**SPIRIT DSP**
Voice & Video Engine Experts

SPIRIT Loudness Control

Changing the loudness of a sound requires applying the proper equal-loudness contour to a signal. An equal-loudness contour is a sound pressure curve over the frequency spectrum, which contains the points of perceptually equal loudness. Loudness is measured in phons. If two sine waves have equal phons they are equally loud.

The human auditory system is sensitive to frequencies from 20 Hz to a maximum of around 20,000 Hz, although the hearing range decreases with age.

SPIRIT Loudness Control is a tool for changing sound volume with consideration to non-linearity of human aural perception.
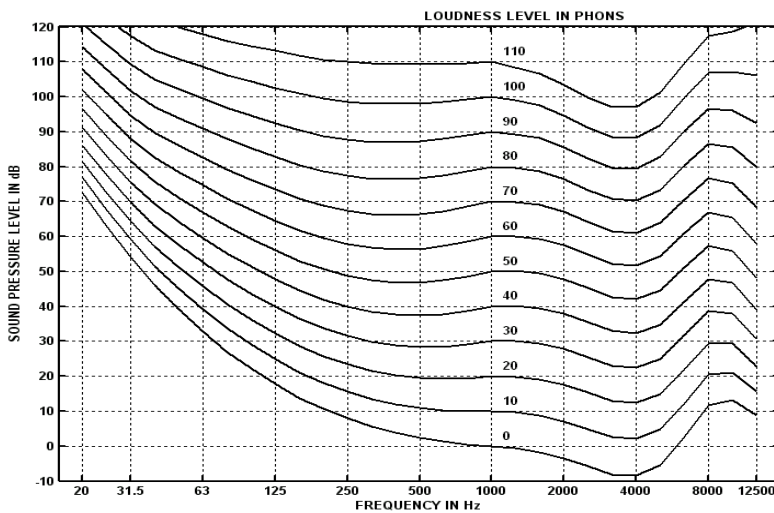
Benefits

- Human ear perception non-linearity compensation
- Ideal for resource constrained applications
- Easy integration and fast time to market

Applications

- Digital audio players
- Portable media players
- Audio streaming/digital radio
- Set-top boxes
- Mobile phones
- Car electronics

Availability

- ARM   Now
- TI C6xx   Call
- Starcore   Call
- MIPS   Call

Features

- Changing reproduction Sound Pressure Level
- Acts like equalizer, due to ear non-linearity
- Usage of inverse parametric filter

Resource Requirements

PLATFORM	ARM 9E	
	Cross-fade active	Cross-fade disabled
Peak MIPS	1.08	1.02
Total Memory, KB	1.86	1.86

MIPS are given for worst-case 48 KHz mono bitstream

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