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| **Joint Collaborative Team on 3D Video Coding Extensions**  **of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11**  9th Meeting: Sapporo, JP, 3–9 July 2014 | Document: JCT3V-I0089 |

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| *Title:* | **3D-CE1 related: Diagonal prediction using ARP** | | |
| *Status:* | Input document | | |
| *Purpose:* | Proposal | | |
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1. **Proposed Text**

I.7.3.8.5.2 Coding unit extension syntax

|  |  |
| --- | --- |
| cu\_extension( x0 , y0 , log2CbSize ) { | **Descriptor** |
| if ( rpEnableFlag ) |  |
| **iv\_res\_pred\_weight\_idx** | ae(v) |
| if ( icEnableFlag && iv\_res\_pred\_weight\_idx ~~= = 0~~ != 1 ) |  |
| **ic\_flag** | ae(v) |
| … |  |

I. 8.5.3.3.7 Bilinear sample interpolation and residual prediction process

…

The motion vector mvCLX is set equal to mvLX.

When iv\_res\_pred\_weight\_idx is not equal to 2, The arrays predSamplesLXL, predSamplesLXCb, and predSamplesLXCr  are derived as specified in the following:

* The reference picture consisting of an ordered two-dimensional array refPicLXL of luma samples and two ordered two-dimensional arrays refPicLXCb and refPicLXCr of chroma samples is derived by invoking the process specified in subclause 8.5.2.2.1 with currRefIdx as input.
* The arrays predSamplesLXL, predSamplesLXCb, and predSamplesLXCr are derived by invoking the bilinear sample interpolation process specified in subclause I.8.5.3.3.7.1 with the luma locations ( xCb, yCb ), ( xBl, yBl ), , the luma prediction block width nPbW, the luma prediction block height nPbH,, the motion vectors mvLX, mvCLX, and the reference arrays with refPicLXL, refPicLXCb and refPicLXCr. as inputs.

When availFlag is equal to 1 and iv\_res\_pred\_weight\_idx is not equal to 0, the following applies:

* Depending on ivRefFlag, the variables rpPic, rpRefPic, mvRp and curRefIdx are derived as specified in the following:
  + If ivRefFlag is equal to 0, the following applies:
    - Let rpPic be the picture with PicOrderCnt( rpPic ) equal to PicOrderCntVal and ViewIdx equal to RefViewIdx[ xP ][ yP ].
    - Let rpRefPic be the picture with PicOrderCnt( rpRefPic ) equal to RefPicListX[ RpRefIdxLX ] ) and ViewIdx equal to RefViewIdx[ xP ][ yP ],
    - The variable mvRp is set equal to MvDisp[ xP ][ yP ].
    - The variable curRefIdx is set equal to RpRefIdxLX.
  + Otherwise (ivRefFlag is equal to 1), the following applies:
    - Let rpPic be the picture RefPicListY[ RpRefIdxLY ].
    - Let rpRefPic be the picture with PicOrderCnt( rpRefPic ) equal to PicOrderCnt( rpPic ) and ViewIdx equal to RefViewIdx[ xP ][ yP ]
    - The variable mvRp is set equal to mvT.
    - The variable currRefIdx is set equal to RpRefIdxLY.
* When iv\_res\_pred\_weight\_idx is equal to 1, The arrays rpSamplesLXL, rpSamplesLXCb, and rpSamplesLXCr are derived as specified in the following:
  + Let the reference picture sample arrays rpPicLXL, rpPicLXCb, and rpPicLXCr corresponding to decoded sample arrays SL, SCb, SCr derived in subclause 8.7 for the previously-decoded picture rpPic.
  + The arrays rpSamplesLXL, rpSamplesLXCb, and rpSamplesLXCr are derived by invoking the bilinear sample interpolation process specified in subclause I.8.5.3.3.7.1 with the luma locations ( xCb, yCb ) and ( xBl, yBl ), the luma prediction block width nPbW, the luma prediction block height nPbH, the motion vectors mvLX equal to mvRp and mvCLX equal to mvRp, and the reference arrays with rpPicLXL, rpPicLXCb and rpPicLXCr as inputs.
* The arrays rpRefSamplesLXL, rpRefSamplesLXCb, and rpRefSamplesLXCr are derived as specified in the following:
  + Let the reference picture sample arrays rpRefPicLXL, rpRefPicLXCb, and rpRefPicLXCr corresponding to decoded sample arrays SL, SCb, SCr derived in subclause 8.7 for the previously-decoded picture rpRefPic.
  + The arrays rpRefSamplesLXL, rpRefSamplesLXCb, and rpRefSamplesLXCr are derived by invoking the bilinear sample interpolation process specified in subclause with the luma locations ( xCb, yCb ), ( xBl, yBl ), the luma prediction block width nPbW, the luma prediction block height nPbH,, the motion vector mvLX equal to ( mvLX + mvRp ) and the motion vector mvCLX equal to ( mvCLX + mvRp ), and the reference arrays with rpRefPicLXL, rpRefPicLXCb and rpRefPicLXCr as inputs.
* ~~The variable shiftVal is set equal to ( iv\_res\_pred\_weight\_idx − 1 ).~~
* The modified arrays of predSamplesLXL, predSamplesLXCb, and predSamplesLXCr are modified as the following ordered steps:

1. When iv\_res\_pred\_weight\_idx is equal to 1, the modified arrays predSamplesLXL, predSamplesLXCb, and predSamplesLXCr are derived as specified in the following:

* + The modified prediction samples predSamplesLXL[ x ][ y ] with x = 0..( nPbW ) − 1 and y = 0..( nPbH ) − 1 are derived as specified in the following:
  1. predSamplesLXL[ x ][ y ] = predSamplesLXL[ x ][ y ] +   
      ( ( rpSamplesLXL[ x ][ y ] − rpRefSamplesLXL[ x ][ y ] )  ~~>>  shiftVal~~ ) (I‑227)
  + The modified prediction samples predSamplesLXCb[ x ][ y ] with x = 0..( nPbW /2 ) − 1 and y = 0..( nPbH /2 )−1 are derived as specified in the following:
  1. predSamplesLXCb[ x ][ y ] = predSamplesLXCb[ x ][ y ] +   
      ( ( rpSamplesLXCb[ x ][ y ] − rpRefSamplesLXCb[ x ][ y ] ) ~~>>  shiftVal~~ ) (I‑228)
  + The modified prediction samples predSamplesLXCr[ x ][ y ] with x = 0..( nPbW /2 ) − 1 and y = 0..( nPbH /2 ) − 1 are derived as specified in the following:
  1. predSamplesLXCr[ x ][ y ] = predSamplesLXCr[ x ][ y ] +   
      ( ( rpSamplesLXCr[ x ][ y ] − rpRefamplesLXCr[ x ][ y ] )  ~~>>  shiftVal~~ ) (I‑229)

2. When iv\_res\_pred\_weight\_idx is equal to 2, the modified arrays predSamplesLXL, predSamplesLXCb, and predSamplesLXCr are derived as specified in the following:

* + The modified prediction samples predSamplesLXL[ x ][ y ] with x = 0..( nPbW ) − 1 and y = 0..( nPbH ) − 1 are derived as specified in the following:
  1. predSamplesLXL[ x ][ y ] = rpRefSamplesLXL[ x ][ y ]
  + The modified prediction samples predSamplesLXCb[ x ][ y ] with x = 0..( nPbW /2 ) − 1 and y = 0..( nPbH /2 )−1 are derived as specified in the following:
  1. predSamplesLXCb[ x ][ y ] = rpRefSamplesLXCb[ x ][ y ]
  + The modified prediction samples predSamplesLXCr[ x ][ y ] with x = 0..( nPbW /2 ) − 1 and y = 0..( nPbH /2 ) − 1 are derived as specified in the following:
  1. predSamplesLXCr[ x ][ y ] =rpRefamplesLXCr[ x ][ y ]

1. **Patent Rights Declaration(s)**

**Samsung Electronics Co. Ltd. may have IPR relating to the technology described in this contribution and, conditioned on reciprocity, is prepared to grant licenses under reasonable and non-discriminatory terms as necessary for implementation of the resulting ITU-T Recommendation | ISO/IEC International Standard (per box 2 of the ITU-T/ITU-R/ISO/IEC patent statement and licensing declaration form).**