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

**Part 3:  
Audio**

**AMENDMENT 6: Profiles, levels and  
downmixing method for 22.2 channel  
programs**

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*Technologies de l'information — Codage des objets audiovisuels —*

*Partie 3: Codage audio*  
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**AMENDEMENT 6:**



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Amendment 6 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*.

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# Information technology — Coding of audio-visual objects —

## Part 3: Audio

### AMENDMENT 6: Profiles, levels and downmixing method for 22.2 channel programs

Page 31, 1.5.2.3

Replace:

**Table 1.10 — Levels for the AAC Profile**

Level	Max. channels/ object	Max. sampling rate [kHz]	Max. PCU	Max. RCU
1	2	24	3	5
2	2	48	6	5
3	NA	NA	NA	NA
4	5	48	19	15
5	5	96	38	15
6	7	48	25	19
7	7	96	50	19

with:

**Table 1.10 — Levels for the AAC Profile**

Level	Max. channels/ object	Max. sampling rate [kHz]	Max. PCU	Max. RCU
1	2	24	3	5
2	2	48	6	5
3	NA	NA	NA	NA
4	5	48	19	15
5	5	96	38	15
6	7	48	25	19
7	7	96	50	19
8	22	48	73	56
9	22	96	146	56

Insert the following new entries into Table 1.14 “audioProfileLevelIndication values” and adapt the “reserved for ISO use” range accordingly:

0x5D	AAC Profile	L8
0x5E	AAC Profile	L9
0x5F - 0x7F	reserved for ISO use	-

Replace:

**Table AMD4.3 — Syntax of MPEG4\_ancillary\_data**

Syntax	No. of Bits	Mnemonic
MPEG4_ancillary_data() {		
<b>ancillary_data_sync;</b>	<b>8</b>	<b>bslbf</b>
<b>mpeg_audio_type</b>	<b>2</b>	<b>bslbf</b>
<b>dolby_surround_mode</b>	<b>2</b>	<b>bslbf</b>
<b>drc_presentation_mode</b>	<b>2</b>	<b>bslbf</b>
<b>stereo_downmix_mode;</b>	<b>1</b>	<b>bslbf</b>
bs_info_reserved, set to “0”	<b>1</b>	<b>bslbf</b>
anc_data_status_reserved, set to “000”	<b>3</b>	<b>bslbf</b>
<b>downmixing_levels_MPEG4_status</b>	<b>1</b>	<b>bslbf</b>
<b>ancillary_data_extension_status;</b>	<b>1</b>	<b>bslbf</b>
<b>audio_coding_and_compression_status</b>	<b>1</b>	<b>bslbf</b>
<b>coarse_grain_timecode_status</b>	<b>1</b>	<b>bslbf</b>
<b>fine_grain_timecode_status</b>	<b>1</b>	<b>bslbf</b>
if (downmixing_levels_MPEG4_status == 1) {		
<b>center_mix_level_on</b>	<b>1</b>	<b>bslbf</b>
<b>center_mix_level_value</b>	<b>3</b>	<b>bslbf</b>
<b>surround_mix_level_on</b>	<b>1</b>	<b>bslbf</b>
<b>surround_mix_level_value</b>	<b>3</b>	<b>bslbf</b>
}		
if (audio_coding_mode_and_compression_status == 1) {		
<b>audio_coding_mode_reserved</b>	<b>7</b>	<b>bslbf</b>
<b>compression_on</b>	<b>1</b>	<b>bslbf</b>
<b>compression_value</b>	<b>8</b>	<b>bslbf</b>
}		
if(coarse_grain_timecode_status == 1)		
<b>coarse_grain_timecode</b>	<b>16</b>	<b>bslbf</b>
if(fine_grain_timecode_status == 1)		
<b>fine_grain_timecode</b>	<b>16</b>	<b>bslbf</b>
if (ancillary_data_extension_status == 1){		
reserved, set to “0”	<b>1</b>	<b>bslbf</b>
<b>ext_downmixing_levels_status;</b>	<b>1</b>	<b>bslbf</b>
<b>ext_downmixing_global_gains_status;</b>	<b>1</b>	<b>bslbf</b>
<b>ext_downmixing_lfe_level_status;</b>	<b>1</b>	<b>bslbf</b>
reserved, set to “0000”	<b>4</b>	<b>bslbf</b>
if (ext_downmixing_levels_status == 1){		
<b>dmix_a_idx;</b>	<b>3</b>	<b>bslbf</b>
<b>dmix_b_idx;</b>	<b>3</b>	<b>bslbf</b>
reserved, set to “00”	<b>2</b>	<b>bslbf</b>
}		

Table (continued)

Syntax	No. of Bits	Mnemonic
if (ext_downmixing_global_gains_status == 1) {		
<b>dmx_gain_5_sign;</b>	1	bslbf
<b>dmx_gain_5_idx;</b>	6	bslbf
reserved, set to "0"	1	bslbf
<b>dmx_gain_2_sign;</b>	1	bslbf
<b>dmx_gain_2_idx;</b>	6	bslbf
reserved, set to "0"	1	bslbf
}		
if (ext_downmixing_lfe_level_status == 1) {		
<b>dmix_lfe_idx;</b>	4	bslbf
reserved, set to "0000"	4	bslbf
}		
}		

with:

Table AMD4.3 — Syntax of MPEG4\_ancillary\_data

Syntax	No. of Bits	Mnemonic
MPEG4_ancillary_data() {		
<b>ancillary_data_sync;</b>	8	bslbf
<b>mpeg_audio_type</b>	2	bslbf
<b>dolby_surround_mode</b>	2	bslbf
<b>drc_presentation_mode</b>	2	bslbf
<b>stereo_downmix_mode;</b>	1	bslbf
bs_info_reserved, set to "0"	1	bslbf
anc_data_status_reserved, set to "000"	3	bslbf
<b>downmixing_levels_MPEG4_status</b>	1	bslbf
<b>ancillary_data_extension_status;</b>	1	bslbf
<b>audio_coding_and_compression_status</b>	1	bslbf
<b>coarse_grain_timecode_status</b>	1	bslbf
<b>fine_grain_timecode_status</b>	1	bslbf
}		
if (downmixing_levels_MPEG4_status == 1) {		
<b>center_mix_level_on</b>	1	bslbf
<b>center_mix_level_value</b>	3	bslbf
<b>surround_mix_level_on</b>	1	bslbf
<b>surround_mix_level_value</b>	3	bslbf
}		
If (audio_coding_mode_and_compression_status == 1) {		
<b>audio_coding_mode_reserved</b>	7	bslbf
<b>compression_on</b>	1	bslbf
<b>compression_value</b>	8	bslbf
}		
if (coarse_grain_timecode_status == 1)		
<b>coarse_grain_timecode</b>	16	bslbf
if (fine_grain_timecode_status == 1)		
<b>fine_grain_timecode</b>	16	bslbf
if (ancillary_data_extension_status == 1){		

Table (continued)

Syntax	No. of Bits	Mnemonic
reserved, set to "0"	1	bslbf
<b>ext_downmixing_levels_status;</b>	1	bslbf
<b>ext_downmixing_global_gains_status;</b>	1	bslbf
<b>ext_downmixing_lfe_level_status;</b>	1	bslbf
reserved, set to "0000"	4	bslbf
if (ext_downmixing_levels_status == 1){		
<b>dmix_a_idx;</b>	3	bslbf
<b>dmix_b_idx;</b>	3	bslbf
reserved, set to "00"	2	bslbf
}		
if (ext_downmixing_global_gains_status == 1) {		
<b>dmx_gain_5_sign;</b>	1	bslbf
<b>dmx_gain_5_idx;</b>	6	bslbf
reserved, set to "0"	1	bslbf
<b>dmx_gain_2_sign;</b>	1	bslbf
<b>dmx_gain_2_idx;</b>	6	bslbf
reserved, set to "0"	1	bslbf
}		
if (ext_downmixing_lfe_level_status == 1) {		
<b>dmix_lfe_idx;</b>	4	bslbf
reserved, set to "0000"	4	bslbf
}		
}		
<b>ancillary_data_sync2;</b>	8	bslbf
<b>ext_downmixing_level_status2;</b>	1	bslbf
if (ext_downmixing_levels_status2 == 1) {		
<b>dmix_c_idx;</b>	3	bslbf
<b>dmix_d_idx;</b>	3	bslbf
<b>dmix_e_idx;</b>	3	bslbf
<b>dmix_f_idx;</b>	3	bslbf
<b>dmix_g_idx;</b>	3	bslbf
<b>dmix_l_idx;</b>	4	bslbf
reserved, set to "0000"	4	bslbf
} else {		
reserved, set to "0000000"	7	bslbf
}		
byte_alignment();		
}		



Page 56, 4.5.2

In 4.5.2.14.1.1 “Data elements”, add the following elements:

<b>ancillary_data_sync2</b>	indicates the presence of MPEG-4 Audio ancillary data 2 and shall be set to 0xBD
<b>ext_downmixing_levels_status2</b>	indicates if downmixing coefficients for channelConfiguration = 13 exist
<b>dmix_c_idx</b>	indicates an index for the generation of a 5-channel downmix from 22-channel as shown in Tables AMD4.8 and AMD6.1
<b>dmix_d_idx</b>	indicates an index for the generation of a 5-channel downmix from 22-channel as shown in Tables AMD4.8 and AMD6.1
<b>dmix_e_idx</b>	indicates an index for the generation of a 5-channel downmix from 22-channel as shown in Tables AMD4.8 and AMD6.1
<b>dmix_f_idx</b>	indicates an index for the generation of a 5-channel downmix from 22-channel as shown in Tables AMD4.8 and AMD6.1
<b>dmix_g_idx</b>	indicates an index for the generation of a 5-channel downmix from 22-channel as shown in Tables AMD4.8 and AMD6.1
<b>dmix_l_idx</b>	indicates an index for LFE for the generation of a 5-channel downmix from 22-channel as shown in Tables AMD4.9 and AMD6.1

In 4.5.2.14.2 “Decoding process”, replace

If a 2-channel stereo downmix is to be derived from a 6.1 or 7.1 stream,

with:

If a 2-channel stereo downmix is to be derived from a 6.1, 7.1 or 22.2 stream,