

Non-SCCE3: Skip palette size for palette based coding [JCTVC-R0079]

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■ Palette base coding tools in SCCE3

- Palette information is first coded. Then pixel information are encoded.
- A palette size related syntax element is signaled.

...

```
for( i = 0; i < previousPaletteSize; i++ )  
    previous_palette_entry_flag[ i ]
```

palette_num_signalled_entries

```
for( i = 0; i < palette_num_signalled_entries; i++ )  
    palette_entrie[ numPredPreviousPalette + i ]
```

```
Pixel_index_infomation ( );//copy mode, index and run etc.
```

- Palette size is derived from index information.
 - Index information is decoded firstly. Necessary info is needed to make index info is decodable, e.g. **index_bit_depth**.
 - Palette size = maximum value of index + 1.

```
...
index_bit_depth
Pixel_index_infomation ( );//copy mode, index and run etc.

PaletteSize=max_value(index)+1;
for( i = 0; i < previousPaletteSize; i++ ) {
    previous_palette_entry_flag[ i ]
    if ( previous_palette_entry_flag[ i ] ) {
        numPredPreviousPalette++
    }
PaletteNumSignalledEntries=PaletteSize-numPredPreviousPalette;
for( i = 0; i < PaletteNumSignalledEntries; i++ )
    palette_entrie[ numPredPreviousPalette + i ]
```

Simulation results(AI-lossless)

■ Anchor: SCCE3 (2CTU IBC) anchor

| | All Intra | | | |
|---|-------------------------|---------------------------|-----------------------|-----------------------|
| | Bit-rate saving (Total) | Bit-rate saving (Average) | Bit-rate saving (Min) | Bit-rate saving (Max) |
| RGB, text & graphics with motion, 1080p | 1.5% | 1.5% | 0.8% | 1.9% |
| RGB, text & graphics with motion,720p | 0.7% | 0.5% | 0.0% | 1.0% |
| RGB, mixed content, 1440p | 0.3% | 0.3% | 0.2% | 0.5% |
| RGB, mixed content, 1080p | 0.3% | 0.3% | 0.3% | 0.3% |
| RGB, Animation, 720p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, camera captured, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, text & graphics with motion, 1080p | 1.5% | 1.7% | 0.8% | 3.0% |
| YUV, text & graphics with motion,720p | 0.5% | 0.4% | 0.0% | 0.9% |
| YUV, mixed content, 1440p | 0.2% | 0.3% | 0.1% | 0.5% |
| YUV, mixed content, 1080p | 0.3% | 0.3% | 0.3% | 0.3% |
| YUV, Animation, 720p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, camera captured, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| Enc Time[%] | 98% | | | |
| Dec Time[%] | 101% | | | |

Simulation results(RA-lossless)

■ Anchor: SCCE3 (2CTU IBC) anchor

| | Random Access | | | |
|---|-------------------------|---------------------------|-----------------------|-----------------------|
| | Bit-rate saving (Total) | Bit-rate saving (Average) | Bit-rate saving (Min) | Bit-rate saving (Max) |
| RGB, text & graphics with motion, 1080p | 0.8% | 0.7% | 0.7% | 0.8% |
| RGB, text & graphics with motion, 720p | 0.1% | 0.1% | 0.0% | 0.3% |
| RGB, mixed content, 1440p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, mixed content, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, Animation, 720p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, camera captured, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, text & graphics with motion, 1080p | 0.6% | 0.8% | 0.5% | 1.2% |
| YUV, text & graphics with motion, 720p | 0.1% | 0.1% | 0.0% | 0.3% |
| YUV, mixed content, 1440p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, mixed content, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, Animation, 720p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, camera captured, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| Enc Time[%] | 96% | | | |
| Dec Time[%] | 87% | | | |

Simulation results(LB-lossless)

■ Anchor: SCCE3 (2CTU IBC) anchor

| | Low Delay B | | | |
|---|-------------------------|---------------------------|-----------------------|-----------------------|
| | Bit-rate saving (Total) | Bit-rate saving (Average) | Bit-rate saving (Min) | Bit-rate saving (Max) |
| RGB, text & graphics with motion, 1080p | 0.7% | 0.6% | 0.5% | 0.7% |
| RGB, text & graphics with motion,720p | 0.1% | 0.1% | 0.0% | 0.3% |
| RGB, mixed content, 1440p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, mixed content, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, Animation, 720p | 0.0% | 0.0% | 0.0% | 0.0% |
| RGB, camera captured, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, text & graphics with motion, 1080p | 0.4% | 0.6% | 0.4% | 1.0% |
| YUV, text & graphics with motion,720p | 0.0% | 0.1% | 0.0% | 0.3% |
| YUV, mixed content, 1440p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, mixed content, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, Animation, 720p | 0.0% | 0.0% | 0.0% | 0.0% |
| YUV, camera captured, 1080p | 0.0% | 0.0% | 0.0% | 0.0% |
| Enc Time[%] | 90% | | | |
| Dec Time[%] | 106% | | | |

Simulation results(AI-lossy)

■ Anchor: SCCE3 (2CTU IBC) anchor

| | All Intra | | |
|---|-----------|-------|-------|
| | G/Y | B/U | R/V |
| RGB, text & graphics with motion, 1080p | -1.0% | -1.0% | -0.9% |
| RGB, text & graphics with motion,720p | -0.4% | -0.3% | -0.4% |
| RGB, mixed content, 1440p | -0.3% | -0.2% | -0.2% |
| RGB, mixed content, 1080p | -0.3% | -0.3% | -0.3% |
| RGB, Animation, 720p | 0.0% | 0.0% | 0.0% |
| RGB, camera captured, 1080p | 0.0% | 0.0% | 0.0% |
| YUV, text & graphics with motion, 1080p | -0.9% | -0.8% | -0.8% |
| YUV, text & graphics with motion,720p | -0.2% | -0.3% | -0.4% |
| YUV, mixed content, 1440p | -0.1% | -0.2% | -0.2% |
| YUV, mixed content, 1080p | -0.2% | -0.4% | -0.4% |
| YUV, Animation, 720p | 0.0% | 0.0% | 0.0% |
| YUV, camera captured, 1080p | 0.0% | 0.0% | 0.0% |
| Enc Time[%] | 100% | | |
| Dec Time[%] | 102% | | |

Simulation results(RA-lossy)

■ Anchor: SCCE3 (2CTU IBC) anchor

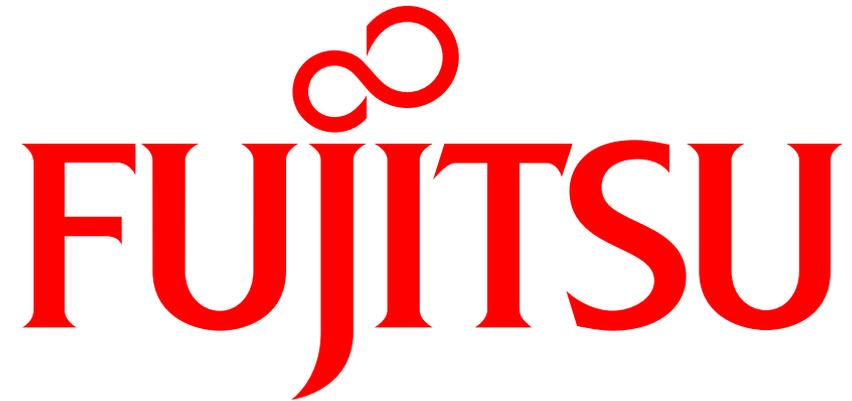
| | Random Access | | |
|---|---------------|-------|-------|
| | G/Y | B/U | R/V |
| RGB, text & graphics with motion, 1080p | -0.5% | -0.5% | -0.4% |
| RGB, text & graphics with motion,720p | -0.3% | -0.2% | -0.2% |
| RGB, mixed content, 1440p | -0.1% | 0.0% | -0.1% |
| RGB, mixed content, 1080p | -0.2% | -0.2% | -0.3% |
| RGB, Animation, 720p | 0.0% | 0.0% | 0.0% |
| RGB, camera captured, 1080p | 0.0% | 0.0% | 0.0% |
| YUV, text & graphics with motion, 1080p | -0.3% | -0.5% | -0.4% |
| YUV, text & graphics with motion,720p | -0.2% | -0.3% | -0.5% |
| YUV, mixed content, 1440p | 0.0% | -0.2% | -0.3% |
| YUV, mixed content, 1080p | -0.2% | -0.4% | -0.4% |
| YUV, Animation, 720p | 0.0% | 0.0% | -0.2% |
| YUV, camera captured, 1080p | 0.0% | 0.0% | 0.0% |
| Enc Time[%] | 98% | | |
| Dec Time[%] | 113% | | |

Simulation results(LB-lossy)

■ Anchor: SCCE3 (2CTU IBC) anchor

| | Low delay B | | |
|---|-------------|-------|-------|
| | G/Y | B/U | R/V |
| RGB, text & graphics with motion, 1080p | -0.3% | -0.4% | -0.4% |
| RGB, text & graphics with motion,720p | -0.2% | -0.2% | -0.1% |
| RGB, mixed content, 1440p | -0.3% | 0.0% | -0.1% |
| RGB, mixed content, 1080p | 0.0% | -0.2% | 0.0% |
| RGB, Animation, 720p | -0.1% | 0.0% | 0.0% |
| RGB, camera captured, 1080p | 0.0% | 0.0% | 0.0% |
| YUV, text & graphics with motion, 1080p | -0.1% | -0.2% | -0.2% |
| YUV, text & graphics with motion,720p | 0.0% | 0.0% | 0.0% |
| YUV, mixed content, 1440p | -0.1% | 0.0% | -0.2% |
| YUV, mixed content, 1080p | -0.1% | -0.3% | 0.1% |
| YUV, Animation, 720p | 0.0% | 0.0% | -0.1% |
| YUV, camera captured, 1080p | 0.0% | 0.0% | 0.0% |
| Enc Time[%] | 100% | | |
| Dec Time[%] | 115% | | |

- Gain is showed when palette size is omitted.
- Suggest to add it into base software of palette based coding.



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