RW10BX-37P规格书

RW10BX-37P Specification

IEEE 802.11b/g/n 1T1R Module

Custom Approval Section		
Custom Name		
Department		
Approval		Date：

prepare	check	approve
LiaojL		
2019.08.29		

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Change Records

Change the table				
Change NO.	**Date**	**Subject And Reason**	**Version NO.**	**Responser**
1	27-Nov-2017	Initial	V1.0	Liaojl
2	15-Dec-2017	Module definition	V1.1	Liaojl
3	21-Mar-2018	Modify the pin definition	V1.2	Liaojl
4	10-Dec-2018	Modify module briefly	V1.3	Liaojl
5	29-Dec-2018	Modify Frequency Band	V1.4	Liaojl

CATALOG

1.General Description

■ I TON RW10BX-37P is a highly integrated single-chip low power 802.11n Wireless LAN (WLAN) network controller. It combines an ARM-CM4 MCU, WLAN MAC, a 1T1R capable WLAN baseband, and RF in a single chip. It also provides a bunch of configurable GPIOs which are configured as digital peripherals for different applications and control usage.

■I TON RW10BX-37P integrates internal memories for complete WIFI protocol functions. The embedded memory configuration also provides simple application developments.

2.Block Diagra

2.1.Functional Block Diagram

2.2.WIFI Application Diagram

2.3.Power Supply Application Diagram

3.FEATURE

3.1 General

- CMOS MAC, Baseband PHY, and RF in a single chip for 802.11b/g/n compatible WLAN
- Complete 802.11n solution for 2.4GHz band
- 72.2Mbps receive PHY rate and 72.2Mbps transmit PHY rate using 20MHz bandwidth
- Compatible with 802.11n specification
- Backward compatible with 802.11b/g devices while operating in 802.11n mode

3.2 Standards Supported

- 802.11b/g/n compatible WLAN
- 802.11e QoS Enhancement (WMM)
- 802.11i (WPA, WPA2). Open, shared key, and pair-wise key authentication services
- WIFI WPS support
- WIFI Direct support
- Light Weight TCP/IP protocol

3.3 WLAN MAC Features

- Frame aggregation for increased MAC efficiency (A-MSDU, A-MPDU)
- Low latency immediate High-Throughput Block Acknowledgement (HT-BA)
- Long NAV for media reservation with CF-End for NAV release
- PHY-level spoofing to enhance legacy compatibility
- Power saving mechanism

3.4 WLAN PHY Features

- 802.11n OFDM
- One Transmit and one Receive path (1T1R)
- 20MHz bandwidth transmission
- Short Guard Interval (400ns)
- DSSS with DBPSK and DQPSK, CCK modulation with long and short preamble
- OFDM with BPSK, QPSK, 16QAM, and 640QAM modulation. Convolutional Coding Rate: 1/2, 2/3, 3/4, and 5/6
- Maximum data rate 54Mbps in 802.11g and 72.2Mbps in 802.11n
- Fast receiver Automatic Gin Contro(AGC)

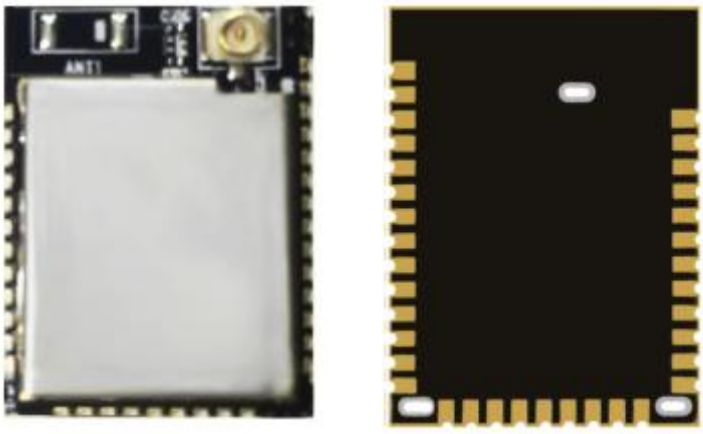
4.WLAN Product Specification

Dimension	L*W*H :19.8mm（±0.15mm）*14.7mm（±0.15mm）*2.3mm（±0.15mm）
Chip-set	RTL8710BX
Standard	IEEE802.11n;IEEE802.11g;IEEE802.11b;
Modulation Type	CCK 、OFDM(16-QAM)
Frequency Band	2400~2483.5MHz
Interface	UART、I2C、PWM
Spread Spectrum	DSSS
Transmission Distance	Indoor up to 100m, outdoor up to 300m(limited in an environment)
Data Security	64/128bit WEP, WPA/WPA2,
Transmit Power	2.4G: 11b:16±2dBm, 11g:14±2dBm, 11n HT20 :14±2dBm;

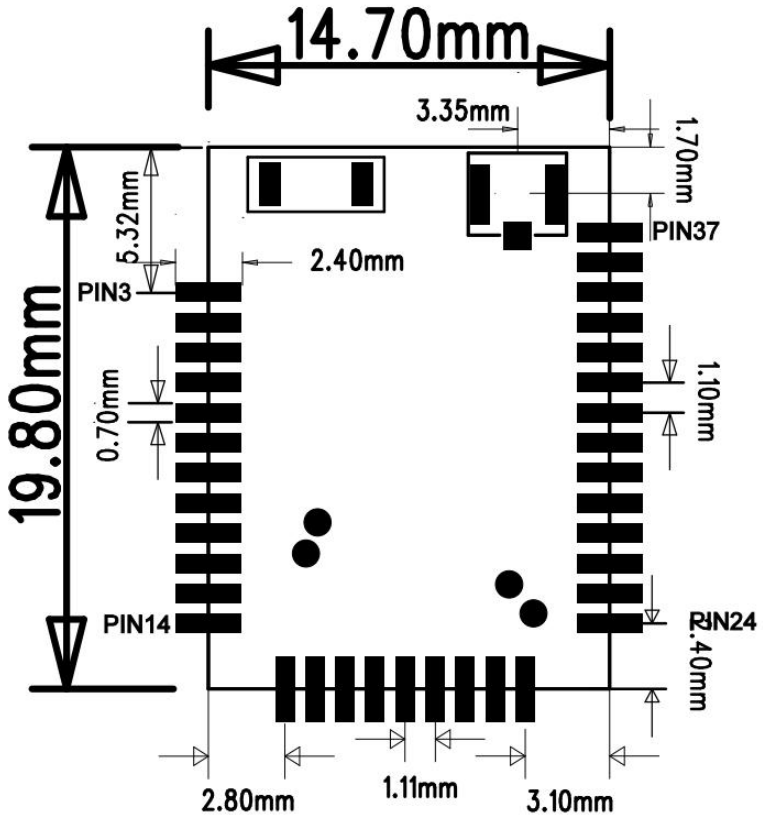
Rx Sensitivity	11n HT20 MCS7:-71dBm@10% PER 11g 54M:-75dBm@10% PER 11b 11M:-88dBm@8% PER
Data Rate	802.11b[11,5.5,2 and 1Mbps] 802.11g[54,48,36,24,18,12,9&6Mbps] 802.11n(20MHz):up to 72Mbps
Clock	2.4GHz :±20 ppm
Ambient Temperature	-20℃~85℃
Storage Temperature	-55℃~125℃
Antenna	internal PF or external PF
Operation System	windows OS, Linux
Operation Voltage	3.3V DC (±0.3V) ,500mA,200mv under.

5.Size Of Module Graph

5.1 Physical Map



5.2 Machine Size Map And Pin Definition



5.3 Pin Definition

Pin	Name	Description
1	\	\
2	\	\
3	GND	Ground
4	NC	NC
5	VDD33	3.3V power supply
6	NC	NC
7	GPIOA_8	GPIOA_8
8	GPIOA_11	GPIOA_11
9	GPIOA_5	GPIOA_5.Multiplexed with PWM4(Pulse-Width Modulation)
10	NC	NC
11	NC	NC
12	NC	NC
13	NC	NC
14	GND	Ground

15	NC	NC
16	NC	NC
17	NC	NC
18	NC	NC
19	NC	NC
20	NC	NC
21	NC	NC
22	GPIOA_23/Uart0_TXD	GPIOA_23.Multiplexed with UART0_TX (send data)
23	GPIOA_18/Uart0_RXD	GPIOA_18.Multiplexed withUART0_RX(Receive data)
24	GND	Ground
25	NC	NC
26	NC	NC
27	GPIOA_22/U0RTS	UART 0 RTS(Request To send) .Multiplexed with GPIOA_22
28	GPIOA_19/U0CTS	UART 0 CTS(Clear TO send) .Multiplexed with GPIOA_19
29	GPIOA_12/PWM3	GPIOA_12.Multiplexed with PWM3(Pulse-Width Modulation)
30	GPIOA_0/PWM2	GPIOA_0 .Multiplexed with PWM2 (Pulse-Width Modulation)
31	GPIOA_14/SWD_CLK	SWD_CLK.Multiplexed with GPIOA_14
32	GPIOA_15/SWD_TMS	SWD_TMS.Multiplexed with GPIOA_15
33	GPIOA_30/Uart2_log_TXD	GPIOA_30.Multiplexed with Uart2_log_TXD
34	GPIOA_29/Uart2_log_RXD	GPIOA_29 .Multiplexed with Uart2_log_RXD
35	GND	Ground
36	ANT	WIFI Antenna
37	GND	Ground

6.RF Specifications

All measurements are made under nominal supply voltage, room temperature, and conducted conditions at each antenna port except antenna.

6.1Receiver RF Specifications

Parameter	Conditions		Min.	Nom.	Max.	Unit
Receive input frequency						
2.4GHz	802.11b/g/n mode		2401	-	2484	MHz
Receiver sensitivity						
802.11b	1Mbps	FER<8%, Packet size= 1,024bytes	-	-	-80*	dBm
	2Mbps		-	-	-80*	dBm
	5.5Mbps		-	-	-76*	dBm

	11Mbps		-	-	-76*	dBm
802.11g	6Mbps	PER<10%, Packet size= 1,024bytes	-	-	-82	dBm
	9Mbps		-	-	-81	dBm
	12Mbps		-	-	-79	dBm
	18Mbps		-	-	-77	dBm
	24Mbps		-	-	-74	dBm
	36Mbps		-	-	-70	dBm
	48Mbps		-	-	-66	dBm
	54Mbps		-	-	-65	dBm
802.11n (HT20)	MCS0	PER<10%, Packet size= 1,024byte	-	-	-82	dBm
	MCS1.		-	-	-79	dBm
	MCS2		-	-	-77	dBm
	MCS3.		-	-	-74	dBm
	MCS4.		-	-	-70	dBm
	MCS5.		-	-	-66	dBm
	MCS6.		-	-	-65	dBm
	MCS7.		-	-	-64	dBm

Maximum input level					
802.11b	FER<8%	-10	-	-	dBm
802.11g/n	FER<10%	-20	-	-	dBm

6.2 Transmitter RF Specifications

Parameter	**Conditions**	**Min.**	**Nom.**	**Max.**	**Unit**
Receive input frequency					
802.11b/g/n	2.4GHz	2401	-	2483	MHz
Transmit Channel Power					
802.11b	11Mbps	15	17	19	dBm
802.11g	54Mbps	13	15	17	dBm
802.11n	2.4GHz, HT20, MCS0~7	13	15	17	dBm
Spectrum mask					
802.11b	Fc ±11MHz to ±22MHz	-	-	-30	dBm
	Fc ±22MHz and more	-	-	-50	dBm
802.11g	Fc ±11MHz	-	-	-20	dBm
	Fc ±20MHz	-	-	-28	dBm
	Fc ±30MHz	-	-	-40	dBm

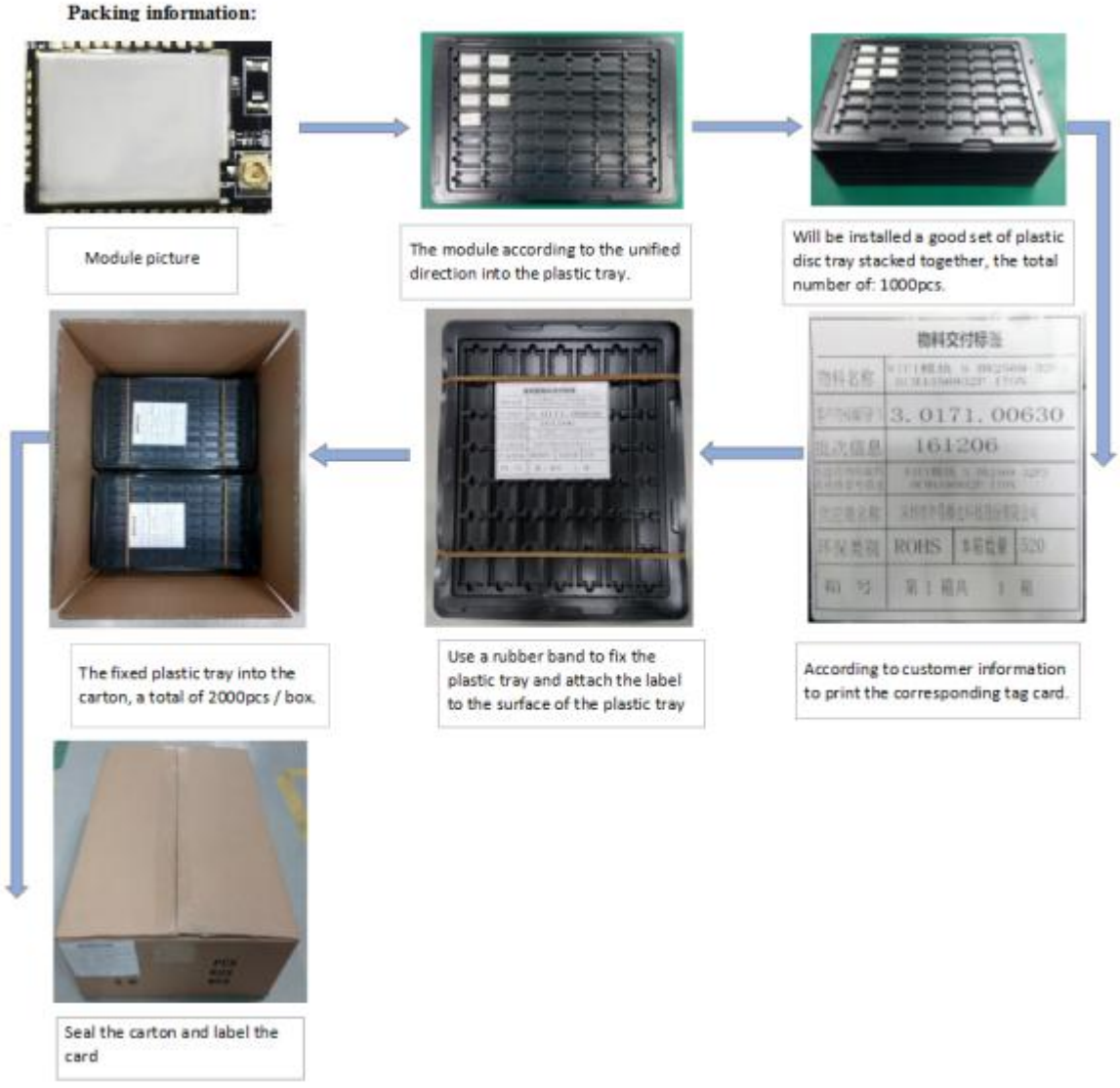
802.11n	Fc ±11MHz(±21MHz @ HT20)	-	-	-20	dBm
	Fc ±20MHz(±40MHz @ HT20)	-	-	-28	dBm
	Fc ±30MHz(±60MHz @ HT20)	-	-	-45	dBm
Center Frequency tolerance					
802.11b		-20	-	+20	pmm
802.11g/n		-20	-	+20	pmm
EVM(Error Vector Magnitude)*					
802.11b	1Mbps	-	-	35	%
	2Mbps	-	-	35	%
	5.5Mbps	-	-	35	%
	11Mbps	-	-	35	%
802.11g	6Mbps	-	-	-5	%
	9Mbps	-	-	-8	dB
	12Mbps	-	-	-10	dB
	18Mbps	-	-	-13	dB
	24Mbps	-	-	-16	dB
	36Mbps	-	-	-19	dB
	48Mbps	-	-	-22	dB
	54Mbps	-	-	-25	dB
802.11n	MCS0	-	-	-5	dB
	MCS1.	-	-	-10	dB
	MCS2	-	-	-13	dB
	MCS3.	-	-	-16	dB
	MCS4.	-	-	-19	dB
	MCS5.	-	-	-22	dB
	MCS6.	-	-	-25	dB
	MCS7.	-	-	-28	dB
Remarks					

EVM :
<Test condition>
. Method: composite EVM method.
. Phase correction: Symbol-by-symbol correction.
. Channel estimation: Raw channel estimate full packet.
. Symbol timing correction: on.
. Frequency Sync: Long training symbol.

7.Order Information

Part No.	Description
RW10BX-37PA	Ipex generation Antenna
RW10BX-37PB	Ceramic Antenna
RW10BX-37PC	PIN37/Stamp hole pad

8.Packaging Information



FCC Interference 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.

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

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.

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

IMPORTANT NOTE:

FCC 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 & your body.

This module is intended for OEM integrators under the following conditions:

1.This module is certified pursuant to two Part 15 rules sections(15.247).

2.Antennas: This module has been approved to operate with the antenna types listed below, with the maximum permissible gain indicated.

Frequency Band	Antenna Type	Model Number	Max Gain(dBi)
2400-2483.5MHz	Multilayer ceramic antenna	RFANT3216120A5T	2.12

3.Label and compliance information

Label of the end product:

The host product must be labeled in a visible area with the following "Contains FCC ID: **VYVRW10BX-37P**".

The end product shall bear the following 15.19 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.

4.Information on test modes and additional testing requirements

This module is restricted to integration into hosts for indoor use only.

This module has been approved under stand-alone configuration.

OEM integrator has be limited the operation channels in channel 1-11 for 2.4GHz band.

The separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations

The information on how to configure test modes for host product evaluation for different operational conditions for a stand-alone modular transmitter in a host, versus with multiple, simultaneously transmitting modules or other transmitters in a host can be found at KDB Publication 996369 D04.

5.Additional testing, Part 15 Subpart B disclaimer

Appropriate measurements (e.g. 15 B compliance) and if applicable additional equipment authorizations (e.g. SDoC) of the host product to be addressed by the integrator/manufacturer.

This module is only FCC authorized for the specific rule parts 15.247 listed on the grant, and the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host product as being Part 15 Subpart B compliant.

6.The user manual of the end product should include:

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

b) The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons.

c) 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.

d) This device is restricted to *indoor* use.

e) The antenna(s) used for this transmitter must not transmit simultaneously with any other antenna or transmitter.