
Firmware Update Release 1.6

(Update: April 30, 2016)

Overview

The firmware of the 7330 is easily updated over its serial port. Simple commands allow all firmware to be upgraded to a new version. The following files can be updated:

Location	File	Description
SBOOT	SBOOT_1.5.0.bin	7330 S-COM Bootloader
DIAG	DIAG_1.2.0.bin	7330 Diagnostics
SCOM_A	7330_3.5.1.bin	7330 Repeater Controller
LIB	SpLibEng_1.2.bin	7330 Standard Speech Library
CUSTOM	Custom Audio Library	Your Custom Audio Library
SBOOT Recovery	SBOOT_1.5.0.S19	7330 S-COM Bootloader Recovery File

Note: These instructions apply to any update from previous versions of firmware to the current release of firmware. You can skip all the intermediate versions. See the *Where To Start* section on page 2 for tips on how to identify the software that's currently loaded in your controller and where to begin your update.

Materials Required

The following materials are required to update the 7330 firmware:

- An RS-232 cable connection to the *Console Port* of the controller. By default and in Beta releases, this cable is a straight-through RS-232 cable, DE9S-to-DE9P connected to the RS232-2 connector of the controller. (See *Chapter 8, Serial Port*, for more information.)
- A terminal program that supports X-Modem protocol. For Windows, TeraTerm is preferred, HyperTerm has been tested. Linux users successfully use Minicom. On other operating systems, choose an appropriate terminal program.
- The 7330 files for this release. The latest release is available at:
<http://www.scomcontrollers.com>

Note: At S-COM, we prefer to use *TeraTerm* on Windows instead of *HyperTerm*. We've found that *HyperTerm* is just too difficult for many users to configure. See the *Chapter 8, Serial Port*, in the User Manual for additional configuration details.

Where To Start

There are separate procedures to update the firmware in your controller depending on the version of firmware currently installed in your controller and whether you need to recover your controller from a problem with the firmware load. Here's a table you can use to identify the firmware release installed on your controller:

Release	Go To	Repeater Version	SBOOT Version
1.1 or Newer	Page 3	3.06 or Newer	1.1.0 or Newer
1.0	Page 23	3.05	1.0.0
Beta	Page 28	3.01 thru 3.04	0.3.1
Recovery	Page 34	All	All

Warning: this update procedure may erase your controller programming. Be sure you have your configuration saved or recorded so that it can be reloaded after updating the firmware, if required. We recommend that controller commands be typed into a text file for easy downloading following an update. You can also save the configuration in the controller. See *Chapter 8, Serial Port*, for more information on serial command formats and configuration management.

Updating From Release 1.1 and newer

To update the firmware or speech libraries of your controller, you will use the commands of the built-in SBOOT utility. This utility has commands to display the current versions, erase file locations, upload and download files, set the time and other functions. You can view information about using the SBOOT commands in the User Manual starting on page 8-16.

To update one or more files in your controller from Release 1.1 or newer, perform the following steps.

Note: As of Release 1.0, you no longer have to remove the cover of the 7330 Controller to install a jumper to perform a firmware update. Instead, you will enter a console command to the controller to stop the repeater controller program and execute the SBOOT utility.

1. Install the RS-232 cable between your computer's RS-232 port and the *Console* serial port on the rear panel of the 7330. By default, the *Console Port* is assigned to RS232-2. If you changed the assignment of the *Console Port*, install the cable to RS232-1.
2. Run the terminal program. (Note: Examples will use TeraTerm.)
3. At the 7330 controller serial port prompt, type `sboot<enter>`. The LEDs on the front panel of your controller will scan left-to-right as an indication that your repeater is off-the-air. The flashing LEDs also indicate that SBOOT is running properly. Your screen will show the following display:

```
SCOM 7330 SBOOT V1.4.0

7330 Controller Storage Management

T - Show Time
Tmmdyyhhmmssw - Set Time (w=0=Sunday)

S - Save Repeater Configuration
R - Restore Repeater Configuration

E - Erase Files
L - Load File from a PC to Flash
U - Upload File from Flash to a PC
D - Flash Directory

P - Set Baudrate of Console Port
N - Set Baudrate of Auxiliary Port
W - Set Console Port Number

B - Boot from Flash
X - Reboot SBOOT from Flash
H - Help

Time: 091708-091211-3
Battery OK.
SBOOT>
```

Note: The following commands are available in SBOOT version 1.1.0 and newer:

- H<enter> – enter at any time to display the help menu.
 - T<enter> – display the current time in the controller.
 - Tmddyyhhmmssw<enter> – set the time in the controller.
 - D<enter> -- display a list of the files and their versions currently stored in the controller.
 - E<enter> -- erase a file. A submenu is presented.
 - L<enter> -- Load a file from your computer to the controller using X-Modem-CRC. A submenu is presented.
 - Some options on the menu may not be supported.
-

Set the Time

4. Verify the Time as shown. The format of the time display is :

mmddyy-hhmmss-w

is the 2-digit month (01-12), 2-digit day-of-month (01-31), 2-digit year (00-99), 2-digit hour (00-23, 24 hour format), 2-digit minute (00-59), 2-digit second (00-59), and the 1-digit day-of-week (0-6, Sunday is 0, Monday is 1, Tuesday is 2, etc.)

5. If required, enter a new time with the following command:

tmmddyyhhmmssw<enter>

Display the Directory of Files

6. Enter D<enter>. The following list of files will be shown: :

```

Controller Information
  Model Number   : 7330
  Serial Number  : Proto2
  Manufactured DT: 091709-065554-4
  Formatted DT   : 091709-065458-4
  Customer Name  : Dave's Beta

Firmware Files
  Location      Name          Version  Date          Type
  -----
  SYSTEM        BootROM          1.2.0
  SBOOT         7330_SBoot      1.2.1    12/22/2009    Program
  MFG           No File
  DIAG          7330_Diag       1.2.0    9/4/2009      Program
  SCOM_A        7330             3.2.2    11/7/2010     Program
  SCOM_B        No File

Configuration Files
  Location      Name          Version  Date          Type
  -----
  CONFIG_A      Active140611          6/11/14 09:27  Configuration
  CONFIG_B      ColdReset140328      3/28/14 15:11  Configuration
  CONFIG_C      No File
  CONFIG_D      No File

Speech Files
  Location      Name          Version  Date          Type
  -----
  LIB           SCOM Sp Lib Eng  1.2.0    5/8/2011      Speech Library
  CUSTOM        SCOM Cust ALib   1.0.0    09/09/09 12:00 Custom Audio Library

```

The first section of the display, “Controller Info”, shows information about your specific controller: the Model Number, Serial Number, etc.

The balance of the display “Directory/File” status shows the Name, Version, Date, and Type of file currently stored in your controller. We will be checking these versions to determine which files need to be updated.

Updating SBOOT

Check the version of SBOOT on the Directory/File Status display. If the version shown on the display is older than the new version shipped to you in the update, perform the following steps. Otherwise, skip forward to update other files beginning on page 10.

Caution: do not remove power from the controller during the following steps! Doing so will make your controller inoperative and require a special recovery procedure. Call us if this happens and we will walk you through it!

1. Erase the existing SBOOT program by entering the following command:

```
e<enter>
```

You will see the following submenu:

```
Erase a File from Flash:
 0 - SBOOT
 1 - Diagnostics
 2 - 7330 Repeater Controller
 3 - Speech Library
 Q - Return to Main Menu
 H - Redisplay these options
```

```
Enter File Erase Option>
```

Select the option to erase SBOOT (*Tip: use zero*):

```
0<enter>
```

You will be asked to confirm the erase:

```
Enter Y to erase the file, N to cancel>y
```

You will see the following message displayed:

```
Erasing...Done.
```

2. Load the new version of SBOOT by entering the following command:

```
L<enter>
```

You will see the following submenu:

```
Load a File to Flash from a PC:
0 - SBOOT
1 - Diagnostics
2 - 7330 Repeater Controller
3 - Speech Library
Q - Return to Main Menu
H - Redisplay these options
```

```
Enter File Load Option>
```

Select the option to load SBOOT (*Tip: use zero*):

```
0<enter>
```

You will be asked to confirm the load:

```
Enter Y to load the file, N to cancel>y
```

You will be asked to confirm the erase of the selected location. (This command was added in SBOOT Version 1.4.1. You do not need to do this again if you erased this location previously.)

```
Erase this location before the load?
```

```
Enter Y to Erase, N to Continue>y
```

You will now see one or more “C” characters displayed. These are being sent by the controller to tell your terminal emulator that it’s ready to receive the file.

```
Transfer the file to flash using XModem. Start XModem Send-CRC...
CCCCC
```

The controller will wait 60 seconds for you to select a file and begin the transfer. At the end of 60 seconds, the controller will display `Load Cancelled` and the prompt. You can then begin another transfer.

3. In TeraTerm, send the new `SBOOT_x.y.z.bin` file using the X-Modem protocol. Click *File, Transfer, X-Modem*, then *Send...* The *TeraTerm: XMODEM Send* dialog is displayed. Select the new `SBOOT_x.y.z.bin` file from the list of displayed files. Select the CRC transfer option. Click on the *Open* button to send the file. A dialog is displayed showing the transfer status. When TeraTerm is done sending the file, the dialog disappears.

4. On the display, the following message is displayed:

```
Transfer the file to flash using XModem. Start XModem Send-CRC...
CCCCC
Done.
```

It is ok if a different number of “C” characters are shown.

If you see Done, the new file has been successfully loaded into the flash. Go to page 10, *Updating DIAG (Diagnostics)*.

If the *Tera Term: Send File* dialog closes and you still see just:

```
Transfer the file to flash using XModem. Start XModem Send-CRC...
CCCCC
```

wait for the controller’s transfer timer to expire.

You will then see:

```
Transfer the file to flash using XModem. Start XModem Send-CRC...
CCCCC
Load Cancelled.
```

Go back to step 2 and start the transfer again. It is not necessary to erase the file again if the load does not complete. Just start the transfer again. Be sure that you’re clicking *File, Transfer, X-Modem, Send* to send the file and selecting CRC. You must **not** be using the *File, Send File...* command; this command will not work as it does not use the X-Modem-CRC protocol for the transfer.

Note: Once the new version of `SBOOT_x.y.z.bin` is successfully loaded into the flash, it is safe once again to remove the power from the controller, though not necessary at this time.

5. Display the directory and verify the version of the new file:

```
D<enter>
```

6. Load and execute the new version of SBOOT from the flash by entering the following command:

```
B<enter>
```

You will see the following submenu:

```
Load and Execute a Program from Flash:
0 - SBOOT
1 - Diagnostics
2 - 7330 Repeater Controller
3 - 7330 Repeater Controller - Cold Start, Erase Your Programming
Q - Return to Main Menu
H - Redisplay these options
```

```
Enter Load and Execute Option>
```


Select the option to load and execute SBOOT (*Tip: use zero*):

```
0<enter>
```

If you're updating from SBOOT version 1.1.0, the new version of SBOOT automatically prepares the controller for the new Custom Audio Library support. You will see the following message when it starts:

```
Custom Audio Library upgrade in progress...Done.
```

If you're updating a newer version, you will not see this message. Your controller already supports the Custom Audio Library.

If you're updating from SBOOT version 1.1.0, the new version of SBOOT automatically prepares the controller for the new Configuration File Management support. You will see the following message when it starts:

```
Configuration Upgrade in Progress...Done.
```

If you're updating a newer version, you will not see this message. Your controller already supports Configuration File Management.

7. Continue updates of your controller on the next page.

Updating DIAG (Diagnostics)

Check the version of DIAG on the Directory/File Status display as shown on page 5 by typing `d<enter>`. If the version shown on the display is older than the new version shipped to you in the update, perform the following steps. Otherwise, skip to *Updating 7330 Repeater Controller Program* on page 13.

Note: The restriction on power cycling of the controller does not apply to DIAG. If you turn off the power during a DIAG update, you should start over at step 1 on this page.

1. Erase the existing DIAG program by entering the following command:

```
E<enter>
```

You will see the following submenu:

```
Erase a File from Flash:
0 - SBOOT
1 - Diagnostics
2 - 7330 Repeater Controller
3 - Speech Library
4 - Custom Audio Library
Q - Return to Main Menu
H - Redisplay these options
```

```
Enter File Erase Option>
```

Select the option to erase Diagnostics

```
1<enter>
```

You will be asked to confirm the erase:

```
Enter Y to erase the file, N to cancel>y
```

You will see the following message displayed:

```
Erasing...Done.
```

2. Load the new version of DIAG by entering the following command:

```
L<enter>
```

You will see the following submenu:

```
Load a File to Flash from a PC:
 0 - SBOOT
 1 - Diagnostics
 2 - 7330 Repeater Controller
 3 - Speech Library
 4 - Custom Audio Library
 Q - Return to Main Menu
 H - Redisplay these options
```

```
Enter File Load Option>
```

Select the option to load Diagnostics

```
1<enter>
```

You will be asked to confirm the load:

```
Enter Y to load the file, N to cancel>y
```

You will be asked to confirm the erase of the selected location. (This command was added in SBOOT Version 1.4.1. You do not need to do this again if you erased this location previously.)

```
Erase this location before the load?
```

```
Enter Y to Erase, N to Continue>y
```

You will now see one or more “C” characters displayed. These are being sent by the controller to tell your terminal emulator that it’s ready to receive the file.

```
Transfer the file to flash using XModem. Start XModem Send-CRC...
CCCC
```

The controller will wait 60 seconds for you to select a file and begin the transfer. At the end of 60 seconds, the controller will display Load Cancelled and the prompt. You can then begin another transfer.

3. In TeraTerm, send the new `DIAG_x.y.z.bin` file using the X-Modem protocol. Click *File, Transfer, X-Modem*, then *Send...* The *TeraTerm: XMODEM Send* dialog is displayed. Select the new `DIAG_x.y.z.bin` file from the list of displayed files. Select the CRC transfer option. Click on the *Open* button to send the file. A dialog is displayed showing the transfer status. When TeraTerm is done sending the file, the dialog disappears.

4. On the display, the following message is displayed:

```
Transfer the file to flash using XModem. Start XModem Send-CRC...
CCCC
Done.
```

It is ok if a different number of “C” characters are shown.

If you see Done, the new file has been successfully loaded into the flash. Go to step 5.

If the *Tera Term: Send File* dialog closes and you still see just:

```
Transfer the file to flash using XModem. Start XModem Send-CRC...
CCCC
```

wait for the controller’s transfer timer to expire. You will then see:

```
Transfer the file to flash using XModem. Start XModem Send-CRC...
CCCC
Load Cancelled.
```

Go back to step 2 and start the transfer again. It is not necessary to erase the file again if the load does not complete. Just start the transfer again. Be sure that you’re clicking *File, Transfer, X-Modem, Send* to send the file. You must **not** be using the *File, Send File...* command; this one will not work.

Note: A normal upload usually takes less than 30 seconds. If SBOOT recognizes a file compatibility issue, it could take up to 2 minutes for the transfer to be canceled.

5. Display the directory and verify the version is of the new file:

```
D<enter>
```

Updating 7330 Repeater Controller Program (SCOM_A)

Note: The SBOOT Directory display uses the name `SCOM_A` to refer to the storage location for the 7330 Repeater Controller program. The update process described below first erases the `SCOM_A` location then copies a new version of the 7330 Repeater Controller firmware to the `SCOM_A` location.

Check the version of `SCOM_A` on the Directory/File Status display. If the version shown on the display is older than the new version shipped to you in the update, perform the following steps. Otherwise, skip to *Updating The Standard Speech Library* on page 16.

Note: The restriction on power cycling of the controller does not apply to the 7330 Repeater Controller program.

1. Erase the existing `SCOM_A` program by entering the following command:

```
E<enter>
```

You will see the following submenu:

```
Erase a File from Flash:
 0 - SBOOT
 1 - Diagnostics
 2 - 7330 Repeater Controller
 3 - Speech Library
 4 - Custom Audio Library
 Q - Return to Main Menu
 H - Redisplay these options
```

```
Enter File Erase Option>
```

Select the option to erase the 7330 Repeater Controller program:

```
2<enter>
```

You will be asked to confirm the erase:

```
Enter Y to erase the file, N to cancel>y
```

You will see the following message displayed:

```
Erasing...Done.
```

2. Load the new version of SCOM_A by entering the following command:

```
L<enter>
```

You will see the following submenu:

```
Load a File to Flash from a PC:
 0 - SBOOT
 1 - Diagnostics
 2 - 7330 Repeater Controller
 3 - Speech Library
 4 - Custom Audio Library
 Q - Return to Main Menu
 H - Redisplay these options
```

```
Enter File Load Option>
```

Select the option to load the 7330 Repeater Controller program:

```
2<enter>
```

You will be asked to confirm the load:

```
Enter Y to load the file, N to cancel>y
```

You will be asked to confirm the erase of the selected location. (This command was added in SBOOT Version 1.4.1. You do not need to do this again if you erased this location previously.)

```
Erase this location before the load?
```

```
Enter Y to Erase, N to Continue>y
```

You will now see will see one or more “C” characters displayed. These are being sent by the controller to tell your terminal emulator that it’s ready to receive the file.

```
Transfer the file to flash using XModem. Start XModem Send-CRC...
CCCC
```

The controller will wait 60 seconds for you to select a file and begin the transfer. At the end of 60 seconds, the controller will display `Load Cancelled` and the prompt. You can then begin another transfer.

3. In TeraTerm, send the new `7330_x.y.z.bin` file using the X-Modem protocol. Click *File, Transfer, X-Modem*, then *Send...* The *TeraTerm: XMODEM Send* dialog is displayed. Select the new `7330_x.y.z.bin` file from the list of displayed files. Select the CRC transfer option. Click on the *Open* button to send the file. A dialog is displayed showing the transfer status. When TeraTerm is done sending the file, the dialog disappears.

4. On the display, the following message is displayed:

```
Transfer the file to flash using XModem. Start XModem Send-CRC...
CCCCC
Done.
```

It is ok if a different number of “C” characters are shown.

If you see Done, the new file has been successfully loaded into the flash. Go to step 5.

If the *Tera Term: Send File* dialog closes and you still see just:

```
Transfer the file to flash using XModem. Start XModem Send-CRC...
CCCCC
```

wait for the controller’s transfer timer to expire. You will then see:

```
Transfer the file to flash using XModem. Start XModem Send-CRC...
CCCCC
Load Cancelled.
```

Go back to step 2 and start the transfer again. It is not necessary to erase the file again if the load does not complete. Just start the transfer again. Be sure that you’re clicking *File, Transfer, X-Modem, Send* to send the file. You must **not** be using the *File, Send File...* command; this one will not work since it does not use the X-Modem protocol.

Note: A normal upload usually takes less than 30 seconds. If SBOOT recognizes a file compatibility issue, it could take up to 2 minutes for the transfer to be canceled.

5. Display the directory and verify the version of the new file:

```
D<enter>
```

Updating The Standard Speech Library

Check the version of LIB on the Speech Files section of the SBOOT Directory/File Status display. If the version shown on the display is older than the new version shipped to you in the update, perform the following steps. Otherwise, skip to *Updating Your Custom Audio Library* on page 19.

Note: The restriction on power cycling of the controller does not apply to speech files.

Note: As of Release 1.1, the full Speech Library is quite large and will require extra time to complete erase and load operations. For the shortest load time, we recommend that you set the baudrate of the *Console Port* to 57,600 baud. See Chapter 8, Serial Port, of the 7330 Repeater Controller manual on configuring the serial port.

1. Erase the existing Speech Library file by entering the following command:

```
E<enter>
```

You will see the following submenu:

```
Erase a File from Flash:
0 - SBOOT
1 - Diagnostics
2 - 7330 Repeater Controller
3 - Speech Library
4 - Custom Audio Library
Q - Return to Main Menu
H - Redisplay these options
```

```
Enter File Erase Option>
```

Select the option to erase the Speech Library:

```
3<enter>
```

You will be asked to confirm the erase:

```
Enter Y to erase the file, N to cancel>y
```

You will see the following message displayed:

```
Erasing...Done.
```

Erasing of this file can take up to 2 minutes.

2. Load the new version of the Speech Library file by entering the following command:

```
L<enter>
```


You will see the following submenu:

```
Load a File to Flash from a PC:
 0 - SBOOT
 1 - Diagnostics
 2 - 7330 Repeater Controller
 3 - Speech Library
 4 - Custom Audio Library
 Q - Return to Main Menu
 H - Redisplay these options
```

```
Enter File Load Option>
```

Select the option to load the Speech Library:

```
3<enter>
```

You will be asked to confirm the load:

```
Enter Y to load the file, N to cancel>y
```

You will be asked to confirm the erase of the selected location. (This command was added in SBOOT Version 1.4.1. You do not need to do this again if you erased this location previously.)

```
Erase this location before the load?
```

```
Enter Y to Erase, N to Continue>y
```

You will now see will see one or more “C” characters displayed. These are being sent by the controller to tell your terminal emulator that it’s ready to receive the file.

```
Transfer the file to flash using XModem. Start XModem Send-CRC...
CCCCC
```

The controller will wait 60 seconds for you to select a file and begin the transfer. At the end of 60 seconds, the controller will display `Load Cancelled` and the prompt. You can then begin another transfer.

3. In TeraTerm, send the new `SpLibEng_x.y.z.bin` file using the X-Modem protocol. Click *File, Transfer, X-Modem*, then *Send...* The *TeraTerm: XMODEM Send* dialog is displayed. Select the new `SpLibEng_x.y.z.bin` file from the list of displayed files. Select the CRC transfer option. Click on the *Open* button to send the file. A dialog is displayed showing the transfer status. Loading of this file can take up to 30 minutes at 57,600 baud. Lower baudrates take proportionately longer. When TeraTerm is done sending the file, the dialog disappears.
4. On the display, the following message is displayed:

```
Transfer the file to flash using XModem. Start XModem Send-CRC...
CCCCC
Done.
```

It is ok if a different number of “C” characters are shown.

If you see Done, the new file has been successfully loaded into the flash. Go to step 5.

If the *Tera Term: Send File* dialog closes and you still see just:

```
Transfer the file to flash using XModem. Start XModem Send-CRC...  
CCCCC
```

wait for the controller’s transfer timer to expire. You will then see:

```
Transfer the file to flash using XModem. Start XModem Send-CRC...  
CCCCC  
Load Cancelled.
```

Go back to step 2 and start the transfer again. It is not necessary to erase the file again if the load does not complete. Just start the transfer again. Be sure that you’re clicking *File, Transfer, X-Modem, Send* to send the file. You must **not** be using the *File, Send File...* command; this one will not work.

Note: In the current version of firmware, there have been reports of the “Done” message not being displayed when TeraTerm reports that the transfer is complete. If this happens, start the download again at step 2.

5. Display the directory and verify the version of the new file:

```
D<enter>
```

Updating Your Custom Audio Library

During firmware updates of the controller, your Custom Audio Library file has not been modified. At any time, you can check your version of CUSTOM on the Speech Files section of the SBOOT Directory/File Status display. If you wish to replace your Custom Audio Library file with a different one, follow the instructions below.

If you do not need to update your Custom Audio Library at this time, skip to *Finishing Up* on page 22.

Note: The restriction on power cycling of the controller does not apply to speech files.

Note: A Custom Audio Library is quite large and will require extra time to complete erase and load operations. For the shortest load time, we recommend that you set the baud rate of the *Console Port* to 57,600 baud. See chapter 8 of the 7330 Repeater Controller manual.

1. Erase the existing Custom Audio Library file by entering the following command:

```
E<enter>
```

You will see the following submenu:

```
Erase a File from Flash:
 0 - SBOOT
 1 - Diagnostics
 2 - 7330 Repeater Controller
 3 - Speech Library
 4 - Custom Audio Library
 Q - Return to Main Menu
 H - Redisplay these options
```

```
Enter File Erase Option>
```

Select the option to erase the Custom Audio Library:

```
4<enter>
```

You will be asked to confirm the erase:

```
Enter Y to erase the file, N to cancel>y
```

You will see the following message displayed:

```
Erasing...Done.
```

Erasing of this file can take up to 2 minutes.

2. Load the new version of the Custom Audio Library file by entering the following command:

```
L<enter>
```

You will see the following submenu:

```
Load a File to Flash from a PC:
 0 - SBOOT
 1 - Diagnostics
 2 - 7330 Repeater Controller
 3 - Speech Library
 4 - Custom Audio Library
 Q - Return to Main Menu
 H - Redisplay these options
```

```
Enter File Load Option>
```

Select the option to load the Custom Audio Library:

```
4<enter>
```

You will be asked to confirm the load:

```
Enter Y to load the file, N to cancel>y
```

You will be asked to confirm the erase of the selected location. (This command was added in SBOOT Version 1.4.1. You do not need to do this again if you erased this location previously.)

```
Erase this location before the load?
```

```
Enter Y to Erase, N to Continue>y
```

You will now see will see one or more “C” characters displayed. These are being sent by the controller to tell your terminal emulator that it’s ready to receive the file.

```
Transfer the file to flash using XModem. Start XModem Send-CRC...
CCCCC
```

The controller will wait 60 seconds for you to select a file and begin the transfer. At the end of 60 seconds, the controller will display `Load Cancelled` and the prompt. You can then begin another transfer.

3. In TeraTerm, send the new `CustomAudioLib.bin` file using the X-Modem protocol. Click *File, Transfer, X-Modem*, then *Send...* The *TeraTerm: XMODEM Send* dialog is displayed. Select the new `CustomAudioLib.bin` file from the list of displayed files. Select the CRC transfer option. Click on the *Open* button to send the file. A dialog is displayed showing the transfer status. When TeraTerm is done sending the file, the dialog disappears.

The time it takes to load this file depends on the size of your `CustomAudioLib.bin` file. It can take approximately 5 minutes per megabyte at 57,600 baud. Lower baud rates take proportionately longer.

4. On the display, the following message is displayed:

```
Transfer the file to flash using XModem. Start XModem Send-CRC...
CCCCC
Done.
```

It is ok if a different number of “C” characters are shown.

If you see Done, the new file has been successfully loaded into the flash. Go to step 5.

If the *Tera Term: Send File* dialog closes and you still see just:

```
Transfer the file to flash using XModem. Start XModem Send-CRC...
CCCCC
```

wait for the controller’s transfer timer to expire. You will then see:

```
Transfer the file to flash using XModem. Start XModem Send-CRC...
CCCCC
Load Cancelled.
```

Go back to step 2 and start the transfer again. It is not necessary to erase the file again if the load does not complete. Just start the transfer again. Be sure that you’re clicking *File, Transfer, X-Modem, Send* to send the file. You must **not** be using the *File, Send File...* command; this one will not work.

Note: In the current version of firmware, there have been reports of the “Done” message not being displayed when TeraTerm reports that the transfer is complete. If this happens, start the download again at step 2. Do not erase the file before reloading.

5. Display the directory and verify the version of your new file:

```
D<enter>
```

Finishing Up When Updating From Release 1.1 or Newer

Your files have been updated. Only a few more steps are required to finish up:

Do you need to erase all your programming (Cold Start)?

The need for a *Cold Start* depends on what files you changed. Here's a table to help you decide:

File	Do you need to ColdStart?
SBOOT	Yes
DIAG	No
7330 Repeater	Yes
Speech Library	No
Custom Audio Library	No

If required, to *Cold Start* your controller using the RESET and INIT buttons:

1. Hold the INIT button and press the RESET button on the back of your 7330. It will start with the speech message "SCOM 7330 Version *version number*" played on Port 1 and a text message on the console port. The front panel will light the PTT LED for Port 1 while the speech message is played. If the front panel LEDs are lighting left-to-right as before, there was a problem in updating the *7330 Repeater Firmware*. Repeat that step.

Or, if you are updating the controller remotely, you can use the option in the SBOOT Boot menu that perform a boot with a Cold Start.

2. If you changed your serial port configuration to perform the update, change your *Console Port* configuration back to the way you had it.
3. Send the programming commands to your controller to change your messages, macros, timers, etc., since the *Cold-Start* erased them.

If you did not *Cold Start*:

1. If you changed your serial port configuration to perform the update, change your *Console Port* configuration back to the way you had it.

The update is complete!

Updating From Release 1.0

Perform the following steps to prepare for a firmware update from Release 1.0:

Note: As of Release 1.0, you no longer have to remove the cover of the 7330 Controller to install a jumper to perform a firmware update. Instead, you will enter a console command to the controller to stop the repeater controller and execute SBOOT.

1. Install the RS-232 cable between your computer's RS-232 port and the *Console* serial port on the rear panel of the 7330. By default, the *Console Port* is assigned to RS232-2. If you changed the assignment of the *Console Port*, install the cable to RS232-1.
2. Run the terminal program. (Note: Examples will use TeraTerm.)
3. At the 7330 controller serial port prompt, type "sboot<enter>". The LEDs on the front panel of your controller will scan left-to-right as an indication that your repeater is off-the-air. The flashing LEDs also indicate that SBOOT is running properly. Your screen will show the following display:

```
SBOOT S7330 V1.0.0

7330 Controller Storage Management

T - Show Time
Tmmddyhhmmssw - Set Time (w=0=Sunday)

S - Save Repeater Configuration
R - Restore Repeater Configuration
C - Cold Init of Repeater Configuration

I - Format Flash
Ef - Erase Files or Flash
Lf - Load File from PC to Flash
Uf - Upload File from Flash to PC
D - Flash Directory

P - Set Baudrate of Console Port
N - Set Baudrate of Auxiliary Port
W - Set Console Port Number

B - Boot from Flash
X - Reboot SBOOT from Flash
H - Help

f, 0=SBOOT, 1=DIAG, 2=Mfg, 3=CtrlA, 4=CtrlB, 5=Speech

Time: 032308-142947-0
Battery OK.
512KB SRAM
Flash already formatted.
Flash Sectors: 0x80
SBOOT>
```

Note: The following commands are available in SBOOT version 1.0.0:

- H<enter> – enter at any time to display the help menu.
 - T<enter> – display the current time in the controller.
 - Tmddyyhhmmssw<enter> – set the time in the controller.
 - D<enter> -- display a list of the versions of the files currently stored in the controller.
 - Ef<enter> -- erase a file.
Replace the “f” with the location of the file to erase:
0 = Boot, 1 = Diag, 3 = SCOM_A/CtrlA, 5 = Speech
Other options are not currently supported.
 - Lf<enter> -- Load a file from your computer to the controller.
Replace the “f” with the location to store the file:
0 = Boot, 1 = Diag, 3 = SCOM_A/CtrlA, 5 = Speech
Other options are not currently supported.
 - Some options on the menu may not be supported.
-

4. Verify the Time as shown. The format of the time display is :

```
mmddyy-hhmmss-w
```

is 2-digit month (01-12), 2-digit day-of-month (01-31), 2-digit year (00-99), 2-digit hour (00-23, 24 hour format), 2-digit minute (00-59), 2-digit second (00-59), and 1-digit day-of-week (0-6, Sunday is 0, Monday is 1, Tuesday is 2, etc.)

5. If required, enter a new time with the following command:

```
tmmddyyhhmmssw<enter>
```

6. Type “D<enter>”. The following list of files will be shown: :

```
Controller Info
Model Number   : 7330
Serial Number  : Proto2
Manufactured DT: 070307-110844-2
Formatted DT   : 070307-110815-2
Customer Name  : Dave's Beta
```

```
Directory/File Status
PROGRAMS
```

SBOOT

```
FN   : 7330_SBoot
Ver  : 1.0.0
DT   : 3/23/2008
Type: Program
```

MFG

```
No File Loaded
```

DIAG

```
FN   : 7330_Diag
Ver  : 1.0.0
DT   : 3/23/2008
Type: Program
```

SCOM_A

```
FN   : 7330
```



```
Ver : 3.0.5
DT  : 3/23/2008
Type: Program
SCOM_B
No File Loaded
RESTORE
RESTORE_A
No File Loaded
RESTORE_B
No File Loaded
SPEECH
LIB
FN  : 7XXX Words
Ver : 0.0.1
DT  : 12/28/05
Type: Speech Lib
```

The first section of the display, “Controller Info”, shows information about your specific controller: the Model Number, Serial Number, etc.

The balance of the display “Directory/File” status shows the Name, Version, Date, and Type of file currently stored in your controller. We will be checking these versions to determine which files need to be updated.

7. Check the version of SBOOT on the Directory/File Status display. If the version shown on the display is older than the new version shipped to you in the update, perform the following steps. Otherwise, go back to page 10 to update other files.

Caution: do not remove power from the controller during the following steps! Doing so will make your controller inoperative and require a special recovery procedure. Call us if this happens!

8. Erase the existing SBOOT program by entering the following command (*Tip: use zero*):

```
E0<enter>
```

You will see the following message displayed:

```
Erasing...Done.
```

9. Load the new version of SBOOT by entering the following command (*Tip: use zero*):

```
L0<enter>
```

You will see will see one or more “C” characters displayed.

10. In TeraTerm, send the new `SBOOT_x.y.z.bin` file using the X-Modem protocol. Click *File, Transfer, X-Modem*, then *Send...* The *TeraTerm: XMODEM Send* dialog is displayed. Select the new `SBOOT_x.y.z.bin` file from the list of displayed files. Click on the *Open* button to send the file. A dialog is displayed showing the transfer status. When TeraTerm is done sending the file, the dialog disappears.
11. On the display, the following message is displayed:

```
CCCCC  
Done.
```

It is ok if a different number of “C” characters are shown.

If you see Done, the new file has been successfully loaded into the flash. Go to step 12.

If the *Tera Term: Send File* dialog closes and you still see just:

```
Transfer the file to flash using XModem..  
CCCCC
```

wait for the controller’s transfer timer to expire. You will then see:

```
Transfer the file to flash using XModem..  
CCCCC  
Load Cancelled.
```

Go back to step 9 and start the transfer again. It is not necessary to erase the file again if the load does not complete. Just start the transfer again. Be sure that you’re clicking *File, Transfer, X-Modem, Send* to send the file. You must **not** be using the *File, Send File...* command; this one will not work.

Note: Once the new version of `SBOOT_x.y.z.bin` is successfully loaded into the flash, it is safe once again to remove the power from the controller, though not necessary at this time.

12. Display the directory and verify the version of the new file:

```
D<enter>
```

13. Load and execute the new version of SBOOT from the flash by entering the following command:

```
B<enter>
```

You will see the following submenu:

```
Load and Execute a Program from Flash:
0 - SBOOT
1 - Diagnostics
2 - 7330 Repeater Controller
3 - 7330 Repeater Controller - Cold Start, Erase Your Programming
Q - Return to Main Menu
H - Redisplay these options
```

```
Enter Load and Execute Option>
```

Select the option to load and execute SBOOT:

```
0<enter>
```

When started for the first time, the new version of SBOOT automatically prepares the controller for the new Custom Audio Library support. You will see the following message when it starts:

```
Custom Audio Library upgrade in progress...Done.
```

Note: The new version of SBOOT uses a new menu style for Erase, Load and Boot of files. The next section will use these new commands.

14. Continue updates of your controller on page 10. Come back to page 33 to finish up.

Updating From Any Beta Release

Perform the following steps to prepare for a firmware update from a beta release:

1. Unplug the power to your 7330.
2. Remove the cover of your 7330
3. Install a jumper at the AUX2 position of jumper block J33. (Hint: this is the block with the PTT inversion jumpers.) You can borrow a jumper from one of the other jumper blocks while performing the firmware update.

Note: When you have finished all the file updates, you must remove the AUX2 jumper for the 7330 to operate as a repeater controller once again. See the *Finishing Up* section, below.

4. Install the RS-232 cable between your computer's RS-232 port and the serial port on the rear panel of the 7330 marked RS232-2.
5. Run the terminal program. (Note: Examples will use TeraTerm.)

6. Plug in the power to your 7330. The LEDs on the front panel of your controller will scan left-to-right as an indication that your repeater is off-the-air. Also, the flashing LEDs indicate that the jumper is properly installed. Your screen will show the following display:

```
SBOOT S7330 V0.3.1

7330 Controller Storage Management

T - Show Time
Tmmddyymmssw - Set Time (w=0=Sunday)

S - Save Repeater Configuration
R - Restore Repeater Configuration
C - Cold Init of Repeater Configuration

I - Format Flash
Ef - Erase Files or Flash
Lf - Load File from PC to Flash
Uf - Upload File from Flash to PC
D - Flash Directory

Bf - Boot from Flash
H - Help

f, 0=Boot, 1=Diag, 2=Mfg, 3=CtrlA, 4=CtrlB, 5=Speech

Time: 071807-064614-3
Battery OK.
512KB SRAM
Flash already formatted.
Flash Sectors: 0x80
SBOOT>
```

Note: The following commands are available in SBOOT version 0.3.1:

- H<enter> – enter at any time to display the help menu.
 - T<enter> – display the current time in the controller.
 - Tmmddyymmssw<enter> – set the time in the controller.
 - D<enter> -- display a list of the versions of the files currently stored in the controller.
 - Ef<enter> -- erase a file.
 Replace the “f” with the location of the file to erase:
 0 = Boot, 1 = Diag, 3 = SCOM_A/CtrlA, 5 = Speech
 Other options are not currently supported.
 - Lf<enter> -- Load a file from your computer to the controller.
 Replace the “f” with the location to store the file:
 0 = Boot, 1 = Diag, 3 = SCOM_A/CtrlA, 5 = Speech
 Other options are not currently supported.
 - Some options on the menu may not be supported.
-

7. Verify the Time as shown. The format of the time display is :

```
mmddy-hhmmss-w
```

is 2-digit month (01-12), 2-digit day-of-month (01-31), 2-digit year (00-99), 2-digit hour (00-23, 24 hour format), 2-digit minute (00-59), 2-digit second (00-59), and 1-digit day-of-week (0-6, Sunday is 0, Monday is 1, Tuesday is 2, etc.)

8. If required, enter a new time with the following command:

```
tmddyhhmmssw<enter>
```

9. Type "D<enter>". The following list of files will be shown:

```
Controller Info
Model Number   : 7330
Serial Number  : Proto2
Manufactured DT: 070307-110844-2
Formatted DT   : 070307-110815-2
Customer Name  : Dave's Beta

Directory/File Status
PROGRAMS
SBOOT
  FN : 7330_SBoot
  Ver : 0.3.1
  DT : 7/3/2007
  Type: Program
MFG
  No File Loaded
DIAG
  FN : 7330_Diag
  Ver : 0.5.1
  DT : 7/14/2007
  Type: Program
SCOM_A
  FN : 7330
  Ver : 3.0.1
  DT : 7/15/2007
  Type: Program
SCOM_B
  No File Loaded
RESTORE
  RESTORE_A
    No File Loaded
  RESTORE_B
    No File Loaded
SPEECH
LIB
  FN : 7XXX Words
  Ver : 0.0.1
  DT : 12/28/05
  Type: Speech Lib
```

The first section of the display, "Controller Info", shows information about your specific controller: the *Model Number*, *Serial Number*, etc.

The balance of the display “Directory/File” status shows the *Name*, *Version*, *Date*, and *Type* of file currently stored in your controller. We will be checking these versions to determine which files need to be updated.

10. Check the version of SBOOT on the Directory/File Status display. If the version shown on the display is older than the new version shipped to you in the update, perform the following steps. Otherwise, skip to update other files on page 10.

Caution: do not remove power from the controller during the following steps! Doing so will make your controller inoperative and require a special recovery procedure. Call us if this happens!

11. Erase the existing SBOOT program by entering the following command (*Tip*: use zero):

```
E0<enter>
```

You will see the following message displayed:

```
Erasing...Done.
```

12. Load the new version of SBOOT by entering the following command (*Tip*: use zero):

```
L0<enter>
```

You will see will see one or more “C” characters displayed. The controller will wait 60 seconds for you to select a file and begin the transfer. At the end of 60 seconds, the controller will display `Load Cancelled` and the prompt. You can then begin another transfer.

13. In TeraTerm, send the new `SBOOT_x.y.z.bin` file using the X-Modem protocol. Click *File, Transfer, X-Modem*, then *Send...* The *TeraTerm: XMODEM Send* dialog is displayed. Select the new `SBOOT_x.y.z.bin` file from the list of displayed files. Click on the *Open* button to send the file. A dialog is displayed showing the transfer status. When TeraTerm is done sending the file, the dialog disappears.

14. On the display, the following message is displayed:

```
CCCCCDone.
```

It is ok if a different number of “C” characters are shown.

If you see Done, the new file has been successfully loaded into the flash. Go to step 5.

If the *Tera Term: Send File* dialog closes and you still see just:

```
Transfer the file to flash using XModem...  
CCCCC
```

wait for the controller's transfer timer to expire. You will then see:

```
Transfer the file to flash using XModem...  
CCCCC  
Load Cancelled.
```

Go back to step 2 and start the transfer again. It is not necessary to erase the file again if the load does not complete. Just start the transfer again. Be sure that you're clicking *File, Transfer, X-Modem, Send* to send the file. You must **not** be using the *File, Send File...* command; this one will not work.

Note: Once the new version of `SBOOT_x.y.z.bin` is successfully loaded into the flash, it is safe once again to remove the power from the controller, though not necessary at this time.

15. Display the directory and verify the version of the new file:

```
D<enter>
```

16. Press the RESET button on the controller so that you will be using the new version of SBOOT.

Note: The new version of SBOOT uses a new menu style for Erase, Load and Boot of files. The next section will use these new commands.

17. Continue updates of your controller on page 10. Come back to page 33 to finish up.

Finishing Up When Updating From a Beta Release or Release V1.0

Your files have been updated. Only a few more steps are required to finish up:

1. Unplug the power to your 7330.
2. Unplug the RS-232 cable.
3. Remove the jumper you installed at the AUX2 position of jumper block J33.
4. Install the cover of the controller.

Note: It is important to *Cold-Start* your controller at this time! Changes were made that are incompatible with the previous configuration.

5. Hold the INIT button and plug the power into your 7330. It will start by playing the speech message "SCOM 7330 Version *version number*" to Port 1 and send text to the console port. The front panel will light the PTT LED for Port 1 while the speech message is played. If the front panel LEDs are lighting left-to-right as before, or the SBOOT menu has been displayed to the console port, the AUX2 jumper hasn't been removed.
6. Send the programming commands to your controller to changes your messages, macros, timers, etc., since the *Cold-Start* erased them.
7. The update is complete!

Controller Recovery Procedure

If you have a problem while loading the firmware and this problem causes the controller to be inoperative, the following procedure can be used to again gain access to the SBOOT menu via the serial port to update any missing or corrupted files.

This procedure will use the latest version of the SBOOT firmware included with the release package. The recovery file is in a different format (the name of the file ends in .S19) that is compatible with the controller's hidden boot rom loader, firmware that you never see when everything operates perfectly.

Follow this procedure:

1. Set the baudrate of your terminal emulator to 57,600.
2. Unplug the power to the controller, remove the cover, install jumpers at AUX1 and AUX2 (see the board layout in the User Manual on page B-18 for the location of the jumpers), then apply power to the controller.
3. Press reset. You will see the BootROM Loader message:

```
S-COM 7330 V1.2.0  
>
```

4. Type L then press enter. The screen looks like this:

```
S-COM 7330 V1.2.0  
>L
```

5. In your terminal program, select the option to send a **text file**. This is **not** an X-Modem transfer. Use the same option you use to send a file of programming commands to the controller. (In TeraTerm, select File then Send File...) Use the recovery version of SBOOT listed in the table on page 1 of this document. The name looks like this:

```
SBOOT_1.4.1.S19
```

You will see lots of dots on the screen followed by a prompt, like this:

```
S-COM 7330 V1.2.0  
>L  
.....  
>
```

6. Type e8000 then press enter:

```
>e8000
```

On your console you will see the familiar SBOOT menu:

```
SCOM 7330 SBOOT V1.4.0

7330 Controller Storage Management

T - Show Time
Tmmddyhhmmssw - Set Time (w=0=Sunday)

S - Save Repeater Configuration
R - Restore Repeater Configuration

E - Erase Files
L - Load File from a PC to Flash
U - Upload File from Flash to a PC
D - Flash Directory

P - Set Baudrate of Console Port
N - Set Baudrate of Auxiliary Port
W - Set Console Port Number

B - Boot from Flash
X - Reboot SBOOT from Flash
H - Help

Time: 091708-091211-3
Battery OK.
SBOOT>
```

7. **You aren't done yet!** You have loaded a temporary copy of SBOOT that will let you correct the problem with the files loaded in the flash memory. You must complete all of the following steps to recover your controller.
8. Type D then press enter to display the directory of files loaded in the flash memory of the controller. Compare the list of files currently in the flash memory to the list of expected files and versions.
9. Proceed following the Firmware Update Instructions starting on page 10 of this document to erase then load the SBOOT firmware into the flash memory.
10. Remove power from the controller, remove and store the AUX1 but leave AUX2 in place. Apply power to the controller. You will again see the SBOOT menu.

11. Now install the other files. Check the versions of DIAG, 7330 (in location SCOM_A) and the Speech Library. Update those as well, if required or if you suspect they are corrupted.
12. Now boot the 7330 firmware. Type B then press enter. Select option 3 if you need to erase your previous configuration (this is the normal step for a firmware upgrade). Otherwise, select option 2. The 7330 app should begin to run and display text like this on the console:

```
S-COM 7330 Repeater V3.4.1

Internal Battery: OK
Started at 07/15/14 19:06:40
7330>
```

It will also say `Cold Reset` if you selected boot option 3.

13. Remove power from the controller, remove and store AUX2, then apply power to the controller. The controller should now operate properly.
14. Recovery of the controller is complete.