



### About QHD<sup>®</sup>

QSound Labs offers the broadest range of audio enhancement technologies available. Today's entertainment device now support a wide range of formats: DVD, DVD-HD, HD television broadcast and new streaming Internet video formats, various audio CD standards as well as MP3 and similar compressed audio files.

The audio from these players or online sources is predominantly two channel stereo, and in the case of most audio content (CD, MP3, WMA and broadcast streaming) this is a default. These products are ideal candidates to benefit from stereo soundfield enhancement, thus delivering a 'must have' surround-like experience.

Supporting internet audio formats such as MP3 present unique challenges since compressed recordings often suffer in clarity, frequency response and stereo imaging when compared to the superior DVD and linear audio CD formats.

QHD combines several audio technologies while addressing the unique demands of multi-format audio playback. QHD provides an extremely attractive feature set coupled with substantial improvements to the listening experience. The QHD software package easily ported to virtually any digital signal processor (DSP) platform.

QSound Labs is well known for the high efficiency and scalability of its audio enhancement algorithms. Simply by adding the QHD process library to your entertainment player or player-targeted DSP, you benefit from an unparalleled suite of high-quality features in a surprisingly small and highly cost effective DSP resource footprint.

### Product Suite

**QXpander<sup>®</sup>** earphone/speaker 3D sound stage expansion.

**QSizzle<sup>™</sup>** active mid/high-frequency spectral enhancement.

**QRumble<sup>™</sup>** active low-frequency spectral enhancement.

**QVerb<sup>™</sup>** reverberation (reflecting sound like echoes).

**QLimiter<sup>™</sup>** anti-saturation dynamic range control.



### The QHD Competitive Edge

- Unparalleled experience in 3D audio and surround virtualization
- Efficient resource utilization with small software footprint
- Patented sound-field enhancement technology
- Selectable, scalable modular components for easy implementation

## Feature Set Description

### QXpander®

**QXpander** is QSound Labs' patented stereo soundfield expansion algorithm. QXpander accepts any ordinary stereo signal and produces an output signal with dramatically widened stereo imaging and enhanced realism. It even produces a stunning synthesized 3D soundfield from mono to stereo!

**QXpander** requires no extra speakers or special encoding of input signals and provides excellent results in low-power or limited bandwidth systems. QXpander employs purpose-specific algorithms for maximum spatial impact on regular or narrow geometry speakers as well as headphones.

### QSizzle™

An adaptive mid to high-frequency spectral enhancement, **QSizzle** restores a natural-sounding sonic punch to highly compressed audio formats like mp3.

**QSizzle** selectively adds upper spectrum energy according to the real-time characteristics of the input signal. The result is lively, sparkling highs without the strident, harsh side-effects of simple frequency boosters.

### QRumble™

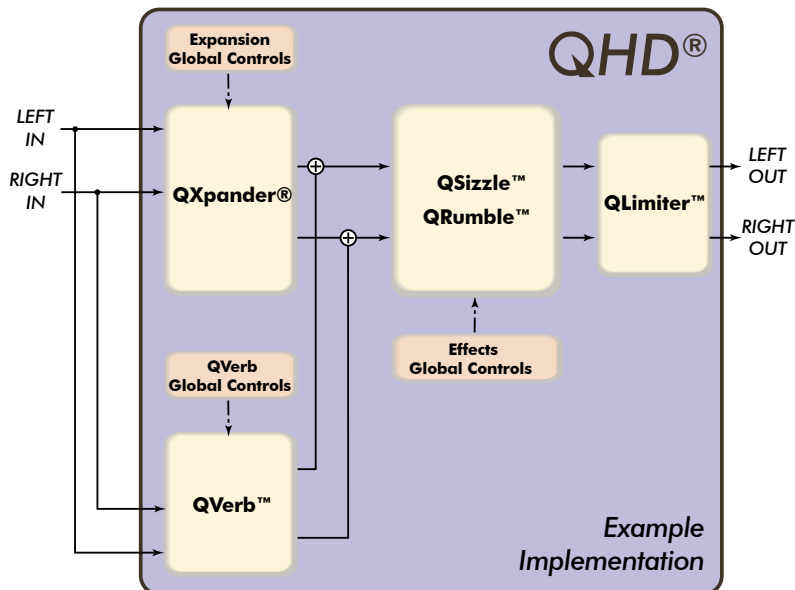
The low-frequency counterpart to **QSizzle**, **QRumble** also adds energy in a selective fashion, bringing substance and warmth to the low end of the spectrum without overloading on loud passages.

### QVerb™

3D acoustic environment simulation enables users to place their music in the sonic context of choice, with presets for stadium, concert hall, club and more.

### QLimiter™

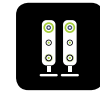
A high-efficiency, anti-saturation dynamic range controller, **QLimiter** handles any combination of signals and extreme effects settings, eliminating output distortion with surprisingly little CPU bandwidth.



## QHD Applications



Home Entertainment



Stereos



Automobile



Music Players



TVs



Computers

## Hardware Partners

- AKM
- Genesis Microchip
- Motorola
- Pixelworks
- ST Microelectronics
- Texas Instruments
- VeriSilicon
- Zoran

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