

# JCTVC-N0248: Support of Field Coding for Signalling of Chroma Phase for Upsampling

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# Agenda

- Introduction / Problem Statement
- Proposed Syntax in M0465
- Chroma Phases in Field Coding
- Proposed Solutions
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## Introduction / Problem Statement

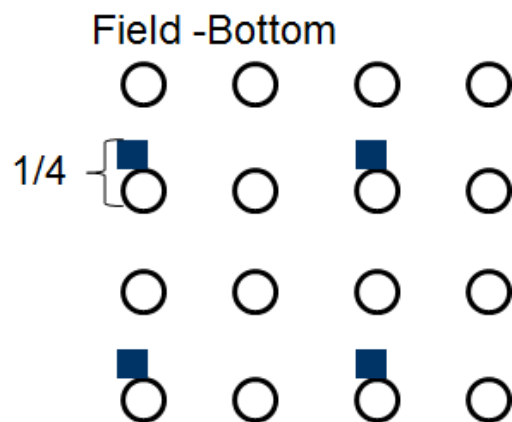
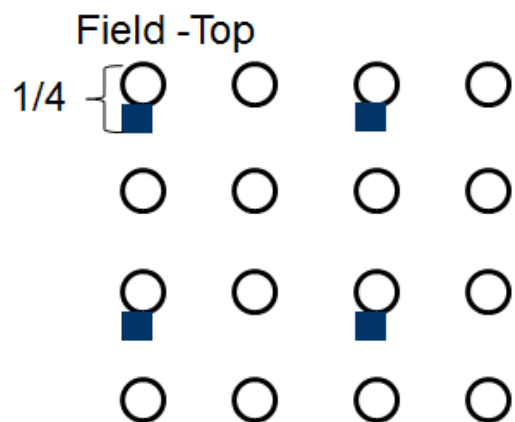
- It is proposed by JCTVC-M0465 that signal sampling grid shift information and chroma sampling location be transmitted in SPS so an up-sampling filter with correct phase.
- With this syntax information on only one phase per sequence can be transmitted.
- If field-coding is applied for the sequence chroma phase of the top-field and the bottom-field differ.

# Proposed Syntax in M0465

■ <u>sps_extension()</u> { <sup>↵</sup>	<b>Descriptor</b> <sup>↵</sup>
■ <sup>↵</sup>	<sup>↵</sup>
■ <b>sampling_grid_information()</b> <sup>↵</sup>	<sup>↵</sup>
■ } <sup>↵</sup>	<sup>↵</sup>

■ <b>sampling_grid_information()</b> { <sup>↵</sup>	<b>Descriptor</b> <sup>↵</sup>
■ <b>phase_offset_present_flag</b> <sup>↵</sup>	u(1) <sup>↵</sup>
■ if( sampling_grid_info_present_flag ) { <sup>↵</sup>	<sup>↵</sup>
<b>horizontal_phase_offset16</b> <sup>↵</sup>	ue(v) <sup>↵</sup>
<b>vertical_phase_offset16</b> <sup>↵</sup>	ue(v) <sup>↵</sup>
<b>chroma_phase_x_flag</b> <sup>↵</sup>	u(1) <sup>↵</sup>
<b>chroma_phase_y</b> <sup>↵</sup>	u(2) <sup>↵</sup>
■ } <sup>↵</sup>	<sup>↵</sup>

# Chroma Phases in Field Coding



○ Luma  
■ Chroma

# Proposed Syntax

- We propose 2 solutions so that chroma phases in field coding be supported.
  - Solution -1:
    - `sampling_grid_information()` is transmitted not in `sps_extension()` but in `pps_extension()` so that it is allowed that different offsets are applied picture-by-picture.
  - Solution -2:
    - Allows to transmit more than one phase in `sps_extension()`, and in `pps_extension()` an index is transmitted to indicate which phase is applied for the current picture.

# Solution -1

■ <u>pps_extension()</u> {↵	<b>Descriptor</b> ↵
■ ↵	↵
■       sampling_grid_information()↵	↵
■ }↵	↵

# Solution -2

▪ <code>sampling_grid_information() {</code>	<b>Descriptor</b>
▪ <code>num_phase_offset_minus1</code>	<code>u(1)</code>
▪ <code>for(phase_offset_idx=0;phase_offset_idx&lt;=num_phase_offset_minus1; phase_offset_idx++){</code>	
▪ <code>horizontal_phase_offset16[phase_offset_idx]</code>	<code>ue(v)</code>
▪ <code>vertical_phase_offset16[phase_offset_idx]</code>	<code>ue(v)</code>
▪ <code>chroma_phase_x_flag[phase_offset_idx]</code>	<code>u(1)</code>
▪ <code>chroma_phase_y[phase_offset_idx]</code>	<code>u(2)</code>
▪ <code>}</code>	

**num\_phase\_offset\_minus1** plus 1 specifies the number of offsets signalled in `sampling_grid_information()` syntax. Its value shall be in the range of 0 to 1, inclusive. When its value is not specified, it is inferred to be 0.

▪ <code>pps_extension() {</code>	<b>Descriptor</b>
▪ <code>...</code>	
▪ <code>phase_offset_idx</code>	<code>u(1)</code>
▪ <code>...</code>	
▪ <code>}</code>	

**phase\_offset\_idx** indicates which phase specified in `sampling_grid_information()` is applied for the picture associated with active PPS. Its value shall be in the range of 0 to `num_phase_offset_minus1` inclusive. When its value is not specified, it is inferred to be 0.



# Conclusion

- It is proposed by JCTVC-M0465 that chroma sampling position be transmitted for the purpose of up-sampling for spatial scalability.
  - The proposed syntax is in `sps_extension()` and only one phase can be specified per sequence.
- This proposal claims to modify syntax so that information on 2 phases can be transmitted within a sequence to support field coding.
  - Solution 1 proposes that `sampling_grid_information()` is transmitted not in `sps_extension()` but in `pps_extension()` so that it is allowed that different offsets are applied picture-by-picture.
  - Solution 2 proposes that it is allowed to transmit more than one phase in `sps_extension()`, and in `pps_extension()` an index is transmitted to indicate which phase is applied for the current picture.
- It is recommended that one of the proposed solutions be adopted.



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