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S1V30120 Evaluation Kit
User Guide

NOTICE

Table of Contents

1. Introduction

1.1 Scope

The User Guide documents the contents and use of the S1V30120 Evaluation Kit.

The S1V30120 Evaluation Kit is designed to be used in conjunction with the S1V30100 Evaluation Board. The S1V30100 evaluation board is used to provide a bridge from a USB link to a SPI link that controls the S1V30120. Further details of the S1V30100 evaluation board can be found in the S1V30100 Evaluation Kit documentation.

The S1V30120 evaluation kit software supports the Microsoft Windows 2000 and XP operating systems.

1.2 Document Structure

Section 2 gives a list of S1V30120 evaluation kit contents.

Section 3 gives an overview of the S1V30120 Evaluation System. Section 3 gives details on how to install and set-up the evaluation system. Section 4 gives details on running the S1V30120 evaluation applications.

2. Evaluation Kit Contents

2.1 Evaluation Kit Contents

Item	Description
`S1V30120 evaluation board`	S1V30120 evaluation board
`S1V30100 evaluation board`	S1V30100 evaluation board converts UART(RS-232C) to SPI to evaluate with PC application.
`USB Cable`	It connects PC to the board.
`USB Driver(FTDI Driver) software`	Windows driver
`S1V30120 Evaluation GUI Application`	This application controls S1V30120.
`ADPCM Encoder software`	This software makes ADPCM compressed data which can be played back on S1V30120.
`S1V30120_INIT_DATA`	This binary data is S1V30120 download firmware which initializes S1V30120. Customer needs to load this data to S1V30120 by ISC_BOOT_LOAD_REQ message protocol.
`S1V30120 sample software`	This software is host cpu's sample program.
`S1V30120_eval_kit_user_guide.pdf`	User Guide for Evaluation Kit. Read this document to install and setup the evaluation kit.
`S1V30120_Hw_spec.pdf`	S1V30120 Datasheet
`S1V30120_eval_board_user_guide.pdf`	S1V30120 Evaluation Board User Guide
`S1V30120_eval_kit_user_guide.pdf`	This document
`S1V30120_message_protocol.pdf`	S1V30120 Message Protocol Specification
`S1V30000_series_gui_guide.pdf`	30000 GUI Guide
`S1V30120_gettingstarted_guide.pdf`	Getting Started Guide for System Developers
`s1v30120_data_pack.exe`	Data Packaging tool (with library.zip and python25.dll)
`S1V30120_sample_software_specification.pdf`	Host CPU's sample software specification
`EpsonDECtalk501.pdf`	DECtalk is TTS Engine of S1V30120. This is it's manual.
`udict`	This is a PC tool to create the data used by ISC_TTS_UDICT_DATA_REQ.
`DicBuildTool.pdf`	udict tool's manual
`build_udic_load_script.pl`	This is a perl script to convert from the data of udict to *.isc script which is used by GUI PC application.
`Version.txt`	Version description

3. System Overview

3.1 System Description

The diagram in Figure 3 presents the full S1V30120 evaluation system. A brief description of each component is provided in this figure. The evaluation system consists of two boards, the S1V30120 evaluation board (FIRECREST) and an S1V30100 evaluation board (NIGHTINGALE) that is acting as a protocol bridge. Figure 1 shows the connections needed between the two boards.
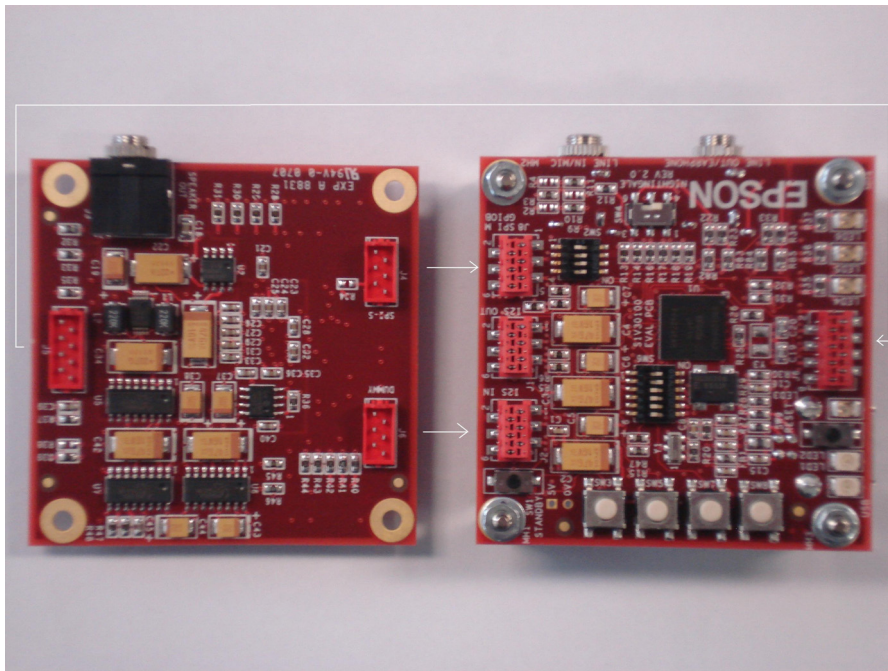
Figure 1   S1V30120 connections to S1V30100

The FIRECREST board is connected to the NIGHTINGALE board by directly mounting the FIRECREST board on top of NIGHTINGALE board. Figure 2 shows an assembled S1V30120 evaluation kit.

3. System Overview
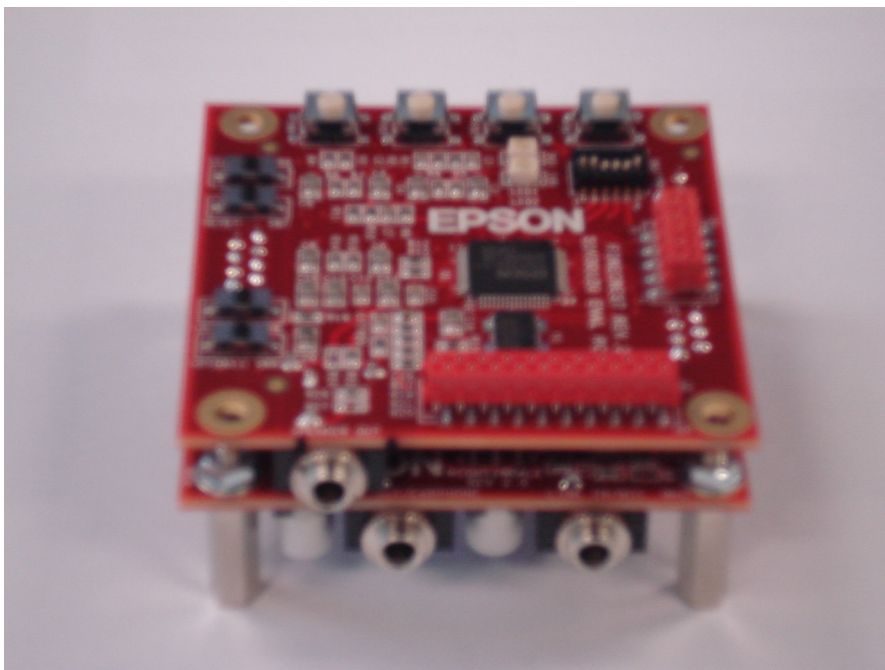
Figure 2   Assembled S1V30120

The overall system operation consists of a PC running evaluation software sending messages using the S1V30120 message protocol to the bridge over the USB link. The bridge stores the message, and then forwards it on the SPI link to the S1V30120 evaluation board.

The first messages sent to the S1V30120 are used to download additional system firmware and patches over the SPI link. Once the main audio decoder firmware is running, then audio data is transferred across the SPI link, and decoded. Analogue data is output, which can be sent to speakers or headphones.

PC
The PC runs the S1V30120 Evaluation Kit GUI.

USB Cable/ 5V DC

P1

SPI / UART Bridge

S1V30100
Evaluation Board
(NIGHTINGALE)

UART / SPI Bridge
The Bridge receives messages over the USB connection and sends them out over the SPI interface using a 8-bit wide SPI protocol.

J8   J6

SPI   Power

Connectors
The SPI and Power connections between the S1V30120 evaluation board and the bridge with Amp MicroMatch connectors.

J4   J5

S1V30120
Evaluation Board
(FIRECREST)

Audio Out

Speaker Out

S1V30120 Evaluation Board

The FIRECREST board provides power, clock and interface connectors for the S1V30120 on the board. Connectors to the bridge are also used to send and receive messages over the SPI interface.

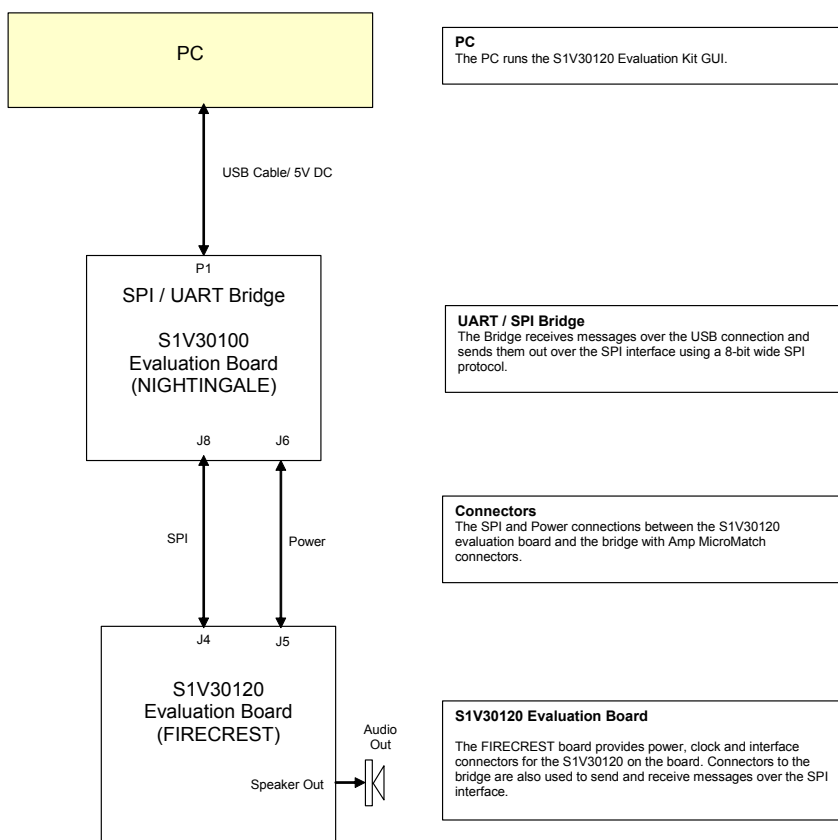**Figure 3   S1V30120 Evaluation System**

4. Evaluation Kit Installation

4.1   Components Supplied

The S1V30120 Evaluation Kit has the following components:

1.   S1V30120 Evaluation Board (FIRECREST)

2.   S1V30100 Evaluation Board (NIGHTINGALE). This component is supplied separately as part of a S1V30100 Evaluation Kit.

3.   S1V30120 Evaluation Kit Release 2.0 Installation CD-ROM

4.2   Installation

Follow the steps below to install the Evaluation Kit.

4.2.1   Install S1V30120 Evaluation Kit on PC.

The S1V30120 Evaluation Kit Firmware is provided as a self-installing executable on the CD-ROM. The **setup.exe** file will run automatically.   If the **setup.exe** file doesn't start automatically, run the file **setup.exe** from Windows Explorer

4.2.2   Configuring the Bridge Board

The switches on the S1V30100 evaluation board (NIGHTINGALE) should be configured as shown in Table 1.

Table 1   Bridge Configuration

Switch	Position
SW2-1	OPEN
SW2-2	CLOSED
SW2-3	CLOSED
SW2-4	CLOSED
SW6-1	CLOSED
SW6-2	CLOSED
SW6-3	OPEN
SW6-4	OPEN
SW6-5	OPEN
SW6-6	OPEN

4.2.3 Connecting the Bridge and the S1V30120 Evaluation Board

The Bridge (NIGHTINGALE board) is connected to the S1V30120 Evaluation Board (FIRECREST) by plugging the FIRECREST board directly on top of the NIGHTINGALE board, making sure to line up the connectors properly.

The configuration switches on the S1V30120 Evaluation Board (FIRECREST) should be configured as described in Table 2.

Table 2   S1V30120 Evaluation Board Configuration Switch Settings

Switch	Position
SW5-1	CLOSED
SW5-2	CLOSED
SW5-3	OPEN
SW5-4	OPEN
SW5-5	OPEN
SW5-6	CLOSED

4.3   Install Software Driver for USB/UART Converter on PC

The FTDI USB/UART device driver software is included within the evaluation kit. Its installation is started by Microsoft Windows® hot-plugging support after connecting NIGHTINGALE via the supplied USB cable. The FTDI driver installed should be manually navigated to and installed from the supplied installation CD.   For a detailed guide to installation please see the USB UART IC(FT232BL) software driver's installation guide document on the Future Technology Devices International Ltd (FTDI Chip) web site. .

4.4 ADPCM Encoder

The usage of the ADPCM encoder is described below.

```
> s1v30120_adpcm_encoder.exe

WAV(Linear PCM) to ADPCM encoder (s1v30120_adpcm_encoder)  Version 1.02

Copyright(c) SEIKO EPSON CORP. 2007  All rights reserved.


Usage:

    s1v30120_adpcm_encoder [options] input-file


    -t [linpcm/adpcm] : select output file type (default is "adpcm")

    -b [3/4/5]        : select encoding data rate by bit(kbps = bit x fs) - adpc
m only (default is 3)

    -o output-file    : Output ADPCM file (default is "<input-file>.adp")


  Example:

    s1v30120_adpcm_encoder -b 3 -t adpcm sample.wav
```

5. Running the S1V30120 Evaluation GUI Application

Plug in the S1V30120 evaluation board using the USB cable provided in the S1V30100 evaluation kit. The S1V30120 GUI application, **S1V30120_eval_application.exe**, can be found on the desktop. Double-click on the application icon.   The main window will appear as in Figure 4. On starting the application, the appropriate COM Port, target device and target mode will already be chosen.

When first installing the evaluation kit, the bridge firmware must be flashed on to the NIGHTINGALE board. "Demo Mode" will be selected in the mode pull-down. You will need to change to "Reflash Mode" in the mode pull-down.   Instructions on reflashing the board are given in Section 4.1.
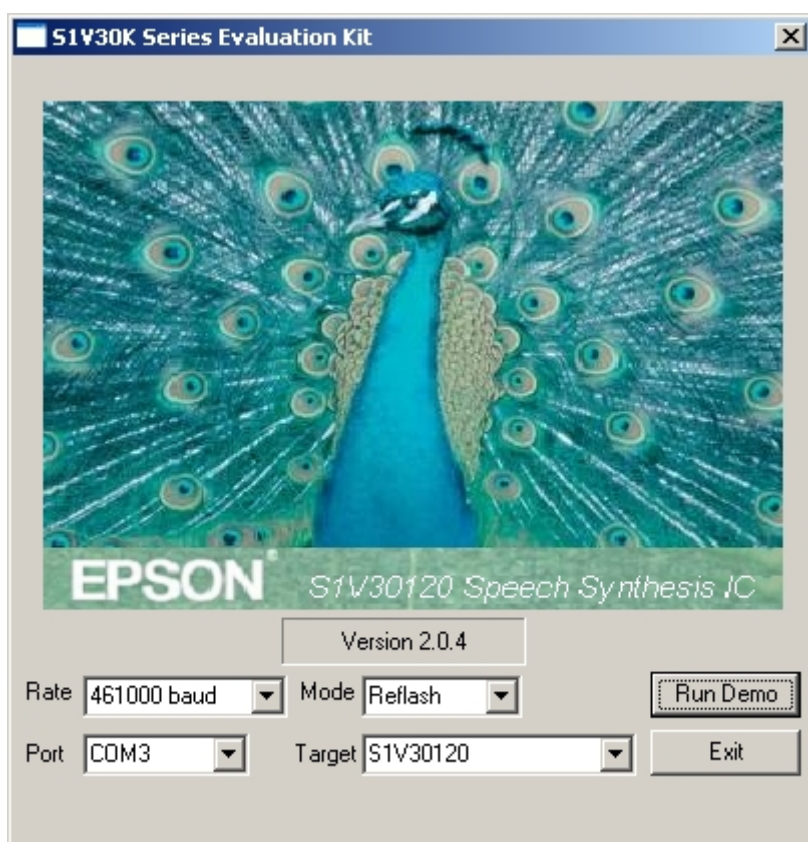

Figure 4   S1V30120 Main Application Window

After reflashing the board the main S1V30120 firmware must be downloaded. This is described in Section 4.2. For all subsequent times on running the application, "Demo Mode" will be selected which goes directly to the S1V30120 firmware download, bypassing the bridge reflashing.

5. Running the S1V30120 Evaluation GUI Application

5.1 Bridge Firmware Reflashing

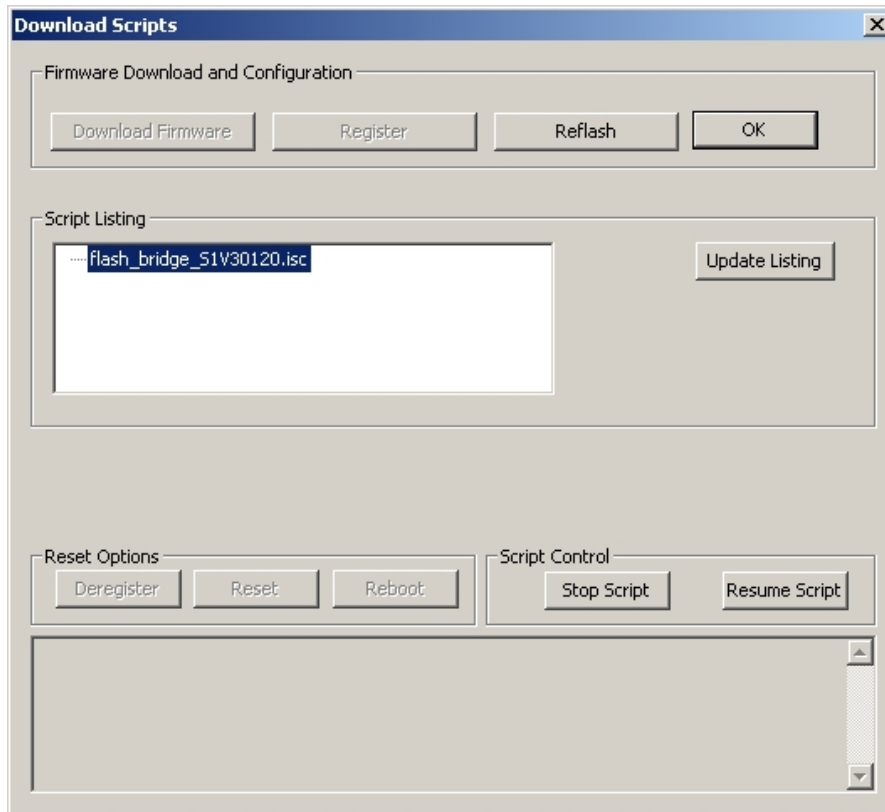1. Click on Run Demo from the Main Application Window. This will display the Download Scripts Window as in Figure 5.

Figure 5   Reflashing the Bridge

2. Click on the Reflash button.   This will reflash the bridge with the appropriate bridge firmware.

3. After the download is finished, the user will see a "script finished" message in the messages window.

5.2 Downloading the S1V30120 Firmware

1. The Download Scripts window will show the S1V30120 download script in the Script Listing window, and the Download Scripts button will be available. The window will look like Figure 6.
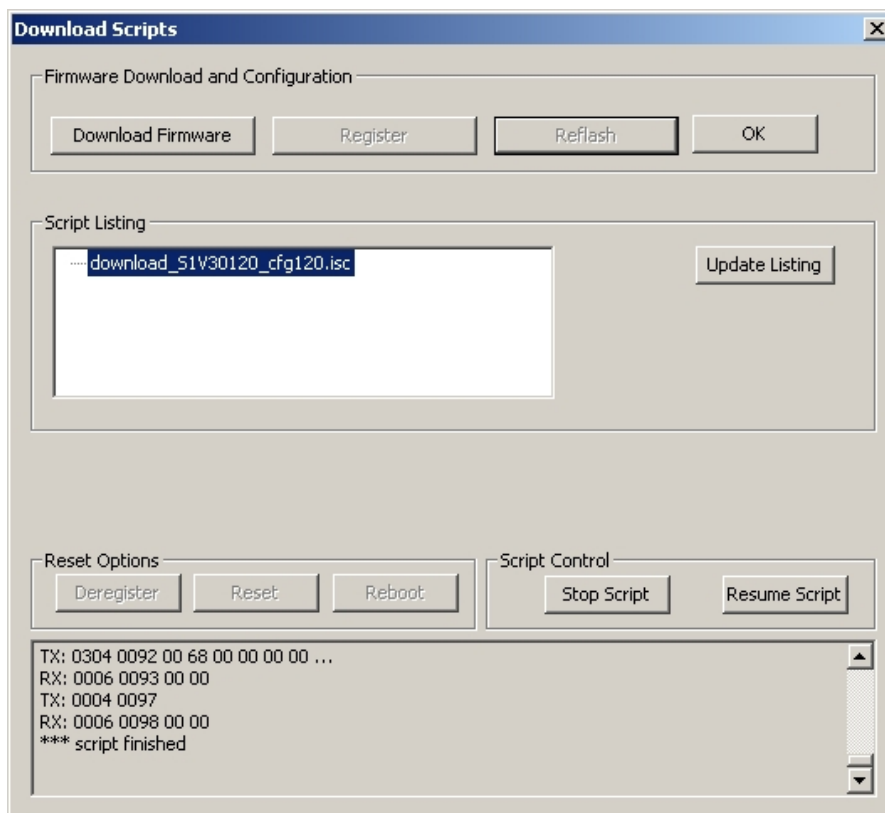

Figure 6   S1V30120 Download Scripts Window, Step 2

2. Click on the Download Firmware button.   This will download the S1V30120 firmware.

3. Click on the Register Button.   This will register the board and configure the DAC and the Power Management.

4. Click OK.   This will bring the user to the Multilingual Text-to-speech tab for the S1V30120. This tab will be as shown in Figure 7.
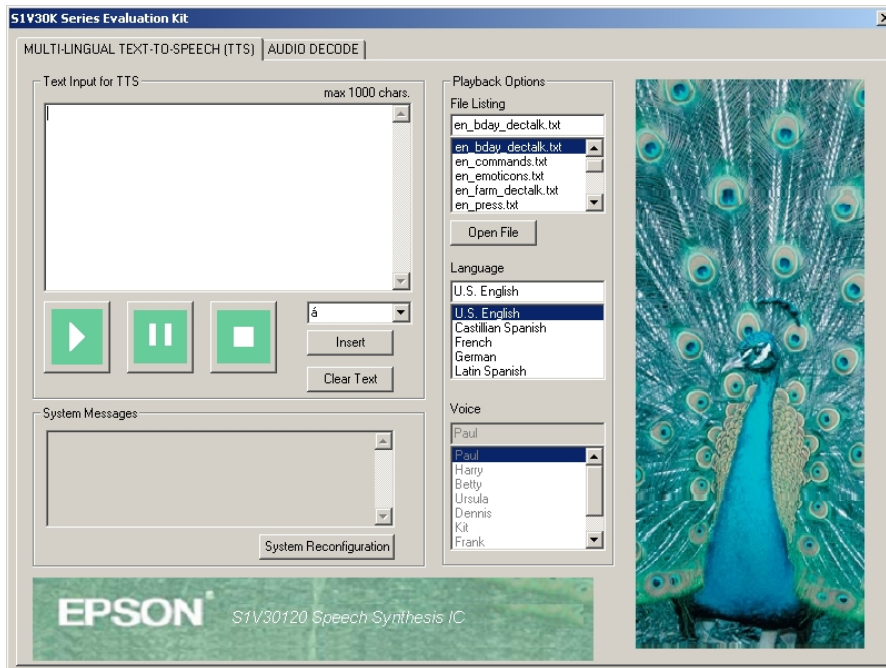
5. Running the S1V30120 Evaluation GUI Application

Figure 7   S1V30120 TTS Window

5.3 TTS Playback

Full instructions on running the TTS Panel can be found in the Application GUI User Guide. To quickly verify the evaluation kit has been configured correctly, perform the follow operations:

1. Click on the 'open file' button next to the 'file listing' window. This will open up the currently selected text file, and show the text in the 'Text Input for TTS' window.

2. Hit the Play button. The appropriate language will be selected, and audio playback can be heard by connecting a speaker or headphones to the FIRECREST audio jack.
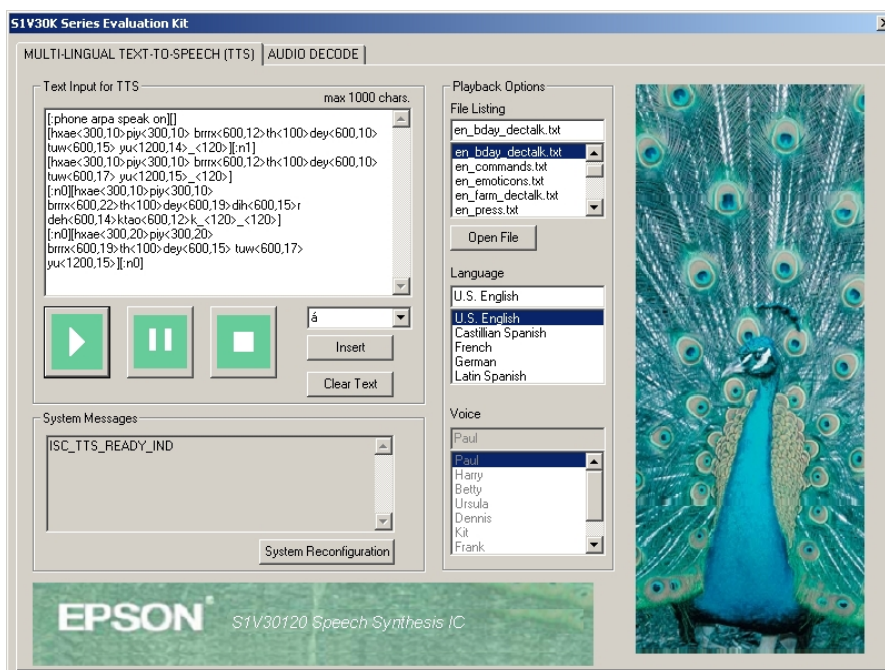

Figure 8   S1V30120 TTS Window Playback

*   Note that the Language windows displays many languages, but only US English, Castillian Spanish, and Latin Spanish are supported.

5.4   Audio File Playback

Full instructions on running the Audio Decoders can be found in the Application GUI User Guide. To quickly verify the evaluation kit has been configured correctly, perform the follow operations:

1.   Double-click the 'playlist' directory, and any subsequent sub-directory until you get to an audio file.   Select the audio file, and hit the play button.   This will transfer the audio file to the playlist, and start to play.   The decoded music/speech can be heard by connecting a speaker or headphones to the FIRECREST audio jack.
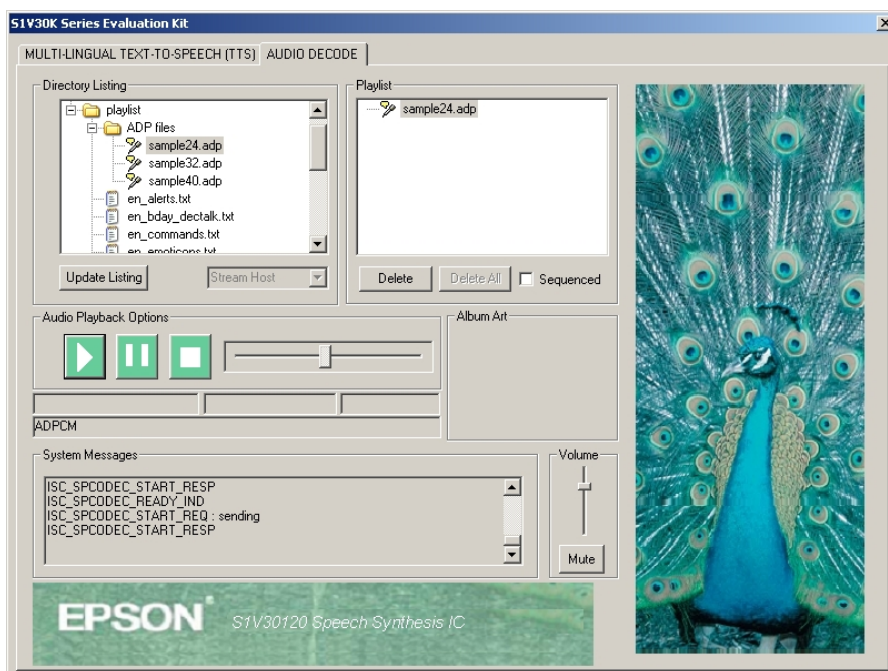

Figure 9   S1V30120 Audio Decode Window Playback

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