**3-ANNEX A(informative)**

**DIAGRAMS**

**Figure 3-A.1. Layer I and II decoder flow chart**



**Figure 3-A.2. Synthesis subband filter flow chart**



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



**Figure 3-A.4. Layer III decoder diagram**



**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**



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



**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.**



**Figure 3-A.9. CRC-Check diagram**



**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

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

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 --------

index

sb nbal 0 1 2 3 4 5 6 7 8 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 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

index

sb nbal 0 1 2 3 4 5 6 7 8 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 C D grouping Samples per Bits per**

**of steps codeword 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 1.77777777777 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. no. of bits no. of bits other

table no. single channel mode 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 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 0000000101010

2 15 13 0000000010000

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 0000000011001

3 15 13 0000000001110

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 0000000110101

4 14 13 0000000010111

4 15 14 00000000011000

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 0000001001010

5 13 13 0000000110001

5 14 14 00000000101001

5 15 14 00000000010001

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 0000000111011

6 13 13 0000000100110

6 14 14 00000000100100

6 15 14 00000000001111

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 0000001001101

7 11 13 0000001000001

7 12 13 0000000110011

7 13 14 00000000101100

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 00000000110001

13 7 14 00000000101101

13 8 14 00000000011111

13 9 14 00000000010011

13 10 14 00000000001100

13 11 15 000000000001111

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 00000000010000

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 00000000011001

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 00000110111101

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 00001011001011

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 00001011010111

8 13 14 00001011001001

8 14 14 00001011000100

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 00001011011111

9 12 13 0000101100111

9 13 14 00001011000110

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 00001011100111

10 10 14 00001011100001

10 11 14 00001011010000

10 12 15 000001101110101

10 13 15 000001101110010

10 14 14 00000110110111

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 00001011101010

11 8 14 00001011100110

11 9 14 00001011100000

11 10 14 00001011010001

11 11 14 00001011001000

11 12 14 00001011000010

11 13 13 0000011011111

11 14 14 00000110110100

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 000001101111000

12 10 14 00000110111011

12 11 14 00001011000011

12 12 14 00000110111000

12 13 14 00000110110101

12 14 16 0000011011000000

12 15 11 00000000100

13 0 14 00001011101011

13 1 12 000011010011

13 2 12 000011010010

13 3 12 000011010000

13 4 13 0000101110010

13 5 13 0000101111011

13 6 14 00001011011110

13 7 14 00001011010011

13 8 14 00001011001010

13 9 16 0000011011000111

13 10 15 000001101110011

13 11 15 000001101101101

13 12 15 000001101101100

13 13 17 00000110110000011

13 14 15 000001101100001

13 15 11 00000000010

14 0 13 0000101111001

14 1 13 0000101110001

14 2 11 00001100110

14 3 12 000010111011

14 4 14 00001011010110

14 5 14 00001011010010

14 6 13 0000101100110

14 7 14 00001011000111

14 8 14 00001011000101

14 9 15 000001101100010

14 10 16 0000011011000110

14 11 15 000001101100111

14 12 17 00000110110000010

14 13 15 000001101100110

14 14 14 00000110110010

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 width of index of index of

band band start 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 width of index of index of

band band start 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 width of index of index of

band band start 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 width of index of index of

band band start 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 width of index of index of

band band start 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 width of index of index of

band band start 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:

