

AW-GE780

IEEE 802.11b/g Mini PCI-Express Wireless Module

Datasheet

Version 0.6

Document Release	Date	Modification	Initials
Version 0.2	2006/12/06	1. Update OP temp.	Jesse
Version 0.2	2006/12/06	2.Update the detail power consumption	Jesse
Version 0.3	2006/12/15	1. update support OS Windows 2003 server / XP / XP 64	Stephanie
Version 0.4	2007/01/09	Update support WPA2	Stephanie
Version 0.5	2007/02/01	1. Update Humidity information 2. Support Vista 32/64	Benson /Stephanie
Version 0.6	2007/03/19	1. Update Storage temp.	Benson

1. Introduction

AzureWave Technologies, Inc. introduces the pioneer of the IEEE 802.11b/g Mini PCI Express wireless module ---**AW-GE780**. The AW-GE780 Mini PCI Express 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 PCI Express Mini Card.

Compliant with the IEEE 802.11b/g standard, the AW-GE780 uses Direct Sequence Spread Spectrum (**DSSS**), Orthogonal Frequency Division Multiplexing (**OFDM**), **DBPSK**, **DQPSK**, **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-GE780.

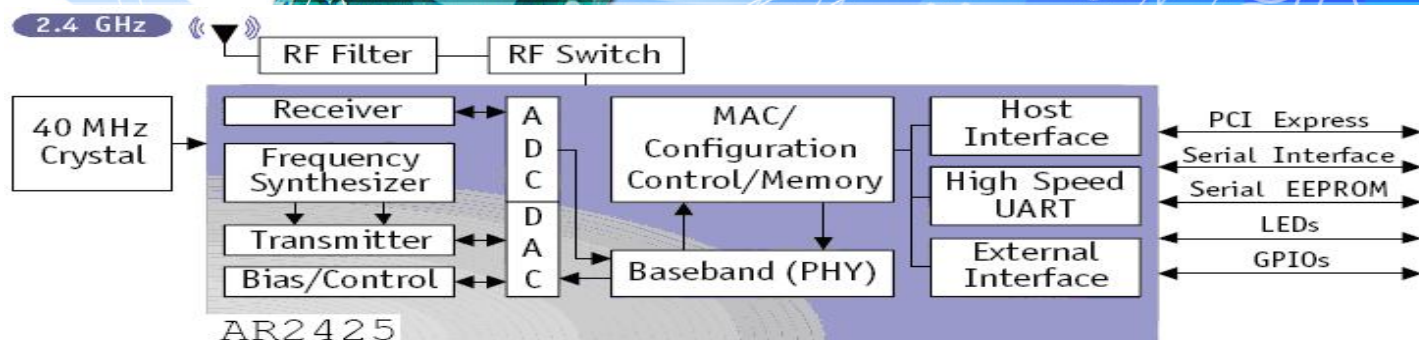
AW-GE780 module adopts Atheros **AR2425** solution. The module design is based on the AR2425 solution which is a highly integrated single chip contains **MAC/BB/Radio** to reduce the size of module. All the other components can be implemented by all means to reach the mechanical specification. AW-GE780 is the surface mounted type component. The solder joint and soldering strength provide mounting mechanism to secure the AW-GE780 module against vibration and shock on the host system.

2. Features

- ◆ **Mini PCI Express**
- ◆ **High speed wireless connection to 54Mbps**
- ◆ **Solid design with external antenna diversity**
- ◆ **Low power consumption and high performance**
- ◆ **Enhanced wireless security**



A simplified block diagram of the AW-GE780 module is depicted in the figure below.



3. General Specifications

Model Name	AW-GE780
Product Description	Mini PCI Express Wireless Module
WLAN Standard	IEEE 802.11b/g, Wi-Fi compliant
Host Interface	Mini PCI Express
Dimension	51mm X 30mm X 3.3mm (with shielding)
Weight	18 g
Operating Conditions	
Voltage	3.3V +/- 5%
Temperature	Operating: -10~70 °C; Storage: -20 ~ 80°C
Humidity	15%-95%
Electrical Specifications	
Frequency Range	2.4 GHz ISM Bands 2.412-2.472 GHz, 2.484 GHz
Modulation	802.11g: OFDM 802.11b: CCK(11, 5.5Mbps), DQPSK(2Mbps), BPSK(1Mbps)
Output Power	802.11b: typical 16 ± 1.5dBm 802.11g: typical 13 ± 1.5dBm
Antenna	Build-in inside host (U.FL-R-SMT)
Receive Sensitivity	802.11b: typical -76dBm at 11Mbps 802.11g: typical -68dBm at 54Mbps
Data Rates	802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps
Power Consumption	802.11b: TX : MAX 710mA at 3.3V , MIN 630mA at 3.3V Rx : MAX 330mA at 3.3V , MIN 310mA at 3.3V 802.11g: TX : MAX 650mA at 3.3V , MIN 620mA at 3.3V Rx : MAX 340mA at 3.3V , MIN 320mA at 3.3V
Operating Range	Open Space: ~300m; Indoor: ~100m (The transmission speed may vary according to the environment)

Security	<ul style="list-style-type: none"> ◆ WEP 64-bit and 128-bit encryption ◆ WPA (Wi-Fi Protected Access) ◆ WPA 2 (Wi-Fi Protected Access)
Operating System Compatibility	Windows 2003 server / XP / XP 64 / Vista 32/ Vista 64
Regulatory	FCC 47 CFR Part 15, Subpart E(Section 15.247), ANSI C63.4-2003 CE EN 300 328 V1.5.1 / EN 301 893 V1.2.3 / EN 60950:2001 IC RSS-210 DGT LP0002 Telec ARIB STD-T66 / RCR STD-33 CMII GB15629.1102-2003 Singapore

4. Electrical Characteristics

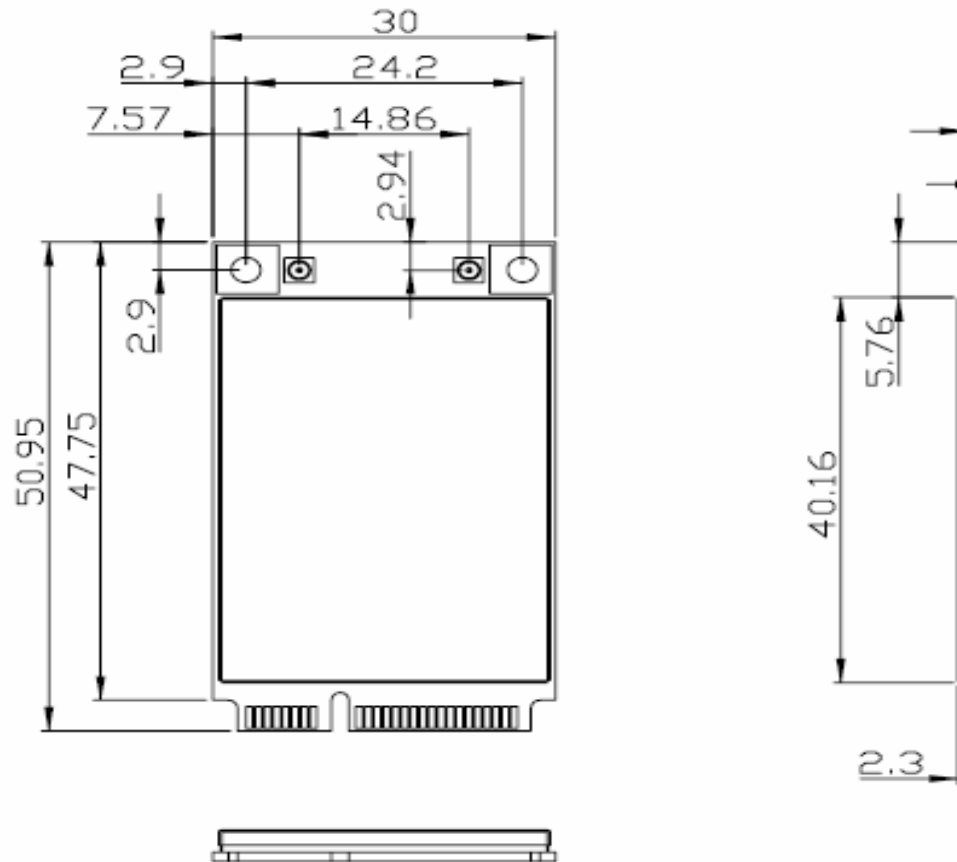
4-1. Absolute Maximum Ratings

Symbol	Parameter	Max. Rating	Unit
V_{dd33}	Maximum I/O supply voltage	-0.3 to 3.6	V
RF_{in}	Maximum RF input (reference to 50 Ω)	+10	dBm
ESD	Electronic discharge tolerance	2000	V

4-2. Recommended Operating Conditions

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{dd33}	I/O voltage	$\pm 10\%$	3.0	3.3	3.6	V
T_{case}	Case temperature (standard temperature range)	-	0	25	95	$^{\circ}\text{C}$
	Case temperature (extended temperature range)	-	-40		95	$^{\circ}\text{C}$
T_j	Junction temperature	-	0	50	110	$^{\circ}\text{C}$

5. Mechanical Dimensions



Dimension Tolerances : $\pm 0.1\text{mm}$

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6. Pin Assignment

Pin No.	Definition	Basic Description	Type
1	WAKE_L	WLAN wake low active.	
2	3.3v	3.3V power supply	
3	BT_ACTIVE	Indicates medium busy from an external source. This pin can be asserted by a Bluetooth device, for example, to prevent the mini card from transmitting a new frame.	Input
4	GND	Ground	
5	RX_CLEAR	Indicates medium clear to an external device. The external (e.g., Bluetooth) should transmit only when RX_CLEAR is asserted.	Output
6	NC	No connect. Should be left open.	
7	CLKREQ_L	Reference clock request.	Output
8	NC	No connect. Should be left open.	
9	GND	Ground	
10	NC	No connect. Should be left open.	
11	REFCLK-	Differential reference clock	Input
12	NC	No connect. Should be left open.	
13	REFCLK+	Differential reference clock	Input
14	NC	No connect. Should be left open.	
15	GND	Ground	
16	NC	No connect. Should be left open.	
17	NC	No connect. Should be left open.	
18	GND	Ground	
19	NC	No connect. Should be left open.	
20	W_Disable_L	WLAN disable low active.	
21	GND	Ground	
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	
27	GND	Ground	
28	NC	No connect. Should be left open.	
29	GND	Ground	
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	
35	GND	Ground	
36	NC	No connect. Should be left open.	
37	NC	No connect. Should be left open.	
38	NC	No connect. Should be left open.	
39	NC	No connect. Should be left open.	
40	GND	Ground	
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	
51	NC	No connect. Should be left open.	
52	3.3v	3.3V power supply	