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Disclaimer

Advice for users

AUTOSAR specifications may contain exemplary items (exemplary reference models, "use cases", and/or references to exemplary technical solutions, devices, processes or software).

Any such exemplary items are contained in the specifications for illustration purposes only, and they themselves are not part of the AUTOSAR Standard. Neither their presence in such specifications, nor any later documentation of AUTOSAR conformance of products actually implementing such exemplary items, imply that intellectual property rights covering such exemplary items are licensed under the same rules as applicable to the AUTOSAR Standard.

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1 Scope of Document

This document defines requirements for Acceptance Test specifications in AUTOSAR. It shall be used as a basis for each Acceptance Test Case.

The requirements are grouped together according to compatibility of the system under test to the AUTOSAR software requirements at application, bus and configuration levels.

The requirements have been chosen as most relevant through a selection process within AUTOSAR.
They list software requirements (SRS) that should be tested. Exceptionally, software specifications (SWS) can be referenced if they are identified as important for the Acceptance Test Requirement and no relevant SRS exists.

2 Conventions to be used

- The representation of requirements in AUTOSAR documents follows the table specified in [1] (TPS_STDT_00078).

- In requirements, the following specific semantics shall be used (based on the Internet Engineering Task Force IETF).

  The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as:

  - SHALL: This word means that the definition is an absolute requirement of the specification.
  - SHALL NOT: This phrase means that the definition is an absolute prohibition of the specification.
  - MUST: This word means that the definition is an absolute requirement of the specification due to legal issues.
  - MUST NOT: This phrase means that the definition is an absolute prohibition of the specification due to legal constraints.
  - SHOULD: This word, or the adjective "RECOMMENDED", mean that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.
  - SHOULD NOT: This phrase, or the phrase "NOT RECOMMENDED" mean that there may exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.
  - MAY: This word, or the adjective „OPTIONAL“, means that an item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because the vendor feels that it enhances the product while another vendor may omit the same item. An implementation, which does not include a particular option, MUST be prepared to interoperate with another implementation, which does include the option, though perhaps with reduced functionality. In the same vein an implementation, which does include a particular option, MUST be prepared to interoperate with another implementation, which does not include the option (except, of course, for the feature the option provides.)

3 Acronyms and Abbreviations

All acronyms and abbreviations used throughout this document are included in the official AUTOSAR glossary [2]. For respective explanation please see there.

4 Acceptance test requirements

4.1 Application compatibility

4.1.1 RTE features

4.1.1.1 [ATR_ATR_00001] AUTOSAR Acceptance Tests shall support Client Server Asynchronous communication

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that Client Server Asynchronous communication (client not blocked after the service request is initiated until the response of the server is received) is supported according to the RTE specification.
Rationale:	Software Components with AUTOSAR interfaces shall have the possibility to use different communication schemes. Client Server Asynchronous communication is needed whenever the client needs to continue its operations after requesting a service from a server and collect a response later on.
Use Case:	--
Dependencies:	ATR_ATR_00022, ATR_ATR_00023
Supporting Material:	AUTOSAR_SWS_RTE.pdf, AUTOSAR_SRS_RTE.pdf, AUTOSAR_SoftwareComponentTemplate.pdf
Tested Items:	SRS_Rte_00029, SRS_Rte_00072, SRS_Rte_00079, SRS_Rte_00110, SRS_Rte_00111

⌋(ATR_ATF_00004, ATR_ATF_00027, ATR_ATF_00007, ATR_ATF_00011)

4.1.1.2 [ATR_ATR_00002] AUTOSAR Acceptance Tests shall support Client Server Synchronous communication

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that Client Server Synchronous communication (client blocked after the service request is initiated until the response of the server is received) is supported according to the RTE specification.
Rationale:	Software Components with AUTOSAR interfaces shall have the possibility to use different communication schemes. Client Server Synchronous communication is needed whenever the client needs a response after requesting a service from a server before continuing its operations.
Use Case:	Access to BSW services
Dependencies:	ATR_ATR_00022, ATR_ATR_00023
Supporting Material:	AUTOSAR_SWS_RTE.pdf, AUTOSAR_SRS_RTE.pdf, AUTOSAR_SoftwareComponentTemplate.pdf
Tested Items:	SRS_Rte_00029, SRS_Rte_00072, SRS_Rte_00110, SRS_Rte_00111

⌋(ATR_ATF_00004, ATR_ATF_00027, ATR_ATF_00007, ATR_ATF_00011)

4.1.1.3 [ATR_ATR_00020] AUTOSAR Acceptance Tests shall support 1:n Sender Receiver communication

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that different Sender Receiver communications are supported according to the RTE specifications.
Rationale:	Software Components with AUTOSAR interfaces shall have the possibility to use different communication schemes. Implicit or explicit transmission/sending can be used by Software Components deployed in intra-partition or intra/inter-ECU architectures.
Use Case:	Broadcast information on networks / to different applications
Dependencies:	ATR_ATR_00021, ATR_ATR_00022, ATR_ATR_00023
Supporting Material:	AUTOSAR_SWS_RTE.pdf, AUTOSAR_SRS_RTE.pdf
Tested Items:	SRS_Rte_00028, SRS_Rte_00068, SRS_Rte_00072, SRS_Rte_00098, SRS_Rte_00108, SRS_Rte_00110, SRS_Rte_00128, SRS_Rte_00129, SRS_Rte_00131, SRS_Rte_00141

⌋(ATR_ATF_00004, ATR_ATF_00027, ATR_ATF_00007, ATR_ATF_00011)

4.1.1.4 [ATR_ATR_00021] AUTOSAR Acceptance Tests shall support initial values

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that applications read a valid data before COM or other Software Components have provided a first value.
Rationale:	Data can be read before COM (inter-ECU) or other Software Components (intra-ECU) have provided a first value and applications should be prevented from reading un-initialized data.
Use Case:	Deterministic behavior.
Dependencies:	--
Supporting Material:	AUTOSAR_SWS_RTE.pdf, AUTOSAR_SRS_RTE.pdf
Tested Items:	SRS_Rte_00068, SRS_Rte_00108

⌋(ATR_ATF_00004, ATR_ATF_00027, ATR_ATF_00007, ATR_ATF_00011)

4.1.1.5 [ATR_ATR_00022] AUTOSAR Acceptance Tests shall support the activation of runnable entities

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that Runnable Entities are correctly activated based on arrival of data from other components, invocation of operations or time-based execution of runnable entities.
Rationale:	Runnable Entities shall be activated when data arrives from other components, when operations are invoked or on time based execution of Runnable Entities.
Use Case:	Acceptance of an EMS platform which relies on triggers for the scheduling of executable entities synchronized with the ignition of the combustion engine.
Dependencies:	--
Supporting Material:	AUTOSAR_SWS_RTE.pdf
Tested Items:	SRS_Rte_00072

⌋(ATR_ATF_00004, ATR_ATF_00027, ATR_ATF_00007, ATR_ATF_00011)

4.1.1.6 [ATR_ATR_00023] AUTOSAR Acceptance Tests shall support the BUFFERING attribute

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that communication between Software Components can be done with buffering semantic as “last-is-best”, “queue” or “no”.
Rationale:	The RTE shall support buffering semantic with the values “last_is_best” (sender/receiver only), “queue” and “no” (client/server only).
Use Case:	
Dependencies:	--
Supporting Material:	AUTOSAR_SWS_RTE.pdf
Tested Items:	SRS_Rte_00110

⌋(ATR_ATF_00004, ATR_ATF_00027, ATR_ATF_00007, ATR_ATF_00011)

4.1.1.7 [ATR_ATR_00025] AUTOSAR Acceptance Tests shall support Mode switches

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that mode switches are supported according to RTE specifications.
Rationale:	ModeDisablingDependency is the only means by which AUTOSAR allows to define sets of Runnable Entities that run only in certain modes. ModeSwitchEvent allows triggering Runnable Entities on the transitions between modes.
Use Case:	Initialization and finalization phases
Dependencies:	--
Supporting Material:	AUTOSAR_SWS_RTE.pdf, AUTOSAR_SRS_RTE.pdf
Tested Items:	SRS_Rte_00143, SRS_Rte_00144

⌋(ATR_ATF_00004, ATR_ATF_00027, ATR_ATF_00007, ATR_ATF_00011)

4.1.1.8 [ATR_ATR_00026] AUTOSAR Acceptance Tests shall support RTE Status 'Never Received'

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that the “never received” status is supported for sender receiver communication according to the RTE specification.
Rationale:	
Use Case:	Differentiate ECU’s initial values from default values
Dependencies:	--
Supporting Material:	AUTOSAR_SWS_RTE.pdf
Tested Items:	SRS_Rte_00184

⌋(ATR_ATF_00004, ATR_ATF_00027, ATR_ATF_00007, ATR_ATF_00011)

4.1.1.9 [ATR_ATR_00027] AUTOSAR Acceptance Tests shall support RTE conversions between internal and network data types

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that the RTE support the conversion of received data from busses to the representation needed by software components.
Rationale:	The RTE shall support the development of application software components independently from the development of communication matrixes.
Use Case:	Reduction of network load. Reuse of ECUs / Software components in different environments
Dependencies:	--
Supporting Material:	AUTOSAR_SWS_RTE.pdf
Tested Items:	SRS_Rte_00181

⌋(ATR_ATF_00004, ATR_ATF_00027, ATR_ATF_00007, ATR_ATF_00011)

4.1.1.10 [ATR_ATR_00028] AUTOSAR Acceptance Tests shall support RTE scaling of signals at port interfaces

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that the RTE supports the automatic conversion of dataElements with different computation methods.
Rationale:	
Use Case:	Reuse Software components in different environments
Dependencies:	--
Supporting Material:	AUTOSAR_SWS_RTE.pdf
Tested Items:	SRS_Rte_00182

⌋(ATR_ATF_00004, ATR_ATF_00027, ATR_ATF_00007, ATR_ATF_00011)

4.1.1.11 [ATR_ATR_00029] AUTOSAR Acceptance Tests shall support RTE automatic range checks of data

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that the RTE supports the automatic range checks of data.
Rationale:	
Use Case:	Ensure reusability constraints of software components
Dependencies:	--
Supporting Material:	AUTOSAR_SWS_RTE.pdf
Tested Items:	SRS_Rte_00180

⌋(ATR_ATF_00004, ATR_ATF_00027, ATR_ATF_00007, ATR_ATF_00011)

4.1.1.12 [ATR_ATR_00030] AUTOSAR Acceptance Tests shall support RTE update flag for data reception

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that the RTE supports an update flag for data received from bus or other software components.
Rationale:	
Use Case:	Allows polling of data and reduce CPU load
Dependencies:	--
Supporting Material:	AUTOSAR_SWS_RTE.pdf
Tested Items:	SRS_Rte_00179

⌋(ATR_ATF_00004, ATR_ATF_00027, ATR_ATF_00007, ATR_ATF_00011)

4.1.1.13 [ATR_ATR_00031] AUTOSAR Acceptance Tests shall support RTE transmission monitoring

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that the RTE supports the monitoring of transmission timeout and acknowledgement.
Rationale:	
Use Case:	
Dependencies:	--
Supporting Material:	AUTOSAR_SWS_RTE.pdf, AUTOSAR_SWS_COM.pdf
Tested Items:	SRS_Rte_00069, SRS_Rte_00147, SRS_Rte_00122, SRS_Com_02044

⌋(ATR_ATF_00004, ATR_ATF_00027, ATR_ATF_00007, ATR_ATF_00011, ATR_ATF_00028)

4.1.2 BSW Services

4.1.2.1 [ATR_ATR_00018] AUTOSAR Acceptance Tests shall test the DEM service interfaces

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that the interaction mechanisms for DEM events with Software Components are correctly supported according to the RTE and DEM specifications. These tests in particular relate to reporting and retrieving of DEM events by Software Components.
Rationale:	Handling of error events is a core functionality of automotive ECUs. Applications have to constantly monitor the system they realize and report an error event in case of a detected error to enable diagnostic of the faulty system. AUTOSAR has defined the handling and storing of these “DEM events” using standardized interfaces between SWCs and RTE.
Use Case:	Debouncing and storing of an undervoltage/overvoltage error event
Dependencies:	--
Supporting Material:	AUTOSAR_SWS_DEM.pdf
Tested Items:	SRS_Diag_04010, SRS_Diag_04059, SRS_Diag_04030, SRS_Diag_04074, SRS_Diag_04104

⌋(ATR_ATF_00008)

4.1.2.2 [ATR_ATR_00019] AUTOSAR Acceptance Tests shall test the DCM service interfaces

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that the interaction mechanisms between Software Components and Basic Software with respect to diagnosis handling (requests, responses etc.) works correctly according to the DCM specification. These tests in particular relate to executing and responding to UDS service requests by an external diagnosis tester.
Rationale:	Diagnostics of an automotive ECUs involves the application in many ways. AUTOSAR has defined the interaction mechanisms between the DCM module and the SWCs using standardized RTE interfaces.
Use Case:	Reporting of an application measurement value identified by a record identifier to the external diagnosis tester
Dependencies:	--
Supporting Material:	AUTOSAR_SWS_DCM.pdf
Tested Items:	SRS_Diag_04010, SRS_Diag_04007, SRS_Diag_04000, SRS_Diag_04019, SRS_Diag_04011

⌋(ATR_ATF_00008)

4.1.2.3 [ATR_ATR_00035] AUTOSAR Acceptance Tests shall test that the memory stack can read, write or erase data from NVRAM

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that the memory stack is able to read, write or erase data from native, redundant or data set blocks, and verify the status of those operations.
Rationale:	Read, write and erase are the basic features from a memory stack
Use Case:	
Dependencies:	--
Supporting Material:	
Tested Items:	SRS_Mem_00016, SRS_Mem_00017, SRS_Mem_00027, SRS_Mem_00020, SRS_Mem_08544, SRS_Mem_08529, SRS_Mem_08531

⌋(ATR_ATF_00008)

4.1.2.4 [ATR_ATR_00032] AUTOSAR Acceptance Tests shall test that the memory stack can restore default values

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that the memory stack is able to restore default values (provided from ROM or application) for native, dataset or redundant blocks.
Rationale:	Restoring default values participates to the memory stack behavior
Use Case:	
Dependencies:	--
Supporting Material:	
Tested Items:	SRS_Mem_08548, SRS_Mem_00018

⌋(ATR_ATF_00008)

4.1.2.5 [ATR_ATR_00033] AUTOSAR Acceptance Tests shall test notification of the memory stack to the applications

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking the notification of the memory stack to application when jobs are finished
Rationale:	Applications require notification to ensure deterministic behavior
Use Case:	Disable write to RAM mirror while write rquest is pending Use of RAM mirror only after data was loaded from NV device
Dependencies:	--
Supporting Material:	
Tested Items:	SRS_Mem_00125

⌋(ATR_ATF_00008)

4.1.2.6 [ATR_ATR_00034] AUTOSAR Acceptance Tests shall test write protection of the memory stack

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking the write protection of the memory stack for native, redundant of data set blocks
Rationale:	Applications shall not change some of the data loaded at end of line
Use Case:	Disable write to RAM mirror while write rquest is pending Use of RAM mirror only after data was loaded from NV device
Dependencies:	--
Supporting Material:	
Tested Items:	SRS_Mem_08009, SRS_Mem_00127

⌋(ATR_ATF_00008)

4.1.2.7 [ATR_ATR_00038] AUTOSAR Acceptance Tests shall test access and control of communication modes

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking the access and control of the communication mode of communication channels.
Rationale:	The communication mode of communication channels need to be managed based on the needs from applications or diagnostic.
Use Case:	Aggregate requests from multiple applications Notify application of mode switches Keep network awake during diagnostic sessions
Dependencies:	--
Supporting Material:	
Tested Items:	SRS_ModeMgm_00049, SRS_ModeMgm_09080, SRS_ModeMgm_09081, SRS_ModeMgm_09083, SRS_ModeMgm_09084, SRS_ModeMgm_09172, SRS_ModeMgm_09149, SRS_ModeMgm_09085, SRS_ModeMgm_09071, SRS_ModeMgm_09157

⌋(ATR_ATF_00008)

4.1.2.8 [ATR_ATR_00036] AUTOSAR Acceptance Tests shall test the management of shutdown targets

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking the interaction with the bootloader: • the selection of a shutdown target (for reset or sleep) • the access to the current and last shutdown targets • the indication and access to reason of a reset
Rationale:	Applications need the ability to control the boot target for energy management Applications have to behave differently depending on the reason of the last reset
Use Case:	
Dependencies:	--
Supporting Material:	
Tested Items:	SRS_ModeMgm_09128, SRS_ModeMgm_09102, SRS_ModeMgm_09235, SRS_ModeMgm_09101

⌋(ATR_ATF_00008)

4.1.2.9 [ATR_ATR_00037] AUTOSAR Acceptance Tests shall test the management of the ECU state

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking the access to and control of the ECU state by applications
Rationale:	
Use Case:	
Dependencies:	--
Supporting Material:	
Tested Items:	SRS_ModeMgm_09017, SRS_ModeMgm_09116, SRS_ModeMgm_09001, SRS_ModeMgm_09115, SRS_ModeMgm_09164, SRS_ModeMgm_09165, SRS_ModeMgm_09166

⌋(ATR_ATF_00008)

4.2 Bus compatibility

4.2.1 Node management

4.2.1.1 [ATR_ATR_00101] AUTOSAR Acceptance tests shall support bus-off

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that strategy for handling bus-off (bus-off notification, bus-off recovery, …) are supported.
Rationale:	The ECU shall support Bus-off to prevent to overload the bus in case of failure
Use Case:	--
Dependencies:	--
Supporting Material:	AUTOSAR_SRS_CAN, AUTOSAR_SWS_CANStateManager, AUTOSAR_SWS_CANInterface
Tested Items:	SRS_Can_01029, SRS_Can_01143, SRS_Can_01146

⌋(ATR_ATF_00028, ATR_ATF_00014,)

4.2.2 Network management

4.2.2.1 [ATR_ATR_00102] AUTOSAR Acceptance tests shall support network management PDUs

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that network management PDUs (scheduling NM PDUs, busload reduction, initialization,…) are supported.
Rationale:	The ECU shall support network management PDUs to be able to share its active mode information.
Use Case:	--
Dependencies:	--
Supporting Material:	AUTOSAR_SRS_NetworkManagement, AUTOSAR_SWS_CANNetworkManagement
Tested Items:	SRS_Nm_02517, SRS_Nm_00151, SRS_Nm_00044, SRS_Nm_00045, SRS_Nm_02513, SRS_Nm_00047, SRS_Nm_00048, SRS_Nm_00051, SRS_NM_02503

⌋(ATR_ATF_00028, ATR_ATF_00014)

4.2.2.2 [ATR_ATR_00122] AUTOSAR Acceptance tests shall test the state transition of network management state machines

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking the effects of the transitions in network management state machines.
Rationale:	Network management state machines control the communication on buses and interact with applications
Use Case:	Impact on communication from the network management
Dependencies:	--
Supporting Material:	AUTOSAR_SRS_NetworkManagement, AUTOSAR_SWS_CANNetworkManagement
Tested Items:	SRS_Nm_00151, SRS_Nm_00044, SRS_Nm_00045, SRS_Nm_02513, SRS_Nm_00047, SRS_Nm_00048, SRS_Nm_00051, SRS_Nm_00052

⌋(ATR_ATF_00028, ATR_ATF_00014)

4.2.2.3 [ATR_ATR_00111] AUTOSAR Acceptance tests shall support mode management of communication channels

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that mode management of communication channels is supported
Rationale:	The applications have to control and be informed of the state of communication channels
Use Case:	--
Dependencies:	--
Supporting Material:	AUTOSAR_SRS_ModeManagement
Tested Items:	SRS_ModeMgm_09078, SRS_ModeMgm_00049, SRS_ModeMgm_09080, SRS_ModeMgm_09149, SRS_ModeMgm_09085, SRS_ModeMgm_09081, SRS_ModeMgm_09083, SRS_ModeMgm_09084, SRS_ModeMgm_09172, SRS_ModeMgm_09149, SRS_ModeMgm_09090, SRS_ModeMgm_09133 SRS_ModeMgm_09250, SRS_ModeMgm_09251, SRS_ModeMgm_09243, SRS_ModeMgm_09244,

⌋(ATR_ATF_00028, ATR_ATF_00014, ATR_ATF_00008)

4.2.2.4 [ATR_ATR_00114] AUTOSAR Acceptance tests shall support partial networking on CAN

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that partial networking is supported in EIRA and ERA mode, that the NM messages with PN information are produced and handled correctly on a network and that it can be gatewayed
Rationale:	The applications have to control and be informed of the state of partial networks and ECUs need to behave correctly regarding the NM messages with PN information.
Use Case:	Reduction of power consumption
Dependencies:	--
Supporting Material:	
Tested Items:	SRS_Nm_02517, SRS_Nm_02518, SRS_Nm_02519, SRS_Nm_02520, SRS_Nm_02521, SRS_Nm_02522, SRS_Nm_02523, SRS_Nm_02524, SRS_Nm_02525, SRS_Nm_02526, SRS_ModeMgm_09078, SRS_ModeMgm_09247, SRS_ModeMgm_09249, SRS_ModeMgm_09250, SRS_ModeMgm_09251,

⌋(ATR_ATF_00028, ATR_ATF_00014, ATR_ATF_00008)

4.2.2.5 [ATR_ATR_00123] AUTOSAR Acceptance tests shall test the Network Management Voting

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking the functionalities of Network Management Voting.
Rationale:	FlexRay nodes use NM Votes to keep the nodes awake.
Use Case:	Impact on communication from the network management
Dependencies:	--
Supporting Material:	AUTOSAR_SRS_FlexRay, AUTOSAR_SRS_NetworkManagement. AUTOSAR_SWS_FlexRayNetworkManagement
Tested Items:	SRS_Nm_02511, SRS_Fr_05061

⌋(ATR_ATF_00028, ATR_ATF_00014)

4.2.3 Diagnostic features

4.2.3.1 [ATR_ATR_00103] AUTOSAR Acceptance tests shall support loss of communication

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests to verify the correct implementation of Lost communication DTCs. This would include the criteria to set and clear the Lost communication DTCs
Rationale:	The ECU shall support loss of communication to be able to go in a downgraded mode along with the necessary fail soft action.
Use Case:	--
Dependencies:	--
Supporting Material:	AUTOSAR_SRS_ModeManagement
Tested Items:	SRS_ModeMgm_09083, SRS_ModeMgm_09084

⌋(ATR_ATF_00028, ATR_ATF_00014,)

4.2.3.2 [ATR_ATR_00104] AUTOSAR Acceptance tests shall support bus off DTC

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests to verify the correct implementation of the bus off DTC. This would include the conditions to set and conditions to clear the bus off DTC.
Rationale:	The ECU shall support Bus off DTC to track and warn about the presence of Bus Off issue.
Use Case:	--
Dependencies:	--
Supporting Material:	AUTOSAR_SRS_CAN
Tested Items:	SRS_Can_01146

⌋(ATR_ATF_00028, ATR_ATF_00014,)

4.2.3.3 [ATR_ATR_00105] AUTOSAR Acceptance tests shall support deadline monitoring configuration dependencies

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance test to verify the configuration dependencies of deadline monitoring.
Rationale:	The ECU shall support Deadline monitoring configuration dependencies to be able to monitor CAN frames
Use Case:	Storing CAN timeout errors only when CAN self-diagnosis is active
Dependencies:	--
Supporting Material:	AUTOSAR_SRS_COM
Tested Items:	SRS_Com_02058

⌋(ATR_ATF_00028, ATR_ATF_00014, ATR_ATF_00004)

4.2.3.4 [ATR_ATR_00112] AUTOSAR Acceptance tests shall support reception deadline monitoring

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance test to verify the correct handling of reception deadline monitoring.
Rationale:	
Use Case:	--
Dependencies:	--
Supporting Material:	AUTOSAR_SRS_COM.pdf, AUTOSAR_SRS_RTE.pdf
Tested Items:	SRS_Com_02058, SRS_Com_02088, SRS_Com_02089, SRS_Com_00192, SRS_Rte_00069, SRS_Rte_00147

⌋(ATR_ATF_00028, ATR_ATF_00014, ATR_ATF_00011)

4.2.3.5 [ATR_ATR_00113] AUTOSAR Acceptance tests shall support invalidation of signals

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance test to verify the correct support for invalidation of signals in the transmission and reception path.
Rationale:	
Use Case:	--
Dependencies:	--
Supporting Material:	AUTOSAR_SRS_COM.pdf, AUTOSAR_SRS_RTE.pdf
Tested Items:	SRS_Com_02077, SRS_Com_02079, SRS_Com_02087, SRS_Rte_00078

⌋(ATR_ATF_00028, ATR_ATF_00014, ATR_ATF_00011)

4.2.4 Gateway features

4.2.4.1 [ATR_ATR_00106] AUTOSAR Acceptance tests shall support Set/Reset of Update bit

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance test to verify the correct handling of setting/resetting of the update bit.
Rationale:	The Gateway shall support Set/Reset of Update bit to ensure that data sent on the CAN corresponds to the data received.
Use Case:	--
Dependencies:	--
Supporting Material:	
Tested Items:	SRS_Com_02030

⌋(ATR_ATF_00028, ATR_ATF_00014, ATR_ATF_00018)

4.2.4.2 [ATR_ATR_00120] AUTOSAR Acceptance tests shall support gateway for partial networking information

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance tests for checking that partial networking can be gatewayed between different bus
Rationale:	Gateway has to transfer the partial networking information and busses other than CAN have to transport this information
Use Case:	Reduction of power consumption and heterogenic network where partial networking information has to be communicated outside over a non CAN bus
Dependencies:	--
Supporting Material:	
Tested Items:	SRS_Nm_02517, SRS_PduR_06123

⌋(ATR_ATF_00028, ATR_ATF_00014, ATR_ATF_00008)

4.2.5 Communication via Bus

4.2.5.1 [ATR_ATR_00115] AUTOSAR Acceptance tests shall support multiple transmission modes

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance test to verify the correct handling of the transmission modes: Periodic, Direct/n-times, and Mixed with one or two transmission modes defined for an I-PDU.
Rationale:	Commonly used for communication on automotive bus systems
Use Case:	--
Dependencies:	--
Supporting Material:	
Tested Items:	SRS_Com_02083, SRS_Com_02082, SRS_Com_02084, SRS_Com_02080

⌋(ATR_ATF_00028, ATR_ATF_00014, ATR_ATF_00018)

4.2.5.2 [ATR_ATR_00116] AUTOSAR Acceptance tests shall support the control of groups of I-PDUs

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance test to verify the correct handling of starting or stopping groups of I-PDUs.
Rationale:	Groups of I-PDUs are used by application t change modes
Use Case:	--
Dependencies:	--
Supporting Material:	
Tested Items:	SRS_Com_02083, SRS_Com_02082

⌋(ATR_ATF_00028, ATR_ATF_00014, ATR_ATF_00018)

4.2.5.3 [ATR_ATR_00117] AUTOSAR Acceptance tests shall support the transmissions which are triggered by the bus

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance test to verify the correct handling of transmission which are triggered by bus.
Rationale:	Trigger transmit is required for LIN or Flexray communication
Use Case:	--
Dependencies:	--
Supporting Material:	
Tested Items:	SRS_Com_02045

⌋(ATR_ATF_00028, ATR_ATF_00014, ATR_ATF_00018)

4.2.5.4 [ATR_ATR_00118] AUTOSAR Acceptance tests shall support the communication of data larger than the N-PDU of the underlying busses

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance test to verify the correct handling of the communication of data larger than the N-PDU of the underlying busses.
Rationale:	Consistency needed in the transmission / reception of data split in multiple N-PDUs.
Use Case:	Transmission of large data
Dependencies:	--
Supporting Material:	
Tested Items:	SRS_Com_02091, SRS_Com_02095, SRS_Com_02098.

⌋(ATR_ATF_00028, ATR_ATF_00014, ATR_ATF_00018)

4.2.5.5 [ATR_ATR_00121] AUTOSAR Acceptance tests shall support the communication of data with dynamic length

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance test to verify the correct handling of the communication of data with dynamic length
Rationale:	Consistency needed in the transmission / reception of data
Use Case:	Transmission of data with dynamic length
Dependencies:	--
Supporting Material:	
Tested Items:	SRS_Com_02091, SRS_Com_02093, SRS_Com_02094, SRS_Com_02097, SRS_Com_02098.

⌋(ATR_ATF_00028, ATR_ATF_00014, ATR_ATF_00018)

4.2.5.6 [ATR_ATR_00119] AUTOSAR Acceptance tests shall support the OSEK COM 3.0.3 features

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance test to verify the correct handling of OSEK COM 3.0.3 features.
Rationale:	The AUTOSAR COM stack specification is an add-on to OSEK COM 3.0.3
Use Case:	--
Dependencies:	--
Supporting Material:	
Tested Items:	SRS_Com_02037

⌋(ATR_ATF_00028, ATR_ATF_00014, ATR_ATF_00018)

4.2.5.7 [ATR_ATR_00126] AUTOSAR Acceptance tests shall support the IPv4 protocol

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance test to verify that the IPv4 protocol implementation in an ECU conforms to the subset of features selected for AUTOSAR TCP/IP in the IETF RFC 791, 894, 4632, 1122, 1112, 815, and 1191.
Rationale:	An AUTOSAR ECU may communicate to another equipment (inside or outside the vehicle) using the IPv4 protocol (e.g. to support UDP or TCP communication). For this purpose the AUTOSAR stack used in the ECU needs to be tested regarding its interoperability with regard to the automotive subset of IPv4 features selected for AUTOSAR.
Use Case:	• Communication with other ECUs in the vehicle • Communication with diagnostic tools, infrastructure or other vehicles
Dependencies:	--
Supporting Material:	
Tested Items:	• [SRS_Eth_00014] IPv4 shall be implemented according to IETF RFC 791 • [SRS_Eth_00019] TCP and UDP related requirement specified in IETF RFC 1122 shall be implemented • [SRS_Eth_00103] TcpIp shall support generic upper layers

⌋(ATR_ATF_00028, ATR_ATF_00014)

4.2.5.8 [ATR_ATR_00124] AUTOSAR Acceptance tests shall support the UDP protocol

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance test to verify that the UDP protocol implementation in an ECU conforms to the subset of features selected for AUTOSAR TCP/IP in the IETF RFC 768 and 1122.
Rationale:	An AUTOSAR ECU may communicate to another equipment (inside or outside the vehicle) using the UDP protocol. For this purpose the AUTOSAR stack used in the ECU needs to be tested regarding its interoperability with regard to the automotive subset of features from IETF RFC 768 and 1122 selected for AUTOSAR.
Use Case:	• Communication with other ECUs in the vehicle • Communication with diagnostic tools, infrastructure or other vehicles
Dependencies:	--
Supporting Material:	
Tested Items:	• [SRS_Eth_00019] TCP and UDP related requirement specified in IETF RFC 1122 shall be implemented • [SRS_Eth_00018] UDP shall be implemented according to IETF RFC 768 • [SRS_Eth_00005] Both UDP or TCP shall be usable • [SRS_Eth_00103] TcpIp shall support generic upper layers

⌋(ATR_ATF_00028, ATR_ATF_00014)

4.2.5.9 [ATR_ATR_00125] AUTOSAR Acceptance tests shall support the TCP protocol

⌈

Type:	Valid
Description:	AUTOSAR shall provide acceptance test to verify that the TCP protocol implementation in an ECU conforms to the subset of features selected for AUTOSAR TCP/IP in the IETF RFCs 793 and 1122.
Rationale:	An AUTOSAR ECU may communicate to another equipment (inside or outside the vehicle) using the UDP protocol. For this purpose the AUTOSAR stack used in the ECU needs to be tested regarding the its interoperability with regard to the automotive subset of features from IETF RFCs 793 and 1122 selected for AUTOSAR.
Use Case:	• Communication with other ECUs in the vehicle • Communication with diagnostic tools, infrastructure or other vehicles • Establishment of communication • Deterministic communication error handling (checksum and state management)
Dependencies:	--
Supporting Material:	
Tested Items:	• [SRS_Eth_00103] TcpIp shall support generic upper layers • [SRS_Eth_00019] TCP and UDP related requirement specified in IETF RFC 1122 shall be implemented • [SRS_Eth_00017] TCP shall be implemented according to IETF RFC 793

⌋(ATR_ATF_00028, ATR_ATF_00014)

5 References

5.1 Deliverables of AUTOSAR

[1] Software Standardization Template
AUTOSAR_TPS_StandardizationTemplate.pdf
[2] Glossary
AUTOSAR_TR_Glossary.pdf