

The Samsung logo is located in the top left corner of the slide. It consists of the word "SAMSUNG" in a blue, sans-serif font, enclosed within a white oval that has a slight 3D effect with a blue shadow.

SAMSUNG

Mode-Dependent DCT/DST for 4x4 Chroma Blocks JCTVC-F553

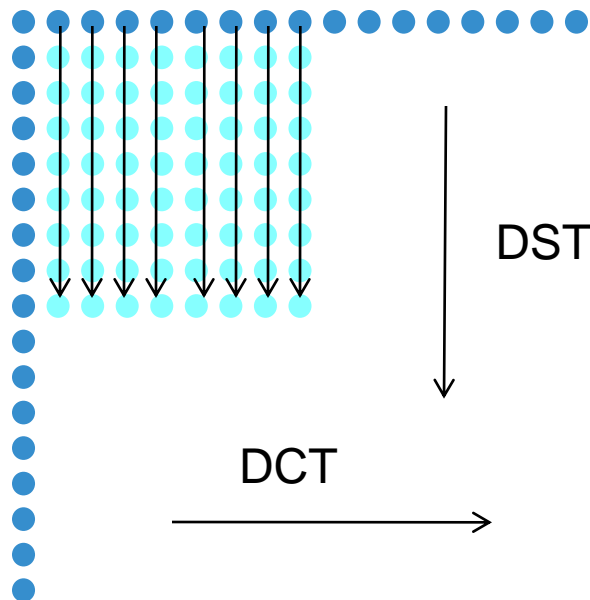
***Ankur Saxena, Felix Fernandes, Elena Alshina & Jianle Chen
Samsung Electronics, Co. Ltd.***

Overview

- ❑ Mode-Dependent DCT/DST for 4x4 Luma blocks JCTVC-E125 by Saxena & Fernandes adopted in Geneva meeting
- ❑ Current Proposal: Mode-Dependent DCT/DST for 4x4 Chroma Blocks
- ❑ Chroma Intra Prediction modes:
 - ❑ Vertical, Horizontal and DC mode
 - ❑ LM mode (Reconstructing Chroma from Luma Reconstructed Values)
 - ❑ Oblique Modes (Use same intra prediction mode for Chroma as for Luma)

Proposal

- ❑ Apply mode-dependent DCT/DST for Vertical and Horizontal Modes in Chroma 4x4 blocks
- ❑ LM Mode: Not a directional mode. Retain DCT/DCT as Vertical/Horizontal Transform



- ❑ Vertical Mode
- ❑ DST in vertical direction
- ❑ DCT in horizontal direction

Implementation in HM 3.0

- ❑ Experiments were performed for Intra HE, Intra LC, Random Access HE, Random Access LC configurations according to stipulated conditions in CE 7 description (JCTVC-E707, Robert Cohen et al.)
- ❑ Changes introduced in HM 3.0 :
 - ❑ For Vertical Chroma Mode, use DST along Vertical Direction
 - ❑ For Horizontal Chroma Mode, use DST along Horizontal Direction

Simulation Results

	Anchor	Proposed Scheme	Cross-Checker
1.	HM 3.0	DCT/DST for 4x4 Chroma	Panasonic (JCTVC-F679)

	All Intra HE			All Intra LC		
	Y BD-rate	U BD-rate	V BD-rate	Y BD-rate	U BD-rate	V BD-rate
Class A	0.0	-0.2	-0.1	0.0	-0.4	-0.4
Class B	0.0	-0.3	-0.3	0.0	-0.6	-0.6
Class C	0.0	-0.4	-0.5	0.0	-0.7	-0.9
Class D	0.0	-0.5	-0.6	-0.1	-0.9	-1.1
Class E	0.0	-0.2	-0.1	0.0	-0.6	-0.8
All	0.0	-0.3	-0.3	0.0	-0.6	-0.8
Enc Time[%]	100%			100%		
Dec Time[%]	100%			100%		

	Random access HE			Random access LC		
	Y BD-rate	U BD-rate	V BD-rate	Y BD-rate	U BD-rate	V BD-rate
Class A	0.0	-0.4	-0.5	-0.1	-0.5	-0.2
Class B	0.0	-0.5	-0.6	0.0	-0.6	-0.7
Class C	0.0	-0.3	-0.7	0.0	-0.7	-0.7
Class D	0.0	-0.9	-0.9	0.0	-1.0	-0.5
Class E						
All	0.0	-0.5	-0.7	0.0	-0.7	-0.5
Enc Time[%]	99%			100%		
Dec Time[%]	99%			100%		

Cross-Checker's
Number for Encoding/
Decoding times are
100 %/ 100% for all 4
settings

Conclusions

- ☐ Proposed mode-dependent DCT/DST for 4x4 Chroma blocks in Intra.
- ☐ **Recommend to adopt mode-dependent DCT/DST for 4x4 Chroma blocks in HM.**