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				Audio Content			
sound setting	EDID	Output	Others	Dolby Digital	Dolby Digital Plus		
	Dolby Digital Dive	HDMI	PCM	DD passthrough	DD+ passthrough		
	Dolby Digital Plus	SPDIF	PCM	DD passthrough	no output		
	Dolby Digital	HDMI	PCM	DD passthrough	no output		
Auto	Doiby Digital	SPDIF	PCM	DD passthrough	no output		
Auto	No Dolby	HDMI	PCM	no output	no output		
	ForceAC3 set (default)	SPDIF	PCM	DD passthrough	no output		
	No Dolby	HDMI	PCM	no output	no output		
	ForceAC3 cleared	SPDIF	SPDIF PCM no out		no output		
	Dolby Digital Plus	HDMI	PCM	DD passthrough	DD+ passthrough		
	Doiby Digital Plus	SPDIF	PCM	DD passthrough	no output		
Alwaya	Dolby Digital	HDMI	PCM	DD passthrough	undefined		
Always	Doiby Digital	SPDIF	PCM	DD passthrough	undefined		
	No Dolby	HDMI	PCM	undefined	undefined		
	No Dolby	SPDIF	PCM	undefined	undefined		
	Dolby Digital Dive	HDMI	PCM	no output	no output		
	Dolby Digital Plus	SPDIF	PCM	no output	no output		
Never	Dollar Digital	HDMI	PCM	no output	no output		
	Dolby Digital	SPDIF	PCM	no output	no output		
	No Dollay	HDMI	PCM	no output	no output		
	No Dolby	SPDIF	PCM	no output	no output		

Android P with ExoPlayer - Dolby MS10/MS11 Support

		ID Output		Audio Con			
Surround sound setting	EDID		Others	Dolby Digi ro.nx.media.disable_a		Dolby Digital	Comments
Setting				0 (default)	1	Plus	
	Dolby Digital	HDMI	PCM	DD passthrough	DD	DD+	
	Plus	SPDIF	PCM	DD passthrough	DD	DD	DD+ converted to DD in HAL
	Dolby	HDMI	PCM	DD passthrough	DD	DD	DD+ converted to DD in HAL
	Digital	SPDIF	PCM	DD passthrough	DD	DD	DD+ converted to DD in HAL
Auto	No Dolby ForceAC3	HDMI	PCM	no output	PCM	PCM	DD+ decoded by OMX Codec, DD decoded to PCM in HAL
	set (default)	SPDIF	PCM	DD passthrough	DD	PCM	DD+ decoded by OMX Codec
	No Dolby ForceAC3 cleared	HDMI	PCM	PCM	PCM	PCM	DD+/DD decoded by OMX Codec
		SPDIF	PCM	PCM	PCM	PCM	DD+/DD decoded by OMX Codec
	Dolby Digital Plus	HDMI	PCM	DD passthrough	DD	DD+	
		SPDIF	PCM	DD passthrough	DD	DD	DD+ converted to DD in HAL
	Dolby Digital	HDMI	PCM	DD passthrough	DD	Undefined	
Always		SPDIF	PCM	DD passthrough	DD	Undefined	
	No Dolby	HDMI	PCM	Undefined	Undefined	Undefined	
	No Dolby	SPDIF	PCM	Undefined	Undefined	Undefined	
	Dolby Digital	HDMI	PCM	PCM	PCM	PCM	DD+/DD decoded by OMX Codec
	Plus	SPDIF	PCM	PCM	PCM	PCM	DD+/DD decoded by OMX Codec
Never	Dolby	HDMI	PCM	PCM	PCM	PCM	DD+/DD decoded by OMX Codec
	Digital	SPDIF	PCM	PCM	PCM	PCM	DD+/DD decoded by OMX Codec
	No Dolby	HDMI	PCM	PCM	PCM	PCM	DD+/DD decoded by OMX Codec
	NO DOIDY	SPDIF	PCM	PCM	PCM	PCM	DD+/DD decoded by OMX Codec

Android P with ExoPlayer - Dolby MS12 Support

_				Audio Con				
Surround sound setting	EDID	Output	Others	Dolby Digital ro.nx.media.disable_ac3_passthru			Comments	
Jetting				0 (default)	1	Digital Plus		
	Dolby Digital	HDMI	$\begin{array}{c c} & 5.1 \\ & DD+ \end{array}$ DD passthrou		5.1 DD+	5.1 DD+	re-encoded to DD+ in HAL	
	Plus	SPDIF	5.1 DD	DD passthrough	5.1 DD	5.1 DD	re-encoded to DD in HAL	
	Dolby	HDMI	5.1 DD	DD passthrough	5.1 DD	5.1 DD	re-encoded to DD in HAL	
	Digital	SPDIF	5.1 DD	DD passthrough	5.1 DD	5.1 DD	re-encoded to DD in HAL	
Auto	No Dolby ForceAC3	HDMI	PCM	no output	PCM	PCM	DD+ decoded by OMX Codec, DD decoded to PCM in HAL	
	set (default)	SPDIF	5.1 DD	DD passthrough	5.1 DD	5.1 DD	DD+ decoded by OMX Codec, re-encoded to DD in HAL	
	No Dolby	HDMI	PCM	PCM	PCM	PCM	DD+/DD decoded by OMX Codec	
	ForceAC3 cleared	SPDIF	5.1 DD	5.1 DD	5.1 DD	5.1 DD	DD+/DD decoded by OMX Codec, re-encoded to DD in HAL	
	Dolby Digital Plus	HDMI	5.1 DD+	DD passthrough	5.1 DD+	5.1 DD+	re-encoded to DD+ in HAL	
		SPDIF	5.1 DD	DD passthrough	5.1 DD	5.1 DD	re-encoded to DD in HAL	
	Dolby Digital	HDMI	5.1 DD	DD passthrough	5.1 DD	Undefined		
Always		SPDIF	5.1 DD	DD passthrough	5.1 DD	Undefined		
	No Dollar	HDMI	PCM	Undefined	Undefined	Undefined		
	No Dolby	SPDIF	5.1 DD	Undefined	Undefined	Undefined		
	Dolby			PCM	PCM	PCM	PCM	DD+/DD decoded by OMX Codec
	Digital Plus	SPDIF	PCM	PCM	PCM	PCM	DD+/DD decoded by OMX Codec	
Never	Dolby	HDMI	PCM	PCM	PCM	PCM	DD+/DD decoded by OMX Codec	
	Digital	SPDIF	PCM	PCM	PCM	PCM	DD+/DD decoded by OMX Codec	
	No Dolby	HDMI	PCM	PCM	PCM	PCM	DD+/DD decoded by OMX Codec	
	INO DOIDY	SPDIF	PCM	PCM	PCM	PCM	DD+/DD decoded by OMX Codec	

Android P with Netflix - No Dolby Support

Surround sound	EDID	Output	Netflix available audio source				
setting			2.0 HE-AAC	2.0 DD+	5.1 DD+	Atmos	
	Dolby Digital Plus	HDMI	PCM	-	DD+ 5.1 passthrough	-	
	Doiby Digital Flus	SPDIF	PCM	-	no output	-	
Auto	Dolby Digital	HDMI	PCM	-	-	-	
Auto	Dolby Digital	SPDIF	PCM	-	-	-	
	No Dolby	HDMI	PCM	-	-	-	
	No Dolby	SPDIF	PCM	-	-	-	
	Dolby Digital Plus	HDMI	PCM	-	DD+ 5.1 passthrough	-	
		SPDIF	PCM	-	no output	-	
	Dolby Digital	HDMI	РСМ	-	undefined	-	
Always		SPDIF	РСМ	-	undefined	-	
	No Dolby	HDMI	РСМ	-	undefined	-	
		SPDIF	РСМ	-	undefined	-	
	Dolby Digital Plus	HDMI	PCM	-	-	-	
		SPDIF	PCM	-	-	-	
Never	Dolby Digital	HDMI	PCM	-	-	-	
		SPDIF	PCM	-	-	-	
	No Dolby	HDMI	PCM	-	-	-	
	No Dolby	SPDIF	PCM	-	-	-	

Android P with Netflix - Dolby MS10/MS11 Support

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

Android P with Netflix - Dolby MS12 Support

Surround	EDID	Output	Netflix available audio source				
sound setting			2.0 HE-AAC	2.0 DD+	5.1 DD+	Atmos	
	Atmos	HDMI	5.1 DD+	5.1 DD+	5.1 DD+	Atmos	
		SPDIF	5.1 DD	5.1 DD	5.1 DD	5.1 DD	
	Dolby Digital Plus	HDMI	5.1 DD+	5.1 DD+	5.1 DD+	-	
Auto	Boilby Bigital Flas	SPDIF	5.1 DD	5.1 DD	5.1 DD	-	
Auto	Dolby Digital	HDMI	5.1 DD	5.1 DD	5.1 DD	-	
	Dolby Digital	SPDIF	5.1 DD	5.1 DD	5.1 DD	-	
	No Dolby	HDMI	PCM	PCM	-	-	
	No Bolby	SPDIF	5.1 DD	5.1 DD	-	-	
	Atmos	HDMI	5.1 DD+	5.1 DD+	5.1 DD+	Atmos	
	Aurios	SPDIF	5.1 DD	5.1 DD	5.1 DD	5.1 DD	
	Dolby Digital Plus	HDMI	5.1 DD+	5.1 DD+	5.1 DD+	Undefined	
		SPDIF	5.1 DD	5.1 DD	5.1 DD	Undefined	
Always	Dolby Digital	HDMI	5.1 DD	5.1 DD	Undefined	Undefined	
		SPDIF	5.1 DD	5.1 DD	Undefined	Undefined	
	No Dolby	HDMI	PCM	PCM	Undefined	Undefined	
		SPDIF	5.1 DD	5.1 DD	Undefined	Undefined	
	Atmos	HDMI	PCM	PCM	-	-	
	Atmos	SPDIF	PCM	PCM	-	-	
	Dolby Digital Plus	HDMI	PCM	PCM	-	-	
Never		SPDIF	PCM	PCM	-	-	
	Dolby Digital	HDMI	PCM	PCM	-	-	
		SPDIF	PCM	PCM	-	-	
	No Dallas	HDMI	PCM	PCM	-	-	
	No Dolby	SPDIF	PCM	PCM	-	-	