CCITT COM XV Q1 **Doc n° 308**

TOKYO Jan 26-28 , 1988

SOURCE : FRANCE

TITLE : Simulation results at 64 Kbit/s based on Macro block approach.

I. Introduction

In order to demonstrate possible compatibility between 384 Kbit/s and 64 Kbit/s codecs when utilizing the macro block approach , we have applied at 64 Kbit/s the coding scheme described in Doc # 302 (" Comparison between RM4 and Macro block approach at 384 Kbit/s ").

II. Coding scheme

The intra frame mode is the same as in the 384 Kbit/s coding scheme (The decision is based on the four luminance subblocks : the macroblock is intra coded if the decisions concerning the four subblocks are "intra" according to RM4 criterion).

The differences with the 384 Kbit/s scheme only concern :
- The buffer size (6400 bits instead of 30 Kbits)
- The buffer control :8 quantizers ranging from 8 to 64
- Only zigzag scanning is used

308

III. Simulation results

Statistics : Macro blocks scheme (RM4 based)
Bit rate : 64 Kbit/s
Source : CNET/FRANCE
Date : 19/1/88

Number of coded pictures : Miss A : 48
Claire : 158

All these frames are taken into account for the following statistics.

Sequence Frame rate	**MISS A** 10 Hz	**CLAIRE** 10 Hz
R.M.S	11.24	10.91
S.N.R	**37.62**	**37.75**
Step size	23.44	25.11
Nbr of non zeroes	Y: 2.20 C: 1.22	Y: 2.03 C: 0.98
Nbr of zeroes	Y: 5.35 C: 1.35	Y: 4.46 C: 0.71
MACRO BLOCK TYPE		
Intra Fixed Fixed MC Inter Inter MC	19 231 23 49 72	39 260 9 36 50
NUMBER OF BITS		
MC Attributes	673	655
Motion vectors	765	477
Coefficients : Y C	3670 1176	4480 711
Total	6284	6323

IV. Conclusion

According to our simulation results , the macro block technique is promising at 64 Kbit/s. Compatibility can be easily achieved. Further improvements (i.e differential coding of the motion vectors , post processing of the motion vector field , object matching , etc) are still possible.