CLAIMS

1. A method implemented in a decoder, the method comprising:

receiving ~~, by a receiver of the decoder,~~ a bitstream comprising a luma mapping with chroma scaling (LMCS) adaptation parameter set (APS) including LMCS parameters associated with a coded slice, wherein an APS is a syntax structure used to signal information for slices, the LMCS parameters are used for a LMCS which is a process that scale chroma values based on luma mappings, and the LMCS APS is referenced by data related to the coded slice;

obtaining LMCS parameters from the LMCS APS associated with the coded slice; and

decoding~~, by the processor,~~ the coded slice using LMCS parameters from the LMCS APS;

wherein the bitstream further comprises an adaptive loop filter (ALF) APS containing ALF parameters, wherein the ALF parameters are used for an ALF which is a filter that is controlled by parameters included in the ALF APS;

wherein each APS includes an APS identifier (ID) selected from a predefined range, and wherein the predefined range is determined based on a parameter type of each APS; and

wherein APSs of a particular parameter type share the same predefined range for the APS IDs, and different parameter types of APSs use different predefined ranges of the APS ID.

2. The method of claim 1, wherein the bitstream further comprises a header related to the coded slice, wherein the data related to the coded slice contains an APS identifier (ID) in the header .

3. The method of any of claims 1-2, wherein the bitstream further comprises ~~an adaptive loop filter (ALF) APS containing ALF parameters and~~ a scaling list APS containing ~~APS~~ scaling list parameters, wherein the scaling list parameters are included in a scaling list for a transform process.

4. The method of any of claims 1-3, wherein each APS includes an APS parameter type (aps_params_type) coded set to a predefined value indicating a type of parameters included in ~~the~~ each APS.

~~5. The method of any of claims 1-4, wherein each APS includes an APS identifier (ID) selected from a predefined range, and wherein the predefined range is determined based on a parameter type of the each APS.~~

~~65~~. The method of any of claims 1-~~54~~, wherein each APS is identified by a combination of a parameter type and an APS ID.

~~76~~. The method of any of claims 1-~~65~~, wherein the bitstream further comprises a sequence parameter set (SPS) including a flag set to indicate LMCS is enabled for an encoded video sequence including the coded slice, and wherein the LMCS parameters from the LMCS APS are obtained based on the flag.

~~87~~. A method implemented in an encoder, the method comprising:

determining~~, by a processor of the encoder,~~ luma mapping with chroma scaling (LMCS) parameters for a slice;

encoding~~, by the processor,~~ the slice into a bitstream as a coded slice;

encoding~~, by the processor,~~ the LMCS parameters into a LMCS adaptation parameter set (APS) of the bitstream; and

encoding into the bitstream~~, by the processor,~~ data related to the coded slice that references the LMCS APS;

wherein the bitstream further comprises an adaptive loop filter (ALF) APS containing ALF parameters;

wherein each APS includes an APS identifier (ID) selected from a predefined range, and wherein the predefined range is determined based on a parameter type of each APS, wherein APSs of a particular parameter type share the same predefined range for the APS IDs, and different parameter types of APSs use different predefined ranges of the APS ID.

~~98~~. The method of claim ~~87~~, wherein the data related to the coded slice contains an APS identifier (ID) in a header related to the coded slice.

~~109~~. The method of any of claims ~~87~~-~~98~~, further comprising encoding into the bitstream, by the processor, an adaptive loop filter (ALF) APS containing ALF parameters and a scaling list APS containing APS parameters.

~~11~~10. The method of any of claims ~~8~~7-~~10~~9, wherein each APS includes an APS parameter type (aps_params_type) coded set to a predefined value indicating a type of parameters included in the each APS.

~~12~~11. The method of any of claims ~~8~~7-~~11~~10, wherein each APS includes an APS identifier (ID) selected from a predefined range, and wherein the predefined range is determined based on a parameter type of the each APS.

~~13~~12. The method of any of claims ~~8~~7-~~12~~11, wherein each APS is identified by a combination of a parameter type and an APS ID.

~~14~~13. The method of any of claims ~~8~~7-~~13~~12, further comprising encoding, by the processor, a sequence parameter set (SPS) into the bitstream, wherein the SPS includes a flag set to indicate LMCS is enabled for an encoded video sequence including the coded slice.

~~15~~14. A video coding device comprising:

a processor, a receiver coupled to the processor, a memory coupled to the processor, and a transmitter coupled to the processor, wherein the processor, receiver, memory, and transmitter are configured to perform the method of any of claims 1-~~14~~13.

~~16~~15. A non-transitory computer readable medium comprising a computer program product for use by a video coding device, the computer program product comprising computer executable instructions stored on the non-transitory computer readable medium such that when executed by a processor cause the video coding device to perform the method of any of claims 1-~~14~~13.

~~17~~16. A decoder comprising:

a receiving unit, configured to receive a bitstream comprising a luma mapping with chroma scaling (LMCS) adaptation parameter set (APS) including LMCS parameters associated with a coded slice, wherein the LMCS APS is referenced by data related to the coded slice;

a obtaining unit, configured to obtain LMCS parameters from the LMCS APS associated with the coded slice;

a decoding unit, configured to decode the coded slice using LMCS parameters from the LMCS APS;

wherein the bitstream further comprises an adaptive loop filter (ALF) APS containing ALF parameters;

wherein each APS includes an APS identifier (ID) selected from a predefined range, and wherein the predefined range is determined based on a parameter type of each APS; and

wherein APSs of a particular parameter type share the same predefined range for the APS IDs, and different parameter types of APSs use different predefined ranges of the APS ID.

~~18~~17. The decoder of claim ~~17~~16, wherein the decoder is further configured to perform the method of any of claims ~~1~~2-~~7~~6.

~~19~~18. An encoder comprising:

a determining unit, configured to determine luma mapping with chroma scaling (LMCS) parameters for a slice;

an encoding unit, configured to:

encode the slice into a bitstream as a coded slice;

encode the LMCS parameters into a LMCS adaptation parameter set (APS) of the bitstream; and

encode into the bitstream data related to the coded slice that references the LMCS APS;

wherein the bitstream further comprises an adaptive loop filter (ALF) APS containing ALF parameters;

wherein each APS includes an APS identifier (ID) selected from a predefined range, and wherein the predefined range is determined based on a parameter type of each APS; and

wherein APSs of a particular parameter type share the same predefined range for the APS IDs, and different parameter types of APSs use different predefined ranges of the APS ID.

~~20~~19. The encoder of claim ~~19~~18, wherein the encoder is further configured to perform the method of any of claims 8-~~14~~13.

~~21~~20. A non-transitory storage medium which includes an encoded bitstream being generated by a method according to any of claims 7-13~~, the bitstream comprising a luma mapping with chroma scaling (LMCS) adaptation parameter set (APS) including LMCS parameters associated with a coded slice, and data related to the coded slice references the LMCS APS~~.

~~22~~21. A~~n~~ decoder comprising processing circuitry for carrying out the method according to any one of claims 1 to ~~7~~6.

~~23~~22. An encoder comprising processing circuitry for carrying out the method according to any of claims 8 to ~~14~~13.

~~24~~23. A computer program product comprising program code for performing the method according to any of claims 1 to ~~14~~ 13 when executed on a computer or a processor.

~~25~~24. A non-transitory computer-readable medium carrying a program code which, when executed by a computer device, causes the computer device to perform the method of any one of claims 1 to ~~14~~13.