AW-NU103

IEEE 802.11b/g/n

USB Wireless Module

Datasheet

Version draft 0.5

Document release	Date	Modification	initials	Approved
Version 0.1	2009/02/19	Initial release	Benson	Eric Lee
Version 0.2	2009 /03/11	Update Pin define / certification Country	Benson	Eric Lee
Version 0.3	2009/09/09	Update RF label	Mandy	Ray Lee
Version 0.4	2009/09/10	Update,mechanical drawing pin 1 Location	Steve Chang	Ray Lee
Version 0.5	2009/11/26	Update RF label	Stephanie	Ray Lee

1. Introduction

AzureWave Technologies, Inc. introduces the pioneer of the IEEE 802.11b/g/n USB wireless module ---AW-NU103. The AW-NU103 USB wireless module is a highly integrated wireless local area network (WLAN) solution to let users enjoy the digital content through the latest wireless technology without using the extra cables and cords. It enables a high performance, cost effective, low power, compact solution that easily fits onto one side of a USB.

Compliant with the IEEE 802.11b/g/n standard, the AW-NU103 uses Direct Sequence Spread Spectrum (DSSS), Orthogonal Frequency Division Multiplexing (OFDM), BPSK, QPSK, CCK and QAM baseband modulation technologies.

A high level of integration and full implementation of the power management functions specified in the IEEE 802.11 standard minimize system power requirements by using AW-NU103.

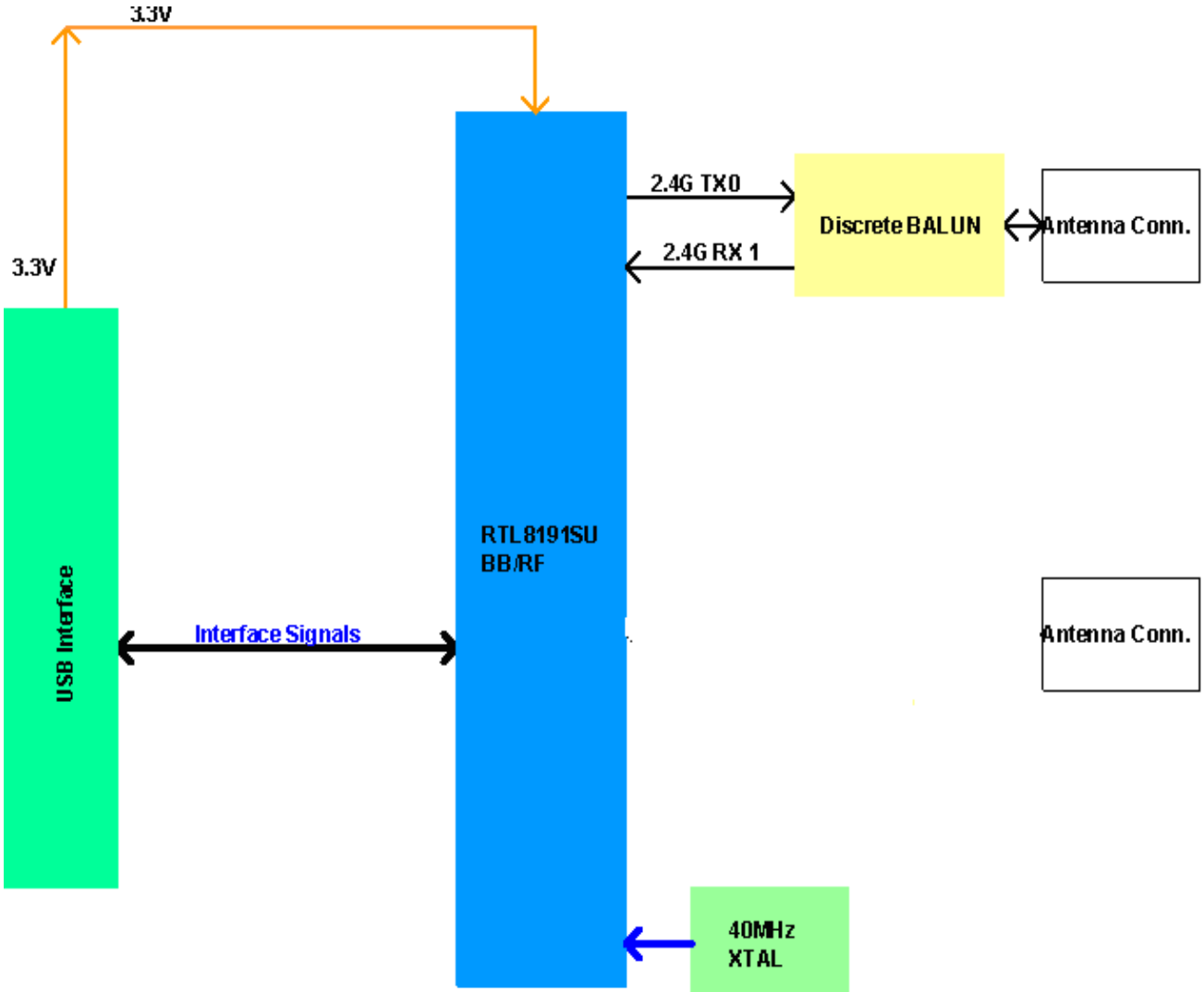
Longer Range and Faster Speed

Comparing to 802.11g technology, 802.11n draft 3.0 standard make big improvement on speed and range. It Increases wireless range by up to 2 times and reduces dead spots in coverage area. The data rate can up to 150Mbps data rate.

2. Features

- **USB.**
- **Compliant with IEEE802.11n standard**
- **1 antennas to support 1(Transmit) × 1(Receive) technology**
- **High speed wireless connection up to 150Mbps**
- **Low power consumption and high performance**
- **Enhanced wireless security**

3. Block diagram



4. General Specifications

Model Name	AW-NU103
Product Description	USB wireless module
WLAN Standard	IEEE 802.11 b/g/n, Wi-Fi compliant
Host Interface	USB
Major Chipset	Realtek RTL8191SU (MAC/Baseband/Radio)
Dimension	27.29x19.69 X 2.7 mm
Weight	3.8 g
Antenna Connector	Hirose U.FL-R-SMT 1: TX / RX 2: N/A
Operating Conditions	
Voltage	3.3V +/- 5%
Temperature	Operating: 0~80 °C Storage: -10~85 °C;
Electrical Specifications	
Frequency Range	2.4 GHz ISM Bands 2.412-2.472 GHz, 2.484 GHz
Modulation	802.11 g/n: OFDM 802.11b: CCK(11, 5.5Mbps), QPSK(2Mbps), BPSK(1Mbps)
Output Power	802.11b: 12 dBm +/-1 dBm (11Mbps) 802.11g: 12 dBm +/- 1dBm (54Mbps) 802.11n: 10 dBm +/- 1dBm (HT20 MCS7) 10 dBm +/- 1dBm (HT40 MCS7)
Receive Sensitivity	802.11b: less than -76 dBm (11Mbps) 802.11g: less than -68 dBm (54Mbps) 802.11n: less than -61 dBm at HT40 MCS7 less than -64 dBm at HT20 MCS7
Data Rates	802.11b: 11,5.5,2,1 Mbps 802.11g: 54,48,36,24,18,12,9,6 Mbps 802.11n: up to 300Mbps
Operating Range	Open Space: 300 M Indoor: 100 M (The transmission speed may vary according to the environment)
Security	◆ WEP 64-bit and 128-bit encryption ◆ WPA(Wi-Fi Protected Access) ◆ WPA2(Wi-Fi Protected Access)
Operating System Compatibility	Windows XP/Vista/win 7

Regulatory	FCC / CE / NCC , please refer regulatory list

4-1. Power Consumption @3.3V

Continue TX Power:

(11b= 12 dBm, 11g= 12dBm, 11n HT20= 10dBm HT40= 10ddBm)+/-1dBm

In Idle mode: typically 252 mA / In WLAN Disable: typically 0 mA

In 802.11B mode

MCS index	Data rate	Power Consumption	Unit
TX	1 Mbps (LP)	348	mA
TX	11Mbps (LP)	326	mA
TX	1Mbps (SP)	346	mA
TX	11Mbps (SP)	324	mA

In 802.11G mode

MCS index	Data rate	Power Consumption	Unit
TX	6 Mbps	343	mA
TX	54Mbps	302	mA

In 802.11N mode (HT20)

MCS index	Data rate	Power Consumption	Unit
1	6.5Mbps	336	mA
7	65Mbps	298	mA

In 802.11N mode (HT40)

MCS index	Data rate	Power Consumption	Unit
1	13Mbps	333	mA
7	135Mbps	293	mA

5. Electrical Characteristics

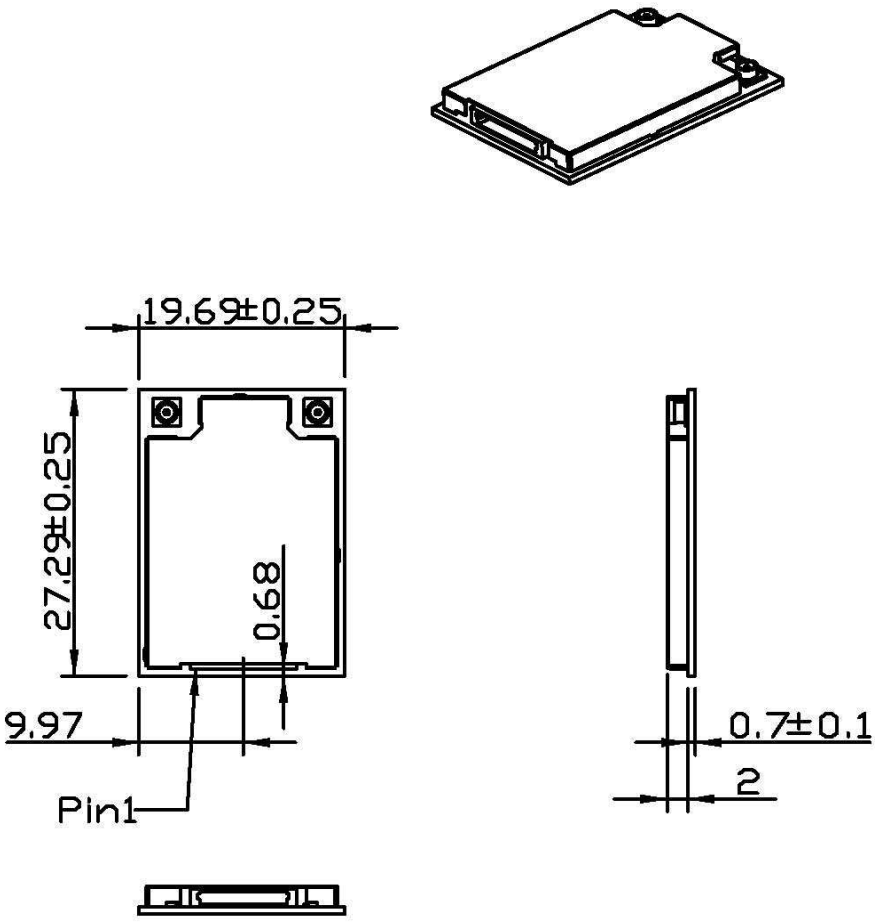
5-1. Absolute Maximum Ratings

Symbol	Parameter	Max. Rating	Unit
V_{dd33}	Maximum I/O supply voltage	3.135 to 3.465	V
RF_{in}	Maximum RF input (reference to 50 Ω)	+10	dBm
T_{store}	Storage temperature	TBD	℃

5-2. Connector Pin-out Definitions

Pin number	Name	Type	Description
1	GND	Power	Ground
2	USB_D+	I/O	USB Differential signal
3	USB_D-	I/O	USB Differential signal
4	LED	Output	LED indicator for radio activity; Low Active.
5	HW_DIS	Input	WLAN disable control – Low Active
6	+3.3V	Power	3.3V Power input
7	+3.3V	Power	3.3V Power input
8	GND	Power	Ground
9	NC		Not use
10	NC		Not use

6. Mechanical Dimensions



Tolerances unless otherwise specified : ±0.2mm

7. RF label