

**On issues for interlaced format support
in HEVC standard
(JCTVC-G170/ M21723)**

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Summary

- Background
- Issues of interlaced format support
 - Identify complementary field pair
 - Reference picture management
 - Handle different chroma vertical sampling positions
- Recommend to establish BoG and AHG on interlaced format support

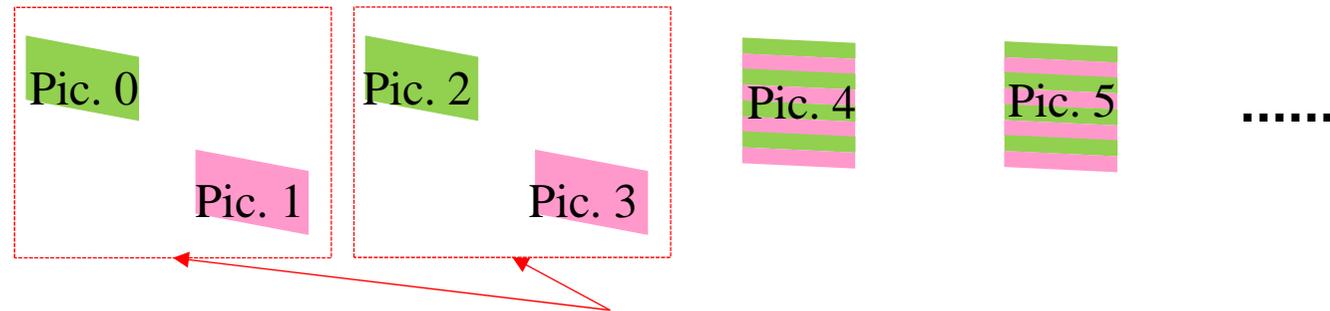
Background

- In the last meeting, JCTVC-F194 proposed support of interlaced format in HEVC standard
- It was recognized that the current requirements document does not prohibit consideration of interlaced video

This contribution presents issues to be considered toward support of interlaced video in HEVC standard.

Identify Complementary Field Pair

- Current WD does not have a means for identifying complementary field pair; **field_pic_flag** and **bottom_field_flag** syntaxes should be supported for that purpose.

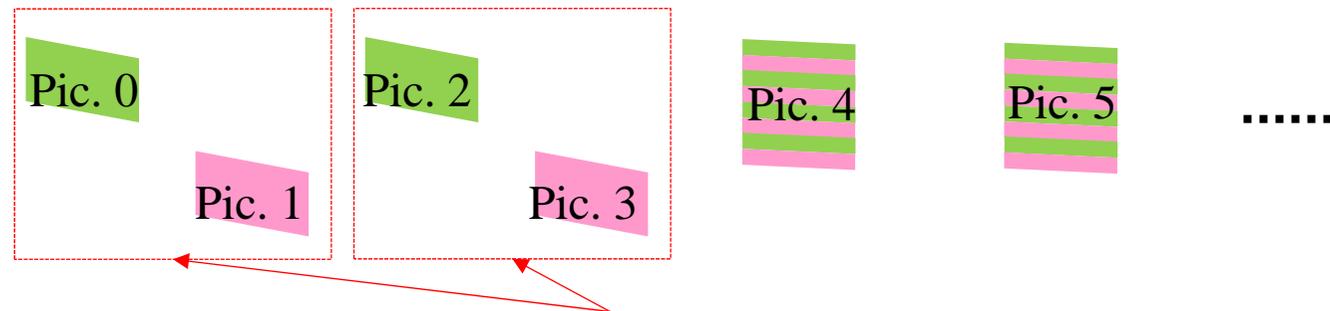


Complementary field pairs

frame_num	0	0	1	1	2	3
field_pic_flag	1	1	1	1	0	0
bottom_field_flag	0	1	0	1	-	-
POC	0	0	2	2	4	6

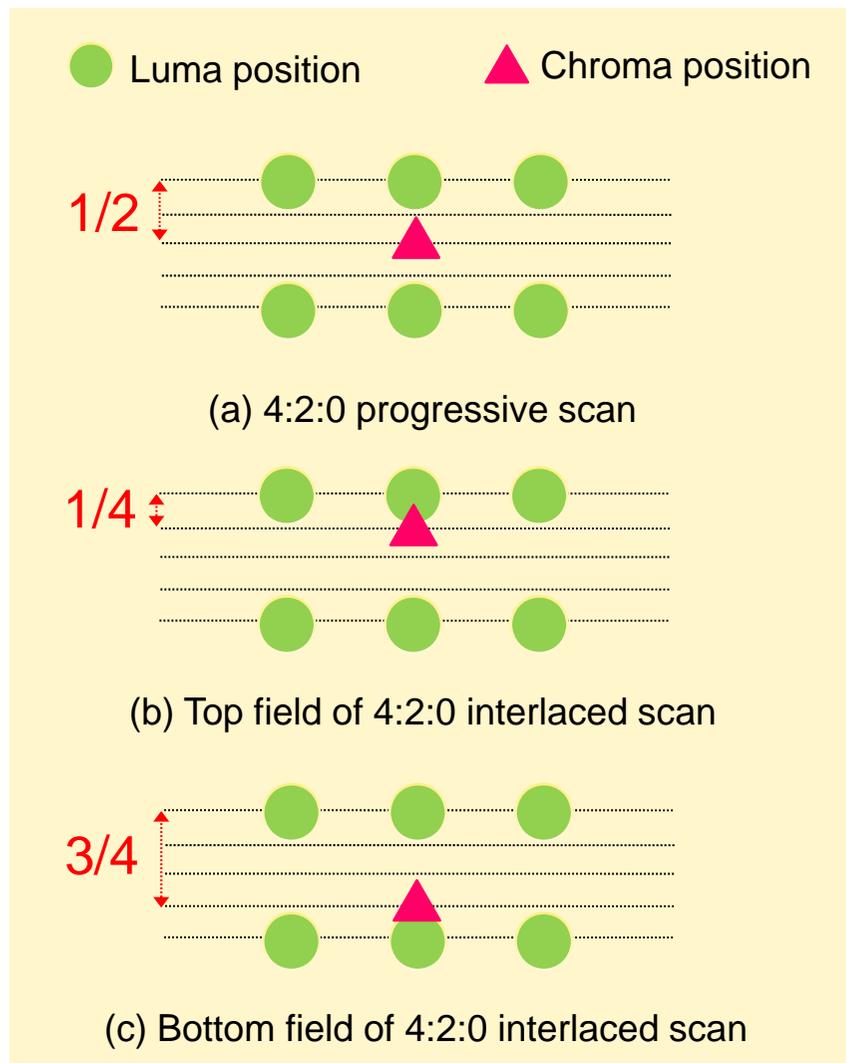
Reference Picture Management

- AHG21 studies a absolute signaling method of reference pictures using POC and temporal_id.
- If HEVC takes the AHG21 method, then frame_num is removed. Therefore introducing **a parity constraint on the POC value** or keeping frame_num (only for identifying complementary field pair) should be considered.



	Pic. 0	Pic. 1	Pic. 2	Pic. 3	Pic. 4	Pic. 5
field_pic_flag	1	1	1	1	0	0
bottom_field_flag	0	1	0	1	-	-
POC	0	1	2	3	4	6

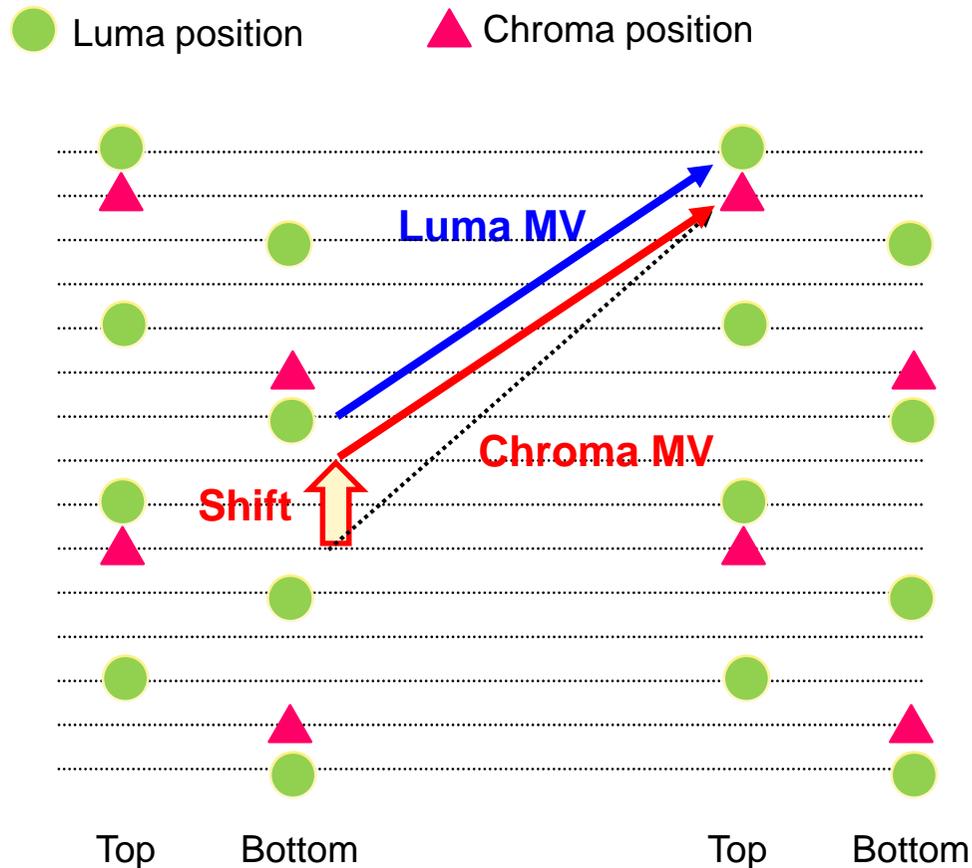
Handle Different Chroma Vertical Sampling Positions between 420p and 420i Videos



- Chroma vertical sampling position is different between 4:2:0 progressive and interlaced formats
- Applying the same processing for 4:2:0 progressive and interlaced formats results in chroma misalignment.
- The chroma misalignment is solved by minor modifications to *chroma MV derivation process* and *luma down sampling process for intra chromaFromLuma Mode*.

Modifications to Chroma MV Derivation Process

- Vertical MV shift corrects Chroma MV misalignment and improves prediction accuracy



Small changes in both WD text and software

Bottom to top

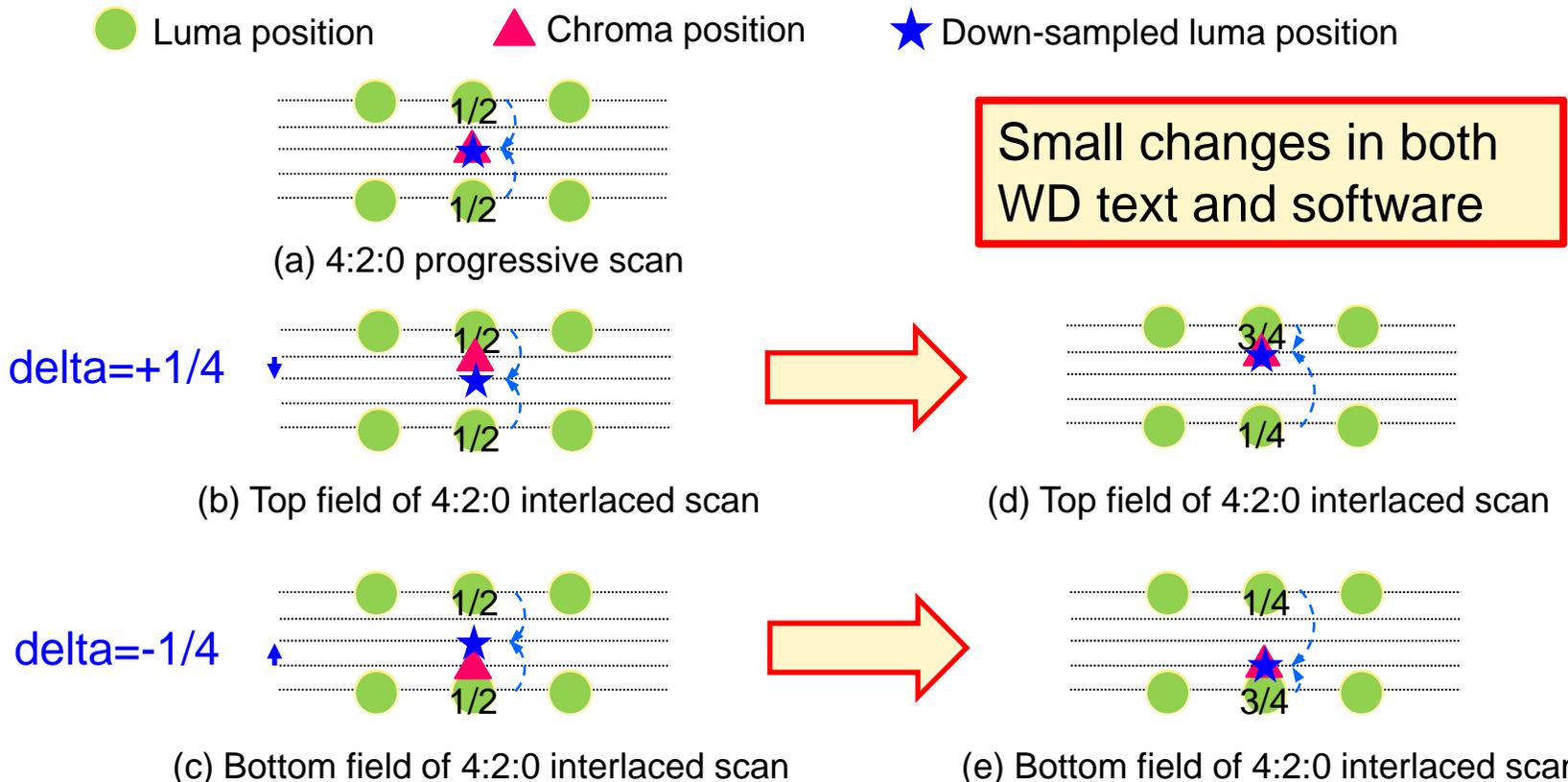
$$MVy_{chroma} = \frac{MVy_{Luma}}{2} - \frac{1}{4}$$

Top to bottom

$$MVy_{chroma} = \frac{MVy_{Luma}}{2} + \frac{1}{4}$$

Modifications to Luma Down-Sampling Process for intra_chromaFromLuma Mode

- Modified down-sampling corrects down-sampled luma misalignment and improves prediction accuracy



Conclusions

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