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Information technology — MPEG video technologies —

Part 4: Video tool library

AMENDMENT 2: FU and FN descriptions for HEVC

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Technologies de l'information — Technologies vidéo MPEG —

Partie 4: Bibliothèque d'outils vidéo

AMENDMENT 2: Descriptions des FU et FN pour HEVC

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The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

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Introduction

This amendment specifies FU and FN description for support of HEVC (ISO/IEC 23008-2) Main Profile.

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Information technology — MPEG video technologies —

Part 4:
Video tool library

AMENDMENT 2: FU and FN descriptions for HEVC

Add the end of Clause 2, add the following paragraph:

ISO/IEC 23008-2, *Information technology — High efficiency coding and media delivery in heterogeneous environments — Part 2: High efficiency video coding*

Insert a new Clause 9 and its subclauses, as follows:

9 FUs for HEVC Main Profile

FUs for building an HEVC Main Profile decoder are described in this subclause.

9.1 Syntax Parsing

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9.1.1 Algo_SynP

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FU Name	Algo_Parser
Description	FU algoParser parses syntax elements needed to decode HEVC Main profile bitstreams.
Profiles@levels supported	HEVC Main Profile
Input	
Name	**Token**
byte	uint(size=8) token
Output	
Name	**Token**
CUInfo	uint(size=16) token
IntraPredMode	uint(size= 6) token
SliceAddr	uint(size=16) token
PartMode	uint(size= 4) token
IsPicSlcLcu	uint(size=2) token
LFAcrossSlcTile	uint(size=2) token
TilesCoord	uint(size=16) token
LcuSizeMax	uint(size=8) token
PictSize	uint(size=16) token
Poc	uint(size=16) token
SliceType	uint(size= 2) token
SplitTransform	bool token
TUSize	int(size= 8) token

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Coeff	int(size=16) token	
StrongIntraSmoothing	bool token	
DispCoord	uint(size=14) token	
PicSizeInMb	uint(size=9) token	
NumRefIdxLxActive	uint(size= 5) token	
RefPicListModif	uint(size= 4) token	
RefPoc	int(size=16) token	
MvPredSyntaxElem	int(size=16)	
SaoSe	int(size=9) token	
SEI_MD5	uint(size=8) token	
Cbf	bool token	
DBFDisable	bool token	
DbfSe	int(size=8)	
weightedPred	int(size=16) token	
Qp	int(size=8) token	
Parameter		
Name	**Description**	**Range**
Package		
package org.sc29.wg11.mpegh.part2.main.synParser		

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9.2 Texture Decoding

9.2.1 IntraPrediction

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FU Name	IntraPrediction
Description	FU intraPrediction supports all HEVC intra prediction modes, including all 33 directional modes and the DC and planar modes.
Profiles@levels supported	HEVC Main Profile
Input	
Name	**Token**
CUInfo	uint(size=16) token
IntraPredMode	uint(size= 6) token
SliceAddr	uint(size=16) token
PartMode	uint(size= 4) token
PictSize	uint(size=16) token
SplitTransform	bool token
StrongIntraSmoothing	bool token
Sample	uint(size=8) token
TilesCoord	uint(size=16) token
LcuSizeMax	uint(size=8) token
Output	
Name	**Token**
PredSample	uint(size=8) token
Parameter	

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Name	Description	Range
Package		
package org.sc29.wg11.mpegh.part2.main.intra		

9.2.2 selectCU

FU Name	selectCU	
Description	Actor selectCU depending on whether the current CU is predicted as intra or inter, the FU adds the residual information to inter or intra prediction.	
Profiles@levels supported	HEVC Main Profile	
Input		
Name	**Token**	
CUInfo	uint(size=16) token	
InterSample	uint(size=8) token	
IntraSample	uint(size=8) token	
PartMode	uint(size= 4) token	
Output		
Name	**Token**	
Sample	uint(size=8) token	
Parameter		
Name	**Description**	**Range**
Package		
package org.sc29.wg11.mpegh.part2.main.intra		

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9.3 Motion Compensation

9.3.1 InterPrediction

FU Name	InterPrediction
Description	The FU interPrediction computes the interpolated samples for the inter prediction.
Profiles@levels supported	HEVC Main Profile
Input	
Name	**Token**
CUInfo	uint(size=16) token
IsBiPredOrLx	uint(size=2) token
Mv	int (size=16) token
PartMode	uint(size=4) token
Poc	uint(size=16) token
RefIdx	uint(size=3) token
RefList	int(size=16) token
Sample	uint(size=8) token
SliceType	uint(size=2) token
WeightedPredSe	int (size=16) token
Output	
Name	**Token**

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PredSample	uint(size=8) token	
Parameter		
Name	**Description**	**Range**
Package		
package org.sc29.wg11.mpegh.part2.main.inter		

9.3.2 DecodedPictureBuffer

FU Name	DecodedPictureBuffer	
Description	The Decoded Picture Buffer contains all previously decoded pictures needed for prediction or later output.	
Profiles@levels supported	HEVC Main Profile	
Input		
Name	**Token**	
IsBiPredOrLx	uint(size=2) token	
IsReadOrNewSlc	uint(size=1) token	
Mv	int(size=16) token	
PicSize	uint(size=16) token	
Poc	uint(size=16) token	
PredCuSize	uint(size=7) token	
RpsPoc	int(size=16) token	
Sample	uint(size=8) token	
Output		
Name	**Token**	
RefSample	uint(size=8) token	
Parameter		
Name	**Description**	**Range**
Package		
package org.sc29.wg11.mpegh.part2.main.inter		

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9.3.3 GenerateRefList

FU Name	GenerateRefList	
Description	This FU generates reference lists l0 and l1.	
Profiles@levels supported	HEVC Main Profile	
Input		
Name	**Token**	
RefPoc	uint(size=16) token	
RefPicListModif	uint(size=4) token	
NumRefIdxLXAct	uint(size=8) token	
Output		
Name	**Token**	
RefList	int(size=16) token	
Parameter		

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Name	Description	Range
Package		
package org.sc29.wg11.mpegh.part2.main.inter		

9.3.4 MvComponentPred

FU Name	MvComponentPred	
Description	This FU reconstructs Motion Vectors for the interpolation process.	
Profiles@levels supported	HEVC Main Profile	
Input		
Name	**Token**	
CUInfo	uint(size=16) token	
PartMode	uint(size=4) token	
PicSize	uint(size=16) token	
Poc	uint(size=16) token	
RefList	int(size=16) token	
RpsPoc	int(size=16) token	
SliceType	uint(size=2) token	
SyntaxElem	int(size=16) token	
SliceAddr	uint(size=16) token	
TilesCoord	uint(size=16) token	
LcuSizeMax	uint(size=8) token	
Output		
Name	**Token**	
IsBiPredOrLx	uint(size=2) token	
IsReadOrNewSlice	uint(size=1) token	
Mv	int(size=16) token	
PocRef	int(size=16) token	
PredCuSize	uint(size=7) token	
RefIdx	uint(size=3) token	
Parameter		
Name	**Description**	**Range**
Package		
package org.sc29.wg11.mpegh.part2.main.inter		

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9.4 Filtering

9.4.1 SaoFilter

FU Name	SaoFilter
Description	This FU implements the Sample Adaptive Offset filtering stage.
Profiles@levels supported	HEVC Main Profile
Input	
Name	**Token**

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IsPicSlcLcu	uint(size=2) token	
LFAcrossSlcTile	uint(size=2) token	
PicSize	uint(size=16) token	
SampleIn	uint(size=8) token	
SaoSe	int(size=9) token	
TilesCoord	uint(size=16) token	
LcuSizeMax	uint(size=8) token	
Output		
Name	**Token**	
FiltSample	uint(size=8) token	
Parameter		
Name	**Description**	**Range**
Package		
package org.sc29.wg11.mpegh.part2.main.Filters		

9.4.2 GenerateBs

FU Name	GenerateBs	
Description	This FU generates boundary strength coefficients for the inloop deblocking filter.	
Profiles@levels supported	HEVC Main Profile	
Input		
Name	**Token**	
Cbf	bool token	
CUInfo	uint(size=16) token	
IsBiPredOrLx	uint(size=2) token	
LFAcrossSlcTile	uint(size=2) token	
Mv	int(size=16) token	
PartMode	uint(size=4) token	
RefPoc	int(size=16) token	
SliceAddr	uint(size=16) token	
SplitTransf	bool token	
TilesCoord	uint(size=16) token	
LcuSizeMax	uint(size=8) token	
Output		
Name	**Token**	
BS	uint(size=2) token	
Parameter		
Name	**Description**	**Range**
Package		
package org.sc29.wg11.mpegh.part2.main.Filters		

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9.4.3 DeblockingFilter

FU Name	DeblockingFilter

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Description	This FU implements the deblocking filter for Coding Units.	
Profiles@levels supported	HEVC Main Profile	
Input		
Name	**Token**	
Bs	uint(size=2) token	
IsPicSlcLcu	uint(size=2) token	
PicSize	uint(size=16) token	
Qp	int(size=8) token	
SampleIn	uint(size=8) token	
DBFDisable	bool token	
DbfSe	int(size=8)	
Output		
Name	**Token**	
FiltSample	uint(size=8) token	
Parameter		
Name	**Description**	**Range**
Package		
package org.sc29.wg11.mpegh.part2.main.Filters		

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9.4.4 QpGen

FU Name	QpGen	
Description	This FU computes the Qp for 8x8, 16x16, 32x32, and 64x64 blocks.	
Profiles@levels supported	HEVC Main Profile	
Input		
Name	Token	
TuSize	int(size=7) token	
Qp	int(size=8) token	
Output		
Name	**Token**	
Qp	int(size=8) token	
Parameter		
Name	**Description**	**Range**
Package		
package org.sc29.wg11.mpegh.part2.main.Filters		

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9.5 MD5 check

9.5.1 MD5SplitInfo

FU Name	MD5SplitInfo
Description	This FU splits the file data into 512 bit units necessary for the MD5 algorithm.
Profiles@levels supported	HEVC Main Profile
Input	

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