CCITT STUDY GROUP XV
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1- INTRODUCTION

This paper describes the structure of a VQ-based codec, working at a bit rate of 300 kbit/s. An intra-frame coder with conditionnal replenishment strategy has been simulated; It includes an interframe mode, using either VQ or another quantization procedure.

For both codebook generation and coding algorithm, tree search structure has been retained for the codebook, as it decreases considerably the amount of necessary computations, and it allows easy rate regulation.

2- BASIC STRUCTURE OF THE CODER

2-1 INPUT PICTURE FORMAT

To compare simulation results the picture format according CCIR rec. 601 is adopted:

Frame rate	25 Hz
Sampling frequency	13.5 MHz (Y)
	6.75 MHz (U,V)
Number of active lines	576
Number of active pixels / line	720 (Y)
	360 (U,V)

2-2 PRE-PROCESSING

Spatial and temporal sub-sampling are performed in order to obtain the agreed picture format, which is a subset of the agreed intermediate format:

Number of pixels / line	360 (Y)
	180 (U,V)
Number of lines	288 (Y)
	144 (U,V)
Frame rate	30 Hz

2-3 INTRA-FRAME CODING

Vector quantization is applied only on significant blocks. The block size has to be decided, as the used size varies between 4 and 8.

The coded data are bufferized before transmission, the buffer size is 20 kbits. Buffer regulation can be achieved by modifying the depth of the codebook, the threshold of conditionnal replenishment and the block selection.

Multi-stage VQ is under study as a way of increasing the codebook's accuracy.

2-4 INTER-FRAME CODING

The interframe coding strategy has to be specified. Proposals include VQ-coding, VLC, and DCT. Motion compensation can be an necessary feature.

3- POST-PROCESSING

Field repetition is applied in order to obtain the agreed intermediate format temporal rate of 30 Hz. Linear interpolation is used to compute the 50 Hz presented simulations.

Fig.1 VQ hybrid coder structure