

i.MX Android™ Extended Codec Release Notes

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 more details, see Section 6.

2 Supported Hardware SoCs/ Boards

- i.MX 8QuadXPlus MEK Board
- i.MX 8M Nano 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

Table continues on the next page...

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.....	8
7 Limitations of This Release.....	9
8 Known Issues.....	9
9 Revision History.....	9



Table 1. Enhanced codecs (continued)

File extension	Demuxers	Video decoders	Audio decoders
.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
.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
.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 VC-1 SP/MP/AP HEVC	AAC MP3 WMA STD, PRO, Lossless Vorbis Opus
.flv/.f4v	FLV	Sorenson H263	MP3

Table continues on the next page...

Table 1. Enhanced codecs (continued)

File extension	Demuxers	Video decoders	Audio decoders
		H.264 BP/MP/HP	AAC
.mpg	MPEG2/PS	MPEG2 BP/MP	MP3
.vob	MPEG2/TS	MPEG2 BP/MP	AAC
.ts		H.264 BP/MP/HP	LPCM
.m2ts			
.webm	MKV	VP8	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](#)".
- AACPlus, ASF, WMV, WMA, 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.

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 .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:
 1. Start vlc with the GUI, and select **Media > Streaming**.
 2. Press **Add** to load the stream file, press **Stream**, and click **Next**.
 3. Select **RTP/Mpeg Transport Stream** from the drop-down list, and click **Add**.
 4. Enter the IP address 224.0.1.1 and base port number 5004, and deselect **Activate Transcoding**.
 5. 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.

4.3 Audio pass through streaming

Audio pass through supports audio AC-3 and DD-plus. To enable audio pass through, run the following command to set the property:

```
setprop persist.audio.pass.through 2000
```

5 Codec Specification

Video decoder for i.MX with VPU hardware

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

	Format	Platform	Profile	Min. resolution	Max. resolution	Frame rate	Bit rate	Comment
Video Decoder	HEVC	i.MX 8M Quad	main/main 10	144 x 144	4096 x 2160	60 fps	160 Mbps	-
		i.MX 8M Mini	main/main 10	144 x 144	1920 x 1080	60 fps	100 Mbps	-
		i.MX 8QuadXPlus	main	144 x 144	4096 x 2160	30 fps	100 Mbps	-
		i.MX 8QuadMax	main	144 x 144	4096 x 2160	60 fps	100 Mbps	

Table continues on the next page...

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

	Format	Platform	Profile	Min. resolution	Max. resolution	Frame rate	Bit rate	Comment
	H.264	i.MX 8M Quad	HP/MP/BP	96 x 48	4096 x 2160	30 fps	60 Mbps	-
		i.MX 8M Mini	HP/MP/BP	48 x 48	1920 x 1080	60 fps	60 Mbps	-
		i.MX 8QuadXPlus	HP/MP/BP	64 x 64	4096 x 2160	30 fps	50 Mbps	-
		i.MX 8QuadMax	HP/MP/BP	64 x 64	4096 x 2160	30 fps	50 Mbps	
		i.MX 6	HP/MP/BP	64 x 64	1920 x 1080	60 fps	50 Mbps	-
	VP9	i.MX 8M Quad	profile 0, 2	96 x 72	4096 x 2160	60 fps	100 Mbps	-
		i.MX 8M Mini	profile 0, 2	72 x 72	1920 x 1080	60 fps	100 Mbps	-
	VP8	i.MX 8M Quad	-	48 x 48	1920 x 1080	60 fps	60 Mbps	-
		i.MX 8M Mini						
		i.MX 8QuadXPlus	-	64 x 64	1920 x 1080	60 fps	60 Mbps	-
		i.MX 8QuadMax	-	64 x 64	1920 x 1080	60 fps	60 Mbps	-
		i.MX 6Quad	-	64 x 64	1920 x 1080	30 fps	20 Mbps	-
		i.MX 6DualLite	-	64 x 64	1280 x 720	30 fps	20 Mbps	-
	MPEG4	i.MX 8M Quad	SP/ASP	48 x 48	1920 x 1080	60 fps	-	-
		i.MX 8QuadXPlus	SP/ASP	64 x 64	1920 x 1080	60 fps	-	-
		i.MX 8QuadMax	SP/ASP	64 x 64	1920 x 1080	60 fps	-	-
		i.MX 6	SP/ASP	64 x 64	1920 x 1080	30 fps	40 Mbps	-
	MPEG2	i.MX 8M Quad	MP	48 x 48	1920 x 1080	60 fps	-	-
		i.MX 8QuadXPlus	MP	64 x 64	1920 x 1080	60 fps	-	-
		i.MX 8QuadMax	MP	64 x 64	1920 x 1080	60 fps	-	-
		i.MX 6	MP	64 x 64	1920 x 1080	30 fps	50 Mbps	-

Table continues on the next page...

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

	Format	Platform	Profile	Min. resolution	Max. resolution	Frame rate	Bit rate	Comment
	H.263	i.MX 8M Quad	P3	48 x 48	1920 x 1080	60 fps	-	-
		i.MX 8QuadXPlus	P0/P3	64 x 64	1920 x 1080	60 fps	-	-
		i.MX 8QuadMax	P0/P3	64 x 64	1920 x 1080	60 fps	-	-
		i.MX 6	P3	64 x 64	1920 x 1080	30 fps	20 Mbps	-
	VC1	i.MX 8M Quad	AP/MP/SP	48 x 48	1920 x 1080	60 fps	-	-
		i.MX 8QuadXPlus	AP/MP/SP	64 x 64	1920 x 1080	60 fps	-	-
		i.MX 8QuadMax	AP/MP/SP	64 x 64	1920 x 1080	60 fps	-	-
		i.MX 6	AP/MP/SP	64 x 64	1920 x 1080	30 fps	45 Mbps	-
	MJPEG	i.MX 8M Quad	-	48 x 48	1920 x 1080	60 fps	180 Mpixl	-
		i.MX 8QuadXPlus	-	64 x 64	1920 x 1080	60 fps	-	-
		i.MX 8QuadMax	-	64 x 64	1920 x 1080	60 fps	-	-
		i.MX 6	-	64 x 64	1920 x 1080	30 fps	120 Mpixl	-
	RV	i.MX 8M Quad	9	48 x 48	1920 x 1080	60 fps	-	-
		i.MX 8QuadXPlus	8/9/10	64 x 64	1920 x 1080	60 fps	-	-
		i.MX 8QuadMax	8/9/10	64 x 64	1920 x 1080	60 fps	-	-
		i.MX 6	8/9/10	64 x 64	1920 x 1080	30 fps	40 Mbps	-

Video decoder for i.MX without VPU hardware

Table 4. Video decoder for i.MX without VPU hardware

	Format	Platform	Profile	Min. resolution	Max. resolution	Frame rate	Bit rate	Comment
Software Video Decoder	-	i.MX all	-	-	According to system performance	According to system performance	According to system performance	Supported With Android Native Decoder

Video encoder for i.MX with VPU hardware

Table 5. Video encoder for i.MX with VPU hardware

	Format	Platform	Profile	Min. resolution	Max. resolution	Frame rate	Bit rate	Comment
Video Encoder	H.264	i.MX 8M Mini	HP/MP/BP	132 x 96	1920 x 1080	60 fps	40 Mbps	-
		i.MX 8QuadXPlus	HP/MP/BP	64 x 64	1920 x 1080	30 fps	-	-
		i.MX 6	BP	64 x 64	1920 x 1080	30 fps	20 Mbps	-
	VP8	i.MX 8M Mini	-	132 x 96	1920 x 1080	30 fps	60 Mbps	-
	MPEG4	i.MX 6	SP	64 x 64	1280 x 720	30 fps	12 Mbps	-
	H.263	i.MX 6	P3	64 x 64	1280 x 720	30 fps	8 Mbps	-

Audio decoder

Table 6. Audio decoder

Decoder	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/HW	-
AACLC	MPEG-2 AACLC	<=5.1	8-96	8-256	SW/HW	AACLC HW decoder only supports stereo/ mono channel.
	MPEG-4 AACLC					
HE-AAC	HE-AAC V1 HE-AAC V2	stereo/mono	8-96	Mono: 8-384 stereo:16-768	SW/HW	-
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	-

Table continues on the next page...

Table 6. Audio decoder (continued)

Decoder	Feature/Profile	Channel	Rate (KHz)	Bitrate	HW/SW	Comments
	M2 @ QL2	<=5.1	<=96	<=768	SW	-
	M3 @ QL2	<=7.1	<=96	<=1500	SW	-
WMA 9 Lossless	N1	stereo/mono	<=48	<=3000	SW	-
	N2	<=5.1	<=96	<=3000	SW	-
	N3	<=7.1	<=96	<=3000	SW	-
FLAC	-	<=7.1	8-192	-	N/A	-
RA	cook	stereo/mono	8k, 11.025k, 22.05k, 44.1k	-	SW	-
BSAC	-	stereo/mono	8-48	16-128	HW	-

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 7. License limited codecs

Package name	Feature
fsl_aacp_dec.tar.gz	Audio Codec: AACPlus
fsl_ms_codec.tar.gz	<ul style="list-style-type: none"> • Demuxer: ASF • Video Decoder: WMV • Audio Codec: WMA
fsl_real_dec.tar.gz	<ul style="list-style-type: none"> • Demuxer: RM • Video Decoder VPU firmware • Audio Decoder: RA
imx_dsp.tar.gz	Audio Hardware Codec: Hi-Fi firmware
imx_dsp_codec.tar.gz	Audio Hardware Codec: MP3, BSAC
imx_dsp_aacp_dec.tar.gz	Audio Hardware Codec: AACLC, AACPlus

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 an 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 8. Revision history

Revision number	Date	Substantive changes
O8.1.0_1.1.0_AUTO-EAR	02/2018	Initial release
O8.1.0_1.1.0_AUTO-beta	05/2018	i.MX 8QuadXPlus/8QuadMax Beta release
P9.0.0_1.0.2-AUTO-alpha	11/2018	i.MX 8QuadXPlus/8QuadMax Automotive Alpha release
P9.0.0_1.0.2-AUTO-beta	01/2019	i.MX 8QuadXPlus/8QuadMax Automotive Beta release
P9.0.0_2.1.0-AUTO-ga	04/2019	i.MX 8QuadXPlus/8QuadMax Automotive GA release
P9.0.0_2.1.0-AUTO-ga	08/2019	Updated the location of the SCFW porting kit
P9.0.0_2.3.3-AUTO	02/2020	i.MX 8QuadXPlus MEK GA release

How To Reach Us

Home Page:

nxp.com

Web Support:

nxp.com/support

Information in this document is provided solely to enable system and software implementers to use NXP products. There are no express or implied copyright licenses granted hereunder to design or fabricate any integrated circuits based on the information in this document. NXP reserves the right to make changes without further notice to any products herein.

NXP makes no warranty, representation, or guarantee regarding the suitability of its products for any particular purpose, nor does NXP assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters that may be provided in NXP data sheets and/or specifications can and do vary in different applications, and actual performance may vary over time. All operating parameters, including "typicals," must be validated for each customer application by customer's technical experts. NXP does not convey any license under its patent rights nor the rights of others. NXP sells products pursuant to standard terms and conditions of sale, which can be found at the following address: nxp.com/SalesTermsandConditions.

While NXP has implemented advanced security features, all products may be subject to unidentified vulnerabilities. Customers are responsible for the design and operation of their applications and products to reduce the effect of these vulnerabilities on customer's applications and products, and NXP accepts no liability for any vulnerability that is discovered. Customers should implement appropriate design and operating safeguards to minimize the risks associated with their applications and products.

NXP, the NXP logo, NXP SECURE CONNECTIONS FOR A SMARTER WORLD, COOLFLUX, EMBRACE, GREENCHIP, HITAG, I2C BUS, ICODE, JCOP, LIFE VIBES, MIFARE, MIFARE CLASSIC, MIFARE DESFire, MIFARE PLUS, MIFARE FLEX, MANTIS, MIFARE ULTRALIGHT, MIFARE4MOBILE, MIGLO, NTAG, ROADLINK, SMARTLX, SMARTMX, STARPLUG, TOPFET, TRENCHMOS, UCODE, Freescale, the Freescale logo, Altivec, C-5, CodeTEST, CodeWarrior, ColdFire, ColdFire+, C-Ware, the Energy Efficient Solutions logo, Kinetis, Layerscape, MagniV, mobileGT, PEG, PowerQUICC, Processor Expert, QorIQ, QorIQ Qonverge, Ready Play, SafeAssure, the SafeAssure logo, StarCore, Symphony, VortiQa, Vybrid, Airfast, BeeKit, BeeStack, CoreNet, Flexis, MXC, Platform in a Package, QUICC Engine, SMARTMOS, Tower, TurboLink, UMEMS, EdgeScale, EdgeLock, eIQ, and Immersive3D are trademarks of NXP B.V. All other product or service names are the property of their respective owners. AMBA, Arm, Arm7, Arm7TDMI, Arm9, Arm11, Artisan, big.LITTLE, Cordio, CoreLink, CoreSight, Cortex, DesignStart, DynamiQ, Jazelle, Keil, Mali, Mbed, Mbed Enabled, NEON, POP, RealView, SecurCore, Socrates, Thumb, TrustZone, ULINK, ULINK2, ULINK-ME, ULINK-PLUS, ULINKpro, µVision, Versatile are trademarks or registered trademarks of Arm Limited (or its subsidiaries) in the US and/or elsewhere. The related technology may be protected by any or all of patents, copyrights, designs and trade secrets. All rights reserved. Oracle and Java are registered trademarks of Oracle and/or its affiliates. The Power Architecture and Power.org word marks and the Power and Power.org logos and related marks are trademarks and service marks licensed by Power.org.

© NXP B.V. 2020.

All rights reserved.

For more information, please visit: <http://www.nxp.com>

For sales office addresses, please send an email to: salesaddresses@nxp.com

Date of release: 28 February 2020

Document identifier: IMXACRN