

深圳市恒利永通电子有限公司

Shenzhen Hengli Yongtong Electronics Co., Ltd.

产品承认书

客 户 CUSTOMER:	Shenzhen Yueer Industrial Co., Ltd. Factory 101-501, No.19 Jianlong Street, Bao'an Community, Yuanshan Subdistrict, Longgang District, Shenzhen City, Guangdong Province, China
品 名 规 格 DESCRIPTION:	TS345N-R
型 号 MODEL NO:	WA-F-LA-00-129
客 户 料 号 CUS PART NO:	T.FC.TS345N.R001
日 期 D A T E:	2026.3.24

呈样签章

工 程 ENGINEERING DEPARTMENT	品 保 Q C DEPARTMENT	业 务 SALES DEPARTMENT

客户承认签章

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※ 客户确认样品附意栏:

WA-F-LA-00-129 Specification

1. Explanation of part number :

WA — F — LA — 00 — 129
(1) (2) (3) (4) (5)

(1) Product Type : Wireless Antenna

(2) Material: FPC

(3) Frequency : 2400MHz-2500MHz

(4) Coaxial Cable Type : 00

(5) Suffix : 129

2. Electrical Specification :

Those specifications were specially defined for 悦尔 TS345N-R model, and all characteristics were measured under the model's handset testing jig .

2-1. Frequency Band:

Frequency Band	MHz
BT	2400-2500

2-2. Impedance

50 ohm nominal

2-3. VSWR

2-3-1.Measurement frequency points and VSWR value

Frequency (Unit MHz)	2400	2450	2500
VSWR	1.80	1.04	1.87

2-3-2. VSWR

Frequency Band(MHz)	2400	2450	2500
2-3-3. Typical Value:	≤2.0	≤2.0	≤2.0
2-3-4 Measuring Method	1. A 50Ω coaxial cable is connected to the FPC. Then this cable is connected to a network analyzer to measure the VSWR. 2. Keeping this jig away from metal at least 20 cm		
2-3-5 Picture	E5063A Network Analyzer 1 Active Ch/Trace 2 Response 3 Stimulus 4 Mkr/Analysis 5 Instr State ▶ Tr S11 SWR 1.000 / Ref 1.000 [F1 Del] 11.00 10.00 9.000 8.000 7.000 6.000 5.000 4.000 3.000 2.000 1.000 1 2.4000000 GHz 1.8063 2 2.4500000 GHz 1.0403 >3 2.5000000 GHz 1.8778 1 Start 1 GHz IFBW 70 kHz Stop 3 GHz Cor Hold Ext Ref 2023-11-09 10:11 Trigger Hold Single Continuous Hold All Channels Continuous Disp Channels Trigger Source Internal Trigger Event On Sweep Trigger Scope All Channel Restart Trigger Ext Trig Input Negative Edge Trigger Delay 0 s		

2-4. Efficiency and Gain

- Measuring instruments: microwave darkroom, network analyzer, standard antenna.微波 Dark room description:
This is the microwave darkroom set up by our company in Shenzhen, which belongs to a far-field measurement system. The size of the darkroom is 7.0 m x4.0 m x3.0 m, and the size of the Quiet zone is 15 cm x15 cm x15cm

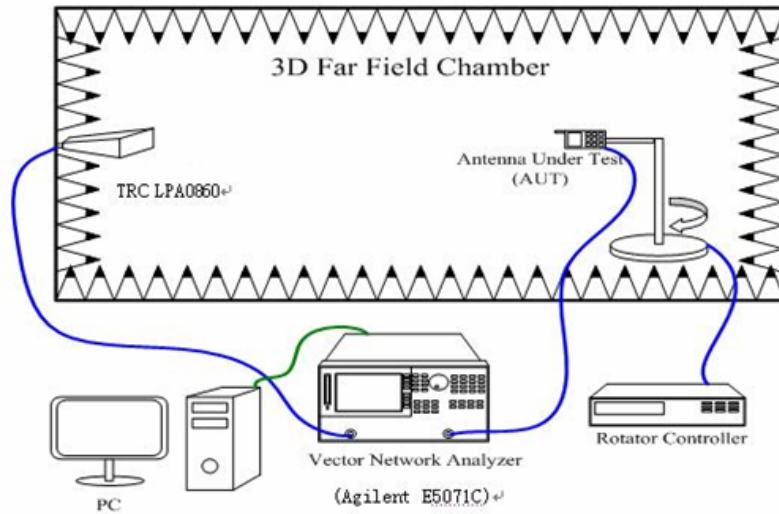


图 1. 微波暗室内仪器设置

FIG. 1 shows the instrument setup in the microwave darkroom and the connection diagram of the network analyzer. The distance between the transmitting antenna (the model of transmitting antenna used in the darkroom is TRC LPA0860 800MHZ-6GHZ) and the antenna to be tested (AUT) is 1.35m. The antenna to be measured is placed on a rotating platform and can be measured roughly and accurately by controlling the rotating Angle of the rotating table.

The antenna to be measured is placed on the rotating table, and the 360-degree field intensity data of each plane (ZY plane and ZX plane) are measured. Another day to be measured

The wire is changed into a standard dipole antenna (the model of the standard dipole antenna used in this darkroom is TRC AD series dipole antenna 800MHz~2500MHz), and the field intensity data of 360 degrees is measured, and the standard gain value is used as the converted gain value. The gain value and direction diagram of the antenna to be measured can be obtained through the conversion of formula 1.

$$G_{AUT} = G_{stand} + P_{AUT} - P_{stand}$$

G_{AUT} : Gain of AUT

G_{stand} : Gain of Standard Gain Antenna

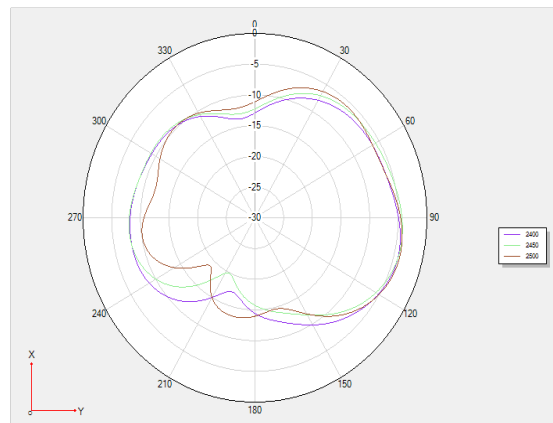
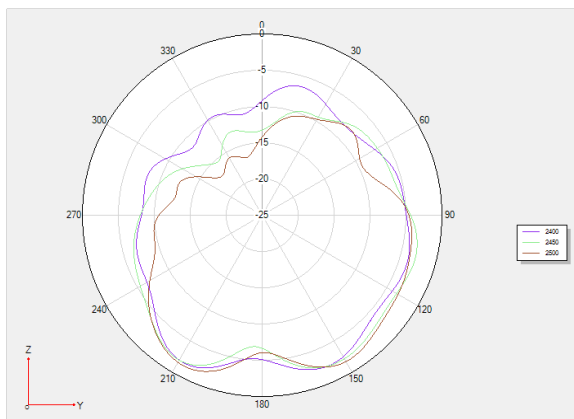
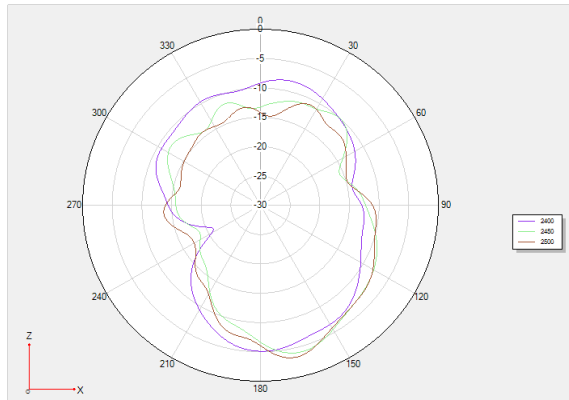
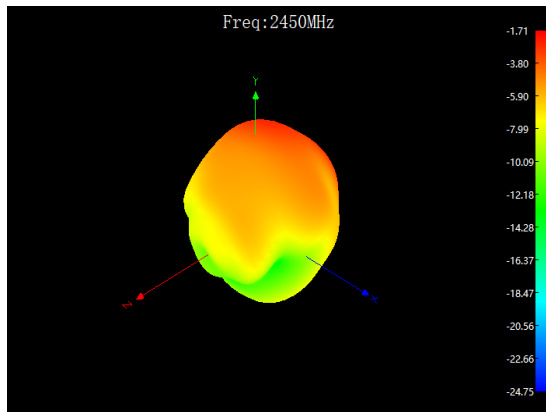
P_{AUT} : Measured Power of AUT

P_{stand} : Measured Power of Standard Gain Antenna

2-4-1 Efficiency and Gain

Frequency(MHz)	Efficiency (%)	Average GAIN(dB)	Peak GAIN (dBi)
2400	21.02	-6.77	-1.73
2450	22.13	-6.55	-1.71
2500	21.32	-6.71	-1.83

2-4-2 2D/3D Gain Pattern



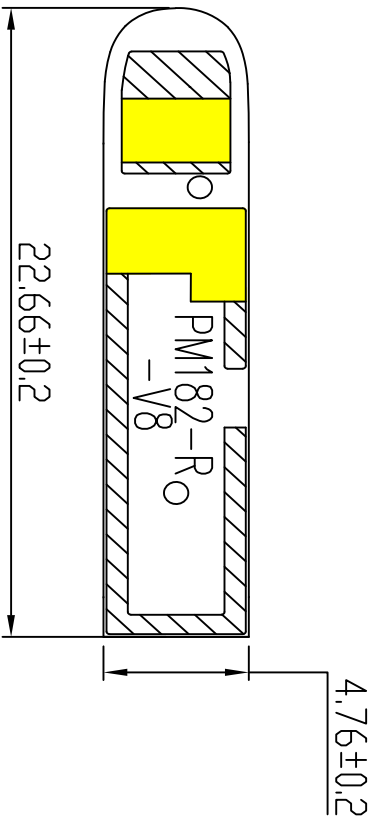
3. Mechanical Specification:

3-1. Mechanical Configuration (Unit: mm)

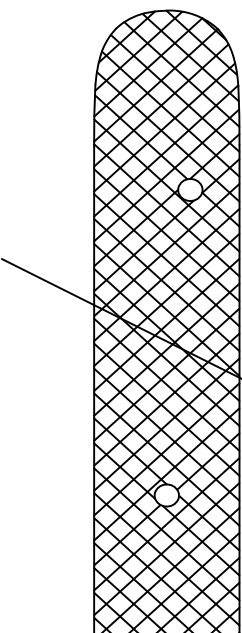
The appearance of the antenna is according to drawing Figure 3-1-

??	修改内容	修改者	修改日期

正面

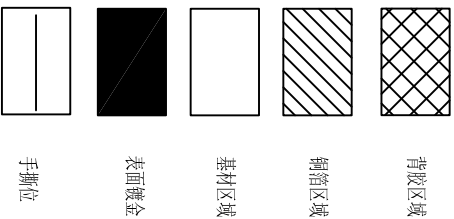


反面



NOTE

1. 红色为外形轮廓,注意边缘尺寸
2. 青色填充部位为电气走线覆铜
3. 黄色填充部分需要表面镀金
4. 图示为正面,底部带3M胶,背面预留手撕位
5. 此FPC表面为黑色油墨,且需添加白色丝印
6. 天线材料采用电解铜一对半



深圳市恒利永通电子有限公司

Φ	单位: mm	名称: PM182-R-V9-FPC天线	日期: 2026/3/20
一般公差:	料号:	设计:	Jack
X. ±0.5	材质: PET/T=0.10mm	R F:	Jack
.X ±0.25	表面处理: 清洁	确认:	Jack
.XX ±0.05	颜色: 黑色	比例: 1:1	版本: V9
.XXX ±0.05			
ANGULAR ± 0.5°			