

## VS1003 APPNOTE: PLAYBACK AND RECORDING

### Microcontroller example code

**All information in this document is provided as-is without warranty. Features are subject to change without notice.**

Revision History			
Rev.	Date	Author	Description
1.10	2016-05-09	HH	Changed quick sanity check registers.
1.00	2012-11-28	HH	Initial version.

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## 1 Playback and Recording on VS1003

The VS1003 Datasheet tells how to play back and record files using VS1003 as a slave processor. This AppNote and software package provides the same information as generic microcontroller C code.

Note that this code is not written for any particular microcontroller. It has been written in standard C, and the few parts having to do with SPI bus communication that are environment-specific, have not been included.

To create your own program, read the included source code, make the modifications and additions suggested in this document, compile with your favourite microcontroller compiler, and run.

The rest of this Chapter introduces the files in this package.

### 1.1 vs10xx\_uc.h

Contains symbols for VS10xx registers and register bits.

## 1.2 player.h

Definitions and prototypes for the player. The following functions are declared:

### **int VSTestInitHardware(void)**

Initializes microcontroller for VS10xx operations. You need to add the microcontroller-specific code to this file in `player1003.c`.

Returns 0 on success, non-zero on failure.

### **int VSTestInitSoftware(void)**

Makes a software reset for VS1003 and initializes it for use, including loading the patches package.

Returns 0 on success, non-zero on failure.

### **int VSTestHandleFile(const char \*fileName, int record)**

Plays back a given file or records to it, depending on whether `record` is 0 or 1.

### **u\_int16 ReadSci(u\_int8 addr)**

### **void WriteSci(u\_int8 addr, u\_int16 data),**

### **int WriteSdi(const u\_int8 \*data, u\_int8 bytes)**

You need to provide these functions that read and write from the VS1003's Serial Control and Data SPI Interfaces. For details on how to implement these functions, see Application Note *Connecting VS10xx SPI Buses*, available at <http://www.vlsi.fi/en/support/applicationnotes.html>

### **void SaveUIState(void)**

### **void RestoreUIState(void)**

### **int GetUICommand(void)**

You need to provide these functions if you want your player to have a simple demonstration user interface.

`SaveUIState()` saves the user interface environment before execution, and `RestoreUIState()` restores it. In many cases these may be implemented as empty functions.

`GetUICommand()` should return -1 if there are no messages and -2 if forceful cancel is requested. By returning 63 (ASCII code for '?'), you get the list of other options from the player or recorder. See `player1003.c` for details.

### 1.3 player1003.c

Contains the implementation for VS1003 playback and recording.

See the source code for details.

### 1.4 Main Program

Your main program, which is not included in this package, should look something like this:

```
int main(...) {
    if (VSTestInitHardware() || VSTestInitSoftware()) {
        printf("Failed initializing VS10xx, exiting\n");
        exit(EXIT_FAILURE);
    }

    /* ... */

    /* Playback example. You can call these functions many times in a row
       because they leave VS1003 in a stable state. */
    VSTestHandleFile("MyPlayFile.mp3", 0);

    /* Recording example */
    VSTestHandleFile("MyRecordFile.ogg", 1);

    /* ... */
}
```

## 2 Latest Version Changes

### Version 1.10, 2016-05-09

The following source code changes have been made:

- Changed quick sanity check registers in this package from registers SCI\_HDAT0 and SCI\_HDAT1 to SCI\_AICTRL1 and SCI\_AICTRL2.
- Added chip type recognition to this package. Now code will refuse to run if the chip is not a VS1003.

### Version 1.00, 2012-11-28

Initial version.

### 3 Contact Information

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