
ThinkPad® Regulatory Notice for Wireless WAN adapter

Read first — regulatory information

Please read this document before you use the ThinkPad computer. Be sure to also read *ThinkPad Regulatory Notice*, included with your 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.

You cannot use the Wireless WAN Adapter Model: MC8775 and a Wireless LAN adapter simultaneously. If one of the adapters has established the connection to the network, the other will be disconnected automatically. To confirm the status of the network connection, check the power status indicators of your computer. For more information about the power status indicators, see the "Power status indicators" section in Access Help.

USA — Federal Communications Commission (FCC)

If your computer integrates the Wireless WAN adapter Model: MC8775, 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: MC8775) was certified under the FCC ID: N7NMC8775-L, 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. For the location of the FCC ID indicator, see the "Location of the FCC ID and IC Certification number label" 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 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 installation procedure, see the "Replacing the PCI Express Mini Card for wireless WAN connection" 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 your 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 the antenna connected to the Wireless WAN adapter (Model: MC8775), the *Bluetooth* module with its built-in antenna on card (Model: J07H081), and the Wireless USB Card (Model: T60H990) conforms to the FCC limit of the SAR (Specific Absorption Rate) requirement regarding 47 CFR Part 2 section 1093. The maximum SAR values measured for your ThinkPad computer were less than the FCC limit 1.6W/Kg, when the ThinkPad computer was operated in a conventional setting.

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

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 *Bluetooth* module (Model: J07H081, FCC ID: MCLJ07H081) or the Wireless USB Card (Model: T60H990, FCC ID: MCLT60H990), the Wireless WAN module Model: MC8775 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: MC8775

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.
5241 Paramount Parkway
Morrisville, NC 27650
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.



14. [UltraConnect™ wireless antennas](#)

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

16. [UltraConnect™ wireless antennas](#)

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



17. [UltraConnect™ wireless antennas](#)

ThinkPad® 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 here, on the right side of the computer display.

For details, refer to the instructions in [Access Connections™](#).



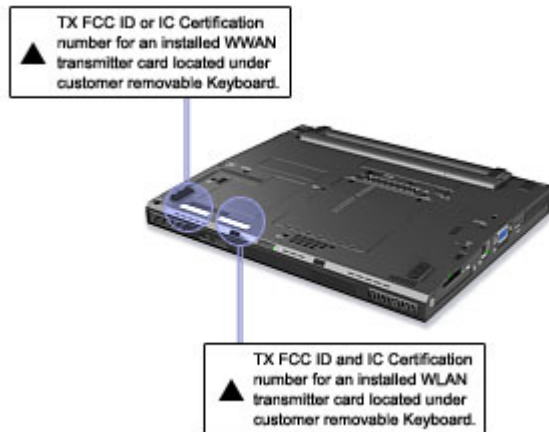
7. Bluetooth antenna

Some ThinkPad® models have Integrated Bluetooth features.

Location of the FCC ID and IC Certification number label

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

*** Note:** The wording of the label may vary depending on the model.



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](#).



6. PCI Express Mini Card slots

Your computer might include PCI Express Mini Cards in the PCI Express Mini Card slots which enable wireless LAN and WAN communications.

Replacing the PCI Express Mini Card for wireless WAN connection

Before you start, print these instructions.

Some ThinkPad® 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](#).

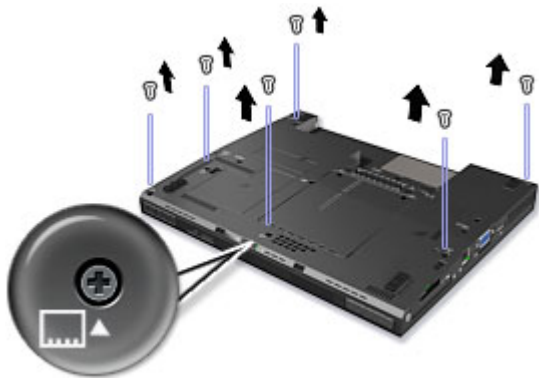
⚠ Danger: During electrical storms, do not connect the cable to or disconnect it from the telephone outlet on the wall.

⚠ 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.

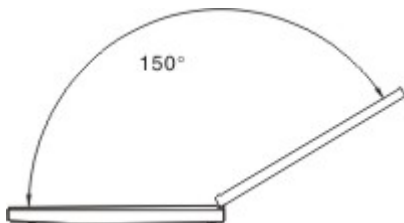
👁 Attention: Before you start installing a PCI Express Mini Card, touch a metal table or a grounded metal object. This action reduces any static electricity from your body. The static electricity could damage the card.

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 keyboard](#).
5. Close the computer display, and turn the computer over.
6. Remove the screws that secure the upper case.



7. Turn the computer over and open the display 150 degrees.



8. If your computer has a fingerprint reader, unplug the fingerprint reader cable.

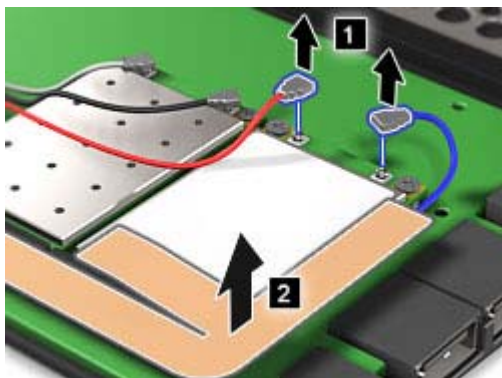


9. Push the upper edge of the palm rest downward slightly (1), while lifting up the lower edge of the palm rest and pulling the upper case towards you (2) to remove it from the lower case.

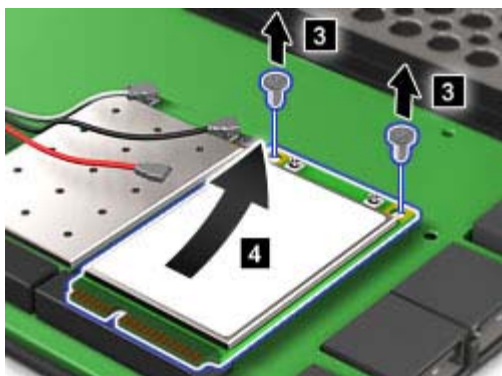


10. If a tool for removing connectors is included in the package with the new card, use it to disconnect the cables from the card (1). If no such tool is included, disconnect the cables from the card (1) by picking up the connectors with your fingers and gently unplugging them. Then peel off the antenna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



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 the middle top part of the upper case into place until you hear it click; then turn the machine over and tighten the screws you have removed in step 6.



15. If your computer has a fingerprint reader, reattach the fingerprint reader cable.
16. [Reinstall the keyboard.](#)
17. [Reinstall the battery.](#)
18. Turn the computer over again. Connect the ac adapter and cables to the computer; then turn it on.

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.

Using wireless WAN connections

Wireless Wide Area Network (wireless WAN) enables you to establish wireless connections over remote public or private networks. These connections can be maintained over a large geographical area, such a city or an entire country, by use of multiple antenna sites or satellite systems maintained by wireless service providers.

Some ThinkPad® computers come with a built-in wireless WAN card integrating some wireless WAN technologies, such as 1xEV-DO or HSPDA. You can connect to the Internet or your company network with the built-in wireless WAN card and the configuration utility to make a wireless WAN connection and monitor its status.

*** Note:** Wireless WAN service is provided by authorized service providers in some countries.

Some models of ThinkPad X61 come with a retractable wireless WAN antenna. Before you establish a wireless WAN connection, pull out the antenna as shown in the drawing **(1)**.



*** Note:** When the computer is being carried or is not in use, make sure that the antenna is stored in its original position.

To use a wireless WAN connection with built-in wireless WAN features, start [Access Connections™](#).

To start the Access Connections wizard, click **Start -> All Programs** (in Windows® 2000, **Programs**) -> **ThinkVantage -> Access Connections**, and follow the instructions on the screen.

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 or wireless WAN card, refer to [Making wireless LAN connections](#) and [Using wireless WAN connections](#) for more information. If your computer has the Integrated *Bluetooth* features and/or is equipped with the Certified Wireless USB, refer to [Using Bluetooth](#) and [Using Certified Wireless USB](#) 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® 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.

Wireless networking setup

To use the built-in wireless networking card (the IEEE 802.11 standard) to communicate, start [Access Connections™](#)

To start the Access Connections wizard, click **Start --> All Programs** (in Windows® 2000, **Programs**) --> **ThinkVantage --> 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® 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 is displayed. 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 Access Connections wireless icon in the system tray.
2. Click **Power On Wireless Radio**.

To disable the wireless feature, do as follows:

1. Click the Access Connections 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 Access Connections wireless icon in the system tray and select **Turn Wireless Radio On**. Or press Fn+F5, 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.

8 Wireless upgradeable ThinkPad models

Depending on the model, your ThinkPad® 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](#).