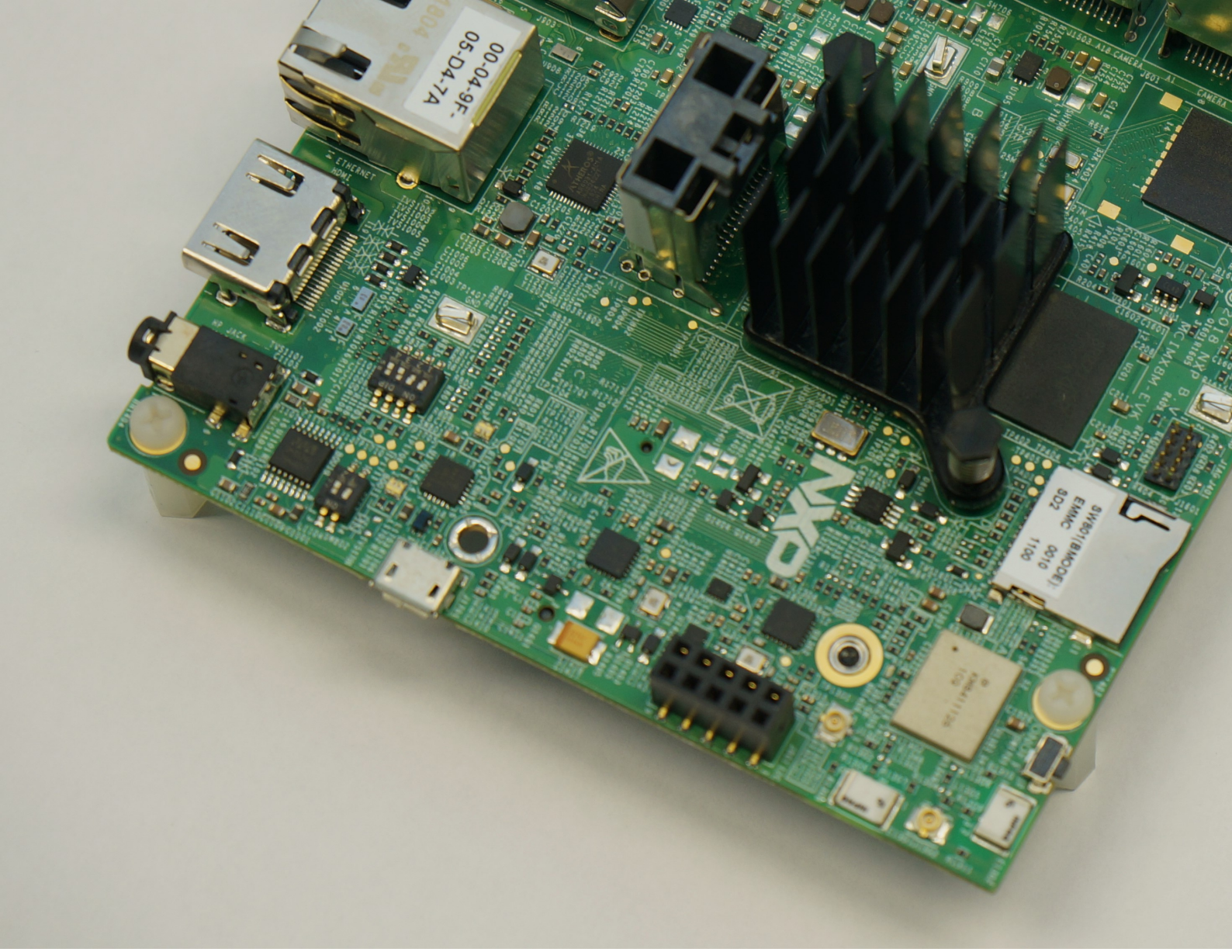

i.MX Windows 10 IoT Release Notes

for NXP i.MX Platform

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Microsoft NXP

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1 Overview

This document contains important information about the package contents, supported features, known issues and limitations in this release. This release is an engineering release for Windows 10 IoT and supports SoC in the i.MX 8 families.

1.1 References

For more information about Windows 10 IoT Enterprise, see Microsoft online documentation.

- http://windowsondevices.com

The quick start guides contain basic information on the board and setting it up. They are on the NXP website.

- i.MX 8M Quad Evaluation Kit Quick Start Guide (IMX8MQUADEVKQSG)
- i.MX 8M Mini Evaluation Kit Quick Start Guide (8MMINIEVKQSG)

Documentation is available online at nxp.com

- i.MX 8 information is at http://www.nxp.com/imx8

2 BSP change history

This chapter lists changes in releases, including new features and defect fixes.

2.1 1/2022 : W0.9.0

Private preview release for i.MX8M platform.

- **Supported boards:** The existing BSP with support for MCIMX8M-EVK NXP board.

2.2 3/2022 : W0.9.1

Public preview release for i.MX8M platform.

- Fixes:
  - **eMMC driver:** eMMC tuning parameters add to the Dsdt-Sdhc.asl.
  - **BSP deployment:** Removed invalid characters from make-winpe-enterprise.cmd.

2.3 4/2022 : W1.0.0

Public release for i.MX8M and i.MX8M Mini platforms.

- **Supported boards:** MCIMX8M-EVK evaluation kit
  8MMINILPD4-EVK evaluation kit
- New features:
  - **VPU driver:** Supported codes HEVC, VP9, H.264, VP8. MPEG-2 and MPEG-4 codes supported on i.MX8M only.
- Fixes:
  - **UART driver:** The UART driver failure during uninstallation in the Device manager has been fixed.
  - **I2C driver:** The issue in iMXI2cRead function (when ReadBufferSize == 1) in UEFI has been fixed.

- buildme 64.sh: : The script has been updated. Updates in UEFI source code were included in firmware.bin only if firmware was built with -c parameter (clean build).
- PCIe: : PCIE ATU (Address Translation Unit) setup for PCIE BAR memory mapped registers in UEFI drivers has been fixed. After this fix, the system works as expected in UEFI and relevant Storage drivers appears in Windows.

3 BSP Supported Features

The following table displays the features supported in this BSP release. If no board is explicitly mentioned, the feature is shared across All boards listed in Supported Hardware in the Release contents section; otherwise, the feature is only supported on the boards listed.

Table 3.1: Supported boards

Board name	Board revision	Schema revision	BSP name
MCIMX8M-EVK	700-29615 REV A3	SCH-29615 REV B4	NXPEVK_iMX8M_4GB
8MMINILPD4-EVK	700-31407 REV X5	SCH-3140 REV C	NXPEVK_iMX8M_Mini_2GB

Table 3.2: Supported features

Feature	Supported board	Comment
Boot Image		
U-Boot	All i.MX	• Clock, Anatop regulator, ENET, UART, MMC/SD, eMMC4.3/4.4/4.5. • SPI-NOR, Parallel NOR, SATA, NAND, FlexSPI-NOR, USB MassStorage.
OP-TEE	All i.MX	• OP-TEE OS is required on the boot partition with the TEE file for OP-TEE enablement.
Machine-specific layer		
Arm® Core	All i.MX	• i.MX 8M Quad supports four Cortex-A53 cores.

Feature	Supported board	Comment
Memory	All i.MX	• i.MX 8M Quad supports one 32-bit LPDDR4 channel @ 1600 MHz and 50 MHz.
Interrupt	All i.MX	• GIC
Clock	All i.MX	• Controls the system frequency and clock tree distribution.
Timer	All i.MX	• System timer tick and broadcast timer support.
GPIO/EDIO	All i.MX	• GPIO is initialized in earlier phase according to hardware design.
IOMUX	All i.MX	• Provides the interfaces for I/O configuration.
DMA engine		
SDMA	8M Quad	• SDMA HAL.
Character device drivers		
UART	All i.MX	• i.MX 8 supports Cortex-A53 processor through UART0 and Cortex-M4 processor through UART2.

Feature	Supported board	Comment
Networking drivers		
ENET	All i.MX	• i.MX 8 supports Atheros AR8031 PHY with 10/100/1000 bps mode
PCIe	All i.MX	• i.MX 8 supports M.2 interface.
Sound drivers		
WM8524	8M Quad	• Supports playback
USB drivers		
USB Host	All i.MX	• Supports USB-A and USB-C connectors.
Video		
HDMI/Display Port	8M Quad	• i.MX 8M Quad supports HDMI through DCSS.
GPU	8M Quad	• HW acceleration for 3D rendering through D3D11 API, thus accelerates D2D, XAML, UWP, WinUI, Windows desktop UI and D3D11 apps.
General drivers		

Feature	Supported board	Comment
uSDHC	All i.MX	• Supports SD, SDXC, eMMC.
I2C	All i.MX	• Supports I2C master.
SPI	All i.MX	• Supports SPI master mode.

4 Known Issues/Limitations

Read through all hardware-related reference material and ensure that you have made all the necessary hardware modifications before using the software.

The imx-windows-bsp reference BSP has the following limitations:

- SD/eMMC is the only supported boot media

Table 4.1: Common known issues and workarounds for i.MX Family SoC

SoC	Module	Source	Description	Workaround
All SoC	Boot	Software	In case multiple SD cards marked as bootable are inserted before power on target might fail to boot.	It is recommended to newly format the SD card using Diskpart.
All SoC	UEFI	Software	USB is not supported in UEFI.	Use on board serial port and console application in order to access UEFI menu.
All SoC	USB	Software	Only USB HOST mode is supported.	No workaround
All SoC	VS2017 build	Software	Build of iMXPlatform.sln fails if there are spaces in project path.	Place the imx-windows-iot directory in way its path doesn't contain spaces.
All SoC	WSL build	Software	On older versions of Windows the OP-TEE Trusted OS build might fail inside WSL environment if the BSP is located in Windows file system.	Move sources to WSL root drive (eg. $HOME).

SoC	Module	Source	Description	Workaround
All SoC	HAL Drivers	Software	The HAL Extensions must be signed be certificates provided by Microsoft. Unfortunately required cerificates that are included in WDK 1809 have expired.	Download the Microsoft Kits Package from Collaborate and use the “Windows OEM HAL Extension Test Cert 2017 (TEST ONLY)” and “Windows OEM Intermediate 2017 (TEST ONLY)” found in the EWDK.iso file or contact Microsoft for help.
All SoC	Drivers	Software	The sdport.sys in the recommended Windows build 19044.1288.211006-0501.21h2_release could cause the blue bug check screen. This could be observed when encrypting volumes with Bitlocker or using Cfimager.	Patch the operating system with newer sport.sys included in bsp. When deploying bsp use `/patch_sdport` option as described in Install Windows IOT Enterprise to eMMC chapter. Please note that this driver is test signed and will cause blue screen in case of testsigning is disabled (`/test_signing` is not used). If testsigning is disabled do not use `/patch_sdport` and install KB5014023.

SoC	Module	Source	Description	Workaround
All SoC	SDHC	Software	The imxusdhc.sys in crashdump mode doesn't read HW specific settings from ACPI so that these values are hardcoded in the SdhcSlotInitialize() method.	Keep these values synchronized with values in Dsdt-Sdhc.asl ACPI table.
All SoC	TPM/BitLocker	Software	Windows does not start if BitLocker encrypted system drive (eMMC). There is failure on "Microsoft Windows Trusted Runtime Secure Service".	Patch firmware according to the following three steps. First apply patch: 'cd mu_platform_nxp/MU_BASECORE/ && git apply ../../patches/patch-mu_platform_nxp-MU_BASECORE.diff && cd ../../'. Second build firmware: './buildme64.sh -b 8M -t all -c -fw -t secured_uefi', change '8M' for another SoC. See Building ARM64 Firmware chapter in User's Guide for more details. Third deploy the firmware, see Deploy boot firmware chapter in User's Guide.

SoC	Module	Source	Description	Workaround
All SoC	signed_firmware	Software	Built signed_firmware.bin does not verify the FIT image signed.	Add CONFIG_IMX_HAB=y and CONFIG_FIT_SIGNATURE=y into uboot-imx/configs/imx8mq_evk_nt_uuu_defco for i.MX8MQ or imx8mm_evk_nt_uuu_defconfig for i.MX8MM and build signed_firmware.bin using command ./buildme64.sh -b 8M -t all -fw -t secured_uefi -t sign_images for i.MX8MQ, use -b 8Mm for i.MX8MM. See Enabling Secure Boot chapter in User's Guide.
i.MX 8MQ	Power management	Software	Device is unable to enter sleep and then wakeup. Device that is left unattended for longer period of time might hang.	Disable sleep.
i.MX 8MQ	UART	Software	The RTS-CTS hardware flow control is not available.	No workaround
i.MX 8MQ	Display	Software	Display driver supports 1280 x 720 60 Hz resolution only.	No workaround
i.MX 8MQ	Display	Software	The driver only supports HDMI monitor.	No workaround

SoC	Module	Source	Description	Workaround
i.MX 8MQ	Display	Software	Monitor power-off is emulated by displaying a blank image.	No workaround
i.MX 8MQ	GPU	Software	The driver doesn't support D3D9, so WPF (Windows Present Foundation) will not be accelerated.	No workaround
i.MX 8MM	Power management	Software	Device is unable to enter sleep and then wakeup. Device that is left unattended for longer period of time might hang.	Disable sleep.
i.MX 8MM	Power management	Software	Thermal management is not supported.	No workaround
i.MX 8MM	UART	Software	The RTS-CTS hardware flow control is not available.	No workaround
i.MX 8MM	Display	Software	Display driver supports 1920 x 1080 60 Hz resolution only.	No workaround
i.MX 8MM	Display	Software	The driver only supports HDMI monitor.	No workaround
i.MX 8MM	Display	Software	Display driver supports 1280 x 720 60 Hz resolution only.	No workaround
i.MX 8MM	Display	Software	Monitor power-off is emulated by displaying a blank image.	No workaround

5 Revision History

Table 5.1: Revision history

Revision number	Date	Substantive changes
W0.9.0	1/2022	Private preview release for i.MX8M platform.
W0.9.1	3/2022	Public preview release for i.MX8M platform.
W1.0.0	4/2022	Public release for i.MX8M and i.MX8M Mini platforms.