# Tools for ISO BM-FF files with uncompressed audio

This software includes tools to read and write MP4 files containing PCM audio. It originated from the MPEG input document [5]. The tools require the *isomediafile* library that supports the channel layout box defined in [2] and the PCM configuration box defined in [3]. They also require the *wavIO* library available from MPEG SVN [4], revision 1463 or later.

## PCM audio file tools

### WAV conversion

Tools are provided that convert between a WAV file and MP4 file. A WAV file comparison tool is also included. The tools support mono and stereo PCM audio files. An overview of the tool usage is shown Figure 1.



Figure 1 - Overview of tool usage.

#### WAV to MP4 conversion tool

The tool WAV\_TO\_MP4 converts an input WAV file into an MP4 file. It supports the following command line parameters:

|  |  |
| --- | --- |
| **Parameter** | **Description** |
| -h | Prints a description of the parameters |
| -i inputFile | WAV input file (mandatory) |
| -o outputFile | MP4 output file (mandatory) |
| -d DebugLevel | 0 = No Logging, 1 = Error, 2 = Warning, 3 = Info (Default), 4 = Debug, 5 = Trace |

Table 1 - Parameters for WAV\_to\_MP4

#### MP4 to WAV conversion tool

The tool MP4\_to\_WAV converts an input MP4 file into a WAV file. It supports the following command line parameters:

|  |  |
| --- | --- |
| **Parameter** | **Description** |
| -h | Prints a description of the parameters |
| -i inputFile | WAV input file (mandatory) |
| -o outputFile | MP4 output file (mandatory) |
| -t track | Track number of the audio track (default = 1) |
| -d DebugLevel | 0 = No Logging, 1 = Error, 2 = Warning, 3 = Info (Default), 4 = Debug, 5 = Trace |

Table 2 - Parameters for MP4\_to\_WAV

#### WAV file comparison tool

The tool CompareWAV checks if the PCM data of two WAV files is identical. It supports the following command line parameters:

|  |  |
| --- | --- |
| **Parameter** | **Description** |
| -h | Prints a description of the parameters |
| -a inputFile A | WAV input file A (mandatory) |
| -b inputFile B | WAV input file B (mandatory) |
| -d DebugLevel | 0 = No Logging, 1 = Error, 2 = Warning, 3 = Info (Default), 4 = Debug, 5 = Trace |

Table 3 - Parameters for CompareWAV

### Building the tools

The tools are linked against the *isomediafile* library and the *wavIO* library. The *wavIO* library is part of the MPEG-D part-4 project with sources available from the MPEG SVN server [4]. The *isomediafile* repository is located in a folder called isobmff/. The *wavIO* library must be located in a subfolder called external/ as indicated here:

isobmff/IsoLib/pcm\_audio\_example/macosx/WAV\_conversion/

isobmff/external/Part04-Dynamic\_Range\_Control/trunk/

Currently only macOS platforms are supported for building the tools. To build the tools, the *isomediafile* must be built first (see isobmff/IsoLib/libisomediafile).

Then open the following XCode project and build the tools:

isobmff/IsoLib/pcm\_audio\_example/macosx/WAV\_conversion/WAV-conversion

After building, the tools should be tested by running the following script:

isobmff/IsoLib/pcm\_audio\_example/test/runtest\_macos.sh

The test was successful if the following message occurs: “WAVE file content matches”.

# References

[1] https://github.com/MPEGGroup/isobmff

[2] w17992, ISO/IEC 14496-12 DAM 3

[3] w18156, Text of CD ISO/IEC 23003-5, Uncompressed Audio

[4] <http://wg11.sc29.org/svn/repos>

[5] m45268, “Reference Software Enhancement for ISO Base Media File Format”, MPEG input document.