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# HE-AAC Multichannel Encoder

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HE-AAC (High Efficiency Advanced Audio Coding) also known as AAC Plus is a popular audio coding technique recommended by MPEG (Moving Picture Experts Group) committee. SBR is a tool used in combination with the AAC general audio codec resulting in aacPlus (also known as HEAAC). It provides significant increase in coding gain. In SBR, the high-band, i.e. the high frequency part of the spectrum is replicated using the low-band. The bit-rate is far below the bit-rate required when using conventional AAC coding. This translates into better quality at lower bit-rates.

### Features Supported

- Encoding of multi-channel Data in Plain AAC and AAC Plus (HE-AAC) modes.
- Encoding a maximum of 7.1 channels and 2 independently switched CCE(for multi-lingual content)
- Sampling rates
  - AAC Plus Encoding
    - 32kHz,44.1kHz,48kHz
  - Plain AAC Encoding
    - 8,11.025,12,16,22.05,24,32, 44.1, 48, 88.2 and 96 kHz
- Mid Side Stereo
- Bit Rates
  - AAC Plus Encoding
    - Stereo audio:32-288 kbps/channel
    - Mono audio: 16-144 kbps/channel
  - Plain AAC Encoding
    - 8- 576 kbps/channel
- Bit Stream Formats: ADIF (Audio Data Interchange Format) and ADTS (Audio Data Transport System)
- Creation of Program Configuration Element(PCE)
- Average Bit-rate.
- TNS (Temporal Noise Shaping)
- C Callable interface for encoder
- Efficient scratch memory with reduced stack requirements.
- Supports 3 Quality Levels to get a quality v/s MCPS performance trade-off.

**Not Supported**

- IS (Intensity Stereo) Coding
- PNS (Perceptual Noise Substitution)
- MP4 packetization
- Dynamic Range Compression (DRC) signaling.
- Dependently Switched Coupling Channel encoding.

**Encoder Validation**

HE-AAC Encoder is an informative standard. There is no standard measure or tool for evaluating the quality /fidelity of the encoder. The encoders produce complex artifacts, which is dependent on the source material. Taking these into consideration, the test bench for the audio coders includes the following types of test.

**Features**

- Bit Stream Compliance: Tests to ensure that the generated bit-stream is in conformance with the specification.
- Objective Quality Evaluation: Audio Quality test based on the ITU BS.1387 standard for objective audio quality evaluation.
- Subjective Quality Evaluation: Listening test to evaluate the quality.
- Artifact Listening Tests: Listening tests to ensure that the encoder does not produce the artifacts.

**Notice**

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