

Euphonia

Manual



by tb-software 2014

1 Introduction

During the development of many audio projects (e.g. "Toscanalyzer", www.toscanalyzer.org) we analyzed around 100.000+ music titles from all ages and genres. We have heard 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 differ from the above mentioned curves) to these 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 "Toscanalyzer" and run the (spectrum -) aggregation.

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

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

2 How it works

Euphonia should be inserted as first plugin into the master bus of your DAW. During "capture" - phase incoming audio 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.

Beside using the standard reference curves you are able to create your own reference curves from well mastered songs, and use it as custom curves [V1.5+].

3 Minimum System Requirements

- Windows XP or newer
- Mac OS X 10.5 or newer
- Win: 32/64 Bit VST, 32/64 Bit VST3, 32 Bit RTAS, 32/64 Bit AAX
- OS X: 32/64 Bit VST, 32/64 Bit VST3, 32/64 Bit AU, 32 Bit RTAS, 32/64 Bit AAX
- Tested with: Cockos Reaper, Steinberg Cubase/Nuendo/Wavelab 6
- Works optimal in 44.1/48kHz sample rate environments

4 Plugin Controls

4.1 Capture/Stop/Process



The 3 buttons control the state of the plugin:

- In "capture" state incoming audio is analyzed and the audio fingerprint is continuously stored internally
- "stop" stops capturing of audio
- In "process" state the audio is processed based on the fingerprint and the build-in spectrum curves.

Switching from "process" to "capture" state removes previous audio-fingerprint

4.2 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, so the style can be changed flawlessly during "processing" - state.



4.3 A/B



"A/B" - button switches between processed and unprocessed signal. Lighted button means "A" or processed.

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

4.4 A/D



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

Please to note, that digital filtering creates a plugin delay of 32.768 samples (FFT-Filter).

Please refer to your DAW manual if and how the delay is compensated (e.g. PDC).

4.5 Load/Save



4.5.1 Load/Save FP

Loads/Saves **Euphonia** audio fingerprint files (*.eph).

"Save" stores the current audio fingerprint gathered in "capture" state as Euphonia fingerprint file.

"Load" fills the internal "capture" buffer with data from Euphonia fingerprint file. Please make sure that the fingerprint file matches with the audio to be processed.

Storing the current audio fingerprint could be useful, if you need to switch from one DAW to another or even from Windows to Mac OS X or visa versa.

4.5.2 Load/Save Ref

Loads/Saves **Euphonia** reference curve files (*.ref).

"Save" stores the current audio fingerprint gathered in "capture" state as Euphonia reference file. This file can be used as custom reference curve ("Load Ref").

5 Demo mode versus Registered mode

In demo mode (without registering) the capturing of audio is stopped after 90 sec. You can still restart capturing, but data already captured is then deleted. All other functions work in normal mode.

You can register at <http://www.tb-software.com/tbproaudio>.

6 When to use

Euphonia is mainly used after the final mix, as first audio shaping tool 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. So in a first step 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. The audio is played or rendered, just switch the "stop"-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" knob.

It could be very wise to use a style which fits to your audio material!!

Please have also a look at our web site. You will find video and audio material which explains the functionality for **Euphonia** much more in detail.

Note to custom reference curves:

Reference file creation: insert your reference audio file into an audio track of your DAW. Use Euphonia as the only plugin. Switch to "capture" state and let the audio file run fully through Euphonia. Then switch to "stop" state and press "Save Ref" button.

Your custom reference curve should be created from well mastered audio file, and should not clip or distort during normal playback (all fader at 0 dBFS, no plugins).

Reference file usage: Start with first step as described above (How to use). Before switching to "process" state load your reference file and select "custom" style. Now switch to processing state and let your audio run.

8 Why does Euphonia not provide a complete mastering toolset?

Well, **Euphonia** changes your audio material to "neutral" sound. Later in the mastering process you may want to use your favorite "coloring" equalizer/compressor/limiter to shape your final sound. So we do not want to compete with this tool chain :-)

9 Conclusion

Euphonia can help starters and semi-professionals to get much quicker a well balanced mix/master, which translates fairly good 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 :-)