EchoRemote

Evaluation Software for Windows®

1 Overview

EchoRemote is a Microsoft Windows program that communicates with the Echo Embedded Monitor described in AN2962, *Echo Monitor for the MC9S08RG60 MCU*. It provides a simple method of configuring an Echo RF module to allow testing and measurement of its parameters. EchoRemote allows the user to control Echo using on-screen controls, or using script files.

2 Getting Started

To use EchoRemote you need:

- 1x MC9S08RG60 demo board (DEMO9S08RG60E)
- 1x Echo RF module (MC33696MOD315, MC33696MOD434, or MC33696MOD868—others may be available)
- 1x PC running Windows 2000® or XP®

Contents

The MC9S08RG60 demo board and Echo RF module must be configured as described in AN2962 and programmed with the embedded monitor program supplied with AN2962.

2.1   Installation

To install EchoRemote, download AN2953SW.zip from http://www.freescale.com

Unzip the contents of the file, then double click on the Setup.exe file. This begins the installation process. Complete the on-screen instructions to install the EchoRemote package.

NOTE

The Microsoft .NET framework must be installed for EchoRemote to work. This is installed by default on newer versions of Windows XP. Older versions of Windows do not have .NET installed. The EchoRemote installer verifies .NET is installed and, if not, provides a link to a download site.

2.2   Startup

1. The MC9S08RG60 demo board and Echo RF module must be configured as described in AN2962, and programmed with the embedded monitor program supplied with AN2962. Figure 1 shows the hardware configuration.
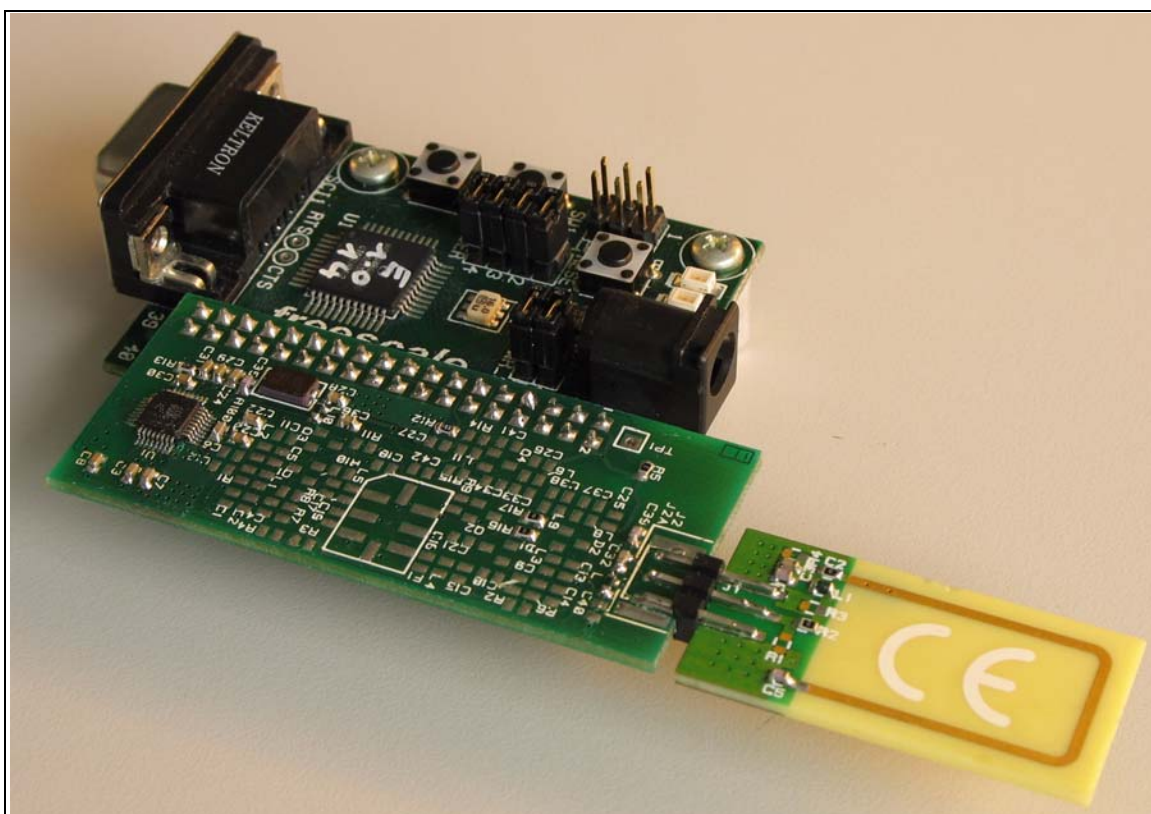

Figure 1. EchoRemote Hardware Setup

2. Using a serial cable, connect the RG60 demo board to a PC COM port.
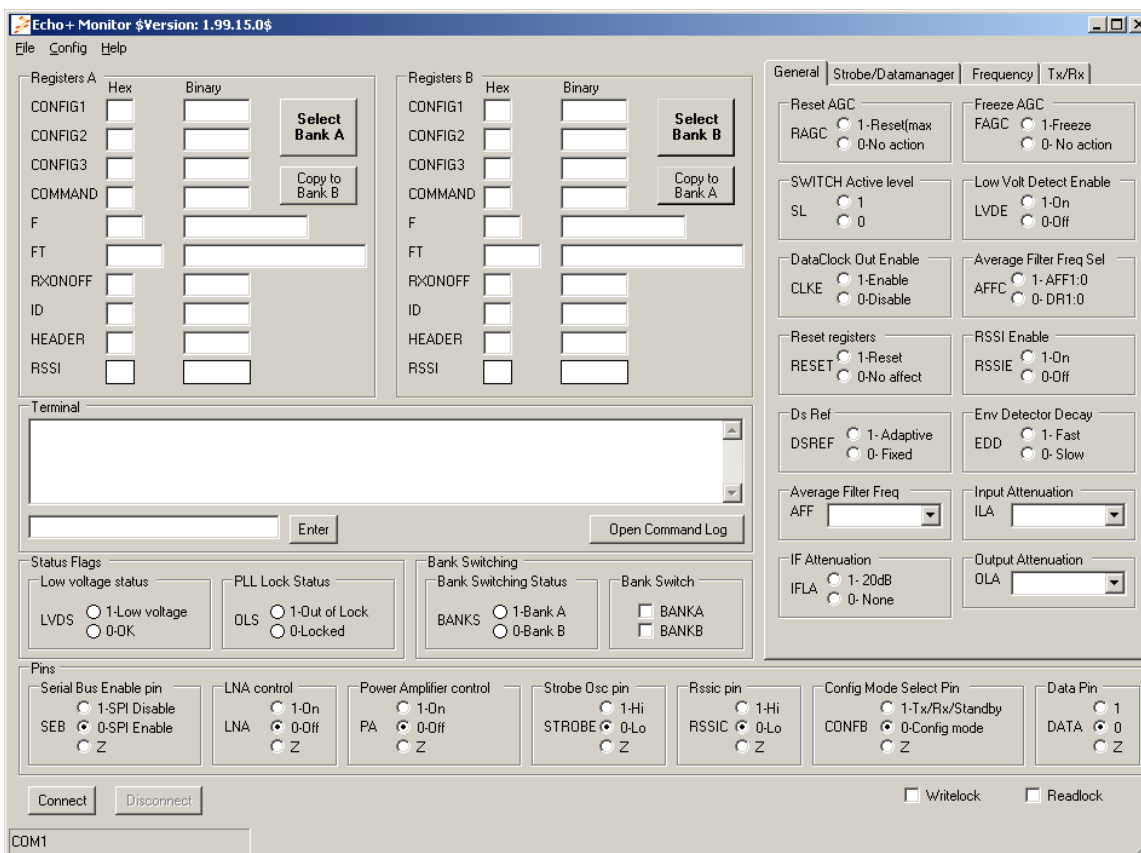3. Select EchoRemote from the Windows Start menu. Figure 2 shows the window that appears.

Figure 2. EchoRemote Window

4. Select Confg and choose COM port from the menu options to enter the correct COM port. After choosing the correct COM port from the list, click OK. EchoRemote remembers the last used COM port.
5. Click Connect.

EchoRemote connects to the MCU board and initializes the Echo RF module. A series of commands and replies will apper in EchoRemote's Terminal window. At the end of installation, the terminal window will show "Connected!"

If communication is not successful, press the reset button on the MCU board, then click Connect on EchoRemote to retry.

Typical reasons for communications failure include:

- The COM port is in use by another application. Shut down other applications using the COM port or change COM ports.
- The MCU board is not programmed with the Echo embedded monitor. Please verify the MC9S08RG60 demo board and Echo RF module are configured as described in AN2962.

3 Commands and Controls

3.1 Connect/Disconnect

These buttons are used to connect/disconnect the MCU board on the chosen COM port. The status bar shows the currently selected COM port.

3.2 I/O Controls—Seb, Strobe, Lna, Rssic, Pa, Dataout Confb

Echo's control pins can be directly controlled by ticking the appropriate boxes on screen. Each pin can be set to logic 1, logic 0, or high impedance ('Z').

The high impedance setting allows external test equipment such as signal generators to be connected to Echo's pins without causing any conflicts with the MCU's I/O pins.

3.3 Registers A and B

The register sections allow you to set the values of Echo's internal registers. There are two banks of registers (A and B), only one of which is active at a time. The active banks can be selected by clicking a Select Bank A or Select Bank B, respectively. The values can be set in binary or hexadecimal. The values can also be copied from one bank to another by clicking Copy to Bank A or Copy to Bank B.

3.4 Bank Switching

The bank switching registers section allows you to set the values of Echo's bank switching registers (bits). The bank switching status bits are also displayed here.

3.5 Bitfields

You can set individual bit fields in each register using the radio buttons and pull-down lists in the four tabbed sections: General, Tx/Rx, Frequency, and Strobe/Datamanager. Bit fields are grouped according to function to minimize the need to switch between tabbed sections.

3.6 Status Flags

This section allows you to monitor the state of the LVDS and OLS bits.

3.7 Terminal

The terminal section displays the communication between the MCU board and EchoRemote. Communication uses the commands defined in application note AN2962.

The terminal can also be used to send commands to the MCU board. Type any Echo monitor command into the text box below the main terminal display and press the Enter key or click the on-screen Enter button.

3.8   Datarate

The MCU's transmit data rate can be set using the Datarate box in the Tx/Rx tab. Enter a value in the range 500–20000 baud and press the return key.

3.9   Tx Square Wave

The TX Square Wave box in the Tx/Rx tab allows you to configure the MCU board to generate a square wave on Echo's data pin. Enter the period of the square wave in microseconds in the box, then press the Enter key or click the Tx button. To stop transmission, press the Enter key or click the Tx button.

This option is useful when measuring the output spectrum, especially when using FSK modulation.

You can tweak Echo's register settings and I/O pins while transmitting a square wave. For example, you can increment/decrement the contents of the frequency registers to vary the transmit frequencies, or set the FSK frequencies on the fly.

NOTE

To make Echo transmit the square wave, the other I/O pins and registers must be configured correctly. Example script files that show the correct configuration of the device are supplied.

3.10   Transmit Frame

The Transmit Frame field in the Tx/Rx tab allows you to configure a message frame for transmission. The message can be retransmitted any number of times by clicking the Tx button (or press the Enter key when the Transmit Frame box is selected).

NOTE

To make Echo transmit the message, the other I/O pins and registers must be configured correctly. Example script files that show the correct configuration of the device are supplied.

To reduce delays between transmission of frames, send the first frame by clicking the Tx button, then send subsequent frames by clicking Enter in the Terminal area and clicking Enter on each frame.

3.11   Receive Control

The Receive button in the Tx/Rx tabbed section allows you to configure Echo to receive messages. The received data is displayed in the Terminal window.

NOTE

To make Echo receive data, the register contents and I/O pins must be correctly configured to match incoming data. Example script files that show the correct configuration of the device are supplied.

3.12 Open Command Log

This button allows you to store all commands executed into a script file. The script file can be loaded at any time to repeat the commands. Command logging can be halted at any time. A more detailed discussion of script files is given below.

3.13 Saving the Screen Setup

You can save the current screen configuration to a script file by selecting Save from the File menu. This creates a script file containing a list of commands that can be reloaded later.

3.14 Setting the COM Port

You can set the COM port used to communicate with the MCU board by selecting COM port from the Config menu. EchoRemote software must be disconnected from the MCU board before this option is active. To disconnect, press the Disconnect button.

3.15 Script Files

A script file is a text file containing a list of Echo embedded monitor commands. EchoRemote can load these files and execute the commands.

Figure 3 shows an example of a script file that configures Echo to transmit an OOK modulated message. An Echo embedded monitor command can be used in a script file. AN2962 describes a full list of commands.

Script files can be executed by selecting File, Open, and Script from the menu bar.

Figure 3. Example Script File

3.15.1   Example Script Files

A set of example script files is supplied with EchoRemote in file AN2953SW.zip. These script files match the example configurations shown in AN2962.

How to Reach Us:

Home Page:
www.freescale.com

Web Support:
http://www.freescale.com/support

USA/Europe or Locations Not Listed:
Freescale Semiconductor, Inc.
Technical Information Center, EL516
2100 East Elliot Road
Tempe, Arizona 85284
+1-800-521-6274 or +1-480-768-2130
www.freescale.com/support

Europe, Middle East, and Africa:
Freescale Halbleiter Deutschland GmbH
Technical Information Center
Schatzbogen 7
81829 Muenchen, Germany
+44 1296 380 456 (English)
+46 8 52200080 (English)
+49 89 92103 559 (German)
+33 1 69 35 48 48 (French)
www.freescale.com/support

Japan:
Freescale Semiconductor Japan Ltd.
Headquarters
ARCO Tower 15F
1-8-1, Shimo-Meguro, Meguro-ku,
Tokyo 153-0064
Japan
0120 191014 or +81 3 5437 9125
support.japan@freescale.com

Asia/Pacific:
Freescale Semiconductor Hong Kong Ltd.
Technical Information Center
2 Dai King Street
Tai Po Industrial Estate
Tai Po, N.T., Hong Kong
+800 2666 8080
support.asia@freescale.com

For Literature Requests Only:
Freescale Semiconductor Literature Distribution Center
P.O. Box 5405
Denver, Colorado 80217
1-800-441-2447 or 303-675-2140
Fax: 303-675-2150
LDCForFreescaleSemiconductor@hibbertgroup.com

Document Number: AN2953
Rev.1
05/2007

freescale™
semiconductor