

# User Manual

**H/W Version:0.01**

**IEEE 802.11b/g/n USB Wireless Module**

## 1. Introduction

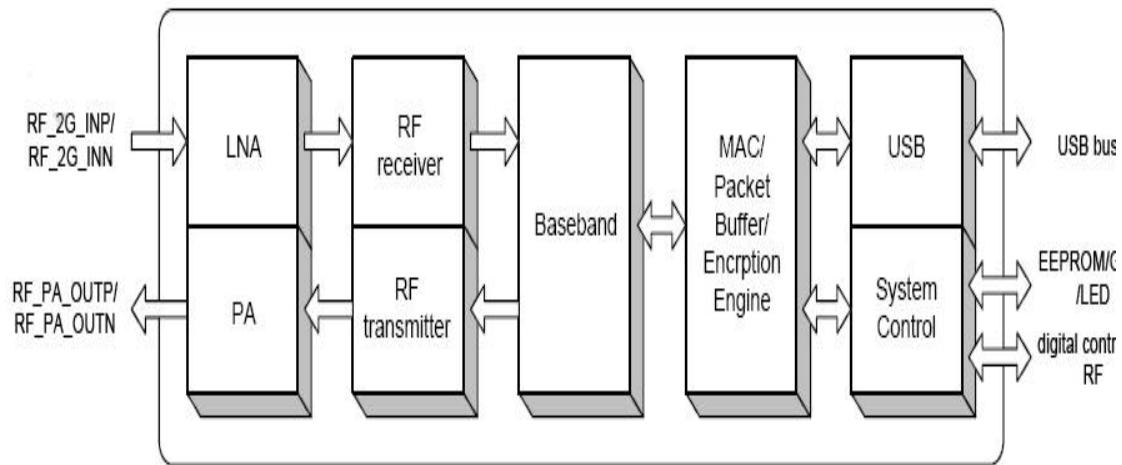
### Product Description

The RT5370 is a highly integrated MAC/BBP and 2.4 GHz RF/PA/LNA single chip with 150Mbps PHY rate supporting. It fully complies with IEEE 802.11n and IEEE 802.11 b/g feature rich wireless connectivity at high standards, delivers reliable, cost-effective, throughput from an extended distance. Optimized RF architecture and baseband algorithms provide superb performance and low power consumption. Intelligent MAC design deploys a high efficient DMA engine and hardware data processing accelerators without overloading the host processor. The RT5370 is designed to support standard based features in the areas of security, quality of service and international regulation, giving end users the greatest performance anytime in any circumstance.

### Features

- \*CMOS Technology with PA, LNA, RF, Baseband, and MAC Integrated.
- \*1T1R Mode with 150Mbps PHY Rate for Both Transmit and Receiving.
- \*Legacy and High Throughput Modes
- \*20MHz/40MHz Bandwidth
- \*Reverse Direction Grant Data Flow and Frame Aggregation
- \*WEP 64/128, WPA, WPA2,TKIP, AES, WAPI \*QoS-WMM, WMM-PS
- \*WPS,PIN,PBC
- \*Multiple BSSID Support
- \*USB 2.0
- \*Cisco CCX Support
- \*Bluetooth Co-existence
- \*Low Power with Advanced Power Management
- \*Operating Systems - Windows XP 32/64, 2000, Windows 7, Vista 32/64 , Linux, Macintosh

## 2. simplified block diagram of the RT5370-6P module is depicted in the figure below.



### 3. General Specifications

Model Name	RA-WN110606B
Product Description	USB 2.0 Wireless Module
WLAN Standard	IEEE 802.11 b/g/n ,Wi-Fi compliant
Host Interface	USB 2.0
Major Chipset	Ralink RT5370
Dimension	12mm X 25mm X 1.0mm
Weight	4g

#### Operating Conditions

Voltage	3.3V/1.8V
Operating Temperature	-10~50°C
Humidity Non-Operating	90% RH non-condensing (12 months among 0~40°C )

#### Electrical Specifications

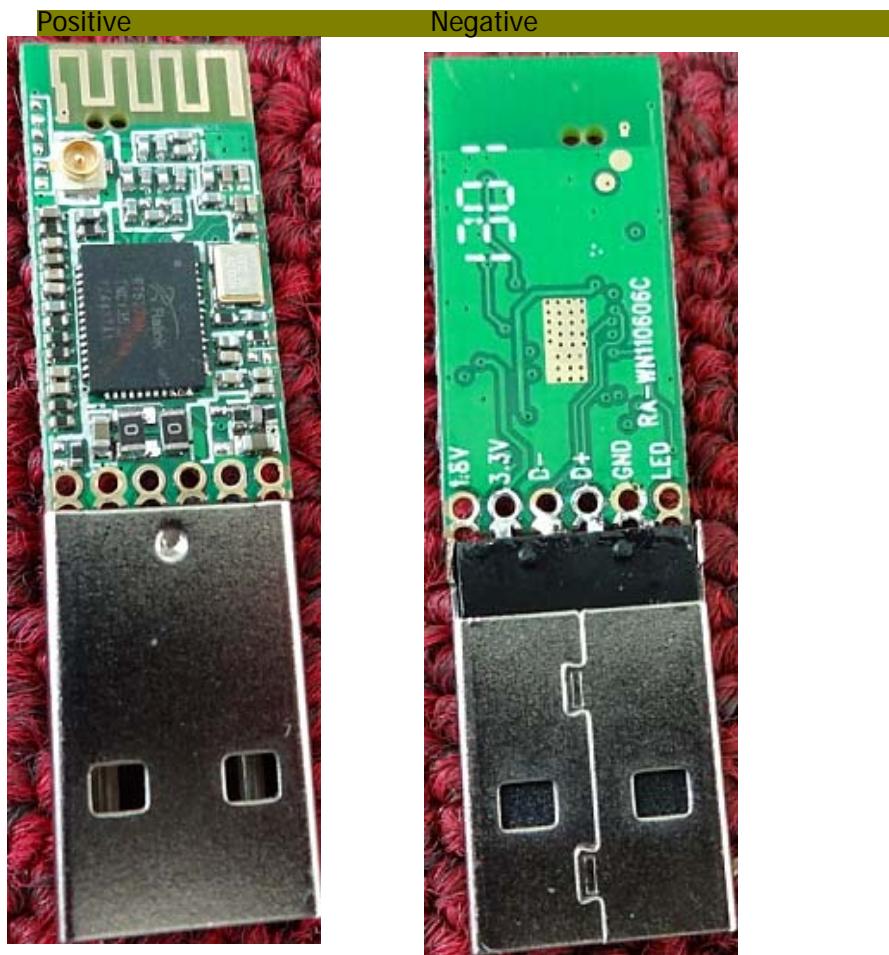
Frequency Range	2.4~2.4835GHZ
Spread Spectrum	DSSS
Transmission Distance	300m(The transmission speed may vary according to the environment)
	11n:150/135/120/90/60//54/45/30/15Mbps 72/65/57.8/43.3/28.9/21.7/14.4/7.2Mbps
Data Rate	11b:1/2/5.5/11Mbps 11g:6/9/12/24/36/48/54Mbps
Transmit power	13dbm
Data security	64/128/152bitWEP,WPA/WPA2,WPA-PSK/WPA2-PSK(TKIP/AE S)
Receiver Sensitivity	150M:-71dbm@10%PER 135M: -71dbm@10%PER

	<b>54M:-71dbm@10%PER</b>
	<b>11M:-84dbm@10%PER</b>
	<b>6M:-89dbm@10%PER</b>
	<b>1M:-93dbm@10%PER</b>
<b>Environment</b>	<b>Storage Temperature:-40~70°C(-40°F ~158°F )</b>
	<b>Relative humidity:10%-90%</b>
	<b>Non-condensing</b>
	<b>Storage Humidity:5%~95%</b>
	<b>Non-condensing</b>
<b>Modulation Type</b>	<b>OFDM/CCK/16-QAM/64-QAM</b>
<b>Operating System</b>	<b>Window98,ME,SE,XP,XP-64</b>
	<b>Windows7, 32/64, 2000,Vista,linux,mac</b>

## 4. Power Consumption

Parameters	Sym	Conditions	Min	Typ	Max	Unit
3.3V Supply Voltage	Vcc33		3.0	3.3	3.6	V
1.2V Supply Voltage	Vcc12		1.14	1.2	1.38	V
Receiving						
3.3V Current Consumption	Icc33rx	HT40 MCS7		35		mA
1.2V Current Consumption	Icc12rx	HT40 MCS7		190		mA
Transmission						
3.3V Current Consumption	Icc33tx	HT40 MCS7		230		mA
1.2V Current Consumption	Icc12tx	HT40 MCS7		110		mA

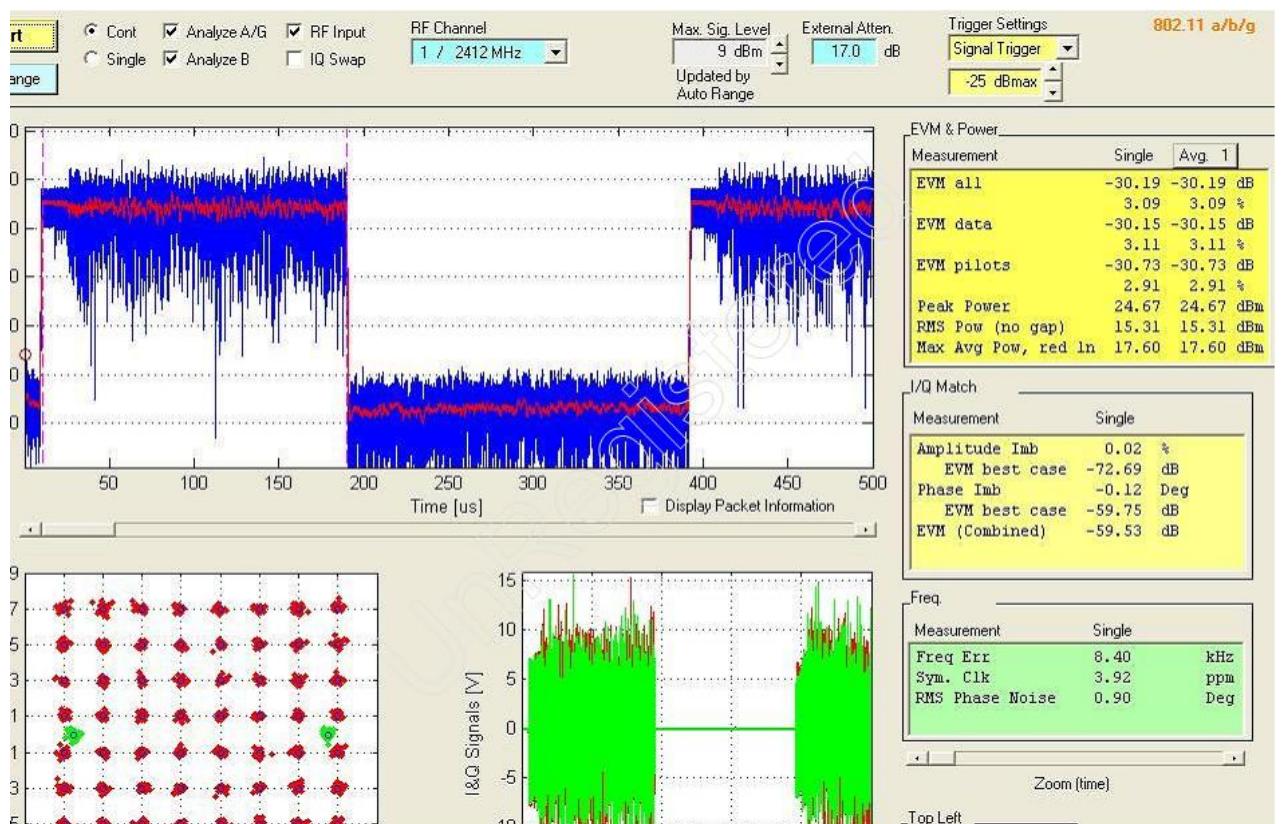
## 5. Mechanical Information



## 6. Pin Description

J1	1.8V	J5	GND
J2	3.3V	J6	LED
J3	D-		
J4	D+		

## 7. TEST PARAMETER



Test item	TX POWER	EVM	Freq ERR	RX SENS
<b>Test result (54M)</b>	<b>13.00 dbm</b>	<b>-30.19dbm</b>	<b>-2.32 khz</b>	<b>-73 dbm</b>

## 8. Antenna And Interface Connection Information

1. Interface and the antenna have the option
2. LED PIN have the option with WPS

## 9. Product ordering information

**RT5370-6P Module, only support 802.11b/g/n, 3.3V or 3.3V/1.8V voltage**

**And pls mark clearly your need about Antenna、Interface and voltage information.**

## 10. How the host system do the labeling

The Host system using this radio module . Should have label indicated " contains FCC ID: **AQF-RA-WN110606C**"

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.
- 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.

### RF Exposure Statement

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: This module is only approved on the PCB antenna condition, the antenna connector could not be used with any other antenna by the OEM integrator without the further FCC authorization.

This EUT (FCC ID: **AQF-RA-WN110606C**) doesn't have Ad Hoc Mode function on "non-US/Canada frequencies". In addition, the frequency selection feature is disabled by channel 1-11 will be used in North America. County code selection is disabled.

**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.

**Important Note:**

This module is intended for OEM integrator. The OEM integrator is still responsible for the FCC compliance requirement of the end product, which integrates this module, and this module is without the shielding part .

20cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the FCC radiation exposure limits set forth for an population/uncontrolled environment can be satisfied.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

In the users manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. the end user has to be informed that the FCC radio-frequency exposure guideline for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment. if the size of the end product is smaller than 8\*10cm, then additional FCC part 15.19 statement is required to be available in the users manual: This device complies with Part 15 of 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 is intended only for OEM integrators under the following conditions:

(1) According to FCC Part 15 Subpart C Section 15.212, the radio elements of the modular transmitter must have their own shielding. However, due to there is no shielding for this WiFi Module, this module is granted as a Limited Modular Approval.

(2) This module is designed to operate with an PCB antenna having a maximum gain of 0dBi. Only this type of antenna may be used.

(3) Integration is typically strictly restricted to Grantee himself or dedicated OEM integrators under control of the Grantee.

As long as 3 conditions above are met, further transmitter test 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 (for example, digital device emissions, PC peripheral requirements....etc.).

**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.

**LABEL OF THE END PRODUCT:**

The final end product must be labeled in a visible area with the following " Contains TX FCC ID: **AQF-RA-WN110606C** If the size of the end product is larger than 8x10cm, then the following FCC part 15.19 statement has to also be available on the label: This device complies with Part 15 of 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.