

# ITU-T G.722.2 Wide-Band Audio Codec for Blackfin DSP



## G.722.2 Wide-Band Speech Codec

This 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 16000 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 are:

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

Our implementation of a 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 (preliminary):

- <70 MIPS per encoder channel average (depending on bitrate, ASM optimizable)
- < 10 MIPS per decoder channel average (depending on bitrate, ASM optimizable)
- ~30 KWords program memory
- ~16 Kwords data memory (includes stack)
- 1350 Words data memory/encoder channel
- 766 Words data memory/decoder channel
- ITU G.722.2 compliant for all bitrates

## Support

Available under NDA as a compiled library  
Customization/Integration support available  
Code portable to other platforms (DSP, non-DSP)  
Demo for BF533-EZLite available

## Bayer DSP Solutions

was founded in 1995 and offers tools, hardware, software, algorithm and integration services around digital signal processing applications.

The major focus is on telecommunications application. Bayer DSP Solutions has developed a number of proprietary algorithms for use in private branch exchanges (PBX) for most popular DSP platforms.

Supported DSP families include TI's C54x, C55x, C3x, C6x, Analog Devices ADSP218x, SHARC and Blackfin, Motorola DSP56K and DSP568xx as well as DSPs from other vendors.

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## Contact:

Andreas R. Bayer  
Ingenieurbüro Bayer DSP Solutions  
Vohwinkelallee 8, 40229 Duesseldorf / Germany  
Tel: +49-211-210 8120  
Fax: +49-211-210 8176  
Email: solutions@dsp-bayer.de  
<http://www.dsp-bayer.de>



EXT営業部  
E-mail : sales@dsp-tdi.com  
〒198-0063 東京都青梅市梅郷5-955 TEL.0428-77-7000 FAX.0428-77-7010