

# TOPBAND 拓邦

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深圳拓邦股份有限公司  
Shenzhen Topband Co.,Ltd.

TB89W01  
product manual

Address:  
Topband Industrial Park, Liyuan Industrial Zone, Tangtou, Shiyan, Baoan, Shenzhen,  
518108, Guangdong, China

Date	Revision Content	Revised By	Version
2023/06/08	N/A	Liyixiong	1.0

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## 1. Introduction

The TB89W01 module is an ideal solution for sub-GHz “Internet of Things” applications in smart homes, security, lighting, building automation, and metering. The high-performance sub-GHz radio provides long range capabilities and is not susceptible to 2.4 GHz interference from technologies like Wi-Fi.

The single die, multi-core solution, provides industry leading security, low power consumption with fast wakeup times, and an integrated power amplifier to enable the next level of secure connectivity for IoT devices.

KEY FEATURES:32-bit ARM® Cortex®-M33 core with 78MHz maximum operating frequency. Up to 512 kB of flash and 64 kB of RAM. Energy-efficient radio core with low active and sleep currents. Integrated PA with up to 20 dBm (sub-GHz) TX power.

## 2. Features

Low Power Wireless System-on-Chip:

- High Performance 32-bit 78 MHz ARM Cortex®-M33 with DSP instruction and floating-point unit for efficient signal processing
- Up to 512 kB flash program memory
- Up to 64 kB RAM data memo
- Sub-GHz radio operation
- TX power up to +20 dBm

Low Energy Consumption

- 3.8 mA RX current at 915 MHz (4.8 kbps O-QPSK)

High Receiver Performance

- -125.8 dBm sensitivity @ 4.8 kbps 915 MHz O-QPSK

## 3. General Specification

### 3.1 General Spefication

Model Name	TB89W01
Product Description	915MHz communication module
Dimension	L x W : 16.5 x 18 mm
Operating temperature a,b	-30°C to 85°C
Storage temperature	-40°C to 85°C
Humidity	Operating Humidity 10% to 95% Non-Condensing
Antenna Specification	
Manufacturer	Shenzhen Topband Co.,Ltd.
Address	Topband Industrial Park,LiYuan Industrial Zone, ShiYan Town, Bao'An District, Shenzhen 518108 China
Antenna model	TB89W01 Antenna
Antenna Gain	0.37 dBi for Charging Station ANT, 2.60 dBi for Robotic Lawn Mower ANT

a. The operating temperature 65 to 85°C is feasible at conditional environment.

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Please examine the reliability on final product.

b. Functionality is guaranteed across this range of temperature. Optimal RF performance as specified in the data sheet, however, is guaranteed only for  $-10^{\circ}\text{C}$  to  $55^{\circ}\text{C}$ .

## 3.2 Voltage

### 3.2.1 Absolute Maximum Ratings

Symbol	Description	Min.	Max.	Unit
VBAT	Input supply Voltage	-0.3	3.3	V

### 3.2.2 Recommended Operating Rating

The module requires two power supplies: VBAT and VDDIO.

	Min.	Typ.	Max.	Unit
Operating Temperature	-30	25	85	deg.C
VBAT	3.0	3.3	3.6	V

## 4. Label



## 5. Certification

### FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: -Reorient or relocate the receiving antenna. -Increase the separation between the equipment and receiver. -Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. -Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful

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interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Please notice that if the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains FCC ID: 2ADDW-RF915 " any similar wording that expresses the same meaning may be used.

FCC RF Radiation Exposure Statement Caution: To maintain compliance with the FCC's RF exposure guidelines, place the product at least 20cm from nearby persons.

## IC Statement

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions: (1) This device may not cause interference; and (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage; (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Please notice that if the ISED certification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains IC: 23804-RF915" any similar wording that expresses the same meaning may be used.

l'appareil hôte doit porter une étiquette donnant le numéro de certification du module d'Industrie Canada, précédé des mots « Contient un module d'émission », du mot « IC: 23804-RF915» ou d'une formulation similaire exprimant le même sens.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.