





# Material acknowledgement

F&D Material name	FD200
F&D Item No	
Supplier name	SINAWEILL Electronics (Shenzhen)Co.,LTD
Address	708-718, Jinfulai Building, No. 49-1 Dabao Road, Xin'an 28 District, Bao'an District, Shenzhen
brand&Manufacturer model	SN0978

Supplier acknowledges that				F&D admit	
	engineer	to examine	approval	engineer	approval
sign					
date	2023. 08. 02	2023. 08. 02	2023. 08. 02		
Seal: 					
remarks:					

## Table of Contents

<b>cover.....</b>	<b>1</b>
<b>catalogue.....</b>	<b>2</b>
<b>1. Specification overview.....</b>	<b>3</b>
<b>2. Appearance of FPC antenna .....</b>	<b>3</b>
<b>3. Electrical performance .....</b>	<b>3</b>
3.1. Antenna band.....	3
3.2. Matching circuit .....	3
3.3. Return loss .....	4
3.4. Antenna gain.....	4
<b>4. Appearance structure .....</b>	<b>5</b>
4.1. FPC Antenna material.....	5
<b>6.Appendix 1: Structural drawings.....</b>	<b>6</b>
<b>7.Dimension Report.....</b>	<b>7</b>
<b>8.Salt spray Report.....</b>	<b>8</b>
<b>9.FPC Storage period description.....</b>	<b>9</b>

## 1. Specification description

This specification describes the status of the FD200 internal antenna with a frequency band of BT.

### Antenna appearance



## 2. Electrical performance

### 2.1. Antenna band

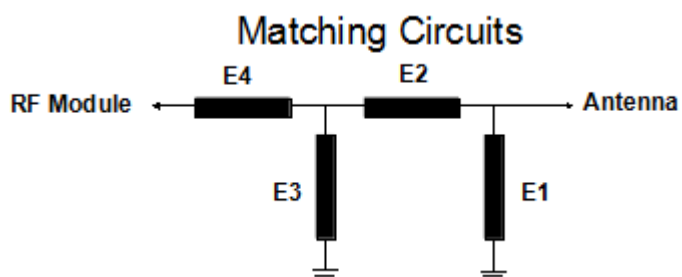
	BT
Transmitting band(MHz)	2400MHz-2500MHz

### 2.2. 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)	1.0PF
E2(0402)	0 $\Omega$
E3(0402)	NC
E4(0402)	0 $\Omega$



### 2.3. Return loss

BT VSWR+ Return

	Resonant Point Range(MHz)	Frequency point(MHz)/Maximum Echo Loss(dB)		
	2400-2500		2400	2500
		VSWR	1.94	1.89
		Return loss	-9.904	-10.23

### 3.4 Antenna gain

Channel	0	39	78
Gain	-1.62dBi	-1.51dBi	-1.73dBi
Gain diagram	<p>Horizontal 2400.000MHz</p>	<p>Horizontal 2440.000MHz</p>	<p>Horizontal 2480.000MHz</p>

Passive Test For			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	29.96	-5.23	-1.62
2410	31.91	-4.96	-1.44
2420	31.49	-5.02	-1.55
2430	32.12	-4.93	-1.58
2440	32.54	-4.88	-1.51
2450	33.04	-4.81	-1.55
2460	32.07	-4.94	-1.58
2470	31.4	-5.03	-1.76
2480	30.83	-5.11	-1.73
2490	29.98	-5.23	-1.81
2500	29.2	-5.35	-1.88

### **3. Appearance structure**

#### **3.1. Antenna Material**

FPC

### **4. 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)**

FPC Structural drawings

1	2	3	4	5	6	7	8																																				
RoHS		<div><div><div></div><div></div></div><div>The third person</div><table><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></div>						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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A							A																																				
B	<div><div><div><div></div><div></div></div><div>FD200</div><div>*8±0.3</div></div><div><div><div></div><div></div></div><div>*20.75±0.2</div><div>*4.96±0.2</div><div>∅0.75±0.1</div></div></div>						B																																				
C							C																																				
D	<div>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.</div> <table><tr><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td>BT antenna</td><td>Electrolytic copper One and a half substrate</td><td>Black AD:3N9471</td></tr><tr><td>No.</td><td>Part name</td><td>Material</td><td>Color Thickness</td></tr><tr><td colspan="4"><div><div><div></div><div></div></div><div>司南微电子(深圳)有限公司 SINAWELL Electronics (Shenzhen) Co.,LTD</div></div></td></tr><tr><td colspan="2">Project name</td><td>FD200 (SN0978)</td><td>Date 2023-08-03</td></tr><tr><td colspan="2">Product name</td><td>BT antenna</td><td>ME</td></tr><tr><td colspan="2">Material no.</td><td>SN0978-BT</td><td>RF</td></tr><tr><td colspan="2">Material</td><td></td><td>Project</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 AD:3N9471	No.	Part name	Material	Color Thickness	<div><div><div></div><div></div></div><div>司南微电子(深圳)有限公司 SINAWELL Electronics (Shenzhen) Co.,LTD</div></div>				Project name		FD200 (SN0978)	Date 2023-08-03	Product name		BT antenna	ME	Material no.		SN0978-BT	RF	Material			Project			Company	mm Scale 1:1 Rev. A	D
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# Size Report

	customer	F&D	entry name	FD200		Measurement date	2023-08-02	
	supplier	sinawell	Measuring tools	Quadratic		Unit	mm	
NO	dimension	Toleranca	Measured1	Measured2	Measured3	Measured4	Measured5	determine
1	4.96	$\pm 0.2$	5.03	5.01	5.04	5.03	5.04	OK
2	20.75	$\pm 0.2$	20.69	20.72	20.70	20.73	20.70	OK
3	8	$\pm 0.3$	7.98	8.06	8.02	8.10	8.05	OK
4	0.75	$\pm 0.1$	0.78	0.78	0.76	0.75	0.77	OK
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DRAWN BY: Shimei Yang

APPROVED BY: De Chen

## Salt spray Report

Customer Name	F&D	Corax	FD200	Tester	Shimei Yang
Test Quantity	5PCS	Test Item	Salt fog	Test Date	2023-08-02
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 clear water and place it at room temperature for two hours.				
TEST	Projects	Before testing	After testing	test result	remarks
	Coating	Well	Well	qualified	
	Conductivity	Well	Well	qualified	
	Resistance	Well	Well	qualified	
	Cohesion	Well	Well	qualified	

DRAWN BY: Shimei Yang

APPROVED BY: De Chen

# Explanation of FPC Preservation Period

I .Preservation conditions: temperature  $21 \pm 4$ ; humidity  $60\% \pm 10\%$ .

## 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  $100^\circ\text{C}$  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  $290^\circ\text{C}$ , and the time of soldering iron staying on the plate surface should not exceed 10 seconds.