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User manual

802.11ac, 2T2R Wireless LAN USB2.0 Module

WN4505L

Version 1.2

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Change History

Revision	Date	Author	Change List
Version 1.0	2013/03/04	Kaysa Lee	Preliminary
Version 1.1	2013/12/06	Kaysa Lee	Update Pin definition for WOW function
Version 1.2	2014/04/22	Kaysa Lee	Update Power Consumption

CONTENT

PRODUCT FEATURES

- Operate at ISM frequency Band (2.4GHz)
- IEEE Standards Support, 802.11a, 802.11b, 802.11g, 802.11n, 802.11ac
- The WN4505L is developed using single-chip designed by Realtek Technology Corporation
- USB 2.0 support for date rates up to 12Mbps full speed and 480Mbps high speed
- Enterprise level security supporting: WPA, WPA2, WEP 64/128
- Support 2 transmission and 2 receiving, transmission rate can up to 867Mbps (Physical Rate) in downstream and upstream
- Full feature software utility for easy configuration and management
- RoHS compliance
- Low Halogen compliance

PRODUCT SPECIFICATIONS

MAIN CHIPSET

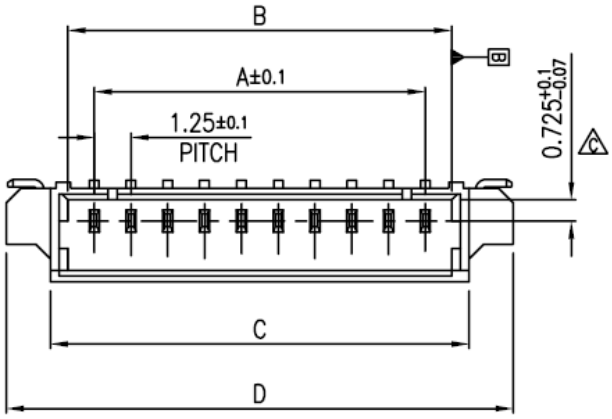
MAC/ Baseband/ RF: Realtek 8812AU-VS-CG

FUNCTIONAL SPECIFICATIONS

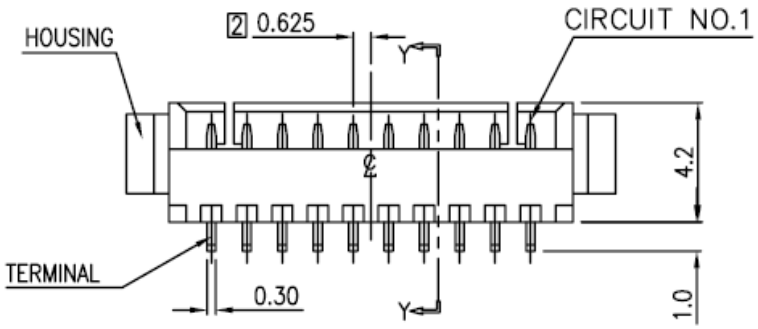
WiFi Function	
Standard	IEEE802.11b; IEEE 802.11g; IEEE 802.11n
Bus Interface	Universal Serial Bus (USB2.0)
Data Rate	***802.11b:*** 11, 5.5, 2, 1 Mbps ***802.11g:*** 54, 48, 36, 24, 18, 12, 9, 6 Mbps ***802.11n:*** MCS 0 to 15 for HT20MHz MCS 0 to 15 for HT40MHz
Media Access Control	CSMA/CA with ACK
Modulation Techniques	***802.11b***: CCK, DQPSK, DBPSK ***802.11g***: 64QAM, 16QAM, QPSK, BPSK ***802.11n***: BPSK, QPSK, 16QAM, 64QAM
Network Architecture	Ad-hoc mode (Peer-to-Peer) Infrastructure mode
Operation Channel	***2.4GHz*** 11: (Ch. 1-11) – United States 13: (Ch. 1-13) – Europe 14: (Ch. 1-14) – Japan
Frequency Range	***802.11bg*** 2.412 ~ 2.462 GHz
Transmit Output Power – 2x2 (Tolerance: +-1.5dBm)	***802.11b:*** 16 dBm@1~11Mbps ***802.11g:*** 16 dBm@6~24Mbps 15 dBm@36Mbps~54Mbps ***802.11a:*** 16 dBm@6~24Mbps 15 dBm@36Mbps~54Mbps ***802.11n:*** ***2.4G*** 16dBm@MCS0~3 15dBm@MCS4 14dBm@MCS5 13dBm@MCS6 13dBm@MCS7 ***5G*** 16dBm@MCS0~3 15dBm@MCS4

	14dBm@MCS5 13dBm@MCS6 13dBm@MCS7 13dBm@MCS9
EVM	802.11g mode (54Mbps) < -25dB HT20 (MCS7) < -28dB HT40(MCS7) < -28dB HT80(MCS9) < -32dB
Transmit Spectrum flatness/Mask	802.11b at 11 MHz Offset-30dBr 802.11b at 22 MHz Offset-50dBr 802.11a/g at 9 MHz Offset0 dBr 802.11a/g at 11 MHz Offset -20 dBr 802.11a/g at 20 MHz Offset-28 dBr 802.11a/g at 30 MHz Offset-40 dBr 802.11n at 9 MHz offset0 dBr 802.11n at 11 MHz offset-20 dBr 802.11n at 20 MHz offset-28 dBr 802.11n at 30 MHz offset-45 dBr 802.11n above 30MHz offset-53dBm/MHz
Transmit center frequency tolerance	+/-20ppm(48kHz) frequency stability vs. temperature and aging.
Receive Sensitivity	***802.11b:*** -94dBm@1Mbps -82dBm@11Mbps ***802.11g:*** -90dBm@6Mbps -68dBm@54Mbps ***802.11n:*** **20MHz** -89dBM@MCS0 -67dBm@MCS7 -65dBm@MCS15 **40MHz** -88dBm@MCS0 -64dBm@MCS7 -62dBm@MCS15
Security	WPA, WPA2, WPS, WEP 64/128, IEEE 802.11x, IEEE 802.11i
Operating Voltage	5V ±10% I/O supply voltage
OS Supported	Microsoft Windows XP/Vista/Win7/Win8/Linux
Power Consumption	***TX Mode:*** 580mA ***RX Mode:*** 165mA ***Standby Mode:*** 165mA
Antenna Type	Two Metallic Antenna

CONNECTOR SPEC (CONNECTOR 1.25MM 1*5P 50271-0050N-001 SMD(宏致))



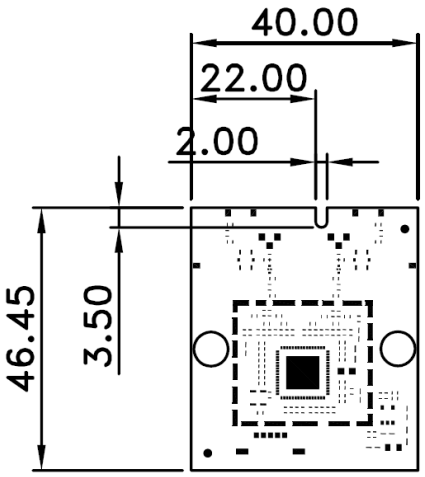
CKT	Dim A	Dim B	Dim C	Dim D	Dim E
2	1.25	3.05	4.25	7.25	7.15
3	2.50	4.30	5.50	8.50	8.40
4	3.75	5.55	6.75	9.75	9.65
5	5.00	6.80	8.00	11.00	10.90
6	6.25	8.05	9.25	12.25	12.15
7	7.50	9.30	10.50	13.50	13.40
8	8.75	10.55	11.75	14.75	14.65
9	10.00	11.80	13.00	16.00	15.90



PIN ASSIGNMENT

PIN.	PIN DEFINE
1	+5V
2	D-
3	D+
4	GND
5	WOW - Device wake Host function
6	Host inform Device function

MECHANICAL



BLOCK DIAGRAM

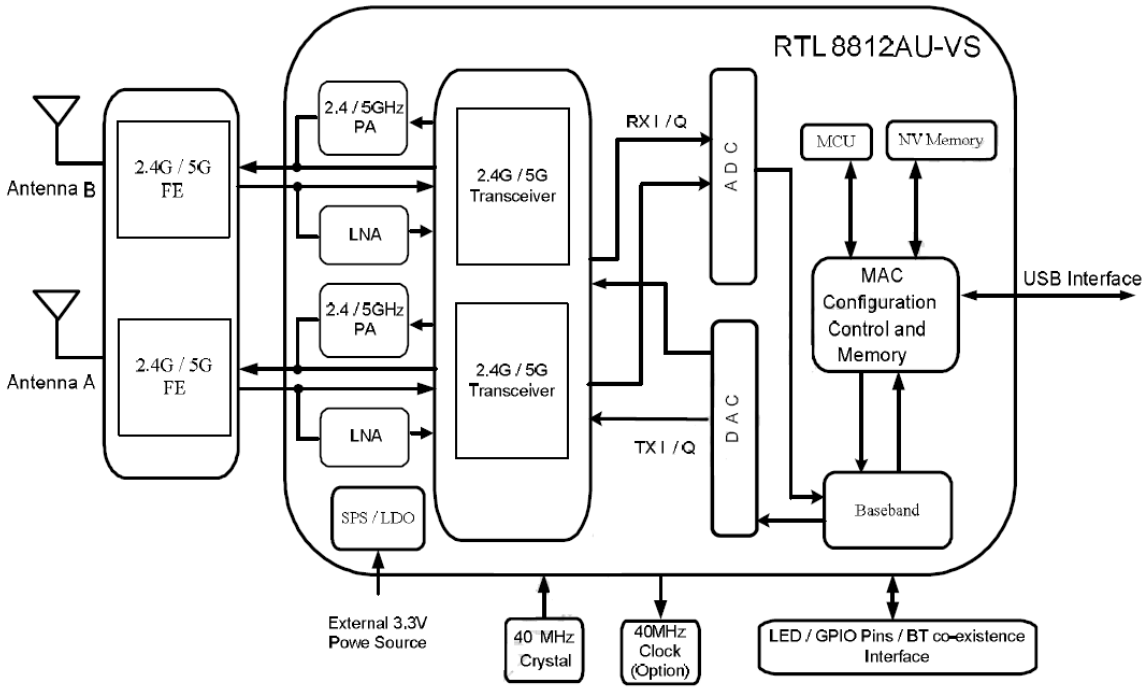


Figure 1. Dual-Band MIMO 2x2 Solution—RTL8812AU-VS (11ac 2x2 MAC/BB/RF + PA)

EEPROM INFORMATION

Reg Domain	World Wide_13
	0x7F
Vendor ID	0x0BDA
Product ID	0x881A

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)

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 digi tal device, pursuant to part 15 of the FCC rules. These limits are designed to provide r easonable protection against harmful interference in a residential installation. This equ ipment 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 co mmunications. However, there is no guarantee that interference will not occur in a par ticular installation. If this equipment does cause harmful interference to radio or televi sion 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 measu res: -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 recei ver 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 r esponsible 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 unco ntrolled environment. This equipment should be installed and operated with a minimu m 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 o f 5.15GHz to 5.25GHz under all conditions of normal operation. Normal operation of this device is restricted to indoor used only to reduce any potential for harmful interfer ence to co-channel MSS operations.

Information to OEM integrator
The OEM integrator has to be aware not to provide information to the end user regard ing how to install or remove this RF module in the user manual of the end product. Th e user manual which is provided by OEM integrators for end users must include the fo llowing 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 c an be used with this device.
3. The regulatory label on the final system must include the statement: “Contains IC I D: 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-
ways 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 authorit y to operate the equipment.