Spot Vital Signs® LXi
Radio accessory
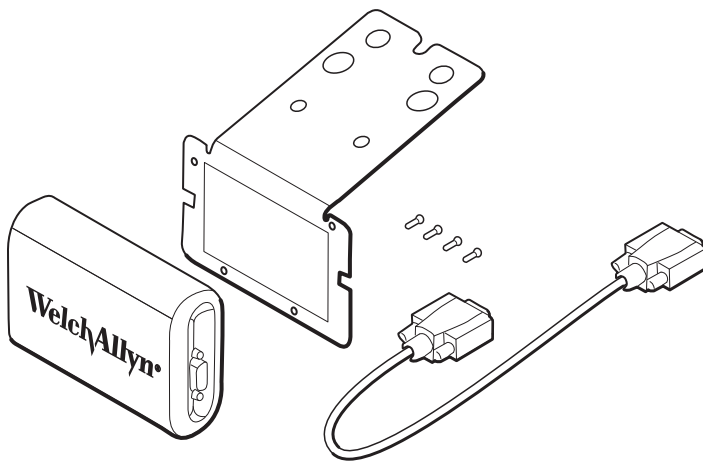
Directions for use

WelchAllyn®

Advancing Frontline Care™

For information about any Welch Allyn product, call Welch Allyn Technical Support:

USA	+ 1 315 685 4560 800 535 6663	Australia	+ 61 2 9638 3000 800 074 793
Canada	800 561 8797	China	+ 86 216 327 9631
European Call Center	+ 35 3 46 906 7790	France	+ 33 1 60 09 33 66
Germany	+ 49 7477 92 71 86	Japan	+ 81 3 3219 0071
Latin America	+ 1 305 669 9003	Netherlands	+ 31 15 750 5000
Singapore	+ 65 6419 8100	South Africa	+ 27 11 777 7555
United Kingdom	+ 44 20 7365 6780	Sweden	+ 46 8 58 53 65 51

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EC REP
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CE 0297

Contents

Directions for use

Introduction

Read this manual thoroughly before using the radio.

Symbols

The following symbols are associated with the radio.

⚠	**WARNING** A warning statement in this manual identifies a condition or practice, which if not corrected or discontinued immediately, could lead to patient injury, illness, or death.	⚠	**Caution** A caution statement in this manual identifies a condition or practice, which if not corrected or discontinued immediately, could lead to equipment failure, equipment damage, or data loss.
♻	Recyclable		Temperature limits
	Recycle the product separate from other disposables (see "Product disposal" on page 7). www.welchallyn.com/weee	**IPXØ**	Equipment is not protected against the ingress of liquid.
CE ①	Restrictions for use of wireless device in Europe. European Communities Class 2 equipment.	**FC**	This device complies with the 47 CFR Part 15 radiated and conducted emissions requirements.
((•))	Non-ionizing electromagnetic radiation. This device contains an approved RLAN module operating in frequency bands 2.402 GHz to 2.4835 GHz and 5.125 GHz to 5.875 GHz.	**RoHS** Compliant	Complies with the Restriction of Hazardous Substances Directive.
⊷	Input	**MAC**	Medium Access Control
---	Direct current	**WiFi**	Wireless Fidelity
SN	Serial number		See the accompanying manual.
REF	Reorder number		

Welch Allyn 802.11 a/b/g wireless radio
FCC ID: PGUWA11ABG09
IC: 4168A-WA11ABG09

This device complies with FCC and Industry Canada requirements for international radiators (802.11 wireless).

Related publications

- Welch Allyn Spot Vital Signs® LXi Directions for Use
- Welch Allyn Spot Vital Signs LXi Service Manual

Warnings and cautions

All operating personnel must read and understand the general safety information in this summary. Specific warnings and cautions are also found throughout this manual.

General warnings

WARNING   ELECTRIC SHOCK HAZARD. Do not attempt to service the radio. The radio contains no user-serviceable parts. If you attempt to service the radio, you will void the product warranty.

WARNING   ELECTRIC SHOCK HAZARD. Do not autoclave the radio. Autoclaving can force moisture inside the case, creating an electric shock hazard. Clean the radio according to the directions in "Cleaning" on page 7.

WARNING   All signal input and output connectors are intended only for connection of devices complying with IEC 60601-1 or other IEC standards (for example, IEC 60950) as appropriate to the device. Connecting additional devices to Spot Vital Signs LXi may increase leakage currents. To maintain operator and patient safety, it is necessary to consider the requirements of IEC 60601-1-1. Use only Welch Allyn approved accessories.

WARNING   Changes or modifications not expressly approved by Welch Allyn could void the purchaser's authority to operate the equipment. This product does not contain any user-serviceable components. Any unauthorized product changes or modifications will invalidate Welch Allyn's warranty and all applicable regulatory certifications and approvals.

General cautions

Caution   Do not permit water or other fluid to enter any connectors on the radio. Should this occur, dry the connectors with warm air. Check the accuracy of all operating functions before putting the radio back in service.

Caution   Use the radio only within stated operating temperature ranges. The radio might not meet performance specifications if used outside these temperature ranges.

Caution   Use only the radio identified in this manual. Using unapproved accessories with Spot Vital Signs LXi can affect transmission accuracy.

Caution   The radio is not intended for hand-held use.

Caution   The radio complies with current required standards for electromagnetic interference and should not present problems to other equipment or be affected by other devices. As a precaution, avoid using the radio in close proximity to other equipment.

Caution   High-power radars are allocated as primary users of the bandwidth between 5.25 GHz and 5.35 GHz and between 5.65 GHz and 5.85 GHz. These radars can interfere with the radio and can damage the radio.

Caution   This radio is compliant with FCC RF Exposure requirements for mobile devices. To ensure compliance, users are cautioned to maintain at least 20 cm (8 inches) between the transmitter and any people.

Contents checklist

Unpack the radio and then inspect for missing items. Retain the shipping materials in the event of shipping damage or for return, if necessary, to Welch Allyn for repair or warranty service. Report any signs of shipping damage to the carrier. Report any missing or damaged items to the Welch Allyn Service Center nearest you (see page ii).

- Radio
- Directions for Use CD
- Serial Cable
- Mounting Bracket and Screws

Mounting the radio to a mobile stand

If your mobile stand looks like the one below, follow the instructions on this page. If your stand looks different, follow the instructions on the next page.

1

2

3

4

5
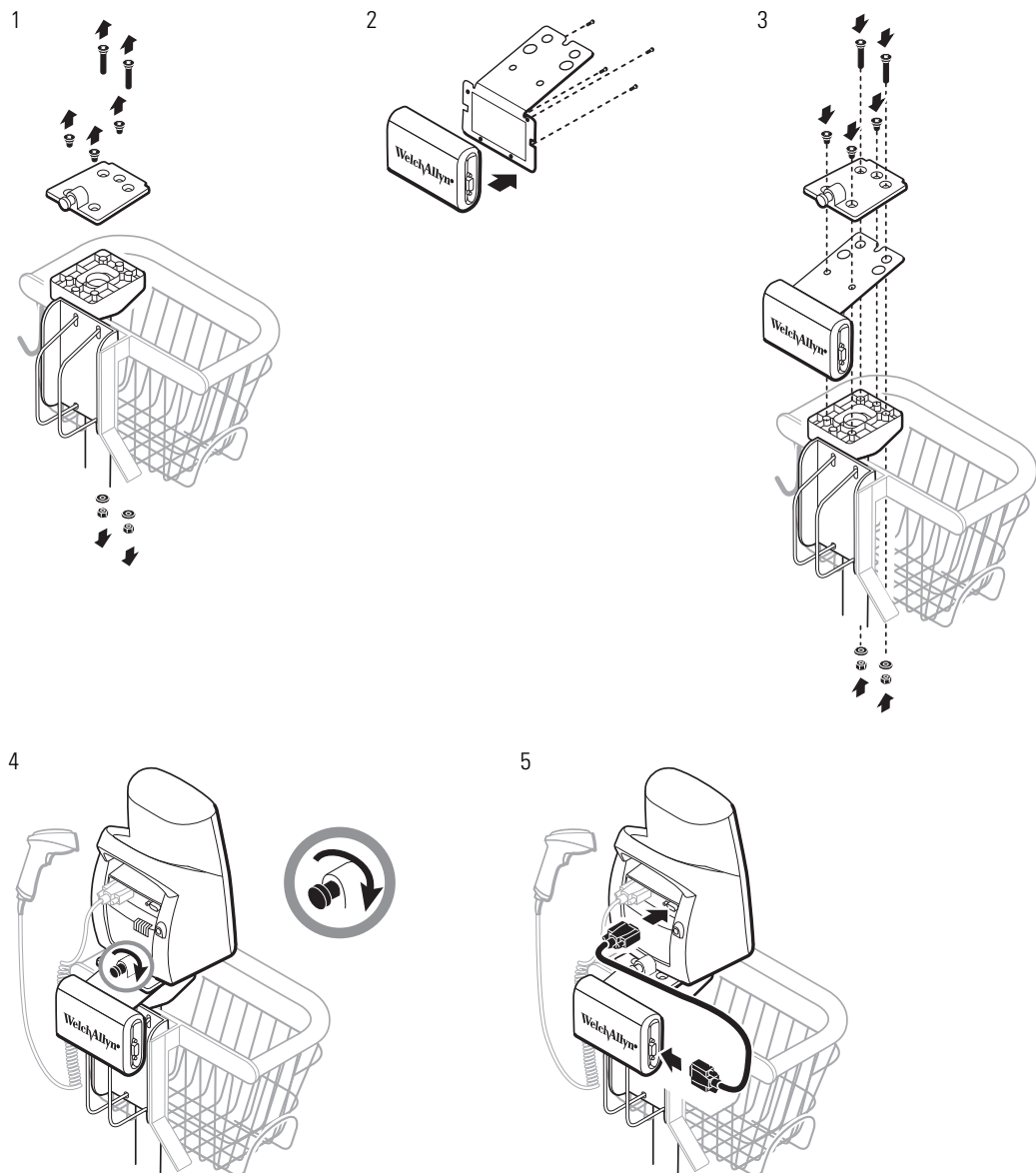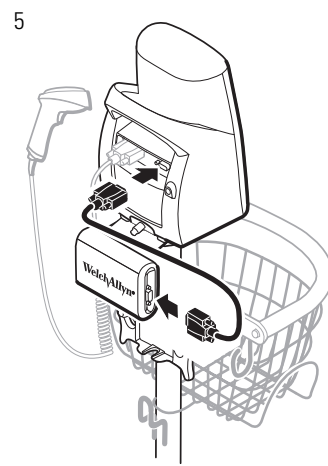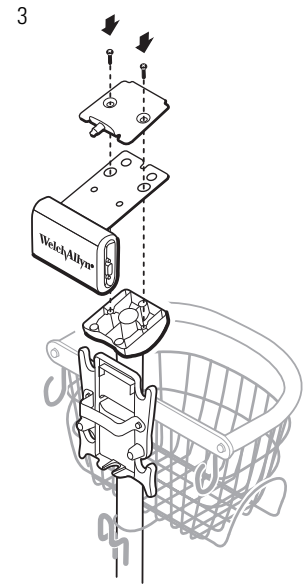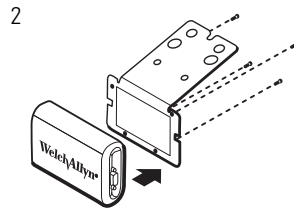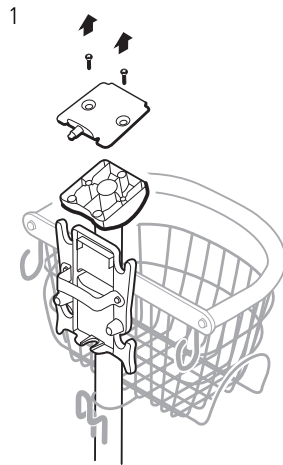
Setup

Before the radio can be used for the first time, the following tasks must be completed:

1. Set up the wireless LAN to support the radio including ESSID, authentication, and encryption.

2. Configure the radio for the network using the ESSID, authentication, and encryption from the previous step.

3. Configure Spot Vital Signs LXi.

To complete these tasks, follow the instructions below.

Setting up the network

To work with the radio, your network must have these features:

- A DHCP server.
- If EAP authentication is enabled: an authentication server (RADIUS).
- Welch Allyn Connex® software.

Ensure that your network meets these requirements.

Configuring the radio for the network

To complete this task, you need the Spot Vital Signs LXi Radio Configuration CD.

The CD installs a configuration utility and procedure on your computer.

Refer to the procedure for instructions on how to complete the configuration process.

Configuring Spot Vital Signs LXi

After configuring the radio for the network, you must configure the Spot Vital Signs LXi device.

To complete this task, you must change a few settings in the Internal Configuration Mode of the device. When changed, these settings become the default power-up settings.

This task also requires you to connect the radio and barcode scanner to the appropriate serial ports on the back of the device.

To configure Spot Vital Signs LXi

1. Disconnect all devices from Port I and Port II on the back of Spot Vital Signs LXi.

2. Press ⏻ to turn off Spot Vital Signs LXi.

3. Press and hold ✔ and ⏻ simultaneously for 5 seconds. The Configuration Menu screen appears.

4. Use ◐ to choose **External Devices** and press ✔ to access the options.

    The External Devices option enables or disables available external devices.

5. Use ◐ to choose **Information System** and press ✔. Use ◐ to select **On** and press ✔.

6. Choose **Barcode Patient ID** and select **On**.

    Instructions appear on the display.

7. Follow the instructions by connecting the barcode scanner to the port listed on the display and pressing ✔ to return to the External Devices menu.

8. Choose **Wireless Module** and select **DPAC**. ("DPAC" refers to the radio.)

    Instructions appear on the display.

9. Follow the instructions by connecting the radio to the port listed on the display and pressing ✔.

10. Turn off Spot Vital Signs LXi.

Transmitting patient readings

You can transmit patient readings after completing the steps described in "Setup" on page 5.

To transmit a patient's readings immediately after taking them

1. Measure the patient's vital signs. Use the barcode scanner to read the Patient ID. The words "Send/Next Reading" appear in the Navigation Window. You can enter the Patient ID any time before the data is sent.

2. When vitals readings are complete, use ◀▮▶ to choose **Send/Next Reading**. Press ✔.

    The device displays "Sending reading to Information System" in the Navigation Window and the successful operation icon (⊘) upon completion.

    If the reading was not sent, it is retained in memory, the device displays the failed send operation icon (⊗), and the reading count increments. The device attempts to resend all unsent readings at the next send attempt.

    Data is deleted from the device only after an acknowledgement is received from Connex.

Note   If more than 50 readings are stored, taking another reading may result in deletion of the oldest reading in memory, depending on the device configuration. For details, see the Spot Vital Signs LXi directions for use.

To manually transmit all readings

Press MEM , use ◀▮▶ to choose **Send Reading** and press ✔.

Cleaning

⚠ **Caution** IPXØ Equipment is not protected against the ingress of liquid.

Caution Do not use abrasive cleaners.

Caution Do not immerse the module in any liquid.

To clean the exterior, use a soft cloth slightly moistened with a mild detergent solution.

Technical assistance

If you have an equipment problem that you cannot resolve, call the Welch Allyn Service Center nearest you for assistance (see page ii). Technical service telephone support is available on normal business days.

If you are advised to return a product to Welch Allyn for repair or routine maintenance, schedule the repair with the service center nearest you.

Before returning a product for repair, you must obtain authorization from Welch Allyn. Service personnel will give you a Service Notification number. Please note this number on the outside of your shipping box. Returns without a Service Notification number will not be accepted for delivery.

Product disposal

Do not dispose of this product as unsorted municipal waste. Prepare this product for reuse or separate collection as specified by Directive 2002/96/EC of the European Parliament and the Council of the European Union on Waste Electronic and Electrical Equipment (WEEE). If this product is contaminated, this directive does not apply.

For more specific disposal information, see www.welchallyn.com/weee, or contact Welch Allyn Customer Service.

Supplies and accessories

REF	Description	REF	Description
705310	Spot Vital Signs LXi Directions for Use	704432	Spot Vital Signs LXi Service Manual
4500-915	2D Barcode Scanner with Mounting Bracket	4500-927	Cable kit for serial connectivity
4500-926	Cable for use with the USB-to-serial adapter	4500-906	Spot Vital Signs LXi Radio Configuration CD

Troubleshooting

Problem: The radio does not connect or communicate with the network.

Possible cause	Corrective action
Spot Vital Signs LXi is outside the radio signal range.	Move the device closer to a wireless connection. Refer to the Signal Strength Indicator (no bar = out of range).
The radio is not configured to match the network settings.	Reconfigure the radio with the Spot Vital Signs LXi Radio Configuration CD.

For more information, see the Spot Vital Signs LXi service manual.

Specifications

Radio

Wireless network interface	IEEE 802.11b/g, 802.11a
Frequency	802.11b/g: 2.402 GHz to 2.4835 GHz 802.11a: 5.125 GHz to 5.875 GHz
Channels	Up to 14 in 802.11b/g, up to 24 in 802.11a; country-dependent
Security/encryption/authentication	WPA2/AES (either EAP or PSK authentication)
Antenna	Internal multiband PIFA
Wireless data rates	802.11b: 1 Mbps or higher during vitals transmission only 802.11a/g: 6 Mbps or higher during vitals transmission only (approximately 2 seconds per reading)
Agency approvals	US: FCC Part 15, Class B, C/UL, CE Europe: ETSI Canada: RSS-210
Protocols	UDP, DHCP, TCP/IP
Data transfer protocols	UDP/TCP/IP
Modulation	OFDM (802.11a/g), DSSS/CCK (802.11b)
Output power	40 mW typical, country-dependent
Ancillary IEEE standards	802.11e, 802.11h, 802.11i, 802.1X

Operates on Welch Allyn FlexNet™ Network and other 802.11 networks.

Channel restrictions in the 5-GHz band are determined by country.

⚠️ **Caution**   Some countries restrict the use of 5-GHz bands. The 802.11a radio in Spot Vital Signs LXi uses only the channels indicated by the access point with which the radio associates. The hospital IT department must therefore configure access points to operate within approved domains.

Mechanical

Dimensions	4.64 in L x 3.35 in W x 1.45 in T 118 mm L x 85 mm W x 37 mm T
Mounting	Aluminum Bracket
Operating temperature	0° C to +40° C (32° F to +104° F)
Storage temperature	-20° C to +60° C (-4° F to 140° F)

Configuration options

Authentication and encryption	None 802.1X WPA2 (AES) Pre-shared key WPA2 (AES)
Certificates	Welch Allyn Customer
EAP types	TLS, TTLS, PEAP
Radio bands	802.11b/g (2.4 GHz) 802.11a (5 GHz)
ESSID	16 alphanumeric character
Webserver password	Alphanumeric string
PSK user	Alphanumeric string
PSK password	Alphanumeric string
EAP identity	Alphanumeric string
EAP password	Alphanumeric string

Compliance

General

This radio card must be installed and used in strict accordance with the manufacturer's instructions.

This product encrypts data. It is unlawful to export it from the U.S. without obtaining a U.S. Export License.

Federal Communications Commission (FCC)

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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it 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 tuning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment to outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The user may find the following booklet prepared by the Federal Communications Commission helpful: *The Interference Handbook*

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 004-000-0034504.

Welch Allyn is not responsible for any radio or television interference caused by unauthorized modification of the devices included with this Welch Allyn product, or the substitution or attachment of connecting cables and equipment other than specified by Welch Allyn.

The correction of interference caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

Industry Canada (IC) emissions

This device complies with RSS 210 of Industry Canada.

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 this device.

L'utilisation de ce dispositif est autorisée seulement aux conditions suivantes: (1) il ne doit pas produire de brouillage et (2) l' utilisateur du dispositif doit étre prêt à accepter tout brouillage radioélectrique reçu, même si ce brouillage est susceptible de compromettre le fonctionnement du dispositif.

High-power radars are allocated as primary users of the 5.25 to 5.35 GHz and 5.65 to 5.85 GHz bands. These radar stations can cause interference with and/or damage this device.

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

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

European Union

Czech	Welch Allyn tímto prohlašuje, ze tento *RLAN device* je ve shodě se základními po_adavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
Danish	Undertegnede Welch Allyn erklærer herved, at følgende udstyr RLAN device overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Dutch	Hierbij verklaart Welch Allyn dat het toestel RLAN device in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG. Bij deze verklaart Welch Allyn dat deze RLAN device voldoet aan de essentiële eisen en aan de overige relevante bepalingen van Richtlijn 1999/5/EC.
English	Hereby, Welch Allyn, declares that this RLAN device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Estonian	Käesolevaga kinnitab Welch Allyn seadme RLAN device vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
Finnish	Welch Allyn vakuuttaa täten että RLAN device tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
French	Par la présente Welch Allyn déclare que l'appareil RLAN device est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE. Par la présente, Welch Allyn déclare que ce RLAN device est conforme aux exigences essentielles et aux autres dispositions de la directive 1999/5/CE qui lui sont applicables.
German	Hiermit erklärt Welch Allyn, dass sich dieser/diese/dieses Managed Accces Point in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet. (BMWi) Hiermit erklärt Welch Allyn die Übereinstimmung des Gerätes RLAN device mit den grundlegenden Anforderungen und den anderen relevanten Festlegungen der Richtlinie 1999/5/EG. (Wien)
Greek	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ Welch Allyn ΔΗΛΩΝΕΙ ΟΤΙ RLAN device ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
Hungarian	Alulírott, Welch Allyn nyilatkozom, hogy a RLAN device megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak.
Italian	Con la presente Welch Allyn dichiara che questo RLAN device è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latvian	Ar šo Welch Allyn deklarē, ka *RLAN device* atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lithuanian	Šiuo Welch Allyn deklaruoja, kad šis RLAN device atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Malti	Hawnhekk, Welch Allyn, jiddikjara li dan RLAN device jikkonforma mal-htigijiet essenzjali u ma provvedimenti ohrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
Portuguese	Welch Allyn declara que este RLAN device está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Slovak	Welch Allyn týmto vyhlasuje, ze RLAN device spĺňa základné po_iadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Slovene	Šiuo Welch Allyn deklaruoja, kad šis RLAN device atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Spanish	Por medio de la presente Welch Allyn declara que el RLAN device cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Swedish	Härmed intygar Welch Allyn att denna RLAN device står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

EMC

Special precautions concerning electromagnetic compatibility (EMC) must be taken for all medical electrical equipment. Portable and mobile RF communications equipment can affect the behavior of medical electrical equipment.

Welch Allyn Spot Vital Signs LXi devices and accessories comply with all applicable and required standards for electromagnetic interference.

- They do not normally affect nearby equipment and devices.
- They are not normally affected by nearby equipment and devices.
- It is safe to operate them in the presence of high-frequency surgical equipment; however, it is good practice to avoid using the devices near other equipment.

Warranty

Welch Allyn warrants that the Spot Vital Signs LXi Radio products meet the labeled specifications of the products and will be free from defects in materials and workmanship that occur within one year after the date of purchase.

The date of purchase is one of the following:

- the date specified in our records if you purchased the product directly from us
- the date specified in the warranty registration card that we ask you to send to us
- the date of purchase of product from the authorized Welch Allyn distributor as documented from a receipt from said distributor

This warranty does not cover damage caused by:

- handling during shipping
- use or maintenance contrary to labeled instructions
- alteration or repair by anyone not authorized by Welch Allyn
- accidents

If a product or accessory covered by this warranty is determined to be defective because of defective materials, components, or workmanship, and if the warranty claim is made within the warranty period described above, Welch Allyn will repair or replace, at its discretion, the defective product or accessory free of charge.

You must obtain a Service Notification number from Welch Allyn to return your product before you send it to Welch Allyn's designated service center for repair. Contact Welch Allyn Technical Support.

This warranty is in lieu of all other warranties, express or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. Welch Allyn's obligation under this warranty is limited to repair or replacement of products containing a defect. Welch Allyn is not responsible for any indirect or consequential damages resulting from a product covered by the warranty.