CLAIMS

1. A method of processing video data, the method comprising:

obtaining video data comprising one or more pictures;

obtaining a block of a picture from the one or more pictures;

determining clipping values for at least one filter, the clipping values comprising a first set of clipping values corresponding to a luma component of the block and a second set of clipping values corresponding to a chroma component of the block, wherein a clipping value of the clipping values is determined by left shifting a first integer by a second integer, the second integer comprising a result of a bit depth value for a sample from the block minus an offset value associated with a clipping index value, and wherein the first set of clipping values corresponding to the luma component and the second set of clipping values corresponding to the chroma component are both determined by left shifting the first integer by the second integer, wherein the offset value comprises a first integer value associated with the luma component and a second integer value associated with the chroma component, the first integer value and the second integer value comprising one of 0, 3, 5, or 7; and

applying the at least one filter to the block.

2. The method of claim 1, wherein the at least one filter comprises an adaptive loop filter.

3. The method of claim 1, wherein the first integer is 1, and wherein left shifting the first integer by the second integer comprises raising 2 to a power of an exponent comprising the second integer.

4. The method of claim 1, wherein the clipping values correspond to a set of filter clipping values in a clipping index table, wherein different filter clipping values of the set of filter clipping values in the clipping index table correspond to different positions within the picture.

5. The method of claim 1, wherein the offset value comprises a predetermined offset value from a plurality of predetermined offset values, and wherein the offset value is determined from the plurality of predetermined offset values based on the clipping index value.

6. The method of claim 5, wherein determining the clipping values for the at least one filter comprises determining corresponding clipping values for a plurality of samples from the picture, wherein each corresponding clipping value is associated with a particular sample from the plurality of samples, and wherein each corresponding clipping value is determined by left shifting the first integer by a particular integer associated with the particular sample, the particular integer comprising a particular result of the bit depth value for the particular sample minus a particular offset value from the plurality of predetermined offset values.

7. The method of claim 6, wherein the particular offset value is determined from the plurality of predetermined offset values based on a particular clipping index value associated with the particular sample.

8. The method of claim 1, wherein the first set of clipping values for the at least one filter comprise one or more luma clipping values for the luma component and the second set of clipping values comprise one or more chroma clipping values for the chroma component, wherein the one or more luma clipping values are determined by left shifting the first integer by a third integer, the third integer comprising a second result of the bit depth value for a luma sample from the picture minus a luma offset value associated with a second clipping index value, and wherein the one or more chroma clipping values are determined by left shifting the first integer by a fourth integer, the fourth integer comprising a third result of the bit depth value for a chroma sample from the picture minus a chroma offset value associated with a third clipping index value.

9. The method of claim 1, wherein the at least one filter comprises a 5x5 adaptive loop filter and a 7x7 adaptive loop filter, wherein applying the at least one filter to the block comprises applying the 5x5 adaptive loop filter to the chroma component and applying the 7x7 adaptive loop filter to the luma component.

10. The method of claim 1, further comprising:
generating an encoded video bitstream comprising the one or more pictures.

11. The method of claim 10, wherein the encoded video bitstream is generated based on the video data and a result of applying the at least one filter to the block.

12. The method of claim 10, further comprising:
sending the encoded video bitstream to a decoding device, the encoded video bitstream being sent with signaling information, the signaling information comprising at least one of the offset value, the clipping index value, filter parameters, and an adaptive loop filter flag.

13. The method of claim 10, further comprising:
storing the encoded video bitstream.

14. The method of claim 1, further comprising:
obtaining an encoded video bitstream comprising the one or more pictures;
identifying signaling information associated with the encoded video bitstream, the signaling information comprising at least one of the offset value, the clipping index value, filter parameters, and an adaptive loop filter flag; and
decoding the block of the picture from the encoded video bitstream.

15. The method of claim 14, wherein decoding the block of the picture from the encoded video bitstream comprises reconstructing the block of the picture, and wherein applying the at least one filter comprises applying the at least one filter to the reconstructed block.

16. An apparatus comprising:
memory; and
one or more processors coupled to the memory, the one or more processors being configured to:
obtain video data comprising one or more pictures;
obtain a block of a picture from the one or more pictures;

determine clipping values for at least one filter, the clipping values comprising a first set of clipping values corresponding to a luma component of the block and a second set of clipping values corresponding to a chroma component of the block, wherein a clipping value of the clipping values is determined by left shifting a first integer by a second integer, the second integer comprising a result of a bit depth value for a sample from the block minus an offset value associated with a clipping index value, and wherein the first set of clipping values corresponding to the luma component and the second set of clipping values corresponding to the chroma component are both determined by left shifting the first integer by the second integer, wherein the offset value comprises a first integer value associated with the luma component and a second integer value associated with the chroma component, the first integer value and the second integer value comprising one of 0, 3, 5, or 7; and

apply the at least one filter to the block.

17. The apparatus of claim 16, wherein the at least one filter comprises an adaptive loop filter.

18. The apparatus of claim 16, wherein the first integer is 1, and wherein left shifting the first integer by the second integer comprises raising 2 to a power of an exponent comprising the second integer.

19. The apparatus of claim 16, wherein the clipping values correspond to a set of filter clipping values in a clipping index table, wherein different filter clipping values of the set of filter clipping values in the clipping index table correspond to different positions within the picture.

20. The apparatus of claim 16, wherein the offset value comprises a predetermined offset value from a plurality of predetermined offset values, and wherein the offset value is determined from the plurality of predetermined offset values based on the clipping index value.

21. The apparatus of claim 20, wherein determining the clipping values for the at least one filter comprises determining corresponding clipping values for a plurality of samples from the picture, wherein each corresponding clipping value is associated with a particular sample from the plurality of samples, and wherein each corresponding clipping value is determined by left shifting the first integer by a particular integer associated with the particular sample, the particular integer comprising a particular result of the bit depth value for the particular sample minus a particular offset value from the plurality of predetermined offset values.

22. The apparatus of claim 21, wherein the particular offset value is determined from the plurality of predetermined offset values based on a particular clipping index value associated with the particular sample.

23. The apparatus of claim 16, wherein the first set of clipping values for the at least one filter comprise one or more luma clipping values for the luma component and the second set of clipping values comprise one or more chroma clipping values for the chroma component, wherein the one or more luma clipping values are determined by left shifting the

first integer by a third integer, the third integer comprising a second result of the bit depth value for a luma sample from the picture minus a luma offset value associated with a second clipping index value, and wherein the one or more chroma clipping values are determined by left shifting the first integer by a fourth integer, the fourth integer comprising a third result of the bit depth value for a chroma sample from the picture minus a chroma offset value associated with a third clipping index value.

24. The apparatus of claim 16, wherein the at least one filter comprises a 5x5 adaptive loop filter and a 7x7 adaptive loop filter, wherein applying the at least one filter to the block comprises applying the 5x5 adaptive loop filter to the chroma component and applying the 7x7 adaptive loop filter to the luma component.

25. The apparatus of claim 16, the one or more processors being configured to:
generate an encoded video bitstream comprising the one or more pictures.

26. The apparatus of claim 25, wherein the encoded video bitstream is generated based on the video data and a result of applying the at least one filter to the block.

27. The apparatus of claim 25, the one or more processors being configured to:
send the encoded video bitstream to a decoding device, the encoded video bitstream being sent with signaling information, the signaling information comprising at least one of the offset value, the clipping index value, filter parameters, and an adaptive loop filter flag.

28. The apparatus of claim 25, the one or more processors being configured to:
store the encoded video bitstream.

29. The apparatus of claim 16, one or more processors coupled to the memory, the one or more processors being configured to:
obtain an encoded video bitstream comprising the one or more pictures;
identify signaling information associated with the encoded video bitstream, the signaling information comprising at least one of the offset value, the clipping index value, filter parameters, and an adaptive loop filter flag; and
decode the block from the encoded video bitstream.

30. The apparatus of claim 29, wherein decoding the block of the picture from the encoded video bitstream comprises reconstructing the block of the picture, and wherein applying the at least one filter comprises applying the at least one filter to the reconstructed block.

31. The apparatus of claim 16, wherein the apparatus is a mobile computing device.

32. A non-transitory computer-readable storage medium comprising:
instructions stored thereon which, when executed by one or more processors, cause the one or more processors to:
obtain video data comprising one or more pictures;
obtain a block of a picture from the one or more pictures;

determine clipping values for at least one filter, the clipping values comprising a first set of clipping values corresponding to a luma component of the block and a second set of clipping values corresponding to a chroma component of the block, wherein a clipping value of the clipping values is determined by left shifting a first integer by a second integer, the second integer comprising a result of a bit depth value for a sample from the block minus an offset value associated with a clipping index value, and wherein the first set of clipping values corresponding to the luma component and the second set of clipping values corresponding to the chroma component are both determined by left shifting the first integer by the second integer, wherein the offset value comprises a first integer value associated with the luma component and a second integer value associated with the chroma component, the first integer value and the second integer value comprising one of 0, 3, 5, or 7; and

apply the at least one filter to the block.