# Software modifications

The software has been modified based on the SHM 3.0.1 reference software. All modifications have been put in preprocessor typedefs and can be controlled by settion them in the “TypeDef.h” file

## RWTH\_COMPLEXITY\_DEC\_STAT

Controls counting of pixel level complexity data at the decoder. If set to 1 the decoder will count the following values and output the results to stdout:

* relative number of pixels that are reconstructed using Inter/Intra prediction (Pix Inter, Pix Intra)
* relative number of pixels that use Uni/Bi-prediction with Full/Half/Quarter precision(Pix MV Full/Half/Quarter)
* relative number of pixels that use inter-layer prediction(Pix MV Full BL)
* relative number of pixels that require inverse transform(Pix Inv Transf)
* relative Number of pixels that are modified by Deblocking/SAO(Pix Deblocking, Pix SAO)

## SHVC\_COMPLEXITY\_ASSESSMENT

Controls the decoder memory access measurements of AHG17.

## RWTH\_KEY\_PICTURE\_CONCEPT\_PRED\_MOD

If set to 1, the prediction scheme in the base layer is modified in a way that key pictures only use other key pictures for prediction.

## RWTH\_KEY\_PICTURE\_GOP\_SIZE

Defines the period of key pictures. For the RA configuration this is set to 8. For LDB it is set to 4.

## RWTH\_FORCE\_BL\_CONSTRAINS

If set to 1 the base layer will use constrained intra prediction.

## RWTH\_IL\_PRED\_UNFILTERED

If set to 1, the enhancement layer will use the unfiltered reconstruction of the base layer for inter layer prediction.

## RWTH\_IL\_PRED\_FILTERED\_KEYPIC

If set to 1, the enhancement layer will use the filtered base layer reconstruction for key pictures. (see 1.4 RWTH\_KEY\_PICTURE\_GOP\_SIZE).

## RWTH\_ILMC\_BI\_CONSTRAINT

Apply enhancement layer restriction on motion candidates. If the base layer uses bi-prediction, the enhancement layer is forced to not use another bi-prediction using the base layer as a reference.

## RWTH\_DEACTIVATE\_TMVP\_IN\_BL

Deactivate temporal motion vector prediction in the base layer.

## SCE2\_TEMP\_SCALABILITY\_INC

Activate the temporal scalability patch.

## RWTH\_SINGLE\_LOOP\_DECODING

Activate single loop decoding. When decoding the enhancement layer, only required operations in the base layer will be performed and the base layer will not be reconstructed.

# Reported Results

The following preprocessor settings have been used in generating the reported data.

## Key picture concept

|  |  |
| --- | --- |
| RWTH\_KEY\_PICTURE\_CONCEPT\_PRED\_MOD | 1 |
| RWTH\_KEY\_PICTURE\_GOP\_SIZE | 8 (RA) 4 (LDB) |
| RWTH\_FORCE\_BL\_CONSTRAINS | 1 |
| RWTH\_IL\_PRED\_UNFILTERED | 1 |
| RWTH\_IL\_PRED\_FILTERED\_KEYPIC | 0 |
| RWTH\_ILMC\_BI\_CONSTRAINT | 0 |
| RWTH\_DEACTIVATE\_TMVP\_IN\_BL | 0 |

## Key picture concept with EL prediction restriction

|  |  |
| --- | --- |
| RWTH\_KEY\_PICTURE\_CONCEPT\_PRED\_MOD | 1 |
| RWTH\_KEY\_PICTURE\_GOP\_SIZE | 8 (RA) 4 (LDB) |
| RWTH\_FORCE\_BL\_CONSTRAINS | 1 |
| RWTH\_IL\_PRED\_UNFILTERED | 1 |
| RWTH\_IL\_PRED\_FILTERED\_KEYPIC | 0 |
| RWTH\_ILMC\_BI\_CONSTRAINT | 1 |
| RWTH\_DEACTIVATE\_TMVP\_IN\_BL | 0 |

## Single loop decoding with prediction from filtered key pictures

|  |  |
| --- | --- |
| RWTH\_KEY\_PICTURE\_CONCEPT\_PRED\_MOD | 1 |
| RWTH\_KEY\_PICTURE\_GOP\_SIZE | 8 (RA) 4 (LDB) |
| RWTH\_FORCE\_BL\_CONSTRAINS | 1 |
| RWTH\_IL\_PRED\_UNFILTERED | 1 |
| RWTH\_IL\_PRED\_FILTERED\_KEYPIC | 1 |
| RWTH\_ILMC\_BI\_CONSTRAINT | 0 |
| RWTH\_DEACTIVATE\_TMVP\_IN\_BL | 0 |

# Decoder complexity measurements

The decoder complexity measurements have been performed as follows:

## Pixel level complexity

The results have been generated by setting the RWTH\_COMPLEXITY\_DEC\_STAT macro to 1.

## AHG 17 memory complexity measurements

The results for “Pure” and “Mult” have been generated by setting the SHVC\_COMPLEXITY\_ASSESSMENT

Macro to 1 and running the enhancement layer decoder normally:

TAppDecoder –b strFileName –ls 2

The results for “DDR2” and “DDR3” architectures have been generated by setting the HVC\_COMPLEXITY\_ASSESSMENT Macro to 1 and running the enhancement layer decoder with the following command:

TAppDecoder --LumaMemCompWidth=4 --LumaMemCompHeight=4 --ChromaMemCompWidth=4 --ChromaMemCompHeight=4 –b strFileName –ls 2