VS1073 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**
1.11	2025-04-01	HH	Initial version.

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1 Playback and Recording on VS1073

The VS1073 Datasheet tells how to play back and record files using VS1073 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 vs1073a-patches.plg

This file is not included in this package.

Get this file from the latest *VS1073 Patches* package, available at
http://www.vlsi.fi/en/support/software/vs10xxpatches.html

For best playback and recording quality, keep this file updated with the latest version.

Note!
As of writing of this document (2025-04-01), there doesn't yet exist a patches package for the VS1073. In this case, comment including this file out from player1073.c

1.3 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 `player1073.c`.

Returns 0 on success, non-zero on failure.

int VSTestInitSoftware(void)

Makes a software reset for VS1073 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 ReadSciMulti(u_int8 addr, u_int16 *data, int nWords),
void WriteSci(u_int8 addr, u_int16 data),
void WriteSciMulti(u_int8 addr, const u_int16 *data, int nWords),
int WriteSdi(const u_int8 *data, u_int8 bytes)

You need to provide these functions that read/write to/from the VS1073'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 `player1073.c` for details.

1.4 player1073.c

Contains the implementation for VS1073 playback and recording.

See the source code for details.

1.5 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 VS1073 in a known state. */
  VSTestHandleFile("MyPlayFile.mp3", 0);

  /* Recording example */
  VSTestHandleFile("MyRecordFile.mp3", 1);

  /* ... */

}
```

2   Latest Version Changes

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