



**hp** digital home networking

**wireless USB  
network adapter**

**model hn210w**

## acknowledgements and notices

### hewlett-packard company notices

The information contained in this document is subject to change without notice. Hewlett-Packard (HP) makes no warranty of any kind with regard to this material including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Hewlett-Packard shall not be liable for any errors or for incidental or consequential damages in connection with the furnishing, performance, or use of this material. All rights reserved. Reproduction, adaptation, or translation of this material is prohibited without prior written permission of Hewlett-Packard, except as allowed under copyright laws.

### acknowledgements

Microsoft, MS, MS-DOS, and Windows are registered trademarks of Microsoft Corporation.

### conventions

The following conventions are used in this guide:

#### symbols

The > symbol guides you through a series of software steps. For example:

Click **Start > Settings > Control Panel** to view the active control panels.

#### warnings

A Warning indicates possible damage to the HP Gateway or to other equipment. A Warning can also indicate a possible harm to yourself or to others.

For example:



**Warning:** *Plugging into a nongrounded electrical socket can damage your Gateway.*

Copyright 2001 Hewlett-Packard Company

# contents

introduction .....	5
hp digital home networking wireless USB network adapter .....	5
features .....	6
getting to know the wireless USB network adapter.....	7
port.....	7
LEDs.....	8
USB icon .....	9
USB cabling .....	10
setting up a wireless network.....	11
wireless FAQs.....	13
troubleshooting .....	15
specifications.....	17
general.....	17
environmental.....	18
glossary .....	19
index.....	29
regulatory notices.....	31



# introduction

## hp digital home networking wireless USB network adapter

Congratulations on your purchase of the HP Digital Home Networking Wireless USB Network Adapter. The Wireless USB Network Adapter operates on the Industrial, Scientific, and Medical (ISM) band using Direct Sequence Spread Spectrum (DSSS) transmission to implement the IEEE 802.11b standard being developed for the wireless industry. Users can now move easily between access points without having to reconfigure the connection.

The Wireless USB Network Adapter with its powerful built-in antenna gives you the freedom to work anywhere you want, letting you take full advantage of your PC and providing you with access to all your networked resources beyond your desktop. LEDs provide feedback on power and linkage.

This adapter, which is compatible with Windows 98, Millennium, 2000, and XP, is a true necessity for all your wireless PC applications.

## features

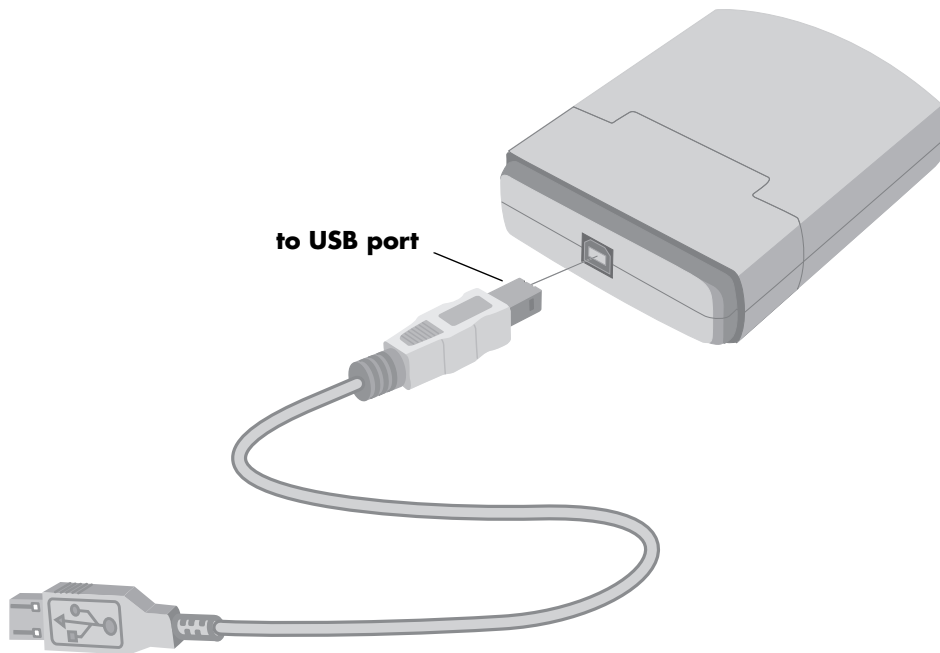
The Wireless USB Network Adapter is compatible with Windows 98, Millenium, 2000, and XP operating systems, and includes the following:

- ❑ 2.4 Ghz frequency band, compliant with world standards
- ❑ Wireless interface is compliant with the IEEE 802.11b standard
- ❑ A Universal Serial Bus (USB) interface
- ❑ Capable of up to 128-bit Wired Equivalent Privacy (WEP) encryption
- ❑ Wire-free access to networked resources located anywhere beyond the desktop
- ❑ Move between access points without resetting the connection configuration
- ❑ Data transfer rate of up to 11 Mbps
- ❑ Direct Sequence Spread Spectrum (DSSS)
- ❑ Automatic fall-back rate
- ❑ User-friendly GUI setup software provides hassle-free configuration
- ❑ Free driver/firmware upgrades
- ❑ Built-in dielectric antenna with LEDs indicating Power and Link

# getting to know the wireless USB network adapter

## port

### Wireless USB Network Adapter USB port



---

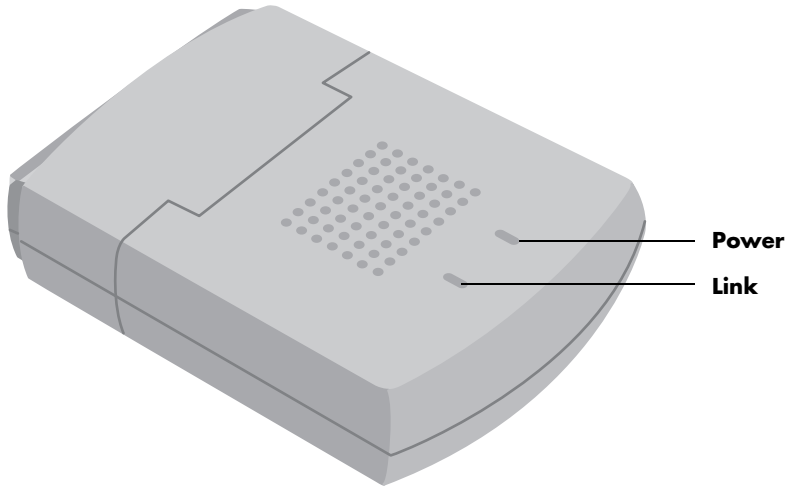
USB

Connect the Wireless USB Network Adapter to your computer through the Universal Serial Bus (USB) Type B port.

---

## LEDs

### Wireless USB Network Adapter LEDs



---

Power	Lights green when the adapter is powered on.
Link	Lights red when the adapter has an active connection. If the LED is not lit, the adapter is not interfacing with the network.

---



## USB icon

The USB icon identifies a USB port.

### USB icon



## USB cabling

The Wireless USB Network Adapter comes with one USB cable. The cable has two plugs:

- Type A rectangular plug
- Type B square plug

### USB plugs



Type A



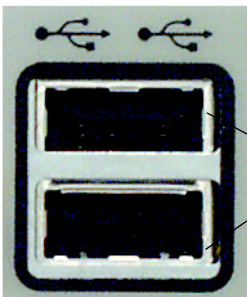
Type B

## connecting the cable

Follow the steps below to connect the cable:

- 1 Connect the Type B square plug to the Wireless USB Network Adapter.
- 2 Connect the Type A rectangular plug to the USB port of your computer.

### USB ports



Typical USB ports  
on a computer

## setting up a wireless network

### network topology

A wireless Local Area Network (LAN) uses a wireless adapter to connect each computer to the network. Computers in a wireless network must be configured to share the same radio channel.

The Wireless USB Network Adapter provides wireless computers access to a wired network. This integrated wireless and wired network is called an “infrastructure” configuration. A group of wireless-network-adapter-equipped computers plus a wireless access point, such as the HP Wireless Network Access Point, is called a Basic Service Set (BSS). The wireless access point connects the wireless network to the conventional wired network. Each wireless-network-adapter-equipped computer can communicate with any computer in a wired network infrastructure via the wireless access point.

An infrastructure configuration doubles the effective wireless transmission range of two wireless-network-adapter-equipped PCs since the wireless access point forwards data within the network. It is essential to use a unique ID, a BSSID or, more generically, an SSID within a wireless network. All PCs within an independent wireless network that are configured without roaming options (see Roaming below) must be configured with the same wireless network ID.

The wireless network infrastructure configuration is appropriate for enterprise-scale wireless access to a central database and for mobile users.

### roaming

Infrastructure mode also supports roaming capabilities for mobile users. A multiple wireless network can be configured as an “extended” wireless network, known as an Extended Service Set (ESS), allowing users to roam freely within it. All wireless-network-adapter-equipped PCs within one extended network must be configured with the same extended network ID an ESSID or taken generically with a BSSID as discussed above, called an SSID, and must use the same radio channel.

Before enabling an extended wireless network with roaming capability, select a feasible radio channel and an optimal location for the wireless access point. Proper wireless access point positioning and a clear radio signal will enhance performance.



# wireless FAQs

## Can I run an application from a remote computer over the wireless network?

This depends on whether the application is designed to be used over a network. Consult the application's documentation to determine if it supports operation over a network

## Can I play computer games with other members of the wireless network?

Yes, as long as the game supports multiple players over a local area network (LAN). Refer to the game's documentation for more information.

## What is the IEEE 802.11 standard?

The IEEE 802.11 Wireless LAN Standards Subcommittee of the Institute of Electrical and Electronics Engineers (IEEE) is formulating a standard for the industry to enable wireless LAN hardware from different manufacturers to communicate with one another.

## What IEEE 802.11 features are supported?

HP wireless products support the following IEEE 802.11 functions:

- CMSA/CA plus the Acknowledge protocol
- Multi-channel roaming
- Automatic rate selection
- RTS/CTS
- Fragmentation
- Power management

## Would information be intercepted while transmitting on air?

Wireless LAN features two-fold security protection. On the hardware side, as with DSSS technology, it has the devices have the inherent scrambling security feature. On the software side, wireless LAN offers Wired Equivalent Privacy (WEP) encryption to enhance security and access control.



# troubleshooting

[My computer does not recognize the Wireless USB Network Adapter.](#)

- ❑ Verify that the USB cable is properly connected to both the Type B USB adapter port and the Type A USB computer port.
- ❑ Verify that the USB controller is enabled in the computer's BIOS. Check your computer's documentation for more information.

[The Wireless USB Network Adapter does not work properly.](#)

- ❑ Reinsert the adapter's USB cable into the computer's USB port.
- ❑ Verify that the adapter is installed properly:
  - 1** Right-click **My Computer**.
  - 2** Select **Properties**.
  - 3** Select the **Hardware** tab, click **Device Manager**, and double-click **Network Adapters**. If the adapter is installed properly, it will be displayed. If you see a yellow exclamation point, there may be a resource conflict. If so, do the following:
    - ❑ Uninstall the drive software from your PC.
    - ❑ Restart your PC.
    - ❑ Repeat the adapter's software installation.

[My computer cannot communicate with computers linked via Ethernet to the wireless network in the infrastructure configuration.](#)

- ❑ Verify that the computer you are trying to contact is powered on.
- ❑ Verify that your adapter is configured for the same channel, SSID, and WEP as the other computers in the infrastructure configuration.





# specifications

## general

Model number	hn210w
Standards	IEEE 802.11b, USB 1.0, 1.1
Port	one USB Type B port
Channels	11 channels (U.S., Canada) 13 channels (Europe) 14 channels (Japan)
Operating range: indoors	up to 30 meters (100 ft) at up to 11 Mbps up to 50 meters (165 ft) at up to 5.5 Mbps up to 70 meters (230 ft) at up to 2 Mbps up to 91 meters (300 ft) at up to 1 Mbps
Operating range: outdoors	up to 152 meters (500 ft) at up to 11 Mbps up to 270 meters (885 ft) at up to 5.5 Mbps up to 396 meters (1,300 ft) at up to 2 Mbps up to 457 meters (1,500 ft) at up to 1 Mbps
Data rate	up to 11 Mbps (with automatic scale-back)
LEDs	Power, Link

## environmental

---

Dimensions	123 mm x 86mm x 28mm (4.84 in x 3.38 in x 1.10 in)
Power	5V DC, 250mA Tx, 100mA Rx, 30mA standby
Certifications	FCC Part 15, Classes B and C
Operating temperature	32° F to 104° F (0° C to 40° C)
Storage temperature	-13° F to 158° F (-25° C to 70° C)
Operating humidity	10% to 70% noncondensing
Storage humidity	10% to 90% noncondensing

---

# glossary

## **10BaseT**

Ethernet standard topology for twisted pair (T) cabling (transfer rate of 10 Mbps over 100 meters).

## **100BaseT**

Fast Ethernet twisted pair cabling (transfer rate of 100 Mbps over 100 meters).

## **ad-hoc network**

Group of computers, each with a wireless LAN network adapter, connected as an independent wireless local area network for the duration of a single communications session. An ad-hoc wireless LAN is applicable at a departmental scale for a branch or SOHO (small office/home office) operation.

## **ADSL (Asymmetric Digital Subscriber Line)**

A DSL modem technology geared to acceptable Internet performance in which downstream data transfer (downloading data from the Internet to the subscriber) is faster than upstream data transfer (uploading data from the subscriber).

## **ATM (Asynchronous Transfer Mode)**

Asynchronous transfer mode (broadband switching). ATM (asynchronous transfer mode) — a dedicated-connection switching technology that transmits digital data over a physical medium using digital signal technology. An individual cell is processed asynchronously relative to other related cells and is queued before being multiplexed over the transmission path.

## **broadband**

Fast Internet access through DSL, cable modem, or other means.

## **BSS (Basic Service Set)**

One wireless network.

## **BSSID (Basic Service Set Identification)**

A unique name (or ID) used by all computers on the network. A specific ad-hoc LAN. Computers in a BSS must be configured with the same BSSID.

## **bus topology**

Simple way of connecting computers in a network linearly along a single cable (each connected to the cable, not one to another).

### **client/server network**

Network in which one computer (the “server”) shares resources with other computers, called “clients” (as opposed to a peer-to-peer network).

### **CSMA/CD (Carrier Sense Multiple Access/Collision Detect)**

The protocol for carrier transmission access in an Ethernet network in which each device senses whether the line is idle and then sends data. If another device sends data at the same time, a collision occurs, the data is discarded, and the devices try again.

### **default gateway**

The router used to forward all traffic not addressed to a station within the local subnet.

### **DHCP (Dynamic Host Configuration Protocol)**

A utility for assigning TCP/IP addresses to workstations automatically (a unique IP address must be assigned to each computer in the network). When computers are moved within the network, DHCP allows automated IP addresses to be assigned automatically. DHCP “leases” an IP address to a device for a specific amount of time, which is useful in education and other environments where users change frequently. DHCP also supports static IP addresses for computers needing a permanent IP address, such as those containing Web servers. See static IP address.

### **DCHP Client**

A device configured to receive a DHCP address.

### **DHCP Server**

A device configured to assign IP addresses to DHCP clients.

### **DMZ (Demilitarized Zone)**

Computer host or small network inserted as a “neutral zone” between a company’s private network and the external public network. It prevents outside users from having access to an internal server containing confidential data.

### **DMZ Hosting**

Allows one IP address (or computer) to be exposed to the Internet. Some applications require multiple TCP/IP ports to be open. It is recommended that you set your computer with a static IP address if you want to use DMZ Hosting.

**DNS (Domain Name System)**

Method for matching Internet domain names with IP addresses. When a Uniform Resource Locator (URL) is entered into a Web browser, a domain name server retrieves the corresponding IP address for the domain name specified ("name resolution") and sends the request to the appropriate server. Domain names are convenient "handles" for IP addresses.

**DSL (Digital Subscriber Line)**

Transmits data bi-directionally at high speeds.

**DSSS (Direct Sequence Spread Spectrum )**

Generates a redundant bit pattern for each bit to be transmitted. This bit pattern is called a chip (or chipping code). The longer the chip, the greater the probability that the original data can be recovered. Even if one or more bits in the chip are damaged during transmission, statistical techniques embedded in the radio can recover the original data without the need for retransmission. To an unintended receiver, DSSS appears as low-power wideband noise and is rejected (ignored) by most narrowband receivers.

**dynamic IP address**

An IP address that is automatically assigned (typically by a DHCP server) in a TCP/IP network, as opposed to a static IP address.

**ESS (Extended Service Set)**

More than one wireless network.

**ESSID (Extended Service Set Identification)**

A unique name (or ID) used by users roaming among the multiple wireless networks. An infrastructure configuration can support roaming capability for mobile workers. More than one BSS can be configured as an ESS. Users within an ESS can roam freely between BSSs while served as a continuous connection to the network. Wireless stations and wireless access points within an ESS must be configured with the same ESSID and radio channel.

**Ethernet**

Protocol and cabling scheme allowing transfer of data at 10 Mbps.

**Ethernet card**

See NIC (Network Interface Card).

### **FHSS (Frequency Hopping Spread Spectrum)**

Uses a narrowband carrier that changes frequency in a pattern known to both transmitter and receiver. Properly synchronized, the net effect is to maintain a single logical channel. To an unintended receiver, FHSS appears to be short-duration impulse noise.

### **firewall**

A set of related programs, located at a network gateway server, that protects the resources of a network from users in other networks. It also controls access of internal users to outside resources. A firewall, working closely with the Gateway, examines each network packet to determine whether or not to forward it to its destination.

### **firmware**

Programming inserted permanently onto a chip within a computing device.

### **FTP (File Transfer Protocol)**

Enables electronic exchange of bulk information over an intranet or the Internet.

### **gateway**

Hardware or software acting as a translator between two different protocols; a router.

### **HomePNA (Home Phonenumber Networking Alliance)**

See HPNA (Home Phonenumber Networking Alliance).

### **host**

Computer on network that provides services to other computers.

### **HPNA (Home Phonenumber Networking Alliance)**

A standard for home local area networks using phonenumber connections.

### **IEEE (Institute of Electrical and Electronics Engineers)**

The IEEE promotes the development and application of electrotechnology and allied sciences, fosters the development of standards that often become national and international standards, publishes several journals, and has local and regional chapters.

### **infrastructure**

LAN incorporating both wired and wireless devices. Allows wireless devices to access a central database.

**Internet**

Worldwide network of networks linking millions of computers together; *see also* WAN (Wide Area Network).

**intranet**

Private home or business network.

**IP (Internet Protocol) address**

A unique 12-digit number (for example, 205.112.134.121) identifying each sender and receiver of network packets across the Internet.

**IPSec (Internet Protocol Security)**

A developing standard for security on the Internet.

**IPX (Internet Packet eXchange)**

A Novell NetWare communications protocol similar to IP (Internet Protocol) used to route messages from one node to another on a network.

**ISM band**

The FCC and its counterparts outside the U.S. have set aside bandwidth for unlicensed use on the ISM band. In particular, the spectrum in the vicinity of 2.4 GHz is being made available worldwide.

**ISP (Internet Service provider)**

Company or organization providing access to the Internet.

**LAN (Local Area Network)**

Computers and peripherals linked together by cabling in a home, business, or local area with communication via networking protocols.

**MAC (Media Access Control) address**

A computer's unique hardware number that identifies it over a network.

**Mbps**

Megabits per second.

**NAT (Network Address Translation)**

Translation of an IP address in one network to a different IP address known within another.

**Netware™**

Novell's network operating system.

## **network**

System connecting two or more computers and peripherals enabling them to communicate and share resources.

## **network adapter**

See NIC (Network Interface Card).

## **network mask**

See subnet mask.

## **NIC (Network Interface Card)**

Card or adapter that allows a computer to connect to a network. Also called a network adapter. Ethernet cards and phoneline adapters are examples.

## **PCI (Peripheral Component Interconnect)**

Specification defining an interconnection system between a PC and attached devices through up to ten expansion slots.

## **PCMCIA (Personal Computer Memory Card International Association) card**

A memory card or I/O device that is inserted into a PC, usually a notebook or laptop computer.

## **peer-to-peer network**

Network in which all computers are of equal rank and share resources equally, as opposed to a client/server network.

## **peripheral**

Any piece of equipment attached to a computer, including printers, scanners, CD-ROM burners, Zip drives, or other means.

## **Ping (Packet Internet Groper)**

Internet utility used to determine whether a particular IP address is online. It can be used to test and debug a network by sending out a data packet and waiting for a response.

## **PNA (Phoneline Networking Alliance)**

See HPNA (Home Phoneline Networking Alliance).

## **PPPoE (Point-to-Point Protocol over Ethernet)**

Method used mostly by DSL providers for connecting personal computers to a broadband modem for Internet access. Similar to a dial-up connection but at higher speeds.



**PPTP (Point-to-Point Tunneling Protocol)**

Protocol allowing corporations to extend their corporate network over the Internet through private “tunnels.” This has the effect of using the Internet as a large private local area network known as a “virtual private network” or VPN.

**print server**

A hardware device that enables a printer to be connected directly to a network.

**protocol**

Network language allowing devices to communicate.

**proxy server**

Computer with software that controls user access to Internet services and information.

**ring topology**

See token ring topology.

**RIP (Routing Information Protocol)**

Widely used protocol for routing traffic on the Internet.

**RJ-11**

4-wire phoneline cable connector.

**RJ-45**

8-wire twisted pair connector used for connecting Ethernet devices.

**Roaming**

Roaming allows a portable computer user to communicate continuously while moving freely throughout an area greater than that covered by a single wireless access point. Before using the roaming function, the computer must be set to the same channel as the wireless access point for the coverage area.

**router**

Device or software connected to at least two networks that determines where a data packet will next be forwarded on the Internet. Located at the gateway where two networks meet. Often part of a network switch.

**RTS/CTS (request-to-send/clear-to-send)**

In exchanging data on a network, RTS is a signal sent from one computer or other device requesting permission to send data to a receiving device; CTS is a signal from the receiving computer or device indicating it is ready to receive the data.

**server**

Computer on a network that provides services to other computers on the network.

**SPI (stateful packet inspection)**

The ability of a firewall to remember outgoing requests to the Internet from internal network users and only allow responses to those requests back through the firewall, thus denying attempts to access the local network that have not been requested.

**spread spectrum**

Wideband radio frequency technique designed to trade bandwidth efficiency for reliability, integrity, and security.

**SSID (Service Set ID)**

A generic term for a Service Set ID.

**SSL (Secure Sockets Layer)**

Protocol enabling encrypted and authenticated Internet communications.

**star (or spanning tree) topology**

Ethernet networking in which all devices (including computers, print servers, or additional hubs) are connected through a central hub.

**static IP address**

Permanent IP address assigned to a node in a TCP/IP network. Network devices serving multiple users, such as servers and printers, are usually assigned static IP addresses, as compared to dynamic IP address.

**subnet mask**

Method for splitting IP networks into a series of subgroups, or subnets. Also known as a network mask.

**switch**

A network device that selects a path or circuit for sending a unit of data to its next destination. It may also serve as a router, but at its basic level is simpler and faster than a router.

**T1 line**

High-speed communications line.

**TCP/IP (Transmission Control Protocol/Internet Protocol)**

Basic communication language of the Internet (but can also be used in private networks). TCP keeps track of individual data packets, while IP handles the actual delivery of the data.

**TFTP (Trivial File Transfer Protocol)**

A simple, easy-to-implement protocol for transferring files on a network that lacks most of the features of a normal File Transfer Protocol (FTP) program (it cannot list directories or authenticate users).

**token ring topology**

Networking layout in which computers and other devices are connected in a unidirectional loop or ring. A computer captures a “token” being passed around the network and waiting for data transmission.

**topology**

Arrangement of cables and hardware in a network; see bus topology, default gateway, star (or spanning tree) topology, and token ring topology.

**URL (Uniform Resource Locator)**

Unique address on the Internet.

**USB (Universal Serial Bus)**

USB ports connect high-speed peripherals; supports multiport hubs.

**UTP (Unshielded Twisted Pair)**

The most common kind of copper telephone wiring connecting home and many business computers to a telephone service.

**VPN (Virtual Private Network)**

See PPTP (Point-to-Point Tunneling Protocol).

**WAN (Wide Area Network)**

Communications network that extends over a wide geographic area; sometimes used to mean the Internet.

**WEP (Wired Equivalent Privacy)**

A data privacy mechanism based on a 64-bit shared key algorithm, as described in the IEEE 802.11 standard.



# index

## **C**

cabling  
    USB 10

## **F**

features 6  
    summarized 5

## **G**

glossary 19

## **I**

indicators 8  
introduction 5

## **L**

LEDs 8  
link LED 8  
listed 6

## **N**

network topology 11

## **P**

port 7  
power LED 8

## **R**

roaming 11

## **S**

setting up 11  
specifications  
    environmental 18  
    general 17

## **T**

troubleshooting 15

## **U**

USB cabling 10  
USB icon (pictured) 9  
USB port 7



# regulatory notices

## hewlett-packard company

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

- ❑ This device may not cause harmful interference, and
- ❑ This device must accept any interference received, including interference that may cause undesired operation.
- ❑ Pursuant to Part 15.21 of the FCC Rules, any changes or modifications to this equipment not expressly approved by Hewlett-Packard Company may cause harmful interference, and void your authority to operate this equipment. To maintain compliance with FCC Rules and Regulations, use only cable accessories provided.

For further information, contact:

Hewlett-Packard Company  
Manager of Corporate Product Regulations  
3000 Hanover Street  
Palo Alto, Ca 94304  
(650) 857-1501

## note

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, can 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 the receiver.
- ❑ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ❑ Consult the dealer or an experienced radio/TV technician for help.

