



REFERENCE PICTURE LIST RESTRICTIONS

JCTVC-H0412

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INTRODUCTION

- › Picture list construction in HEVC is very flexible
 - Reference picture list modification and combination provides arbitrary lists

- › HEVC lists for different slices belonging to the same picture may be different
 - This is rare to see in real-life bitstream
 - Also, list construction is a burden for the decoder if there are many slices for each picture
 - List construction is generally done on slow general purpose processors and not in hardware

PROPOSAL

- › An SPS flag (`identical_ref_pic_lists_flag`) in the SPS to indicate whether lists are the same for all slices of the same slice type that belong to the same picture
 - Decoder can do list construction once per picture
- › An SPS flag (`ref_pic_list_modification_not_present_flag`) conditioned on the first flag indicating whether there are any list modifications at all
 - Decoder does not have to do any list modifications
 - If there are no list modifications, we do not need to include `ref_pic_list_modification()` nor `ref_pic_list_combination()` in the slice header, saving 3 bits per slice
- › Mandating `identical_ref_pic_list_flag` equal to 1 for HEVC profiles targeting broadcast TV should be considered

SYNTAX

seq_parameter_set_rbsp() {	Descriptor
...	
num_reorder_frames	u(1)
<u>identical_ref_pic_lists_flag</u>	<u>u(1)</u>
if(<u>identical_ref_pic_lists_flag</u> == 1) {	
<u>ref_pic_list_modification_not_present_flag</u>	<u>u(1)</u>
}	
...	
}	

slice_header () {	Descriptor
...	
if(<u>ref_pic_list_modification_not_present_flag</u> == 0) {	
<u>ref_pic_list_modification()</u>	
<u>ref_pic_list_combination()</u>	
}	
...	
}	

SEMANTICS

identical_ref_pic_lists_flag equal to 1 indicates that all slices of the same slice type that belong to the same picture have identical reference picture lists.

identical_ref_pic_lists_flag equal to 0 indicates that there may be slices of the same slice type that belong to the same picture that have different reference picture lists.

num_ref_idx_l0_active_minus1 and **num_ref_idx_l1_active_minus1** shall when present be identical for all slices of the same slice type that belong to the same picture when **identical_ref_pic_lists_flag** is equal to 1.

ref_pic_list_modification_not_present_flag equal to 1 specifies that the syntax elements **ref_pic_list_modification_flag_l0**, **ref_pic_list_modification_flag_l1** and **ref_pic_list_combination_flag** are not present. **no_ref_pic_list_modification_present_flag** equal to 0 specifies that syntax elements **ref_pic_list_modification_flag_l0**, **ref_pic_list_modification_flag_l1** and **ref_pic_list_combination_flag** are present. When **ref_pic_list_modification_present_flag** is not present, it shall be inferred to be equal to 0.



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