CLAIMS:

1. A method for video decoding in a decoder, comprising:

decoding coded information of a coding block (CB) in a picture from a coded video bitstream, the coded information indicating a width of W samples and a height of H samples of the CB;

partitioning the CB into sub-processing units having a width that is a minimum one of W and K and a height that is a minimum one of H and K, at least one of the width W and the height H of the CB being larger than a processing data unit size K;

determining a partitioning structure to further partition the sub-processing units based on the width and the height of the sub-processing units and a maximum transform unit (TU) size of M samples, at least one of the width and the height of the sub-processing units being larger than M; and

partitioning each of the sub-processing units into TUs of MxM based on the determined partitioning structure, wherein

when the width of the sub-processing units is larger than M and the height of the sub-processing units is less than M,

the determining the partitioning structure includes determining the partitioning structure to be a vertical binary tree partitioning structure; and the partitioning each of the sub-processing units into the TUs includes partitioning each of the sub-processing units into the TUs using the vertical binary tree partitioning structure where a width of the TUs is M and a height of the TUs is equal to the height of the sub-processing unit, or

when the height of the sub-processing units is larger than M and the width of the sub-processing unit is less than M,

the determining the partitioning structure includes determining the partitioning structure to be a horizontal binary tree partitioning structure; and the partitioning each of the sub-processing units into the TUs includes partitioning each of the sub-processing units into the TUs using the horizontal binary tree partitioning structure where a height of the TUs is M and a width of the TUs is equal to the width of the sub-processing unit.

2. The method of claim 1, wherein

when the width and the height of the sub-processing units are larger than M,

the determining the partitioning structure includes determining the partitioning structure to be a quadtree partitioning structure; and

the partitioning the SPUs into the TUs includes partitioning the sub-processing units into the TUs based on the quadtree partitioning structure.

3. The method of claim 1, wherein

the width of the sub-processing units is larger than M and the height of the sub-processing units is equal to M;

the determining the partitioning structure includes determining the partitioning structure to be a vertical binary tree partitioning structure; and

the partitioning the SPUs into the TUs includes partitioning the SPUs into the TUs based on the vertical binary tree partitioning structure.

4. The method of claim 1, wherein

the height of the sub-processing units is larger than M and the width of the sub-processing units is equal to M;

the determining the partitioning structure includes determining the partitioning structure to be a horizontal binary tree partitioning structure; and

the partitioning the sub-processing units into the TUs includes partitioning the sub-processing units into the TUs based on the horizontal binary tree partitioning structure.

5. The method of any one of claims 1 to 4, wherein the partitioning the sub-processing units into the TUs includes partitioning one of the sub-processing units recursively into the TUs based on the partitioning structure.

6. The method of any one of claims 1 to 5, further comprising:

processing the sub-processing units according to a first scan order; and

processing the TUs in each of the sub-processing units according to a second scan order.

7. The method of claim 6, wherein at least one of the first scan order and the second scan order is one of (i) a raster scan order, (ii) a vertical scan order, (iii) a zig-zag order, and (iv) a diagonal scan order.

8. The method of claim 7, wherein the first scan order and the second scan order are the raster scan order.

9. The method of claim 6 or 7, wherein

W is 128, H is 64, K is 64, and M is 32;

the first scan order is from left to right; and

the second scan order is a raster scan order.

10. The method of any one of claims 1 to 9, wherein

the processing data unit size K indicates a size of a virtual pipeline data unit (VPDU);

a first one of the sub-processing units is included in a first VPDU and a second one of the sub-processing units is included in a second VPDU in the picture; and

the method further includes:

after processing the first VPDU in a first stage of a multi-stage pipeline, simultaneously processing the first the first VPDU in a second stage of the multi-stage pipeline and the second VPDU in the first stage.

11. The method of claim 1, wherein at least two TUs are configured to be processed simultaneously at different stages of a multi-stage pipeline.

12. An apparatus for video decoding, comprising processing circuitry configured to perform the method of any one of claims 1 to 11.

13. A computer-readable storage medium, having stored thereon computer instructions that, when executed by a computer, cause the computer to perform the method according to any one of claims 1 to 11.

14. A method for video encoding in an encoder, comprising:

determining a width of W samples and a height of H samples of a coding block (CB) in a picture;

partitioning the CB into sub-processing units having a width that is a minimum one of W and K and a height that is a minimum one of H and K, at least one of the width W and the height H of the CB being larger than a processing data unit size K;

determining a partitioning structure to further partition the sub-processing units based on the width and the height of the sub-processing units and a maximum transform unit (TU)

size of M samples, at least one of the width and the height of the sub-processing units being larger than M;

partitioning each of the sub-processing units into TUs of MxM based on the determined partitioning structure; and

encoding the CB based on the width and height of the CB for signaling a coded video bitstream, the coded video bitstream comprising coded information of the CB indicating the width of W samples and the height of H samples of the CB, wherein

when the width of the sub-processing units is larger than M and the height of the sub-processing units is less than M,

the determining the partitioning structure includes determining the partitioning structure to be a vertical binary tree partitioning structure; and the partitioning each of the sub-processing units into the TUs includes partitioning each of the sub-processing units into the TUs using the vertical binary tree partitioning structure where a width of the TUs is M and a height of the TUs is equal to the height of the sub-processing unit, or

when the height of the sub-processing units is larger than M and the width of the sub-processing unit is less than M,

the determining the partitioning structure includes determining the partitioning structure to be a horizontal binary tree partitioning structure; and the partitioning each of the sub-processing units into the TUs includes partitioning each of the sub-processing units into the TUs using the horizontal binary tree partitioning structure where a height of the TUs is M and a width of the TUs is equal to the width of the sub-processing unit.

15. An apparatus for video encoding, comprising processing circuitry configured to perform the method of claim 14.

16. A computer-readable storage medium, having stored thereon computer instructions that, when executed by a computer, cause the computer to perform the method according to claim 14.