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The Hi-Fi Audio Codec Designed for Multimedia

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AMR-WB+
Hi-Fi Audio Compression

The hi-fi audio codec designed for multimedia services and applications

Most multimedia services and applications have **mixed audio content**, usually a combination of speech and other audio, and, in fact, mostly speech. Only pure music applications, such as music downloads or streaming, are important exceptions where the audio content can be expected to be restricted to music alone (see table).

Until recently, no single codec could encode both speech and music and still produce high-quality sound at low to very low bit rates. Now the 3GPP-standardized **AMR-WB+ audio codec addresses both types of content** and provides excellent sound quality for both speech and audio at highly efficient bit rates. To achieve this, AMR-WB+ combines an advanced audio coding technology called Transform-Coded Excitation (TCX) with the unrivaled speech coding technology of Algebraic Code-Excited Linear Prediction (ACELP®).

As a result, AMR-WB+ delivers unbeatable sound quality for both speech and audio, which, as shown in the table, are equally important in most multimedia services. This versatility makes AMR-WB+ adaptable to a broad range of audio services and applications, where it's the only audio codec you need.

Typical Audio Content in Multimedia Services

Service type	Content type(s)
Information – news, sports, traffic, weather, etc.	Speech Dominant, Mixed
TV, Movies	Speech, Mixed, Music
Animation & cartoons	Speech, Mixed, Music
Audio content distribution – Audio books	Speech Dominant, Mixed
Ringtones	Speech, Mixed, Music
Interactive gaming	Speech Mixed, Music
Travel guides	Speech Dominant, Mixed
Audio content distribution – Music	Music

AMR-WB+ addresses the mixed content of most multimedia services and applications by efficiently combining advanced audio coding and unrivaled speech coding to deliver unbeatable sound quality for all content types

Applications

Packet-switched Streaming Service (PSS)
▪ Music and other audio content in mono and stereo ▪ Movies ▪ Video clips ▪ News programming ▪ Sports events ▪ Audio books ▪ Commercial advertisements ▪ Access to multimedia information systems ▪ Interactive gaming ▪ "Infotainment"

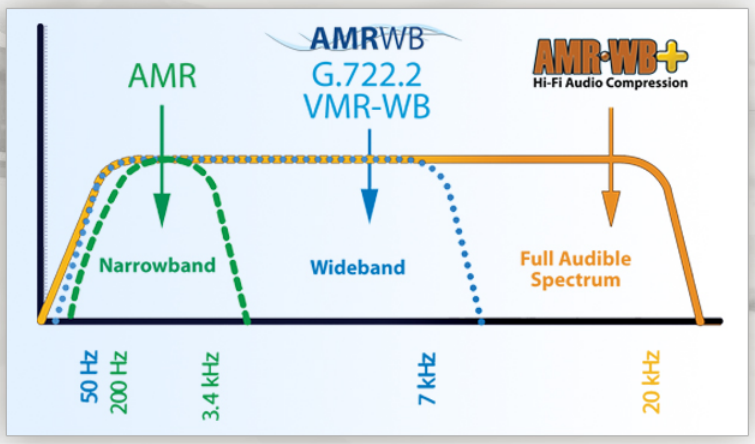
Download Services
▪ Hi-fi ringtones ▪ Music ▪ Video clips ▪ Movie trailers ▪ Audio books

Multimedia Messaging Service (MMS)
▪ Person-to-person messaging ▪ Application-to-person messaging ▪ Instant messaging

Multimedia Broadcast/Multicast Service (MBMS)
▪ Live TV ▪ Radio programming ▪ Multi-player interactive gaming ▪ Commercial advertisements

Digital Video Broadcast – Handheld (DVB-H)
▪ Mobile digital TV broadcasting

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.

High efficiency and built-in robustness

AMR-WB+ can adjust its coding bit rates dynamically in response to varying network conditions while preserving audi quality even at very low bit rates. This capability, combined with built-in robustness features such as high-efficiency pack loss concealment, ensures that mobile users of streaming services experience a consistently high level of service qualit 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	• 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 A GLOBAL INITIATIVE 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 **unrivaled quality at lower bit rates and excellent quality at higher rates**.

VoiceAge®

VoiceAge Corporation 750 Lucerne Road, Suite 250 Montreal (Quebec) H3R 2H6 Canada
Tel: +1.514.737.4940 Fax: +1.514.908.2037 http://www.voiceage.com email: sales@voiceage.com
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