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G.729

DSP-BASED SPEECH COMPRESSION CODEC

Analog Devices offers a G.729 full-duplex speech compression decoder, also called CS-ACELP (Conjugate-Structure Algebraic Code Excited Linear Prediction). The decoder process the G.729 algorithm, which is a state-of-the-art voice compression ITU (International Telecommunications Union) standard that can be used in a wide range of applications including wireless communications, digital satellite systems, packetized speech and digital leased lines.

G.729 provides 8 Kbps bandwidth for compressed speech at toll quality (equivalent to G.726 32 Kbps ADPCM under clean channel condition). Also, G.729 has lower complexity and lower bit rate than G.728.

This G.729 implementation provides a bit-exact implementation of the ITU standard on a single Analog Devices ADSP-218x Digital Signal Processor. The software is C callable and fully re-entrant, which enables easy interfacing and multi-channel capability. The encoder and decoder are fully independent, therefore, a DSP device can run a number of full-duplex or half-duplex channels. The coder and the decoder are able to operate under a real-time task switching kernel.

HIGHLIGHTS

- **8 Kbps Bit Rate at Toll Quality**

- **32 Kbps Bit Rate ADPCM under clean channel condition**

- **Discontinuous Transmission And Noise Fill During Non-Speech Intervals**

- **Optimizer Represented In Speech**

- **Encodes Speech Using Conjugate-Structure Algebraic Code-Excited Linear Prediction (CS-ACELP)**

- **Frame Size: 30 msec**

- **Delay Time: 7.5 msec**

- **Minimum Buffer Size: 2.5 msec**

- **Other algorithm options available include:**
  - G.728
  - G.723
  - Acoustic Echo Cancellation
  - Line Echo Cancellation
  - DTMF Generation/Decode
  - V.34 Modem

For single chip performance, optimal specifications for G.729 utilize an ADSP-218x processor with 17 MIPS, 5 K DM RAM and 9.6 K PM RAM.

This chipset is sold as a combination DSP and software module under the part number ADSST-G729-XXXX. All software is provided under license from the Software and Systems Technology Division of Analog Devices

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