

SOURCE: NTT, KDD, NEC and Fujitsu
TITLE: Coding of Motion Vectors

This document summarizes previous documents(Doc.#114,#153,#192).

*Differential coding method(Doc.#114, Doc.#153). This method is efficient for panning sequences and large object motion.

*One dimensional coding for motion vector components(Doc.#153, Doc.#192). It is simpler than two dimensional coding, and there is little difference in coding efficiency.

*Motion vector range is from -15 to +15 for Vx and from -7 to +7 for Vy. Wider motion range may be desirable in performance. However, the range of Vy is preferred smaller from the viewpoint of hardware complexity.

*VLC code set for motion vectors(Doc.#192, Doc.#217, Doc.#249)

DVx	code length	code pattern	DVy	code length	code pattern
-16/+16	9	000000001			
-15/+17	9	000000011			
-14/+18	9	000000101			
-13/+19	9	000000111			
-12/+20	8	00000101			
-11/+21	8	00000111			
-10/+22	7	0000101			
-9/+23	7	0000111			
-8/+24	6	000101	-8/+8	6	000001
-7/+25	6	000111	-7/+9	6	000011
-6/+26	6	001001	-6/+10	5	00011
-5/+27	6	001011	-5/+11	5	00101
-4/+28	5	00111	-4/+12	5	00111
-3/+29	4	0101	-3/+13	4	0101
-2/+30	4	0111	-2/+14	4	0111
-1	3	101	-1	3	101
0	2	11	0	2	11
+1	3	100	-1	3	100
+2/-30	4	0110	+2/-14	4	0110
+3/-29	4	0100	+3/-13	4	0100
+4/-28	5	00110	+4/-12	5	00110
+5/-27	6	001010	+5/-11	5	00100
+6/-26	6	001000	+6/-10	5	00010
+7/-25	6	000110	+7/-9	6	000010
+8/-24	6	000100			
+9/-23	7	0000110			
+10/-22	7	0000100			
+11/-21	8	00000110			
+12/-20	8	00000100			
+13/-19	9	000000110			
+14/-18	9	000000100			
+15/-17	9	000000010			

DVx = Vx - Vx'

DVy = Vy - Vy'

Vx', Vy' : motion vector component in a previous block