

xHE-AAC

The audio codec of choice for adaptive streaming

xHE-AAC is the latest generation of the AAC audio codec family. Overall, AAC is now in about ten billion devices, being a required part of iOS, Android, FireOS, and Windows products.

It is used by Netflix and natively supported in the latest Apple, Android and Amazon operating systems and products. Fraunhofer's xHE-AAC implementation has recently been licensed to Microsoft.

A demonstration of the improved audio quality and new features of xHE-AAC compared to HE-AAC is available on Fraunhofer's informal AAC playback test site at [**xhe-aac.com/listen**](http://xhe-aac.com/listen)

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xHE AAC
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xHE-AAC combines speech and audio coding into one unified system and enables consumers to enjoy uninterrupted streaming with all types of content – such as movies, music, audiobooks or podcasts. The codec's usable bit rate range for stereo services spans from 12 kbit/s to 500 kbit/s and allows for seamless switching between those. This bit rate flexibility improves the reliability of streaming services: listeners will enjoy a continuous playback, even under challenging network conditions. Since xHE-AAC includes dedicated speech coding tools, speech quality can be greatly improved at lower bit rates compared to legacy codecs.

The reduced bit demand of xHE-AAC can also help reducing bandwidth costs. These characteristics make xHE-AAC the ideal codec for mixed-content applications with limited transmission capacity, such as mobile audio and video streaming or digital radio.

The mandatory MPEG-D DRC metadata provides loudness and dynamic range control for xHE-AAC to play content at a consistent volume and deliver the best possible user experience in any listening environment and on any device. This enables consumers to better understand dialogue, for instance, while watching a movie in a noisy environment.

xHE-AAC has been a mandatory audio codec of Digital Radio Mondiale (DRM) since 2013. Digital radio broadcasters also benefit from a simplified codec configuration process where all relevant quality parameters are automatically optimized by the encoder, as well the ability to deliver a wider selection of audio programs thanks to xHE-AAC's high coding efficiency.

xHE-AAC is included in the AAC Patent Licensing Program by VIA Licensing at no extra cost.

Fraunhofer IIS has also announced a new web-based test service that developers and manufacturers can use to validate their implementations of the xHE-AAC audio codec for compliance with MPEG standards. The service which is available at **test.xhe-aac.com** is free to use upon registration with Fraunhofer and will test both encoders and decoders.

Bit rate transition scenario with xHE-AAC



Low reception quality – audio stream with 12 kbit/s



Medium reception quality – audio stream with 48 kbit/s



High reception quality – audio stream with 128 kbit/s

Contact

Fraunhofer Institute for Integrated Circuits IIS

Management of the institute	Mandy Garcia
Prof. Albert Heuberger (executive)	Phone +49 9131 776-6178 audio-info@iis.fraunhofer.de
Prof. Bernhard Grill	
Prof. Alexander Martin	www.xhe-aac.com www.iis.fraunhofer.de

Am Wolfsmantel 33
91058 Erlangen, Germany
Phone +49 9131 776-0
info@iis.fraunhofer.de