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

**Part 3:
Audio**

**AMENDMENT 5: BSAC extensions and
transport of MPEG Surround**

Technologies de l'information — Codage des objets audiovisuels —

Partie 3: Codage audio

AMENDEMENT 5: Extensions BSAC et transport d'ambiance MPEG

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

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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 5 to ISO/IEC 14496-3:2005 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

This Amendment specifies the normative syntax of the integration of ER BSAC and the SBR tool and the corresponding decoding process. An informative encoder description is given in the Annex. Furthermore, this Amendment specifies the transport and embedding of MPEG Surround (ISO/IEC 23003-1) side information in MPEG-4 AAC bitstreams and MPEG-4 Audio environments.

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In the following, changes to existing text and Tables are highlighted by gray background.

In the fourth paragraph of subclause 0.3.2.2 General audio coding tools, replace:

It operates at up to 48 kHz sampling rate and uses a frame length of 512 or 480 samples, compared to the 1024 or 960 samples used in standard MPEG-2/4 AAC to enable coding of general audio signals with an algorithmic delay not exceeding 20 ms.

with:

To enable coding of general audio signals with an algorithmic delay not exceeding 20 ms at 48 kHz, it uses a frame length of 512 or 480 samples (compared to the 1024 or 960 samples used in standard MPEG-2/4 AAC).

In Part 3: Audio, Subpart 1, in subclause 1.2 Normative references, add:

ISO/IEC 14496-23, *Information technology — Coding of audio-visual objects — Part 23: Symbolic Music Representation*

ISO/IEC 23003-1, *Information technology — MPEG audio technologies — Part 1: MPEG Surround*

In Part 3: Audio, Subpart 1, in subclause 1.3 Terms and definitions, add:

PS: Parametric Stereo

SMR: Symbolic Music Representation

and increase the index-number of subsequent entries.

In Part 3: Audio, Subpart 1, in subclause 1.5.1.1 Audio object type definition, amend Table 1.1 with the updates in the table below:

Tools/ Modules	Remark	Object Type ID
<u>Audio Object Type</u>		
...		
MPEG Surround		30
...		
(escape)	X	31
...		
(reserved)		39
SMR Simple		40
SMR Main		41
...		

In Part 3: Audio, Subpart 1, after subclause 1.5.1.2.32 add the following subclauses:

1.5.1.2.33 PS object type

The PS object type contains the PS tool and can be combined with the SBR tool.

1.5.1.2.34 MPEG Surround object type

The MPEG Surround object type conveys MPEG Surround side information (see ISO/IEC 23003-1) in the MPEG-4 Audio framework.

1.5.1.2.35 SMR Simple object type

The SMR simple object type it is used to transport musical scores to be rendered both audibly and visually. The encoded data contains information on the main score, the parts (i.e. instrument specific scores), the possible multilingual lyrics associated with the parts, the visual formatting rules to be used for visual rendering, fonts to be used for custom musical symbols and synchronization information. The fonts and the synchronization information are represented as binary data, all the other as XML data. The SMR simple object type can convey the XML data as plain XML text or as gzip-ped XML (see ISO/IEC 14496-23).

1.5.1.2.36 SMR Main object type

The SMR main object type can transport the musical scores exactly in the same way as the SMR Simple object type but in this case the XML data can be encoded also using the MPEG-B tools defined in ISO/IEC 23001-1 (see ISO/IEC 14496-23).

In Part 3: Audio, Subpart 1, in subclause 1.5.1.2.6 SBR object type, replace Table 1.2 with the table below:

Table 1.2 — Audio object types that can be combined with SBR

Audio Object Type	Object Type ID
AAC main	1
AAC LC	2
AAC SSR	3
AAC LTP	4
AAC Scalable	6
ER AAC LC	17
ER AAC LTP	19
ER AAC scalable	20
ER BSAC	22

In subclause 1.5.2.1, replace Table 1.3 Audio Profiles definition with the table below:

Object Type ID	Audio Object Type	Main Audio Profile	Scalable Audio Profile	Speech Audio Profile	Synthetic Audio Profile	High Quality Audio Profile	Low Delay Audio Profile	Natural Audio Profile	Mobile Audio Internet-working Profile	AAC Profile	High Efficiency AAC Profile	High Efficiency AAC v2 Profile
0	Null											
1	AAC main	X						X				
2	AAC LC	X	X			X		X		X	X	X
3	AAC SSR	X						X				
4	AAC LTP	X	X			X		X				
5	SBR										X	X
6	AAC Scalable	X	X			X		X				
7	TwinVQ	X	X					X				
8	CELP	X	X	X		X	X	X				
9	HVXC	X	X	X			X	X				
10	(reserved)											
11	(reserved)											
12	TTSI	X	X	X	X		X	X				
13	Main synthetic	X			X							
14	Wavetable synthesis	X*			X*							
15	General MIDI	X*			X*							
16	Algorithmic Synthesis and Audio FX	X*			X*							
17	ER AAC LC					X		X	X			
18	(reserved)											
19	ER AAC LTP					X		X				
20	ER AAC Scalable					X		X	X			
21	ER TwinVQ							X	X			
22	ER BSAC							X	X			
23	ER AAC LD						X	X	X			
24	ER CELP					X	X	X				
25	ER HVXC						X	X				
26	ER HILN							X				
27	ER Parametric							X				
28	SSC											
29	PS											X
30	MPEG Surround											
31	(escape)											
32	Layer-1											
33	Layer-2											
34	Layer-3											
35	DST											

36	ALS											
37	SLS											
38	SLS non-core											
39	(reserved)											
40	SMR Simple											
41	SMR Main											

*) Subset of Main Synthetic

In subclause 1.6.2.1, extend Table 1.13 — AudioSpecificConfig() as follows:

Table 1.13 — Syntax of AudioSpecificConfig()

Syntax	No. of bits	Mnemonic
AudioSpecificConfig ()		
{		
audioObjectType = GetAudioObjectType();		
samplingFrequencyIndex;	4	uimsbf
if (samplingFrequencyIndex==0xf)		
samplingFrequency;	24	uimsbf
channelConfiguration;	4	uimsbf
sbrPresentFlag = -1;		
psPresentFlag = -1;		
if (audioObjectType == 5		
audioObjectType == 29) {		
extensionAudioObjectType = audioObjectType;		
sbrPresentFlag = 1;		
if (audioObjectType == 29) {		
psPresentFlag = 1;		
}		
extensionSamplingFrequencyIndex;	4	uimsbf
if (extensionSamplingFrequencyIndex==0xf)		
extensionSamplingFrequency;	24	uimsbf
audioObjectType = GetAudioObjectType();		
if (audioObjectType == 22)		
extensionChannelConfiguration;	4	uimsbf
}		
else {		
extensionAudioObjectType = 0;		
}		
switch (audioObjectType) {		
...		
case 28:		
SSCSpecificConfig();		
break;		
case 30:		
sacPayloadEmbedding;	1	uimsbf
SpatialSpecificConfig();		
break;		
case 32:		
case 33:		
case 34:		
...		