

SOURCE: NTT, KDD, NEC and FUJITSU
TITLE : TWO-DIMENSIONAL VLC FOR TRANSFORM COEFFICIENTS

A type of two-dimensional VLC has been implemented and experimented in the Flexible Hardware. This document reports experimental results for information.

The code set is as described in Doc. #224 (June 1987) with the following modifications due to existing hardware limitation;

- 13 bit codes are replaced with 14 bit codes,
- LEVEL is from -128 to + 127.

The number of bits for each code is shown in the attached table.

Three 10 second sequences are recorded on VCR using the 1-D code set for the initial compatibility check and the 2-D code set in the attached table, respectively. Finer quantization for chrominance with step size half of the luminance is applied.

It is found difficult to distinguish the performance difference between 1-D and 2-D by observing these materials. Further study is required to obtain more firm conclusion.

Table 1 Word Length of VLC for Two-dimensional Coding

		LEVEL (absolute value)																				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	...	128*	
R U N	0	3	5	6	8	9	9	11	14	14	14	14	14	14	14	14	15	15	15	...	15	
	1	4	7	9	11	14	14	14	21	21	21	21	21	21	21	21	21	21	21	...	21	
	2	5	8	11	14	14	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	3	6	9	14	14	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	4	6	11	14	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	5	7	11	14	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	6	7	14	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	7	7	14	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	8	8	14	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	9	8	14	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	10	9	14	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	11	9	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	12	9	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	13	9	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	14	11	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	15	11	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	16	11	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	17	14	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	18	14	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	19	14	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	20	14	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	21	14	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	22	14	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	23	14	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	24	14	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	25	14	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	26	14	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
	27	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	
28	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21		
.																						
63	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	...	21	

**Word length of EOB is 2 bits.

* +128 is not used.