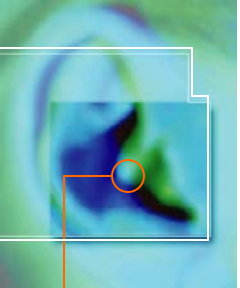


draft-ietf-avt-ilbc-codec-00
draft-ietf-avt-rtp-ilbc-00

email/SIP: alan.duric@globalipsound.com

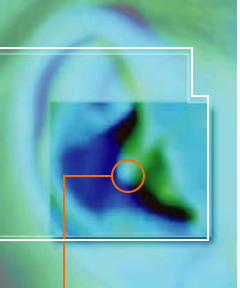




iLBC – IETF work

IETF deliverables, (first iterations submitted during Feb-02)

- iLBC codec specification draft
 - draft-ietf-avt-ilbc-codec-00 (successor of draft-andersen-ilbc-01)
- LBC RTP payload profile draft
 - draft-ietf-avt-rtp-ilbc-00 (successor of draft-duric-rtp-ilbc-01)
- Statement about IPRs in iLBC and its freeware nature



Changes since the last version

- Bit rate decreased to 13.33 kbps
 - 399 bits instead of 416 bits per 30 ms
- Changed bit packing (ULP ready since the last draft version)
 - Class I – most sensitive = 8 bytes (unchanged)
 - Class II = 12 bytes (unchanged)
 - Class III = 30 bytes (vs 32 in previous draft)
- Decreased complexity
- Further improved quality (A/B tests confirmed that)
- Improved descriptions of the blocks in the draft
- Source code changed and trimmed - number of pages decreased :)

Changes since last version – bitstream

Bitstream structure:

Parameter		Bits	Class 1,2,3	
LSF	LSF 1	Split 1	6, 0, 0	
		Split 2	7, 0, 0	
		Split 3	7, 0, 0	
	LSF 2	Split 1	6, 0, 0	
		Split 2	7, 0, 0	
		Split 3	7, 10	
		Sum	40	52
	Block Class.		3	3, 0, 0
	Scale Factor State Coder		6	6, 0, 0
Quantized Residual State Samples	Sample 0	3	0, 1, 2	
	Sample 1	3	0, 1, 2	
	:	:	:	
	:	:	:	
	:	:	:	
	Sample 55	3	0, 1, 2	
	Sample 56	3	0, 1, 2	
	Sample 57	3	0, 1, 2	
	Sum	174	171	

Changes since last version – bitstream

Indices sub-block 1	Stage 1	8	6,1,1
	Stage 2	7 8	0,0,7
	Stage 3	7 8	0,0,7
Indices sub-block 2	Stage 1	8 9	0,7,1
	Stage 2	8 9	0,0,8
	Stage 3	8 9	0,0,8

Indices sub-block 3	Stage 1	8 9	0,7,1
	Stage 2	8 9	0,0,8
	Stage 3	8 9	0,0,8
Indices sub-block 4	Stage 1	8 9	0,7,1
	Stage 2	8 9	0,0,8
	Stage 3	8 9	0,0,8

Sum		94	105

Gains sub-block 1	Stage 1	5 4	1,2,2
	Stage 2	4 3	1,2,1
	Stage 3	3 3	0,0,3
Gains sub-block 2	Stage 1	5 4	0,2,3
	Stage 2	4 3	0,2,2
	Stage 3	3 3	0,0,3
Gains sub-block 3	Stage 1	5 4	0,2,3
	Stage 2	4 3	0,2,2
	Stage 3	3 3	0,0,3
Gains sub-block 4	Stage 1	5 4	0,1,4
	Stage 2	4 3	0,1,3
	Stage 3	3 3	0,0,3

Sum		48	40

CB for 22 samples in start state	Stage 1	7 8	4,2,1
	Stage 2	7 8	0,0,7
	Stage 3	7 8	0,0,7

Sum		21	24

Gain for 22 samples in start state	Stage 1	5 4	1,1,3
	Stage 2	4 3	1,1,2
	Stage 3	3	0,0,3

Sum		12	10

Position 22 sample segment		1	1,0,0

SUM		399	416



Changes since last version – bit allocation

240 samples encoded to 416 bits = 13.867 kbit/s

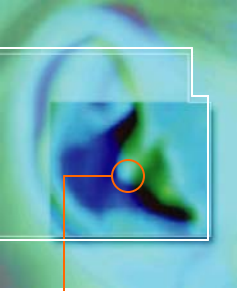
Parameter	Bits
LPC	52
Start state position	4
Start state scale	6
Start state samples	171
Shapes	129
Gains	50
Gain correction	4
Total	416

240 samples encoded to 399 bits = 13.33 kbit/s (50 oct)

Parameter	Bits
LPC	40
Start state position	4
Start state scale	6
Start state samples	174
Shapes	115
Gains	60
Gain correction	-
Total	399

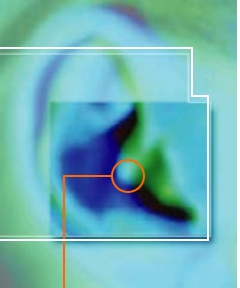
draft-andersen-ilbc-01

draft-ietf-avt-ilbc-codec-00



Open Issues (coming features)

- ✓ • Reduction to (52) 50 bytes of payload per 30 ms
- ✓ • Bit packing prepared i optimized for ULP (8, 12, 30)
- ✓ • Complexity optimization related work
 - 20 ms frame option
 - Voice activity detection and comfort noise generation



The Way Forward

- Interop test of different implementations planned for the next SIPiT (details being discussed)
- Qualification Criteria Draft
- Advance towards last call (after SIPiT)

***For demo SIP client with iLBC contact:
email/sip: alan.duric@globalipsound.com***

***Also iLBC available in Kphone 2.1 at:
www.wirlab.net/kphone/***