

Adaptive Digital Technologies, Inc.

G.722.1 Audio Coder

PRODUCT DESCRIPTION

The Adaptive Digital Technologies G.722.1 Audio Coder is an implementation of the ITU G.722.1 standard. ADT's G.722.1 coder is a high quality low-complexity algorithm that provides an audio bandwidth of 50Hz to 7kHz (to 14kHz with Annex C), operating at a bit rate of 48 kbps (Annex C), 24 kbit/s or 32 kbit/s or 16 kbit/s (Not available in Annex C). This algorithm is recommended for use in hands-free applications such as conferencing where there is a low probability of frame loss. It is used with many applications that require audio frequency bandwidth coding such as video conferencing, multimedia, and speaker/microphone digital telephony. The G.722.1 audio coder encodes 16 kHz and 32kHz sampled audio signals for transmission over 16, 24, 32 and 48 kbps channels, and provides 7 kHz /14kHz of audio bandwidth.

FEATURES

- Functions are C-callable.
- Multi -Channel Implementation.
- Completely re-entrant (Channel can interrupt any Channel, any time)
- Can be integrated with echo cancellers, VOX and tone detection/regeneration.
- The encoder and decoder meet all ITU G.722.1 compliance data files.
- Includes Frame Loss Concealment Algorithm
- xDM Compliant: ensures easy codec implementation and integration for DaVinci™ Technology

AVAILABILITY

ADT G.722.1 is available on the TI TMS320™ DSP Family
 C55x™DSP, C62x & C64x™DSP Generations
 Stellaris® Cortex-M3, Cortex-M4, Cortex A-8

SPECIFICATIONS

Coding Rate: 24 and 32 kbps

Sampling Rate: 16 kHz

Delay: 20 microseconds

C55x

All Memory usage is given in units of byte.

Function	32khz (Annex C) (MIPS)			16khz (MIPS)			Memory (bytes)			
	48kbs	32kbs	24kbs	32kbs	24kbs	16kbs	Program	Data	Channel	Scratch
Encode	5.91	5.76	5.32	3.10	2.91	2.85	--	--	1.3k	5.2k
Decode	7.64	7.07	6.53	4.15	3.64	3.39	--	--	2.6k	5.2k
Encode/Decode	13.55	12.83	11.85	7.25	6.55	6.24	7148	24k	3.8k	5.2k

C62x

All Memory usage is given in units of byte.

Function	MIPs		Program Memory	Data Memory	Per Channel Data Memory
	24	32			
Encode	2.47	2.60	-	-	648
Decode	2.22	2.45	-	-	1312
Encode/Decode	4.69	5.05	20128	20718	1950

C64x supports Big Endian/Little Endian

All Memory usage is given in units of byte.

Function	32khz (Annex C) (MIPS)			16khz (MIPS)			Memory (bytes)		
	48kbps	32kbps	24kbps	32kbps	24kbps	16kbps	Program	Channel	Scratch
Encode	4.93	4.70	4.22	1.95	1.86	1.75	--	656 or 1296 *	--
Decode	3.93	3.49	3.34	2.12	1.85	1.76	--	1344 or 2624 *	--
Encode/Decode	8.86	8.19	7.56	4.07	3.71	3.51	52k	--	6.4k

* With annex "C" defined.

CORTEX-A8/ CORTEX-M4 with SIMD

All Memory usage is given in units of byte.

Function	32khz (Annex C) (MIPS)			16khz (MIPS)			Memory (bytes)		
	48kbps	32kbps	24kbps	32kbps	24kbps	16kbps	Program	Channel	Scratch
Encode	16.0	14.5	13.7	8.5	8.4	7.7	--	656 or 1296 *	--
Decode	13.9	13.2	12.3	7.3	6.5	6.1	--	1344 or 2624 *	--
Encode/Decode	29.9	27.7	26	15.8	14.9	13.8	45k	--	6.4k

* With annex "C" defined.

CORTEX-M3

All Memory usage is given in units of byte.

Function	MIPs		Program Memory	Data Memory	Per Channel Data Memory
	24	32			
Encode	28.2	28.9	-	-	648
Decode	27.1	28.1	-	-	1312
Encode/Decode	55.3	57.0	28318	28828	1950

FUNCTIONS

InitializeEncoderChannel (...) Initializes the G.722.1 Encode Channel Structure
InitializeDecoderChannel (...) Initializes the G.722.1 Decode Channel Structure
EncodeG722_1 (...) Executes the G.722.1 encoder
DecodeG722_1 (...) Executes the G.722.1 decoder

Adaptive Digital is a member of the Texas Instruments Developer Network, and ARM Connected Community.

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