

AHG5: Tools for lossless coding of medical image/video content in RExt profiles (m31989/JCTVC-P0107)

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Proposed future profiles for coding of medical visual content

Overview

Profile	Chroma Formats				Maximum bit depth	Prediction		Lossless coding	Signed coding
	4:0:0	4:2:0	4:2:2	4:4:4		Intra	Inter		
High 12 Intra 4:0:0	Yes	No	No	No	12	Yes	No	Yes	Yes
High 12 4:0:0	Yes	No	No	No	12	Yes	Yes	Yes	Yes
High 16 Intra 4:0:0	Yes	No	No	No	16	Yes	No	Yes	Yes
High 16 4:0:0	Yes	No	No	No	16	Yes	Yes	Yes	Yes
RGB 4:4:4	No	No	No	Yes	8	Yes	Yes	Yes	No

Further remarks and properties

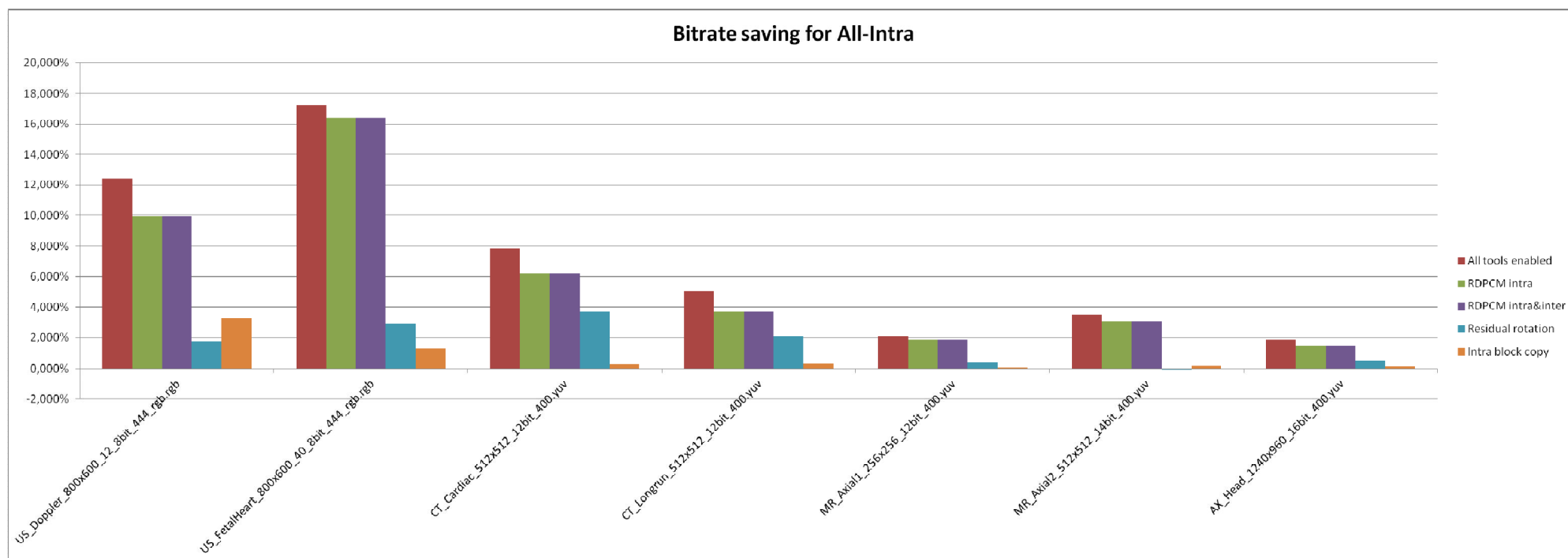
- No necessity of specific conformance points for 14-bit compression
- No minimal compression ratio should be defined (other than that the coded bitstream should not exceed the size of the source video)

RExt tools under evaluation:

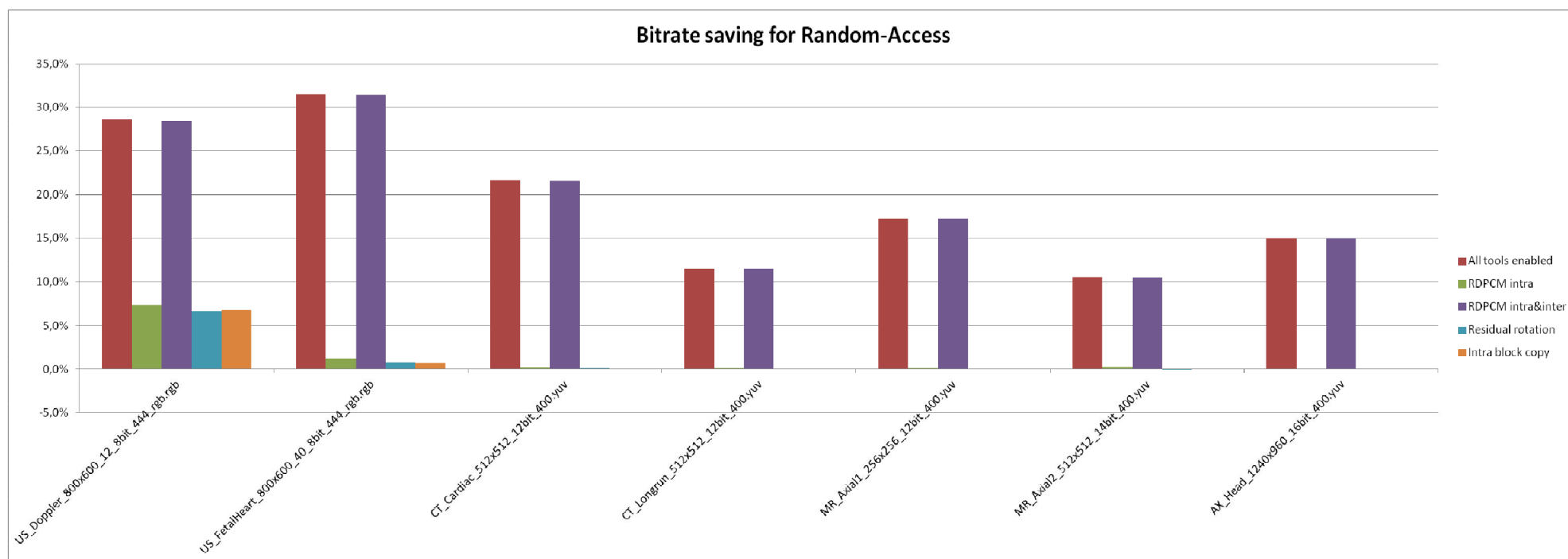
- intra residual differential pulse code modulation (“RDPCM intra”)
- inter residual differential pulse code modulation (“RDPCM inter”)
- residual rotation
- intra block copy

Software tested: HM-12.0+RExt-4.1 software

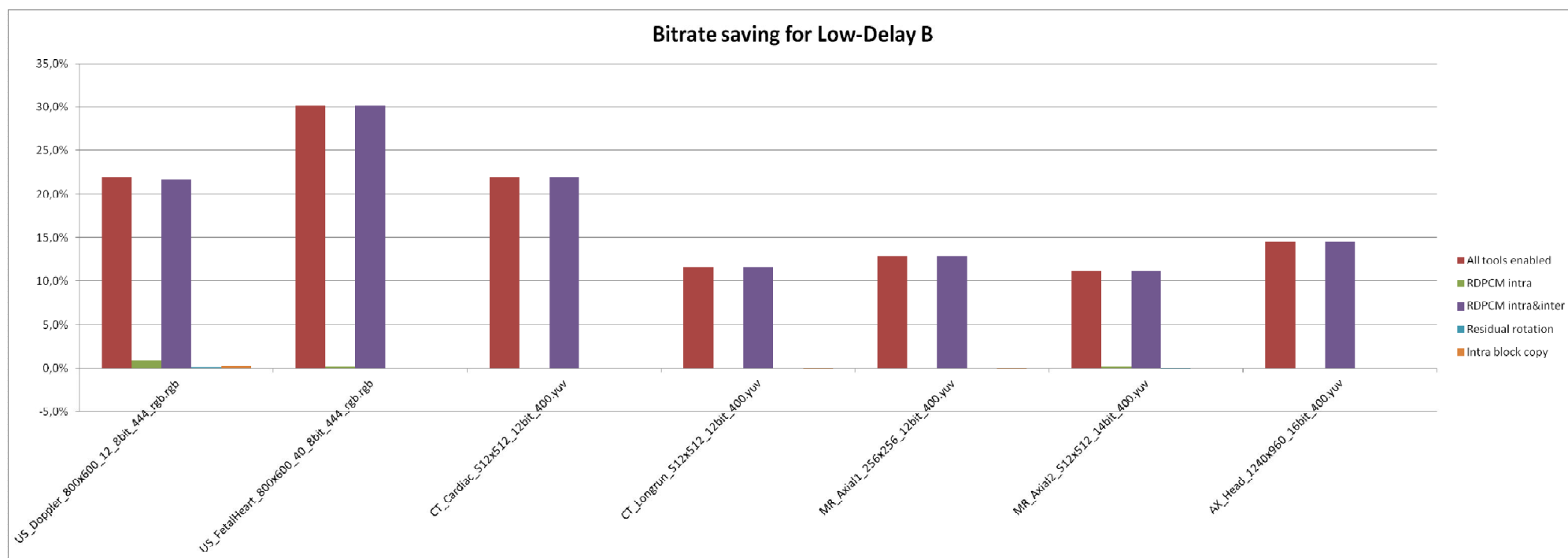
Results for All-Intra



Results for Random-Access



Results for Low-delay B



Recommendation

- RDPCM
 - Well known technology (similar to “intra residual transform bypass”) in AVC
 - Relatively low complexity
 - Relatively high bitrate savings for lossless coding (not only of medical visual content)
- Include RDPCM in RExt profiles, especially
 - 12- bit monochrome profiles
 - 16-bit monochrome profiles
 - 8-bit 4:4:4 profiles