

产品承认书

SPECIFICATION FOR APPROVAL

客 户:

CUSTOMER:

客 户 案 号:

*CUSTOMER P/N: EDP-156 2.4G-Wi-Fi Antenna

本 厂 编 号:

OUR MODEL NO:

品 名 / 规 格:

SPECIFICATIONS: PCB Antenna

样 品 数:

QTY:

日 期:

test Date: 2024-10-20

United Digital Technology Co., Limited			Customer approve
射频 RF tested by	结构 Structural	核准 Approved	David.lee
Jiaxi. Wang	Lei.lee	Henry.Dai	

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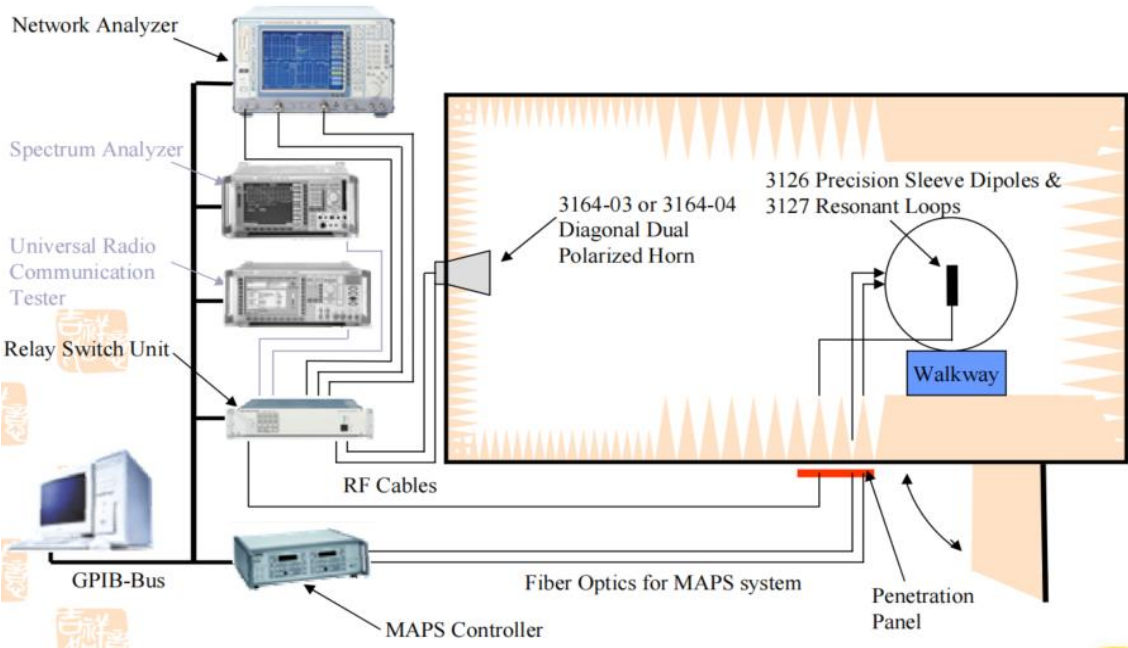
三 基本参数 The basic parameters

主要技术指标		Main technical specifications	
频率范围 (MHz)	2400-2500	Frequency Range (MHz)	2400-2500
特性阻抗(Ω)	50	Impedance(Ω)	50
峰值增益(dBi)	>1.5	Peak Gain(dBi)	>1.5
电压驻波比	≤ 3.5	VSWR	≤ 3.5
最大功率	10W	Admitted Power	10W
极化方式	线极化	Polarization	Linear polarization
连接方式	IPEX-1	Connector Type	IPEX-1
物理性能		Physical Properties	
天线本体材料	/	Antenna Base	/
颜色	/	Colour	/
天线尺寸	/	Antenna Dimensions	/
连接线长度	/	Connecting line length	/
工作温度	-20℃~+85℃	Operating Temp	-20℃~+85℃

四 工程图纸 **Product Drawing**

Please refer to antenna photo exhibition.

五 测试设备 The Equipment&Conditions



5.1 仪器清单及校准 (Instrument list and calibration)

Equipment	Manufacturer	Model No.	Last Cal.	Due Date
Communication comprehensive tester	R&S	CMW500	2024.11.04	2025.11.03
Network analyzer	Agilent	5071C	2024.11.04	2025.11.03
Network analyzer	R&S	ZVB 8	2024.11.04	2025.11.03

5.1 仪器编号及软件版本 (Instrument number and software version)

Equipment	Manufacturer	Model No.	Factory number	Software version
Communication comprehensive tester	R&S	CMW500	135128	WLAN:3.5.40
Network analyzer	Agilent	5071C	1192117	A.11.31
Network analyzer	R&S	ZVB 8	101087	2.71

test method:

Antenna performance	Radiation efficiency	IEEE Standard Test Procedures for Antennas	ANSI/IEEE Std 149- 2021
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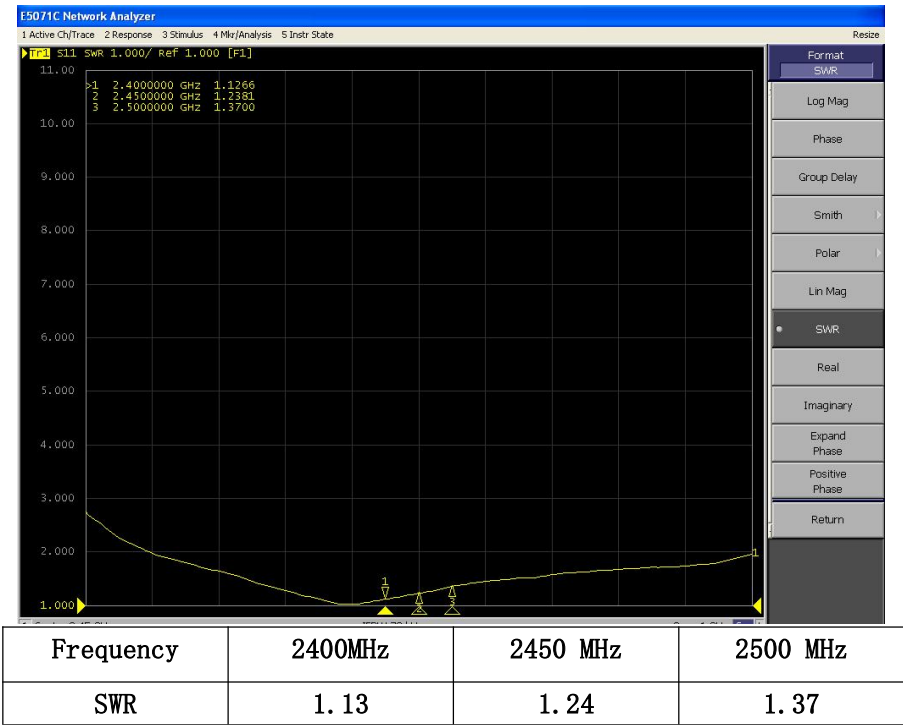
Test Procedure

Test Step Flow

1. Maintain the test ambient temperature of $23 \pm 2\text{ }^{\circ}\text{C}$, the instrument is powered on and preheated for more than 30 minutes
2. Tum on the darkroom power supply, connect the test cable, and set up the sample according to the standard
3. Outline sets the test content objectives and conducts calibration tests
4. Run the EMQuest OTA software, the test is complete, export the corresponding test diagram and test data, and save to the corresponding directory

六 性能测试报告（The Report）

6.1 驻波（SWR）



6.2 无源增益、效率（Passive gain, efficiency）

Frequency ID	1	2	3
Frequency (MHz)	2400.0	2450.0	2500.0
Efficiency (dBi)	-4.35	-4.01	-4.58
Gain (dBi)	1.35	1.45	1.55
Efficiency (%)	23.18	24.95	25.26
Directivity (dB)	4.46	4.64	4.36
Peak Gain Position (Theta)	75.00	75.00	76.00
Peak Gain Position (Phi)	225.00	306.00	305.00
Efficiency ThetaPol (%)	54.85	59.25	51.74
Efficiency PhiPol (%)	3.33	3.70	3.52
Upper Hem. Efficiency (%)	31.81	35.19	30.48
Lower Hem. Efficiency (%)	26.37	27.76	24.78

Frequency (MHz)	Gain (dBi)	Efficiency (dBi)	Standard no
2400	1.35	-4.35	ANSI/IEEE Std149-2021
2450	1.45	-4.01	ANSI/IEEE Std149-2021
2500	1.55	-4.48	ANSI/IEEE Std149-2021

6.3 有源测试数据（Active Test Data）

测试模	测试速率	测试信道	TRP	TIS
802.11b	TRP:11M TIS:11M	1	10.32	-73.16
		6	11.28	-76.44
		11	10.42	-67.52
802.11g	TRP:6M TIS:54M	1	8.14	-71.15
		6	7.95	-72.35
		11	8.34	-64.88
802.11n	TRP:MCS0 TIS:MCS7 (HT20)	1	6.01	-61.38
		6	6.32	-62.18
		11	6.38	-60.47

6.4 暗室测试（darkroom）

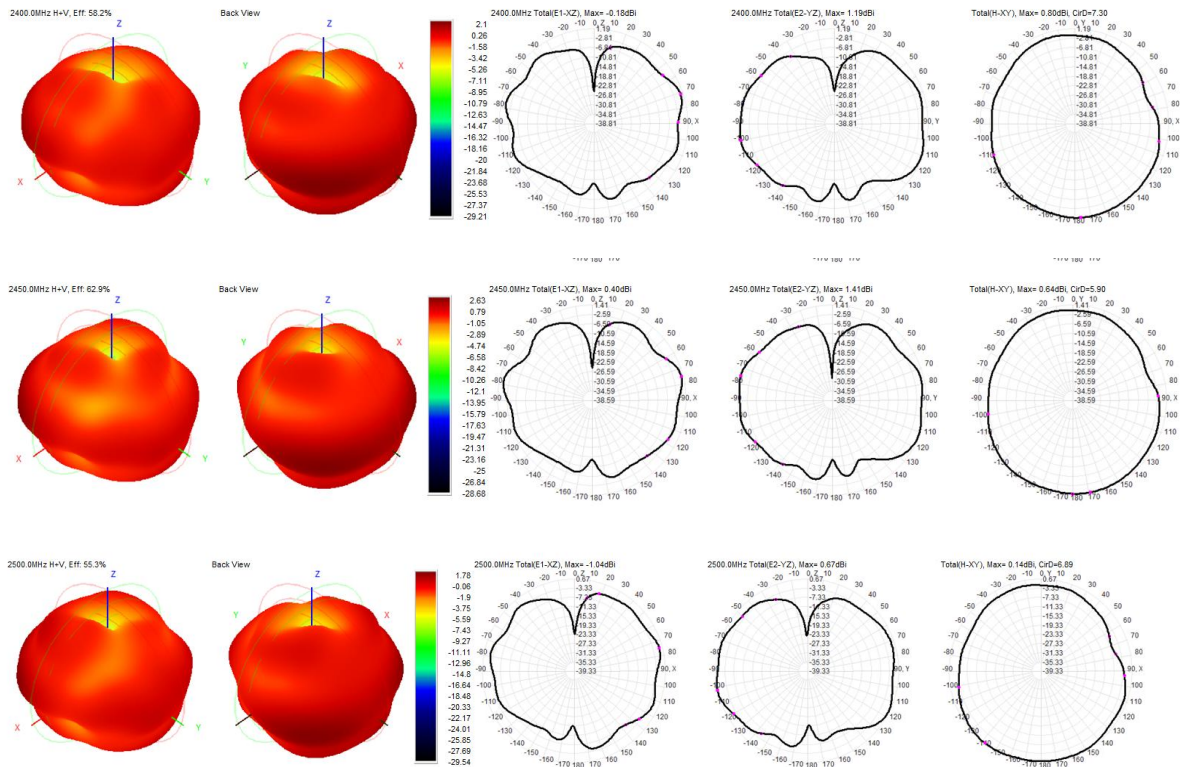
Darkroom FW Name: AnTestpro97

FW version: V015

6.4.1 Testing environment

Please refer to antenna photo exhibition.

6.5 辐射方向图 (Radiation pattern)



七、环境可靠性试验报告 environmental testing

1、可靠性测试报告 Reliability test report

测试项目		测试方法	要求	结果
C1	V.S.W.R.电性驻波比	网路分析仪参数进行测试	符合待测物规范	pass
M1	天线增益	天线暗室参数进行测试	符合待测物规范	pass
M2	Vibration 震动	GB / T2423.48-2008 Amplitude: 0.03 inch (1.5mm); Freq: 20 to 80 to 20 Hz3 directions; 2 hours for each direction 振幅 1.5mm; 频率 20~80~20Hz; 3个方向各 2H	1. No Visual Damage 2. Frequency Tol.≤5% 无明显外观不良;频率偏移≤5%	pass
M6	Random Drop 跌落	GB / T2423.8-1995 Single: Height: 1.0 Meter;3 directions; 1 time for each direction 单支天线, 高 1m; 3 个方向各 1 次	1. No parts separated、fracture 2. Frequency Tol.≤5% 产品无脱落、断裂;频率偏移≤5%	pass
E3	Dimension 尺寸	Inspection of dimension, color, material, package, surface process. 检查尺寸, 颜色, 材料, 包装, 表面处理	Directive DUT specification 符合待测物规范	pass

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E4	Temperature and Humidity Chamber 恒温恒湿	GB / T 2423. 3-2006 Temp: 80° C / 12 H; -40° C / 12H RH: ≥ 90%; Time: 24H 温度 80° C 测试 12H 转-40° C 测试 12H; 湿度 ≥ 90%; 时间 24H	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤ 5% 恢复 2H 后, 无明显外观不良; 频率偏移 ≤ 5%	pass
E5	Thermal Shock 冷热冲击	GB / T 2423. 22 - 2008 - 40° C (30 minutes) to +80° C (30 minutes); Cycles: 24- 40° C 测试 30 分转 80° C 测试 30 分为一个周期; 共 24 周期	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤ 5% 恢复 2H 后, 无明显外观不良; 频率偏移 ≤ 5%	pass
R1	Aging test 老化	GB / T 2423. 2 - 2008 Temp: 80° C; Time: 24 hours 温度 80° C, 测试 24H	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤ 5% 無明顯外觀不良; 頻率偏移 ≤ 5%	pass
M1	RoHS	With Reference to IEC 62321:2008 with flow chart 参考 IEC 62321 测试流程	Directive RoHS 2015/863/EU 符合 RoHS 2015/863/EU 标准	pass

八 安装方式 (installation method)

1、板载天线，无需安装。(PCB antenna, no installation required.)