

# Antenna Datasheet

## 2.4G Spring Antenna

Model:

BW2.4SNX12-3Z9

Description:

2.4G Spring Antenna

Length Features:

2400-2500MHz

360° Omnidirectional Radiation

Dimensions: 12mm x 3mm x 9mm

Compliant with RoHS & REACH Regulations

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## BW2.4SNX12-3Z9

### Part Number Explanation

BW	Company	Bat Wireless
2.4	Frequency	2400-2500MHz
S	Name	Spring Antenna
N	Type	Internal
X	Constant	X
12-3	Dimensions	12-3mm
Z	Feature	Straight
9	Length	9

## 1. Description

Bat Wireless **BW2.4SNX12-3Z9** is a compact antenna specifically designed for 2.4GHz wireless communication. Featuring a spring-like spiral structure, it combines mechanical flexibility with electrical performance, offering vibration resistance and bend tolerance, making it ideal for automotive or mobile devices. Its small size and light weight support PCB soldering, facilitating integration into smart home devices and wireless modules. The spiral design reduces multipath interference, enhancing signal stability in complex environments.

Typical Application Scenarios:

**Vehicle & Mobile Devices:** ETC terminals, in-car Wi-Fi, logistics trackers

**IoT Terminals:** Smart home sensors, industrial wireless modules

**Intelligent Transportation:** Rail contact network monitoring

Bat Wireless provides customized services to optimize your equipment. We have a mature R&D team that can respond quickly to meet your needs. If you have any requirements, please contact our sales and FAE.



## 2. Specification

Parameters	Typ.	Unites	Notes
<b>Electrical Characteristics</b>			
Antenna Type	Spring Antenna		
Frequency Range	2400-2500	MHz	
Input Impedence	50	$\Omega$	
V.S.W.R	<3		
Gain	1.7	dBi	
Polarization Type	Vertical		
Power Capacity	50	W	
Lightning Protection	-		
DC Voltage	-	V	
Radiator	-		
<b>Mechanical Characteristics</b>			
Dimensions	12 x 3 x 9	mm	
Connector Type	-		
Cable Type	-		
Cable Length	-	mm	
Mount way	-		
Color	Black		
Meterial	-		
Weight	0.17	g	
<b>Environmental Characteristics</b>			
Waterproof Rating	-		
ROHS Compliant	Compliant		
Operating Temperature	-45~ +85	$^{\circ}\text{C}$	
Storage Temperature	-45~ +85	$^{\circ}\text{C}$	

3. Product Picture





## 5. Test Equipment



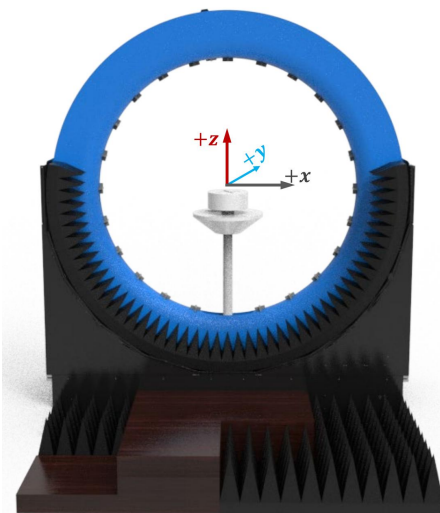
Keysight/E5071C Network Analyzer



R&amp;S/CMW500 Comprehensive Tester



R&amp;S/SMBV100B Signal Generator



### DT-3500 Datasheet

#### Specification:

Specification:	Description
Test Frequency	400MHz-8.5GHz
System Size	L*W*H=4*3.5*3.5m
Number of Probes	23 (Probe) + 1 (link)
Interval Angle	15°
Sampling Diameter	2200mm
Carring Capacity	≤40kg

#### Testing Capability

#### Description

##### Active measurement

**Capability** : TRP、TIS、EIRP、EIS,. etc  
**Mode** : 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

**Test category** : Gain、Efficiency、2D pattern、3D pattern、Pattern roundness、Axial Ratio、ECC,Phase center,. etc  
**Polarization** : Circular polarization, linear polarization, elliptical polarization



## RF Link diaram of multi probe spherical near-field testing system

RF Link Overview



RF Link of Passive measurement



RF Link Overview

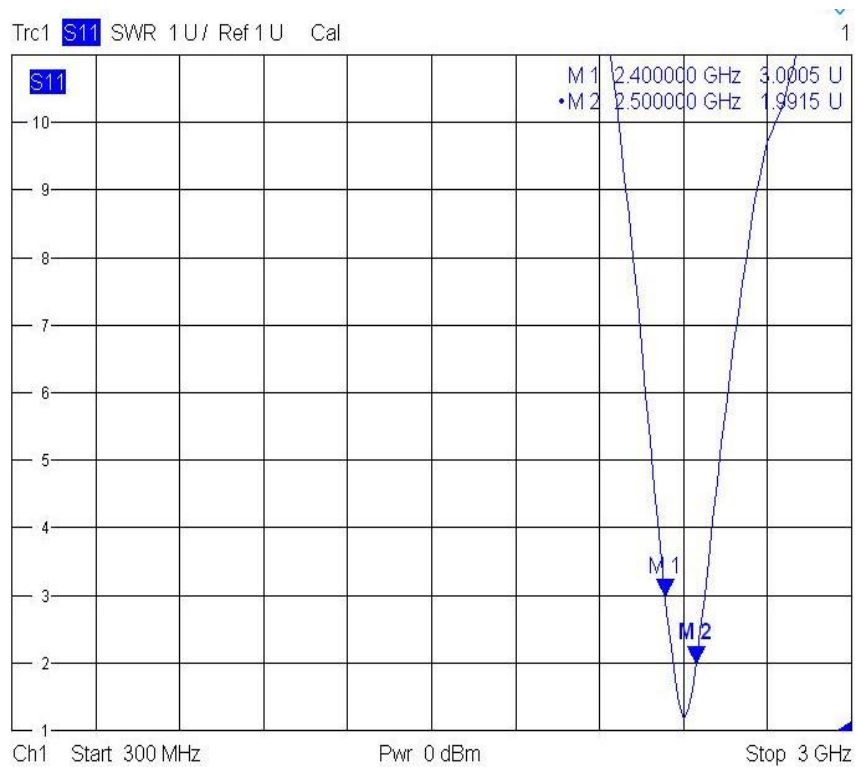


RF Link of Passive measurement

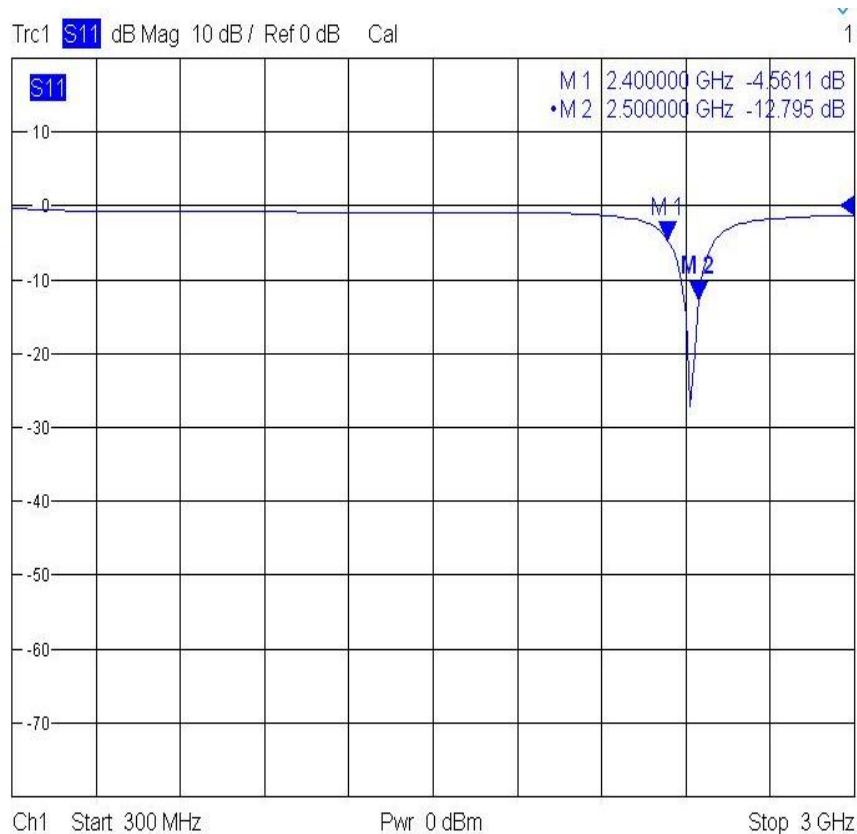


## 6. Performance Data

### 6.1 VSWR

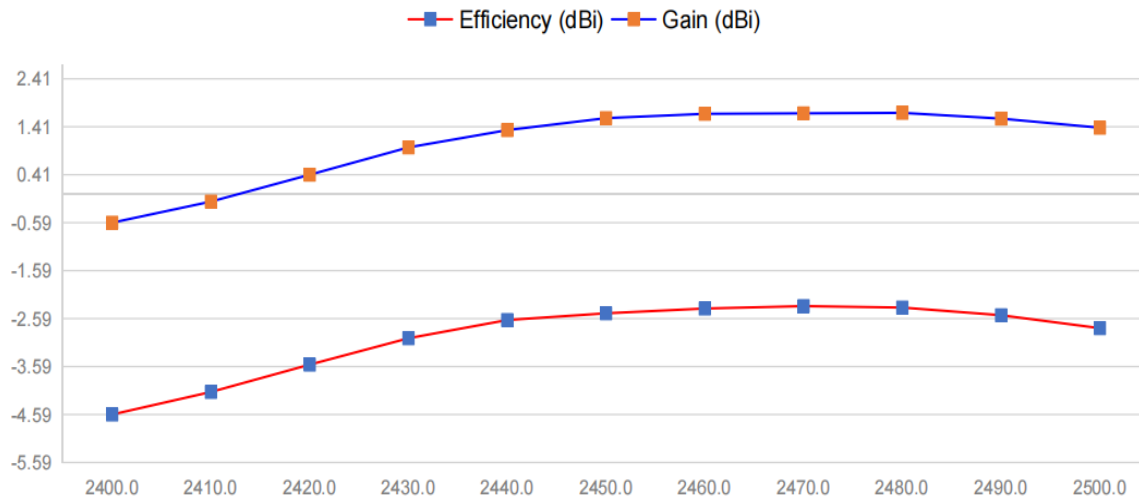


### 6.2 Return Loss

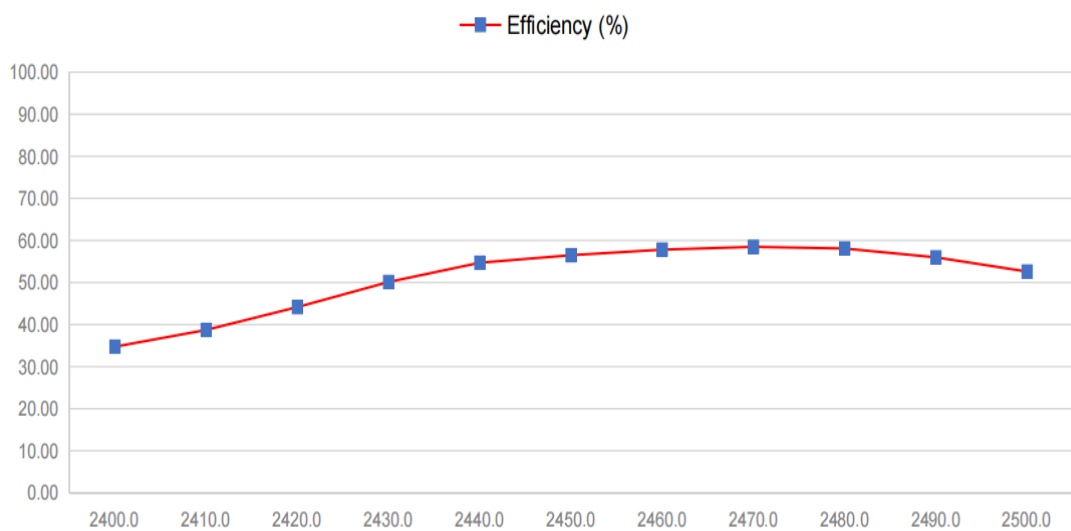


## 6. Performance Data

### 6.3 Gain



### 6.4 Efficiency



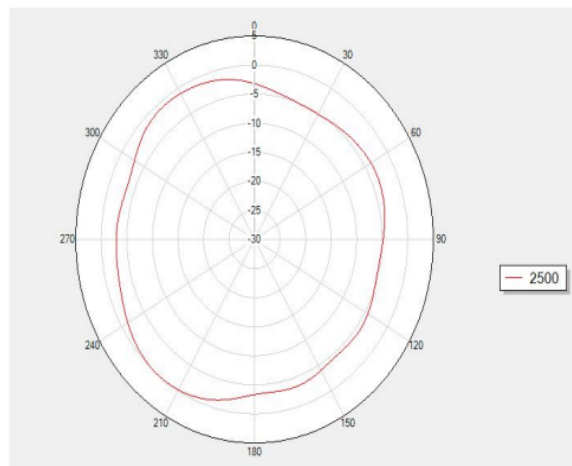
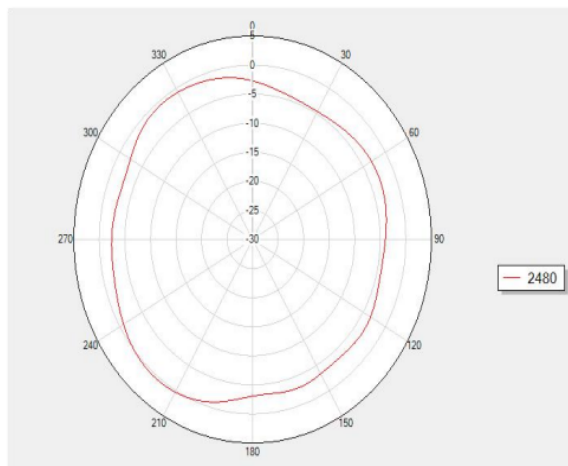
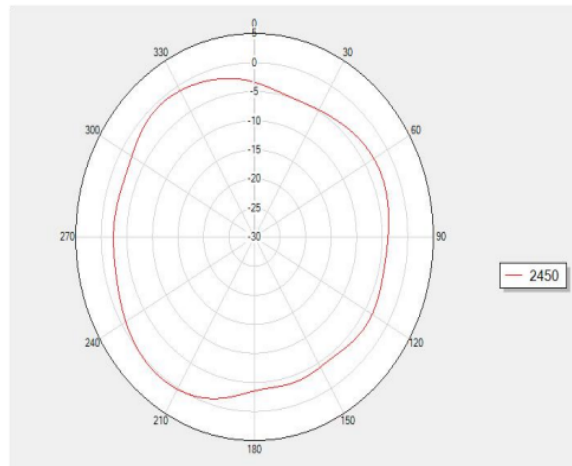
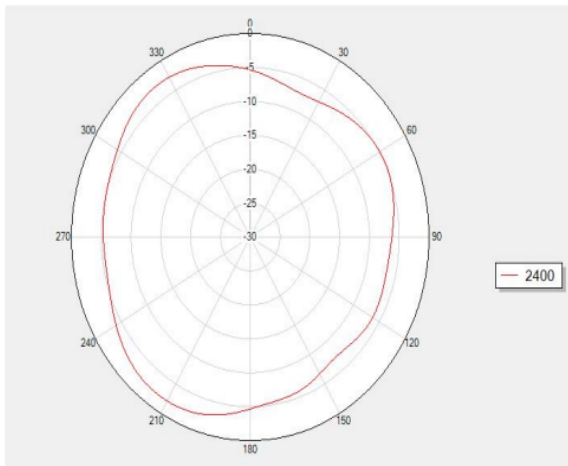
### 6.5 Gain and Efficiency

Frequency (MHz)	2400	2450	2500
Gain (dBi)	-0.59	1.59	1.39
Efficiency (%)	34.75	56.90	52.6



# 7. Radiation Patterns

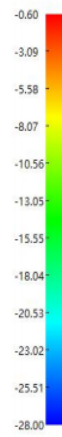
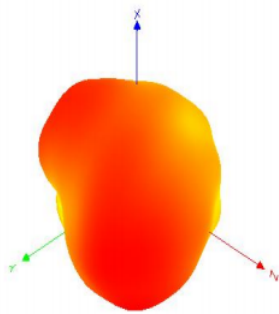
## 7.1 2 D Radiation Patterns



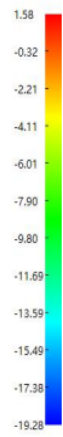
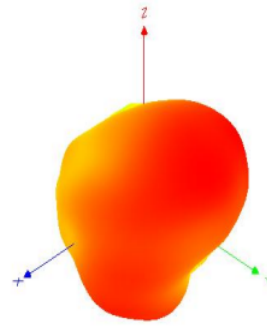


## 7.2 3D Radiation Patterns

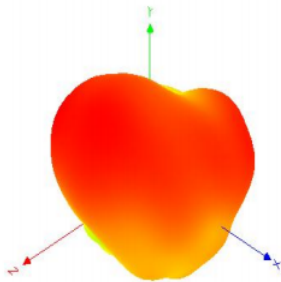
Frequency (MHz) : 2400



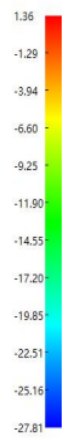
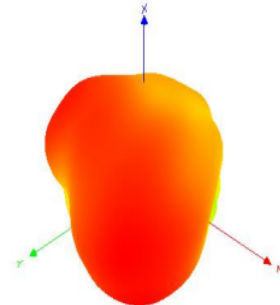
Frequency (MHz) : 2450



Frequency (MHz) : 2480



Frequency (MHz) : 2500





## DECLARATION:

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