



## LICENSING OVERVIEW

HDCD Decoding and HDCD Precision Digital Filtering are available in several IC implementations and are licensed to OEMs for inclusion in their products. Attached to this summary is a step by step guide to obtaining an HDCD hardware product license.

The PMD-100 HDCD Decoder and HDCD Precision Digital Filter integrated circuit is available only from Pacific Microsonics, Inc. and its authorized agents and/or distributors. The price of the PMD-100 is inclusive of the HDCD technology licensing royalty. For all other HDCD implementations the OEM must pay a royalty to Pacific Microsonics, Inc., separate from the price paid to the supplier of the chip.

Other implementations include digital audio Digital Signal Processor (DSP) chips, DVD chip sets, digital to analog converters, digital filters and one-chip CD player ICs. DSP integrated circuits designed for digital audio applications that contain HDCD Decoding and HDCD Precision Digital Filtering are presently available for the *Analog Devices, Inc. ADSP SHARC* and *Motorola Semiconductor Products Division 56362*. *Burr-Brown, Inc.* has announced the *PCM 1732* dual 24-bit DAC with HDCD Decoding and HDCD Precision Digital Filtering, and *Sanyo Electric Co., Ltd.* has announced the *LC 78628E IC* which contains the CD servo, HDCD Decoder, HDCD Precision Digital Filter, and dual 20-bit DACs. DVD chip sets with HDCD technology are available from *Mediamatics, Inc.*, *Motorola (VM Labs)* and *Zoran, Inc.*

For all of the third-party supplied implementations the HDCD royalty is not included in the price of the chip and must be paid directly to Pacific Microsonics, Inc. The royalty amounts are calculated based on the volume of HDCD licensed equipment delivered and are reported and paid each quarter by the OEM. There is also a one-time licensing fee of \$5,000 which is treated as an advance against the royalties due in the first year of the license agreement. This fee is payable in two installments – one half at the time of signing the **HDCD OEM License Agreement** and the other half after the OEM equipment has been HDCD certified. The complete details of the license fee and the royalty requirements can be found in **Section 3** of the **HDCD OEM License Agreement**.

The HDCD OEM License Agreement also requires the proper use of the HDCD trademarks, the HDCD indicator and the HDCD technology acknowledgement that must appear on all products and/or literature that contain the HDCD technology. Complete details can be found in **Section 4** of the **HDCD OEM License Agreement** and **Section 2.4, 2.5 & 2.6** of the **HDCD Equipment Certification Procedure**.

To maintain the high quality standards of HDCD equipment, Pacific Microsonics, Inc. certifies all OEM equipment before it can go into mass production. The complete **HDCD Equipment Certification Procedure** is included in this package. In most cases, if we have all of the required documentation, we can complete the required testing and certification in approximately one week after receiving the equipment.



## HDCD TECHNOLOGY

HDCD – High Definition Compatible Digital – is a patented process for delivering on digital media the full richness and detail of the original microphone feed. When listening to HDCD recordings, you will hear more dynamic range and very natural vocal and musical timber. With HDCD, you get the body, depth and emotion of the original performance – not a flat, digital image.

Because of the superior analog to digital conversion and digital filtering in the HDCD mastering equipment, HDCD recordings will always sound better, even on players not equipped with HDCD Decoding. This is why so many top recording artists and recording engineers use HDCD. But to bring out the full bandwidth and superb fidelity of HDCD recordings, the player should be equipped with HDCD Decoding and HDCD Precision Digital Filtering.

For conventional CDs, HDCD encoded CDs sound better because they are encoded with 20 bits of real music information, compared to 16 bits for all other CDs. HDCD overcomes the limitations of the 16-bit CD format by using a sophisticated system to encode the additional 4 bits onto the CD while remaining completely compatible with the CD format.

In addition, HDCD Precision Digital Filtering has the benefit of improving the sound of all digital recordings. This means that any A/V receiver, CD player, DVD player or MiniDisc player equipped with HDCD will improve the sound of all digital recordings, whether mastered with HDCD or not.

With HDCD, your entire collection of digital music will sound better. Recordings mastered with HDCD have the HDCD logo on the back of the album cover and/or on the disc itself. When you play an HDCD recording on a DVD or CD player equipped with an HDCD decoder, a light will come on, indicating that the recording is an HDCD recording.

Until recently, HDCD Decoding and HDCD Precision Digital Filtering were only available in the PMD-100 HDCD integrated circuit from Pacific Microsonics. This high performance integrated circuit has been used over the past three years in high fidelity CD players and digital to analog converters and has gained the reputation as being the best sounding digital filter available.

Now, this same HDCD Decoding and HDCD Precision Digital Filtering is available in many different forms from many digital audio integrated circuit suppliers including *Analog Devices*, *Burr Brown*, *Mediamatics*, *Motorola*, and *Sanyo Electric*. More HDCD integrated circuit suppliers will be announced soon.