IEEE 802.11 a/b/g/n/ac 5.8G/2.4GHz
433Mbps/150Mbps

PRODUCT DATASHEET

PRODUCT MODULE: TOP-5M01
VERSION: V1.0
DATE: 2015-08-28

	WRITTEN BY	VERIFIED BY	RATIFIED BY
SIGNITURE			
DATE			

※ ※ VERSION HISTORY（CONTAINED CHANGE LOGS） ※ ※

VERSION	CHANGE LOGS	WRITTEN BY	VERIFIED BY	DATE	DEPARTMENT
V1.0	First version				

CONTENTS

1.Product Basic Information

1.1 Product Introduction

The TOP-5M01 is a WLAN PCB module with 4/6-pin connector supporting USB2.0/1.1 interface, it uses the latest 802.11ac technology and being compliant with IEEE 802.11a/b/g/n/ac specification, offering feature-rich wireless connectivity and reliable throughput from an extended distance. Optimized RF architecture and baseband algorithms provide superb performance and low power consumption. MT7610UN integrates MAC design deploys a high efficient DMA engine and hardware data processing accelerators which offloads the host processor.

The MT7610UN is designed to support standard based features in the areas of security, quality of service and international regulations, giving end users the greatest performance any time and in any circumstance.

This module operates in 2.4GHz and 5GHz ISM frequency band with low power consumption; it applies a highly integrated MAC/BBP and RF single chip MT7610UN with 433Mbps PHY rate supporting. The small form factor and low cost design provide excellent performance for the wireless connectivity, it is ideal for confine space application.

It has a built-in aerial, or an I-PEX receptacle, and operates in dual-frequency, to let users have the chance to choose the faster network environment. This module also supports several encryption patterns, to let users to enjoy fast network speed and clean safe network environment.

TOP-5M01 belongs to the kind of broadband network module, the bandwidth can reach to 80MHz. It prevents the traffic jam and shorten the time delay in network, and it can operates as a mate of many devices, such as IP camera, IP STB, TV, Internet broadcasting equipment.

It is compatible with many kinds of operation system, for example, Windows Vista, XP/7/8/2000, Linux, Mac etc to avoid the problem of OS incompatibility.

1.2 Product Features

- Built in antenna or external antenna
- Support WPS, Wi-Fi direct
- 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps
- 802.11b: 1, 2, 5.5, 11Mbps
- 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps
- 802.11n: (20MHz)MCS0-7, up to 72Mbps, (40MHz)MCS0-7, up to 150Mbps
- 802.11ac: up to 433Mbps(80MHz)
- Support safe encryption pattern, such as WFA, WPA, WPA2, Personal, WPS2.0, WAPI
- Built-in power consumption management function
- USB2.0/1.1 interface
- Excellent anti-interference ability
- Compatible with many kinds of operation system, for example, Windows Vista, XP/7/8/2000, Linux, and Mac etc.

NOTICE: WLAN communication channel is the communication channel used for IEEE 802.11 (Wi-Fi) wireless network permitted by national laws. It is divided to 2 different independent bands (2.4 GHz and 4.9/5.8 GHz) by 802.11 working team. Though each band can be partitioned to several communication channels, every country has its own authority to decide how to use them. You can refer to CHAPTER 5 for detailed information.

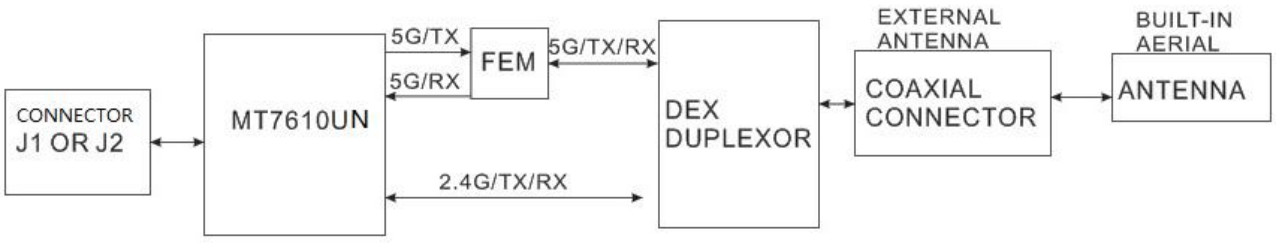
2 Product Basic Function

2.1 Brief Specification

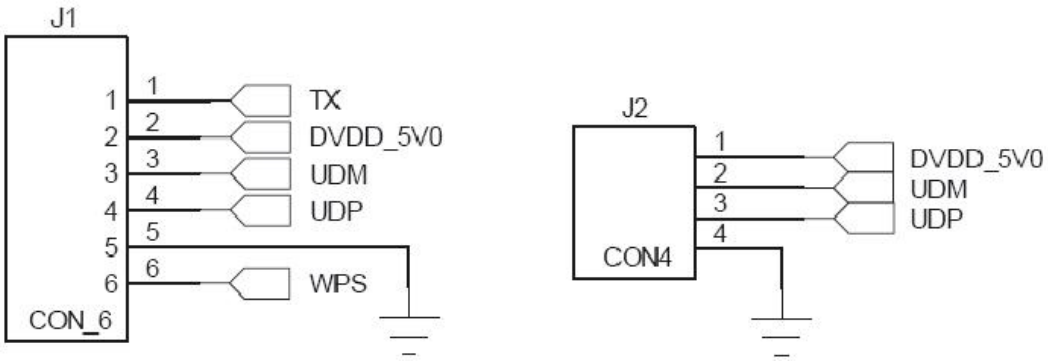
Electronic Specification	
Main Chip	MT7610UN
Interface	USB 2.0/1.1
Protocols and Standards	IEEE802.11/b/g & 802.11n & 802.11ac （1T1R mode）
Working Bands	2.412GHz-2.4835GHz, 5.15 GHz- 5.825 GHz (usage condition is depended on different country's supervision)
Antenna	Built-in antenna or an external antenna(via IPEX)
Encryption Pattern	WFA, WPA, WPA2, WPS2.0, WAPI
Transmitting Power (feed point to antenna)	802.11a: 14-16dBm@ 54Mbps （OFDM）
	802.11b: 16-20dBm@ 11Mbps
	802.11g: 14-16dBm@ 54Mbps
	802.11n: 14-16dBm@ 150Mbps
	802.11ac: 12.5-13.5dBm@433Mbps（AC80)
Receiving Sensitivity (feed point from antenna)	802.11a: -66+/-1dBm
	802.11b: -80+/-1dBm
	802.11g: -73+/-1dBm
	802.11n: -70+/-1dBm(HT2); -64+/-1dBm(HT40)
	802.11ac: -80+/-1dBm(MCS0); -56+/-1dBm(MCS9), (AC80)
Working Voltage	5.0VDC± 5%
Power Consumption	RX & TX condition: 220mA(max)
	TX condition: 220mA(max)
	RX condition: 180mA(max)
Mechanical Specification	
Dimension	42*19*8.8mm
Net Weight	3.4g

2.2 Hardware Information

1. Block diagram:



2. Pin diagram of 4/6-pin connector:



3. Pin definition and related function description:

LINE 1: J1-1~J1-6

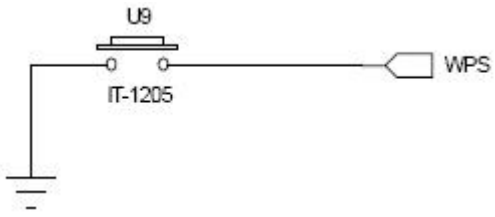
LINE 2: J2-1~J2-4

Pin No.	Definition	Description	Remark
J1-1	TX	RF Transmitter Enable	3.3V, high level
J1-2	DVDD-5V0	USB Power Supply	USB Power supply, DC 5V +/-0.5V
J1-3	UDM	Data-	
J1-4	UDP	Data+	
J1-5	GND	GND	
J1-6	WPS	WPS Button input port	3.3V, low level
J2-1	DVDD-5V0	USB Power Supply	USB Power supply, DC 5V +/-0.5V
J2-2	UDM	Data -	
J2-3	UDP	Data +	
J2-4	GND	GND	

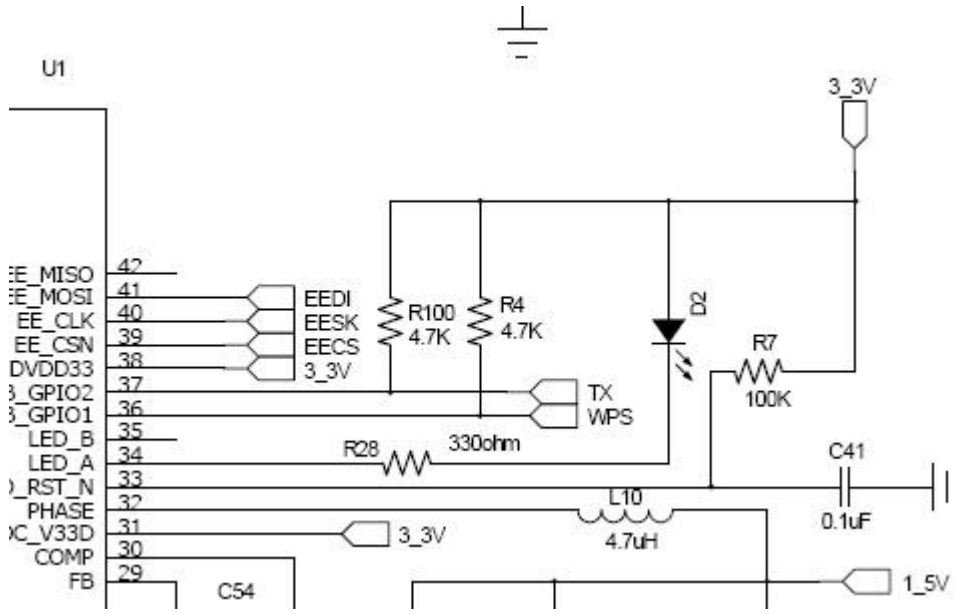
Careful consideration must be paid when selecting pull -up (or down) resistors.

J1-1(TX) has a embedded pull-up resistor, and it can be connected directly, 3.3V high level.

J1-6(WPS) can be grounded by pressing down WPS(U9) button, it is 3.3V low level as the picture below referred:



The following diagram is our recommended circuit connection:



2.3 Software Information

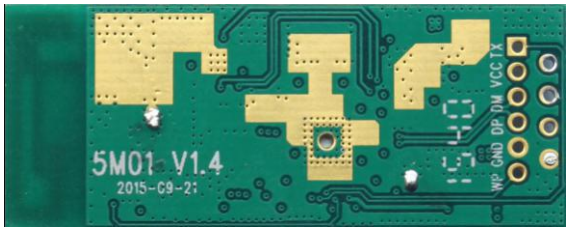
The table below is for users to check the available Operation System and its version:

OS	Available	OS Version
Windows	YES	XP
	YES	Win7
	YES	Win8
	YES	Win2000
	YES	Vista
Linux	YES	2.6 or above, only support STA mode
Android	YES	2.6 or above, only support STA mode
Mac	YES	10.3-10.10
WinCE	NO	Invalid

2.4 Mechanical Information

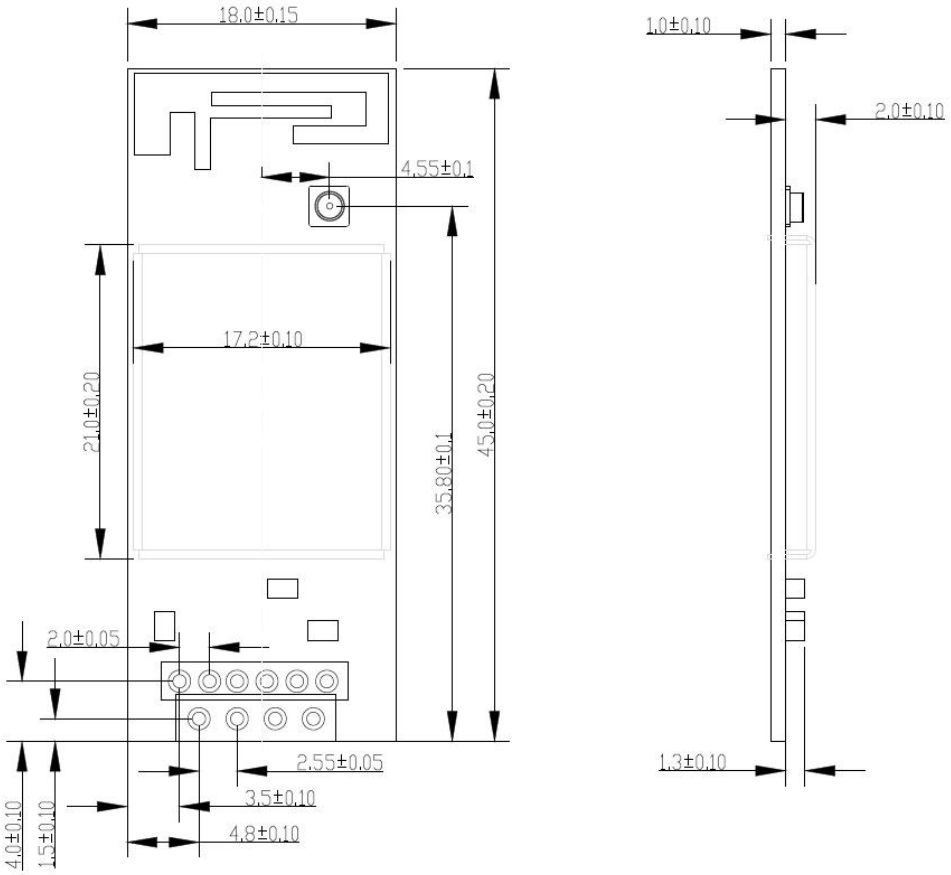
2.4.1 Product Appearance

The view of top and bottom layer of TOP-5M01 can be displayed in the following pictures:



2.4.2 Product Dimension

The dimension of TOP-5M01 can be referred by the following picture:

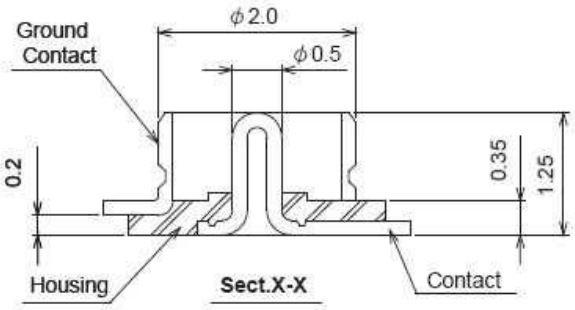


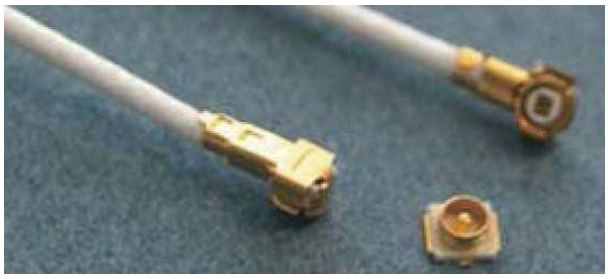
2.4.3 RF Signal Input and Output

A. A 50 ohm external antenna via an I-PEX receptacle

If the I-PEX RF connection is selected, a 50 ohm external antenna connects to the module RF output via an I-PEX MHF receptacle (RF connector).

The profile of the I-PEX connector is contained in the following picture:



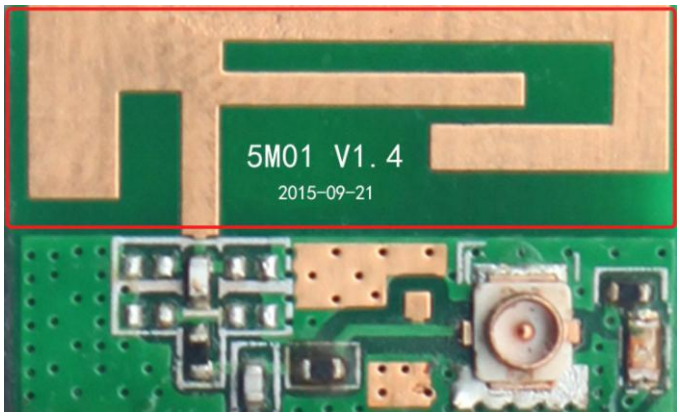


Note:

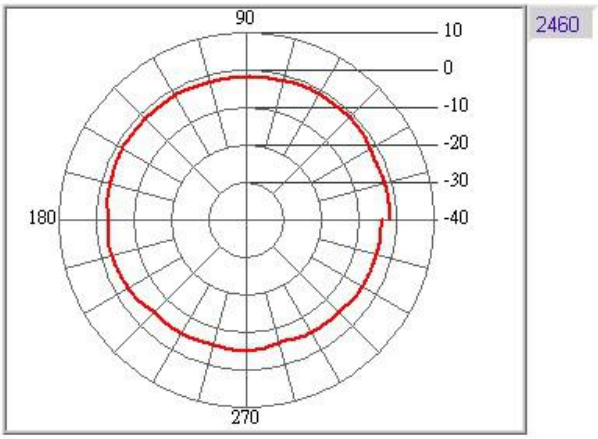
- **The MHF receptacle can be mounted at the top side or bottom side of the PCB.**
- **When an external antenna is required via the I-PEX MHF RF connector, the on board PCB antenna will be disconnected.**

B. Onboard PCB antenna

The onboard antenna is designed with tiny space which affects the signal performance. If the onboard antenna does not satisfy user's application, please use other external antenna.



Peak gain value is: -1dBi, and the average gain value is: -3dBi.



3. Agency Approval

Our products are strictly confirmed to these certificates:

Agency	Approval
FCC	Undergoing
CE	Undergoing
RoHS	Undergoing

4.Environment Requirements

4.1 Suitable Temperature

Working Temperature: -5℃~+50℃

Storage Temperature: -20℃ ~+85℃

4.2 Suitable Humidity

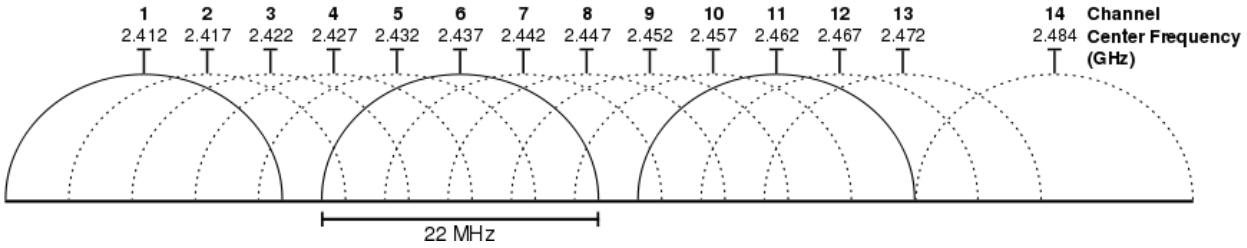
Working Humidity: 20%~85%

Storage Humidity: 20%～90%

Notice: To keep the normal service life and ensure the excellent working performance of our device, please use it and store it abide by environment requirements strictly.

5. Available WLAN Channels in Major Countries

2.4 GHz (802.11b/g/n)：



Channel	Frequency (MHz)	China	USA / Canada	Europe	Japan	Australia	Venezuela	Israel
1	2412	Available	Available	Available	Available	Available	Available	Invalid
2	2417	Available	Available	Available	Available	Available	Available	Invalid
3	2422	Available	Available	Available	Available	Available	Available	Available
4	2427	Available	Available	Available	Available	Available	Available	Available
5	2432	Available	Available	Available	Available	Available	Available	Available
6	2437	Available	Available	Available	Available	Available	Available	Available
7	2442	Available	Available	Available	Available	Available	Available	Available
8	2447	Available	Available	Available	Available	Available	Available	Available
9	2452	Available	Available	Available	Available	Available	Available	Available
10	2457	Available	Available	Available	Available	Available	Available	Invalid
11	2462	Available	Available	Available	Available	Available	Available	Invalid
12	2467	Available	Invalid	Available	Available	Available	Available	Invalid
13	2472	Available	Invalid	Available	Available	Available	Available	Invalid
14	2484	Invalid	Invalid	Invalid	802.11b only	Invalid	Invalid	Invalid

5.8 GHz (802.11ac)：

Channel	Frequency (MHz)	USA	Europe	Japan	Singapore	China	Taiwan(China)
36	5180	Available	Available	Available	Available	Invalid	Invalid
38	5190	Invalid	Invalid	Invalid	Invalid	Invalid	Invalid
40	5200	Available	Available	Available	Available	Invalid	Invalid
42	5210	Invalid	Invalid	Invalid	Invalid	Invalid	Invalid
44	5220	Available	Available	Available	Available	Invalid	Invalid
46	5230	Invalid	Invalid	Invalid	Invalid	Invalid	Invalid
48	5240	Available	Available	Available	Invalid	Invalid	Invalid
52	5260	Available	Available	Available	Invalid	Invalid	Available

56	5280	Available	Available	Available	Invalid	Invalid	Available
60	5300	Available	Available	Available	Invalid	Invalid	Available
64	5320	Available	Available	Available	Invalid	Invalid	Available
100	5500	Available	Available	Available	Invalid	Invalid	Available
104	5520	Available	Available	Available	Invalid	Invalid	Available
108	5540	Available	Available	Available	Invalid	Invalid	Available
112	5560	Available	Available	Available	Invalid	Invalid	Available
116	5580	Available	Available	Available	Invalid	Invalid	Available
120	5600	Available	Available	Available	Invalid	Invalid	Available
124	5620	Available	Available	Available	Invalid	Invalid	Available
128	5640	Available	Available	Available	Invalid	Invalid	Available
132	5660	Available	Available	Available	Invalid	Invalid	Available
136	5680	Available	Available	Available	Invalid	Invalid	Available
140	5700	Available	Available	Available	Invalid	Invalid	Available
149	5745	Available	Invalid	Invalid	Available	Available	Available
153	5765	Available	Invalid	Invalid	Available	Available	Available
157	5785	Available	Invalid	Invalid	Available	Available	Available
161	5805	Available	Invalid	Invalid	Available	Available	Available
165	5825	Available	Invalid	Invalid	Available	Available	Available

6. Disclaimer

This **DATA SHEET** document is the guidance of the installation and tentative usage of our products. Before operating the product, please read this data sheet carefully.

We do not provide any guarantee about this data sheet, software or other relevant information. We solemnly state that there is no implied business warranty or commercial contract assurance in the sheet, software or other related information. The data sheet is only for operation guidance and reference; it cannot be used as basis or supplement of any other contract or duty.