PRO AUDIO REVIEW
Gear & Software Reviews For The End-User
REPRINTED FROM OCTOBER 2005 WWW.PROAUDIOREVIEW.COM

Algorithmix PEQ
Linear Phase EQ Plug-ins

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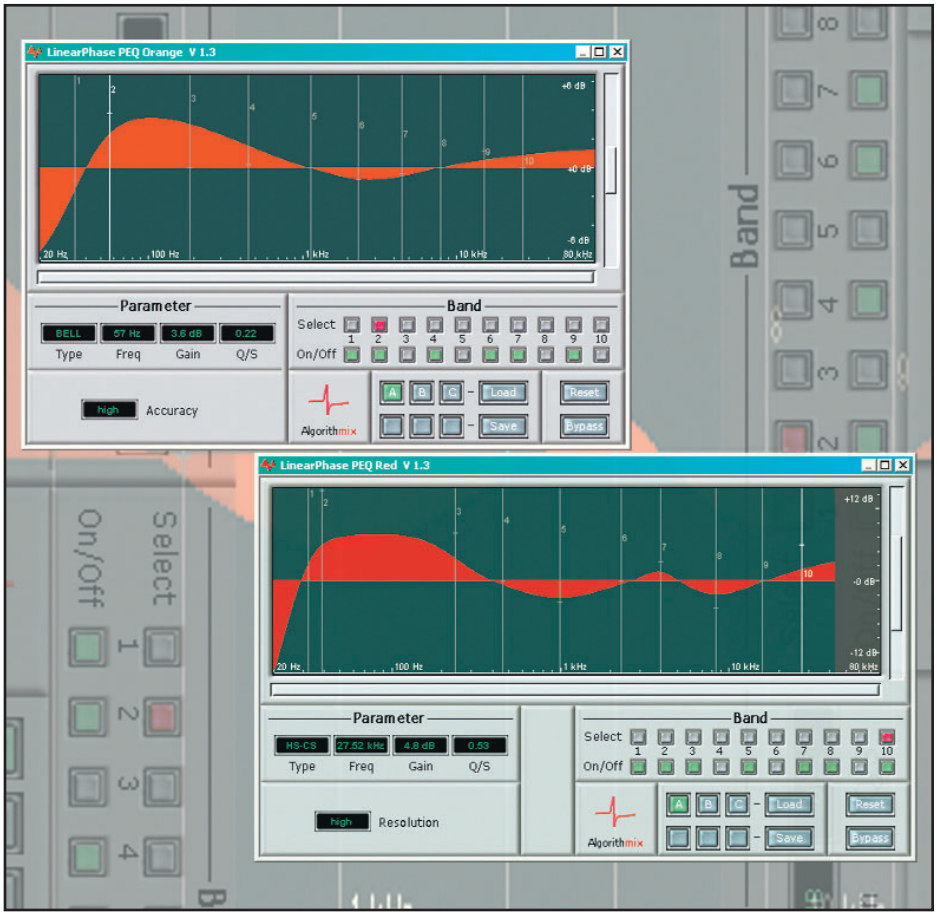

It was only a matter of time before an EQ plug-in running on a native processor would match and even surpass the best outboard mastering hardware in sound quality and versatility. That time is now. The feat required proprietary advances in signal processing and psychoacoustic modeling guided by exhaustive listening tests. After four years of R&D, the developers at Algorithmix have released their extraordinary new linear phase EQ plug-ins for PC DirectX and VST.

FEATURES

Traditional analog EQs are termed "minimum-phase," meaning they introduce a small time-shift that varies with the frequency of the signal. As greater boosts and cuts are applied, some frequencies are time-shifted more than others, essentially pulling apart the precise alignment of overtones that define a musical instrument's character. There is a point of diminishing returns. If the EQ is pushed to far, its benefits are overshadowed by damage to the wave structure caused by phase-shift. The typical side effects of this are muddiness in the low end, an unnatural midrange, and harshness in the top.

Algorithmix linear phase PEQs come in two flavors – Orange and Red. Linear phase EQ is a digital filtering process. There is phase shift, or rather latency, but it is the same for all frequencies so waveforms remain intact. The company has built upon standard digital theory with proprietary algorithms that result in absolutely pristine and transparent sound. Internal calculations are done in 64-bit double-floating point with an 80-bit accumulator to prevent overflow. Both EQs will operate at sample rates up to 384 kHz and as such can be used on DXD (352.4 kHz/32-bit) audio. Orange has a remarkable THD+N spec of –140 dB for virtually full 24-bit transparency.

The plugs each provide ten bands of fully parametric EQ. Any band can be set for low or high-shelf, bell, or low or high-cut. To adjust parameters you can type values directly, drag number fields up or down, or drag the curve display itself. In the later case, left click drags the frequency and gain, while right click drags the bandwidth, or Q. Real-time parameter adjustments do not interrupt the audio - one of the hallmarks of a true mastering-grade equalizer. You can change settings or switch bands on-the-fly without hearing a glitch. That feature alone requires considerable processing sophistication.

Orange and Red are based on two different types of digital filters and each has its own characteristic personality. I would describe Orange as more pure, and Red as having more edge. In addition, Red provides a unique, ultrahigh quality, continuously

variable-slope low and high frequency shelving filter. Such a filter, which is not attainable in the analog domain, can work wonders for a gentle broadening or highlighting of a track. Both flavors preserve correct filter shapes near the Nyquist upper frequency limit – in Orange this is accomplished through oversampling and in red through frequency domain modeling.

An accuracy setting increases internal resolution but on the higher settings is likely to overload all but the fastest CPUs. In practice, low and medium run well on a 1.8 GHz P4 and sound absolutely fine. Settings of High and Xtra are best reserved for non-real-time track bounces. Three registers are provided for temporary storage of settings while named presets can be stored and retrieved using standard Windows ctl-s/ctl-l keyboard commands, provided the user's host application supports menu shortcuts in plug-ins. The frequency range of the response graph automatically adjusts to half the sampling frequency of the project - the highest audio frequency allowable by the Nyquist theorem.

In Use

Linear phase EQ is a very recent development compared with nearly a century of experience with analog filters and, accordingly, there is a learning curve attached. At first it can be difficult to let go of the familiar distortions that are a part of traditional equalization. The benefits, however, of LP EQ are great – enhanced detail, better transient accuracy, preservation of impact and greater flexibility in correcting severe spectral problems. With care, the results can be so smooth and musical that you'd think they were done, well… done analog. LP EQ of the superior quality attained by the Algorithmix plug-ins does not sound like EQ – the effect is more like having a better recording, done with a better mic, of a better sounding source. LP EQ has changed the way I think about EQ and the way I master recordings.

The mastering of the latest release from Chaka Khan, *Classikhan*, was a perfect application for the Algorithmix EQ suite. The mixes consisted of a very high-energy live rhythm section, full orchestrations performed by the London Symphony, and the enormous spectrum of Chaka's incredible vocals. The producers wanted a very brilliant top end and extremely full, high-impact lows. I was able to get close with analog EQ, but the punch and separation of sounds within the mixes was too diminished in comparison with the Algorithmix. We used both the Red and Orange in series - Red for its variable low and high shelving boosts, and Orange for its natural-sounding mid range. I found that by using two Red shelves for the highs, one slightly steeper and at a higher frequency than the other, I could get a sheen that was quite remarkable. The Red low-boost was deep and clean without losing the punch of the kick drum and slap bass.

Fast Facts

- ***Applications:***
  Post production, studio
- ***Key Features:***
  Two types of 10-band fully parametric linear phase EQ; DirectX/VST plug-ins
- ***Price:***
  Single type - $1,485, both types bundled - $2,485
- ***Contact:***
  Algorithmix at 49-7741-91930, www.algorithmix.com.

While it may seem counterintuitive, mastering entirely in the digital domain with Algorithmix and a high-quality set of digital compressors and limiters has turned out to be especially good for Hip-Hop projects. The vocal character is excellent and there is no loss of snap in the beat, especially at the over-the-top levels that the style demands.

The Orange plug-in excels in purity and absolute transparency. So much so that, for a last minute tweak, I have been able to apply it to already mastered material, even material that has been compressed and peak-limited. It has worked wonders in providing a finishing touch to a master that is almost perfect. I know of no other EQ that allows this without an audible increase in distortion and a loss of clarity.

While I have done many successful masters using only analog or only linear-phase digital EQ, the best results are often obtained by using both simultaneously. The Algorithmix plug-ins play very well with an analog outboard loop. Moving back and forth between the two domains to shape a sound has given me some of the most exciting and satisfying results.

Summary

The Algorithmix Orange and Red PEQs are at the top of the game in quality, versatility and power. On a fast PC you can open multiple instances for multichannel work. With the addition of high-quality dynamics software, accurate monitors and experienced ears, state-of-the-art mastering is possible entirely within the box.

Alan Silverman has recently remastered The Kinks' complete RCA and Arista catalogs for hybrid SACD and was an album-of-the-year nominee at the 2004 Latin Grammy Awards for mastering Lagrimas Negras by Bebo Valdes and Diego El Cigala.