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

CLAIMS

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

deriving a minimum allowed base quantization parameter for video data ~~based on~~as a function of an internal bitdepth minus an input bitdepth of the video data;

determining a base quantization parameter for a block of the video data based on the minimum allowed base quantization parameter; and

inverse quantizing the block of video data based on the base quantization parameter.

2. The method of claim 1, further comprising:

decoding a syntax element indicative of the input bitdepth.

3. The method of claim 1, wherein the block of the video data is a transform unit of pixel domain video data, the method further comprising:

decoding the inverse quantized transform unit of pixel domain video data using a transform skip mode or an escape mode of palette mode.

4. The method of claim 1, wherein deriving the minimum allowed base quantization parameter for the video data ~~based on the input bitdepth of the video data comprises:~~

~~deriving the minimum allowed base quantization parameter for the video data as a function of an internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth).~~

~~5. The method of claim 4, wherein deriving the minimum allowed base quantization parameter for the video data~~ as the function of the internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth) comprises:

deriving the minimum allowed base quantization parameter (min_baseQP) according to the function:

$$\text{min_baseQP} = 4 + 6 * (\text{internalBitDepth} - \text{inputBitDepth}).$$

~~6~~5. The method of claim ~~4~~1, wherein deriving the minimum allowed base quantization parameter for the video data as the function of the internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth) comprises:

deriving the minimum allowed base quantization parameter for the video data as the function of the internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth) and a maximum allowed transform unit size for a transform skip mode.

~~7~~6. The method of claim ~~6~~5, wherein deriving the minimum allowed base quantization parameter for the video data as the function of the internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth) and the maximum allowed transform unit size for the transform skip mode comprises:

deriving the minimum allowed base quantization parameter (min_baseQP) according to the function:

$\text{min_baseQP} = 4 + 6 * (\text{internalBitDepth} - \text{inputBitDepth} + \log_2 \text{Sb} - 5)$, wherein Sb is a width or a height of the maximum allowed transform unit size for the transform skip mode.

~~8~~7. The method of claim ~~6~~5, wherein deriving the minimum allowed base quantization parameter for the video data as the function of the internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth) and the maximum allowed transfo2rm unit size for the transform skip mode comprises:

deriving the minimum allowed base quantization parameter (min_baseQP) according to the function:

$\text{min_baseQP} = 4 + 6 * (\text{internalBitDepth} - \text{internalBitDepth} + \log_2 \text{Sb} - 5) = 4 + 6 * (\log_2 \text{Sb} - 5)$), wherein Sb is a width or a height of the maximum allowed transform unit size for the transform skip mode.

~~9~~8. The method of claim 1, wherein determining the base quantization parameter for the block of the video data based on the minimum allowed base quantization parameter comprises:

determining an initial value of the base quantization parameter; and

determining the base quantitation parameter as the maximum of the initial value of the

base quantization parameter and the minimum allowed base quantization parameter.

~~10~~9. The method of claim 1, further comprising:

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

~~11~~10. An apparatus configured to decode video data, the apparatus comprising:

a memory configured to store the video data; and

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

derive a minimum allowed base quantization parameter for the video data ~~based on~~as a function of an internal bitdepth minus an input bitdepth of the video data;

determine a base quantization parameter for a block of the video data based on the minimum allowed base quantization parameter; and

inverse quantize the block of video data based on the base quantization parameter.

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

decode a syntax element indicative of the input bitdepth.

~~13~~12. The apparatus of claim ~~11~~10, wherein the block of the video data is a transform unit of pixel domain video data, and wherein the one or more processors are further configured to:

decode the inverse quantized transform unit of pixel domain video data using a transform skip mode or an escape mode of palette mode.

~~14~~13. The apparatus of claim ~~11, wherein to derive the minimum allowed base quantization parameter for the video data based on the input bitdepth of the video data, the one or more processors are further configured to:~~

~~derive the minimum allowed base quantization parameter for the video data as a function of an internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth).~~

~~15. The apparatus of claim 14~~10, wherein to derive the minimum allowed base quantization parameter for the video data as the function of the internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth), the one or more processors are further configured to:

derive the minimum allowed base quantization parameter (min_baseQP) according to the function:

$$\text{min_baseQP} = 4 + 6 * (\text{internalBitDepth} - \text{inputBitDepth}).$$

~~16~~14. The apparatus of claim ~~14~~10, wherein to derive the minimum allowed base quantization parameter for the video data as the function of the internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth), the one or more processors are further configured to:

derive the minimum allowed base quantization parameter for the video data as the function of the internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth) and a maximum allowed transform unit size for a transform skip mode.

~~17~~15. The apparatus of claim ~~16~~14, wherein to derive the minimum allowed base quantization parameter for the video data as the function of the internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth) and the maximum allowed transform unit size for the transform skip mode, the one or more processors are further configured to:

derive the minimum allowed base quantization parameter (min_baseQP) according to the function:

$\text{min_baseQP} = 4 + 6 * (\text{internalBitDepth} - \text{inputBitDepth} + \log_2 \text{Sb} - 5)$, wherein Sb is a width or a height of the maximum allowed transform unit size for the transform skip mode.

~~18~~16. The apparatus of claim ~~16~~14, wherein to derive the minimum allowed base quantization parameter for the video data as the function of the internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth) and the maximum allowed transfo2rm unit size for the transform skip mode, the one or more processors are further configured to:

derive the minimum allowed base quantization parameter (min_baseQP) according to the function:

$\text{min_baseQP} = 4 + 6 * (\text{internalBitDepth} - \text{internalBitDepth} + \log_2 \text{Sb} - 5) = 4 +$

$6 * (\log_2 \mathrm{Sb} - 5)$), wherein Sb is a width or a height of the maximum allowed transform unit size for the transform skip mode.

~~19~~17. The apparatus of claim ~~11~~10, wherein to determine the base quantization parameter for the block of the video data based on the minimum allowed base quantization parameter, the one or more processors are further configured to:

determine an initial value of the base quantization parameter; and

determine the base quantitation parameter as the maximum of the initial value of the base quantization parameter and the minimum allowed base quantization parameter.

~~20~~18. The apparatus of claim ~~11~~10, further comprising:

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

~~21~~19. An apparatus configured to decode video data, the apparatus comprising:

means for deriving a minimum allowed base quantization parameter for video data ~~based on~~as a function of an internal bitdepth minus an input bitdepth of the video data;

means for determining a base quantization parameter for a block of the video data based on the minimum allowed base quantization parameter; and

means for inverse quantizing the block of video data based on the base quantization parameter.

~~22~~20. The apparatus of claim ~~21~~19, further comprising:

means for decoding a syntax element indicative of the input bitdepth.

~~23~~21. The apparatus of claim ~~21~~19, wherein the block of the video data is a transform unit of pixel domain video data, the apparatus further comprising:

means for decoding the inverse quantized transform unit of pixel domain video data using a transform skip mode or an escape mode of palette mode.

~~24. The apparatus of claim 21, wherein the means for deriving the minimum allowed base quantization parameter for the video data based on the input bitdepth of the video data comprises:~~

~~means for deriving the minimum allowed base quantization parameter for the video data as a function of an internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth).~~

~~25. The apparatus of claim 24~~22. The apparatus of claim 19, wherein the means for deriving the minimum allowed base quantization parameter for the video data as the function of the internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth) comprises:

means for deriving the minimum allowed base quantization parameter (min_baseQP) according to the function:

$$\text{min_baseQP} = 4 + 6 * (\text{internalBitDepth} - \text{inputBitDepth}).$$

~~26~~23. A non-transitory computer-readable storage medium storing instructions that, when executed, cause one or more processors configured to decode video data to:

derive a minimum allowed base quantization parameter for the video data ~~based on~~as a function of an internal bitdepth minus an input bitdepth of the video data;

determine a base quantization parameter for a block of the video data based on the minimum allowed base quantization parameter; and

inverse quantize the block of video data based on the base quantization parameter.

~~27~~24. The non-transitory computer-readable storage medium of claim ~~26~~23, wherein the instructions further cause the one or more processors to:

decode a syntax element indicative of the input bitdepth.

~~28~~25. The non-transitory computer-readable storage medium of claim ~~26~~23, wherein the block of the video data is a transform unit of pixel domain video data, and wherein the instructions further cause the one or more processors to:

decode the inverse quantized transform unit of pixel domain video data using a transform skip mode or an escape mode of palette mode.

~~29~~26. The non-transitory computer-readable storage medium of claim ~~26, wherein to derive the minimum allowed base quantization parameter for the video data based on the input bitdepth of the video data, the instructions further cause the one or more processors to:~~

~~derive the minimum allowed base quantization parameter for the video data as a function of an internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth).~~

~~30. The non-transitory computer-readable storage medium of claim 29~~23, wherein to derive the minimum allowed base quantization parameter for the video data as the function of the internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth), the instructions further cause the one or more processors to:

derive the minimum allowed base quantization parameter (min_baseQP) according to the function:

$$\text{min_baseQP} = 4 + 6 * (\text{internalBitDepth} - \text{inputBitDepth}).$$

~~31~~27. An apparatus configured to encode video data, the apparatus comprising:

a memory configured to store the video data; and

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

derive a minimum allowed base quantization parameter for the video data ~~based on~~as a function of an internal bitdepth minus an input bitdepth of the video data;

determine a base quantization parameter for a block of the video data based on the minimum allowed base quantization parameter; and

quantize the block of video data based on the base quantization parameter.

~~32~~28. The apparatus of claim ~~31~~27, wherein the one or more processors are further configured to:

encode a syntax element indicative of the input bitdepth.

~~33~~29. The apparatus of claim ~~31~~27, wherein the block of the video data is a transform unit of pixel domain video data, and wherein the one or more processors are further configured to:

encode the block of the video data using a transform skip mode or an escape mode of

palette mode.

~~34. The apparatus of claim 31, wherein to derive the minimum allowed base quantization parameter for the video data based on the input bitdepth of the video data, the one or more processors are further configured to:~~

~~derive the minimum allowed base quantization parameter for the video data as a function of an internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth).~~

~~35. The apparatus of claim 34~~30. The apparatus of claim 27, wherein to derive the minimum allowed base quantization parameter for the video data as the function of the internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth), the one or more processors are further configured to:

derive the minimum allowed base quantization parameter (min_baseQP) according to the function:

$$\text{min_baseQP} = 4 + 6 * (\text{internalBitDepth} - \text{inputBitDepth}).$$

~~36~~31. The apparatus of claim ~~34~~27, wherein to derive the minimum allowed base quantization parameter for the video data as the function of the internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth), the one or more processors are further configured to:

derive the minimum allowed base quantization parameter for the video data as the function of the internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth) and a maximum allowed transform unit size for a transform skip mode.

~~37~~32. The apparatus of claim ~~36~~31, wherein to derive the minimum allowed base quantization parameter for the video data as the function of the internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth) and the maximum allowed transform unit size for the transform skip mode, the one or more processors are further configured to:

derive the minimum allowed base quantization parameter (min_baseQP) according to the function:

$\text{min_baseQP} = 4 + 6 * (\text{internalBitDepth} - \text{inputBitDepth} + \log_2 \text{Sb} - 5)$, wherein Sb is a width or a height of the maximum allowed transform unit size for the transform skip

mode.

~~38~~33. The apparatus of claim ~~36~~31, wherein to derive the minimum allowed base quantization parameter for the video data as the function of the internal bitdepth (internalBitDepth) minus the input bitdepth (inputBitDepth) and the maximum allowed transfo2rm unit size for the transform skip mode, the one or more processors are further configured to:

derive the minimum allowed base quantization parameter (min_baseQP) according to the function:

$\text{min_baseQP} = 4 + 6 * (\text{internalBitDepth} - \text{internalBitDepth} + \log_2 \text{Sb} - 5) = 4 + 6 * (\log_2 \text{Sb} - 5)$), wherein Sb is a width or a height of the maximum allowed transform unit size for the transform skip mode.

~~39~~34. The apparatus of claim ~~31~~27, wherein to determine the base quantization parameter for the block of the video data based on the minimum allowed base quantization parameter, the one or more processors are further configured to:

determine an initial value of the base quantization parameter; and

determine the base quantitation parameter as the maximum of the initial value of the base quantization parameter and the minimum allowed base quantization parameter.

~~40~~35. The apparatus of claim ~~31~~27, further comprising:

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