AW-NE785

IEEE 802.11b/g/n

PCIE Mini-Card Wireless Module

Datasheet

Version draft 0.9

Document release	Date	Modification	initials	Approved
Version 0.1	2008 /10 /28	Initial release	Antonio Chu	Eric Lee
Version 0.2	2008 /12 /2	Update Mechanical	Antonio Chu	Antonio Chu
Version 0.3	2008 /12 /29	Update RF power	Antonio Chu	Antonio Chu
Version 0.4	2008 /12 /31	Update RF power	Antonio Chu	Antonio Chu
Version 0.5	2009 /01/23	Remove mino words	Stephanie	Ray Lee
Version 0.6	2009/02/10	Update PID,VID, SVID, SSID, FW version	Stephanie / Antonio	Ray Lee & Eric
Version 0.7	2009/03/16	Update power consumption Update Temperature	Antonio	Antonio
Version 0.8	2009/06/02	Update packing / storage temp	Antonio	Antonio
Version 0.9	2009/06/09	Update 4-1 Section	Antonio	Antonio
Version 1.0	2009/10/20	Update RF label	Stephanie	Ray Lee

1. Introduction

AzureWave Technologies, Inc. introduces the pioneer of the IEEE 802.11b/g/n PCIE Mini-Card wireless module ---AW-NE785. The AW-NE785 PCIE Mini-Card 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 PCIE Mini-Card.

Compliant with the IEEE 802.11b/g/n standard, the AW-NE785 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-NE785.

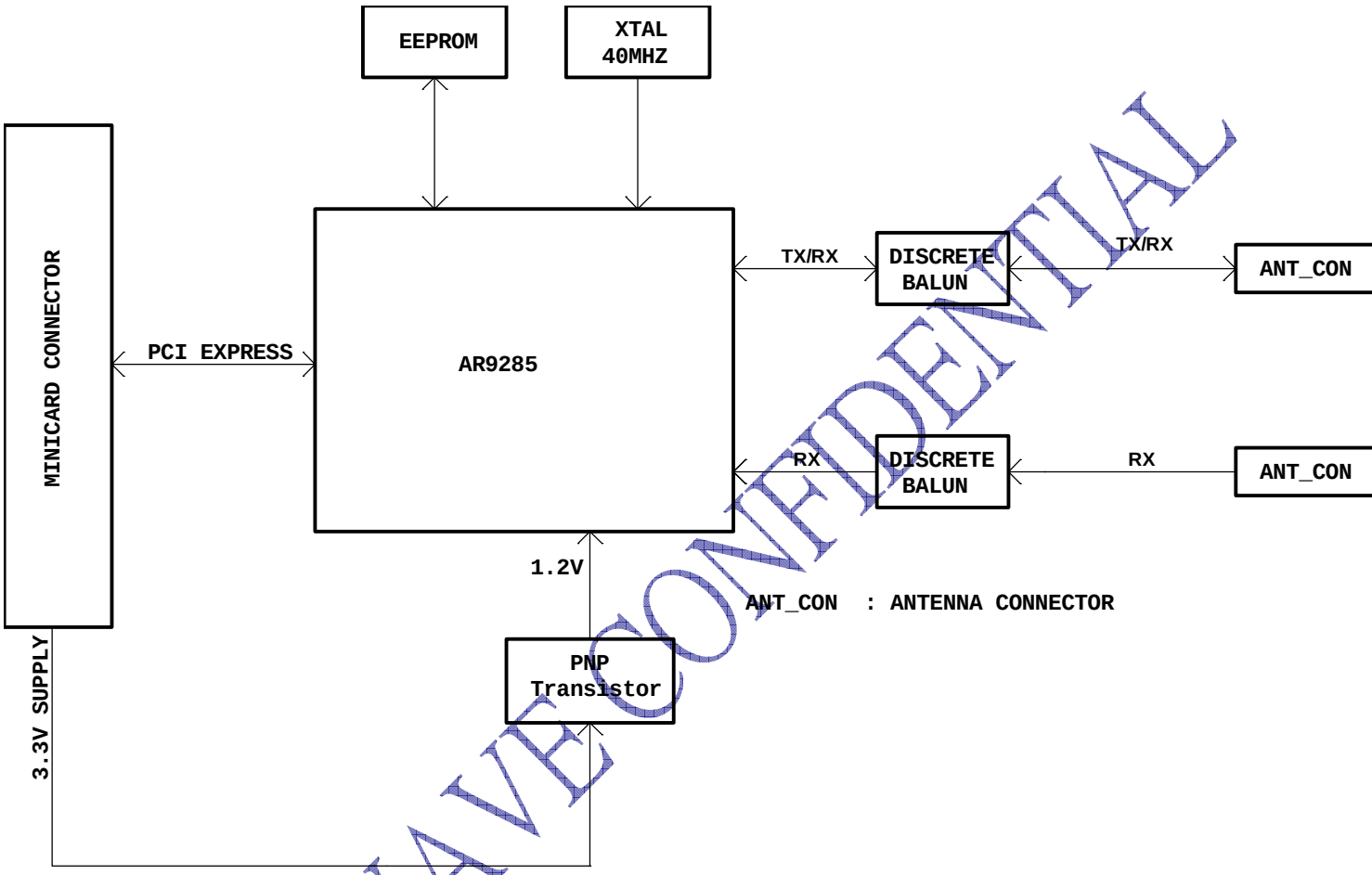
Longer Range and Faster Speed

Comparing to 802.11g technology, 802.11n draft 2.0 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 robust signal travels farther, maintaining wireless connections more farther than standard 802.11g. The data rate can up to 150Mbps data rate.

2. Features

- **PCIE Mini-Card**
- **Compliant with IEEE802.11n Draft 2.0 standard**
- **Antenna to support 1(Transmit) × 1 (Receive) technology**
- **Antenna RX diversity**
- **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-NE785
Product Description	**PCIE Mini-Card wireless module**
WLAN Standard	IEEE 802.11 b/g/n, Wi-Fi compliant
Host Interface	PCIE Mini-Card
Major Chipset	Atheros AR9285 (MAC/Baseband/RF) Single chip
PID(Product ID)-Atheros	002B
VID (Vendor ID)-Atheros	168C
SSID (Sub product ID) AZW	1089
SVID (Sub vendor ID)AZW	1A3B
Firmware (Calibration tool version)	08b10
Weight	5 g
Antenna Connector	Hirose U.FL-R-SMT 1:TX / RX 2:RX
Operating Conditions	
Voltage	3.3V+-10%
Temperature	Operating: 0-80 °C
Storage temperature	– 40 °C -- + 85 °C
Humidity Non-Operating	50 ~92% RH non-condensing (at temperatures of 25 °C to 80 °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: 17dBm +/-1.5dBm 802.11g: 16dBm +/-1.5dBm 802.11n(HT20): 15dBm +/-1.5dBm 802.11n(HT40): 12dBm +/-1.5dBm
Receive Sensitivity	802.11b: less than -80 dBm (11Mbps) 802.11g: less than -70 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 802011n: up to 150Mbps
Operating Range	Open Space: ~300M

	Indoor:~100M **(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**
Regulatory	**FCC / CE / NCC / Japan …etc** **Details refer to Regulatory documentation**

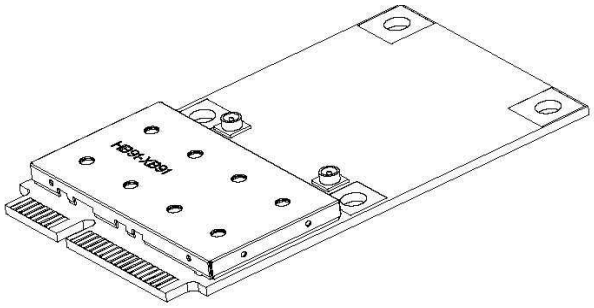
4-1. Absolute Maximum Ratings

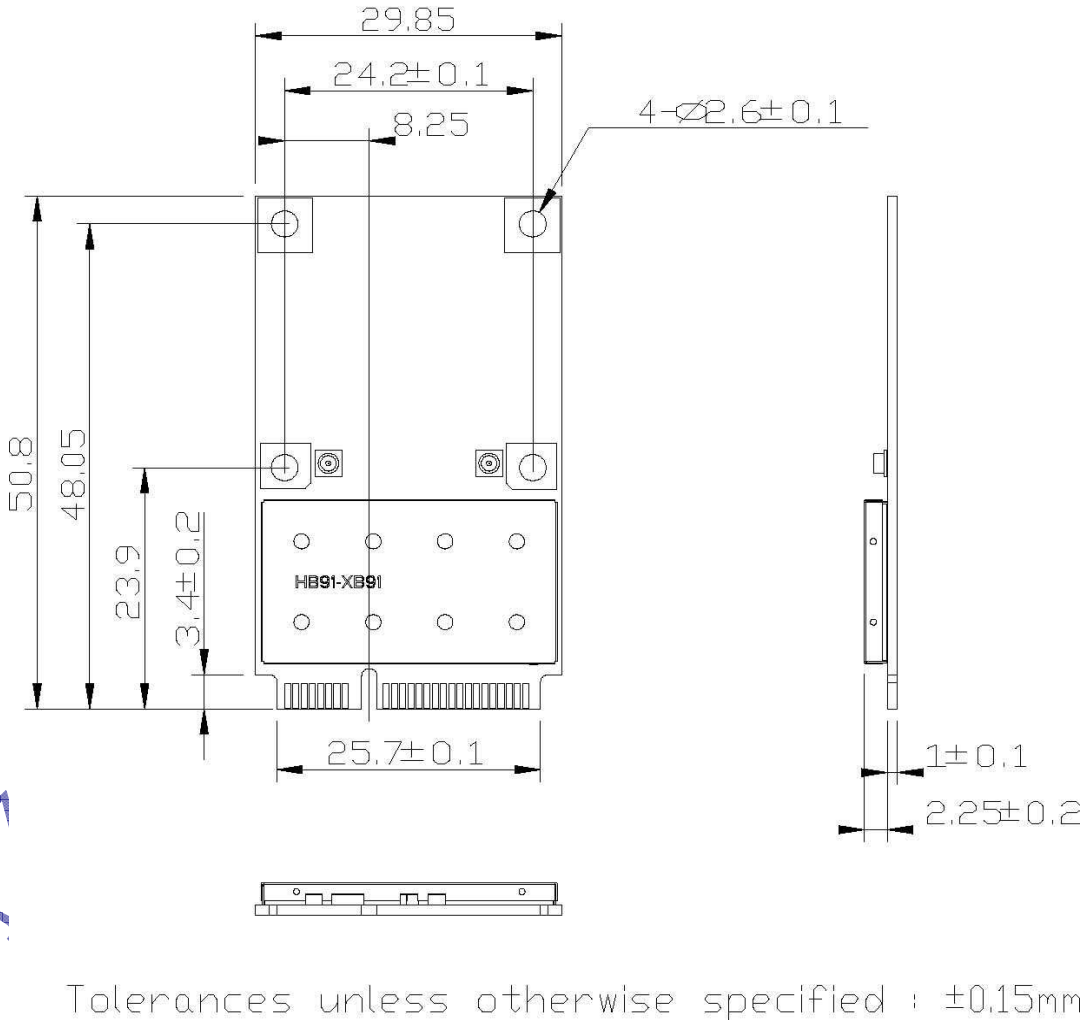
Symbol	Parameter	Max. Rating	Unit
V_{dd33}	Maximum I/O supply voltage	4	V
RF_{in}	Maximum RF input (reference to 50 Ω)	10	dBm
T_{store}	Storage temperature	-40~85	℃

4-2. Power Consumption

States	States	Current (mA)
Max TX power Consumption	Cont Tx	405
Max RX power Consumption	Cont Rx	285

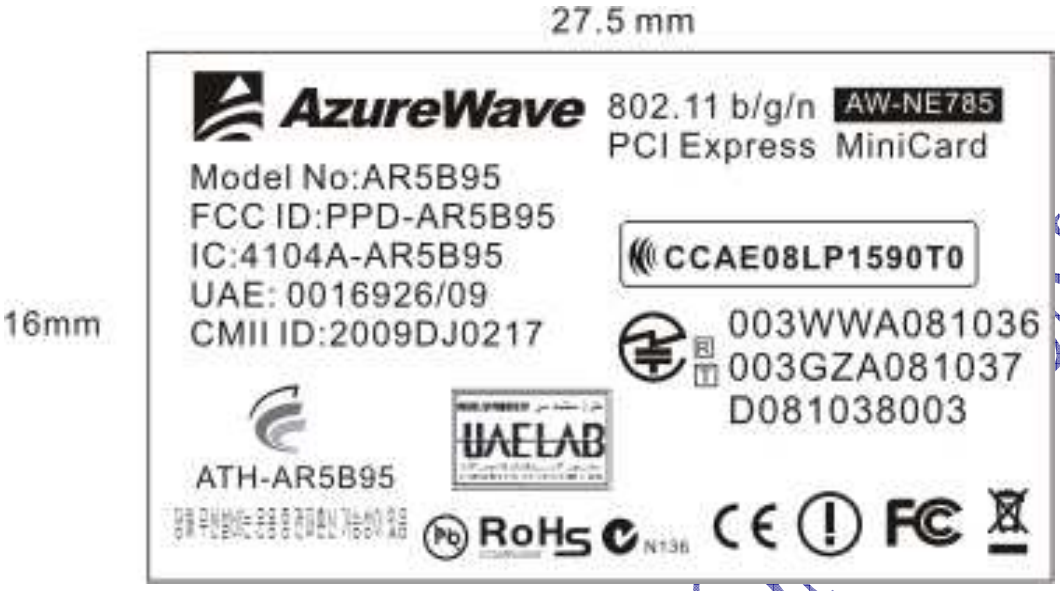
5. Mechanical Dimensions





Tolerances unless otherwise specified : ±0.15mm

5-1 RF label



6. Connector Pin-out Definitions

Pin No.	Definition	Basic Description	Type
1	NC	No connect. Should be left open.	
2	3.3v	3.3V power supply	VCC
3	NC	No connect. Should be left open	
4	GND	Ground	GND
5	NC	No connect. Should be left open	
6	NC	No connect. Should be left open.	
7	CLKREQ_L	Reference clock request.	
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	
12	NC	No connect. Should be left open.	
13	REFCLK+	Differential reference clock	
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	W_DISABLE_L	WLAN disable control.	Input
21	GND	Ground	GND
22	PERST_L	PCI express fundamental reset	Input
23	PERn0	Differential transmit	Output
24	NC	No connect. Should be left open.	
25	PERp0	Differential transmit	Output
26	GND	Ground	GND
27	GND	Ground	GND
28	NC	No connect. Should be left open.	
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	NC	No connect. Should be left open.	
37	GND	Ground	GND
38	NC	No connect. Should be left open.	
39	NC	No connect. Should be left open.	
40	GND	Ground	GND
41	NC	No connect. Should be left open.	
42	NC	No connect. Should be left open.	
43	NC	No connect. Should be left open.	
44	LED_WLAN_L	Active low signal. The signal is used to provide status indicators via LED.	Output
45	NC	No connect. Should be left open.	
46	NC	No connect. Should be left open.	
47	NC	No connect. Should be left open.	
48	NC	No connect. Should be left open.	
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

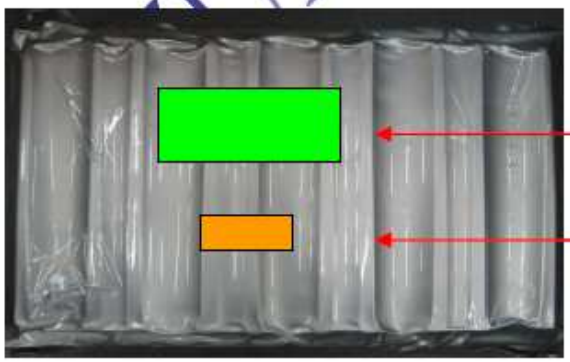
7. Packing Method

Load WLAN mini cards into tray. Single tray can hold up to 100pcs.

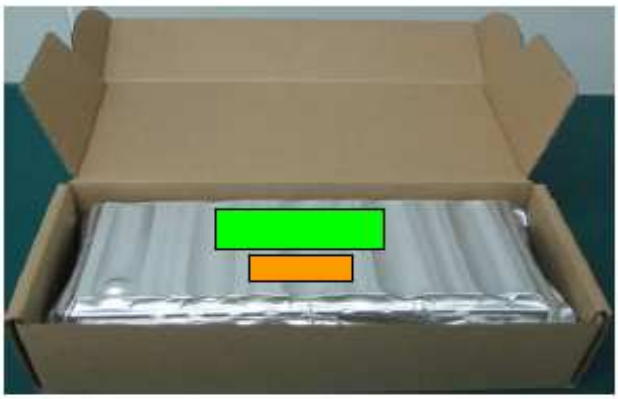
Tighten 4 layers of tray with rubber bands and insert one piece of Silicon Gel Desiccant

Place the stack of trays into moisture barrier bag.

Vacuum and seal moisture barrier bag. Attach shipping and S/N labels as instructed.



Place the vacuumed moisture barrier bag into inner box



Place two inner boxes into shipping box and seal the box as instructed.