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| **Joint Collaborative Team on 3D Video Coding Extension Development**  **of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11**  4th Meeting: Incheon, KR, 20–26 Apr. 2013 | Document: JCT3V- Dxxxx |

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| *Title:* | **CE1.h related : Unification of Disparity Vector Accuracy in VSP with Motion Vector/Disparity Vector Accuracy in Inter-Prediction for Depth Coding** | | |
| *Status:* | Input Document | | |
| *Purpose:* | Proposal | | |
| *Author(s) or Contact(s):* |  |  |  |
| *Source:* | LG Electronics | | |

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Spec Change (highlighted):

**H.8.5.2.2.7 View synthesis prediction process**

Inputs to this process are:

* a location ( xC, yC ) specifying the top-left sample of the current luma coding block relative to the top left sample of the current picture,
* a location ( xB, yB ) specifying the top-left sample of the current prediction block relative to the top left sample of the current coding block,
* the width and height of this prediction block, nPbW and nPbH,
* a motion vector mvL0

Outputs of this process are:

– an array predSamplesL of luma prediction samples,

– an array predSamplesCb of chroma prediction samples for the component Cb

– an array predSamplesCr of chroma prediction samples for the component Cr

The location ( xP, yP ) given in full-sample units of the upper-left luma samples of the current prediction block relative to the upper-left luma sample location of the current picture is derived by:

* 1. xP = xC + xB (H‑261)  
     yP = yC + yB (H‑262)

The variable refViewIdx is set equal to RefViewIdx[ xP ][ yP ].

The variable refIdx is set equal to – 1 and the following applies:

* For X in the range of 0 to 1, inclusive, the following applies:
  + For i in the range of 0 to NumRefPicsLX – 1, inclusive, the following applies:
    - When refIdx is equal to – 1, ViewIdx of picture RefPicListX[ i ] is equal to refViewIdx, the variable Y is set equal to X, and refIdx is set equal to i.

[Ed. (GT): In software always the base-view with current POC is used, regardless of being in a reference list or not. ]

The reference picture consisting of an ordered two-dimensional array refPicL of luma samples and two ordered two-dimensional arrays refPicCb and refPicCr of chroma samples is derived by invoking the process specified in subclause 8.5.2.2.1 with refIdx as input.

The derivation process for disparity sample array as specified in section H.8.5.4.3 is invoked with the luma location ( xP, yP ), the disparity vector mvDisp being equal to mvL0, the variable refViewIdx, the variables nPSW and nPSH, the variable nSubBlkW being equal 4 the variable nSubBlkW being equal to 4, and the flag restMaxSearchFlag being equal to 0, as the inputs, and the output is the array disparitySamples of size (nPSW)x(nPSH).

Let ( xIntL, yIntL ) be a luma location given in full-sample units and ( xFracL, yFracL ) be an offset given in quarter-sample units.

For each luma sample location ( xL = 0..nPbW−1, yL = 0..nPbH−1 ) inside the prediction luma sample array predSamplesL, the corresponding prediction luma sample value predSamplesL[ xL ][ yL ] is derived as follows:

* The variables xIntL, yIntL, xFracL, and yFracL are derived by
  1. xIntL = xP + xL+ disparitySamples[ xL ][ yL ] (H‑263)  
     yIntL = yP + yL (H‑264)
  2. ~~xFrac~~~~L~~ ~~= disparitySamples[ x~~~~L~~~~][ y~~~~L~~~~] & 3 (‑265)~~
  3. xFracL = DepthFlag ? 0 : ( disparitySamples[ xL ][ yL ] & 3 ) (‑265)  
     yFracL = 0 (H‑266)
* The prediction luma sample value predSamplesL[ xL][ yL ] is derived by invoking the process specified in subclause 8.5.2.2.2.1 with ( xIntL, yIntL ), ( xFracL, yFracL ) and refPicL given as input.

[Ed. (GT): As for inter prediction the treatment of colour planes for depth needs to be discussed. In software colour planes are set to 128 in VSP process. (3D-I0012)]

Let ( xIntC, yIntC ) be a chroma location given in full-sample units and ( xFracC, yFracC ) be an offset given in one-eighth sample units.

For each chroma sample location ( xC = 0..nPbW/2−1, yC = 0..nPbH/2−1 ) inside the prediction chroma sample arrays predSamplesCb and predSamplesCr, the corresponding prediction chroma sample values predSampleLXCb[ xC ][ yC ] and predSamplesCr[ xC ][ yC ] are derived as follows:

* The variables xIntC, yIntC, xFracC, and yFracC are derived by
  1. xIntC = ( xP / 2 ) + xC + disparitySamples[ xC << 1 ][ yC << 1 ] (H‑267)  
     yIntC = ( yP / 2 ) + yC (H‑268)
  2. ~~xFrac~~~~C~~ ~~= disparitySamples[ x~~~~C~~~~<< 1][ y~~~~C~~~~<< 1 ] & 7 (‑269)~~
  3. xFracC = DepthFlag ? 0 : ( disparitySamples[ xC << 1][ yC << 1 ] & 7 ) (‑269)  
     yFracC = 0 (H‑270)
* The prediction sample value predSamplesCb[ xC ][ yC ] is derived by invoking the process specified in subclause 8.5.2.2.2.2 with ( xIntC, yIntC ), ( xFracC, yFracC ) and refPicCb given as input.
* The prediction sample value predSamplesCr[ xC ][ yC ] is derived by invoking the process specified in subclause 8.5.2.2.2.2 with ( xIntC, yIntC ), ( xFracC, yFracC ) and refPicCr given as input.