



## **Dolby Laboratories Announces Shipment of First Licensee Implementation of Dolby Virtual Speaker Technology**

### **ADI's Melody SHARC Ultra chipset enables a variety of products to simulate multichannel audio from as few as two speakers**

San Francisco, January 2, 2003--Dolby Laboratories announced that it has licensed the first silicon implementation of Dolby® Virtual Speaker technology. The Melody® SHARC® Ultra chipset from Analog Devices, Inc. (ADI), which also implements Dolby Headphone technology, will enable ADI's customers to incorporate the Dolby technologies into consumer electronics products as varied as digital televisions, stereo mini-systems, video-game consoles, in-car entertainment systems, DVD-Video players, portable DVD players, and other devices.

Dolby Virtual Speaker technology incorporates a next-generation, advanced algorithm to reproduce the dynamics and surround-sound effects of a precisely placed 5.1-channel speaker system from a consumer electronics device or personal computer equipped with as few as two speakers. The result is a rich, encompassing, true-to-life, and involving multichannel entertainment experience for movies, music, and gam play in situations where a full 5.1-speaker surround system is not practical.

Dolby Headphone technology transforms multichannel audio soundtracks into a dramatic and realistic surround sound listening experience accessible from any conventional pair of stereo headphones. The sophisticated room-modeling technique at the heart of the Dolby Headphone process is easily integrated into virtually any type of audio or video product normally equipped with a headphone output, thanks to readily available DSP, ASIC, and DLL solutions. Both Dolby Headphone and Dolby Virtual Speaker employ core algorithms licensed from Lake Technologies Ltd.

Analog Devices' Melody SHARC Ultra is the highest performance multichannel processor available for audio processing applications, and is based on a SIMD core architecture. Featuring 32-bit audio quality, the Melody SHARC Ultra reference designs auto-detect and decode 6.1- and 5.1-channel digital audio formats in real time, enabling end users to enjoy a cinema-quality audio experience in their living rooms with popularly priced consumer products. By including ADI's SHARC DSP processor, Melody reference designs support multiple algorithm combinations.

"As a result of space constraints or environmental issues, some people cannot integrate a full 5.1 surround speaker system into their home entertainment lifestyle," said Craig Eggers, director of consumer channel marketing, Dolby Laboratories. "Dolby Virtual Speaker and Dolby Headphone technologies are the ideal solutions for these consumers, who will now be able to take advantage and experience the benefits of multichannel Dolby Digital 5.1 audio tracks included in a host of entertainment delivery systems, including DVD, digital television, digital cable, and DBS.

"The Dolby Virtual Speaker experience is highly realistic," continued Eggers. "When listening to systems equipped with Dolby Virtual Speaker technology, people say they have actually heard surround speakers located to their left and right rear. And, unlike previous technologies, Dolby Virtual Speaker technology preserves the integrity of key center channel dialogue, the most critical element of any entertainment experience. We fully expect that the emergence of products incorporating Dolby Virtual Speaker technology will redefine the quality of audio experience that people expect from their entertainment products."

Until the ADI Melody SHARC Ultra chipset, iterations of Dolby Virtual Speaker technology have been limited to digital signal processing (DSP) applications in personal computers, which have far more processing power than traditional consumer electronics products. Dolby Virtual Speaker technology, integrated into software DVD players from InterVideo's WinDVD Platinum, is already providing a highly compelling entertainment experience for PC entertainment enthusiasts. The soon-to-be-released version of CyberLink's PowerDVD XP 4.0 also supports Dolby Virtual Speaker technology in personal computers.

#### **About Dolby Virtual Speaker Technology**

Dolby Laboratories is recognized historically as the leader in developing high-quality surround technologies for the cinema and home theater alike. The introduction of Dolby Virtual Speaker technology expanded Dolby's engineering expertise in surround sound to a virtual environment, an exciting direction for the company. Dolby Virtual Speaker technology demonstrates the versatility of Dolby's engineering skills and its ability to re-create a dynamic, compelling multichannel listening experience, even when a five- or six-speaker setup is impractical.

The algorithm at the heart of Dolby Virtual Speaker technology is based on advanced psychoacoustic parameters that include an understanding of sound from both a technical and an experiential perspective. Dolby Virtual Speaker technology capitalizes

on this biological, psychological, and physical understanding to create the impression of additional speakers positioned exactly at the recommended locations for a Dolby Digital sound system with five actual speakers.

Audio channels are processed through advanced filters that simulate the sonic signature of a speaker located within an acoustic space. By re-creating these waveforms-- precisely as they would be heard from real speakers--Dolby Virtual Speaker technology allows users to experience a very realistic sensation of five discrete sound sources over as few as two physical speakers.

#### About Dolby Headphone Technology

Dolby Headphone technology enables stereo headphones to portray the sound of a fivespeaker, surround-sound playback system. It achieves its unique effect through a powerful signal-processing algorithm that generates a multitude of audio cues modeled from real life. From these cues, a person's ears and brain perceive a truly threedimensional sound image.

Dolby Headphone technology lets listeners enjoy multichannel sound sources, such as Dolby Digital and Dolby Surround movies, with thrilling, realistic surround sound over any conventional stereo headset; it also produces far more natural sound from stereo sources, such as CDs and MP3 files.

With the Dolby Headphone process, spatiality is preserved; music and sound that is intended to be in front of you is indeed located in front of you, and special effects and ambience surround and envelop you. Most importantly, Dolby Headphone technology maintains the integrity of key center-channel dialogue, the most critical element of any surround-sound entertainment experience.

#### Analog Devices Opens Dolby Virtual Speaker Technology to the CE World

Analog Devices is the first Dolby licensee to ship an integrated circuit product incorporating Dolby Virtual Speaker technology. Mike Haidar, general manager, software and systems technology, Analog Devices, Inc., said, "ADI's Melody SHARC Ultra processor is remarkably flexible and already includes a framework supporting industry-wide standard audio formats, making it possible for our customers to easily add support for Dolby Virtual Speaker technology. Analog Devices is delighted to work with Dolby once again, and we believe that the addition of Dolby Virtual Speaker technology will be an appealing feature for our chipset."

In addition to Dolby Virtual Speaker and Dolby Headphone technologies the Melody SHARC Ultra processor implements Dolby Digital, Dolby Surround Pro Logic®, Dolby Surround Pro Logic II, Dolby Digital consumer encoding, and AAC technologies--all on the same chipset. The ADI chipset is used by leading-edge customers in consumer audio products including integrated home theater A/V systems, in-car entertainment systems, set-top DVD-players, video-game consoles, and television set-top boxes.

#### About Dolby Laboratories

Dolby Laboratories is the developer of signal processing systems used worldwide in applications that include motion picture sound, consumer entertainment products and media, broadcasting, and music recording. Based in San Francisco with European headquarters in England, the privately held company also has offices in New York, Los Angeles, Hong Kong, Shanghai, Beijing, and Tokyo. For more information about Dolby Laboratories or Dolby technologies, please visit [www.dolby.com](http://www.dolby.com).

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#### Media Contacts:

Jim Arnold, Dolby Laboratories, Inc., Director of Public Relations, 415-645-5116 [jja@dolby.com](mailto:jja@dolby.com)  
Colleen Martell, Martell Communications, 408-374-7420 [cmartell@martellpr.com](mailto:cmartell@martellpr.com)