

## GIPS iLBC

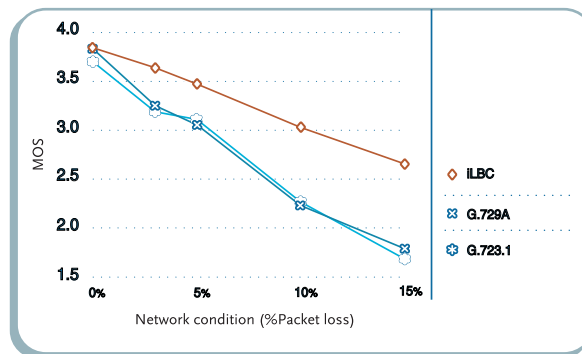
### Enabling robust telephony with a low-bit rate code

iLBC from Global IP Solutions is a royalty-free codec for Voice over IP (VoIP) networks. GIPS iLBC delivers speech quality better than G.729A and equal to G.729E, while offering substantially better quality over congested networks with packet loss.

iLBC is the first codec ever to be standardized by the IETF (RFC3951 and RFC3952) and is designated by CableLabs as a mandatory component of PacketCable voice-over-cable telephony systems.

Other standard low bit rate codecs exploit dependencies between speech frames, resulting in error propagation when packets are lost or delayed. In contrast, iLBC encoded speech frames are independent. This unique technology gives iLBC robustness against packet loss and delay. Furthermore, iLBC has the added benefit of avoiding the complex licensing structure of current standard low bit rate codecs, because it is royalty-free.

iLBC offers substantially better quality than G.729A and G.723.1.



Tests were performed by Dynastat, Inc., an independent test laboratory. Score system range: 1 = bad, 2 = poor, 3 = fair, 4 = good, 5 = excellent.

The reference code for iLBC, which is available through the IETF, is floating point C code. For most practical cases it is necessary to convert the code to fixed point (FIP) C before porting it to a DSP. This is a very difficult and time consuming procedure, which requires in-depth knowledge of signal processing and the iLBC codec. Global IP Sound has developed a FIP version of iLBC, optimized for efficient DSP implementation and with speech quality indistinguishable from the floating point code.

GIPS NetEQ™ has features that are optimized for use with iLBC. The combination of NetEQ with iLBC delivers competitive speech quality versus bit rate trade-off in addition to low delay and high packet loss robustness.

#### Who needs iLBC?

- Providers and users who work with "real-life" (including wireless) networks and require reliability
- Providers that use the Internet as their main communication network as a part of their virtual private network
- Markets with constrained bandwidth requirements



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## GIPS iLBC

### Key benefits

- The only codec ever to be standardized by the IETF
- Royalty-free with speech quality better than G.729A and G.723.1.
- Better packet loss robustness compared to other low-bit rate codecs, including G.729A, G.729E, G.723.1 and G.728
- iLBC supports multiple frame sizes giving increased flexibility to meet the needs of different applications and/or VoIP equipment
- Works with GIPS NetEQ to provide low delay and high packet loss robustness for low-bit rate codecs
- iLBC delivers the same basic quality as G.729E and exceeds G.729E under packet loss conditions

Specifications	
Implementation	Fixed point ANSI C and DSP <sup>1</sup> . Please visit <a href="http://www.ilbcfreeware.org">www.ilbcfreeware.org</a> for access of the royalty-free floating point C code and specification
Frame size	20 and 30 ms
Bit rate	13.3 kbps (30 ms frames) and 15.2 kbps (20 ms frames)
Sampling rate	8 kHz
Basic Quality	Better than G.729A, and comparable to G.729E
Packet loss robustness	Significantly better than G.729A and exceeds G.729E
Packet loss concealment	Integrated example solution

1) Please contact a GIPS sales representative for a complete list of implementations.