

Antenna Datasheet

2.4 GHz Black Rubber Antenna

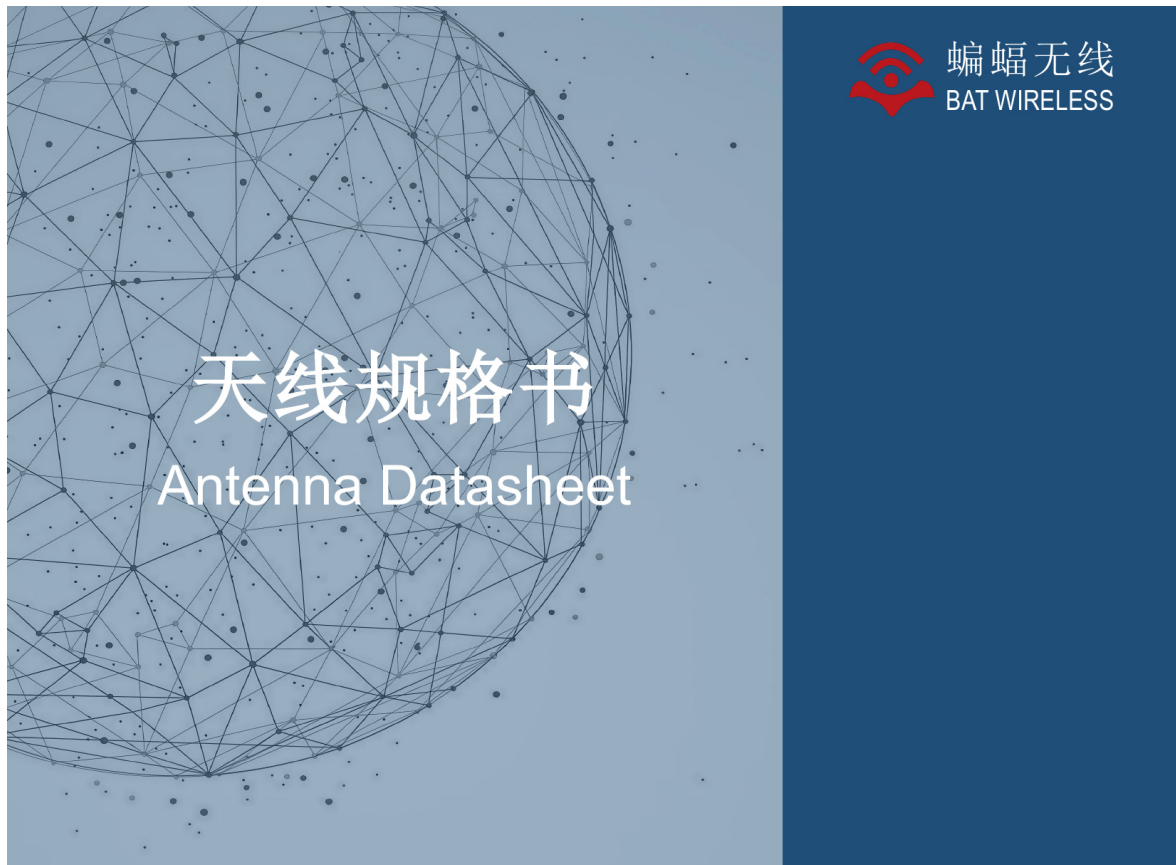
Model: BW2.4JWX110-10KK

BAT WIRELESS

Website: www.batwireless.cn

Version: July-1-2025-A01

Date: July 1, 2025



BAT WIRELESS

Antenna Datasheet

2.4G Black Rubber Duck Antenna

Model:

BW2.4JWX110-10KK

Description:

2.4G black rubber duck antenna with SMA female connector.

Features:

- Frequency range: 2400–2500 MHz
- SMA female connector

Structure: Foldable

360° omnidirectional radiation

Dimensions: 108 mm × Ø10 mm

Compliant with RoHS & REACH requirements

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Legal Statement

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1. Product Description

Typical Application Scenarios:

- Industry 4.0: Real-time monitoring for CNC machines
- Smart Healthcare: Surgical robot control
- Intelligent Transportation: Railway catenary/contact-line monitoring
- Energy IoT: Substation inspection robots

The BAT WIRELESS BW2.4JWX110-10KK is a high-performance omnidirectional antenna designed for devices that require frequent movement or temporary networking. It uses a high-quality plastic (ABS) housing and a foldable structure, providing stable and reliable signal transmission and reception. Its compact rubber-antenna form factor makes it easy to install, transport, and carry.

BAT WIRELESS also provides customization services to optimize your device. Our experienced R&D team can respond quickly to your requirements. If you have any requests, please contact our Sales or FAE team.

Part Number Definition:

Code	Meaning	Description / Value
BW	Company	BAT WIRELESS
2.4	Frequency Band	2400-2500 MHz
J	Name	Rubber antenna
W	Type	External
X	Constant	X
110-10	Approx. Dimensions	110-10 mm
K	Feature	Foldable
K	Connector	SMA female

Full Part Number: BW2.4JWX110-10KK

2. Specifications

Key specifications for model BW2.4JWX110-10KK are listed below.

Parameter	Value	Unit	Notes
Antenna Type	Rubber antenna		
Frequency Range	2400-2500	MHz	
Input Impedance	50	Ohm	
VSWR	< 1.5		
Gain (typ.)	3.3	dBi	
Polarization	Vertical		
Power Capacity	50	W	
Lightning Protection	-		
DC Voltage	-	V	
Radiator	-		
Dimensions	108 x Ø10	mm	
Connector Type	SMA Female		
Cable Type	-		
Cable Length	-	mm	
Mounting Method	Screw-on		
Color	Black		
Material	ABS		
Weight	-	g	
Waterproof Rating	-		
RoHS Compliant	Yes		
Operating Temperature	-45 to +85	°C	
Storage Temperature	-45 to +85	°C	

Original Datasheet Page 4 (Specifications Table)

3. Product Photos

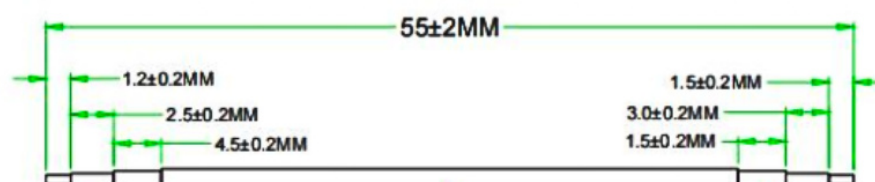
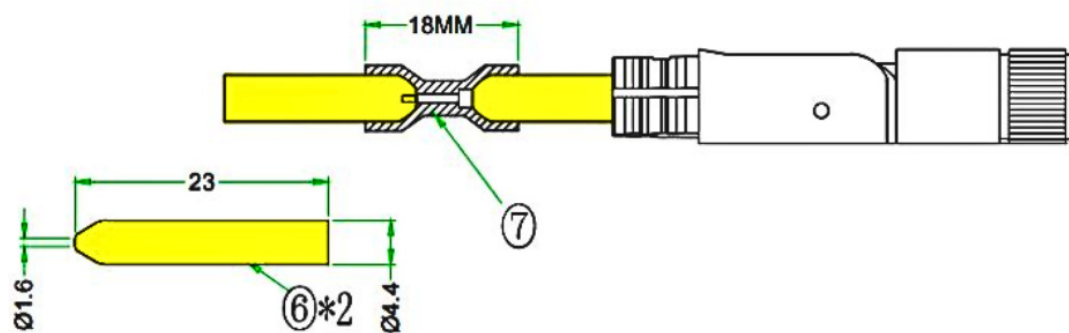
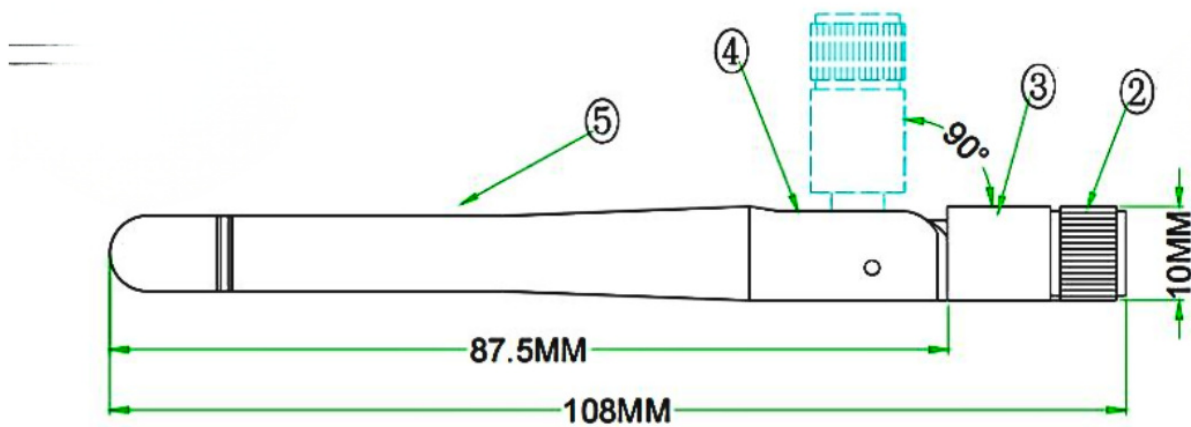
Photo of the antenna (foldable rubber antenna with SMA female connector).



Product Photo (Original Datasheet Page 5)

4. Mechanical Drawing

Mechanical drawing and dimensions of BW2.4JWX110-10KK.



Mechanical Drawing (Original Datasheet Page 6)

5. Test Equipment

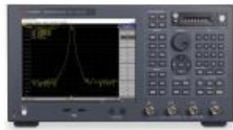
The antenna performance data in this datasheet was measured using the following equipment and a multi-probe spherical near-field test system (DT-3500).

- Keysight E5071C Network Analyzer
- Rohde & Schwarz CMW500 Radio Communication Tester
- Rohde & Schwarz SMBV100B Vector Signal Generator
- DT-3500 Multi-Probe Spherical Near-Field Test System (400 MHz to 8.5 GHz)

DT-3500 System (Typical) Specifications:

Item	Value
Test Frequency	400 MHz - 8.5 GHz
System Size (L x W x H)	4 x 3.5 x 3.5 m
Number of Probes	23 probes + 1 link
Interval Angle	15°
Sampling Diameter	2200 mm
Carrying Capacity	<= 40 kg

5. 测试设备 / Test Equipment



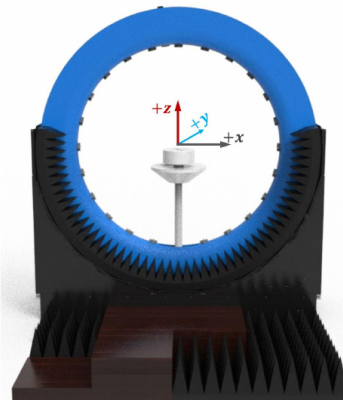
Keysight/E5071C 网络分析仪



R&S/CMW500 综测仪



R&S/SMBV100B 信号源

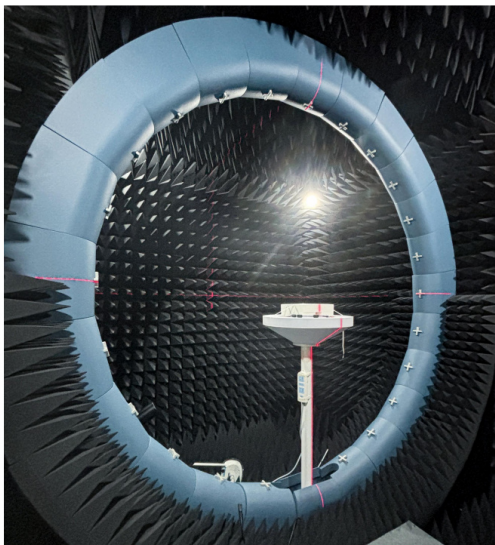


DT-3500 Datasheet / 系统规格

Specification:	Description
Test Frequency /测试频域:	400MHz-8.5GMHz
System Size /系统尺寸:	L*W*H=4*3.5*3.5m
Number of Probes /探头数目:	23 (Probe) + 1 (link)
Interval Angle /采样夹脚:	15°
Sampling Diameter /采样直径:	2200mm
Carring Capacity /承载能力:	≤40kg

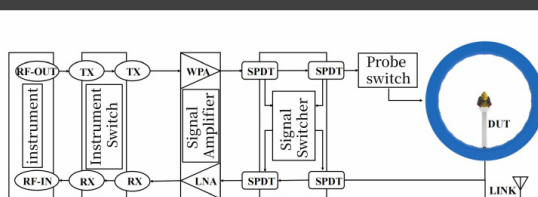
Testing Capability / 测试能力	Description / 能力描述
Active measurement 有源测试	Capability /测试指标: TRP、TIS、EIRP、EIS,. etc Mode /测试制式: 2G/3G/4G/5G、Wi-Fi b/g/n/a/ac/ax、BT、NB-IOT、Cat-M(eMTC)、GPS/BEIDOU/GLONASS、ZigBee、LoRa(Non-Signaling),.etc
Passive measurement 无源测试	Test category /测试类型: Gain、Efficiency、2D pattern、3D pattern、Pattern roundness、Axial Ratio、ECC、Phase center,. etc Polarization /极化方式: Circular polarization, linear polarization, elliptical polarization

Test Equipment and DT-3500 Summary (Original Datasheet Page 7)

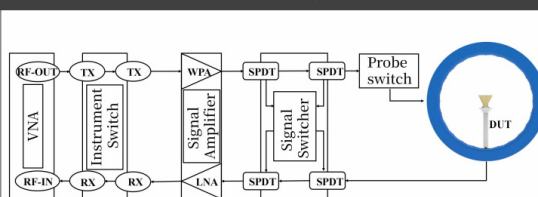


RF Link diagram of multi probe spherical near-field testing system 多探头球面近场测试系统射频链路图

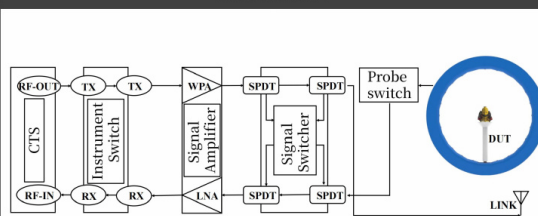
RF Link Overview
总射频链路图



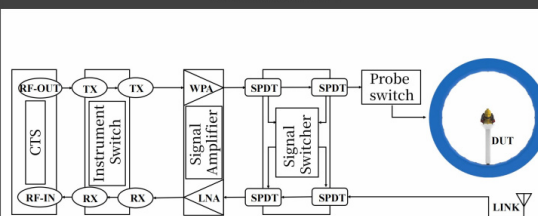
RF Link of Passive measurement
无源测试链路图



RF Link Overview
总射频链路图



RF Link of Passive measurement
无源测试链路图



6. Performance Data

6.1 VSWR

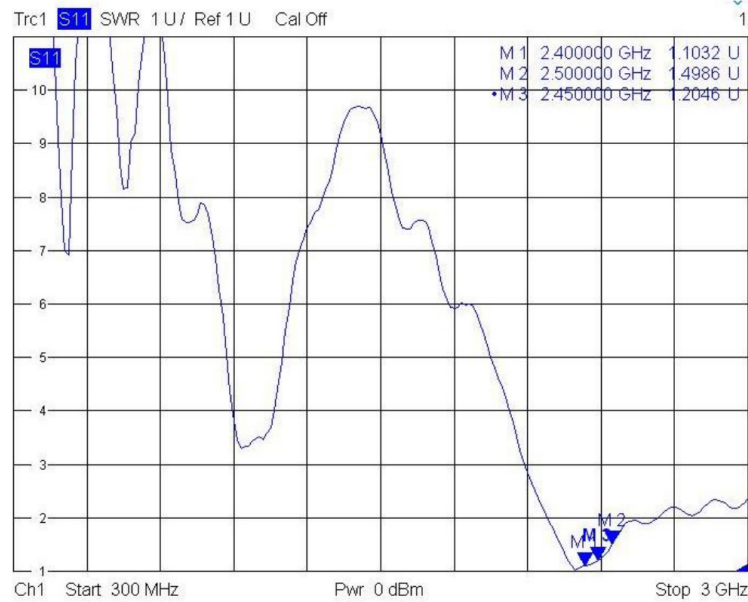
The following plot shows the measured Voltage Standing Wave Ratio (VSWR) over frequency.

6.2 Return Loss

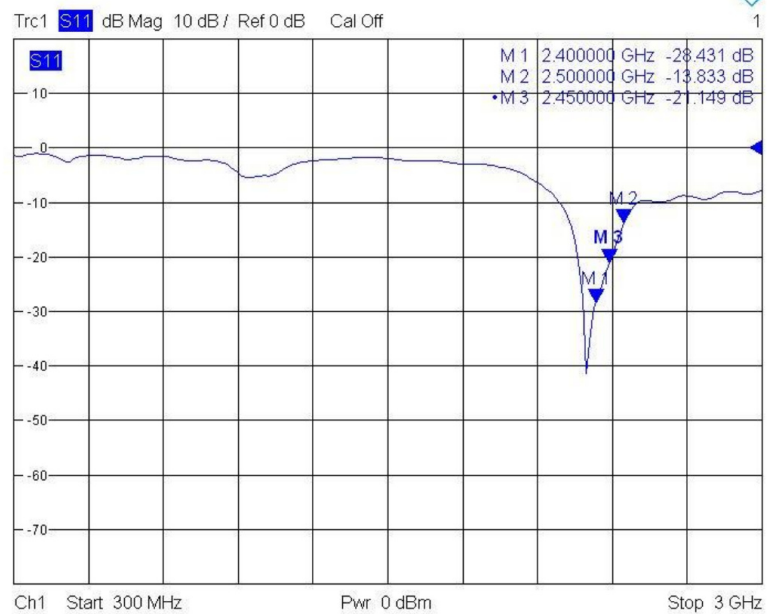
The following plot shows the measured return loss over frequency.

6. 性能数据 / Performance Data

6.1 电压驻波比 / VSWR



6.2 回波损耗 / Return Loss



VSWR and Return Loss Plots (Original Datasheet Page 9)

6.3 Gain and 6.4 Efficiency (Key Points)

Measured maximum gain and total efficiency at representative frequencies:

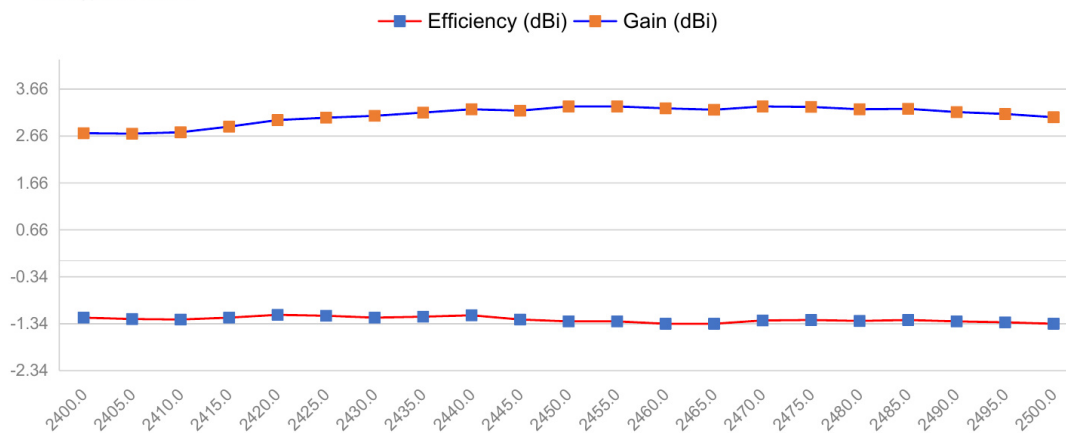
Frequency (MHz)	Max Gain (dBi)	Efficiency (%)	Notes
2400	2.72	75.68	
2450	3.29	74.30	
2500	3.06	73.45	

6.5 Gain and Efficiency vs. Frequency

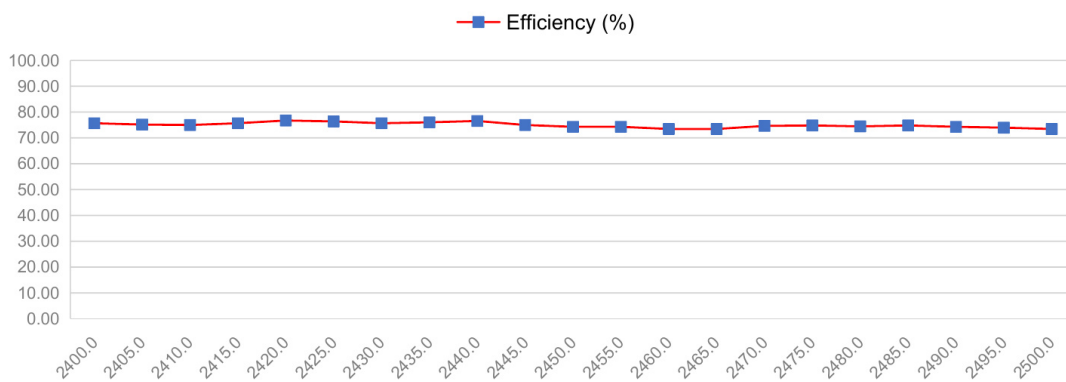
The following charts summarize gain and efficiency across the 2.4 GHz band.

6. 性能数据 / Performance Data

6.3 增益 / Gain



6.4 效率 / Efficiency



6.5 天线增益与效率

频率 / Frequency (MHz)	2400	2450	2500
最大增益 / Gain (dBi)	2.72	3.29	3.06
效率 / Efficiency (%)	75.68	74.3	73.45

Gain/Efficiency Data and Charts (Original Datasheet Page 10)

7. Radiation Patterns

7.1 2D Radiation Patterns

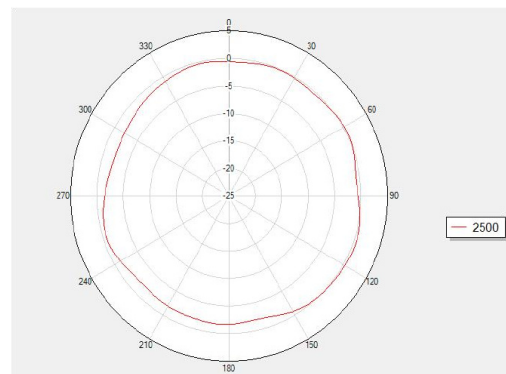
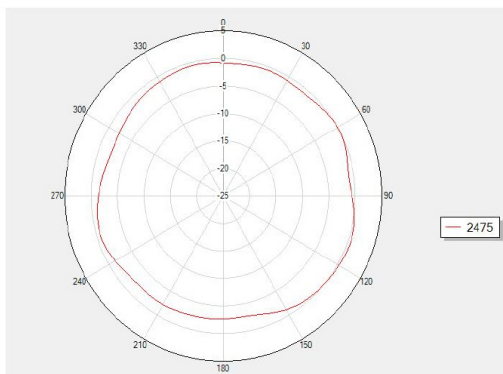
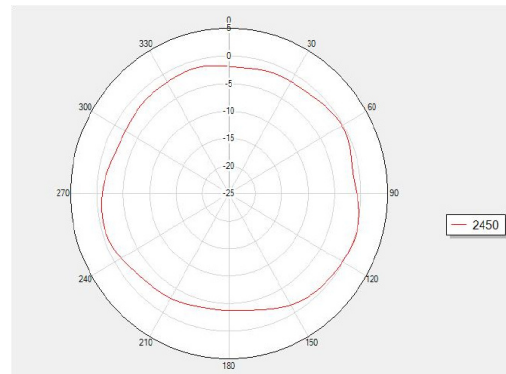
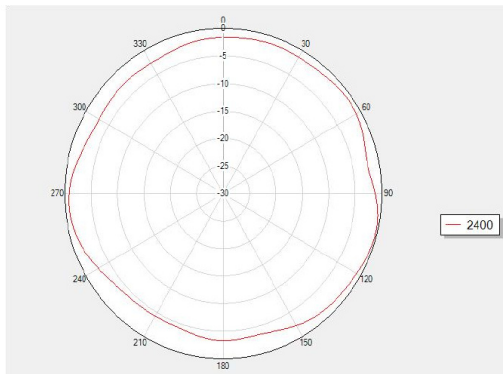
2D radiation patterns at typical frequencies within the 2.4 GHz band.

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7. 辐射模式 / Radiation Patterns

7.1 2D 辐射模式图 / Radiation Patterns



2D Radiation Patterns (Original Datasheet Page 11)

7.2 3D Radiation Patterns

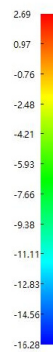
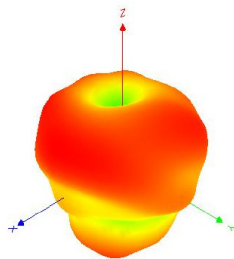
3D radiation patterns at typical frequencies within the 2.4 GHz band.

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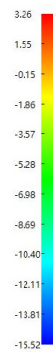
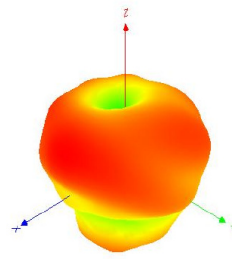


7.2 3D辐射模式图 / 3D Radiation Patterns

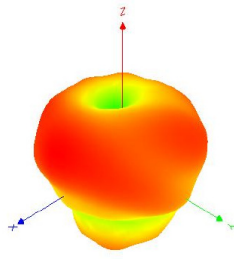
Frequency (MHz) : 2400



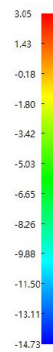
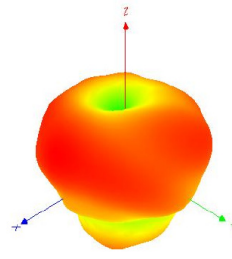
Frequency (MHz) : 2450



Frequency (MHz) : 2475



Frequency (MHz) : 2500



3D Radiation Patterns (Original Datasheet Page 12)

Document Record / Change Log

Version: July-1-2025-A01

Date: 2025-07-01

Notes: First release

Author: Carly

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文档记录 / Documentation	
版本:	July-1-2025-A01
日期:	2025-7-1
备注:	首次更新
作者:	Carly

变更记录 / Change Log	

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Original Datasheet Page 13 (Change Log)

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Original Datasheet Page 14 (Contact Information)