

J0220 – cu qp delta enabling syntax

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Proposal

- ❖ `diff_cu_qp_delta_depth_slice_granularity` is signalled as the increased value by 1 to involve the indication of `cu_qp_delta` coding
 - `diff_cu_qp_delta_depth_slice_granularity = 0` means no dQP signaling at CU-level
- This makes hard to understand the maximum cu qp delta depth intuitively
- In this proposal, `cu_qp_delta_enabled_flag` is restored in PPS and `diff_cu_qp_delta_depth_slice_granularity` is signalled as the original delta qp granularity from slice granularity

cu_qp_delta_enabled_flag

- ❖ Restore syntax of cu_qp_delta_enabled_flag in PPS

pic_parameter_set_rbsp() {	Descriptor
pic_parameter_set_id	ue(v)
...	
slice_granularity	u(2)
cu_qp_delta_enabled_flag	u(1)
if (cu_qp_delta_enabled_flag)	
diff_cu_qp_delta_depth	ue(v)
...	
}	

- Coding condition of dQP is changed according to the new syntax

coding_tree(x0, y0, log2CbSize, ctDepth) {
...
if((cu_qp_delta_enabled_flag diff_cu_qp_delta_depth > 0) && log2CbSize >= Log2MinCUDQPSize)
IsCuQpDeltaCoded = 0

transform_unit(x0L, y0L, x0C, y0C, log2TrafoWidth, log2TrafoHeight, trafoDepth, blkIdx) {
if(cbf_luma[x0L][y0L][trafoDepth] cbf_cb[x0C][y0C][trafoDepth] cbf_cr[x0C][y0C][trafoDepth] {
if((cu_qp_delta_enabled_flag diff_cu_qp_delta_depth > 0) && !IsCuQpDeltaCoded) {
cu_qp_delta
IsCuQpDeltaCoded = 1
}

cu_qp_delta_enabled_flag

❖ Semantics change

- **cu_qp_delta_enabled_flag** specifies whether a cu_qp_delta syntax element is coded or not. If cu_qp_delta_enabled_flag is equal to 1, cu_qp_delta is coded, otherwise it is not coded.
- diff_cu_qp_delta_depth is decreased by one by excluding dQP coding indication in it as the original value:

diff_cu_qp_delta_depth specifies the difference between the control granularity for QP_Y values for coding units within a picture and slice_granularity ~~plus 1~~. The value of diff_cu_qp_delta_depth shall be in the range of 0 to $\log_2(\text{diff_max_min_coding_block_size} - \text{slice_granularity} + 1)$, inclusive.

The variable Log2MinCUDQPSIZE specifying the minimum luma coding block size of coding units that convey cu_qp_delta, is derived as follows.

$$\text{Log2MinCUDQPSIZE} = \text{Log2CtbSize} - \text{diff_cu_qp_delta_depth} - \text{slice_granularity} + 1$$

Thank you !