

# **i.MX53 SDK Windows Embedded Compact 7**

## **Multimedia Framework**

### **Release Notes**

## **1 Introduction**

This document contains important information about the package contents, and instructions for building Freescale components on an i.MX53 ARD platform running Windows Embedded Compact 7.

This document does not provide any details of the architecture or APIs in the codecs.

You should have a basic understanding of Microsoft DirectShow framework.

All features are believed to function correctly, except as noted in this document.

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## 2 Release Contents

### 2.1 SDK Documentation Package

The documentation package provided with this release includes all of the documents in the documentation package.

**Table 1. Document Package**

Document Package	Descriptions
MX53_MMFMWK_WINCE_DOCKIT.zip	Documentation set

The compressed file includes all of the related documents in the document package.

**Table 2. Document Contents**

Document Name	Descriptions
imx53_WinCE70_MMFW_RN.pdf	Release notes
imx53_WinCE70_MMFW_UG.pdf	SDK user's guide

### 2.2 SDK Software Packages

Multimedia framework Software Development Kit (SDK) software packages are the collection of both Freescale developed codecs and third party codecs. Freescale developed codecs will be archived as the installer package (in .exe files). And the third party codecs are archived as SDK patches (in .zip files).

**Table 3. Software Packages Contents**

Document Name	Descriptions
WCE700_iMX53_ARD_11.05.03_ER_MM.exe	SDK installer with framework source codes, framework binaries, core lib binaries, core lib header files and support documents
WCE700_MX53_ARD_11.05.03_ER_MM_AACP_DEC.zip <sup>1</sup>	Patches for AACPlus audio decoder
WCE700_MX53_ARD_11.05.03_ER_MM_AC3_DEC.zip <sup>2</sup>	Patches for AC3 audio decoder
WCE700_MX53_ARD_11.05.03_ER_MM_MSFT.zip <sup>3</sup>	Patches for WMA audio decoder, WMA audio encoder, DMX audio post-processor

<sup>1</sup> AACPlus audio decoder has license limitation

<sup>2</sup> AC3 audio decoder has license limitation

<sup>3</sup> WMA audio decoder has license limitation

WMA audio encoder has license limitation

DMX audio post-processor has license limitation

## 3 System Requirements

### 3.1 Hardware Requirements

- MX53 ARD Rev 1.0

### 3.2 Software requirements

- Build machine should be running Microsoft Windows XP.
- Build machine should have the following installed:
  - Windows Embedded Compact 7 with Platform Builder
  - i.MX53 ARD Windows Embedded Compact 7 BSP for ER1105 release

## 4 What is new

This section describes the new changes in this release (version 11.05.03), including new features and defect fixes.

### 4.1 New Features and Enhancements

The following table describes the new features and enhancements since last release.

**Table 4. New Features and Enhancements**

Changes and improvements	Descriptions
New feature of audio	1. OGG support trick mode seek 2. Upgrade mp3 core library to v.2.9.2 3. Support audio recoding into mp3/ wma
New feature of video	1. mkv/mka playback support 2. camera recording into h264/mpg4/h263/mjpg

### 4.2 Defect Fixes

Table 5 describes the issues that have been resolved since the previous release.

**Table 5. Defect Fixes List**

NO.	CR ID	Headline
1	ENGR00141350	[WMX53]Divx5: It takes about 10s to load one Divx5 stream and it plays stutteringly.
2	ENGR00142321	[WMX_MPG] it takes too long time to loading a small mpeg2 video
3	ENGR00124410	[WMX53] Playback time should stop at 4s even if the total duration displays as 22:49 .
4	ENGR00127213	[WMX53] AC3Dec: One clip plays a little slower on device, 5s longer than on PC.
5	ENGR00131509	[WMX53] fsl_jpeg_img_lib.dll is not used by pvviewer.exe
6	ENGR00131803	[WMX53] Mp3Dec: Some short Mp3 stream cannot play.
7	ENGR00143706	[WMX5x_AVI] one 720P video cause AVI parser allocate too large system memory
8	ENGR00143870	[WMX53] Noise at the background when play some clips.
9	ENGR00151165	[WMX_H264] one video flick, when playback rate switch from ffx2 to normal
10	ENGR00123911	[WMX53]H264Dec: No audio from 50s to 90s and only one ear can heard sound for H264_MP40_1920x816_23.98_10313_AACLC_48_256_6_1080p.mov.
11	ENGR00133948	[WMX53] WMAProDec: Playback speed is faster than normal for one M0b stream.
12	ENGR00141055	[WMX53] H264Dec: A/V is not sync for H264_MP40_1920x1080_23.976_9264_AACLC_44.1_96_2_CBR_brooklynfinest.mov .
13	ENGR00143867	[WMX53]Video: Video flicker or mosaic sometimes when playback some VC-1, H264 clips.
14	ENGR00143868	[WMX53]Video: Video flicker and menu bar may be showed when switch between full screen and default screen for all video.
15	ENGR00151335	[WMX53]H264Dec: Video freeze after playing for a while cannot close player after that, have to reboot.
16	ENGR00131699	[WMX53EVK] AVI(Divx+Mp3): Audio is no t right for the 8audio stream, it seems 8 audio mixed

## 5 Supported Features

Table 6~Table 9 identifies the features provided by this release.

**Table 6. Audio Features List**

Feature		Profile	Channel	Sample Rate (Hz)	Bit rate (bps)
Audio decoding	AAC	MPEG-2 and MPEG-4 audio low complexity (LC) profile	<=5.1	8K~96K	8K~256K
	aacPlus	MPEG-2 and MPEG-4 audio low complexity (LC) profile HE-AAC 1.2 HE-AAC 2.0	Mono / Stereo	8K~96K	8K~384K (Mono) 16K~768K (Stereo)
	AC3	Dolby AC3	<=5.1	<=48K	32K~640K
	AMR	AMR Narrow Band	Mono	8K	
	MP3	MPEG-1 Audio Layer I MPEG-1 Audio Layer II MPEG-1 Audio Layer III	Mono / Stereo	<=48K	8K~320K
	WMA Standard	WMA V10 Standard L1 profile	Mono / Stereo	44.1K	64K~161K
		WMA V10 Standard L2 profile	Mono / Stereo	<=48K	<=161K
		WMA V10 Standard L3 profile	Mono / Stereo	<=48K	<=385K
	WMA Professional	WMA V10 Professional M0a profile	Mono / Stereo	<=48K	48K~196K
		WMA V10 Professional M0b profile	Mono / Stereo	<=48K	<=192K
		WMA V10 Professional M1profile	<=5.1	<=48K	<=384K
		WMA V10 Professional M2profile	<=5.1	<=96K	<=768K
		WMA V10 Professional M3profile	<=7.1	<=96K	<=1.5M
	WMA Lossless	WMA V10 Lossless N1 profile	Mono / Stereo	<=48K	<=3M
		WMA V10 Lossless N2 profile	<=5.1	<=96K	<=3M
		WMA V10 Lossless N3 profile	<=7.1	<=96K	<=3M
	FLAC	Free Lossless Audio Codec	<=2	<=192K	
	Oggvorbis	Ogg vorbis audio codec	<=2	<=192K	
Audio encoding	MP3	MPEG-1 Audio Layer III	Mono / Stereo	32/ 44.1/ 48K	8K~320K
	WMA	WMA V8 L1 profile	Mono / Stereo	44.1K	64K~161K
		WMA V8 L2 profile	Mono / Stereo	<=48K	<=161K
		WMA V8 L3 profile	Mono / Stereo	<=48K	<=385K

**Table 7. Video Features List**

Feature		Profile	Max Resolution	Min Resolution
Video decoding	H.263	Supports H.263 baseline profile P3	1920 x 1080@30fps	64 x 64
	H.264	Supports MPEG-4, Part 10 video H.264 baseline / main / high Profile (BP/MP/HP@L4.1)	1920 x 1080@30fps	64 x 64
	MJPEG	Supports JPEG baseline mode	1280 x 720@30fps	16 x 16
	MPEG2	Supports MPEG-1 video Supports MPEG-2 video main profile (MP@HL)	1920 x 1080@30fps	64 x 64
	MPEG4	Supports MPEG-4 Part 2 video simple / advanced simple profile (SP/ASP@L5) except GMC	1920 x 1080@30fps	64 x 64
	VC-1	Supports VC-1 simple / main / advanced	1920 x 1080@30fps	64 x 64

		profile (SP/MP/AP@L3)		
Video encoding	H.263	Supports H.263 baseline profile P3	1280 x 720@30fps	64 x 64
	H.264	Supports MPEG-4, Part 10 video H.264 baseline profile (BP)	1280 x 720@30fps	64 x 64
	MJPEG	Supports JPEG baseline mode	1280 x 720@30fps	64 x 64
	MPEG4	Supports MPEG-4 Part 2 video simple profile (SP)	1280 x 720@30fps	64 x 64

**Table 8. Speech Features List**

Feature	Profile	Sample Rate (Hz)	Bit rate (bps)
Speech decoding / encoding			

**Table 9. Image Features List**

Feature		Profile	Max Resolution	Min Resolution
Image decoding	BMP	Supports BMP	65535 x 65535 <sup>1</sup>	1 x 1
	GIF	Supports GIF 87a, 89a	65535 x 65535 <sup>1</sup>	1 x 1
	JPEG	Supports JPEG baseline/progressive mode	65535 x 65535 <sup>1</sup>	1 x 1
	PNG	Supports PNG V1.0	65535 x 65535 <sup>1</sup>	1 x 1

Table 10 identifies the feature matrix for audio/video playback.

**Table 10. Playback Feature Matrix**

Filename Extension	Container	Video Codec	Audio Codec	Image Codec
.mp3	MPEG-1 Audio Layer III	N/A	MP3	N/A
.wma	Advanced Systems Format	N/A	WMA	N/A
.aac		N/A	AAC LC, AAC+	N/A
.ac3		N/A	AC3	N/A
.asf .wmv	Advanced Systems Format	VC1	WMA	N/A
.flac		N/A	FLAC	N/A
.ogg	OGG	N/A	vorbis	N/A
.mpg	MPEG-2 PS	MPEG-2	MP3, AC3, LPCM	N/A
	MPEG-2 PES	MPEG-2	MP3, AC3, LPCM	N/A

<sup>1</sup> Actual supported maximum resolution depends on the system memory allocation on the i.MX53 platform

	MPEG-1 SS	MPEG-2	MP3	N/A
	MPEG-2 TS	MPEG-2	MP3, AC3, LPCM	N/A
.vob	MPEG2 PS	MPEG-2	AC3, LPCM	N/A
.mp4 .mov .3gp	MPEG-4 Part 14	H.263, H.264, MPEG4	AAC, MP3, AMR	N/A
.avi	Audio Video Interleave	H.264, MPEG4, MJPEG, Xvid, WMV	AAC, AC3, MP3, WMA	N/A
.m4a	MPEG-4 Part 14	N/A	AAC, MP3	N/A
.m4b	MPEG-4 Part 14	N/A	AAC	N/A
.m4v	MPEG-4 Part 14	H.264, MPEG4	N/A	N/A
.mkv	Matroska	H.264, MPEG4, MPEG-2	AAC, AC3, MP3	N/A
.mka	Matroska Audio	N/A	AAC, AC3, MP3	N/A
.bmp	N/A	N/A	N/A	BMP
.gif	N/A	N/A	N/A	GIF 87a & 89a
.jpg	N/A	N/A	N/A	JPEG baseline mode
.png	N/A	N/A	N/A	PNG v1.0

Table 11 identifies the version number for each component in this release.

**Table 11. Component Versions**

Components		Version
Audio codecs	AAC decoder	3.05.0
	AACPlus decoder	3.05.0
	AC3 decoder	3.00.0
	FLAC decoder	2.01.0
	MP3 decoder	2.05.0
	MP3 encoder	2.06.0
	Oggvorbis decoder	2.02.0
	WMA decoder	3.04.0
	WMA encoder	3.01.0
Audio post-processing	PEQ post-processing	1.07.0
	DMX post-processing	2.00.00

Speech codecs		
Video codecs (VPU)	H.263 decoder	1.04.28
	H.264 decoder	
	MPEG2 decoder	
	MPEG4 decoder	
	VC1 decoder	
Parsers	AVI Parser	2.04.6
	MP4 Parser	6.01.9
	MPG parser	4.00.0
	MKV Parser	1.00.5
	OGG Parser	1.05.0
Image codecs	BMP decoder	0.03.0
	GIF decoder	0.03.0
	JPEG decoder	0.06.1
	PNG decoder	0.04.0



## 6 Known Problems

This section will cover known problem with this release.

### 6.1 Known Defects

Table 12 identifies the engineering change requests that have not been resolved.

**Table 12. Known Defects List**

NO.	CR ID	Headline
1	ENGR125383	[WMX53EVK] AACPlus(M4B): Cannot open m4b to play, player does not have any reaction.
2	ENGR131931	[WMX53EVK] VC1Dec: One WMV with avi container cannot open.
3	ENGR131702	[WMX53EVK] XvidDec: A/V is not sync after 1:02, no audio after 3:20.
4	ENGR125362	[WMX53EVK] VPU_Mpeg4Enc: Cannot play the encoded Mpeg4 file on MX53.
5	ENGR123709	[WMX53EVK] VC1Dec: Sometimes reaction is a little slow after seek

### 6.2 Limitations/Issues

Table 13 identifies the limitations of each component.

**Table 13. Limitations/Issues List**

Items	Description
Audio feature limitations	AAC/aacPlus ADIF File format decoding does not support trick mode seeking, so the Windows Embedded Compact media player does not display a time progress bar
	Playback AAC, aacPlus (in .aac file) and MP3 in the Windows Embedded Compact player does not support Fast Forward or Rewind in trick mode
	Playback WMA in the Windows Embedded Compact media player does not support Fast Backward, but only supports 2x Fast Forward
Video feature limitations	The maximum resolution for video decoding is 1920*1080, and the minimum resolution is 64*64
	New Media Player Issue on Windows Embedded Compact 7 Nov 2010 drop <ol style="list-style-type: none"><li>1. When status bar display, system response slowly and causes video/audio playback block. Recommend to use playwnd.exe. The playwnd.exe will be produced through compiling source code of playwnd which locates at \WINCE700\PUBLIC\DIRECTX\SDK\SAMPLES\DSHOW\PLAYERS\PLAY WND.</li><li>2. Media library only recognizes the media file in .avi, .wmv, mp3, .wma</li></ol>
Image feature limitations	Although image decoders have no limitation on image size, the Windows Embedded CE OS system memory allocation is limited on the i.MX53 platform. Therefore, the image test applications may fail to allocate the memory for large size image decode and display. In general, the image of a size less than 1474560 pixels can be decoded and displayed successfully

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