

# Antenna Datasheet

## Spring Antenna

Model:

BW433SNX21-5W2

Description:

Bent Spring Antenna

Length Features:

433MHz

360° Omnidirectional Radiation

Dimensions: 21mm x 5mm x 2mm

Compliant with RoHS & REACH Regulations

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## BW433SNX21-5W2

### Part Number Explanation

BF	Company	Bat Wireless
433	Frequency	433MHz
S	Name	Spring Antenna
N	Type	Internal
X	Constant	X
21-5	Dimensions	21-5mm
W	Feature	Bent
2	Length	2

## 1. Description

Bat Wireless **BW433SNX21-5W2** is a compact antenna specifically designed for 433MHz 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	433	MHz	
Input Impedence	50	$\Omega$	
V.S.W.R	< 1.3		
Gain	0.2	dBi	
Polarization Type	Vertical		
Power Capacity	50	W	
Lightning Protection	-		
DC Voltage	-	V	
Radiator	-		
<b>Mechanical Characteristics</b>			
Dimensions	21 x 5 x 2	mm	
Connector Type	-		
Cable Type	-		
Cable Length	-	mm	
Mount way	-		
Color	Golden yellow		
Meterial	-		
Weight	0.65	g	
<b>Environmental Characteristics</b>			
Waterproof Rating	-		
ROHS Complaint	Compliant		
Operating Temperature	-45~ +85	$^{\circ}\text{C}$	
Storage Temperature	-45~ +85	$^{\circ}\text{C}$	

3. Product Picture





## 5. Test Equipment



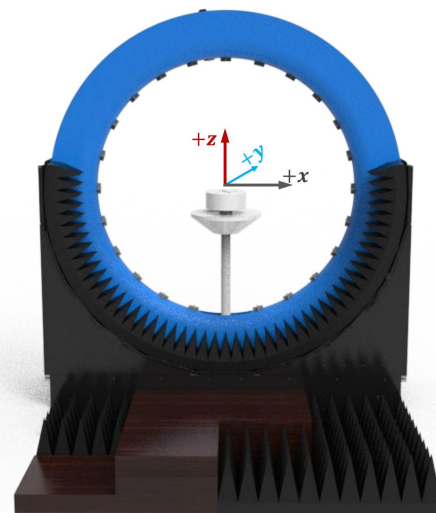
Keysight/E5071C Network Analyzer



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

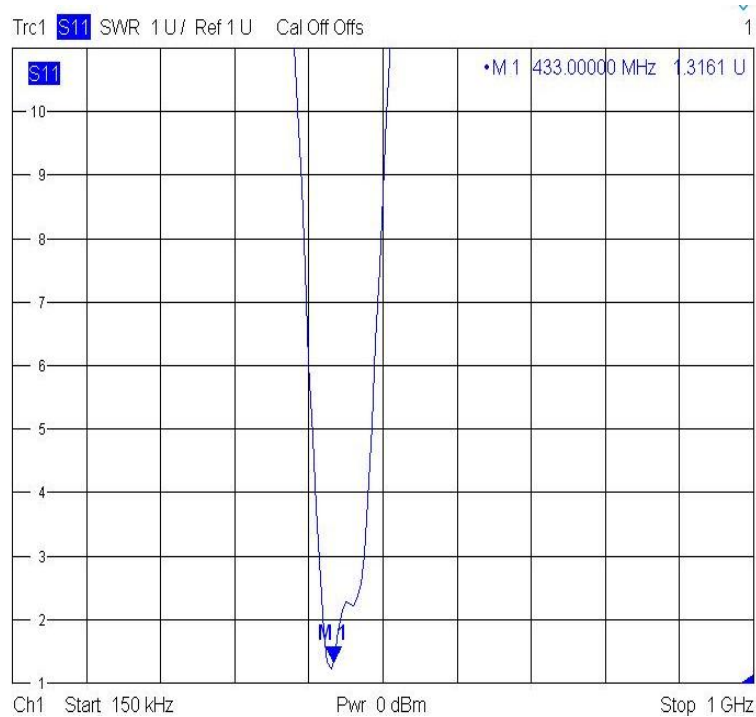


RF Link of Passive measurement

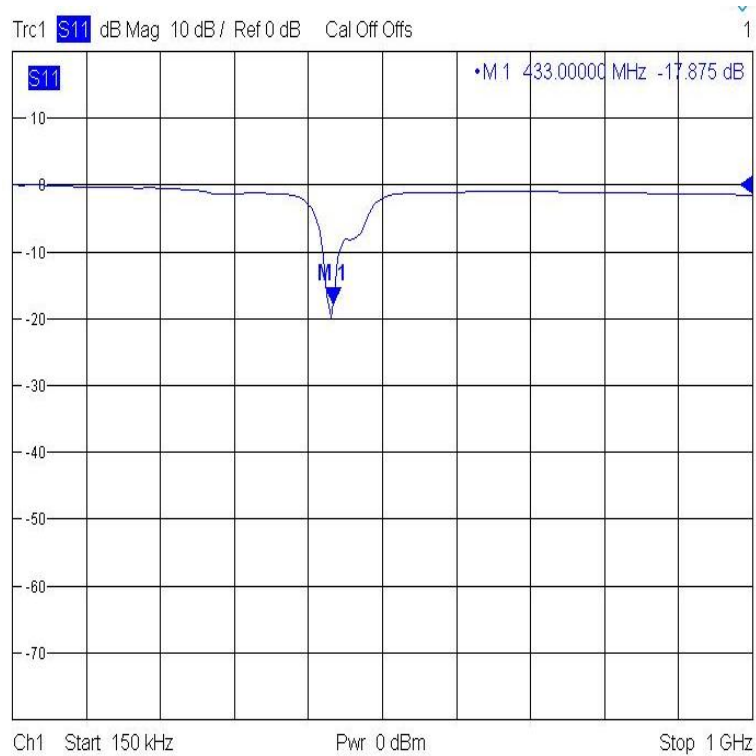


## 6. Performance Data

### 6.1 VSWR

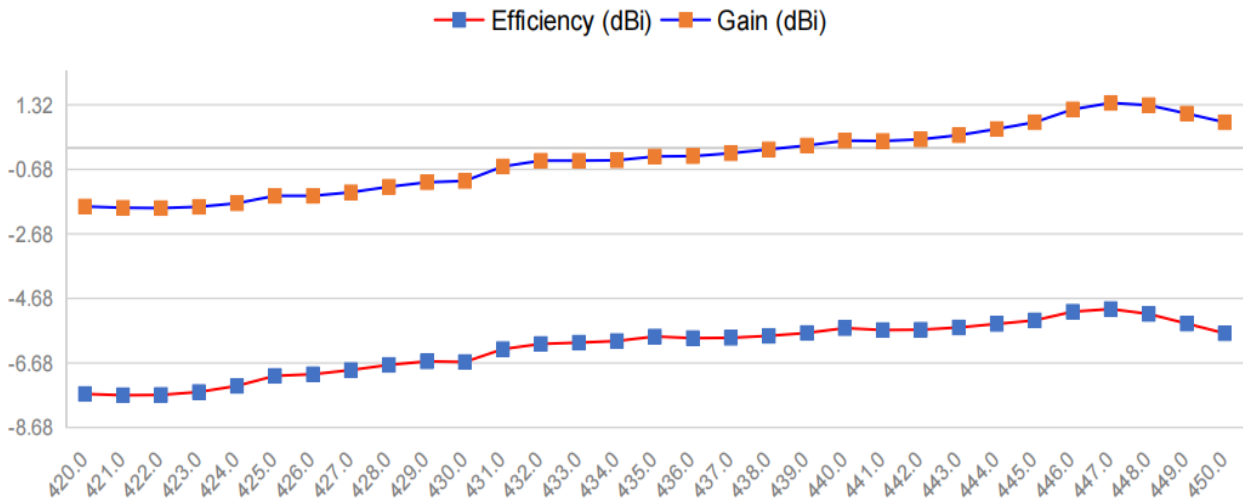


### 6.2 Return Loss

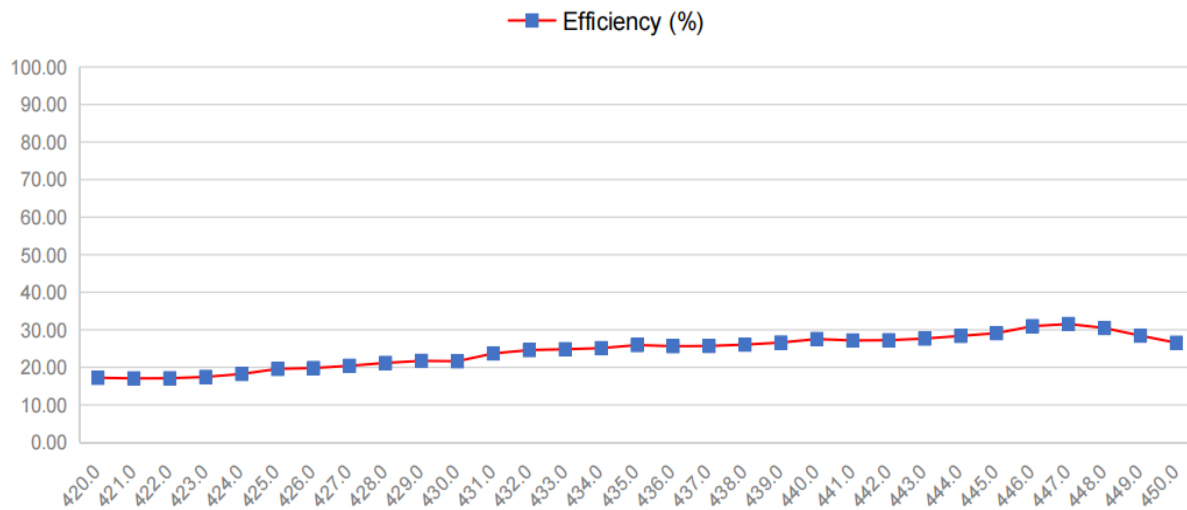


## 6. Performance Data

### 6.3 Gain



### 6.4 Efficiency

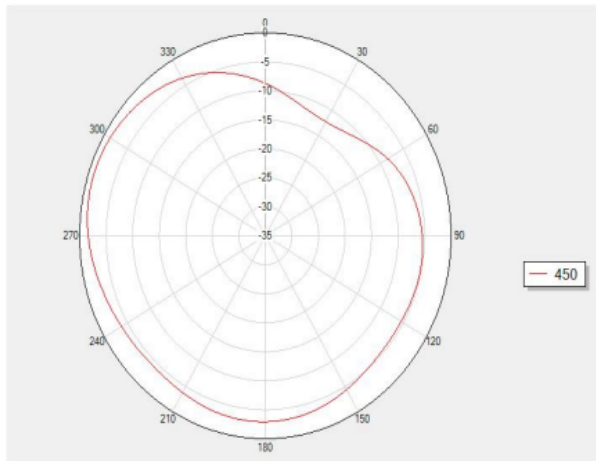
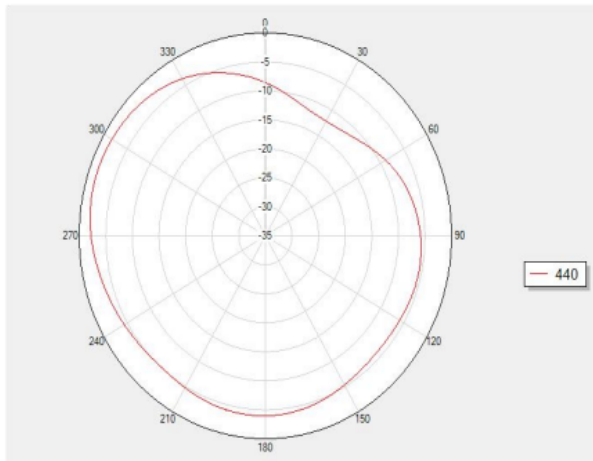
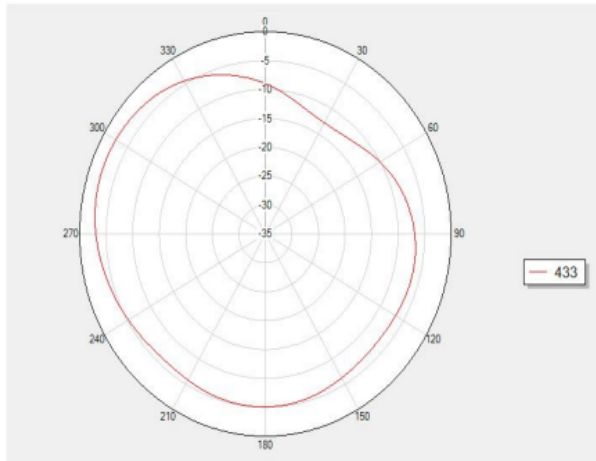
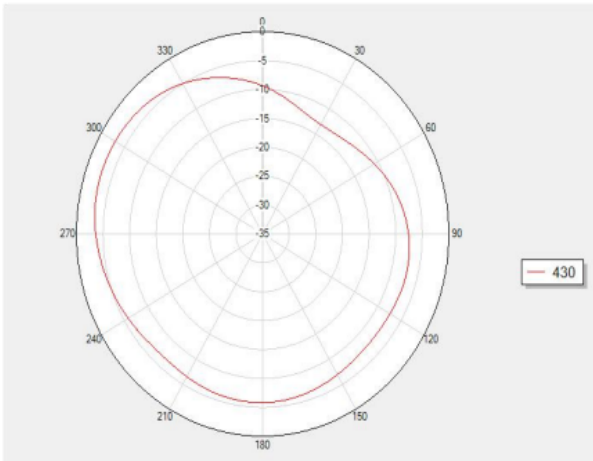


### 6.5 Gain and Efficiency

Frequency (MHz)	430	433	440
Gain (dBi)	-1.04	-0.41	0.21
Efficiency (%)	21.63	24.83	27.54

# 7. Radiation Patterns

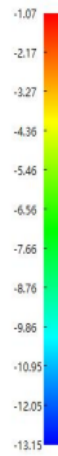
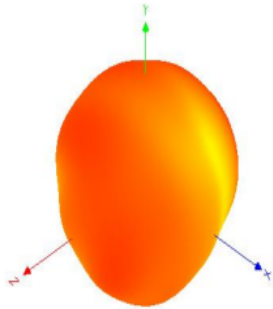
## 7.1 2 D Radiation Patterns



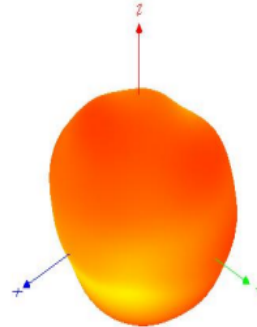


## 7.2 3D Radiation Patterns

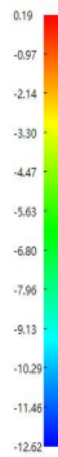
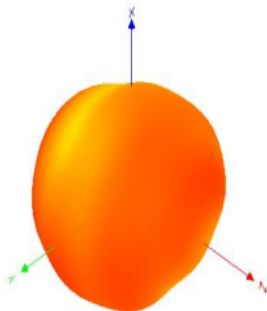
Frequency (MHz) : 430



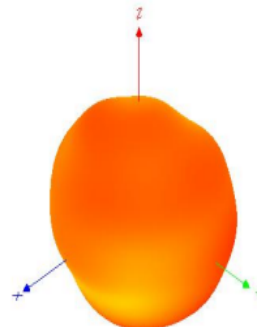
Frequency (MHz) : 433



Frequency (MHz) : 440



Frequency (MHz) : 450





## DECLARATION:

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