S1V30000 Series Graphical User Interface Application

NOTICE

Table of Contents

1. Introduction

1.1   Scope of Document

This document describes the PC based graphical user interface supplied with the EPSON S1V30000 Series Evaluation Kits. This provides a Microsoft Windows® based method of communicating with application software running on EPSON's S1V30000 series of products.

1.2   Document Outline

(1) The "User Interface Guide" is structured as follows: Section 1 provides a description of this document and other information useful to its readers. Section 2 describes the installation of the GUI. Section 3 gives an overview of the of the user interface, describes the communication mechanism used and gives some general instructions on operating the user interface. Sections 4, 5 and 6 give a detailed description of the user interface starting with the main application window, and then describing the evaluation, demonstration and reflash modes of operation. Section 7 gives a description of the initialisation file use with the GUI. Finally Section 8 is a trouble-shooting guide.

2. Installation

The Graphical User Interface Application (GUI) is a Microsoft Windows® based PC application, which may be used to drive the Speech and Audio Applications on EPSON S1V30000 Series of Speech and Audio Products.

2.1   System requirements

To run the software, a PC running under either the Microsoft Windows® 2000, XP or Vista operating system is required.

2.2   Software Installation

The Evaluation Software should be installed as described in the Evaluation Kit Getting Started Guide.

The exact contents of the sub-directories located within this installation directory are discussed in the Evaluation Kit Release notes.

2.3   Launching the User Interface Application

The target hardware should be set-up and connected as described in the Evaluation Kit Getting Started Guide before starting to use the interface. The evaluation application is launched by double clicking the `S1V30xxx_eval_application.exe` file from the desktop or start menu.

3. Overview

3.1   Main components of the user interface

The user interface is composed of two windows; a *main application window* used for setting up communications with the target and an *application control window,* which enables the user to interact with the applications software running on the target. The *application control window* also refers to the Download Scripts window in Demo and Reflash modes.

The application control window takes one of three forms depending on which of the three modes; Evaluation, Demo and Reflash Mode is selected. The Evaluation mode is made up of seven tabs; *Configuration, TTS, ADPCM, Playback-Stream, File Transfer, Scripting,* and *I2S*. The Demo mode is made up of two tabs; *Multi-lingual Text-to-Speech* and *Audio Decode*. The Reflash Mode is similar to the Demo mode, except it allows the firmware to be reflashed. Not all applications are supported on all target products, so fewer tabs may be displayed, depending on the chosen target device.

The application control tabs contain a variety of file-views, text-boxes, drop-boxes, data-fields and buttons. Parameters are selected using the drop-boxes and data-fields, and buttons are used to send commands to the target in the form of messages. The parameters selected at the time that the button is clicked are transferred to the target as part of these messages.

3.2   Common system message display

The PC communicates with the S1V30000 Series Chip via the messaging protocol described in the Message Protocol Specification.

All messages sent to or received from the evaluation board are reported to the user via the *System Messages Display* text-box of the currently active tab. This display, and the information it contains, are common to all tabs and are always shown in the currently active tab.

All messages have an ISC message identifier, which determines its contents as well as which one of the three basic types it belongs to: request, response or indication message. Figure 1 below shows the generic message protocol, based on these ISC messages, which is used to communicate with the target.
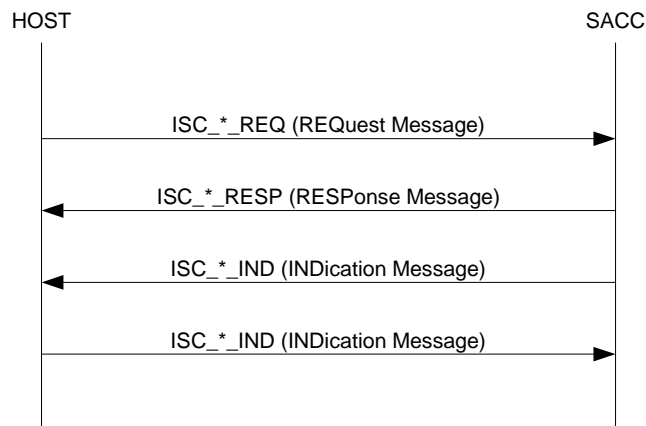
Figure 1   Generic Message Protocol Flow

A user action may correspond to the sending of a single message, the sending and receiving of a sequence of messages or may require action only from the host. All messages transferred between the host and target will be visible to the user in the system messages window.

Further details can be found in the Message Protocol document supplied with the Release.

3.3   Sequencing of user interface operations

In the case where messages are sent in a different sequence from that expected, the target will respond with an error message which will be reported to the user in the system messages window. An example of this is shown in Figure 2 below where the user has successfully registered the active interface and then attempted to register again. The request has been blocked and an error code returned. The user interface has interpreted the 0x4004 error code and displayed a message to give the user meaningful error information.
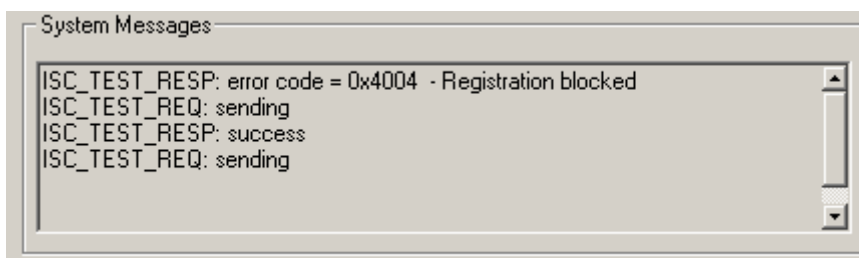
Figure 2   Illustration of target reporting an unexpected message via system messages

In general the tabs, buttons and other controls within the user interface have been arranged so that if the user works their way from left to right and then from top to bottom within each tab then messages will be sent in the correct sequence to drive S1V30xxx according to its required protocols

4. Main Application Window Operation

The main application window has four lists of options to determine which setup the user will have. In general, these four options will not have to be modified, unless changing the mode or target device. One list allows selection of the COM port from which the user will be communicating to the evaluation board. The COM port will only show the available COM ports, and will default to the COM port associated with the evaluation board. The second list allows the user to select the communication baud rate. (Only two baud rates will normally be used, 115200 for firmware update in evaluation mode, and 461000 for normal operation.)   If the firmware is being updated through the Download Scripts page, the baud rate will automatically be reconfigured for firmware updates and normal operation. The third list allows the user to select between running the evaluation mode, the demo mode or a reflash mode. The fourth list allows the user to select the target evaluation device.
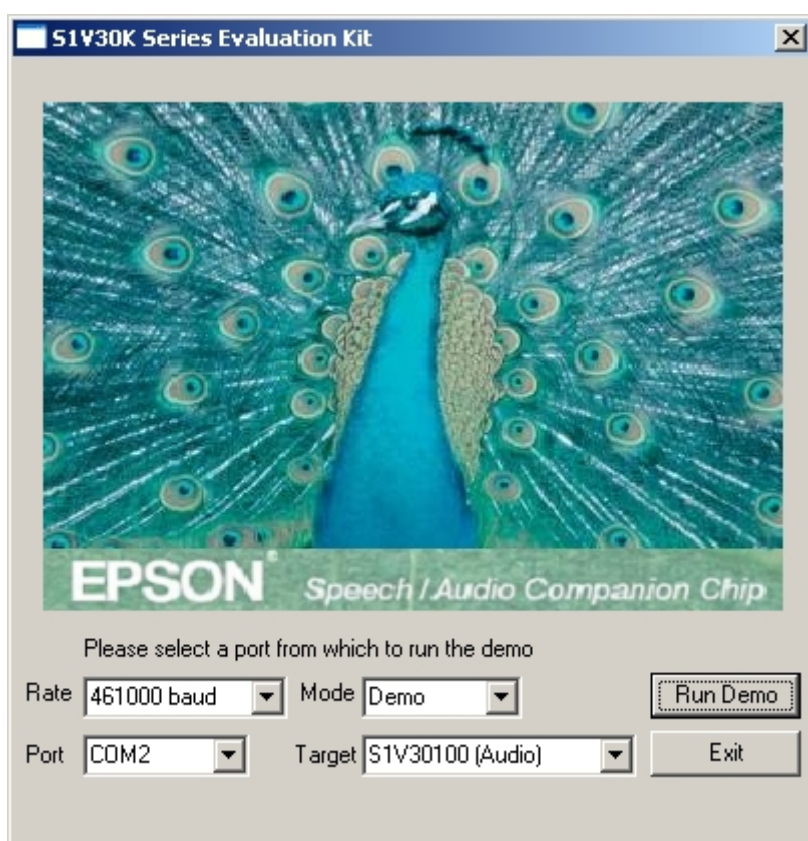
Figure 3   Main Application window (used for evaluation setup)

(The graphic and options displayed might differ depending on the target device selected in the target menu.) The Run Demo button opens the application control window. If the Exit button is clicked, the application will terminate.

4. Main Application Window Operation

Once a Run Demo button has been clicked, the main application control window will be displayed with the default tab or window selected. Section 5 describes the window and tabs in the Demonstration mode. Section 6 describes the tabs in the Evaluation mode. Reflash mode is used conjunction with Demo mode. Reflash mode is used to reflash the firmware on the S1V30xxx devices. In Reflash mode, it is necessary to reflash the target device before continuing on in to Demo mode.

5. Demonstration Mode Operation

5.1 Download Scripts Window

5.1.1 Firmware Download and Configuration Window

The Download Scripts window is a multi-function window that gives the ability to reflash firmware. This window is shared between both Demo and Reflash modes. It also gives the ability to register and configure the board, as well as reset or reboot the board.
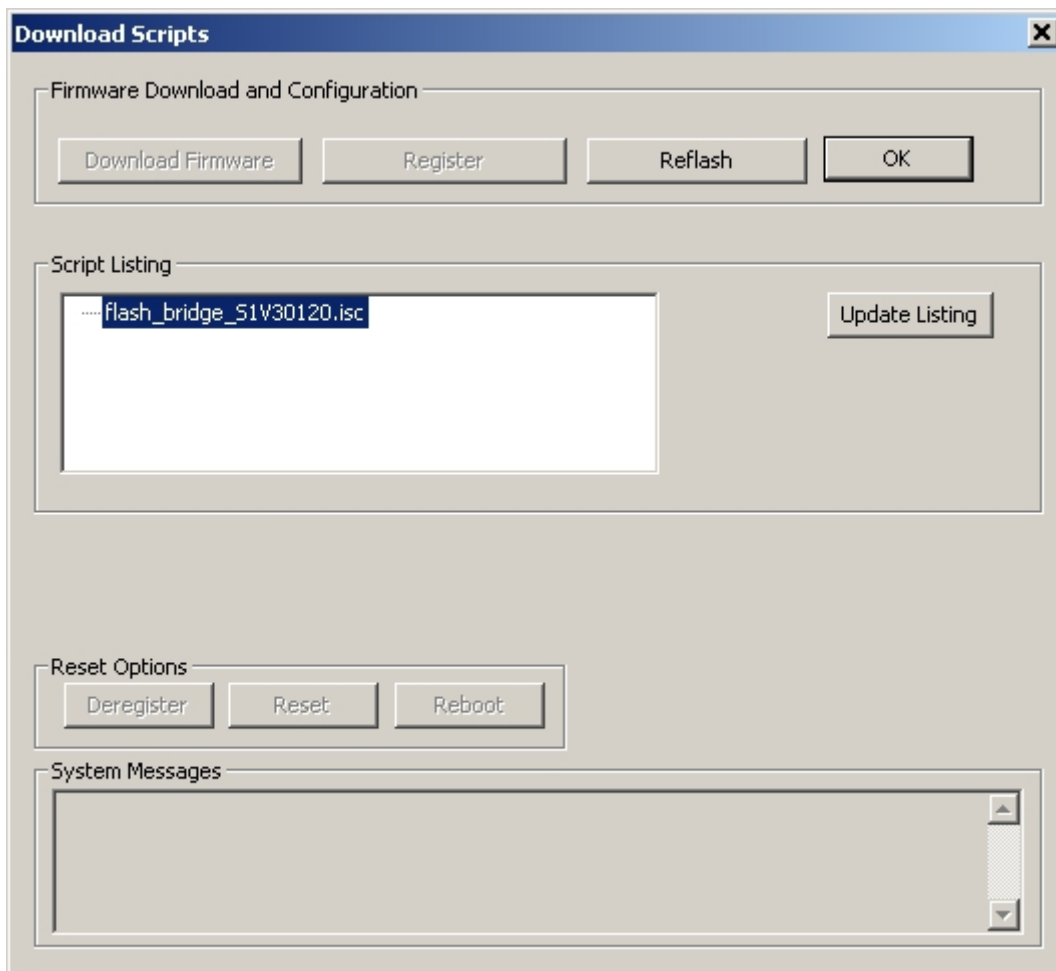
Figure 4   Download Scripts Window

5. Demonstration Mode Operation

5.1.1.1 Download Firmware Button

The Download Firmware button is enabled only when the devices that require an initial firmware download. It will only be enabled in a Demo mode. This button downloads firmware on to the device when the appropriate file is selected in the Script Listing Window.

5.1.1.2 Register Button

The Register button registers the boards and configures the audio output. When the register button is pressed the messages 'ISC_TEST_REQ:sending' and 'ISC_TEST_RESP:success' and 'ISC_AUDIO_CONFIG_REQ:sending' and 'ISC_AUDIO_CONFIG_RESP:success' will appear in the System Messages window. This signifies that registration of the board and the DAC configuration has been completed. This button is enabled after a reflash of the board when in Reflash mode. It will always be enabled when entering in Demo mode.

5.1.1.3 Reflash Button

The Reflash button first sends a reset request message 'ISC_RESET_REQ:sending', and receives back the message 'ISC_RESET_RESP'. After the response, the baud rate is reconfigured to an 115200 baud rate, and the board is reflashed with the selected *.isc file in the Script Listing Window. After the script is finished running, the baud rate is then reconfigured to the 461000 baud rate. The previous baud rate selection is ignored.

5.1.1.4 OK Button

The OK button closes the Download Scripts window and opens up the Demo tabs for demonstration.

5.1.1.5 Script Listing Window/Update Listing Button

The Script Listing Window displays a list of current firmware files in the executable directory available for download or reflashing. The *update listing button* does an update of the Script Listing Window, and lists all current firmware files in the executable directory. The Script Listing Window and the update listing button will be disabled when in Demo mode.

5.1.1.6 Deregister Button

The Deregister button deregisters the board. When the deregister button is pressed the messages 'ISC_TEST_REQ:sending' and 'ISC_TEST_RESP:success' will appear in the System Messages window. This signifies that the Deregister of the board has been completed.

5.1.1.7 Reset Button

The Reset button is supplied to allow software reset of S1V30xxx – it sends an ISC_RESET_REQ message to the S1V30xxx board.

5.1.1.8 Reboot Button

The Reboot button is supplied to allow reset of S1V30xxx firmware – it sends an ISC_RESET_REQ message to the S1V30xxx board with a command to execute the bootstrap and so configure for a firmware change.

5.2 Multilingual Text-to-Speech Tab

5.2.1 Text Input area

The 'Text Input for TTS' text box is where the user-defined text is placed ready for TTS processing. The input text can be pasted or typed in this area in any of the languagaes specified in the language list box.
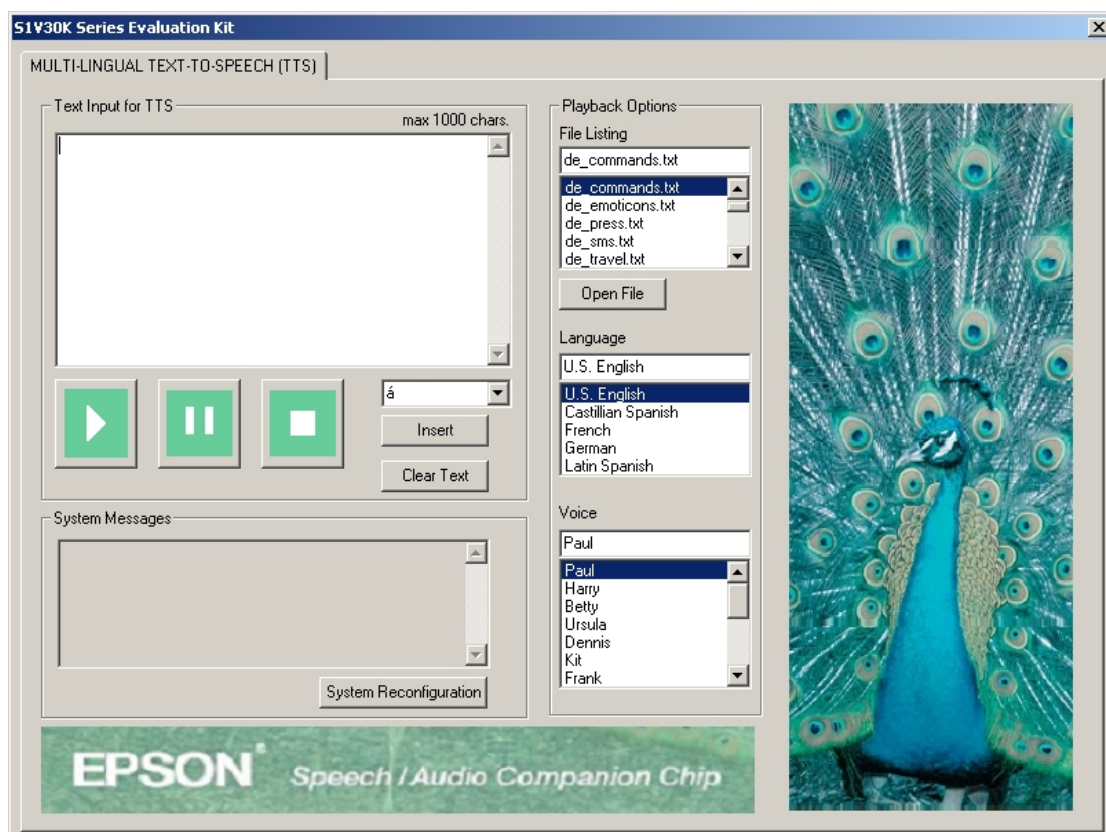
Figure 5   Demonstration TTS User Interface

5.2.1.1 Speak button

The Speak button sends an ISC_TTS_CONFIG_REQ message to S1V30xxx. This message incorporates the contents of the Language and Voice list boxes. Upon receipt of the request message, S1V30xxx will send back an ISC_TTS_CONFIG_RESP message to let the user know the S1V30xxx was configured correctly.

The Speak button then sends an ISC_TTS_SPEAK_REQ message to S1V30xxx, this message incorporates the contents of the 'Text input for TTS' text-box.

Upon receipt of the request message, S1V30xxx will send back an ISC_TTS_SPEAK_RESP message. If the message displayed is 'ISC_TTS_SPEAK_RESP : success' the speak request has been accepted. Otherwise please refer to the trouble-shooting guide.

Following completion of TTS processing of the text, an ISC_TTS_SPEAK_READY_IND message will be sent. This message signals that the TTS application is again ready to receive more input text.

5.2.1.2 Pause button

Clicking the Pause button, while text sent via the Speak button is being processed and output by the target, will have the effect of sending an ISC_TTS_PAUSE_REQ message, which immediately halts TTS processing, and audio output. Success is indicated by the display of 'ISC_TTS_PAUSE_RESP: success' in the System Messages text-box. If other messages are displayed please refer to the trouble-shooting guide.

Clicking the Pause button again, will send an ISC_TTS_UNPAUSE_REQ message, which immediately start TTS processing where it left off. Success is indicated by the display of 'ISC_TTS_UNPAUSE_RESP: success' in the System Messages text-box. If other messages are displayed please refer to the trouble-shooting guide.

5.2.1.3 Stop button

Clicking the Stop button, while text sent via the Speak button is being processed and output by the target, will have the effect of sending an ISC_TTS_STOP_REQ message, which immediately halts TTS processing, and audio output.

Success is indicated by the display of 'ISC_TTS_STOP_RESP: success' in the System Messages text-box. If other messages are displayed please refer to the trouble-shooting guide.

5.2.1.4   Clear Text button

The Text Input for TTS text box can be cleared at any time using the Clear Text button located directly below it.

5.2.1.5   Insert button and drop-box

The drop-box located to the right of the Insert button contains a list of possible foreign-language characters that might be required when inputting text in languages other than English. It also contains emoticons and other special characters, which can be used as inline commands to control the behaviour of the TTS application when using the EPSON parser. To insert these characters into the text-box, make a selection and then press the Insert button.

5.2.2   Playback Options Area

5.2.2.1   Open File button and File list-box

The list box located above the Open File button contains a list of all of the files with a .txt extension located in the same directory as the evaluation application executable. This list is compiled on start-up.

The Open File button causes the text within the file currently selected in the list-box to be placed in the Text Input for TTS text box. This provides a facility for reading text from a pre-created text file rather than typing it in directly.

Should the user wish to add their own .txt files containing input text for the TTS application to the file list, the .txt file should be saved in the same directory as the evaluation application executable file.

A number of example files are supplied with the evaluation kit. The languages of the files are indicated by the ending: "en" for English, "es" for Spanish, "de" for German, and "fr" for French. The ending "dectalk" indicates that the file requires the DECtalk(R) parser to be enabled.

All these options can be set automatically when a file is opened by header comments in the file, so do not need to be set by the user for the example files supplied with the system.

5.2.2.2   Language list-box

The Language drop-box is used to specify the target language. The user has the option of selecting U.S. English, Castillian Spanish, French, German or Latin Spanish. The default on start-up is U.S. English.

5.2.2.3 Voice list-box

The voice selection drop-box allows the user to choose one of up to nine TTS voices; the voices are individually named, with a 'CUSTOM' option for user-defined voices.

5.2.3 System Reconfiguration Button

5.2.3.1 System Reconfiguration Button

The System Reconfiguration button opens up the Download Scripts dialog window.

5.3 The Audio Decode Tab

The S1V30xxx needs to have the audio firmware loaded. The Audio Decode demo page acts as a digital juke box. Figure 6 shows an example of the Audio Decode demo page. This may appear differently depending on which target device is currently being evaluated.
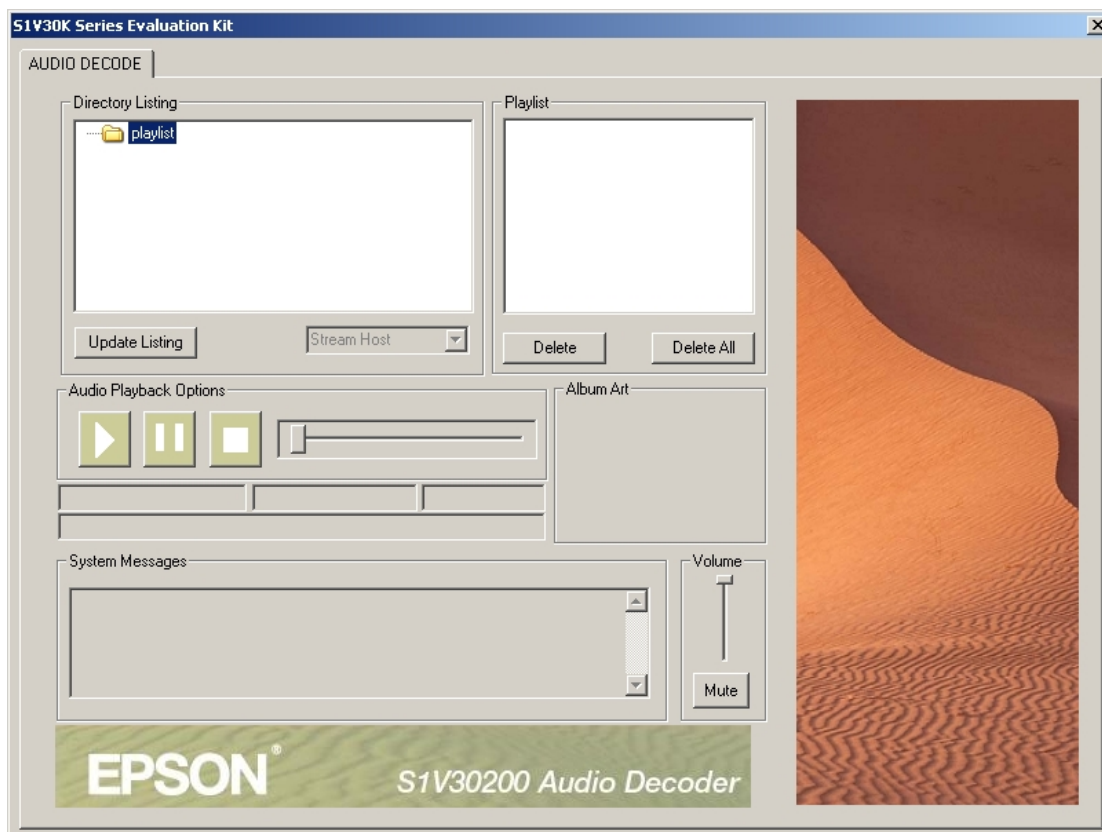
Figure 6   Demonstration Audio Decode User Interface

5.3.1 Audio Decode Functionality

5.3.1.1 Directory Listing, Update Listing Button and Listing Drop-down

On the left of the screen is a Directory Listing. The directory listing button displays a file view of the host PC. The file view displays folders from the executable directory and all sub folders and valid audio files. The Update Listing Button resets the Directory Listing at the same time does a search for any new files valid for playback. In the case of the S1V30200, the drop-down menu will be greyed out only allowing playback from the local host. Double-click the directory items to open up the contents of the folder. Double-click the audio files to transfer them to the Playlist Listing for playback.

5.3.1.2 Playlist Listing and Delete Buttons

On the right side of the screen is a file Playlist. The user double-clicks files in the Directory Listing to transfer files from the Directory listing to the Playlist. The Playlist holds all the files that will be played back while streaming audio. Audio streaming will continue from one file to the next until the stop button is pressed, or the frontend application is terminated. The Delete button deletes the currently selected file in the Playlist. The Delete All button deletes all the files currently in the Playlist.

5.3.1.3 Play button

The Play button starts the playback of files in the Playlist. The user can also begin playing files in the Playlist simply by double-clicking on them.

5.3.1.4 Pause button

The Pause button pauses playback of audio streaming. Click the play button or the pause button to resume playback of files.

5.3.1.5 Stop button

Clicking the Stop button stops the current playback of audio files.

5.3.1.6 Track bar Status

The track bar is used for two different purposes. First, it shows the user the current position of the file being played back. Second, it allows the user to change the current position of the file being played back simply by clicking and dragging the track bar of audio files, but not all.

5.3.1.7 Album Art and Metadata Fields

The Album Art and Metadata Fields show specific information about the current track being played back. The Album Art shows a picture file associated with the current track. The Metadata Fields show information such as track title, artist's name, track type and time remaining for playback.

5.3.1.8 Volume Control and Mute Button

The Volume slider bar and Mute buttons control the volume of the audio output. Press the Mute button to mute the audio output. Press the Mute button again to un-mute the audio output. Slide the marker box to the top of the slider bar for the highest volume setting. Slide the marker box to the bottom of the slider bar for the lowest volume setting.

6. Evaluation Mode Operation

The Evaluation mode is a more advanced mode that gives the user greater control of the device configuration via a one to one correspondence of buttons to messages in the message protocol. This mode requires more interaction and selection from the user. It is recommended only to use this mode once the user is highly familiar with the operation of the S1V30000's series devices. Most aspects of this mode can also be more easily demonstrated by the Demo and Reflash modes.

6.1   Configuration tab

The configuration tab contains a set of buttons and drop-boxes, which are used to configure the communication link and to configure its audio hardware and firmware.
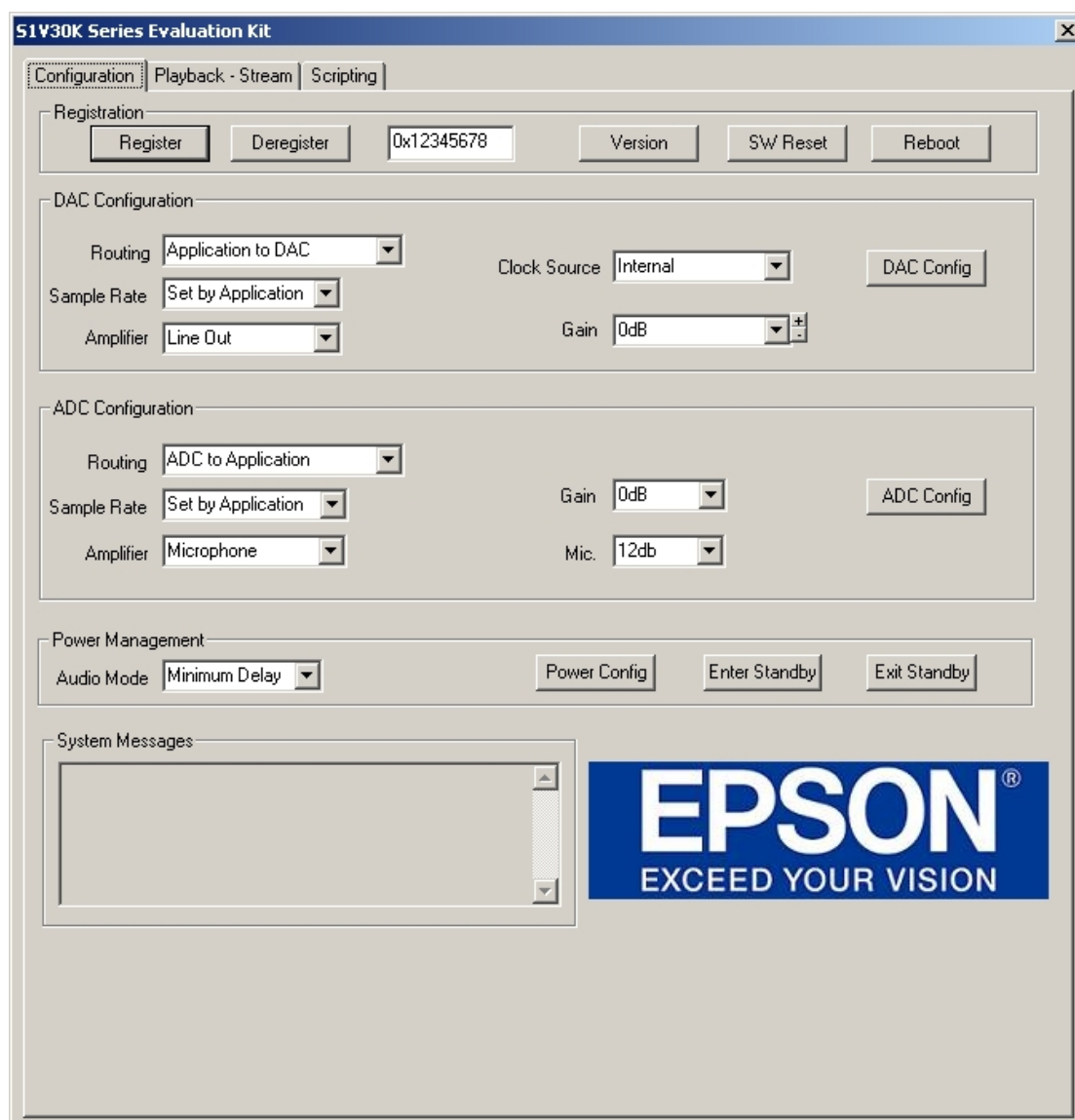
Figure 7   Evaluation Configuration tab (application control window)

6. Evaluation Mode Operation

6.1.1 Registration area

The Register button sends an ISC_TEST_REQ message over the serial communications link to register S1V30xxx's UART as its active interface. At the same time, this allows the user to verify that both the interface and target system are functioning correctly. This registration process must occur before any further communication with the target can take place. If any messages are sent before registering the UART as S1V30xxx's active interface, then this is reported in a response message with an error code. (See section 3.2).

On pressing the Register button, the following messages will appear in the system messages window:

> 'ISC_TEST_REQ : sending'

> 'ISC_TEST_RESP : success'

If these messages do not appear then either there is a problem with the hardware setup or the communications link, please refer to the troubleshooting section.

Before S1V30xxx can be controlled via an interface other than its UART, it is required to deregister the UART as its active interface. The Deregister button is provided for this purpose. It uses the same pair of messages to request deregistration and to acknowledge successful deregistration. The messages displayed for successful deregistration should therefore be exactly as described in the case of registration (see above). While controlling S1V30xxx using the GUI there is no need for the user to deregister.

The decode key field is used with devices that support keys. In order to register the device, the host must supply the appropriate key in the ISC_TEST_REQ message. The key is specified in the **init_file.inf.** Please refer to the Message Protocol document for more information.

The Version button sends back the hardware and firmware version. Messages will appear in the system messages window similar to those below.

> 'ISC_VERSION_REQ : sending'

> 'ISC_VERSION_RESP: HW v0.0, FW v1.5'

The SW Reset button is supplied to allow software reset of S1V30xxx – it sends an ISC_RESET_REQ message to the S1V30xxx board. This resets the firmware running on the target device.

The Reboot button is supplied to allow reset of S1V30xxx firmware – it sends an ISC_RESET_REQ message to the S1V30xxx board. This message causes the bootstrap mode of the target device firmware to be entered so that its firmware may be upgraded.

6.1.2   DAC Configuration area

The DAC configuration area allows configuration of the target's output audio. This must be done before using any of S1V30xxx's applications which output audio.
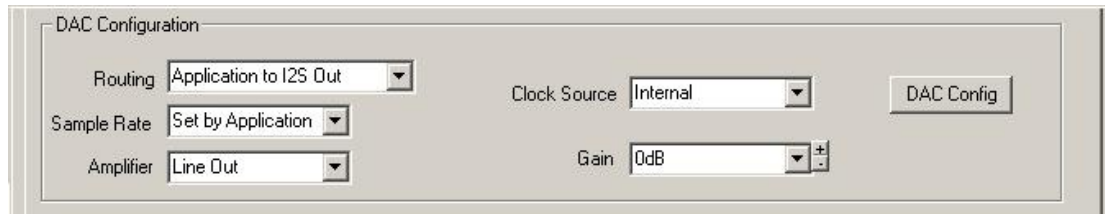
Figure 8   Evaluation Audio configuration area

The DAC Config button is used to configure S1V30xxx's audio hardware with the selected parameters from the DAC Configuration area. Clicking this button causes an ISC_AUDIO_CONFIG_REQ message to be sent to the target.

The following sequence of messages should be displayed to signal successful configuration of the audio.

'ISC_AUDIO_CONFIG_REQ: sending'

'ISC_AUDIO_CONFIG_RESP: success'

If this is not the case please refer to the trouble-shooting guide.

6.1.2.1   Routing

The Routing Drop-box is used to configure the basic routing of audio data output from S1V30xxx. Four Options are provided:

- **Application to DAC:** Audio Data from Applications are routed to the integrated DAC on S1V30xxx.

- **Application to I^{2}S Out:** Audio Data from Application are routed to the I^{2}S Output on S1V30xxx.

- **I^{2}S In to DAC**: Input Data from I^{2}S Interface is routed directly to the DAC. Applications cannot access DAC.

- **No Routing:** No DAC Routing. Applications cannot access DAC.

Note that in some cases the routing selection may be incompatible with the routing of the ADC and an error will be reported in the System Message Window.

6.1.2.2   Sample Rate

The Sample Rate Drop-box is used to configure the output sample rate of the DAC. Most applications choose their own sample rate, so the default "Set by Application" option should be used. The "Set by Application" option cannot be used with the
"I^{2}S In to DAC" routing, since a defined sample rate is required for the incoming I^{2}S data.

Note that in some cases, the sample rate may be incompatible with the ADC sample rate and an error will be reported in the System Message Window.

6.1.2.3   Clock Source

The Clock Source Drop-box is used to select the clock source for S1V30xxx. The default is to use an internally generated clock source. For synchronising with external clock sources (mainly applicable to I^{2}S data transfer), the External Option can be used. Refer to the Evaluation Board User Guide supplied with the Evaluation Kit for details on connecting an external clock.

6.1.2.4   Amplifier

The Amplifier drop-box is used to select the path over which output audio is routed on the target. On the evaluation boards, both the "LINE OUT" and "Headphones" options are multiplexed and routed to a single 3.5mm jack on the board. The default selection is Headphones.

6.1.2.5   Gain

The Gain buttons and drop-box can be used to change the gain of the headphone amplifier independently of other DAC configuration. Gain modifications take effect immediately and do not require the sending of an audio configuration message. Changing the gain causes an ISC_AUDIO_VOLUME_REQ message to be sent to the target.

The following sequence of messages should be displayed to signal successful alteration of volume:

'ISC_AUDIO_VOLUME_REQ: sending'

'ISC_AUDIO_VOLUME_RESP: success'

The selectable range of values is –18dB to 12dB and the default selection is 0dB. The user interface ignores any commands that would result in the gain either being decremented beyond its minimum or incremented beyond its maximum.

6.1.3 ADC Configuration Area

The ADC Config button can be used to configure the input audio data routing path on S1V30xxx. Pressing the button will send a "ISC_AUDIO_ADC_CONFIG_REQ" message to S1V30xxx, with the information supplied in the area.
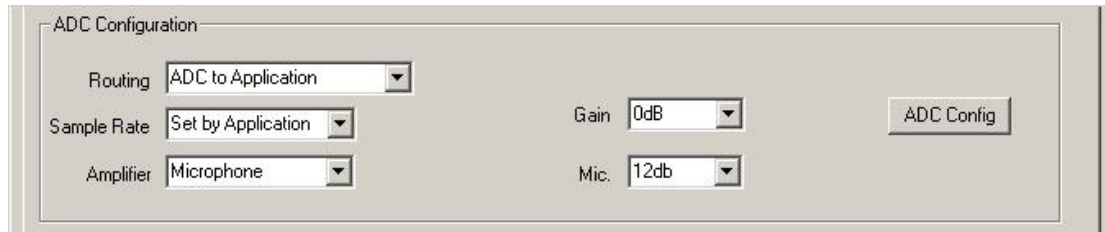
Figure 9   ADC Configuration Area

6.1.3.1 Routing

The Routing Drop-box is used to configure the basic routing of audio data input in S1V30xxx. Four Options are provided:

- **ADC to Application:** Audio Data is sent to applications from the integrated ADC on S1V30xxx.

- **I^{2}S Input to Application:** Audio Data from the I^{2}S Input on S1V30xxx is sent to the Application.

- **ADC to I^{2}S Out**: ADC output is sent directly I^{2}S Output. Applications cannot access ADC.

- **No Routing:** No ADC Routing. Applications cannot access ADC.

Note that in some cases the routing selection may be incompatible with the routing of the DAC and an error will be reported in the System Message Window.

6.1.3.2 Sample Rate

The Sample Rate Drop-box is used to configure the input sample rate of the ADC. Most applications choose their own sample rate, so the default "Set by Application" option should be used. The "Set by Application" option cannot be used with the
"ADC to I^{2}S Out" routing, since a defined sample rate is required for the out-going I^{2}S data.

Note that in some cases, the sample rate may be incompatible with the DAC sample rate and an error will be reported in the System Message Window.

6.1.3.3 Amplifier, Amplifier Gain and Microphone Pre-Amplifier Gain

The Amplifier Drop-box is used to select the path over which output audio is routed on the target. For either the "microphone" or LINE IN options, the ADC will sample data from the MIC IN/LINE IN input on the evaluation board, and it will be routed through the on-chip microphone pre-amplifier before going to the ADC input amplifier.

The Gain Drop-box selects the gain for the ADC input amplifier. This can be set in 1dB steps from 0dB to 12dB. The Mic Drop-Box selects the gain for the Microphone pre-Amplifier (this is only used if the microphone input is selected). This can be set in 6dB step from 12dB to 30dB. Unlike the DAC Configuration Gain, these gain settings can only be set using the ADC Config button.

6.1.4 Power Management Area

The Power Management Area allows a power management mode to be selected. A single drop-box is supplied which selects whether power-managements internally opt for minimum power or minimum delay. Pressing the Power Config button sends a "ISC_PMAN_CONFIG_REQ" message that configures the power management mode.
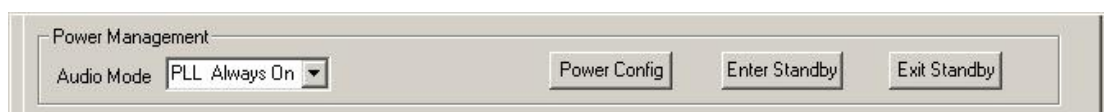
Figure 10   Power Management area
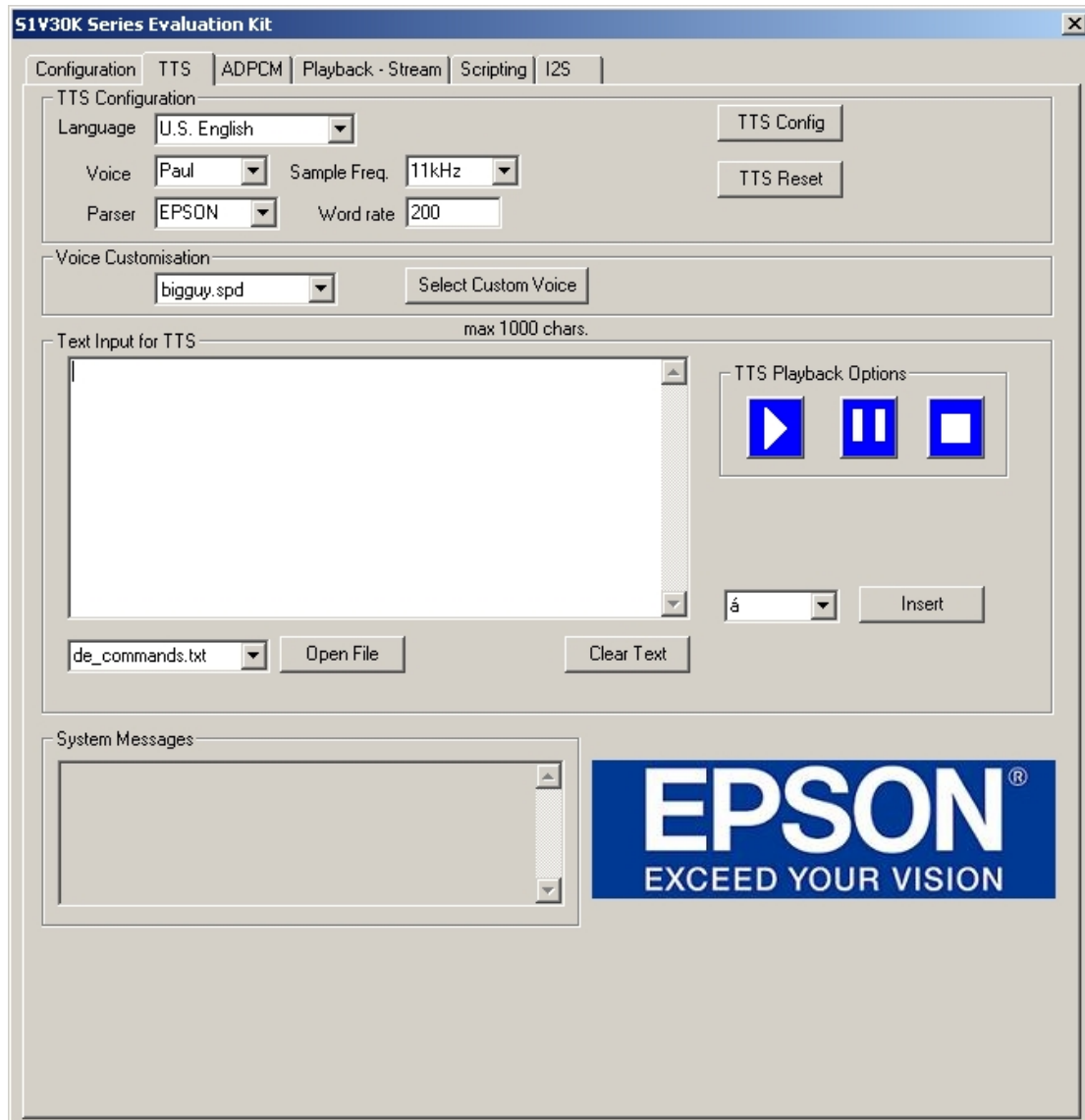
Figure 11   Evaluation TTS tab

6.2   TTS tab

The TTS tab is the user interface to S1V30xxx's TTS functionality.

6.2.1   TTS Configuration area

The configuration area contains the controls used to set the parameters for the TTS application configuration. To configure the sub-system press the "TTS Config" buttons with the user's desired settings selected in the "Configuration" area. Clicking the "TTS speak" or "TTS stop" buttons at this stage will be reported by a message response with an error code (see section 3.2).

6. Evaluation Mode Operation
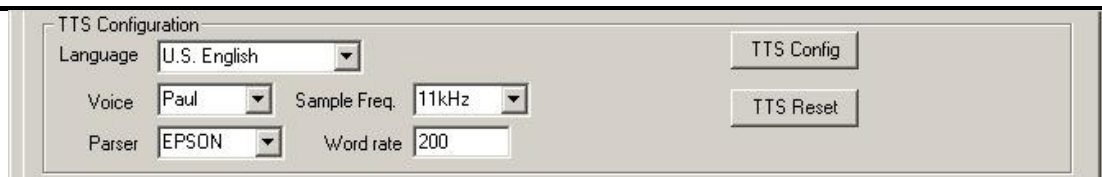
Figure 12   TTS configuration area

6.2.1.1   Language drop-box

The Language drop-box is used to specify the target language. The user has the option of selecting U.S. English, Castillian Spanish, French, German or Latin Spanish. The default on start-up is U.S. English.

6.2.1.2   Voice

The voice selection drop-box allows the user to choose one of up to nine TTS voices; the voices are individually named, with a 'CUSTOM' choice for user-defined voices. For details on the voices defined for the target, please refer to the Message Protocol Document.

6.2.1.3   Parser

The Parser drop-box has two options, DECtalk(R) or EPSON (the default); the EPSON parser provides a number of common input parser options and supports a range of shorthand commands. The DECtalk(R) parser provides access to the DECtalk(R) embedded commands. Refer to the "S1V30xxx DECtalk(R) Implementation" Document for details on the parsers.

6.2.1.4   Sample Frequency

The sample frequency drop-box has two options, 8kHz and 11kHz (default); these values specify the sampling frequency of the TTS application's, and so S1V30xxx's, audio output.

6.2.1.5   Word rate

The word rate data field allows specification of the speaker rate of the output audio in words-per-minute (wpm). The default value is 200. The data entered in this field is constrained by the user interface to positive integer values only.

The word rate supported by the target is from 75 to 600 wpm inclusive. If any attempt is made to configure the target for a word-rate greater than 600wpm, the TTS software will be configured to its maximum value of 600. Similarly attempts to configure for word-rates below 75 wpm cause the target to be configured at 75 wpm.

6.2.1.6 TTS Configure button

The "TTS config" button is used to send an 'ISC_TTS_CONFIG_REQ' message to S1V30xxx. This message causes the TTS application to be configured with the parameters specified in the configuration area. A successful configuration will be indicated in the System Messages text-box through the following sequence of messages:

'ISC_TTS_CONFIG_REQ : sending'

'ISC_TTS_CONFIG_RESP : success'

If this is not the case please refer to the trouble-shooting guide.

6.2.1.7 TTS Reset button

The "TTS Reset" button is use to send an 'ISC_TTS_STOP_REQ' message to the S1V30xxx. This message causes the TTS application to reset the configuration parameters specified in the configuration area. A successful reset will be indicated in the System Messages text-box through the following sequence of messages:

'ISC_TTS_STOP_REQ : sending'

'ISC_TTS_STOP_RESP : success'

If this is not the case please refer to the trouble-shooting guide.

6.2.2 Voice customisation area
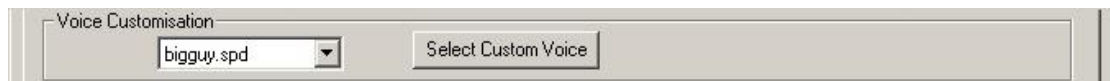
Figure 13   Evaluation Voice Customisation Area

The voice customisation area contains a drop-box which allows selection of one of the user-defined speaker definition files in the same directory as the executable (the file extension for this format is ".spd"). A warning message will appear upon entering the TTS tab if there are no speaker definition files available and voice customisation functionality will then be disabled.

To select a customised voice, click on the drop down box, choose from the list and click on the button labeled "Select Custom Voice". This has the effect of sending a message to the target specifying the parameters associated with its custom voice. Before the effect of this selection can be heard, it will be necessary to configure the target to use the CUSTOM voice as described in section 6.2.1.

6.2.3   Text Input for TTS area

The "Text Input for TTS" area is where the text passed to the target's TTS application software is determined and the buttons used to start and stop TTS processing are located.

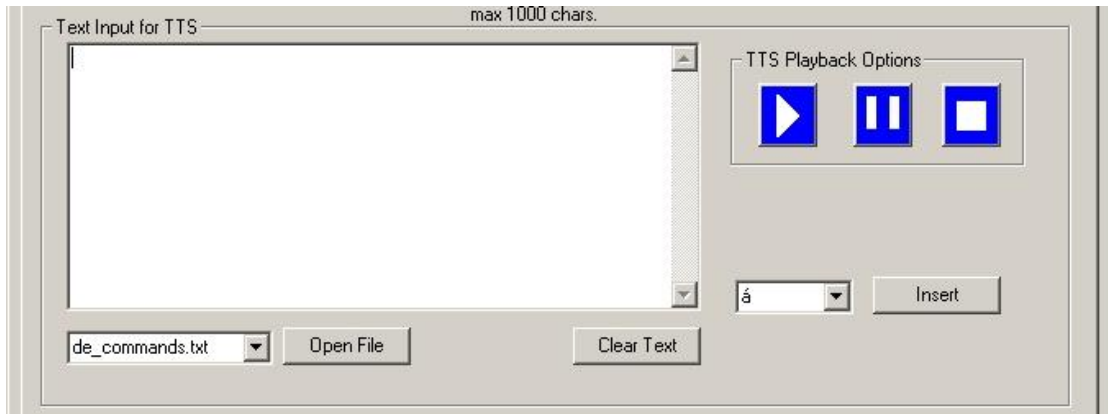**Figure 14   The text input for TTS area**

6.2.3.1   Text Input for TTS text box

The 'Text Input for TTS' text box is where the user-defined text is placed ready for TTS processing. The input text can be pasted or typed in this area in any of the four languages specified in the language selection box above.

6.2.3.2   Open File button and drop-box

The drop box located beside the 'open file' button contains a list of all of the files with a .txt extension located in the same directory as the user interface executable. This list is compiled on start-up.

The 'open file' button causes the text within the file currently selected in the drop-box to be placed in the 'text input for TTS' text-box. This provides a facility for reading text from a pre-created text file rather than typing it in directly.

Should the user wish to add their own .txt files containing input text for the TTS application to the file list, the .txt file should be saved in the same directory as the user interface executable file.

A number of example files are supplied with the evaluation kit. The languages of the files are indicated by the ending: "en" for English, "es" for Spanish, "de" for German, and "fr" for French. The ending "dectalk" indicates that the file requires the DECtalk(R) parser to be enabled as described in Section 6.2.1.3.

Headers in the example text files can be used to automatically set these parameters in the GUI.

6.2.3.3 Clear Text button

The 'Text Input for TTS' text box can be cleared at any time using the 'Clear Text' button located directly below it.

6.2.3.4 Insert button and drop-box

The drop-box located next to the Insert button contains a list of all possible foreign-language characters that might be required when inputting text in languages other than English. It also contains emoticons and other special characters, which can be used as inline commands to control the behaviour of the TTS application when using the EPSON parser. To insert these characters into the text-box, make a selection and then press the insert button.

6.2.3.5 Speak button

The Speak button sends an ISC_TTS_SPEAK_REQ message to S1V30xxx, this message incorporates the contents of the 'Text input for TTS' text-box.

Upon receipt of the request message, S1V30xxx should send back an ISC_TTS_SPEAK_RESP message. If the message displayed is 'ISC_TTS_SPEAK_RESP : success' the speak request has been accepted. Otherwise please refer to the trouble-shooting guide.

Following completion of TTS processing of the text, an ISC_TTS_SPEAK_READY_IND message will be sent. This message signals that the TTS application is again ready to receive more input text.

6.2.3.6 Pause button

This button allows streaming or playback of voice data to be paused at any time. To unpause the paused process, this button should be clicked again. Alternatively playback may be continued when in the paused state by clicking the play button.

It is also possible to begin playback of any other file while in this paused state using any of the previously described methods (see section 6.3.1.1). In this case, the currently active process will be stopped and it will no longer be possible to resume it from its paused state.

6.2.3.7 Stop button

Clicking the Stop button, while text sent via the Speak button is being processed and output by the target, will have the effect of sending an ISC_TTS_STOP_REQ message, which immediately halts TTS processing, and audio output.

Success is indicated by the display of 'ISC_TTS_STOP_RESP: success' in the System Messages text-box. If other messages are displayed please refer to the trouble-shooting guide.

The target's TTS firmware will now require reconfiguration before it is ready to speak again.

6.3 Playback – Stream tab

The playback – stream tab is used to playback audio and text files that are both stored locally in ROM or on an SD Card, or streamed over a USB/Serial link from a host PC. See Figure 15.

6.3.1 Playback options area

This area is used to control the playback of files from S1V30xxx's internal/external memory.

6.3.1.1 Play button

Clicking this button begins streaming or playback from the host PC or the devices internal/external memory. If the file has an audio extension like ".mp3", ".mp4", ".aac" or ".mid" then the file contents are decoded by S1V30xxx's audio decoder and output as audio. If, however, the file is a text file, it is processed by the target's TTS engine and the audio output is synthetic speech. This button serves as an alternative to the double-clicking of an entry within the file view described in section 6.3.2.2 below.

6.3.1.2 Pause button

This button allows streaming or playback of audio files to be paused at any time. To unpause the paused process, this button should be clicked again. Alternatively playback may be continued when in the paused state by clicking the play button.

It is also possible to begin playback of any other file while in this paused state using any of the previously described methods (see section 6.3.1.1). In this case, the currently active process will be stopped and it will no longer be possible to resume it from its paused state.

6.3.1.3 Stop button

The stop button may be clicked during playback of any audio file to cause that process to end.

6.3.2 Directory listing area

Before playback can begin, the user must request a list of files from the host PC, or in the target's internal/external memory storage device. Some files that cannot be played may also be listed. For example, dictionaries.

6.3.2.1 Update Listing button

The Update Listing button resets the view of the file view.

6.3.2.2 Directory listing file-view

By default the Directory Listing will show the files and directories in the executable directory of the host PC. Double-click on any file to begin streaming. Double-click on any directory to open it up and see its contents. An expanding tree view is used. It is not possible to view files or directories higher than the executable directory.

6.3.2.3 Directory Location pull-down

The Directory Location pull-down shows the location of the current file view, whether it's Local Host, or SD/MMC Card, or ROM. The user simply chooses the location to stream or playback files from. Whenever a new location is chosen the Directory Listing will update to show the root view of each location.

A message box will notify the user if no compatible files are available for streaming. A directory listing must be obtained before attempting to play a file.

6.3.3 Pause Memory area

6.3.3.1 Pause Mem button

When clicked, the Pause Mem button pauses the currently streamed file, and saves off its file information. This allows the user to stream a completely new file whilst still holding the original file's information. This button is used in conjunction with the *Resume Mem* button.

6.3.3.2 Resume Mem button

When clicked, the Resume Mem button starts a file that was paused using the *Pause Mem* button. It starts streaming the file from the location it was paused. If another file had been playing between the pause and resume, it will need to be stopped before clicking the Resume Mem button.
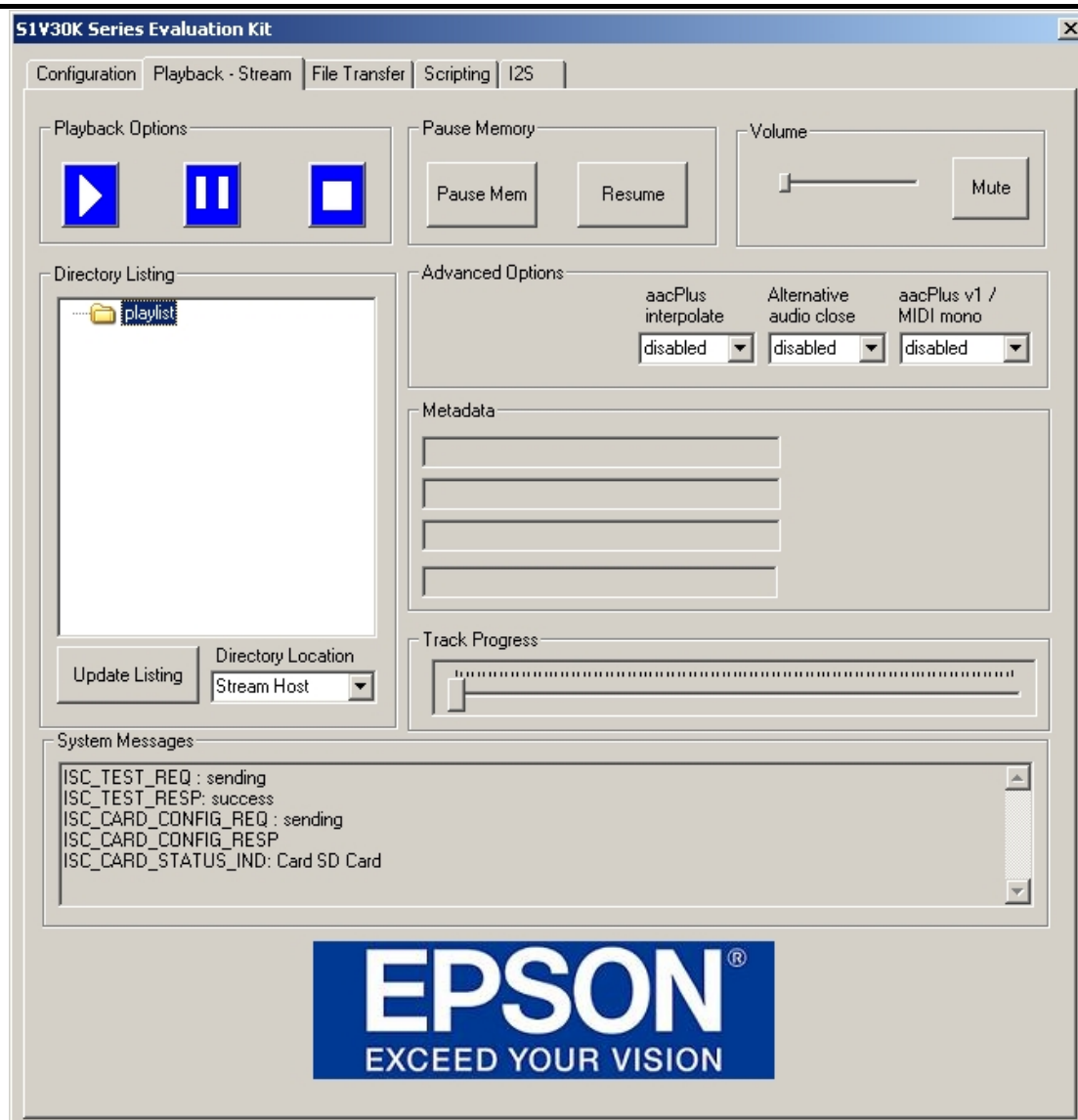
Figure 15   Playback tab

6.3.4   Volume area

This area is used to control the audio volume of the audio files being played back. The Up and Down buttons increase and decrease the volume respectively. The Mute button mutes and un-mutes the volume.

6.3.5   Advanced Options Area

This area has three advanced options for selection. It is advised to leave these three options as default. Please refer to the message protocol document to find out more about these three options.

6.3.6 Metadata Area

The Metadata Area contains a set of non modifiable fields that show file data of the currently streamed file. Not all audio files contain metadata, and therefore will not always show associated data. The fields show such information as track number, artist name, track title, track type, playback frequency and album art.

6.3.7 Track Progress Area

This area gives a visual representation on where the current file is during playback. The track progress bar will allow the user to scroll to any point in the currently selected file.

6.4   File Transfer Tab

The File Transfer Tab allows a user to transfer files to/from the host PC to/from an SD Card plugged in to an evaluation board that supports SD Cards.
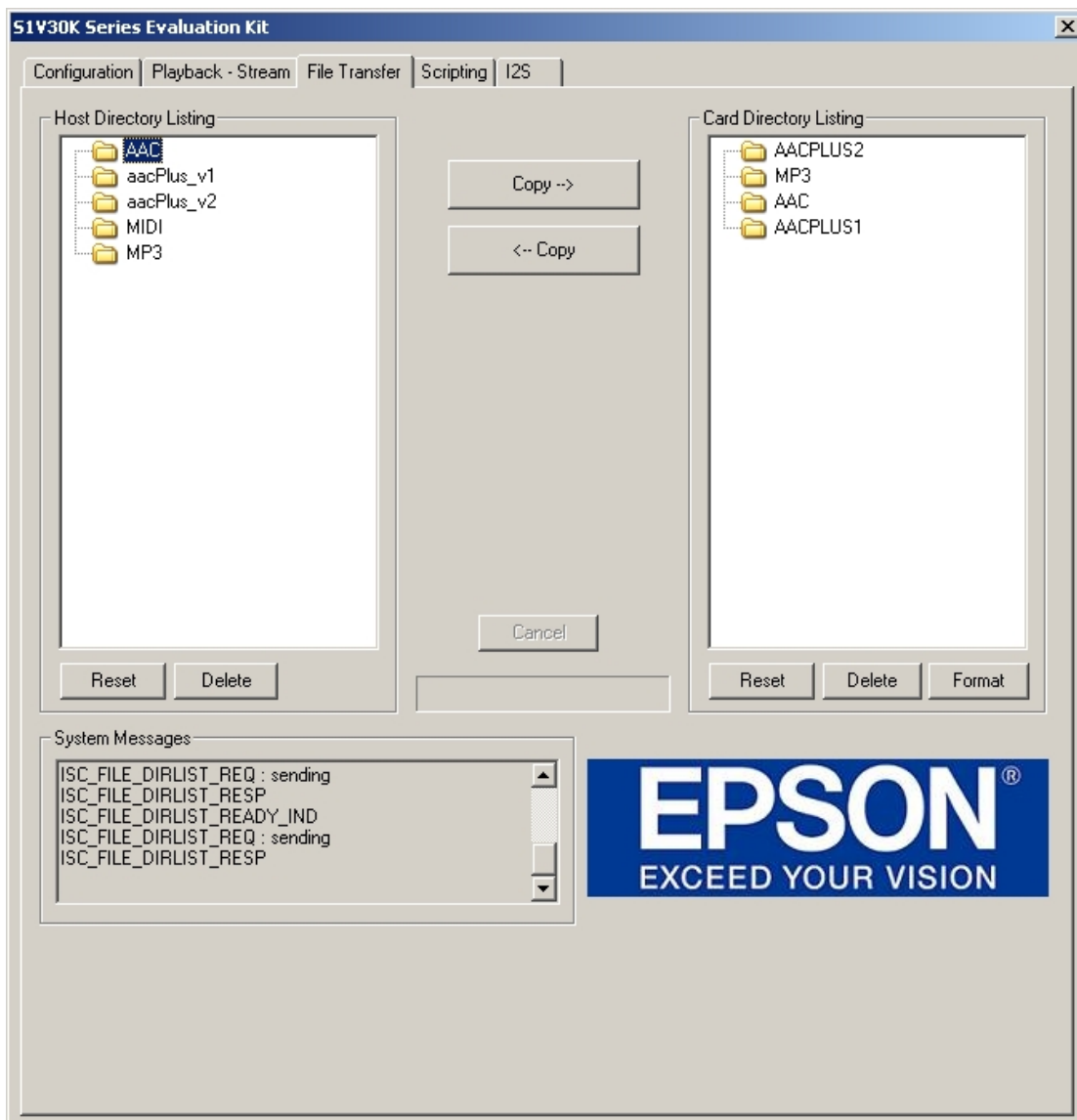

Figure 16   File Transfer Tab

6.4.1   Host Directory Listing

This area is used to display the file listing of the host PC.

6.4.1.1   File View

The File View shows the current directory listing of the host PC. This is an expanding tree file view. Double-click on any directory to view its contents. Double-clicking on any files does nothing. The file view's root is at the 'playlist' directory in the executable directory.

6.4.1.2   Reset Button

The Reset button resets the File View window to its default file listing.

6.4.1.3   Delete Button

The Delete button deletes the currently selected item in the File View. This will delete the file from the file structure.

6.4.2   Card Directory Listing

This area is used to display the file listing of the local SD Card connected to an evaluation board that supports SD Cards.

6.4.2.1   File View

The File View shows the current directory listing of the SD Card. This is an expanding tree file view. Double-click on any directory to view its contents. Double-clicking on any files does nothing. The File View's default is at the root of the SD Card.

6.4.2.2   Reset Button

The Reset button resets the File View window to its default file listing.

6.4.2.3   Delete Button

The Delete button deletes the currently selected item in the File View. This will delete the file from the file structure.

6.4.2.4   Format Button

The Format button formats the SD Card connected to the evaluation board. This will erase all data contained on the card.

6.4.3 Copy/Cancel Buttons

6.4.3.1 Copy Buttons

The Copy buttons in the center of the panel copy a file from one directory listing to the other. Depending on which copy button a user presses determines the file copied and the location where it is copied to. When an item is copied, it will be copied in the location that is currently selected in its destination directory listing. The item that will be copied is the currently selected item in the source directory listing

6.4.3.2 Cancel Button

The Cancel button is only active when a copy is in process. Clicking on the Cancel button stops the copy process of the file. Copying is done in 64 KB blocks, which means that the cancel will not process until the current 64KB of data has finished copying.

6.4.3.3 Copy Status Bar

Like the Cancel button, the status bar is only active when a copy is in process. This status bar shows the current status of the copy process.

6.5 ADPCM Tab

The ADPCM tab allows voice data to be recorded to a file. Voice data will be input to the S1V30xxx via a microphone input, and will be sent over the serial communication link, and saved to a file in a local storage area. The layout of the tab has three main areas: playback options, ADPCM record configuration and the system messages window. For information on the system messages window see section 3.2. See Figure 17 for the tab layout.
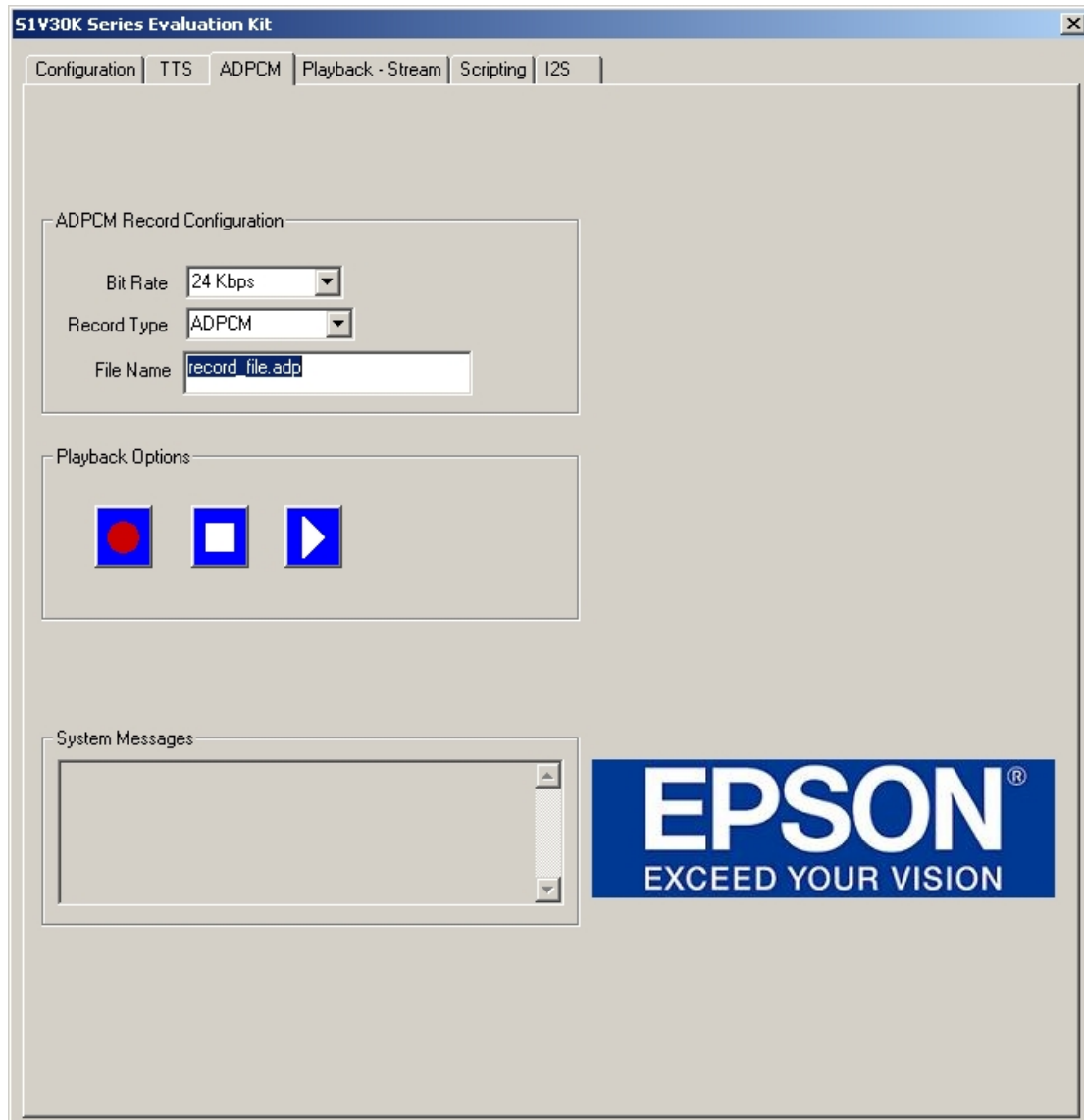

Figure 17　ADPCM Tab

6.5.1 Playback options area

This area is used to control the streaming and recording of ADPCM files

6.5.1.1 Record button

Clicking the record button allows streaming and encoding of a specified file with voice data input via a microphone to the S1V30xxx. Beginning this streaming process also has the effect of disabling all other tabs.

6.5.1.2 Stop button

The stop button may be clicked during streaming and decoding of any file to cause all processing of that file to end. The stop button also may be clicked during the streaming and encoding of a file to cause all processing of that file to end. This will also re-enable all of the other previously disabled tabs.

6.5.1.3 Play button

Clicking this button begins streaming and decoding of the file named in the File Name box. Beginning this streaming process also has the effect of disabling all other tabs.

6.5.2 ADPCM record configuration area

This area is used to set the options for the record configuration.

6.5.2.1 Bit Rate drop box

This option specifies the bit transfer rate when doing ADPCM record. The bit transfer rate can be either 24, 32 or 40 Kbps for the ADPCM record.
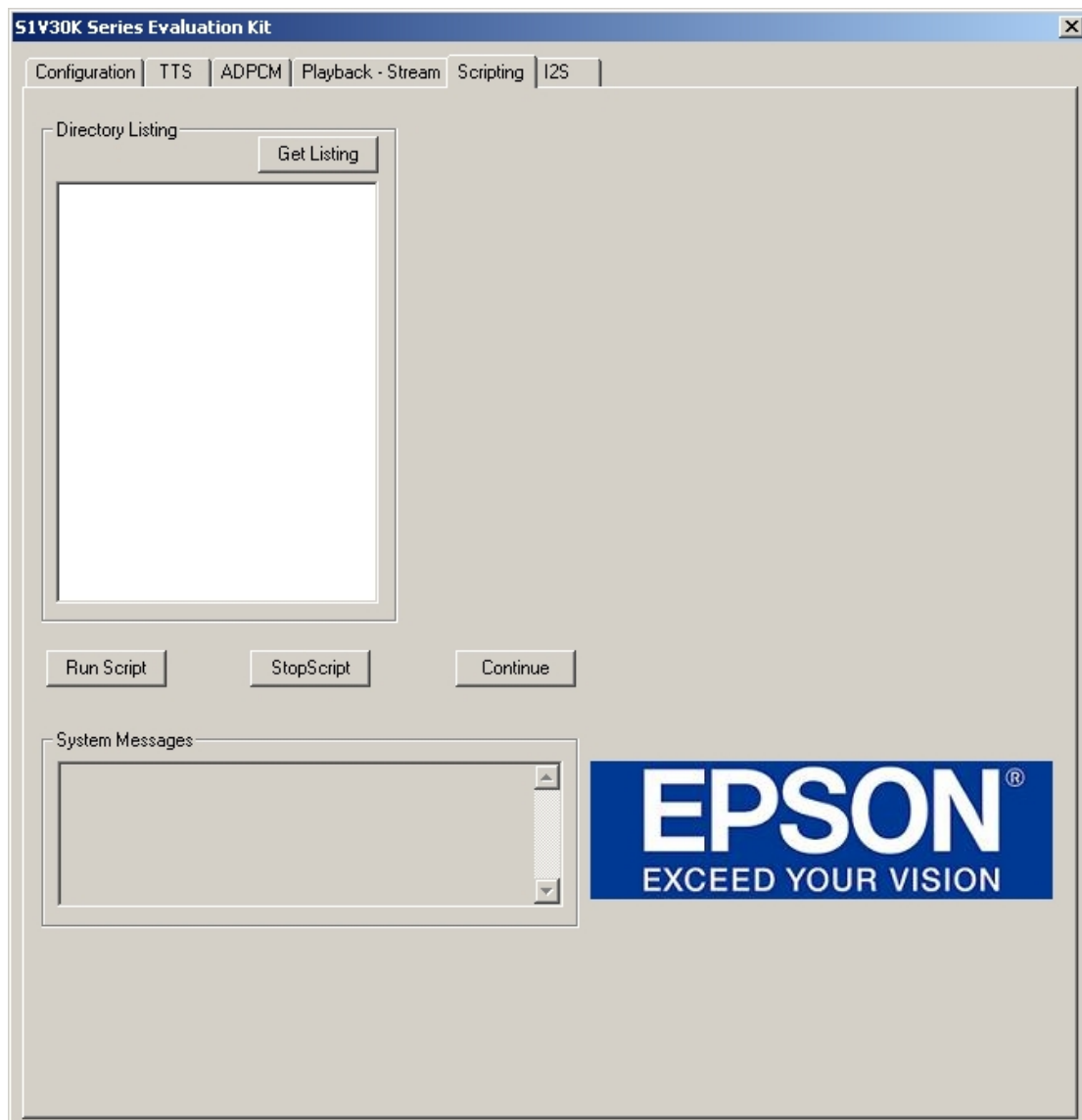
6.5.2.2 Record Type drop box

This option specifies the record type. Two record types are available: ADPCM or linear record. Only the ADPCM record type supports multiple bit transfer rates.

6.5.2.3 File Name box

This field specifies the name of the file to be created for recording voice data to.

6.6   Scripting Tab

Figure 18   Scripting Tab

The Scripting Tab is used to update the firmware on the S1V30xxx. There are three main sets of firmware that are used. There is a multi-lingual firmware which supports multi-lingual text-to-speech. There is audio firmware which supports the streaming of high-speed audio files to/from the S1V30xxx. There is also bridge firmware used to setup some S1V30xxx boards as a bridge to another S1V30xxx board.

The S1V30xxx evaluation board must be properly setup in order to be able to update the firmware. Please refer to the S1V30xxx Evaluation Kit Getting Started Guide for details on how to setup the board and application for firmware updates.

6.6.1 Directory Listing Area

This area is used to display a list of the available firmware updates for the S1V30xxx.

6.6.1.1 Get Listing

To view the list of compatible files located in the same directory as the user interface executable, click the 'get listing' button. This will list only those files with usable extensions that are in the same directory as the executable, (eg. .isc).

A message box will notify the user if no compatible files are available for firmware download. A directory listing must be obtained before attempting to run a script.

6.6.1.2 Directory listing file-view

The list of files available for streaming is displayed here. A single click on a file name within this view makes it the currently selected script, ready to be run by the user, if desired.

6.6.1.3 Run Script

This button runs the currently selected script in the Directory listing file-view. This will update the firmware stored on the S1V30xxx. This will take a couple minutes. The user will see TX/RX messages being scrolled through the System Messages window. This will continue until a message "Script Finished" has appeared in the System Messages window.

6.6.1.4 Stop Script

This button stops the currently running script in the Directory listing file-view. The user will see TX/RX messages stop scrolling through the System Messages window.

6.6.1.5 Continue

This button will continue a currently stopped script. The user will see TX/RX messages being scrolled through the System Messages window. This will continue until a message "Script Finished" has appeared in the System Messages window.

6.7   I²S Tab
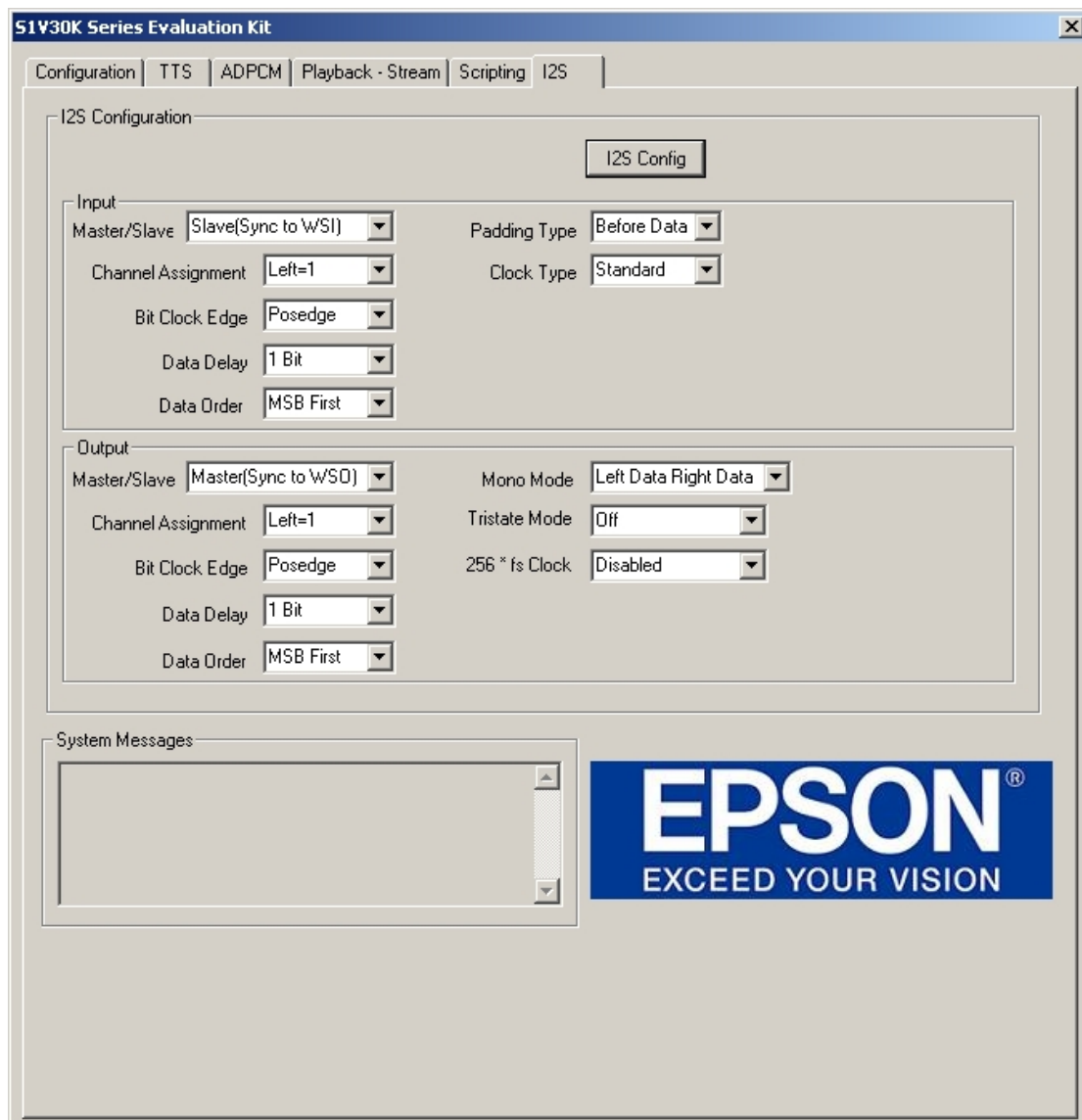
Figure 19   I²S Tab

The I²S Tab is used to configure the I²S Interfaces on the S1V30xxx.

The I²S interfaces must first be enabled on the customer evaluation board; refer to the customer evaluation board guide for details on how to enable the interfaces, and how to connect the I²S connectors.

The I²S Tab consists of a number of drop-down lists that allow basic parameters of the I²S interfaces to be configured, and also to permit other serial audio data transfer protocols beyond the scope of the I²S standard.

6. Evaluation Mode Operation

A description of the options is given in Table 1 (Input Configuration) and Table 2 (Output Configuration).

Table 1   I²S Input Configuration Options

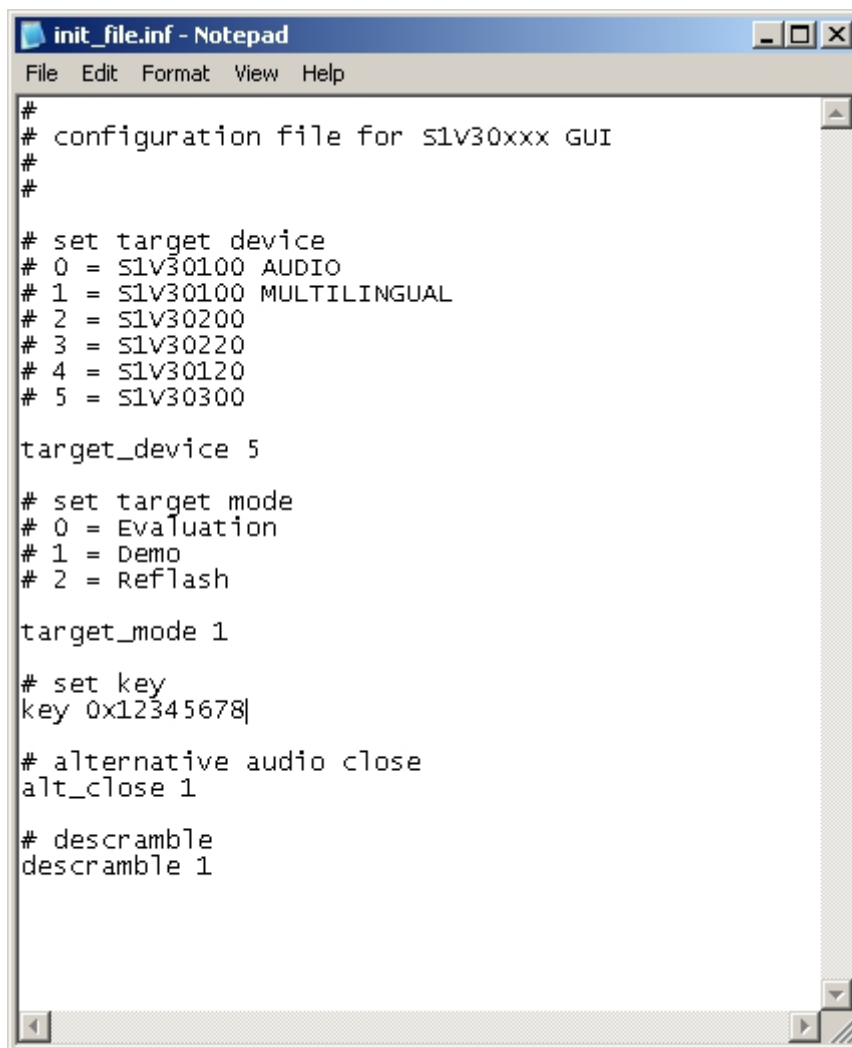| Input Options	(* indicates default for I²S Standard)
Master/Slave	Determines whether the I²S data input stream is configured as a master or a slave. **Master:** Input data on SDI is synchronised to output bit clock SCKO, and output framing signal WSO. **Slave:** Input data on SDI is synchronised to input bit clock SCKI, and input framing signal WSI.
Channel Assignment	Determines the assignment of channels of data synchronised to WSI. **Left = 1** – Left Channel data occurs when WSI=1 **Right = 1 *** – Right Channel data occurs when WSI=1
Bit Clock Edge	Determines which edge of SCKI that data is synchronised to. **posedge *** = data valid on positive edge of SCKI **negedge** = data valid on negative edge of SCKI
Data Delay	Determines delay of input data on SDI with respect to change of WSI / WSO. **1 Bit *** – first data bit of frame occurs one bit after change of WSI/WSO. **0 Bit** – first data bit of frame occurs at same time as change of WSI/WSO.
Data Order	Determines order of bits in word on SDI **LSB First** – Least Significant Bit First **MSB First *** - Most Significant Bits First
Padding Type	Determines position of padding bits in frame, when more bits received then supported by S1V30xxx. **Before Data** – padding occurs before data **After Data *** – padding occurs after data
Clock Type	**Standard *** – 50:50 duty cycle WSI **Pulsed** – WSI only pulsed for single bit clock cycle.

Table 2   I²S Output Configuration Options

Output Options	(* indicates default for I²S Standard)
Master/Slave	Determines whether the I²S data output stream is configured as a master or a slave. **Master**: Output data is synchronised to output bit clock SCKO, and output framing signal WSO. **Slave**: Output data is synchronised to input bit clock SCKI, and input framing signal WSI.
Channel Assignment	Determines the assignment of channels of output data clock WSO. **Left = 1** – Left Channel data occurs when WSO=1 **Right = 1 *** – Right Channel data occurs when WSO=1
Bit Clock Edge	Determines which edge of SCKO that data is synchronised to. **posedge *** = data valid on positive edge of SCKO **negedge** = data valid on negative edge of SCKO
Data Delay	Determines delay of output data on SDO with respect to change of WSI / WSO. **1 Bit *** – first data bit of frame occurs one bit after change of WSI/WSO. **0 Bit** – first data bit of frame occurs at same time as change of WSI/WSO.
Data Order	Determines order of bits in word on SDO. **LSB First** – Least Significant Bit First **MSB First *** - Most Significant Bits First
Mono Mode	Determines mapping of data from ADC onto I²S Data Output. **Left Data Right Data** – ADC data duplicated on both channels **Left Data Right Zero** – ADC data appears on left channel, zero data on right channel **Left Zero Right Data** – ADC data appears on right channel, zero data on left channel.
Tristate Mode	Tristates the outputs on the I2S allows other devices to use the bus **Off** – Leaves the tristate mode to off **On** – Puts the outputs of the I2S into a tristate
256 x fs Clock	Select 256 * fs clock output on S1V30200

7. Init File

This section provides a description of the **init_file.inf**. Figure 20 shows an example of the file. All lines with the hash (#) symbol indicates a comment. The target_device followed by a number indicates the default device selected when the application GUI is started. The target_mode followed by a number indicates the default mode when the application GUI is started. The key field is used with devices that support keys. The key is used with the ISC_TEST_REQ message, and the correct key must be supplied, or the device will not function properly. Please refer to the Message Protocol document, section 5.8.1.4, for an explanation on the alternative audio close field. AAC and ADPCM files may be scrambled with the key mentioned above. To play scrambled AAC and ADPCM files, set the value associated with descramble in descramble field to 1. Set it to 0 to play unscrambled AAC and ADPCM files. It is used to set the appropriate field in the ISC_AAC_CONFIG_REQ and ISC_SPCODEC_CONFIG_REQ messages. Please reference the Message Protocol document for more information.

```
#
# configuration file for S1V30xxx GUI
#
#

# set target device
# 0 = S1V30100 AUDIO
# 1 = S1V30100 MULTILINGUAL
# 2 = S1V30200
# 3 = S1V30220
# 4 = S1V30120
# 5 = S1V30300

target_device 5

# set target mode
# 0 = Evaluation
# 1 = Demo
# 2 = Reflash

target_mode 1

# set key
key 0x12345678

# alternative audio close
alt_close 1

# descramble
descramble 1
```

Figure 20   Example of init_file.inf

8. Troubleshooting

This section provides a list of error messages that appear if the Evaluation Kit GUI is not operated correctly.

8.1 Common Problems

The message "the system cannot open file specified" appears when the application is started.

Ensure that another instance of the user interface is not already running. If it is, close both down and restart the application. If this is not the case, ensure that one of the ports on the PC is mapped to the selected communications port by checking the settings in Windows® device manager. See the Windows® Documentation for further details.

Register button is pressed but no ISC_TEST_RESP message is reported in the system messages window.

Ensure the hardware has been set up and is in the state described in Evaluation Kit Getting Started Guide. Ensure that the PC on which the software is running has the specifications outlined in section 2.1 above.

Instead of success, an error code is reported when the Response message is displayed.

Ensure that no messages have been sent out of sequence as outlined in the Message Protocol Specification. If this is not the case then please refer to the error codes in the same document to see the meaning of the error code returned.

After reflashing multiple times, System Messages Window doesn't update with messages scrolling while in audio playback or TTS demonstration.

Close down and restart the GUI in Demonstration Mode for the particular device being targeted.

Revision History

Date	Rev.	Page	Type	Details
				Revision details
10/29/2007	3.00	All	New	Release for S1V30120
07/24/2009	3.01			Added Windows Vista OS

EPSON

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