

SMPTE STANDARD

MCA Label Controlled Vocabulary



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Foreword

SMPTE (the Society of Motion Picture and Television Engineers) is an internationally-recognized standards developing organization. Headquartered and incorporated in the United States of America, SMPTE has members in over 80 countries on six continents. SMPTE's Engineering Documents, including Standards, Recommended Practices, and Engineering Guidelines, are prepared by SMPTE's Technology Committees. Participation in these Committees is open to all with a bona fide interest in their work. SMPTE cooperates closely with other standards-developing organizations, including ISO, IEC and ITU.

SMPTE Engineering Documents are drafted in accordance with the rules given in its Standards Operations Manual. This SMPTE Engineering Document was prepared by Technology Committee 31FS.

Intellectual Property

At the time of publication no notice had been received by SMPTE claiming patent rights essential to the implementation of this Engineering Document. However, attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. SMPTE shall not be held responsible for identifying any or all such patent rights.

Introduction

This section is entirely informative and does not form an integral part of this Engineering Document.

Developments in the moving-image production industries have led to increasing use of multichannel audio (herein abbreviated "MCA") schemes, with channel counts in excess of 20. There are some Audio Channels, Soundfield Groups, and Groups of Soundfield Groups in use today that are either not specified in other documents, or have labels that are not standardized. Therefore, it would be advantageous to standardize labels and values based on the SMPTE ST 377-4 framework. These MCA labels are registered with the SMPTE metadata registry, and can be referenced by any application.

SMPTE ST 2098-5:2018, D-Cinema Immersive Audio Channels and Soundfield Groups, is an important precursor to this document. It defines names and abbreviations for Immersive Audio Channels and Immersive Soundfield Groups associated with D-Cinema Immersive Audio presentation in order to promote consistency. It also depicts typical locations for loudspeakers used in Immersive Soundfield Configurations. However, it does not define Universal Labels (herein abbreviated "ULs", or "UL" for singular), and therefore these Immersive Audio Channels and Soundfield Groups have never been entered into the SMPTE Metadata Registers. This document defines ULs for these and other established Channels, Soundfield Groups and Groups of Soundfield Groups.

In order to have a single controlled vocabulary of MCA Label values that can be used by any application, this document is created with the intention of being a general reference source for MCA Label values and does not specify how they are to be used. Furthermore, the existing MCA Label values that have been defined in SMPTE ST 428-12 and ST 2067-8 are included in this controlled vocabulary via normative references, thus forming an overall set of MCA Label values that can be utilized by any application.

1 Scope

This standard creates an MCA Label Controlled Vocabulary of MCA Label values for Channels, Soundfield Groups, and Groups of Soundfield Groups based on the MCA Labeling Framework defined in SMPTE ST 377-4.

All MCA Label values defined in SMPTE ST 428-12 and ST 2067-8 are an integral part of this controlled vocabulary through normative reference.

2 Conformance Notation

Normative text is text that describes elements of the design that are indispensable or contains the conformance language keywords: “shall”, “should”, or “may”. Informative text is text that is potentially helpful to the user, but not indispensable, and can be removed, changed, or added editorially without affecting interoperability. Informative text does not contain any conformance keywords.

All text in this document is, by default, normative, except: the Introduction, any section explicitly labeled as “Informative” or individual paragraphs that start with “Note:”

The keywords “shall” and “shall not” indicate requirements strictly to be followed in order to conform to the document and from which no deviation is permitted.

The keywords, “should” and “should not” indicate that, among several possibilities, one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required; or that (in the negative form) a certain possibility or course of action is deprecated but not prohibited.

The keywords “may” and “need not” indicate courses of action permissible within the limits of the document.

The keyword “reserved” indicates a provision that is not defined at this time, shall not be used, and may be defined in the future. The keyword “forbidden” indicates “reserved” and in addition indicates that the provision will never be defined in the future.

A conformant implementation according to this document is one that includes all mandatory provisions (“shall”) and, if implemented, all recommended provisions (“should”) as described. A conformant implementation need not implement optional provisions (“may”) and need not implement them as described.

Unless otherwise specified, the order of precedence of the types of normative information in this document shall be as follows: Normative prose shall be the authoritative definition; Tables shall be next; followed by formal languages; then figures; and then any other language forms.

3 Normative References

The following standards contain provisions that, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this recommended practice are encouraged to investigate the possibility of applying the most recent edition of the standards indicated below.

SMPTE ST 377-4:2021, MXF Multichannel Audio Labeling Framework

SMPTE ST 428-12:2013, D-Cinema Distribution Master Common Audio Channels and Soundfield Groups

SMPTE ST 2067-8:2013, Interoperable Master Format — Common Audio Labels

SMPTE ST 2098-5:2018, D-Cinema Immersive Audio Channels and Soundfield Groups

4 Terms and Definitions

For the purposes of this document, the terms and definitions given in SMPTE ST 377-4, SMPTE ST 2098-5 and the following additions and modifications apply.

4.1. Audio Data Channel

Audio Channel carrying data that is intended to control a device that will process audio

Note 1 to entry: This data is not intended to be played out of a sound reproducing device such as a loudspeaker or headphone.

4.2. Bottom Layer

layer of Loudspeakers placed on the walls, below the Base Layer

4.3. Soundfield Group (SG)

collection of Audio Channels meant to be played out simultaneously through a given Soundfield Configuration that can include Audio Data Channels to control the playout

5 UL Structure

The SMPTE ULs for Audio Channels, Soundfield Groups, and Groups of Soundfield Groups defined by this document shall conform to the structure defined in Table 1.

Table 1 – UL Structure used in this document.

Byte No.	Description	Value (hex)	Meaning
1	Object Identifier	06h	
2	Label side	0Eh	
3	Designator	2Bh	ISO, ORG
4	Designator	34h	SMPTE
5	Registry Category Designator	04h	Labels
6	Registry Designator	01h	Labels Registry
7	Structure Designator	01h	Labels Structure
8	Version Number	VVh	Current Version Byte for the Labels Registry Version at the point of registration of this UL
9	Item Designator	03h	Interpretive
10	Essence Kind	02h	Sound Essence
11	Essence Facet	01h / 02h / 03h	Audio Channel / Soundfield / Group of SG
12	Scope Designator	30h	Value from ST 377-42
13	Start value	01h	
14	Enumeration value	NNh	
15	Reserved	00h	
16	Reserved	00h	

6 Audio Channels

Table 2 and Table 3 define the MCA Tag Name, Symbol and UL values for Audio Channels in the MCA Label Controlled Vocabulary, which shall be used to label Audio Channels. The entries in Table 2 and Table 3, in addition to the labels for Audio Channels defined in SMPTE ST 428-12 and ST 2067-8, are part of the MCA Label Controlled Vocabulary.

NOTE: The Symbol value in Table 2 is a constituent of the MCA Tag Symbol value. See individual applications for further details, e.g., SMPTE ST 429-2 and ST 2067-2.

Table 2 – MCA Tag Names, Symbols and Descriptions for Audio Channel Labels

MCA Tag Name	Symbol	Description
Left Height Channel	Lh	Intended to drive the Left Height Loudspeaker.
Right Height	Rh	Intended to drive the Right Height Loudspeaker.
Center Height	Ch	Intended to drive the Center Height Loudspeaker.
Left Surround Height	Lsh	Intended to drive the Left Surround Height Loudspeaker(s).
Right Surround Height	Rsh	Intended to drive the Right Surround Height Loudspeaker(s).
Left Side Surround Height	Lssh	Intended to drive the Left Side Surround Height Loudspeaker(s).
Right Side Surround Height	Rssh	Intended to drive the Right Side Surround Height Loudspeaker(s).
Left Rear Surround Height	Lrsh	Intended to drive the Left Rear Surround Height Loudspeaker(s).
Right Rear Surround Height	Rrsh	Intended to drive the Right Rear Surround Height Loudspeaker(s).
Left Top Surround	Lts	Intended to drive the Left Top Surround Loudspeaker(s).
Right Top Surround	Rts	Intended to drive the Right Top Surround Loudspeaker(s).
Top Surround	Ts	Intended to drive the Top Surround Loudspeaker(s).
Left Wide	Lw	Intended to drive the Left Wide Loudspeaker.
Right Wide	Rw	Intended to drive the Right Wide Loudspeaker.
Left Top Front Surround	Ltfs, Lts*	Intended to drive the Left Top Front Surround Loudspeaker.
Right Top Front Surround	Rtfs, Rts*	Intended to drive the Right Top Front Surround Loudspeaker.
Left Top Middle Surround	Ltms, TpSiL*	Intended to drive the Left Top Middle Surround Loudspeaker.
Right Top Middle Surround	Rtms, TpSiR*	Intended to drive the Right Top Middle Surround Loudspeaker.
Left Top Rear Surround	Ltrs, Ltb*	Intended to drive the Left Top Rear Surround Loudspeaker.
Right Top Rear Surround	Rtrs, Rtb*	Intended to drive the Right Top Rear Surround Loudspeaker.
LFE1	LFE1	Intended to drive the Left Front subwoofer
LFE2	LFE2	Intended to drive the Right Front subwoofer
Center Rear Height	Crh	Intended to drive the Center Rear Height Loudspeaker.
Center Rear	Cr	Intended to drive the Center Rear Loudspeaker.
Left Below	Lb	Intended to drive the Left Below Loudspeaker.
Right Below	Rb	Intended to drive the Right Below Loudspeaker.
Center Below	Cb	Intended to drive the Center Below Loudspeaker.
Audio Description Studio Signal Data Channel	ADSSdc	Identifies an Audio Data Channel carrying a data signal as shown in BBC R&D White Paper WHP 198, intended to be used to control the fade and pan of the Main Program audio when it is being mixed with a Visually Impaired Narrative Audio Channel. Note that compliance with BBC R&D White Paper WHP 198 is not required for compliance with this standard.

* NOTE: This symbol is included for legacy support.

Table 3 – Symbols and ULs for Audio Channel Labels

Symbol	Registered Symbol	Item UL
Lh	ST37742chLeftHeight	urn:smpte:ul:060e2b34.0401010d.03020130.01010000
Rh	ST37742chRightHeight	urn:smpte:ul:060e2b34.0401010d.03020130.01020000
Ch	ST37742chCenterHeight	urn:smpte:ul:060e2b34.0401010d.03020130.01030000
Lsh	ST37742chLeftSurroundHeight	urn:smpte:ul:060e2b34.0401010d.03020130.01040000
Rsh	ST37742chRightSurroundHeight	urn:smpte:ul:060e2b34.0401010d.03020130.01050000
Lssh	ST37742chLeftSideSurroundHeight	urn:smpte:ul:060e2b34.0401010d.03020130.01060000
Rssh	ST37742chRightSideSurroundHeight	urn:smpte:ul:060e2b34.0401010d.03020130.01070000
Lrsh	ST37742chLeftRearSurroundHeight	urn:smpte:ul:060e2b34.0401010d.03020130.01080000
Rrsh	ST37742chRightRearSurroundHeight	urn:smpte:ul:060e2b34.0401010d.03020130.01090000
Lts	ST37742chLeftTopSurround	urn:smpte:ul:060e2b34.0401010d.03020130.010a0000
Rts	ST37742chRightTopSurround	urn:smpte:ul:060e2b34.0401010d.03020130.010b0000
Ts	ST37742chTopSurround	urn:smpte:ul:060e2b34.0401010d.03020130.010c0000
Lw	ST37742chLeftWide	urn:smpte:ul:060e2b34.04010105.0e090101.04010000
Rw	ST37742chRightWide	urn:smpte:ul:060e2b34.04010105.0e090101.04020000
Ltfs, Lts*	ST37742chLeftTopFront	urn:smpte:ul:060e2b34.04010105.0e090101.04030000
Rtfs, Rts*	ST37742chRightTopFront	urn:smpte:ul:060e2b34.04010105.0e090101.04040000
Ltms, TpSiL*	ST37742chTopSideLeft	urn:smpte:ul:060e2b34.04010105.0e090101.04050000
Rtms, TpSiR*	ST37742chTopSideRight	urn:smpte:ul:060e2b34.04010105.0e090101.04060000
Ltrs, Ltb*	ST37742chLeftTopBack	urn:smpte:ul:060e2b34.04010105.0e090101.04070000
Rtrs, Rtb*	ST37742chRightTopBack	urn:smpte:ul:060e2b34.04010105.0e090101.04080000
LFE1	ST37742chLFE1	urn:smpte:ul:060e2b34.0401010d.03020130.010d0000
LFE2	ST37742chLFE2	urn:smpte:ul:060e2b34.0401010d.03020130.010e0000
Crh	ST37742chCenterRearHeight	urn:smpte:ul:060e2b34.0401010d.03020130.010f0000
Cr	ST37742chCenterRear	urn:smpte:ul:060e2b34.0401010d.03020130.01100000
Lb	ST37742chLeftBelow	urn:smpte:ul:060e2b34.0401010d.03020130.01110000
Rb	ST37742chRightBelow	urn:smpte:ul:060e2b34.0401010d.03020130.01120000
Cb	ST37742chCenterBelow	urn:smpte:ul:060e2b34.0401010d.03020130.01130000
ADSSdc	AudioDescriptionStudioSignalDataChannel	urn:smpte:ul:060e2b34.04010101.0d010801.01010100

* NOTE: This symbol is included for legacy support.

7 Soundfield Groups

Table 4 and Table 5 define the MCA Tag Name, Symbol and UL values for Soundfield Groups in the MCA Label Controlled Vocabulary, which shall be used to label Soundfield Groups. The entries in Table 4 and Table 5, in addition to the labels for Soundfield Groups defined in SMPTE ST 428-12 and ST 2067-8, are part of the MCA Label Controlled Vocabulary.

NOTE 1: The Symbol value in Table 4 is a constituent of the MCA Tag Symbol value. See individual applications for further details, e.g., SMPTE ST 429-2 and ST 2067-2.

NOTE 2: Soundfield Groups are intended to play from Loudspeakers within Soundfield Configurations as shown in Annex A.

Table 4 – MCA Tag Names, Symbols and Descriptions for Soundfield Group Labels

MCA Tag Name	Symbol	Description
5.1.4	514	L, C, R, Ls, Rs, LFE, Ltfs, Rtfs, Ltrs, Rtrs
7.1.4	714	L, C, R, Lss, Rss, Lrs, Rrs, LFE, Ltfs, Rtfs, Ltrs, Rtrs
9.1.4	914	L, C, R, Lw, Rw, Lss, Rss, Lrs, Rrs, LFE, Ltfs, Rtfs, Ltrs, Rtrs
9.1.6	916	L, C, R, Lw, Rw, Lss, Rss, Lrs, Rrs, LFE, Ltfs, Rtfs, Ltms, Rtms, Ltrs, Rtrs
6.0 Height	60HT	L, R, Ls, Rs, Lh, Rh
8.0 Height	80HT	L, R, Ls, Rs, Lh, Rh, Lsh, Rsh
9.1 Overhead	91OH	L, C, R, Lss, Rss, Lrs, Rrs, LFE, Lts, Rts
9.1 Height	91HT	L, C, R, Ls, Rs, LFE, Lh, Rh, Lsh, Rsh
10.1 Height	101HT	L, C, R, Ls, Rs, LFE, Lh, Rh, Lsh, Rsh, Ts
11.1 Height	111HT	L, C, R, Ls, Rs, LFE, Lh, Ch, Rh, Lsh, Rsh, Ts
13.1 Height	131HT	L, C, R, Lss, Rss, Lrs, Rrs, LFE, Lh, Ch, Rh, Lsh, Rsh, Ts
15.1 Height	151HT	L, C, R, Lss, Rss, Lrs, Rrs, LFE, Lh, Ch, Rh, Lssh, Rssh, Lrsh, Rrsh, Ts
12.0 Center Height	120CH	L, C, R, Lss, Rss, Lrs, Rrs, Ltfs, Rtfs, Ltrs, Rtrs, Ch
12.1 Center Height	121CH	L, C, R, Lss, Rss, Lrs, Rrs, LFE, Ltfs, Rtfs, Ltrs, Rtrs, Ch
6.0 Center Height	60CH	L, C, R, Ls, Rs, Ch
6.1 Center Height	61CH	L, C, R, LFE, Ls, Rs, Ch
22.2 UHD TV	222	L, C, R, LFE1, LFE2, Lss, Rss, Lrs, Rrs, Cr, Lc, Rc, Lh, Rh, Ch, Lssh, Rssh, Crh, Lrsh, Rrsh, Ts, Lb, Rb, Cb
Audio Description Studio Signal	ADSS	VIN, ADSSdc Identifies a Soundfield Group carrying a Visually Impaired Narrative Audio Channel (VIN) and an Audio Description Studio Signal Data Channel (ADSSdc). This is the two-channel Audio Description Studio Signal as shown in BBC R&D White Paper WHP 198. Note that compliance with BBC R&D White Paper WHP 198 is not required for compliance with this standard.
IAB	IAB	Immersive Audio Bitstream. Identifies a Soundfield Group containing channels and/or objects that is intended to be played through an Immersive Sound System. IAB is specified in SMPTE 2098-2.

Table 5 – Symbols and ULs for Soundfield Group Labels

Symbol	Registered Symbol	Item UL
514	ST37742sg514	urn:smpte:ul:060e2b34.04010105.0e090101.05020000
714	ST37742sg714	urn:smpte:ul:060e2b34.04010105.0e090101.05040000
914	ST37742sg914	urn:smpte:ul:060e2b34.04010105.0e090101.05060000
916	ST37742sg916	urn:smpte:ul:060e2b34.04010105.0e090101.05070000
60HT	ST37742sg60Height	urn:smpte:ul:060e2b34.0401010d.03020230.01010000
80HT	ST37742sg80Height	urn:smpte:ul:060e2b34.0401010d.03020230.01020000
91OH	ST37742sg91Overhead	urn:smpte:ul:060e2b34.0401010d.03020230.01030000
91HT	ST37742sg91Height	urn:smpte:ul:060e2b34.0401010d.03020230.01040000
101HT	ST37742sg101Height	urn:smpte:ul:060e2b34.0401010d.03020230.01050000
111HT	ST37742sg111Height	urn:smpte:ul:060e2b34.0401010d.03020230.01060000
131HT	ST37742sg131Height	urn:smpte:ul:060e2b34.0401010d.03020230.01070000
151HT	ST37742sg151Height	urn:smpte:ul:060e2b34.0401010d.03020230.01080000
120CH	ST37742sg120CenterHeight	urn:smpte:ul:060e2b34.0401010d.03020230.01090000
121CH	ST37742sg121CenterHeight	urn:smpte:ul:060e2b34.0401010d.03020230.010a0000
60CH	ST37742sg60CenterHeight	urn:smpte:ul:060e2b34.0401010d.03020230.010b0000
61CH	ST37742sg61CenterHeight	urn:smpte:ul:060e2b34.0401010d.03020230.010c0000
222	ST37742sg222UHDTV	urn:smpte:ul:060e2b34.0401010d.03020230.010d0000
ADSS	AudioDescriptionStudioSignal	urn:smpte:ul:060e2b34.04010101.0d010801.01020100
IAB	IABSoundfield	urn:smpte:ul:060e2b34.0401010d.03020221.00000000

8 Groups of Soundfield Groups

Table 6 and Table 7 define the MCA Tag Name, Symbol and UL values for Groups of Soundfield Groups in the MCA Label Controlled Vocabulary, which shall be used to label Audio. The entries in Table 6 and Table 7, in addition to the labels for Groups of Soundfield Groups defined in ST 2067-8, are part of the MCA Label Controlled Vocabulary.

NOTE: The Symbol value in Table 6 is a constituent of the MCA Tag Symbol value. See individual applications for further details, e.g., SMPTE ST 429-2 and ST 2067-2.

Table 6 – MCA Names, Symbols and Descriptions for Groups of Soundfield Groups Labels

MCA Tag Name	Symbol	Description
Music and Effects with Optional	MESP	A Group of Soundfield Groups containing a Soundfield Group with MCA Content value ME (music and effects) and one or more Soundfield Groups with MCA Content value OP (optional music and effects).
DME	DME	Dialog, Music, and Effects. A Group of Soundfield Groups containing an original language Soundfield Group with MCA Content value DX (dialog), a Soundfield Group with MCA Content value MX (music) and a Soundfield Group with MCA Content value FX (effects).
NDME	NDME	Narration, Dialog, Music, and Effects. A Group of Soundfield Groups containing a Soundfield Group with MCA Content value PNAR (program narration), an original language Soundfield Group with MCA Content value DX (dialog), a Soundfield Group with MCA Content value MX (music) and a Soundfield Group with MCA Content value FX (effects).

Table 7 – Symbols and ULs for Groups of Soundfield Group Labels

Symbol	Registered Symbol	Item UL
MESP	ST37742gsgMusicAndEffectsWithOptional	urn:smpte:ul:060e2b34.0401010d.03020330.01010000
DME	ST37742gsgDME	urn:smpte:ul:060e2b34.0401010d.03020330.01020000
NDME	ST37742gsgNDME	urn:smpte:ul:060e2b34.0401010d.03020330.01030000

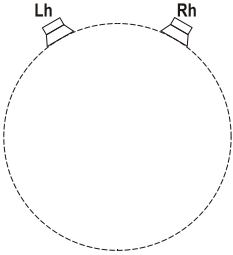
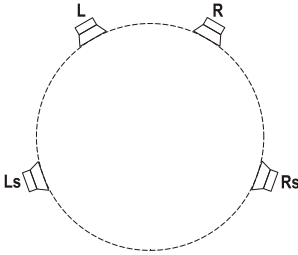
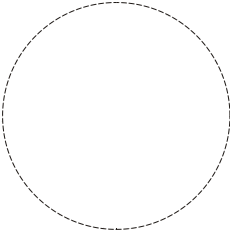
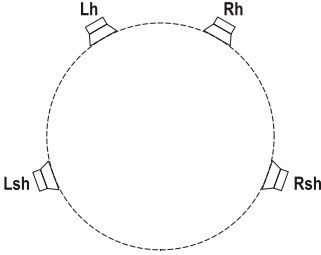
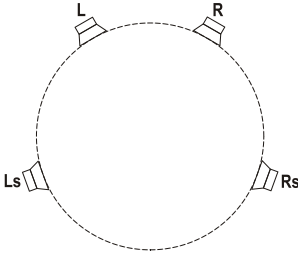
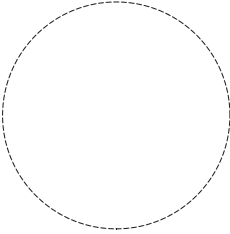
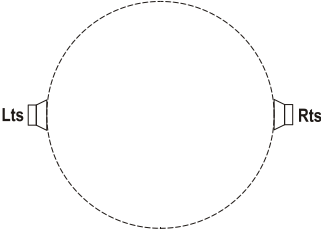
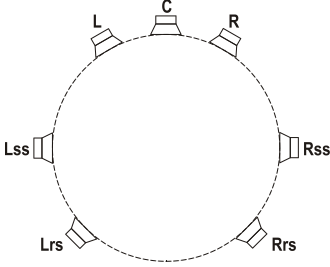
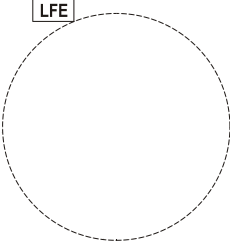
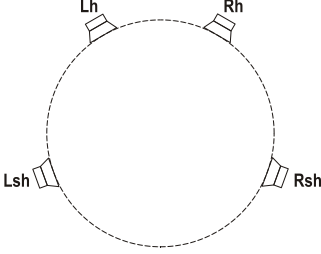
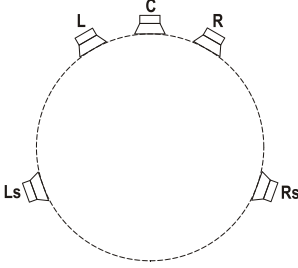
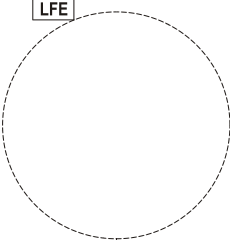
Annex A (Informative)

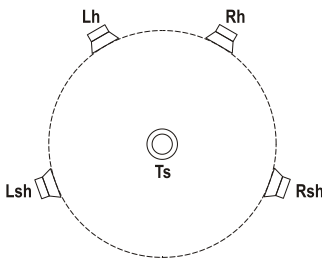
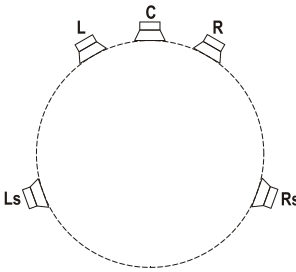
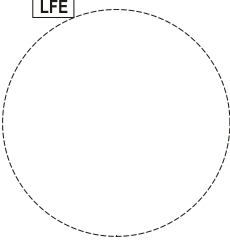
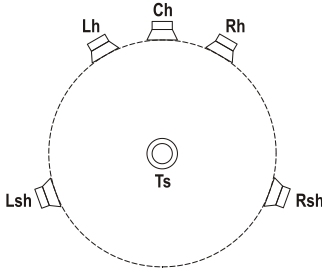
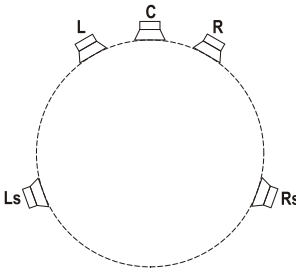
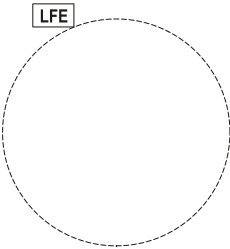
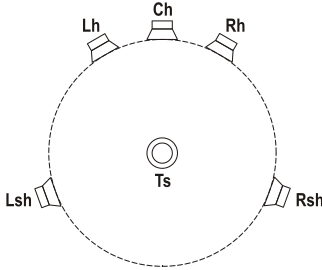
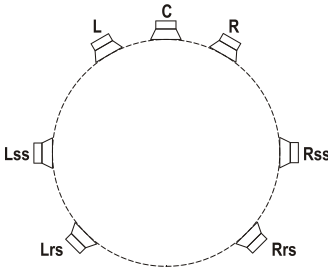
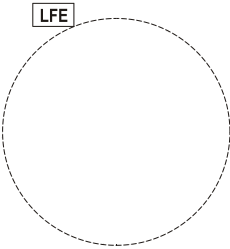
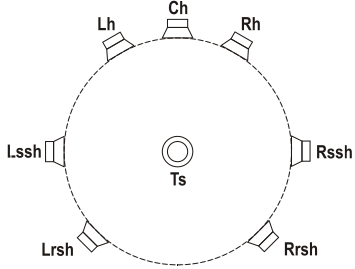
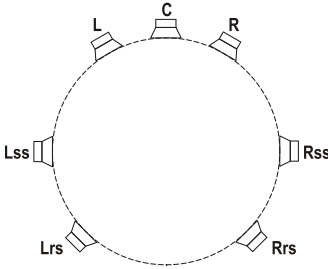
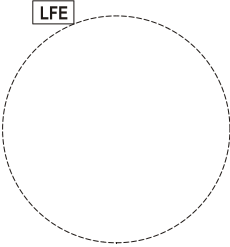
Loudspeaker Locations

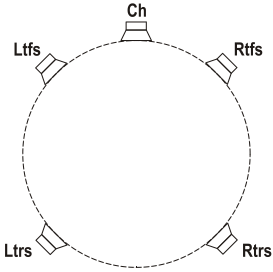
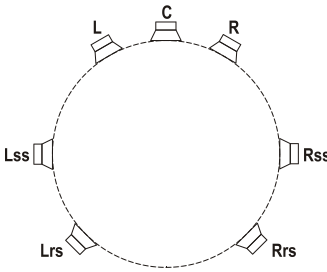
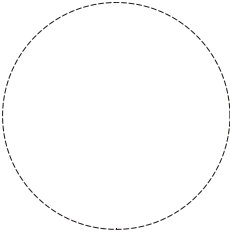
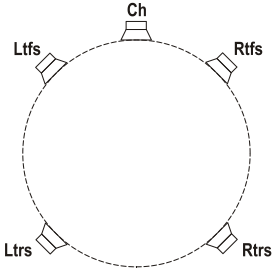
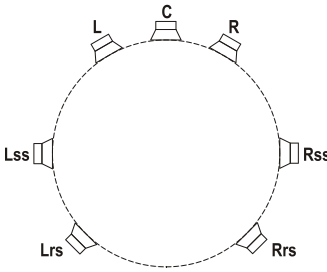
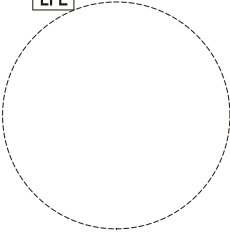
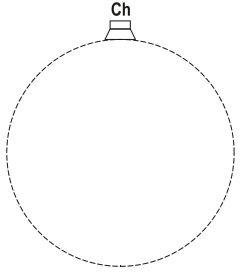
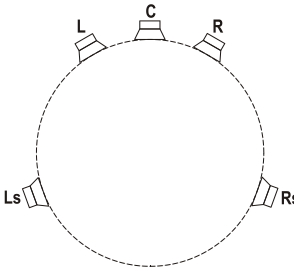
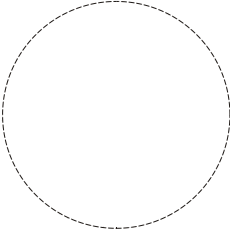
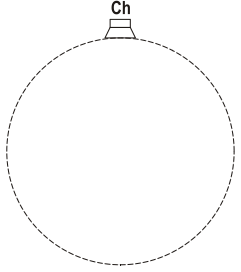
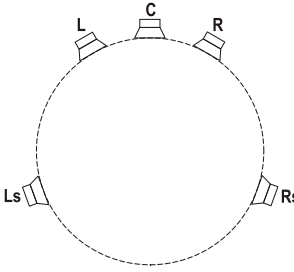
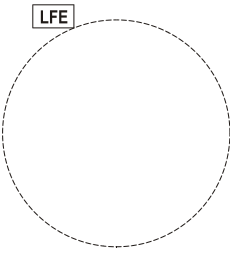
Table A.1 depicts the physical locations of Loudspeakers within Soundfield Configurations associated with the Soundfield Groups listed in Table 4.

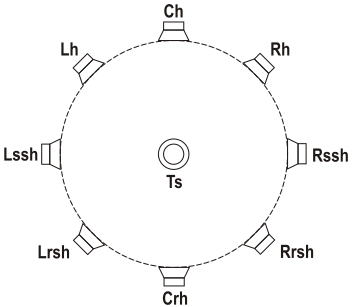
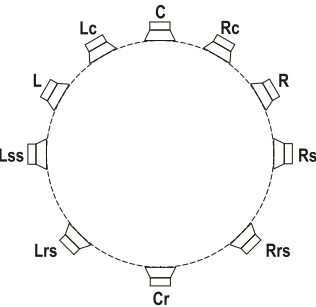
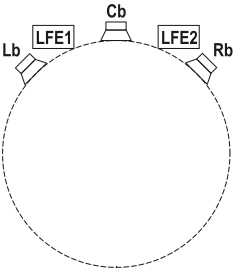
Table A.1 – Soundfield Configurations

Soundfield Group	Height/Top Layer	Base Layer	Bottom Layer
514			
714			
914			
916			

Soundfield Group	Height/Top Layer	Base Layer	Bottom Layer
60HT			
80HT			
91OH			
91HT			

Soundfield Group	Height/Top Layer	Base Layer	Bottom Layer
101HT			
111HT			
131HT			
151HT			

Soundfield Group	Height/Top Layer	Base Layer	Bottom Layer
120CH			
121CH			
60CH			
61CH			

Soundfield Group	Height/Top Layer	Base Layer	Bottom Layer
222			

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