



Processor

TMS320C64x Series.

Technology

ITU-T G.728 is low delay speech coder standard, for compressing toll quality speech (8000 samples/second). G.728 Annex G (G.728 G) is a fixed point specification of the coder working at a bit rate of 16000 bits/second. G.728 coders are widely used for applications that require very low algorithmic delay. The typical application of this speech coder is in telephony over packet networks, especially voice over cable and VoIP. This is a very robust speech coder, with very good speech quality, comparable to 32 kbit/s ADPCM.

G.728 coders are based on the principle of Low Delay-Code Excited Linear Prediction (LD-CELP). This coder has the conventional approach of analysis-by-synthesis for fixed codebook search, which is generally available in all CELP class coders. The low algorithmic delay of the coder is achieved using backward adaptation of predictors and gain. Though the algorithmic delay can be as low as 0.625 msec (5 samples), the frame size of the coder is 2.5 msec (20 samples).

Features

- Fully compatible/bit-exact with the following standards
 - *ITU-T G.728 (09/92)*
Coding of speech at 16 kbit/s using Low Delay Code Excited Linear Prediction
 - *ITU-T G.728 Annex G (11/94)*
16 kbit/s fixed point specification
 - *ITU-T G.728 Annex G Corrigendum 1 (02/00)*
16 kbit/s fixed point specification
- The implementation is verified with the following standard
 - *ITU-T G.728 Appendix 1 Verification tools (07/95)*
Programs and test sequences for implementation verification of the algorithm of the G.728 16 kbit/s LD-CELP speech coder.
- Texas Instruments eXpressDSP™ compatible software architecture.
- Little endian implementation (If required it can be converted to big endian)
- Frame based design. Frame is 20 samples (2.5 msec).
- The enabling/disabling of post filter in decoder is selectable at the time of decoder channel initialization.
- Full duplex multi-channel capability.
- Flexible interface with 'C' callability, with a single archive file for all functions.
- Relocatable program and data spaces. Static (state), scratch data memory and tables are dynamically relocatable.
- The code is interruptible and re-entrant. This code can be used in systems with multi threaded software architecture.

Performance

Resource Requirements

(Internal Code Version 4.0, CCS Version 2.12.01)

Memory (KBytes)

Program Memory	Data Memory		
	Tables	Static/Channel	Scratch
55.375	2.17	3.39	0.769

MCPS

MCPS measurements on **TMS320C64xx** simulator platform, with a flat memory configuration.

	Maximum
Encoder	7.5
Decoder (with Post Filter enable)	6.3
Full Duplex	13.8

MCPS measurements on **TMS320C6416 TEB** platform, with all program,data and stack in **L2 memory**.

	Maximum
Encoder	9.52
Decoder (with Post Filter enable)	7.56
Full Duplex	17.08

Availability

Now.

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