Codec 2

David Rowe

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1 Introduction

Codec 2 is an open source speech codec designed for communications quality speech between 700 and 3200 bit/s. The main application is low bandwidth HF/VHF digital radio. It fills a gap in open source voice codecs beneath 5000 bit/s and is released under the GNU Lesser General Public License (LGPL). It is written in C99 standard C.

The Codec 2 project was started in 2009 in response to the problem of closed source, patented, proprietary voice codecs in the sub-5 kbit/s range, in particular for use in the Amateur Radio service.

This document describes Codec 2 at two levels. Section 2 is a high level overview aimed at the Radio Amateur, while Section 3 contains a more detailed description with math and signal processing theory. This document is not a concise algorithmic description, instead the algorithm is defined by the reference C99 source code and automated tests (ctests).

This production of this document was kindly supported by an ARDC grant [1]. As an open source project, many people have contributed to Codec 2 over the years - we deeply appreciate all of your support.

2 Codec 2 for the Radio Amateur

3 Signal Processing Details

4 Further Work

[2]

References

[1] Enhancing HF Digital Voice with FreeDV, 2023. https://www.ardc.net/apply/grants/2023-grants/enhancing-hf-digital-voice-with-freedv/.

[2] Daniel W Griffin and Jae S Lim. Multiband excitation vocoder. *IEEE Transactions on acoustics, speech, and signal processing*, 36(8):1223–1235, 1988.