CLAIMS:

1. A high dynamic range video encoder (900), arranged to receive via an image input (920) an input high dynamic range image (MsterHDR) which has a first maximum pixel luminance (PB_C_H50) for which the encoder has a first metadata input (922), and arranged to receive via a second metadata input (921) a master luma mapping function (FL_50t1), which luma mapping function defines the relationship between normalized lumas of the input high dynamic range image and normalized lumas of a corresponding low dynamic range image (Im_LDR) having an LDR maximum pixel luminance, preferably being equal to 100 nit, characterized in that the encoder further comprises a third metadata input (923) to receive a second maximum pixel luminance (PB_CH), which is lower than the first maximum pixel luminance (PB_C_H50), and the encoder further being characterized in that it comprises:

- a HDR function generation unit (901) arranged to apply a standardized algorithm to transform the master luma mapping function (FL_50t1) into an adapted luma mapping function (F_H2hCI), which relates normalized lumas of the input high dynamic range image to normalized luminances of an intermediate dynamic range image (IDR) which is characterized by having a maximum possible luminance being equal to the second maximum pixel luminance (PB_CH);
- an IDR image calculation unit (902) arranged to apply the adapted luma mapping function (F_H2hCI) to lumas of pixels of the input high dynamic range image (MsterHDR) to obtain lumas of pixels of the intermediate dynamic range image (IDR) which is output of this unit; and
- an IDR mapping function generator (903) arranged to derive on the basis of the master luma mapping function (FL_50t1) and the adapted luma mapping function (F_H2hCI) a channel luma mapping function (F_I2sCI), which defines as output the respective normalized lumas of the low dynamic range image (Im_LDR) when given as input the respective normalized lumas of the intermediate dynamic range image (IDR), which in turn correspond to respective lumas of the input high dynamic range image (MsterHDR); the encoder being further characterized to have:
- an image output (930) to output the intermediate dynamic range image (IDR);

- a first metadata output (932) to output the second maximum pixel luminance (PB_CH);
- a second metadata output (931) to output the channel luma mapping function (F_I2sCI); and
- a third metadata output (933) to output the first maximum pixel luminance (PB_C_H50).

2. A high dynamic range video encoder (900) as claimed in claim 1, characterized in that the standardized algorithm of the HDR function generation unit (901) applies a compression towards the diagonal of the master luma mapping function (FL_50t1) to obtain the adapted luma mapping function (F_H2hCI), which compression involves scaling all output luma values of the function with a scale factor which depends on the first maximum pixel luminance (PB_C_H50) and the second maximum pixel luminance (PB_CH).

3. A high dynamic range video encoder (900) as claimed in one of the above encoder claims, which comprises a limiter (1804) arranged to re-determine a slope of the channel luma mapping function (F_I2sCI) for a sub-range of the normalized lumas comprising the brightest normalized luma equal to 1.0.

4. A high dynamic range video encoder (900) as claimed in one of the above encoder claims in which the HDR function generation unit (901) is arranged to determine a saturation boost specification curve depending on an original saturation boost specification curve (2801) and the adapted luma mapping function (F_H2hCI).

~~5. A high dynamic range video decoder (1100) having an image input (1110) to receive an intermediate dynamic range image (IDR), which has a second maximum pixel luminance (PB_CH) which is lower by a multiplicative factor preferably being 0.8 or less than a first maximum pixel luminance (PB_C_H50) of a master high dynamic range image (MsterHDR), which second maximum pixel luminance (PB_CH) is received via a second metadata input (1112), the decoder having a first metadata input (1111) to receive a luma mapping function (F_I2sCI) which defines the transformation of all possible normalized lumas of the intermediate dynamic range image (IDR) to corresponding normalized lumas of a LDR maximum pixel luminance low dynamic range image (Im_LDR), the decoder being~~

characterized in that it has a third metadata input (1113) to receive the first maximum pixel luminance (PB_C_H50), and the decoder comprising:

a luminance function determination unit (1104) arranged to apply a standardized algorithm to transform the luma mapping function (F_I2sCI) into a decoding luma mapping function (F_ENCINV_H2I) which specifies as output for any possible input normalized luma of a pixel of the intermediate dynamic range image (IDR) a corresponding normalized HDR luma of the master high dynamic range image (MsterHDR), which standardized algorithm uses the values of the first maximum pixel luminance (PB_C_H50) and the second maximum pixel luminance (PB_CH); and

a color transformer (1102) arranged to successively apply to inputted normalized lumas of the intermediate dynamic range image (IDR) the decoding luma mapping function (F_ENCINV_H2I) to obtain normalized reconstructed lumas (L_RHDR) of pixels of a reconstructed master HDR image (REC_M_HDR); the decoder further having an image output (1120) to output the reconstructed master HDR image (REC_M_HDR).

6. A high dynamic range video decoder (1100) as claimed in claim 5, characterized in that the standardized algorithm of the luminance function determination unit (1104) calculates a scale factor which depends on the first maximum pixel luminance (PB_C_H50) and the second maximum pixel luminance (PB_CH).

7. A high dynamic range video decoder (1100) as claimed in one of the above decoder claims in which the luma mapping function (F_I2sCI) is defined by a luma mapping which consists of a first linear segment having a first slope (SG_gr) for a range of dark normalized lumas, a second linear segment having a second slope (HG_gr) for a range of bright normalized lumas, and a parabolic segment for lumas in between said two ranges.

8. A high dynamic range video decoder (1100) as claimed in one of the above decoder claims in which the color transformer (1102) is arranged to calculate pixel lumas of a medium dynamic range image (MDR_300) having a maximum pixel luminance (PB_MDR) which is not equal to the values of the LDR maximum luminance, the first maximum pixel luminance (PB_C_H50), and the second maximum pixel luminance (PB_CH), and the decoder having an image output (1122) for outputting the medium dynamic range image (MDR_300).

~~9. A high dynamic range video decoder (1100) as claimed in one of the above decoder claims which has a metadata output (1121) for outputting a luma mapping function (F_L_subsq) which defines for all normalized lumas of the reconstructed master HDR image (REC_M_HDR) or alternatively the medium dynamic range image (MDR_300) corresponding lumas of an image having another maximum pixel luminance, this another maximum pixel luminance preferably being 100 nit, or a value higher or lower than the maximum luminance value of respectively the reconstructed master HDR image (REC_M_HDR) or alternatively the medium dynamic range image (MDR_300).~~

~~10. A high dynamic range video encoder (900) as claimed in one of the above decoder claims in which the luminance function determination unit (1104) is further arranged to determine an original saturation boost specification curve (2801) depending on a channel saturation boost specification curve (2804) and the channel luma mapping function (F_I2sCI).~~

~~11. A high dynamic range video encoder (900) as claimed in one of the above decoder claims 8, 9 or 10 in which the original saturation boost specification curve further depends on a saturation position correction function (FSNL) which corresponds to an equation involving a power function of the value of the normalized lumas.~~

~~12~~5. A method of high dynamic range video encoding of a received input high dynamic range image (MsterHDR) which has a first maximum pixel luminance (PB_C_H50), comprising receiving a master luma mapping function (FL_50t1), which luma mapping function defines a relationship between normalized lumas of the input high dynamic range image and normalized lumas of a corresponding low dynamic range image (Im_LDR) having a LDR maximum pixel luminance preferably having a value equal to 100 nit, characterized in that the encoding further comprises receiving a second maximum pixel luminance (PB_CH), and the encoding comprising:

- applying a standardized algorithm to transform the master luma mapping function (FL_50t1) into a adapted luma mapping function (F_H2hCI), which relates normalized lumas of the input high dynamic range image to normalized luminances of an intermediate dynamic range image (IDR) which is characterized by having a maximum possible luminance being equal to the second maximum pixel luminance (PB_CH);
- applying the adapted luma mapping function (F_H2hCI) to lumas of pixels of

the input high dynamic range image (MsterHDR) to obtain lumas of pixels of the intermediate dynamic range image (IDR);

- deriving on the basis of the master luma mapping function (FL_50t1) and the adapted luma mapping function (F_H2hCI) a channel luma mapping function (F_I2sCI), which defines as output the respective normalized lumas of the low dynamic range image (Im_LDR) when being given as input the respective normalized lumas of the intermediate dynamic range image (IDR), which lumas in turn correspond to respective lumas of the input high dynamic range image (MsterHDR);
- outputting the intermediate dynamic range image (IDR); and
- outputting the second maximum pixel luminance (PB_CH), the channel luma mapping function (F_I2sCI) and the first maximum pixel luminance (PB_C_H50).

~~13. A method of high dynamic range video decoding of a received intermediate dynamic range image (IDR), which image has a second maximum pixel luminance (PB_CH) which is lower by a multiplicative factor being preferably 0.8 or less than a first maximum pixel luminance (PB_C_H50) of a master high dynamic range image (MsterHDR), which second maximum pixel luminance (PB_CH) is received as metadata of the intermediate dynamic range image, the decoding method also receiving in metadata a luma mapping function (F_I2sCI), which defines the transformation of all possible normalized lumas of the intermediate dynamic range image (IDR) to corresponding normalized lumas of a LDR maximum pixel luminance low dynamic range image (Im_LDR), and the decoding method being characterized in that it receives the first maximum pixel luminance (PB_C_H50), and the decoding method being characterized in that it comprises:~~

~~- applying a standardized algorithm to transform the luma mapping function (F_I2sCI) into a decoding luma mapping function (F_ENCINV_H2I) which specifies as output for any possible input normalized luma of a pixel of the intermediate dynamic range image (IDR) a corresponding normalized HDR luma of the master high dynamic range image (MsterHDR), which standardized algorithm uses the values of the first maximum pixel luminance (PB_C_H50) and the second maximum pixel luminance (PB_CH);~~

~~- apply to normalized lumas of the intermediate dynamic range image (IDR) the decoding luma mapping function (F_ENCINV_H2I) to obtain normalized reconstructed lumas (L_RHDR) of pixels of a reconstructed master HDR image (REC_M_HDR); and~~

~~- outputting the reconstructed master HDR image (REC_M_HDR).~~