

Euphonia3

Manual



TBProAudio 2022

1 Introduction

During the development of many audio software-projects we analyzed around 100.000+ music titles from all ages and genres. We listened to songs mixed and mastered by the best engineers around the world. And we found out (at least for POP/ROCK, DANCE and JAZZ songs) that most of them are following *similar spectrum curves*. This spectrum curves have some important advantages:

- They translate very well on 99.9% of listening environments (e.g. Hifi, MP3 player, mobile/smart-phones, car audio, cheap PC sound system)
- They seem to complement very well with existing listening experience and the ear response curve (ISO 226, Fletcher Munson)
- And finally every instrument, every voice, even every subtle event is audible and present in a very pleasant way

In a next step we created average spectrum curves from thousands well mastered POP/ROCK, DANCE, JAZZ and EDM (Electronic Dance Music) songs. Then we adjusted randomly picked songs (which obviously differed from the above mentioned curves) to this curves with a simple equalizer. After many days of careful A/B comparison on different audio systems we found that most of the songs gained more clearness, had less "boominess", more air etc.

You can easily follow our findings by loading your favorite music titles into any frequency analyzer.

We decided to develop a tool (DAW plugin) that does the job as described above automatically: the idea to **Euphonia** was born.

So, **Euphonia3** is an optimal audio spectrum balancing plugin which equalizes automatically any audio input based on a few standard average spectrum curves.

Euphonia3 is the successor of **Euphonia V1**, now with complete rewritten DSP code and more control over the spectrum balancing process.

2 How it works

Euphonia should be inserted as first plugin into the master bus of your DAW. During the "capture" - phase the audio signal is analyzed and continuously stored (audio fingerprint). After finishing the capturing phase a filter curve is calculated based on the audio fingerprint and the build-in average Pop(/Rock)/Dance/Jazz/EDM/Custom spectrum curves. The filtering is done in a very gentle way; it **does not harm the tonal information** but **adjusts the overall spectrum balance**. It also tries to keep the overall loudness.

Besides using the standard reference curves you are able to create your own reference curves from well mastered songs, and use it as custom curves.

3 Features

Euphonia offers following features:

- 4 standard spectrum curves (Pop, Dance, Jazz and EDM)
- Custom spectrum curves
- IIR and Linear Phase filter design
- Freely mix between original and processed signal
- Adjustable output gain
- Gain matching
- Support of WAV and AIFF files
- 64-bit internal processing
- Very efficient CPU usage design
- GUI Scaling

4 Minimum System Requirements

- Windows 7, OpenGL 2 GFX card
- Mac OS X 10.11, Metal GFX card
- SSE2 CPU
- Win: 32/64 Bit VST, 32/64 Bit VST3, 32/64 Bit AAX
- OS X: 64 Bit VST, 64 Bit VST3, 64 Bit AU, 64 Bit AAX
- Tested with: Cockos Reaper, Steinberg Cubase/Nuendo/Wavelab 6+, FL Studio 12+, PT2018+, Reason 9.5+, Studio One, Ableton Live
- For latest information please visit www.tbproaudio.de

5 Plugin Controls

5.1 Capture/Idle/Process



The 3 buttons control the state of the plugin:

- In "capture" state (left button) incoming audio is analyzed and the audio fingerprint is continuously stored internally. The small LED above the "capture" knob indicates if **Euphonia** has already a fingerprint available (red=NO, green=YES)
- "idle" (middle button) stops the capturing of audio. In this state **Euphonia** bypasses the audio signal.
- In "process" state (right button) audio is processed based on the fingerprint and the selected spectrum curves.

Switching from "process/idle" to "capture" state removes current audio-fingerprint

5.2 Tuning



"Tuning" knob selects the style of the build-in spectrum curves: Pop, Dance, Jazz and EDM:

- Pop: general purpose setting, which complies to most of the music in the Pop/Rock style
- Dance: this style focus more on the low end, for genres like Dance, electronic (dance) music
- Jazz: similar style to Pop but with less focus on the high end, like Jazz, Blues
- EDM: similar style to Dance, but with much more focus on low end, and much less focus on high end
- Custom: uses custom reference spectrum curve

This knob is only relevant during "processing" - state.

5.3 A/D

"A/D" - button switches between analog and digital filtering. Yellow LED means digital filter mode. This button is only relevant during "processing" - state.

Please to note, that digital filtering creates a plugin delay (Linear-Phase Filter). Please refer to your DAW manual if and how the delay is compensated (e.g. PDC).

5.4 Mix

The mix control balances between dry and wet signal. At some cases (e.g. audio sounds over-processed), a balance between wet and dry can reduce the filter effect.

5.5 Gain and Gain Match



The gain control adjusts the output volume. The small LED above the process knob indicates signal clipping (> 0.0 dBFS).

In "process" state the plugin shows constantly the maximum peak value of the output signal.

In order to avoid clipping or distortion artifacts the gain should be adjusted to a level < 0.0 dBFS. The "match" button matches the gain value to 0.0 dBFS maximum peak value.

E.g. gain value is 0.0 dB, maximum peak value is $+2.5$ dBFS. Pressing now the "match" button sets the gain value to -2.5 dB. Next run should show then 0.0 dBFS maximum peak value. *Please note that Euphonia clips the signal at 0 dBFS in "process" state to avoid signal overload.*

5.6 Load/Save



5.6.1 Load/Save FP

Loads/Saves **Euphonia** audio fingerprint files.

"Save FP" stores the current audio fingerprint as eph file.

"Load FP" loads either an eph file or wav/aiff audio file as internal audio fingerprint.

Please note that fingerprints of **Euphonia V1** are not compatible with **Euphonia V2/3**.

5.6.2 Load/Save Ref

Loads/Saves **Euphonia** reference curve files.

"Save Ref" stores the current audio fingerprint as ref file.

"Load Ref" loads either a ref file or wav/aiff audio files as custom reference.

Please note that fingerprints of **Euphonia V1** are not compatible with **Euphonia V2/3**.

5.6.3 Plugin info menu



Opens plugin info menu. It provides more information about the plugin, online, version check, opens the online manual and online change-log.

6 When to use

Euphonia is mainly used after the final mix, as plugin in mastering stage, usually before using "sounding" equalizers, compressors and the limiter.

It could also be used with existing, already mastered material, just to hear the difference. In many cases you will notice an audible improvement, even with commercially released music. **Euphonia** could also point out mistakes in the mix or even in the listening environment.

7 How to use

As mentioned **Euphonia** should be your first plugin in your mastering chain:

1. At first let the audio material completely run through **Euphonia** with "capture" state enabled. You can do it in "real-time" as the DAW plays or you can use the offline rendering function of your DAW. As soon as the audio is played or rendered, just switch to "idle"-state, this stops the capturing. Now the audio fingerprint is stored in the plugin (and of course saved with the project file)
2. Now switch to "process" - state and start playing the audio material again. The sound of the processed audio can be changed with the "tuning" and "mix" knob.

Please use the style which fits to your audio material! Have also a look at our web site. You will find video and audio material which explains the functionality of **Euphonia** much more in detail.

Note to usage of audio finger prints:

Creation of audio finger print: select the "capture" mode and start playback of our DAW. As soon the LED above the "capture" button lights green **Euphonia** has enough data. Usually you capture the full audio to get the complete frequency range. The audio finger print can be stored as eph file (finger print) to disk for later usage

Usage of audio finger print: either load a stored eph file or open any wav/aiff file. **Euphonia** converts it internally to an audio finger print.

Note to usage of custom reference curves:

Creation of custom reference curves: existing audio finger print (either captured or loaded) could be stored to disk as custom reference curve (ref file).

Usage of custom reference curves: either load a stored ref file or open any wav/aiff file. **Euphonia** converts it internally to a custom reference curve. Please make sure that the tuning mode "custom" is selected.

8 Why dos Euphonia not provided a complete mastering toolset?

Euphonia changes your audio material to a "neutral" sound. Later in the mastering process you may want to use your favorite "coloring" equalizer/compressor/limiter to shape your final sound. So **Euphonia** does not want to compete with this tool chain.

9 Demo mode versus Registered Mode

In demo mode (without activation) the plug-in mutes audio every 90 seconds for a short period. This could be circumvented by clicking on the "TBProAudio" logo within 90 seconds.

10 Plugin activation

The plugins needs to be registered/activated to remove demo restrictions. Please go to  www.tb-proaudio.de to purchase the activation key. After purchase you will receive an email from TBProAudio with either the (zipped) activation key file or the activation key in text form. Go to the plugin menu->Activate plugin. Please follow the steps described here: <https://www.tbproaudio.de/support/productactivation>. After successful activation the key symbol shown in the GUI appears in golden colour.

11 Conclusion

Euphonia can help starters and semi-professionals to get much quicker a well balanced mix/master, which translates fairly well on most audio systems. Of course, **Euphonia** does not fix mixing mistakes or even does not create any Nr 1 hit. But it supports you to find the right spectrum balance with the help of a reasonable listening environment and your ears (of course).

So finally if you have any questions or suggestions just let us know. And have fun with our tools.

Your team from TBProAudio :-)