

# Shenzhen World Elite Electronic Co. LTD.


## Sample Approval Sheet

### Product Information:

Customer	Zhong Shan City Richsound Electronic Industrial Ltd
Material Description	HS2000 BT Antenna
Customer's Part number	
Specifications	FPC (36*18.8mm) +White Coaxial Cable (φ 1.13*400mm) +Welding+UV adhesive
Supplier's Part number	136-HS2000-10A
Date	2024-5-16

### 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:

Shenzhen World Elite Electronic Co. LTD.

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Tel: 86-755-89983786

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# 1、 Specification

This report mainly provides the testing status of various electrical and structural performance parameters of HS2000 BT Antenna.



Figure 1 Antenna

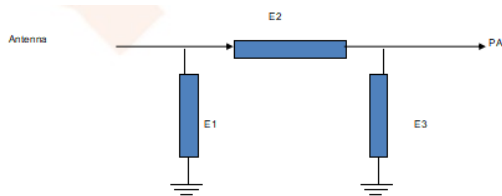
## 1.1 Electrical specification standard

### 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	HS2000 BT Antenna
Frequency Range	2400-2480MHz
VSWR	< 2.0
Efficiency	>50%
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

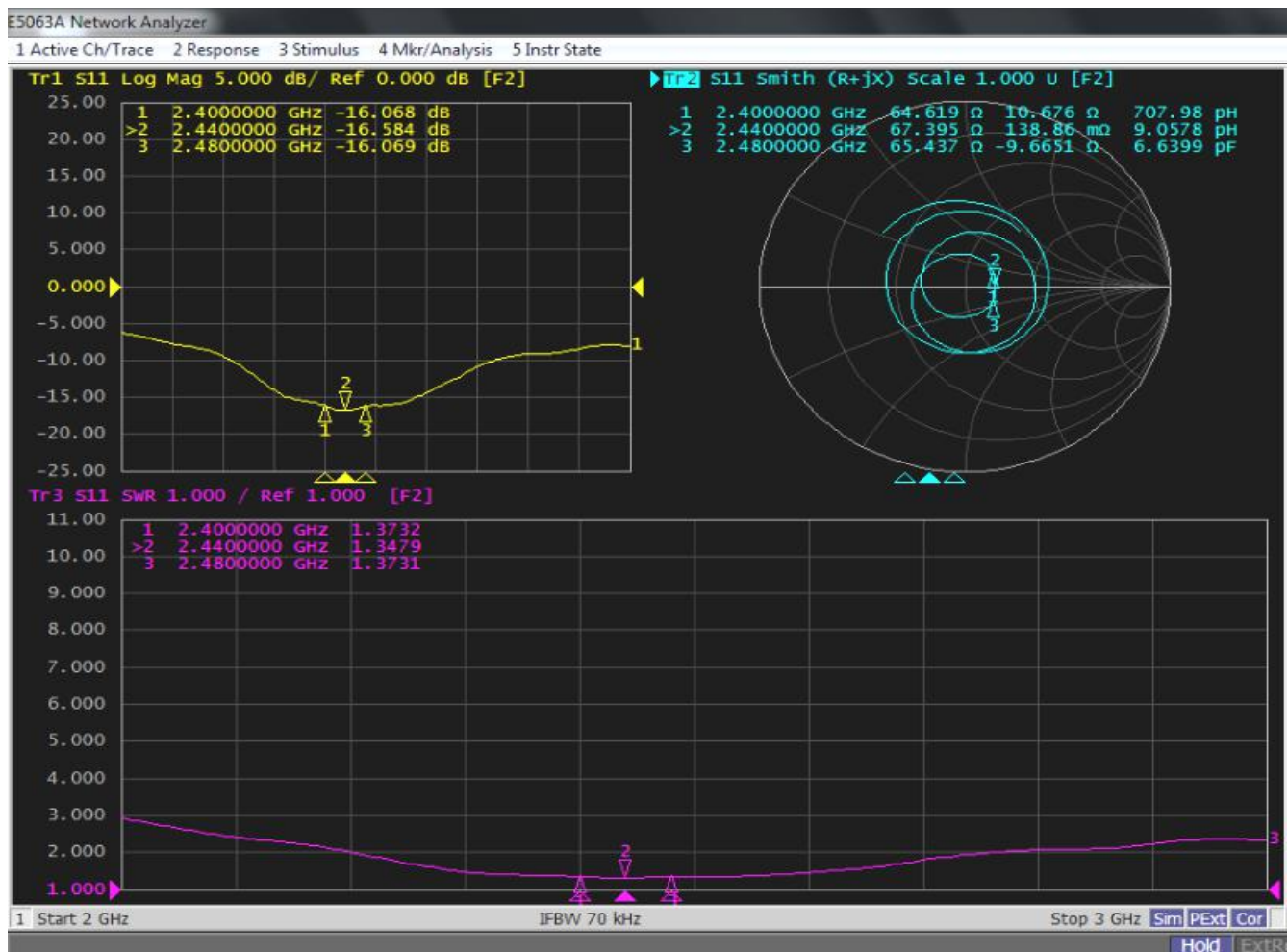
#### 2.1.1 Test connection

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	1.35	1.37
Return Loss	-16.07	-16.58	-16.07



## 2.2 Gain and efficiency test

### 2.2.1 Test Position

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

### 2.2.2 Test equipment

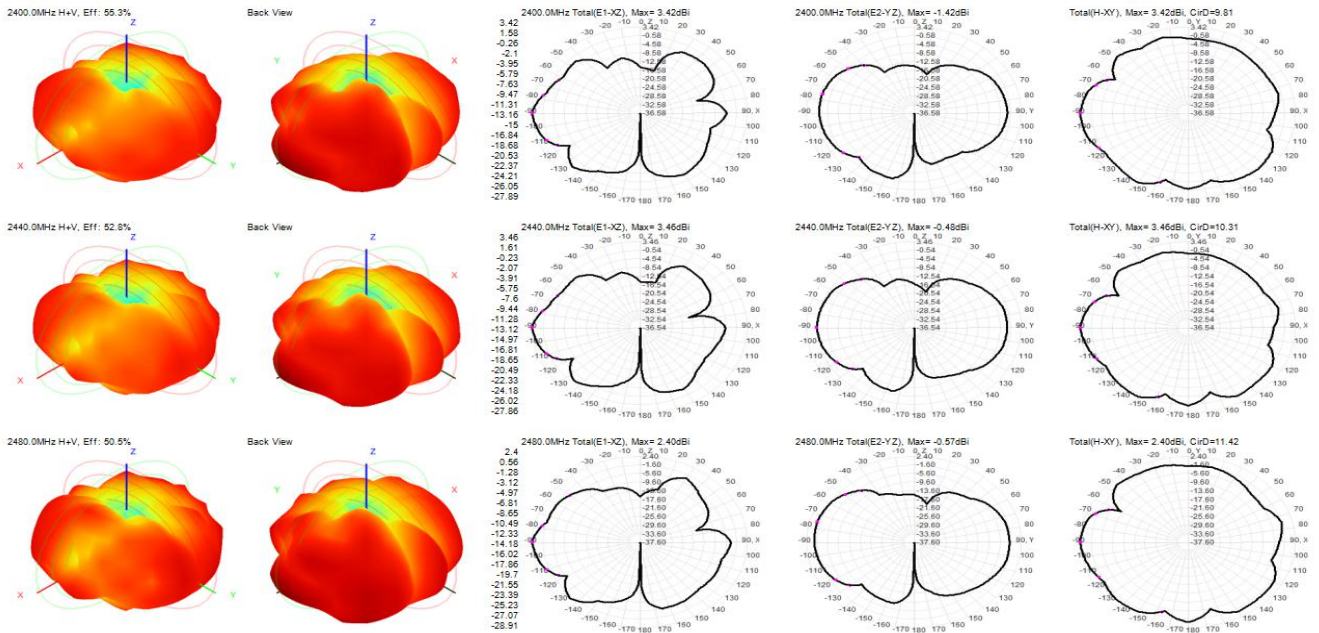
Network analyzer, standard horn antenna, multi-probe near field antenna test system, test computer, etc

### 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	3.42	55.27
2410	3.39	54.61
2420	3.47	54.20
2430	3.51	53.55
2440	3.46	52.76
2450	3.23	52.19
2460	2.90	51.31
2470	2.62	50.86
2480	2.40	50.48
2490	2.39	50.42
2500	2.41	50.48

### 2.2.4 Radiation Pattern Results



## 2.3 OTA test

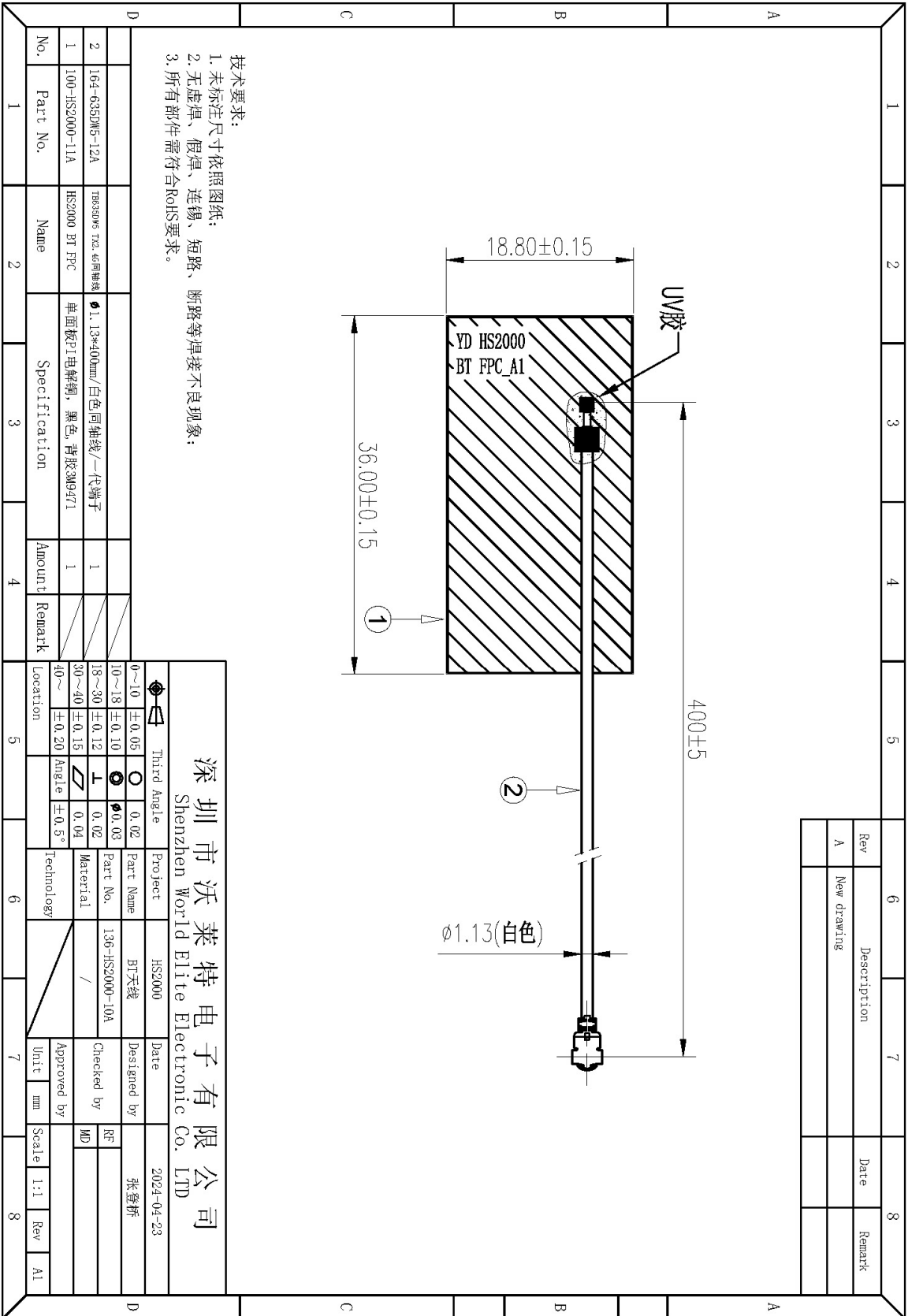
### 2.3.1 Results Summary

Channel No.	TRP (dBm)	TIS (dBm)
0	3.37	-88.88
39	4.82	-88.60
78	4.96	-88.41

### **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



- 技术要求:
1. 未标注尺寸依照图纸;
  2. 无虚焊、假焊、连锡、短路、断路等焊接不良现象;
  3. 所有部件需符合RoHS要求。

No.	Part No.	Name	Specification	Amount	Remark
1	100-HS2000-11A	HS2000 BT FPC	单面板PI电解铜, 黑色, 背胶3M9471	1	
2	164-635DM5-12A	TR835DM5 TX2.45同轴天线	Ø1.13*400mm/白色同轴线/一代端子	1	

<p style="text-align: center;"><b>深圳市沃莱特电子有限公司</b> Shenzhen World Elite Electronic Co. LTD</p>		<p>Project: HS2000</p>		<p>Date: 2024-04-23</p>	
<p>Part Name: BT天线</p>		<p>Part No.: 136-HS2000-10A</p>		<p>Designed by: 张登桥</p>	
<p>Material: /</p>		<p>Technology: /</p>		<p>Checked by: MD</p>	
<p>Location: 40~</p>		<p>Third Angle: 0.02</p>		<p>Unit: mm</p>	
<p>Angle: ±0.20</p>		<p>0.02</p>		<p>Scale: 1:1</p>	
<p>0.04</p>		<p>0.03</p>		<p>Rev: A1</p>	
<p>±0.15</p>		<p>0.02</p>			
<p>±0.10</p>		<p>0.03</p>			
<p>±0.10</p>		<p>0.02</p>			
<p>±0.05</p>		<p>0.02</p>			
<p>0~10</p>		<p>0.02</p>			