



AN02015: Run-time DSP control in a USB Audio Application (README)

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vendor

XMOS

version

1.0.0

scope

Example

description

Adding run-time control to the DSP in a USB audio application with an active speaker example.

category

Audio

keywords

USB, UAC, DSP, Audio

hardware

XK-AUDIO-316-MC

1 Overview

This application note describes how to add real-time control to a DSP pipeline developed using `lib_audio_dsp`. Output audio from the host is passed through a DSP pipeline generated with `lib_audio_dsp`. An active speaker application with volume control and bass boost is used as the example.

2 Key Features

The application is designed to run on the xcore.ai Multichannel Audio Board (MCAB). It uses the XMOS USB Audio framework to implement a USB Audio device with the following key features:

- USB Audio Class 2.0 (High Speed)
- Multi-channel inputs and outputs connecting the host to ADCs and DACs
- DSP that is simple to configure to a specific application
- 48 kHz sample rate

3 Known Issues

- None

4 Required Tools

- XMOS XTC Tools: 15.3.0

5 Required Libraries (Dependencies)

- `lib_sw_pll` (www.github.com/xmos/lib_sw_pll)
- `lib_xua` (www.github.com/xmos/lib_xua)
- `lib_adat` (www.github.com/xmos/lib_adat)
- `lib_locks` (www.github.com/xmos/lib_locks)
- `lib_logging` (www.github.com/xmos/lib_logging)
- `lib_mic_array` (www.github.com/xmos/lib_mic_array)
- `lib_xassert` (www.github.com/xmos/lib_xassert)
- `lib_dsp` (www.github.com/xmos/lib_dsp)
- `lib_spdif` (www.github.com/xmos/lib_spdif)
- `lib_xud` (www.github.com/xmos/lib_xud)
- `lib_i2c` (www.github.com/xmos/lib_i2c)
- `lib_i2s` (www.github.com/xmos/lib_i2s)
- `lib_audio_dsp` (www.github.com/xmos/lib_audio_dsp)

6 Related Application Notes

- AN02014: Integrating a Generated Audio DSP Pipeline into a USB Audio Application

7 Support

Issues can be raised against the software at: <http://www.xmos.com/support>



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