

## Specification Approval Sheet

Vender Name	SINAWELL Electronics (ShenZhen) Co., LTD
Project Name	PB-2090
Part Name	Bluetooth Antenna
Part Number	3.01015.0053
Part Version	
Part Spec.	BTAntenna/2.4GHZ FPCAntenna/first generation terminal coaxial line length135mm/ $\phi$ 1.13/FPC 39.56*12.17*0.12mm/3M9471LE/PB-2090

PB-2090

The materials meet the following environmental requirements:

- ☐ Banned and Monitored Substances Control Standard(Latest Edition)
- ☐ Halogen-free technical standard

Vender Confirm (Stamp)	Prepared by	Checked by	Approved by

Customer Approved (Stamp)	Sourcing	DQ	RD	Approved by

## The Main Antenna Sample Confirmation

Customer	Shenzhen Angsi Technology Co., Ltd.		
Project Name	PB-2090		Date 2025-7-14
Project NO.	SN1473	Notes	FPC + coaxial cable
Frequency Range	BT:2400-2500MHz		
Designed By	RF Engineer	Structural Engineer	
Checked By	Engineering Manager		
Client' s Approval			

**Designer: SINAWELL Electronics(Shenzhen) Co., Ltd.**

**Add: 712-717, Block A Jinfulai Building,49-1 Dabao Road,Xinan 28<sup>th</sup> area,Baoan District,Shenzhen,China**

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## Contents

<b>cover</b> .....	1
<b>catalogue</b> .....	2
1. Overview of Specification Sheet .....	1
2. Appearance .....	2
3. Electrical performance .....	3
3.1. Antenna frequency band .....	3
3.2. Matching circuit .....	3
3.3. Smith+log mag .....	3
4. Antenna Passive Testing Report .....	4
5. Antenna Active Testing Report .....	5
6. Structural drawing .....	6
7. 3D/2Ddirectional diagram.....	7
8. Dimensional Report .....	8
9. Salt Spray Test Report .....	9
10. Explanation of FPC Storage Period .....	10

## 1. Overview of Specification Sheet

This specification document describes the status of the BT antenna for the PB-2090 project.

## 2. Appearance



## 3. Electrical performance

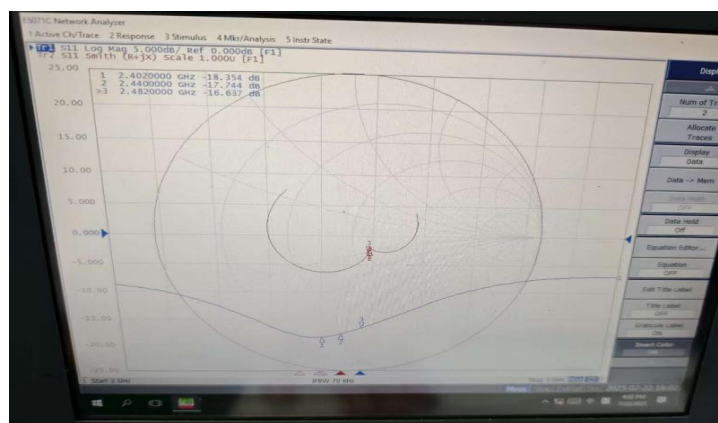
### 3.1. Antenna Frequency

BT: 2400-2500MHz

### 3.2. Matching Circuit

The original motherboard configuration remains unchanged.

### 3.3. Smith+log mag



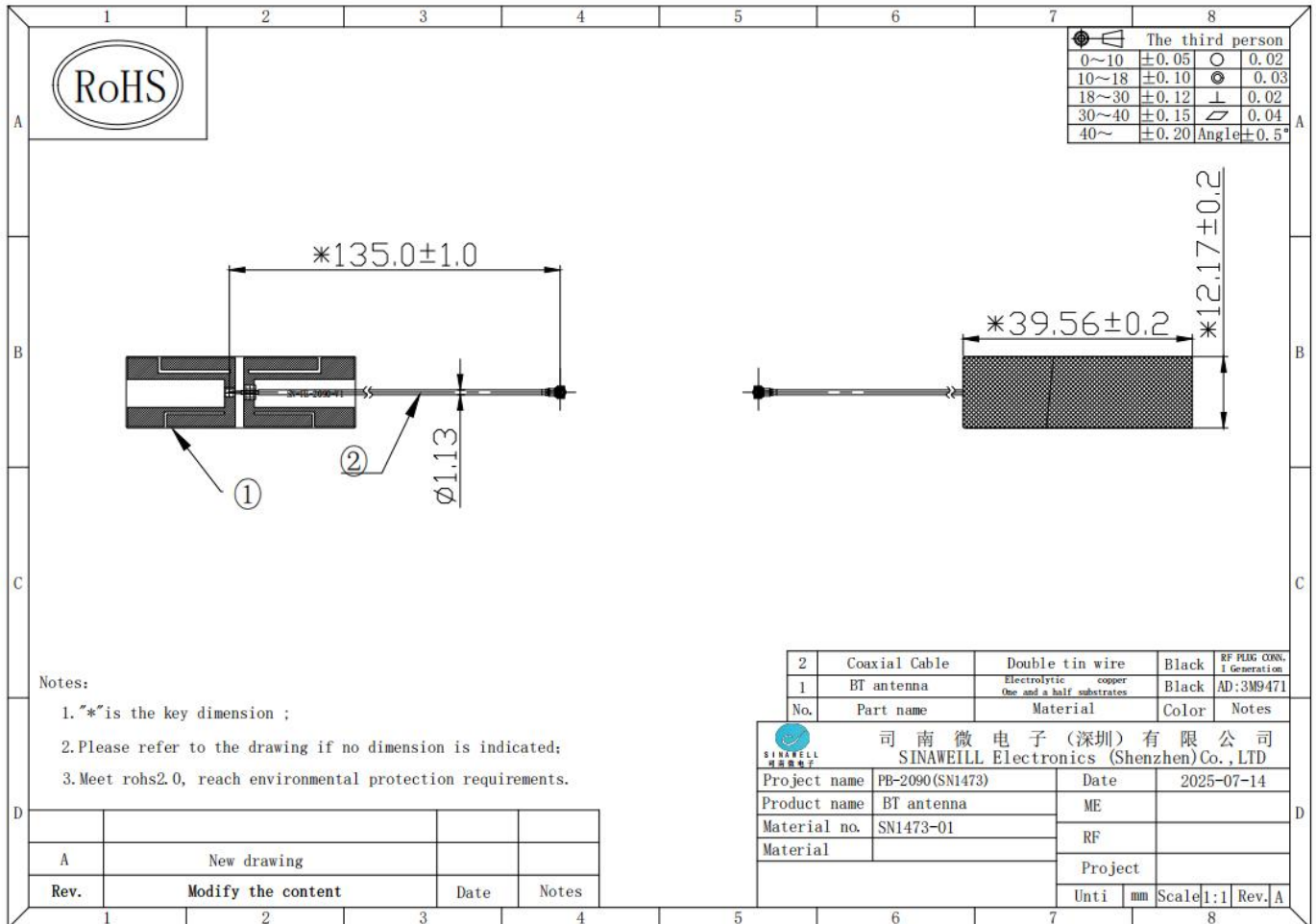
#### 4. Antenna Passive Test Report

Freq (MHz)	Effi (dB)	Gain (dBi)	Effi (%)
2400	-2.67	2.15	54.12
2410	-2.63	2.32	54.61
2420	-2.86	2.11	51.75
2430	-2.91	2.21	51.13
2440	-2.85	2.36	51.9
2450	-2.76	2.59	52.92
2460	-2.8	2.64	52.43
2470	-2.8	2.87	52.52
2480	-2.93	2.79	50.99
2490	-3.03	2.84	49.75
2500	-3.18	2.84	48.07

#### 5. Antenna Active Testing Report

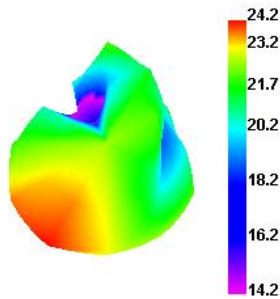
Test Result	Bluetooth TRP		
	0	39	78
Frequency (MHz)	2402	2441	2480
TRP (dBm)	19.59	19.37	18.9
TIS (dBm)	-91.06	-95.04	-93.48

## 6. Structural drawing

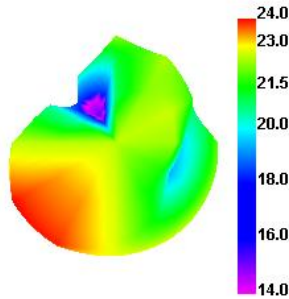


## 7. 3D/2Ddirectional diagram

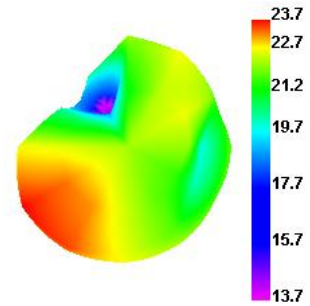
Bluetooth 0 TRP



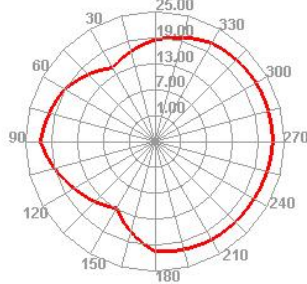
Bluetooth 39 TRP



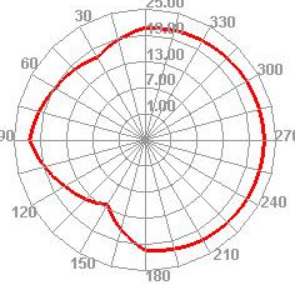
Bluetooth 78 TRP



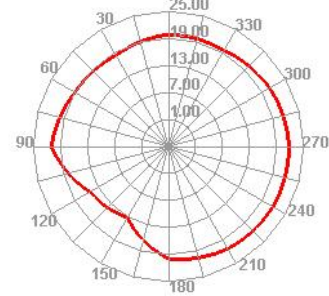
Bluetooth 0 TRP H



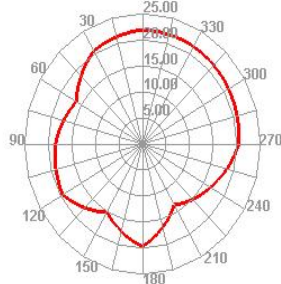
Bluetooth 39 TRP H



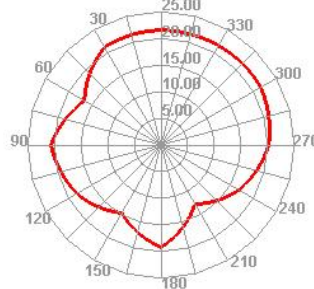
Bluetooth 78 TRP H



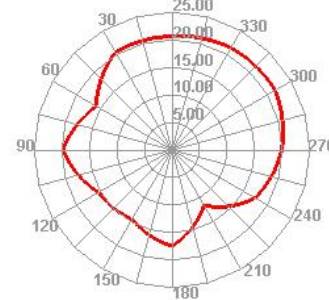
Bluetooth 0 TRP E1



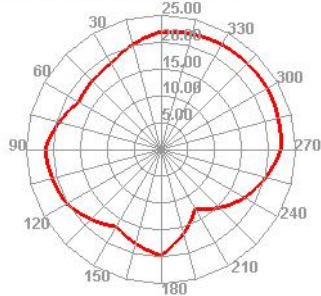
Bluetooth 39 TRP E1



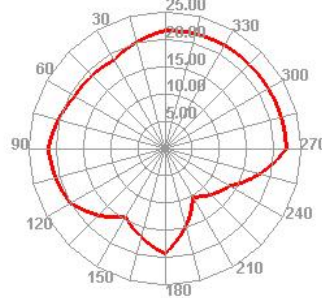
Bluetooth 78 TRP E1



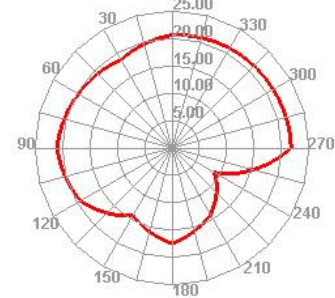
Bluetooth 0 TRP E2



Bluetooth 39 TRP E2



Bluetooth 78 TRP E2



## Dimensional Report


	Client :	AngSi	Project Name:	PB-2090 BTAntenna		Measurement Date	2025-7-8	
	Supplier	SINAWELL	Measurement Tools	0MM		Measurement Unit	mm	
NO	Dimensional	Tolerances	Test1	Test2	Test3	Test4	Test5	Judgment
1	108.51	$\pm 0.2$	108.60	108.58	108.57	108.62	108.60	OK
2	8.45	$\pm 0.2$	8.41	8.42	8.43	8.43	8.40	OK
3	350.0	$\pm 1.0$	350.38	350.68	350.41	350.62	350.70	OK
4	1.13	$\pm 0.05$	1.13	1.13	1.13	1.13	1.13	OK
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Maker: Yang Shimei

Review: Chen De



## Salt spray report

Customer Name	AngSi	Project Name	PB-2090BT Antenna	Tester	Yang Shimei
Number of tests	5PCS	Test items	Salt spray	Test Date	2025-7-8
Test conditions	1. Temperature: 35℃				
	2. Humidity: 98%, PH value: 6.5-7.2				
	3. Temperature inside the box: 37℃				
	4. Test duration: 48 hours				
	5 Solution concentration:: 5%NaCl				
Test steps	1.Place the product in the salt spray cabine				
	2.Place the product at the correct angle				
	3.Set relevant parameters and start spraying				
	4. After the test, take out the product and rinse it with clean water and place it at room temperature for two hours before testing.				
Test	project	Before the test	After the test	Test Results	Remark
	Plating	Pass	Pass	Qualified	
	Electrical conductivity	Pass	Pass	Qualified	
	resistance	Pass	Pass	Qualified	
	Binding force	Pass	Pass	Qualified	

## FPC Retention Period Description

1. Storage conditions: Temperature  $21\pm4^{\circ}\text{C}$ ; Humidity  $60\%\text{RH}\pm10\%$

2. Factory guarantee

1. Appearance guarantee: No oxidation within 12 months under the original packaging conditions

2. Functional guarantee

A: One year to ensure good welding adhesion.

B: Ensure good conductivity within two years.

3. FPC welding precautions

1. ) FPC itself is hygroscopic, it is recommended to preheat at  $100^{\circ}\text{C}$  and bake for 30 minutes before use. For three-layer boards (including) or above, preheat at  $100^{\circ}\text{C}$  and bake for 120 minutes. minutes to avoid cracking of the board due to moisture absorption and rapid oxidation during operation

2. ) HOT BAR Operation

A: FPC is used for pressing, CVI should be placed over the glass to avoid hanging in the air, which may cause the copper material to break when bent.

B: Avoid using FPC at dead corners as this may cause breakage.

3. ) SMT operation: The plated part needs to be shielded to prevent atomization during flow soldering.

4. ) Hand soldering: The operating temperature of the soldering iron should not exceed  $350^{\circ}\text{C}$ , and the soldering iron should not stay on the board for more than 3 seconds.