CLAIMS:

1. A method (400) for deblocking filtering of vertical and/or horizontal block boundaries, the method being performed by an image or video encoder or an image or video decoder, the method comprising:

obtaining (s402) a first set of sample values comprising a first block of sample values and a second block of sample values, wherein the first block of sample values comprises a set of sample values B1_i,k for i=0-7 and k=0-3, and the second block of sample values comprises a set of sample values B2_~~i~~j,k for ~~i~~j=0-7 and k=0-3; and

deciding (s404) whether or not to use a long filter to filter at least a subset of the first set of sample values, wherein deciding whether or not to use a long filter to filter at least a subset of the first set of sample values comprises:

calculating (s502) a first gradient value, maxGradB1_6,0, using sample value B1_6,0;

calculating (s504) a first pq value, pq1_0, using maxGradB1_6,0, wherein calculating pq1_0 comprises calculating a value sp, calculating a value sq, and calculating sp + sq, wherein pq1_0 = (sp + sq), and wherein calculating sp comprises calculating sp = (Abs(B1_0,0 – B1_3,0) + Abs(B1_3,0 – B1_7,0) + maxGradB1_6,0 + 1) >> 1 and wherein maxGradB1_6,0 equals Abs(B1_7,0 - B1_6,0 - B1_5,0 + B1_4,0);

comparing (s508) pq1_0 to a threshold;

calculating a second gradient value, maxGradB1_6,3, using sample value B1_6,3;

calculating a second pq value, pq1_3, using maxGradB1_6,3; and

comparing (s508) pq1_3 to the threshold.

2. The method of claim 1, wherein

the second block has a maximum filter length, maxFilterLengthQ,

if maxFilterLengthQ is equal to 7, then sq = (Abs(B2_0,0 – B2_3,0) + Abs(B2_3,0 – B2_7,0) + maxGradB2_6,0 + 1) >> 1, where maxGradB2_6,0 is a third gradient value,

if maxFilterLengthQ is equal to 5, then sq = (Abs(B2_0,0 – B2_3,0) + Abs(B2_3,0 – B2_5,0) + 1) >> 1, and

if maxFilterLengthQ is not equal to 7 and is not equal to 5, then sq = Abs(B2_0,0 – B2_3,0).

3. The method of claim 2, wherein maxGradB2_6,0 equals Abs(B2_7,0 – B2_6,0 – B2_5,0 + B2_4,0).

4. The method of any one of claims 1-3, wherein calculating pq1_3 comprises calculating a value sp3, calculating a value sq3, and calculating sp3 + sq3, wherein pq1_3 = (sp3 + sq3), and wherein calculating sp3 comprises calculating sp3 = (Abs(B1_0,3 – B1_3,3) + Abs(B1_3,3 – B1_7,3) + maxGradB1_6,3 + 1) >> 1.

5. The method of claim 4, wherein maxGradB1_6,3 equals Abs(B1_7,3 - B1_6,3 - B1_5,3 + B1_4,3).

6. The method of any one of claims 1-5, wherein

the step of calculating pq1_0 using maxGradB1_6,0 is performed as a result of determining that a maximum filter length for the first block, maxFilterLengthP, is equal to 7.

7. The method of any one of claims 1-6, wherein

the step of calculating pq1_3 using maxGradB1_6,3 is performed as a result of determining that a max filter length for the first block, maxFilterLengthP, is equal to 7.

~~8. The method of claim 4, wherein~~

~~the second block has a maximum filter length, maxFilterLengthQ,~~

~~if maxFilterLengthQ is equal to 7, then sq3 = (Abs(B2_0,3 – B2_3,3) + Abs(B2_3,3 – B2_7,3) + maxGradB2_6,3 + 1) >> 1, where maxGradB2_6,3 is a fourth gradient value,~~

~~if maxFilterLengthQ is equal to 5, then sq3 = (Abs(B2_0,3 – B2_3,3) + Abs(B2_3,3 – B2_5,3) + 1) >> 1, and~~

~~if maxFilterLengthQ is not equal to 5 and not equal to 7, then sq3 = Abs(B2_0,3 – B2_3,3).~~

~~9. The method of claim 8, wherein maxGradB2_6,3 equals Abs(B2_7,3 – B2_6,3 – B2_5,3 + B2_4,3).~~

~~10~~8. The method of any one of claims 1-~~9~~7, wherein

when deblocking a vertical boundary, the i value identifies a column of a block and the k value identifies a row of the block, and

when deblocking a horizontal boundary, the k value identifies a column of the block and the i value identifies a row of the block.

~~11. The method of any one of claims 1-10, wherein B1_0,0 refers to the sample in the first block which is closest to a sample B2_0,0 in the second block, wherein B1_1,0 is closest to B1_0,0, B1_2,0 is closest to B1_1,0, B1_3,0 is closest to B1_2,0, B1_4,0 is closest to B1_3,0, B1_5,0 is closest to B1_4,0, B1_6,0 is closest to B1_5,0, B1_7,0 is closest to B1_6,0, B2_1,0 is closest to B2_0,0, B2_2,0 is closest to B2_1,0, B2_3,0 is closest to B2_2,0, B2_4,0 is closest to B2_3,0, B2_5,0 is closest to B2_4,0, B2_6,0 is closest to B2_5,0, B2_7,0 is closest to B2_6,0, wherein B1_0,3 refers to the sample in the first block which is closest to a sample B2_0,3 in the second block, wherein B1_1,3 is closest to B1_0,3, B1_2,3 is closest to B1_1,3, B1_3,3 is closest to B1_2,3, B1_4,3 is closest to B1_3,3, B1_5,3 is closest to B1_4,3, B1_6,3 is closest to B1_5,3, B1_7,3 is closest to B1_6,3, B2_1,3 is closest to B2_0,3, B2_2,3 is closest to B2_1,3, B2_3,3 is closest to B2_2,3, B2_4,3 is closest to B2_3,3, B2_5,3 is closest to B2_4,3, B2_6,3 is closest to B2_5,3, B2_7,3 is closest to B2_6,3.~~

~~12~~9. The method of any one of claims 1-~~11~~8, wherein the samples to filter by the long filter when maxFilterLengthP is equal to 7 are B1_0,0 to B1_6,0, B1_0,1 to B1_6,1, B1_0,2 to B1_6,2 and B1_0,3 to B1_6,3.

~~13~~10. The method of any one of claims 1-~~12~~9, wherein the samples to filter by the long filter when maxFilterLengthQ is equal to 7 are B2_0,0 to B2_6,0, B2_0,1 to B2_6,1, B2_0,2 to B2_6,2 and B2_0,3 to B2_6,3.

~~14~~11. A method (400) for deblocking filtering of vertical and/or horizontal block boundaries, the method being performed by an image or video encoder or an image or video decoder, the method comprising:

obtaining (s402) a first set of sample values comprising a first block of sample values and a second block of sample values, wherein the first block of sample values comprises a set of sample values B1_i,k for i=0-7 and k=0-3, and the second block of sample values comprises a set of sample values B2_~~i~~j,k for ~~i~~j=0-7 and k=0-3; and

selecting (s404) a long filter, wherein selecting the long filter comprises:

calculating (s504) a first pq value, pq2_0, using at least a first value equal to Abs(B1_2,0 - 2 * B1_1,0 + B1_0,0) and a second value equal to Abs(B2_2,0 - 2 * B2_1,0 + B2_0,0); and

comparing (s508) pq2_0 to a threshold, wherein

the threshold is equal to β >> *4*, and

β is selected from a set of predetermined beta values based on a quantization parameter value, Q.

~~15~~12. The method of claim ~~14~~11, wherein selecting the long filter further comprises calculating a second pq value, pq2_3, using at least a first value equal to Abs(B1_2,3 - 2 * B1_1,3 + B1_0,3) and a second value equal to Abs(B2_2,3 - 2 * B2_1,3 + B2_0,3); and

comparing pq2_3 to the threshold.

~~16~~13. A method for deblocking filtering of vertical and/or horizontal block boundaries, the method being performed by an image or video encoder or an image or video decoder, the method comprising:

1) obtaining (s402) a first set of sample values comprising a first block of sample values and a second block of sample values, wherein the first block of sample values comprises a set of sample values B1_i,k for i=0-7 and k=0-3, and the second block of sample values comprises a set of sample values B2_~~i~~j,k for ~~i~~j=0-7 and k=0-3; and

2) selecting (s404) a long filter, wherein selecting the long filter comprises:

i) calculating a first pq value, pq1_0, wherein calculating pq1_0 comprises calculating a value sp, calculating a value sq, and calculating sp + sq, wherein pq1_0 = (sp + sq);

ii) comparing pq1_0 to a first threshold;

iii) calculating (s504) a second pq value, pq2_0, using at least a first value equal

to Abs(B1_2,0 - 2 * B1_1,0 + B1_0,0) and a second value equal to Abs(B2_2,0 - 2 * B2_1,0 + B2_0,0); and

iv) comparing (s508) pq2_0 to a second threshold, wherein the second threshold is equal to $\beta >> 4$, and β is selected from a set of predetermined beta values based on a quantization parameter value, Q.

~~17~~14. The method as in claim ~~16~~ 13 wherein selecting the long filter further comprises:

calculating a third pq value, pq3_0, wherein pq3_0 = Abs(B1_0,0 - B2_0,0); and

comparing pq3_0 with a third threshold, wherein

the third threshold is equal to (5*tC+1) >> 1, wherein tC is selected from a set of predetermined values based on a quantization parameter value, Q.

~~18~~15. The method as in claim ~~16~~ 13 or ~~17~~14, wherein selecting the long filter further comprises:

calculating a fourth pq value, pq2_3;

comparing pq2_3 to the second threshold;

calculating a fifth pq value, pq1_3; and

comparing pq1_3 to the first threshold, wherein

the step of calculating pq2_3 comprises calculating pq2_3 using at least a first value equal to Abs(B1_2,3 - 2 * B1_1,3 + B1_0,3) and a second value equal to Abs(B2_2,3 - 2 * B2_1,3 + B2_0,3), and when maxFilterLengthP is greater than 3 also using a third value Abs(B1_5,3 – 2*B1_4,3 + B1_3,3) and when maxFilterLengthQ is greater than 3 also using a fourth value Abs(B2_5,3 – 2*B2_4,3 + B2_3,3),

the step of calculating pq1_3 comprises: calculating a value sp3, calculating a value sq3, and calculating sp3 + sq3, where pq1_3 = (sp3 + sq3).

~~19. The method as in claim 18, wherein selecting the long filter further comprises:~~

~~calculating a sixth pq value, pq3_3, wherein pq3_3 = Abs(B1_0,3 - B2_0,3); and~~

~~comparing pq3_3 with the third threshold.~~

~~20. The method of any one of claims 16-19, wherein the long filter is used to modify 7~~

~~samples on each of lines 0 to line 3 in block B1 when conditions for line 0 and line 3 are less than a respective threshold (e.g. for line 0 pq1_0 < thr1 and pq2_0 < thr2 and pq3_0 < thr3 and line 3 pq1_3 < thr1 and pq2_3 < thr2 and pq3_3 < thr3).~~

~~21. The method as in claim 20, wherein thr1 is equal to 3* β >> 5, thr2 is equal to β >> 4 and thr3 is equal to (5*tC+1) >> 1.~~

~~22~~16. The method of any one of claims ~~16~~13-~~21~~15, wherein

the first block has a maximum filter length, maxFilterLengthP,

if maxFilterLengthP is equal to 7, then calculating sp comprises calculating sp = (Abs(B1_0,0 – B1_3,0) + Abs(B1_3,0 – B1_7,0) + maxGradB1_6,0 + 1) >> 1, where maxGradB1_6,0 is a gradient value,

if maxFilterLengthP is 5, then calculating sp comprises calculating sp=(Abs(B1_0,0 – B1_3,0) + Abs(B1_3,0 – B1_5,0) + 1) >> 1, and

if maxFilterLengthP is equal to 3, then calculating sp comprises calculating sp=Abs(B1_0,0 – B1_3,0).

~~23. The method of claim 22, wherein maxGradB1_6,0 equals Abs(B1_7,0 - B1_6,0 - B1_5,0 + B1_4,0).~~

~~24~~17. The method of any one of claims ~~16~~13-~~23~~16, wherein

the second block has a maximum filter length, maxFilterLengthQ,

if maxFilterLengthQ is equal to 7, then calculating sq comprises calculating sq = (Abs(B2_0,0 – B2_3,0) + Abs(B2_3,0 – B2_7,0) + maxGradB2_6,0 + 1) >> 1, where maxGradB2_6,0 is a gradient value,

if maxFilterLengthQ is equal to 5, then calculating sq comprises calculating sq=(Abs(B2_0,0 – B2_3,0) + Abs(B2_3,0 – B2_5,0) + 1) >> 1, and

if maxFilterLengthQ is equal to 3, then calculating sq comprises calculating sq= Abs(B2_0,0 – B2_3,0).

~~25. The method of claim 24, wherein maxGradB2_6,0 equals Abs(B2_7,0 - B2_6,0 -~~

~~B2_5,0 + B2_4,0).~~

~~26. The method of any one of claims 16-25, wherein~~

~~and when maxFilterLengthP is greater than 3 also using a third value Abs(B1_5,0 – 2*B1_4,0 + B1_3,0) and wherein the second block has a maximum filter length, maxFilterLengthQ, and when maxFilterLengthQ is greater than 3 also using a fourth value Abs(B2_5,0 – 2*B2_4,0 + B2_3,0).~~

~~27. The method of claim 18 or 19, wherein~~

~~if maxFilterLengthP is equal to 7, then calculating sp3 comprises calculating sp3=(Abs(B1_0,3 – B1_3,3) + Abs(B1_3,3 – B1_7,3) + maxGradB1_6,3 + 1) >> 1, where maxGradB1_6,3 is a gradient value,~~

~~if maxFilterLengthP is equal to 5, then calculating sp3 comprises calculating sp3=(Abs(B1_0,3 – B1_3,3) + Abs(B1_3,3 – B1_5,3) + 1) >> 1,~~

~~if maxFilterLengthP is equal to 3, then calculating sp3 comprises calculating sp3=Abs(B1_0,3 – B1_3,3),~~

~~if maxFilterLengthQ is equal to 7, then calculating sq3 comprises calculating sq3 = (Abs(B2_0,3 – B2_3,3) + Abs(B2_3,3 – B2_7,3) + maxGradB2_6,3 + 1) >> 1, where maxGradB2_6,3 is a gradient value,~~

~~if maxFilterLengthQ is equal to 5, then calculating sq3 comprises calculating sq3=(Abs(B2_0,3 – B2_3,3) + Abs(B2_3,3 – B2_5,3) + 1) >> 1, and~~

~~if maxFilterLengthQ is equal to 3, then calculating sq3 comprises calculating sq3=Abs(B2_0,3 – B2_3,3).~~

~~28~~18. A computer program (643) comprising instructions (644) which when executed by processing circuitry (602) causes the processing circuitry (602) to perform the method of any one of claims 1-~~27~~17.

~~29~~19. A carrier containing the computer program of claim ~~28~~18, wherein the carrier is one of an electronic signal, an optical signal, a radio signal, and a computer readable storage medium (642).

~~30~~20. An apparatus (600) for deblocking filtering of vertical and/or horizontal block boundaries, the apparatus being adapted to perform the method according to any of claims 1-17. ~~an image or video encoder or an image or video decoder, the apparatus (600) being configured to:~~

~~obtain (s402) a first set of sample values comprising a first block of sample values and a second block of sample values, wherein the first block of sample values comprises a set of sample values B1_i,k for i=0..7 and k=0..3, and the second block of sample values comprises a set of sample values B2_i,k for i=0..7 and k=0..3; and~~

~~decide (s404) whether or not to use a long filter to filter at least a subset of the first set of sample values, wherein the apparat is configured to decide whether or not to use a long filter to filter at least a subset of the first set of sample values by performing a process that includes:~~

~~calculating (s502) a first gradient value, maxGradB1_6,0, using sample value B1_6,0, ;~~

~~calculating (s504) a first pq value, pq1_0, using maxGradB1_6,0, wherein calculating pq1_0 comprises calculating a value sp, calculating a value sq, and calculating sp + sq, wherein pq1_0 = (sp + sq), and wherein calculating sp comprises calculating sp = (Abs(B1_0,0 – B1_3,0) + Abs(B1_3,0 – B1_7,0) + maxGradB1_6,0 + 1) >> 1 and wherein maxGradB1_6,0 equals Abs(B1_7,0 - B1_6,0 - B1_5,0 + B1_4,0);~~

~~comparing (s508) pq1_0 to a threshold;~~

~~calculating a second gradient value, maxGradB1_6,3, using sample value B1_6,3;~~

~~calculating a second pq value, pq1_3, using maxGradB1_6,3; and~~

~~comparing (s508) pq1_3 to the threshold.~~

~~31. The apparatus of claim 30, wherein the apparatus is further configured to perform the method of any one of claims 2-13.~~

~~32. An apparatus (600) for deblocking filtering of vertical and/or horizontal block boundaries, the apparatus being an image or video encoder or an image or video decoder, the apparatus (600) being configured to:~~

~~obtain (s402) a first set of sample values comprising a first block of sample values and a second block of sample values, wherein the first block of sample values comprises a set of~~

~~sample values B1_i,k for i=0..7 and k=0..3, and the second block of sample values comprises a set of sample values B2_i,k for i=0..7 and k=0..3; and~~

~~select (s404) a long filter, wherein the apparatus is configured to select the long filter by performing a process that comprises:~~

~~calculating (s504) a first pq value, pq2_0, using at least a first value equal to Abs(B1_2,0 - 2 * B1_1,0 + B1_0,0) and a second value equal to Abs(B2_2,0 - 2 * B2_1,0 + B2_0,0); and~~

~~comparing (s508) pq2_0 to a threshold, wherein~~

~~the threshold is equal to β >> *4*, and~~

~~β is selected from a set of predetermined beta values based on a quantization parameter value, Q~~

~~33. The apparatus of claim 32, wherein the apparatus is further configured to perform the method of claim 18.~~

~~34. An apparatus (600) for deblocking filtering of vertical and/or horizontal block boundaries, the apparatus being an image or video encoder or an image or video decoder, the apparatus (600) being configured to:~~

~~obtain (s402) a first set of sample values comprising a first block of sample values and a second block of sample values, wherein the first block of sample values comprises a set of sample values B1_i,k for i=0..7 and k=0..3, and the second block of sample values comprises a set of sample values B2_i,k for i=0..7 and k=0..3; and~~

~~select (s404) a long filter, wherein the apparatus is configured to select the long filter by performing a process that comprises:~~

~~i) calculating a first pq value, pq1_0, wherein calculating pq1_0 comprises calculating a value sp, calculating a value sq, and calculating sp + sq, wherein pq1_0 = (sp + sq);~~

~~ii) comparing pq1_0 to a first threshold;~~

~~iii) calculating (s504) a second pq value, pq2_0, using at least a first value equal to Abs(B1_2,0 - 2 * B1_1,0 + B1_0,0) and a second value equal to Abs(B2_2,0 - 2 * B2_1,0 + B2_0,0); and~~

~~iv) comparing (s508) pq2_0 to a second threshold, wherein the second threshold is equal to β >> *4*, and β is selected from a set of predetermined beta values based on a quantization~~

~~parameter value, Q.~~

~~35. The apparatus of claim 34, wherein the apparatus is further configured to perform the method of any one of claims 17-27.~~