Operations Manual

Read15 Alignment Software

June 2019

HAMAR LASER
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Table of Contents

Read15 Software for PDAs

Read15 is an alignment program that runs under Windows CE™ on handheld PDAs. The program acts as a multi-target readout when used with Hamar Laser's A-1519-2.4ZB and A-1520-2.4ZB Wireless Targets and L-730/L-740 Series scanning lasers, providing a graphic display for basic alignment functions.

This manual assumes that you are familiar with the operation of the PDA and the Windows CE™ program. To navigate through **Read15**, *use the tabs at the bottom of the screen*.

Except when instructed, clicking **OK** in the upper right-hand corner of the screen will *close* the program. Before performing an alignment, it is suggested that you view each program screen and follow the descriptions of the features in this manual. Selecting the **Read15** icon displays the opening screen (see Figure 1).
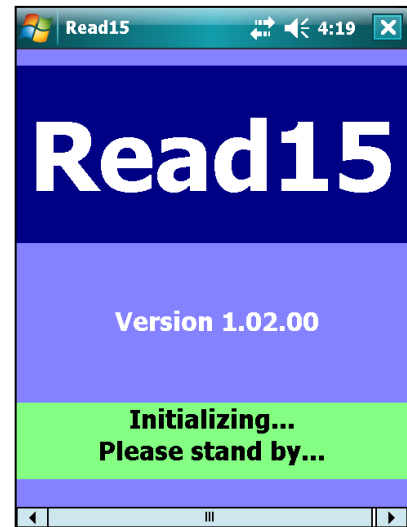
Figure 1 – Read15 Opening Screen

Using Read15 with the Nomad PDA Equipped with a ZigBee Radio

Your Nomad PDA comes with **Read15** preinstalled. Click **Read15** from the Start Menu to open the program.
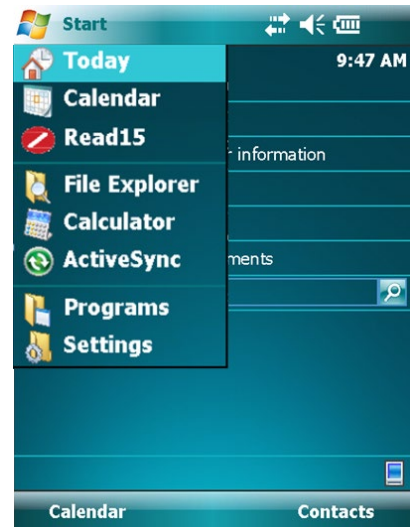
Launching the Read15 Manual

The **Read15** manual is loaded on the Nomad PDA. To launch the manual, press the button indicated.

1. Highlight **Read15** and click **Open** to launch the manual.

2. Use the Zoom buttons to enlarge or reduce the document on your screen.

3. The arrow buttons at the bottom of the screen move the document to the next page, forward or backward.

4. Double arrows jump ten pages, forward or backward.

Using Read15

Preferences Tab

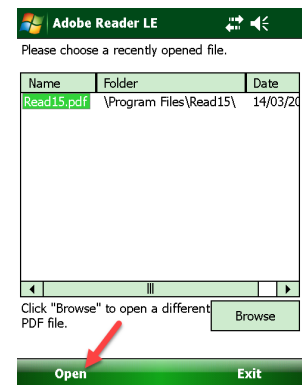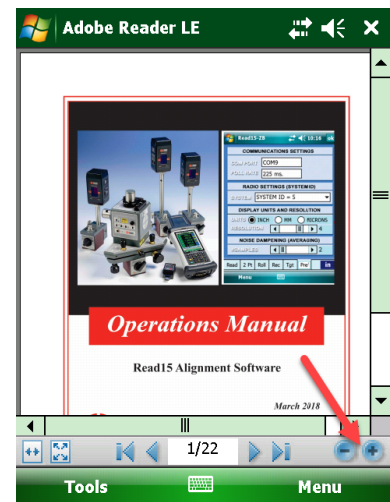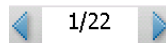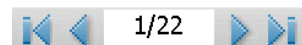When starting to use **Read15**, establish **Preferences** first. Click **Pref** to make changes.

- **Display Units** – Select the preferred units to be displayed: *INCH*, MM or *MICRON*.
  Note: *Microns are calculated by multiplying the MM value times 1,000.*
- **Resolution** – Select the number of decimals to display for all target values.
  Note: *The maximum number of digits for INCH is 5, for MM is 3 and MICRON is 2.*

Data Averaging

Readings received from the target are averaged in order to reduce the amount of data noise (fluctuation) seen on the displays. Typically, noise can come from atmospheric turbulence or vibration of the surfaces on which the laser or target sit. On the **Read** tab, users may choose one of three possible settings: *BI- Fast, BI-Slow and Measure*.

- **Data Averaging (BI-Fast)** – Controls the number of samples used for the averaging for the *BI-Fast* (Buck-In Fast) selection on the **Read** tab. Use this for buck-ins (setups).
- **Data Averaging (BI-Slow)** – Controls the number of samples used for the averaging for the *BI-Slow* (Buck-In Slow) selection on the **Read** tab. Use this for long distance buck-ins.
- **Data Averaging (Measuring)** – Controls the number of samples used for the averaging for the *Measure* selection on the **Read** tab. Use this when taking data. It uses a slightly better averaging algorithm to minimize noise.
  - **#Samples -** Controls the number of samples used for the averaging for the *Measure* selection on the **Read** tab.
  - **Accel –** select the approximate distance the target will be away from the laser. This flushes the buffer so the data will update faster when using higher sampling. The threshold is ±.002 in. (0.05 mm) per 10 ft. (3.3 m). Therefore, if the target value is over .002 in. from the average, the buffer will be emptied so that "good data" will be used. This is useful when first putting the target down each time to take a data point, where some large, non-relevant values will be detected by the target since it will start detecting the laser before it is set on the surface.

Com Setting Button

Click on the **Com Setting** button and a new screen displays with:

- **Com Port–** This is the COM port on the PDA used to communicate with the radio. Normally this is not changed and is password protected. Please contact Hamar Laser Support to get the password.
- **Poll Rate** – The rate at which the command for the target to send its data to the PDA is set. It is password protected and generally is not changed. Please contact Hamar Laser Support to get the password.
- **System ID** – The radios used in the A-1519/1520 Zigbee targets allow the ability to set different system IDs, so multiple sets of targets/lasers can be used in the same area.
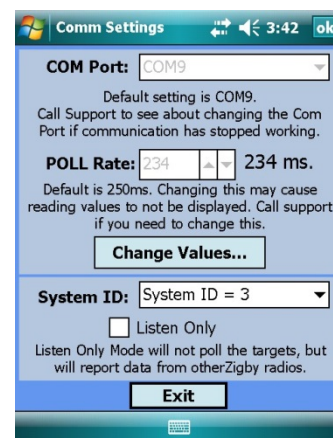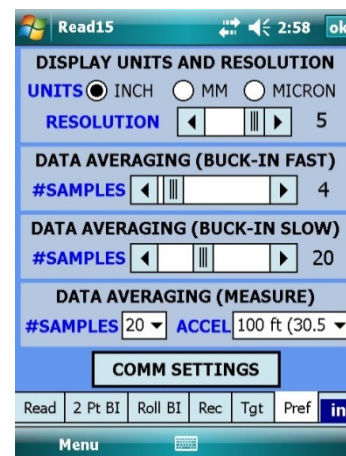
To use this feature, each set of laser/targets must have its own unique System ID. See Appendix B on Page 18 to see how to change the System ID on the A-1519/1520 targets.

To allow the PDA Zigbee radio to receive the data from the targets, you must match the System ID on the targets to the System ID set here in **Read15**. Click the **System ID** dropdown menu to change the System ID. Wait 15-20 seconds for the change to take place.

Target Tab

The **Targets** (**Tgt**) Tab is where each target ID is selected for the displays in the **Read** tab. Each **Display** field can be changed to a specific Target ID. The Target ID is shown on the side of the A-1519-2.4ZB/A-1520-2.4ZB target housing (see Appendix A beginning on Page 16) and is normally set by the factory and not changed.

The default setting for the **Read** tab is *Single-Axis Target,* showing Target IDs 1 to 5 with each display enabled. The default ID for each display is noted in the **Target** tab by "ID=#".

To change a display's Target ID, click on the dropdown list (down arrow) and select the new Target ID. To disable a target display, select **DISABLED** from the *top* of the drop-down list.

Note: *If only using three targets, select the Target IDs for the first three displays and disable the remaining displays. When disabling a display, the radio will stop "polling" that target ID, so the target data update rate will increase for the other targets.*

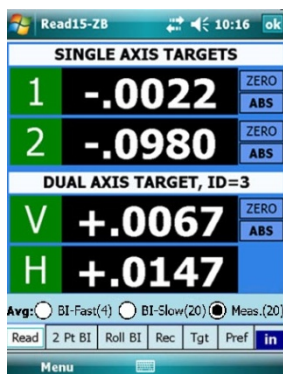### Choosing a 2-Axis Target Display

If using the R-1307-2.4ZB 2-Axis Readout with Zigbee communication capability, you can also display the data for 2-axis targets in **Read15**. To configure the displays, click the checkbox next to the *Chain* icon (chain link) and the two displays will be linked to a 2-axis target. You will need to pick the target ID to match the target ID set in the R-1307-2.4ZB. In this example, Displays 4 and 5 will be linked to an R-1307-2.4ZB Readout with a Target ID = 3 (see Figure 3).

Note: *If you are not using single-axis targets, too, then disable the Displays 1 & 2 (or hit the link button for Displays 1 & 2 and disable Displays 4 & 5) to speed up data communication.*

Here is an example of the **Read** tab being configured with 2 single-axis targets (#1 and #2) and a 2-axis Target with an ID=3 (see Figure 2).
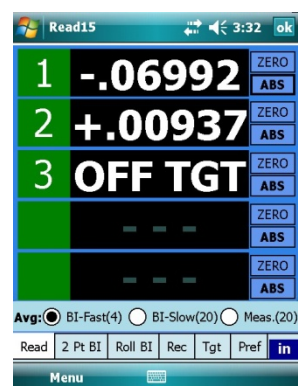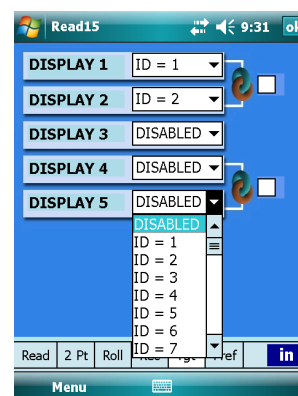
For 2-axis displays, the display ID will change to:
- **V** - means the target's *vertical* axis
- **H** - means the target's *horizontal* axis.

Figure 3 – *Read15* **Read** *tab showing two single axis targets and one 2-axis target*

Figure 2 – *Read15* **Target** *tab, showing a 2-axis target selected for Displays 4 and 5*

READ Tab

The **READ** tab screen provides a real-time numeric display of A-1519-2.4ZB/A-1520-2.4ZB Single-Axis Target data values or two 2-axis wired targets using the wireless function in the R-1307-2.4ZB Readout.

The display numbers 1 through 5 refer to the corresponding Target IDs that are labeled on the side of the targets. Up to five target data values can be displayed simultaneously, as shown in Figure 4. Each **READ** tab target display can show one of the following:

Value

A numeric value represents the position of the laser plane relative to the target centerline (see Figure 5). A *positive* reading indicates that the point on the surface being measured is *above* the laser plane reference; a *negative* reading indicates that the point is *below* the laser plane reference.

OFF TGT

When the target stops detecting the laser beam, **OFF TGT** displays, which means the A-1519/1520 target is communicating normally with the PDA but the laser plane is *not* hitting the target. This could be due to the target not being pointed directly at the laser or something blocking the laser beam. When the target detects the laser plane, the display automatically updates to show the current value.

Blank Readout Displays

If *no* information is displayed in a **READ** target display, either a target (1-5) is not present or it is out of range of the ZigBee Receiver.

Blank Target ID

If the target ID (white number in green box) is missing in a display, the target is <u>disabled</u> in the **Pref** tab. Go to the **TGT** tab to enable communication with the targets.
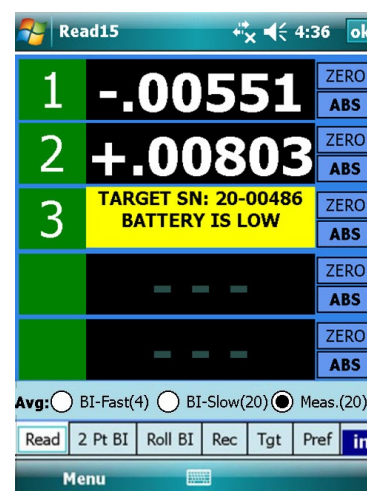
Low Battery Warning

The A-1519-2.4ZB/A-1520-2.4ZB Single-Axis Target features a battery-life indicator for each target that Read15 can use to warn if a target's battery life gets too low. When the battery life is too low, **Read15** automatically displays a warning message.

Figure 4 – *Read15 Read Screen*

Figure 5 -- *Universal Wireless Target (showing centerline)*

Excessive Light Warnings

The A-1519-2.4ZB/A-1520-2.4ZB Single-Axis Target features an automatic background-light correction function for extremely accurate readings. The targets are able to subtract the effects that background light has on the readings to increase accuracy. Also, if the background light gets too bright for the target to get accurate readings, a warning message displays.

Note: *The use of target light shields (included with each target) may help reduce the excess background light. In outdoor applications, optional narrow-band light filters are required to block the sunlight so the target can detect the laser beam.*

Mode Buttons

The buttons located to the right of the target boxes are used to set the data display mode (see Figure 6). Click on ABS or ZERO to toggle between ABSolute and ZERO modes.

- *Absolute Mode* – in *ABS* mode, the value indicates where the laser plane hits the target cell relative to the target's electronic centerline (zero) – see Figure 6. The numbers in the display will be white.

- *Zero Mode* – when *ZERO* mode is selected, **Read15** applies an offset to zero the display. All target values then indicate the elevation of the point relative to the zeroed value. To zero a target, place it on a reference point, wait a few seconds for the display value to settle down and hit *ZERO*. When the display value has been zeroed, it will turn yellow.

You can re-zero a point by clicking Zero. A warning message displays asking if you want to re-zero or not (if you click ABS and then click Zero, the same message displays). To keep your existing Zero Offset, click **NO**.

Averaging

Located under the last display box is the *Averaging* (*Avg:*) selection area. Each display value is an average of a user-selected number of data samples. There are three average selection modes:

BI-Fast(4) – This is "fast" averaging used for buck-ins where the number of values averaged is set to 4 in the **Pref** Tab.

BI-Slow (16) – This is "slow" averaging used for long-distance buck-ins where the number of values averaged is set to 16 in the **Pref** Tab

Meas (20) – This averaging uses a different algorithm to further smooth out data noise (fluctuations), where the number of values averaged is set to the user-defined value selected in the **Pref** tab. This is used when taking data after the buck-in.
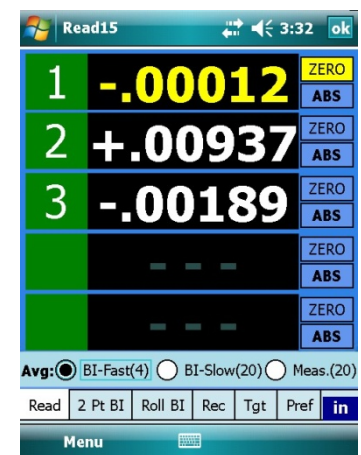
Figure 6 –READ Screen showing Mode Buttons and Averaging

When severe turbulence or vibration exists in an alignment situation, the level of averaging should be increased to help smooth out the target fluctuations (measurement noise). In these situations, first try **Slow** Mode, and if that doesn't help, go to the **Pref tab** and select a higher value until the fluctuations decrease to desired levels. When you are ready to take data, select **Meas.**

Note: *In severe fluctuation environments, such as measuring in direct sunlight or near welding or safety lights, the averaging probably won't provide enough reduction in measurement noise. In these cases, the **source** of the fluctuations must be reduced.*
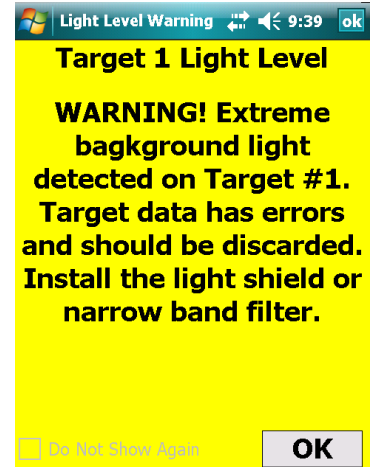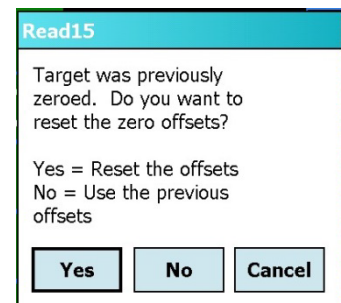
Read Tab – Target Status

Click on **Menu** and then click ***Show Target Status*** to see the status of each target with the following info:

- Current data point
- Remaining battery life
- Inside temperature
- Current light level
- Serial number

The information is displayed in the data area for each target. To close down this information, click on another tab or click on **Menu** and ***Hide Target Details***
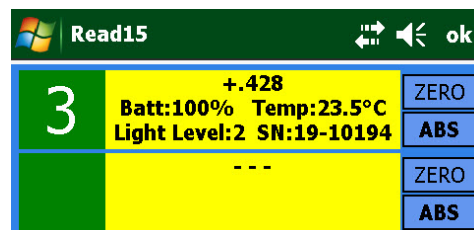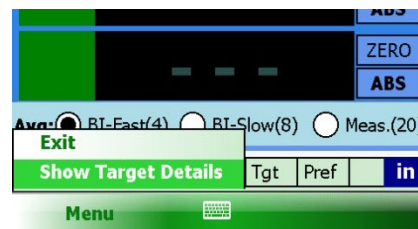
Read Tab – Popup Mode

If you need to see the display values from far away, you can pop up the displays in a *landscape* screen format to get bigger data displays. To pop up the displays, double-click the green display-number area on the left side of the display box.

To see displays 1-3 in the popup window, double-click the 1 (green area) display. To see 2-4 in the popup, double-click the 2 (green area) display, etc.

To return to the portrait display, click **Exit**.
Note: *The ABS, REL and Zero buttons are not enabled in Popup Mode.*
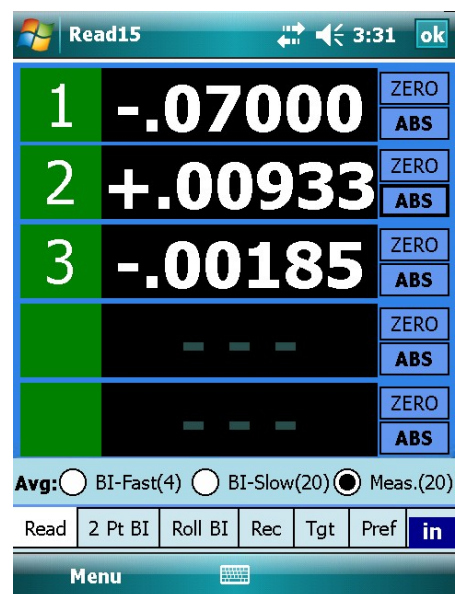
**Figure 7** – *READ Screen Popup showing Targets #1, 2 and 3*

8

Two-Point Buck-In Tab

The **Two-Point Buck-in** tab is used to make the process of making the laser parallel (bucked-in) to two reference points easier. There is a short procedure to follow that requires measuring the dimensions between the target and laser. When done with this procedure, the laser will be "bucked-in" (made parallel to) two points on a surface.
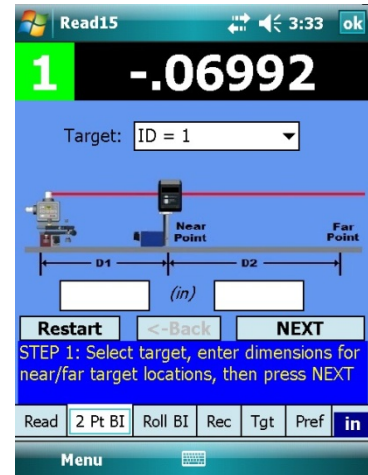
Step 1 – Setup

a. Select the Target ID to use by using the dropdown menu.
b. Select a location to place the laser.
c. Select the *Near* and *Far* reference point locations on the surface to be measured – see Figure 8.
d. Measure the D1 dimension from the laser's Pivot Point to the center of the target post on the *Near* reference point.
e. Measure the D2 dimension from the center of the target post on the *Near* reference point to the center of the target post on the *Far* reference point.
f. Enter the two dimensions in the entry boxes and click **Next**.
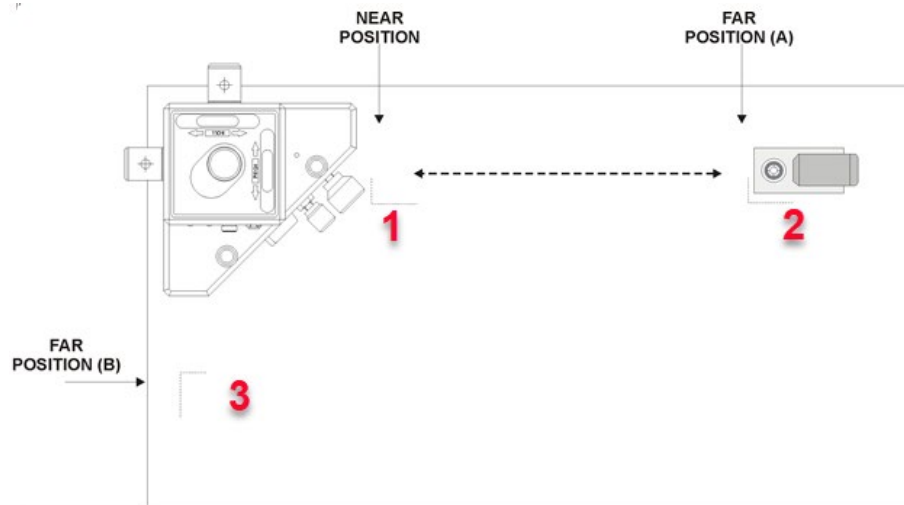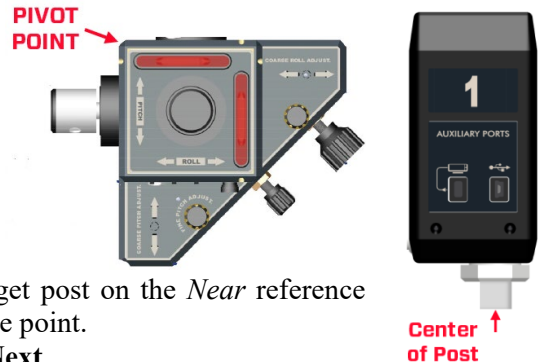
Figure 8 -- *Recommended Buck-in points to measure the flatness of a surface.*

9

Step 2 – Zero Target and Record Data

a. Place the target on the *Near* point, and when the displayed readings settle down, tap the yellow **ZERO** button.
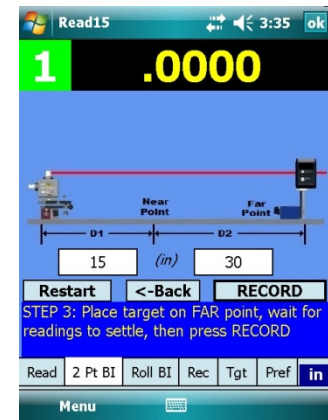
b. Place the target on the *Far* point, and when the displayed readings settle down, press **RECORD**.
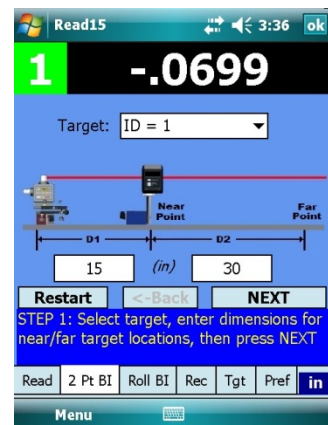
c. Read15 calculates a **Set Point**, which is the value that you want the target to read when you finish tilting the laser beam. This bucks-in the laser to the two reference points.
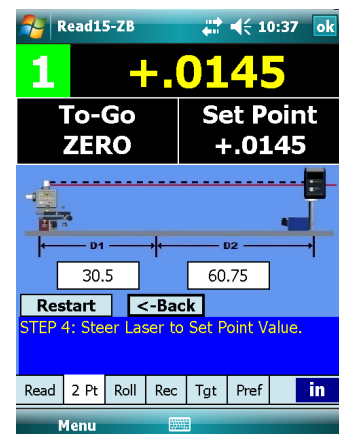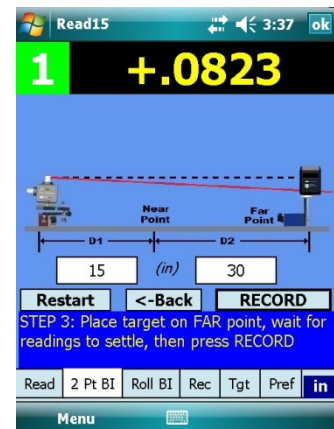
Step 3 – Tilt Laser to Be Parallel to Reference Points

a. There are two ways to use the *Set Point*:
   - **To Go** – This is the amount the laser beam needs to be tilted until the *Far* point value is equal to the *Near* point value. Here you will tilt the laser until the **To Go** value is zero.
   - **Set Point** - This is the value you want the main display value to be set to. The laser is bucked-in when the display value equals the Set Point.
b. Tilt the laser until either the **To Go** value is zero or the *display* (yellow) value equals the **Set Point**.
c. Move the target back to the Near Point and the value should be equal to the **Set Point**.
d. If not, then repeat Steps 2 and 3 until the display values are zero at both the *Near* and *Far* points. The laser is now bucked-in to the two reference points for a line on a surface.
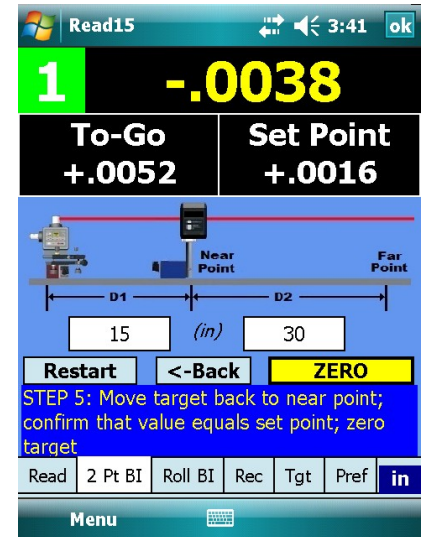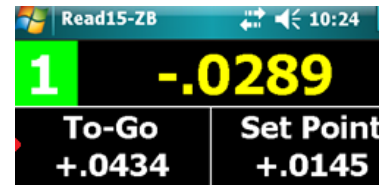
To measure the flatness (vertical straightness) in a *line* between the *Near* and *Far* points, move the target to another point on the surface and the display value will be a measure of that point's alignment relative to the reference points.

To measure a surface *plane*, you will need to find a third reference point and repeat Steps 1, 2 and 3 until the target reads zero on *all three* reference points (see Figure 8). When the laser is bucked-into three points, the entire surface can be measured (rather than just one line on the surface).

Using 2 PT BI Tab for Three-Point Buck-In (Flatness)

The 3-Point Buck-In procedure requires adjusting the laser plane to be parallel to three points on the surface being measured; for example, a table top, a surface plate, or a way surface. Any three points on a surface may be used, however Hamar Laser recommends the "L" setup illustrated in Figure 9.
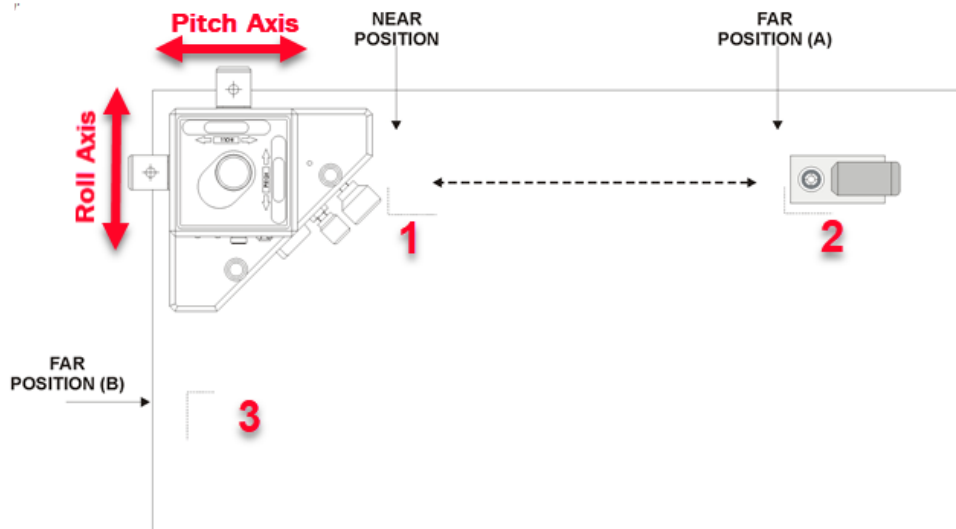
Figure 9 – *3-Point Buck-in Using One Target using the "L"Setup*

When performing this procedure, it is best to place the laser source in a position that is as close to the near target position as possible. The third target position should be approximately 90 degrees to these two points.

Three-Point Buck-In Procedure Using One Target

1. Follow Steps 1-3 above using the 2 PT BI Tab for the Pitch Axis
2. With the target zeroed on Point 1, move the target to Far Position b (Point 3) and tilt the Roll Axis on the laser until the readout reads zero. Use only the laser adjustment knobs that face the target when tilting the laser beam (in the setup displayed in Figure 9, this would be the ROLL Axis adjustment).
3. Recheck the readings at the Near Position and at Far Positions A and B (1 and 2) and adjust to zero if necessary.
4. When all readings are zero without adjustment, the laser plane is parallel to three points on the surface and it can be measured for flatness by moving the target to any point on the surface. You can also measure a second surface for parallelism by moving the target to that surface and measuring its flatness.

Three-Point Buck-In Procedure Using Multiple Targets

This method requires three targets. The procedure is basically the same as with one target, but it saves the time required to move a single target to the three different footprints.
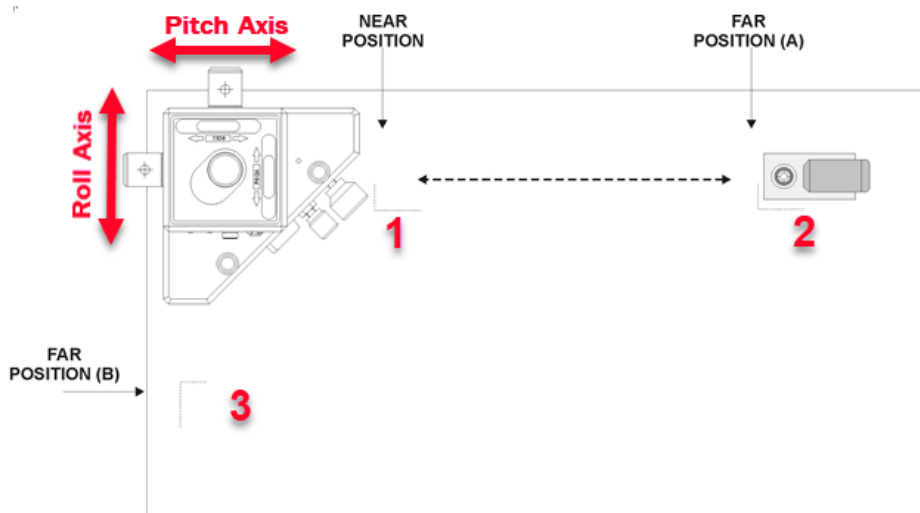

Figure 10 -- *Three Point Buck-in Using Multiple Targets*

1. Using the **Read** tab, zero all three targets on the same point (#1) near the laser.
2. Place two of the targets on the other two footprints (points 2 and 3).
3. Tilt or aim the laser until all three readouts read the same numbers and the same sign. In the example above, let's say Target 1 is on Point 1, Target 2 on Point 2 and Target 3 on Point 3. It is best to start with the target that is farthest from the laser (Point 2) and tilt the laser until that target value equals the target nearest the laser.
   a. In the example above, you would first look at the values for Target 2 and tilt the Pitch Axis until the Target 2 value equals that of Target 1.
   b. Adjust the Roll Axis until the Target 3 value equals Target 1.
   c. Recheck the Target 2 value to make sure it is still the same as Target 1. If not, repeat the process.
4. When all three target values are the same, the laser plane is parallel to all three points. To measure for flatness, zero one target on the near point and move to the desired locations.

Roll Alignment Buck-in Tab

The **Roll Buck-In** tab is used to align the laser plane (usually the side or rear plane) to reference targets in roll alignment. Using the Yaw axis knob, the goal is to align one of the vertical laser planes, on the L-743/L-733/L-742W/L-732W laser parallel to the offset-centerline reference targets. Please refer to the Hamar Laser's Training Manual for a more detailed description of roll alignment.

Transfer Laser Buck-in Procedure

Here is a procedure to transfer the laser to a new section of the machine using the **Roll** tab, assuming the laser has already been bucked-in to the reference roll and the reference targets have been set up.

To transfer the laser to another section of the machine:
1. Move the laser to the new section of the machine.
2. With the laser rotation turned off, rotate the spindle by hand and roughly align the laser to the two reference targets until you see the laser beam hit in the window on both reference targets.
3. Using the dropdown menus (*ID = X*), select the target IDs for the reference targets. Typically, Target #1 is used to measure the rolls and #2 and #3 are used as the reference targets.
4. Power on the laser. You will see a display value in green. This value is the difference between the values of the two target IDs selected above. This value is a measure of how far out of alignment the laser plane is to the reference targets.
5. Use the *coarse* and *fine* (L-743, L-742W) *Yaw* adjustment knobs on the laser base until the display value is zero or within your buck-in tolerance.
6. As you adjust the laser, the laser line's angle will update, indicating whether the laser is getting closer (angle is decreasing) or farther away (angle is increasing) from being parallel to the reference targets.
7. When the display value is at zero (or within your tolerance), the laser line will be parallel to the white centerline, indicating the laser is now bucked-in to the two reference targets. You can now measure the roll on the machine for alignment.

13
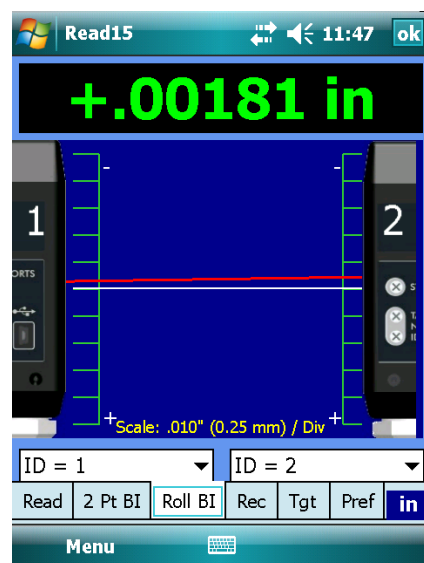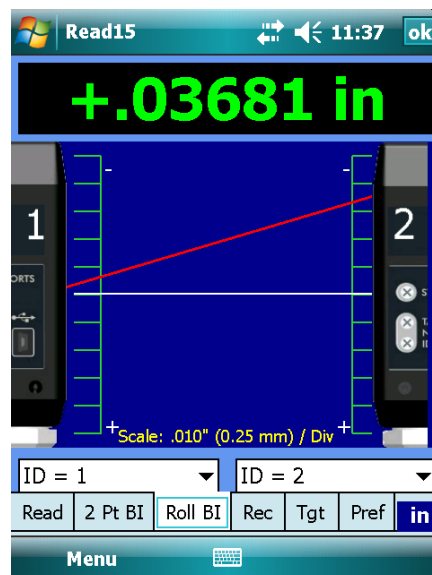
Record (Rec) Tab

The **Record** (Rec) tab is used to record data points. You can record up to 500 data points and save the data in an XML or CSV (Excel) format:

- **CSV** – Comma separated values. Commonly used for import to programs such as Microsoft Excel.
- **XML** – Extensible Markup Language. This format can be opened by a number of programs, including Internet browsers.

Read15 records the data point number, target value, date/time and units used in the measurement. The number of digits shown in the display area is set by the value in the **Pref** tab.
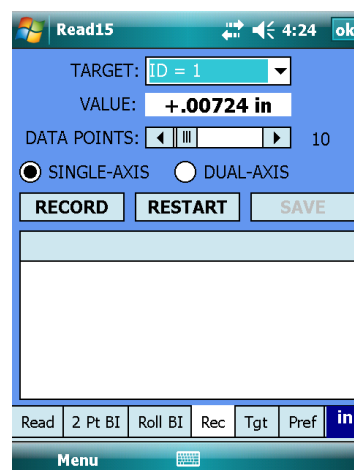
To record data:
1. First select the target ID that you want to record by clicking on the dropdown menu for **Target**.
2. Select the number of points to measure by sliding the bar to the desired number of points in **Data Points**.
3. Click **Single Axis** for A-1519-2.4ZB/A-1520-2.4ZB Single-Axis Targets or **Dual Axis** for recording the data of a 2-axis target using the R-1307-2.4ZB Readout.
4. Move the target to the first data point, wait a few seconds for the readings to settle down and tap **RECORD** to record a data point. A value and the date/time appear in the display area.
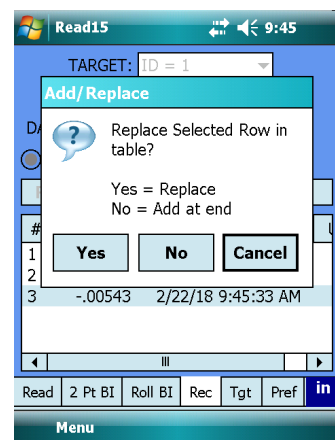5. Move the target to the next point and repeat.
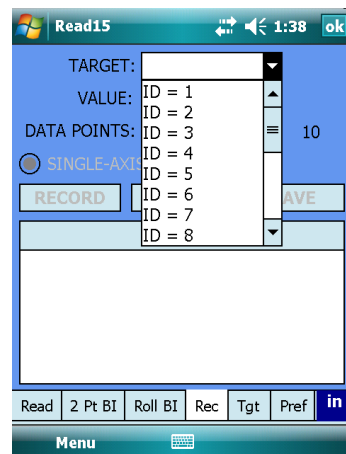
To re-record a point, click on the row in the data table and click **RECORD.** A warning message provides the following options:

Yes – records the new data over the old point.
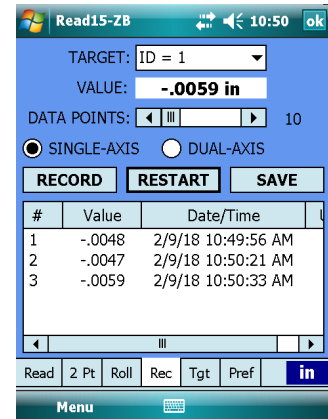**No** – records the data point at the end of the set of data.
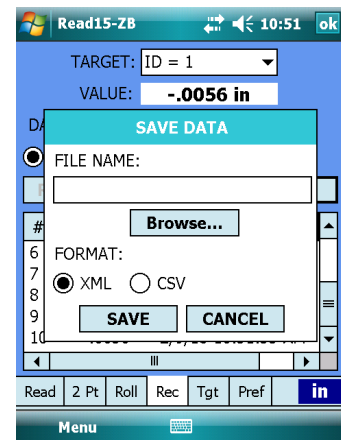**Cancel** – closes the window and does not record the data point.

Saving the Data File

Once all data points are recorded, press **Save**. The program will prompt you for a file name and/or location. The default is the **Read15** folder within the system Application folder.

Note: *You may have to click the keyboard icon at the bottom of the screen to display the keyboard in order to enter the file name.*

Appendix A – A-1519/1520 Type II Wireless Targets - Overview

The A-1519/1520 Type II Universal Wireless Targets incorporate new features and provide greater capabilities than previous wireless targets offered by Hamar Laser. New features include:

- Built-in radio transceiver, available in either 900 MHz or 2.4GHz ISM band
- Internal Li-Polymer rechargeable battery with twice the capacity of previously offered targets
- Rechargeable through a plug-in power supply or an optional charging station/cradle
- Field-Programmability: System ID and Target Network ID programmable via rotary DIP switches. Firmware Updates, Calibration and Other Parameters configurable through the USB Port, using the A-1519/1520 Configuration Utility.
- Three data communication modes: Wireless (Radio), RS-485 and USB
- Auxiliary Port for future expansion, such as a numerical display or external temperature sensor Improved Background light noise suppression
- Internal dampening by averaging of 2 to 64 laser position scans

Identifying Target Features

(1) Right Side Auxiliary Ports	(2) Front View	(3) Left Side ID Switches	(4) Rear View
1-1 Auxiliary Port. Expansion Port. **1-2** USB Port. Used to update target firmware, upload calibration data, configure operating parameters and run diagnostics. Can also be used as a Data I/O port, compatible with standard applications.	**2-1** Target Status LEDs. *Steady* when the laser scanner is detected and all conditions are normal. *Blinks* at different rates when an abnormal condition is detected. **2-2** Battery Charging Indicator. **2-3** Low Battery Indicator. **2-4** Position Sensor Aperture Window. **2-5** Optional Light Shield Mounting Holes (4x).	**3-1** System ID rotary switch used to set the System ID Group Number 0-9. **3-2** Target Network ID. Used to set the Target Network ID from 01 to 99.	**4-1** Radio regulatory information. **4-2** RS-485 and plug-in power supply connector. **4-3** Serial Number Label.

Figure 11 – Universal Wireless Targets

Using the Target as a Height Gage

The UniTargets can be easily converted to a height gage by attaching precision spacers and the spherical tip to the base of the target. Since the center of the target has been set to a tightly controlled dimension, the exact dimension from laser plane to the measured surface can be obtained. Optional precision spacers are available in 1 in. (25.4 mm), 2 in. (51 mm), 3 in. (76 mm) and 6 in. (154 mm) sizes, all of which are accurate to .0003 in. (0.008 mm).

The precision spacers screw into the threaded hole in the base of the target where the shaft for the magnetic base is normally installed. The spherical tip screws into the bottom precision spacer. Multiple precision spacers can be screwed together to ensure that the target reaches the laser plane, but the spherical tip, which is used to touch the surface being measured, must be on the bottom.
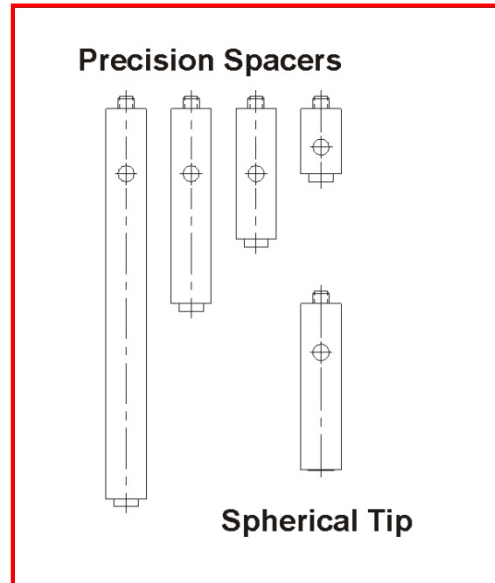

Figure 12 – *Precision Spacers/Spherical Tip*

Appendix B – Setting the Target System ID and Target Network ID (A-1519/A-1520 Targets, A-910-900/2.4, A-910-2.4ZB)

The System ID is a Radio Network Address that is used by the Radio Communications Protocol to filter unwanted data from other radio transceivers and targets using a different address. Only targets and radio transceivers that are set to a matching System ID can communicate with each other.

Because no two targets with the same System ID can transmit simultaneously, it is necessary for each target to be programmed to respond only when it is being addressed. The Target Network ID is the target address on the communications network. Under Host (computer) control, the radio transceiver transmits a message called a *polling request* that contains the Target Network ID of one specific target. All targets receive all polling requests, but only the target with a Network ID matching the ID contained in the polling message will reply (Transmit Data to the Host).

There are three rotary DIP switches located on the right side of the target, shown in Figure 13:

- The uppermost switch sets the System ID.
- The two lower switches are used to set the target network ID.

Setting the System ID

Note: *Before selecting a System ID, ensure that it is not already in use by another system within the radio coverage area.*

Using a small screwdriver, rotate Switch 1 to align the arrowhead with the System ID number (0-9). Figure 13 shows the System ID switch set to 1.

Figure 13 – *Unitarget ID Switch set to 1*

18

Appendix C – Restoring the Read15 Software

1. (*Optional only if you still have a non-working copy of Read15 on your PDA*) Uninstall any previous versions of the Read15 software. Click Start> Settings>Tape on the **System** tab. Scroll down to **Remove Programs**. Highlight the Read15 Software and click **REMOVE**.
2. Connect the Nomad PDA via USB cable to the PC.

    NOTE: *You must have ActiveSync for Windows XP installed before connecting your PDA to your PC. If you have Windows 7,8 or 10, you can connect your PDA and Windows Mobile Device Center will install the drivers and begin installing the Device Center for you.*

3. After you are connected to your PC, copy and paste all of the **Read15** files from your PC to the Nomad.

a. In Windows XP using ActiveSync, click **Explore My-Windows Mobile Based Device**, open the Program Files folder and create a new folder called Read15ZB to paste the files in.

b. In Windows Vista/7/8/10, using the Windows Mobile Device Center, click **File Management> Browse the Contents of Your Device.** Double-click the \ drive, open the Program Folder and create a new folder called Read15ZB to paste the files in.

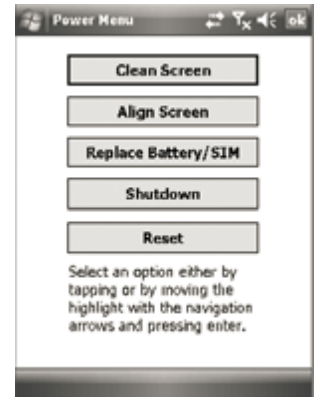# Appendix D – Reinstalling the Zigbee Driver

If HLI Support determines there is a problem with the Zigbee radio driver, follow this procedure for re-installing the driver to restore communication.

1. **Disconnect Nomad PDA from PC and Shut PDA off**
   Power menu: Hold down the **Power** key for about three seconds to display a countdown. Continuing to press the **Power** key will cause a reset when the countdown reaches zero. If you release the **Power** key while the countdown is proceeding, you access the Power Menu. Tap **SHUTDOWN.**

2. **Remove the top boot of PDA**
   Using the screwdriver on the stylus, unscrew the two screws ¼ turn each on the Top Boot. Lift the boot off the PDA.


3. **Gently remove the Zigbee Radio card by lifting upwards**

4. Re-Installing Driver and Files

   a. Press the green power button to turn the PDA back on.

   b. Tap **Start** and click **Programs>File Explorer**. Using the small dropdown arrow located near the top left of the screen, select **My Device**. Tap **Program Files>Read9ZB>Driver – New Zigbee Board** to open the folder. Tap the file to install the driver. When setup is complete, tap the dropdown arrow and select Read15ZB.

   d. Install **NetCFv35.wm.armv4i.cab, Read15_Setup.cab and Prog-ZB.Setup**. After each file is installed, tap the **X** in the top right corner to exit the setup screen.

   e. Shutdown the PDA and reseat the Zigbee Radio

      • Press and hold the green power button for about three seconds until the countdown begins. Tap **Shutdown**.

      • Align the Zigbee radio card to the socket and align the gold prongs to their sockets. Push down gently, making sure not to bend the prongs.
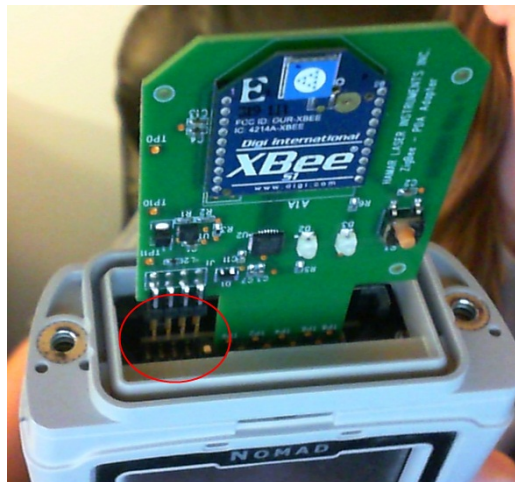
5. Replace top boot cap and tighten the screws, ¼ turn clockwise.
6. Press the green power button to turn on the PDA. A popup displays *Unidentified USB Device*. Enter **CP210xVCP** for the driver name and press **OK**.
7. Tap **Start** and scroll down to Read15ZB to start the program. Change the COM Port to COM9 and SYSTEM ID to SYSTEM ID = 1. Tap **OK** to exit
8. Tap **Start>Programs** and scroll down to Read15. Select the **Setup** tab. Change COM to COM9 and tap **Apply**. Tap the circle next to **Radio**. Tap **OK** to exit. In the popup, select **Yes** to save the setup. Read15 will then close and is now reinstalled.