

TSG-SA WG4#25 meeting  
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**Source:** TSG-SA WG4  
**Title:** Updated Work Item Description for AMR-WB extension for high audio quality  
**Document for:** Approval  
**Agenda Item:** 7.4.3

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### Work Item Description

#### TITLE

Extended AMR-WB codec (AMR-WB+) targeted for packet-switched streaming and messaging services

#### 1 3GPP Work Area

	Radio Access
	Core Network
X	Services

#### 2 Linked work items

TSG-SA WG4 Extended packet switched streaming service (Rel-6)  
TSG-T WG2 Multimedia Messaging (MMS) enhancements (Rel-6)

#### 3 Justification

The 3GPP AMR-WB speech codec is targeted to wideband speech applications. The codec has reasonable performance also in music but it is not comparable to generic audio codecs. The proposed AMR-WB extension will contain both the bit exact AMR-WB and new modes. The new modes will provide consistent quality for audio which is understood here as speech, music and mixed content. The extended AMR-WB codec will be considered as a candidate for PSS and MMS services in 3GPP Rel-6. It is expected that SA4 will define the selection criteria for a codec for low-rate high quality audio applications. The audio extension is primarily intended for non-conversational services.

Mobile streaming audio and messaging services will often contain speech only or speech mixed with music on background. Typical content types will be e.g. news casting and infotainment. Considering the expected mixed streaming content, available codecs have difficulties in performing consistently well for both speech and music at a range of bit-rates well below 32 kbit/s.

Radio resources and channel capacity will likely set limitations to available data rates for streaming. Audio content, such as described above, should be made available at a low bit-rate well below 32 kbit/s, focusing on the bit-rate range already used in the AMR-WB codec. Especially, if video is included in the content, the data rate should be as low as possible.

#### 4 Objective

The objective of the work is to enhance the current AMR-WB codec for audio by developing an audio extension based on the current 3GPP AMR-WB speech codec. The AMR-WB codec based audio extension will be introduced as new audio modes. The extended codec is targeted for use in packet-switched streaming and messaging services targeting Release 6.

The objectives of the audio extension are:

- The AMR-WB extension is realised as new modes to the existing standard AMR-WB codec.
- High perceptual quality with speech, music and mixed content.
- The music performance should be comparable to the quality of state-of-the-art audio codecs.
- The speech performance should be at least as good as that of AMR-WB.
- Target is to use similar bit-rates as the AMR-WB codec in order to ensure efficient use of radio resources.
- The codec should support mono and stereo coding.
- Low complexity decoder for the streaming client.
- For streaming and messaging applications, AMR-WB delay requirements can be relaxed for the extended AMR-WB.
- Normative fixed-point source code for both encoder and decoder to enable fast and wide adoption of the codec and to guarantee known audio quality.
- Seamless switching between the modes of the extended AMR-WB codec should be supported.

#### 5 Service Aspects

The work item does not introduce any new services. It extends the AMR-WB codec (new modes) targeting for use in packet-switched streaming and messaging services. The codec is primarily intended for non-conversational services. As this work item brings just additional modes to the existing AMR-WB codec, it is expected that there are no service or architectural impacts. SA1 and SA2 will be kept informed of the progress of the work in SA4.

#### 6 MMI-Aspects

None

#### 7 Charging Aspects

Outside the scope of this work item. Covered in the linked PSS and MMS service work.

#### 8 Security Aspects

Outside the scope of this work item. Covered in the linked PSS and MMS service work.

#### 9 Impacts

Affects:	USIM	ME	AN	CN	Others
Yes		X			
No	X		X	X	
Don't know					

