

## G.722.2 / AMR WB Audio Coder

Adaptive Multi-Rate Wideband audio codec

### PRODUCT DESCRIPTION

The Adaptive Digital Technologies G.722.2 Audio Coder is a real-time implementation of the ITU G.722.2 audio coder also referred to as the Adaptive Multi-Rate Wideband (AMR-WB) codec. The vocoder, originally developed for cellular telephony, also has other applications that extend beyond standard telephone bandwidth such as VoIP, video conferencing, and multimedia.

The G.722.2 audio coder encodes 16 kHz sampled audio signals for transmission, and compresses the signals to a multitude of bit rates ranging from 6.6 kbit/s to 23.85 kbit/s. The G.722.2 coder provides 7 kHz of audio bandwidth.

### FEATURES

- Functions are C-callable.
- Multi-Channel Implementation.
- Completely re-entrant (Channel can interrupt any Channel, any time)
- The encoder and decoder meet all ITU G.722.2 compliance data files.
- Includes Packet Loss Concealment Algorithm
- Includes Support for Discontinuous Transmission (DTX)
- The G.722.2 software operates at all defined data rates (6.60, 8.85, 12.65, 14.25, 15.85, 18.25, 19.85, 23.05 and 23.85 kbps).
- XDAIS Compliant

### AVAILABILITY

ADT G.722.2 is available on the following Platforms: Other configurations are available upon request.

Platform	Memory Model	Endian	Code Gen Tool Version
TI TMS320C55x	Large	Little	N/R
TI TMS320C64x	L3	Little	N/R
ARM Cortex-A8	N/A	Little	Android NDK r6b
ARM Cortex-A9	N/A	Little	Android NDK r6b
ARM Cortex-A15	N/A	Little	Android NDK r6b
ARM9e/ARM11	N/A	Little	N/R

\*GCC v 4.5.2 (Sourcery G++2011.03-41)

Endian, byte order: "Little Endian" means that the low-order byte of the number is stored in memory at the lowest address, and the high-order byte at the highest address. "Big Endian" means that the high-order byte of the number is stored in memory at the lowest address, and the low-order byte at the highest address.

### Acronyms

Mm – Memory Model: Memory Model is specific to Texas Instruments processors.

N/A – Not Applicable

N/R – Not Recorded

## SPECIFICATIONS

Coding Rate: 48, 56, or 64 kbps

Sampling Rate: 16 kHz

Delay: 125 microseconds

### TI TMS320

#### C55x

#### CPU UTILIZATION & MEMORY REQUIREMENTS

All Memory usage is given in units of byte.

Function	MIPS (Peak)	Program Memory	Data Memory	Per-Channel Data Memory
Encode/Decode	33	49,000	33,000	4,330

#### C64x

#### CPU UTILIZATION & MEMORY REQUIREMENTS

All Memory usage is given in units of byte.

Function	MIPS (Peak)	Program Memory	Data Memory	Per-Channel Data Memory
Encode	24	140,000	29,138	2792
Decode	6	90,000	24,588	1560
Encode/Decode	30	150,000	32,500	4352

## ARM DEVICES

### G.722.2 CORTEX-A8/A9/A15

#### MEMORY REQUIREMENTS

Function	Program Memory	Data Memory	Per Channel Data Memory
Encode	--	--	2712
Decode	--	--	1532
Encode/Decode	158.4k	7.8k	4244

#### CPU UTILIZATION

Rate of operation (kbps)	6.60	8.85	12.65	14.25	15.85	18.25	19.85	23.05	23.85
Encode	63.8	68.7	79.3	84.8	85.6	87.9	90.2	90.1	93.4
Decode	30.0	27.8	26.8	27.0	27.0	27.1	27.5	27.7	34.1

## G.722.2 ARM9e/ARM11 MEMORY REQUIREMENTS

Function	Program Memory	Data Memory	Per Channel Data Memory
Encode	--	--	2712
Decode	--	--	1532
Encode/Decode	161.4k	8.3k	4244

## CPU UTILIZATION

Rate of operation (kbps)	6.60	8.85	12.65	14.25	15.85	18.25	19.85	23.05	23.85
Encode	71.4	81.9	95.9	105.5	105.7	110.1	115	114.0	111.5
Decode	33.8	31.4	30.1	30.3	30.4	30.7	30.7	30.9	37.3

## FUNCTIONS

### API function call summary

```
InitializeEncoderChannel (...)  Initializes the G.722.2 Encode Channel Structure
InitializeDecoderChannel (...)  Initializes the G.722.2 Decode Channel Structure
EncodeG722_2 (...)             Executes the G.722.2 encoder
DecodeG722_2 (...)             Executes the G.722 .2 decoder
```

### Deliverables

The deliverable items are platform dependent. In general, there is one library. (Sometimes multiple variants of the library are included in the deliverables.) There are also header files, some of which are specific to the product and others are common across many of Adaptive Digital's products. Also included in the deliverables is product documentation, which includes a users guide and usually includes release notes and a data sheet. Sample/test code may be included as well.

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

### CONTACT INFORMATION

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