ISO/IEC 23002-4:2014-04 (E)

Information technology - MPEG video technologies - Part 4: Video tool library

Contents

Page

Foreword vi

Introduction vii

1 Scope 1

2 Normative references 1

3 Terms and definitions 1

4 FU description convention 2
4.1 FU interfaces 2
4.2 FU IDs 2
4.3 Token Pool 5

5 General-Purpose FUs 8
5.1 Syntax Parsing 8
5.1.1 Generic Syntax Parser 8
5.1.2 Algo_Byte2bit 8
5.1.3 Mgnt_Select_MB_4 8
5.1.4 Mgnt_Merger420 9
5.1.5 Mgnt_Select_MB_8 9

6 FUs for MPEG-4 Simple Profile 10
6.1 Syntax Parsing 10
6.1.1 Algo_ SynP 10
6.1.2 Mgnt_BlockExpand 10
6.1.3 Mgnt_Splitter420B 11
6.1.4 Mgnt_Splitter420MV 11
6.1.5 Algo_MVR_MedianOfThreeLeftAndTopAndTopRight 12
6.1.6 Mgnt_Splitter_420_TYPE 12
6.1.7 Algo_VLDtableB6_MPEG4Part2 13
6.1.8 Algo_VLDtableB7_MPEG4Part2 13
6.1.9 Algo_VLDtableB8_MPEG4Part2 14
6.1.10 Algo_VLDtableB12_MPEG4Part2 14
6.1.11 Algo_VLDtableB13_MPEG4Part2 14
6.1.12 Algo_VLDtableB14_MPEG4Part2 15
6.1.13 Algo_VLDtableB15_MPEG4Part2 15
6.1.14 Algo_VLDtableB16_MPEG4Part2 16
6.1.15 Algo_VLDtableB17_MPEG4Part2 16
6.2 Texture Decoding 17
6.2.1 Algo_IQ_QSAndQmatrixMp4vOrH263Scaler 17
6.2.2 Algo_DCRAddr_ThreeLeftTop_8x8 17
6.2.3 Algo_DCRAddr_ThreeLeftTop_16x16 18
6.2.4 Algo_DCRInvPred_CHROMA_8x8 18
6.2.5 Algo_DCRInvPred_LUMA_16x16 19
6.2.6 Algo_IS_ZigzagOrAlternateHorizontalVertical_8x8 20
6.2.7 Algo_IAP_AdaptiveHorizontalOrVerticalPred_8x8 20
6.2.8 Algo_IAP_AdaptiveHorizontalOrVerticalPred_16x16 21
6.2.9 Algo_IDCT2D_ISOIEC_23002_1 22
6.2.10 Mgnt_DCSplit 22
6.3 Motion Compensation 23

6.3.1 Mgnt_FB_w_Addess_8x8 23
6.3.2 Mgnt_FB_w_Addess_16x16 23
6.3.3 Algo_PictureReconstruction_Saturation 24
6.3.4 Algo_Interp_HalfpelBilinearRoundingControl 24

7 FUs for MPEG-4 AVC Constrained Baseline Profile 25
7.1 Syntax Parsing 25
7.1.1 Algo_NALU 25
7.1.2 Algo_SynP 25
7.1.3 Algo_BlockExpand 26
7.1.4 Algo_BlockSplit 27
7.1.5 Algo_IntraPred_Split 27
7.1.6 Algo_Parser_I_PCM 28
7.1.7 Algo_DemuxParserInfoForBlocks_Chroma 28
7.1.8 Algo_DemuxParserInfoForBlocks_Luma 28
7.2 Texture Decoding 29
7.2.1 Algo_IS_Zigzag_4x4 29
7.2.2 Algo_DCR_Hadamard_LUMA_IHT1d 29
7.2.3 Algo_Transpose4x4 30
7.2.4 Algo_DCR_Hadamard_LUMA_Reordering 30
7.2.5 Algo_DCR_Hadamard_LUMA_Scaling 31
7.2.6 Algo_DCR_Hadamard_CHROMA 31
7.2.7 Algo_IT4x4_1d 31
7.2.8 Algo_IT4x4_Addshift 32
7.2.9 Algo_IntraPred_LUMA_16x16 32
7.2.10 Algo_IntraPred_LUMA_4x4 33
7.2.11 Algo_Merge_4x4_to_16x16 33
7.2.12 Algo_IQ_QSAndSLAndIDCTScaler_4x4 33
7.2.13 Mgnt_IQ_INTRA16x16 34
7.2.14 Algo_IntraPred_4x4_to_8x8 34
7.2.15 Algo_IntraPred_CHROMA 35
7.2.16 Mgnt_Intra16x16 35
7.2.17 Mgnt_Intra4x4 36
7.2.18 Mgnt_IQ_Chroma 36
7.2.19 Mgnt_Buffer_Neighbour_FullMb 36
7.2.20 Mgnt_Buffer_Neighbour_YxY 37
7.2.21 Algo_Merge_4x4_to_16x16_norasterscan 37
7.2.22 Algo_Split_16x16_to_4x4_norasterscan 38
7.3 Motion Compensation 38
7.3.1 Algo_Interp_EighthPelBilinear 38
7.3.2 Algo_Interp_SeparableSixTapQuarterPel 39
7.3.3 Algo_Interp_Reord 39
7.3.4 Algo_MvLXReconstr 39
7.3.5 Mgnt_DPB 40
7.3.6 Algo_MMCO 41
7.3.7 AlgoRefList 41
7.3.8 Mgnt_InterPred 42
7.3.9 Algo_RefIdxtoFrameNum 42
7.4 Filtering 42
7.4.1 Mgnt_DBF_AdaptiveFilter 42
7.4.2 Algo_DBF_AdaptiveFilter 43
7.4.3 Algo_MvComponentReorder 43
7.5 Renderer 44
7.5.1 Mgnt_POC 44
7.5.2 Mgnt_BufferRender 44
7.5.3 Mgnt_Merger420_AVC 45

8 FUs for MPEG-4 AVC Progressive High Profile 45
8.1.1 Algo_SynP 45
8.1.2 Algo_BlockExpand 46
8.1.3 Algo_DemuxParserInfoForBlocks_Luma 47
8.2 Texture Decoding 47

8.2.1 Algo_IS_Zigzag_8x8 47
8.2.2 Algo_IQ_QSAndSLAndIDCTScaler_8x8 48
8.2.3 Algo_IIT_8x8 48
8.2.4 Algo_IntraPred_LUMA_8x8 49
8.2.5 Mgnt_Intra_8x8 49
8.2.6 Algo_Merge_8x8_to_16x16 50
8.2.7 Algo_DCR_Hadamard_CHROMA 50
8.2.8 Algo_DCR_Hadamard_LUMA_Scaling 50
8.2.9 Algo_IQ_QSAndSLAndIDCTScaler_4x4 51
8.2.10 Algo_Merge_8x8_to_16x16_norasterscan 51
8.2.11 Algo_Split_16x16_to_8x8_norasterscan 52
8.2.12 Mgnt_I4x4_I8x8_demux 52
8.2.13 Mgnt_I4x4_I8x8_mux 52
8.3 Motion Compensation 53
8.3.1 Algo_GeneratePredWeight 53
8.3.2 Mgnt_SelectMvpLX 53
8.3.3 Algo_MvLXReconstr 54
8.3.4 Algo_MvBuffer 55
8.3.5 Mgnt_SelectMvpLX 55
8.3.6 Algo_FrameNumToPocList 56
8.4 Filtering 56
8.4.1 Algo_DBF_AdaptiveFilter 56
8.4.2 Algo_MvComponentReorder 57

Annex A (normative) Naming Convention of FU 58

A.1 Simple Functional Units name convention 58
A.2 Description of the fields 58

Annex B (informative) FU Network Examples 60

B.1 Value of the RVC descriptions 60
B.2 FNL of MPEG-4 Simple Profile 60
B.3 FNL of MPEG-4 AVC Constrained Baseline Profile decoder 66

Annex C (normative) FNL of MPEG-4 AVC Progressive High Profile decoder 81

Bibliography 104