

Source: SWEDEN

Title: SIGNALLING CODED SUB-BLOCKS WITHIN A CODED MACRO-BLOCK

Several strategies are possible to signal if a sub-block within a coded macro-block is coded or not.

1. RM5 Send EOB words for all sub-blocks.
2. RM6 Send VLC word to indicate one out of 7 patterns.
Send EOB words for all sub-block within the pattern.
3. 6 bits per coded macro-block.
4. VLC word unique for each of 63 possible patterns.

These and other methods were previously studied in Japan (#357). An independent study has now been made in Sweden. The methods are compared in terms of number of bits per picture to signal "non-coded sub-block". A specific VLC for the 63 patterns has been selected, namely the optimum VLC received for CLAIRE in RM5. This VLC has been applied in a reduced version of RM6 (without intra).

	MISS A	CLAIRE	SALESMAN	SWING
RM5	1153	724	1027	990
RM6	760	447	512	592
6 bit/MB	852	613	760	724
Opt. VLC	702	493	519	580

Table 1. No of bits to signal "non-coded sub-block" in RM5

	MISS A	CLAIRE	SALESMAN	SWING
RM5	1247	801	955	850
RM6	835	478	467	533
6 bit/MB	918	656	716	644
Opt. VLC	756	522	512	528
Spec. VLC	972	525	534	568

Table 2. No of bits to signal "non-coded sub-block" in reduced RM6

CONCLUSIONS

RM5	worst performance	Not complex
RM6	best performance	Complex
6 bits/MB	80-250 bits worse than RM6	Not complex
	150-300 bits better than RM5	
VLC (63 pat)	35-140 bits worse than RM6	Some complexity
	275-420 bits better than RM5	

No information is available for higher bit rates.

The specific VLC used was the following, where pattern number can be derived by adding SB-number for coded blocks as in Figure 1.

pat.nr.	1	2	3	4	5	6	7	8	9	10	11	12	13
VLC length	6	9	9	4	7	10	9	4	7	9	9	5	7
pat.nr.	14	15	16	17	18	19	20	21	22	23	24	25	26
VLC length	10	8	4	8	10	11	4	7	9	9	6	8	11
pat.nr.	27	28	29	30	31	32	33	34	35	36	37	38	39
VLC length	11	5	7	9	8	3	8	10	10	6	9	11	10
pat.nr.	40	41	42	43	44	45	46	47	48	49	50	51	52
VLC length	5	6	8	8	5	7	8	8	5	9	10	10	5
pat.nr.	53	54	55	56	57	58	59	60	61	62	63		
VLC length	7	8	9	5	7	8	9	3	5	6	5		

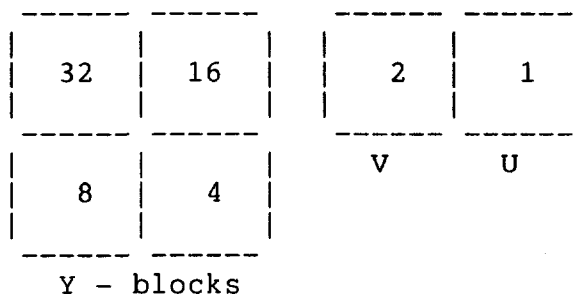


Figure 1. Numberring of sub-blocks

Example: If the upper left, lower right and U sub-blocks are coded, the pattern number becomes 37 and VLC word length is 9 bits.