~~**WHAT IS CLAIMED IS:**~~

CLAIMS

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

receiving syntax elements describing a set of pivot points that specify a piece-wise linear model for a first chroma quantization parameter (QP) mapping table in an encoded video bitstream;

determining a first chroma QP value for a first chroma block of video data from a luma QP value and the first chroma QP mapping table~~; and~~

receiving a syntax element that indicates if a same chroma QP mapping table is used for both a Cb chroma block and a co-located Cr chroma block, wherein the first chroma block is the Cb chroma block and a second chroma block is the co-located Cr chroma block; and

decoding the first chroma block of video data using the first chroma QP value.

2. The method of claim 1, further comprising:

padding QP values to the first chroma QP mapping table from a lowest value pivot point of the set of pivot points to a minimum QP value using a slope of 1 function; and~~–~~

padding QP values to the first chroma QP mapping table from a largest value pivot point of the set of pivot points to a maximum QP value using a slope of 1 function.

3. The method of claim 1, wherein the ~~first chroma block is a Cb chroma block and a second chroma block is a co-located Cr chroma block, the method further comprising:~~

~~receiving a syntax element that indicates if a same chroma QP mapping table is used for both the Cb chroma block and the Cr chroma block.~~

~~4. The method of claim 3, wherein the~~ syntax element indicates that the same chroma QP mapping table is used for the Cb chroma block, the Cr chroma block, and a joint CbCr residual, the method further comprising:

determining a second chroma QP value for the Cr chroma block of video data from the luma QP value and the first chroma QP mapping table.

~~5~~4. The method of claim ~~3~~1, wherein the syntax element indicates that the same chroma QP mapping table is not used for both the Cb chroma block and the Cr chroma block, the method further comprising:

receiving a second chroma QP mapping table in the encoded video bitstream for the Cr chroma block; and

determining a second chroma QP value for the Cr chroma block of video data from the luma QP value and the second chroma QP mapping table.

~~6~~5. The method of claim ~~3~~1, wherein the syntax element indicates that the same chroma QP mapping table is not used for each of the Cb chroma block, the Cr chroma block and a joint CbCr residual, the method further comprising:

receiving a second chroma QP mapping table in the encoded video bitstream for the Cr chroma block; and

receiving a third chroma QP mapping table in the encoded video bitstream for the joint CbCr residual.

~~7. The method of claim 1, wherein the first chroma block of video data is a joint CbCr residual.~~

~~8~~6. The method of claim 1, further comprising:

determining the luma QP value; and

decoding a luma block of video data corresponding to the first chroma block of video data using the luma QP value.

~~9~~7. The method of claim 1, wherein receiving the chroma QP mapping table comprises:

receiving the chroma QP mapping ~~tables~~table in a sequence parameter set (SPS).

~~10~~8. The method of claim 1, further comprising:

receiving a syntax element that indicates whether one or more chroma QP mapping tables are signaled explicitly in the encoded video bitstream.

~~11~~9. The method of claim 1, further comprising:

displaying a picture that includes the first chroma block of video data.

~~12~~10. An apparatus configured to decode video data, the apparatus comprising:

a memory configured to store video data; and

one or more processors in communication with the memory, the one or more processors configured to:

receive syntax elements describing a set of pivot points that specify a piece-wise linear model for a first chroma quantization parameter (QP) mapping table in an encoded video bitstream;

determine a first chroma QP value for a first chroma block of video data from a luma QP value and the first chroma QP mapping table~~; and~~

receive a syntax element that indicates if a same chroma QP mapping table is used for both a Cb chroma block and a co-located Cr chroma block, wherein the first chroma block is the Cb chroma block and a second chroma block is the co-located Cr chroma block; and

decode the first chroma block of video data using the first chroma QP value.

~~13~~11. The apparatus of claim ~~12~~10, wherein the one or more processors are further configured to:

pad QP values to the first chroma QP mapping table from a lowest value pivot point of the set of pivot points to a minimum QP value using a slope of 1 function; and

pad QP values to the first chroma QP mapping table from a largest value pivot point of the set of pivot points to a maximum QP value using a slope of 1 function.

~~14. The apparatus of claim 12, wherein the first chroma block is a Cb chroma block and a second chroma block is a co-located Cr chroma block, wherein the one or more processors are further configured to:~~

~~receive a syntax element that indicates if a same chroma QP mapping table is used for both the Cb chroma block and the Cr chroma block.~~

~~15. The apparatus of claim 14~~12. The apparatus of claim 10, wherein the syntax element

indicates that the same chroma QP mapping table is used for the Cb chroma block, the Cr chroma block, a joint CbCr residual, and wherein the one or more processors are further configured to:

determine a second chroma QP value for the Cr chroma block of video data from the luma QP value and the first chroma QP mapping table.

~~16~~13. The apparatus of claim ~~14~~10, wherein the syntax element indicates that the same chroma QP mapping table is not used for both the Cb chroma block and the Cr chroma block, and wherein the one or more processors are further configured to:

receive a second chroma QP mapping table in the encoded video bitstream for the Cr chroma block; and

determine a second chroma QP value for the Cr chroma block of video data from the luma QP value and the second chroma QP mapping table.

~~17~~14. The apparatus of claim ~~14~~10, wherein the syntax element indicates that the same chroma QP mapping table is not used for each of the Cb chroma block, the Cr chroma block and a joint CbCr residual, wherein the one or more processors are further configured to:

receive a second chroma QP mapping table in the encoded video bitstream for the Cr chroma block; and

receive a third chroma QP mapping table in the encoded video bitstream for the joint CbCr residual.

~~18~~15. The apparatus of claim ~~12, wherein the first chroma block of video data is a joint CbCr residual.~~

~~19. The apparatus of claim 12~~10, wherein the one or more processors are further configured to:

determine the luma QP value; and

decode a luma block of video data corresponding to the first chroma block of video data using the luma QP value.

~~20~~16. The apparatus of claim ~~12~~10, wherein to receive the chroma QP mapping table, the one or more processors are further configured to:

receive the chroma QP mapping ~~tables~~table in a sequence parameter set (SPS).

~~21~~17. The apparatus of claim ~~12~~10, wherein the one or more processors are further configured to:

receive a syntax element that indicates whether one or more chroma QP mapping tables are signaled explicitly in the encoded video bitstream.

~~22~~18. The apparatus of claim ~~12~~10, further comprising:

a display configured to display a picture that includes the first chroma block of video data.

~~23~~19. The apparatus of claim ~~12~~10, wherein the apparatus is a wireless communication device.

~~24~~20. A method of encoding video data, the method comprising:

determining a first chroma quantization parameter (QP) value for a first chroma block of video data from a luma QP value and a first chroma QP mapping table;

encoding the first chroma block of video data using the first chroma QP value; ~~and~~

~~signalling~~signaling a syntax element that indicates if a same chroma QP mapping table is used for both a Cb chroma block and a co-located Cr chroma block, wherein the first chroma block is the Cb chroma block and a second chroma block is the co-located Cr chroma block; and

signaling syntax elements describing a set of pivot points that specify a piece-wise linear model for the first chroma ~~quantization parameter (QP)~~QP mapping table in an encoded video bitstream.

~~25~~21. An apparatus configured to encode video data, the apparatus comprising:

a memory configured to store video data; and

one or more processors in communication with the memory, the one or more processors configured to:

determine a first chroma ~~QP~~quantization parameter (QP) value for a first chroma block of video data from a luma QP value and a first chroma QP mapping table;

encode the first chroma block of video data using the first chroma QP value; ~~and~~

signal a syntax element that indicates if a same chroma QP mapping table is used for both a Cb chroma block and a co-located Cr chroma block, wherein the first chroma block is the Cb chroma block and a second chroma block is the co-located Cr chroma block; and

signal syntax elements describing a set of pivot points that specify a piece-wise linear model for the first chroma ~~quantization parameter (QP)~~QP mapping table in an encoded video bitstream.

~~26. The apparatus of claim 25, wherein the first chroma block is a Cb chroma block and a second chroma block is a co-located Cr chroma block, wherein the one or more processors are further configured to:~~

~~signal a syntax element that indicates if a same chroma QP mapping table is used for both the Cb chroma block and the Cr chroma block.~~

~~27. The apparatus of claim 26~~22. The apparatus of claim 21, wherein the same chroma QP mapping table is used for the Cb chroma block, the Cr chroma block, and a joint CbCr residual, and wherein the one or more processors are further configured to:

determine a second chroma QP value for the Cr chroma block of video data from the luma QP value and the first chroma QP mapping table.

~~28~~23. The apparatus of claim ~~26~~21, wherein the same chroma QP mapping table is not used for both the Cb chroma block and the Cr chroma block, and wherein the one or more processors are further configured to:

determine a second chroma QP value for the Cr chroma block of video data from the luma QP value and a second chroma QP mapping table; and

signal the second chroma QP mapping table in the encoded video bitstream for the Cr chroma block.

~~29~~24. The apparatus of claim ~~26~~21, wherein the same chroma QP mapping table is not used for each of the Cb chroma block, the Cr chroma block and a joint CbCr residual, and wherein the one or more processors are further configured to:

signal a second chroma QP mapping table in the encoded video bitstream for the Cr chroma block; and

signal a third chroma QP mapping table in the encoded video bitstream for the joint CbCr residual.

~~30~~25. The apparatus of claim ~~25, wherein the first chroma block of video data is a joint CbCr residual.~~

~~31. The apparatus of claim 25~~21, wherein the one or more processors are further configured to:

determine the luma QP value; and

encode a luma block of video data corresponding to the first chroma block of video data using the luma QP value.

~~32~~26. The apparatus of claim ~~25~~21, wherein to signal the chroma QP mapping table, the one or more processors are further configured to:

signal the chroma QP mapping ~~tables~~table in a sequence parameter set (SPS).

~~33~~27. The apparatus of claim ~~25~~21, wherein the one or more processors are further configured to:

signal a syntax element that indicates whether one or more chroma QP mapping tables are signaled explicitly in the encoded video bitstream.

~~34~~28. The apparatus of claim ~~25~~21, further comprising:

a camera configured to capture a picture that includes the first chroma block of video data.

~~35~~29. The apparatus of claim ~~25~~21, wherein the apparatus is a wireless communication device.

30. An apparatus configured to decode video data, the apparatus comprising:

a memory configured to store video data; and

one or more processors in communication with the memory, the one or more processors configured to:

receive syntax elements describing a set of pivot points that specify a piece-wise linear model for a first chroma quantization parameter (QP) mapping table in an encoded video bitstream;

determine a first chroma QP value for a first chroma block of video data from a luma QP value and the first chroma QP mapping table, wherein the first chroma block of video data is a joint CbCr residual; and

decode the first chroma block of video data using the first chroma QP value.