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AMENDMENT 2
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Information technology — Coding of audio-visual objects —

Part 27: 3D Graphics conformance

AMENDMENT 2: Scalable complexity 3D mesh coding conformance

Technologies de l'information — Codage des objets audiovisuels —

Partie 27: Conformité aux graphiques 3D

AMENDEMENT 2: Conformité pour encodage de maille en 3D de complexité atteignable

Reference number
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Foreword

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The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

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Amendment 2 to ISO/IEC 14496-27:2009 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

Information technology — Coding of audio-visual objects —

Part 27:
3D Graphics conformance

AMENDMENT 2: Scalable complexity 3D mesh coding conformance

After 4.2.2.4.4.4, add the following new subclause 4.2.2.5 as follows:

4.2.2.5 Scalable Complexity 3D Mesh Compression(SC3DMC)

4.2.2.5.1 Conformance Points

4.2.2.5.1.1 Covered functionalities

The conformance points for SC3DMC cover

- the compression of different attributes per vertex,
- different compression configurations (QBCR, SVA and TFAN) and possible combinations between,
- arithmetic encoding, 4C and table based BPC encoding,
- scalability with respect to compression and complexity.

The following subclauses specify the normative tests for verifying conformance of SC3DMC compressed bitstreams and SC3DMC decoder. Those normative tests make use of test data (bitstream test suites).

4.2.2.5.2 Terminal conformance

4.2.2.5.2.1 Conformance Requirements

A compliant decoder shall implement a decoding process that is equivalent to the one specified in ISO/IEC 14496-16:2009/Amd.1 and meets all the general requirements, defined in the document, which apply for the functionalities considered. The decoder shall decode bitstreams with any options or parameters with values permitted for the functionalities.

4.2.2.5.2.2 Test Bitstreams

Files:

Model's properties: each model has coordinate, coordinate index, color, color index, normal, normal index, texCoord and texCoordIndex per vertex.

In the test name, the prefix *XX* indicates the input file name. In the files attached to this part of ISO/IEC 14496, 3 Models are considered, cow, dance and eagle.

If an input file, cow.wrl, is tested under SVA mode, circular prediction and Bit precision coding

- Test Name: cow_S_Ci_BP
- Bitstream: cow_S_Ci_BP.mp4
- Decoded file: Decoded_cow_S_Ci_BP.wrl

Test Name	Parameters	Bitstream (.mp4)	Decoded file (.wrl)
XX_Q_No_FL	QBCR, no prediction, fixed length coding	XX_Q_No_FL	DECODED_XX_Q_No_FL
XX_Q_CD_EG	QBCR, circular prediction, Exponential Golomb entropy coding	XX _Q_CD_EG	DECODED_XX _Q_CD_EG
XX_Q_CD_AC	QBCR, circular prediction, Arithmetic coding	XX _Q_Cd_AC	DECODED_XX _Q_CD_AC
XX_Q_CD_BP	QBCR, circular prediction, Bit precision entropy coding	XX _Q_CD_BP	DECODED_XX _Q_CD_BP
XX_Q_CD_4C	QBCR, circular prediction, 4-bit entropy coding	XX _Q_Cd_4C	DECODED_XX _Q_CD_4C
XX_Q_Ad_EG	QBCR, adaptive prediction, Exponential Golomb entropy coding	XX _Q_Ad_EG	DECODED_XX _Q_Ad_EG
XX_Q_Ad_AC	QBCR, adaptive prediction, Arithmetic coding	XX _Q_Ad_AC	DECODED_XX _Q_Ad_AC
XX_Q_Ad_BP	QBCR, adaptive prediction, Bit precision entropy coding	XX _Q_Ad_BP	DECODED_XX _Q_Ad_BP
XX_Q_Ad_4C	QBCR, adaptive prediction, 4-bit entropy coding	XX _Q_Ad_4C	DECODED_XX _Q_Ad_4C
XX_Q_Xo_EG	QBCR, XOR prediction, Exponential Golomb entropy coding	XX _Q_ Xo _EG	DECODED_XX_Q_Xo _EG
XX_Q_ Xo _AC	QBCR, XOR prediction, Arithmetic coding	XX _Q_ Xo _AC	DECODED_XX _Q_Xo_AC
XX_Q_ Xo _BP	QBCR, XOR prediction, Bit precision entropy coding	XX _Q_ Xo _BP	DECODED_XX _Q_Xo_BP
XX_Q_ Xo _4C	QBCR, XOR prediction, 4-bit entropy coding	XX _Q_ Xo _4C	DECODED_XX _Q_Xo_4C
XX_Q_Di_EG	QBCR, differential prediction, Exponential Golomb entropy coding	XX _Q_ Di _EG	DECODED_XX _Q_ Di_EG
XX_Q_ Di _AC	QBCR, differential prediction, Arithmetic coding	XX _Q_ Di _AC	DECODED_XX _Q_ Di _AC
XX_Q_ Di _BP	QBCR, differential prediction, Bit precision entropy coding	XX _Q_ Di _BP	DECODED_XX _Q_ Di _BP
XX_Q_ Di _4C	QBCR, differential prediction, 4-bit entropy coding	XX _Q_ Di _4C	DECODED_XX _Q_ Di _4C
XX_S_CD_EG	SVA, circular prediction, Exponential Golomb entropy coding	XX _S_CD_EG	DECODED_XX _S_CD_EG
XX_S_CD_AC	SVA, circular prediction, Arithmetic coding	XX _S_Cd_AC	DECODED_XX _S_CD_AC
XX_S_CD_BP	SVA, circular prediction, Bit precision entropy coding	XX _S_CD_BP	DECODED_XX _S_CD_BP
XX_S_CD_4C	SVA, circular prediction, 4-bit entropy coding	XX _S_Cd_4C	DECODED_XX _S_CD_4C
XX_S_Ad_EG	SVA, adaptive prediction, Exponential Golomb entropy coding	XX _S_Ad_EG	DECODED_XX _S_Ad_EG

Test Name	Parameters	Bitstream (.mp4)	Decoded file (.wrl)
XX_S_Ad_AC	SVA, adaptive prediction, Arithmetic coding	XX _S_Ad_AC	DECODED_XX _S_Ad_AC
XX_S_Ad_BP	SVA, adaptive prediction, Bit precision entropy coding	XX _S_Ad_BP	DECODED_XX _S_Ad_BP
XX_S_Ad_4C	SVA, adaptive prediction, 4-bit entropy coding	XX _S_Ad_4C	DECODED_XX _S_Ad_4C
XX_S_Xo_EG	SVA, XOR prediction, Exponential Golomb entropy coding	XX _S_ Xo _EG	DECODED_XX_S_Xo _EG
XX_S_ Xo _AC	SVA, XOR prediction, Arithmetic coding	XX _S_ Xo _AC	DECODED_XX _S_Xo_AC
XX_S_ Xo _BP	SVA, XOR prediction, Bit precision entropy coding	XX _S_ Xo _BP	DECODED_XX _S_Xo_BP
XX_S_ Xo _4C	SVA, XOR prediction, 4-bit entropy coding	XX _S_ Xo _4C	DECODED_XX _S_Xo_4C
XX_S_Di_EG	SVA, differential prediction, Exponential Golomb entropy coding	XX _S_ Di _EG	DECODED_XX _S_ Di_EG
XX_S_ Di _AC	SVA, differential prediction, Arithmetic coding	XX _S_ Di _AC	DECODED_XX _S_ Di _AC
XX_S_ Di _BP	SVA, differential prediction, Bit precision entropy coding	XX _S_ Di _BP	DECODED_XX _S_ Di _BP
XX_S_ Di _4C	SVA, differential prediction, 4-bit entropy coding	XX _S_ Di _4C	DECODED_XX _S_ Di _4C
XX_T_CD_EG	TFAN, circular prediction, Exponential Golomb entropy coding	XX _T_CD_EG	DECODED_XX _T_CD_EG
XX_T_CD_AC	TFAN, circular prediction, Arithmetic coding	XX _T_Cd_AC	DECODED_XX _T_CD_AC
XX_T_CD_BP	TFAN, circular prediction, Bit precision entropy coding	XX _T_CD_BP	DECODED_XX _T_CD_BP
XX_T_CD_4C	TFAN, circular prediction, 4-bit entropy coding	XX _T_Cd_4C	DECODED_XX _T_CD_4C
XX_T_Ad_EG	TFAN, adaptive prediction, Exponential Golomb entropy coding	XX _T_Ad_EG	DECODED_XX _T_Ad_EG
XX_T_Ad_AC	TFAN, adaptive prediction, Arithmetic coding	XX _T_Ad_AC	DECODED_XX _T_Ad_AC
XX_T_Ad_BP	TFAN, adaptive prediction, Bit precision entropy coding	XX _T_Ad_BP	DECODED_XX _T_Ad_BP
XX_T_Ad_4C	TFAN, adaptive prediction, 4-bit entropy coding	XX _T_Ad_4C	DECODED_XX _T_Ad_4C
XX_T_Xo_EG	TFAN, XOR prediction, Exponential Golomb entropy coding	XX _T_ Xo _EG	DECODED_XX_T_Xo _EG
XX_T_ Xo _AC	TFAN, XOR prediction, Arithmetic coding	XX _T_ Xo _AC	DECODED_XX _T_Xo_AC
XX_T_ Xo _BP	TFAN, XOR prediction, Bit precision entropy coding	XX _T_ Xo _BP	DECODED_XX _T_Xo_BP
XX_T_ Xo _4C	TFAN, XOR prediction, 4-bit entropy coding	XX _T_ Xo _4C	DECODED_XX _T_Xo_4C
XX_T_Di_EG	TFAN, differential prediction, Exponential Golomb entropy coding	XX _T_ Di _EG	DECODED_XX _T_ Di_EG
XX_T_ Di _AC	TFAN, differential prediction, Arithmetic coding	XX _T_ Di _AC	DECODED_XX _T_ Di _AC
XX_T_ Di _BP	TFAN, differential prediction, Bit precision entropy coding	XX _T_ Di _BP	DECODED_XX _T_ Di _BP
XX_T_ Di _4C	TFAN, differential prediction, 4-bit entropy coding	XX _T_ Di _4C	DECODED_XX _T_ Di _4C

Test Name	Parameters	Bitstream (.mp4)	Decoded file (.wrl)
XX_T_Tf_EG	TFAN, TFAN-based parallelogram prediction, Exponential Golomb entropy coding	XX _T_ Tf _EG	DECODED_XX _T_ Tf _EG
XX_T_Tf _AC	TFAN, TFAN-based parallelogram prediction Arithmetic coding	XX _T_ Tf _AC	DECODED_XX _T_ Tf _AC
XX_T_ Tf _BP	TFAN, TFAN-based parallelogram prediction, Bit precision entropy coding	XX _T_ Tf _BP	DECODED_XX _T_ Tf _BP
XX_T_ Tf _4C	TFAN, TFAN-based parallelogram prediction, 4-bit entropy coding	XX _T_ Tf _4C	DECODED_XX _T_ Tf _4C
XX_T_Tf_EG_VO	TFAN with vertex ordering preservation, TFAN-based parallelogram prediction, Exponential Golomb entropy coding	XX _T_ Tf _EG	DECODED_XX _T_ Tf _EG
XX_T_Tf_EG_VO_FO	TFAN with vertex and face ordering preservation, TFAN-based parallelogram prediction, Exponential Golomb entropy coding	XX _T_ Tf _EG	DECODED_XX _T_ Tf _EG

4.2.2.5.2.3 Measurement Procedure

The terminal should produce a formatted output giving a IndexedFaceSet structure. The decoder shall be able to decode the bitstreams provided.

4.2.2.5.2.4 Tolerance

The diagnosis is to check whether the field data (geometry, coordinate and other attributes such as color, normal, texture, and etc.) of the IndexedFaceSet sequence that is decoded from ".mp4" files correspond with the data included in the provided reference "*.wrl" files.