For more information, refer to the documentation provided with the postprocessing software.

Postprocessed real-time DGPS

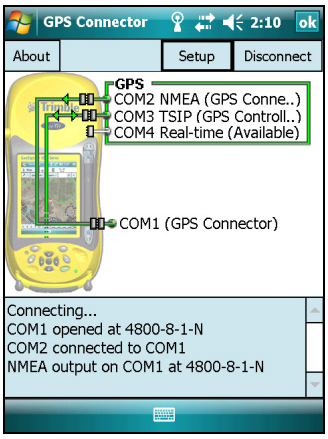
If you collected data with decimeter or subfoot accuracy in real time, you do not need to postprocess the data.

However, if your data files contain autonomous (uncorrected) positions as well as real-time corrected positions, Trimble recommends that you postprocess the data. During postprocessing, you can choose whether to correct only autonomous positions, or all positions.

If you collected data with submeter accuracy in real time, Trimble recommends that you postprocess the data, as postprocessed data is often more accurate than data corrected in real time.

For more information about GPS and DGPS, go to www.trimble.com/gps and review the All About GPS tutorial.

Outputting GPS data to external equipment

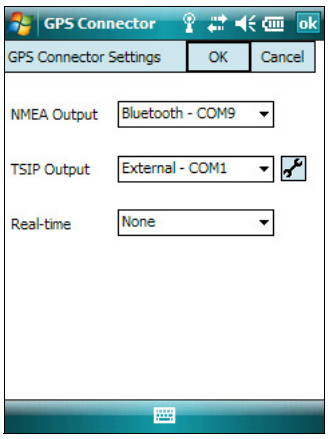


The GPS Connector software is pre-installed on the GeoExplorer 2008 series handheld. Use the software to specify how the integrated GPS receiver communicates with equipment that is connected to one of the handheld's external communications ports.

To open GPS Connector, tap / *Settings* / *Connections* / *GPS Connector*.

The GPS Connector software lets you connect the GPS COM ports to COM1 or Bluetooth ports and configure port settings such as the baud rate. GPS Connector software has a graphical display that shows all active connections, and a text display that shows connection messages.

Use the GPS Connector software to output NMEA or TSIP messages from the integrated GPS receiver to another device, such as an external data collector.



Note – *If you are using a Bluetooth port, ensure that the Bluetooth radio is on and the handheld is visible to other devices. Use the GPS Connector software to configure NMEA or TSIP output to Bluetooth - COM9, which is the pre-defined Bluetooth Host Serial Port. For more information, see* *Providing Bluetooth services as a host, page 107*.

The connections that you create in the GPS Connector software are active only while the software is running. Connections created by the GPS Connector software are labeled GPS Connector in the status screen and end when you exit the software.

For more information, refer to the *GPS Connector Help*.

CHAPTER

6

Getting Connected

In this chapter:

The GeoExplorer 2008 series handheld includes an integrated wireless LAN radio and an integrated Bluetooth radio, and provides a number of options for connecting to networks and other devices.

This chapter describes how to enable the radios, and the main connectivity options available.

Use the table on page 81 to identify the wireless connection type you want to make and then follow the steps provided to connect to that device.

You can use the handheld's integrated wireless LAN radio to connect to the Internet or a corporate network using a wireless LAN (Local Area Network) connection.

Alternatively, you can use Bluetooth wireless technology to connect to the Internet using a cellular phone and then receive real-time corrections from a VRS network or download background map data. You can also connect directly to other Bluetooth-enabled devices such as a GeoBeacon receiver, a laser rangefinder, or a barcode scanner.

You can also use the optional serial clip to connect to external devices using a cabled serial connection.

General wireless connection information

The GeoExplorer 2008 series handheld has an integrated wireless LAN radio compliant with IEEE 802.11 b/g and an integrated Bluetooth radio. The handheld is shipped with the wireless LAN and Bluetooth wireless technology activated. To use the wireless LAN or Bluetooth radio,you need to turn it on (see Turning on and turning off the integrated radios below).

Note – *You may need to deactivate the wireless LAN and/or Bluetooth radio in the handheld (see below) if the country in which you are working does not approve the use of wireless LAN and/or Bluetooth wireless technology.*

Deactivating the integrated radios

Note – *If you are unsure about whether the GeoExplorer 2008 series handheld's radios are approved for use in your country, check with your Trimble reseller.*

Use the Radio Activation Manager software to deactivate the integrated wireless LAN and/or Bluetooth radio, or to reactivate the radios if they have been deactivated. The Radio Activation Manager software runs on an office computer.

The latest copy of the software is available for download from the Trimble website. Go to www.trimble.com/support.shtml, click the link for your receiver type (*GeoXH*, *GeoXM*, or *GeoXT*), click *Downloads*, click *GeoExplorer 2008 Series* and then click *Radio Activation Manager*.

Turning on and turning off the integrated radios

You can use the Wireless Manager application to turn on and turn off the GeoExplorer 2008 series handheld's wireless LAN radio and/or Bluetooth radio (see Using the Wireless Manager, page 79).

You can also turn on or turn off the Bluetooth radio from within the Bluetooth application (see Turning on and turning off the Bluetooth radio from within the Bluetooth application, page 80).

To make the GeoExplorer 2008 series handheld visible to other Bluetooth-enabled devices and enable them to connect, see Making the handheld visible (discoverable) to other Bluetooth devices, page 80.

Using the Wireless Manager

You can use the Wireless Manager application to turn on and turn off the GeoExplorer 2008 series handheld's wireless LAN radio and/or Bluetooth radio. You can turn on and turn off both radios at the same time, or control each radio individually.

To open the Wireless Manager, do one of the following:

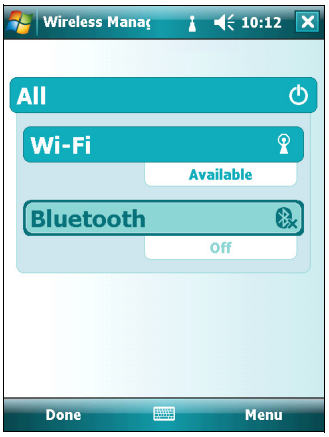
- Tap the Wi-Fi icon or the Bluetooth icon in the *Today* screen.
- Tap , , or in the title bar and then tap *Wireless Manager*.
- Tap / *Settings* / *Connections* / *Wireless Manager*.

Turn on the wireless LAN radio and/or Bluetooth radio to be able to connect to other devices or networks.

Turn off the wireless LAN radio and/or Bluetooth radio to prevent the handheld from sending or receiving wireless signals.

Tip – To conserve power, turn off the wireless LAN radio and/or the Bluetooth radio when not in use.

To turn on or turn off the radios using the Wireless Manager



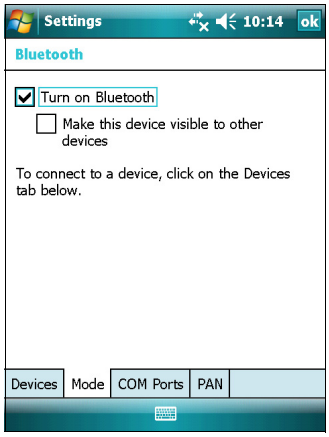
1. Open the Wireless Manager (see above).
2. Do one of the following:
   - Tap **All** at the top of the screen to turn on both radios, or to turn off both radios if they are already on.
   - Tap **Wi-Fi** or **Bluetooth** to turn on the radio that you want to use, or to turn off the radio if it is already on.

   The status fields below the **Wi-Fi** button and the **Bluetooth** button change from *Off* when the radios are turned on and show the current state of the radio. The Wi-Fi status field shows *Connecting* or *Available*, and the Bluetooth status field shows *On* or *Visible*.
3. Tap **Done** to exit the Wireless Manager.

After you turn on the wireless LAN radio, the wireless LAN icon appears in the title bar to indicate that the wireless LAN radio is enabled. A second icon appears if a wireless LAN network is detected, and a Notification for the detected network may appear in the left softkey.

Turning on and turning off the Bluetooth radio from within the Bluetooth application

1. Tap / *Settings* / *Connections* / *Bluetooth.*
2. Tap the *Mode* tab.
3. Select the *Turn on Bluetooth* check box to turn on the radio, or clear this check box to turn off the radio.
4. Tap **OK**.



Note – *If the integrated Bluetooth radio is deactivated, the message* Problem with Bluetooth hardware *may appear when you try to turn on the Bluetooth radio or discover devices.*

Making the handheld visible (discoverable) to other Bluetooth devices

To allow other Bluetooth-enabled devices to connect to the GeoExplorer 2008 series handheld, or if the handheld will not connect to or pair with another device you are attempting to connect to, you must make the handheld visible (this is sometimes referred to as "discoverable").

To make the handheld ***visible*** to other devices:

1. Tap / *Settings* / *Connections* / *Bluetooth.*
2. Tap the *Mode* tab.
3. Select the *Turn on Bluetooth* check box, if it is not already selected. This enables the integrated Bluetooth radio.
4. Select the *Make this device visible to other devices* check box.
5. Tap **OK**.

Options for connecting wirelessly to other devices and networks

The GeoExplorer 2008 series handheld has an integrated wireless LAN radio and an integrated Bluetooth radio that you can use to connect to other devices and networks.

When you are within range of an available wireless LAN access point, you can use a wireless LAN connection to connect to the Internet (at broadband speeds) or a corporate network to:

- browse the Internet or an Intranet
- send and receive e-mail and instant messages
- access files on the network

Access points are also known as "hotspots". Wireless LAN is often referred to as ***Wi-Fi***.

You can use Bluetooth wireless technology to connect to other Bluetooth-enabled devices that are within range (typically within 5 m to 10 m of the handheld). You can connect to:

- Bluetooth-enabled devices such as cellular phones to access the Internet and receive data (for example, to obtain real-time corrections from a VRS network)
- computers and other handheld devices to exchange files
- other devices such as a GeoBeacon receiver, laser rangefinder or barcode scanner

The following table lists devices you can connect to using the handheld, and where to find detailed information on how to achieve these connections.

Connection method	To...	See...
Wireless LAN	Connect to a wireless LAN access point	page 82
Bluetooth wireless technology	Connect to another Bluetooth-enabled device (paired and non-paired connections)	page 84
	Connect to a Bluetooth-enabled phone for Internet access or real-time corrections (including VRS networks)	page 88
	Connect to a Bluetooth-enabled serial device	page 94
	Connect to an office computer to use ActiveSync technology	page 97
	Output GPS data to other devices using Bluetooth wireless technology	page 100
	Enable other devices to transfer files using Bluetooth wireless technology	page 101
	Beam files to or from another device	page 102
Wireless LAN or Bluetooth wireless technology	Access a corporate network through your Internet connection	page 103

Note – *For information on connecting to external devices using the optional serial clip, see* *Connecting to other devices using the serial clip, page 109*.

Connecting to a wireless LAN access point

To connect to a wireless LAN access point, you must:

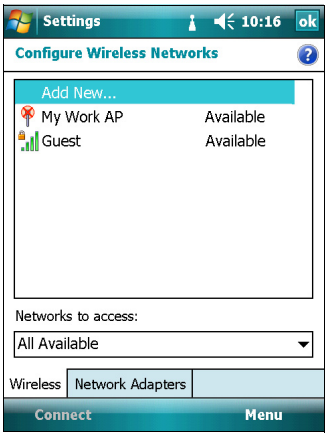
1. Set up the wireless LAN connection
2. Connect to the wireless LAN network or access point.

Note – *If you have installed a personal certificate on the handheld, you do not need to set up the wireless connection manually as described in Step 1. To connect to the network or access point go to* *Step 2: Connecting to the network or access point*.

Step 1: Setting up the wireless LAN connection

1. Make sure that the GeoExplorer 2008 series handheld's wireless LAN radio is enabled (see page 78).
2. Tap / *Settings* / *Connections* / *Network Cards*.
3. Select the *Wireless* tab.

   Any networks that you have already configured are displayed in the list of preferred networks.



4. To add a new network, tap *Add New*. To change the settings for an existing network, tap the network.
5. Enter the name of the network and other connection details and then tap **Next**.
6. To use authentication, select the authentication method from the *Authentication* list.
7. To use data encryption, select an encryption method from the *Data encryption* list.
8. To automatically use a network key, select the check box for *The key is automatically provided*. Otherwise, enter the network key.
9. Tap **Next**.
10. For increased security, select the *Use IEEE 802.1x network access control* check box and then configure additional authentication information.
11. Tap **Finish**.

Step 2: Connecting to the network or access point

1. Remove the handheld from the support module, as the handheld prioritizes a USB connection over a wireless LAN connection.
2. Bring the handheld within range of the network or access point.

   When a wireless LAN is detected, the access point icon on the title bar is animated, and a notification message appears on the left softkey.

If the access point icon or the notification does not appear, use the Wireless Manager to turn off and then turn back on the wireless LAN radio. When the wireless LAN radio is turned on, any networks or access points within range are detected and the icon and notification appear.

3. Tap the access point icon on the title bar or tap **Notification** on the left softkey.

   A popup message shows the available networks.

4. Select the network you want to connect to and then tap **OK** on the left softkey.

5. Select *The Internet (or work via a VPN)* or *Work* and then tap **Connect** on the left softkey.

6. If a *Network Log On* screen appears, enter your user name, password, and domain information and then tap **OK** on the left softkey.

   When the handheld is connected to the network or access point, the wireless LAN connected icon appears in the title bar.

7. Start using the program you want to use, for example Windows Explorer Mobile or Internet Explorer.

Note – *To disconnect from the network or an access point at any time, turn off the handheld's wireless radio. To do this, tap the wireless LAN connected* icon *in the title bar, select* ***Wireless Manager*** *and then tap the* **Wi-Fi** *button.*

Tip – To delete a wireless LAN connection, tap and hold the connection in the *Wireless* tab of the *Network Cards* screen and then select *Delete*.

Connecting to a Bluetooth-enabled device

To use another Bluetooth-enabled device with the GeoExplorer 2008 series handheld, you must form a Bluetooth connection between the two devices, during which you select the type of service to use for the connection. This defines how the devices will communicate with each other.

After forming the Bluetooth connection between the devices you may need to configure settings for the connection such as the COM port for the field software to use, or the number for the phone to dial. You must then connect to the other device using the appropriate software application.

To connect the GeoExplorer 2008 series handheld to another Bluetooth-enabled device, you can use either a paired connection or a non-paired connection.

Note – *If you are connecting to a phone, skip this section and go to Connecting to a Bluetooth-enabled phone for Internet access or real-time corrections (including VRS networks) on page 88, where the pairing step is described as part of the procedure for connecting to a phone.*

Trimble recommends using a paired connection, if pairing is supported by the other device, as a paired connection creates a more secure connection and makes reconnecting to the device easier. For more information, see Pairing with a Bluetooth-enabled device below.

Some devices, such as a Trimble GeoBeacon receiver, do not support paired connections. Use a non-paired connection if the device does not have a keyboard, and if you know that the device does not automatically exchange a pre-programmed passkey during pairing. For more information, see Setting up a connection to a non-paired device, page 86.

To connect the GeoExplorer 2008 handheld to the other device, do one of the following:

- Pair with a Bluetooth-enabled device (see below)
- Set up a connection to a non-paired device (see page 86)

Pairing with a Bluetooth-enabled device

Pairing the handheld with another Bluetooth-enabled device creates a permanent security bond between the devices, which helps to exchange information securely between the devices. The paired relationship is established when two devices create and exchange a link key. Once the relationship is established, the handheld and the other Bluetooth device only need to have their Bluetooth radios turned on to exchange information; they do not need to be visible to other devices.

To pair with a Bluetooth device:

1. Make sure that the handheld and the Bluetooth device you want to pair with are within five meters of each other, and that the Bluetooth radio in each device is turned on.
2. On the GeoExplorer 2008 series handheld, tap  / *Settings* / *Connections* / *Bluetooth*.

3. In the *Devices* tab, tap *Add new device*. The handheld searches for other Bluetooth devices and displays them in the list.

   If the device you are trying to connect is not displayed in the list, ensure that the device is on and within range and then tap **Refresh** to search for devices again.

4. Tap the name of the device you want to pair with and then tap **Next** on the right softkey.
5. In the *Passcode* field, enter a passcode of between 1 and 16 characters. If you are connecting to:
   - a device with a keypad, enter a passcode of your choice.
   - a device without a keypad, but you know that the device has a pre-programmed passcode that will be exchanged, enter that passcode on the GeoExplorer handheld.

Note – *Trimble recommends that you enter only numbers, as some devices do not support passcodes that include letters.*

6. Tap **Next** on the right softkey.
7. When prompted, enter the same passcode on the other device.

   On the handheld, the *Partnership Settings* screen appears.
8. If required, change the name of the device in the *Display Name* field.
9. Select the service(s) you want to use with this device. For example, if you are connecting to:
   - a Bluetooth-enabled phone to connect to the Internet and receive real-time corrections or download background maps, select ***Dialup Networking (DUN)***.
   - a serial device, such as a GeoBeacon receiver or a laser rangefinder, select ***Serial Port***.
   - a computer to access ActiveSync technology, select ***ActiveSync***.

Note – *For more information on the types of devices that the GeoExplorer 2008 series handheld can connect to, and the supported Bluetooth services, see* *Connecting to a Bluetooth device as a client, page 105*.

10. Tap **Finish** on the right softkey.
11. Tap **OK** in the top right corner of the screen to close the Bluetooth application.
12. Tap ☒ in the top right corner to close the *Settings* screen.

You have now created a partnership between the GeoExplorer 2008 handheld and the other Bluetooth-enabled device so that they can communicate. To start using the connection, you must complete the configuration steps for that type of connection and then connect to the device. For more information, see:

- Connecting to a Bluetooth-enabled phone for Internet access or real-time corrections (including VRS networks), page 88
- Connecting to a Bluetooth-enabled serial device, page 94
- Connecting to an office computer to use ActiveSync technology, page 97

Tip – You only need to pair the handheld with a device before you connect to the device for the ***first*** time.

Setting up a connection to a non-paired device

Setting up a connection to a non-paired device enables you to connect to a device that does not allow you to enter a passcode on the device, or that does not automatically exchange a pre-programmed passkey during pairing.

To set up a non-paired connection to a Bluetooth-enabled device:

1. Make sure that the handheld and the Bluetooth device you want to connect to are within five meters of each other, and that the Bluetooth radio in each device is turned on.
2. Tap / *Settings* / *Connections* / *Bluetooth*.
3. In the *Devices* tab, tap *Add new device*. The handheld searches for other Bluetooth devices and displays them in the list.

4. Tap the name of the device you want to connect to and then tap **Next** on the right softkey.

   The *Enter Passcode* screen appears.
5. Tap **Next** without entering a passcode.
6. If prompted to add the device to your device list, tap **No**.

   The *Partnership Settings* screen appears.
7. If required, change the name of the device in the *Display Name* field.
8. Select the service(s) you want to use with this device. For example, if you are connecting to:
   - a Bluetooth-enabled phone to connect to the Internet and receive real-time corrections or download background maps, select ***Dialup Networking (DUN)***.
   - a serial device, such as a GeoBeacon receiver or a laser rangefinder, select ***Serial Port***.

– a computer to access ActiveSync, select ***ActiveSync***.

Note – *For more information on the types of devices that the GeoExplorer 2008 series handheld can connect to, and the supported Bluetooth services, see* *Connecting to a Bluetooth device as a client, page 105*.

9. Tap **Finish** on the right softkey.
10. Tap **OK** in the top right corner of the screen to close the Bluetooth application.
11. Tap  in the top right corner to close the *Settings* screen.

You have now created a partnership between the GeoExplorer 2008 handheld and the other Bluetooth-enabled device so that they can communicate. To start using the connection, you must complete the configuration steps for that type of connection and then connect to the device. For more information, see:

- Connecting to a Bluetooth-enabled phone for Internet access or real-time corrections (including VRS networks), page 88
- Connecting to a Bluetooth-enabled serial device, page 94
- Connecting to an office computer to use ActiveSync technology, page 97

Connecting to a Bluetooth-enabled phone for Internet access or real-time corrections (including VRS networks)

Use the GeoExplorer series handheld's Bluetooth radio to connect to a Bluetooth-enabled cellular phone and then connect to the Internet. Use this type of connection to access a VRS network or other correction source from the Internet, a background map server, or for Internet and email access.

Note – *Some cellular phones support the Bluetooth PAN (Personal Area Networking) service as well as the Bluetooth DUN (Dialup Networking) service. Because DUN connections are more common, this section assumes you are making a dialup network connection with the Bluetooth-enabled phone.*

To connect to a Bluetooth-enabled phone using a Bluetooth DUN (Dialup Networking) connection, you must:

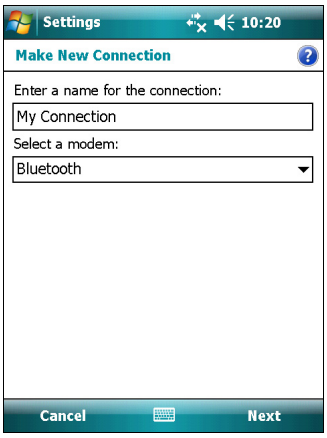
1. Connect the GeoExplorer 2008 series handheld to a Bluetooth-enabled phone and then configure the connection to the dialup network.
2. Connect to the Internet using the dialup network.
3. Configure the software to use the connection. For example, you must configure the GPS field software to use real-time corrections or map data received from the Internet source, or you must set up the Messaging application to send and receive email using the connection.

Note – *Before you begin the steps below, Trimble recommends that you confirm that the phone can access the Internet directly. If necessary, contact the cellular phone provider and confirm whether you must enter a user name, password, and domain details when connecting an external device to the phone using Bluetooth dialup networking.*

Step 1: Connecting the handheld to the phone and configuring the connection to the dialup network

1. Make sure that the handheld and the Bluetooth device you want to connect to are within five meters of each other, and that the Bluetooth radio in each device is turned on. For more information, see Turning on and turning off the integrated radios, page 78.
2. On the handheld, tap  / *Settings* / *Connections* / *Connections*.
3. Below ***My ISP***, tap *Add a new modem connection*.

4. Enter the name for the connection. For example, enter the name of the phone or the VRS network that you will connect to.



5. From the *Select a Modem* dropdown list, select ***Bluetooth*** and then tap **Next** on the right softkey.
6. If the phone you want to connect to is:
   - listed, go to Step 7 below.
   - not listed:
     a. Tap *Add new device*. The handheld searches for other Bluetooth devices and displays them in the list.

        If the handheld's integrated Bluetooth radio is turned off, it is now automatically turned on.

     b. From the list of available devices, select the device you want to connect to and then tap **Next** on the right softkey.

     c. To pair with the phone, enter a passcode of your choice that you will easily remember onto the handheld and then tap **Next** on the right softkey.

     d. When prompted by the phone, enter the same password and then accept the connection.

     e. On the GeoExplorer 2008 series handheld, in the *Partnership Settings* screen, make sure that ***Dialup Networking (DUN)*** is selected and then tap **Finish** on the right softkey.

     You have now created a partnership between the GeoExplorer 2008 series handheld and the phone so that they can communicate.
7. From the *My Connections* list, select the phone that you want to configure the connection to.
8. Enter the GPRS access number for the Internet.

   Two of the common GPRS access numbers for cellular phones on GSM networks are *99***1# and *99#. If these access numbers do not work, contact the cellular phone provider to obtain the appropriate number to use.

Note – *You do not need to set up dialling rules or change the Internet connection settings on the phone. The connection settings you enter on the handheld are passed to the phone to use for this connection.*

9. Tap **Next** on the right softkey.

10. Unless the phone provider confirmed that you must enter user name, password, and domain settings to access the Internet, tap **Finish** on the right softkey without entering any information in this screen.

    Otherwise:

    a. Enter the required information.

    b. If the phone provider has told you that you need to change the baud rate or other settings for the connection, tap **Advanced**, configure these settings and then tap **OK** in the top right corner of the screen.

    c. Tap **Finish** on the right softkey.

    You are returned to the *Connections* screen.

    You have now configured the dialup networking connection.

Step 2: Connecting to the Internet using the dialup network

1. On the handheld, go to the *Connections* screen, if it is not already open (tap / *Settings* / *Connections* / *Connections)*.
2. Below ***My ISP***, tap *Manage existing connections*.
3. Tap and hold the connection you want to use and then select *Connect*.
4. Unless the phone provider confirmed that you must enter user name, password, and domain settings to access the Internet, tap **OK** on the left softkey without entering any information in this screen. Otherwise, enter the required information and then tap **OK** on the left softkey.
5. If the phone prompts for confirmation to connect to the Internet, accept the connection.

   The phone dials the configured GPRS access number and then connects to the Internet.

   A Connectivity notification appears on the handheld as the connection is being made.

   After the connection is made you are returned to the *My ISP* screen.

   To confirm that the GeoExplorer series handheld is connected to the phone, or to check the status of the connection at any time, tap the Connectivity icon in the title bar. The notification shows the name of the current connection, and the time elapsed since the connection was made. To hide the notification, tap **Hide**.

Note – *If you have an active wireless LAN connection, the connectivity icon appears as instead.*

6. Tap **OK** in the top right corner of the screen to close the *My ISP* screen.
7. Tap **OK** in the top right corner to close the *Connections* screen.
8. Tap in the top right corner to close the *Settings* screen.

To check the connection status at any time, tap the or icon in the title bar.

To end the connection at any time, tap the or icon in the title bar and then tap **Disconnect**.

To connect to a corporate network or Intranet, see page 103.

To send and receive email messages, see Messaging, page 49.

Step 3: Configuring the GPS field software to use data received from the Internet source

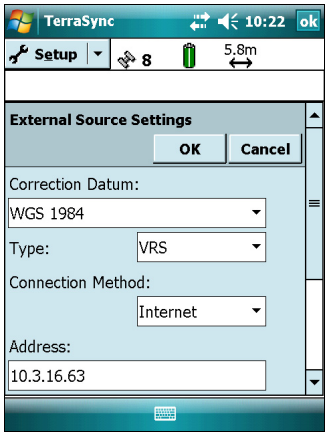
Now that you have connected the GeoExplorer 2008 series handheld to the Internet using a Bluetooth-enabled cellular phone, you must configure the software to use the connection to receive data.

To use real-time corrections in Trimble field software, see Using real-time corrections from the Internet below.

To use background map data in the TerraSync software, see Downloading background map files from an Internet map server, page 93.

Using real-time corrections from the Internet

1. Start the Trimble GPS field software and then open the *Setup* section.
2. Tap **Real-time Settings**. The *Real-time Settings* form appears.
3. From the *Choice 1* field, select ***External Source***.
4. Configure the external source:
   a. Tap the Setup button beside the *Choice 1* field. The *External Source Settings* form appears.
   b. From the *Correction Datum* field, select the same datum as the VRS network coordinate system.
   c. From the *Type* field, select:
      - ***VRS*** if the real-time correction source is a VRS network.
      - ***Single Base*** if the real-time correction source is a single base station that broadcasts its corrections over the Internet.
   d. From the *Connection Method* field, select ***Internet***.



e. In the *Address* field, enter the IP address or URL of the VRS network or the server that is supplying the corrections from the VRS network.

   Typically, the IP address or URL of a VRS network has the format 10.3.123.456:1234, where the digits before the colon (:) are the address, and the digits after the colon (:) are the port number.

f. In the *Port* field, enter the port number that you will use to connect to the server.

g. If you are connecting to a VRS network through a broadcast server, tap the Setup button beside the *Source* field. The GPS field software attempts to establish a connection to the broadcast server. If the connection is successful, the *Select Server* form appears. Select the server that you want to use and then tap **OK** to return to the *External Source Settings* form.

h. If you selected a VRS network that requires authentication, the *Name* and *Password* fields appear. Enter the user name and password that you obtained from the service provider.

i. From the *Connection Control* field, select:

   – ***Auto*** if you want the GPS field software to automatically establish and end connections to the VRS network as necessary.

   – ***Manual*** if you want to connect or disconnect only when you tap **Ext Source** in the *Setup* screen.

j. Tap **OK** to confirm the settings and return to the *Real-time Settings* form.

5. Tap **OK** to confirm the real-time settings and return to the main screen of the Setup section.

   If you selected ***Auto*** in the *Connection Control* field, the **Ext Source** button is depressed and the software attempts to connect to the server.

6. If you selected ***Manual*** in the *Connection Control* field, tap the **Ext Source** button that appears below the Status bar in the Setup section to connect the Trimble GPS field software to the Internet correction source.

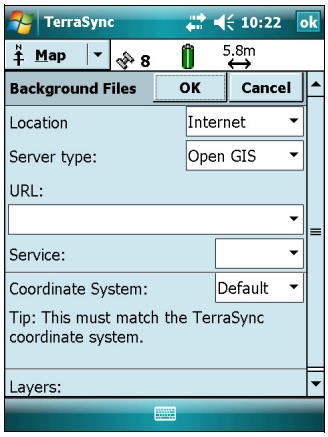
Tip – To disconnect or reconnect to the server at any time, tap **Ext Source**. To view the status of the real-time correction source, open the Status section, select the Real-time subsection and then select *External* from the **Summary** list button.

Downloading background map files from an Internet map server

1. Make sure that the coordinate system selected in the TerraSync software matches the coordinate system of the map server.
2. In the Map section of the TerraSync software, pan or zoom to make sure that the area for which you want a background image is displayed on the map.

   If the map server covers the area you are in, it will provide a background image that matches the current map extents.
3. Tap **Layers** and then select *Background files*. The *Background Files* form appears.
4. In the *Location* field select Internet and then use the fields that appear to specify the Map Server type, the URL of the server, the service, and the layers from that service that you want to download.
5. Tap **OK** to close the *Background File* form and download the selected background map.

   This may take some time. When a download is in progress, an icon appears in the top left corner of the map. Once the background file is downloaded, the hourglass icon appears until the downloaded image is rendered and becomes visible.



If you pan or zoom beyond the extents of the downloaded image, new images are downloaded automatically and displayed in the background of the map.

To stop automatic downloading of background files, either clear the address of the map server from the *URL* field, or set the *Location* field to Default and then clear the check box next to any files.

Reconnecting to the Internet

To reconnect to the Internet at any time after setting up the connection, repeat the steps listed under Step 2: Connecting to the Internet using the dialup network on page 90.

If you selected Auto in the *Connection Control* field of the Trimble GPS field software, the software automatically connects to the Internet source that is providing real-time differential corrections.

To ***manually*** reconnect the Trimble GPS field software to the Internet source that is providing real-time differential corrections, open the software and then tap the **Ext Source** button that appears below the status bar in the Setup section.

Connecting to a Bluetooth-enabled serial device

Use Bluetooth wireless technology to receive data from a Bluetooth-enabled serial device, such as a GeoBeacon receiver or a laser rangefinder.

To connect to a Bluetooth-enabled serial device, you must:

1. Connect to the Bluetooth-enabled serial device.
2. Configure the COM port on the handheld to use for the connection.
3. If necessary, configure the GPS field software to use data received from the serial device.

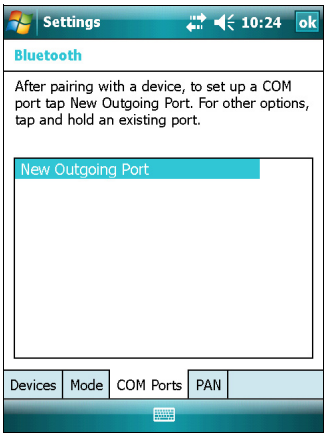
Step 1: Connecting to the Bluetooth-enabled serial device

Connect the handheld to the Bluetooth-enabled device, selecting the ***Serial Port*** service if it is not already selected (see Connecting to a Bluetooth-enabled device, page 84).

Step 2: Configuring the COM port to use on the handheld

1. On the GeoExplorer 2008 series handheld, tap / *Settings* / *Connections* / *Bluetooth*.
2. Tap the *COM Ports* tab.
3. Tap *New Outgoing Port*.
4. Select the device you want to set up the connection to and then tap **Next** on the right softkey.
5. Select the COM port on the GeoExplorer handheld to use for the connection.

   The GeoExplorer 2008 series handheld has three COM ports (COM5, COM6, and COM7) available for connections out to Bluetooth-enabled serial devices.



6. Do one of the following:
   - To communicate with any device, for example if you have formed this connection without pairing to a device, clear the *Secure Connection* check box.
   - To communicate only with devices with which the handheld has a Bluetooth partnership, select the *Secure Connection* check box.
7. Tap **Finish** on the right softkey.
8. Tap **OK** in the top right corner to close the Bluetooth application.
9. Tap in the top right corner to close the *Settings* screen.

Step 3: Configuring the GPS field software to use data from the serial device

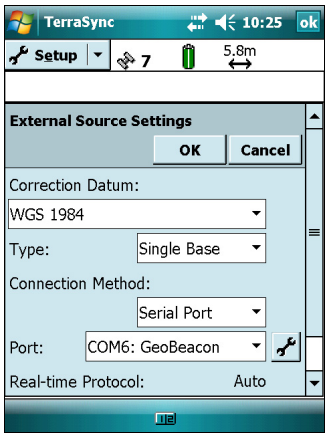
Once you configure the connection between the GeoExplorer 2008 series handheld and the Bluetooth-enabled serial device, you must configure the software to use the connection to receive data.

To use real-time corrections in Trimble field software, see Using real-time corrections from an external serial device below.

To use an Bluetooth-enabled external sensor such as a laser rangefinder or a barcode scanner in TerraSync software, see Using data from an external source in the TerraSync software, page 96.

Using real-time corrections from an external serial device

1. Start the Trimble GPS field software and then open the *Setup* section.
2. Tap **Real-time Settings**. The *Real-time Settings* form appears.
3. From the *Choice 1* field, select ***External Source***.
4. Tap the Setup button beside the *Choice 1* field. The *External Source Settings* form appears.



5. From the *Correction Datum* field, select the datum used by the correction source to calculate corrections.

   Trimble recommends that you select NAD 1983 (Conus) CORS96 if you are using a US Coast Guard beacon service, or WGS84 for any other beacon service.
6. From the *Type* field, select ***Single Base***.
7. From the *Connection Method* field, select ***Serial Port***.
8. From the *Port* field, select the name of the COM port that you selected in the Bluetooth application when you set up the connection to the serial device.
9. Tap **OK** to confirm the external source settings and return to the *Real-time Settings* form.
10. Tap **OK** to confirm the real-time settings and return to the main screen of the Setup section.

    The real-time correction source is now set up for use. The TerraSync software automatically connects to the correction source when you run the software, and automatically disconnects from the source when you close the software.

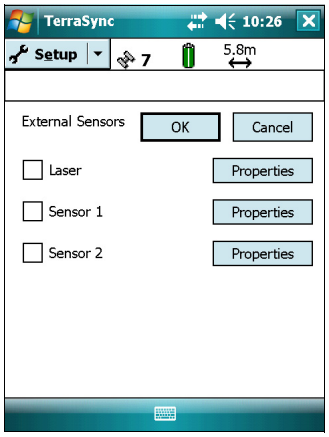
To manually disconnect from the correction source at any time, go to the *Real-time Settings* form and from the *Choice 2* field select Use Uncorrected GPS.

To view the status of the real-time correction source, open the Status section, select the Real-time subsection and then select *External* from the **Summary** list button.

Using data from an external source in the TerraSync software

To configure the TerraSync software to use data from an external source, for example, a laser rangefinder or barcode scanner:

1. Start the TerraSync software and then open a data file.
2. In the *Setup* section, tap **External Sensors**. The *External Sensors* form appears.



3. If you are connecting to:
   - a laser rangefinder, select the *Laser* check box and then tap the **Properties** button beside the *Laser* check box. The *Laser Properties* form appears.
   - a barcode scanner or other external sensor, select the *Sensor 1* or *Sensor 2* check box and then tap the **Properties** button beside the appropriate check box. The *Sensor Properties* form appears.
4. If you are connecting to a barcode scanner or other external sensor, enter a name for the connection in the *Name* field.
5. From the *Port* drop-down list, select the name of the COM port that you selected in the Bluetooth application when you set up the connection to the device.
6. Tap **OK** to confirm the sensor settings and return to the *External Sensors* form.
7. Tap **OK** to confirm the settings and return to the main screen of the Setup section.
8. The external sensor is now setup for use and can be used to add data as attributes into an open file in TerraSync. The device is automatically connected and disconnected when data files in TerraSync are opened and closed.

   To check the status of the connection, select the Comms subsection in the Status section of the GPS field software .

Connecting to an office computer to use ActiveSync technology

Instead of using a USB or serial cable to physically connect to an office computer, you can use Bluetooth wireless technology to connect to ActiveSync technology or the Windows Mobile Device Center on a Bluetooth-enabled office computer.

Note – *Not all Bluetooth devices and Bluetooth management software support ActiveSync connections. Check with the manufacturer of the office computer for compatibility.*

Note – *The exact steps required may vary depending on the office computer.*

To connect to a office computer to use ActiveSync with a Bluetooth connection, you must:

1. Set up the connection to the computer.
2. Connect to ActiveSync using Bluetooth wireless technology.

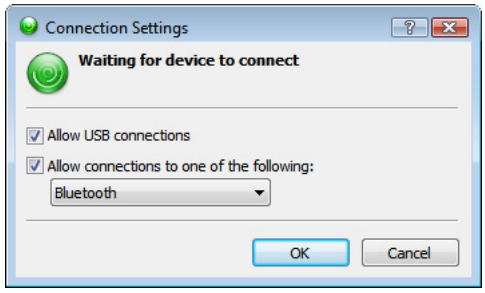
Step 1: Setting up the connection to the computer

1. From the Bluetooth user interface on the office computer, make sure that the computer allows itself to be discovered by other Bluetooth devices.
2. Configure the ActiveSync software on the office computer to connect to the correct Bluetooth port. The steps required depend on the operating system installed on the office computer. If the office computer is using:

- the Windows Vista operating system:

  a. From the *Start* menu on the office computer, select *Control Panel* / *Hardware and Sound* / *Windows Mobile Device Center*.

  The *Connection Settings* dialog appears:



  b. Select the *Allow connections to one of the following* check box.

  c. From the list, select Bluetooth and then click **OK**.

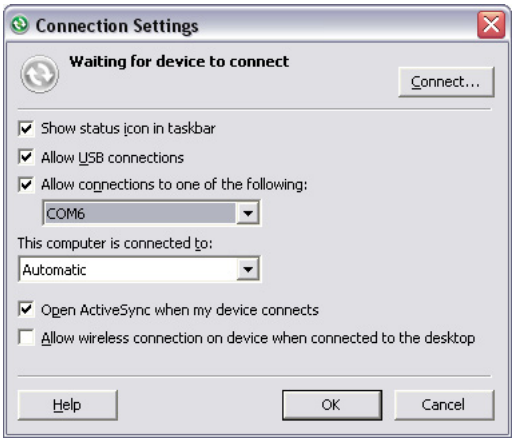
- the Windows XP or 2000 operating system:

  a. From the Bluetooth user interface on the office computer, identify the virtual COM port of the of the host Bluetooth Serial Port or Local Service and ensure that this is enabled. In this example, the virtual COM port is COM5.

  b. Start the ActiveSync software on the office computer.

c. Select *File* / *Connection Settings*.

The *Connection Settings* dialog appears:



d. Select the *Allow connections to one of the following* check box.

e. From the list, select the COM port that you selected in Step a and then click **OK**.

Note – *Before you try to form a Bluetooth connection from the GeoExplorer 2008 series handheld to the office computer, you must correctly configure the Bluetooth host serial port and ActiveSync technology on the office computer.*

3. On the handheld, tap / *Settings* / *Connections* / *Bluetooth*.
4. In the *Devices* tab, tap *Add new device*. The handheld searches for other Bluetooth devices and displays them in the list.
5. Tap the name of the computer you want to connect to and then tap **Next** on the right softkey.
6. When prompted, enter a passcode of your choice that you will easily remember on the handheld.
7. Enter the same passcode on the office computer.
8. On the handheld, select the ***ActiveSync*** check box in the list of services provided by the computer and then tap **Finish** on the right softkey.

   You have now created a partnership between the GeoExplorer 2008 series handheld and the office computer so that they can communicate.
9. Tap **OK** in the top right corner to close the Bluetooth application.
10. Tap in the top right corner to close the *Settings* screen.

    To connect to ActiveSync, see Step 2 on the following page.

Step 2: Connecting to ActiveSync using Bluetooth wireless technology

1. On the GeoExplorer 2008 series handheld, tap / *Programs* / *ActiveSync*.
2. Tap **Menu** and then select *Connect via Bluetooth*.

   On the GeoExplorer handheld, a message box shows the status of the connection as it is made.
3. When the connection to the office computer is successful, you are returned to the ActiveSync application on the handheld.
4. Tap to close.

   The connectivity icon in the status bar shows , or if WLAN is connected.

   To check the status of the ActiveSync connection, tap the connectivity icon in the title bar.

   To disconnect, tap / *Programs* / *ActiveSync* on the handheld and then select *Menu* / *Disconnect*.

Outputting GPS data to other devices using Bluetooth wireless technology

To provide GPS positions from the GeoExplorer 2008 series handheld to another device using a Bluetooth wireless connection, you must:

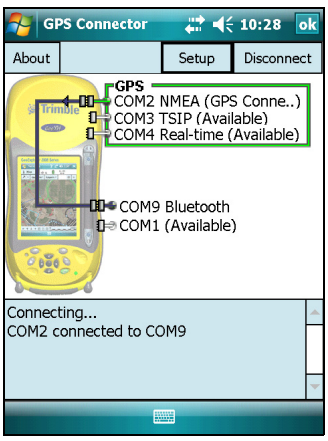
1. Connect the other device to the GeoExplorer 2008 series handheld.
2. Configure the handheld to output data to the other device.
3. Configure the other device to receive data from the handheld.

Step 1: Connecting the other device to the GeoExplorer series handheld

1. Turn on the GeoExplorer 2008 series handheld's Bluetooth radio and make the handheld ***visible*** to other devices (see page 80).
2. On the other device, turn on the Bluetooth radio.
3. Use the Bluetooth management software on the other device to scan for other Bluetooth devices and then set up a serial port connection to the GeoExplorer 2008 series handheld.
4. If prompted to enter a passcode on the other device, enter a passcode of your choice that you will easily remember.
5. When prompted on the GeoExplorer 2008 series handheld, accept the connection to the other device.
6. Enter the same passcode on the GeoExplorer 2008 series handheld that you entered on the other device and then tap **Next** on the right softkey on the handheld.
7. On the handheld, tap **Finish** on the right softkey.

Step 2: Configuring the handheld to output data to the other device

1. On the GeoExplorer 2008 series handheld, tap / *Settings* / *Connections* / *GPS Connector* to open the GPS Connector software.
2. Use the GPS Connector software to output NMEA or TSIP messages to ***COM9***. This is the GeoExplorer 2008 series handheld's Host Bluetooth serial port.
3. Use the Trimble GPS field software to ensure NMEA output is set to on, to configure the NMEA output settings (output rate and messages), and to configure the GPS settings.



Step 3: Configuring the other device to receive data from the handheld

1. On the other device, run the application that will use the data from the handheld.
2. Configure the application to connect to the COM port on the other device that you selected (or was assigned) when you created the serial port connection to the handheld.

Enabling other devices to transfer files using Bluetooth wireless technology

To transfer files to and from another device without connecting using ActiveSync technology, follow the general steps below:

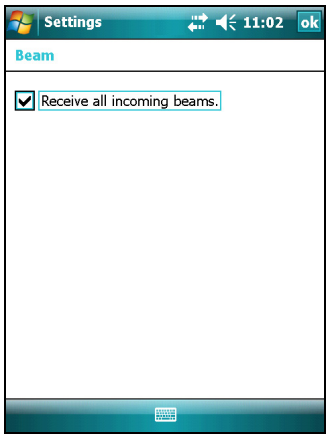
Note – *The exact steps for transferring files will depend on the Bluetooth file management software that is installed on the other device.*

1. Turn on the GeoExplorer 2008 series handheld's Bluetooth radio and make the handheld ***visible*** to other devices (see page 80).
2. On the other device, turn on the Bluetooth radio.
3. On the other device, make sure that Bluetooth file transfer is enabled.
4. Use the Bluetooth management software on the other device to scan for devices and then set up a connection to the GeoExplorer 2008 series handheld.
5. Use the Bluetooth management software on the other device to locate the file and transfer it to the \My Documents folder on the handheld.

Beaming files to or from another device

You can beam files, contacts, tasks, and appointments between the handheld and another device.

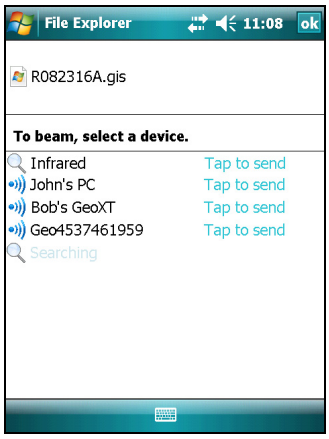
To ***receive*** beamed files from another device:



1. Make sure that the GeoExplorer 2008 series handheld's integrated Bluetooth radio is turned on (see page 80).
2. Tap / *Settings* / *Connections*/ *Beam*.
3. Select the *Receive all incoming beams* check box and then tap **OK**.
4. When another device attempts to beam a file, you are prompted to accept the file. To receive the file, tap **Yes**.

Note – *All incoming files are automatically saved in the My Documents folder on the handheld.*

To ***send*** beamed files to another device:



1. Make sure that the GeoExplorer 2008 series handheld's integrated Bluetooth radio is turned on (see page 80).
2. On the GeoExplorer 2008 series handheld, open File Explorer and go to the file you want to send.
3. Tap and hold the file and then select *Beam File*. The handheld scans for nearby devices.
4. Tap the device you want to send the file to. The file is sent to the device.

   A message reports Done or Failed, depending on the outcome of the file transfer.

Accessing a corporate network through your Internet connection

Use a Virtual Private Network (VPN) connection to access a corporate network or Intranet.

Before you begin, obtain the following information from your network administrator:

- user name and password
- domain name
- host name or IP address of the VPN server

To access a corporate network through your Internet connection, you must:

1. Set up an Internet connection on the handheld.
2. Set up a VPN connection.
3. Connect to the corporate network or Intranet.

Step 1: Setting up an Internet connection on the handheld

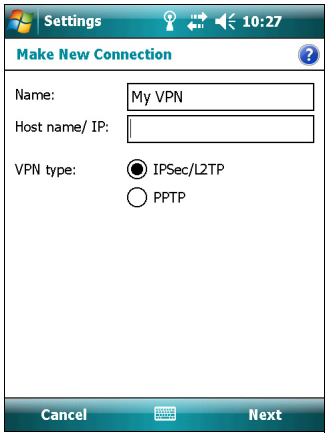
Do one of the following:

- Set up a wireless LAN connection to an access point. For more information, see page 82.
- Connect to the Internet using a Bluetooth-enabled phone. For more information, see page 88.

Step 2: Setting up a VPN connection

1. On the GeoExplorer 2008 series handheld, tap / *Settings* / *Connections* / *Connections*.
2. From the *My Work Network* list, tap *Add a new VPN server connection*.
3. Follow the instructions in the *Make New Connection* wizard.

   To view additional information for any screen in the wizard, tap .
4. Tap **Finish**.



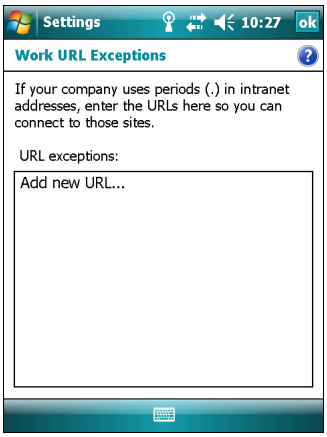
Step 3: Connecting to the corporate network or Intranet

To connect to the corporate network or Intranet, simply start using Internet Explorer.

The Windows Mobile operating system automatically controls whether the VPN connection is used, depending on whether the URL contains a period. For example, the URL www.trimble.com contains periods, and so the connection to this web site is made without using the VPN connection. However, an address to a network computer or file server that does not contain periods automatically starts the VPN connection.

If you need to use the VPN connection to access URL addresses that contain periods, specify exceptions for the addresses that are within the corporate network. To do this:

1. Tap / *Settings* / *Connections* / *Connections*.
2. Tap the *Advanced* tab.
3. Tap **Exceptions**. The *Work URL Exceptions* screen appears.
4. Tap *Add new URL*.
5. Enter the URL and then tap **OK** in the top right corner of the screen.
6. Repeat steps 4 and 5 as required.
7. Tap **OK** in the top right corner of the screen to return to the *Advanced* tab of the *Connections* screen.
8. Tap **OK** in the top right corner of the screen to close the *Connections* screen.
9. Tap to close the *Settings* screen.



Bluetooth wireless connections explained

The GeoExplorer 2008 series handheld has an integrated Bluetooth radio that you can use to establish a wireless connection to other Bluetooth devices that are within range.

Using a Bluetooth connection, you can communicate with devices such as cellular phones, office computers, other handhelds, and Bluetooth-enabled laser rangefinders and barcode scanners. You can also communicate with peripheral devices that use Bluetooth adaptors instead of serial or USB connections.

The GeoExplorer 2008 series handheld can act as a Bluetooth client device or a Bluetooth host device, and can act as both at the same time. The concepts of client and host devices are explained in detail below.

Connecting to a Bluetooth device as a client

You can use the GeoExplorer 2008 series handheld as ***client*** device, which uses ***services*** offered by Bluetooth host devices that are within range. In general the ***host*** device provides information to the client device, but in some cases the client initiates the connection and also provides information to the host device.

The services used by a GeoExplorer 2008 series handheld when connecting as a Bluetooth client are:

Service	Description
Dialup Networking (DUN)	Connects the handheld to a cellular phone or modem for dial-up network or Internet access.
Personal Area Networking (PAN)	Connects to Bluetooth network access points or phones that support the Personal Area Network/Network Access (PAN) profile.
Serial Port	Emulates an RS-232 serial (COM) port on the handheld.
ActiveSync	Enables an ActiveSync connection to a computer.
Input Device (HID)	Connects the handheld to a physical input device, such as a keyboard.
Wireless Stereo	Connects to Bluetooth A2DP (Advanced Audio Distribution Profile) headphones.

A client can connect to a number of different services provided by different hosts. The number of active connections at any one time affects the speed of the connections. Figure 6.1 shows the handheld connected to different types of host devices using Bluetooth wireless technology.

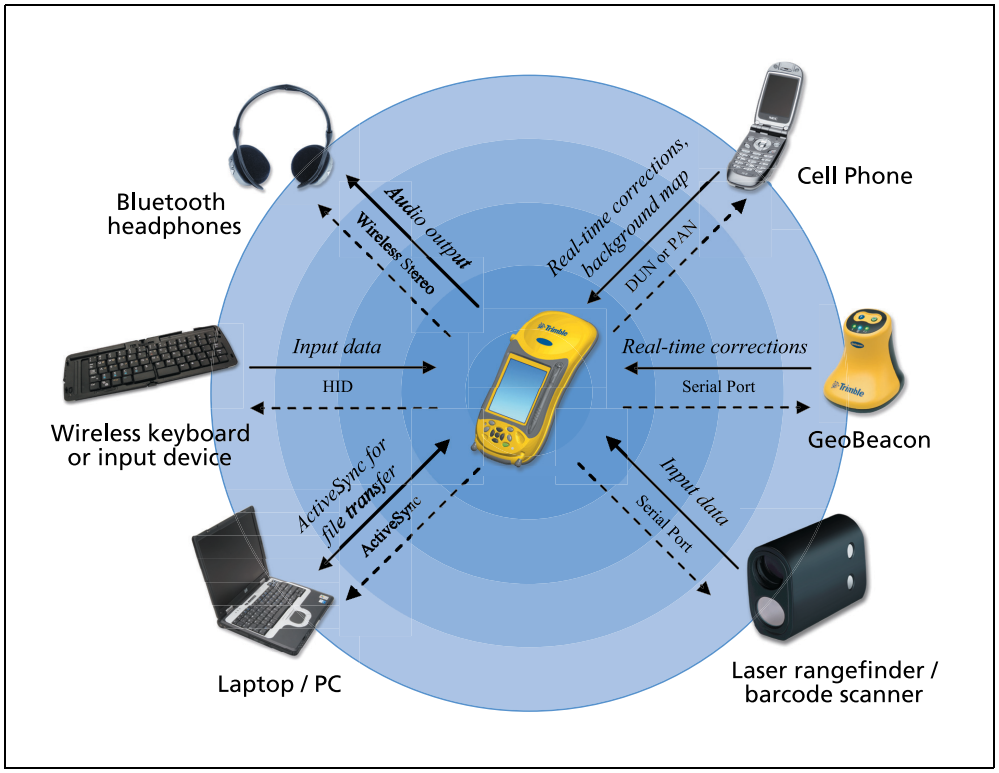


Figure 6.1 GeoExplorer 2008 series handheld Bluetooth client connections

In Figure 6.1, the dashed arrows indicate the client device—that is, the GeoExplorer 2008 series handheld—connecting to host devices. The Bluetooth profile (or service) used for the connection is shown between the arrows, for example, the ***DUN*** service is used for a connection to a cell phone, and the ***Serial Port*** service is used for a serial connection to a GeoBeacon receiver or laser rangefinder.

The solid arrows indicate the flow of information between devices. For example, when the GeoExplorer 2008 series handheld connects as a client to:

- a cellphone, the handheld uses the DUN or PAN host service provided by the phone to access the Internet and receive real-time differential corrections or background map data.
- a laptop computer or office computer, the devices use the ActiveSync service to exchange information to and from either device.
- Bluetooth headphones, the handheld uses the Wireless Stereo host service provided by the headphones to play audio files and system sounds.

Providing Bluetooth services as a host

You can use the GeoExplorer 2008 series handheld as a Bluetooth host device, which provides services to Bluetooth client devices that are within range.

Host services provided by the GeoExplorer 2008 series handheld are:

Service	Description
Serial Port	Emulates an RS-232 serial (COM) port on the handheld. For more information, see Outputting GPS data to other devices using Bluetooth wireless technology below.
File Transfer	Allows a client to browse, copy, paste, and delete files and folders on the handheld.

Note – *You cannot transfer files between two GeoExplorer 2008 series handhelds, as the client file transfer profile is not supported. The handheld supports file transfers as a host device only. To transfer files between handhelds, you can beam them (see page 102).*

To provide a host service, you must turn on the Bluetooth radio and make both devices visible to other devices (see page 78 and page 80).

Figure 6.2 shows different client devices connecting to the handheld using Bluetooth wireless technology.

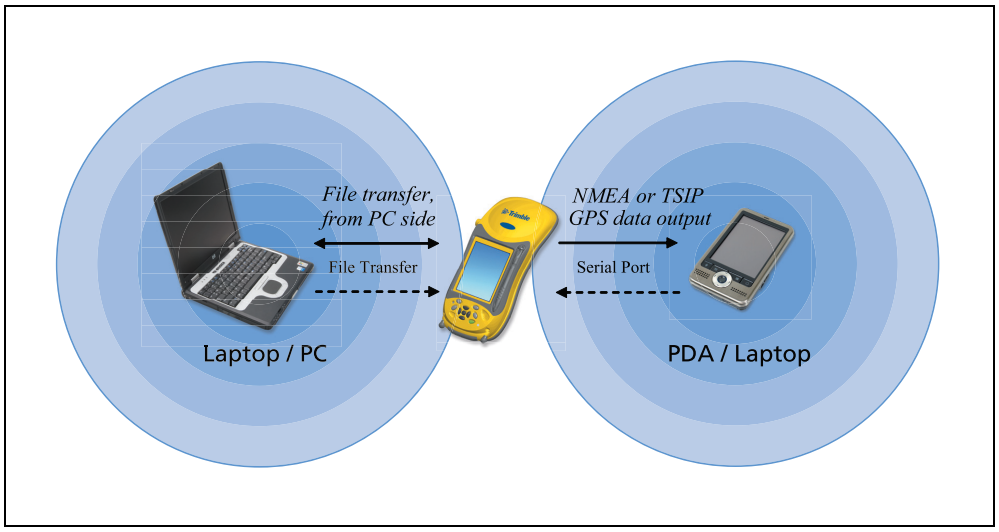


Figure 6.2 GeoExplorer 2008 series handheld Bluetooth host connections

In Figure 6.2 the dashed arrows indicate the client devices—for example, the laptop or PDA—connecting to the GeoExplorer 2008 series handheld, which is the host device. The Bluetooth profile (or service) used for the connection is shown between the arrows, for example the ***Serial Port*** service is used when outputting GPS data from the handheld to another device.

The solid arrows indicate the flow of information between devices. The GeoExplorer 2008 series handheld can output GPS data to client devices that connect to the handheld using a Bluetooth serial port. When a laptop computer or office computer connects to the GeoExplorer 2008 series handheld and selects the File Transfer service, files and information can be exchanged to and from either device.

When a client device connects to the Serial Port service provided by the GeoExplorer 2008 series handheld, applications on the handheld can use the pre-defined host serial port on COM9 to provide host services to the client device. For example, to provide GPS positions from the integrated GPS receiver to another device, use the GPS Connector software to redirect the NMEA or TSIP output to COM9.

Connecting to other devices using the serial clip

The optional serial clip attaches to the communication swipes on the back of the handheld. When the serial clip is attached, it adds a serial port (COM1) to the GeoExplorer 2008 series handheld.

You can use the serial clip to:

- receive differential corrections from an external real-time correction source, such as a Trimble GeoBeacon receiver, or a DGPS radio (see Using real-time corrections from an external correction source, page 70)
- receive GPS data from a Trimble GPS Pathfinder series or GPS Pathfinder Pro series receiver
- connect to other external devices, such as a laser rangefinder (see Using data from an external source in the TerraSync software, page 96, and select COM1 instead of a Bluetooth COM port)
- connect to a computer to supply GPS data (for example, when running the Trimble GPS Analyst extension for ESRI ArcGIS software on a laptop) (see Outputting GPS data to external equipment, page 76)
- supply external power from the external power kit or a vehicle's battery (see Connecting to an external power source with the serial clip, page 111)
- recharge the internal battery from an external power source (see Connecting to an external power source with the serial clip, page 111)

Attaching the serial clip

To attach the serial clip to the handheld:

1. Line up the communication swipes on the handheld with the pins on the serial clip.
2. Lower the handheld onto the serial clip.
3. Use the screws supplied with the serial clip to secure it to the handheld.

Note – *When the serial clip is attached, you cannot place the handheld in the support module.*

Connecting to external devices

You can use the serial clip instead of the support module to connect to an external device that has a serial port, such as a computer. The serial clip also provides a serial port to connect to other devices.

Note – *When connecting to an office computer using the serial clip, you cannot use ActiveSync technology to establish the connection or synchronize data. To use ActiveSync, you must use a support module USB or a Bluetooth connection (see* *Connecting the handheld to a computer, page 55**).*

To connect to an external device that has a serial port:

1. Attach the serial clip to the handheld.
2. Plug the null modem cable into the serial (COM) port on the serial clip.
3. Connect the other end of the cable to the serial port on the external device.

To connect to a serial device that does not have a standard 9-pin serial port, use a cable that has a DE9 connector on one end, and the appropriate connector for the other device on the other end. A suitable cable may be supplied with the external device.

Connecting to an external power source with the serial clip

Use the optional serial clip to connect the GeoExplorer 2008 series handheld to an external power source. Depending on the optional accessories that you have purchased, you can use mains power, the external power kit, or a vehicle battery to supply power to the handheld.

To connect to an external power source:

1. Attach the serial clip to the handheld.
2. Plug the appropriate cable into the power port on the serial clip.
3. Connect the other end of the cable to the external power source. Details about each type of external power source are as follows:

To use power from...	connect the...	to the...
AC power source (mains power)	AC power adaptor supplied with the handheld	AC power outlet
external Lithium-ion power kit battery	adaptor cable from the optional external Lithium-ion power kit for GeoExplorer 2008 series handhelds	Lithium-ion battery provided as part of external power kit
vehicle battery	optional vehicle power adaptor for GeoExplorer 2008 series handhelds that supports 12–24 V inputs	cigarette lighter socket of the vehicle

Recharging from an external power source

By default, the GeoExplorer 2008 series handheld recharges its internal battery from any external power source that is connected. Recharging the battery draws more power from the external source than is used to power the handheld.

Note – *The life of the battery can be significantly shortened if power is constantly supplied to the handheld. To avoid this issue, connect the handheld to an external power source only when the battery requries charging. Once fully charged, disconnect the external power source and allow the battery to discharge through normal use.*

CHAPTER

7

Troubleshooting

In this chapter:

Use this section to identify and solve common problems that may occur when using the GeoExplorer 2008 series handheld. Please read this section before you contact technical support.

Power issues

Problem	Cause	Solution
The handheld does not turn on.	The battery is flat.	Recharge the battery (see page 24).
The screen is blank.	The handheld is turned off.	Press the **Power** button to turn on the handheld.
	The handheld has locked up.	Reset the handheld (see Resetting the handheld, page 29).
The handheld is not charging.	The internal temperature has risen above the allowed maximum (40 °C or 104 °F) for charging the battery.	Do one or all of the following: • Turn off the integrated radios before charging the handheld. • Suspend the handheld before charging. • Remove the handheld from any external heat sources (for example, sunlight). The handheld will automatically start charging again when the internal temperature has dropped below the range for charging the battery.
The battery power percentage bar does not appear in the Power control.	The battery has 0% power.	Recharge the battery (see page 24). Once the battery level is above 0%, the battery power percentage bar reappears. Tap / *Settings* / *System* / *Power* / *Battery* to view the level of power remaining in the battery.
The charge level of the battery drops when the handheld is turned off.	The handheld was left in Suspend mode or was left fully charged for a long duration.	Before storing the handheld, completely shut down the handheld (see Turning on and turning off the handheld, page 27). Then store the handheld as recommended (see Storage, page 19).

Backlight issues

Problem	Cause	Solution
The backlight does not come on when you tap the screen or press a button.	The backlight is not set to turn on in the Backlight control.	Tap / *Settings* / *System* / *Backlight* to view the Backlight control, and make sure that: • the *Turn on backlight when a button is pressed or the screen is tapped* check box is selected. • the brightness is not set to *Dark* in the *Brightness* tab.
The screen is blank or hard to see.	The backlight is off.	Tap the screen or press a button.
	The backlight level needs to be adjusted.	Tap / *Settings* / *System* / *Backlight* to view the Backlight control and then adjust the slider in the *Brightness* tab.

Touch screen issues

Problem	Cause	Solution
The touch screen does not respond to stylus taps.	The touch screen is incorrectly aligned.	Realign the screen (see page 47).
	The touch screen is locked.	To unlock the touch screen, tap **Unlock** in the menu bar of the *Today* screen.
	The handheld has locked up.	Reset the handheld (see Resetting the handheld, page 29).
The screen is blank.	The handheld is turned off.	Press the **Power** button to turn on the handheld.
	The battery is flat.	Recharge the battery (see page 25).
	The handheld has locked up.	Reset the handheld (see Resetting the handheld, page 29).
The screen is hard to see.	The backlight level needs to be adjusted.	Open the Backlight control and then adjust the backlight level (see Backlight, page 48).
	The backlight is off.	Tap the screen to turn on the backlight.
	You are unable to see parts of an application windows when the screen is in landscape orientation.	Some applications are designed for portrait orientation only. To view the entire application window, change the screen display to portrait.
	The selected display theme does not have enough contrast.	Select the High-Contrast display theme. Tap / *Settings* / *Personal* / *Today*, select the High-Contrast theme and then tap **OK**.
Images on the screen do not display correctly.	An electrostatic discharge has occurred to one of the recessed connector terminals at the rear of the handheld.	Press the **Power** button to turn off the handheld and then press the **Power** button again to turn on the handheld. This corrects the screen display without losing any data.

Keypad issues

Problem	Cause	Solution
Pressing the application key does not activate the function shown on the softkey above it.	The hardware application key has been programmed to run another program or to perform another action.	Do one of the following: • Tap the touchscreen softkey to activate the function shown on the softkey. • Re-program the application key to perform the same action as the touchscreen softkey. To do this, tap / *Settings* / *Personal* / *Buttons*, select the button to reprogram and then select <Left Softkey> or <Right Softkey>.

Memory card issues

Problem	Cause	Solution
The handheld does not recognize a memory card.	The handheld does not support SDIO (SD input/output) cards.	Use an SD or SDHC memory card.
Files on the memory card are not visible or are not able to be opened.	Files have been encrypted on another device and have a .menc file extension.	Remove encryption from the files (see Encrypting files on memory cards, page 32).

Connection issues

ActiveSync technology

Problem	Cause	Solution
ActiveSync technology will not connect to the handheld.	The connection is not initiated automatically.	Remove the handheld from the support module and then place it in the support module again. Alternatively, in the ActiveSync software on the office computer, select *File* / *Connection Settings* and then tap **Connect**.
	ActiveSync does not recognize the GeoExplorer 2008 series handheld.	Restart the office computer. Remove the handheld from the support module, reset it (see Resetting the handheld, page 29) and then replace it in the support module.
	An incompatible version of ActiveSync software is installed.	ActiveSync version 4.5 and later is compatible with the GeoExplorer 2008 series handheld. If version 4.5 or later of the ActiveSync software is not installed on the office computer, you can install it from the *GeoExplorer 2008 Series Getting Started Disc*.You can also download the latest version from the Microsoft website at www.microsoft.com/windowsmobile/activesync/default.mspx.
	The connection is not enabled in ActiveSync on the computer.	In the ActiveSync software on the office computer, click *File* / *Connection Settings*. If you are using: • the support module, make sure that the *Allow USB connections* check box is selected from the drop-down list. • a Bluetooth connection, make sure that the correct port for Bluetooth is selected. Then open the Bluetooth control on the handheld. In the *Devices* tab, tap the partnership and in the services list make sure that the *ActiveSync* check box is selected.
	The connection is not enabled in ActiveSync on the handheld.	On the handheld, tap / *Programs* / *ActiveSync* / *Menu* / *Connections*. Make sure that the *Synchronize all PCs using this connection* check box is selected, and that the correct option is selected.
	The handheld connection settings conflict with network settings or VPN client software.	If you are using the support module, use the USB to PC utility to change the connection method the handheld uses to connect to ActiveSync on the computer. Tap / *Settings* / *Connections* / *USB to PC Utility*. Clear the *Enable advanced network functionality* check box. The handheld stops using the default RNDIS method to connect to the ActiveSync software.

Windows Mobile Device Center

Problem	Cause	Solution
Windows Mobile Device Center will not connect to the handheld.	The connection is not initiated automatically.	Remove the handheld from the support module and then place it in the support module again. Alternatively, in the Windows Mobile Device Center software on the office computer, select *Mobile Device Settings* / *Connection Settings*.
	The Windows Mobile Device Center software does not recognize the GeoExplorer 2008 series handheld.	Restart the office computer. Remove the handheld from the support module, reset it (see Resetting the handheld, page 29) and then replace it in the support module.
	The connection is not enabled in Windows Mobile Device Center on the computer.	In the Windows Mobile Device Center software on the office computer, click *Mobile Device Settings* / *Connection Settings*. If you are using: • the support module, make sure that the *Allow USB connection* check box is selected from the drop-down list. • a Bluetooth connection, make sure that the correct port for Bluetooth is selected. Then open the Bluetooth control on the handheld. In the *Devices* tab, tap the partnership and in the services list make sure that the *ActiveSync* check box is selected.
	The connection is not enabled on the handheld.	On the handheld, tap  / *Programs* / *ActiveSync* / *Menu* / *Connections*. Make sure that the *Synchronize all PCs using this connection* check box is selected, and that the correct option is selected.
	The handheld connection settings conflict with network settings or VPN client software.	If you are using the support module, use the USB to PC utility to change the connection method the handheld uses to connect to the Windows Mobile Device Center on the computer. Tap  / *Settings* / *Connections* / *USB to PC Utility*. Clear the *Enable advanced network functionality* check box. The handheld stops using the default RNDIS method to connect to the Windows Mobile Device Center.

Network connections

Problem	Cause	Solution
The connection with the cellular phone suddenly ends.	If you change the proxy settings of the handheld while connected to a cellular phone, the cellular phone ends the connection.	Make any changes to proxy settings before connecting to a mobile device.
Unable to connect to another GeoExplorer 2008 series handheld.	Data encryption settings are set incorrectly.	When setting up a peer-to-peer ad-hoc network with a WEP encryption, set a Network Key, rather than leaving the key blank to be provided automatically.

Bluetooth wireless technology

Problem	Cause	Solution
The handheld cannot discover a nearby Bluetooth device.	The integrated Bluetooth radio is not activated.	The handheld's Bluetooth radio has been deactivated. If Bluetooth wireless technology is allowed where you are working, use the Radio Activation Manager software to re-activate the radio (see Deactivating the integrated radios, page 7).
	The device is out of range.	Move the devices closer to each other and then scan again.
	Bluetooth wireless technology is not enabled on one or both devices.	Make sure that the Bluetooth radio is turned on, on both the handheld (see page 80) and the other Bluetooth device.
	The device has not been made Discoverable.	Make sure that the Bluetooth device has been made Discoverable.
The COM port that you assigned to a serial port service is not available in your application.	The application cannot recognize ports if they are added after the application opens.	Exit from the application, add the port and then run the application again.
The Bluetooth connection fails while in use.	The Bluetooth device has moved out of range.	Move the devices closer to each other. The devices should reconnect automatically. If they do not, select the Bluetooth device in the *Devices* tab. Tap and hold the device name and then select *Delete*. Tap *New* to discover the device again.
	The Bluetooth radio has lost the connection.	Turn off the Bluetooth radio on the handheld and then turn on the Bluetooth radio (see page 80).
	Bluetooth file transfer interrupts the connection.	When you transfer large image or data files, other Bluetooth connections may stop responding. To avoid problems, close other Bluetooth connections before transferring large files.
An error message reports "Problem with Bluetooth Hardware".	The integrated Bluetooth radio may have been deactivated.	Use the Radio Activation Manager to reactivate the Bluetooth radio (see Deactivating the integrated radios, page 7).

Wireless LAN connections

Problem	Cause	Solution
The "New Network Detected" notification does not appear automatically.	The wireless LAN radio is off.	Tap the wireless icon in the Today screen or go to the Wireless Manager and make sure wireless LAN is on.
	The handheld is out of range of the network.	Move to within range of the network, then tap / *Settings* /*Connections* /*Network Cards* and then setup the connection.
The handheld cannot connect to a secure site.	The date on the handheld is incorrect.	Check that the handheld has the date set correctly on the *Today* screen. If the date is incorrect, tap the clock icon on the *Today* screen and then adjust the date and time.
You cannot configure an Internet connection.		
Within range of more than one network, you are not connecting to the network you would prefer to use.	The radio is connecting to the first network signal it has received.	Tap / *Settings* /*Connections* /*Network Cards*. Tap and hold the network you would prefer to use and then select *Connect*.
The "New Network Detected" notification appears but the menu bar and soft key options are not displayed.	Some applications are not fully compatible with all features of the Windows Mobile 6 operating system.	Use the application buttons on the keypad, as they map to the soft keys in the menu bar: • To dismiss the notification, press the right application button on the keypad. • To connect to the network, press the left application button. Alternatively, select a Windows Mobile application from the *Start* menu, such as the *Today* screen or File Explorer, and the menu bar and soft keys will be displayed correctly.
Wireless LAN is unavailable in the Wireless Manager.	The integrated wireless LAN radio has been deactivated.	Use the Radio Activation Manager to reactivate the wireless LAN radio (see Deactivating the integrated radios, page 7).

Serial clip issues

Problem	Cause	Solution
Handheld does not recognize serial clip is attached.	The handheld needs to be reset.	Perform a soft reset of the handheld. To do this, either press the **Reset** button, or press the **Power** button to open the *Power* menu and then tap **Soft Reset**.
Unable to receive information from COM1.	The incorrect serial port settings have been selected on the handheld or on the other device.	Check that the serial port settings are the same on both devices and then try connecting to COM1 again.
	The incorrect data protocol is selected in the application on the handheld.	Select the data protocol supported by the device and then try connecting again.
	The serial cable used is not the correct type. Some serial cables, called null-modem cables, switch the data transmit and data receive lines, whereas other cables are 'straight through' and do not switch the pinouts.	Use the serial cable provided with the device.
A 'New Modem Detected' notification appears.	You have reset the handheld and then connected the serial clip.	Tap **Dismiss** to close the notification.
Handheld resumes when serial clip is removed.	The handheld was in Suspend mode.	To return the handheld to Suspend mode, press the **Power** button.
'Unidentified USB device' notification appears.	The serial clip is unevenly connected to the device.	To continue, cancel the notification and then reattach the serial clip correctly.

GPS receiver issues

Problem	Cause	Solution
The handheld is not receiving GPS positions.	The integrated GPS receiver is not activated.	Use the Connect or Activate GPS command in the GPS field software to open the GPS COM port and activate the integrated GPS receiver. For more information, see Using the GPS receiver, page 61.
	Incorrect configuration of serial COM port.	When supplying GPS data to an external device using the COM1 serial clip, set the baud rate to the high-speed TSIP setting: 38400, 8, 1, Odd.
	The GPS COM port is already in use. Only one application at a time can have the port open.	Do the following: • Exit the software that is using the GPS COM port and then retry in your application. • Check that a GPS application is not running in the background. Tap / *Settings* / *Memory*, select Running Programs, and then select and close any GPS applications you are not using. • Make sure that connections are not left setup in the GPS Connector application. Set NMEA to Internal - COM2 and TSIP to Internal - COM3, and then disconnect GPS Connector when you not using the connections.
	The GPS field software is using the wrong GPS COM port.	Connect to COM2 if the GPS field software uses NMEA messages, or COM3 for TSIP messages. For information on which protocol to use, check the documentation for the application.
	Not enough satellites are visible.	Move to a location where the receiver has a clear view of the sky and ensure the antenna is not obstructed. Alternatively, adjust the GPS settings to increase productivity. For more information, refer to the Help provided with the GPS field software.
	The DOP (Dilution of Precision) value for the current position is above the maximum DOP setting.	Wait until the DOP value falls below the maximum DOP specified. Alternatively, adjust the GPS settings to increase productivity. For more information, refer to the Help provided with the GPS field software.
	Wait for real-time is selected in the GPS field software and the integrated receiver is waiting to receive real-time corrections.	If you are collecting data for postprocessing, clear the wait for real-time selection. Check that the real-time correction source is setup correctly (see Connecting to a real-time differential correction source, page 68).
	External antenna connected but not receiving data.	The handheld can take up to two seconds to detect that an external antenna has been connected or disconnected.
NMEA data includes autonomous positions.	The integrated GPS receiver outputs autonomous positions when real-time corrections are unavailable.	Configure the NMEA application to filter out non-DGPS positions.

Problem	Cause	Solution
The GPS Connector utility reports “Unknown”.	The GPS Connector software may report “Unknown” on COM3.	This should not interfere with operation of the handheld.
Error Code 5 appears.	A receiver timeout error has occurred, caused by issues with communications to the receiver, or when the receiver has taken too long to reconnect.	Close the dialog and if the handheld does not automatically connect to the receiver, try to connect to the receiver again. If repeated attempts to connect to the receiver fail, contact your Trimble reseller.

Real-time DGPS issues

Problem	Cause	Solution
The handheld is not receiving SBAS real-time corrections	The SBAS satellite is obstructed from view.	Check the location of the SBAS satellite in the Skyplot section of the GPS field software, and if possible move to a different location.
	You are outside the WAAS, EGNOS, or MSAS coverage area.	Wide Area Augmentation System (WAAS) satellites are tracked in the Continental United States including Alaska, and in southern parts of Canada. European Geostationary Navigation Overlay Service (EGNOS) satellites are tracked in Europe. MTSAT Satellite-based Augmentation System (MSAS) satellites are tracked in Japan. If you have selected satellites that are not available at your location, you cannot use SBAS corrections.
The handheld is not able to track a new or a specific SBAS satellite	You are not using the latest SBAS configuration (.ini) file.	1. To download the software, go to www.trimble.com/support.shtml, click the link for your receiver type (*GeoXH*, *GeoXM*, or *GeoXT*), click *Downloads*, click *GeoExplorer 2008 Series* and then click *SBAS.INI*. 2. To specify the satellites you want the receiver to track or to ignore, select the Custom option in the *Tracking Mode* field in the *Integrated SBAS Settings* form of the Trimble GPS field software.
The handheld is not receiving real-time corrections from the external real-time correction source	There is no physical connection to the external source.	Connect the external real-time correction source to COM1 using the optional serial clip, or to a Bluetooth port on the handheld.
	There is no Bluetooth wireless connection to the external source.	The Bluetooth external correction source is more than ten meters from the handheld, or is obstructed. Move the devices closer together, in a direct line of sight, to re-connect.
	The external source is incorrectly connected to the real-time COM port.	In the Real-time Settings section of the GPS field software, select the COM port that the real-time source is connected to. ***Note –*** *If you are using a non-Trimble application, use the GPS Connector software to create a connection between the COM port and the integrated GPS receiver's real-time GPS COM port (COM4). In the GPS Controller software, configure the receiver to use real-time corrections from an External Source using the handheld's "Receiver Port". For more information, see* *Using real-time corrections from an external correction source, page 70.*
	The port settings are incorrect.	Change the port settings to match those used by the external source.
	No GPS positions are available.	You cannot use real-time corrections until the GPS receiver is computing positions. In the GPS field software, make sure that the integrated GPS receiver is activated, enough satellites are available, and that the satellite geometry (PDOP) is good enough to compute positions.
	Integrated SBAS is selected as the second choice source of real-time corrections.	If the SBAS status is Waiting, the integrated GPS receiver may incorrectly change the status of the preferred real-time choice to Waiting as well. To avoid this, select Wait for real-time or Use uncorrected GPS as your second choice.

Recommended GPS settings for maximum precision

The following table lists some of the factors that affect the precision of your data, and describes how to minimize the effect of atmospheric interference and poor satellite geometry.

Tip – To quickly find the recommended values shown here, move the GPS slider in the *GPS Settings* form to the middle (default) setting.

Factor	Description	To Maximize Precision
Number of visible satellites	The quality of your data increases with the number of satellites being used to calculate the position.	You need at least four satellites to calculate an accurate 3-dimensional position. Trimble data collection software only logs GPS positions when four or more satellites are visible. Tracking more satellites can help to lower DOP values.
Multipath	Multipath is when GPS satellite signals are reflected off nearby objects, such as buildings or cars, causing an erroneous signal to be received by the GPS antenna. This can cause errors of several meters.	To reduce multipath, collect data in an open environment away from large reflective surfaces and with a clear view of the sky. In high multipath environments, record velocity data and use velocity filtering when postprocessing the data.
Weak satellite signals	Signal-to-Noise Ratio (SNR) is a measure of the strength of the satellite signal relative to the background noise. GPS quality degrades as the signal strength decreases. Weak signals may be caused by signals coming through vegetation, multipath signals, or low satellite elevation.	Set the GPS field software to ignore satellites with a weak SNR. Trimble recommends a minimum SNR setting of 39 dBHz.
Poor satellite geometry	Dilution of Precision (DOP) is a measure of the quality of GPS positions, based on the spread (geometry) of the satellites in the sky that are used to compute the positions. When satellites are widely spaced relative to each other, the PDOP value is lower, and position accuracy is greater. If the view of the sky is partially blocked, or if all of the satellites are in one area of the sky, the geometry and DOP may be poor.	Set the GPS field software to ignore positions with a poor DOP value. You can choose to filter positions based on PDOP (Position Dilution of Precision) or HDOP (Horizonal Dilution of Precision). PDOP is a measure of the horizontal and vertical quality of the GPS positions, whereas HDOP is just a measure of the horizontal precision (x and y coordinates). Select HDOP rather than PDOP if you want to ensure positions are accurate horizontally, and when vertical accuracy is less important Trimble recommends a maximum PDOP setting of 6, or a maximum HDOP setting of 4.
Satellite elevation	When a satellite is low on the horizon, satellite signals must travel farther through the atmosphere. This results in a lower signal strength and delayed reception by the GPS receiver, which can cause errors in calculating the position.	Set the elevation field in the GPS field software to ignore satellites that are low in the sky. Trimble recommends a minimum elevation setting of 15°.
Occupation time at a point	Occupation time is the time spent at a point logging GPS positions.	For point features, remain at the feature and log a number of GPS positions to obtain an averaged position. When collecting line and area features, collect them using averaged vertices.

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