Digital TV and DVD are examples of the success of digital video compression. The video compression method of DVD, i.e. MPEG-2, provides good quality video for a bandwidth of 5 Mbits/s. The delivery of video through networks in real-time would enable the development of video-renting services into a whole new level. Today’s ADSL networks provided for private use can deliver a bandwidth around 2 Mbits/s. More advanced compression methods are thus needed for delivery of good quality video through these networks.

In this study four software products for video compression are tested and their compression efficiency is compared to the MPEG-2. Two of the tested methods are compliant with the standards MPEG-4 ASP and H.264 baseline. The other two are non-standardized. Three test sequences are used and the efficiency is measured with four objective video quality measurement methods. Also the principles of compression methods and visual quality measurement are discussed. The ability of measurement methods to model the human vision is also discussed.

The study shows that the advanced quality measurement methods can model human perception quite accurately. These methods can be used to enhance the compression ability of video compression methods, though the study reveals that the results of one measurement method should be verified with another method or with subjective tests. The tested compression methods can provide the same quality with a half or a third of the bit rate needed for MPEG-2 depending on the testmaterial and the measurement method. For bandwidths of ADSL networks this is not enough and thus more advanced compression methods or preprocessing are needed for delivering good quality video over ADSL.

Keywords: ADSL, Video-on-Demand, Video Compression, MPEG-4, H.264, Objective Visual Quality Measurement