MCUXpresso SDK Release Notes Supporting evkmimx8mq

Change Logs

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Middleware Change Log

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1 Driver Change Log

CLOCK

The current CLOCK driver version is 2.4.1

- 2.4.1
  - Improvements
    * Make driver compilable with GNU C++ Compiler.
- 2.4.1
  - New feature
    * Add new API CLOCK_GetClockRootFreq() to get frequency for peripherals.
- 2.3.3
  - Bug Fixes
    * Fixed violations of MISRA C-2012 rule 10.4.
- 2.3.2
  - Bug Fixes
    * Corrected and added clock information for IOMUX and IPMUX.
- 2.3.1
  - Bug Fixes
    * Fixed MISRA C-2012 rule 10.1,rule 10.4,rule 10.8,rule 20.7 and so on.
- 2.3.0
  - New feature:
    * Moved SDK_DelayAtLeastUs function from clock driver to common driver.
- 2.2.0
  - New feature
    * Added new API CLOCK_DelayAtLeastUs() implemented by DWT to allow users set delay in unit of microsecond.
- 2.1.2
  - Bug Fix:
    * Fixed build issue with GCC compiler when include header from C++ file.
- 2.1.1
  - Improvement:
    * Changed reserved bit fields in _scg_sys_clk_config struct into unnamed bit fields.
- 2.1.0
  - Other Changes:
    * Merged fsl_scg and fsl_osc into fsl_clock.
- 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.

MEMORY

The current MEMORY driver version is 2.0.1.

- 2.0.1 -Improvements
  - Make driver aarch64 compatible.
- 2.0.0
  - Initial version.

ECSPI_CMSIS

Current ecspi_cmsis driver version is 2.3

- 2.3
  - Bug Fixes
    * Fixed the MISRA-2012 violations.
      · Fixed rule 8.4, 10.3, 11.1, 11.8, 16.1, 16.3.
- 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 2.3.2.

* 2.3.2
  - Improvements
    * Make driver aarch64 compatible
* 2.3.1
  - Bug Fixes
    * Fixed MAKE_VERSION overflow on 16-bit platforms.
* 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

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  – 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_S-ECTION" 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.

GPT

The current GPT driver version is 2.0.4.

- 2.0.4

– Bug Fixes
  * Fixed compiler warning when built with FSL_SDK_DISABLE_DRIVER_CLOCK_CO-NTROL flag enabled.
- 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 2.0.6.

- 2.0.6
  – Bug Fixes
    * Fixed compile warning: 'GPIO_GetInstance' defined but not used when macro FSL_SD-K_DISABLE_DRIVER_CLOCK_CONTROL is defined.
- 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 2.3.2.

- 2.3.2
  - Improvements
    ∗ Make driver aarch64 compatible
- 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.

MU

The Current MU driver version is 2.1.0.

- 2.1.0
  - Improvements
    * Added new enum mu_msg_reg_index_t.
- 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.

QSPI

The current QSPI driver version is 2.2.4.

- 2.2.4
  - Bug Fixes
    - ∗ Fixed violations of MISRA C-2012 rule 10.3.
- 2.2.3
  - Bug Fixes
    - ∗ Cleared buffer generic configuration when do software reset.
- 2.2.2
  - Bug Fixes
    - ∗ MISRA C-2012 issue fixed: rule 10.1 and 11.9.
- 2.2.1
  - Bug Fixes
    - ∗ Fixed violations of MISRA C-2012 rule 10.1, 10.3, 10.4, 10.6, 10.8, 11.3, 11.6, 11.8, 11.9, 14.4, 16.1, 16.4, 17.7.
- 2.2.0
  - New Features
    - ∗ Added new API QSPI_ClearCache to clear cache for new IP feature FSL_FEATURE_Q-SPI_SOCCR_HAS_CLR_LPCAC.
  - Bug Fixes
    - ∗ Fixed the QSPI_WriteBlocking API programming issue for low watermark, caused by previous improvement change of using TX watermark signal to fill the TX FIFO. Reverted change to previous implementation to use TX FIFO full flag for filling the FIFO. Improved previous API by accessing TX data register directly.
    - ∗ Fixed the issue that QSPI_SetIPCommandSize incorrectly triggered a transaction.
    - ∗ Fixed clock divider accurate issue when using internal QSPI internal divider.

* Fixed build fail issue for some devices' not supporting API QSPI_SetDqsConfig for DQS configuration.
- 2.1.0
  - New Features
    * Added new API QSPI_SetDqsConfig for DQS configuration.
  - Improvements
    * Updated the QSPI_WriteBlocking API to fill the TX FIFO once there are bytes of TX watermark room in the FIFO. This will improve the performance of filling TX FIFO when watermark is high.
- 2.0.2
  - Improvements
    * New Macro function:
      · Added QSPI_LUT_SEQ() function for users to set LUT table easily.
      · Added LUT command macros for users to easy use.
    * Comment update:
      · Added the comments for the limitation of QSPI_ReadBlocking and QSPI_Transfer-ReceiveBlocking.
- 2.0.1
  - Improvements
    * New API:
      · QSPI_SetReadArea to set the read area.
  - Bug Fixes
    * Fixed the issue that QSPI_UpdateLUT function only updated first LUT.
    * Fixed issue that some function that hardcode QSPI0 as base.
- 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 2.0.4.

- 2.0.4
  – Improvements
    * Changed to implement RDC_SEMAPHORE_Lock base on RDC_SEMAPHORE_Try-Lock.
- 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 2.3.6

- 2.3.6
  – Bug Fixes
    * Fixed violations of MISRA C-2012 rule 5.6.
  – 2.3.5
    * Improvements
      · Make driver to be aarch64 compatible.
  – 2.3.4
    * Bug Fixes
      · Corrected the fifo combine feature macro used in driver.
  – 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_TransferTxSetConfigSD-
         MA.
       · Fixed BAD BIT SHIFT OPERATION issue caused by the FSL_FEATURE_SAI_C-
         HANNEL_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

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- · 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_C-HANNEL_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 bclk bypass support when bclk 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_Tx-Init/SAI_RxInit.
- 2.0.0
  * Initial version.

SEMA4

The current SEMA4 driver version is 2.0.3.

- 2.0.3
    - Improvements
        * Changed to implement SEMA4_Lock base on SEMA4_TryLock.
- 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 2.0.3.

- 2.0.3
    - Bug Fixes
        * Fixed the violations of MISRA 2012 rules:
            · Rule 10.1 10.3 10.4 17.7.
- 2.0.2
    - Bug Fixes
        * Fixed missing right pair definition for extern C.
- 2.0.1
    - New Features
        * Added control macro to enable/disable the CLOCK code in current driver.
- 2.0.0
    - Initial version.
    - This module was first developed on i.MX 8MQuad.

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 2.12.0.

- 2.12.0
  - Multicore SDK component versions:
    * embedded Remote Procedure Call (eRPC) v1.9.1
    * eRPC generator (erpcgen) v.1.9.1
    * Multicore Manager (MCMgr) v4.1.2
    * RPMsg-Lite v4.0.0
  - New features:
    * eRPC: Construct the USB CDC transport, rather than a client, GitHub PR #220.
    * eRPC: Fix premature import of package, causing failure when attempting installation of Python library in a clean environment, GitHub PR #38, #226.
    * eRPC: Improve python detection in make, GitHub PR #225.
    * eRPC: Fix several warnings with deprecated call in pytest, GitHub PR #227.
    * eRPC: Fix freeing union members when only default need be freed, GitHub PR #228.
    * eRPC: Fix making test under Linux, GitHub PR #229.
    * eRPC: Assert costumizing, GitHub PR #148.
    * eRPC: Fix corrupt clientList bug in TransportArbitrator, GitHub PR #199.
    * eRPC: Fix build issue when invoking g++ with -Wno-error=free-nonheap-object, GitHub PR #233.
    * eRPC: Fix inout cases, GitHub PR #237.
    * eRPC: Remove ERPC_PRE_POST_ACTION dependency on return type, GitHub PR #238.
    * eRPC: Adding NULL to ptr when codec function failed, fixing memcpy when fail is present during deserialization, GitHub PR #253.
    * eRPC: MessageBuffer usage improvement, GitHub PR #258.
    * eRPC: Get rid for serial and enum34 dependency (enum34 is in python3 since 3.4 (from 2014)), GitHub PR #247.
    * eRPC: Several MISRA violations addressed.
    * eRPC: Fix timeout for Freertos semaphore, GitHub PR #251.
    * eRPC: Use of rpmsg_lite_wait_for_link_up() in rpmsg_lite based transports, GitHub PR #223.
    * eRPC: Fix codec nullptr dereferencing, GitHub PR #264.
    * erpcgen: Fix two syntax errors in erpcgen Python output related to non-encapsulated unions, improved test for union, GitHub PR #206, #224.
    * erpcgen: Fix serialization of list/binary types, GitHub PR #240.
    * erpcgen: Fix empty list parsing, GitHub PR #72.
    * erpcgen: Fix templates for malloc errors, GitHub PR #110.
    * erpcgen: Get rid of encapsulated union declarations in global scale, improve enum usage in unions, GitHub PR #249, #250.

- ∗ erpcgen: Fix compile error:UniqueIdChecker.cpp:156:104:'sort' was not declared, Git-Hub PR #265.
- ∗ MCMgr: Update mcmgr_stop_core_internal() implementations to set core state to kM-CMGR_ResetCoreState.
- ∗ RPMsg-Lite: Introduce new rpmsg_lite_wait_for_link_up() API function - this allows to avoid using busy loops in rtos environments, GitHub PR #21.
- ∗ RPMsg-Lite: Adjust rpmsg_lite_is_link_up() to return RL_TRUE/RL_FALSE.

- 2.11.1
  - Multicore SDK component versions:
    - ∗ embedded Remote Procedure Call (eRPC) v1.9.0
    - ∗ eRPC generator (erpcgen) v.1.9.0
    - ∗ Multicore Manager (MCMgr) v4.1.1
    - ∗ RPMsg-Lite v3.2.1
  - New features:
    - ∗ RPMsg-Lite: Add support for custom shared memory arangement per the RPMsg_Lite instance.

- 2.11.0
  - Multicore SDK component versions:
    - ∗ embedded Remote Procedure Call (eRPC) v1.9.0
    - ∗ eRPC generator (erpcgen) v.1.9.0
    - ∗ Multicore Manager (MCMgr) v4.1.1
    - ∗ RPMsg-Lite v3.2.0
  - New features:
    - ∗ eRPC: Improving template usage, GitHub PR #153.
    - ∗ eRPC: run_clang_format.py cleanup, GitHub PR #177.
    - ∗ eRPC: Build TCP transport setup code into liberpc, GitHub PR #179.
    - ∗ eRPC: Fix multiple definitions of g_client error, GitHub PR #180.
    - ∗ eRPC: Fix memset past end of buffer in erpc_setup_mbf_static.cpp, GitHub PR #184.
    - ∗ eRPC: Fix deprecated error with newer pytest version, GitHub PR #203.
    - ∗ eRPC: Allow used LIBUSBSIO device index being specified from the Python command line argument.
    - ∗ eRPC, erpcgen: Static allocation support and usage of rpmsg static FreeRTOSs related APi, GitHub PR #168, #169.
    - ∗ erpcgen: Remove redundant module imports in erpcgen, GitHub PR #196.
    - ∗ RPMsg-Lite: Improve static allocations - allow OS-specific objects being allocated statically, GitHub PR #14.
    - ∗ RPMsg-Lite: Minor Misra and typo corrections, GitHub PR #19, #20.

- 2.10.0
  - Multicore SDK component versions:
    - ∗ embedded Remote Procedure Call (eRPC) v1.8.1
    - ∗ eRPC generator (erpcgen) v.1.8.1
    - ∗ Multicore Manager (MCMgr) v4.1.1
    - ∗ RPMsg-Lite v3.1.2
  - New features:
    - ∗ eRPC: Fix misra erpc c, GitHub PR #158.

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- ∗ eRPC: Allow conditional compilation of message_loggers and pre_post_action.
- ∗ eRPC: New i2c_slave_transport trasnport 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, Git-Hub 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 MCUXpressoS-DK projects.
- 2.9.0
  - Multicore SDK component versions:
    - ∗ embedded Remote Procedure Call (eRPC) v1.8.0
    - ∗ eRPC generator (erpcgen) v.1.8.0
    - ∗ 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, Git-Hub 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, Git-*

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Hub 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) v.1.7.4
    * 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.

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* 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.

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* 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 lpcxpresso54114 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

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- – 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 2.3.1.

- 2.3.1
  - **–** Bug Fixes
    - ∗ Fixed violations of MISRA C-2012 rule 16.1,16.3.
- 2.3.0
  - **–** Improvements
    - ∗ Added enum _codec_volume_capability for CODEC_SetVolume/CODEC_SetMute to cover more volume configurations.
- 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 agaist 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.

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