

## User Manual

Product Name: Wireless module

Model Number: TOP-MS04

## 1. Introduction

TOP-MS04 is a WLAN module supporting IEEE 802.11b/g/n standards with 4-pin connector supporting USB2.0 interface. This is a low cost compact WLAN module designed in the product with embedded system for the wireless connectivity.

### **Scope:**

TOP-MS04 WLAN module is designed to operate in 2.4GHz ISM frequency band it applies a highly integrated MAC/BBP and RF single chip RT5070 with 150Mbps PHY rate supporting it fully complies with 802.11b/g/n draft 3.0 and 802.11b/g/n feature

- 802.11b: 1, 2, 5.5, 11Mbps;
- 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps
- 802.11n: (20MHz) MCS0-7, Support up to 72Mbps
- (40MHz) MCS0-7, Support up to 150Mbps
- OFDM, Peak rate 150Mbps, Peak throughput 90Mbps.
- Security support for 64/128 WEP, WPA, WPA2, TKIP, AES
- Operates in 2.4GHz frequency bands. Power Management
- Antenna configuration: I-PEX receptacle for external antenna/Built-in On Board

## 2. Product Information

Standards	IEEE802.11b/g&802.11n(1T1R mode)
Operating Frequency	USA (FCC) : 2.412GHz~2.462GHz (channel 1 - 11) ISM band
	Europe (CE) : 2.412GHz~2.472GHz (channel 1 - 13) ISM band
Protocols	802.11b: CCK, QPSK, BPSK, 802.11g/n: OFDM
Antenna	External Antenna via an I-PEX receptacle/Built-in On Board
Security	WPA/WP2, 64/128/152-bit WEP, WPS

ReceiveSensitivity	11b:-86dBm@11Mbps ; 11g:-72dBm@54Mbps. 802.11n: (HT20) , -68dBm@MSC7, (HT40) , -64dBm@MSC7
Operating Voltage	5.0VDC±5% (or 3.3VDC±5% upon special requirement)
Operating Current	<110mA at 5.0V DC input.
Bus Interface	USB 2.0/USB1.1
USB Interface	USB2.0
Antenna Impedance	I-PEX receptacle for external antenna/Built-in onBoard

### Specification Overview

Operation System	CPU Supplier	Driver
Linux 2.4/2.6	ARM, MIPSII	Available
Windows 2000/XP/Vista	X86 Platform	Available
Windows CE 5.0/6.0	ARM, MIPSII	Available
Mac OS X 10.3/10.4/10.5/10.6	N/A	Available

### Software and system Information

## 3. Temperature

### Operating Temperature

Continuous reliable operation in ambient temperature: -20°C to +45°C

### Storage Temperature

The product is not damaged or degraded when keeping in -20°C to +85°C

## 4. Humidity

### Operating Humidity Conditions

The product is capable of continuous reliable operation when subjected to relative humidity in the range of 20% to 80% (non-condensing)

### Non-Operating Humidity Conditions (including warehouse)

The product is not damaged or degraded when kept in the relative humidity range from 20% to 80%

## 5. Disclaimer

These Materials And Information Are Provided "AS IS" Without.Warranty of Any Kind, Either Express or Implied, Including But Not. Limited To, The Implied Warranties Of Merchantability, Fitness For A. particular Purpose or Non-infringement.

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## FCC Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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

NOTE: 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.
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- Consult the dealer or an experienced radio/TV technician for help important announcement

## Important Note:

### Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This device is intended only for OEM integrators under the following conditions:

1. The transmitter module may not be co-located with any other transmitter or antenna, As long as the three conditions above are met, further transmitter testing will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

## Important Note:

In the event that these conditions cannot be met (for example co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

## End Product Labeling

The final end product must be labeled in a visible area with the following" Contains FCC ID: 2AATNTP-MS04 ".



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#### Manual Information to the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.