CCITT SGXV
Specialists Group on Coding for
Visual Telephony

Doc. No 328
March 88

Title: Signalling of loop filter, classification index and quantiser in a p x 64 kbit/s Codec (p = 1,2,...,30)

Source: FRG

1. Introduction

In this paper methods for signalling the filter in the loop, the classification index and the quantiser, as given in Recommendation H.12x are modified to allow for a bitrate of 64 kbit/s. Reduction of side information for block attributes and motion vectors as introduced in document # 310 is not discussed in the paper.

2. Signalling methods

2.1 Loop filter

It has been shown that a switchable low-pass filter in the coding loop can improve the coding performance. Signalling the filter explicitly by extra side information works well for n x 384 kbit/s but results in too much side information at 64 kbit/s. On the other hand signalling the status of the filter implicitly from motion vector has proven to be a good solution for 64 kbit/s. Therefore it would be preferable to include both signalling methods in the source coding algorithm. One bit in the Picture Header (TYPE 1), which defines whether the filter is signalled explicitly or implicitly from motion vector, would solve the problem.

2.2 Classification Index

The use of several sequence orders (scanning classes) can improve coding performance but the side information for signalling may be critical at 64 kbit/s. On the other hand only one sequence order (zig-zag scan) could be sufficient at 64 kbit/s, as first simulations have shown. Thus alternatives should

be permitted in the source coding algorithm. One bit in the Picture Header (TYPE 1) can solve the problem. It defines whether block coefficients are transmitted in anyone of several sequence orders (as indicated by CLASS) or are transmitted in one sequence order only.

2.3 Quantiser

Signalling the quantiser on block basis would result in too much side information at 64 kbit/s. On the other hand signalling the quantiser on GOB basis prevents sufficiently fast buffer control because a GOB should contain more than 2 luminance block lines for 64 kbit/s. A flexible solution consists in defining the quantiser for Q equal subgroups of a GOB separately. Q is defined in QUANT 1 of the GOB-Header. QUANT 2 is present then in the first transmitted block from up the start position of each of the Q subgroups.

3. Conclusion

Methods for signalling the filter in the loop, the classification index and the quantiser are given to allow a 384 kbit/s Codec to operate at 64 kbit/s.