

Material acceptance letter

FENDA Material name	FD185
FENDA material code	13.001.0017.00005
Supplier name	SINAWELL Electronics (Shenzhen)Co.,LTD
Address	708-718, Jinfulai Building, No. 49-1 Dabao Road, Xin'an 28 District, Bao'an District, Shenzhen
Manufacturer model	SN0979

Supplier acknowledges				FENDA acknowledges	
	Engineer	Check	Approve	Engineer	Check
subscribe					
date	2023. 04. 07	2023. 04. 07	2023. 04. 07		
stamp: 					
Remarks:					

Catalogue

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1.Overview of specifications

This specification describes the status of FD185 built-in FPC antenna, and its frequency band is BT.

2.2.Antenna appearance



3.Electrical performance

3.1.Antenna frequency band

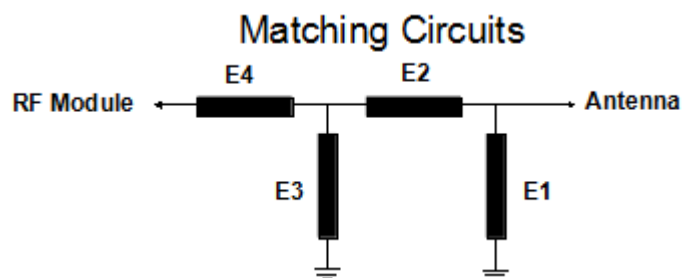
	BT
Transmitting frequency band(MHz)	2400MHz-2500MHz

3.2.Matching circuit

The test point is behind the antenna connector (RF test port), as shown in the figure below.

BT Antenna matching

Element	Value
E1(0402)	1.8PF
E2(0402)	0 Ohm
E3(0402)	NC
E4(0402)	0 Ohm

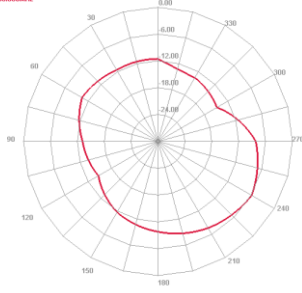
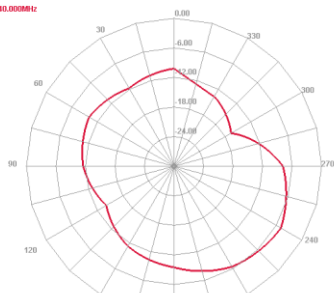
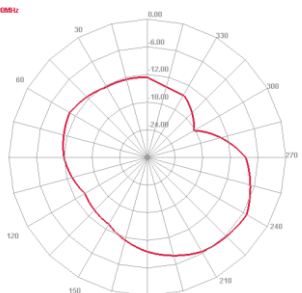


3.3.BT return loss

BT VSWR+ Return

	Resonance point range(MHz)	frequency point(MHz)/Maximum return loss(dB)		
			2400	2500
	2400-2500	VSWR	1.3	1.5
		Return loss	-17.69	-13.98

3.4 BTantenna gain

Channel	0	39	78
Gain	-5.86dBi	-4.91Bi	-5.15dBi
Gain diagram	Horizontal 2400.000MHz 	Horizontal 2440.000MHz 	Horizontal 2480.000MHz 

① hand

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	9.55	-10.2	-5.86
2410	10.61	-9.74	-5.28
2420	10.82	-9.66	-5.07
2430	11.2	-9.51	-4.9
2440	11.18	-9.51	-4.91
2450	10.84	-9.65	-5.03
2460	10.79	-9.67	-4.98
2470	9.64	-10.16	-5.36
2480	9.57	-10.19	-5.15
2490	9.97	-10.01	-4.93
2500	9.77	-10.1	-5.06

② free field

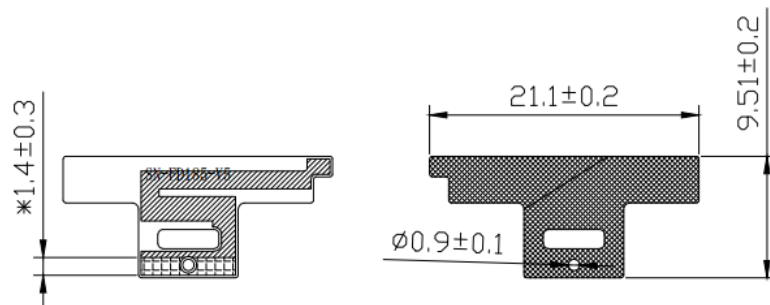
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	32.9	-4.83	-1.43
2410	32.98	-4.82	-1.35
2420	31.02	-5.08	-1.7
2430	30.07	-5.22	-1.82
2440	29.28	-5.33	-1.98
2450	28.89	-5.39	-2.1
2460	27.46	-5.61	-2.37
2470	26.43	-5.78	-2.5
2480	25.16	-5.99	-2.78
2490	23.88	-6.22	-2.98
2500	22.72	-6.44	-3.22

4.1. Antenna material
FPCAntenna

5. BT Antenna structure drawing



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°



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.

1	BT antenna	Electrolytic copper Half to half substrate	Black	AD:3N9471
No.	Part name	Material	Color	Thickness
SINAWELL 司南微电子(深圳)有限公司 SINAWELL Electronics (Shenzhen) Co., LTD				
Project name		FD185 (SN0979)	Date	2023-08-25
Product name		BT antenna	ME	
Material no.		SN0979-BT	RF	
Material			Project	
		Company	mm	Scale 1:1 Rev. A

Size report

	client	Fenda	Project name	FD185 BTantenna		Measurement date	2023-08-25	
	supplier	Sinawell	Measuring tool	Secondary element	testing instrument	unit of measure	mm	
NO	Size	tolerance	Test1	Test2	Test3	Test4	Test5	decide
1	21.1	±0.2	21.06	21.09	21.11	21.07	21.09	OK
2	9.51	±0.2	9.55	9.53	9.52	9.54	9.52	OK
3	0.9	±0.1	0.88	0.89	0.87	0.86	0.90	OK
4	1.4	±0.3	1.49	1.42	1.38	1.33	1.42	OK
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DRAWN BY: De Chen

APPROVED BY: Wenfeng Zhang

Salt spray report

Customer name	Fenda	Project name	FD185 BT	test controler	De Chen
Test quantity	5PCS	test item	salt haze	Test Date	2023-08-25
test condition	1.temperature: 35℃				
	2.humidity: 98%, pH value: 6.5-7.2				
	3.Temperature in box: 37℃				
	4.Test duration: 48 小时				
	5.Liquid medicine concentration: 5%NaCl				
Test steps	1.Put the product into the salt spray box.				
	2.Place the product at the right angle.				
	3.Set relevant parameters and start spraying.				
	4.Take out the experimental products, rinse the products with clean water and leave them at room temperature for two hours before inspection.				
test	project	Before testing	After the test	test result	remarks
	cladding material	good	good	qualified	
	electrical conductivity	good	good	qualified	
	electric resistance	good	good	qualified	
	binding force	good	good	qualified	

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APPROVED BY: Wenfeng Zhang

FPC Description of shelf life

一、 Preservation condition: temperature $21^{\circ}\text{C} \pm 4^{\circ}\text{C}$: humidity $60\% \pm 10\%$

二、 Factory guarantee

1. Appearance guarantee: No oxidation will occur under the storage condition of original packaging for 12 months.

2. Functional guarantee

A: Ensure good welding adhesion in one year.

B: Ensure good conductivity within two years.

三、 FPC Matters needing attention in welding

1. FPC It has hygroscopicity, so it is recommended to preheat it at 100°C for 30 minutes before use, and preheat it at 100°C for 120 minutes for the three-layer board (inclusive) or above, so as to avoid board explosion due to hygroscopicity and rapid oxidation during operation.

2. HOT BAR work
A: FPC is used for pressing, and CVI should span the glass to avoid hanging, which will cause the copper to break when bending.

B: FPC avoids the use of folded corners and is easy to break.

3: SMT operation: The plated parts should be shielded to prevent atomization during flow welding.。

4: Hand welding operation: the operating temperature of soldering iron should not exceed 350°C , and the time for soldering iron to stay on the board should not exceed 3 seconds.

manner of packing

Customer item:	13. 001. 0017. 00005	product name:	FD185 FPC antenna
Product specification:	21.1*9.51mm	wrapper:	PE self-sealing bag
Number of packages:	5000PCS/Bags	manner of packing:	1. Stack the yellow separator paper and the product in turn, and finally put another separator paper on the top. After stacking neatly, put it into PE bags, each with 5000PCS. 2. Put each bag of products in a carton neatly, with 20 bags in each box and seal the box. There are 20 bags in each box, each with 5000PCS, that is, 100000PCS per box.
Packing quantity:	100000/PCS		

Figure 1: One-piece packaging

Figure 2: Packing method



Figure 3: View of packing box (front, side and top) box label

Figure 4: Outer

