

## 4. Importing the FIR Filters into ROON

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## Overview

In the previous article you learned how to generate the FIR Filters in the Acourate Digital Room Correction software.

You created 2 Project Workspaces:

C:\ACOURATE\P1

C:\ACOURATE\P2

You created 2 ZIP Files:

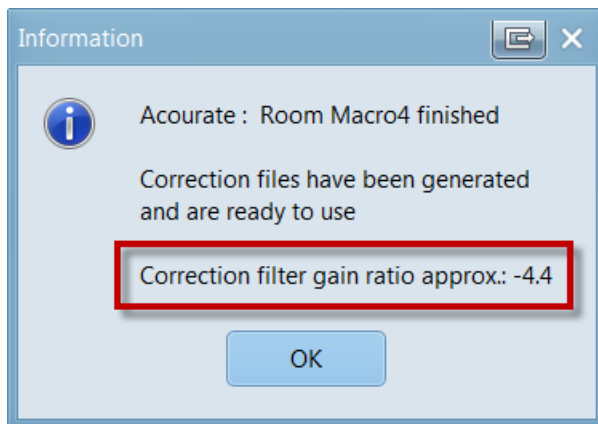
C:\ACOURATE\P1\Acourate4Room\Moab-P1.zip

C:\ACOURATE\P2\Acourate4Room\Moab-P2.zip

The FIR Filters in Moab-P1.zip corrects for **Amplitude**.

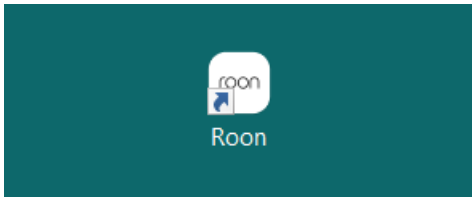
The FIR Filters in Moab-P2.zip corrects for both **Amplitude** and **Time**.

The Filter Insertion Loss in both cases was **-4.4dB**

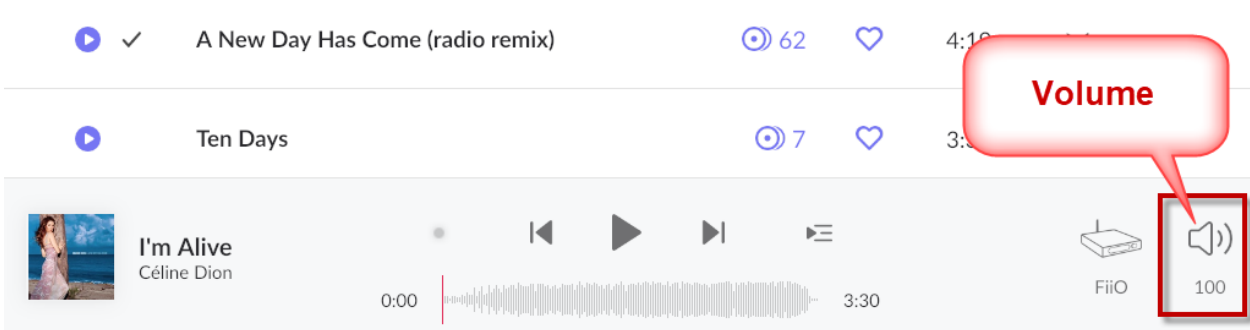


In this article you will learn how to import these FIR Filters into ROON.

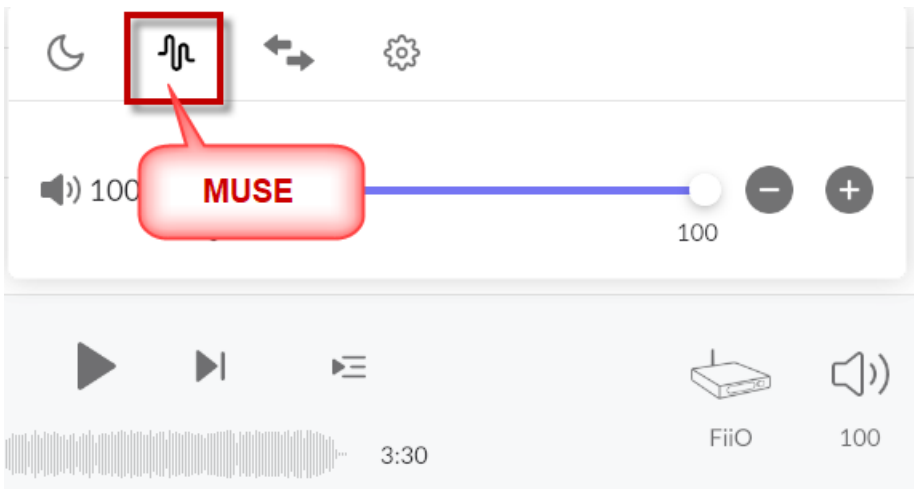
## Launch the ROON App on your Laptop



Click on the **Volume Icon** on the bottom right.



Open the **MUSE Control**.



This is your MUSE Precision Audio Control Settings Page.  
You have not created any Presets yet.

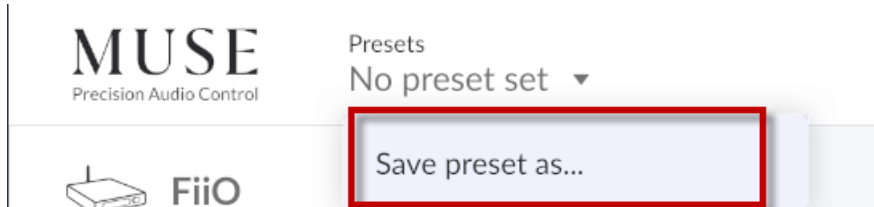
The screenshot displays the MUSE Precision Audio Control interface. At the top, the 'Presets' dropdown menu is highlighted with a red box and a red arrow pointing to it, with the text 'No Presets' written in yellow on the arrow. The interface includes a sidebar with settings for FiiO, Headroom management (Disabled), Sample rate conversion (Disabled), and a list of filters: Crossfeed (Disabled), Parametric EQ (Disabled), Headphone EQ (Disabled), and Convolution (Disabled). A 'Bypass all filters' toggle is also present. The main content area features the title 'Precision audio control' and a description: 'MUSE algorithmically alters the audio signal, using tools like EQ, upsampling, and more.' Below this is a 3D wireframe visualization of a sound wave. Further down, there is a paragraph: 'No system is perfect. No room is perfect. No content is perfect. Roon offers a suite of algorithms that can be used to help all of them reach their full potential.' and a link to 'Learn more about MUSE on our knowledge base.' At the bottom, a music player shows 'I'm Alive' by Céline Dion, with a progress bar from 0:00 to 3:30 and volume control set to 100.

Everything is disabled at the moment.

The screenshot displays the MUSE Precision Audio Control interface. At the top left is the MUSE logo with the tagline "Precision Audio Control". To the right, there is a "Presets" section showing "No preset set" with a dropdown arrow. Below this is a "FiiO" section with a device icon and a back arrow. Underneath are "Headroom management" and "Sample rate conversion" sections, each with a disabled toggle switch and a right-pointing arrow. The "Filters" section features a "Bypass all filters" toggle switch. A vertical line on the left side of the filter list indicates the active filter path. The filter list includes "Crossfeed", "Parametric EQ", "Headphone EQ", and "Convolution", all with disabled toggle switches and right-pointing arrows. At the bottom of the filter list is a blue circular button with a plus sign and the text "Add filter".

Save this initial state with everything disabled as your first Preset.

Name it **BYPASS**

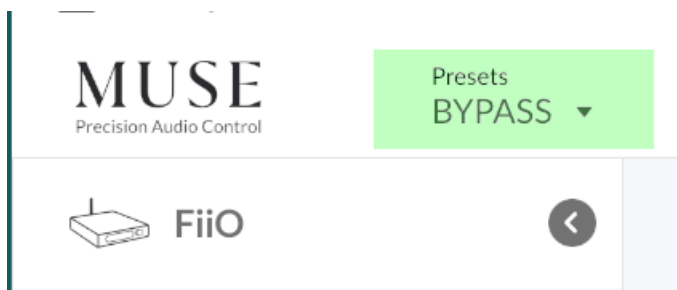


### Save preset

Preset name



You have created your first Preset = BYPASS



## Import Moab-P1.zip

You are going to import Moab-P1.zip into ROON's Convolution Engine.

**Enable** the Convolution Engine.

The screenshot shows the MUSE Precision Audio Control interface. At the top left is the MUSE logo with the tagline "Precision Audio Control". To the right, there is a "Presets" dropdown menu currently set to "BYPASS\*". Below this is a "FiiO" device selection area with a back arrow. The main settings area includes "Headroom management" (Disabled) and "Sample rate conversion" (Disabled). A "Filters" section is visible with a "Bypass all filters" toggle. Under "Filters", there are four filter options: "Crossfeed" (Disabled), "Parametric EQ" (Disabled), "Headphone EQ" (Disabled), and "Convolution" (Enabled). The "Convolution" filter is highlighted with a red box. At the bottom of the filter list is an "Add filter" button.

## Expand the Convolution Engine.

The screenshot shows the MUSE software interface. At the top left is the MUSE logo with the tagline "Precision Audio Control". To its right is a "Presets" dropdown menu set to "BYPASS\*". A gear icon for settings is in the top right corner. The main interface is split into two panels. The left panel contains a sidebar with "FiiO" at the top, followed by "Headroom management" (Disabled) and "Sample rate conversion" (Disabled). Below this is a "Filters" section with a "Bypass all filters" toggle. A vertical line connects four filter icons: Crossfeed (Disabled), Parametric EQ (Disabled), Headphone EQ (Disabled), and Convolution (Enabled). The Convolution filter's right-side arrow is highlighted with a red box. At the bottom of the sidebar is an "Add filter" button. The right panel is titled "Convolution" and has a "Remove filter" button. It contains text explaining that convolution is used for room correction and that Roon does not generate these filters. It lists supported filter formats: impulse response files (.wav), .zip files with impulse responses, and .zip files with convolver-style (.cfg) files. It also notes that Roon will choose the best match filter based on sample rate and channel configuration. A link to documentation is provided. At the bottom, it shows "Currently selected filter (none)" and a "Browse..." button.

Browse for Moab-P1.zip

This is a close-up of the "Browse..." button from the screenshot above. The button is light blue with rounded corners and is highlighted with a red rectangular box. It is positioned to the right of the text "Currently selected filter (none)".

Select **Moab-P1.zip**

### Load convolution filter

Selected folder

This PC > [C:] Windows > ACOURATE > P1 > Acourate4Roan

[C:] Windows  
SAMSUNG  
MZMTE256HMHP-000MV

Folder listing

File Name	Size
Cor1S96.wav	1 MB
Cor2.0_176.cfg	79 bytes
Cor2.0_192.cfg	79 bytes
Cor2.0_352.cfg	79 bytes
Cor2.0_384.cfg	79 bytes
Cor2.0_44.cfg	76 bytes
Cor2.0_48.cfg	76 bytes
Cor2.0_88.cfg	76 bytes
Cor2.0_96.cfg	76 bytes
<b>Moab-P1.zip</b>	<b>9.9 MB</b>

New folder

Select

Cancel

Your currently selected Convolution Filter is **Moab-P1**

**MUSE**  
Precision Audio Control

Presets  
BYPASS\* ▾

**FiiO**

Headroom management  
Disabled

Sample rate conversion  
Disabled

**Filters** Bypass all filters

- Crossfeed Disabled
- Parametric EQ Disabled
- Headphone EQ Disabled
- Convolution Enabled**
- Add filter

## Convolution

Remove filter

Convolution is a powerful signal processing method that is commonly used for things like room correction, headphone listening, or surround processing.

Roon does not generate Convolution filters--this is done using an external piece of software.

Roon supports Convolution filters in several forms:

- An impulse response file, usually in .wav format, that describes the filter
- A .zip file containing one or more impulse response files
- A .zip file containing one or more convolver-style .cfg files and their associated impulse response files

In cases where a .zip file with multiple filters is provided, Roon will choose the best match filter by considering the sample rate and channel configuration of the source material.

For more detailed documentation on Roon's convolution feature, [see here](#).

Currently selected filter: **Moab-P1** Browse... Clear

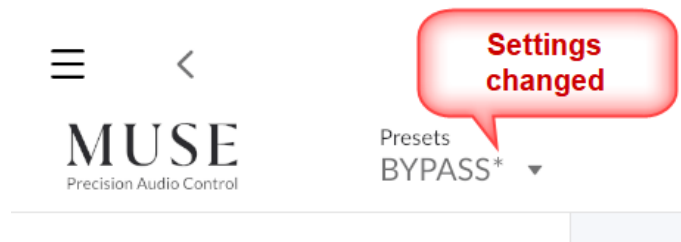
**Moab-P1**

**I'm Alive**  
Céline Dion

0:00 3:30

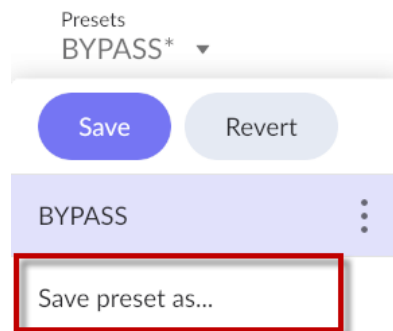
FiiO 100

Notice the “\*” next to the Preset Name.



This mean the current Preset has been changed.

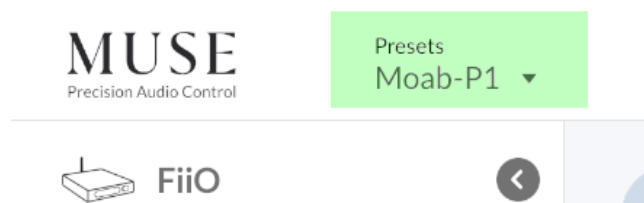
Save this Preset as **Moab-P1**.



### Save preset



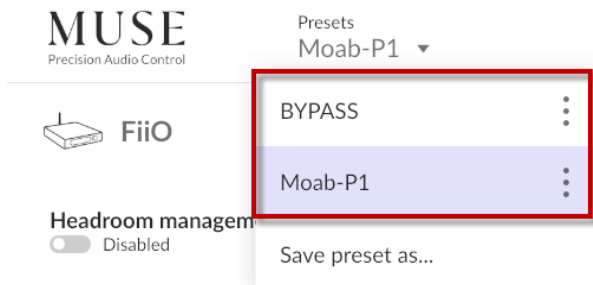
Save



This is your new Preset

You have created 2 Presets:

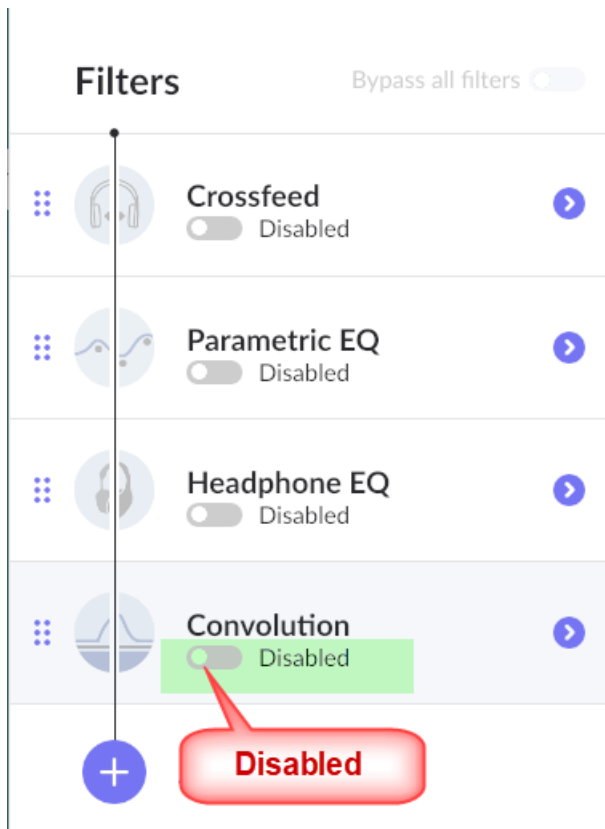
- BYPASS
- Moab-P1



Engaging the Moab-P1 preset will result in a **-4.4dB** Filter Insertion Loss. Toggling between the two will cause a sudden change in volume during playback.

To avoid this issue, create another Preset named **Moab-P1 Filters Off**.

**Disable** the Convolution Filter.



Enable Headroom Management.

Enter Headroom Adjustment = **-4.4dB**

**MUSE**  
Precision Audio Control

Presets  
Moab-P1\* ▾

FiiO

**Headroom management**  
 Enabled

**Enabled** Conversion

**Filters** Bypass all filters

- Crossfeed Disabled
- Parametric EQ Disabled
- Headphone EQ Disabled
- Convolution Disabled

+ Add filter

## Headroom management

Digital signal processing can result in audio samples that exceed the allowed range.

When this happens, Roon clips outgoing samples to the allowed range before sending them to your playback device, which introduces distortion.

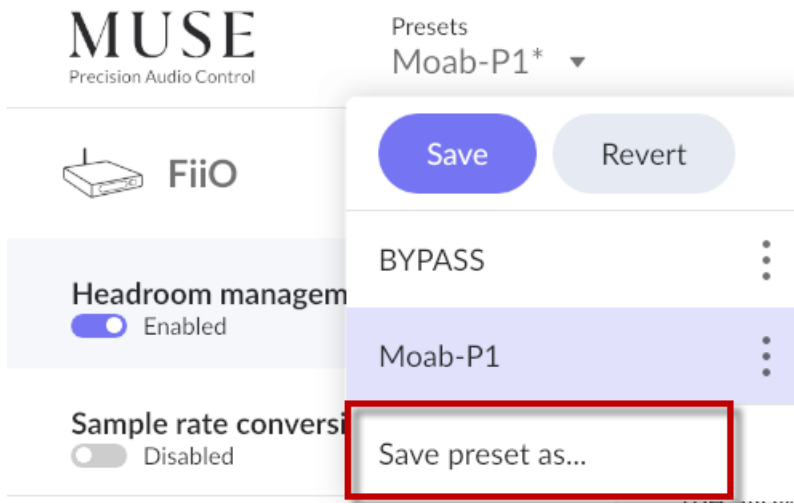
If you find that your MUSE settings are causing clipping, try creating some headroom by applying a small negative gain to the signal. Another way to combat clipping is to turn on volume leveling.

For more information, [see here](#).

Headroom adjustment (dB)  
If you're not sure, start with -3dB.

Show clipping indicator  
The Signal path light will turn red when samples are clipped.  Yes

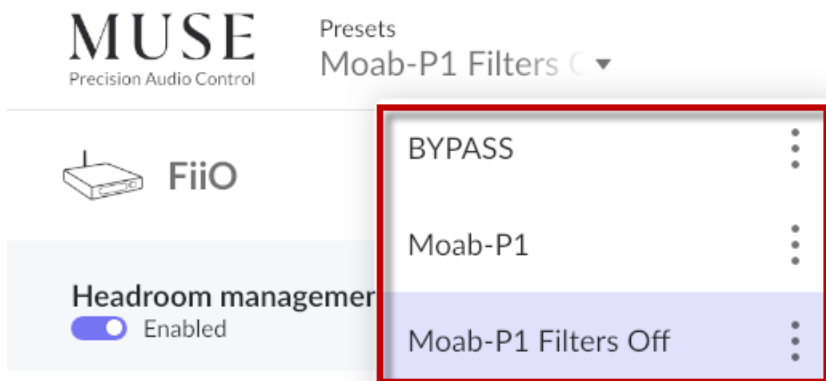
Save this Preset as **Moab-P1 Filters Off**



### Save preset

Preset name

Now you have 3 Presets:



Toggle between these two Presets as the music plays:

- Moab-P1
- Moab-P1 Filters Off

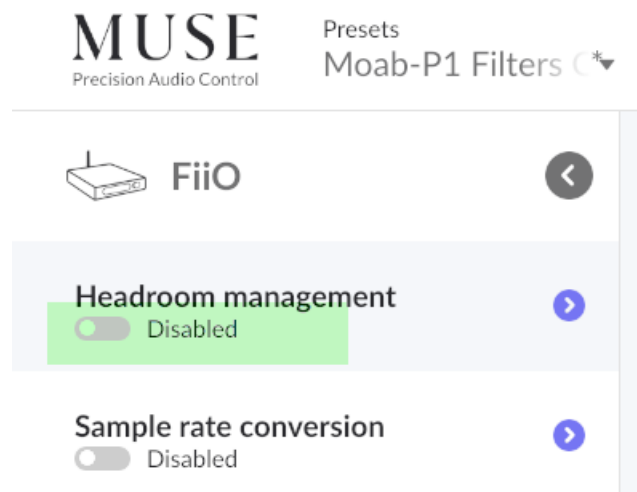
This will make it easier to compare the results of adding Room Correction to your speakers while the music plays at the same volume.

The frequencies will sound more even with Preset Moab-P1 engaged.

**Note:** You will notice a slight pause in music playback when you change Presets.

## Import Moab-P2.zip

Disable the Headroom Management



Enable the Convolution Filter.

The screenshot shows the MUSE software interface. At the top left is the MUSE logo with the tagline "Precision Audio Control". To its right, it says "Presets Moab-P1 Filters" with a dropdown arrow. A gear icon is in the top right corner. On the left side, there are several settings sections: "FiiO" with a back arrow, "Headroom management" with a "Disabled" toggle and a right arrow, and "Sample rate conversion" with a "Disabled" toggle and a right arrow. Below these is a "Filters" section with a "Bypass all filters" toggle. It lists four filter types: "Crossfeed" (Disabled), "Parametric EQ" (Disabled), "Headphone EQ" (Disabled), and "Convolution" (Enabled). A red callout box with the word "Enabled" points to the Convolution filter's toggle. The main panel on the right is titled "Convolution" and has a "Remove filter" button. It contains text explaining that convolution is used for room correction and that Roon does not generate these filters. It lists supported filter formats: impulse response files (.wav), .zip files of impulse responses, and .zip files of convolver-style (.cfg) files with impulse responses. It also notes that Roon will choose the best match filter based on sample rate and channel configuration. At the bottom of the main panel, it shows "Currently selected filter Moab-P1" and buttons for "Browse..." and "Clear".

Browse for file Moab-P2.zip

This is a close-up of the bottom part of the software interface. It shows the text "Currently selected filter" followed by "Moab-P1". To the right of "Moab-P1" is a button labeled "Browse..." which is highlighted with a red rectangular box. Further to the right is a button labeled "Clear".

Select **Moab-P2.zip**

### Load convolution filter

Selected folder

This PC > [C:] Windows > ACOURATE > P2 > Acourate4Roan

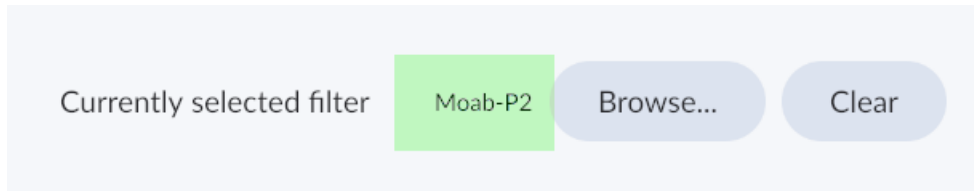
Folder listing		↻	↑
📄	Cor2.0_176.cfg	79 bytes	
📄	Cor2.0_192.cfg	79 bytes	
📄	Cor2.0_352.cfg	79 bytes	
📄	Cor2.0_384.cfg	79 bytes	
📄	Cor2.0_44.cfg	76 bytes	
📄	Cor2.0_48.cfg	76 bytes	
📄	Cor2.0_88.cfg	76 bytes	
📄	Cor2.0_96.cfg	76 bytes	
📄	Moab-P1.zip	9.9 MB	
📄	<b>Moab-P2.zip</b>	<b>10 MB</b>	

New folder

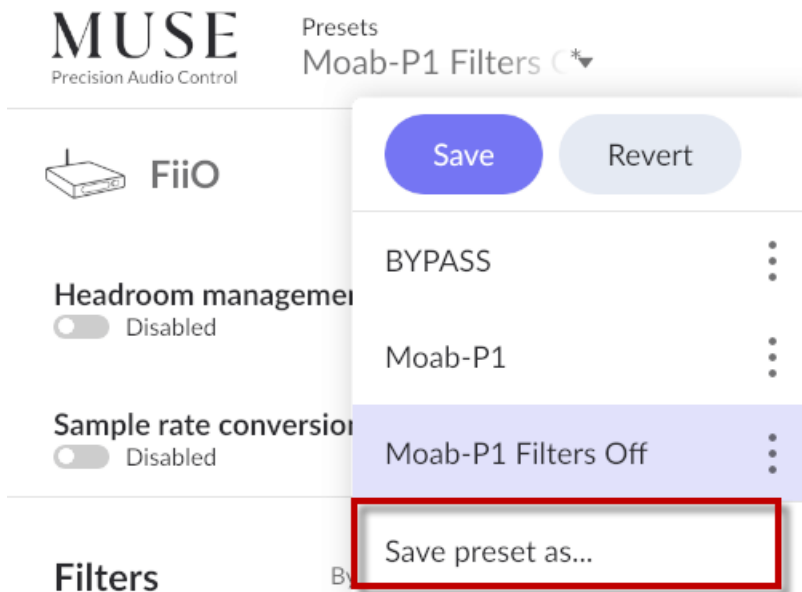
Select

Cancel

The currently selected filter = **Moab-P2**



Save this new Preset as **Moab-P2**



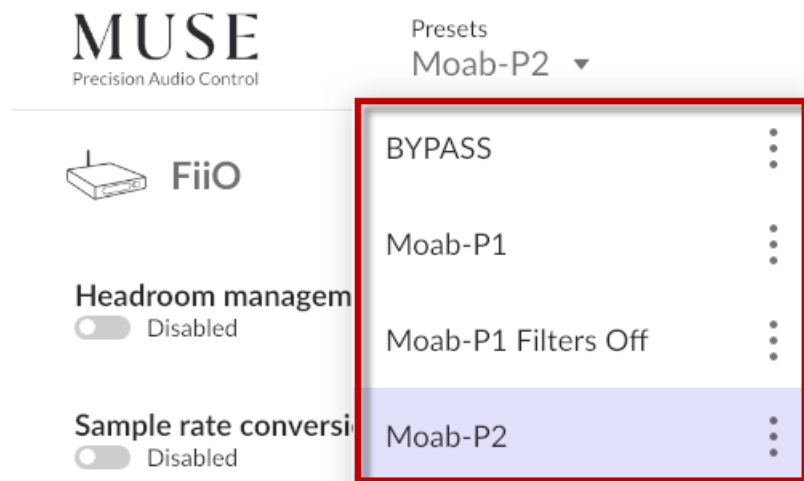
### Save preset

Preset name



## Compare your Presets

Now you have 4 Presets:



You can switch between these 3 Presets to evaluate which one sounds better:

- Moab-P1 → Corrected for Amplitude
- Moab-P1 Filters Off → No correction
- Moab-P2 → Corrected for Amplitude and Time

**Note:** The Filter Insertion Loss is the same for Moab-P1 and Moab-P2.

If they were different, you would need to create a companion **Moab-P2 Filters Off** Preset by entering the appropriate Headroom Adjustment.

Select **Preset Moab-P1**

Play a song that you are intimately familiar with. Repeat a short segment of that song while switching presets.

In this example I am comparing the bass response in the track “A New Day Has Come” by Celine Dion by repeating a short segment between 0.17 seconds and 0.27 seconds.

The screenshot shows a music application interface with a 'TRACKS' tab selected. The track list includes:

Track Name	Views	Heart	Duration	Plays	More
I'm Alive	53	✓	3:30	▶ 14	⋮
Right in Front of You	7	♥	4:13	▶ 0	⋮
Have You Ever Been in Love	22	♥	4:08	▶ 0	⋮
Rain, Tax (It's Inevitable)	7	♥	3:25	▶ 0	⋮
A New Day Has Come (radio remix)	62	♥	4:19	▶ 1	⋮
Ten Days	7	♥	3:37	▶ 0	⋮
Goodbye's	6	♥	5:19	▶ 0	⋮

The playback control bar at the bottom shows the track 'I'm Alive' by Céline Dion. The waveform is visible, and a red callout bubble points to the 0:27 mark, containing the text: **0.17 seconds to 0.27 seconds**. The playback progress is shown as 0:27 out of 3:30. The output device is identified as FiiO with a volume level of 100.

With properly calibrated speakers you should hear and feel the punch of the bass. It should sound tight and focused dead center. It should not sound soft or anemic.

Click on the **Starburst Icon** while the song is playing.



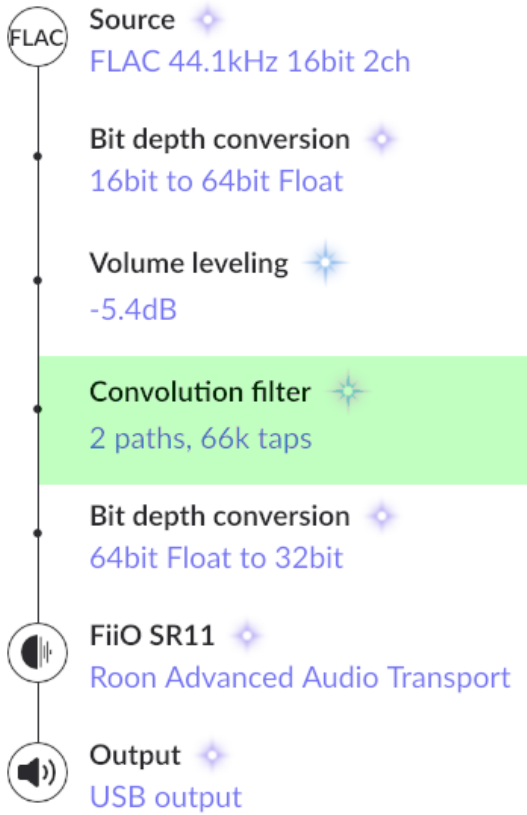
This additional information panel will appear.

### Signal path: Enhanced

Click on any stage of the path to Learn more

FiiO  

Processing speed: 92.2x



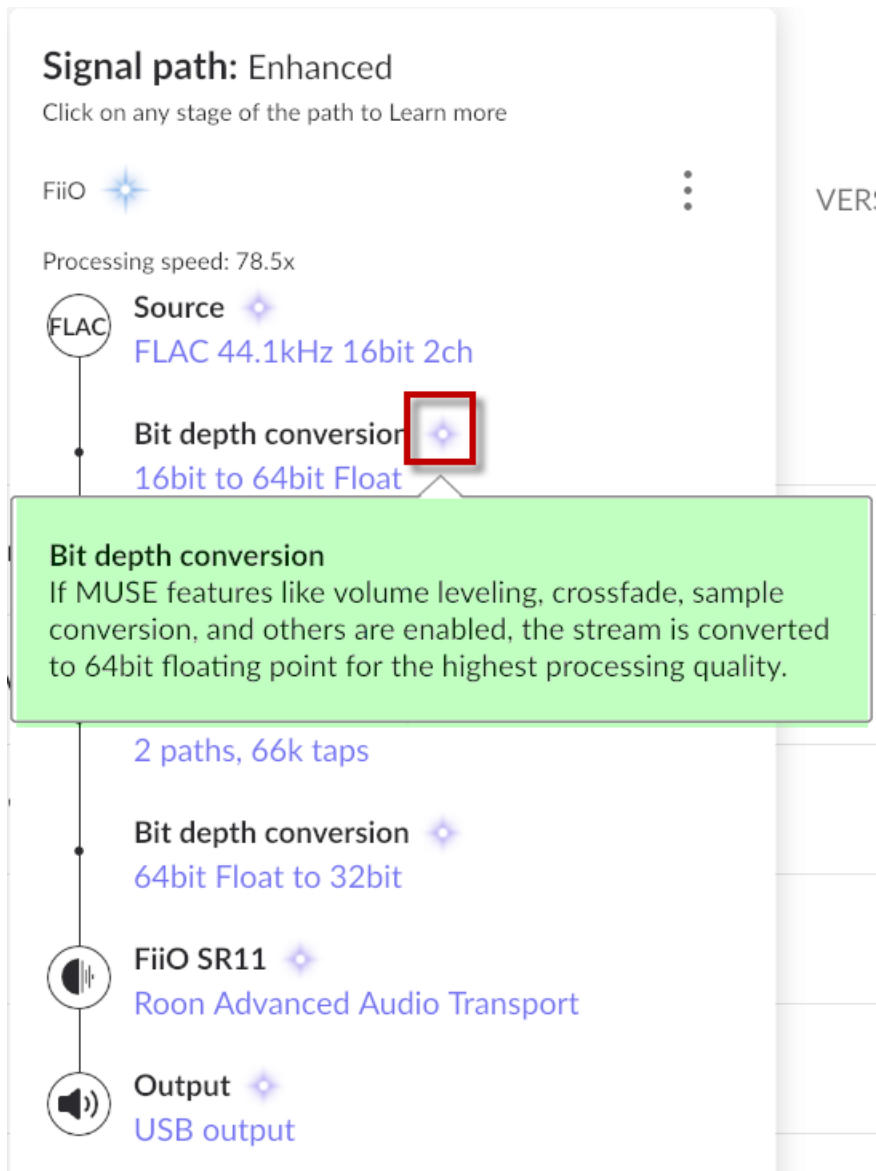
Your Convolution Filter is making 65536 Taps. This is enough for sampling frequencies of 44.1kHz and 48KHz. A higher sampling frequency like 384kHz will require 524,288 taps to truly reflect your corrections.

Click on each Starburst Icon to learn more about each chain in your Signal Path.

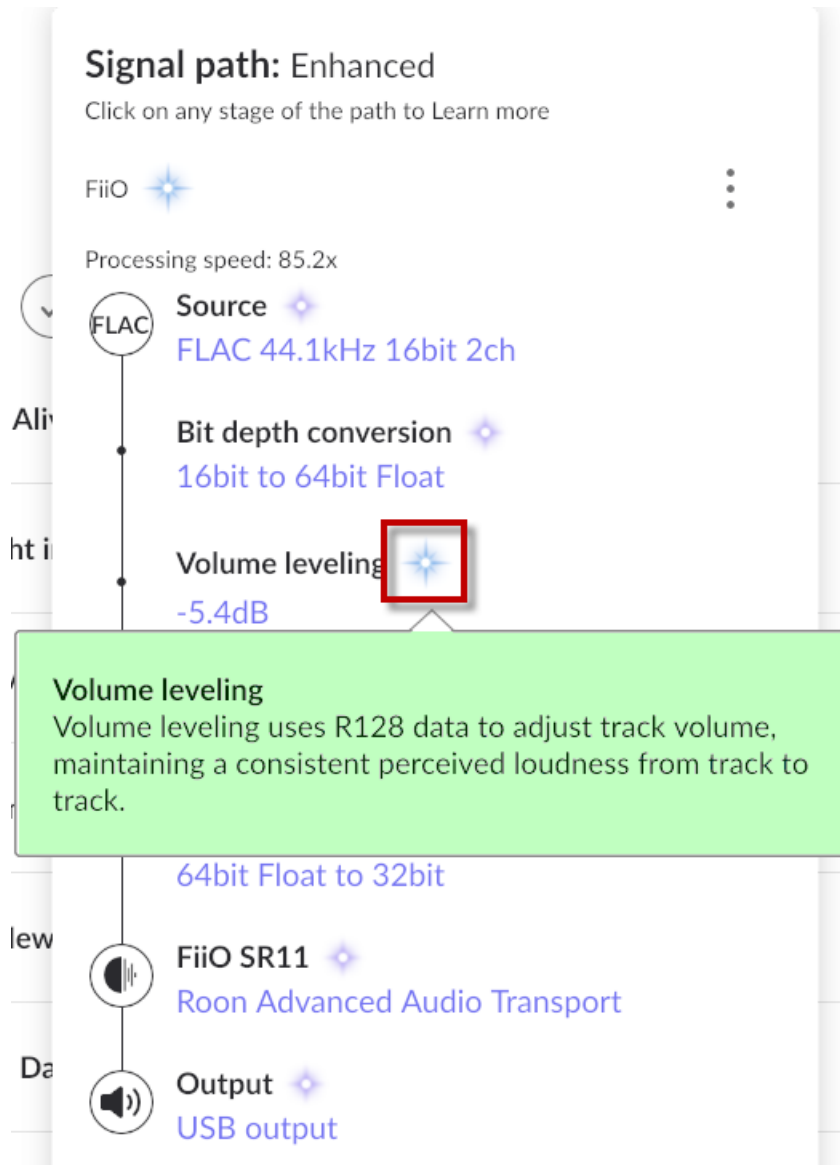
Source:

The screenshot displays the 'Signal path: Enhanced' interface in ROON. At the top, it says 'Click on any stage of the path to Learn more'. Below this, the 'FiiO' stage is visible. The 'Processing speed' is indicated as 70.2x. The 'Source' stage is highlighted with a red box and a starburst icon. A green tooltip box is overlaid on the 'Source' stage, containing the following text: 'Source Describes the file or streaming format, sample rate, bit-depth, and channel count of the source media.' Below the 'Source' stage, the signal path continues through 'Volume leveling' (-5.4dB), 'Convolution filter' (2 paths, 66k taps), 'Bit depth conversion' (64bit Float to 32bit), 'FiiO SR11' (Roon Advanced Audio Transport), and finally 'Output' (USB output). Each stage has a starburst icon for more information.

Bit depth conversion:




## Volume leveling:



## Convolution Filter:

### Signal path: Enhanced

Click on any stage of the path to Learn more

FiiO 



Processing speed: 86.2x

FLAC

Source 

FLAC 44.1kHz 16bit 2ch

Bit depth conversion 

16bit to 64bit Float

Volume leveling 

-5.4dB

Convolution filter 

2 paths, 66k taps

#### Convolution filter

The audio stream is being convolved with a filter.



FiiO SR11 

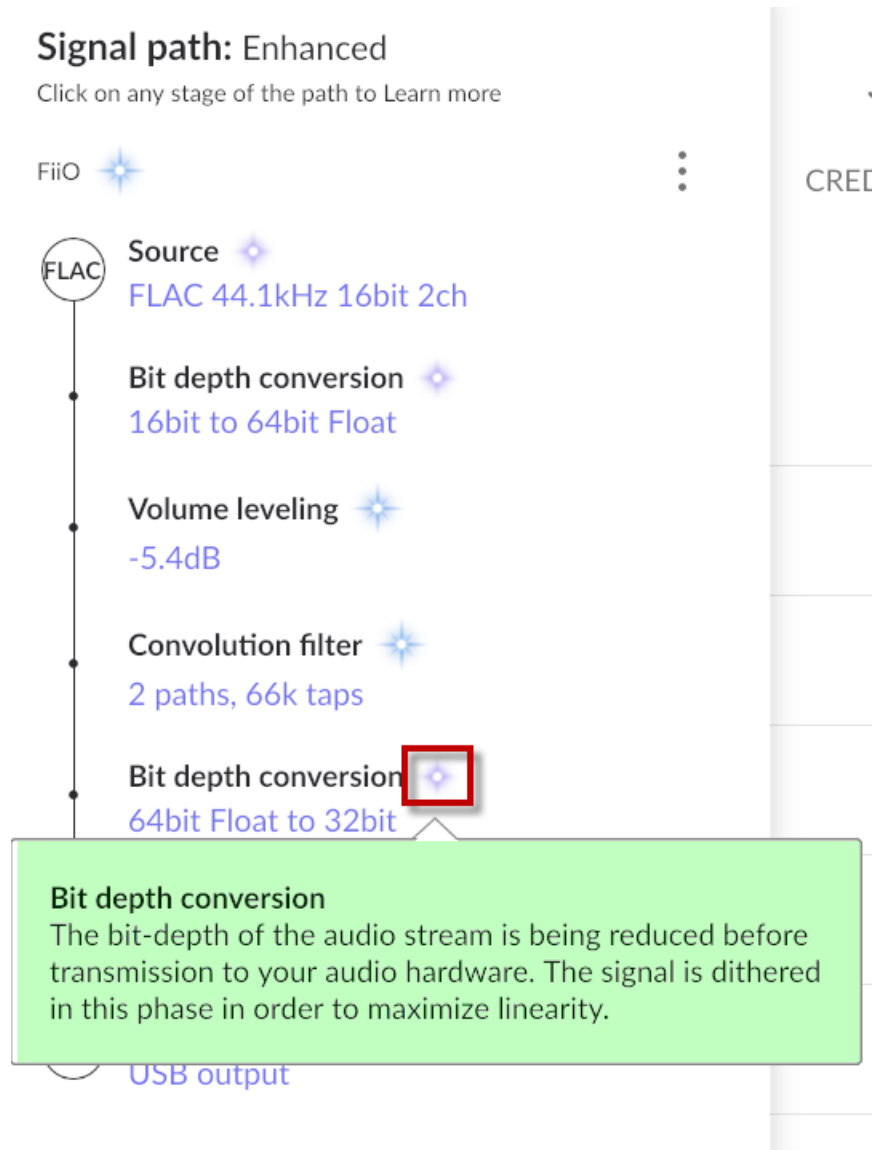
Roon Advanced Audio Transport



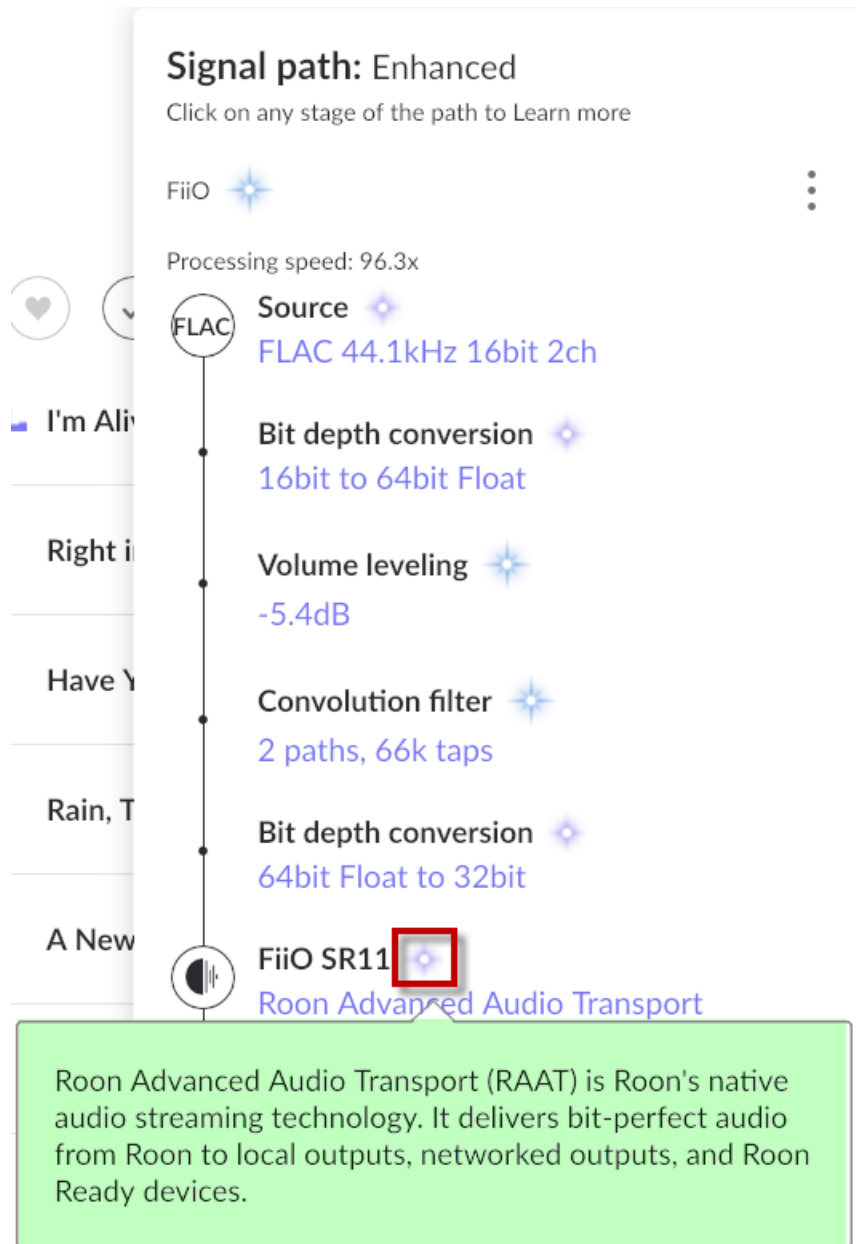
Output 

USB output

## Bit depth conversion after Convolution filtering:



## FiiO SR11 Music Streamer:



**Signal path: Enhanced**  
Click on any stage of the path to Learn more

FiiO

Processing speed: 96.3x

- Source  
FLAC 44.1kHz 16bit 2ch
- Bit depth conversion  
16bit to 64bit Float
- Volume leveling  
-5.4dB
- Convolution filter  
2 paths, 66k taps
- Bit depth conversion  
64bit Float to 32bit
- FiiO SR11  
Roon Advanced Audio Transport

Roon Advanced Audio Transport (RAAT) is Roon's native audio streaming technology. It delivers bit-perfect audio from Roon to local outputs, networked outputs, and Roon Ready devices.

Output:

**Signal path: Enhanced**  
Click on any stage of the path to Learn more

FiiO

Processing speed: 92.4x

Source  
FLAC 44.1kHz 16bit 2ch

Bit depth conversion  
16bit to 64bit Float

Volume leveling  
-5.4dB

Convolution filter  
2 paths, 66k taps

Bit depth conversion  
64bit Float to 32bit

FiiO SR11  
Roon Advanced Audio Transport

Output  
USB output

**Output**  
Describes the hardware and streaming technology that is used to render the audio stream

In the next article you will learn how to verify the Measurements in REW.