

CCITT COM XV Q1

DOC n° 343

THE HAGUE March 22-25, 1988

SOURCE : FRANCE

Specialist Group on coding for Videotelephony

TITLE : Simulation results at 384 kbit/s based on RM5 Macro
block scheme.

I - INTRODUCTION

The Reference Model N° 5 based on macroblock technique, that is depicted in DOC 339 has been defined for 64 kbit/s coding. However, to demonstrate the capability of that scheme for p x 64 kbit/s, it has been applied at 384 kbit/s.

II - SIMULATION RESULTS

Table 1 gives simulation results for RM5 and RM4 on several sequences.

Simulation results

Statistics : RM5 macroblock scheme
 Bit rate : 300 Kbit/s
 Source : CNET/France
 Date : 22/3/88

Number of coded pictures : SALESMAN : 148

All these frames are taken into account for the following statistic chart.

Sequence Frame rate	SALESMAN 10 Hz	
R.M.S. Y	4.01	
C	2.07	
S.N.R. Y	36.06	
C	41.81	
Step size	12.33	
Nbr of non zeroes	Y: 4.36 C: 1.66	
Nbr of zeroes	Y: 20.80 C: 4.83	
MACRO BLOCK TYPE		
Intra	0	
Fixed	97	
Fixed MC	0	
Inter	236	
Inter MC	61	
NUMBER OF BITS		
MB Attributes	3442	
Motion vectors	496	
E O B	3564	
Coefficients : Y	21868	
C	559	
Total	29929	

Statistics : RM5 macroblock scheme
 Bit rate : 300 Kbit/s
 Source : CNET/France
 Date : 22/3/88

Number of coded pictures : SPLIT : 46
 MISS A : 48
 CHEC J : 28

All these frames are taken into account for the following statistic chart.

Sequence Frame rate	SPLIT 10 Hz	MISS A 15 Hz	CHEC J 15 Hz
R.M.S. Y	3.24	2.52	3.10
C	2.22	2.31	1.97
S.N.R. Y	37.93	40.10	38.29
C	41.20	40.85	42.22
Step size	13.00	10.00	11.40
Nbr of non zeroes	Y: 5.00 C: 1.98	Y: 4.05 C: 1.97	Y: 4.35 C: 1.22
Nbr of zeroes	Y: 6.37 C: 4.45	Y: 9.45 C: 6.50	Y: 9.58 C: 1.96
MACRO BLOCK TYPE			
Intra	0	0	0
Fixed	149	88	131
Fixed MC	1	0	0
Inter	104	237	233
Inter MC	140	70	30
NUMBER OF BITS			
MB Attributes	3066	2956	2954
Motion vectors	1132	572	247
E O B	2928	3672	3156
Coefficients : Y	21375	8374	12492
C	1215	4361	819
Total	29716	19935	19668

Statistics : RM4 Macroblock scheme
 Bit rate : 300 Kbit/s
 Source : CNET/France
 Date : 22/3/88

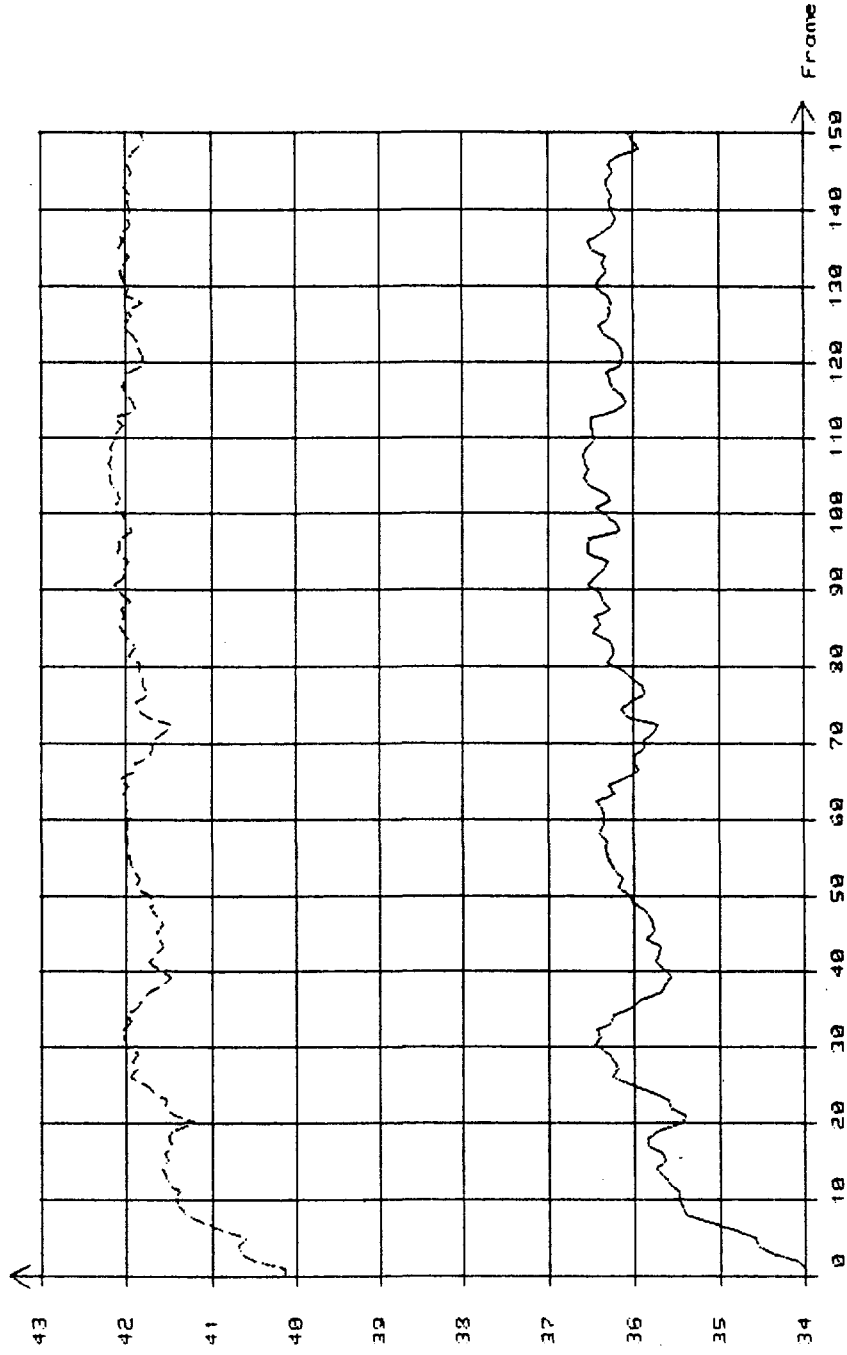
Number of coded pictures : SPLIT : 46
 MISS A : 48
 CHEC J : 28

All these frames are taken into account for the following statistic chart.

Sequence Frame rate	SPLIT 10 Hz	MISS A 15 Hz	CHEC J 15 Hz
R.M.S. Y C	3.30	2.53	3.09
S.N.R. Y C	37.74	40.06	38.32
Step size	13.50	10.51	11.77
Nbr of non zeroes	Y: 4.89 C: 2.38	Y: 3.96 C: 2.14	Y: 4.52 C: 1.32
Nbr of zeroes	Y: 6.28 C: 3.67	Y: 9.09 C: 6.67	Y: 9.74 C: 2.25
MACRO BLOCK TYPE			
Intra	10	3	9
Fixed	159	93	159
Fixed MC	1	0	0
Inter	92	228	196
Inter MC	131	70	30
NUMBER OF BITS			
MB Attributes	3109	2926	2931
Motion vectors	1064	571	248
E O B	2796	3612	2820
Coefficients : Y C	20573 2007	7943 4835	12304 1150
Total	29549	19887	19453

— RMS Macro block scheme Lumi
 Chroma

SNR/dB



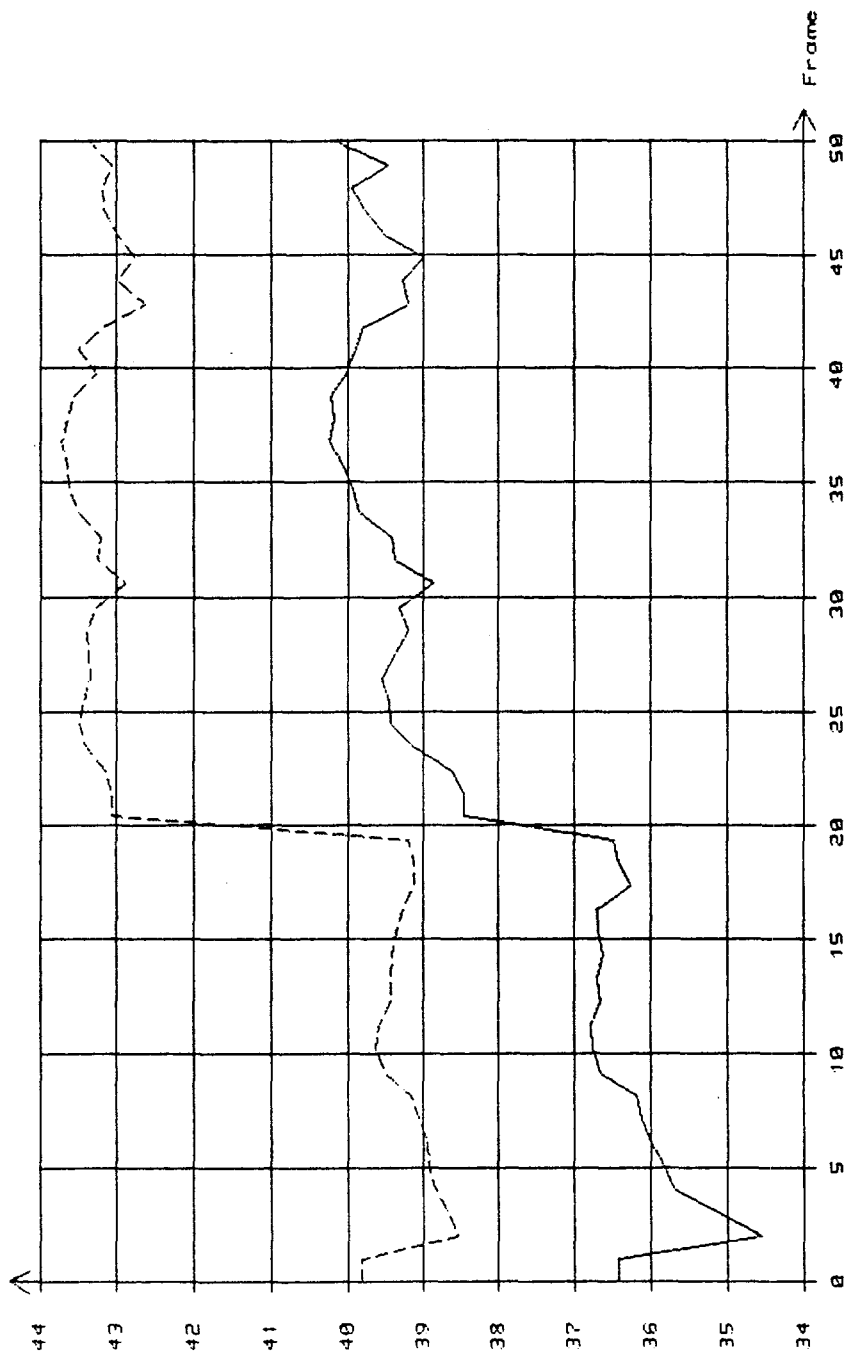
Sequence : SALES

Bit rate : 300 k

Frame rate : 10 Hz

— RM5 Macro block scheme Lumi Chroma

SNR/dB

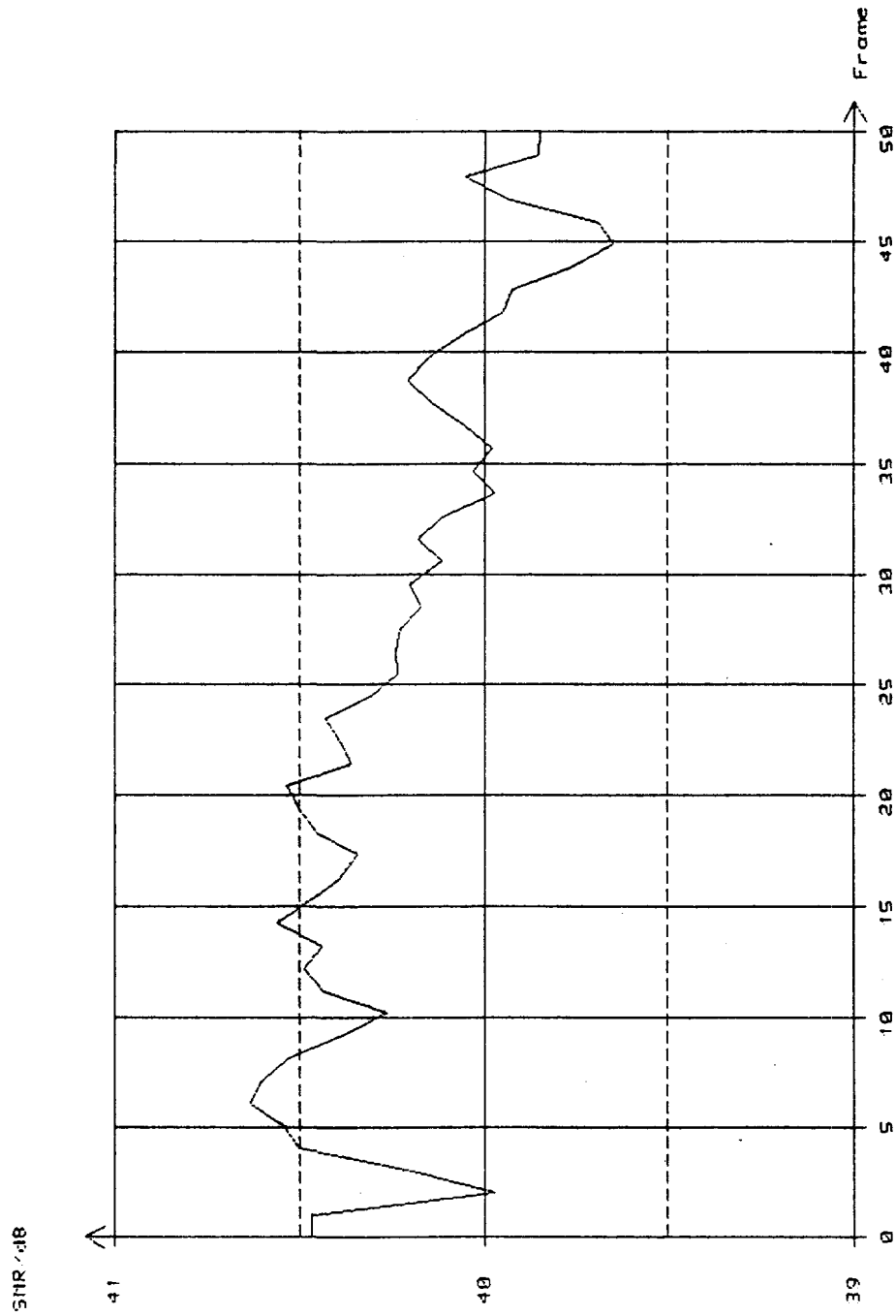


Sequence : SPLIT

Bit rate : 300 k

Frame rate : 10 Hz

— RMS Macro block scheme



Sequence : MISS

Bit rate : 300 k

Frame rate : 15 Hz