

# P R I M A R Y

## BLU-RAY DISC AND HD AUDIO

Blu-ray players can be configured to output uncompressed multi-channel PCM from any Blu-ray Disc. The SPA22 will perform accurate D/A conversion on the multi-channel LPCM bit-stream.

- Blu-ray Disc is the only source of 5.1 or 7.1 channel HD audio currently available
- Most film soundtracks are mastered in 5.1-channel, 24-bit/48kHz PCM
- LPCM has the highest bit rate of all three lossless codecs\*
- Currently 26% of Blu-ray discs carry a native multichannel PCM soundtrack+
- Most Blu-ray players can be set to decompress (unpack) Dolby and DTS HD audio formats and output them as uncompressed multichannel PCM audio. Even if the Blu-ray Disc doesn't carry the PCM soundtrack, it's still available from the player.

### Blu-ray lossless audio formats\*

Three are available currently: multichannel LPCM, Dolby TrueHD and DTS-HD Master Audio.

**Multichannel LPCM** – Linear Pulse Code Modulation: LPCM (often referred to as PCM) is used for the lossless encoding of audio data in the compact disc Red Book standard; has been defined as a part of the DVD and Blu-ray standards and is used by HDMI. On Blu-ray it offers a maximum bit rate of 27.648Mbps, up to 8 channels of 24bit/96kHz audio and up to six channels of 24bit/192kHz audio. Under the standard, players must have the capability to support LPCM.

**Dolby TrueHD:** lossless encoding of up to 8 channels of audio, built on MLP technology. It offers a maximum bit rate of 18.64Mbps, up to 8 channels of 24bit/96kHz audio and up to six channels of 24bit/192kHz audio. Under the Blu-ray standard, support is optional.

**DTS-HD Master Audio:** lossless encoding of up to 8 channels of audio. It offers a maximum bit rate of 24.5Mbps, up to 8 channels of 24bit/96kHz audio and up to six channels of 24bit/192kHz audio. Under the Blu-ray standard, support is optional.

### Blu-ray and LPCM+

Currently 80% of all Blu-ray Discs offer lossless multichannel audio, split this way: 20% LPCM, 33% DTS-HD:MA, 27% TrueHD <http://www.blu-raystats.com/Stats/Stats.php>

Irrespective of the studios' choice, the only lossless audio format that Blu-ray players must support (because it's mandatory in the standard) is LPCM. Even so most Blu-ray players are able to decode (decompress) DTS-HD:MA and Dolby TrueHD and to output multichannel PCM. <http://www.blu-ray.com/players/compare.php?p=1>

ends 08/26/09

