
**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*

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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*.

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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.