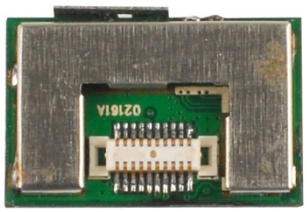
Product Delivery Specification for

Wireless USB Module (1T*1R)

Model: WL0261D



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Subject to change without notices

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Table of Contents

Chapter 1 Revision

1.1 Revision History

Version	Amendments	Revision Date	Revised by
V1.0	Final Doc	2013-01-14	Long Shuzhen
V1.1	Add Electrical Characteristics Part	2013-09-30	Fan Xiujuan
V1.2	Add Test Report	2013-10-11	Fan Xiujuan
V1.3	Modify Sample Test Repor	2015-02-26	Nong Xiaohua

Chapter 2 Introduction

2.1 Overview

ZC-WL0261 is a 2.4G 1T*1R USB interface Wi-Fi module. It complies with the most advanced IEEE 802.11n standard and can deliver up to 72.2Mbps data rate with stable throughput. Also it adopts open Linux driver, which makes customers without RF knowledge achieve Wi-Fi function on their equipments easily.

2.2 Appearance

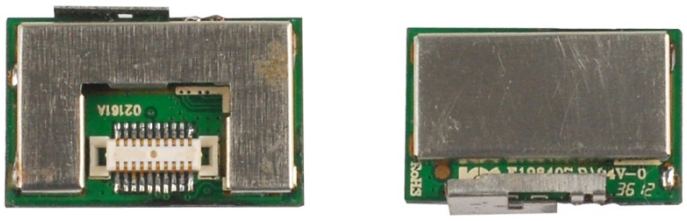


Figure 2-1 Front and rear panel

2.3 Features

- Complies with IEEE 802.111n 20 standards for 2.4GHz Wireless LAN.
- Up to 72.2Mbps high speed transmission rate.
- Supports USB 2.0 Host Interface.
- Works with all existing network infrastructure.
- Supports 64/128-bit WEP and WPA/WPA2 encryption.
- Supports Windows 8/7/XP/Vista (32/64 bits), Linux and Mac OS.
- Low power consumption.

Chapter 3 Specifications

3.1 Hardware

Interface	▪ 20 PIN USB2.0 interface
Chipset	▪ RTL8188EUS
Antenna	▪ Internal Sheet iron Antenna
PCB Dimensions	▪ 18.5mm x 12mm x 1.0mm (L x W x H)
Environment	▪ Operating Temperature: 0℃~40℃ (32˚F~104˚F) ▪ Storage Temperature: -40~70℃ (-40˚F~158˚F) ▪ Relative humidity: 10%~90% non-condensing ▪ Storage Humidity: 5%~95% ▪ non-condensing

3.2 Wireless

Standards	▪ IEEE 802.11n20
RF Frequency	▪ 2.4~2.4835GHz
Output Power	▪ 20dBm (Max.)
Transmission Distance	▪ Indoor up to 100m ▪ outdoor up to 300m (it is limited in an environment)
Security	▪ 64/128 bit WEP, WPA/WPA2, WPA-PSK/WPA2-PSK (TKIP/AES)
Data Rate	▪ 802. 11n: up to 72.2Mbps
Modulation Type	▪ OFDM

Chapter 4 Hardware Architecture

4.1 Block Diagram

The major internal components and external interfaces of ZC-WL0261 are illustrated.

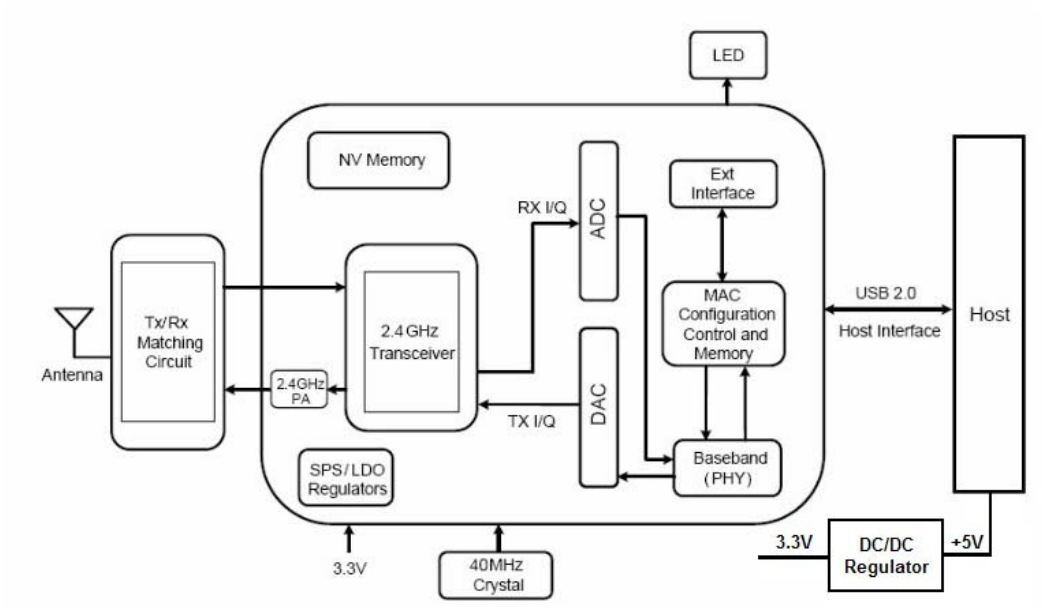


Figure 4 Hardware Block Diagram

4.2 Pin Assignment

The below figure shows you detailed Pin Assignment of ZC-WL0261 module.

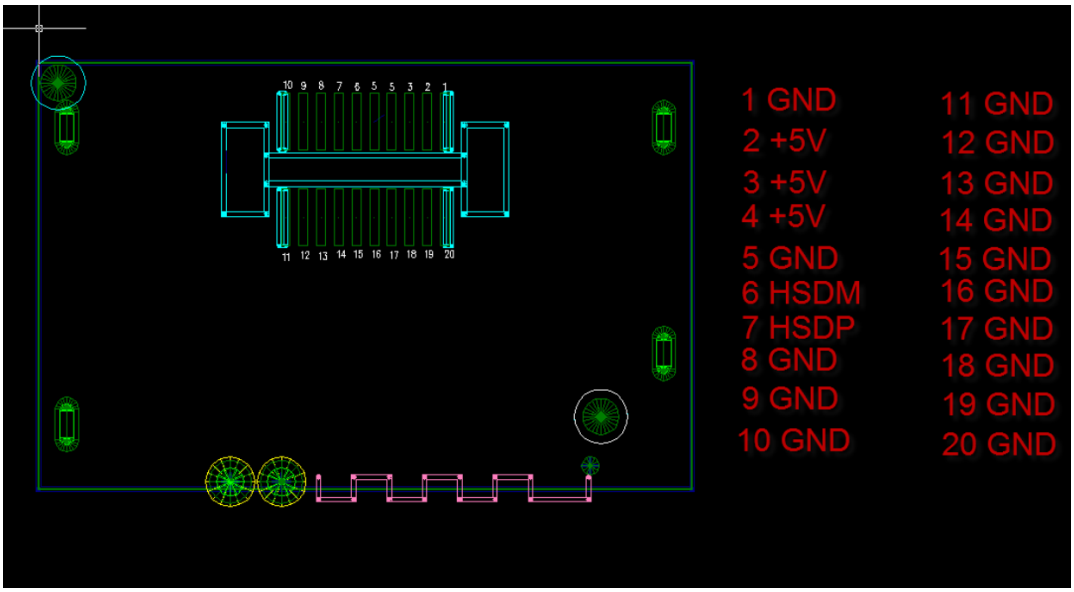


Figure 4-1 Pin Assignments

4.3 Pin Description

Pin #	Pin Name	Description	Type
2, 3, 4	VDD_5V	+5V power supply	V
6	USB_DM	USB Interface(D-)	I/O

7	USB_DP	USB Interface(D+)	I/O
1,5,8,9,10,11,12,13,14,15,16,17,18,19,20	GND	Ground	G

4.4 Mechanical Dimension

(L x W x H = 18.5mm x 12mm x 4.8mm)

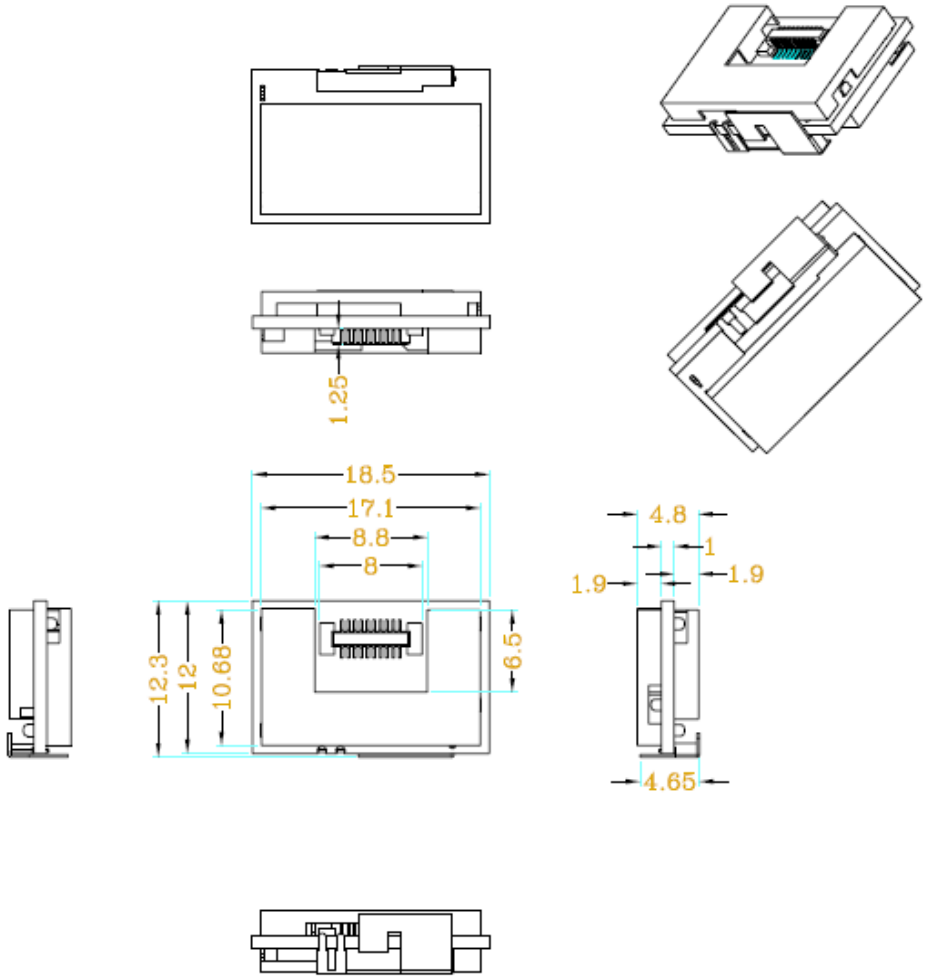


Figure 4-2 Mechanical Dimension

Chapter 5 Software

5.1 Operating System Supported

♦ Windows 2000, XP, Vista, Win 7

♦ Linux

♦ Mac

5.2 Wireless Mode Supported

♦Infrastructure/Ad-hoc mode

5.3 Security

♦ Supports AP (Infrastructure) mode

♦ Static WEP supports both 64 and 128 bit keys.

♦ WPA (TKIP) with PSK

♦ Supports Ad-hoc mode

Chapter 6 Electrical Characteristics

6.1 Temperature Limit Ratings

Parameter	Minimum	Maximum	Units
Storage Temperature	-55	+125	℃
Ambient Operating Temperature	0	75	℃
Junction Temperature	0	125	℃

6.2 DC Characteristics

Symbol	Parameter	Minimum	Typical	Maximum	Units
VD33A, VD33D	3.3V I/O Supply Voltage	3.135	3.3	3.465	V
VD12A, VD12D	1.2V Core Supply Voltage	1.10	1.2	1.32	V
VD15A, VD15D	1.5V Supply Voltage	1.425	1.5	1.575	V
IDD33	3.3V Rating Current	-	-	600	mA

Chapter 7 Power Consumption

Scenario(unit: mA)@5V	RTL8188EUS
Associated Idle	92.6
Unassociated Idle	91.2
Associated Idle(enable power save)	34.5
Unassociated Idle(enable power save)	18.9
1T-MCS7/BW20M(13dBm)	244.6
1R-MCS7/BW20M(Pin=-60dBm)	91
Packet TX@85mbps(3U)	129
Packet RX@87.4mbps(3D)	105.5
Packet T/RX@88.3mbps(3D+3U)	119
Disable	1.36
S1	1.36
S3	1.36
S4	1.36
Radio Off	18.9
IPS	18.9
LPS	34.5
Power Down	0.54

Chapter 8 Sample Test Report

Testing Object	WL0261	Testing Time	2014-03-13
Testing Device	PC、Wireless adapter、Router	PCB Ver	D
Device Edition	1021.4.928.2012	Chip	RTL8188EUS
Power Supply	5V	Report version	V1.1

8.1 Produce Performance Parameter Table

8.1.1 Automatism Program (common test)

RF hardware performance (2.4G) (1T1R)

Testing Item	Testing Sub-Item	Expectation Result	Actual Result	Test Result
Antenna 0	Frequency error	±10ppm	-3.927ppm	PASS
	power	MCS7(HT20) ≥11.5~14.5dbm	MCS7(HT20) 12.362dbm	PASS
	EVM	MCS7(HT20) ≤ -28db	MCS7(HT20) -31.630db	PASS
	MAX Sensitivity	MCS7(HT20) ≤ -65dbm	MCS7(HT20) -70dbm	PASS

8.1.2 WLAN MP Diagnostic manual program test 0.0032.20130530 .

①fixed EVM test.

(driver ver:1014.0.1103.2011)

2.4G RF hardware performance

Testing Item	Testing Sub-Item (Fixed EVM)	Channel	Actual result (MAX power)
Antenna 0			
	MCS7(HT20) EVM=-28db	1	15.0dbm(51)
		6	15.7dbm(51)
		11	15.7dbm(51)

②Using WLAN MP Diagnostic check the Automatism program value

2.4G test

Testing Item	Testing Sub-Item	Autotest Cal-value result	ATE result	Test result (±1dbm)
Antenna 0				
	11N-HT20	CH1:45=12.362dbm CH6:45=13.104dbm CH11:45=13.465dbm	CH1:45=11.9dbm CH6:45=12.5dbm CH11:45=12.8dbm	PASS

8.2 Distance Throughput Performance of Wireless

8.2.1Test Equipments

Dut and reference produce description

Router description	Name: IP04227	Chip:Realtek8197D+8192ER+8812AR	ver: A2004NS 8.92
		PCB Ver: A	Power Supply:12V 1A

DUT environment	Name: WL0261.D	PCB Ver:D
	Chip:RTL8188EUS	Driver: 1021.4.928.2012

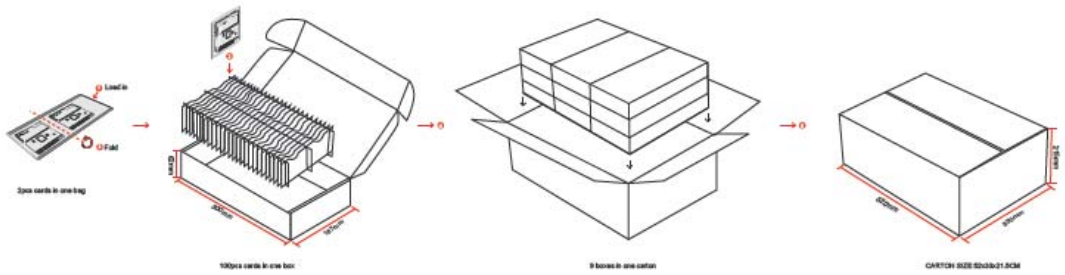
8.2.2 Distance Test Result

2.4G wireless-LAN(1T1R 150Mbps)

Distance Point	Channel		DUT throughput		
			Throughput (Mbps)	Link data(Mbps)	Signal(dbm)
SiteA (3M)	Ch1	Up	94.245	150	100%
		Down	90.035		
	Ch6	Up	90.884	150	100%
		Down	97.554		
	Ch11	Up	90.385	150	100%
		Down	95.480		
SiteA (60M)	Ch1	Up	80.200	120~150	86%~92%
		Down	85.800	120~150	
	Ch6	Up	48.861	120~150	86%~92%
		Down	72.096	120~150	
	Ch11	Up	88.302	120~150	86%~92%
		Down	86.091	120~150	
SiteA (69M)	Ch1	Up	13.891	45	42%
		Down	11.166	45	
	Ch6	Up	8.280	45	42%
		Down	7.006	45	
	Ch11	Up	11.193	45	42%
		Down	11.371	45	

Chapter 8 Packaging

8.1 Packaging TBD



The satisfy FCC exterior labeling requirements, the following text must be placed on the exterior of the end product.

Contains Transmitter module FCC ID: 2AFYG-W15WL026

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment. This device should be installed and operated with minimum distance 20cm between the radiating element of this device and the user. This device must not be co-located or operating in conjunction with any other antenna or transmitter.
This device is intended only for OEM integrators and following statements shall be included to host user manual: 1) The antenna must be installed such that 20cm is maintained between the antenna and users. 2) This module may not be co-located with any other transmitters or antennas. As long as 2 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 with this module installed. In the event that these conditions cannot be met, then the FCC authorizations are 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 this module and obtaining separate FCC authorizations.
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 technical for help.

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 may generate or use radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.