AW-NB037H

IEEE 802.11b/g/n Wi-Fi with Bluetooth 3.0 + HS class II Combo half Size Mini Card

<Control pin separated-Pin 5/ Pin20>

Datasheet

Version 1.3

Document Release	Date	Modification	Initials	Approved
Version 1.0	2010/5/18	1. First release	Amos	Eric Lee
Version 1.1	2010/6/7	1. Add device Label	Hannah	Ray Lee
Version 1.2	2010/7/9	1. Update device label	Hannah	Ray Lee
Version 1.3	2010/7/12	1. Update Block diagram for diversity	Amos	Antonio

1. Introduction

AzureWave Technologies, Inc. introduces the pioneer of the IEEE 802.11b/g/n WiFi with Bluetooth 3.0 + HS class II combo half size mini card module ---**AW-NB037H.** The AW-NB037H IEEE 802.11 b/g/n PCIE WIFI with Bluetooth 3.0 +HS class II combo 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. And it combines with Bluetooth 3.0+HS class II and provides a complete 2.4GHz Bluetooth system and is fully compliant to Bluetooth 3.0+HS and BT2.1 that supports EDR of 2Mbps and 3Mbps for data and audio communications. It enables a **high performance, cost effective, low power, compact solution** that easily fits onto two sides of the PCI Express and USB Combo Half Mini Card.

Compliant with the IEEE 802.11b/g/n standard, the AW-NB037H uses Direct Sequence Spread Spectrum (DSSS), Orthogonal Frequency Division Multiplexing (OFDM), BPSK, QPSK, CCK and QAM baseband modulation technologies.

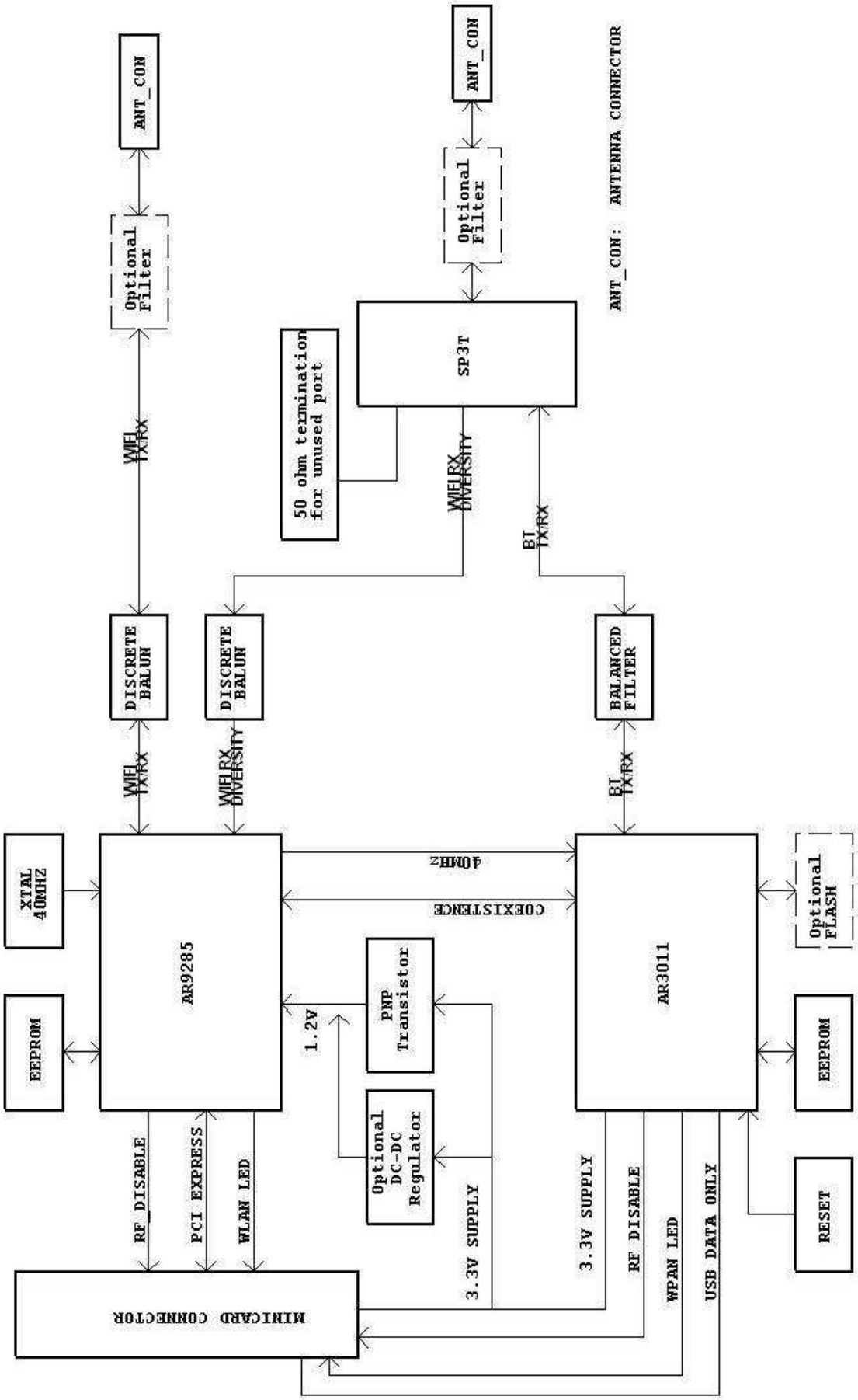
A high level of integration and full implementation of the power management functions specified in the IEEE 802.11 standard minimize system power requirements by using AW-NB037H.

AW-NB037H module adopts Atheros **AR9285 with AR3011**solution. The module design is based on the AR9285 with AR3011 solution.

2. Features

- **PCIE half size Mini-Card**
- **Compliant with IEEE802.11 b/g/n standard**
- **2 Antenna to support 1(Transmit) × 1 (Receive) technology and Bluetooth**
  Antenna 1: WiFi → TX/RX
  Antenna 2: Bluetooth → TX/RX
- **High speed wireless connection up to 150 Mbps**
- **Low power consumption and high performance**
- **Enhanced wireless security**
- **Fully qualified Bluetooth v3.0+HS system**
- **Fully speed operation with Piconet and Scatternet support**

3. Block Diagram

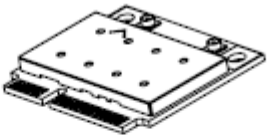


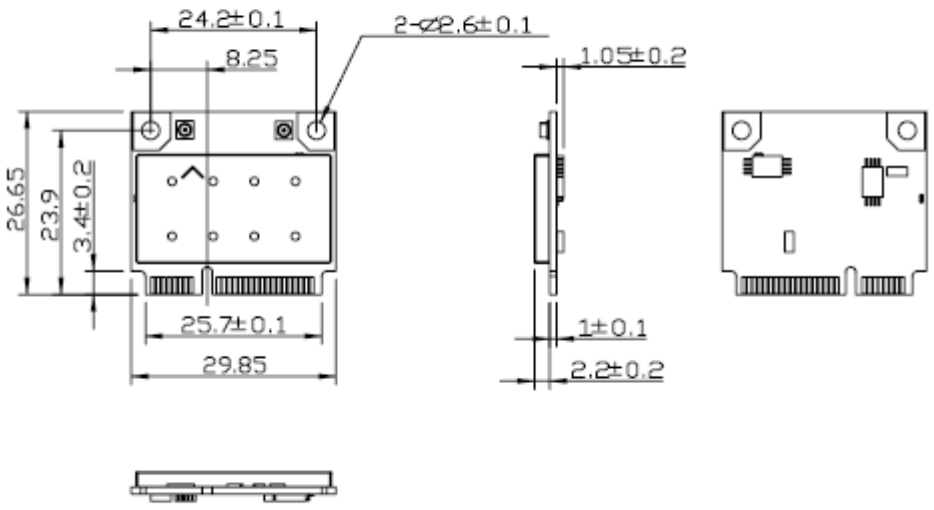
4. General Specifications

Model Name	AW-NB037H
Product Description	IEEE 802.11 b/g/n Wi-Fi with Bluetooth 3.0+HS class II Combo half size mini card
BlueTooth Standard	IEEE 802.11b/g/n, Wi-Fi compliant / Bluetooth v3.0+HS Standard
Host Interface	PCIE / USB
Major Chipset	Atheros AR9285(MAC/Baseband/RF) with AR3011
Dimension	29.85mm x 26.65mm x 4.25 mm
Weight	3.4g
Antenna	Hirose* U.FL-R-SMT 1: WiFi → TX/RX 2: Bluetooth → TX/RX
Operating Conditions	
Voltage	3.3V +/- 5%
Temperature	Operating: 0-80 °C
Storage temperature	-40 °C~ 85 °C
Electrical Specifications	
Frequency Range	Wi-Fi: 2.4 GHz ISM Bands 2.412-2.472 GHz, 2.484 GHz / BT: 2402MHz~2483MHz
Modulation	Wi-Fi: 802.11 g/n: OFDM 802.11b: CCK(11, 5.5Mbps), QPSK(2Mbps), BPSK(1Mbps) BT: Header GFSK Payload 2M: 4-DQPSK Payload 3M: 8DPSK
Output Power	Wi-Fi: 802.11b: Typical 17 dBm at all rates +/- 1.5dBm 802.11g: Typical 15 dBm at 54Mbps / 17dBm at 6Mbps +/- 1.5dBm 802.11n 2.4G HT20 : Typical 13 dBm at MCS15/17dBm at MCS0+/-1.5dBm 802.11n 2.4G HT40 : Typical 11 dBm at MCS15/16dBm at MCS0+/- 1.5dBm BT: -6 ≤ Output Power ≤ +4 dBm (Conductive)
Receive Sensitivity	802.11b: less than -78 dBm (11Mbps) 802.11g: less than -68 dBm (54Mbps) 802.11n: less than -62 dBm at HT40 MCS7 less than -65 dBm at HT20 MCS7 BT: BER < 0.1% (Anritsu 8852B Tx -70Bm)
Power consumption	Wi-Fi: Idle mode: 252.1 mA(Max.) Connect AP: 265.6 mA(Max.) BT: Idle mode: 96.1 mA(Max.) Connect AP: 92.3 mA(Max.)

	Radio off: 118.2 mA (Max)	Radio off: 61.0 mA (Max)
Operating Range	**Wi-Fi:** **Open Space: ~300m; Indoor: ~100m** **(The transmission speed may vary according to the environment)** **BT: 10m (depending on environment and NB model)**	
Regulatory	**FCC, CE…**	

5. Mechanical Dimensions





Tolerances unless otherwise specified : ±0.15mm

6. Connector Pin-out Definitions

Pin No.	Definition	Basic Description	Type
1	WAKE_L	No connect. Should be left open	
2	3.3V	3.3V power supply	VCC
3	Reserve	No connect. Should be left open	
4	GND	Ground	GND
5	Radio DISABLE_L	BT disable control (Module default pull high, Module Internal 10K Resister Pull-High)	Input
6	1.5V	The pin is defined according to PCI-E standard. Note: this module does not use power source 1.5V	VCC
7	CLKREQ_L	Reference clock request.	Output
8	NC	No connect. Should be left open.	
9	GND	Ground	GND
10	NC	No connect. Should be left open.	
11	REFCLK-	Differential reference clock	CLK
12	NC	No connect. Should be left open.	
13	REFCLK+	Differential reference clock	CLK
14	NC	No connect. Should be left open.	
15	GND	Ground	GND
16	NC	No connect. Should be left open.	
17	NC	No connect. Should be left open.	
18	GND	Ground	GND
19	NC	No connect. Should be left open.	
20	Radio DISABLE_L	WLAN disable control. (Module default pull high, Module Internal 10K Resister Pull-High)	Input
21	GND	Ground	GND
22	PERST_L	PCI express fundamental reset	Input
23	PERn0	Differential transmit	Output
24	3.3VAUX	The pin is defined according to PCI-E standard. Note: this module does not use power source 3.3V AUX.	VCC
25	PERp0	Differential transmit	Output
26	GND	Ground	GND
27	GND	Ground	GND
28	1.5V	The pin is defined according to PCI-E standard. Note: this module does not use power source 1.5V	VCC
29	GND	Ground	GND
30	NC	No connect. Should be left open.	
31	PETn0	Differential receive	Input
32	NC	No connect. Should be left open.	
33	PETp0	Differential receive	Input
34	GND	Ground	GND
35	GND	Ground	GND
36	USB_D-	USB Differential signal	Output/Input
37	GND	Ground	GND
38	USB_D+	USB Differential signal	Output/Input
39	3.3VAUX	The pin is defined according to PCI-E standard. Note: this module does not use power source 3.3V AUX.	VCC
40	GND	Ground	GND
41	3.3VAUX	The pin is defined according to PCI-E standard. Note: this module does not use power source 3.3V AUX.	VCC
42	NC	No connect. Should be left open.	
43	GND	Ground	GND
44	LED_WLAN_L	Active low signal. The signal is used to provide	Output

		status indicators via LED.	
45	NC	No connect. Should be left open.	
46	LED_BT_L	Active low signal. The signal is used to provide status indicators via LED.	Output
47	NC	No connect. Should be left open.	
48	1.5V	The pin is defined according to PCI-E standard. Note: this module does not use power source 1.5V	VCC
49	NC	No connect. Should be left open.	
50	GND	Ground	GND
51	NC	No connect. Should be left open.	
52	3.3V	3.3V power supply	VCC

7. Device Label

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