
**Information technology — Coding of
audio-visual objects —**

Part 5:

Reference software

AMENDMENT 27: Scalable complexity 3D
mesh coding reference software

(standards.iteh.ai)

Technologies de l'information — Codage des objets audiovisuels —

Partie 5: Logiciel de référence

*AMENDEMENT 27: Logiciel de référence d'encodage de maille en 3D
de complexité atteignable*

ISO/IEC 14496-5:2001/Amd.27:2011
<https://standards.iteh.ai/catalog/standards/sist/84c396b4-d848-426b-8f50-a8f7bd6d9540/iso-iec-14496-5-2001-AMD-27-2011>

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO/IEC 14496-5:2001/Amd 27:2011](https://standards.iteh.ai/catalog/standards/sist/84c396b4-d848-426b-8f50-a8f7bd6d954b/iso-iec-14496-5-2001-amd-27-2011)

<https://standards.iteh.ai/catalog/standards/sist/84c396b4-d848-426b-8f50-a8f7bd6d954b/iso-iec-14496-5-2001-amd-27-2011>



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2011

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

Amendment 27 to ISO/IEC 14496-5:2001 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

ISO/IEC 14496-16:2009 introduced a scalable complexity mesh coding. This Amendment deals with the reference software of the SC3DMC tool.

[ISO/IEC 14496-5:2001/Amd 27:2011](https://standards.iteh.ai/catalog/standards/sist/84c396b4-d848-426b-8f50-a8f7bd6d954b/iso-iec-14496-5-2001-amd-27-2011)

<https://standards.iteh.ai/catalog/standards/sist/84c396b4-d848-426b-8f50-a8f7bd6d954b/iso-iec-14496-5-2001-amd-27-2011>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO/IEC 14496-5:2001/Amd 27:2011](https://standards.iteh.ai/catalog/standards/sist/84c396b4-d848-426b-8f50-a8f7bd6d954b/iso-iec-14496-5-2001-amd-27-2011)

<https://standards.iteh.ai/catalog/standards/sist/84c396b4-d848-426b-8f50-a8f7bd6d954b/iso-iec-14496-5-2001-amd-27-2011>

Information technology — Coding of audio-visual objects —

Part 5: Reference software

AMENDMENT 27: Scalable complexity 3D mesh coding reference software

Add 7.5 Reference Software for the Scalable Complexity 3D Mesh Compression:

7.5 Reference Software for the Scalable Complexity 3D Mesh Compression (SC3DMC)

7.5.1 Introduction

This is the description of the reference software for SC3DMC.

7.5.2 Description of Classes (standards.iteh.ai)

7.5.2.1 SC3DMC Classes

ISO/IEC 14496-5:2001/Amd 27:2011

Class	Function	Files	Description
SC3DMCEncoder	void SetIFS(IndexedFaceSet * ifs)	SC3DMC_SC3DMCEncoder.h SC3DMC_SC3DMCEncoder.cpp	Links the S3DMCEncoder to the IndexedFaceSet to be compressed
SC3DMCEncoder	void SetParams(EncodingParams params)	SC3DMC_SC3DMCEncoder.h SC3DMC_SC3DMCEncoder.cpp	Sets the encoding parameters
SC3DMCEncoder	unsigned int GetEstimatedCompressedStreamSize()	SC3DMC_SC3DMCEncoder.h SC3DMC_SC3DMCEncoder.cpp	Returns the number of bytes to be allocated for the compressed stream
SC3DMCEncoder	int Encode(unsigned char * compressedStream, unsigned int & compressedStreamSize)	SC3DMC_SC3DMCEncoder.h SC3DMC_SC3DMCEncoder.cpp	Encodes the IFS

SC3DMCEncoder	void EncodeHeader (unsigned char * compressedStream, unsigned int & compressedStream Size)	SC3DMC_SC3DMCEn coder.h SC3DMC_SC3DMCEn coder.cpp	Writes the header information to the binary stream
SC3DMCEncoder	void EncodeDataBuffer (unsigned char * compressedStream, unsigned int & compressedStream Size)	SC3DMC_SC3DMCEn coder.h SC3DMC_SC3DMCEn coder.cpp	Writes the data buffer to the binary stream
SC3DMCEncoder	void Insert_Data(unsigned char * compressedStream, unsigned int & compressedStream Size, int symbol, int length)	SC3DMC_SC3DMCEn coder.h SC3DMC_SC3DMCEn coder.cpp	Insert symbol into char array with length bits
SC3DMCEncoder	void Flush(unsigned char * compressedStream, unsigned int & compressedStream Size)	SC3DMC_SC3DMCEn coder.h SC3DMC_SC3DMCEn coder.cpp	Performing the zero-padding
SC3DMCDecoder	void SetIFS(IndexedFace Set * ifs)	SC3DMC_SC3DMCDe coder.h SC3DMCDecoder.cpp	Connects the S3DMCdecoder to the output IFS
SC3DMCDecoder	IndexedFaceSet * GetIFS()	SC3DMC_SC3DMCDe coder.h SC3DMC_SC3DMCDe coder.cpp	Returns a pointer to the output IFS
SC3DMCDecoder	unsigned int GetStreamSize()	SC3DMC_SC3DMCDe coder.h SC3DMC_SC3DMCDe coder.cpp	Returns the size of the compressed bitstream
SC3DMCDecoder	int Decode(unsigned char * compressedStream, unsigned int compressedStream Size)	SC3DMC_SC3DMCDe coder.h SC3DMC_SC3DMCDe coder.cpp	Decodes the compressed stream
SC3DMCDecoder	void DecodeDataBuffer (unsigned char * &compressedStream)	SC3DMC_SC3DMCDe coder.h SC3DMC_SC3DMCDe coder.cpp	Decodes the buffer data

SC3DMCDecoder	bool DecodeHeader (unsigned char * & compressedStream)	SC3DMC_SC3DMCDe coder.h SC3DMC_SC3DMCDe coder.cpp	Decodes the header information
SC3DMCDecoder	unsigned int ReadBitsFromStorag e(unsigned int unReadLength, unsigned char * &compressedStream)	SC3DMC_SC3DMCDe coder.h SC3DMC_SC3DMCDe coder.cpp	Reads unReadLength bits from bitstream
SC3DMCDecoder	void CheckFlush(unsigned char * &compressedStream)	SC3DMC_SC3DMCDe coder.h SC3DMC_SC3DMCDe coder.cpp	Checks the zero-padding

7.5.2.2 QBCR Classes

Class	Function	Files	Description
QBCR_En coderforMM W	DumpBitstream(strin g filename)	SC3DMC_QBCR_En coder.cpp , SC3DMC_QBCR_En coder.h	Dump the compressed bitstream into file
QBCR_En coderforMM W	Encode_Geometry() https://standards.iteh.ai/catalog/standards/sist/84c396b4-d848-426b-8f50-a8f7bd954b/iso-iec-14496-5-2001-amd-27-2011	SC3DMC_QBCR_En coder.cpp , SC3DMC_QBCR_En coder.h	Encode the geometry of input mesh
QBCR_En coderforMM W	Encode_Connectiv ity()	SC3DMC_QBCR_En coder.cpp , SC3DMC_QBCR_En coder.h	Encode the connectivity of input mesh
QBCR_En coderforMM W	QuantizationGeomet ry(int QP)	SC3DMC_QBCR_De coder.cpp , SC3DMC_QBCR_De coder.h	Quantize with QP value
QBCR_De coderforMM W	DecoderGeometry()	SC3DMC_QBCR_De coder.cpp , SC3DMC_QBCR_De coder.h	Decode the geometry of compressed bitstream
QBCR_De coderforMM W	DecoderConnectivity ()	SC3DMC_QBCR_De coder.cpp , SC3DMC_QBCR_De coder.h	Decode the connectivity of compressed bitstream
QBCR_De coderforMM W	InverseQuantization(unsigned quantCoord, float quantRange, float quantMin, float quantValue)	SC3DMC_QBCR_De coder.cpp , SC3DMC_QBCR_De coder.h	De-Quantize with given parameter
QBCR_De coderforMM W	ReadBitsFromStorag e(unsigned int unReadLength)	SC3DMC_QBCR_De coder.cpp , SC3DMC_QBCR_De coder.h	Read unReadLength bits from the storage (buffer)

7.5.2.3 SVA Classes

Class	Function	Files	Description
SVA_EncoderforMMW	Encode_Geometry()	SC3DMC_SVA_Encoder.cpp, SC3DMC_SVA_Encoder.h,	Encode the geometry of input mesh with SVA method
SVA_EncoderforMMW	ConnectivityAnalyze()	SC3DMC_SVA_Encoder.cpp, SC3DMC_SVA_Encoder.h,	Analyze the connectivity to compute mode, position, difference of index value and direction
SVA_EncoderforMMW	Encode_Connectivity()	SC3DMC_SVA_Encoder.cpp, SC3DMC_SVA_Encoder.h,	Encode the analyzed vertex index with BPC
SVA_EncoderforMMW	Rotation(int faceIndex, int move)	SC3DMC_SVA_Encoder.cpp, SC3DMC_SVA_Encoder.h,	Rotate the given face "move" times
SVA_DecoderforMMW	DecoderGeometry()	SC3DMC_SVA_Decoder.cpp, SC3DMC_SVA_Decoder.h,	Decode the geometry of compressed SVA bitstream
SVA_DecoderforMMW	DecoderConnectivity()	SC3DMC_SVA_Decoder.cpp, SC3DMC_SVA_Decoder.h,	Decode the connectivity of compressed SVA bitstream
SVA_DecoderforMMW	InverseCircularDifference(unsigned int previous, int differential)	SC3DMC_SVA_Decoder.cpp, SC3DMC_SVA_Decoder.h,	Perform the inverse circular difference with the given parameters
SVA_DecoderforMMW	BPLInit()	SC3DMC_SVA_Decoder.cpp, SC3DMC_SVA_Decoder.h,Amd.27	Initialize the BPC table for BPC decoding

<https://standards.iteh.ai/catalog/standards/sist/84c396b4-d848-426b-8f50-a8f7bd6d954b/iso-iec-14496-5-2001-amd-27-2011>

7.5.2.4 TFAN Classes

Class	Function	Files	Description
BaseConnectivityDecoder	void SetTriangleList(int * triangles)	SC3DMC_BaseConnectivityDecoder.h SC3DMC_BaseConnectivityDecoder.cpp	Sets the array that will hold the decoded list of triangles
BaseConnectivityDecoder	void SetNTriangles(int nTriangles)	SC3DMC_BaseConnectivityDecoder.h SC3DMC_BaseConnectivityDecoder.cpp	Sets the number of triangles
BaseConnectivityDecoder	void SetNVertices(int nVertices)	SC3DMC_BaseConnectivityDecoder.h SC3DMC_BaseConnectivityDecoder.cpp	Sets the number of vertices

BaseConnectivityDecoder	int Decode(unsigned char * &compressedStream)	SC3DMC_BaseConnectivityDecoder.h SC3DMC_BaseConnectivityDecoder.cpp	Decodes the connectivity information
BaseGeometryDecoder	void SetGeometryList(float * geometry)	SC3DMC_BaseGeometryDecoder.h SC3DMC_BaseGeometryDecoder.cpp	Set the array that will hold the decoded geometry information
BaseGeometryDecoder	void SetNVertices(int nVertices)	SC3DMC_BaseGeometryDecoder.h SC3DMC_BaseGeometryDecoder.cpp	Sets the number of vertices
BaseGeometryDecoder	void SetDim(int dim)	SC3DMC_BaseGeometryDecoder.h SC3DMC_BaseGeometryDecoder.cpp	Sets the dimension of the geometry information
BaseGeometryDecoder	int Decode(unsigned char * &compressedStream)	SC3DMC_BaseGeometryDecoder.h SC3DMC_BaseGeometryDecoder.cpp	Decodes the geometry information
TFANConnectivityDecoder	void ReOrderTab(float * tab, int D, int nVertices)	SC3DMC_TFANConnectivityDecoder.h SC3DMC_TFANConnectivityDecoder.cpp	Reorders the array of geometry according to the new order of triangles defined by the TFAN encoder
TFANConnectivityDecoder	void ReOrderTab(int * tab, int D, int nTriangles)	SC3DMC_TFANConnectivityDecoder.h SC3DMC_TFANConnectivityDecoder.cpp	Reorders the connectivity array according to the new order of triangles defined by the TFAN encoder
TFANConnectivityDecoder	void ReOrderConnec(int * coordIndex, int nCoordIndex)	SC3DMC_TFANConnectivityDecoder.h SC3DMC_TFANConnectivityDecoder.cpp	Reorders the connectivity array according to the new order of vertices defined by the TFAN encoder
TFANConnectivityDecoder	void ReOrderPerm(int * coordIndex, int nCoordIndex)	SC3DMC_TFANConnectivityDecoder.h SC3DMC_TFANConnectivityDecoder.cpp	Reorders the connectivity array to inverse the permutation generated by the TFAN encoder