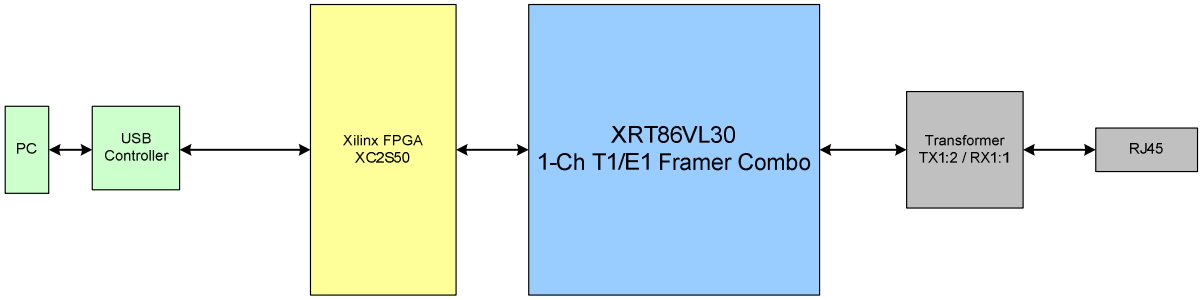
XRT86VL30ES

(80-Pin and 128-Pin Packages)

Evaluation System User Manual

TABLE OF CONTENTS

SECTION 1 Introduction.....3
SECTION 2 Circuit Overview.....3



.....3
Figure 1. Simplified Block Diagram of the XRT86VL30ES.....3
Section 3 Schematic Design.....4
Figure 2. XRT86VL30IV80 Schematic Page (80-Pin Package).....4
Figure 3. XRT86VL30IV Schematic Page (128-Pin Package).....5
Section 4 USB Installation.....6
Section 5 Software Configuration..... 14

SECTION 1 Introduction

This XRT86VL30ES is a complete evaluation kit for characterizing the 1 Channel T1/E1 Framer+LIU Combo BITS device. The evaluation kit includes the following:

1. Evaluation Board
2. USB Cable
3. AC Adaptor Power Cord
4. CD Rom
5. Documentation

SECTION 2 Circuit Overview

This evaluation board is controlled by a graphical user interface (GUI) through a USB port from a typical PC. The FPGA is used to transfer data between the PC and the evaluation board in addition to providing the microprocessor interface to communicate with the EXAR device.

(Quick Note: The software supports Windows XP and NT down to most versions of Windows 98)

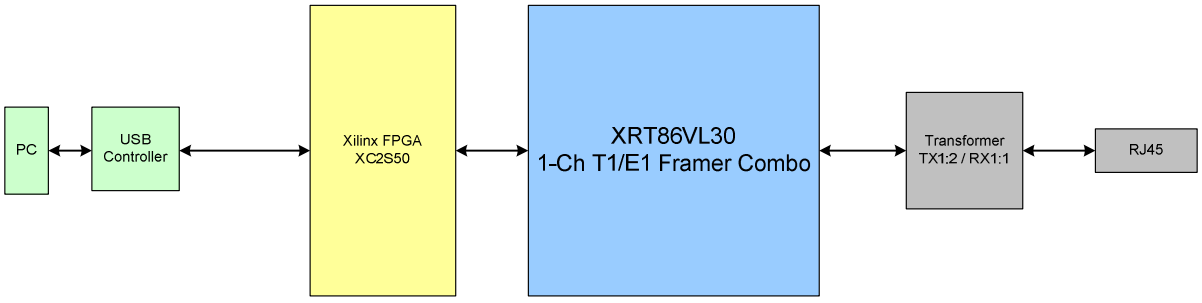


Figure 1. Simplified Block Diagram of the XRT86VL30ES

Section 3 Schematic Design

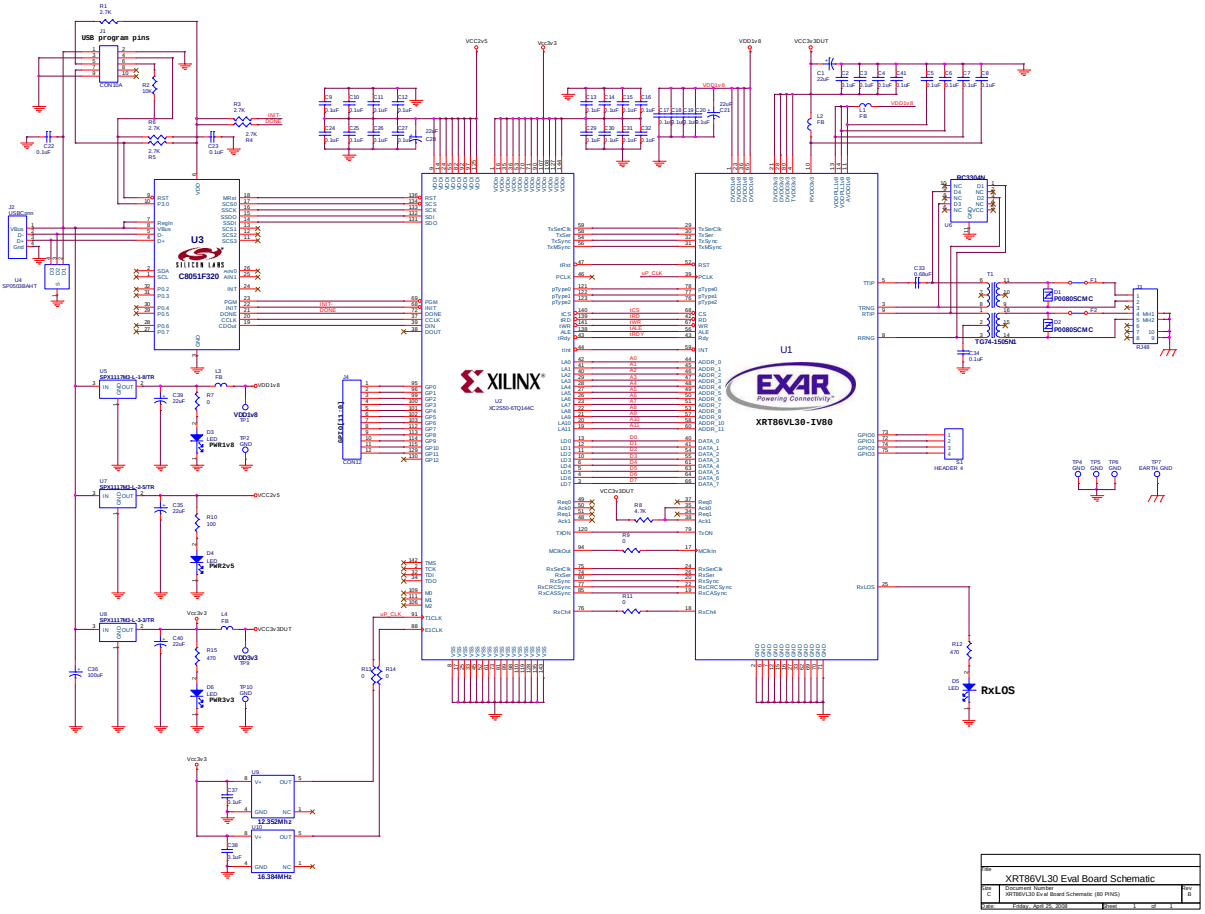


Figure 2. XRT86VL30IV80 Schematic Page (80-Pin Package)

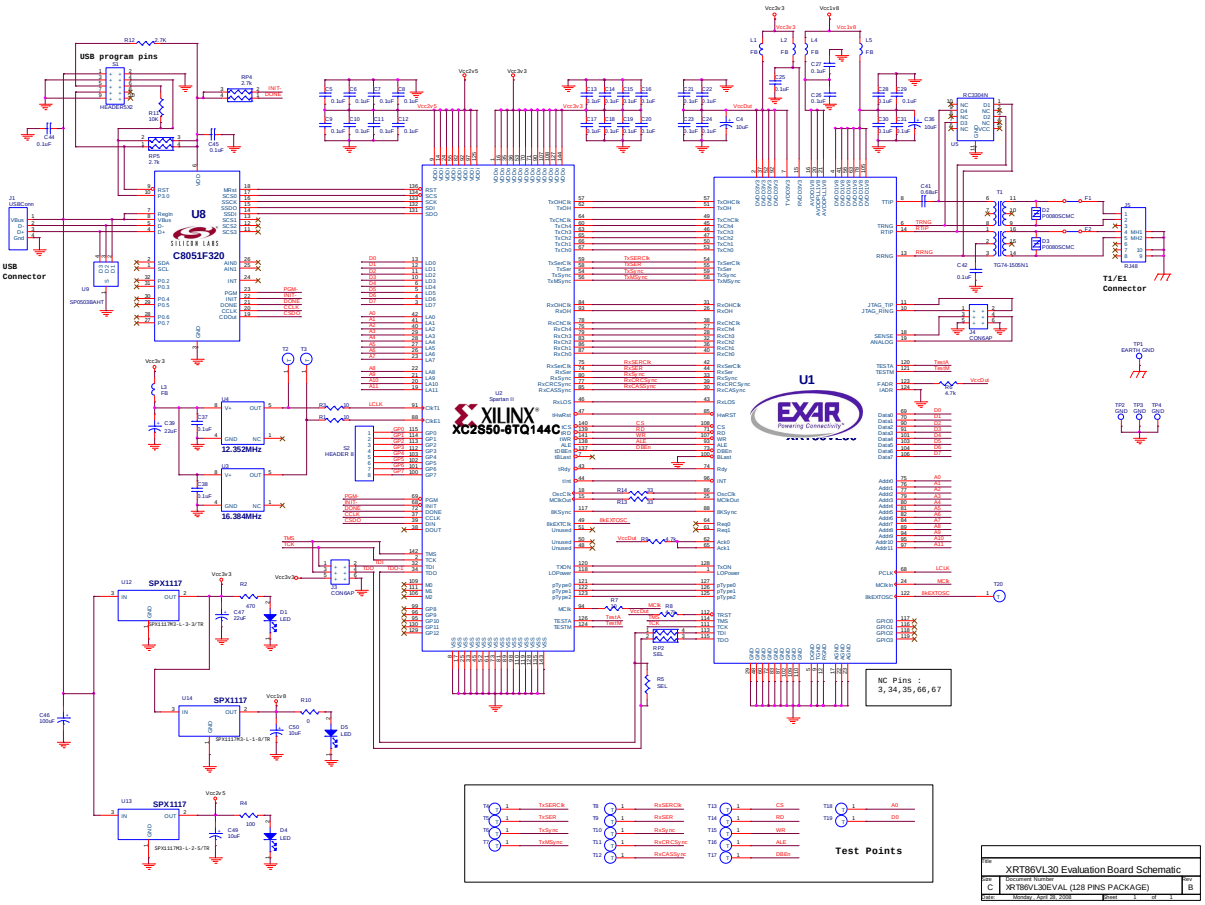
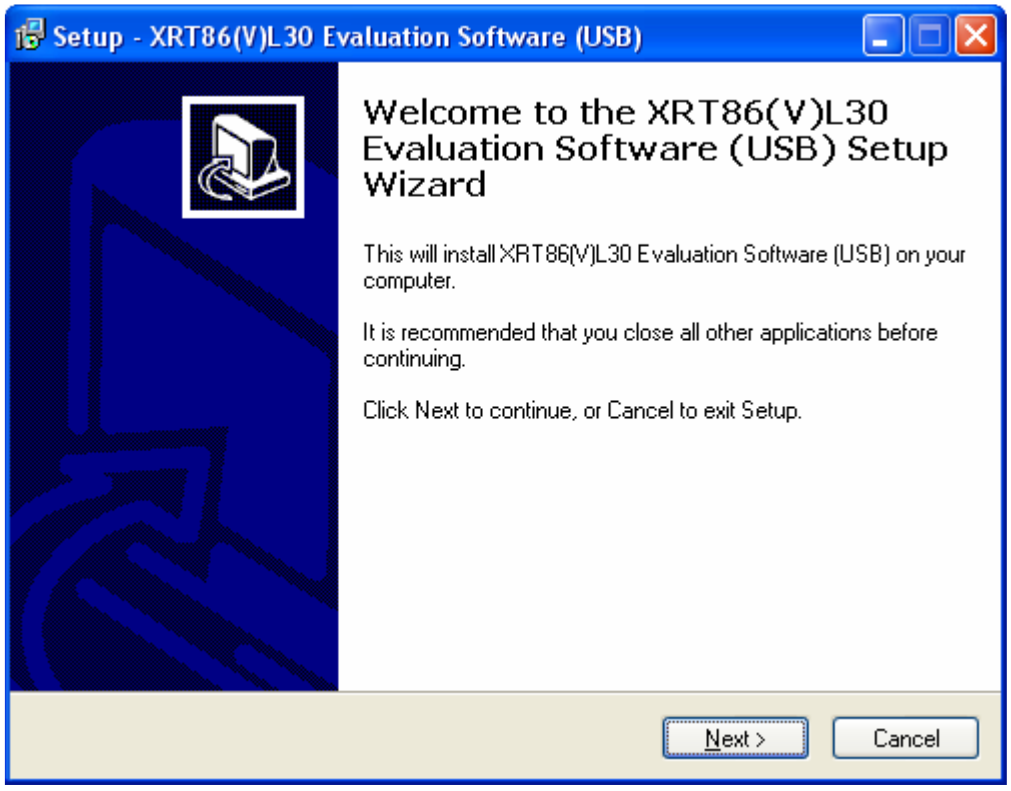


Figure 3. XRT86VL30IV Schematic Page (128-Pin Package)

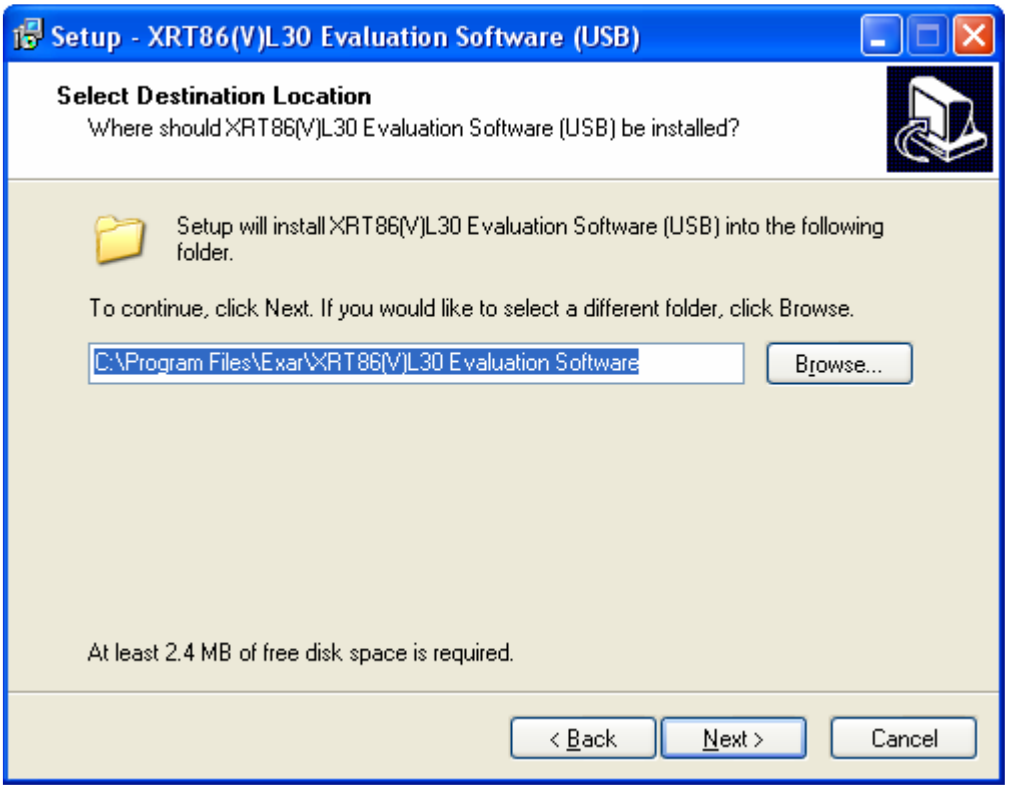
Section 4 USB Installation

Included in the Evaluation System Kit, there is an Installation file on the CD Rom called "XRT86(V)L30EvaluationUSB.exe". This file should automatically load the Exar Usb drivers and the board will be up and running. However, if the following steps are performed and the board is NOT recognized by the PC, the last step in this process describes how to manually load the drivers.

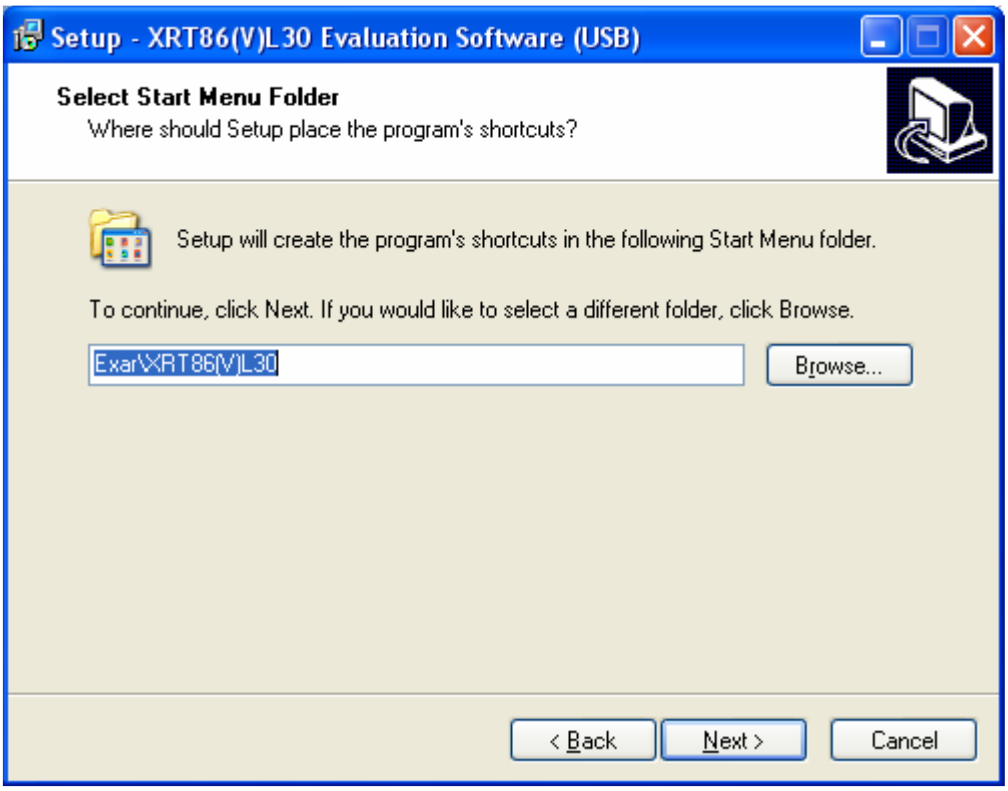
Step 1 Double Click the "XRT86(V)L30EvaluationUSB.exe" file to bring up the following screen. Click on the **Next>** button.



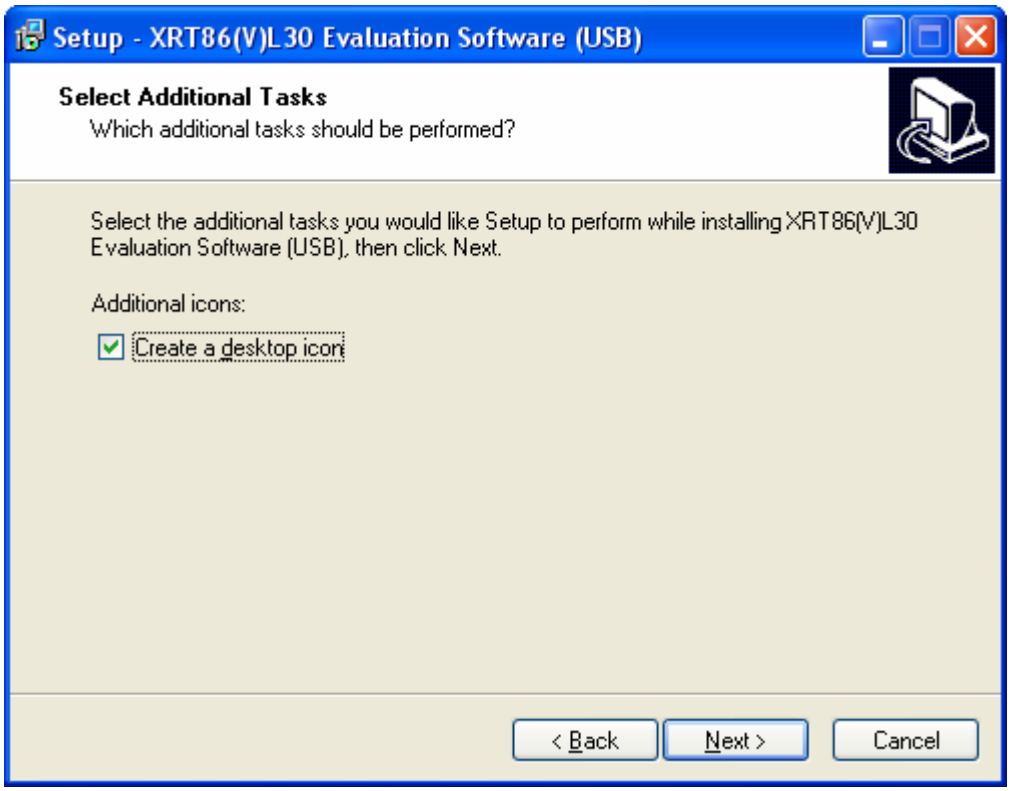
Step 2 Exar recommends using the default directory, but the files can be installed to any directory that you choose. *Note: Make sure that all files from the CD are properly copied to the unique directory if it is changed.* Click on the **Next>** button to proceed.



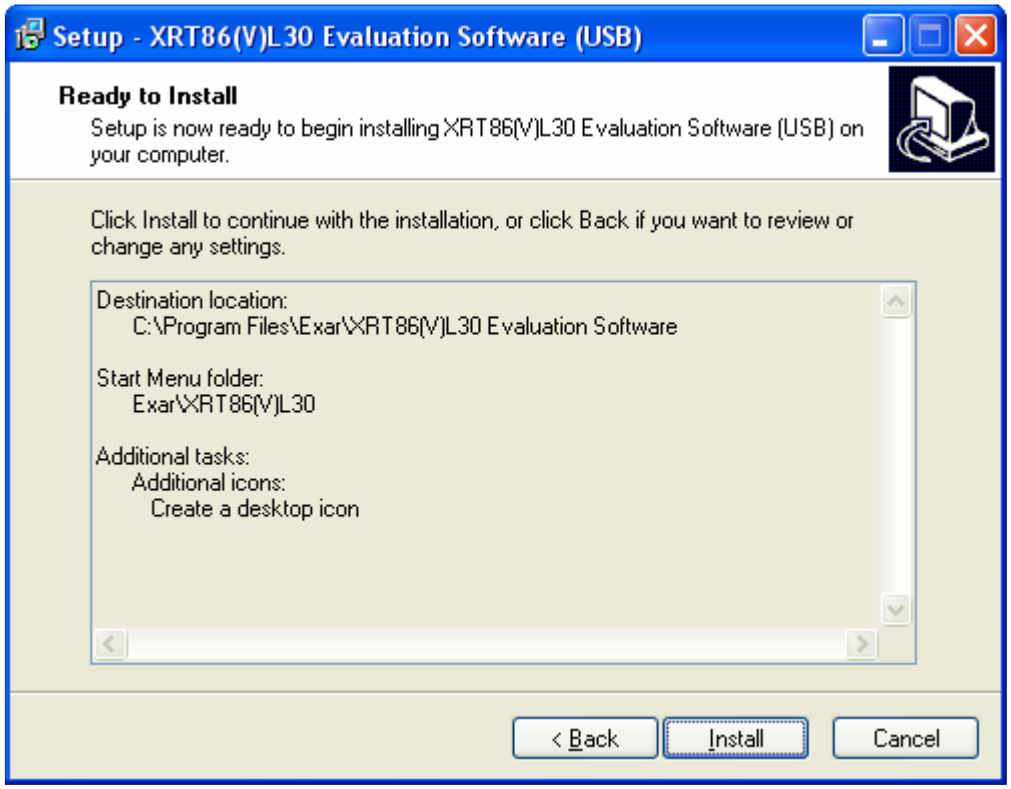
Step 3 Click the Next> button to continue.



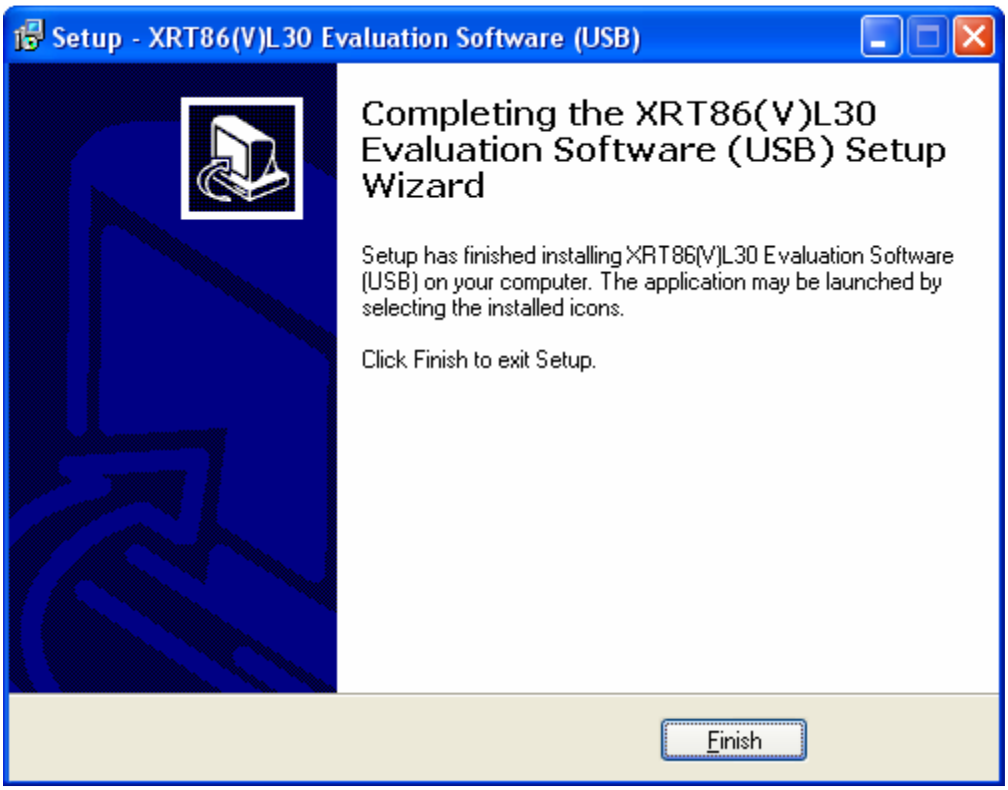
Step 4 You can choose to have an Icon placed on the desktop. Click on the Next> button to continue installation.



Step 5 Click on the Install button to complete installation.



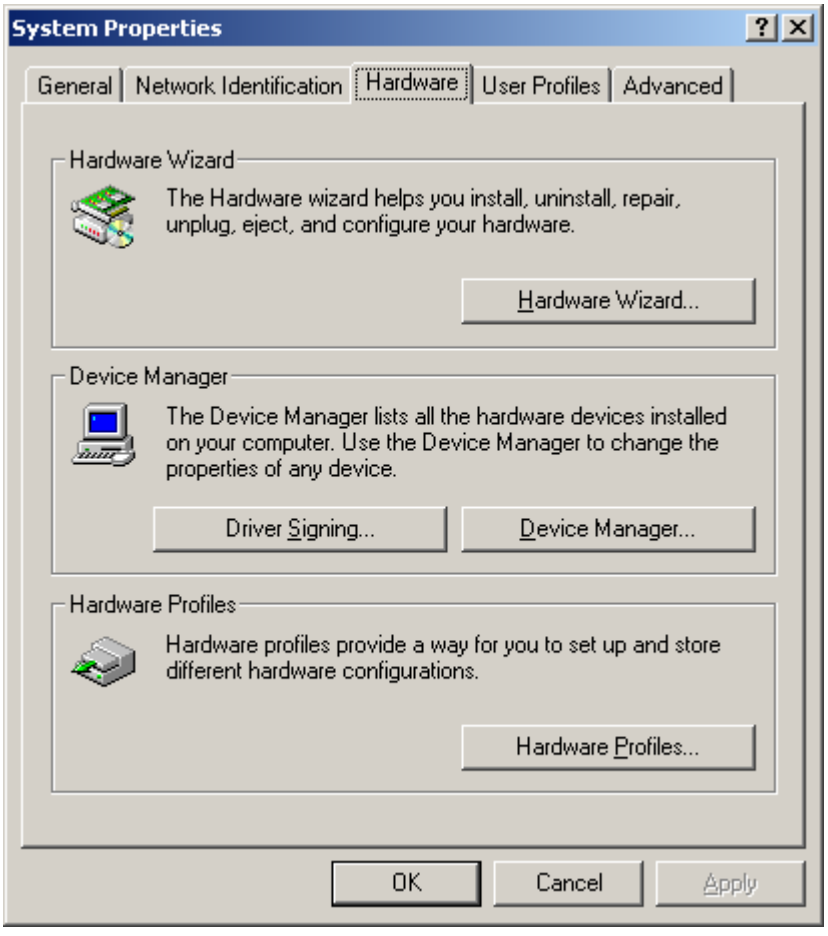
Step 6 Click on the Finish button to complete installation. The Exar USB drivers should be properly installed and ready to go. If so, continue to the next section that describes the Graphical User Interface. If not, see the last step below to manually load the Exar USB Drivers.



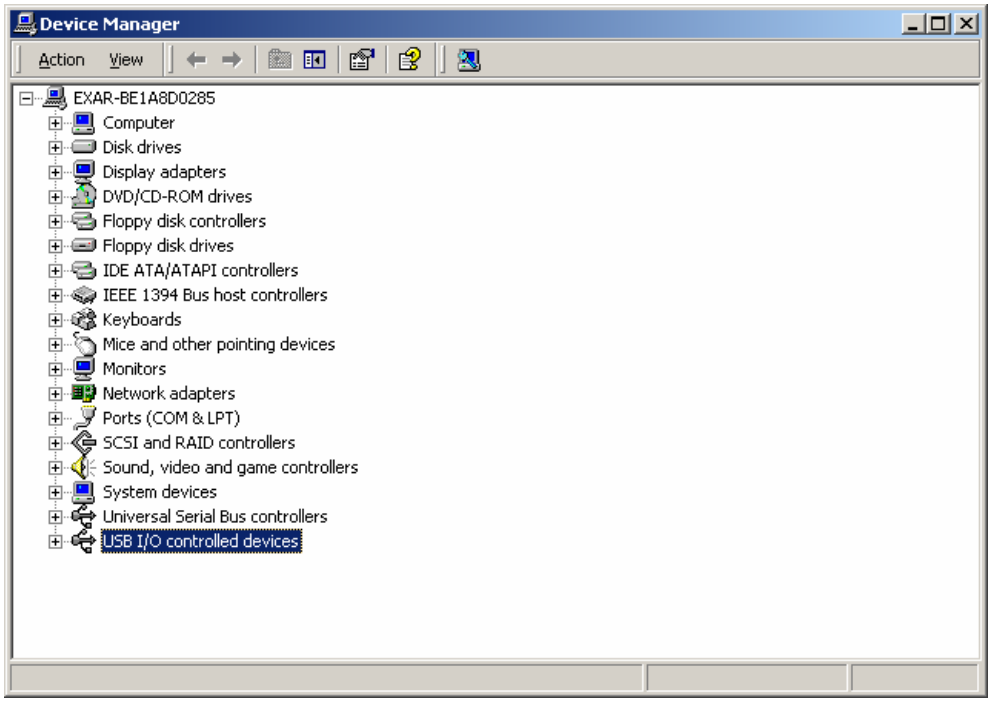
Manually Loading Exar Drivers (If Installation is NOT Successful)

If the Evaluation Board is NOT recognized and/or the installation process was NOT successful, most likely there is a driver contention or the driver was not installed in the proper directory from the software. This section describes how to manually load the drivers.

Note: Each Windows operating system, the key component is usually the Control Panel of the PC. From the Control Panel, you can access the System Properties dialog box. From there, choose the Hardware menu item and go to the Device Manager…



The device Manager will bring up the following dialog box. Choose the USB I/O Controlled Devices, select Exar Device, right click, select properties, select Update Driver, and then follow the directions to choose the driver from the CD or the /Driver directory in the Exar working directory ("C:\Program Files\Exar\XRT86SH221 Evaluation Software\Drivers" by default).



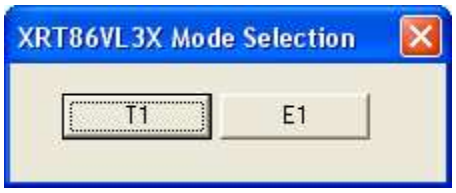
Section 5 Software Configuration

The GUI is intended to allow easy access to configure basic registers in the EXAR device. There are too many registers to fit in an easy to follow software package. Therefore, any features NOT supported in the GUI can be executed through a manual Read/Write menu.

This section will run through the basic GUI setup and describe the modes of operation.

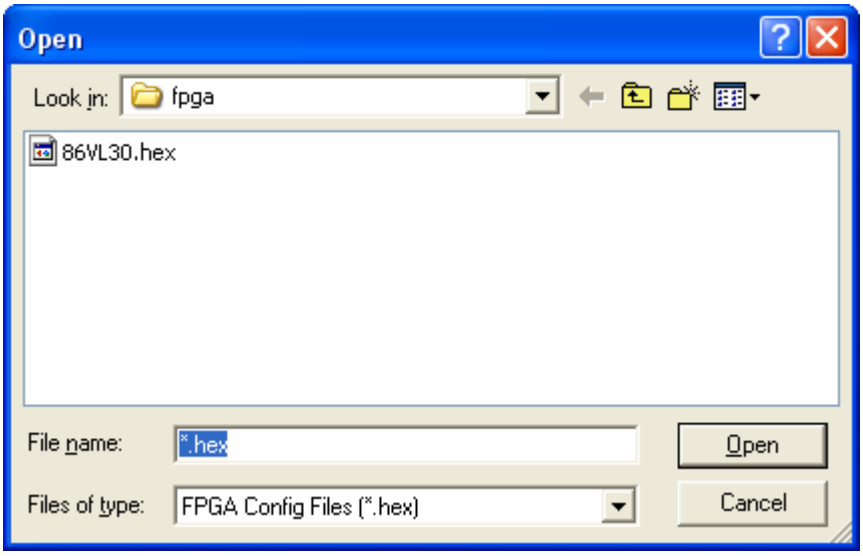
Initialization of the GUI

Once the USB Installer program is completed, an executable file called "xrt86vl3xusb.exe" will be available in the working directory. Double Click this file to initiate the GUI. The following dialog box will appear which will allow you to choose between T1 or E1 configuration. After testing has begun, it is recommended to restart the board and GUI if you decide to switch from one line rate to the other.



Selecting the FPGA File

Once T1 or E1 is selected, the dialog box will automatically point to the correct directory for downloading the FPGA file. Simply choose the FPGA file in the window and select the Open button.

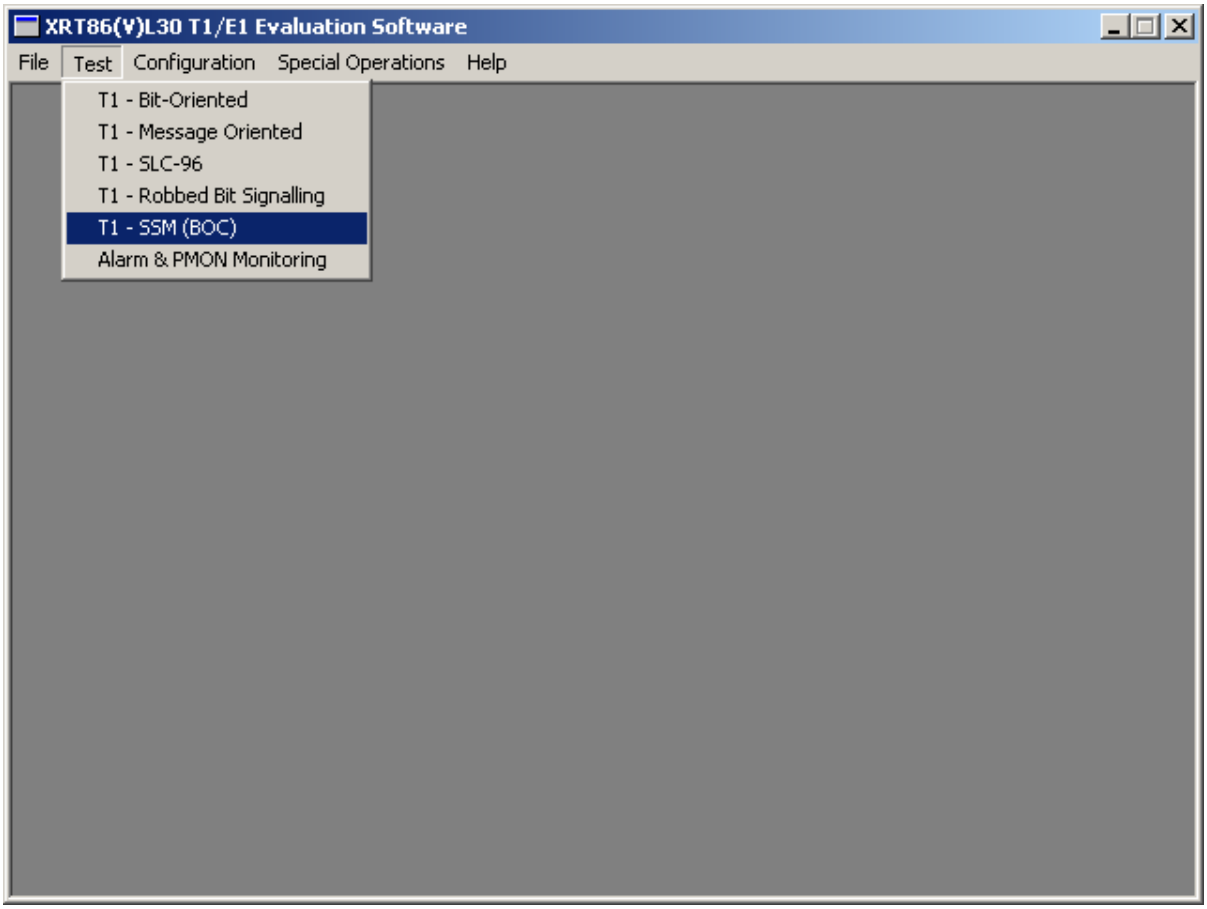


Main Dialog Window

Below is a picture of the main dialog window within the GUI.

T1 Test Menu

The Test menu contains the dialog menus for use in testing Bit-Oriented Signaling, Message-Oriented Signaling, Robbed Bit Signaling, and Alarm & Performance Monitoring. In order to test these features, it is necessary to place the device in a Framer Local Loopback or an External Loopback by shorting Ttip/Tring to Rtip/Rring through the RJ45 connector(s).

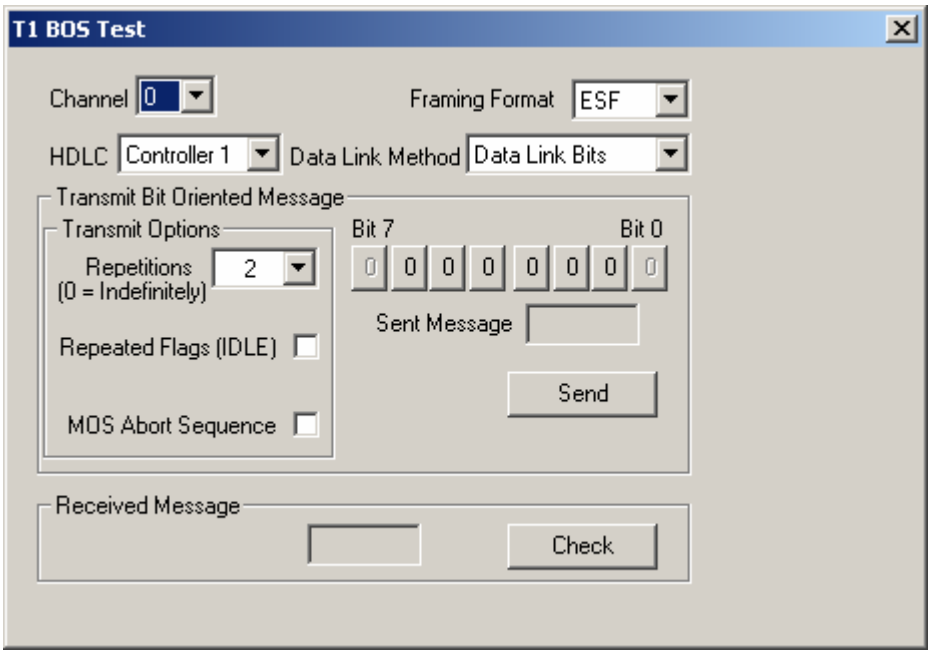


Note

When performing these tests, do not enable FPGA loopback. Generally, this is disabled by default.

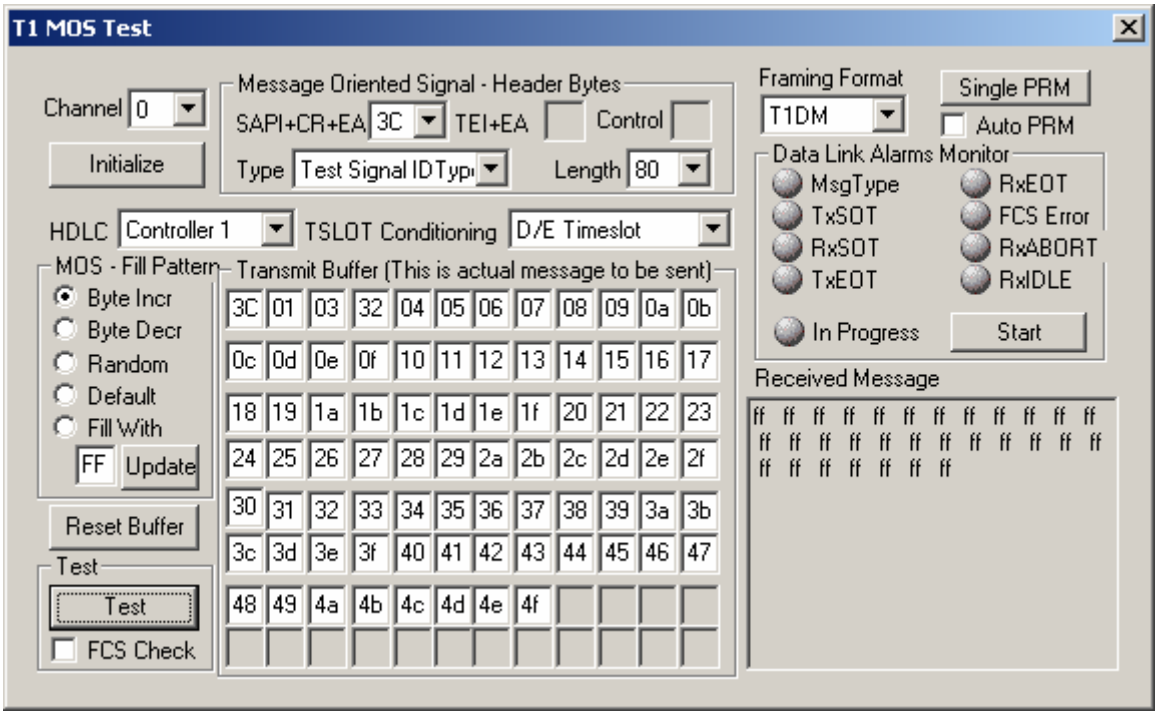
T1 Bit Oriented Signaling Testing

In order to Test BOS, select the channel to be tested, select the framing format that supports BOS (i.e., ESF) and ensure that HDLC Controller 1 and Data Link Bits are used. Then click Send.



T1 Message Oriented Signaling Testing

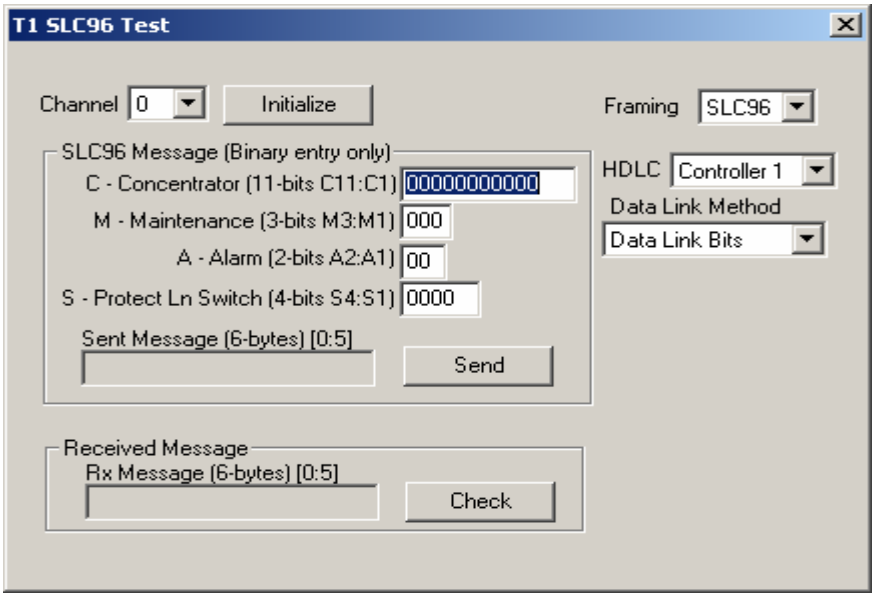
In order to test MOS, select the channel to be tested, select the framing format that supports MOS (e.g., ESF), select a Fill Pattern, select a TSLOT conditioning (note that D/E Timeslot can be used with most framing formats) and select a HDLC Controller. Then click Start which begins the process of checking for received messages.
Click Test to sent the message.



Note
When using Data Link Bits, HDLC Controller 1 must be selected.

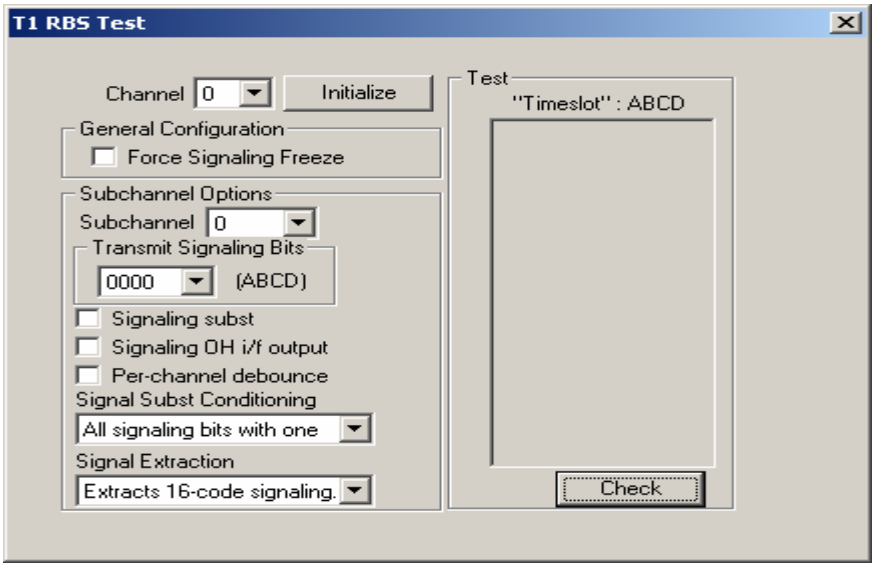
T1 SLC96 Testing

In order to test SLC96, ensure the framing format is SLC96, modify the SLC96 to your liking. Other settings should be left to default. Then click Send to send the message. Click Check to check for received messages.



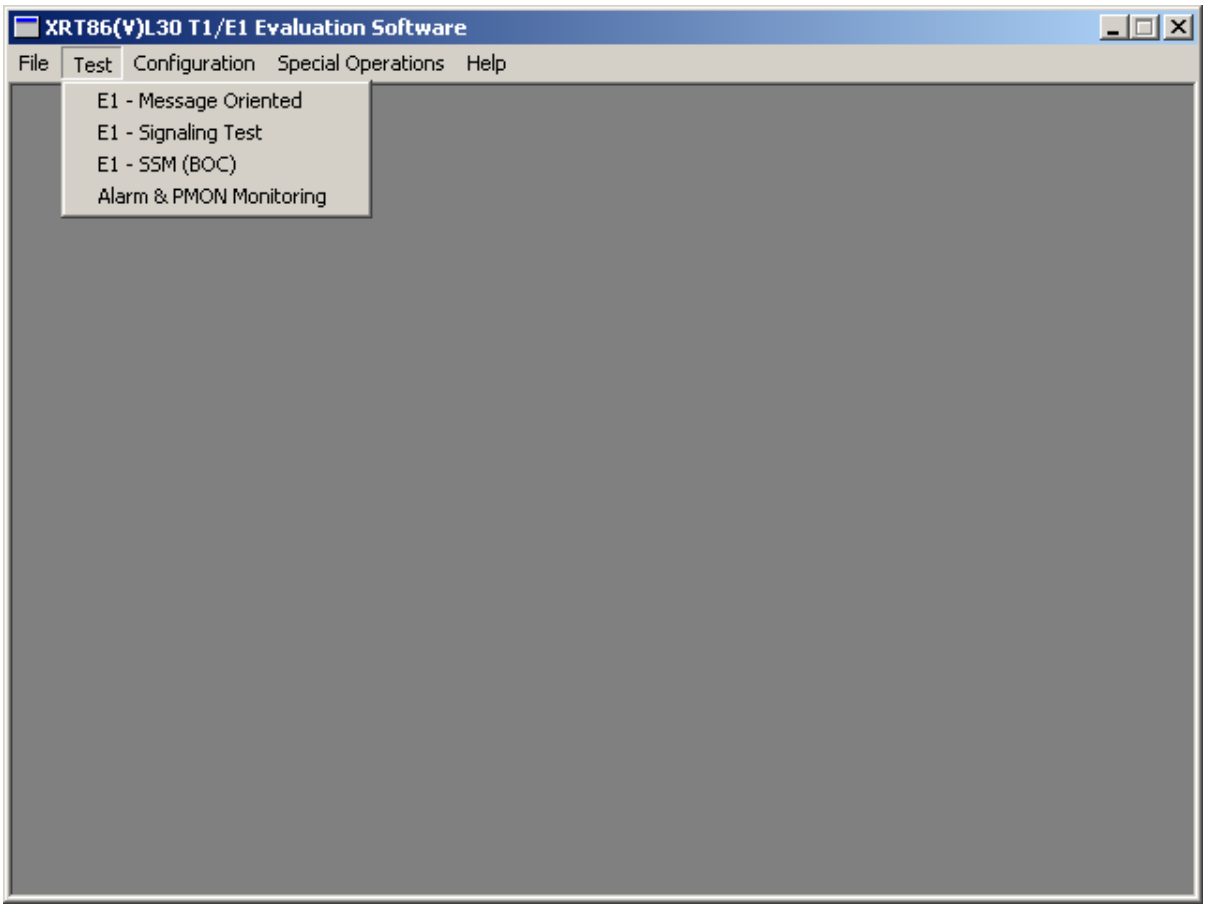
T1 Robbed Bit Signaling Testing

In order to test RBS, select the channel to be tested, and then select the Subchannel (Timeslot) to be configured.Then the user can modify the settings for that timeslot. The user can click check to display all received Timeslot ABCD values for the selected channel.



E1 Test Menu

The test menu contains the dialogs for use in testing Message-Oriented Signaling, CAS Signaling, and Alarm & Performance Monitoring. In order to test these features, it is necessary to place the device in a Framer Local Loopback or an External Loopback by shorting Ttip/Tring to Rtip/Rring through the RJ45 connector(s).

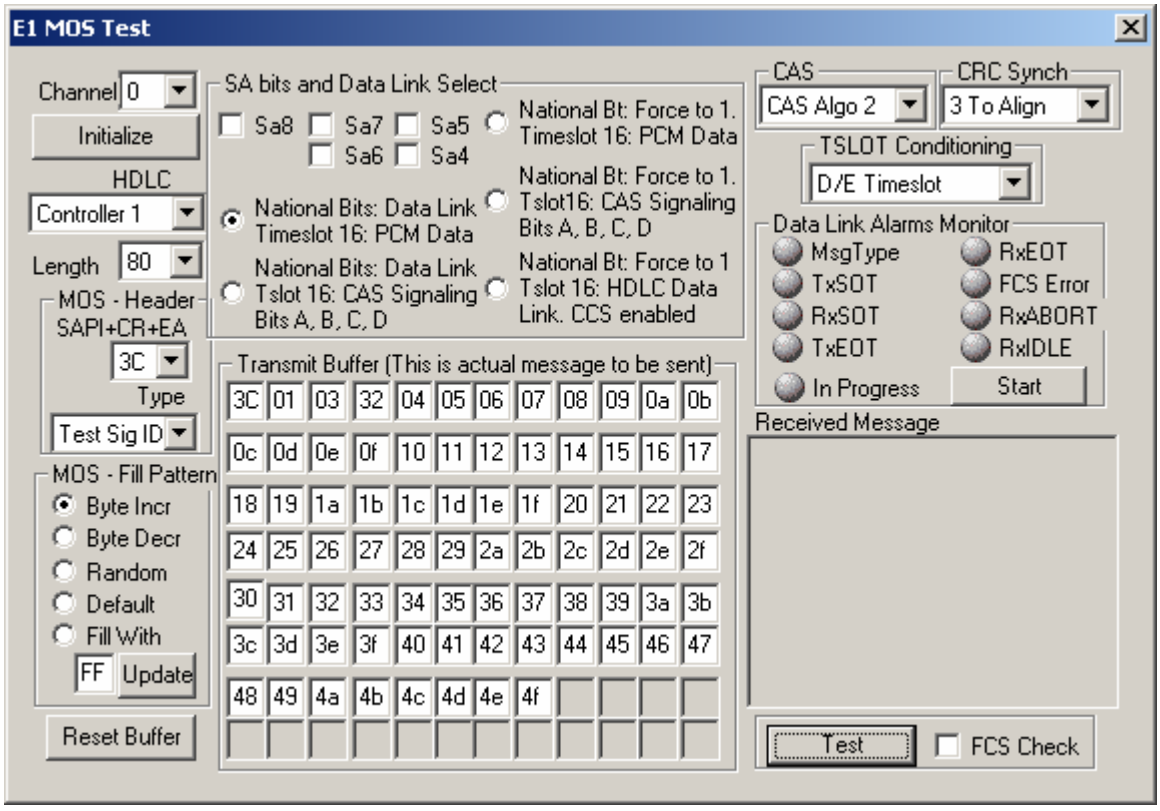


Note

When performing these tests, do not enable FPGA loopback. Generally, this is disabled by default.

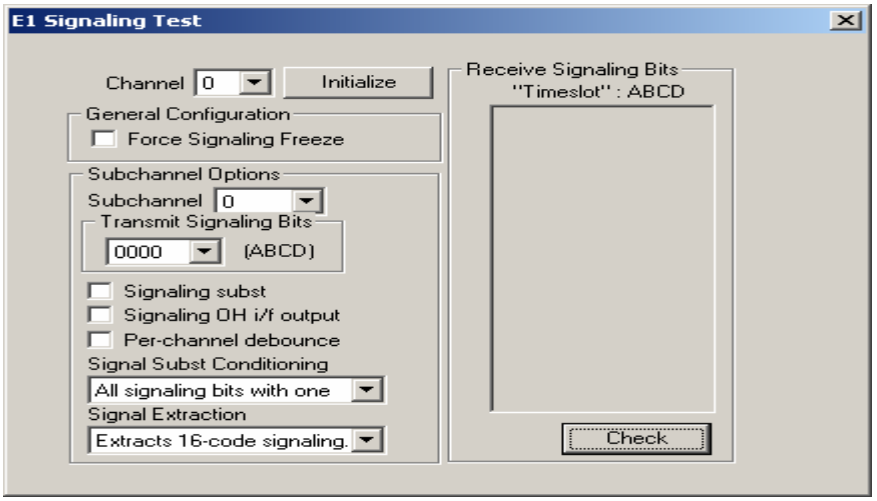
E1 Message Oriented Signaling

In order to test MOS, select the channel to be tested, only select options that supports MOS, select a Fill Pattern, select a TSLOT conditioning (note that D/E Timeslot can be used with most framing formats) and select a HDLC Controller. Then Click Start which begins the process of checking for received messages. Click Test to sent the message.



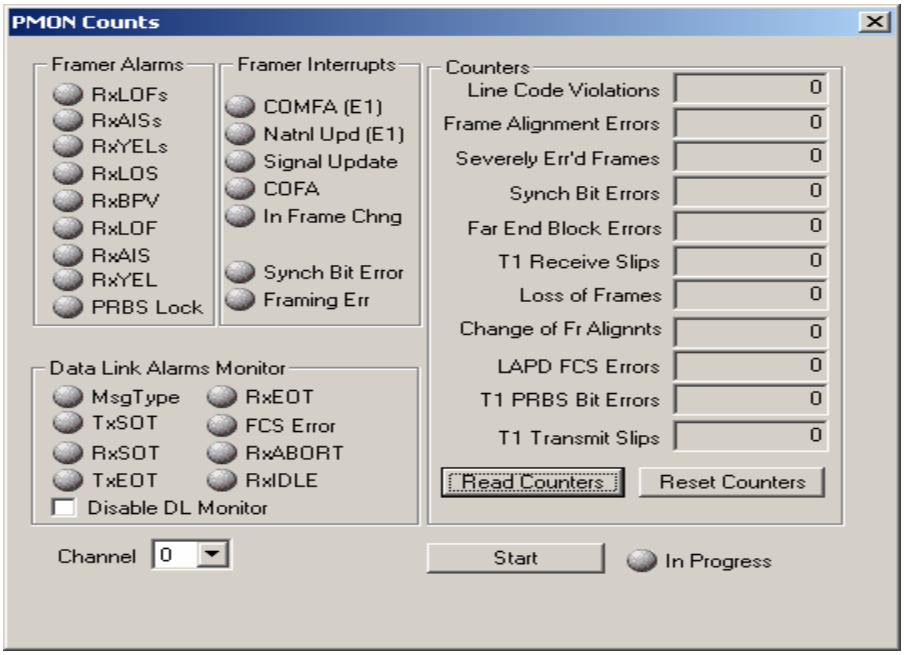
E1 Signaling Test

In order to Test Signaling, select the desired channel, and then Subchannel (Timeslot) to be configure. ONce the desired timeslot is selected, the use may configure the options for the selected time slot. The Check Button will check and report the ABCD values for all timeslots.



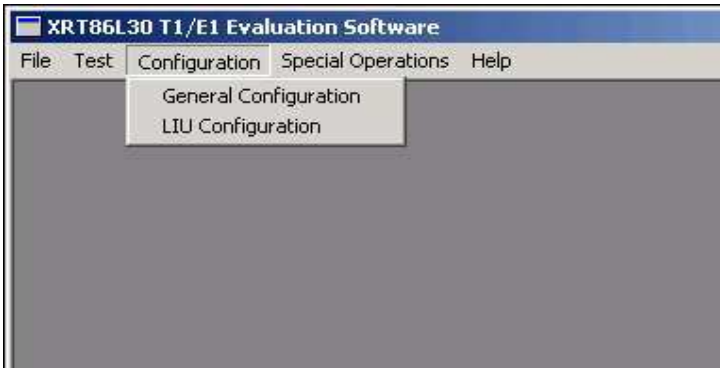
Alarm & Performance Monitoring

There is a dialog that allows the user monitor Alarms and Error Counts. The Read Counters Button simply reads the count once and add it to the total. Pressing Start will poll for Counters and Alarms. The Reset Counters Button resets all counts to zero.



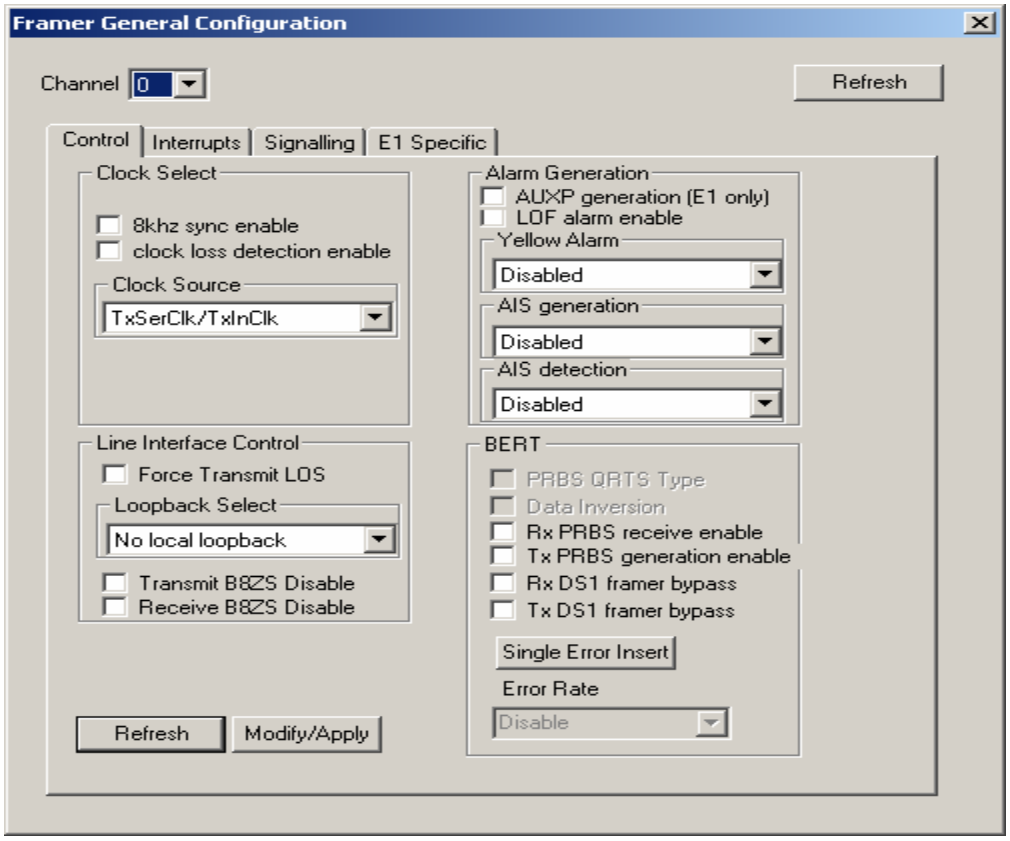
Configuration Menu

From the configuration menu, two dialogs are available. The General Confiuration dialog allows the user to configure the framer part of the device. The LIU Configuration allows the user to configure the LIU part of the device. The menu is pictured below.



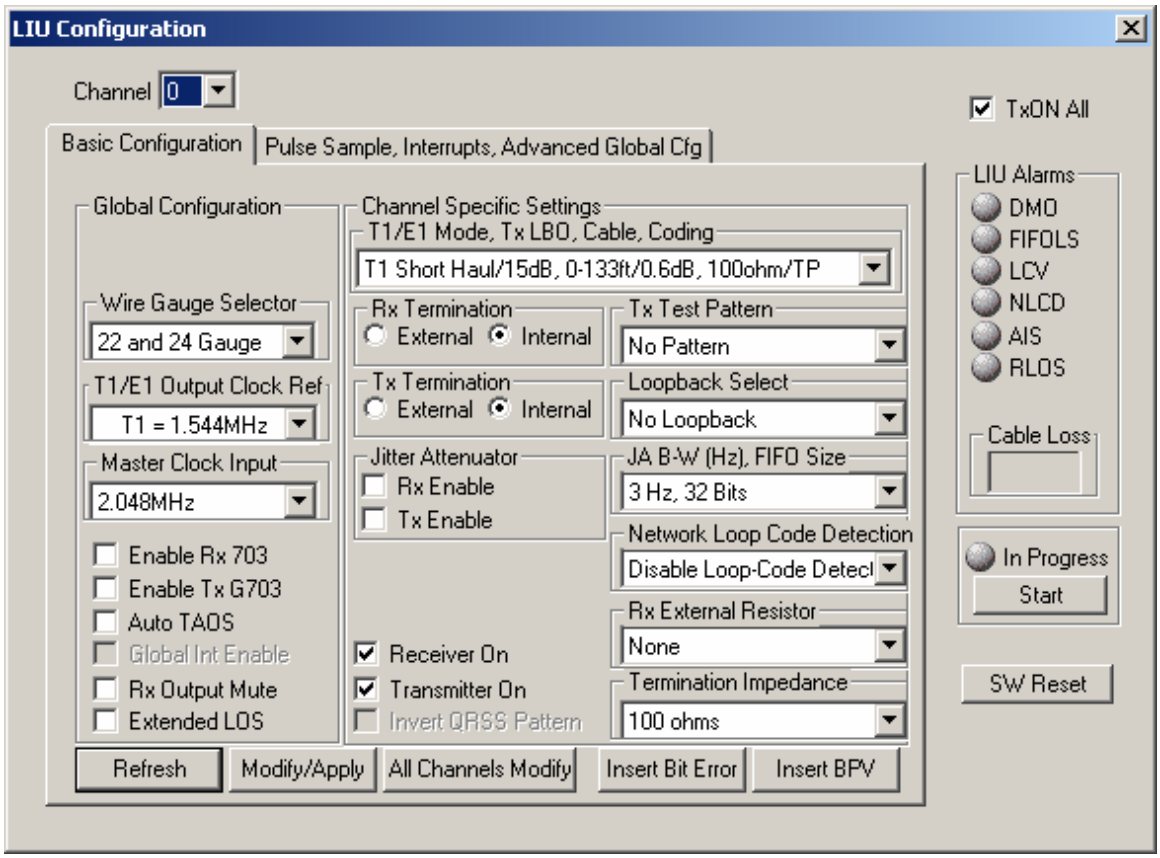
General Configuration

The framer can be configured using this window. Please consult the datasheet the ascertain the meaning of each option if unsure. Pictured Below.



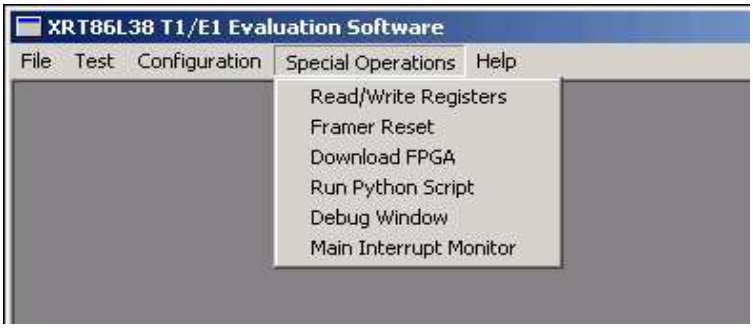
LIU Configuration

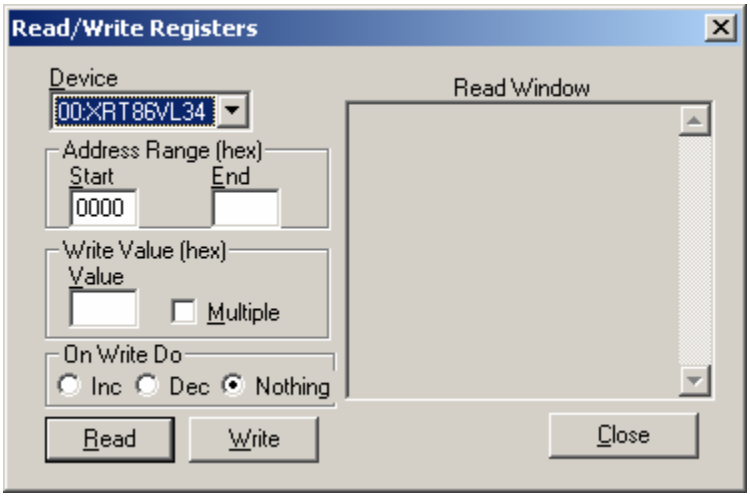
The LIU can be configured using this window. Please consult the datasheet the ascertain the meaning of each option if unsure. Pictured Below.



Read Write Registers

The Read/Write Registers Dialog can be accessed from within the Special Operations menu. Pictured below is the how to access this from the main menu and the Read Write Dialog.



Read Write Registers Introduction

This dialog allows the user to arbitrarily configure any register the user wants. This is useful when the user needs to be certain that the Evaluation Software is reading and writing the correct values.