

# Audio Output Matrix

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

## Android Audio Output Matrix

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 P 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 Plus	Dolby Digital PCM	no output	no output	
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 P with ExoPlayer - Dolby MS10/MS11 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 passthrough	DD converted to PCM in HAL
Always	Others	Don't care	LPCM	LPCM	

Never	Dolby Digital Plus Dolby Digital	Don't care	LPCM	LPCM	
Never	Others	Don't care	LPCM	LPCM	

## Android P with ExoPlayer - Dolby MS12 Support

Surround sound setting	Audio Content	EDID	HDMI	SPDIF	Comment
Auto	Dolby Digital Plus Dolby Digital Others	Dolby Digital Plus	DD+ 5.1 MS12	DD 5.1 MS12	re-encoded to DD+/DD in HAL
Auto	Dolby Digital Plus Dolby Digital Others	Dolby Digital	DD 5.1 MS12	DD 5.1 MS12	re-encoded to DD in HAL
Auto	Dolby Digital Plus	PCM	LPCM	DD 5.1 MS12	DD+ decoded by OMX Codec, then re-encoded to DD in HAL
Auto	Dolby Digital	PCM	LPCM	DD 5.1 MS12	*Fails to play unless framework ForceAC3 flag is cleared  DD decoded by OMX Codec, then re-encoded to DD in HAL
Auto	Others	PCM	LPCM	DD 5.1 MS12	PCM encoded to DD in HAL
Always	Dolby Digital Plus Dolby Digital Others	Dolby Digital Plus	DD+ 5.1 MS12	DD 5.1 MS12	re-encoded to DD+/DD in HAL
Always	Dolby Digital Plus Dolby Digital Others	Dolby Digital	DD 5.1 MS12	DD 5.1 MS12	re-encoded to DD in HAL
Always	Dolby Digital Plus Dolby Digital Others	PCM	LPCM	DD 5.1 MS12	re-encoded to LPCM/DD in HAL

Always	Dolby Digital	PCM	LPCM	DD 5.1 MS12	
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 P with Netflix - No Dolby Support

Surround sound setting	EDID	Netflix available audio source			
		2.0 HE-AAC	2.0 DD+	5.1 DD+	Atmos
Auto	Dolby Digital Plus	HDMI: LPCM SPDIF: LPCM	-	HDMI: DD+ 5.1 passthrough SPDIF: no output	-
Auto	Dolby Digital	HDMI: LPCM SPDIF: LPCM	-	-	-
Auto	No Dolby	HDMI: LPCM SPDIF: LPCM	-	-	-
Always	Dolby Digital Plus	HDMI: LPCM SPDIF: LPCM	-	HDMI: DD+ 5.1 passthrough SPDIF: no output	-
Always	Dolby Digital	HDMI: LPCM SPDIF: LPCM	-	HDMI: no output SPDIF: no output	-
Always	No Dolby	HDMI: LPCM SPDIF: LPCM	-	HDMI: no output SPDIF: no output	-
Never	Dolby Digital Plus	HDMI: LPCM SPDIF: LPCM	-	-	-
Never	Dolby Digital	HDMI: LPCM SPDIF: LPCM	-	-	-
Never	No Dolby	HDMI: LPCM SPDIF: LPCM	-	-	-

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

Surround sound setting	EDID	Netflix available audio source			
		2.0 HE-AAC	2.0 DD+	5.1 DD+	Atmos
Auto	Dolby Digital Plus	HDMI: LPCM SPDIF: LPCM	HDMI: LPCM SPDIF: LPCM	HDMI: DD+ 5.1 passthrough SPDIF: DD5.1 MS10/11	-
Auto	Dolby Digital	HDMI: LPCM SPDIF: LPCM	HDMI: LPCM SPDIF: LPCM	HDMI: DD5.1 MS10/11 SPDIF: DD5.1 MS10/11	-
Auto	No Dolby	HDMI: LPCM SPDIF: LPCM	HDMI: LPCM SPDIF: LPCM	-	-
Always	Dolby Digital Plus	HDMI: LPCM SPDIF: LPCM	HDMI: LPCM SPDIF: LPCM	HDMI: DD+ 5.1 passthrough SPDIF: DD5.1 MS10/11	-
Always	Dolby Digital	HDMI: LPCM SPDIF: LPCM	HDMI: LPCM SPDIF: LPCM	HDMI: DD5.1 MS10/11 SPDIF: DD5.1 MS10/11	-
Always	No Dolby	HDMI: LPCM SPDIF: LPCM	HDMI: LPCM SPDIF: LPCM	HDMI: LPCM SPDIF: DD5.1 MS10/11	-
Never	Dolby Digital Plus	HDMI: LPCM SPDIF: LPCM	HDMI: LPCM SPDIF: LPCM	HDMI: LPCM SPDIF: LPCM	-
Never	Dolby Digital	HDMI: LPCM SPDIF: LPCM	HDMI: LPCM SPDIF: LPCM	HDMI: LPCM SPDIF: LPCM	-
Never	No Dolby	HDMI: LPCM SPDIF: LPCM	HDMI: LPCM SPDIF: LPCM	HDMI: LPCM SPDIF: LPCM	-

## Android P with Netflix - Dolby MS12 Support

Surround sound setting	EDID	Netflix available audio source			
		2.0 HE-AAC	2.0 DD+	5.1 DD+	Atmos
Auto	Atmos	HDMI: 5.1 DD+ SPDIF: 5.1 DD	HDMI: 5.1 DD+ SPDIF: 5.1 DD	HDMI: 5.1 DD+ SPDIF: 5.1 DD	HDMI: Atmos SPDIF: 5.1 DD
Auto	Dolby Digital Plus	HDMI: 5.1 DD+ SPDIF: 5.1 DD	HDMI: 5.1 DD+ SPDIF: 5.1 DD	HDMI: 5.1 DD+ SPDIF: 5.1 DD	-
Auto	Dolby Digital	HDMI: 5.1 DD SPDIF: 5.1 DD	HDMI: 5.1 DD SPDIF: 5.1 DD	HDMI: 5.1 DD SPDIF: 5.1 DD	-
Auto	No Dolby	HDMI: 2.0 PCM SPDIF: 5.1 DD	HDMI: 2.0 PCM SPDIF: 5.1 DD	-	-
Always	Atmos	HDMI: 5.1 DD+ SPDIF: 5.1 DD	HDMI: 5.1 DD+ SPDIF: 5.1 DD	HDMI: 5.1 DD+ SPDIF: 5.1 DD	HDMI: Atmos SPDIF: 5.1 DD
Always	Dolby Digital Plus	HDMI: 5.1 DD+ SPDIF: 5.1 DD	HDMI: 5.1 DD+ SPDIF: 5.1 DD	HDMI: 5.1 DD+ SPDIF: 5.1 DD	-
Always	Dolby Digital	HDMI: 5.1 DD SPDIF: 5.1 DD	HDMI: 5.1 DD SPDIF: 5.1 DD	HDMI: 5.1 DD SPDIF: 5.1 DD	-
Always	No Dolby	HDMI: 2.0 PCM SPDIF: 5.1 DD	HDMI: 2.0 PCM SPDIF: 5.1 DD	HDMI: 2.0 PCM SPDIF: 5.1 DD	-
Never	Atmos	HDMI: 2.0 PCM SPDIF: 2.0 PCM	HDMI: 2.0 PCM SPDIF: 2.0 PCM	-	-
Never	Dolby Digital Plus	HDMI: 2.0 PCM SPDIF: 2.0 PCM	HDMI: 2.0 PCM SPDIF: 2.0 PCM	-	-
Never	Dolby Digital	HDMI: 2.0 PCM SPDIF: 2.0 PCM	HDMI: 2.0 PCM SPDIF: 2.0 PCM	-	-
Never	No Dolby	HDMI: 2.0 PCM SPDIF: 2.0 PCM	HDMI: 2.0 PCM SPDIF: 2.0 PCM	-	-