TRAVEO™ T2G family AUTOSAR MCAL MCU release notes

SRN223359 version 1.21

About this document

Scope and purpose

Thank you for your interest in the TRAVEO™ T2G family AUTOSAR MCAL MCU driver version 1.21. This document lists the installation requirements, software changes, limitations, and known issues.

Intended audience

This document is intended for anyone who uses the MCU driver of the TRAVEO™ T2G family.

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1 System requirements and recommendations

Software prerequisites	Supported version
EB tresos Studio package for Infineon	26.2.0

1.1 Supported compilers

Green Hills Software, compiler v2017.1.4

IAR Embedded Workbench 8.0, EWARM FS 8.22.3

1.2 Compiler options

This section summarizes the compiler options used to build and test the module. When changing the compiler options, the module must be considered untested.

Compiler	Option (Cortex®-M4F core)
Green Hills Software, compiler v2017.1.4	`-cpu=cortexm4f -thumb -thumb_lib -C99 --short_enum -align4 --no_commons --no_alternative_tokens -asm3g -preprocess_assembly_files -nostartfiles -globalcheck=normal -globalcheck_qualifiers --prototype_errors -Wformat -Wimplicit-int -Wshadow -Wtrigraphs -Wundef -reject_duplicates -c -list -Ospeed -OI -Olink -Ointerproc -Omax -fsingle`

Compiler	Option (Cortex®-M7 core)
Green Hills Software, compiler v2017.1.4	`-cpu=cortexm7 -thumb -thumb_lib -C99 --short_enum -align4 --no_commons --no_alternative_tokens -asm3g -preprocess_assembly_files -nostartfiles -globalcheck=normal -globalcheck_qualifiers --prototype_errors -Wformat -Wimplicit-int -Wshadow -Wtrigraphs -Wundef -reject_duplicates -c -list -Ospeed -OI -Olink -Ointerproc -Omax -fhard`

Compiler	Option (Cortex®-M0+ core)
Green Hills Software, compiler v2017.1.4	`-cpu=cortexm0plus -thumb -thumb_lib -C99 --short_enum -align4 --no_commons --no_alternative_tokens -asm3g -preprocess_assembly_files -nostartfiles -globalcheck=normal -globalcheck_qualifiers --prototype_errors -Wformat -Wimplicit-int -Wshadow -Wtrigraphs -Wundef -reject_duplicates -c -list -Ospeed -OI -Olink -Ointerproc -Omax -fsoft`

Compiler	Option (Cortex®-M4F core)
IAR Embedded Workbench 8.0, EWARM FS 8.22.3	`--debug --endian=little --cpu=Cortex-M4 -e --fpu=VFPv4_sp -Ohs --no_size_constraints`

Compiler	Option (Cortex®-M7 core)
IAR Embedded Workbench 8.0, EWARM FS 8.22.3	`--debug --endian=little --cpu=Cortex-M7 -e --fpu=VFPv5_d16 -Ohs --no_size_constraints`

Compiler	Option (Cortex®-M0+ core)
IAR Embedded Workbench 8.0, EWARM FS 8.22.3	`--debug --endian=little --cpu=Cortex-M0+ -e -Ohs --no_size_constraints`

1.3 Library compiler options

If a binary library has been delivered with this module, it has been built using the following options:

Compiler	Option (Cortex®-M4F core)
Green Hills Software, compiler v2017.1.4	`-cpu=cortexm4f -thumb -thumb_lib -C99 --short_enum -align4 --no_commons --no_alternative_tokens -asm3g -preprocess_assembly_files -nostartfiles -globalcheck=normal -globalcheck_qualifiers --prototype_errors -Wformat -Wimplicit-int -Wshadow -Wtrigraphs -Wundef -reject_duplicates -c -list -Ospeed -OI -Olink -Ointerproc -Omax -fsingle`

Compiler	Option (Cortex®-M7 core)
Green Hills Software, compiler v2017.1.4	`-cpu=cortexm7 -thumb -thumb_lib -C99 --short_enum -align4 --no_commons --no_alternative_tokens -asm3g -preprocess_assembly_files -nostartfiles -globalcheck=normal -globalcheck_qualifiers --prototype_errors -Wformat -Wimplicit-int -Wshadow -Wtrigraphs -Wundef -reject_duplicates -c -list -Ospeed -OI -Olink -Ointerproc -Omax -fhard`

Compiler	Option (Cortex®-M0+ core)
Green Hills Software, compiler v2017.1.4	`-cpu=cortexm0plus -thumb -thumb_lib -C99 --short_enum -align4 --no_commons --no_alternative_tokens -asm3g -preprocess_assembly_files -nostartfiles -globalcheck=normal -globalcheck_qualifiers --prototype_errors -Wformat -Wimplicit-int -Wshadow -Wtrigraphs -Wundef -reject_duplicates -c -list -Ospeed -OI -Olink -Ointerproc -Omax -fsoft`

Compiler	Option (Cortex®-M4F core)
IAR Embedded Workbench 8.0, EWARM FS 8.22.3	`--debug --endian=little --cpu=Cortex-M4 -e --fpu=VFPv4_sp -Ohs --no_size_constraints`

Compiler	Option (Cortex®-M7 core)
IAR Embedded Workbench 8.0, EWARM FS 8.22.3	`--debug --endian=little --cpu=Cortex-M7 -e --fpu=VFPv5_d16 -Ohs --no_size_constraints`

Compiler	Option (Cortex®-M0+ core)
IAR Embedded Workbench 8.0, EWARM FS 8.22.3	`--debug --endian=little --cpu=Cortex-M0+ -e -Ohs --no_size_constraints`

1.4 Memory consumption

GHS (Mcu_lib) section	Size (in bytes)
.text	20952
.bss	17
Combined	20969

GHS (Mcu_src) section	Size (in bytes)
.text	1538
.data	16
.rodata	1173
Combined	2727

IAR (Mcu_lib) section	Size (in bytes)
.text	13226
.bss	17
Combined	13243

IAR (Mcu_src) section	Size (in bytes)
.text	1449
.data	16
.rodata	1112
Combined	2577

Note: *The memory consumption of *_src.lib depends on the configuration.*

Note: *The listed memory consumption will vary depending on customer configuration.*

Explanatory notes for this section

Section	Description
.text	Program code
.data	Variables with explicitly initialized values
.bss	Variables that are not explicitly initialized
.rodata	Read-only data

1.5 Stack consumption

1.5.1 Green Hills Software

Function	Max stack usage (in bytes)
`Mcu_Init`	88
`Mcu_InitRamSection`	28
`Mcu_InitClock`	72
`Mcu_DistributePllClock`	32
`Mcu_GetPllStatus`	28
`Mcu_GetResetReason`	4
`Mcu_GetResetRawValue`	4
`Mcu_PerformReset`	60
`Mcu_SetMode`	88
`Mcu_GetVersionInfo`	8
`Mcu_CheckClockStatus`	76
`Mcu_CheckModeStatus`	104
`Mcu_Lvd_Isr_Cat1`	4
`Mcu_Lvd_Isr_Cat2`	4

Note: *Stack consumption has been evaluated using the gstack utility program, which is part of the Green Hills release package. To enable the measurement of stack consumption in your project, build the source code according to the instructions given in the "Measuring Stack Consumption" section of the module's user guide.*

Note: *The listed stack consumption will vary depending on customer configuration.*

Note: *The GHS stack consumption listed in the release notes was measured using the additional compile option "`-gs`". The GHS compiler cannot measure stack consumption for the selected optimization level (see compilation options). Green Hills cannot exclude possible effects of "`-gs`" on optimization and stack consumption. Therefore, Infineon cannot guarantee the accuracy of these values. For more information on measuring GHS stack consumption, see the section gstack utility program in Build_arm.pdf.*

1.5.2 IAR Embedded Workbench

Function	Max stack usage (in bytes)
Mcu_Init	84
Mcu_InitRamSection	40
Mcu_InitClock	84
Mcu_DistributePllClock	36
Mcu_GetPllStatus	20
Mcu_GetResetReason	8
Mcu_GetResetRawValue	8
Mcu_PerformReset	48
Mcu_SetMode	108
Mcu_GetVersionInfo	8
Mcu_CheckClockStatus	92
Mcu_CheckModeStatus	108
Mcu_Lvd_Isr_Cat1	8
Mcu_Lvd_Isr_Cat2	8

Note: *To enable the measurement of stack consumption in your project, build the source code with the linker option "`--enable_stack_usage --log call_graph`". See stack usage analysis of the IAR C/C++ development guide for details.*

Note: *The listed stack consumption will vary depending on customer configuration.*

1.6 Note on "*_Bswmd.arxml"

Note that the *<Module>_Bswmd.arxml* files are templates that can be freely modified by the customer or RTE vendor.

These are in the *output\generated\swcd* subfolder of your project folder.

Named files are not tested.

1.7 Release details

Module software version
1.21.x (x=software patch version; see the delivery notes for details)

AUTOSAR specification version (ASR)
4.2.2

Target
MXS40

MCAL configuration settings	Supported derivatives
See the resource release notes	See the resource release notes

Corresponding *Mcu_MemMap.h* stub file version
1.0.1

2 Installation

See the installation manual for EB tresos Studio for INFINEON AUTOSAR software products and installation manual for MCAL42-TRAVEO.

3 Deviations from AUTOSAR

T2MC-12474 - [SWS_Mcu_00129] Configuration specification: Variants VARIANT-PRE-COMPILE

Title: [SWS_Mcu_00129] Configuration specification: Variants VARIANT-PRE-COMPILE

Description: [SWS_Mcu_00129]: [VARIANT-PRE-COMPILE.
Only parameters with "Pre-compile time" configuration are allowed in this variant.
The intention of this variant is to optimize the parameters configuration for a source code delivery.] ()

Reason for rejection: Only post-build time is supported.

T2MC-12448 - [SWS_Mcu_00207] Function definitions Mcu_GetRamState: Syntax

Title: [SWS_Mcu_00207] Function definitions Mcu_GetRamState: Syntax

Description: [SWS_Mcu_00207]:
[

Service name:	`Mcu_GetRamState`	
Syntax:	`Mcu_RamStateType Mcu_GetRamState( void )`	
Service ID[hex]:	0x0a	
Sync/Async:	Synchronous	
Reentrancy:	Reentrant	
Parameters (in):	None	
Parameters (inout):	None	
Parameters (out):	None	
Return value:	`Mcu_RamStateType`	Status of the Ram Content
Description:	This service provides the actual status of the microcontroller Ram. (if supported)	

] (BSW13701)

Reason for rejection: Hardware does not have RAM state function.

T2MC-12449 - [SWS_Mcu_00208] Function definitions Mcu_GetRamState: Call condition Mcu_Init

Title: [SWS_Mcu_00208] Function definitions Mcu_GetRamState: Call condition `Mcu_Init`

Description: [SWS_Mcu_00208]: [The MCU module's environment shall call this function only if the MCU module has been already initialized using the function `MCU_Init`.] (BSW13701)

Reason for rejection: Hardware does not have RAM state function.

T2MC-12450 - [SWS_Mcu_00209] Function definitions Mcu_GetRamState: Enabling the function

Title: [SWS_Mcu_00209] Function definitions Mcu_GetRamState: Enabling the function

Description: [SWS_Mcu_00209]: [The function `Mcu_GetRamState` shall be available to the user if the pre-compile parameter `McuGetRamStateApi` is set to TRUE. Instead, if the former parameter is set to FALSE, this function shall be disabled (e.g. the hardware does not support this functionality).] (BSW13701)

Reason for rejection: Hardware does not have RAM state function.

T2MC-12329 - [SWS_Mcu_00216] Header file structure: Mcu_Lcfg.c include

Title: [SWS_Mcu_00216] Header file structure: Mcu_Lcfg.c include

Description: [SWS_Mcu_00216]: [Mcu_Lcfg.c shall include Mcu_Cbk.h for a link time configuration if the call back function is linked to the module via the ROM structure.] ()

Reason for rejection: Only variant post-build time is supported. Therefore, the *Mcu_Lcfg.c* file is not required.

4 Limitations

T2MC-12480 - [ECUC_Mcu_00166] Configuration specification: McuGeneralConfiguration McuDevErrorDetect

Title: [ECUC_Mcu_00166] Configuration specification: McuGeneralConfiguration McuDevErrorDetect

Description:

SWS Item	**ECUC_Mcu_00166:**		
Name	`McuDevErrorDetect`		
Description	Switches the Default Error Tracer (Det) detection and notification ON or OFF. · true: enabled (ON). · false: disabled (OFF).		
Multiplicity	1		
Type	EcucBooleanParamDef		
Default value	--		
Post-Build Variant Value	False		
Value Configuration Class	***Pre-compile time***	X	All Variants
	Link time	--	
	Post-build time	--	
Scope / Dependency	scope: local		

Limitation: DET error detection mechanism is used as a safety mechanism (fault detection), so detection of development errors cannot be disabled.

T2MC-12490 - [ECUC_Mcu_00172] Configuration specification: McuModuleConfiguration McuRamSectors

Title: [ECUC_Mcu_00172] Configuration specification: McuModuleConfiguration McuRamSectors

Description:

SWS Item	**ECUC_Mcu_00172**:		
Name	McuRamSectors		
Description	This parameter shall represent the number of RAM sectors available for the MCU. calculationFormula = Number of configured McuRamSectorSettingConf		
Multiplicity	1		
Type	EcucIntegerParamDef		
Range	0 .. 65535		
Default value	--		
Post-Build Variant Value	True		
Value Configuration Class	***Pre-compile time***	X	VARIANT-PRE-COMPILE
	Link time	--	
	Post-build time	X	VARIANT-POST-BUILD
Scope / Dependency	scope: local		

Limitation: To reduce memory consumption, maximum value of this parameter is limited to 65535.

T2MC-12491 - [ECUC_Mcu_00173] Configuration specification: McuModuleConfiguration McuResetSetting

Title: [ECUC_Mcu_00173] Configuration specification: McuModuleConfiguration McuResetSetting

Description:

SWS Item	**ECUC_Mcu_00173:**		
Name	McuResetSetting		
Description	This parameter relates to the MCU specific reset configuration. This applies to the function `Mcu_PerformReset`, which performs a microcontroller reset using the hardware feature of the microcontroller.		
Multiplicity	0..1		
Type	EcucIntegerParamDef		
Range	1 .. 255		
Default value	--		
Post-Build Variant Multiplicity	false		
Post-Build Variant Value	false		
Multiplicity Configuration Class	***Pre-compile time***	X	All Variants
	Link time	--	
	Post-build time	--	
Value Configuration Class	***Pre-compile time***	X	All Variants
	Link time	--	
	Post-build time	--	
Scope / Dependency	scope: local		

Limitation: `McuResetSetting` does not affect `Mcu_PerformReset`. Instead `McuResetSelect` is used for selecting reset.

T2MC-12481 - [ECUC_Mcu_00181] Configuration specification: McuGeneralConfiguration McuGetRamStateApi

Title: [ECUC_Mcu_00181] Configuration specification: McuGeneralConfiguration McuGetRamStateApi

Description:

SWS Item	**ECUC_Mcu_00181:**		
Name	McuGetRamStateApi		
Description	Pre-processor switch to enable/disable the API `Mcu_GetRamState`. (e.g. If the H/W does not support the functionality, this parameter can be used to disable the API).		
Multiplicity	1		
Type	EcucBooleanParamDef		
Default value	--		
Post-Build Variant Value	false		
Value Configuration Class	***Pre-compile time***	X	All Variants
	Link time	--	

	Post-build time	--	
Scope / Dependency	scope: local		

Limitation: `McuGetRamStateApi` is always set to false, because hardware does not support the functionality for getting RAM state.

T2MC-14788 - [MCU] AUTOSAR C implementation rules

Title: [MCU] AUTOSAR C implementation rules

Description: The MCAL modules shall fulfill all design and implementation guidelines as described in Specification of C Implementation Rules AUTOSAR_TR_CImplementationRules.pdf.

Limitation: Out of scope: keyword macros 'CONST' and 'VAR' are not required for declaration/definition of the local variable, function parameter, and structure/union fields.

T2MC-12459 - [SWS_Mcu_00017] API parameter checking

Title: [SWS_Mcu_00017] API parameter checking

Description: [SWS_Mcu_00017]: [If the default error detection is enabled for the MCU module, the MCU functions shall check the following API parameters, report detected errors to the Default Error Tracer and reject with return value E_NOT_OK in case the function has a standard return type.] ()

Limitation: DET error detection mechanisms are used as safety mechanisms (fault detection), so the detection of development error is always executed.

T2MC-12464 - [SWS_Mcu_00125] API parameter checking: MCU_E_UNINIT

Title: [SWS_Mcu_00125] API parameter checking: MCU_E_UNINIT

Description: [SWS_Mcu_00125]: [If default error detection is enabled and if any other function (except `Mcu_GetVersionInfo`) of the MCU module is called before `Mcu_Init` function, the error code `MCU_E_UNINIT` shall be reported to the DET.] ()

Limitation: DET error detection mechanisms are used as safety mechanisms (fault detection), so the detection of development error is always executed.

T2MC-12475 - [SWS_Mcu_00130] Configuration specification: Variants VARIANT-POST-BUILD

Title: [SWS_Mcu_00130] Configuration specification: Variants VARIANT-POST-BUILD

Description: [SWS_Mcu_00130]: [VARIANT-POST-BUILD.
Parameters with "Pre-compile time", "Link time" and "Post-build time" are allowed in this variant.
The intention of this variant is to optimize the parameters configuration for a re-loadable binary.] ()

Limitation: MCU driver does not provide link time configuration.

T2MC-12328 - [SWS_Mcu_00215] Header file structure: Mcu_Lcfg.c and Mcu_PBcfg.c include

Title: [SWS_Mcu_00215] Header file structure: Mcu_Lcfg.c and Mcu_PBcfg.c include

Description: [SWS_Mcu_00215]: [The type definitions for Mcu_Lcfg.c and Mcu_PBcfg.c are located in the file Mcu.h.] ()

Limitation: Only variant post-build time is supported. Therefore, Mcu_Lcfg.c file is not required.

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5 Known defects

The listed issues were known at the day this release note was generated. Further problems may have been discovered in the meantime. For an up-to-date list of known issues, contact your Infineon sales representative.

This release has no known issues at the time of release.

6 Documentation

All user guides for MCAL drivers are in the *\doc* subdirectory of the *installation* directory. The default location is:

C:\INFINEON_ESDB\Tresos26_2_0\doc

7 Technical support

If you have questions related to the driver, contact the local support application engineer.

8 Version history

8.1 Module SW-Version 1.3

Initial module setup.

8.2 Module SW-Version 1.4

T2MC-39176 - [All] Correcting vendor-specific module definition

Title: [All] Correcting vendor-specific module definition

Description: The following rules should be followed in the vendor-specific module definition:

- The multiplicity of each AUTOSAR Parameter, Reference and Container is not correctly derived.
- The DEFAULT-VALUE of each Parameter is not valid.
- If the target of DESTINATION-REF is not the standard AUTOSAR Container, the reference should not start with '/AUTOSAR/EcucDefs/'.

T2MC-38130 - [MCU] Add error check for flash wait states

Title: [MCU] Add error check for flash wait states

Description: McuFlashWaitCycle should have an error check for illegal values. Flash can operate up to 100MHz. If the frequency becomes higher, wait cycle must be inserted for each 100MHz. Following formula calculates minimum allowed value:
McuFlashWaitCycle >= floor((clk_hf - 1Hz) / 100MHz)

Furthermore, default value of McuFlashWaitCycle should be calculated by the same formula above.

T2MC-39172 - [MCU] Add functionality to perform reset after RAM write buffer timeout occurred

Title: [MCU] Add functionality to perform reset after RAM write buffer timeout occurred

Description: Currently the status of RAM write buffer is checked before performing reset in the `Mcu_PerformReset()` API.
If RAM write buffer doesn't become empty, reset is not performed.
But, it is required that reset will be performed even if RAM write buffer timeout occurred.

T2MC-38073 - [MCU] Cannot change FLL settings when it is running

Title: [MCU] Cannot change FLL settings when it is running

Description: To change running FLL settings, you can use the McuFllStopForUpdate configuration parameter.
MCU module stops running FLL once and update its settings when the `Mcu_InitClock()` API is called with clock configuration that McuFllStopForUpdate is set true.
Currently, CPU stops and does not restart when FLL is stopped once in the `Mcu_InitClock()` API.
This issue will also occur for PLL.

T2MC-38110 - [MCU] FLL/PLL may not be distributed after Mcu_DistributePllClock

Title: [MCU] FLL/PLL may not be distributed after Mcu_DistributePllClock

Description: If auto distribution of FLL/PLL is disabled, they will be distributed by calling Mcu_DistributePllClock.
But when auto distribute is enabled for some of FLL/PLL in the same clock configuration (McuClockSettingConfig), FLL/PLL for which auto distribute is disabled will not be distributed even if Mcu_DistributePllClock is called.

T2MC-38076 - [MCU] The duration of exclusive area deviates software requirement

Title: [MCU] The duration of exclusive area deviates software requirement

Description: According to the software requirement, the duration of exclusive area should not exceed 40 us for a microcontroller running at 80 MHz.
But in current implementation of MCU module, the duration of exclusive area in the `Mcu_InitClock` API may exceed 40 us depending on the configuration.
It would be same for Mcu_Init with McuEnableDefaultClock set to true and Mcu_SetMode with McuReferenceClockSetting enabled.

T2MC-38074 - File extension should be changed from .bmd to .arxml

Title: File extension should be changed from .bmd to .arxml

Description: The file extension should be changed from *.bmd to *.arxml.
Each module still has an *autosar/<module>.bmd* file.

8.3 Module SW-Version 1.5

T2MC-39747 - [All] Checking for valid C function name and including filename in configuration parameters

Title: [All] Checking for valid C function name and including filename in configuration parameters

Description: Checking for valid C function name:
Check all configuration parameters related to the function name to see if it is a valid C function name.
A part of parameters are not checked.
If an invalid function name is set, a compile error will occur during the build process, which is inconvenient for users.
Therefore, it is better to check whether the configured function names are valid C function names in advance (i.e. during configuration phase).

Checking for valid filename:
Check all configuration parameters related to the file name to see if it is valid.
A part of parameters cannot check the fact that empty file name (i.e. ".h") is wrong.
If an invalid file name is set, a compile error will occur during the build process, which is inconvenient for users.
Therefore, it is better, to check in advance, whether the configured file names are valid.

This CR is intended to solve the inconvenience.

T2MC-41850 - [General] <CODE-DESCRIPTORS> Node should be added to the *arxml* files of all modules

Title: [General] <CODE-DESCRIPTORS> Node should be added to the *arxml* files of all modules

Description: For all modules, the <CODE-DESCRIPTORS> Node needs to be added for the RTE within the BSWMD *arxml* file.

T2MC-48305 - [MCU] Memory section VAR_INIT_ASIL_B_32 is missing in Mcu_Bswmd.arxml

Title: [MCU] Memory section VAR_INIT_ASIL_B_32 is missing in Mcu_Bswmd.arxml

Description: A compilation error occurs when integrating Mcal_Ver20180629.
It is caused that MCU driver refers the definition MCU_START_SEC_VAR_INIT_ASIL_B_32, but memory section VAR_INIT_ASIL_B_32 is not described in *Mcu_Bswmd.arxml*.

T2MC-41697 - [MCU] Support ECO trim

Title: [MCU] Support ECO trim

Description: Support setting of ECO trim by the MCU driver.

T2MC-41696 - [MCU] Support enabling the DMA

Title: [MCU] Support enabling the DMA

Description: Support enabling the DMA by the MCU driver.

T2MC-39473 - [MCU] Support TRAVEO™ T2G-B-H-8M

Title: [MCU] Support TRAVEO™ T2G-B-H-8M

Description: AUTOSAR MCAL supports the TRAVEO™ T2G-B-H-8M.

Regarding MCU, following will be changed:

- Corresponding to updated CPU subsystem (Multiple Cortex®-M7 CPUs and some clocks are added)
- Corresponding to updated peripheral interconnect (Programmable clocks and those dividers are grouped into multiple groups)
- Corresponding to updated system resource subsystem (PLL with SSCG, high current regulator, and low power external crystal oscillator are supported)

T2MC-39634 - [MCU] Warning generation in case of McuClockOutputXEnable

Title: [MCU] Warning generation in case of McuClockOutputXEnable

Description: It is requested that the warning should be generated in case "McuClockOutput0Enable" is configured as enable.

8.4 Module SW-Version 1.6

T2MC-50519 - [General] Export issue with MCAL ES10_20180308

Title: [General] Export issue with MCAL ES10_20180308

Description: An example of the issue is described below.
The configuration exported from Tresos does not correspond to the real configuration shown in Tresos. See the attached example.
The issue concerns other modules too, not only the Port described in attached pdf file.

T2MC-51808 - [MCU] Bus error occurs by accessing the PCLK divider register before enabling supplied clock

Title: [MCU] Bus error occurs by accessing the PCLK divider register before enabling supplied clock

Description: For TRAVEO™ T2G-B-H-8M family, PCLK group 1 is clocked by CLK_HF2 (clock root 2).
Currently MCAL may access the register in PCLK group 1 before enabling CLK_HF2.
Then bus error will occur.

T2MC-51849 - [MCU] Corresponding to SRSS updates for TRAVEO™ T2G-B-H-8M CMR4

Title: [MCU] Corresponding to SRSS updates for TRAVEO™ T2G-B-H-8M CMR4

Description: Corresponding to the following SRSS updates for TRAVEO™ T2G-B-H-8M CMR4.

1. High current regulator (REGHC) is updated in order to correspond the sequencer
2. Direct mux for clock root is added
3. SSCG depth and rate are modified
4. The usage of PLL400M lock delay is updated
5. The enabling sequence of FLL is updated

T2MC-51847 - [MCU] Some configuration values are not reflected correctly

Title: [MCU] Some configuration values are not reflected correctly

Description: Following configuration values are not reflected to another configuration or hardware correctly.

1. McuSscgPllFrequency cannot be calculated correctly when MCU_CLOCK_LPECO is set to McuSscgPllSource.
2. LPECO_AMP_SEL bit in LPECO_CTL register cannot be set correctly when McuLpEcoMaximumAmplitude is set to MCU_LPECO_AMPLITUDE_1_80V.

T2MC-50612 - [General] Delete device-dependent information from the user guide

Title: [General] Delete device-dependent information from the user guide

Description: Any device-dependent information should not be included in the user guide.
Therefore, delete the datasheet name from the related documentation in the user guide.

T2MC-57008 - [MCU] Support of LF clock frequency for 8M PSVP

Title: [MCU] Support of LF clock frequency for 8M PSVP

Description: For 8M PSVP, LF clock frequency is modified to 12.8 kHz.
But current MCAL supports only 32.768 kHz.
So it is necessary to support 12.8 kHz of LF clock.

8.5 Module SW-Version 1.7

T2MC-59623 - [MCU] The invalid value of McuRamSectionBaseAddress is not detected

Title: [MCU] The invalid value of McuRamSectionBaseAddress is not detected

Description: The invalid value of McuRamSectionBaseAddress is not detected when the parameter MEMORY.SRAM1.baseaddress is not defined in the resource properties file.
Currently following devices will be affected:

- MXS40_CYT2B57BAE
- MXS40_CYT2B57BAS
- MXS40_CYT2B58BAE
- MXS40_CYT2B58BAS

T2MC-59624 - [MCU] Insufficient description about sleep mode in user guide

Title: [MCU] Insufficient description about sleep mode in user guide

Description: The description about sleep mode is insufficient in user guide. The following should be added:

- How to locate MCU module for supporting system sleep mode.
- The acceptable APIs of MCU module on slave core.
- The restriction of source clock for LF clock during deep sleep mode.

8.6 Module SW-Version 1.8

T2MC-68664 - [MCU] Clock frequency limits are not checked in Tresos

Title: [MCU] Clock frequency limits are not checked in Tresos

Description: Tresos MCU plugin does not detect illegal clock settings according to datasheet.

T2MC-72644 - [MCU] Fractional value of McuFast0ClockDivision is not reflected in the calculation of McuFast0ClockFrequency

Title: [MCU] Fractional value of McuFast0ClockDivision is not reflected in the calculation of McuFast0ClockFrequency

Description: For devices that uses CPUSS-M7 IP, fractional value can be set to the fast 0 clock division value by configuring the configuration parameter McuFast0ClockDivision.
Currently, fractional value can be configured to McuFast0ClockDivision, but its fractional value is not used for calculation of McuFast0ClockFrequency.

T2MC-72563 - [MCU] Mcu_CheckClockStatus sometimes returns an error

Title: [MCU] Mcu_CheckClockStatus sometimes returns an error

Description: Mcu_CheckClockStatus returns an error when CLK_FLL_CONFIG4.CCO_FREQ register value is updated by hardware if the configuration parameter McuFllSettings is enabled and McuFllCcoAutoUpdateDisable is set to 'false'.
This issue can also occur in Mcu_CheckModeStatus if the configuration parameter McuReferenceClockSetting is enabled.

T2MC-65950 - [MCU] Mcu_InitClock API fails when McuWcoStopForUpdate is set and WCO is already enabled

Title: [MCU] Mcu_InitClock API fails when McuWcoStopForUpdate is set and WCO is already enabled

Description: The `Mcu_InitClock` API fails when all the following conditions are met:
WCO is already enabled
McuWcoStopForUpdate is configured to true
Mcu_InitClock API is called with the above configuration

T2MC-72628 - [MCU] McuSscgPllLockSensitivity default value is not in range

Title: [MCU] McuSscgPllLockSensitivity default value is not in range

Description: In the MCU configuration, the parameter McuSscgPllLockSensitivity has a default value which is not in the range of the enumeration (you can see this when you add a new McuSscgPllSettings configuration).
Default value is : MCU_LOCK_SENSITIVITY_NORMAL
Range :
MCU_LOCK_SENSITIVITY_INTEGER
MCU_LOCK_SENSITIVITY_FRACTIONAL_OR_SPREADING

T2MC-67335 - [MCU] Support TRAVEO™ T2G-C-2D-6M and TRAVEO™ T2G-B-H-8M updates

Title: [MCU] Support TRAVEO™ T2G-C-2D-6M and TRAVEO™ T2G-B-H-8M updates

Description: AUTOSAR MCAL supports the TRAVEO™ T2G-C-2D-6M devices.

Regarding MCU, following will be changed.

Corresponding to updated system resource subsystem (SRSS_VER3P2: External PMIC is supported, Timer clock setting is obsoleted, WCO enabling procedure is changed).

Note: *This change is also applied to TRAVEO™ T2G-B-H-8M devices.*

Also, supports calculating the average of SSCG modulated frequency when down spread mode is specified.

T2MC-65941 - [MCU] The program stops if FLL is disabled while FLL is selected as CPU clock

Title: [MCU] The program stops if FLL is disabled while FLL is selected as CPU clock

Description: The program stops when all the following conditions are met:
FLL is already enabled
FLL is already selected as CPU clock
McuFllEnable is configured as 'false' or McuFllStopForUpdate is configured to 'true'
The `Mcu_InitClock` API is called with the above configuration.

T2MC-77772 - [MCU] Wait cycle values for disabling PLL or SSCG PLL are incorrect.

Title: [MCU] Wait cycle values for disabling PLL or SSCG PLL are incorrect.

Description: For PLL/SSCG PLL, it is necessary to wait few cycles for disabling.
However, if there are multiple PLLs or SSCG PLLs, the wait cycle is too short.
Then, program may hang-up.

T2MC-77594 - Support IAR compiler

Title: Support IAR compiler

Description: Support IAR compiler (IAR EWARM FS 8.22.3.15992).

8.7 Module SW-Version 1.9

T2MC-86453 - Mcu_SetMode issues DET error when TRAVEO™ T2G-B-H-8M series revision B is used

Title: Mcu_SetMode issues DET error when TRAVEO™ T2G-B-H-8M series revision B is used

Description: Mcu_SetMode issues DET error with Error ID MCU_E_PARAM_MODE when TRAVEO™ T2G-B-H-8M series revision B is used.

8.8 Module SW-Version 1.10

T2MC-90308 - [MCU] PMIC cannot be controlled using MCAL

Title: [MCU] PMIC cannot be controlled using MCAL

Description: The TRAVEO™ T2G-C-2D-6M series has PMIC function.
This PMIC function cannot be controlled using MCAL MCU module.
If McuPmicSettings is enabled in the MCAL MCU configuration, Mcu_SetMode issues DET error with error ID MCU_E_PARAM_MODE.

8.9 Module SW-Version 1.11

T2MC-91218 - [MCU] Mcu.xdm is inconsistent with Mcu.arxml

Title: [MCU] Mcu.xdm is inconsistent with Mcu.arxml

Description: Following value in Mcu.xdm is inconsistent with *Mcu.arxml*.

- UUID of McuLpEcoLoadCapacitanceRange

Also, POST-BUILD-VARIANT-MULTIPLICITY of some parameters are inconsistent in *Mcu.arxml* and *Mcu.xdm*.

T2MC-91801 - [MCU] Modify the arxml file to support TRAVEO™ T2G-B-H-4M

Title: [MCU] Modify the arxml file to support TRAVEO™ T2G-B-H-4M

Description: The *arxml* file of the Mcu module must be modified to support TRAVEO™ T2G-B-H-4M devices.

T2MC-91520 - Note about the configuration of the SRAM power mode

Title: Note about the configuration of the SRAM power mode

Description: Some SRAM areas are used by the SROM API. If the power mode of those SRAM areas is changed, the behavior of the SROM API will be unpredictable.

The power mode of the SRAM areas can be changed by MCAL. So, this information should be added in the MCAL user guide.

8.10 Module SW-Version 1.12

T2MC-92537 - Mcu_InitClock API returns E_NOT_OK when McuAgcEnable is set to FALSE in the configuration

Title: Mcu_InitClock API returns E_NOT_OK when McuAgcEnable is set to FALSE in the configuration

Description: The Mcu_InitClock API returns E_NOT_OK when the configuration container McuClockSettingConfig including the McuEcoEnable parameter, set to TRUE, and the McuAgcEnable parameter, set to FALSE are specified.

8.11 Module SW-Version 1.13

T2MC-97124 - [MCU] Remove redundant register read processes

Title: [MCU] Remove redundant register read processes

Description: There are some redundant register read processes in the functions Mcu_SetRAM1WaitCycle_Regs and Mcu_SetRAM2WaitCycle_Regs.
These redundant registers read processes are removed.

T2MC-97131 - Different macros are used for setting and checking the value

Title: Different macros are used for setting and checking the value

Description: Some modules differ in the macro names defined and the macro names used in the processing. For example, when the macro set to TRUE is judged as STD_ON, the definition value is 1 for both, but the same macro must be used.

```
#define MACRO_DEFINE (TRUE)
-
#if MACRO_DEFINE == STD_ON
xxx
#endif
```

In Platform_Types.h of the base module

```
#define TRUE 1U
#define FALSE 0U
```

In Std_Types.h of the base module

```
#define STD_ON 0x01U
#define STD_OFF 0x00U
```

T2MC-97382 - Macro definition at variable declaration is missing and the limitation is not mentioned in release notes

Title: Macro definition at variable declaration is missing and the limitation is not mentioned in release notes

Description: Macro definitions are not used when declaring some variables and pointers (in FLS, MCU, PORT, SPI, and WDG).

According to AUTOSAR specification:
[SWS_COMPILER_00026]
#define VAR(vartype, memclass)

True:
volatile P2VAR(Spi_DmaChannelRegsType, AUTOMATIC, REGSPACE) retPtr;

False:
volatile Spi_DmaChannelRegsType * retPtr;

This issue is present in the following cases:

- All types of pointer declaration/definition are defined without macros.
  These contain the function parameter/global variable/local variable/structure field/union field.
- All types of function declaration/definition are defined without macros.
- When there is nested macro usage in function macros.
- Raw pointer is used in the function macro:
  e.g., FUNC(int *, memclass) function(void);
- Global variable or static variable in the function is not defined with macros.

To fully comply with the above cases, change variable and function definitions in FLS, MCU, PORT, SPI, and WDG.

In requirements, keyword macros 'CONST' and 'VAR' are not required for declaration/definition of the local variable, function parameter, and structure/union fields.
The information must be described in all release notes.

T2MC-39519 - Support EB tresos V26.2.0

Title: Support EB tresos V26.2.0

Description: Support EB tresos V26.2.0

[Impact]
Strict AUTOSAR specification and check for parameter configuration errors are implemented in EB tresos V26.2.0.
In addition, handling of reference paths (relative paths) such as system description file (ARXML) is changed in EB tresos V26.2.0.

Therefore, if the current ECUC configuration definitions XML file contains deviations or errors, you may find errors during import to tresos26. In that case, the ECUC configuration definitions XML file must be modified appropriately.
In addition, if the current ARXML file contains unresolvable paths, you may find errors during import to tresos26. In that case, ARXML file must be modified.

The SW has been tested; no risks except for the low-level risk listed above were found.

T2MC-97128 - Unnecessary exclusive control for a process

Title: Unnecessary exclusive control for a process

Description: Some modules have exclusive control in the section where only variables and registers are written atomically. Exclusive control should not be performed for a process that is clearly not affected by interference.

8.12 Module SW-Version 1.14

T2MC-94500 - [MCU] 11 enumeration definitions of McuPeriGroupSlaveName in *arxml* are added and modified for cluster devices

Title: [MCU] 11 enumeration definitions of McuPeriGroupSlaveName in *arxml* are added and modified for cluster devices

Description: Following are the changes made to the peripheral group structure for cluster devices:

- AXI DMAC is added to slave 10 of peripheral group 2
- VIDEOSS PD is added to slave 1 of peripheral group 10

So, 11 enumeration definitions of McuPeriGroupSlaveName must be added and modified for cluster devices.

Also, SMART IO#9 clock was added for cluster devices. Therefore, the enumeration definition for SMARTIO#9 clock must be added to McuPclk and McuClock.

T2MC-163459 - [MCU] Make McuMainCore0PowerMode optional

Title: [MCU] Make McuMainCore0PowerMode optional

Description: If there is no need to update CM4_PWR_CTL, it is better to skip setting of the CM4_PWR_CTL register for performance.

For this reason, it would be better to make McuMainCore0PowerMode optional to skip setting of CM4_PWR_CTL register.

T2MC-164826 - [MCU] Update configuration ranges to support current hardware manual and datasheet

Title: [MCU] Update configuration ranges to support current hardware manual and datasheet

- SSCG modulation rate fPFD/256 is not supported by MCAL
- ECO minimum/maximum frequency (MCAL) 4 MHz/33.33 MHz, (TRM/DS) 3.988 MHz/33.34 MHz
- LPECO minimum/maximum frequency (MCAL) 4 MHz/8 MHz, (TRM/DS) 3.99 MHz/8.01 MHz
- ILO0/ILO1 maximum frequency (MCAL) 32768 Hz, (TRM/DS) 34406.4 Hz

So, the parameter range of above configurations, in MCAL implementation are updated to match the description in TRM/DS.
Also, currently ILO0/1 clock monitor feature should be disabled. So, the user guide should include a description about the usage of ILO0/1 clock monitor feature.

T2MC-164408 - Improvement of interrupt register clear processing

Title: Improvement of interrupt register clear processing

Description: Some modules clear the interrupt register by read modify write (RMW).
However, there is a possibility that unintended bits might also be cleared, if some bits are already set before clearing, because the attribute of the interrupt register is RW1C (every bit is cleared upon writing 1).
Also, unnecessary read access to the register reduces performance.
Therefore, change the clearing process to write intended bit only.

T2MC-164778 - Support MISRA C:2012 coding rule

Title: Support MISRA C:2012 coding rule

Description: Support MISRA C:2012 coding rule.
The MISRA C:2012 coding rule checks the source code.
If a deviation from the rules is required, add the deviation comment to the code and report the result.
If a deviation is for MISRA-C:2004 only, remove the deviation comment.

8.13 Module SW-Version 1.15

T2MC-164831 - [ALL] Misleading comment in Module_MemMap.h

Title: [ALL] Misleading comment in Module_MemMap.h

Description: *{Mip}_MemMap.h* files are provided as sample template files. But, the file header comment cannot be modified, which is a contradiction. To resolve this contradiction, change the file header comment to allow user modification.
Also, to make sure that the file is not a part of the commercial product, move the *{Mip}_MemMap.h* files to the *MemMap* stub folder.

T2MC-166091 - [MCU] Modify the range of McuEcoAmplitudeTrimValue and McuEcoWatchdogTrimValue due to TRM updates

Title: [MCU] Modify the range of McuEcoAmplitudeTrimValue and McuEcoWatchdogTrimValue due to TRM updates

Description:

[Overview]
The value of CLK_ECO_CONFIG2.ATRIM and CLK_ECO_CONFIG2.WDTRIM will be changed in the hardware technical reference manual (TRM).
Therefore, the range of McuEcoAmplitudeTrimValue and McuEcoWatchdogTrimValue should be changed.

Also, the following description will be added for PWR_CTL2.DPSLP_REG_DIS:
"If the DeepSleep regulator is disabled, it cannot be enabled again by clearing this bit.".
Therefore, the note for McuDeepSleepRegulatorDisable should be added in the user guide.

[Impact for customer]
The range of McuEcoAmplitudeTrimValue and McuEcoWatchdogTrimValue is completely changed.
Therefore, the customer needs to reconfigure the value of these parameters.

8.14 Module SW-Version 1.16

T2MC-167264 - [MCU] Add description of privileged operation in user guide

Title: [MCU] Add description of privileged operation in user guide

Description: Some registers controlled by the MCU module must be accessed in privileged mode. However, it is not currently mentioned in any document because It was assumed that those registered could be accessed in user mode.

So, description about privileged operation needed to be added in the user guide.

T2MC-167177 - [MCU] Add warning of McuClockRootPathRef

Title: [MCU] Add warning of McuClockRootPathRef

Description: Add a warning when one of following values is configured to McuClockPathSource in McuClockPathSettings which is referred by McuClockRootPathRef:

- MCU_CLOCK_ILO0
- MCU_CLOCK_ILO1
- MCU_CLOCK_WCO
- MCU_CLOCK_ALTLF
- MCU_CLOCK_DSIn (n = 0 - 15)These settings might result in undefined behavior.

8.15 Module SW-Version 1.17

T2MC-170651 - [MCU] Add description for fault structure

Title: [MCU] Add description for fault structure

Description: The MCU driver configures the clock supervisor, which can use the fault structure.

Then, you must configure the fault structure. This information has been added to the user guide.

T2MC-163916 - [MCU] Register structure for Hibernate mode is changed and clock supervisor for clk_bak is added for cluster 6M devices

Title: [MCU] Register structure for Hibernate mode is changed and clock supervisor for clk_bak is added for cluster 6M devices

Description: For cluster 6M devices, the following updates affect the MCAL MCU module:

- Changed the register structure for Hibernate mode.
- Added the clock supervisor for clk_bak.
- Modified SMIF. This change affects the enumeration literal definition in arxml.
- Added JPEGDEG. This change affects the enumeration literal definition in arxml.
- Changed the Pump clock registers to reserved. This change affects all devices.
- Changed SSCG_DITHER_EN to reserved. This change affects all devices.

T2MC-170536 - [MCU] Some error condition of MCU_E_PARAM_MODE is not described in the user guide

Title: [MCU] Some error condition of MCU_E_PARAM_MODE is not described in the user guide

Description: The MCU driver reports MCU_E_PARAM_MODE to DET, even if the clock setting fails in `Mcu_SetMode()`. However, this error condition is not described in the user guide.

Therefore, the error description has been added in the user guide.

T2MC-170794 - [MCU] Need to guarantee the order of register settings between relevant peripherals for robustness

Title: [MCU] Need to guarantee the order of register settings between relevant peripherals for robustness

Description: If a driver controls different peripherals that have different bridges and buffers, then the order of access must be guaranteed.

It is also necessary to guarantee the order of CPU instruction and peripheral operations.

PERI and other IPs such as SRSS and CPUSS and some CPU instructions meet the above conditions regarding the MCU driver.

Therefore, register read back process has been added.

T2MC-170539 - [MCU] Unused structure member exists

Title: [MCU] Unused structure member exists

Description: Unused structure member has been found inside MCAL code.

The following structure members are not used:

- PclkEnToCnt in Mcu_ClockConfigType
- RefClockId in Mcu_SysResConfigDataType

This would not affect the functions and its behaviors. However, the unused structure members should be removed as they are redundant.

T2MC-172217 - [MCU] Modify the access to the configuration data structure

Title: [MCU] Modify the access to the configuration data structure

Description: In some cases, data that is not allocated to memory is accessed. These do not affect the MCAL behavior, if ROM or CM7_ITCM is set to be accessible from MCAL. However, the program may cause hard fault if ROM or CM7_ITCM is not set to be accessible from MCAL.

This issue occurs when the `Mcu_InitClock()` API is called in any of the following cases:

- `McuEcoSettings`, `McuWcoSettings`, or both are enabled for the device other than the cluster.
- One or two of `McuEcoSettings`, `McuWcoSettings`, and `McuLpEcoSettings` are disabled for the cluster device.
- `McuClockRootSettings` exists and `McuFllSettings` is disabled if the clock root configured by `McuClockRootSettings` is already enabled and sourced by FLL for all devices.

The program has been modified, so that it does not access the data that is not allocated to memory.

Version history

Following is supported in release V1.10.0.

T2MC-172502 - Note on McuFreezeIoRelease is incorrect in the user guide

Title: Note on McuFreezeIoRelease is incorrect in user guide

Description: There is a documentation error related to `McuFreezeIoRelease`:

(Current) Note: If I/O freeze is enabled when entering Hibernate mode, then after wakeup I/O freeze should be released after by applying the mode configuration with this parameter set to FALSE.

(Correct) Note: If I/O freeze is enabled when entering Hibernate mode, then after wakeup I/O freeze should be released after by applying the mode configuration with this parameter set to TRUE.

Also, the description of the following configuration parameters is incomplete:

- MCU_E_CLOCK_FAILURE, MCU_E_RESET_FAILURE, McuFllAutoDistributeEnable, McuFllAutoDistributeType, and McuHvLvdType have unnecessary descriptions.
- The description of McuFast0ClockFrequency, McuFast1ClockFrequency, McuSlowClockFrequency, McuSscgPllFrequency, McuPclkFrequency, McuPeriGroupClockFrequency, and McuPeriGroupSlaveEnable is insufficient.
- The description of McuLfClockSource is incorrect.
- The description of McuDefaultClockSetting is insufficient (MCU driver user guide only).
- The description of McuEcoAmplitudeTrimValue, McuEcoWatchdogTrimValue, McuIlo0MonitorEnable, McuIlo1MonitorEnable, McuFast0ClockDivision, McuSscgPllModulationRate, McuMainCore1PowerMode, and McuDeepSleepRegulatorDisable is incomplete (MCU 3.0 driver user guide only).

T2MC-172515 - [MCU] Improve the description in safety manual

Title: [MCU] Improve the description in safety manual

Description: Currently, the following description exists in the safety manual.

"The integrated system shall stop feeding the watchdog after detecting a reset instruction did not work on time"

However, the description may be difficult to understand, so it will be revised.

T2MC-178099 - [MCU] Add the note on controlling REGHC and PMIC

Title: [MCU] Add the note on controlling REGHC and PMIC

Description: According to the application note, AN226698 (External power supply design guide for TRAVEO™ T2G family), it is recommended to use system call API to control REGHC and PMIC. However, current MCAL does not support the system call API to control REGHC and PMIC.

Therefore, a note recommending the user to follow the AN226698 for controlling the REGHC and PMIC is added in the user guide.

8.16 Module SW-Version 1.18

T2MC-172501 - [MCU] Fractional part of McuSscgPllFeedbackDivision is not used to calculate McuSscgPllFrequency

Title: [MCU] Fractional part of McuSscgPllFeedbackDivision is not used to calculate McuSscgPllFrequency

Description: In the following configuration of McuSscgPllSettings, McuSscgPllFrequency is not calculated as expected:

- McuSscgPllSource = 24MHz (McuExtFrequency)
- McuSscgPllReferenceDivision = 2
- McuSscgPllOutputDivision = 5
- McuSscgPllFeedbackDivision = 62.7
- McuSscgPllFractionalDivisionEnable = True

The expected value of McuSscgPllFrequency is 150.48MHz, but actual value is 148.8MHz.

T2MC-173298 - [MCU] Change MCAL MCU to not access the FLASH wait status register when its value is not changed

Title: [MCU] Change MCAL MCU to not access the FLASH wait status register when its value is not changed

Description: Currently, MCAL MCU always accesses the FLASH_CTL register when the Mcu_Init, Mcu_InitClock, or Mcu_SetMode API is called.

However, there are some cases where you do not want MCAL to access the FLASH_CTL register. For example, you might want only HSM to access the register in a safety project.

Therefore, the MCAL MCU has been changed so that it does not access the FLASH_CTL register to update FLASH wait status when its value is not changed.

T2MC-173307 - [MCU] Add a warning in Tresos when McuImoEnable is configured as FALSE

Title: [MCU] Add a warning in Tresos when McuImoEnable is configured as FALSE

Description: According to the register TRM, the IMO should be enabled at all times for all functions to work properly.

Therefore, add a warning in Tresos when McuImoEnable is configured as FALSE.

T2MC-175597 - [MCU] Change the value against which the McuFlashWaitCycle value is checked

Title: [MCU] Change the value against which the McuFlashWaitCycle value is checked

Description: Currently, the value of McuFlashWaitCycle is checked with the value of McuClockRootFrequency.

However, the value of McuFlashWaitCycle should be checked with the value of McuMemClockFrequency for TRAVEO™ T2G body high and TRAVEO™ T2G cluster devices according to the current architecture TRM.

Therefore, for TRAVEO™ T2G body high and TRAVEO™ T2G cluster devices, change the value against which the McuFlashWaitCycle value is checked.

T2MC-178153 - [MCU] Update MCAL code and user guide to match the architecture TRM and the datasheet

Title: [MCU] Update MCAL code and user guide to match the architecture TRM and the datasheet

Description: To match the current architecture TRM and the datasheet, the following changes are required:

- Add WFI after writing PWR_HIBERNATE register and add description of Hibernate entry in the user guide.
- Change the minimum frequency of the source clock for `McuPllSource` and PFD to 3.988 MHz.
- Change the minimum frequency of the source clock for `McuSscgPllSource` and PFD to 3.988 MHz.
- Change the maximum frequency of `McuIlo0Frequency`, `McuIlo1Frequency`, and `McuLfClockFrequency` to 35.06176 kHz.
- Delete the parameter `MCU_SSCG_MODE_CENTER_SPREAD` from `McuSscgPllModulationMode`.
- Add a note to `McuFllAutoDistributeEnable` and `McuFllAutoDistributeType` in the user guide.
- Add a note in the user guide to not to set the `McuLinearCoreRegulatorDisable` parameter TRUE.
- Delete the note of McuVoltageReferenceBufferDisable in the user guide.

T2MC-178155 - [MCU] Add a dummy read to ensure the processing order in reset procedure

Title: [MCU] Add a dummy read to ensure the processing order in reset procedure

Description: Currently, MCAL sets the RAM power mode as RETAINED before performing a reset. However, there is a possibility to reverse the order of setting the RAM power mode and performing a reset. So, a dummy read of the RAM power mode register should be added before performing a reset to ensure the processing order.

8.17 Module SW-Version 1.19

T2MC-178682 - [MCU] Enumeration definitions of `McuPclk`, `McuClock`, and `McuPeriGroupSlaveName` are added for cluster entry devices in arxml

Title: [MCU] Enumeration definitions of `McuPclk`, `McuClock`, and `McuPeriGroupSlaveName` are added for cluster entry devices in arxml

Description: Some peripheral clocks and IPs are newly added for cluster entry devices. Therefore, it is necessary to add new enumeration definitions of `McuPclk`, `McuClock`, and `McuPeriGroupSlaveName` in Mcu.arxml as follows:

- Add `MCU_PCLK_LCD0_CLOCK` to `McuPclk` and `McuClock`.
- Add `MCU_PERI_GROUP3_SLAVE4_LCD` to `McuPeriGroupSlaveName`.
- Add `MCU_PERI_GROUP3_SLAVE5_EVTGEN` to `McuPeriGroupSlaveName`.
- Add `MCU_PERI_GROUP8_SLAVE3_MIXER` to `McuPeriGroupSlaveName`.

T2MC-178688 - Addition of the notice for Arm® errata and workaround in the user guide

Title: Addition of the notice for Arm® errata and workaround in the user guide

Description: Add a notice for Arm® Cortex®-M4 errata 838869 and software workaround in the user guide.

MCAL release V1.14.0:

T2MC-181026 - [MCU] Add a note about memory allocation in the user guide

Title: [MCU] Add a note about memory allocation in the user guide

Description: The MCU driver may control the cache and SRAM power mode according to the configuration. The MCU driver accesses the stack and static data while controlling the cache and SRAM power mode. Therefore, these data must be allocated to the non-cached memory or the SRAM whose mode is kept ENABLED. This information should be added in the user guide.

8.18 Module SW-Version 1.20

T2MC-183979 - [MCU] Improve the DET error when McuVoltageReferenceBufferReadyTimeout occurs

Title: [MCU] Improve the DET error when McuVoltageReferenceBufferReadyTimeout occurs

Description: Currently, the MCU driver reports a DET error with MCU_E_PARAM_MODE when McuVoltageReferenceBufferReadyTimeout occurs in the Mcu_SetMode() API.

However, in this case, it would be more suitable to handle this error as an incomplete update of the system resource. Therefore, MCU_E_SYSTEM_RESOURCE_UPDATE_NOT_COMPLETED will be reported as the DET error for this case.

This change is also applied when the following timeout occurs:

- McuLinearCoreRegulatorEnableTimeout
- McuReferenceCurrentGeneratorEnableTimeout

T2MC-183980 - [MCU] Enumeration definitions of McuPclk, McuClock, and McuPeriGroupSlaveName are added for cluster high devices in ARXML

Title: [MCU] Enumeration definitions of McuPclk, McuClock, and McuPeriGroupSlaveName are added for cluster high devices in ARXML

Description: Some peripheral clocks and IPs are newly added for cluster high devices; therefore, new enumeration definitions of McuPclk, McuClock, and McuPeriGroupSlaveName are added in *Mcu.arxml* as follows:

- Added MCU_PCLK_SMARTIO8_CLOCK to McuPclk and McuClock.
- Added MCU_PERI_GROUP4_SLAVE3_LPDDR4 to McuPeriGroupSlaveName.
- Added MCU_PERI_GROUP10_SLAVE2_VIDEOSS_JPEGDEC to McuPeriGroupSlaveName.

Also, to correspond with the latest hardware TRM and datasheet, the following changes are made:

- Changed the wait cycles to 10 cycles when the FLL is disabled.
- Changed the enumeration range of McuWcoPrescaler for devices other than cluster 2D 6M and cluster entry 4M devices.

T2MC-183983 - Update copyright notice and disclaimer statement

Title: Update copyright notice and disclaimer statement

Description: Copyright notice and disclaimer statement in the file header comment are updated to follow the up-to-date specifications.

T2MC-184061 - [MCU] Add error message for McuPmicSettings, McuRegHcSettings, and McuLinearCoreRegulatorDisable

Title: [MCU] Add error message for McuPmicSettings, McuRegHcSettings, and McuLinearCoreRegulatorDisable

Description: The user guide mentions that the following settings are prohibited:

- Activate McuPmicSettings.
- Activate McuRegHcSettings.
- Set TRUE to McuLinearCoreRegulatorDisable.

However, there is a risk of accidentally making these settings. To avoid this situation, added error messages if these settings are made. In addition, removed the code that is not executed anymore.

T2MC-184060 - [MCU] Add configuration to skip clearing the pending wakeup causes for hibernate mode

Title: [MCU] Add configuration to skip clearing the pending wakeup causes for hibernate mode

Description: In the current implementation, the MCAL clears wakeup causes just before entering hibernate mode.

However, it is possible for a wakeup from hibernate mode to occur that is caused by a wakeup trigger that occurred before entering hibernate mode after the system decides to transition.

To handle this situation, a new configuration parameter is added to skip clearing the wakeup causes for hibernate mode.

8.19 Module SW-Version 1.21

T2MC-184094 - [MCU] Add check of LPECO_AMPDET_OK for LPECO stabilization

Title: [MCU] Add check of LPECO_AMPDET_OK for LPECO stabilization

Description: In the current implementation, only checking the LPECO_STATUS.LPECO_READY for LPECO stabilization. However, check the LPECO_STATUS.LPECO_AMPDET_OK to ensure that the amplitude of LPECO is sufficient if the amplitude detector is enabled. Therefore, check LPECO_STATUS.LPECO_AMP_DET_OK is added for LPECO stabilization if the amplitude detector is enabled.

T2MC-184095 - [MCU] Add a note for disabling ILO0 when bandgap reference power mode changes to normal mode

Title: [MCU] Add a note for disabling ILO0 when bandgap reference power mode changes to normal mode

Description: If bandgap reference power mode changes to normal mode, enable ILO0 for at least five ILO0 cycles. But MCAL controls them with different functions. Therefore, added a note to McuBandgapReferencePowerMode for disabling ILO0 after changing bandgap reference power mode to normal mode on tresos and in the user guide.

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Edition 2022-09-27

Published by

Infineon Technologies AG

81726 Munich, Germany

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Document reference

002-23359 Rev. *T

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