

Shenzhen World Elite Electronic Co. LTD.


Sample Approval Sheet

Product Information:

Customer	Acoustic Innovation (Huizhou) Co., Ltd.
Material Description	BTA1386 BT Antenna
Customer's Part number	VA. E. 03313860010ZR
Specifications	FPC (L37.8*W9.9mm) +Black Coaxial Cable (ϕ 0.81*55mm) +Welding
Supplier's Part number	136-A1386-10A
Date	2023-03-15

Supplier:

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



Customer Approval:

Accepted By	Checked By	Approved By

Results:

- Full Approval
- Conditional Approval
- Unqualified
- Others:

Shenzhen World Elite Electronic Co. LTD.

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Contents

1、 Specification.....	3
1.1 Electrical specification standard.....	3
1.1.1 Electrical Specifications.....	3
1.1.2 Antenna Matching Network.....	3
2、 Test.....	4
2.1 Test of passive S11.....	4
2.1.1 Test connection.....	4
2.1.2 Passive S11.....	4
2.2 Gain and efficiency test.....	4
2.2.1 Test Position.....	4
2.2.2 Test equipment.....	5
2.2.3 Results Summary.....	5
2.2.4 Radiation Pattern Results.....	6
2.2.5 Test Environment.....	6
3、 Conclusion.....	7
4、 Part Drawing.....	8

1、 Specification

This report mainly provides the testing status of various electrical and structural performance parameters of BTA1386 BT Antenna.

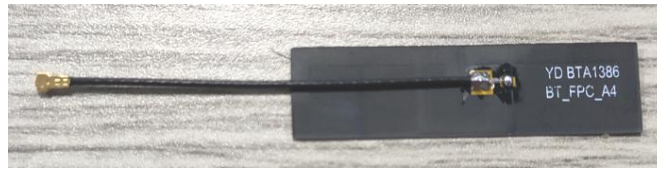


Figure 1 Antenna



Figure 2 Antenna Placement

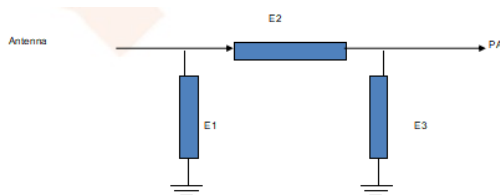
1.1 Electrical specification standard

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	BTA1386 BT Antenna
Frequency Range	2400-2480MHz
VSWR	< 2.0
Efficiency	> 45%
Impedance	50 ohm
Polarization	Linear polarization

1.1.2 Antenna Matching Network



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

Schematic diagram of matching circuit modification

2、 Test

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

2.1 Test of passive S11

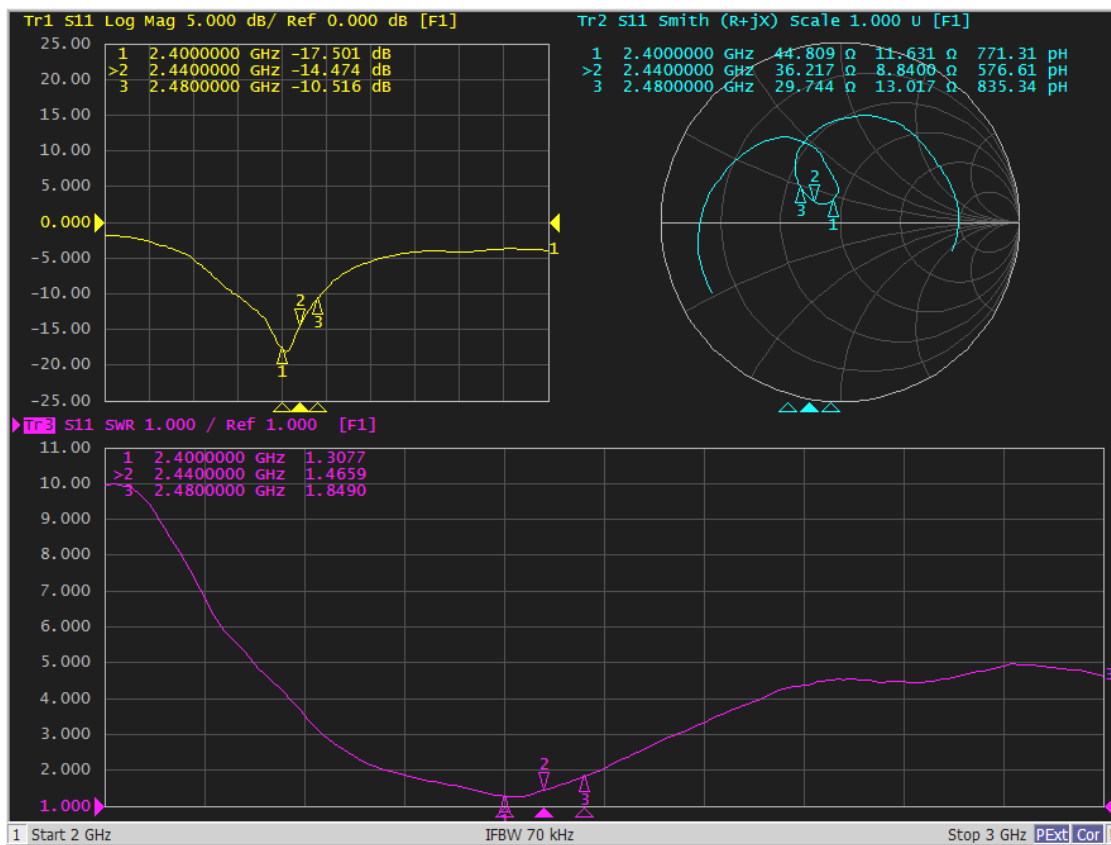
2.1.1 Test connection

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	1.30	1.46	1.84
Return Loss	-17.50	-14.47	-10.51



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

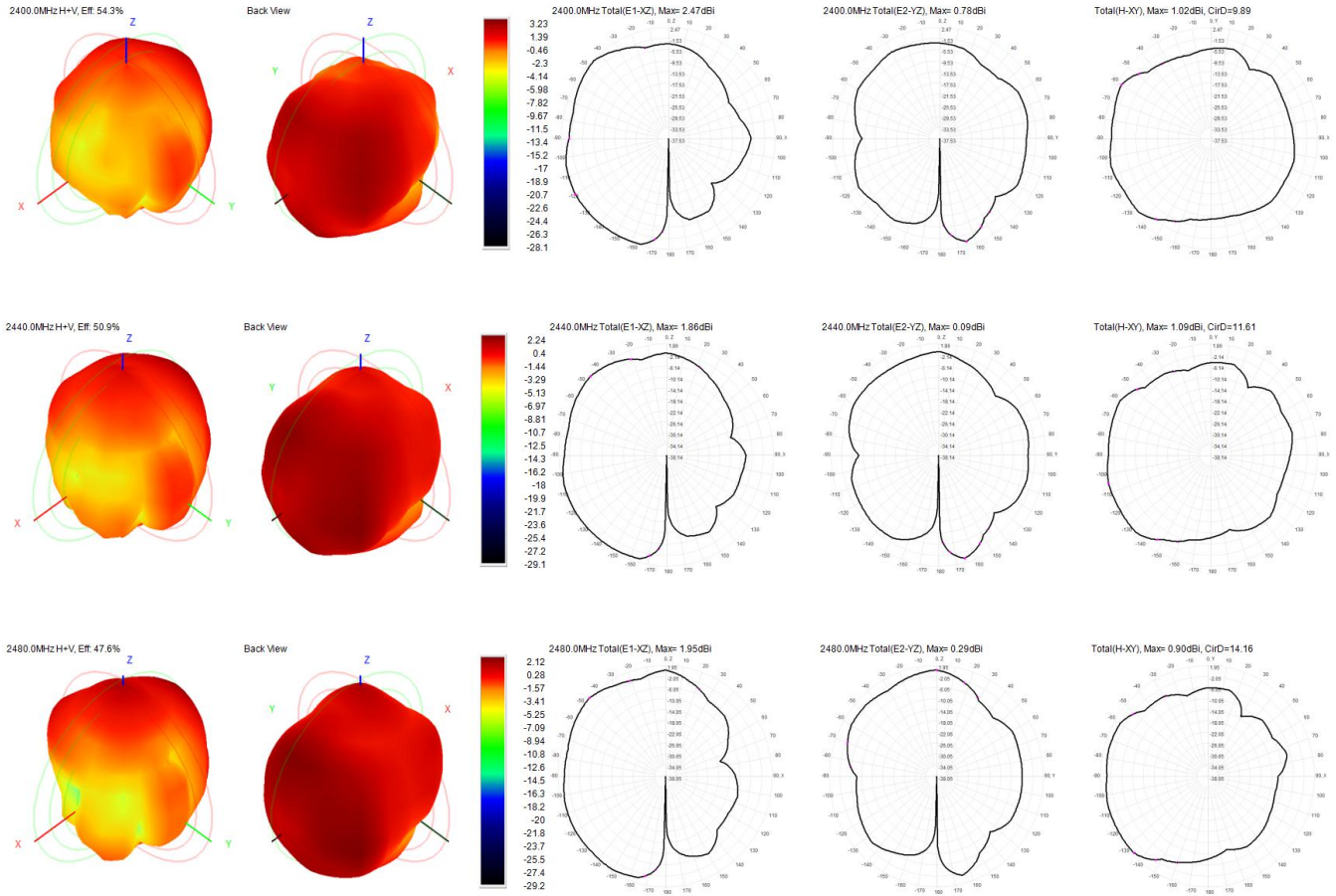
In the microwave anechoic chamber, the measured values related to efficiency and gain are shown in the table below.

Frequency (MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
Efficiency (dBi)	-2.65	-2.87	-2.62	-2.84	-2.93	-2.81	-3.12	-2.96	-3.22	-3.26	-3.28
Gain (dBi)	3.23	2.82	2.87	2.52	2.24	2.40	2.21	2.42	2.12	2.11	2.23
Efficiency (%)	54.33	51.67	54.69	52.06	50.89	52.37	48.72	50.60	47.64	47.22	46.99
Directivity (dB)	5.88	5.69	5.49	5.36	5.17	5.21	5.33	5.38	5.34	5.37	5.51
Peak Gain Position (Theta)	120.00	120.00	120.00	120.00	120.00	150.00	150.00	75.00	75.00	45.00	45.00
Peak Gain Position (Phi)	150.00	150.00	150.00	150.00	150.00	150.00	150.00	225.00	225.00	180.00	180.00
Efficiency ThetaPol (%)	18.92	18.27	19.62	18.91	18.71	19.40	18.16	18.86	17.69	17.42	17.03
Efficiency PhiPol (%)	35.42	33.40	35.08	33.14	32.18	32.97	30.56	31.74	29.95	29.80	29.96
Upper Hem. Efficiency (%)	25.49	24.72	26.77	25.87	25.49	26.35	24.70	25.98	24.89	25.18	25.32
Lower Hem. Efficiency (%)	28.85	26.95	27.92	26.18	25.40	26.02	24.03	24.62	22.75	22.03	21.68

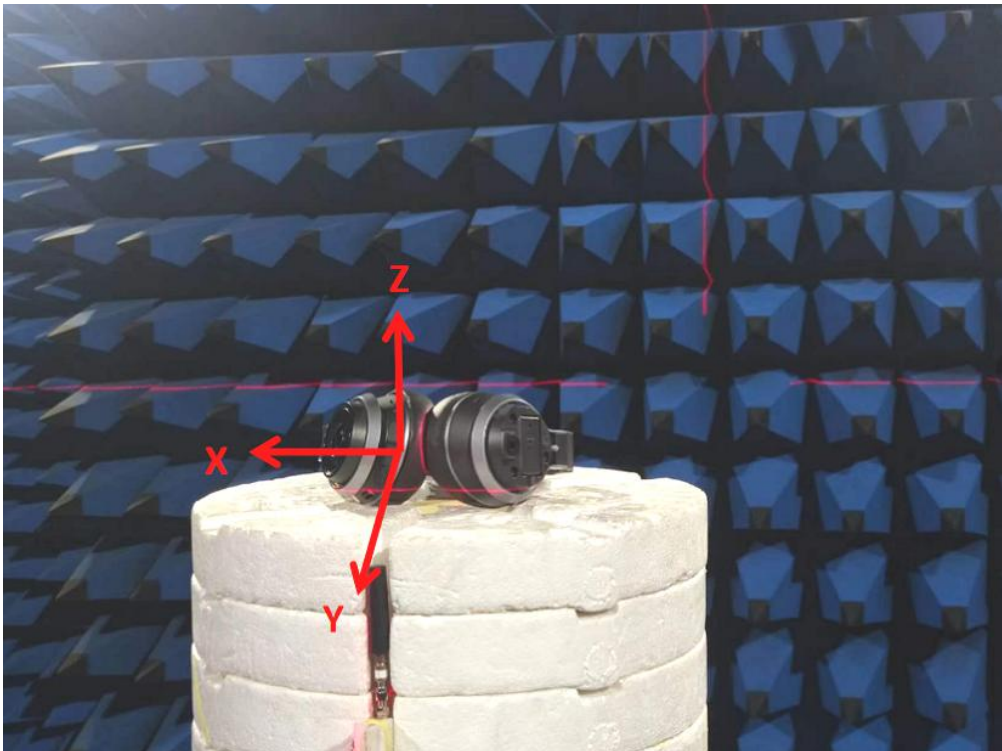
T90(H) circu lar degree	9.89	10.62	11.16	11.45	11.61	12.02	13.11	14.01	14.16	13.80	15.32
E1(XZ) beam width	82.00	144.00	148.00	147.00	149.00	149.00	149.00	149.00	147.00	144.00	143.00
E1(XZ) front-to-rear ratio	0.39	0.50	0.64	1.04	1.11	1.03	0.84	0.92	1.11	1.34	1.51
E2(YZ) beam width	19.00	19.00	19.00	19.00	19.00	19.00	19.00	87.00	87.00	89.00	89.00
E2(YZ) front-to-rear ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.73	1.43	2.26	2.91
Max Gain Axis Ratio(P)	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Elevation 10° min(max) axial ratio (P)	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Hc(XY) beam width	96.00	97.00	97.00	98.00	98.00	98.00	97.00	96.00	96.00	96.00	97.00
Hc(XY) front-to-rear ratio	4.91	4.92	4.75	4.60	4.42	4.39	4.42	4.46	4.56	4.48	4.60

The gain (dBi) value in the test result corresponds to the maximum value in the 3D directional diagram.

2.2.4 Radiation Pattern Results



2.2.5 Test Environment



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

1	2	3	4	5	6	7	8	
					Rev	Description	Date	Remark
					A	New drawing		

YD BTA1386
BT FPC A4

9.90±0.15

37.80±0.15

55±2

(公差)

ø0.81

2

1

A

B

C

D

1	2	3	4	5	6	7	8
No.	Part No.	Name	Specification	Amount	Remark		
2	104-A1386-12A	BTA1386 BT天线	ø0.81*55mm/黑色同轴线/三代IPEX端子	1			
1	100-A1386-11A	BTA1386 BT FPC	单面板PI电解铜, 黑色, 背胶3M9471	1			
1							

0~-10	±0.05	0	0.02	Project	BTA1386	Date	2022-09-26
10~18	±0.10	1	0.03	Part Name	BT天线	Designed by	张登桥
18~30	±0.12	2	0.02	Part No.	136-A1386-10A	Checked by	RF
30~40	±0.15	3	0.04	Material	/	Approved by	MD
40~	±0.20	4	±0.5°	Technology	/	Unit	mm
Location	Angle	Third Angle	Angle	Scale	1:1	Rev	A2

技术要求:

1. 标“*” 尺寸为重点管控尺寸;
2. 未标注尺寸依照图纸;
3. 无虚焊、假焊、连锡、短路、断路等焊接不良现象;
4. 所有部件需符合RoHS要求。