

PCI Express Wireless Local Area Network (WLAN) 802.11 a/b/g/n Card

**Goldcrest**

# **User's Guide**

**11a/b/g/n mini PCI Express module**

**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 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.

**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.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Operations in the 5.15-5.25GHz band are restricted to indoor usage only IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

## **Industry Canada**

This device complies with RSS-210 of the Industry Canada Rules.

Operation is subject to the following two conditions:

- 1) this device may not cause interference and
- 2) this device must accept any interference, including interference that may cause undesired operation of the device

Caution:

The device for the band 5150-5250 MHz is only for indoor usage to reduce potential for harmful interference to co-channel mobile satellite systems.

## **IMPORTANT NOTE:**

### **IC Radiation Exposure Statement:**

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

High power radars are allocated as primary users (meaning they have priority) of 5250-5350 MHz and 5650-5850 MHz and these radars could cause interference and/or damage to LE-LAN devices.

**Note: The Goldcrest has disable the 5600-5650M band by S/W to avoid 5600-5650M band for IC certification.**

**This device is intended only for OEM integrators under the following conditions:**

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna,
- 3) For all products market in US, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.

As long as 3 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed **(for example, PC peripheral requirements... etc.)**.

**IMPORTANT NOTE:** In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC/IC authorization is no longer considered valid and the FCC/IC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC/IC authorization.

### **End Product Labeling**

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: **“Contains FCC ID: MXF-P970813N or IC: 3069B-WPEA113N”**.

### **Manual Information To the End User**

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user’ s manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as show in this manual.

**Goldcrest with PIFA antenna and max. antenna gain is 1.65dBi in 2.4G and 4.33dBi in 5G.**

## Europe – EU Declaration of Conformity

This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the R&TTE Directive 1999/5/EC:

- **EN60950-1:2006**  
Safety of Information Technology Equipment
- **EN50371 : (2002-03)**
- Generic standard to demonstrate the compliance of low power electronic and electrical apparatus with the basic restrictions related to human exposure to electromagnetic fields (10 MHz - 300 GHz) -- General public
- **EN 300 328 V1.7.1: (2006-10)**
- Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband Transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using spread spectrum modulation techniques; Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive
- **EN 301 489-1 V1.6.1: (2005-09)**  
Electromagnetic compatibility and Radio Spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio

equipment and services; Part 1: Common technical requirements

- **EN 301 489-17 V1.2.1 (2002-08)**
- Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for 2,4 GHz wideband transmission systems and 5 GHz high performance RLAN equipment

This device is a 2.4 GHz wideband transmission system (transceiver), intended for use in all EU member states and EFTA countries, except in France and Italy where restrictive use applies.


In Italy the end-user should apply for a license at the national spectrum authorities in order to obtain authorization to use the device for setting up outdoor radio links and/or for supplying public access to telecommunications and/or network services.





This device may not be used for setting up outdoor radio links in France and in some areas the RF output power may be limited to 10 mW EIRP in the frequency range of 2454 – 2483.5 MHz. For detailed information the end-user should contact the national spectrum authority in France.

# CE 0560

cs Česky [Czech]	[ <i>Jméno výrobce</i> ] tímto prohlašuje, že tento [ <i>typ zařízení</i> ] je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
da Dansk [Danish]	Undertegnede [ <i>fabrikantens navn</i> ] erklærer herved, at følgende udstyr [ <i>udstyrets typebetegnelse</i> ] overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
de Deutsch [German]	Hiermit erkläre [ <i>Name des Herstellers</i> ], dass sich das Gerät [ <i>Gerätetyp</i> ] in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
et Eesti [Estonian]	Käesolevaga kinnitab [ <i>tootja nimi = name of manufacturer</i> ] seadme [ <i>seadme tüüp = type of equipment</i> ] vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist

	tulenevatele teistele asjakohastele sätetele.
en English	Hereby, [ <i>name of manufacturer</i> ], declares that this [ <i>type of equipment</i> ] is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
es Español [Spanish]	Por medio de la presente [ <i>nombre del fabricante</i> ] declara que el [ <i>clase de equipo</i> ] cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
el Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ [ <i>name of manufacturer</i> ] ΔΗΛΩΝΕΙ ΟΤΙ [ <i>type of equipment</i> ] ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
fr Français [French]	Par la présente [ <i>nom du fabricant</i> ] déclare que l'appareil [ <i>type d'appareil</i> ] est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
it Italiano [Italian]	Con la presente [ <i>nome del costruttore</i> ]

	dichiara che questo <i>[tipo di apparecchio]</i> è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo <i>[name of manufacturer / izgatavotāja nosaukums]</i> deklarē, ka <i>[type of equipment / iekārtas tips]</i> atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių [Lithuanian]	Šiuo <i>[manufacturer name]</i> deklaruoja, kad šis <i>[equipment type]</i> atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
 Nederlands [Dutch]	Hierbij verklaart <i>[naam van de fabrikant]</i> dat het toestel <i>[type van toestel]</i> in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
 Malti [Maltese]	Hawnhekk, <i>[isem tal-manifattur]</i> , jiddikjara li dan <i>[il-mudel tal-prodott]</i> jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Direttiva

	1999/5/EC.
 Magyar [Hungarian]	Alulírott, <i>[gyártó neve]</i> nyilatkozom, hogy a <i>[... típus]</i> megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.
 Polski [Polish]	Niniejszym <i>[nazwa producenta]</i> oświadczam, że <i>[nazwa wyrobu]</i> jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
 Português [Portuguese]	<i>[Nome do fabricante]</i> declara que este <i>[tipo de equipamento]</i> está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
 Slovensko [Slovenian]	<i>[Ime proizvajalca]</i> izjavlja, da je ta <i>[tip opreme]</i> v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
Slovensky [Slovak]	<i>[Meno výrobcu]</i> týmto vyhlasuje, že <i>[typ zariadenia]</i> spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice

	1999/5/ES.
<span>fi</span> Suomi [Finnish]	<i>[Valmistaja = manufacturer]</i> vakuuttaa täten että <i>[type of equipment = laitteen tyyppimerkintä]</i> tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
<span>sv</span> Svenska [Swedish]	Härmed intygar <i>[företag]</i> att denna <i>[utrustningstyp]</i> står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.



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## **Introduction**

While Orthogonal Frequency Division Multiplexing (OFDM) is adopted by 802.11a/b/g/n for the high-speed transfer rate in a 2.4GHz and 5GHz range. Gemtek's WPEA-113N fully utilizes the benefits of 802.11a/b/g/n standard on the proven compatibility between two transfer modes and the high speed bit transfer that is desirable for multimedia application in Wireless environment.

The internal Wireless LAN module allows your system (for example, your notebook) to connect wirelessly to other 802.11-enabled systems, devices, or network.

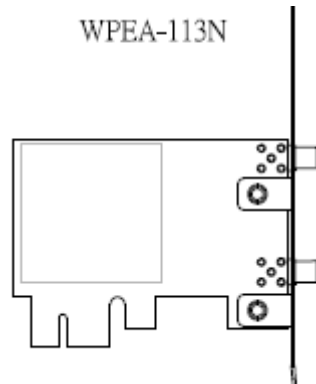
### **Features**

The WPEA-113N has the following features:

- Wireless LAN Data rates of 1Mbps to 54Mbps for 802.11g, 1Mbps to 11Mbps for 802.11b, and 1 Mbps to 100 Mbps for 802.11n.
- Wireless security using WPA with TKIP encryption, 802.1X with EAP-type Authentication

## Hardware Installation

Please follow the instruction to install your 11a/b/g/n mini PCI module on your system (for example, your notebook):



Your computer comes with a unique Mini PCI Card socket, which allows the computer to add wireless LAN (IEEE802.11g).

**Step 1** Insert the mini-PCI at an angle of approximately 45 degrees into the empty Mini-PCI interface socket.

**Step 2** Press it firmly so that the contact edge is driven into the receiving socket.

**Step 3** Connect the internal antenna.

**Step 4** Connect the External antenna.

Congratulations! You have just completed the Wireless LAN hardware installation. When you boot up the computer, you should expect to see the wireless LAN connection capacity.

**IMPORTANT NOTE:** To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

## Software Installation

Go to [Start > Settings > Control Panel > System > Hardware > Device Manager]. Double-click on Network Adapters and check if 11A/G mini PCI module appears as one of the adapters. If it does not exist, Windows has not detected it or the device driver has not been installed properly. If there is a yellow mark or red-cross on the network adapter, it may be a device or resource conflict. Replace or update the device driver or consult Windows.

## **Trouble Shooting**

If the wireless LAN card does not function:

1. Make sure you have properly installed the driver for the card.
2. Consult the card's manual or contact the vendor for installation information.

## **Software Configuration**

If the driver is successfully installed, you can use your Windows XP Wireless Zero Configuration (WZC) utility or the utility tool your vendor provided to manage your wireless adapter.

To enable the wireless connection:

**Step 1** Click the icon to open the Windows XP configuration utility window.

**Step 2** The Wireless Network Properties window displays. Your computer automatically connects to the network displayed at the top of the Preferred networks list.

**Step 3** In the Available networks list, highlight the network you want to connect and click Configure.

**Step 4** A Wireless Network Properties window will appear.

**Step 5** Enter the Network name (SSID) of no more than 32 alphanumeric characters. This SSID is a network name that identifies the wireless devices in the network. All workstations and access points must use the same SSID to be able to communicate with one another. The SSID is a 32-character field, and the value is case sensitive.

**Step 6** If the network requires Network Authentication, select the type of authentication required. WPA might require further Authentication options found on the Authentication tab. Match the setting used by the network.


**Step 7** Enter information for the new wireless network based on the descriptions in the following:

### **Security: Authentication and Encryption**


#### **Network Authentication**

Select if your access point requires authentication. Match the authentication used by the network.

- Open: No authentication is used. Shared The Pre-Shared Key (PSK) authentication method is used.

 In enterprises, WPA will be used in conjunction with both wireless router and authentication server. In Small Office/ Home Office (SOHO) environment, where there are no authentication servers, user can use pre-shared key (PSK) mode in place of the authentication server.

- WPA: Wi-Fi® Protected Access (WPA) authentication (802.1X) is used with an EAP type.

 WPA consists of three main elements: an Authentication Server (typically a RADIUS server), WPA-enabled router or AP (called "Authenticator"), and a WPA-enabled client (called "Supplicant").


- WPA-PSK: WPA authentication (802.1X) is used with a Pre-Shared Key, which enables you to enter a static Network key.

### Data Encryption

Select the type of security encryption algorithm used. The available types of encryption are based on the type of the

authentication selected.

- Disabled: No encryption.
- WEP: Deselect Network Key is provided for me automatically and enter the Key provided by the network. Available only with Open and Shared Authentication.
- TKIP: Available with WPA and WPA-PSK Authentication.

 TKIP (Temporal Key Integrity Protocol) includes four algorithms: MIC (message integrity check), to protect packets from tampering; PPK (Per-Packet Key) hashing, to prevent weak key attacks; extended IV (initialization vector), to reduce IV reuse and the possibility that a hacker will collect sufficient packets to crack the encryption; and a re-keying mechanism, to change the temporal key dynamically. TKIP is the most commonly used encryption method; however, if your wireless clients do not support TKIP, the WX-5803 also supports AES (Advanced Encryption Security) encryption. AES will replace 802.11's RC4-based encryption under 802.11i specification.

### Network key

Enter the security key for data encryption, when WEP or WPA-PSK is selected. This can be entered in ASCII or

hexadecimal for WEP and in ASCII for WPA-PSK.

### Key index

There are four Keys (1, 2, 3, 4) that can be selected for WEP. The key index selected here must match the network key index.

### The key is provided for me automatically

Select if the key is automatically provided. Most often, the key is not automatically provided, so you have to un-check this box and enter the network key. If using a RADIUS server, the key is automatically provided.

### This is a computer-to-computer (ad hoc) network

Select if the network you are creating or accessing is a computer-to-computer (ad hoc) network. If you are attempting to connect to an infrastructure network, then do not select this setting.

**Note: To comply with FCC rule, Ad-hoc mode in DFS bands for US models has been removed.**

Step 8 After entering the information for this network, click OK. The Wireless Network window is displayed and the new network is listed in the Preferred networks area.

Step 9 Your computer is connected to the selected network when you see a blue bubble on top of the icon for that network. If the blue bubble does not appear, click *Refresh*. If it still does not appear, double-check that the wireless settings match the configuration of the wireless network.

Step 10 Click OK to save your changes.

Congratulation!

You have successfully setup your wireless connection.

Visit our website at  
[www.gemtek.com.tw](http://www.gemtek.com.tw)

The Gemtek logo consists of the word "Gemtek" in a bold, blue, sans-serif font. The letter "G" is significantly larger than the other letters and is positioned to the left of the rest of the word.