Signal Noise SN04/SN04-G

Channel EQ

INSTALLATION

The package should contain the following files:

SN04 Channel EQ.dll	– 32bit GUI-less version
SN04G Channel EQ.dll	– 32bit version with GUI
SN04 Channel EQ x64.dll	– 64bit GUI-less version
SN04G Channel EQ x64.dll	– 64bit version with GUI
sn04g_manual.pdf	– manual (this file)

To install the plug-in, copy the DLL files of the version(s) you wish to use to the respective VST plug-in folders. Tested with Cubase 5.1 (32-bit) and Cakewalk 2019 (64-bit).

CREDITS

SN04-G uses biquad algorithms by Robert Bristow-Johnson as found in "*Cookbook formulae for audio EQ biquad filter coefficients*", 2005 [1], and also parts of original code of white noise PRNG by Andrew Simper, 2006, which is based on algorithms by Allan Herriman, James McCartney, Phil Burk, Paul Kellet and Robin Whittle [2]. Plots in this manual were generated with VST Plugin Analyser by Christian-W. Budde [3].

DISCLAIMER

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This software is provided 'as-is', without any express or implied warranty. In no event will the author be held liable for any damages arising from the use of this software.

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[1] https://www.musicdsp.org/en/latest/Filters/197-rbj-audio-eq-cookbook.html

[2] http://www.firstpr.com.au/dsp/pink-noise/

[3] http://www.pcjv.de/applications/measurement-programs/

DESCRIPTION

SN04-G is a hybrid character 3-band channel EQ plug-in with basic surgical capabilities. It features a LP/HP section, adjustable output volume and phase, and optional "analog modeling". It's designed with ASIO/CPU footprint that allows it to live across all channels of a project without taking away as much of the resources as an insert slot - well, almost – it has to do some processing, after all :D.

High frequency: +/-18dB shelf or bell filter with variable bandwidth and selectable frequencies of 1.1kHz, 2.2kHz, 3.9kHz, 5.8kHz, 8.2kHz, 10kHz, and 12kHz.

Mid frequency: +/-18dB bell filter with variable bandwidth and selectable frequencies of 0.22kHz, 0.36kHz, 0.7kHz, 1.6kHz, 3.2kHz, 4.8kHz, and 7.2kHz.

Low frequency: +/-18dB shelf or bell filter with variable bandwidth and selectable frequencies of 35Hz, 45Hz, 60Hz, 110Hz, 220Hz, 300Hz, and 400Hz.

High pass filter: 6, 12, 18, and 24dB per octave slope, with frequencies switchable between 15Hz, 45Hz, 70Hz, 160Hz, and 360Hz.

Low pass filter: 6dB, 12dB, 18dB, and 24dB per octave slopes, with frequencies switchable between 18kHz, 14kHz, 10kHz, 8kHz, and 6kHz.

Output: Final +/- 25dB trim or gain with switchable phase invert at output.

BELL FILTERS

The concentric knob on the left: Use outer knob to select the desired frequency (in steps). Use inner knob to dial in the amount of dB for boost or cut (smooth). Standard operation (left mouse drag) increases/decreases the value by 1dB. Holding the Shift key changes the steps to 0.1 dB. You can also insert the amount of boost and cut directly into the text field next to the knob.

Skirted knob on the right: Use this knob to set the bandwidth (inverse Q). This knob's operation mode depends on the setting of the switch below it. Please note that the knob has a range +/-20 'ticks', which are just arbitrary numbers – their real values depend on BW switch below, filter's gain, and also selected frequency. Best way to think about it is that you can dial in a min/max deviation from the plug-in's default ("hand-tuned") bandwidth. Standard operation (left mouse drag) increases/decreases the value by 1dB. Holding the Shift key changes the steps to 0.1 dB. You can insert the value of this knob directly via the text field next to the knob.

BW switch: This switch defines the overall behavior of the filter as follows (for details, please see the plots in Appendix):

Mode A: This mode has a symmetrical boost/cut response, but the actual bandwidth depends on gain and frequency. The more you boost or cut, and the higher the frequency you select, the narrower the peak gets. You may know this behavior from many acclaimed outboard EQs as "proportional Q".

Mode B: The same as Mode A but it introduces an asymmetric boost/cut response with the cut being much more narrow as the boost. Again, it's a behavior known from many famous console EQs and it's designed for basic surgical EQ tasks.

Small turquoise led: Indicates whether the section is on or off. To turn the section off, select 'OFF' on the frequency knob. Clicking this led mutes the filter section (led starts to blink), which allows fast A/B testing.

SHELF FILTERS

The concentric knob on the left: Use outer knob to select the desired frequency (in steps). Use inner knob to dial in the amount of dB for boost or cut (smooth). Standard operation (left mouse drag) increases/decreases the value by 1dB. Holding the Shift key changes the steps to 0.1 dB. You can also insert the amount of boost and cut directly into the text field next to the knob.

Skirted knob on the right: When *Bell button* is off (see below), this control has no effect (you can still operate it, but it's essentially bypassed). When *Bell button* is on, this control operates as described in chapter *Bell Filters*.

Bell button: Use this button to make the section operate as a bell filter (except for frequencies which are specific for each band, the operation is identical to that of the MF bell filter). When disengaged, which is the default state, the whole section operates as a shelf filter.

BW switch: When the bell button is on, this switch operates as described in previous chapter *Bell Filters*. When the section operates as shelf filter (*Bell button* is off), the overall behavior of the filter is as follows (for details, please see the plots in Appendix):

Mode A: Roughly mimics the frequency response of shelf filter of an American EQ. Although the differences between both modes are rather subtle, Mode A has wider and more open sound. You can think of it as a wide brush (as opposed to Mode B).

Mode B: This mode was inspired by the frequency response of a widely renown British EQ. It delivers a more focused frequency response than Mode A which helps with depth separation and is especially noticeable at higher gain settings.

Small turquoise led: Indicates whether the section is on or off. To turn the section off, select 'OFF' on the frequency knob. Clicking this led mutes the filter section (led starts to blink), which allows fast A/B testing.

HIGH PASS / LOW PASS

Concentric knob: Use outer knob to select high pass frequency. Use inner knob to select low pass frequency. To switch either section off, select 'OFF' on the respective knob.

Slope switches: Use these 4-way switches to select the slope of either HP (lower switch) or LP (upper switch).

Small turquoise leds: Indicate whether the sections are on or off. Clicking this led mutes the associated filter section (led starts to blink), which allows fast A/B testing.

OUTPUT

Skirted knob: Use this knob to set the overall output gain/trim of the EQ. Standard operation (left mouse drag) increases/decreases the value by 1dB. Holding the Shift key changes the steps to 0.1 dB. You can also insert the value directly into the text field next to the knob.

Phase invert: Use this button to invert the phase at the output.

Sample peak led: It lights up when the signal from EQ goes above 0dBFS.

"ANALOG MODELING"

Engage this button if you wish to add some overall "analog character" to the EQ (which is but a little bit of noise at -117dBFS and a slight high cut - see Appendix).
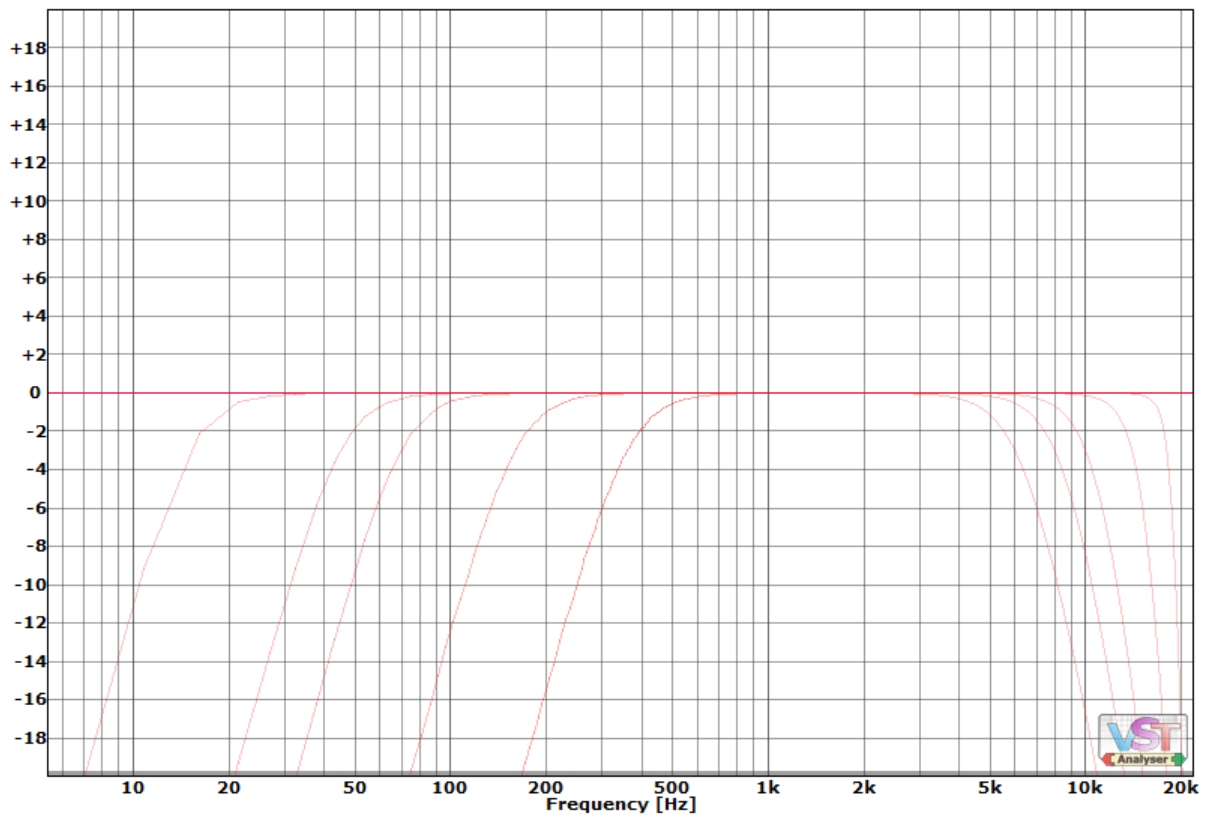
APPENDIX (all plots were captured @ F_s = 44.1kHz)
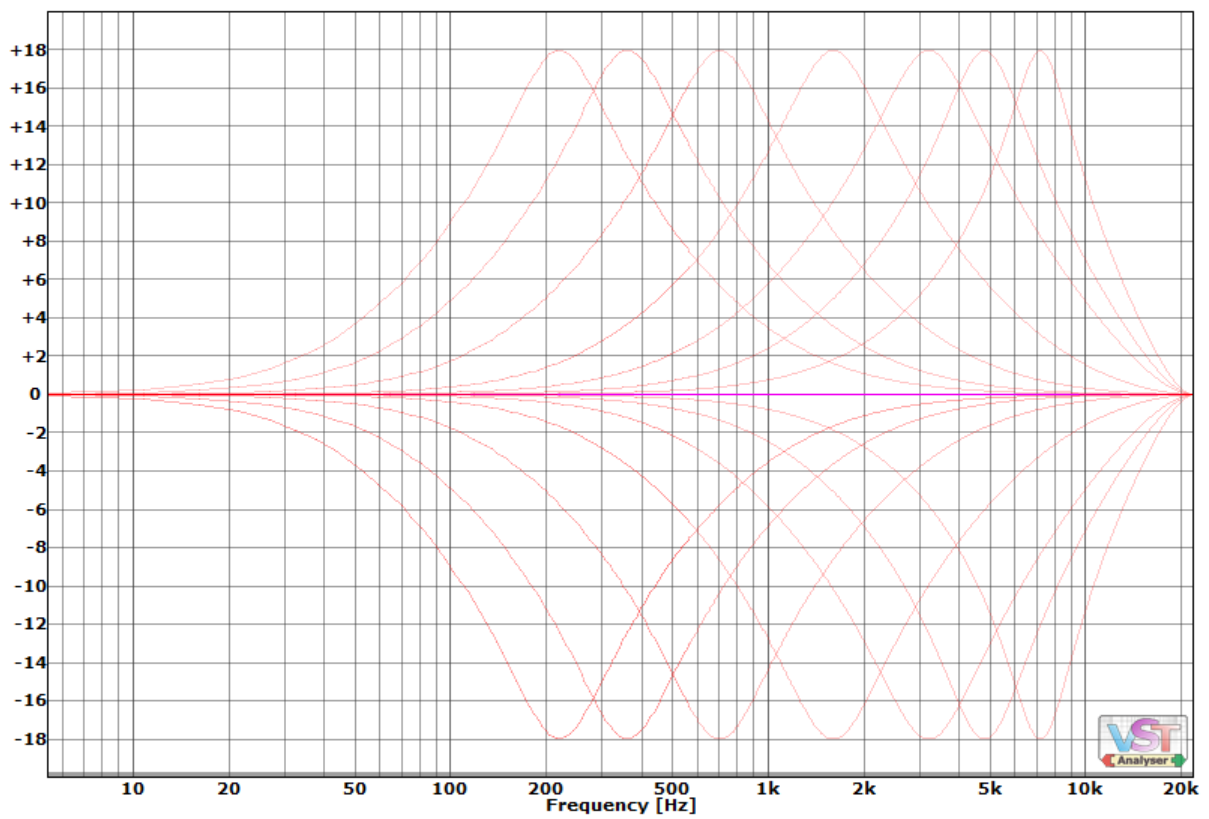

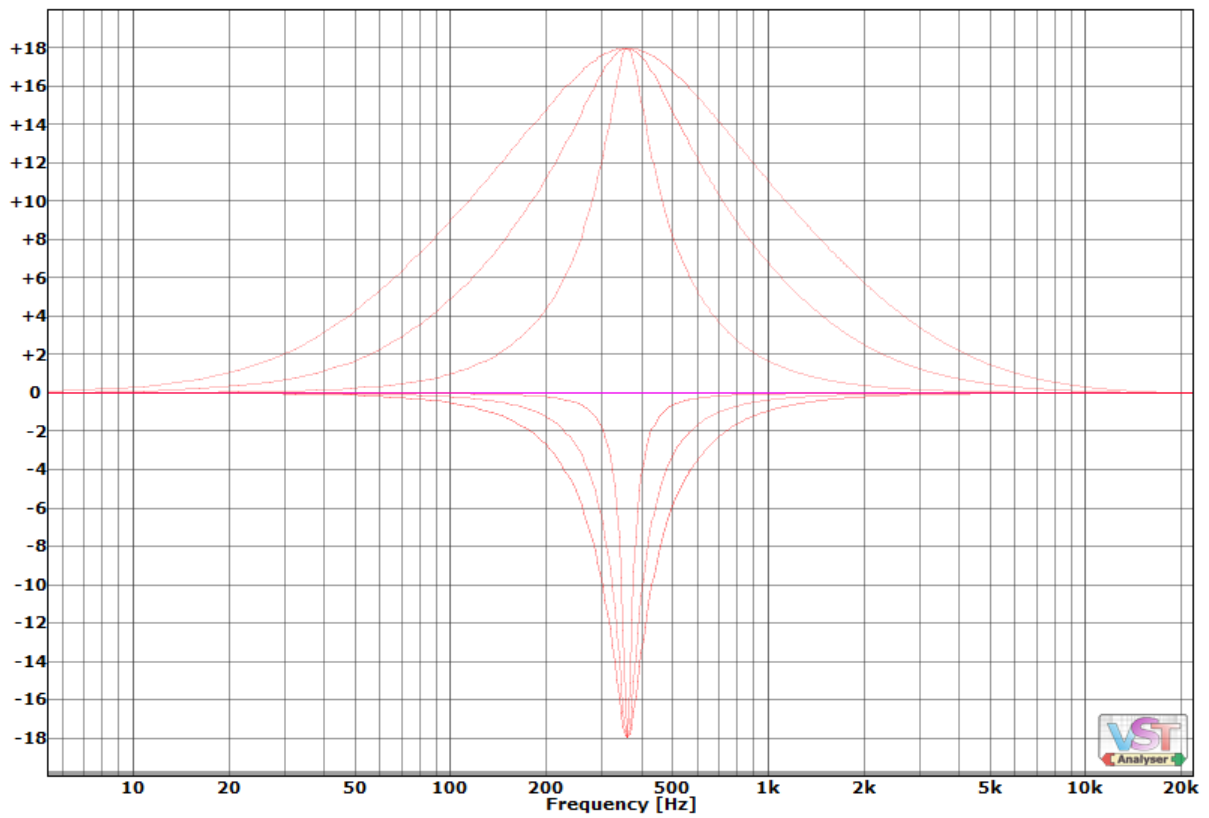
"Analog modeling" frequency response.

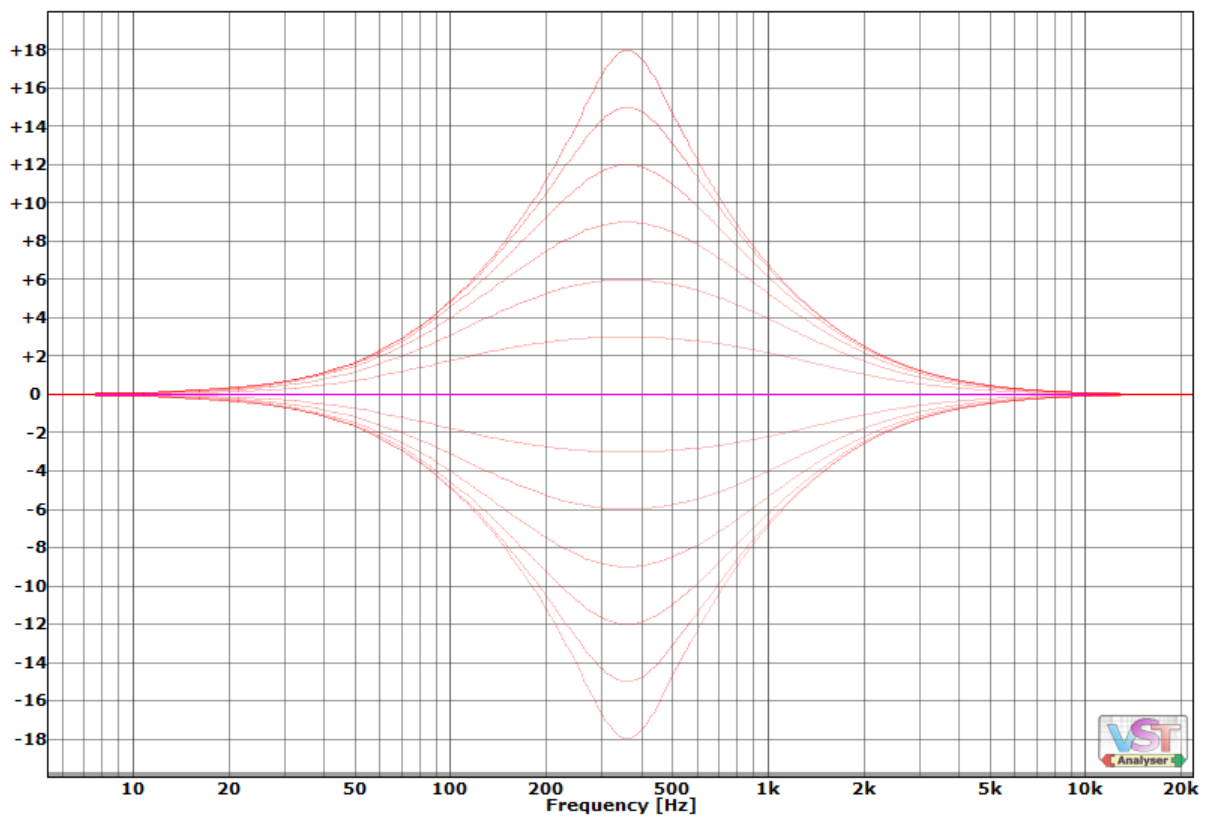High pass/low pass slopes @ 70Hz and 6kHz respectively.

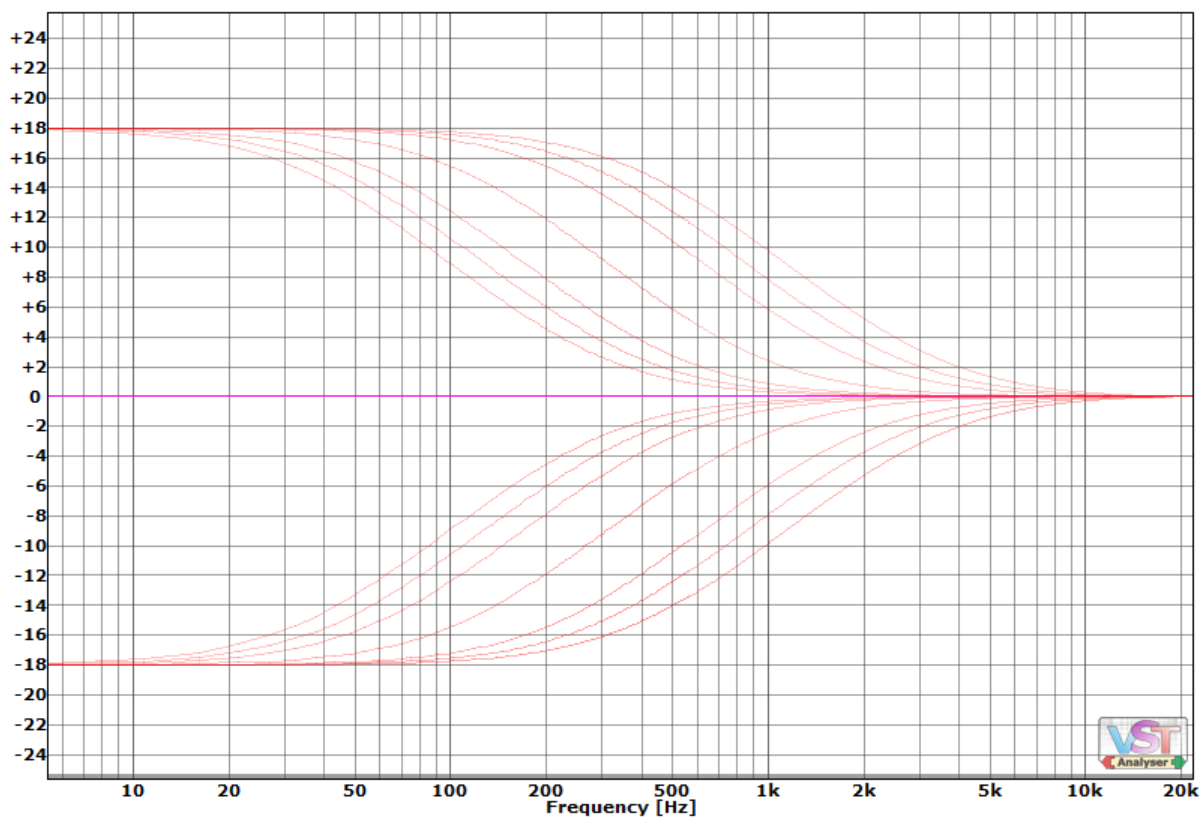High pass/low pass ranges with slope @ 18dB per octave.
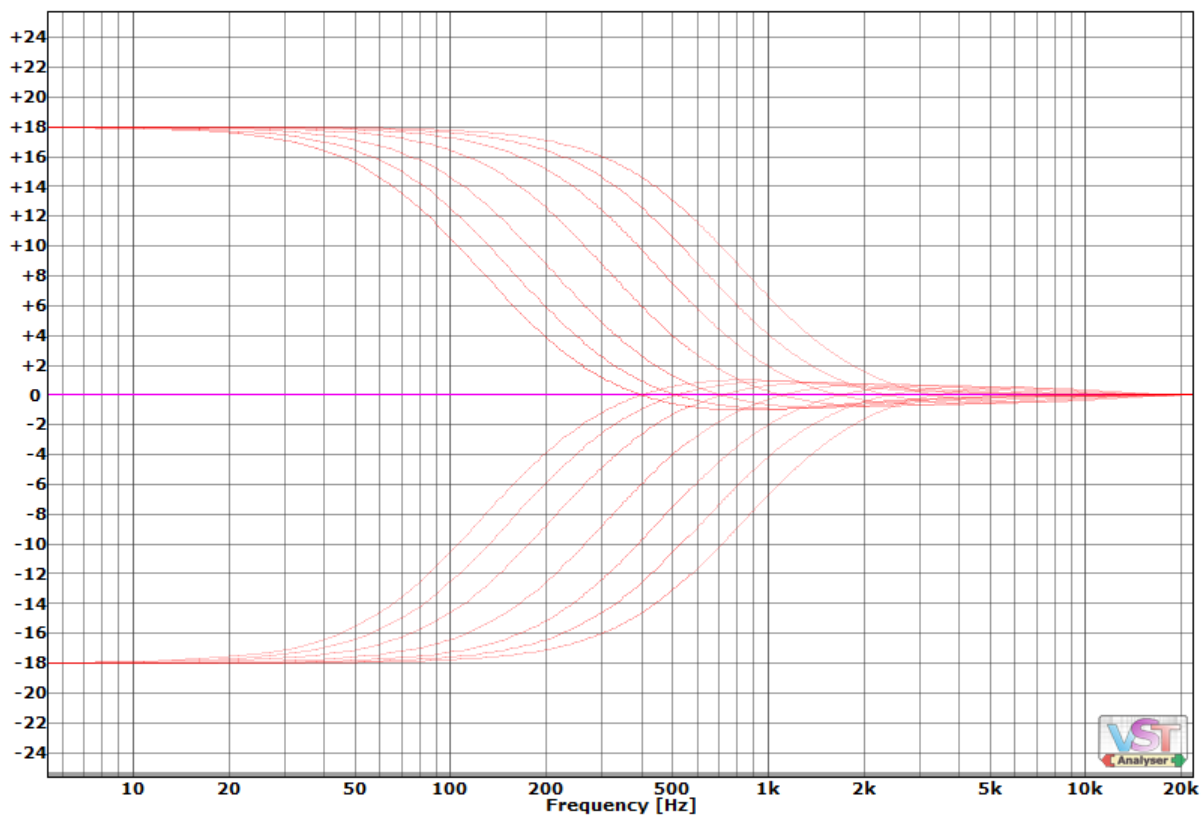

MF bell filters, - Mode A, default bandwidth.

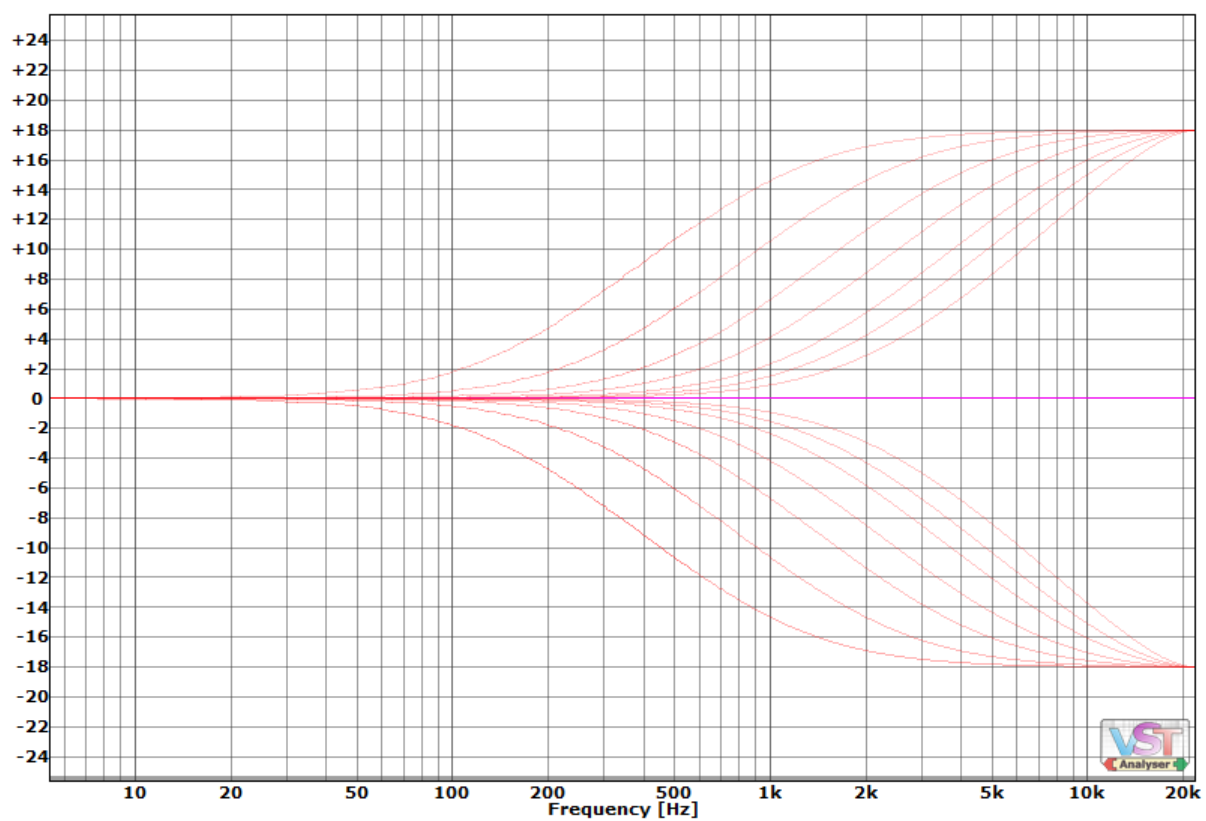Bell filter asymmetric bandwidth ranges – Mode B @ 360Hz (-20, 0, +20).

Bell filter "proportional Q" - Mode A, default bandwidth @ 360Hz.
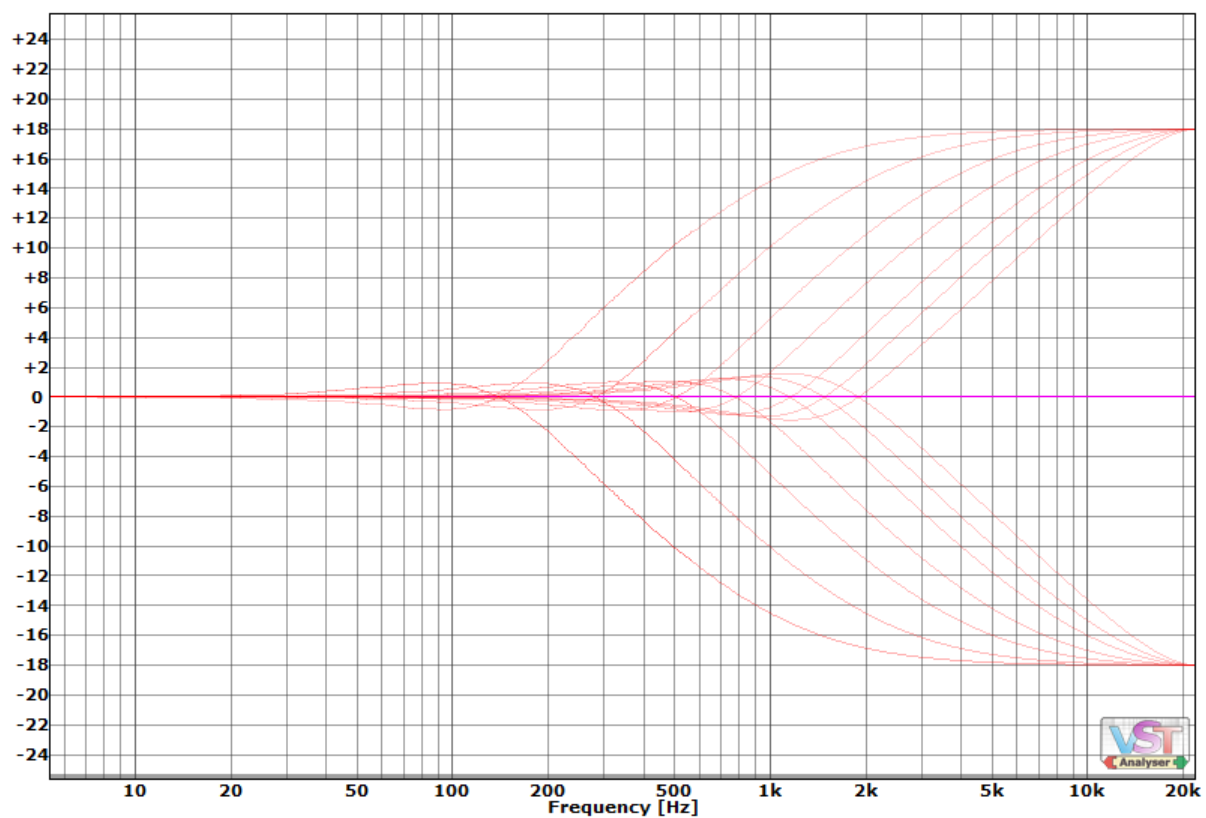
LF shelf filter – Mode A.

LF shelf filter – Mode B.

HF shelf filter – Mode A.

HF shelf filter – Mode B.