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| Document Change History |         |                                  |  |
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| Document Change History |         |                                  |   |
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## 1 Introduction and functional overview

This specification specifies the functionality, API and the configuration of the AUTOSAR Basic Software module Flash Test driver.

This Flash test module provides algorithm to test invariable memory. Invariable memory can be data/program flash, program SRAM, locked cache and is either embedded in the microcontroller or memory mapped connected to the microcontroller. For simplification the SW module is called Flash Test driver.

The test service can be executed at any time after MCU initialization and it is up to the user of the Flash Test Driver to choose the suitable test algorithm and the right execution place to fulfill the safety requirements of the system. The test service itself is dependant on the storage concept of the system. Therefore, the availability of different test algorithms is configurable.

The Flash Test driver is intended to be integrated in the overall safety concept and will not provide the required diagnostic coverage on its own.



## 2 Acronyms and abbreviations

Acronyms and abbreviations that have a local scope are not contained in the AUTOSAR glossary. These appear in a local glossary below.

| <b>Acronym:</b> | <b>Description:</b> |
|-----------------|---------------------|
| BSW             | BasicSoftWare       |
| PC              | PreCompile          |
| PB              | PostBuild           |

| <b>Abbreviation:</b> | <b>Description:</b>        |
|----------------------|----------------------------|
| DEM                  | Diagnostic Event Manager.  |
| DET                  | Default Error Tracer.      |
| MCU                  | Micro Controller Unit.     |
| PLL                  | Phase Locked Loop.         |
| ISR                  | Interrupt Service Routine. |

The following table lists important Term and Definition, which are used within this document.

| <b>Term:</b>      | <b>Description:</b>  |
|-------------------|--|
| Background test   | Background test is called periodically by a scheduler, and is interruptible. The test is split up over many scheduled tasks. |
| Foreground test   | Foreground test is called via users call.  |
| Flash cell        | Smallest entity to be addressed, in this case bytes shall be used  |
| Invariable memory | Invariable memory can be program flash, program SRAM, locked cache and ROM   |
| Test block        | Defined memory area to be tested in foreground and background mode.  |
| Test interval     | Interval of a complete Flash test in background mode   |
| Test time         | Time for partial test defined within one scheduled task.   |
| Signature         | Unique calculation result of the content of a specific memory block  |
| Memory block      | Defined memory area  |
| Partial test      | Test to be executed in one scheduler interval  |
| Test Interval Id  | Identifier of a test interval, which shall be incremented by each start of a new test interval                               |

## 3 Related documentation

### 3.1 Input documents

- [1] Layered Software Architecture  
AUTOSAR\_EXP\_LayeredSoftwareArchitecture.pdf
- [2] General Requirements on SPAL  
AUTOSAR\_SRS\_SPALGeneral.pdf
- [3] General Requirements on Basic Software Modules  
AUTOSAR\_SRS\_BSWGeneral.pdf
- [4] Specification of Default Error Tracer  
AUTOSAR\_SWS\_DefaultErrorTracer.pdf
- [5] Specification of MCU Driver  
AUTOSAR\_SWS\_MCUDriver.pdf
- [6] Specification of ECU Configuration,  
AUTOSAR\_TPS\_ECUConfiguration.pdf
- [7] Basic Software Module Description Template,  
AUTOSAR\_TPS\_BSWModuleDescriptionTemplate.pdf
- [8] List of Basic Software Modules  
AUTOSAR\_TR\_BSWModuleList
- [9] General Specification of Basic Software Modules  
AUTOSAR\_SWS\_BSWGeneral.pdf

### 3.2 Related specification

AUTOSAR provides a General Specification on Basic Software modules [9] (SWS BSW General), which is also valid for Flash Test.

Thus, the specification SWS BSW General shall be considered as additional and required specification for Flash Test.

## **4 Constraints and assumptions**

### **4.1 Limitations**

During Flash Test operation, the Flash area under test shall not be modified.

### **4.2 Applicability to car domains**

No restrictions.

## 5 Dependencies to other modules

The Flash Test module depends on the following modules:

- BSW scheduler is required to trigger main function in background mode

### 5.1 File structure

#### 5.1.1 Code file structure

Note: Refer to SWS\_BSWGeneral document [9].

## 6 Requirements traceability

| Requirement   | Description  | Satisfied by     |
|---------------|--|------------------|
| SRS_BSW_00003 | All software modules shall provide version and identification information  | SWS_FlsTst_00166 |
| SRS_BSW_00005 | Modules of the $\hat{\mu}$ C Abstraction Layer (MCAL) may not have hard coded horizontal interfaces  | SWS_FlsTst_00166 |
| SRS_BSW_00006 | The source code of software modules above the $\hat{\mu}$ C Abstraction Layer (MCAL) shall not be processor and compiler dependent.            | SWS_FlsTst_00166 |
| SRS_BSW_00007 | All Basic SW Modules written in C language shall conform to the MISRA C 2012 Standard.   | SWS_FlsTst_00166 |
| SRS_BSW_00009 | All Basic SW Modules shall be documented according to a common standard.   | SWS_FlsTst_00166 |
| SRS_BSW_00010 | The memory consumption of all Basic SW Modules shall be documented for a defined configuration for all supported platforms.                    | SWS_FlsTst_00166 |
| SRS_BSW_00101 | The Basic Software Module shall be able to initialize variables and hardware in a separate initialization function                             | SWS_FlsTst_00017 |
| SRS_BSW_00159 | All modules of the AUTOSAR Basic Software shall support a tool based configuration   | SWS_FlsTst_00166 |
| SRS_BSW_00161 | The AUTOSAR Basic Software shall provide a microcontroller abstraction layer which provides a standardized interface to higher software layers | SWS_FlsTst_00166 |
| SRS_BSW_00162 | The AUTOSAR Basic Software shall provide a hardware abstraction layer  | SWS_FlsTst_00166 |
| SRS_BSW_00164 | The Implementation of interrupt service routines shall be done by the Operating System, complex drivers or modules                             | SWS_FlsTst_00166 |
| SRS_BSW_00167 | All AUTOSAR Basic Software Modules shall provide configuration rules and constraints to enable plausibility checks                             | SWS_FlsTst_00166 |
| SRS_BSW_00168 | SW components shall be tested by a function defined in a common API  | SWS_FlsTst_00166 |

|               |   |                  |
|---------------|---|------------------|
|               | in the Basis-SW   |                  |
| SRS_BSW_00170 | The AUTOSAR SW Components shall provide information about their dependency from faults, signal qualities, driver demands            | SWS_FlsTst_00166 |
| SRS_BSW_00172 | The scheduling strategy that is built inside the Basic Software Modules shall be compatible with the strategy used in the system    | SWS_FlsTst_00166 |
| SRS_BSW_00300 | All AUTOSAR Basic Software Modules shall be identified by an unambiguous name   | SWS_FlsTst_00166 |
| SRS_BSW_00301 | All AUTOSAR Basic Software Modules shall only import the necessary information  | SWS_FlsTst_00166 |
| SRS_BSW_00302 | All AUTOSAR Basic Software Modules shall only export information needed by other modules  | SWS_FlsTst_00166 |
| SRS_BSW_00304 | All AUTOSAR Basic Software Modules shall use the following data types instead of native C data types                                | SWS_FlsTst_00016 |
| SRS_BSW_00305 | Data types naming convention  | SWS_FlsTst_00166 |
| SRS_BSW_00306 | AUTOSAR Basic Software Modules shall be compiler and platform independent   | SWS_FlsTst_00166 |
| SRS_BSW_00307 | Global variables naming convention  | SWS_FlsTst_00166 |
| SRS_BSW_00308 | AUTOSAR Basic Software Modules shall not define global data in their header files, but in the C file                                | SWS_FlsTst_00166 |
| SRS_BSW_00309 | All AUTOSAR Basic Software Modules shall indicate all global data with read-only purposes by explicitly assigning the const keyword | SWS_FlsTst_00166 |
| SRS_BSW_00310 | API naming convention   | SWS_FlsTst_00166 |
| SRS_BSW_00312 | Shared code shall be reentrant  | SWS_FlsTst_00166 |
| SRS_BSW_00323 | All AUTOSAR Basic Software Modules shall check passed API parameters for validity   | SWS_FlsTst_00033 |
| SRS_BSW_00325 | The runtime of interrupt service routines and functions that are running in interrupt context shall be kept short                   | SWS_FlsTst_00166 |
| SRS_BSW_00327 | Error values naming convention  | SWS_FlsTst_00166 |
| SRS_BSW_00328 | All AUTOSAR Basic Software Modules shall avoid the duplication  | SWS_FlsTst_00166 |

|               |  |  |
|---------------|--|--|
|               | of code  |  |
| SRS_BSW_00330 | It shall be allowed to use macros instead of functions where source code is used and runtime is critical                             | SWS_FlsTst_00166                                     |
| SRS_BSW_00331 | All Basic Software Modules shall strictly separate error and status information  | SWS_FlsTst_00166                                     |
| SRS_BSW_00334 | All Basic Software Modules shall provide an XML file that contains the meta data   | SWS_FlsTst_00166                                     |
| SRS_BSW_00335 | Status values naming convention  | SWS_FlsTst_00166                                     |
| SRS_BSW_00336 | Basic SW module shall be able to shutdown  | SWS_FlsTst_00027                                     |
| SRS_BSW_00337 | Classification of development errors   | SWS_FlsTst_00007                                     |
| SRS_BSW_00339 | Reporting of production relevant error status  | SWS_FlsTst_00042, SWS_FlsTst_00060, SWS_FlsTst_00112 |
| SRS_BSW_00341 | Module documentation shall contains all needed informations  | SWS_FlsTst_00166                                     |
| SRS_BSW_00342 | It shall be possible to create an AUTOSAR ECU out of modules provided as source code and modules provided as object code, even mixed | SWS_FlsTst_00166                                     |
| SRS_BSW_00343 | The unit of time for specification and configuration of Basic SW modules shall be preferably in physical time unit                   | SWS_FlsTst_00166                                     |
| SRS_BSW_00344 | BSW Modules shall support link-time configuration  | SWS_FlsTst_00166                                     |
| SRS_BSW_00347 | A Naming separation of different instances of BSW drivers shall be in place  | SWS_FlsTst_00166                                     |
| SRS_BSW_00348 | All AUTOSAR standard types and constants shall be placed and organized in a standard type header file                                | SWS_FlsTst_00166                                     |
| SRS_BSW_00350 | All AUTOSAR Basic Software Modules shall allow the enabling/disabling of detection and reporting of development errors.              | SWS_FlsTst_00166                                     |
| SRS_BSW_00353 | All integer type definitions of target and compiler specific scope shall be placed and organized in a single type header             | SWS_FlsTst_00166                                     |
| SRS_BSW_00357 | For success/failure of an API call a standard return type shall be defined   | SWS_FlsTst_00063                                     |
| SRS_BSW_00358 | The return type of init() functions implemented by AUTOSAR Basic   | SWS_FlsTst_00166                                     |

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|               | Software Modules shall be void  |  |
| SRS_BSW_00361 | All mappings of not standardized keywords of compiler specific scope shall be placed and organized in a compiler specific type and keyword header | SWS_FlsTst_00166   |
| SRS_BSW_00371 | The passing of function pointers as API parameter is forbidden for all AUTOSAR Basic Software Modules   | SWS_FlsTst_00166   |
| SRS_BSW_00373 | The main processing function of each AUTOSAR Basic Software Module shall be named according the defined convention                                | SWS_FlsTst_00166   |
| SRS_BSW_00375 | Basic Software Modules shall report wake-up reasons   | SWS_FlsTst_00166   |
| SRS_BSW_00377 | A Basic Software Module can return a module specific types  | SWS_FlsTst_00048   |
| SRS_BSW_00378 | AUTOSAR shall provide a boolean type  | SWS_FlsTst_00166   |
| SRS_BSW_00385 | List possible error notifications   | SWS_FlsTst_00007   |
| SRS_BSW_00386 | The BSW shall specify the configuration for detecting an error  | SWS_FlsTst_00025, SWS_FlsTst_00033, SWS_FlsTst_00056, SWS_FlsTst_00059, SWS_FlsTst_00062, SWS_FlsTst_00065, SWS_FlsTst_00089, SWS_FlsTst_00091, SWS_FlsTst_00093, SWS_FlsTst_00114 |
| SRS_BSW_00398 | The link-time configuration is achieved on object code basis in the stage after compiling and before linking                                      | SWS_FlsTst_00166   |
| SRS_BSW_00401 | Documentation of multiple instances of configuration parameters shall be available  | SWS_FlsTst_00166   |
| SRS_BSW_00405 | BSW Modules shall support multiple configuration sets   | SWS_FlsTst_00018, SWS_FlsTst_00019   |
| SRS_BSW_00406 | A static status variable denoting if a BSW module is initialized shall be initialized with value 0 before any APIs of the BSW module is called    | SWS_FlsTst_00011   |
| SRS_BSW_00407 | Each BSW module shall provide a function to read out the version information of a dedicated module implementation                                 | SWS_FlsTst_00044   |
| SRS_BSW_00408 | All AUTOSAR Basic Software Modules configuration parameters shall be named according to a specific naming rule                                    | SWS_FlsTst_00166   |
| SRS_BSW_00409 | All production code error ID symbols are defined by the Dem module and shall be retrieved by the other BSW modules from Dem                       | SWS_FlsTst_00007   |



|               |  |                  |
|---------------|--|------------------|
|               | configuration  |                  |
| SRS_BSW_00410 | Compiler switches shall have defined values  | SWS_FlsTst_00166 |
| SRS_BSW_00411 | All AUTOSAR Basic Software Modules shall apply a naming rule for enabling/disabling the existence of the API           | SWS_FlsTst_00044 |
| SRS_BSW_00413 | An index-based accessing of the instances of BSW modules shall be done   | SWS_FlsTst_00166 |
| SRS_BSW_00414 | Init functions shall have a pointer to a configuration structure as single parameter                                   | SWS_FlsTst_00166 |
| SRS_BSW_00415 | Interfaces which are provided exclusively for one module shall be separated into a dedicated header file               | SWS_FlsTst_00166 |
| SRS_BSW_00416 | The sequence of modules to be initialized shall be configurable  | SWS_FlsTst_00166 |
| SRS_BSW_00417 | Software which is not part of the SW-C shall report error events only after the DEM is fully operational.              | SWS_FlsTst_00166 |
| SRS_BSW_00419 | If a pre-compile time configuration parameter is implemented as "const" it should be placed into a separate c-file     | SWS_FlsTst_00166 |
| SRS_BSW_00422 | Pre-de-bouncing of error status information is done within the DEM   | SWS_FlsTst_00166 |
| SRS_BSW_00423 | BSW modules with AUTOSAR interfaces shall be describable with the means of the SW-C Template                           | SWS_FlsTst_00166 |
| SRS_BSW_00424 | BSW module main processing functions shall not be allowed to enter a wait state  | SWS_FlsTst_00166 |
| SRS_BSW_00425 | The BSW module description template shall provide means to model the defined trigger conditions of schedulable objects | SWS_FlsTst_00166 |
| SRS_BSW_00426 | BSW Modules shall ensure data consistency of data which is shared between BSW modules                                  | SWS_FlsTst_00166 |
| SRS_BSW_00427 | ISR functions shall be defined and documented in the BSW module description template                                   | SWS_FlsTst_00166 |
| SRS_BSW_00428 | A BSW module shall state if its main processing function(s) has to be executed in a specific order or sequence         | SWS_FlsTst_00166 |
| SRS_BSW_00429 | Access to OS is restricted   | SWS_FlsTst_00166 |
| SRS_BSW_00432 | Modules should have separate   | SWS_FlsTst_00166 |

|                  |  |  |
|------------------|--|--|
|                  | main processing functions for read/receive and write/transmit data path  |  |
| SRS_BSW_00433    | Main processing functions are only allowed to be called from task bodies provided by the BSW Scheduler                           | SWS_FlsTst_00166   |
| SRS_BSW_00437    | Memory mapping shall provide the possibility to define RAM segments which are not to be initialized during startup               | SWS_FlsTst_00166   |
| SRS_BSW_00438    | Configuration data shall be defined in a structure   | SWS_FlsTst_00018   |
| SRS_BSW_00439    | Enable BSW modules to handle interrupts  | SWS_FlsTst_00166   |
| SRS_BSW_00440    | The callback function invocation by the BSW module shall follow the signature provided by RTE to invoke servers via Rte_Call API | SWS_FlsTst_00166   |
| SRS_FlsTst_14208 | Background Flash test shall be interruptible   | SWS_FlsTst_00066, SWS_FlsTst_00071   |
| SRS_FlsTst_14209 | The memory to be tested shall be split into individual smaller pieces  | SWS_FlsTst_00066, SWS_FlsTst_00071, SWS_FlsTst_00139   |
| SRS_FlsTst_14211 | Flash test execution status shall be available   | SWS_FlsTst_00040, SWS_FlsTst_00041, SWS_FlsTst_00091   |
| SRS_FlsTst_14212 | Flash test execution completion shall be provided by a notification mechanism  | SWS_FlsTst_00077, SWS_FlsTst_00078   |
| SRS_FlsTst_14213 | Calculation signature/checksum of a finalized test shall be provided   | SWS_FlsTst_00054, SWS_FlsTst_00055, SWS_FlsTst_00056, SWS_FlsTst_00057, SWS_FlsTst_00058, SWS_FlsTst_00059, SWS_FlsTst_00115, SWS_FlsTst_00116 |
| SRS_FlsTst_14214 | Service for Flash test execution result shall be provided.   | SWS_FlsTst_00042, SWS_FlsTst_00043, SWS_FlsTst_00093, SWS_FlsTst_00112, SWS_FlsTst_00113, SWS_FlsTst_00114                                     |
| SRS_FlsTst_14215 | Suspend Flash test execution shall be possible   | SWS_FlsTst_00034, SWS_FlsTst_00036, SWS_FlsTst_00037, SWS_FlsTst_00088   |
| SRS_FlsTst_14216 | Flash test execution shall be resumed when suspended   | SWS_FlsTst_00035, SWS_FlsTst_00038, SWS_FlsTst_00039, SWS_FlsTst_00089   |
| SRS_FlsTst_14217 | Flash test execution shall be stopped when wanted  | SWS_FlsTst_00030, SWS_FlsTst_00031, SWS_FlsTst_00032   |
| SRS_FlsTst_14219 | Foreground Flash test shall be available   | SWS_FlsTst_00033, SWS_FlsTst_00050, SWS_FlsTst_00051, SWS_FlsTst_00137, SWS_FlsTst_00143, SWS_FlsTst_00149                                     |
| SRS_FlsTst_14221 | Memory Content to Be Tested Should Not be Valid During the Test  | SWS_FlsTst_00166   |
| SRS_FlsTst_14223 | Flash Test Error details shall be reported   | SWS_FlsTst_00060, SWS_FlsTst_00061, SWS_FlsTst_00062   |

|                  |  |  |
|------------------|--|--|
| SRS_FlsTst_14224 | ECC Circuitry shall be tested  | SWS_FlsTst_00063, SWS_FlsTst_00064, SWS_FlsTst_00065   |
| SRS_FlsTst_14225 | Each Flash test Interval shall have an Identifier  | SWS_FlsTst_00153, SWS_FlsTst_00154, SWS_FlsTst_00155   |
| SRS_SPAL_00157   | All drivers and handlers of the AUTOSAR Basic Software shall implement notification mechanisms of drivers and handlers | SWS_FlsTst_00040, SWS_FlsTst_00042, SWS_FlsTst_00054, SWS_FlsTst_00057, SWS_FlsTst_00060, SWS_FlsTst_00072, SWS_FlsTst_00073, SWS_FlsTst_00077, SWS_FlsTst_00112 |
| SRS_SPAL_12057   | All driver modules shall implement an interface for initialization   | SWS_FlsTst_00017, SWS_FlsTst_00020   |
| SRS_SPAL_12064   | All driver modules shall raise an error if the change of the operation mode leads to degradation of running operations | SWS_FlsTst_00166   |
| SRS_SPAL_12067   | All driver modules shall set their wake-up conditions depending on the selected operation mode                         | SWS_FlsTst_00166   |
| SRS_SPAL_12068   | The modules of the MCAL shall be initialized in a defined sequence   | SWS_FlsTst_00166   |
| SRS_SPAL_12069   | All drivers of the SPAL that wake up from a wake-up interrupt shall report the wake-up reason                          | SWS_FlsTst_00166   |
| SRS_SPAL_12075   | All drivers with random streaming capabilities shall use application buffers   | SWS_FlsTst_00166   |
| SRS_SPAL_12077   | All drivers shall provide a non blocking implementation  | SWS_FlsTst_00166   |
| SRS_SPAL_12078   | The drivers shall be coded in a way that is most efficient in terms of memory and runtime resources                    | SWS_FlsTst_00166   |
| SRS_SPAL_12092   | The driver's API shall be accessed by its handler or manager   | SWS_FlsTst_00166   |
| SRS_SPAL_12125   | All driver modules shall only initialize the configured resources  | SWS_FlsTst_00022   |
| SRS_SPAL_12129   | The ISRs shall be responsible for resetting the interrupt flags and calling the according notification function        | SWS_FlsTst_00166   |
| SRS_SPAL_12163   | All driver modules shall implement an interface for de-initialization  | SWS_FlsTst_00027, SWS_FlsTst_00028   |
| SRS_SPAL_12169   | All driver modules that provide different operation modes shall provide a service for mode selection                   | SWS_FlsTst_00166   |
| SRS_SPAL_12265   | Configuration data shall be kept constant  | SWS_FlsTst_00166   |
| SRS_SPAL_12267   | Wakeup sources shall be initialized by MCAL drivers and/or the MCU driver  | SWS_FlsTst_00166   |

|                |   |  |
|----------------|---|--|
| SRS_SPAL_12448 | All driver modules shall have a specific behavior after a development error detection                     | SWS_FlsTst_00025, SWS_FlsTst_00033, SWS_FlsTst_00039 |
| SRS_SPAL_12461 | Specific rules regarding initialization of controller registers shall apply to all driver implementations | SWS_FlsTst_00166                                     |
| SRS_SPAL_12462 | The register initialization settings shall be published   | SWS_FlsTst_00166                                     |
| SRS_SPAL_12463 | The register initialization settings shall be combined and forwarded                                      | SWS_FlsTst_00166                                     |

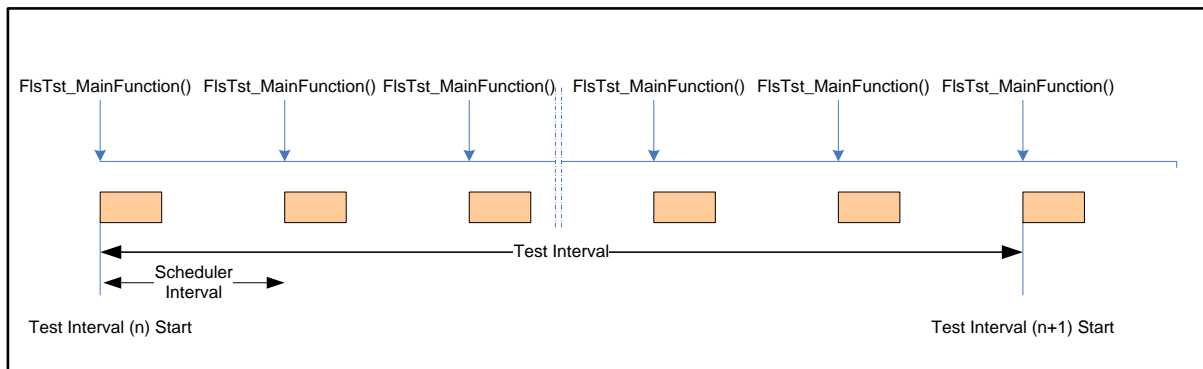
## 7 Functional specification

### 7.1 General behavior

**[SWS\_FlsTst\_00137]** [The Flash test module provides test execution services in background and foreground mode (see also chapter 2). ] (SRS\_FlsTst\_14219)

**[SWS\_FlsTst\_00138]** [The memory blocks to be tested shall be configurable for background and foreground mode separately. ] ( )

**[SWS\_FlsTst\_00139]** [In background mode the test blocks shall be tested in the same order they are configured in configuration structure. When all blocks are tested, one test interval is completed (see Figure 2). In background testing the partial tests shall be triggered via `FlsTst_MainFunction` (see [SWS\\_FlsTst\\_00066](#)). ] (SRS\_FlsTst\_14209)



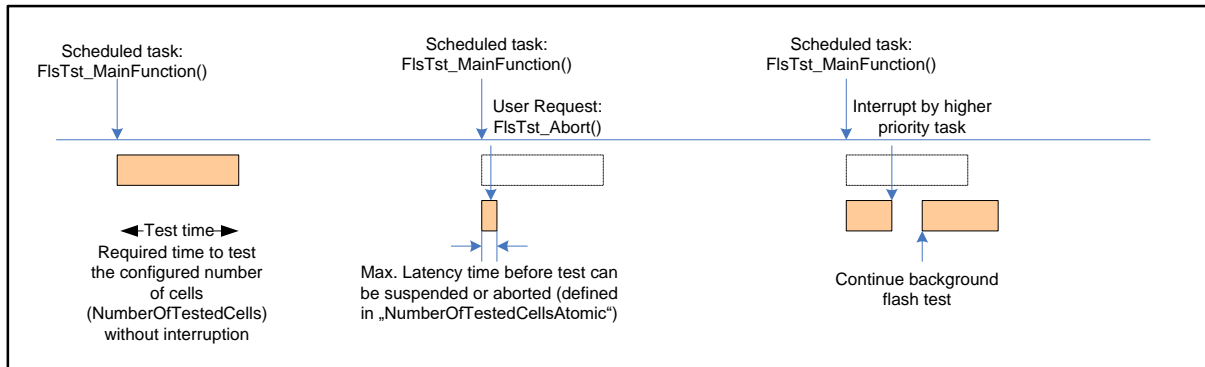
**Figure 2: Background Test: Test Interval**

**[SWS\_FlsTst\_00140]** [The length of a partial test is defined by the number of tested cells, which shall be tested in one scheduled task. (see ECUC\_FlsTst\_00161). The required time for a partial test without interruption is defined as “Test time”. ] ( )

Note: The partial test can be interrupted by a higher priority task at any time, because the Flash test does not require atomic sequences. It is the responsibility of the user to ensure that the interruptible partial test is finished before the scheduler interval is started (See Figure 3).

**[SWS\_FlsTst\_00142]** [A background test shall be aborted or suspended via the API services `FlsTst_Abort()` or `FlsTst_Suspended()`. The maximum latency time until the API call request is processed, shall be configurable (see ECUC\_FlsTst\_00120). ] ( )

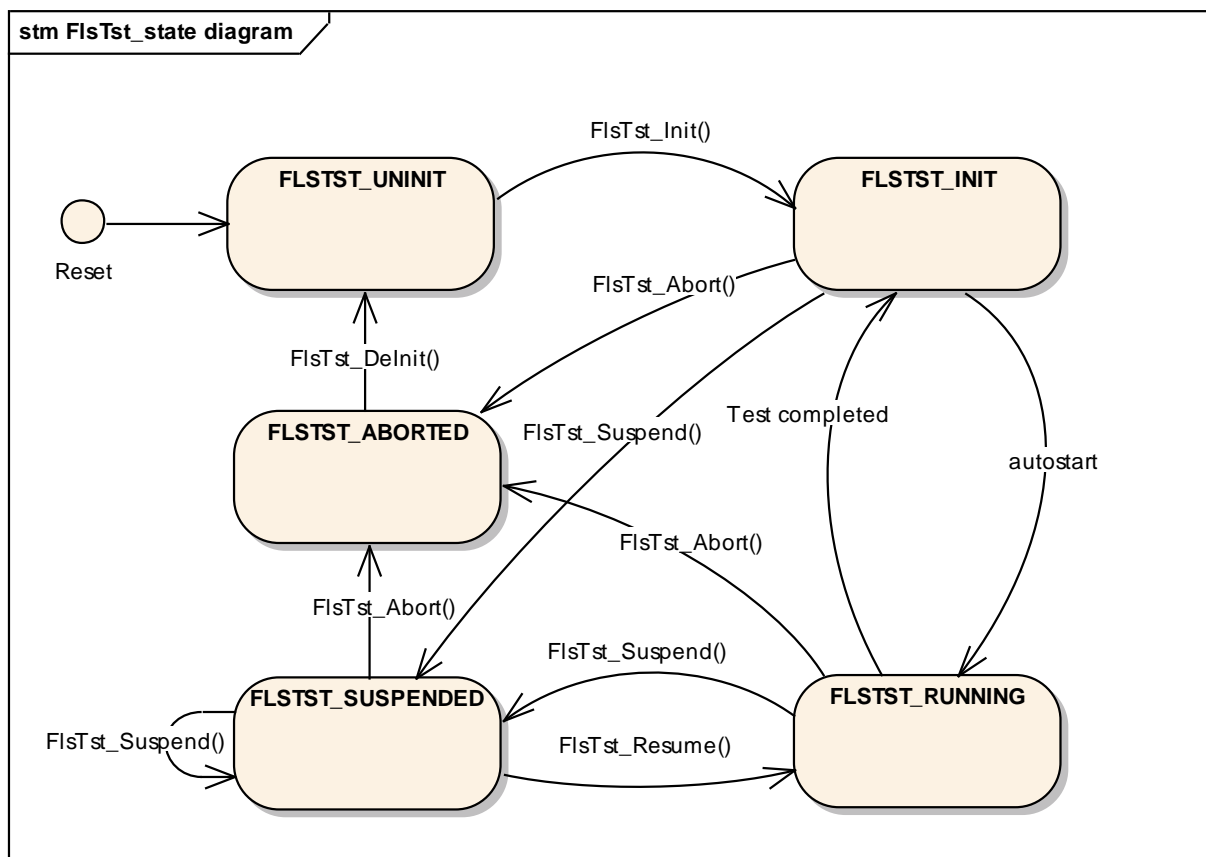
**[SWS\_FlsTst\_00156]** [Each Flash test Interval shall have an Identifier, which shall be incremented by each start of a new test interval in background mode. ] ( )



**Figure 3: Background Test: Test Process**

### 7.1.1 State Diagram

The Flash test driver states in background mode are described in Figure 4. The described states are driver states in background operation mode.



**Figure 4: State Diagram – Background mode**

**[SWS\_FlsTst\_00143]** [ Foreground tests are defined as synchronous tests which shall not be interrupted. The execution of Foreground tests is configurable (see ECUC\_FlsTst\_00086) and can be called after module initialization at any time. ]  
(SRS\_FlsTst\_14219)

## 7.2 Error Classification

The section 7.2 "Error Handling" of the document "General Specification of Basic Software Modules" describes the error handling of the Basic Software in detail. Above all, it constitutes a classification scheme consisting of five error types that may occur in BSW modules.

Based on this foundation, the following section specifies particular errors arranged in the respective subsections below.

### 7.2.1 Development Errors

[SWS\_FlsTst\_00007][

| <i>Type of error</i>  | <i>Related error code</i>    | <i>Error value</i> |
|---|------------------------------|--------------------|
| Failure within Flash Test execution state   | FLSTST_E_STATE_FAILURE       | 0x01               |
| API parameter out of specified range  | FLSTST_E_PARAM_INVALID       | 0x02               |
| API service used without module initialization  | FLSTST_E_UNINIT              | 0x03               |
| Flash Test module is already initialized  | FLSTST_E_ALREADY_INITIALIZED | 0x04               |
| For Variant PB: Configuration pointer is a NULL pointer. For Variant PC: Configuration pointer is NOT a NULL pointer. | FLSTST_E_INIT_FAILED         | 0x05               |
| Pointer is a NULL pointer   | FLSTST_E_PARAM_POINTER       | 0x06               |

](SRS\_BSW\_00337, SRS\_BSW\_00409, SRS\_BSW\_00385)

### 7.2.2 Runtime Errors

There are no runtime errors.

### 7.2.3 Transient Faults

There are no transient faults.

### 7.2.4 Production Errors

There are no production errors.

## 7.2.5 Extended Production Errors

[SWS\_FlsTst\_00168]

|                              |   |   |
|------------------------------|---|---|
| <b>Error Name:</b>           | FLSTST_E_FLSTST_FAILURE   |   |
| <b>Short Description:</b>    | Failure detection in background mode  |   |
| <b>Long Description:</b>     | This Extended Production Error shall be issued in case a failure is detected in background mode within a test interval. |   |
| <b>Detection Criteria:</b>   | Fail  | At least one block within a test interval in background mode is NOT OK (see SWS_FlsTst_00167)             |
|                              | Pass  | All blocks within a test interval in background mode are tested with the result OK.(see SWS_FlsTst_00161) |
| <b>Secondary Parameters:</b> | N/A   |   |
| <b>Time Required:</b>        | N/A   |   |
| <b>Monitor Frequency</b>     | continuous  |   |

⌋()

## 7.3 Initialization Sequence

[SWS\_FlsTst\_00011] ⌈The function `FlsTst_Init` shall be called first before calling any other Flash Test functions except the function `FlsTst_GetCurrentState`. If this sequence is not respected, the error code `FLSTST_E_UNINIT` shall be reported to the Default Error Tracer (if development error detection is enabled). ⌋  
(SRS\_BSW\_00406)

## 7.4 Version Check

Note: Refer to SWS\_BSWGeneral document [9].

## 7.5 Debugging Support

No requirement defined.



## 8 API specification

### 8.1 Imported types

This chapter lists data type definitions for the included variables and constants.

[SWS\_FlsTst\_00016]

| Module | Header File    | Imported Type       |
|--------|----------------|---------------------|
| Dem    | Rte_Dem_Type.h | Dem_EventIdType     |
|        | Rte_Dem_Type.h | Dem_EventStatusType |
| Std    | Std_Types.h    | Std_ReturnType      |
|        | Std_Types.h    | Std_VersionInfoType |

](SRS\_BSW\_00304)

### 8.2 Type definitions

#### 8.2.1 FlsTst\_ConfigType

[SWS\_FlsTst\_00018]

|                      |  |                         |
|----------------------|--|-------------------------|
| <b>Name</b>          | FlsTst_ConfigType  |                         |
| <b>Kind</b>          | Structure  |                         |
| <b>Elements</b>      | implementation specific  |                         |
|                      | <b>Type</b>  | --                      |
|                      | <b>Comment</b>   | implementation specific |
| <b>Description</b>   | This type of external data structure shall contain the initialization data for the Flash Test. |                         |
| <b>Available via</b> | FlsTst.h   |                         |

](SRS\_BSW\_00405, SRS\_BSW\_00438)

[SWS\_FlsTst\_00019] [The type `FlsTst_ConfigType` shall denote the external data structure which contains the configuration data for the Flash Test module.

List of mandatory configuration parameters:

- Memory block definition to test in foreground mode
- Memory block definition to test in background mode
- Test sequence indication in background mode

- Hardware specific configuration] (SRS\_BSW\_00405)

### 8.2.2 FlsTst\_StateType

[SWS\_FlsTst\_00048][

|                      |   |      |   |
|----------------------|---|------|---|
| <b>Name</b>          | FlsTst_StateType  |      |   |
| <b>Kind</b>          | Enumeration   |      |   |
| <b>Range</b>         | FLSTST_UNINIT   | 0x00 | The Flash Test is not initialized or not usable.                                    |
|                      | FLSTST_INIT   | 0x01 | The Flash Test is initialized and ready to be started.                              |
|                      | FLSTST_RUNNING  | 0x02 | The Flash Test is currently running.  |
|                      | FLSTST_ABORTED  | 0x03 | The Flash Test is aborted.  |
|                      | FLSTST_SUSPENDED  | 0x04 | The Flash Test is waiting to be resumed or is waiting to start foreground mode test |
| <b>Description</b>   | This is a state value returned by the API service FlsTst_GetCurrentState(). |      |   |
| <b>Available via</b> | FlsTst.h  |      |   |

](SRS\_BSW\_00377)

[SWS\_FlsTst\_00049] [For the type FlsTst\_StateType, the enumeration value FLSTST\_UNINIT shall be the default value after a reset.] ( )

### 8.2.3 FlsTst\_TestResultFgndType

[SWS\_FlsTst\_00052][

|                      |  |      |   |
|----------------------|--|------|---|
| <b>Name</b>          | FlsTst_TestResultFgndType                          |      |   |
| <b>Kind</b>          | Enumeration  |      |   |
| <b>Range</b>         | FLSTST_NOT_TESTED                                  | 0x00 | There is no result available.                           |
|                      | FLSTST_OK  | 0x01 | The last Flash Test has been tested with OK result.     |
|                      | FLSTST_NOT_OK                                      | 0x02 | The last Flash Test has been tested with NOT_OK result. |
| <b>Description</b>   | Return type of API service FlsTst_GetResultFgnd(). |      |   |
| <b>Available via</b> | FlsTst.h   |      |   |

]()

[SWS\_FlsTst\_00053] [For the type `FlsTst_TestResultFgndType`, the enumeration value `FLSTST_NOT_TESTED` shall be the default value after a reset.] ( )

#### 8.2.4 FlsTst\_TestResultBgndType

[SWS\_FlsTst\_00153]

|                      |  |  |
|----------------------|--|--|
| <b>Name</b>          | FlsTst_TestResultBgndType                              |  |
| <b>Kind</b>          | Structure  |  |
| <b>Elements</b>      | 0..<FlsTstTestIntervalldEndValue>                      |  |
|                      | <b>Type</b>  | uint8, uint16, uint32  |
|                      | <b>Comment</b>   | current value of FlsTstTestIntervalld, which is incremented by each new start of an test interval. |
|                      | result   |  |
|                      | <b>Type</b>  | FlsTst_TestResultType  |
|                      | <b>Comment</b>   | --   |
| <b>Description</b>   | Return type of API service FlsTst_GetTestResultBgnd(). |  |
| <b>Available via</b> | FlsTst.h   |  |

](SRS\_FlsTst\_14225)

[SWS\_FlsTst\_00154] [For the type `FlsTst_TestResultBgndType`, the enumeration value `FLSTST_RESULT_NOT_TESTED` shall be the default value after a reset.] (SRS\_FlsTst\_14225)

#### 8.2.5 FlsTst\_BlockIdFgndType

[SWS\_FlsTst\_00100]

|                     |                                |  |
|---------------------|--------------------------------|--|
| <b>Name</b>         | FlsTst_BlockIdFgndType         |  |
| <b>Kind</b>         | Type                           |  |
| <b>Derived from</b> | <b>Basetype</b>                | <b>Variation</b>   |
|                     | uint16                         | --   |
|                     | uint32                         | --   |
|                     | uint8                          | --   |
| <b>Range</b>        | 0..<FlsTstBlock NumberFgnd > - | -- The range is dependent on the number of Foreground Flash blocks defined in the configuration structure. The type shall be |

|                      |  |  |  |
|----------------------|--|--|--|
|                      | 1  |  | chosen depending on the MCU platform for best performance. |
| <b>Description</b>   | This type specifies the identification (ID) for a Flash block to be tested in foreground mode, which is configured in the configuration structure. |  |  |
| <b>Available via</b> | FlsTst.h   |  |  |

]()

### 8.2.6 FlsTst\_ErrorDetailsType

[SWS\_FlsTst\_00108][

|                      |   |                         |  |
|----------------------|---|-------------------------|--|
| <b>Name</b>          | FlsTst_ErrorDetailsType   |                         |  |
| <b>Kind</b>          | Structure   |                         |  |
| <b>Elements</b>      | implementation specific   |                         |  |
|                      | <b>Type</b>   | --                      |  |
|                      | <b>Comment</b>  | implementation specific |  |
| <b>Description</b>   | This type shall specify implementation specific error information monitored in the Flash test module. |                         |  |
| <b>Available via</b> | FlsTst.h  |                         |  |

]()

### 8.2.7 FlsTst\_TestSignatureFgndType

[SWS\_FlsTst\_00109][

|                              |  |                              |
|------------------------------|--|------------------------------|
| FlsTst_TestSignatureFgndType |  |                              |
| Name                         | FlsTst_TestSignatureFgndType               |                              |
| Kind                         | Structure                                  |                              |
| Elements                     | implementation specific                    |                              |
|                              | Type                                       | --                           |
|                              | Comment                                    | Implementation specific type |
| Description                  | Type for test signature in foreground mode |                              |
| Available via                | FlsTst.h                                   |                              |

]()

## 8.2.8 FlsTst\_TestSignatureBgndType

[SWS\_FlsTst\_00155]

|                      |   |  |  |
|----------------------|---|--|--|
| <b>Name</b>          | FlsTst_TestSignatureBgndType                    |  |  |
| <b>Kind</b>          | Structure                                       |  |  |
| <b>Elements</b>      | 0.. <b>&lt;FlsTstTestIntervalIdEndValue&gt;</b> |  |  |
|                      | <b>Type</b>                                     | uint8, uint16, uint32  |  |
|                      | <b>Comment</b>                                  | current value of FlsTstTestIntervalId, which is incremented by each new start of an test interval.                             |  |
|                      | Implementation specific                         |  |  |
|                      | <b>Type</b>                                     | uint8, uint16, uint32  |  |
|                      | <b>Comment</b>                                  | It represents the signature value of the last completed test interval. Value might be generated from several block signatures. |  |
| <b>Description</b>   | Type for test signature in background mode.     |  |  |
| <b>Available via</b> | FlsTst.h  |  |  |

](SRS\_FlsTst\_14225)

## 8.2.9 FlsTst\_TestResultType

[SWS\_FlsTst\_00164]

|                      |                          |      |  |
|----------------------|--------------------------|------|--|
| <b>Name</b>          | FlsTst_TestResultType    |      |  |
| <b>Kind</b>          | Enumeration              |      |  |
| <b>Range</b>         | FLSTST_RESULT_NOT_TESTED | 0x00 | There is no test result available.                               |
|                      | FLSTST_RESULT_OK         | 0x01 | The last Flash Test interval has been tested with OK result      |
|                      | FLSTST_RESULT_NOT_OK     | 0x02 | The last Flash Test interval has been tested with NOT-OK result. |
| <b>Description</b>   | --                       |      |  |
| <b>Available via</b> | FlsTst.h                 |      |  |

](

## 8.3 Function definitions

This is a list of functions provided for upper layer modules.

### 8.3.1 FlsTst\_Init

#### [SWS\_FlsTst\_00017]

|                           |  |                              |
|---------------------------|--|------------------------------|
| <b>Service Name</b>       | FlsTst_Init  |                              |
| <b>Syntax</b>             | <pre>void FlsTst_Init (     const FlsTst_ConfigType* ConfigPtr )</pre> |                              |
| <b>Service ID [hex]</b>   | 0x00   |                              |
| <b>Sync/Async</b>         | Synchronous  |                              |
| <b>Reentrancy</b>         | Non Reentrant  |                              |
| <b>Parameters (in)</b>    | ConfigPtr  | Pointer to configuration set |
| <b>Parameters (inout)</b> | None   |                              |
| <b>Parameters (out)</b>   | None   |                              |
| <b>Return value</b>       | None   |                              |
| <b>Description</b>        | Service for Flash Test initialization.                                 |                              |
| <b>Available via</b>      | FlsTst.h   |                              |

](SRS\_BSW\_00101, SRS\_SPAL\_12057)

**[SWS\_FlsTst\_00020]** [The function `FlsTst_Init` shall initialize all Flash Test relevant registers and global variables and change the execution state to `FLSTST_INIT`. ] (SRS\_SPAL\_12057)

**[SWS\_FlsTst\_00022]** [The function `FlsTst_Init` shall only initialize the configured resources and shall not touch resources that are not configured in the configuration file. ] (SRS\_SPAL\_12125)

**[SWS\_FlsTst\_00025]** [If development error detection is enabled, calling the routine `FlsTst_Init` while the Flash Test driver is already initialized shall cause development error `FLSTST_E_ALREADY_INITIALIZED`. The function shall be left without any action. ] (SRS\_BSW\_00386, SRS\_SPAL\_12448)

Note: The `FlsTst_Init` function shall be called only once after a reset, unless an `FlsTst_DeInit` call is made before calling `FlsTst_Init` again.

### 8.3.2 FlsTst\_DeInit

#### [SWS\_FlsTst\_00027]

|                     |                                 |  |
|---------------------|---------------------------------|--|
| <b>Service Name</b> | FlsTst_DeInit                   |  |
| <b>Syntax</b>       | <pre>void FlsTst_DeInit (</pre> |  |

|                           |   |
|---------------------------|---|
|                           | void<br>)                                 |
| <b>Service ID [hex]</b>   | 0x01                                      |
| <b>Sync/Async</b>         | Synchronous                               |
| <b>Reentrancy</b>         | Non Reentrant                             |
| <b>Parameters (in)</b>    | None                                      |
| <b>Parameters (inout)</b> | None                                      |
| <b>Parameters (out)</b>   | None                                      |
| <b>Return value</b>       | None                                      |
| <b>Description</b>        | Service for Flash Test De-Initialization. |
| <b>Available via</b>      | FlsTst.h                                  |

](SRS\_BSW\_00336, SRS\_SPAL\_12163)

**[SWS\_FlsTst\_00028]** [The function `FlsTst_DeInit` shall de-initialize all Flash Test relevant registers and global variables that were initialized by `FlsTst_Init`. ]

(SRS\_SPAL\_12163)

**[SWS\_FlsTst\_00029]** [The function `FlsTst_DeInit` shall set the Flash Test module state to `FLSTST_UNINIT`. ] ( )

### 8.3.3 FlsTst\_StartFgnd

**[SWS\_FlsTst\_00149]**[

|                           |   |   |
|---------------------------|---|---|
| <b>Service Name</b>       | FlsTst_StartFgnd  |   |
| <b>Syntax</b>             | <pre>Std_ReturnType FlsTst_StartFgnd (     FlsTst_BlockIdFgndType FgndBlockId )</pre> |   |
| <b>Service ID [hex]</b>   | 0x02  |   |
| <b>Sync/Async</b>         | Synchronous   |   |
| <b>Reentrancy</b>         | Non Reentrant   |   |
| <b>Parameters (in)</b>    | FgndBlockId   | Number of the foreground test to be executed. This is dependent on configuration. |
| <b>Parameters (inout)</b> | None  |   |
| <b>Parameters (out)</b>   | None  |   |
| <b>Return value</b>       | Std_Return-Type   | E_OK: Foreground test processed<br>E_NOT_OK: Foreground test not accepted         |

|                      |  |
|----------------------|--|
| <b>Description</b>   | Service for executing foreground Flash Test. |
| <b>Available via</b> | FlsTst.h                                     |

](SRS\_FlsTst\_14219)

**[SWS\_FlsTst\_00050]** [The function `FlsTst_StartFgnd` is only applicable for Foreground mode Flash Test operation. ] (SRS\_FlsTst\_14219)

**[SWS\_FlsTst\_00051]** [The function `FlsTst_StartFgnd` shall be pre compile time configurable On/Off by the configuration parameter: `FlsTst_StartFgndApi`. ] (SRS\_FlsTst\_14219)

**[SWS\_FlsTst\_00033]** [If development error detection is enabled and the parameter `FgndBlockId` is out of range, the DET error value `FLSTST_E_PARAM_INVALID` shall be raised and the function shall return without any action with return value `E_NOT_OK`. ] (SRS\_BSW\_00323, SRS\_BSW\_00386, SRS\_SPAL\_12448, SRS\_FlsTst\_14219)

### 8.3.4 FlsTst\_Abort

**[SWS\_FlsTst\_00030]**[

|                           |   |
|---------------------------|---|
| <b>Service Name</b>       | FlsTst_Abort                              |
| <b>Syntax</b>             | <pre>void FlsTst_Abort (     void )</pre> |
| <b>Service ID [hex]</b>   | 0x03                                      |
| <b>Sync/Async</b>         | Synchronous                               |
| <b>Reentrancy</b>         | Non Reentrant                             |
| <b>Parameters (in)</b>    | None                                      |
| <b>Parameters (inout)</b> | None                                      |
| <b>Parameters (out)</b>   | None                                      |
| <b>Return value</b>       | None                                      |
| <b>Description</b>        | Service for aborting the Flash Test.      |
| <b>Available via</b>      | FlsTst.h                                  |

](SRS\_FlsTst\_14217)

**[SWS\_FlsTst\_00031]** [This function shall abort Flash test background operation and set the state to `FLSTST_ABORTED`. When the `FlsTst_Abort` function is called,



FlsTst\_MainFunction shall finish the current atomic sequence it is running. ]  
(SRS\_FlsTst\_14217)

**[SWS\_FlsTst\_00032]** [After an FlsTst\_Abort call, FlsTst\_MainFunction shall not begin testing again when called by the scheduler until after a complete re-initialization of the Flash test module. ] (SRS\_FlsTst\_14217)

### 8.3.5 FlsTst\_Suspend

**[SWS\_FlsTst\_00034]**[

|                           |  |
|---------------------------|--|
| <b>Service Name</b>       | FlsTst_Suspend   |
| <b>Syntax</b>             | void FlsTst_Suspend (<br>void<br>)   |
| <b>Service ID [hex]</b>   | 0x04   |
| <b>Sync/Async</b>         | Synchronous  |
| <b>Reentrancy</b>         | Non Reentrant  |
| <b>Parameters (in)</b>    | None   |
| <b>Parameters (inout)</b> | None   |
| <b>Parameters (out)</b>   | None   |
| <b>Return value</b>       | None   |
| <b>Description</b>        | Service for suspending current operation of the Flash Test, until FlsTst_Resume is called. |
| <b>Available via</b>      | FlsTst.h   |

](SRS\_FlsTst\_14215)

**[SWS\_FlsTst\_00036]** [The function FlsTst\_Suspend is only applicable for Background mode Flash Test operation. ] (SRS\_FlsTst\_14215)

**[SWS\_FlsTst\_00037]** [The function FlsTst\_Suspend shall set the Flash Test execution state to FLSTST\_SUSPENDED in case the execution state was FLSTST\_RUNNING or FLSTST\_INIT. ] (SRS\_FlsTst\_14215)

**[SWS\_FlsTst\_00088]** [The function FlsTst\_Suspend shall be pre compile time configurable On/Off by the configuration parameter: FlsTst\_SuspendResumeApi. ] (SRS\_FlsTst\_14215)

### 8.3.6 FlsTst\_Resume

[SWS\_FlsTst\_00035]

|                           |  |
|---------------------------|--|
| <b>Service Name</b>       | FlsTst_Resume  |
| <b>Syntax</b>             | void FlsTst_Resume (<br>void<br>)                                    |
| <b>Service ID [hex]</b>   | 0x05   |
| <b>Sync/Async</b>         | Synchronous  |
| <b>Reentrancy</b>         | Non Reentrant  |
| <b>Parameters (in)</b>    | None   |
| <b>Parameters (inout)</b> | None   |
| <b>Parameters (out)</b>   | None   |
| <b>Return value</b>       | None   |
| <b>Description</b>        | Service for continuing the Flash Test at the point it was suspended. |
| <b>Available via</b>      | FlsTst.h   |

](SRS\_FlsTst\_14216)

**[SWS\_FlsTst\_00038]** [The function `FlsTst_Resume` shall change the execution state to `FLSTST_RUNNING` when commanded to continue and the current execution state is `FLSTST_SUSPENDED`. ] (SRS\_FlsTst\_14216)

**[SWS\_FlsTst\_00039]** [If development error detection is enabled and the execution state of the Flash Test module is not `FLSTST_SUSPENDED`, the Flash Test module shall report the error value `FLSTST_E_STATE_FAILURE` to the DET, and then immediately return from the function. ] (SRS\_SPAL\_12448, SRS\_FlsTst\_14216)

**[SWS\_FlsTst\_00162]** [The function `FlsTst_Resume` is only applicable for Background mode Flash Test operation. ] ( )

**[SWS\_FlsTst\_00089]** [The function `FlsTst_Resume` shall be pre compile time configurable On/Off by the configuration parameter: `FlsTst_SuspendResumeApi`. ] (SRS\_BSW\_00386, SRS\_FlsTst\_14216)

### 8.3.7 FlsTst\_GetCurrentState

[SWS\_FlsTst\_00040]

|                     |                        |
|---------------------|------------------------|
| <b>Service Name</b> | FlsTst_GetCurrentState |
|---------------------|------------------------|

|                           |   |   |
|---------------------------|---|---|
| <b>Syntax</b>             | FlsTst_StateType FlsTst_GetCurrentState (<br>void<br>)  |   |
| <b>Service ID [hex]</b>   | 0x06  |   |
| <b>Sync/Async</b>         | Synchronous   |   |
| <b>Reentrancy</b>         | Non Reentrant   |   |
| <b>Parameters (in)</b>    | None  |   |
| <b>Parameters (inout)</b> | None  |   |
| <b>Parameters (out)</b>   | None  |   |
| <b>Return value</b>       | FlsTst -<br>StateType                                   | FLSTST_UNINIT The Flash Test is not initialized or not usable.<br>FLSTST_INIT The Flash Test is initialized and ready to be started.<br>FLSTST_RUNNING The Flash Test is currently running.<br>FLSTST_ABORTED The Flash Test is aborted.<br>FLSTST_SUSPENDED The Flash Test is waiting to be resumed or<br>is waiting to start foreground mode test |
| <b>Description</b>        | Service returns the current Flash Test execution state. |   |
| <b>Available via</b>      | FlsTst.h  |   |

](SRS\_SPAL\_00157, SRS\_FlsTst\_14211)

**[SWS\_FlsTst\_00041]** [The function `FlsTst_GetCurrentState` shall return the current Flash Test execution state. ] (SRS\_FlsTst\_14211)

**[SWS\_FlsTst\_00091]** [The function `FlsTst_GetCurrentState` shall be pre compile time configurable On/Off by the configuration parameter: `FlsTst_GetCurrentStateApi`. ] (SRS\_BSW\_00386, SRS\_FlsTst\_14211)

### 8.3.8 FlsTst\_GetTestResultBgnd

**[SWS\_FlsTst\_00042]**[

|                         |   |  |
|-------------------------|---|--|
| <b>Service Name</b>     | FlsTst_GetTestResultBgnd  |  |
| <b>Syntax</b>           | FlsTst_TestResultBgndType FlsTst_GetTestResultBgnd (<br>void<br>) |  |
| <b>Service ID [hex]</b> | 0x07  |  |
| <b>Sync/Async</b>       | Synchronous   |  |
| <b>Reentrancy</b>       | Reentrant   |  |
| <b>Parameters (in)</b>  | None  |  |

|                           |   |                     |
|---------------------------|---|---------------------|
| <b>Parameters (inout)</b> | None  |                     |
| <b>Parameters (out)</b>   | None  |                     |
| <b>Return value</b>       | FlsTst_TestResultBgndType                         | See type definition |
| <b>Description</b>        | Service returns the Background Flash Test result. |                     |
| <b>Available via</b>      | FlsTst.h  |                     |

](SRS\_BSW\_00339, SRS\_SPAL\_00157, SRS\_FlsTst\_14214)

**[SWS\_FlsTst\_00043]** [The function `FlsTst_GetTestResultBgnd` shall return the Flash test result and Test Interval Id of the last background test. ]  
(SRS\_FlsTst\_14214)

**[SWS\_FlsTst\_00093]** [The function `FlsTst_GetTestResultBgnd` shall be pre compile time configurable On/Off by the configuration parameter: `FlsTst_GetTestResultBgndApi`. ] (SRS\_BSW\_00386, SRS\_FlsTst\_14214)

### 8.3.9 FlsTst\_GetTestResultFgnd

**[SWS\_FlsTst\_00112]**[

|                           |  |                     |
|---------------------------|--|---------------------|
| <b>Service Name</b>       | FlsTst_GetTestResultFgnd   |                     |
| <b>Syntax</b>             | <pre>FlsTst_TestResultFgndType FlsTst_GetTestResultFgnd (     void )</pre> |                     |
| <b>Service ID [hex]</b>   | 0x0f   |                     |
| <b>Sync/Async</b>         | Synchronous  |                     |
| <b>Reentrancy</b>         | Reentrant  |                     |
| <b>Parameters (in)</b>    | None   |                     |
| <b>Parameters (inout)</b> | None   |                     |
| <b>Parameters (out)</b>   | None   |                     |
| <b>Return value</b>       | FlsTst_TestResultFgndType  | See type definition |
| <b>Description</b>        | Service returns the Foreground Flash Test result.                          |                     |
| <b>Available via</b>      | FlsTst.h   |                     |

](SRS\_BSW\_00339, SRS\_SPAL\_00157, SRS\_FlsTst\_14214)

**[SWS\_FlsTst\_00113]** [The function `FlsTst_GetTestResultFgnd` shall return the Flash test result of the last foreground test. ] (SRS\_FlsTst\_14214)

**[SWS\_FlsTst\_00114]** [The function `FlsTst_GetTestResultFgnd` shall be pre compile time configurable On/Off by the configuration parameter: `FlsTst_GetTestResultFgndApi.`] (SRS\_BSW\_00386, SRS\_FlsTst\_14214)

### 8.3.10 FlsTst\_GetVersionInfo

**[SWS\_FlsTst\_00044]**[

|                           |  |   |
|---------------------------|--|---|
| <b>Service Name</b>       | FlsTst_GetVersionInfo  |   |
| <b>Syntax</b>             | <pre>void FlsTst_GetVersionInfo (     Std_VersionInfoType* versioninfo )</pre> |   |
| <b>Service ID [hex]</b>   | 0x08   |   |
| <b>Sync/Async</b>         | Synchronous  |   |
| <b>Reentrancy</b>         | Reentrant  |   |
| <b>Parameters (in)</b>    | None   |   |
| <b>Parameters (inout)</b> | None   |   |
| <b>Parameters (out)</b>   | versioninfo  | Pointer to where to store the version information of this module. |
| <b>Return value</b>       | None   |   |
| <b>Description</b>        | Service returns the version information of this module.                        |   |
| <b>Available via</b>      | FlsTst.h   |   |

](SRS\_BSW\_00407, SRS\_BSW\_00411)

### 8.3.11 FlsTst\_GetTestSignatureBgnd

**[SWS\_FlsTst\_00054]**[

|                           |  |  |
|---------------------------|--|--|
| <b>Service Name</b>       | FlsTst_GetTestSignatureBgnd  |  |
| <b>Syntax</b>             | <pre>FlsTst_TestSignatureBgndType FlsTst_GetTestSignatureBgnd (     void )</pre> |  |
| <b>Service ID [hex]</b>   | 0x09   |  |
| <b>Sync/Async</b>         | Synchronous  |  |
| <b>Reentrancy</b>         | Reentrant  |  |
| <b>Parameters (in)</b>    | None   |  |
| <b>Parameters (inout)</b> | None   |  |

|                         |   |                     |
|-------------------------|---|---------------------|
| <b>Parameters (out)</b> | None  |                     |
| <b>Return value</b>     | FlsTst_TestSignatureBgndType                              | See type definition |
| <b>Description</b>      | Service returns the Flash Test result in background mode. |                     |
| <b>Available via</b>    | FlsTst.h  |                     |

|(SRS\_FlsTst\_14213, SRS\_SPAL\_00157) [**SWS\_FlsTst\_00055**] |The function `FlsTst_GetTestSignatureBgnd` shall return the signature and Test Interval Id of the last background test. |(SRS\_FlsTst\_14213)

[**SWS\_FlsTst\_00056**] |The function `FlsTst_GetTestSignatureBgnd` shall be pre compile time configurable On/Off by the configuration parameter: `FlsTst_GetTestSignatureBgndApi`. |(SRS\_BSW\_00386, SRS\_FlsTst\_14213)

[**SWS\_FlsTst\_00115**] |If no signature is available, the function `FlsTst_GetTestSignatureBgnd` shall return the default signature value “0x0”. |(SRS\_FlsTst\_14213)

### 8.3.12 FlsTst\_GetTestSignatureFgnd

[**SWS\_FlsTst\_00057**]|

|                           |  |                     |
|---------------------------|--|---------------------|
| <b>Service Name</b>       | FlsTst_GetTestSignatureFgnd  |                     |
| <b>Syntax</b>             | <pre>FlsTst_TestSignatureFgndType FlsTst_GetTestSignatureFgnd (     void )</pre> |                     |
| <b>Service ID [hex]</b>   | 0x0a   |                     |
| <b>Sync/Async</b>         | Synchronous  |                     |
| <b>Reentrancy</b>         | Reentrant  |                     |
| <b>Parameters (in)</b>    | None   |                     |
| <b>Parameters (inout)</b> | None   |                     |
| <b>Parameters (out)</b>   | None   |                     |
| <b>Return value</b>       | FlsTst_TestSignatureFgndType   | See type definition |
| <b>Description</b>        | Service returns the Flash Test result in foreground mode.                        |                     |
| <b>Available via</b>      | FlsTst.h   |                     |

|(SRS\_FlsTst\_14213, SRS\_SPAL\_00157)

**[SWS\_FlsTst\_00058]** [The function `FlsTst_GetTestSignatureFgnd` shall return the signature of the last foreground test. ] (SRS\_FlsTst\_14213)

**[SWS\_FlsTst\_00059]** [The function `FlsTst_GetTestSignatureFgnd` shall be pre compile time configurable On/Off by the configuration parameter: `FlsTst_GetTestSignatureFgndApi`. ] (SRS\_BSW\_00386, SRS\_FlsTst\_14213)

**[SWS\_FlsTst\_00116]** [If no signature is available, the function `FlsTst_GetTestSignatureFgnd` shall return the default signature value “0x0”. ] (SRS\_FlsTst\_14213)

### 8.3.13 FlsTst\_GetErrorDetails

**[SWS\_FlsTst\_00060]**

|                           |  |                     |
|---------------------------|--|---------------------|
| <b>Service Name</b>       | FlsTst_GetErrorDetails   |                     |
| <b>Syntax</b>             | <pre>FlsTst_ErrorDetailsType FlsTst_GetErrorDetails (     void )</pre> |                     |
| <b>Service ID [hex]</b>   | 0x0b   |                     |
| <b>Sync/Async</b>         | Synchronous  |                     |
| <b>Reentrancy</b>         | Reentrant  |                     |
| <b>Parameters (in)</b>    | None   |                     |
| <b>Parameters (inout)</b> | None   |                     |
| <b>Parameters (out)</b>   | None   |                     |
| <b>Return value</b>       | FlsTst_ErrorDetailsType  | See type definition |
| <b>Description</b>        | Service returns error detais monitored from the Flash module.          |                     |
| <b>Available via</b>      | FlsTst.h   |                     |

](SRS\_BSW\_00339, SRS\_SPAL\_00157, SRS\_FlsTst\_14223)

**[SWS\_FlsTst\_00061]** [The function `FlsTst_GetErrorDetails` shall return the error details monitored from the Flash Test driver. ] (SRS\_FlsTst\_14223)

**[SWS\_FlsTst\_00062]** [The function `FlsTst_GetErrorDetails` shall be pre compile time configurable On/Off by the configuration parameter: `FlsTst_GetErrorDetailsApi`. ] (SRS\_BSW\_00386, SRS\_FlsTst\_14223)

### 8.3.14 FlsTst\_TestEcc

#### [SWS\_FlsTst\_00063]

|                           |  |                     |
|---------------------------|--|---------------------|
| <b>Service Name</b>       | FlsTst_TestEcc   |                     |
| <b>Syntax</b>             | <pre>Std_ReturnType FlsTst_TestEcc (     void )</pre>  |                     |
| <b>Service ID [hex]</b>   | 0x0c   |                     |
| <b>Sync/Async</b>         | Synchronous  |                     |
| <b>Reentrancy</b>         | Non Reentrant  |                     |
| <b>Parameters (in)</b>    | None   |                     |
| <b>Parameters (inout)</b> | None   |                     |
| <b>Parameters (out)</b>   | None   |                     |
| <b>Return value</b>       | Std_ReturnType   | see type definition |
| <b>Description</b>        | Service executes a test of ECC hardware. This is only applicable in case the hardware provides such functionality. |                     |
| <b>Available via</b>      | FlsTst.h   |                     |

[(SRS\_BSW\_00357, SRS\_FlsTst\_14224) [SWS\_FlsTst\_00064] [The function `FlsTst_TestEcc` shall execute a test of the ECC circuitry. ] (SRS\_FlsTst\_14224)

[SWS\_FlsTst\_00065] [The function `FlsTst_TestEcc` shall be pre compile time configurable On/Off by the configuration parameter: `FlsTst_TestEccApi`. ] (SRS\_BSW\_00386, SRS\_FlsTst\_14224)

## 8.4 Callback notifications

Since the Flash Test is a driver module, it does not provide any callback functions for lower layer modules.

## 8.5 Scheduled functions

### 8.5.1 FlsTst\_MainFunction

#### [SWS\_FlsTst\_00066]

|                     |                     |
|---------------------|---------------------|
| <b>Service Name</b> | FlsTst_MainFunction |
|---------------------|---------------------|



|                         |  |
|-------------------------|--|
| <b>Syntax</b>           | <code>void FlsTst_MainFunction (</code><br><code>void</code><br><code>)</code> |
| <b>Service ID [hex]</b> | 0x0d   |
| <b>Description</b>      | Service for executing the Flash Test in background mode.                       |
| <b>Available via</b>    | SchM_FlsTst.h  |

](SRS\_FlsTst\_14208, SRS\_FlsTst\_14209)

**[SWS\_FlsTst\_00067]** [The function `FlsTst_MainFunction` shall test the defined flash blocks in background mode, starting with the first flash block in the `FlsTstConfigParams`. ] ( )

**[SWS\_FlsTst\_00068]** [The function `FlsTst_MainFunction` shall set the Flash Test execution state from `FLSTST_INIT` to `FLSTST_RUNNING` when calling the function the first time after initialization or after a complete test interval. ] ( )

**[SWS\_FlsTst\_00069]** [When `FlsTstTestResultSignature` is true, the function `FlsTst_MainFunction` shall provide the test signatures of all blocks within a test interval. ] ( )

**[SWS\_FlsTst\_00161]** [When `FlsTstTestResultSignature` is disabled, the function `FlsTst_MainFunction` shall set the overall result status for a test interval to `FLSTST_RESULT_OK` if all blocks are tested with result status OK. Additionally the `DEM_FLSTST_E_FLSTST_FAILURE` shall be triggered with the detection criteria "Pass". ] ( )

**[SWS\_FlsTst\_00167]** [ When `FlsTstTestResultSignature` is disabled, the function `FlsTst_MainFunction` shall set the overall result status for a test interval to `FLSTST_RESULT_NOT_OK` if at least one block test result is not ok regardless whether all blocks are already tested or not. Additionally the `DEM_FLSTST_E_FLSTST_FAILURE` shall be triggered with the detection criteria "Fail". ] ( )

**[SWS\_FlsTst\_00070]** [After the function `FlsTst_MainFunction` has completed testing all flash blocks, the next call of the function `FlsTst_MainFunction` shall restart the test from the beginning. ] ( )

**[SWS\_FlsTst\_00071]** [The function `FlsTst_MainFunction` shall test a defined number of flash cells within one call. The defined number is specified by configuration (see `ECUC_FlsTst_00161`). ] (SRS\_FlsTst\_14208, SRS\_FlsTst\_14209)

**[SWS\_FlsTst\_00117]** [The function `FlsTst_MainFunction` shall test a defined number of flash cells without checking user request for Abort or Suspend. The defined number is specified by configuration (see `ECUC_FlsTst_00120`). ] ( )

**[SWS\_FlsTst\_00121]** [The function `FlsTst_MainFunction` shall increment the Test Interval Id by 1 before start of a new test interval. The first test interval shall have the Test Interval Id = "0". If the end value = `FlsTstIntervalIdEndValue` is reached, Test Interval Id shall start with value "0" again. The value shall be provided as part of the return values of `FlsTst_GetTestResultBgnd` and `FlsTst_GetTestSignatureBgnd`. ] ( )

## 8.6 Expected Interfaces

In this chapter, all interfaces required from other modules are listed.

### 8.6.1 Mandatory Interfaces

This chapter defines all interfaces that are required to fulfill the core functionality of the module.

**[SWS\_FlsTst\_00072]**[

| <i>API Function</i> | <i>Header File</i> | <i>Description</i>   |
|---------------------|--------------------|--|
| Dem_Set-EventStatus | Dem.h              | Called by SW-Cs or BSW modules to report monitor status information to the Dem. BSW modules calling <code>Dem_SetEventStatus</code> can safely ignore the return value. This API will be available only if <code>{(Dem/DemConfigSet/DemEventParameter/DemEventReportingType) == STANDARD_REPORTING}</code> |

](SRS\_SPAL\_00157)

### 8.6.2 Optional Interfaces

This chapter defines all interfaces that are required to fulfill an optional functionality of the module.

**[SWS\_FlsTst\_00073]**[

| <i>API Function</i> | <i>Header File</i> | <i>Description</i>                    |
|---------------------|--------------------|---------------------------------------|
| Det_ReportError     | Det.h              | Service to report development errors. |

](SRS\_SPAL\_00157)

### 8.6.3 Configurable interfaces

In this chapter, all interfaces are listed where the target function could be configured. The target function is usually a callback function. The names of these kinds of interfaces are not fixed because they are configurable.

**[SWS\_FlsTst\_00074]** [The callback notifications shall be configurable as function pointers within the initialization data structure (FlsTst\_ConfigType). ] ( )

**[SWS\_FlsTst\_00075]** [The callback notifications shall have no parameters and no return value. ] ( )

**[SWS\_FlsTst\_00076]** [If a callback notification is configured as null pointer, the Flash Test module shall not execute the callback. ] ( )

#### 8.6.3.1 FlsTst\_TestCompleted Notification

**[SWS\_FlsTst\_00077]**

|                           |  |
|---------------------------|--|
| <b>Service Name</b>       | FlsTst_TestCompletedNotification   |
| <b>Syntax</b>             | <pre>void FlsTst_TestCompletedNotification (     void )</pre>  |
| <b>Service ID [hex]</b>   | 0x0e   |
| <b>Sync/Async</b>         | Synchronous  |
| <b>Reentrancy</b>         | Don't care   |
| <b>Parameters (in)</b>    | None   |
| <b>Parameters (inout)</b> | None   |
| <b>Parameters (out)</b>   | None   |
| <b>Return value</b>       | None   |
| <b>Description</b>        | The function FlsTst_TestCompleted shall be called every time when a complete test cycle had been tested. |
| <b>Available via</b>      | FlsTst.h   |

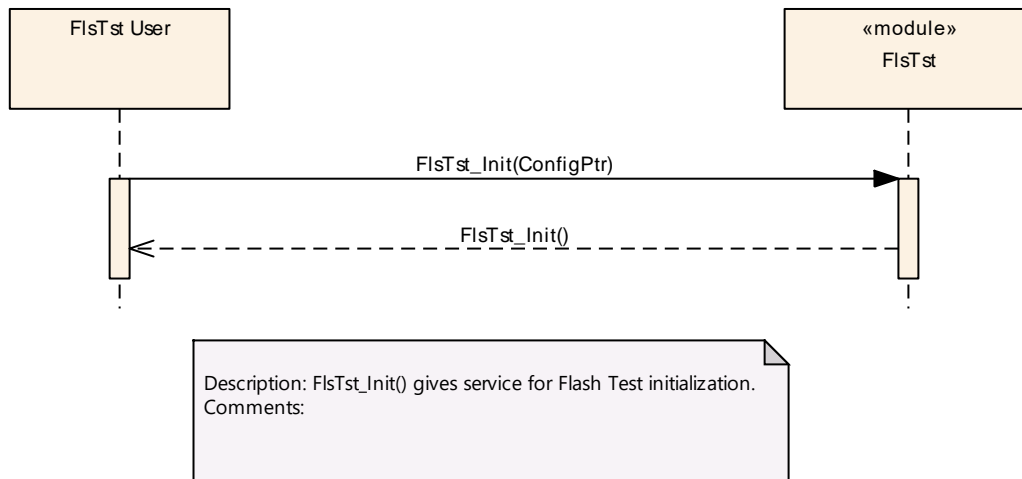
](SRS\_SPAL\_00157, SRS\_FlsTst\_14212)

**[SWS\_FlsTst\_00078]** [The Flash Test module shall call the callback notification `FlsTst_TestCompleted` every time when it has tested a complete test cycle of a flash test in background mode. ] (SRS\_FlsTst\_14212)

**[SWS\_FlsTst\_00159]** [The call of function `FlsTst_TestCompleted` shall be pre compile time configurable On/Off by the configuration parameter `FlsTstTestCompletedNotificationSupported`. ]()

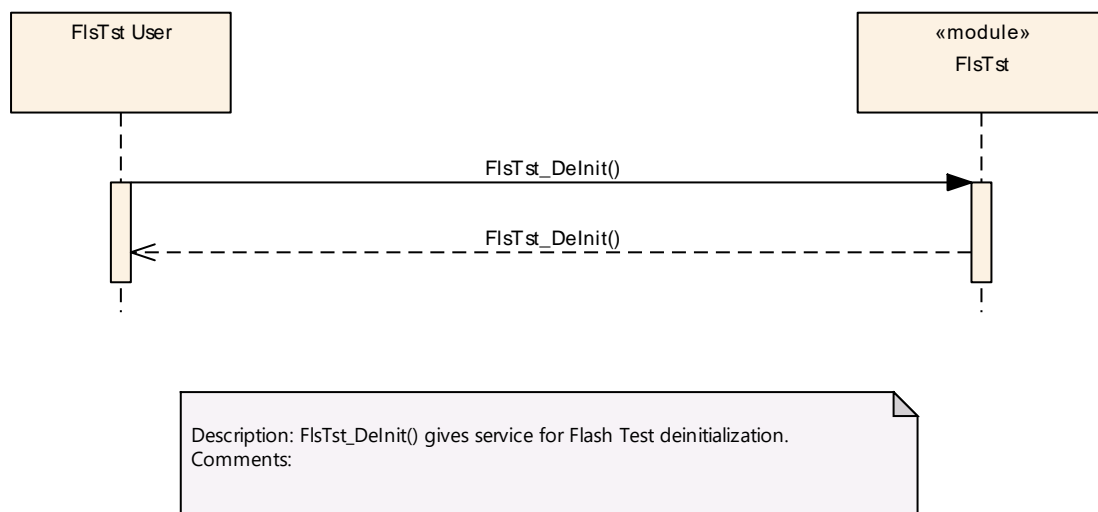
## 9 Sequence diagrams

### 9.1 Initialization



**Figure 5: Flash test driver initialization**

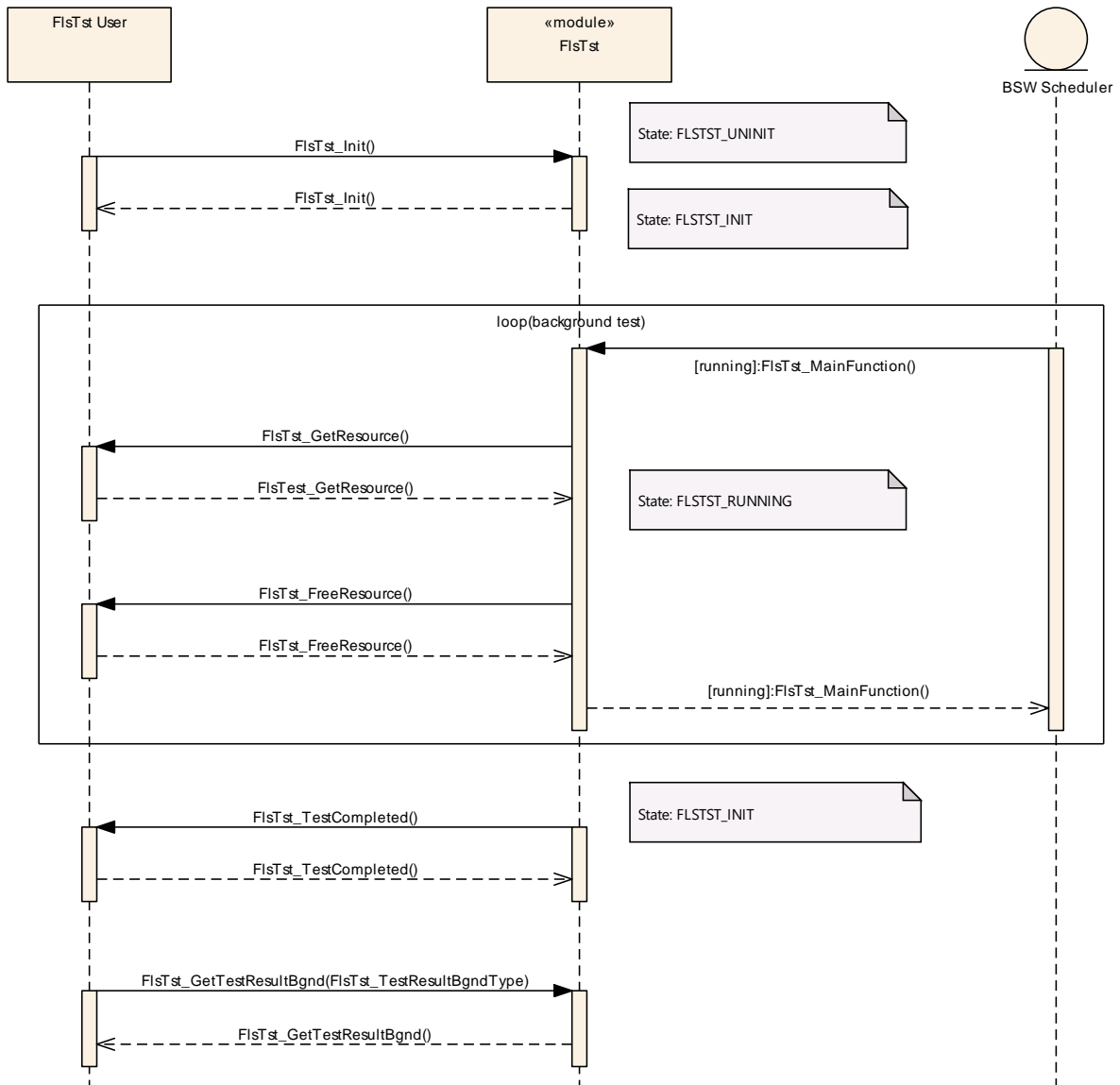
### 9.2 De-initialization



**Figure 6: Flash test driver de-initialization**

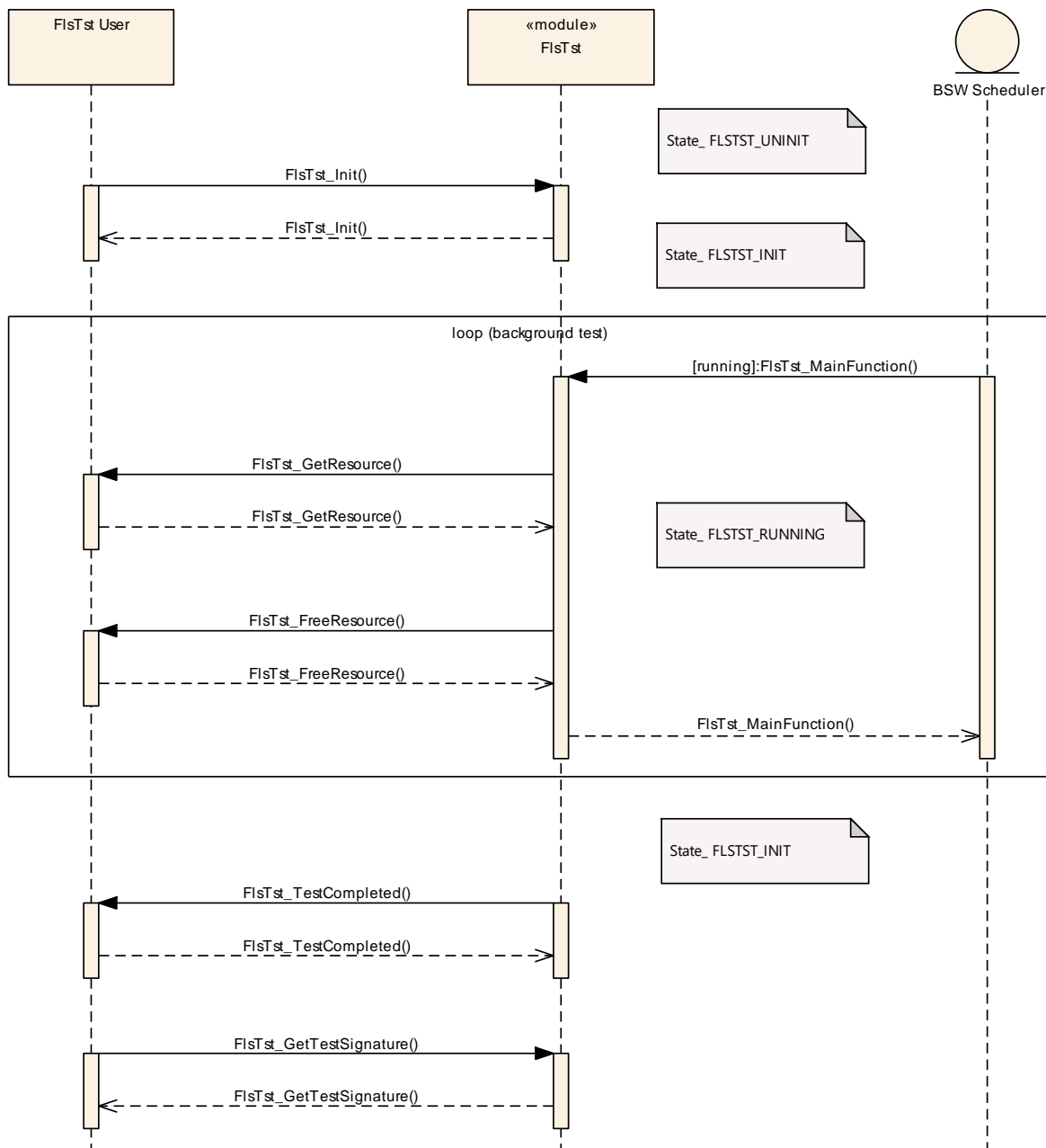
## 9.3 Background Test

### 9.3.1 Test Result Calculation within Flash test driver



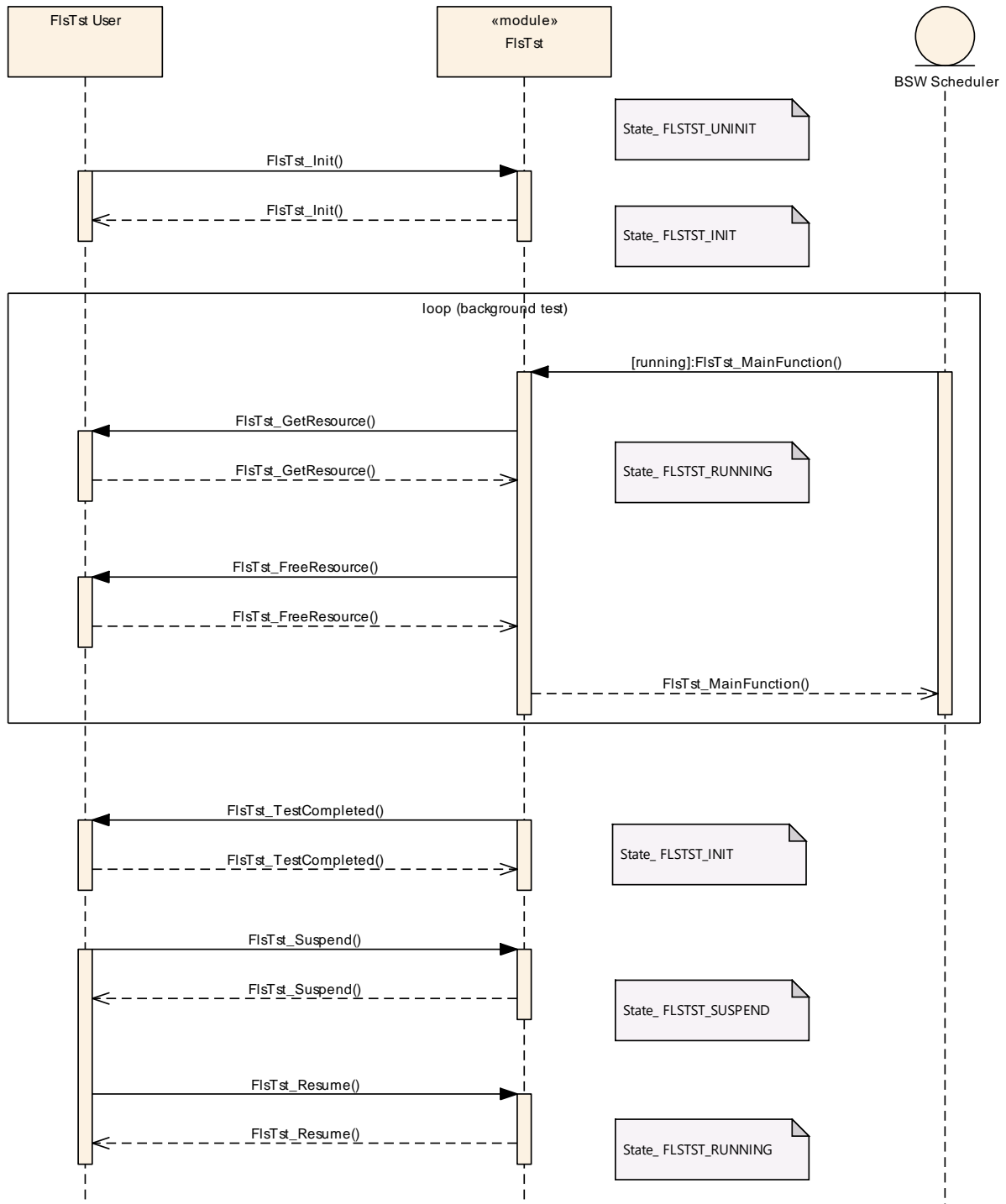
**Figure 7: Background Test – Test result calculation in Flash test driver**

### 9.3.2 Test signature provided to caller



**Figure 8: Background Test – Test signature provided to caller**

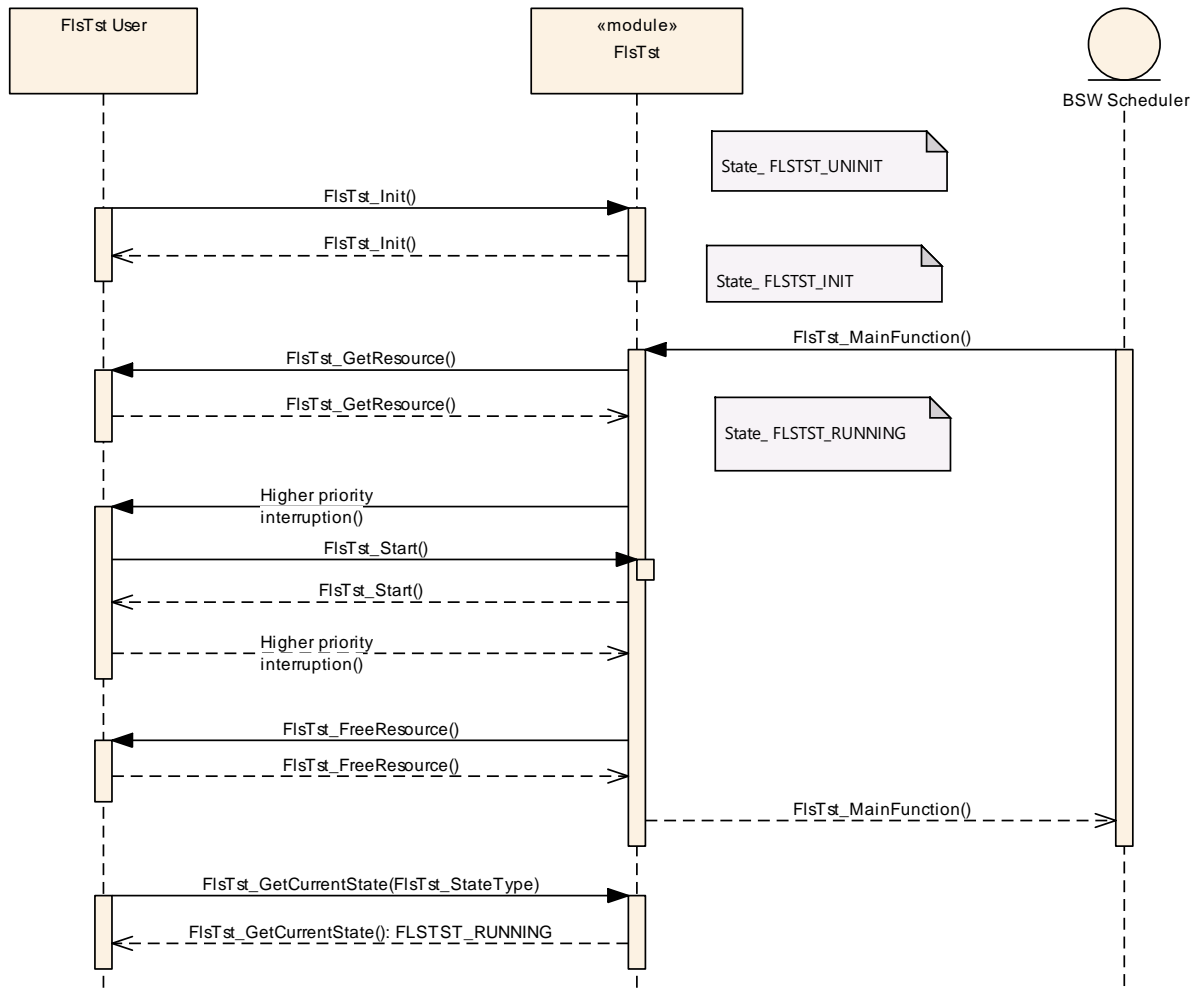
## 9.4 Suspend and Resume Background Testing



**Figure 9: Suspend and Resume Background Testing**



## 9.5 Foreground Task interrupts Background Task



**Figure 10: Foreground task interrupts Background Task**

## 10 Configuration specification

### 10.1 Specification template for configuration parameters

| <b>Label</b> | <b>Description</b>  |
|--------------|---|
| x            | The configuration parameter shall be of configuration class <i>Pre-compile time</i> .       |
| --           | The configuration parameter shall never be of configuration class <i>Pre-compile time</i> . |

Link time - specifies whether the configuration parameter shall be of configuration class *Link time* or not

| <b>Label</b> | <b>Description</b>   |
|--------------|--|
| x            | The configuration parameter shall be of configuration class <i>Link time</i> .       |
| --           | The configuration parameter shall never be of configuration class <i>Link time</i> . |

Post Build - specifies whether the configuration parameter shall be of configuration class *Post Build* or not

| <b>Label</b> | <b>Description</b>   |
|--------------|--|
| x            | The configuration parameter shall be of configuration class <i>Post Build</i> and no specific implementation is required.  |
| L            | <i>Loadable</i> - the configuration parameter shall be of configuration class <i>Post Build</i> and only one configuration parameter set resides in the ECU.   |
| M            | <i>Multiple</i> - the configuration parameter shall be of configuration class <i>Post Build</i> and is selected out of a set of multiple parameters by passing a dedicated pointer to the init function of the module. |
| --           | The configuration parameter shall never be of configuration class <i>Post Build</i> .  |

### 10.2 Containers and configuration parameters

The following chapters summarize all configuration parameters. The detailed meanings of the parameters describe Chapters [Functional specification](#) and Chapter [API specification](#).

#### 10.2.1 Variants

See AUTOSAR\_SWS\_BSWGeneral for definition of variants.

#### 10.2.2 FlsTst

|                                   |   |
|-----------------------------------|---|
| <b>SWS Item</b>                   | ECUC_FlsTst_00135 :                     |
| <b>Module Name</b>                | <i>FlsTst</i>                           |
| <b>Module Description</b>         | --                                      |
| <b>Post-Build Variant Support</b> | true                                    |
| <b>Supported Config Variants</b>  | VARIANT-POST-BUILD, VARIANT-PRE-COMPILE |

| <b>Included Containers</b>          |                     |  |
|-------------------------------------|---------------------|--|
| <b>Container Name</b>               | <b>Multiplicity</b> | <b>Scope / Dependency</b>  |
| FlsTstConfigSet                     | 1                   | This container contains the configuration parameters and sub containers of the AUTOSAR FlsTst module.  |
| FlsTstConfigurationOfOptApiServices | 1                   | --   |
| FlsTstDemEventParameterRefs         | 0..1                | Container for the references to DemEventParameter elements which shall be invoked using the API Dem_SetEventStatus in case the corresponding error occurs. The EventId is taken from the referenced DemEventParameter's DemEventId symbolic value. The standardized errors are provided in this container and can be extended by vendor-specific error references. |
| FlsTstGeneral                       | 1                   | --   |

### 10.2.3 FlsTstGeneral

|                          |                     |
|--------------------------|---------------------|
| SWS Item                 | ECUC_FlsTst_00082 : |
| Container Name           | FlsTstGeneral       |
| Parent Container         | FlsTst              |
| Description              | --                  |
| Configuration Parameters |                     |

|                                  |   |    |              |
|----------------------------------|---|----|--------------|
| <b>SWS Item</b>                  | <b>ECUC_FlsTst_00083 :</b>  |    |              |
| <b>Name</b>                      | FlsTstDevErrorDetect  |    |              |
| <b>Parent Container</b>          | FlsTstGeneral   |    |              |
| <b>Description</b>               | Switches the development error detection and notification on or off. <ul style="list-style-type: none"> <li>true: detection and notification is enabled.</li> <li>false: detection and notification is disabled.</li> </ul> |    |              |
| <b>Multiplicity</b>              | 1   |    |              |
| <b>Type</b>                      | EcucBooleanParamDef   |    |              |
| <b>Default value</b>             | false   |    |              |
| <b>Post-Build Variant Value</b>  | false   |    |              |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>   | X  | All Variants |
|                                  | <b>Link time</b>  | -- |              |
|                                  | <b>Post-build time</b>  | -- |              |
| <b>Scope / Dependency</b>        | scope: local  |    |              |

|                                  |  |    |              |
|----------------------------------|--|----|--------------|
| <b>SWS Item</b>                  | <b>ECUC_FlsTst_00172 :</b>   |    |              |
| <b>Name</b>                      | FlsTstMainFunctionPeriod   |    |              |
| <b>Parent Container</b>          | FlsTstGeneral  |    |              |
| <b>Description</b>               | Determines the frequency at which the FlsTstMainFunction is called in [s]. |    |              |
| <b>Multiplicity</b>              | 1  |    |              |
| <b>Type</b>                      | EcucFloatParamDef  |    |              |
| <b>Range</b>                     | ]0 .. INF[   |    |              |
| <b>Default value</b>             | --   |    |              |
| <b>Post-Build Variant Value</b>  | false  |    |              |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>  | X  | All Variants |
|                                  | <b>Link time</b>   | -- |              |
|                                  | <b>Post-build time</b>   | -- |              |

|                           |                        |    |  |
|---------------------------|------------------------|----|--|
|                           | <b>Link time</b>       | -- |  |
|                           | <b>Post-build time</b> | -- |  |
| <b>Scope / Dependency</b> | scope: ECU             |    |  |

|                                  |  |    |              |
|----------------------------------|--|----|--------------|
| <b>SWS Item</b>                  | <b>ECUC_FlsTst_00161 :</b>   |    |              |
| <b>Name</b>                      | FlsTstNumberOfTestedCells  |    |              |
| <b>Parent Container</b>          | FlsTstGeneral  |    |              |
| <b>Description</b>               | Configures the Number of cells to be tested in background mode during one scheduled task (FlsTst_MainFunction() call). |    |              |
| <b>Multiplicity</b>              | 0..1   |    |              |
| <b>Type</b>                      | EcucIntegerParamDef  |    |              |
| <b>Range</b>                     | 0 .. 4294967295  |    |              |
| <b>Default value</b>             | --   |    |              |
| <b>Post-Build Variant Value</b>  | false  |    |              |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>  | X  | All Variants |
|                                  | <b>Link time</b>   | -- |              |
|                                  | <b>Post-build time</b>   | -- |              |
| <b>Scope / Dependency</b>        | scope: local   |    |              |

|                                  |   |    |              |
|----------------------------------|---|----|--------------|
| <b>SWS Item</b>                  | <b>ECUC_FlsTst_00120 :</b>  |    |              |
| <b>Name</b>                      | FlsTstNumberOfTestedCellsAtomic   |    |              |
| <b>Parent Container</b>          | FlsTstGeneral   |    |              |
| <b>Description</b>               | Configures the Number of cells to be tested in background mode without checking user requests (Abort, Suspend). |    |              |
| <b>Multiplicity</b>              | 1   |    |              |
| <b>Type</b>                      | EcucIntegerParamDef   |    |              |
| <b>Range</b>                     | 0 .. 4294967295   |    |              |
| <b>Default value</b>             | --  |    |              |
| <b>Post-Build Variant Value</b>  | false   |    |              |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>   | X  | All Variants |
|                                  | <b>Link time</b>  | -- |              |
|                                  | <b>Post-build time</b>  | -- |              |
| <b>Scope / Dependency</b>        | scope: local  |    |              |

|                                  |  |    |              |
|----------------------------------|--|----|--------------|
| <b>SWS Item</b>                  | <b>ECUC_FlsTst_00084 :</b>                             |    |              |
| <b>Name</b>                      | FlsTstTestCompletedNotificationSupported               |    |              |
| <b>Parent Container</b>          | FlsTstGeneral  |    |              |
| <b>Description</b>               | Switch to indicate that the notification is supported. |    |              |
| <b>Multiplicity</b>              | 1  |    |              |
| <b>Type</b>                      | EcucBooleanParamDef                                    |    |              |
| <b>Default value</b>             | true   |    |              |
| <b>Post-Build Variant Value</b>  | false  |    |              |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>                                | X  | All Variants |
|                                  | <b>Link time</b>                                       | -- |              |
|                                  | <b>Post-build time</b>                                 | -- |              |
| <b>Scope / Dependency</b>        | scope: local   |    |              |

|                         |  |  |  |
|-------------------------|--|--|--|
| <b>SWS Item</b>         | <b>ECUC_FlsTst_00158 :</b>                     |  |  |
| <b>Name</b>             | FlsTstTestIntervalIdEndValue                   |  |  |
| <b>Parent Container</b> | FlsTstGeneral                                  |  |  |
| <b>Description</b>      | Defines the end value of the Test Interval Id. |  |  |
| <b>Multiplicity</b>     | 1  |  |  |
| <b>Type</b>             | EcucIntegerParamDef                            |  |  |
| <b>Range</b>            | 0 .. 4294967295                                |  |  |

|                                  |                         |    |              |
|----------------------------------|-------------------------|----|--------------|
| <b>Default value</b>             | --                      |    |              |
| <b>Post-Build Variant Value</b>  | false                   |    |              |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b> | X  | All Variants |
|                                  | <b>Link time</b>        | -- |              |
|                                  | <b>Post-build time</b>  | -- |              |
| <b>Scope / Dependency</b>        | scope: local            |    |              |

|                                  |  |    |              |
|----------------------------------|--|----|--------------|
| <b>SWS Item</b>                  | <b>ECUC_FlsTst_00160 :</b>   |    |              |
| <b>Name</b>                      | FlsTstTestResultSignature  |    |              |
| <b>Parent Container</b>          | FlsTstGeneral  |    |              |
| <b>Description</b>               | Configures the result of the test in background mode:<br>True: Test Result is a signature (see SWS_FlsTst_00155, SWS_FlsTst_00054)<br>False: Test Result is ok/not ok (see SWS_FlsTst_00153, SWS_FlsTst_00042) |    |              |
| <b>Multiplicity</b>              | 1  |    |              |
| <b>Type</b>                      | EcucBooleanParamDef  |    |              |
| <b>Default value</b>             | false  |    |              |
| <b>Post-Build Variant Value</b>  | false  |    |              |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>  | X  | All Variants |
|                                  | <b>Link time</b>   | -- |              |
|                                  | <b>Post-build time</b>   | -- |              |
| <b>Scope / Dependency</b>        | scope: local   |    |              |

|   |  |    |              |
|---|--|----|--------------|
| <b>SWS Item</b>                         | <b>ECUC_FlsTst_00175 :</b>   |    |              |
| <b>Name</b>                             | FlsTstEcucPartitionRef   |    |              |
| <b>Parent Container</b>                 | FlsTstGeneral  |    |              |
| <b>Description</b>                      | Maps the Flash test driver to zero or one ECUC partition to make the driver API available in this partition. |    |              |
| <b>Multiplicity</b>                     | 0..1   |    |              |
| <b>Type</b>                             | Reference to [ EcucPartition ]   |    |              |
| <b>Post-Build Variant Multiplicity</b>  | true   |    |              |
| <b>Post-Build Variant Value</b>         | true   |    |              |
| <b>Multiplicity Configuration Class</b> | <b>Pre-compile time</b>  | X  | All Variants |
|   | <b>Link time</b>   | -- |              |
|   | <b>Post-build time</b>   | -- |              |
| <b>Value Configuration Class</b>        | <b>Pre-compile time</b>  | X  | All Variants |
|   | <b>Link time</b>   | -- |              |
|   | <b>Post-build time</b>   | -- |              |
| <b>Scope / Dependency</b>               | scope: ECU   |    |              |

|                               |
|-------------------------------|
| <b>No Included Containers</b> |
|-------------------------------|

#### 10.2.4 FlsTstConfigurationOfOptApiServices

|                                 |                                     |  |  |
|---------------------------------|-------------------------------------|--|--|
| <b>SWS Item</b>                 | <b>ECUC_FlsTst_00085 :</b>          |  |  |
| <b>Container Name</b>           | FlsTstConfigurationOfOptApiServices |  |  |
| <b>Parent Container</b>         | FlsTst                              |  |  |
| <b>Description</b>              | --                                  |  |  |
| <b>Configuration Parameters</b> |                                     |  |  |

|                                  |  |    |              |
|----------------------------------|--|----|--------------|
| <b>SWS Item</b>                  | <b>ECUC_FlsTst_00092 :</b>   |    |              |
| <b>Name</b>                      | FlsTstGetCurrentStateApi   |    |              |
| <b>Parent Container</b>          | FlsTstConfigurationOfOptApiServices                                |    |              |
| <b>Description</b>               | Adds / removes the service FlsTst_GetCurrentState() from the code. |    |              |
| <b>Multiplicity</b>              | 1  |    |              |
| <b>Type</b>                      | EcucBooleanParamDef  |    |              |
| <b>Default value</b>             | false  |    |              |
| <b>Post-Build Variant Value</b>  | false  |    |              |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>  | X  | All Variants |
|                                  | <b>Link time</b>   | -- |              |
|                                  | <b>Post-build time</b>   | -- |              |
| <b>Scope / Dependency</b>        | scope: local   |    |              |

|                                  |  |    |              |
|----------------------------------|--|----|--------------|
| <b>SWS Item</b>                  | <b>ECUC_FlsTst_00098 :</b>   |    |              |
| <b>Name</b>                      | FlsTstGetErrorDetailsApi   |    |              |
| <b>Parent Container</b>          | FlsTstConfigurationOfOptApiServices                                |    |              |
| <b>Description</b>               | Adds / removes the service FlsTst_GetErrorDetails() from the code. |    |              |
| <b>Multiplicity</b>              | 1  |    |              |
| <b>Type</b>                      | EcucBooleanParamDef  |    |              |
| <b>Default value</b>             | false  |    |              |
| <b>Post-Build Variant Value</b>  | false  |    |              |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>  | X  | All Variants |
|                                  | <b>Link time</b>   | -- |              |
|                                  | <b>Post-build time</b>   | -- |              |
| <b>Scope / Dependency</b>        | scope: local   |    |              |

|                                  |  |    |              |
|----------------------------------|--|----|--------------|
| <b>SWS Item</b>                  | <b>ECUC_FlsTst_00094 :</b>   |    |              |
| <b>Name</b>                      | FlsTstGetTestResultBgndApi   |    |              |
| <b>Parent Container</b>          | FlsTstConfigurationOfOptApiServices                                  |    |              |
| <b>Description</b>               | Adds / removes the service FlsTst_GetTestResultBgnd() from the code. |    |              |
| <b>Multiplicity</b>              | 1  |    |              |
| <b>Type</b>                      | EcucBooleanParamDef  |    |              |
| <b>Default value</b>             | false  |    |              |
| <b>Post-Build Variant Value</b>  | false  |    |              |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>  | X  | All Variants |
|                                  | <b>Link time</b>   | -- |              |
|                                  | <b>Post-build time</b>   | -- |              |
| <b>Scope / Dependency</b>        | scope: local   |    |              |

|                                  |  |    |              |
|----------------------------------|--|----|--------------|
| <b>SWS Item</b>                  | <b>ECUC_FlsTst_00150 :</b>   |    |              |
| <b>Name</b>                      | FlsTstGetTestResultFgndApi   |    |              |
| <b>Parent Container</b>          | FlsTstConfigurationOfOptApiServices                                  |    |              |
| <b>Description</b>               | Adds / removes the service FlsTst_GetTestResultFgnd() from the code. |    |              |
| <b>Multiplicity</b>              | 1  |    |              |
| <b>Type</b>                      | EcucBooleanParamDef  |    |              |
| <b>Default value</b>             | false  |    |              |
| <b>Post-Build Variant Value</b>  | false  |    |              |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>  | X  | All Variants |
|                                  | <b>Link time</b>   | -- |              |
|                                  | <b>Post-build time</b>   | -- |              |
| <b>Scope / Dependency</b>        | scope: local   |    |              |

|                 |                            |  |  |
|-----------------|----------------------------|--|--|
| <b>SWS Item</b> | <b>ECUC_FlsTst_00096 :</b> |  |  |
|-----------------|----------------------------|--|--|

|                                  |   |    |              |
|----------------------------------|---|----|--------------|
| <b>Name</b>                      | FlsTstGetTestSignatureBgndApi   |    |              |
| <b>Parent Container</b>          | FlsTstConfigurationOfOptApiServices                                     |    |              |
| <b>Description</b>               | Adds / removes the service FlsTst_GetTestSignatureBgnd() from the code. |    |              |
| <b>Multiplicity</b>              | 1   |    |              |
| <b>Type</b>                      | EcucBooleanParamDef   |    |              |
| <b>Default value</b>             | false   |    |              |
| <b>Post-Build Variant Value</b>  | false   |    |              |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>   | X  | All Variants |
|                                  | <b>Link time</b>  | -- |              |
|                                  | <b>Post-build time</b>  | -- |              |
| <b>Scope / Dependency</b>        | scope: local  |    |              |

|                                  |   |    |              |
|----------------------------------|---|----|--------------|
| <b>SWS Item</b>                  | <b>ECUC_FlsTst_00097 :</b>  |    |              |
| <b>Name</b>                      | FlsTstGetTestSignatureFgndApi   |    |              |
| <b>Parent Container</b>          | FlsTstConfigurationOfOptApiServices                                     |    |              |
| <b>Description</b>               | Adds / removes the service FlsTst_GetTestSignatureFgnd() from the code. |    |              |
| <b>Multiplicity</b>              | 1   |    |              |
| <b>Type</b>                      | EcucBooleanParamDef   |    |              |
| <b>Default value</b>             | false   |    |              |
| <b>Post-Build Variant Value</b>  | false   |    |              |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>   | X  | All Variants |
|                                  | <b>Link time</b>  | -- |              |
|                                  | <b>Post-build time</b>  | -- |              |
| <b>Scope / Dependency</b>        | scope: local  |    |              |

|                                  |  |    |              |
|----------------------------------|--|----|--------------|
| <b>SWS Item</b>                  | <b>ECUC_FlsTst_00086 :</b>                                   |    |              |
| <b>Name</b>                      | FlsTstStartFgndApi   |    |              |
| <b>Parent Container</b>          | FlsTstConfigurationOfOptApiServices                          |    |              |
| <b>Description</b>               | Adds / removes the service FlsTst_StartFgnd() from the code. |    |              |
| <b>Multiplicity</b>              | 1  |    |              |
| <b>Type</b>                      | EcucBooleanParamDef  |    |              |
| <b>Default value</b>             | false  |    |              |
| <b>Post-Build Variant Value</b>  | false  |    |              |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>                                      | X  | All Variants |
|                                  | <b>Link time</b>   | -- |              |
|                                  | <b>Post-build time</b>                                       | -- |              |
| <b>Scope / Dependency</b>        | scope: local   |    |              |

|                                  |   |    |              |
|----------------------------------|---|----|--------------|
| <b>SWS Item</b>                  | <b>ECUC_FlsTst_00087 :</b>  |    |              |
| <b>Name</b>                      | FlsTstSuspendResumeApi  |    |              |
| <b>Parent Container</b>          | FlsTstConfigurationOfOptApiServices   |    |              |
| <b>Description</b>               | Adds / removes the services FlsTst_Suspend() and FlsTst_Resume() from the code. |    |              |
| <b>Multiplicity</b>              | 1   |    |              |
| <b>Type</b>                      | EcucBooleanParamDef   |    |              |
| <b>Default value</b>             | false   |    |              |
| <b>Post-Build Variant Value</b>  | false   |    |              |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>   | X  | All Variants |
|                                  | <b>Link time</b>  | -- |              |
|                                  | <b>Post-build time</b>  | -- |              |
| <b>Scope / Dependency</b>        | scope: local  |    |              |

|                 |                            |  |  |
|-----------------|----------------------------|--|--|
| <b>SWS Item</b> | <b>ECUC_FlsTst_00099 :</b> |  |  |
| <b>Name</b>     | FlsTstTestEccApi           |  |  |

|                                  |  |    |              |
|----------------------------------|--|----|--------------|
| <b>Parent Container</b>          | FlsTstConfigurationOfOptApiServices                        |    |              |
| <b>Description</b>               | Adds / removes the service FlsTst_TestEcc() from the code. |    |              |
| <b>Multiplicity</b>              | 1  |    |              |
| <b>Type</b>                      | EcucBooleanParamDef  |    |              |
| <b>Default value</b>             | false  |    |              |
| <b>Post-Build Variant Value</b>  | false  |    |              |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>                                    | X  | All Variants |
|                                  | <b>Link time</b>   | -- |              |
|                                  | <b>Post-build time</b>                                     | -- |              |
| <b>Scope / Dependency</b>        | scope: local   |    |              |

|                                  |   |    |              |
|----------------------------------|---|----|--------------|
| <b>SWS Item</b>                  | <b>ECUC_FlsTst_00095 :</b>  |    |              |
| <b>Name</b>                      | FlsTstVersionInfoApi  |    |              |
| <b>Parent Container</b>          | FlsTstConfigurationOfOptApiServices                               |    |              |
| <b>Description</b>               | Adds / removes the service FlsTst_GetVersionInfo() from the code. |    |              |
| <b>Multiplicity</b>              | 1   |    |              |
| <b>Type</b>                      | EcucBooleanParamDef   |    |              |
| <b>Default value</b>             | false   |    |              |
| <b>Post-Build Variant Value</b>  | false   |    |              |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>   | X  | All Variants |
|                                  | <b>Link time</b>  | -- |              |
|                                  | <b>Post-build time</b>  | -- |              |
| <b>Scope / Dependency</b>        | scope: local  |    |              |

**No Included Containers**

### 10.2.5 FlsTstDemEventParameterRefs

|                                 |  |
|---------------------------------|--|
| <b>SWS Item</b>                 | <b>ECUC_FlsTst_00170 :</b>   |
| <b>Container Name</b>           | FlsTstDemEventParameterRefs  |
| <b>Parent Container</b>         | FlsTst   |
| <b>Description</b>              | Container for the references to DemEventParameter elements which shall be invoked using the API Dem_SetEventStatus in case the corresponding error occurs. The EventId is taken from the referenced DemEventParameter's DemEventId symbolic value. The standardized errors are provided in this container and can be extended by vendor-specific error references. |
| <b>Configuration Parameters</b> |  |

|   |   |    |              |
|---|---|----|--------------|
| <b>SWS Item</b>                         | <b>ECUC_FlsTst_00171 :</b>  |    |              |
| <b>Name</b>                             | FLSTST_E_FLSTST_FAILURE   |    |              |
| <b>Parent Container</b>                 | FlsTstDemEventParameterRefs   |    |              |
| <b>Description</b>                      | Reference to the DemEventParameter which shall be issued when the error "Flash Failure" has occurred. |    |              |
| <b>Multiplicity</b>                     | 0..1  |    |              |
| <b>Type</b>                             | Symbolic name reference to [ DemEventParameter ]  |    |              |
| <b>Post-Build Variant Multiplicity</b>  | false   |    |              |
| <b>Post-Build Variant Value</b>         | false   |    |              |
| <b>Multiplicity Configuration Class</b> | <b>Pre-compile time</b>   | X  | All Variants |
|   | <b>Link time</b>  | -- |              |
|   | <b>Post-build time</b>  | -- |              |



|                                  |                         |    |              |
|----------------------------------|-------------------------|----|--------------|
| <b>Value Configuration Class</b> | <b>Pre-compile time</b> | X  | All Variants |
|                                  | <b>Link time</b>        | -- |              |
|                                  | <b>Post-build time</b>  | -- |              |
| <b>Scope / Dependency</b>        | scope: local            |    |              |

**No Included Containers**

## 10.2.6 FlsTstBlockBgnd

|                                 |  |  |  |
|---------------------------------|--|--|--|
| <b>SWS Item</b>                 | <b>ECUC_FlsTst_00173 :</b>   |  |  |
| <b>Container Name</b>           | FlsTstBlockBgnd  |  |  |
| <b>Parent Container</b>         | FlsTstConfigSet  |  |  |
| <b>Description</b>              | This container specifies configuration parameters for an individual background test block. |  |  |
| <b>Configuration Parameters</b> |  |  |  |

|                           |   |    |              |
|---------------------------|---|----|--------------|
| SWS Item                  | ECUC_FlsTst_00174 :   |    |              |
| Name                      | FlsTstBgndBlockIndex  |    |              |
| Parent Container          | FlsTstBlockBgnd   |    |              |
| Description               | The scheduling for background test shall follow an order defined by this index. '0' means highest priority. |    |              |
| Multiplicity              | 1   |    |              |
| Type                      | EcucIntegerParamDef (Symbolic Name generated for this parameter)  |    |              |
| Range                     | 0 .. 4294967295   |    |              |
| 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  |    |              |

|                           |                                   |    |                     |
|---------------------------|-----------------------------------|----|---------------------|
| SWS Item                  | ECUC_FlsTst_00106 :               |    |                     |
| Name                      | FlsTstBlockBaseAddress            |    |                     |
| Parent Container          | FlsTstBlockBgnd                   |    |                     |
| Description               | Start Address of the Flash block. |    |                     |
| Multiplicity              | 1                                 |    |                     |
| Type                      | EcucIntegerParamDef               |    |                     |
| Range                     | 0 ..<br>18446744073709551615      |    |                     |
| 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                      |    |                     |

|                         |   |  |  |
|-------------------------|---|--|--|
| <b>SWS Item</b>         | <b>ECUC_FlsTst_00107 :</b>                                |  |  |
| <b>Name</b>             | FlsTstBlockSize   |  |  |
| <b>Parent Container</b> | FlsTstBlockBgnd   |  |  |
| <b>Description</b>      | This parameter shall represent the Flash Test block size. |  |  |
| <b>Multiplicity</b>     | 1   |  |  |

|                           |                     |    |                     |
|---------------------------|---------------------|----|---------------------|
| Type                      | EcucIntegerParamDef |    |                     |
| Range                     | 0 .. 4294967295     |    |                     |
| 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        |    |                     |

|                           |   |    |                     |
|---------------------------|---|----|---------------------|
| SWS Item                  | ECUC FlsTst_00123 :   |    |                     |
| Name                      | FlsTstSignatureAddress  |    |                     |
| Parent Container          | FlsTstBlockBgnd   |    |                     |
| Description               | Address of the signature reference value of the Flash test block. |    |                     |
| Multiplicity              | 1   |    |                     |
| Type                      | EcucIntegerParamDef   |    |                     |
| Range                     | 0 .. 18446744073709551615   |    |                     |
| 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  |    |                     |

|                                  |  |    |                     |
|----------------------------------|--|----|---------------------|
| <b>SWS Item</b>                  | <b>ECUC_FlsTst_00101 :</b>   |    |                     |
| <b>Name</b>                      | FlsTstTestAlgorithm  |    |                     |
| <b>Parent Container</b>          | FlsTstBlockBgnd  |    |                     |
| <b>Description</b>               | This is the configuration of the test algorithm. The availability of algorithm is implementation specific. |    |                     |
| <b>Multiplicity</b>              | 1  |    |                     |
| <b>Type</b>                      | EcucEnumerationParamDef  |    |                     |
| <b>Range</b>                     | FLSTST_16BIT_CRC   | -- |                     |
|                                  | FLSTST_32BIT_CRC   | -- |                     |
|                                  | FLSTST_8BIT_CRC  | -- |                     |
|                                  | FLSTST_CHECKSUM  | -- |                     |
|                                  | FLSTST_DUPLICATED_MEMORY   | -- |                     |
|                                  | FLSTST_ECC   | -- |                     |
| <b>Post-Build Variant Value</b>  | true   |    |                     |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>  | X  | VARIANT-PRE-COMPILE |
|                                  | <b>Link time</b>   | -- |                     |
|                                  | <b>Post-build time</b>   | X  | VARIANT-POST-BUILD  |
| <b>Scope / Dependency</b>        | scope: local   |    |                     |

No Included Containers

### 10.2.7 FlsTstBlockFgnd

|                  |                     |  |  |
|------------------|---------------------|--|--|
| SWS Item         | ECUC FlsTst_00105 : |  |  |
| Container Name   | FlsTstBlockFgnd     |  |  |
| Parent Container | FlsTstConfigSet     |  |  |

|                                 |  |
|---------------------------------|--|
| <b>Description</b>              | This container specifies configuration parameters for an individual foreground test block. |
| <b>Configuration Parameters</b> |  |

|                                  |                                   |    |                     |
|----------------------------------|-----------------------------------|----|---------------------|
| <b>SWS Item</b>                  | <b>ECUC_FlsTst_00106 :</b>        |    |                     |
| <b>Name</b>                      | FlsTstBlockBaseAddress            |    |                     |
| <b>Parent Container</b>          | FlsTstBlockFgnd                   |    |                     |
| <b>Description</b>               | Start Address of the Flash block. |    |                     |
| <b>Multiplicity</b>              | 1                                 |    |                     |
| <b>Type</b>                      | EcucIntegerParamDef               |    |                     |
| <b>Range</b>                     | 0 ..<br>18446744073709551615      |    |                     |
| <b>Default value</b>             | --                                |    |                     |
| <b>Post-Build Variant Value</b>  | true                              |    |                     |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>           | X  | VARIANT-PRE-COMPILE |
|                                  | <b>Link time</b>                  | -- |                     |
|                                  | <b>Post-build time</b>            | X  | VARIANT-POST-BUILD  |
| <b>Scope / Dependency</b>        | scope: local                      |    |                     |

|                                  |   |    |                     |
|----------------------------------|---|----|---------------------|
| <b>SWS Item</b>                  | <b>ECUC_FlsTst_00107 :</b>                                |    |                     |
| <b>Name</b>                      | FlsTstBlockSize   |    |                     |
| <b>Parent Container</b>          | FlsTstBlockFgnd   |    |                     |
| <b>Description</b>               | This parameter shall represent the Flash Test block size. |    |                     |
| <b>Multiplicity</b>              | 1   |    |                     |
| <b>Type</b>                      | EcucIntegerParamDef                                       |    |                     |
| <b>Range</b>                     | 0 .. 4294967295   |    |                     |
| <b>Default value</b>             | --  |    |                     |
| <b>Post-Build Variant Value</b>  | true  |    |                     |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>                                   | X  | VARIANT-PRE-COMPILE |
|                                  | <b>Link time</b>  | -- |                     |
|                                  | <b>Post-build time</b>                                    | X  | VARIANT-POST-BUILD  |
| <b>Scope / Dependency</b>        | scope: local  |    |                     |

|                                  |  |    |              |
|----------------------------------|--|----|--------------|
| <b>SWS Item</b>                  | <b>ECUC_FlsTst_00151 :</b>                                       |    |              |
| <b>Name</b>                      | FlsTstFgndBlockIndex   |    |              |
| <b>Parent Container</b>          | FlsTstBlockFgnd  |    |              |
| <b>Description</b>               | Index identifies block to be tested by FlsTst_StartFgnd();       |    |              |
| <b>Multiplicity</b>              | 1  |    |              |
| <b>Type</b>                      | EcucIntegerParamDef (Symbolic Name generated for this parameter) |    |              |
| <b>Range</b>                     | 0 .. 4294967295  |    |              |
| <b>Default value</b>             | --   |    |              |
| <b>Post-Build Variant Value</b>  | false  |    |              |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>  | X  | All Variants |
|                                  | <b>Link time</b>   | -- |              |
|                                  | <b>Post-build time</b>   | -- |              |
| <b>Scope / Dependency</b>        | scope: local   |    |              |

|                         |   |  |  |
|-------------------------|---|--|--|
| <b>SWS Item</b>         | <b>ECUC_FlsTst_00123 :</b>  |  |  |
| <b>Name</b>             | FlsTstSignatureAddress  |  |  |
| <b>Parent Container</b> | FlsTstBlockFgnd   |  |  |
| <b>Description</b>      | Address of the signature reference value of the Flash test block. |  |  |
| <b>Multiplicity</b>     | 1   |  |  |
| <b>Type</b>             | EcucIntegerParamDef   |  |  |
| <b>Range</b>            | 0 ..  |  |  |

|                                  |                         |                       |
|----------------------------------|-------------------------|-----------------------|
|                                  | 18446744073709551615    |                       |
| <b>Default value</b>             | --                      |                       |
| <b>Post-Build Variant Value</b>  | true                    |                       |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b> | X VARIANT-PRE-COMPILE |
|                                  | <b>Link time</b>        | --                    |
|                                  | <b>Post-build time</b>  | X VARIANT-POST-BUILD  |
| <b>Scope / Dependency</b>        | scope: local            |                       |

|                                  |  |                       |
|----------------------------------|--|-----------------------|
| <b>SWS Item</b>                  | <b>ECUC_FlsTst_00101 :</b>   |                       |
| <b>Name</b>                      | FlsTstTestAlgorithm  |                       |
| <b>Parent Container</b>          | FlsTstBlockFgnd  |                       |
| <b>Description</b>               | This is the configuration of the test algorithm. The availability of algorithm is implementation specific. |                       |
| <b>Multiplicity</b>              | 1  |                       |
| <b>Type</b>                      | EcucEnumerationParamDef  |                       |
| <b>Range</b>                     | FLSTST_16BIT_CRC   | --                    |
|                                  | FLSTST_32BIT_CRC   | --                    |
|                                  | FLSTST_8BIT_CRC  | --                    |
|                                  | FLSTST_CHECKSUM  | --                    |
|                                  | FLSTST_DUPLICATED_MEMORY   | --                    |
|                                  | FLSTST_ECC   | --                    |
| <b>Post-Build Variant Value</b>  | true   |                       |
| <b>Value Configuration Class</b> | <b>Pre-compile time</b>  | X VARIANT-PRE-COMPILE |
|                                  | <b>Link time</b>   | --                    |
|                                  | <b>Post-build time</b>   | X VARIANT-POST-BUILD  |
| <b>Scope / Dependency</b>        | scope: local   |                       |

|                               |
|-------------------------------|
| <b>No Included Containers</b> |
|-------------------------------|

## Published Information

Note: The content of this chapter is specified in SWS\_BSWGeneral document [9].

## 11 Not applicable requirements

**[SWS\_FlsTst\_00166]** [These requirements are not applicable to this specification.]

(SRS\_BSW\_00344, SRS\_BSW\_00159, SRS\_BSW\_00167, SRS\_BSW\_00170, SRS\_BSW\_00419, SRS\_BSW\_00398, SRS\_BSW\_00375, SRS\_BSW\_00416, SRS\_BSW\_00168, SRS\_BSW\_00423, SRS\_BSW\_00424, SRS\_BSW\_00425, SRS\_BSW\_00426, SRS\_BSW\_00427, SRS\_BSW\_00428, SRS\_BSW\_00429, SRS\_BSW\_00432, SRS\_BSW\_00433, SRS\_BSW\_00422, SRS\_BSW\_00417, SRS\_BSW\_00161, SRS\_BSW\_00162, SRS\_BSW\_00005, SRS\_BSW\_00415, SRS\_BSW\_00164, SRS\_BSW\_00325, SRS\_BSW\_00342, SRS\_BSW\_00343, SRS\_BSW\_00007, SRS\_BSW\_00300, SRS\_BSW\_00413, SRS\_BSW\_00347, SRS\_BSW\_00305, SRS\_BSW\_00307, SRS\_BSW\_00310, SRS\_BSW\_00373, SRS\_BSW\_00327, SRS\_BSW\_00335, SRS\_BSW\_00350, SRS\_BSW\_00408, SRS\_BSW\_00410, SRS\_BSW\_00348, SRS\_BSW\_00353, SRS\_BSW\_00361, SRS\_BSW\_00301, SRS\_BSW\_00302, SRS\_BSW\_00328, SRS\_BSW\_00312, SRS\_BSW\_00006, SRS\_BSW\_00378, SRS\_BSW\_00306, SRS\_BSW\_00308, SRS\_BSW\_00309, SRS\_BSW\_00371, SRS\_BSW\_00358, SRS\_BSW\_00414, SRS\_BSW\_00330, SRS\_BSW\_00331, SRS\_BSW\_00009, SRS\_BSW\_00401, SRS\_BSW\_00172, SRS\_BSW\_00010, SRS\_BSW\_00003, SRS\_BSW\_00341, SRS\_BSW\_00334, SRS\_BSW\_00437, SRS\_BSW\_00439, SRS\_BSW\_00440, SRS\_SPAL\_12267, SRS\_SPAL\_12461, SRS\_SPAL\_12462, SRS\_SPAL\_12463, SRS\_SPAL\_12068, SRS\_SPAL\_12069, SRS\_SPAL\_12169, SRS\_SPAL\_12075, SRS\_SPAL\_12129, SRS\_SPAL\_12064, SRS\_SPAL\_12067, SRS\_SPAL\_12077, SRS\_SPAL\_12078, SRS\_SPAL\_12092, SRS\_SPAL\_12265, SRS\_FlsTst\_14221)