

# User's Manual

The attachment is the part of the user's manual of the specific host device (Lenovo ThinkPad X60 Tablet Series) that indicates the regulatory notice concerning the FCC Part 2/15/22/24 and IC RSS-210/102.

The regulatory notice consists of the following separate parts.

- WLAN/ Bluetooth/ Modem features
- WWAN feature (Model: MC5720, MC8755 or MC8765) (US only)

And the following electronic manual referred in the notice is also attached.

- Antenna location of each wireless features
- Operation/Installation instruction of wireless features

**Regulatory notice  
concerning WLAN/ Bluetooth/ Modem features**

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## ThinkPad® X60 Tablet Regulatory Notice for the wireless LAN module, Bluetooth module and modem.

### Read first — regulatory information

Please read this document before you use the ThinkPad X60 Tablet computer. ThinkPad computer complies with the radio frequency and safety standards of any country or region in which it has been approved for wireless use. You must install and use your computer in strict accordance with the instructions as described hereafter.

Veillez lire ce document avant d'utiliser l'ordinateur ThinkPad. L'ordinateur ThinkPad est conforme aux normes de sécurité et de radiofréquence du pays ou de la région où son utilisation sans fil est agréée. Vous devez installer et utiliser votre ordinateur en respectant scrupuleusement les instructions décrites ci-après.

### USA — Federal Communications Commission (FCC)

If your ThinkPad computer contains a Wireless WAN Adapter, be sure to also read *ThinkPad Regulatory Notice for Wireless WAN Adapter*, included with your computer.

#### I. RF safety compliance

The antennas used for wireless LAN Mini PCI Express Cards (Model: AR5BXB6, WM3945ABG, AR5BXB72) in this notebook computer are located on the upper side of the LCD screen, and the antenna used for Bluetooth card (Model: J07H081) is located on the keyboard bezel under the palm rest to the right.

For the illustrations of each antenna location, see the UltraConnect wireless LAN antennas and Bluetooth antenna sections in Access Help.

**Note:** Main, Auxiliary and Third antennas are used for the WLAN cards. Third antenna is only used with the Model: AR5BXB72 and functions as Receive Only. It does not emit any radio frequency energy. For WLAN cards (Models: AR5BXB6 and WM3945ABG) using IEEE 802.11 a/b/g transmission mode, radio frequency energy is not emitted simultaneously from both Main and Auxiliary antennas. One of the antennas is selected automatically or manually (by users) to have good

quality of radiocommunication (transmission diversity function). For the WLAN card (Model: AR5BXB72) using either the MIMO (Multiple In Multiple Out) or IEEE 802.11 a/b/g transmission mode, multiple antennas (Main and Auxiliary) can transmit radio frequency energy simultaneously, in order to obtain high data transmission speed.

The total radiated energy from those antennas (Main and Auxiliary) connected to one of the wireless LAN Mini PCI Express Cards and Bluetooth card (with its built-in antenna on the card) conforms to the FCC limit of SAR (Specific Absorption Rate) requirement regarding CFR Part 2 section 1093. The maximum SAR values measured for the ThinkPad X60 Tablet computer are less than the limit (1.6W/Kg), when the computer was used in the conventional settings.

## **II. User installable Wireless LAN module**

Mini PCI Express Cards:

- FCC ID: PPD-AR5BXB6 (Model: AR5BXB6)
- FCC ID: PD9LEN3945ABG (Model: WM3945ABG)
- FCC ID: PPD-AR5BXB72-L (Model: AR5BXB72)

Wireless LAN Mini PCI Express Cards marketed in the USA and Canada do not support nor function in the extended channels (12ch, 13ch).

**i) FCC ID of wireless module:** There is no FCC ID for Mini PCI Express Card shown on the enclosure of your ThinkPad computer. Instead you will find an indicator pointing to the location of the FCC ID on the bottom side of your ThinkPad computer. For the location of the FCC ID indicator, see the Location of the FCC ID label section in Access Help. The FCC ID is affixed on the approved module installed in the Mini PCI Express Card slot. For the location of the slot, see the PCI Express Mini Card slots section in Access Help.

**ii) Installation of approved wireless module:** If no integrated wireless LAN Mini PCI Express Card has been preinstalled in your ThinkPad computer, you can install one, provided by Lenovo as an option. Plug the wireless card option into the Mini PCI Express Card slot. For the installation procedure, see the Installing and replacing the PCI Express Mini Card for wireless LAN connection section in Access Help.

**Attention:** The ThinkPad computers contain an authentication mechanism. If you install an unauthorized wireless LAN Mini PCI Express Card that is not approved for use in your computer, the computer will not start, but only displays an error message and emits beeps.

**iii) Radio Frequency interference requirements:**

- The devices have been tested and found to comply with the limits for a Class B digital device pursuant to FCC Part 15 Subpart B. The models AR5BXB6 and AR5BXB72 were subject to DoC. Refer to “Electronic emission notices” on page 7.  
The model WM3945ABG underwent the certification process, thus FCC ID PD9LEN3945ABG for model WM3945ABG includes all compliances of Part 15 Subpart B, C, and E.
- Each device is restricted to indoor use due to its operation in the 5.15 to 5.25 GHz frequency range. FCC requires these products 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 radar 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.

### III. Pre-installed integrated Bluetooth module

- FCC ID: MCLJ07H081 (Model: J07H081)

The device has been tested and found to comply with the limits for both a Class B digital device regarding FCC Part 15 Subpart B and an intentional radiator regarding FCC Part 15 Subpart C; then it underwent the certification processes for both rules. Thus the FCC ID MCLJ07H081 of this device includes both certifications of Part 15 Subpart B and C.

**i) FCC ID and installation of the module:** If you find the FCC ID “MCLJ07H081” on the label at the bottom side of your computer, your computer integrates the Bluetooth transmitter module (Model: J07H081). The Bluetooth module is preinstalled by Lenovo, and is not removable by users. If your card requires replacement via the proper steps shown in “Getting help and service” of the *Service and Troubleshooting Guide*, shipped with your computer, Lenovo will request you to send your computer with the card to Lenovo so that Lenovo will repair it.

**ii) The FCC RF safety requirement:** For the location of the Bluetooth module “J07H081” and its built-in antenna, see the Bluetooth antenna section in Access Help.

The radiated output power of the Bluetooth module is far below the FCC radio frequency exposure limits. Therefore, a 20 cm of separation between the Bluetooth antenna and human body is not required.

### IV. Digitizer function in LCD screen

The ThinkPad X60 Tablet computers employ a digitizer function in LCD screen which is able to sense the Tablet Digitizer Pen shipped associated with your computer. The digitizer emits extra low power radio frequency and

complies with the FCC Part 15, Subpart C. The FCC ID: PU5-X60T is indicated on the label at the bottom side of your ThinkPad computer.

#### **V. Simultaneous use of RF transmitters**

Your ThinkPad computer is approved for simultaneous use of the transmitters listed below:

- Wireless LAN adapter (FCC ID: PPD-AR5BXB6, PD9LEN3945ABG or PPD-AR5BXB72-L)
- Bluetooth module (FCC ID: MCLJ07H081)

Please make sure of the following conditions on use of these wireless features:

1. When you use any other RF option device, you are requested to confirm that the device conforms to the SAR requirement and is approved to use for ThinkPad X60 Tablet Series computer.
2. All other wireless features including the above integrated devices in your ThinkPad computer are required to be turned off.
3. Users must follow the RF Safety instructions on wireless option devices that are included in the RF option device's user's manual.

### **Canada — Industry Canada (IC)**

#### **IC Certification number**

##### **I) User installable Wireless LAN modules:**

- IC: 4105A-AR5BXB6 (Model: AR5BXB6)
- IC: 1000M-LEN3945 (Model: WM3945ABG)
- IC: 4104A-ARBXB72L (Model: AR5BXB72)

Wireless LAN Mini PCI Express Cards marketed in the USA and Canada do not support nor function in the extended channels (12ch, 13ch).

The certification number of Industry Canada for the approved Mini PCI Express wireless card is affixed on the module installed in the Mini PCI Express Card slot. For the location of the slot, see the PCI Express Mini Card slots section in Access Help, your online manual.

**Attention:** The ThinkPad computer contains an authentication mechanism. You can install or remove each wireless feature by yourself. If you install an unauthorized wireless adapter that is not approved for use in the ThinkPad computer, the computer will not start, but only displays an error message and emits beeps.

**II) Digitizer function in LCD screen:** The ThinkPad X60 Tablet computers employ a digitizer function in LCD screen which is able to sense the Tablet Digitizer Pen shipped associated with your computer. The digitizer emits extra low power radio frequency and complies with the standard (RSS-210).

The IC certification number IC: 4182A-X60T is indicated on the label at the bottom side of your ThinkPad computer.

**III) Pre-installed integrated Bluetooth module:**

- IC: 2878D-J07H081 (Model: J07H081)

If you find an indication “Contains Transmitter Module: Canada IC: 2878D-J07H081” on the label at the bottom side of your computer, your computer integrates the Bluetooth transmitter module. The Bluetooth module is preinstalled by Lenovo, and is not removable by users. If your card requires replacement via the proper steps shown in “Getting help and service” of the *Service and Troubleshooting Guide*, Lenovo will request you to send your computer with the card to Lenovo so that Lenovo will repair it.

**Low power license-exempt radiocommunication devices (RSS-210):**

Operation is subject to the following two conditions:

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

The transmitter devices have been designed to operate with the antennas integrated in ThinkPad computer, and having a maximum gain of within 3 dBi.

The maximum antenna gain permitted for devices in the 5250-5350 MHz and 5725-5785 MHz bands complies with the e.i.r.p. limit in section A9.2 of RSS-210.

When you use the model AR5BXB6, AR5BXB72 or WM3945ABG:

- The devices for the band 5150–5250 MHz are only for indoor usage to reduce potential for harmful interference to co-channel Mobile Satellite systems.
- High power radars are allocated as primary users (meaning they have priority) of 5250–5350 MHz and 5650–5850 MHz and these radars could cause interference and/or damage to LELAN (Licence-Exempt Local Area Network) devices.

**Exposure of humans to RF fields (RSS-102):** ThinkPad computers employ low gain integral antennas that do not emit RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada’s Web site at [www.hc-sc.gc.ca/rpb](http://www.hc-sc.gc.ca/rpb)

**Numéro d’homologation IC**

**I) Module sans fil installable par l’utilisateur:** Les cartes Express mini-PCI de réseau local sans fil:

- IC: 4105A-AR5BxB6 (Modèle: AR5BxB6)
- IC: 1000M-LEN3945 (Modèle: WM3945ABG)
- IC: 4104A-ARBxB72L (Modèle: AR5BxB72)

Les cartes de réseau local sans fil Express mini-PCI commercialisées aux Etats-Unis et au Canada ne prennent pas en charge les canaux étendus (12ch, 13ch) et ne fonctionnent donc pas sur de tels canaux.

Le numéro d'homologation d'Industrie Canada pour le carte sans fil Express mini-PCI homologuée est indiqué sur le module installé dans l'emplacement réservé à la carte Express mini-PCI. Pour plus d'informations sur l'emplacement réservé à la carte Express mini-PCI reportez-vous à la rubrique "ThinkPad - Présentation" dans Access Help.

**Attention:** L'ordinateur ThinkPad contient un mécanisme d'authentification. Vous pouvez installer ou désinstaller tout dispositif sans fil. Si vous installez une carte sans fil qui n'est pas homologuée pour l'ordinateur ThinkPad, l'ordinateur ne démarrera pas; un message d'erreur sera affiché et des bips sonores seront émis.

**II) Fonction de numérisation sur écran LCD:** Les ordinateurs ThinkPad X60 Tablet utilisent une fonction de numérisation sur écran LCD capable de détecter le stylo numériseur de la tablette graphique qui est associé à votre ordinateur. Le numériseur émet une fréquence radio extrêmement basse et il est conforme à la norme CNR-210. Le numéro de certification IC: 4182A-X60T figure sur l'étiquette apposée au bas de votre ordinateur ThinkPad.

### **III) Module Bluetooth intégré préinstallé:**

- IC : 2878D-J07H081 (Modèle : J07H081)

Si la mention "Contains Transmitter Module: Canada IC: 2878D-J07H081" figure sur l'étiquette située au bas de votre ordinateur, cela signifie que ce dernier intègre le module de transmission Bluetooth. Le module Bluetooth est préinstallé par Lenovo et ne peut pas être retiré par les utilisateurs. Si votre carte doit être remplacée conformément aux étapes du Chapitre relatif à l'aide et la maintenance dans le manuel *Guide de maintenance et d'identification des incidents*, Lenovo vous demandera de lui envoyer votre ordinateur accompagné de la carte pour réparation.

**Remarque relative aux appareils de communication radio de faible puissance sans licence (CNR-210):** Le fonctionnement de ce type d'appareil est soumis aux deux conditions suivantes:

1. Cet appareil ne doit pas perturber les communications radio, et
2. cet appareil doit supporter toute perturbation, y compris les perturbations qui pourraient provoquer son dysfonctionnement.



Lorsque vous utilisez le modèle AR5BXB6, AR5BXB72 ou WM3945ABG:

- Tout appareil destiné à la bande 5150-5250 MHz devra être exclusivement utilisé en intérieur afin de réduire les risques de perturbations électromagnétiques gênantes sur les systèmes de satellite mobile dans un même canal.
- Les radars à forte puissance sont désignés comme les utilisateurs principaux (c'est-à-dire qu'ils sont prioritaires) des bandes 5250-5350 MHz et 5650-5850 MHz. Ils peuvent provoquer des perturbations électromagnétiques sur les appareils de type LELAN (réseau de communication local sans licence) ou les endommager.

**Exposition des êtres humains aux champs radioélectriques (RF) (CNR-102):**

L'ordinateur ThinkPad utilise des antennes intégrales à faible gain qui n'émettent pas un champ électromagnétique supérieur aux normes imposées par le Ministère de la santé canadien pour la population. Consultez le Safety Code 6 sur le site Web du Ministère de la santé canadien à l'adresse "[www.hc-sc.gc.ca/rpb](http://www.hc-sc.gc.ca/rpb)".

## **Electronic emission notices**

### *Federal Communications Commission (FCC) Statement*

- Model: AR5BXB6
- Model: AR5BXB72
- Model: ThinkPad X60 Tablet (Machine Type: 6363, 6364, 6365, 6366, 6367 and 6368)

**Note:** The compliances of the FCC Part 15 Subpart B for models WM3945ABG and J07H081 were proceeded by certification under each respective FCC ID: PD9WM3945ABG and MCLJ07H081.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an authorized dealer or service representative for help.

Lenovo is not responsible for any radio or television interference caused by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party:

Lenovo (United States) Inc.  
One Manhattanville Road  
Purchase, New York 10577  
Telephone: (919) 254-0532



Tested To Comply  
With FCC Standards

FOR HOME OR OFFICE USE

***Industry Canada Class B Emission Compliance Statement***

This Class B digital apparatus complies with Canadian ICES-003.

***Avis de conformité à la réglementation d'Industrie Canada***

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

**Telecommunication notices**

***Federal Communications Commission (FCC) and Telephone Company Requirements (Part 68 of the FCC Rules)***

1. The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device to send any message via a telephone fax machine unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent, and an identification of the business or other entity, or other individual sending the message and the telephone number of the sending machine or such business, other entity, or individual.

In order to program this information into your computer, you should be sure to follow the installation instructions for your fax software package.

2. This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On this equipment is a label that contains, among other information, a product identifier in the format US:AAAEQ##TXXXX. If requested, this number must be provided to the telephone company.

3. The REN is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company. The REN for this product is part of the product identifier that has the format US:AAAEQ##TXXXX. The digits represented by ## are the REN without a decimal point (e.g., 03 is a REN of 0.3).
4. If the built-in modem causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But, if advance notice isn't practical, you will be notified as soon as possible. You will be advised of your right to file a complaint with the FCC.
5. Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper operation of your equipment. If they do, you will be given advance notice so as to give you an opportunity to maintain uninterrupted service.
6. No customer repairs are possible to the modem. If you experience trouble with this built-in modem, contact your Lenovo Authorized Seller, or the Customer Support Center. For the most current phone numbers, go to <http://www.lenovo.com/think/support> and click Support phone list. The telephone company may ask you to disconnect this equipment from the network until the problem has been corrected, or until you are sure the equipment is not malfunctioning.
7. The modem may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs. Contact your state public utility commission or corporation commission for information.
8. When ordering network interface (NI) service from the Local Exchange Carrier, specify service arrangement USOC RJ11C.
9. A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. See installation instructions for details.
10. If your home has specially wired alarm equipment connected to the telephone line, ensure the installation of this Data/Fax Modem does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

## **Industry Canada requirements**

### *Notice*

This equipment meets the applicable Industry Canada Terminal Equipment

Technical Specifications. This is confirmed by the registration number. The abbreviation, IC, before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of communication. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

### *Caution*

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

The Ringer Equivalence Number (REN) for the terminal equipment RD02-D110 is 0.1. The REN assigned to each terminal equipment provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

### *Avis*

Le présent matériel est conforme aux spécifications techniques d'Industrie Canada applicables au matériel terminal. Cette conformité est confirmée par le numéro d'enregistrement. Le sigle IC, placé devant le numéro d'enregistrement, signifie que l'enregistrement s'est effectué conformément à une déclaration de conformité et indique que les spécifications techniques d'Industrie Canada ont été respectées. Il n'implique pas qu'Industrie Canada a approuvé le matériel.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. Dans certains cas, les fils intérieurs de l'entreprise utilisés pour un service individuel à ligne unique peuvent être prolongés au moyen d'un dispositif homologué de raccordement (cordon prolongateur téléphonique interne). L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêchent pas la dégradation du service dans certaines situations. Actuellement, les entreprises de télécommunication ne permettent pas que l'on raccorde leur matériel à des jacks d'abonné, sauf dans les cas précis prévus par les tarifs particuliers de ces entreprises.

Les réparations de matériel homologué doivent être effectuées par un centre d'entretien canadien autorisé désigné par le fournisseur. La compagnie de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à la terre de la source d'énergie électrique, des lignes téléphoniques et des canalisations d'eau métalliques, s'il y en a, sont raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.

#### *Avertissement*

L'utilisateur ne doit pas tenter de faire ces raccordements lui-même; il doit avoir recours à un service d'inspection des installations électriques, ou à un électricien, selon le cas.

L'indice d'équivalence de la sonnerie (IES) du présent matériel RD02-D110 est de 0.1. L'IES assigné à chaque dispositif terminal indique le nombre maximal de terminaux qui peuvent être raccordés à une interface téléphonique. La terminaison d'une interface peut consister en une combinaison quelconque de dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas 5.

### **Trademarks**

The following terms are trademarks of Lenovo in the United States, other countries, or both:

Lenovo  
ThinkPad

Other company, product, and service names may be trademarks or service marks of others.

# **Regulatory notice concerning WWAN features**

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## ThinkPad® Supplementary Regulatory Notice

### Read first — regulatory information

This notice is a supplementary document of the ThinkPad Service and Troubleshooting Guide. Please read this document before you use the ThinkPad computer.

ThinkPad computer complies with the radio frequency and safety standards of any country or region in which it has been approved for wireless use. You must install and use your computer in strict accordance with the instructions as described hereafter.

### USA — Federal Communications Commission (FCC)

If your computer integrates the Wireless WAN Adapter Model: MC5720, you may connect it to the radiocommunication Public Network in the USA.

#### I. FCC ID of the wireless module

The Wireless WAN Adapter (Model: MC5720) was certified under the FCC ID: N7N-MC5720, but there is no FCC ID for the card shown on the enclosure of your ThinkPad computer. Instead you will find an indicator pointing to the location of the FCC ID on the bottom side of your ThinkPad computer. The FCC ID is affixed on the approved module installed in the Mini PCI Express Card slot. For the location of the slot, see the About your computer section in Access Help.

#### II. Installation of the approved wireless module

If no integrated wireless WAN Mini PCI Express Card has been preinstalled in your ThinkPad computer, you can install one, provided by Lenovo as an option. Plug the wireless card option into the Mini PCI Express Card slot. For the location of the slot, see the About your computer section in Access Help.

**Attention:** The ThinkPad computers contain an authentication mechanism. If you install an unauthorized wireless WAN Mini PCI Express Card that is not approved for use in the ThinkPad computer, the computer will not start, but only displays an error message and emits beeps.

#### III. RF safety compliance

The total radiated energy from all the antennas connected to the Wireless WAN adapter (Model: MC5720), the Wireless LAN Mini PCI Express adapter

(Model: WM3945ABG, AR5BXB6, or AR5BXB72), and the Bluetooth module (Model: J07H081) conforms to the FCC limit of the SAR (Specific Absorption Rate) requirement regarding 47 CFR Part 2 section 1093.

For the location of the transmission antenna used for the Wireless WAN adapter in this notebook computer, see the About your computer section in Access Help.

#### **IV. Emergency Calls**

The Wireless WAN adapters embedded in the ThinkPad do not support voice calls, hence their use for essential communication is not possible, including emergency calls regarding the E911 rule.

#### **V. Simultaneous use of RF transmitters**

If your ThinkPad computer contains the Model: WM3945ABG (FCC ID: PD9LEN3945ABG), AR5BXB6 (FCC ID: PPD-AR5BXB6), AR5BXB72 (FCC ID: PPD-AR5BXB72-L), or the Bluetooth module (FCC ID: MCLJ07H081), the Wireless WAN module Model: MC5720 is approved for simultaneous use with these radio devices.

Please make sure of the following conditions on use of these wireless features:

1. When you use any other RF option device, all other wireless features including the above integrated devices in your ThinkPad computer are required to be turned off.
2. Users must follow the RF Safety instructions on wireless option devices that are included in the RF option device's user's manual.

### **Electronic emission notices**

#### *Federal Communications Commission (FCC) Statement*

- Model: AR5BXB6
- Model: AR5BXB72
- Model: MC5720

**Note:** The compliances of the FCC Part 15 Subpart B for models WM3945ABG and J07H081 were proceeded by certification under each respective FCC ID: PD9WM3945ABG and MCLJ07H081.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or



television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an authorized dealer or service representative for help.

Lenovo is not responsible for any radio or television interference caused by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party:

Lenovo (United States) Inc.  
One Manhattanville Road  
Purchase, New York 10577  
Telephone: (919) 254-0532



Tested To Comply  
With FCC Standards

FOR HOME OR OFFICE USE

## Trademarks

The following terms are trademarks of Lenovo in the United States, other countries, or both:

Lenovo  
ThinkPad

Other company, product, and service names may be trademarks or service marks of others.

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## ThinkPad® Regulatory Notice

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ThinkPad computer complies with the radio frequency and safety standards of any country or region in which it has been approved for wireless use. You must install and use your computer in strict accordance with the instructions as described hereafter.

### USA — Federal Communications Commission (FCC)

#### i) FCC ID of the wireless module

The Wireless WAN Adapter (Model: MC8755) was certified under the FCC ID: N7NMC8755, but there is no FCC ID for the card shown on the enclosure of your ThinkPad computer. Instead you will find an indicator pointing to the location of the FCC ID on the bottom side of your ThinkPad computer. The FCC ID is affixed on the approved module installed in the Mini PCI Express Card slot.

#### ii) Installation of the approved wireless module

If no integrated wireless WAN Mini PCI Express Card has been preinstalled in your ThinkPad computer, you can install one, provided by Lenovo as an option. Plug the wireless card option into the Mini PCI Express Card slot. For the location of the slot, see the About your computer section in Access Help, your online manual.

**Attention:** The ThinkPad computers contain an authentication mechanism. If you install an unauthorized wireless WAN Mini PCI Express Card that is not approved for use in your computer, the computer will not start, but only displays an error message and emits beeps.

#### iii) RF safety compliance

The total radiated energy from all the antennas connected to the Wireless WAN adapter (Model: MC8755), the Wireless LAN Mini PCI Express adapter (Model: AR5BxB6 or AR5BxB72), and the Bluetooth module (Model: J07H081) conforms to the FCC limit of the SAR (Specific Absorption Rate) requirement regarding 47 CFR Part 2 section 1093.

For the location of the antenna, see the About your computer section in Access Help, your online manual.

#### **iv) Emergency Calls**

The Wireless WAN adapters embedded in the ThinkPad computer do not support voice calls, hence their use for essential communication is not possible, including emergency calls regarding the E911 rule.

#### **v) Simultaneous use of RF transmitters**

If your ThinkPad computer contains the Model: WM3945ABG (Intel PRO/Wireless 3945ABG Network Connection), you are required to disable it when you are traveling in the USA, because this WLAN radio carries EU specification and is not authorized by the FCC for use in the USA.

If your ThinkPad computer contains the Wireless LAN Mini PCI Express adapter (Model: AR5BXB6 (FCC ID: PPD-AR5BXB6) or AR5BXB72 ((FCC ID: PPD-AR5BXB72-L)) or the Bluetooth module (FCC ID: MCLJ07H081), the Wireless WAN module Model: N7NMC8755 is approved for simultaneous use with these two radio devices.

Please make sure of the following conditions on use of these wireless features:

1. When you use any other RF option device, all other wireless features including the above integrated devices in your ThinkPad computer are required to be turned off.
2. Users must follow the RF Safety instructions on wireless option devices that are included in the RF option device's user's manual.

### **Electronic emission notices**

#### *Federal Communications Commission (FCC) Statement*

- Model: AR5BXB6
- Model: AR5BXB72
- Model: MC8755

**Note:** The compliances of the FCC Part 15 Subpart B for Bluetooth device (Model: J07H081) were proceeded by certification under the FCC ID: MCLJ07H081, thus the FCC ID: MCLJ07H081 includes both compliances for Part 15 Subpart B and C/E.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular

installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an authorized dealer or service representative for help.

Lenovo is not responsible for any radio or television interference caused by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party:

Lenovo (United States) Inc.  
One Manhattanville Road  
Purchase, New York 10577  
Telephone: (919) 254-0532



Tested To Comply  
With FCC Standards

FOR HOME OR OFFICE USE

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## ThinkPad® Regulatory Notice

### Read first — regulatory information

This notice is a supplementary document of the ThinkPad Service and Troubleshooting Guide. Please read this document before you use the ThinkPad computer.

ThinkPad computer complies with the radio frequency and safety standards of any country or region in which it has been approved for wireless use. You must install and use your computer in strict accordance with the instructions as described hereafter.

### USA — Federal Communications Commission (FCC)

If your computer integrates the Wireless WAN Adapter Model MC8765, you may connect it to the radiocommunication Public Network in the USA. This WWAN Module is only certified with the FCC.

#### i) FCC ID of the wireless module

The Wireless WAN Adapter (Model: MC8765) was certified under the FCC ID: N7NMC8765, but there is no FCC ID for the card shown on the enclosure of your ThinkPad computer. Instead you will find an indicator pointing to the location of the FCC ID on the bottom side of your ThinkPad computer. The FCC ID is affixed on the approved module installed in the Mini PCI Express Card slot. For the location of the slot, see the About your computer section in Access Help, your online manual.

#### ii) Installation of the approved wireless module

If no integrated wireless WAN Mini PCI Express Card has been preinstalled in your ThinkPad computer, you can install one, provided by Lenovo as an option. Plug the wireless card option into the Mini PCI Express Card slot. For the location of the slot, see the About your computer section in Access Help, your online manual.

**Attention:** The ThinkPad computers contain an authentication mechanism. If you install an unauthorized wireless WAN Mini PCI Express Card that is not approved for use in your computer, the computer will not start, but only displays an error message and emits beeps.

### **iii) RF safety compliance**

The total radiated energy from all the antennas connected to the Wireless WAN adapter (Model: MC8765), the Wireless LAN Mini PCI Express adapter (Model: AR5BxB6, WM3945ABG, or AR5BxB72), and the Bluetooth module (Model: J07H081) conforms to the FCC limit of the SAR (Specific Absorption Rate) requirement regarding 47 CFR Part 2 section 1093.

For the location of the antenna, see the About your computer section in Access Help, your online manual.

### **iv) Emergency Calls**

The Wireless WAN adapters embedded in the ThinkPad computer do not support voice calls, hence their use for essential communication is not possible, including emergency calls regarding the E911 rule.

### **v) Simultaneous use of RF transmitters**

If your ThinkPad computer contains the Wireless LAN Mini PCI Express adapter (Model: AR5BxB6 (FCC ID: PPD-AR5BxB6), WM3945ABG (FCC ID: PD9LEN3945ABG) or AR5BxB72 (FCC ID: PPD-AR5BxB72-L)) or the Bluetooth module (FCC ID: MCLJ07H081), the Wireless WAN module Model: N7NMC8765 is approved for simultaneous use with these two radio devices.

Please make sure of the following conditions on use of these wireless features:

1. When you use any other RF option device, all other wireless features including the above integrated devices in your ThinkPad computer are required to be turned off.
2. Users must follow the RF Safety instructions on wireless option devices that are included in the RF option device's user's manual.

## **Electronic emission notices**

### *Federal Communications Commission (FCC) Statement*

- Model: AR5BxB6
- Model: AR5BxB72
- Model: MC8765

**Note:** The compliances of the FCC Part 15 Subpart B for Bluetooth device (Model: J07H081) and WLAN device (Model: WM3945ABG) were proceeded by certification, thus the FCC ID: MCLJ07H081 and PD9WM3945ABG include both compliances for Part 15 Subpart B and C/E.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio

frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an authorized dealer or service representative for help.

Lenovo is not responsible for any radio or television interference caused by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party:

Lenovo (United States) Inc.  
One Manhattanville Road  
Purchase, New York 10577  
Telephone: (919) 254-0532



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## Trademarks

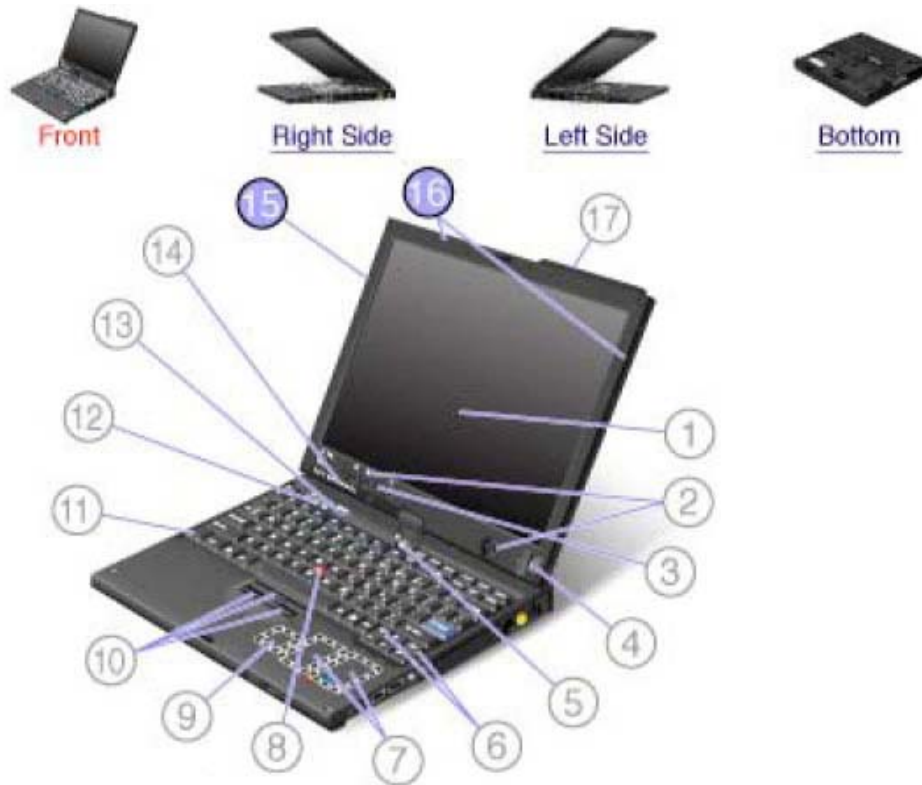
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## Extracts from electronic manual indicated on the LCD screen

### WLAN antenna location



#### UltraConnect(TM) wireless LAN antennas

**15.** UltraConnect wireless antennas: third

**16.** UltraConnect wireless antennas: main and auxiliary

ThinkPad(R) models feature an integrated diversity antenna system built into the display for optimal reception, enabling wireless LAN communication wherever you are.

If your computer has the Multiple Input Multiple Output (MIMO) wireless LAN feature, the third wireless antenna is on the top left side of the computer display.



Extracts from electronic manual indicated on the LCD screen

### Bluetooth antenna location



#### 10. Bluetooth antenna

Some ThinkPad(R) models have Integrated Bluetooth features.

## Extracts from electronic manual indicated on the LCD screen

### WWAN antenna location



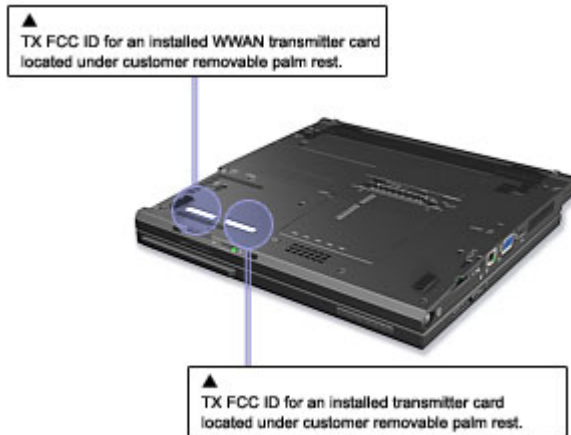
#### 17. UltraConnect(TM) wireless WAN antenna

Some ThinkPad(R) models feature an integrated diversity antenna system built into the display for optimal reception, enabling wireless communication wherever you are.

If your computer has the wireless WAN feature, the antenna is on the top right side of the computer display.

## Location of the FCC ID label

There is no FCC ID for the PCI Express Mini Card (wireless module) shown on the enclosure of your ThinkPad computer. Instead you will find an indicator pointing to the location of the FCC ID for the installed transmitter card on the bottom side of your ThinkPad as shown below. The FCC ID label is affixed on the card installed in the Mini PCI Express Card slot of your ThinkPad computer.



If no integrated wireless PCI Express Mini Card has been preinstalled in your ThinkPad computer, you can install one. To do this, follow the procedure in [Installing and replacing the PCI Express Mini Card for wireless LAN connection](#) or [Replacing the PCI Express Mini Card for wireless WAN connection](#).

## Power-status indicators

The computer has status indicators that show the mode (standby, hibernation, or normal), AC power status, and the status of the battery. The following shows the location and the meaning of the indicators:



### 1. Standby status

- **Green:** The computer is in standby mode.
- **Blinking green:** The computer is entering standby or hibernation mode, or is resuming normal operation.

### 2. AC power status

- **Green:** The ac adapter is connected and the computer is operating on ac power. If a battery is installed in the computer, it is charged when this indicator is green.
- **Off:** The computer is operating on battery power.

### 3. Battery status

- **Green:** The battery has more than 20% charge.
- **Orange:** The battery has between 5% and 20% charge.
- **Fast blinking orange:** The battery has less than 5% charge.

**\* Note:** The battery may be charging.

- **Slow blinking orange:** The battery is being charged. When it reaches 20%, the blinking color changes to green.
- **Slow blinking green:** The battery has between 20% and 80% charge, and charging is continuing. When the battery reaches 80% charge, blinking stops, but the charging may continue until the battery is 100% charged.

**\* Note:** If the computer is operating on battery power, the Battery status indicator does not work while the computer is turned off or it is in standby mode or hibernation mode.

If your computer is shipped with a wireless feature and a *Bluetooth* feature, you can use the following indicators:

### 4. Wireless WAN status

- **Green:** The wireless WAN feature is on, and the radio link is ready for use.
- **Blinking green:** Data is being transmitted.

### 5. Bluetooth status

- **Green:** The *Bluetooth* feature is on, and the radio link is ready for use.
- **Blinking green:** Data is being transmitted.

### 6. Wireless LAN status

- **Green:** The wireless feature (the IEEE 802.11 standard) is on, and the radio link is ready for use.
- **Blinking green:** Data is being transmitted.

## Installing and replacing the PCI Express Mini Card for wireless LAN connection

**Before you start, print these instructions.**


### Installation of the PCI Express Mini Card for wireless LAN


If no integrated wireless LAN Mini-PCI express card module has been preinstalled in your ThinkPad computer, you can install one. To do this, follow the procedure in the Replacement of the PCI Express Mini Card for wireless LAN section below.


### Replacement of the PCI Express Mini Card for wireless LAN

If your computer has a PCI Express Mini Card for wireless LAN, you can replace it with a new one. To do this, follow the procedure below.

To find the position of the PCI Express Mini Card for wireless LAN connection in your computer, click [here](#).

 **Danger:** During electrical storms, do not connect the cable to or disconnect it from the telephone outlet on the wall.

 **Danger:** Electric current from power, telephone, and communication cables is hazardous. To avoid shock hazard, disconnect the cables before opening the cover of this slot.

 **Attention:** Before you start installing a module, touch a metal table or a grounded metal object. This action reduces any static electricity from your body. The static electricity could damage the PCI Express Mini Card.

 **Note:** Use the PCI Express Mini Card provided by Lenovo.

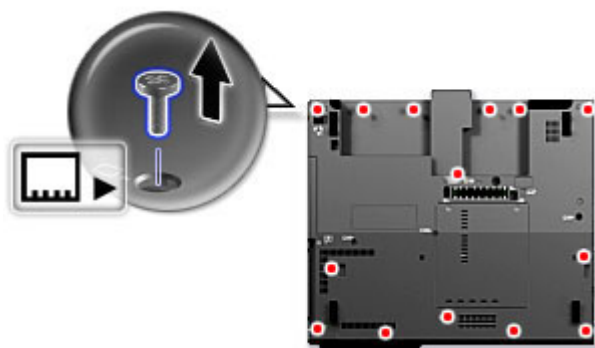
 **Note:** If your computer is a wireless upgradeable model, you can install a wireless PCI Express Mini Card, available as an option.

To replace the PCI Express Mini Card with two connectors, click [here](#).

To replace the PCI Express Mini Card with three connectors, click [here](#).

To replace the PCI Express Mini Card with two connectors, do as follows:

1. Turn off the computer; then disconnect the ac adapter and all cables from the computer. Wait for a few minutes, till the inside of the computer cools, before you start the following procedures.
2. Close the computer display, and turn the computer over.
3. [Remove the battery](#).
4. [Remove the Tablet Digitizer Pen](#).
5. [Remove the keyboard](#).
6. Close the computer display, and turn the computer over.
7. Remove the screws that secure the upper case.

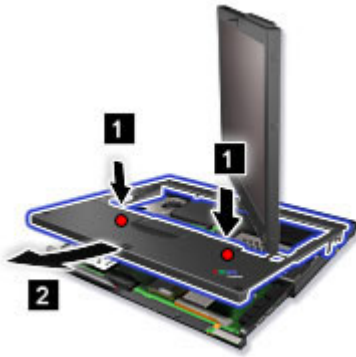


8. Open the display to about 90 degrees; then rotate the display clockwise 45 degrees as shown in the

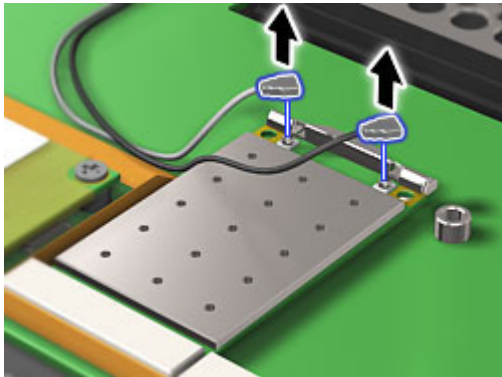
drawing.



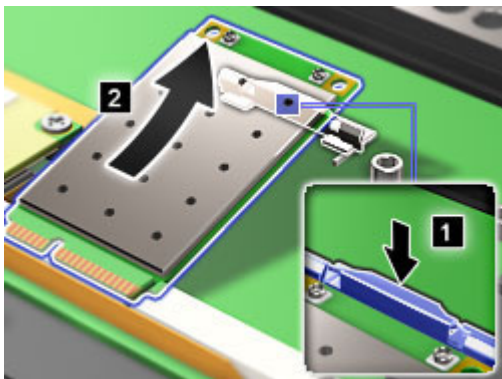
9. Push the upper edge of the palm rest downward slightly (1), while lifting up the lower edge of the palm rest and pulling the upper case towards you (2) to remove it from the lower case.



10. If a tool for removing connectors is included in the package with the new card, use it to disconnect the cables from the card. If no such tool is included, disconnect the cables from the card by picking up the connectors with your fingers and gently unplugging them.



11. Press on the release latch (1) to release the card (2). Then remove the card.

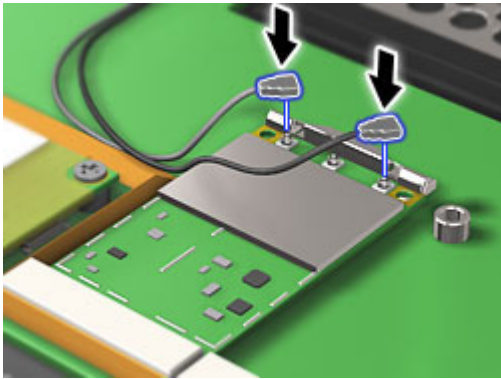


12. Align the contact edge of the PCI Express Mini Card with the corresponding socket contact of the computer.
13. Pivot the card until you can snap it into place by pressing the upper side of the connectors; then press the latch to hold it in place.

Make sure that the card is firmly fixed in the slot and does not move easily.

14. Connect the cables to the new PCI Express Mini Card.

**\* Note:** If the new PCI Express Mini Card has three connectors, as in the next drawing, you must attach the cables to the right and left connectors. If you attach either cable to the center connector, the connection speed will be lower.



15. Replace the upper case and push down on the front and sides of the upper case.

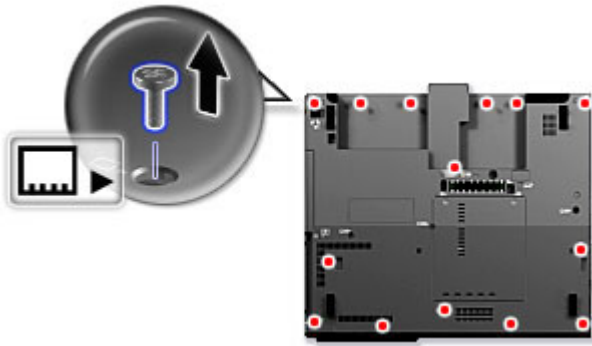


16. Rotate the display counterclockwise 45 degrees and close it. Turn the machine over and tighten the screws you have removed in step 7.
17. [Store the Tablet Digitizer Pen back in its slot.](#)
18. [Reinstall the keyboard.](#)
19. [Reinstall the battery.](#)
20. Turn the computer over again. Connect the ac adapter and cables to the computer; then turn it on.

If your computer has a Multiple Input Multiple Output (MIMO) feature, the PCI Express Mini Card with three connectors comes with the computer. To replace the card for the MIMO feature, do as follows:

1. Turn off the computer; then disconnect the ac adapter and all cables from the computer. Wait for a few minutes, till the inside of the computer cools, before you start the following procedures.
2. Close the computer display, and turn the computer over.
3. [Remove the battery.](#)
4. [Remove the Tablet Digitizer Pen.](#)
5. [Remove the keyboard.](#)
6. Close the computer display, and turn the computer over.
7. Remove the screws that secure the upper case.

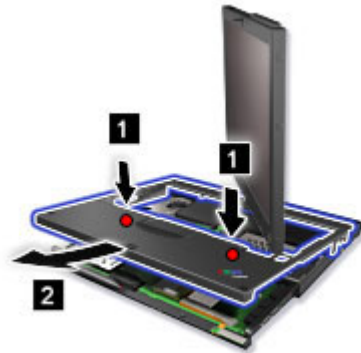




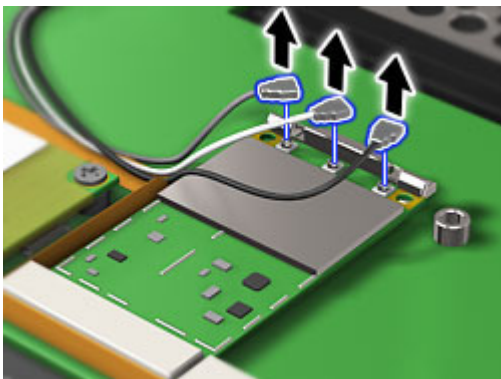
8. Open the display to about 90 degrees; then rotate the display clockwise 45 degrees as shown in the drawing.



9. Push the upper edge of the palm rest downward slightly (1), while lifting up the lower edge of the palm rest and pulling the upper case towards you (2) to remove it from the lower case.

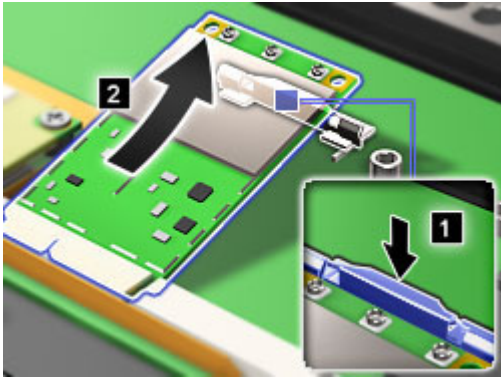


10. If a tool for removing connectors is included in the package with the new card, use it to disconnect the cables from the card. If no such tool is included, disconnect the cables from the card by picking up the connectors with your fingers and gently unplugging them.

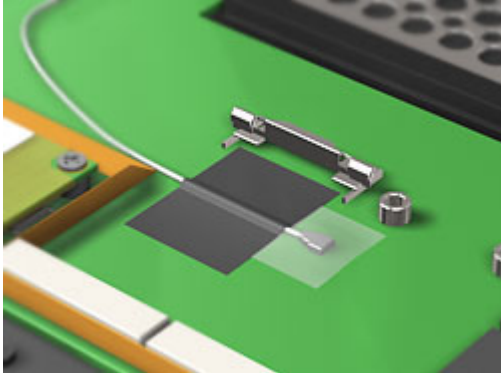


11. Press on the release latch (1) to release the card (2). Then remove the card.





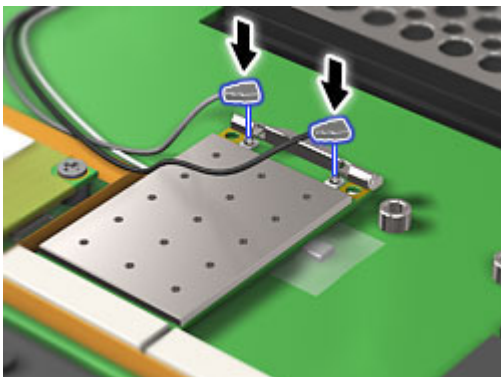
12. If the new PCI Express Mini Card has three connectors, skip this step. If the new PCI Express Mini Card has two connectors, first insert the connector end of the white cable in the plastic cable bag and affix the cable to the mainboard with tape.



13. Align the contact edge of the new card with the corresponding socket contact of the computer.
14. Pivot the card until you can snap it into place by pressing the upper side of the connectors; then press the latch to hold it in place.  
Make sure that the card is firmly fixed in the slot and does not move easily.

15. Connect the cables to the new card.

**\* Note:** If the new PCI Express Mini Card has two connectors, as in the next drawing, you must attach the gray cable to the left connector and the black cable to the right connector.



16. Replace the upper case and push down on the front and sides of the upper case.



17. Rotate the display counterclockwise 45 degrees and close it. Turn the machine over and tighten the screws you have removed in step 7.
18. [Store the Tablet Digitizer Pen back in its slot.](#)
19. [Reinstall the keyboard.](#)
20. [Reinstall the battery.](#)
21. Turn the computer over again. Connect the ac adapter and cables to the computer; then turn it on.


## Replacing the PCI Express Mini Card for wireless WAN connection

### Before you start, print these instructions.

Some ThinkPad(R) models have a PCI Express Mini Card slot for wireless WAN connection. To replace the PCI Express Mini Card with a new one, follow the procedure below.

To find the position of the PCI Express Mini Card for wireless WAN connection in your computer, click [here](#) .

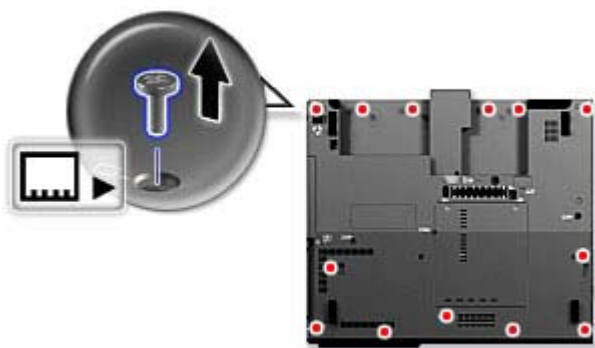
 **Danger:** During electrical storms, do not connect the cable to or disconnect it from the telephone outlet on the wall.

 **Danger:** Electric current from power, telephone, and communication cables is hazardous. To avoid shock hazard, disconnect the cables before opening the cover of this slot.

 **Attention:** Before you start installing a PCI Express Mini Card, touch a metal table or a grounded metal object. This action reduces any static electricity from your body. The static electricity could damage the card.

To replace the PCI Express Mini Card, do as follows:

1. Turn off the computer; then disconnect the ac adapter and all cables from the computer. Wait for a few minutes, till the inside of the computer cools, before you start the following procedures.
2. Close the computer display, and turn the computer over.
3. [Remove the battery](#).
4. [Remove the Tablet Digitizer Pen](#).
5. [Remove the keyboard](#).
6. Close the computer display, and turn the computer over.
7. Remove the screws that secure the upper case.

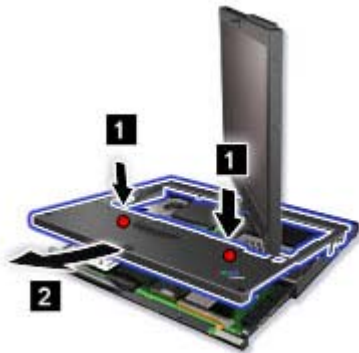


8. Open the display to about 90 degrees; then rotate the display clockwise 45 degrees as shown in the drawing.



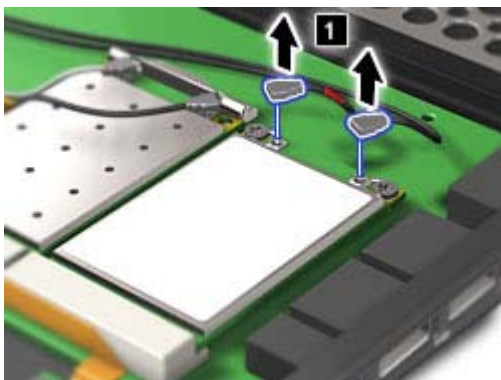
9. Push the upper edge of the palm rest downward slightly **(1)**, while lifting up the lower edge of the palm rest and pulling the upper case towards you **(2)** to remove it from the lower case.

**\* Note:** Pull up slightly to release the edges on the right side of the palm rest.

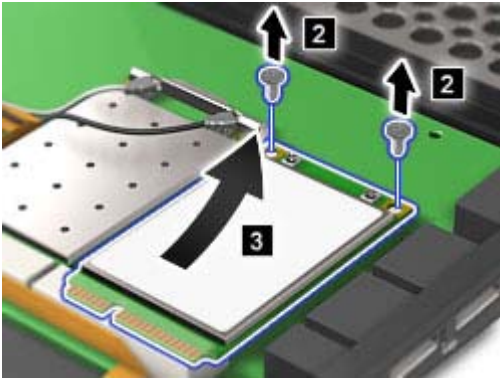


10. If a tool for removing connectors is included in the package with the new card, use it to disconnect the cables from the card **(1)**. If no such tool is included, disconnect the cables from the card **(1)** by picking up the connectors with your fingers and gently unplugging them. Then peel off the antenna **(2)**.

**\* Note:** Depending on the system configuration of your computer, the card may have only one connector.



11. Remove the screws **(3)**. The card pops up **(4)**. Remove the card **(3)**.



12. Align the contact edge of the new Wireless WAN Card with the corresponding socket contact of the computer.
13. Pivot the card until you can snap it into place by pressing the upper side of the connectors; then secure the card with the two screws. Reattach the antenna, and connect the cables to the new card.

**\* Note:** Depending on the system configuration of your computer, the card may have only one connector.

14. Replace the upper case and push down on the front and sides of the upper case.



15. Rotate the display counterclockwise 45 degrees and close it. Turn the machine over and tighten the screws you have removed in step 7.
16. [Store the Tablet Digitizer Pen back in its slot.](#)
17. [Reinstall the keyboard.](#)
18. [Reinstall the battery.](#)
19. Turn the computer over again. Connect the ac adapter and cables to the computer; then turn it on.

## Wireless connections

You can connect to the Internet without connecting a wire to your computer by setting up a wireless access point or residential gateway. A wireless access point does not connect you to the Internet directly. Instead, it connects to a wired connection such as a cable modem, a DSL modem, or a phone line.

Certain types of wireless connections, such as wireless LAN (the IEEE 802.11 standard), are being used to connect to an access point.

To connect to an access point, you will need several pieces of information. You will need to know the network name (obtain this from your administrator), and your MAC address (which should have come with your computer or wireless networking card). You may also need to set up encryption. Contact your administrator for your network name and encryption settings. You may need to register your MAC address with your network administrator before connecting to your company network. A residential gateway is the consumer version of an access point. Consult your residential gateway instructions for setup.


Be careful to disable the wireless function when you are not using it because it uses power even when you are not connected to the network. Some models have an integrated Wireless LAN antenna and hardware. If your computer did not come with integrated wireless, you can purchase a PC Card as an option. Wireless LAN gives you a high-speed connection to an access point.

If your computer comes with the built-in wireless LAN card, refer to [Making wireless LAN connections](#) for more information.

If your computer has the Integrated *Bluetooth* features and/or comes with the built-in wireless WAN card, refer to [Using Bluetooth](#) and [Using wireless WAN connections](#) for more information.

## Making wireless LAN connections

You can stay connected to your network while you are in the office, in a meeting room, or at home, with no need for a wired connection. Some ThinkPad(R) models come with a built-in wireless networking card and a configuration utility to help you make wireless connections and monitor the status of your connection.

 **Attention:** If you carry your ThinkPad computer with the wireless LAN feature into an airplane, you need to disable it before boarding. To disable it, refer to the instructions in [Enabling or disabling the wireless feature](#).


[Wireless networking setup](#)


[Wireless security features](#)


[Checking wireless connection status](#)

[Enabling or disabling the wireless feature](#)

[Wireless upgradeable ThinkPad models](#)

 **Note:** Some models come with a wireless networking card and a wireless LAN configuration utility built-in. If your computer does not come with these features, you can purchase the wireless networking card as an option. For more information, refer to [Finding ThinkPad options](#).

 **Note:** If you use the wireless LAN feature, place your computer so that there are as few obstacles as possible between the wireless LAN access point and the computer. Also for the best connection of the wireless LAN feature, open your computer display to an angle of slightly more than 90 degrees.

 **Note:** If you use the computer in tablet mode, do not cover the UltraConnect(TM) wireless antennas built into the display.

## Wireless networking setup

To use the built-in wireless networking card (the IEEE 802.11 standard) to communicate, click this button to start [Access Connections](#), and follow the instructions on the screen.

 **Note:** Before you start setting up wireless networking connections by using Access Connections, obtain a Network Name (SSID) and your encryption information from your network administrator.

Access Connections, a connectivity assistant program, can easily enable one network adapter and disable the other adapters on demand. After setting up your wireless networking connection, you can use the program to quickly switch the network settings.



## Wireless security features

Advances in wireless technology require that we manage your security more reliably than ever. Therefore, Lenovo has extended its Embedded Security Subsystem to encompass virtually all of our ThinkPad(R) and desktop computer lines. This security subsystem helps protect data, hardware, network access and communications - both wired and wireless - on select ThinkPad and desktop PCs.

The Embedded Security Subsystem provides hardware-based protection of critical security information, including passwords, encryption keys, and electronic credentials. It also helps identify computer users involved in transactions, and helps establish that data transmissions are authentic, confidential and intact.

Security and Privacy Services for wireless risk assessment and wireless solution design can help you assess the risks based on your business needs, identify your information risk position, and integrate security strategies, policies, and architectures to help you achieve your wireless e-business objectives. To effectively manage risk on an ongoing basis, organizations must have a sound security strategy. By understanding threats and vulnerabilities at an early stage, we can help define the necessary scope and features of your wireless e-business security infrastructure.

For more information on wireless security offerings, click the following link:

<http://www.pc.ibm.com/us/think/thinkvantagetech/security.html>

## Checking wireless connection status

You can check the signal strength and status of your wireless connection either by opening Access Connections, or by double-clicking the **Access Connections** wireless status icon in the system tray.

The Access Connections wireless status icon displays the signal strength and status of your wireless connection as follows:



No link or a very poor one



Usable but weak link



Strong link



Wireless radio is disabled



**Note:** If you have trouble in making a connection, try moving your computer closer to your wireless access point.

## Enabling or disabling the wireless feature

To enable or disable the wireless feature, press Fn+F5. A list of wireless features appears in the Wireless Radio Control window. You can turn the feature on and off with a single click.

You can also enable or disable the feature by the following procedures.

To enable the wireless feature, do as follows:


1. Click the Wireless Icon in the system tray.
2. Click **Power On Wireless Radio**.

To disable the wireless feature, do as follows:

1. Click the Wireless Icon in the system tray.
2. Click **Power Off Wireless Radio**.

 **Note:** To enable the wireless radio, do as follows:

1. Select **Enabled** for the Internal Wireless Device in the [BIOS Setup Utility](#).
2. Select the On position of the wireless radio switch on the computer.
3. Click the Wireless Icon in the system tray and select **Power On Wireless Radio**. Or press Fn+F5 to open the Wireless Radio Control window, and then turn the feature on.

 **Note:** You can use the wireless radio switch to disable the wireless radio of all the wireless devices on your computer.

 **Note:** You can also use the [Tablet Shortcut Menu](#) to enable or disable the wireless feature if you are using your computer in tablet mode.

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## **8 Wireless upgradeable ThinkPad models**

Depending on the model, your ThinkPad(R) computer might be wireless upgradeable. This means that your computer has an antenna that can support wireless LAN access when wireless LAN access points are available. Wireless devices are available from Lenovo: [Finding ThinkPad options](#).

## Using the tablet mode

In the tablet mode, you can use your ThinkPad(R) computer in a creative and intuitive way by jotting down notes and illustrations with the Tablet Digitizer Pen and then storing them digitally.

To use your ThinkPad(R) computer in the tablet mode, do as follows:

1. Unlock the display latch **(1)** and open the computer display **(2)** slowly, holding the upper left and right sides of the display with both hands. Your computer is now in the **notebook mode**.



2. Open the display by at least 45 degrees, preferably by 90 degrees. Grasp the center of one side of the computer display with one hand while holding the keyboard bezel with the other hand; then rotate the display slowly clockwise until the back of the display is facing the keyboard. Your computer is now in the **picture frame mode**.

**\* Note:** While rotating the display, do not press the upper edge of either side of the display.

**\* Note:** In the notebook mode, you can rotate the computer display only clockwise. In the tablet mode, you can rotate it only counterclockwise. Do not force it to rotate in the wrong direction.



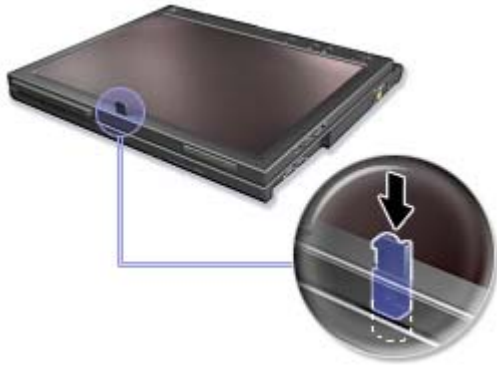
3. Close the computer display slowly, holding the upper left and right sides with both hands.

**\* Note:** Make sure that the display is rotated at 180 degrees, so that the back of the display faces the keyboard.



4. Press the center latch down to lock the display.

**\* Note:** Do not rotate, twist, or bend the center latch of the display.



Your computer is now in the **tablet mode**.

To return your ThinkPad computer to the notebook mode, do as follows:

Unlatch the display latch and open the display by at least 45 degrees, preferably by 90 degrees. Then rotate the display slowly counter-clockwise until the front of the display is facing the keyboard.



Your computer is now in the **notebook mode**.

### **Tips on using your computer in the tablet mode**

- To close the computer display, first make sure that the display either faces the keyboard or is positioned at 180 degrees to the keyboard, so that the back of the display faces the keyboard.
- Do not pick up or hold the computer by the display only.
- Do not hit, vibrate, or bump the computer display.
- To allow free ventilation, do not place any obstacle, such as a thick-piled carpet or a soft cushion, in front of the fan.
- When you use the computer in the picture frame mode, hold the display with one hand and use the Tablet Digitizer Pen.
- If you hold the computer with one hand while using it in the tablet mode, do not expose it to excessive vibration, shock, or rotation.
- Do not use the computer outdoors. Do not expose it to rain.
- If you put your computer in a carrying case, put it into notebook mode and close the display.

## Using the Tablet Digitizer Pen and the touch panel feature

The Tablet Digitizer Pen and its accessories are shipped in a separate box within the ThinkPad(R) shipping box. You can use the pen to control your computer just as you would with a mouse or keyboard.

**\* Note:** This pen is not waterproof. Take care not to soak it or dip it in water.

You can store the pen in the slot on the left side of the ThinkPad computer. Press it gently into the slot until you hear a click.

To remove the pen from its slot, press it gently into the slot **(1)** to release it; then pull it out **(2)**.



**\* Note:** The pen contains pressure sensors. Do not push the tip of the pen for an extended period of time. Do not subject the pen to shock or vibration.

The Tablet Digitizer Pen consists of a tip **(2)**, a click button **(3)**, and an eraser tip **(4)**. Hold the pen and point the tip at the display to move the cursor **(1)**.



To make a selection (single click), tap the display once with the pen. To double-click, tap twice without pausing. To do a right-click, tap the display once and then hold the tip of the pen on the display; the right-click icon appears.

Pressing the click button **(3)** is the same as a right-click. The eraser tip **(4)** functions like an eraser in applications that support this function.

**\* Note:** You can enable or disable the pen buttons in the Tablet and Pen Settings panel of the [Tablet Shortcut Menu](#).

**\* Note:** The Digitizer Pen shipped with the ThinkPad X60 Tablet computer is for use with that computer only. Do not insert it into the pen slot of the ThinkPad X41 Tablet computer.

**\* Note:** The Digitizer Pen shipped with the ThinkPad X41 Tablet computer is for use with that computer only. Do not insert it into the pen slot of the ThinkPad X60 Tablet computer.



Besides functioning as a basic selection tool, the Tablet Digitizer Pen also enables you to write text or draw on the screen, as you would with a pen on paper. Different methods of input can be chosen from the Tablet PC Input Panel on the Windows taskbar.



To configure the Tablet Digitizer Pen settings, use the Tablet and Pen Settings panel of the [Tablet Shortcut Menu](#).

### Replacing the Tablet Digitizer Pen tip

The tip of the Tablet Digitizer Pen may wear out. Replacement tips and a tip removal tool are included in the pen box shipped with your computer.

**\* Note:** Your computer is shipped with five replacement tips for the Digitizer Pen. Be sure to store the pen tips in a secure place for future use. The pen tips will not be covered under the warranty for the digitizer pen or the computer.

To replace a pen tip, do as follows:

1. Grip the pen tip with the tip removal tool, and pull it out.



2. Insert a replacement pen tip fully into the Tablet Digitizer Pen.



### Using the touch panel

Some modes have the touch panel feature. The touch panel feature makes the interaction with your ThinkPad computer even more natural, because you can use your finger instead of a pen for navigation on the go.

To make a selection (single click), tap the display once with your finger. To double-click, tap twice without pausing. To do a right-click, tap the display once and then hold your finger on the display until the right-click icon appears.

### **Tips on using the touch panel**

- The touch panel is a glass panel covered with a plastic film. For input you can use either your finger or the Tablet Digitizer Pen shipped with your computer. Do not use any pen other than the specified one, or any metallic object, because to do so might damage the touch panel or cause it to malfunction.
- If you put your computer in a carrying case, put it into notebook mode and close the display. Do not carry your computer in tablet mode.
- If you use both your finger and the Tablet Digitizer Pen simultaneously for input to the screen, only data entered by use of the Digitizer Pen will be processed.
- If you use your finger to input to the touch panel, touch only one point at a time. If you touch several points simultaneously, the input will not be processed correctly.
- With the touch panel, gradually a discrepancy may start to appear between the point you touched with your finger during the finger point, and its actual position on the screen. To avoid this, regularly correct the accuracy of the finger input by use of the touch panel Settings Utility.

### **Cleaning the touch panel display**

1. To remove fingerprints, etc., from the touch panel display, use a dry, soft, lint-free cloth. (A piece of absorbent cotton will also serve the purpose.) Do not apply solvents to the cloth.
2. Gently wipe foreign particles and dust from the touch panel with one side of the cloth.
3. Wipe smudges or fingerprints with the other side of the cloth, or with a clean cloth.
4. After using the cloth, wash it with a neutral detergent.