

TITLE: MOTION ESTIMATION ALGORITHMS

SOURCE: UK

The attached results represent a comparison of 'Reference Model 3' against a modified 'Reference Model 3' using a full search motion estimation algorithm.

It is clear that the full search algorithm produces superior results. This is true both objectively and subjectively.

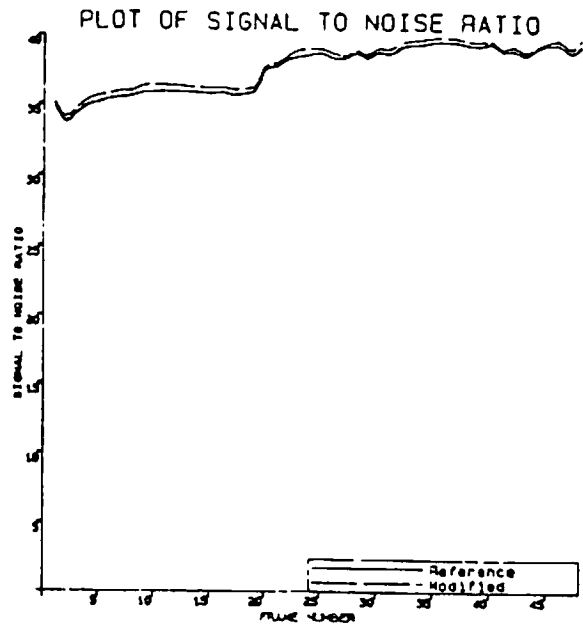
	FRAME 15	AVERAGE
PULSE value of luminance.....	3.96	3.28
Signal to noise ratio.....	36.16	37.98
mean quantizer step size.....	11	9.782609
No of transmitted coeffs.....	8328	8308
No of non-zero transmitted coeffs.....	2979	2956
No of zero transmitted coeffs.....	5346	10704
No of FIXED luminance blocks.....	748	836
No of INTRA luminance blocks.....	8	33
No of INTER luminance blocks.....	599	598
No of MC blocks.....	891	523
No of FIXED chrominance blocks.....	599	620
No of INTRA chrominance blocks.....	21	9
No of INTER chrominance blocks.....	172	161
Bits per frame.....	20025	29662
Buffer status (0 - 100 full).....	32.690823	33.473468

DATE: 9/2/87
SOURCE: BTRL UK
AUTHOR: G SEXTON

CODER SOFTWARE: CODEC6 V1.4 (OKUBO
REFERENCE MODEL3
MODIFIED).

MODIFICATIONS: FULL SEARCH MC
SOURCE SEQUENCE: COSTI CIF. SPLIT
SCREEN/TREVOR
FRAME SIZE: 352 * 288
BITRATE: 300KBITS/SEC
BUFFER SIZE: 30000

FRAME RATE: 10 FRAMES / S
CODED FRAMES: 48



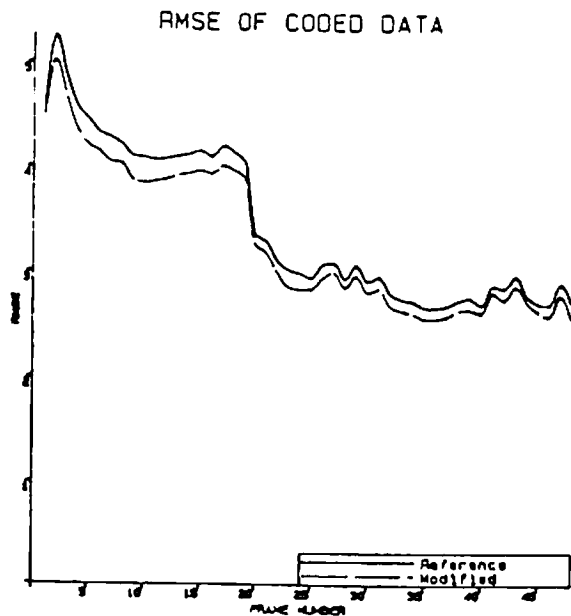
Mean value of reference = 37.616287
Mean value of modified = 38

DATE: 9/2/87
SOURCE: BTRL UK
AUTHOR: G SEXTON

CODER SOFTWARE: CODEC6 V1.4 (OKUBO
REFERENCE MODEL3
MODIFIED).

MODIFICATIONS: FULL SEARCH MC
SOURCE SEQUENCE: COSTI CIF. SPLIT
SCREEN/TREVOR
FRAME SIZE: 352 * 288
BITRATE: 300KBITS/SEC
BUFFER SIZE: 30000

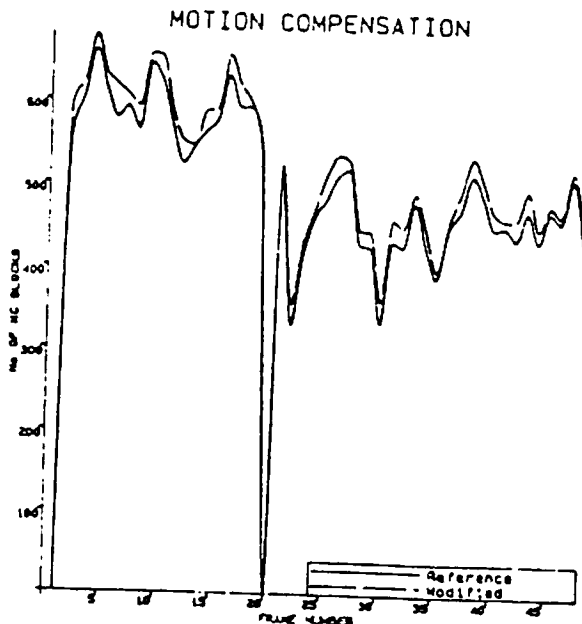
FRAME RATE: 10 FRAMES / S
CODED FRAMES: 48



Mean value of reference = 3.42757
Mean value of modified = 3.2632846

DATE: 9/2/87
 SOURCE: BTRL UK
 AUTHOR: G SEXTON

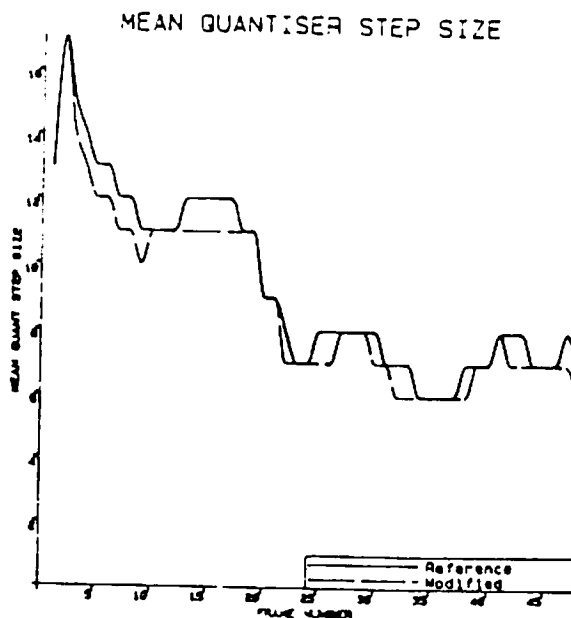
CODER SOFTWARE: CODEC6 V1.4 (OKUBO
 REFERENCE MODEL3
 MODIFIED).
 MODIFICATIONS: FULL SEARCH MC
 SOURCE SEQUENCE: COSTI CIP. SPLIT
 SCREEN/TREVOR
 FRAME SIZE: 352 * 288
 BITRATE: 300KBITS/SEC
 BUFFER SIZE: 30000
 FRAME RATE: 10 FRAMES / S
 CODED FRAMES: 48



Mean value of reference = 505
 Mean value of modified = 523.6522

DATE: 9/2/87
 SOURCE: BTRL UK
 AUTHOR: G SEXTON

CODER SOFTWARE: CODEC6 V1.4 (OKUBO
 REFERENCE MODEL3
 MODIFIED).
 MODIFICATIONS: FULL SEARCH MC
 SOURCE SEQUENCE: COSTI CIP. SPLIT
 SCREEN/TREVOR
 FRAME SIZE: 352 * 288
 BITRATE: 300KBITS/SEC
 BUFFER SIZE: 30000
 FRAME RATE: 10 FRAMES / S
 CODED FRAMES: 48



Mean value of reference = 9.282609
 Mean value of modified = 8.782609

DATE: 16/2/87
SOURCE: BTRL UK
AUTHOR: G SEXTON

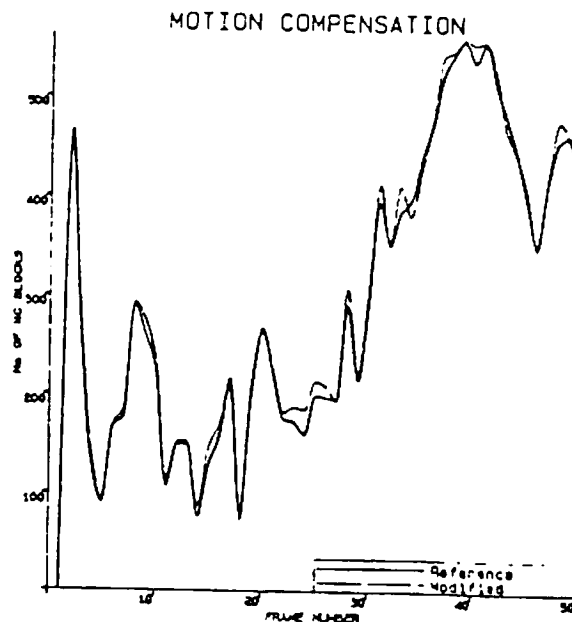
SUBJECT: COMPARISON OF RM3
WITH MODIFIED RM3

CODER SOFTWARE: CODECS V1.1 (OKUBO
REFERENCE MODEL3
MODIFIED). RM3V3
V1.0.

MODIFICATIONS: FULL SEARCH MC
SOURCE SEQUENCE: COSTI CIF. MISSA

FRAME SIZE: 352 * 288
BITRATE: 300KBITS/SEC
BUFFER SIZE: 30000

FRAME RATE: 15 FRAMES / S
CODED FRAMES: 50



Mean value of reference = 303
Mean value of modified = 309.32653

DATE: 16/2/87
SOURCE: BTRL UK
AUTHOR: G SEXTON

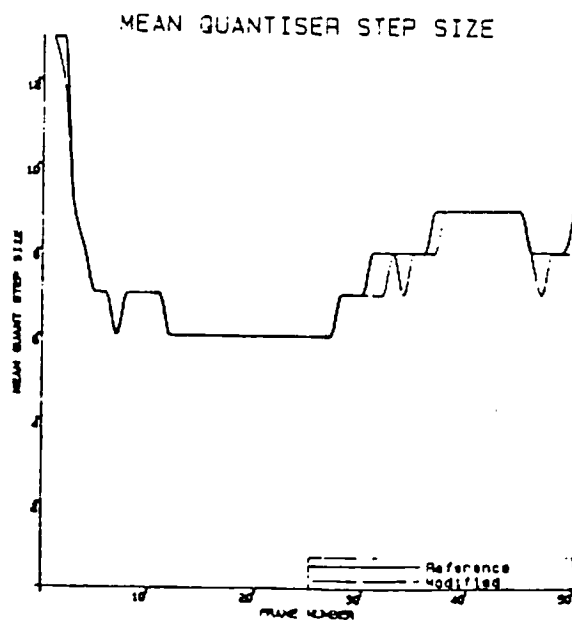
SUBJECT: COMPARISON OF RM3
WITH MODIFIED RM3

CODER SOFTWARE: CODECS V1.1 (OKUBO
REFERENCE MODEL3
MODIFIED). RM3V3
V1.0.

MODIFICATIONS: FULL SEARCH MC
SOURCE SEQUENCE: COSTI CIF. MISSA

FRAME SIZE: 352 * 288
BITRATE: 300KBITS/SEC
BUFFER SIZE: 30000

FRAME RATE: 15 FRAMES / S
CODED FRAMES: 50



Mean value of reference = 7.449
Mean value of modified = 7.3061223

DATE: 16/2/87
SOURCE: BTRL UK
AUTHOR: G SEXTON

SUBJECT: COMPARISON OF RM3
WITH MODIFIED RM3

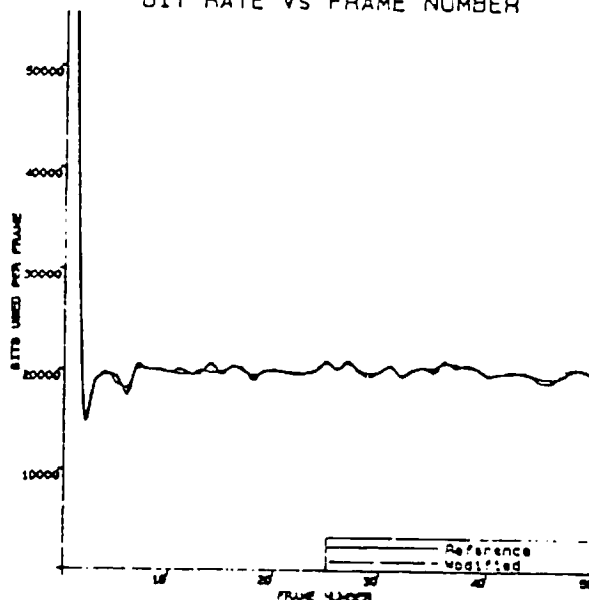
CODER SOFTWARE: CODEC8 V1.1 (OKUBO
REFERENCE MODEL3
MODIFIED). RM3V3
V1.0.

MODIFICATIONS: FULL SEARCH MC
SOURCE SEQUENCE: COSTI CIF. MISSA

FRAME SIZE: 352 * 288
BITRATE: 300KBITS/SEC
BUFFER SIZE: 30000

FRAME RATE: 15 FRAMES / S
CODED FRAMES: 50

BIT RATE vs FRAME NUMBER



Mean value of reference = 19652
Mean value of modified = 19652

DATE: 16/2/87
SOURCE: BTRL UK
AUTHOR: G SEXTON

SUBJECT: COMPARISON OF RM3
WITH MODIFIED RM3

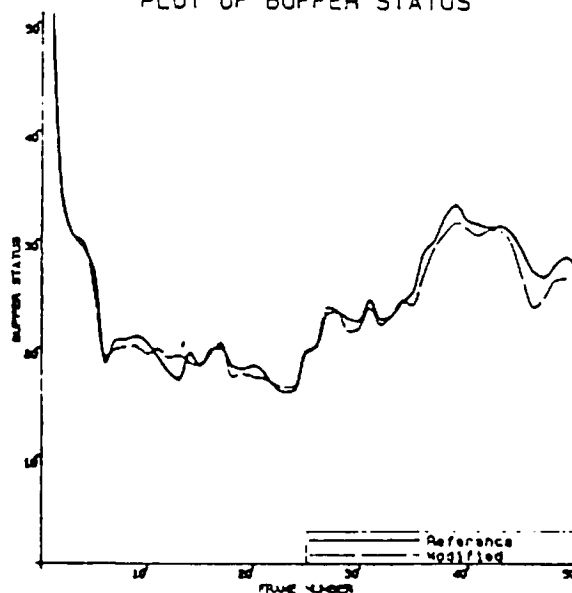
CODER SOFTWARE: CODEC8 V1.1 (OKUBO
REFERENCE MODEL3
MODIFIED). RM3V3
V1.0.

MODIFICATIONS: FULL SEARCH MC
SOURCE SEQUENCE: COSTI CIF. MISSA

FRAME SIZE: 352 * 288
BITRATE: 300KBITS/SEC
BUFFER SIZE: 30000

FRAME RATE: 15 FRAMES / S
CODED FRAMES: 50

PLOT OF BUFFER STATUS



Mean value of reference = 24
Mean value of modified = 23.4

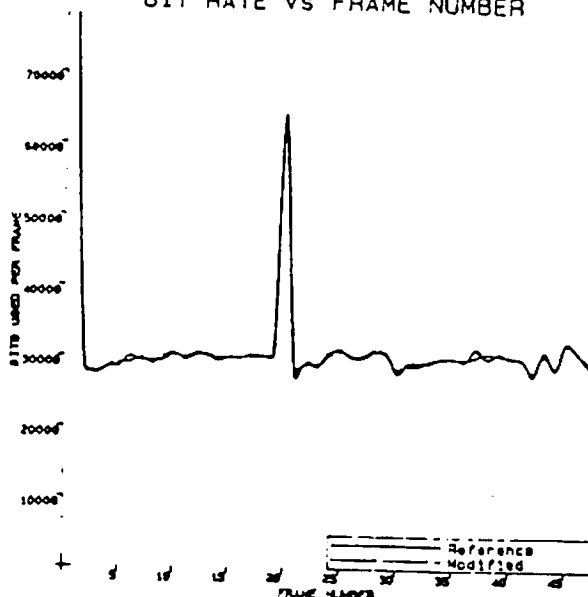
DATE: 9/2/87
SOURCE: BTRL UK
AUTHOR: G SEXTON

CODER SOFTWARE: CODEC6 V1.4 (OKUBO
REFERENCE MODEL3
MODIFIED).
MODIFICATIONS: FULL SEARCH MC

SOURCE SEQUENCE: COSTI CIF. SPLIT
SCREEN/TREVOR
FRAME SIZE: 352 * 288
BITRATE: 300KBITS/SEC
BUFFER SIZE: 30000

FRAME RATE: 10 FRAMES / S
CODED FRAMES: 48

BIT RATE vs FRAME NUMBER



Mean value of Reference = 29668
Mean value of Modified = 29662

DATE: 9/2/87
SOURCE: BTRL UK
AUTHOR: G SEXTON

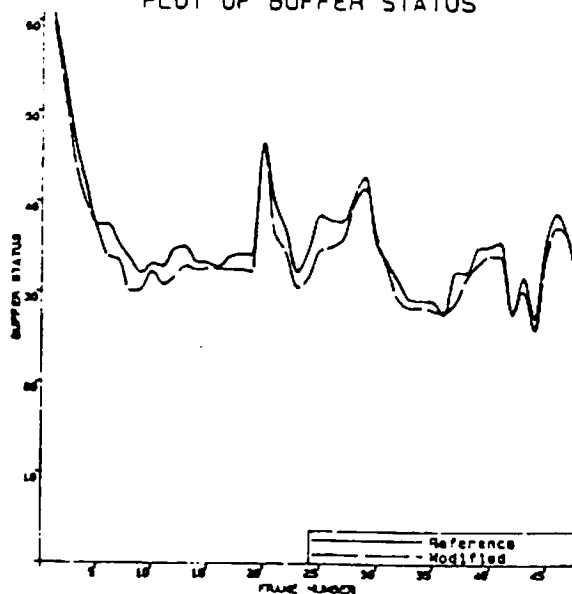
CODER SOFTWARE: CODEC6 V1.4 (OKUBO
REFERENCE MODEL3
MODIFIED).
MODIFICATIONS: FULL SEARCH MC

SOURCE SEQUENCE: COSTI CIF. SPLIT
SCREEN/TREVOR
FRAME SIZE: 352 * 288
BITRATE: 300KBITS/SEC
BUFFER SIZE: 30000

FRAME RATE: 10 FRAMES / S
CODED FRAMES: 48

0 = Empty
100 = Full

PLOT OF BUFFER STATUS



Mean value of Reference = 35.076732
Mean value of Modified = 33.47347

DATE: 16/2/87
 SOURCE: BTRL UK
 AUTHOR: G SEXTON

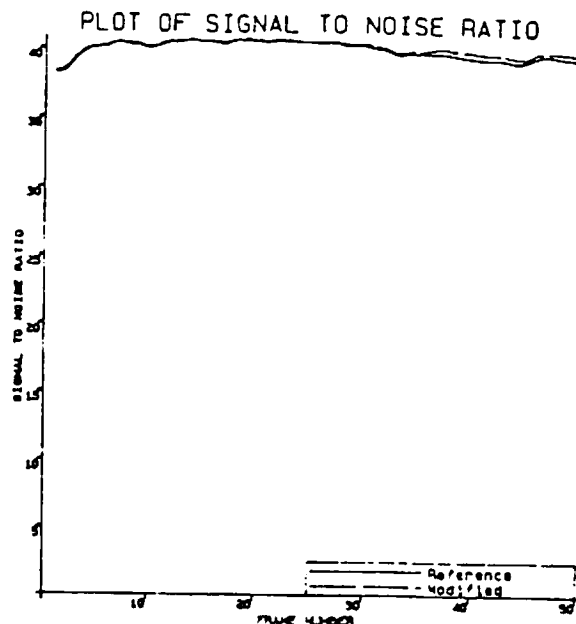
SUBJECT: COMPARISON OF RM3
 WITH MODIFIED RM3

CODER SOFTWARE: CODEC8 V1.1 (OKUBO
 REFERENCE MODEL3
 MODIFIED). RM3V3
 V1.0.

MODIFICATIONS: FULL SEARCH MC
 SOURCE SEQUENCE: COSTI CIF. MISSA

FRAME SIZE: 352 * 288
 BITRATE: 300KBITS/SEC
 BUFFER SIZE: 30000

FRAME RATE: 15 FRAMES / S
 CODED FRAMES: 50



Mean value of reference = 40
 Mean value of modified = 40

DATE: 16/2/87
 SOURCE: BTRL UK
 AUTHOR: G SEXTON

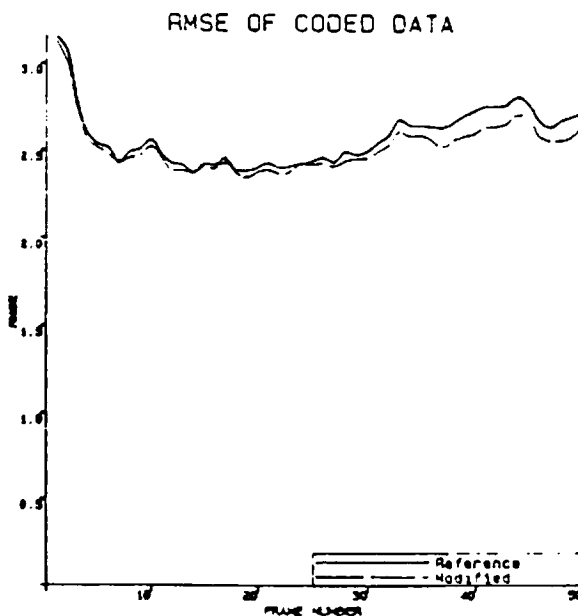
SUBJECT: COMPARISON OF RM3
 WITH MODIFIED RM3

CODER SOFTWARE: CODEC8 V1.1 (OKUBO
 REFERENCE MODEL3
 MODIFIED). RM3V3
 V1.0.

MODIFICATIONS: FULL SEARCH MC
 SOURCE SEQUENCE: COSTI CIF. MISSA

FRAME SIZE: 352 * 288
 BITRATE: 300KBITS/SEC
 BUFFER SIZE: 30000

FRAME RATE: 15 FRAMES / S
 CODED FRAMES: 50



Mean value of reference = 2.562586
 Mean value of modified = 2.5118427