# **WiFi Network card**

**Quick Installiaton Guide** 

Version 1.0

# WPER-116GN

#### PRODUCT SPECIFICATION

Model Name	WPER-116GN					
Bus Interface	PCI Express					
Form Factor	Mini PCIe					
Frequency Band	2.4GHz~2.484GHz					
Chipset Solution	Ralink RT3090	Ralink RT3090				
RF Chain	1 Transmitter and 1 Receiver					
Antenna Port	1 Main: TX0 ; RX0					
Dimension	30.00mm x 26.80mm x 3.3mm (+/- 0.15 mm)					
	802.11b mode	US : Ch 1 ~ Ch 11 EU : Ch 1 ~ Ch 13 Japan : Ch 1 ~ Ch 14				
Channel Number	802.11g mode	US : Ch 1 ~ Ch 11 EU : Ch 1 ~ Ch 13 Japan : Ch 1 ~ Ch 13				
	EWC 20MHz Bandwidth	US : Ch 1 ~ Ch 11 EU : Ch 1 ~ Ch 13 Japan : Ch 1 ~ Ch 13				
	EWC 40MHz Bandwidth	US : Ch 3 ~ Ch 9 EU : Ch 3 ~ Ch 11				
	11b mode	1, 2, 5.5, 11Mbps				
Data Rate	11g mode	6, 9, 12, 18, 24, 36, 48,54Mbps				
	EWC mode	Refer Table1.1				
	11b mode	DSSS(PSK/CCK, DBPSK, DQPSK)				
Modulation	11g mode	OFDM(BPSK, QPSK, 16-QAM, 64QAM)				
	EWC mode	OFDM(BPSK, QPSK, 16-QAM, 64QAM)				
	11b mode	17 dBm ±1.5 dBm				
PE output power	11g mode	14 dBm ±1.5 dBm				
	EWC 20MHz	14 dBm ±1.5 dBm				
	EWC 40MHz	14 dBm ±1.5 dBm				
	11b mode	-85dBm@1Mbps, ±2dB				
Receive Sensitivity	11g mode	-65dBm@54Mbps, ±2dB				
Acceive Sensitivity	EWC 20MHz	-65dBm@MCS7, ±2dB				
	EWC 40MHz	-60dBm@MCS7, ±2dB				
Power requirements	DC3.3V ± 10%					
Power consumption	Continue TX : Max 450mA Continue RX : Max 300mA Idle mode : Max 150mA					
Security	WEP / WPA / WPA2					
Cisco CCX	CCX5 Compliance					
Software support	Windows XP/Vista/Win7	//Linux/WinCE driver				
Operating Range	The transmission speed	varies in the surrounding environment.				
Temperature	0 ~ 55°C (Operating), -20~85°C (Storing)					

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April 2012

### 1. Package Contents

Before you starting to use this WiFi network card, please check if there's anything missing in the package, and contact your dealer of purchase to claim for missing items:

### Package Contents

Please make sure you have the following in the box:

- WiFi network card
- CDROM

Note: if anything is missing, please contact your vendor

### 2. WiFi Network Card Installation

- 1. Put wifi module onto the expansion Adapter of the platform.
- 2. If he following message appear on your computer, click 'Cancel'.

Found New Hardware Wiz	ard					
	Welcome to the Found New Hardware Wizard					
	This wizard helps you install software for:					
	802.11 n WLAN					
	If your hardware came with an installation CD or floppy disk, insert it now.					
	Install the software automatically [Recommended]					
	Install from a list or specific location (Advanced)					
	Click Next to continue.					
	< <u>₿</u> ack <u>N</u> ext > Cancel					

3. Insert the Driver CD then wait for the Autorun prompt.

- 4. If Autorun does not work, please browse the CD content and double click the "Setup.exe".
- 5. Click "Next" and then follow the instructions on the screen to continue the installation.

Ratifik wireless Laiv - Insta	
License Agreement Please read the following licen	se agreement carefully.
	RALINK Wireless Utility for Windows 2000/XP/Vista/Win7 Copyright (C) RALINK TECHNOLOGY, CORP. All Rights Reserved.
	Thank you for purchasing RALINK Wireless product!
	SUFTWARE PRODUCT LICENSE The SOFTWARE PRODUCT is protected by copyright laws and international copyright treaties, as well as other intellectual property laws and treaties. The SOFTWARE PRODUCT is licensed, not sold.
Ralink	<ol> <li>GRANT OF LICENSE. This End-User License Agreement grants you the following rights:Installation and Use. You may install and use an unlimited number of copies of the SOFTWARE PRODUCT.</li> </ol>
	Reproduction and Distribution. You may reproduce and distribute an unlimited number of copies of the SOFTWARE PRODUCT; provided that each copy shall be a true and complete copy, including all copyright and trademark notices, and shall be accompanied by a copy of this EULA. Copies of the SOFTWARE PRODUCT may be distributed as a standalone product or included with your own product.
	○ I accept the terms of the license agreement
	I do not accept the terms of the license agreement
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Ralink Wireless LAN - Instal	IShield Wizard	×
Setup Type		
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	Select Configuration Tool.	
	Ralink Configuration Tool	
	Microsoft Zero Configuration Tool	
Ralink		
InstallShield	< Back Next > Cancel	
Ralink Wireless LAN - Instal	IShield Wizard	×
Ready to Install the Program The wizard is ready to begin in:	n stallation.	
	Click Install to begin the installation.	
	If you want to review or change any of your installation settings, click Back. Click Cancel to exit th wizard.	ne
Ralink		
		_
InstallShield	< Back [Install] Cancel	

6. When you see this message, please click "Finish" to complete the driver installation process.

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InstallShield	< Back Finish Cancel

#### **3. Connect to Wireless Access Point**

**1.** After installation is complete, a small Ralink icon appears in the notifications area of the taskbar. You can double click it to maximize the RaUI dialog box.



2. When starting RaUI, the system will connect to the AP with best signal strength without setting a profile or matching a profile setting. When starting RaUI, it will issue a scan command to a WiFi network card. After two seconds, the AP list will be updated with the results of a BSS list scan. The AP list includes most used fields, such as SSID, network type, channel used, wireless mode, security status and the signal percentage. The arrow icon indicates the connected BSS or IBSS network. The dialog box is shown below.



You could click the two buttons which red arrow pointed to open the "Site Survey" and "Link Information" page to show detail information.

Ralink	Site Survey
SSID         AP1           Rate         13.5 Mbps         > IP Address         192.168.2.101           Channel         7 (2442 MHz)         > Mask         255.255.255.0	Cheetah     b     6     9     1     65%       1STAP     b     6     9     1     4     60%       f-roaming2     b     6     9     1     4     60%       SoftAP-br     b     6     9     1     7     50%       160     b     9     1     7     50%       SMS-192     b     6     5     9     1     60%
Link Information X	✓         AP1         Image: bold state         7         Image: bold state         100%           Ralink-Meeting-2591         Image: bold state         7         Image: bold state         10         Image: bold state         44%           Accusys_LEO         Image: bold state         10         Image: bold state         10         Image: bold state         20%           VWIFI-S1         Image: bold state         Image: bold state         11         Image: bold state         70%
Extra Info Link is Up [Tx Power:100%] Authentication WPA2-PSK Encryption AES Network Type Infrastructure Central Channel 5	VWIPI-51     11     9     70%       SoftAP-98     11     9     1     81%       FTC-02     11     9     10%       AMBITBB-A     11     9     0%       kkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkk
	SSID SoftAP-51 Authentication Open MAC Address 00-0C-43-21-65-51 Encryption NONE

**3.** You could follow the steps to connect to the AP which you want to connect (Example to Configure Connection with WPA2-PSK).

		Site Sur	vey		×
Cheetah	Ŷ	6	D 9 D	55%	^
RT305x_AP_BFu	ø	6	590	86%	
ExRegNW3135DB	Ŷ	6	🛛 🔁 🗊 🗘	99%	
WXX	Ŷ	6	590 🔋	44%	
RT61AP_Z	ø	6	69	29%	
baldwin	ø	6	9 🛈 🌹	29%	
AP1	Ø	7	8900	100%	
1STAP	Ŷ	6	🕒 🔁 🛈 📢	39%	
NAP2-WEP-197	Ŋ	8	690 🕈	20%	
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RT2860AP1	Ŵ	11	🕒 🖻 🗍 🗍	24%	~
AP Information	•				
SSID AP1		Aul	thentication WPA-P	SK 🤇 📢	N
MAC Address 00-0E-2E	-E1-98-	2D End	ryption TKIP+	AES	1

a. Select the AP and click "Connect" icon 1

b. Authentication/Encryption function appears.

Ralink		Site Survey	×
SSID Rate Channel	RT2860AP1 1.0 Mbps IP Address 192.168.0.195 11 (2462 MHz) Mask 255.255.255.0	001601D314B4_G       10       5       10       9       10       7       86%         Stitch       10       6       10       9       10       7       86%         Baron_Test       10       6       10       9       10       86%         Cheetah       10       6       10       9       10       55%         RT305x_AP_BFu       10       6       10       9       10       86%         ExRegNW3135DB       10       6       10       9       10       41       99%	
<b>1</b> + +	Profile ×	wxx     b     6     9     1     7     44%       RT61AP_Z     b     6     9     7     29%       baldwin     b     6     9     1     7       AP1     b     7     9     1     10%	
Authentication	WPA2-PSK	1STAP     1     6     9     1     39%       NAP2-WEP-197     1<	~
		AP Information SSID AP1 Authentication WPA-PSK MAC Address 00-0E-2E-E1-98-2D Encryption TKIP+AES	Ŋ

c. Select WPA2-PSK as the Authentication Type. Select TKIP or AES encryption. Enter the WPA Pre-Shared Key.

	Site Survey	×
		_
(( <b>a</b> ))	001601D314B4_G 校 5 🕒 9 🦿 50%	^
SSID RT2860AP1	Stitch 🦻 6 🧕 🔮 🦉 🖓 86%	
Rate 1.0 Mbps > IP Address 192.168.0.195	Baron_Test 🙋 6 🔰 🔮 🕦 86%	
	Cheetah 🤌 6 🧕 🖳 55%	
Channel 11 (2462 MHz) Mask 255.255.0.0	RT305x_AP_BFu 🤌 6 🧕 🖳 86%	
	📕 ExRegNW3135DB 🤌 6 🌗 9 🕦 🐓 99%	
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	📗 baldwin 🤌 6 🛛 🦞 🚺 🦞 29%	
	AP1 🤌 7 📴 9 🕦 💔 100%	
WPA Preshared Key ******	1STAP 🤌 6 🚺 9 🕦 💔 39%	
	NAP2-WEP-197 🤣 8 🚺 9 🕦 🌹 20%	
	test_ssid 🤣 11 🚺 9 🕦 55%	
	VWIFI-51 🤣 11 🖪 🌖 🌹 76%	
	VWIFI-51 🤣 11 🖪 🗓 🍞 39%	~
	AP Information	
	SSID AP1 Authentication WPA-PSK ((	20
	MAC Address 00-0E-2E-E1-98-2D Encryption TKIP+AES	

d. Click "OK". Be careful, if the WPA Pre-Shared Key entered is not correct, you won't be able to exchange any data frames, even though the AP can be connected.

2	00000		6	d (=)		Site Sur	vey			×
7 Ralink		×	1	<b>9</b>						
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Authentication	WPA2-P5K			test_ssid	Ŷ	11	- 🕒 <mark>9</mark>	0	55%	
Encryption	AES			VWIFI-S1	Ŷ	11	- 🕒 😏	8	76%	
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Central Channel	5			SSID AP1		Au	thenticatio	n WPA-P	SK 🛛 🔇	((()))
				MAC Address 00-0E-2E	-E1-98-	-2D End	cryption	TKIP+/	AES	

4. At last, if you want to know more using method of RaUI, you could refer to the help file by click the question mark at the top right corner of RaUI to open it.

2	Ralink			)() ? ×
<b>"</b> ]"	> SSID	AP1		
	👂 Rate	13.5 Mbps	> IP Address	192.168.2.101
all	👂 Channel	7 (2442 MHz)	> Mask	255.255.255.0

💕 HTML Help	
🖅 🗇 🎒 🕅 - Hide Back Print <u>O</u> ptions	
Section 1 : Windows Wireless Utility         Section 2 : Ralink Wireless Utility (RaUI)         Section 2 : Reve         Section 3 : Security         Section 5 : FAQ	Start RaUI When starting RaUI, the system will connect to the AP with best signal strength without setting a profile or matching a profile setting. When starting RaUI, it will issue a scan command to a wireless NIC. After two seconds, the AP list will be updated with the results of a BSS list scan. The AP list includes most used fields, such as SSID, network type, channel used, wireless mode, security status and the signal percentage. The arrow icon indicates the connected BSS or IBSS network. The dialog box is shown in Figure 2-1.
	Ralink       Image: Constraint of the second state of the second s

### **Federal Communication Commission Interference Statement**

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 technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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 device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

#### **IMPORTANT NOTE:**

#### FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

#### IMPORTANT NOTE:

This module is intended for OEM integrator. The OEM integrator is still responsible for the FCC compliance

requirement of the end product, which integrates this module.

20cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the FCC radiation exposure limits set forth for an population/uncontrolled environment can be satisfied.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

#### **USERS MANUAL OF THE END PRODUCT:**

In the users manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment. If the size of the end product is smaller than 8x10cm, then additional FCC part 15.19 statement is required to be available in the users manual: This device complies with Part 15 of 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. LABEL OF THE END PRODUCT:

The final end product must be labeled in a visible area with the following " Contains TX FCC ID: E2K-WPER-116GN". If the size of the end product is larger than 8x10cm, then the following FCC part 15.19 statement has to also be available on the label: This device complies with Part 15 of 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

RF Antenna Assembly		
Specification		
. Electrical Properties :		
1.1 Frequency Range		
1.2 Impedance	50ΩNominal	
1.3 VSWR		
1.4 Return Loss	-10 dB Max.	
1.5 Radiation	Omni-directional	
1.6 Gain(peak)	2dBi	
1.7 Polarization	Linear, Vertical	
1.8 Admitted Power		
1.9 Cable		
1.10 Connector	SMA Plug Reverse	
Physical Properties :		
2.1 Antenna Body	TPE	
2.2 Antenna Base	PC	
2.3 Antenna Base	PBT	
2.4 Operating Temp	<mark>-10°C ~ +60°C</mark>	
2.5 Storage Temp	10°C ~ +70°C	
2.6 Color	Black	