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# **MCUXpresso SDK Release Notes Supporting evkmimx8mm**

**Change Logs**

**NXP Semiconductors**



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# 1 Driver Change Log

## CLOCK

The current CLOCK driver version is 2.2.2

- 2.2.2
  - Bug Fixes
    - \* Corrected and added clock information for IOMUX and IPMUX.
- 2.2.1
  - Bug Fixes
    - \* Fixed MISRA C-2012 rule 10.1,rule 10.4,rule 10.8,rule 20.7,rule 13.2.
- 2.2.0
  - Improvements
    - \* Moved SDK\_DelayAtLeastUs from clock driver to common driver.
- 2.1.0
  - Improvements
    - \* Added new delay API for clock driver.
- 2.0.0
  - Initial version.

## IOMUXC

The current IOMUXC driver version is 2.0.1.

- 2.0.1
  - Doxygen improvement.
- 2.0.0
  - Initial version.

## ECSPI\_CMSIS

Current ecspi\_cmsis driver version is 2.2

- 2.2
  - Bug Fixes
    - \* Fixed the MISRA-2012 violations.
      - Fixed rule 8.4, 8.6, 10.1, 10.3, 10.4, 11.1, 11.8, 11.9, 14.4, 16.1, 16.3, 16.4, 20.7, 20.9.
- 2.1
  - Bug Fixes
    - \* Fixed the bug that, the parameter num of APIs ARM\_SPI\_Transfer, ARM\_SPI\_Send and ARM\_SPI\_Receive, and the return value of API ARM\_SPI\_GetDataCount should be the number of data item defined by datawidth, rather than the number of byte.

- 2.0
  - Initial version.

## I2C

Current I2C CMSIS driver version is 2.2

- 2.2
  - Bug Fixes
    - \* Fixed the MISRA-2012 violations.
      - Fixed rule 8.4, 8.6, 10.1, 10.3, 10.4, 11.1, 11.8, 11.9, 14.4, 16.1, 16.3, 16.4, 20.7, 20.9.
- 2.1
  - Bug Fixes
    - \* Fixed the bug that in PowerControl, module should be reset first by calling I2C\_MasterInit and I2C\_SlaveInit.
- 2.0
  - Initial version.

## UART

The current UART CMSIS driver version is 2.1

- 2.1
  - Bug Fixes
    - \* Fixed the violations of MISRA C-2012 rules: 10.1,10.3,10.4,11.1,11.9,14.4,15.7,16.1,16.-6,20.9.
- 2.0
  - Initial version.

## COMMON

The current COMMON driver version is 2.3.0.

- 2.3.0
  - Improvements
    - \* Split the driver to common part and CPU architecture related part.
- 2.2.10
  - Bug Fixes
    - \* Fixed the ATOMIC macros build error in cpp files.
- 2.2.9
  - Bug Fixes
    - \* Fixed MISRA C-2012 issue, 5.6, 5.8, 8.4, 8.5, 8.6, 10.1, 10.4, 17.7, 21.3.
    - \* Fixed SDK\_Malloc issue that not allocate memory with required size.
- 2.2.8

- Improvements
  - \* Included stddef.h header file for MDK tool chain.
- New Features:
  - \* Added atomic modification macros.
- 2.2.7
  - Other Change
    - \* Added MECC status group definition.
- 2.2.6
  - Other Change
    - \* Added more status group definition.
  - Bug Fixes
    - \* Undef \_\_VECTOR\_TABLE to avoid duplicate definition in cmsis\_clang.h
- 2.2.5
  - Bug Fixes
    - \* Fixed MISRA C-2012 rule-15.5.
- 2.2.4
  - Bug Fixes
    - \* Fixed MISRA C-2012 rule-10.4.
- 2.2.3
  - New Features
    - \* Provided better accuracy of SDK\_DelayAtLeastUs with DWT, use macro SDK\_DELAY\_USE\_DWT to enable this feature.
    - \* Modified the Cortex-M7 delay count divisor based on latest tests on RT series boards, this setting lets result be closer to actual delay time.
- 2.2.2
  - New Features
    - \* Added include RTE\_Components.h for CMSIS pack RTE.
- 2.2.1
  - Bug Fixes
    - \* Fixed violation of MISRA C-2012 Rule 3.1, 10.1, 10.3, 10.4, 11.6, 11.9.
- 2.2.0
  - New Features
    - \* Moved SDK\_DelayAtLeastUs function from clock driver to common driver.
- 2.1.4
  - New Features
    - \* Added OTFAD into status group.
- 2.1.3
  - Bug Fixes
    - \* MISRA C-2012 issue fixed.
      - Fixed the rule: rule-10.3.
- 2.1.2
  - Improvements
    - \* Add SUPPRESS\_FALL\_THROUGH\_WARNING() macro for the usage of suppressing fallthrough warning.
- 2.1.1

- Bug Fixes
    - \* Deleted and optimized repeated macro.
- 2.1.0
  - New Features
    - \* Added IRQ operation for XCC toolchain.
    - \* Added group IDs for newly supported drivers.
- 2.0.2
  - Bug Fixes
    - \* MISRA C-2012 issue fixed.
      - Fixed the rule: rule-10.4.
- 2.0.1
  - Improvements
    - \* Removed the implementation of LPC8XX Enable/DisableDeepSleepIRQ() function.
    - \* Added new feature macro switch "FSL\_FEATURE\_HAS\_NO\_NONCACHEABLE\_SECTION" for specific SoCs which have no noncacheable sections, that helps avoid an unnecessary complex in link file and the startup file.
    - \* Updated the align(x) to **attribute**(aligned(x)) to support MDK v6 armclang compiler.
- 2.0.0
  - Initial version.

## ECSPI

The current eCSPI driver version is 2.2.0.

- 2.2.0
  - Bug Fixes
    - \* Removed the useless channel configuration of waveform, since the waveform can not be configured when not using the exchange bit(ECSPiX\_CONREG[XCH]) for the transfer.
    - \* Fixed violations of MISRA C-2012 rules: 10.1, 11.9, 8.4.
- 2.1.1
  - Bug Fixes
    - \* Fixed violations of MISRA C-2012 rules: 10.1, 10.3, 10.4, 11.9, 14.4, 15.7, 17.7.
- 2.1.0
  - Improvements
    - \* Added timeout mechanism when waiting certain states in transfer driver.
- 2.0.2
  - Bug Fixes
    - \* Fixed violations of MISRA C-2012 rules: 10.1, 10.3, 10.4
- 2.0.1
  - Bug Fixes
    - \* Memset local variable SDMA transfer configuration structure to make sure unused members in structure are cleared.
    - \* Fixed sign-compare warning in ECSPI\_SendTransfer.
- 2.0.0

- Initial version.

## GPC

The current GPC driver version is 2.2.0.

- 2.2.0
  - Improvements
    - \* Optimized the exited APIs to support extended IRQs and slots.
  - Bug Fixes
    - \* Fixed the violations of MISRA C-2012 rules.
- 2.1.0
  - Improvements
    - \* Unified the register or bit fields' name which contains specific cortex M core information.
  - Bug Fixes
    - \* Fixed Coverity Out-of-bounds issue.
- 2.0.1
  - Improvements
    - \* Added parameters to enable/disable the WFI and DSM mask.
- 2.0.0
  - Initial version.

## GPT

The current GPT driver version is 2.0.3.

- 2.0.3
  - Bug Fixes
    - \* Fixed violations of the MISRA C-2012 rules 5.3 by customizing function parameter.
- 2.0.2
  - Bug Fixes
    - \* Fixed violations of the MISRA C-2012 rules 17.7.
- 2.0.1
  - Bug Fixes
    - \* Fixed violations of the MISRA C-2012 rules 10.1, 10.3, 10.4, 10.6, 10.8, 17.7.
- 2.0.0
  - Initial version.

## GPIO

The current GPIO driver version is 2.0.5.

- 2.0.5
  - Bug Fixes



- \* Fixed MISRA C-2012 issue: rule-17.7.
- 2.0.4
  - Improvements
    - \* Updated the GPIO\_PinWrite to use atomic operation if possible.
  - Bug Fixes
    - \* Fixed GPIO\_PortToggle bug with platforms don't have register DR\_TOGGLE.
- 2.0.3
  - Bug Fixes
    - \* MISRA C-2012 issue fixed.
      - Fixed rules, containing: rule-10.3, rule-14.4, and rule-15.5.
- 2.0.2
  - Bug Fixes
    - \* Fixed the bug of enabling wrong GPIO clock gate in initial API. Since some GPIO instances may not have a clock gate enabled, it checks the clock gate number and makes sure the clock gate is valid.
- 2.0.1
  - Improvements
    - \* API interface changes:
      - Refined naming of the API while keeping all original APIs, marking them as deprecated. Original APIs will be removed in next release. The main change is to update the API with prefix of \_PinXXX() and \_PortXXX().
- 2.0.0
  - Initial version.

## I2C

The current I2C driver version is 2.0.7.

- 2.0.7
  - Bug Fixes
    - \* Fixed MISRA issues.
      - Fixed rules 8.4, 8.5.
- 2.0.6
  - Bug Fixes
    - \* Fixed the bug that, in I2C\_MasterStop after the stop command is issued, the IBB flag should be cleared rather than set.
    - \* Fixed the bug that to clear kI2C\_ArbitrationLostFlag and kI2C\_IntPendingFlag, their bits should be written '0' rather than '1'.
- 2.0.5
  - Bug Fixes
    - \* Fixed Coverity issue of unchecked return value in I2C\_RTOS\_Transfer.
    - \* Fixed MISRA issues.
      - Fixed rules 10.1, 10.3, 10.4, 11.9, 14.4, 15.7, 16.4, 17.7.
  - Improvements

- \* Updated the I2C\_WAIT\_TIMEOUT macro to unified name I2C\_RETRY\_TIMES.
- 2.0.4
  - Bug Fixes
    - \* Fixed the issue that I2C Master transfer APIs(blocking/non-blocking) did not support the situation that master transfer with subaddress and transfer data size being zero, which means no data followed by the subaddress.
- 2.0.3
  - Improvements
    - \* Improved code readability, added new static API I2C\_WaitForStatusReady for the status flag wait, and changed to call I2C\_WaitForStatusReady instead of polling flags with reading register.
- 2.0.2
  - Improvements
    - \* Added I2C\_WATI\_TIMEOUT macro to allow users to specify the timeout times for waiting flags in functional API and blocking transfer API.
- 2.0.1
  - Bug Fixes
    - \* Added a proper handle for transfer config flag kI2C\_TransferNoStartFlag to support transmit with kI2C\_TransferNoStartFlag flag. Only supports write only or write+read with no start flag; does not support read only with no start flag.
- 2.0.0
  - Initial version.

## PWM

The current PWM driver version is 2.0.1.

- 2.0.1
  - Bug Fixes
    - \* Fixed violations of the MISRA C-2012 rules 17.7.
- 2.0.0
  - Initial version.

## UART

The current UART driver version is 2.3.1.

- 2.3.1
  - Improvements
    - \* Use separate data for TX and RX in uart\_transfer\_t.
  - Bug Fixes
    - \* Fixed bug that when ring buffer is used, if some data is received in ring buffer first before calling UART\_TransferReceiveNonBlocking, the received data count returned by UART\_TransferGetReceiveCount is wrong.

- 2.3.0
  - Bug Fixes
    - \* Fixed DMA transfer blocking issue by enabling tx idle interrupt after DMA transmission finishes.
- 2.2.1
  - Bug Fixes
    - \* Fixed MISRA 2012 rule 10.4 violation.
- 2.2.0
  - New Features
    - \* Modified `uart_config_t`, `UART_Init` and `UART_GetDefaultConfig` APIs so that the RTS and CTS used for hardware flow control can be enabled during module initialization.
    - \* Added API `UART_SetRxRTSWatermark` so that the water mark level of RTS deassertion can be configured.
- 2.1.1
  - Bug Fixes
    - \* Fixed MISRA 8.5 violation.
- 2.1.0
  - Improvements
    - \* Added timeout mechanism when waiting for certain states in transfer driver.
- 2.0.2
  - Improvements
    - \* Added check for transmission complete in `UART_WriteBlocking`, `UART_Transfer-HandleIRQ` and `UART_SendSDMACallback` to ensure all the data would be sent out to bus.
    - \* Modified `UART_ReadBlocking` so that if more than one receiver errors occur, all status flags will be cleared and the most severe error status will be returned.
  - Bug Fixes
    - \* Fixed MISRA issues.
      - Fixed rules 10.1, 10.3, 10.4, 10.6, 10.7, 10.8, 11.9, 14.4.
- 2.0.1
  - Bug Fixes
    - \* Memset local variable SDMA transfer configuration structure to make sure unused members in structure are cleared.
- 2.0.0
  - Initial version.

## UART\_FREERTOS

The current UART\_FREERTOS driver version is 2.1.1.

- 2.1.1
  - Refer UART driver change log 2.0.0 to 2.1.1.

## UART\_SDMA

The current UART\_SDMA driver version is 2.3.0.

- 2.3.0
  - Refer UART driver change log 2.0.0 to 2.1.1, 2.3.0.

## MU

The Current MU driver version is 2.0.7.

- 2.0.7
  - Bug Fixes
    - \* Fixed MU\_GetInterruptsPending bug that can not get general interrupt status.
- 2.0.6
  - Bug Fixes
    - \* Fixed violations of the MISRA C-2012 rules 17.7.
- 2.0.5
  - Bug Fixes
    - \* Fixed violations of the MISRA C-2012 rules 14.4, 15.5.
- 2.0.4
  - Improvements
    - \* Improved for the platforms which don't support reset assert interrupt and get the other core power mode.
- 2.0.3
  - Bug fixes
    - \* MISRA C-2012 issue fixed.
      - Fixed rules, containing: rule-10.3, rule-14.4, rule-15.5.
- 2.0.2
  - Improvements
    - \* Added support for MIMX8MQx.
- 2.0.1
  - Improvements
    - \* Added support for MCIMX7Ux\_M4.
- 2.0.0
  - Initial version.

## PDM

The current PDM driver version is 2.5.0.

- 2.5.0
  - Bug Fixes
    - \* Fixed violations of the MISRA C-2012 rules 8.4, 16.5, 10.4, 10.3, 10.1, 11.9, 17.7, 10.6, 14.4, 11.8, 11.6.

- 2.4.1
  - Bug Fixes
    - \* Fixed MDK 66-D warning in pdm driver.
- 2.4.0
  - Improvements
    - \* Added api PDM\_TransferSetChannelConfig/PDM\_ReadFifo to support read different width data.
    - \* Added feature FSL\_FEATURE\_PDM\_HAS\_RANGE\_CTRL and api PDM\_ClearRangeStatus/PDM\_GetRangeStatus for range register.
  - Bug Fixes
    - \* Fixed violation of MISRA C-2012 Rule 14.4, 10.3, 10.4.
- 2.3.0
  - Improvements
    - \* Enabled envelope/energy voice detect mode by adding apis PDM\_SetHwvadInEnvelopeBasedMode/PDM\_SetHwvadInEnergyBasedMode.
    - \* Added feature FSL\_FEATURE\_PDM\_CHANNEL\_NUM for different SOC.
- 2.2.1
  - Bug Fixes
    - \* Fixed violation of MISRA C-2012 Rule 10.1, 10.3, 10.4, 10.6, 10.7, 11.3, 11.8, 14.4, 17.7, 18.4.
    - \* Added medium quality mode support in function PDM\_SetSampleRateConfig.
- 2.2.0
  - Improvements
    - \* Added api PDM\_SetSampleRateConfig to improve user experience and marked api PDM\_SetSampleRate as deprecated.
- 2.1.1
  - Improvements
  - Used new SDMA API SDMA\_SetDoneConfig instead of SDMA\_EnableSwDone for PDM SDMA driver.
- 2.1.0
  - Improvements
    - \* Added software buffer queue for transactional API.
- 2.0.1
  - Improvements
    - \* Improved HWVAD feature.
- 2.0.0
  - Initial version.

## RDC

The current RDC driver version is 2.2.0.

- 2.2.0
  - New Features

- \* Added APIs to get memory region or peripheral access policy for specific domain.
- 2.1.1
  - Bug Fixes
    - \* Fixed violations of the MISRA C-2012 rules 10.6.
- 2.1.0
  - Improvements
    - \* Enhanced to support memory region larger than 32-bit address.
- 2.0.2
  - Bug Fixes
    - \* Fixed violations of the MISRA C-2012 rules 10.3, 10.4, 11.3, 11.8, 17.7.
- 2.0.1
  - Bug Fixes:
    - \* Added \_\_DSB after new configuration is set to ensure the new configuration takes effect.
- 2.0.0
  - Initial version.

## RDC\_SEMA42

The current RDC\_SEMA42 driver version is 2.0.3.

- 2.0.3
  - Improvements:
    - \* Supported the RDC\_SEMAPHORE\_Type structure whose gate registers are defined as an array.
- 2.0.2
  - Bug Fixes
    - \* Fixed violations of the MISRA C-2012 rules 10.3, 10.4, 10.8, 14.3, 14.4, 18.1.
- 2.0.1
  - Improvements:
    - \* Added support for the platforms that don't have dedicated RDC\_SEMA42 clock gate.
- 2.0.0
  - Initial version.

## SAI

The current SAI driver version is 2.3.3

- 2.3.3
  - Bug Fixes
    - \* Added bit clock polarity configuration when sai act as slave.
    - \* Fixed out of bound access coverity issue.
    - \* Fixed violations of MISRA C-2012 rule 10.3, 10.4.
- 2.3.2
  - Bug Fixes

- \* Corrected the frame sync configuration when sai act as slave.
- 2.3.1
  - Bug Fixes
    - \* Corrected the peripheral name in function SAI0\_DriverIRQHandler.
    - \* Fixed violations of MISRA C-2012 rule 17.7.
- 2.3.0
  - Bug Fixes
    - \* Fixed the build error caused by the SOC has no fifo feature.
- 2.2.3
  - Bug Fixes
    - \* Corrected the peripheral name in function SAI0\_DriverIRQHandler.
- 2.2.2
  - Bug Fixes
    - \* Fixed the issue of MISRA 2004 rule 9.3.
    - \* Fixed sign-compare warning.
    - \* Fixed the PA082 build warning.
    - \* Fixed sign-compare warning.
    - \* Fixed violations of MISRA C-2012 rule 10.3,17.7,10.4,8.4,10.7,10.8,14.4,17.7,11.6,10.-1,10.6,8.4,14.3,16.4,18.4.
    - \* Allow to reset Rx or Tx FIFO pointers only when Rx or Tx is disabled.
  - Improvements
    - \* Added 24bit raw audio data width support in sai sdma driver.
    - \* Disabled the interrupt/DMA request in the SAI\_Init to avoid generates unexpected sai FIFO requests.
- 2.2.1
  - Improvements
    - \* Added mclk post divider support in function SAI\_SetMasterClockDivider.
    - \* Removed useless configuration code in SAI\_RxSetSerialDataConfig.
  - Bug Fixes
    - \* Fixed the SAI SDMA driver build issue caused by the wrong structure member name used in the function SAI\_TransferRxSetConfigSDMA/SAI\_TransferTxSetConfigSDMA.
    - \* Fixed BAD BIT SHIFT OPERATION issue caused by the FSL\_FEATURE\_SAI\_CHANNEL\_COUNTn.
    - \* Applied ERR05144: not set FCONT = 1 when TMR > 0, otherwise the TX may not work.
- 2.2.0
  - Improvements
    - \* Added new APIs for parameters collection and simplified user interfaces:
      - SAI\_Init
      - SAI\_SetMasterClockConfig
      - SAI\_TxSetBitClockRate
      - SAI\_TxSetSerialDataConfig
      - SAI\_TxSetFrameSyncConfig
      - SAI\_TxSetFifoConfig
      - SAI\_TxSetBitclockConfig
      - SAI\_TxSetConfig

- SAI\_TxSetTransferConfig
  - SAI\_RxSetBitClockRate
  - SAI\_RxSetSerialDataConfig
  - SAI\_RxSetFrameSyncConfig
  - SAI\_RxSetFifoConfig
  - SAI\_RxSetBitclockConfig
  - SAI\_RXSetConfig
  - SAI\_RxSetTransferConfig
  - SAI\_GetClassicI2SConfig
  - SAI\_GetLeftJustifiedConfig
  - SAI\_GetRightJustifiedConfig
  - SAI\_GetTDMConfig
- 2.1.9
  - Improvements
    - \* Improved SAI driver comment for clock polarity.
    - \* Added enumeration for SAI for sample inputs on different edges.
    - \* Changed FSL\_FEATURE\_SAI\_CHANNEL\_COUNT to FSL\_FEATURE\_SAI\_CHANNEL\_COUNTn(base) for the difference between the different SAI instances.
  - Added new APIs:
    - \* SAI\_TxSetBitClockDirection
    - \* SAI\_RxSetBitClockDirection
    - \* SAI\_RxSetFrameSyncDirection
    - \* SAI\_TxSetFrameSyncDirection
- 2.1.8
  - Improvements
    - \* Added feature macro test for the sync mode2 and mode 3.
    - \* Added feature macro test for masterClockHz in sai\_transfer\_format\_t.
- 2.1.7
  - Improvements
    - \* Added feature macro test for the mclkSource member in sai\_config\_t.
    - \* Changed "FSL\_FEATURE\_SAI5\_SAI6\_SHARE\_IRQ" to "FSL\_FEATURE\_SAI\_SAI5\_SAI6\_SHARE\_IRQ".
    - \* Added #ifndef #endif check for SAI\_XFER\_QUEUE\_SIZE to allow redefinition.
  - Bug Fixes
    - \* Fixed build error caused by feature macro test for mclkSource.
- 2.1.6
  - Improvements
    - \* Added feature macro test for mclkSourceClockHz check.
    - \* Added bit clock source name for general devices.
  - Bug Fixes
    - \* Fixed incorrect channel numbers setting while calling RX/TX set format together.
- 2.1.5
  - Bug Fixes
    - \* Corrected SAI3 driver IRQ handler name.
    - \* Added I2S4/5/6 IRQ handler.



- \* Added base in handler structure to support different instances sharing one IRQ number.
- New Features
  - \* Updated SAI driver for MCR bit MICS.
  - \* Added 192 KHZ/384 KHZ in the sample rate enumeration.
  - \* Added multi FIFO interrupt/SDMA transfer support for TX/RX.
  - \* Added an API to read/write multi FIFO data in a blocking method.
  - \* Added blk bypass support when blk is same with mclk.
- 2.1.4
  - New Features
    - \* Added an API to enable/disable auto FIFO error recovery in platforms that support this feature.
    - \* Added an API to set data packing feature in platforms which support this feature.
- 2.1.3
  - New Features
    - \* Added feature to make I2S frame sync length configurable according to bitWidth.
- 2.1.2
  - Bug Fixes
    - \* Added 24-bit support for SAI eDMA transfer. All data shall be 32 bits for send/receive, as eDMA cannot directly handle 3-Byte transfer.
- 2.1.1
  - Improvements
    - \* Reduced code size while not using transactional API.
- 2.1.0
  - Improvements
    - \* API name changes:
      - SAI\_GetSendRemainingBytes -> SAI\_GetSentCount.
      - SAI\_GetReceiveRemainingBytes -> SAI\_GetReceivedCount.
      - All names of transactional APIs were added with "Transfer" prefix.
      - All transactional APIs use base and handle as input parameter.
      - Unified the parameter names.
  - Bug Fixes
    - \* Fixed WLC bug while reading TCSR/RCSR registers.
    - \* Fixed MOE enable flow issue. Moved MOE enable after MICS settings in SAI\_TxInit/SAI\_RxInit.
- 2.0.0
  - Initial version.

## SDMA

The current SDMA driver version is 2.3.4.

- 2.3.4
  - Bug Fixes
    - \* Fixed the violation of MISRA C-2012 rule 10.4.

- 2.3.3
  - Improvements
    - \* Improved sdma driver comments and parameters validation.
- 2.3.2
  - Bug Fixes
    - \* Fixed violations of MISRA C-2012 rule 10.6.
- 2.3.1
  - Improvements
    - \* Removed clear all channel interrupt status in SDMA\_HandleIRQ to avoid the possibility of losing interrupt.
- 2.3.0
  - Improvements
    - \* Added peripheral-to-peripheral support in SDMA driver.
    - \* Added 24bit data width support in sdma driver.
  - Bug Fixes
    - \* Fixed Coverity issue: left shift may overflow issue.
    - \* Fixed MISRA2004 issue: the operand of underlying type 'unsigned char' or 'unsigned short' caused the result cast to the underlying type.
    - \* Fixed violations of MISRA C-2012 rule 10.3, 11.9, 10.4, 17.7, 20.7, 14.4, 11.6, 12.2, 16.4.
- 2.2.1
  - Bug Fixes
    - \* Fixed MISRA 2004 issue in sdma driver.
- 2.2.0
  - Improvements
    - \* Added fsl\_sdma\_script.h to define the sdma script address and firmware.
    - \* Updated the format of generic register R7 to align with newest firmware.
- 2.1.1
  - Improvements
    - \* Added SDMA\_SetDoneConfig to support hardware/software done configuration.
    - \* Marked SDMC\_EnableSwDone as deprecated.
  - Bug Fixes
    - \* Fixed logical dead code issue in function SDMA\_SetDoneConfig.
- 2.1.0
  - Improvements
    - \* Added SDMA\_SetMultiFifoConfig API to support multi fifo feature.
    - \* Added SDMA\_EnableSwDone API to support software done feature.
    - \* Added SDMA\_LoadScript API to support load script to SDMA program memory.
    - \* Added SDMA\_DumpScript API to support dump script from SDMA program memory.
    - \* Added SDMA3 IRQ handler.
- 2.0.0
  - Initial version.

## SEMA4

The current SEMA4 driver version is 2.0.2.

- 2.0.2
  - Improvements:
    - \* Supported the SEMA4\_Type structure whose gate registers are defined as an array.
- 2.0.1
  - Bug Fixes
    - \* Fixed violations of the MISRA C-2012 rules 10.3, 10.4, 15.5, 18.1, 18.4.
- 2.0.0
  - Initial version.

## TMU

The current TMU driver version is 2.1.1.

- 2.1.1
  - Bug Fixes
    - \* Fixed violations of the MISRA C-2012 Rule 10.1, 10.4, 15.5.
- 2.1.0
  - Other Changes:
    - \* Removed the gain setting and reference voltage setting of amplifier.
- 2.0.1
  - Bug Fixes
    - \* Fixed missing right pair definition for extern C.
- 2.0.0
  - Initial version.
  - This module was first developed on i.MX 8MM.

## WDOG

The current WDOG driver version is 2.1.1.

- 2.1.1
  - Bug Fixes
    - \* MISRA C-2012 issue fixed: rule 10.1, 10.3, 10.4, 10.6, 10.7 and 11.9.
    - \* Fixed the issue of the inseparable process interrupted by other interrupt source.
      - WDOG\_Init
      - WDOG\_Refresh
- 2.1.0
  - New Features
    - \* Added new API "WDOG\_TriggerSystemSoftwareReset()" to allow users to reset the system by software.
    - \* Added new API "WDOG\_TriggerSoftwareSignal()" to allow users to trigger a WDOG\_B

signal by software.

- \* Removed the parameter "softwareAssertion" and "softwareResetSignal" out of the wdog\_config\_t structure.
  - \* Added new parameter "enableTimeOutAssert" to the wdog\_config\_t structure. With this parameter enabled, when the WDOG timeout occurs, a WDOG\_B signal will be asserted. This signal can be routed to external pin of the chip. Note that WDOG\_B signal remains asserted until a power-on reset (POR) occurs.
- 2.0.1
    - New Features
      - \* Added control macro to enable/disable the CLOCK code in current driver.
  - 2.0.0
    - Initial version.

## 2 Middleware Change Log

### Multicore SDK

The current version of Multicore SDK is 2.10.0.

- 2.10.0
  - Multicore SDK component versions:
    - \* embedded Remote Procedure Call (eRPC) v1.8.1
    - \* eRPC generator (erpcgen) v1.8.1
    - \* Multicore Manager (MCMgr) v4.1.1
    - \* RPMsg-Lite v3.1.2
  - New features:
    - \* eRPC: Fix misra erpc c, GitHub PR #158.
    - \* eRPC: Allow conditional compilation of message\_loggers and pre\_post\_action.
    - \* eRPC: New i2c\_slave\_transport transport introduced.
    - \* eRPC: (D)SPI slave transports updated to avoid busy loops in rtos environments.
    - \* erpcgen: Re-implement EnumMember::hasValue(), GitHub PR #159.
    - \* erpcgen: Fixing several misra issues in shim code, erpcgen and unit tests updated, GitHub PR #156.
    - \* erpcgen: Fix bison file, GitHub PR #156.
    - \* RPMsg-Lite: Fixed incorrect description of the rpmsg\_lite\_get\_endpoint\_from\_addr function.
    - \* RPMsg-Lite: Updated RL\_BUFFER\_COUNT documentation.
    - \* RPMsg-Lite: env\_print macro adjusted to address MISRA 21.6 rule in MCUXpressoSDK projects.
- 2.9.0
  - Multicore SDK component versions:
    - \* embedded Remote Procedure Call (eRPC) v1.8.0
    - \* eRPC generator (erpcgen) v1.8.0
    - \* Multicore Manager (MCMgr) v4.1.1
    - \* RPMsg-Lite v3.1.1
  - New features:
    - \* eRPC: Support win32 thread, GitHub PR #108.
    - \* eRPC: Add mbed support for malloc() and free(), GitHub PR #92.
    - \* eRPC: Update makefile.
    - \* eRPC: Fixed warnings and error with using MessageLoggers, GitHub PR #127.
    - \* eRPC: Extend error msg for python server service handle function, GitHub PR #132.
    - \* eRPC: Update CMSIS UART transport layer to avoid busy loops in rtos environments, introduce semaphores.
    - \* eRPC: Introduced pre and post callbacks for eRPC call, GitHub PR #131.
    - \* eRPC: Introduced new USB CDC transport.
    - \* eRPC: Introduced new Linux spidev-based transport.
    - \* eRPC: SPI transport update to allow usage without handshaking GPIO.

- \* eRPC: Native WIN32 erpc serial transport and threading.
  - \* eRPC: Arbitrator deadlock fix, TCP transport updated, TCP setup functions introduced, GitHub PR #121.
  - \* eRPC: Update of matrix\_multiply.py example: Add -serial and -baud argument, GitHub PR #137.
  - \* eRPC: Added formatting extension for VSC, GitHub PR #134.
  - \* eRPC: Update of .clang-format, GitHub PR #140.
  - \* eRPC: Update of erpc\_framed\_transport.cpp: return error if received message has zero length, GitHub PR #141.
  - \* eRPC, erpcgen: Fixed error messages produced by -Wall -Wextra -Wshadow -pedantic-errors compiler flags, GitHub PR #136, #139.
  - \* eRPC, erpcgen: Core re-formatted using Clang version 10.
  - \* erpcgen: Enable deallocation in server shim code when callback/function pointer used as out parameter in IDL.
  - \* erpcgen: Removed '\$' character from generated symbol name in '\$union' suffix, GitHub PR #103.
  - \* erpcgen: Resolved mismatch between C++ and Python for callback index type, GitHub PR #111.
  - \* erpcgen: Python generator improvements, GitHub PR #100, #118.
  - \* erpcgen: Fixed error messages produced by -Wall -Wextra -Wshadow -pedantic-errors compiler flags, GitHub PR #136.
  - \* erpcgen: Introduce ustring type for unsigned char and force cast to char\*, GitHub PR #125.
  - \* RPMsg-Lite: Introduced RL\_ALLOW\_CONSUMED\_BUFFERS\_NOTIFICATION config option to allow opposite side notification sending each time received buffers are consumed and put into the queue of available buffers.
  - \* RPMsg-Lite: Added environment layers for Threadx.
- 2.8.0
    - Multicore SDK component versions:
      - \* embedded Remote Procedure Call (eRPC) v1.7.4
      - \* eRPC generator (erpcgen) v1.7.4
      - \* Multicore Manager (MCMgr) v4.1.0
      - \* RPMsg-Lite v3.1.0
    - New features:
      - \* eRPC: Unit test code updated to handle service add and remove operations.
      - \* eRPC: Several MISRA issues in rpmsg-based transports addressed.
      - \* eRPC: Support MU transport unit testing.
      - \* eRPC: Adding mbed os support.
      - \* eRPC: Fixed Linux/TCP acceptance tests in release target.
      - \* eRPC: Minor documentation updates, code formatting.
      - \* erpcgen: Whitespace removed from C common header template.
      - \* RPMsg-Lite: MISRA C-2012 violations fixed (7.4).
      - \* RPMsg-Lite: Fix missing lock in rpmsg\_lite\_rx\_callback() for QNX env.
      - \* RPMsg-Lite: Correction of rpmsg\_lite\_instance structure members description.
      - \* RPMsg-Lite: Address -Waddress-of-packed-member warnings in GCC9.

- \* RPMsg-Lite: Clang update to v10.0.0, code re-formatted.
- 2.7.0
  - Multicore SDK component versions:
    - \* embedded Remote Procedure Call (eRPC) v1.7.3
    - \* eRPC generator (erpcgen) v.1.7.3
    - \* Multicore Manager (MCMgr) v4.1.0
    - \* RPMsg-Lite v3.0.0
  - New features:
    - \* eRPC: Improved the test\_callbacks logic to be more understandable and to allow requested callback execution on the server side.
    - \* eRPC: TransportArbitrator::prepareClientReceive modified to avoid incorrect return value type.
    - \* eRPC: The ClientManager and the ArbitratedClientManager updated to avoid performing client requests when the previous serialization phase fails.
    - \* erpcgen: Generate the shim code for destroy of statically allocated services.
    - \* MCMgr: Code adjustments to address MISRA C-2012 Rules
    - \* RPMsg-Lite: MISRA C-2012 violations fixed, incl. data types consolidation.
    - \* RPMsg-Lite: Code formatted
- 2.6.0
  - Multicore SDK component versions:
    - \* embedded Remote Procedure Call (eRPC) v1.7.2
    - \* eRPC generator (erpcgen) v.1.7.2
    - \* Multicore Manager (MCMgr) v4.0.3
    - \* RPMsg-Lite v2.2.0
  - New features:
    - \* eRPC: Improved support of const types.
    - \* eRPC: Fixed Mac build.
    - \* eRPC: Fixed serializing python list.
    - \* eRPC: Documentation update.
    - \* eRPC: Add missing doxygen comments for transports.
    - \* RPMsg-Lite: Added configuration macro RL\_DEBUG\_CHECK\_BUFFERS.
    - \* RPMsg-Lite: Several MISRA violations fixed.
    - \* RPMsg-Lite: Added environment layers for QNX and Zephyr.
    - \* RPMsg-Lite: Allow environment context required for some environments (controlled by the RL\_USE\_ENVIRONMENT\_CONTEXT configuration macro).
    - \* RPMsg-Lite: Data types consolidation.
    - \* MCMgr: Documentation updated to describe handshaking in a graphic form.
    - \* MCMgr: Minor code adjustments based on static analysis tool findings
- 2.5.0
  - Multicore SDK component versions:
    - \* embedded Remote Procedure Call (eRPC) v1.7.1
    - \* eRPC generator (erpcgen) v.1.7.1
    - \* Multicore Manager (MCMgr) v4.0.2
    - \* RPMsg-Lite v2.0.2
  - New features:

- \* RPMsg-Lite, MCMgr: Align porting layers to the updated MCUXpressoSDK feature files.
- \* eRPC: Fixed semaphore in static message buffer factory.
- \* erpcgen: Fixed MU received error flag.
- \* erpcgen: Fixed tcp transport.
- 2.4.0
  - Multicore SDK component versions:
    - \* embedded Remote Procedure Call (eRPC) v1.7.0
    - \* eRPC generator (erpcgen) v.1.7.0
    - \* Multicore Manager (MCMgr) v4.0.1
    - \* RPMsg-Lite v2.0.1
  - New features:
    - \* eRPC: Improved code size of generated code.
    - \* eRPC: Generating crc value is optional.
    - \* eRPC: Fixed CMSIS Uart driver. Removed dependency on KSDK.
    - \* eRPC: List names are based on their types. Names are more deterministic.
    - \* eRPC: Service objects are as a default created as global static objects.
    - \* eRPC: Added missing doxygen comments.
    - \* eRPC: Forbid users use reserved words.
    - \* eRPC: Removed outByref for function parameters.
    - \* eRPC: Added support for 64bit numbers.
    - \* eRPC: Added support of program language specific annotations.
    - \* eRPC: Optimized code style of callback functions.
    - \* RPMsg-Lite: New API rpmsg\_queue\_get\_current\_size()
    - \* RPMsg-Lite: Fixed bug in interrupt handling for lpc5411x, lpc5410x
    - \* RPMsg-Lite: Code adjustments based on static analysis tool findings
- 2.3.1
  - Multicore SDK component versions:
    - \* embedded Remote Procedure Call (eRPC) v1.6.0
    - \* eRPC generator (erpcgen) v.1.6.0
    - \* Multicore Manager (MCMgr) v4.0.0
    - \* RPMsg-Lite v1.2.0
  - New features:
    - \* eRPC: Improved code size of generated code.
    - \* eRPC: Improved eRPC nested calls.
    - \* eRPC: Improved eRPC list length variable serialization.
    - \* eRPC: Added @nullable support for scalar types.
    - \* MCMgr: Added new MCMGR\_TriggerEventForce() API.
- 2.3.0
  - Multicore SDK component versions:
    - \* embedded Remote Procedure Call (eRPC) v1.5.0
    - \* eRPC generator (erpcgen) v.1.5.0
    - \* Multicore Manager (MCMgr) v3.0.0
    - \* RPMsg-Lite v1.2.0
  - New features:
    - \* eRPC: Added support for unions type non-wrapped by structure.



- \* eRPC: Added callbacks support.
  - \* eRPC: Added support @external annotation for functions.
  - \* eRPC: Added support @name annotation.
  - \* eRPC: Added Messaging Unit transport layer.
  - \* eRPC: Added RPMSG Lite RTOS TTY transport layer.
  - \* eRPC: Added version verification and IDL version verification between eRPC code and eRPC generated shim code.
  - \* eRPC: Added support of shared memory pointer.
  - \* eRPC: Added annotation to forbid generating const keyword for function parameters.
  - \* eRPC: Added python matrix multiply example.
  - \* eRPC: Added nested call support.
  - \* eRPC: Added struct member "byref" option support.
  - \* eRPC: Added support of forward declarations of structures
  - \* eRPC: Added Python RPMsg Multiendpoint kernel module support
  - \* eRPC: Added eRPC sniffer tool
  - \* MCMgr: Unused API removed
  - \* MCMgr: Added the ability for remote core monitoring and event handling
  - \* RPMsg-Lite: Several source files renamed to avoid conflicts with other middleware sw components
  - \* RPMsg-Lite: Added the ability to use Multicore Manager (MCMGR) as the IPC interrupts router
- 2.2.0
    - Multicore SDK component versions:
      - \* embedded Remote Procedure Call (eRPC) v1.4.0
      - \* eRPC generator (erpcgen) v.1.4.0
      - \* Multicore Manager (MCMgr) v2.0.1
      - \* RPMsg-Lite v1.1.0
    - New features:
      - \* eRPC: win\_flex\_bison.zip for windows updated.
      - \* eRPC: Use one codec (instead of inCodec outCodec).
      - \* eRPC: New RPMsg-Lite Zero Copy (RPMsgZC) transport layer.
      - \* MCMgr: code updated to be Misra compliant.
      - \* RPMsg-Lite: Added macros for packed structures (compiler.h).
      - \* RPMsg-Lite: Improved interrupt handling in platform layer.
      - \* RPMsg-Lite: Changed RL\_BUFFER\_SIZE definition.
      - \* RPMsg-Lite: Fix of double initialization of vring shared data structure.
      - \* RPMsg-Lite: Support for the multi-instance.
  - 2.1.0
    - Multicore SDK component versions:
      - \* embedded Remote Procedure Call (eRPC) v1.3.0
      - \* eRPC generator (erpcgen) v.1.3.0
    - New features:
      - \* eRPC: New annotation types introduced (@length, @max\_length, ...).
      - \* eRPC: Support for running both erpc client and erpc server on one side.
      - \* eRPC: New transport layers for (LP)UART, (D)SPI.

- \* eRPC: Error handling support.
- 2.0.0
  - Multicore SDK component versions:
    - \* embedded Remote Procedure Call (eRPC) v1.2.0
    - \* eRPC generator (erpcgen) v.1.2.0
    - \* Multicore Manager (MCMgr) v2.0.0
    - \* RPMsg-Lite v1.0.0
  - New features:
    - \* Multicore SDK support for lpcpresso54114 board added.
    - \* RPMsg component of the Open-AMP framework re-implemented and the RPMsg-Lite version introduced.
    - \* eRPC source directory organization changed.
    - \* Many eRPC improvements.
- 1.1.0
  - Multicore SDK component versions:
    - \* embedded Remote Procedure Call (eRPC) v1.1.0
    - \* Multicore Manager (MCMgr) v1.1.0
    - \* Open-AMP / RPMsg based on SHA1 ID 44b5f3c0a6458f3cf80 rev01
  - New features:
    - \* Multicore SDK 1.1.0 ported to KSDK 2.0.0.
    - \* Python support added into eRPC.
- 1.0.0
  - Multicore SDK component versions:
    - \* embedded Remote Procedure Call (eRPC) v1.0.0
    - \* Multicore Manager (MCMgr) v1.0.0
    - \* Open-AMP / RPMsg based on SHA1 ID 44b5f3c0a6458f3cf80 rev00

### 3 Component Change Log

#### CODEC

The current codec common driver version is 2.2.2.

- 2.2.2
  - Bug Fixes
    - \* Fixed the typo in codec common driver.
- 2.2.1
  - Bug Fixes
    - \* Fixed violations of MISRA C-2012 rule 10.3, 8.3, 10.7, 17.7.
- 2.2.0
  - Improvements
    - \* Used HAL\_CODEC\_HANDLER\_SIZE which is determined by low level driver instead of use CODEC\_HANDLE\_SIZE for the codec device handle definition.
- 2.1.1
  - Improvements
    - \* Supported all of the codec in the codec adapter.
    - \* Modified the codec handle definition to improve user experience.
    - \* Modified the capability member type from entity to pointer in codec handle.
  - Bug Fixes
    - \* Fixed the Coverity issue regrading array compared against 0.
- 2.1.0
  - Deprecated APIs
    - \* CODEC\_GetMappedFormatBits
    - \* CODEC\_I2C\_WriteReg
    - \* CODEC\_I2C\_ReadReg
    - \* CODEC\_I2C\_ModifyReg
    - \* CODEC\_SetEncoding
  - new APIs
    - \* CODEC\_SetPower
    - \* CODEC\_SetVolume
    - \* CODEC\_SetMute
    - \* CODEC\_SetPlay
    - \* CODEC\_SetRecord
    - \* CODEC\_SetRecordChannel
    - \* CODEC\_ModuleControl
  - new features
    - \* Removed duplicate members in codec\_handle\_t and codec\_config\_t.
    - \* Added codec\_config\_t pointer in codec\_handle\_t.
    - \* Added codec capability flag in codec\_handle\_t.
    - \* Used codec adapter instead of function opinter in codec common driver.
- 2.0.1

- Added delayMs function pointer in codec handle.
- 2.0.0
  - Initial version.

## WM8524

The current wm8524 driver version is 2.1.1.

- 2.1.1
  - Bug Fixes
    - \* Fixed the MISRA-2012 violation of 14.4.
- 2.1.0
  - New features
    - \* Removed dependency of gpio driver.
- 2.0.0
  - Initial version.

## AK4497

The current ak4497 driver version is 2.1.2.

- 2.1.2
  - Bug Fixes
    - \* Fixed violations of MISRA C-2012 rule 10.3, 8.3, 10.7, 17.7.
- 2.1.1
  - Improvements
    - \* Enabled the volume setting function in AK4497 adapter.
- 2.1.0
  - Improvements
    - \* Added AK4497\_ModuleControl API.
    - \* Removed dependency on codec common driver.
    - \* Added dependency on codec i2c.
- 2.0.0
  - Initial version.

## SERIAL\_MANAGER

The current Serial\_Manager component version is 1.0.2.

- 1.0.2
  - Add SerialManager\_WriteTimeDelay()/SerialManager\_ReadTimeDelay() for serial manager's read/write non-blocking mode.
- 1.0.1
  - Add prefixing fsl\_component\_XXX/fsl\_adapter\_XXX.

- 1.0.0
  - Initial version

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