INTERNATIONAL STANDARD

ISO/IEC 14496-3

Fourth edition
2009-09-01

AMENDMENT 2
2010-10-15

Information technology — Coding of audio-visual objects —

Part 3: **Audio**

AMENDMENT 2: ALS simple profile and transport of SAOC

Technologies de l'information — Codage des objets audiovisuels —

Partie 3: Codage audio

AMENDEMENT 2: Profil simple ALS et transport de SAOC

Reference number
ISO/IEC 14496-3:2009/Amd.2:2010(E)

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Published in Switzerland

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 14496-3:2009 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 3:
Audio

AMENDMENT 2: ALS simple profile and transport of SAOC

Changes in existing text and tables are highlighted by gray background.

In 1.2, Normative references, add:

ISO/IEC 23003-2, *Information technology — MPEG audio technologies — Part 2: Spatial Audio Object Coding (SAOC)*

In 1.3, Terms and definitions, alphabetically incorporate the following into the list and renumber the subsequent index-number-entries:

LD MPEG Surround: Low Delay MPEG Surround

SAOC: Spatial Audio Object Coding

In 1.5.1.1, Audio object type definition, amend Table 1.1 by incorporating the updates below:

Object Type ID	Audio Object Type	Remark
	…	
42	(reserved)	
43	SAOC	
44	LD MPEG Surround	
45-95	(reserved)	

After 1.5.1.2.37, add the following two new subclauses:

1.5.1.2.38 SAOC object type

The SAOC object type conveys Spatial Audio Object Coding side information (see ISO/IEC 23003-2) in the MPEG-4 Audio framework.

1.5.1.2.39 LD MPEG Surround object type

The LD MPEG Surround object type conveys Low Delay MPEG Surround Coding side information (see ISO/IEC 23003-2) in the MPEG-4 Audio framework.

In 1.5.2.1 (Profiles), add:

14. The **ALS Simple Profile** contains the audio object type 36 (ALS).

In 1.5.2.1 (Profiles), Table 1.3 (Audio Profiles definition), add:

Object Type ID	Audio Object Type	…	ALS Simple Profile
…	…	…	…
36	ALS	…	X
…	…	…	…
42	(reserved)		
43	SAOC		
44	LD MPEG Surround		

In 1.5.2.3 (Levels within the profiles), add:

- **Levels for the ALS Simple Profile**

Table AMD 2-1 – Level for the ALS Simple Profile

Level	Max. number of channels	Max. sampling rate [kHz]	Max. word length [bit]	Max. number of samples per frame	Max. prediction order	Max. BS* stages	Max. MCC** stages
1	2	48	16	4096	15	3	1

* BS: Block switching, ** MCC: Multi-channel coding

The BGMC tool and the RLS-LMS tool are not permitted. Floating-point audio data is not supported.

In 1.5.2.4 (audioProfileLevelIndication), insert the following new entries into Table 1.14 (audioProfileLevelIndication values) and adapt the "reserved for ISO use" range accordingly:

Value	Profile	Level
…		
0x3C	ALS Simple Profile	L1
0x3D	SAOC Baseline Profile	L1
0x3E	SAOC Baseline Profile	L2
0x3F	SAOC Baseline Profile	L3
0x40	SAOC Baseline Profile	L4
0x41	SAOC LD Profile	L1
0x42	SAOC LD Profile	L2
0x43	SAOC LD Profile	L3
0x44 - 0x7F	reserved for ISO use	-
…		

In 1.6.2.1, extend Table1.15 "AudioSpecificConfig()"as follows:

Table 1.15 – Syntax of AudioSpecificConfig()

Syntax	No. of bits	Mnemonic
AudioSpecificConfig () {		
…		

sbrPresentFlag = -1;
psPresentFlag = -1;
mpsPresentFlag = -1;
saocPresentFlag = -1;
ldmpsPresentFlag = -1;
if (audioObjectType == 5 ||
audioObjectType == 29) {		

```
...

case 40:
case 41:
    SymbolicMusicSpecificConfig()
    break;
case 43:
    saocPresentFlag = 1;
    saocPayloadEmbedding;                                   1       uimsbf
    SaocSpecificConfig();
    break;
case 44:
    ldmpsPresentFlag = 1;
    ldsacPayloadEmbedding;                                  1       uimsbf
    LDSpatialSpecificConfig();
    break;
default:
    /* reserved */
}

...

                extensionChannelConfiguration;              4       uimsbf
            }
        }
    }
    if (extensionIdentifier == -1 && bits_to_decode() >= 11 ) {
        extensionIdentifier;                                11      bslbf
    }
    if ( extensionIdentifier == 0x76a ) {
        extensionIdentifier = -1;
        if ( audioObjectType != 30 && bits_to_decode() >= 1 ) {
            mpsPresentFlag;                                 1       uimsbf
            if ( mpsPresentFlag == 1 ) {
                sacPayloadEmbedding = 1;
                sscLen;                                     8       uimsbf
                if ( sscLen == 0xff ) {
                    sscLenExt;                              16      uimsbf
                    sscLen += sscLenExt;
                }
                SpatialSpecificConfig();
            }
        }
    }
    if (extensionIdentifier == -1 && bits_to_decode() >= 11 ) {
        extensionIdentifier;                                11      bslbf
    }
    if ( extensionIdentifier == 0x7cb ) {
        extensionIdentifier = -1;
        if ( audioObjectType != 43 && bits_to_decode() >= 1 ) {
            saocPresentFlag;                                1       uimsbf
            if ( saocPresentFlag == 1 ) {
                saocPayloadEmbedding = 1;
                saocscLen;                                  8       uimsbf
                if ( saocscLen == 0xff ) {
                    saocscLenExt;                           16      uimsbf
```

```
                        saocscLen += saocscLenExt;
                    }
                    SaocSpecificConfig();
                }
            }
        }
        if (extensionIdentifier == -1 && bits_to_decode() >= 11 ) {
            extensionIdentifier;                                    11      bslbf
        }
        if ( extensionIdentifier == 0x7cc ) {
            extensionIdentifier = -1;
            if ( audioObjectType != 44 && bits_to_decode() >= 1 ) {
                ldmpsPresentFlag;                                   1       uimsbf
                if ( ldmpsPresentFlag == 1 ) {
                    ldsacPayloadEmbedding = 1;
                    ldsscLen;                                       8       uimsbf
                    if ( ldsscLen == 0xff ) {
                        ldsscLenExt;                                16      uimsbf
                        ldsscLen += ldsscLenExt;
                    }
                    LDSpatialSpecificConfig();
                }
            }
        }
}
```


After 1.6.2.1.17, add 1.6.2.1.18 and 1.6.2.1.19 as follows:

1.6.2.1.18 SaocSpecificConfig

Defined in 6.1 of ISO/IEC 23003-2.

1.6.2.1.19 LDSpatialSpecificConfig

Defined in B.2.1 of ISO/IEC 23003-2.

In 1.6.2.2.1, extend Table 1.17 "Audio Object Types" as follows:

Table 1.17 — Audio Object Types

Object Type ID	Audio Object Type	definition of elementary stream payloads and detailed syntax	Mapping of audio payloads to access units and elementary streams
0	NULL		
…			
41	SMR Main	ISO/IEC 14496-23	
42	(reserved)		
43	SAOC	ISO/IEC 23003-2	
44	LD MPEG Surround	ISO/IEC 23003-2	