

ITU-T G.722.2 Wide-Band Audio Codec for Analog Devices Blackfin



G.722.2 Wide-Band Speech Codec

The G722.2 recommendation describes the detailed mapping from input blocks of 320 speech samples in 16-bit uniform PCM format to encoded blocks of 132, 177, 253, 285, 317, 365, 397, 461, and 477 bits and vice versa. The sampling rate is 16 kHz leading to a bit rate for the encoded bit stream of 6.60, 8.85, 12.65, 14.25, 15.85, 18.25, 19.85, 23.05, or 23.85 kbit/s. The coding scheme for the multi-rate coding modes is Algebraic Code Excited Linear Prediction Coder (ACELP). The multi-rate wideband ACELP coder is referred to as AMR-WB. The codec described in this recommendation also utilizes an integrated Voice Activity Detector (VAD).

Some of the applications for which this coder is suitable:

- Real-time communications such as wide-band videoconferencing and IP telephony.
- Streaming audio
- Archival and messaging

Our implementation of G.722.2 is available for Blackfin platforms and can be demonstrated on BF533-EZLite or simulated on PC platforms.

The algorithm was implemented to be independent of the hardware interface, i.e. the user specifies input and output channels and must handle buffers in his framework.

The algorithm is fully re-entrant and can easily be integrated in a "C"-environment.

Specifications:



- max. 60 MIPS per encoder channel average (depending on bit rate)
- max. 10 MIPS per decoder channel average (depending on bit rate)
- ~ 60 kBytes program memory
- ~ 32 kBytes data memory (includes stack)
- 2.7 kBytes data memory/encoder channel
- 1.5 kBytes data memory/decoder channel
- ITU G.722.2 compliant for all bitrates

Support

- Demo for BF533-EZLite available under NDA
- Fully documented separate libraries for encoder and decoder
- Customization/Integration support available
- Code portable to other platforms (DSP, non-DSP)

Ingenieurbüro Bayer DSP Solutions

Ingenieurbüro Bayer DSP Solutions was founded more than a decade ago by Andreas Bayer, a first hour DSP specialist.

Originally specializing in the telecommunication field, the company has grown its DSP expertise to provide comprehensive services around Digital Signal Processing applications by using DSP chips from Analog Devices, Texas Instruments, NEC, Freescale and other renowned DSP vendors.

Our goal is to provide comprehensive coverage of all Digital Signal Processing topics, including hardware design, FPGA design, DSP algorithms, software integration, tools and complete products.

Today we support many DSP families including Texas Instruments C54x, C55x, C3x, C6x, Analog Devices ADSP218x, SHARC and Blackfin, Motorola DSP56K as well as DSPs from other vendors.

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