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The World's Premier Supplier of Speech and Audio Codecs



Low-Complexity Hi-Fi Audio for Portable Multimedia

Portable devices are delivering an increasingly sophisticated array of applications, from audio books to radio and mobile TV streaming to user-generated content and video messaging. And the more applications and services they provide, the more efficient their use of both internal resources – processor, power and memory – and network bandwidth must be to deliver a consistent, high-quality end-user experience.

- *Low power consumption*
- *High bit-rate efficiency*
- *High-quality audio*

One key to ensuring the best end-user experience is to select the right audio codec for the job, and the **3GPP and DVB-H standard AMR-WB+ audio codec** makes more efficient use of internal and network resources than any comparable codec, as the following table clearly shows. It therefore leaves more resources for application processing, big color screens, speakers and other power-hungry features.

Decoder Complexity of Mobile Audio Codecs (MHz)

	TI-C5510	ARM946E-S	ARM920T
MP3	45 ¹	30 ²	40 ²
AAC+	40 ¹	53 ²	62 ²
EAAC+	50 ³	98 ²	105 ²
AMR-WB+	6–27 ⁴	7–30 ⁴	10–40 ⁴

In 3GPP testing, AMR-WB+ outperformed AAC+ and EAAC+ in subjective listening tests across all content types at equivalent bit rates while maintaining its significant edge in lower complexity. (Ref.: 3GPP TR 26.936)

- 1 Fraunhofer IIS (2006) TI Developer Conference.
- 2 Fraunhofer IIS (Oct. 2005) ARM Developers' Conference.
- 3 Coding Technologies, "Embedded MPEG-4 aacPlus Libraries," Rev. 1.0 (2006).
- 4 Average best case to worst case.

Codec efficiency has other important benefits for applications on handhelds. It helps increase battery-charge operating time. It also helps ensure real-time performance in the low- to mid-tier processors that are used in many mid-range portable devices – thereby delivering high-quality mobile multimedia services problem free across a wide set of end-user devices and so greatly increasing the addressable market of users who can benefit from these services.

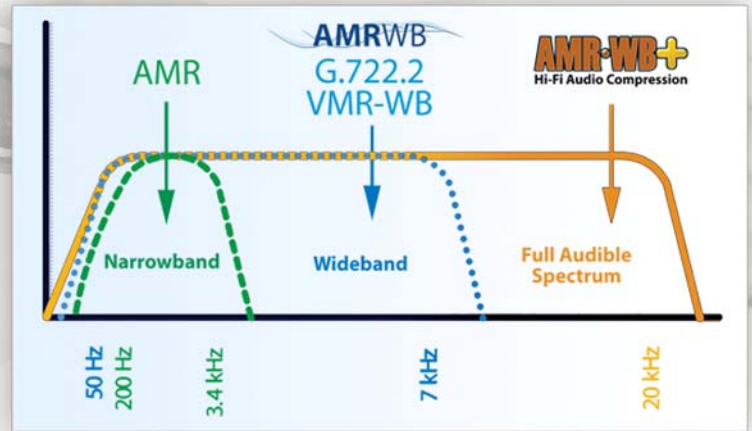
Unlike codecs that are specialized for audio only, **the AMR-WB+ audio codec provides excellent sound quality for both speech and audio content – even at low bit rates.** Its high bandwidth efficiency supports streaming applications with high-quality audio at bit rates that were previously unimaginable. Its bandwidth efficiency also helps speed up downloads and reduce storage requirements. So, for example, a given storage medium using AMR-WB+ encoding will have the capacity for a whole audio book instead of a single chapter – and it will have the power to play longer because of the AMR-WB+ low-complexity decoder.

AMR-WB+

Hi-Fi Audio Compression

Full audio compression

AMR-WB+ provides excellent reproduction of the full audio spectrum (up to 20 kHz) for all types of speech and audio, while making efficient use of transmission capacity.



Reach more customers today!



High efficiency and built-in robustness

AMR-WB+ coding bit rates can be adjusted dynamically in response to varying network conditions while preserving audio quality even at very low bit rates. This capability, combined with built-in robustness features such as high-efficiency packet loss concealment, ensures that mobile users of streaming services experience a consistently high level of service quality as they move around. Moreover, it enables operators to extend their network coverage areas and serve more users simultaneously.

AMR-WB+ not only provides scalability and flexibility but also addresses the capabilities of diverse networks and handsets. This means that content providers can reach customers on several networks using a common service platform so they don't need to duplicate their hardware investments.

AMR-WB+ at a glance

Bit rates	Mono: 6–36 kbps Stereo: 7–48 kbps
Encoded bandwidth	Ranges from 50 Hz–7.2 kHz up to 50 Hz–19.2 kHz
Typical delay	60–90 ms
Quality	<ul style="list-style-type: none"> • For music at low bit rates, outperforms all other audio codecs • For music at high bit rates, equivalent to the latest audio codec • For speech, performs better than wideband speech codecs and any other latest audio codec
Low decoder complexity	TI C55x 6–27 MIPS ARM9E 7–30 MHz



The 3GPP and DVB-H standard for mobile multimedia

AMR-WB+ has been standardized and recommended by the 3GPP for multimedia applications, including PSS, MMS, MBMS and IP Multimedia Subsystem (IMS) Messaging Service and Presence Service (ref: TS 26.290 et al.). It is also specified for use in DVB-H applications.



Independent testing has established that AMR-WB+ provides **unrivalled quality at lower bit rates and excellent quality at higher rates.**

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