

CCITT Q1

Doc n° 344

THE HAGUE

March 22-25, 1988

Specialist Group on Coding for Videotelephony

SOURCE : FRANCE

TITLE : Simulation results at 64 kbit/s based on RM5
macroblock scheme

There is now in Europe a Reference Model n° 5 based on macroblock technique that is depicted in Doc 339. In order to demonstrate the capability of the scheme we have applied it at 64 kbit/s (exactly at 59 kbit/s, e.g. 15 bits per macroblock) and compared it with previous results (see table).

Simulation results

Statistics : RM5 macroblock scheme
 Bit rate : 60 Kbit/s
 Source : CNET/France
 Date : 22/3/88

Number of coded pictures : MISS A : 48
 CLAIRE : 156

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

Sequence Frame rate	MISS A 10 Hz	CLAIRE 10 Hz
R.M.S. Y	3.32	3.35
C	3.07	2.50
S.N.R. Y	37 .71	37.62
C	38.40	40.19
Step size	22.17	23.83
Nbr of non zeroes	Y: 2.54	3.00
	C: 1.30	1.46
Nbr of zeroes	Y: 6.61	8.24
	C: 2.79	3.59
MACRO BLOCK TYPE		
Intra	0	0
Fixed	234	284
Fixed MC	25	9
Inter	64	50
Inter MC	71	52
NUMBER OF BITS		
MB Attributes	541	413
Motion vectors	775	490
E O B	1620	1224
Coefficients : Y	2354	3566
C	554	221
Total	5844	5914

Statistics : RM5 macroblock scheme
 Bit rate : 60 Kbit/s
 Source : CNET/France
 Date : 22/3/88

Number of coded pictures : SALESMAN : 148
 SWING : 158

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

Sequence Frame rate	SALESMAN 10 Hz	SWING 10 Hz
R.M.S. Y	8.14	7.89
C	3.24	5.38
S.N.R. Y	29.92	30.19
C	37.91	33.51
Step size	34.64	25.58
Nbr of non zeroes	Y: 2.34	2.05
	C: 1.20	2.07
Nbr of zeroes	Y: 12.64	23.66
	C: 2.53	14.41
MACRO BLOCK TYPE		
Intra	0	0
Fixed	256	270
Fixed MC	7	1
Inter	94	110
Inter MC	34	7
NUMBER OF BITS		
MB Attributes	523	498
Motion vectors	340	74
E O B	1536	1404
Coefficients : Y	3468	3369
C	46	567
Total	5913	5912

Statistics : RM4 macroblock scheme
 Bit rate : 64 Kbit/s
 Source : CNET/France
 Date : 22/3/88

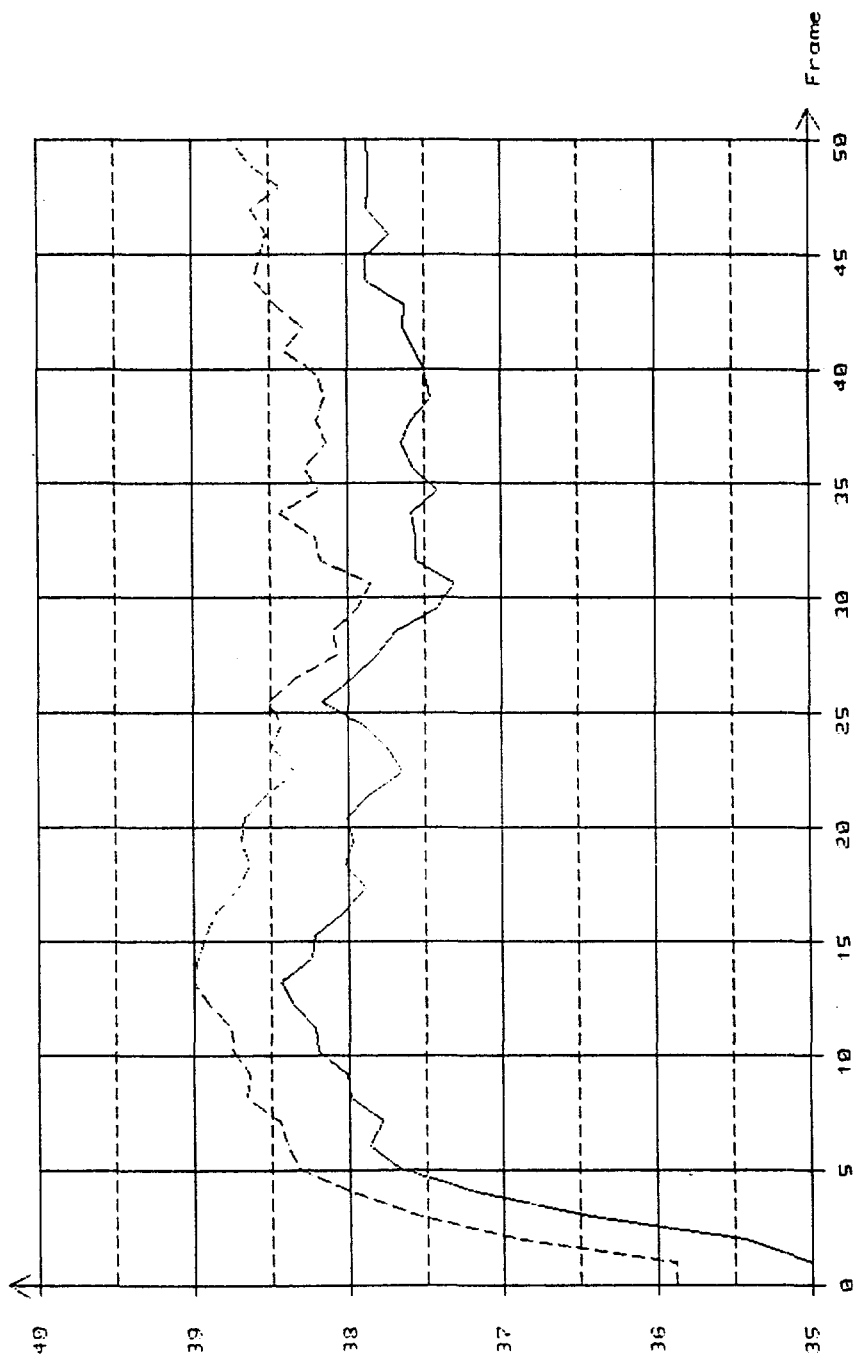
Number of coded pictures : MISS A : 48
 CLAIRE : 156

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

Sequence Frame rate	MISS A 10 Hz	CLAIRE 10 Hz
R.M.S. Y C	3.35	3.30
S.N.R. Y C	37.62	37.75
Step size	23.44	25.11
Nbr of non zeroes	Y: 2.20 C: 1.22	2.03 0.98
Nbr of zeroes	Y: 5.35 C: 1.35	4.46 0.71
MACRO BLOCK TYPE		
Intra	19	39
Fixed	231	260
Fixed MC	23	9
Inter	49	36
Inter MC	72	50
NUMBER OF BITS		
MB Attributes	673	655
Motion vectors	765	477
E O B	1680	1500
Coefficients : Y C	2550 616	3480 211
Total	6284	6323

— RM5 Macro block scheme Lumi
 Chroma

31R/48 ----



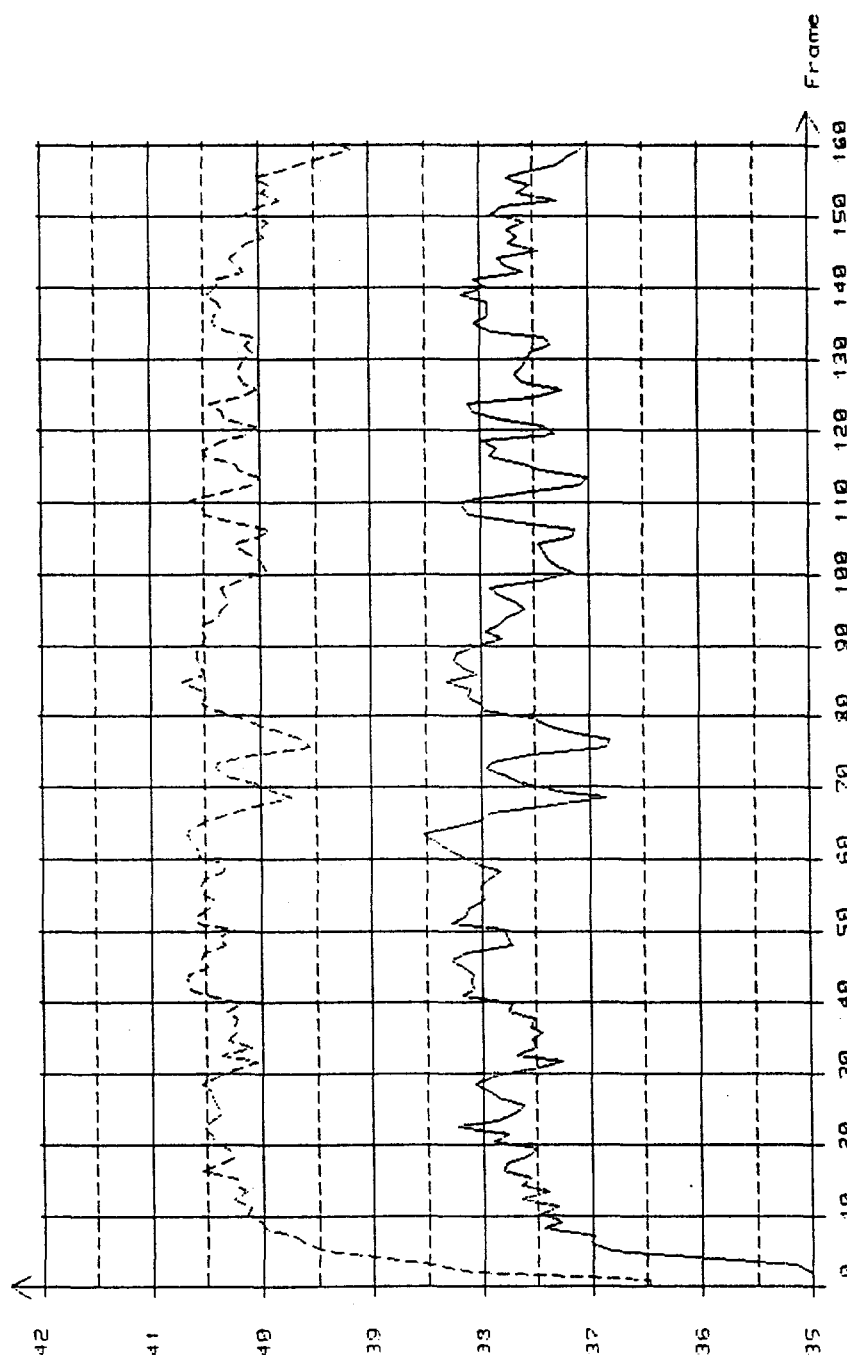
Sequence : MISS

Bit rate : 60 k

Frame rate : 10 Hz

— RMS Macro block scheme Lumi
 Chroma

SNR/dB -----



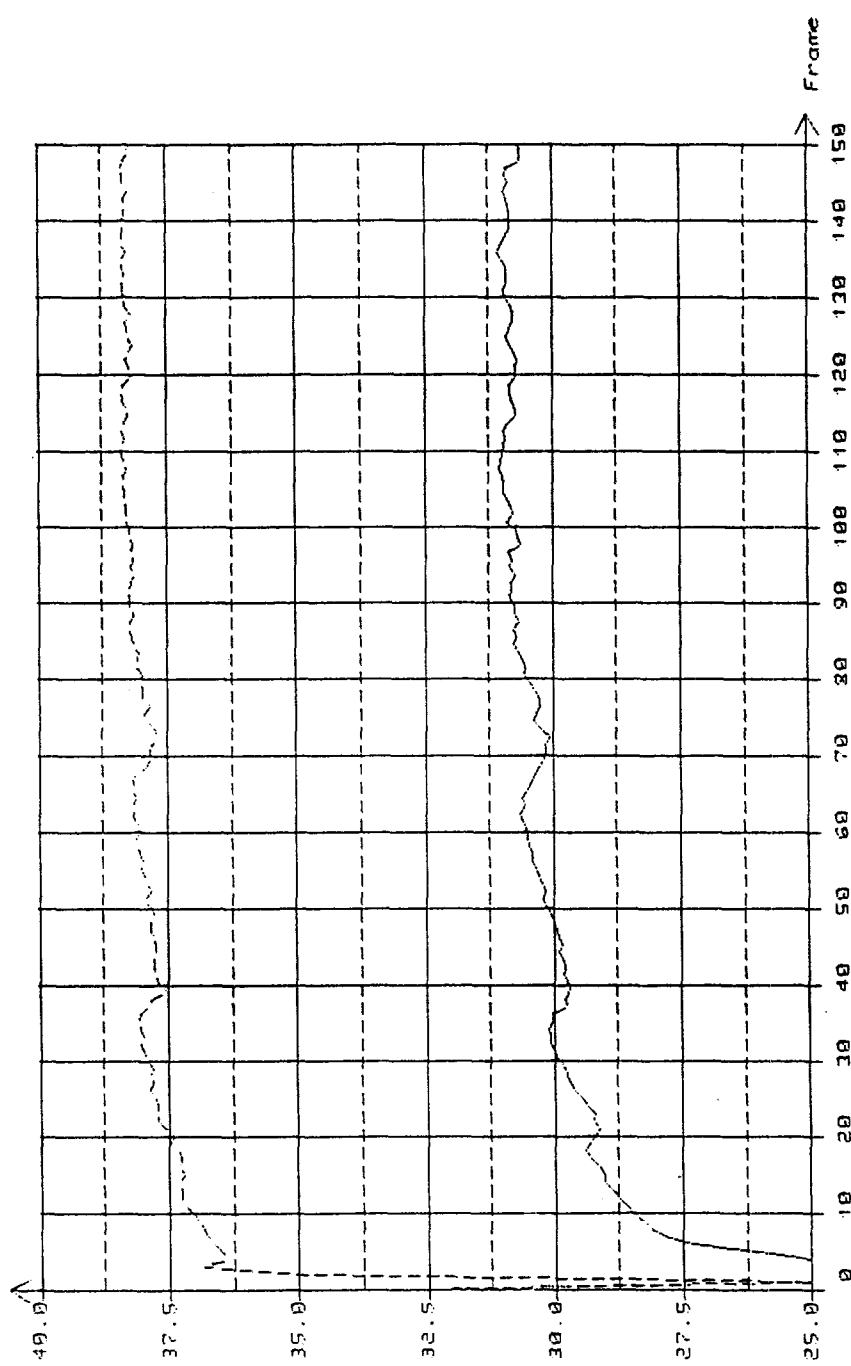
Sequence : CLAIRE

Bit rate : 60 k

Frame rate : 10 Hz

— RM5 Macro block scheme Lumi Chroma

SHRdB ----



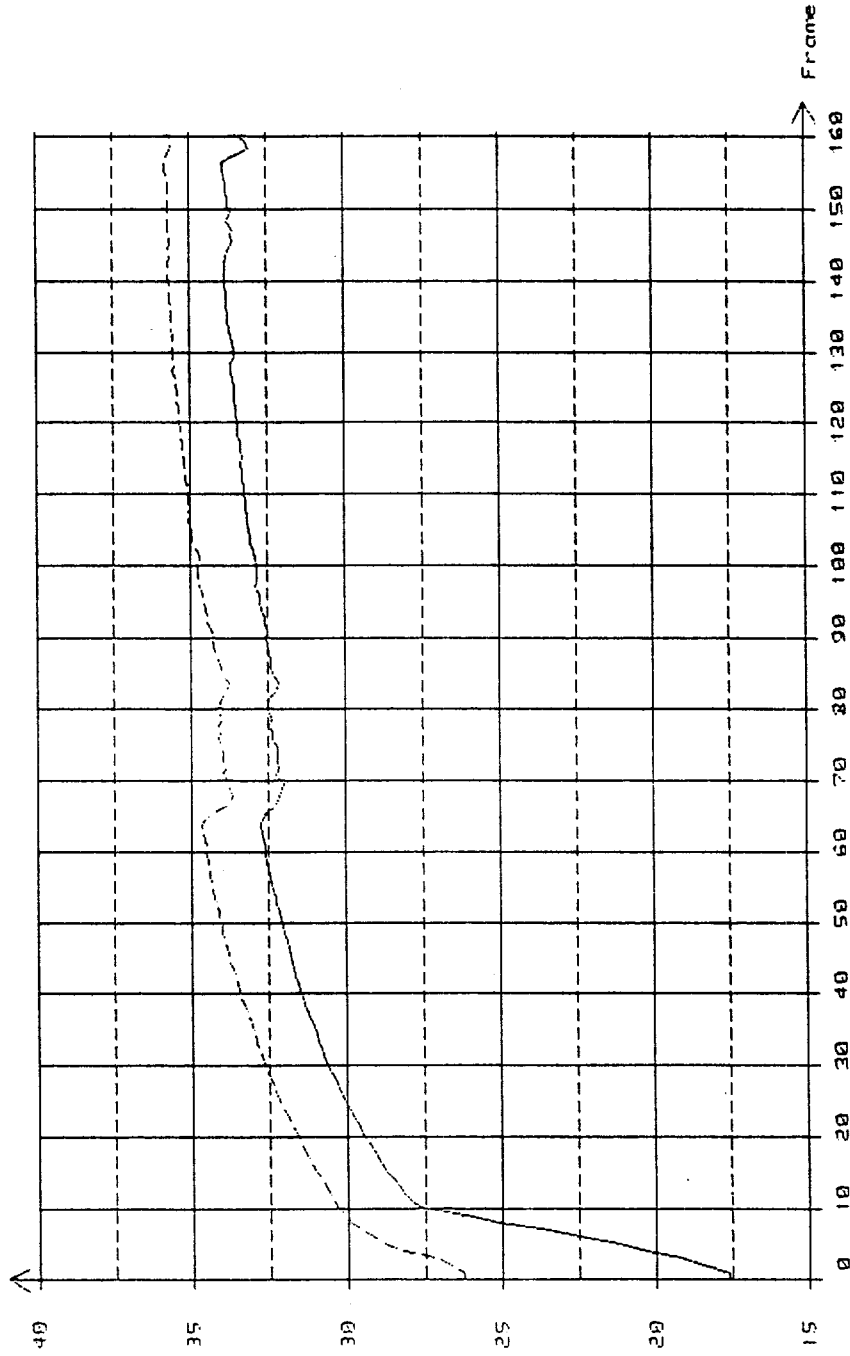
Sequence : SALES

Bit rate : 60 k

Frame rate : 10 Hz

— RMS Macro block scheme Lumi Chroma

3HR/dB ----



Sequence : SWING

Bit rate : 60 k

Frame rate : 10 Hz