



REDEFINING MOBILITY



# Extension of TU-Based Inter RDPCM

## JCTVC-N0258

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# Introduction

- Inter RDPCM

- Three coding modes are used: no RDPCM, vertical RDPCM and horizontal RDPCM
- Coding mode is explicitly signalled

# Proposal

- Extend RDPCM to the first row/column

Let  $(i, j)$  and  $(i', j')$  be the residual position in the TU and CU respectively.

For vertical RDPCM

$$\tilde{r}_{i,j} = \begin{cases} r_{i,j}, & i' = 0, i = 0, 0 \leq j \leq (N-1) \\ r_{i,j} - r_{(i-1),j}, & i' \neq 0, 0 \leq i \leq (M-1), 0 \leq j \leq (N-1) \end{cases}$$

For horizontal RDPCM

$$\tilde{r}_{i,j} = \begin{cases} r_{i,j}, & j' = 0, 0 \leq i \leq (M-1), j = 0 \\ r_{i,j} - r_{i,(j-1)}, & j' \neq 0, 0 \leq i \leq (M-1), 0 \leq j \leq (N-1) \end{cases}$$

# Experimental results (lossless)

## Proposed vs Anchor

	Random Access Main			Low delay B Main		
	compression ratio		Bit-rate saving	compression ratio		Bit-rate saving
	Reference	Tested		Reference	Tested	
<b>Class F</b>	31.7	33.4	-3.8%	49.8	54.7	-6.1%
<b>Class B</b>	2.6	2.6	-0.5%	2.6	2.6	-0.6%
<b>SC RGB 444</b>	100.4	102.6	-3.4%	381.6	404.3	-6.1%
<b>SC YUV 444</b>	128.9	131.1	-1.9%	325.6	342.1	-4.4%
<b>RangeExt</b>	2.5	2.5	-0.2%	2.5	2.5	-0.3%

## Proposed vs [1]

	Random Access Main			Low delay B Main		
	compression ratio		Bit-rate saving	compression ratio		Bit-rate saving
	Reference	Tested		Reference	Tested	
<b>Class F</b>	33.2	33.4	-0.4%	54.3	54.7	-0.7%
<b>Class B</b>	2.6	2.6	-0.1%	2.6	2.6	-0.1%
<b>SC RGB 444</b>	102.6	102.6	-0.1%	403.5	404.3	-0.4%
<b>SC YUV 444</b>	131.3	131.1	0.1%	342.3	342.1	-0.2%
<b>RangeExt</b>	2.5	2.5	0.0%	2.5	2.5	0.0%

[1] M. Naccari, M. Mrak, "RCE2: Experimental results for Test C.1", JCTVC-N0074, Vienna, AT, August 2013.

# Experimental results (lossy)

## Proposed vs Anchor

	Random Access HE Main-tier			Random Access HE High-tier		
	Y	U	V	Y	U	V
Class F	-0.1%	0.0%	-0.1%	-0.1%	0.0%	0.0%
Class B	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SC RGB 444	-1.1%	-1.1%	-1.2%	-1.2%	-1.3%	-1.3%
SC YUV 444	0.0%	-0.2%	-0.2%	0.1%	-0.1%	-0.1%
RangeExt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Low delay B HE Main-tier			Low delay B HE High-tier		
	Y	U	V	Y	U	V
Class F	-0.3%	-0.2%	-0.7%	-0.4%	-0.4%	-0.7%
Class B	0.0%	0.1%	0.1%	0.0%	0.1%	0.0%
SC RGB 444	-3.0%	-3.1%	-3.2%	-3.3%	-3.3%	-3.2%
SC YUV 444	-1.1%	-1.1%	-1.3%	-1.2%	-1.3%	-1.5%
RangeExt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

## Proposed vs [1]

	Random Access HE Main-tier			Random Access HE High-tier		
	Y	U	V	Y	U	V
Class F	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Class B	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SC RGB 444	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SC YUV 444	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%
RangeExt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Low delay B HE Main-tier			Low delay B HE High-tier		
	Y	U	V	Y	U	V
Class F	-0.1%	0.0%	-0.4%	-0.2%	-0.1%	-0.4%
Class B	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%
SC RGB 444	0.1%	0.0%	0.0%	-0.1%	-0.1%	-0.1%
SC YUV 444	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
RangeExt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%