

D.W. FEARN 

 **ACUSTICA**

RUBY



VT-5 Stereo Vacuum Tube LC Equalizer

Operating Instructions

D.W. FEARN 

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Introduction

RUBY is a VST/AAX/AU plug-in which faithfully replicates the operational mode and classy sonic imprint of the highly prized VT-5 vacuum-tube equalizer built by D.W. Fearn. The VT-5 has been lovingly conceived, perfected, designed and finally produced by D.W. Fearn as a result of his long-standing experience as a recording engineer/audio designer who's used to working with the best existing audio processors.



Over the years D.W. Fearn has come to know the sound he's after like the back of his hand: because of this, the task of producing a convincing digital replica of his processors has proven to be an impossible mission for a long time. Several past attempts have been discarded by the man himself, just because he felt there was something lacking in the various proposed digital emulations, so much that he didn't feel confident enough as to put his brand name (and his credibility) on those half-baked efforts.

It took Acustica Audio's proprietary sampling technology to finally succeed in the difficult task of appeasing D.W. Fearn; only RUBY could convince him to release a digital replica of his stellar equalizer in a plug-in format with his name on it. Granted, real analog hardware has still a slight edge over digital, but as far as software emulation, we at AA (and Mr. Fearn, for that matter) strongly believe that RUBY is simply today's state-of-the-art.

SAMPLING PROCESS

The sampling process has been performed by Acustica. The unit was sampled with mastering quality converters, using a method which takes considerably more time than the normal sampling standard.

This method is of benefit to the entire audio spectrum. Two sample rates are provided with RUBY; the native sample frequency was 96kHz. The 44.1kHz frequency was derived from the native one by a downsampling and upsampling process. This method avoids any negative sample rate conversion (SRC) artifacts when matching project different sample rates and also helps in project loading times.

SYSTEM REQUIREMENTS

	Windows		OSX	
	Minimum	Recommended	Minimum	Recommended
Operating System	Windows 7	Windows 10	OSX 10.8	OSX 10.13
CPU	Quad Core	Latest multicore CPU(1)	Quad Core	Latest multicore CPU(1)
RAM	4 GB	16 GB to 128 GB	4 GB	16 GB to 128 GB
HDD/SDD	4000 MB	4000 MB	4000 MB	4000 MB
Screen Resolution	1024x768 (XGA)	1920x1080 (HDTV)	1024x768 (XGA)	1920x1080 (HDTV)
Audio Host	VST2 / AAX 32 bits	VST2 / AAX 64 bits	VST2/AAX/AU 32 bits	VST2/AAX/AU 64 bits

(1) Intel i7 or Intel i9 generation 4 or 8 or newer is recommended.

Acustica reserves the right to change these specifications without notice in any time.

Core 11 represents a significant upgrade of the already revolutionary Acustica technology.

It's not only an engine optimization which improves the performance of every Acqua Effects plug-in, but also a completion of all the features already supported in CORE X with the addition of a number of substantial innovations:

- introduction of new Delay and Pre-delay modules;
- client/server architecture supported also in Acqua plug-ins;
- implementation of High Efficiency Symmetric & Asymmetric Saturation Modeling (SASM), a new high performance saturation algorithm/harmonic distortion modeling characterized by a significantly smaller number of digital artifacts.

The History Behind The VT-5 Eq

by D.W. Fearn

Throughout my career in recording, there have always been a few equalizers that stood out as being exceptional. Among my favorites are the 1970s-era Neve 1073 input-strip eqs, and the Trident CB9066 parametric. I began my equalizer development project by first building a series of test circuits, using all the various tone-modification techniques. After listening to a wide variety of equalization circuits, it was obvious to me that the passive inductor-capacitor (LC) circuit was the one that sounded the most musical and natural to me.

In thinking about how I use equalization, I realized that having simultaneous boost and cut at the low and end frequencies was often very useful. For mid-frequencies, I found that I always cut, usually around 400 Hz, and never had any reason to boost in that range. If I were using a parametric equalizer, I invariably tended to use the low-Q (broadest) settings, and if I had a choice between shelving or peaking on the high and low end, I almost always preferred the shelving curve.

So the VT-5 was designed around those preferences -- low-Q curves, shelving, with simultaneous boost and cut, mid-range cut but not boost, and using passive LC circuitry.

The amplification stages would be vacuum tube, and since the VT-1/VT-2 mic preamps have had such a gratifying acceptance in the world of recording, it was important to preserve the same sonic characteristics that distinguished the preamps. I decided to try the 6N1P dual triode, and was pleasantly surprised to find that it is a wonderful-sounding tube, with many of the same sonic characteristics as the 6072A used in my preamps. The active tube circuitry fell into place with relatively little effort. Now it was time to make the equalization circuitry work the way I wanted.



To start, I used the filter design tables developed by Bell Labs in the 1930s. That got the project off the ground and it was starting to sound pretty good. For several months, I listened to a variety of music through a prototype equalizer while I was working on other things, and gradually narrowed-in on what sounded really good and what didn't. I would frequently have a box of capacitors and clip leads next to the prototype and often clipped-in a different value here or there and continued listening.

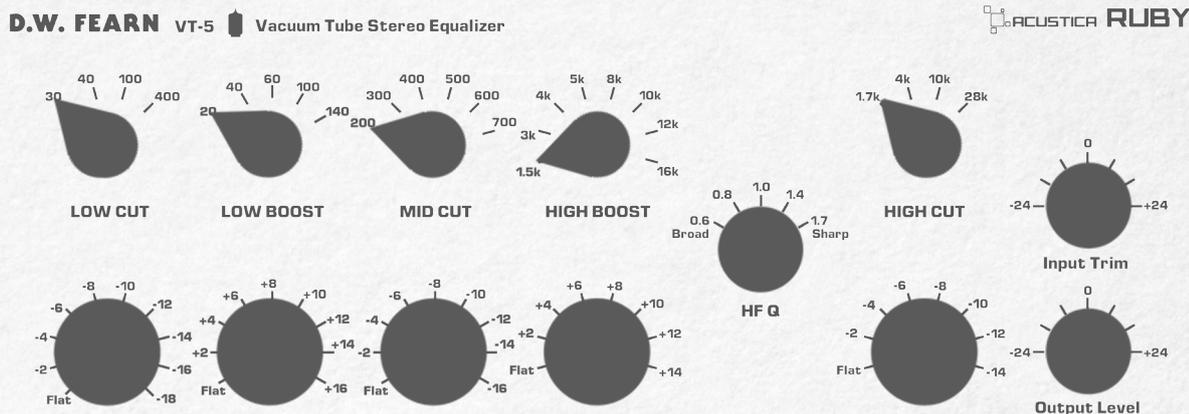
Eventually, the final frequencies, curves, control operation, etc. was determined. To this day, I have only a vague idea of what the actual curves look like. Equalizers, like all audio equipment, should please your ears, not your test equipment. My experience with Jensen Transformers Inc. was so positive that I knew from the beginning that I would utilize their products. The first couple of prototypes used inductors that I wound myself, but for production units more-consistent inductors would be necessary. Jensen agreed to manufacture the necessary inductors to my specifications, and the quality of the parts is astounding.

The VT-5 is not mass-produced. Each one is hand-made and meticulously tested and listened to before shipment to the customer. The philosophy behind the VT-5 is: use only the best components in an optimized circuit, and build it with pride and precision.



Operation

RUBY Aqua plug-in is designed to provide recording professionals with a sonically superior processing device. It is typically used in sound recording studios for modifying the frequency response characteristics of an individual track. RUBY is a true stereo device, with one set of controls that simultaneously adjust both channels.



The use of most controls on RUBY is self-explanatory. One feature to note is that controls may be used in any combination. For example, use of both the Low Cut and Low Boost controls at the same time can result in some extraordinary effects. This also applies to the High Boost and High Cut.

The Mid-Cut control has a relatively low Q at minimal attenuation settings. Thus, the band covered is quite broad. As the Mid Cut control is advanced, the Q becomes sharper and effects the selected frequency more narrowly. Low attenuation settings (-2 to -6) are effective for removing some of the “mid-range muddle” than can degrade a recording. The higher settings are useful to null-out an annoying resonance.

The High Cut control is useful for reducing noise. The highest frequency setting (28 kHz) is particularly useful for digital recording. Attenuation in this range may help avoid effects common with anti-aliasing filters in A-D converters.

The Input control allows processing of a wide range of input levels. Also, extreme amounts of boost could cause an excessive output level. Reducing the Input control setting may be helpful in this circumstance.

Like all audio processors, there is no right or wrong when using RUBY. Use your ears and select settings that achieve your sonic goal. But avoid boosting frequencies when there is no effect (such as boosting the extreme highs on a bass guitar), since doing so may only increase noise.

EQ features

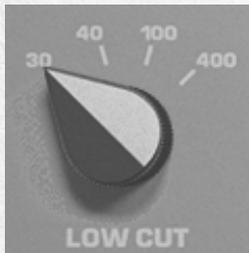
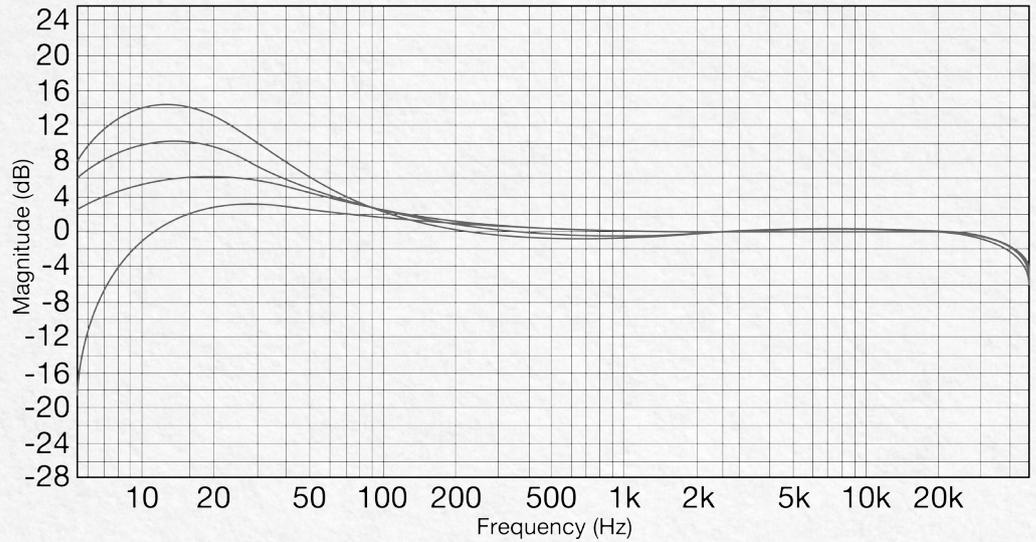
(All controls are independent and can be used in any combination)

Low Cut at 30, 40, 100, or 400 Hz, 0 to -18 dB shelving

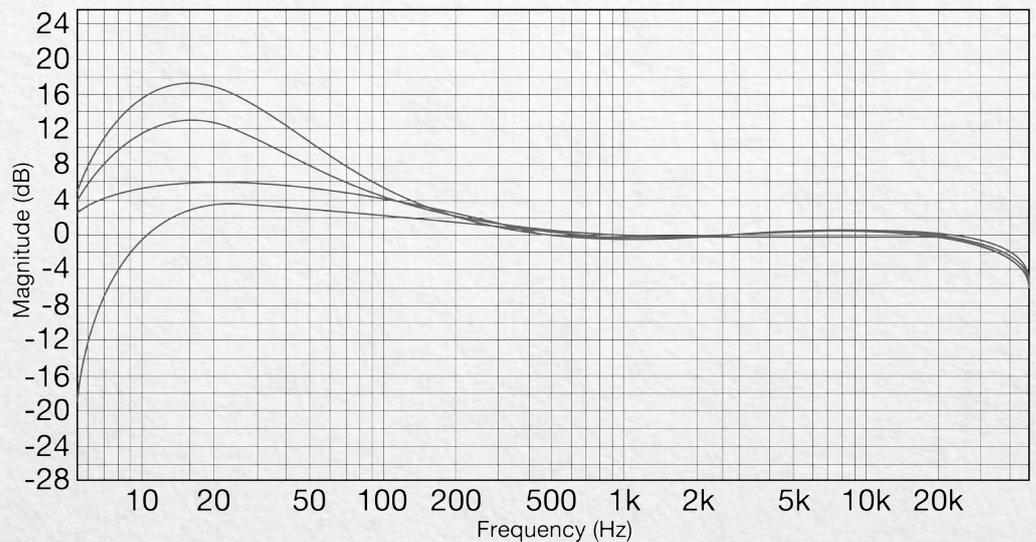
Low Boost at 20, 40, 60, or 140 Hz, 0 to +12 dB shelving



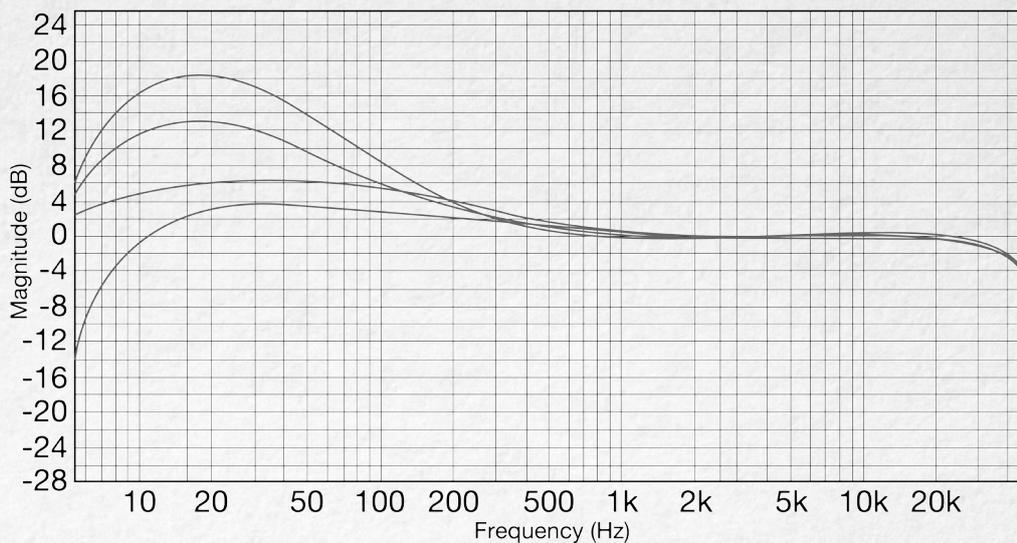
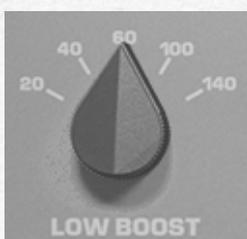
Low cut value: 30 (gain flat) / Low boost value: 20



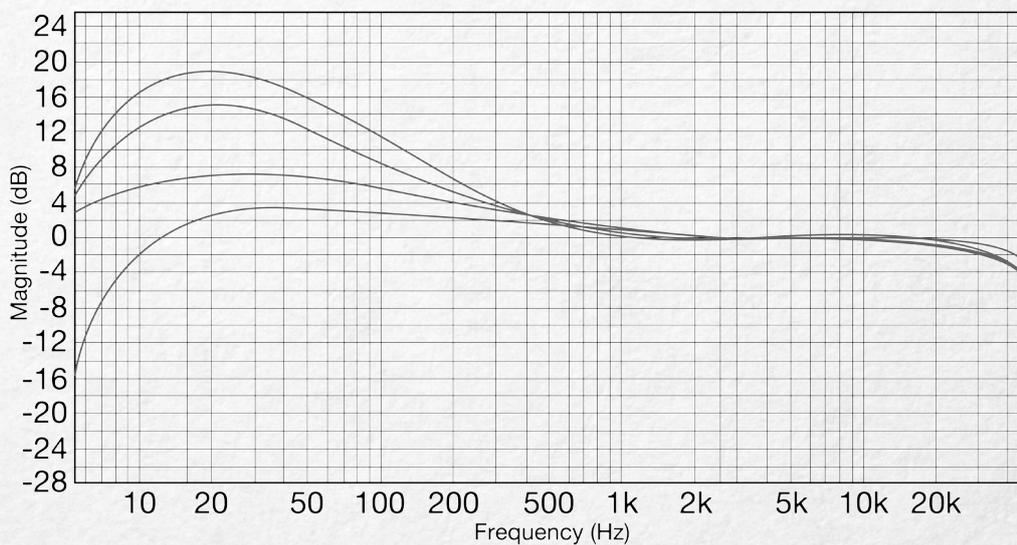
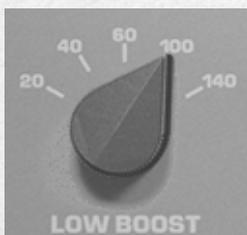
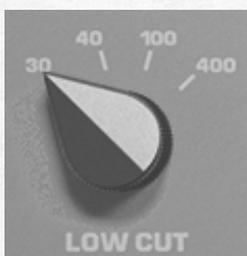
Low cut value: 30 (gain flat) / Low boost value: 40



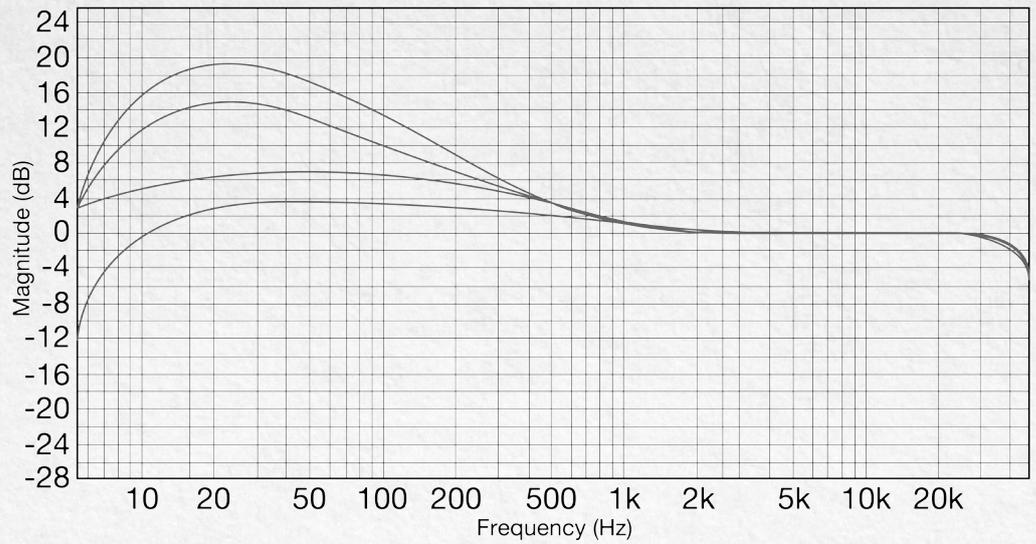
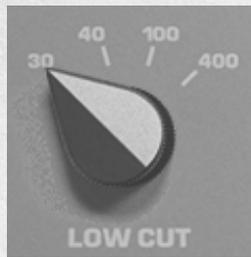
Low cut value: 30 (gain flat) / Low boost value: 60



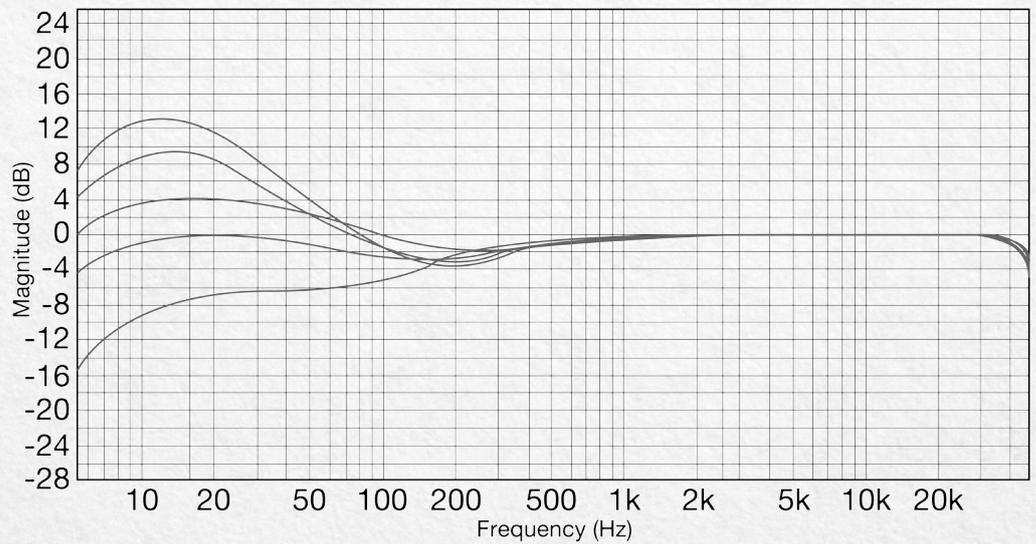
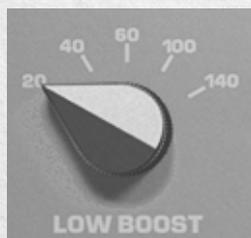
Low cut value: 30 (gain flat) / Low boost value: 100



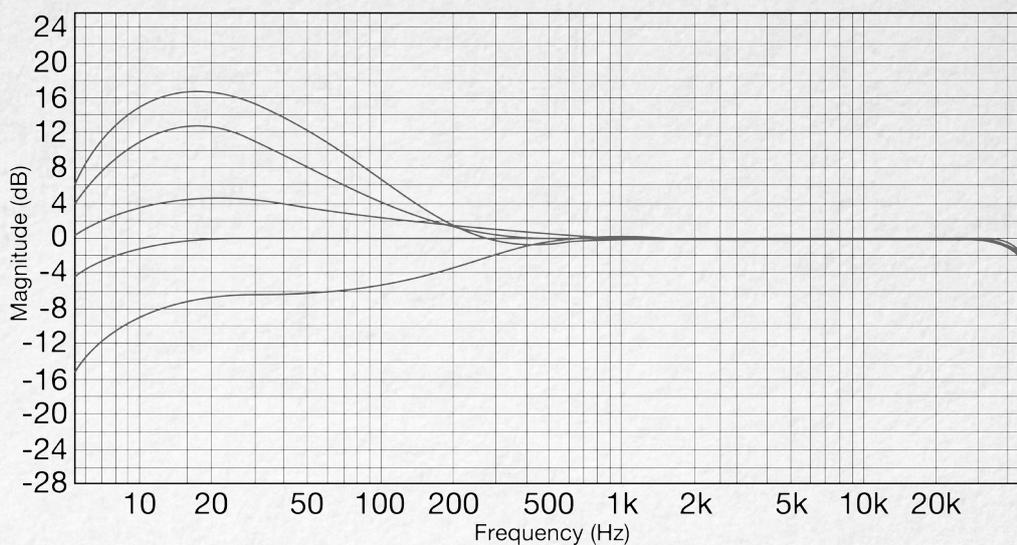
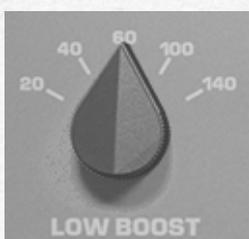
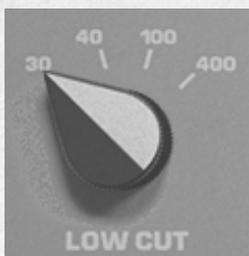
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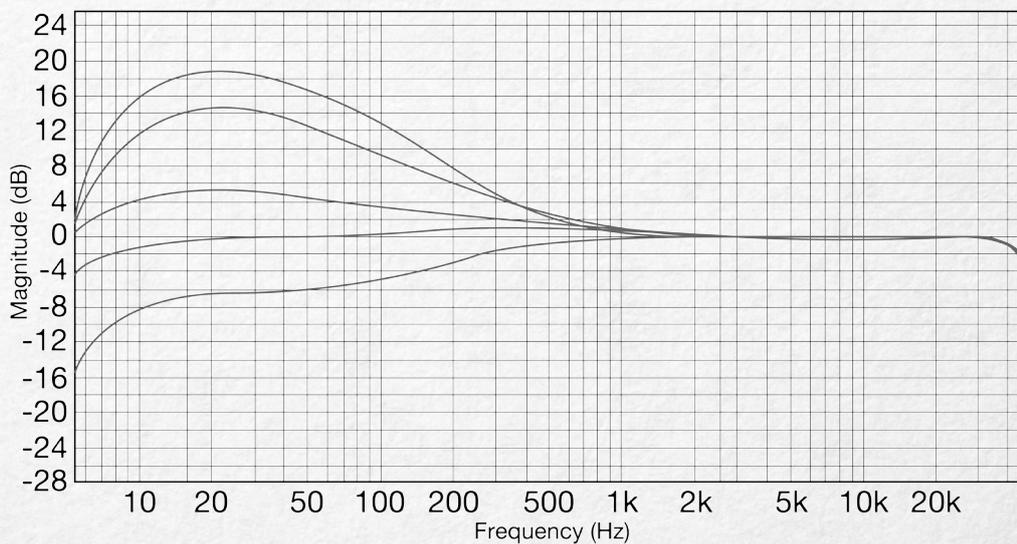
Low cut value: 30 (gain -8) / Low boost value: 20



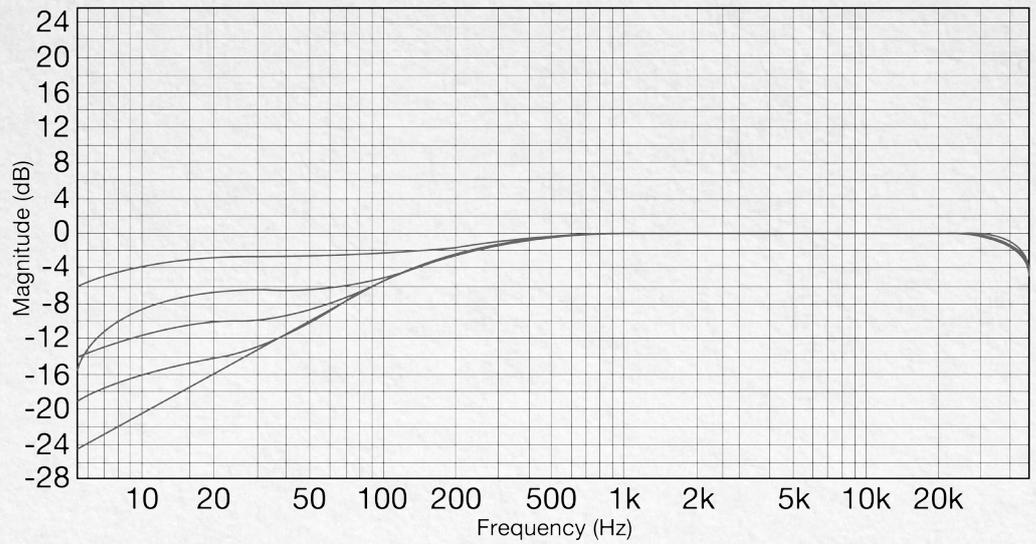
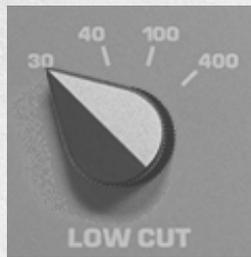
Low cut value: 30 (gain -8) / Low boost value: 20



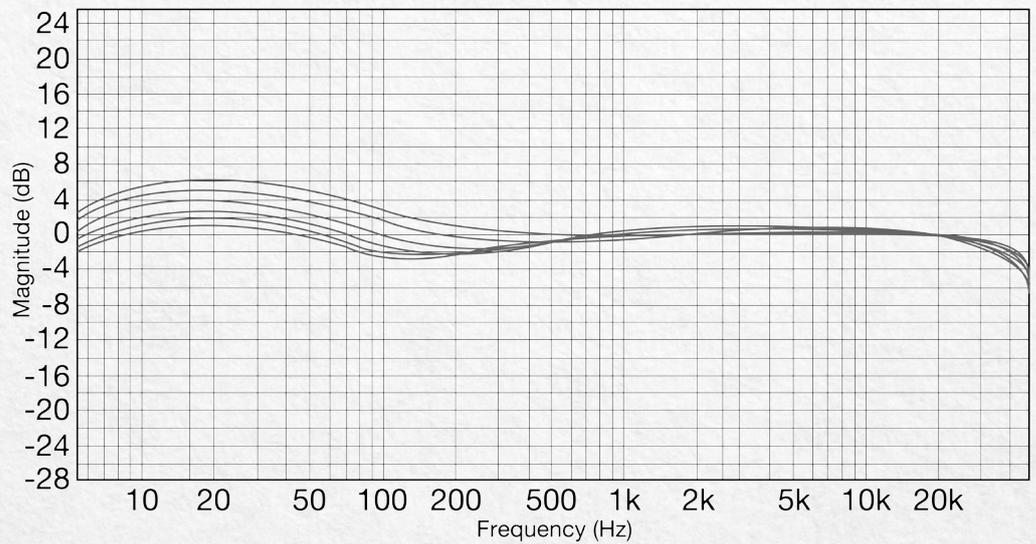
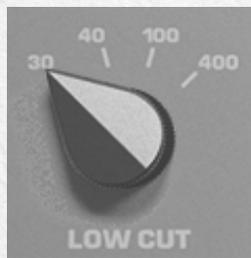
Low cut value: 30 (gain -8) / Low boost value: 20



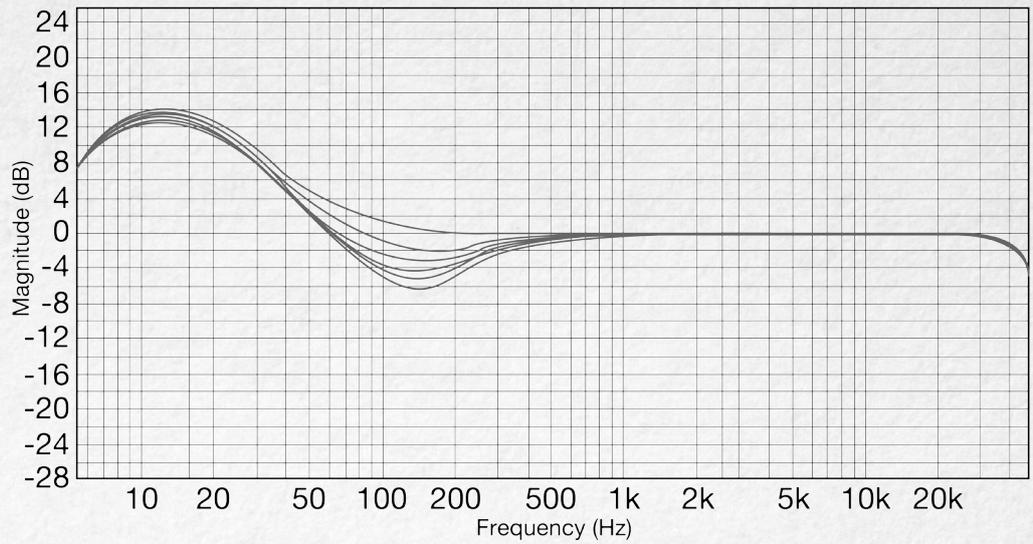
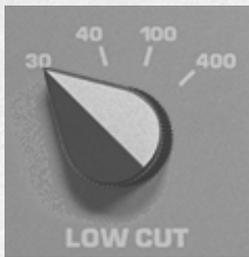
Low cut value: 30 / Low boost value: 20 (gain flat)



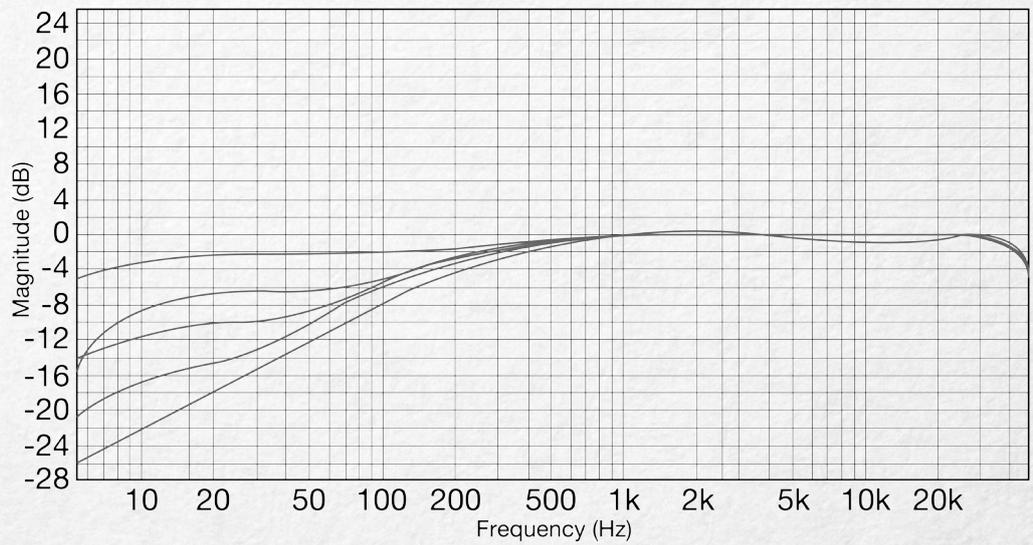
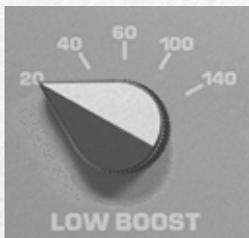
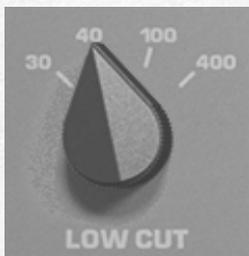
Low cut value: 30 / Low boost value: 20 (gain +8)



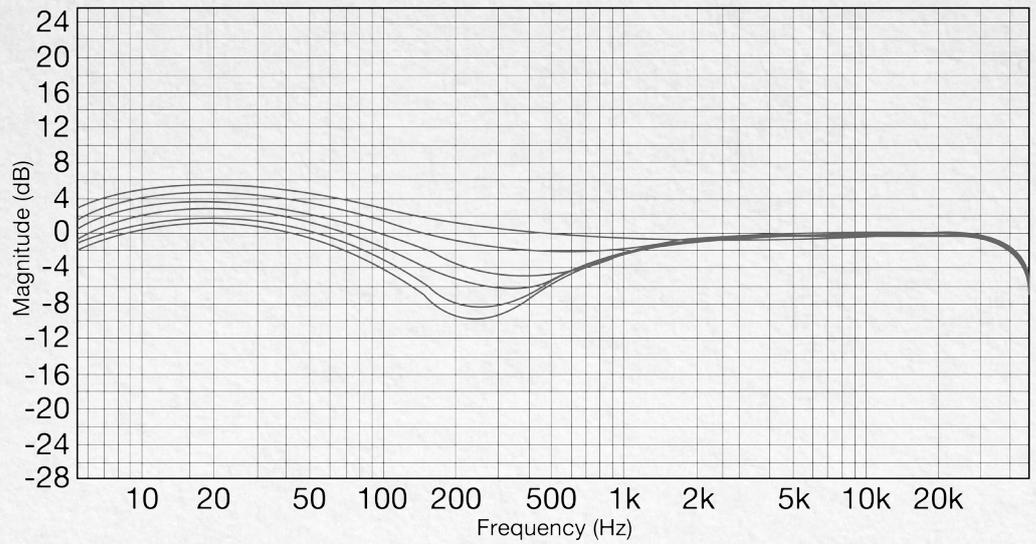
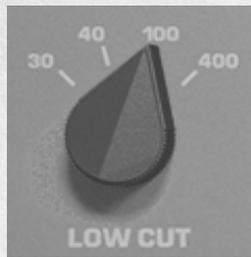
Low cut value: 30 / Low boost value: 20 (gain +16)



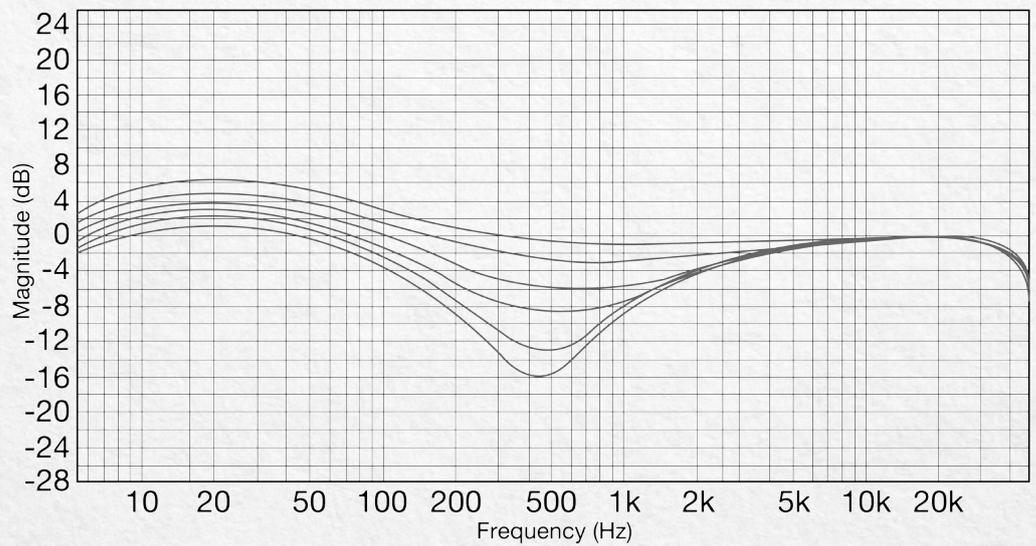
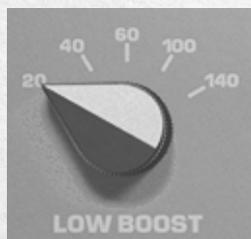
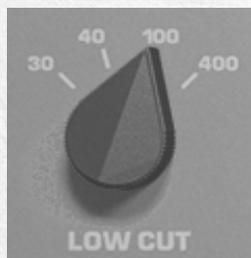
Low cut value: 40 / Low boost value: 20 (gain flat)



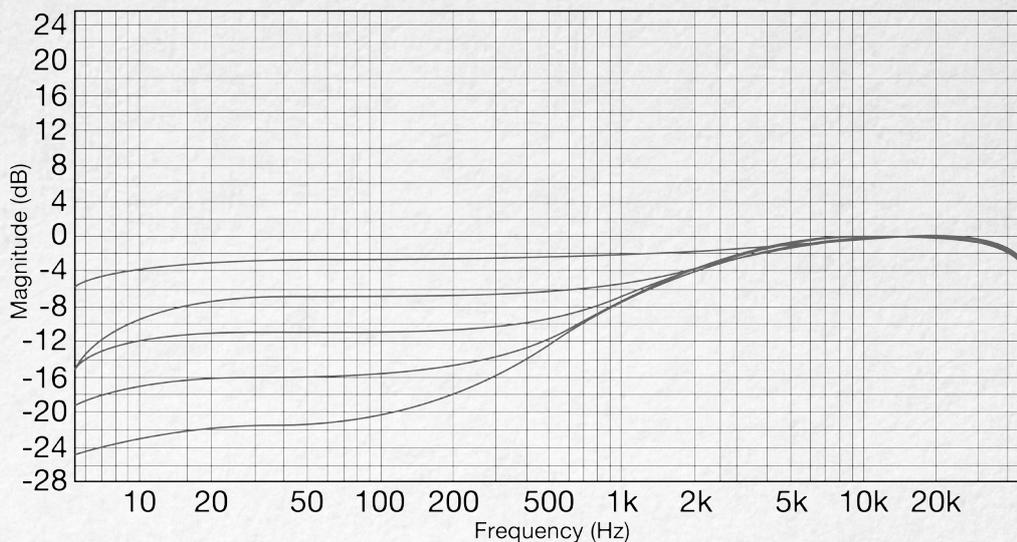
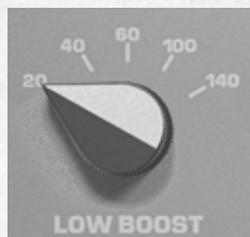
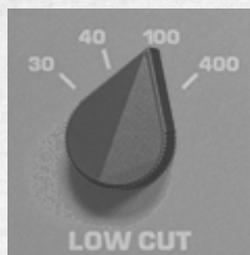
Low cut value: 100 / Low boost value: 20 (gain +8)



Low cut value: 400 / Low boost value: 20 (gain +8)



Low cut value: 400 / Low boost value: 20 (gain flat)

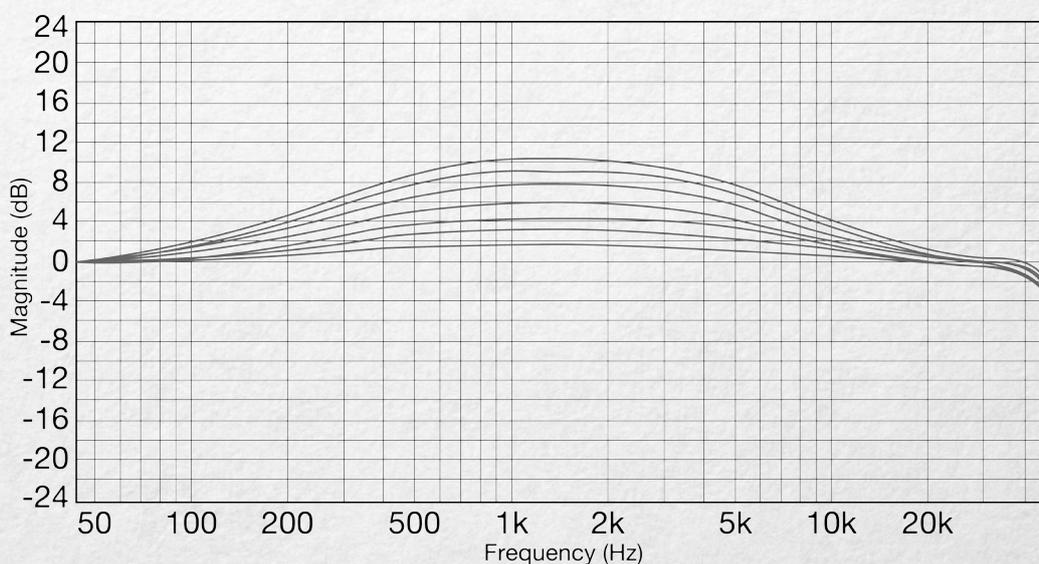


High Boost at 2, 3, 4, 5, 8, 10, 12, or 16 KHz, 0 to +14 dB

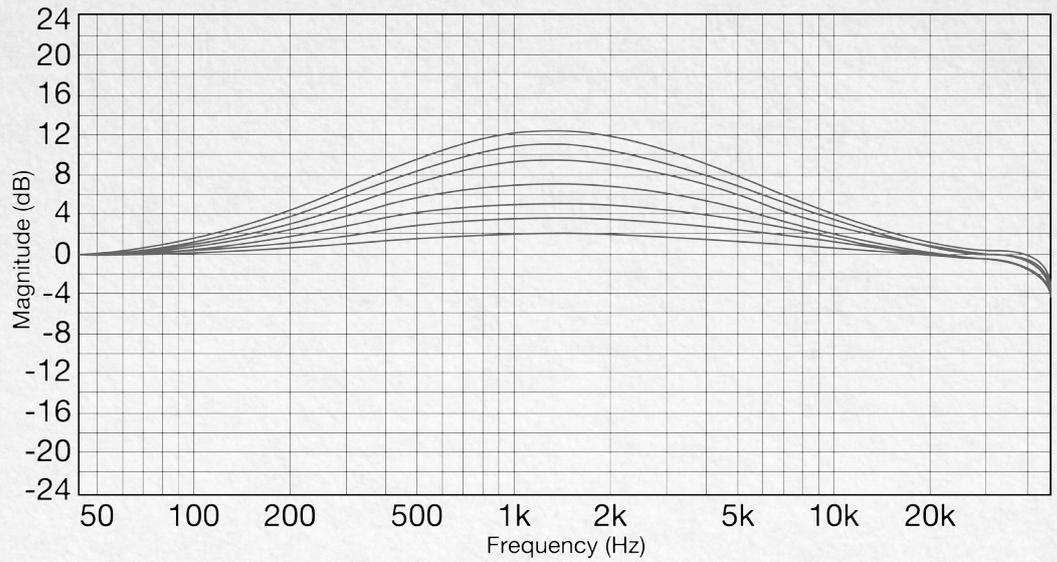
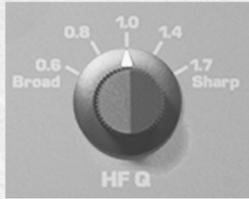
High Bandwidth Q of 0.6, 0.8, 1.0, 1.4, or 1.7

High Frequency Cut at 1.7, 4, 10, or 28 KHz, 0 to -14 dB shelving

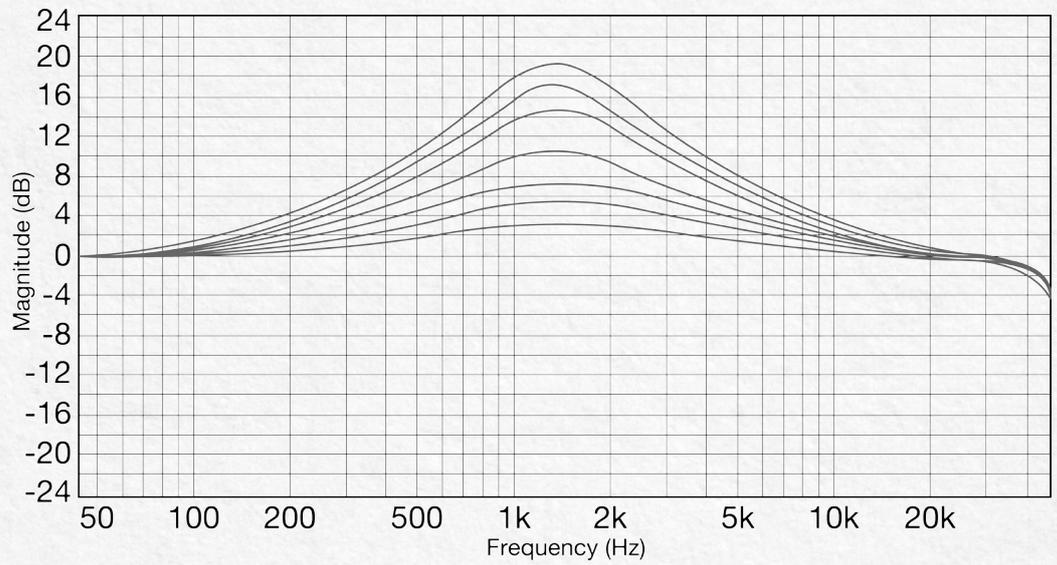
High boost value: 1.5k / HF Q value: 0.6



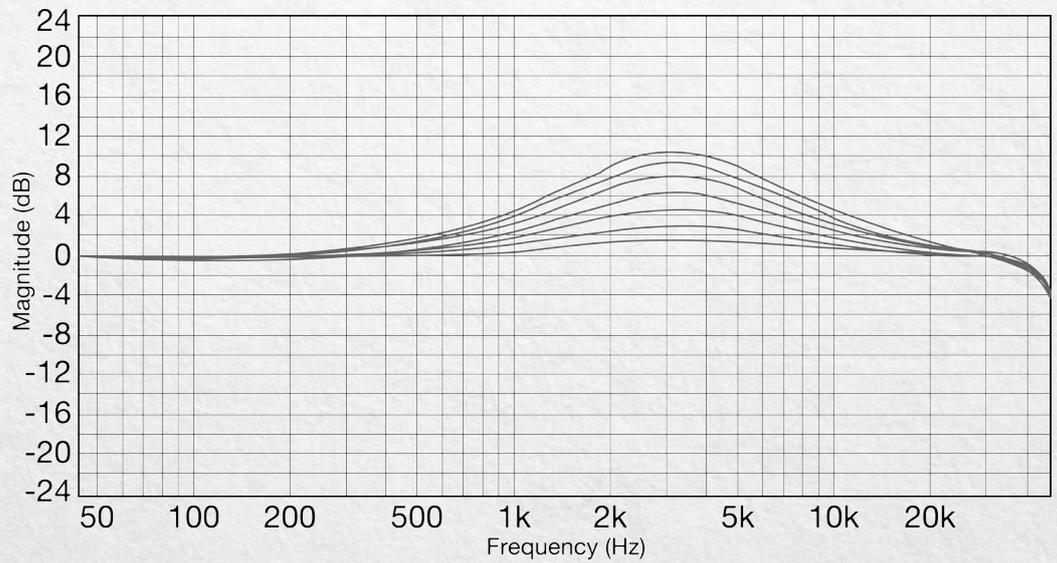
High boost value: 1.5k / HF Q value: 1



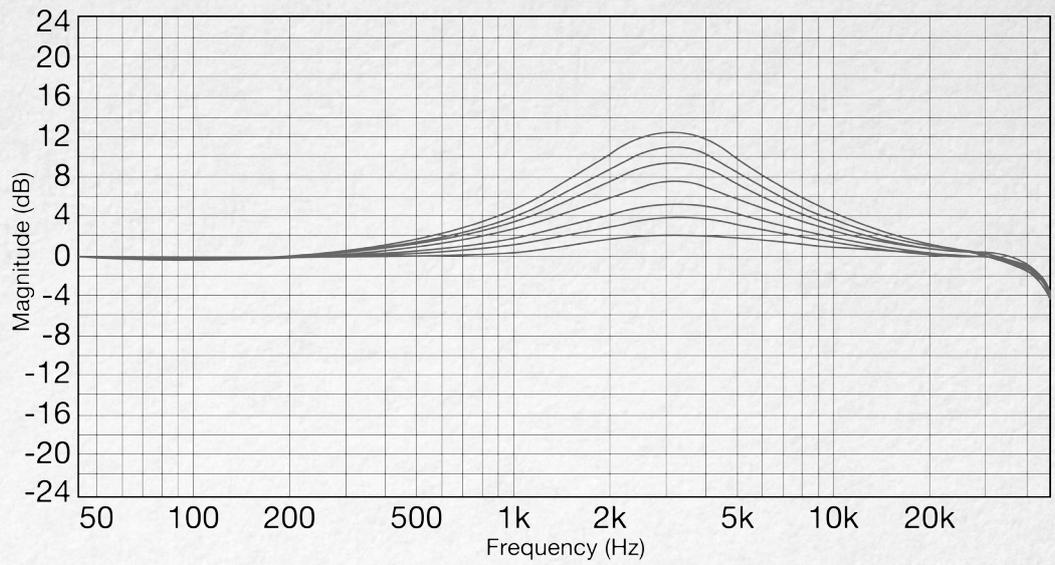
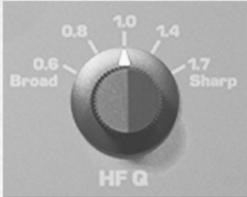
High boost value: 1.5k / HF Q value: 1.7



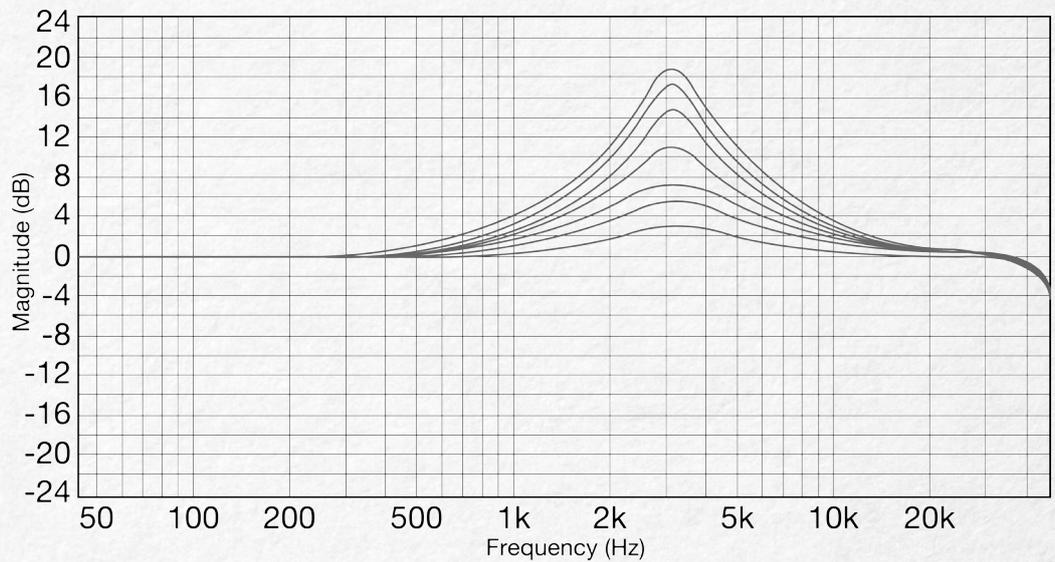
High boost value: 3k / HF Q value: 0.6



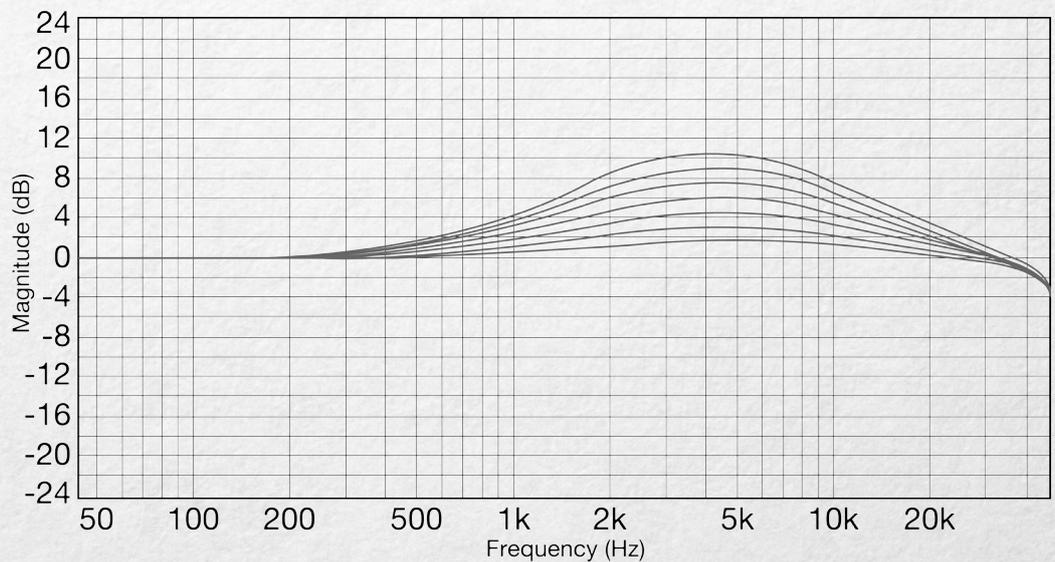
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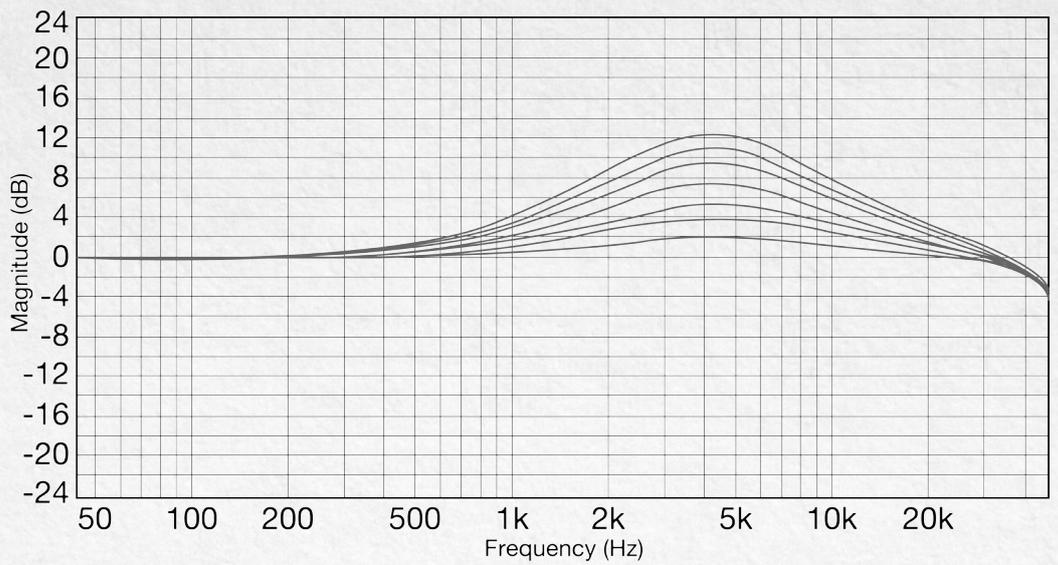
High boost value: 3k / HF Q value: 1.7



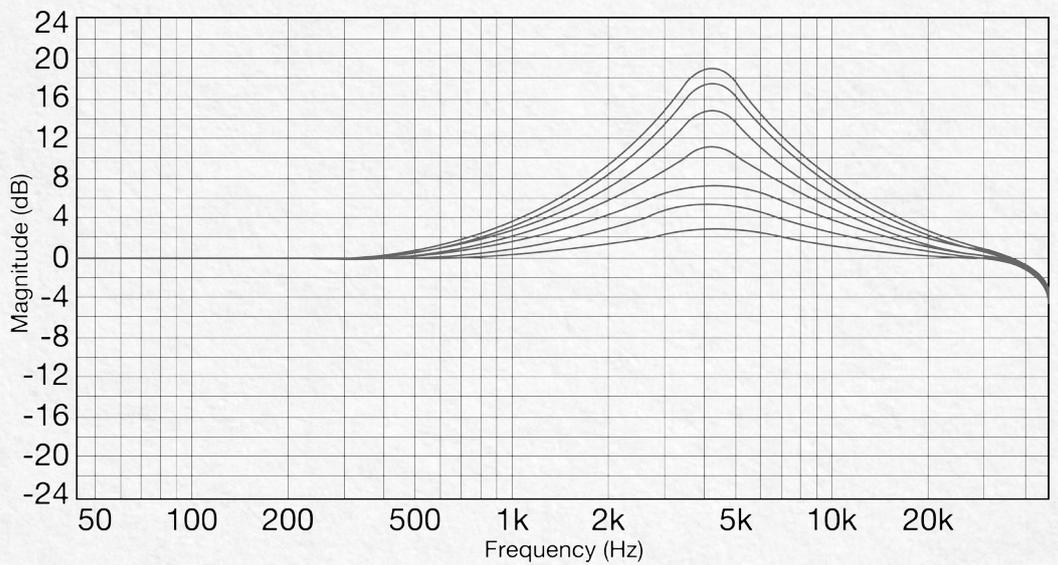
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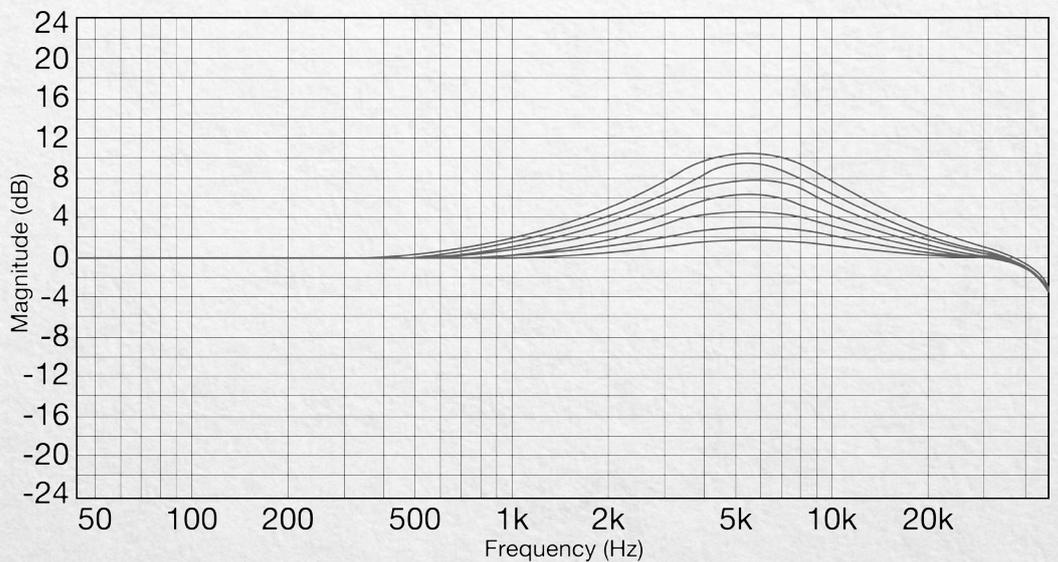
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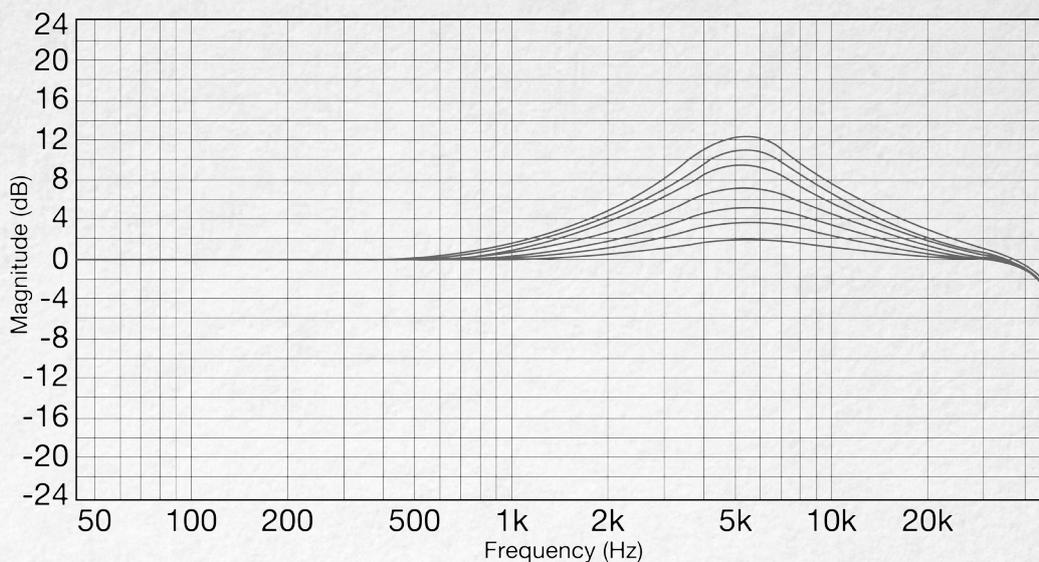
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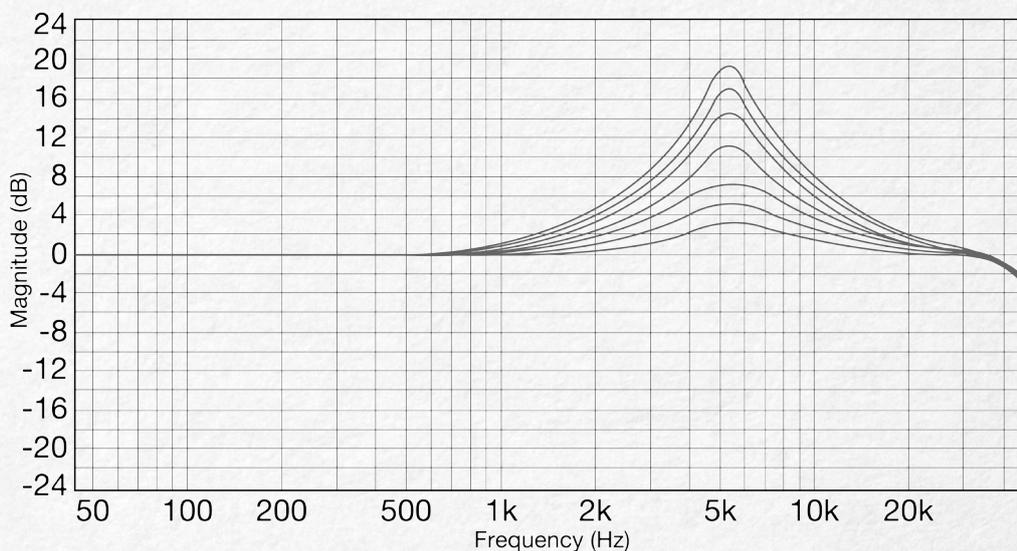
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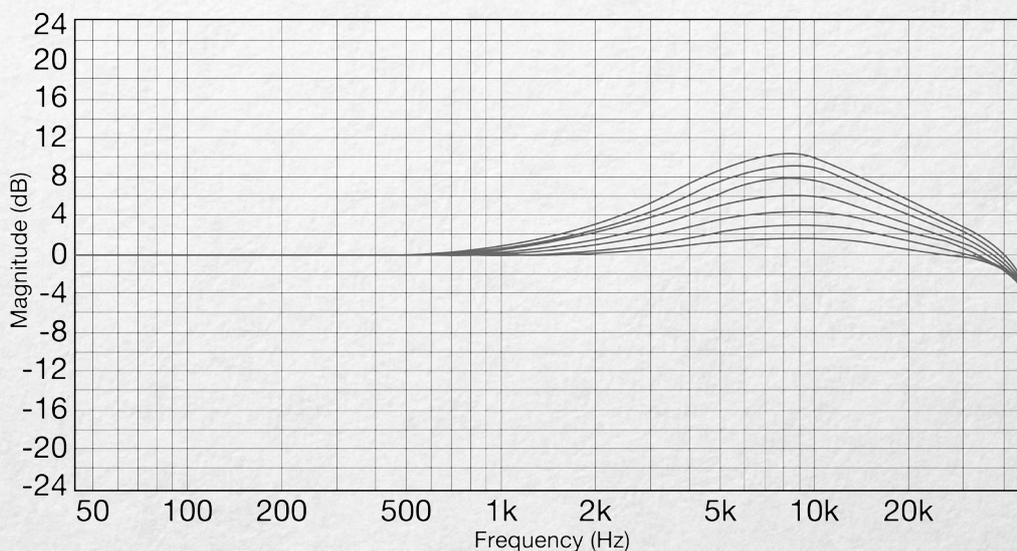
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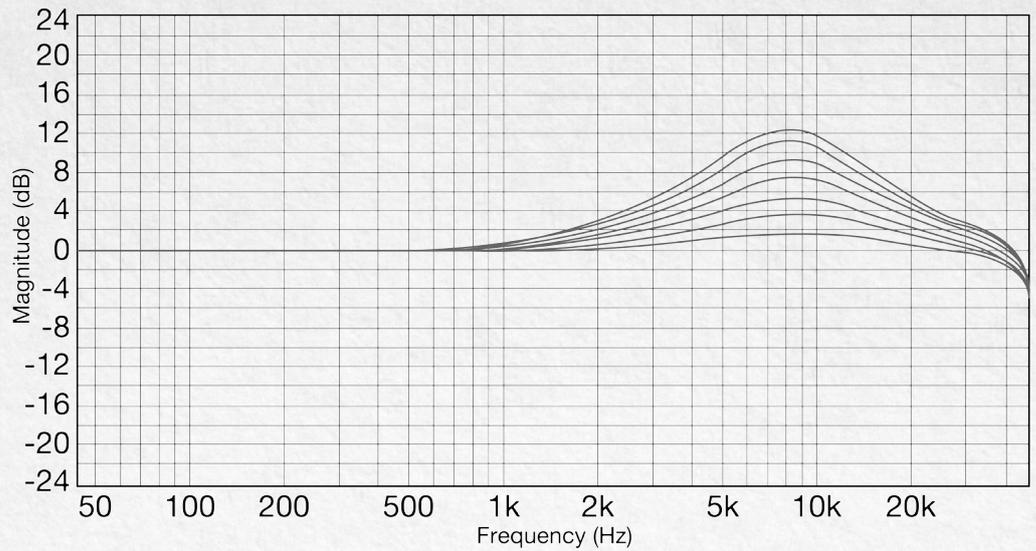
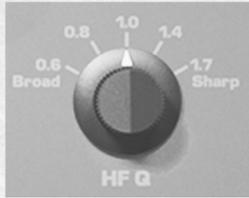
High boost value: 5k / HF Q value: 1.7



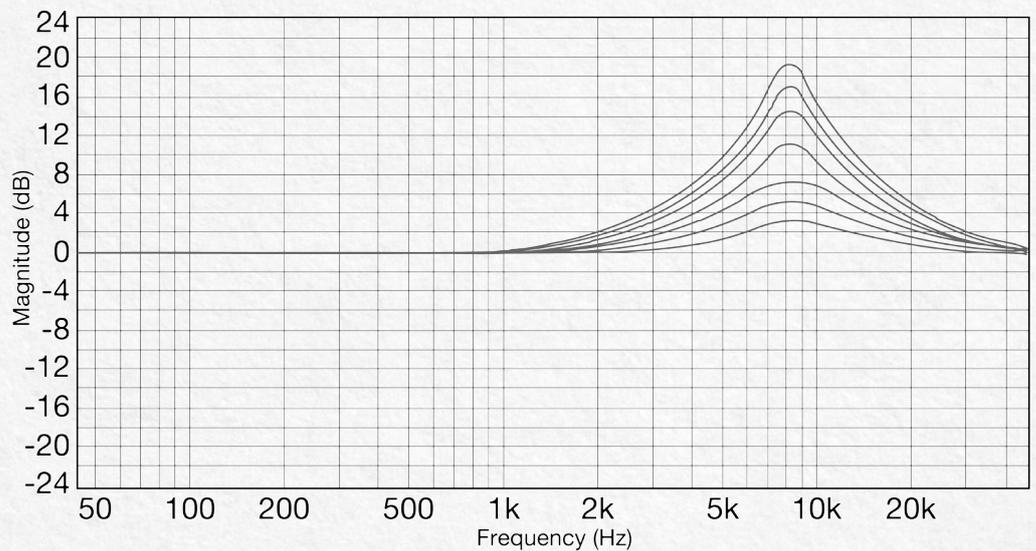
High boost value: 8k / HF Q value: 0.6



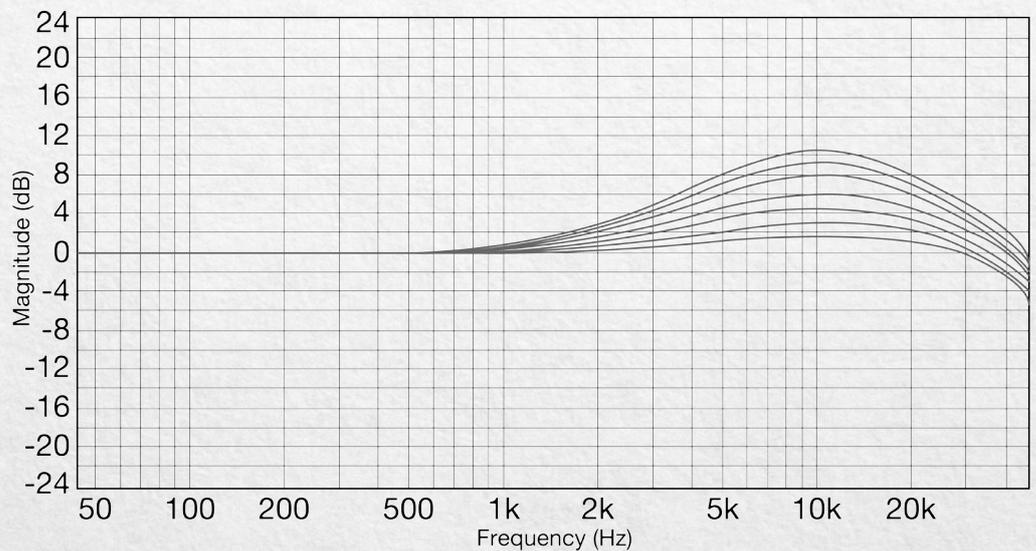
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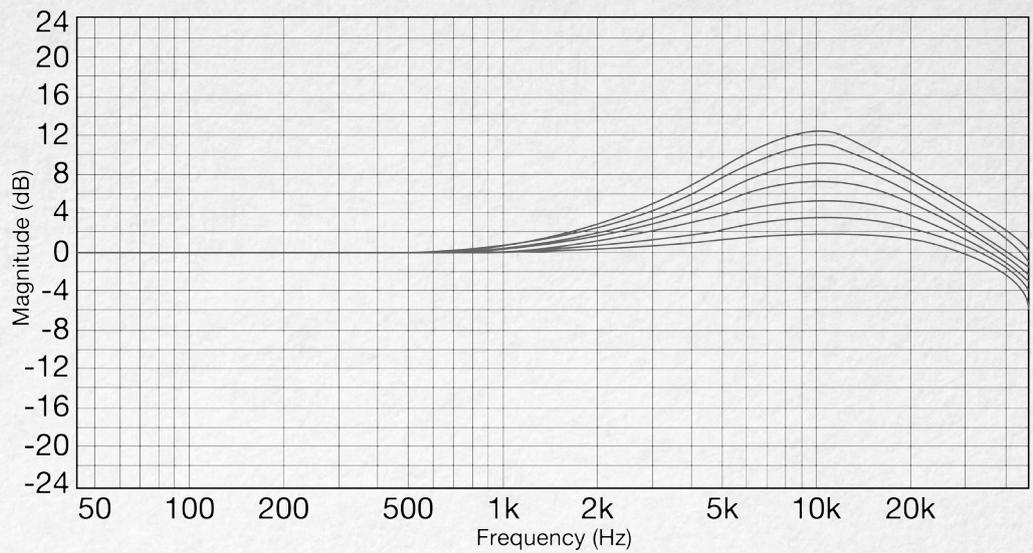
High boost value: 8k / HF Q value: 1.7



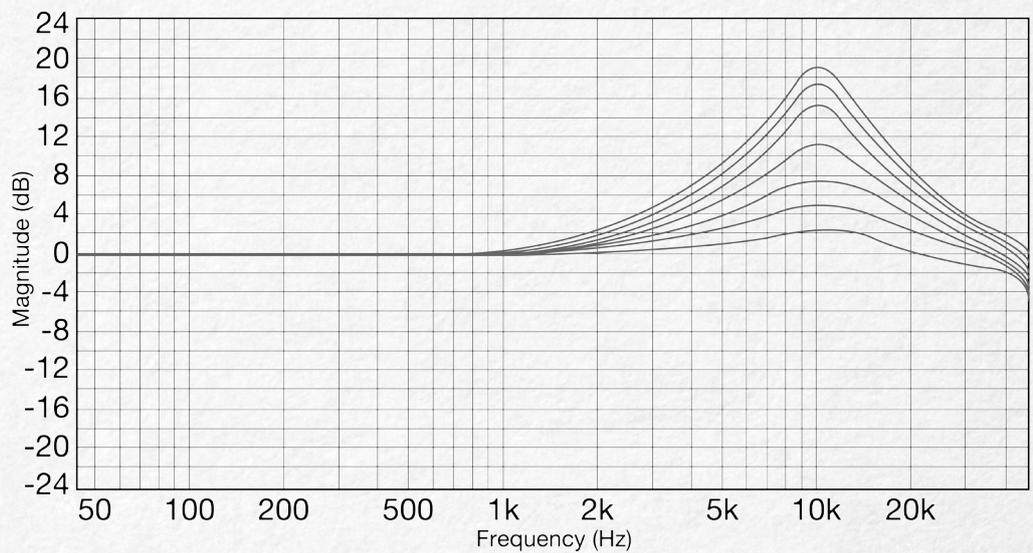
High boost value: 10k / HF Q value: 0.6



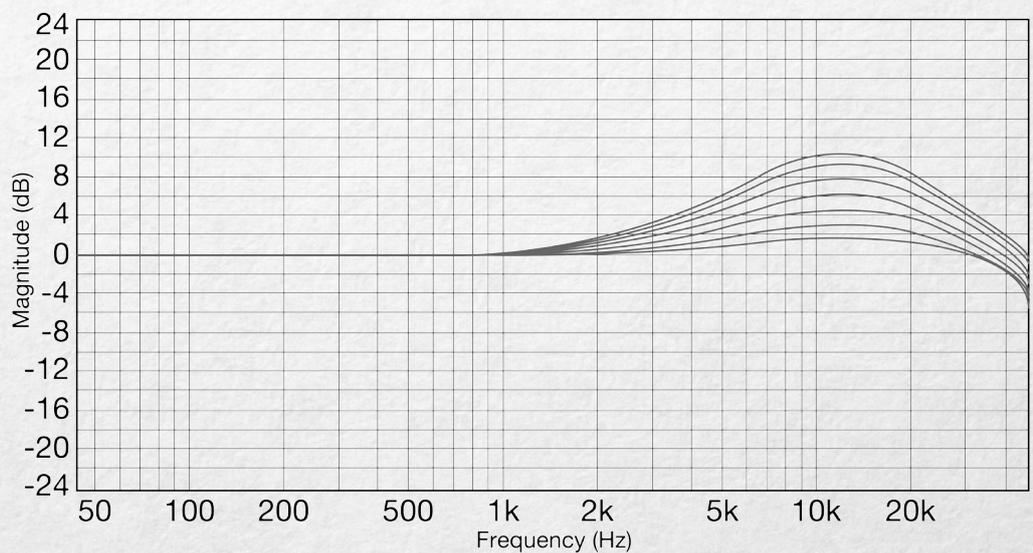
High boost value: 10k / HF Q value: 1



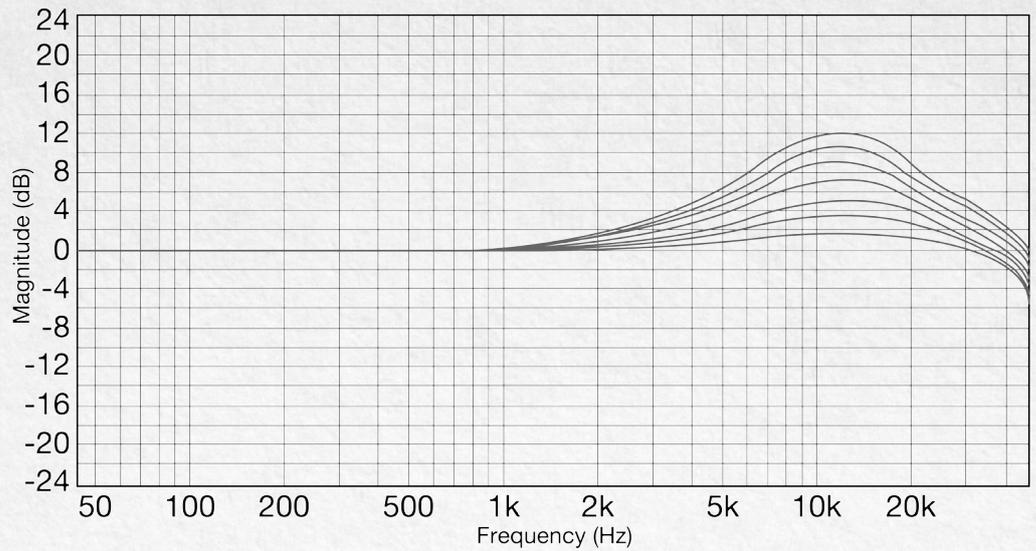
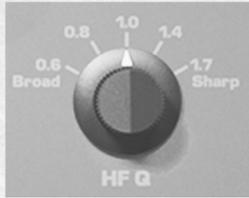
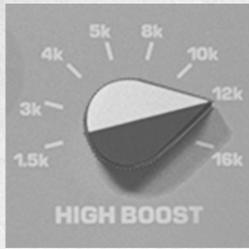
High boost value: 10k / HF Q value: 1.7



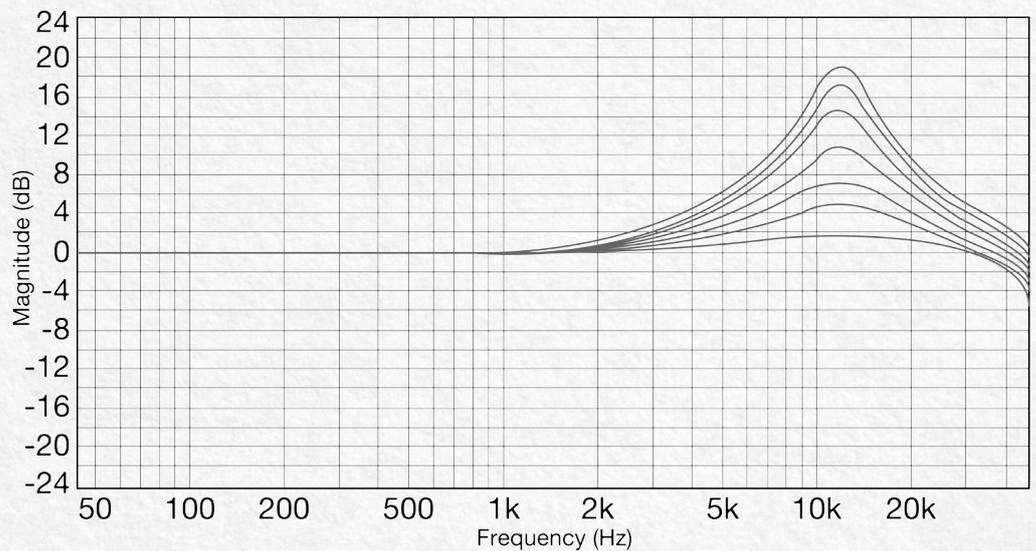
High boost value: 12k / HF Q value: 0.6



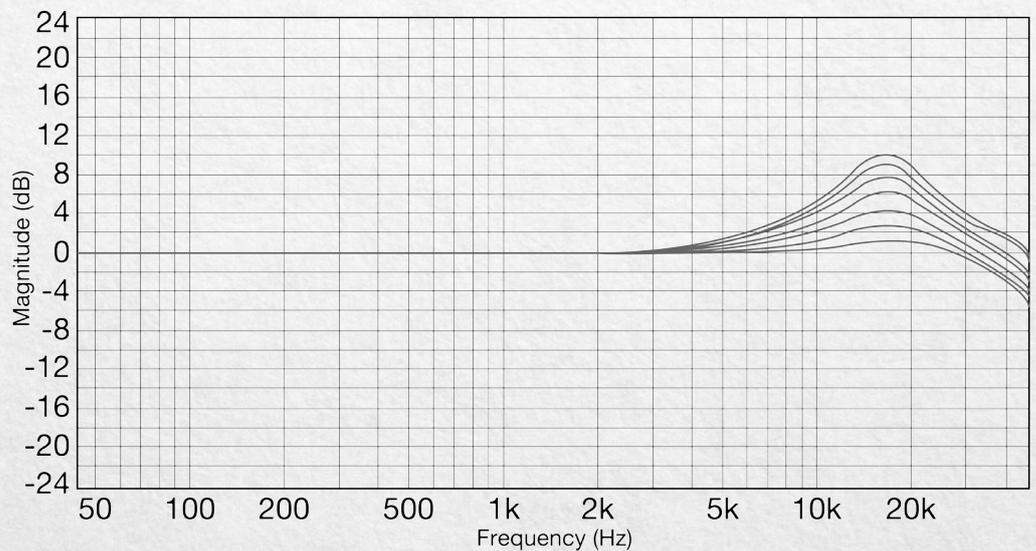
High boost value: 12k / HF Q value: 1



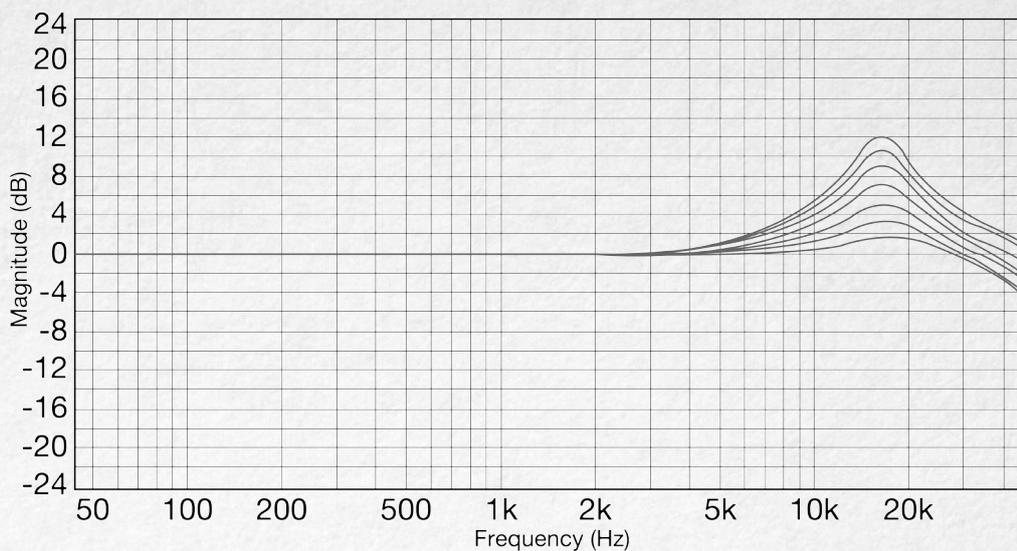
High boost value: 12k / HF Q value: 1.7



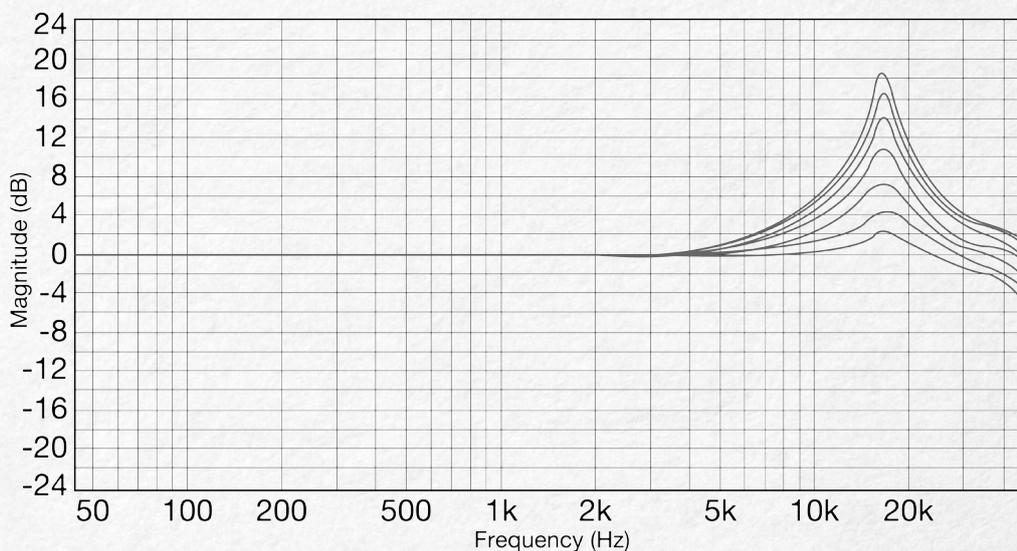
High boost value: 16k / HF Q value: 0.6



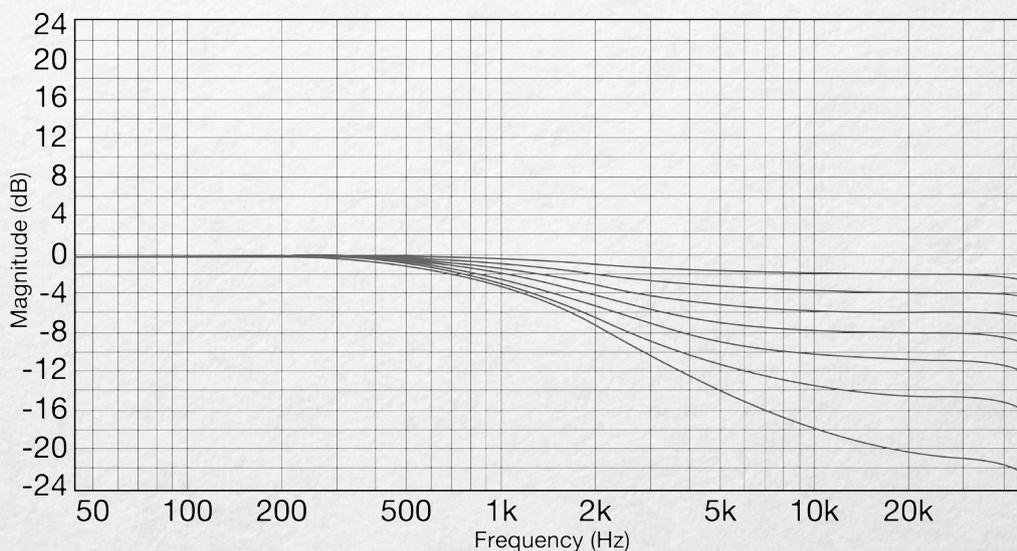
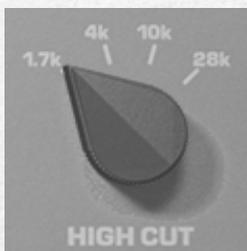
High boost value: 16k / HF Q value: 1



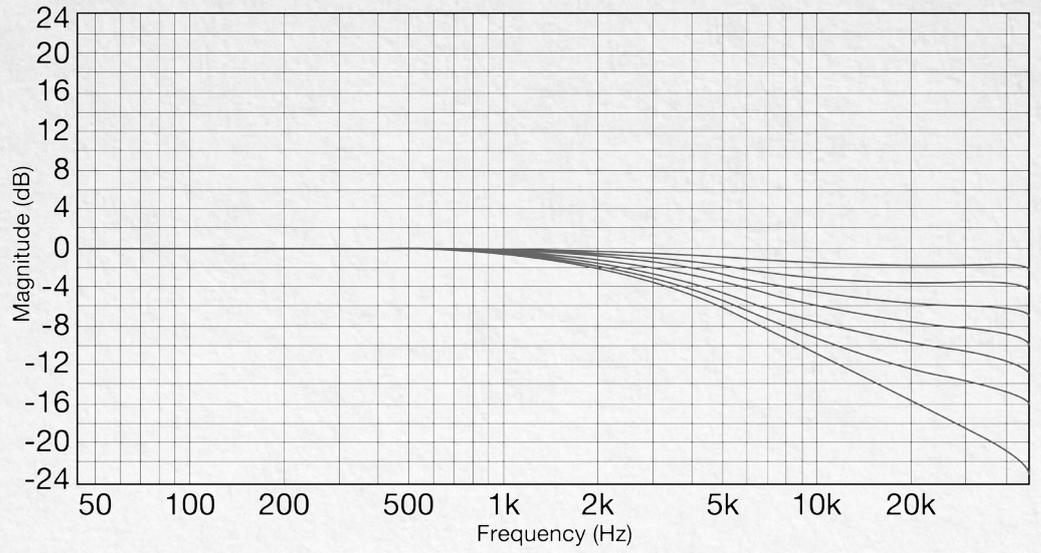
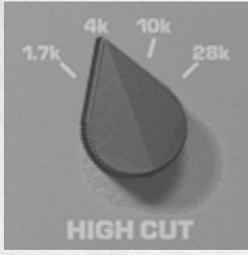
High boost value: 16k / HF Q value: 1.7



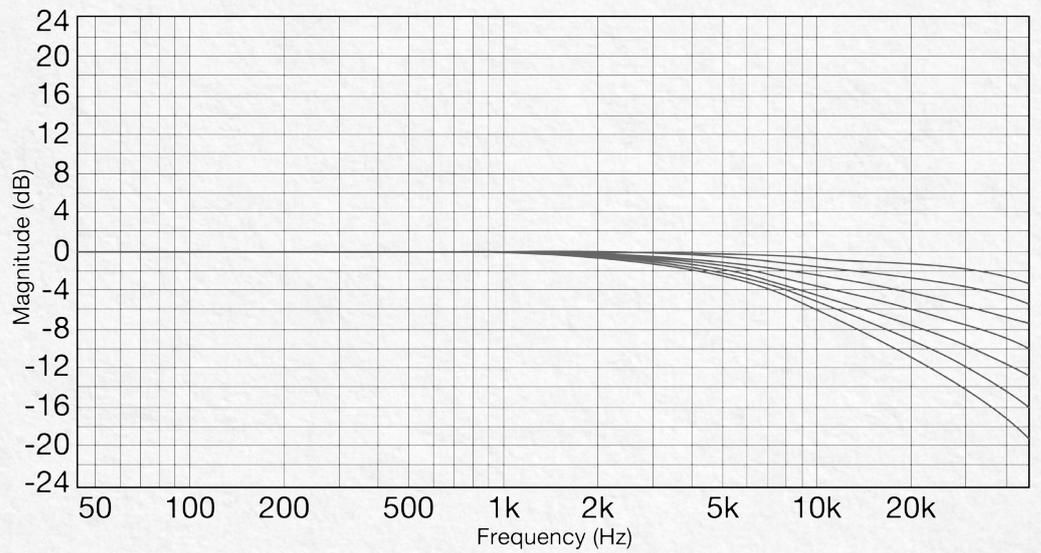
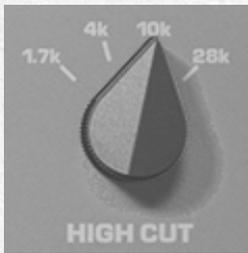
High cut value: 1.7k



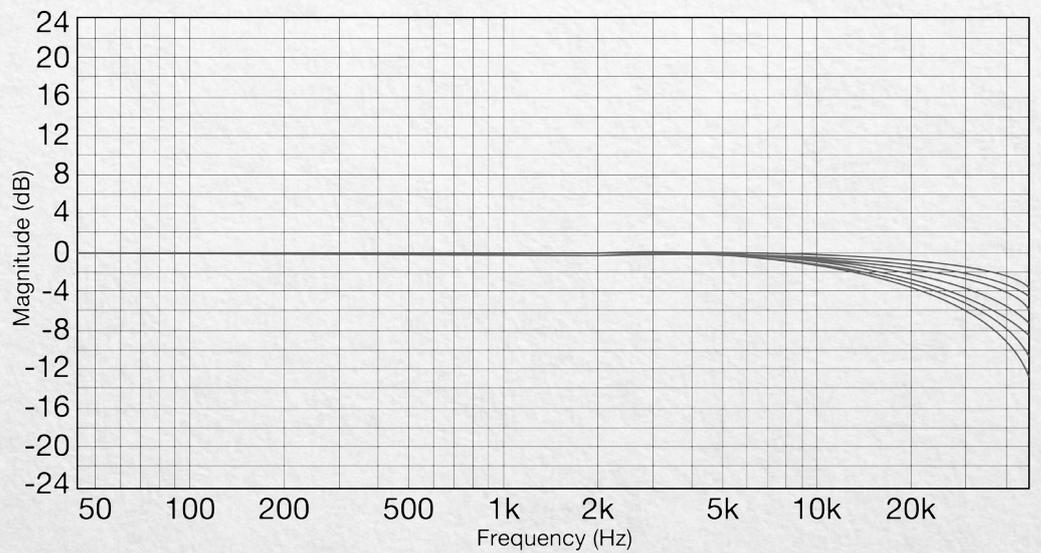
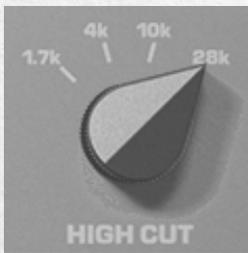
High cut value: 4k



High cut value: 10k



High cut value: 28k



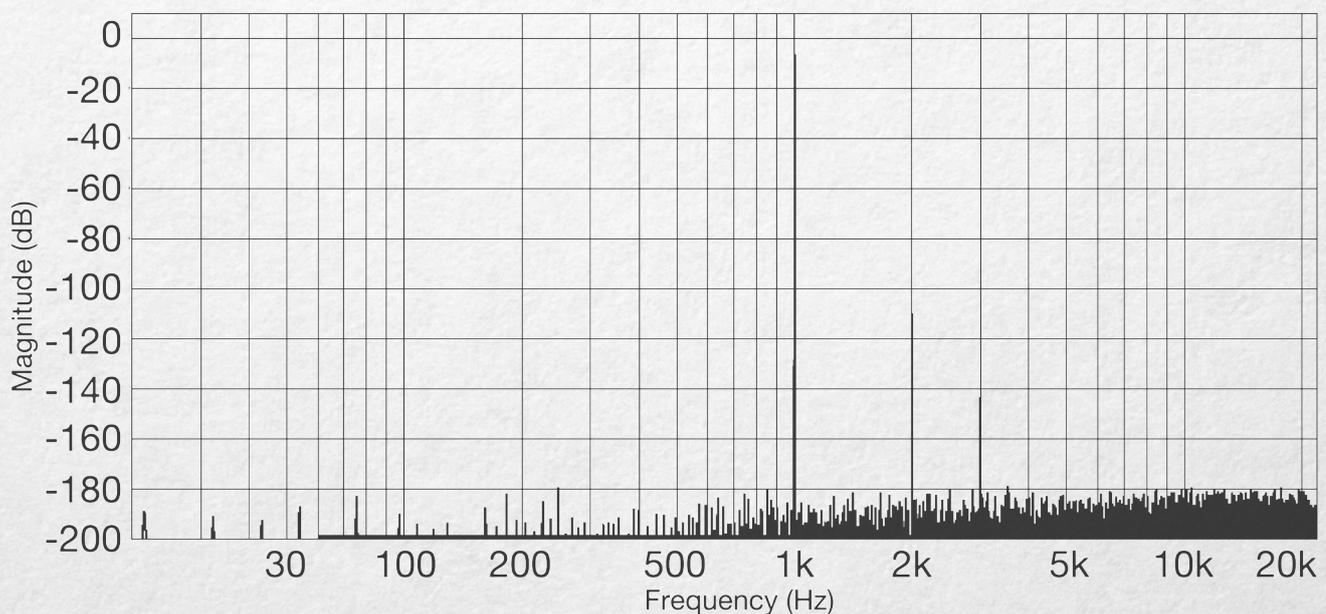
Input Trim continuously adjusts the internal operating level from -24 to +24 dB. Any gain change introduced by Input Trim is inversely compensated at the output stage, so that the internal operating level may be varied while the final output level remains constant. Its main scope is to achieve a stronger harmonic coloration by hitting the preamp stage with a higher input signal.



Output Level adjustable from -24 to +24 dB



The vacuum tube, Class-A preamp stage is enabled by clicking the lamp above the Input Trim and Output Level controls on the top right of the GUI panel. Lamp ON = preamp active; Lamp OFF = preamp bypassed (but the Eq section is still active).



Plug-in Authorization



Welcome to Aquarius, a brand new application from Acustica Audio. Its purpose is to simplify and automate authorization and installation process of your purchased Acustica products (ACQUA plug-ins etc.).

The screenshot shows the Aquarius application window. At the top left is the Aquarius logo. In the top right, there are icons for 'Purchased' and 'Updates', and a settings gear icon. Below the header, it says '8 Updates Available' and 'UPDATE ALL'. The main area lists four updates:

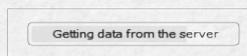
Plug-in Name	Usage	Path	Engine	Size	Last Update
Cobalt (Equalizer)	2 Used / 10 Available	C:\Program Files\Steinberg\Vstplugins\acustica	Engine 1.4, 204	2297 MB	B000 - 10 Nov 2017
Diamond Lift (Strip Channel)	2 Used / 10 Available	C:\Program Files\Steinberg\Vstplugins\acustica	Engine 1.4, 204b - eco bug fix - dynamic rate conversion added	71 MB	S000 - 16 Nov 2017
Ebony (Strip Channel)	1 Used / 10 Available	c:\Program Files\Common Files\Avid\Audio\Plug-Ins\Acustica	Engine 1.4, 200 Release 1	2027 MB	B000 - 28 Oct 2017
Emerald (Equalizer)	1 Used / 10 Available	C:\Program Files\Steinberg\Vstplugins\acustica	Engine 1.4, 200 Beta 1	1404 MB	B000 - 30 Oct 2017

Aquarius runs as Windows 32 bit (64 bit optional) and Mac OSX universal-binary application (32/64 bit). You will need a working internet connection in order to run the application. Off-line mode is not available, yet.

Important:

On Windows, application needs access to system folders, so it must run with administrator privileges. Aquarius automatically tries to elevate administrator privileges at startup, so usually no additional user action is needed.

On Mac OSX, user will be prompted to enter username and password for every operation which involves system folders (authorization, installation etc.)



When started, application searches your computer for installed Acustica products and then connects to the Aquarius server in order to retrieve the status of products found. Progress bar at the top of the window will keep you informed about the progress. This is the main progress bar, which is always telling you, what is Aquarius doing at that moment, so keep an eye on it.



For successful server connection, your credentials must be entered (a window will pop-up). Enter the user name and password of your Acustica Audio account. If »Remember me« option is checked, program will remember your credentials the next time you log in. You can cancel this operation using »Escape« key or by clicking on the »Close« button – in this case, application will close.

Important:

Before you actually start to install plugins, Aquarius must know three important things to operate correctly:

1. path where your products (installation files) are downloaded (stage area)
2. paths where your installed products are located, so Aquarius can find them
3. paths where your products/updates will be installed, so Aquarius can install them properly

When started for the first time, Aquarius creates default standard paths for stage area, searching and installing. You can change these paths in Settings window (»Search paths« and »Installing« tabs). So, if you want to add or change some things, now it is the right time to do it. See chapter »Settings« for detailed explanation.

You will notice two icons at the top center of the Aquarius window (Purchased, Updates). They represent the two major areas of the program. A mouse click on any of the icons opens its corresponding page. Currently selected icon is colored blue. When program starts, Updates page is opened automatically.

When clicking on the  icon at the top right corner of the program, a pop-up menu will show.

Menu contains the following options:

- Logout (will disconnect you from the server and the login window will pop up again)
- Settings (settings window will pop up)
- Exit (application will terminate)

You can click on the Aquarius image at the top left to force refresh of the current page.



PURCHASED PAGE

This page contains your purchased Acustica Audio products, supported by Aquarius. Each product is presented in a form of a »product« strip.



Amethyst 3 (Strip Channel) ACUSTICA
Release: 25 Oct 2017

INSTALL

VST2 x64

VST2 x86

✓ VST2 x64

AAX x86

AAX x64

Product can be (re)installed at any time and as many times you wish. Installation process will always install THE LATEST version of the selected product. To install product, first select desired plugin format (VST2, AAX, AU) and architecture (32, 64 bits). Then click on the “Install” button. Product will be downloaded, installed and authorized automatically.

Before installing a product, check »Settings/Installation« page to ensure, that proper installation target paths are defined. Please see chapter “Settings” for more details. After successful installation, you will be automatically redirected to the “Updates” page. Green question mark button will show a hint about possible actions, which could be taken.

For more information about downloading and installing process check chapter “Stage area, downloading and installing details”.

UPDATES PAGE

Using this page, you can update your installed products with newer (upgrade) or older (downgrade) versions of the product. There could be multiple sections of items visible on this page (up to four) – we will call them sections A, B, C and D (from top to bottom, respectively).

Each section item is presented in a form of »update« strip. You can (re)authorize products using this page, as well. Important: you will NOT see items for your installed products here, unless products are previously installed from “Purchased” page.

Section A (Updates available)



Emerald (Equalizer) 1 Used / 10 Available
C:\Program Files\Steinberg\Vstplugins\acustica
Engine 1.4.200 Beta 1
1404 MB

 **UPDATE**

B000 - 30 Oct 2017

Re-Authorize

✓ B000 - 30 Oct 2017

A000 - 20 Oct 2017

Section contains available updates for installed products. You can update product with a newer or older version. When product is updated to the latest version, it is automatically moved to the section B, otherwise it remains in section A.

To install, select desired update version (its description and size will be displayed) and click on the “Update” button. Before installing an update, check “Settings/Installation” page to ensure, that proper installation target paths are defined. Please see chapter »Settings« for more details.

UPDATE ALL

“Update All” button. This option will install all available updates from the section A, sequentially, one by one.

To authorize the product, select »Re-Authorize« option – please see chapter »Authorization« for more details. Green question mark button will show a hint about possible actions, which could be taken.

Section B (Updates Installed)



Violet (Compressor) 3 Used / 10 Available
C:\Program Files (x86)\Steinberg\Vstplugins\acustica



Section contains up-to-date installed products (sorted by days, months etc.). To downgrade a product, select desired version and click on the »Downgrade« button. Before downgrading, check “Settings/Installation” page to ensure, that proper installation target paths are defined. After you downgrade a product, it will be automatically moved to the section A.

To authorize product, select »Re-Authorize« option or button – please see chapter »Authorization« for more details.

Green question mark button will show a hint about possible actions, which could be taken.

Section C (Manual Updates Only – Please Re-install)



Amber 2 (Equalizer) 2 Used / 15 Available
C:\Program Files\Steinberg\Vstplugins\acustica



Section contains manually installed products, supported by Aquarius.

Re-install of these products is required – use »Purchased« page for this task (see chapter »Purchased«). When installed, product will be automatically moved to the section B.

To authorize product, select »Re-Authorize« button – please see chapter »Authorization« for more details.

Green question mark button will show a hint about possible actions, which could be taken.

Section D (Manual Updates)



Amethyst 3 Comp (Compressor) 2 Used / 10 Available
C:\Program Files\Steinberg\Vstplugins\acustica

? RE-AUTHORIZE

Section contains installed products, which are supported by Aquarius (yet). To authorize product, click on the »Re-Authorize« button – please see chapter »Authorization« for more details.

Green question mark button will show a hint about possible actions, which could be taken.

Important note: this section contains also plugins, which are part of the bundles. Simply ignore them, because only the bundle product is relevant (it is listed in sections A and/or B).

AUTHORIZATION

Authorization is available on »Updates« page only. Whenever there is an “Re-authorize” button available in the »update« strip, the following rules apply: Under the product’s name and category you can see the number of used licenses and the total number of bought / available licenses. Of course you can not use more licenses than you own – in that case, you should buy additional licenses. Depending of those two numbers and computers involved in the authorization process, question mark button can have different colors and meanings.

So, let’s look at the colored question mark button – it is the main indicator of the authorization status of product in question. By clicking on this button, you can see a hint about its status and possible actions.

So what do the different colors mean?

GREEN – Everything is OK – your product is properly authorized and you don’t need to do anything. Still, the authorization button on the right (labeled »RE-AUTHORIZE«) is available. You should use the authorization button only if you experience unexpected problems with the product, despite it is properly authorized. Your existing license slot will be used and used licenses count will NOT increase.

Note, if you’ve already used all your available licenses, the authorization button will not be available at all – in such a case, please contact a technical support.

? YELLOW – Authorize product – product hasn't yet been authorized on this computer and the authorization button on the right is labeled »AUTHORIZE«. By clicking on it, you will authorize product in question on this particular computer. Note, that a new license slot will be used, so used licenses count WILL increase. There is one exception, though. If product is already marked as authorized on this computer, but license file can not be found (corrupted, deleted), clicking on the authorization button will fix this situation using the existing license slot (used licenses count will NOT increase).

? RED – Contact technical support – no further action is possible (authorization button is not available).

STAGE AREA USAGE, DOWNLOADING AND INSTALLING

Aquarius stores downloaded files into stage area. Stage area path is defined in “Settings/Installation” page. When (re)installing or updating product, which has already been downloaded, its files from stage area are used instead of being downloaded again. This way installation process is much faster. You can manually delete files from stage area after installation, but we suggest you to keep them if possible. When files are not found in the stage area, they are downloaded from cloud. Download bar (located inside product/update strip) will show you the actual progress of the download.



Installation process can be stopped by clicking on the »Stop« button. In this case, already downloaded files will not be deleted. If you decide to repeat the installation, Aquarius will resume and download only missing files. If you see error dialog during the installation, carefully read the message and act accordingly. Errors are rare, but they could happen because of a few possible reasons (locked files, not enough privileges, corrupted downloads, download/communication errors etc.). In most cases, repeating the installation fixes the problem. If the problem persists, please open a support ticket at Acustica Audio.

SELF UPDATE

When started, Aquarius always checks for the update. If the a version is available, it is installed over the current version. After installation, program is automatically restarted.

SETTINGS

Settings window contains three pages:

- Search paths
- Installation
- Coupons

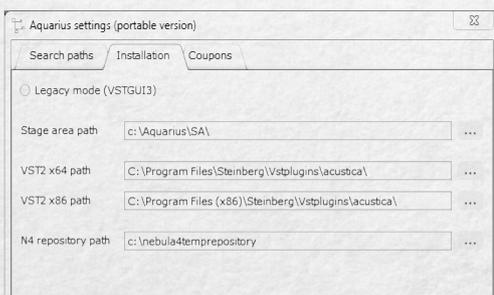


SEARCH PATHS

Page contains two main sections. Upper section show factory defined plugin search paths. All standard paths are covered, so if you installed your plug-ins in standard folders, they all will be found at the searching/scanning process. Factory list can not be changed.

In case you have some or all of your plugins installed in nonstandard folders, you can use the bottom section. Here you can add additional folders, which will then be included in product searching/scanning process as well.

Use »plus« button to add new, »minus« button to delete existing and »x« button to delete ALL existing user defined plugin paths. You must confirm changes with »Save« button, which will close the settings window and re-scan your installed products.



INSTALLATION

On this page, you can define stage area path (check chapter “Stage area usage, downloading and installing”), target installation paths for VST2 32 and 64 bit plugins and N4 repository path.

Target installation paths for AAX and AU plugins are set automatically. All paths are extremely important – if they are not defined properly, Aquarius will fail in many areas, including downloading and installation. If paths are not defined (empty), Aquarius will use default its values. This happens also with the first start of the program. Every used path for VST2 plugins is automatically added to user defined product search paths in “Search paths” page. This way all products will be always found, even if you change VST2 path after installation. You can manually delete these paths, if you don’t need them anymore.



Here you can enter and apply a coupon code.

Contact and Support

. CONTACT US

You are welcome to contact us through our website, forum or social media.

. GETTING TECHNICAL SUPPORT

To open a new ticket go to:

<https://www.acustica-audio.com> > log-in > support > New support ticket

To check ticket status go to:

<https://www.acustica-audio.com> > log-in > support > Check ticket status

. TROUBLESHOOTING AND BUG REPORT

Acustica Audio is constantly improving its products and adding new features. There is the possibility of on-going issues, bugs and rare crashes.

In order to enable Acustica Audio to support you, please provide a complete system profile as well as a thorough description of the problem you are experiencing, including the exact text and error numbers in any error messages you are getting.

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2018**