Review: PSP MasterPack
by Rick Paul - *17th September 2007* -

PSP Audioware is best known for providing analog-flavored plug-in processors for the DAW environment. We've previously reviewed PSP MixPack (along with PSP EasyVerb and the original version of PSP MasterQ), PSP StereoPack, and PSP EffectsPack. This time we will be focusing on what may well be considered PSP's flagship line of processors, the mastering-oriented PSP MasterPack.

Background

PSP MasterPack is a collection of five plug-ins that are available individually or as a discounted bundle. PSP VintageWarmer 2 simulates an analog-style, single- or multi-band compressor/limiter. PSP MasterQ is a parametric equalizer geared toward providing a transparent sound. PSP MasterComp is a stereo dynamics processor that can be used as a compressor or expander. PSP Neon and Neon HR ("HR" for "high resolution") are 8-band linear phase equalizers geared toward mastering.

Windows plug-in formats supported include VST and RTAS. AudioUnit, VST and RTAS are supported on the Macintosh under OS X. For purposes of this review, I checked out the VST versions of the plug-ins under SONAR Producer Edition 6.2.1.

List prices for VintageWarmer 2, MasterQ, and Neon are $149 apiece. MasterComp lists for $249. Neon HR lists for $299, and includes a free copy of Neon. The MasterPack bundle goes for $569, saving $277 off the total price of the individual plug-ins.

With one exception, software protection is either via a user name and authorization key or via i-Lok authorization. The exception is PSP Neon HR, for which only i-Lok authorization is available. Note that an i-Lok dongle is not included with the software, so must be purchased separately if you don't have one and want to use Neon HR (or prefer to use i-Lok authorization for any of the plug-ins). I used the software authorization for all plug-ins except Neon HR. My first attempt to authorize Neon HR via PSP's i-Lok request feature of their registration page did not result in receiving the needed activation on my i-Lok account. However, a second attempt the next day did return the authorization later that same day.

Documentation comes in the form of a detailed PDF operation manual for each plug-in. Only the MasterComp manual makes use of the bookmarks feature of the Acrobat format and reader, which makes it particularly easy to navigate around the document. I hope PSP will consider adding bookmarks to the other manuals in the future. Whether coincidentally or not, the MasterComp manual was the only manual whose shortcut at the Windows level was not named "PSP MasterQ Manual". The documentation is generally quite thorough, which is on par with other PSP manuals.

Family Traits

Before getting to the details of the individual plug-ins, it may be worth mentioning a few characteristics shared by all or most of the plug-ins in the MasterPack series.

Perhaps the most noticeable shared element is PSP's preset management bar, which is located at the bottom of each of the plug-in interfaces. In case it looks a little confusing at first, it may help to know that red means save and green means load. From left to right, then, the preset management system allows saving and loading banks of presets, individual presets, and "A" and "B" settings for A/B comparisons. Smack dab in the middle of the preset bar is a text display that displays the name of the most recently loaded preset, while also allowing you to enter your own preset name, for example if you'll be saving a setting you created as a preset. Just to the right of that is a button that brings up a menu display of all the presets in the currently loaded bank, and there are previous/next preset arrows just to the right of that.

All but one of the MasterPack family plug-ins have a button or switch labeled "FAT". Neon doesn't include the FAT capability, though Neon HR does. No, the FAT button isn't for turning on "phat" sound mode. Rather, it stands for "Frequency Authentication Technique", PSP's proprietary algorithm that uses double sampling techniques to make plug-ins using it sound even more analog-like. In the equalizer plug-ins, MasterQ and Neon HR, FAT reduces the frequency response errors introduced when digital filters are derived from analog prototypes. With the dynamics processors, VintageWarmer and Mastercomp, FAT primarily reduces aliasing artifacts in higher frequencies. While you will hear the difference between using FAT or not, especially at lower sample rates such as 44.1 kHz and 48 kHz, it should be noted that engaging FAT mode uses more than double the CPU resources compared to using the same plug-in with FAT mode turned off. As such, my general rule of thumb was to do most of my work with FAT disengaged, then engage it just prior to rendering. Whether this is necessary or not will depend on the sample rate and bit depth of your project, what else is going on in your project, and how powerful your computer's CPU is.

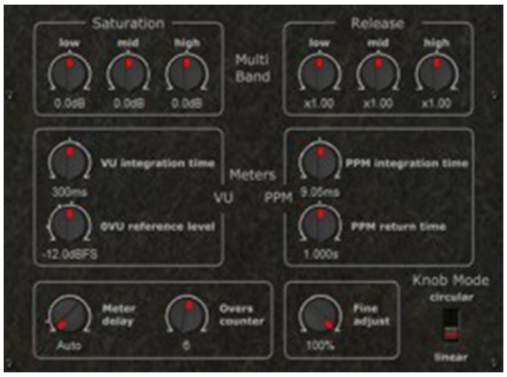
Something you won't see in the MasterPack plug-in interfaces, though you might spot an indication of it in SONAR's effects bin interface if you're on a very recent version of SONAR, is 64-bit interfaces between each of the MasterPack plug-ins and the VST host application. PSP is one of the first plug-in vendors, other than Cakewalk, to implement 64-bit plug-in interfaces to and from the DAW. In SONAR's effects bins, this is shown by double ticks from the 64-bit plug-in to the next plug-in in line -- there is one set of these for a mono plug-in and two sets for a stereo plug-in. For example, in the screen clip at right, you can see that both Waves' RDeEsser (from the Renaissance Maxx plug-in bundle) and PSP MixTreble (from the PSP MixPack bundle) have 32-bit stereo interfaces (i.e. one tick for each channel). However, the three PSP MasterPack plug-ins (i.e. MasterComp, Neon HR, and VintageWarmer 2) have 64-bit stereo interfaces (i.e. two ticks for each channel). Of course, this feature isn't so much about what you can see as what you can hear, in terms of the results of your mixes. The idea is that using the full 64-bit resolution of SONAR's mix engine, without having to ratchet bit-depth down to go through a 32-bit plug-in interface, should preserve more of the subtleties that are present in the mix since there is less likelihood of important information's being chopped off via truncation or rounding. Sure, mixing at 64-bit to get more analog-like summing sounds great in theory, but if you then ended up shoving the data through a series of 32-bit plug-ins for mix or mastering processing, you've lopped off the extra resolution in the process. The new 64-bit interfaces in the PSP MasterPack plug-ins help avoid that compromise.

Let's move on to details of the individual plug-ins.

PSP VintageWarmer 2 (V2.1.4)

PSP bills VintageWarmer 2 (hereafter "VW2" for brevity) as being a "high quality digital simulation of an analog-style single- or multi-band compressor/limiter. That may be true, but, if you come to the party thinking of VW2 as a compressor/limiter, you may find yourself scratching your head trying to figure out where the compression ratio and other common compressor/limiter controls are. At the other end of the spectrum, I've historically viewed PSP VintageWarmer as a specialized processor for warming up digital audio, for example to simulate mixing or tracking to tape. (An instance of VintageWarmer running its "Mix liteDriven Tape" preset has occupied the position of honor at the end of my mix bus chain for a number of years now.) What is the reason for these differing views of the same plug-in?

Both assessments are more or less correct. Which you'd come to first will probably depend if you're more of a tweaker or more likely to play around with presets. Given the 30 included presets have names like "Guitar Track", "Track Tape Slow", "Mix semiDriven Tape", "Mix Finalizer 1", and "Mastering First Aid", you can probably guess which orientation I tend toward. In fact, there is a lot of instant gratification potential with VintageWarmer for these sorts of specialized applications. On the other hand, if /when you want to go beyond the instant gratification factor, there is also a significant amount of fine control available. Let's take a look at some of the highlights.



Up at the top of VW2's interface are stereo VU meters. That's right, I said VU meters! Not only do they look like analog VU meters, but they are calibrated to behave like real VU meters, at least by default. You can also flip a switch to make them behave like PPM meters (Pseudo Peak Meters). Furthermore, if you click on the large PSP VintageWarmer name in the lower left of the plug-in's interface, you get access to a back panel with additional detailed settings, including the ability to more finely specify meter behavior in both VU and PPM modes. Back to the front panel, though, one additional switch, in this case a three-way switch, between the meters allows you to choose between monitoring the gain reduction being applied by VW2's processing and monitoring the input or output signal from VW2.

Along the left-hand side of the central portion of VW2's front panel are the main compressor/limiter control knobs. At the top is the Knee knob, which allows controlling hard versus soft knee behavior. This allows setting VW2 to behave like anything from a hard knee limiter through providing deep, fast compression, with analog tape-style effects lying somewhere in between. Below that are the Speed knob, which sets both "attack" and "release" times in conventional compressor lingo, and the Release knob, which serves as a multiplier for the value of the Speed knob for setting release time. There is also an Auto button that tells VW2 to automatically adjust the release time based on the Speed and Release knob settings, and a Long button that extends the range of the Release time beyond where it's standard settings leave off.

The second column of knobs and other controls includes the prominent Drive knob, a parameter readout, the Ceiling knob, and a Brick Wall toggle button. The drive knob raises or lowers the input level to the limiter. The Ceiling knob allows the VW2's maximum level to be other than 0 dBFS, and also interacts with Low, Mid, and High frequency band-specific saturation level adjustment settings in VW2's back panel controls. The Brick Wall button

engages VW2's output brick wall limiter mode when operating in multi-band mode, and controls the output clipper section of the single band mode. This can be used to prevent transients over 0 dBFS from getting through. The parameter readout, which resembles a car's odometer, displays the value of the current VW2 control (i.e. based on the control being manipulated or just moused over). I'd have preferred a more modern numeric display here as the odometer style behavior can be a bit funky at times in terms of its appropriateness for any given control, but it does the basic job and certainly looks interesting.

VW2's rightmost two columns of knobs include a wet/dry Mix control, an Output attenuator, and Adjust and Freq (frequency) knobs for the Low and High frequency band-specific processing. The Freq knobs adjust the crossover frequencies for the low and high frequency bands. How the Adjust knobs work depends on whether VW2 is in multi-band mode or single band mode. In single band mode, the Adjust knobs act as gain controls for low and high shelving equalizer bands. In multi-band mode these controls adjust the pre-limiter gain applied to these frequency bands. This is somewhat opposite of the way many multi-band limiters work in that the gain is being applied before the limiter, then the general limiter settings, along with any frequency band-specific saturation settings, are relied upon for determining the limiting action. By contrast, many multi-band compressors and limiters have a band gain control that occurs after the limiter function. Perhaps it is fair to say that this difference is representative of the difference in philosophy between VW2 and more typical multi-band compressor/limiters. That is, a more digitally-, or more surgically-, oriented tool may be more about absolute control, whereas VW2 is more about shaping sounds in pleasing, analog-like ways. In particular, keep in mind that how hard you drive the limiter circuitry in VW2 is affecting not just gain reduction, but also the level of saturation in the output signal.

Down at the bottom of the VW2 interface are a row of switches and a plug-in latency indicator calibrated in both milliseconds (with a decimal to get to the nearest tenth of a millisecond) and samples. The switches turn VW2's processing on and off, turn FAT mode on and off, switch between single- and multi-band operation, switch between stereo and mono operation, and turn stereo link mode on and off.

It is worth noting that simply having FAT in the plug-in, whether it is enabled or not, significantly increases plug-in latency over the old VintageWarmer. However, PSP thoughtfully includes a VintageWarmer LE plug-in without FAT, which can be used for situations where reduced latency is required.VintageWarmer LE is also backwardly compatible with VintageWarmer 1.6.5, thus preventing issues with loading plug-in settings in older projects.

My historic tendency with PSP VintageWarmer has been to use it as a special purpose processor, but those special purposes were common enough that I've used it on almost every recording project I've done. At minimum, it was strapped across the mix bus to simulate mixing to tape, but it also often found its way onto individual tracks, be it to simulate tracking to tape or simply to color the sound in an analog-like way. In the course of doing this review, I was forced to explore the capabilities of VW2 beyond picking a preset and perhaps adjusting a knob or two. In particular, I attempted using it as a multi-band limiter for mastering purposes. While its only having three bands may be considered a limitation for tackling problem situations, for the most part I found it to be an excellent and intuitive tool for that application. In particular, the limited number of controls and frequency bands was much more conducive to experimentation and adjusting by ear than units I'd used in the past that had more bands and controls. VW2's analog-like saturation has a tendency to just make things sound better, too. I get the feeling I'll be using VW2 for quite a few additional applications in the future. The 64-bit plug-in interface and addition of FAT mode are also a major benefit of VW2 over the original VintageWarmer, especially for mix bus and mastering applications.

PSP MasterQ (V1.5.2)

We have already covered PSP MasterQ in depth in an earlier review, so I will refer you to that earlier review for the nitty-gritty details of MasterQ's capabilities and operations. As a quick refresher, though, MasterQ is a high quality parametric equalizer featuring seven fixed-function bands: low cut, low shelf, three fully parametric bands (nominally low, mid, and high), high shelf, and high cut. Frequencies and Q are sweepable for all bands, and gain can be adjusted for all except the high and low cut bands. The high and low cut filters can operate in either 12/dB per octave or 24/dB per octave modes, though adjusting the Q control for those bands, can change the slope of the filters. All bands may be individually enabled or bypassed. There is also a reasonably large-sized EQ graph display,

which shows the graphs for both individual bands of EQ that are enabled, color coded by band to allow distinguishing which is which, and the net effect of combining all enabled bands.

Key updates to MasterQ since our original review include the ability to directly manipulate the main EQ controls (i.e. frequency, Q, and gain) from the EQ graph, the addition of the new PSP preset management system, and full 64-bit operation at the plug-in/host interface in addition to the 64-bit internal operations that were there from the start. Additionally, there is now support for Mac OS X Universal Binary (AudioUnit, VST, and RTAS formats) and i-Lok authorization has been added as an alternative to software key-based authorization. DirectX support has been discontinued. The discontinuation of the DirectX version of the plug-in also means that latency compensation is now automatic in the only version of the plug-in applicable to SONAR users.

Having used MasterQ for over three years now, I am happy to report that my initial enthusiasm for the plug-in remains untempered. In fact, with more powerful computers -- I'm currently running an Intel Core 2 Duo E6600, as opposed to the AMD Athlon XP 1600+ I was running at the time of the MasterQ review -- comes the potential for using MasterQ on more tracks, rather than just reserving it for particularly high value tracks and mixing and mastering applications. The addition of being able to manipulate the EQ controls from the graph is extremely welcome. I still do wish, however, that the EQ graph provided an FFT meter ala the Sonic Timeworks Equalizer. Of course, it is easy enough to use a separate plug-in for FFT metering (e.g. Cakewalk's own Analyst, which is included with SONAR 6). However, it is very handy to be able to manipulate an EQ curve super-imposed on an FFT readout, especially when you can see the effects of your changes in the real-time FFT display (i.e. in the case of post-EQ metering).

PSP MasterComp (V1.5.4)

PSP MasterComp is a highly transparent compressor/expander, with a built-in brick wall limiter. It is aimed primarily at mastering and bus-level operations, though it can also be used at the track level if you have the horsepower available on your DAW or don't mind freezing tracks. The availability of fractional compression rates, or expansion, means you can use MasterComp to help restore the dynamics of overly compressed tracks or mixes in addition to using it for traditional compressor applications. Advanced side chain filtering, channel linking, and compression tilting capabilities are also provided, thus expanding the potential applications, especially for mix-level processing in cases where it may not be possible to address issues at the source.

A quick look at MasterComp's front panel interface may make you wonder if you're looking at an alternate set of skins for VintageWarmer 2, as their layouts are very similar at a superficial level. In fact, the VU meters at the top of MasterComp's interface, and the preset bar at the bottom of the interface do behave the same way as the corresponding interface elements of VW2. However, that is where most of the similarities end.

The left-most column of knobs and buttons on MasterComp's front panel provide traditional compressor/expander controls. At the top is a compression ratio control -- fractional ratios result in expansion. Below that are conventional Attack and Release knobs, with attack ranges from one hundredth of a millisecond to one second and release times ranging from a tenth of a second to ten seconds. One cool thing about these, and, in fact all of MasterComp's, knobs is that there is a numerical display above each knob to show its value. Not only does this get

you settings at a glance, but you can also edit the numbers directly, for example to set a compression ratio or a specific attack time in milliseconds. You may not always get back exactly what you typed in, though, as compression ratios available are limited (i.e. by design) to those shown on MasterComp's display. For example, when I typed in a compression ratio of 3.25:1, I actually got a ratio of 3.36:1. There are also Auto buttons associated with the Attack and Release knobs. When these are engaged the related knob (i.e. Attack or Release) sets a nominal attack or release time, then MasterComp's automation algorithm takes it from there in adjusting the attack or release time upward or downward based on the source material. These algorithms are aimed at providing maximum transparency. There is also a Classic button associated with the Release control. This button, which is new in MasterComp V1.5.4, is not documented in the MasterComp manual. However, release notes indicate it engages a classic mode with alternate release phase response for a more focused sound. In my experimentation I found that this mode does make a subtle, but noticeable difference in the sound. The best I can suggest is trying it both ways and seeing which you prefer for any given application.

The next column to the right provides the large compression/expansion Threshold knob and a Make-up gain knob. If you are familiar with other compressors, these controls work just as you would expect. There is also an Auto Make-up button available to allow MasterComp to calculate the amount of make-up gain or attenuation needed based on the settings of the Ratio and Threshold knobs. When it is engaged, the Make-up knob can be used for fine-tuning the behavior of the Auto control. Note that make-up gain is added prior to the wet/dry mix, output gain/attenuation, and brick wall limiter functions within MasterComp. Speaking of the Mix and Output knobs, these are on the lowest positions of the two right-most columns of knobs. These function like the similarly named controls in VW2, except that the Output control sits before the brick wall limiter in MasterComp.

The top two knobs in each of the two right-most columns in MasterComp, and their associated buttons, control the MasterComp's sidechain functionality. Up near the very top, to the left and right of the words, "Low" and "High", respectively, are what look to be two EQ shelf pictures. These are actually buttons, though -- press them to toggle between cut and boost filter types. Below those are the Low and High cutoff frequency knobs to adjust the frequency of the respective side chain filters. Between the Low and High knobs is a Mon (for "Monitor") button that engages sidechain monitoring mode. There is also a "s.c. Ext" button to the left of the Low knob. That is not documented in the manual, but release notes for MasterComp V1.5.4 suggest that it is likely intended to engage external side chain monitoring. However, unless I am doing something wrong, I can see no way to provide an external side chain signal, nor does the button engage. Thus, I suspect this feature is not available when MasterComp is running under SONAR. (NOTE: PSP indicated true external sidechaining is implemented in the plug-in, but it is host-dependent, and requires a way to route the external signal to the plug-in's insertion point. PSP was not aware of whether SONAR supported this feature, but I'm reasonably certain it does not, at least as of SONAR 6.2.1. To the best of my knowledge, the only plug-in compressor that provides true external sidechain capabilities in SONAR is dB audioware's dB-D, which uses its own proprietary method for routing signals between multiple instances of the dB-D plug-in.) The middle row of knobs and buttons includes the Link and Tilt knobs, along with buttons to gently cut high and/or low frequencies from the linked side chain signal in cases where you don't want the low and/or high frequencies affecting the stereo linking. The Link knob adjusts the amount of linking between stereo channels, while the Tilt button governs the side chain balance between left and right channels for cases where the side chain input is not balanced between channels. When I think of sidechaining in a compressor or gate, I think of scenarios like ducking, where compression of backing tracks is engaged during a voiceover, or gated pad effects, where a gate is engaged by a rhythmic pulse, such as from a hi-hat. Both of these require external signals to be used for the sidechain input. Without the external input, you are effectively using some portion of the signal itself, rather than the entire signal, as the sidechain, for frequency-dependent compression. For example, a preset called "KickPump" boosts the sidechain signal from 71 Hz down, with the idea of enhancing the kick drum in a drums submix or full mix.

Down at the bottom of MasterComp's front panel are switches to turn MasterComp's processing on or off, turn FAT mode on or off, switch between hard and soft knee compression/expansion curves, switch between Peak or RMS operation, and turn the brick wall limiter on or off. The brick wall limiter is set at 0 dBFS. In order to ensure accurate limiting at your project's sample rate, it does not use FAT mode.

One thing I've noticed about MasterComp is that, whereas many compressors can really suck the life out of audio as settings get more extreme, short of mangling things via creatively uses of sidechain monitor mode, MasterComp

remains reasonably transparent. This is a very good thing for mixing and mastering uses, though it doesn't make MasterComp ideal for certain types of special effects. But, hey, that's what VintageWarmer is for! Another thing I've noticed is that MasterComp can tend to suck up CPU cycles, especially when FAT mode is engaged. This is a case where keeping the FAT mode toggle handy can be a good idea, turning it off while monitoring, but remembering to turn it on prior to any rendering. You probably won't find yourself using MasterComp in scenarios where you previously would have used Waves' Renaissance Compressor or another "vintage compressor" simulator, but, if you're looking for heavy-duty control with as much transparency as possible, MasterComp might just be the ticket.

PSP Neon and Neon HR (V1.5.0)

PSP Neon and Neon HR, with the "HR" standing for "High Resolution", are linear phase precision equalizers. For those of you wondering whether I just wrote a few words in Swahili, here's the scoop:

In the interests of keeping CPU and memory requirements low, as well as simplicity of design, most digital EQ plug-ins use infinite impulse response (IIR) recursive filters for manipulating the frequency spectrum of an audio signal. While this approach is not inherently bad, most digital IIR filter implementations have the side effect of altering the phase response of the signal in addition to the frequency response. To put it in simpler terms, different frequencies get shifted in time by different amounts, with the result being that a specific "slice of a signal", if you will, that would have arrived at a single point in time gets smeared across time, with different frequencies arriving at different times. This can result, for example, in harmonics from a given sound being shifted compared to the fundamentals from that same sound. This may not be undesirable in some situations. For example, phase response characteristics are one influence that can contribute to the notion of an equalizer's having "a sound", as opposed to being transparent. However, if you are looking for maximum potential for altering frequency response with minimal loss in transparency, it is desirable to minimize the phase response side effects of frequency-specific amplitude modifications. To achieve this, linear phase (LP) filtering delays each frequency by the same number of samples to ensure all parts of a signal that are meant to arrive together do arrive together, even after having their frequency response manipulated.

It's not quite that simple, though (Okay, granted, that's probably the understatement of the year if you're reading this because you'd never heard the term "linear phase precision" before.) The technique generally used to accomplish linear phase filtering is called finite impulse response (FIR) filtering, but this technique requires sufficient processing horsepower that even today's über-CPUs can't handle it in real time. To get around this roadblock, different DSP developers use different techniques. The technique used by PSP is called frequency-domain fast convolution, which PSP indicates reduces the accumulated calculation errors compared to another popular technique, while also offering other implementation benefits. FIR techniques require processing the audio in chunks called frames. The number of samples needed in a frame to provide a given degree of precision in the calculations depends on the sample rate, with more samples needed as sample rate rises. As you might imagine, the impact on CPU load is also related to the frame size and the resolution that is delivered. This is worth keeping in mind when we talk about the Neon HR controls, and also for when we go over the differences between Neon and Neon HR.

We will focus primarily on Neon HR since its interface and functionality are supersets of the interface and functionality of Neon. Most observations made here will apply to both plug-ins, but I will endeavor to point out any important differences.

The interface of both plug-ins can be thought of as having four separate areas. At the upper left corner, and dominating the upper portion of the interface is the EQ graph. In some respects, it has a lot in common with MasterQ's EQ graph in terms of the actual display. In particular, the display can show not only the plug-in's overall EQ curve, but also the color-coded component curves relating to individual bands. One immediately noticeable difference, besides Neon's cool light blue color, is that, while MasterQ shows all color-coded bands that are active, Neon only shows the a curve that has focus, because you are manipulating it or hovering over its controls, at any

given point in time. I find Neon's method preferable as a complex curve in MasterQ can make it hard to see what individual bands of EQ are contributing. More exciting, though, is that you can directly manipulate the EQ curve on Neon's EQ graph. Frequency and gain are tweaked by dragging a point representing the frequency and gain on the curve, while "Q" is manipulated by Shift-dragging the point belonging to that band. At the bottom of the EQ display, numerical indicators display the band type (more on that below), frequency, gain, and Q figures for each band, as well as the value of the overall plug-in's output gain dial (see below). This is a very nice setup indeed. The only thing that could have made it more useful is if FFT metering were available on the same graph, thus making it easy to view the EQ curve you are setting versus what is going on in the signal coming into or flowing out of the plug-in (ala Sonic Timeworks Equalizer).

The top right corner of both plug-ins is dominated by a Zoom dial, which allows zooming in or out on the range of the EQ graph. This is very useful for mastering applications where gain changes are often quite small, making them hard to see on fixed resolution EQ graphs. For example, instead of going with the default resolution of a little over 6 dB of gain or cut, you may choose to zoom in to 3 dB of gain or cut, or even less. Alternately, if you need to set more extreme values, you can zoom out as far as 24 dB of gain or cut.

In Neon HR only, there are a number of additional controls surrounding and below the Zoom dial. Up at the very top of the dial is a Link toggle, which allows linking or unlinking the two channels of Neon HR. If the channels are unlinked separate EQ curves can be set for each channel. Note that I said "channels, without specifically saying "left" and "right" or "stereo channels". Down at the bottom of the Zoom dial are buttons to toggle Neon HR between left/right and mid-side operation. When the EQ curves are not linked, separate buttons on each side of the Link button allow selecting whether Left/Mid is being manipulated and displayed, or whether Right/Side is being manipulated and displayed. When you are manipulating one channel the other channel's EQ curve is displayed with a thinner line for reference. For example, when using Mid/Side mode with unlinked channels it is possible to EQ centered sounds, such as the lead vocal, bass, and kick, separately from sounds on the sides of the stereo spectrum (e.g. acoustic guitars). This can be very helpful in mastering, where it may not be possible to go back and fix a featured sound's EQ in the mix, but applying the fixes to the whole mix might not be the right solution, either. By contrast, Neon only provides linked left/right operation. Down below the Zoom dial, and again only on Neon HR, is a row of buttons to toggle between Std ("Standard"), High, and Max ("Maximum") resolution. This affects both performance and Neon HR's frame size needs. If performance is tight, and it well may be on even newer CPUs if using high sample rates, it is worth noting that you can monitor initially using standard resolution, then set maximum resolution for rendering. Neon is preset to standard resolution, which PSP indicates should be acceptable for most situations when running at 44.1 kHz or 48 kHz (the only sample rates Neon supports -- Neon HR supports up to 192 kHz).

Directly below the EQ graph, and dominating the lower portion of the Neon interface are the individual EQ band controls. Tabs at the left of each row of controls allow resetting the entire row of controls to default values via a simple Ctrl-click, while individual controls can be reset to default values by Ctrl-clicking on the control itself. The top row of controls provides a toggle button to turn each band on or off, as well as a drop down list button to set the filter type of the band. Selections for filter band include two types of high and low cut filters (12 dB and 24 dB per octave slope), high and low shelving filters, and a peak filter. Note that you can set the type of band for each band independently, and there is nothing saying you have to have the bands be in logical orders. For example, if you start out tweaking mid-range frequencies using the left-most bands, then decide you need a low cut filter later, you can put it to the right of those bands with no problem. Of course, there are some times when I would love to see a "band reorder" button to put the bands in their logical order based on frequency. However, the EQ graph's ability to manipulate the bands directly can make band order in the hardware-like controls not such a big deal. Frequency, Gain, and Q knobs round out the controls for each band of EQ.

Moving down to the lower right corner of the Neon interface, there is the normal on/off button to bypass Neon's processing at the very bottom. Above that is an Out ("Output") gain/attenuation knob to raise or lower the plug-in output up to 12 dB. An "LP" ("Linear Phase") button above that toggles between using linear phase filtering and using the more traditional phase warping filtering. This can be used in cases where undesirable side effects of using

linear phase filtering are noticeable and objectionable, or simply to use Neon as a more traditional, but very high quality, equalizer. On Neon HR only, there is also a FAT button to toggle FAT mode on and off as desired. FAT processing is not available in Neon.

The fifteen presets Neon provides are mostly special purpose filters (e.g. for removing power-related harmonics), special effects (e.g. "Car Radio"), and conceptual demonstrations (e.g. "More Air"). This is more or less as one might expect for an equalizer aimed primarily at professionals. After all, most EQ setting needs depend on not only the sound being processed, but also the context in which the sound must fit, and the needs for a mastering situation are even less conducive to creating presets. However, I do have one minor complaint with most the collection of presets supplied with Neon. To demonstrate, I will refer to three presets: "More Air", "Mid Boost", and "Bottom End". These are all presets that focus on boosting the area of the frequency spectrum you might expect given their individual names. "More Air" sets only the high shelf filter, "Mid Boost" uses only one parametric band, and "Bottom End" uses one parametric band plus a low cut filter. For all other bands in all three presets, the frequency is set to 632 Hz. Let's say, for example, you start with "More Air", then decide you need to add a high cut filter to roll a little of the very top end off. The moment you click to enable the rightmost filter, which defaults to high cut functionality with a 24 dB per octave slope, you no longer get "more air". In fact, you get a steep rolloff of all high end and a fair bit of the mid-range to boot. It would have been more useful if the unused bands in these presets at least had their frequencies set across the spectrum in a numerical order consistent with their positions versus the used band(s). The sort of result I just described is mainly relevant to the high and low cut filters in that the other filters don't actually do any damage simply by enabling them. However, even with the other filters, it would have been nice to start them off in a reasonable range based on their function (e.g. high/low shelves up in the portion of the spectrum where you'd be likely to use them) and/or location (e.g. lower bands of parametric filters at lower starting settings, higher bands of parametric filters at higher settings). On a related note, I would also have preferred if resetting all the Frequency knobs did not default all frequencies to 632 Hz, but, rather, something more related to their left to right position in the controls. As it stands now, resetting frequency bands to more reasonably spaced frequencies requires calling up a preset, be it the "Flat" preset provided or one you make up yourself based on your favorite set of starting points, then recalling that preset. But doing that will also reset gain and Q settings to those established in the preset. And I can't imagine anyone actually wanting a default eight-band equalizer setup with all bands set to 632 Hz. This is really a workflow consideration more than anything else.

One other minor complaint, also in the workflow department, is that you do have to hover over one of the controls in a filter band to see what the settings are for any of its controls, other than the filter type. Of course, we are admonished to use our ears, not our eyes, when dealing with EQ settings. Still, this consideration can make it take longer to find the proper band to tweak when trying to address a specific problem, especially when you consider the default settings and presets issues I mentioned above, which may increase the likelihood of having control bands cross over with the frequency bands they are manipulating. For example, if you start with the "More Air" preset, then add an adjustment somewhere in the mid-range, you could pick pretty much any band as a starting point because they are all set the same. Of course, you'd be much more likely to pick one of the parametric bands than a shelf or cut (though you could change the filter type for any of the bands -- the defaults are just initial settings). So perhaps you decide to use band 4, and make a tweak around 800 Hz. Then you decide to make a low end tweak that involves low cut, low shelf, and one parametric band filters, say all set down in the 20 to 120 Hz range. Now you decide you need to make another tweak in the 250 Hz range. Assuming you picked the first three bands for the low-end tweaks, now you've got to go up to band 5 (or higher) for the 250 Hz tweak, crossing over the 800 Hz setting on band 4. That's not a problem in that you've been able to do what you need to do and physical arrangement of controls doesn't have to correspond to logical arrangement of the frequencies they control. However, maybe a little later you come back to this and hear a problem, and want to tweak the 250 Hz control a bit. You don't recall where you set what, so the natural place to look, based on what you are seeing on the EQ graph and which controls are enabled, is the band 4. If you just start tweaking, you've messed up your 800 Hz setting, and it slows you down slightly to have to look up at the graph while hovering over the various columns of knobs to see which is the correct one to use. It would have been much easier if there were numerical labels to show you what was what at a glance. The main saving grace here is that you can actually make the adjustment direction from the graph. Another is that hovering over either the controls or the relevant parts of the graph, does make it very visible which band is which due to the colored individual band graphs and the corresponding color of the enabled filter band type controls.

Minor complaints aside, Neon is generally very intuitive to use, and the sound quality, especially with Neon HR and its potential to use FAT mode and higher resolutions, is superb. Perhaps I should qualify that, when I say the sound quality is superb, when talking about an equalizer, especially for mastering purposes, the idea is that it should be as transparent as possible. To put it another way, it should make the changes you have dialed in, but should not have adverse side effects. This is really where Neon's linear phase mode shines. It can be instructive to get a setting in Neon or Neon HR, then play your recording and toggle the LP button on and off, noting the difference in sound quality. The actual equalization effects may be the same, but there is a subtle, yet noticeable, difference in sound quality. The best parallel I can suggest is that it is like the difference between live and recorded sound, where the linear phase filter mode just sounds that much more real than the non-LP mode. Mind you, this extra transparency doesn't come cheap, especially if you are using Neon HR's FAT mode and maximum resolution settings. However, for mastering purposes, where you're typically only running a stereo track with a small number of high-grade plug-ins, the tradeoffs in sound quality versus CPU usage are pretty easy to decide in favor of sound quality.

Playing Around

I originally received the PSP MasterPack plug-ins that I didn't already have back in late February. My intention at the time was to make this review the second of my three-part series on PSP bundles. Since I was already familiar with MasterQ and VintageWarmer, I reasoned that I would just have to get a feel for MasterComp and Neon/Neon HR, as well as the updates between VintageWarmer and VintageWarmer 2, in order to begin writing my review. However, it turned out that PSP was making a number of enhancements to all the MasterPack series plug-ins, all of which seemed worth waiting for. Some of these took longer than others. There were extended public beta tests of some of the updated releases, and the last of the updates finally went to general release in mid-to-late August.

Due to the extended period from receiving the plug-ins to writing this review, I have had the opportunity to use the plug-ins on many different projects, in a fair number of different contexts. I had a number of stability problems early on, especially when running Neon HR at 64-bit/96 kHz. However, I am happy to report I have yet to observe any stability issues with the current released versions of the plug-ins.

I've already made some plug-in-specific observations above in the individual plug-in sections of the review. Thus, rather than being redundant here, I will make a few more general observations regarding the overall series of plug-ins, and how they came into play in my mixing and mastering activities.

The first key thing I noted was there is a big distinction between wanting a given plug-in for flavor, as well as addressing some functional needs, and wanting to fulfill some functional need without imparting a flavor. With the exception of VintageWarmer 2, the PSP MasterPack plug-ins are about filling functional needs as transparently as possible. They do this very well. In fact, in almost every side-by-side comparison I made, for example in trying different mastering chains, some using mostly or only MasterPack plug-ins and others using products from different vendors, the MasterPack option would have won hands down if transparency was the main goal. Of course, sometimes imparting flavor is desirable, too, and it all comes down to taste in the end.

Another key observation was that, specifically for mastering-type activities, there is a significant difference in orientation between integrated multi-module solutions (e.g. T-RackS, Ozone), which often provide a number of cross-module presets, and a set of individual plug-ins like MasterPack. Of course, for the real mastering pros, it is all about knowing what you need to accomplish, then having the control you need to accomplish that available. The MasterPack modules are quite good in that respect. For less accomplished types who nevertheless find themselves in the position of needing to do their own mastering from time to time, the multiple plug-in approach may seem a bit more daunting at first. For example, it can be the difference between the integrated multi-module approach that offers a "Country Master" preset as a starting point, to trying to determine which plug-ins you need to use, and how to set each one (or at least which presets to use in each as starting points). I tend to be in the less-accomplished camp. There have certainly been times when I found myself needing to do something in a hurry, thus defaulting to my old ways. However, when I did manage to summon the courage to start right in with the MasterPack modules, doing whatever level of work was necessary to achieve the sounds that would work for me, MasterPack was much more likely to be the option that was chosen based on ultimate sonic results. This is especially true when it came to characteristics of the high end of the frequency spectrum. I suspect this is most likely due to the combination of

PSP's FAT mode's being available in the four primary MasterPack plug-ins and the MasterPack plug-ins' supporting full 64-bit data paths to and from SONAR 6, as well as inside the plug-ins themselves.

Closing Notes

PSP Audioware's plug-ins are all good stuff, but, if you were to liken plug-in lines to car branding within the overall suite of offerings from a given manufacturer, the PSP MasterPack line would be PSP's luxury line. Any car may get you from one place to another, but some cars just do it with more style and in better comfort. Similarly, there are plenty of plug-ins that do multi-band parametric EQ and compression, but these plug-ins seem to do a better job than most.

As a user of a recent version SONAR, with its 64-bit mix engine, I am particularly happy to see PSP support the 64-bit plug-in to host (and vice versa) interfaces in all four of these plug-ins. This is most important at the mix bus and mastering levels, which is where these plug-ins are most likely to hang out, though some will also find themselves coming into play on individual tracks. I am not yet aware of any other non-Cakewalk plug-ins that support the 64-bit interface, so this feature, along with PSP's proprietary FAT mode, give PSP a sound quality-oriented leg up on the competition in this area.

While these plug-ins aren't exactly cheap in the pricing department, they do represent very good value, especially if you consider what similarly functional, similar quality hardware would cost. In fact, it is probably fair to say that, if your specific application needs consistently require the kind of quality the PSP MasterPack plug-ins deliver, you may find these plug-ins to be a downright bargain. I predict that, if you do acquire these plug-ins, most, if not all, of them are likely to find their way into almost every recording project you do, especially if you are doing your own mastering.

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