



Encore's GSM-AMR

Processor

TMS320C54x Series.

Technology

GSM-AMR is an Adaptive Multi Rate (AMR) 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 (8000 samples/second). This speech coder is mainly used for speech compression in the 3rd generation mobile telephony.

This codec has eight basic bit rates, 12.2, 10.2, 7.95, 7.40, 6.70, 5.90, 5.15 and 4.75 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. There are two types of VAD algorithms.

The coder works on a frame of 160 speech samples (20 msec), and no look ahead is required. So the algorithmic delay for the coder is 20 msec.

Features

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

3GPP TS 26.071 V4.0.0	AMR Speech Codec; General Description
3GPP TS 26.090 V4.0.0	AMR Speech Codec; Transcoding functions
3GPP TS 26.091 V4.0.0	AMR Speech Codec; Error concealment of lost frames
3GPP TS 26.092 V4.0.0	AMR Speech Codec; Comfort noise aspects
3GPP TS 26.093 V4.0.0	AMR Speech Codec; Source controlled rate operation
3GPP TS 26.094 V4.0.0	AMR Speech Codec; Voice activity detector

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

3GPP TS 26.071 V4.0.0	ANSI-C code for AMR speech codec (Code Version 7.5.0)
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Fully tested using the test vectors given in the following 3GPP GSM-AMR standard

3GPP TS 26.074 V4.0.0	AMR Speech Codec; Test sequences
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- Texas Instruments eXpressDSP™ compatible software architecture.
- Coder bit rate selection (any of the 8 rates) and DTX (VAD/CNG) enabling or disabling can be done on a frame basis.
- Selection of VAD options (NO_VAD, VAD1 or VAD2) at the time of initialization.
- 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 1.0, CCS Version 1.2)

Memory (KWords)

Program Memory	Data Memory		
	Tables	Static/Channel	Scratch
25.740	14.353	1.512	2.745

MIPS

MIPS measurements are taken on **TMS320C5410** based target platform with following memory configurations.

Program Memory		SARAM
Data Memory	Tables	SARAM
	Static	DARAM
	Scratch	DARAM

Rate: 12.2 Kbps (GSM-EFR)	Maximum
Encoder (VAD-CNG enabled, VAD2)	16.81
Decoder	2.48
Full duplex (VAD-CNG enabled, VAD2)	19.29

Availability

Now.

For further information please visit our web site, <http://www.ncoretech.com> or email to: jp@ncoretech.com or contact:

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