ISSN 0280–5316
ISRN LUTFD2/TFRT--5612--SE

Synchronization in ADSL Modems

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December 1998

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Document name
MASTER THESIS

Date of issue
December 1998

Document Number
ISRN LUTFD2/TFRT--5612--SE

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Sponsoring organisation

Title and subtitle
Synchronization in ADSL modems (Synkronisering i ADSL modem)

Abstract

We present two methods for timing recovery in ADSL-modems. Both techniques, the phase-lock loop and the digital phase correction technique, use the pilot tone in the ADSL-signal. The first has a variable receiver sample clock that is tuned to the transmitter sample clock. The latter, also known as the rotor technique, has a non-adjustable receiver clock, but compensates the arising phase errors by rotations of the received QAM-constellation points. We also present a method to achieve frame synchronization. The synchronization frame that is sent every 69th frame is of crucial importance for this method. Simulations show that these synchronization techniques work well in the presence of noise on twisted pair copper wires.

Key words
timing recovery, synchronization, ADSL

Classification system and/or index terms (if any)

Supplementary bibliographical information

ISSN and key title

ISBN

Language
English

Number of pages
54

Recipient's notes

Security classification

Preface

First of all we would like to thank our supervisor prof. Björn Wittenmark who initiated our contact with the University of Melbourne, Australia. We would also like to thank our supervisors prof. Rob Evans and Dr. Iain Collings at the Dept. of Elec. & Electr. Engineering, University of Melbourne. The telecommunication service provider Telstra made our work possible by funding the work on ADSL at the Dept. of Elec. & Electr. Engineering.

Finally we would like to thank all our friends from Melbourne which made our stay abroad really enjoyable.

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