draft-ietf-codec-results-00

Jan Skoglund, Christian Hoene

November 15th, 2011

Diff to draft-valin-codec-results-00

- Added test results of Google and Universität Tübingen (Section 2.1.4, 2.1.5 and 2.4)

- Editorial changes
  - Moved Section 2 and 3 to the appendix – as suggested by email comments
  - Moved Section 4 to the appendix as it also refers to old implementations.

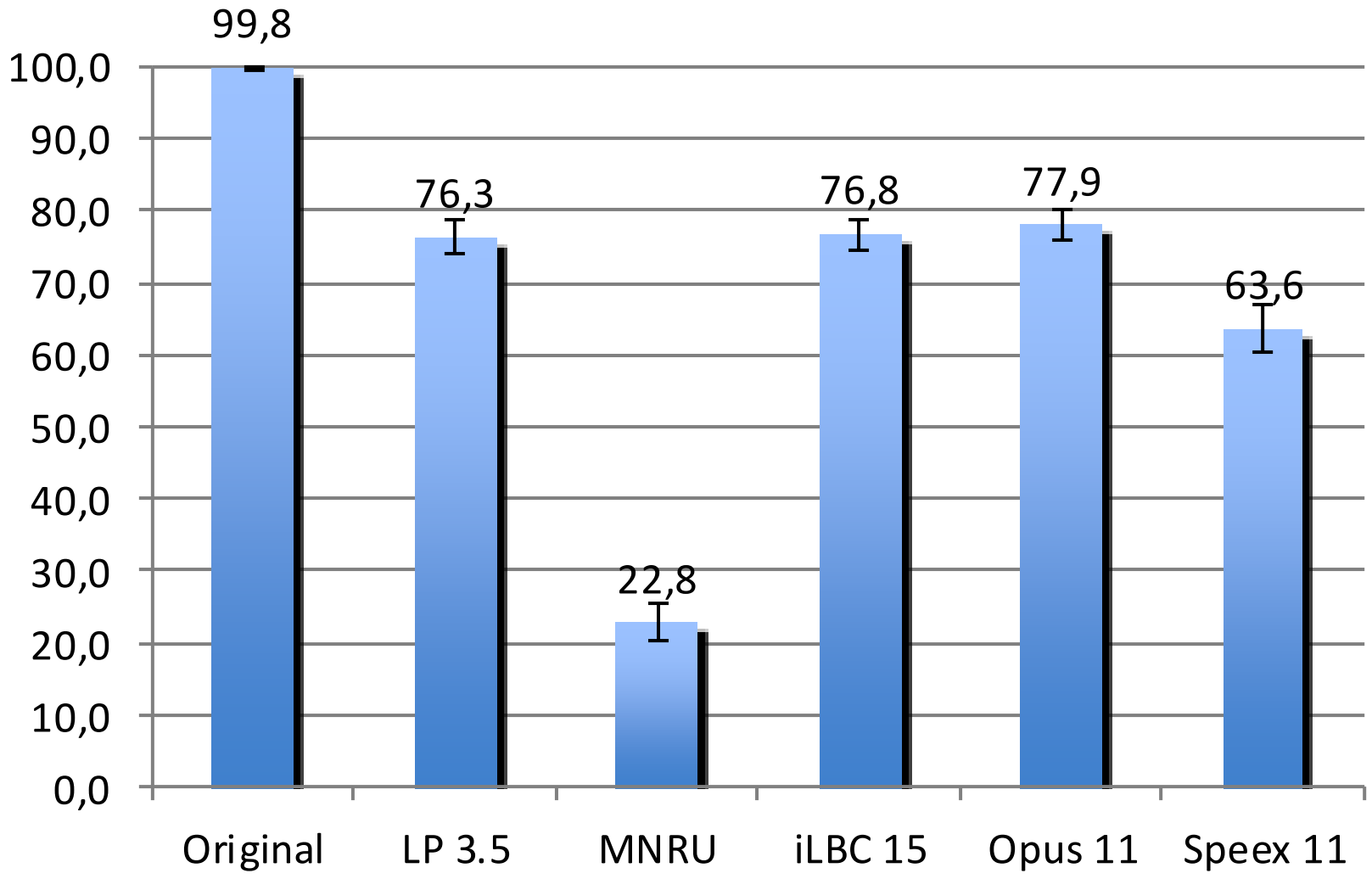
Results of Google

- Can Opus compress
  - tonal languages (in this case Mandarin) well?
- What is the impact of transcoding
  - with AMR and AMR-WB?

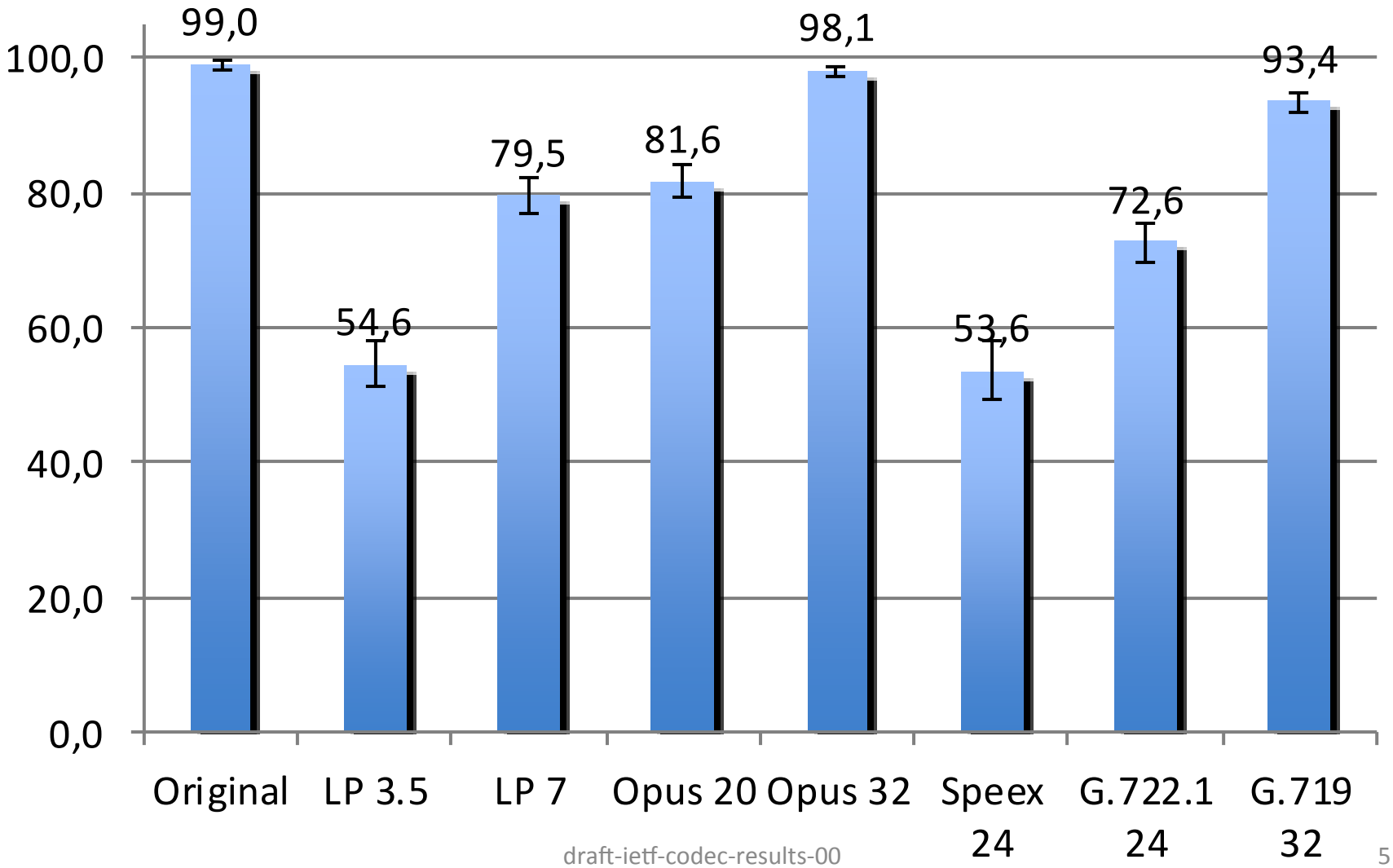
Measurement Methodology

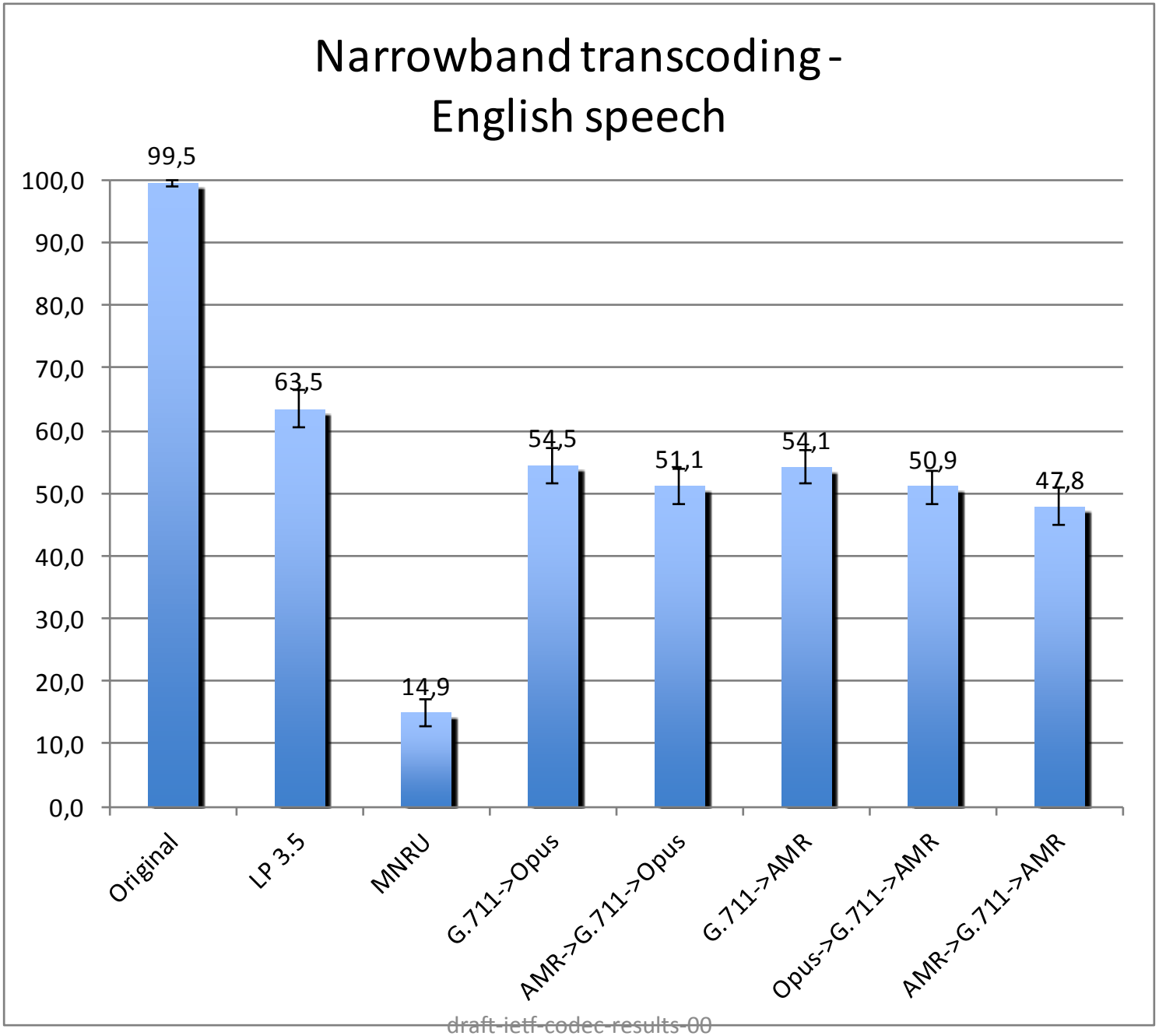
- Followed MUSHRA ITU-R BS.1384-1
- Headphones

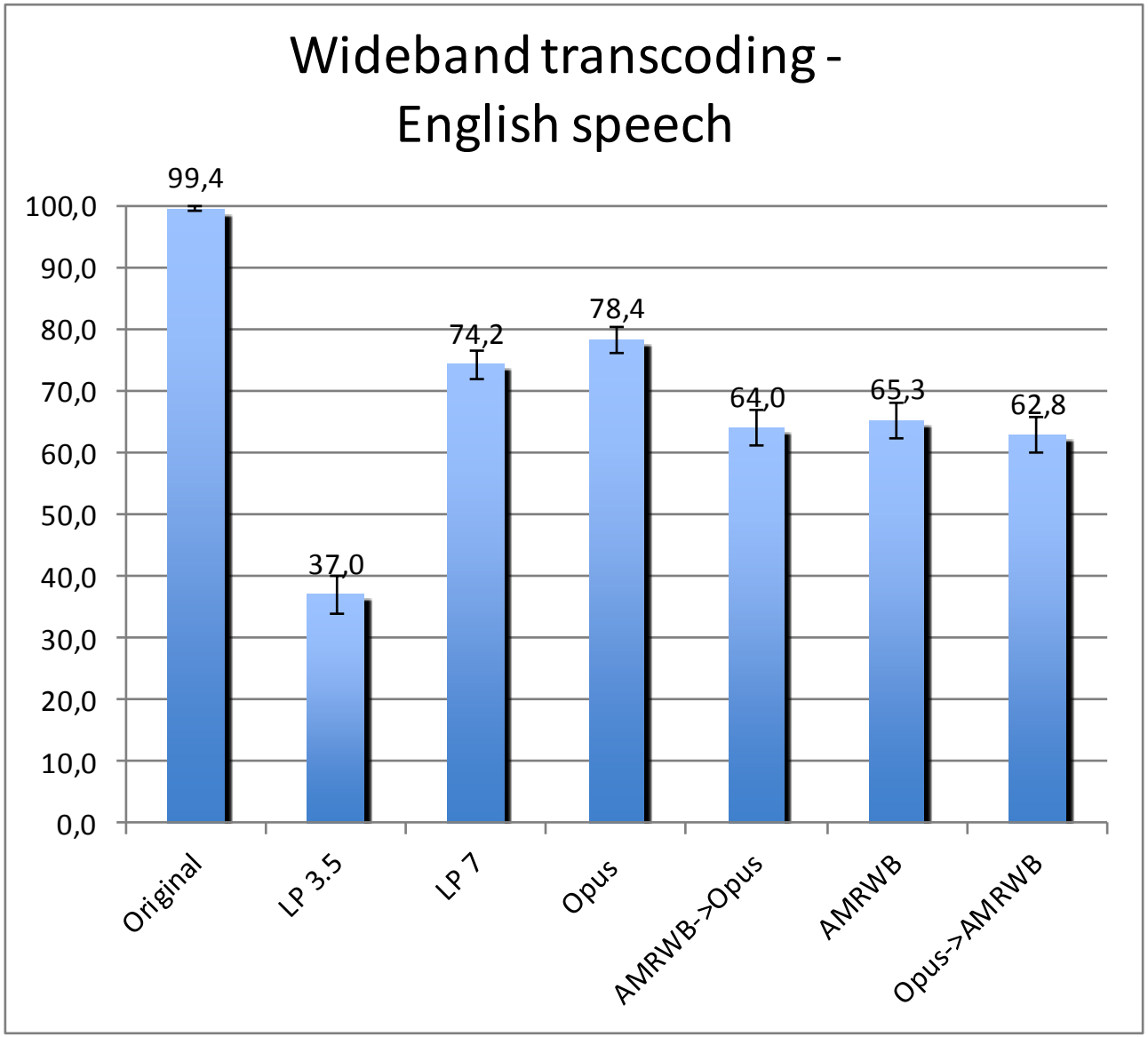
Narrowband Coding - Mandarin Speech



Wideband and fullband codecs - Mandarin speech




Narrowband transcoding - English speech
100,0
90,0
80,0
70,0
60,0
50,0
40,0
30,0
20,0
10,0
0,0
99,5
63,5
14,9
54,5
51,1
54,1
50,9
47,8
Original
LP 3.5
MNRU
G.711->Opus
AMR->G.711->Opus
G.711->AMR
Opus->G.711->AMR
AMR->G.711->AMR


Wideband transcoding - English speech
100,0
90,0
80,0
70,0
60,0
50,0
40,0
30,0
20,0
10,0
0,0
99,4
37,0
74,2
78,4
64,0
65,3
62,8
Original
LP 3.5
LP 7
Opus
AMRWB->Opus
AMRWB
Opus->AMRWB

Results of Universität Tübingen

Can Opus compress

- stereo voice in the Silk and the Hybrid mode?
- two simultaneous voices?
- binaural content?

How does Opus perform compared to other stereo voice codecs?

- No open source stereo voice codec available
- thus, used AMR-WB+

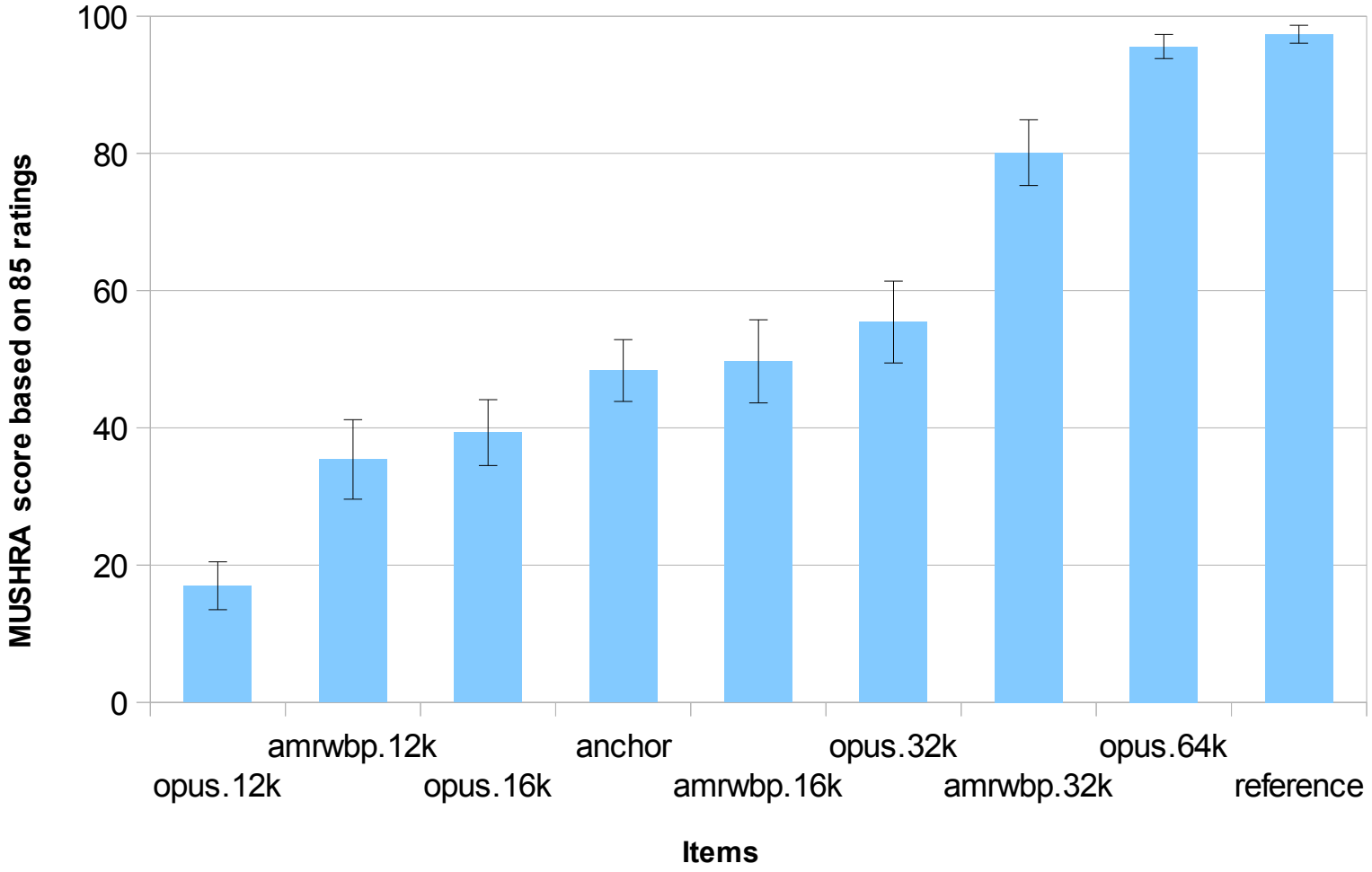
Measurement Methodology

- Followed MUSHRA ITU-R BS.1384-1
- Headphones
- Participants were unaware of a hidden reference

Reference Items

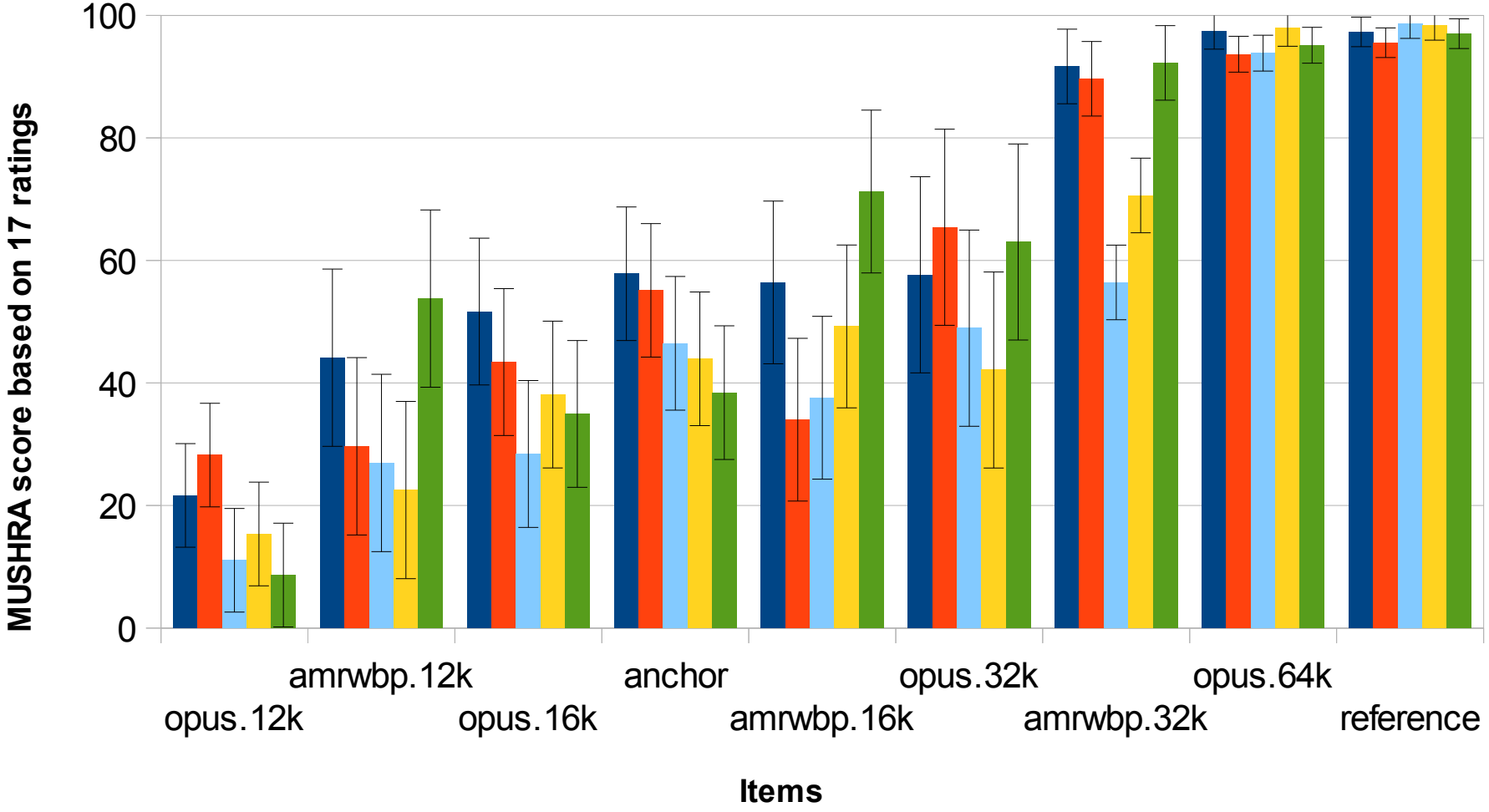
1. One Voice Stereo
   8s, stereo voice recording, female German speakers
2. Two Voices Stereo
   9s, two stereo female voices mixed together
3. One Voice Binaural
   13s, one female voice, rendered with HTRF and
   added room impulse response, moving
4. Two Voice Binaural
   13s, two female voices at different stationary positions, rendered with HTRF and added room impulse response
5. Acappella Song „Mein Fahrrad“ by „Die Prinzen“
   10.5s, mono

Results: Codecs



CI 95%

Codec and Item



both tests

works well – Passed

- However, Opus at 20 kbps did not outperformed G.719 at 32 kbps as with
- Mandarin seems not to contain as much contain much high frequency-rich consonants as English

English

- Transcoding via AMR and AMR-WB – Passed
  - Opus better than AMR-WB
- Stereo voice coding in CELT mode – voice coding in CELP mode – Fixed

steps: Codec characterization

Codec characterization needed for
- People selecting codecs
- Application programmers

Work

- Work can only be started after code
- Old test results might use freeze.
  testing output of old version equals output but only
- Shall tests and audio quality well
  runtime and memory of new version as
- Merging consumption?
  to include more textual ?
  with draft-hoene-quality-01

listening-test results to the editor (hoene@uni-tuebingen.de

- Thanks…