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# Audio Output Matrix

## Broadcom Proprietary and Confidential

**Release Note:** This document can be shared with customers.

### Android Audio Output Matrix

#### CONTENTS

- 1 Broadcom Proprietary and Confidential
- 2 Android Audio Output Matrix
- 3 Android O with Exoplayer - No Dolby Support
- 4 Android O with Exoplayer - Dolby MS10/11 Support
- 5 Android O with Netflix - Dolby Support
- 6 Android O with Netflix - Dolby MS10/MS11 Support

The audio output format on Broadcom's Android STB dynamically changes based on several factors:

- Capability of A/V receiver or TV reported over HDMI EDID
- Surround sound setting in Android TV Settings
- Encoding of audio content
- Dolby features included in Broadcom STB

The following tables summarize the output formats for Exoplayer based playback and Netflix playback.

### Android O with Exoplayer - No Dolby Support

Surround sound setting	Audio Content	EDID	HDMI	SPDIF	Comment
Auto	Dolby Digital Plus	Dolby Digital Plus	DD+5.1 passthrough	no output	
Auto	Dolby Digital	Dolby Digital	no output	no output	

	Plus	PCM			
Auto	Dolby Digital	Dolby Digital Plus Dolby Digital	DD 5.1 passthrough	DD 5.1 passthrough	
Auto	Dolby Digital	PCM	no output	no output	
Auto	Others	Don't care	LPCM	LPCM	
Always	Dolby Digital Plus	Dolby Digital Plus	DD+5.1 passthrough	no output	
Always	Dolby Digital Plus	Dolby Digital PCM	no output	no output	
Always	Dolby Digital	Dolby Digital Plus Dolby Digital	DD 5.1 passthrough	DD 5.1 passthrough	
Always	Dolby Digital	PCM	no output	DD 5.1 passthrough	
Always	Others	Don't care	LPCM	LPCM	
Never	Dolby Digital Plus Dolby Digital	Don't care	no output	no output	
Never	Others	Don't care	LPCM	LPCM	

## Android O with Exoplayer - Dolby MS10/11 Support

Surround sound setting	Audio Content	EDID	HDMI	SPDIF	Comment
Auto	Dolby Digital Plus	Dolby Digital Plus	DD+5.1 passthrough	DD 5.1 MS10/11	DD+ converted to DD in HAL
Auto	Dolby Digital Plus	Dolby Digital PCM	LPCM	LPCM	DD+ decoded by OMX Codec
Auto	Dolby Digital	Dolby Digital Plus Dolby Digital	DD 5.1 passthrough	DD 5.1 passthrough	
Auto	Dolby Digital	PCM	LPCM	LPCM	DD decoded by OMX Codec
Auto	Others	Don't care	LPCM	LPCM	
Always	Dolby Digital Plus	Dolby Digital Plus	DD+5.1 passthrough	DD 5.1 MS10/11	DD+ converted to DD in HAL
Always	Dolby Digital Plus	Dolby Digital	DD 5.1 MS10/11	DD 5.1 MS10/11	DD+ converted to DD in HAL
Always	Dolby Digital Plus	PCM	LPCM MS10/11	DD 5.1 MS10/11	DD+ converted to DD/PCM in HAL
Always	Dolby Digital	Dolby Digital Plus Dolby Digital	DD 5.1 passthrough	DD 5.1 passthrough	
Always	Dolby Digital	PCM	LPCM MS10/11	DD 5.1	DD converted to

				passthrough	PCM in HAL
Always	Others	Don't care	LPCM	LPCM	
Never	Dolby Digital Plus Dolby Digital	Don't care	LPCM	LPCM	DD+/DD decoded by OMX Codec
Never	Others	Don't care	LPCM	LPCM	

## Android O with Netflix - Dolby Support

Surround sound setting	EDID	DPI audio profiles	Netflix available audio source	HDMI	SPDIF	Comment
Auto	Dolby Digital Plus	heaac-2-dash, ddplus-2.0-dash, ddplus-5.1-dash	heaac-2.0	LPCM	LPCM	
Auto	Dolby Digital Plus	heaac-2-dash, ddplus-2.0-dash, ddplus-5.1-dash	ddplus-5.1	DD+5.1 passthrough	no output	
Auto	Dolby Digital Plus	heaac-2-dash, ddplus-2.0-dash, ddplus-5.1-dash	ddplus-2.0	LPCM	LPCM	
Auto	Anything else	heaac-2-dash, ddplus-2.0-dash	heaac-2.0	LPCM	LPCM	
Auto	Anything else	heaac-2-dash, ddplus-2.0-dash	ddplus-2.0	LPCM	LPCM	
Always	Don't care	heaac-2-dash, ddplus-2.0-dash	heaac-2.0	LPCM	LPCM	5.1 unavailable
Always	Don't care	heaac-2-dash, ddplus-2.0-dash	ddplus-2.0	LPCM	LPCM	5.1 unavailable
Always	Dolby	ddplus-5.1-	ddplus-5.1	DD+5.1	no	user enforces DD+

	Digital Plus	dash		passthrough	output	passthrough
Always	Dolby Digital	ddplus-5.1-dash	ddplus-5.1	no output	no output	5.1 unavailable
Always	Anything else	ddplus-5.1-dash	ddplus-5.1	no output	no output	5.1 unavailable
Never	Don't care	heaac-2-dash, ddplus-2.0-dash	heaac-2.0	LPCM	LPCM	

## Android O with Netflix - Dolby MS10/MS11 Support

Surround sound setting	EDID	DPI audio profiles	Netflix available audio source	HDMI	SPDIF	Comment
Auto	Dolby Digital Plus	heaac-2-dash, ddplus-2.0-dash, ddplus-5.1-dash	heaac-2.0	LPCM	LPCM	5.1 unavailable
Auto	Dolby Digital Plus	heaac-2-dash, ddplus-2.0-dash, ddplus-5.1-dash	ddplus-5.1	DD+5.1 passthrough	DD5.1 MS10/11	
Auto	Dolby Digital Plus	heaac-2-dash, ddplus-2.0-dash, ddplus-5.1-dash	ddplus-2.0	LPCM	LPCM	5.1 unavailable
Auto	Anything else	heaac-2-dash, ddplus-2.0-dash	heaac-2.0	LPCM	LPCM	
Auto	Anything else	heaac-2-dash, ddplus-2.0-dash	ddplus-2.0	LPCM	LPCM	
Always	Don't care	heaac-2-dash, ddplus-2.0-dash	heaac-2.0	LPCM	LPCM	5.1 unavailable
Always	Don't care	heaac-2-	ddplus-2.0	LPCM	LPCM	5.1 unavailable

		dash, ddplus-2.0- dash				
Always	Dolby Digital Plus	ddplus-5.1- dash	ddplus-5.1	DD+5.1 passthrough	DD5.1 MS10/11	HDMI output respects EDID
Always	Dolby Digital	ddplus-5.1- dash	ddplus-5.1	DD5.1 MS10/11	DD5.1 MS10/11	HDMI output respects EDID
Always	Anything else	ddplus-5.1- dash	ddplus-5.1	LPCM	DD5.1 MS10/11	HDMI output respects EDID
Never	Don't care	heaac-2- dash, ddplus-2.0- dash	heaac-2.0	LPCM	LPCM	user enforces LPCM