software-based embodiments.

SUMMARY OF THE INVENTION

The present invention meets the existing needs described above by providing for a system and method of digitally processing an audio signal in a manner such that studio-quality sound can be reproduced across the entire spectrum of audio devices. The present invention also provides for the ability to enhance audio in real-time and tailors the enhancement to the audio signal of a given audio device or delivery system and playback environment.

According to an aspect of the present invention, there is provided a system for digital signal processing of an input audio signal comprising: a high pass filter configured to filter the input audio signal to create a high pass signal, a first filter module configured to filter the high pass signal to create a first filtered signal, a first compressor configured to modulate the first filtered signal to create a modulated signal, a second filter module configured to filter the modulated signal to create a second filtered signal, a first processing module configured to process second filtered signal to create a processed signal, a band splitter configured to split the processed signal into a low band signal, a mid band signal, and a high band signal, a low band compressor configured to modulate the low band signal to create a modulated low band signal, a high band compressor configured to modulate the high band signal to create a modulated high band signal, and a second processing module configured to process the modulated low band signal, the mid band signal, and the modulated high band signal to create an output signal.

The present invention may provide for a computer chip that can digitally process an audio signal in such a manner, as well as provide for audio devices that comprise such a chip

or equivalent circuit combination. The present invention may also provide for computer software readable and executable by a computer to digitally process an audio signal. In the software embodiments, the present invention may utilize existing hardware and software components on computers such as PCs, Mac, and mobile devices, comprising various operating systems such as Android, iOS, and Windows.

Accordingly, in initially broad terms, an audio input signal is first filtered with a high pass filter. The high pass filter, in at least one embodiment, is configured to remove ultra-low frequency content from the input audio signal resulting in the generation of a high pass signal.

The high pass signal from the high pass filter is then filtered through a first filter module to create a first filtered signal. The first filter module is configured to selectively boost and/or attenuate the gain of select frequency ranges in an audio signal, such as the high pass signal. In at least one embodiment, the first filter module boosts frequencies above a first frequency, and attenuates frequencies below a first frequency.

The first filtered signal from the first filter module is then modulated with a first compressor to create a modulated

section.

15. A system as recited in claim 6 wherein said summing module is further configured to selectively adjust the individual gains of each of the received modulated low band signal, mid signal, and modulated high band signals.

16. A system as recited in claim 1 wherein said second filter module comprise gain values which are at least partially inverse relative to the gain values of said first filter module.

17. A system as recited in claim 16 wherein said second filter module comprises frequency values which are approximately equal to frequency values of said first filter module.