

User manual

802.11n, Dual Band 2T2R Wireless USB Module

WN4501L

Version 1.1

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Change History

Revision	Date	Author	Change List
Version 1.0	2012/03/29	Ben J. Chen	Preliminary
Version 1.1	2012/06/05	Ben J. Chen	Update Power Consumption Update Antenna Type Update Label Drawing Update Module Photo Update EEPROM information Update Packing Drawing

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PRODUCT FEATURES

Wi-Fi Feature

- Operate at ISM frequency Band (2.4GHz/5GHz)
- IEEE Standards Support, 802.11a, 802.11b, 802.11g and 802.11n
- The WN4501L is developed using single-chip designed by Realtek Semiconductor Corp.
- Complies with USB Specification 2.0, support Full-speed(12Mbps) and High-speed(480Mbps)
- Enterprise level security supporting: WPA, WPA2
- Support 2 transmission and 2 receiving, transmission rate can up to 300Mbps (Physical Rate) in downstream and upstream
- WAPI (Wireless Authentication Privacy Infrastructure) certified
- RoHS compliance
- Low Halogen compliance

PRODUCT SPECIFICATIONS

MAIN CHIPSET

Realtek RTL8192DU

FUNCTIONAL SPECIFICATIONS

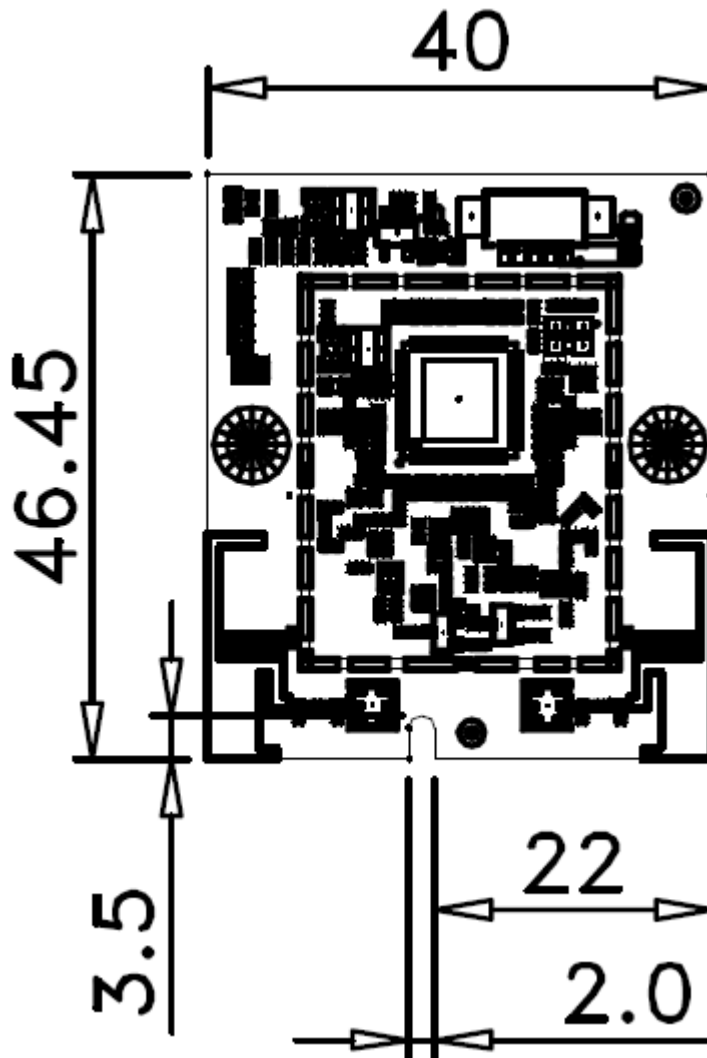
Wi-Fi Function	
Standard	IEEE802.11a; IEEE802.11b; IEEE 802.11g; IEEE 802.11n
Bus Interface	USB Interface
Data Rate	<p>802.11b: 11, 5.5, 2, 1 Mbps</p> <p>802.11a/g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps</p> <p>802.11n: MCS 0 to 15 for HT20MHz MCS 0 to 15 for HT40MHz</p>
Media Access Control	CSMA/CA with ACK
Modulation Techniques	<p>802.11b: CCK, DQPSK, DBPSK</p> <p>802.11a/g: 64QAM, 16QAM, QPSK, BPSK</p> <p>802.11n: BPSK, QPSK, 16QAM, 64QAM</p>
Network Architecture	Ad-hoc mode (Peer-to-Peer) Infrastructure mode
Operation Channel	<p>2.4GHz 11: (Ch. 1-11) – United States 13: (Ch. 1-13) – Europe 14: (Ch. 1-14) – Japan</p> <p>5GHz 12: United States 19: Europe 8: Japan</p>
Frequency Range	<p>802.11bg 2.412 ~ 2.4835 GHz</p> <p>802.11a 5.15 ~ 5.85 GHz</p>
Transmit Output Power – 2x2 (Tolerance: ±1.5dBm)	<p>802.11a: 13 dBm@54Mbps</p> <p>802.11b: 17 dBm@11Mbps</p> <p>802.11g: 17 dBm@6Mbps 14 dBm@54Mbps</p> <p>802.11n(2.4GHz): 20MHz: 17 dBm@MCS0 13 dBm@MCS7 13 dBm@MCS15 40MHz:</p>

	<p>13 dBm@MCS0 13 dBm@MCS7 13 dBm@MCS15 802.11n(5GHz): 20MHz: 15 dBm@MCS0 11 dBm@MCS7 11 dBm@MCS15 40MHz: 15 dBm@MCS0 11 dBm@MCS7 11 dBm@MCS15</p>
Receiver Sensitivity	<p>802.11a: -76 dBm@54Mbps 802.11b: -86 dBm@11Mbps 802.11g: -77 dBm@54Mbps 802.11n(2.4GHz): 20MHz -74 dBm@MCS7 -71 dBm@MCS15 40MHz -70 dBm@MCS7 -67 dBm@MCS15 802.11n(5GHz): 20MHz -72 dBm@MCS7 -69 dBm@MCS15 40MHz -69 dBm@MCS7 -66 dBm@MCS15</p>
Security	WEP 64&128bit, WPA, WPA2, WPS, IEEE 802.1X, IEEE 802.11i
Operating Voltage	3.3 V ±5% I/O supply voltage
OS Supported	Microsoft Windows XP/Vista/Win7/Win8; Linux based
Power Consumption	<p><i>TX Mode:</i> 5G: 330mA 2.4G: 270mA <i>RX Mode:</i> 5G: 240mA 2.4G: 190mA <i>Associate Idle Mode:</i> 5G: 180mA 2.4G: 150mA <i>Un-associate Idle Mode:</i> 130mA <i>Radio Off:</i> 20mA</p>
Antenna Type	Dual Metal Antennas

PIN ASSIGNMENT

Pin.	Pin Define	Status
1	+5V	YES
2	USB D-	YES
3	USB D+	YES
4	GND	YES
5	Reset	YES

MECHANICAL



EEPROM INFORMATION

Reg Domain	<i>World Wide</i> 2.4GHz Channels 1-11 with active scan Channels 12,13 with passive scan Chanel 14 with no scan
	5GHz: (all passive scan) 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140, 149, 153, 157, 161, 165
	0x13
Customer ID	0x00
Vendor ID	0x0BDA
Device ID	0x8194

ENVIRONMENTAL

OPERATING

Operating Temperature: 0 to 70 °C (32 to 158 °F)

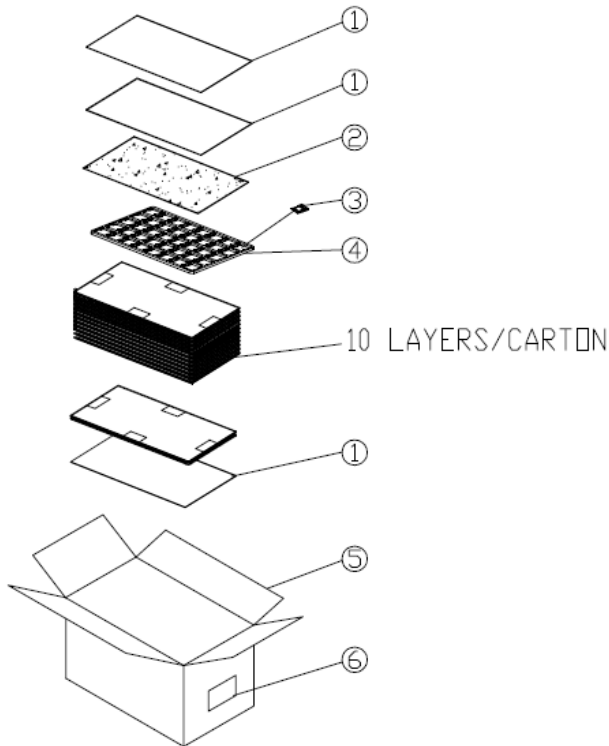
Relative Humidity: 5-90% (non-condensing)

STORAGE

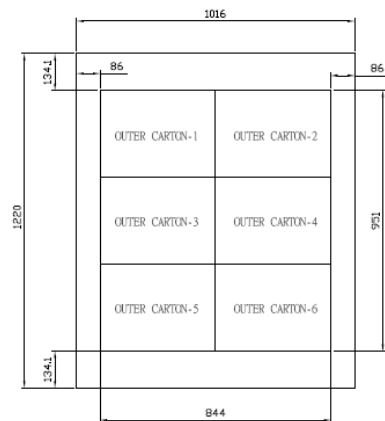
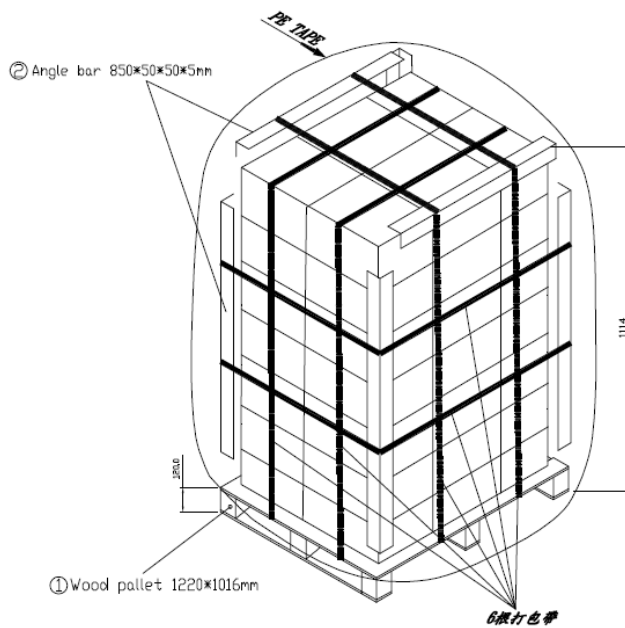
Temperature: -40 to 80 °C (-40 to 176 °F)

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

PACKING DRAWING



ITEM	P/N	DESCRIPTION	QTY
1	5160000061ND	Carton Sheet	12/400
2	5230000079XD	Clamshell cover	10/400
3	***	Product	1
4	5230000169XD	Clamshell	10/400
5	5030000676ND	Carton	1/400
6	***	Carton Label	1/400
A 3	UNIT	SCALE	SHEET
		MODEL No.	WN4501L



TOP VIEW
SCALE 1:1

1	PALLET	5140000012HD	1220*1016*120	1/16800
2	ANGLE_PAPER	5040000006ED	850*50*50*5	6/16800
ITEM	PART NAME	PART NO.	D I M	Q'TY

- NOTE :
- 1.) Shipment 7 LAYERS/High=1114mm
 - 2.) CARTON OUTSIDE DIM 422.0(L)X317.0(W)X142.0(H)mm
 - 3.) 400 SETS / CARTON
 - 4.) 6 CARTONS / LAYER
 - 5.) 16800 SETS / PALLET
 - 6.) THE PACKAGE IS SHIPPING BY SEA

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 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.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

FCC RF Radiation Exposure Statement: 1. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. 2.

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

According to FCC 15.407(e), the device is intended to operate in the frequency band of 5.15GHz to 5.25GHz under all conditions of normal operation. Normal operation of this device is restricted to indoor use only to reduce any potential for harmful interference to co-channel MSS operations.

Information to OEM integrator

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 manual of the end product. The user manual which is provided by OEM integrators for end users must include the following information in a prominent location.

1. To comply with IC RF exposure compliance requirements, the antenna 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, except in accordance with IC multi-transmitter product transmitter product procedures.
2. Only those antennas with same type and lesser gain filed under this IC ID number can be used with this device.
3. The regulatory label on the final system must include the statement: "Contains IC ID: xxxx".
4. The final system integrator must ensure there is no instruction provided in the user manual or customer documentation indicating how to install or remove the transmitter module except such device has implemented two-way authentication between module and the host system.
5. If the end product integrating this module is going to be operated in 5.15 ~5.25GHz frequency range, the warning statement in the user manual of the end product should include the restriction of operating this device in indoor could void the user's authority to operate the equipment.