Encore's AMR-WB

Processor

TMS320C62x Series.

Technology

The Adaptive Multi-Rate Wideband Codec (AMR-WB) is a speech coder standard introduced by the 3rd Generation Partnership Project (3GPP), which is a partnership project of various standards organizations, for compressing the toll quality speech (16,000 samples/second). The AMR-WB Codec has been approved by the ITU-T standards body and is referred to as G.722.2.This speech coder is mainly used for speech compression in the 3rd generation mobile telephony.

This codec has nine basic bit rates, 23.85, 23.05, 19.85, 18.25, 15.85, 14.25, 12.65, 8.85 and 6.6 kbit/s. This codec works on the principle of Algebraic Code Excited Linear Prediction (ACELP) for all bit rates. To reduce average bit rate, this codec supports the discontinuous transmission (DTX), using Voice Activity Detection (VAD) and Comfort Noise Generation (CNG) algorithms.

The coder works on a frame of 320 speech samples (20 msec), and a look ahead of 5 msec is required. So the algorithmic delay for the coder is 25 msec.

Features

- Fully compatible with the following 3GPP AMR-WB standards

  3GPP TS 26.171 V5.0.0   AMR Wideband Speech Codec; General Description
  3GPP TS 26.190 V5.0.0   AMR Wideband Speech Codec; Transcoding functions
  3GPP TS 26.191 V5.0.0   AMR Wideband Speech Codec; Error concealment of lost frames
  3GPP TS 26.192 V5.0.0   AMR Wideband Speech Codec; Comfort noise aspects
  3GPP TS 26.193 V5.0.0   AMR Wideband Speech Codec; Source controlled rate operation
  3GPP TS 26.194 V5.0.0   AMR Wideband Speech Codec; Voice activity detector

  Fully bit exact with the following 3GPP GSM-AMR WB standard reference code

  3GPP TS 26.173 V5.4.0   ANSI-C code for AMR Wideband speech codec
                                        (Code Version 5.4.0)

  Fully tested using the test vectors given in the following 3GPP GSM-AMR-WB standard

  3GPP TS 26.174 V5.3.0   AMR Wideband Speech Codec; Test sequences

- Texas Instruments eXpressDSP™ compatible software architecture.
- Coder bit rate selection (any of the 9 rates) and DTX (VAD/CNG) enabling or disabling can be done on a frame basis.
- Full duplex multi-channel capability.
- Flexible interface with 'C' callability, with a single archive file for all functions.
- Built-in scratch memory management to avoid run-time overloading of system stack memory.
- Relocatable program and data spaces. Static (state) and scratch data spaces are dynamically relocatable. Program and table data spaces can be fragmented.
- The code is interruptible and re-entrant. It can be used in systems with multi threaded software architecture.

Performance

Resource Requirements
(Internal Code Version 0.1, CCS Version 2.12.01)

Memory (KBytes)

Program Memory	Data Memory		
	Tables	Static/Channel	Scratch
143.44	19.88	4.41	8.58

MCPS

MCPS measurements on **TMS320C6202 EVM** target platform, with following memory configuration.

Program Memory	Internal
Data Memory	Internal

	Maximum
Encoder (VAD-CNG enabled) for rate 19.85	25.18
Decoder for rate 19.85	4.17
Full duplex (VAD-CNG enabled)	29.35

Availability
Now

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