**Technical Service Bulletin**

**Monitoring Products**

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**Subject:** TSB – PLFM Radio Ver 2.30.00 Upgrade

**CAR Number:** NA

**Distribution Scope:** WA ASP's and Distributors
WA Technical Support, Product Service, & International Service Centers

**Product(s) Referenced:** Connex Vital Sign Monitor (CVSM) with the radio (406187 PLAT. RADIO, PROV. SPI,802.11A/B/G) option

**SW Version:** CVSM Host version 1.50.02 or earlier

**Serial No. / Lot Code:** CVSM - 103000002411 and earlier

**Summary:** Radio software (SW) version 2.30.00 has been released for the platform radio. Version 2.30.00 SW offers additional security options and addresses connectivity issues. The upgraded radio SW will ship with CVSM devices provisioned with host version 1.70.00. Devices with host SW version 1.50.02 or older will need to be upgraded to host version 1.70.00 to support the radio 2.30.00 SW.
Radio SW version 2.30.00 address the following issues:

- Corrects an issue where repeated reboots cause the settings to revert back to the original factory provisioned settings
- Corrects an issue where the radio does not always report the correct RSSI value when viewed on the device or accessed through the Web Server because of a problem with calibration
- Corrects an issue where when the DHCP lease is renewed, the device will sometimes fail with a Radio not functional error due to a re-initialization sequence error in the radio

New features:

- Authentication/Encryption types for WEP64, WEP128, WPA2AES Mixed Mode (AES + TKIP) and WPA2PSK Mixed Mode (AES + TKIP)
- Authentication/Encryption type setting functionality to LamarrServer

Use the procedure described in this TSB to update the radio software

CAUTION: This procedure may disable the radio if the upgrade is interrupted when the files are being written to flash. Before starting the upgrade ensure the CVSM battery is fully charged and/or connected to AC power.

21 CFR Part 820, ISO 13485, MPD SOP-0002

20012565 CSB – PLFM Radio Ver 2.30.00 Upgrade
60038567 Spot LXi Radio SW Update Release Lamarr Radio 802.11/a/b/g

Upgrades may be delivered onsite by field service or the customer may be offered the opportunity to perform the upgrade themselves on an as needed basis as determined below.

Marketing will evaluate the current install base and schedule onsite upgrades with field service for those customers in immediate need of an upgrade.

Customers who call with radio connectivity issues will be evaluated by Tech Support. If the issue cannot be resolved, it will be escalated to service engineering. Service Engineering will work with the radio team to determine if an upgrade will resolve the issue and how it will be deployed.

If an on-site upgrade is needed field service will be requested to assist. In the event Field Service is unable to make an onsite visit within the customer’s time frame, the customer will be offered the option of performing the upgrade themselves or returning the device to a service center.

Customers opting to perform the upgrade will receive instructions for performing the upgrade along with the upgrade software via
PartnerConnect. Warranty coverage will remain in effect for any damage to the radio resulting from the customers attempt at upgrading the radio software, provided the case was not opened and no modifications were made to the hardware. Customers reporting failed upgrades may request an RMA to repair the failed devices.

Service centers will continue the policy of upgrading CVSM SW to current levels including the radio SW unless the RMA specifies the SW is not to be upgraded. The upgrade is provided at no charge for those customers needing the upgrade to address connectivity issues.

When issuing an RMA the service representative will need to ask the customer if the device is being used with Connex VM 1.x. There is a known issue with the patient query when running CVSM SW 1.70.00 with Connex VM 1.x. If the customer is using patient queries they should not upgrade CVSM SW to 1.70.00 without upgrading to Connex VM 2.x. In this case indicate on the RMA the CVSM host SW must not be upgraded above version 1.50.02, and the radio SW must remain at version 2.20.00.

The existing service kit for the radio will remain active to support those customers that are not ready to upgrade. A new radio service kit will be released to support Radio SW version 2.30.00.

Old radio service kit: 103356 SERV KIT, VSM6000, Radio
New radio service kit: 104560 SERV KIT, PLFM RADIO 2.30

Required Training: All Welch Allyn employees and contractors engaged in service and repair of CVSM shall complete a Read & Sign training record indicating they have read and understand this document. This Read & Sign is to be filed locally.

Required Tools:

<table>
<thead>
<tr>
<th>Material no.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>408308</td>
<td>Welch Allyn Service Tool 1.5.0.0</td>
</tr>
<tr>
<td>Off the shelf item</td>
<td>Wireless router 802.11 a/b/g*</td>
</tr>
<tr>
<td>660-0138-00</td>
<td>Cable, patch 5' RJ45, T568B*</td>
</tr>
<tr>
<td>4500-925</td>
<td>USB 2.0/5-pin type A to mini-B cable, gold, 6 ft.</td>
</tr>
</tbody>
</table>

* if a wireless network is unavailable

System Requirements
Windows PC with Windows XP SP3 or Windows 7
Internet Explorer 7 or 8
Internet access to connect to PartnerConnect

Required Materials:

<table>
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<tbody>
<tr>
<td>50010672</td>
<td>SWF, PLFM, Radio 2.30.00, SPI</td>
</tr>
</tbody>
</table>

You will need the following four files from material no. 50010672:
1. nk*.bin (* is a placeholder for the release date i.e. 4_1_26)
2. nk*.sha1 (* is a placeholder for the release date i.e. 4_1_26)
3. Lamarr2_SPI.cab
4. Lamarr2_SPI.sha1.txt
Quality Process for failed units or components: NA

Procedure: Overview

The upgrade process will take approximately 20 to 30 minutes to complete.

To access the radio’s configuration web page the PC running the service tool must be able to connect to the wireless network the radio is associated with. If the radio is already connected to a network accessible to the PC verify the RSSI value is between 0 dBm to -60 dBm, and proceed to Access the radio’s web interface.

If the radio is not configured to a network or the network is inaccessible to the PC you may setup a simple wireless network with a wireless router to communicate between the CVSM’s radio and the PC. See Wireless network setup.

Wireless network setup

Follow these instructions to setup a simple network with a wireless router to communicate between the radio and the PC. To setup the CVSM to communicate with the router, follow the manufacturer’s instructions to connect the PC to the router and logon to the router.

Configure the following wireless settings on the router:

1. Configure the following wireless settings on the router:
   a) Name (SSID)
   b) Radio band (mode) a or b/g
   c) Security: none, WPA2-AES or, WPA2-PSK

2. Configure the radio settings on the CVSM to match the router settings.

To access the radio configuration on the CVSM:
   a) Touch the Settings tab
   b) Touch Advanced tab
   c) Enter the access code ‘6345’ and touch OK.
   d) Touch Network tab
   e) Touch Radio tab
   f) Enter the SSID
   g) Select the radio band
   h) If you are using security configure the Authentication type to match the router settings. If not set the Authentication type to Open.
   i) Touch Configure radio button
   j) Touch the Status tab, and wait for the radio to associate with the router. Radio, network, and session information are displayed in the Status screen to assist
you in troubleshooting any connection issues.

k) In the right hand Session pane check the RSSI value is between 0 dBm and -60 dBm (-50 dBm is better than -60dBm).

Note: If the CVSM is in the same room with the router and the RSSI value is still too low consult the service manual to trouble shoot the radio.

Access the radio’s web interface

1. Connect the device to the PC running the service tool with the USB cable
2. Launch the service tool and logon
3. In the service tool select the device to be upgraded to open the Welch Allyn Connex Device tab
4. In the service tool verify there is a Radio IP address in the device information pane (this is the area just below the device tab).
   - If you see a Radio IP address, continue with step 5
   - If you do not see a Radio IP address, go to the section titled, “Wireless network setup”, above.
5. Select the Configure tab
6. Select the Change button in the current settings pane
7. Select the Radio tab
8. Follow the onscreen prompt and click Configure. The Welch Allyn Software Tool connects you to the radio manufacturer’s configuration web page. Proceed to: Update the radio software

Update the radio software

If the radio’s web interface is not open; launch the radios web page as described in, “Access the radio’s web interface”

1. In the Web Admin menu, select, Radio card firmware Upload
2. Click on the browse button and navigate to the directory containing the upgrade files and select the nk*.bin file
3. Launch Windows Explorer and browse to the same location as the nk*.bin file and open nk*.sha1 file (right click and open with Notepad)
4. Select and copy all text characters in the first line up to (but not including) “*nk bin”
5. Paste copied text into SHA1 checksum box on the radio card firmware upload page
6. Click **Apply** to begin the upgrade. This process will take 20-30 minutes (depending on network speed). An information message is displayed on the monitor; “Radio Software upgrade in progress. Do not shut down”.

   Note: The status string in the radio frame displays the file loading and the percentage complete.

7. When the files have been transferred and a checksum is complete, the software will then be written to the radios memory. At this point, the Web page changes to show the following message:

   Web Admin>

   Radio card firmware has been uploaded and the checksum is good.

   The firmware will now be burned to flash

   !******************************************************************************!

   This procedure will take approximately 7 minutes.

   After the firmware programming is complete, the radio card will automatically boot the new firmware image and reconfigure itself.

   **DO NOT POWER THE INSTRUMENT OFF DURING THIS PROCESS**

   !******************************************************************************!

8. Wait approximately 7 minutes for the task to complete. While the software is being burned to flash the status string and information message advises, “Radio card rebooting; please wait.” When the flash process is complete the information message changes to “Advanced settings.” If the information message displays “Advanced settings”, proceed to step 12.
9. If after 10 minutes the information message has not changed to “Advanced settings”. Touch the power button to place the device in standby mode, touch the display to wake the device. If the screen has not refreshed reboot the CVSM as follows:
   a) From Advanced settings touch Exit
   b) Touch Settings
   c) Touch Device
   d) Touch Power down
   e) Push the power button to restart the monitor.

10. Verify radio settings. Navigate to the advanced settings, Radio tab as follows:
    a. Touch Settings
    b. Touch Advanced
    c. Enter 6345 and touch OK
    d. Touch Network
    e. Touch Radio

    If the SSID and Authentication settings have been reset to factory defaults it will be necessary to reconfigure the radio as described in the **Wireless network setup**, step 2.

    If the radio settings have not changed touch the Status tab and wait for the radio to initialize, associate and receive an IP address.

11. When the radio has initialized and received an IP address, return to the Web Admin page. If the radio settings were reset it may be necessary to restart the radio’s web interface as described in, “**Access the radio’s web interface**.”

12. In the Web Admin menu, select “Load cab file”

13. In the Cab file text box, click browse and navigate to the directory containing the Lamarr2_SPI.cab file, and select it

14. Use the Windows Explorer to browse to the same location as the CAB file and open the associated Lamarr2_SPI.sha1 (text document) (right click and open with Notepad).

15. Select all the open text characters up to (but not including) the space before the filename

16. Copy and paste the text into the SHA1 checksum box on the Load CAB file page
17. Click the **Apply** button to begin Lamarr2_SPI.cab file download and flash writing. This process will take approximately 1-2 minutes. An information message is displayed on the monitor; “Radio Software upgrade in progress. Do not shut down”. While the software is being updated the status string displays the percentage complete of the file download, then advises, “Radio card reboots; please wait.” When the flash process is complete the information message changes to “Advanced settings”

18. The Web page will display the following message: “Radio Card is rebooting now”

19. Wait at least 2 minutes for the radio to reboot and do post-update configuration

20. Return to the radio web page in the Windows Browser and confirm the Device Information section of the web page shows the new SW versions. The version information may alternately be confirmed on the Network Status tab on the CVSM.

21. This completes the radio update

22. Close the browser

23. Return to the service tool. In the Change device configuration settings box click the **save or cancel** button to close the Change the device configuration settings dialog

24. End of procedure

**Quality Documents:**

- **All service centers using SAP to record service transactions:** For each monitor serviced, record the service activity in SAP.
- **All other service centers and Field Service:** For each monitor serviced, complete and file a service report and attach to the service DHR.

**Notes:**

1. Contact the Welch Allyn Complaints Department to initiate or process a medical device complaint resulting from this or other issues.
2. Drawings, illustrations, and part numbers in this document are for reference purposes only and subject to change.

**End of Bulletin**

**Revision History**

<table>
<thead>
<tr>
<th>Version</th>
<th>Description</th>
<th>Change #</th>
<th>Init</th>
<th>Release Date</th>
<th>Appr</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>TSB – PLFM Radio Ver 2.30.00 Upgrade</td>
<td>GCS</td>
<td>2011-06-10</td>
<td>D*</td>
<td></td>
</tr>
</tbody>
</table>

D* - Refer to SAP DIR digital signature log for approval details.