

Product Specifications

IEEE802. 11a/b/g/n/bt 2T2R 2.4G/5G Dual
with Integrated Bluetooth 2.1/3.0/4.0

Project Name	MT7632U WIFI Module
Model NO	WD_7632U_M (USB Interface)
Customer	
Customer's Part NO	

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一. Introduction

1.1 Overview

The MT7632U is a highly integrated single chip which has built in a 2x2 dual-band wireless LAN radio and Bluetooth radio. It supports IEEE 802.11a/b/g/n standard and provides the highest PHY rate up to 300Mbps, offering feature-rich wireless connectivity and reliable throughput from an extended distance. It includes Bluetooth EDR and LE radio which complies with Bluetooth v2.1+EDR, v3.0, and v4.0+BLE.

Optimized RF architecture and baseband algorithms provide superb performance and low power consumption. MT7632U integrates PA/LNA such that the number of the external components is reduced to minimum. Intelligent MAC design deploys a high efficient DMA engine and hardware data processing accelerators which offloads the host processor.

The MT7632U supports the 802.11i security standard and implements hardware acceleration for TKIP, CCMP and WAPI. The device also supports 802.11e QoS for video, voice, and multimedia applications.

The MT7632U can provide a concurrent operation of Wi-Fi and Bluetooth over USB interface. An intelligent Wi-Fi/Bluetooth coexistence algorithm is implemented to reach the best Wi-Fi and Bluetooth radio performance. MT7632U also features the high-speed UART with SIG standard HCI interface to support Bluetooth over UART.

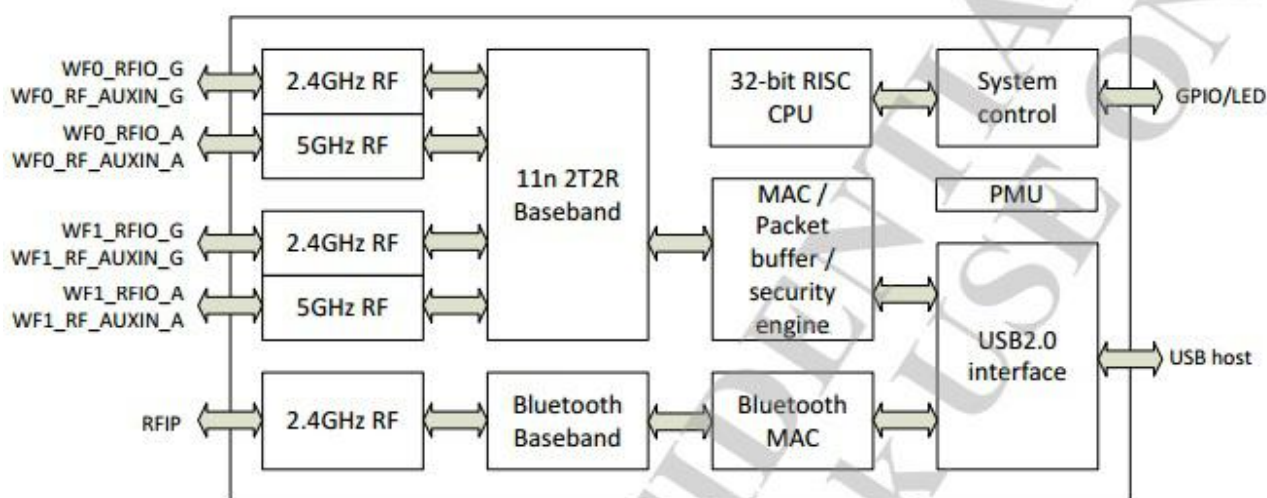


Figure 1 MT7632U block diagram

1.2 Product Features

1.2.1: WLAN

- IEEE 802.11 a/b/g/n compliant
- Support 20MHz, 40MHz in 5GHz band, and 20MHz, 40MHz bandwidth in 2.4GHz band

- Dual-band 2T2R mode with data rate up to 300Mbps
- Support STBC, LDPC, MRC, and transmit Beamforming
- Greenfield, mixed mode, legacy modes support
- Frame aggregation
- Integrated LNA, PA, and T/R switch
- Optional external LNA and PA support.
- IEEE 802.11 d/e/h/i/k/r/w support
- Security support for WFA WPA/WPA2 personal, WPS2.0, WAPI
- Supports 802.11w protected managed frames
- QoS support of WFA WMM, WMM PS
- 802.11 to 802.3 header translation offload
- Supports Wi-Fi Direct
- Per packet transmit power control
- Wake on WLAN

1.2.2: BLUETOOTH

- Bluetooth specification v2.1+EDR
- Bluetooth v4.0 Low Energy (LE)
- Standard HCI interface over USB super-speed, high-speed and full-speed mode
- High speed UART up to 4Mbps BAUD rate
- Integrated BALUN and PA with 9dBm transmit power
- Best-in-class BT/Wi-Fi coexistence performance
- Scatternet support: Up to 4 piconets simultaneously with background inquiry/page scan
- Up to 4 simultaneous active ACL links
- Support SCO and eSCO link with re-transmission
- Support wide-band speech and hardware accelerated SBC codec for A2DP streaming
- Packet loss concealment
- Channel quality driven data rate adaptation
- Channel assessment for AFH
- 3DD support
- Wake on Bluetooth

1.3 Applications

- Tablet/MID
- DTV
- Set-Top box

二. GENERAL SPECIFICATION

2.1 WiFi RF Specifications

Features	Descriptions
Main Chipset	MT7632U

Pcb	4 layer / FR4
Crystal oscillator	SMD3225 40.000MHZ
Frequency Range	2400 ~ 2483.5MHz / 4900 MHz ~ 5845MHz
Host Interface	WiFi: USB2.0 BT: USB2.0
Standards	WiFi: IEEE 802.11a, IEEE 802.11b, IEEE 802.11g, IEEE 802.11n,
Modulation	WiFi: 802.11b: DSSS/CCK 802.11 a/g/n: OFDM
PHY Data rates	WiFi: 802.11a: 54,48,36,24,18,12,9,6 Mbps 802.11b: 11,5.5,2,1 Mbps 802.11g: 54,48,36,24,18,12,9,6 Mbps 802.11n: up to 300Mbps
Transmit Output Power	WiFi: 802.11b@11Mbps $\geq 14\text{dBm}$ 802.11g@54Mbps $\geq 13\text{dBm}$ 802.11a@54Mbps $\geq 12\text{dBm}$ 802.11n@ MCS 7 /2.4G $\geq 12\text{dBm}$ 802.11n@ MCS 7 /5.8G $\geq 11\text{dBm}$
EVM	802.11b /11Mbps : EVM $\leq -9\text{dB}$ 802.11a /g54Mbps : EVM $\leq -25\text{dB}$ 802.11n /MCS7 : EVM $\leq -28\text{dB}(2.4\text{G}/5.8\text{G})$
Receiver Sensitivity 2.4G	802.11b@8% PER Receive maximum level ≥ -10 11Mbps $\leq -82\text{dBm}$
	802.11g@10% PER Receive maximum level ≥ -20 54Mbps $\leq -71\text{dBm}$
	802.11n@10% PER Receive maximum level ≥ -20 MCS 7_HT20 $\leq -67\text{ dBm}$ MCS 7_HT40 $\leq -64\text{ dBm}$
	802.11a@10% PER Receive maximum level ≥ -30 54Mbps $\leq -65\text{dBm}$
Receiver Sensitivity 5.8G	802.11n@10% PER Receive maximum level ≥ -30 MCS 7_HT20 $\leq -65\text{ dBm}$ MCS 7_HT40 $\leq -63\text{ dBm}$
Operating Channel	WiFi 2.4GHz: 11: (Ch. 1-11) – United States(North America) 13: (Ch. 1-13) – Europe 14: (Ch. 1-14) – Japan
Media Access Control	WiFi: CSMA/CA with ACK

Network Architecture	WiFi: Ad-hoc mode (Peer-to-Peer) Infrastructure mode Software AP WiFi Direct
Security	WiFi: WEP, TKIP, AES, WPA, WPA2
Antenna	External
OS Supported	Android / Linux
Dimension	Typical L27.0 mm *W12.9 mm *H2.6mm (+/-0.2mm)

2.2 BT RF Specifications

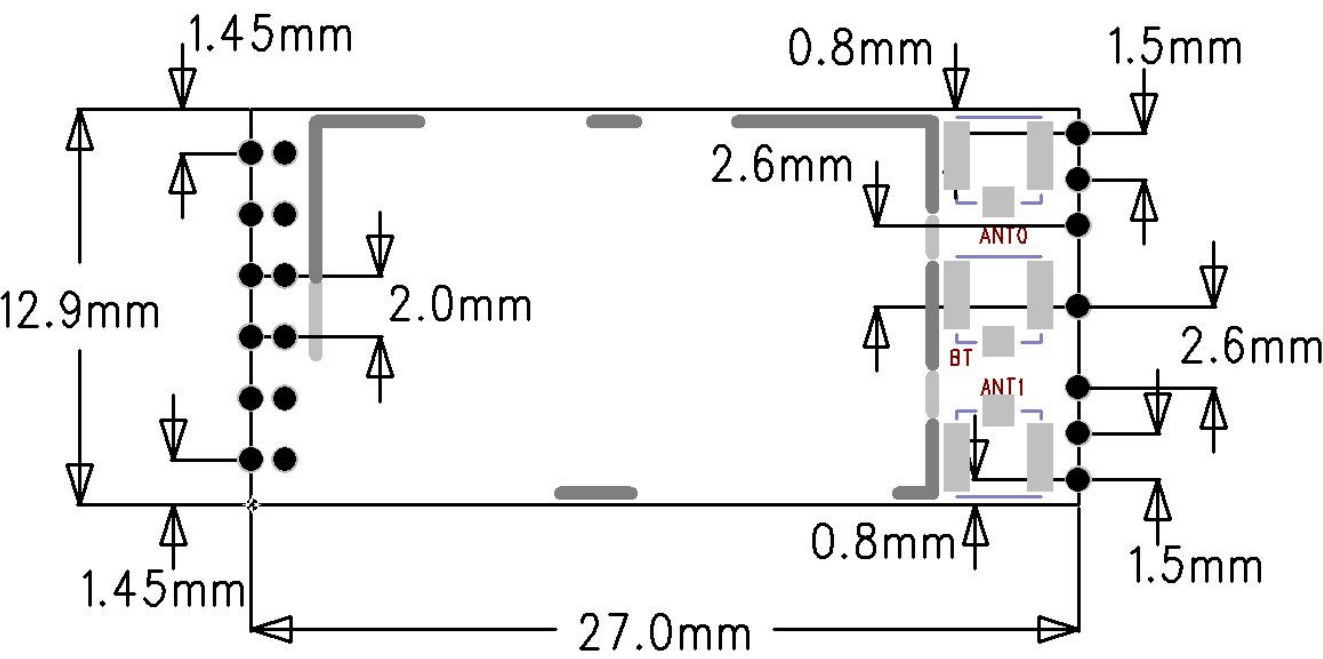
Feature	Description		
Bluetooth Standard	Bluetooth V3.3 of 1, 2 and 3 Mbps.		
Frequency Band	2.400~2.483.5GHz		
Channel numbers	79 (0~78)		
	Min	Typical	Max
Output Power (Class 1.5)		10 dBm	
Output Power (Class 2)		2 dBm	
Sensitivity @ BER=0.1% for GFSK (1Mbps)		-89 dBm	
Sensitivity @ BER=0.01% for $\pi/4$ -DQPSK (2Mbps)		-85 dBm	
Sensitivity @ BER=0.01% for 8DPSK (3Mbps)		-83 dBm	

2.3 Operating Conditions

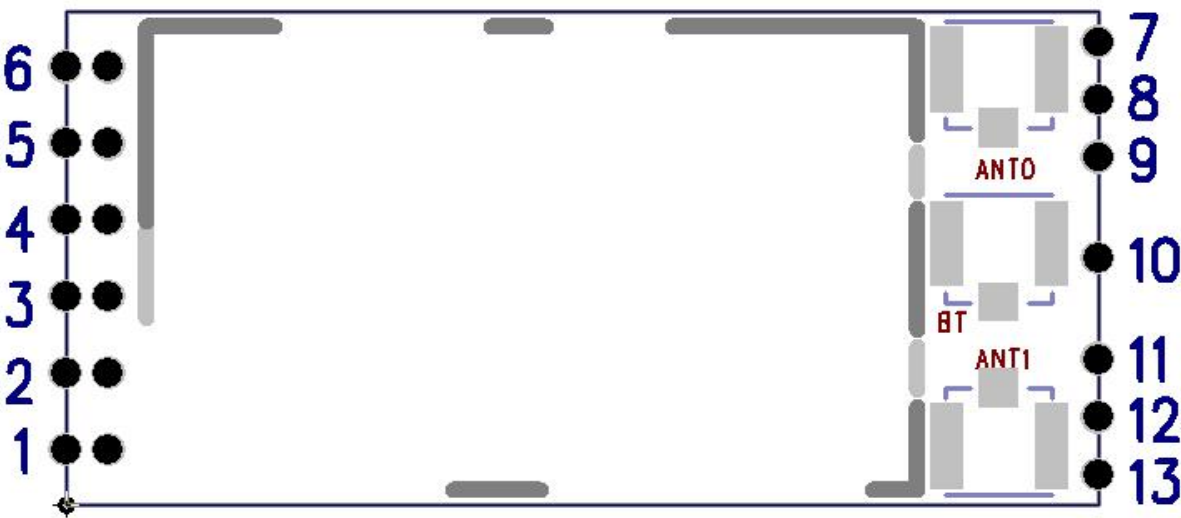
Parameter		Min	Typ	Max	Unit
Operating Temperature		0	-	+60	℃
Operating Humidity		-	-	85	%
Supply Voltage1	VDD_3.3V	3.15	3.3	3.45	Vdc
External power supply current design		≥ 1000mA			

三. Mechanical Specification

3.1 Outline Drawing (Unit: $\pm 0.2\text{mm}$)



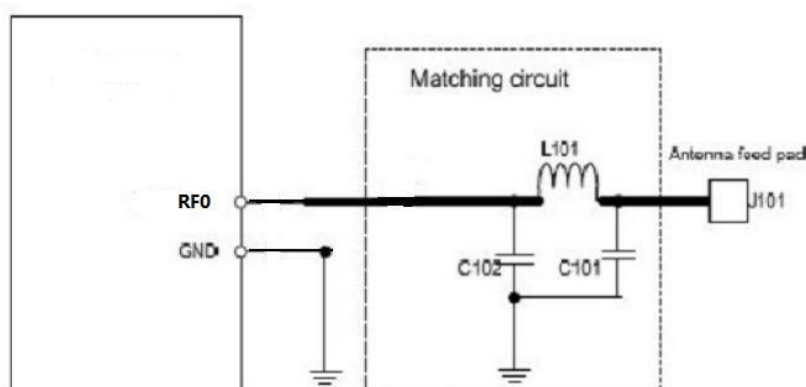
3.2 PIN Assignment



Pin #	Name	Description
1	BT_WAKE	BT_WAKE(Low potential effective)
2	3.3V	3.3V DC power supply input
3	DM	USB Data DN
4	DP	USB Data DP

5	GND	Ground
6	RESET	RESET(Low potential effective)
7	GND	Ground
8	NC/WIFI_0	NC/ WIFI_0-ANT
9	GND	Ground
10	NC/BT	NC/ BT-ANT
11	GND	Ground
12	NC/WIFI_1	NC/ WIFI_1-ANT
13	GND	Ground

3.3 Recommended Footprint



NOTE: Antenna design requirements

1. RF-line need 50 Ω single line impedance;
2. Layout is arc line or straight line;
3. Parameter need adjustment according to different antenna;
4. Please antenna close to the WIFI module, its farthest distance can not exceed 20 mm.

四. Environmental Requirements

4.1 Operating& Storage Conditions

Operating	Temperature: 0°C to +55°C
	Relative Humidity: 10-90% (non-condensing)
Storage	Temperature: -40°C to +80°C (non-operating)
	Relative Humidity: 5-90% (non-condensing)
MTBF (Mean Time Between Failures)	Over 150,000hours

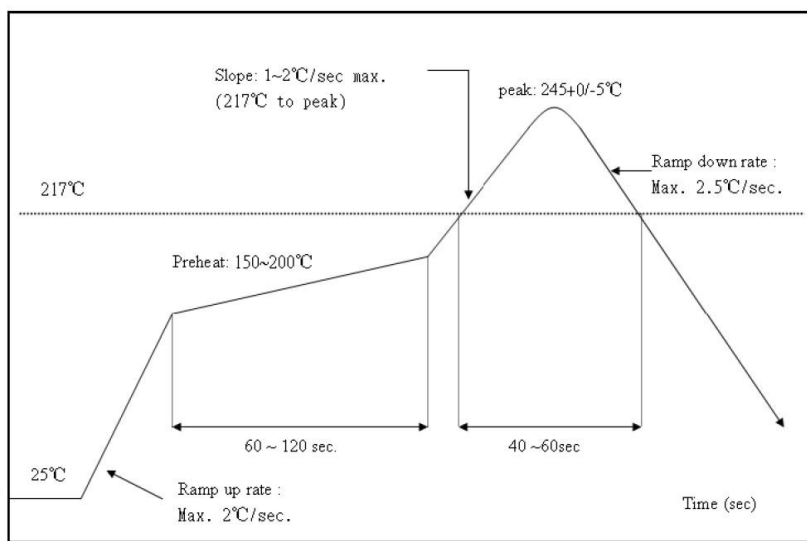
4.2 Recommended Reflow Profile

Referred to IPC/JEDEC standard.

Peak Temperature : <250°C

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Number of Times : ≤ 2 times



4.3 Patch WIFI modules installed before the notice:

WIFI module installed note:

1. Please press 1 : 1 and then expand outward proportion to 0.7 mm, 0.12 mm thickness When open a stencil
2. Take and use the WIFI module, please insure the electrostatic protective measures.
3. Reflow soldering temperature should be according to the customer the main size of the products, such as the temperature set at 250 + 5 °C for the MID motherboard.

About the module packaging, storage and use of matters needing attention are as follows:

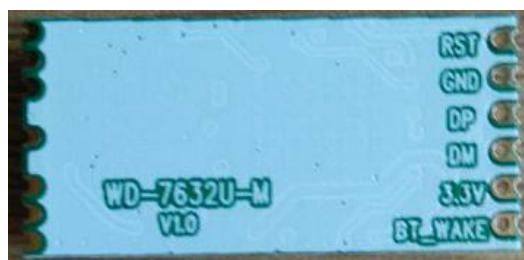
1. The module of the reel and storage life of vacuum packing: 1). Shelf life: 8 months, storage environment conditions: temperature in: < 40 °C, relative humidity: < 90% r.h.
2. The module vacuum packing once opened, time limit of the assembly: Card: 1) check the humidity display value should be less than 30% (in blue), such as: 30% ~ 40% (pink), or greater than 40% (red) the module have been moisture absorption.
- 2.) factory environmental temperature humidity control: ≤ 30 °C, $\leq 60\%$ r.h..
- 3). Once opened, the workshop the preservation of life for 168 hours.
3. Once opened, such as when not used up within 168 hours:
 - 1). The module must be again to remove the module moisture absorption.
 - 2). The baking temperature: 125 °C, 8 hours.
 - 3.) After baking, put the right amount of desiccant to seal packages.

五. PACKING INFORMATION

5.1 Blister packaging

Top

Bottom



Note: Shenzhen Weida may make improvements and/or changes in this document or in the product described in this document at any time. This document could include technical inaccuracies or typographical errors.

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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.
- Reorient or relocate the receiving antenna.
- Reorient or relocate the receiving antenna.
- Consult the dealer or an experienced radio/TV technician for help

Important Note:

Radiation Exposure Statement

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

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

Country Code selection feature to be disabled for products marketed to the US/Canada.

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

1. The antenna must be installed such that 20 cm is maintained between the antenna and users, and
2. The transmitter module may not be co-located with any other transmitter or antenna,
3. For all products market in US, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change. (if modular only test Channel 1-11)

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 certain laptop configurations or 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: 2AMX NWD76X2".

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.

THE END