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BL-LW08-5

Product Specification

WLAN 11b/g/n MINI PCI-E MODULE

Version: 2.0

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1. General Description

BL-LW08-5 product Accord with FCC CE and is 300 wireless MINI PCI EXPRESS adapter which has lower power consumption, high linearity output power, accords with IEEE802.11B/G/N, and supports IEEE802.11i safety protocol, along with IEEE 802.11e standard service quality. It connects with other wireless device which accorded with these standards together, supports the new data encryption on 64/128 bit WEP and safety mechanism on WPA-PSK/WPA2-PSK, WPA/WPA2. Its wireless transmitting rate rises 150M, equivalent to 10 times of common 11b product. It's easy and convenient to link to wireless network for the users using desktop and other device that needs connect to wireless network.

2. Features

Feature	Implementation
Power supply	VCC_3.3V +-0.2V
Clock source	40MHz
Temperature range	Work temperature: -20°C---70°C Storage temperature -55°C ~ +125°C
Package	PCI-E 52 pins
WLAN features	
General features	■ CMOS MAC, Baseband PHY, and RF in a single chip for IEEE 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 ■ 300Mbps receive PHY rate and 300Mbps transmit PHY rate using 40MHz bandwidth ■ Compatible with 802.11n specification ■ Backward compatible with 802.11b/g devices while operating in 802.11n mode

Host Interface	■ MINI PCI EXPRESS
Standards Supported	■ IEEE 802.11b/g/n compatible WLAN ■ IEEE 802.11e QoS Enhancement (WMM) ■ IEEE 802.11h TPC, Spectrum Measurement ■ 802.11i (WPA, WPA2). Open, shared key, and pair-wise key authentication services
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 ■ Channel management and co-existence ■ Multiple BSSID feature allows the RTL8192CE-VA4 to assume multiple MAC identities when used as a wireless bridge ■ Transmit Opportunity (TXOP) Short Inter-Frame Space (SIFS) bursting for higher multimedia bandwidth
WLAN PHY Features	■ IEEE 802.11n OFDM ■ 20MHz and 40MHz bandwidth transmission ■ Short Guard Interval (400ns) ■ DSSS with DBPSK and DQPSK, CCK modulation with long and short preamble ■ OFDM with BPSK, QPSK, 16QAM, and 64QAM modulation. Convolutional Coding Rate: 1/2, 2/3, 3/4, and 5/6 ■ Maximum data rate 54Mbps in 802.11g and 150Mbps in 802.11n ■ Switch diversity for DSSS/CCK ■ Selectable receiver FIR filters ■ Hardware version: BL-R8192RA1 VER1.0 ■ Software version: Version 700.1658.813.2013 ■ Programmable scaling in transmitter and receiver to trade quantization noise against increased probability of clipping ■ Fast receiver Automatic Gain Control (AGC) ■ On-chip ADC and DAC ■ Antenna specification: two ipex port, two FCP Antenna, 2dBi

3. DC Characteristics

Symbol	Parameter	Minimum	Typical	Maximum	Units
VD33A, VD33D	3.3V I/O Supply Voltage	3.00	3.3	3.60	V
VD12A, VD12D	1.2V/Core Supply Voltage	1.10	1.20	1.32	V
VD15A, VD15D	1.5V Supply Voltage	1.425	1.5	1.575	V
IDD33	3.3V Rating Current	-	-	800	mA

4. The main performance of product

Item	Description
The supported protocol and standard	IEEE 802.11n, IEEE 802.11g, IEEE 802.11b
Interface type	MINI PCI EXPRESS
The range of frequency	2.4-2.462GHZ
The amount of working Channel	1-11 (America, Canada)
Data Modulation	OFDM/DBPSK/DQPSK/CCK
Working Mode	Infrastructure, Ad-Hoc
The transmitting rate	300/135/54/48/36/24/18/12/9/6 /1M (self-adapting)
Spread spectrum	DSSS
Sensitivity @PER	54/135/300M:-74dBm@10%PER, 11M:-85dBm@8%PER 6M: -88dBm@10%PER , 1M: -90dBm@8%PER
Throughput	90Mbps(external 2dbi antenna ,damping 40dbm in Shielding box)
The connect type of Antenna	External antenna

The transmit distance	Indoor 100M, Outdoor 300M, according the local environment
Working Power consumption	180MA
MENS(L*W*H)	30.0mm* 26.7mm *3 .2mm
The chipset model	REALTEK RTL8192CE

5. DC/RF characteristics

Terms	Contents			
Specification : IEEE802.11b				
Mode	DSSS / CCK			
Frequency	2412 – 2462MHz			
Data rate	1, 2, 5.5, 11Mbps			
DC Characteristics	min	Typ.	max.	unit
TX mode	305	311	320	mA
Rx mode	180	190	200	mA
Standby mode	240	245	246	uA
Specification : IEEE802.11g				
Mode	OFDM			
Frequency	2412 – 2462MHz			
Data rate	6, 9, 12, 18, 24, 36, 48, 54Mbps			
DC Characteristics	min	Typ.	max.	unit
TX mode	250	260	270	mA
Rx mode	180	190	200	mA
Standby mode	243	245	246	uA
Specification : IEEE802.11n				
Mode	OFDM			
Frequency	2412 – 2462MHz			
Data rate	6.5, 13, 19.5, 26, 39, 52, 58.5, 65Mbps			
DC Characteristics	min	Typ.	max.	unit
TX mode	240	250	260	mA
Rx mode	180	190	200	mA
Standby mode	244	245	246	uA

6. The block diagram of product principle

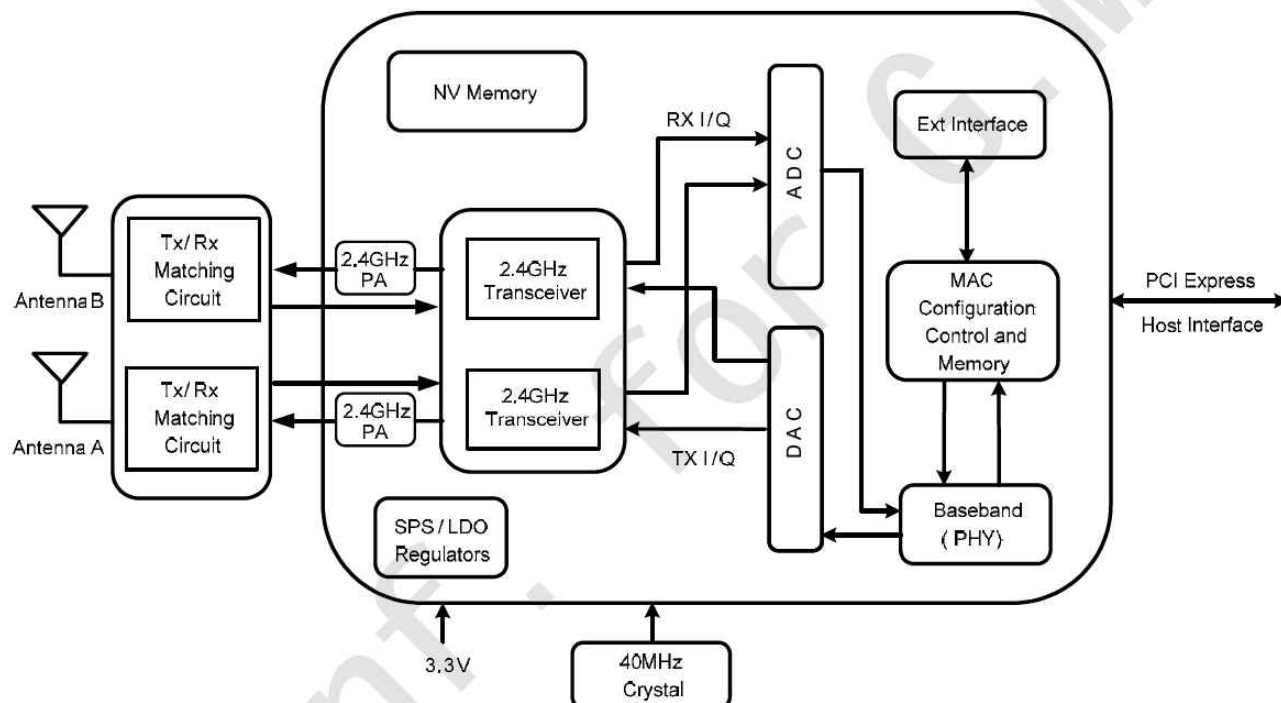


Figure 1. 11n 2x2 MAC/BB/RF Application

7. The supported platform

Operating System	CPU Framework	Driver
WIN2000/XP/VISTA/WIN7	X86 Platform	Enable
LINUX2.4/2.6	ARM, MIPSII	Enable
WINCE5.0/6.0	ARM ,MIPSII	Enable

8. The definition of product Pin

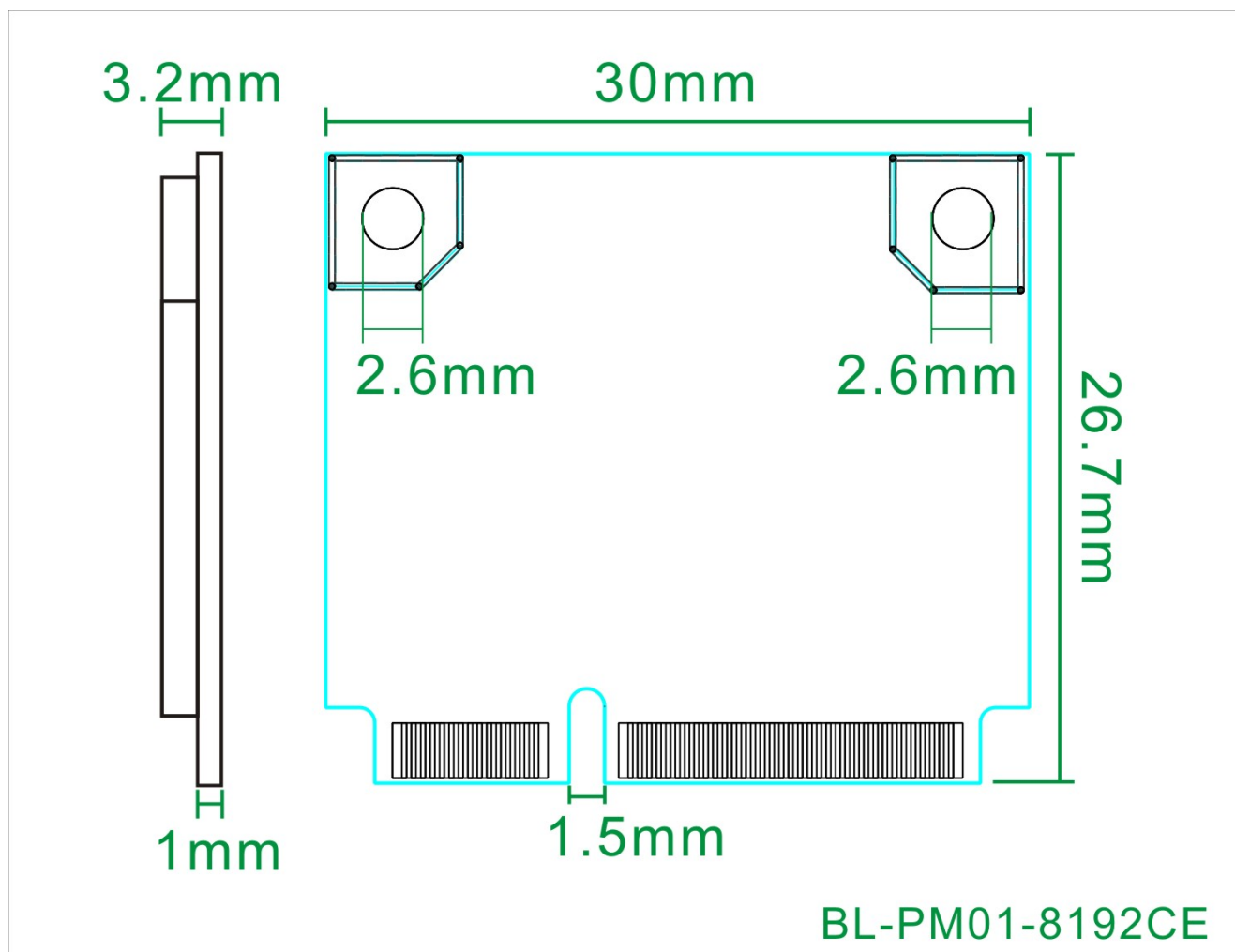


Top and bottom view of BL-LW08-5

NO	Signal Name	Description	NO	Signal Name	Description
1	WAKE#	Wake up/dormancy control	2	VD33A	3.3V power supply
3	COEX1	Wireless coexist control	4	GND	negative)
5	COEX2	Wireless coexist control	6	Reserved	NC
7	CLKREQ#	Reference clock request signal	8	Reserved	NC
9	GND	negative	10	Reserved	NC
11	REFCLK-	PCI Express differential reference when reference	12	Reserved	NC
13	REFCLK+	CLK: 100MHz $\pm$ 300ppm	14	Reserved	NC
15	GND	negative	16	Reserved	NC
17	Reserved	NC	18	GND	negative
19	Reserved	NC	20	W_DISABLE#	Radio signal control
21	GND	negative	22	PERST#	Reset signal (low level)
23	HS0N	PCI Express differential transmission positive signal	24	Reserved	NC
25	HS0P	PCI Express differential tr	26	GND	negative

		ansmission negative signal			
27	GND	negative	28	Reserved	NC
29	GND	negative	30	Reserved	NC
31	HSIN	PCI Express Difference is the received positive signal	32	Reserved	NC
33	HSIP	PCI Express Difference is the received negative signal	34	GND	negative
35	GND	negative	36	USB_D-	USB negative Signal
37	GND	negative	38	USB_D+	USB positive Signal
39	Reserved	NC	40	Reserved	NC
41	Reserved	NC	42	Reserved	NC
43	GND	negative	44	LED_WLAN#	LED PIN (Active Low)
45	Reserved	NC	46	Reserved	NC
47	Reserved	NC	48	VDD15	1.5V power supply
49	Reserved	NC	50	GND	negative
51	Reserved	NC	52	VD33	3.3V power supply

9. The Structure and Size of product



10. FCC Warning

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates 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

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.

Note: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate this equipment.

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

IMPORTANT NOTE:

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 transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Country Code selection feature to be disabled for products marketed to the US/CANADA.

This device is intended only for OEM integrators under the following conditions:

Hardware version: BL-R8192RA1 VER1.0

Software version: Version 700.1658.813.2013

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located or operating in conjunction with any other antenna or transmitter, except in accordance with multi-transmitter policy.

As long as above conditions 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.

End Product Labeling

The final end product must be labeled in a visible area with the following: "Contains FCC ID: YVK-BL-LW08-5". 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.

Manual Information to the End User

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's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

11. IC Warning

IC Statement

This radio transmitter (IC: 9295A-BL-LW08-5) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (IC: 9295A-BL-LW08-5) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur. RE) ne dépasse pas ce qui est nécessaire pour la réussite de communication.

Notice: Antenna port IPEX; antenna style: FCP, PIFA; the max antenna gain: 2dBi

IC Caution

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

- (1) This device may not cause interference; and
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage;
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

RF exposure statements

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.

Cet équipement est conforme aux limites FCC d'exposition aux radiations définies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à distance minimum de 20cm entre le radiateur et votre corps.

Information to OEM integrator

Hardware version: BL-R8192RA1 VER1.0

Software version: Version 700.1658.813.2013

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 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 : 9295A-BL-LW08-5"

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.