

# G.711

## Pulse Code Modulation (PCM) of Voice Frequencies

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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.711 uses a sampling rate of 8,000 samples per second. The tolerance on that rate is  $\pm 50$  parts per million (ppm). Eight binary digits per sample are used. Two encoding laws are used and these are commonly referred to as the A-law and the mu-law. When using the mu-law in networks where suppression of the all 0 character signal is required, the character signal corresponding to negative input values between decision values numbers 127 and 128 should be 0000010 and the value at the decoder output is -7519. The corresponding decoder output value number is 125.

Packet Loss Concealment (PLC) algorithms, also known as frame erasure concealment algorithms, hide transmission losses in an audio system where the input signal is encoded and packetized at a transmitter, sent over a network, and received at a receiver that decodes the packet and plays out the output. Many of the standard CELP-based speech coders, such as Recommendations G.723.1, G.728 and G.729, have PLC algorithms built into their standards. G.711 Appendix I: "A high quality low-complexity algorithm for packet loss concealment with G.711" provides a PLC method for Recommendation G.711.

G.711 Appendix II: "A comfort noise payload definition for ITU-T G.711 use in packet-based multimedia communication systems" defines a comfort noise payload format (or bit-stream) for ITU-T G.711 use in packet-based multimedia communication systems. The use of the payload format is intended for packet-based systems with a large header overhead where the packet transmission rate plays a significant role in the overall system bit-rate. In this situation, the use of VAD/DTX/CNG can significantly reduce the packet transmission rate and hence improve the bandwidth efficiency.

### Applications:

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

### Features:

- 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.
- Can be integrated with G.168 and G.165 echo cancellers, and tone detection/regeneration.
- Multi channel implementation.
- Complain with G.711 specification.
- Optimized implementation.
- 64 kbit/s expander input rate.
- A-law or mu-law expander input.
- Uniform PCM expander output.
- 64 kbit/s compressor output rate.
- Uniform PCM compressor input.
- A-law or mu-law compressor output.

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