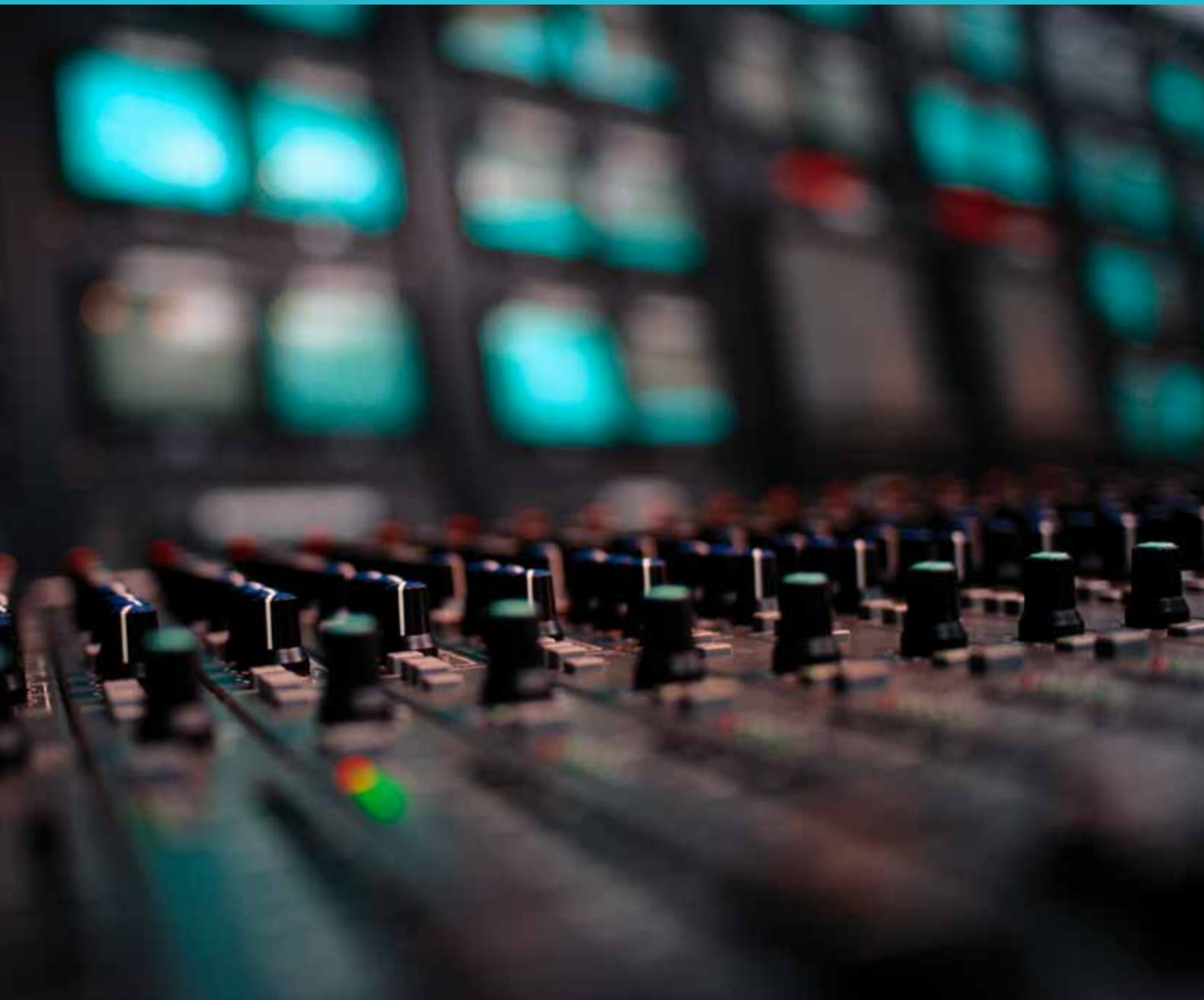# DAB+ / DAB SURROUND
THE NEXT GENERATION OF
DIGITAL RADIO

BENEFITS

OFFER MORE HIGH-QUALITY PROGRAMS TO YOUR LISTENERS

With DAB+, broadcasters can offer up to three times more programs compared to conventional DAB transmissions due to higher bandwidth efficiency. The underlying new audio coding technology ensures good quality audio even with poor reception conditions.

SURROUND SOUND ADDS A NEW DIMENSION TO YOUR DAB SERVICE

For the first time, broadcasters can transmit 5.1 surround sound over DAB at any bit-rate. There is no need for simulcast as the DAB Surround signal can be played back by all existing stereo devices. Future surround-enabled receivers will reproduce the same signal in high-quality surround sound.

GET YOUR RECEIVERS ON THE MARKET QUICKLY

DAB+ and DAB Surround optimized decoder implementations are available for multiple platforms, including PC, fixed- and floating-point processors.

GET YOUR BROADCAST SERVICE ON AIR NOW

DAB+ and DAB Surround are integrated into the Fraunhofer DAB/DMB ContentServer™, an easy-to-use encoder system for the DAB/DMB broadcasting chain.

Fraunhofer
MPEG- Sorround

Fraunhofer
HD-AAC

What are DAB+ and DAB Surround?

DAB+ is a new ETSI standard that improves upon the DAB Digital Radio Standard by employing the MPEG-4 High Efficiency AAC v2 (HE-AAC v2) codec. As a result, DAB+ provides significantly greater bandwidth efficiency than conventional DAB allowing up to three times the programs per channel compared to traditional DAB.

DAB Surround brings multi-channel sound to DAB services at stereo bit-rates without the need to simulcast stereo and multi-channel programs. It combines the new DAB+ HE-AAC v2 audio codec (or, alternatively, the existing DAB MPEG Layer 2 audio codec) with MPEG Surround. MPEG Surround is the surround extension for perceptual audio codecs, combining backwards compatibility with high-quality surround sound at stereo bit-rates. MPEG Surround is part of the WorldDMB specification.

When combined, DAB+ and DAB Surround enable the smooth, mono/stereo compatible and cost-efficient introduction of multi-channel sound to digital radio at low bit-rates and high audio quality.

DAB broadcasters can provide 5.1 channel surround sound at a total audio sub-channel bit-rate of only 96 kbit/s or less. This data-rate includes the stereo signal. PAD data services can be added to this data-rate.

Fraunhofer IIS DAB+ solutions

Fraunhofer IIS offers HE-AAC v2 encoders and decoders optimized for the DAB+ transport layer and incorporating super-framing and full PAD support for an extensive range of PC platforms, fixed-point and floating-point DSPs, and embedded processors. These technologies have been successfully tested for compatibility with other DAB+ implementations. All codecs can also be obtained in combination with MPEG Surround.

The Fraunhofer DAB/DMB Content-Server™ is available as a versatile professional broadcast solution with full DAB+ support. The ContentServer is an easy-to-use encoder system for the DAB/DMB broadcast chain. It features real-time audio and video encoding in DAB+, MPEG Audio Layer 2 and MPEG-4 H.264 / AVC, and enables the generation and insertion of almost any data service in PAD and NPAD, such as Journaline®, Dynamic Labels and EPG (www.iis.fraunhofer.de/broadcast).

Fraunhofer IIS DAB Surround solutions

For the production of DAB Surround bit-streams Fraunhofer IIS offers an encoder for integration into any system or for use as a complete all-in-one solution based on the Fraunhofer DAB/DMB ContentServer™. Fraunhofer IIS offers two decoder options for the incorporation of DAB Surround technology: 1) a WinAmp Plug-in for playback on PC receivers, and 2) the DAB Surround CDK (Core Design Kit) software. The CDK software allows easy and effective implementation on all popular fixed-point and embedded floating-point processors, including ARM, MIPS, Texas Instruments (TI-C6x, OMAP, DaVinci), Analog Devices (Blackfin), Freescale, PowerPC and Starcore, among others. It is specifically designed to work with the limited memory and processing power of embedded processors.

A complete DAB receiver library for fixed-point DSPs - including baseband decoder, audio decoder (DAB+ and DAB Surround) and service decoders – is available upon request.

For more information about DAB+ and DAB Surround, please visit

WWW.IIS.FRAUNHOFER.DE/AMM

About Fraunhofer IIS

The Fraunhofer IIS Audio and Multimedia division, based in Erlangen, Germany, has been working in audio coding technology for more than 20 years and remains a leading innovator of technologies for cutting-edge multimedia systems. Fraunhofer IIS is the main inventor of mp3 and universally credited with the co-development of AAC (Advanced Audio Coding) as well as technologies for the media world of tomorrow, including MPEG Surround and the Fraunhofer Audio Communication Engine.

Through the course of more than two decades, Fraunhofer IIS has licensed its audio codec software and application-specific customizations to at least 1,000 companies. Fraunhofer estimates that it has enabled more than 5 billion commercial products worldwide using its mp3, AAC and other media technologies.

The Fraunhofer IIS organization is part of Fraunhofer-Gesellschaft, based in Munich, Germany. Fraunhofer-Gesellschaft is Europe's largest applied research organization and is partly funded by the German government. With nearly 20,000 employees worldwide, Fraunhofer-Gesellschaft is composed of 60 Institutes conducting research in a broad range of research areas.

Fraunhofer Institute for Integrated Circuits IIS

Director
Prof. Dr.-Ing. Albert Heuberger

Am Wolfsmantel 33
91058 Erlangen

www.iis.fraunhofer.de

Contact
Olaf Korte
Phone +49 9131 776-6177
amm-info@iis.fraunhofer.de

Fraunhofer USA, Inc.
Digital Media Technologies*

100 Century Court
Suite 504
San Jose, California 95112
www.dmt.fraunhofer.org

Contact
Phone +1 408 573 9900
codecs@dmt.fraunhofer.org

* Fraunhofer USA Digital Media Technologies, a division of Fraunhofer USA, Inc., promotes and supports the products of Fraunhofer IIS in the U. S.