USER GUIDE

Trimble® TDLCONF Software

Version 1.00
Revision A
September 2009

☉ Trimble.

Release notice

This is the September 2009 release (Revision A) of the *Trimble TDLCONF Software User Guide.* It applies to version 1.00 of the Trimble TDLCONF software.

Contents

Introduction

■ Related information

■ Technical assistance

■ Your comments

The *Trimble TDLCONF Software User Guide* describes the Trimble® TDLCONF configuration software ("the software"), which is a suite of software utilities used to configure and troubleshoot the Trimble TDL 450 range of digital communication radios.

When you run the TDLCONF software on a computer that is attached by serial cable to a TDL 450 radio, you can check the status of the radio, enter channel tables, and set radio parameters such as channel bandwidth and output power.

For an interactive look at Trimble and GPS, go to www.trimble.com

Note – A license is required prior to operation of radio communication equipment.

Related information

An electronic copy of this manual is available in portable document format (PDF) on the receiver CD-ROM. Use Adobe Reader to view the contents of this file.

Other sources of related information are:

- Release notes – the release notes describe new features of the product, information not included in the manual, and any changes to the manual. They are provided as a PDF on the CD. Use Adobe Reader to view the contents of the release notes.

- Registration – register your receiver to automatically receive e-mail notifications of receiver firmware upgrades and new functionality. To register, do one of the following:

  - Run the receiver CD.

  - Register electronically at www.trimble.com.

  - Print the registration form that is on the CD, fill it in, and fax or mail it to the address shown.

  Contact your local Trimble Dealer for more information about the support agreement contracts for software and firmware, and an extended warranty program for hardware.

- Trimble training courses – consider a training course to help you use your GPS system to its fullest potential. For more information, visit the Trimble website at www.trimble.com/training.html.

Technical assistance

If you have a problem and cannot find the information you need in the product documentation, *contact your local Dealer*. Alternatively, request technical support using the Trimble website at (www.trimble.com/support.html).

Your comments

Your feedback about the supporting documentation helps us to improve it with each revision. E-mail your comments to ReaderFeedback@trimble.com.

Using the software

This chapter describes how to install and run the the TDLCONF software.

In this chapter:

- Getting started
- Menus
- Connecting to the radio
- Identification tab
- Radio Link tab
- Serial Interface tab
- Frequencies tab
- Programming the radio
- Printing radio configuration parameters

Getting started

Installing the software

1. Insert the TDL radio CD into the computer.

2. Do one of the following:

   – Browse to the CD drive and then double-click TDLCONF_setup.exe.

   – Click *Start* / *Run*, enter **D:\TDLCONF_setup.exe** (where **D** is the name of the CD drive) and then click **OK**.

Running the software

Do one of the following:

- Double-click the TDLCONF icon on the computer desktop.

- Click *Start* / *All Programs* / *Trimble* / *TDLCONF* / *TDLCONF*.

- Click *Start* / *Run*, enter **C:\Program Files\Trimble\TDLCONF.exe** and click then **OK.**

If you have trouble running the TDLCONF software on a 64-bit computer with the Windows Vista® operating system, try the following:

Close the TDLCONF software.

Double-click **My Computer** or run Windows® Explorer.

3. Navigate to *C:\Program Files\Trimble\TDLCONF* and then right-click TDLCONF.exe

4. Click **Properties**.

5. In the *Compatibility* tab, click **Run this program in compatibility mode for**.

6. Select *Windows XP* or *Vista 32* and then click **OK**.

7. Restart the TDLCONF software.
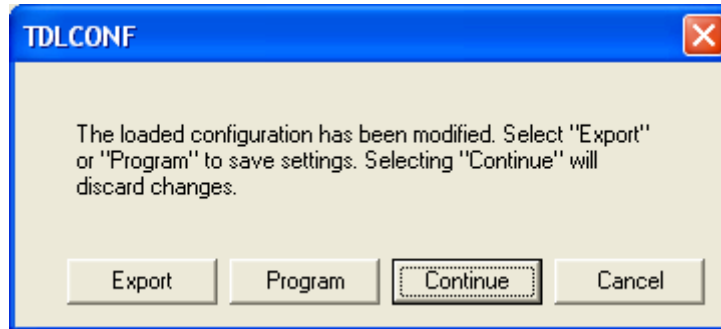
Exiting the software

Do one of the following:

- Click **Exit** in the dialog.

- Click **X** in the top right corner

- Select *File* / *Exit.*

Note – Exiting the TDLCONF software puts an attached radio back into data mode.

If you exit the TDLCONF software after changing settings but without programming the change(s) to a radio, the following message appears:

If you click...	The software...
Export	writes a configuration file to a user-selectable location on your computer and then closes.
Program	writes the new configuration to the attached radio and then closes.
Continue	discards the changes and then closes.
Cancel	returns you to the TDLCONF software without programming any changes to the radio.

Saving changes

When you edit parameters in the TDLCONF software, the changes are made to a *copy* of the file in the computer RAM. You must *save* changes before you exit the software or you will lose them. Exit the TDLCONF software and then click **Export**, or select *File / Export*.
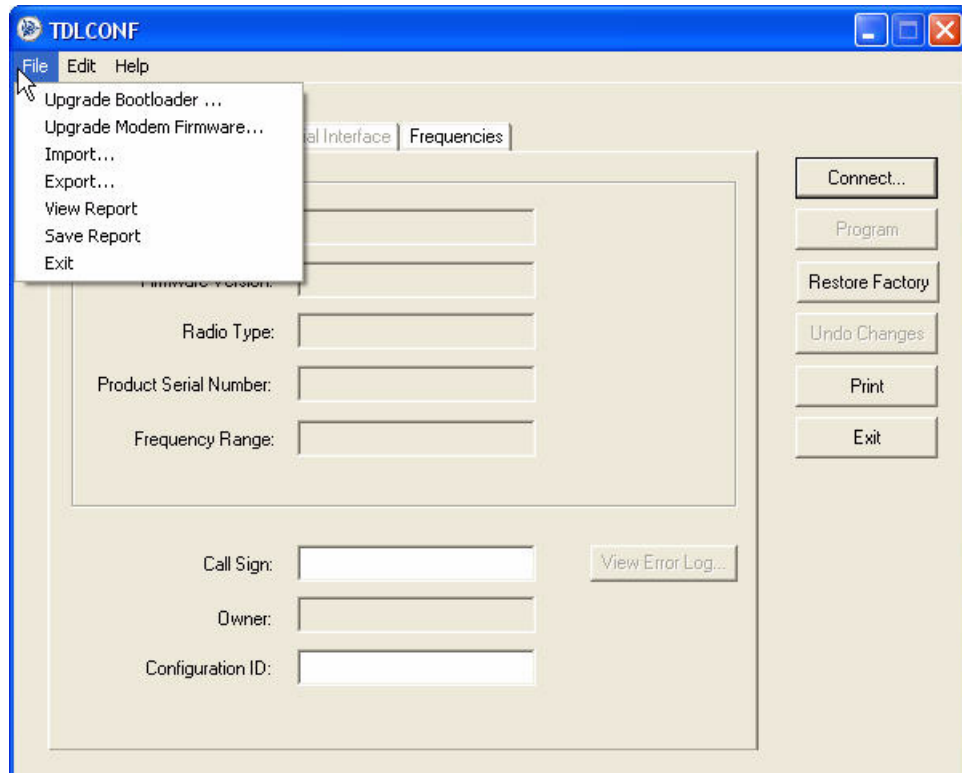
To save the changes to a connected radio, click **Program** in the main dialog, or exit the TDLCONF software and then select the Program option.

Menus

The main *TDLCONF* dialog contains the following main menus:

- File: see page 10.
- Edit: see page 11.
- Help: see page 12.

File

Select...	To...
Upgrade Bootloader	Select a bootloader firmware file to upload into the attached TDL 450 radio modem. This is a low-level firmware application that launches the main radio application.
Upgrade Modem Firmware	Select a firmware file (*.bin) to upload into the attached TDL 450 radio modem. Trimble recommends that you save the radio's current configuration to your computer before upgrading the firmware. Use the Export function described below to save the configuration. Before upgrading the firmware, TDLCONF prompts you to connect or reconnect to the radio. See Connecting to the radio, page 12.
Import	Import radio configuration files (*.dat) from your computer to the TDLCONF software. Click **Program** to upload the configuration to the attached radio; this overwrites the existing configuration.
Export	Save the radio configuration shown in TDLCONF (*.dat) to your computer. This enables you to create one configuration and copy it into multiple radios.
	Note – When you export a configuration, you only create a *.dat file. To configure a radio, you must view a configuration in the software (either by creating it or by importing an existing configuration) and then click **Program***.*
View Report	View on a web browser all the configuration parameters of the attached radio. In addition, this html-formatted report shows firmware settings that may help Trimble support technicians to diagnose problems if the radio requires service.
Save Report	Save a *.txt copy of the configuration report to any location accessible to your computer.

Edit
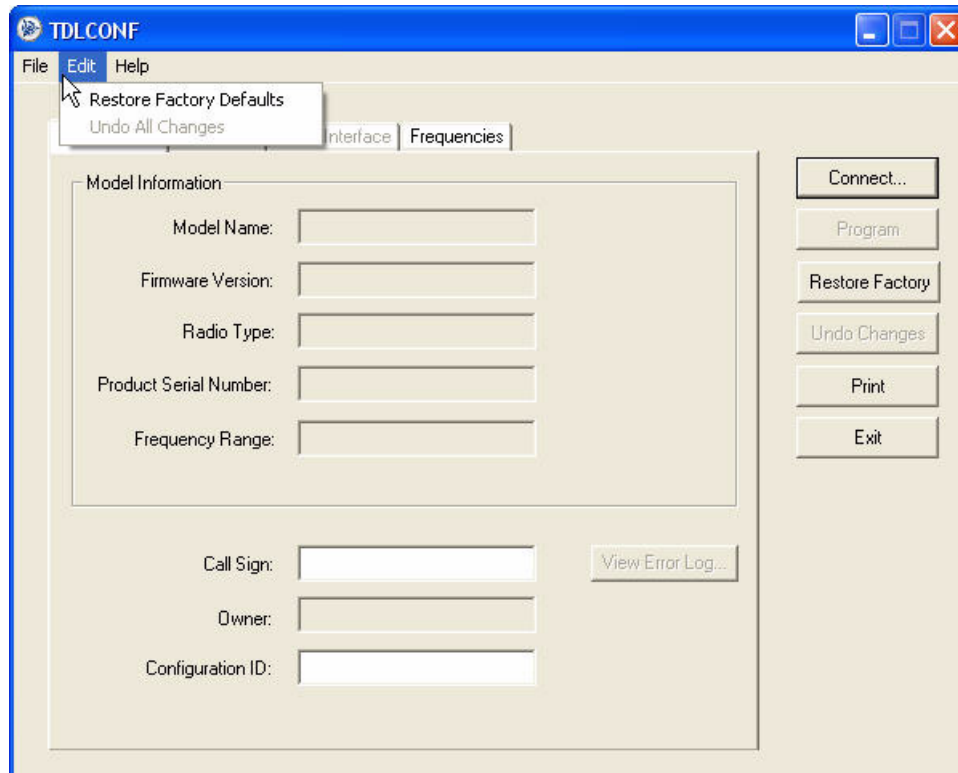
Select...	To...
Restore Factory Defaults	View the radio factory defaults.
	Different TDL 450 radios use different default configuration parameters. Regardless of how you reconfigure a TDL 450 radio, it always remembers the original default settings. To view the defaults in the software, select *Edit / Restore Factory Defaults* or click **Restore Factory**.
	The software must connect or reconnect to the radio. For more information, see Connecting to the radio, page 12.
	If the software already shows a radio configuration, the following message appears:
	Click **Yes** to copy the default settings from the radio's permanent memory into the computer RAM for review and editing. The radio does not use any changes until you click **Program** in the main dialog or in the *Exit* dialog. When restoring factory defaults, the TDLCONF current channel table is retained.
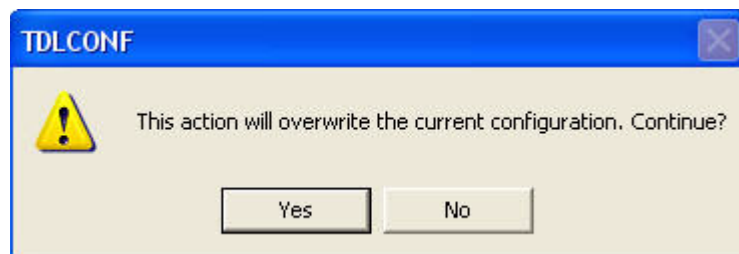
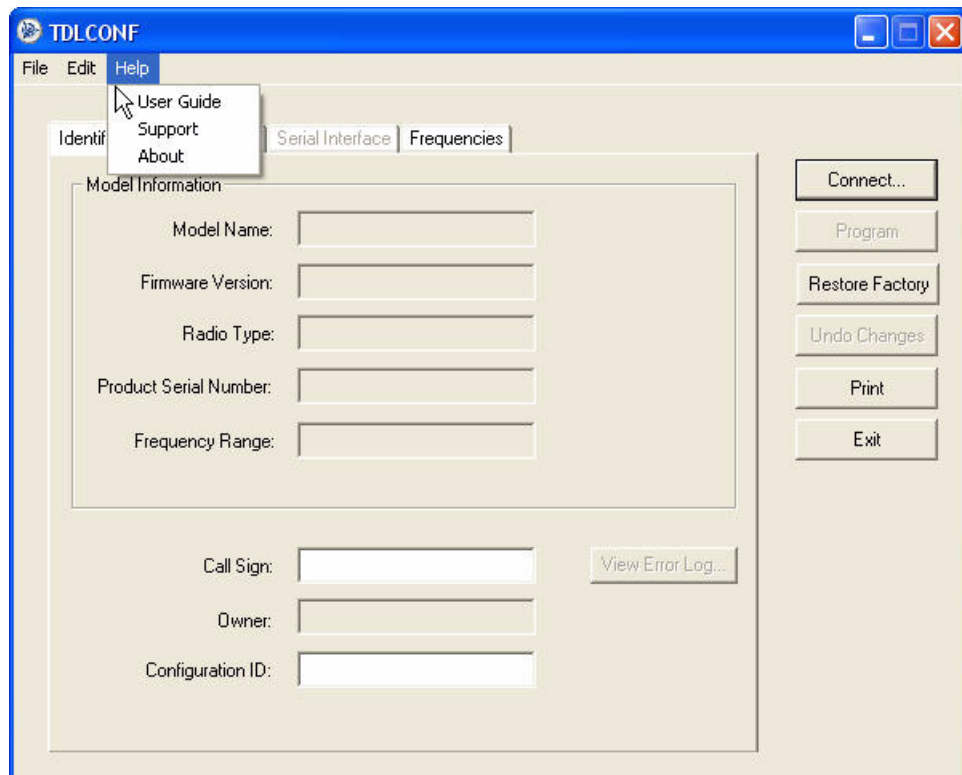| Select...	To...
Undo All Changes	Abandon all configuration changes that you made during this session.
	Parameters on all TDLCONF dialogs reset to what was in effect when you started this session. **Undo All Changes** does not affect any settings in the radio or any configuration file on the computer. To change the radio configuration, you must make changes in the software and then click **Program** in the main dialog.

Help

Select...	To...
User Guide	View a copy of the *Trimble TDLCONF Software User Guide*.
Support	Access links to Trimble Technical Support and the Trimble website.
About	See which version of the TDLCONF software is installed on your computer.

Connecting to the radio

To connect the software to a TDL 450 radio:

Run the software. See

Use the provided programming cable to connect the radio to the computer serial port.

If the computer does not have a serial port, connect the programming cable to a serial-to-USB adaptor cable such as an IOGEAR Model GUC232A.

The TDLCONF software communicates only with Trimble TDL 450 radios. You must use the PDLCONF software to link to Positioning Data Link (PDL), and the RFMCONF software to link to RFM radios. These programs are available for free download from www.trimble.com.

Turn on the radio.

Note – Transmitting without an antenna will not damage the radio but Trimble does not recommend that you do this. Use a gained antenna to raise the Effective Isotropic Radiated Power of the radio. Make sure that the resulting Effective Isotropic Radiated Power does not exceed your licensed limit.

Click **Connect**. The software connects to the radio and then loads its settings into the computer, overwriting any parameters that are currently displayed:
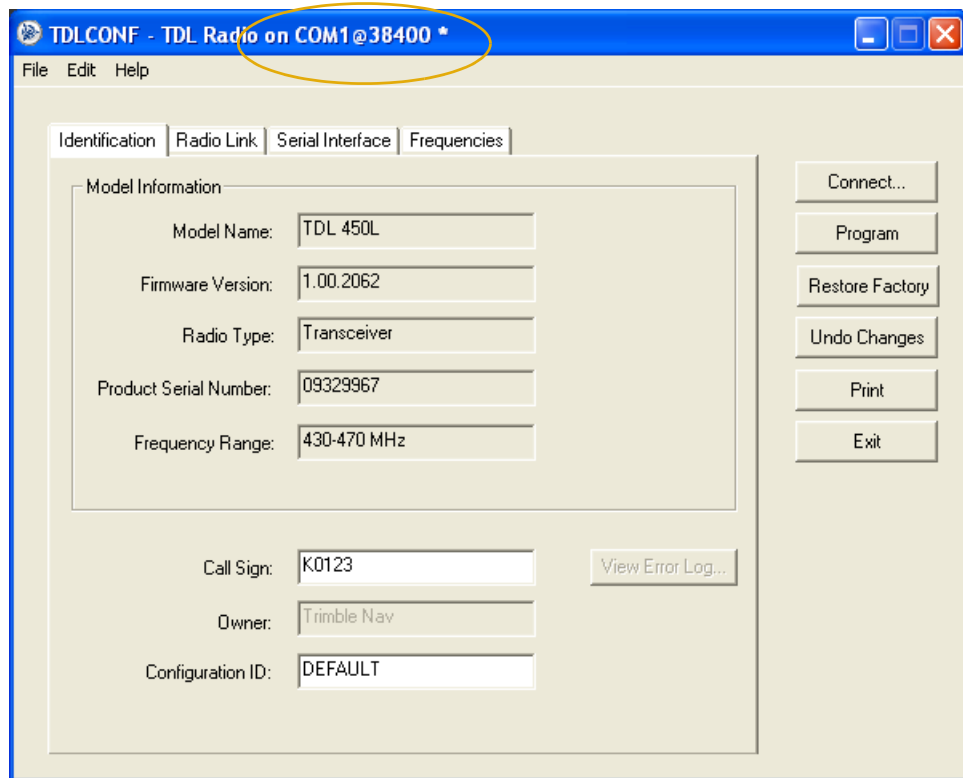
Note – If you edit any parameters, changes are made only in the RAM copy of the file. A changed file has an asterix next to the file name at the top of the dialog. To save changes to the radio or to the computer hard drive, see Saving changes, page 9*.*
*If you change the RAM copy of the file and then click **Connect***, the software does not prompt you to save the changed parameters to a file on the computer hard drive.*

In the *Connect to TDL 450 Radio* dialog, select the COM port that the radio is connected to (from the *Port* drop down list) and then select a baud rate (from the *Data Rate* drop down list):
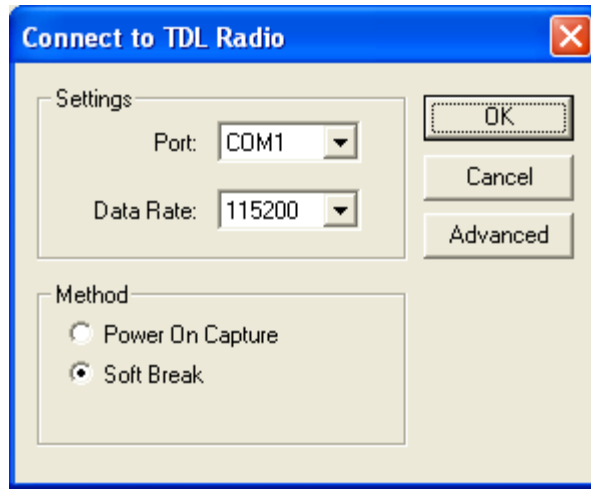
When prompted, click **Yes** to overwrite the current configuration:

To establish a connection, select one of the following:

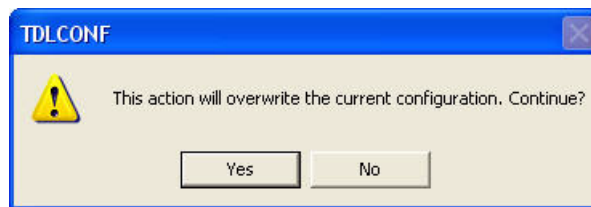– Power On Capture. See page 15.

– Soft Break (the default method). Wait until the radio has been turned on for at least four seconds and then click **OK.**

This sends a soft break (ASCII string **+++**) to the radio at the selected baud rate, which puts the radio into a mode to accept commands from the TDLCONF software ("command mode").

Note – If the TDL 450 radio was previously connected to any external device (for example, a computer, a GPS receiver, or a measurement device) while using a data rate other than that shown, the software detects non-communication at the displayed rate and cycles through the other rates to establish a connection. Some versions of the Windows operating system, and some serial communications drivers, can prevent this connection; if communication fails, do the following:

a.   Turn off the radio.

b.   Disconnect it from the computer.

c.   Reconnect it but do not turn it on.

d.   Use the Power On Capture method for connection (see Step 8).

8. To use the Power On Capture method, if required:

   a. Turn off the radio.

   b. Select *Power On Capture* and then click **OK**:
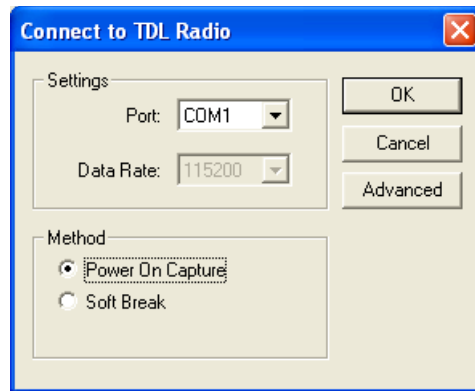
   c. ***Within 10 seconds***, turn on the radio. The radio accepts a packet switch command (at the selected baud rate) that puts the radio into command mode.

If neither of these methods establishes a connection:

Turn off the radio and then click **Advanced**.

Select *Bootloader Power On Capture* and then click **OK**:
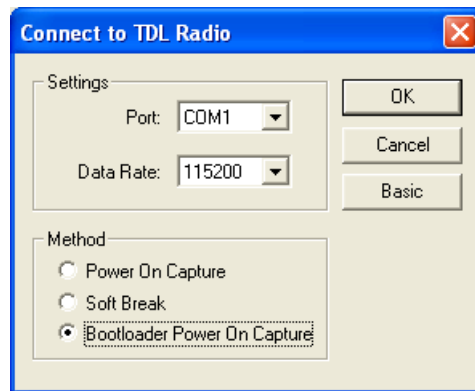
Within 10 seconds, turn on the radio. The bootloader firmware puts the radio into monitor mode that will accept commands.

Demo mode

To simulate connection to a radio, you can run the TDLCONF software in Demo Mode:

Launch the software.

Press Alt+D and then click **OK** in the *Demo Mode* dialog.

Click **Connect** in the main dialog and then follow the steps in Connecting to the radio, page 12.

The software uses a pre-set demonstration radio configuration so that you can view the software features and settings as though it was connected to a radio.

You can load an existing radio configuration file (*.dat) to simulate a connection to that radio: Click *File / Import*.

Once the software connects to the radio, the *TDLCONF - TDL Radio on <COM1 @38400>* dialog appears.

Identification tab

This tab has the following controls:
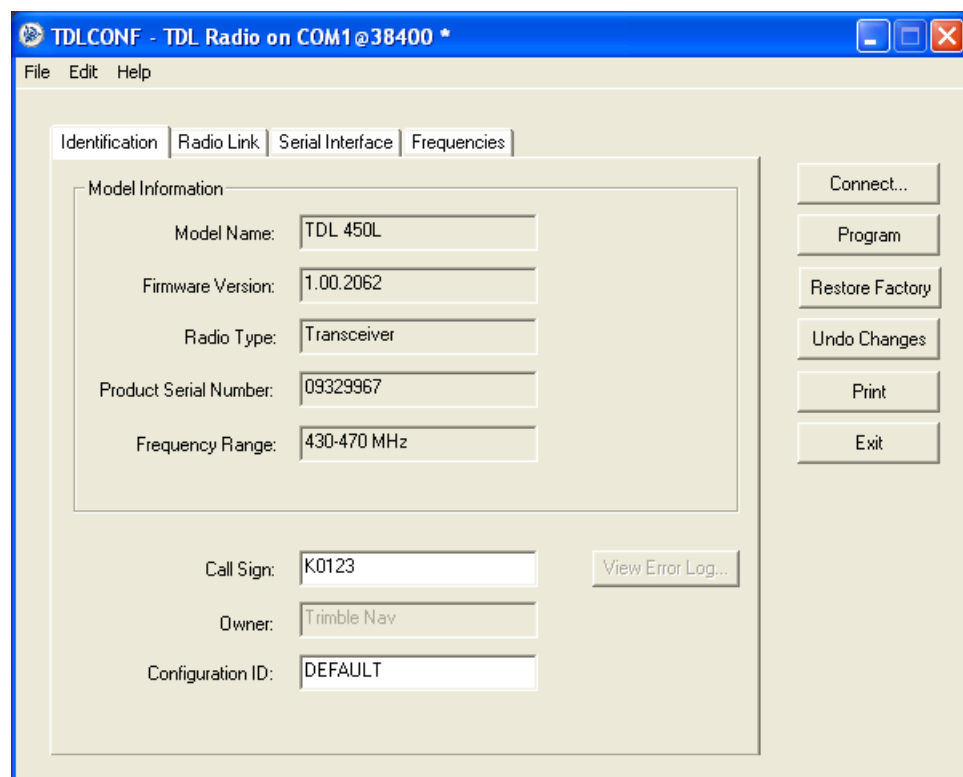
Fields that you cannot edit

- Model Name.

- Firmware Version.

- Radio Type: *Transceiver* or *Receiver Only.*

- Product Serial Number: An 8-digit number where the first two digits are the year of manufacture, the next two digits are the week of manufacture, and the last four digits are incremented from 0001.

- Frequency Range.

Fields that you can edit

- Call Sign.

- Owner: For example, the company name.

- Configuration ID: Identifies which configuration is loaded into the radio. It can be different from the *.dat filename used when exporting (saving) the configuration (*File / Export*).

To save these entries to the radio, click **Program**.

To save configuration changes to a file on the computer, select *File / Export*.

Note – *TDL 450 radio modems record error logs in the field whenever the modem experiences an abnormality. To view this log, click View Error Log to the right of the Call Sign field. You can copy the log to the computer clipboard for pasting into another document, print the log, or save the log on the computer as a *.txt file:*

Radio Link tab

This tab has the following controls:
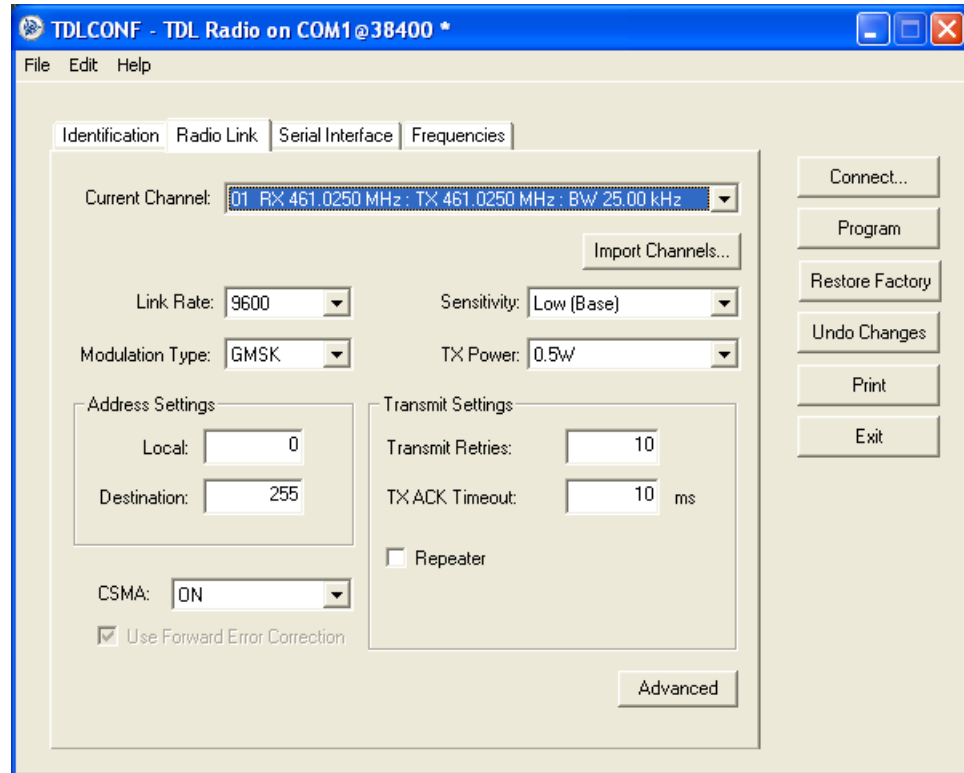
Current Channel field

Channel tables are lists of radio parameters comprising:

- Channel numbers (1 through 32)

- Frequencies at which the radio will receive data on each channel

- Frequencies at which the radio will transmit data on each channel (this may be different from the receive frequencies)

- One channel bandwidth (25 kHz or 12.5 kHz) for all channels in the table

- An optional list of TDL 450 radio serial numbers that can read the channel table

  Your dealer should have created a channel table based on your radio license and then loaded it into your radio(s) before delivery. If you did not receive a channel table with your radio, contact your dealer or Trimble Support.

The radio channel table can contain more than one channel, but the radio can be set to only one channel at a time. The *Current Channel* field shows the current setting. The drop down list to the right of the field shows all the channels in your channel table. To select another channel, click it:
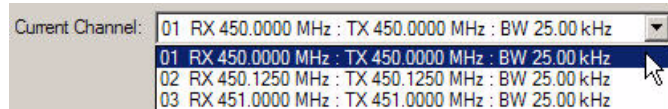
Note – The radio is not set to this new channel until you click **Program**. *While all TDL 450 radios can be reconfigured using the TDLCONF software, some models have user interfaces that enable you to select other channels on the front of the radio, and others must be reconfigured through the TDLCONF software.*

Import Channels

Click **Import Channels** to select any other channel table created for your TDL 450 radio by an authorized Trimble dealer. Channel tables files have the *.frq extension. Other channel table files, such as *.upg files created by PDLCONF for PDL-generation radios, are not compatible with TDL 450 radios.

⚠ **CAUTION –** Government regulations may require you to possess a valid license to transmit data on certain radio frequencies. The standard version of the TDLCONF software does not allow you to create your own channel tables. You must check with your dealer about obtaining frequency channel tables that meet your licensed authorized frequencies or other government regulations.

Link Rate

This is the rate at which data bits are transmitted or received by the radio modem. The radio must receive and transmit at the same rate. The default link rate for all TDL 450 radios is 9600. You can select a different rate from the drop down list next to the field:
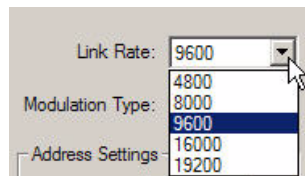
Sensitivity

Note – You may know this function as Digisquelch.

To optimize your radio for operation in different signal or noise environments, select a sensitivity level from the drop down list:

In general, have the Sensitivity level low enough to reject noise but high enough to accept signal. ***Signal*** is defined here as the radio energy you want to receive; ***noise*** is defined as everything else. Suitable Sensitivity levels to select, depending on the noise and signal levels, are as follows:

		Signal	
		Strong	**Weak**
Noise	**Loud**	Low	Medium
	Quiet	Medium	High

Signal levels decrease with distance between the transmitter and the receiver. To extend the range, set Sensitivity to Medium or High, although this can increase the amount of noise passed through the radio. At times, it may not be easy to determine the noise level without using a scanner or other RF energy monitor. If you are not sure about the noise level in your work environment, use the following guidelines for setting Sensitivity.

Note – The default Sensitivity level is Low: Use this setting when CSMA is on. See page 24. *CSMA is a legal requirement in the United States. If you are outside the United States and can legally operate with CSMA off, you can set the Sensitivity of a GPS base station radio or a remote sensor radio to High.*

GPS surveying and similar applications	Set Sensitivity to
GPS base station radio	Low
GPS rover radio	High

Environmental monitoring and similar applications	Set Sensitivity to
Remote sensor radio	Low
Local office radio	High

Environmental noise levels may change throughout a work day and you may need to re-adjust the Sensitivity setting. The TDL 450 radio user interface enables you to adjust Sensitivity in the field without running the TDLCONF software.

Modulation Type

The TDLCONF software enables you to configure your radio for either Gaussian Minimum-Shift Keying (GMSK) modulation or 4-Level Frequency-Shift Keying (4FSK) modulation. The default (GMSK) is generally less sensitive to interference from environmental noise. However, 4FSK modulation supports approximately twice the data throughput of GMSK. When you use a link rate above 9600, Trimble recommends that you use 4FSK modulation. To switch to 4FSK modulation, select it from the *Modulation Type* drop down list:

Not all data protocols support 4FSK modulation. If you select 4FSK modulation on the *Radio Link* tab, you will not be able to select an incompatible protocol on the *Serial Interface* tab. See Serial Interface tab, page 27.

TX Power

You can configure the radio for various output power levels. To adjust the transmit (Tx) power, select a value from the *TX Power* drop down list:
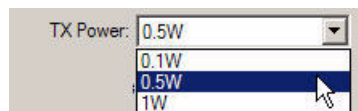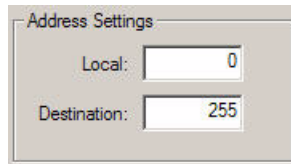

Address Settings

Use these fields to set Local and Destination addresses for any two TDL 450 transceivers to communicate exclusively with each other.

The main advantage of addressing is the ability to restrict the use of transmitted data to a specified receiver. Any receiving rover radio with a Local address different from the transmitting base radio's Destination address will delete the data without repeating it over the air to other radios or sending it serially to an external device such as a GPS receiver. This enables multiple transceiver pairs to operate on the same channel without "seeing" each other's data. However, the addressed radios must have transmit and receive capability.

Addressing works only between two radios. In addition, each radio must be configured for the Transparent EOT, Transparent EOC, or Packet Switched protocols (from the *Serial Interface* tab). The Local address of each radio must be the same as the Destination address of the other radio. For example, a radio with Local=X and Destination=Y can communicate only with another radio with Local=Y and Destination=X.

To set a Local or Destination address, enter a value (between 0 and 254) into the appropriate field. You can enter only one Local and one Destination address into any one radio:
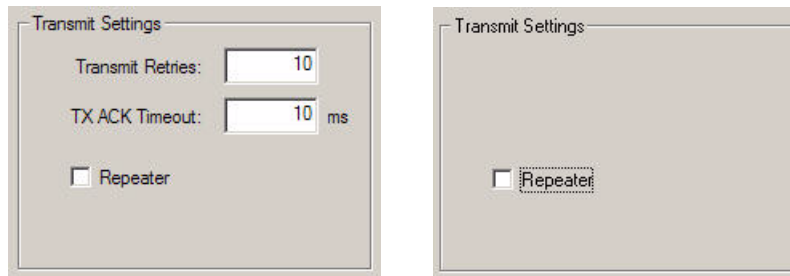

The Destination address of 255 is a special case designated as ***broadcast mode***. If you enter **255** as a radio's Destination address, all Trimble radios sharing the channel—regardless of their Local address—can receive the data transmissions and either repeat them over the air to other radios or send them serially to an external device.

The default Local address number is 0 and the default Destination address number is 255. If you are not using Transparent EOT, Transparent EOC, or Packet Switched protocol, do not change these defaults.

Note – The Local=0/Destination=255 combination is the only selection that works with receive-only radios.

Transmit Settings

These controls enable you to configure the following:

- Transmitter Retries

- TX ACK Timeout

Note – These controls appear only if you selected Transparent EOT, Transparent EOC, or Packet Switched protocol.

They require the rover radio to transmit an acknowledgement packet (ACK) for each packet that is correctly received from the base radio. The base radio retransmits the data packet a specified number of times (the *Transmit Retries* value) if it does not receive the ACK packet from the rover within a specified number of milliseconds (the *TX ACK Timeout* value). This ensures 100% data transfer during periods of intermittent interference.
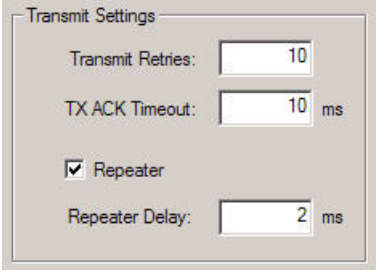
If you transmit latency-sensitive data such as RTK corrections that are typically updated every second, do not set the *Transmit Retries* value so high that the transmitter might wait longer than the latency period to transmit the data. In general, set the number of Transmit Retries to less than:

(radio link rate in bps) ÷ (packet size in bits) × (latency period in seconds).

For example, if you transmit 2400-bit corrections every second at a 9600 bps radio link rate, set the Transmit Retries to less than 4 because it takes more than one second to retransmit a 2400-bit RTK correction more than 4 times at 9600 bps, and after 1 second there are newer, more accurate corrections to transmit.

- Repeater

  Select this if you want the radio to act as a repeater (automatically transmit the data it receives). Once you select this check box, the *Repeater Delay* field appears. Enter the time in milliseconds you want to elapse between receipt of a data packet and its retransmission:

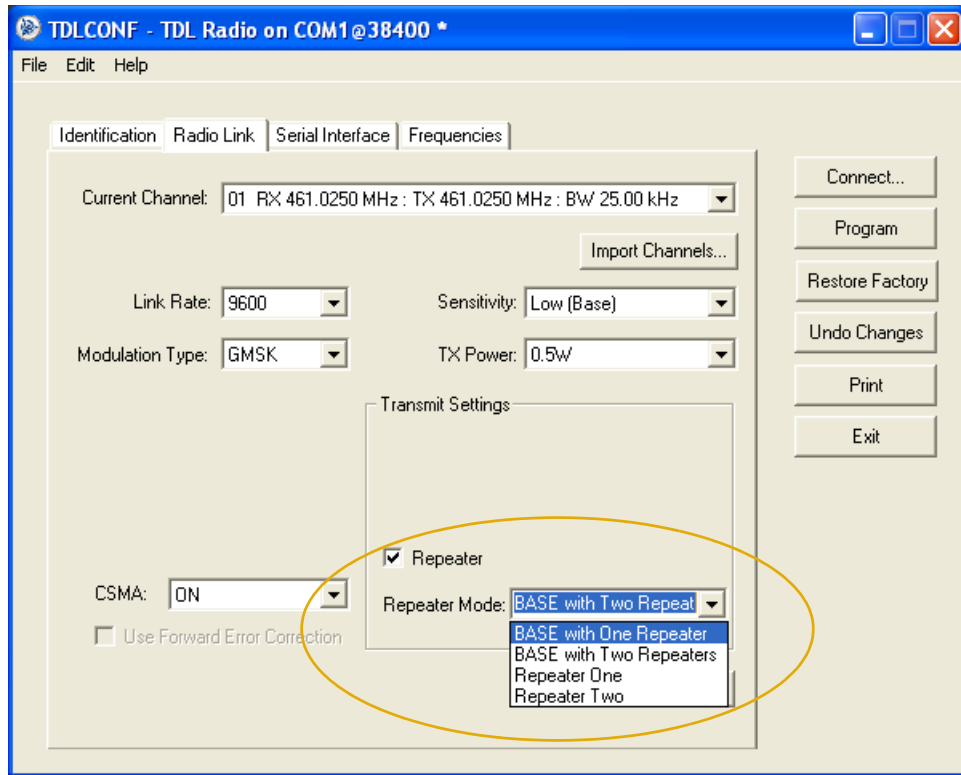 | Transmit Settings | | |
  | --- | --- | --- |
  | Transmit Retries: | 10 | |
  | TX ACK Timeout: | 10 | ms |
  | ☑ Repeater | | |
  | Repeater Delay: | 2 | ms |

  The default is 2 milliseconds. Enter a value between 0 and 255.

If you selected TRIMTALK™ 450S, TRIMMARK™ II/IIe, TT450S (HW), or TRIMMARK 3 protocol and then selected the *Repeater* check box, the following repeater modes are available:

Select	To configure the attached radio as a
BASE with One Repeater	Base station transmitting GPS corrections to one repeater radio
BASE with Two Repeaters	Base station transmitting GPS corrections to two repeater radios
Repeater One	Single repeater or the first of two repeaters
Repeater Two	Second of two repeaters

CSMA

TDL 450 radios are configured in the factory with the CSMA feature (Carrier Sense Multiple Access) set to ON. In the United States, it is illegal to transmit while CSMA is turned off. When CSMA is activated, the radio listens on the selected transmission frequency for any broadcasts. (The selected transmission frequency appears in the *Current Channel* field of the *Radio Link* tab.) If no broadcasts are detected, the radio transmits any data received on its serial interface. If a radio signal is detected on the selected frequency, the radio will not transmit but will wait 3.3 milliseconds before checking again if it is clear to transmit. It continues checking until the frequency is clear.

Use Forward Error Correction

Select this check box to place extra bits in the transmitted data so that other TDL 450 radios receiving the data can check for transmission errors. Although data throughput is adversely affected, using forward error correction can greatly improve range; Trimble strongly recommends that you use this feature.

The check box is unavailable if you use the TRIMTALK protocol, which does not support forward error correction. Select the protocol type from the *Serial Interface* tab.

Advanced

Click **Advanced** to access the following controls:
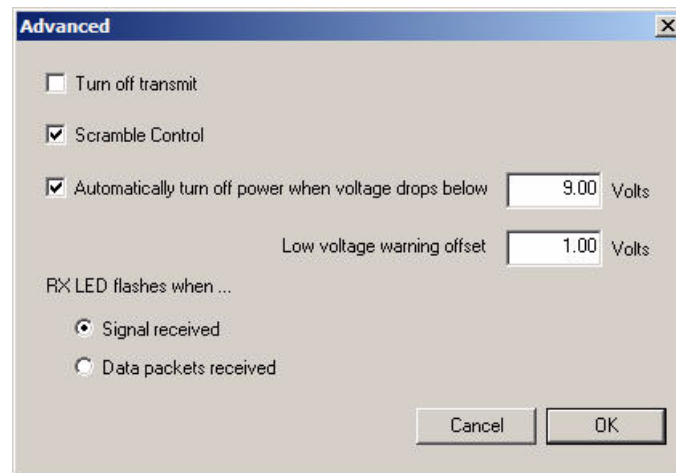
Turn off transmit

Select this to turn off the radio's transmitter.

Scramble Control

This is a low-level security technique that scrambles (encodes) your data before transmission and then decodes it after reception. This prevents nearby non-authorized radios from reading your transmitted data. Scramble Control works only with the Transparent (EOT and EOC) and Packet Switched protocols. Only Trimble PDL and TDL 450 radios can read/write the Transparent (EOT and EOC) and Packet Switched protocols; all PDL and TDL 450 radios with Scramble Control selected will automatically decode the received data.

For security purposes, Trimble recommends that you have Scramble Control selected at all times. However, if you have non-Trimble radios in your system, you may need to turn off Scramble Control.

Note – If you select a protocol type other than Transparent (EOT and EOC) or Packet Switched, Scrambling Control is automatically disabled, although the check box remains selected.

Automatic turn off

This enables the radio to turn off automatically when the power level in the battery falls below a user-specifiable level. The default value is 9.00 V. Enter a non-zero value to prevent the radio battery from being completely drained, as this may damage it.

You can also select a low voltage warning offset. This is the number of volts above the automatic off level at which the radio user interface, if it has one, warns you that the radio battery charge is low. With a radio shut off value of 9 V and a low voltage warning offset of 1 V, the radio warns you when the battery reaches 10 V. The radio turns off when the battery reaches 9 V.
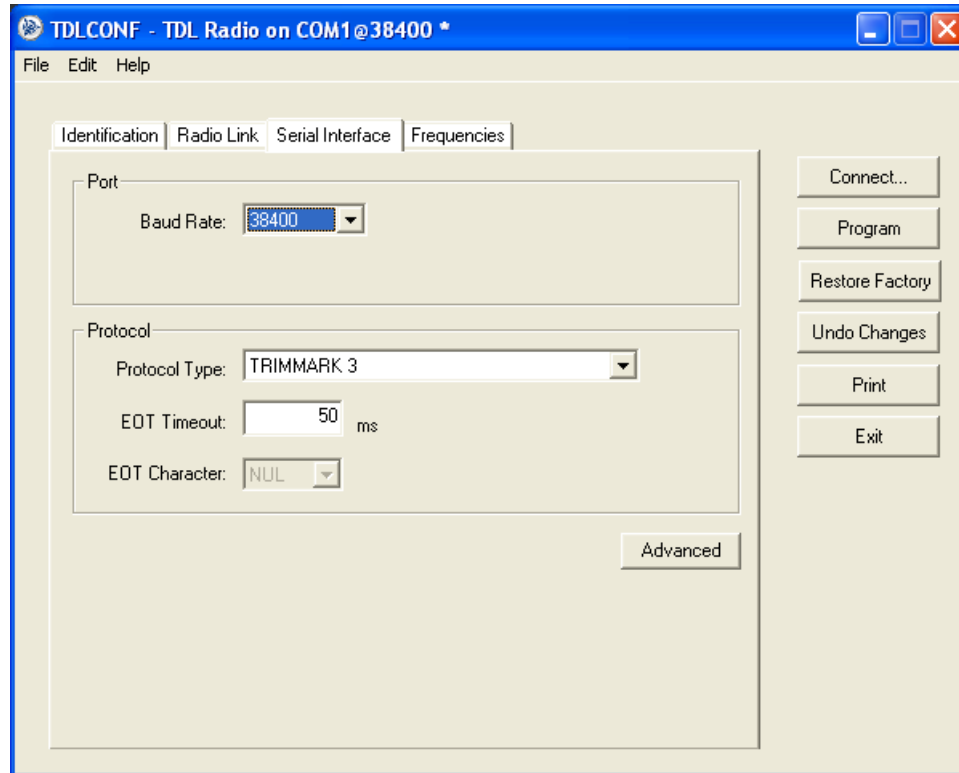
RX LED definition

If your TDL 450 radio has RX LEDs, you can switch the meanings of the LED to one of the following:

- Signal received (RF energy above squelch level is detected)
- Data packets received

The default is *Signal received*, but you can reset the radio so that a flashing RX LED means *Data packets received*.

Serial Interface tab

This tab has the following controls:

In the tab, you can configure the serial interface between the TDL 450 radio and an external devices such as a computer running the TDLCONF software, a GPS receiver, or monitoring equipment.

The way that you set up the radio to talk to a computer is how it will talk to all external devices, so first determine which parameters are required for serial communications in the field by the GPS receiver or external equipment and then enter these same parameters in the *Serial Interface* tab.

Serial communications require a serial port consisting of a software driver running in conjunction with the operating system, and a physical port—usually a DB9 connector. If the external device does not have a serial port, you can use a serial-to-USB adaptor cable to connect the radio serial cable to the external device.

Port group

- Baud Rate

   The default baud rate between the computer and the radio is 38400. Select other rates (between 4800 and 115200) from the drop down *Baud Rate* list:
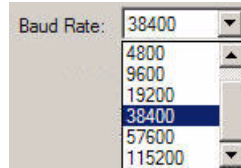
Protocol group

- Protocol Type

   You must select a protocol—a set of rules that governs the order, syntax, and so on of the data communicated between the external device and the radio. All radios communicating with one another must use the same protocol.

   Select the required protocol from the *Protocol Type* drop down list:

   – Transparent with EOT Timeout

   – Transparent with EOT Character

   – Packet Switched

   – TRIMTALK 450S

   – TRIMTALK II/IIE

   – TT450S (HW)

   – TRIMMARK 3

   – SATEL

Transparent

   In this type of protocol, the data has no address or frame characters. A radio that uses transparent protocols determines the end of transmission (EOT) in one of the following ways:

   – A length of time during which there is no transmission (EOT Timeout)

   – A special character (EOT Character)

   For systems using Trimble radio modems exclusively, the default setting is Transparent with EOT Timeout. When you select this, enter the time in milliseconds (between 10 and 2560) that signifies the end of transmission. The default is 50 milliseconds.

If you select Transparent with EOT Character, select the ASCII character for the radios to use. The default is the NUL ASCII character. Select another character from the *EOT Character* drop down list: NUL, SOU, STX, ETX, EOT, ENQ, ACK, BEL, BS, HT, LF, VT, FF, CR, SO, SI, DLE, DC1, DC2, DC3, DC4, NAK, SYN, ETB, CAN, EM, SUB, ESC, FS, GS, RS, US, SP, QWERTY keyboard characters, and so on.

Packet switched

This protocol is a command mode. In all other protocols, incoming serial port data is formatted into packets and transmitted automatically. With Packet Switched protocol, external equipment must provide the packet formatting, scrambling, error correction, and housekeeping functions, and send commands to the radio to transmit and receive data. This may be useful in specialized applications where settings, such as channel selection, must be changed on the fly, and the controlling serial port equipment can be programmed to perform these functions.

TDL 450 radios are fully compatible with other Trimble radios, but only when configured to use the same protocol selected for use with the Trimble radios. The following variations of the Trimble wireless protocol are supported by TDL 450 radios: TRIMTALK 450S, TRIMMARK II/IIe, TT450S (HW), and TRIMMARK 3. Use the TDLCONF software to select the same protocol used on the Trimble radios in your network.

Note – *If you select 4FSK modulation, protocol types that do not support it do not appear in the Protocol Type field. To select one of these non-4FSK protocols, you must first select GMSK on the Radio Link tab.*

SATEL

This is a proprietary protocol used by SATEL radios. TDL 450 radios are fully compatible with SATEL radios, but only when set to SATEL protocol. If SATEL is not included in the *Protocol Type* list, check in the *Radio Link* tab to make sure that you selected *4FSK* in the *Modulation Type* field. SATEL protocol supports only 4FSK modulation.

Advanced

Click **Advanced** to access the following functions:
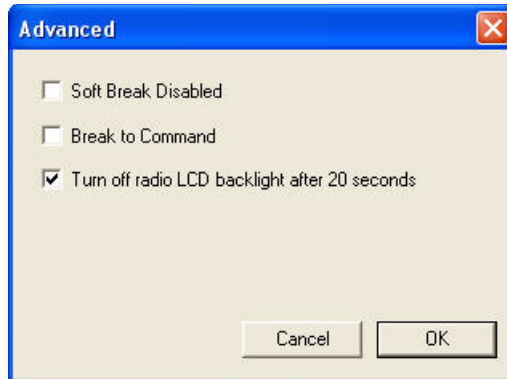
Function	Description
Soft Break Disabled	Enables you to reconnect to the radio without using Soft Break. This is normally done under the guidance of a service technician to troubleshoot connection problems.
Break to Command	Configures the radio to accept a hard break signal that puts the radio into command mode. Clear this check box for the radio to ignore a hard break.
Turn off radio LCD Backlight after 20 seconds	Configures the LCD backlight to turn off 20 seconds after a radio button is last clicked. Clear this check box to keep the LCD backlight on as long as the radio is turned on.

Frequencies tab

This tab has the following controls:
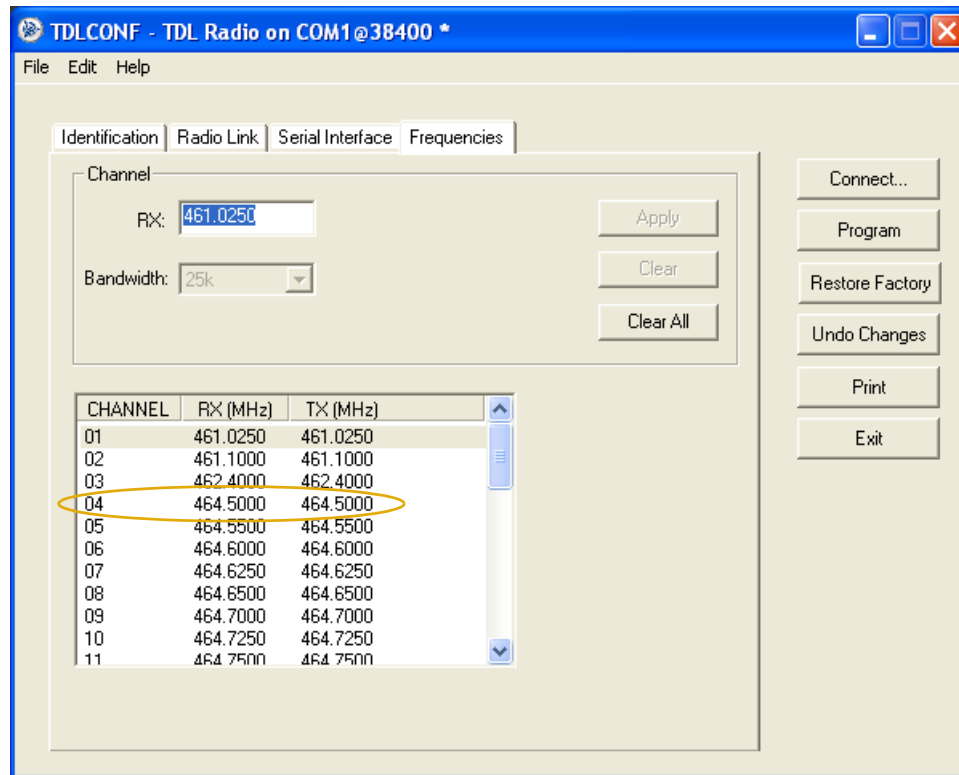
In the tab, you can configure the radio for receive-only channels.

When you first open this tab, the current channel table shows the Channel 01 RX frequency in the *RX* field:

To add a receive-only channel:

> Select the first unused channels (for example, see above).
>
> In the *RX* field, enter a frequency on which to receive data and then click **Apply**.

You can also do the following:

- To clear a receive-only channel, highlight it and then click **Clear**.

- To clear all receive-only channels, click **Clear All**.

- To program the attached radio to receive on this frequency, you must click **Program** (see below). In addition, click *File / Save* to save any new radio configurations to the computer.

*Note – Only your dealer can create or edit a channel table that allows data transmission.*

Programming the radio

When the software connects to the radio, it opens a radio parameter file in the computer RAM. If you change any parameters, the changes are made to that RAM *copy* of the file. Before you exit the software, *save* changes or you will lose them.

If the current configuration parameters are changed, an asterisk appears next to the file name in the computer title bar.

To save the changes to a connected radio, click **Program**, or exit the TDLCONF software and then select the Program option.

To save changes to the computer hard drive, select *File / Export*.
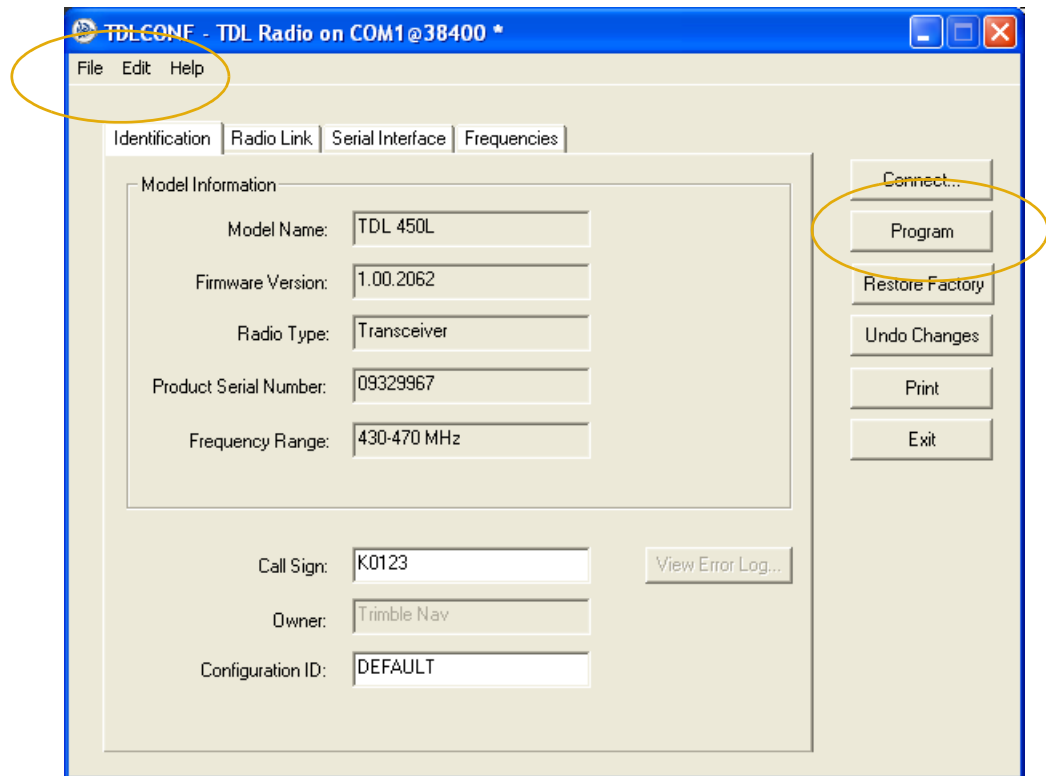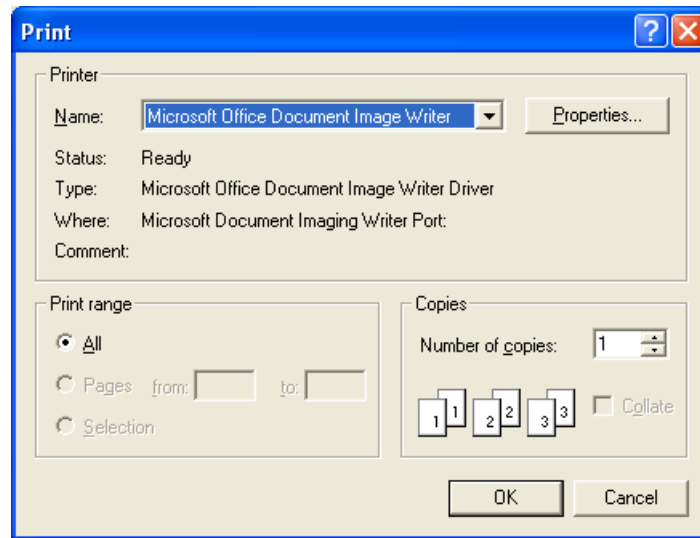

Printing radio configuration parameters

Do one of the following:

- To create a file that describes the current configuration of the attached radio, click *File / Save Report*.

- • To print the configuration without creating a file, click **Print**. In the dialog that appears, select a printer and then click **OK**:

Note – The configuration that appears in the software (which appears as soon as the radio connects) may not be the same as the attached radio's configuration. To import a configuration file from your computer, click File / Import.
You can also use the software to edit parts of the displayed configuration. These changes are not written to the radio until you click **Program**. *If you click* **Print** *before you click* **Program***, the* **radio** *configuration is printed.*
An asterisk in the software title bar shows that the displayed configuration has changed: