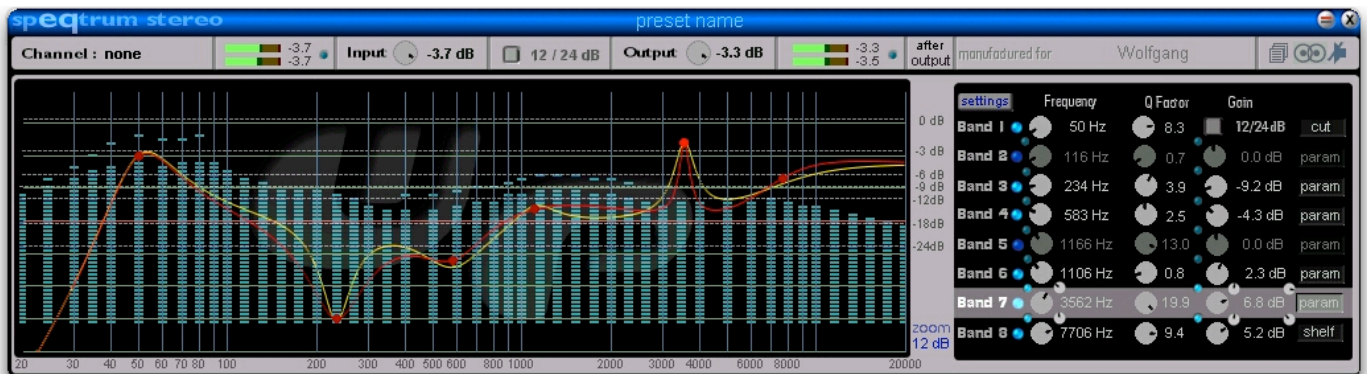


WOLF AUDIO DESIGN



SPECTRUM



An eight band EQ with graphical interaction, four different flavours of filters, zoom, gain-bandwidth coupling, frequency & gain linking and a 48 band spectrum analyzer.

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1.0 INSTALLATION

- Windows : Just drag the content of the unzipped archive onto the scope / sfp folder. The devices for scope itself you'll find in the filter subdirectory of the effect mono/stereo folder (or the pendant of the LiveBar).
- Mac OS9 : Unzip the archive and navigate into the folder Devices > Effects > Filter > Mono / Stereo. Copy the "spEQtrum S" / "spEQtrum M" found there into your scope / sfp installation to Devices > Effects > Filter > Stereo / Mono. In the unzipped archive navigate again to the presets folder and copy the preset list files found there into the same folder of your scope / sfp installation.

2.0 GENERAL

Filters :

A special feature of spEQtrum is the possibility to freely adjust the steepness of all delivered filters (including the freely adjustable gain-bandwidth dependency, see below). This makes it possible to create or rebuild many kinds and behaviours of filters.

There was much research time used to have a great fidelity between the surface and the actual treatment of the waveform as well as making the filters sound as good as possible (which of course is always a personal opinion thing).

SpEQtrum delivers following kind of filters :

- low / high shelf filter with adjustable steepness
- low / high cut with adjustable steepness
- parametric filter with adjustable steepness
- notch filter with adjustable steepness

EQ Mimics :

The shelf and parametric filters can be set to a special gain-bandwidth dependency. This allows to emulate different eq behaviours.

Most digital eqs these days (and since the 80ies analog as well) have a constant bandwidth, while changing the amplitude. This function removed the need to readjust the bandwidth every time the volume is changed. However this advantage is not always wanted, especially if we talk about modelling vintage eq behaviours.

Beside the internal filter design, the volume dependant bandwidth is one of the reasons, old eq units sound "different".

The new spEQtrum can now mimic nearly any eq out there in that regard with just two additional settings and shows the result as a separate eq curve.

Frequency Link :

Frequency controls can be tied together, so several bands are moved by moving one node. This way it is possible to create a cluster of different filter settings finally presenting one filter.



Gain Link :

Gain levels can be linked to each other, either via settings window or via the small blue LEDs beside the gain controls. This further extends the cluster building and therefor emulation possibilities.

Spectrum Analyzer :

A 48 band spectrum analyzer right below the eq curve gives maximum control over frequencies and direct feedback, when applying changes to the spectrum.

There is a high and low resolution available, "high", as the name implies, uses a larger amount of dsp. Of course the analyzer can be switched off as well to save dsp.

Zoom :

Zooming into the eq curve is possible within the range of +/- 1 dB up to +/- 48 dB in one dB steps for the 12 dB amplification / damping setting and within the range of +/- 2 dB up to +/- 96 dB in two dB steps for the 24 dB amplification / damping setting.

Interface Interaction - EQ Curve :

Most curve settings are tweakable via the graphical interface; following listing contains the available parameters which can be tweaked via the graphical user interface.

Parametric Filter :

right mouse button -> frequency and level
left mouse button up/down -> steepness / quality

Notch Filter :

right mouse button -> frequency (level is always 12 or 24 dB, according to the settings)
left mouse button up/down -> steepness / quality

Shelf Filter :

right mouse button -> frequency and amplification/damping

Cut Filter :

right mouse button -> frequency

Parameters / Presets :

Following parameters are only saved within the project, but not with the preset list(s) :

- all analyzer settings
- all position settings of surfaces
- bypass, mono-stereo
- view settings like zoom and frequency link knobs
- local <-> main preset list

The mono and stereo version share the same preset list. Also the spEQtrum preset list is fully compatible with the 8BandEQ preset list and vice versa. This way you can easily change between both EQs (e.g. if you started with 8BandEQ and want to use the spEQtrum instead).



3.0 DESCRIPTION

Top :

On the top there are two level meters. The one on the left shows the input level, which you can adjust with the poti right beside.

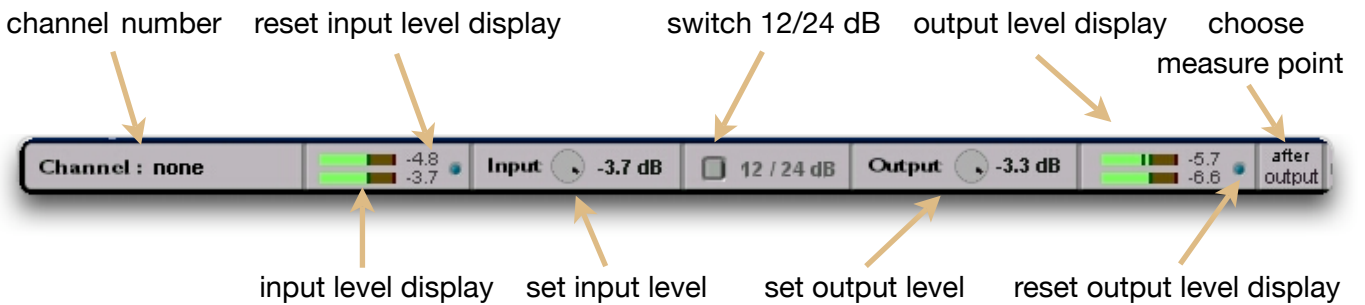
The right level meter can show the level behind each filter or behind the total sum of all. This behaviour is set with a fader right beside. Just click+hold on e.g. "output" and drag the mouse down to change the point, where the level meter should measure. If the measuring is set e.g. to "band5", it shows the sum of the levels behind the filters 1,2,3,4 and 5.



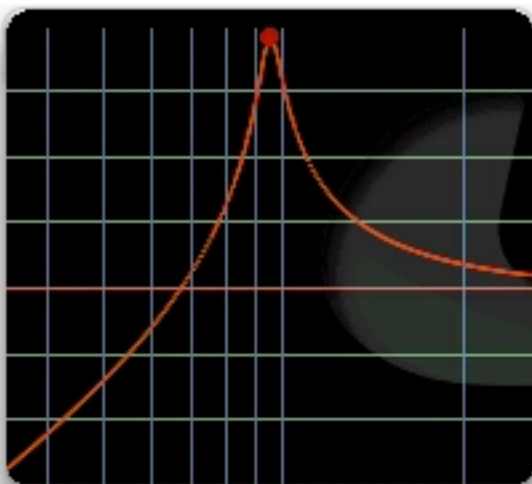
The small blue LED beside the level meters is actually a button, which resets the meters and their dB values. The output level can be set as well with the right poti.

You can set the whole 8 Band EQ to 12db or 24 dB amplification/damping range. However there is one exception: The cut filter has its own independant setting, which will be shown as soon as you switch it on.

So if you have a cut filter activated, it will be untouched by the global 12/24 dB switch.

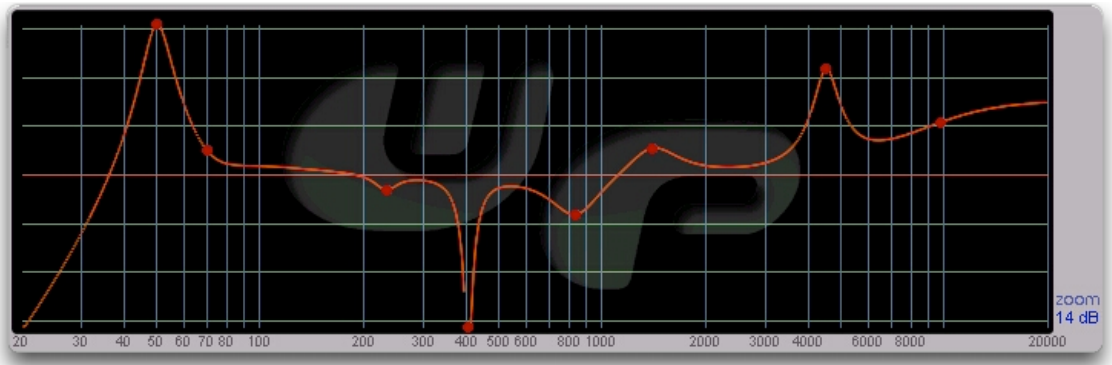


Graphical User Interface :



To change the frequency / level of a node, just click with the left mouse button on a node of the graphical representation of the EQ curve and move it around.

EQ -
Curve
with all eight
nodes

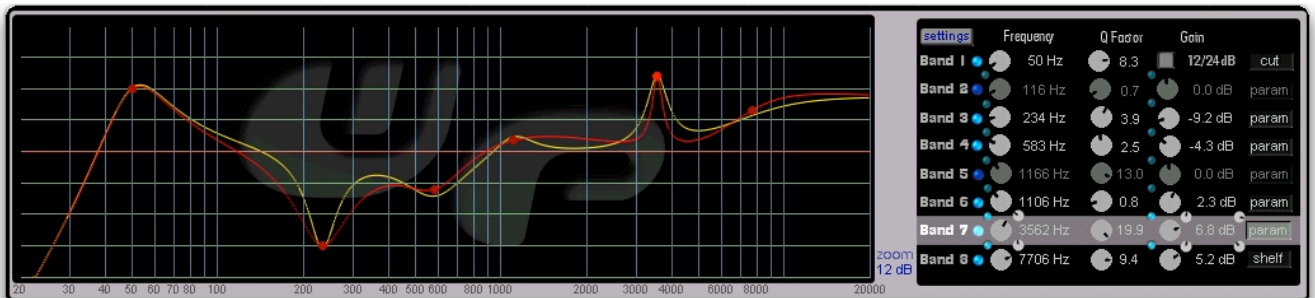


You'll quickly see, if it is possible to change the steepness of the selected node by trying to move with the right mouse button held down. If not, use the controls to the right to set the steepness.

To change the kind of a filter (e.g. form cut to shelf) just click+drag the text on the most right until the desired filter is shown.

Deactivating a filter can be done either via double click on a node in the graphical representation of the EQ curve (see pic below) or by clicking on the small blue LED found beside the controls of the filter, so it isn't illuminated anymore (see pic below).

Activating a filter is done either by double clicking on an empty area into the graphical representation of the EQ curve or by clicking on the small blue LED found beside the controls of the filter, so it is illuminated.



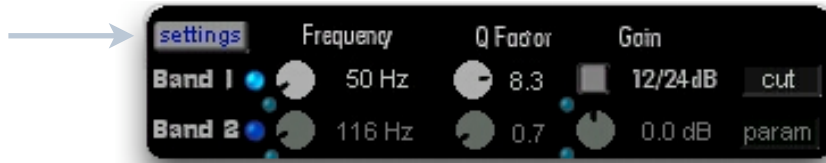
In case a filter is switched off, the node in the curve display vanishes and the knobs are dimmed (in the example above band 2 and 5 are deactivated).

If a eq curve node is selected, the according band controls on the right are highlighted (here band 7).

Like all wolf audio devices spEQtrum includes an automatic dsp saving feature, so that switching off a filter also unloads it from the dsps.

Gain - Bandwidth Coupling :

As explained earlier, spEQtrum features gain dependant bandwidth settings. To activate this function open the settings panel via the settings button located in the band parameter area.

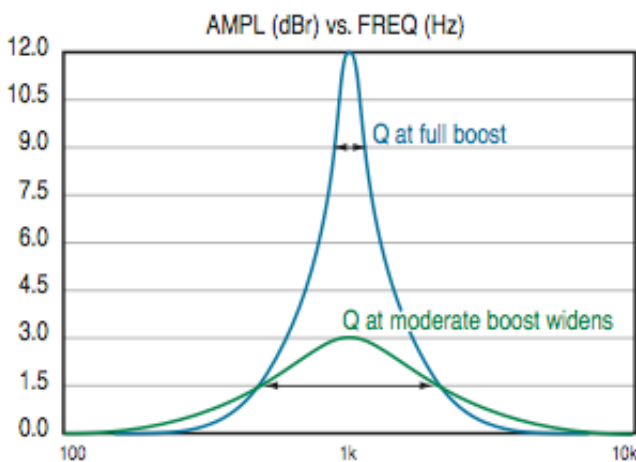


The settings panel (see below) has three sections. In the middle is the section for the gain-bandwidth dependency as well as the switches for (de-) activating the function for each band.

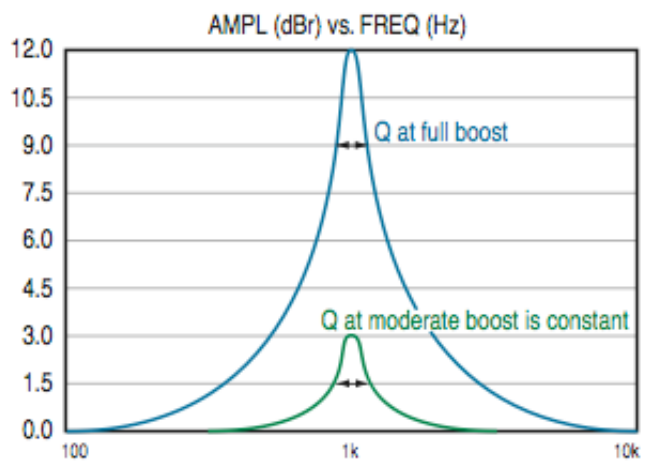
The attenuation and balance pots both individually alter the coupling strength of gain and bandwidth. I advice to play around with and to experience the function, as this way is far easier to learn than long winded explanations.

The graphic below might explain faster, how it basically works.

On the left graph the bandwidth is wider with low gain boost than with high gain boost. This is not the case for a constant bandwidth as seen on the right graph. There the bandwidth stay always the same.



bandwidth coupled to gain



constant bandwidth

As a starter help the local preset list of the gain-quality dependency contains dozens of presets for several crossings and behaviours to get an insight of what this feature does for you.

All bands can be individually influenced by main, local or no preset settings.

This is reflected by the lowest button:

M -> Main Preset List,

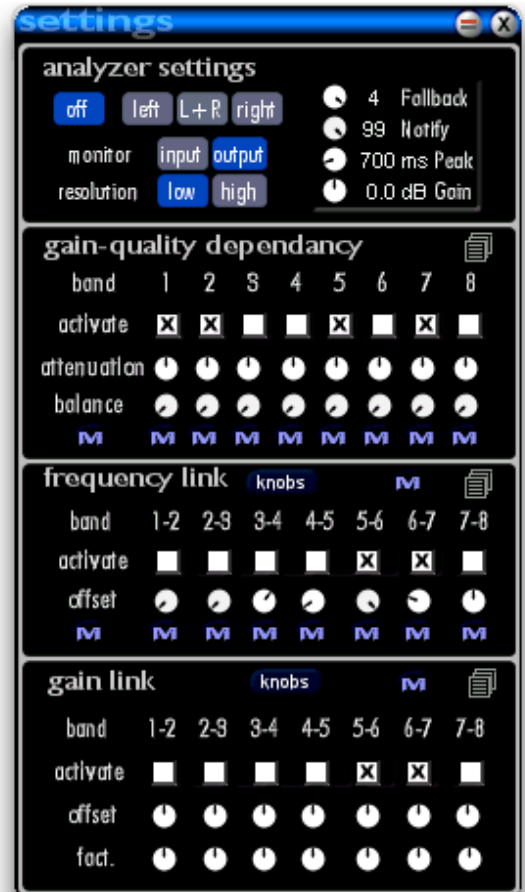
L -> Local Preset List and

off -> no influence by any preset list

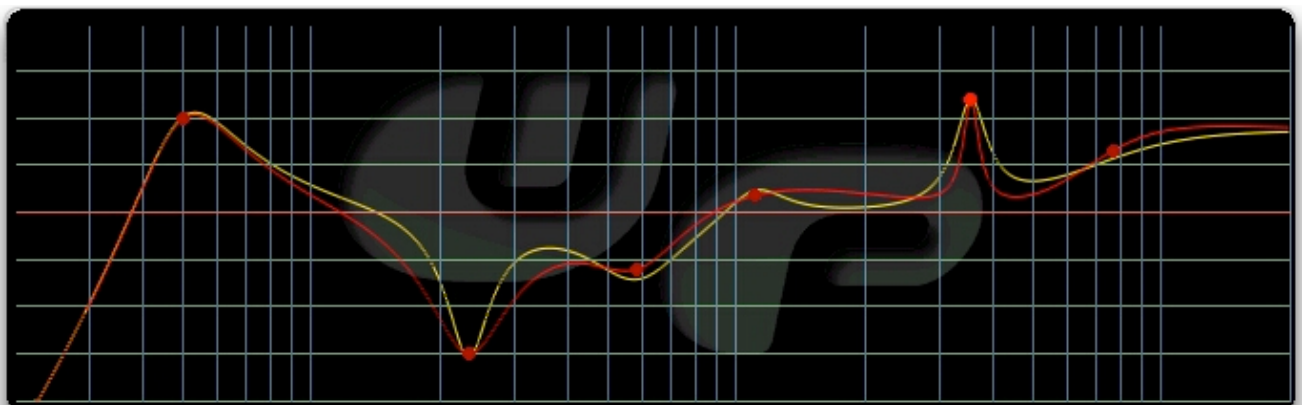
The button below the text “balance” switches all preset dependancies.

The local presets don't influence the activation, this parameter is only set by the main preset list.

As long as a band is set to cut or notch, the corresponding controls in the settings panel are disabled.



As soon as a band has gain and bandwidth coupled, a yellow line will appear for that band beside the red line. Now the yellow line shows the real eq characteristics, while the red line shows, what the initial setting is.

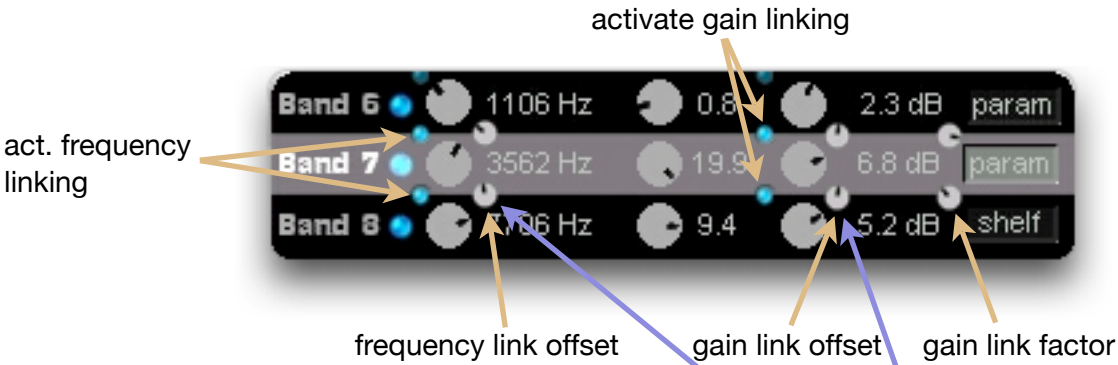


Frequency & Gain Linking :

Frequency & Gain Linking allows to tie the frequency & gain values of the different bands via an offset together which can e.g. result in a custom filter made out of separate bands.

The linking can be switched on/off for gain & frequency via the small blue LEDs between the frequency and gain knobs or via the settings panel.

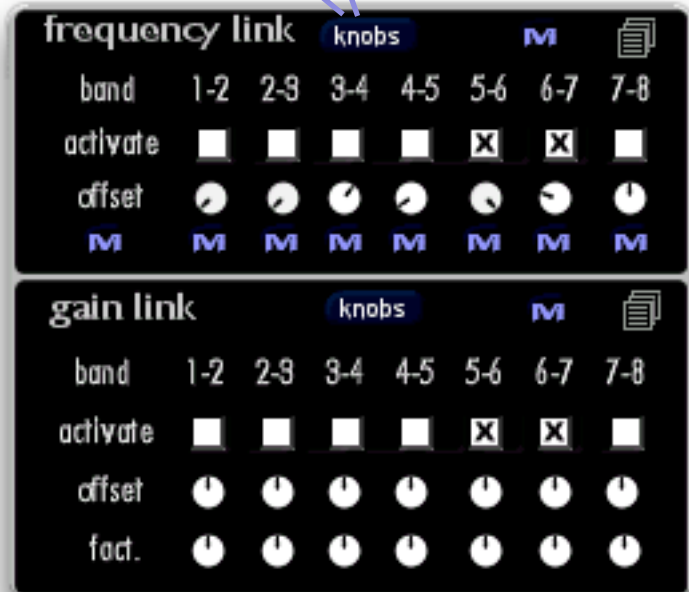
As soon as it is switched on, small knobs will appear on the main panel, where you can set offset & factor.



The small knobs can be hidden via the settings panel, if not needed.

Frequency linking provides one control for the offset.

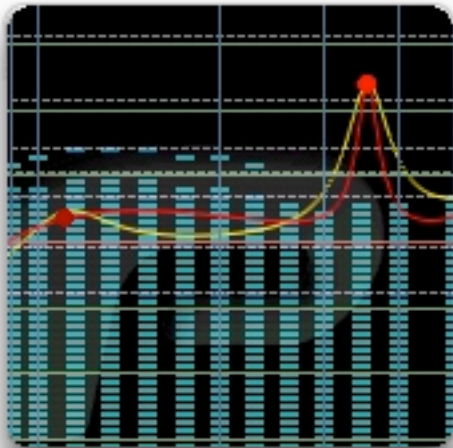
Gain Linking provides two controls, the 1st for the offset, the 2nd sets the relation factor between both gain values. Usually you'll use the factor control to adjust the gain coupling.



Again both sections feature the main <-> local preset list behaviour like the gain-quality dependency section.

In fact the local preset lists work in nearly the same kind, so please refer to the explanation above regarding main and local preset lists. Gain linking differs a bit as it only allows to switch all bands at once and not separate like the others.

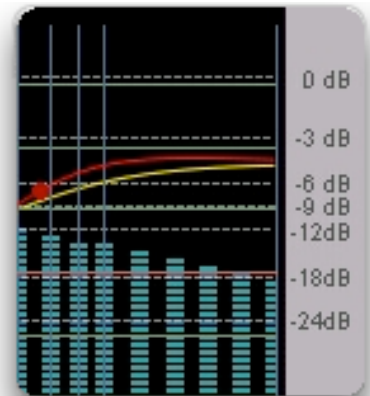
Frequency / Spectrum Analyzer :



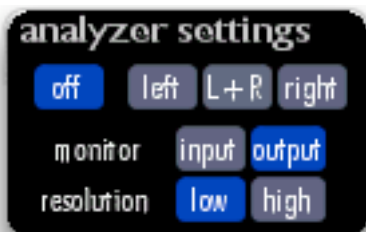
The spectrum analyzer is shown right behind the eq curve.

This lets you immediately see the results of your eq adjustments.

It can also be used to easily adjust your speakers to your rooms frequency response in the first place.



As long as the analyzer is switched on, it shows dotted white helper lines on the eq display for the dB division, which is shown on the right as well - but only, if the analyzer is activated.

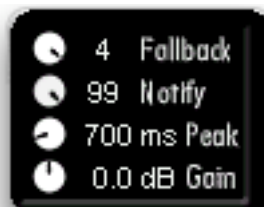


The input can be set to left-only or right-only or to both channels. In the latter mode the signal is damped by 3 dB to avoid overloads. "off" unloads the whole analyzer circuit from dsp and switches it off.

You can either monitor the input or the output after having applied the eq curve.

As it uses quite a lot resources, there is a low and a high resolution view possible, switchable via the settings panel.

On the left of the settings panel the analyzers display behaviour can be set.



- <- adjusts fallback time
- <- update time of the display
- <- peak hold time
- <- drive for input

The gain poti adjusts the input level for the analyzer, so it is driven with a hotter signal. This leads to a better resolution because the higher levels between zero and -6 dB are displayed with more resolution.

However if you drive the analyzer with a too hot signal (means overload) the results won't be correct.

Zoom :

The zoom slider is located on the right lower corner of the eq display. Just click and drag up/down on the number to change the zoom.

You can also click on it and directly start typing the desired resolution. After hitting return it will become active.

Btw, a very convenient way is to connect the zoom slider to a midi controller ;-)

If it is zoomed in more than 12 dB (or 24 dB for the 24 dB setting), the frequency and gain control knobs will be disabled.

Gain and frequency are still controllable via the eq curve display as long as their nodes are visible.

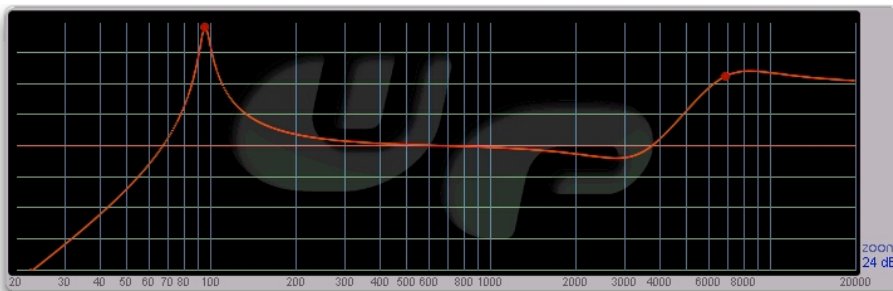
Filters :

Availability of the different filters for each band :

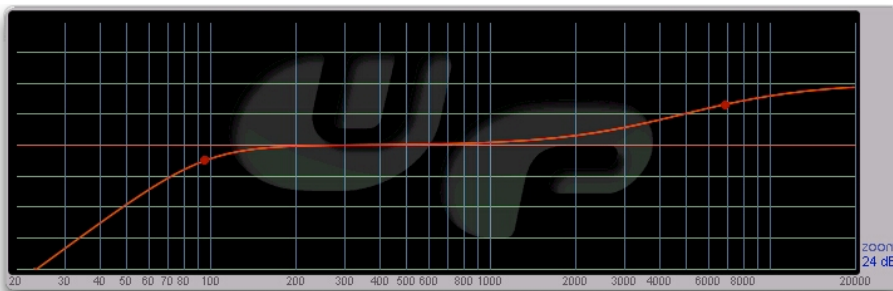
Filter	Band 1	Band 2	Band 3	Band 4	Band 5	Band 6	Band 7	Band 8
cut	X							X
shelf	X	X					X	X
parametric	X	X	X	X	X	X	X	X
notch		X	X	X	X	X	X	

The red X stands for the possibility of gain-bandwidth coupling.

Different steepness / filter quality settings :



low cut and high shelf filter with **high** steepness / quality



low cut and high shelf filter with **low** steepness / quality

4.0 LEGAL BLURB

The content of this manual and features of spEQtrum itself are subject of change. Also I'm not responsible for any kind of damage caused by the use of spEQtrum.

You can use this device on as many computers as you want, however I urge you not to deliver it to anyone else.

The manual was written with the best intention to help you. Anyway there could be errors or I forgot something to mention. Please inform me, if you encounter such faults.

5.0 TIPS & TRICKS

Frequency & Gain Linking :

The gain factor control is a little bit fiddly. This is due to a bugfix to avoid „Function Call Limit reached“ (followed by the need to restart the computer).

To get the knob back to a default setting, it isn't suffice to just doubleclick on the knob. You'll need to use the arrow back/forward keys afterwards to achieve the default setting (means both gains have the same level).

Presets for Gain-Bandwidth Coupling :

The main and local preset list share some presets regarding the gain-bandwidth coupling. In difference to the local presets the main presets save the actual bandwidth setting and not only the dependancies.

Depending on which gain level and bandwidth you want to have a crossing (means same values) between the red and yellow eq curve, you can choose a setting from both preset lists.

Presets are supplied for crossings at 1.5 dB, 3 dB, 6 dB and 9 dB with a Q factor of 2.5, 5 and 10 for the 12 dB amplification setting and for crossings at 3 dB, 6 dB, 12 dB, and 18 dB again with a Q factor of 2.5, 5 and 10 for the 24 dB amplification setting.

As e.g. crossings at 1.5 dB with Q=2.5 for 12 dB amplification are the same as crossings at 3 dB with Q=2.5 for 24 dB amplification, these settings share the same preset (bank) and have a somewhat coded name, e.g. the name of the preset bank for the example above would be "crossings@1.5/3dB".

Miscellaneous :

- For fine or small frequency movements use the graphic display. This is also handy for gain changes, if zoomed in.
- To copy presets from local to main preset lists (or vice versa), first switch the desired setting to local, load the local setting, switch to main and save it in the main preset list.
Couldn't be easier, could it ?
- Assign the zoom slider to a midi controller (can't repeat it often enough :-)
- Creating a new band via the eq curve (double click into it) chooses the next available deactivated band. This is not always wanted. Use the blue LED to activate a band, if it shouldn't be the next available.
- Ignore the hint about compatibility when loading a spEQtrum preset list into the 8BandEQ. spEQtrum has far more parameters, which of course aren't recognized by the 8BandEQ and therefor don't do anything.
- For checking and adjusting your rooms frequency response superficially, use pink noise, send it to your speakers, mike your speakers, route the mike output into the left channel of spEQtrum and the pink noise to the right channel. Now you can start to adjust the eq to get a flat room response with the use of in/out monitoring and left/right channel switching.
Another way would be to use a sweep and set the peak hold time to max.

HAVE FUN !!