

The Main Antenna Sample Confirmation

Customer	Dongguan Yinqu Technology Co., Ltd.		
Project Name	B201-R		Date2023-05-04
Project NO.	SN0870	Notes	FPC
Frequency Range	BT		
Designed By	RF Engineer	Structural Engineer	
Checked By	Engineering Manager		
Client' s Approval			

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

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1. Specification description

This specification describes the status of the B201-R internal antenna with a frequency band of 2400MHz-2480MHz.

2. Antenna appearance



3. Electrical performance

3.1. Antenna band

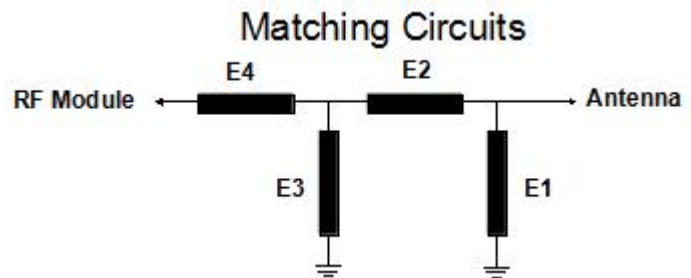
	BT
Transmitting band(MHz)	2400MHz-2500MHz

3.2. Matching Circuit

After the test point is at the antenna connector (RF test port), see the figure below.

1. BT antenna matching.

Element	Value
E1(0402)	2.7PF
E2(0402)	0 Ω
E3(0402)	NC
E4(0402)	0 Ω

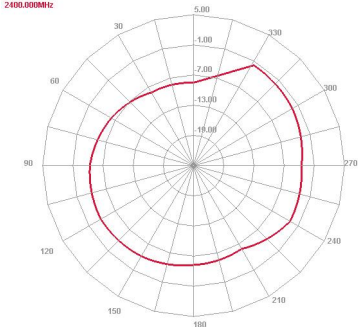
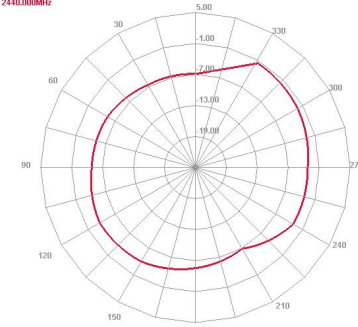
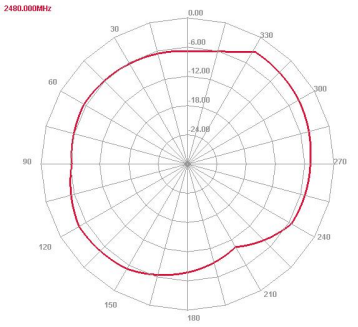


3.3. Return Loss

BT VSWR+ Return

	Resonant Point Range(MHz)	Frequency point(MHz)/Maximum Echo Loss(dB)		
	2400-2500		2400	2500
		VSWR	1.95	1.82
		Return loss	-9.84	-10.73

3.4. Antenna Gain

Channel	0	39	78
Gain	--0.9dBi	-0.88dBi	-1.13dBi
Gain diagram	Horizontal 	Horizontal 	Horizontal 

Passive Test For D4

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Attenut Hor	Attenut Ver
2400	32.66	-4.86	-0.9	-1.25	12.745	19.911	0.9	-15.78	49.5	48.85
2410	33.68	-4.73	-0.83	-1.12	12.941	20.734	1.03	-15.31	49.61	49.05
2420	33.55	-4.74	-0.81	-1.05	12.682	20.867	1.1	-15.23	49.59	49.17
2430	34.39	-4.64	-0.78	-0.87	12.718	21.676	1.28	-15.18	49.77	49.14
2440	33.34	-4.77	-0.88	-0.98	12.167	21.176	1.17	-15.57	49.79	48.97
2450	31.3	-5.04	-0.96	-1.49	11.364	19.939	0.66	-15.96	49.58	48.82
2460	30.95	-5.09	-1.02	-1.79	11.259	19.69	0.36	-16.3	49.73	48.96
2470	30.56	-5.15	-1.15	-1.73	11.037	16.918	0.42	-19.32	49.14	47.65
2480	30.64	-5.14	-1.13	-2.54	9.965	17.298	-0.39	-17.41	49.54	48.98
2490	30.66	-5.13	-1.14	-2.53	9.937	15.026	-0.38	-17.96	48.63	47.54
2500	30.15	-5.21	-1.35	-3.17	9.211	16.157	-1.02	-18.51	49.48	49.46

4. Appearance structure

4.1. Antenna Material

5. Notes

(Electrical Performance Test Report)

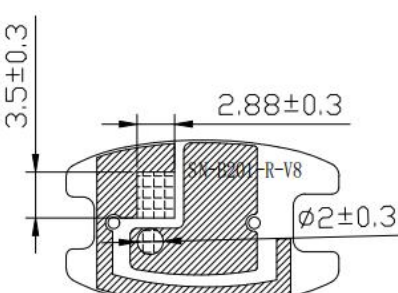
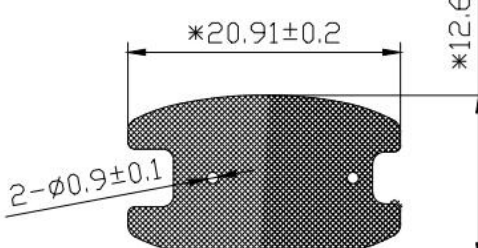
In the electrical performance test report, the 3D darkroom data for manufacturers are provided.

The following table format

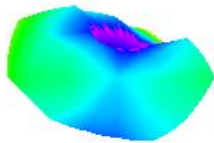
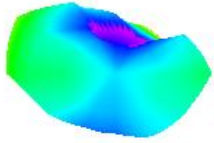
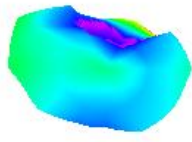
Appendix 1: (Mechanical drawing)

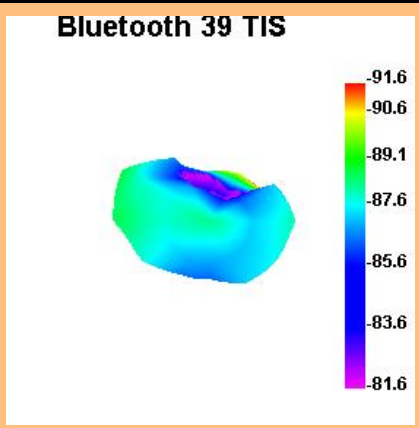
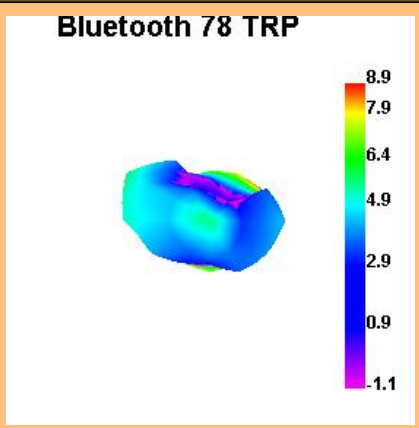
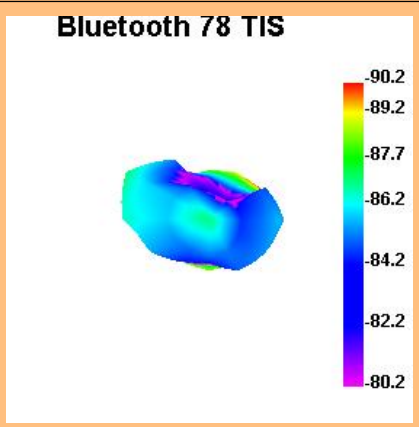
Appendix II (Performance report)

FPC Mechanical drawing(Annex I)

1	2	3	4	5	6	7	8																														
							<table border="1" style="font-size: 8px;"> <tr> <th colspan="4">The third person</th> </tr> <tr> <td>0~10</td> <td>±0.05</td> <td>○</td> <td>0.02</td> </tr> <tr> <td>10~18</td> <td>±0.10</td> <td>⊙</td> <td>0.03</td> </tr> <tr> <td>18~30</td> <td>±0.12</td> <td>⊥</td> <td>0.02</td> </tr> <tr> <td>30~40</td> <td>±0.15</td> <td>▤</td> <td>0.04</td> </tr> <tr> <td>40~</td> <td>±0.20</td> <td>Angle</td> <td>±0.5°</td> </tr> </table>	The third person				0~10	±0.05	○	0.02	10~18	±0.10	⊙	0.03	18~30	±0.12	⊥	0.02	30~40	±0.15	▤	0.04	40~	±0.20	Angle	±0.5°						
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Notes: 1. "*"is the key dimension ; 2. Please refer to the drawing if no dimension is indicated; 3. Meet rohs2.0, reach environmental protection requirements.																																					
<table border="1" style="width:100%; font-size: 8px;"> <tr> <td style="width:5%;">1</td> <td style="width:20%;">BT antenna</td> <td style="width:40%;">Electrolytic copper One and a half substrate</td> <td style="width:15%;">Black</td> <td style="width:20%;">T=0.10±0.02mm</td> </tr> <tr> <th>No.</th> <th>Part name</th> <th>Material</th> <th>Color</th> <th>Thickness</th> </tr> </table>  司南微电子(深圳)有限公司 SINAWELL Electronics (Shenzhen) Co., LTD <table border="1" style="width:100%; font-size: 8px;"> <tr> <td style="width:25%;">Project name</td> <td style="width:35%;">B201 (SN0870)</td> <td style="width:20%;">Date</td> <td style="width:20%;">2023-05-04</td> </tr> <tr> <td>Product name</td> <td>BT antenna</td> <td>ME</td> <td></td> </tr> <tr> <td>Material no.</td> <td>SN0870-BT-R</td> <td>RF</td> <td></td> </tr> <tr> <td>Material</td> <td></td> <td>Project</td> <td></td> </tr> <tr> <td colspan="2"></td> <td>Company</td> <td>mm Scale 1:1 Rev. A</td> </tr> </table>								1	BT antenna	Electrolytic copper One and a half substrate	Black	T=0.10±0.02mm	No.	Part name	Material	Color	Thickness	Project name	B201 (SN0870)	Date	2023-05-04	Product name	BT antenna	ME		Material no.	SN0870-BT-R	RF		Material		Project				Company	mm Scale 1:1 Rev. A
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3D Test Report (Annex II)

BT	Channel	3DCoupling Test	Field strength map
TRP	0	5.68	Bluetooth 0 TRP 
TIS	0	-88.06	Bluetooth 0 TIS 
TRP	39	5.52	Bluetooth 39 TRP 

TIS	39	-87.19	Bluetooth 39 TIS 
TRP	78	4.09	Bluetooth 78 TRP 
TIS	78	-85.42	Bluetooth 78 TIS 

Size Report

	Customer	Yinqu	Project Name	B201-R		Measurement Date	2023-05-04	
	Supplier	sinawell	Measurement Tool	Quadratic		Unit	mm	
NO	dimension	Tolerance	Measure 1	Measure 2	Measure 3	Measure 4	Measure 5	determine
1	20.91	± 0.2	20.87	20.89	20.88	20.88	20.86	OK
2	12.67	± 0.2	12.64	12.67	12.67	12.65	12.66	OK
3	2.88	± 0.3	2.91	2.95	2.90	2.97	2.94	OK
4	3.5	± 0.3	3.56	3.58	3.50	3.52	3.60	OK
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DRAWN BY: De Chen

APPROVED BY: Wenfeng Zhang

Salt fog Report

Customer Name	Yinqu	Corax	B201-R	Tester	De Chen
Test Quantity	5PCS	Test Item	Salt fog	Test Date	2023-05-04
Test conditions	1.Temperature: 35℃				
	2.Humidity: 98%, PH: 6.5-7.2				
	3.Temperature in the box: 37℃				
	4.Test duration: 24hours				
	5.Drug concentration: 5%NaCl				
Testing procedure	1.Put the product in the salt mist box.				
	2.Place the product at the right angle.				
	3.set the relevant parameters and start the spray.				
	4.Complete the removal of the experimental product. Before inspection, wash the product with clean water and place it at room temperature for two hours.				
TEST	Projects	Before testing	After testing	test result	remarks
	Coating	/	/	/	
	Conductivity	Well	Well	qualified	
	Resistance	Well	Well	qualified	
	Cohesion	Well	Well	qualified	

DRAWN BY: De Chen

APPROVED BY: Wenfeng Zhang

Explanation of FPC Preservation Period

I .Preservation conditions: temperature 21 ±4; humidity 60% RH ±10%.

II . Exit Guarantee

1.Appearance Guarantee: No oxidation occurs during 12 months of storage in original packaging.

2.Functional Assurance

A:One year to ensure good welding continuity.

B:Ensure good conductivity within two years.

III、 Points for Attention in FPC Welding

1. FC itself has hygroscopicity. It is suggested to preheat the three-layer plate (including) for 30 minutes before use, and bake it for 120 minutes at 100 in order to avoid bursting due to hygroscopicity and rapid oxidation during operation.

2. HOT BAR jobs

A: FPC is used for cooked pressing. CVI should be crossed over glass to avoid suspension, resulting in fracture of copper during bending.

B: FPC avoids the use of dead angle and is liable to cause fracture.

3: SMT operation: The plating part should be shielded to prevent atomization in flow welding.

4: Hand welding operation: the working temperature of soldering iron should not exceed 290 C, and the time of soldering iron staying on the plate surface should not exceed 10 seconds.