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

CLAIMS

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

~~———~~decoding a first syntax element that indicates whether all linear model (LM) modes are disabled for a ~~picture~~sequence parameter set (SPS) of the video data;

~~———~~decoding a second syntax element that indicates a chroma prediction mode index for a chroma block of ~~the picture~~a picture in a sequence of pictures associated with the SPS of the video data;

determining a chroma intra prediction mode for the chroma block based on the chroma ~~intra~~ prediction mode index, wherein determining the chroma intra prediction mode for the chroma block comprises~~-~~:

determining, based on the chroma prediction mode index for the chroma block being equal to a particular value, that the chroma intra prediction mode for the chroma block is inherited from a collocated luma block, wherein the collocated luma block is collocated with the chroma block and the particular value is a same value regardless of whether the first syntax element indicates that all the LM modes are disabled for the picture~~;~~, and

responsive to the first syntax element indicating all the LM modes are not disabled for the picture, determining that the chroma prediction mode index indicates a cross-component linear model intra prediction mode; and

decoding the chroma block based on the chroma intra prediction mode for the chroma block~~.~~

~~2. The method of claim 1~~, wherein decoding the second syntax element comprises decoding the second syntax element using a binarization table that is a same binarization table regardless of whether or not the first syntax element indicates that all the LM modes are disabled for the picture.

~~3~~2. The method of claim ~~2~~1, wherein the binarization table specifies different fixed length codes for different chroma prediction mode indexes.

43. The method of claim 21, wherein the binarization table specifies variable length codes for at least some chroma prediction mode indexes.

54. The method of claim 21, wherein the binarization table specifies Golomb codes for different chroma prediction mode indexes.

65. The method of claim 1, wherein the chroma prediction mode index defines a chroma prediction mode from a group of chroma prediction modes consisting of:

mode index 0-- planar mode;

mode index 1-- vertical mode;

mode index 2-- horizontal mode;

mode index 3-- DC mode;

mode index 4 – DM_Chroma mode;

mode index 5-- LM_Chroma mode;

mode index 6 – LM_L mode; and

mode index 7-- LM_A mode.

76. The method of claim 21, wherein decoding the second syntax element using the binarization table comprises:

determining a bin string for the second syntax element; and

using the binarization table to determine the chroma prediction mode index from the bin string. for the second syntax element.

~~8~~7. The method of claim ~~7~~6, wherein the binarization table comprises:

~~-~~Chroma prediction mode index	Bin string
4	00
0	0100
1	0101
2	0110
3	0111
5	10
6	110
7	111

~~9~~8. The method of claim ~~2~~1, wherein decoding the second syntax element using the binarization table comprises:

determining a bin string for the second syntax element; and

using the binarization table to determine the chroma prediction mode index from the bin string for the second syntax element, and

wherein determining the bin string for the second syntax element comprises:

inferring a first portion of the bin string for the second syntax element associated with a chroma prediction mode used to decode the chroma block of the picture based on ~~the~~a value of the first syntax element; and

determining a second portion of the bin string for the second syntax element associated with the chroma prediction mode used to decode the chroma block of the picture based on ~~the~~a value of the second syntax element.

~~10~~9. The method of claim ~~2~~1, wherein decoding the second syntax element comprises:

applying a context adaptive binary arithmetic coding (CABAC) technique to determine a bin string for the second syntax element; and

using the binarization table to determine the chroma prediction mode index from the bin string~~,~~ for the second syntax element,

wherein applying the CABAC technique to determine the bin string for the second syntax element comprises, based on the first syntax element indicating that all the LM modes are disabled for the picture~~:~~;

using a first context to decode of a first-occurring bin of the bin string for the second syntax element; and

using a second context to decode a second-occurring bin of the bin string for the second syntax element depending on a value of the first bin of the bin string for the second syntax element, wherein the first and second contexts are different from each other, and the second-occurring bin indicates whether or not the chroma prediction intra prediction mode for the chroma block is inherited from a collocated luma block.

~~11.~~10. A method of encoding video data, the method comprising:

encoding a first syntax element that indicates whether all linear model (LM) modes are disabled for a ~~picture~~sequence parameter set (SPS) of the video data;

determining a chroma intra prediction mode for a chroma block of ~~the~~a picture~~;~~ in a sequence of pictures associated with the SPS of the video data;

determining a chroma ~~intra~~ prediction mode index to specify the chroma intra prediction mode for the chroma block, wherein determining the chroma intra prediction mode index comprises~~:~~:

selecting a particular value to specify that the chroma intra prediction mode for the chroma block is inherited from a collocated luma block, wherein the collocated luma block is collocated with the chroma block and the particular value is a same value regardless of whether the first syntax element indicates that all the LM modes are disabled for the picture~~;~~, and

responsive to the first syntax element indicating all the LM modes are not disabled for the picture, determining that the chroma prediction mode index indicates a cross-component linear model intra prediction mode; and

encoding a second syntax element that indicates the chroma prediction mode index for the chroma block of the picture~~.~~

~~12. The method of claim 11~~, wherein encoding the second syntax element comprises encoding the second syntax element using a binarization table that is a same binarization table regardless of whether or not the first syntax element indicates that all the LM modes are disabled for the picture.

~~13~~11. The method of claim ~~12~~10, wherein the binarization table specifies different fixed length codes for different chroma prediction mode indexes.

~~14~~12. The method of claim ~~12~~10, wherein the binarization table specifies variable length codes for at least some chroma prediction mode indexes.

~~15~~13. The method of claim ~~12~~10, wherein the binarization table specifies Golomb codes for different chroma prediction mode indexes.

~~16~~14. The method of claim ~~11~~10, wherein the chroma prediction mode index defines a chroma prediction mode from a group of chroma prediction modes consisting of:

———mode index 0 - planar mode;

———mode index 1 - vertical mode;

———mode index 2 - horizontal mode;

———mode index 3-- DC mode;

———mode index 4-- DM_Chroma mode;

———mode index 5 - LM_Chroma mode;

———mode index 6 - LM_L mode; and

———mode index 7 - LM_A mode.

~~17~~15. The method of claim ~~12~~10, wherein encoding the second syntax element using the binarization table comprises:

encoding a bin string for the second syntax element based on the chroma prediction mode index using the binarization table.

~~18~~16. The method of claim ~~17~~15, wherein the binarization table comprises:

-Chroma prediction mode index	**Bin string**
4	00
0	0100
1	0101
2	0110
3	0111
5	10
6	110
7	111

~~19~~17. The method of claim ~~12~~10, wherein encoding the second syntax element using the binarization table comprises:

~~———~~using the binarization table to determine a bin string based on the chroma prediction
mode index~~,~~;

excluding from encoded video data, a first portion of the bin string associated with a chroma prediction mode used to encode the chroma block of the picture, wherein the first portion is inferable based on the value of the first syntax element; and

including in the encoded video data a second portion of the bin string associated with the chroma prediction mode used to encode the chroma block of the picture.

~~20~~18. The method of claim ~~12~~10, wherein encoding the second syntax element comprises:

~~———~~using the binarization table to determine a bin string for the second syntax element based on the chroma prediction mode index; and

~~———~~applying a context adaptive binary arithmetic coding (CABAC) technique to encode the
bin string for the second syntax element,

~~———~~wherein applying the CABAC technique to encode the bin string for the second syntax element comprises, based on the first syntax element indicating that all the LM modes are disabled for the picture:

~~———~~using a first context to encode of a first-occurring bin of the bin string for the second syntax element; and

~~———~~using a second context to encode a second-occurring bin of the bin string for the second syntax element depending on a value of the first bin of the bin string for the second syntax element, wherein the first and second contexts are different from each other, and the second-occurring bin indicates whether or not the chroma intra prediction mode for the chroma block is inherited from a collocated luma block.

~~21~~19. A video decoding device comprising:

a memory configured to store video data; and

~~———~~processing circuity configured to:

~~———~~decode a first syntax element that indicates whether all linear model (LM) modes

are disabled for a ~~picture~~sequence parameter set (SPS) of the video data;

~~———~~decode a second syntax element that indicates a chroma prediction mode index for

a chroma block of ~~the~~a picture~~;~~ in a sequence of pictures associated with the SPS of the video data;

determine a chroma intra prediction mode for the chroma block based on the chroma ~~intra~~ prediction mode index, wherein to ~~deterimine~~determine the chroma intra prediction mode for the chroma block, the processing circuitry is configured to~~-~~:

determine, based on the chroma prediction mode index for the chroma block being equal to a particular value, that the chroma intra prediction mode for the chroma block is inherited from a collocated luma block, wherein the collocated luma block is collocated with the chroma block and the particular value is a same value regardless of whether the first syntax element indicates that all LM modes are disabled for the picture~~;~~, and

responsive to the first syntax element indicating all LM modes are not disabled for the picture, determine that the chroma prediction mode index indicates a cross component linear model intra prediction mode; and

decode the chroma block based on the chroma intra prediction mode for the ~~chroma block.~~

~~22. The video decoding device of claim 21~~chroma block, wherein the processing circuity is configured to decode the second syntax element using a binarization table that is a same binarization table regardless of whether or not the first syntax element indicates that all LM modes are disabled for the picture.

~~23~~20. The video decoding device of claim ~~22~~19, wherein the binarization table specifies different fixed length codes for different chroma prediction mode indexes.

~~24~~21. The video decoding device of claim ~~22~~19, wherein the binarization table specifies variable length codes for at least some chroma prediction mode indexes.

~~25~~22. The video decoding device of claim ~~22~~19, wherein the binarization table specifies Golomb codes for different chroma prediction mode indexes.

~~26~~23. The video decoding device of claim ~~21~~19, wherein the chroma prediction mode index defines a chroma prediction mode from a group of chroma prediction modes consisting of:

~~———~~mode index 0 - planar mode;

~~———~~mode index 1 - vertical mode;

~~———~~mode index 2 - horizontal mode;

~~———~~mode index 3~~--~~ DC mode;

~~———~~mode index 4~~--~~ DM_Chroma mode;

~~———~~mode index 5 - LM_Chroma mode;

~~———~~mode index 6 - LM_L mode; and

~~———~~mode index 7 - LM_A mode.

~~27~~24. The video decoding device of claim ~~22~~19, wherein in using the binarization table the processing circuity is configured to:

determine a bin string for the second syntax element; and

use the binarization table to determine the chroma prediction mode index from the bin string.

~~28~~25. The video decoding device of claim ~~27~~24, wherein the binarization table comprises:

-**Chroma prediction mode index**	**Bin string**
4	00
0	0100
1	0101
2	0110
3	0111
5	10
6	110
7	111

~~29~~26. The video decoding device of claim ~~22,~~ 19,

wherein to decode the second syntax element using the binarization table, the processing circuity is configured to:

determine a bin string for the second syntax element; and

———use the binarization table to determine the chroma prediction mode index from the bin string, and

wherein to determine the bin string for the second syntax element, the processing circuity is configured to:

infer a first portion of the bin string associated with a chroma prediction mode used to decode the chroma block of the picture based on the value of the first syntax element; and

determine a second portion of the bin string associated with the chroma prediction mode used to decode the chroma block of the picture based on the value of the second syntax element.

~~30~~27. The video decoding device of claim ~~22,~~ 19,

wherein to decode the second syntax element, the processing circuity is configured to:

apply a context adaptive binary arithmetic coding (CABAC) technique to determine a bin string for the second syntax element; and

use the binarization table to determine the chroma prediction mode index from the bin string,

wherein to apply the CABAC technique to determine the bin string for the second syntax element the processing circuitry is configured to, based on the first syntax element indicating that all LM modes are disabled for the picture:

use a first context to decode of a first-occurring bin of the bin string; and

use a second context to decode a second-occurring bin of the bin string depending on a value of the first bin of the bin string, wherein the first and second contexts are different from each other, and the second-occurring bin indicates whether or not the chroma intra prediction mode for the chroma block is inherited from a collocated luma block.

~~31.~~ 28. A video encoding device comprising:

a memory configured to store video data; and

processing circuity configured to:

encode a first syntax element that indicates whether all linear model (LM) modes are disabled for a ~~picture~~ sequence parameter set (SPS) of the video data;

determine a chroma intra prediction mode for a chroma block of ~~the picture;~~ a picture in a sequence of pictures associated with the SPS of the video data;

determine a chroma ~~intra~~ prediction mode index to specify the chroma intra prediction mode for the chroma block,

wherein to determine the chroma intra prediction mode index, the processing circuity is configured to~~-~~:

select a particular value to specify that the chroma intra prediction mode for the chroma block is inherited from a collocated luma block, wherein the collocated luma block is collocated with the chroma block and the particular value is a same value regardless of whether the first syntax element indicates that all LM modes are disabled for the picture~~;~~, and

~~responsive to the first syntax element indicating all LM modes are not disabled for the picture, determine that the chroma prediction mode index indicates a cross component linear model intra prediction mode; and~~

encode a second syntax element that indicates the chroma prediction mode index for the chroma block of the picture~~.~~

~~32. The video encoding device of claim 31~~, wherein the processing circuity is configured to encode the second syntax element using a binarization table that is a same binarization table regardless of whether or not the first syntax element indicates that all LM modes are disabled for the picture.

~~33~~29. The video encoding device of claim ~~32~~28, wherein the binarization table specifies different fixed length codes for different chroma prediction mode indexes.

~~34~~30. The video encoding device of claim ~~32~~28, wherein the binarization table specifies variable length codes for at least some chroma prediction mode indexes.

~~35~~31. The video encoding device of claim ~~32~~28, wherein the binarization table specifies Golomb codes for different chroma prediction mode indexes.

~~36~~32. The video encoding device of claim ~~31~~28, wherein the chroma prediction mode index defines a chroma prediction mode from a group of intra prediction modes consisting of:

———mode index 0 - planar mode;

———mode index 1 - vertical mode;

———mode index 2 - horizontal mode;

———mode index 3-- DC mode;

———mode index 4-- DM_Chroma mode;

———mode index 5 - LM_Chroma mode;

———mode index 6 - LM_L mode; and

———mode index 7 - LM_A mode.

~~37~~33. The video encoding device of claim ~~32~~28, wherein to encode the second syntax element using a binarization table, the processing circuity is configured to:

encode a bin string for the second syntax element based on the chroma prediction mode index using the binarization table.

~~38~~34. The video encoding device of claim ~~37~~33, wherein the binarization table comprises:

-**Chroma prediction mode index**	**Bin string**
4	00
0	0100
1	0101
2	0110
3	0111
5	10
6	110
7	111

~~39~~35. The video encoding device of claim ~~32~~28, wherein to encode the second syntax element using the binarization table, the processing circuity is configured to:

~~———~~use the binarization table to determine a bin string based on the chroma prediction mode index~~,~~;

exclude from encoded video data, a first portion of the bin string associated with a chroma prediction mode used to encode the chroma block of the picture, wherein the first portion is inferable based on the value of the first syntax element; and

include in the encoded video data a second portion of the bin string associated with the chroma prediction mode used to encode the chroma block of the picture.

~~40~~36. The video encoding device of claim ~~32,~~ 28,

wherein to encode the second syntax element using the binarization table, the processing circuity is configured to:

———use the binarization table to determine a bin string based on the chroma prediction mode index; and

———apply a context adaptive binary arithmetic coding (CABAC) technique to encode the bin string for the second syntax element,

———wherein to apply the CABAC technique to encode the bin string the processing circuity is

configured to, based on the first syntax element indicating that all LM modes are disabled for the picture:

———use a first context to encode of a first-occurring bin of the bin string; and

———use a second context to encode a second-occurring bin of the bin string depending on a value of the first bin of the bin string, wherein the first and second contexts are different from each other, and the second-occurring bin indicates whether or not the chroma intra prediction mode for the chroma block is inherited from a collocated luma block.

~~41~~37. A video decoding device comprising:

———means for decoding a first syntax element that indicates whether all linear model (LM) modes are disabled for a ~~picture~~sequence parameter set (SPS) of the video data;

means for decoding a second syntax element that indicates a chroma prediction mode ~~index for a chroma block of the picture;~~

index for a chroma block of a picture in a sequence of pictures associated with the SPS of the video data;

———means for determining a chroma intra prediction mode for the chroma block based on the chroma ~~intra~~ prediction mode index, wherein the means for determining the chroma intra prediction mode for the chroma block comprises ~~determining, based on the chroma prediction mode index for the chroma block being equal to a particular value, that the chroma intra prediction mode for the chroma block is inherited from a collocated luma block, wherein the collocated luma block is collocated with the chroma block and the particular value is a same~~

~~value regardless of whether the first syntax element indicates that all LM modes are disabled for the picture; and~~:

~~means for decoding the chroma block based on the chroma intra prediction mode for the chroma block.~~

~~42. A video encoding device comprising:~~

~~means for encoding a first syntax element that indicates whether all linear model (LM) modes are disabled for a picture of the video data;~~

~~means for determining a chroma intra prediction mode for a chroma block of the picture;~~

~~means for determining a chroma intra prediction index to specify the chroma intra prediction mode for the chroma block, wherein determining the chroma intra prediction mode index comprises selecting a particular value to specify that the chroma intra prediction mode for the chroma block is inherited from a collocated luma block, wherein the collocated luma block is collocated with the chroma block and the particular value is a same value regardless of whether the first syntax element indicates that all LM modes are disabled for the picture; and~~

~~means for encoding a second syntax element that indicates the chroma prediction mode index for the chroma block of the picture.~~

~~43. A computer-readable storage medium storing instructions that, when executed, cause one or more processors of a video decoding device to:~~

~~decode a first syntax element that indicates whether all linear model (LM) modes are disabled for a picture of video data;~~

~~decode a second syntax element that indicates a chroma prediction mode index for a chroma block of the picture;~~

~~determine a chroma intra prediction mode for the chroma block based on the chroma intra prediction index, wherein determining the chroma intra prediction mode for the chroma block comprises~~means for determining, based on the chroma prediction mode index for the chroma block being equal to a particular value, that the chroma intra prediction mode for the chroma block is inherited from a collocated luma block, wherein the collocated luma block is collocated with the chroma block and the particular value is a same value regardless of whether the first syntax element indicates that all LM modes are disabled for the picture~~;~~, and

~~decode~~means for determining, responsive to the first syntax element indicating all LM modes are not disabled for the picture, that the chroma prediction mode index indicates a cross component linear model intra prediction mode; and

means for decoding the chroma block based on the chroma intra prediction mode for the chroma block~~.~~

~~44. A computer-readable storage medium storing instructions that, when executed, cause one or more processors~~, wherein the means for decoding the second syntax element comprises means for decoding the second syntax element using a binarization table that is a same binarization table regardless of ~~a~~whether or not the first syntax element indicates that all LM modes are disabled for the picture.

38. A video encoding device ~~to~~comprising:

~~encode~~means for encoding a first syntax element that indicates whether all linear model (LM) modes are disabled for a ~~picture~~sequence parameter set (SPS) of the video data;

~~determine~~ means for determining a chroma intra prediction mode for a chroma block of ~~the picture;~~ a picture in a sequence of pictures associated with the SPS of the video data;

~~determine~~ means for determining a chroma ~~intra~~ prediction mode index to specify the chroma intra prediction mode for the chroma block, wherein the means for determining the chroma intra prediction mode index comprises:

means for selecting a particular value to specify that the chroma intra prediction mode for the chroma block is inherited from a collocated luma block, wherein the collocated luma block is collocated with the chroma block and the particular value is a same value regardless of whether the first syntax element indicates that all LM modes are disabled for the picture~~;~~, and

~~encode~~means for determining, responsive to the first syntax element indicating all LM modes are not disabled for the picture, that the chroma prediction mode index indicates a cross-component linear model intra prediction mode; and

means for encoding a second syntax element that indicates the chroma prediction mode index for the chroma block of the picture~~.~~, wherein the means for encoding the second syntax element comprises means for encoding the second syntax element using a binarization table that is a same binarization table regardless of whether or not the first syntax element indicates that all LM modes are disabled for the picture.

39. A non-transitory computer-readable storage medium storing instructions that, when executed, cause one or more processors of a video decoding device to:

decode a first syntax element that indicates whether all linear model (LM) modes are

disabled for a sequence parameter set (SPS) of video data;

decode a second syntax element that indicates a chroma prediction mode index for a chroma block of a picture in a sequence of pictures associated with the SPS of the video data;

determine a chroma intra prediction mode for the chroma block based on the chroma prediction mode index, wherein to determine the chroma intra prediction mode for the chroma block, the instructions cause the one or more processors to:

determine, based on the chroma prediction mode index for the chroma block being equal to a particular value, that the chroma intra prediction mode for the chroma block is inherited from a collocated luma block, wherein the collocated luma block is collocated with the chroma block and the particular value is a same value regardless of whether the first syntax element indicates that all LM modes are disabled for the picture, and

responsive to the first syntax element indicating all LM modes are not disabled for the picture, determine that the chroma prediction mode index indicates a cross-component linear model intra prediction mode; and

decode the chroma block based on the chroma intra prediction mode for the chroma block, wherein the instructions cause the one or more processors to decode the second syntax element using a binarization table that is a same binarization table regardless of whether or not the first syntax element indicates that all LM modes are disabled for the picture.

40. A non-transitory computer-readable storage medium storing instructions that, when executed, cause one or more processors of a video encoding device to:

encode a first syntax element that indicates whether all linear model (LM) modes are disabled for a sequence parameter set (SPS) of video data;

determine a chroma intra prediction mode for a chroma block of a picture in a sequence of pictures associated with the SPS of the video data;

determine a chroma prediction mode index to specify the chroma intra prediction mode for

the chroma block, wherein to determine the chroma intra prediction mode index, the instructions cause the one or more processors to:

select a particular value to specify that the chroma intra prediction mode for the chroma block is inherited from a collocated luma block, wherein the collocated luma block is collocated with the chroma block and the particular value is a same value regardless of whether the first syntax element indicates that all LM modes are disabled for the picture, and

responsive to the first syntax element indicating all LM modes are not disabled for the picture, determine that the chroma prediction mode index indicates a cross-component linear model intra prediction mode; and

encode a second syntax element that indicates the chroma prediction mode index for the chroma block of the picture, wherein the instructions cause the one or more processors to encode the second syntax element using a binarization table that is a same binarization table regardless of whether or not the first syntax element indicates that all LM modes are disabled for the picture.