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BBE Sound, Inc.
5381 Production Drive Huntington Beach, California 92649 • 714-897-6766 • www.bbesound.com

SONIC MAXIMIZER™
Plugin

Sonic Maximizer Release Notes:

Software Installation

For all versions:
Click on <install.htm> and follow installation directions.

System Requirements:

Macintosh Minimum System Requirements

- Power Mac based 604e Processor, G3, or G4
- 120 MHz processor
- 64 MB RAM
- Mac OS 8.5
- 4 MB Hard drive space
- VST 2 compliant host application

Windows Minimum System Requirements

- Intel-based PC or compatible (486 or higher)
- 4 MB of free hard-disk space
- 16 MB of RAM
- 256 color VGA video or better
- Windows 9.x, ME, 2000, XP
- Host application that supports DirectX plugins

PRODUCT DESCRIPTION

The BBE Sonic Maximizer Plugin is a software version of our rackmount Sonic Maximizer. It is a stereo processor consisting of a Lo Contour control, Process control, Output Level control and L/R LED meters. The BBE Process switch is for both engaging the Process as well as comparing the processed sound to the unprocessed sound. LEDs on either side of the BBE Process switch indicate whether the BBE Process is in or out. The Lo Contour control is for adjusting the level of phase corrected low frequencies in the program material. The Process control is for adjusting the level of phase corrected high frequencies in the program material. The output is monitored by a “virtual” clipping circuit which turns on an LED when the output level is at 3dB below true clipping.

BBE HIGH DEFINITION SOUND–WHAT IT IS AND WHAT IT DOES

All music that is amplified through a loudspeaker suffers some loss of fidelity - or subtle distortions - caused by the inherent characteristics of the loudspeaker itself. The BBE system addresses these problems by compensating for phase and amplitude distortions and, in effect, delivering the signal to the speaker in a form which allows it to reproduce the original live performance more fully and more faithfully.

TRANSIENTS AND HARMONICS–THE COLOR CODES OF SOUND

To understand how BBE sound processing technology works, consider the characteristics of a loudspeaker and what we expect from one. Among a loudspeaker's most important requirements is the ability to reproduce transients - the brief high-energy bursts at the beginning of sounds. The transients then evolve into harmonics. It is the particular amplitudes and phase relationships of these transients and harmonics which add the unique color and character to each sound.

Varying either the amplitude or the phase of the transients and harmonics within signal causes distortion of the sound's characteristics. By drastically altering the transient response of a sound, it's possible to make a cymbal crash seem like a car crash. Similarly, altering amplitude or phase relationships of the harmonics in a clarinet's tone can make it sound more like a flute, or a French horn like an oboe.

AMPLITUDE AND PHASE

A loudspeaker's transient response is typically expressed in terms of amplitude response (how quickly it reacts to an incoming signal), with little or no regard to phase response (whether high and low frequencies are reproduced at the proper time). The ability to accurately represent a sound's phase and amplitude define the quality of a loudspeaker's transient and steady - state, or sustained, response.

If a loudspeaker's amplitude response curve were linear, then the relationship between the high and low frequencies would be correct. And if a loudspeaker's phase response curve were linear, then the low and high frequencies would reach the listener's ears in their correct time order. This would result in faithful reproduction of the sound. However, this isn't normally the case.

WHY IS LIVE SOUND SO APPEALING?

When we listen to live music, all of the highs and lows reach our ears in the same relationship to each other as when they were created by the instruments. If this same live music were to be recorded and played back through a loudspeaker system, the loudspeaker would introduce frequency-dependent phase shifting. The inductance of the speaker's voice coil creates a stronger impedance as the signal's frequency increases, resulting in a time delay. Consequently, frequency components with large negative phase shifts (high frequencies) arrive at the listener's ear later than signals undergoing small phase shifts (low frequencies). The resultant signal is distorted in the time domain to the listener's ear. Audio material containing sharp transients (e.g., percussive and plucked sounds such as drums, guitar, piano and harpsichord, etc.) suffers the most from this phenomenon, making it seem unfocused, or mushy.

In order to address these problems inherent in basic loudspeaker design, BBE Sound, Inc. has developed a circuit that has two primary functions. The first adjusts the phase relationships of the low, mid and high frequencies. Since a loudspeaker's natural tendency is to add progressively longer delay times to higher frequencies, the BBE sound processing system adds progressively longer delay times to lower frequencies. This creates a kind of "mirror" curve to the time delay curve created by the speaker, neutralizing its phase distortion.

The second major element in the BBE system is the augmentation of the higher and lower frequencies. Loudspeakers tend to be less efficient in their extreme treble and bass ranges. Most sound-reproducing systems include a circuit for boosting high and low frequencies, showing an accepted awareness of the loudspeaker's efficiency problem. The BBE system, however, provides a dynamic, program-driven augmentation which combines with the phase compensation feature to restore the brilliance and clarity of the original live sound. The result is, as one professional journal phrased it, "The most hearable advance in audio technology since high fidelity itself!"