

G.722

7 kHz audio coding within 64 kbit/s

Using Sub-Band Adaptive Differential Pulse Code Modulation (SB-ADPCM)

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VOCAL Technologies, Ltd. software libraries include a complete range of ETSI / ITU / IEEE compliant and other standard and proprietary vocoder algorithms for execution on ANSI C and optimized for leading DSP architectures (ADI, AMD, ARM, DSP Group, LSI Logic ZSP, MIPS and TI).

G.722 describes the characteristics of an audio (50 to 7 000 Hz) coding system which may be used for a variety of higher quality speech applications. The coding system uses sub-band adaptive differential pulse code modulation (SB-ADPCM) within a bit rate of 64 kbit/s. The system is referred as 64 kbit/s (7 kHz) audio coding.

In the SB-ADPCM technique used, the frequency band is split into two sub-bands (higher and lower) and the signals in each sub-band are encoded using ADPCM. The system has three basic modes of operation corresponding to the bit rates used for 7 kHz audio coding: 64, 56 and 48 kbit/s. The latter two modes allow an auxiliary data channel of 8 and 16 kbit/s respectively to be provided within the 64 kbit/s by making use of bits from the lower sub-band.

The 64 kbit/s (7 kHz) audio encoder includes a transmit audio part which converts an audio signal to a uniform digital signal which is coded using 14 bits with 16 kHz sampling and a SB-ADPCM encoder which reduces the bit rate to 64 kbit/s.

The 64 kbit/s (7 kHz) audio decoder includes a SB-ADPCM decoder which performs the reverse operation to the encoder, noting that the effective audio coding bit rate at the input of the decoder can be 64, 56 or 48 kbit/s depending on the mode of operation and a receive audio part which reconstructs the audio signal from the uniform digital signal which is encoded using 14 bits with 16 kHz sampling.

The three basic possible modes of operation, which correspond to the bit rates available for audio coding at the input of the decoder, are: mode 1: 64 kbit/s; mode 2: 56 kbit/s and mode 3: 48 kbit/s.

Applications:

- WIFI phones VoWLAN
- Wireless GPRS EDGE systems.
- Personal Communications
- Wideband IP telephony
- Audio and Video Conferencing
- Wideband IP telephony

Features:

- Full and half duplex modes of operation.
- Passes ITU test vectors.
- Common compressed speech frame stream interface to support systems with multiple speech coders (G.729, G.728, G.726 et al).
- Optimized for high performance on leading edge DSP architectures.
- Multi-tasking environment compatible.

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