

PRODUCT SPECIFICATION

802.11n, 2.4G 1T1R Wireless LAN USB Module

WN4608R

Version 1.4

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Change History

Revision	Date	Author	Change List
Version 1.0	2011/9/23	Tracy Chang	Preliminary
Version 1.1	2011/10/7	Tracy Chang	Update Transmit Output Power
Version 1.2	2011/10/17	Tracy Chang	Update Mechanical, Domain code, Frequency range, Transmit Output Power, Product picture, Power Consumption
Version 1.3	2011/10/21	Tracy Chang	Update Transmit Mechanical
Version 1.4	2011/11/29	Tracy Chang	Update FCC Warning Statement

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PRODUCT FEATURES

- Operate at ISM frequency Band (2.4GHz)
- IEEE Standards Support, 802.11b, 802.11g and 802.11n
- The WN4608R is developed using single-chip designed by Ralink Technology Corporation
- USB 2.0 support for data rates up to 12Mbps full speed and 480Mbps high speed
- Enterprise level security supporting: WPA, WPA2, WEP 64/128
- Support 1 transmission and 1 receiving, transmission rate can up to 150Mbps (Physical Rate) in downstream and upstream
- Full feature software utility for easy configuration and management
- RoHS compliance
- Low Halogen compliance

PRODUCT SPECIFICATIONS

MAIN CHIPSET

MAC/ Baseband/ RF: Ralink RT5370 (Cu wire bounding)

FUNCTIONAL SPECIFICATIONS

WiFi Function	
Standard	IEEE802.11b; IEEE 802.11g; IEEE 802.11n
Bus Interface	Universal Serial Bus (USB2.0)
Data Rate	<p><i>802.11b:</i> 11, 5.5, 2, 1 Mbps</p> <p><i>802.11g:</i> 54, 48, 36, 24, 18, 12, 9, 6 Mbps</p> <p><i>802.11n:</i> MCS 0 to 7 for HT20MHz MCS 0 to 7 for HT40MHz</p>
Media Access Control	CSMA/CA with ACK
Modulation Techniques	<p><i>802.11b:</i> CCK, DQPSK, DBPSK</p> <p><i>802.11g:</i> 64QAM, 16QAM, QPSK, BPSK</p> <p><i>802.11n:</i> BPSK, QPSK, 16QAM, 64QAM</p>
Network Architecture	Ad-hoc mode (Peer-to-Peer) Infrastructure mode
Operation Channel	<p><i>2.4GHz</i> 11: (Ch. 1-11) – United States 13: (Ch. 1-13) – Europe 14: (Ch. 1-14) – Japan</p>
Frequency Range	<p><i>802.11bg</i> 2.412 ~ 2.462 GHz</p>
Transmit Output Power – 1x1 (Tolerance: +-1.5dBm)	<p>High CTL Power</p> <p><i>802.11b:</i> 17 dBm@1Mbps <i>802.11g:</i> 15 dBm@6Mbps <i>802.11n: 20MHz:</i> 14 dBm@MCS0 <i>40MHz:</i> 12 dBm@MCS0</p> <p>Low CTL Power</p> <p><i>802.11b:</i> 17 dBm@1Mbps <i>802.11g:</i> 14 dBm@6Mbps <i>802.11n: 20MHz:</i> 14 dBm@MCS0 <i>40MHz:</i> 10 dBm@MCS0</p>
Receive Sensitivity	<p><i>802.11b:</i> -89 dBm@11 Mbps</p> <p><i>802.11g:</i> -74 dBm@54Mbps</p> <p><i>802.11n:</i> 20MHz</p>

	-73 dBm@MCS7 40MHz -69 dBm@MCS7
Security	WPA, WPA2, WPS, WEP 64/128, IEEE 802.11x, IEEE 802.11i
Operating Voltage	3.3V ±10% I/O supply voltage
OS Supported	Microsoft Windows XP/Vista/Win7
Power Consumption	<i>TX Mode:</i> 243 mA <i>RX Mode:</i> 176 mA <i>Standby Mode:</i> 51 mA
Antenna Type	Two Antenna Connectors

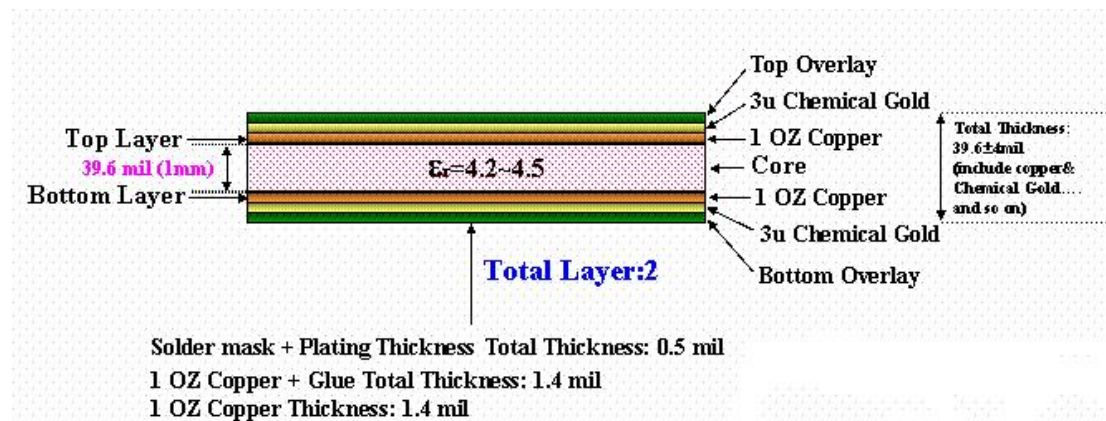
PIN ASSIGNMENT

PIN.	PIN DEFINE
1	WOW
2	BT_PRIORITY
3	BT_ACTING
4	WL_ACTING
5	GND
6	D+
7	D-
8	3.3V
9	Reserved
10	GND

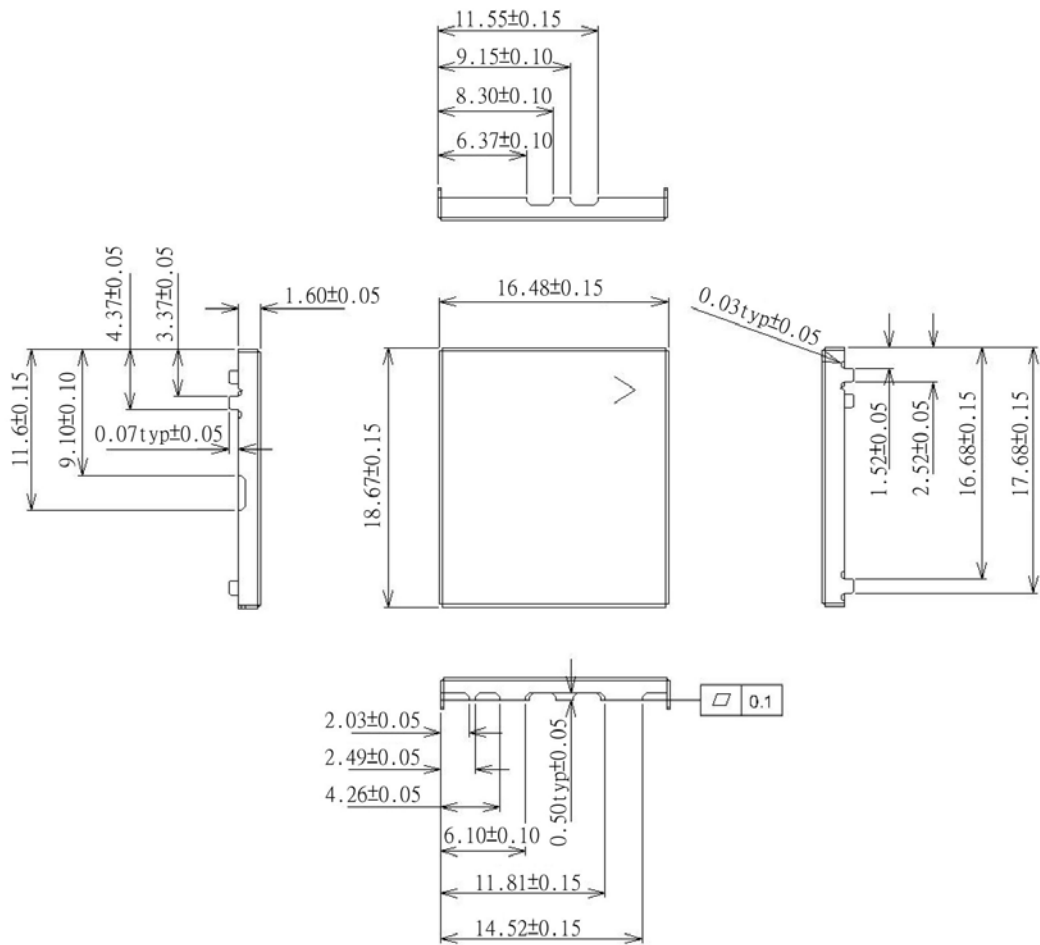
PCB

Immersion Gold plating

Layer stack



Shielding case



PRODUCT PICTURE

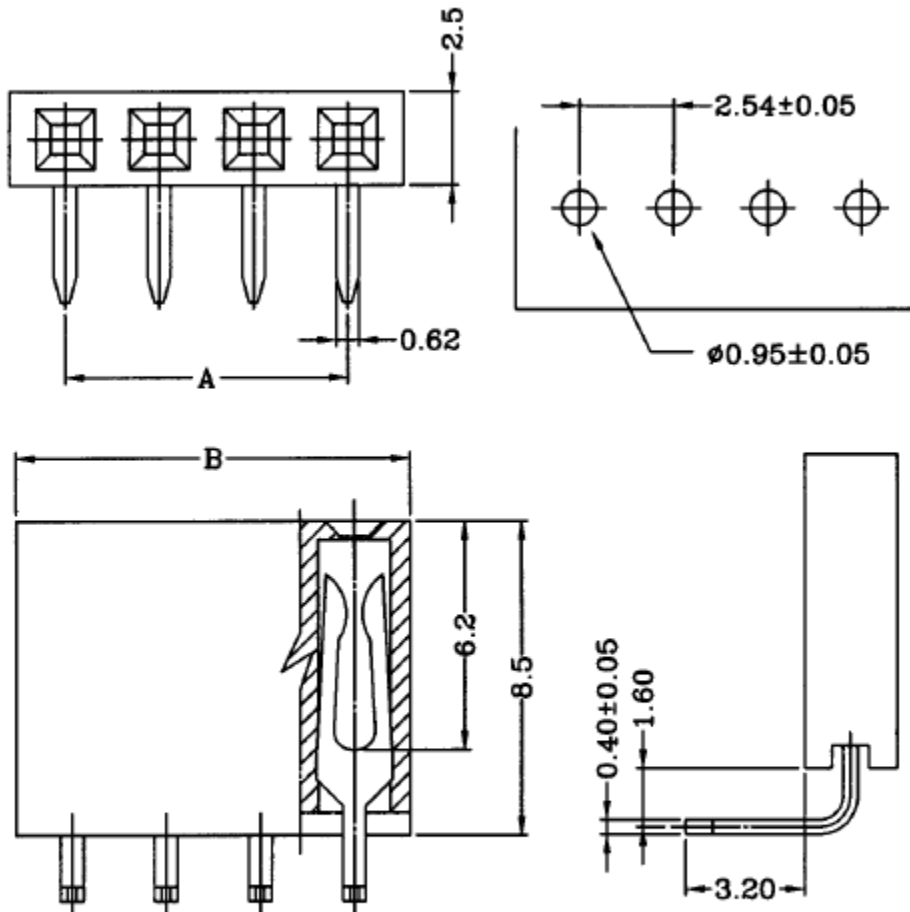
TOP

BOTTOM



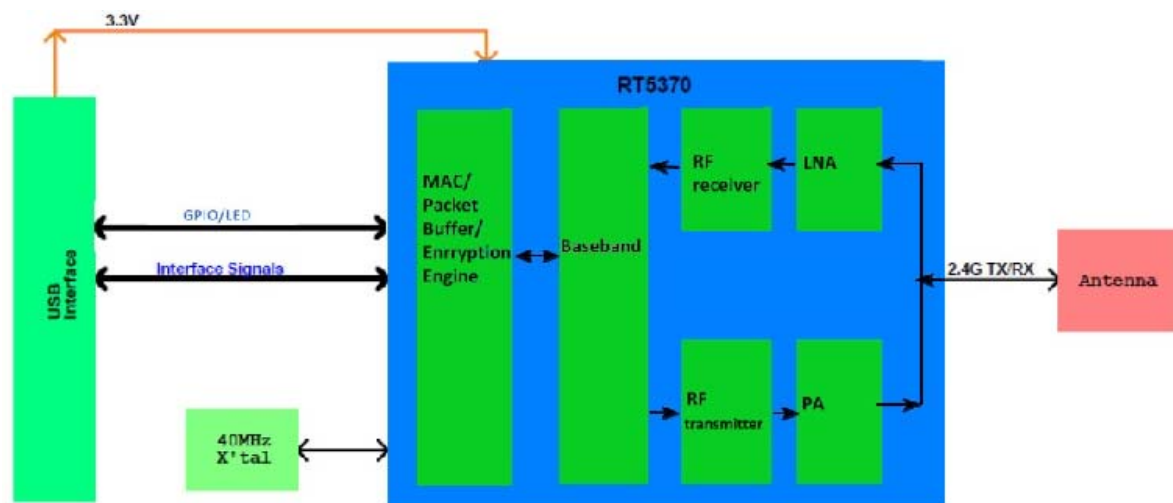
CONNECTOR

Material: *Insulator: PBT UL 94V-0
 *Contact: Brass, Gold Flash



Circuits	Part No.	DIM. A	DIM. B	Pcs/Tray
10	B2541WR0-1Ax10P	22.86	25.90	320

BLOCK DIAGRAM



EEPROM INFORMATION

Reg Domain	US: Channel 1~11 Active Scan
	Offset 0x38 for 5G: 0x00 Offset 0x39 for 2.4G: 0x00
Vendor ID	0x148F
Product ID	0x5370

ENVIRONMENTAL

Operating

Operating Temperature: 0 to 75 °C (32 to 167 °F)

Relevant Humidity: 5-90% (non-condensing)

Storage

Temperature: -40 to 85 °C (-40 to 185 °F)

Relevant Humidity: 5-95% (non-condensing)

RELIABILITY REQUEST**1. Environmental Test**

Test Item	Test Timing	Period	Result
1.1 Thermal measurement test	21hrs	TBD	
1.2 High Temperature Test (Operating)	96hrs		
1.3 Low Temperature Test (Operating)	96hrs		
1.4 Temp. and Humidity Cyclic Test (Operational)	96hrs		
1.5 High Temperature Test (Storage)	96hrs		
1.6 Low Temperature Test (Storage)	96hrs		
1.7 High Temperature & High Humidity (Storage)	96hrs		
1.8 Thermal Shock Test (Storage)	24hrs		
1.9 Cold Start Testing	6hrs		
1.10 Longtime Connection Test (Operating)	168hrs		
1.11 MTBF Demonstration	76days		
1.12 Open Short Test	3hrs		

2. Mechanical Test

Test Item	Test Time	Period	Result
2.1 Drop Test (Unit and Package)	2hrs	TBD	
2.2 Vibration Test (Unit and Package)	5.5hrs		
2.3 Power ON/OFF Cycling Test	1hrs		
2.4 Salt Mist Test	48hrs		

FCC WARNING STATEMENT

Class B:

FEDERAL COMMUNICATIONS COMMISSION 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.

CAUTION:

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

Labeling requirements

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.

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: MDZLTRT5370-WL "

RF exposure warning

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

FCC NOTICE: To comply with FCC part 15 rules in the United States, the system must be professionally installed to ensure compliance with the Part 15 certification. It is the responsibility of the operator and professional installer to ensure that only certified systems are deployed in the United States. The use of the system in any other combination (such as co-located antennas transmitting the same information) is expressly forbidden.

Only the antennas listed below are allowed to be used with the EUT output power.

Antenna List

No.	Manufacturer	Model No.	Peak Gain	NOTE
1	MAG.LAYERS	MSA-3420-25GC4-A1 -B160MM	2.37 dBi in 2.4GHz	without metal reflector (High CTL Power)
2	MAG.LAYERS	MSA-3414-25GC4-A1 -B160MM-RF	3.97 dBi in 2.4GHz	with metal reflector (Low CTL Power)

NOTE:

1. There are two different EUT output power for with ground plane antenna and without ground plane antenna.
2. About Output power, please refer to present document page 4: Functional Specifications.