CCITT SG XV
Specialists Group on Coding
for Visual Telephony

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Title: About the Implementation of the Intra Mode

Source: FRG, UK, S, N, F, I, NL

1. Background

In some situations the use of the intra mode is necessary:

- After start of transmission the undefined content of the receiver frame memory has to be initialized to synchronize the predictor both in the encoder and decoder.

- After multipoint switching the content of the frame memory does not match very well with the new picture. Therefore it is better to update the whole picture in intra mode yielding a better quality with the same amount of bits.

- To eliminate transmission errors and mismatch errors due to different implementations of the IDCT, the transmitted picture has to be updated from time to time. Therefore the intra mode must provide the best possible picture quality without any coding artefacts, even with very critical pictures.

2. Proposal

Due to this applications the following proposal is given:
The intra mode is provided for updating the picture making the coded block pattern senseless for signalling non coded subblocks. When a macroblock is signalled to be intra coded, all subblocks have to be coded in intra mode and the codeword for the block pattern does not exist.

For updating a whole GOB in the past hardware specification a special TYPE2 mode existed. This mode can never be used with lower bitrates because the amount of bits is too large. Only the update of a few macroblocks is possible. Assuming 4 bits for the TYPE3 codeword for intra mode, an additional bit for the macroblock address and concerning that there is no Coded Block Pattern the total gain of the TYPE2 mode is about 150 bits/GOB compared to perhaps 15kbits for its picture data. Taking into account that this mode never occurs with lower bitrates the 'waste' of 150 bits for this condition at higher bitrates seems tolerable by eliminating the signalling on TYPE2 level. Additionally remove of this mode simplifies the multiplex scheme.