

FRAUNHOFER INSTITUTE FOR
INTEGRATED CIRCUITS IIS

WWW.IIS.FRAUNHOFER.DE/AUDIO

THE AAC AUDIO CODEC FAMILY

**COMPREHENSIVE AUDIO SOLUTIONS
UNDER A SINGLE LICENSE**

**Fraunhofer Institute for
Integrated Circuits IIS**

Management of the institute
Prof. Dr.-Ing. Albert Heuberger
(executive)
Dr.-Ing. Bernhard Grill

Am Wolfsmantel 33
91058 Erlangen, Germany

Contact
Matthias Rose
Phone +49 9131 776-6175
Fax +49 9131 776-6199
matthias.rose@iis.fraunhofer.de

www.iis.fraunhofer.de



The MPEG AAC codec family's efficiency, flexibility and proven unified licensing model make it a great audio solution for a broad range of applications including TV broadcast, audio and video streaming, communications and wireless, low-latency connectivity.

It has been deployed in over 10 billion consumer products globally and provides use-case-optimized features such as high-quality multi-channel audio, ultra low bitrates for all audio content types, low delay, adaptive streaming and metadata support.

Codecs	Features	Applications	Typical bit rates
AAC-LC (AAC Low Complexity)	Excellent audio quality for mono, stereo and multichannel audio (up to 48 channels). Supports audio-specific metadata.	<ul style="list-style-type: none">– Music and video download (e. g. Apple iTunes)– TV broadcast	stereo: 128 to 256 kbit/s 5.1 surround: 256 to 320 kbit/s
HE-AAC (High Efficiency AAC) v1 (SBR) & v2 (PS)	High quality mono, stereo and multichannel audio (incl. 7.1 profile) at low bit rates. Supports audio-specific metadata.	<ul style="list-style-type: none">– Ideal for channels with limited capacity (e. g. in TV & radio broadcast)– De facto standard for streaming (e. g. Google Play, Netflix, Pandora)	stereo: 32 to 96 kbit/s 5.1 surround: 96 to 256 kbit/s
xHE-AAC (Extended High Efficiency AAC)	Enabling ultra low bitrates for speech, music and mixed content while offering seamless adaptive bitrate switching to higher bitrates. Mandatory loudness and DRC support.	<ul style="list-style-type: none">– Ideal for radio, music and video streaming, including on mobile networks– Widely deployed for Digital Radio Mondiale	stereo: 12 to 300 kbit/s range, flawless switching over DASH or HLS
AAC-ELD (Enhanced Low Delay AAC) family	AAC-LD, AAC-ELD and AAC-ELD v2 for Full-HD Voice audio quality at a coding delay as low as 15 ms.	<ul style="list-style-type: none">– Video conferencing systems– VoIP– Consumer video telephony applications (e. g. Apple FaceTime)– Low delay audio streaming	mono/stereo: 24 to 128 kbit/s