How to Remix Concert Audio

18 April 2021

Contents

Overview:

As many surround music fans have discovered, many music concert release, both on DVDV and Blu-ray, often have underwhelming surround mixes. Many have almost no music in the rear channels, just crowd noise and maybe some reverb. Many surround enthusiasts prefer a more discrete or immersive sound stage than simply listening to front channels.

This document describes a method to enhance concert surround tracks by describing a work-flow and tools anyone can use to remix the original surround track to contain realistic surround by enhancing the existing (inferior) 5.1 mix on your DVDV and BDV discs.

There is nothing revolutionary about the theory, but the methodology and tools described in this 'How To' make this way easier than you may think.

Some interesting concerts that have worked well are The Police – Certifiable where Sting's bass guitar is isolated in the LFE channel, voice and drums in Centre and the FL FR upmix add significant rear music for the high fidelity recording. Midnight Oils' Armistice Day Live In Sydney where Garret's voice is isolated in C and the original mix had no music in rears. This sounds spectacular with the fronts upmixed to quad giving nice rear music.

The Theory:

From my experience with 5.1 concert mixes there is usually a good centre channel mix and LFE channel. This method will reuse those two channels in the new remix.

We can derive good rear channel music from many Upmixing applications available. There are several software applications that can upmix stereo to quad or 5.1 including:

- SpecWeb (free)
- Foobar (with its Upmix component) (free)
- Penteo 16 Pro (A licence must be purchased)

So, we can upmix the existing concerts 5.1 front left and right channels (FL and FR) as a stereo pair to create a new quad or 5.1 mix, then remix the new FL, FR (fronts) and SL and SR (rear) channels with the existing C and LFE channels to create a new 5.1 mix. Then merge the new 5.1 mix into your concert video.

Extracting the original audio from your concert discs, converting the audio to individual mono channels, upmixing, remixing the new and existing channels, merging the new multichannel surround back into your concert video. This is way to hard, right? No. It is quite easy.

The Methodology:

This 'How to' uses Windows based software and assumes you can play Concert Videos with Surround from a PC or media player. Applications that play ripped DVDV and Blu-ray Concerts include JRiver (paid license required) Kodi (free) and VLC (free). MakeMKV and Music Media Helper (MMH) can be downloaded from the web.

Here is a breakdown of the steps required:

1. Use MakeMKV (free) to convert your disc to MKV format (MKV is a lossless container that can contain copies of SD, HD and 4K video streams and various audio streams ranging from DTS and Dolby Digital through to lossless PCM, DTS-HDMA, TrueHD and Atmos.
2. Use Music Media Helper (free) to split your initial MKV file into its chapters (song tracks) and rename to the song titles. These individual song MKVs contain the same video and audio streams you selected when you ripped your disc.
3. Use Music Media Helper to Extract Audio from the MKVs to wav or FLAC files.
4. Use Music Media Helper to Split the extracted audio files to mono channel files.

5. Use your preferred Upmixing Software to create a new quad or 5.1 mix from the extracted audio files.
6. Use Music Media Helper to Split the new upmixed audio files to mono channel files.
7. Use Music Media Helper to Merge the mono files (original C and LFE) with upmixed FL, FR, SL and SR files.
8. Use Music Media Helper to Merge the new remixed multichannel files back into your original MKV video files.

NOTE: *Music Media Helper works with multiple input files. Most to the steps are done in a single batch, simply select all the files the process ALL in one command. This is way easier than using other tools where you must process each file individually!*

WORKFLOW
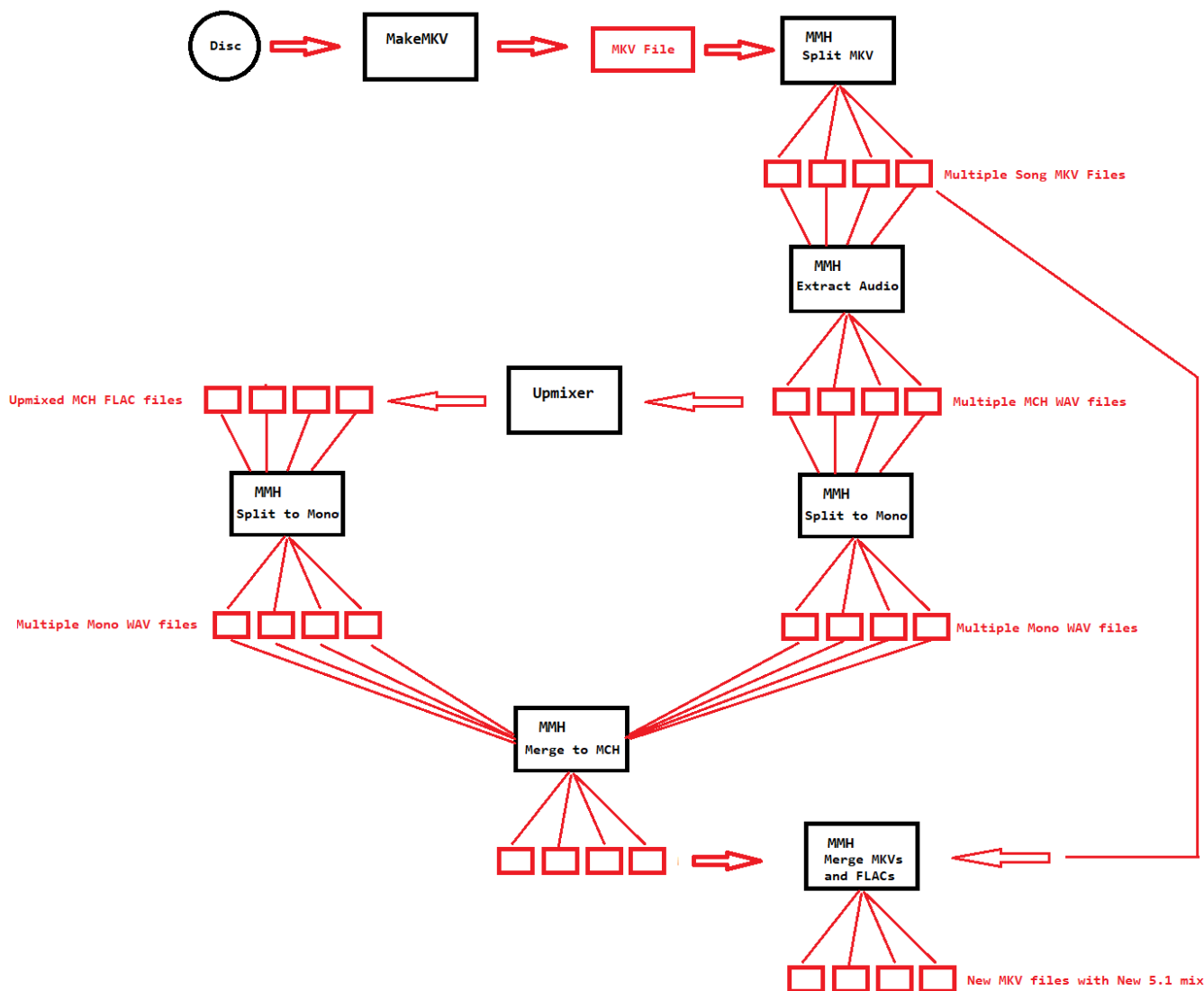
If your concert Blu-ray or DVD disc only contains a Stereo track, you can easily use these tools to extract the stereo, upmix to 5.1 then Merge your new 5.1 FLACs back into your original MKV file(s).

Step 1: Use MakeMKV to rip your disc to an MKV file:

Create a working folder for your remix project and the Run MakeMKV. MakeMKV will show the titles on your disc:
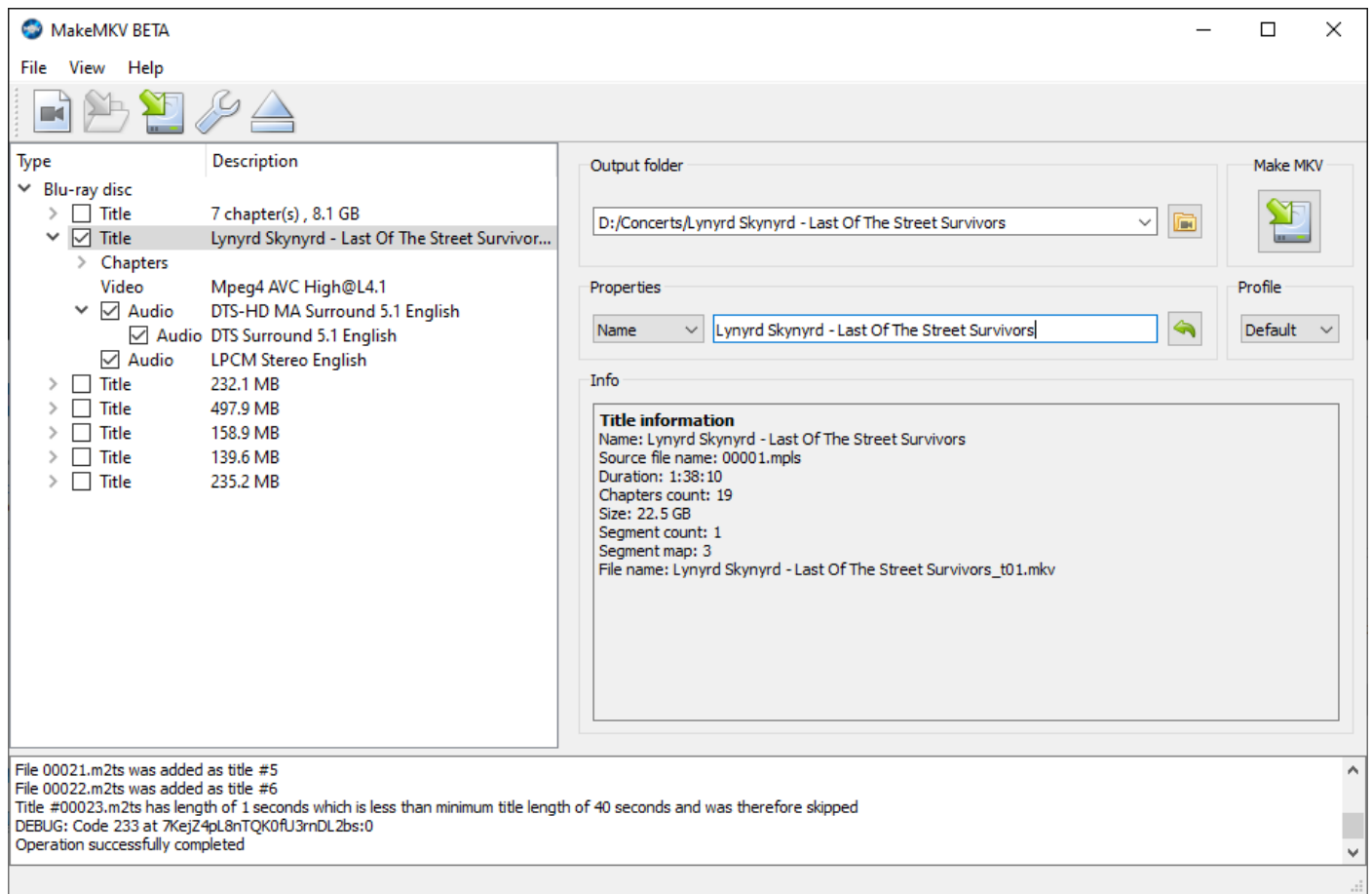
You can work out which title contains the main concert as it usually is the largest size (see the Tite Information panel on right). Also opening the Chapters node on the left will show a list of the chapters which will closely match the number of songs listed for the concert on your disc cover or label. Usually, the number of chapters is one or two more as the discs often have an Intro chapters at beginning and a Credits at the end. Often there is a very small 'stray' chapter at the end (less than a second or so).

For this exercise, just select a single title and the Audio streams you wish to copy into the MKV output file. In the above figure all the Audio streams are selected to retain an exact copy of the disc contents (for the second Title).

Select the Output folder (your working folder you created) and give the output a Name that is meaningful. To create the MKV file:

click: 'Make MKV' at top right.

MakeMKV goes ahead and copies the selected audio streams (and video and chapters) to the new MKV file.

Step 2: Use Music Media Helper to split your MKV file into its chapters:

Run Music Media Helper. The tool Launcher dialog appears:
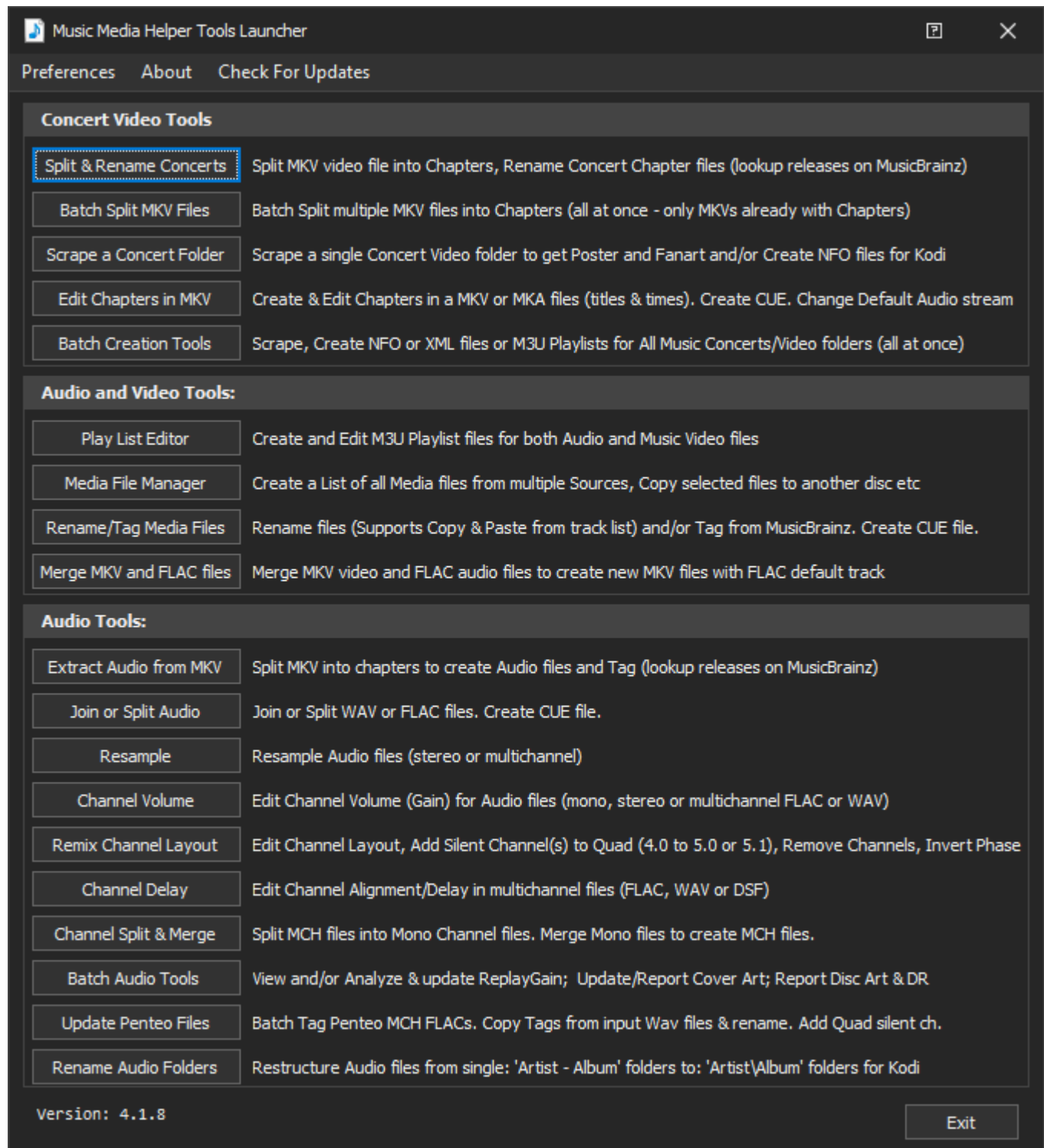
Open the Split & Rename tool as shown above.

The Split & Rename dialog opens:
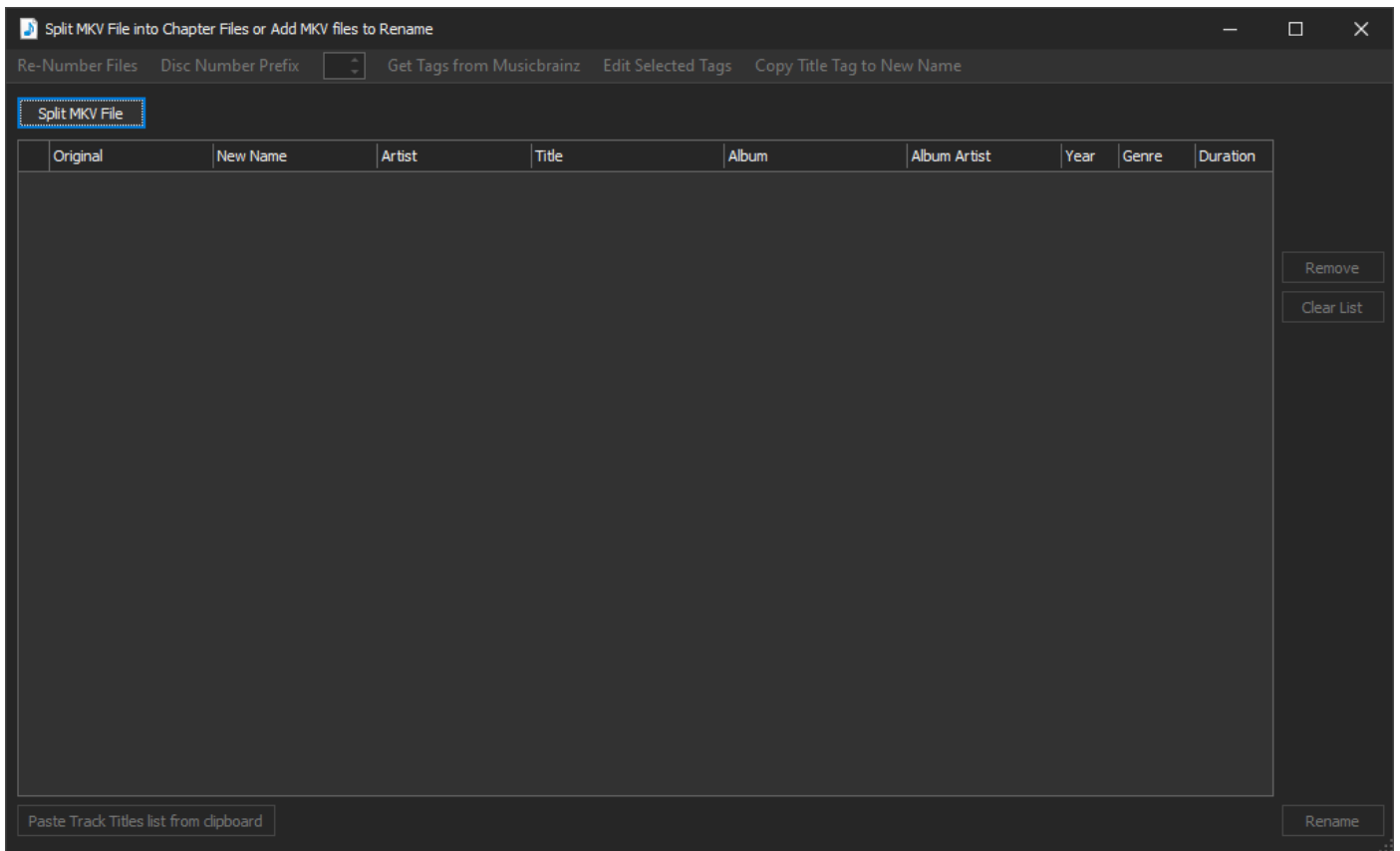
Click: Split MKV File

MMH opens a file selection dialog, go ahead and navigate to your working folder:
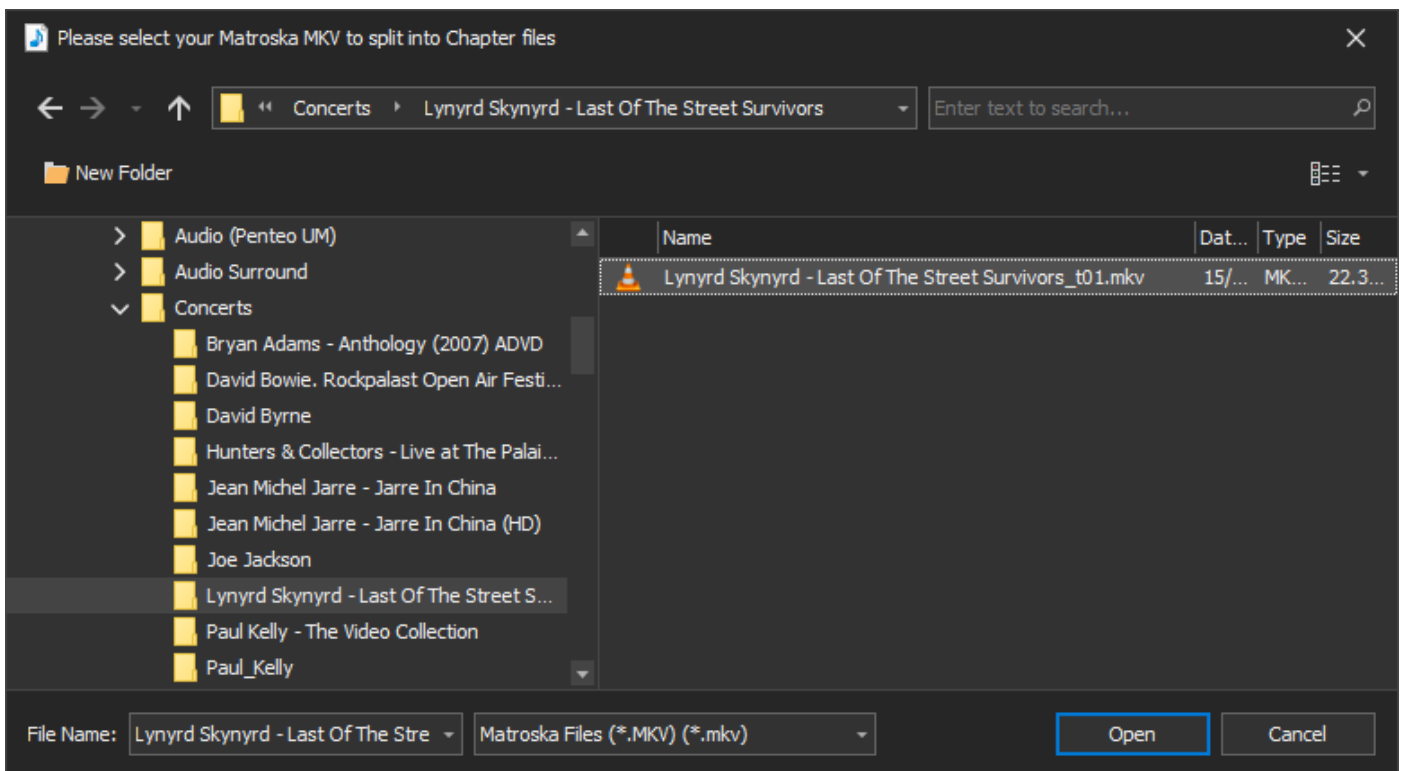
Select your MKV and click: 'Open'

If your MKV has multiple audio streams MMH will pop up a dialog listing the audio streams for you to select a new default stream (when you play this is the audio stream that is used). Many Concerts default to the Stereo stream, we want to hear a lossless surround stream:
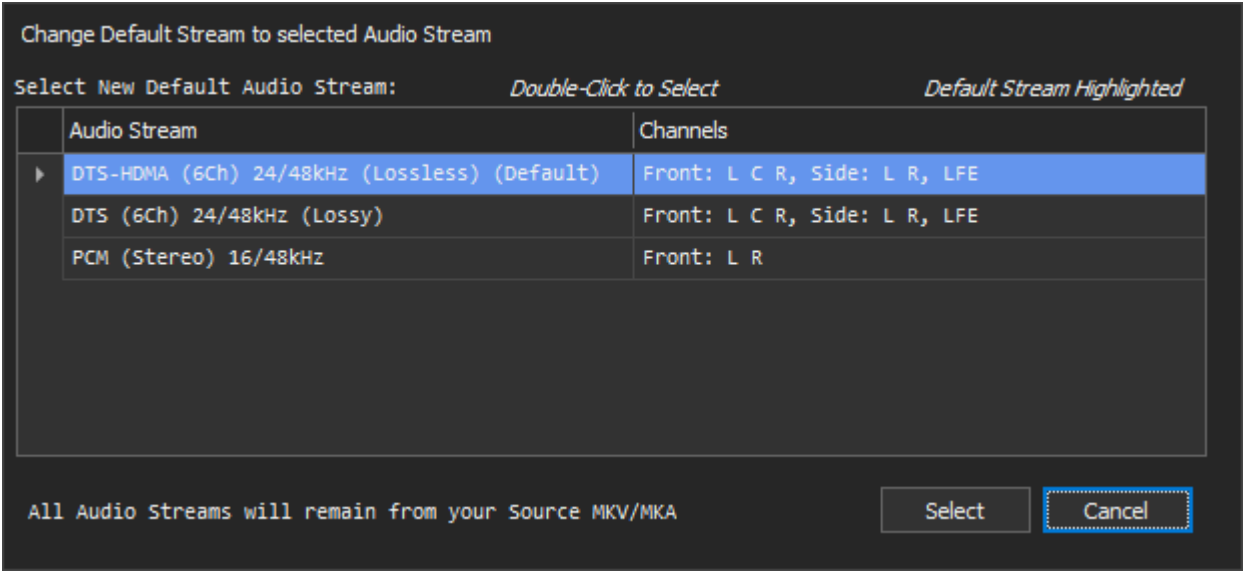
MMH highlights the current default stream. Select a stream then click: 'Select' (or just *double-click* on the stream)

MMH then processes the selected MKV, splitting each chapter into new MKV files containing copies (lossless) of the original MKVs video and audio streams and setting your selected stream to the default audio stream.

When completed, MMH displays all the new MKV files and their durations:
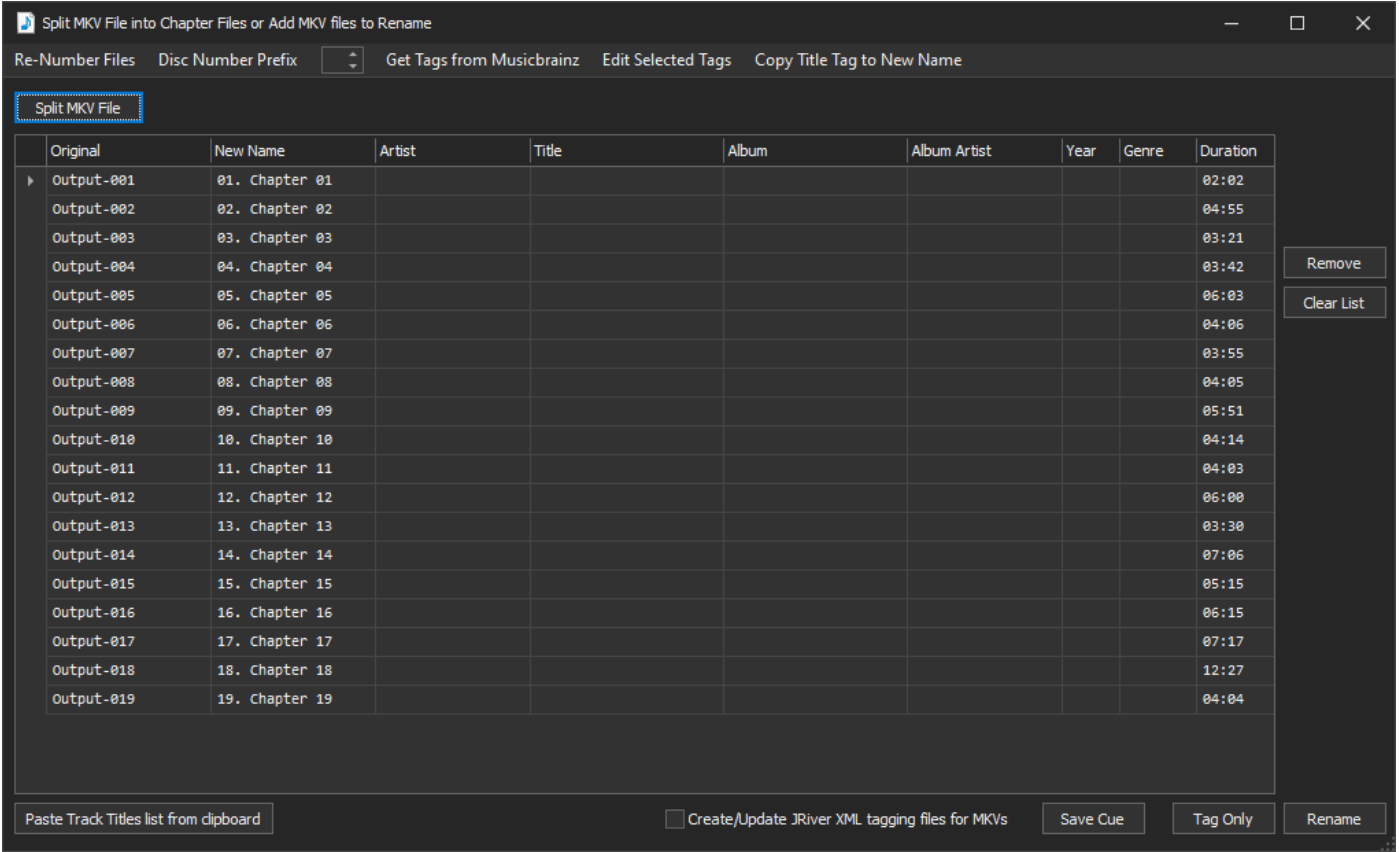
Here's a screen shot of your working folder:
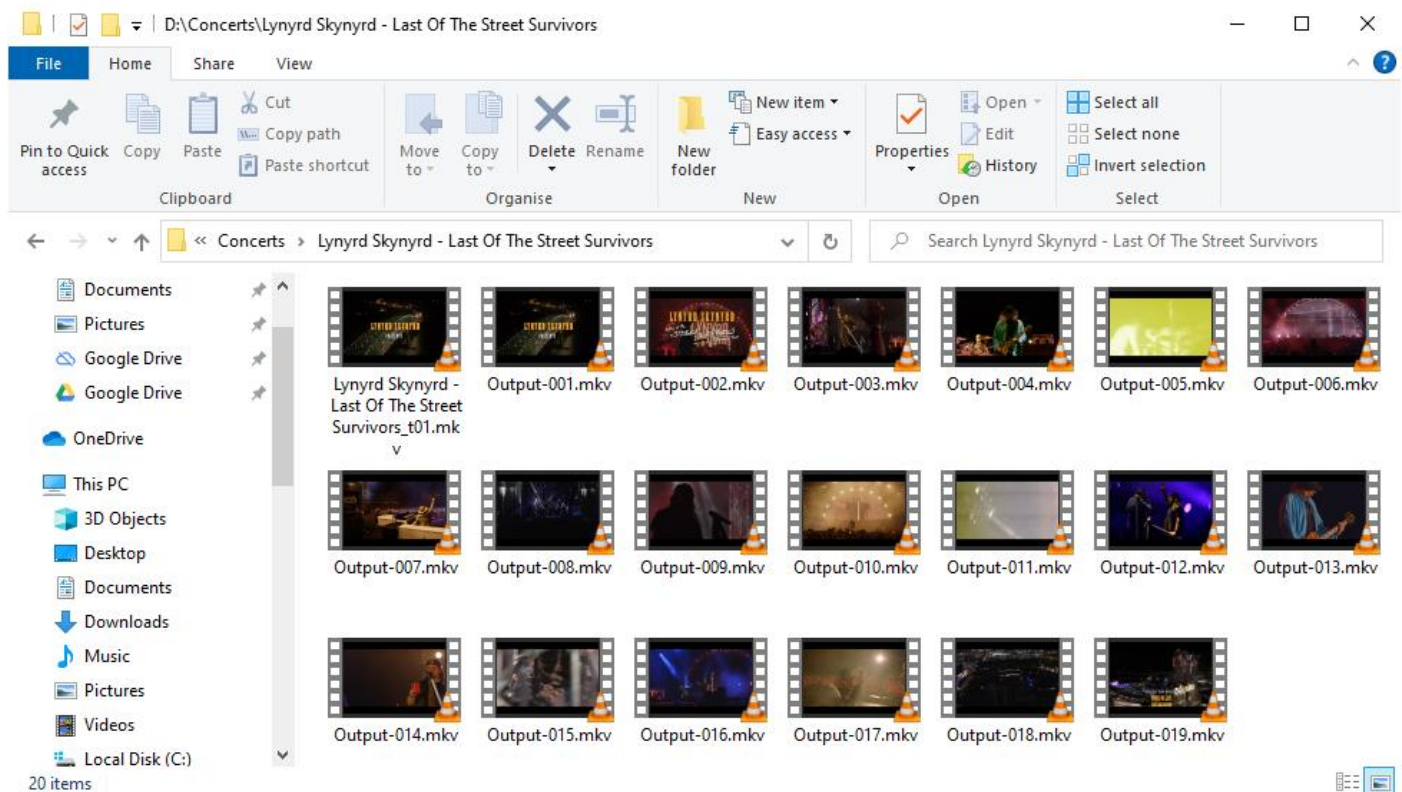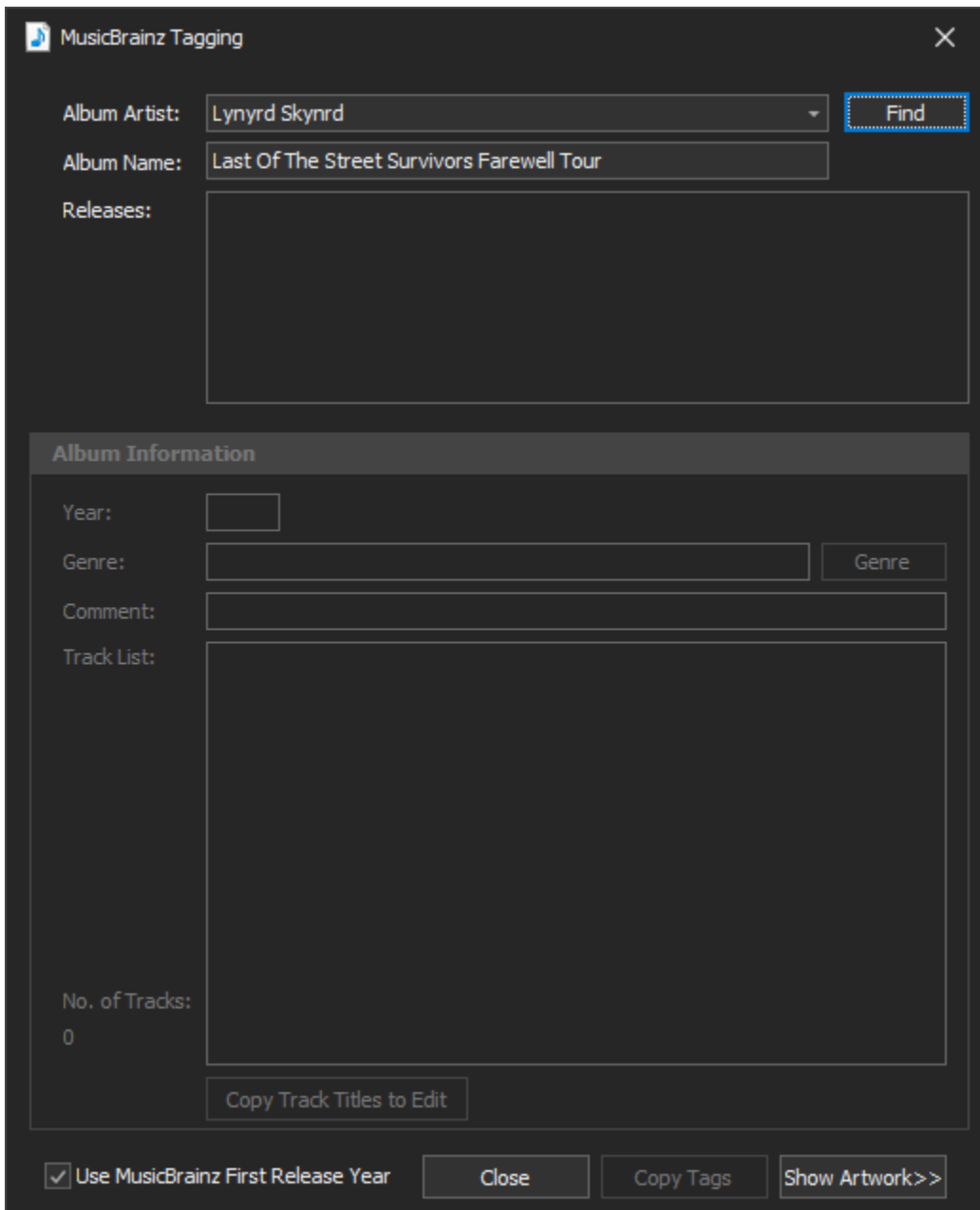
HINT: if your have VLC on your PC (highly recommended for test plays) you can play the first and last tracks, as these are usually Intro and Credits chapters. You will need to take these into account when renaming the files as track lists online seldom include these chapters, usually its only the actual song titles in these lists.

We want to rename each new MKV file to the song title so its easy to find a specific song to play. You can copy a list of song titles from a website and paste them (all titles at once) by using the 'Paste Tracks from Clipboard' but its often easier to use a Musicbrainz online database lookup to fetch the release song titles:

To lookup MusicBrainz:

Click: 'Get Tags from Musicbrainz' from the toolbar

The MMH Musicbrainz Tagging dialog pops up. Go ahead and enter the Artist and Concert Title:

MusicBrainz Tagging

Album Artist:	Lynyrd Skynrd
Album Name:	Last Of The Street Survivors Farewell Tour
Releases:	

Album Information

Year:	
Genre:	
Comment:	
Track List:	
No. of Tracks:	
0	

Copy Track Titles to Edit

☑ Use MusicBrainz First Release Year   Close   Copy Tags   Show Artwork>>

NOTE: You should enter the Artist and Concert release names correctly as possible to get a good match.

If a match is found the Releases list will be populated with matching releases. Go ahead and click on the release that best matches your disc. In this example the Blu-ray release was not entered into the Musicbrainz database but there is a DVD-Video release of same concert. That has been selected in the next figure:

The selected release has 3 discs. These are listed on the left Discs list. Select the video disc and its tracks are listed in the Track List as shown above.

NOTE: This is a good example of the number of tracks (17) in the Track List not matching the number of Chapters in the original MKV (19).

To rename the new MKV files click 'Copy Tracks'. HOWEVER, since the number of tracks here is not the same as the number of chapters (new MKV files) the naming will not align correctly. To fix this click: 'Copy Track Titles to Edit'

This pops up the Track Text editor dialog:

You can edit the text, but in this case add a new title at top named 'Intro' and one at the end 'Credits':
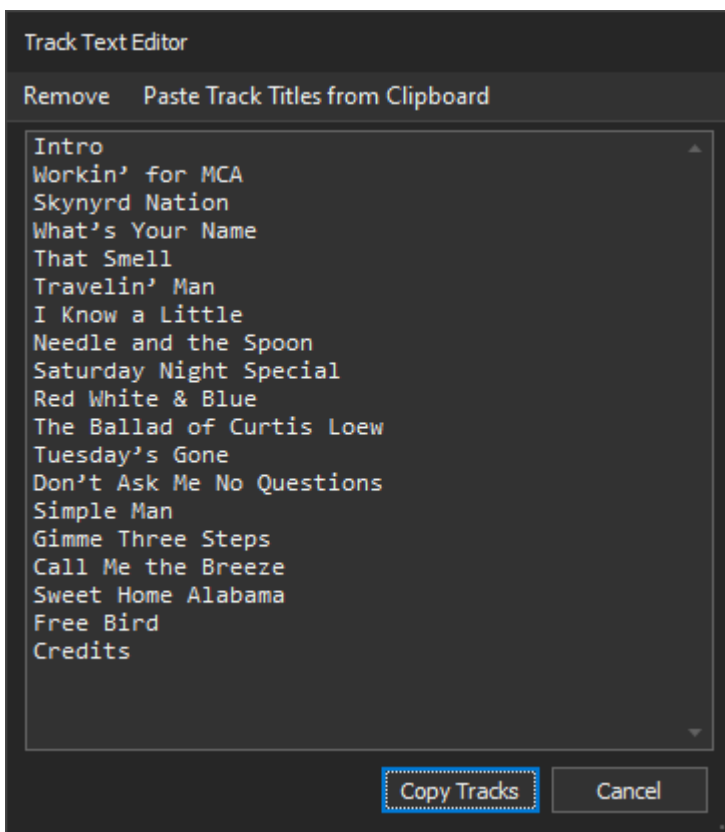
Click: 'Copy Tracks' to copy your edited list back to the Tagging dialog:

Now we have 19 tracks in the Track List to match the 19 new MKV files.

Click: 'Copy Tracks' to copy the track list back to the Split & Rename grid

Now the grid has all the information for renaming the files (or to create a CUE file for all the new files, but do not click 'Save Cue' until you have Renamed the files). We do not need a CUE file for this exercise.

To rename the new MKV files:

Click: 'Rename'

MMH will pop up a dialog asking if you want to create NFO files (for Kodi) or XML files (for JRiver). Only click Yes if you plan to play these files in either of those to media players.

All the files are now renamed: (except the original source MKV)
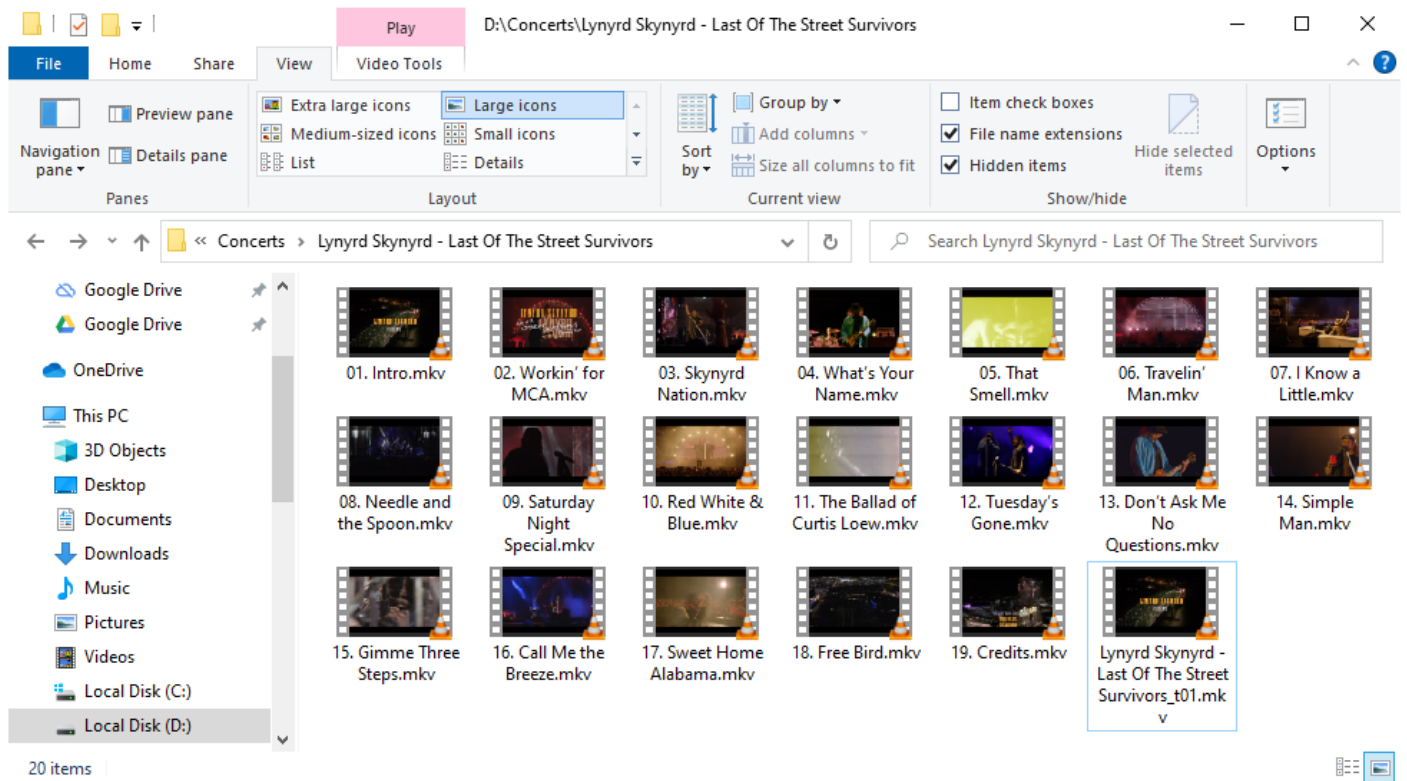
Step 2 completed.

Step 3: Use Music Media Helper to Extract Audio from new MKVs to wav or FLAC files:

From the MMH tool Launcher dialog:

Click: 'Extract Audio from MKV'

The Extract Audio from MKV tool appears:

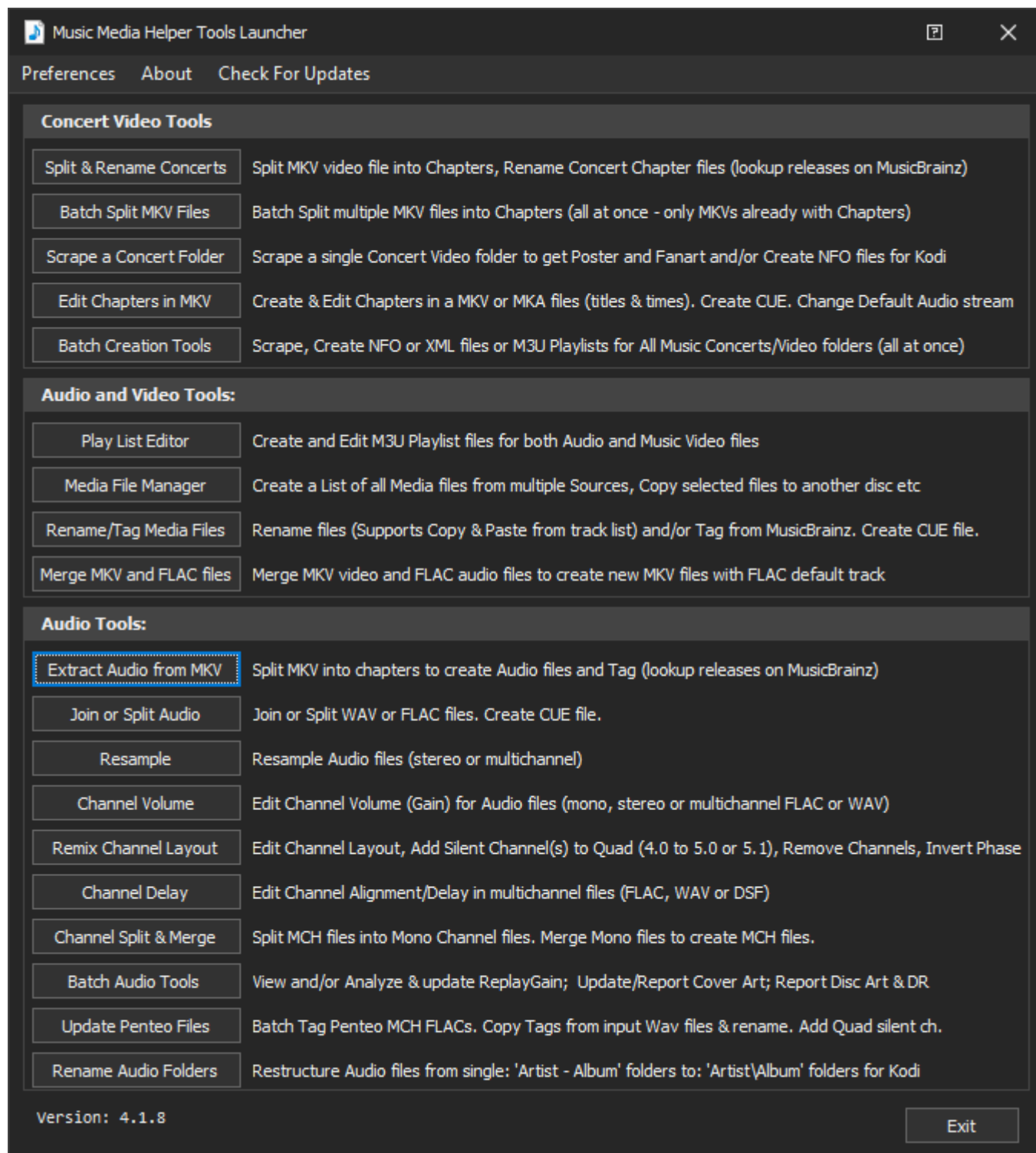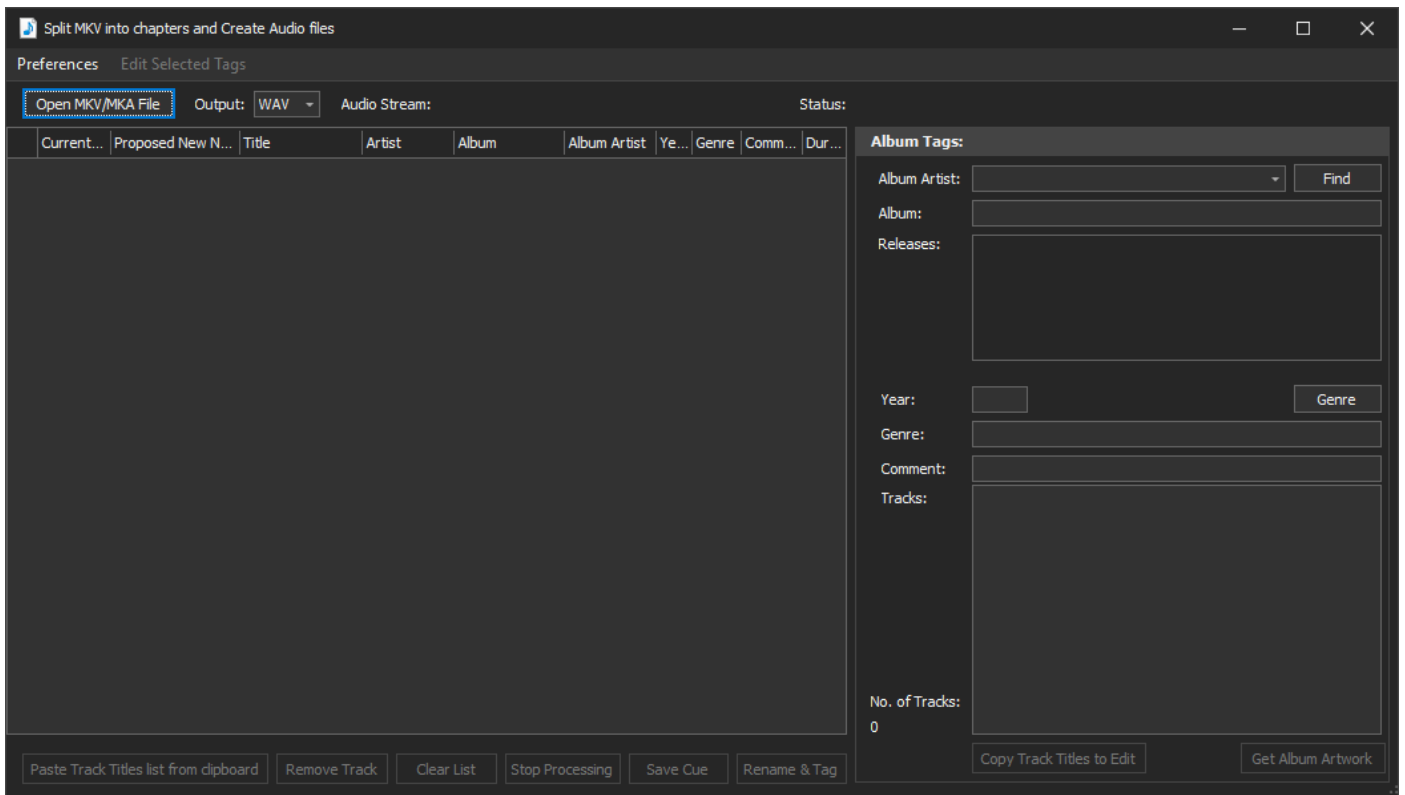First: Select the audio output from the Output dropdown list. For this exercise we should select either FLAC or WAV. This will create multichannel audio files containing the selected audio stream (selected later).

NOTE: When selecting MKV file(s) you can either select the original source MKV (with chapters) and this tool will split each chapter into individual audio files OR you can select all the new MKV files you just created and this tool will extract audio each new MKV file into a new FLAC or WAV file.

To Extract Audio to your selected output: Select WAV output first.

NOTE: Most upmixing programs recommend upmixing from WAV to limit processing.

Click: 'Open MKV/MKA file'

MMH opens the file selection browser, go ahead a select your original source MKV file.

MMH pops up a dialog asking you to select an audio stream to converts to WAV (if your MKV has multiple audio streams.

Select the 5.1 lossless audio stream:
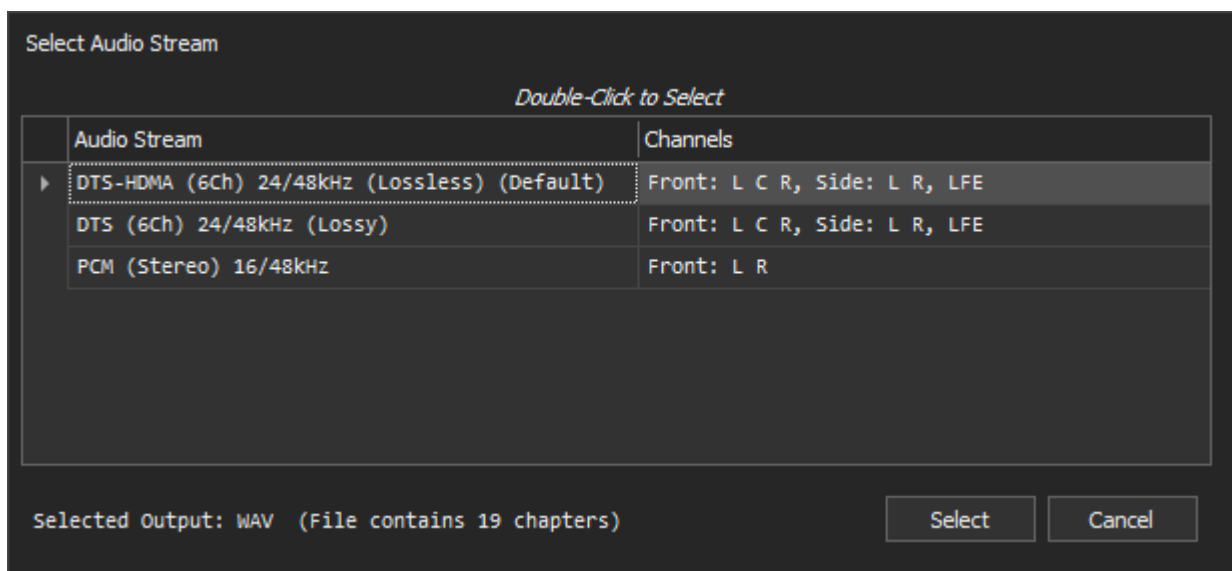
MMH splits each the source MKV into chapters extracting the selected stream and converting to multichannel WAV.
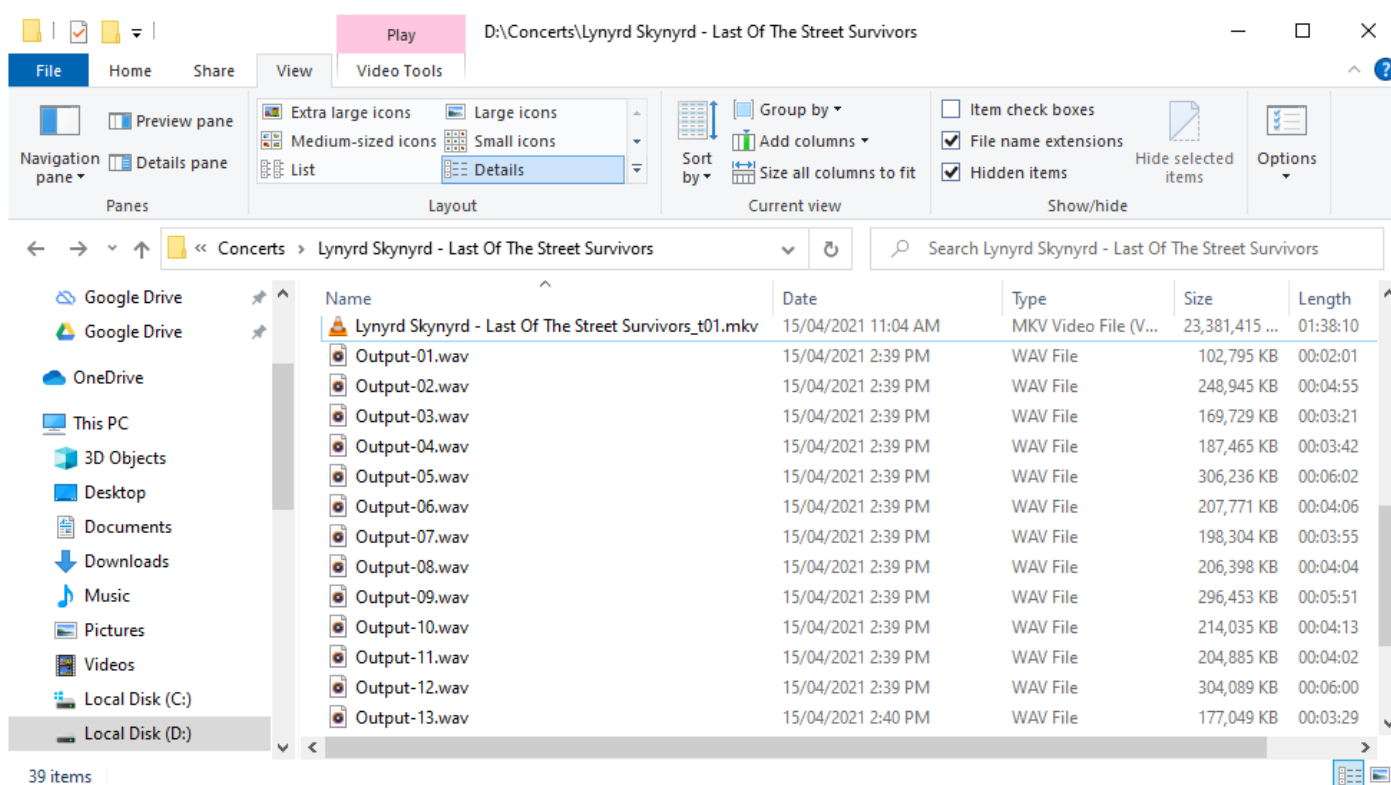
If you wanted to use this tool to create FLAC or other output to play back as audio files you can use the MusicBrainz tagging feature to tag your audio files. However, for this exercise of remixing and using the remix in your video files there is no need to rename these output files.

Step 3 completed.

Step 4: Use Music Media Helper to Split the extracted audio files to mono channel files:

From the MMH tool Launcher dialog:

Click: 'Channel Split & Merge'
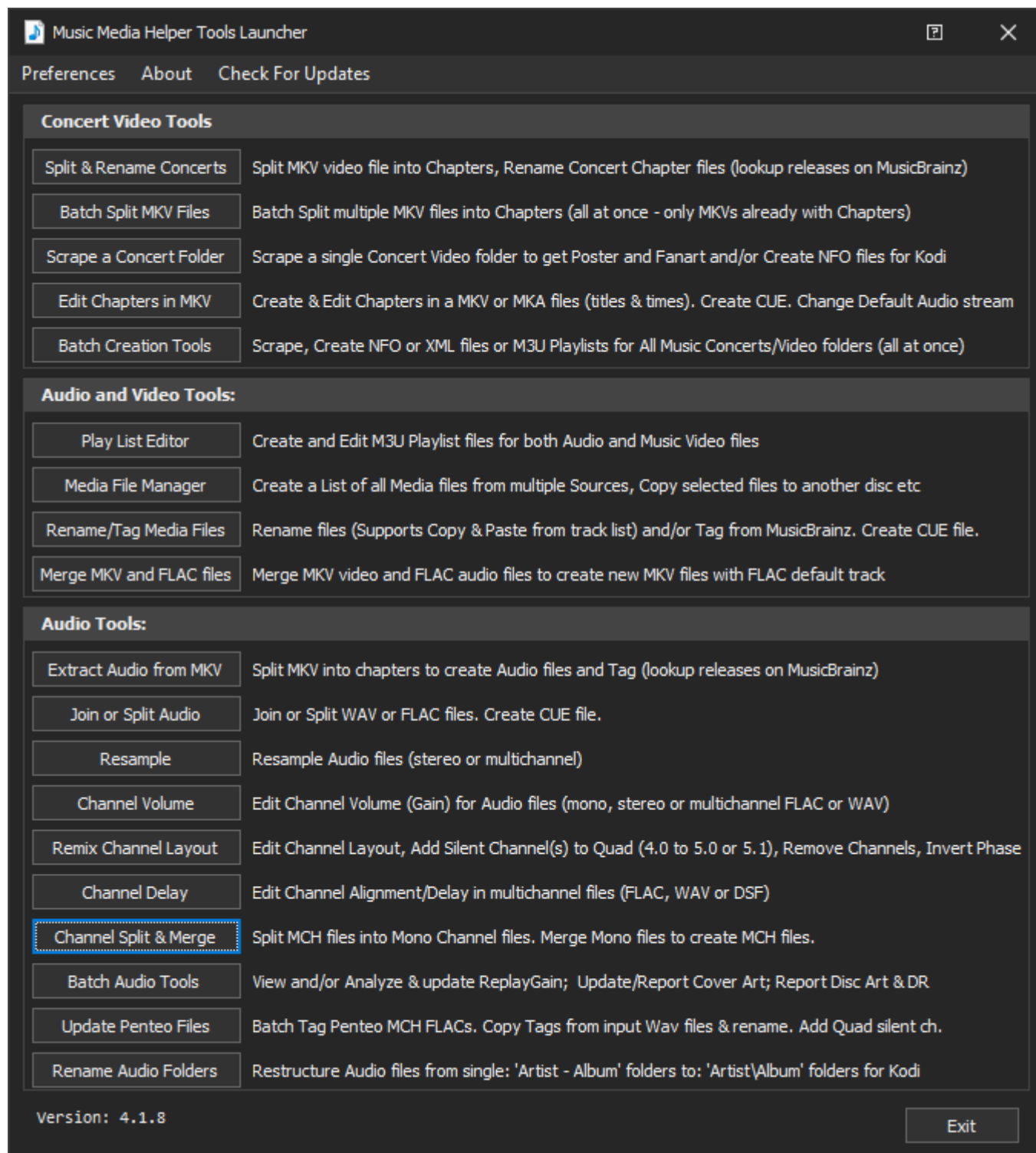
The Channel Split & Merge tool dialog appears:

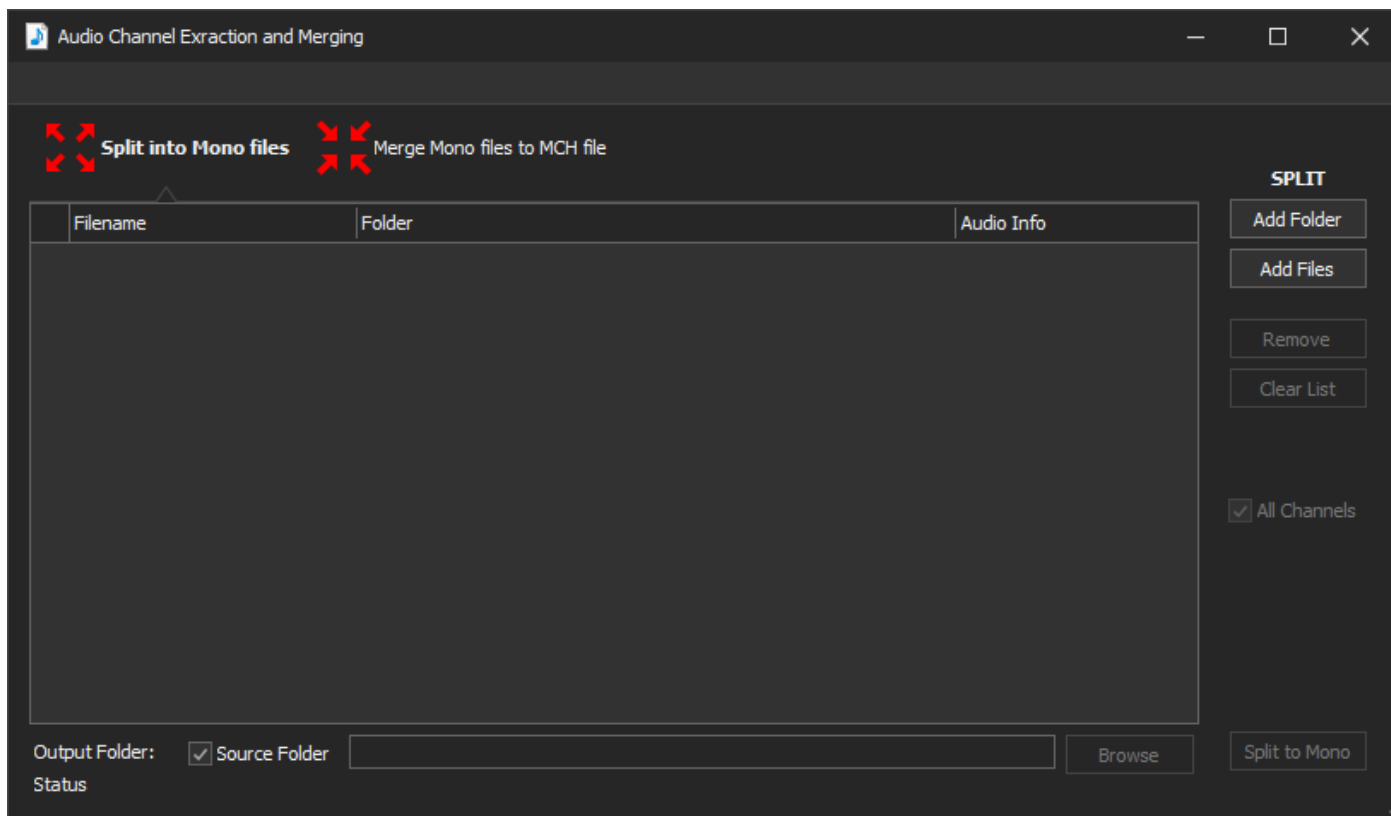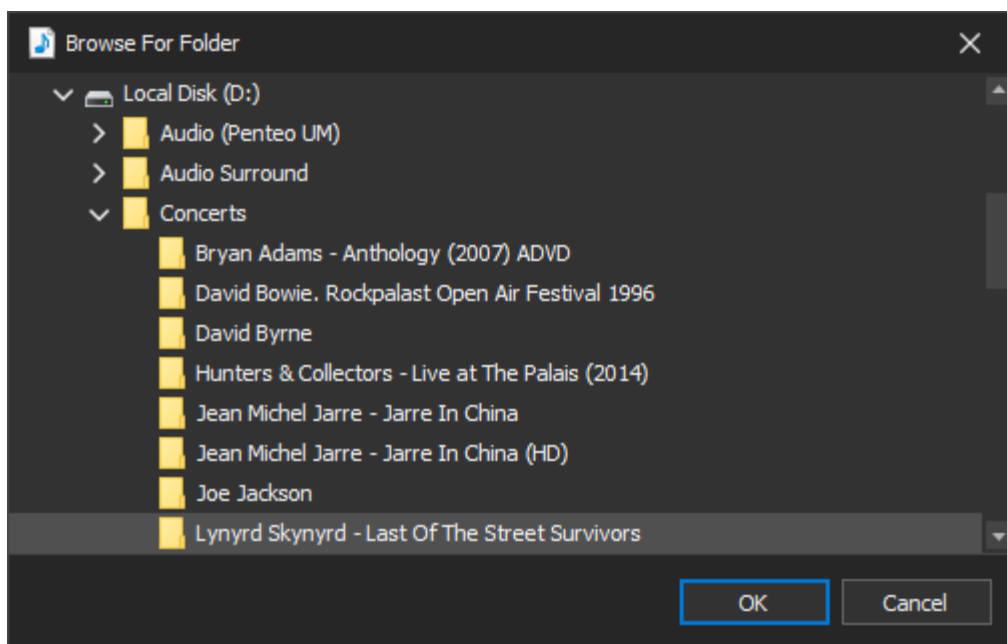There are two tabs. The default tab is 'Split into Mono files.

To split the new extracted multichannel WAVs to mono wavs:

Click 'Add folder'

The folder browser dialog appears. Go ahead and navigate to your working folder and select it:

Click: 'OK'

MMH looks for all FLAC or WAV files in your selected folder and loads them into its grid ready to process:
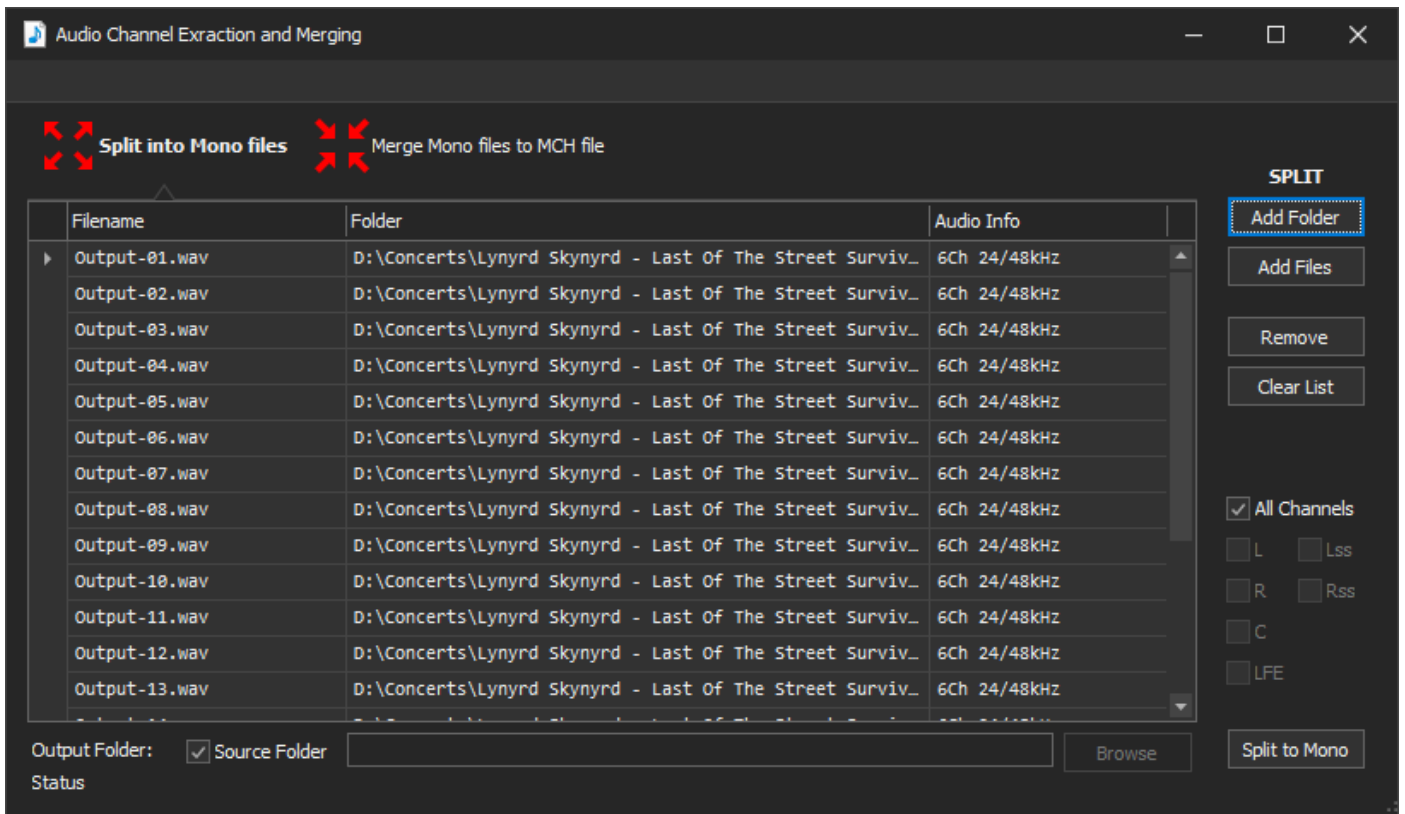
By default, MMH will create mono channel files for all channels in each input file listed.

For this exercise, we plan to remix the original 5.1 Centre and LFE channels into our new Remix, so we only need to select 'C' and 'LFE' channels for mono file output:
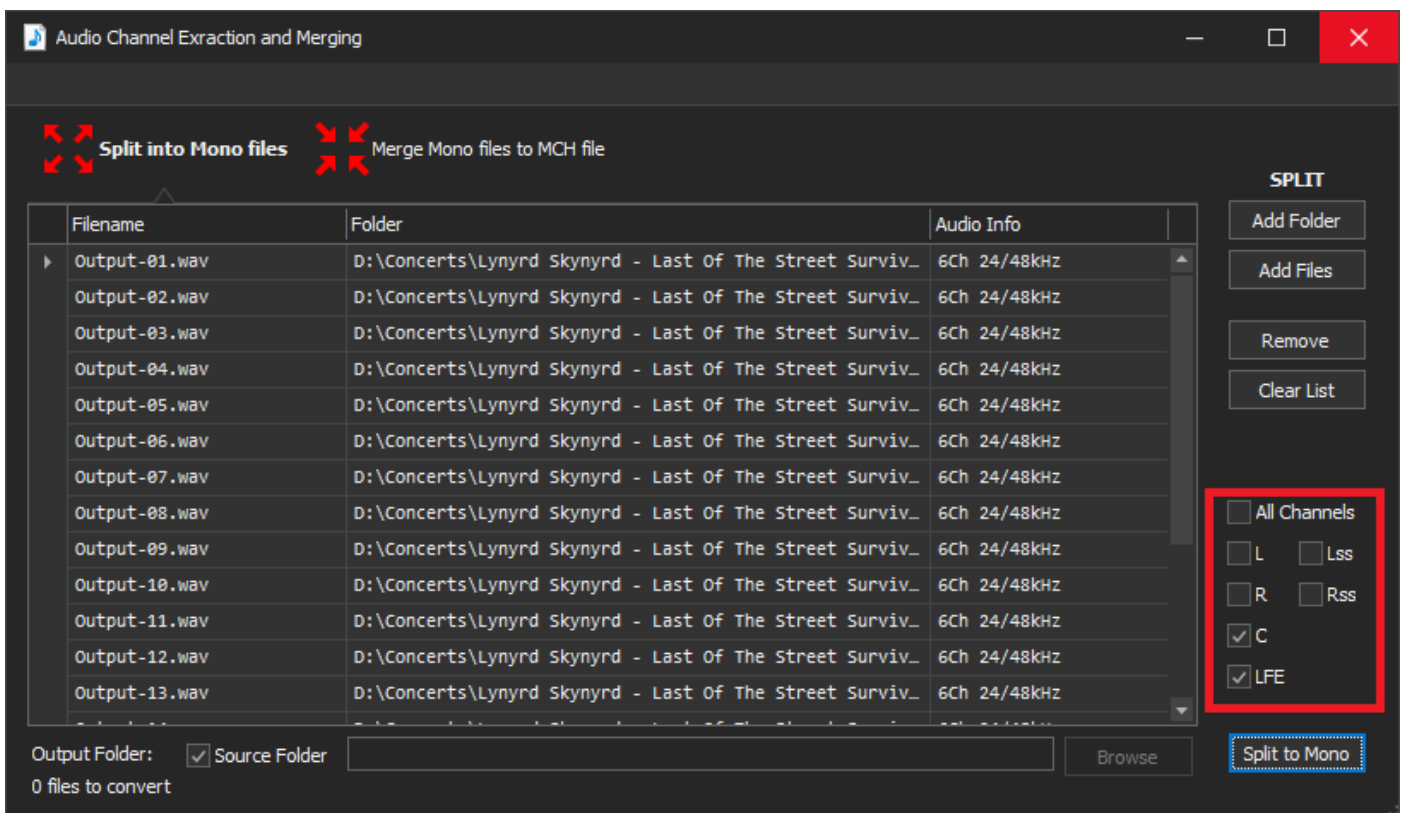
Go ahead and disable 'All Channels', then enable 'C' and 'LFE'

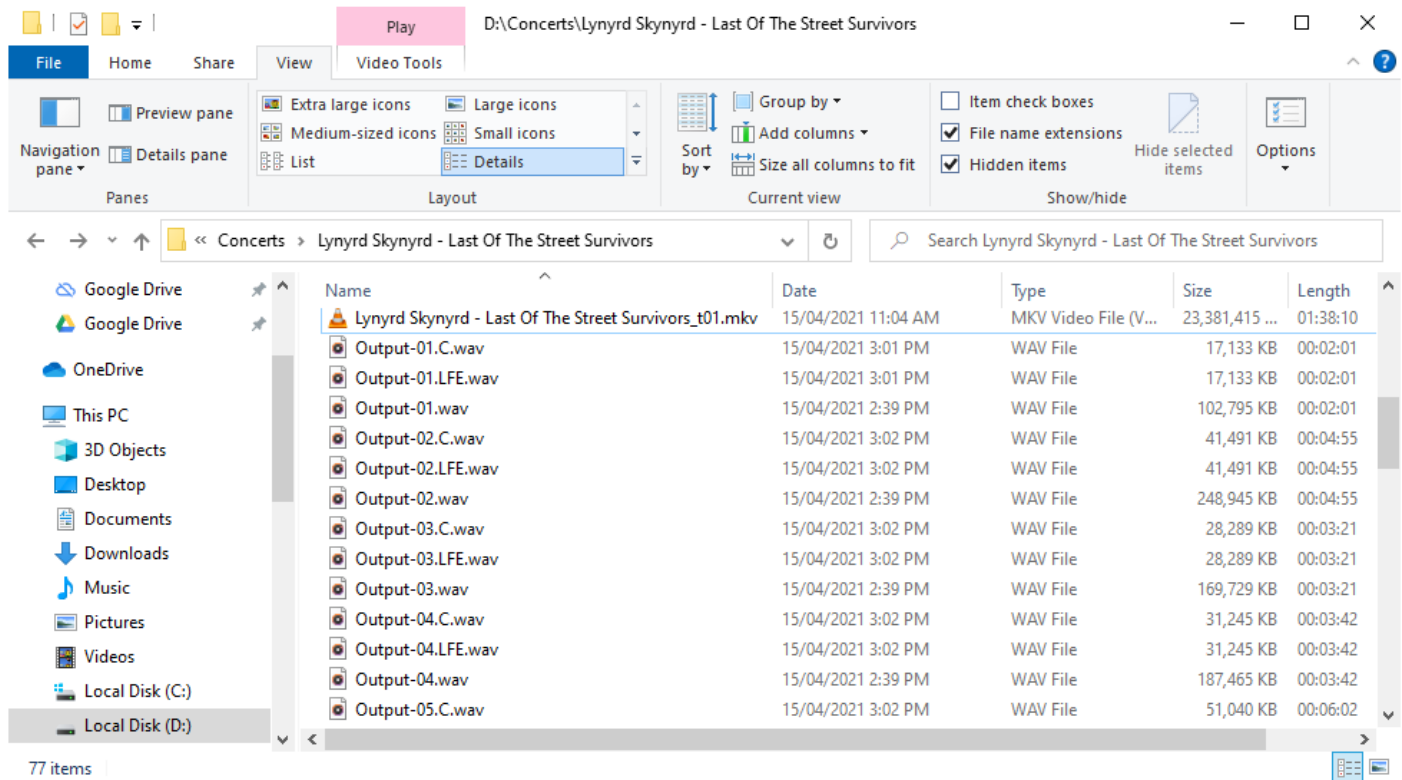To create the selected mono channel files for all input WAVs in the grid:

Click: 'Split to Mono'

MMH processes all files in the grid and creates the mono channel files:

You can see both the mono files and the original source files in the working folder (for all files).

Step 4 completed:

Step 5: Use your preferred Upmixing Software to create a new quad or 5.1 mix:

In this step we should upmix the stereo (FL & FR) channels in the extracted multichannel output wavs to create new quad surround mix. This will remix (redistribute) music from the stereo channels to both fronts and rears moving the soundstage to the centre of your mix instead of being front loaded.

NOTE: I use Penteo 16 Pro and it can upmix the stereo channels for a multichannel file to quad. Other upmixers may require a pure Stereo input file, in which case you may need to extract the FL and FR channels in the previous step then Merge with this MMH tool to create Stereo input files for upmixing.

This step should end with you have new upmixed quad files from the FL & FR channels of the original 5.1 mix extracted from your concert.

Using Penteo I upmix to Quad in a 5.1 (6 channel) FLAC with silent C and LFE. So at this point in this exercise I have 19 upmixed FLAC files upmixed to Quad from the multichannel WAV files.

These upmixed FLAC files are copied to your working folder.

Step 5 completed.

Step 6: Use Music Media Helper to Split new upmixed audio files to mono channel files:

In this step we will create mono channel files for the new quad channels from our upmix:

From Channel Split & Merge tool:

Click: 'Add Files'

The file browser opens, go ahead and select all your FLAC files:

HINT: You can use the file type dropdown at bottom to filter only FLAC files into the list, CTRL-A will select all files displayed). If we use 'Add Folder' MMH will add all the wav and flac files, in this case we only want the MCH FLACs.
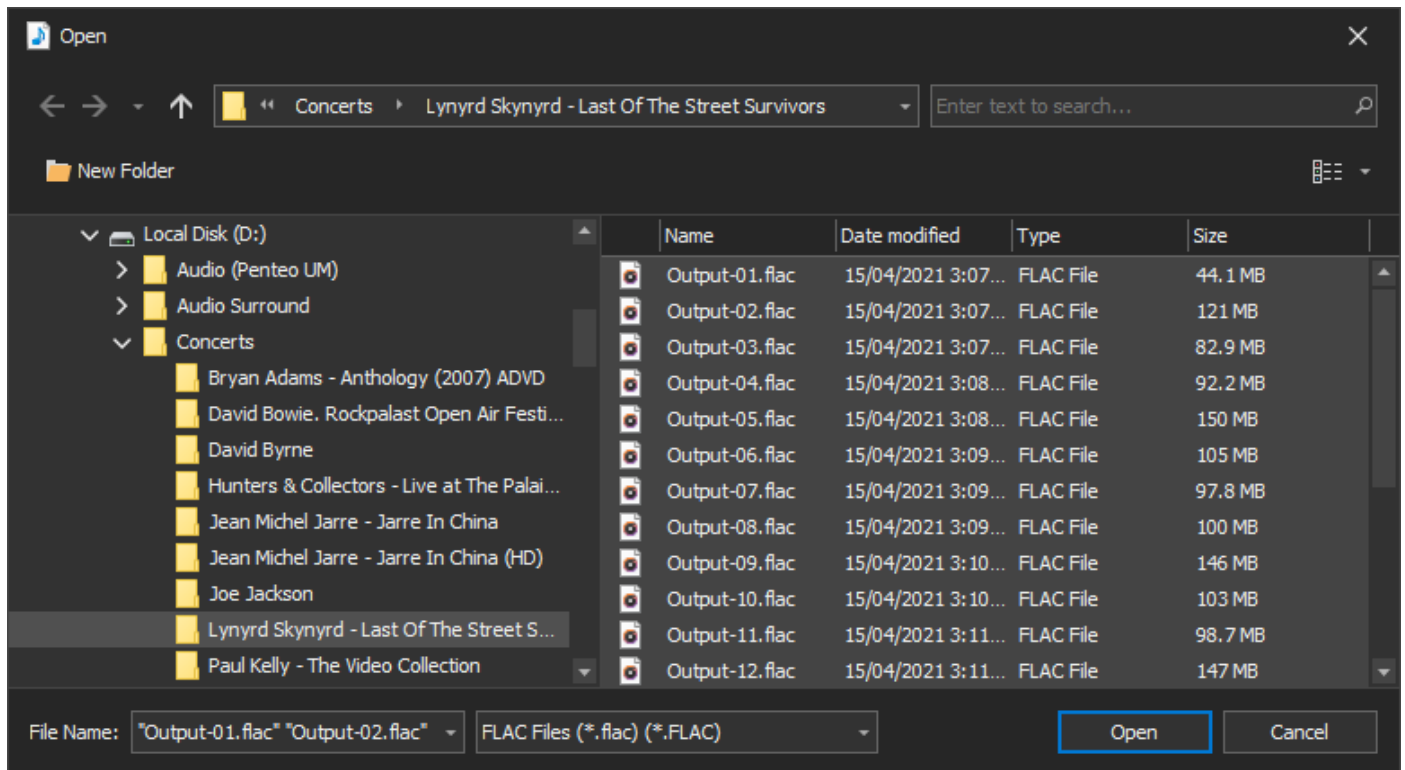
Click: 'Open' (after selecting all the upmixed FLAC files)

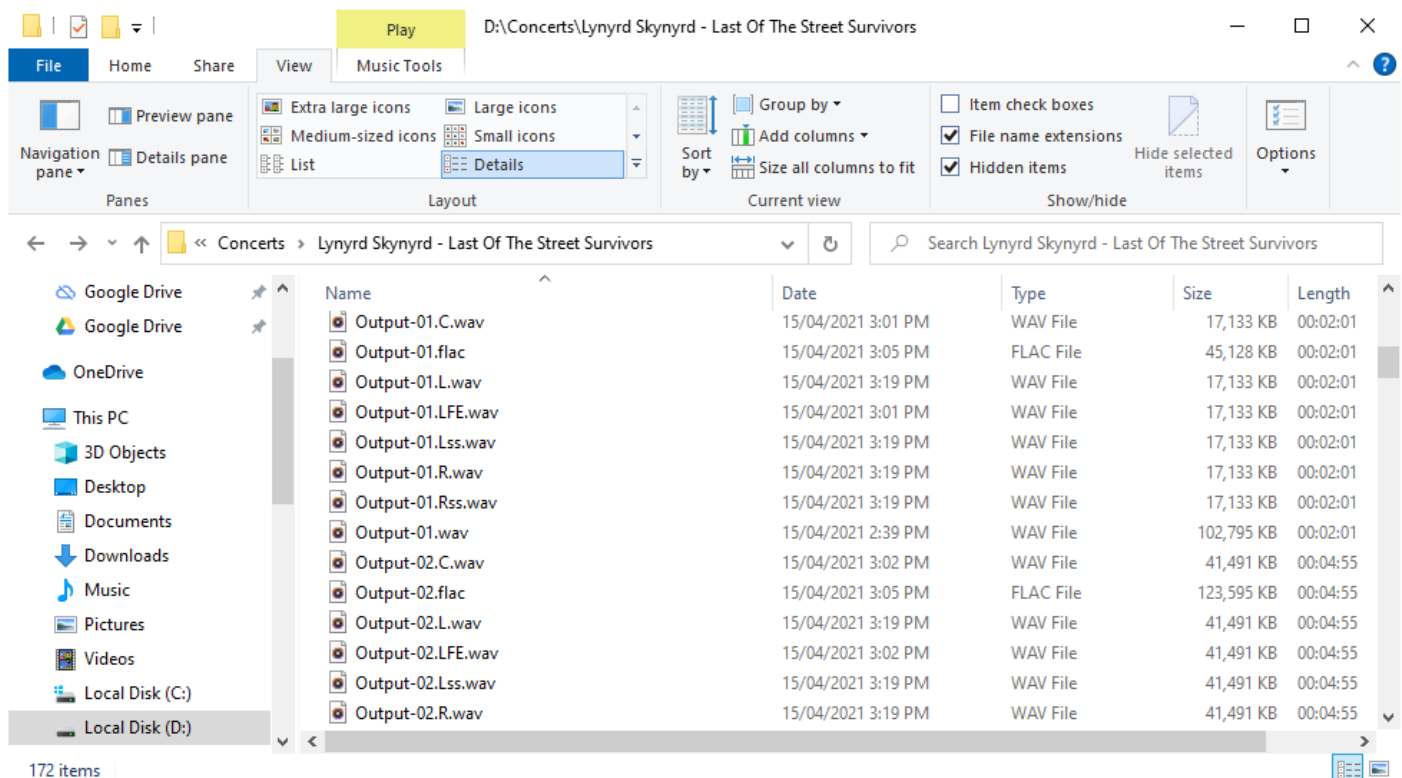The Split grid will load with all the selected files:
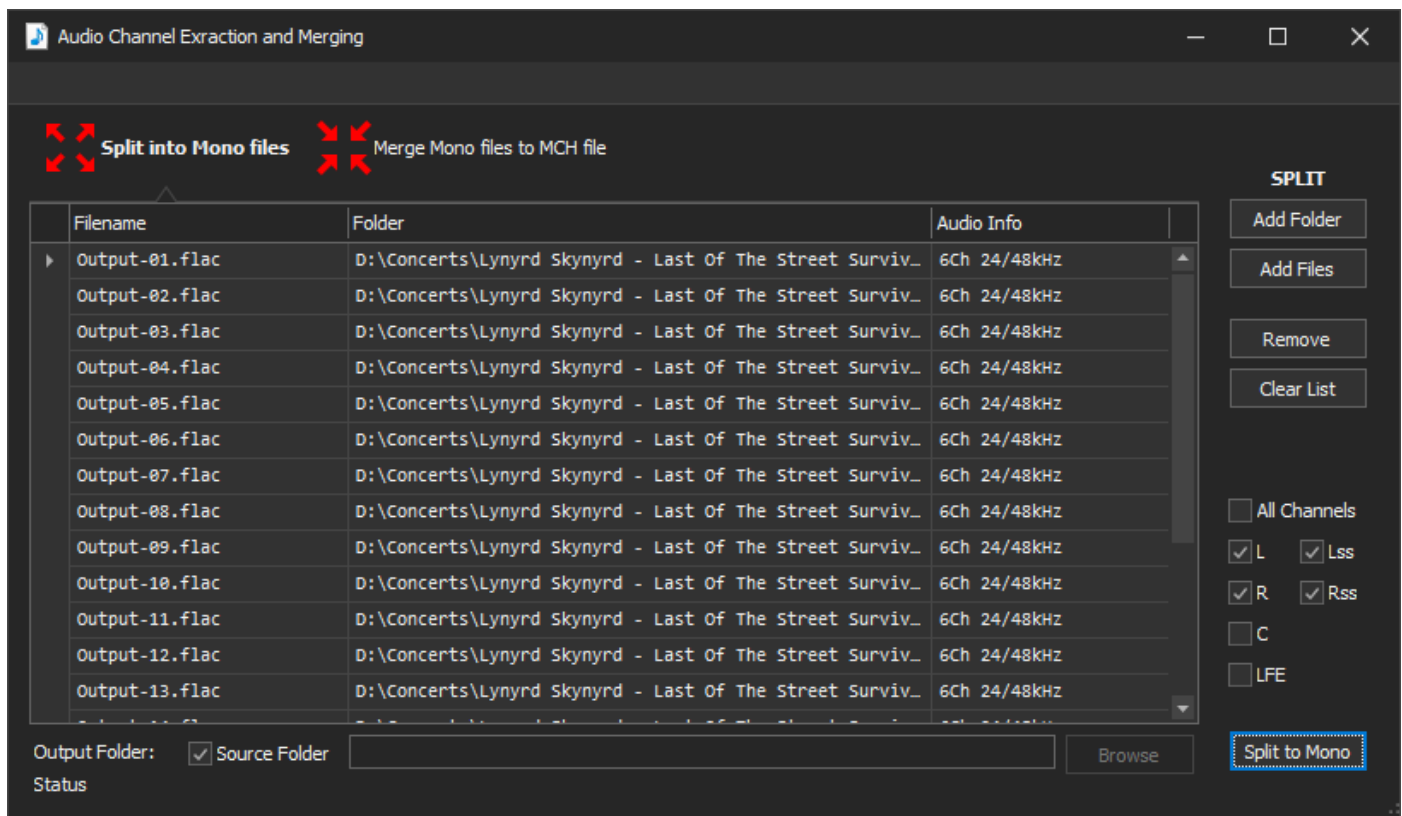
This time we need to select only the front and side (rear) channels from our upmixed files.

Select: 'L', 'R', 'Lss' and 'Rss' (ss = Surround Side)

To create the mono channel files for all the input FLAC files:

Click: 'Split to Mono'

Now we have the new L, R, Lss and Rss mono files from our upmix in our working folder, along with the C and LFE mono files from the original mix created earlier.
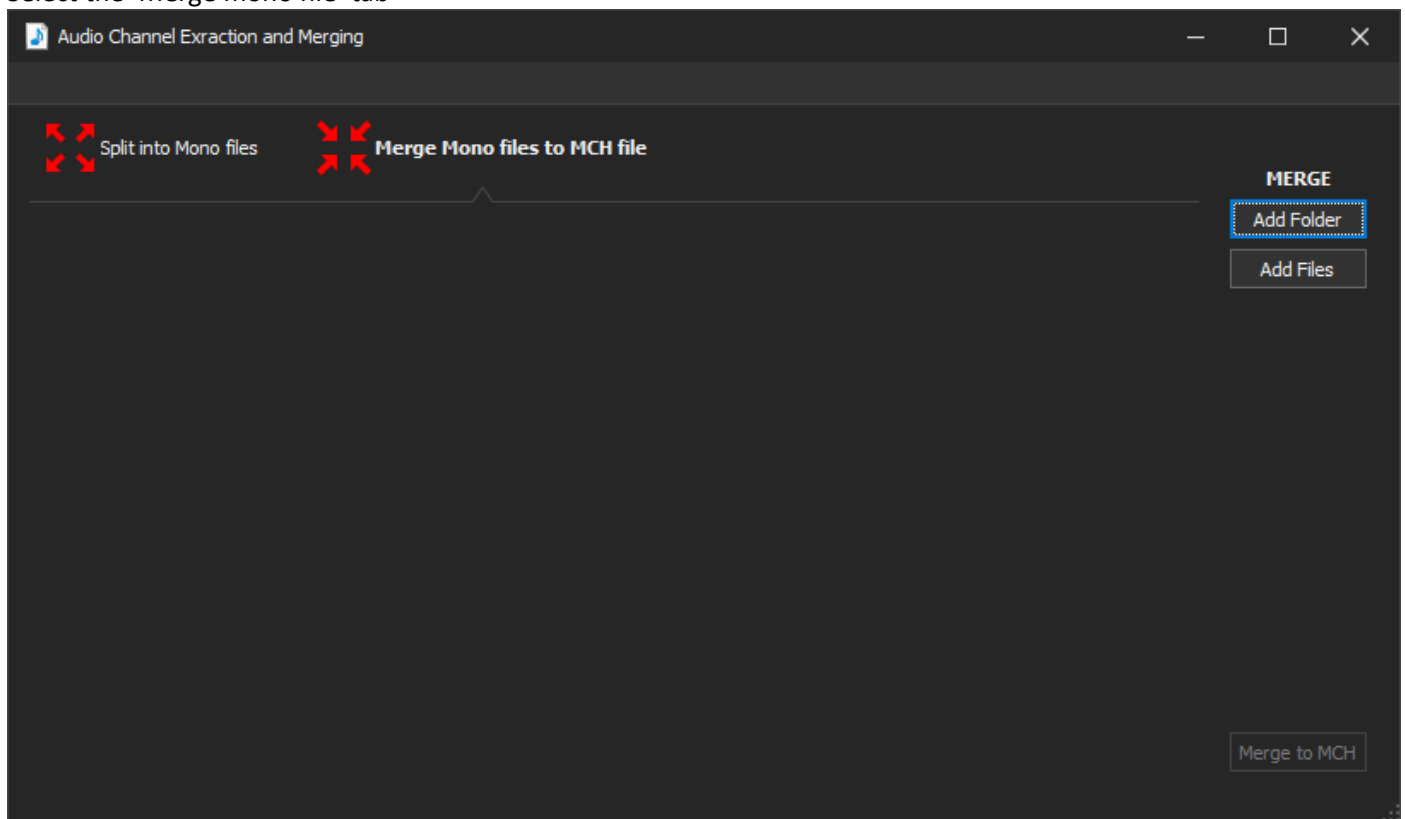
We are now ready to merge the monos into new multichannel files to create our new hybrid mix.

Step 6 completed.

Step 7: Use MMH to Merge mono (original C & LFE) with upmixed FL, FR, SL & SR files:

From Channel Split & Merge tool:

Select the 'Merge mono file' tab

Click: 'Add Folder'

NOTE: This tool automatically selects only wav files with a single channel named specifically with a recognised channel suffix. It also auto groups the mono files into their correct merged FLAC file based on the mono file names.

The folder browser opens, go ahead and navigate to your working folder and select it:
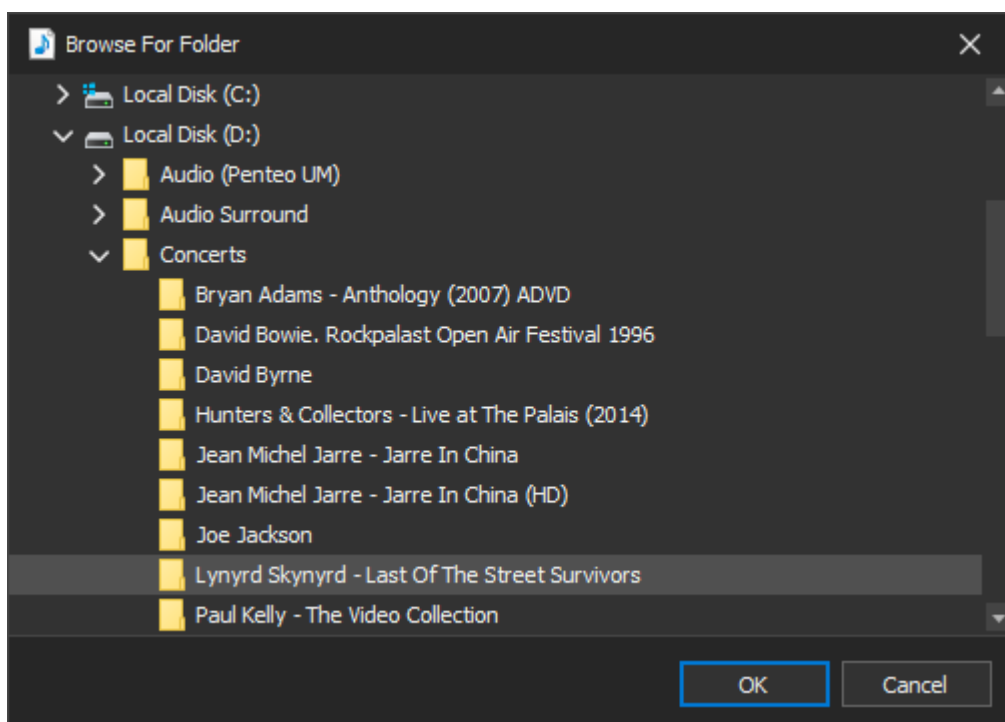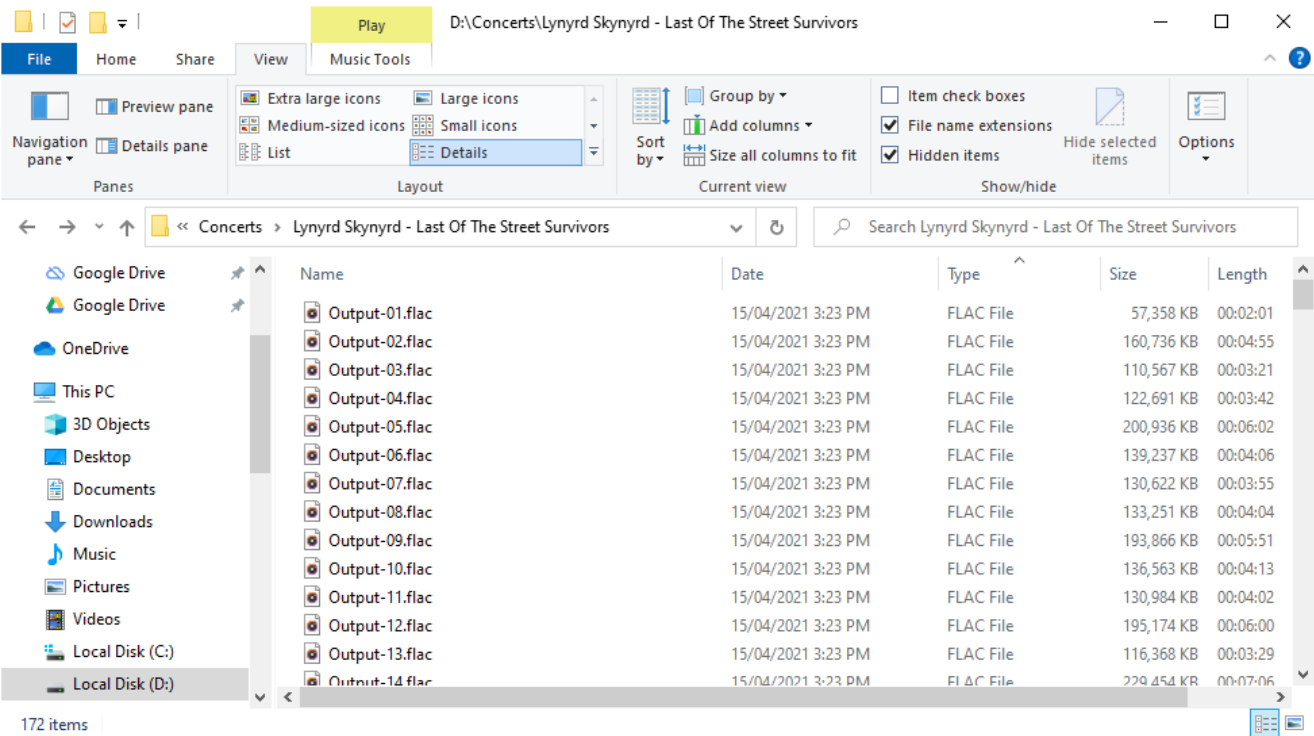
MMH loads the mono files into each output (merged file) into the scrollable list:
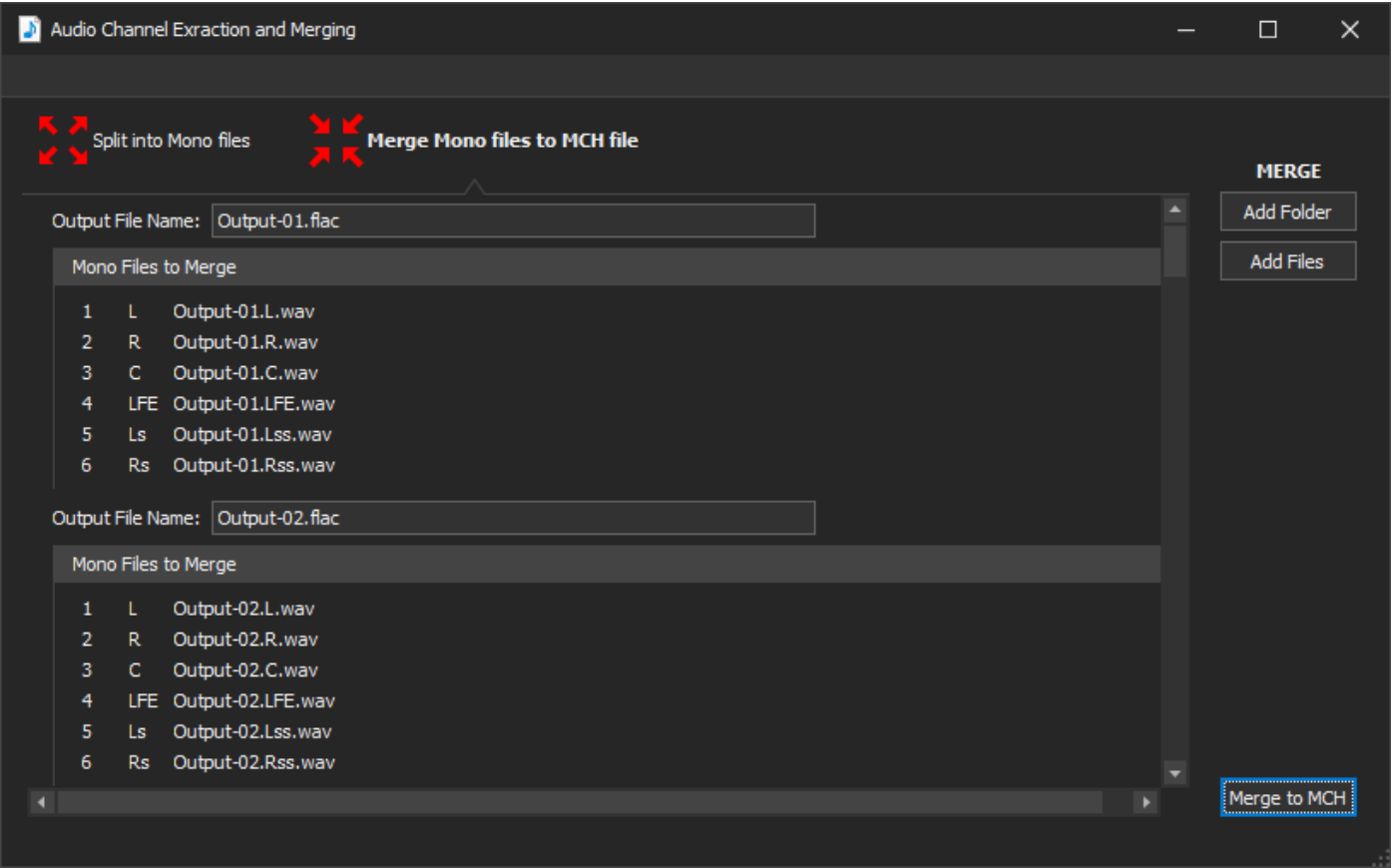
To merge the mono files to create new multichannel FLAC files:

Click: 'Merge to MCH'

The new MCH FLAC files are now created in you working folder.

Step 7 completed.

NOTE: At this point you can listen to your new hybrid mix and make minor channel level changes using Music Media Helper's Channel Volume too described at the end of this document.
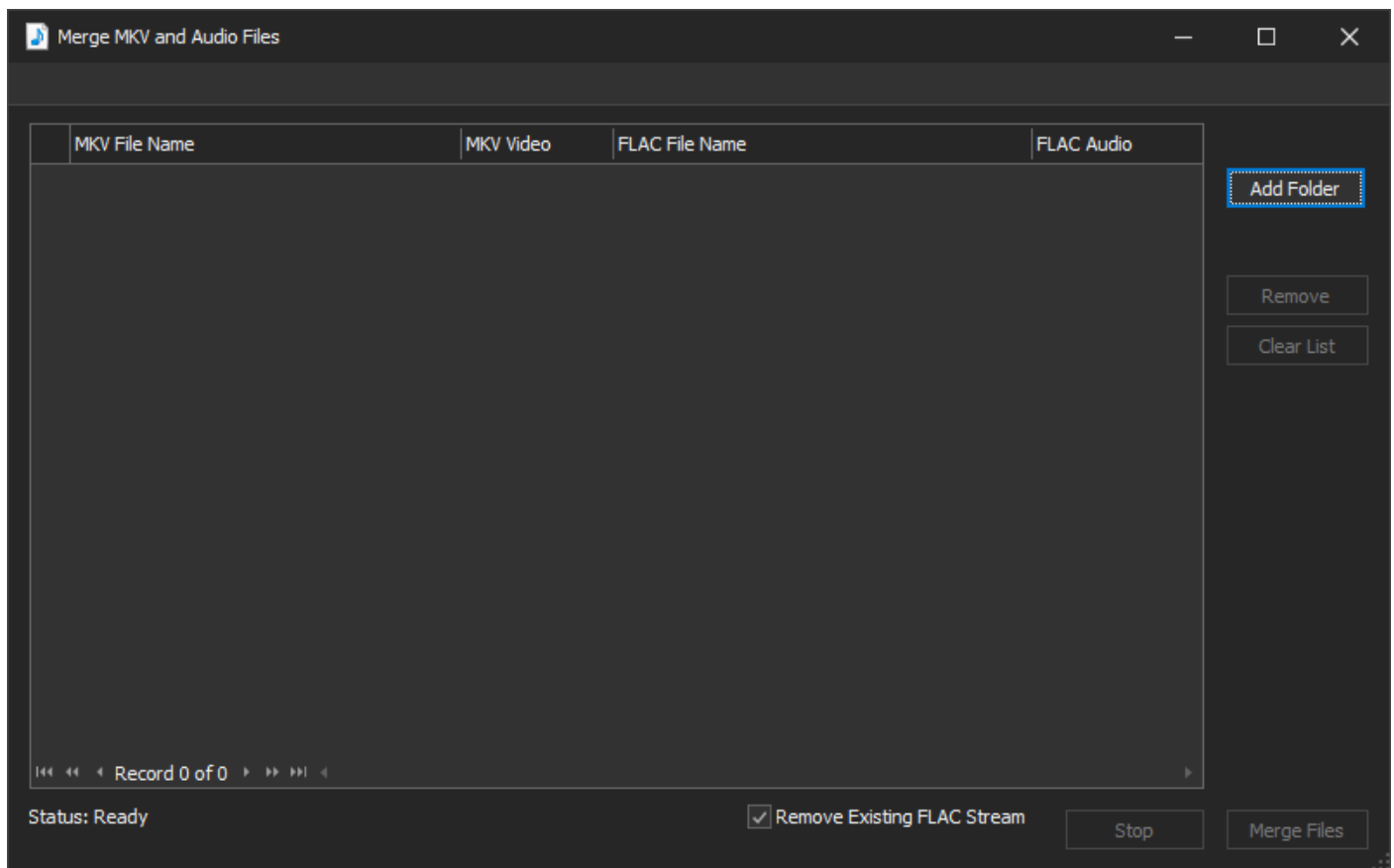
Step 8: Use MMH to Merge new remixed MCH files back into your original MKV video:

From the MMH tool Launcher dialog:

Click: 'Merge MKV and FLAC files'
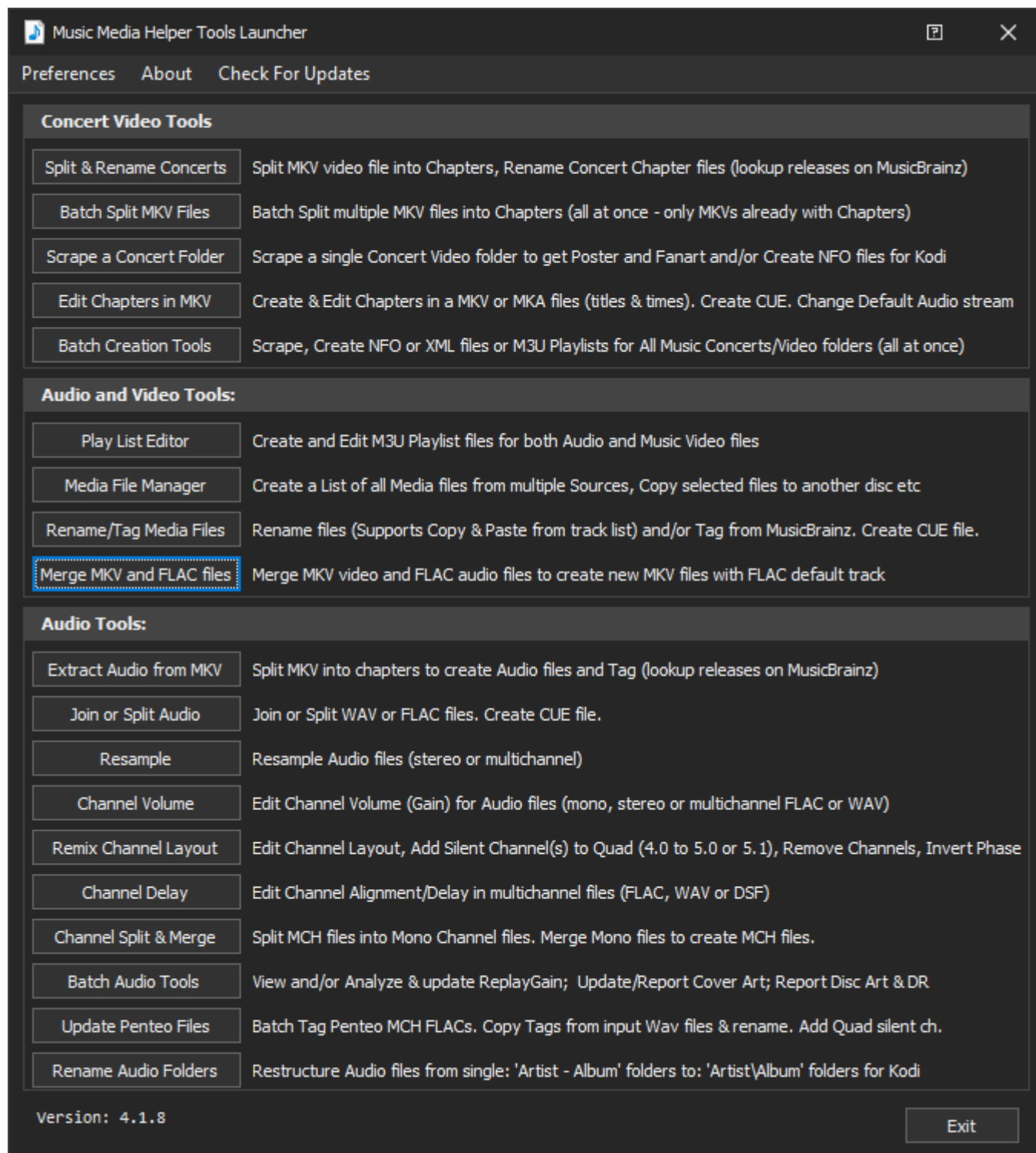

The Merge MKV and FLAC tool appears:

This tools merges MKV and FLAC files. The source folder must contain the same number of MKV files as FLAC files. The matching of each pair of MKV and FLACs to merge is based on the alphabetical order of each file type.

Click: 'Add Folder'

The folder browser pops up, go ahead and navigate to your working folder and select it.

The Merge MKV and FLAC tool's grid is populated with the file pairs:
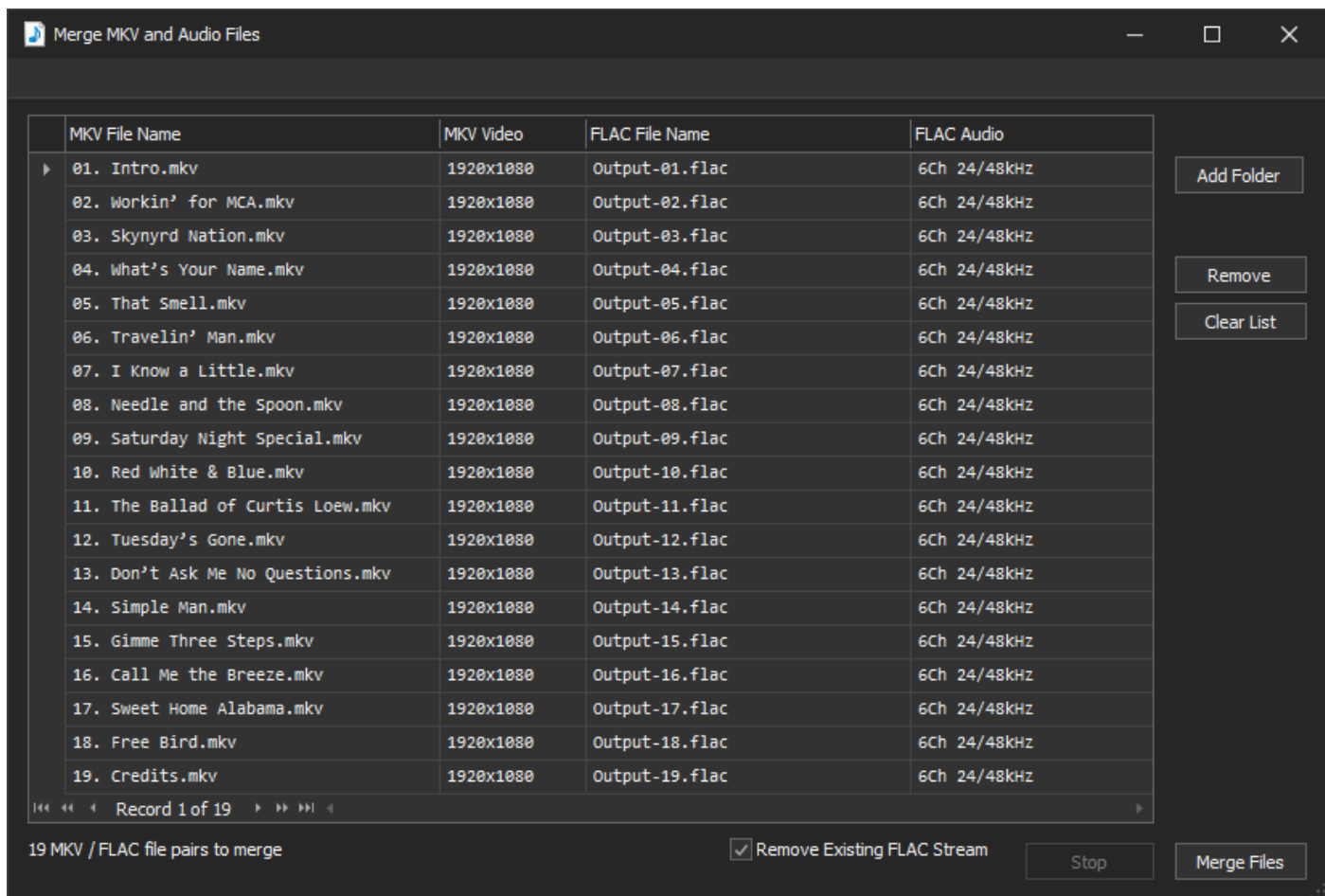
NOTE: The 'Remove Existing FLAC Stream' option exist to allow you to merge additional FLACs in the future (replacing any previous FLAC stream)

To merge the MKVs and FLACs listed in the grid:

Click: 'Merge Files'

NOTE: So not to overwrite your current new MKV files, MMH recreated new MKVs with your merged FLACs in a sub-folder to your working folder named: ***MergedMKVs***

The final screen shot shows the a new FLAC stream added as the default audio stream to one of the MKVs in the new MergedMKVs folder:
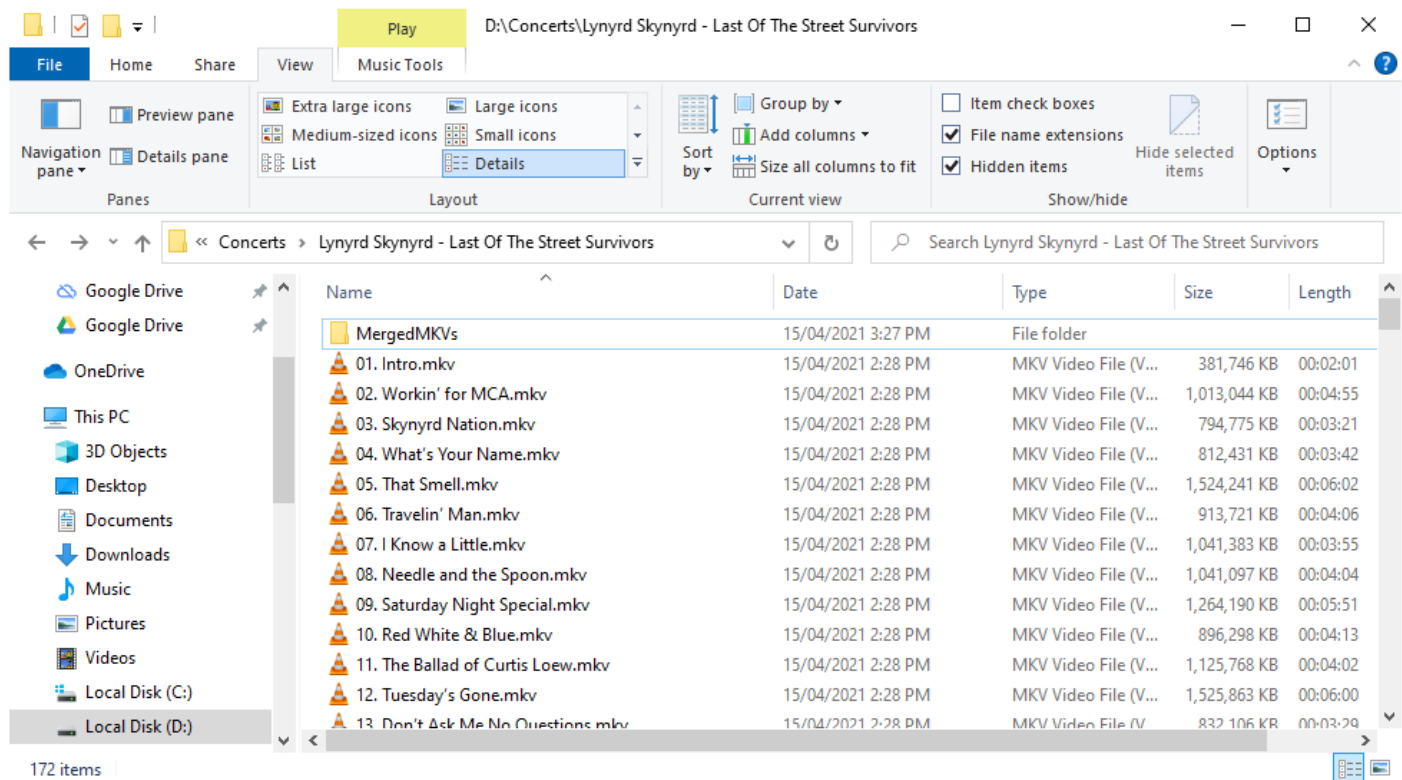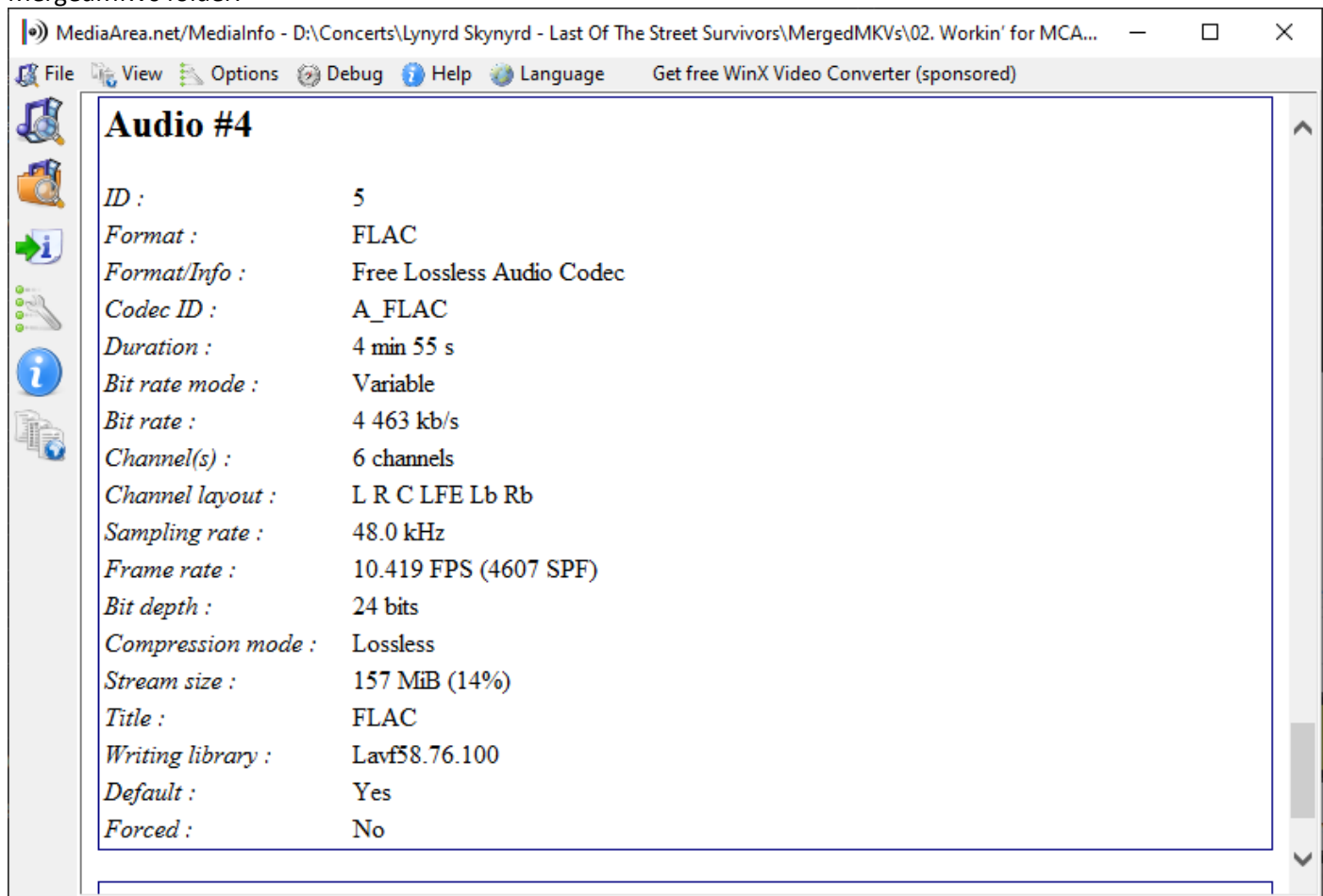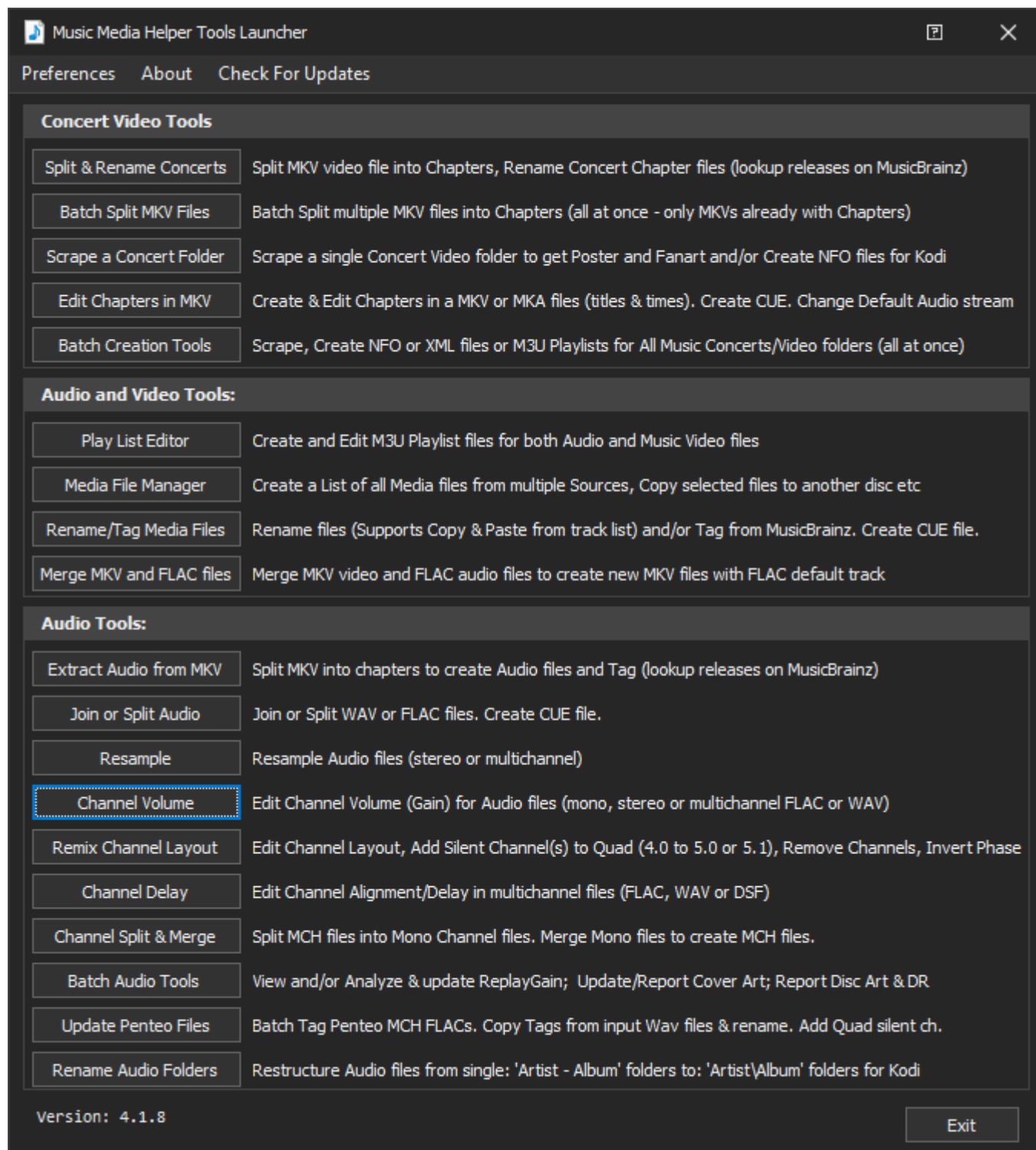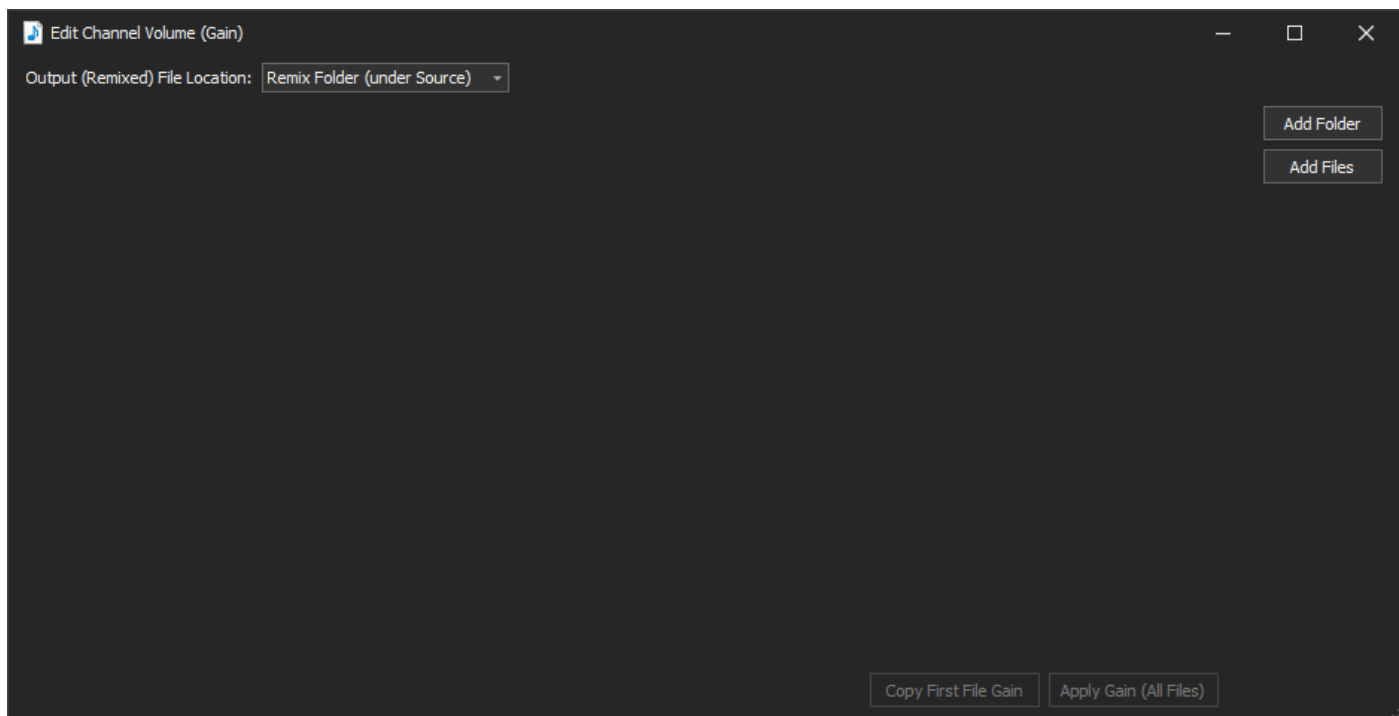

Project completed.

Appendix: Using MMH's Channel Volume tool to adjust channel levels:

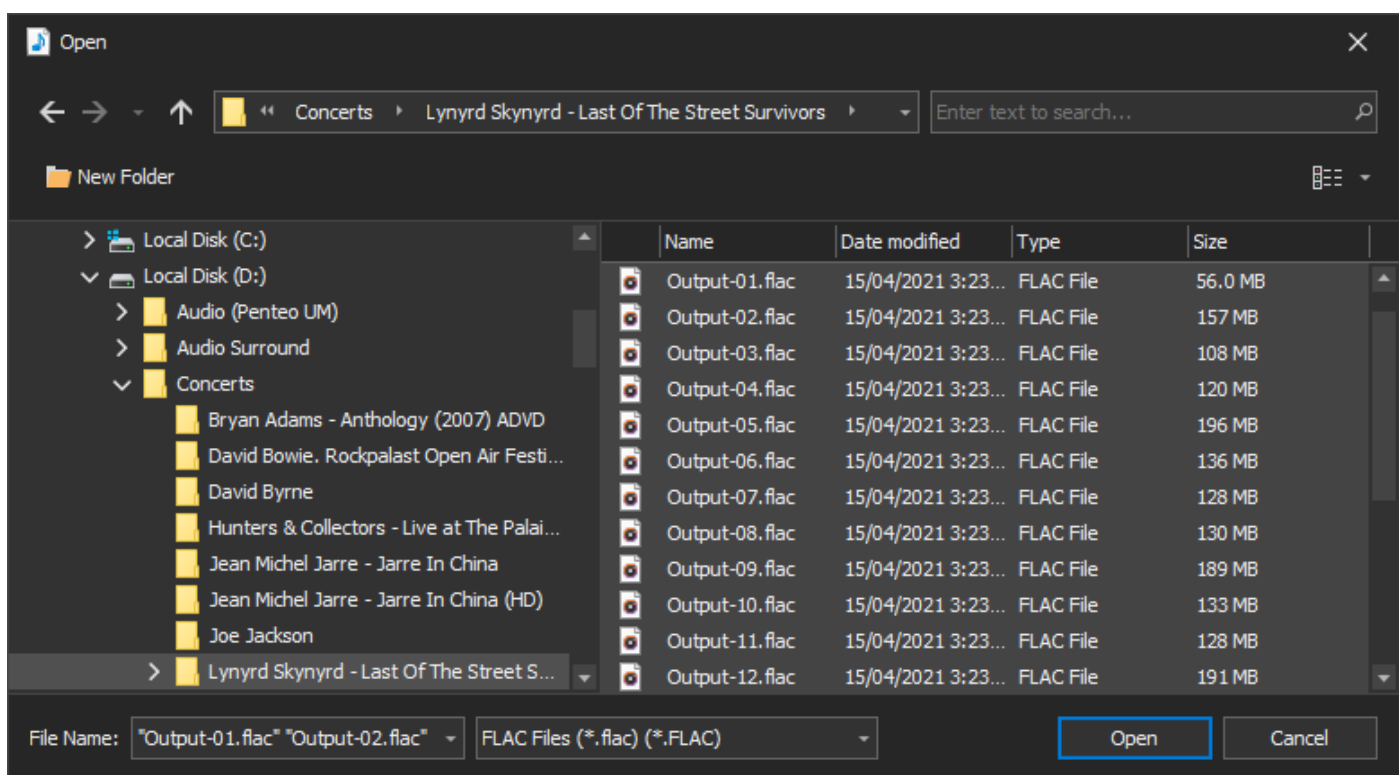From the MMH tool Launcher dialog:

Click: 'Channel Volume'

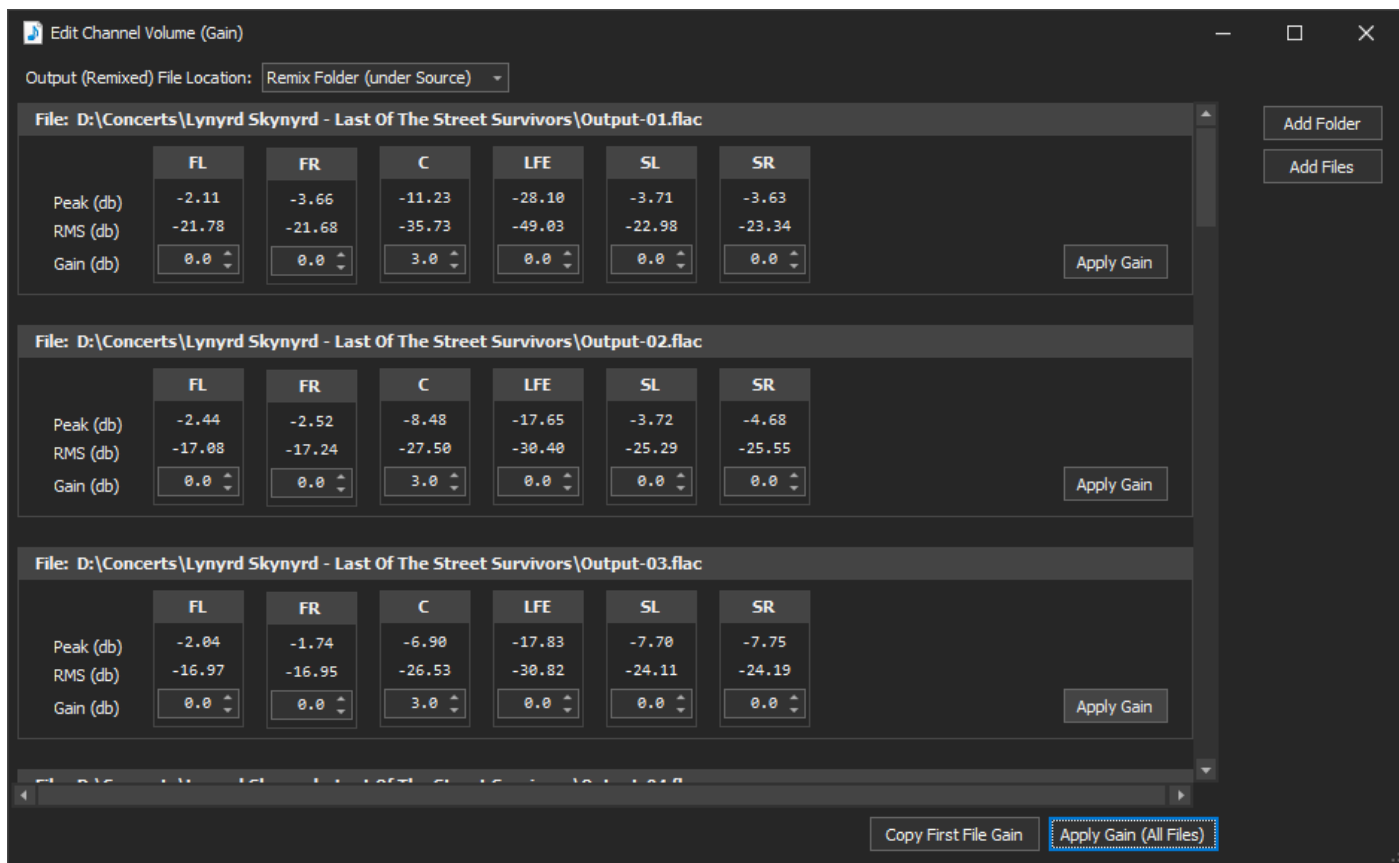The Channel Volume tool dialog appears:

Click: 'Add Folder' or 'Add files'

The next figure shows 'Add Files', after navigating to the multichannel FLACs prior to Merging with MKVs:

Select the FLACs and click: Open

The dialog list each selected file and displays audio statistics for each file for each channel.

Simply edit the gain to adjust each channel up or down.

Click: 'Apply Gain (All Files)' at the bottom of the dialog to batch update all files

Or

Click: 'Apply Gain' next to each file to update each file individually