			V1.0	
SUNNYWAY Will sign the box				
R & D	ME:	Audit:	QE:	Approved:
	RF:	Audit:		
The customer will sign the bar				
Electrical engineer	PM	ME	QE	

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1. Project information

Machine Information



Antenna information



Motherboard

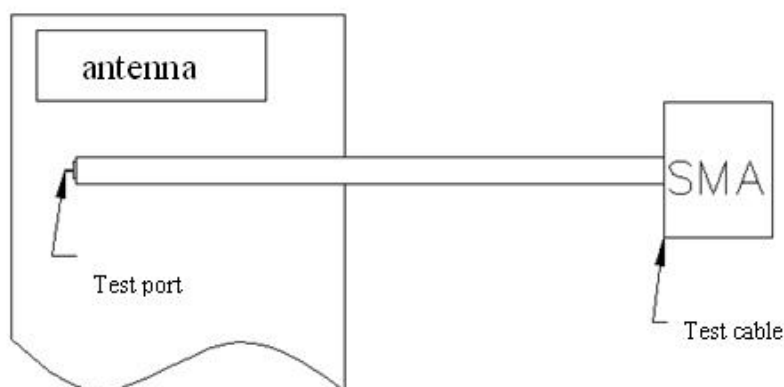
PT102_V2_221102A

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

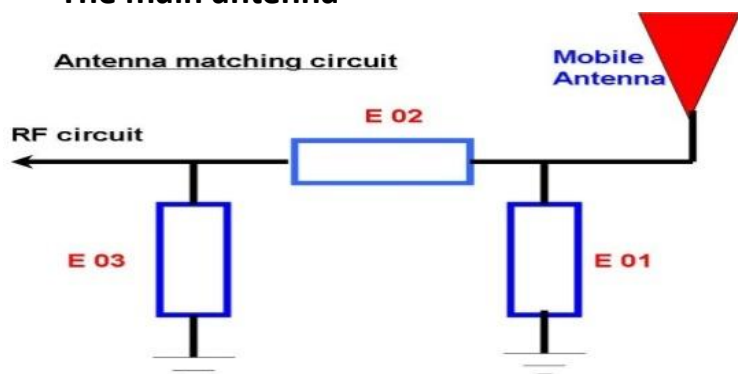
Purpose: To test antenna passive parameters as accurately as possible.

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.



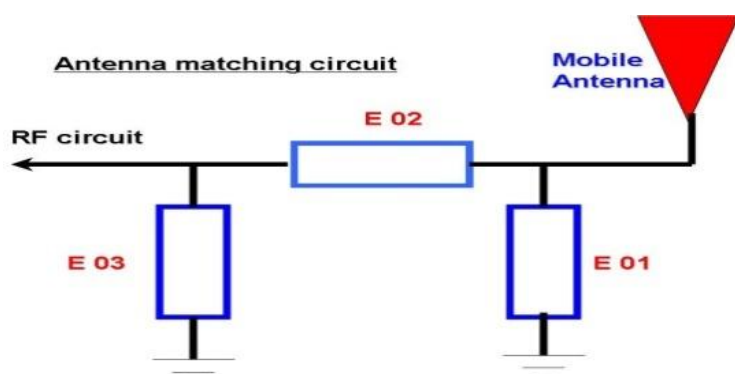
3. Matching circuit

The main antenna



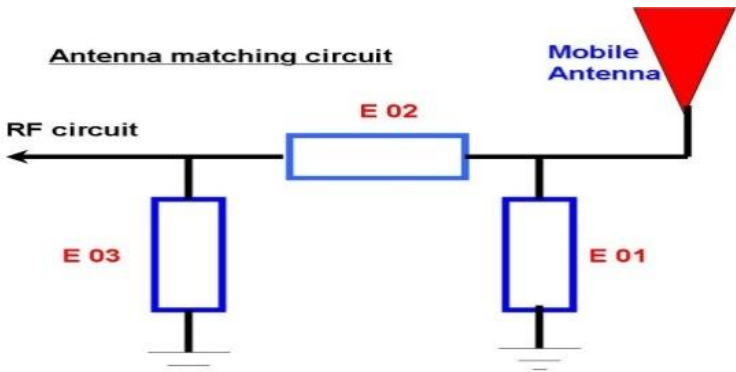
Element	Value
E1	N/A
E2	0 Ω
E3	N/A

Diversity antenna



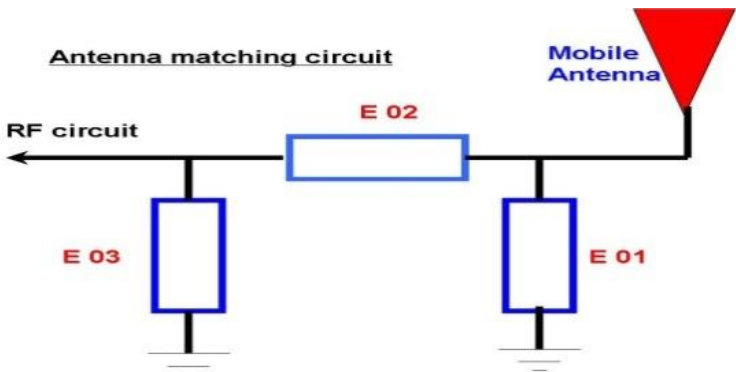
Element	Value
E1	N/A
E2	0 Ω
E3	N/A

Wi-fi antenna



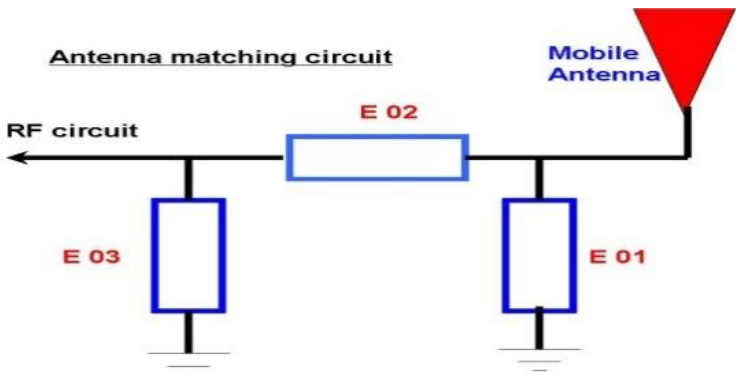
Element	Value
E1	N/A
E2	0 Ω
E3	N/A

GPS antenna



Element	Value
E1	N/A
E2	0 Ω
E3	N/A

433 Antenna



Element	Value
E1	18nH
E2	0 Ω
E3	N/A

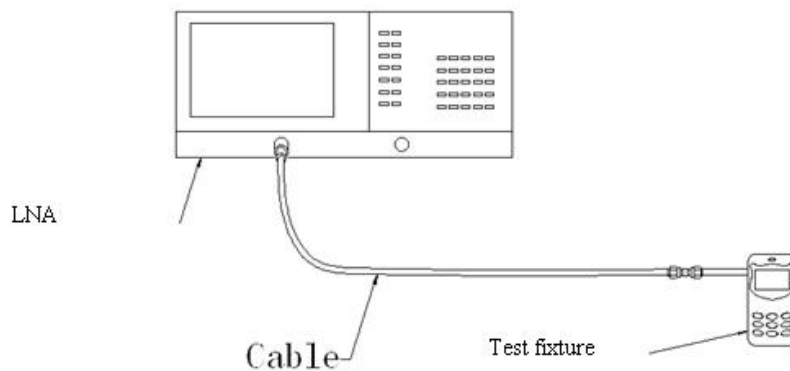
4. S11 Test

4.1 S11 test method instructions

Test equipment: LNA(E5062A)

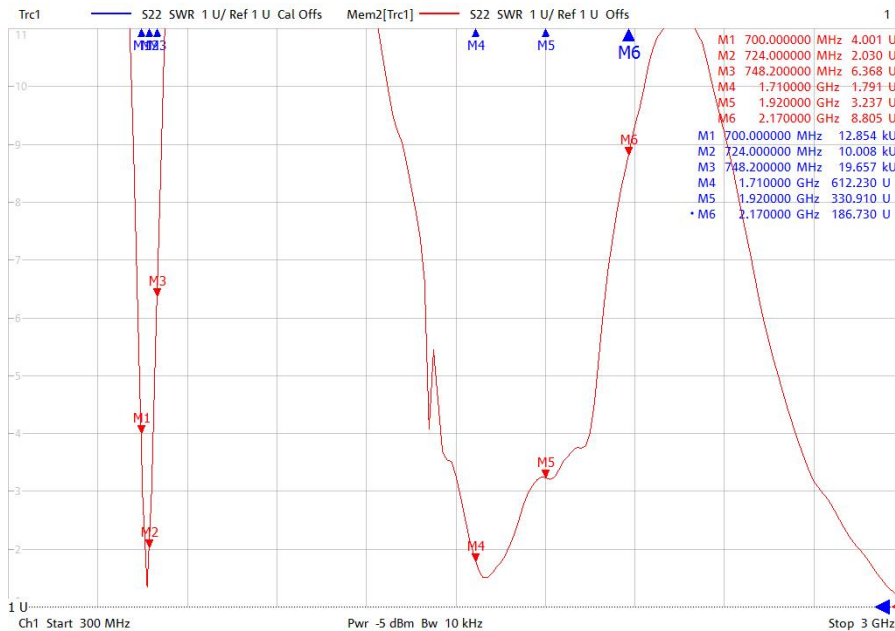
Test method: With a 50 ohm CABLE ,CABLE export from instrument testing port , After the calibration with calibration Key, connected to the SMA connector, Records the return loss and VSWR of the related frequency points.

Test schematic diagram is as follows:



4.2 S11 Parameter

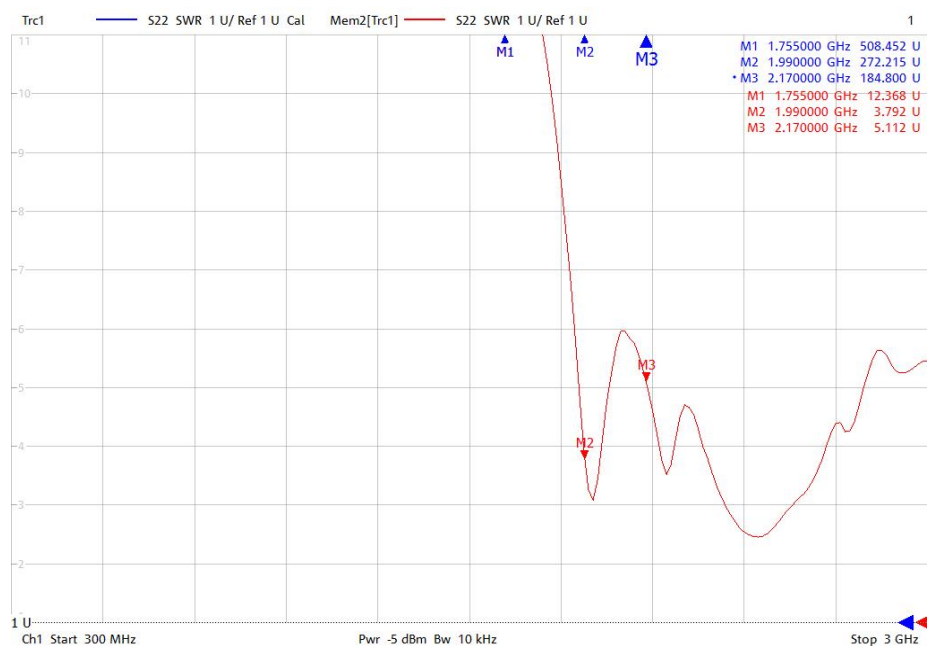
The main antenna



FRq (MHz)	VSWR
700	4.0
724	2.03
748	6.36
1710	1.79
1920	3.23
2170	8.8

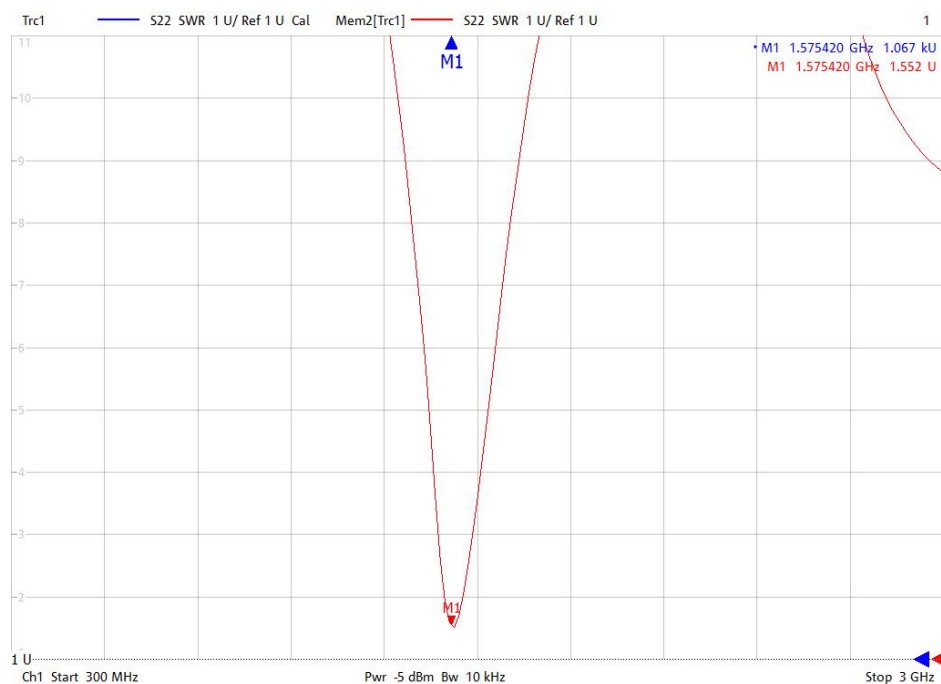
Sunnyway Technology (china) Ltd. Company Antenna Specification

Diversity antenna



FRq (MHz)	VSWR
1710	12.3
1920	3.79
2170	5.11

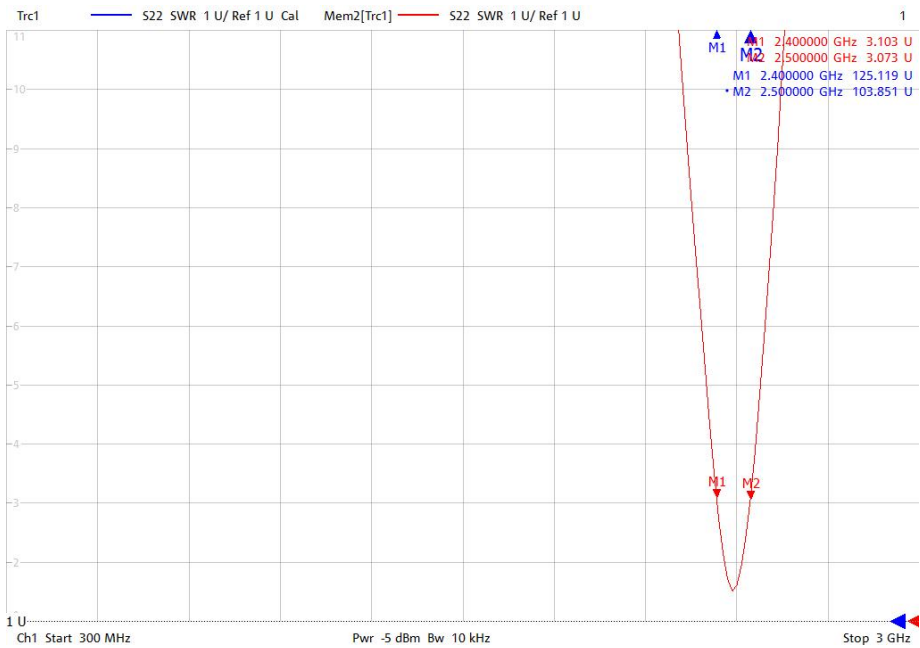
GPS antenna



FRq (MHz)	VSWR
1575	1.55

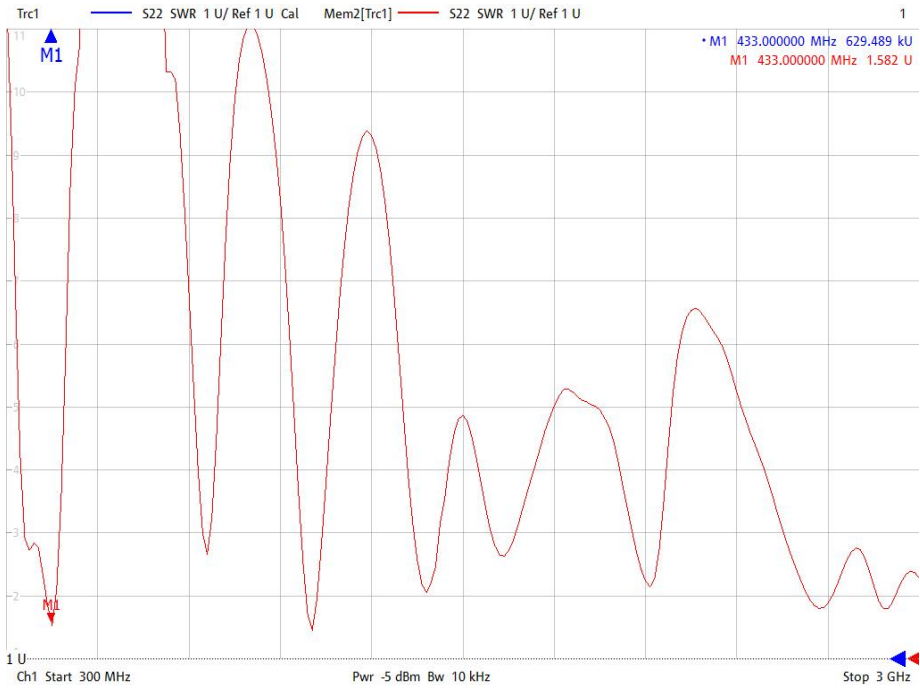
Sunnyway Technology (china) Ltd. Company Antenna Specification

Wi-fi antenna



FRq (MHz)	VSWR
2400	3.1
2500	3.07

433 Antenna



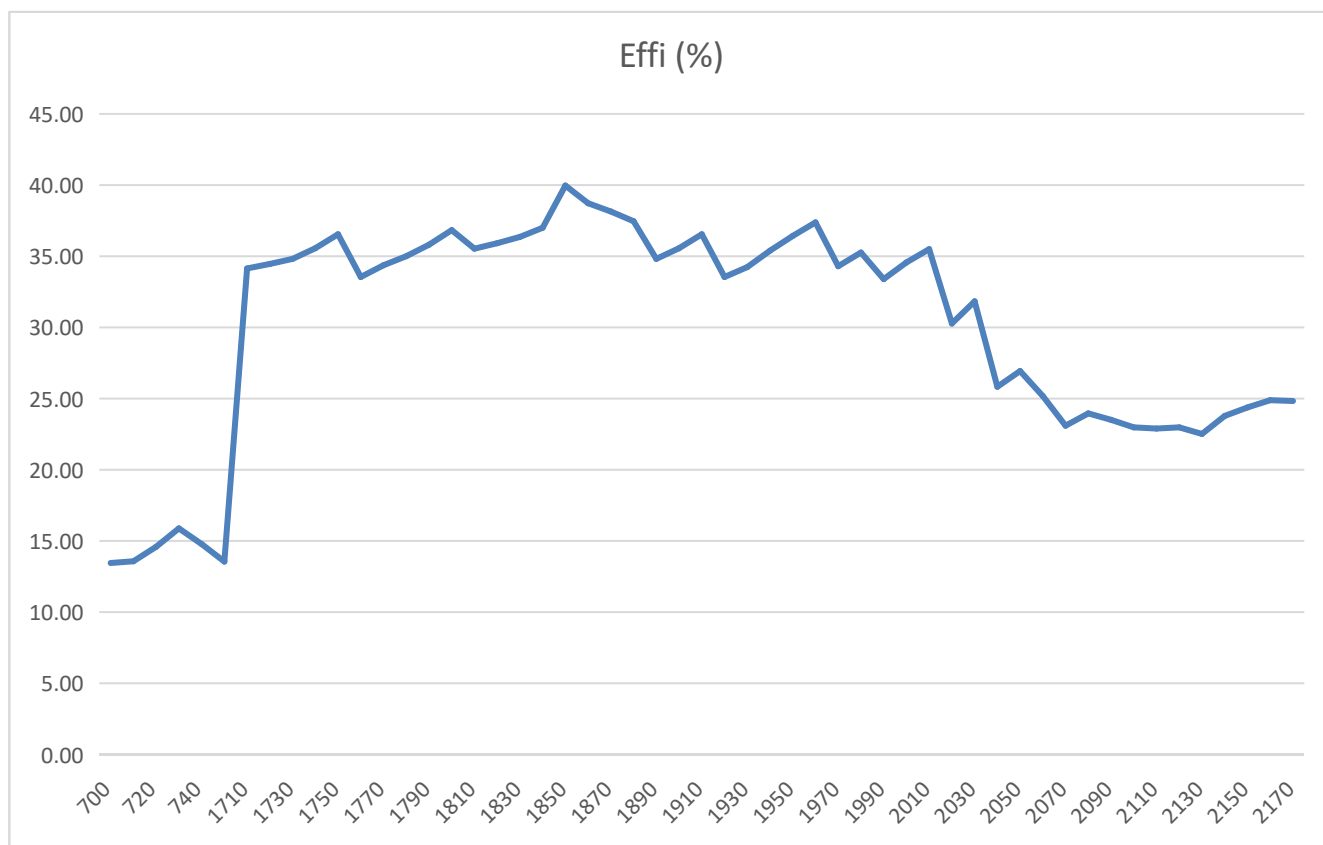
FRq (MHz)	VSWR
433	1.58

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

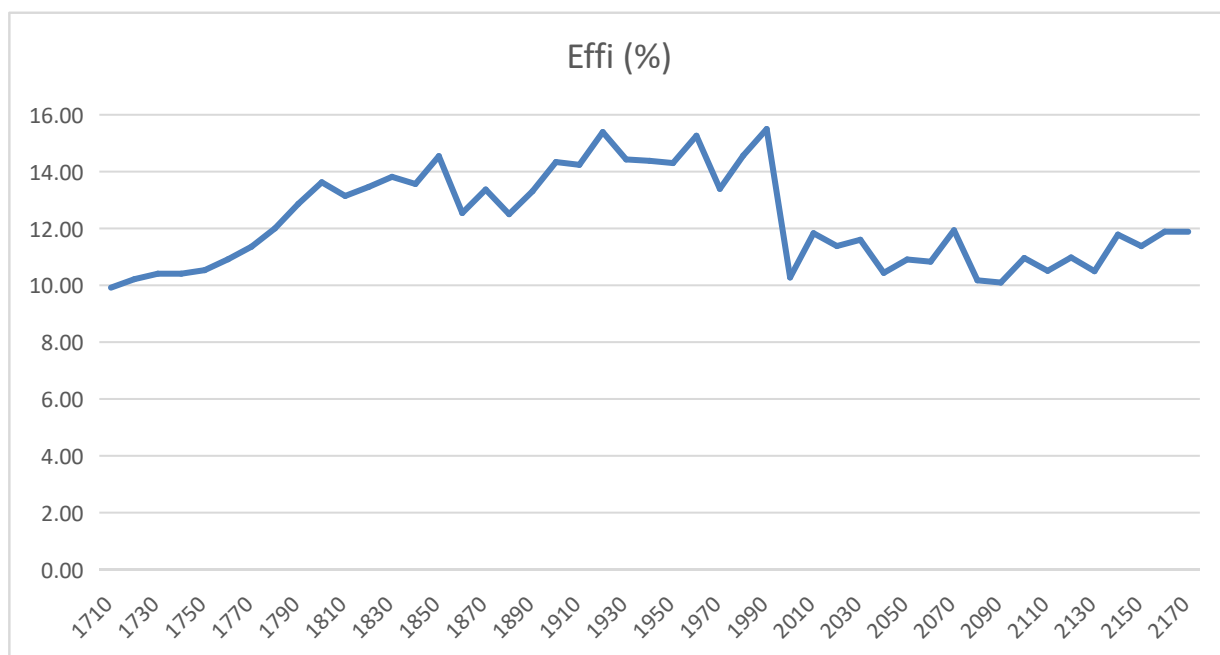
Passive efficiency of WIFI antennas

The main antenna



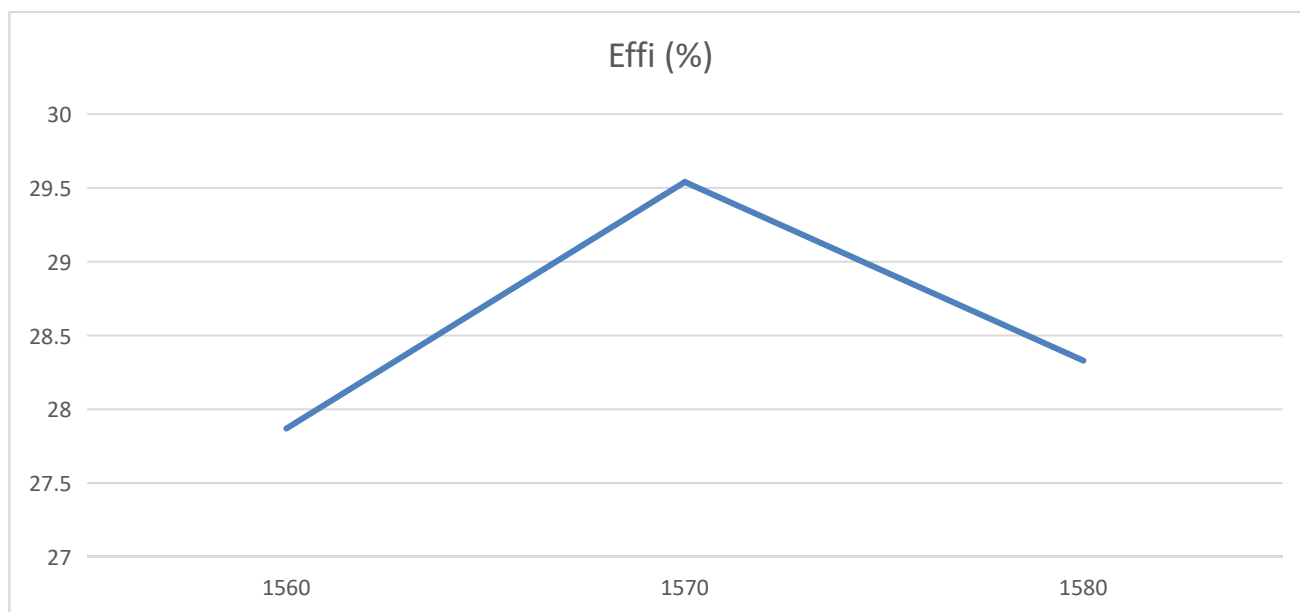
Freq. (MHz)	700-740			1710-2170		
	Min	Max	Avg	Min	Max	Avg
Effi (%)	13.45	15.88	14.39	22.51	39.96	32.02
Effi (dB)	-8.71	-7.99	-8.43	-6.48	-3.98	-5.02

Diversity antenna



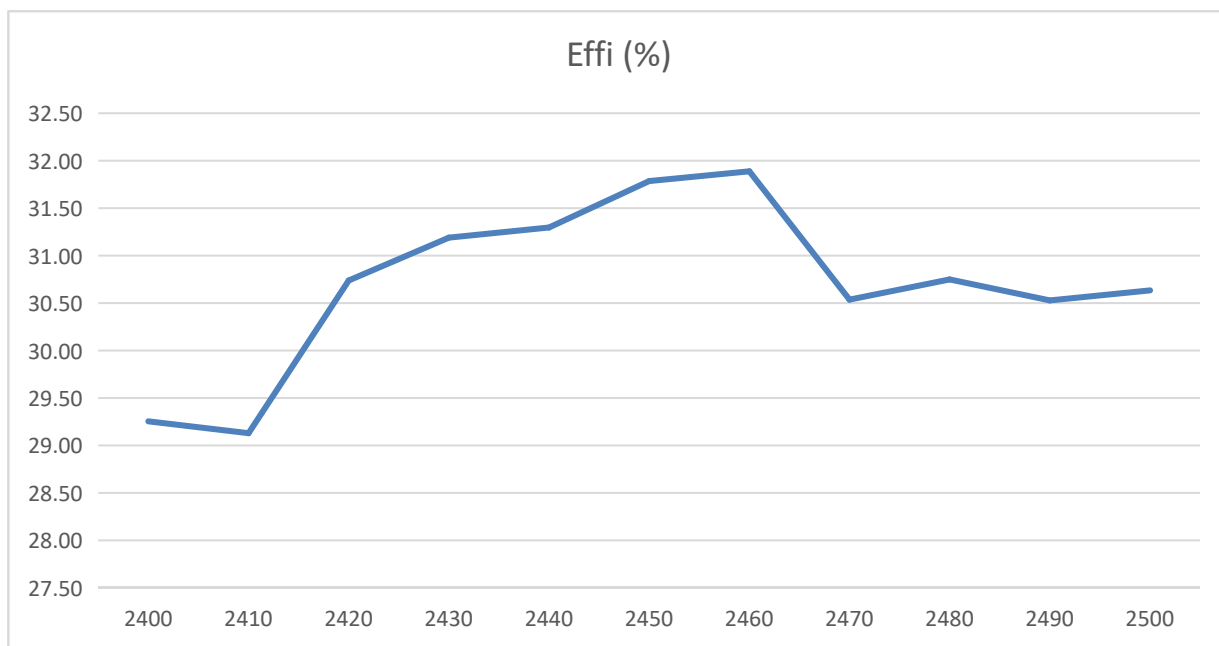
Freq. (MHz)	1710-2170		
	Min	Max	Avg
Effi (%)	9.92	15.5	12.31
Effi (dB)	-10.04	-8.01	-9.14

GPS antenna



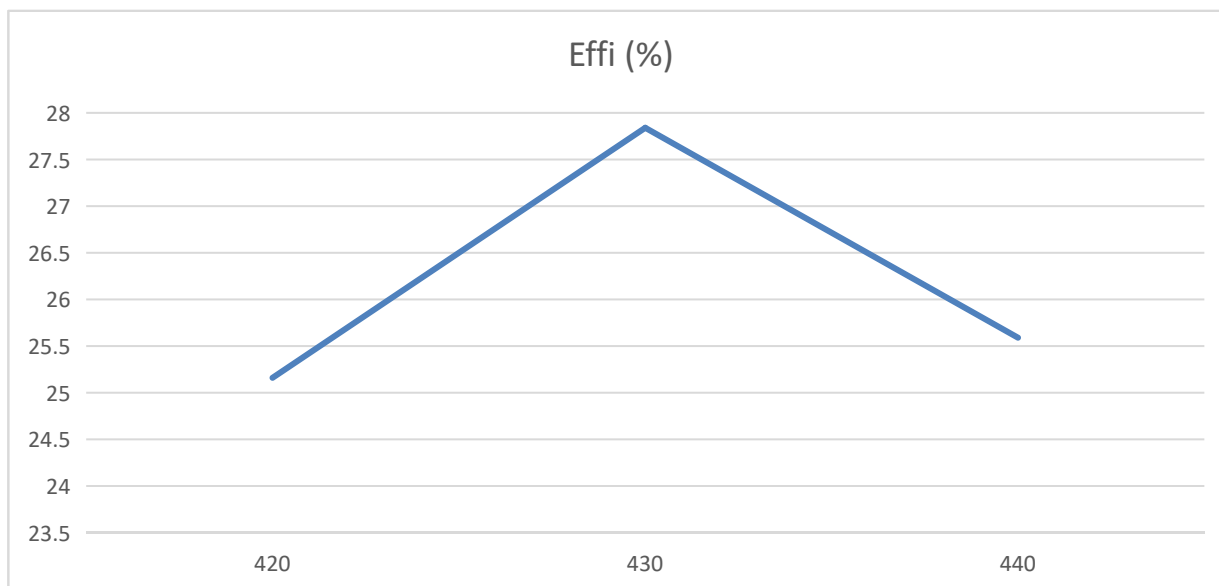
Freq. (MHz)	1560-1580		
	Min	Max	Avg
Effi (%)	27.87	29.54	28.58
Effi (dB)	-5.55	-5.3	-5.44

Wi-fi antenna



Freq. (MHz)	2400-2500		
	Min	Max	Avg
Effi (%)	29.13	31.89	30.67
Effi (dB)	-5.36	-4.96	-5.13

433 Antenna



Freq. (MHz)	420-440		
	Min	Max	Avg
Effi (%)	25.16	27.84	26.19
Effi (dB)	-5.99	-5.55	-5.82

The main antenna gain

Band	Antenna gain(dbi)
Band 2	-4
Band 4	-4
Band 12	-3

5.2 Active test data

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

Band	Channel	OTA (dBm)	
		TRP (dB)	TIS (dB)
LTE FDD-B2 (10M)	L	19.13	
	M	18.96	
	H	18.64	-91.53
LTE FDD-B4 (10M)	L	19.02	
	M	19.23	
	H	19.17	-90.26
LTE FDD-B12 (10M)	L	16.51	
	M	17.54	
	H	16.78	-87.27

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--740MHz 1710MHz--2170MHz 1575.42MHz 2400MHz--2500MHz	VSWR (MP performance) <VSWR(Verify performance)+1

8 Engineering drawings

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Technical requirement

1. Shipping and packaging requirements:
(pallet packaging and shipping)
2. LDS surface has no sensitive scratch,
leakage and overflow plating. (due to
plating process antenna surface will
appear insensitive scratches);
3. With * as the key size, the unmarked
tolerance size is plus or minus 0.15MM;
4. The copper plating thickness of LDS
antenna is 8μm-12μm, and the nickel
plating thickness is 3μm-5μm. The salt
spray has been tested for 48H.
5. Electroplating material;
copper-nickel
6. According to the general requirements
7. Products meet ROHS requirements.

②

bracket

SH2241TB02

DX11365

BLACK

1

①

LDS

SH22396TB04

materials

natural

1

UNIT: mm

COLOUR:

SCALE: 1:1

REV: TA

TOLERANCE

X, X ±0.25

.XX ±0.20

.XXX±0.05

ANGULAR $\leq \pm 0.5^\circ$

PART NAME: LDS

PART NO: SH22396TB89

MATERIAL: materials

FINISHING:

DATE: 2023.2.11

DRAWN: YUJIANG

CHECKED: zhangyuanfang

APPROVED:

12.07±0.15

4.28±0.15

62.16±0.15

13.85±0.15

20.20±0.15

7.60±0.15

6.50±0.15

5.21±0.15

3.50±0.15

3.50±0.15

1.00±0.15

32.18±0.15

1

2

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5

6

7