NXP Semiconductors
Release Notes

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i.MX Android™ Extended Codec Release Notes

Contents

1 Release Description.....1
2 Supported Hardware SoCs/Boards.....1
3 What's New.....1
4 Enhanced Features.....1
5 Codec Specification.....4
6 License Restricted Codecs.....6
7 Limitations of This Release.....7
8 Known Issues.....7
9 Revision History.....7

1 Release Description

The features described in the release notes are NXP extended media formats and codecs based on Android™ native media framework.

Only codecs that have no license restriction are included in the standard release package.

Codecs that have license restriction are provided in separate packages. For details, see Section 6.

2 Supported Hardware SoCs/ Boards

- i.MX 7ULP EVK Board

3 What's New

- Enhanced stability and robustness.

4 Enhanced Features

4.1 Local playback

This section describes the local playback information.

4.1.1 Enhanced and extended formats and codecs

The following table provides the information about the enhanced codecs.

Table 1. Enhanced codecs

File extension	Demuxers	Video decoders	Audio decoders
.mp3	-	-	MP3
.aac/.adts	-	-	AAC LC/PLUS
.wav	-	-	LPCM
.flac	-	-	FLAC
.amr/.awb	-	-	AMR-NB/AMR-WB
.mp4 .mov .f4v	MP4	MPEG4 SP/ASP except GMC H.264 BP/MP/HP H263 MJPEG HEVC	AAC LC/PLUS MP3 Dolby Digital Plus
.m4a	MP4		AAC LC/PLUS
.3gp	MP4	MPEG4 SP/ASP except GMC H.264 BP/MP/HP H263 HEVC	AAC LC/PLUS AMR-NB AMR-WB
.avi	AVI	MPEG4 SP/ASP except GMC Xvid H.264 BP/MP/HP H263 MJPEG HEVC	AAC LC/PLUS MP3 LPCM
.wma	ASF	-	WMA STD, PRO, Lossless Dolby Digital Plus
.wmv/.asf	ASF	VC-1 SP/MP/AP WMV 7/8 HEVC	WMA STD, PRO, Lossless
.mkv/mka	MKV	H.264 BP/MP/HP MPEG4 SP/ASP except GMC Xvid	AAC MP3 WMA STD, PRO, Lossless

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Table 1. Enhanced codecs (continued)

File extension	Demuxers	Video decoders	Audio decoders
		VC-1 SP/MP/AP HEVC VP8 VP9	Vorbis Dolby Digital Plus Opus
.flv/.f4v	FLV	Sorenson H263 H.264 BP/MP/HP	MP3 AAC
.mpg .vob .ts .m2ts	MPEG2/PS MPEG2/TS	MPEG2 BP/MP MPEG2 BP/MP H.264 BP/MP/HP	MP3 AAC AC3 LPCM Dolby Digital Plus
.webm	MKV	VP8 VP9	MP3 AAC LC/PLUS
.rmvb	RM	RV 8/9/10	RA
.rm	RM	RV 8/9/10	AAC
.ra	RM	-	RA

NOTE

- For detailed video and audio codec capability, see Section 5 "Codec Specification".
- AC3, AACPlus, ASF, WMV, WMA, DDPlus, and RMVB are restricted codec packages and are not generally available. Install them from the Restricted Codec Package.
- MJPEG subtypes and MJPEG_2000 and MJPEG_B are not supported.
- MJPEG only supports YUV420 and YUV422 (horizontal) color formats.
- To enable tile format in i.MX 8MQuad, use this command on board console:

```
setprop media.hantro_vpu.enable-tile 1
```

4.2 Streaming playback

The following table provides the information about streaming playback.

Table 2. Feature matrix for streaming playback

Protocol	File format
HTTP	.mp4/.3gp/.mov .flv/ .f4v .avi .wmv/.asf .mpg/.vob/.ts .mp3 .aac

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Table 2. Feature matrix for streaming playback (continued)

Protocol	File format
	.wma .mkv
RTP	.ts
UDP	.ts

To set up RTP/UDP streaming, perform the following operations:

- Install vlc 1.1.5 on Windows® OS or Ubuntu.
- For UDP streaming server: run VLC with the command:

  ```
  vlc -vvv stream_file_name --sout udp://224.0.1.1:1234
  ```
- For the RTP streaming server:
  a. Start vlc with the GUI, and select MediaStreaming.
  b. Press Add to load the stream file, press Stream, and click Next.
  c. Select RTP/Mpeg Transport Stream from the drop-down list, and click Add.
  d. Enter the IP address 224.0.1.1 and base port number 5004, and deselect Activate Transcoding.
  e. Press Stream at the bottom. The server is started.
- For the UDP streaming client, run the Gallery on the Android platform with the command:

  ```
  am start -n com.android.gallery3d/com.android.gallery3d.app.MovieActivity -d udp://
  224.0.1.1:1234
  ```
- For the RTP streaming client, run Gallery on the Android platform with the command:

  ```
  am start -n com.android.gallery3d/com.android.gallery3d.app.MovieActivity -d rtp://
  224.0.1.1:5004
  ```
- For the uni-cast, use the client IP address instead of 224.0.1.1 when starting the server, and use the server IP address instead of 224.0.1.1 when starting the client.

5 Codec Specification

5.1 Video decoder for i.MX with VPU hardware

Table 3. Video decoder for i.MX with VPU hardware

Feature	Profile	Max. resolution	Min. resolution	Max. framerate	HW/SW	Bitrate	Comments
MPEG2	MP	1920 * 1080	64 * 64	30 fps	HW	50 Mbps	-
MPEG4/Xvid	SP	1920 * 1080	64 * 64	30 fps	HW	40 Mbps	-
	ASP	1920 * 1080	64 * 64	30 fps	HW		-
H.263	P3	1920 * 1080	64 *64	30 fps	HW	20 Mbps	-
H.264	BP	1920 * 1080	64 * 64	30 fps	HW	50 Mbps	-
	MP	1920 * 1080	64 * 64	30 fps	HW		-
	HP	1920 * 1080	64 * 64	30 fps	HW		-

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Table 3. Video decoder for i.MX with VPU hardware (continued)

Feature	Profile	Max. resolution	Min. resolution	Max. framerate	HW/SW	Bitrate	Comments
VC-1	SP	1920 * 1080	64 * 64	30 fps	HW	45 Mbps	-
	MP	1920 * 1080	64 * 64	30 fps	HW		-
	AP	1920 * 1080	64 * 64	30 fps	HW		-
VP8	-	1920 * 1080	64 * 64	30 fps	HW	20 Mbps	-
MJPEG	-	1920 * 1080	64 * 64	30 fps	HW	120 Mpixl/s	-
RV	8/9/10	1920 * 1080	64 * 64	30 fps	H/W	40 Mbps	-
WMV7/8	-	640 * 480	64 * 64	15 fps	SW	-	-
SorensonH263	-	720 * 480	64 * 64	30 fps	SW	-	-
VP9	profile 0, 2	3840 * 2160	64 * 64	60 fps	HW	160 Mbps	-
HEVC	Main, Main, 10	3840 * 2160	64 * 64	60 fps	HW	160 Mbps	-

5.2 Audio decoder

Table 4. Audio decoder

Encoder	Feature/Profile	Channel	Rate (KHz)	Bitrate	HW/SW	Comments
MP3	MPEG-1 (Layer-1/ Layer-2/Layer-3) MPEG-2 (Layer-1/ Layer-2/Layer-3) MPEG-2.5 (Layer-3)	stereo/mono	<=48	8-448	SW	-
AACLC	MPEG-2 AACLC	<=5.1	8-96	8-256	SW	-
	MPEG-4 AACLC					
HE-AAC	HE-AAC V1 HE-AAC V2	stereo/mono	8-96	Mono: 8-384 stereo:16-768	SW	-
WMA10 Std	L1 @ QL1	stereo/mono	44.1	64-161	SW	-
	L2 @ QL1	stereo/mono	<=48	<=161	SW	-
	L3 @ QL1	stereo/mono	<=48	<=385	SW	-
WMA10 Pro	M0a @ QL2	stereo/mono	<=48	48-192	SW	-
	M0b @ QL2	stereo/mono	<=48	<=192	SW	-
	M1 @ QL2	<=5.1	<=48	<=384	SW	-
	M2 @ QL2	<=5.1	<=96	<=768	SW	-
	M3 @ QL2	<=7.1	<=96	<=1500	SW	-
WMA 9 Lossless	N1	stereo/mono	<=48	<=3000	SW	-

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Table 4. Audio decoder (continued)

Encoder	Feature/Profile	Channel	Rate (KHz)	Bitrate	HW/SW	Comments
	N2	<=5.1	<=96	<=3000	SW	-
	N3	<=7.1	<=96	<=3000	SW	-
AC-3	-	<=5.1	<=48	32-640	SW	-
FLAC	-	<=7.1	8-192	-	N/A	-
DD-plus	-	<=7.1	32, 44.1, 48 64, 88.2, 96	<=6.144 Mbps	SW	-
RA	cook	stereo/mono	8k, 11.025k, 22.05k, 44.1k	-	SW	-

5.3 Audio encoder

Use Android OS default audio encoders.

6 License Restricted Codecs

For information about receiving the restricted codec packages, contact an NXP representative.

6.1 Package list

The following features are supplementary to standard codec release packages.

Table 5. License limited codecs

Package name	Feature
fsl_ac3_dec.tar.gz	Audio Codec: AC3
fsl_ddp_dec.tar.gz	Audio Codec: DD Plus
fsl_aacp_dec.tar.gz	Audio Codec: AACPlus
fsl_ms_codec.tar.gz	• Demuxer: ASF • Video Decoder: WMV • Audio Codec: WMA
fsl_real_dec.tar.gz	• Demuxer: RM • Audio Decoder: RA

6.2 How to install the license limited codecs

See the readme file for each package.

7 Limitations of This Release

- The minimum resolution is 64*64
- Complex Profile of WMV9 is not supported
- Multimedia files that do not have index table may not be searchable
- Corrupted multimedia files may not be searchable and may have an incorrect duration

8 Known Issues

None.

9 Revision History

Table 6. Revision history

Revision number	Date	Substantive changes
N7.1.2_1.1.0_7ULP-PRC	06/2017	Initial release
O8.1.0_1.4.0_7ULP-ga	06/2018	i.MX 7ULP GA release

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