



AN02016: Integrating Audio Weaver (AWE) Core into USB Audio (README)

Publication Date: 2024/8/22

Document Number: XM-015091-AN v1.0.2

IN THIS DOCUMENT

1	Overview	1
2	Key Features	2
3	Known Issues	2
4	Required Tools	2
5	Required Libraries (Dependencies)	2
6	Related Application Notes	2
7	Support	3

vendor

XMOS

version

1.0.2

scope

Example

description

USB Audio application with AWE stack

category

Audio

keywords

USB, UAC, Audio Weaver, DSP, Audio

hardware

XK-AUDIO-316-MC

1 Overview

This application note describes firmware that provides a high-speed USB Audio device designed to be compliant to version 2.0 of the USB Audio Class Specification based on the xcore.ai device. Output audio from the host is passed through Audio Weaver (AWE) Core for DSP processing, provided by DSP Concepts.

For more information on Audio Weaver see the DSP Concepts website, [here](#).

The code related to this application note depends on [lib_awe](#) which contains the XMOS port of AWE.

Note: You must manually obtain the [libAWECore.a](#) file and place in the lib_awe/lib/xs3a directory inable to build applications with this software.



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)
- ▶ Stereo input from the host
- ▶ Stereo output on the OUT 1/2 3.5 mm analog jack (line level)
- ▶ Audio from the host is routed through the AWE framework before being played on the output jack
- ▶ Asynchronous clocking (local audio clock to hardware)
- ▶ 24 bit Sample resolution
- ▶ 48 kHz sample rate
- ▶ Tuning to AWE provided over USB HID with VID 0x20b1 and PID 0x0018 supporting live tuning from the Audio Weaver software
- ▶ Optional use of the AWE Flash File System

A number of build configurations are included supporting different feature sets.

3 Known Issues

- ▶ None

For general issues see Known Issues in lib_awe

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_awe (www.github.com/xmos/lib_awe)

6 Related Application Notes

- ▶ None

7 Support

This package is supported by XMOS Ltd. Issues can be raised against the software at: <http://www.xmos.com/support>



Copyright © 2024, All Rights Reserved.

Xmos Ltd. is the owner or licensee of this design, code, or Information (collectively, the "Information") and is providing it to you "AS IS" with no warranty of any kind, express or implied and shall have no liability in relation to its use. Xmos Ltd. makes no representation that the Information, or any particular implementation thereof, is or will be free from any claims of infringement and again, shall have no liability in relation to any such claims.

XMOS, xCore, xcore.ai, and the XMOS logo are registered trademarks of XMOS Ltd in the United Kingdom and other countries and may not be used without written permission. Company and product names mentioned in this document are the trademarks or registered trademarks of their respective owners.

