3-ANNEX A(informative)
DIAGRAMS

Figure 3-A.1. Layer I and II decoder flow chart
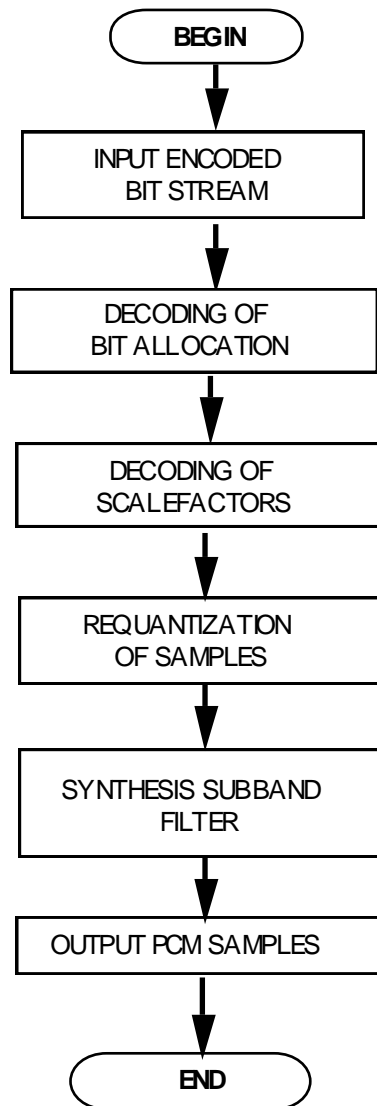
```
                    ( BEGIN )
                        |
                        v
              +--------------------+
              |  INPUT ENCODED     |
              |  BIT STREAM        |
              +--------------------+
                        |
                        v
              +--------------------+
              |  DECODING OF       |
              |  BIT ALLOCATION    |
              +--------------------+
                        |
                        v
              +--------------------+
              |  DECODING OF       |
              |  SCALEFACTORS      |
              +--------------------+
                        |
                        v
              +--------------------+
              |  REQUANTIZATION    |
              |  OF SAMPLES        |
              +--------------------+
                        |
                        v
              +--------------------+
              |  SYNTHESIS SUBBAND |
              |  FILTER            |
              +--------------------+
                        |
                        v
              +--------------------+
              |  OUTPUT PCM SAMPLES|
              +--------------------+
                        |
                        v
                    ( END )
```
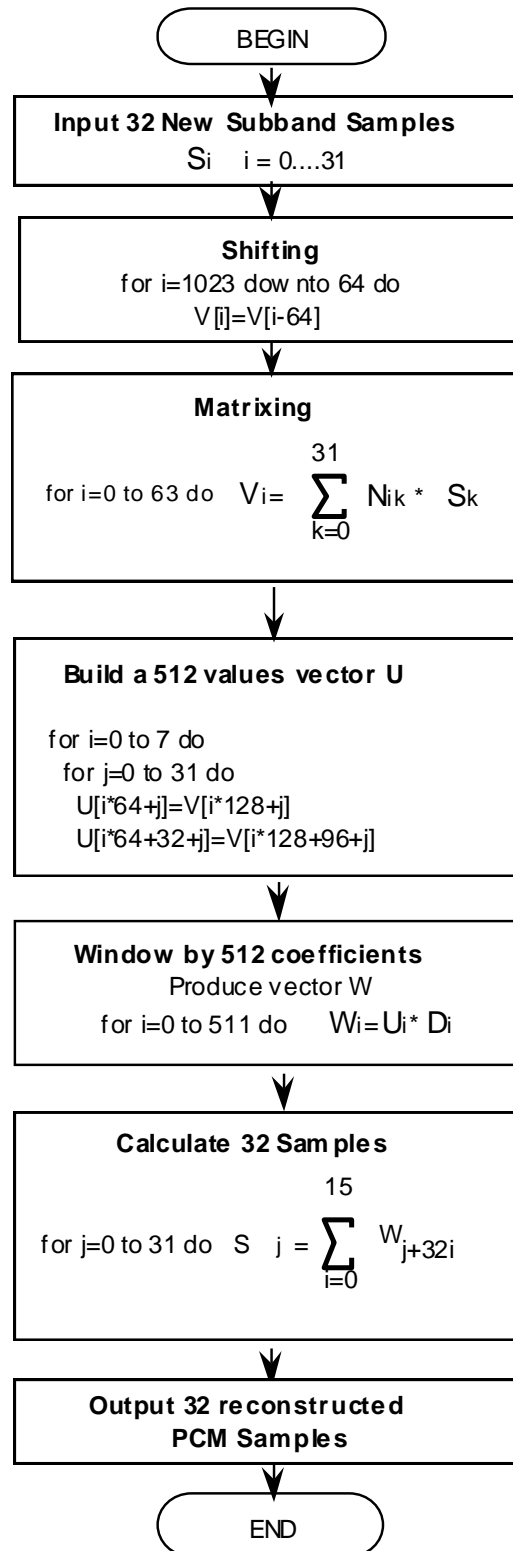
Figure 3-A.2. Synthesis subband filter flow chart

```
                    ┌─────────────┐
                    │    BEGIN    │
                    └─────────────┘
                           │
                           ▼
        ┌──────────────────────────────────────┐
        │   Input 32 New  Subband Samples       │
        │          Si    i = 0....31            │
        └──────────────────────────────────────┘
                           │
                           ▼
        ┌──────────────────────────────────────┐
        │              Shifting                 │
        │      for i=1023 dow nto 64 do         │
        │            V[i]=V[i-64]               │
        └──────────────────────────────────────┘
                           │
                           ▼
        ┌──────────────────────────────────────┐
        │             Matrixing                 │
        │                                       │
        │                       31              │
        │   for i=0 to 63 do   Vi= ∑  Nik * Sk  │
        │                      k=0              │
        └──────────────────────────────────────┘
                           │
                           ▼
        ┌──────────────────────────────────────┐
        │     Build a 512 values vector U       │
        │                                       │
        │   for i=0 to 7 do                     │
        │    for j=0 to 31 do                   │
        │     U[i*64+j]=V[i*128+j]              │
        │     U[i*64+32+j]=V[i*128+96+j]        │
        └──────────────────────────────────────┘
                           │
                           ▼
        ┌──────────────────────────────────────┐
        │    Window by 512 coefficients         │
        │         Produce vector W              │
        │     for i=0 to 511 do   Wi=Ui* Di     │
        └──────────────────────────────────────┘
                           │
                           ▼
        ┌──────────────────────────────────────┐
        │        Calculate 32 Sam ples          │
        │                                       │
        │                     15                │
        │   for j=0 to 31 do  S j = ∑  Wj+32i   │
        │                     i=0              │
        └──────────────────────────────────────┘
                           │
                           ▼
        ┌──────────────────────────────────────┐
        │        Output 32 reconstructed        │
        │             PCM Samples               │
        └──────────────────────────────────────┘
                           │
                           ▼
                    ┌─────────────┐
                    │     END     │
                    └─────────────┘
```

Input 32 New Subband Samples
S_i $i = 0....31$

Shifting
for i=1023 dow nto 64 do
$V[i]=V[i-64]$

Matrixing

for i=0 to 63 do $V_i = \sum_{k=0}^{31} N_{ik} * S_k$

Build a 512 values vector U

for i=0 to 7 do
 for j=0 to 31 do
  $U[i*64+j]=V[i*128+j]$
  $U[i*64+32+j]=V[i*128+96+j]$

Window by 512 coefficients
Produce vector W
for i=0 to 511 do $W_i = U_i * D_i$

Calculate 32 Sam ples

for j=0 to 31 do $S_j = \sum_{i=0}^{15} W_{j+32i}$

**Output 32 reconstructed
PCM Samples**

Figure 3-A.3. Layer III decoder flow chart

```
                    ┌─────────────┐
                    │    BEGIN    │
                    └──────┬──────┘
                           ▼
          ┌─────────────────────────────────┐
          │  GET BIT STREAM, FIND HEADER    │
          └────────────────┬────────────────┘
                           ▼
          ┌─────────────────────────────────┐
          │       DECODE BIT STREAM         │
          │        FORMAT INFO              │
          └────────────────┬────────────────┘
                           ▼
          ┌─────────────────────────────────┐
          │     DECODE SCALE FACTORS        │
          └────────────────┬────────────────┘
                           ▼
          ┌─────────────────────────────────┐
          │       DECODE SAMPLES            │
          └────────────────┬────────────────┘
                           ▼
          ┌─────────────────────────────────┐
          │   INVERSE QUANTIZE SAMPLES      │
          └────────────────┬────────────────┘
                           ▼
          ┌─────────────────────────────────┐
          │  REORDER  IF (blocksplit_flag)  │
          │     AND (block_type==2)         │
          └────────────────┬────────────────┘
                           ▼
          ┌─────────────────────────────────┐
          │     ALIAS  CANCELLATION         │
          └────────────────┬────────────────┘
                           ▼
          ┌─────────────────────────────────┐
          │  SYNTHESIZE VIA  MDCT           │
          │    & OVERLAP-ADD                │
          │ (Using either 18 or 666 depending on │
          │ blocksplit_flag and block_type [gr] ) │
          └────────────────┬────────────────┘
                           ▼
          ┌─────────────────────────────────┐
          │     SYNTHESIZE VIA              │
          │     POLYPHASE MDCT              │
          └────────────────┬────────────────┘
                           ▼
          ┌─────────────────────────────────┐
          │    OUTPUT PCM SAMPLES           │
          └────────────────┬────────────────┘
                           ▼
                    ┌─────────────┐
                    │     END     │
                    └─────────────┘
```
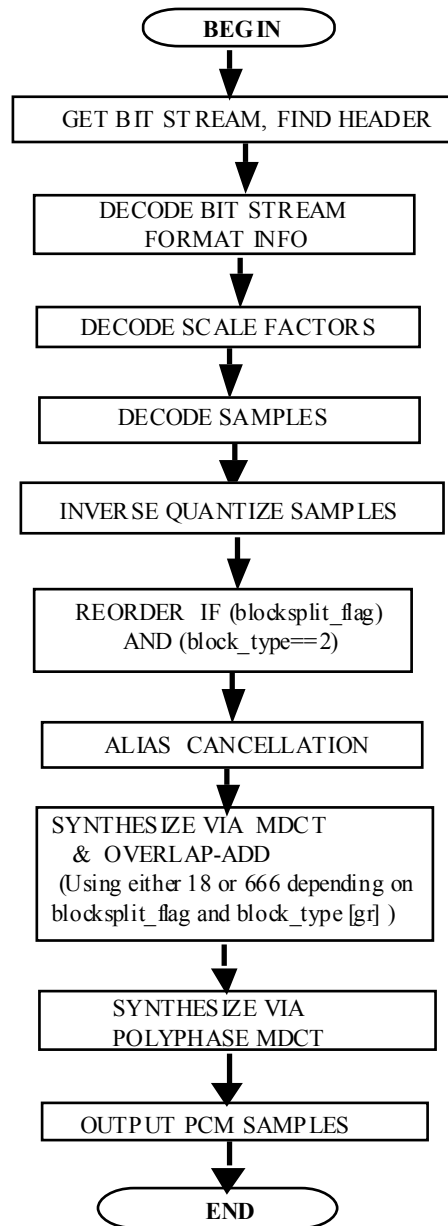
Figure 3-A.4. Layer III decoder diagram
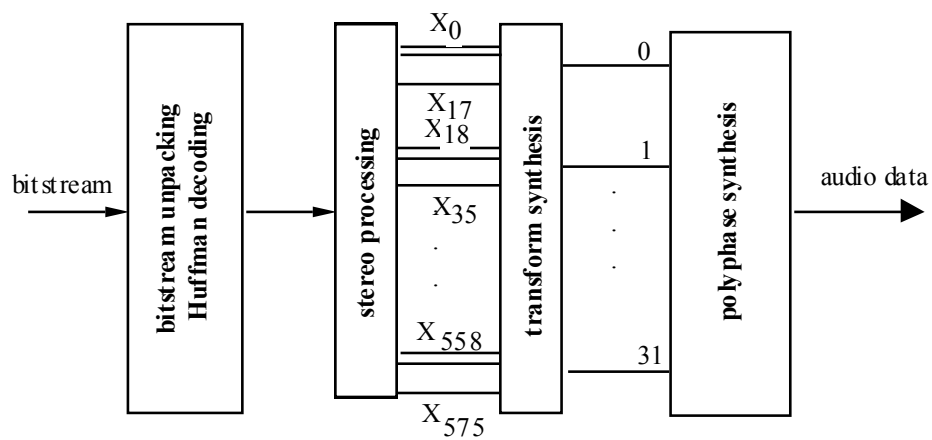
Block "transform synthesis":
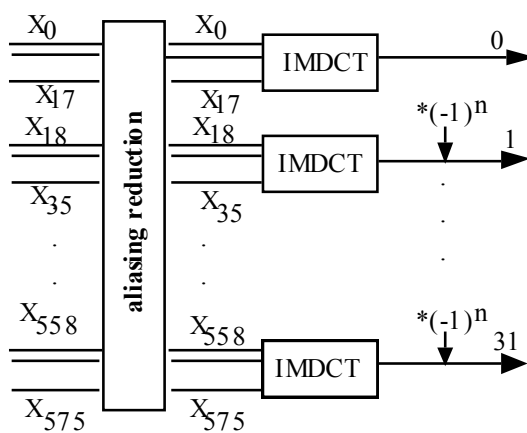
Figure 3-A.5. Layer III aliasing reduction encoder/decoder diagram
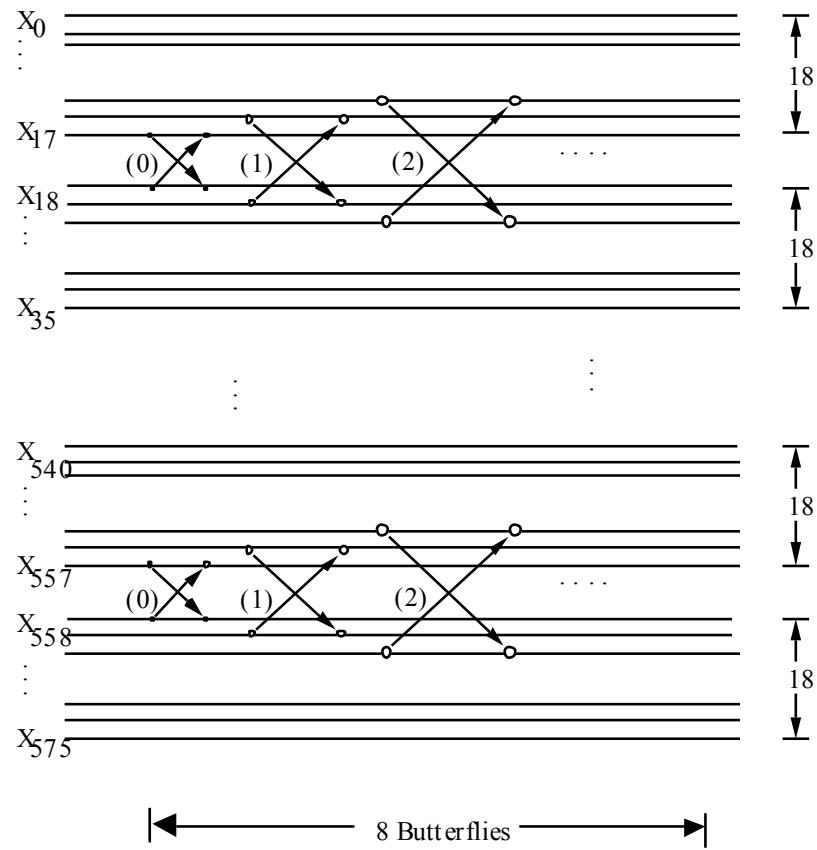
Figure 3-A.6. Layer III aliasing-butterfly, decoder
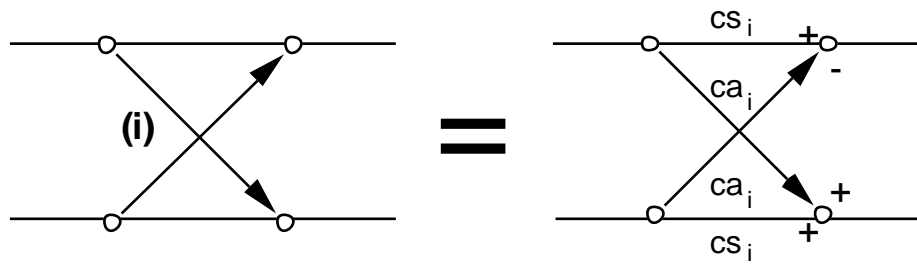
Figure 3-A.7.1. Layer III bitstream organization

header frame 1 — sync — side info 1
header frame 2 — sync — side info 2
header frame 3 — sync — side info 3
header frame 4 — sync — side info 4

main_data_end 1   main_data_end 2   main_data_end 3   main_data_end 4

main info 1   main info 2   main info 3
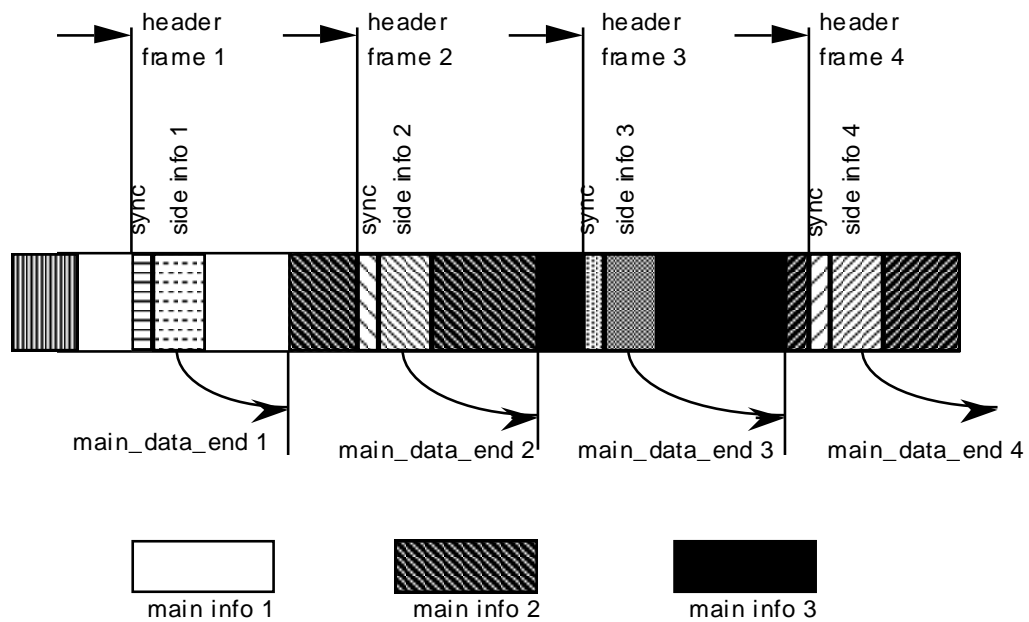
Figure 3-A.7.2. Layer III bitstream organization with peak demand at main info 3 and small demand at main info 2.

header frame 1 — sync — side info 1
header frame 2 — sync — side info 2
header frame 3 — sync — side info 3
header frame 4 — sync — side info 4

main_data_end 1   main_data_end 2   main_data_end 3   main_data_end 4

main info 1   main info 2   main info 3
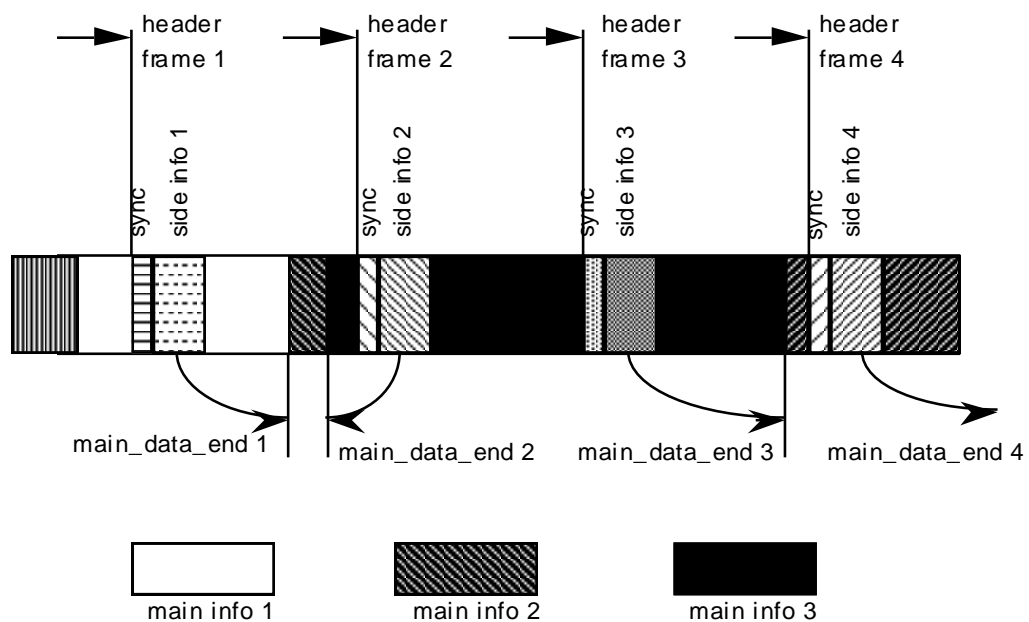
Note: 'info' means information

Figure 3-A.8. Layer III illustration of granules for frame with no block split in first granule and block split in second granule.

```
0  ...   scfsi bands   .... 3   |
0 .. scalefactor bands .. 20
                                |
0 ........ frequency lines .............. 575
```

global_gain[0]

Granule 0

```
0 .. scalefactor bands .. 11   |
0 ........ frequency lines .............. 191
```

global_gain [1]
subblock_gain 1
subblock_gain 2
subblock_gain 3

Granule 1

Figure 3-A.9. CRC-Check diagram

Data bits

b_{15} b_{14} b_2 b_1 b_0

3-ANNEX B (normative)
TABLES

Table 3-B.1. Layer I,II scalefactors

index	scalefactor	index	scalefactor
0	2.00000000000000	32	0.00123039165029
1	1.58740105196820	33	0.00097656250000
2	1.25992104989487	34	0.00077509816991
3	1.00000000000000	35	0.00061519582514
4	0.79370052598410	36	0.00048828125000
5	0.62996052494744	37	0.00038754908495
6	0.50000000000000	38	0.00030759791257

7	0.39685026299205	39	0.00024414062500
8	0.31498026247372	40	0.00019377454248
9	0.25000000000000	41	0.00015379895629
10	0.19842513149602	42	0.00012207031250
11	0.15749013123686	43	0.00009688727124
12	0.12500000000000	44	0.00007689947814
13	0.09921256574801	45	0.00006103515625
14	0.07874506561843	46	0.00004844363562
15	0.06250000000000	47	0.00003844973907
16	0.04960628287401	48	0.00003051757813
17	0.03937253280921	49	0.00002422181781
18	0.03125000000000	50	0.00001922486954
19	0.02480314143700	51	0.00001525878906
20	0.01968626640461	52	0.00001211090890
21	0.01562500000000	53	0.00000961243477
22	0.01240157071850	54	0.00000762939453
23	0.00984313320230	55	0.00000605545445
24	0.00781250000000	56	0.00000480621738
25	0.00620078535925	57	0.00000381469727
26	0.00492156660115	58	0.00000302772723
27	0.00390625000000	59	0.00000240310869
28	0.00310039267963	60	0.00000190734863
29	0.00246078330058	61	0.00000151386361
30	0.00195312500000	62	0.00000120155435
31	0.00155019633981		

3-B.2. Layer II bit allocation tables

Table 3-B.2a Possible quantization per subband

Fs = 48 kHz   Bit rates per channel = 56, 64, 80, 96, 112, 128, 160, 192 kbits/s,
and free format
Fs = 44.1 kHz   Bit rates per channel = 56, 64, 80 kbits/s
Fs = 32 kHz   Bit rates per channel = 56, 64, 80 kbits/s

											index						
sb	nbal	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SB0	4	-	3	7	15	31	63	127	255	511	1023	2047	4095	8191	16383	32767	65535
SB1	4	-	3	7	15	31	63	127	255	511	1023	2047	4095	8191	16383	32767	65535
SB2	4	-	3	7	15	31	63	127	255	511	1023	2047	4095	8191	16383	32767	65535
SB3	4	-	3	5	7	9	15	31	63	127	255	511	1023	2047	4095	8191	65535
SB4	4	-	3	5	7	9	15	31	63	127	255	511	1023	2047	4095	8191	65535
SB5	4	-	3	5	7	9	15	31	63	127	255	511	1023	2047	4095	8191	65535
SB6	4	-	3	5	7	9	15	31	63	127	255	511	1023	2047	4095	8191	65535

sb	nbal	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SB7	4	-	3	5	7	9	15	31	63	127	255	511	1023	2047	4095	8191	65535
SB8	4	-	3	5	7	9	15	31	63	127	255	511	1023	2047	4095	8191	65535
SB9	4	-	3	5	7	9	15	31	63	127	255	511	1023	2047	4095	8191	65535
SB10	4	-	3	5	7	9	15	31	63	127	255	511	1023	2047	4095	8191	65535
SB11	3	-	3	5	7	9	15	31	65535								
SB12	3	-	3	5	7	9	15	31	65535								
SB13	3	-	3	5	7	9	15	31	65535								
SB14	3	-	3	5	7	9	15	31	65535								
SB15	3	-	3	5	7	9	15	31	65535								
SB16	3	-	3	5	7	9	15	31	65535								
SB17	3	-	3	5	7	9	15	31	65535								
SB18	3	-	3	5	7	9	15	31	65535								
SB19	3	-	3	5	7	9	15	31	65535								
SB20	3	-	3	5	7	9	15	31	65535								
SB21	3	-	3	5	7	9	15	31	65535								
SB22	3	-	3	5	7	9	15	31	65535								
SB23	2	-	3	5	65535												
SB24	2	-	3	5	65535												
SB25	2	-	3	5	65535												
SB26	2	-	3	5	65535												
SB27	0	-															
SB28	0	-															
SB29	0	-															
SB30	0	-															
SB31	0	-															

sblimit = 27
Sum of nbal = 88

Table 3-B.2b. Possible quantization per subband

Fs = 48 kHz	-------------- not relevant --------------	
Fs = 44.1 kHz	Bitrates per channel =	96, 112, 128, 160, 192 kbits/s and free format
Fs = 32 kHz	Bitrates per channel =	96, 112, 128, 160, 192 kbits/s and free format

											index						
sb	nbal	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SB0	4	-	3	7	15	31	63	127	255	511	1023	2047	4095	8191	16383	32767	65535
SB1	4	-	3	7	15	31	63	127	255	511	1023	2047	4095	8191	16383	32767	65535
SB2	4	-	3	7	15	31	63	127	255	511	1023	2047	4095	8191	16383	32767	65535
SB3	4	-	3	5	7	9	15	31	63	127	255	511	1023	2047	4095	8191	65535
SB4	4	-	3	5	7	9	15	31	63	127	255	511	1023	2047	4095	8191	65535

sb	nbal	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SB5	4	-	3	5	7	9	15	31	63	127	255	511	1023	2047	4095	8191	65535
SB6	4	-	3	5	7	9	15	31	63	127	255	511	1023	2047	4095	8191	65535
SB7	4	-	3	5	7	9	15	31	63	127	255	511	1023	2047	4095	8191	65535
SB8	4	-	3	5	7	9	15	31	63	127	255	511	1023	2047	4095	8191	65535
SB9	4	-	3	5	7	9	15	31	63	127	255	511	1023	2047	4095	8191	65535
SB10	4	-	3	5	7	9	15	31	63	127	255	511	1023	2047	4095	8191	65535
SB11	3	-	3	5	7	9	15	31	65535								
SB12	3	-	3	5	7	9	15	31	65535								
SB13	3	-	3	5	7	9	15	31	65535								
SB14	3	-	3	5	7	9	15	31	65535								
SB15	3	-	3	5	7	9	15	31	65535								
SB16	3	-	3	5	7	9	15	31	65535								
SB17	3	-	3	5	7	9	15	31	65535								
SB18	3	-	3	5	7	9	15	31	65535								
SB19	3	-	3	5	7	9	15	31	65535								
SB20	3	-	3	5	7	9	15	31	65535								
SB21	3	-	3	5	7	9	15	31	65535								
SB22	3	-	3	5	7	9	15	31	65535								
SB23	2	-	3	5	65535												
SB24	2	-	3	5	65535												
SB25	2	-	3	5	65535												
SB26	2	-	3	5	65535												
SB27	2	-	3	5	65535												
SB28	2	-	3	5	65535												
SB29	2	-	3	5	65535												
SB30	0	-															
SB31	0	-															

sblimit = 30
Sum of nbal = 94

Table 3-B.2c. Possible quantization per subband

Fs = 48 kHz   Bitrates per channel = 32, 48 kbits/s
Fs = 44.1 kHz   Bitrates per channel = 32, 48 kbits/s
Fs = 32 kHz   -------- not relevant --------

sb	nbal	0	1	2	3	4	5	6	7	8	index 9	10	11	12	13	14	15
SB0	4	-	3	5	9	15	31	63	127	255	511	1023	2047	4095	8191	16383	32767
SB1	4	-	3	5	9	15	31	63	127	255	511	1023	2047	4095	8191	16383	32767
SB2	3	-	3	5	9	15	31	63	127								
SB3	3	-	3	5	9	15	31	63	127								
SB4	3	-	3	5	9	15	31	63	127								

sb	nbal	0	1	2	3	4	5	6	7
SB5	3	-	3	5	9	15	31	63	127
SB6	3	-	3	5	9	15	31	63	127
SB7	3	-	3	5	9	15	31	63	127
SB8	0	-							
SB9	0	-							
SB10	0	-							
SB11	0	-							
SB12	0	-							
SB13	0	-							
SB14	0	-							
SB15	0	-							
SB16	0	-							
SB17	0	-							
SB18	0	-							
SB19	0	-							
SB20	0	-							
SB21	0	-							
SB22	0	-							
SB23	0	-							
SB24	0	-							
SB25	0	-							
SB26	0	-							
SB27	0	-							
SB28	0	-							
SB29	0	-							
SB30	0	-							
SB31	0	-							

sblimit = 8
Sum of nbal = 26

Table 3-B.2d. Possible quantization per subband

Fs = 48 kHz   ------- not relevant -------
Fs = 44.1kHz   ------- not relevant -------
Fs = 32 kHz   Bitrates per channel = 32, 48 kbits/s

sb	nbal	0	1	2	3	4	5	6	7	8	index 9	10	11	12	13	14	15
SB0	4	-	3	5	9	15	31	63	127	255	511	1023	2047	4095	8191		
		16383	32767														
SB1	4	-	3	5	9	15	31	63	127	255	511	1023	2047	4095	8191		
		16383	32767														
SB2	3	-	3	5	9	15	31	63	127								
SB3	3	-	3	5	9	15	31	63	127								
SB4	3	-	3	5	9	15	31	63	127								
SB5	3	-	3	5	9	15	31	63	127								
SB6	3	-	3	5	9	15	31	63	127								
SB7	3	-	3	5	9	15	31	63	127								
SB8	3	-	3	5	9	15	31	63	127								
SB9	3	-	3	5	9	15	31	63	127								
SB10	3	-	3	5	9	15	31	63	127								

```
SB11 3    -    3    5    9    15   31   63   127
SB12 0    -
SB13 0    -
SB14 0    -
SB15 0    -
SB16 0    -
SB17 0    -
SB18 0    -
SB19 0    -
SB20 0    -
SB21 0    -
SB22 0    -
SB23 0    -
SB24 0    -
SB25 0    -
SB26 0    -
SB27 0    -
SB28 0    -
SB29 0    -
SB30 0    -
SB31 0    -
```

Max. No. of active subbands = 12
Sum of nbal = 38

Table 3-B.3. Coefficients Di of the synthesis window

```
D[   0]= 0.000000000    D[   1]=-0.000015259    D[   2]=-0.000015259    D[   3]=-0.000015259
D[   4]=-0.000015259    D[   5]=-0.000015259    D[   6]=-0.000015259    D[   7]=-0.000030518
D[   8]=-0.000030518    D[   9]=-0.000030518    D[  10]=-0.000030518    D[  11]=-0.000045776
D[  12]=-0.000045776    D[  13]=-0.000061035    D[  14]=-0.000061035    D[  15]=-0.000076294
D[  16]=-0.000076294    D[  17]=-0.000091553    D[  18]=-0.000106812    D[  19]=-0.000106812
D[  20]=-0.000122070    D[  21]=-0.000137329    D[  22]=-0.000152588    D[  23]=-0.000167847
D[  24]=-0.000198364    D[  25]=-0.000213623    D[  26]=-0.000244141    D[  27]=-0.000259399
D[  28]=-0.000289917    D[  29]=-0.000320435    D[  30]=-0.000366211    D[  31]=-0.000396729
D[  32]=-0.000442505    D[  33]=-0.000473022    D[  34]=-0.000534058    D[  35]=-0.000579834
D[  36]=-0.000625610    D[  37]=-0.000686646    D[  38]=-0.000747681    D[  39]=-0.000808716
D[  40]=-0.000885010    D[  41]=-0.000961304    D[  42]=-0.001037598    D[  43]=-0.001113892
D[  44]=-0.001205444    D[  45]=-0.001296997    D[  46]=-0.001388550    D[  47]=-0.001480103
D[  48]=-0.001586914    D[  49]=-0.001693726    D[  50]=-0.001785278    D[  51]=-0.001907349
D[  52]=-0.002014160    D[  53]=-0.002120972    D[  54]=-0.002243042    D[  55]=-0.002349854
D[  56]=-0.002456665    D[  57]=-0.002578735    D[  58]=-0.002685547    D[  59]=-0.002792358
D[  60]=-0.002899170    D[  61]=-0.002990723    D[  62]=-0.003082275    D[  63]=-0.003173828
D[  64]= 0.003250122    D[  65]= 0.003326416    D[  66]= 0.003387451    D[  67]= 0.003433228
D[  68]= 0.003463745    D[  69]= 0.003479004    D[  70]= 0.003479004    D[  71]= 0.003463745
D[  72]= 0.003417969    D[  73]= 0.003372192    D[  74]= 0.003280640    D[  75]= 0.003173828
D[  76]= 0.003051758    D[  77]= 0.002883911    D[  78]= 0.002700806    D[  79]= 0.002487183
D[  80]= 0.002227783    D[  81]= 0.001937866    D[  82]= 0.001617432    D[  83]= 0.001266479
D[  84]= 0.000869751    D[  85]= 0.000442505    D[  86]=-0.000030518    D[  87]=-0.000549316
D[  88]=-0.001098633    D[  89]=-0.001693726    D[  90]=-0.002334595    D[  91]=-0.003005981
D[  92]=-0.003723145    D[  93]=-0.004486084    D[  94]=-0.005294800    D[  95]=-0.006118774
D[  96]=-0.007003784    D[  97]=-0.007919312    D[  98]=-0.008865356    D[  99]=-0.009841919
D[100]=-0.010848999    D[101]=-0.011886597    D[102]=-0.012939453    D[103]=-0.014022827
D[104]=-0.015121460    D[105]=-0.016235352    D[106]=-0.017349243    D[107]=-0.018463135
D[108]=-0.019577026    D[109]=-0.020690918    D[110]=-0.021789551    D[111]=-0.022857666
D[112]=-0.023910522    D[113]=-0.024932861    D[114]=-0.025909424    D[115]=-0.026840210
D[116]=-0.027725220    D[117]=-0.028533936    D[118]=-0.029281616    D[119]=-0.029937744
D[120]=-0.030532837    D[121]=-0.031005859    D[122]=-0.031387329    D[123]=-0.031661987
D[124]=-0.031814575    D[125]=-0.031845093    D[126]=-0.031738281    D[127]=-0.031478882
D[128]= 0.031082153    D[129]= 0.030517578    D[130]= 0.029785156    D[131]= 0.028884888
D[132]= 0.027801514    D[133]= 0.026535034    D[134]= 0.025085449    D[135]= 0.023422241
D[136]= 0.021575928    D[137]= 0.019531250    D[138]= 0.017257690    D[139]= 0.014801025
D[140]= 0.012115479    D[141]= 0.009231567    D[142]= 0.006134033    D[143]= 0.002822876
D[144]=-0.000686646    D[145]=-0.004394531    D[146]=-0.008316040    D[147]=-0.012420654
D[148]=-0.016708374    D[149]=-0.021179199    D[150]=-0.025817871    D[151]=-0.030609131
D[152]=-0.035552979    D[153]=-0.040634155    D[154]=-0.045837402    D[155]=-0.051132202
D[156]=-0.056533813    D[157]=-0.061996460    D[158]=-0.067520142    D[159]=-0.073059082
D[160]=-0.078628540    D[161]=-0.084182739    D[162]=-0.089706421    D[163]=-0.095169067
```

```
D[164]=-0.100540161    D[165]=-0.105819702    D[166]=-0.110946655    D[167]=-0.115921021
D[168]=-0.120697021    D[169]=-0.125259399    D[170]=-0.129562378    D[171]=-0.133590698
D[172]=-0.137298584    D[173]=-0.140670776    D[174]=-0.143676758    D[175]=-0.146255493
D[176]=-0.148422241    D[177]=-0.150115967    D[178]=-0.151306152    D[179]=-0.151962280
D[180]=-0.152069092    D[181]=-0.151596069    D[182]=-0.150497437    D[183]=-0.148773193
D[184]=-0.146362305    D[185]=-0.143264771    D[186]=-0.139450073    D[187]=-0.134887695
D[188]=-0.129577637    D[189]=-0.123474121    D[190]=-0.116577148    D[191]=-0.108856201
D[192]= 0.100311279    D[193]= 0.090927124    D[194]= 0.080688477    D[195]= 0.069595337
D[196]= 0.057617187    D[197]= 0.044784546    D[198]= 0.031082153    D[199]= 0.016510010
D[200]= 0.001068115    D[201]=-0.015228271    D[202]=-0.032379150    D[203]=-0.050354004
D[204]=-0.069168091    D[205]=-0.088775635    D[206]=-0.109161377    D[207]=-0.130310059
D[208]=-0.152206421    D[209]=-0.174789429    D[210]=-0.198059082    D[211]=-0.221984863
D[212]=-0.246505737    D[213]=-0.271591187    D[214]=-0.297210693    D[215]=-0.323318481
D[216]=-0.349868774    D[217]=-0.376800537    D[218]=-0.404083252    D[219]=-0.431655884
D[220]=-0.459472656    D[221]=-0.487472534    D[222]=-0.515609741    D[223]=-0.543823242
D[224]=-0.572036743    D[225]=-0.600219727    D[226]=-0.628295898    D[227]=-0.656219482
D[228]=-0.683914185    D[229]=-0.711318970    D[230]=-0.738372803    D[231]=-0.765029907
D[232]=-0.791213989    D[233]=-0.816864014    D[234]=-0.841949463    D[235]=-0.866363525
D[236]=-0.890090942    D[237]=-0.913055420    D[238]=-0.935195923    D[239]=-0.956481934
D[240]=-0.976852417    D[241]=-0.996246338    D[242]=-1.014617920    D[243]=-1.031936646
D[244]=-1.048156738    D[245]=-1.063217163    D[246]=-1.077117920    D[247]=-1.089782715
D[248]=-1.101211548    D[249]=-1.111373901    D[250]=-1.120223999    D[251]=-1.127746582
D[252]=-1.133926392    D[253]=-1.138763428    D[254]=-1.142211914    D[255]=-1.144287109
D[256]= 1.144989014    D[257]= 1.144287109    D[258]= 1.142211914    D[259]= 1.138763428
D[260]= 1.133926392    D[261]= 1.127746582    D[262]= 1.120223999    D[263]= 1.111373901
D[264]= 1.101211548    D[265]= 1.089782715    D[266]= 1.077117920    D[267]= 1.063217163
D[268]= 1.048156738    D[269]= 1.031936646    D[270]= 1.014617920    D[271]= 0.996246338
D[272]= 0.976852417    D[273]= 0.956481934    D[274]= 0.935195923    D[275]= 0.913055420
D[276]= 0.890090942    D[277]= 0.866363525    D[278]= 0.841949463    D[279]= 0.816864014
D[280]= 0.791213989    D[281]= 0.765029907    D[282]= 0.738372803    D[283]= 0.711318970
D[284]= 0.683914185    D[285]= 0.656219482    D[286]= 0.628295898    D[287]= 0.600219727
D[288]= 0.572036743    D[289]= 0.543823242    D[290]= 0.515609741    D[291]= 0.487472534
D[292]= 0.459472656    D[293]= 0.431655884    D[294]= 0.404083252    D[295]= 0.376800537
D[296]= 0.349868774    D[297]= 0.323318481    D[298]= 0.297210693    D[299]= 0.271591187
D[300]= 0.246505737    D[301]= 0.221984863    D[302]= 0.198059082    D[303]= 0.174789429
D[304]= 0.152206421    D[305]= 0.130310059    D[306]= 0.109161377    D[307]= 0.088775635
D[308]= 0.069168091    D[309]= 0.050354004    D[310]= 0.032379150    D[311]= 0.015228271
D[312]=-0.001068115    D[313]=-0.016510010    D[314]=-0.031082153    D[315]=-0.044784546
D[316]=-0.057617187    D[317]=-0.069595337    D[318]=-0.080688477    D[319]=-0.090927124
D[320]= 0.100311279    D[321]= 0.108856201    D[322]= 0.116577148    D[323]= 0.123474121
D[324]= 0.129577637    D[325]= 0.134887695    D[326]= 0.139450073    D[327]= 0.143264771
D[328]= 0.146362305    D[329]= 0.148773193    D[330]= 0.150497437    D[331]= 0.151596069
D[332]= 0.152069092    D[333]= 0.151962280    D[334]= 0.151306152    D[335]= 0.150115967
D[336]= 0.148422241    D[337]= 0.146255493    D[338]= 0.143676758    D[339]= 0.140670776
D[340]= 0.137298584    D[341]= 0.133590698    D[342]= 0.129562378    D[343]= 0.125259399
D[344]= 0.120697021    D[345]= 0.115921021    D[346]= 0.110946655    D[347]= 0.105819702
D[348]= 0.100540161    D[349]= 0.095169067    D[350]= 0.089706421    D[351]= 0.084182739
D[352]= 0.078628540    D[353]= 0.073059082    D[354]= 0.067520142    D[355]= 0.061996460
D[356]= 0.056533813    D[357]= 0.051132202    D[358]= 0.045837402    D[359]= 0.040634155
D[360]= 0.035552979    D[361]= 0.030609131    D[362]= 0.025817871    D[363]= 0.021179199
D[364]= 0.016708374    D[365]= 0.012420654    D[366]= 0.008316040    D[367]= 0.004394531
D[368]= 0.000686646    D[369]=-0.002822876    D[370]=-0.006134033    D[371]=-0.009231567
D[372]=-0.012115479    D[373]=-0.014801025    D[374]=-0.017257690    D[375]=-0.019531250
D[376]=-0.021575928    D[377]=-0.023422241    D[378]=-0.025085449    D[379]=-0.026535034
D[380]=-0.027801514    D[381]=-0.028884888    D[382]=-0.029785156    D[383]=-0.030517578
D[384]= 0.031082153    D[385]= 0.031478882    D[386]= 0.031738281    D[387]= 0.031845093
D[388]= 0.031814575    D[389]= 0.031661987    D[390]= 0.031387329    D[391]= 0.031005859
D[392]= 0.030532837    D[393]= 0.029937744    D[394]= 0.029281616    D[395]= 0.028533936
D[396]= 0.027725220    D[397]= 0.026840210    D[398]= 0.025909424    D[399]= 0.024932861
D[400]= 0.023910522    D[401]= 0.022857666    D[402]= 0.021789551    D[403]= 0.020690918
D[404]= 0.019577026    D[405]= 0.018463135    D[406]= 0.017349243    D[407]= 0.016235352
D[408]= 0.015121460    D[409]= 0.014022827    D[410]= 0.012939453    D[411]= 0.011886597
D[412]= 0.010848999    D[413]= 0.009841919    D[414]= 0.008865356    D[415]= 0.007919312
D[416]= 0.007003784    D[417]= 0.006118774    D[418]= 0.005294800    D[419]= 0.004486084
D[420]= 0.003723145    D[421]= 0.003005981    D[422]= 0.002334595    D[423]= 0.001693726
D[424]= 0.001098633    D[425]= 0.000549316    D[426]= 0.000030518    D[427]=-0.000442505
D[428]=-0.000869751    D[429]=-0.001266479    D[430]=-0.001617432    D[431]=-0.001937866
D[432]=-0.002227783    D[433]=-0.002487183    D[434]=-0.002700806    D[435]=-0.002883911
D[436]=-0.003051758    D[437]=-0.003173828    D[438]=-0.003280640    D[439]=-0.003372192
D[440]=-0.003417969    D[441]=-0.003463745    D[442]=-0.003479004    D[443]=-0.003479004
D[444]=-0.003463745    D[445]=-0.003433228    D[446]=-0.003387451    D[447]=-0.003326416
D[448]= 0.003250122    D[449]= 0.003173828    D[450]= 0.003082275    D[451]= 0.002990723
D[452]= 0.002899170    D[453]= 0.002792358    D[454]= 0.002685547    D[455]= 0.002578735
D[456]= 0.002456665    D[457]= 0.002349854    D[458]= 0.002243042    D[459]= 0.002120972
D[460]= 0.002014160    D[461]= 0.001907349    D[462]= 0.001785278    D[463]= 0.001693726
D[464]= 0.001586914    D[465]= 0.001480103    D[466]= 0.001388550    D[467]= 0.001296997
D[468]= 0.001205444    D[469]= 0.001113892    D[470]= 0.001037598    D[471]= 0.000961304
D[472]= 0.000885010    D[473]= 0.000808716    D[474]= 0.000747681    D[475]= 0.000686646
D[476]= 0.000625610    D[477]= 0.000579834    D[478]= 0.000534058    D[479]= 0.000473022
D[480]= 0.000442505    D[481]= 0.000396729    D[482]= 0.000366211    D[483]= 0.000320435
D[484]= 0.000289917    D[485]= 0.000259399    D[486]= 0.000244141    D[487]= 0.000213623
```

```
D[488]= 0.000198364    D[489]= 0.000167847    D[490]= 0.000152588    D[491]= 0.000137329
D[492]= 0.000122070    D[493]= 0.000106812    D[494]= 0.000106812    D[495]= 0.000091553
D[496]= 0.000076294    D[497]= 0.000076294    D[498]= 0.000061035    D[499]= 0.000061035
D[500]= 0.000045776    D[501]= 0.000045776    D[502]= 0.000030518    D[503]= 0.000030518
D[504]= 0.000030518    D[505]= 0.000030518    D[506]= 0.000015259    D[507]= 0.000015259
D[508]= 0.000015259    D[509]= 0.000015259    D[510]= 0.000015259    D[511]= 0.000015259
```

Table 3-B.4. Layer II classes of quantization

Number of steps	C	D	grouping	Samples per codeword	Bits per codeword
3	1.33333333333	0.50000000000	yes	3	5
5	1.60000000000	0.50000000000	yes	3	7
7	1.14285714286	0.25000000000	no	1	3
9	1.777777777777	0.50000000000	yes	3	10
15	1.06666666666	0.12500000000	no	1	4
31	1.03225806452	0.06250000000	no	1	5
63	1.01587301587	0.03125000000	no	1	6
127	1.00787401575	0.01562500000	no	1	7
255	1.00392156863	0.00781250000	no	1	8
511	1.00195694716	0.00390625000	no	1	9
1023	1.00097751711	0.00195312500	no	1	10
2047	1.00048851979	0.00097656250	no	1	11
4095	1.00024420024	0.00048828125	no	1	12
8191	1.00012208522	0.00024414063	no	1	13
16383	1.00006103888	0.00012207031	no	1	14
32767	1.00003051851	0.00006103516	no	1	15
65535	1.00001525902	0.00003051758	no	1	16

Table 3-B.5. Number of protected audio_data bits

Layer	bit alloc. table no.	no. of bits single channel mode	no. of bits other modes
I	-	128	256
I I	3-B.2a	142	284
I I	3-B.2b	154	308
I I	3-B.2c	42	84
I I	3-B.2d	62	124
I I I	-	136	256

Table 3-B.6. Layer III Preemphasis

0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 2 2 3 3 3 3 2

Table 3-B.7. Huffman codes for Layer III

Huffman code table for quadruples (A)

```
Value hlen hcod
 0000  1    1
 0001  4    0101
 0010  4    0100
 0011  5    00101
 0100  4    0110
 0101  6    000101
 0110  5    00100
 0111  6    000100
```

```
1000  4   0111
1001  5   00011
1010  5   00110
1011  6   000000
1100  5   00111
1101  6   000010
1110  6   000011
1111  6   000001
```

Huffman code table for quadruples (B)

```
Value hlen hcod
0000  4   1111
0001  4   1110
0010  4   1101
0011  4   1100
0100  4   1011
0101  4   1010
0110  4   1001
0111  4   1000
1000  4   0111
1001  4   0110
1010  4   0101
1011  4   0100
1100  4   0011
1101  4   0010
1110  4   0001
1111  4   0000
```

Huffman code table 0

```
x  y hlen
0  0  0
```

Huffman code table 1

```
x  y hlen hcod
0  0  1   1
0  1  3   001
1  0  2   01
1  1  3   000
```

Huffman code table 2

```
x  y hlen hcod
0  0  1   1
0  1  3   010
0  2  6   000001
1  0  3   011
1  1  3   001
1  2  5   00001
2  0  5   00011
2  1  5   00010
2  2  6   000000
```

Huffman code table 3

```
x  y hlen hcod
0  0  2   11
0  1  2   10
0  2  6   000001
1  0  3   001
1  1  2   01
1  2  5   00001
2  0  5   00011
2  1  5   00010
2  2  6   000000
```

Huffman code table 4

```
not used
```

Huffman code table 5

```
x  y hlen hcod
0  0  1   1
0  1  3   010
0  2  6   000110
0  3  7   0000101
```

```
1   0   3   011
1   1   3   001
1   2   6   000100
1   3   7   0000100
2   0   6   000111
2   1   6   000101
2   2   7   0000111
2   3   8   00000001
3   0   7   0000110
3   1   6   000001
3   2   7   0000001
3   3   8   00000000
```

Huffman code table 6

```
x   y  hlen hcod
0   0   3   111
0   1   3   011
0   2   5   00101
0   3   7   0000001
1   0   3   110
1   1   2   10
1   2   4   0011
1   3   5   00010
2   0   4   0101
2   1   4   0100
2   2   5   00100
2   3   6   000001
3   0   6   000011
3   1   5   00011
3   2   6   000010
3   3   7   0000000
```

Huffman code table 7

```
x   y  hlen hcod
0   0   1   1
0   1   3   010
0   2   6   001010
0   3   8   00010011
0   4   8   00010000
0   5   9   000001010
1   0   3   011
1   1   4   0011
1   2   6   000111
1   3   7   0001010
1   4   7   0000101
1   5   8   00000011
2   0   6   001011
2   1   5   00100
2   2   7   0001101
2   3   8   00010001
2   4   8   00001000
2   5   9   000000100
3   0   7   0001100
3   1   7   0001011
3   2   8   00010010
3   3   9   000001111
3   4   9   000001011
3   5   9   000000010
4   0   7   0000111
4   1   7   0000110
4   2   8   00001001
4   3   9   000001110
4   4   9   000000011
4   5   10  0000000001
5   0   8   00000110
5   1   8   00000100
5   2   9   000000101
5   3   10  0000000011
5   4   10  0000000010
5   5   10  0000000000
```

Huffman code table 8

```
x   y  hlen hcod
0   0   2   11
0   1   3   100
0   2   6   000110
0   3   8   00010010
```

```
0   4   8    00001100
0   5   9    000000101
1   0   3    101
1   1   2    01
1   2   4    0010
1   3   8    00010000
1   4   8    00001001
1   5   8    00000011
2   0   6    000111
2   1   4    0011
2   2   6    000101
2   3   8    00001110
2   4   8    00000111
2   5   9    000000011
3   0   8    00010011
3   1   8    00010001
3   2   8    00001111
3   3   9    000001101
3   4   9    000001010
3   5   10   0000000100
4   0   8    00001101
4   1   7    0000101
4   2   8    00001000
4   3   9    000001011
4   4   10   0000000101
4   5   10   0000000001
5   0   9    000001100
5   1   8    00000100
5   2   9    000000100
5   3   9    000000001
5   4   11   00000000001
5   5   11   00000000000
```

Huffman code table 9

```
x   y   hlen  hcod
0   0   3     111
0   1   3     101
0   2   5     01001
0   3   6     001110
0   4   8     00001111
0   5   9     000000111
1   0   3     110
1   1   3     100
1   2   4     0101
1   3   5     00101
1   4   6     000110
1   5   8     00000111
2   0   4     0111
2   1   4     0110
2   2   5     01000
2   3   6     001000
2   4   7     0001000
2   5   8     00000101
3   0   6     001111
3   1   5     00110
3   2   6     001001
3   3   7     0001010
3   4   7     0000101
3   5   8     00000001
4   0   7     0001011
4   1   6     000111
4   2   7     0001001
4   3   7     0000110
4   4   8     00000100
4   5   9     000000001
5   0   8     00001110
5   1   7     0000100
5   2   8     00000110
5   3   8     00000010
5   4   9     000000110
5   5   9     000000000
```

Huffman code table 10

```
x   y   hlen  hcod
0   0   1     1
0   1   3     010
0   2   6     001010
0   3   8     00010111
```

```
0   4   9    000100011
0   5   9    000011110
0   6   9    000001100
0   7   10   0000010001
1   0   3    011
1   1   4    0011
1   2   6    001000
1   3   7    0001100
1   4   8    00010010
1   5   9    000010101
1   6   8    00001100
1   7   8    00000111
2   0   6    001011
2   1   6    001001
2   2   7    0001111
2   3   8    00010101
2   4   9    000100000
2   5   10   0000101000
2   6   9    000010011
2   7   9    000000110
3   0   7    0001110
3   1   7    0001101
3   2   8    00010110
3   3   9    000100010
3   4   10   0000101110
3   5   10   0000010111
3   6   9    000010010
3   7   10   0000000111
4   0   8    00010100
4   1   8    00010011
4   2   9    000100001
4   3   10   0000101111
4   4   10   0000011011
4   5   10   0000010110
4   6   10   0000001001
4   7   10   0000000011
5   0   9    000011111
5   1   9    000010110
5   2   10   0000101001
5   3   10   0000011010
5   4   11   00000010101
5   5   11   00000010100
5   6   10   0000000101
5   7   11   00000000011
6   0   8    00001110
6   1   8    00001101
6   2   9    000001010
6   3   10   0000001011
6   4   10   0000010000
6   5   10   0000000110
6   6   11   00000000101
6   7   11   00000000001
7   0   9    000001001
7   1   8    00001000
7   2   9    000000111
7   3   10   0000001000
7   4   10   0000000100
7   5   11   00000000100
7   6   11   00000000010
7   7   11   00000000000
```

Huffman code table 11

```
x   y  hlen  hcod
0   0   2    11
0   1   3    100
0   2   5    01010
0   3   7    0011000
0   4   8    00100010
0   5   9    000100001
0   6   8    00010101
0   7   9    000001111
1   0   3    101
1   1   3    011
1   2   4    0100
1   3   6    001010
1   4   8    00100000
1   5   8    00010001
1   6   7    0001011
1   7   8    00001010
2   0   5    01011
```

```
2  1   5   00111
2  2   6   001101
2  3   7   0010010
2  4   8   00011110
2  5   9   000011111
2  6   8   00010100
2  7   8   00000101
3  0   7   0011001
3  1   6   001011
3  2   7   0010011
3  3   9   000111011
3  4   8   00011011
3  5   10  0000010010
3  6   8   00001100
3  7   9   000000101
4  0   8   00100011
4  1   8   00100001
4  2   8   00011111
4  3   9   000111010
4  4   9   000011110
4  5   10  0000010000
4  6   9   000000111
4  7   10  0000000101
5  0   8   00011100
5  1   8   00011010
5  2   9   000100000
5  3   10  0000010011
5  4   10  0000010001
5  5   11  00000001111
5  6   10  0000001000
5  7   11  00000001110
6  0   8   00001110
6  1   7   0001100
6  2   7   0001001
6  3   8   00001101
6  4   9   000001110
6  5   10  0000001001
6  6   10  0000000100
6  7   10  0000000001
7  0   8   00001011
7  1   7   0000100
7  2   8   00000110
7  3   9   000000110
7  4   10  0000000110
7  5   10  0000000011
7  6   10  0000000010
7  7   10  0000000000
```

Huffman code table 12

```
x  y hlen hcod
0  0   4   1001
0  1   3   110
0  2   5   10000
0  3   7   0100001
0  4   8   00101001
0  5   9   000100111
0  6   9   000100110
0  7   9   000011010
1  0   3   111
1  1   3   101
1  2   4   0110
1  3   5   01001
1  4   7   0010111
1  5   7   0010000
1  6   8   00011010
1  7   8   00001011
2  0   5   10001
2  1   4   0111
2  2   5   01011
2  3   6   001110
2  4   7   0010101
2  5   8   00011110
2  6   7   0001010
2  7   8   00000111
3  0   6   010001
3  1   5   01010
3  2   6   001111
3  3   6   001100
3  4   7   0010010
3  5   8   00011100
```

```
3   6    8    00001110
3   7    8    00000101
4   0    7    0100000
4   1    6    001101
4   2    7    0010110
4   3    7    0010011
4   4    8    00010010
4   5    8    00010000
4   6    8    00001001
4   7    9    000000101
5   0    8    00101000
5   1    7    0010001
5   2    8    00011111
5   3    8    00011101
5   4    8    00010001
5   5    9    000001101
5   6    8    00000100
5   7    9    000000010
6   0    8    00011011
6   1    7    0001100
6   2    7    0001011
6   3    8    00001111
6   4    8    00001010
6   5    9    000000111
6   6    9    000000100
6   7   10    0000000001
7   0    9    000011011
7   1    8    00001100
7   2    8    00001000
7   3    9    000001100
7   4    9    000000110
7   5    9    000000011
7   6    9    000000001
7   7   10    0000000000
```

Huffman code table 13

```
x   y hlen hcod
0   0    1    1
0   1    4    0101
0   2    6    001110
0   3    7    0010101
0   4    8    00100010
0   5    9    000110011
0   6    9    000101110
0   7   10    0001000111
0   8    9    000101010
0   9   10    0000110100
0  10   11    00001000100
0  11   11    00000110100
0  12   12    000001000011
0  13   12    000000101100
0  14   13    0000000101011
0  15   13    0000000010011
1   0    3    011
1   1    4    0100
1   2    6    001100
1   3    7    0010011
1   4    8    00011111
1   5    8    00011010
1   6    9    000101100
1   7    9    000100001
1   8    9    000011111
1   9    9    000011000
1  10   10    0000100000
1  11   10    0000011000
1  12   11    00000011111
1  13   12    000000100011
1  14   12    000000010110
1  15   12    000000001110
2   0    6    001111
2   1    6    001101
2   2    7    0010111
2   3    8    00100100
2   4    9    000111011
2   5    9    000110001
2   6   10    0001001101
2   7   10    0001000001
2   8    9    000011101
2   9   10    0000101000
2  10   10    0000011110
```

```
2  11  11   00000101000
2  12  11   00000011011
2  13  12   000000100001
2  14  13   00000000101010
2  15  13   00000000010000
3   0   7   0010110
3   1   7   0010100
3   2   8   00100101
3   3   9   000111101
3   4   9   000111000
3   5  10   0001001111
3   6  10   0001001001
3   7  10   0001000000
3   8  10   0000101011
3   9  11   00001001100
3  10  11   00000111000
3  11  11   00000100101
3  12  11   00000011010
3  13  12   000000011111
3  14  13   00000000011001
3  15  13   00000000001110
4   0   8   00100011
4   1   7   0010000
4   2   9   000111100
4   3   9   000111001
4   4  10   0001100001
4   5  10   0001001011
4   6  11   00001110010
4   7  11   00001011011
4   8  10   0000110110
4   9  11   00001001001
4  10  11   00000110111
4  11  12   000000101001
4  12  12   000000110000
4  13  13   00000000110101
4  14  13   00000000010111
4  15  14   000000000011000
5   0   9   000111010
5   1   8   00011011
5   2   9   000110010
5   3  10   0001100000
5   4  10   0001001100
5   5  10   0001000110
5   6  11   00001011101
5   7  11   00001010100
5   8  11   00001001101
5   9  11   00000111010
5  10  12   000001001111
5  11  11   00000011101
5  12  13   00000001001010
5  13  13   00000000110001
5  14  14   000000000101001
5  15  14   000000000010001
6   0   9   000101111
6   1   9   000101101
6   2  10   0001001110
6   3  10   0001001010
6   4  11   00001110011
6   5  11   00001011110
6   6  11   00001011010
6   7  11   00001001111
6   8  11   00001000101
6   9  12   000001010011
6  10  12   000001000111
6  11  12   000000110010
6  12  13   00000000111011
6  13  13   00000000100110
6  14  14   00000000100100
6  15  14   000000000001111
7   0  10   0001001000
7   1   9   000100010
7   2  10   0000111000
7   3  11   00001011111
7   4  11   00001011100
7   5  11   00001010101
7   6  12   000001011011
7   7  12   000001011010
7   8  12   000001010110
7   9  12   000001001001
7  10  13   00000001001101
7  11  13   00000001000001
```

```
 7 12  13    0000000110011
 7 13  14    000000000101100
 7 14  16    0000000000101011
 7 15  16    0000000000101010
 8  0   9    000101011
 8  1   8    00010100
 8  2   9    000011110
 8  3  10    0000101100
 8  4  10    0000110111
 8  5  11    00001001110
 8  6  11    00001001000
 8  7  12    000001010111
 8  8  12    000001001110
 8  9  12    000000111101
 8 10  12    000000101110
 8 11  13    0000000110110
 8 12  13    0000000100101
 8 13  14    00000000011110
 8 14  15    000000000010100
 8 15  15    000000000010000
 9  0  10    0000110101
 9  1   9    000011001
 9  2  10    0000101001
 9  3  10    0000100101
 9  4  11    00000101100
 9  5  11    00000111011
 9  6  11    00000110110
 9  7  13    0000001010001
 9  8  12    000001000010
 9  9  13    0000001001100
 9 10  13    0000000111001
 9 11  14    00000000110110
 9 12  14    00000000100101
 9 13  14    00000000010010
 9 14  16    0000000000100111
 9 15  15    000000000001011
10  0  10    0000100011
10  1  10    0000100001
10  2  10    0000011111
10  3  11    00000111001
10  4  11    00000101010
10  5  12    000001010010
10  6  12    000001001000
10  7  13    0000001010000
10  8  12    000000101111
10  9  13    0000000111010
10 10  14    00000000110111
10 11  13    0000000010101
10 12  14    00000000010110
10 13  15    000000000011010
10 14  16    0000000000100110
10 15  17    00000000000010110
11  0  11    00000110101
11  1  10    0000011001
11  2  10    0000010111
11  3  11    00000100110
11  4  12    000001000110
11  5  12    000000111100
11  6  12    000000110011
11  7  12    000000100100
11  8  13    0000000110111
11  9  13    0000000011010
11 10  13    0000000100010
11 11  14    00000000010111
11 12  15    000000000011011
11 13  15    000000000001110
11 14  15    000000000001001
11 15  16    0000000000000111
12  0  11    00000100010
12  1  11    00000100000
12  2  11    00000011100
12  3  12    000000100111
12  4  12    000000110001
12  5  13    0000001001011
12  6  12    000000011110
12  7  13    0000000110100
12  8  14    00000000110000
12  9  14    00000000101000
12 10  15    000000000110100
12 11  15    000000000011100
12 12  15    000000000010010
```

```
12 13  16   0000000000010001
12 14  16   0000000000001001
12 15  16   0000000000000101
13  0  12   000000101101
13  1  11   00000010101
13  2  12   000000100010
13  3  13   0000001000000
13  4  13   0000000111000
13  5  13   0000000110010
13  6  14   000000000110001
13  7  14   00000000101101
13  8  14   000000000011111
13  9  14   000000000010011
13 10  14   000000000001100
13 11  15   0000000000001111
13 12  16   0000000000001010
13 13  15   000000000000111
13 14  16   0000000000000110
13 15  16   0000000000000011
14  0  13   0000000110000
14  1  12   000000010111
14  2  12   000000010100
14  3  13   0000000100111
14  4  13   0000000100100
14  5  13   0000000100011
14  6  15   000000000110101
14  7  14   00000000010101
14  8  14   000000000010000
14  9  17   00000000000010111
14 10  15   000000000001101
14 11  15   000000000001010
14 12  15   000000000000110
14 13  17   00000000000000001
14 14  16   0000000000000100
14 15  16   0000000000000010
15  0  12   000000010000
15  1  12   000000001111
15  2  13   0000000010001
15  3  14   00000000011011
15  4  14   000000000011001
15  5  14   00000000010100
15  6  15   000000000011101
15  7  14   00000000001011
15  8  15   000000000010001
15  9  15   000000000001100
15 10  16   0000000000010000
15 11  16   0000000000001000
15 12  19   0000000000000000001
15 13  18   000000000000000001
15 14  19   0000000000000000000
15 15  16   0000000000000001
```

Huffman code table 14

```
not used
```

Huffman code table 15

```
x   y  hlen hcod
0   0   3   111
0   1   4   1100
0   2   5   10010
0   3   7   0110101
0   4   7   0101111
0   5   8   01001100
0   6   9   001111100
0   7   9   001101100
0   8   9   001011001
0   9  10   0001111011
0  10  10   0001101100
0  11  11   00001110111
0  12  11   00001101011
0  13  11   00001010001
0  14  12   000001111010
0  15  13   0000000111111
1   0   4   1101
1   1   3   101
1   2   5   10000
1   3   6   011011
1   4   7   0101110
```

```
1    5    7     0100100
1    6    8     00111101
1    7    8     00110011
1    8    8     00101010
1    9    9     001000110
1   10    9     000110100
1   11   10     0001010011
1   12   10     0001000001
1   13   10     0000101001
1   14   11     00000111011
1   15   11     00000100100
2    0    5     10011
2    1    5     10001
2    2    5     01111
2    3    6     011000
2    4    7     0101001
2    5    7     0100010
2    6    8     00111011
2    7    8     00110000
2    8    8     00101000
2    9    9     001000000
2   10    9     000110010
2   11   10     0001001110
2   12   10     0000111110
2   13   11     00001010000
2   14   11     00000111000
2   15   11     00000100001
3    0    6     011101
3    1    6     011100
3    2    6     011001
3    3    7     0101011
3    4    7     0100111
3    5    8     00111111
3    6    8     00110111
3    7    9     001011101
3    8    9     001001100
3    9    9     000111011
3   10   10     0001011101
3   11   10     0001001000
3   12   10     0000110110
3   13   11     00001001011
3   14   11     00000110010
3   15   11     00000011101
4    0    7     0110100
4    1    6     010110
4    2    7     0101010
4    3    7     0101000
4    4    8     01000011
4    5    8     00111001
4    6    9     001011111
4    7    9     001001111
4    8    9     001001000
4    9    9     000111001
4   10   10     0001011001
4   11   10     0001000101
4   12   10     0000110001
4   13   11     00001000010
4   14   11     00000101110
4   15   11     00000011011
5    0    8     01001101
5    1    7     0100101
5    2    7     0100011
5    3    8     01000010
5    4    8     00111010
5    5    8     00110100
5    6    9     001011011
5    7    9     001001010
5    8    9     000111110
5    9    9     000110000
5   10   10     0001001111
5   11   10     0000111111
5   12   11     00001011010
5   13   11     00000111110
5   14   11     00000101000
5   15   12     000000100110
6    0    9     001111101
6    1    7     0100000
6    2    8     00111100
6    3    8     00111000
6    4    8     00110010
6    5    9     001011100
```

```
 6   6    9    001001110
 6   7    9    001000001
 6   8    9    000110111
 6   9   10    0001010111
 6  10   10    0001000111
 6  11   10    0000110011
 6  12   11    00001001001
 6  13   11    00000110011
 6  14   12    000001000110
 6  15   12    000000011110
 7   0    9    001101101
 7   1    8    00110101
 7   2    8    00110001
 7   3    9    001011110
 7   4    9    001011000
 7   5    9    001001011
 7   6    9    001000010
 7   7   10    0001111010
 7   8   10    0001011011
 7   9   10    0001001001
 7  10   10    0000111000
 7  11   10    0000101010
 7  12   11    00001000000
 7  13   11    00000101100
 7  14   11    00000010101
 7  15   12    000000011001
 8   0    9    001011010
 8   1    8    00101011
 8   2    8    00101001
 8   3    9    001001101
 8   4    9    001001001
 8   5    9    000111111
 8   6    9    000111000
 8   7   10    0001011100
 8   8   10    0001001101
 8   9   10    0001000010
 8  10   10    0000101111
 8  11   11    00001000011
 8  12   11    00000110000
 8  13   12    000000110101
 8  14   12    000000100100
 8  15   12    000000010100
 9   0    9    001000111
 9   1    8    00100010
 9   2    9    001000011
 9   3    9    000111100
 9   4    9    000111010
 9   5    9    000110001
 9   6   10    0001011000
 9   7   10    0001001100
 9   8   10    0001000011
 9   9   11    00001101010
 9  10   11    00001000111
 9  11   11    00000110110
 9  12   11    00000100110
 9  13   12    000000100111
 9  14   12    000000010111
 9  15   12    000000001111
10   0   10    0001101101
10   1    9    000110101
10   2    9    000110011
10   3    9    000101111
10   4   10    0001011010
10   5   10    0001010010
10   6   10    0000111010
10   7   10    0000111001
10   8   10    0000110000
10   9   11    00001001000
10  10   11    00000111001
10  11   11    00000101001
10  12   11    00000010111
10  13   12    000000011011
10  14   13    0000000111110
10  15   12    000000001001
11   0   10    0001010110
11   1    9    000101010
11   2    9    000101000
11   3    9    000100101
11   4   10    0001000110
11   5   10    0001000000
11   6   10    0000110100
```

```
11  7  10    0000101011
11  8  11    00001000110
11  9  11    00000110111
11 10  11    00000101010
11 11  11    00000011001
11 12  12    000000011101
11 13  12    000000010010
11 14  12    000000001011
11 15  13    0000000001011
12  0  11    00001110110
12  1  10    0001000100
12  2   9    000011110
12  3  10    0000110111
12  4  10    0000110010
12  5  10    0000101110
12  6  11    00001001010
12  7  11    00001000001
12  8  11    00000110001
12  9  11    00000100111
12 10  11    00000011000
12 11  11    00000010000
12 12  12    000000010110
12 13  12    000000001101
12 14  13    0000000001110
12 15  13    0000000000111
13  0  11    00001011011
13  1  10    0000101100
13  2  10    0000100111
13  3  10    0000100110
13  4  10    0000100010
13  5  11    00000111111
13  6  11    00000110100
13  7  11    00000101101
13  8  11    00000011111
13  9  12    000000110100
13 10  12    000000011100
13 11  12    000000010011
13 12  12    000000001110
13 13  12    000000001000
13 14  13    0000000001001
13 15  13    0000000000011
14  0  12    000001111011
14  1  11    00000111100
14  2  11    00000111010
14  3  11    00000110101
14  4  11    00000101111
14  5  11    00000101011
14  6  11    00000100000
14  7  11    00000010110
14  8  12    000000100101
14  9  12    000000011000
14 10  12    000000010001
14 11  12    000000001100
14 12  13    0000000001111
14 13  13    0000000001010
14 14  12    000000000010
14 15  13    0000000000001
15  0  12    000001000111
15  1  11    00000100101
15  2  11    00000100010
15  3  11    00000011110
15  4  11    00000011100
15  5  11    00000010100
15  6  11    00000010001
15  7  12    000000011010
15  8  12    000000010101
15  9  12    000000010000
15 10  12    000000001010
15 11  12    000000000110
15 12  13    0000000001000
15 13  13    0000000000110
15 14  13    0000000000010
15 15  13    0000000000000
```

Huffman code table 16

```
ESC table, linbits=1
 x  y hlen hcod
 0  0   1   1
 0  1   4   0101
```

```
0   2    6    001110
0   3    8    00101100
0   4    9    001001010
0   5    9    000111111
0   6   10    0001101110
0   7   10    0001011101
0   8   11    00010101100
0   9   11    00010010101
0  10   11    00010001010
0  11   12    000011110010
0  12   12    000011100001
0  13   12    000011000011
0  14   13    0000101111000
0  15    9    000010001
1   0    3    011
1   1    4    0100
1   2    6    001100
1   3    7    0010100
1   4    8    00100011
1   5    9    000111110
1   6    9    000110101
1   7    9    000101111
1   8   10    0001010011
1   9   10    0001001011
1  10   10    0001000100
1  11   11    00001110111
1  12   12    000011001001
1  13   11    00001101011
1  14   12    000011001111
1  15    8    00001001
2   0    6    001111
2   1    6    001101
2   2    7    0010111
2   3    8    00100110
2   4    9    001000011
2   5    9    000111010
2   6   10    0001100111
2   7   10    0001011010
2   8   11    00010100001
2   9   10    0001001000
2  10   11    00001111111
2  11   11    00001110101
2  12   11    00001101110
2  13   12    000011010001
2  14   12    000011001110
2  15    9    000010000
3   0    8    00101101
3   1    7    0010101
3   2    8    00100111
3   3    9    001000101
3   4    9    001000000
3   5   10    0001110010
3   6   10    0001100011
3   7   10    0001010111
3   8   11    00010011110
3   9   11    00010001100
3  10   12    000011111100
3  11   12    000011010100
3  12   12    000011000111
3  13   13    0000110000011
3  14   13    0000101101101
3  15   10    0000011010
4   0    9    001001011
4   1    8    00100100
4   2    9    001000100
4   3    9    001000001
4   4   10    0001110011
4   5   10    0001100101
4   6   11    00010110011
4   7   11    00010100100
4   8   11    00010011011
4   9   12    000100001000
4  10   12    000011110110
4  11   12    000011100010
4  12   13    0000110001011
4  13   13    0000101111110
4  14   13    0000101101010
4  15    9    000001001
5   0    9    001000010
5   1    8    00011110
5   2    9    000111011
```

```
 5   3   9   000111000
 5   4  10   0001100110
 5   5  11   00010111001
 5   6  11   00010101101
 5   7  12   000100001001
 5   8  11   00010001110
 5   9  12   000011111101
 5  10  12   000011101000
 5  11  13   0000110010000
 5  12  13   0000110000100
 5  13  13   0000101111010
 5  14  14   000000110111101
 5  15  10   0000010000
 6   0  10   0001101111
 6   1   9   000110110
 6   2   9   000110100
 6   3  10   0001100100
 6   4  11   00010111000
 6   5  11   00010110010
 6   6  11   00010100000
 6   7  11   00010000101
 6   8  12   000100000001
 6   9  12   000011110100
 6  10  12   000011100100
 6  11  12   000011011001
 6  12  13   0000110000001
 6  13  13   0000101101110
 6  14  14   000010110011011
 6  15  10   0000001010
 7   0  10   0001100010
 7   1   9   000110000
 7   2  10   0001011011
 7   3  10   0001011000
 7   4  11   00010100101
 7   5  11   00010011101
 7   6  11   00010010100
 7   7  12   000100000101
 7   8  12   000011111000
 7   9  13   0000110010111
 7  10  13   0000110001101
 7  11  13   0000101110100
 7  12  13   0000101111100
 7  13  15   000001101111001
 7  14  15   000001101110100
 7  15  10   0000001000
 8   0  10   0001010101
 8   1  10   0001010100
 8   2  10   0001010001
 8   3  11   00010011111
 8   4  11   00010011100
 8   5  11   00010001111
 8   6  12   000100000100
 8   7  12   000011111001
 8   8  13   0000110101011
 8   9  13   0000110010001
 8  10  13   0000110001000
 8  11  13   0000101111111
 8  12  14   000010110010111
 8  13  14   000010110001001
 8  14  14   000010110001100
 8  15  10   0000000111
 9   0  11   00010011010
 9   1  10   0001001100
 9   2  10   0001001001
 9   3  11   00010001101
 9   4  11   00010000011
 9   5  12   000100000000
 9   6  12   000011110101
 9   7  13   0000110101010
 9   8  13   0000110010110
 9   9  13   0000110001010
 9  10  13   0000110000000
 9  11  14   000010110011111
 9  12  13   0000101100111
 9  13  14   000010110001010
 9  14  13   0000101100000
 9  15  11   00000001011
10   0  11   00010001011
10   1  11   00010000001
10   2  10   0001000011
10   3  11   00001111101
```

```
10   4   12   000011110111
10   5   12   000011101001
10   6   12   000011100101
10   7   12   000011011011
10   8   13   0000110001001
10   9   14   000010111100111
10  10   14   000010111100001
10  11   14   000010111010000
10  12   15   0000011011110101
10  13   15   0000011011110010
10  14   14   000000110110111
10  15   10   0000000100
11   0   12   000011110011
11   1   11   00001111000
11   2   11   00001110110
11   3   11   00001110011
11   4   12   000011100011
11   5   12   000011011111
11   6   13   0000110001100
11   7   14   000010111101010
11   8   14   000010111100110
11   9   14   000010111100000
11  10   14   000010111010001
11  11   14   000010111001000
11  12   14   000010111000010
11  13   13   0000011011111
11  14   14   000000110110100
11  15   11   00000000110
12   0   12   000011001010
12   1   12   000011100000
12   2   12   000011011110
12   3   12   000011011010
12   4   12   000011011000
12   5   13   0000110000101
12   6   13   0000110000010
12   7   13   0000101111101
12   8   13   0000101101100
12   9   15   0000011011111000
12  10   14   000000110111011
12  11   14   000010111000011
12  12   14   000000110111000
12  13   14   000000110110101
12  14   16   0000001101100000000
12  15   11   00000000100
13   0   14   000010111101011
13   1   12   000011010011
13   2   12   000011010010
13   3   12   000011010000
13   4   13   0000101110010
13   5   13   0000101111011
13   6   14   000010111011110
13   7   14   000010110100111
13   8   14   000010111001010
13   9   16   0000001101100111
13  10   15   0000011011110011
13  11   15   0000011011101101
13  12   15   0000011011101100
13  13   17   000000110110000011
13  14   15   0000011011100001
13  15   11   00000000010
14   0   13   0000101111001
14   1   13   0000101110001
14   2   11   00001100110
14   3   12   000010111011
14   4   14   000010111010110
14   5   14   000010111010010
14   6   13   0000101100110
14   7   14   000010111000111
14   8   14   000010111000101
14   9   15   0000011011100010
14  10   16   0000001101100110
14  11   15   0000011011100111
14  12   17   000000110110000010
14  13   15   0000011011100110
14  14   14   000000110110010
14  15   11   00000000000
15   0    9   000001100
15   1    8   00001010
15   2    8   00000111
15   3    9   000001011
15   4    9   000001010
```

```
15  5  10   0000010001
15  6  10   0000001011
15  7  10   0000001001
15  8  11   00000001101
15  9  11   00000001100
15 10  11   00000001010
15 11  11   00000000111
15 12  11   00000000101
15 13  11   00000000011
15 14  11   00000000001
15 15   8   00000011
```

Huffman code table 17
```
same as table 16, but linbits=2
```

Huffman code table 18
```
same as table 16, but linbits=3
```

Huffman code table 19
```
same as table 16, but linbits=4
```

Huffman code table 20
```
same as table 16, but linbits=6
```

Huffman code table 21
```
same as table 16, but linbits=8
```

Huffman code table 22
```
same as table 16, but linbits=10
```

Huffman code table 23
```
same as table 16, but linbits=13
```
Huffman code table 24
```
ESC table, linbits=4
 x  y hlen hcod
 0  0   4   1111
 0  1   4   1101
 0  2   6   101110
 0  3   7   1010000
 0  4   8   10010010
 0  5   9   100000110
 0  6   9   011111000
 0  7  10   0110110010
 0  8  10   0110101010
 0  9  11   01010011101
 0 10  11   01010001101
 0 11  11   01010001001
 0 12  11   01001101101
 0 13  11   01000000101
 0 14  12   010000001000
 0 15   9   001011000
 1  0   4   1110
 1  1   4   1100
 1  2   5   10101
 1  3   6   100110
 1  4   7   1000111
 1  5   8   10000010
 1  6   8   01111010
 1  7   9   011011000
 1  8   9   011010001
 1  9   9   011000110
 1 10  10   0101000111
 1 11  10   0101011001
 1 12  10   0100111111
 1 13  10   0100101001
 1 14  10   0100010111
 1 15   8   00101010
 2  0   6   101111
 2  1   5   10110
 2  2   6   101001
 2  3   7   1001010
```

```
2    4    7    1000100
2    5    8    10000000
2    6    8    01111000
2    7    9    011011101
2    8    9    011001111
2    9    9    011000010
2   10    9    010110110
2   11   10    0101010100
2   12   10    0100111011
2   13   10    0100100111
2   14   11    01000011101
2   15    7    0010010
3    0    7    1010001
3    1    6    100111
3    2    7    1001011
3    3    7    1000110
3    4    8    10000110
3    5    8    01111101
3    6    8    01110100
3    7    9    011011100
3    8    9    011001100
3    9    9    010111110
3   10    9    010110010
3   11   10    0101000101
3   12   10    0100110111
3   13   10    0100100101
3   14   10    0100001111
3   15    7    0010000
4    0    8    10010011
4    1    7    1001000
4    2    7    1000101
4    3    8    10000111
4    4    8    01111111
4    5    8    01110110
4    6    8    01110000
4    7    9    011010010
4    8    9    011001000
4    9    9    010111100
4   10   10    0101100000
4   11   10    0101000011
4   12   10    0100110010
4   13   10    0100011101
4   14   11    01000011100
4   15    7    0001110
5    0    9    100000111
5    1    7    1000010
5    2    8    10000001
5    3    8    01111110
5    4    8    01110111
5    5    8    01110010
5    6    9    011010110
5    7    9    011001010
5    8    9    011000000
5    9    9    010110100
5   10   10    0101010101
5   11   10    0100111101
5   12   10    0100101101
5   13   10    0100011001
5   14   10    0100000110
5   15    7    0001100
6    0    9    011111001
6    1    8    01111011
6    2    8    01111001
6    3    8    01110101
6    4    8    01110001
6    5    9    011010111
6    6    9    011001110
6    7    9    011000011
6    8    9    010111001
6    9   10    0101011011
6   10   10    0101001010
6   11   10    0100110100
6   12   10    0100100011
6   13   10    0100010000
6   14   11    01000001000
6   15    7    0001010
7    0   10    0110110011
7    1    8    01110011
7    2    8    01101111
7    3    8    01101101
7    4    9    011010011
```

```
 7   5    9   011001011
 7   6    9   011000100
 7   7    9   010111011
 7   8   10   0101100001
 7   9   10   0101001100
 7  10   10   0100111001
 7  11   10   0100101010
 7  12   10   0100011011
 7  13   11   01000010011
 7  14   11   00101111101
 7  15    8   00010001
 8   0   10   0110101011
 8   1    9   011010100
 8   2    9   011010000
 8   3    9   011001101
 8   4    9   011001001
 8   5    9   011000001
 8   6    9   010111010
 8   7    9   010110001
 8   8    9   010101001
 8   9   10   0101000000
 8  10   10   0100101111
 8  11   10   0100011110
 8  12   10   0100001100
 8  13   11   01000000010
 8  14   11   00101111001
 8  15    8   00010000
 9   0   10   0101001111
 9   1    9   011000111
 9   2    9   011000101
 9   3    9   010111111
 9   4    9   010111101
 9   5    9   010110101
 9   6    9   010101110
 9   7   10   0101001101
 9   8   10   0101000001
 9   9   10   0100110001
 9  10   10   0100100001
 9  11   10   0100010011
 9  12   11   01000001001
 9  13   11   00101111011
 9  14   11   00101110011
 9  15    8   00001011
10   0   11   01010011100
10   1    9   010111000
10   2    9   010110111
10   3    9   010110011
10   4    9   010101111
10   5   10   0101011000
10   6   10   0101001011
10   7   10   0100111010
10   8   10   0100110000
10   9   10   0100100010
10  10   10   0100010101
10  11   11   01000010010
10  12   11   00101111111
10  13   11   00101110101
10  14   11   00101101110
10  15    8   00001010
11   0   11   01010001100
11   1   10   0101011010
11   2    9   010101011
11   3    9   010101000
11   4    9   010100100
11   5   10   0100111110
11   6   10   0100110101
11   7   10   0100101011
11   8   10   0100011111
11   9   10   0100010100
11  10   10   0100000111
11  11   11   01000000001
11  12   11   00101110111
11  13   11   00101110000
11  14   11   00101101010
11  15    8   00000110
12   0   11   01010001000
12   1   10   0101000010
12   2   10   0100111100
12   3   10   0100111000
12   4   10   0100110011
12   5   10   0100101110
```

```
12  6  10   0100100100
12  7  10   0100011100
12  8  10   0100001101
12  9  10   0100000101
12 10  11   01000000000
12 11  11   00101111000
12 12  11   00101110010
12 13  11   00101101100
12 14  11   00101100111
12 15   8   00000100
13  0  11   01001101100
13  1  10   0100101100
13  2  10   0100101000
13  3  10   0100100110
13  4  10   0100100000
13  5  10   0100011010
13  6  10   0100010001
13  7  10   0100001010
13  8  11   01000000011
13  9  11   00101111100
13 10  11   00101110110
13 11  11   00101110001
13 12  11   00101101101
13 13  11   00101101001
13 14  11   00101100101
13 15   8   00000010
14  0  12   010000001001
14  1  10   0100011000
14  2  10   0100010110
14  3  10   0100010010
14  4  10   0100001011
14  5  10   0100001000
14  6  10   0100000011
14  7  11   00101111110
14  8  11   00101111010
14  9  11   00101110100
14 10  11   00101101111
14 11  11   00101101011
14 12  11   00101101000
14 13  11   00101100110
14 14  11   00101100100
14 15   8   00000000
15  0   8   00101011
15  1   7   0010100
15  2   7   0010011
15  3   7   0010001
15  4   7   0001111
15  5   7   0001101
15  6   7   0001011
15  7   7   0001001
15  8   7   0000111
15  9   7   0000110
15 10   7   0000100
15 11   8   00000111
15 12   8   00000101
15 13   8   00000011
15 14   8   00000001
15 15   4   0011
```

Huffman code table 25

```
same as table 24, but linbits=5
```

Huffman code table 26

```
same as table 24, but linbits=6
```

Huffman code table 27

```
same as table 24, but linbits=7
```

Huffman code table 28

```
same as table 24, but linbits=8
```

Huffman code table 29

```
same as table 24, but linbits=9
```

Huffman code table 30
```
same as table 24, but linbits=11
```

Huffman code table 31
```
same as table 24, but linbits=13
```

Table 3-B.8. Layer III scalefactor bands

These tables list the width of each scalefactor band. There are 21 bands at each sampling frequency for long (type 0,1 or 3) windows and 12 bands each for short windows.

Table 3-B.8a. 32kHz sampling rate

long blocks:

scale factor band	width of band	index of start	index of end
0	4	0	3
1	4	4	7
2	4	8	11
3	4	12	15
4	4	16	19
5	4	20	23
6	6	24	29
7	6	30	35
8	8	36	43
9	10	44	53
10	12	54	65
11	16	66	81
12	20	82	101
13	24	102	125
14	30	126	155
15	38	156	193
16	46	194	239
17	56	240	295
18	68	296	363
19	84	364	447
20	102	448	549

short blocks:

scale factor band	width of band	index of start	index of end
0	4	0	3
1	4	4	7
2	4	8	11
3	4	12	15
4	6	16	21
5	8	22	29
6	12	30	41
7	16	42	57
8	20	58	77
9	26	78	103

10	34	104	137
11	42	138	179

Table 3-B.8b. 44.1kHz sampling rate

long blocks:

scale factor band	width of band	index of start	index of end
0	4	0	3
1	4	4	7
2	4	8	11
3	4	12	15
4	4	16	19
5	4	20	23
6	6	24	29
7	6	30	35
8	8	36	43
9	8	44	51
10	10	52	61
11	12	62	73
12	16	74	89
13	20	90	109
14	24	110	133
15	28	134	161
16	34	162	195
17	42	196	237
18	50	238	287
19	54	288	341
20	76	342	417

short blocks:

scale factor band	width of band	index of start	index of end
0	4	0	3
1	4	4	7
2	4	8	11
3	4	12	15
4	6	16	21
5	8	22	29
6	10	30	39
7	12	40	51
8	14	52	65
9	18	66	83
10	22	84	105
11	30	106	135

Table 3-B.8c. 48 kHz sampling rate

long blocks:

scale factor band	width of band	index of start	index of end
0	4	0	3
1	4	4	7
2	4	8	11
3	4	12	15
4	4	16	19
5	4	20	23
6	6	24	29
7	6	30	35
8	6	36	41
9	8	42	49
10	10	50	59
11	12	60	71
12	16	72	87
13	18	88	105
14	22	106	127
15	28	128	155
16	34	156	189
17	40	190	229
18	46	230	275
19	54	276	329
20	54	330	383

short blocks:

scale factor band	width of band	index of start	index of end
0	4	0	3
1	4	4	7
2	4	8	11
3	4	12	15
4	6	16	21
5	6	22	27
6	10	28	37
7	12	38	49
8	14	50	63
9	16	64	79
10	20	80	99
11	26	100	125

Table 3-B.9 Layer III coefficients for aliasing reduction:

(i)	ci
0	-0.6
1	-0.535
2	-0.33
3	-0.185
4	-0.095
5	-0.041
6	-0.0142
7	-0.0037

The butterfly coefficients csi and cai are calculated as follows:

$$cs_i = \frac{1}{\sqrt{1 + c_i^2}} \qquad ca_i = \frac{c_i}{\sqrt{1 + c_i^2}}$$