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STUDY GROUP XV - CONTRIBUTION

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Title: Group-Of-Block (GOB) definition for px64 kb/s video telephony

INTRODUCTION

Three picture formats have been proposed to be included in the p x 64 kbps video telephony standard. The proposed formats are shown in Table 1.

	Luma Resolution	Chroma Resolution	Implementation
1/4 CIF	180 x 144	90 x 72	Required
4/9 CIF	240 x 192	120 x 96	Optional
Full CIF	360 x 288	180 x 144	Optional

Table 1: Proposed resolution options

In this document, two alternative methods are proposed for defining the transmission format used in each of these three resolution modes. In each case, the transmission format is defined using the approach proposed for use in full CIF transmission. That is, the image is divided into macro blocks which include a 16 x 16 pixel luminance block and two 8 x 8 chrominance blocks (U and V). These macro blocks are grouped in a group-of-blocks (GOB) in which quantization and other parameters may be collectively specified. In the two methods proposed, the GOB definition differs for the 4/9 CIF picture format.

METHOD 1

In method 1, a GOB is defined such that it consists of a single row of macro blocks extending across the entire horizontal width of the image. For each of the three picture formats, a GOB contains a different number of macro blocks horizontally, and the image contains a different number of GOBs vertically. These values are shown in Table 2.

	GOB size (H x V macro blocks)	Number of GOBs (H x V)
1/4 CIF	11 x 1	1 x 9
4/9 CIF	15 x 1	1 x 12
Full CIF	22 x 1	1 x 18

Table 2: Group-of-blocks definition (Method 1)

During the communications procedure at the start of transmission, the picture format would be negotiated, selecting the highest resolution of the three formats which is commonly supported by both ends. The result of this negotiation unambiguously determines the GOB format to be used for coding and decoding.

METHOD 2

In method 2, 4/9 CIF is transmitted using the same transmission format as will be used for full CIF transmission. For 4/9 CIF, only a sub-window of the full CIF format is actually transmitted. When transmitting 4/9 CIF, a transmitter would have the following differences from a full CIF transmitter.

1. Numbering the full-CIF macro blocks 1 through 22 horizontally and 1 through 18 vertically, 4/9 CIF transmission would allow coded or motion compensated blocks only between blocks 4 through 18 horizontally, and 4 through 15 vertically. All other macro blocks are transmitted as type 1 (no MC, not coded)

2. Motion vectors are restricted such that all pels referenced by them are within the 4/9 CIF active area.

During the communications procedure at the start of transmission, the picture format would be negotiated, selecting the highest resolution of the three formats which is commonly supported by both ends. By defining 4/9 CIF transmission in the manner described by method 2, it would be possible for a full CIF codec to also support 4/9 CIF with only minor variations.