

Regulatory Information

[Intel\(R\) WiMAX/WiFi Link 5350 and Intel\(R\) WiMAX/WiFi Link 5150 Adapters](#)

- [Information for the User](#)
- [Regulatory Information](#)

[Intel\(R\) WiFi Link 5300 and Intel\(R\) WiFi Link 5100 Adapters](#)

- [Information for the User](#)
- [Regulatory Information](#)

[Intel\(R\) Wireless WiFi Link 4965AGN](#)

[Intel\(R\) Wireless WiFi Link 4965AG](#)

- [Information for the User](#)
- [Regulatory Information](#)

[Intel\(R\) PRO/Wireless 3945ABG Network Connection](#)

[Intel\(R\) PRO/Wireless 3945BG Network Connection](#)

- [Information for the User](#)
- [Regulatory Information](#)

[Intel\(R\) PRO/Wireless 2915ABG Network Connection](#)

- [Information for the User](#)
- [Regulatory Information](#)

[Intel\(R\) PRO/Wireless 2200BG Network Connection](#)

- [Information for the User](#)
 - [Regulatory Information](#)
-

Intel(R) WiMAX/WiFi Link 5350 and Intel(R) WiMAX/WiFi Link 5150 Adapters

The information in this section applies to the following products:

WiMAX and Wireless LAN Adapters

- Intel(R) WiMAX/WiFi Link 5350
- Intel(R) WiMAX/WiFi Link 5150

NOTE: In this section, all references to "the adapter" refer equally to the Intel® WiMAX/WiFi Link 5350 and Intel® WiMAX/WiFi Link 5150 adapters.

NOTE: Due to the evolving state of regulations and standards in the wireless LAN field (IEEE 802.11 and similar standards), the information provided herein is subject to change. Intel Corporation assumes no responsibility for errors or omissions in this document. Nor does Intel make any commitment to update the information contained herein.

Information for the user

Safety Notices

USA—FCC and FAA

The FCC with its action in ET Docket 96-8 has adopted a safety standard for human exposure to radio frequency (RF) electromagnetic energy emitted by FCC certified equipment. The adapter meets the Human Exposure limits found in OET Bulletin 65, supplement C, 2001, and ANSI/IEEE C95.1, 1992. Proper operation of this radio according to the instructions found in this manual will result in exposure substantially below the FCC's recommended limits.


The following safety precautions should be observed:

- Do not touch or move antenna while the unit is transmitting or receiving.
- Do not hold any component containing the radio such that the antenna is very close or touching any exposed parts of the body, especially the face or eyes, while transmitting.
- Do not operate the radio or attempt to transmit data unless the antenna is connected; this behavior may cause damage to the radio.
- Use in specific environments:
 - The use of wireless devices in hazardous locations is limited by the constraints posed by the safety directors of such environments.
 - The use of wireless devices on airplanes is governed by the Federal Aviation Administration (FAA).
 - The use of wireless devices in hospitals is restricted to the limits set forth by each hospital.


Antenna Use


- In order to comply with FCC RF exposure limits, low gain integrated antennas should be located at a minimum distance of 20 cm (8 inches) or more from the body of all persons.
- High-gain, wall-mount, or mast-mount antennas are designed to be professionally installed and should be located at a minimum distance of 30 cm (12 inches) or more from the body of all persons. Please contact your professional installer, VAR, or antenna manufacturer for proper installation requirements.

Explosive Device Proximity Warning


 **Warning:** Do not operate a portable transmitter (such as a wireless network adapter) near unshielded blasting caps or in an explosive environment unless the adapter has been modified to be qualified for such use.

Antenna Warnings

 **Warning:** To comply with the FCC and ANSI C95.1 RF exposure limits, it is recommended that for the adapter installed in a desktop or portable computer, the antenna for this adapter to be installed so as to provide a separation distance of at least 20 cm (8 inches) from all persons. It is recommended that the user limit exposure time if the antenna is positioned closer than 20 cm (8 inches).

 **Warning:** Intel(R) PRO/Wireless LAN products are not designed for use with high-gain directional antennas. Use of such antennas with these products in a manner other than as described in the previous section titled, "Antenna Use" is illegal.


Use On Aircraft Caution

 **Caution:** Regulations of the FCC and FAA prohibit airborne operation of radio-frequency wireless adapters because their signals could interfere with critical aircraft instruments.

Other Wireless Devices

Safety Notices for Other Devices in the Wireless Network: See the documentation supplied with wireless Ethernet adapters or other devices in the wireless network.

Local Restrictions on 802.11a, 802.11b, 802.11g, 802.11n, and 802.16e Radio Usage

 **Caution:** Due to the fact that the frequencies used by 802.11a, 802.11b, 802.11g, 802.11n, and 802.16e wireless LAN devices may not yet be harmonized in all countries, 802.11a, 802.11b, 802.11g, 802.11n, and 802.16e products are designed for use only in specific countries, and are not allowed to be operated in countries other than those of designated use. As a user of these products, you are responsible for ensuring that the products are used only in the countries for which they were intended and for verifying that they are configured with the correct selection of frequency and channel for the country of use. The device transmit power control (TPC) interface is part of the Intel(R) PROSet/Wireless

NOTE: In this section, all references to "the adapter" refer equally to the Intel(R) WiFi Link 5300 and Intel(R) WiFi Link 5100 adapters.

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Information for the user

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USA—FCC and FAA

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The following safety precautions should be observed:

- Do not touch or move antenna while the unit is transmitting or receiving.
- Do not hold any component containing the radio such that the antenna is very close or touching any exposed parts of the body, especially the face or eyes, while transmitting.
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Antenna Warnings

 **Warning:** To comply with the FCC and ANSI C95.1 RF exposure limits, it is recommended for the adapter installed in a desktop or portable computer, that the antenna for this device be installed so as to provide a separation distance of at least 20 cm (8 inches) from all persons. It is recommended that the user limit exposure time if the antenna is positioned closer than 20 cm (8 inches).

 **Warning:** Intel(R) PRO/Wireless LAN products are not designed for use with high-gain directional antennas. Use of such antennas with these products in a manner other than as described in the previous section titled, "Antenna Use" is illegal.


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 **Caution:** Regulations of the FCC and FAA prohibit airborne operation of radio-frequency wireless devices because their signals could interfere with critical aircraft instruments.

Other Wireless Devices

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Local Restrictions on 802.11a, 802.11b, 802.11g and 802.11n Radio Usage

 **Caution:** Due to the fact that the frequencies used by 802.11a, 802.11b, 802.11g and 802.11n wireless LAN devices may not yet be harmonized in all countries, 802.11a, 802.11b, 802.11g and 802.11n products are designed for use only in specific countries, and are not allowed to be operated in countries other than those of designated use. As a user of these products, you are responsible for ensuring that the products are used only in the countries for which they were intended and for verifying that they are configured with the correct selection of frequency and channel for the country of use. The device transmit power control (TPC) interface is part of the Intel(R) PROSet/Wireless WiFi Connection Utility Software. Operational restrictions for Equivalent Isotropic Radiated Power (EIRP) are provided by the system manufacturer. Any deviation from the permissible power and frequency settings for the country of use is an infringement of national law and may be punished as such.

For country-specific information, see the additional compliance information supplied with the product.

Wireless interoperability

The adapter is designed to be interoperable with other wireless LAN products that are based on direct sequence spread spectrum (DSSS) radio technology and to comply with the following standards:

- IEEE Std. 802.11b compliant Standard on Wireless LAN
- IEEE Std. 802.11g compliant Standard on Wireless LAN
- IEEE Std. 802.11a compliant Standard on Wireless LAN
- IEEE Std. 802.11n draft 2.0 compliant on Wireless LAN
- Wireless Fidelity certification, as defined by the Wi-Fi Alliance

The Intel(R) WiFi Link 5300 adapter, Intel(R) WiFi Link 5100 adapter and your health

The adapter, like other radio devices, emits radio frequency electromagnetic energy. The level of energy emitted by this device, however, is less than the electromagnetic energy emitted by other wireless devices such as mobile phones. The adapter operates within the guidelines found in radio frequency safety standards and recommendations. These standards and recommendations reflect the consensus of the scientific community and result from deliberations of panels and committees of scientists who continually review and interpret the extensive research literature. In some situations or environments, the use of the adapter may be restricted by the proprietor of the building or responsible representatives of the applicable organization. Examples of such situations may include:

- Using the adapter equipment on board airplanes, or
- Using the adapter equipment in any other environment where the risk of interference with other devices or services is perceived or identified as being harmful.

If you are uncertain of the policy that applies to the use of wireless devices in a specific organization or environment (an airport, for example), you are encouraged to ask for authorization to use the adapter before you turn it on.

Regulatory information

Information for the OEMs and Integrators

The following statement must be included with all versions of this document supplied to an OEM or integrator, but should not be distributed to the end user.

- This device is intended for OEM integrators only.
- Please See the full Grant of Equipment document for other restrictions.
- This device must be operated and used with a locally approved access point.


Information To Be Supplied to the End User by the OEM or Integrator

The following regulatory and safety notices must be published in documentation supplied to the end user of the product or system incorporating an Intel(R) WiFi Link 5300 adapter or Intel(R) WiFi Link 5100 adapter in compliance with local regulations. Host system must be labeled with "Contains FCC ID: XXXXXXXX", FCC ID displayed on label.

The adapter must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. For country-specific approvals, see [Radio approvals](#). Dell Inc. is not responsible for any radio or television interference caused by unauthorized modification of the devices included with the adapter kit, or the substitution or attachment of connecting cables and equipment other than that specified by Dell Inc. The correction of interference caused by such unauthorized modification, substitution or attachment is the responsibility of the user. Dell Inc. and its authorized resellers or distributors are not liable for any damage or violation of government regulations that may arise from the user failing to comply with these guidelines.

Local Restriction of 802.11a, 802.11b, 802.11g, and 802.11n Radio Usage

The following statement on local restrictions must be published as part of the compliance documentation for all 802.11a, 802.11b, 802.11g and 802.11n products.

 **Caution:** Due to the fact that the frequencies used by 802.11a, 802.11b, 802.11g and 802.11n wireless LAN devices may not yet be harmonized in all countries, 802.11a, 802.11b, 802.11g and 802.11n products are designed for use only in specific countries, and are not allowed to be operated in countries other than those of designated use. As a user of these products, you are responsible for ensuring that the products are used only in the countries for which they were intended and for verifying that they are configured with the correct selection of frequency and channel for the country of use. Any deviation from permissible settings and restrictions in the country of use could be an infringement of national law and may be punished as such.

FCC Radio Frequency Interference Requirements

This device is restricted to indoor use due to its operation in the 5.15 to 5.25 GHz frequency range. FCC requires this product to be used indoors for the frequency range 5.15 to 5.25 GHz to reduce the potential for harmful interference to co-channel Mobile Satellite systems. High power radars are allocated as primary users of the 5.25 to 5.35 GHz and 5.65 to 5.85 GHz bands. These radar stations can cause interference with and /or damage this device.

- This device is intended for OEM integrators only.
- This device cannot be co-located with any other transmitter unless approved by the FCC.

USA—Federal Communications Commission (FCC)

This device complies with Part 15 of the FCC Rules. Operation of the device is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference that may cause undesired operation.

NOTE: The radiated output power of the adapter is far below the FCC radio frequency exposure limits. Nevertheless, the adapter should be used in such a manner that the potential for human contact during normal operation is minimized. To avoid the possibility of exceeding the FCC radio frequency exposure limits, you should keep a distance of at least 20 cm between you (or any other person in the vicinity) and the antenna that is built into the computer. Details of the authorized configurations can be found at <http://www.fcc.gov/oet/ea/> by entering the FCC ID number on the device.

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. If the equipment is not installed and used in accordance with the instructions, the equipment may cause harmful interference to radio communications. There is no guarantee, however, that such 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 taking one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment to 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.

NOTE: The adapter must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. Any other installation or use will violate FCC Part 15 regulations.

Underwriters Laboratories Inc. (UL) Regulatory Warning


For use in (or with) UL Listed personal computers or compatible.

Brazil

Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário.

Canada—Industry Canada (IC)

This device complies with RSS210 of Industry Canada.

 **Caution:** When using IEEE 802.11a wireless LAN, this product is restricted to indoor use due to its operation in the 5.15- to 5.25-GHz frequency range. Industry Canada requires this product to be used indoors for the frequency range of 5.15 GHz to 5.25 GHz to reduce the potential for harmful interference to co-channel mobile satellite systems. High power radar is allocated as the primary user of the 5.25- to 5.35-GHz and 5.65 to 5.85-GHz bands. These radar stations can cause interference with and/or damage to this device.

The maximum allowed antenna gain for use with this device is 6dBi in order to comply with the E.I.R.P limit for the 5.25- to 5.35 and 5.725 to 5.85 GHz frequency range in point-to-point operation.

This Class B digital apparatus complies with Canadian ICES-003, Issue 4, and RSS-210, No 4 (Dec 2000) and No 5 (Nov 2001).

Cet appareil numérique de la classe B est conforme à la norme NMB-003, No. 4, et CNR-210, No 4 (Dec 2000) et No 5 (Nov 2001).

"To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing."

« Pour empêcher que cet appareil cause du brouillage au service faisant l'objet d'une licence, il doit être utilisé à l'intérieur et devrait être placé loin des fenêtres afin de fournir un écran de blindage maximal. Si le matériel (ou son antenne

d'émission) est installé à l'extérieur, il doit faire l'objet d'une licence. »

European Union

The low band 5.15 -5.35 GHz is for indoor use only.

Intel(R) WiFi Link 5300 Adapter Declaration of Conformity

The European Declaration of Conformity is available at the following site:

http://www.intel.com/support/go/wireless/wlan/wf_reg.htm

This equipment complies with the essential requirements of the European Union directive 1999/5/EC.

•esky [Czech]	Intel(R) Corporation tímto prohlašuje, že tento Intel(R) WiFi Link 5300 je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
Dansk [Danish]	Undertegnede Intel(R) Corporation erklærer herved, at følgende udstyr Intel(R) WiFi Link 5300 overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Deutsch [German]	Hiermit erkläre Intel(R) Corporation, dass sich das Gerät Intel(R) WiFi Link 5300 in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
Esti [Estonian]	Käesolevaga kinnitab Intel(R) Corporation seadme Intel(R) WiFi Link 5300 vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
English	Hereby, Intel(R) Corporation, declares that this Intel(R) WiFi Link 5300 is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Español [Spanish]	Por medio de la presente Intel(R) Corporation declara que el Intel(R) WiFi Link 5300 cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Ελληνικ• [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ Intel(R) Corporation ΔΗΛΩΝΕΙ ΟΤΙ Intel(R) WiFi Link 5300 ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/EK.
Français [French]	Par la présente Intel(R) Corporation déclare que l'appareil Intel(R) WiFi Link 5300 est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Italiano [Italian]	Con la presente Intel(R) Corporation dichiara che questo Intel(R) WiFi Link 5300 è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo Intel(R) Corporation deklar•, ka Intel(R) WiFi Link 5300 atbilst Direkt•vas 1999/5/EK b•tiskaj•m pras•b•m un citiem ar to saist•tajiem noteikumiem.
Lietuvi• [Lithuanian]	Šiuo Intel(R) Corporation deklaruoja, kad šis Intel(R) WiFi Link 5300 atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Nederlands [Dutch]	Hierbij verklaart Intel(R) Corporation dat het toestel Intel(R) WiFi Link 5300 in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
Malti [Maltese]	Hawnhekk, Intel(R) Corporation, jiddikjara li dan Intel(R) WiFi Link 5300 jikkonforma mal-•ti•ijiet essenzjali u ma provvedimenti o•rajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
Magyar [Hungarian]	Alulírott, Intel(R) Corporation nyilatkozom, hogy a Intel(R) WiFi Link 5300 megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.
Norsk [Norwegian]	Intel Corporation erklærer herved at utstyret Intel(R) WiFi Link 5300 er i samsvar med de grunnleggende krav og øvrige relevante krav i direktiv 1999/5/EF.
Polski [Polish]	Niniejszym, Intel(R) Corporation, o•wiadcza, •e Intel(R) WiFi Link 5300 jest zgodne z zasadniczymi wymaganiami oraz innymi stosownymi postanowieniami Dyrektywy 1999/5/WE.
Português [Portuguese]	Intel(R) Corporation declara que este Intel(R) WiFi Link 5300 está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Slovensko [Slovenian]	Šiuo Intel(R) Corporation izjavlja, da je ta Intel(R) WiFi Link 5300 v skladu z bistvenimi zahtevami in ostalimi relevantnimi dolo•ili direktive 1999/5/ES.
Slovensky [Slovak]	Intel(R) Corporation týmto vyhlasuje, že Intel(R) WiFi Link 5300 sp••a základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Suomi [Finnish]	Intel(R) Corporation vakuuttaa täten että Intel (R) WiFi Link 5300 tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.

Svenska [Swedish]	Härmed intygar Intel(R) Corporation att denna Intel(R) WiFi Link 5300 står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.
Íslenska [Icelandic]	Hér með lýsir Intel(R) Corporation yfir því að Intel(R) WiFi Link 5300 er í samræmi við grunnkröfur og aðrar kröfur, sem gerðar eru í tilskipun 1999/5/EC.

Intel(R) WiFi Link 5100 Adapter Declaration of Conformity

The European Declaration of Conformity is available at the following site:

http://www.intel.com/support/go/wireless/wlan/wf_reg.htm

This equipment complies with the essential requirements of the European Union directive 1999/5/EC.

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Esti [Estonian]	Käesolevaga kinnitab Intel(R) Corporation seadme Intel(R) WiFi Link 5100 vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
English	Hereby, Intel(R) Corporation, declares that this Intel(R) WiFi Link 5100 is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Español [Spanish]	Por medio de la presente Intel(R) Corporation declara que el Intel(R) WiFi Link 5100 cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
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Français [French]	Par la présente Intel(R) Corporation déclare que l'appareil Intel(R) WiFi Link 5100 est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Italiano [Italian]	Con la presente Intel(R) Corporation dichiara che questo Intel(R) WiFi Link 5100 è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo Intel(R) Corporation deklarē, ka Intel(R) WiFi Link 5100 atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
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Nederlands [Dutch]	Hierbij verklaart Intel(R) Corporation dat het toestel Intel(R) WiFi Link 5100 in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
Malti [Maltese]	Hawnhekk, Intel(R) Corporation, jiddikjara li dan Intel(R) WiFi Link 5100 jikkonforma mal-•ti•ijiet essenzjali u ma provvedimenti o•rajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
Magyar [Hungarian]	Alulírott, Intel(R) Corporation nyilatkozom, hogy a Intel(R) WiFi Link 5100 megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.
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Italy

The use of these equipments is regulated by:

1. D.L.gs 1.8.2003, n. 259, article 104 (activity subject to general authorization) for outdoor use and article 105 (free use) for indoor use, in both cases for private use.
2. D.M. 28.5.03, for supply to public of RLAN access to networks and telecom services.

L'uso degli apparati è regolamentato da:

1. D.L.gs 1.8.2003, n. 259, articoli 104 (attività soggette ad autorizzazione generale) se utilizzati al di fuori del proprio fondo e 105 (libero uso) se utilizzati entro il proprio fondo, in entrambi i casi per uso private.
2. D.M. 28.5.03, per la fornitura al pubblico dell'accesso R-LAN alle reti e ai servizi di telecomunicazioni.

Japan

Indoor use only.

Korea

당해 무선설비는 운용 중 전파혼신 가능성이 있음

Taiwan

第十二條

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條

低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前項合法通信，指依電信法規定作業之無線電通信。

低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

Radio approvals

To determine whether you are allowed to use your wireless network device in a specific country, please check to see if the radio type number that is printed on the identification label of your device is listed in the manufacturer's OEM Regulatory Guidance document.

Intel(R) Wireless WiFi Link 4965AGN and Intel(R) Wireless WiFi Link 4965AG_

The information in this document applies to the following products:

Quad-mode wireless LAN adapters (802.11a/802.11b/802.11g/802.11n)

Intel(R) Wireless WiFi Link 4965AGN (model WM4965AGN)

Tri-mode wireless LAN adapters (802.11a/802.11b/802.11g)

Intel(R) Wireless WiFi Link 4965AG_ (model WM4965AG_)

NOTE: Due to the evolving state of regulations and standards in the wireless LAN field (IEEE 802.11 and similar standards), the information provided herein is subject to change. Intel Corporation assumes no responsibility for errors or omissions in this document. Nor does Intel make any commitment to update the information contained herein.

Information for the user

Safety Notices

USA—FCC and FAA

The FCC with its action in ET Docket 96-8 has adopted a safety standard for human exposure to radio frequency (RF) electromagnetic energy emitted by FCC certified equipment. The Intel(R) Wireless WiFi Link 4965AGN and Intel(R) Wireless WiFi Link 4965AG_ adapters meet the Human Exposure limits found in OET Bulletin 65, supplement C, 2001, and ANSI/IEEE C95.1, 1992. Proper operation of this radio according to the instructions found in this manual will result in exposure substantially below the FCC's recommended limits.


The following safety precautions should be observed:

- Do not touch or move antenna while the unit is transmitting or receiving.
- Do not hold any component containing the radio such that the antenna is very close or touching any exposed parts of the body, especially the face or eyes, while transmitting.
- Do not operate the radio or attempt to transmit data unless the antenna is connected; this behavior may cause damage to the radio.
- Use in specific environments:
 - The use of wireless devices in hazardous locations is limited by the constraints posed by the safety directors of such environments.
 - The use of wireless devices on airplanes is governed by the Federal Aviation Administration (FAA).
 - The use of wireless devices in hospitals is restricted to the limits set forth by each hospital.


Antenna Use


- In order to comply with FCC RF exposure limits, low gain integrated antennas should be located at a minimum distance of 20 cm (8 inches) or more from the body of all persons.
- High-gain, wall-mount, or mast-mount antennas are designed to be professionally installed and should be located at a minimum distance of 30 cm (12 inches) or more from the body of all persons. Please contact your professional installer, VAR, or antenna manufacturer for proper installation requirements.

Explosive Device Proximity Warning


 **Warning:** Do not operate a portable transmitter (such as a wireless network device) near unshielded blasting caps or in an explosive environment unless the device has been modified to be qualified for such use.

Antenna Warnings

 **Warning:** To comply with the FCC and ANSI C95.1 RF exposure limits, it is recommended for the Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ adapters installed in a desktop or portable computer, that the antenna for this device be installed so as to provide a separation distance of at least 20 cm (8 inches) from all persons. It is recommended that the user limit exposure time if the antenna is positioned closer than 20 cm (8 inches).

 **Warning:** Intel(R) PRO/Wireless LAN products are not designed for use with high-gain directional antennas. Use of such antennas with these products in a manner other than as described in the previous section titled, "Antenna Use" is illegal.


Use On Aircraft Caution

 **Caution:** Regulations of the FCC and FAA prohibit airborne operation of radio-frequency wireless devices because their signals could interfere with critical aircraft instruments.

Other Wireless Devices

Safety Notices for Other Devices in the Wireless Network: See the documentation supplied with wireless Ethernet adapters or other devices in the wireless network.

Local Restrictions on 802.11a, 802.11b, 802.11g and 802.11n Radio Usage

 **Caution:** Due to the fact that the frequencies used by 802.11a, 802.11b, 802.11g and 802.11n wireless LAN devices may not yet be harmonized in all countries, 802.11a, 802.11b, 802.11g and 802.11n products are designed for use only in specific countries, and are not allowed to be operated in countries other than those of designated use. As a user of these products, you are responsible for ensuring that the products are used only in the countries for which they were intended and for verifying that they are configured with the correct selection of frequency and channel for the country of use. The device transmit power control (TPC) interface is part of the Intel(R) PROSet/Wireless WiFi Connection Utility. Operational restrictions for Equivalent Isotropic Radiated Power (EIRP) are provided by the system manufacturer. Any deviation from the permissible power and frequency settings for the country of use is an infringement of national law and may be punished as such.

For country-specific information, see the additional compliance information supplied with the product.

Wireless interoperability

The Intel(R) Wireless WiFi Link 4965AGN and the Intel(R) Wireless WiFi Link 4965AG_ adapters are designed to be interoperable with other wireless LAN products that are based on direct sequence spread spectrum (DSSS) radio technology and to comply with the following standards:

- IEEE Std. 802.11b compliant Standard on Wireless LAN
- IEEE Std. 802.11g compliant Standard on Wireless LAN
- IEEE Std. 802.11a compliant Standard on Wireless LAN
- IEEE Std. 802.11n draft 2.0 compliant on Wireless LAN (does apply to the Intel(R) Wireless WiFi Link 4965AG_ adapter)
- Wireless Fidelity certification, as defined by the Wi-Fi Alliance

The Intel(R) Wireless WiFi Link 4965AGN adapter or Intel(R) Wireless WiFi Link 4965AG_ adapter and your health

The Intel(R) Wireless WiFi Link 4965AGN adapter and Intel(R) Wireless WiFi Link 4965AG_ adapter, like other radio devices, emit radio frequency electromagnetic energy. The level of energy emitted by the device, however, is less than the electromagnetic energy emitted by other wireless devices such as mobile phones. The adapter operates within the guidelines found in radio frequency safety standards and recommendations. These standards and recommendations reflect the consensus of the scientific community and result from deliberations of panels and committees of scientists who continually review and interpret the extensive research literature. In some situations or environments, the use of the Intel (R) Wireless WiFi Link 4965AGN adapter or Intel(R) Wireless WiFi Link 4965AG_ adapter may be restricted by the proprietor of the building or responsible representatives of the applicable organization. Examples of such situations may include:

- Using the adapter equipment on board airplanes, or
- Using the adapter equipment in any other environment where the risk of interference with other devices or services is perceived or identified as being harmful.

If you are uncertain of the policy that applies to the use of wireless devices in a specific organization or environment (an airport, for example), you are encouraged to ask for authorization to use the Intel(R) Wireless WiFi Link 4965AGN or Intel (R) Wireless WiFi Link 4965AG_ adapter before you turn it on.

Regulatory information

Information for the OEMs and Integrators

The following statement must be included with all versions of this document supplied to an OEM or integrator, but should not be distributed to the end user.

- This device is intended for OEM integrators only.
- Please See the full Grant of Equipment document for other restrictions.
- This device must be operated and used with a locally approved access point.


Information To Be Supplied to the End User by the OEM or Integrator

The following regulatory and safety notices must be published in documentation supplied to the end user of the product or system incorporating an Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ in compliance with local regulations. Host system must be labeled with "Contains FCC ID: XXXXXXXX", FCC ID displayed on label.

The Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ wireless network device must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. For country-specific approvals, see [Radio approvals](#). Intel Corporation is not responsible for any radio or television interference caused by unauthorized modification of the devices included with the Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ adapter kit, or the substitution or attachment of connecting cables and equipment other than that specified by Intel Corporation. The correction of interference caused by such unauthorized modification, substitution or attachment is the responsibility of the user. Intel Corporation and its authorized resellers or distributors are not liable for any damage or violation of government regulations that may arise from the user failing to comply with these guidelines.

Local Restriction of 802.11a, 802.11b, 802.11g, and 802.11n Radio Usage

The following statement on local restrictions must be published as part of the compliance documentation for all 802.11a, 802.11b, 802.11g and 802.11n products.

 **Caution:** Due to the fact that the frequencies used by 802.11a, 802.11b, 802.11g and 802.11n wireless LAN devices may not yet be harmonized in all countries, 802.11a, 802.11b, 802.11g and 802.11n products are designed for use only in specific countries, and are not allowed to be operated in countries other than those of designated use. As a user of these products, you are responsible for ensuring that the products are used only in the countries for which they were intended and for verifying that they are configured with the correct selection of frequency and channel for the country of use. Any deviation from permissible settings and restrictions in the country of use could be an infringement of national law and may be punished as such.

FCC Radio Frequency Interference Requirements

This device is restricted to indoor use due to its operation in the 5.15 to 5.25 GHz frequency range. FCC requires this product to be used indoors for the frequency range 5.15 to 5.25 GHz to reduce the potential for harmful interference to co-channel Mobile Satellite systems. High power radars are allocated as primary users of the 5.25 to 5.35 GHz and 5.65 to 5.85 GHz bands. These radar stations can cause interference with and /or damage this device.

- This device is intended for OEM integrators only.

USA—Federal Communications Commission (FCC)

This device complies with Part 15 of the FCC Rules. Operation of the device is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference that may cause undesired operation.

NOTE: The radiated output power of the Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ adapter is far below the FCC radio frequency exposure limits. Nevertheless, the Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ adapter should be used in such a manner that the

potential for human contact during normal operation is minimized. To avoid the possibility of exceeding the FCC radio frequency exposure limits, you should keep a distance of at least 20 cm between you (or any other person in the vicinity) and the antenna that is built into the computer. Details of the authorized configurations can be found at <http://www.fcc.gov/oet/ea/> by entering the FCC ID number on the device.

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. If the equipment is not installed and used in accordance with the instructions, the equipment may cause harmful interference to radio communications. There is no guarantee, however, that such 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 taking one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment to 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.

NOTE: The Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ adapter must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. Any other installation or use will violate FCC Part 15 regulations.

Underwriters Laboratories Inc. (UL) Regulatory Warning


For use in (or with) UL Listed personal computers or compatible.

Brazil

Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário.

Canada—Industry Canada (IC)

This device complies with RSS210 of Industry Canada.

 **Caution:** When using IEEE 802.11a wireless LAN, this product is restricted to indoor use due to its operation in the 5.15- to 5.25-GHz frequency range. Industry Canada requires this product to be used indoors for the frequency range of 5.15 GHz to 5.25 GHz to reduce the potential for harmful interference to co-channel mobile satellite systems. High power radar is allocated as the primary user of the 5.25- to 5.35-GHz and 5.65 to 5.85-GHz bands. These radar stations can cause interference with and/or damage to this device.

The maximum allowed antenna gain for use with this device is 6dBi in order to comply with the E.I.R.P limit for the 5.25- to 5.35 and 5.725 to 5.85 GHz frequency range in point-to-point operation.

This Class B digital apparatus complies with Canadian ICES-003, Issue 4, and RSS-210, No 4 (Dec 2000) and No 5 (Nov 2001).

Cet appareil numérique de la classe B est conforme à la norme NMB-003, No. 4, et CNR-210, No 4 (Dec 2000) et No 5 (Nov 2001).

"To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing."

« Pour empêcher que cet appareil cause du brouillage au service faisant l'objet d'une licence, il doit être utilisé à l'intérieur et devrait être placé loin des fenêtres afin de fournir un écran de blindage maximal. Si le matériel (ou son antenne d'émission) est installé à l'extérieur, il doit faire l'objet d'une licence. »

European Union

The low band 5.15 -5.35 GHz is for indoor use only.

Declaration of Conformity

The European Declaration of Conformity is available at the following site:

http://download.intel.com/support/wireless/wlan/4965agn/sb/eudoc4965_combined1.pdf

This equipment complies with the essential requirements of the European Union directive 1999/5/EC.

•esky [Czech]	Intel(R) Corporation tímto prohlašuje, že tento Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ je ve shod• se základními požadavky a dalšími p•islušnými ustanoveními sm•rnice 1999/5/ES.
Dansk [Danish]	Undertegnede Intel(R) Corporation erklærer herved, at følgende udstyr Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Deutsch [German]	Hiermit erklárt Intel(R) Corporation, dass sich das Gerát Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
Esti [Estonian]	Käesolevaga kinnitab Intel(R) Corporation seadme Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
English	Hereby, Intel(R) Corporation, declares that this Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Español [Spanish]	Por medio de la presente Intel(R) Corporation declara que el Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Ελληνικ• [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ Intel(R) Corporation ΔΗΛΩΝΕΙ ΟΤΙ Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΠΙΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/EK.
Français [French]	Par la présente Intel(R) Corporation déclare que l'appareil Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Italiano [Italian]	Con la presente Intel(R) Corporation dichiara che questo Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo Intel(R) Corporation deklar•, ka Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ atbilst Direkt•vas 1999/5/EK b•tiskaj•m pras•b•m un citiem ar to saist•tajiem noteikumiem.
Lietuvi• [Lithuanian]	Šiuo Intel(R) Corporation deklaruoja, kad šis Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Nederlands [Dutch]	Hierbij verklaart Intel(R) Corporation dat het toestel Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
Malti [Maltese]	Hawnhekk, Intel(R) Corporation, jiddikjara li dan Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ jikkonforma mal-•ti•ijiet essenzjali u ma provvedimenti o•rajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
Magyar [Hungarian]	Alulírott, Intel(R) Corporation nyilatkozom, hogy a Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.
Norsk [Norwegian]	Intel Corporation erklærer herved at utstyret Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ er i samsvar med de grunnleggende krav og øvrige relevante krav i direktiv 1999/5/EF.

Polski [Polish]	Niniejszym, Intel(R) Corporation, o•wiadcza, •e Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ jest zgodne z zasadniczymi wymaganiami oraz innymi stosownymi postanowieniami Dyrektywy 1999/5/WE.
Português [Portuguese]	Intel(R) Corporation declara que este Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Slovensko [Slovenian]	Šiuo Intel(R) Corporation izjavlja, da je ta Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ v skladu z bistvenimi zahtevami in ostalimi relevantnimi dolo•ili direktive 1999/5/ES.
Slovensky [Slovak]	Intel(R) Corporation týmto vyhlasuje, že Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ sp••a základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Suomi [Finnish]	Intel(R) Corporation vakuuttaa täten että Intel (R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Svenska [Swedish]	Härmed intygar Intel(R) Corporation att denna Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.
Íslenska [Icelandic]	Hér með lýsir Intel(R) Corporation yfir því að Intel(R) Wireless WiFi Link 4965AGN or Intel(R) Wireless WiFi Link 4965AG_ er í samræmi við grunnkröfur og aðrar kröfur, sem gerðar eru í tilskipun 1999/5/EC.

Italy

The use of these equipments is regulated by:

1. D.L.gs 1.8.2003, n. 259, article 104 (activity subject to general authorization) for outdoor use and article 105 (free use) for indoor use, in both cases for private use.
2. D.M. 28.5.03, for supply to public of RLAN access to networks and telecom services.

L'uso degli apparati è regolamentato da:

1. D.L.gs 1.8.2003, n. 259, articoli 104 (attività soggette ad autorizzazione generale) se utilizzati al di fuori del proprio fondo e 105 (libero uso) se utilizzati entro il proprio fondo, in entrambi i casi per uso private.
2. D.M. 28.5.03, per la fornitura al pubblico dell'accesso R-LAN alle reti e ai servizi di telecomunicazioni.

Japan

Indoor use only.

Korea

당해 무선설비는 운용 중 전파혼신 가능성이 있음

Taiwan

第十二條

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條

低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前項合法通信，指依電信法規定作業之無線電通信。

低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

Radio approvals

To determine whether you are allowed to use your wireless network device in a specific country, please check to see if the radio type number that is printed on the identification label of your device is listed in the manufacturer's OEM Regulatory Guidance document.

Intel(R) PRO/Wireless 3945ABG Network Connection and the Intel(R) PRO/Wireless 3945BG Network Connection

The information in this document applies to the following products:

Tri-mode wireless LAN adapters (802.11a/802.11b/802.11g)

Intel(R) PRO/Wireless 3945ABG Network Connection (model WM3945ABG)

Dual-mode wireless LAN adapters (802.11b/802.11g)

Intel(R) PRO/Wireless 3945BG Network Connection (model WM3945BG)

NOTE: Due to the evolving state of regulations and standards in the wireless LAN field (IEEE 802.11 and similar standards), the information provided herein is subject to change. Intel Corporation assumes no responsibility for errors or omissions in this document. Nor does Intel make any commitment to update the information contained herein.

Information for the user

Safety Notices

USA—FCC and FAA

The FCC with its action in ET Docket 96-8 has adopted a safety standard for human exposure to radio frequency (RF) electromagnetic energy emitted by FCC certified equipment. The Intel(R) PRO/Wireless 3945ABG Network Connection adapter, or the Intel(R) PRO/Wireless 3945BG Network Connection adapter meet the Human Exposure limits found in OET Bulletin 65, supplement C, 2001, and ANSI/IEEE C95.1, 1992. Proper operation of this radio according to the instructions found in this manual will result in exposure substantially below the FCC's recommended limits.


The following safety precautions should be observed:

- Do not touch or move antenna while the unit is transmitting or receiving.
- Do not hold any component containing the radio such that the antenna is very close or touching any exposed parts of the body, especially the face or eyes, while transmitting.
- Do not operate the radio or attempt to transmit data unless the antenna is connected; this behavior may cause damage to the radio.
- Use in specific environments:
 - The use of wireless devices in hazardous locations is limited by the constraints posed by the safety directors of such environments.
 - The use of wireless devices on airplanes is governed by the Federal Aviation Administration (FAA).
 - The use of wireless devices in hospitals is restricted to the limits set forth by each hospital.


Antenna Use


- In order to comply with FCC RF exposure limits, low gain integrated antennas should be located at a minimum distance of 20 cm (8 inches) or more from the body of all persons.
- High-gain, wall-mount, or mast-mount antennas are designed to be professionally installed and should be located at a minimum distance of 30 cm (12 inches) or more from the body of all persons. Please contact your professional installer, VAR, or antenna manufacturer for proper installation requirements.

Explosive Device Proximity Warning


 **Warning:** Do not operate a portable transmitter (such as a wireless network device) near unshielded blasting caps or in an explosive environment unless the device has been modified to be qualified for such use.

Antenna Warnings

 **Warning:** To comply with the FCC and ANSI C95.1 RF exposure limits, it is recommended that when the Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection adapter is installed in a desktop or portable computer, the antenna for this device be installed so as to provide a separation distance of at least 20 cm (8 inches) from all persons. It is recommended that the user limit exposure time if the antenna is positioned closer than 20 cm (8 inches).

 **Warning:** Intel(R) PRO/Wireless LAN products are not designed for use with high-gain directional antennas. Use of such antennas with these products in a manner other than as described in the previous section titled, "Antenna Use" is illegal.


Use On Aircraft Caution

 **Caution:** Regulations of the FCC and FAA prohibit airborne operation of radio-frequency wireless devices because their signals could interfere with critical aircraft instruments.

Other Wireless Devices

Safety Notices for Other Devices in the Wireless Network: See the documentation supplied with wireless Ethernet adapters or other devices in the wireless network.

Local Restrictions on 802.11a, 802.11b, and 802.11g Radio Usage

 **Caution:** Due to the fact that the frequencies used by 802.11a, 802.11b and 802.11g wireless LAN devices may not yet be harmonized in all countries, 802.11a, 802.11b, and 802.11g products are designed for use only in specific countries, and are not allowed to be operated in countries other than those of designated use. As a user of these products, you are responsible for ensuring that the products are used only in the countries for which they were intended and for verifying that they are configured with the correct selection of frequency and channel for the country of use. The device transmit power control (TPC) interface is part of the Intel(R) PROSet/Wireless WiFi Connection Utility. Operational restrictions for Equivalent Isotropic Radiated Power (EIRP) are provided by the system manufacturer. Any deviation from the permissible power and frequency settings for the country of use is an infringement of national law and may be punished as such.

For country-specific information, see the additional compliance information supplied with the product.

Wireless interoperability

The Intel(R) PRO/Wireless 3945ABG Network Connection and Intel(R) PRO/Wireless 3945BG Network Connection are designed to be interoperable with other wireless LAN products that are based on direct sequence spread spectrum (DSSS) radio technology and to comply with the following standards:

- IEEE Std. 802.11b compliant Standard on Wireless LAN
- IEEE Std. 802.11g compliant Standard on Wireless LAN
- IEEE Std. 802.11a compliant Standard on Wireless LAN
- Wireless Fidelity (Wi-Fi) certification, as defined by the Wi-Fi Alliance

The Intel(R) PRO/Wireless 3945ABG Network Connection adapter or the Intel(R) PRO/Wireless 3945BG Network Connection adapter and your health

The Intel(R) PRO/Wireless 3945ABG Network Connection adapter or the Intel(R) PRO/Wireless 3945BG Network Connection adapter, like other radio devices, emits radio frequency electromagnetic energy. The level of energy emitted by this device, however, is less than the electromagnetic energy emitted by other wireless devices such as mobile phones. The Intel(R) PRO/Wireless 3945ABG Network Connection adapter or the Intel(R) PRO/Wireless 3945BG Network Connection adapter wireless device operates within the guidelines found in radio frequency safety standards and recommendations. These standards and recommendations reflect the consensus of the scientific community and result from deliberations of panels

and committees of scientists who continually review and interpret the extensive research literature. In some situations or environments, the use of the Intel(R) PRO/Wireless 3945ABG Network Connection adapter or the Intel(R) PRO/Wireless 3945BG Network Connection adapter may be restricted by the proprietor of the building or responsible representatives of the applicable organization. Examples of such situations may include:

- Using the Intel(R) PRO/Wireless 3945ABG Network Connection adapter or the Intel(R) PRO/Wireless 3945BG Network Connection adapter equipment on board airplanes, or
- Using the Intel(R) PRO/Wireless 3945ABG Network Connection adapter or the Intel(R) PRO/Wireless 3945BG Network Connection adapter equipment in any other environment where the risk of interference with other devices or services is perceived or identified as being harmful.

If you are uncertain of the policy that applies to the use of wireless devices in a specific organization or environment (an airport, for example), you are encouraged to ask for authorization to use the Intel(R) PRO/Wireless 3945ABG Network Connection adapter or the Intel(R) PRO/Wireless 3945BG Network Connection wireless devices before you turn it on.

Regulatory information

Information for the OEMs and Integrators

The following statement must be included with all versions of this document supplied to an OEM or integrator, but should not be distributed to the end user.

- This device is intended for OEM integrators only.
- Please See the full Grant of Equipment document for other restrictions.
- This device must be operated and used with a locally approved access point.


Information To Be Supplied to the End User by the OEM or Integrator

The following regulatory and safety notices must be published in documentation supplied to the end user of the product or system incorporating an Intel(R) PRO/Wireless 3945ABG Network Connection or an Intel(R) PRO/Wireless 3945BG Network Connection in compliance with local regulations. Host system must be labeled with "Contains FCC ID: XXXXXXXX", FCC ID displayed on label.

The Intel(R) PRO/Wireless 3945ABG Network Connection adapter or the Intel(R) PRO/Wireless 3945BG Network Connection wireless network device must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. For country-specific approvals, see [Radio approvals](#). Intel Corporation is not responsible for any radio or television interference caused by unauthorized modification of the devices included with the Intel(R) PRO/Wireless 3945ABG Network Connection or the Intel(R) PRO/Wireless 3945BG Network Connection adapter kit, or the substitution or attachment of connecting cables and equipment other than that specified by Intel Corporation. The correction of interference caused by such unauthorized modification, substitution or attachment is the responsibility of the user. Intel Corporation and its authorized resellers or distributors are not liable for any damage or violation of government regulations that may arise from the user failing to comply with these guidelines.

Local Restriction of 802.11a, 802.11b, and 802.11g Radio Usage

The following statement on local restrictions must be published as part of the compliance documentation for all 802.11a, 802.11b, and 802.11g products.

 **Caution:** Due to the fact that the frequencies used by 802.11a, 802.11b, and 802.11g wireless LAN devices may not yet be harmonized in all countries, 802.11a, 802.11b, and 802.11g products are designed for use only in specific countries, and are not allowed to be operated in countries other than those of designated use. As a user of these products, you are responsible for ensuring that the products are used only in the countries for which they were intended and for verifying that they are configured with the correct selection of frequency and channel for the country of use. Any deviation from permissible settings and restrictions in the country of use could be an infringement of national law and may be punished as such.

FCC Radio Frequency Interference Requirements

This device is restricted to indoor use due to its operation in the 5.15 to 5.25 GHz frequency range. FCC requires this product to be used indoors for the frequency range 5.15 to 5.25 GHz to reduce the potential for harmful interference to co-channel Mobile Satellite systems. High power radars are allocated as primary users of the 5.25 to 5.35 GHz and 5.65 to 5.85 GHz bands. These radar stations can cause interference with and /or damage this device.

- This device is intended for OEM integrators only.

USA—Federal Communications Commission (FCC)

This device complies with Part 15 of the FCC Rules. Operation of the device is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference that may cause undesired operation.

NOTE: The radiated output power of the Intel(R) PRO/Wireless 3945ABG Network Connection adapter or the Intel(R) PRO/Wireless 3945BG Network Connection adapter wireless network device is far below the FCC radio frequency exposure limits. Nevertheless, the Intel(R) PRO/Wireless LAN wireless network device should be used in such a manner that the potential for human contact during normal operation is minimized. To avoid the possibility of exceeding the FCC radio frequency exposure limits, you should keep a distance of at least 20 cm between you (or any other person in the vicinity) and the antenna that is built into the computer. Details of the authorized configurations can be found at <http://www.fcc.gov/oet/ea/> by entering the FCC ID number on the device.

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. If the equipment is not installed and used in accordance with the instructions, the equipment may cause harmful interference to radio communications. There is no guarantee, however, that such 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 taking one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment to 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.

NOTE: The Intel(R) PRO/Wireless 3945ABG Network Connection adapter or the Intel(R) PRO/Wireless 3945BG Network Connection adapter wireless network device must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. Any other installation or use will violate FCC Part 15 regulations.

Underwriters Laboratories Inc. (UL) Regulatory Warning


For use in (or with) UL Listed personal computers or compatible.

Brazil

Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário.

Canada—Industry Canada (IC)

This device complies with RSS210 of Industry Canada.

 **Caution:** When using IEEE 802.11a wireless LAN, this product is restricted to indoor use due to its operation in the 5.15- to 5.25-GHz frequency range. Industry Canada requires this product to be used indoors for the frequency range of 5.15 GHz to 5.25 GHz to reduce the potential for harmful interference to co-channel mobile satellite systems. High power radar is allocated as the primary user of the 5.25- to 5.35-GHz and 5.65 to 5.85-GHz bands. These radar stations can

cause interference with and/or damage to this device.

The maximum allowed antenna gain for use with this device is 6dBi in order to comply with the E.I.R.P limit for the 5.25- to 5.35 and 5.725 to 5.85GHz frequency range in point-to-point operation.

This Class B digital apparatus complies with Canadian ICES-003, Issue 4, and RSS-210, No 4 (Dec 2000) and No 5 (Nov 2001).

Cet appareil numérique de la classe B est conforme à la norme NMB-003, No. 4, et CNR-210, No 4 (Dec 2000) et No 5 (Nov 2001).

"To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing."

« Pour empêcher que cet appareil cause du brouillage au service faisant l'objet d'une licence, il doit être utilisé à l'intérieur et devrait être placé loin des fenêtres afin de fournir un écran de blindage maximal. Si le matériel (ou son antenne d'émission) est installé à l'extérieur, il doit faire l'objet d'une licence.»

European Union

The low band 5.15 -5.35 GHz is for indoor use only.

Declaration of Conformity



Declaration of Conformity (1999/5/EC)

We, **INTEL CORPORATION SAS**

Address: Les Taissounières B3, 1681 route des Dolines – BP 293
06905 – Sophia Antipolis, France

declare under our sole responsibility that the product:

- Name: **INTEL® PRO/Wireless 3945ABG Network Connection**
- Model: **WM3945ABG MOW2**

to which this declaration relates, is in compliance with all the applicable essential requirements, and other provisions of the European Council Directive:

1999/5/EC	Radio and Telecommunications Terminal Equipment Directive (R&TTE)
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The conformity assessment procedure used for this declaration is Annex IV of this Directive

This product will bear the CE Mark label CE 0336 !

Product compliance has been demonstrated on the basis of:

This product will bear the CE Mark label CE 0336 !

Product compliance has been demonstrated on the basis of:

- IEC 60950-1:2001, and EN 60950-1:2001 (safety) - EN 50371: 2002	For article 3.1(a) : Health and Safety of the User
- EN 301 489-1 V1.4.1 (2002-08) - EN 301 489-17 V1.2.1 (2002-08)	For article 3.1(b) : Electromagnetic Compatibility
- EN 300 328 V1.5.1 (2004-08) - EN 301 893 V1.2.3 (2003-08)	For article 3.2 : Effective use of the spectrum allocated

The technical construction file is kept available at:

INTEL CORPORATION SAS

Branch Office: 1681 route des Dolines,
06905 - Sophia Antipolis, France

Authorized Signature by

Date: 9th September 2005



Gilles Catala,
Regulatory & Compliance Engineering Manager
Wireless Networking Group

This equipment complies with the essential requirements of the European Union directive 1999/5/EC.

•esky [Czech]	Intel(R) Corporation tímto prohlašuje, že tento Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
Dansk [Danish]	Undertegnede Intel(R) Corporation erklærer herved, at følgende udstyr Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Deutsch [German]	Hiermit erkläre Intel(R) Corporation, dass sich das Gerät Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
Esti [Estonian]	Käesolevaga kinnitab Intel(R) Corporation seadme Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
English	Hereby, Intel(R) Corporation, declares that this Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Español [Spanish]	Por medio de la presente Intel(R) Corporation declara que el Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Ελληνικ• [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ Intel(R) Corporation ΔΗΛΩΝΕΙ ΟΤΙ Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
Français [French]	Par la présente Intel(R) Corporation déclare que l'appareil Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Italiano [Italian]	Con la presente Intel(R) Corporation dichiara che questo Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo Intel(R) Corporation deklar•, ka Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection atbilst Direkt•vas 1999/5/EK b•tiskaj•m pras•b•m un citiem ar to saist•tajiem noteikumiem.
Lietuvi• [Lithuanian]	Šiuo Intel(R) Corporation deklaruoja, kad šis Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Nederlands [Dutch]	Hierbij verklaart Intel(R) Corporation dat het toestel Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
Malti [Maltese]	Hawnhekk, Intel(R) Corporation, jiddikjara li dan Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection jikkonforma mal-•ti•ijiet essenzjali u ma provvedimenti o•rajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
Magyar [Hungarian]	Alulírott, Intel(R) Corporation nyilatkozom, hogy a Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.
Norsk [Norwegian]	Intel Corporation erklærer herved at utstyret Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection er i samsvar med de grunnleggende krav og øvrige relevante krav i direktiv 1999/5/EF.
Polski [Polish]	Niniejszym, Intel(R) Corporation, o•wiadcza, •e Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection jest zgodne z zasadniczymi wymaganiami oraz innymi stosownymi postanowieniami Dyrektywy 1999/5/WE.
Português [Portuguese]	Intel(R) Corporation declara que este Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Slovensko [Slovenian]	Šiuo Intel(R) Corporation izjavlja, da je ta Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection v skladu z bistvenimi zahtevami in ostalimi relevantnimi dolo•ili direktive 1999/5/ES.
Slovensky [Slovak]	Intel(R) Corporation týmto vyhlasuje, že Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection sp••a základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Suomi [Finnish]	Intel(R) Corporation vakuuttaa täten että Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Svenska [Swedish]	Härmed intygar Intel(R) Corporation att denna Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.
Íslenska [Icelandic]	Hér með lýsir Intel(R) Corporation yfir því að Intel(R) PRO/Wireless 3945ABG Network Connection or Intel(R) PRO/Wireless 3945BG Network Connection) er í samræmi við grunnkröfur og aðrar kröfur, sem gerðar eru í tilskipun 1999/5/EC.

Italy

The use of these equipments is regulated by:

1. D.L.gs 1.8.2003, n. 259, article 104 (activity subject to general authorization) for outdoor use and article 105 (free

- use) for indoor use, in both cases for private use.
2. D.M. 28.5.03, for supply to public of RLAN access to networks and telecom services.

L'uso degli apparati è regolamentato da:

1. D.Lgs 1.8.2003, n. 259, articoli 104 (attività soggette ad autorizzazione generale) se utilizzati al di fuori del proprio fondo e 105 (libero uso) se utilizzati entro il proprio fondo, in entrambi i casi per uso privato.
2. D.M. 28.5.03, per la fornitura al pubblico dell'accesso R-LAN alle reti e ai servizi di telecomunicazioni.

Japan

Indoor use only.

Korea

당해 무선설비는 운용 중 전파혼신 가능성이 있음

Taiwan

第十二條

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條

低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前項合法通信，指依電信法規定作業之無線電通信。

低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

Radio approvals

To determine whether you are allowed to use your wireless network device in a specific country, please check to see if the radio type number that is printed on the identification label of your device is listed in the manufacturer's OEM Regulatory Guidance document.

Intel(R) PRO/Wireless 2915ABG Network Connection

The information in this document applies to the following products:

Tri-mode wireless LAN adapters (802.11a/802.11b/802.11g)

Intel(R) PRO/Wireless 2915ABG Network Connection (model WM3B2915ABG)

Intel(R) PRO/Wireless 2915ABG Network Connection (model WM3A2915ABG)

NOTE: Due to the evolving state of regulations and standards in the wireless LAN field (IEEE 802.11 and similar standards), the information provided herein is subject to change. Intel Corporation assumes no responsibility for errors or omissions in this document. Nor does Intel make any commitment to update the information contained herein.

Information for the user

Safety Notices

The FCC with its action in ET Docket 96-8 has adopted a safety standard for human exposure to radio frequency (RF) electromagnetic energy emitted by FCC certified equipment. The Intel(R) PRO/Wireless 2915ABG Network Connection adapter meets the Human Exposure limits found in OET Bulletin 65, supplement C, 2001, and ANSI/IEEE C95.1, 1992. Proper operation of this radio according to the instructions found in this manual will result in exposure substantially below the FCC's recommended limits.


The following safety precautions should be observed:

- Do not touch or move antenna while the unit is transmitting or receiving.
- Do not hold any component containing the radio such that the antenna is very close or touching any exposed parts of the body, especially the face or eyes, while transmitting.
- Do not operate the radio or attempt to transmit data unless the antenna is connected; this behavior may cause damage to the radio.
- Use in specific environments:
 - The use of wireless devices in hazardous locations is limited by the constraints posed by the safety directors of such environments.
 - The use of wireless devices on airplanes is governed by the Federal Aviation Administration (FAA).
 - The use of wireless devices in hospitals is restricted to the limits set forth by each hospital.


Antenna Use


- In order to comply with FCC RF exposure limits, low gain integrated antennas should be located at a minimum distance of 20 cm (8 inches) or more from the body of all persons.
- High-gain, wall-mount, or mast-mount antennas are designed to be professionally installed and should be located at a minimum distance of 30 cm (12 inches) or more from the body of all persons. Please contact your professional installer, VAR, or antenna manufacturer for proper installation requirements.

Explosive Device Proximity Warning


 **Warning:** Do not operate a portable transmitter (such as a wireless network device) near unshielded blasting caps or in an explosive environment unless the device has been modified to be qualified for such use.

Antenna Warnings

 **Warning:** To comply with the FCC and ANSI C95.1 RF exposure limits, it is recommended that when the Intel(R) PRO/Wireless 2915ABG Network Connection adapter is installed in a desktop or portable computer, the antenna for this device be installed so as to provide a separation distance of at least 20 cm (8 inches) from all persons. It is recommended that the user limit exposure time if the antenna is positioned closer than 20 cm (8 inches).

 **Warning:** Intel(R) PRO/Wireless LAN products are not designed for use with high-gain directional antennas. Use of such antennas with these products in a manner other than as described in the previous section titled, "Antenna Use" is illegal.


Use On Aircraft Caution

 **Caution:** Regulations of the FCC and FAA prohibit airborne operation of radio-frequency wireless devices because their signals could interfere with critical aircraft instruments.

Other Wireless Devices

Safety Notices for Other Devices in the Wireless Network: See the documentation supplied with wireless Ethernet adapters or other devices in the wireless network.

Local Restrictions on 802.11a, 802.11b, and 802.11g Radio Usage

 **Caution:** Due to the fact that the frequencies used by 802.11a, 802.11b, and 802.11g wireless LAN devices may not yet be harmonized in all countries, 802.11a, 802.11b, and 802.11g products are designed for use only in specific countries, and are not allowed to be operated in countries other than those of designated use. As a user of these products, you are responsible for ensuring that the products are used only in the countries for which they were intended and for verifying

that they are configured with the correct selection of frequency and channel for the country of use. The device transmit power control (TPC) interface is part of the Intel(R) PROSet/Wireless WiFi Connection Utility. Operational restrictions for Equivalent Isotropic Radiated Power (EIRP) are provided by the system manufacturer. Any deviation from the permissible power and frequency settings for the country of use is an infringement of national law and may be punished as such.

For country-specific information, see the additional compliance information supplied with the product.

Wireless interoperability

The Intel(R) PRO/Wireless 2915ABG Network Connection adapter is designed to be interoperable with other wireless LAN products that are based on direct sequence spread spectrum (DSSS) radio technology and to comply with the following standards:

- IEEE Std. 802.11b compliant Standard on Wireless LAN.
- IEEE Std. 802.11g compliant Standard on Wireless LAN.
- IEEE Std. 802.11a compliant Standard on Wireless LAN.
- Wireless Fidelity (Wi-Fi) certification, as defined by the Wi-Fi Alliance

The Intel(R) PRO/Wireless 2915ABG Network Connection adapter and your health

The Intel(R) PRO/Wireless 2915ABG Network Connection adapter, like other radio devices, emits radio frequency electromagnetic energy. The level of energy emitted by this device, however, is less than the electromagnetic energy emitted by other wireless devices such as mobile phones. The Intel(R) PRO/Wireless 2915ABG Network Connection adapter wireless device operates within the guidelines found in radio frequency safety standards and recommendations. These standards and recommendations reflect the consensus of the scientific community and result from deliberations of panels and committees of scientists who continually review and interpret the extensive research literature. In some situations or environments, the use of the Intel(R) PRO/Wireless 2915ABG Network Connection adapter wireless device may be restricted by the proprietor of the building or responsible representatives of the applicable organization. Examples of such situations may include:

- Using the Intel(R) PRO/Wireless 2915ABG Network Connection adapter equipment on board airplanes, or
- Using the Intel(R) PRO/Wireless 2915ABG Network Connection adapter equipment in any other environment where the risk of interference with other devices or services is perceived or identified as being harmful

If you are uncertain of the policy that applies to the use of wireless devices in a specific organization or environment (an airport, for example), you are encouraged to ask for authorization to use the Intel(R) PRO/Wireless 2915ABG Network Connection adapter wireless device before you turn it on.

Regulatory information

Information for the OEMs and Integrators

The following statement must be included with all versions of this document supplied to an OEM or integrator, but should not be distributed to the end user.

- This device is intended for OEM integrators only.
- Please See the full Grant of Equipment document for other restrictions.
- This device must be operated and used with a locally approved access point.

Information To Be Supplied to the End User by the OEM or Integrator


The following regulatory and safety notices must be published in documentation supplied to the end user of the product or system incorporating an Intel(R) PRO/Wireless 2915ABG Network Connection in compliance with local regulations. Host system must be labeled with "Contains FCC ID: XXXXXXXX", FCC ID displayed on label.

The Intel(R) PRO/Wireless 2915ABG Network Connection adapter wireless network device must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. For country-specific approvals, see [Radio approvals](#). Intel Corporation is not responsible for any radio or television

interference caused by unauthorized modification of the devices included with the Intel(R) PRO/Wireless 2915ABG Network Connection adapter kit, or the substitution or attachment of connecting cables and equipment other than that specified by Intel Corporation. The correction of interference caused by such unauthorized modification, substitution or attachment is the responsibility of the user. Intel Corporation and its authorized resellers or distributors are not liable for any damage or violation of government regulations that may arise from the user failing to comply with these guidelines.

Local Restriction of 802.11a, 802.11b, and 802.11g Radio Usage

The following statement on local restrictions must be published as part of the compliance documentation for all 802.11a, 802.11b, and 802.11g products.

 **Caution:** Due to the fact that the frequencies used by 802.11a, 802.11b, and 802.11g wireless LAN devices may not yet be harmonized in all countries, 802.11a, 802.11b, and 802.11g products are designed for use only in specific countries, and are not allowed to be operated in countries other than those of designated use. As a user of these products, you are responsible for ensuring that the products are used only in the countries for which they were intended and for verifying that they are configured with the correct selection of frequency and channel for the country of use. Any deviation from permissible settings and restrictions in the country of use could be an infringement of national law and may be punished as such.

FCC Radio Frequency Interference Requirements

This device is restricted to indoor use due to its operation in the 5.15 to 5.25 GHz frequency range. FCC requires this product to be used indoors for the frequency range 5.15 to 5.25 GHz to reduce the potential for harmful interference to co-channel Mobile Satellite systems. High power radars are allocated as primary users of the 5.25 to 5.35 GHz and 5.65 to 5.85 GHz bands. These radar stations can cause interference with and /or damage this device.

- This device is intended for OEM integrators only.

USA—Federal Communications Commission (FCC)

This device complies with Part 15 of the FCC Rules. Operation of the device is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference that may cause undesired operation.

NOTE: The radiated output power of the Intel(R) PRO/Wireless 2915ABG Network Connection adapter wireless network device is far below the FCC radio frequency exposure limits. Nevertheless, the Intel(R) PRO/Wireless LAN wireless network device should be used in such a manner that the potential for human contact during normal operation is minimized. To avoid the possibility of exceeding the FCC radio frequency exposure limits, you should keep a distance of at least 20 cm between you (or any other person in the vicinity) and the antenna that is built into the computer.

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. If the equipment is not installed and used in accordance with the instructions, the equipment may cause harmful interference to radio communications. There is no guarantee, however, that such 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 taking one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment to 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.

NOTE: The Intel(R) PRO/Wireless 2915ABG Network Connection adapter wireless network device must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. Any other installation or use will violate FCC Part 15 regulations.

Canada—Industry Canada (IC)

This device complies with RSS210 of Industry Canada.

This Class B digital apparatus complies with Canadian ICES-003, Issue 4, and RSS-210, No 4 (Dec 2000) and No 5 (Nov 2001).

Cet appareil numérique de la classe B est conforme à la norme NMB-003, No. 4, et CNR-210, No 4 (Dec 2000) et No 5 (Nov 2001).

"To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing."

« Pour empêcher que cet appareil cause du brouillage au service faisant l'objet d'une licence, il doit être utilisé à l'intérieur et devrait être placé loin des fenêtres afin de fournir un écran de blindage maximal. Si le matériel (ou son antenne d'émission) est installé à l'extérieur, il doit faire l'objet d'une licence. »

European Union

The low band 5.15 -5.35 GHz is for indoor use only.

Declaration of Conformity



Declaration of Conformity (1999/5/EC)

We, **INTEL CORPORATION SA**

Address: Branch Office; Veldkant 31; 2550 Kontich, Belgium

declare under our sole responsibility that the product:

- Name: **INTEL® PRO/Wireless 2915ABG Network Connection**
- Model: **WM3B2915ABG EU**

to which this declaration relates, is in compliance with all the applicable essential requirements, and other provisions of the European Council Directive:

1999/5/EC	Radio and Telecommunications Terminal Equipment Directive (R&TTE)
-----------	---

The conformity assessment procedure used for this declaration is Annex IV of this Directive

This product will bear the CE Mark label CE 0523 !

Product compliance has been demonstrated on the basis of:

Product compliance has been demonstrated on the basis of:

- IEC 60950 (1999 3 rd Edition with amendments 1, 2, 3, 4), and EN 60950 (2000) - 1995/519/EC, Council recommendation of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)	For article 3.1(a) : Health and Safety of the User
- EN 301 489-1 v1.4.1, Aug. 2002 - EN 301 489-17 v1.2.1, Aug. 2002	For article 3.1(b) : Electromagnetic Compatibility
- Final Draft EN 300 328 v1.5.1, Mar 2004 - EN 301 893 v1.2.3, Aug 2003	For article 3.2 : Effective use of the spectrum allocated

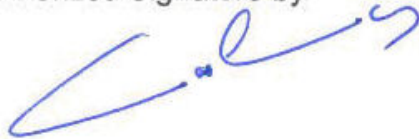
The technical construction file is kept available at:

INTEL CORPORATION SA

Branch Office: Veldkant 31,
2550 Kontich, Belgium

Authorized Signature by

Date: July 19th 2004



Vincent Colin,
Worldwide Homologations Manager,
WPD Regulatory Department



Declaration of Conformity (1999/5/EC)

We, **INTEL CORPORATION SA**

Address: Branch Office; Veldkant 31; 2550 Kontich, Belgium

declare under our sole responsibility that the product:

- Name: **INTEL® PRO/Wireless 2915ABG Network Connection**
- Model: **WM3A2915ABG EU**

declare under our sole responsibility that the product:

- Name: **INTEL® PRO/Wireless 2915ABG Network Connection**
- Model: **WM3A2915ABG EU**

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- EN 301 489-1 v1.4.1, Aug. 2002 - EN 301 489-17 v1.2.1, Aug. 2002	For article 3.1(b) : Electromagnetic Compatibility
- Final Draft EN 300 328 v1.5.1, Mar 2004 - EN 301 893 v1.2.3, Aug 2003	For article 3.2 : Effective use of the spectrum allocated

The technical construction file is kept available at:

INTEL CORPORATION SA

Branch Office: Veldkant 31,
2550 Kontich, Belgium

Authorized Signature by

Date: July 19th 2004



Vincent Colin,
Worldwide Homologations Manager,
WPD Regulatory Department

This equipment complies with the essential requirements of the European Union directive 1999/5/EC.

Czech	Intel(R) Corporation tímto prohlašuje, že tento Intel(R) PRO/Wireless 2915ABG Network Connection je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES."
Danish	Undertegnede Intel(R) Corporation erklærer herved, at følgende udstyr Intel(R) PRO/Wireless 2915ABG Network Connection overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF
Dutch	Hierbij verklaart Intel(R) Corporation dat het toestel Intel(R) PRO/Wireless 2915ABG Network Connection in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG Bij deze verklaart Intel(R) Corporation dat deze Intel(R) PRO/Wireless 2915ABG Network Connection voldoet aan de essentiële eisen en aan de overige relevante bepalingen van Richtlijn 1999/5/EC.
English	Hereby, Intel(R) Corporation, declares that this Intel(R) PRO/Wireless 2915ABG Network Connection is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Estonian	Käesolevaga kinnitab Intel(R) Corporation seadme Intel(R) PRO/Wireless 2915ABG Network Connection vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
Finnish	Intel(R) Corporation vakuuttaa täten että Intel(R) PRO/Wireless 2915ABG Network Connection tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
French	Par la présente Intel(R) Corporation déclare que l'appareil Intel(R) PRO/Wireless 2915ABG Network Connection est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE. Par la présente, Intel(R) Corporation déclare que ce Intel(R) PRO/Wireless 2915ABG Network Connection est conforme aux exigences essentielles et aux autres dispositions de la directive 1999/5/CE qui lui sont applicables.
German	Hiermit erklärt Intel(R) Corporation, dass sich dieser/diese/dieses Intel(R) PRO/Wireless 2915ABG Network Connection in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet". (BMW) Hiermit erklärt Intel(R) Corporation die Übereinstimmung des Gerätes Intel(R) PRO/Wireless 2915ABG Network Connection mit den grundlegenden Anforderungen und den anderen relevanten Festlegungen der Richtlinie 1999/5/EG. (Wien). =
Greek	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ Intel(R) Corporation ΔΗΛΩΝΕΙ ΟΤΙ Intel(R) PRO/Wireless 2915ABG Network Connection ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/EK.
Hungarian	Alulírott, Intel(R) Corporation nyilatkozom, hogy a Intel(R) PRO/Wireless 2915ABG Network Connection megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.
Icelandic	Intel lysir her með yfir að thessi bunadur, Intel(R) PRO/Wireless 2915ABG Network Connection, uppfyllir allar grunnkröfur, sem gerdar eru í R&TTE tilskipun ESB nr 1999/5/EC
Italian	Con la presente Intel(R) Corporation dichiara che questo Intel(R) PRO/Wireless 2915ABG Network Connection è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latvian	Ar šo Intel(R) Corporation deklarē, ka Intel(R) PRO/Wireless 2915ABG Network Connection atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.

Lithuanian	Intel(R) Corporation deklaruoja, kad Intel(R) Pro/Wireless 2915ABG Network Connection atitinka 1999/5/EC Direktyvos esminius reikalavimus ir kitas nuostatas".
Malti	Hawnhekk, Intel(R) Corporation, jiddikjara li dan Intel(R) PRO/Wireless 2915ABG Network Connection jikkonforma mal-•ti•ijiet essenzjali u ma provvedimenti o•rajn rilevanti li hemm fid-Direttiva 1999/5/EC.
Polish	Niniejszym, Intel(R) Corporation, deklaruje, że Intel(R) PRO/Wireless 2915ABG Network Connection spełnia wymagania zasadnicze oraz stosowne postanowienia zawarte Dyrektywie 1999/5/EC.
Portuguese	Intel(R) Corporation declara que este Intel(R) PRO/Wireless 2915ABG Network Connection está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Slovak	Intel(R) Corporation týmto vyhlasuje, že Intel(R) PRO/Wireless 2915ABG Network Connection sp••a základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Slovenia	Šiuo Intel(R) Corporation deklaruoja, kad šis Intel(R) PRO/Wireless 2915ABG Network Connection atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Spanish	Por medio de la presente Intel(R) Corporation declara que el Intel(R) PRO/Wireless 2915ABG Network Connection cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Swedish	Härmed intygar Intel(R) Corporation att denna Intel(R) PRO/Wireless 2915ABG Network Connection står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

France

Pour la France métropolitaine

2.400 - 2.4835 GHz (Canaux 1 à 13) autorisé en usage intérieur

2.400 -2.454 GHz (canaux 1 à 7) autorisé en usage extérieur

Pour la Guyane et la Réunion

2.400 - 2.4835 GHz (Canaux 1 à 13) autorisé en usage intérieur

2.420 - 2.4835 GHz (canaux 5 à 13) autorisé en usage extérieur

Pour tout le territoire Français:

Seulement 5.15 -5.35 GHz autorisé pour le 802.11a

Belgium

Dans le cas d'une utilisation privée, à l'extérieur d'un bâtiment, au-dessus d'un espace public, aucun enregistrement n'est nécessaire pour une distance de moins de 300m. Pour une distance supérieure à 300m un enregistrement auprès de l'IBPT est requise. Pour les enregistrements et licences, veuillez contacter l'IBPT.

In geval van privé-gebruik, buiten een gebouw, op een openbare plaats, is geen registratie nodig, wanneer de afstand minder dan 300m is. Voor een afstand groter dan 300m is een registratie bij BIPT vereist. Voor registraties en licenties, gelieve BIPT te contacteren.

Japan

5GHz 帯は室内でのみ使用のこと

Italy

The use of these equipments is regulated by:

- D.L.gs 1.8.2003, n. 259, article 104 (activity subject to general authorization) for outdoor use and article 105 (free use) for indoor use, in both cases for private use.
- D.M. 28.5.03, for supply to public of RLAN access to networks and telecom services.

L'uso degli apparati è regolamentato da:

- D.L.gs 1.8.2003, n. 259, articoli 104 (attività soggette ad autorizzazione generale) se utilizzati al di fuori del proprio fondo e 105 (libero uso) se utilizzati entro il proprio fondo, in entrambi i casi per uso privato.
- D.M. 28.5.03, per la fornitura al pubblico dell'accesso R-LAN alle reti e ai servizi di telecomunicazioni.

Greece

A license is required for the outdoor use of band 5.470 – 5.725 GHz.

Belarus

2.4 GHz OFDM (802.11g) is not allowed at this time.

Indonesia

5 GHz interface is not allowed at this time.

Kuwait

5 GHz interface is not allowed at this time.

Oman

If the modules are less than 100 milliwatts they are unlicensed but if they are more than 100 milliwatts, the user is responsible for getting a license to operate from Telecommunications Regulatory Authority (TRA) in Sultanate of Oman.

Taiwan

第十二條

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條

低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前項合法通信，指依電信法規定作業之無線電通信。

低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

Pakistan

Pakistan Telecommunication Authority (PTA) Approved

UAE

5 GHz interface is not allowed at this time.

Ukraine

5 GHz interface is not allowed at this time.

Radio approvals

To determine whether you are allowed to use your wireless network device in a specific country, please check to see if the radio type number that is printed on the identification label of your device is listed in the manufacturer's OEM Regulatory Guidance document.

Underwriters Laboratories Inc. (UL) Regulatory Warning

For use in (or with) UL Listed personal computers or compatible.

Regulatory Information: Intel(R) PRO/Wireless 2200BG Network Connection

[Information for the User](#)
[Regulatory Information](#)

Information for the user

Safety Notices

The FCC with its action in ET Docket 96-8 has adopted a safety standard for human exposure to radio frequency (RF) electromagnetic energy emitted by FCC certified equipment. The Intel(R) PRO/Wireless 2200BG Network Connection meets the Human Exposure limits found in OET Bulletin 65, 2001, and ANSI/IEEE C95.1, 1992. Proper operation of this radio according to the instructions found in this manual will result in exposure substantially below the FCC's recommended limits.


The following safety precautions should be observed:

- Do not touch or move antenna while the unit is transmitting or receiving.
- Do not hold any component containing the radio such that the antenna is very close or touching any exposed parts of the body, especially the face or eyes, while transmitting.
- Do not operate the radio or attempt to transmit data unless the antenna is connected; this behavior may cause damage to the radio.
- Use in specific environments:
 - The use of wireless devices in hazardous locations is limited by the constraints posed by the safety directors of such environments.
 - The use of wireless devices on airplanes is governed by the Federal Aviation Administration (FAA).
 - The use of wireless devices in hospitals is restricted to the limits set forth by each hospital.

Antenna Use


- In order to comply with FCC RF exposure limits, low gain integrated antennas should be located at a minimum distance of 20 cm (8 inches) or more from the body of all persons.
- High-gain, wall-mount, or mast-mount antennas are designed to be professionally installed and should be located at a minimum distance of 30 cm (12 inches) or more from the body of all persons. Please contact your professional installer, VAR, or antenna manufacturer for proper installation requirements.


Explosive Device Proximity Warning

 **Warning:** Do not operate a portable transmitter (such as a wireless network device) near unshielded blasting caps or


in an explosive environment unless the device has been modified to be qualified for such use.

Antenna Warnings

 **Warning:** To comply with the FCC and ANSI C95.1 RF exposure limits, it is recommended that when the Intel(R) PRO/Wireless 2200BG Network Connection adapter is installed in a desktop or portable computer, the antenna for this device be installed so as to provide a separation distance of at least 20 cm (8 inches) from all persons. It is recommended that the user limit exposure time if the antenna is positioned closer than 20 cm (8 inches).

 **Warning:** Intel(R) PRO/Wireless LAN products are not designed for use with high-gain directional antennas. Use of such antennas with these products in a manner other than as described in the previous section titled, "Antenna Use" is illegal.

Use On Aircraft Caution

 **Caution:** Regulations of the FCC and FAA prohibit airborne operation of radio-frequency wireless devices because their signals could interfere with critical aircraft instruments.

Local Restrictions on 802.11b and 802.11g Radio Usage

All frequencies used by 802.11b and 802.11g are harmonized. Some countries though may not allow 802.11g.

Wireless interoperability

The Intel(R) PRO/Wireless 2200BG Network Connection adapter is designed to be interoperable with any wireless LAN product that is based on direct sequence spread spectrum (DSSS) radio technology and to comply with the following standards:

- IEEE Std. 802.11b-1999. Standard on Wireless LAN.
- IEEE Std. 802.11g compliant. Standard on Wireless LAN.
- Wireless Fidelity (Wi-Fi) certification, as defined by the Wi-Fi Alliance

The Intel(R) PRO/Wireless LAN 2200BG Mini PCI adapter and your health

The Intel(R) PRO/Wireless 2200BG Network Connection adapter, like other radio devices, emits radio frequency electromagnetic energy. The level of energy emitted by this device, however, is less than the electromagnetic energy emitted by other wireless devices such as mobile phones. The Intel(R) PRO/Wireless 2200BG Network Connection adapter wireless device operates within the guidelines found in radio frequency safety standards and recommendations. These standards and recommendations reflect the consensus of the scientific community and result from deliberations of panels and committees of scientists who continually review and interpret the extensive research literature. In some situations or environments, the use of the Intel(R) PRO/Wireless 2200BG Network Connection adapter wireless device may be restricted by the proprietor of the building or responsible representatives of the applicable organization. Examples of such situations may include:

- Using the Intel(R) PRO/Wireless 2200BG Network Connection adapter equipment on board airplanes, or
- Using the Intel(R) PRO/Wireless 2200BG Network Connection adapter equipment in any other environment where the risk of interference with other devices or services is perceived or identified as being harmful.

If you are uncertain of the policy that applies to the use of wireless devices in a specific organization or environment (an airport, for example), you are encouraged to ask for authorization to use the Intel(R) PRO/Wireless 2200BG Network Connection adapter wireless device before you turn it on.

Regulatory information

The Intel(R) PRO/Wireless 2200BG Network Connection adapter wireless network device must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

For country-specific approvals, see [Radio approvals](#). Intel Corporation is not responsible for any radio or television interference caused by unauthorized modification of the devices included with the Intel(R) PRO/Wireless 2200BG Network Connection adapter kit, or the substitution or attachment of connecting cables and equipment other than that specified by Intel Corporation. The correction of interference caused by such unauthorized modification, substitution or attachment is the responsibility of the user. Intel Corporation and its authorized resellers or distributors are not liable for any damage or violation of government regulations that may arise from the user failing to comply with these guidelines.

USA—Federal Communications Commission (FCC)

This device complies with Part 15 of the FCC Rules. Operation of the device is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference that may cause undesired operation.

NOTE: The radiated output power of the Intel(R) PRO/Wireless 2200BG Network Connection adapter wireless network device is far below the FCC radio frequency exposure limits. Nevertheless, the Intel(R) PROSet/Wireless LAN wireless network device should be used in such a manner that the potential for human contact during normal operation is minimized. To avoid the possibility of exceeding the FCC radio frequency exposure limits, you should keep a distance of at least 2 cm between you (or any other person in the vicinity) and the antenna that is built into the computer.

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. If the equipment is not installed and used in accordance with the instructions, the equipment may cause harmful interference to radio communications. There is no guarantee, however, that such 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 taking one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment to 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.

NOTE: The Intel(R) PRO/Wireless 2200BG Network Connection adapter wireless network device must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. Any other installation or use will violate FCC Part 15 regulations.

U.S. Frequency Bands

2.400 - 2.462 GHz

Canada—Industry Canada (IC)

This Class B digital apparatus complies with Canadian ICES-003, Issue 2, and RSS-210, Issue 4 (Dec. 2000).

Cet appareil numérique de la classe B est conforme à la norme NMB-003, No. 2, et CNR-210, No 4 (Dec 2000).

To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing."

« Pour empêcher que cet appareil cause du brouillage au service faisant l'objet d'une licence, il doit être utilisé à l'intérieur et devrait être placé loin des fenêtres afin de fournir un écran de blindage maximal. Si le matériel (ou son antenne d'émission) est installé à l'extérieur, il doit faire l'objet d'une licence.»

Europe—EU Declaration of Conformity

European Frequency Bands



C E0336 !

Declaration of Conformity

We, **INTEL CORPORATION SA** ; Branch Office; Veldkant 31; 2550 Kontich; Belgium
 Declare that the **INTEL® PRO/Wireless 2200BG Network Connection** with model name: **WM3A2200BG**
 is in conformance with the essential requirements of the European Council Directive:

1999/5/EC (R&TTE)	Radio and Telecommunications Terminal Equipment Directive (Following Annex IV of this Directive)
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The essential requirements being:

Health & Safety of the user (article 3.1.a)	Following directive 73/23/EEC & European Council Recommendation 1999 519 EC
Electromagnetic Compatibility (article 3.1.b)	Following directive 89/336/EEC
Effective use of the spectrum (article 3.2)	Following the Notified Body Opinion from TNO Certification B.V. with Notified Body number 0336

This declaration is based upon compliance to the following standards:

IEC 60950 (1999 3 rd Edition with amendments 1, 2, 3, 4) & EN 60950 (2000)	Safety Information Technology Equipment, Including Electrical Business Equipment. & Common modifications, special national conditions and National Deviation
EN 301 489-1 v1.4.1, Aug. 2002 EN 301 489-17 v1.2.1, Aug. 2002	Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services: Part 1: Common technical requirements Part 17: Specific conditions for Wideband Data and Hiperlan equipment
EN 300 328-1 v1.4.1, Apr 2003	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. Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive
	Generic standard to demonstrate the compliance of low power electronic and

	Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive
EN 50371	Generic standard to demonstrate the compliance of low power electronic and electrical apparatus with the basis restrictions related to human exposure to electromagnetic fields (10MHz - 300GHz) - General public

This declaration is made under our sole responsibility.

Authorized Signature by

Date: 01 December 2003



Vincent Colin,
Worldwide Homologations Manager,
WPD Regulatory Department



CE 0336

Declaration of Conformity

We, **INTEL CORPORATION SA** ; Branch Office; Veldkant 31; 2550 Kontich; Belgium
Declare that the **INTEL® PRO/Wireless 2200BG Network Connection** with model name: **WM3B2200BG**
is in conformance with the essential requirements of the European Council Directive:

1999/5/EC (R&TTE)	Radio and Telecommunications Terminal Equipment Directive (Following Annex IV of this Directive)
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The essential requirements being:

Health & Safety of the user (article 3.1.a)	Following directive 73/23/EEC & European Council Recommendation 1999 519 EC
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This declaration is made under our sole responsibility.

Authorized Signature by

Date: 01 December 2003



Vincent Colin,
Worldwide Homologations Manager,
WPD Regulatory Department

This equipment complies with the essential requirements of the European Union directive 1999/5/EC.

English	Hereby, Intel(R) Corporation, declares that this Intel(R) PRO/Wireless 2200BG Network Connection is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Finnish	Intel(R) Corporation vakuuttaa täten että Intel(R) PRO/Wireless 2200BG Network Connection tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Dutch	Hierbij verklaart Intel(R) Corporation dat het toestel Intel(R) PRO/Wireless 2200BG Network Connection in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG. Bij deze verklaart Intel(R) Corporation dat deze Intel(R) PRO/Wireless 2200BG Network Connection voldoet aan de essentiële eisen en aan de overige relevante bepalingen van Richtlijn 1999/5/EC.
French	Par la présente Intel(R) Corporation déclare que l'appareil Intel(R) PRO/Wireless 2915ABG Network Connection est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE. Par la présente, Intel(R) Corporation déclare que ce Intel(R) PRO/Wireless 2200BG Network Connection est conforme aux exigences essentielles et aux autres dispositions de la directive 1999/5/CE qui lui sont applicables.
Swedish	Härmed intygar Intel(R) Corporation att denna Intel(R) PRO/Wireless 2200BG Network Connection står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.
Danish	Undertegnede Intel(R) Corporation erklærer herved, at følgende udstyr Intel(R) PRO/Wireless 2200BG Network Connection overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.

German	Hiermit erklärt Intel(R) Corporation, dass sich dieser/diese/dieses Intel(R) PRO/Wireless 2200BG Network Connection in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet". (BMW)
	Hiermit erklärt Intel(R) Corporation die Übereinstimmung des Gerätes Intel(R) PRO/Wireless 2200BG Network Connection mit den grundlegenden Anforderungen und den anderen relevanten Festlegungen der Richtlinie 1999/5/EG. (Wien)
Greek	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ Intel(R) Corporation ΔΗΛΩΝΕΙ ΟΤΙ Intel(R) PRO/Wireless 2200BG Network Connection ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
Icelandic	Intel lýsir her með yfir að thessi bunadur, Intel(R) PRO/Wireless 2200BG Network Connection, uppfyllir allar grunnkröfur, sem gerdar eru í R&TTE tilskipun ESB nr 1999/5/EC.
Italian	Con la presente Intel(R) Corporation dichiara che questo Intel(R) PRO/Wireless 2200BG Network Connection è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Spanish	Por medio de la presente Intel(R) Corporation declara que el Intel(R) PRO/Wireless 2200BG Network Connection cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Portuguese	Intel(R) Corporation declara que este Intel(R) PRO/Wireless 2200BG Network Connection está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Malti	Hawnhekk, Intel(R) Corporation, jiddikjara li dan Intel(R) PRO/Wireless 2200BG Network Connection jikkonforma mal-•ti•ijiet essenzjali u ma provvedimenti o•rajn rilevanti li hemm fid-Direttiva 1999/5/EC

New Member States requirements of Declaration of Conformity

Estonian	Käesolevaga kinnitab Intel(R) Corporation seadme Intel(R) PRO/Wireless 2200BG Network Connection vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
Hungarian	Alulírott, Intel(R) Corporation nyilatkozom, hogy a Intel(R) PRO/Wireless 2200BG Network Connection megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak
Slovak	Intel(R) Corporation týmto vyhlasuje, že Intel(R) PRO/Wireless 2200BG Network Connection sp••a základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Czech	Intel(R) Corporation tímto prohlašuje, že tento Intel(R) PRO/Wireless 2200BG Network Connection je ve shod• se základními požadavky a dalšími p•islušnými ustanoveními sm•rnice 1999/5/ES."
Slovenia	Šiuo Intel(R) Corporation deklaruoja, kad šis Intel(R) PRO/Wireless 2200BG Network Connection atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Latvian	Ar šo Intel(R) Corporation deklar•, ka Intel(R) PRO/Wireless 2200BG Network Connection atbilst Direkt•vas 1999/5/EK b•tiskaj•m pras•b•m un citiem ar to saist•tajiem noteikumiem
Lithuanian	Intel(R) Corporation deklaruoja, kad Intel(R) Pro/Wireless 2200BG Network Connection atitinka 1999/5/EC Direktyvos esminius reikalavimus ir kitas nuostatas".
Polish	Niniejszym, Intel(R) Corporation, deklaruje, •e Intel(R) PRO/Wireless 2200BG Network Connection spe•nia wymagania zasadnicze oraz stosowne postanowienia zawarte Dyrektywie 1999/5/EC.

France

Pour la France métropolitaine

2.400 - 2.4835 GHz (Canaux 1à 13) autorisé en usage intérieur
2.400 - 2.454 GHz (canaux 1 à 7) autorisé en usage extérieur

Pour la Guyane et la Réunion

2.400 - 2.4835 GHz (Canaux 1à 13) autorisé en usage intérieur
2.420 - 2.4835 GHz (canaux 5 à 13) autorisé en usage extérieur

Pour tout le territoire Français:

Seulement 5.15 -5.35 GHz autorisé pour le 802.1

Belgique

Dans le cas d'une utilisation privée, à l'extérieur d'un bâtiment, au-dessus d'un espace public, aucun enregistrement n'est nécessaire pour une distance de moins de 300m. Pour une distance supérieure à 300m un enregistrement auprès de l'IBPT est requise. Pour les enregistrements et licences, veuillez contacter l'IBPT.

In geval van privé-gebruik, buiten een gebouw, op een openbare plaats, is geen registratie nodig, wanneer de afstand minder dan 300m is. Voor een afstand groter dan 300m is een registratie bij BIPT vereist. Voor registraties en licenties, gelieve BIPT te contacteren.

Italia

The use of these equipments is regulated by:

- D.L.gs 1.8.2003, n. 259, article 104 (activity subject to general authorization) for outdoor use and article 105 (free use) for indoor use, in both cases for private use.

- D.M. 28.5.03, for supply to public of RLAN access to networks and telecom services.

L'uso degli apparati è regolamentato da:

- D.L.gs 1.8.2003, n. 259, articoli 104 (attività soggette ad autorizzazione generale) se utilizzati al di fuori del proprio fondo e 105 (libero uso) se utilizzati entro il proprio fondo, in entrambi i casi per uso privato.

- D.M. 28.5.03, per la fornitura al pubblico dell'accesso R-LAN alle reti e ai servizi di telecomunicazioni.

Belarus

2.4 GHz OFDM (802.11g) is not allowed at this time.

Korea

당해 무선설비는 운용 중 전파혼신 가능성이 있음

Taiwan

第十二條

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條

低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前項合法通信，指依電信法規定作業之無線電通信。

低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

Pakistan

Pakistan Telecommunication Authority (PTA) Approved

Radio approvals

To determine whether you are allowed to use your wireless network device in a specific country, please check to see if the radio type number that is printed on the identification label of your device is listed in the manufacturer's OEM Regulatory Guidance document.

[Back to Contents](#)

Specifications

- [Intel\(R\) WiMAX/WiFi Link 5350](#)
- [Intel\(R\) WiMAX/WiFi Link 5150](#)
- [Intel\(R\) WiFi Link 5300](#)
- [Intel\(R\) WiFi Link 5100](#)
- [Intel\(R\) Wireless WiFi Link 4965AGN](#)
- [Intel\(R\) Wireless WiFi Link 4965AG](#)
- [Intel\(R\) PRO/Wireless 3945ABG Network Connection](#)
- [Intel\(R\) PRO/Wireless 3945BG Network Connection](#)
- [Intel\(R\) PRO/Wireless 2915ABG Network Connection](#)
- [Intel\(R\) PRO/Wireless 2200BG Network Connection](#)

Intel(R) WiFi Link 5150 and Intel(R) WiFi Link 5350

WiFi / WiMAX	
Form Factor	PCI Express* Mini Card and Half-Mini Card
SKUs	Intel® WiMAX/WiFi Link 5350 - 3x3 MC Intel® WiMAX/WiFi Link 5150 - 1X2 MC/HMC
Dimensions	Mini Card: Width 20 in x Length 1.18 in x Height 0.18 in (50.80 mm x 30 mm x 4.5 mm) Half-Mini Card: Width 1.049 in x Length 1.18 in x Height 0.18 in (26.64 mm x 30 mm x 4.5 mm)
Antenna Interface Connector	Hirose U.FL-R-SMT mates with cable connector U.FL-LP-066
Antenna Diversity	On-board diversity
Connector Interface	53-pin Mini Card edge connector
Voltage	3.3 V
Operating Temperature	0 to +80 degrees Celsius

Humidity	50% to 90% non-condensing (at temperatures of 25 °C to 35 °C)	
WiFi		
Frequency Modulation	5 GHz (802.11a/n)	2.4 GHz (802.11b/g/n)
Frequency band	5.15 GHz - 5.85 GHz (dependent on country)	2.41-2.474 GHz (dependent on country)
Modulation	BPSK, QPSK, 16 QAM, 64 QAM	CCK, DQPSK, DBPSK
Wireless Medium	5 GHz UNII: Orthogonal Frequency Division Multiplexing (OFDM)	2.4 GHz ISM: Orthogonal Frequency Division Multiplexing (OFDM)
Channels	4 to 12 (dependent on country)	Channel 1-11 (US only) Channel 1-13 (Japan, Europe)
IEEE 802.11n Data Rates	Intel(R) WiFi Link 5350	
	450, 405, 360, 300, 270, 243, 240, 216.7, 195, 180, 173.3, 150, 144, 135, 130, 120, 117, 115.5, 90, 86.667, 72.2, 65, 60, 57.8, 45, 43.3, 30, 28.9, 21.7, 15, 14.4, 7.2 Mbps	
	Intel(R) WiFi Link 5150	
	300, 270, 243, 240, 180, 150, 144, 135, 130, 120, 117, 115.5, 90, 86.667, 72.2, 65, 60, 57.8, 45, 43.3, 30, 28.9, 21.7, 15, 14.4, 7.2 Mbps	
IEEE 802.11a Data Rates	54, 48, 36, 24, 18, 12, 9, 6 Mbps	
IEEE 802.11g Data Rates	54, 48, 36, 24, 18, 12, 9, 6 Mbps	
IEEE 802.11b Data Rates	11, 5.5, 2, 1 Mbps	
WiFi General		
Operating Systems	Microsoft Windows XP* (32 and 64 bit) and Windows Vista* (32 and 64 bit)	
Wi-Fi Alliance* certification	Wi-Fi* certification for 802.11b, 802.11g, 802.11a, 802.11h, 802.11d, WPA-Personal, WPA-Enterprise, WPA2-Personal, WPA2-Enterprise, WMM, WMM Power Save, EAP-SIM, LEAP, PEAP, TKIP, EAP-FAST, EAP-TLS, EAP-TTLS	
Cisco Compatible Extensions certification	Cisco Compatible Extensions, v4.0	
WLAN Standard	IEEE 802.11g, 802.11b, 802.11a, 802.11n	
Architecture	Infrastructure or ad hoc (peer-to-peer) operating modes	

Security	WPA-Personal, WPA2-Personal, WPA-Enterprise, WPA2-Enterprise, 802.1X: EAP-SIM, LEAP, PEAP, EAP-FAST, EAP-TLS, EAP-TTLS, EAP-AKA	
Encryption	AES-CCMP 128-bit, WEP 128-bit and 64-bit, CKIP, TKIP	
Product Safety	UL, C-UL, CB (IEC 60590)	
WiMAX		
Frequency band	2.5-2.7 GHz (3A Profile)	
Modulation	UL - QPSK, 16 QAM DL - QPSK, 16 QAM, 64 QAM	
Wireless Medium	Duplex mode: TDD operations	Scalable OFDMA (SOFDMA): 512 and 1024 FFT
	sub-carrier permutation: PUSC	Channel bandwidths: 5 MHz and 10 MHz
WiMAX Network Release Feature set	SPWG/NWG Release 1.0 SPWG/NWG Release 1.5	
Rate Performance (OTA performance 10MHz channel)	10 Mbps DL and 4 Mbps UL @ peak rate	
RF Transmitter Output Power	Compliance with Power class 2	
WiMAX General		
Operating Systems	Microsoft Windows XP* ,Vista*	
Standard Compliance	802.16e-2005 Corrigenda 2 (D4)	
WiMAX System Profile Feature set	Mobile WiMAX release 1, Wave II Profile 3A	
Security	Key Management Protocol (PKMv2)	
Encryption	128bit CCMP (Counter-Mode/CBC-MAC) based on AES encryption	

Intel(R) WiFi Link 5300 and Intel(R) WiFi Link 5100

Form Factor	PCI Express* Full-Mini Card and Half-Mini Card
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Dimensions	Full-Mini Card: Width 2.00 in x Length 1.18 in x Height 0.18 in (50.95 mm x 30 mm x 4.5 mm)	
	Half-Mini Card: Width 1.049 in x Length 1.18 in x Height 0.18 in (26.64 mm x 30 mm x 4.5 mm)	
Antenna Interface Connector	Hirose U.FL-R-SMT mates with cable connector U.FL-LP-066	
Antenna Diversity	On-board diversity	
Connector Interface	52-pin Mini Card edge connector	
Voltage	3.3 V	
Operating Temperature	0 to +80 degrees Celsius	
Humidity	50% to 95% non-condensing (at temperatures of 25 °C to 35 °C)	
Frequency Modulation	5 GHz (802.11a/n)	2.4 GHz (802.11b/g/n)
Frequency band	5.15 GHz - 5.85 GHz (dependent on country)	2.400 - 2.4835 GHz (dependent on country)
Modulation	BPSK, QPSK, 16 QAM, 64 QAM	CCK, DQPSK, DBPSK
Wireless Medium	5 GHz UNII: Orthogonal Frequency Division Multiplexing (OFDM)	2.4 GHz ISM: Orthogonal Frequency Division Multiplexing (OFDM)
Channels	4 to 12 (dependent on country)	Channel 1-11 (US only) Channel 1-13 (Japan, Europe)
IEEE 802.11n Data Rates	Intel(R) WiFi Link 5300	
	450, 405, 360, 300, 270, 243, 240, 216.7, 195, 180, 173.3, 150, 144, 135, 130, 120, 117, 115.5, 90, 86.667, 72.2, 65, 60, 57.8, 45, 43.3, 30, 28.9, 21.7, 15, 14.4, 7.2 Mbps	
	Intel(R) WiFi Link 5100	
	300, 270, 243, 240, 180, 150, 144, 135, 130, 120, 117, 115.5, 90, 86.667, 72.2, 65, 60, 57.8, 45, 43.3, 30, 28.9, 21.7, 15, 14.4, 7.2 Mbps	
IEEE 802.11a Data Rates	54, 48, 36, 24, 18, 12, 9, 6 Mbps	
IEEE 802.11g Data Rates	54, 48, 36, 24, 18, 12, 9, 6 Mbps	
IEEE 802.11b Data Rates	11, 5.5, 2, 1 Mbps	
General		

Operating Systems	Microsoft Windows XP* (32 and 64 bit) and Windows Vista* (32 and 64 bit).
Wi-Fi Alliance* certification	Wi-Fi* certification for 802.11b, 802.11g, 802.11a, 802.11h, 802.11d, WPA-Personal, WPA-Enterprise, WPA2-Personal, WPA2-Enterprise, WMM, WMM Power Save, EAP-SIM, LEAP, PEAP, TKIP, EAP-FAST, EAP-TLS, EAP-TTLS, EAP-AKA
Cisco Compatible Extensions certification	Cisco Compatible Extensions, v4.0
WLAN Standard	IEEE 802.11g, 802.11b, 802.11a, 802.11n
Architecture	Infrastructure or ad hoc (peer-to-peer) operating modes
Security	WPA-Personal, WPA2-Personal, WPA-Enterprise, WPA2-Enterprise, AES-CCMP 128-bit, WEP 128-bit and 64-bit; 802.1X: EAP-SIM, LEAP, PEAP, TKIP, EAP-FAST, EAP-TLS, EAP-TTLS, EAP-AKA
Product Safety	UL, C-UL, CB (IEC 60590)

Intel(R) Wireless WiFi Link 4965AGN

Form Factor	PCI Express* Mini Card
Dimensions	Width 2.00 in x Length 1.18 in x Height 0.18 in (50.95 mm x 30 mm x 4.5 mm)
Antenna Interface Connector	Hirose U.FL-R-SMT mates with cable connector U.FL-LP-066
Antenna Diversity	On-board diversity
Connector Interface	52-pin Mini Card edge connector
Voltage	3.3 V
Operating Temperature	0 to +80 degrees Celsius

Humidity	50% to 95% non-condensing (at temperatures of 25 °C to 35 °C)	
Frequency Modulation	5 GHz (802.11a/n)	2.4 GHz (802.11b/g/n)
Frequency band	5.15 GHz - 5.85 GHz (dependent on country)	2.400 - 2.4835 GHz (dependent on country)
Modulation	BPSK, QPSK, 16 QAM, 64 QAM	CCK, DQPSK, DBPSK
Wireless Medium	5 GHz UNII: Orthogonal Frequency Division Multiplexing (OFDM)	2.4 GHz ISM: Orthogonal Frequency Division Multiplexing (OFDM)
Channels	4 to 12 (dependent on country)	Channel 1-11 (US only) Channel 1-13 (Japan, Europe)
IEEE 802.11n Data Rates	Rx: 300, 270, 243, 240, 180 Rx/Tx: 150, 144, 135, 130, 120, 117, 115.5, 90, 86.667, 72.2, 65, 60, 57.8, 45, 43.3, 30, 28.9, 21.7, 15, 14.4, 7.2	
IEEE 802.11a Data Rates	54, 48, 36, 24, 18, 12, 9, 6 Mbps	
IEEE 802.11g Data Rates	54, 48, 36, 24, 18, 12, 9, 6 Mbps	
IEEE 802.11b Data Rates	11, 5.5, 2, 1 Mbps	
General		
Operating Systems	Microsoft Windows XP* (32 and 64 bit) and Windows Vista* (32 and 64 bit).	

Wi-Fi Alliance* certification	Wi-Fi* certification for 802.11b, 802.11g, 802.11a, 802.11h, 802.11d, WPA-Personal, WPA-Enterprise, WPA2-Personal, WPA2-Enterprise, WMM, WMM Power Save, EAP-SIM, LEAP, PEAP, TKIP, EAP-FAST, EAP-TLS, EAP-TTLS, EAP-AKA
Cisco Compatible Extensions certification	Cisco Compatible Extensions, v4.0
WLAN Standard	IEEE 802.11g, 802.11b, 802.11a, 802.11n
Architecture	Infrastructure or ad hoc (peer-to-peer) operating modes
Security	WPA-Personal, WPA2-Personal, WPA-Enterprise, WPA2-Enterprise, AES-CCMP 128-bit, WEP 128-bit and 64-bit; 802.1X: EAP-SIM, LEAP, PEAP, TKIP, EAP-FAST, EAP-TLS, EAP-TTLS, EAP-AKA
Product Safety	UL, C-UL, CB (IEC 60590)

Intel(R) Wireless WiFi Link 4965AG_

This is a version of Intel Wireless WiFi 4965AGN with 8-2.11n capabilities disabled. 802.11n refers to: IEEE P802.11n / D2.0 Draft Amendment to STANDARD [FOR] Information Technology-Telecommunications and information exchange between systems-Local and Metropolitan networks-Specific requirements-Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) specifications: Enhancements for Higher Throughput.

Form Factor	PCI Express Mini Card
Dimensions	Width 2.00 in x Length 1.18 in x Height 0.18 in (50.95 mm x 30 mm x 4.5 mm)
Antenna Interface Connector	Hirose U.FL-R-SMT mates with cable connector U.FL-LP-066
Antenna Diversity	On-board diversity
Connector Interface	52-pin Mini Card edge connector
Voltage	3.3 V
Operating Temperature	0 to +80 degrees Celsius

Humidity	50% to 95% non-condensing (at temperatures of 25 °C to 35 °C)	
Frequency Modulation	5 GHz (802.11a)	2.4 GHz (802.11b/g)
Frequency band	5.15 GHz - 5.85 GHz (dependent on country)	2.400 - 2.4835 GHz (dependent on country)
Modulation	BPSK, QPSK, 16 QAM, 64 QAM	CCK, DQPSK, DBPSK
Wireless Medium	5 GHz UNII: Orthogonal Frequency Division Multiplexing (OFDM)	2.4 GHz ISM: Orthogonal Frequency Division Multiplexing (OFDM)
Channels	4 to 12 (dependent on country)	Channel 1-11 (US only) Channel 1-13 (Japan, Europe)
IEEE 802.11a Data Rates	54, 48, 36, 24, 18, 12, 9, 6 Mbps	
IEEE 802.11g Data Rates	54, 48, 36, 24, 18, 12, 9, 6 Mbps	
IEEE 802.11b Data Rates	11, 5.5, 2, 1 Mbps	
General		
Operating Systems	Microsoft Windows XP (32 and 64 bit), and Windows Vista (32 and 64 bit)	
Wi-Fi Alliance* certification	Wi-Fi* certification for 802.11b, 802.11g, 802.11a, WPA, WPA2, WMM, EAP-SIM	
Cisco Compatible Extensions certification	Cisco Compatible Extensions, v4.0	
WLAN Standard	IEEE 802.11g, 802.11b, 802.11a	
Architecture	Infrastructure or ad hoc (peer-to-peer) operating modes	
Security	WPA-Personal, WPA2-Personal, WPA-Enterprise, WPA2-Enterprise, AES-CCMP 128-bit, WEP 128-bit and 64-bit; 802.1X: EAP-SIM, LEAP, PEAP, TKIP, EAP-FAST, EAP-TLS, EAP-TTLS, EAP-AKA	
Product Safety	UL, C-UL, CB (IEC 60590)	

Intel(R) PRO/Wireless 3945ABG Network Connection

Form Factor	PCI Express Mini Card
Dimensions	Width 2.00 in x Length 1.18 in x Height 0.18 in (50.95 mm x 30 mm x 4.5 mm)
Antenna Interface Connector	Hirose U.FL-R-SMT mates with cable connector U.FL-LP-066

Dual Diversity Antenna	On-board dual diversity switching	
Connector Interface	52-pin Mini Card edge connector	
Voltage	3.3 V	
Operating Temperature	0 to +80 degrees Celsius	
Humidity	50 to 92% non-condensing (at temperatures of 25 °C to 55 °C)	
Frequency Modulation	5 GHz (802.11a)	2.4 GHz (802.11b/g)
Frequency band	5.15 GHz - 5.85 GHz	2.400 - 2.4835 GHz (dependent on country)
Modulation	BPSK, QPSK, 16 QAM, 64 QAM	CCK, DQPSK, DBPSK
Wireless Medium	5 GHz UNII: Orthogonal Frequency Division Multiplexing (OFDM)	2.4 GHz ISM: Orthogonal Frequency Division Multiplexing (OFDM)
Channels	4 to 12 non-overlapping, dependent on country	Channel 1-11 (US only) Channel 1-13 (Japan, Europe)
Data Rates	54, 48, 36, 24, 18, 12, 9, 6 Mbps	11, 5.5, 2, 1 Mbps
General		
Operating Systems	Microsoft Windows XP and Windows Vista	
Wi-Fi Alliance* certification	Wi-Fi* certification for 802.11b, 802.11g, 802.11a, 802.11h, 802.11d, WPA-Personal, WPA-Enterprise, WPA2-Personal, WPA2-Enterprise, WMM, WMM Power Save, EAP-SIM, LEAP, PEAP, TKIP, EAP-FAST, EAP-TLS, EAP-TTLS, EAP-AKA	
Cisco Compatible Extensions certification	Cisco Compatible Extensions, v4.0	
WLAN Standard	IEEE 802.11g, 802.11b, 802.11a	
Architecture	Infrastructure or ad hoc (peer-to-peer) operating modes	
Security	WPA-Personal, WPA2-Personal, WPA-Enterprise, WPA2-Enterprise, AES-CCMP 128-bit, WEP 128-bit and 64-bit; 802.1X: EAP-SIM, LEAP, PEAP, TKIP, EAP-FAST, EAP-TLS, EAP-TTLS, EAP-AKA	
Product Safety	UL, C-UL, CB (IEC 60590)	

Intel(R) PRO/Wireless 3945BG Network Connection

Form Factor	PCI Express Mini Card
Dimensions	Width 2.00 in x Length 1.18 in x Height 0.18 in (50.95 mm x 30 mm x 4.5 mm)
Antenna Interface Connector	Hirose U.FL-R-SMT mates with cable connector U.FL-LP-066
Dual Diversity Antenna	On-board dual diversity switching
Connector Interface	52-pin Mini Card edge connector
Voltage	3.3 V
Operating Temperature	0 to +80 degrees Celsius
Humidity	50 to 92% non-condensing (at temperatures of 25 °C to 55 °C)
Frequency Modulation	2.4 GHz (802.11b/g)
Frequency band	2.400 - 2.4835 GHz (dependent on country)
Modulation	CCK, DQPSK, DBPSK
Wireless Medium	2.4 GHz ISM: Orthogonal Frequency Division Multiplexing (OFDM)
Channels	Channel 1-11 (US only) Channel 1-13 (Japan, Europe)
IEEE 802.11g Data Rates	54, 48, 36, 24, 18, 12, 9, 6, 5.5, 2, 1 Mbps
IEEE 802.11b Data Rates	11, 5.5, 2, 1 Mbps
General	
Operating Systems	Microsoft Windows XP and Windows Vista
Wi-Fi Alliance* certification	Wi-Fi* certification for 802.11b, 802.11g, WPA, WPA2, WMM, EAP-SIM, LEAP, PEAP, TKIP, EAP-FAST, EAP-TLS, EAP-TTLS, EAP-AKA
Cisco Compatible Extensions certification	Cisco Compatible Extensions, v4.0
WLAN Standard	IEEE 802.11g, 802.11b
Architecture	Infrastructure or ad hoc (peer-to-peer) operating modes
Security	WPA-Personal, WPA2-Personal, WPA-Enterprise, WPA2-Enterprise, AES-CCMP 128-bit, WEP 128-bit and 64-bit; 802.1X: EAP-SIM, LEAP, PEAP, TKIP, EAP-FAST, EAP-TLS, EAP-TTLS, EAP-AKA
Product Safety	UL, C-UL, CB (IEC 60590)

Intel(R) PRO/Wireless 2915ABG Network Connection

Form Factor	Mini PCI Type 3A	
Dimensions	Width 2.85 in x Length 1.75 in x Height 0.20 in (72.39 mm x 44.54 mm x 5.08 mm)	
Weight	0.7 oz. (12.90 g.)	
Antenna Interface Connector	Hirose U.FL-R-SMT mates with cable connector U.FL-LP-066	
Dual Diversity Antenna	On-board dual diversity switching	
Connector Interface	124-pin SO-DIMM edge connector	
Voltage	3.3 Volt	
Operating Temperature	0 to +70 degrees Celsius	
Humidity	50 to 85% non-condensing	
Frequency Modulation	5 GHz (802.11a)	2.4 GHz (802.11b/g)
Frequency band	5.15 GHz - 5.85 GHz	2.400 - 2.472 GHz (dependent on country)
Modulation	BPSK, QPSK, 16 QAM, 64 QAM	CCK, DQPSK, DBPSK
Wireless Medium	5 GHz UNII: Orthogonal Frequency Division Multiplexing (OFDM)	2.4 GHz ISM: Orthogonal Frequency Division Multiplexing (OFDM)
Channels	4 to 12 non-overlapping, dependent on country	Channel 1-11 (US only) Channel 1-13 (Japan, Europe)

Data Rates	54, 48, 36, 24, 18, 12, 9, 6 Mbps	11, 5.5, 2, 1 Mbps
General		
Operating Systems	Microsoft Windows XP and Windows Vista	
Wi-Fi Alliance* certification	Wi-Fi* certification for 802.11b, 802.11g, 802.11a, WPA, WPA2, WMM, EAP-SIM, LEAP, PEAP, TKIP, EAP-FAST, EAP-TLS, EAP-TTLS, EAP-AKA	
Cisco Compatible Extensions certification	Cisco Compatible Extensions, v3.0	
WLAN Standard	IEEE 802.11g, 802.11b, 802.11a	
Architecture	Infrastructure or ad hoc (peer-to-peer) operating modes	
Security	WPA-Personal, WPA2-Personal, WPA-Enterprise, WPA2-Enterprise, AES-CCMP 128-bit, WEP 128-bit and 64-bit. 802.1X: EAP-SIM, LEAP, PEAP, TKIP, EAP-FAST, EAP-TLS, EAP-TTLS, EAP-AKA	
Product Safety	UL, C-UL, CB (IEC 60590)	

Intel(R) PRO/Wireless 2200BG Network Connection

Form Factor	Mini PCI Type 3B
Dimensions	Width 2.34 in x Length 1.75 in x Height 0.20 in (59.45 mm x 44.45 mm x 5 mm)
Weight	0.7 oz. (12.90 g.)
Antenna Interface Connector	Hirose U.FL-R-SMT mates with cable connector U.FL-LP-066
Dual Diversity Antenna	On-board dual diversity switching
Connector Interface	124-pin mini PCI edge connector
Voltage	3.3 V

Operating Temperature	0 to +70 degrees Celsius
Humidity	50 to 85% non-condensing
Frequency Modulation	OFDM with BPSK, QPSK, 16QAM, 64QAM, DBPSK, DQPSK, CCK
Frequency band	2.400 - 2.472 GHz (US) 2.400 - 2.4835 GHz (Japan) 2.400 - 2.4835 GHz (Europe ETSI)
Modulation	OFDM with BPSK, QPSK, 16QAM, 64QAM, DBPSK, DQPSK, CCK
Channels	Full 14 channel support
Data Rates	1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48 and 54 Mbps
General	
Operating Systems	Microsoft Windows XP and Windows Vista
Wi-Fi Alliance* certification	Wi-Fi* certification for 802.11b, 802.11g, WPA, WPA2, WMM, EAP-SIM, LEAP, PEAP, TKIP, EAP-FAST, EAP-TLS, EAP-TTLS, EAP-AKA
Cisco Compatible Extensions certification	Cisco Compatible Extensions, v2.0
WLAN Standard	IEEE 802.11g and 802.11b
Architecture	Infrastructure or ad hoc (peer-to-peer) operating modes
Security	WPA, LEAP, PEAP, TKIP, EAP-TLS, EAP-TTLS, AES (128-bit), WEP 128-bit and 64-bit.
Product Safety	UL, C-UL, CB (IEC 60590)

[Back to Top](#)

[Back to Contents](#)

[Trademarks and Disclaimers](#)

[Back to Contents](#)

General Troubleshooting

[Intel\(R\) Wireless Troubleshooter](#)

[Wireless Event Viewer](#)

[Manual Diagnostics Tool](#)

[Resolving Errors](#)

[Basic Troubleshooting](#)

Basic Troubleshooting

Problem or Symptom	Possible Solution
The wireless network card cannot connect to the access point.	<p>Ensure that your access point is turned on, and that you have a profile for the wireless network. The security settings in your profile must match your access point's settings.</p> <p>Ensure that 802.1X is disabled on both your access point and your wireless card.</p>
The wireless card drops connection occasionally.	<ol style="list-style-type: none">1. Move closer to the access point.2. Power cycle access point.3. Update access point firmware from access point vendor support site.4. Update the wireless LAN driver.

Your wireless connection is slower than expected.

1. Move closer to the access point.
2. Power cycle access point.
3. Update access point firmware from access point vendor support site.
4. Update the wireless LAN driver.

The name of my wireless network is not displayed in the list of available networks.

Ensure that your access point is functioning correctly.

Check the SSID (network name) of the wireless network and ensure that the access point is set to broadcast the SSID.

For XP users: The computers seem to be connected to the network, but printers and/or file shares do not appear in **My Computer** or in **My Network Places**.

Verify that File and Printer Sharing is enabled on all the computers on your network.

1. Click **Start**.
2. Click **Control Panel**.
3. Click **Switch to Classic View**, if available in the left pane.
4. Double-click **Network Connections**.
5. Right-click **Wireless Network Connection**.
6. Click **Properties**.
7. Click the **General** tab.
8. Under **This connection uses the following items**, verify that the **File and Printer Sharing for Microsoft Networks** is selected.
9. If cleared, click to select **File and Printer Sharing for Microsoft Networks**.
10. If this item is not present, perform the following steps:
 - Click **Install**.

- Select **Service**
- Click **Add**.
- Select **File and Printer Sharing for Microsoft Networks**.
- Click **OK**

11. Close **OK** to close Wireless Network Connection Properties.

12. Close Network Connections.

For Vista users: The computers seem to be connected to the network, but printers and/or file shares do not appear in **Computer**.

Verify that File and Printer Sharing are enabled in the Network and Sharing Center.

1. Click **Start**.
2. Click **Control Panel**.
3. Click **Network and Internet**.
4. Under Network and Sharing Center, click **View network computers and devices**.
5. If no resources are displayed, network discovery and file sharing may be turned off. This is indicated by a message by the top of the window: **Network discovery and file sharing are turned off. Network computers and devices are not visible. Click to change...** Click this message.
6. Click **Turn on network discovery and file sharing**. The instructions will guide you through the process.

<p>Data transfer is sometimes very slow.</p>	<p>Microwave ovens, some baby monitors, cordless game controllers, and some cordless phones operate at the same radio frequency as the installed wireless card. When these devices are in use, they interfere with the wireless network. For optimum performance, keep wirelessly-connected computers at least 20 feet away from devices that operate at a frequency of 2.4 GHz.</p>
<p>Data transfer is always very slow.</p>	<p>Some homes and most offices are steel-framed structures. The steel in such buildings may interfere with your network's radio signals, thus causing a slowdown in the data transmission rate. Try moving your computer to different locations in the building to see if performance improves.</p>
<p>Computers are not communicating with the network.</p>	<p>Verify that all of the wireless network properties settings are correct.</p> <ul style="list-style-type: none"> • Make sure that your computer is receiving a good signal from the access point or router. • Verify with the network administrator that installed the wireless card in your portable computer is compatible with the IEEE 802.11 WLAN standard under which the wireless network is operating. • You may need to disable or uninstall firewall software to connect. • If your network uses access points or routers, check all cables and make sure the power LED on the front of the access point or router is green.
<p>I cannot connect to any wireless network.</p>	<p>Radio may be disabled. See: Turn on/Turn off Radio for more information.</p>
<p>Intel(R) PROSet/Wireless WiFi software asks me for a key when I try to connect to a wireless network.</p>	<p>Network has security enabled. See Security Overview for more information.</p>
<p>No wireless networks are displayed in the list of available networks.</p>	<p>Computer is too far from wireless network or there are no wireless networks in the area.</p>

How do I configure roaming identity for multiple users.

Configure Roaming Identity to support multiple users:

If you use a [Pre-logon/Common](#) profile that requires the roaming identity to be based on the Windows logon credentials, the creator of the profile can add a roaming identity that uses %username% and %domain%. The roaming identity is parsed and the appropriate log on information is substituted for the keywords. This allows maximum flexibility in configuring the roaming identity while allowing multiple users to share the profile.

Please see your authentication server user guide for directions about how to format a suitable roaming identity. Possible formats are:

```
%domain%\%username%  
%username%@%domain%  
%username%@%domain%.com  
%username%@mynetwork.com
```

If Roaming Identity is cleared, %domain%\%username% is the default.

NOTE: Credentials: This user name and domain must match the user name that is set in the authentication server by the administrator prior to client authentication. The user name is case-sensitive. This name specifies the identity supplied to the authenticator by the authentication protocol operating over the TLS tunnel. This user identity is securely transmitted to the server only after an encrypted channel has been verified and established.

[Back to Top](#)

[Back to Contents](#)

[Trademarks and Disclaimers](#)

Glossary of Terms

Term	Definition
802.11	The 802.11 standard refers to a family of specifications developed by the IEEE for wireless LAN technology. The 802.11 specifies an over-the-air interface between a wireless client and a base station or between two wireless clients and provides 1 or 2 Mbps transmission in the 2.4 GHz band using either frequency hopping spread spectrum (FHSS) or direct sequence spread spectrum (DSSS).
802.11a	The 802.11a standard specifies a maximum data transfer rate of 54 Mbps and an operating frequency of 5 GHz. The 802.11a standard uses the Orthogonal Frequency Division Multiplexing (OFDM) transmission method. Additionally, the 802.11a standard supports 802.11 features such as WEP encryption for security.
802.11b	802.11b is an extension to 802.11 that applies to wireless networks and provides 11 Mbps transmission (with a fallback to 5.5, 2 and 1 Mbps) in the 2.4 GHz band. 802.11b uses only DSSS. Throughput data rate 5+ Mbps in the 2.4 GHz band.
802.11g	The 802.11g standard specifies a maximum data transfer rate of 54 Mbps, an operating frequency of 2.4GHz, and WEP encryption for security. 802.11g networks are also referred to as Wi-Fi* networks.
802.11n	A taskgroup of the IEEE 802.11 committee is in the process of defining a standard for high throughput speeds of at least 100Mbps on wireless networks. Some proposals being fielded by the taskgroup include designs for up to 540 Mbps. Multiple-Input-Multiple-Output (MIMO) technology, using multiple receivers and multiple transmitters in both the client and access point to achieve improved performance is expected to form the basis of the final specification.
802.1X	802.1X is the IEEE Standard for Port-Based Network Access Control. This is used in conjunction with EAP methods to provide access control to wired and wireless networks.
AAA Server	Authentication, Authorization and Accounting Server. A system to control access to computer resources and track user activity.
Access Point (AP)	A device that connects wireless devices to another network. For example, a wireless LAN, Internet modem or others.

Ad Hoc Network	A communication configuration in which every computer has the same capabilities, and any computer can initiate a communication session. Also known as a peer-to-peer network, a device to device network or a computer-to-computer network.
AES-CCMP	Advanced Encryption Standard - Counter CBC-MAC Protocol is the new method for privacy protection of wireless transmissions specified in the IEEE 802.11i standard. AES-CCMP provides a stronger encryption method than TKIP. The AES algorithm is capable of using cryptographic keys of 128, 192, and 256 bits to encrypt and decrypt data in 128-bit blocks. AES-CCMP uses the AES block cipher, but restricts the key length to 128 bits. AES-CCMP incorporates two sophisticated cryptographic techniques (counter mode and CBC-MAC) to provide improved security between the mobile client and the access point.
Authentication	Verifies the identity of a user logging onto a network. Passwords, digital certificates, smart cards and biometrics are used to prove the identity of the client to the network. Passwords and digital certificates are also used to identify the network to the client.
Available network	One of the networks listed under Available networks on the Wireless Networks tab of the Wireless Network Connection Properties (Windows XP environment). Any wireless network that is broadcasting and is within receiving range of the wireless adapter appears on the list.
BER	Bit Error Rate. The ratio of errors to the total number of bits being sent in a data transmission from one location to another.
Bit Rate	The total number of bits (ones and zeros) per second that a network connection can support. Note that this bit rate will vary, under software control, with different signal path conditions.
Broadcast SSID	Used to allow an access point to respond to clients on a wireless network by sending probes.
BSSID	A unique identifier for each wireless client on a wireless network. The Basic Service Set Identifier (BSSID) is the Ethernet MAC address of each adapter on the network.
CA (Certificate Authority)	A corporate certification authority implemented on a server. In addition, Internet Explorer's certificate can import a certificate from a file. A trusted CA certificate is stored in the root store.
CCX (Cisco Compatible eXtension)	Cisco Compatible Extensions Program ensures that devices used on Cisco wireless LAN infrastructure meet the security, management and roaming requirements.
Certificate	Used for client authentication. A certificate is registered on the authentication server (for example, RADIUS server) and used by the authenticator.

CKIP	Cisco Key Integrity Protocol (CKIP) is a Cisco proprietary security protocol for encryption in 802.11 media. CKIP uses a key message integrity check and message sequence number to improve 802.11 security in infrastructure mode. CKIP is Cisco's version of TKIP.
Client computer	The computer that gets its Internet connection by sharing either the host computer's connection or the access point's connection.
DSSS	Direct Sequence Spread Spectrum. Technology used in radio transmission. Incompatible with FHSS.
EAP	Short for Extensible Authentication Protocol, EAP sits inside of Point-to-Point Protocol's (PPP) authentication protocol and provides a generalized framework for several different authentication methods. EAP is supposed to head off proprietary authentication systems and let everything from passwords to challenge-response tokens and public-key infrastructure certificates all work smoothly.
EAP-AKA	EAP-AKA (Extensible Authentication Protocol Method for UMTS Authentication and Key Agreement) is an EAP mechanism for authentication and session key distribution, using the Universal Mobile Telecommunications System (UMTS) Subscriber Identity Module (USIM). The USIM card is a special smart card used with cellular networks to validate a given user with the network.
EAP-FAST	<p>EAP-FAST, like EAP-TTLS and PEAP, uses tunneling to protect traffic. The main difference is that EAP-FAST does not use certificates to authenticate.</p> <p>Provisioning in EAP-FAST is negotiated solely by the client as the first communication exchange when EAP-FAST is requested from the server. If the client does not have a pre-shared secret Protected Access Credential (PAC), it can request to initiate a provisioning EAP-FAST exchange to dynamically obtain one from the server.</p> <p>EAP-FAST documents two methods to deliver the PAC: manual delivery through an out-of-band secure mechanism, and automatic provisioning.</p> <ul style="list-style-type: none"> • Manual delivery mechanisms can be any delivery mechanism that the administrator of the network feels is sufficiently secure for their network. • Automatic provisioning establishes an encrypted tunnel to protect the authentication of the client and the delivery of the PAC to the client. This mechanism, while not as secure as a manual method may be, is more secure than the authentication method used in LEAP. <p>The EAP-FAST method can be divided into two parts: provisioning, and authentication. The provisioning phase involves the initial delivery of the PAC to the client. This phase only needs to be performed once per client</p>

	and user.
EAP-GTC	The EAP-GTC (Generic Token Card) is similar to the EAP-OTP except with hardware token cards. The request contains a displayable message, and the response contains the string read from the hardware token card.
EAP-OTP	EAP-OTP (One-Time Password) is similar to MD5, except it uses the OTP as the response. The request contains a displayable message. The OTP method is defined in RFC 2289.
EAP-SIM	<p>Extensible Authentication Protocol-Subscriber Identity Module (EAP-SIM) authentication can be used with:</p> <ul style="list-style-type: none"> • Network Authentication types: Open, Shared, and WPA*-Enterprise, WPA2*-Enterprise. • Data Encryption types: None, WEP and CKIP. <p>A SIM card is a special smart card that is used by Global System for Mobile Communications (GSM) based digital cellular networks. The SIM card is used to validate your credentials with the network</p>
EAP-TLS	A type of authentication method that uses EAP and a security protocol called the Transport Layer Security (TLS). EAP-TLS uses certificates that use passwords. EAP-TLS authentication supports dynamic WEP key management.
EAP-TTLS	A type of authentication method that uses EAP and Tunneled Transport Layer Security (TTLS). EAP-TTLS uses a combination of certificates and another security method such as passwords.
Encryption	Scrambling data so that only the authorized recipient can read it. Usually a key is needed to interpret the data.
FHSS	Frequency-Hop Spread Spectrum. Technology used in radio transmission. Incompatible with DSSS.
File and printer sharing	A capability that allows a number of people to view, modify, and print the same file(s) from different computers.
Fragmentation threshold	The threshold at which the wireless adapter breaks the packet into multiple frames. This determines the packet size and affects the throughput of the transmission.
GHz (Gigahertz)	A unit of frequency equal to 1,000,000,000 cycles per second.
Host computer	The computer that is directly connected to the Internet via a modem or network adapter.
Infrastructure network	A wireless network centered around an access point. In this environment, the access point not only provides communication with the wired network, but also mediates wireless network traffic in the immediate neighborhood.

IEEE	Institute of Electrical and Electronics Engineers (IEEE) is an organization involved in defining computing and communications standards.
Internet Protocol (IP) address	The address of a computer that is attached to a network. Part of the address designates which network the computer is on, and the other part represents the host identification.
LAN (Local Area Network)	A high-speed, low-error data network covering a relatively small geographic area.
LEAP (Light Extensible Authentication Protocol)	A version of Extensible Authentication Protocol (EAP). LEAP is a proprietary extensible authentication protocol developed by Cisco that provides a challenge-response authentication mechanism and dynamic key assignment.
MAC (Media Access Control) Address	A hardwired address applied at the factory. It uniquely identifies network hardware, such as a wireless adapter, on a LAN or WAN.
Mbps (Megabits-per-second)	Transmission speed of 1,000,000 bits per second.
MHz (Megahertz)	A unit of frequency equal to 1,000,000 cycles per second.
MIC (Michael)	Message Integrity Check (commonly called Michael).
MS-CHAP	An EAP mechanism used by the client. Microsoft Challenge Authentication Protocol (MS-CHAP) Version 2, is used over an encrypted channel to enable server validation. The challenge and response packets are sent over a non-exposed TLS encrypted channel.
ns (Nanosecond)	1 billionth (1/1,000,000,000) of a second.
OFDM	Orthogonal Frequency Division Multiplexing.
Open authentication	Allows any device network access. If encryption is not enabled on the network, any device that knows the Service Set Identifier (SSID) of the access point can gain access to the network.

PEAP	Protected Extensible Authentication Protocol (PEAP) is an Internet Engineering Task Force (IETF) draft protocol sponsored by Microsoft, Cisco, and RSA Security. PEAP creates an encrypted tunnel similar to the tunnel used in secure web pages (SSL). Inside the encrypted tunnel, a number of other EAP authentication methods can be used to perform client authentication. PEAP requires a TLS certificate on the RADIUS server, but unlike EAP-TLS there is no requirement to have a certificate on the client. PEAP has not been ratified by the IETF. The IETF is currently comparing PEAP and TTLS (Tunneled TLS) to determine an authentication standard for 802.1X authentication in 802.11 wireless systems. PEAP is an authentication type designed to take advantage of server-side EAP-Transport Layer Security (EAP-TLS) and to support various authentication methods, including user passwords and one-time passwords, and Generic Token Cards.
Peer-to-Peer mode	A wireless network structure that allows wireless clients to communicate directly with each other without using an access point.
Power save mode	The state in which the radio is periodically powered down to conserve power. When the portable computer is in Power Save mode, receive packets are stored in the access point until the wireless adapter wakes up.
Preferred network	One of the networks that has been configured. Such networks are listed under Preferred networks on the Wireless Networks tab of the Wireless Network Connection Properties (Windows XP* environment).
RADIUS (Remote Authentication Dial-In User Service)	RADIUS is an authentication and accounting system that verifies user's credentials and grants access to requested resources.
RF (Radio Frequency)	The international unit for measuring frequency is Hertz (Hz), which is equivalent to the older unit of cycles per second. One MegaHertz (MHz) is one million Hertz. One GigaHertz (GHz) is one billion Hertz. For reference: the standard US electrical power frequency is 60 Hz, the AM broadcast radio frequency band is 0.55 -1.6 MHz, the FM broadcast radio frequency band is 88-108 MHz, and microwave ovens typically operate at 2.45 GHz.
Roaming	Movement of a wireless node between two micro cells. Roaming usually occurs in infrastructure networks built around multiple access points. Current wireless network roaming is only supported in the same subnet of a network.
RTS threshold	The number of frames in the data packet at or above which an RTS/CTS (request to send/clear to send) handshake is turned on before the packet is sent. The default value is 2347.
Shared key	An encryption key known only to the receiver and sender of data. This is also referred to as a pre-shared key.

SIM (Subscriber Identity Module)	A SIM card is used to validate credentials with the network. A SIM card is a special smart card used by GSM-based digital cellular networks.
Silent mode	Silent Mode Access Points or Wireless Routers have been configured to not broadcast the SSID for the wireless network. This makes it necessary to know the SSID in order to configure the wireless profile to connect to the access point or wireless router.
Single Sign On	Single Sign On feature set allows the 802.1X credentials to match your Windows log on user name and password credentials for wireless network connections.
SSID (Service Set Identifier)	SSID or network name is a value that controls access to a wireless network. The SSID for your wireless network card must match the SSID for any access point that you want to connect with. If the value does not match, you are not granted access to the network. Each SSID may be up to 32 alphanumeric characters long and is case-sensitive.
stealth	A stealth access point is one that has the capability and is configured to not broadcast its SSID. This is the wireless network name that appears when a DMU (Device Management Utility, such as Intel® PROSet/Wireless WiFi) scans for available wireless networks. Although this can enhance wireless network security, it is commonly considered a weak security feature. To connect to a stealth access point, a user must specifically know the SSID and configure their DMU accordingly. The feature is not a part of the 802.11 specification, and is known by differing names by various vendors: closed mode, private network, SSID broadcasting.
TKIP (Temporal Key Integrity Protocol)	Temporal Key Integrity protocol improves data encryption. Wi-Fi Protected Access* uses its TKIP. TKIP provides important data encryption enhancements including a re-keying method. TKIP is part of the IEEE 802.11i encryption standard for wireless networks. TKIP is the next generation of WEP, the Wired Equivalency Protocol, which is used to secure 802.11 wireless networks. TKIP provides per packet key mixing, a message integrity check and a re-keying mechanism, thus fixing the flaws of WEP.

<p>TLS (Transport Layer Security)</p>	<p>A type of authentication method using the Extensible Authentication Protocol (EAP) and a security protocol called the Transport Layer Security (TLS). EAP-TLS uses certificates which use passwords. EAP-TLS authentication supports dynamic WEP key management. The TLS protocol is intended to secure and authenticate communications across a public network through data encryption. The TLS Handshake Protocol allows the server and client to provide mutual authentication and to negotiate an encryption algorithm and cryptographic keys before data is transmitted.</p>
<p>TTLS (Tunneled Transport Layer Security)</p>	<p>These settings define the protocol and the credentials used to authenticate a user. In TTLS, the client uses EAP-TLS to validate the server and create a TLS-encrypted channel between the client and server. The client can use another authentication protocol. Typically password-based protocols challenge over this encrypted channel to enable server validation. The challenge and response packets are sent over a non-exposed TLS encrypted channel. TTLS implementations today support all methods defined by EAP, as well as several older methods (CHAP, PAP, MS-CHAP and MS-CHAP-V2). TTLS can easily be extended to work with new protocols by defining new attributes to support new protocols.</p>
<p>WEP (Wired Equivalent Privacy)</p>	<p>Wired Equivalent Privacy, 64- and 128-bit (64-bit is sometimes referred to as 40-bit). This is a low-level encryption technique designed to give the user about the same amount of privacy that he would expect from a LAN. WEP is a security protocol for wireless local area networks (WLANs) defined in the 802.11b standard. WEP is designed to provide the same level of security as that of a wired LAN. WEP aims to provide security by data over radio waves so that it is protected as it is transmitted from one end point to another.</p>
<p>WEP Key</p>	<p>Either a pass phrase or hexadecimal key. The pass phrase must be 5 ASCII characters for 64-bit WEP or 13 ASCII characters for 128-bit WEP. For pass phrases, 0-9, a-z, A-Z, and ~!@#\$%^&*()_+ `-={} []\:";'<>?,./ are all valid characters. The hex key must be 10 hexadecimal characters (0-9, A-F) for 64-bit WEP or 26 hexadecimal characters (0-9, A-F) for 128-bit WEP.</p>
<p>Wi-Fi* (Wireless Fidelity)</p>	<p>Is meant to be used generically when referring of any type to 802.11 network, whether 802.11b, 802.11a, or dual-band.</p>

WiMAX	<p>WiMAX, the Worldwide Interoperability for Microwave Access, is a telecommunications technology aimed at providing wireless data over long distances in a variety of ways, from point-to-point links to full mobile cellular type access. It is based on the IEEE 802.16 standard. The name WiMAX was created by the WiMAX Forum, which was formed in June 2001 to promote conformance and interoperability of the standard. The forum describes WiMAX as "a standards-based technology enabling the delivery of last mile wireless broadband access as an alternative to cable and DSL."</p>
Wireless router	<p>A stand-alone wireless hub that allows any computer that has a wireless network adapter to communicate with another computer within the same network and to connect to the Internet.</p>
WLAN (Wireless Local-Area Network)	<p>A type of local-area network that uses high-frequency radio waves rather than wires to communicate between nodes.</p>
WPA* (Wi-Fi Protected Access)	<p>This is a security enhancement that strongly increases the level of data protection and access control to a wireless network. WPA is an interim standard that will be replaced with the IEEE's 802.11i standard upon its completion. WPA consists of RC4 and TKIP and provides support for BSS (Infrastructure) mode only. (Not compatible with WPA2.)</p>
WPA2* (Wi-Fi Protected Access 2)	<p>This is the second generation of WPA that complies with the IEEE TGi specification. WPA2 consists of AES encryption, pre-authentication and PMKID caching. It provides support for BSS (Infrastructure) mode and IBSS (ad hoc) mode. (Not compatible with WPA.)</p>
WPA-Enterprise	<p>Wi-Fi Protected Access-Enterprise applies to corporate users. A new standards-based, interoperable security technology for wireless LAN (subset of IEEE 802.11i draft standard) that encrypts data sent over radio waves. WPA is a Wi-Fi standard that was designed to improve upon the security features of WEP as follows:</p> <ul style="list-style-type: none"> • Improved data encryption through the temporal key integrity protocol (TKIP). TKIP uses a hashing algorithm to scramble the encryption keys and adds an integrity-checking feature to ensure that the keys have not been tampered with. • User authentication, which is generally missing in WEP, through the extensible authentication protocol (EAP). WEP regulates access to a wireless network based on a computer's hardware-specific MAC address, which is relatively simple to be sniffed out and stolen. EAP is built on a more secure public-key encryption system to ensure that only authorized network users can access the network. <p>WPA is an interim standard that will be replaced with the IEEE's 802.11i</p>

standard upon its completion.

WPA-Personal

Wi-Fi Protected Access-Personal provides a level of security in the small network or home environment.

WPA-PSK (Wi-Fi Protected Access-Pre-Shared Key)

WPA-PSK mode does not use an authentication server. It can be used with the data encryption types WEP or TKIP. WPA-PSK requires configuration of a pre-shared key (PSK). You must enter a pass phrase or 64 hex characters for a pre-shared key of length 256-bits. The data encryption key is derived from the PSK.

[Back to Top](#)

[Back to Contents](#)

[Trademarks and Disclaimers](#)

[Back to Contents](#)

Customer Support

Intel support is available online or by telephone. Available services include the most up-to-date product information, installation instructions about specific products, and troubleshooting tips.

Online Support

Technical Support: <http://support.intel.com>

Network Product Support: <http://www.intel.com/network>

Corporate Web Site: <http://www.intel.com>

[Back to Contents](#)

Warranty

Product Warranty Information

One-Year Limited Hardware Warranty

Limited Warranty

In this warranty statement, the term "Product" applies to the following devices:

- Intel(R) WiMAX/WiFi Link 5350
- Intel(R) WiMAX/WiFi Link 5150
- Intel(R) WiFi Link 5300
- Intel(R) WiFi Link 5100
- Intel(R) Wireless WiFi Link 4965AGN
- Intel(R) Wireless WiFi Link 4965AG_
- Intel(R) PRO/Wireless 3945ABG Network Connection
- Intel(R) PRO/Wireless 2915ABG Network Connection
- Intel(R) PRO/Wireless 2200BG Network Connection

Intel warrants to the purchaser of the Product that the Product, if properly used and installed, will be free from defects in material and workmanship and will substantially conform to Intel's publicly available specifications for the Product for a period of one (1) year beginning on the date the Product was purchased in its original sealed packaging.

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[Back to Top](#)


[Back to Contents](#)

[Trademarks and Disclaimers](#)

Taskbar Icon

- [Taskbar Menu Options](#)
- [Taskbar Icons](#)
- [Tool Tips and Desktop Alerts](#)
- [Start Intel PROSet/Wireless from Taskbar](#)

Taskbar Menu Options

The Intel(R) PROSet/Wireless WiFi Connection Utility status icon displays on the Taskbar located in the lower right corner of your Windows desktop. This icon looks like this: 

Right-click the status icon to display the menu options.

If the WiFi connection utility is managing your WiFi connections, then the following menu options appear.




Name	Description
Configure WiFi...	Click to open Intel PROSet/Wireless WiFi and configure your WiFi connections.
WiFi On / WiFi Off	Click to turn on or off the Intel wireless adapter. If you are currently connected to a wireless network and you click WiFi Off, your wireless network connection will be closed.
Connect to Profile	Displays the current profiles in the Profiles list. Click on a profile to connect to it.
Add New Device	This command lets you add a new device (for example, a laptop) using Wi-Fi Protected Setup*. The availability of this command on your computer means that your computer is already configured as a Wi-Fi Protected Setup registrar (using the WiFi connection utility). See Add an New Device .







If Windows Zero Configuration manager is managing your WiFi connections, then the following menu options appear.

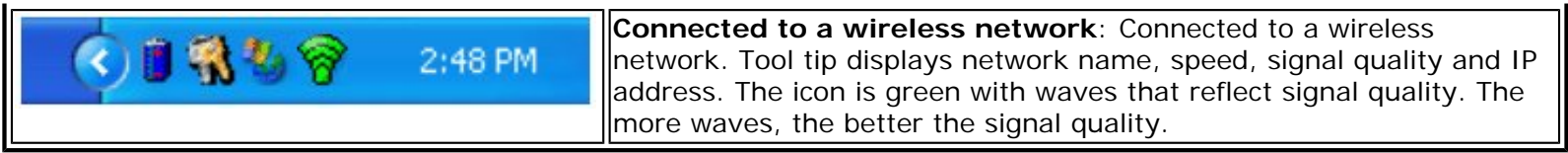


Name	Description
Open Wireless Zero Configuration	Click to open Windows Zero Configuration, the wireless connections manager provided by Windows*. Only available if you have selected Use Windows to manage WiFi at the Intel(R) PROSet/Wireless WiFi Connection Utility, Advanced menu.
Configure WiFi	Click to open Intel(R) PROSet/Wireless WiFi Connection Utility and configure your WiFi connections.
WiFi On / WiFi Off	Click to turn on or off the Intel wireless adapter. If you are currently connected to a wireless network and you click WiFi Off, your wireless network connection will be closed.
Connect to Profile	Displays the current profiles in the Profiles list. Click on a profile to connect to it.
Add New Device	This command lets you add a new device (for example, a laptop) using Wi-Fi Protected Setup*. The availability of this command on your computer means that your computer is already configured as a Wi-Fi Protected Setup registrar (using the WiFi connection utility). See Add an New Device .
Enable WiFi Control	Click to assign management of your WiFi wireless connections to the WiFi connection utility. Wireless Zero Configuration manager will no longer manage your connections. If you want to assign management of your WiFi wireless connections back to Wireless Zero Configuration manager, open the Intel(R) PROSet/Wireless WiFi software, and under the Advanced menu, click Use Windows to Manage WiFi .

Taskbar Icons

The Taskbar icon  provides visual indication of the current wireless connection state. The connection status icon is located on the lower right corner of your Windows desktop. The Taskbar icon can be set to display or be hidden in the Tools Menu [Application Settings](#).

Name	Description
 2:48 PM	WiFi Off : The wireless adapter is off. The wireless device does not transmit or receive while it is off. Click WiFi On to enable the adapter. The icon is white and static.
 2:48 PM	Searching for wireless networks : The wireless adapter searches for any available wireless networks. The icon is white with animation.
 2:48 PM	No wireless networks found : There are no available wireless networks found. Intel PROSet/Wireless WiFi periodically scans for available networks. If you want to force a scan, double-click the icon to launch Intel PROSet/Wireless and click Refresh . The icon is red.
 2:48 PM	Wireless network found : An available wireless network is found. Double-click the icon to display the Wireless Networks list. Select the network. Click Connect . The icon is yellow.
 2:48 PM	Authentication failed : Unable to authenticate with wireless network. The icon is green with a yellow warning triangle.
 2:48 PM	Connecting to a wireless network : Flashes while an IP address is being obtained or if an error occurs.



Tool Tips and Desktop Alerts

The Tool Tips and Desktop Alerts provide feedback and interaction. To display Tool Tips, move your mouse pointer over the icon. Desktop alerts are displayed when your wireless network changes state. For example, if you are out of range of any wireless networks, a desktop alert is displayed when you come into range.

Select **Show Information Notifications** in the [Application Settings](#) to enable desktop alerts.

Tool Tips

Tool tips display when the mouse pointer rolls over the icon. The tool tips display text for each of the connection states.



Desktop Alerts

When user action is required, a desktop alert displays. If you click the alert, then an appropriate action is taken. For example when wireless networks are found, the following alert displays:



Action: Click the desktop alert to connect to a network in the WiFi Networks list.

Once connected, the alert displays the wireless network that you are connected to, the speed of the connection, signal quality and IP address.





Desktop alerts are also used to indicate if there is a connection problem. Click the alert to open the [Intel Wireless Troubleshooter](#).



Start Intel PROSet/Wireless WiFi from Taskbar

To start Intel(R) PROSet/Wireless WiFi software:

- Double-click the Taskbar icon  located in the lower right corner of your Windows desktop, or
- Right-click the Taskbar icon , and select **Configure WiFi**.






[Back to Top](#)



[Back to Contents](#)

[Trademarks and Disclaimers](#)

WiFi Networks list

The WiFi Networks list displays a list of wireless networks within range of the adapter. To update the list, click **Refresh** to rescan for wireless networks. Click **Profile** to launch the Profile Wizard and create a profile for the selected wireless network.

Name	Description
Wireless Networks ()	The number within the parentheses designates the number of wireless network found within range of your wireless network adapter.
	The signal strength of the wireless network access point or computer (Device to Device [ad hoc] mode). The signal strength icon bars indicate that the wireless network or computer is available for connection but is still not associated with an access point or computer (Device to Device [ad hoc] mode).
Network Name	<p>Network Name (SSID): The name of the network that the adapter is connected to. The Network Name (SSID) must be the same as the SSID of the access point.</p> <p>If an access point does not broadcast its network name (SSID) or the wireless adapter receives a hidden network name from a stealth access point, <SSID not broadcast> is displayed in the WiFi Networks list. To associate with an <SSID not broadcast> network entry, a new profile must be created before connection. After connection, the <SSID not broadcast> is still displayed in the WiFi Networks list. The associated SSID profile is viewed in the Profiles list.</p>
Status	Notification that the adapter is connecting to the wireless network. Once connected, the status is changed to Connected .
	Profiles: Identifies a network in the WiFi Networks list that is connected and has a profile in the profiles list.
	The wireless network uses Network (Infrastructure) mode.
	The wireless network uses Device to Device (ad hoc) mode.
	The wireless network uses Security encryption.

	<p>The band frequency being used by the wireless network (802.11a, 802.11b, 802.11g, or 802.11n).</p>
	<p>The wireless network is on the Exclude list or the profile is configured for Manual connection. When set to Manual in the profile, connection to network or an access point is not automatic. Double-click on the network in the list to connect to it.</p>
<p>Connect (Disconnect)</p>	<p>Click to connect to a wireless network. Once connected, the button changes to Disconnect.</p> <p>Lists the network names of the available networks and profiles. The network status icons indicate the current connection status.</p> <ul style="list-style-type: none"> • If the selected network has 802.1X authentication, the Profile Wizard General Settings opens. If the network has no WEP security (Open), WEP 64-bit or 128-bit encryption, or pre-shared key (PSK), click Connect. • If a PSK or WEP password are required, you are prompted to enter this information prior to connection. If you need to add security settings, click Advanced to access the Create Wireless Profile General Settings. See First Time Connection for more information.
<p>Properties</p>	<p>Provides detailed information about the connected network and its access points. See Network Properties for information.</p>
<p>Refresh</p>	<p>Refreshes the list of available networks. If any new networks are available within range of the adapter, the list is updated to show the new network name.</p>
<p>WiFi On / WiFi Off</p>	<p>Switch the WiFi radio off and on. See Turn WiFi On or Off for more information.</p>
<p>Close</p>	<p>Closes the Intel(R) PROSet/Wireless WiFi Connection Utility main window.</p>
<p>Help?</p>	<p>Provides help information for this page.</p>










[Back to Top](#)

[Back to Contents](#)

[Trademarks and Disclaimers](#)

Connection Status Icons

The connection status icons indicate the current connection status of your wireless adapter. The connection status icon displays in the Intel(R) PROSet/Wireless WiFi Connection Utility main window. The Taskbar icon also indicates the current connection status. See [Taskbar Icons](#) for more information.

Icon	Description
	Wireless turned off : The wireless adapter radio is turned off. Click the WiFi On button to turn on the radio.
	Indicates connection problems including authentication failures.
	Searching for wireless networks : The wireless adapter is scanning for any available wireless networks. Animated Icons: 
	No wireless networks found : The adapter does not find any available wireless networks.
	Wireless network found : An available wireless network is found. You can choose to connect to available networks displayed in the WiFi Networks list .
	Connecting to a wireless network . You are connecting to a wireless network. The crescent shaped curves switch between green and white until an IP Address is obtained or if a connection error occurs.
	Connected to a wireless network : You are connected to a wireless network. The network name, speed, signal quality, and IP address display the current connection status. Click the Details button to display details of the current network connection.
Network Name	Name (Profile Name or SSID) : The name of the network that the adapter is connected to. The Name column displays the SSID or the Profile name if a profile for the network is available.
Signal Quality 	The signal strength icon bars indicate the quality of the transmit and receive signals between your wireless adapter and the access point or computer in Device to Device (ad hoc) mode. The number of vertical green bars indicates the strength of the transmit and receive signals. NOTE: The signal strength is displayed for the closest AP for networks that contains multiple APs. The signal strength ranges from excellent to out of range. The following factors affect signal strength: <ul style="list-style-type: none"> • Signal quality decreases with distance and is affected by metal and concrete barriers. • Metal objects can reflect signals and cause interference. • Other electrical devices can cause interference.

Properties	Provides adapter connection status information. See Network Properties for information.
WiFi On/ WiFi Off	Switch the radio off and on. See Turn Radio On or Off for more information.
Help?	Provides help information for this page.
Close	Closes the WiFi connection utility main window.

[Back to Top](#)

[Back to Contents](#)

[Trademarks and Disclaimers](#)

[Back to Contents](#)

Network Properties

[Network Properties](#)

[Manage Exclusions](#)

Click Properties at the Intel(R) PROSet/Wireless WiFi Connection Utility main window to see detailed information about the selected network and its access points. This screen shows you information about this network, information about the access points, and also lets you open up the Exclude List Management screen. On the [Exclude List](#) Management screen, you can add profiles to be excluded from automatic connection.

Network Properties details

Name	Description
Network Name	Displays the wireless network name.
Band	Current band and frequency being used. Displays Out of Range if no band and frequency are displayed. The following bands are listed: <ul style="list-style-type: none">• 802.11a• 802.11b• 802.11g• 802.11n

Operation Mode

Displays the current mode:

- Network (Infrastructure)

A wireless network centered around an access point. In this environment, the access point not only provides communication with the wired network, but also mediates wireless network traffic in the immediate neighborhood.

- Device to Device (ad hoc)

A communication configuration in which every computer has the same capabilities, and any computer can initiate a communication session. Also known as a peer-to-peer network or a computer-to-computer network.

Authentication Level

Displays the current authentication security mode for the network being used.

The following network authentication levels are listed:

- Open
- Shared
- WPA-Enterprise
- WPA2-Enterprise
- WPA-Personal
- WPA2-Personal


Displays the authentication used by the currently used network. See to [Security Overview](#) for more information.

Data Encryption

The following Data Encryption settings are listed:

- None
- WEP
- TKIP
- CKIP
- AES-CCMP

See to [Security Overview](#) for more information.

<p>Access Points in this Network <0-50></p>	<ul style="list-style-type: none"> • Signal Strength: The signal strength icon bars indicate the strength of the transmit and receive signals between your wireless adapter and the nearest access point.  <ul style="list-style-type: none"> • Displays one of the following icons: Indicates the band being used (802.11a, 802.11b, 802.11g or 802.11n). • Channel: Displays the current transmit and receive channel being used for a particular wireless network. • BSSID (Infrastructure operating mode): Displays the twelve-digit MAC address of the access point of the selected network.
<p>Manage Exclusions</p>	<p>See Manage Exclusions for more information. If network exclusion is enabled (see Application Settings), then the Network Properties also indicates if the network is excluded from automatic connection.</p>
<p>Close</p>	<p>Closes the Network Properties.</p>
<p>Help?</p>	<p>Provides help information for this page.</p>

[Back to Top](#)

[Back to Contents](#)

[Trademarks and Disclaimers](#)

Network Connection Details

When you are connected to a network, click the **Details** button on the Intel(R) PROSet/Wireless WiFi Connection Utility main window to display the Connection Details.



Connection Details Description

Name	Description
Profile Name	Name of the profile.
Network Name	Network Name (SSID) of the current connection.

Signal Quality

A radio frequency (RF) signal can be assessed by two components:

- signal strength (quantity)
- signal quality

The quality of the signal is determined by a combination of factors. Primarily it is composed of signal strength and the ratio of the RF noise present. RF noise occurs both naturally and artificially by electrical equipment. If the amount of the RF noise is high, or the signal strength is low, it results in a lower signal to noise ratio, which causes poorer signal quality. With a low signal to noise ratio, it is difficult for the radio receiver to discern the data information contained in the signal from the noise itself.

Signal Strength



The signal strength icon bars indicate the quality of the transmit and receive signals between your wireless adapter and the access point or computer in Device to Device (ad hoc) mode. The number of vertical green bars indicates the strength of the transmit and receive signals.

NOTE: The signal strength is displayed for the closest AP for networks that contains multiple APs.

The signal strength ranges from excellent to out of range. The following factors affect signal strength:

- Signal quality decreases with distance and is affected by metal and concrete barriers.
- Metal objects can reflect signals and cause interference.
- Other electrical devices can cause interference.

IP Address

IPv4 Address: Internet Protocol (IP) address for the current connection.

IPv6 Address: The next generation IP address is backward compatible and is designed to fix data security problems with IPv4. IPv6 increases the address space from 32 to 128 bits, providing for an unlimited number of networks and systems. It also supports quality of service (QoS) parameters for real-time audio and video.

Adapter MAC Address	Media Access Control (MAC) address for the wireless adapter.
Band	Indicates the wireless band of the current connection. <ul style="list-style-type: none"> • 802.11a • 802.11b • 802.11g • 802.11n
Number of Antennas in Use	This indicates the number of antennas currently in use. This number depends on the band(s) that the various networks are currently using, the transmit/receive modes in use on those bands, the signal strength, and the capabilities of the access point(s). The user has no direct control over this parameter.
Supported Data Rates	Rates at which the wireless adapter can send and receive data. Displays the speed in Mbps for the frequency being used. <ul style="list-style-type: none"> • 802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 • 802.11b: 1, 2, 5.5, and 11 • 802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 • 802.11n: 300, 270, 243, 240, 180, 150, 144, 135, 130, 120, 117, 115.5, 90, 86.667, 72.2, 65, 60, 57.8, 45, 43.3, 30, 28.9, 21.7, 15, 14.4, 7.2
Radio Frequency	Displays the frequency of the current wireless connection. <ul style="list-style-type: none"> • 802.11a: 5.15 GHz to 5.85 GHz • 802.11b/g: 2.400 GHz to 2.4835 GHz (dependent on country) • 802.11n: 2.400 GHz to 5.00 GHz
Channel Number	Displays the transmit and receive channel.
Network Authentication	Displays Open, Shared, WPA*-Personal, WPA2*-Personal, WPA-Enterprise and WPA2-Enterprise. Displays the authentication used by the currently used profile. See Security Overview for more information.
Data Encryption	Displays None, WEP, TKIP or AES-CCMP. See Security Overview for more information.

802.1X Authentication Type	Displays None, EAP-SIM, TLS, TTLS, PEAP, LEAP, or EAP-FAST. See Security Overview for more information.
802.1X Authentication Protocol	Displays None, PAP , GTC , CHAP , MS-CHAP , MS-CHAP-V2 or TLS . See Security Overview for more information.
CCX Version	Version of the Cisco Compatible Extensions on this wireless connection.
Current Tx Power	The power level at which the wireless adapter is currently transmitting, in milliwatts.
Supported Power Levels	These are the power levels that the wireless adapter is capable of transmitting. This information is presented in a range and is dependent on the adapter.
Access Point MAC Address	The Media Access Control (MAC) address for the associated access point.
Mandatory Access Point	Displays None, if not enabled. If enabled, from the Mandatory Access Point setting , the access point MAC address is displayed. This option directs the wireless adapter to connect to an access point that uses a specific MAC address (48-bit 12 hexadecimal digits, for example, 00:06:25:0E:9D:84).
AP Name	The name of the access point. This name is set by the person configuring the access point and is typically limited to 32 characters. NOTE: This parameter is only visible when connected to a Cisco Systems access point.
AP IPV4/IPV6 Address	The Interconnect Protocol address (IPV4 or IPV6) for the access point. IPV6 is the next generation IP address and is backward compatible and is designed to fix data security problems with IPv4. IPv6 increases the address space from 32 to 128 bits, providing for an unlimited number of networks and systems. It also supports quality of service (QoS) parameters for real-time audio and video. NOTE: This parameter is only visible when connected to a Cisco Systems access point.

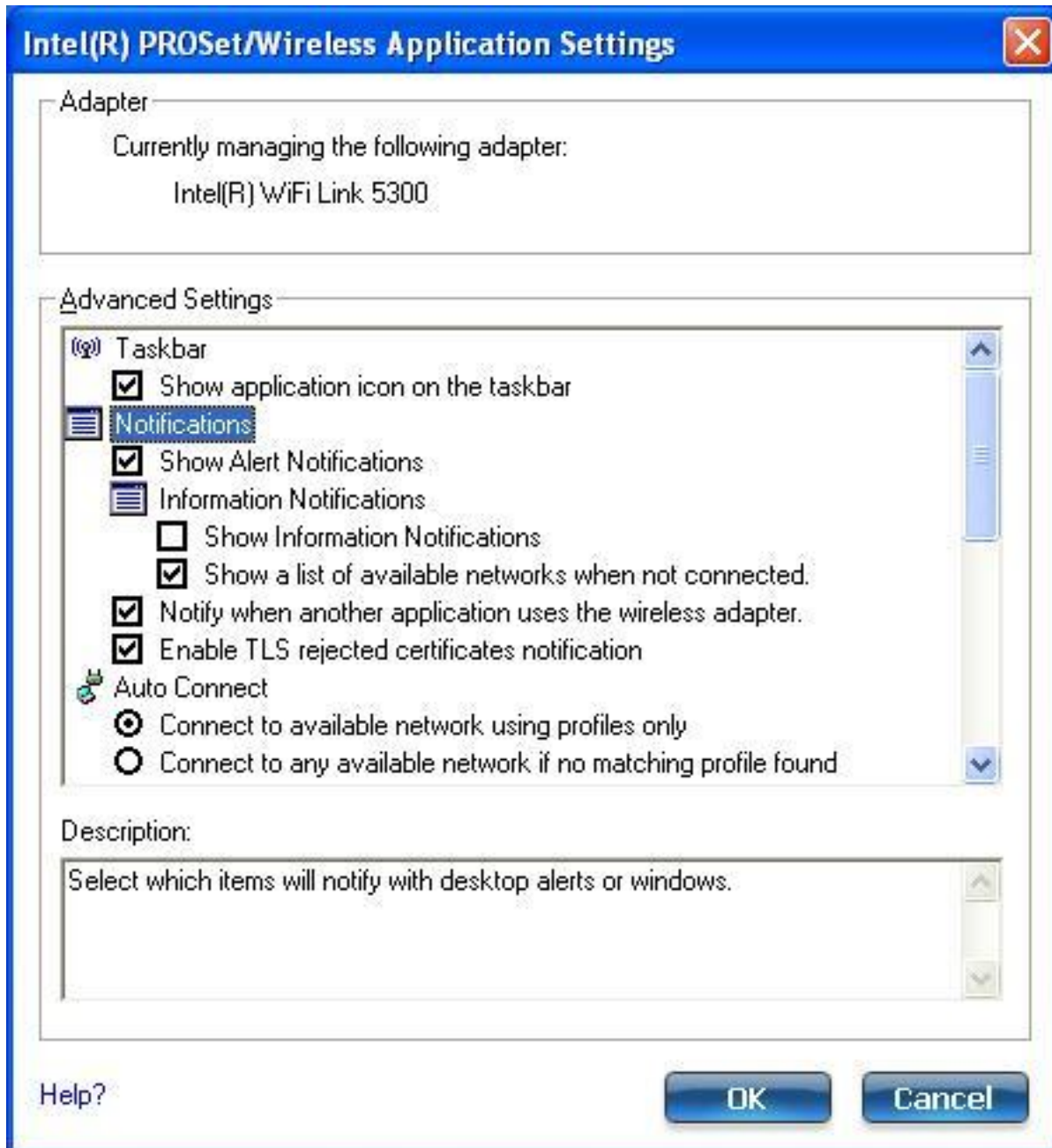
AP Signal Strength	<p>The strength of the signal received from the access point, at the adapter. This value is given in milliwatts (mW) and may actually be in the picowatts range. This value varies, based on the distance between the AP and the adapter, obstacles that may interfere with the signal, and the power level at which the AP is transmitting.</p> <p>NOTE: This parameter is only visible when connected to a Cisco Systems access point.</p>
AP Noise Level	<p>The radio frequency (RF) noise level present in the environment that will tend to interfere with the signal from the access point. RF noise comes from natural and electrical sources.</p> <p>NOTE: This parameter is only visible when connected to a Cisco Systems access point.</p>
Repair	<p>Renews the IP Address. If you have trouble accessing the network, verify if the IP address is valid. If it is 0.0.0.0 or 169.x.x.x then it is probably not valid. If your network is set up for automatic network address assignment, then click Repair and request a new IP address.</p>
Close	<p>Closes the page.</p>
Help?	<p>Provides help information for this page.</p>

[Back to Top](#)

[Back to Contents](#)

[Trademarks and Disclaimers](#)

Application Settings (Tools menu)



The Application Settings control the behavior of the Intel(R) PROSet/Wireless WiFi Connection Utility.

Application Settings Description

Name	Description
Adapter	<p>Lists the network adapter. It may be any one of the following:</p> <ul style="list-style-type: none"> • Intel(R) WiMAX/WiFi Link 5350 • Intel(R) WiMAX/WiFi Link 5150 • Intel(R) WiFi Link 5300 • Intel(R) WiFi Link 5100 • Intel(R) Wireless WiFi Link 4965AGN • Intel(R) Wireless WiFi Link 4965AG_ • Intel(R) PRO/Wireless 3945ABG Network Connection • Intel(R) PRO/Wireless 2915ABG Network Connection • Intel(R) PRO/Wireless 2200BG Network Connection

Advanced Settings: The following settings control how the WiFi connection utility behaves and displays information.

Taskbar	<p>Show application icon on the taskbar: Select to display the Taskbar status icon. This icon resides on the Windows Taskbar (Notification Area). This icon provides the status of your wireless connection. Clear to not display the Taskbar status icon.</p> <p>The Taskbar Status Icon provides several functions:</p> <ul style="list-style-type: none"> • Visual feedback for the connection state and wireless activity of your wireless network. The icon changes color and animation for different wireless activity. See Taskbar Icons for more information. • Menu: A menu is displayed when you right-click the icon. From this menu you perform tasks such as turn the radio on or off or launch the WiFi connection utility. See: Taskbar Menu Options for more information. • Tool tips and desktop alerts. See: Tool Tips and Desktop Alerts for more information.
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Notifications

Show Alert Notifications: Select to display desktop alerts next to the taskbar icon. When your action is required, a message displays. Only events of high importance trigger a desktop alert. If the desktop alert is selected, then the appropriate action is taken. Clear to not display desktop alerts. See [Tool Tips and Desktop Alerts](#) for more information.

Select one of the following options:

Information Notifications: These desktop alerts are of lower importance. They do not require your interaction but can greatly improve the wireless experience.

- **Show Information Notifications:** Selected by default. All informational desktop alerts are displayed next to the taskbar status icon. These desktop alerts improve your wireless experience with notifications when available wireless networks are within range. They also inform you when a wireless connection has been made or has been lost. See [Tool Tips and Desktop Alerts](#) for more information.
- **Show a list of available networks when not connected:** When **Show Information Notifications** is cleared, you can select this item. When the desktop alerts are disabled, this option lets you continue to be notified of available networks when the wireless adapter is not connected.

Notify when another application uses the wireless adapter: When selected, a message is displayed when other applications are trying to manage your wireless adapter. This is helpful if you use software provided by a hotspot location (coffee shop, airport terminal). To take advantage of the WiFi connection utility features, disable this software when you leave the hotspot.

Enable TLS rejected certificates notification: Select if you want a warning issued when a PEAP-TLS certificate is rejected by the authentication server. See [Enterprise Security](#) and [Set up a Client with TLS Network Authentication](#) for more information.

Auto Connect

Connect to available network using profiles only: (Default) Connect the wireless adapter to an available network with a matching profile from the [Profiles List](#). If no matching profile is found, you are notified (see [Notifications](#)). The wireless device remains disconnected until a matching profile is found or you configure a new matching profile.

Connect to any available network if no matching profile found: Select to connect to a network automatically if you have not configured a profile and are at a location that has an open, unsecured wireless network. **NOTE:** Open networks have no security. You would need to provide your own security for this wireless connection. One way to secure an open wireless connection is with Virtual Private Networking (VPN) software.

Connect to any network based on profiles only (Cisco mode): Select to try every profile in preferred order. This signifies that you are in the vicinity of an access point which has more than one SSID but only advertises one.

Do not automatically connect. User will connect manually: Select to turn off automatic connection.

Manage Exclusions

Enable automatic exclude list feature: Select to enable the automatic exclude list feature. This feature provides a way to exclude access points from automatic connection. See [Manage Exclusions](#) for more information.

Enable manual exclude list feature: Select to enable the manual exclude list feature. This feature provides a way to exclude networks from automatic connection. See [Manage Exclusions](#) for more information.

WiFi Networks list

Show column sort headers: Select to display the column names in the WiFi Networks list. Click a column header to sort the column in either ascending or descending order.

Shared Folder Notification

File and printer sharing enables other computers on a network to access resources on your computer. You should be cautious when you use your wireless notebook computer with file and printer sharing enabled.

Use this feature to receive notifications when you connect to a wireless network with shared folders that meet one of the following conditions:

- The Microsoft Windows firewall is disabled
- File and Printer Sharing are enabled as an exception to the Microsoft Windows firewall settings.

Unshare shared folders automatically when connected to an unsecured network.

Select to unshare shared folders automatically, each time you connect to an unsecured network. This feature provides some additional security.

Disable this notification

Select to maintain your current shared folder settings each time you connect to an open, unsecured network.

Notify when connected to an unsecured network.

Select to receive notification each time you are connected to an open, unsecured network.

Device to Device (ad hoc) Network Notification

Receive alerts dependent on the following settings when connected to an ad hoc network. You are alerted every two minutes, with a maximum of five alerts.

Notify when no peers have joined the ad hoc network

Select to receive notification if no peers join the ad hoc network.

Notify when all peers leave the ad hoc network

Select to receive an alert when all the peers leave the ad hoc network.

Network Name (SSID) Notification	<p>Notifies you when the default network name (SSID) is used to connect to a network. Common examples of pre-defined, default network names are: wireless, WLAN, linksys, default.</p> <p>Connecting to an access point that has the default network name (SSID) can be a security problem. This access point usually uses all the default security and management settings (for example, Open authentication; default IP address, user name, or password). If this is a personal network, change the network name and security settings to improve the security of the network.</p> <p>Notify when connected to a network with the default SSID name Select to receive an alert when connected to a network with the default network name.</p>
WiFi Settings	<p>Disable WiFi scanning when associated: This setting disables scanning for additional WiFi access points after the adapter connects to an access point (network). Disabling scanning when already connected can improve the connection performance.</p>
Wi-Fi Protected Setup*	<p>Enable device registration Turn this on to let the computer act as an external registrar. In this capacity, the computer can set up an unconfigured access point or join a configured access point. After the access point has been configured, the computer, as an external registrar, can add new computers (enrollees) to the network. Default state is OFF.</p> <p>Turn Enable device registration off to let the computer detect and connect to a network as an enrollee.</p> <p>Notify when Wi-Fi Protected Setup access points are within range of your computer Turn to on to let you know when an access point equipped with Wi-Fi Protected Setup* is within range of your computer. This is necessary if you want to enroll (connect) this computer to the access point. Default state is On.</p>
OK	Saves settings and return to the previous page.
Cancel	Closes and cancels changes.

Help?	Provides help information for this page.
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[Back to Top](#)

[Back to Contents](#)

[Trademarks and Disclaimers](#)

[Back to Contents](#)

Intel(R) Wireless Troubleshooter (Tools menu)

[Intel\(R\) Wireless Troubleshooter Window](#)
[Open Intel\(R\) Wireless Troubleshooter](#)
[Resolve Errors](#)

The Intel Wireless Troubleshooter is an application that can help you resolve wireless network connection issues. When a connection issue is detected, a desktop *alert notification* appears at the bottom right corner of your desktop. Once you click the desktop alert, a diagnostic message displays the recommended steps to resolve the connection problem. For example, if a connection problem occurred because of an invalid password, the Profile Manager application is launched when you click a displayed hyperlink, letting you enter the correct password.

From the Intel Wireless Troubleshooter you can enable or disable the alert notifications. The Intel Wireless Troubleshooter is only supported under Microsoft Windows XP*.

Intel(R) Wireless Troubleshooter Window

The Intel Wireless Troubleshooter contains two panes. The left pane displays a list of available tools. The right pane displays the current connection issue and is divided into two sections: the error message and the recommended action. The recommended action contains descriptions about available utilities and helps to resolve the associated connection issue. If you click on a help link, the help text is displayed in a window. If you click on the associated issue resolution link, a program is launched to resolve the connection issue.

Name	Description
Menu Options	File Wireless Event Viewer: Launches Wireless Event Viewer . Also selectable in the left pane.
	Disable Notification/Enable Notification: Select to disable or enable alert notifications. Also selectable in the left pane.
	Exit: Click to exit the Intel Wireless Troubleshooter application.

	View	History: Displays or removes the History data on the right panel of the Intel Wireless Troubleshooter.
	Tools	Manual Diagnostics Tool: Run diagnostic test to verify the functionality of your wireless adapter. See Manual Diagnostics Tool for more information.
	Help	Intel(R) Wireless Troubleshooter Help: Displays online help for the Intel Wireless Troubleshooter.
		About: Displays version information for the Intel Wireless Troubleshooter.
Available Help	<p>The date, time and error message:</p> <ul style="list-style-type: none"> • Description of error. • Link to resolve error (if available). See Resolve Errors next. • Link to recommended steps to resolve error. 	
History	Maintains a list of the last five alerts. The alerts are listed chronologically, with the most recent alert at the top of the list.	

How to Open Use Intel(R) Wireless Troubleshooter

Open the Intel(R) PROSet/Wireless WiFi Connection Utility. At the Tools menu, click **Intel (R) Wireless WiFi Troubleshooter**.

Resolve Errors

Use the following recommendations to resolve detected network connection issues.

[Did not receive an IP address](#)

[The ad hoc network is idle and no peers have joined the network](#)

[The ad hoc network is idle and all peers have left the network](#)

[You are connected to a network with default network name \(SSID\). The network or the access point may not be configured with security](#)

[You are connected to a network that is not configured with security and there are shared folders detected in your system](#)

[The wireless network adapter in the system is disabled](#)

[No wireless network adapter was detected in the system](#)

[No wireless network adapter driver was installed](#)

[Corrupted wireless network adapter driver](#)

[Adapter Driver is not loaded](#)
[Disconnection from an access point](#)

If you are an advanced user or administrator, use these error messages to diagnose problems within your wireless network profiles.

[The application failed to start](#)
[No certificate found](#)
[Authentication failed due to invalid user name](#)
[Authentication failed due to invalid user credentials](#)
[Authentication failed due to an invalid user certificate](#)
[Your certificate will expire soon](#)
[Authentication failed due to invalid server identity](#)
[Authentication failed due to invalid server credentials](#)
[Authentication failed due to an invalid server certificate](#)
[Authentication failed because the AAA server is unavailable](#)
[The AAA server rejected the EAP method](#)
[Incorrect PIN for retrieving certificate](#)
[Error occurred because the GSM adapter was unexpectedly removed](#)
[Smart Card was unexpectedly removed](#)
[Authentication failed because timer expired](#)
[An administrator profile failed to authenticate](#)
[Administrator profile did not receive an IP address](#)

Did not receive an IP address

The wireless adapter failed to get a valid IP address. The wireless security password or encryption key does not match the one used by the access point. Other causes are: the wireless network requires a static IP address; there is a problem with the DHCP server; or, a general network problem.

To clear this message:

- Reenter the wireless security password in the network security settings. See [Personal Security](#).
 - Restart the access point, router, computer, and DSL/cable modem.
 - Verify the security configuration on the access point or wireless router. For assistance, contact your access point or router manufacturer.
 - Contact your network administrator for help to set up your wireless connection.
-

The ad hoc network is idle and no peers have joined the network

If you create an ad hoc network and no peers join that ad hoc network for two minutes, this alert notifies you that the ad hoc network is idle.

This alert notification is enabled or disabled in the [Application Settings](#).

To clear this message:

1. From the Tools menu, click **Application Settings**.
 2. Scroll down to locate **Device to Device (ad hoc) Network Notification**.
 3. Clear **Notify when no peers have joined the ad hoc network**.
 4. Click **OK** to save your settings and return to the WiFi connection utility main window.
-

The ad hoc network is idle and all peers have left the network

If you create or join an ad hoc network with other participants, this alert notifies you when any or all participants have left the ad hoc network.

This alert notification is set in the [Application Settings](#).

To clear this message:

1. From the Tools menu, click **Application Settings**.
 2. Scroll down to locate **Device to Device (ad hoc) Network Notification**.
 3. Clear **Notify when all peers leave the ad hoc network**.
 4. Click **OK** to save your settings and return to the WiFi connection utility main window.
-

You are connected to a network with default network name (SSID). The network or the access point may not be configured with security

Connecting to an access point that uses a default network name (SSID) can be a security problem. This access point usually uses all the default security and management settings (for example, Open authentication, default IP address, user name, or password.) If this is a personal network, change the network name and security settings to improve the security of the network.

This alert notification is enabled or disabled in the [Application Settings](#).

To clear this message:

1. From the Tools menu, click **Application Settings**.
 2. Scroll down to locate **SSID Notification**.
 3. Clear **Notify when connected to a network with the default SSID name**.
 4. Click **OK** to save your settings and return to the WiFi connection utility main window.
-

You are connected to a network that is not configured with security and there are shared folders detected in your system

File and printer sharing enables other computers on a network to access resources on your computer. You should be cautious when you use your wireless portable computer with file and printer sharing enabled.

If you are alerted when connecting to a wireless LAN with shared folders, you can disable this notification. See [Application Settings](#).

To clear this message and restore the network shared folders on disconnection:

1. From the Tools menu, click **Application Settings**.
 2. Scroll down to locate **Shared Folder Notification**.
 3. Select **Disable this notification** to maintain your current shared folder settings each time that you connect to an open, unsecured network.
 4. Click **OK** to save your settings and return to the WiFi connection utility main window.
-

The wireless network adapter in the system is disabled

Enable the wireless adapter.

1. Right-click **My Computer**.
 2. Select **Properties**.
 3. Click **Hardware**.
 4. Click **Device Manager**.
 5. Double-click **Network Adapters**.
 6. Right-click the Intel(R) PRO/Wireless adapter that is listed.
 7. Click **Enable**.
 8. Click **File > Exit** to close the Device Manager.
 9. Click **OK** to close System Properties.
-

No wireless network adapter was detected in the system

The system could not detect an Intel wireless adapter in the system. The adapter may be removed or not installed.

First verify if there is a wireless adapter listed in the Device Manager:

1. Right-click **My Computer**.
2. Select **Properties**.
3. Click **Hardware**.
4. Click **Device Manager**.
5. Double-click **Network Adapters**.

If an Intel(R) PRO/Wireless adapter is listed, update the driver from the Intel Corporation Support Web site at www.intel.com/support/. If an Intel(R) PRO/Wireless adapter is not listed, contact your computer manufacturer.

No wireless network adapter driver was detected in the system

The system could not detect an Intel wireless adapter in the system. You may need to update the wireless adapter driver.

First verify if there is a wireless adapter listed in the Device Manager:

1. Right-click **My Computer**.
2. Select **Properties**.
3. Click **Hardware**.
4. Click **Device Manager**.
5. Double-click **Network Adapters**.

If the wireless adapter is listed:

1. Go to **Start > Control Panel > Add or Remove Programs**.
2. Select Intel(R) PROSet/Wireless WiFi Software.
3. Click **Change/Remove**.
4. Select repair.
5. Click **Next**.

If these steps do not resolve the problem, download and install the latest software for the Intel wireless adapter from the Intel Corporation Support Web site at www.intel.com/support/. If an Intel(R) PRO/Wireless adapter is not listed, contact your computer

manufacturer.

Corrupted wireless network adapter driver

The system detected that the network driver is corrupted. You need to update the wireless adapter driver.

1. Right click the Intel(R) PRO/Wireless network card that is installed in your computer.
2. Click **Update Driver**. The **Windows Welcome to the Hardware Update Wizard** is displayed.
3. At the Hardware Update Wizard screen, click **Yes, this time only**.
4. Click **Next**.
5. Click **Install the software automatically**. Or if you know where the driver is located, click **Install from a list or specified location**.

If an Intel(R) PRO/Wireless adapter is listed, update the driver from the Intel Corporation Support Web site at www.intel.com/support/. If an Intel(R) PRO/Wireless adapter is not listed, contact your computer manufacturer.

If you receive the message **Cannot Continue the Hardware Update Wizard**, contact the Intel Corporation Support Web site at www.intel.com/support/.

Adapter Driver is not loaded

The system detected that the wireless adapter driver is not loaded. You need to install/update the wireless adapter driver.

1. Right click the Intel(R) PRO/Wireless network card that is installed in your computer.
2. Click **Update Driver**. The **Windows Welcome to the Hardware Update Wizard** is displayed.
3. At the Hardware Update Wizard screen, click **Yes, this time only**.
4. Click **Next**.
5. Click **Install the software automatically**. Or if you know where the driver is located, click **Install from a list or specified location**.

If an Intel(R) PRO/Wireless adapter is listed, update the driver from the Intel Corporation Support Web site at www.intel.com/support/. If an Intel(R) PRO/Wireless adapter is not listed, contact your computer manufacturer.

If you receive the message **Cannot Continue the Hardware Update Wizard**, contact the

Disconnection from an access point

The following error messages are displayed when the wireless adapter is disconnected from the network access point.

- Disconnect from access point due to failed association.
- Disconnect from access point due to authentication failures.
- Disconnect from access point due to TKIP Michael Integrity Check failure.
- Disconnect from access point due to Class 2 frame non-authentication failure.
- Disconnect from access point due to Class 3 frame non-association failure.
- Disconnect from access point due to re-association failure.
- Disconnect from access point due to Information Element failure.
- Disconnect from access point due to EAPOL-Key protocol 4-way handshake failure.
- Disconnect from access point due to 802.1X authentication failure.

Recommended action:

Manually reconnect or verify network settings stored in profile then remove the access point from the [Exclude list](#). For example, on the WiFi connection utility main window, click

Profiles to open the Profiles list. Select the profile and click **Connect**.

The application failed to start

The application that you specified to start when this profile connected, could not be found. Verify the path and file name in the Profile Wizard [Advanced Settings](#).

To verify the path and file name:

1. From the WiFi connection utility main window, click **Profiles**.
 2. Select the Profile.
 3. Click Properties.
 4. Click [Advanced](#).
 5. Click **Start Application**.
 6. Click **Enable Auto Launch**. Verify that the file name and file location path are correct.
 7. Click **OK** to close the Advanced Settings.
 8. Click **OK** to close the General Settings and return to the Profiles list.
-

No certificate found

This error may occur if a machine certificate or a user certificate was not found in the relevant certificate store. To resolve, perform the following steps:

1. Verify that a valid machine or user certificate is present in the machine or user certificate store, depending on the type of profile you are using.
 2. If a valid certificate is not present in the store, request a valid machine or user certificate from the domain's Certificate Authority. Note that the computer needs to be joined to a domain in order to be eligible to get a machine certificate from the domain's Certificate Authority.
 3. Contact your Administrator for assistance.
-

Authentication failed due to invalid user name: Reenter user name

This authentication error can be caused by an invalid user name when using either TTLS, PEAP, LEAP, or EAP-SIM profiles.

Use the following steps to resolve this error:

1. Select the appropriate profile from the Profiles list.
 2. Click **Properties**.
 3. Click **Next**.
 4. Select the appropriate 802.1X Authentication Type.
 - For TTLS, PEAP and EAP-FAST profiles: Select **Use the following** for User Credentials.
 - Verify the User Name information.
 - If **Use Windows logon** or **Prompt each time I connect** is selected, verify that the correct user credentials information is used when you connect to the wireless network. **NOTE:** This option is only available if you have the Single Sign On Pre-logon Connect component installed.
 - For LEAP profiles: Select **Use the following user name and password** and verify the user name information. If **Use Windows logon user name and password** or **Prompt for user name and password** is selected, make sure that the correct user credentials information is used when you connect to the wireless network.
 - For EAP-SIM authentication type: Verify that the correct user name is being used under **Specify user name** (identity).
 5. To save the settings, click **OK**.
-

Authentication failed due to invalid user credentials: Reenter credentials

This authentication error can be caused by invalid user credentials when using either TTLS, PEAP, LEAP or EAP-FAST profiles.

Use the following steps to resolve this error:

1. Select the appropriate profile from the Profiles list.
 2. Click **Properties** to open the General Settings.
 3. Click **Next** to open the **Security Settings**. **Enterprise Security** is selected.
 4. The 802.1X Authentication Type should be selected.
 5. Select **Use the following** for User Credentials.
 6. Verify the User Name, Domain, and password information.
 - o If **Use Windows logon** or **Prompt each time I connect** is selected, verify that the correct user credentials information is used when you connect to the wireless network.
 7. Click **OK** to save the settings.
-

Authentication failed due to an invalid user certificate: Select another certificate

This authentication error can be caused by an invalid user certificate.

Use the following steps to resolve this error:

1. Select the appropriate profile from the Profiles list.
2. Click **Properties** to open the General Settings.
3. Click **Next** to open the **Security Settings**. **Enterprise Security** is selected.
4. Select the appropriate Authentication Type.
5. For TLS User: You can select to **Use the certificate issued to this computer**. Or you can click **Use a user certificate on this computer**. Then click **Select** and choose another user certificate from the list of installed certificates.
6. Click **OK**.
7. Click **OK** to save the settings.

Notes about Certificates: The specified identity should match who the certificate is issued to and should be registered on the authentication server (for example, RADIUS server) that is used by the authenticator. Your certificate must be valid with respect to the authentication server. This requirement depends on the authentication server and generally means that the authentication server must know the issuer of your certificate as a Certificate Authority. You should be logged in with the same user name you used when the certificate was installed.

Your certificate will expire soon

This message applies to Windows XP* users only. This certificate you are using in your profile will expire soon. This message does not imply connection failure, but is instead a warning intended to help you avoid connection failure in the future. The time left from when this message is first displayed, until the certificate expires, is set by the Administrator. Use the following steps to resolve this error:

1. In the Intel® Wireless Troubleshooter window, click on the link to update your certificate.

If you are not able to obtain a new certificate, contact your Administrator.

Authentication failed due to invalid server identity: Reenter server name

This authentication error can be caused by invalid server identity information.

Use the following steps to resolve this error:

1. Select the appropriate profile from the Profiles list.
 2. Click **Properties** to open the General Settings.
 3. Click **Next** to open the **Security Settings**. **Enterprise Security** is selected.
 4. Click **Next**.
 5. On this screen, if you have selected Validate Server Certificate, then under the Certificate Issuer drop down menu, be sure you have selected the correct issuer. Or if you have selected to Specify Server or Certificate Name, be sure that a valid server or certificate name is entered. Or if you have selected **Any trusted CA**, be sure that the CA certificate is installed in the Trusted Root CA store.
 6. Click **OK** to save the settings.
-

Authentication failed due to invalid server credentials: Reenter server credentials

This authentication error can be caused by an invalid server (domain) credential.

Use the following steps to resolve this error:

1. Select the appropriate profile from the Profiles list.
 2. Click **Properties** to open the General Settings.
 3. Click **Next** to open the **Security Settings**. **Enterprise Security** is selected.
 4. Select the appropriate 802.1X Authentication Type.
 - For TTLS, PEAP and EAP-FAST profiles: Select **Use the following** for User Credentials.
 - Verify the Domain information.
 - If **Use Windows logon user name or password or Prompt for the user name and password** is selected, verify that the correct **domain credentials** information is used when you connect to the wireless network. **NOTE:** This option is only available if you have the Single Sign On Pre-logon Connect component installed.
 - For LEAP profiles: Select **Use the following user name and password** and verify the domain is correct. If **Prompt for the user name and password** is selected, verify that the correct domain and password information is entered when you connect to the wireless network. (Must match what appears on the Security settings window.)
 5. To save the settings, click **OK**.
-

Authentication failed due to an invalid server certificate: Select another certificate

This authentication error can be caused by an invalid server certificate.

Use the following steps to resolve this error:

1. Select the appropriate profile from the profiles list.
2. Click **Properties**.
3. Click **Next** to open the **Security Settings**. **Enterprise Security** is selected.
4. Select the appropriate 802.1X Authentication Type.
 - For TTLS and PEAP profiles: Verify that the correct Authentication Type is selected from the list. Click **Next to** select another certificate from the list of installed certificates or specify another server or certificate name. Click **OK**.
 - For TLS profiles: Click **Select** and choose another certificate from the list of installed certificates and click **OK**.
6. To save the settings, click **OK**.

Notes about certificates: The specified identity should match who the certificate is issued to and should be registered on the authentication server (for example, RADIUS server) that is used by the authenticator. Your certificate must be valid with respect to the authentication server. This requirement depends on the authentication server and generally means that the authentication server must know the issuer of your certificate as a Certificate Authority. You should be logged in with the same user name you used when the certificate was installed.

Authentication failed because the AAA server is unavailable

The wireless adapter is associated to the access point, but the 802.1X authentication cannot be completed because of a response from the authentication server.

Use the following steps to resolve this error:

1. Select the profile
2. Click **Connect** and attempt to associate with the network and authenticate with the server.

The AAA Server rejected the EAP method

This error occurs when the AAA Server does not accept the configured authentication.

Use the following steps to resolve this error:

1. Double-click the Taskbar icon to open the WiFi connection utility.
2. Click **Profiles** on the WiFi connection utility main window.
3. Select the associated or last-used profile from the Profiles list.
4. Click **Properties** to open the General Settings.
5. Click **Next** to open the **Security Settings**.
6. Verify that **Enable 802.1X** is selected.
7. Verify that the correct authentication type is selected.
8. Enter the required security information.
9. Click **OK**. The profile is now reapplied. The WiFi connection utility attempts to connect to the wireless network.

Incorrect PIN for retrieving certificate: Reenter PIN

The certificate retrieval failed because of an incorrect PIN.

Recommended action: Enter the correct PIN.

Error occurred because the GSM adapter was unexpectedly removed

This error occurs when the GSM adapter is not fully inserted or is unexpectedly removed from the mobile station.

Use the following steps to resolve this error:

1. Reinsert the GSM adapter.
 2. Double-click the **Intel PROSet/Wireless WiFi Software** icon at the bottom right of the screen.
 3. Select the associated or last-used profile from the profiles list.
 4. Click **Connect**. The profile is now re-applied. The WiFi connection utility attempts to connect to the wireless network.
-

Smart Card was unexpectedly removed

This error occurred because the Smart Card was unexpectedly removed.

Use the following steps to resolve this error:

1. Insert the Smart Card.
 2. Select the 802.1X EAP-SIM authentication profile.
 3. Click **Connect** to try to associate with the network.
-

Authentication failed because timer expired

Authentication failed because the authentication timer expired while this mobile station was authenticating. A Rogue access point or a problem with the RADIUS server could have been the reason for the problem.

Recommended action:

- If a rogue access point is suspected, consider adding this access point to the [excluded access point list](#) to prevent the wireless adapter from connecting to this access point in the future.
 - If a rogue access point is not suspected, click the profile in the Profiles list. Click **Connect** to associate with the network and attempt to authenticate with the server.
-

An administrator profile failed to authenticate

This error occurs when the credentials in the profile are not accepted by the authenticator (for example, an access point or AAA server). Please contact your Administrator to resolve this problem.

Administrator profile did not receive an IP address

The wireless adapter failed to get a valid IP address. The wireless security password or encryption key does not match the one used by the access point. Other causes are: the wireless network requires a static IP address; there is a problem with the DHCP server; or, a general network problem.

To clear this message, contact your network administrator to help set up your wireless connection.

[Back to Top](#)

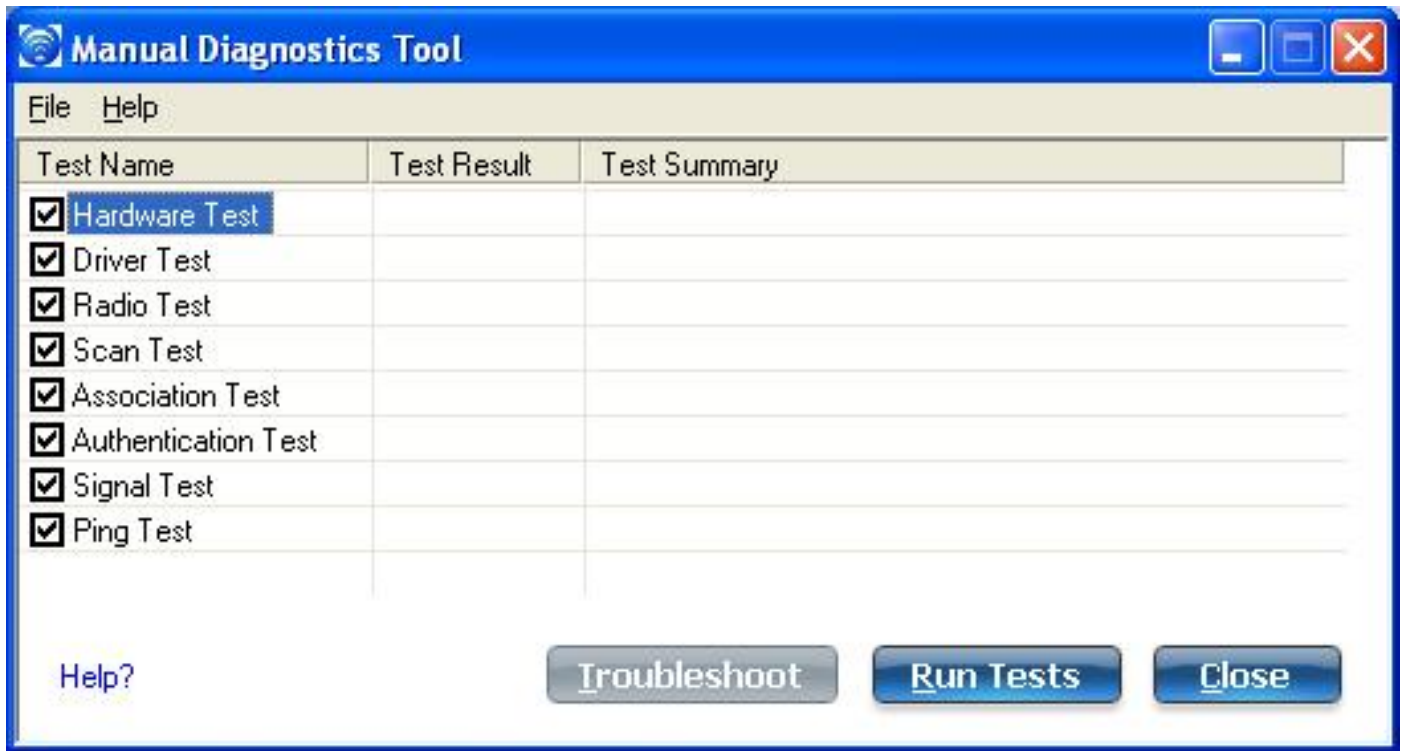
[Back to Contents](#)

[Trademarks and Disclaimers](#)

Manual Diagnostics Tool

The Manual Diagnostics Tool lets you run a set of diagnostics tests that verify the functionality of your wireless adapter. There are two levels of diagnostics details represented in this tool: *user level* and *technical support level*. At the user level, the tool only shows a short description of the different diagnostics steps that are being taken and only shows a pass or fail indication for each step.

The technical support level includes the creation of a log file which contains detailed information on all the executed tests. This log file can be saved to a text file and emailed to a technical support department to troubleshoot connection problems.



Using the Manual Diagnostics Tool

To open the Manual Diagnostics tool:

- For computers running Windows XP*, first open the Intel(R) PROSet/Wireless WiFi Connection Utility. Then under the Tools menu, click **Manual Diagnostics tool**.

- For computers running Windows Vista*, click **Start > All Programs > Intel PROSet Wireless > WiFi Manual Diagnostics**.

To set the log file location:

1. Inside the Manual Diagnostics tool, click **File**.
2. Click **Settings**. The log file named WirelessDiagLog.csv contains the results of the tests. It is saved as a text file and can be used to troubleshoot network connectivity issues.
3. Click **Browse** to specify where you want the log file to be saved.
4. Click **OK** to apply your changes and return to the Manual Diagnostics Tool. The next time you run the tests, the log file will be save to your specified location.

To run the tests:

1. Click the check box next to each test to select the test to run.
2. Click **Run Tests** to run the selected tests. The test results will be saved to a file named WirelessDiagLog.csv.
3. Click **Close** to close the Manual Diagnostics Tool.

Available Tests

Name	Description
Hardware Test	<p>The test passes if the wireless adapter is present and accessible. The test fails if the adapter is not present or present but disabled. The test summary displays whether the wireless hardware is enabled or disabled.</p> <p>Troubleshooting</p> <ul style="list-style-type: none"> • Verify that your adapter is listed under Network adapters in the Device Manager. • If the adapter is not listed, right-click Network adapters and select Scan for hardware changes. You can also reboot your system. • Verify that your adapter is enabled in the Device Manager. When the adapter is disabled, a red X is displayed on the device. Right-click the adapter and select Enable from the menu. • When the adapter displays a yellow exclamation point, right-click the adapter and reinstall the driver. • Contact your computer manufacturer for other troubleshooting options.

Driver Test	<p>The test summary displays the Intel(R) PRO/Wireless Network Connection driver supported by the wireless adapter. The test verifies if the driver binary version is compatible with the installed version of the WiFi connection utility. The test fails if the driver binary is not found or if the driver version does not match the WiFi connection utility software version (for example, version 11.1.x.x and driver version 9.0.x.x, 9.1.x.x, or 11.1.x.x).</p> <p>Troubleshooting</p> <ul style="list-style-type: none">• Reinstall the drivers using the WiFi connection utility.
Radio Test	<p>The test summary displays Radio On or Radio Off. The test queries the current radio state. If the radio is switched on, the test passes. If the radio is off, the test fails.</p> <p>Troubleshooting</p> <p>Verify that your wireless adapter's radio is on. There are two methods to turn the radio on and off:</p> <ul style="list-style-type: none">• The hardware switch• The WiFi On/WiFi Off button in the WiFi connection utility main window. See Turn On or Off the Wireless Radio for more information.
Scan Test	<p>The test queries the wireless networks within range of your wireless adapter. The test passes if networks can be seen in the scan list. The Test Summary displays the number of networks available to connect to.</p> <p>Troubleshooting</p> <ul style="list-style-type: none">• Verify that you are within range of an access point.• Switch the wireless radio to off and back to on.• Verify that the wireless band setting matches the access point band setting.• Switch the access point to off and back to on.

Association Test

The test summary displays Associated or Not Associated. Association is the establishment and maintenance of the wireless link between devices. When security is enabled, the devices only exchange security credentials. The test checks for wireless connectivity. The test passes if the client is associated successfully.

Troubleshooting

- When the access point signal strength is low, use the signal test listed below.
- Verify that a profile has been created. If created:
 - Verify that the profile SSID matches the access point Network Name (SSID).
 - Remove the profile and create a new profile.
- Verify that your wireless network is not included in the Exclude (profiles) List.
- Verify that the MAC address has not been excluded in the access point.

Authentication Test

Describes the process after association, during which the identity of the wireless device or end-user is verified and then allowed network access. The test queries for authentication state information, including all Cisco Compatible Extensions and security-related information. The test passes if the client is authenticated successfully. The test fails if the WEP key or other credentials are not authenticated. The Test Summary displays whether authentication is required for the network connection.

Troubleshooting

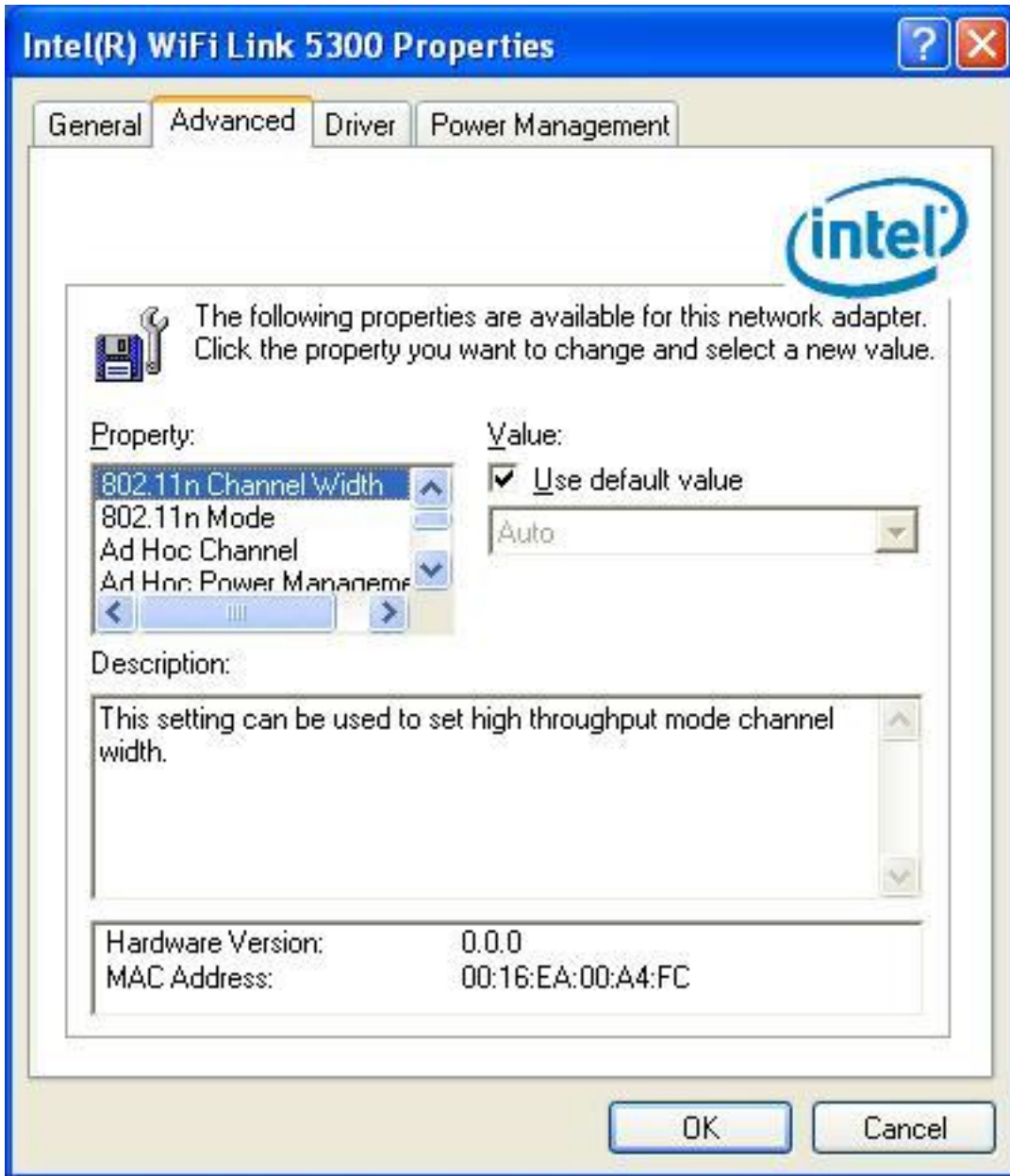
- Edit your profile to ensure the correct credentials have been used for the WEP key, PSK, password or certificates.
- Remove the existing profile and create a new profile.

Signal Test	<p>The test summary displays the signal quality. If the signal quality is low, use the Troubleshoot button to diagnose and fix the problem.</p> <p>Troubleshooting</p> <ul style="list-style-type: none"> • Move your computer 10 to 20 feet from the wireless access point or router. • Reduce interference by moving away from appliances (microwaves, cell phones or 2.4 GHz phones) or access points using the same channel. • Try increasing the transmission power of the access point.
Ping Test	<p>The test verifies whether the wireless adapter successfully sent messages to and received replies from the access point IP address, default gateway, DHCP server (if enabled) and DNS servers. The test summary displays whether replies from these entities were received.</p> <p>Example: Response: AP, default gateway. No Response: DHCP server</p> <p>NOTE: If the ping tests to this access point and default gateway are successful but the ping test to the DNS server fails this is not a wireless network issue but a general network issue.</p> <p>Troubleshooting</p> <ul style="list-style-type: none"> • Disable the security firewall and try the ping test again. • Contact the access point manufacturer to troubleshoot your home network. • Enterprise users should contact their network administrator.
Troubleshoot	<p>Diagnose and fix problems displayed by each of the tests. The Troubleshoot button becomes active if the test fails.</p>
Run Tests	<p>Executes the tests that you have selected.</p>
Close	<p>Closes the page.</p>
Help?	<p>Provides help information for this page.</p>

[Back to Top](#)

[Back to Contents](#)

Adapter Settings (Advanced tab)



The Adapter Settings, advanced tab, displays the device properties for the wireless adapter installed on your computer.

It may be one of the following network connection adapters:

- Intel(R) WiMAX/WiFi Link 5350

- Intel(R) WiMAX/WiFi Link 5150
- Intel(R) WiFi Link 5300
- Intel(R) WiFi Link 5100
- Intel(R) Wireless WiFi Link 4965AGN
- Intel(R) Wireless WiFi Link 4965AG_
- Intel(R) PRO/Wireless 3945ABG Network Connection
- Intel(R) PRO/Wireless 2915ABG Network Connection
- Intel(R) PRO/Wireless 2200BG Network Connection.

For Windows XP* users, to see the adapter settings, on the Advanced Menu click **Adapter Settings**. Select the Advanced tab.

Adapter Settings Description

Name	Description
802.11n Channel Width (2.4 GHz)	<p>Set high throughput channel width to maximize performance. Set the channel width to Auto or 20Mhz. Auto is the default setting. Use 20MHz if 802.11n channels are restricted.</p> <p>NOTE: This setting is available only if the wireless adapter is one of the following:</p> <ul style="list-style-type: none"> • Intel(R) WiMAX/WiFi Link 5350 • Intel(R) WiMAX/WiFi Link 5150 • Intel(R) WiFi Link 5300 • Intel(R) WiFi Link 5100 • Intel(R) Wireless WiFi Link 4965AGN
802.11n Channel Width (5.2 GHz)	<p>Set high throughput channel width to maximize performance. Set the channel width to Auto or 20Mhz. Auto is the default setting. Use 20MHz if 802.11n channels are restricted.</p> <p>NOTE: This setting is available only if the wireless adapter is one of the following:</p> <ul style="list-style-type: none"> • Intel(R) WiMAX/WiFi Link 5350 • Intel(R) WiMAX/WiFi Link 5150 • Intel(R) WiFi Link 5300 • Intel(R) WiFi Link 5100 • Intel(R) Wireless WiFi Link 4965AGN

802.11n Mode

The 802.11n standard builds on previous 802.11 standards by adding multiple-input multiple-output (MIMO). MIMO increases data throughput to improve transfer rate. Select **Enabled** or **Disabled** to set the 802.11n mode of the adapter. Enabled is the default setting.

An administrator can enable or disable support for high throughput mode to reduce power-consumption or conflicts with other bands or compatibility issues.

NOTE: This setting is available only if the adapter is one of the following:

- Intel(R) WiMAX/WiFi Link 5350
- Intel(R) WiMAX/WiFi Link 5150
- Intel(R) WiFi Link 5300
- Intel(R) WiFi Link 5100
- Intel(R) Wireless WiFi Link 4965AGN

NOTE: To achieve transfer rates greater than 54 Mbps on 802.11n connections, WPA2-AES security must be selected. No security (**None**) can be selected to enable network setup and troubleshooting.

Ad Hoc Channel

Unless the other computers in the ad hoc network use a different channel from the default channel, there is no need to change the channel.

Value: Select the permitted operating channel from the list.

- **802.11b/g:** Select this option when 802.11b and 802.11g (2.4 GHz) ad hoc band frequency is used.
- **802.11a:** Select this option when 802.11a (5 GHz) ad hoc band frequency is used.

NOTE: When an 802.11a channel is not displayed, initiating ad hoc networks is not supported for 802.11a channels.

Ad Hoc Power Management

Set power saving features for device to device (ad hoc) networks.

- **Disable:** Select when connecting to ad hoc networks that contain stations that do not support ad hoc power management
- **Maximum Power Savings:** Select to optimize battery life.
- **Noisy Environment:** Select to optimize performance or connecting with multiple clients.

NOTE: This setting is only available if the wireless adapter is one of the following:

- Intel(R) WiMAX/WiFi Link 5350
- Intel(R) WiMAX/WiFi Link 5150
- Intel(R) WiFi Link 5300
- Intel(R) WiFi Link 5100
- Intel(R) Wireless WiFi Link 4965AGN
- Intel(R) PRO/Wireless 3945ABG

Ad Hoc QoS Mode

Quality of Service (QoS) control in ad hoc networks. QoS provides prioritization of traffic from the access point over a wireless LAN based on traffic classification. WMM (Wi-Fi Multimedia) is the QoS certification of the Wi-Fi Alliance (WFA). When WMM is enabled, the adapter uses WMM to support priority tagging and queuing capabilities for Wi-Fi networks.

- **WMM Enabled** (Default)
- **WMM Disabled**

NOTE: This setting is only available if the wireless adapter is one of the following:

- Intel(R) WiMAX/WiFi Link 5350
- Intel(R) WiMAX/WiFi Link 5150
- Intel(R) WiFi Link 5300
- Intel(R) WiFi Link 5100
- Intel(R) Wireless WiFi Link 4965AGN
- Intel(R) PRO/Wireless 3945ABG

<p>Fat Channel Intolerant</p>	<p>This setting communicates to surrounding networks that this wireless adapter is not tolerant of 40MHz channels in the 2.4GHz band. The default setting is for this to be turned off (disabled), so that the adapter does not send this notification.</p> <p>NOTE: This setting is available only if the adapter is one of the following:</p> <ul style="list-style-type: none"> • Intel(R) WiMAX/WiFi Link 5350 • Intel(R) WiMAX/WiFi Link 5150 • Intel(R) WiFi Link 5300 • Intel(R) WiFi Link 5100 • Intel(R) Wireless WiFi Link 4965AGN <p>NOTE: This setting is only available to the user and is <i>not available</i> for export in an administrator package.</p>
<p>HD Mode</p>	<p>In a wireless network environment where several access points are nearby, this feature will reduce interference and improve your wireless connection. The default setting is for this to be turned off (disabled).</p> <p>NOTE: This setting is available only if the adapter is one of the following:</p> <ul style="list-style-type: none"> • Intel(R) WiMAX/WiFi Link 5350 • Intel(R) WiMAX/WiFi Link 5150 • Intel(R) WiFi Link 5300 • Intel(R) WiFi Link 5100 • Intel(R) Wireless WiFi Link 4965AGN
<p>Mixed mode protection</p>	<p>Use to avoid data collisions in a mixed 802.11b and 802.11g environment. Request to Send/Clear to Send (RTS/CTS) should be used in an environment where clients may not hear each other. CTS-to-self can be used to gain more throughput in an environment where clients are in close proximity and can hear each other.</p>

Power Management	<p>Lets you select a balance between power consumption and adapter performance. The wireless adapter power settings slider sets a balance between the computer's power source and the battery.</p> <ul style="list-style-type: none">● Use default value: (Default) Power settings are based on the computer's power source.● Manual: Adjust the slider for the desired setting. Use the lowest setting for maximum battery life. Use the highest setting for maximum performance. <p>NOTE: Power consumption savings vary based on Network (Infrastructure) settings.</p>
Preamble Mode	<p>Changes the preamble length setting received by the access point during an initial connection. Always use Auto Tx Preamble to provide optimal network throughput. Auto Tx Preamble allows automatic preamble detection. If supported, short preamble should be used. If not, use Long Tx Preamble.</p> <p>NOTE: This setting is only available if the adapter is an Intel(R) PRO/Wireless 2915ABG Network Connection or an Intel(R) PRO/Wireless 2200BG Network Connection.</p>
Roaming Aggressiveness	<p>This setting lets you define how aggressively your wireless client roams to improve connection to an access point.</p> <ul style="list-style-type: none">● Default: Balanced setting between not roaming and performance.● Lowest: Your wireless client will not roam. Only significant link quality degradation causes it to roam to another access point.● Highest: Your wireless client continuously tracks the link quality. If any degradation occurs, it tries to find and roam to a better access point.

Throughput Enhancement	<p>Changes the value of the Packet Burst Control.</p> <ul style="list-style-type: none">● Enable: Select to enable throughput enhancement.● Disable: (Default) Select to disable throughput enhancement.
Transmit Power	<p>Default Setting: Highest power setting.</p> <p>Lowest: Minimum Coverage.: Set the adapter to the lowest transmit power. Enables you to expand the number of coverage areas or confine a coverage area. Reduces the coverage area in high traffic areas to improve overall transmission quality and avoids congestion and interference with other devices.</p> <p>Highest: Maximum Coverage.: Set the adapter to a maximum transmit power level. Select for maximum performance and range in environments with limited additional WiFi radio devices.</p> <p>NOTE: The optimal setting is for a user to always set the transmit power at the lowest possible level that is still compatible with the quality of their communication. This allows the maximum number of wireless devices to operate in dense areas and reduce interference with other devices that it shares the same radio spectrum with.</p> <p>NOTE: This setting takes effect when either Network (Infrastructure) or Device to Device (ad hoc) mode is used.</p>

Wireless Mode	<p>Select which mode to use for connection to a wireless network:</p> <ul style="list-style-type: none"> • 802.11a only: Connect the wireless adapter to 802.11a networks only. • 802.11b only: Connect the wireless adapter to 802.11b networks only. • 802.11g only: Connect the wireless adapter to 802.11g networks only. • 802.11a and 802.11g: Connect the wireless adapter to 802.11a and 802.11g networks only. • 802.11b and 802.11g: Connect the wireless adapter to 802.11b and 802.11g networks only. • 802.11a, 802.11b, and 802.11g: (Default) - Connect to either 802.11a, 802.11b or 802.11g wireless networks. <p>NOTE: These wireless modes (Modulation type) determine the discovered access points displayed in the WiFi Networks list</p>
OK	Saves settings and returns to the previous page.
Cancel	Closes and cancels any changes.

Microsoft Windows* Advanced Options (Adapter Settings)

To access the Windows XP* Advanced options:

1. Start Windows and log on with administrative privileges.
2. From your desktop, right-click **My Computer** and click **Properties**.
3. Click the **Hardware** tab.
4. Click **Device Manager**.
5. Double-click **Network adapters**.
6. Right-click the name of the installed wireless adapter that is in use.
7. Click **Properties**.
8. Select the **Advanced** tab.
9. Select the **Property** you want (for example, Mixed Mode Protection, Power Management).
10. To select a new value or setting, click **Use default value** to clear the checkbox. Then select a new value or setting. To return to the default value, click the **Use default value** checkbox. (The **Use default value** box is not present for all properties, for example, Ad Hoc Channel. In this case, simply select the setting you want.)
11. To save your settings and exit the window, click **OK**.

[Back to Top](#)

[Back to Contents](#)

[Trademarks and Disclaimers](#)

Advanced Statistics (Advanced menu)

The Advanced Statistics provides current adapter connection information. This information defines how the adapter communicates with an access point. At the Advanced menu, click **Advanced Statistics** to access.

Advanced Statistics Description

Name	Description
Statistics	<p>Advanced Statistics: This information pertains to how the adapter communicates with an access point.</p> <p>Association: If the adapter finds an access point to communicate with, the value is in range. Otherwise, the value is out of range.</p> <ul style="list-style-type: none">• AP MAC Address: The twelve-digit MAC address (00:40:96:31:1C:05) of the access point.• Number of associations: The number of times the access point has found the adapter.• AP count: The number of available access points within range of the wireless adapter.• Number of full scans: The number of times the adapter has scanned all channels for receiving information.• Number of partial scans: The number of scans that have been terminated. <p>Roaming: This information contains counters that are related to reasons for the adapter roaming. Roaming occurs when an adapter communicates with one access point and then communicates with another for better signal strength.</p> <ul style="list-style-type: none">• Roaming count: The number of times that roaming occurred.• AP did not transmit: The adapter did not receive radio transmission from the access point. You may need to reset the access point.• Poor beacon quality: The signal quality is too low to sustain communication with the access point. Either you

have moved the adapter outside the coverage area of the access point or the access point's device address information has been changed.

- **AP load balancing:** The access point ended its association with the adapter based on the access point's inability to maintain communication with all its associated adapters. Too many adapters are trying to communicate with one access point.
- **AP RSSI too low:** The Receive Signal Strength Indicator (RSSI) is too low to maintain an association with the adapter. You may have moved outside the coverage area of the access point or the access point could have increased its data rate.
- **Poor channel quality:** The quality of the channel is low and caused the adapter to look for another access point.
- **AP dropped mobile unit:** The access point dropped a computer from the list of recognizable mobile devices. The computer must re-associate with an access point.

Miscellaneous: Use this information to determine if an association with a different access point increases performance and helps maintain the highest possible data rate.

- **Received beacons:** Number of beacons received by the adapter.
- **Percent missed beacons:** Percent value for missed beacons.
- **Percent transmit errors:** The percentage of data transmissions that had errors.
- **Signal Strength:** Signal strength of the access point that the adapter communicates with displayed in decibels (dBm).

Transmit/Receive (Tx/Rx) Statistics

Displays percent values for non-directed and directed packets.

Total host packets: The total number of directed and non-directed packets counts.

- Transmit - (Mbps)
- Receive - (Mbps)
- **Non-directed packets:** The number of received packets broadcast to the wireless network.
- **Directed packets:** The number of received packets sent specifically to the wireless adapter.
- **Total Bytes:** The total number of bytes for packets

received and sent by the wireless adapter.

Logging

Set the duration that you want to record statistical data for your wireless adapter.

Configure logging settings: Click **Settings** to set how frequently you want to log the statistics. You can set the number of seconds and how many hours you want the statistics to be logged.

To change the storage location of the log file.

1. Click **Browse** to specify a new log file location. The current path is displayed. The default location is in the Intel PROSet/Wireless WiFi program files directory.
2. Click **Open** to close and apply the new file path.
3. Click **Close** to exit Advanced Statistics.

Start/Stop Logging: Click this button to start and stop logging. When you click Start logging, statistical information (described above) is accumulated. When you click Stop Logging, the accumulation ends and this information is saved to a file that you can open and view.

View Log File...: Click this button to open the Wireless folder under Program Files/Intel (this is the default location). Log files are named using the month, day, and year, plus the number of the log created on that day. For example: 03122007_001.htm. The log file provides:

- Date and Time
- Adapter Information
- Connection Information
- Transmit/Receive Statistics

NOTE: An administrator can disable this feature.

Reset Stats

Resets the adapter statistical counters back to zero and begins making new data measurements.

Close

Closes and returns to the main window.

Help?

Provides help information for this page.

For information about importing/exporting user-created profiles, see [Import or Export Profiles](#).

[Back to Top](#)

[Back to Contents](#)

[Trademarks and Disclaimers](#)

Exclude List Management

The Exclude list is a list of networks that you will not automatically be connected to. This feature lets you restrict automatic access to a listed network or access point, even if you have created a profile for that network. Use **Exclude List Management** to exclude entire wireless networks (SSID).

There are two ways to access the Exclude List Management screen:

- Click **Manage Exclusions** at the Profiles menu, or
- At the main window, select a network and click the [Properties](#) button. Then click **Manage Exclusions**.

NOTE: If an administrator has designated a network for exclusion, only an administrator using the [Administrator Tool](#) may remove the network from the Exclude List.

NOTE: Administrators can exclude profiles from the Administrator Tool. See [Administrator Tool](#).

This icon following icon on the [WiFi Networks list](#) indicates that a network has been excluded.



Name	Description
Network Name	Name (SSID) of the wireless network.
Radio	Displays the band if there is a DHCP error.
MAC Address	The MAC address of the access point, or all access points or stations in the network.
Reason	The source of the exclusion, the User.

Details	<p>Click Details to learn specific information on how the access point was excluded and how to remove it from exclusion. Following is an example:</p> <p>This network has been excluded from automatic connection for the following reasons.</p> <ul style="list-style-type: none"> • User has excluded this network manually. <p>To make this network (or access points) eligible for automatic connection again, select it and click the Remove button.</p> <p>NOTES:</p> <ul style="list-style-type: none"> • The Reset list button removes all entries except rogue and administrator excluded access points from the list. • Rogue access points are removed from the list when a connection is made to this access point using valid credentials. • All excluded access points in a network (other than rogue and administrator excluded) are removed from the list when a profile for that network is applied manually. <p>Entries that are dimmed are excluded rogue or administrator excluded access points. Rogue or administrator excluded access points cannot be removed from the list manually.</p>
Add	<p>Click the Add button to enter the network name (SSID) that you want to add to the Exclude List.</p> <ol style="list-style-type: none"> 1. Network Name: Enter the network name. 2. Click OK.
Remove	<p>Remove an entry from the list.</p> <ol style="list-style-type: none"> 1. Select the entry from the list. 2. Click Remove. 3. You are asked: Do you want to remove the selected item from the Exclude List? 4. Click Yes to remove the profile from the list.
Reset list	Removes all of the networks and access points from the Exclude List.
Close	Closes and saves settings.
Help?	Provides help information for this page.

[Back to Top](#)

[Back to Contents](#)

[Trademarks and Disclaimers](#)

Turn WiFi Radio On or Off

To switch the wireless radio on or off, use one of the following methods:

- The optional hardware radio switch on your computer
- Intel(R) PROSet/Wireless WiFi Connection Utility
- Microsoft Windows

NOTE: When your computer is switched on, the radio is constantly transmitting signals. In certain situations, as in an airplane, signals from the radio may cause interference. Use the following methods if you need to turn off the radio and use your notebook without emitting radio signals.

Use the Optional Computer Radio on or off Switch

If your computer has an external switch installed, use it to switch the radio on or off. See the computer manufacturer's documentation for more information about this switch. If you have Intel PROSet/Wireless WiFi software installed, the current state of the radio displays in the WiFi connection utility main window and on the [Taskbar](#).

Use Intel PROSet/Wireless WiFi to Switch the Radio on or off

From Intel PROSet/Wireless WiFi software, the radio can be switched on or off. The status icon on Intel PROSet/Wireless WiFi displays the current state of the radio.

From the Intel PROSet/Wireless WiFi main Window, click **WiFi On** / **WiFi Off** to toggle the radio on or off.

Switch the radio on or off from the Taskbar Icon

To switch the radio on or off, click the [Taskbar icon](#) and select **WiFi On** / **WiFi Off**.

Use Windows to turn on or off the Radio

The radio can be turned off using Windows.

NOTE: If you turned off the radio from Microsoft Windows, then you must use Microsoft Windows to turn the radio on. You cannot use a hardware switch or the WiFi connection utility to enable the radio if the radio has been turned off using Windows.

Windows XP

1. At the Start Menu, click **Connect to**. Right click **Wireless Network Connection** and select **Disable**.
2. Or if you have more than one wireless adapter, at the Start Menu, click **Connect to > Show all connections**. Right click the desired adapter and select **Disable**.

You can use the same method to turn the radio back on.

[Back to Top](#)

[Back to Contents](#)

[Trademarks and Disclaimers](#)

Application Settings (Administrator Tool)

An administrator can configure the Intel(R) PROSet/Wireless WiFi Connection Utility software application settings to control how the application behaves on the user's computer, and to select what level of control users have over various aspects of their wireless connections. These settings are configured using the Administrator Tool, and are not the same as those listed under the Tools Menu.

To configure Application Settings:

1. Click **Include Application Settings in this package**.
2. Select the settings that you want. Some settings require more information. Each setting is listed in the next table.

Name	Description
802.1X Authentication	Enable a user to create or connect to profiles that support different 802.1X authentication EAP types. Select which 802.1X authentication EAP types you want enabled on a user's computer: EAP LEAP , EAP PEAP , EAP TLS , EAP SIM , EAP TTLS , EAP FAST , EAP AKA .
AAA In Control	Notify when another application uses the wireless adapter.
Adapter Switching	If enabled, then whenever a valid wired Ethernet connection is detected, the WiFi connection utility will automatically close any wireless network connections and turn off the wireless radio. If the system loses its wired Ethernet connection, the WiFi connection utility will automatically turn on the wireless adapter radio and attempt to connect to the last connected profile. If the last connected network is not available, the WiFi connection utility will attempt to connect to the first available wireless network based on the preferred Profile List. NOTE: This behavior is for the system as a whole and is not specific to any user.

	<p>NOTE: If the user has manually turned off the wireless radio, the radio will not turn on again when an wired Ethernet connection is lost. The user must turn the radio back on for wireless connections to be established.</p>
<p>Administrator Tool</p>	<p>Disable access to the Administrator Tool on a user's computer.</p>
<p>Application Auto Launch</p>	<p>Select to start a batch file, executable file, or script automatically when a specific profile connects to the network. For example, start a Virtual Private Network (VPN) session automatically whenever a user connects to a wireless network.</p>
<p>Application On Radio Toggle</p>	<p>Enables a third-party application to disable the Intel (R) PROSet/Wireless WiFi Connection Utility, WiFi On / WiFi Off button.</p>
<p>CCXv4</p>	<p>Select Enable CCXv4 to Enable Cisco Compatible Extensions, version 4 (CCXv4) features for EAP-FAST profiles.</p> <p>NOTE: The EAP-FAST Authority Identifier (A-ID) Groups feature in the Administrator Tool is unavailable if CCXv4 is not enabled.</p> <p>Select which of the following prompts to enable or disable on a user's computer for EAP-FAST PAC provisioning:</p> <p>Turn off prompts and warnings for unauthenticated provisioning: Option to turn off prompts and warnings for PAC auto-provisioning if there is no PAC or there is no PAC that matches the A-ID sent by the server that it is connected to.</p> <p>Turn off prompts when switching default server (A-ID): Option to turn off prompts when a client encounters a server that has provisioned a PAC before but is not currently selected as the default server.</p> <p>Turn off unauthenticated provisioning after PAC is provisioned: Option to turn off auto-provisioning automatically after a PAC for that A-ID has been provisioned.</p>

NOTE: This feature is installed through an Administrator Package when a user's computer has one of the following adapters:

- Intel(R) WiMAX/WiFi Link 5350
- Intel(R) WiMAX/WiFi Link 5150
- Intel(R) WiFi Link 5300
- Intel(R) WiFi Link 5100
- Intel(R) Wireless WiFi Link 4965AGN
- Intel(R) Wireless WiFi Link 4965AG_
- Intel(R) PRO/Wireless 3945ABG Network Connection

Cache Credentials

Select to save credentials after a user logs on. If the wireless connection temporarily disconnects, the saved credentials are used upon reconnection. The credentials are cleared when the user logs off.

NOTE: if cleared, the **Prompt each time I connect** option is unavailable when creating profiles

Certificate Expiry Warning

If specified, the WiFi connection utility will warn users when the certificates are going to expire. The provided URL will allow them to update their certificates from a certificate server.

Device to Device (ad hoc)

Enable or disable whether a user is able to either create Device to Device (ad hoc) profiles or join Device to Device (ad hoc) networks.

Select one of the following to enable or disable whether the user can connect to device to device networks:

- Enable device to device networking
- Enable only secure device to device networking
- Disable device to device networking

Select to either allow a user to configure profiles with device to device (ad hoc) settings or prevent configuration of Device to Device (ad hoc) profiles.

- Show device to device application settings

	<ul style="list-style-type: none"> • Hide device to device application settings <p>To remove the Device to Device (ad hoc) operating mode from the Create Wireless Profile General Settings, select both Disable device to device networking and Hide device to device application settings. This prevents a user from creating profiles that support Device to Device (ad hoc) network.</p>
Import and Export	<p>Select to import to or export profiles from a user's computer. Enable permits auto import of user profiles when copied to an auto import folder.</p>
Maintain Connection	<p>Select to hide the Maintain Connection option in the Create Wireless Profile Advanced Settings. This Maintain Connection option maintains the wireless connection with a user profile after log off.</p> <p>NOTE: The Maintain Connection option may be used with Nortel VPN client when it is configured to Logoff on Connect.</p>
Maintain SmartCard Connection	<p>Select to maintain the connection if the smart card is removed while the wireless device is connected to a network that uses smart card credentials. The default behavior for the WiFi connection utility is to close the connection that uses smart card credentials if the smart card is removed. Turning this feature On will cause the connection to remain connected (unless re-authentication is required for another reason). Select to maintain a connection if the smart card is removed while the wireless device is connected to a network using smart card/SIM credentials.</p> <p>NOTE: This setting is not available for Windows Vista* client profiles.</p>
Message On Radio Toggle	<p>Enables a third-party application to notify a user that the WiFi connection utility radio is either on or off.</p>

<p>Microsoft Windows XP Coexistence</p>	<p>Select Enable Microsoft Wireless Zero Configuration and Intel PROSet/Wireless WiFi to coexist on this system.</p> <p>Enable this option to allow Microsoft Wireless Zero Configuration and the WiFi connection utility to exist together on this system. When you select this option, you prevent Microsoft Windows XP Wireless Zero Configuration Service from being disabled when the WiFi connection utility is enabled.</p>
<p>Persistent Connection</p>	<p>Select Ensure that persistent connection and computer policies are updated prior to user log on.</p> <p>NOTE: Updating policies may delay the log on screen for up to two minutes.</p>
<p>Pre-logon Cisco Mode</p>	<p>Enable Cisco Mode during a Pre-logon connection.</p> <p>Cisco access points have the capability to support multiple wireless network names (SSIDs) but only broadcast one. In order to connect to such an access point, an attempt is made to connect with each profile. This is referred to as Cisco Mode.</p> <p>NOTE: The Pre-logon connection may increase the connection time.</p>
<p>Profile Connectivity</p>	<p>Control profile connection by the user.</p> <p>Disable user-profile switching. Leaving this setting Off lets the user connect to both user and administrator profiles. By turning this setting On, the user can only connect to administrator profiles. The administrator also chooses which administrator profiles are available to the user, as follows:</p> <ul style="list-style-type: none"> • Allow the user to connect to All administrator profiles. • Allow the user to only connect to the First administrator profile.

Security Level	<p>Select the security level on a user's computer.</p> <p>Users are able to connect to profiles only with this security level.</p> <ul style="list-style-type: none"> • Allow the user to connect to networks with Personal Security only.
Shared Folder Notification	<p>Select the shared folder notification setting on a user's computer.</p> <ul style="list-style-type: none"> • Unshare shared folders automatically when connected to an unsecured network. • Disable this notification. • Notify when connected to an unsecured network (default).
Single Sign On	<p>Select which Administrator Profile types are enabled on a user computer.</p> <ul style="list-style-type: none"> • Persistent Connection : Profiles are active during start up and when no user is logged onto the computer. • Pre-logon or Common Connection: Profiles are active immediately once a user logs onto the computer. <p>Common profiles are enabled if Pre-logon or Common features are not installed on a user's computer. Common profiles are active after a user has logged on and the session becomes active.</p> <p>Persistent and Pre-logon or Common profiles are placed at the top of the user's profiles list. They cannot be changed or deleted by a user.</p>

Support Information

Specify the support information displayed in the **About** box of the WiFi connection utility.

- **Support URL:** Enter the support center web site that you want your customers to access for technical support.
- **Support Phone Number:** Enter the telephone number that you want your customers to call for technical support.

Voice over IP

Enables third-party software to use the VoIP application on a user's computer. The default setting enables this feature.

NOTE: This feature is installed through an Administrator Package when a user's computer has one of the following adapters:

- Intel(R) WiMAX/WiFi Link 5350
- Intel(R) WiMAX/WiFi Link 5150
- Intel(R) WiFi Link 5300
- Intel(R) WiFi Link 5100
- Intel(R) Wireless WiFi Link 4965AGN
- Intel(R) Wireless WiFi Link 4965AG_
- Intel(R) PRO/Wireless 3945ABG Network Connection

Wi-Fi Manager

Select which Wi-Fi manager controls a user's wireless connections. Use either the previous logged on user's Wi-Fi manager or allow each user to select their preferred Wi-Fi manager.

- Allow all users to switch between the WiFi connection utility and Microsoft Windows XP Wireless Zero Configuration after log on.
- The Wi-Fi manager at log on is determined by the active Wi-Fi manager when the last user logged off.

Wi-Fi Protected Setup*

The WiFi connection utility can be configured to operate as a registrar for a Wi-Fi Protected Setup supported access points. The registrar securely transfers the access point key or password automatically or manually with a USB flash drive or other external device.

- Enable registering other devices (default).
- Hide Enable Device Registration application setting.

Select to enable the WiFi connection utility to register other devices. Also select to hide the Enable Device Registration setting in the WiFi connection utility application settings to block user to change the settings.

NOTE: This feature is installed through an Administrator Package when a user's computer has one of the following adapters:

- Intel(R) WiMAX/WiFi Link 5350
- Intel(R) WiMAX/WiFi Link 5150
- Intel(R) WiFi Link 5300
- Intel(R) WiFi Link 5100
- Intel(R) Wireless WiFi Link 4965AGN
- Intel(R) Wireless WiFi Link 4965AG_
- Intel(R) PRO/Wireless 3945ABG Network Connection

WiFi On/Off

Control the wireless radio.

- **No change:** The radio is not turned on or off.
- **Turn WiFi Off:** The profile turns the radio off.
- **Turn WiFi On:** The profile turns the radio on.
- **Turn off 802.11a radio only:** This becomes selectable if **Turn WiFi On is** enabled.
- **Disable WiFi On/Off selection:** Select to prevent a user from accessing the **WiFi On/Off** control on the WiFi connection utility main window or Taskbar menu. A user is notified that **The feature is disabled by the administrator** if they attempt to turn on or off the radio control.
- **Add 802.11a Radio On/Off selection:**

Select to allow the user to turn on/off the 802.11a radio separately from the 802.11b/g radio. If you select this, the **Disable 802.11a Radio On/Off selection** becomes available. Select this to show the 802.11a radio On/Off control, but disable it. This lets you give the user individual control over the radios.

Once this feature is installed on a user's computer, follow the instructions below to turn on or off the 802.11a radio control.

To turn off the 802.11a radio:

1. On the WiFi connection utility main window, click the **WiFi On** button. The list of radio options is displayed.
2. Select **802.11a Radio Off**. The 802.11a radio is now inactive.

To turn on the 802.11a radio:

1. On the WiFi connection utility main window, click the **802.11a Radio Off** button. The list of radio options is displayed.
2. Select **WiFi On**. The 802.11a radio is now active.

NOTE: The option **Add 802.11a Radio On/Off selection** is available only for wireless adapters that support 802.11a, 802.11b and 802.11g. This feature is not installed through an Administrator Package when a user's computer has an Intel(R) PRO/Wireless 2200BG Network Connection.

Close

Closes the Administrator Tool.

Help?

Provides help information for this page.


[Back to Top](#)

[Back to Contents](#)

[Trademarks and Disclaimers](#)

Advanced Settings

Use the **Advanced Settings** to password protect a profile, select a specific access point on a network to connect to, start an application or auto import a profile. Click the **Advanced** button on the **Create Wireless Profile General Settings** to access.

Name	Description
Auto Connect	<p>Automatic (Default): Select to have the Intel(R) PROSet/Wireless WiFi Connection Utility connect automatically to this profile when it is in range.</p> <p>On Demand: Select to prevent automatic connection of a profile when the network is in range. For example, if there is a cost for a wireless connection and you did not want to connect automatically when in range. In the WiFi Networks list and in the Profiles list, the network will be noted with this icon,  indicating On Demand connection (also called manual connection).</p> <p>To connect to the network:</p> <ol style="list-style-type: none">1. Select the network from the WiFi Networks list.2. Click Connect.
Auto Import	<p>Allows a network administrator to easily move the selected profile to other computers. When the exported file is placed in the Wireless\AutoImport directory on another computer, the WiFi connection utility automatically imports the profile.</p> <p>NOTE: This feature is <i>only</i> available when configuring a user profile. It is <i>not</i> available when configuring Administrator Profiles.</p>

Band Selection	<p>Here you can select the band to use for this connection profile:</p> <ul style="list-style-type: none"> • Mixed Band: Select this to the have WiFi connection utility attempt to connect this profile to an available network with either of the two bands. • 2.4 GHz band: Select this to have the WiFi connection utility attempt to connect this profile to an available network using only the 2.4 GHz band. • 5.2 GHz band: Select this to have the WiFi connection utility attempt to connect this profile to an available network using only the 5.2 GHz band.
Mandatory Access Point	<p>Forces the wireless adapter to connect to an access point that uses a specific MAC address. Enter the MAC address of the access point (BSSID); 48-bit, 12 hexadecimal digits. For example, 00:06:25:0E:9D:84.</p> <p>Clear: Clear current address.</p> <p>NOTE: This feature is not available when ad hoc operating mode is used.</p>
Password Protection	<ol style="list-style-type: none"> 1. Password protect this profile (maximum 10 characters): Select to enable a password for the profile. The default setting is cleared for no profile password. 2. Password: Enter a password. The entered password characters display as asterisks. 3. Confirm Password: Reenter the password. <p>NOTE: Be sure to keep this password written down. If it is forgotten, it cannot be reset.</p>
Start Application	<p>Automatically starts a batch file, executable file, or script whenever you connect to the profile. For example, start a Virtual Private Network (VPN) session automatically whenever you connect to a wireless network.</p> <ol style="list-style-type: none"> 1. Click Enable Application Auto Launch. 2. Enter the name of the program that you want to start or click Browse to locate the file on your hard disk. 3. Click OK to close the Advanced Settings.

Maintain Connection	<p>The Maintain Connection option maintains the wireless connection with a user profile after log off.</p> <p>If the Maintain Connection option is selected and a Persistent profile exists, the Persistent profile will not be applied at logoff. It will be applied only if the connection with this profile is lost.</p> <p>NOTE: This option may be used with Nortel VPN client when it is configured to Logoff on Connect.</p> <p>NOTE: This feature is <i>only</i> available when configuring a user profile. It is <i>not</i> available when configuring Administrator Profiles.</p>
User Name Format	<p>User Name Format: An administrator can select the user name format for the authentication server.</p> <p>The choices are:</p> <ul style="list-style-type: none"> • user (default) • user@domain • user@domain.com • DOMAIN\user <p>NOTE: This feature is available <i>only</i> when configuring Administrator Profiles. It is not available when creating a profile from the Create Wireless Profile page.</p>
PLC Domain Check	<p>Pre-logon Domain Check: This setting is visible <i>only</i> when using the Administrator Tool, and <i>only</i> if you select to create a Pre-logon/Common profile. The choices are:</p> <ul style="list-style-type: none"> • Check for Domain Server Presence: When using a Pre-logon Connect profile while joined to a domain, this setting will verify the domain server's presence before the user login process is finished. If the server is not found, login may be delayed for a minute or more. • Just continue with login: Login proceeds normally. Server presence is not checked. <p>NOTE: This feature is available <i>only</i> when configuring Administrator Profiles. It is not available when creating a profile from the Create Wireless Profile page.</p>
OK	Close and save the settings.
Cancel	Close and cancel any changes.
Help?	Help information for this page.

[Back to Top](#)

[Back to Contents](#)

[Trademarks and Disclaimers](#)

Adapter Settings (Administrator)

The Adapter Settings screen controls and displays the device properties for the wireless adapter installed on a computer. The adapter may be any one of the following:

- Intel(R) WiMAX/WiFi Link 5350
- Intel(R) WiMAX/WiFi Link 5150
- Intel(R) WiFi Link 5300
- Intel(R) WiFi Link 5100
- Intel(R) Wireless WiFi Link 4965AGN
- Intel(R) Wireless WiFi Link 4965AG_
- Intel(R) PRO/Wireless 3945ABG Network Connection
- Intel(R) PRO/Wireless 2915ABG Network Connection
- Intel(R) PRO/Wireless 2200BG Network Connection.

To configure Adapter Settings:

1. From within the Administrator tool, click **Include Adapter Settings in this package**.
2. For each setting listed in the table below, select one of the following options:
 - **Use default value:** Resets the setting on the user machine to the default value.
 - **No change:** (For Windows XP* users only.) Maintains the user selected value. The administrator decides not to enforce all the settings on a user's computer. The user can change the adapter setting values from the WiFi connection utility Advanced menu.
 - **No change:** (For Windows Vista* users only.) Maintains the user selected value. The administrator decides not to enforce all the settings on a user's computer. The user can change the adapter setting values at the Device Manager .
 - **Select the value:** The administrator selects the value that is to be used on the user's computer.

Adapter Settings Description

Following are descriptions of the adapter settings.

Name	Description

802.11n Channel Width (2.4 GHz)

Set high throughput channel width to maximize performance. Set the channel width to **Auto** or **20Mhz**. **Auto** is the default setting. Use 20MHz if 802.11n channels are restricted.

NOTE: This setting is available only if the wireless adapter is one of the following:

- Intel(R) WiMAX/WiFi Link 5350
- Intel(R) WiMAX/WiFi Link 5150
- Intel(R) WiFi Link 5300
- Intel(R) WiFi Link 5100

802.11n Channel Width (5.2 GHz)

Set high throughput channel width to maximize performance. Set the channel width to **Auto** or **20Mhz**. **Auto** is the default setting. Use 20MHz if 802.11n channels are restricted.

NOTE: This setting is available only if the wireless adapter is one of the following:

- Intel(R) WiMAX/WiFi Link 5350
- Intel(R) WiMAX/WiFi Link 5150
- Intel(R) WiFi Link 5300
- Intel(R) WiFi Link 5100
- Intel(R) Wireless WiFi Link 4965AGN

802.11n Mode

The 802.11n standard builds upon previous 802.11 standards by adding multiple-input multiple-output (MIMO). MIMO increases data throughput to improve transfer rate. Select **Enabled** or **Disabled** to set the 802.11n mode of the adapter. Enabled is the default setting.

NOTE: This setting is available only if the adapter is one of the following:

- Intel(R) WiMAX/WiFi Link 5350
- Intel(R) WiMAX/WiFi Link 5150
- Intel(R) WiFi Link 5300
- Intel(R) WiFi Link 5100
- Intel(R) Wireless WiFi Link 4965AGN

NOTE: To achieve transfer rates greater than 54 Mbps on 802.11n connections, WPA2*-AES security

must be selected. No security (**None**) can be selected to enable network setup and troubleshooting.

An administrator can enable or disable support for high throughput mode to reduce power-consumption or conflicts with other bands or compatibility issues.

Ad Hoc Channel

Unless the other computers in the ad hoc network use a different channel from the default channel, there is no need to change the channel.

Value: Select the allowed operating channel from the list.

- **802.11b/g:** Select this option when 802.11b and 802.11g (2.4 GHz) ad hoc band frequency is used. For this band, the default channel is 11.
- **802.11a:** Select this option when 802.11a (5 GHz) ad hoc band frequency is used. For this band, the default channel is 36.

NOTE: When an 802.11a channel is not displayed, initiating ad hoc networks is not supported for 802.11a channels.

Ad Hoc Power Management

Set power saving features for Device to Device (ad hoc) networks.

- **Disable:** Select when connecting to ad hoc networks that contain stations that do not support ad hoc power management.
- **Maximum Power Savings:** Select to optimize battery life.
- **Noisy Environment:** Select to optimize performance or connecting with multiple clients.

NOTE: This feature is only installed through an Administrator Package when a user's computer has one of the following adapters:

- Intel(R) WiMAX/WiFi Link 5350
- Intel(R) WiMAX/WiFi Link 5150
- Intel(R) WiFi Link 5300
- Intel(R) WiFi Link 5100
- Intel(R) Wireless WiFi Link 4965AGN
- Intel(R) PRO/Wireless 3945ABG

Ad Hoc QoS Mode

Quality of Service (QoS) control in ad hoc networks. QoS provides prioritization of traffic from the access point over a wireless network based on traffic classification. WMM* (Wi-Fi Multimedia*) is the QoS certification of the Wi-Fi Alliance* (WFA). When WMM* is enabled, the adapter uses WMM to support priority tagging and queuing capabilities for Wi-Fi* networks.

- **WMM Enabled** (Default)
- **WMM Disabled**

NOTE: This feature is only installed through an Administrator Package when a user's computer has one of the following adapters:

- Intel(R) WiMAX/WiFi Link 5350
- Intel(R) WiMAX/WiFi Link 5150
- Intel(R) WiFi Link 5300
- Intel(R) WiFi Link 5100
- Intel(R) Wireless WiFi Link 4965AGN
- Intel(R) PRO/Wireless 3945ABG

HD Mode

In a wireless network environment where several access points are nearby, this feature will reduce interference and improve your wireless connection. The default setting is for this to be turned off (disabled).

NOTE: This setting is available only if the adapter is one of the following:

- Intel(R) WiMAX/WiFi Link 5350
- Intel(R) WiMAX/WiFi Link 5150
- Intel(R) WiFi Link 5300
- Intel(R) WiFi Link 5100
- Intel(R) Wireless WiFi Link 4965AGN

Mixed Mode Protection	<p>Use to avoid data collisions in a mixed 802.11b/11g/11a/11n environment. Request to Send/Clear to Send (RTS/CTS) should be used in an environment where clients may not hear each other. CTS-to-self can be used to gain more throughput in an environment where clients are in close proximity and can hear each other. (CTS-to-self is not supported for 802.11n.)</p>
Power Management (Administrator View)	<p>When creating an administrator package, Power Management lets you select a balance between power consumption and adapter performance.</p> <p>PSP - Power Saving Mode CAM - Constantly Awake Mode</p> <p>Select one of the Power Saving Mode levels:</p> <p>PSP CAM: The client adapter is powered up continuously. PSP Level 1: PSP set at maximum power. PSP Levels 2-4: PSP set to maximize power. PSP Level 5: PSP set to maximize battery life. PSP Auto: Default in PSP Level 6: Balances between power consumption and battery life.</p> <p>NOTE: Power consumption savings vary based on infrastructure settings.</p>
Preamble Mode	<p>Changes the preamble length setting received by the access point during an initial connection. Always use Auto Tx Preamble to provide optimal network throughput. Auto Tx Preamble allows automatic preamble detection. If supported, short preamble should be used. If not, use Long Tx Preamble.</p> <p>NOTE: This setting is only available if the client adapter is an Intel(R) PRO/Wireless 2915ABG Network Connection or an Intel(R) PRO/Wireless 2200BG Network Connection.</p>

Roaming Aggressiveness

This setting lets you define how aggressively a wireless client roams to improve connection to an access point.

Click **Use default value** to balance between not roaming and performance or select a value from the list.

Values:

0: No Roaming: Your wireless client does not roam. Only significant link quality degradation causes it to roam to another access point.

1-3: Allow Roaming

2: Default: Balances between not roaming and performance.

4: Maximum Roaming

Throughput Enhancement

Changes the value of the Packet Burst Control.

- **Enable:** Select to enable throughput enhancement.
- **Disable:** (Default) Select to disable throughput enhancement.

Transmit Power

If you decrease the transmit power, you reduce the WiFi radio coverage.

Default Setting: Highest power setting

Values:

Tx Minimum: Lowest Minimum

Coverage: Set the adapter to the lowest transmit power. Enables you to expand the number of coverage areas or confine a coverage area. Reduce the coverage area in high traffic areas to improve overall transmission quality and avoid congestion and interference with other devices.

Tx Level 1, Tx Level 2, Tx Level 3: Set by country requirements.

Tx Maximum: Highest Maximum

Coverage: Set the adapter to the maximum transmit power level. Select for maximum performance and range in environments with limited additional radio devices.

If you select **No change**, then this setting will not be changed at the user's computer.

NOTE: The optimal setting is for a user to always set the transmit power at the lowest possible level still compatible with the quality of their communication. This allows the maximum number of wireless devices to operate in dense areas and reduce interference with other devices that this radio shares radio spectrum with.

NOTE: This setting takes effect when either Network (Infrastructure) or Device to Device (ad hoc) mode is used.

Wireless Mode

Select which mode to use for connection to a wireless network:

- **802.11a** (only): Connect the wireless adapter to 802.11a networks only.
- **802.11b** (only): Connect the wireless adapter to 802.11b networks only.
- **802.11g** (only): Connect the wireless adapter to 802.11g networks only.
- **802.11a and 802.11g**: Connect the wireless adapter to 802.11a and 802.11g networks only.
- **802.11b and 802.11g**: Connect the wireless adapter to 802.11b and 802.11g networks only.
- **802.11a, 802.11b, and 802.11g**: (Default) - Connect to either 802.11a, 802.11b or 802.11g wireless networks.

NOTE: These wireless modes (Modulation types) determine the discovered access points displayed in the [WiFi Networks list](#).

[Back to Top](#)

[Back to Contents](#)

[Back to Contents](#)

Set Administrator Password

A user cannot modify Administrator settings or profiles unless they have the password for this tool. When you first access the Administrator Tool, you are required to enter a password. The password must not exceed 100 characters (although the field will only display up to 56 characters). Null passwords are not allowed.

1. **Password:** Create a password (maximum 100 characters).
2. **Confirm Password:** Reenter the password.
3. Click **OK**. The [Open Administrator Package](#) displays.

To change or unlock the existing password:

1. On the Tools menu, click **Administrator Tool**.
 2. Click **Change Password** on the password entry form.
 3. **Old Password:** Enter the existing password.
 4. **New Password:** Enter the new password.
 5. **Confirm Password:** Reenter the new password again.
 6. Click **OK** to save the new password and enter the Administrator Tool.
-

[Back to Top](#)

[Back to Contents](#)

[Trademarks and Disclaimers](#)

Enterprise Security

From the Security Settings page you can enter the required security settings for the selected wireless network. See [Personal Security](#) to set basic WEP or WPA security in a non-enterprise environment (home, small business). See [Enterprise Security Settings](#) to set up 802.1X security authentication options.

- Use Enterprise Security if your network environment requires 802.1X authentication.
 - 802.1X authentication methods include passwords, certificates and [smart cards](#).
 - 802.1X authentication types are: [EAP-SIM](#), [EAP-AKA](#), [LEAP](#), [TLS](#), [TTLS](#), [PEAP](#), [EAP-FAST](#).
 - See [Profile Management](#) for a description of when the Profile Wizard is launched.
 - See [Security Overview](#) for more information about the different security options for wireless networks.
-

Enterprise Security Settings

Enterprise Security Settings Description

Name	Setting
Enterprise Security	Select to open the Enterprise Security settings. The security settings that are available are dependent on the Operating Mode selected: Device to Device (ad hoc) or Network (Infrastructure) .

Network Authentication

If you configure a profile for Device to Device (ad hoc) networking, the default setting is [Open](#) authentication.

If you configure a profile for an infrastructure network, select:

- [Open](#): Any wireless station can request authentication.
- [Shared](#): Uses an encryption key known only to the receiver and sender of data.
- [WPA-Personal or WPA2-Personal](#): Uses a password also called a pre-shared key (PSK).
- [WPA-Enterprise or WPA2-Enterprise](#): Use on enterprise networks with an 802.1X RADIUS server.

NOTE: WPA-Enterprise and WPA2-Enterprise are interoperable.

Data Encryption

Click to open the following data encryption types:

- None: No encryption.
- [WEP](#): WEP encryption provides two levels of security that use a 64-bit key (sometimes referred to as 40-bit) or a 128-bit key (also known as 104-bit). If you use encryption, all wireless devices on your wireless network must use the same encryption keys.
- [CKIP](#): Cisco Key Integrity Protocol is a Cisco proprietary security protocol for encryption in 802.11 media. CKIP uses Key Permutation (KP) and Message Sequence Number to improve 802.11 security in infrastructure mode.
- [TKIP](#): Provides per-packet key mixing, a message integrity check and a rekeying mechanism.
- [AES-CCMP](#): (Advanced Encryption Standard - Counter CBC-MAC Protocol) Used as the data encryption method whenever strong data protection is important.

<p>Enable 802.1X (Authentication Type)</p>	<p>Click to open the following 802.1X authentication types:</p> <ul style="list-style-type: none"> • TLS • TTLS • PEAP • LEAP • EAP-FAST • EAP-SIM: If in administrator mode, this only available for Pre-logon/Common profiles, not Persistent. • EAP-AKA: If in administrator mode, this only available for Pre-Logo/Common profiles, not Persistent. <p>Certain Authentication Types require that you obtain and install a client certificate. See Set up a Client with TLS authentication or consult your administrator.</p>
<p>Authentication Protocols</p>	<p>Authentication Protocols apply only when Network Authentication is set to WPA-Enterprise or WPA2-Enterprise and Authentication Type is set to TTLS or PEAP.</p> <ul style="list-style-type: none"> • PAP • CHAP • MS-CHAP • MS-CHAP-V2 • GTC • TLS
<p>Cisco Options</p>	<p>Click to view the Cisco Compatible Extensions Options.</p> <p>NOTE: Cisco Compatible Extensions are automatically enabled for CKIP and LEAP profiles.</p>
<p>Advanced</p>	<p>Click to access the Advanced Settings and configure the following options listed.</p> <ul style="list-style-type: none"> • Auto Connect: Select to automatically or manually connect to a profile. • Auto Import: Allows a network administrator to move this profile to other computers. (Visible on user profiles only.) • Band Selection: Select the band to use for this connection profile. • Mandatory Access Point: Select to associate the wireless adapter with a specific access point.

- [Password Protection](#): Select to password protect a profile.
- [Start Application](#): Specify a program to be started when a wireless connection is made.
- [Maintain Connection](#): Select to remain connected to a user profile after log off. (Visible on user profiles only.)
- [User Name Format](#): Select the user name format for the authentication server. (Visible on administrator profiles only.)
- [PLC Domain Check](#): Select to verify the domain server's presence before the user login process is finished. (Visible on administrator profiles only.)

User Credentials

A profile configured for TTLS, PEAP, or EAP-FAST authentication requires one of the following log on authentication methods:

- **Use Windows logon**: The 802.1X credentials match your Windows user name and password. Before connection, you are prompted for your Windows logon credentials.

NOTE: For LEAP profiles, this option is listed as **Use Windows logon user name and password**.

- **Prompt each time I connect**: Prompt for your user name and password every time you log onto the wireless network.

NOTE: For LEAP profiles, this option is listed as **Prompt for the user name and password**.

- **Use the following**: Use your saved credentials to log onto the network.
 - **User Name**: This user name must match the user name that is set in the authentication server by the administrator prior to client authentication. The user name is case-sensitive. This name specifies the identity supplied to the authenticator by the authentication protocol operating over the TLS tunnel. This identity is securely transmitted to the server only after an encrypted channel has been established.
 - **Domain**: Name of the domain on the authentication server. The server name identifies a domain or one of its sub-domains (for example,

zeelans.com, where the server is blueberry. zeelans.com).

- **Password:** Specifies the user password. The password characters appear as asterisks. This password must match the password that is set in the authentication server.
- **Confirm Password:** Reenter the user password.
- **Roaming Identity:** A Roaming Identity may be populated in this field or you can use %domain%\%username% as the default format for entering a roaming identity. When 802.1X Microsoft IAS RADIUS is used as an authentication server, the server authenticates the device using the **Roaming Identity** from Intel PROSet/Wireless WiFi software, and ignores the **Authentication Protocol MS-CHAP-V2** user name. Microsoft IAS RADIUS accepts only a valid user name (dotNet user) for the Roaming Identity. For all other authentication servers, the Roaming Identity is optional. Therefore, it is recommended to use the desired realm (for example, anonymous@myrealm) for the Roaming Identity rather than a true identity.

NOTE: Contact your administrator to obtain the domain name.

NOTE: For LEAP profiles, this option is listed as **Use the following user name and password.**

Server Options

Select one of the following credential retrieval methods:

- **Validate Server Certificate:** Select to verify the server certificate.

Certificate Issuer: The server certificate received during TLS message exchange must be issued by this certificate authority (CA). Trusted intermediate certificate authorities and root authorities whose certificates exist in the system store are available for selection. If **Any Trusted CA** is selected, any CA in the list is acceptable. Click **Any Trusted CA** as the default or select a certificate issuer from the list.

- **Specify Server or Certificate Name:** Enter the server name.

The server name or domain to which the server belongs, depends on which of the following options has been selected.

- **Server name must match the specified entry exactly:** When selected, the server name must match exactly the server name found on the certificate. The server name should include the complete domain name (for example, Servername.Domain name).
- **Domain name must end with the specified entry:** When selected, the server name identifies a domain, and the certificate must have a server name that belongs to this domain or to one of its subdomains (for example, zeelans.com, where the server is blueberry.zeelans.com).

NOTE: These parameters should be obtained from the administrator.

Certificate Options

To obtain a certificate for TLS authentication, select one of the following:

- **Use my smart card:** Select if the certificate resides on a smart card.
- **Use the certificate issued to this computer:** Selects a certificate that resides in the machine store.
- **Use a user certificate on this computer:** Click **Select** to choose a certificate that resides on this computer.

NOTE: The Intel(R) PROSet/Wireless WiFi Connection Utility supports machine certificates. However, they are not displayed in the certificate listings.

Notes about Certificates: The specified identity should match the **Issued to** identity in the certificate and should be registered on the authentication server (for example, RADIUS server) that is used by the authenticator. Your certificate must be valid with respect to the authentication server. This requirement depends on the authentication server and generally means that the authentication server must know the issuer of your certificate as a Certificate Authority. Use the same user name you used to log in when the certificate was installed.

Back

View the prior page in the Profile Wizard.

Next

View the next page in the Profile Wizard. If more security information is required then the next step of the Security Settings is displayed.

OK

Closes the Profile Wizard and saves the profile.

Cancel	Closes the Profile Wizard and cancels any changes made.
Help?	Provides the help information for the current page.

[Back to Top](#)

[Back to Contents](#)

[Trademarks and Disclaimers](#)

Profile Wizard General Settings

The **General Settings** page is the first page in the Create Wireless Profile Wizard. From this page you can specify the profile name, the wireless network name (SSID), and choose the operating mode.

See [Profile Management](#) for a description of when the Create Wireless Profile General Settings is launched.

While you configure a profile, you can use the left pane to navigate to the General and Security Settings pages. The **Back** and **Next** buttons located at the bottom of the Profile Wizard can also be used for the same functions.

General Settings Page Description

Name	Description
Profile Name	Name of the wireless network profile. When you configure a wireless network that was selected from the WiFi Networks list, the profile name is the same as the Wireless Network Name SSID). This name can be changed to be more descriptive or customized for your personal use. Examples: My Office Network, Bob's Home Network, ABC Company Network
Wireless Network Name (SSID)	Name of the wireless network access point used by the wireless adapter for connection. The network name must match exactly the name of the wireless access point. It is case sensitive. When you configure a wireless network that was selected from the WiFi Networks list, the network name is taken from the wireless network list. You cannot and should not change it. < SSID not broadcast >: If an access point does not broadcast its network name (SSID) or the wireless adapter receives a hidden network name from a

	<p>stealth access point, it is displayed in the WiFi Networks list. To associate with an <SSID not broadcast> network entry, a new profile must be created before connection. Provide the actual SSID for the access point. After connection, the <SSID not broadcast> is still displayed in the WiFi Networks list. The associated SSID profile is viewed in the Profiles list.</p>
<p>Operating Mode</p>	<p>Network (Infrastructure): Connect to an access point. A Network (Infrastructure) network consists of one or more access points and one or more computers with wireless adapters. This connection is the type used in home networks, corporate networks, hotels, and other areas that provide access to the network and/or the internet.</p> <p>NOTE: Only Network (Infrastructure) is available for administrator profiles (Pre-logon/Common and Persistent profiles). See the Administrator Tool for more information.</p> <p>Device to Device (ad hoc): Connect directly to other computers in an ad hoc wireless network. This type of connection is useful for connections between two or more computers only. It does not provide access to network resources or the internet.</p>
<p>Administrator Profile Type (Visible only in Administrator Tool)</p>	<p>Persistent: Persistent profiles are applied at boot time or whenever no one is logged on the computer. After a user logs off, a Persistent profile maintains a wireless connection either until the computer is turned off, or a different user logs on.</p> <p>Pre-logon/Common: These profiles are only available using the Administrator Tool. Pre-logon/Common profiles are applied once a user logs on. The connection is made as part of the Windows log-on sequence (Pre-logon/Common). This profile is shared by all users.</p>
<p>Advanced</p>	<p>Click Advanced to access the Advanced Settings. Use the Advanced Settings to set Maintain Connection, User Name Format, Auto Connect or Auto Import options, launch an application (Start Application), set a profile password (Password Protection), specify a certain access point address for adapter connection (Mandatory Access Point), and set Pre-logon Connect options.</p>

Next	Proceeds to the Security Settings page.
OK	Finishes creation of the new profile with the current settings.
Cancel	Closes the Create Wireless Profile Wizard and cancel any changes.
Help?	Provides help information for this page.

[Back to Top](#)

[Back to Contents](#)

[Trademarks and Disclaimers](#)

Personal Security

Use Personal Security if you are a home or small business user who can use a variety of simple security procedures to protect your wireless connection. You may want to select from the list of security settings that are easy to configure, for your wireless network. See [Personal Security Settings](#) for a description of each of the options. A [RADIUS](#) or [AAA](#) server is not required.

- Review the [Set up Data Encryption and Authentication](#) information to learn about the different security types.
 - To add or change the required security settings, click [Security Settings](#) for information to set security for the selected wireless network.
 - See [Profile Management](#) for a description of when to use the Profile Wizard.
 - See [Security Overview](#) for more information about the different security options for wireless networks.
 - If you want to verify the security settings, select a wireless network in the WiFi Networks list. See [Network Properties](#) to review the operating mode, authentication level, and data encryption.
 - See [Enterprise Security](#) to set 802.1X authentication security.
-

Personal Security Settings


Personal Security Settings Description

Name	Setting


General Settings

Select to open the Personal Security Settings. The security settings that are available are dependent on the Operating Mode selected in the [Create Wireless Profile Security Settings](#).

Device to Device (ad hoc): In device to device mode, also called ad hoc mode, wireless computers send information directly to other wireless computers. You can use ad hoc mode to network multiple computers in a home or small office, or to set up a temporary wireless network for a meeting.

NOTE: Device to Device (ad hoc) networks are identified with a notebook image () in the Wireless Networks and Profiles list.

Network (Infrastructure): An infrastructure network consists of one or more access points and one or more computers with wireless adapters installed. At least one access point should also have a wired connection. For home users, this is usually a broadband or cable network.

NOTE: Infrastructure networks are identified with an access point image () in the Wireless Networks and Profiles list.

Security Settings

If you are configuring a Device to Device (ad hoc) profile, select one of the following data encryption settings:

- [None](#): No authentication required.
- [WEP-64 bit](#) or [WEP-128 bit](#): A network key or password is used for encryption.

If you are configuring a Network (Infrastructure) profile, select:

- [WPA*-Personal \(TKIP\)](#) or [WPA2*-Personal \(TKIP\)](#): WPA-Personal uses the Temporal Key Integrity Protocol (TKIP) for data encryption.
- [WPA-Personal \(AES-CCMP\)](#) or [WPA2-Personal \(AES-CCMP\)](#): WPA-Personal uses a new method for privacy protection of wireless transmissions specified in the IEEE 802.11i standard.

Advanced button	<p>Click to access the Advanced Settings and configure the following options:</p> <ul style="list-style-type: none"> • Auto Connect: Select to automatically or manually connect to a profile. • Auto Import: Network administrator can export a profile on another computer. • Band Selection: Select the band to use for this connection profile. • Mandatory Access Point: Select to associate the wireless adapter with a specific access point. • Password Protection: Select to password protect a profile. • Start Application: Specify a program to be started when a wireless connection is made. • Maintain Connection: Select to remain connected to a user profile after log off.
Back	View the prior page in the Profile Wizard.
OK	Closes the Profile Wizard and saves the profile.
Cancel	Closes the Profile Wizard and cancels any changes made.
Help?	Provides the help information for the current page.

Set up Data Encryption and Authentication

In a home wireless network you can use a variety of simple security procedures to protect your wireless connection. These include:

- Enable Wi-Fi Protected Access (WPA*).
- Change your password.
- Change the network name (SSID).

Wi-Fi Protected Access (WPA) encryption provides protection for your data on the network. WPA uses an encryption key called a Pre-Shared Key (PSK) to encrypt data before transmission. Enter the same password in all of the computers and access point in your home or small business network. Only devices that use the same encryption key can access the network or decrypt the encrypted data transmitted by other computers. The password automatically initiates the Temporal Key Integrity Protocol (TKIP) or AES-CCMP protocol for the data encryption process.

Network Keys

WEP encryption provides two levels of security:

- 64-bit key (sometimes referred to as 40-bit)
- 128-bit key (also known as 104-bit)

For improved security, use a 128-bit key. If you use encryption, all wireless devices on your wireless network must use the same encryption keys.

You can create the key yourself and specify the key length (64-bit or 128-bit) and key index (the location that a specific key is stored). The greater the key length, the more secure the key. When the length of a key is increased by one character, the number of possible keys doubles.

Key Length: 64-bit

Pass phrase (64-bit): Enter five (5) alphanumeric characters, 0-9, a-z or A-Z.

Hex key (64-bit): Enter 10 hexadecimal characters, 0-9, A-F.

Key Length: 128-bit

Pass phrase (128-bit): Enter 13 alphanumeric characters, 0-9, a-z or A-Z.

Hex key (128-bit): Enter 26 hexadecimal characters, 0-9, A-F.

With WEP data encryption, wireless station can be configured with up to four keys (the key index values are 1, 2, 3, and 4). When an access point or a wireless station transmits an encrypted message that uses a key stored in a specific key index, the transmitted message indicates the key index that was used to encrypt the message body. The receiving access point or wireless station can then retrieve the key that is stored at the key index and use it to decode the encrypted message body.

Set up a Client with Open Authentication and No Data Encryption (None)

CAUTION: Networks using no authentication or encryption are highly vulnerable to access by unauthorized users.

On the Intel(R) PROSet/Wireless WiFi main window, use one of the following methods to connect to a device to device network:

- Double-click a Device to Device (ad hoc) network in the WiFi Networks list.
- Select a Device to Device (ad hoc) network in the WiFi Networks list. Click **Connect**. The Intel(R) PROSet/Wireless WiFi Connection Utility automatically detects the

security settings for the wireless adapter.

To create a profile for a wireless network connection with no encryption perform these steps:

1. Click **Profiles** on the WiFi connection utility main window.
 2. On the Profiles list, click **Add** to open the **Create Wireless Profile General Settings**.
 3. **Profile Name**: Enter a descriptive profile name.
 4. **Wireless Network Name (SSID)**: Enter the name of your wireless network.
 5. **Operating Mode**: Click **Device to Device (ad hoc)**.
 6. Click **Next** to open the **Security Settings**. **Personal Security** is selected by default.
 7. **Security Settings**: The default setting is **None**, which indicates that there is no security on this wireless network.
 8. Click **OK**. The profile is added to the Profiles list and connects to the wireless network.
-

Set up a Client with WEP 64-bit or WEP 128-bit Data Encryption

When WEP data encryption is enabled, a network key or password is used for encryption.

A network key is provided for you automatically (for example, it might be provided by your wireless network adapter manufacturer), or you can enter it yourself and specify the key length (64-bit or 128-bit), key format (ASCII characters or hexadecimal digits), and key index (the location where a specific key is stored). The greater the key length, the more secure the key.

To add a network key for an infrastructure network connection:

1. On the WiFi connection utility main window, double-click an infrastructure network in the WiFi Networks list or select the network and click **Connect**.
2. Click **Profiles** to access the Profiles list.
3. Click **Properties** to open the **Create Wireless Profile General Settings**. The Profile name and Wireless Network Name (SSID) display. Network (Infrastructure) should be selected as the Operating Mode.
4. Click **Next** to open the **Security Settings**. **Personal Security** is selected by default.
5. **Security Settings**: The default data encryption setting is **None**, which indicates that there is no security on this wireless network.

To add a password or network key:

1. **Security Settings**: Select either **WEP 64-bit** or **WEP 128-bit** to configure WEP data encryption with a 64-bit or 128-bit key.

When WEP encryption is enabled on an access point, the WEP key is used to verify access to the network. If the wireless device does not have the correct

WEP key, even though authentication is successful, the device is unable to transmit data through the access point or decrypt data received from the access point.

Name	Description
Password	Enter the Wireless Security Password (Pass phrase) or Encryption Key (WEP key).
Pass phrase (64-bit)	Enter five (5) alphanumeric characters, 0-9, a-z or A-Z.
WEP key (64-bit)	Enter 10 hexadecimal characters, 0-9, A-F.
Pass phrase (128-bit)	Enter 13 alphanumeric characters, 0-9, a-z or A-Z.
WEP key (128-bit)	Enter 26 hexadecimal characters, 0-9, A-F.

2. **Key Index:** Change the Key Index to set up to four passwords.
3. Click **OK** to return to the Profiles list.

To add more than one password:

1. Select the Key Index number: **1, 2, 3, or 4.**
2. Enter the Wireless Security Password.
3. Select another Key Index number.
4. Enter another Wireless Security Password.
5. Click **OK** to return to the Profiles list.

Set up a Client with WPA*-Personal (TKIP) or WPA2*-Personal (TKIP) Security Settings

WPA* Personal Mode requires manual configuration of a pre-shared key (PSK) on the access point and clients. This PSK authenticates a user's password or identifying code, on both the client station and the access point. The access point performs the authentication. WPA Personal Mode is targeted to home and small business environments.

WPA2* is the second generation of WPA security that provides enterprise and consumer wireless users with a high level of assurance that only authorized users can access their wireless networks. WPA2 provides a stronger encryption mechanism through Advanced Encryption Standard (AES), which is a requirement for some corporate and government users.

NOTE: To achieve transfer rates greater than 54 Mbps on 802.11n connections, WPA2-AES security must be selected. No security (**None**) can be selected to enable network setup and troubleshooting.

To configure a profile with WPA-Personal network authentication and TKIP data encryption:

1. On the WiFi connection utility main window, double-click an infrastructure network in the WiFi Networks list or select the network and click **Connect**.
2. Click **Profiles** to access the Profiles list.
3. Click **Properties** to open the **Wireless Profile Properties General Settings**. The Profile name and Wireless Network Name (SSID) display. Network (Infrastructure) should be selected as the Operating Mode.
4. Click **Next** to open the **Security Settings**.
5. Select **Personal Security**.
6. **Security Settings**: Select **WPA-Personal (TKIP)** to provide security to a small business network or home environment. A password, called a pre-shared key (PSK), is used. The longer the password, the stronger the security of the wireless network.

If your wireless access point or router supports WPA2-Personal, then you should enable it on the access point and provide a long, strong password. The longer the password, the stronger the security of the wireless network. The same password entered in the access point needs to be used on this computer and all other wireless devices that access the wireless network.

NOTE: WPA-Personal and WPA2-Personal are interoperable.

7. **Wireless Security Password (Encryption Key)**: Enter a text phrase with eight to 63 characters. Verify that the network key matches the password in the wireless access point.
8. Click **OK** to return to the Profiles list.

Set up a Client with WPA*-Personal (AES-CCMP) or WPA2*-Personal (AES-CCMP) Security Settings

Wi-Fi Protected Access (WPA*) is a security enhancement that strongly increases the level of data protection and access control to a wireless network. WPA enforces 802.1X authentication and key-exchange and only works with dynamic encryption keys. For a home user or small business, WPA-Personal uses either Advanced Encryption Standard - Counter CBC-MAC Protocol (AES-CCMP) or Temporal Key Integrity Protocol (TKIP).

NOTE: To achieve transfer rates greater than 54 Mbps on 802.11n connections, WPA2-AES security must be selected. No security (**None**) can be selected to enable network setup and troubleshooting.

To create a profile with WPA2*-Personal network authentication and AES-CCMP data encryption:

1. On the WiFi connection utility main window, double-click an infrastructure network from the WiFi Networks list or select the network and click **Connect**.
2. If these are being transmitted, the Profile name and Wireless Network Name (SSID) should display on the **General Settings** screen. **Network (Infrastructure)** should be selected as the Operating Mode. Click **Next** to open the **Security Settings**.
3. Select **Personal Security**.
4. **Security Settings**: Select **WPA2-Personal (AES-CCMP)** to provide this level of security in the small network or home environment. It uses a password, also called a pre-shared key (PSK). The longer the password, the stronger the security of the wireless network.

AES-CCMP (Advanced Encryption Standard - Counter CBC-MAC Protocol) is a newer method for privacy protection of wireless transmissions specified in the IEEE 802.11i standard. AES-CCMP provides a stronger encryption method than TKIP. Choose AES-CCMP as the data encryption method whenever strong data protection is important.

If your Wireless access point or router supports WPA2-Personal, then you should enable it on the access point and provide a long, strong password. The same password entered into the access point needs to be used on this computer and all other wireless devices that access the wireless network.

NOTE: WPA-Personal and WPA2-Personal are interoperable.

Some security solutions may not be supported by your computer's operating system. You may require additional software or hardware as well as wireless LAN infrastructure support. Contact your computer manufacturer for details.

5. **Password: Wireless Security Password (Encryption Key)**: Enter a text phrase (length is between eight and 63 characters). Verify that the network key used matches the wireless access point key.
6. Click **OK** to return to the Profiles list.

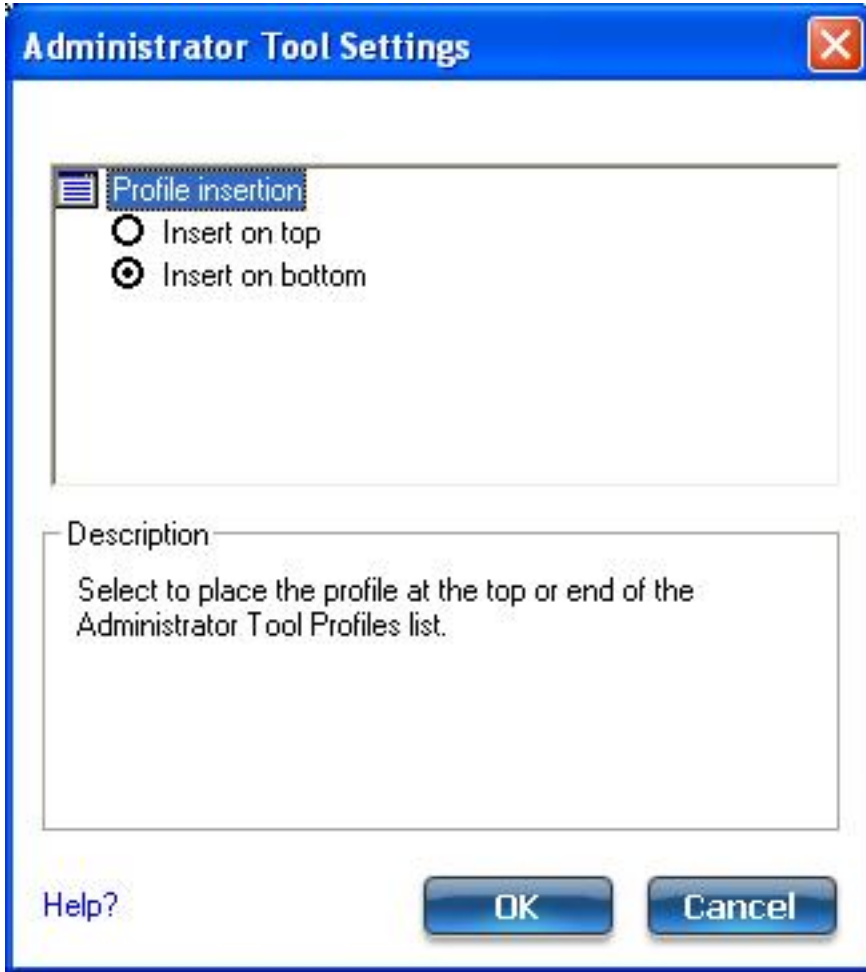
[Back to Top](#)

[Back to Contents](#)

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Administrator Tool Settings

These settings allow the administrator to control where profiles are placed in the Administrator's Profiles list.



Name	Description	
Profile Insertion: Select one of the following to place Administrator profiles within a Administrator's Profiles list.	Insert on top	Select to place Administrator profiles at the top of the Administrator's Profiles list (Persistent, Pre-logon/Common or Voice over IP profiles)

	Insert on bottom	Select to place Administrator profiles at the end of the Administrator's Profiles list. (Persistent, Pre-logon/Common or Voice over IP profiles)
OK	Save settings and close the page.	
Cancel	Cancel settings and close the page.	
Help?	Provides help information for this page.	

How to Use

1. Open the Administrator Tool.
 2. Click **Tools > Settings** to open the **Administrator Tool Settings**.
 - o Select **Insert on top** to always place Administrator profiles at the top of the Administrator Tool's Profiles list.
 - o Select **Insert on bottom** to always place Administrator profiles at the bottom the Administrator Tool's Profiles list.
 3. Click **OK** to close and return to the Administrator Tool.
-

[Back to Top](#)

[Back to Contents](#)

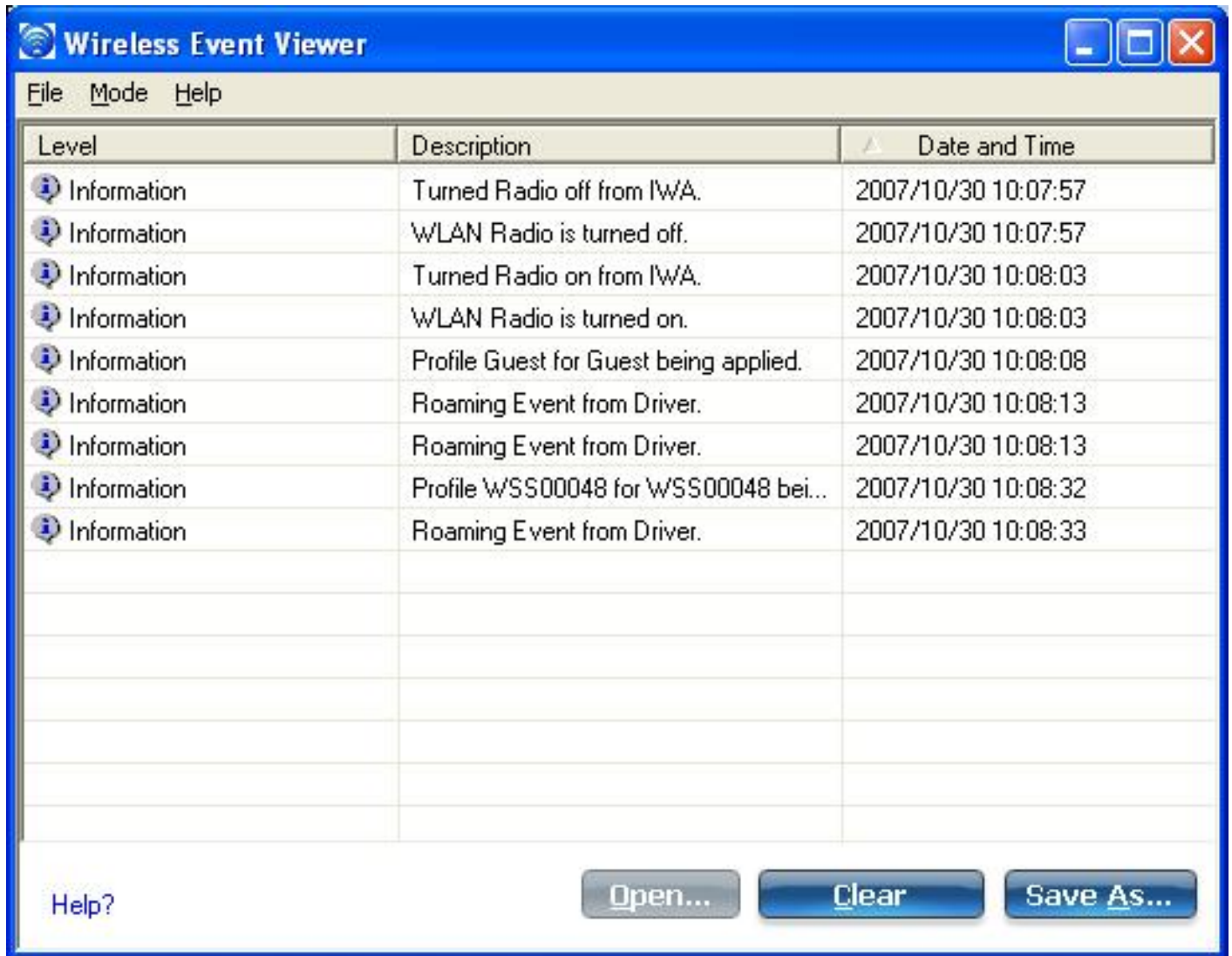
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Wireless Event Viewer

The Wireless Event Viewer program displays a list of error log records. You can save all available log records to a binary format file for sending to customer support.

To launch Wireless Event Viewer:

1. At the Tools menu, click [Intel Wireless Troubleshooter](#).
2. Click **Wireless Event Viewer**.



Wireless Event Viewer Description

Name	Description
File	<p>Settings:</p> <p>To change the storage location of the log file.</p> <ol style="list-style-type: none"> 1. Click File > Settings to open the Wireless Event Viewer Settings. 2. Specify the default folder for saved log files: The default location is My Documents. Click Browse to locate a new folder location. 3. File Name: The file name is the default machine name. 4. Maximum file size (KB): Enter the size of the file in kilobytes (KB). 5. Click OK to close and apply the new changes. Click Cancel to close without applying any changes. <p>If you want the log file copied to an archive site after a specific number of days:</p> <ol style="list-style-type: none"> 1. Click Copy the log file to another location. 2. Destination Folder: Enter where to store the files or click Browse to select a folder location. 3. Frequency (days): Select how often you want the files moved to the destination folder. 4. Click OK to close and apply the new changes. Click Cancel to close without applying any changes. <p>Exit: Click to exit Wireless Event Viewer and return to the Intel Wireless Troubleshooter.</p> <p>NOTE: An administrator can use the Administrator Tool Application Settings, Wireless Event Viewer Settings to set the default log file location.</p>
Mode	<p>Select to view current or previously saved event records:</p> <ul style="list-style-type: none"> • Real time Event Viewing: Select this to view error events as they occur in real time. • Log File Viewing: Select this to open an error log file that has been previously saved, or to save the current error event log to a file.
Help?	<p>Provides help information for this page.</p> <p>About: Displays version information for the Intel Wireless Troubleshooter.</p>

Wireless Event Viewer Information	<p>Level: The severity level of the connection issue is indicated by an icon.</p> <p>The severity levels are:</p> <ul style="list-style-type: none"> • Information • Error • Warning
	<p>Description: Brief description of the connection issue.</p>
	<p>Date and Time: Date and time of the detected connection issue. This column can be sorted in ascending or descending order. Click the column header to sort the displayed events.</p>
Open	Opens log files archived from previous sessions with Intel (R) Wireless Troubleshooter.
Clear	Removes the information in the Wireless Event Viewer.
Save As	Saves the available log. Use the suggested name or change it.

[Back to Top](#)

[Back to Contents](#)

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Support & Downloads

Browse By Product

- Intel® Wireless WiFi Link 4965AGN Home
- Software & Drivers
- Installation & Use
- Product Documentation
- Email Support

Search
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 This Category
 This Product

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[Overview](#)[Technical Documents](#)[Support](#)[Tools & Software](#)

adapter

- [Intel® PRO/Wireless Network connection ID tool](#)
- [Other methods to identify your adapter](#)

Identify your

Identify your adapter

[Need to know what adapter you have?](#)

[Intel® PRO/Wireless network connection ID tool](#)

& solutions

- [back to top](#)

Known issues

Security information

IMPORTANT NOTICE: Ensure the wireless capability of your system functions in accordance with Intel's product specification

[Wireless connection may drop with Microsoft* games for Windows LIVE™](#)

[Reduced battery run time when using wireless on Windows Vista*](#)

[Interference from 2.4 GHz cordless telephones](#)

[Wireless client adapter connection and roaming behavior](#)

[Wireless radio remains inactive and cannot be enabled from software](#)

[More >](#)

Download adapter software

[Download center](#)

drivers

- [back to top](#)

Software &

[Intel® Wireless LAN software support for Windows Vista* OS](#)

[Download center](#)

Other resources

[Product change notifications?](#)

[Windows Vista information](#)

[Hotspot information](#)

[Intel® Centrino® mobile technology](#)

[Other methods to identify your adapter](#)

use

- [back to top](#)

Installation &

[View available wireless networks on Windows Vista](#)

[Connect to secure wireless networks on Windows Vista](#)

[Create a secure wireless network profile on Windows Vista](#)

[Create a secure ad hoc wireless network on Windows Vista](#)

[Set up a secure wireless connection to the internet on Windows Vista](#)

[More >](#)

Frequently

asked questions

- [back to top](#)

[What do I need in order to connect to a wireless network?](#)

[Could you briefly define the various wireless protocols \(802.11a,b,g,n\)?](#)

[Why am I not able to connect, or stay connected, to my wireless network?](#)

[Wireless Security - 802.1x and EAP Types](#)

[What is MIMO?](#)

[More >](#)

Product

documentation

- [back to top ↕](#)

[User guide](#)

[Supported 802.11n APs](#)

[Product brief \[PDF\]](#)

[Currently supported 802.11 wireless LAN products](#)

[More >](#)

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