AVC-142

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ISO/IED JTC1/SC2/WG11
CODING OF MOVING PICTURES AND ASSOCIATED VIDEO

ISO/IEC JTEC1/SC2/WG11
MPEG 91/202
NOV 1991

Source : Faramarz Azadegan and Wesley Hou - AWARE, Inc.
Title : The AWARE MPEGII Algorithm - Algorithm Number 1.
Purpose: Disclosure of The AWARE MPEGII-1 Algorithm

I. Algorithm Description

We have been studying the performance of Wavelet Transform (WT) coding in conjunction with the block matching motion compensation for MPEG-II sequences. This document describes our proposed approach for encoding of MPEG-II sequences based on the aforementioned scheme.

The description of the algorithm is divided into two parts. The first part covers the temporal processing involving the motion estimation. The second part describes the spatial coding of the frames resulted from the temporal processing. These two parts are described in the following.

A) Temporal Processing:

The group of pictures are defined in a similar fashion as MPEG-I. Every frame within a GOP is coded in either Intra (I), Predictive (P) or interpolative (B) mode. The P frames are always coded using the previous I/P frames. However, the B frames are coded using I, P, or B frames. That is, for coding of the B frames, the closest previously coded frames are used independent of their types. In addition, the temporal coding is nested and is done in a layered fashion (like layers of an onion). This insures smaller temporal distance between the two frames that are used for interpolative coding of the B frames. Furthermore, it requires smaller motion vector range and better prediction of the B frame. Two examples of such a system are shown in Figures 1a and 1b. Figure 1a illustrates $M = 6, N = 12$ case, while Figure 1b shows $M = N = 12$ situation. Because of the considerations related to decoding delay, N is not to exceed 12. However, similar to the MPEG-I, M and N are programmable.

Motion estimation is conducted using block matching method with block sizes of 16 pixels by 16 lines (16) with half-pixel accuracy on the frames. Mean-squared error is used as the criterion for choosing the best motion vector. The range for the motion vector calculation is flexible. For our simulations, the motion vector range of ± 32 half-pixel/(frame distance) in horizontal and ± 16 half-pixel/(frame distance) in vertical direction is used.

B) Spatial Processing:

The description of spatial coding of the frames is divided into processing of I, P, and B frame.

i) I-frame Coding/Decoding:

(a) Coder:

For the I-frame Coding (IC), the following steps are followed:

IC-1: The two fields of the Y-frame are aligned to partially compensate for the camera pan. This is accomplished by translating the first field of the Y-frame with respect to the second field of Y-frame. This Y-frame is then truncated at the right border (in the horizontal direction) to 704 pixels and at the bottom border (in the vertical direction) to 480 lines/frame. The value of the shift is transmitted to the decoder.

The U and V frames are aligned using half the value of the shift obtained from Y frame and then are truncated to 352 pixels/line and 480 lines/frame, each.

IC-2: Each of the Y, U and V frames are 2-D Wavelet transformed. The number of levels of decomposition in either horizontal or vertical directions can be specified by the user. A map describing this transformation is transmitted to the decoder. The decomposition shown in Figure 2 is an example of such an arrangement.

IC-3: Each band is divided into several rectangular regions. An example of such partition is shown in Figure 3. The size of each region can be specified by the user and is sent to the decoder. Variance of each region is then estimated.

IC-4: Each band is then assigned a certain number of bits. The bit allocation is done by assuming that the data has Laplacian distribution with variance equal to the estimated variances of the regions and that a uniform-threshold quantizer (UTQ) is to be used for quantizing each coefficient in each region.

IC-5: For each region a uniform-threshold quantizer, possibly with a dead-zone, is used for quantizing the coefficients. The number of levels of the quantizer, the quantizer bin-size and the size of the dead-zone is transmitted to the receiver. The transmission of the estimated variance is optional. It provides better reconstruction values for quantizer and eliminates the need for transmission of number of levels and the quantizer bin-sizes.

IC-6: The quantizer output indexes for each band are then q-coded and sent to the decoder. The q-coder can be replaced by an (adaptive) Huffman coder without noticeable loss in quality and increase in the bit rate.

(b) Decoder:

For the I-frame Decoding (ID), the following steps are followed:

ID-1: The received q-coded representation is decoded into quantizer indexes.

ID-2: The sample values are obtained by using

(i) the received quantizer step-sizes, quantizer bin-size and the dead-zone size,

(ii) the variance of each region, if transmitted, and

(iii) the decoded quantizer indexes.

ID-3: The regions are remapped to each band and the resulting bands are 2-D inverse transformed.

ID-4: The resulting frame is realigned using the received shift value.

ii) P-frame Coding/Decoding:

Since the P-frame coding can be considered as a special case of B-frame coding, we will describe the B-frame coding only. The procedure for P-frame coding/decoding is simply obtained by eliminating the backward motion-compensation option of the B frame.

iii) B-frame Coding/Decoding:

B-frame:

(a) Coder:

For the B-frame Coding (BC), the following steps are followed:

BC-1: The same as *IC-1.*

BC-2: The Y-frame is partitioned into blocks of size 16×16. For each block a motion vector to two previously coded frames, one in the past and one in the future, is calculated as described in the temporal processing section.

BC-3: For each Y-block, similar to MPEG-I algorithm, a series of comparisons is conducted to select the Forward, Backward, Interpolated, or Intra coding decision for the block. The block is then assigned an identification tag and these tags are q-coded and transmitted to the decoder. The q-coder can be replaced by (adaptive) Huffman coder. In case of Intra decision for the block, the mean of the block is subtracted from the pixels within the block and transmitted separately. The U and V frames are partitioned into 8×16 and the decision for the Y-block is used for specifying the type of coding to be used for these blocks. Note that the U and V frames are not pre-filtered.

The residual blocks for Y/U/V are then obtained.

BC-4: Each residual component (Y/U/V) is decomposed spatially into several bands similar to *IC-2.*

BC-5: The same as *IC-3.*

BC-6: The same as *IC-4.*

BC-7: The same as *IC-5.*

BC-8: The same as *IC-6.*

BC-9: Each component (horizontal and vertical) of the motion vectors are first delta-coded and then q-coded and transmitted.

(b) Decoder:

For the B-frame Decoding (BD), the following steps are followed:

BD-1: The same as *ID-1.*

BD-2: The same as *ID-2.*

BD-3: The same as *ID-3.*

ID-4: The received motion-vectors are inverse q-coded and used to create the predicted blocks. These predicted blocks are then added to the residual to reconstruct the coded frame. In case of the intra-coded blocks, the received mean is added to the residual.

ID-4: The resulting frame is realigned using the received shift value.

II. Compatibility Feature

Since the proposed algorithm uses different spatial transformation, it is not compatible with the MPEG-I algorithm.

III. Random Access Feature

Every I frame can be considered as an entry point in the coded sequence. Other frames can be easily accessed after the entry point is established. Therefore, the value of N is the deciding factor for access.

IV. Coding/Decoding Delay

We assume that the coding delay refers to time lapse from the point that a frame is captured from the device, such as camera, to the point that the frame is ready for transmission. This, in turn, is a function of the values of M and N in the scheme in addition to the technique used for handling the intermediate frames. For the simulations, we have used M=N=12. Because of the the specific structure in which the frames are coded, the coding delay depends on the position of the frame in the GOP. The average value is about 0.43 msec with the maximum delay of 0.53 msec. Note that the processing time is not included in here since it is assumed that it is real time.

We also assume that the decoding delay refers to time lapse from the point that a frame enters the decoder buffer untill it is displayed. For our simulation, the average value is 0.4 msec with a maximum of 0.7 msec.

VI. Huffman Tables

In our approach for lossless coding of the parameters, we have used a modified version of the Q-coder. The Q-coder is easily implemented and can adjust to the statistics of the input sequence. The Q-coder can be easily replaced by a static or an adaptive Huffman coder without noticeable loss in the quality of the output or increase in the output bit rate.

VII. Statistics

A) Number of Bits and SNR for Each Frame:

A listing of number of bits used for each frame at the two coding rates of 4 and 9 Mega bits/sec is provided in Appendix A.

B) Cumulative Bit Counts:

Appendix A contains this information.

C) Other Items:

Please refer to Appendix A for this information.

VIII. Paper Listing

The paper listing in shown in Appendix A.

IX. Implementation Document

*Picture Buffers :

1. Temporal Prediction :

   Encoder: 2-4

   Decoder : 2-4

2. Quantizer and Wavelet Transform:

   Encoder: 1

   Decoder: 1

* Size of coded data buffer is estimated as one-fourth of the frame size at 8 bit/sample

X. Modules

Wavelet Module

- Memory : 16 × Frame size off chip, 6 line buffers on chip (at 5.2 f_s).
- Additions : 335 million - 16 bit wide.
- Multiplication : 447 million - 16 bit wide.
- Wavelet Transform coefficient : 4 fixed.

- Table look-up : None.
- Two on-chip address generators needed which could be implemented by registers, counters and two adders.

Inverse Wavelet Module: Same as Wavelet module.

Quantization Module

- Memory
  1. on-chip : RAM of size 40 × 56 (at 2 × f_s).
  2. off-chip : none
- Additions : 21 million (16 bit) and 21 million (32 bit).
- Multiplication : 21 million (16 × 16).
- Table : none.
- Table look-up speed : N/A.
- On-chip : simple address generation.
- Adaptive quantization table generation based on the statistics collected. Must be performed by off-chip controller.

De-Quantization Module

- Memory
  1. on-chip : none.
  2. off-chip : none.
- Additions : 21 million (16 bit) and 21 million (32 bit).
- Multiplication : 21 million (16 × 16).
- Table : 40x32 bit, down-loaded.
- Table look-up speed : same as f_s.
- On-chip : simple address generation.
- Adaptive quantization table generation based on the statistics collected. Must be performed by off-chip controller.

Multi-level Arithmetic Coder

- Memory : 256 × 256 × 6 bit with bandwidth of 2 × f_s.
- The arithmetic coder/decoder follows the statistic modeler and requires 13f_s operating speed.

Motion Compensator The same requirements as MPEG-I with the appropriate upgrade of the speed.

Appendix A

Source : AWARE-ALGORITHM NO. 1
Date : Nov, 1991
Frame Rate : 30 Hz
Sequence : Mobile
Bit Rate : 4 Mega Bits/sec

ITEMS	All	Intra	Predicted	Interpolated
RMS for Luminance	7.32	6.33		7.95
SNR for Y	30.84	32.10		30.12
SNR for U	33.46	34.20		33.39
SNR for V	33.94	34.80		33.86
MV Blocks				
Forward				428
Backward				405
Interpolated				486
Intra				0
Attributes (Bits)				
Y	118509	504000		83464
U	16690	73175		11555
V	18296	83320		12384

Appendix A-continued

Source : AWARE-ALGORITHM NO. 1
Date : Nov, 1991
Frame Rate : 30 Hz
Sequence : Mobile
Bit Rate : 9 Mega Bits/sec

ITEMS	All	Intra	Predicted	Interpolated
RMS for Luminance	5.50	4.21		5.62
SNR for Y	33.09	35.65		33.13
SNR for U	34.20	35.68		34.06
SNR for V	35.65	36.27		35.60
MV Blocks				
Forward				428
Backward				405
Interpolated				486
Intra				0
Attributes (Bits)				
Y	118509	504000		83464
U	16690	73175		11555
V	18296	83320		12384

Appendix A-continued

Source : AWARE-ALGORITHM NO. 1
Date : Nov, 1991
Frame Rate : 30 Hz
Sequence : Flower Garden
Bit Rate : 9 Mega Bits/sec

ITEMS	All	Intra	Predicted	Interpolated
RMS for Luminance	4.55	3.19		4.69
SNR for Y	34.99	38.04		34.71
SNR for U	35.47	36.40		35.39
SNR for V	35.08	35.72		35.02
MV Blocks				
Forward				452
Backward				324
Interpolated				543
Intra				0
Attributes (Bits)				
Y	242543	611832		208971
U	44349	114456		37976
V	31325	84480		26492

Appendix A-continued

Source : AWARE-ALGORITHM NO. 1
Date : Nov, 1991
Frame Rate : 30 Hz
Sequence : Flower Garden
Bit Rate : 4 Mega Bits/sec

ITEMS	All	Intra	Predicted	Interpolated
RMS for Luminance	7.22	7.63		7.18
SNR for Y	30.96	30.49		31.01
SNR for U	33.45	33.38		33.46
SNR for V	33.71	33.27		33.75
MV Blocks				
Forward				398
Backward				304
Interpolated				616
Intra				
Attributes (Bits)				
Y	116301	313784		98348
U	22569	63792		18821
V	12811	37120		10601

Appendix A-continued

Source : AWARE-ALGORITHM NO. 1
Date : Nov, 1991
Frame Rate : 30 Hz
Sequence : Table Tennis
Bit Rate : 4 Mega Bits/sec

ITEMS	All	Intra	Predicted	Interpolated
RMS for Luminance	7.55	6.83		7.61
SNR for Y	30.59	31.44		30.51
SNR for U	39.67	39.91		39.64
SNR for V	39.95	40.42		39.91
MV Blocks				
Forward				504
Backward				458
Interpolated				356
Intra				0
Attributes (Bits)				
Y	118692	320792		100319
U	10330	41298		7515
V	15283	53731		11787

Appendix A-continued

Source : AWARE-ALGORITHM NO. 1
Date : Nov, 1991
Frame Rate : 30 Hz
Sequence : Table Tennis
Bit Rate : 9 Mega Bits/sec

ITEMS	All	Intra	Predicted	Interpolated
RMS for Luminance	5.26	3.46		5.43
SNR for Y	33.77	37.36		33.44
SNR for U	41.04	42.16		40.94
SNR for V	41.77	42.98		41.66
MV Blocks				
Forward				501
Backward				502
Interpolated				315
Intra				0
Attributes (Bits)				
Y	253999	840528		267538
U	19157	75512		14033
V	26393	69360		22486

Appendix A-continued

Source : AWARE-ALGORITHM NO. 1
Date : Nov, 1991
Frame Rate : 30 Hz
Sequence : Popple
Bit Rate : 9 Mega Bits/sec

ITEMS	All	Intra	Predicted	Interpolated
RMS for Luminance	4.77	2.61		4.97
SNR for Y	34.70	39.81		34.24
SNR for U	33.05	39.12		32.50
SNR for V	33.33	39.13		32.80
MV Blocks				
Forward				480
Backward				470
Interpolated				368
Intra				0
Attributes (Bits)				
Y	255304	552304		228304
U	65024	100576		61792
V	35074	79360		31048

Appendix 4 - cntd

flower4_stat

Source : AWARE-1
Date : Nov 1991

Sequence : Flower Garden
Frame Rate : 30 Hz
Rate : 4 Mega bits/sec.

Frame No.	Bits	SNR[Y,U,V]
001	375488	[31.944, 34.584, 34.624]
002	83712	[31.363, 34.069, 34.064]
003	55336	[36.590, 36.084, 35.468]
004	316848	[35.018, 35.798, 35.502]
005	55576	[31.324, 34.683, 34.882]
006	57528	[31.940, 34.415, 34.778]
007	518000	[32.389, 34.659, 34.907]
008	56496	[31.774, 33.779, 34.380]
009	56296	[29.822, 33.278, 33.986]
010	56624	[31.833, 34.424, 34.572]
011	57288	[30.676, 33.683, 34.143]
012	56416	[29.113, 33.193, 33.885]
013	388872	[29.417, 32.496, 33.634]
014	53664	[31.080, 34.003, 33.866]
015	55232	[35.605, 35.870, 35.378]
016	359696	[34.171, 35.121, 34.736]
017	57616	[31.108, 33.715, 34.325]
018	56808	[31.463, 34.153, 34.420]
019	509632	[30.833, 33.758, 34.269]
020	59872	[30.325, 33.332, 34.347]
021	58160	[28.686, 32.933, 33.712]
022	57168	[29.436, 32.573, 33.452]
023	56336	[29.713, 33.380, 33.828]
024	55336	[28.715, 33.456, 33.916]
025	389432	[29.436, 33.017, 33.683]
026	181376	[31.048, 33.986, 33.837]
027	52720	[36.355, 36.092, 35.332]
028	277720	[34.285, 35.753, 35.213]
029	57888	[32.226, 35.073, 34.756]
030	56784	[32.498, 34.971, 34.904]
031	514336	[31.824, 34.213, 34.435]
032	55584	[32.424, 34.650, 34.544]
033	57920	[29.184, 32.746, 33.487]
034	56408	[32.105, 34.422, 34.398]
035	53640	[30.976, 33.517, 33.701]
036	52424	[29.697, 32.363, 33.520]
037	395904	[30.518, 33.507, 33.733]
038	53240	[30.798, 33.544, 33.474]
039	54160	[36.422, 35.914, 35.125]
040	375608	[34.806, 35.636, 35.069]
041	55760	[31.337, 34.607, 34.632]
042	54224	[31.302, 34.532, 34.601]
043	547832	[31.966, 33.728, 34.376]
044	56576	[33.294, 34.950, 34.802]
045	57272	[28.751, 32.221, 33.217]
046	57048	[30.807, 32.061, 33.210]
047	55152	[29.530, 31.636, 33.041]
048	50744	[29.349, 32.902, 33.406]
049	393024	[30.134, 33.312, 33.531]
050	52832	[30.941, 33.737, 33.579]
051	54056	[35.885, 35.597, 34.977]
052	341656	[34.389, 34.383, 33.963]
053	54264	[31.201, 33.174, 33.730]
054	58432	[31.333, 33.336, 33.540]
055	507184	[29.533, 30.222, 31.981]
056	58912	[30.029, 32.573, 32.059]
057	58056	[29.207, 32.073, 33.301]
058	55648	[31.716, 33.528, 32.678]
059	55128	[30.076, 32.402, 32.914]
060	49352	[29.788, 32.893, 33.427]
061	387568	[30.729, 33.508, 33.607]
062	55568	[30.278, 33.430, 33.264]
063	54040	[36.985, 35.940, 35.118]
064	385872	[34.952, 35.341, 34.776]
065	85856	[30.153, 33.054, 33.693]
066	52984	[31.284, 33.226, 33.913]
067	608616	[32.285, 34.206, 34.493]
068	52440	[33.137, 34.630, 34.576]
069	57560	[30.204, 32.701, 33.462]
070	56488	[32.865, 34.387, 34.294]
071	55080	[31.518, 33.433, 33.753]
072	54000	[29.751, 32.365, 33.220]
073	382368	[29.285, 32.874, 33.302]
074	55024	[30.835, 33.462, 33.278]
075	54496	[36.642, 35.738, 34.948]
076	333280	[33.681, 35.009, 34.621]
077	54600	[29.625, 33.602, 33.817]
078	56496	[29.976, 33.437, 33.884]
079	580416	[31.946, 34.628, 34.572]
080	54256	[32.437, 34.489, 34.463]
081	56536	[30.465, 33.595, 33.719]
082	57056	[32.225, 34.291, 34.164]
083	55728	[31.269, 33.667, 33.779]
084	53392	[29.990, 33.447, 33.596]
085	393752	[30.131, 33.268, 33.455]
086	53816	[30.678, 33.415, 33.206]
087	51048	[37.627, 35.801, 34.956]
088	337376	[35.235, 35.380, 34.780]
089	54376	[31.353, 34.178, 34.003]
090	54088	[32.653, 34.521, 34.320]
091	642432	[33.141, 34.599, 34.349]
092	56560	[29.505, 31.675, 32.710]
093	56520	[31.658, 33.655, 33.840]
094	57272	[30.866, 33.067, 33.328]
095	56640	[29.772, 32.563, 33.087]
096	52424	[30.108, 32.900, 33.139]
097	388176	[30.004, 32.871, 32.799]
098	54272	[33.507, 34.500, 33.973]
099	54480	[32.931, 33.963, 33.552]
100	322696	[29.443, 31.986, 32.969]
101	55408	[30.197, 32.240, 33.054]
102	56696	[29.708, 31.216, 32.573]
103	389472	[30.346, 32.006, 33.037]
104	54760	[32.189, 33.892, 33.492]
105	55760	[29.468, 31.237, 32.585]
106	322072	[28.917, 32.055, 32.787]
107	55536	[28.777, 31.463, 32.428]
108	55192	[28.536, 32.085, 32.590]
109	394568	[30.100, 32.996, 32.845]
110	56000	[35.468, 35.162, 34.442]
111	56424	[34.341, 34.567, 33.862]
112	400904	[29.597, 32.378, 33.039]
113	57224	[29.417, 32.080, 32.861]
114	55696	[29.891, 32.007, 32.708]
115	554488	[31.144, 33.181, 33.510]
116	58312	[28.479, 32.474, 32.988]
117	56728	[29.665, 31.851, 32.477]
118	57256	[29.017, 31.681, 32.318]
119	53784	[28.905, 32.960, 33.051]
120	52672	[29.247, 32.909, 33.037]
121	390488	[29.637, 32.779, 32.676]
122	54200	[37.267, 35.629, 34.744]
123	53760	[34.628, 35.073, 34.498]
124	387328	[30.747, 33.541, 33.540]
125	58072	[31.378, 32.993, 33.570]
126	58464	[31.348, 33.614, 33.856]
127	651936	[31.093, 33.513, 33.651]
128	57232	[28.910, 32.295, 33.023]
129	56928	[30.056, 31.660, 32.334]
130	56944	[29.232, 31.598, 32.380]
131	54192	[29.399, 32.723, 33.062]
132	49864	[29.874, 32.958, 32.991]
133	390088	[29.620, 32.678, 32.564]
134	56112	[37.581, 35.748, 34.956]
135	52768	[35.330, 35.542, 34.919]
136	370208	[30.473, 32.821, 33.017]
137	54600	[32.188, 34.236, 34.183]
138	54440	[32.965, 34.857, 34.599]
139	676976	[33.648, 34.442, 34.225]
140	55432	[30.138, 33.782, 33.877]
141	56584	[31.465, 34.143, 34.057]

Appendix A-cntd

flower4_stat

142	57312	[30.386, 33.332, 33.610]
143	54312	[30.392, 33.335, 33.499]
144	50592	[30.335, 32.914, 32.971]
145	389176	[33.587, 34.808, 34.510]
146	56104	[29.317, 32.312, 32.350]
147	57856	[29.693, 32.553, 32.495]
148	1539760	[49.886, 39.218, 38.364]
149	57120	[30.422, 34.018, 34.193]
150	46080	[32.132, 34.416, 34.701]

Source : AWARE-1
Date : Nov 1991

Sequence : Flower Garden
Frame Rate : 30 Hz
Rate : 4 Mega bits/sec.

Time Interval (msec)	Cumulative Bits
[0.00,0.40]	1715608
[0.40,0.80]	1768392
[0.80,1.20]	1806232
[1.20,1.60]	1813520
[1.60,2.00]	1738744
[2.00,2.40]	1876072
[2.40,2.80]	1793648
[2.80,3.20]	1866304
[3.20,3.60]	1864520
[3.60,4.00]	1854056
[4.00,4.40]	1929408
[4.40,4.80]	1931424

Source : AWARE-1
Date : Nov 1991

Sequence : Flower Garden
Frame Rate : 30 Hz
Rate : 9 Mega bits/sec.

Frame No.	Bits	SNR[Y,U,V]
001	806232	[39.833, 37.841, 37.267]
002	179024	[38.907, 37.120, 36.562]
003	80520	[39.190, 37.018, 36.239]
004	443952	[38.070, 37.172, 36.617]
005	116408	[35.359, 36.660, 36.405]
006	198048	[33.943, 35.788, 35.824]
007	617056	[34.474, 35.716, 35.636]
008	144480	[35.197, 35.713, 35.438]
009	59328	[37.841, 36.559, 35.982]
010	482880	[34.984, 36.117, 35.806]
011	161200	[33.697, 35.171, 35.180]
012	216728	[34.081, 35.554, 35.311]
013	826472	[34.732, 35.323, 35.147]
014	222040	[38.646, 37.045, 36.367]
015	56328	[38.307, 37.162, 36.493]
016	477272	[36.968, 36.049, 35.473]
017	173776	[35.327, 35.671, 35.436]
018	225800	[32.765, 35.103, 35.116]
019	618000	[33.731, 35.064, 35.026]
020	262504	[34.411, 35.513, 35.311]
021	55816	[36.860, 36.602, 35.951]
022	480328	[35.082, 35.808, 35.401]
023	54712	[33.846, 35.876, 35.686]
024	105720	[31.966, 35.202, 35.208]
025	828520	[32.789, 34.796, 35.064]
026	306376	[38.617, 36.981, 36.290]
027	156872	[38.966, 37.089, 36.236]
028	404824	[37.271, 37.079, 36.422]
029	221080	[35.972, 36.863, 36.298]
030	80192	[35.718, 36.676, 36.278]
031	625696	[35.443, 35.883, 35.521]
032	91120	[34.018, 35.710, 35.415]
033	96808	[37.789, 36.493, 35.765]
034	506608	[33.859, 35.532, 35.268]
035	284032	[33.221, 35.296, 35.007]
036	54848	[36.084, 35.585, 35.118]
037	830336	[34.082, 35.639, 35.457]
038	72024	[38.446, 36.590, 35.901]
039	100264	[39.147, 36.918, 35.980]
040	500752	[37.765, 36.751, 35.998]
041	229920	[33.692, 35.862, 35.728]
042	55144	[33.428, 35.610, 35.521]
043	651128	[35.607, 35.673, 35.266]
044	235616	[34.857, 35.961, 35.561]
045	214256	[36.590, 35.922, 35.226]
046	462048	[34.772, 34.833, 34.546]
047	130472	[34.880, 35.011, 34.726]
048	72384	[33.954, 35.476, 35.160]
049	838200	[33.667, 35.528, 35.325]
050	257880	[38.572, 36.840, 36.079]
051	68152	[38.746, 36.857, 36.022]
052	467648	[37.246, 35.364, 34.693]
053	280968	[35.898, 35.248, 34.880]
054	320552	[32.751, 34.312, 34.186]
055	618104	[34.260, 33.025, 32.805]
056	77664	[35.343, 34.584, 33.869]
057	169472	[36.327, 35.666, 35.092]
058	411288	[33.108, 34.493, 32.779]
059	55080	[33.895, 34.663, 34.320]
060	56208	[33.031, 35.149, 35.112]
061	835272	[33.969, 35.549, 35.325]
062	254608	[38.092, 36.469, 35.730]
063	192392	[39.416, 37.076, 36.139]
064	811152	[37.581, 36.353, 35.588]
065	226024	[35.121, 35.107, 34.720]
066	85112	[34.956, 34.804, 34.624]
067	712552	[35.788, 35.819, 35.417]
068	84216	[34.176, 35.504, 35.348]
069	89064	[37.931, 36.361, 35.566]
070	477504	[33.812, 35.293, 35.101]
071	189544	[33.083, 34.770, 34.798]
072	86440	[34.502, 34.965, 34.675]
073	828792	[31.646, 34.532, 34.536]
074	374440	[38.525, 36.517, 35.776]
075	253360	[39.325, 36.883, 35.922]
076	464776	[36.214, 35.988, 35.359]
077	130120	[35.408, 36.292, 35.718]
078	57576	[34.691, 35.798, 35.478]
079	696664	[33.822, 35.532, 35.286]
080	106768	[33.196, 35.158, 35.056]
081	55376	[37.516, 36.535, 35.765]
082	428040	[34.831, 35.883, 35.436]
083	84336	[33.801, 35.041, 34.839]
084	101616	[32.789, 35.186, 34.940]
085	838888	[33.427, 35.271, 35.030]
086	106360	[38.558, 36.562, 35.763]
087	73064	[39.941, 36.815, 35.849]
088	462208	[38.062, 36.419, 35.663]
089	71880	[34.277, 35.656, 35.226]
090	95952	[34.361, 35.760, 35.357]
091	735944	[34.112, 35.171, 34.833]
092	255688	[34.843, 35.693, 35.253]
093	90464	[38.344, 36.054, 35.253]
094	544192	[36.719, 36.316, 35.773]
095	189224	[35.417, 35.880, 35.355]
096	90832	[35.448, 35.571, 35.116]
097	846064	[33.885, 35.228, 34.940]
098	123448	[37.681, 35.860, 35.125]
099	108000	[36.617, 35.885, 35.204]
100	450896	[35.681, 34.988, 34.360]
101	143504	[32.188, 32.887, 33.205]
102	113120	[32.264, 33.213, 33.443]
103	496800	[32.022, 32.602, 32.836]
104	155624	[32.360, 33.035, 33.352]
105	250440	[35.725, 35.160, 34.442]
106	506584	[31.955, 32.774, 32.996]
107	224032	[33.318, 33.991, 33.687]
108	143576	[32.988, 33.684, 33.344]
109	845576	[32.007, 34.064, 33.811]
110	198848	[37.453, 35.953, 35.208]
111	239072	[37.940, 36.422, 35.535]
112	527472	[36.886, 35.398, 34.555]
113	281120	[33.587, 34.165, 33.989]
114	84160	[33.599, 34.001, 33.756]
115	671992	[34.502, 34.108, 33.621]
116	256792	[32.532, 33.854, 33.930]
117	56408	[36.150, 35.880, 35.129]
118	459776	[34.402, 34.389, 33.944]
119	86240	[32.025, 33.560, 33.625]
120	57128	[32.201, 35.103, 34.634]
121	827032	[31.575, 34.742, 34.517]
122	135296	[36.942, 35.748, 35.047]
123	245456	[39.328, 36.629, 35.588]
124	521512	[37.260, 36.001, 35.255]
125	228032	[34.101, 35.186, 34.796]
126	86480	[35.852, 35.064, 34.619]
127	746240	[34.594, 35.138, 34.681]
128	322032	[32.308, 34.296, 34.236]
129	56752	[36.529, 35.681, 34.950]
130	449224	[35.668, 34.661, 34.064]
131	85544	[32.369, 33.544, 33.595]
132	52520	[33.004, 34.584, 34.465]
133	822176	[33.629, 35.071, 34.711]
134	135992	[36.948, 35.624, 34.950]
135	206296	[40.208, 37.183, 36.256]
136	508376	[38.178, 36.918, 36.200]
137	106984	[33.971, 34.986, 34.613]
138	86872	[35.014, 36.225, 35.676]
139	778272	[34.457, 35.870, 35.476]
140	934672	[34.429, 35.436, 34.998]

141	55736	[36.122, 36.018, 36.095]
142	489608	[37.260, 36.682, 36.139]
143	89624	[33.988, 35.180, 35.077]
144	82456	[34.642, 35.530, 35.233]
145	817248	[33.672, 34.756, 34.551]
146	1497888	[36.596, 35.296, 34.718]
147	61560	[36.713, 35.396, 34.760]
148	1661344	[52.681, 40.614, 39.771]
149	57688	[52.038, 40.582, 39.683]
150	14480	[33.793, 35.177, 35.204]

Source : ANARE-1
Date : Nov 1991

Sequence : Flower Garden
Frame Rate : 30 Hz
Rate : 9 Mega bits/sec.

Time Interval (msec)	Cumulative Bits
[0.00,0.40]	3525856
[0.40,0.80]	3558768
[0.80,1.20]	3656976
[1.20,1.60]	3554344
[1.60,2.00]	3621216
[2.00,2.40]	3623880
[2.40,2.80]	3551864
[2.80,3.20]	3554696
[3.20,3.60]	3562088
[3.60,4.00]	3734584
[4.00,4.40]	3696120
[4.40,4.80]	3634064

Source : AWARE-1
Date : Nov 1991

Sequence : Mobile
Frame Rate : 30 Hz
Rate : 4 Mega bits/sec.

Frame No.	Bits	SNR(Y,U,V)
001	673184	[32.196, 34.642, 35.336]
002	61144	[32.255, 34.609, 35.284]
003	62336	[30.655, 34.108, 34.839]
004	173880	[30.251, 33.911, 34.592]
005	60344	[28.666, 33.508, 34.005]
006	74120	[28.290, 33.104, 33.498]
007	249336	[28.211, 33.063, 33.493]
008	61112	[28.547, 33.113, 33.573]
009	61856	[29.929, 33.619, 34.253]
010	125888	[27.898, 32.874, 33.339]
011	58224	[28.206, 32.981, 33.409]
012	57568	[28.653, 33.501, 34.105]
013	671824	[29.044, 34.132, 34.701]
014	81216	[32.081, 34.628, 35.266]
015	54032	[32.268, 34.677, 35.382]
016	173168	[31.298, 34.269, 34.923]
017	53600	[30.178, 34.192, 34.837]
018	54192	[29.718, 34.144, 34.711]
019	301296	[30.417, 32.954, 33.627]
020	52736	[30.127, 33.265, 33.948]
021	59616	[29.204, 33.989, 34.433]
022	55360	[29.776, 33.525, 34.125]
023	55112	[29.003, 33.089, 33.741]
024	52888	[29.664, 33.155, 33.676]
025	674984	[29.683, 33.365, 33.989]
026	48912	[31.943, 34.519, 35.144]
027	52448	[31.951, 34.730, 35.375]
028	201920	[31.647, 34.823, 35.478]
029	47376	[30.855, 33.616, 34.158]
030	50592	[30.155, 33.499, 34.006]
031	240144	[30.881, 33.502, 33.968]
032	53952	[30.217, 33.298, 33.817]
033	56176	[31.259, 34.802, 35.457]
034	121152	[29.583, 33.734, 34.202]
035	53208	[29.750, 33.986, 34.500]
036	54720	[29.172, 33.656, 34.136]
037	677728	[29.576, 33.796, 34.266]
038	54248	[32.030, 34.400, 34.975]
039	58000	[31.483, 34.576, 35.257]
040	179544	[30.938, 34.605, 35.235]
041	50704	[29.344, 33.673, 34.144]
042	72184	[29.104, 33.722, 34.241]
043	264600	[30.122, 33.458, 33.856]
044	51288	[29.856, 33.231, 33.725]
045	55096	[30.976, 34.435, 35.032]
046	157288	[29.933, 33.513, 33.913]
047	51920	[29.740, 33.358, 33.777]
048	54968	[29.579, 33.750, 34.122]
049	675016	[29.460, 33.576, 33.976]
050	52448	[31.844, 34.253, 34.821]
051	57656	[31.302, 34.076, 34.750]
052	120216	[30.661, 34.074, 34.607]
053	54040	[30.169, 33.336, 33.777]
054	56960	[29.571, 33.170, 33.561]
055	273144	[29.315, 33.234, 33.651]
056	55032	[29.058, 33.101, 33.465]
057	56088	[30.601, 34.264, 34.831]
058	193944	[28.908, 33.306, 33.715]
059	53488	[28.879, 32.965, 33.360]
060	54368	[28.935, 33.368, 33.772]
061	684760	[29.224, 33.188, 33.593]
062	51632	[31.653, 34.174, 34.714]
063	82568	[31.221, 34.094, 34.744]
064	187304	[30.836, 33.925, 34.472]
065	83176	[29.366, 33.301, 33.859]
066	83488	[29.217, 33.373, 33.723]
067	293720	[29.416, 33.254, 33.683]
068	86128	[29.435, 33.131, 33.678]
069	58056	[30.119, 33.788, 34.204]
070	166536	[28.921, 33.093, 33.529]
071	84712	[28.789, 32.659, 32.997]
072	55920	[28.782, 33.039, 33.274]
073	679320	[28.797, 32.810, 33.111]
074	118856	[31.834, 34.158, 34.772]
075	125112	[29.981, 33.081, 33.570]
076	216080	[29.982, 33.679, 34.165]
077	175760	[29.355, 33.428, 33.889]
078	56288	[29.444, 33.035, 33.540]
079	131344	[29.593, 33.345, 33.837]
080	57640	[28.867, 31.999, 32.394]
081	55288	[28.605, 32.882, 33.279]
082	52632	[28.203, 32.416, 32.784]
083	58968	[28.452, 31.317, 31.892]
084	56360	[28.525, 32.691, 33.087]
085	680808	[29.194, 32.146, 32.801]
086	57600	[31.527, 34.096, 34.611]
087	57568	[31.041, 33.722, 34.280]
088	114872	[30.258, 33.951, 34.491]
089	58936	[29.181, 33.495, 33.920]
090	56536	[28.660, 32.611, 33.005]
091	194880	[28.813, 33.116, 33.564]
092	75384	[29.244, 31.526, 31.946]
093	91824	[30.362, 33.514, 34.094]
094	166152	[28.985, 32.784, 33.275]
095	55960	[29.370, 31.927, 32.362]
096	54536	[29.018, 33.056, 33.405]
097	681800	[29.386, 31.927, 32.355]
098	52288	[31.788, 34.010, 34.550]
099	81992	[31.784, 34.287, 34.929]
100	205856	[31.550, 33.933, 34.470]
101	53544	[29.880, 33.501, 33.833]
102	51400	[30.420, 31.686, 32.083]
103	295544	[30.375, 32.785, 33.189]
104	52680	[30.830, 31.501, 31.877]
105	55776	[28.924, 33.669, 33.824]
106	52224	[30.131, 33.173, 33.433]
107	57216	[29.864, 31.604, 31.806]
108	57848	[28.677, 32.925, 33.120]
109	675464	[29.242, 31.929, 32.206]
110	127464	[32.599, 34.013, 34.634]
111	57600	[31.851, 33.871, 34.426]
112	259496	[31.338, 34.216, 34.853]
113	56152	[30.524, 33.854, 34.380]
114	59288	[29.574, 31.854, 32.164]
115	246584	[29.609, 32.773, 33.059]
116	54328	[29.275, 32.906, 33.195]
117	57272	[29.974, 33.730, 33.993]
118	80320	[29.956, 32.380, 32.605]
119	51760	[29.420, 32.691, 32.871]
120	54888	[30.193, 32.425, 32.758]
121	676816	[30.168, 32.858, 33.298]
122	52664	[33.538, 33.996, 34.561]
123	53840	[33.364, 34.508, 35.164]
124	167544	[32.293, 34.271, 34.892]
125	96216	[30.148, 33.532, 33.930]
126	49408	[30.061, 34.045, 34.495]
127	322240	[31.082, 34.232, 34.792]
128	49584	[31.050, 34.327, 34.819]
129	47936	[30.890, 34.071, 34.363]
130	48920	[30.850, 34.001, 34.376]
131	49912	[30.804, 33.954, 34.291]
132	49096	[31.183, 33.971, 34.230]
133	682552	[31.101, 33.966, 34.334]
134	47640	[32.519, 33.877, 34.504]
135	49224	[33.441, 34.312, 34.994]
136	129232	[32.374, 33.368, 33.935]
137	45368	[31.712, 33.352, 33.840]
138	80712	[31.391, 32.908, 33.489]
139	268696	[31.499, 33.470, 33.973]
140	40144	[31.134, 34.011, 34.563]
141	43936	[32.877, 34.345, 34.963]

App A

mobile4_stat

142	216648	[31.499, 34.302, 34.794]
143	45856	[31.357, 34.285, 34.756]
144	50304	[31.367, 32.621, 33.257]
145	686224	[30.523, 32.539, 33.003]
146	49624	[32.084, 33.933, 34.498]
147	51712	[32.519, 34.037, 34.650]
148	1550144	[49.254, 38.826, 39.307]
149	52856	[32.858, 33.073, 33.687]
150	32800	[32.755, 34.752, 34.975]

Source : ANARE-1
Date : Nov, 1991

Sequence : Mobile Frame Rate : 30 Hz
Rate : 4 Mega bits/sec.

Time Interval (msec)	Cumulative Bits
[0.00,0.40]	1718992
[0.40,0.80]	1665040
[0.80,1.20]	1655584
[1.20,1.60]	1727568
[1.60,2.00]	1702400
[2.00,2.40]	1768000
[2.40,2.80]	1783648
[2.80,3.20]	1665056
[3.20,3.60]	1668168
[3.60,4.00]	1750616
[4.00,4.40]	1664376
[4.40,4.80]	1668312

App A

mobile9_stat

Source : AWARE-1
Date : Nov 1991

Sequence : Mobile
Frame Rate : 30 Hz
Rate : 9 Mega bits/sec.

Frame No.	Bits	SNR[Y,U,V]
001	928792	[35.730, 36.049, 36.713]
002	187376	[35.824, 36.054, 36.663]
003	201968	[33.109, 35.160, 35.956]
004	308344	[32.760, 34.975, 35.740]
005	207360	[31.361, 34.800, 35.461]
006	221448	[31.439, 34.890, 35.182]
007	382312	[31.121, 34.255, 34.911]
008	280344	[31.686, 34.613, 35.226]
009	232264	[32.724, 34.969, 35.703]
010	276376	[31.927, 34.601, 35.219]
011	189400	[32.140, 35.064, 35.688]
012	128160	[31.641, 35.144, 35.811]
013	930152	[31.485, 35.753, 36.373]
014	207032	[35.629, 36.060, 36.670]
015	169184	[34.851, 35.806, 36.523]
016	307408	[33.858, 35.459, 36.169]
017	104672	[32.930, 35.663, 36.338]
018	139712	[32.496, 35.617, 36.295]
019	437304	[32.199, 33.959, 34.707]
020	184600	[32.317, 34.746, 35.450]
021	217992	[34.452, 36.076, 36.773]
022	377312	[33.153, 34.992, 35.651]
023	224016	[33.231, 35.487, 36.172]
024	204712	[33.633, 35.277, 35.924]
025	934144	[33.393, 35.509, 36.200]
026	147592	[35.473, 35.953, 36.608]
027	142520	[34.557, 35.998, 36.660]
028	345272	[34.327, 36.128, 36.799]
029	142360	[33.421, 35.262, 35.901]
030	140136	[32.713, 35.073, 35.728]
031	366344	[33.364, 35.177, 35.725]
032	254520	[32.654, 34.940, 35.571]
033	192760	[34.431, 36.402, 37.059]
034	306784	[33.284, 35.559, 36.166]
035	296912	[33.458, 36.188, 36.786]
036	246352	[33.572, 35.710, 36.390]
037	926656	[34.016, 36.216, 36.850]
038	164272	[35.588, 35.842, 36.425]
039	189920	[34.120, 35.783, 36.467]
040	304368	[33.576, 35.919, 36.587]
041	141360	[32.016, 35.136, 35.758]
042	219920	[32.284, 35.540, 36.175]
043	393616	[32.482, 34.831, 35.352]
044	230344	[32.895, 35.024, 35.663]
045	169920	[33.966, 35.852, 36.481]
046	323760	[33.502, 35.378, 35.940]
047	226488	[32.939, 35.284, 35.917]
048	219128	[33.073, 35.443, 36.030]
049	929616	[33.289, 35.720, 36.321]
050	87568	[35.330, 35.683, 36.253]
051	60672	[33.908, 35.230, 35.906]
052	246920	[33.257, 35.426, 36.036]
053	131032	[31.971, 34.465, 34.923]
054	207304	[30.776, 34.060, 34.569]
055	410584	[31.601, 34.512, 35.026]
056	245712	[32.289, 34.768, 35.320]
057	239200	[34.176, 35.811, 36.405]
058	400880	[32.630, 35.107, 35.713]
059	291656	[33.082, 35.291, 35.865]
060	258568	[33.282, 35.443, 36.012]
061	926792	[33.683, 35.658, 36.205]
062	152416	[35.092, 35.605, 36.166]
063	144376	[33.697, 35.162, 35.857]
064	320528	[33.334, 35.064, 35.661]
065	147040	[31.806, 34.746, 35.330]
066	142328	[31.801, 34.819, 35.323]
067	429408	[31.675, 34.416, 35.028]
068	173720	[31.829, 34.498, 35.028]
069	196136	[33.316, 35.158, 35.698]
070	354928	[31.503, 34.385, 34.984]
071	397432	[32.057, 34.523, 35.020]
072	179560	[33.761, 35.275, 35.909]
073	923080	[32.844, 35.026, 35.571]
074	253432	[35.385, 35.610, 36.194]
075	256112	[32.598, 34.288, 34.918]
076	351752	[32.603, 34.898, 35.412]
077	319648	[32.066, 34.736, 35.298]
078	226664	[32.291, 34.559, 35.125]
079	246464	[32.418, 34.722, 35.239]
080	252088	[32.374, 33.973, 34.532]
081	159128	[32.515, 34.845, 35.415]
082	249416	[32.325, 34.722, 35.268]
083	159456	[32.191, 33.715, 34.164]
084	140448	[31.604, 34.595, 35.069]
085	930952	[32.004, 33.787, 34.343]
086	116872	[35.001, 35.535, 36.060]
087	162840	[33.645, 34.900, 35.511]
088	239288	[32.947, 35.341, 35.953]
089	213408	[31.209, 34.559, 35.099]
090	193800	[31.337, 34.069, 34.617]
091	321816	[31.850, 34.685, 35.224]
092	251200	[32.624, 33.651, 34.200]
093	266672	[33.411, 34.963, 35.624]
094	331264	[32.351, 34.716, 35.291]
095	306888	[33.112, 34.250, 34.800]
096	173328	[33.627, 35.286, 35.880]
097	928648	[32.997, 34.246, 34.796]
098	142920	[35.341, 35.457, 36.028]
099	130752	[34.398, 35.401, 36.068]
100	336072	[34.176, 35.127, 35.738]
101	140760	[32.569, 34.626, 35.144]
102	89984	[32.947, 33.217, 33.776]
103	428752	[32.763, 34.204, 34.782]
104	101816	[32.714, 32.824, 33.344]
105	159632	[34.323, 35.673, 36.330]
106	387712	[32.354, 34.345, 34.839]
107	333448	[33.354, 33.537, 34.033]
108	311624	[33.920, 35.341, 35.917]
109	927008	[34.609, 34.971, 35.525]
110	260760	[34.125, 35.497, 36.071]
111	246616	[34.532, 35.144, 35.755]
112	389864	[34.089, 35.452, 36.106]
113	303608	[33.230, 35.125, 35.715]
114	223672	[33.411, 34.077, 34.603]
115	369784	[33.864, 34.810, 35.408]
116	199864	[32.929, 35.084, 35.656]
117	127408	[34.271, 35.540, 36.197]
118	287552	[33.508, 34.349, 34.917]
119	105304	[32.484, 34.794, 35.266]
120	104392	[32.789, 33.898, 34.468]
121	932408	[32.333, 34.193, 34.794]
122	139704	[37.257, 35.480, 36.017]
123	170640	[35.676, 35.765, 36.446]
124	291880	[34.722, 35.417, 36.054]
125	235056	[32.658, 34.890, 35.457]
126	219552	[33.058, 35.494, 36.111]
127	437072	[33.714, 35.644, 36.292]
128	165800	[34.441, 36.076, 36.698]
129	141632	[34.931, 35.798, 36.464]
130	284696	[33.670, 35.595, 36.180]
131	211936	[33.790, 35.673, 36.301]
132	249752	[34.455, 35.578, 36.095]
133	956104	[35.073, 35.932, 36.532]
134	150144	[36.117, 35.371, 36.006]
135	93744	[35.967, 35.718, 36.390]
136	258752	[34.792, 34.675, 35.320]
137	113784	[34.349, 34.984, 35.641]
138	211008	[33.348, 34.206, 34.888]
139	403416	[33.464, 34.683, 35.257]
140	189056	[34.300, 35.636, 36.290]
141	183632	[35.796, 35.901, 36.526]

App A

mobile9_stat

142	414240	[34.476, 35.927, 36.577]
143	266232	[34.480, 36.128, 36.710]
144	260264	[35.107, 34.940, 35.588]
145	952368	[34.667, 34.954, 35.583]
146	1448776	[35.671, 35.424, 36.004]
147	50288	[35.713, 35.490, 36.100]
148	1721064	[52.346, 39.535, 39.961]
149	52968	[50.850, 39.901, 40.217]
150	16680	[33.268, 35.610, 35.951]

Source : AWARE-1
Date : Nov 1991

Sequence : Mobile
Frame Rate : 30 Hz
Rate : 9 Mega bits/sec.

Time Interval (msec)	Cumulative Bits
[0.00,0.40]	3844144
[0.40,0.80]	3504096
[0.80,1.20]	3515696
[1.20,1.60]	3509752
[1.60,2.00]	3509712
[2.00,2.40]	3524664
[2.40,2.80]	3537688
[2.80,3.20]	3508328
[3.20,3.60]	3492120
[3.60,4.00]	3545832
[4.00,4.40]	3480128
[4.40,4.80]	3500384

App A

popple9_stat

Source : AWARE-1
Date : Nov 1991

Sequence : Popple
Frame Rate : 30 Hz
Rate : 9 Mega bits/sec.

Frame No.	Bits	SNR[Y,U,V]
001	664296	[38.639, 39.945, 39.433]
002	213928	[38.397, 39.269, 39.277]
003	220952	[36.620, 37.789, 38.096]
004	291600	[35.985, 37.658, 37.886]
005	231000	[35.426, 37.207, 37.562]
006	193032	[35.561, 36.710, 37.113]
007	376632	[35.403, 36.960, 37.321]
008	196904	[35.275, 36.355, 36.925]
009	214216	[36.538, 38.019, 38.232]
010	337936	[35.175, 36.694, 37.124]
011	235264	[35.614, 36.741, 37.200]
012	293064	[35.723, 37.434, 37.813]
013	666336	[36.496, 37.994, 38.395]
014	198752	[38.863, 39.213, 39.282]
015	188920	[36.818, 38.015, 38.235]
016	328096	[36.307, 37.882, 38.118]
017	174040	[35.224, 36.896, 37.375]
018	189816	[35.280, 36.636, 37.096]
019	412624	[34.812, 36.281, 36.691]
020	209192	[35.246, 36.517, 36.981]
021	248416	[36.770, 38.263, 38.387]
022	369608	[35.197, 36.505, 36.985]
023	238968	[35.951, 37.141, 37.430]
024	266032	[35.735, 37.449, 37.793]
025	664936	[36.467, 37.741, 38.169]
026	157648	[38.784, 39.493, 39.521]
027	187576	[36.508, 37.777, 37.981]
028	318400	[36.327, 37.849, 38.015]
029	211784	[34.768, 36.738, 37.221]
030	220392	[35.235, 36.529, 37.011]
031	360560	[35.248, 36.553, 36.899]
032	223480	[35.673, 36.651, 37.076]
033	235648	[36.673, 38.199, 38.382]
034	353944	[35.466, 36.704, 37.113]
035	274072	[35.982, 37.032, 37.494]
036	270248	[36.247, 37.639, 38.015]
037	662056	[36.632, 38.126, 38.500]
038	192320	[38.764, 39.200, 39.268]
039	174040	[37.179, 38.456, 38.697]
040	339664	[36.694, 38.113, 38.407]
041	180160	[35.320, 37.176, 37.619]
042	192168	[35.364, 36.815, 37.321]
043	433272	[35.082, 36.535, 36.975]
044	212504	[35.457, 36.716, 37.249]
045	240568	[36.965, 38.299, 38.555]
046	379688	[35.445, 37.028, 37.434]
047	241944	[35.977, 37.361, 37.777]
048	247656	[35.985, 37.513, 37.977]
049	667832	[36.301, 37.857, 38.297]
050	137952	[39.071, 39.666, 39.484]
051	145640	[37.158, 37.969, 38.178]
052	295712	[35.532, 37.390, 37.781]
053	176864	[34.424, 36.361, 36.905]
054	206024	[34.734, 36.239, 36.879]
055	479648	[34.069, 35.776, 36.428]
056	211664	[34.601, 36.095, 36.611]
057	232984	[36.978, 38.062, 38.204]
058	384968	[35.054, 36.373, 36.773]
059	272936	[35.656, 36.614, 36.985]
060	275056	[36.054, 37.475, 37.643]
061	657104	[36.544, 37.837, 37.960]
062	149528	[40.295, 39.819, 39.550]
063	196392	[35.867, 36.799, 37.285]
064	315984	[35.870, 37.281, 37.658]
065	243936	[34.197, 36.054, 36.344]
066	266376	[34.896, 35.917, 36.278]
067	351544	[35.327, 36.131, 36.517]
068	233184	[35.429, 36.499, 36.945]
069	207304	[35.906, 36.853, 37.249]
070	346136	[34.982, 35.885, 36.364]
071	258616	[35.222, 35.743, 36.353]
072	217672	[35.323, 36.028, 36.611]
073	722072	[34.861, 35.680, 36.344]
074	93752	[42.964, 40.341, 40.039]
075	141248	[36.324, 35.030, 35.273]
076	351296	[36.253, 36.508, 36.729]
077	230240	[33.284, 34.336, 34.774]
078	209856	[34.037, 34.487, 35.071]
079	348568	[35.043, 34.619, 34.994]
080	234008	[35.238, 34.819, 34.800]
081	228232	[36.155, 34.316, 34.483]
082	310656	[35.327, 33.708, 33.973]
083	286632	[35.528, 33.925, 34.105]
084	249216	[36.120, 34.450, 34.654]
085	804720	[36.158, 34.638, 34.790]
086	170168	[41.677, 38.877, 39.172]
087	108392	[35.760, 31.635, 31.908]
088	193344	[35.162, 31.474, 31.689]
089	150760	[35.030, 32.180, 32.545]
090	188152	[34.287, 29.988, 30.322]
091	298272	[34.404, 29.295, 29.597]
092	256904	[34.950, 29.911, 30.198]
093	285312	[35.700, 31.866, 32.129]
094	320576	[35.199, 30.357, 30.646]
095	338608	[35.571, 30.657, 30.912]
096	336176	[35.552, 32.107, 32.375]
097	858408	[35.738, 32.883, 33.145]
098	199968	[41.180, 38.715, 38.776]
099	131288	[33.455, 31.299, 31.564]
100	268272	[33.492, 31.013, 31.295]
101	214896	[33.160, 30.344, 30.744]
102	207344	[32.404, 28.251, 28.622]
103	294960	[32.605, 28.926, 29.256]
104	260224	[32.900, 28.695, 28.990]
105	266456	[32.899, 31.522, 31.787]
106	256272	[32.796, 29.262, 29.467]
107	295776	[33.462, 29.189, 29.456]
108	231704	[33.508, 30.284, 30.469]
109	920560	[33.268, 29.596, 29.903]
110	223504	[40.837, 38.433, 38.472]
111	206232	[32.420, 30.969, 31.290]
112	221192	[32.710, 31.216, 31.433]
113	251144	[32.723, 29.388, 29.545]
114	229336	[32.696, 28.239, 28.569]
115	195856	[32.729, 29.045, 29.334]
116	264752	[33.011, 28.427, 28.665]
117	241952	[32.241, 30.761, 31.042]
118	187240	[32.964, 29.037, 29.227]
119	325272	[33.198, 28.417, 28.743]
120	262776	[33.572, 30.136, 30.344]
121	935168	[33.553, 29.787, 30.085]
122	289264	[40.077, 38.221, 38.305]
123	243296	[31.209, 30.843, 31.114]
124	178864	[31.299, 30.727, 30.872]
125	295704	[32.684, 30.158, 30.339]
126	234032	[32.418, 28.831, 29.078]
127	169424	[32.263, 29.458, 29.707]
128	271184	[32.048, 28.535, 28.855]
129	231856	[31.335, 30.823, 31.070]
130	180256	[32.003, 29.174, 29.407]
131	291648	[32.132, 28.664, 28.896]
132	234960	[32.490, 29.874, 30.089]
133	929528	[32.470, 29.229, 29.518]
134	276200	[39.882, 37.960, 38.109]
135	243176	[30.923, 30.808, 31.068]
136	171728	[30.780, 30.295, 30.533]
137	286840	[32.244, 30.186, 30.373]
138	237480	[31.923, 28.825, 28.993]
139	194656	[31.838, 29.119, 29.277]
140	257248	[31.838, 28.509, 28.673]
141	229536	[30.949, 30.337, 30.563]
142	180712	[31.864, 28.915, 29.124]

App A

popple9_stat

143	283528	[31.851, 28.433, 28.662]
144	264760	[31.986, 29.645, 29.839]
145	920136	[32.259, 30.004, 30.164]
146	1969288	[40.004, 38.049, 38.217]
147	54800	[52.357, 40.568, 40.758]
148	1858816	[53.605, 40.097, 40.268]
149	54088	[29.002, 26.602, 26.614]
150	45003	[27.845, 26.660, 26.710]

Source : AWARE-1
Date : Nov 1991

Sequence : Popple
Frame Rate : 30 Hz
Rate : 9 Mega bits/sec.

Time Interval (msec)	Cumulative Bits
[0.00,0.40]	3468824
[0.40,0.80]	3490800
[0.80,1.20]	3478888
[1.20,1.60]	3496040
[1.60,2.00]	3487280
[2.00,2.40]	3443776
[2.40,2.80]	3405776
[2.80,3.20]	3451384
[3.20,3.60]	3485568
[3.60,4.00]	3529816
[4.00,4.40]	3555656
[4.40,4.80]	3555392
[4.80,5.20]	4857128

Source : AWARE-1
Date : Nov 1991

Sequence : Table Tennis
Frame Rate : 30 Hz
Rate : 4 Mega bits/sec.

Frame No.	Bits	SNR[Y,U,V]
001	503960	[29.254, 40.147, 41.844]
002	40784	[29.359, 39.829, 41.232]
003	47504	[28.939, 39.473, 40.708]
004	531232	[31.135, 39.593, 40.824]
005	49448	[27.456, 39.508, 40.386]
006	49448	[27.204, 39.516, 40.200]
007	295904	[26.760, 39.169, 40.000]
008	41360	[25.443, 39.150, 39.953]
009	48464	[24.164, 38.438, 37.948]
010	48112	[26.961, 39.173, 39.763]
011	44432	[23.755, 38.587, 38.859]
012	44320	[24.164, 38.416, 38.393]
013	500896	[24.057, 38.461, 38.634]
014	46248	[30.239, 40.303, 41.506]
015	45440	[28.384, 39.318, 40.555]
016	306704	[28.466, 39.397, 40.646]
017	332352	[26.866, 39.297, 39.809]
018	46520	[26.219, 39.140, 39.866]
019	340240	[27.994, 38.997, 40.097]
020	52192	[25.222, 38.802, 39.388]
021	49424	[24.334, 38.867, 39.339]
022	48944	[24.064, 38.923, 39.666]
023	47936	[24.734, 38.995, 39.714]
024	49608	[24.381, 38.842, 39.560]
025	497528	[24.619, 38.797, 39.651]
026	345528	[34.550, 41.611, 42.557]
027	47824	[30.579, 40.248, 41.241]
028	363968	[31.290, 40.109, 41.134]
029	48360	[30.845, 39.782, 40.886]
030	53024	[27.981, 39.352, 39.687]
031	231992	[28.062, 39.569, 39.876]
032	52768	[27.753, 39.362, 39.460]
033	54256	[29.897, 40.198, 40.851]
034	51856	[29.245, 39.984, 40.620]
035	54664	[29.460, 40.068, 40.650]
036	49504	[30.383, 40.411, 41.033]
037	424816	[31.296, 40.689, 41.521]
038	130984	[36.419, 41.077, 41.621]
039	49704	[34.404, 40.411, 40.249]
040	102392	[32.652, 40.497, 40.693]
041	45912	[31.636, 40.537, 40.729]
042	47232	[31.472, 40.318, 40.511]
043	255872	[32.154, 39.953, 39.363]
044	96872	[32.415, 39.871, 39.262]
045	97000	[34.714, 40.119, 39.764]
046	223392	[33.116, 39.893, 39.415]
047	135240	[33.430, 39.728, 39.134]
048	41944	[34.327, 39.976, 39.447]
049	381264	[33.294, 39.680, 38.481]
050	130200	[35.796, 39.398, 39.801]
051	49848	[35.961, 39.550, 39.461]
052	153592	[34.314, 39.226, 38.766]
053	104576	[34.592, 39.944, 39.645]
054	50584	[33.092, 38.894, 38.292]
055	325592	[33.832, 39.007, 38.589]
056	55136	[33.226, 38.658, 38.287]
057	57376	[35.733, 39.842, 39.745]
058	265920	[33.119, 38.380, 38.227]
059	53520	[33.473, 38.905, 38.674]
060	52592	[33.090, 38.692, 38.436]
061	366800	[33.189, 38.983, 38.890]
062	86240	[31.813, 39.323, 39.436]
063	48816	[35.443, 38.729, 38.655]
064	118464	[33.858, 38.680, 38.520]
065	50080	[33.833, 38.979, 39.021]
066	82088	[33.177, 38.451, 38.385]
067	377688	[33.021, 38.163, 37.944]
068	432632	[33.247, 38.237, 38.083]
069	43552	[31.199, 38.408, 37.158]
070	59056	[34.411, 39.356, 39.618]
071	37352	[31.531, 38.824, 38.259]
072	35688	[31.212, 38.631, 37.670]
073	325544	[31.350, 38.888, 38.258]
074	221440	[31.879, 39.813, 39.658]
075	75720	[34.284, 39.742, 40.161]
076	227680	[34.378, 39.947, 40.333]
077	108208	[34.669, 39.876, 40.327]
078	38512	[33.725, 39.825, 40.174]
079	289104	[33.734, 39.907, 40.298]
080	41000	[33.248, 39.720, 40.034]
081	37872	[34.336, 40.096, 40.489]
082	216808	[33.393, 39.851, 40.080]
083	37232	[33.400, 39.971, 40.242]
084	43352	[33.012, 39.868, 40.146]
085	328280	[33.192, 39.966, 40.290]
086	76960	[31.818, 39.363, 39.515]
087	77936	[35.506, 39.972, 40.660]
088	184568	[34.683, 39.856, 40.471]
089	90992	[33.708, 39.909, 40.435]
090	70888	[33.790, 39.886, 40.408]
091	373488	[34.064, 39.804, 40.346]
092	79400	[33.979, 39.842, 40.439]
093	50216	[33.484, 39.474, 39.792]
094	183536	[33.841, 39.768, 40.285]
095	40240	[33.381, 39.710, 40.038]
096	44048	[32.908, 39.479, 39.618]
097	331200	[32.912, 39.518, 39.746]
098	251672	[30.292, 39.674, 40.012]
099	40720	[33.079, 39.472, 39.970]
100	411776	[34.013, 39.694, 40.226]
101	44072	[33.025, 39.318, 39.677]
102	43056	[32.580, 39.511, 39.771]
103	343208	[32.558, 39.882, 40.222]
104	43056	[32.673, 39.901, 40.253]
105	44400	[31.540, 39.621, 39.808]
106	47192	[32.031, 39.891, 39.905]
107	49584	[31.985, 39.646, 39.901]
108	48912	[31.413, 39.682, 40.062]
109	342040	[31.426, 39.735, 40.142]
110	43616	[30.261, 39.582, 39.907]
111	39416	[33.315, 40.366, 40.888]
112	214008	[33.355, 40.613, 41.264]
113	37056	[32.010, 40.357, 40.855]
114	36072	[32.451, 40.411, 40.904]
115	333960	[32.695, 40.565, 41.080]
116	38240	[32.690, 40.497, 41.032]
117	589816	[31.985, 40.205, 40.594]
118	69880	[32.247, 40.175, 40.529]
119	46352	[35.184, 40.911, 41.615]
120	48792	[31.690, 40.091, 40.427]
121	342848	[31.426, 40.029, 40.420]
122	59672	[31.804, 40.027, 40.296]
123	66752	[34.659, 40.588, 41.414]
124	264144	[33.294, 40.518, 41.347]
125	147736	[30.819, 39.874, 40.291]
126	58296	[32.174, 40.346, 40.985]
127	388664	[32.927, 40.512, 41.328]
128	55712	[32.354, 39.519, 39.983]
129	56320	[31.565, 39.871, 40.144]
130	163928	[34.654, 40.457, 40.949]
131	51816	[34.615, 40.789, 41.343]
132	54528	[32.527, 40.079, 40.503]
133	370328	[32.768, 40.351, 40.855]
134	59480	[33.884, 40.370, 40.891]
135	70664	[33.458, 39.177, 39.368]
136	254800	[33.117, 40.062, 40.555]
137	129456	[33.314, 39.359, 39.717]
138	56728	[32.340, 39.621, 39.937]
139	349696	[31.942, 39.873, 40.147]
140	55928	[31.277, 39.795, 40.119]
141	61944	[33.380, 40.315, 40.967]
142	118088	[32.097, 40.365, 40.889]

143	56936	[31.991, 40.281, 40.729]
144	88032	[32.323, 40.272, 40.660]
145	370792	[32.299, 40.231, 40.609]
146	271432	[31.423, 39.735, 40.072]
147	282928	[32.030, 39.897, 40.340]
148	356352	[35.366, 40.629, 41.302]
149	195976	[35.107, 40.048, 41.592]
150	46888	[35.513, 41.283, 42.071]

Source : AWARE-1
Date : Nov 1991

Sequence : Table Tennis
Frame Rate : 30 Hz
Rate : 4 Mega bits/sec.

Time Interval (msec)	Cumulative Bits
[0.00,0.40]	1744968
[0.40,0.80]	1864504
[0.80,1.20]	1851272
[1.20,1.60]	1651360
[1.60,2.00]	1680200
[2.00,2.40]	1708456
[2.40,2.80]	1662472
[2.80,3.20]	1600552
[3.20,3.60]	1698848
[3.60,4.00]	1639248
[4.00,4.40]	1710416
[4.40,4.80]	1641680

App A tennis9_stat

Source : AWARE-1
Date : Nov 1991

Sequence : Table Tennis
Frame Rate : 30 Hz
Rate : 9 Mega bits/sec.

Frame No.	Bits	SNR[Y,U,V]
001	992520	[36.481, 42.215, 43.484]
002	45280	[36.694, 41.868, 43.087]
003	52992	[32.117, 40.669, 42.033]
004	663248	[33.537, 40.093, 41.524]
005	130336	[30.026, 40.943, 41.611]
006	46568	[29.457, 40.850, 41.309]
007	423368	[28.585, 39.524, 40.776]
008	43704	[26.330, 39.351, 40.433]
009	301768	[32.839, 39.995, 41.484]
010	583088	[28.280, 40.166, 40.693]
011	107968	[29.989, 39.754, 41.036]
012	159248	[28.830, 39.466, 40.516]
013	992024	[28.261, 39.521, 40.750]
014	45928	[37.155, 42.418, 43.547]
015	47936	[31.053, 39.982, 41.371]
016	438392	[31.119, 40.104, 41.544]
017	498592	[28.565, 40.505, 40.772]
018	170800	[26.971, 39.568, 40.433]
019	477920	[30.945, 39.551, 40.876]
020	171072	[27.773, 39.383, 40.491]
021	48128	[30.577, 40.151, 41.437]
022	410888	[28.088, 39.722, 40.897]
023	50512	[28.212, 39.910, 40.812]
024	191432	[26.831, 39.775, 40.823]
025	1001816	[27.960, 39.970, 41.359]
026	476104	[40.719, 43.808, 44.855]
027	369200	[32.803, 41.103, 42.306]
028	497232	[33.625, 40.703, 41.926]
029	301128	[33.231, 40.397, 41.711]
030	240192	[33.196, 40.484, 41.571]
031	364272	[32.139, 40.443, 41.495]
032	143328	[31.421, 40.282, 41.259]
033	54536	[32.602, 41.339, 42.371]
034	183112	[31.430, 40.817, 41.789]
035	54992	[30.546, 40.734, 41.577]
036	50704	[31.269, 41.142, 41.850]
037	883552	[32.015, 41.556, 42.416]
038	259112	[42.474, 43.733, 44.650]
039	102312	[36.194, 41.256, 41.588]
040	226808	[34.768, 41.567, 42.237]
041	105808	[33.747, 41.303, 42.050]
042	122592	[32.787, 41.104, 41.718]
043	380440	[33.622, 40.825, 40.942]
044	273720	[34.096, 40.712, 40.791]
045	277408	[37.221, 41.212, 41.451]
046	404864	[35.673, 41.005, 41.237]
047	334488	[36.186, 40.936, 41.122]
048	186168	[37.045, 41.328, 41.553]
049	837008	[36.036, 41.439, 41.577]
050	246096	[41.505, 42.332, 42.802]
051	162032	[37.589, 40.497, 40.596]
052	275520	[36.057, 40.447, 40.413]
053	233336	[36.464, 41.172, 41.427]
054	160472	[35.271, 40.315, 40.344]
055	454208	[35.740, 40.310, 40.350]
056	201760	[35.275, 40.053, 40.036]
057	120504	[37.741, 40.996, 41.193]
058	424256	[35.506, 40.092, 40.072]
059	207768	[34.950, 40.138, 40.109]
060	234064	[35.786, 40.587, 40.720]
061	798568	[36.390, 41.359, 41.788]
062	210704	[36.915, 41.669, 42.293]
063	139176	[37.049, 39.645, 39.764]
064	234944	[35.600, 40.088, 40.173]
065	186152	[35.932, 40.835, 41.274]
066	85784	[35.090, 40.218, 40.482]
067	508976	[35.180, 39.838, 40.014]
068	610576	[33.833, 39.012, 39.133]
069	142576	[35.084, 40.664, 41.037]
070	204864	[37.001, 40.441, 40.811]
071	224456	[34.626, 40.803, 41.233]
072	312496	[35.468, 41.035, 41.558]
073	683456	[36.526, 41.390, 42.083]
074	373328	[36.918, 41.864, 42.485]
075	214840	[37.353, 41.461, 42.191]
076	375752	[37.235, 41.590, 42.319]
077	259176	[37.505, 41.462, 42.301]
078	159928	[35.842, 41.440, 42.101]
079	406592	[36.114, 41.584, 42.251]
080	115640	[35.368, 41.327, 42.034]
081	187816	[37.267, 41.732, 42.484]
082	377328	[35.049, 41.278, 41.924]
083	289848	[35.683, 41.530, 42.228]
084	97816	[36.587, 41.740, 42.436]
085	679024	[34.892, 41.619, 42.341]
086	211944	[36.965, 41.758, 42.344]
087	224848	[38.623, 41.602, 42.550]
088	335984	[37.221, 41.477, 42.423]
089	242712	[35.888, 41.677, 42.495]
090	214288	[36.009, 41.617, 42.438]
091	500736	[36.324, 41.448, 42.308]
092	226816	[36.114, 41.540, 42.388]
093	230096	[36.751, 41.414, 42.128]
094	325424	[36.065, 41.494, 42.276]
095	168376	[35.839, 41.440, 42.171]
096	161536	[35.549, 41.384, 41.994]
097	698760	[35.454, 41.497, 42.137]
098	391960	[35.671, 41.707, 42.529]
099	188520	[36.095, 40.838, 41.711]
100	528368	[36.565, 40.827, 41.744]
101	230032	[35.464, 40.464, 41.211]
102	192136	[34.952, 40.756, 41.600]
103	438560	[35.244, 41.187, 42.054]
104	170272	[35.037, 41.217, 42.086]
105	86160	[37.662, 41.607, 42.674]
106	463280	[35.039, 41.335, 42.284]
107	81736	[34.402, 41.326, 42.184]
108	58880	[34.278, 41.406, 42.348]
109	721128	[34.106, 41.506, 42.330]
110	44792	[35.678, 41.603, 42.410]
111	43976	[36.381, 41.667, 42.614]
112	356600	[36.673, 41.897, 42.919]
113	42728	[33.898, 41.519, 42.325]
114	40256	[34.057, 41.509, 42.320]
115	432416	[34.006, 41.566, 42.397]
116	52984	[33.986, 41.543, 42.374]
117	938424	[36.087, 41.683, 42.688]
118	316080	[33.915, 41.331, 42.121]
119	280336	[40.559, 41.735, 42.719]
120	254384	[35.760, 41.577, 42.573]
121	718728	[35.502, 41.596, 42.581]
122	140536	[37.299, 42.090, 42.879]
123	209640	[37.278, 41.741, 42.836]
124	395128	[35.945, 41.515, 42.504]
125	264536	[33.938, 41.129, 42.018]
126	152080	[35.024, 41.558, 42.598]
127	497784	[35.257, 41.546, 42.539]
128	201912	[34.273, 40.580, 41.181]
129	255136	[36.197, 41.635, 42.531]
130	311728	[35.927, 41.736, 42.733]
131	297904	[35.765, 41.645, 42.633]
132	47912	[36.679, 41.921, 42.992]
133	712992	[34.592, 41.686, 42.490]
134	63800	[37.197, 42.004, 42.686]
135	209224	[37.069, 41.471, 42.179]
136	390880	[37.253, 41.973, 42.842]
137	283504	[34.416, 41.287, 41.941]
138	58184	[35.540, 41.680, 42.616]
139	456816	[36.324, 41.387, 42.173]
140	246912	[34.350, 39.466, 39.777]
141	185032	[36.626, 41.299, 42.013]
142	319936	[36.172, 40.823, 41.360]

App A tennis9_stat

143	250784	[35.193, 40.947, 41.654]
144	54840	[36.030, 41.492, 42.320]
145	720128	[33.098, 41.398, 41.983]
146	1433488	[36.958, 41.851, 42.565]
147	1298504	[36.998, 41.851, 42.585]
148	53152	[33.133, 39.724, 39.973]
149	62368	[52.165, 44.282, 45.396]
150	26832	[32.838, 40.753, 41.300]

Source : AWARE-1
Date : Nov 1991

Sequence : Table Tennis
Frame Rate : 30 Hz
Rate : 9 Mega bits/sec.

Time Interval (msec)	Cumulative Bits
[0.00,0.40]	3550088
[0.40,0.80]	3543624
[0.80,1.20]	3736616
[1.20,1.60]	3557272
[1.60,2.00]	3557024
[2.00,2.40]	3629272
[2.40,2.80]	3541520
[2.80,3.20]	3521784
[3.20,3.60]	3528664
[3.60,4.00]	3524104
[4.00,4.40]	3593024
[4.40,4.80]	3232904

App A

code_list

Source : AWARE-1
Date : Nov 1991

Frame Rate : 30 Hz
Sequence : Flower Garden

Bit Rate : 4 Mega Bits/Sec

```
-rw-r--r--  1 far      46936 Oct 12 09:38 code.001
-rw-r--r--  1 far       6714 Oct 12 09:56 code.002
-rw-r--r--  1 far       6917 Oct 12 10:00 code.003
-rw-r--r--  1 far      39606 Oct 12 09:51 code.004
-rw-r--r--  1 far       6947 Oct 12 10:04 code.005
-rw-r--r--  1 far       7191 Oct 12 10:08 code.006
-rw-r--r--  1 far      64750 Oct 12 09:46 code.007
-rw-r--r--  1 far       7062 Oct 12 10:16 code.008
-rw-r--r--  1 far       7037 Oct 12 10:21 code.009
-rw-r--r--  1 far       7078 Oct 12 10:12 code.010
-rw-r--r--  1 far       7161 Oct 12 10:25 code.011
-rw-r--r--  1 far       7052 Oct 12 10:29 code.012
-rw-r--r--  1 far      48609 Oct 12 09:42 code.013
-rw-r--r--  1 far       6708 Oct 12 10:45 code.014
-rw-r--r--  1 far       6904 Oct 12 10:49 code.015
-rw-r--r--  1 far      44962 Oct 12 10:41 code.016
-rw-r--r--  1 far       7202 Oct 12 10:53 code.017
-rw-r--r--  1 far       7101 Oct 12 10:57 code.018
-rw-r--r--  1 far      63704 Oct 12 10:36 code.019
-rw-r--r--  1 far       7484 Oct 12 11:06 code.020
-rw-r--r--  1 far       7270 Oct 12 11:10 code.021
-rw-r--r--  1 far       7146 Oct 12 11:02 code.022
-rw-r--r--  1 far       7042 Oct 12 11:14 code.023
-rw-r--r--  1 far       6917 Oct 12 11:19 code.024
-rw-r--r--  1 far      48679 Oct 12 10:32 code.025
-rw-r--r--  1 far      22672 Oct 12 11:33 code.026
-rw-r--r--  1 far       6590 Oct 12 11:36 code.027
-rw-r--r--  1 far      34715 Oct 12 11:29 code.028
-rw-r--r--  1 far       7236 Oct 12 11:39 code.029
-rw-r--r--  1 far       7098 Oct 12 11:43 code.030
-rw-r--r--  1 far      64292 Oct 12 11:26 code.031
-rw-r--r--  1 far       6948 Oct 12 11:49 code.032
-rw-r--r--  1 far       7240 Oct 12 11:53 code.033
-rw-r--r--  1 far       7051 Oct 12 11:46 code.034
-rw-r--r--  1 far       6705 Oct 12 11:56 code.035
-rw-r--r--  1 far       6553 Oct 12 11:59 code.036
-rw-r--r--  1 far      49488 Oct 12 11:22 code.037
-rw-r--r--  1 far       6655 Oct 12 12:12 code.038
-rw-r--r--  1 far       6770 Oct 12 12:15 code.039
-rw-r--r--  1 far      46951 Oct 12 12:09 code.040
-rw-r--r--  1 far       6970 Oct 12 12:19 code.041
-rw-r--r--  1 far       6778 Oct 12 12:22 code.042
-rw-r--r--  1 far      68479 Oct 12 12:05 code.043
-rw-r--r--  1 far       7072 Oct 12 12:29 code.044
-rw-r--r--  1 far       7159 Oct 12 12:32 code.045
-rw-r--r--  1 far       7131 Oct 12 12:26 code.046
-rw-r--r--  1 far       6894 Oct 12 12:36 code.047
-rw-r--r--  1 far       6343 Oct 12 12:39 code.048
-rw-r--r--  1 far      49128 Oct 12 12:02 code.049
-rw-r--r--  1 far       6604 Oct 12 12:51 code.050
-rw-r--r--  1 far       6757 Oct 12 12:55 code.051
-rw-r--r--  1 far      42707 Oct 12 12:48 code.052
-rw-r--r--  1 far       6783 Oct 12 12:58 code.053
-rw-r--r--  1 far       7304 Oct 12 13:01 code.054
-rw-r--r--  1 far      63398 Oct 12 12:45 code.055
-rw-r--r--  1 far       7364 Oct 12 13:08 code.056
-rw-r--r--  1 far       7257 Oct 12 13:11 code.057
-rw-r--r--  1 far       6981 Oct 12 13:05 code.058
-rw-r--r--  1 far       6891 Oct 12 13:15 code.059
-rw-r--r--  1 far       6169 Oct 12 13:18 code.060
-rw-r--r--  1 far      48446 Oct 12 12:41 code.061
-rw-r--r--  1 far       6946 Oct 12 13:31 code.062
-rw-r--r--  1 far       6755 Oct 12 13:34 code.063
-rw-r--r--  1 far      48234 Oct 12 13:28 code.064
-rw-r--r--  1 far       6982 Oct 12 13:37 code.065
-rw-r--r--  1 far       6623 Oct 12 13:41 code.066
-rw-r--r--  1 far      76077 Oct 12 13:24 code.067
-rw-r--r--  1 far       6555 Oct 12 13:47 code.068
-rw-r--r--  1 far       7195 Oct 12 13:51 code.069
-rw-r--r--  1 far       7061 Oct 12 13:44 code.070
-rw-r--r--  1 far       6885 Oct 12 13:54 code.071
-rw-r--r--  1 far       6750 Oct 12 13:57 code.072
-rw-r--r--  1 far      47796 Oct 12 13:20 code.073
-rw-r--r--  1 far       6878 Oct 12 14:10 code.074
-rw-r--r--  1 far       6812 Oct 12 14:14 code.075
-rw-r--r--  1 far      41660 Oct 12 14:07 code.076
-rw-r--r--  1 far       6825 Oct 12 14:17 code.077
-rw-r--r--  1 far       7062 Oct 12 14:20 code.078
-rw-r--r--  1 far      72552 Oct 12 14:03 code.079
-rw-r--r--  1 far       6782 Oct 12 14:27 code.080
-rw-r--r--  1 far       7067 Oct 12 14:30 code.081
-rw-r--r--  1 far       7132 Oct 12 14:24 code.082
-rw-r--r--  1 far       6966 Oct 12 14:33 code.083
-rw-r--r--  1 far       6674 Oct 12 14:37 code.084
-rw-r--r--  1 far      49219 Oct 12 14:00 code.085
-rw-r--r--  1 far       6727 Oct 12 14:49 code.086
-rw-r--r--  1 far       6381 Oct 12 14:53 code.087
-rw-r--r--  1 far      42172 Oct 12 14:46 code.088
-rw-r--r--  1 far       6797 Oct 12 14:56 code.089
-rw-r--r--  1 far       6761 Oct 13 10:20 code.090
-rw-r--r--  1 far      80304 Oct 12 14:43 code.091
-rw-r--r--  1 far       7070 Oct 12 15:03 code.092
-rw-r--r--  1 far       7065 Oct 12 15:06 code.093
-rw-r--r--  1 far       7159 Oct 12 14:59 code.094
-rw-r--r--  1 far       7080 Oct 12 15:09 code.095
-rw-r--r--  1 far       6553 Oct 12 15:13 code.096
-rw-r--r--  1 far      48522 Oct 12 14:39 code.097
-rw-r--r--  1 far       6784 Oct 12 15:25 code.098
-rw-r--r--  1 far       6810 Oct 12 15:29 code.099
-rw-r--r--  1 far      40337 Oct 12 15:22 code.100
-rw-r--r--  1 far       6926 Oct 12 15:32 code.101
-rw-r--r--  1 far       7087 Oct 12 15:35 code.102
-rw-r--r--  1 far      48684 Oct 12 15:19 code.103
-rw-r--r--  1 far       6845 Oct 12 15:42 code.104
-rw-r--r--  1 far       6970 Oct 12 15:45 code.105
-rw-r--r--  1 far      40259 Oct 12 15:39 code.106
-rw-r--r--  1 far       6942 Oct 12 15:49 code.107
-rw-r--r--  1 far       6899 Oct 12 15:53 code.108
-rw-r--r--  1 far      49321 Oct 12 15:15 code.109
-rw-r--r--  1 far       7000 Oct 12 16:07 code.110
-rw-r--r--  1 far       7053 Oct 12 16:10 code.111
-rw-r--r--  1 far      50113 Oct 12 16:03 code.112
-rw-r--r--  1 far       7153 Oct 12 16:14 code.113
-rw-r--r--  1 far       6962 Oct 12 16:18 code.114
-rw-r--r--  1 far      69311 Oct 12 15:59 code.115
-rw-r--r--  1 far       7289 Oct 12 16:25 code.116
-rw-r--r--  1 far       7091 Oct 12 16:28 code.117
-rw-r--r--  1 far       7157 Oct 12 16:21 code.118
-rw-r--r--  1 far       6723 Oct 12 16:31 code.119
-rw-r--r--  1 far       6584 Oct 12 16:35 code.120
-rw-r--r--  1 far      48811 Oct 12 15:56 code.121
-rw-r--r--  1 far       6775 Oct 12 16:47 code.122
-rw-r--r--  1 far       6720 Oct 12 16:50 code.123
-rw-r--r--  1 far      48416 Oct 12 16:44 code.124
-rw-r--r--  1 far       7259 Oct 12 16:54 code.125
-rw-r--r--  1 far       7308 Oct 12 16:57 code.126
-rw-r--r--  1 far      81492 Oct 12 16:40 code.127
-rw-r--r--  1 far       7154 Oct 12 17:03 code.128
-rw-r--r--  1 far       7116 Oct 12 17:07 code.129
-rw-r--r--  1 far       7118 Oct 12 17:00 code.130
-rw-r--r--  1 far       6774 Oct 12 17:10 code.131
-rw-r--r--  1 far       6233 Oct 12 17:14 code.132
-rw-r--r--  1 far      48761 Oct 12 16:37 code.133
-rw-r--r--  1 far       7014 Oct 12 17:26 code.134
-rw-r--r--  1 far       6596 Oct 12 17:29 code.135
-rw-r--r--  1 far      46276 Oct 12 17:23 code.136
-rw-r--r--  1 far       6825 Oct 12 17:33 code.137
-rw-r--r--  1 far       6805 Oct 12 17:36 code.138
-rw-r--r--  1 far      84872 Oct 12 17:19 code.139
-rw-r--r--  1 far       6929 Oct 12 17:42 code.140
-rw-r--r--  1 far       7073 Oct 12 17:45 code.141
-rw-r--r--  1 far       7164 Oct 12 17:39 code.142
```

App A

code_list

```
-rw-r--r--  1 far     6789 Oct 12 17:48 code.143
-rw-r--r--  1 far     6324 Oct 12 17:52 code.144
-rw-r--r--  1 far    46647 Oct 12 17:16 code.145
-rw-r--r--  1 far     7263 Oct 13 10:40 code.146
-rw-r--r--  1 far     7232 Oct 13 10:43 code.147
-rw-r--r--  1 far   192470 Oct 13 10:37 code.148
-rw-r--r--  1 far     7140 Oct 13 10:47 code.149
-rw-r--r--  1 far     5760 Oct 13 11:07 code.150
```

Appp A

code_list

Source : AWARE-1
Date : Nov 1991

Frame Rate : 30 Hz
Sequence : Flower Garden

Bit Rate : 9 Mega Bits/Sec

```
-rw-r--r--  1 far      100779 Oct 12 18:01 code.001
-rw-r--r--  1 far       22378 Oct 12 18:11 code.002
-rw-r--r--  1 far       10065 Oct 12 18:14 code.003
-rw-r--r--  1 far       55494 Oct 12 18:09 code.004
-rw-r--r--  1 far       14551 Oct 12 18:17 code.005
-rw-r--r--  1 far       24756 Oct 12 18:19 code.006
-rw-r--r--  1 far       77132 Oct 12 18:06 code.007
-rw-r--r--  1 far       18060 Oct 12 18:25 code.008
-rw-r--r--  1 far        7416 Oct 12 18:27 code.009
-rw-r--r--  1 far       60360 Oct 12 18:22 code.010
-rw-r--r--  1 far       22650 Oct 12 18:30 code.011
-rw-r--r--  1 far       27091 Oct 12 18:33 code.012
-rw-r--r--  1 far      103309 Oct 12 18:03 code.013
-rw-r--r--  1 far       27755 Oct 12 18:43 code.014
-rw-r--r--  1 far        7041 Oct 12 18:45 code.015
-rw-r--r--  1 far       59659 Oct 12 18:40 code.016
-rw-r--r--  1 far       21722 Oct 12 18:48 code.017
-rw-r--r--  1 far       28225 Oct 12 18:51 code.018
-rw-r--r--  1 far       77250 Oct 12 18:37 code.019
-rw-r--r--  1 far       32813 Oct 12 18:56 code.020
-rw-r--r--  1 far        6977 Oct 12 18:59 code.021
-rw-r--r--  1 far       60041 Oct 12 18:53 code.022
-rw-r--r--  1 far        6839 Oct 12 19:02 code.023
-rw-r--r--  1 far       13215 Oct 12 19:04 code.024
-rw-r--r--  1 far      103565 Oct 12 18:35 code.025
-rw-r--r--  1 far       38297 Oct 12 19:15 code.026
-rw-r--r--  1 far       19609 Oct 12 19:10 code.027
-rw-r--r--  1 far       50603 Oct 12 19:12 code.028
-rw-r--r--  1 far       27635 Oct 12 19:20 code.029
-rw-r--r--  1 far       10024 Oct 12 19:23 code.030
-rw-r--r--  1 far       78212 Oct 12 19:09 code.031
-rw-r--r--  1 far       11390 Oct 12 19:28 code.032
-rw-r--r--  1 far       12101 Oct 12 19:30 code.033
-rw-r--r--  1 far       63326 Oct 12 19:25 code.034
-rw-r--r--  1 far       35504 Oct 12 19:33 code.035
-rw-r--r--  1 far        6856 Oct 12 19:35 code.036
-rw-r--r--  1 far      103792 Oct 12 19:06 code.037
-rw-r--r--  1 far        9003 Oct 12 19:45 code.038
-rw-r--r--  1 far       12533 Oct 12 19:49 code.039
-rw-r--r--  1 far       62594 Oct 12 19:42 code.040
-rw-r--r--  1 far       28740 Oct 12 19:50 code.041
-rw-r--r--  1 far        6893 Oct 12 19:53 code.042
-rw-r--r--  1 far       81391 Oct 12 19:40 code.043
-rw-r--r--  1 far       29452 Oct 12 19:58 code.044
-rw-r--r--  1 far       26782 Oct 12 20:00 code.045
-rw-r--r--  1 far       57756 Oct 12 19:55 code.046
-rw-r--r--  1 far       16309 Oct 12 20:03 code.047
-rw-r--r--  1 far        9048 Oct 12 20:06 code.048
-rw-r--r--  1 far      104775 Oct 12 19:37 code.049
-rw-r--r--  1 far       32235 Oct 12 20:15 code.050
-rw-r--r--  1 far        8519 Oct 12 20:18 code.051
-rw-r--r--  1 far       58456 Oct 12 20:13 code.052
-rw-r--r--  1 far       35121 Oct 12 20:21 code.053
-rw-r--r--  1 far       40069 Oct 12 20:23 code.054
-rw-r--r--  1 far       77263 Oct 12 20:10 code.055
-rw-r--r--  1 far        9708 Oct 12 20:28 code.056
-rw-r--r--  1 far       21184 Oct 12 20:31 code.057
-rw-r--r--  1 far       51411 Oct 12 20:26 code.058
-rw-r--r--  1 far        6885 Oct 12 20:33 code.059
-rw-r--r--  1 far        7026 Oct 12 20:36 code.060
-rw-r--r--  1 far      104409 Oct 12 20:07 code.061
-rw-r--r--  1 far       31826 Oct 12 20:46 code.062
-rw-r--r--  1 far       24049 Oct 12 20:49 code.063
-rw-r--r--  1 far       63894 Oct 12 20:43 code.064
-rw-r--r--  1 far       28253 Oct 12 20:52 code.065
-rw-r--r--  1 far        6889 Oct 12 20:54 code.066
-rw-r--r--  1 far       89069 Oct 12 20:41 code.067
-rw-r--r--  1 far        6777 Oct 12 20:59 code.068
-rw-r--r--  1 far        7383 Oct 12 21:02 code.069
-rw-r--r--  1 far       89688 Oct 12 20:57 code.070
-rw-r--r--  1 far       23693 Oct 12 21:04 code.071
-rw-r--r--  1 far        7055 Oct 12 21:07 code.072
-rw-r--r--  1 far      103599 Oct 12 20:38 code.073
-rw-r--r--  1 far       46805 Oct 12 21:17 code.074
-rw-r--r--  1 far       31670 Oct 12 21:19 code.075
-rw-r--r--  1 far       58097 Oct 12 21:14 code.076
-rw-r--r--  1 far       16265 Oct 12 21:22 code.077
-rw-r--r--  1 far        7197 Oct 12 21:25 code.078
-rw-r--r--  1 far       87083 Oct 12 21:11 code.079
-rw-r--r--  1 far       13346 Oct 12 21:30 code.080
-rw-r--r--  1 far        6922 Oct 12 21:32 code.081
-rw-r--r--  1 far       53505 Oct 12 21:27 code.082
-rw-r--r--  1 far        6792 Oct 12 21:35 code.083
-rw-r--r--  1 far       12702 Oct 12 21:37 code.084
-rw-r--r--  1 far      104861 Oct 12 21:09 code.085
-rw-r--r--  1 far       13295 Oct 12 21:47 code.086
-rw-r--r--  1 far        9133 Oct 12 21:50 code.087
-rw-r--r--  1 far       87776 Oct 12 21:45 code.088
-rw-r--r--  1 far        8985 Oct 12 21:53 code.089
-rw-r--r--  1 far       11994 Oct 12 21:58 code.090
-rw-r--r--  1 far       91993 Oct 12 21:42 code.091
-rw-r--r--  1 far       31961 Oct 12 22:01 code.092
-rw-r--r--  1 far       11308 Oct 12 22:03 code.093
-rw-r--r--  1 far       68024 Oct 12 21:58 code.094
-rw-r--r--  1 far       23653 Oct 12 22:06 code.095
-rw-r--r--  1 far       11354 Oct 12 22:09 code.096
-rw-r--r--  1 far      105758 Oct 12 21:39 code.097
-rw-r--r--  1 far       15431 Oct 12 22:19 code.098
-rw-r--r--  1 far       13500 Oct 12 22:22 code.099
-rw-r--r--  1 far       56362 Oct 12 22:16 code.100
-rw-r--r--  1 far       17938 Oct 12 22:24 code.101
-rw-r--r--  1 far       14140 Oct 12 22:27 code.102
-rw-r--r--  1 far       62100 Oct 12 22:13 code.103
-rw-r--r--  1 far       19453 Oct 12 22:32 code.104
-rw-r--r--  1 far       31305 Oct 12 22:35 code.105
-rw-r--r--  1 far       63323 Oct 12 22:30 code.106
-rw-r--r--  1 far       26004 Oct 12 22:38 code.107
-rw-r--r--  1 far       17947 Oct 12 22:40 code.108
-rw-r--r--  1 far      105697 Oct 12 22:11 code.109
-rw-r--r--  1 far       24856 Oct 12 22:50 code.110
-rw-r--r--  1 far       29884 Oct 12 22:53 code.111
-rw-r--r--  1 far       65934 Oct 12 22:47 code.112
-rw-r--r--  1 far       35140 Oct 12 22:55 code.113
-rw-r--r--  1 far       10520 Oct 12 22:58 code.114
-rw-r--r--  1 far       83999 Oct 12 22:45 code.115
-rw-r--r--  1 far       32099 Oct 12 23:03 code.116
-rw-r--r--  1 far        7051 Oct 12 23:06 code.117
-rw-r--r--  1 far       57472 Oct 12 23:01 code.118
-rw-r--r--  1 far        7030 Oct 12 23:08 code.119
-rw-r--r--  1 far        7141 Oct 12 23:11 code.120
-rw-r--r--  1 far      103379 Oct 12 22:42 code.121
-rw-r--r--  1 far       16912 Oct 12 23:21 code.122
-rw-r--r--  1 far       30682 Oct 12 23:24 code.123
-rw-r--r--  1 far       65189 Oct 12 23:18 code.124
-rw-r--r--  1 far       28504 Oct 12 23:26 code.125
-rw-r--r--  1 far        7060 Oct 12 23:29 code.126
-rw-r--r--  1 far       93280 Oct 12 23:15 code.127
-rw-r--r--  1 far       40254 Oct 12 23:34 code.128
-rw-r--r--  1 far        7094 Oct 12 23:37 code.129
-rw-r--r--  1 far       58153 Oct 12 23:32 code.130
-rw-r--r--  1 far        6943 Oct 12 23:40 code.131
-rw-r--r--  1 far        6565 Oct 12 23:43 code.132
-rw-r--r--  1 far      102772 Oct 12 23:13 code.133
-rw-r--r--  1 far       16999 Oct 12 23:53 code.134
-rw-r--r--  1 far       25787 Oct 12 23:56 code.135
-rw-r--r--  1 far       63547 Oct 12 23:50 code.136
-rw-r--r--  1 far       13373 Oct 12 23:58 code.137
-rw-r--r--  1 far        7109 Oct 13 00:01 code.138
-rw-r--r--  1 far       98909 Oct 12 23:47 code.139
-rw-r--r--  1 far       41834 Oct 13 00:06 code.140
-rw-r--r--  1 far        6967 Oct 13 00:09 code.141
-rw-r--r--  1 far       81201 Oct 13 00:04 code.142
```

App A

code_list . .

```
-rw-r--r--  1 far      11203 Oct 13 00:11 code.143
-rw-r--r--  1 far       6557 Oct 13 00:14 code.144
-rw-r--r--  1 far     102156 Oct 12 23:45 code.145
-rw-r--r--  1 far     187236 Oct 13 11:36 code.146
-rw-r--r--  1 far       7695 Oct 13 11:40 code.147
-rw-r--r--  1 far     207668 Oct 13 11:33 code.148
-rw-r--r--  1 far       7211 Oct 13 11:43 code.149
-rw-r--r--  1 far       1810 Oct 13 11:47 code.150
```

Faramarz Azadegan

App A code_list

Source : AWARE-1
Date : Nov 1991

Frame Rate : 30 Hz
Sequence : Mobile

Bit Rate : 4 Mega Bits/Sec

```
-rw-r--r--  1 far      84148 Oct 12 09:34 code.001
-rw-r--r--  1 far       7643 Oct 12 09:46 code.002
-rw-r--r--  1 far       7792 Oct 12 09:50 code.003
-rw-r--r--  1 far      21735 Oct 12 09:43 code.004
-rw-r--r--  1 far       7543 Oct 12 09:54 code.005
-rw-r--r--  1 far       9265 Oct 12 09:58 code.006
-rw-r--r--  1 far      31167 Oct 12 09:39 code.007
-rw-r--r--  1 far       7639 Oct 12 10:04 code.008
-rw-r--r--  1 far       7732 Oct 12 10:07 code.009
-rw-r--r--  1 far      15736 Oct 12 10:01 code.010
-rw-r--r--  1 far       7278 Oct 12 10:12 code.011
-rw-r--r--  1 far       7196 Oct 12 10:16 code.012
-rw-r--r--  1 far      83978 Oct 12 09:36 code.013
-rw-r--r--  1 far      10152 Oct 12 10:34 code.014
-rw-r--r--  1 far       6754 Oct 12 10:39 code.015
-rw-r--r--  1 far      21646 Oct 12 10:29 code.016
-rw-r--r--  1 far       6700 Oct 12 10:43 code.017
-rw-r--r--  1 far       6774 Oct 12 10:48 code.018
-rw-r--r--  1 far      37662 Oct 12 10:25 code.019
-rw-r--r--  1 far       6592 Oct 12 10:56 code.020
-rw-r--r--  1 far       7452 Oct 12 11:00 code.021
-rw-r--r--  1 far       6920 Oct 12 10:52 code.022
-rw-r--r--  1 far       6889 Oct 12 11:05 code.023
-rw-r--r--  1 far       6611 Oct 12 11:10 code.024
-rw-r--r--  1 far      84373 Oct 12 10:20 code.025
-rw-r--r--  1 far       6114 Oct 12 11:27 code.026
-rw-r--r--  1 far       6556 Oct 12 11:30 code.027
-rw-r--r--  1 far      25240 Oct 12 11:23 code.028
-rw-r--r--  1 far       5922 Oct 12 11:33 code.029
-rw-r--r--  1 far       6324 Oct 12 11:37 code.030
-rw-r--r--  1 far      30018 Oct 12 11:19 code.031
-rw-r--r--  1 far       6744 Oct 12 11:44 code.032
-rw-r--r--  1 far       7022 Oct 12 11:47 code.033
-rw-r--r--  1 far      15144 Oct 12 11:40 code.034
-rw-r--r--  1 far       6651 Oct 12 11:50 code.035
-rw-r--r--  1 far       6840 Oct 12 11:53 code.036
-rw-r--r--  1 far      84716 Oct 12 11:14 code.037
-rw-r--r--  1 far       6781 Oct 12 12:06 code.038
-rw-r--r--  1 far       7250 Oct 12 12:09 code.039
-rw-r--r--  1 far      22443 Oct 12 12:03 code.040
-rw-r--r--  1 far       6338 Oct 12 12:13 code.041
-rw-r--r--  1 far       9023 Oct 12 12:16 code.042
-rw-r--r--  1 far      33075 Oct 12 12:00 code.043
-rw-r--r--  1 far       6411 Oct 12 12:22 code.044
-rw-r--r--  1 far       6887 Oct 12 12:24 code.045
-rw-r--r--  1 far      19661 Oct 12 12:19 code.046
-rw-r--r--  1 far       6490 Oct 12 12:27 code.047
-rw-r--r--  1 far       6871 Oct 12 12:30 code.048
-rw-r--r--  1 far      84377 Oct 12 11:55 code.049
-rw-r--r--  1 far       6556 Oct 12 12:40 code.050
-rw-r--r--  1 far       7207 Oct 12 12:43 code.051
-rw-r--r--  1 far      15027 Oct 12 12:37 code.052
-rw-r--r--  1 far       6755 Oct 12 12:45 code.053
-rw-r--r--  1 far       7120 Oct 12 12:48 code.054
-rw-r--r--  1 far      34143 Oct 12 12:35 code.055
-rw-r--r--  1 far       6879 Oct 12 12:53 code.056
-rw-r--r--  1 far       7011 Oct 12 12:56 code.057
-rw-r--r--  1 far      24243 Oct 12 12:51 code.058
-rw-r--r--  1 far       6686 Oct 12 12:59 code.059
-rw-r--r--  1 far       6796 Oct 12 13:01 code.060
-rw-r--r--  1 far      85595 Oct 12 12:32 code.061
-rw-r--r--  1 far       6454 Oct 12 13:12 code.062
-rw-r--r--  1 far       6571 Oct 12 13:15 code.063
-rw-r--r--  1 far      23413 Oct 12 13:09 code.064
-rw-r--r--  1 far       6647 Oct 12 13:18 code.065
-rw-r--r--  1 far       6686 Oct 12 13:21 code.066
-rw-r--r--  1 far      36718 Oct 12 13:06 code.067
-rw-r--r--  1 far       7016 Oct 12 13:26 code.068
-rw-r--r--  1 far       7257 Oct 12 13:29 code.069
-rw-r--r--  1 far      20817 Oct 12 13:24 code.070
-rw-r--r--  1 far       6839 Oct 12 13:32 code.071
-rw-r--r--  1 far       6990 Oct 12 13:34 code.072
-rw-r--r--  1 far      84915 Oct 12 13:03 code.073
-rw-r--r--  1 far      14857 Oct 12 13:46 code.074
-rw-r--r--  1 far      18639 Oct 12 13:49 code.075
-rw-r--r--  1 far      27010 Oct 12 13:43 code.076
-rw-r--r--  1 far      21970 Oct 12 13:52 code.077
-rw-r--r--  1 far       7036 Oct 12 13:55 code.078
-rw-r--r--  1 far      16418 Oct 12 13:40 code.079
-rw-r--r--  1 far       7205 Oct 12 14:01 code.080
-rw-r--r--  1 far       6911 Oct 12 14:03 code.081
-rw-r--r--  1 far       6579 Oct 12 13:58 code.082
-rw-r--r--  1 far       7371 Oct 12 14:06 code.083
-rw-r--r--  1 far       7045 Oct 12 14:09 code.084
-rw-r--r--  1 far      85101 Oct 12 13:37 code.085
-rw-r--r--  1 far       7200 Oct 12 14:20 code.086
-rw-r--r--  1 far       7196 Oct 12 14:23 code.087
-rw-r--r--  1 far      14359 Oct 12 14:17 code.088
-rw-r--r--  1 far       7367 Oct 12 14:25 code.089
-rw-r--r--  1 far       7067 Oct 12 14:28 code.090
-rw-r--r--  1 far      24360 Oct 12 14:14 code.091
-rw-r--r--  1 far       9423 Oct 12 14:34 code.092
-rw-r--r--  1 far      11478 Oct 12 14:37 code.093
-rw-r--r--  1 far      20769 Oct 12 14:31 code.094
-rw-r--r--  1 far       6995 Oct 12 14:40 code.095
-rw-r--r--  1 far       6817 Oct 12 14:43 code.096
-rw-r--r--  1 far      85225 Oct 12 14:11 code.097
-rw-r--r--  1 far       6536 Oct 12 14:54 code.098
-rw-r--r--  1 far       6499 Oct 12 14:56 code.099
-rw-r--r--  1 far      25732 Oct 12 14:51 code.100
-rw-r--r--  1 far       6693 Oct 12 14:59 code.101
-rw-r--r--  1 far       6425 Oct 12 15:02 code.102
-rw-r--r--  1 far      36943 Oct 12 14:48 code.103
-rw-r--r--  1 far       6585 Oct 12 15:08 code.104
-rw-r--r--  1 far       6972 Oct 12 15:11 code.105
-rw-r--r--  1 far       6528 Oct 12 15:05 code.106
-rw-r--r--  1 far       7152 Oct 12 15:14 code.107
-rw-r--r--  1 far       7231 Oct 12 15:16 code.108
-rw-r--r--  1 far      84433 Oct 12 14:45 code.109
-rw-r--r--  1 far      15933 Oct 12 15:28 code.110
-rw-r--r--  1 far       7200 Oct 12 15:31 code.111
-rw-r--r--  1 far      32437 Oct 12 15:25 code.112
-rw-r--r--  1 far       7019 Oct 12 15:34 code.113
-rw-r--r--  1 far       7411 Oct 12 15:36 code.114
-rw-r--r--  1 far      30823 Oct 12 15:22 code.115
-rw-r--r--  1 far       6791 Oct 12 15:42 code.116
-rw-r--r--  1 far       7159 Oct 12 15:46 code.117
-rw-r--r--  1 far       6290 Oct 12 15:39 code.118
-rw-r--r--  1 far       6470 Oct 12 15:49 code.119
-rw-r--r--  1 far       6861 Oct 12 15:53 code.120
-rw-r--r--  1 far      84602 Oct 12 15:19 code.121
-rw-r--r--  1 far       6608 Oct 12 16:07 code.122
-rw-r--r--  1 far       6730 Oct 12 16:10 code.123
-rw-r--r--  1 far      20943 Oct 12 16:03 code.124
-rw-r--r--  1 far      12027 Oct 12 16:13 code.125
-rw-r--r--  1 far       6176 Oct 12 16:15 code.126
-rw-r--r--  1 far      40280 Oct 12 16:00 code.127
-rw-r--r--  1 far       6198 Oct 12 16:21 code.128
-rw-r--r--  1 far       5992 Oct 12 16:24 code.129
-rw-r--r--  1 far       6115 Oct 12 16:18 code.130
-rw-r--r--  1 far       6239 Oct 12 16:26 code.131
-rw-r--r--  1 far       6137 Oct 12 16:29 code.132
-rw-r--r--  1 far      85319 Oct 12 15:56 code.133
-rw-r--r--  1 far       5955 Oct 12 16:39 code.134
-rw-r--r--  1 far       6153 Oct 12 16:42 code.135
-rw-r--r--  1 far      16154 Oct 12 16:36 code.136
-rw-r--r--  1 far       5671 Oct 12 16:44 code.137
-rw-r--r--  1 far       6339 Oct 12 16:47 code.138
-rw-r--r--  1 far      33587 Oct 12 16:34 code.139
-rw-r--r--  1 far       5018 Oct 12 16:53 code.140
-rw-r--r--  1 far       5492 Oct 12 16:55 code.141
-rw-r--r--  1 far      26831 Oct 12 16:50 code.142
```

App A code_list

```
-rw-r--r--  1 far      5732 Oct 12 16:58 code.143
-rw-r--r--  1 far      6288 Oct 12 17:01 code.144
-rw-r--r--  1 far     65778 Oct 12 16:31 code.145
-rw-r--r--  1 far      6203 Oct 12 17:23 code.146
-rw-r--r--  1 far      6464 Oct 12 17:26 code.147
-rw-r--r--  1 far    193768 Oct 12 17:20 code.148
-rw-r--r--  1 far      6607 Oct 12 17:28 code.149
-rw-r--r--  1 far      4100 Oct 13 10:52 code.150
```

App A

code_list

Source : AWARE-1
Date : Nov 1991

Frame Rate : 30 Hz
Sequence : Mobile

Bit Rate : 9 Mega Bits/Sec

```
-rw-r--r--  1 far      116099 Oct 12 09:37 code.001
-rw-r--r--  1 far       23422 Oct 12 09:54 code.002
-rw-r--r--  1 far       25246 Oct 12 09:58 code.003
-rw-r--r--  1 far       38543 Oct 12 09:50 code.004
-rw-r--r--  1 far       25920 Oct 12 10:03 code.005
-rw-r--r--  1 far       27681 Oct 12 10:07 code.006
-rw-r--r--  1 far        1564 Oct 12 09:45 code.007
-rw-r--r--  1 far       35043 Oct 12 10:15 code.008
-rw-r--r--  1 far       29033 Oct 12 10:20 code.009
-rw-r--r--  1 far       34547 Oct 12 10:11 code.010
-rw-r--r--  1 far       23675 Oct 12 10:24 code.011
-rw-r--r--  1 far       16020 Oct 12 10:28 code.012
-rw-r--r--  1 far      116269 Oct 12 09:40 code.013
-rw-r--r--  1 far       25879 Oct 12 10:44 code.014
-rw-r--r--  1 far       21148 Oct 12 10:48 code.015
-rw-r--r--  1 far       38426 Oct 12 10:40 code.016
-rw-r--r--  1 far       13084 Oct 12 10:53 code.017
-rw-r--r--  1 far       17464 Oct 12 10:57 code.018
-rw-r--r--  1 far       54663 Oct 12 10:36 code.019
-rw-r--r--  1 far       23075 Oct 12 11:06 code.020
-rw-r--r--  1 far       27249 Oct 12 11:10 code.021
-rw-r--r--  1 far       47164 Oct 12 11:01 code.022
-rw-r--r--  1 far       28002 Oct 12 11:14 code.023
-rw-r--r--  1 far       25589 Oct 12 11:19 code.024
-rw-r--r--  1 far      116768 Oct 12 10:31 code.025
-rw-r--r--  1 far       18449 Oct 12 11:33 code.026
-rw-r--r--  1 far       17815 Oct 12 11:36 code.027
-rw-r--r--  1 far       43159 Oct 12 11:29 code.028
-rw-r--r--  1 far       17795 Oct 12 11:40 code.029
-rw-r--r--  1 far       17517 Oct 12 11:43 code.030
-rw-r--r--  1 far       45793 Oct 12 11:26 code.031
-rw-r--r--  1 far       31815 Oct 12 11:50 code.032
-rw-r--r--  1 far       24095 Oct 12 11:53 code.033
-rw-r--r--  1 far       38348 Oct 12 11:46 code.034
-rw-r--r--  1 far       37114 Oct 12 11:57 code.035
-rw-r--r--  1 far       30794 Oct 12 12:00 code.036
-rw-r--r--  1 far      115832 Oct 12 11:22 code.037
-rw-r--r--  1 far       20534 Oct 12 12:13 code.038
-rw-r--r--  1 far       23740 Oct 12 12:16 code.039
-rw-r--r--  1 far       38046 Oct 12 12:09 code.040
-rw-r--r--  1 far       17670 Oct 12 12:19 code.041
-rw-r--r--  1 far       27490 Oct 12 12:23 code.042
-rw-r--r--  1 far       49202 Oct 12 12:06 code.043
-rw-r--r--  1 far       28793 Oct 12 12:30 code.044
-rw-r--r--  1 far       21240 Oct 12 12:33 code.045
-rw-r--r--  1 far       40470 Oct 12 12:26 code.046
-rw-r--r--  1 far       28311 Oct 12 12:36 code.047
-rw-r--r--  1 far       27391 Oct 12 12:39 code.048
-rw-r--r--  1 far      116202 Oct 12 12:02 code.049
-rw-r--r--  1 far       10946 Oct 12 12:52 code.050
-rw-r--r--  1 far        7584 Oct 12 12:55 code.051
-rw-r--r--  1 far       30865 Oct 12 12:49 code.052
-rw-r--r--  1 far       16379 Oct 12 12:59 code.053
-rw-r--r--  1 far       25913 Oct 12 13:02 code.054
-rw-r--r--  1 far       51323 Oct 12 12:45 code.055
-rw-r--r--  1 far       30714 Oct 12 13:09 code.056
-rw-r--r--  1 far       29900 Oct 12 13:12 code.057
-rw-r--r--  1 far       50110 Oct 12 13:05 code.058
-rw-r--r--  1 far       36457 Oct 12 13:16 code.059
-rw-r--r--  1 far       32321 Oct 12 13:19 code.060
-rw-r--r--  1 far      115849 Oct 12 12:42 code.061
-rw-r--r--  1 far       19052 Oct 12 13:32 code.062
-rw-r--r--  1 far       18047 Oct 12 13:35 code.063
-rw-r--r--  1 far       40066 Oct 12 13:28 code.064
-rw-r--r--  1 far       18381 Oct 12 13:38 code.065
-rw-r--r--  1 far       17791 Oct 12 13:42 code.066
-rw-r--r--  1 far       53675 Oct 12 13:25 code.067
-rw-r--r--  1 far       21715 Oct 12 13:48 code.068
-rw-r--r--  1 far       24517 Oct 12 13:52 code.069
-rw-r--r--  1 far       44366 Oct 12 13:45 code.070
-rw-r--r--  1 far       44679 Oct 12 13:55 code.071
-rw-r--r--  1 far       22445 Oct 12 13:59 code.072
-rw-r--r--  1 far      115385 Oct 12 13:21 code.073
-rw-r--r--  1 far       31679 Oct 12 14:12 code.074
-rw-r--r--  1 far       32014 Oct 12 14:15 code.075
-rw-r--r--  1 far       43969 Oct 12 14:08 code.076
-rw-r--r--  1 far       39956 Oct 12 14:18 code.077
-rw-r--r--  1 far       28333 Oct 12 14:22 code.078
-rw-r--r--  1 far       30808 Oct 12 14:05 code.079
-rw-r--r--  1 far       31511 Oct 12 14:28 code.080
-rw-r--r--  1 far       19891 Oct 12 14:32 code.081
-rw-r--r--  1 far       31177 Oct 12 14:25 code.082
-rw-r--r--  1 far       19932 Oct 12 14:35 code.083
-rw-r--r--  1 far       17556 Oct 12 14:38 code.084
-rw-r--r--  1 far      116369 Oct 12 14:01 code.085
-rw-r--r--  1 far       14609 Oct 12 14:51 code.086
-rw-r--r--  1 far       20355 Oct 12 14:55 code.087
-rw-r--r--  1 far       29911 Oct 12 14:48 code.088
-rw-r--r--  1 far       26676 Oct 12 14:58 code.089
-rw-r--r--  1 far       24225 Oct 12 15:01 code.090
-rw-r--r--  1 far       40227 Oct 12 14:44 code.091
-rw-r--r--  1 far       31400 Oct 12 15:08 code.092
-rw-r--r--  1 far       33334 Oct 12 15:12 code.093
-rw-r--r--  1 far       41408 Oct 12 15:05 code.094
-rw-r--r--  1 far       38361 Oct 12 15:15 code.095
-rw-r--r--  1 far       21666 Oct 12 15:18 code.096
-rw-r--r--  1 far      116081 Oct 12 14:41 code.097
-rw-r--r--  1 far       17865 Oct 12 15:31 code.098
-rw-r--r--  1 far       16344 Oct 12 15:35 code.099
-rw-r--r--  1 far       42009 Oct 12 15:28 code.100
-rw-r--r--  1 far       17595 Oct 12 15:38 code.101
-rw-r--r--  1 far       11248 Oct 12 15:41 code.102
-rw-r--r--  1 far       53594 Oct 12 15:24 code.103
-rw-r--r--  1 far       12727 Oct 12 15:49 code.104
-rw-r--r--  1 far       19954 Oct 12 15:53 code.105
-rw-r--r--  1 far       48464 Oct 12 15:45 code.106
-rw-r--r--  1 far       41681 Oct 12 15:56 code.107
-rw-r--r--  1 far       38953 Oct 12 16:00 code.108
-rw-r--r--  1 far      115876 Oct 12 15:21 code.109
-rw-r--r--  1 far       32595 Oct 12 16:14 code.110
-rw-r--r--  1 far       30827 Oct 12 16:18 code.111
-rw-r--r--  1 far       48733 Oct 12 16:10 code.112
-rw-r--r--  1 far       37951 Oct 12 16:22 code.113
-rw-r--r--  1 far       27959 Oct 12 16:25 code.114
-rw-r--r--  1 far       46223 Oct 12 16:06 code.115
-rw-r--r--  1 far       24983 Oct 12 16:32 code.116
-rw-r--r--  1 far       15926 Oct 12 16:35 code.117
-rw-r--r--  1 far       35944 Oct 12 16:29 code.118
-rw-r--r--  1 far       13163 Oct 12 16:39 code.119
-rw-r--r--  1 far       13049 Oct 12 16:42 code.120
-rw-r--r--  1 far      116551 Oct 12 16:03 code.121
-rw-r--r--  1 far       17463 Oct 12 16:55 code.122
-rw-r--r--  1 far       21330 Oct 12 16:58 code.123
-rw-r--r--  1 far       36485 Oct 12 16:51 code.124
-rw-r--r--  1 far       29382 Oct 12 17:01 code.125
-rw-r--r--  1 far       27444 Oct 12 17:05 code.126
-rw-r--r--  1 far       54634 Oct 12 16:48 code.127
-rw-r--r--  1 far       20725 Oct 12 17:12 code.128
-rw-r--r--  1 far       17704 Oct 12 17:15 code.129
-rw-r--r--  1 far       35587 Oct 12 17:08 code.130
-rw-r--r--  1 far       26492 Oct 12 17:18 code.131
-rw-r--r--  1 far       31219 Oct 12 17:21 code.132
-rw-r--r--  1 far      119513 Oct 12 16:44 code.133
-rw-r--r--  1 far       18768 Oct 12 17:34 code.134
-rw-r--r--  1 far       11718 Oct 12 17:37 code.135
-rw-r--r--  1 far       32344 Oct 12 17:31 code.136
-rw-r--r--  1 far       14223 Oct 12 17:41 code.137
-rw-r--r--  1 far       26376 Oct 12 17:44 code.138
-rw-r--r--  1 far       50427 Oct 12 17:27 code.139
-rw-r--r--  1 far       23692 Oct 12 17:50 code.140
-rw-r--r--  1 far       22954 Oct 12 17:54 code.141
-rw-r--r--  1 far       51781 Oct 12 17:47 code.142
```

App A

code_list

```
rw-r--r--  1 far      33279 Oct 12 17:57 code.143
rw-r--r--  1 far      32533 Oct 12 18:00 code.144
rw-r--r--  1 far     119046 Oct 12 17:24 code.145
rw-r--r--  1 far     101097 Oct 13 11:36 code.146
rw-r--r--  1 far       6286 Oct 13 11:38 code.147
rw-r--r--  1 far     215133 Oct 13 11:33 code.148
rw-r--r--  1 far       6621 Oct 13 11:41 code.149
rw-r--r--  1 far       2085 Oct 13 11:45 code.150
```

Source : AWARE-1
Date : Nov 1991

Frame Rate : 30 Hz
Sequence : Popple

Bit Rate : 9 Mega Bits/Sec

```
-rw-r--r--  1 far        83037 Oct 13 11:16 code.001
-rw-r--r--  1 far        26741 Oct 13 11:29 code.002
-rw-r--r--  1 far        27619 Oct 13 11:32 code.003
-rw-r--r--  1 far        36450 Oct 13 11:25 code.004
-rw-r--r--  1 far        28875 Oct 13 11:36 code.005
-rw-r--r--  1 far        24129 Oct 13 11:39 code.006
-rw-r--r--  1 far        47079 Oct 13 11:22 code.007
-rw-r--r--  1 far        24613 Oct 13 11:46 code.008
-rw-r--r--  1 far        26777 Oct 13 11:49 code.009
-rw-r--r--  1 far        42242 Oct 13 11:42 code.010
-rw-r--r--  1 far        29408 Oct 13 11:52 code.011
-rw-r--r--  1 far        36633 Oct 13 11:56 code.012
-rw-r--r--  1 far        83292 Oct 13 11:19 code.013
-rw-r--r--  1 far        24844 Oct 12 18:59 code.014
-rw-r--r--  1 far        23615 Oct 12 19:02 code.015
-rw-r--r--  1 far        41012 Oct 12 18:56 code.016
-rw-r--r--  1 far        21755 Oct 12 19:05 code.017
-rw-r--r--  1 far        23727 Oct 12 19:08 code.018
-rw-r--r--  1 far        51578 Oct 12 18:52 code.019
-rw-r--r--  1 far        26149 Oct 12 19:15 code.020
-rw-r--r--  1 far        31052 Oct 12 19:18 code.021
-rw-r--r--  1 far        46201 Oct 12 19:12 code.022
-rw-r--r--  1 far        29871 Oct 12 19:21 code.023
-rw-r--r--  1 far        33254 Oct 12 19:25 code.024
-rw-r--r--  1 far        83117 Oct 12 18:49 code.025
-rw-r--r--  1 far        19706 Oct 12 19:37 code.026
-rw-r--r--  1 far        23447 Oct 12 19:40 code.027
-rw-r--r--  1 far        39800 Oct 12 19:33 code.028
-rw-r--r--  1 far        26473 Oct 12 19:43 code.029
-rw-r--r--  1 far        27549 Oct 12 19:47 code.030
-rw-r--r--  1 far        45070 Oct 12 19:30 code.031
-rw-r--r--  1 far        27935 Oct 12 19:54 code.032
-rw-r--r--  1 far        29481 Oct 12 19:58 code.033
-rw-r--r--  1 far        44243 Oct 12 19:51 code.034
-rw-r--r--  1 far        34259 Oct 12 20:02 code.035
-rw-r--r--  1 far        33781 Oct 12 20:06 code.036
-rw-r--r--  1 far        82757 Oct 12 19:27 code.037
-rw-r--r--  1 far        24040 Oct 12 20:21 code.038
-rw-r--r--  1 far        21755 Oct 12 20:24 code.039
-rw-r--r--  1 far        42458 Oct 12 20:16 code.040
-rw-r--r--  1 far        22520 Oct 12 20:27 code.041
-rw-r--r--  1 far        24021 Oct 12 20:31 code.042
-rw-r--r--  1 far        84159 Oct 12 20:12 code.043
-rw-r--r--  1 far        26563 Oct 12 20:37 code.044
-rw-r--r--  1 far        30071 Oct 12 20:40 code.045
-rw-r--r--  1 far        47461 Oct 12 20:34 code.046
-rw-r--r--  1 far        30243 Oct 12 20:43 code.047
-rw-r--r--  1 far        30957 Oct 12 20:47 code.048
-rw-r--r--  1 far        83479 Oct 12 20:09 code.049
-rw-r--r--  1 far        17244 Oct 12 20:59 code.050
-rw-r--r--  1 far        18205 Oct 12 21:02 code.051
-rw-r--r--  1 far        36964 Oct 12 20:56 code.052
-rw-r--r--  1 far        22108 Oct 12 21:05 code.053
-rw-r--r--  1 far        25753 Oct 12 21:08 code.054
-rw-r--r--  1 far        59956 Oct 12 20:52 code.055
-rw-r--r--  1 far        26458 Oct 12 21:14 code.056
-rw-r--r--  1 far        29123 Oct 12 21:18 code.057
-rw-r--r--  1 far        48121 Oct 12 21:11 code.058
-rw-r--r--  1 far        34117 Oct 12 21:21 code.059
-rw-r--r--  1 far        34382 Oct 12 21:24 code.060
-rw-r--r--  1 far        82138 Oct 12 20:49 code.061
-rw-r--r--  1 far        18691 Oct 12 21:36 code.062
-rw-r--r--  1 far        24549 Oct 12 21:39 code.063
-rw-r--r--  1 far        39498 Oct 12 21:33 code.064
-rw-r--r--  1 far        30492 Oct 12 21:42 code.065
-rw-r--r--  1 far        33297 Oct 12 21:46 code.066
-rw-r--r--  1 far        43943 Oct 12 21:30 code.067
-rw-r--r--  1 far        29148 Oct 12 21:52 code.068
-rw-r--r--  1 far        25913 Oct 12 21:55 code.069
-rw-r--r--  1 far        43267 Oct 12 21:49 code.070
-rw-r--r--  1 far        32327 Oct 12 21:58 code.071
-rw-r--r--  1 far        27209 Oct 12 22:02 code.072
-rw-r--r--  1 far        90289 Oct 12 21:27 code.073
-rw-r--r--  1 far        11719 Oct 12 22:14 code.074
-rw-r--r--  1 far        17656 Oct 12 22:18 code.075
-rw-r--r--  1 far        43912 Oct 12 22:11 code.076
-rw-r--r--  1 far        28780 Oct 12 22:21 code.077
-rw-r--r--  1 far        26232 Oct 12 22:24 code.078
-rw-r--r--  1 far        43571 Oct 12 22:08 code.079
-rw-r--r--  1 far        29251 Oct 12 22:31 code.080
-rw-r--r--  1 far        28529 Oct 12 22:35 code.081
-rw-r--r--  1 far        38832 Oct 12 22:27 code.082
-rw-r--r--  1 far        35829 Oct 12 22:39 code.083
-rw-r--r--  1 far        31152 Oct 12 22:43 code.084
-rw-r--r--  1 far       100590 Oct 12 22:04 code.085
-rw-r--r--  1 far        21271 Oct 12 22:50 code.086
-rw-r--r--  1 far        13549 Oct 12 23:02 code.087
-rw-r--r--  1 far        24168 Oct 12 22:54 code.088
-rw-r--r--  1 far        18845 Oct 12 23:06 code.089
-rw-r--r--  1 far        23519 Oct 12 23:10 code.090
-rw-r--r--  1 far        37284 Oct 12 22:50 code.091
-rw-r--r--  1 far        32113 Oct 12 23:18 code.092
-rw-r--r--  1 far        35664 Oct 12 23:22 code.093
-rw-r--r--  1 far        40072 Oct 12 23:14 code.094
-rw-r--r--  1 far        42326 Oct 12 23:26 code.095
-rw-r--r--  1 far        42022 Oct 12 23:30 code.096
-rw-r--r--  1 far       107301 Oct 12 22:46 code.097
-rw-r--r--  1 far        24996 Oct 12 23:45 code.098
-rw-r--r--  1 far        16411 Oct 12 23:49 code.099
-rw-r--r--  1 far        33534 Oct 12 23:41 code.100
-rw-r--r--  1 far        26862 Oct 12 23:53 code.101
-rw-r--r--  1 far        25918 Oct 12 23:58 code.102
-rw-r--r--  1 far        36870 Oct 12 23:37 code.103
-rw-r--r--  1 far        32528 Oct 13 00:06 code.104
-rw-r--r--  1 far        33307 Oct 13 00:10 code.105
-rw-r--r--  1 far        32034 Oct 13 00:02 code.106
-rw-r--r--  1 far        36972 Oct 13 00:14 code.107
-rw-r--r--  1 far        28963 Oct 13 00:18 code.108
-rw-r--r--  1 far       115070 Oct 12 23:34 code.109
-rw-r--r--  1 far        27938 Oct 13 00:33 code.110
-rw-r--r--  1 far        25779 Oct 13 00:36 code.111
-rw-r--r--  1 far        27649 Oct 13 00:29 code.112
-rw-r--r--  1 far        31393 Oct 13 00:40 code.113
-rw-r--r--  1 far        28667 Oct 13 00:44 code.114
-rw-r--r--  1 far        24482 Oct 13 00:25 code.115
-rw-r--r--  1 far        33094 Oct 13 00:52 code.116
-rw-r--r--  1 far        30244 Oct 13 00:56 code.117
-rw-r--r--  1 far        23405 Oct 13 00:48 code.118
-rw-r--r--  1 far        40659 Oct 13 01:00 code.119
-rw-r--r--  1 far        32847 Oct 13 01:04 code.120
-rw-r--r--  1 far       116896 Oct 13 00:21 code.121
-rw-r--r--  1 far        36158 Oct 13 01:18 code.122
-rw-r--r--  1 far        30412 Oct 13 01:22 code.123
-rw-r--r--  1 far        22358 Oct 13 01:14 code.124
-rw-r--r--  1 far        36963 Oct 13 01:26 code.125
-rw-r--r--  1 far        29254 Oct 13 01:30 code.126
-rw-r--r--  1 far        21178 Oct 13 01:10 code.127
-rw-r--r--  1 far        33698 Oct 13 01:38 code.128
-rw-r--r--  1 far        28982 Oct 13 01:42 code.129
-rw-r--r--  1 far        22532 Oct 13 01:34 code.130
-rw-r--r--  1 far        36456 Oct 13 01:46 code.131
-rw-r--r--  1 far        29370 Oct 13 01:50 code.132
-rw-r--r--  1 far       116191 Oct 13 01:07 code.133
-rw-r--r--  1 far        34525 Oct 13 02:05 code.134
-rw-r--r--  1 far        30397 Oct 13 02:09 code.135
-rw-r--r--  1 far        21466 Oct 13 02:01 code.136
-rw-r--r--  1 far        35855 Oct 13 02:13 code.137
-rw-r--r--  1 far        29685 Oct 13 02:17 code.138
-rw-r--r--  1 far        24932 Oct 13 01:57 code.139
-rw-r--r--  1 far        32156 Oct 13 02:23 code.140
-rw-r--r--  1 far        28692 Oct 13 02:27 code.141
-rw-r--r--  1 far        22589 Oct 13 02:20 code.142
```

App A code_list

```
-rw-r--r--  1 far      35461 Oct 13 02:30 code.143
-rw-r--r--  1 far      33095 Oct 13 02:33 code.144
-rw-r--r--  1 far     115017 Oct 13 01:53 code.145
-rw-r--r--  1 far     246161 Oct 13 12:16 code.146
-rw-r--r--  1 far       6850 Oct 13 12:20 code.147
-rw-r--r--  1 far     232352 Oct 13 12:13 code.148
-rw-r--r--  1 far       6761 Oct 13 12:23 code.149
-rw-r--r--  1 far       5610 Oct 13 12:50 code.150
```

App A code_list

Source : AWARE-1
Date : Nov 1991

Frame Rate : 30 Hz
Sequence : Table Tennis

Bit Rate : 4 Mega Bits/Sec

```
-rw-r--r--  1 far      62995 Oct 12 09:41 code.001
-rw-r--r--  1 far       5098 Oct 12 09:59 code.002
-rw-r--r--  1 far       5936 Oct 12 10:06 code.003
-rw-r--r--  1 far      66404 Oct 12 09:55 code.004
-rw-r--r--  1 far       6181 Oct 12 10:09 code.005
-rw-r--r--  1 far       6181 Oct 12 10:13 code.006
-rw-r--r--  1 far      36988 Oct 12 09:50 code.007
-rw-r--r--  1 far       5170 Oct 12 10:23 code.008
-rw-r--r--  1 far       6058 Oct 12 10:27 code.009
-rw-r--r--  1 far       6014 Oct 12 10:18 code.010
-rw-r--r--  1 far       5554 Oct 12 10:31 code.011
-rw-r--r--  1 far       5540 Oct 12 10:36 code.012
-rw-r--r--  1 far      62612 Oct 12 09:44 code.013
-rw-r--r--  1 far       5531 Oct 12 10:52 code.014
-rw-r--r--  1 far       5660 Oct 12 10:56 code.015
-rw-r--r--  1 far      38338 Oct 12 10:48 code.016
-rw-r--r--  1 far      41544 Oct 12 11:00 code.017
-rw-r--r--  1 far       5815 Oct 12 11:04 code.018
-rw-r--r--  1 far      42530 Oct 12 10:43 code.019
-rw-r--r--  1 far       6524 Oct 12 11:13 code.020
-rw-r--r--  1 far       6178 Oct 12 11:17 code.021
-rw-r--r--  1 far       6118 Oct 12 11:09 code.022
-rw-r--r--  1 far       5992 Oct 12 11:21 code.023
-rw-r--r--  1 far       6201 Oct 12 11:25 code.024
-rw-r--r--  1 far      62191 Oct 12 10:39 code.025
-rw-r--r--  1 far      43191 Oct 12 11:37 code.026
-rw-r--r--  1 far       5978 Oct 12 11:40 code.027
-rw-r--r--  1 far      45496 Oct 12 11:34 code.028
-rw-r--r--  1 far       6045 Oct 12 11:44 code.029
-rw-r--r--  1 far       6628 Oct 12 11:47 code.030
-rw-r--r--  1 far      28999 Oct 12 11:31 code.031
-rw-r--r--  1 far       6596 Oct 12 11:53 code.032
-rw-r--r--  1 far       6782 Oct 12 11:57 code.033
-rw-r--r--  1 far       6482 Oct 12 11:50 code.034
-rw-r--r--  1 far       6833 Oct 12 12:00 code.035
-rw-r--r--  1 far       6188 Oct 12 12:03 code.036
-rw-r--r--  1 far      53102 Oct 12 11:27 code.037
-rw-r--r--  1 far      16373 Oct 12 12:15 code.038
-rw-r--r--  1 far       6213 Oct 12 12:19 code.039
-rw-r--r--  1 far      12799 Oct 12 12:12 code.040
-rw-r--r--  1 far       5739 Oct 12 12:22 code.041
-rw-r--r--  1 far       5904 Oct 12 12:25 code.042
-rw-r--r--  1 far      31984 Oct 12 12:09 code.043
-rw-r--r--  1 far      12109 Oct 12 12:32 code.044
-rw-r--r--  1 far      12125 Oct 12 12:35 code.045
-rw-r--r--  1 far      27924 Oct 12 12:29 code.046
-rw-r--r--  1 far      16905 Oct 12 12:39 code.047
-rw-r--r--  1 far       5243 Oct 12 12:42 code.048
-rw-r--r--  1 far      47658 Oct 12 12:06 code.049
-rw-r--r--  1 far      16275 Oct 12 12:54 code.050
-rw-r--r--  1 far       6231 Oct 12 12:58 code.051
-rw-r--r--  1 far      19199 Oct 12 12:51 code.052
-rw-r--r--  1 far      13072 Oct 12 13:01 code.053
-rw-r--r--  1 far       6323 Oct 12 13:04 code.054
-rw-r--r--  1 far      40699 Oct 12 12:48 code.055
-rw-r--r--  1 far       6892 Oct 12 13:11 code.056
-rw-r--r--  1 far       7172 Oct 12 13:14 code.057
-rw-r--r--  1 far      33240 Oct 12 13:08 code.058
-rw-r--r--  1 far       6690 Oct 12 13:18 code.059
-rw-r--r--  1 far       6574 Oct 12 13:21 code.060
-rw-r--r--  1 far      45850 Oct 12 12:44 code.061
-rw-r--r--  1 far      10780 Oct 12 13:33 code.062
-rw-r--r--  1 far       6102 Oct 12 13:37 code.063
-rw-r--r--  1 far      14808 Oct 12 13:30 code.064
-rw-r--r--  1 far       6260 Oct 12 13:40 code.065
-rw-r--r--  1 far       6511 Oct 12 13:43 code.066
-rw-r--r--  1 far      47211 Oct 12 13:27 code.067
-rw-r--r--  1 far      54079 Oct 12 13:50 code.068
-rw-r--r--  1 far       5444 Oct 12 13:53 code.069
-rw-r--r--  1 far       7382 Oct 12 13:47 code.070
-rw-r--r--  1 far       4669 Oct 12 13:57 code.071
-rw-r--r--  1 far       4461 Oct 12 14:00 code.072
-rw-r--r--  1 far      40693 Oct 12 13:23 code.073
-rw-r--r--  1 far      27680 Oct 12 14:13 code.074
-rw-r--r--  1 far       9465 Oct 12 14:16 code.075
-rw-r--r--  1 far      28460 Oct 12 14:09 code.076
-rw-r--r--  1 far      13526 Oct 12 14:19 code.077
-rw-r--r--  1 far       4814 Oct 12 14:22 code.078
-rw-r--r--  1 far      36138 Oct 12 14:06 code.079
-rw-r--r--  1 far       5125 Oct 12 14:29 code.080
-rw-r--r--  1 far       4734 Oct 12 14:32 code.081
-rw-r--r--  1 far      27101 Oct 12 14:26 code.082
-rw-r--r--  1 far       4654 Oct 12 14:36 code.083
-rw-r--r--  1 far       5419 Oct 12 14:39 code.084
-rw-r--r--  1 far      41035 Oct 12 14:02 code.085
-rw-r--r--  1 far       9620 Oct 12 14:52 code.086
-rw-r--r--  1 far       9742 Oct 12 14:55 code.087
-rw-r--r--  1 far      23071 Oct 12 14:48 code.088
-rw-r--r--  1 far      11374 Oct 12 14:59 code.089
-rw-r--r--  1 far       8861 Oct 12 15:02 code.090
-rw-r--r--  1 far      46686 Oct 12 14:45 code.091
-rw-r--r--  1 far       9925 Oct 12 15:09 code.092
-rw-r--r--  1 far       6277 Oct 12 15:12 code.093
-rw-r--r--  1 far      22942 Oct 12 15:05 code.094
-rw-r--r--  1 far       5030 Oct 12 15:15 code.095
-rw-r--r--  1 far       5506 Oct 12 15:19 code.096
-rw-r--r--  1 far      41400 Oct 12 14:41 code.097
-rw-r--r--  1 far      31459 Oct 12 15:32 code.098
-rw-r--r--  1 far       5090 Oct 12 15:35 code.099
-rw-r--r--  1 far      51472 Oct 12 15:28 code.100
-rw-r--r--  1 far       5509 Oct 12 15:39 code.101
-rw-r--r--  1 far       5382 Oct 12 15:42 code.102
-rw-r--r--  1 far      42901 Oct 12 15:25 code.103
-rw-r--r--  1 far       5382 Oct 12 15:49 code.104
-rw-r--r--  1 far       5550 Oct 12 15:52 code.105
-rw-r--r--  1 far       5899 Oct 12 15:45 code.106
-rw-r--r--  1 far       6198 Oct 12 15:56 code.107
-rw-r--r--  1 far       6114 Oct 12 15:59 code.108
-rw-r--r--  1 far      42755 Oct 12 15:21 code.109
-rw-r--r--  1 far       5452 Oct 12 16:13 code.110
-rw-r--r--  1 far       4927 Oct 12 16:16 code.111
-rw-r--r--  1 far      26751 Oct 12 16:09 code.112
-rw-r--r--  1 far       4632 Oct 12 16:20 code.113
-rw-r--r--  1 far       4509 Oct 12 16:23 code.114
-rw-r--r--  1 far      41745 Oct 12 16:06 code.115
-rw-r--r--  1 far       4780 Oct 12 16:30 code.116
-rw-r--r--  1 far      73727 Oct 12 16:33 code.117
-rw-r--r--  1 far       8735 Oct 12 16:26 code.118
-rw-r--r--  1 far       5794 Oct 12 16:37 code.119
-rw-r--r--  1 far       6099 Oct 12 16:40 code.120
-rw-r--r--  1 far      42856 Oct 12 16:02 code.121
-rw-r--r--  1 far       7459 Oct 12 16:53 code.122
-rw-r--r--  1 far       8344 Oct 12 16:56 code.123
-rw-r--r--  1 far      33018 Oct 12 16:49 code.124
-rw-r--r--  1 far      18467 Oct 12 16:59 code.125
-rw-r--r--  1 far       7287 Oct 12 17:02 code.126
-rw-r--r--  1 far      48583 Oct 12 16:46 code.127
-rw-r--r--  1 far       6964 Oct 13 10:43 code.128
-rw-r--r--  1 far       7040 Oct 13 10:46 code.129
-rw-r--r--  1 far      20491 Oct 13 10:39 code.130
-rw-r--r--  1 far       6477 Oct 13 10:50 code.131
-rw-r--r--  1 far       6816 Oct 13 10:53 code.132
-rw-r--r--  1 far      46291 Oct 12 16:42 code.133
-rw-r--r--  1 far       7435 Oct 12 17:16 code.134
-rw-r--r--  1 far       8833 Oct 12 17:19 code.135
-rw-r--r--  1 far      31850 Oct 12 17:12 code.136
-rw-r--r--  1 far      16182 Oct 12 17:22 code.137
-rw-r--r--  1 far       7091 Oct 12 17:26 code.138
-rw-r--r--  1 far      49712 Oct 12 17:09 code.139
-rw-r--r--  1 far       6991 Oct 12 17:32 code.140
-rw-r--r--  1 far       7743 Oct 12 17:35 code.141
-rw-r--r--  1 far      14761 Oct 12 17:29 code.142
```

App A code_list

```
-rw-r--r--  1 far     7067 Oct 12 17:39 code.143
-rw-r--r--  1 far     7254 Oct 12 17:42 code.144
-rw-r--r--  1 far    46349 Oct 12 17:05 code.145
-rw-r--r--  1 far    33929 Oct 13 11:06 code.146
-rw-r--r--  1 far    35366 Oct 13 11:09 code.147
-rw-r--r--  1 far    46546 Oct 13 11:02 code.148
-rw-r--r--  1 far    24497 Oct 13 11:12 code.149
-rw-r--r--  1 far     5861 Oct 13 11:16 code.150
```

App A

code_list

Source : AWARE-1
Date : Nov 1991

Frame Rate : 30 Hz
Sequence : Table Tennis

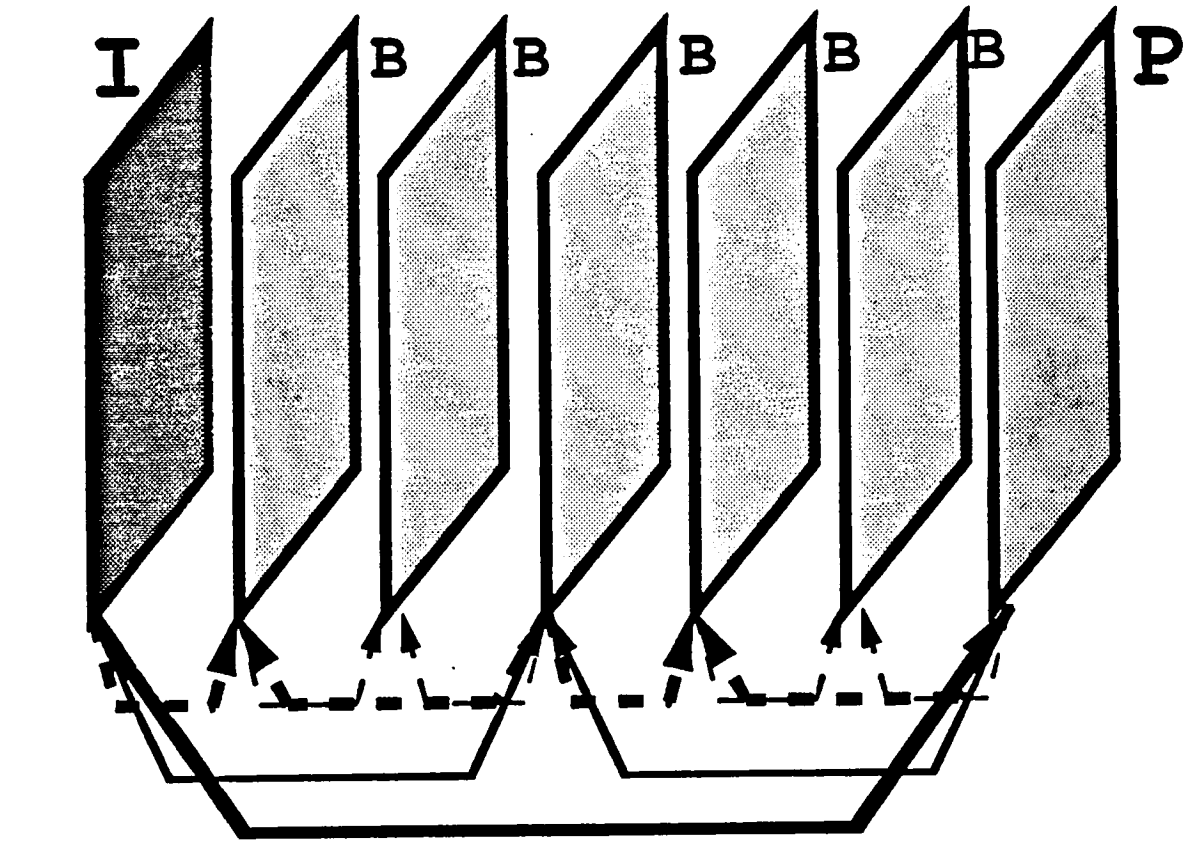
Bit Rate : 9 Mega Bits/Sec

```
-rw-r--r--  1 far      124065 Oct 13 11:31 code.001
-rw-r--r--  1 far        5660 Oct 13 11:43 code.002
-rw-r--r--  1 far        6624 Oct 13 11:46 code.003
-rw-r--r--  1 far       82906 Oct 13 11:40 code.004
-rw-r--r--  1 far       16292 Oct 13 11:49 code.005
-rw-r--r--  1 far        5821 Oct 13 11:51 code.006
-rw-r--r--  1 far        1922 Oct 16 16:27 code.007
-rw-r--r--  1 far        5463 Oct 13 11:57 code.008
-rw-r--r--  1 far       37721 Oct 13 12:00 code.009
-rw-r--r--  1 far       72886 Oct 13 11:54 code.010
-rw-r--r--  1 far       13496 Oct 13 12:04 code.011
-rw-r--r--  1 far       19906 Oct 13 12:07 code.012
-rw-r--r--  1 far      124003 Oct 13 11:33 code.013
-rw-r--r--  1 far        5741 Oct 13 12:20 code.014
-rw-r--r--  1 far        5992 Oct 13 12:23 code.015
-rw-r--r--  1 far       54799 Oct 13 12:17 code.016
-rw-r--r--  1 far       62324 Oct 13 12:27 code.017
-rw-r--r--  1 far       21350 Oct 13 12:31 code.018
-rw-r--r--  1 far       59740 Oct 13 12:13 code.019
-rw-r--r--  1 far       21384 Oct 13 12:37 code.020
-rw-r--r--  1 far        6016 Oct 13 12:40 code.021
-rw-r--r--  1 far       51361 Oct 13 12:34 code.022
-rw-r--r--  1 far        6314 Oct 13 12:42 code.023
-rw-r--r--  1 far       23929 Oct 13 12:45 code.024
-rw-r--r--  1 far      125227 Oct 13 12:10 code.025
-rw-r--r--  1 far       59513 Oct 13 12:57 code.026
-rw-r--r--  1 far       46150 Oct 13 12:59 code.027
-rw-r--r--  1 far       62154 Oct 13 12:54 code.028
-rw-r--r--  1 far       37641 Oct 13 13:02 code.029
-rw-r--r--  1 far       30024 Oct 13 13:05 code.030
-rw-r--r--  1 far       45534 Oct 13 12:50 code.031
-rw-r--r--  1 far       17916 Oct 13 13:10 code.032
-rw-r--r--  1 far        6817 Oct 13 13:13 code.033
-rw-r--r--  1 far       22889 Oct 13 13:08 code.034
-rw-r--r--  1 far        6874 Oct 13 13:15 code.035
-rw-r--r--  1 far        6338 Oct 13 13:18 code.036
-rw-r--r--  1 far      110444 Oct 13 12:47 code.037
-rw-r--r--  1 far       32389 Oct 13 13:28 code.038
-rw-r--r--  1 far       12789 Oct 13 13:31 code.039
-rw-r--r--  1 far       28351 Oct 13 13:25 code.040
-rw-r--r--  1 far       13226 Oct 13 13:33 code.041
-rw-r--r--  1 far       15324 Oct 13 13:36 code.042
-rw-r--r--  1 far       47555 Oct 13 13:23 code.043
-rw-r--r--  1 far       34215 Oct 13 13:41 code.044
-rw-r--r--  1 far       34676 Oct 13 13:44 code.045
-rw-r--r--  1 far       50608 Oct 13 13:39 code.046
-rw-r--r--  1 far       41811 Oct 13 13:47 code.047
-rw-r--r--  1 far       23271 Oct 13 13:49 code.048
-rw-r--r--  1 far      104626 Oct 13 13:20 code.049
-rw-r--r--  1 far       30762 Oct 13 13:59 code.050
-rw-r--r--  1 far       20254 Oct 13 14:02 code.051
-rw-r--r--  1 far       34440 Oct 13 13:57 code.052
-rw-r--r--  1 far       29167 Oct 13 14:05 code.053
-rw-r--r--  1 far       20059 Oct 13 14:07 code.054
-rw-r--r--  1 far       56776 Oct 13 13:54 code.055
-rw-r--r--  1 far       25220 Oct 13 14:13 code.056
-rw-r--r--  1 far       15063 Oct 13 14:16 code.057
-rw-r--r--  1 far       53032 Oct 13 14:10 code.058
-rw-r--r--  1 far       25971 Oct 13 14:19 code.059
-rw-r--r--  1 far       29258 Oct 13 14:21 code.060
-rw-r--r--  1 far       99821 Oct 13 13:51 code.061
-rw-r--r--  1 far       26338 Oct 13 14:32 code.062
-rw-r--r--  1 far       17397 Oct 13 14:35 code.063
-rw-r--r--  1 far       29368 Oct 13 14:29 code.064
-rw-r--r--  1 far       23269 Oct 13 14:38 code.065
-rw-r--r--  1 far        6973 Oct 13 14:40 code.066
-rw-r--r--  1 far       63622 Oct 13 14:26 code.067
-rw-r--r--  1 far       76322 Oct 13 14:46 code.068
-rw-r--r--  1 far       17022 Oct 13 14:49 code.069
-rw-r--r--  1 far       25608 Oct 13 14:43 code.070
-rw-r--r--  1 far       28057 Oct 13 14:52 code.071
-rw-r--r--  1 far       39062 Oct 13 14:55 code.072
-rw-r--r--  1 far       85432 Oct 13 14:24 code.073
-rw-r--r--  1 far       46666 Oct 13 15:07 code.074
-rw-r--r--  1 far       26855 Oct 13 15:10 code.075
-rw-r--r--  1 far       46969 Oct 13 15:04 code.076
-rw-r--r--  1 far       32397 Oct 13 15:13 code.077
-rw-r--r--  1 far       19991 Oct 13 15:16 code.078
-rw-r--r--  1 far       50824 Oct 13 15:01 code.079
-rw-r--r--  1 far       14455 Oct 13 15:22 code.080
-rw-r--r--  1 far       23477 Oct 13 15:25 code.081
-rw-r--r--  1 far       47166 Oct 13 15:19 code.082
-rw-r--r--  1 far       36231 Oct 13 15:28 code.083
-rw-r--r--  1 far       12227 Oct 13 15:31 code.084
-rw-r--r--  1 far       84878 Oct 13 14:57 code.085
-rw-r--r--  1 far       26493 Oct 13 15:43 code.086
-rw-r--r--  1 far       28106 Oct 13 15:46 code.087
-rw-r--r--  1 far       41998 Oct 13 15:40 code.088
-rw-r--r--  1 far       30339 Oct 13 15:49 code.089
-rw-r--r--  1 far       26786 Oct 13 15:52 code.090
-rw-r--r--  1 far       62592 Oct 13 15:37 code.091
-rw-r--r--  1 far       28352 Oct 13 16:24 code.092
-rw-r--r--  1 far       28762 Oct 13 16:27 code.093
-rw-r--r--  1 far       40678 Oct 13 15:55 code.094
-rw-r--r--  1 far       21047 Oct 13 16:29 code.095
-rw-r--r--  1 far       20192 Oct 13 16:32 code.096
-rw-r--r--  1 far       87345 Oct 13 15:34 code.097
-rw-r--r--  1 far       48995 Oct 13 16:42 code.098
-rw-r--r--  1 far       23565 Oct 13 16:44 code.099
-rw-r--r--  1 far       66046 Oct 13 16:39 code.100
-rw-r--r--  1 far       28754 Oct 13 16:47 code.101
-rw-r--r--  1 far       24017 Oct 13 16:50 code.102
-rw-r--r--  1 far       54820 Oct 13 16:36 code.103
-rw-r--r--  1 far       21284 Oct 13 16:55 code.104
-rw-r--r--  1 far       10770 Oct 13 16:58 code.105
-rw-r--r--  1 far       57910 Oct 13 16:52 code.106
-rw-r--r--  1 far       10217 Oct 13 17:00 code.107
-rw-r--r--  1 far        7360 Oct 13 17:03 code.108
-rw-r--r--  1 far       90141 Oct 13 16:34 code.109
-rw-r--r--  1 far        5599 Oct 13 17:13 code.110
-rw-r--r--  1 far        5497 Oct 13 17:15 code.111
-rw-r--r--  1 far       44575 Oct 13 17:10 code.112
-rw-r--r--  1 far        5341 Oct 13 17:18 code.113
-rw-r--r--  1 far        5032 Oct 13 17:20 code.114
-rw-r--r--  1 far       54052 Oct 13 17:07 code.115
-rw-r--r--  1 far        6623 Oct 13 17:26 code.116
-rw-r--r--  1 far      117303 Oct 13 17:28 code.117
-rw-r--r--  1 far       39510 Oct 13 17:23 code.118
-rw-r--r--  1 far       35042 Oct 13 17:31 code.119
-rw-r--r--  1 far       31798 Oct 13 17:34 code.120
-rw-r--r--  1 far       89841 Oct 13 17:05 code.121
-rw-r--r--  1 far       17567 Oct 13 17:44 code.122
-rw-r--r--  1 far       26205 Oct 13 17:46 code.123
-rw-r--r--  1 far       49391 Oct 13 17:41 code.124
-rw-r--r--  1 far       35567 Oct 13 17:49 code.125
-rw-r--r--  1 far       19010 Oct 13 17:52 code.126
-rw-r--r--  1 far       62223 Oct 13 17:38 code.127
-rw-r--r--  1 far       35239 Oct 13 17:57 code.128
-rw-r--r--  1 far       31892 Oct 13 17:59 code.129
-rw-r--r--  1 far       38966 Oct 13 17:54 code.130
-rw-r--r--  1 far       37238 Oct 13 18:02 code.131
-rw-r--r--  1 far        5989 Oct 13 18:05 code.132
-rw-r--r--  1 far       89124 Oct 13 17:36 code.133
-rw-r--r--  1 far        7975 Oct 13 18:15 code.134
-rw-r--r--  1 far       26153 Oct 13 18:31 code.135
-rw-r--r--  1 far       46860 Oct 13 18:12 code.136
-rw-r--r--  1 far       35438 Oct 13 18:34 code.137
-rw-r--r--  1 far        7273 Oct 13 18:36 code.138
-rw-r--r--  1 far       57102 Oct 13 18:09 code.139
-rw-r--r--  1 far       30864 Oct 13 18:42 code.140
-rw-r--r--  1 far       23129 Oct 13 18:45 code.141
-rw-r--r--  1 far       39992 Oct 13 18:39 code.142
```

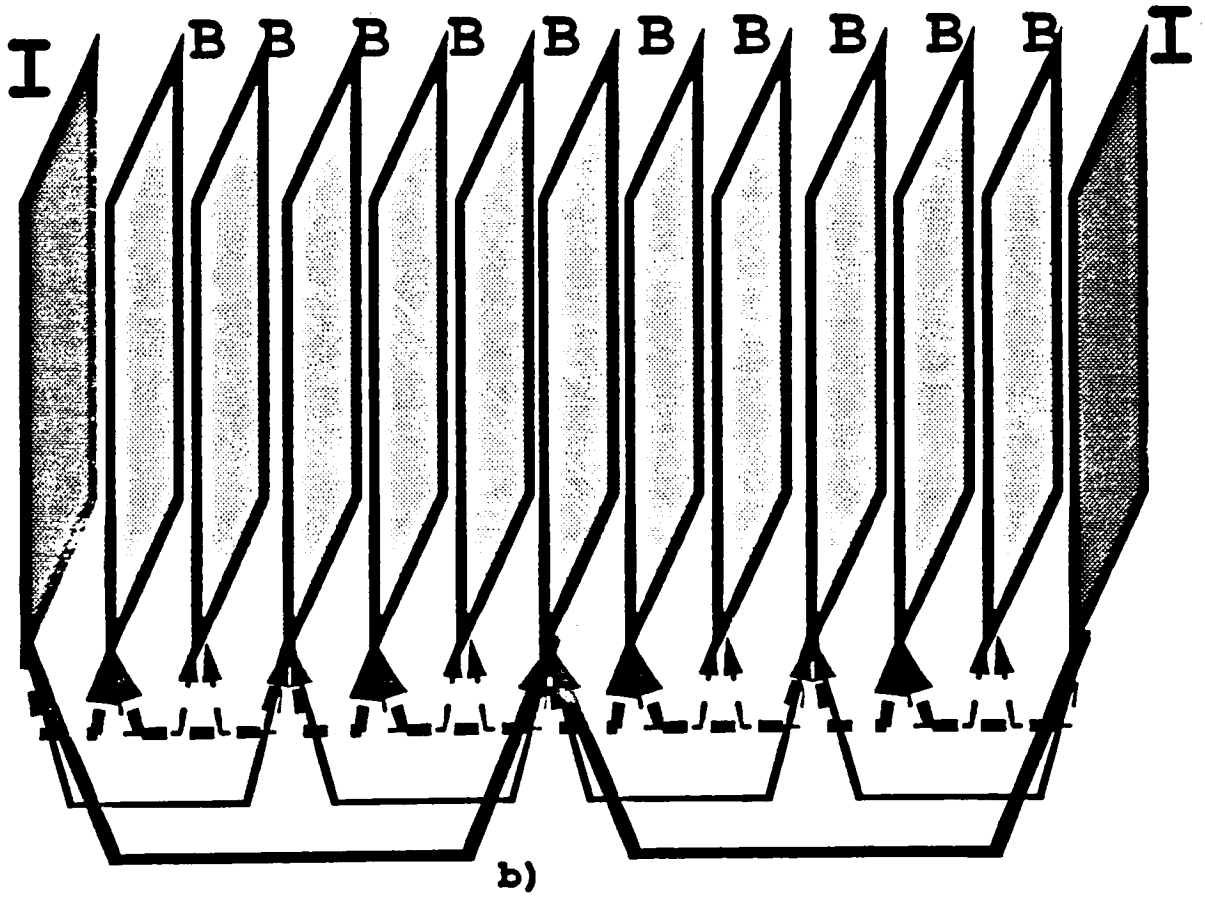
xxx viii

App A code_list

```
-rw-r--r--  1 far      31348 Oct 13 18:47 code.143
-rw-r--r--  1 far       6855 Oct 13 18:50 code.144
-rw-r--r--  1 far      90016 Oct 13 18:07 code.145
-rw-r--r--  1 far     179186 Oct 13 18:59 code.146
-rw-r--r--  1 far     162313 Oct 13 19:02 code.147
-rw-r--r--  1 far       6644 Oct 13 18:57 code.148
-rw-r--r--  1 far       7796 Oct 13 19:04 code.149
-rw-r--r--  1 far       3354 Oct 13 18:54 code.150
```



a)



b)

Figure 1

AWARE-1

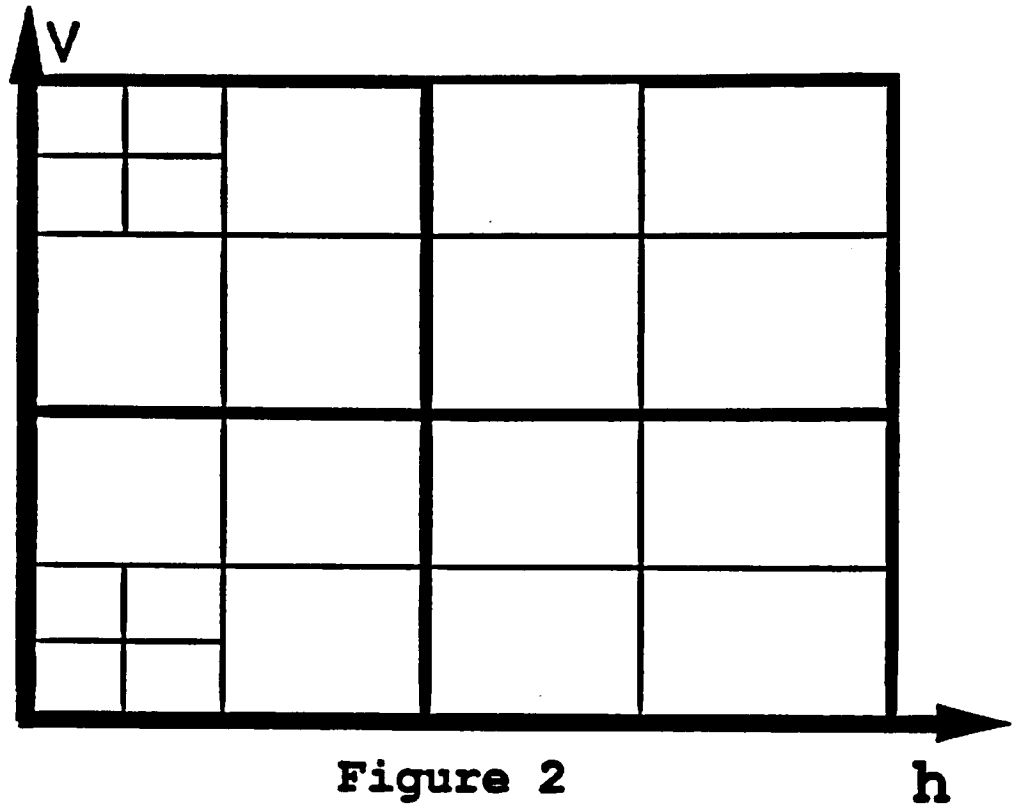


Figure 2

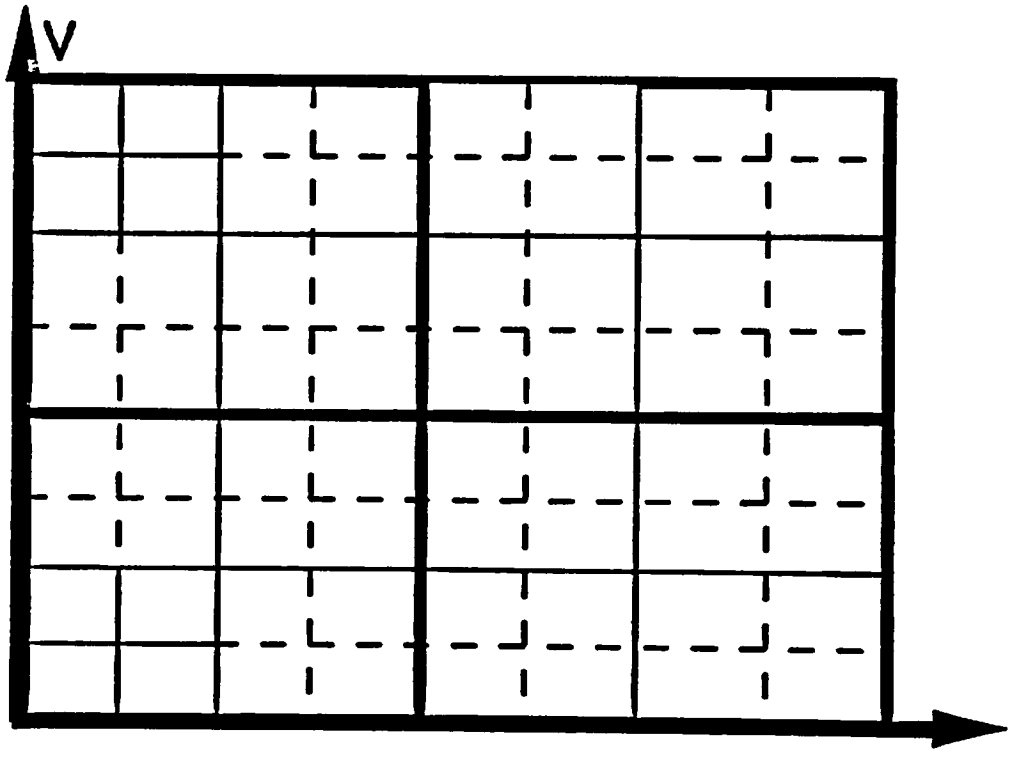
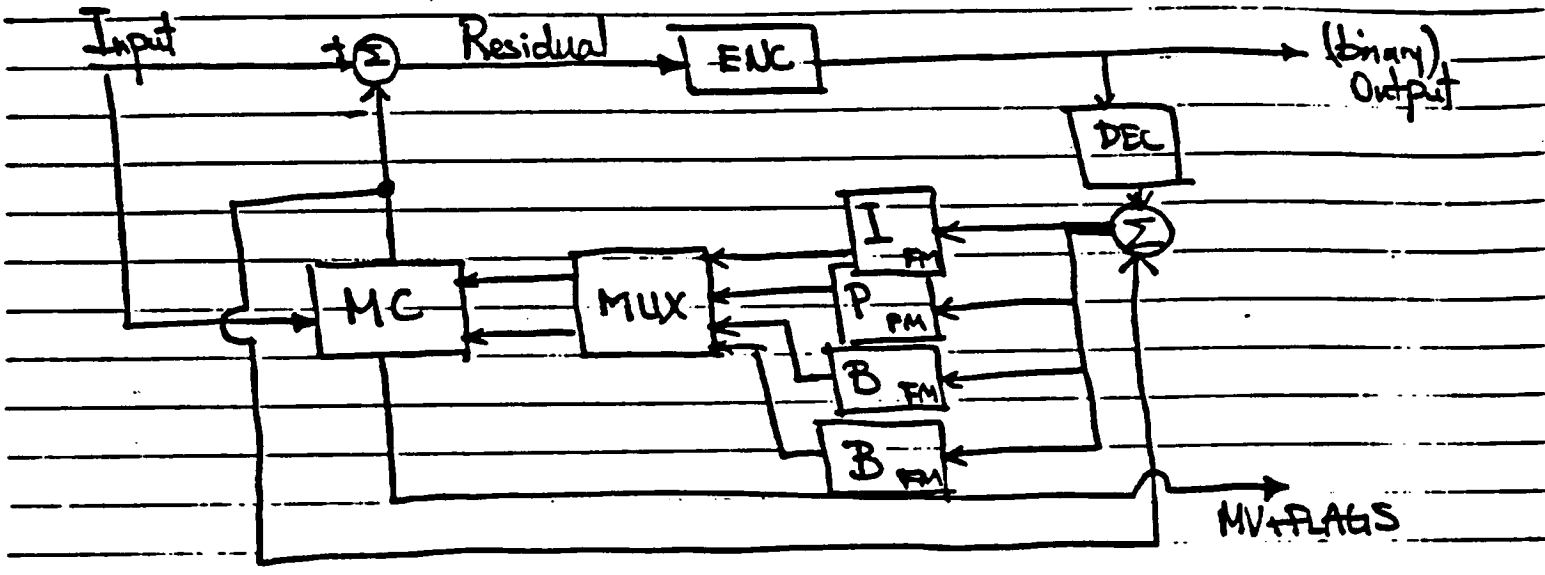
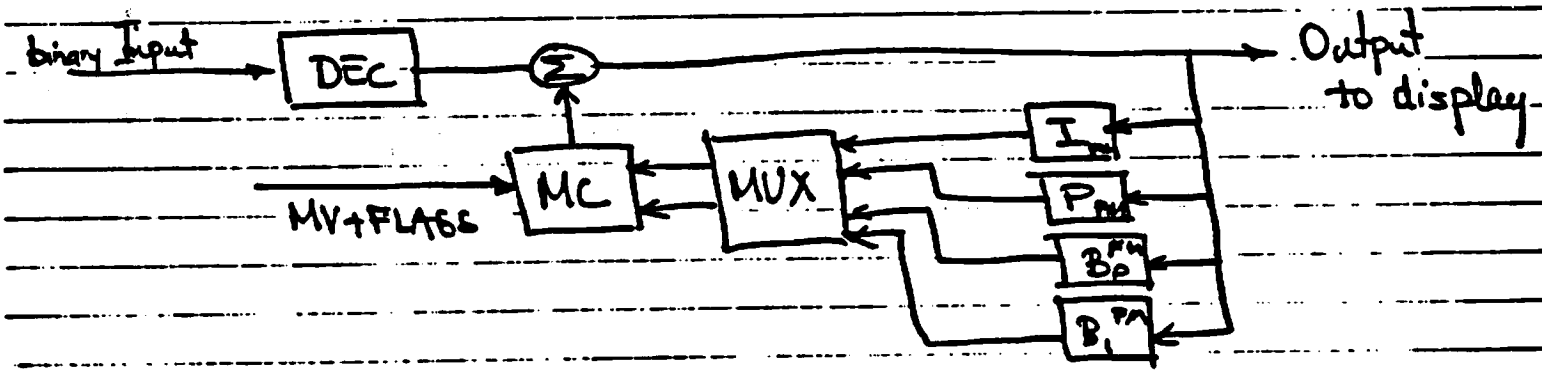


Figure 3

Regions are Indicated by Dashed Lines

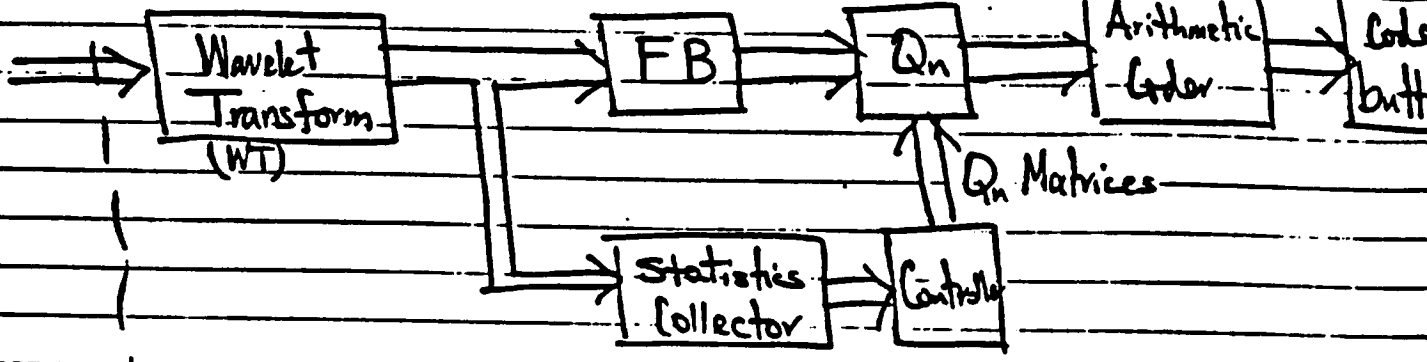


Encoder

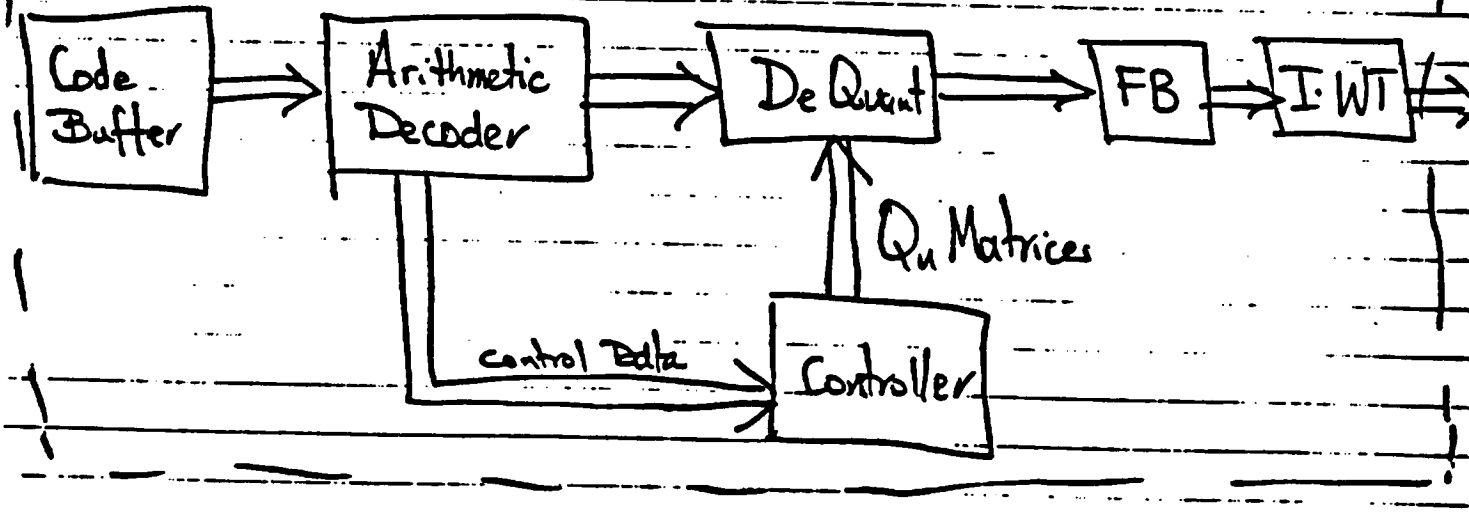


Decoder

AWARE-1



Block diagram of "ENC"



Block diagram of "DEC"