

Recommendation ITU-R BS.2094-2

(02/2025)

BS Series: Broadcasting service (sound)

Common definitions for the audio definition model

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SNG	Satellite news gathering
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Note: This ITU-R Recommendation was approved in English under the procedure detailed in Resolution ITU-R 1.

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RECOMMENDATION ITU-R BS.2094-2

Common definitions for the audio definition model

(2016-2017-2025)

Scope

This Recommendation contains a set of common definitions for multichannel audio configurations that use the audio definition model (Recommendation ITU-R BS.2076) to describe them.

Keywords

ADM, audio, multichannel, channel-based, tracks, metadata, bw64, exchange, audio programme, BWF, immersive, HOA, Higher Order Ambisonics

The ITU Radiocommunication Assembly,

considering

- a) that storage media based on information technology, including data disks and tapes, have penetrated all areas of audio production for radio broadcasting, namely non-linear editing, on-air play-out and archives;
- b) that the adoption of a single file format for signal interchange would greatly simplify the interoperation of individual pieces of equipment, and remote studios, and it would facilitate the desirable integration of editing, on-air play-out, and archiving;
- c) that compatibility with currently-available commercial file formats would minimize the industry efforts required to implement a new format in the equipment;
- d) that future audio systems will require metadata associated with the audio to be carried in the file;
- e) that future audio systems will use a variety of multichannel configurations including channel-, object-, and scene-based audio such as specified in Recommendation ITU-R BS.2051;
- f) that future audio systems will use the audio definition model (Recommendation ITU-R BS.2076) to describe the technical format of the audio being delivered and exchanged;
- g) that the majority of audio in existence and produced in the short-term future is and will be channel-based using a commonly used set of configurations;
- h) that using different metadata descriptions for identical audio configurations will cause compatibility problems and unnecessary overheads,

recommends

that, for exchanging any audio that uses the audio definition model (Recommendation ITU-R BS.2076) as the metadata model, a set of common definitions be used to describe any audio configurations as defined in Annex 1.

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Annex 1 (normative)

Common definitions for the audio definition model

1 Introduction

Recommendation ITU-R BS.2076 – Audio Definition Model, is a metadata model used to describe the technical content and format of audio. It can be used to describe any type of audio signal to allow it to be rendered correctly, whether it be object-, scene-, or channel-based. While the audio definition model (ADM) is extremely flexible and allows any type of audio format to be defined, the vast majority of audio in existence is based on a few commonly used channel-based configurations. Therefore, it is not efficient for these commonly used formats to need to be explicitly defined every time they are used. It would also be problematic for identical formats to be defined in different ways by different organisations or applications.

To provide consistency and efficiency in the use of the ADM, a set of common definitions has been drawn up. These are based on what is commonly used in the audio industry, including those specified in Recommendations ITU-R BS.2051 and ITU-R BS.775 to produce definitions that should be used when these configurations are used in files and streams. This set of common definitions is intended to be a living resource, with new definitions added in the future should they be required.

2 Contents of the common definitions

As the vast majority of existing audio (and in the short-term future) is channel-based, most of the common definitions will be for channel-based audio. The initial set will concentrate on commonly used channel-based configurations. The other assumption used is that the track formats are pulse code modulation (PCM), so it does not include coded audio.

The ADM consists of several different elements used for defining audio. They either describe the content or the format. The set of common definitions is only concerned about the format elements as these can be defined without knowledge of the content of the audio. These elements are:

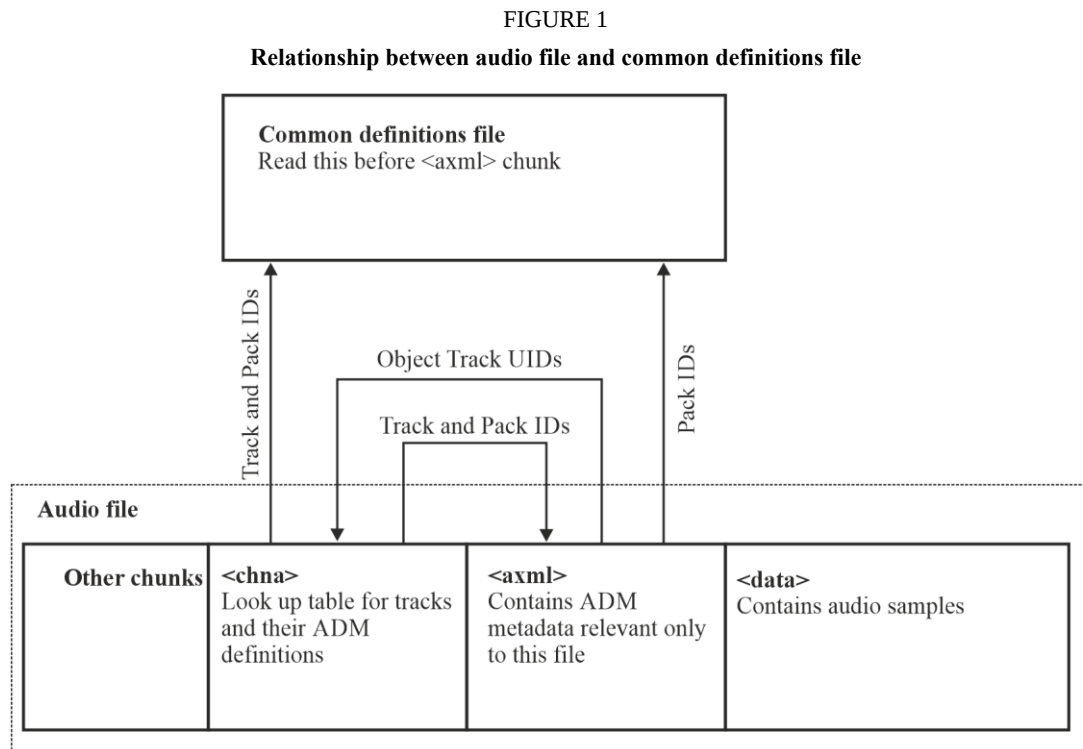
- audioTrackFormat
- audioStreamFormat
- audioChannelFormat
- audioBlockFormat
- audioPackFormat

Apart from audioPackFormat the elements are very closely tied together with one of each used for each channel definition. However, it does not mean that all four of these elements are required to be used at all times. It is perfectly acceptable to use a common audioChannelFormat/ audioBlockFormat definition with custom-made audioTrackFormat and audioStreamFormat definitions.

3 Common definitions usage

The common definitions exist as an extensible markup language (XML) file which can be either stored locally with the application that is handling the audio files, or referred to remotely. It is not intended to be carried in the audio file itself, as one of the intentions of it is to reduce the amount of metadata required to be carried in audio files.

Any code that reads audio files that contain ADM-defined audio (so BWF, BW64, RF64 typically) should always aim to read the common definitions first before reading the ADM metadata stored within the audio file itself. The relationship between the audio file and the common definitions file is shown in Fig. 1.



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The <chna> chunk contains an ID reference to both an audioTrackFormat and an audioPackFormat definition for each track in the file. These references should be looked up in the common definitions file first to see whether that contains the IDs, and if not then the audio file's <axml> chunk should be referred to. When inspecting the content-related ADM metadata in the <axml> chunk, in particular the audioObject elements, it may have references to IDs that exist in the common definitions file, most probably audioPackFormat IDs. This ordering of the chunks is not strict, and it may be preferable to place the <axml> chunk after the <data> chunk.

4 Set of common definitions

The set of common definitions consists of commonly used channel-based configurations, some of which are recognised standards and some are common proprietary configurations. The definitions consist of a set of audioChannelFormat definitions for channels associated with many different speaker locations, including all those in Recommendation ITU-R BS.2051. Each of these channel definitions has an associated audioStreamFormat and audioTrackFormat definition for PCM audio signals to cover the most typical use case. The set of audioPackFormat definitions for the various speaker combinations use only channels from this common set.

The audioChannelFormat and the audioPackFormat IDs follow this format:

- audioChannelFormatID: AC_yyyy0xxx
- audioPackFormatID: AP_yyyy0xxx

where the first four hexadecimal digits (yyyy) indicate what the type of audio is. If this value is set to 0001 then the type is ‘DirectSpeakers’, if it is 0002 then it is ‘Matrix’, 0003 for ‘Objects’, 0004 for ‘HOA’ and 0005 for ‘Binaural’. The final four digits (xxxx) have values below 1000, so belong to the set of common definitions as listed here.

4.1 Common definitions for the ‘DirectSpeakers’ audio type

4.1.1 Common audioChannelFormats for ‘DirectSpeakers’

TABLE 1A

audioChannelFormat definitions for ‘DirectSpeakers’ for polar coordinate system

audioChannelFormatID	audioChannelFormatName	Azimuth	Elevation	speakerLabel
AC_00010001	FrontLeft	30	0	M+030
AC_00010002	FrontRight	−30	0	M-030
AC_00010003	FrontCentre	0	0	M+000
AC_00010004 ⁽¹⁾	LowFrequencyEffects	0	−30	LFE
AC_00010005	SurroundLeft	110	0	M+110
AC_00010006	SurroundRight	−110	0	M-110
AC_00010007	FrontLeftOfCentre	22.5	0	M+022
AC_00010008	FrontRightOfCentre	−22.5	0	M-022
AC_00010009	BackCentre	180	0	M+180
AC_0001000a	SideLeft	90	0	M+090
AC_0001000b	SideRight	−90	0	M-090
AC_0001000c	TopCentre	0	90	T+000
AC_0001000d	TopFrontLeft	30	30	U+030
AC_0001000e	TopFrontCentre	0	30	U+000
AC_0001000f	TopFrontRight	−30	30	U-030
AC_00010010	TopSurroundLeft	110	30	U+110
AC_00010011	TopBackCentre	180	30	U+180
AC_00010012	TopSurroundRight	−110	30	U-110
AC_00010013	TopSideLeft	90	30	U+090
AC_00010014	TopSideRight	−90	30	U-090
AC_00010015	BottomFrontCentre	0	−30	B+000
AC_00010016	BottomFrontLeftMid	45	−30	B+045
AC_00010017	BottomFrontRightMid	−45	−30	B-045
AC_00010018	FrontLeftWide	60	0	M+060
AC_00010019	FrontRightWide	−60	0	M-060
AC_0001001a	N/A (see Note)			
AC_0001001b	N/A (see Note)			
AC_0001001c	BackLeftMid	135	0	M+135
AC_0001001d	BackRightMid	−135	0	M-135
AC_0001001e	TopBackLeftMid	135	30	U+135

TABLE 1A (*end*)

audioChannelFormatID	audioChannelFormatName	Azimuth	Elevation	speakerLabel
AC_0001001f	TopBackRightMid	−135	30	U-135
AC_00010020 ⁽¹⁾	LowFrequencyEffects1	45	−30	LFE1
AC_00010021 ⁽¹⁾	LowFrequencyEffects2	−45	−30	LFE2
AC_00010022	TopFrontLeftMid	45	30	U+045
AC_00010023	TopFrontRightMid	−45	30	U-045
AC_00010024	FrontLeftScreen	Left screen edge (or 25 if unknown)	0	M+SC
AC_00010025	FrontRightScreen	Right screen edge (or −25 if unknown)	0	M-SC
AC_00010026	FrontLeftMid	45	0	M+045
AC_00010027	FrontRightMid	−45	0	M-045
AC_00010028	UpperTopBackCentre	180	45	UH+180
AC_00010029	BackLeft	150	0	M+150
AC_0001002a	BackRight	−150	0	M-150
AC_0001002b	BottomFrontLeft	30	−30	B+030
AC_0001002c	BottomFrontRight	−30	−30	B-030

⁽¹⁾ These channels also feature a low pass frequency cut-off of 120 Hz. For further characteristics of LFE signal, refer to Annex 7 of Recommendation ITU-R BS.775.

NOTE – Earlier versions (Recommendation ITU-R BS.2094-0 and ITU-R BS.2094-1) of this Recommendation contained the common definitions for these audioChannelFormatIDs and audioChannelFormatNames but have now been deprecated. These audioChannelFormatIDs shall not be used for other audioChannelFormats to avoid compatibility issues.

TABLE 1B

audioChannelFormat definitions for ‘DirectSpeakers’ for Cartesian coordinate system

audioChannelFormatID	audioChannelFormatName	X	Y	Z	speakerLabel ⁽²⁾
AC_00010801	FrontLeft_Cart	−1	1	0	M_FL
AC_00010802	FrontRight_Cart	1	1	0	M_FR
AC_00010803	FrontCentre_Cart	0	1	0	M_FC
AC_00010804 ⁽¹⁾	LowFrequencyEffects_Cart	0	1	−1	LFE
AC_00010805	BackLeft_Cart	−1	−1	0	M_BL
AC_00010806	BackRight_Cart	1	−1	0	M_BR
AC_00010807	FrontLeftCentreMid_Cart	−0.5	1	0	M_FL50
AC_00010808	FrontRightCentreMid_Cart	0.5	1	0	M_FR50
AC_00010809	BackCentre_Cart	0	−1	0	M_BC
AC_0001080a	SideLeft_Cart	−1	0	0	M_SL
AC_0001080b	SideRight_Cart	1	0	0	M_SR

TABLE 1B (end)

audioChannelFormatID	audioChannelFormatName	X	Y	Z	speakerLabel ⁽²⁾
AC_0001080c	TopCentre_Cart	0	0	1	U_TC
AC_0001080d	TopFrontLeft_Cart	−1	1	1	U_FL
AC_0001080e	TopFrontCentre_Cart	0	1	1	U_FC
AC_0001080f	TopFrontRight_Cart	1	1	1	U_FR
AC_00010810	TopBackLeft_Cart	−1	−1	1	U_BL
AC_00010811	TopBackCentre_Cart	0	−1	1	U_BC
AC_00010812	TopBackRight_Cart	1	−1	1	U_BR
AC_00010813	TopSideLeft_Cart	−1	0	1	U_SL
AC_00010814	TopSideRight_Cart	1	0	1	U_SR
AC_00010815	BottomFrontCentre_Cart	0	1	−1	B_FC
AC_00010816	BottomFrontLeft_Cart	−1	1	−1	B_FL
AC_00010817	BottomFrontRight_Cart	1	1	−1	B_FR
AC_00010818	FrontSideLeftFar_Cart	−1	0.667	0	M_FSL67
AC_00010819	FrontSideRightFar_Cart	1	0.667	0	M_FSR67
AC_00010820 ⁽¹⁾	LowFrequencyEffects1_Cart	−1	1	−1	LFE1
AC_00010821 ⁽¹⁾	LowFrequencyEffects2_Cart	1	1	−1	LFE2
AC_00010824	FrontLeftScreen_Cart	Left screen edge (or −0.5 if unknown)	1	0	M_FLSc
AC_00010825	FrontRightScreen_Cart	Right screen edge (or 0.5 if unknown)	1	0	M_FRSc
AC_00010828	TopBackCentreFar_Cart	0	−0.667	1	U_BC67
AC_00010829	BackLeftCentreMid_Cart	−0.5	−1	0	M_BL50
AC_0001082a	BackRightCentreMid_Cart	0.5	−1	0	M_BR50

⁽¹⁾ These channels also feature a low pass frequency cut-off of 120 Hz. For further characteristics of LFE signal, refer to Annex 7 of Recommendation ITU-R BS.775.

⁽²⁾ The speakerLabel of an audioChannelFormat in the Cartesian coordinate system uniquely identifies a channel in the “virtual cube”. The loudspeaker, as defined in Recommendation ITU-R BS.2051, that this channel will be played back on is undetermined until the target system layout is known. Table 2B in this document provides speakerLabel mappings for the common definition audioPackFormats when the target system layout matches the audioPackFormat.

Each channel definition is listed in Table 1A, where the audioChannelFormatID, audioChannelFormatName and speakerLabel elements are listed. The azimuth and elevation columns represent the position that would be specified within the position sub-element (the distance is 1.0 for all these channel definitions).

The XML below shows how the first entry in Table 1A is represented in XML.

```
<audioChannelFormat audioChannelFormatID="AC_00010001" audioChannelFormatName="FrontLeft"
typeLabel="0001" typeDefinition="DirectSpeakers">
  <audioBlockFormat audioBlockFormatID="AC_00010001_00000001">
    <speakerLabel>urn:itu:bs:2051:0:speaker:M+030</speakerLabel>
    <position coordinate="azimuth">30.0</position>
```

```

    <position coordinate="elevation">0.0</position>
    <position coordinate="distance">1.0</position>
  </audioBlockFormat>
</audioChannelFormat>

```

4.1.2 Common audioStreamFormats and audioTrackFormats for ‘DirectSpeakers’

The common format type for audioStreamFormat and audioTrackFormat is ‘PCM’.

As previously mentioned, the audioStreamFormat and audioTrackFormat, which relate to each audioChannelFormat definition use the same ID prefixes and the same names with ‘PCM_’ appended, such as ‘PCM_FrontLeft’. The XML code below shows both the audioStreamFormat and audioTrackFormat definition for the first entry in the Table.

```

<audioStreamFormat      audioStreamFormatID="AS_00010001"      audioStreamFormatName="PCM_FrontLeft"
formatLabel="0001" formatDefinition="PCM">
  <audioChannelFormatIDRef>AC_00010001</audioChannelFormatIDRef>
  <audioTrackFormatIDRef>AT_00010001_01</audioTrackFormatIDRef>
</audioStreamFormat>

<audioTrackFormat      audioTrackFormatID="AT_00010001_01"      audioTrackFormatName="PCM_FrontLeft"
formatLabel="0001" formatDefinition="PCM">
  <audioStreamFormatIDRef>AS_00010001</audioStreamFormatIDRef>
</audioTrackFormat>

```

4.1.3 Common audioPackFormats for ‘DirectSpeakers’

The audioPackFormat definitions cover a range of speaker configurations. Tables 2A and 2B show the set of configurations that have been defined. The ones that are in Recommendation ITU-R BS.2051 are indicated. The last column gives the references to each channel the pack consists of. Instead of giving the whole ID (e.g. AP_00010001), only the last two digits are listed for clarity; so they would be AP_000100xx where xx is the digits listed to give the full audioPackFormatIDRef.

The audioPackFormat names have been given both a traditional name and the name formatted in the style of Recommendation ITU-R BS.2051 (U+M+L) separated by an underscore. Spaces are not used in the names as they can cause problems.

To simplify mapping, each audioPackFormat definition in Table 2A has a corresponding entry in Table 2B.

The audioPackFormat elements defined in Tables 2A and 2B for each of the coordinate systems have been designed so that the last 2-digits of the audioPackFormatIDs from one coordinate system corresponds to the other coordinate system. The 3 last digits in the range of 0x001 to 0x7ff indicates a polar based pack, 0x800 to 0xfff indicates a Cartesian based pack.

TABLE 2A

audioPackFormat definitions for ‘DirectSpeakers’ for polar coordinate system

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML
				Channel name in definition document, see first column
AP_00010001 mono_(0+1+0) (BS.775)	AC_00010003	FrontCentre	M+000	Mono

TABLE 2A (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML
				Channel name in definition document, see first column
AP_00010002 stereo_(0+2+0) (BS.775, BS.2051 (A))	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
AP_0001000a 3.0_(0+3+0) (BS.775)	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
AP_0001000b 4.0_(0+4+0) (BS.775)	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_00010009	BackCentre	M+180	Mono Surround
AP_0001000c 5.0_(0+5+0) (BS.775, BS.2051 (B) without LFE)	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_00010005	SurroundLeft	M+110	Left Surround
	AC_00010006	SurroundRight	M-110	Right Surround
AP_00010003 5.1_(0+5+0) (BS.775, BS.2051 (B))	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_00010005	SurroundLeft	M+110	Left Surround
	AC_00010006	SurroundRight	M-110	Right Surround
AP_0001000d 6.1_(0+6+0) (N/A)	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_00010005	SurroundLeft	M+110	Left Surround
	AC_00010006	SurroundRight	M-110	Right Surround
	AC_00010009	BackCentre	M+180	Centre Surround
AP_0001000e 7.1front_(0+7+0) (ISO/IEC 23091-3:2018)	AC_00010001	FrontLeft	M+030	Left Front Centre
	AC_00010002	FrontRight	M-030	Right Front Centre
	AC_00010003	FrontCentre	M+000	Centre Front
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_00010005	SurroundLeft	M+110	Left Surround
	AC_00010006	SurroundRight	M-110	Right Surround
	AC_00010026	FrontLeftMid	M+045	Left Front
	AC_00010027	FrontRightMid	M-045	Right Front

TABLE 2A (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML
				Channel name in definition document, see first column
AP_0001001b 7.0back_(0+7+0) (BS.2051 (I) without LFE)	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_0001000a	SideLeft	M+090	Left Side Surround
	AC_0001000b	SideRight	M-090	Right Side Surround
	AC_0001001c	BackLeftMid	M+135	Left Rear Surround
	AC_0001001d	BackRightMid	M-135	Right Rear Surround
AP_0001000f 7.1back_(0+7+0) (BS.2051 (I))	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_0001000a	SideLeft	M+090	Left Side Surround
	AC_0001000b	SideRight	M-090	Right Side Surround
	AC_0001001c	BackLeftMid	M+135	Left Rear Surround
	AC_0001001d	BackRightMid	M-135	Right Rear Surround
AP_0001001c 7.0top_(2+5+0) (BS.2051 (C) without LFE)	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_00010005	SurroundLeft	M+110	Left Surround
	AC_00010006	SurroundRight	M-110	Right Surround
	AC_0001000d	TopFrontLeft	U+030	Left Top Front
	AC_0001000f	TopFrontRight	U-030	Right Top Front
AP_00010004 7.1top_(2+5+0) (BS.2051 (C))	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_00010005	SurroundLeft	M+110	Left Surround
	AC_00010006	SurroundRight	M-110	Right Surround
	AC_0001000d	TopFrontLeft	U+030	Left Top Front
	AC_0001000f	TopFrontRight	U-030	Right Top Front

TABLE 2A (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML
				Channel name in definition document, see first column
AP_00010012 7.1screen_5.1+sc_(0+7+0) (N/A)	AC_00010001	FrontLeft	M+030	Front Left
	AC_00010002	FrontRight	M-030	Front Right
	AC_00010003	FrontCentre	M+000	Front Centre
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_00010005	SurroundLeft	M+110	Left Surround
	AC_00010006	SurroundRight	M-110	Right Surround
	AC_00010024	FrontLeftScreen	M+SC	Front Left Screen
	AC_00010025	FrontRightScreen	M-SC	Front Right Screen
AP_0001001d 7.0topside_5.0.2_(2+5+0) (N/A without LFE)	AC_00010001	FrontLeft	M+030	Front Left
	AC_00010002	FrontRight	M-030	Front Right
	AC_00010003	FrontCentre	M+000	Front Centre
	AC_00010005	SurroundLeft	M+110	Left Surround
	AC_00010006	SurroundRight	M-110	Right Surround
	AC_00010013	TopSideLeft	U+090	Top Side Left
	AC_00010014	TopSideRight	U-090	Top Side Right
AP_00010013 7.1topside_5.1.2_(2+5+0) (N/A)	AC_00010001	FrontLeft	M+030	Front Left
	AC_00010002	FrontRight	M-030	Front Right
	AC_00010003	FrontCentre	M+000	Front Centre
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_00010005	SurroundLeft	M+110	Left Surround
	AC_00010006	SurroundRight	M-110	Right Surround
	AC_00010013	TopSideLeft	U+090	Top Side Left
	AC_00010014	TopSideRight	U-090	Top Side Right
AP_00010020 Auro-3D_8.0_(4+4+0) (N/A)	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010005	SurroundLeft	M+110	Left Surround
	AC_00010006	SurroundRight	M-110	Right Surround
	AC_0001000d	TopFrontLeft	U+030	Height Left
	AC_0001000f	TopFrontRight	U-030	Height Right
	AC_00010010	TopSurroundLeft	U+110	Height Left Surround
	AC_00010012	TopSurroundRight	U-110	Height Right Surround

TABLE 2A (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML
				Channel name in definition document, see first column
AP_00010014 9.1screen_5.1.2+sc_(2+7+0) (N/A)	AC_00010001	FrontLeft	M+030	Front Left
	AC_00010002	FrontRight	M-030	Front Right
	AC_00010003	FrontCentre	M+000	Front Centre
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_00010005	SurroundLeft	M+110	Left Surround
	AC_00010006	SurroundRight	M-110	Right Surround
	AC_00010013	TopSideLeft	U+090	Top Side Left
	AC_00010014	TopSideRight	U-090	Top Side Right
	AC_00010024	FrontLeftScreen	M+SC	Front Left Screen
	AC_00010025	FrontRightScreen	M-SC	Front Right Screen
AP_00010016 9.1topside_7.1.2_(2+7+0) (N/A)	AC_00010001	FrontLeft	M+030	Front Left
	AC_00010002	FrontRight	M-030	Front Right
	AC_00010003	FrontCentre	M+000	Front Centre
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_0001000a	SideLeft	M+090	Left Side Surround
	AC_0001000b	SideRight	M-090	Right Side Surround
	AC_0001001c	BackLeftMid	M+135	Back Left
	AC_0001001d	BackRightMid	M-135	Back Right
	AC_00010013	TopSideLeft	U+090	Top Side Left
	AC_00010014	TopSideRight	U-090	Top Side Right
AP_0001001e 9.0_5.0.4_(4+5+0) (BS.2051 (D) without LFE)	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_00010005	SurroundLeft	M+110	Left Surround
	AC_00010006	SurroundRight	M-110	Right Surround
	AC_0001000d	TopFrontLeft	U+030	Left Top Front
	AC_0001000f	TopFrontRight	U-030	Right Top Front
	AC_00010010	TopSurroundLeft	U+110	Left Top Rear
	AC_00010012	TopSurroundRight	U-110	Right Top Rear
AP_00010005 9.1_5.1.4_(4+5+0) (BS.2051 (D))	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_00010005	SurroundLeft	M+110	Left Surround
	AC_00010006	SurroundRight	M-110	Right Surround
	AC_0001000d	TopFrontLeft	U+030	Left Top Front
	AC_0001000f	TopFrontRight	U-030	Right Top Front

TABLE 2A (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML
				Channel name in definition document, see first column
	AC_00010010	TopSurroundLeft	U+110	Left Top Rear
	AC_00010012	TopSurroundRight	U-110	Right Top Rear
AP_00010006 10.1_(4+5+1) (BS.2051 (E))	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_00010005	SurroundLeft	M+110	Left Surround
	AC_00010006	SurroundRight	M-110	Right Surround
	AC_0001000d	TopFrontLeft	U+030	Left Top Front
	AC_0001000f	TopFrontRight	U-030	Right Top Front
	AC_00010010	TopSurroundLeft	U+110	Left Top Rear
	AC_00010012	TopSurroundRight	U-110	Right Top Rear
	AC_00010015	BottomFrontCentre	B+000	Centre Bottom Front
AP_00010021 Auro-3D_10.1_(5+5+0) (N/A)	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_00010005	SurroundLeft	M+110	Left Surround
	AC_00010006	SurroundRight	M-110	Right Surround
	AC_0001000d	TopFrontLeft	U+030	Height Left
	AC_0001000f	TopFrontRight	U-030	Height Right
	AC_00010010	TopSurroundLeft	U+110	Height Left Surround
	AC_00010012	TopSurroundRight	U-110	Height Right Surround
	AC_0001000c	TopCentre	T+000	Top
AP_00010007 10.2_(3+7+0) (BS.2051 (F))	AC_00010003	FrontCentre	M+000	Centre
	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010022	TopFrontLeftMid	U+045	Left Height
	AC_00010023	TopFrontRightMid	U-045	Right Height
	AC_0001000a	SideLeft	M+090	Left Side
	AC_0001000b	SideRight	M-090	Right Side
	AC_0001001c	BackLeftMid	M+135	Left Back
	AC_0001001d	BackRightMid	M-135	Right Back
	AC_00010028	UpperTopBackCentre	UH+180	Centre Height
	AC_00010020	LowFrequencyEffects1	LFE1	LowFrequencyEffects-1

TABLE 2A (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML
				Channel name in definition document, see first column
	AC_00010021	LowFrequencyEffects2	LFE2	LowFrequencyEffects-2
AP_00010015 11.1screen_5.1.4+sc_(4+7+0) (N/A)	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_00010005	SurroundLeft	M+110	Left Surround
	AC_00010006	SurroundRight	M-110	Right Surround
	AC_0001000d	TopFrontLeft	U+030	Top Front Left
	AC_0001000f	TopFrontRight	U-030	Top Front Right
	AC_00010010	TopSurroundLeft	U+110	Top Surround Left
	AC_00010012	TopSurroundRight	U-110	Top Surround Right
	AC_00010024	FrontLeftScreen	M+SC	Front Left Screen
	AC_00010025	FrontRightScreen	M-SC	Front Right Screen
AP_0001001f 11.0_7.0.4_(4+7+0) (BS.2051 (J) without LFE)	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_0001000a	SideLeft	M+090	Left Side Surround
	AC_0001000b	SideRight	M-090	Right Side Surround
	AC_0001001c	BackLeftMid	M+135	Left Rear Surround
	AC_0001001d	BackRightMid	M-135	Right Rear Surround
	AC_00010022	TopFrontLeftMid	U+045	Left Top Front
	AC_00010023	TopFrontRightMid	U-045	Right Top Front
	AC_0001001e	TopBackLeftMid	U+135	Left Top Back
	AC_0001001f	TopBackRightMid	U-135	Right Top Back
AP_00010017 11.1_7.1.4_(4+7+0) (BS.2051 (J))	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_0001000a	SideLeft	M+090	Left Side Surround
	AC_0001000b	SideRight	M-090	Right Side Surround
	AC_0001001c	BackLeftMid	M+135	Left Rear Surround
	AC_0001001d	BackRightMid	M-135	Right Rear Surround
	AC_00010022	TopFrontLeftMid	U+045	Left Top Front
	AC_00010023	TopFrontRightMid	U-045	Right Top Front
	AC_0001001e	TopBackLeftMid	U+135	Left Top Back
	AC_0001001f	TopBackRightMid	U-135	Right Top Back

TABLE 2A (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML
				Channel name in definition document, see first column
AP_00010022 Auro-3D_11.1_(6+5+0) (N/A)	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_00010005	SurroundLeft	M+110	Left Surround
	AC_00010006	SurroundRight	M-110	Right Surround
	AC_0001000d	TopFrontLeft	U+030	Height Left
	AC_0001000f	TopFrontRight	U-030	Height Right
	AC_00010010	TopSurroundLeft	U+110	Height Left Surround
	AC_00010012	TopSurroundRight	U-110	Height Right Surround
	AC_0001000c	TopCentre	T+000	Top
	AC_0001000e	TopFrontCentre	U+000	Height Centre
AP_00010023 Auro-3D_11.1_(4+7+0) (N/A)	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_00010005	SurroundLeft	M+110	Left Surround
	AC_00010006	SurroundRight	M-110	Right Surround
	AC_00010029	BackLeft	M+150	Left Back
	AC_0001002a	BackRight	M-150	Right Back
	AC_0001000d	TopFrontLeft	U+030	Height Left
	AC_0001000f	TopFrontRight	U-030	Height Right
	AC_00010010	TopSurroundLeft	U+110	Height Left Surround
	AC_00010012	TopSurroundRight	U-110	Height Right Surround
AP_00010025 360RA_13.0_(5+5+3) (N/A)	AC_00010003	FrontCentre	M+000	Front Centre
	AC_00010001	FrontLeft	M+030	Front Left
	AC_00010002	FrontRight	M-030	Front Right
	AC_00010005	SurroundLeft	M+110	Left Rear
	AC_00010006	SurroundRight	M-110	Right Rear
	AC_0001000e	TopFrontCentre	U+000	Upper Centre
	AC_0001000d	TopFrontLeft	U+030	Upper Left
	AC_0001000f	TopFrontRight	U-030	Upper Right
	AC_00010010	TopSurroundLeft	U+110	Upper Left Rear
	AC_00010012	TopSurroundRight	U-110	Upper Right Rear
	AC_00010015	BottomFrontCentre	B+000	Lower Centre
	AC_0001002b	BottomFrontLeft	B+030	Lower Left

TABLE 2A (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML
				Channel name in definition document, see first column
	AC_0001002c	BottomFrontRight	B-030	Lower Right
AP_00010008 13.1screen_7.1.4+sc_(4+9+0) (BS.2051 (G))	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_0001000a	SideLeft	M+090	Left Side Surround
	AC_0001000b	SideRight	M-090	Right Side Surround
	AC_0001001c	BackLeftMid	M+135	Left Rear Surround
	AC_0001001d	BackRightMid	M-135	Right Rear Surround
	AC_00010022	TopFrontLeftMid	U+045	Left Top Front
	AC_00010023	TopFrontRightMid	U-045	Right Top Front
	AC_0001001e	TopBackLeftMid	U+135	Left Top Back
	AC_0001001f	TopBackRightMid	U-135	Right Top Back
	AC_00010024	FrontLeftScreen	M+SC	Left Screen
	AC_00010025	FrontRightScreen	M-SC	Right Screen
AP_00010018 13.1_9.1.4_(4+9+0) (N/A)	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_0001000a	SideLeft	M+090	Left Side Surround
	AC_0001000b	SideRight	M-090	Right Side Surround
	AC_0001001c	BackLeftMid	M+135	Left Rear Surround
	AC_0001001d	BackRightMid	M-135	Right Rear Surround
	AC_00010018	FrontLeftWide	M+060	Left Wide
	AC_00010019	FrontRightWide	M-060	Right Wide
	AC_00010022	TopFrontLeftMid	U+045	Left Top Front
	AC_00010023	TopFrontRightMid	U-045	Right Top Front
	AC_0001001e	TopBackLeftMid	U+135	Left Top Back
	AC_0001001f	TopBackRightMid	U-135	Right Top Back
AP_00010024 Auro-3D_13.1_(6+7+0) (N/A)	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_00010005	SurroundLeft	M+110	Left Surround
	AC_00010006	SurroundRight	M-110	Right Surround
	AC_00010029	BackLeft	M+150	Left Back
	AC_0001002a	BackRight	M-150	Right Back

TABLE 2A (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML
				Channel name in definition document, see first column
	AC_0001000d	TopFrontLeft	U+030	Height Left
	AC_0001000f	TopFrontRight	U-030	Height Right
	AC_00010010	TopSurroundLeft	U+110	Height Left Surround
	AC_00010012	TopSurroundRight	U-110	Height Right Surround
	AC_0001000c	TopCentre	T+000	Top
	AC_0001000e	TopFrontCentre	U+000	Height Centre
AP_00010019 15.1_9.1.6_(6+9+0) (N/A)	AC_00010001	FrontLeft	M+030	Left
	AC_00010002	FrontRight	M-030	Right
	AC_00010003	FrontCentre	M+000	Centre
	AC_00010004	LowFrequencyEffects	LFE	Low Frequency Effects
	AC_0001000a	SideLeft	M+090	Left Side Surround
	AC_0001000b	SideRight	M-090	Right Side Surround
	AC_0001001c	BackLeftMid	M+135	Left Rear Surround
	AC_0001001d	BackRightMid	M-135	Right Rear Surround
	AC_00010018	FrontLeftWide	M+060	Left Wide
	AC_00010019	FrontRightWide	M-060	Right Wide
	AC_00010022	TopFrontLeftMid	U+045	Left Top Front
	AC_00010023	TopFrontRightMid	U-045	Right Top Front
	AC_00010013	TopSideLeft	U+090	Top Side Left
	AC_00010014	TopSideRight	U-090	Top Side Right
	AC_0001001e	TopBackLeftMid	U+135	Left Top Back
	AC_0001001f	TopBackRightMid	U-135	Right Top Back
AP_00010010 22.0_(9+10+3) (BS.2051 (H) without LFE)	AC_00010018	FrontLeftWide	M+060	Front Left
	AC_00010019	FrontRightWide	M-060	Front Right
	AC_00010003	FrontCentre	M+000	Front Centre
	AC_0001001c	BackLeftMid	M+135	Back Left
	AC_0001001d	BackRightMid	M-135	Back Right
	AC_00010001	FrontLeft	M+030	Front Left Centre
	AC_00010002	FrontRight	M-030	Front Right Centre
	AC_00010009	BackCentre	M+180	Back Centre
	AC_0001000a	SideLeft	M+090	Side Left
	AC_0001000b	SideRight	M-090	Side Right
	AC_00010022	TopFrontLeftMid	U+045	Top Front Left
	AC_00010023	TopFrontRightMid	U-045	Top Front Right
	AC_0001000e	TopFrontCentre	U+000	Top Front Centre
	AC_0001000c	TopCentre	T+000	Top Centre
	AC_0001001e	TopBackLeftMid	U+135	Top Back Left

TABLE 2A (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML
				Channel name in definition document, see first column
	AC_0001001f	TopBackRightMid	U-135	Top Back Right
	AC_00010013	TopSideLeft	U+090	Top Side Left
	AC_00010014	TopSideRight	U-090	Top Side Right
	AC_00010011	TopBackCentre	U+180	Top Back Centre
	AC_00010015	BottomFrontCentre	B+000	Bottom Front Centre
	AC_00010016	BottomFrontLeftMid	B+045	Bottom Front Left
	AC_00010017	BottomFrontRightMid	B-045	Bottom Front Right
AP_00010009 22.2_(9+10+3) (BS.2051 (H)) <i>This pack describes a different variant of the 22.2 system where there are 5 front main channels and loudspeakers, and corresponds with the Cartesian pack AP_00010809. This pack simplifies mapping to the Cartesian pack AP_00010809.</i>	AC_00010018	FrontLeftWide	M+060	Front Left
	AC_00010019	FrontRightWide	M-060	Front Right
	AC_00010003	FrontCentre	M+000	Front Centre
	AC_00010020	LowFrequencyEffects1	LFE1	LowFrequencyEffects-1
	AC_0001001c	BackLeftMid	M+135	Back Left
	AC_0001001d	BackRightMid	M-135	Back Right
	AC_00010001	FrontLeft	M+030	Front Left Centre
	AC_00010002	FrontRight	M-030	Front Right Centre
	AC_00010009	BackCentre	M+180	Back Centre
	AC_00010021	LowFrequencyEffects2	LFE2	LowFrequencyEffects-2
	AC_0001000a	SideLeft	M+090	Side Left
	AC_0001000b	SideRight	M-090	Side Right
	AC_00010022	TopFrontLeftMid	U+045	Top Front Left
	AC_00010023	TopFrontRightMid	U-045	Top Front Right
	AC_0001000e	TopFrontCentre	U+000	Top Front Centre
	AC_0001000c	TopCentre	T+000	Top Centre
	AC_0001001e	TopBackLeftMid	U+135	Top Back Left
	AC_0001001f	TopBackRightMid	U-135	Top Back Right
	AC_00010013	TopSideLeft	U+090	Top Side Left
	AC_00010014	TopSideRight	U-090	Top Side Right
	AC_00010011	TopBackCentre	U+180	Top Back Centre
	AC_00010015	BottomFrontCentre	B+000	Bottom Front Centre
	AC_00010016	BottomFrontLeftMid	B+045	Bottom Front Left
	AC_00010017	BottomFrontRightMid	B-045	Bottom Front Right
AP_0001001a 22.2-3front_(9+10+3) (N/A) <i>This pack describes a different variant of the 22.2 system where there are 3 front main channels and loudspeakers, and is corresponds with the Cartesian pack AP_0001081a. This pack</i>	AC_00010018	FrontLeftWide	M+060	Left Wide
	AC_00010019	FrontRightWide	M-060	Right Wide
	AC_00010003	FrontCentre	M+000	Front Centre
	AC_00010020	LowFrequencyEffects1	LFE1	LowFrequencyEffects-1
	AC_0001001c	BackLeftMid	M+135	Back Left
	AC_0001001d	BackRightMid	M-135	Back Right

TABLE 2A (end)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML
				Channel name in definition document, see first column
<i>simplifies mapping to the Cartesian pack AP_0001081a.</i>	AC_00010001	FrontLeft	M+030	Front Left
	AC_00010002	FrontRight	M-030	Front Right
	AC_00010009	BackCentre	M+180	Back Centre
	AC_00010021	LowFrequencyEffects2	LFE2	LowFrequencyEffects-2
	AC_0001000a	SideLeft	M+090	Side Left
	AC_0001000b	SideRight	M-090	Side Right
	AC_00010022	TopFrontLeftMid	U+045	Top Front Left
	AC_00010023	TopFrontRightMid	U-045	Top Front Right
	AC_0001000e	TopFrontCentre	U+000	Top Front Centre
	AC_0001000c	TopCentre	T+000	Top Centre
	AC_0001001e	TopBackLeftMid	U+135	Top Back Left
	AC_0001001f	TopBackRightMid	U-135	Top Back Right
	AC_00010013	TopSideLeft	U+090	Top Side Left
	AC_00010014	TopSideRight	U-090	Top Side Right
	AC_00010011	TopBackCentre	U+180	Top Back Centre
	AC_00010015	BottomFrontCentre	B+000	Bottom Front Centre
	AC_00010016	BottomFrontLeftMid	B+045	Bottom Front Left
	AC_00010017	BottomFrontRightMid	B-045	Bottom Front Right
AP_00010011 N/A (see NOTE)				

NOTE – Earlier versions (Recommendation ITU-R BS.2094-0 and ITU-R BS.2094-1) of this Recommendation contained the common definition of this audioPackFormatID and audioPackFormatName but have now been deprecated. The audioPackFormatID and audioPackFormatName shall not be used for other audioPackFormats to avoid compatibility issues.

TABLE 2B

audioPackFormat definitions for ‘DirectSpeakers’ for Cartesian coordinate system

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML	
				Channel name in definition document, see first column	Playback system speaker ⁽¹⁾
AP_00010801 mono_(0+1+0) (BS.775)	AC_00010803	FrontCentre_Cart	M_FC	Mono	M+000
AP_00010802 stereo_(0+2+0) (BS.775, BS.2051 (A))	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030

TABLE 2B (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML	
				Channel name in definition document, see first column	Playback system speaker ⁽¹⁾
AP_0001080a 3.0_(0+3+0) (BS.775)	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
AP_0001080b 4.0_(0+4+0) (BS.775)	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010809	BackCentre_Cart	M_BC	Mono Surround	M+180
AP_0001080c 5.0_(0+5+0) (BS.775, BS.2051 (B) without LFE)	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010805	BackLeft_Cart	M_BL	Left Surround	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Surround	M-110
AP_00010803 5.1_(0+5+0) (BS.775, BS.2051 (B))	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_00010805	BackLeft_Cart	M_BL	Left Surround	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Surround	M-110
AP_0001080d 6.1_(0+6+0) (N/A)	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_00010805	BackLeft_Cart	M_BL	Left Surround	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Surround	M-110
	AC_00010809	BackCentre_Cart	M_BC	Centre Surround	M+180
AP_0001080e 7.1front_(0+7+0) (N/A)	AC_00010807	FrontLeftCentreMid_Cart	M_FL50	Left Front Centre	M+030
	AC_00010808	FrontRightCentreMid_Cart	M_FR50	Right Front Centre	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Front Centre	M+000
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_00010805	BackLeft_Cart	M_BL	Left Surround	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Surround	M-110
	AC_00010801	FrontLeft_Cart	M_F	Left Front	M+045
	AC_00010802	FrontRight_Cart	M_FR	Right Front	M-045
AP_0001081b 7.0back_(0+7+0) (BS.2051 (I) without LFE)	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_0001080a	SideLeft_Cart	M_SL	Left Side Surround	M+090

TABLE 2B (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFo rmatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML	
				Channel name in definition document, see first column	Playback system speaker ⁽¹⁾
	AC_0001080b	SideRight_Cart	M_SR	Right Side Surround	M-090
	AC_00010805	BackLeft_Cart	M_BL	Left Rear Surround	M+135
	AC_00010806	BackRight_Cart	M_BR	Right Rear Surround	M-135
AP_0001080f 7.1back_(0+7+0) (BS.2051 (I))	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_0001080a	SideLeft_Cart	M_SL	Left Side Surround	M+090
	AC_0001080b	SideRight_Cart	M_SR	Right Side Surround	M-090
	AC_00010805	BackLeft_Cart	M_BL	Left Rear Surround	M+135
	AC_00010806	BackRight_Cart	M_BR	Right Rear Surround	M-135
AP_0001081c 7.0top_(2+5+0) (BS.2051 (C) without LFE)	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010805	BackLeft_Cart	M_BL	Left Surround	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Surround	M-110
	AC_0001080d	TopFrontLeft_Cart	U_FL	Left Top Front	U+030
	AC_0001080f	TopFrontRight_Cart	U_FR	Right Top Front	U-030
AP_00010804 7.1top_(2+5+0) (BS.2051 (C))	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_00010805	BackLeft_Cart	M_BL	Left Surround	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Surround	M-110
	AC_0001080d	TopFrontLeft_Cart	U_FL	Left Top Front	U+030
	AC_0001080f	TopFrontRight_Cart	U_FR	Right Top Front	U-030
AP_00010812 7.1screen_5.1+sc_(0+7+0) (N/A)	AC_00010801	FrontLeft_Cart	M_FL	Front Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Front Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Front Centre	M+000
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_00010805	BackLeft_Cart	M_BL	Left Surround	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Surround	M-110
	AC_00010824	FrontLeftScreen_Cart	M_FLSc	Front Left Screen	M+SC
	AC_00010825	FrontRightScreen_Cart	M_FRSc	Front Right Screen	M-SC

TABLE 2B (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML	
				Channel name in definition document, see first column	Playback system speaker ⁽¹⁾
AP_0001081d 7.0topside_5.0.2_(2+5+0) (N/A without LFE)	AC_00010801	FrontLeft_Cart	M_FL	Front Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Front Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Front Centre	M+000
	AC_00010805	BackLeft_Cart	M_BL	Left Surround	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Surround	M-110
	AC_00010813	TopSideLeft_Cart	U_SL	Top Side Left	U+090
	AC_00010814	TopSideRight_Cart	U_SR	Top Side Right	U-090
AP_00010813 7.1topside_5.1.2_(2+5+0) (N/A)	AC_00010801	FrontLeft_Cart	M_FL	Front Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Front Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Front Centre	M+000
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_00010805	BackLeft_Cart	M_BL	Left Surround	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Surround	M-110
	AC_00010813	TopSideLeft_Cart	U_SL	Top Side Left	U+090
	AC_00010814	TopSideRight_Cart	U_SR	Top Side Right	U-090
AP_00010820 Auro-3D_8.0_(4+4+0) (N/A)	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010805	BackLeft_Cart	M_BL	Left Surround	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Surround	M-110
	AC_0001080d	TopFrontLeft_Cart	U_FL	Height Left	U+030
	AC_0001080f	TopFrontRight_Cart	U_FR	Height Right	U-030
	AC_00010810	TopBackLeft_Cart	U_BL	Height Left Surround	U+110
	AC_00010812	TopBackRight_Cart	U_BR	Height Right Surround	U-110
AP_00010814 9.1screen_5.1.2+sc_(2+7+0) (N/A)	AC_00010801	FrontLeft_Cart	M_FL	Front Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Front Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Front Centre	M+000
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_00010805	BackLeft_Cart	M_BL	Left Surround	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Surround	M-110
	AC_00010813	TopSideLeft_Cart	U_SL	Top Side Left	U+090
	AC_00010814	TopSideRight_Cart	U_SR	Top Side Right	U-090
	AC_00010824	FrontLeftScreen_Cart	M_FLSc	Front Left Screen	M+SC
	AC_00010825	FrontRightScreen_Cart	M_FRSc	Front Right Screen	M-SC
AP_00010816 9.1topside_7.1.2_(2+7+0) (N/A)	AC_00010801	FrontLeft_Cart	M_FL	Front Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Front Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Front Centre	M+000

TABLE 2B (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML	
				Channel name in definition document, see first column	Playback system speaker ⁽¹⁾
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_0001080a	SideLeft_Cart	M_SL	Left Side Surround	M+090
	AC_0001080b	SideRight_Cart	M_SR	Right Side Surround	M-090
	AC_00010805	BackLeft_Cart	M_BL	Back Left	M+135
	AC_00010806	BackRight_Cart	M_BR	Back Right	M-135
	AC_00010813	TopSideLeft_Cart	U_SL	Top Side Left	U+090
	AC_00010814	TopSideRight_Cart	U_SR	Top Side Right	U-090
AP_0001081e 9.0_5.0.4_(4+5+0) (BS.2051 (D) without LFE)	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010805	BackLeft_Cart	M_BL	Left Surround	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Surround	M-110
	AC_0001080d	TopFrontLeft_Cart	U_FL	Left Top Front	U+030
	AC_0001080f	TopFrontRight_Cart	U_FR	Right Top Front	U-030
	AC_00010810	TopBackLeft_Cart	U_BL	Left Top Rear	U+110
	AC_00010812	TopBackRight_Cart	U_BR	Right Top Rear	U-110
AP_00010805 9.1_5.1.4_(4+5+0) (BS.2051 (D))	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_00010805	BackLeft_Cart	M_BL	Left Surround	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Surround	M-110
	AC_0001080d	TopFrontLeft_Cart	U_FL	Left Top Front	U+030
	AC_0001080f	TopFrontRight_Cart	U_FR	Right Top Front	U-030
	AC_00010810	TopBackLeft_Cart	U_BL	Left Top Rear	U+110
AP_00010806 10.1_(4+5+1) (BS.2051 (E))	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_00010805	BackLeft_Cart	M_BL	Left Surround	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Surround	M-110
	AC_0001080d	TopFrontLeft_Cart	U_FL	Left Top Front	U+030
	AC_0001080f	TopFrontRight_Cart	U_FR	Right Top Front	U-030
	AC_00010810	TopBackLeft_Cart	U_BL	Left Top Rear	U+110
	AC_00010812	TopBackRight_Cart	U_BR	Right Top Rear	U-110

TABLE 2B (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML	
				Channel name in definition document, see first column	Playback system speaker ⁽¹⁾
	AC_00010815	BottomFrontCentre_Cart	B_FC	Centre Bottom Front	B+000
AP_00010821 Auro-3D_10.1_ (5+5+0) (N/A)	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_00010805	BackLeft_Cart	M_BL	Left Surround	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Surround	M-110
	AC_0001080d	TopFrontLeft_Cart	U_FL	Height Left	U+030
	AC_0001080f	TopFrontRight_Cart	U_FR	Height Right	U-030
	AC_00010810	TopBackLeft_Cart	U_BL	Height Left Surround	U+110
	AC_00010812	TopBackRight_Cart	U_BR	Height Right Surround	U-110
	AC_0001080c	TopCentre_Cart	U_TC	Top	T+000
AP_00010807 10.2_ (3+7+0) (BS.2051 (F))	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_0001080d	TopFrontLeft_Cart	U_FL	Left Height	U+045
	AC_0001080f	TopFrontRight_Cart	U_FR	Right Height	U-045
	AC_0001080a	SideLeft_Cart	M_SL	Left Side	M+090
	AC_0001080b	SideRight_Cart	M_SR	Right Side	M-090
	AC_00010805	BackLeft_Cart	M_BL	Left Back	M+135
	AC_00010806	BackRight_Cart	M_BR	Right Back	M-135
	AC_00010828	TopBackCentreFar_Cart	U_BC67	Centre Height	UH+180
	AC_00010820	LowFrequencyEffects1_Cart	LFE1	LowFrequencyEffects-1	LFE1
	AC_00010821	LowFrequencyEffects2_Cart	LFE2	LowFrequencyEffects-2	LFE2
AP_00010815 11.1screen_5.1.4+sc_ (4+7+0) (N/A)	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_00010805	BackLeft_Cart	M_BL	Left Surround	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Surround	M-110
	AC_0001080d	TopFrontLeft_Cart	U_FL	Top Front Left	U+030
	AC_0001080f	TopFrontRight_Cart	U_FR	Top Front Right	U-030
	AC_00010810	TopBackLeft_Cart	U_BL	Top Surround Left	U+110
	AC_00010812	TopBackRight_Cart	U_BR	Top Surround Right	U-110

TABLE 2B (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML	
				Channel name in definition document, see first column	Playback system speaker ⁽¹⁾
	AC_00010824	FrontLeftScreen_Cart	M_FLSc	Front Left Screen	M+SC
	AC_00010825	FrontRightScreen_Cart	M_FRSc	Front Right Screen	M-SC
AP_0001081f 11.0_7.0.4_(4+7+0) (BS.2051 (J) without LFE)	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_0001080a	SideLeft_Cart	M_SL	Left Side Surround	M+090
	AC_0001080b	SideRight_Cart	M_SR	Right Side Surround	M-090
	AC_00010805	BackLeft_Cart	M_BL	Left Rear Surround	M+135
	AC_00010806	BackRight_Cart	M_BR	Right Rear Surround	M-135
	AC_0001080d	TopFrontLeft_Cart	U_FL	Left Top Front	U+045
	AC_0001080f	TopFrontRight_Cart	U_FR	Right Top Front	U-045
	AC_00010810	TopBackLeft_Cart	U_BL	Left Top Back	U+135
	AC_00010812	TopBackRight_Cart	U_BR	Right Top Back	U-135
AP_00010817 11.1_7.1.4_(4+7+0) (BS.2051 (J))	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_0001080a	SideLeft_Cart	M_SL	Left Side Surround	M+090
	AC_0001080b	SideRight_Cart	M_SR	Right Side Surround	M-090
	AC_00010805	BackLeft_Cart	M_BL	Left Rear Surround	M+135
	AC_00010806	BackRight_Cart	M_BR	Right Rear Surround	M-135
	AC_0001080d	TopFrontLeft_Cart	U_FL	Left Top Front	U+045
	AC_0001080f	TopFrontRight_Cart	U_FR	Right Top Front	U-045
	AC_00010810	TopBackLeft_Cart	U_BL	Left Top Back	U+135
	AC_00010812	TopBackRight_Cart	U_BR	Right Top Back	U-135
AP_00010822 Auro-3D_11.1_(6+5+0) (N/A)	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_00010805	BackLeft_Cart	M_BL	Left Surround	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Surround	M-110
	AC_0001080d	TopFrontLeft_Cart	U_FL	Height Left	U+030
	AC_0001080f	TopFrontRight_Cart	U_FR	Height Right	U-030
	AC_00010810	TopBackLeft_Cart	U_BL	Height Left Surround	U+110

TABLE 2B (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML	
				Channel name in definition document, see first column	Playback system speaker ⁽¹⁾
	AC_00010812	TopBackRight_Cart	U_BR	Height Right Surround	U-110
	AC_0001080c	TopCentre_Cart	U_TC	Top	T+000
	AC_0001080e	TopFrontCentre_Cart	U_FC	Height Centre	U+000
AP_00010823 Auro-3D_11.1_(4+7+0) (N/A)	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_00010805	BackLeft_Cart	M_BL	Left Surround	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Surround	M-110
	AC_00010829	BackLeftCentreMid_Cart	M_BL50	Left Back	M+150
	AC_0001082a	BackRightCentreMid_Cart	M_BR50	Right Back	M-150
	AC_0001080d	TopFrontLeft_Cart	U_FL	Height Left	U+030
	AC_0001080f	TopFrontRight_Cart	U_FR	Height Right	U-030
	AC_00010810	TopBackLeft_Cart	U_BL	Height Left Surround	U+110
	AC_00010812	TopBackRight_Cart	U_BR	Height Right Surround	U-110
AP_00010825 360RA_13.0_(5+5+3) (N/A)	AC_00010803	FrontCentre_Cart	M_FC	Front Centre	M+000
	AC_00010801	FrontLeft_Cart	M_FL	Front Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Front Right	M-030
	AC_00010805	BackLeft_Cart	M_BL	Left Rear	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Rear	M-110
	AC_0001080e	TopFrontCentre_Cart	U_FC	Upper Centre	U+000
	AC_0001080d	TopFrontLeft_Cart	U_FL	Upper Left	U+030
	AC_0001080f	TopFrontRight_Cart	U_FR	Upper Right	U-030
	AC_00010810	TopBackLeft_Cart	U_BL	Upper Left Rear	U+110
	AC_00010812	TopBackRight_Cart	U_BR	Upper Right Rear	U-110
	AC_00010815	BottomFrontCentre_Cart	B_FC	Lower Centre	B+000
	AC_00010816	BottomFrontLeft_Cart	B_FL	Lower Left	B+030
	AC_00010817	BottomFrontRight_Cart	B_FR	Lower Right	B-030
AP_00010808 13.1screen_7.1.4+sc_(4+9+0) (BS.2051 (G))	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_0001080a	SideLeft_Cart	M_SL	Left Side Surround	M+090
	AC_0001080b	SideRight_Cart	M_SR	Right Side Surround	M-090
	AC_00010805	BackLeft_Cart	M_BL	Left Rear Surround	M+135

TABLE 2B (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML	
				Channel name in definition document, see first column	Playback system speaker ⁽¹⁾
	AC_00010806	BackRight_Cart	M_BR	Right Rear Surround	M-135
	AC_0001080d	TopFrontLeft_Cart	U_FL	Left Top Front	U+045
	AC_0001080f	TopFrontRight_Cart	U_FR	Right Top Front	U-045
	AC_00010810	TopBackLeft_Cart	U_BL	Left Top Back	U+135
	AC_00010812	TopBackRight_Cart	U_BR	Right Top Back	U-135
	AC_00010824	FrontLeftScreen_Cart	M_FLSc	Left Screen	M+SC
	AC_00010825	FrontRightScreen_Cart	M_FRSc	Right Screen	M-SC
AP_00010818 13.1_9.1.4_(4+9+0) (N/A)	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_0001080a	SideLeft_Cart	M_SL	Left Side Surround	M+090
	AC_0001080b	SideRight_Cart	M_SR	Right Side Surround	M-090
	AC_00010805	BackLeft_Cart	M_BL	Left Rear Surround	M+135
	AC_00010806	BackRight_Cart	M_BR	Right Rear Surround	M-135
	AC_00010818	FrontSideLeftFar_Cart	M_FSL67	Left Wide	M+060
	AC_00010819	FrontSideRightFar_Cart	M_FSR67	Right Wide	M-060
	AC_0001080d	TopFrontLeft_Cart	U_FL	Left Top Front	U+045
	AC_0001080f	TopFrontRight_Cart	U_FR	Right Top Front	U-045
	AC_00010810	TopBackLeft_Cart	U_BL	Left Top Back	U+135
	AC_00010812	TopBackRight_Cart	U_BR	Right Top Back	U-135
AP_00010824 Auro-3D_13.1_(6+7+0) (N/A)	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_00010805	BackLeft_Cart	M_BL	Left Surround	M+110
	AC_00010806	BackRight_Cart	M_BR	Right Surround	M-110
	AC_00010829	BackLeftCentreMid_Cart	M_BL50	Left Back	M+150
	AC_0001082a	BackRightCentreMid_Cart	M_BR50	Right Back	M-150
	AC_0001080d	TopFrontLeft_Cart	U_FL	Height Left	U+030
	AC_0001080f	TopFrontRight_Cart	U_FR	Height Right	U-030
	AC_00010810	TopBackLeft_Cart	U_BL	Height Left Surround	U+110
	AC_00010812	TopBackRight_Cart	U_BR	Height Right Surround	U-110
	AC_0001080c	TopCentre_Cart	U_TC	Top	T+000
	AC_0001080e	TopFrontCentre_Cart	U_FC	Height Centre	U+000

TABLE 2B (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML	
				Channel name in definition document, see first column	Playback system speaker ⁽¹⁾
AP_00010819 15.1_9.1.6_(6+9+0) (N/A)	AC_00010801	FrontLeft_Cart	M_FL	Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Right	M-030
	AC_00010803	FrontCentre_Cart	M_FC	Centre	M+000
	AC_00010804	LowFrequencyEffects_Cart	LFE	Low Frequency Effects	LFE
	AC_0001080a	SideLeft_Cart	M_SL	Left Side Surround	M+090
	AC_0001080b	SideRight_Cart	M_SR	Right Side Surround	M-090
	AC_00010805	BackLeft_Cart	M_BL	Left Rear Surround	M+135
	AC_00010806	BackRight_Cart	M_BR	Right Rear Surround	M-135
	AC_00010818	FrontSideLeftFar_Cart	M_FSL67	Left Wide	M+060
	AC_00010819	FrontSideRightFar_Cart	M_FSR67	Right Wide	M-060
	AC_0001080d	TopFrontLeft_Cart	U_FL	Left Top Front	U+045
	AC_0001080f	TopFrontRight_Cart	U_FR	Right Top Front	U-045
	AC_00010813	TopSideLeft_Cart	U_SL	Top Side Left	U+090
	AC_00010814	TopSideRight_Cart	U_SR	Top Side Right	U-090
	AC_00010810	TopBackLeft_Cart	U_BL	Left Top Back	U+135
	AC_00010812	TopBackRight_Cart	U_BR	Right Top Back	U-135
AP_00010810 22.0_(9+10+3) (BS.2051 (H) without LFE)	AC_00010801	FrontLeft_Cart	M_FL	Front Left	M+060
	AC_00010802	FrontRight_Cart	M_FR	Front Right	M-060
	AC_00010803	FrontCentre_Cart	M_FC	Front Centre	M+000
	AC_00010805	BackLeft_Cart	M_BL	Back Left	M+135
	AC_00010806	BackRight_Cart	M_BR	Back Right	M-135
	AC_00010807	FrontLeftCentreMid_Cart	M_FL50	Front Left Centre	M+030
	AC_00010808	FrontRightCentreMid_Cart	M_FR50	Front Right Centre	M-030
	AC_00010809	BackCentre_Cart	M_BC	Back Centre	M+180
	AC_0001080a	SideLeft_Cart	M_SL	Side Left	M+090
	AC_0001080b	SideRight_Cart	M_SR	Side Right	M-090
	AC_0001080d	TopFrontLeft_Cart	U_FL	Top Front Left	U+045
	AC_0001080f	TopFrontRight_Cart	U_FR	Top Front Right	U-045
	AC_0001080e	TopFrontCentre_Cart	U_FC	Top Front Centre	U+000
	AC_0001080c	TopCentre_Cart	U_TC	Top Centre	T+000
	AC_00010810	TopBackLeft_Cart	U_BL	Top Back Left	U+135
	AC_00010812	TopBackRight_Cart	U_BR	Top Back Right	U-135
	AC_00010813	TopSideLeft_Cart	U_SL	Top Side Left	U+090
	AC_00010814	TopSideRight_Cart	U_SR	Top Side Right	U-090
	AC_00010811	TopBackCentre_Cart	U_BC	Top Back Centre	U+180
	AC_00010815	BottomFrontCentre_Cart	B_FC	Bottom Front Centre	B+000
	AC_00010816	BottomFrontLeft_Cart	B_FL	Bottom Front Left	B+045

TABLE 2B (continued)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFo rmatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML	
				Channel name in definition document, see first column	Playback system speaker ⁽¹⁾
	AC_00010817	BottomFrontRight_Cart	B_FR	Bottom Front Right	B-045
AP_00010809 22.2_(9+10+3) (BS.2051 (H))	AC_00010801	FrontLeft_Cart	M_FL	Front Left	M+060
	AC_00010802	FrontRight_Cart	M_FR	Front Right	M-060
	AC_00010803	FrontCentre_Cart	M_FC	Front Centre	M+000
	AC_00010820	LowFrequencyEffects1_Cart	LFE1	LowFrequencyEffe cts-1	LFE1
	AC_00010805	BackLeft_Cart	M_BL	Back Left	M+135
	AC_00010806	BackRight_Cart	M_BR	Back Right	M-135
	AC_00010807	FrontLeftCentreMid_Cart	M_FL50	Front Left Centre	M+030
	AC_00010808	FrontRightCentreMid_Cart	M_FR50	Front Right Centre	M-030
	AC_00010809	BackCentre_Cart	M_BC	Back Centre	M+180
	AC_00010821	LowFrequencyEffects2_Cart	LFE2	LowFrequencyEffe cts-2	LFE2
	AC_0001080a	SideLeft_Cart	M_SL	Side Left	M+090
	AC_0001080b	SideRight_Cart	M_SR	Side Right	M-090
	AC_0001080d	TopFrontLeft_Cart	U_FL	Top Front Left	U+045
	AC_0001080f	TopFrontRight_Cart	U_FR	Top Front Right	U-045
	AC_0001080e	TopFrontCentre_Cart	U_FC	Top Front Centre	U+000
	AC_0001080c	TopCentre_Cart	U_TC	Top Centre	T+000
	AC_00010810	TopBackLeft_Cart	U_BL	Top Back Left	U+135
	AC_00010812	TopBackRight_Cart	U_BR	Top Back Right	U-135
	AC_00010813	TopSideLeft_Cart	U_SL	Top Side Left	U+090
	AC_00010814	TopSideRight_Cart	U_SR	Top Side Right	U-090
	AC_00010811	TopBackCentre_Cart	U_BC	Top Back Centre	U+180
	AC_00010815	BottomFrontCentre_Cart	B_FC	Bottom Front Centre	B+000
	AC_00010816	BottomFrontLeft_Cart	B_FL	Bottom Front Left	B+045
	AC_00010817	BottomFrontRight_Cart	B_FR	Bottom Front Right	B-045
AP_0001081a 22.2-3front_(9+10+3) (N/A)	AC_00010818	FrontSideLeftFar_Cart	M_FSL67	Left Wide	M+060
	AC_00010819	FrontSideRightFar_Cart	M_FSR67	Right Wide	M-060
	AC_00010803	FrontCentre_Cart	M_FC	Front Centre	M+000
	AC_00010820	LowFrequencyEffects1_Cart	LFE1	LowFrequencyEffe cts-1	LFE1
	AC_00010805	BackLeft_Cart	M_BL	Back Left	M+135
	AC_00010806	BackRight_Cart	M_BR	Back Right	M-135
	AC_00010801	FrontLeft_Cart	M_FL	Front Left	M+030
	AC_00010802	FrontRight_Cart	M_FR	Front Right	M-030
	AC_00010809	BackCentre_Cart	M_BC	Back Centre	M+180
	AC_00010821	LowFrequencyEffects2_Cart	LFE2	LowFrequencyEffe cts-2	LFE2
	AC_0001080a	SideLeft_Cart	M_SL	Side Left	M+090

TABLE 2B (end)

audioPackFormatID audioPackFormatName (Defined in Document)	audioChannelFormatIDRef	audioChannelFormatName	speakerLabel	Informal, not contained in BS.2094 XML	
				Channel name in definition document, see first column	Playback system speaker ⁽¹⁾
	AC_0001080b	SideRight_Cart	M_SR	Side Right	M-090
	AC_0001080d	TopFrontLeft_Cart	U_FL	Top Front Left	U+045
	AC_0001080f	TopFrontRight_Cart	U_FR	Top Front Right	U-045
	AC_0001080e	TopFrontCentre_Cart	U_FC	Top Front Centre	U+000
	AC_0001080c	TopCentre_Cart	U_TC	Top Centre	T+000
	AC_00010810	TopBackLeft_Cart	U_BL	Top Back Left	U+135
	AC_00010812	TopBackRight_Cart	U_BR	Top Back Right	U-135
	AC_00010813	TopSideLeft_Cart	U_SL	Top Side Left	U+090
	AC_00010814	TopSideRight_Cart	U_SR	Top Side Right	U-090
	AC_00010811	TopBackCentre_Cart	U_BC	Top Back Centre	U+180
	AC_00010815	BottomFrontCentre_Cart	B_FC	Bottom Front Centre	B+000
	AC_00010816	BottomFrontLeft_Cart	B_FL	Bottom Front Left	B+045
	AC_00010817	BottomFrontRight_Cart	B_FR	Bottom Front Right	B-045

⁽¹⁾ The playback system speaker specified in this column is only relevant when the loudspeaker configuration of the playback system matches the audioPackFormat specified.

To show how an audioPackDefinition is represented in XML the following code shows the stereo pack definition.

```
<audioPackFormat audioPackFormatID="AP_00010002"
audioPackFormatName="urn:itu:bs:2051:0:pack:stereo_(0+2+0)" typeLabel="0001"
typeDefinition="DirectSpeakers">
  <audioChannelFormatIDRef>AC_00010001</audioChannelFormatIDRef>
  <audioChannelFormatIDRef>AC_00010002</audioChannelFormatIDRef>
</audioPackFormat>
```

4.2 Common definitions for the ‘Matrix’ audio type

Currently, there are no common definitions for the ‘Matrix’ audio type. However, in future revisions relevant information may be added to this section for common matrix configurations used.

4.3 Common definitions for the ‘Objects’ audio type

Currently, there are no common definitions for the ‘Objects’ audio type. However, in future revisions relevant information may be added to this section.

4.4 Common definitions for the ‘HOA’ audio type

4.4.1 Common audioChannelFormats for ‘HOA’

TABLE 3
AudioChannelFormat definitions for 'HOA'

audioChannelFormatID	audioChannelFormatName	Order	Degree	Normalization
AC_00040001	SN3D_ACN_0	0	0	SN3D
AC_00040002	SN3D_ACN_1	1	−1	SN3D
AC_00040003	SN3D_ACN_2	1	0	SN3D
AC_00040004	SN3D_ACN_3	1	1	SN3D
AC_00040005	SN3D_ACN_4	2	−2	SN3D
AC_00040006	SN3D_ACN_5	2	−1	SN3D
...	...	...	...	...
AC_00040079	SN3D_ACN_120	10	10	SN3D
AC_00040101	N3D_ACN_0	0	0	N3D
AC_00040102	N3D_ACN_1	1	−1	N3D
AC_00040103	N3D_ACN_2	1	0	N3D
AC_00040104	N3D_ACN_3	1	1	N3D
AC_00040105	N3D_ACN_4	2	−2	N3D
AC_00040106	N3D_ACN_5	2	−1	N3D
...	...	...	...	...
AC_00040179	N3D_ACN_120	10	10	N3D
AC_00040201	FuMa_W	0	0	FuMa
AC_00040202	FuMa_X	1	1	FuMa
AC_00040203	FuMa_Y	1	−1	FuMa
AC_00040204	FuMa_Z	1	0	FuMa
AC_00040205	FuMa_R	2	0	FuMa
AC_00040206	FuMa_S	2	1	FuMa
AC_00040207	FuMa_T	2	−1	FuMa
AC_00040208	FuMa_U	2	2	FuMa
AC_00040209	FuMa_V	2	−2	FuMa
AC_0004020a	FuMa_K	3	0	FuMa
AC_0004020b	FuMa_L	3	1	FuMa
AC_0004020c	FuMa_M	3	−1	FuMa
AC_0004020d	FuMa_N	3	2	FuMa
AC_0004020e	FuMa_O	3	−2	FuMa
AC_0004020f	FuMa_P	3	3	FuMa
AC_00040210	FuMa_Q	3	−3	FuMa

Each channel definition is listed in Table 3, where the audioChannelFormatID, and audioChannelFormatName elements are listed. The order, degree, and normalization columns represent the settings that would be specified within the audioBlockFormat sub-elements. The XML below shows how the first entry in this table is represented in XML.

```
<audioChannelFormat      audioChannelFormatID="AC_00040001"      audioChannelFormatName="SN3D_ACN_0"
typeLabel="0004" typeDefinition="HOA">
  <audioBlockFormat audioBlockFormatID="AB_00040001_00000001">
    <normalization>SN3D</normalization>
    <order>0</order>
    <degree>0</degree>
  </audioBlockFormat>
</audioChannelFormat>
```

4.4.2 Common audioPackFormats for ‘HOA’

The audioPackFormat definitions cover HOA configurations where all channels have the same normalization scheme and a complete series of channels up to a given order. Table 4 shows the set of configurations that have been defined.

As audioPackFormats can be nested, this allows the higher order packs to contain the lower order pack it contains plus the higher order channels. This reduces the size of each pack, and allows for flexibility in systems where different orders may require different processing.

The audioPackFormat names consist of the order, normalization and type. Spaces are not used in the names as they can cause problems.

audioPackFormatID scheme:

for type 0-1: AP_00040<type><normalization><order>

for type 2-3: AP_00040<type><normalization><order combination>

TABLE 4
HOA type values

<type>	Value
0	3D / periphonic
1	2D / pantophonic / horizontal-only
2	pantophonic and periphonic superimposed (#H#P)
3	Complete mixed-order sets (#H#V)

TABLE 5
HOA normalization values

<normalization>	Value
0	SN3D
1	N3D
2	FuMa

TABLE 6
HOA order combination values

<type>	<order combination>	Value
2	0	2H1P
2	1	3H1P
3	0	2H1V

TABLE 7
AudioPackFormat definitions

audioPackFormatID audioPackFormatName	audioChannelIDRef	audioChannelName	Order	Degree	Norm.
AP_00040001 3D_order1_SN3D_ACN	AC_00040001	SN3D_ACN_0	0	0	SN3D
	AC_00040002	SN3D_ACN_1	1	−1	SN3D
	AC_00040003	SN3D_ACN_2	1	0	SN3D
	AC_00040004	SN3D_ACN_3	1	1	SN3D
AP_00040011 3D_order1_N3D_ACN	AC_00040101	N3D_ACN_0	0	0	N3D
	AC_00040102	N3D_ACN_1	1	−1	N3D
	AC_00040103	N3D_ACN_2	1	0	N3D
	AC_00040104	N3D_ACN_3	1	1	N3D
AP_00040021 3D_order1_FuMa	AC_00040201	FuMa_W	0	0	FuMa
	AC_00040202	FuMa_X	1	1	FuMa
	AC_00040203	FuMa_Y	1	−1	FuMa
	AC_00040204	FuMa_Z	1	0	FuMa
AP_00040002 3D_order2_SN3D_ACN	audioPackFormatIDRef: AP_00040001				
	AC_00040005	SN3D_ACN_4	2	−2	SN3D
	AC_00040006	SN3D_ACN_5	2	−1	SN3D
	AC_00040007	SN3D_ACN_6	2	0	SN3D
	AC_00040008	SN3D_ACN_7	2	1	SN3D
	AC_00040009	SN3D_ACN_8	2	2	SN3D
AP_00040012 3D_order2_N3D_ACN	audioPackFormatIDRef: AP_00040011				
	AC_00041005	N3D_ACN_4	2	−2	N3D
	AC_00041006	N3D_ACN_5	2	−1	N3D
	AC_00041007	N3D_ACN_6	2	0	N3D
	AC_00041008	N3D_ACN_7	2	1	N3D
	AC_00041009	N3D_ACN_8	2	2	N3D
AP_00040022 3D_order2_FuMa	audioPackFormatIDRef: AP_00040021				
	AC_00040205	FuMa_R	2	0	FuMa
	AC_00040206	FuMa_S	2	1	FuMa
	AC_00040207	FuMa_T	2	−1	FuMa
	AC_00040208	FuMa_U	2	2	FuMa
	AC_00040209	FuMa_V	2	−2	FuMa
AP_00040003 3D_order3_SN3D_ACN	audioPackFormatIDRef: AP_00040002				
	AC_0004000a	SN3D_ACN_9	3	−3	SN3D
	AC_0004000b	SN3D_ACN_10	3	−2	SN3D

TABLE 7 (continued)

audioPackFormatID audioPackFormatName	audioChannelIDRef	audioChannelName	Order	Degree	Norm.
	AC_0004000c	SN3D_ACN_11	3	−1	SN3D
	AC_0004000d	SN3D_ACN_12	3	0	SN3D
	AC_0004000e	SN3D_ACN_13	3	1	SN3D
	AC_0004000f	SN3D_ACN_14	3	2	SN3D
	AC_00040010	SN3D_ACN_15	3	3	SN3D
AP_00040013 3D_order3_N3D_ACN	audioPackFormatIDRef: AP_00040012				
	AC_0004010a	N3D_ACN_9	3	−3	N3D
	AC_0004010b	N3D_ACN_10	3	−2	N3D
	AC_0004010c	N3D_ACN_11	3	−1	N3D
	AC_0004010d	N3D_ACN_12	3	0	N3D
	AC_0004010e	N3D_ACN_13	3	1	N3D
	AC_0004010f	N3D_ACN_14	3	2	N3D
	AC_00040110	N3D_ACN_15	3	3	N3D
AP_00040023 3D_order3_FuMa	audioPackFormatIDRef: AP_00040022				
	AC_0004020a	FuMa_K	3	0	FuMa
	AC_0004020b	FuMa_L	3	1	FuMa
	AC_0004020c	FuMa_M	3	−1	FuMa
	AC_0004020d	FuMa_N	3	2	FuMa
	AC_0004020e	FuMa_O	3	−2	FuMa
	AC_0004020f	FuMa_P	3	3	FuMa
	AC_00040210	FuMa_Q	3	−3	FuMa
AP_00040004 3D_order4_SN3D_ACN	audioPackFormatIDRef: AP_00040003				
	AC_00040011	SN3D_ACN_16	4	−4	SN3D
	AC_00040012	SN3D_ACN_17	4	−3	SN3D
	AC_00040013	SN3D_ACN_18	4	−2	SN3D
	AC_00040014	SN3D_ACN_19	4	−1	SN3D
	AC_00040015	SN3D_ACN_20	4	0	SN3D
	AC_00040016	SN3D_ACN_21	4	1	SN3D
	AC_00040017	SN3D_ACN_22	4	2	SN3D
	AC_00040018	SN3D_ACN_23	4	3	SN3D
	AC_00040019	SN3D_ACN_24	4	4	SN3D
AP_00040014 3D_order4_N3D_ACN	audioPackFormatIDRef: AP_00040013				
	AC_00040111	N3D_ACN_16	4	−4	N3D
	AC_00040112	N3D_ACN_17	4	−3	N3D
	AC_00040113	N3D_ACN_18	4	−2	N3D
	AC_00040114	N3D_ACN_19	4	−1	N3D
	AC_00040115	N3D_ACN_20	4	0	N3D
	AC_00040116	N3D_ACN_21	4	1	N3D
	AC_00040117	N3D_ACN_22	4	2	N3D
	AC_00040118	N3D_ACN_23	4	3	N3D
	AC_00040119	N3D_ACN_24	4	4	N3D

TABLE 7 (continued)

audioPackFormatID audioPackFormatName	audioChannelIDRef	audioChannelName	Order	Degree	Norm.
AP_00040005 3D_order5_SN3D _ACN	audioPackFormatIDRef: AP_00040004				
	AC_0004001a	SN3D_ACN_25	5	−5	SN3D
	AC_0004001b	SN3D_ACN_26	5	−4	SN3D
	AC_0004001c	SN3D_ACN_27	5	−3	SN3D
	AC_0004001d	SN3D_ACN_28	5	−2	SN3D
	AC_0004001e	SN3D_ACN_29	5	−1	SN3D
	AC_0004001f	SN3D_ACN_30	5	0	SN3D
	AC_00040020	SN3D_ACN_31	5	1	SN3D
	AC_00040021	SN3D_ACN_32	5	2	SN3D
	AC_00040022	SN3D_ACN_33	5	3	SN3D
	AC_00040023	SN3D_ACN_34	5	4	SN3D
	AC_00040024	SN3D_ACN_35	5	5	SN3D
AP_00040015 3D_order5_N3D _ACN	audioPackFormatIDRef: AP_00040014				
	AC_0004011a	N3D_ACN_25	5	−5	N3D
	AC_0004011b	N3D_ACN_26	5	−4	N3D
	AC_0004011c	N3D_ACN_27	5	−3	N3D
	AC_0004011d	N3D_ACN_28	5	−2	N3D
	AC_0004011e	N3D_ACN_29	5	−1	N3D
	AC_0004011f	N3D_ACN_30	5	0	N3D
	AC_00040120	N3D_ACN_31	5	1	N3D
	AC_00040121	N3D_ACN_32	5	2	N3D
	AC_00040122	N3D_ACN_33	5	3	N3D
	AC_00040123	N3D_ACN_34	5	4	N3D
	AC_00040124	N3D_ACN_35	5	5	N3D
AP_00040006 3D_order6_SN3D _ACN	audioPackFormatIDRef: AP_00040005				
	AC_00040025	SN3D_ACN_36	6	−6	SN3D
	AC_00040026	SN3D_ACN_37	6	−5	SN3D
	AC_00040027	SN3D_ACN_38	6	−4	SN3D
	AC_00040028	SN3D_ACN_39	6	−3	SN3D
	AC_00040029	SN3D_ACN_40	6	−2	SN3D
	AC_0004003a	SN3D_ACN_41	6	−1	SN3D
	AC_0004003b	SN3D_ACN_42	6	0	SN3D
	AC_0004002c	SN3D_ACN_43	6	1	SN3D
	AC_0004002d	SN3D_ACN_44	6	2	SN3D
	AC_0004002e	SN3D_ACN_45	6	3	SN3D
	AC_0004002f	SN3D_ACN_46	6	4	SN3D
	AC_00040030	SN3D_ACN_47	6	5	SN3D
	AC_00040031	SN3D_ACN_48	6	6	SN3D
AP_00040016 3D_order6_N3D _ACN	audioPackFormatIDRef: AP_00040015				
	AC_00040125	N3D_ACN_36	6	−6	N3D
	AC_00040126	N3D_ACN_37	6	−5	N3D
	AC_00040127	N3D_ACN_38	6	−4	N3D
	AC_00040128	N3D_ACN_39	6	−3	N3D
	AC_00040129	N3D_ACN_40	6	−2	N3D

TABLE 7 (end)

audioPackFormatID audioPackFormatName	audioChannelIDRef	audioChannelName	Order	Degree	Norm.
	AC_0004013a	N3D_ACN_41	6	−1	N3D
	AC_0004013b	N3D_ACN_42	6	0	N3D
	AC_0004013c	N3D_ACN_43	6	1	N3D
	AC_0004013d	N3D_ACN_44	6	2	N3D
	AC_0004013e	N3D_ACN_45	6	3	N3D
	AC_0004013f	N3D_ACN_46	6	4	N3D
	AC_00040140	N3D_ACN_47	6	5	N3D
	AC_00040141	N3D_ACN_48	6	6	N3D
AP_00040111 2D_Order1_N3D_ACN	AC_00040101	N3D_ACN_0	0	0	N3D
	AC_00040102	N3D_ACN_1	1	−1	N3D
	AC_00040104	N3D_ACN_3	1	1	N3D
AP_00040112 2D_Order2_N3D_ACN	audioPackFormatIDRef: AP_00040111				
	AC_00040105	N3D_ACN_4	2	−2	N3D
	AC_00040109	N3D_ACN_8	2	2	N3D
AP_00040210 2H1P_N3D_ACN	audioPackFormatIDRef: AP_00040011				
	AC_00040105	N3D_ACN_4	2	−2	N3D
	AC_00040109	N3D_ACN_8	2	2	N3D
AP_00040211 3H1P_N3D_ACN	audioPackFormatIDRef: AP_00040210				
	AC_0004010a	N3D_ACN_9	3	−3	N3D
	AC_00040110	N3D_ACN_15	3	3	N3D
AP_00040310 2H1V_N3D_ACN	audioPackFormatIDRef: AP_00040011				
	AC_00040105	N3D_ACN_4	2	−2	N3D
	AC_00040106	N3D_ACN_5	2	−1	N3D
	AC_00040108	N3D_ACN_7	2	1	N3D
	AC_00040109	N3D_ACN_8	2	2	N3D

To show how an audioPackDefinition is represented in XML the following code shows the first-order SN3D ACN (AmbiX) pack definition.

```
<audioPackFormat audioPackFormatID="AP_00040001" audioPackFormatName="3D_order1_SN3D_ACN"
typeLabel="0004" typeDefinition="HOA">
  <audioChannelFormatIDRef>AC_00040001</audioChannelFormatIDRef>
  <audioChannelFormatIDRef>AC_00040002</audioChannelFormatIDRef>
  <audioChannelFormatIDRef>AC_00040003</audioChannelFormatIDRef>
  <audioChannelFormatIDRef>AC_00040004</audioChannelFormatIDRef>
</audioPackFormat>
```

4.5 Common definitions for the ‘Binaural’ audio type

Currently, there are no common definitions for the ‘Binaural’ audio type. However, in future revisions relevant information may be added to this section.

4.5.1 Common audioChannelFormats for ‘Binaural’

TABLE 8
AudioChannelFormat definitions for ‘Binaural’

audioChannelFormatID	audioChannelFormatName
AC_00050001	LeftEar
AC_00050002	RightEar

Each channel definition is listed in Table 8, where the audioChannelFormatID, and audioChannelFormatName elements are listed. The XML below shows how the first entry in this table is represented in XML.

```
<audioChannelFormat audioChannelFormatID="AC_00050001" audioChannelFormatName="LeftEar"
typeLabel="0005" typeDefinition="DirectSpeakers">
  <audioBlockFormat audioBlockFormatID="AC_00050001_00000001">
    </audioBlockFormat>
  </audioChannelFormat>
```

4.5.2 Common audioStreamFormats and audioTrackFormats for ‘Binaural’

The common format type for audioStreamFormat and audioTrackFormat is ‘PCM’.

As previously mentioned, the audioStreamFormat and audioTrackFormat, which relate to each audioChannelFormat definition use the same ID prefixes and the same names with ‘PCM_’ appended, such as ‘PCM_LeftEar’. The XML code below shows both the audioStreamFormat and audioTrackFormat definition for the first entry in the table.

```
<audioStreamFormat audioStreamFormatID="AS_00050001" audioStreamFormatName="PCM_LeftEar"
formatLabel="0001" formatDefinition="PCM">
  <audioChannelFormatIDRef>AC_00050001</audioChannelFormatIDRef>
  <audioTrackFormatIDRef>AT_00050001_01</audioTrackFormatIDRef>
</audioStreamFormat>

<audioTrackFormat audioTrackFormatID="AT_00050001_01" audioTrackFormatName="PCM_LeftEar"
formatLabel="0001" formatDefinition="PCM">
  <audioStreamFormatIDRef>AS_00050001</audioStreamFormatIDRef>
</audioTrackFormat>
```

4.5.3 Common audioPackFormats for ‘Binaural’

The audioPackFormat definition covers a single configuration. Table 9 shows the configuration that has been defined. The last column gives the references to each channel the pack consists of. Instead of giving the whole ID (e.g. AP_00010001), only the last two digits are listed for clarity; so they would be AP_000100xx where xx is the digits listed to give the full audioPackFormatIDRef.

TABLE 9
AudioPackFormat definitions

audioPackFormatID audioPackFormatName	audioChannelIDRef	audioChannelName
AP_00050001 Binaural	AC_00050001 AC_00050002	LeftEar RightEar

To show how an audioPackDefinition is represented in XML the following code shows the binaural pack definition.

```
<audioPackFormat audioPackFormatID="AP_00050001" audioPackFormatName="Binaural" typeLabel="0001"
typeDefinition="DirectSpeakers">
  <audioChannelFormatIDRef>AC_00050001</audioChannelFormatIDRef>
  <audioChannelFormatIDRef>AC_00050002</audioChannelFormatIDRef>
</audioPackFormat>
```

4.6 Using URIs

As the set of common definitions may increase in the future, it helps to have a method of provenance for particular elements. In the channel definitions for polar coordinates the speakerLabel elements correspond to those used in Recommendation ITU-R BS.2051, which use the L+aaa style of naming.

The two places that use URIs are the speakerLabel element (within audioBlockFormat) and the audioPackFormatName attribute (part of audioPackFormat). For example, for Recommendation ITU-R BS.2051-0 the URI prefix is given as: *urn:itu:bs:2051:0*. It should be noted that this is not necessarily the most recent edition of Recommendation ITU-R BS.2051. An example of code using the URIs specifying M+030 and stereo is shown below.

```
<speakerLabel>urn:itu:bs:2051:0:speaker:M+030</speakerLabel>
<audioPackFormat audioPackFormatID="AP_00010002"
audioPackFormatName="urn:itu:bs:2051:0:pack:stereo_(0+2+0)" typeLabel="0001"
typeDefinition="DirectSpeakers">
```

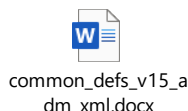
After each *urn* prefix follows a string to classify what is being named (either *speaker* or *pack* in this case), and then this is followed by the actual name.

5 Attachments

This file is a Microsoft Excel spreadsheet containing both the channel definitions and pack definitions:



The following file contains the Common Definitions using the Recommendation ITU-R BS.2076 model in XML. It has been automatically generated from the spreadsheet. Due to the limitations of Word, an XML file cannot be embedded. So this is a Word document containing just the XML as text. To use, open the file, select all, then copy into a plain ASCII text file (using a text editor) and save it as “common_adm_def_v15.xml”.



If there is a difference between the text in this Recommendation and the attached files (XLSX, XML), the text of this Recommendation shall have priority.

Annex 2

(informative)

Overview of changes in this edition (Recommendation ITU-R BS.2094-2)

Modifications are as follows:

- The audio channel labels of Low Frequency Effects -Left and -Right are changed to Low Frequency Effects –1 and –2 respectively in modified Tables 1 and 2.
 - New common definitions of audioChannelFormat for M+/-150 and B+/-030 with polar coordinate system are added in Table 1A.
 - New common definitions of audioPackFormat for the following sound systems with polar coordinate system are added in Table 2A.
 - Six sound systems without LFE used in production (7.0back, 7.0top, 7.0topside, 9.0, 11.0, 22.0).
 - Eight sound systems used in streaming / package media (13.1_9.1.4, 15.1_9.1.6, Auro-3D_8.0 (4+4+0), Auro-3D_10.1 (5+5+0), Auro-3D_11.1 (6+5+0), Auro-3D_11.1 (4+7+0), Auro-3D_13.1 (6+7+0), 360RealityAudio).
 - The common definitions of audioPackFormat for Auro-3D_(9+9+0) and audioChannelFormat for M+/-135_Diff with polar coordinate system are deprecated from modified Tables 2A and 1A.
 - New common definitions of audioChannelFormat and audioPackFormat for Cartesian coordinate system are added in Tables 1B and 2B.
 - Addition of text in § 5 regarding the priority of Recommendation text versus attached XML:
 - "If there is a difference between the text in this Recommendation and the attached files (XLSX, XML), the text of this Recommendation shall have priority."
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