

Yuande Electronics (Shenzhen) Co., Ltd.

Sample Approval Sheet

Product Information:

Customer	Concord Intelligent Technology (Huizhou) Ltd.
Material Description	TWB-013 Antenna
Customer's Part number	
Specifications	FPC Antenna (L23*W6mm)
Supplier's Part number	100-TWB013-11A
Date	2024-2-1

Supplier:

Prepared By	Checked By	Approved By
Zhang Dengqiao	Li Yuepeng	Zhang Hongying



Customer Approval:

Accepted By	Checked By	Approved By

Results:

- Full Approval
- Conditional Approval
- Unqualified
- Others:

Yuande Electronics (Shenzhen) Co., Ltd.

Add: Xiangyuer Industrial Park, No. 8, Longsheng Road, Longgang Street, Longgang District, Shenzhen, Guangdong, China

Tel: 86-755-28510731

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1、 Specification

This report mainly provides the testing status of various electrical and structural performance parameters of TWB-013 BT Antenna.



Figure 1 Antenna



Figure 2 Antenna Placement

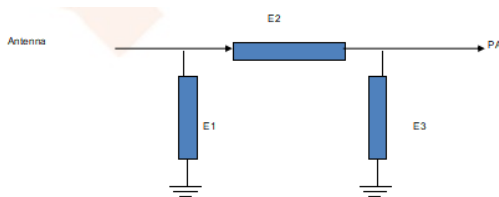
1.1 Electrical specification standard

1.1.1 Electrical Specifications

The antenna operates in the 2400-2480 MHz. The following table is the electrical performance index of the antenna designed by our company.

Antenna	TWB-013 Antenna
Frequency Range	2400-2480MHz
Gain	-1.2
VSWR	< 2.0
Efficiency	> 20%
Impedance	50 ohm
Polarization	Linear polarization

1.1.2 Antenna Matching Network



Element	Value
E1(0402)	N/A
E2(0402)	N/A
E3(0402)	N/A

2、 Test

The antenna was debugged and tested with the prototype provided by the customer.

2.1 Test of passive S11

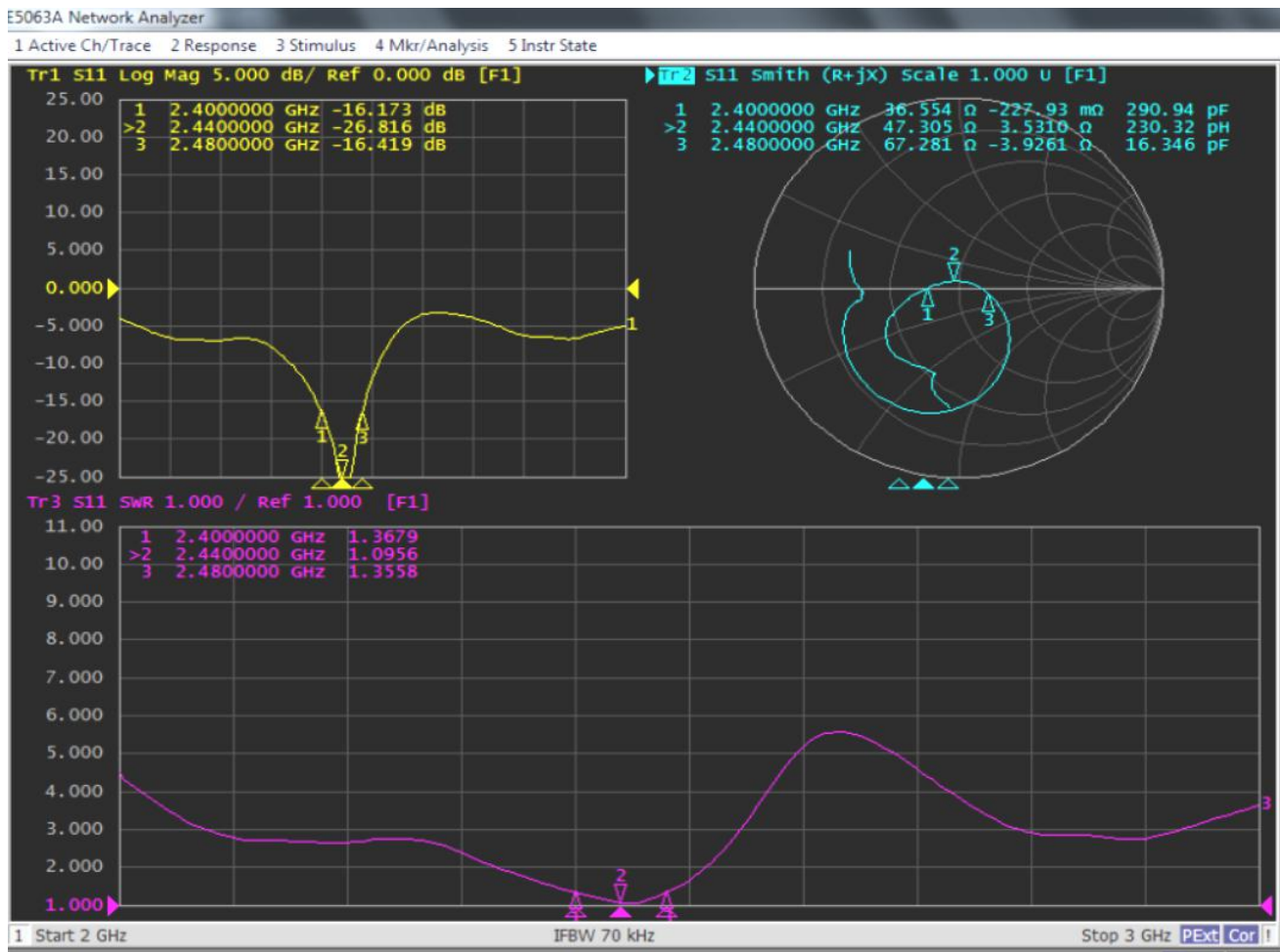
2.1.1 Test connection

The passive S11 test device is connected as follows: Network Analyzer → Test Line → Test Fixture.

2.1.2 Passive S11

The following table shows the standing wave ratio values of the edge frequency points of the antenna operating frequency band. The waveform of Return Loss and VSWR obtained by the test is shown as follows.

Frequency (MHz)	2400	2440	2480
VSWR	1.37	1.10	1.36
Return Loss	-16.17	-26.82	-16.42



2.2 Gain and efficiency test

2.2.1 Test Position

Yuande microwave anechoic chamber, the test frequency range is 400MHz-6GHz.

2.2.2 Test equipment

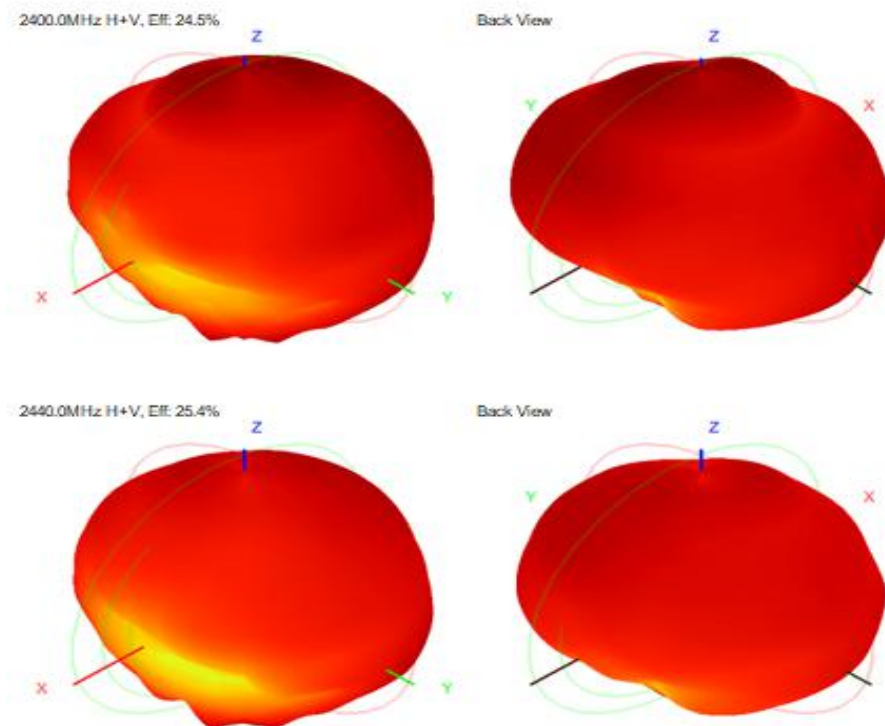
Network analyzer, standard horn antenna, multi-probe near field antenna test system, test computer, etc

2.2.3 Results Summary

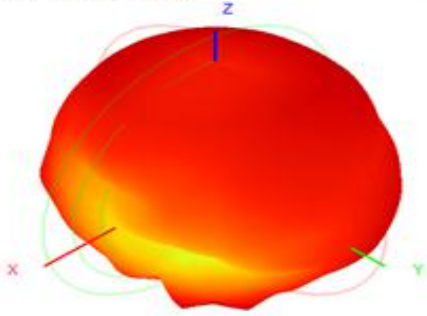
In the microwave anechoic chamber, the measured values related to efficiency and gain are shown in the table below.

Frequency (MHz)	Gain (dBi)	Efficiency (%)
2400	-2.10	24.53
2410	-1.99	24.88
2420	-1.72	25.13
2430	-1.36	25.41
2440	-1.24	25.38
2450	-1.20	24.95
2460	-1.29	24.37
2470	-1.34	23.66
2480	-1.42	22.73
2490	-1.53	21.59
2500	-1.82	20.00

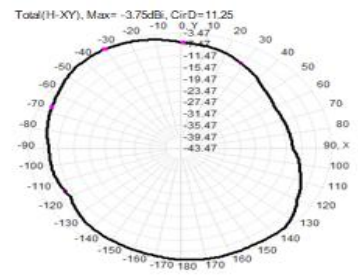
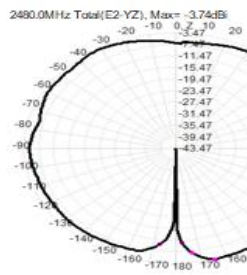
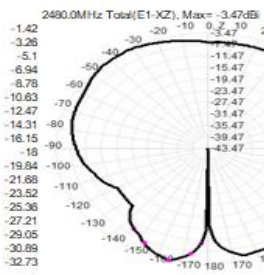
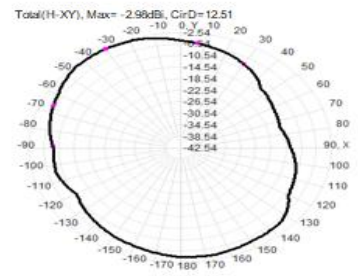
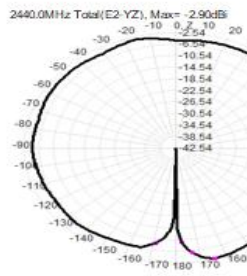
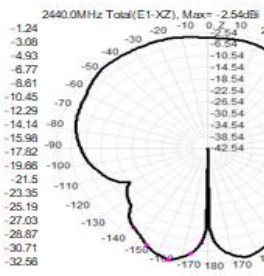
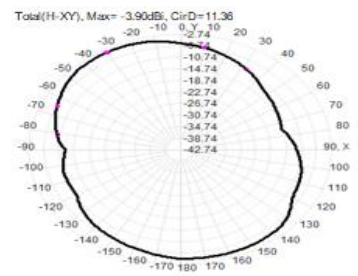
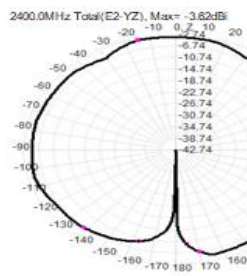
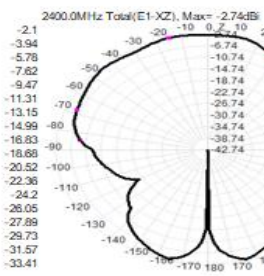
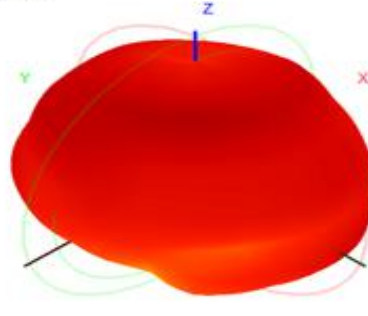
2.2.4 Radiation Pattern Results



2490.0MHz H+V, Eff: 22.7%



Back View



2.3 OTA test

2.3.1 Results Summary-Free Field

	TRP/TIS		TRP/TIS
BlueTh-0000-TX	5.68	BlueTh-0000-TX	5.59
BlueTh-0039-TX	6.66	BlueTh-0039-TX	6.71
BlueTh-0078-TX	7.05	BlueTh-0078-TX	7.98
BlueTh-0000-RX	-88.99	BlueTh-0000-RX	-89.81
BlueTh-0039-RX	-86.73	BlueTh-0039-RX	-88.74
BlueTh-0078-RX	-86.57	BlueTh-0078-RX	-88.42

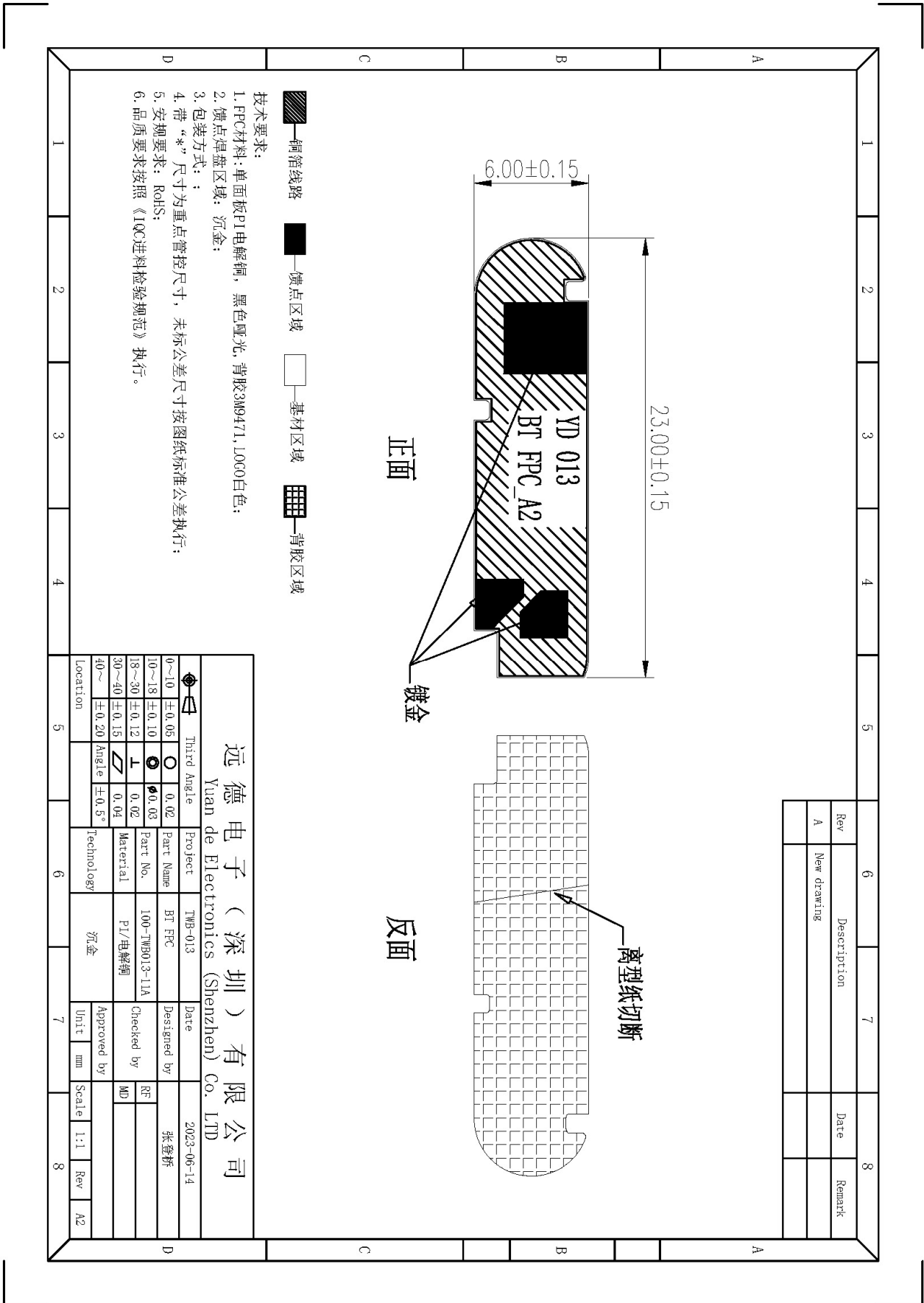
2.3.2 Results Summary-Head phantom

	TRP/TIS		TRP/TIS
BlueTh-0000-TX	-1.38	BlueTh-0000-TX	-0.36
BlueTh-0039-TX	-1.00	BlueTh-0039-TX	0.29
BlueTh-0078-TX	-0.85	BlueTh-0078-TX	0.62
BlueTh-0000-RX	-83.32	BlueTh-0000-RX	-85.93
BlueTh-0039-RX	-80.77	BlueTh-0039-RX	-83.05
BlueTh-0078-RX	-80.06	BlueTh-0078-RX	-82.27

3、 Conclusion

This antenna is designed on the basis of the prototype provided by the customer. The above electrical performance parameters are tested under the environmental treatment conditions of the test prototype. The electrical parameters and structural performance have met the technical requirements. Please confirm!

4、Part Drawing



Rev	Description	Date	Remark
A	New drawing		

远德电子 (深圳) 有限公司 Yuan de Electronics (Shenzhen) Co. LTD			
Third Angle	Project	Date	
0~10 ±0.05	BT FPC	2023-06-14	
10~18 ±0.10	Part Name	Designed by 张登桥	
18~30 ±0.12	Part No. 100-TWB013-11A	Checked by	
30~40 ±0.15	Material PI/电解铜	RF	
40~ ±0.20	Technology 沉金	MD	
Angle ±0.5°	Approved by	Unit mm	
Location	Scale 1:1	Rev A2	