150Mbps
IEEE 802.11 b/g/n WiFi Module

Product Specifications

Model: GWF-7M02

Version: 1.2
2016-3-20

1. Introduction

The GWF-7M02 is a WLAN PCB module with 7-pin connector supporting USB2.0 interface, it supports IEEE 802.11b/g/n standards. This module operates in 2.4GHz ISM frequency band with low power consumption; it applies a highly integrated MAC/BBP and RF single chip MT7601U with 150Mbps 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.
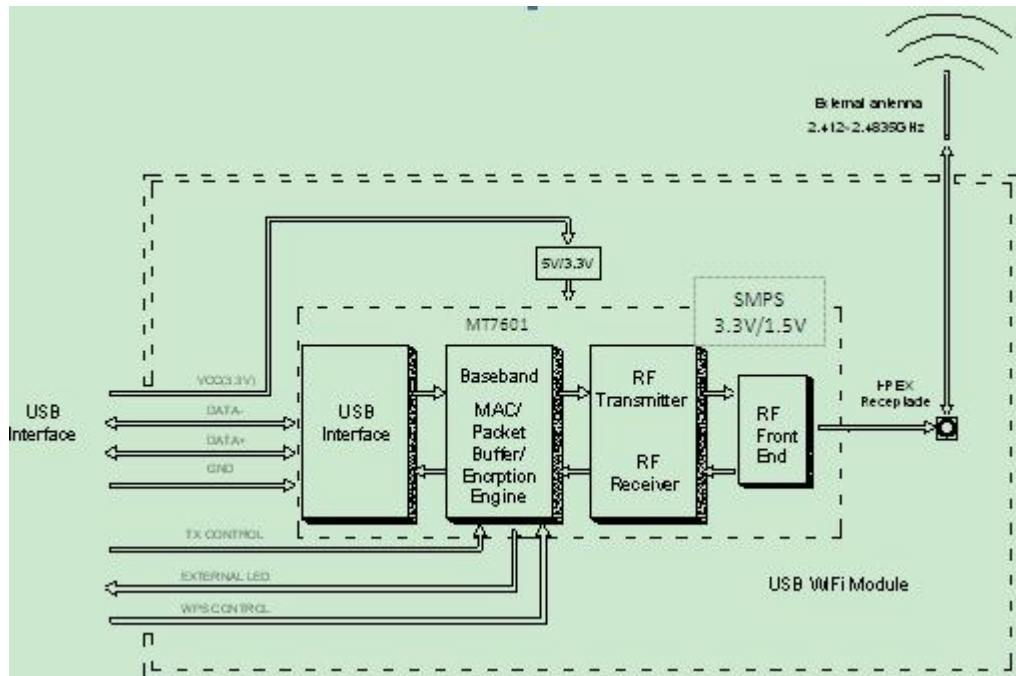
2. Features

- 20MHz/40MHz bandwidth support. 1T1R mode

- 802.11b: 1, 2, 5.5, 11Mbps; 802.11g: 6, 9, 12, 24, 36, 48, 54Mbps ;

- 802.11n: Support PHY rate up to 150Mbps.

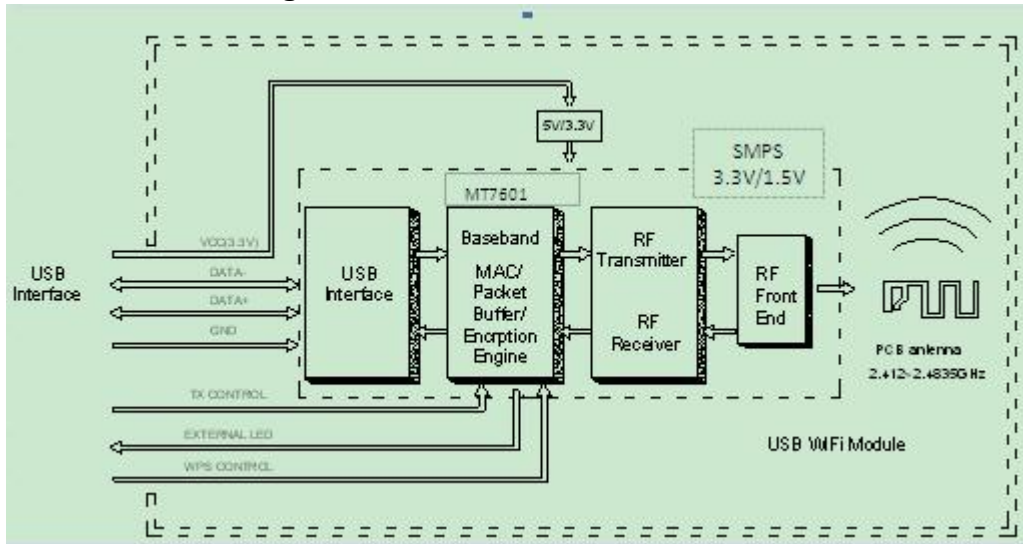- Security support for WEP 64/128, WPA,WPA2, TKIP,AES

3. Application

- Portable Smart Device: Mobile, Tablet, Mini-PC, etc.

- Others: TV, Meida player, Setup box, IP cam, Camcorder etc.

4. Product Description

4.1. Block Diagram

Figure 1 With external antenna used

Figure 2 With onboard PCB antenna used

4.2. Specification:

General	
Main Chipset	MediaTek MT7601U
Device Interface	USB 2.0, 7 PCB Semi-holes
RF output	External antenna Via I-PEX MHF receptacle or Built-in On Board
Dimensions	28x14mm
Weight	1.75g
WLAN	
Operation Frequency	2412~2483.5MHz, ISM band (Depends on country region)
Operation Channel	Ch1~14 (Depends on country region)
Protocol	802.11b: CCK, QPSK, BPSK, 802.11g/n: OFDM
Security	64/128 WEP, WPA/WPA2, WFA, WPS2.0, WAPI
Others	QoS: WFA,WMM,WMM PS;
	WiFi Direct
RF Characteristics (Typical)	
Antenna	External antenna Via I-PEX MHF receptacle
Transmit Power	802.11b (CCK) 11Mbps: 18+/-1dBm
	802.11g (OFDM) 54Mbps: 16+/-1dBm
	802.11n (HT20@MCS7), 14+/-1dBm
	802.11n (HT40@MCS7),14+/-1dBm
Receive Sensitivity	802.11b: -88+/-1dBm;802.11g: -72+/-1dBm

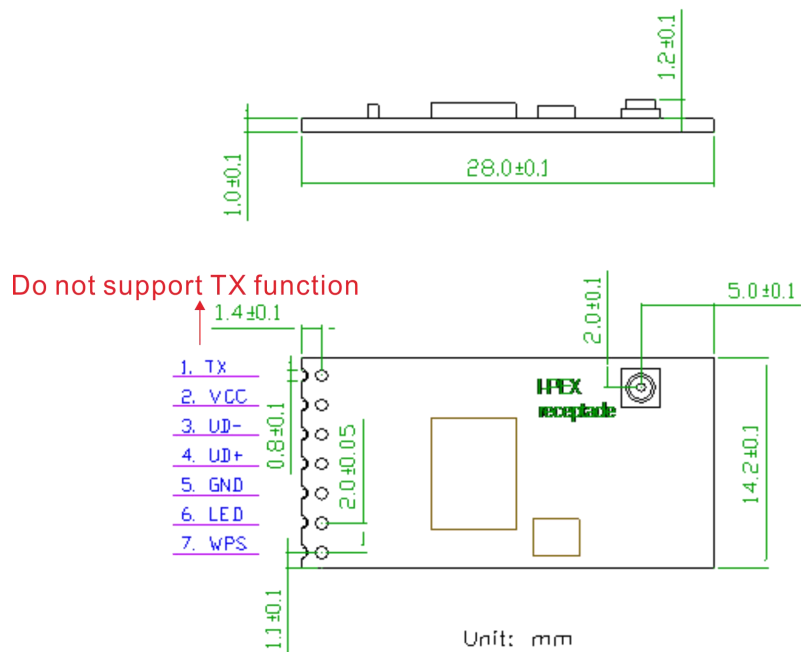|	802.11n (HT20), -70+/-1dBm; 802.11n (HT40), -68+/-1dBm	
DC Characteristic (Typical)		
Operating Voltage	3.3VDC +/-5%	
Current consumption	Normal operation (Average)	<80mA
	Sleep mode	1.5 mA
	TX HT40,MCS7@16dBm	210 mA
	TX CCK	250 mA
	RX Listen	6 mA

4.3. Mechanical Information
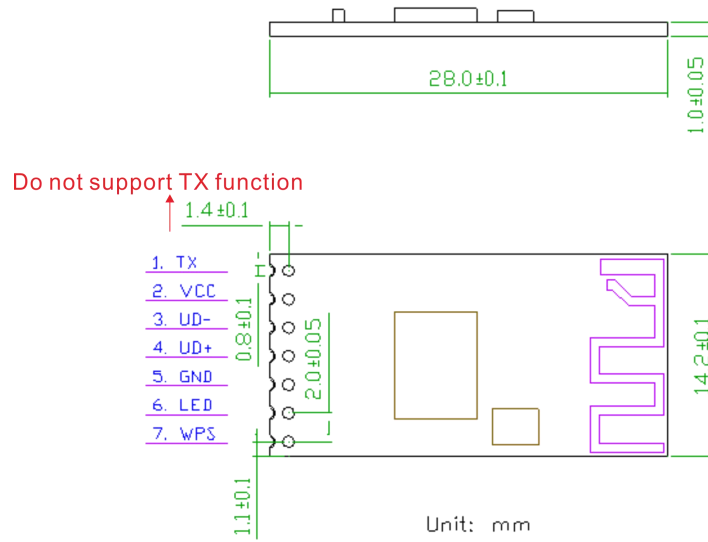
4.3.1. OUTLINE (Pictures are for reference only)
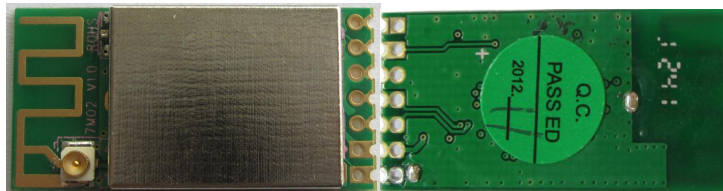
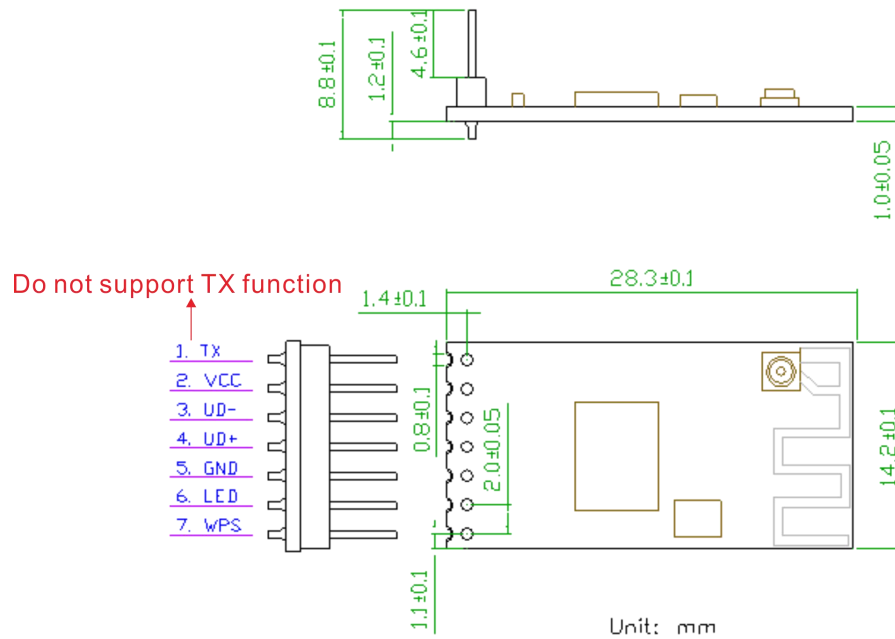### 4.3.2. Dimensions and Pinout:

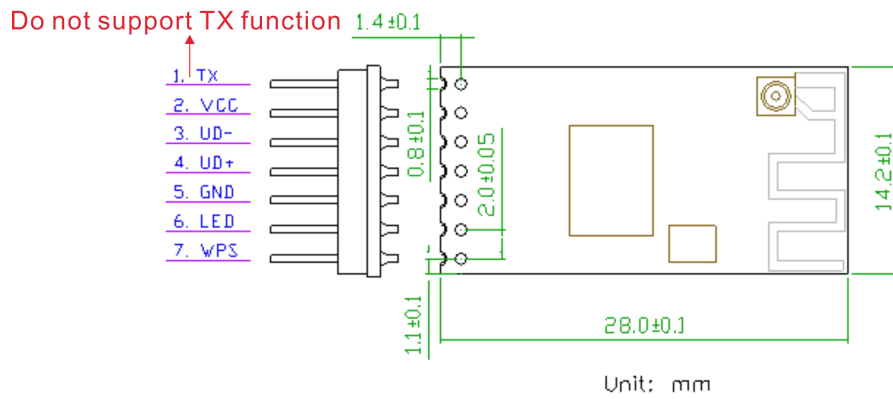**A.** Semi-holes with 2.0mm pitch (external RF antenna via I-PEX MHF receptacle)

1. TX
2. VCC
3. UD-
4. UD+
5. GND
6. LED
7. WPS

Do not support TX function

I-PEX receptacle

Unit: mm

B. Semi-holes with 2.0mm pitch (onboard PCB antenna).

28.0±0.1
1.0±0.05

Do not support TX function
1.4±0.1

1. TX
2. VCC
3. UD-
4. UD+
5. GND
6. LED
7. WPS

0.8±0.1
2.0±0.05

14.2±0.1

1.1±0.1

Unit: mm

C. Top side 7-pin pin header with 2.0mm pitch

8.8±0.1
1.2±0.1
4.6±0.1

1.0±0.05

Do not support TX function
1.4±0.1
28.3±0.1

1. TX
2. VCC
3. UD-
4. UD+
5. GND
6. LED
7. WPS

0.8±0.1
2.0±0.05

14.2±0.1

1.1±0.1

Unit: mm

D. Bottom side 7-pin pin header with 2.0mm pitch
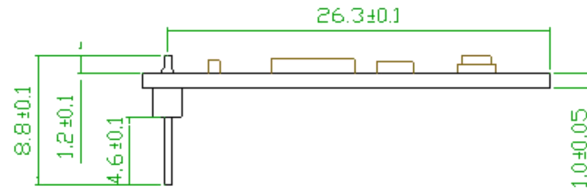
E. 90 degree 7-pin pin header with 2.0mm pitch
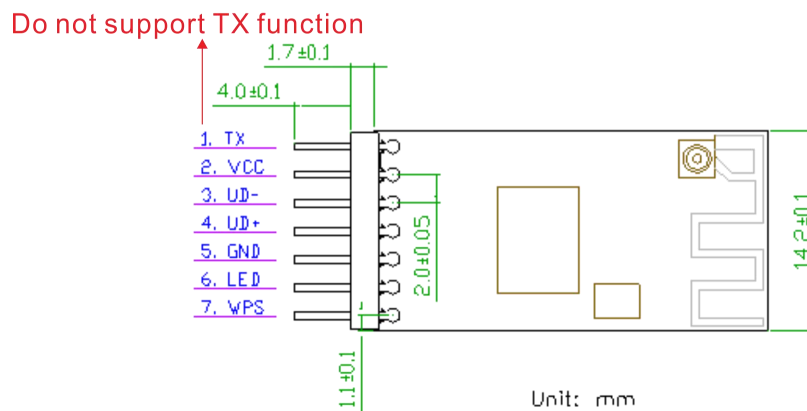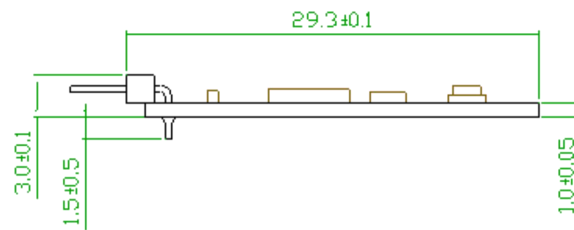
4.3.3. Pin Definition:

Pin	Name	Description
1	TX	RF ON/OFF control; low level activated to

		OFF(**does not support**)
2	VCC	5.0VDC or 3.3VDC, +/-5%
3	UD-	USB data-
4	UD+	USB data+
5	GND	Ground
6	LED	Indicate module working status
7	WPS	External to activate WPS function. Low level activated

Notes:

1. ***Does not support the TX function***

2. *LED terminal output 3.3V LED blink signal. To limit LED current, a series 330 ohm or other value resistor should be connected.*

3. *WPS terminal is internally pulled up with an onboard 4.7K ohm resistor to 3.3VDC.*

4.4. Software and system Information

Operation System	Driver
Linux 2.6 or above	support
Android	support
Windows Vista/XP/7/8/10	support
Mac OS	Not support

5. Agency Approval

Agency	Approval
FCC Part15	√
CE	√
RoHS	√

6. Environment

6.1. Temperature

- **Operating Temperature**

  Continuous reliable operation in ambient temperature: -20ºC to +70ºC.

- **Storage Temperature**

  The product is not damaged or degraded when keeping in -20ºC to +85ºC.

6.2. Humidity

- **Operating Humidity Conditions**

  The product should be 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 should not be damaged or degraded when kept in the place (where relative humidity range is in the range of 20% to 80%) for 36 hours.

7. Design Concerns:

7.1. Power supply:

1) The input power can be 5.0VDC or 3.3VDC, please mentioned it when place an order.

2) The operation current of 5.0VDC power input will be different with that of 3.3V power input. The external power shall be well designed with enough capacity.

3) Should 3.3VDC power be selected, please be sure it's clean with low ripple; otherwise, the EMI or RF performance might be deteriorated.

7.2. Using pin headers:

1) The pins can be less than 7 pins, but the VCC, UD-, UD+, GND must be applied for USB interface communication.

2) Should the pin header connection be applied, please still keep enough metallic clear space around the antenna end of the module, this gives better antenna performance

7.3. Using semi-holes:

1) When the module is designed to be soldered on a main PCB board directly, the area under the antenna end of the module should be keep clear of metallic components, connectors, vias, traces and other materials that can interfere with the radio signal.
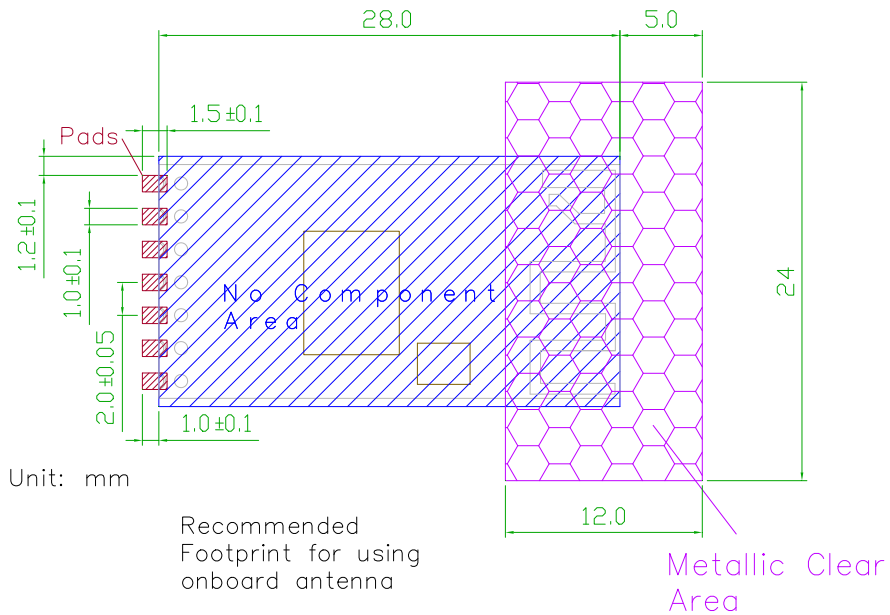
2) The module is not recommended using reflow oven process, hand soldering is suggested.

7.4. Footprint design reference:

The following drawing shows a recommended footprint which can be a reference design for a main PCB layout.

Recommended Footprint for external antenna output
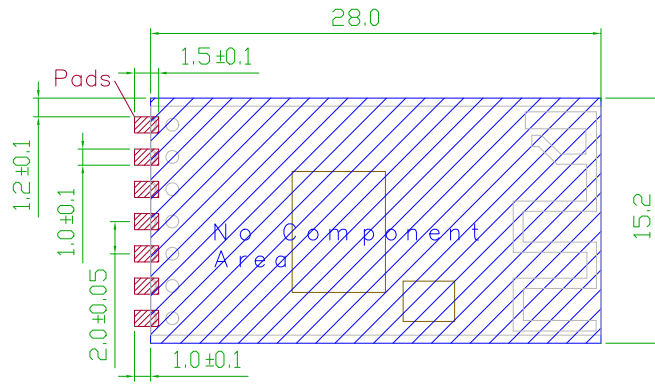
Unit: mm


Recommended Footprint for using onboard antenna

Unit: mm

Metallic Clear Area

7.5. Soldering requirement:

The module is not recommended using reflow oven process, hand soldering is suggested.

If reflow oven process is selected, please keep good control on the soldering process. Otherwise the flow air might blow components removing. A reference flow chaw likes as following:
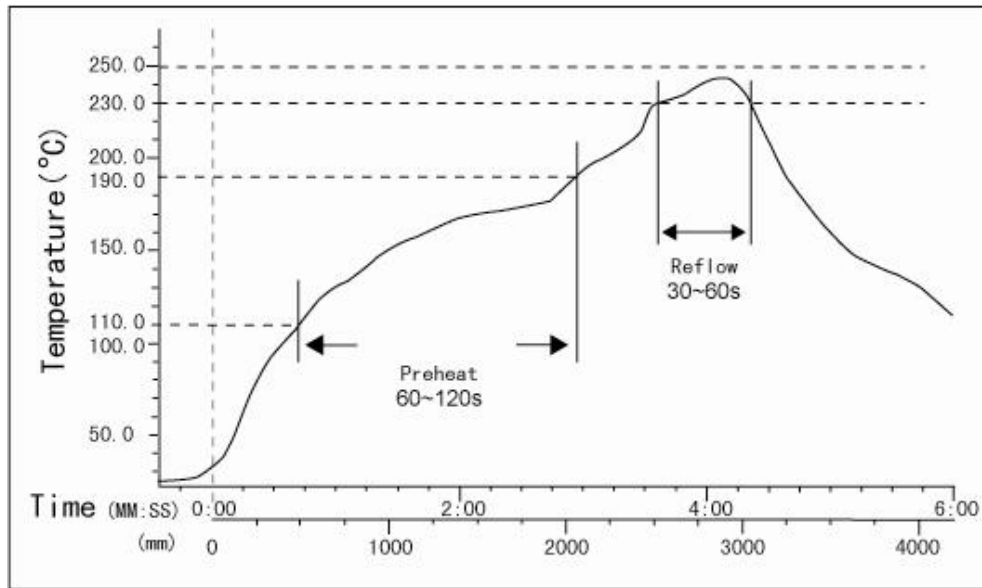
Notes: user should adjust setting of reflow oven to get best soldering quality

8. 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.

We uses reasonable efforts to include accurate and up-to-date information on this document; it does not, however, make any representations as to its accuracy or completeness of the information, text, graphics, links or other items contained within these materials. Your use of this Document is at your own risk. Ogemray, its suppliers, and other parties involved in creating and delivering this Document's contents shall not be liable for any special, indirect, incidental, or consequential damages, including without limitation, lost revenues or lost profits.