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Document Change History

Date	Release	Changed by	Change Description
2016-12-15	1.2.0	AUTOSAR Release Management	• Checked and adapted to Classic Platform Release 4.2.2 • Added RS_BRF_01649 for Large Data Com • ATS_COMINDEP_00226 modified
2015-10-31	1.1.0	AUTOSAR Release Management	• Checked and adapted to Classic Platform Release 4.2.1 (ATS_COMINDEP_00205, ATS_COMINDEP_00260, ATS_COMINDEP_00261 modified) • Formalization of the point of control and observation for actions and expected results • Added 29 new test cases
2014-07-30	1.0.0	AUTOSAR Release Management	• Initial release

Disclaimer

Advice for users

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1 Acronyms and abbreviations

Abbreviation / Acronym:	*Description:*
AT	Acceptance Test
CAN	Controller Area Network
ECU	Electronic Control Unit
LT	Lower Tester
NM	Network Management
PCO	Point of Control and Observation
PDU	Protocol Data Unit
RfC	Request for Change
Rx	Reception
SUT	System Under Test
SWC	Software Component
TCP	Test Coordination Procedures
Tx	Transmission
UT	Upper Tester
LdCom	Large Data COM

2 Scope

The following test cases are used to verify the correct behavior of all the communication features which are independent from the bus (i.e. bus can be CAN, LIN, FlexRay or Ethernet).

Each test case documents for which releases of the AUTOSAR software specification it can be used:

- When test cases are known to be applicable for a release, this is mentioned in the “AUTOSAR Releases” field of the test case specifications.
  You can find a summary of the applicability of all test cases to the software specification releases in the “AUTOSAR_TR_ATSReleaseApplicability” document.
- When test cases are known to require adaptations (in their configuration requirements or test sequences), this is mentioned in the “Needed Adaptation to other Releases” field of the test case specifications.

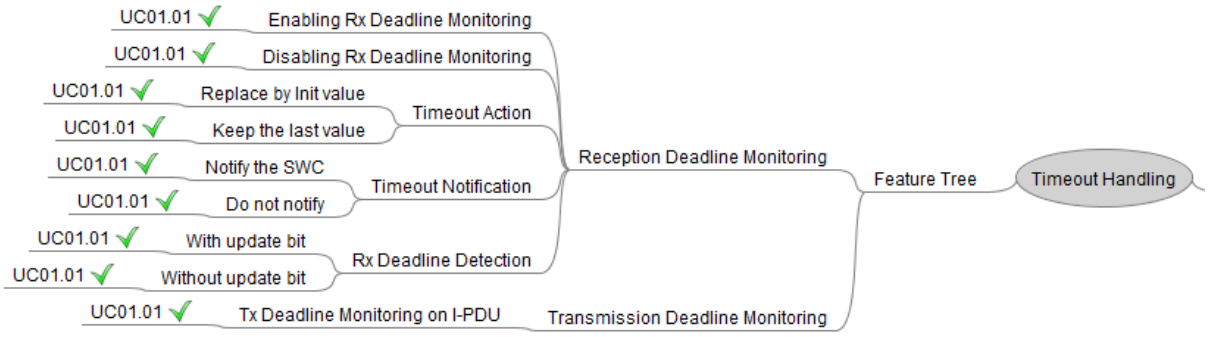
3 RS_BRF_01600 - Timeout Handling

3.1 General Test Objective and Approach

This Test Specification intends to cover the Timeout Handling feature of the Com as described in the AUTOSAR Feature [RS_BRF_01600].

The tests use a test bench environment and Embedded Software Components that use the feature.

This test case document has been established to cover the following features:



This specification gives the description of required tests environments (test bench, uses case, arxml files) and detailed tests cases for executing tests.

3.1.1 Test System

3.1.1.1 Overview on Architecture

In order to cover the required features / sub-features coverage, the environment has been separated in several uses case.

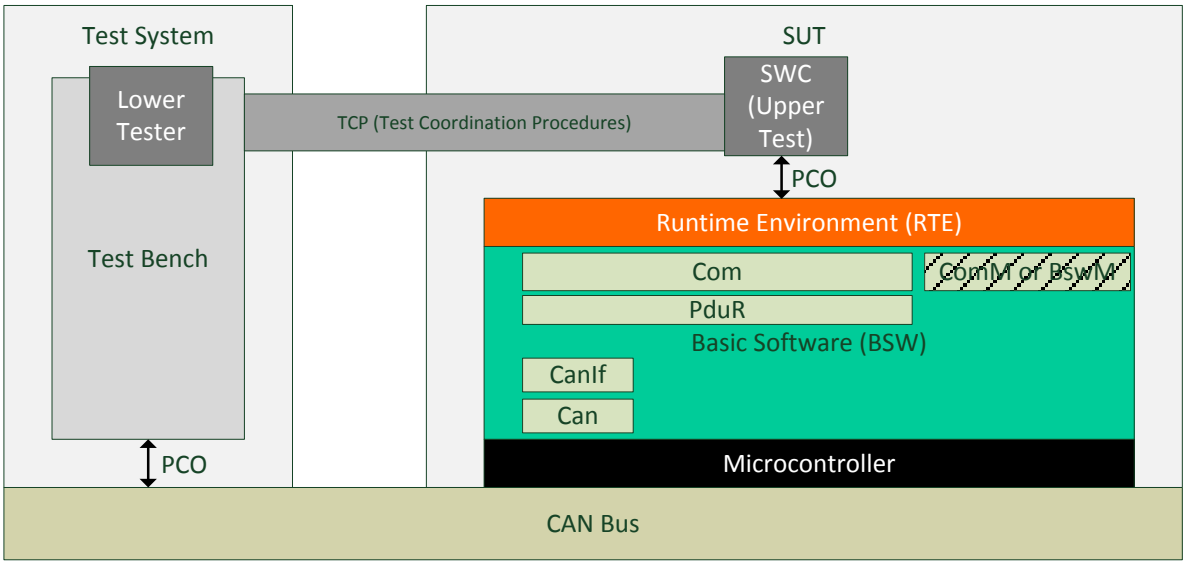
3.1.1.1.1 Use case 01.01: Deadline Monitoring

For this use case, the aim is to test the Timeout Handling feature.

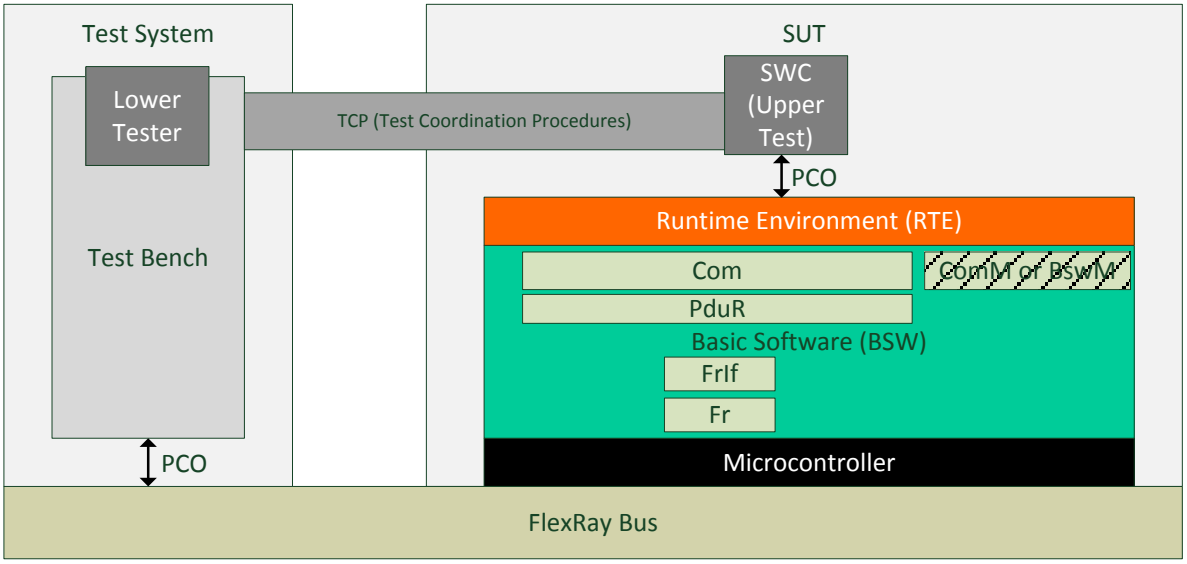
The test system architecture consists of Test Bench that executes only test sequencer and gives actions request through Test coordination Procedures to embedded SWC.

The test architecture depends on the bus chosen for the test:

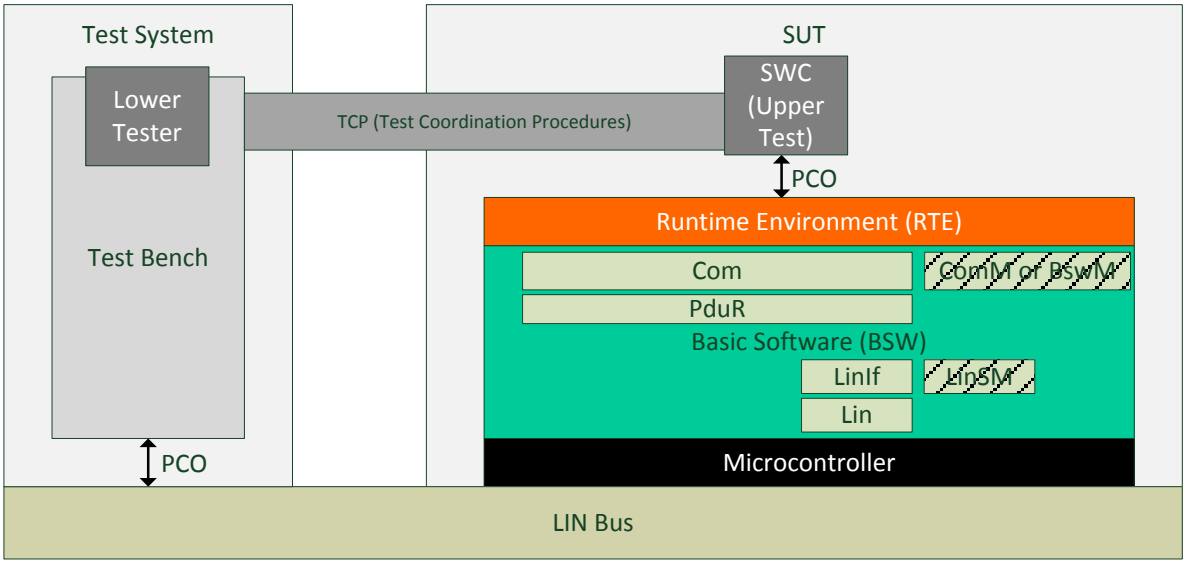
- CAN Bus:



- FlexRay Bus:



- LIN Bus:



3.1.1.2 Specific Requirements

Not Applicable.

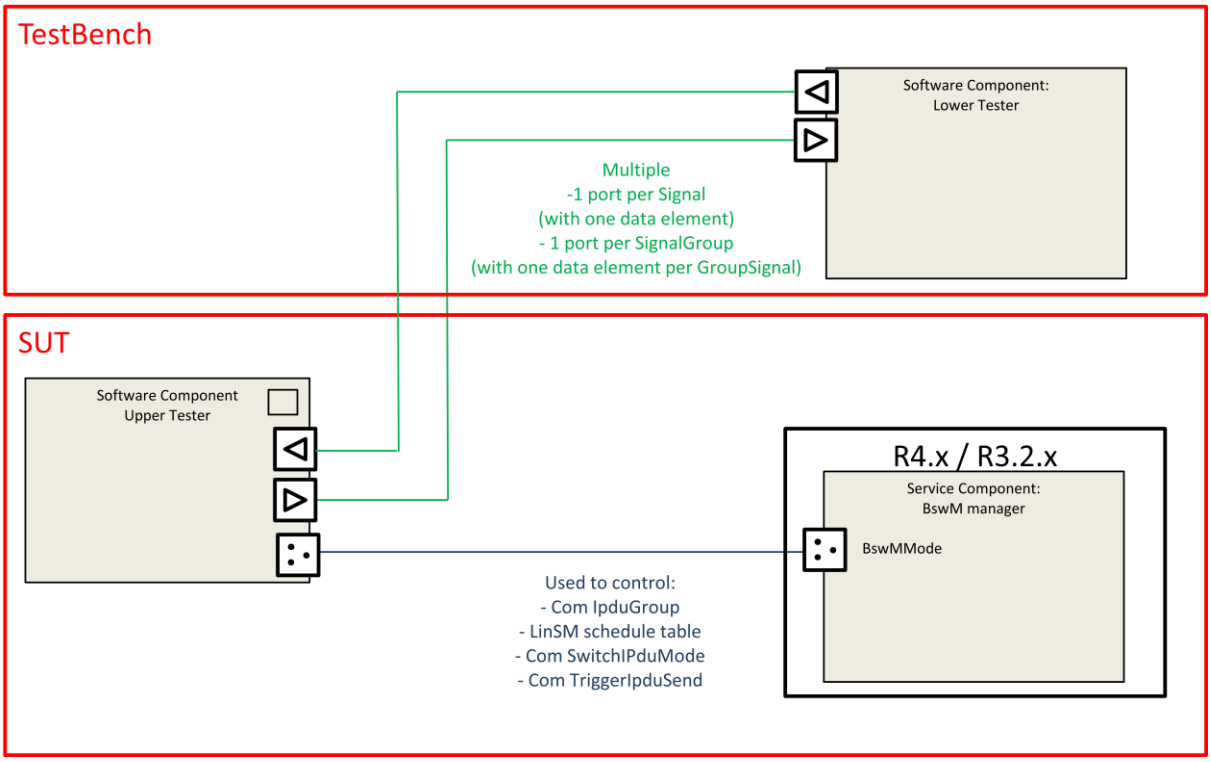
3.1.1.3 Test Coordination Requirements

Not Applicable.

3.1.2 Test Configuration

This section describes sets of requirements on configuration. These sets are later referenced by test cases. No configuration files are provided. They need to be developed when the test suite is implemented.

3.1.2.1 Required ECU Extract of System Description Files



A Mode-Switch Interface IF_AT_SwC_ActionsBswM must be created. The SWC Upper Tester is the owner of this state machine and BswM read the state through BswMMode Port. BswM shall launch actions according to following table (check 3.3 Test Cases for details):

ModeDeclaration	BswM Actions
IPDU_ACTIVATED	OnEntry: -Start IpduGroup
IPDU_DEACTIVATED	OnEntry: -Stop IpduGroup
IPDU_OFF_ON	OnEntry: -Stop IpduGroup -Re-start IpduGroup
TXMODE_TRUE	OnEntry: -SwitchIPduMode to TRUE
TXMODE_FALSE	OnEntry: -SwitchIPduMode to FALSE
TRIG_IPDU_SEND	OnEntry: -TriggerIpduSend
LIN_START_SCHEDULE	OnEntry: -Start LIN Schedule Table
IPDU_ACTIVATED_LIN_START_SCHEDULE	OnEntry: -Start IpduGroup -Start LIN Schedule Table

Unless a different configuration is specified in test case, Sender/Receiver Ports used for communication Non queued Data Element and Explicit Data access for associated runnables.

The communication database is depicted below:

IPduGroup	IPdu	SignalGroup	Signal	Tx ECU	Rx ECU
AT_100_IpduGroup	AT_100_Ipdu_1	AT_100_Sg1	AT_100_Sg1	TestBench	SUT
		AT_100_Sg2	AT_100_Sg2	TestBench	SUT
	AT_100_Ipdu_2	AT_100_Sg3	AT_100_Sg3	TestBench	SUT
		AT_100_Sg4	AT_100_Sg4	TestBench	SUT
AT_101_IpduGroup	AT_101_Ipdu_2	AT_101_SgGr1	AT_101_GrSg1	TestBench	SUT
			AT_101_GrSg2		
AT_102_IpduGroup	AT_102_TxIpdu_1	AT_102_TxSg1	AT_102_TxSg1	SUT	TestBench
AT_104_IpduGroup	AT_104_Ipdu_1	AT_104_Sg1	AT_104_Sg1	TestBench	SUT
AT_105_IpduGroup	AT_105_Ipdu_3	AT_105_Sg2	AT_105_Sg2	TestBench	SUT
AT_107_IpduGroup	AT_107_Ipdu_4	AT_107_SgGr2	AT_107_GrSg1	TestBench	SUT
			AT_107_GrSg2		

Some of the test cases requires specific signal transfer properties and unique IPDU structure to fulfil the test requirements. These are listed here.

AT_738 Signal Properties:

Fibex::FibexCore::CoreCommunication::ISignalToPduMapping	Com First Timeout (ms)	SWCTemplate::Communication::ReceiverComSpec.aliveTimeout and SystemTemplate::Fibex::FibexCore::CoreCommunication::SignalPort.timeout	Com Timeout Notification	SWCTemplate::Communication:ReceiverComSpec::NonqueuedReceiverComSpec.handleTimeoutType
Sn_83	150	500	App_Rte_Com_CbkRxTOut_Sn_81	NONE
Sn_84	50	500	App_Rte_Com_CbkRxTOut_Sn_82	NONE
Sg84	150	500	App_Rte_Com_CbkRxTOut_Sg80	NONE

AT_738_IPDU_Structure:

B7								
B6								
B5	Sn_83							
B4			Sg84_2					
B3								
B2		Sn_84						
B1	Sg84_1							
B0								
	D7	D6	D5	D4	D3	D2	D1	D0

3.1.2.2 Required ECU Configuration Description Files

No specific configuration requirements for ECU Configuration files as they can be derived from EcuExtract.

3.1.2.3 Required Software Component Description Files

No specific configuration requirements for Software Components.

3.1.2.4 Mandatory vs. Customizable Parts

Mandatory parameters are listed in Tests Cases (see 3.3 Test Cases).

Customizable parameters are (these values are test case independent):

- ComSignalType (ISignal.networkRepresentationProps.swBaseType), ComSignalLength (baseTypeSize) and ComBitSize (ISignal.length) => must be consistent to associated dataElement
- ComSignalInitValue (ISignal.initValue)
- PduLength (Pdu.length)
- ComBitPosition (ISignalToIPduMapping.startPosition) and ComUpdateBitPosition (ISignalToIPduMapping.updateIndicationBitPosition) values => the location of these elements in the pdu
- frames identifiers

3.1.3 Test Case Design

Not Applicable.

3.2 Re-usable Test Steps

Not Applicable.

3.3 Test Cases

3.3.1 [ATS_COMINDEP_00100] Managing Rx signal deadline timeout with notification

Test Objective	Managing Rx signal deadline timeout with notification		
ID	ATS_COMINDEP_00100	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00030 ATR: ATR_ATR_00112		
Trace to SWS Item	COM: SWS_Com_00291 COM: SWS_Com_00292 COM: SWS_Com_00500 COM: SWS_Com_00772		
Requirements /	Configuration use case : UC01.01		

Reference to Test Environment	
Configuration Parameters	ComIpdu(SignalIPdu): AT_100_Ipdu_1, AT_100_Ipdu_2 - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal(ISignalToPduMapping): AT_100_Ipdu_1->AT_100_Sg1 - ComUpdateBitPosition(updateIndicationBitPosition) - ComTimeout(ReceiverComSpec.aliveTimeout) = 600ms ComSignal(ISignalToPduMapping): AT_100_Ipdu_1->AT_100_Sg2 - ComUpdateBitPosition(updateIndicationBitPosition) - ComTimeout(ReceiverComSpec.aliveTimeout) = 300ms ComSignal(ISignalToPduMapping): AT_100_Ipdu_2->AT_100_Sg3 - No ComUpdateBitPosition(updateIndicationBitPosition) - ComTimeout(ReceiverComSpec.aliveTimeout) = 1s ComSignal(ISignalToPduMapping): AT_100_Ipdu_2->AT_100_Sg4 - No ComUpdateBitPosition(updateIndicationBitPosition) - ComTimeout(ReceiverComSpec.aliveTimeout) = 4s For all ComSignal/ComSignalGroup (ISignalToPduMapping): - ComTimeoutNotification(no upstream template parameter) is configured - ComRxDataTimeoutAction (NonqueuedReceiverComSpec.handleTimeoutType) = NONE
Summary	The SUT is started. The Rx IPdu 1, IPdu 2 are sent periodically on the bus, with the update-bit of the Signal 1 and Signal 2 set to 1. Two use case must be tested: - use case with IPdu 1 (Ignoring IPDU base timeout handling if all signals are configured with update-bit): 1- After a while, the update-bit of the Signal 1 is set to 0 2- After Signal 1 Timeout, the update-bit of the Signal 2 is set to 0 - use case with IPdu 2 (Smallest configured timeout for signals without update bits): 1- After a while, stop sending IPdu 2 2- Check Signal 3 and Signal 4 Deadline timeout Awaiting result for first use case with IPdu 1 (Ignoring IPDU base timeout handling if all signals are configured with update-bit): • Deadline timeout occurs independently (with configured timeout value) for the Signal 1 and Signal 2. The SUT must notify Deadline timeout to the SWC. • The value of the Signal 1 and Signal 2 must be the same as the last valid received value. Awaiting result for first use case with IPdu 2 (Smallest configured timeout for signals without update bits): • Deadline timeout occurs is the same for the Signal 3 and Signal 4 (Smallest configured timeout). The SUT must notify Deadline timeout to the SWC. • The value of the Signal 3 and Signal 4 must be the same as the last valid received value.
Needed Adaptation to other Releases	None
Pre-conditions	The SUT is started. The frames containing Rx AT_100_Ipdu_1, AT_100_Ipdu_2 are sent periodically Signals values different from Init value

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[LT] Set update-bit of AT_100_Sg1, AT_100_Sg2 with value 1	
Step 2	[SWC] Check the update-bit of AT_100_Sg1 AND AT_100_Sg2 (call to Rte_IsUpdated)	[SWC] Return Value of Rte_IsUpdated for Signal_1 is TRUE Return Value of Rte_IsUpdated for Signal_2 is TRUE
Step 3	[LT] Set update-bit of the AT_100_Sg1 with value 0	
Step 4	[SWC] Check the update-bit of Signal_1 (call to Rte_IsUpdated)	[SWC] Return Value of Rte_IsUpdated for Signal_1 is FALSE
Step 5	[SWC] Waiting for 500ms (<deadline_timeout=600ms - safety_margin=100ms>)	[SWC] The SUT must NOT notify the SWC (Return Value of Rte_Read for AT_100_Sg1 is different from RTE_E_MAX_AGE_EXCEEDED)
Step 6	[SWC] Waiting for 200ms (<deadline_timeout=600ms + safety_margin=100ms> - 500ms)	[SWC] The SUT must notify the SWC (Return Value of Rte_Read for AT_100_Sg1 is RTE_E_MAX_AGE_EXCEEDED)
Step 7	[SWC] Get AT_100_Sg1 Value (Rte_Read)	[SWC] AT_100_Sg1 Value is the same as the last valid received value
Step 8	[LT] Set update-bit of the AT_100_Sg2 with value 0	
Step 9	[SWC] Check the updatebit of AT_100_Sg2 (call to Rte_IsUpdated())	[SWC] Return value of Rte_IsUpdated for AT_100_Sg2 is FALSE
Step 10	[SWC] Wait for 200ms (<deadlinetimeout=300ms - safetymarging=100ms>)	[SWC] The SUT must NOT notify the SWC (Return Value of Rte_Read for AT_100_Sg2 is different from RTE_E_MAX_AGE_EXCEEDED)
Step 11	[SWC] Wait for 200ms ((deadlinetimeout + safetymargin) - 200ms)	[SWC] The SUT must notify the SWC (Return value of Rte_Read for AT_100_Sg2 is RTE_E_MAX_AGE_EXCEEDED)
Step 12	[LT] Stop sending periodically the AT_100_Ipdu2	
Step 13	[SWC] Wait for 900ms (min(deadlinetimeout GrSg3/GrSg4) - safetymargin)	[SWC] The SUT must NOT notify the SWC: - Return Value of Rte_Read for AT_100_Sg3 is different from RTE_E_MAX_AGE_EXCEEDED - Return Value of Rte_Read for AT_100_Sg4 is different from RTE_E_MAX_AGE_EXCEEDED
Step 14	[CP]	[SWC]

	Wait for 200ms	The SUT must notify the SWC: - Return Value of Rte_Read for AT_100_Sg3 is RTE_E_MAX_AGE_EXCEEDED - Return Value of Rte_Read for AT_100_Sg4 is RTE_E_MAX_AGE_EXCEEDED
Post-conditions	None	

3.3.2 [ATS_COMINDEP_00101] Managing Rx signal group deadline timeout with action REPLACE

Test Objective	Managing Rx signal group deadline timeout with action REPLACE		
ID	ATS_COMINDEP_00101	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00030 ATR: ATR_ATR_00112		
Trace to SWS Item	COM: SWS_Com_00292 COM: SWS_Com_00513 COM: SWS_Com_00772		
Requirements / Reference to Test Environment	Configuration use case : UC01.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignalGroup(ISignalToPduMapping): - ComUpdateBitPosition(updateIndicationBitPosition) is configured - ComTimeout(ReceiverComSpec.aliveTimeout) is configured - ComTimeoutNotification(no upstream template parameter) is configured - ComRxDataTimeoutAction (NonqueuedReceiverComSpec.handleTimeoutType) = REPLACE		
Summary	The SUT is started. The Rx IPdu 2 is sent periodically on the bus, with the update-bit of the Signal Group 1 set to 1. After a while, the update-bit of the Signal Group 1 is set to 0. Hint: To perform this test, the COM Bsw should be configured with ComTimeOutNotification on SignalGroup level (not exist at ICC1 level).		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. The frame containing Rx IPdu 2 is sent periodically Signal value different from Init value		
Main Test Execution			

Test Steps		Pass Criteria
Step 1	[LT] Set update-bit of the SignalGroup_1 with value 1	
Step 2	[SWC] Check the update-bit of SignalGroup_1 (call to Rte_IsUpdated)	[SWC] Return Value of Rte_IsUpdated for SignalGroup_1 is TRUE
Step 3	[LT] Set update-bit of SignalGroup_1 with value 0	
Step 4	[SWC] Check the update-bit of SignalGroup_1 (call to Rte_IsUpdated)	[SWC] Return Value of Rte_IsUpdated for SignalGroup_1 is FALSE
Step 5	[CP] Waiting for <deadline_timeout>	
Step 6	[SWC] Get signalGroup_1 Value (Rte_Read())	[SWC] Return Value of Rte_Read should be equal to RTE_E_MAX_AGE_EXCEEDED SignalGroup_1 Value is set to InitValue
Post-conditions	None	

3.3.3 [ATS_COMINDEP_00102] Managing Tx Ipdu deadline timeout

Test Objective	Managing Tx Ipdu deadline timeout		
ID	ATS_COMINDEP_00102	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00030		
Trace to SWS Item	COM: SWS_Com_00304 COM: SWS_Com_00445 COM: SWS_Com_00481		
Requirements / Reference to Test Environment	Configuration use case : UC01.01 In order to block sending of Tx IPdu 1, one of these means can be used: - If applied on CAN bus, the bus is overloaded by CAN frame (so that the Tx IPdu 1 cannot be sent by the SUT) or LowerTester stop its CAN Controller (Hint: In this case, [BUSOFF detection Timer > Tx_deadline_timeout] and no rule in BswM shall stop associated IpduGroup if BUSOFF is detected). - If applied on FlexRay/LIN bus, Tester must be intrusive to block the notification (lock interrupt, No TxConfirmation configured in FrIf/LinIf		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- ComTxModeMode (TransmissionModeTiming) = PERIODIC (CyclicTiming) ComSignal(ISignalToPduMapping):		

	- ComTimeout(ReceiverComSpec.aliveTimeout) is configured - ComTimeoutNotification(no upstream template parameter) is configured - DataSendCompletedEvent mapped on signal transmission (ComNotification is configured)
Summary	The SUT is started. The Tx IPdu 1 is sent periodically on the bus. After a while, the sending of Tx IPdu 1 is blocked. Expected result: The SUT must notify the SWC that the deadline timeout occurs for the Tx IPdu 1.
Needed Adaptation to other Releases	None
Pre-conditions	The SUT is started. The frame containing Tx IPdu 1 is sent periodically.

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[LT] Send application frames to the SUT	
Step 2	[LT] Check Tx IPdu_1 is received on the bus	[LT] The Tx IPdu_1 is sent periodically by SUT on the bus
Step 3	[LT] Make correct transmission impossible (e.g. stop acknowledging can frames, overload, destroy frames, ...) avoiding bus off handling by CanSM	
Step 4	[SWC] Update value of TxIPdu_1 -> TxSignal_1 (Rte_Write)	
Step 5	[CP] Wait for <deadlinetimeout - safetymargin>	[SWC] Return Value of Rte_Feedback is NOT RTE_E_TIMEOUT (The SUT has NOT notified the SWC) DataSendCompletedEvent NOT called
Step 6	[SWC] Waiting for 2 x <safetymargin>	[SWC] Return Value of Rte_Feedback is RTE_E_TIMEOUT (The SUT has notified the SWC) DataSendCompletedEvent NOT called
Post-conditions	None	

3.3.4 [ATS_COMINDEP_00104] Disabling/Enabling Rx Deadline monitoring

Test Objective	Disabling/Enabling Rx Deadline monitoring		
ID	ATS_COMINDEP_00104	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement	ATR: ATR_ATR_00030 ATR: ATR_ATR_00112		

on Acceptance Test Document	
Trace to SWS Item	COM: SWS_Com_00224 COM: SWS_Com_00225 COM: SWS_Com_00486 COM: SWS_Com_00772
Requirements / Reference to Test Environment	Configuration use case : UC01.01
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal(ISignalToPduMapping): - ComUpdateBitPosition(updateIndicationBitPosition) is configured - ComTimeout(ReceiverComSpec.aliveTimeout) is configured - ComTimeoutNotification(no upstream template parameter) is configured - ComRxDataTimeoutAction (NonqueuedReceiverComSpec.handleTimeoutType) = NONE
Summary	The SUT is started. The Rx Deadline monitoring is disabled. Use Case 1, Rx Deadline monitoring disabled: The Rx IPdu 1 is sent periodically on the bus, with the update-bit of the Signal 1 set to 1. After a while, the update-bit of the Signal 1 is set to 0. Awaiting result : • The SUT must NOT notify the SWC that the deadline timeout occurs for the Signal 1. Use Case 2, Rx Deadline monitoring enabled: The SWC enables the Rx Deadline monitoring. The Rx IPdu 1 is sent periodically on the bus, with the update-bit of the Signal 1 set to 1. After a while, the update-bit of the Signal 1 is set to 0. Awaiting result : • The SUT must notify the SWC that the deadline timeout occurs for the Signal 1.
Needed Adaptation to other Releases	None
Pre-conditions	The SUT is started. The frame containing Rx IPdu 1 is sent periodically

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Disable Rx Deadline Monitoring (request DeadlineMonitoringControl action to BswM)	

Step 2	[LT] Send Rx IPdu_1 on the bus	[LT] The Rx IPdu_1 is sent periodically on the bus
Step 3	[LT] Set update-bit of Signal_1 with value 1	
Step 4	[SWC] Check the update-bit of Signal_1 (call to Rte_IsUpdated)	[SWC] Return Value of Rte_IsUpdated for Signal_1 is TRUE
Step 5	[LT] Set update-bit of Signal_1 with value 0	
Step 6	[SWC] Check the update-bit of Signal_1 (call to Rte_IsUpdated)	[SWC] Return Value of Rte_IsUpdated for Signal_1 is FALSE
Step 7	[CP] Waiting for <deadline_timeout>	[SWC] The SUT must not notify the SWC (Return Value of Rte_Read is different from RTE_E_MAX_AGE_EXCEEDED)
Step 8	[SWC] Enable Rx Deadline Monitoring (request DeadlineMonitoringControl action to BswM)	
Step 9	[LT] Set update-bit of Signal_1 with value 1	
Step 10	[SWC] Check the update-bit of Signal_1 (call to Rte_IsUpdated)	[SWC] Return Value of Rte_IsUpdated for Signal_1 is TRUE
Step 11	[LT] Set update-bit of Signal_1 with value 0	
Step 12	[SWC] Check the update-bit of Signal_1 (call to Rte_IsUpdated)	[SWC] Return Value of Rte_IsUpdated for Signal_1 is FALSE
Step 13	[SWC] Waiting for <deadline_timeout>	[SWC] The SUT must notify the SWC (Return Value of Rte_Read is RTE_E_MAX_AGE_EXCEEDED)
Post-conditions	None	

3.3.5 [ATS_COMINDEP_00105] Managing Rx Ipdu deadline timeout without notification

Test Objective	Managing Rx Ipdu deadline timeout without notification		
ID	ATS_COMINDEP_00105	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00112		
Trace to SWS Item	COM: SWS_Com_00290 COM: SWS_Com_00291 COM: SWS_Com_00470		

	COM: SWS_Com_00772
Requirements / Reference to Test Environment	Configuration use case : UC01.01
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal(ISignalToPduMapping): - ComUpdateBitPosition(updateIndicationBitPosition) is NOT configured - ComTimeout(ReceiverComSpec.aliveTimeout) is configured - ComTimeoutNotification(no upstream template parameter) is not present - ComRxDataTimeoutAction (NonqueuedReceiverComSpec.handleTimeoutType) = REPLACE If applied on Flexray bus: - FlexRay Rx Frame in Dynamic slot If applied on CAN/LIN bus: - Normal Rx Frame
Summary	The SUT is started. The Rx IPdu 3 is sent periodically on the bus. After a while, the Rx IPdu 3 is stopped to be sent. Awaiting result : • The SUT must NOT notify the SWC that the deadline timeout occurs for Rx IPdu 3. • The value of the Signal 2 must be replaced by its Init value.
Needed Adaptation to other Releases	None
Pre-conditions	The SUT is started. The frame containing Rx IPdu 3 is sent periodically
Main Test Execution	
Test Steps	**Pass Criteria**
Step 1	[LT] Send periodically Rx IPdu_3 on the bus with Signal_2 Value equal Value_1 [LT] The Rx IPdu_3 is sent periodically on the bus with Value_1
Step 2	[SWC] Read value of Signal_2 (Rte_Read) [SWC] Signal_2 value is Value_1
Step 3	[LT] Stop sending Rx IPdu_3 on the bus [LT] The Rx IPdu_3 is not sent on bus
Step 4	[CP] Waiting for <deadline_timeout>
Step 5	[SWC] Read value of Signal_2 (Rte_Read) [SWC] The SUT must NOT notify the SWC (Return Value of Rte_Read is NOT RTE_E_MAX_AGE_EXCEEDED) Signal_2 Value is the Init Value
Post-conditions	None

3.3.6 [ATS_COMINDEP_00107] Managing Rx signal group deadline timeout with action NONE

Test Objective	Managing Rx signal group deadline timeout with action NONE		
ID	ATS_COMINDEP_00107	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00112		
Trace to SWS Item	COM: SWS_Com_00292 COM: SWS_Com_00500 COM: SWS_Com_00772		
Requirements / Reference to Test Environment	Configuration use case : UC01.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignalGroup(ISignalToPduMapping): - ComUpdateBitPosition(updateIndicationBitPosition) is configured - ComTimeout(ReceiverComSpec.aliveTimeout) is configured - ComTimeoutNotification(no upstream template parameter) is configured - ComRxDataTimeoutAction (NonqueuedReceiverComSpec.handleTimeoutType) = NONE		
Summary	The SUT is started. The Rx IPdu 4 is sent periodically on the bus, with the update-bit of the Signal Group 2 set to 1. After a while, the update-bit of the Signal Group 2 is set to 0. Awaiting result : • The SUT must notify the SWC that the deadline timeout occurs for the Signal Group 2. • The value of the Signal Group 2 must be the same as the last valid received value.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. The frame containing Rx IPdu 4 is sent periodically		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Send Rx IPdu_4 on the bus with SignalGroup_2 value different from init value		[LT] The Rx IPdu_4 should be sent periodically on the bus
Step 2	[LT] Set update-bit of SignalGroup_2 with value 1		
Step 3	[SWC] Check the update-bit of SignalGroup_2 (call to Rte_IsUpdated)		[SWC] Return Value of Rte_IsUpdated for SignalGroup_2 is TRUE
Step 4	[LT]		

	Set update-bit of the SignalGroup_2 with value 0	
Step 5	[SWC] Check the update-bit of SignalGroup_2 (call to Rte_IsUpdated)	[SWC] Return Value of Rte_IsUpdated for SignalGroup_2 is FALSE
Step 6	[CP] Waiting for <deadline_timeout>	
Step 7	[SWC] Get signalGroup_2 Value (Rte_Read)	[SWC] The SUT must notify the SWC (Return Value of Rte_Read is RTE_E_MAX_AGE_EXCEEDED) SignalGroup_2 Value is the same as the last valid received value
Post-conditions	None	

3.3.7 [ATS_COMINDEP_00738] Signal With ComRxDataTimeoutAction Set To NONE And Reception Deadline Monitoring Expires

Test Objective	Signal With ComRxDataTimeoutAction Set To NONE And Reception Deadline Monitoring Expires		
ID	ATS_COMINDEP_00738	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00291 COM: SWS_Com_00500		
Requirements / Reference to Test Environment	none		
Configuration Parameters	For signal properties, please refer to "AT_738 Signal Properties:" in chapter 3.1.2.1 For IPDU Rx_IPDU_DMTO_None Structure, please refer to "AT_738_IPDU_Structure" in chapter 3.1.2.1		
Summary	The required functionality can be achieved by configuring the ComRxDataTimeoutAction to NONE and using the configured timeout notification for reception deadline monitoring.		
Needed Adaptation to other Releases			
Pre-conditions	DUT shall be in Full communication state		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Transmit Rx_IPDU_DMTO_None frame packed with signals having valid values		[SWC] Com Notification for the corresponding signals are called out
Step 2	[CP] Wait until the deadline monitoring timeout		[SWC] Com timeout notification functions for

	expires (e.g. 500)	all signals are invoked.
Post-conditions	None	

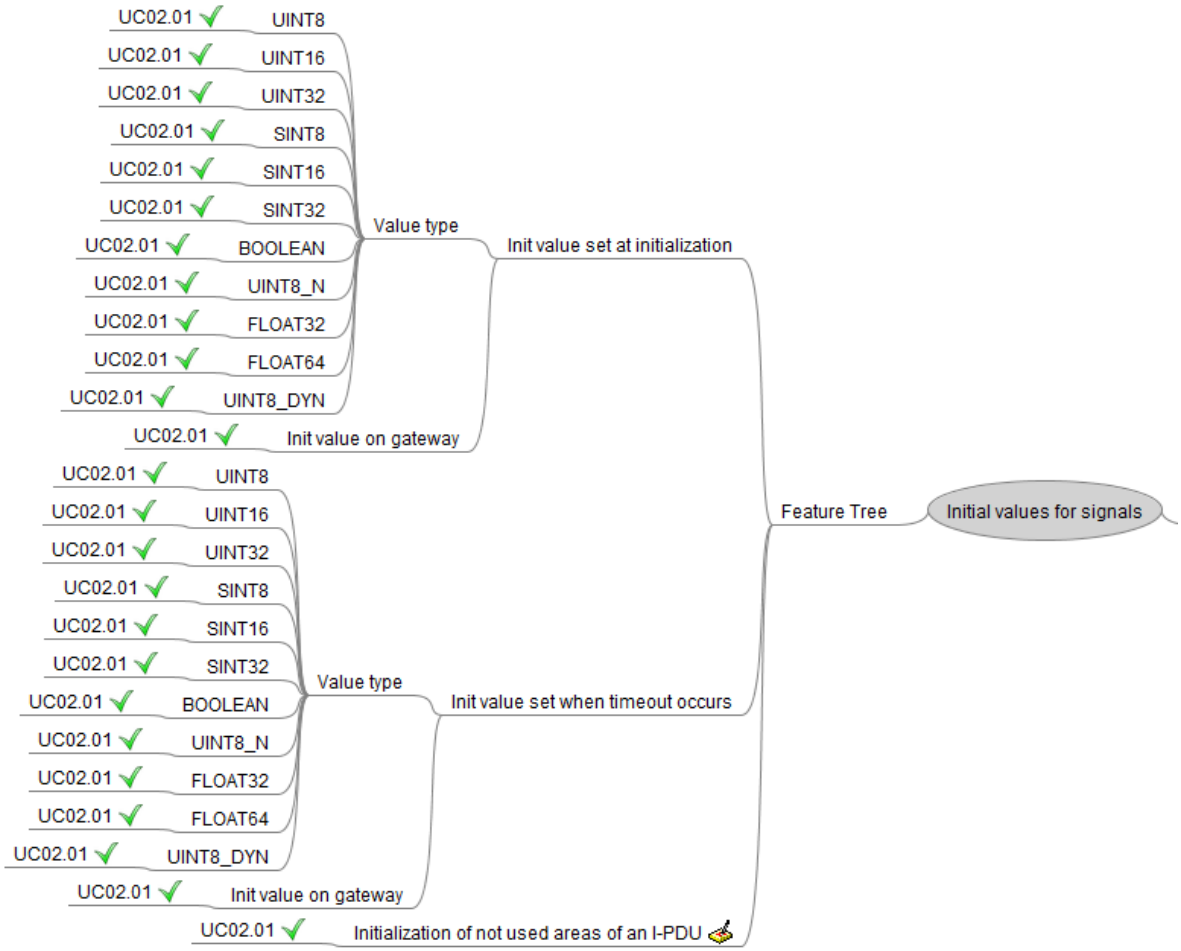
4 RS_BRF_01616 - Initial Values

4.1 General Test Objective and Approach

This Test Specification intends to cover the Initial Values feature of the Com as described in the AUTOSAR Feature [RS_BRF_01616].

The tests use a test bench environment and Embedded Software Components that use the feature.

This test case document has been established to cover the following features:



This specification gives the description of required tests environments (test bench, uses case, arxml files) and detailed tests cases for executing tests.

4.1.1 Test System

4.1.1.1 Overview on Architecture

In order to cover the required features / sub-features coverage, the environment has been separated in several uses case.

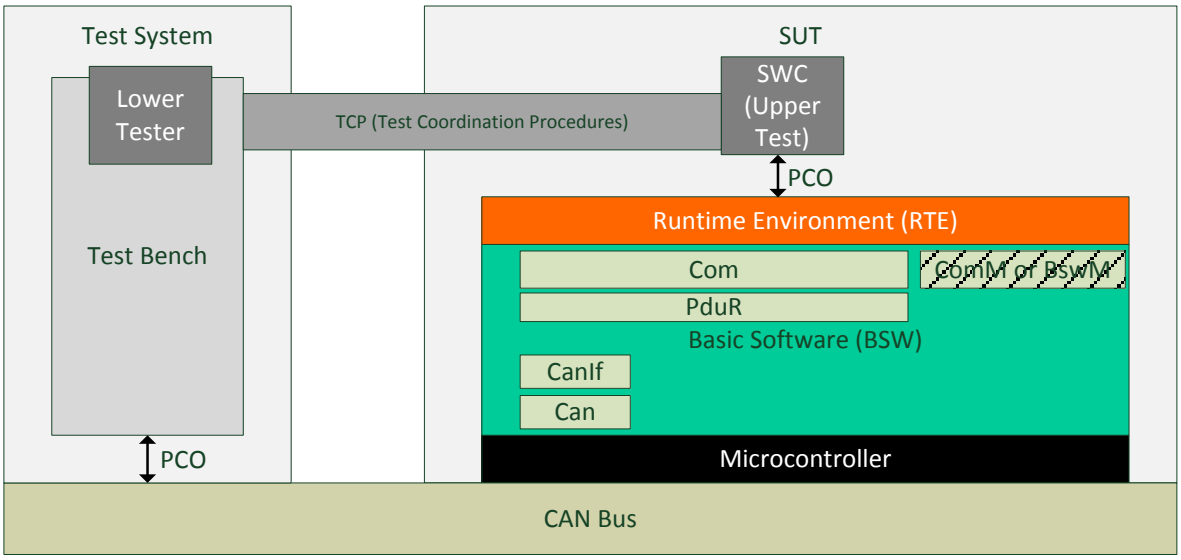
4.1.1.1.1 Use case 02.01: Initial Values

For this use case, the aim is to test the Initial Values features.

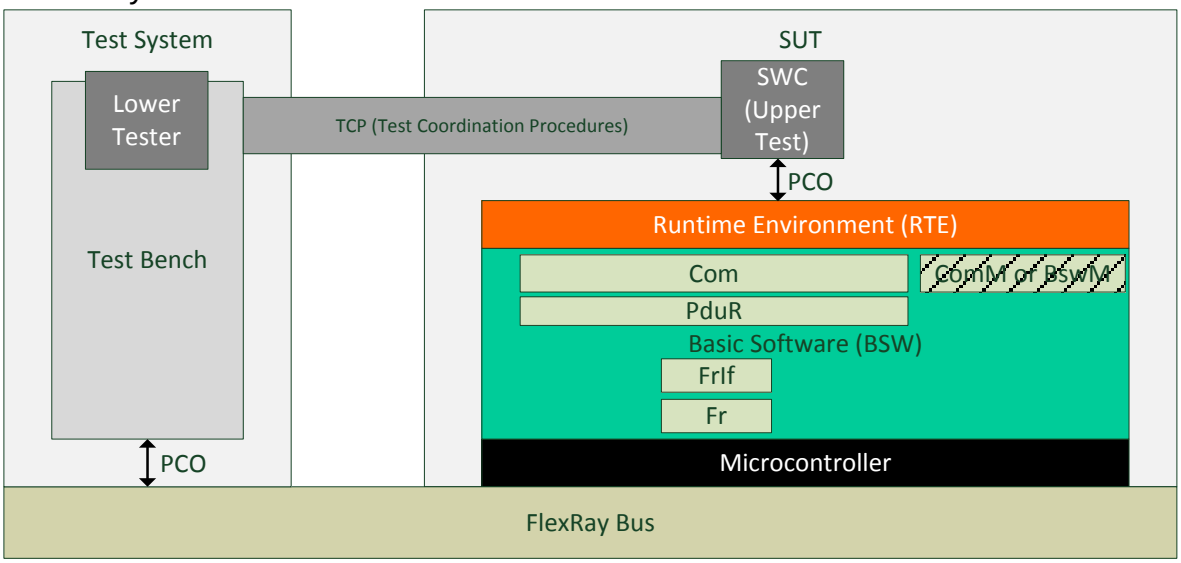
The test system architecture consists of Test Bench that executes only test sequencer and gives actions request through Test coordination Procedures to embedded SWC.

The test architecture depends on the bus chosen for the test:

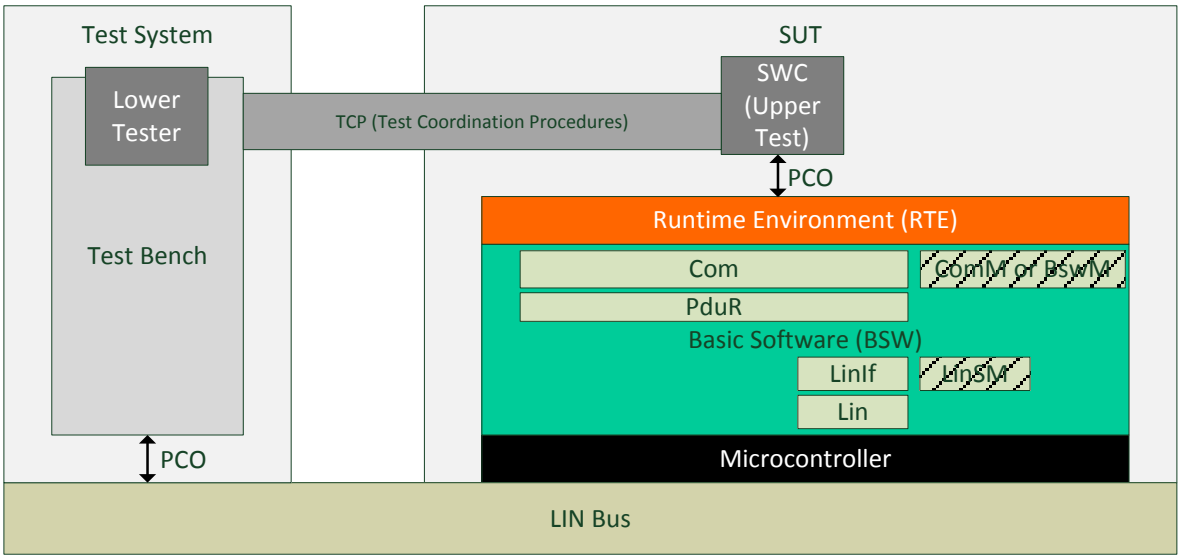
- CAN Bus:



- FlexRay Bus:



- LIN Bus:



4.1.1.2 Specific Requirements

Not Applicable.

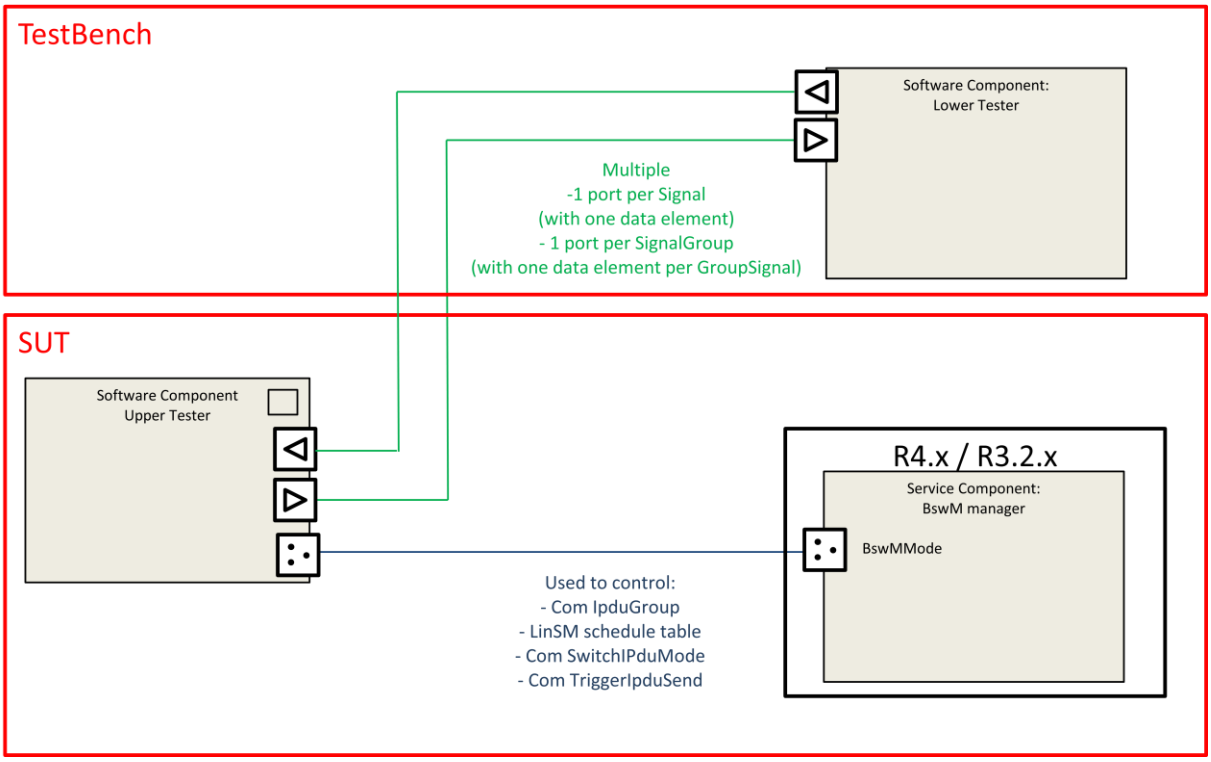
4.1.1.3 Test Coordination Requirements

Not Applicable.

4.1.2 Test Configuration

This section describes sets of requirements on configuration. These sets are later referenced by test cases. No configuration files are provided. They need to be developed when the test suite is implemented.

4.1.2.1 Required ECU Extract of System Description Files



A Mode-Switch Interface IF_AT_SwC_ActionsBswM must be created. The SWC Upper Tester is the owner of this state machine and BswM read the state through BswMMode Port. BswM shall launch actions according to following table (check 4.3 Test Cases for details):

ModeDeclaration	BswM Actions
IPDU_ACTIVATED	OnEntry: -Start IpduGroup
IPDU_DEACTIVATED	OnEntry: -Stop IpduGroup
IPDU_OFF_ON	OnEntry: -Stop IpduGroup -Re-start IpduGroup
TXMODE_TRUE	OnEntry: -SwitchIPduMode to TRUE
TXMODE_FALSE	OnEntry: -SwitchIPduMode to FALSE
TRIG_IPDU_SEND	OnEntry: -TriggerIpduSend
LIN_START_SCHEDULE	OnEntry: -Start LIN Schedule Table
IPDU_ACTIVATED_LIN_START_SCHEDULE	OnEntry: -Start IpduGroup -Start LIN Schedule Table

Unless a different configuration is specified in test case, Sender/Receiver Ports used for communication Non queued Data Element and Explicit Data access for associated runnables.

The communication database is depicted below:

IPduGroup	IPdu	SignalGroup	Signal	Tx ECU	Rx ECU
AT_BRF01616_IpduGroup	AT_BRF01616_IpduRx1	AT_BRF01616_Sg1_1	AT_BRF01616_Sg1_1	TestBench	SUT
		AT_BRF01616_Sg1_2	AT_BRF01616_Sg1_1	TestBench	SUT
		AT_BRF01616_Sg1_3	AT_BRF01616_Sg1_1	TestBench	SUT
		AT_BRF01616_Sg1_4	AT_BRF01616_Sg1_1	TestBench	SUT
	AT_BRF01616_IpduRx2	AT_BRF01616_Sg2_1	AT_BRF01616_Sg2_1	TestBench	SUT
		AT_BRF01616_Sg2_2	AT_BRF01616_Sg2_2	TestBench	SUT
		AT_BRF01616_Sg2_3	AT_BRF01616_Sg2_3	TestBench	SUT
	AT_BRF01616_IpduRx3	AT_BRF01616_Sg3_1	AT_BRF01616_Sg3_1	TestBench	SUT
		AT_BRF01616_Sg3_2	AT_BRF01616_Sg3_2	TestBench	SUT
	AT_BRF01616_IpduRx4	AT_BRF01616_Sg4_1	AT_BRF01616_Sg4_1	TestBench	SUT
	AT_BRF01616_IpduRx5	AT_BRF01616_Sg5_1	AT_BRF01616_Sg5_1	TestBench	SUT
	AT_BRF01616_IpduTx1	AT_BRF01616_Sg6_1	AT_BRF01616_Sg6_1	SUT	TestBench

Some of the test cases requires specific signal transfer properties and unique IPDU structure to fulfil the test requirements. These are listed here.

AT_721 Signal Transfer Properties:

Fibex::FibexCore::CoreCommunication::ISignalToPduMapping	Fibex::FibexCore::CoreCommunication::ISignalToIPduMapping.transferProperty	Com Notification
Sn_01	PENDING	Rte_ComCbkTAck_Sn_01
Sn_02	PENDING	Rte_ComCbkTAck_Sn_02
Sn_03	PENDING	Rte_ComCbkTAck_Sn_03
Sn_04	PENDING	Rte_ComCbkTAck_Sn_04
Sn_05	TRIGGERED	Rte_ComCbkTAck_Sn_05
Sg1	PENDING	Rte_ComCbkTAck_Sg1
Sg2	PENDING	Rte_ComCbkTAck_Sg2
Sg3	PENDING	Rte_ComCbkTAck_Sg3
Sg4	PENDING	Rte_ComCbkTAck_Sg4
Sg5	TRIGGERED	Rte_ComCbkTAck_Sg5

AT_721_PDU structure:

B7	Sn_01						Sg2_2	
B6	Sg3_3					Sn_04		
B5	Sg5_4			Sg4_2				
B4			Sg3_2			Sg3_1		
B3	Sn_05			Sg4_1		Sg1_3		
B2	Sg2_1					Sn_03		
B1	Sg5_2		Sg5_3		Sn_02			
B0	Sg5_1		Sg1_2				Sg1_1	
	D7	D6	D5	D4	D3	D2	D1	D0

AT_722: ComNotification

Fibex::FibexCore::CoreCommunication::ISignalToPduMapping	Com Notification
Sn_06	Rte_ComCbk_Sn_06
Sn_07	Rte_ComCbk_Sn_07
Sn_08	Rte_ComCbk_Sn_08
Sn_09	Rte_ComCbk_Sn_09
Sn_10	Rte_ComCbk_Sn_10
Sg6	Rte_ComCbk_Sg6
Sg7	Rte_ComCbk_Sg7
Sg8	Rte_ComCbk_Sg8
Sg9	Rte_ComCbk_Sg9
Sg10	Rte_ComCbk_Sg10

AT_722_IPDU_Structure

B7	Sg8_2					Sg9_4		
B6	Sg7_3					Sn_10		
B5		Sn_09						
B4	Sg9_1		Sg7_2			Sg9_3		
B3	Sn_08			Sg6_3			Sg10_2	
B2	Sg10_1					Sn_07		
B1	Sg9_2		Sg8_1		Sn_06			
B0	Sg7_1		Sg6_2				Sg6_1	
	D7	D6	D5	D4	D3	D2	D1	D0

4.1.2.2 Required ECU Configuration Description Files

No specific configuration requirements for ECU Configuration files as they can be derived from EcuExtract.

4.1.2.3 Required Software Component Description Files

No specific configuration requirements for Software Components.

4.1.2.4 Mandatory vs. Customizable Parts

Mandatory parameters are listed in Tests Cases (see 4.3 Test Cases).

Customizable parameters are (these values are test case independent):

- ComSignalType (ISignal.networkRepresentationProps.swBaseType), ComSignalLength (baseTypeSize) and ComBitSize (ISignal.length) => must be consistent to associated dataElement
- ComSignalInitValue (ISignal.initValue)
- PduLength (Pdu.length)
- ComBitPosition (ISignalToIPduMapping.startPosition) and ComUpdateBitPosition (ISignalToIPduMapping.updateIndicationBitPosition) values => the location of these elements in the pdu
- frames identifiers

4.1.3 Test Case Design

Not Applicable.

4.2 Re-usable Test Steps

Not Applicable.

4.3 Test Cases

4.3.1 [ATS_COMINDEP_00075] Providing UINT8 initial value if Rx signal was never received

Test Objective	Providing UINT8 initial value if Rx signal was never received		
ID	ATS_COMINDEP_00075	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00020 ATR: ATR_ATR_00021		
Trace to SWS Item	COM: SWS_Com_00217 COM: SWS_Com_00603 COM: SWS_Com_00604		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = UINT8 - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 1 is never sent to the SUT. One SWC gets the value of the Signal 1.1. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. No frame is sent to the SUT		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] No Frame is sent to the SUT		
Step 2	[LT] Check Rx IPdu_1		[LT] The Rx IPdu_1 is never sent to the SUT
Step 3	[SWC] Check value of the Signal_1_1 (Rte_Read())		[SWC] UINT8 initial value provided
Post-conditions	None		

4.3.2 [ATS_COMINDEP_00076] Providing UINT8 initial value if Rx signal deadline timeout occurs

Test Objective	Providing UINT8 initial value if Rx signal deadline timeout occurs		
ID	ATS_COMINDEP_00076	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00112		
Trace to SWS Item	COM: SWS_Com_00470		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComSignalGroup(ISignalToPduMapping): - ComTimeout(ReceiverComSpec.aliveTimeout) is configured - ComRxDataTimeoutAction (NonqueuedReceiverComSpec.handleTimeoutType) = REPLACE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = UINT8 - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 1 is sent periodically to the SUT. After a while, the Rx IPdu 1 is stopped to be sent to the SUT. One SWC gets the value of the Signal 1.1. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. The frame containing Rx IPdu 1 is sent periodically		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Send Rx IPdu_1 with Signal_1_1 Value_1 (different from Signal_1_1 InitValue)		[LT] The Rx IPdu_1 is sent periodically to the SUT
Step 2	[SWC] Check value of Signal_1_1 (Rte_Read())		[SWC] Signal_1_1 Value is different from InitValue (value from BUS is received)
Step 3	[LT] Stop sending Rx IPdu_1		[LT] The Rx IPdu_1 is stopped to be sent to the SUT
Step 4	[CP] Wait for <deadline_timeout>		
Step 5	[SWC] Check value of the Signal_1_1 (Rte_Read())		[SWC] UINT8 initial value provided
Post-conditions	None		

4.3.3 [ATS_COMINDEP_00079] Providing UINT16 initial value if Rx signal was never received

Test Objective	Providing UINT16 initial value if Rx signal was never received		
ID	ATS_COMINDEP_00079	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00020 ATR: ATR_ATR_00021		
Trace to SWS Item	COM: SWS_Com_00217 COM: SWS_Com_00603 COM: SWS_Com_00604		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = UINT16 - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 1 is never sent to the SUT. One SWC gets the value of the Signal 1.2. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. No frame is sent to the SUT		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] No Frame is sent to the SUT		
Step 2	[LT] Check Rx IPdu_1		[LT] The Rx IPdu_1 is never sent to the SUT
Step 3	[SWC] Check value of the Signal_1_2 (Rte_Read())		[SWC] UINT16 initial value provided
Post-conditions	None		

4.3.4 [ATS_COMINDEP_00080] Providing UINT16 initial value if Rx signal deadline timeout occurs

Test Objective	Providing UINT16 initial value if Rx signal deadline timeout occurs

ID	ATS_COMINDEP_00080	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00112		
Trace to SWS Item	COM: SWS_Com_00470		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComSignalGroup(ISignalToPduMapping): - ComTimeout(ReceiverComSpec.aliveTimeout) is configured - ComRxDataTimeoutAction (NonqueuedReceiverComSpec.handleTimeoutType) = REPLACE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = UINT16 - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 1 is sent periodically to the SUT. After a while, the Rx IPdu 1 is stopped to be sent to the SUT. One SWC gets the value of the Signal 1.2. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. The frame containing Rx IPdu 1 is sent periodically		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Send Rx IPdu_1 with Signal_1_2 Value_1 (different from Signal_1_2 InitValue)		[LT] The Rx IPdu_1 is sent periodically to the SUT
Step 2	[SWC] Check value of Signal_1_2 (Rte_Read())		[SWC] Signal_1_2 Value is different from InitValue (value from BUS is received)
Step 3	[LT] Stop sending Rx IPdu_1		[LT] The Rx IPdu_1 is stopped to be sent to the SUT
Step 4	[CP] Wait for <deadline_timeout>		
Step 5	[SWC] Check value of the Signal_1_2 (Rte_Read())		[SWC] UINT16 initial value provided
Post-conditions	None		

4.3.5 [ATS_COMINDEP_00081] Providing UINT32 initial value if Rx signal was never received

Test Objective	Providing UINT32 initial value if Rx signal was never received		
ID	ATS_COMINDEP_00081	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00020 ATR: ATR_ATR_00021		
Trace to SWS Item	COM: SWS_Com_00217 COM: SWS_Com_00603 COM: SWS_Com_00604		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = UINT32 - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 1 is never sent to the SUT. One SWC gets the value of the Signal 1.3. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. No frame is sent to the SUT		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] No Frame is sent to the SUT		
Step 2	[LT] Check Rx IPdu_1		[LT] The Rx IPdu_1 is never sent to the SUT
Step 3	[SWC] Check value of the Signal_1_3 (Rte_Read())		[SWC] UINT32 initial value provided
Post-conditions	None		

4.3.6 [ATS_COMINDEP_00082] Providing UINT32 initial value if Rx signal deadline timeout occurs

Test Objective	Providing UINT32 initial value if Rx signal deadline timeout occurs		
ID	ATS_COMINDEP_00082	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2

Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00112		
Trace to SWS Item	COM: SWS_Com_00470		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComSignalGroup(ISignalToPduMapping): - ComTimeout(ReceiverComSpec.aliveTimeout) is configured - ComRxDataTimeoutAction (NonqueuedReceiverComSpec.handleTimeoutType) = REPLACE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = UINT32 - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 1 is sent periodically to the SUT. After a while, the Rx IPdu 1 is stopped to be sent to the SUT. One SWC gets the value of the Signal 1.3. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. The frame containing Rx IPdu 1 is sent periodically		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Send Rx IPdu_1 with Signal_1_3 Value_1 (different from Signal_1_3 InitValue)		[LT] The Rx IPdu_1 is sent periodically to the SUT
Step 2	[SWC] Check value of Signal_1_3 (Rte_Read())		[SWC] Signal_1_3 Value is different from InitValue (value from BUS is received)
Step 3	[LT] Stop sending Rx IPdu_1		[LT] The Rx IPdu_1 is stopped to be sent to the SUT
Step 4	[CP] Wait for <deadline_timeout>		
Step 5	[SWC] Check value of the Signal_1_3 (Rte_Read())		[SWC] UINT32 initial value provided
Post-conditions	None		

4.3.7 [ATS_COMINDEP_00083] Providing SINT8 initial value if Rx signal was never received

Test Objective	Providing SINT8 initial value if Rx signal was never received		
ID	ATS_COMINDEP_00083	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00020 ATR: ATR_ATR_00021		
Trace to SWS Item	COM: SWS_Com_00217 COM: SWS_Com_00603 COM: SWS_Com_00604		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = SINT8 - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 1 is never sent to the SUT. One SWC gets the value of the Signal 1.4. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. No frame is sent to the SUT		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] No Frame is sent to the SUT		
Step 2	[LT] Check Rx IPdu_1		[LT] The Rx IPdu_1 is never sent to the SUT
Step 3	[SWC] Check value of the Signal_1_4 (Rte_Read())		[SWC] SINT8 initial value provided
Post-conditions	None		

4.3.8 [ATS_COMINDEP_00084] Providing SINT8 initial value if Rx signal deadline timeout occurs

Test Objective	Providing SINT8 initial value if Rx signal deadline timeout occurs		
ID	ATS_COMINDEP_00084	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2

Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00112		
Trace to SWS Item	COM: SWS_Com_00470		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComSignalGroup(ISignalToPduMapping): - ComTimeout(ReceiverComSpec.aliveTimeout) is configured - ComRxDataTimeoutAction (NonqueuedReceiverComSpec.handleTimeoutType) = REPLACE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = SINT8 - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 1 is sent periodically to the SUT. After a while, the Rx IPdu 1 is stopped to be sent to the SUT. One SWC gets the value of the Signal 1.4. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. The frame containing Rx IPdu 1 is sent periodically		

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[LT] Send Rx IPdu_1 with Signal_1_4 Value_1 (different from Signal_1_4 InitValue)	[LT] The Rx IPdu_1 is sent periodically to the SUT
Step 2	[SWC] Check value of Signal_1_4 (Rte_Read())	[SWC] Signal_1_4 Value is different from InitValue (value from BUS is received)
Step 3	[LT] Stop sending Rx IPdu_1	[LT] The Rx IPdu_1 is stopped to be sent to the SUT
Step 4	[CP] Waiting for <deadline_timeout>	
Step 5	[SWC] Check value of the Signal_1_4 (Rte_Read())	[SWC] SINT8 initial value provided
Post-conditions	None	

4.3.9 [ATS_COMINDEP_00086] Providing SINT16 initial value if Rx signal was never received

Test Objective	Providing SINT16 initial value if Rx signal was never received		
ID	ATS_COMINDEP_00086	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00020 ATR: ATR_ATR_00021		
Trace to SWS Item	COM: SWS_Com_00217 COM: SWS_Com_00603 COM: SWS_Com_00604		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = SINT16 - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 2 is never sent to the SUT. One SWC gets the value of the Signal 2.1. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. No frame is sent to the SUT		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] No Frame is sent to the SUT		
Step 2	[LT] Check Rx IPdu_2		[LT] The Rx IPdu_2 is never sent to the SUT
Step 3	[SWC] Check value of the Signal_2_1 (Rte_Read())		[SWC] SINT16 initial value provided
Post-conditions	None		

4.3.10 [ATS_COMINDEP_00087] Providing SINT16 initial value if Rx signal deadline timeout occurs

Test Objective	Providing SINT16 initial value if Rx signal deadline timeout occurs		
ID	ATS_COMINDEP_00087	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2

Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00112		
Trace to SWS Item	COM: SWS_Com_00470		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComSignalGroup(ISignalToPduMapping): - ComTimeout(ReceiverComSpec.aliveTimeout) is configured - ComRxDataTimeoutAction (NonqueuedReceiverComSpec.handleTimeoutType) = REPLACE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = SINT16 - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 2 is sent periodically to the SUT. After a while, the Rx IPdu 2 is stopped to be sent to the SUT. One SWC gets the value of the Signal 2.1. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. The frame containing Rx IPdu 2 is sent periodically		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Send Rx IPdu_2 with Signal_2_1 Value_1 (different from Signal_2_1 InitValue)		[LT] The Rx IPdu_2 is sent periodically to the SUT
Step 2	[SWC] Check value of Signal_2_1 (Rte_Read())		[SWC] Signal_2_1 Value is different from InitValue (value from BUS is received)
Step 3	[LT] Stop sending Rx IPdu_2		[LT] The Rx IPdu_2 is stopped to be sent to the SUT
Step 4	[CP] Waiting for <deadline_timeout>		
Step 5	[SWC] Check value of the Signal_2_1 (Rte_Read())		[SWC] SINT16 initial value provided
Post-conditions	None		

4.3.11 [ATS_COMINDEP_00088] Providing SINT32 initial value if Rx signal was never received

Test Objective	Providing SINT32 initial value if Rx signal was never received		
ID	ATS_COMINDEP_00088	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00020 ATR: ATR_ATR_00021		
Trace to SWS Item	COM: SWS_Com_00217 COM: SWS_Com_00603 COM: SWS_Com_00604		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = SINT32 - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 2 is never sent to the SUT. One SWC gets the value of the Signal 2.2. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. No frame is sent to the SUT		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] No Frame is sent to the SUT		
Step 2	[LT] Check Rx IPdu_2		[LT] The Rx IPdu_2 is never sent to the SUT
Step 3	[SWC] Check value of the Signal_2_2 (Rte_Read())		[SWC] SINT32 initial value provided
Post-conditions	None		

4.3.12 [ATS_COMINDEP_00089] Providing SINT32 initial value if Rx signal deadline timeout occurs

Test Objective	Providing SINT32 initial value if Rx signal deadline timeout occurs		
ID	ATS_COMINDEP_00089	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2

Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00112		
Trace to SWS Item	COM: SWS_Com_00470		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComSignalGroup(ISignalToPduMapping): - ComTimeout(ReceiverComSpec.aliveTimeout) is configured - ComRxDataTimeoutAction (NonqueuedReceiverComSpec.handleTimeoutType) = REPLACE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = SINT32 - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 2 is sent periodically to the SUT. After a while, the Rx IPdu 2 is stopped to be sent to the SUT. One SWC gets the value of the Signal 2.2. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. The frame containing Rx IPdu 2 is sent periodically		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Send Rx IPdu_2 with Signal_2_2 Value_1 (different from Signal_2_2 InitValue)		[LT] The Rx IPdu_2 is sent periodically to the SUT
Step 2	[SWC] Check value of Signal_2_2 (Rte_Read())		[SWC] Signal_2_2 Value is different from InitValue (value from BUS is received)
Step 3	[LT] Stop sending Rx IPdu_2		[LT] The Rx IPdu_2 is stopped to be sent to the SUT
Step 4	[CP] Wait for <deadline_timeout>		
Step 5	[SWC] Check value of the Signal_2_2 (Rte_Read())		[SWC] SINT32 initial value provided
Post-conditions	None		

4.3.13 [ATS_COMINDEP_00090] Providing BOOLEAN initial value if Rx signal was never received

Test Objective	Providing BOOLEAN initial value if Rx signal was never received		
ID	ATS_COMINDEP_00090	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00020 ATR: ATR_ATR_00021		
Trace to SWS Item	COM: SWS_Com_00217 COM: SWS_Com_00603 COM: SWS_Com_00604		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = BOOLEAN - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 2 is never sent to the SUT. One SWC gets the value of the Signal 2.3. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. No frame is sent to the SUT		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] No Frame is sent to the SUT		
Step 2	[LT] Check Rx IPdu_2		[LT] The Rx IPdu_2 is never sent to the SUT
Step 3	[SWC] Check value of the Signal_2_3		[SWC] BOOLEAN initial value provided
Post-conditions	None		

4.3.14 [ATS_COMINDEP_00091] Providing BOOLEAN initial value if Rx signal deadline timeout occurs

Test Objective	Providing BOOLEAN initial value if Rx signal deadline timeout occurs		
ID	ATS_COMINDEP_00091	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2

Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00112		
Trace to SWS Item	COM: SWS_Com_00470		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComSignalGroup(ISignalToPduMapping): - ComTimeout(ReceiverComSpec.aliveTimeout) is configured - ComRxDataTimeoutAction (NonqueuedReceiverComSpec.handleTimeoutType) = REPLACE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = BOOLEAN - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 2 is sent periodically to the SUT. After a while, the Rx IPdu 2 is stopped to be sent to the SUT. One SWC gets the value of the Signal 2.3. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. The frame containing Rx IPdu 2 is sent periodically		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Send Rx IPdu_2 with Signal_2_3 Value_1 (different from Signal_2_3 InitValue)		[LT] The Rx IPdu_2 is sent periodically to the SUT
Step 2	[SWC] Check value of Signal_2_3 (Rte_Read())		[SWC] Signal_2_3 Value is different from InitValue (value from BUS is received)
Step 3	[LT] Stop sending Rx IPdu_2		[LT] The Rx IPdu_2 is stopped to be sent to the SUT
Step 4	[CP] Wait for <deadline_timeout>		
Step 6	[SWC] Check value of the Signal_2_3		[SWC] BOOLEAN initial value provided
Post-conditions	None		

4.3.15 [ATS_COMINDEP_00092] Providing FLOAT32 initial value if Rx signal was never received

Test Objective	Providing FLOAT32 initial value if Rx signal was never received		
ID	ATS_COMINDEP_00092	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00020 ATR: ATR_ATR_00021		
Trace to SWS Item	COM: SWS_Com_00217 COM: SWS_Com_00603 COM: SWS_Com_00604		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = FLOAT32 - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 3 is never sent to the SUT. One SWC gets the value of the Signal 3.1. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. No frame is sent to the SUT		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] No Frame is sent to the SUT		
Step 2	[LT] Check Rx IPdu_3		[LT] The Rx IPdu_3 is never sent to the SUT
Step 3	[SWC] Check value of the Signal_3_1 (Rte_Read())		[SWC] FLOAT32 initial value provided
Post-conditions	None		

4.3.16 [ATS_COMINDEP_00093] Providing FLOAT32 initial value if Rx signal deadline timeout occurs

Test Objective	Providing FLOAT32 initial value if Rx signal deadline timeout occurs		
ID	ATS_COMINDEP_00093	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2

Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00112		
Trace to SWS Item	COM: SWS_Com_00470		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComSignalGroup(ISignalToPduMapping): - ComTimeout(ReceiverComSpec.aliveTimeout) is configured - ComRxDataTimeoutAction (NonqueuedReceiverComSpec.handleTimeoutType) = REPLACE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = FLOAT32 - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 3 is sent periodically to the SUT. After a while, the Rx IPdu 3 is stopped to be sent to the SUT. One SWC gets the value of the Signal 3.1. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. The frame containing Rx IPdu 3 is sent periodically		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Send Rx IPdu_3 with Signal_3_1 Value_1 (different from Signal_3_1 InitValue)		[LT] The Rx IPdu_3 is sent periodically to the SUT
Step 2	[SWC] Check value of Signal_3_1 (Rte_Read())		[SWC] Signal_3_1 Value is different from InitValue (value from BUS is received)
Step 3	[LT] Stop sending Rx IPdu_3		[LT] The Rx IPdu_3 is stopped to be sent to the SUT
Step 4	[CP] Wait for <deadline_timeout>		
Step 5	[SWC] Check value of the Signal_3_1 (Rte_Read())		[SWC] FLOAT initial value provided
Post-conditions	None		

4.3.17 [ATS_COMINDEP_00094] Providing UINT8_N initial value if Rx signal was never received

Test Objective	Providing UINT8_N initial value if Rx signal was never received		
ID	ATS_COMINDEP_00094	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00020 ATR: ATR_ATR_00021		
Trace to SWS Item	COM: SWS_Com_00217 COM: SWS_Com_00603 COM: SWS_Com_00604		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = UINT8_N - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 3 is never sent to the SUT. One SWC gets the value of the Signal 3.2. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. No frame is sent to the SUT		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] No Frame is sent to the SUT		
Step 2	[LT] Check Rx IPdu_3		[LT] The Rx IPdu_3 is never sent to the SUT
Step 3	[SWC] Check value of the Signal_3_2 (Rte_Read())		[SWC] UINT8_N initial value provided
Post-conditions	None		

4.3.18 [ATS_COMINDEP_00095] Providing UINT8_N initial value if Rx signal deadline timeout occurs

Test Objective	Providing UINT8_N initial value if Rx signal deadline timeout occurs		
ID	ATS_COMINDEP_00095	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2

Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00112		
Trace to SWS Item	COM: SWS_Com_00470		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComSignalGroup(ISignalToPduMapping): - ComTimeout(ReceiverComSpec.aliveTimeout) is configured - ComRxDataTimeoutAction (NonqueuedReceiverComSpec.handleTimeoutType) = REPLACE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = UINT8_N - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 3 is sent periodically to the SUT. After a while, the Rx IPdu 3 is stopped to be sent to the SUT. One SWC gets the value of the Signal 3.2. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. The frame containing Rx IPdu 3 is sent periodically		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Send Rx IPdu_3 with Signal_3_2 Value_1 (different from Signal_3_2 InitValue)		[LT] The Rx IPdu_3 is sent periodically to the SUT
Step 2	[SWC] Check value of the Signal_3_2 (Rte_Read())		[SWC] Signal_3_2 Value is different from InitValue (value from BUS is received)
Step 3	[LT] Stop sending Rx IPdu_3 to the SUT		[LT] The Rx IPdu_3 is stopped to be sent to the SUT
Step 4	[CP] Wait for <deadline_timeout>		
Step 5	[SWC] Check value of the Signal_3_2 (Rte_Read())		[SWC] UINT8_N initial value provided
Post-conditions	None		

4.3.19 [ATS_COMINDEP_00096] Providing FLOAT64 initial value if Rx signal was never received

Test Objective	Providing FLOAT64 initial value if Rx signal was never received		
ID	ATS_COMINDEP_00096	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00020 ATR: ATR_ATR_00021		
Trace to SWS Item	COM: SWS_Com_00217 COM: SWS_Com_00603 COM: SWS_Com_00604		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = FLOAT64 - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 4 is never sent to the SUT. One SWC gets the value of the Signal 4.1. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. No frame is sent to the SUT		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] No Frame is sent to the SUT		
Step 2	[LT] Check Rx IPdu_4		[LT] The Rx IPdu_4 is never sent to the SUT
Step 3	[SWC] Check value of the Signal_4_1 (Rte_Read())		[SWC] FLOAT64 initial value provided
Post-conditions	None		

4.3.20 [ATS_COMINDEP_00097] Providing FLOAT64 initial value if Rx signal deadline timeout occurs

Test Objective	Providing FLOAT64 initial value if Rx signal deadline timeout occurs		
ID	ATS_COMINDEP_00097	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2

Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00112		
Trace to SWS Item	COM: SWS_Com_00470		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComSignalGroup(ISignalToPduMapping): - ComTimeout(ReceiverComSpec.aliveTimeout) is configured - ComRxDataTimeoutAction (NonqueuedReceiverComSpec.handleTimeoutType) = REPLACE ComSignal or ComGroupSignal(ISignalToPduMapping): - ComSignalType(ISignal.networkRepresentationProps.swBaseType) = FLOAT64 - ComSignalInitValue (ISignal.initValue) is configured (different from 0)		
Summary	The SUT is started. The Rx IPdu 4 is sent periodically to the SUT. After a while, the Rx IPdu 4 is stopped to be sent to the SUT. One SWC gets the value of the Signal 4.1. Awaiting result : The Initial value is provided to the SWC.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. The frame containing Rx IPdu 4 is sent periodically		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Send Rx IPdu_4 with Signal_4_1 Value_1 (different from Signal_4_1 InitValue)		[LT] The Rx IPdu_4 is sent periodically to the SUT
Step 2	[SWC] Check value of Signal_4_1 (Rte_Read())		[SWC] Signal_4_1 Value is different from InitValue (value from BUS is received)
Step 3	[LT] Stop sending Rx IPdu_4		[LT] The Rx IPdu_4 is stopped to be sent to the SUT
Step 4	[CP] Wait for <deadline_timeout>		
Step 5	[SWC] Check value of the Signal_4_1 (Rte_Read())		[SWC] FLOAT64 initial value provided
Post-conditions	None		

4.3.21 [ATS_COMINDEP_00098] Providing initial value for Tx gatewayed signal if Rx signal was never received

Test Objective	Providing initial value for Tx gatewayed signal if Rx signal was never received		
ID	ATS_COMINDEP_00098	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00021		
Trace to SWS Item	COM: SWS_Com_00217 COM: SWS_Com_00603 COM: SWS_Com_00604 COM: SWS_Com_00701		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): IPdu_5 - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComGroupSignal(ISignalToPduMapping): Signal_5_1 - ComSignalInitValue (ISignal.initValue) is configured (RxInitValue != 0) ComIpdu(SignalIPdu): TxIPdu_1 - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComTxIPduUnusedAreasDefault (unusedBitPattern) is configured - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- ComTxModeMode (TransmissionModeTiming) = PERIODIC (CyclicTiming) ComSignal or ComGroupSignal(ISignalToPduMapping): Signal_6_1 - ComSignalInitValue (ISignal.initValue) is configured (TxInitValue != 0) ComGwMapping (Gateway): Signal_5_1->Signal_6_1 - ComGwSource (Gateway.ISignalMapping) -- ComGwSignal (ComSignal or ComSignalGroup or ComGroupSignal) => Rx Signal_5_1 - ComGwDestination (Gateway.ISignalMapping) -- ComGwSignal (ComSignal or ComSignalGroup or ComGroupSignal) => Tx Signal_6_1		
Summary	The SUT is started. The Rx IPdu 5 is never sent to the SUT. The Tx IPdu 1 is sent periodically by the SUT. Awaiting result : The initial value (TxInitValue) must be sent in the Tx IPdu 1		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. No frame is sent to the SUT The Tx IPdu 1 is sent periodically by SUT		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] No Frame is sent to the SUT		

Step 2	[LT] Check Rx IPdu_5	[LT] The Rx IPdu_5 is never sent to the SUT
Step 3	[CP] Wait for 2 seconds	
Step 4	[LT] Check Signal_6_1 value of Tx IPdu_1	[LT] Signal_6_1 Initial value should be sent by the SUT
Post-conditions	None	

4.3.22 [ATS_COMINDEP_00099] Providing initial value for Tx gatewayed signal if Rx signal deadline timeout occurs

Test Objective	Providing initial value for Tx gatewayed signal if Rx signal deadline timeout occurs		
ID	ATS_COMINDEP_00099	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00112		
Trace to SWS Item	COM: SWS_Com_00217 COM: SWS_Com_00470		
Requirements / Reference to Test Environment	Configuration use case : UC02.01		
Configuration Parameters	ComIpdu(SignalIPdu): IPdu_5 - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal or ComGroupSignal(ISignalToPduMapping): Signal_5_1 - ComSignalInitValue (ISignal.initValue) is configured (RxInitValue != 0) ComIpdu(SignalIPdu): TxIPdu_1 - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComTxIPduUnusedAreasDefault (unusedBitPattern) is configured - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- ComTxModeMode (TransmissionModeTiming) = PERIODIC (CyclicTiming) ComSignal or ComGroupSignal(ISignalToPduMapping): Signal_6_1 - ComSignalInitValue (ISignal.initValue) is configured (TxInitValue != 0) ComGwMapping (Gateway): Signal_5_1->Signal_6_1 - ComGwSource (Gateway.ISignalMapping) -- ComGwSignal (ComSignal or ComSignalGroup or ComGroupSignal) => Rx Signal_5_1 - ComGwDestination (Gateway.ISignalMapping) -- ComGwSignal (ComSignal or ComSignalGroup or ComGroupSignal) => Tx Signal_6_1		
Summary	The SUT is started. The Rx IPdu 5 is sent periodically to the SUT. The Tx IPdu 1 is sent periodically by the SUT, which contains the same value as the one sent in the		

	Rx IPdu 5. After a while, the Rx IPdu 5 is stopped to be sent to the SUT. Awaiting result : The initial value (RxInitValue) must be sent in the Tx IPdu 1
Needed Adaptation to other Releases	None
Pre-conditions	The SUT is started. The Rx IPdu 5 is sent periodically to the SUT The Tx IPdu 1 is sent periodically by SUT
Main Test Execution	
Test Steps	**Pass Criteria**
Step 1	[LT] Send Rx IPdu_5 with Signal_5_1 Value_1 (different from Signal_5_1 InitValue)
	[LT] The Rx IPdu_5 is sent periodically to the SUT
Step 2	[LT] Check Tx IPdu_1 period
	[LT] The Tx IPdu_1 is sent periodically by the SUT
Step 3	[LT] Check Signal_6_1 value of Tx IPdu_1
	[LT] Signal_6_1 Value is different from InitValue Tx Signal_6_1 = Rx Signal_5_1 Value_1
Step 4	[LT] Stop sending Rx IPdu_5 to SUT.
Step 5	[LT] Check Rx IPdu_5
	[LT] The Rx IPdu_5 is stopped to be sent to the SUT
Step 6	[CP] Wait for <deadline_timeout>
Step 7	[LT] Check Signal_6_1 value of Tx IPdu_1
	[LT] Signal_6_1 Initial value should be sent by the SUT
Post-conditions	None

4.3.23 [ATS_COMINDEP_00721] Packing Of IPdu Data

Test Objective	Packing Of IPdu Data		
ID	ATS_COMINDEP_00721	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00305 COM: SWS_Com_00741		

Requirements / Reference to Test Environment	none	
Configuration Parameters	Signals and their transfer properties: Please refer to "AT_721 Signal Transfer Properties" in chapter 4.1.2.1 Tx IPDU STRUCTURE: Please refer to "AT_721_PDU structure" in chapter 4.1.2.1 Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = DIRECT Fibex::FibexCore::CoreCommunication.EventControlledTiming.numberOfRepetitions= 2 Fibex::FibexCore::CoreCommunication::EventControlledTiming.repetitionPeriod = 300 ms	
Summary	The transmission of assigned I-PDU shall be verified using Com transmission confirmation of the respective signals and signal groups along with data observed on the trace log.	
Needed Adaptation to other Releases		
Pre-conditions	DUT shall be in full communication	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Call Rte_Write for Signal_01 Signal_02 Signal_Group_1 and with valid data	[SWC] E_OK shall be returned for the requests
Step 2	-	[LT] Frame shall be observed on the bus by the DUT twice for every Com Transmission Mode Repetition Period
Step 3	-	[SWC] Com transmission confirmation for the configured signals and signal groups shall be invoked
Step 4	[SWC] Call Rte_Write for Signal_03 Signal_Group_4 and Signal_Group_5 with valid data	[SWC] E_OK shall be returned for the request
Step 5	-	[LT] Frame shall be observed on the bus by the DUT twice for every Com Transmission Mode Repetition Period
Step 6	-	[SWC] Com transmission confirmation for the configured signals and signal groups shall be invoked
Post-conditions	None	

4.3.24 [ATS_COMINDEP_00722] Unpacking Of IPdu Data

Test Objective	Unpacking Of IPdu Data		
ID	ATS_COMINDEP_00722	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2

Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00574 COM: SWS_Com_00575		
Requirements / Reference to Test Environment	none		
Configuration Parameters	For signals and their Notification, please refer to "AT_722: ComNotification" in chapter 4.1.2.1 For RX PDU Structure, please refer to "AT_722_IPDU_Structure" in chapter 4.1.2.1		
Summary	The unpacking of I-PDU data shall be verified using Com receive acknowledgement of the respective signals and signal groups.		
Needed Adaptation to other Releases			
Pre-conditions	DUT shall be in Full communication state		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Tester to send the frame with 0x69 0x55 0x0D 0x85 0x40 0x54 0xAA0x0A value		[SWC] Com notification for the signals and signal groups shall be invoked
Step 2	[SWC] Call Rte_read for Signal_Group_6, Signal_Group_7, Signal_Group_8, Signal_06, Signal_07, Signal_08, Signal_09, Signal_10, Signal_Group_9 and Signal_Group_10		[SWC] E_OK shall be returned for all the requests along with the transmitted data
Post-conditions	None		

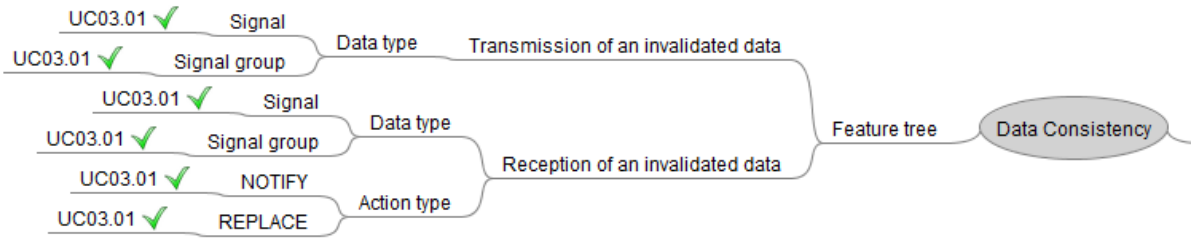
5 RS_BRF_01632 - Data Consistency

5.1 General Test Objective and Approach

This Test Specification intends to cover the Data Consistency feature of the Com as described in the AUTOSAR Feature [RS_BRF_01632].

The tests use a test bench environment and Embedded Software Components that use the feature.

This test case document has been established to cover the following features:



This specification gives the description of required tests environments (test bench, uses case, arxml files) and detailed tests cases for executing tests.

5.1.1 Test System

5.1.1.1 Overview on Architecture

In order to cover the required features / sub-features coverage, the environment has been separated in several uses case.

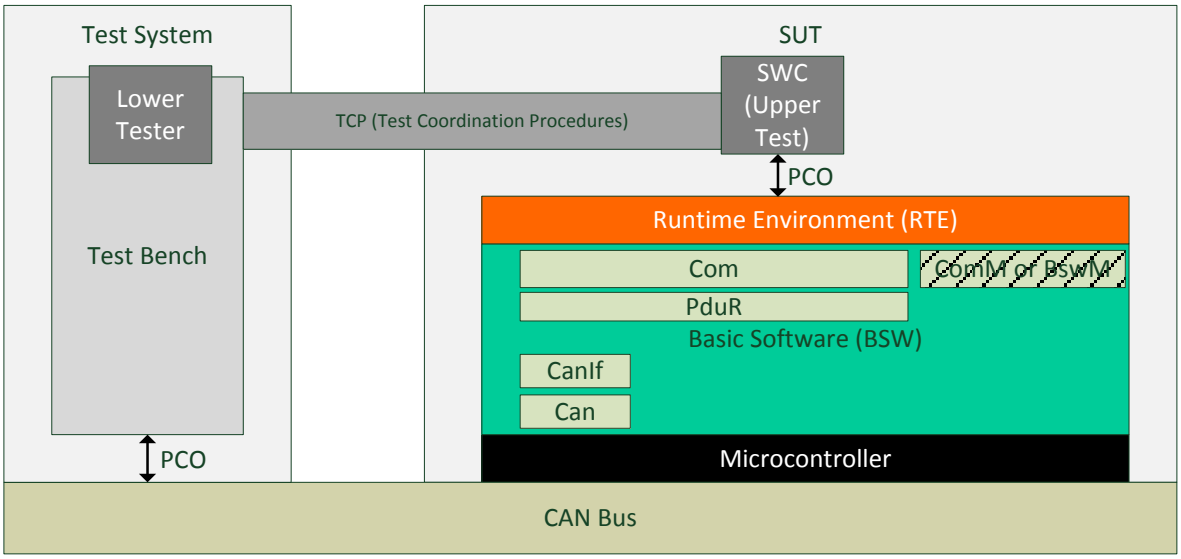
5.1.1.1.1 Use case 03.01: Data consistency on Rx way and Tx way

For this use case, the aim is to test the Data Consistency features.

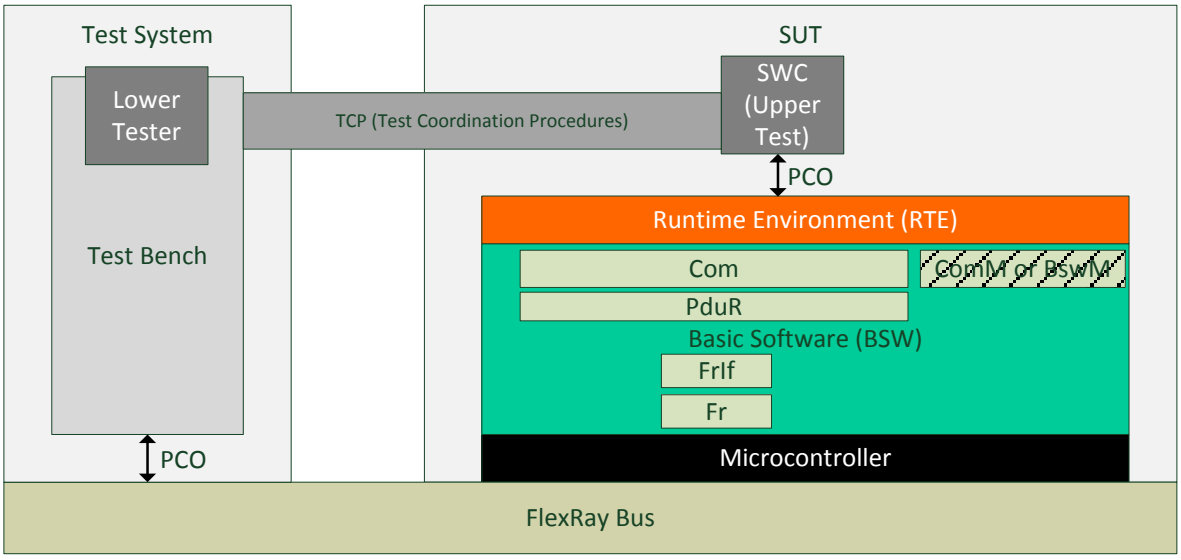
The test system architecture consists of Test Bench that executes only test sequencer and gives actions request through Test coordination Procedures to embedded SWC.

The test architecture depends on the bus chosen for the test:

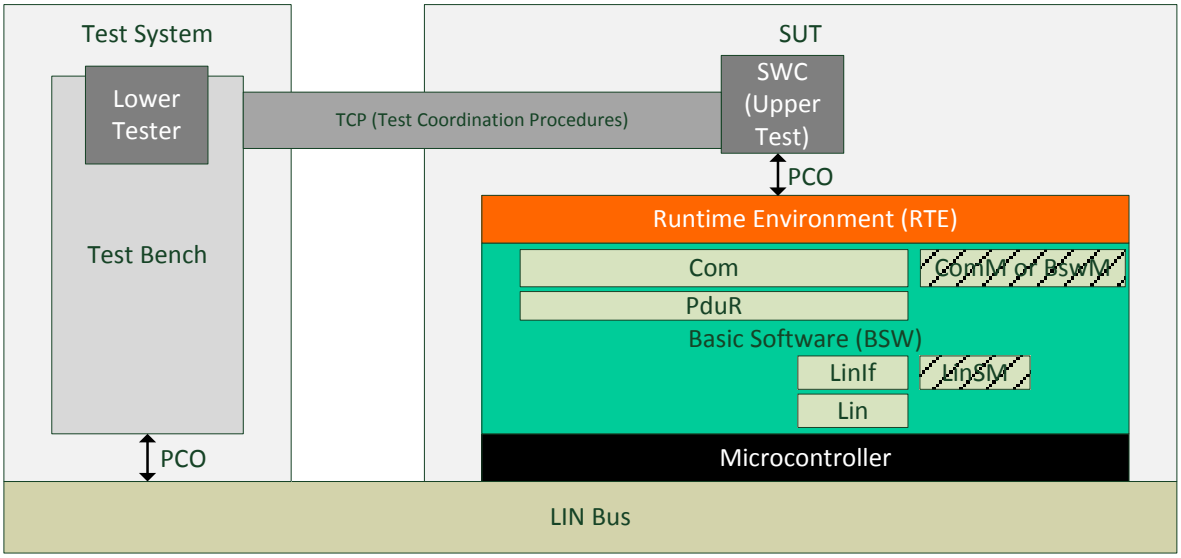
- CAN Bus:



- FlexRay Bus:



- LIN Bus:



5.1.1.2 Specific Requirements

Not Applicable.

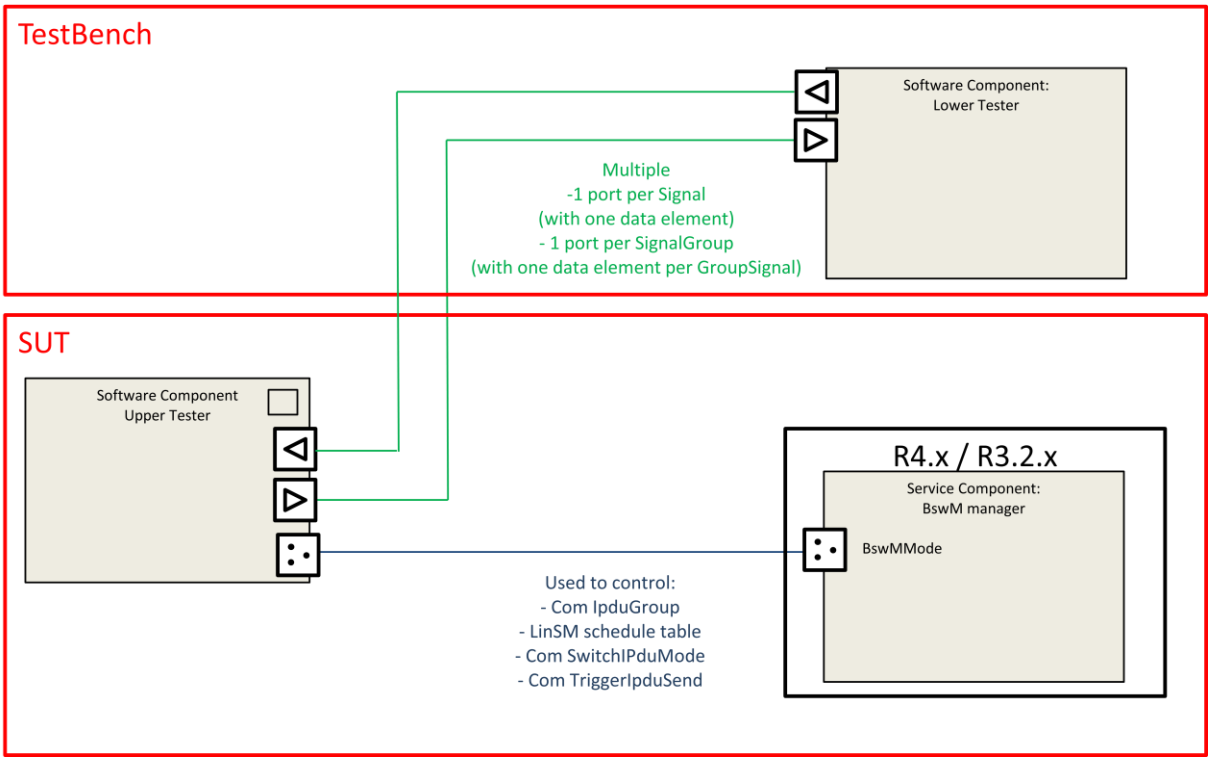
5.1.1.3 Test Coordination Requirements

Not Applicable.

5.1.2 Test Configuration

This section describes sets of requirements on configuration. These sets are later referenced by test cases. No configuration files are provided. They need to be developed when the test suite is implemented.

5.1.2.1 Required ECU Extract of System Description Files



A Mode-Switch Interface IF_AT_SwC_ActionsBswM must be created. The SWC Upper Tester is the owner of this state machine and BswM read the state through BswMMode Port. BswM shall launch actions according to following table (check 5.3 Test Cases for details):

ModeDeclaration	BswM Actions
IPDU_ACTIVATED	OnEntry: -Start IpduGroup
IPDU_DEACTIVATED	OnEntry: -Stop IpduGroup
IPDU_OFF_ON	OnEntry: -Stop IpduGroup -Re-start IpduGroup
TXMODE_TRUE	OnEntry: -SwitchIPduMode to TRUE
TXMODE_FALSE	OnEntry: -SwitchIPduMode to FALSE
TRIG_IPDU_SEND	OnEntry: -TriggerIpduSend
LIN_START_SCHEDULE	OnEntry: -Start LIN Schedule Table
IPDU_ACTIVATED_LIN_START_SCHEDULE	OnEntry: -Start IpduGroup -Start LIN Schedule Table

Unless a different configuration is specified in test case, Sender/Receiver Ports used for communication Non queued Data Element and Explicit Data access for associated runnables.

The communication database is depicted below:

IPduGroup	IPdu	SignalGroup	Signal	Tx ECU	Rx ECU
AT_50_IpduGroup	AT_50_Ipdu1	AT_50_SgGr1	AT_50_GrSg1 AT_50_GrSg2	SUT	TestBench
AT_51_IpduGroup	AT_51_Ipdu1	AT_51_Sg1	AT_51_Sg1	TestBench	SUT
	AT_51_Ipdu2	AT_51_SgGr1	AT_51_GrSg1 AT_51_GrSg2	TestBench	SUT
AT_72_IpduGroup	AT_72_Ipdu	AT_72_Sg1	AT_72_Sg1	SUT	TestBench
AT_74_IpduGroup	AT_74_Ipdu	AT_74_SgGr1	AT_74_GrSg1 AT_74_GrSg2	TestBench	SUT

5.1.2.2 Required ECU Configuration Description Files

No specific configuration requirements for ECU Configuration files as they can be derived from EcuExtract.

5.1.2.3 Required Software Component Description Files

No specific configuration requirements for Software Components.

5.1.2.4 Mandatory vs. Customizable Parts

Mandatory parameters are listed in Tests Cases (see 5.3 Test Cases).

Customizable parameters are (these values are test case independent):

- ComSignalType (ISignal.networkRepresentationProps.swBaseType), ComSignalLength (baseTypeSize) and ComBitSize (ISignal.length) => must be consistent to associated dataElement
- ComSignalInitValue (ISignal.initValue)
- PduLength (Pdu.length)
- ComBitPosition (ISignalToIPduMapping.startPosition) and ComUpdateBitPosition (ISignalToIPduMapping.updateIndicationBitPosition) values => the location of these elements in the pdu
- frames identifiers

5.1.3 Test Case Design

Not Applicable.

5.2 Re-usable Test Steps

Not Applicable.

5.3 Test Cases

5.3.1 [ATS_COMINDEP_00050] Invalidating a Tx signal group when invalidated by the SWC

Test Objective	Invalidating a Tx signal group when invalidated by the SWC		
ID	ATS_COMINDEP_00050	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected	Com	**State**	reviewed

Modules			
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00113		
Trace to SWS Item	COM: SWS_Com_00099		
Requirements / Reference to Test Environment	Configuration use case : UC03.01		
Configuration Parameters	ComIpdu(SignalIPdu): TxIPdu_1 - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- ComTxModeMode (TransmissionModeTiming) = PERIODIC (CyclicTiming) ComSignalGroup(ISignalToPduMapping): SgGr1 - ComGroupSignal(ISignalToPduMapping): GrSg1 -- ComSignalDataInvalidValue (SwDataDefProps.invalidValue) is configured - ComGroupSignal(ISignalToPduMapping): GrSg2 -- ComSignalDataInvalidValue (SwDataDefProps.invalidValue) is configured		
Summary	The SUT is started. A SignalGroup is sent periodically by the SUT. The SWC invalidates The SignalGroup. Awaiting result : The SUT must invalidate each GroupSignal of the SignalGroup.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started. The Tx IPdu 1 is sent periodically on the bus		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[SWC] Update Tx IPdu_1 SgGr1 (Rte_Write()) with value different from Invalid_Value		[LT] The Tx IPdu_1 is sent periodically on the bus SgGr1 is updated Group signal GrSg1 value is different from GrSg1_Invalid_Value Group signal GrSg2 value is different from GrSg2_Invalid_Value
Step 2	[SWC] Invalidate the SignalGroup SgGr1 (Rte_Invalidate())		[LT] SgGr1 is updated Group signal GrSg1 value is GrSg1_Invalid_Value Group signal GrSg2 value is GrSg2_Invalid_Value (The SUT has invalidated each GroupSignal of the SignalGroup)
Post-conditions	None		

5.3.2 [ATS_COMINDEP_00051] Notifying the SWC when a signal or a signal group is received with invalid data

Test Objective	Notifying the SWC when a signal or a signal group is received with invalid data		
ID	ATS_COMINDEP_00051	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00113		
Trace to SWS Item	COM: SWS_Com_00680 COM: SWS_Com_00682 COM: SWS_Com_00717		
Requirements / Reference to Test Environment	Configuration use case : UC03.01		
Configuration Parameters	ComIpdu(SignalIPdu): RxIPdu_1 - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal(ISignalToPduMapping): Sg1 - ComSignalDataInvalidValue (SwDataDefProps.invalidValue) is configured - ComInvalidNotification (no upstream template parameter) is configured - ComDataInvalidAction (PortInterface.InvalidationPolicy) = NOTIFY ComIpdu(SignalIPdu): RxIPdu_2 - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignalGroup(ISignalToPduMapping): SgGr1 - ComDataInvalidAction (PortInterface.InvalidationPolicy) = NOTIFY - ComGroupSignal(ISignalToPduMapping): GrSg1/GrSg2 -- ComSignalDataInvalidValue (SwDataDefProps.invalidValue) is configured -- ComInvalidNotification (no upstream template parameter) is configured		
Summary	This test case validates notification to SWC when receiving a signal in a frame with InvalidValue, and when receiving a groupsignal with invalid value inside a signalgroup.		
Needed Adaptation to other Releases	None		
Pre-conditions	The SUT is started		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Send periodically Rx IPdu_1 with Sg1 Value_1 (different from Sg1 InitValue)		[LT] The Rx IPdu_1 is sent periodically to the SUT
Step 2	[SWC] Check value of Sg1 (Rte_Read())		[SWC] Return value of Rte_Read is RTE_E_OK Sg1 Value is different from InitValue (value from BUS is received)
Step 3	[LT] Send periodically Rx IPdu_1 with Sg1 INVALID value		
Step 4	[SWC]		[SWC]

	Check value of Sg1 (Rte_Read())	Return value of Rte_Read is RTE_E_INVALID Sg1 Value is the last valid value
Step 5	[LT] Send periodically Rx IPdu_2 with: GrSg1 value = GrSg1_Value1 GrSg2 value = GrSg2_Value1 (different from SgGr1 InitValue)	[LT] The Rx IPdu_2 is sent periodically to the SUT
Step 6	[SWC] Check value of SgGr1 (Rte_Read())	[SWC] Return value of Rte_Read is RTE_E_OK Group signal GrSg1 value is GrSg1_Value1 Group signal GrSg2 value is GrSg2_Value1
Step 7	[LT] Send periodically Rx IPdu_2 with: GrSg1 value = GrSg1_InvalidValue GrSg2 value = GrSg2_Value1 (only 1 GroupSignal INVALID)	
Step 8	[SWC] Check value of SgGr1 (Rte_Read())	[SWC] Return value of Rte_Read is RTE_E_INVALID Group signal GrSg1 value is GrSg1_Value1 Group signal GrSg2 value is GrSg2_Value1
Post-conditions	None	

5.3.3 [ATS_COMINDEP_00072] Invalidating a Tx signal when invalidated by the SWC

Test Objective	Invalidating a Tx signal when invalidated by the SWC		
ID	ATS_COMINDEP_00072	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00113		
Trace to SWS Item	COM: SWS_Com_00099		
Requirements / Reference to Test Environment	Configuration use case : UC03.01		
Configuration Parameters	ComIpdu(SignalIPdu): TxIPdu_1 - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming)		

	-- ComTxModeMode (TransmissionModeTiming) = PERIODIC (CyclicTiming) ComSignal(ISignalToPduMapping): Sg1 - ComSignalDataInvalidValue (SwDataDefProps.invalidValue) is configured
Summary	The SUT is started. A signal is sent periodically by the SUT. The SWC invalidates this signal. Awaiting result : The SUT must invalidate the signal.
Needed Adaptation to other Releases	None
Pre-conditions	The SUT is started. The Tx IPdu 1 is sent periodically on the bus
Main Test Execution	
Test Steps	**Pass Criteria**
Step 1	[SWC] Update Tx IPdu_1 Sg1 (Rte_Write()) with value different from Invalid_Value [LT] The Tx IPdu_1 is sent periodically on the bus Sg1 is updated Signal Sg1 value is different from Sg1_Invalid_Value
Step 2	[SWC] Invalidate the Signal Sg1 (Rte_Invalidate()) [LT] Sg1 is updated Signal Sg1 value is Sg1_Invalid_Value (The SUT has invalidated the signal)
Post-conditions	None

5.3.4 [ATS_COMINDEP_00074] Replacing by the init value when a signal group is received invalid

Test Objective	Replacing by the init value when a signal group is received invalid		
ID	ATS_COMINDEP_00074	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules		**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00113		
Trace to SWS Item	COM: SWS_Com_00683		
Requirements / Reference to Test Environment	Configuration use case : UC03.01		
Configuration Parameters	ComIpdu(SignalIPdu): RxIPdu_1 - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignalGroup(ISignalToPduMapping): SgGr1 - ComDataInvalidAction (PortInterface.InvalidationPolicy) = REPLACE - ComGroupSignal(ISignalToPduMapping): GrSg1/GrSg2		

	-- ComSignalDataInvalidValue (SwDataDefProps.invalidValue) is configured -- ComInvalidNotification (no upstream template parameter) is configured	
Summary	The SUT is started. The Rx IPdu 1 is sent periodically to the SUT. Inside this Frame, there is one signal group. One group signal inside this signal group is set INVALID. Awaiting result : The SUT shall replace the values of all group signals by their init values.	
Needed Adaptation to other Releases	None	
Pre-conditions	The SUT is started The Rx IPdu 1 is sent periodically to the SUT	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[LT] Send periodically Rx IPdu_1 with: GrSg1 value = GrSg1_Value1 GrSg2 value = GrSg2_Value1 (different from SgGr1 InitValue)	[LT] The Rx IPdu_1 is sent periodically to the SUT
Step 2	[SWC] Check value of SgGr1 (Rte_Read())	[SWC] Return value of Rte_Read is RTE_E_OK Group signal GrSg1 value is GrSg1_Value1 Group signal GrSg2 value is GrSg2_Value1
Step 3	[LT] Send periodically Rx IPdu_1 with: GrSg1 value = GrSg1_InvalidValue GrSg2 value = GrSg2_Value1 (only 1 GroupSignal INVALID)	
Step 4	[SWC] Check value of SgGr1 (Rte_Read())	[SWC] Return value of Rte_Read is RTE_E_OK Group signal GrSg1 value is GrSg1_Value_Init Group signal GrSg2 value is GrSg2_Value_Init (The SUT has replaced the values of whole Group signals by their init values)
Post-conditions	None	

6 RS_BRF_01649- LdCom data transfer (Bus independent)

6.1 General Test Objective and Approach

This Test Specification intends to cover communication features of array type signals, using LdCom as Interaction Layer, independent of underlying bus as described in AUTOSAR Feature [RS_BRF_01649].

The tests use a Test Bench environment and Embedded Software Components that uses the feature.

This test case document has been established to cover the following features:

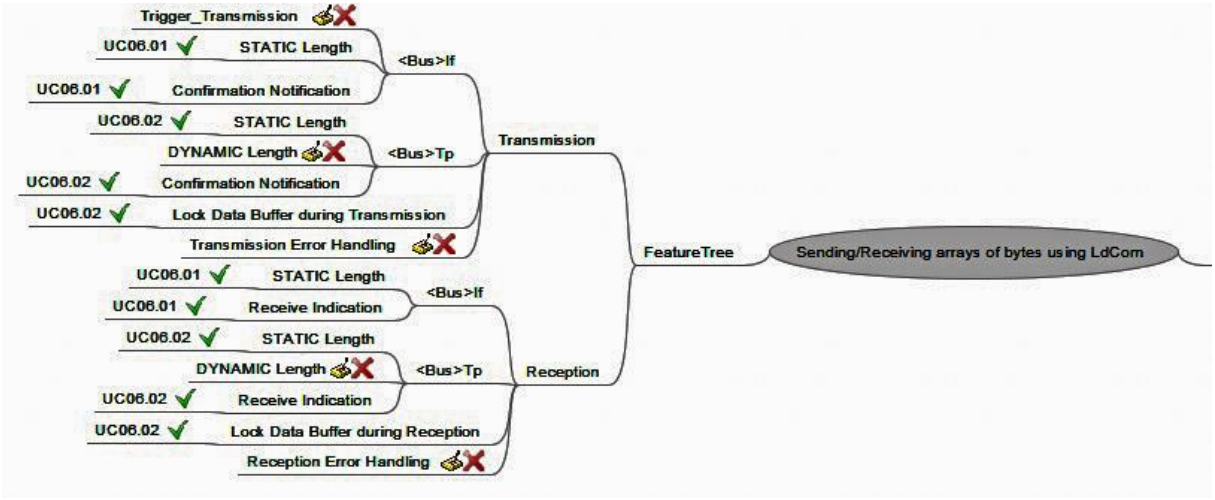


Figure 1: Mindmap of features covered and not covered in the test cases

This specification gives the description of required test environment (Test Bench, Use cases, arxml files) and detailed test case for executing tests.

6.1.1 Test System

6.1.1.1 Overview on Architecture

In order to cover the required features/sub-features, the environment has been separated into several Use cases.

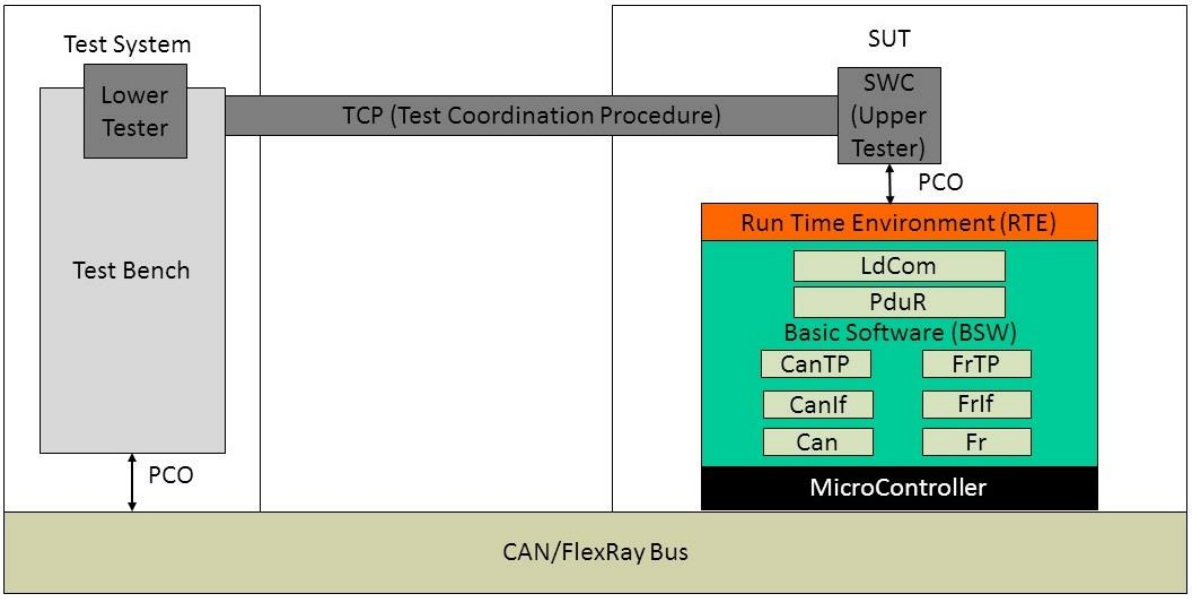


Figure 2: Test System architecture

The Test System architecture consists of Test Bench that executes only test sequences and gives action request through test coordination procedures to embedded SWC.

6.1.1.1.1 Use case 06.01: Data Transfer of Array Signal of Size lesser than or equal to<BUS> Capability

For this use case, the aim is to test data transfer features of LdCom, for array signal of length lesser than or equal to underlying bus capability.

6.1.1.1.2 Use case 06.02: Data Transfer of Array Signal of size more than <BUS> Capability

For this use case, the aim is to test data transfer features of LdCom, for array signal of length greater than underlying bus capability.

6.1.1.2 Specific Requirements

Not Applicable.

6.1.1.3 Test Coordination Requirements

Not Applicable.

6.1.2 Test Configuration

This section describes sets of requirements on configuration. These sets are later referenced by test cases. No configuration files are provided, they need to be developed when the test suite is implemented.

6.1.2.1 Required ECU Extract of System Description Files

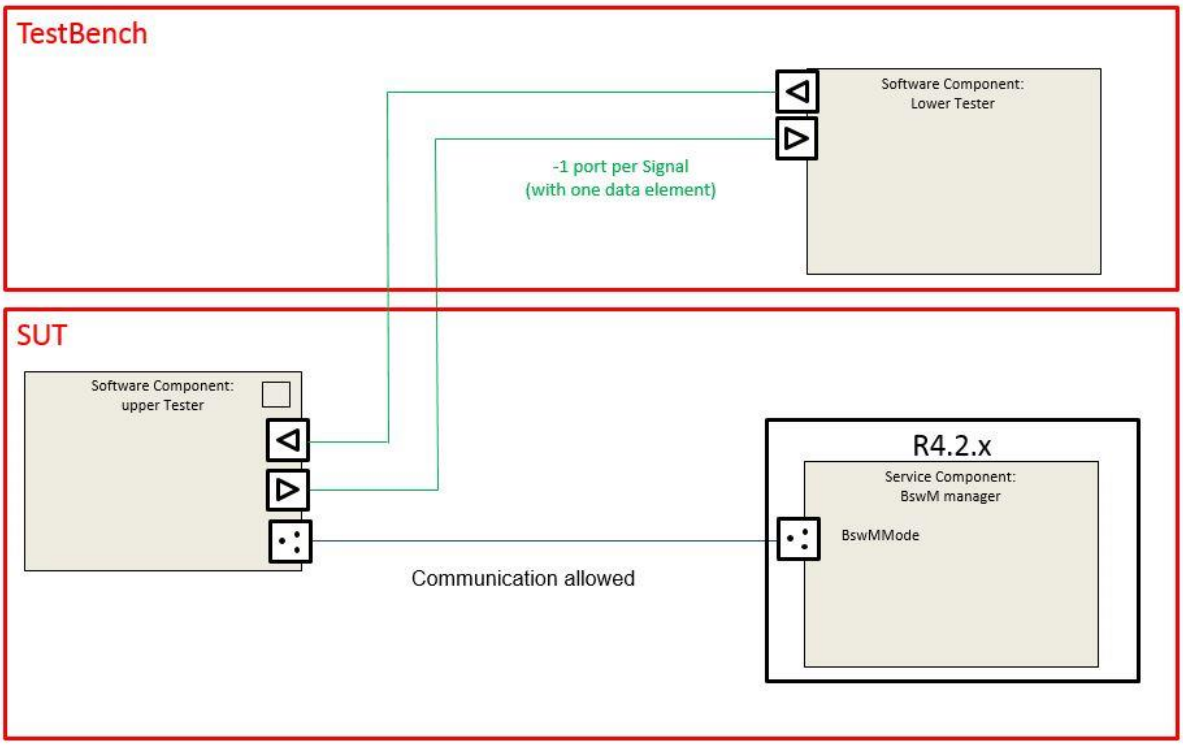


Figure 3: Required SWC description

From Software Component point of view, for each test case, the communication interfaces are defined as follows:

Port name	Data element type	Data element	Mapping	Type
<TestCaseName>_<signalname>	UINT8_N	<signalname>	<signalname>	signal

Table 1: SWC Interface used

Therefore ports and signals names change according to Test Case number, but the building rule is the same.

For API calls Rte_Write(), Rte_Send(), Rte_Read(),Rte_Receive(), Rte_Feedback() refer AUTOSAR_SWS_RTE.pdf.

For API calls Rte_LdComCbkTpRxIndication, Rte_LdComCbkTxConfirmation, Rte_LdComRxIndication, Rte_LdComCbkTpTxConfirmation refer to Specification of Module Efficient COM for Large Data.

6.1.2.1.1 Use Case 06.01: Data Transfer of Array Signal of Size lesser than or equal to<BUS> Capability

The communication database is depicted below:

IPdu	Signal	TxECU	RxECU
AT_1470_IPdu	AT_1470_Sg1	SUT	TestBench
AT_1471_IPdu	AT_1471_Sg1	TestBench	SUT

Table 2: Communication Database

6.1.2.1.2 Use case 06.02: Data Transfer of Array Signal of size more than <BUS> Capability

The communication database is depicted below:

IPdu	Signal	TxECU	RxECU
AT_1472_IPdu	AT_1472_Sg1	SUT	TestBench
AT_1473_IPdu	AT_1473_Sg1	TestBench	SUT
AT_1476_IPdu	AT_1476_Sg1	SUT	TestBench
AT_1478_IPdu	AT_1478_Sg1	TestBench	SUT
AT_1047_IPdu	AT_1047_Sg1	SUT	TestBench

Table 3: Communication Database

6.1.2.2 Required ECU Configuration Description Files

No specific configuration requirements for ECU Configuration files, as they can be derived from EcuExtract.

6.1.2.3 Required Software Component Description Files

No specific configuration requirements for Software Components.

6.1.2.4 Mandatory vs. Customizable Parts

Mandatory parameters are:

- ISignalToIPduMapping.startPosition => 0
- ISignalToIPduMapping.packingByteOrder =>Opaque
- ISignalToIPduMapping.transferProperty =>triggered/ triggeredWithoutRepetition
  See 6.3 Test Cases for further details.

Customizable parameters are (these values are test case independent):

- FlexRay, CAN frames identifiers

6.1.3 Test Case Design

Not Applicable.

6.2 Re-usable Test Steps

Not Applicable.

6.3 Test Cases

6.3.1 [ATS_COMINDEP_01470] LdCom Transmission using <Bus>IF API and Notification for PDU Transfer

Test Objective	LdCom Transmission using <Bus>IF API and Notification for PDU Transfer		
ID	ATS_COMINDEP_01470	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	LdCom, PduR, BusIf, BusDrv	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00127 ATR: ATR_ATR_00128		
Trace to SWS Item	LargeDataCOM: SWS_LDCOM_00046		
Requirements / Reference to Test Environment	Use Case UC06.01		
Configuration Parameters	LdComIPdu(SignalIPdu): AT_1470_IPdu(normal I-PDU) -LdComApiType = LDCOM_IF -LdComIPduDirection(CommConnectorPort.communicationDirection) = LDCOM_SEND -LdComTxConfirmation = Rte_LdComCbkTxConfirmation_Sg1 LdComSignal(ISignalToPduMapping): Sg1 -SignalLength(baseTypeSize) < Size of <BUS> capability -SystemSignal.networkRepresentationProps.swBaseType = UINT8_N -DataSendCompletedEvent mapped on TxConfirmation PduRRoutingPath: -Routing path for LdComIPdu with PduRSrcBswModuleRef = BswMod_LdCom -PduRDestPdu with PduRDestBswModuleRef = BswMod_<Bus>If		
Summary	- To check that application layer can initiate a LdCom transmission via IF-API. As this is indirect testing for transmission confirmation, notification is given to software component of Upper Tester about transmission of signal.		
Needed Adaptation to other Releases	n/a		
Pre-conditions	Com stack is initialized		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[SWC] Call Rte_Write() for Port AT_1470_Sg1 with Signal value AT_1470_Sg1_Value_1.		[SWC] Rte_Write() shall return RTE_E_OK.
Step 2	[LT] Monitor and validate the frame on bus.		[LT] Frame shall be observed on bus with data transmitted by SUT.
Step 3	-		[SWC] Rte_LdComCbkTxConfirmation API for the signal is invoked for the signal. DataSendCompleted Event

		is activated for the same.
Post-conditions	Not Applicable	

6.3.2 [ATS_COMINDEP_01471] LdCom Reception using <Bus>IF API

Test Objective	LdCom Reception using <Bus>IF API		
ID	ATS_COMINDEP_01471	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	LdCom, PduR, BusIf, BusDrv	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00127 ATR: ATR_ATR_00128		
Trace to SWS Item	LargeDataCOM: SWS_LDCOM_00014		
Requirements / Reference to Test Environment	Use Case UC06.01		
Configuration Parameters	LdComIPdu(SignalIPdu): AT_1471_IPdu(normal I-PDU) -LdComApiType = LDCOM_IF -LdComIPduDirection(CommConnectorPort.communicationDirection) = LDCOM_RECEIVE -LdComRxIndication = Rte_LdComCbkRxIndication_Sg1 LdComSignal(ISignalToPduMapping): Sg1 -SignalLength(baseTypeSize) < Size of <BUS> capability -SystemSignal.networkRepresentationProps.swBaseType = UINT8_N -DataReceivedEvent mapped on RxIndication PduRRoutingPath: -Routing path for LdComIpdu with PduRSrcBswModuleRef = BswMod_<Bus>If -PduRDestPdu with PduRDestBswModuleRef = BswMod_LdCom		
Summary	-To check application can receive LdCom data via IF-API.		
Needed Adaptation to other Releases	n/a		
Pre-conditions	Com stack is initialized.		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Send the signal AT_1471_Sg1 with AT_1471_Sg1_Value_1.		[SWC] Rte_LdComRxIndication API is invoked for the signal and DataReceivedEvent is activated for the same.
Step 2	[SWC] Call Rte_Read() for Signal AT_1471_Sg1.		[SWC] Rte_Read() shall return RTE_E_OK. AT_1471_Sg1_value is

		AT_1471_Sg1_Value_1.
Post-conditions	Not Applicable	

6.3.3 [ATS_COMINDEP_01472] LdCom Transmission using <Bus>TP API and Notification for PDU Transfer

Test Objective	LdCom Transmission using <Bus>TP API and Notification for PDU Transfer		
ID	ATS_COMINDEP_01472	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	LdCom, PduR, BusTp, BusIf, BusDrv	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00127 ATR: ATR_ATR_00128		
Trace to SWS Item	LargeDataCOM: SWS_LDCOM_00012 LargeDataCOM: SWS_LDCOM_00013		
Requirements / Reference to Test Environment	Use Case UC06.02		
Configuration Parameters	LdComIPdu(SignalIPdu): AT_1472_IPdu(large I-PDU) -LdComApiType = LDCOM_TP -LdComIPduDirection(CommConnectorPort.communicationDirection) = LDCOM_SEND -LdComTxCopyTxData = Rte_LdComCbkCopyTxData_Sg1 -LdComTxConfirmation = Rte_LdComCbkTpTxConfirmation_Sg1 ComSignal(ISignalToPduMapping): Sg1 -SignalLength(baseTypeSize) > Size of <BUS> capability -SystemSignal.networkRepresentationProps.swBaseType = UINT8_N -DataSendCompletedEvent mapped on signal transmission PduRRoutingPath: -Routing path for LdComIpdu with PduRSrcBswModuleRef = BswMod_LdCom -PduRDestPdu with PduRDestBswModuleRef = BswMod_<Bus>TP		
Summary	-To check LdCom transmission through TP for a signal of length greater than or equal to maximum transmission unit of underlying bus. As this is indirect testing for transmission confirmation, notification is given to software component of Upper Tester about transmission of the signal.		
Needed Adaptation to other Releases	n/a		
Pre-conditions	Com stack is initialized.		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[SWC] Call Rte_Write() for port AT_1472_Sg1 with value AT_1472_Sg1_Value_1.		[SWC] Rte_Write() shall return RTE_E_OK.
Step 2	[LT]		[LT]

	Monitor the bus for First Frame and validate the same.	First Frame shall be observed with data transmitted by SUT. Send Flow Control frame with Flow Status ClearToSend.
Step 3	[SWC] Consecutive frames are sent by SWC until all the data has been transmitted on reception of Flow Control frame.	[LT] Consecutive Frames shall be observed with data transmitted by SUT.
Step 4	-	[LT] Rte_LdComCbkTpTxConfirmation API is invoked for the signal. DataSendCompleted event is activated for the same.
Post-conditions	Not Applicable	

6.3.4 [ATS_COMINDEP_01473] LdCom Reception using <Bus>TP API

Test Objective	LdCom Reception using <Bus>TP API		
ID	ATS_COMINDEP_01473	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	LdCom, PduR, BusTp, BusIf, BusDrv	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00127 ATR: ATR_ATR_00128		
Trace to SWS Item	LargeDataCOM: SWS_LDCOM_00015 LargeDataCOM: SWS_LDCOM_00016 LargeDataCOM: SWS_LDCOM_00017		
Requirements / Reference to Test Environment	Use Case UC06.02		
Configuration Parameters	LdComIPdu(SignalIPdu): AT_1473_IPdu(normal I-PDU) -LdComApiType = LDCOM_TP -LdComIPduDirection(CommConnectorPort.communicationDirection) = LDCOM_RECEIVE -LdComRxIndication = Rte_LdComCbkTpRxIndication_Sg1 -LdComRxStartOfReception = Rte_LdComCbkStartOfReception_Sg1 -LdComRxCopyRxData = Rte_LdComCbkCopyRxData_Sg1 ComSignal(ISignalToPduMapping): Sg1 -SignalLength(baseTypeSize) > Size of <BUS> capability -SystemSignal.networkRepresentationProps.swBaseType = UINT8_N -DataReceivedEvent mapped on RxIndication PduRRoutingPath: -Routing path for LdComIpdu with PduRSrcBswModuleRef = BswMod_<Bus>Tp -PduRDestPdu with PduRDestBswModuleRef = BswMod_LdCom		
Summary	- To check LdCom reception through TP for signal length greater than transmission unit of underlying bus.		

Needed Adaptation to other Releases	n/a	
Pre-conditions	Com stack is initialized.	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[LT] Send the signal AT_1473_Sg1 with AT_1473_Sg1_Value_1.	[SWC] First Frame shall be received with FF_DL value greater than single frame length. Flow Control with Flow Status ClearToSend is sent.
Step 2	[LT] Consecutive frames are sent by LT until all the data has been transmitted on reception of Flow Control frame.	[SWC] DataReceivedEvent is activated on successful reception of all Consecutive Frames.
Step 3	[SWC] Call Rte_Read() for AT_1473_Sg1.	[SWC] Return value of Rte_Read() is RTE_E_OK. AT_1473_Sg1_value is AT_1473_Sg1_Value_1.
Post-conditions	Not Applicable	

6.3.5 [ATS_COMINDEP_01476] Behavior of LdCom Transmit Request from Application when there is a request in Progress for the same PDU

Test Objective	Behavior of LdCom Transmit Request from Application when there is a request in Progress for the same PDU		
ID	ATS_COMINDEP_01476	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	RTE, LdCom	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00127 ATR: ATR_ATR_00128		
Trace to SWS Item	RTE: SWS_Rte_01379		
Requirements / Reference to Test Environment	Use Case UC06.02		
Configuration Parameters	LdComIPdu(SignalIPdu): AT_1476_IPdu(large I-PDU) -LdComApiType = LDCOM_TP -LdComIPduDirection(CommConnectorPort.communicationDirection) =		

	LDCOM_SEND -LdComTxCopyTxData = Rte_LdComCbkCopyTxData_Sg1 -LdComTxConfirmation = Rte_LdComCbkTpTxConfirmation_Sg1 ComSignal(ISignalToPduMapping): Sg1 -SignalLength(baseTypeSize) > Size of <BUS> capability -SystemSignal.networkRepresentationProps.swBaseType = UINT8_N -DataSendCompletedEvent mapped on TxConfirmation	
Summary	- To transmit large signal data from software component of Upper Tester to Lower Tester. The second frame is introduced deliberately when already initiated transmission is in progress.	
Needed Adaptation to other Releases	n/a	
Pre-conditions	Com stack is initialized.	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Trigger Rte_Write() for AT_1476_Sg1 signal with AT_1476_Sg1_Value1(This will initiate LdCom transmission).	[SWC] Rte_Write() shall return RTE_E_OK.
Step 2	[LT] Monitor the bus for First Frame and validate the same.	[LT] First frame shall be observed on bus with data transmitted by SUT.
Step 3	[LT] Send Flow Control frame with Flow Status ClearToSend.	[SWC] Flow Control frame is received.
Step 4	[SWC] Trigger Rte_Write() for AT_1476_Sg1 signal with AT_1476_Sg1_Value2 before the transmission initiated in Step1 is completed.	[SWC] Rte_Write() shall return RTE_E_COM_BUSY as the TP buffer is locked due to the ongoing transmission.
Step 5	[SWC] Consecutive frames are sent by SWC until all the data has been transmitted for data transmission initiated in Step1	[LT] Consecutive frames shall be observed on bus with data AT_1476_Sg1_Value1 transmitted by SUT.
Step 6	-	[SWC] Rte_LdComCbkTpTxConfirmation API is invoked for the signal and DataSendCompletedEvent is activated for the same.
Post-conditions	NONE	

6.3.6 [ATS_COMINDEP_01478] Behavior of LdCom Receive Request from Application when there is a request in Progress for the same PDU

Test Objective	Behavior of LdCom Receive Request from Application when there is a request in Progress for the same PDU		
ID	ATS_COMINDEP_01478	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	RTE, LdCom	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00127 ATR: ATR_ATR_00128		
Trace to SWS Item	RTE: SWS_Rte_01385 RTE: SWS_Rte_01387		
Requirements / Reference to Test Environment	Use Case UC06.02		
Configuration Parameters	LdComIPdu(SignalIPdu): AT_1478_IPdu(normal I-PDU) -LdComApiType = LDCOM_TP -LdComIPduDirection(CommConnectorPort.communicationDirection) = LDCOM_RECEIVE -LdComRxIndication = Rte_LdComCbkTpRxIndication_Sg1 -LdComRxStartOfReception = Rte_LdComCbkStartOfReception_Sg1 -LdComRxCopyRxData = Rte_LdComCbkCopyRxData_Sg1 ComSignal(ISignalToPduMapping): Sg1 -SignalLength(baseTypeSize) > Size of <BUS> capability -SystemSignal.networkRepresentationProps.swBaseType = UINT8_N -DataReceivedEvent mapped on RxIndication		
Summary	- To check LdCom behavior for a PDU reception when already initiated reception for the same PDU is in progress.		
Needed Adaptation to other Releases	n/a		
Pre-conditions	Com stack is initialized.		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Send the Signal AT_1478_Sg1 with AT_1478_Sg1_Value_1.		[SWC] Flow Control with Flow Status ClearToSend is sent from SUT on reception of First Frame.
Step 2	[LT] Send the Signal AT_1478_Sg1 with AT_1478_Sg1_Value_2.		[SWC] Rte_LdComCbkTpRxIndication API shall be invoked with E_NOT_OK for signal AT_1478_Sg1 triggered in Step1.
Step 3	-		[SWC] Reception is started for second instance of AT_1478_Sg1 triggered in Step2. Send Flow control frame with Flow Status ClearToSend.

Step 4	[LT] Consecutive frames are sent by LT until all the data has been transmitted on reception of Flow Control frame.	[SWC] DataReceivedEvent is activated on successful reception of all Consecutive Frames.
Step 5	[SWC] Call Rte_Read() for AT_1478_Sg1.	[SWC] Rte_Read() returns RTE_E_OK. AT_1478_Sg1_value is AT_1478_Sg1_Value_2
Post-conditions	NONE	

6.3.7 [ATS_COMINDEP_01047] Behavior of LdCom Transmit Request from Application when Transmit Confirmation was invoked for the ongoing Transmission request for the same PDU

Test Objective	Behavior of LdCom Transmit Request from Application when Transmit Confirmation was invoked for the ongoing Transmission request for the same PDU		
ID	ATS_COMINDEP_01047	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	RTE, LdCom	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00127 ATR: ATR_ATR_00128		
Trace to SWS Item	RTE: SWS_Rte_01380		
Requirements / Reference to Test Environment	Use Case UC06.02		
Configuration Parameters	LdComIPdu(SignalIPdu): AT_1047_IPdu(large I-PDU) -LdComApiType = LDCOM_TP -LdComIPduDirection(CommConnectorPort.communicationDirection) = LDCOM_SEND -LdComTxCopyTxData = Rte_LdComCbkCopyTxData_Sg1 -LdComTxConfirmation = Rte_LdComCbkTpTxConfirmation_Sg1 ComSignal(ISignalToPduMapping): Sg1 -SignalLength(baseTypeSize) > Size of <BUS> capability -SystemSignal.networkRepresentationProps.swBaseType = UINT8_N -DataSendCompletedEvent mapped on TxConfirmation		
Summary	To check the unlocking of signal buffer by RTE when the Transmit Confirmation has been invoked for the PDU. A Second frame is transmitted from Application after Transmit confirmation was received for the ongoing tramsmission for same PDU.		
Needed Adaptation to other Releases			
Pre-conditions	Com stack is initialized.		
Main Test Execution			

Test Steps		Pass Criteria
Step 1	[SWC] Trigger Rte_Write() for AT_1047_Sg1 signal with AT_1047_Sg1_Value1 (This will initiate LdCom transmission)	[SWC] Rte_Write() shall return RTE_E_OK
Step 2	[LT] Monitor the bus for First Frame and validate the same.	[LT] First frame shall be observed on bus with data transmitted by SUT.
Step 3	[LT] Send Flow Control frame with Flow Status ClearToSend.	[SWC] Flow Control frame is received.
Step 4	[SWC] Consecutive frames are sent by SWC until all the data has been transmitted.	[LT] Consecutive frames shall be observed on bus with data AT_1047_Sg1_Value1 transmitted by SUT.
Step 5	-	[SWC] Rte_LdComCbkTpTxConfirmation API is invoked for the signal. DataSendCompletedEvent is activated.
Step 6	[SWC] Trigger Rte_Write() for AT_1047_Sg1 signal with AT_1047_Sg1_Value2.	[LT] Rte_Write() shall return RTE_E_OK.
Step 7	[LT] Monitor the bus for first frame and validate the same.	[LT] First frame shall be observed on bus with data transmitted by SUT.
Step 8	[LT] Send Flow Control frame with Flow Status ClearToSend.	[SWC] Flow Control frame is received.
Step 9	[SWC] Consecutive frames are sent by SWC until all the data has been transmitted.	[LT] Consecutive frames shall be observed with data AT_1047_Sg1_Value2 transmitted by SUT.
Step 10	-	[SWC] Rte_LdComCbkTpTxConfirmation API is invoke for the signal and DataSendCompletedEvent is activated for the same.
Post-conditions	NONE	

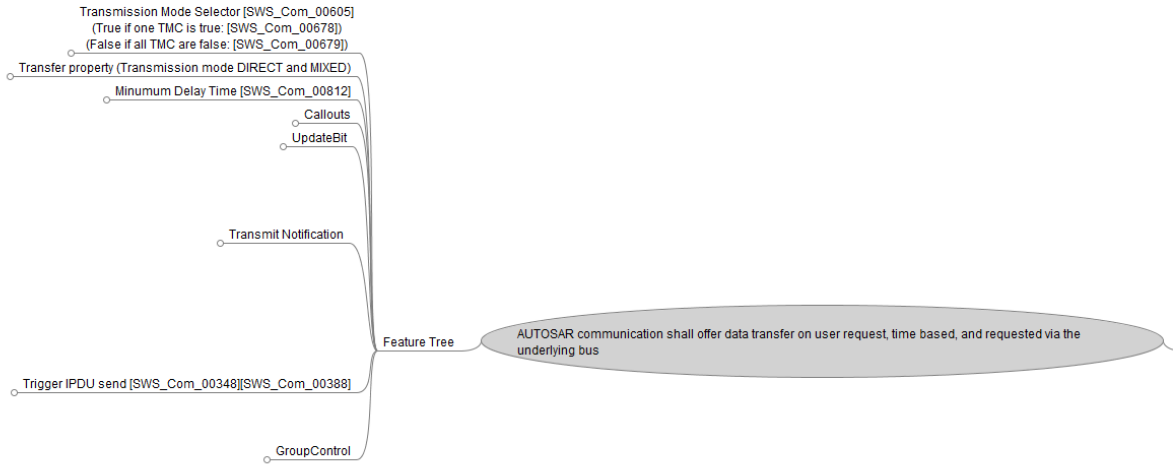
7 RS_BRF_01592 - Data Transfer (Bus independent)

7.1 General Test Objective and Approach

This Test Specification intends to cover the Data Transfer feature of the Com as described in the AUTOSAR Feature [RS_BRF_01592].

The tests use a test bench environment and Embedded Software Components that use the feature.

This test case document has been established to cover the following features:



This specification gives the description of required tests environments (test bench, uses case, arxml files) and detailed tests cases for executing tests.

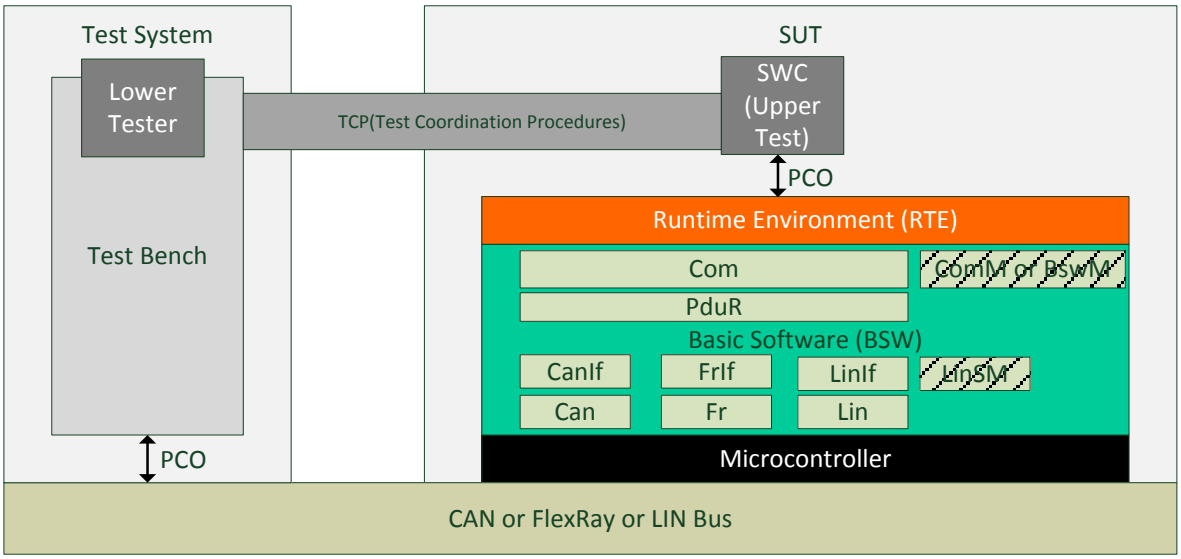
7.1.1 Test System

7.1.1.1 Overview on Architecture

In order to cover the required features / sub-features coverage, the environment has been separated in several uses case.

7.1.1.1.1 Use case 04.01: General features

For this use case, the aim is to test the general Com module data transfer features independently of the Bus.



The test system architecture consists of Test Bench that executes only test sequencer and gives actions request through Test coordination Procedures to embedded SWC.

The Bus used (CAN or FlexRay or Lin) is independent for this use case.

7.1.1.2 Specific Requirements

Not Applicable.

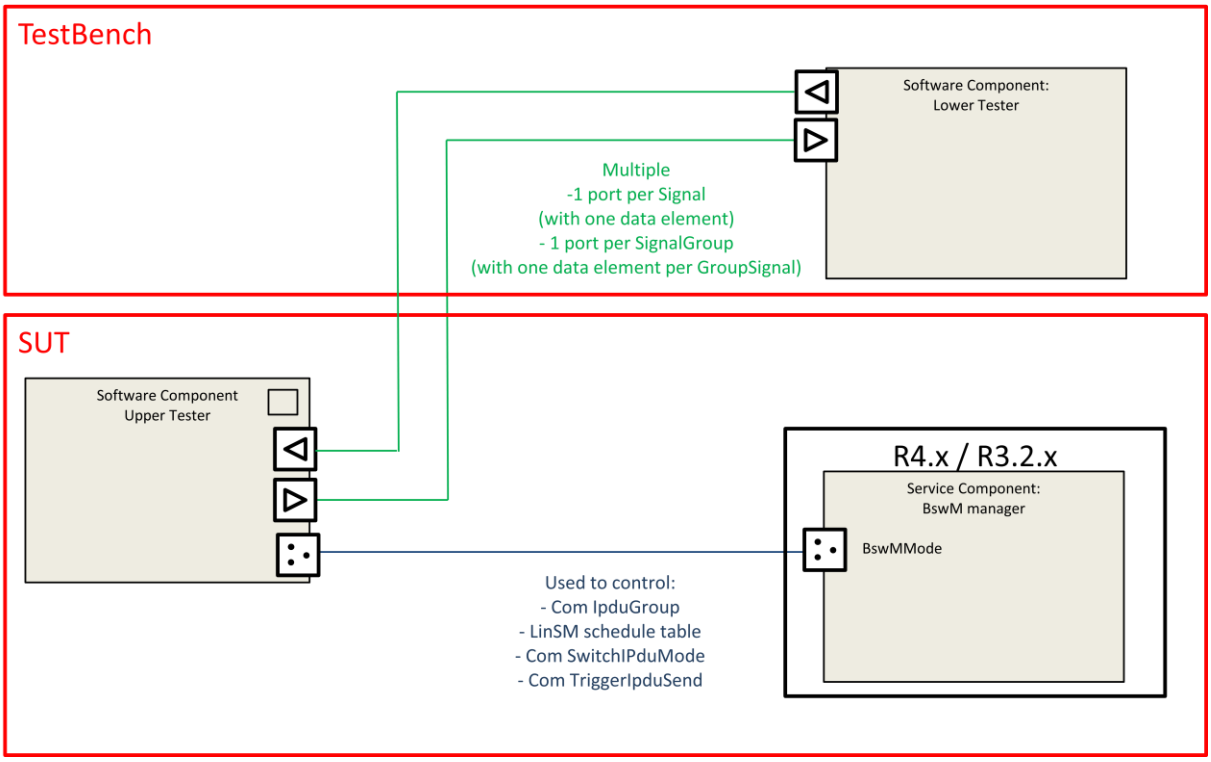
7.1.1.3 Test Coordination Requirements

Not Applicable.

7.1.2 Test Configuration

This section describes sets of requirements on configuration. These sets are later referenced by test cases. No configuration files are provided. They need to be developed when the test suite is implemented.

7.1.2.1 Required ECU Extract of System Description Files



A Mode-Switch Interface IF_AT_SwC_ActionsBswM must be created. The SWC Upper Tester is the owner of this state machine and BswM read the state through BswMMode Port. BswM shall launch actions according to following table (check 7.3 Test Cases for details):

ModeDeclaration	BswM Actions
IPDU_ACTIVATED	OnEntry: -Start IpduGroup
IPDU_DEACTIVATED	OnEntry: -Stop IpduGroup
IPDU_OFF_ON	OnEntry: -Stop IpduGroup -Re-start IpduGroup
TXMODE_TRUE	OnEntry: -SwitchIPduMode to TRUE
TXMODE_FALSE	OnEntry: -SwitchIPduMode to FALSE
TRIG_IPDU_SEND	OnEntry: -TriggerIpduSend
LIN_START_SCHEDULE	OnEntry: -Start LIN Schedule Table
IPDU_ACTIVATED_LIN_START_SCHEDULE	OnEntry: -Start IpduGroup -Start LIN Schedule Table

For the Software Component point of view, for each test case, the communication interfaces are defined as follow:

Port name	Data element type	Dataelement	Mapping	Type
<TestCaseName>_<signalname>	Uint8	<signalname>	<Signalname>	Signal

<TestCaseName>_<signalgroupname>	Struct
	{
	Uint8: groupsignal1;
	…
	Uint8: groupsignalx;
	}
		Groupsignal	Groupsignal1->
			<signal1name>
			Groupsignal2->
			<signal2name>
			<PortName>->
			<signalgroupname>	

Therefore ports and signals names change according to Test Case number, but the building rule is the same.

Unless a different configuration is specified in test case, Sender/Receiver Ports used for communication Non queued Data Element and Explicit Data access for associated runnables.

7.1.2.1.1 Use Case 04.01: General features

The communication database is depicted below:

IPduGroup	IPdu	SignalGroup	Signal	Tx ECU	Rx ECU
AT_200_IpduGroup	AT_200_Ipdu	AT_200_Sg1	AT_200_Sg1	SUT	TestBench
		AT_200_Sg2	AT_200_Sg2		
		AT_200_SgGr1	AT_200_GrSg1		
			AT_200_GrSg2		
AT_205_IpduGroup	AT_205_Ipdu	AT_205_Sg1	AT_205_Sg1	SUT	TestBench
AT_259_IpduGroup	AT_259_Ipdu	AT_259_Sg1	AT_259_Sg1	SUT	TestBench
AT_260_IpduGroup	AT_260_Ipdu	AT_260_Sg1	AT_260_Sg1	SUT	TestBench
AT_212_IpduGroup	AT_212_Ipdu	AT_212_Sg1	AT_212_Sg1	SUT	TestBench
		AT_212_SgGr1	AT_212_GrSg1		
			AT_212_GrSg2		
			AT_212_GrSg3		
		AT_212_Sg2	AT_212_Sg2		
AT_220_IpduGroup	AT_220_Ipdu	AT_220_Sg1	AT_220_Sg1	SUT	TestBench
		AT_220_Sg2	AT_220_Sg2		
		AT_220_SgGr1	AT_220_GrSg1		
			AT_220_GrSg2		
AT_221_IpduGroup	AT_221_Ipdu	AT_221_Sg1	AT_221_Sg1	SUT	TestBench
		AT_221_Sg2	AT_221_Sg2		
AT_261_IpduGroup	AT_261_Ipdu	AT_261_Sg1	AT_261_Sg1	SUT	TestBench
		AT_261_SgGr1	AT_261_GrSg1		
			AT_261_GrSg2		
		AT_261_SgGr2	AT_261_GrSg3		
			AT_261_GrSg4		
AT_222_IpduGroup	At_222_Ipdu	AT_222_SgGr1	AT_222_GrSg1	SUT	TestBench
			AT_222_GrSg2		
AT_224_IpduGroup	AT_224_Ipdu	AT_224_Sg1	AT_224_Sg1	SUT	TestBench
		AT_224_SgGr1	AT_224_GrSg1		
			AT_224_GrSg2		
AT_225_IpduGroup	AT_225_Ipdu	AT_225_Sg1	AT_225_Sg1	SUT	TestBench
AT_223_IpduGroup	AT_223_Ipdu	AT_223_Sg1	AT_223_Sg1	SUT	TestBench
AT_226_IpduGroup	AT_226_Ipdu1	AT_226_Sg1	AT_226_Sg1	SUT	TestBench
	AT_226_Ipdu2	AT_226_Sg2	AT_226_Sg2	SUT	TestBench

Some of the test cases requires specific signal transfer properties and unique IPDU structure to fulfil the test requirements. These are listed here.

AT_723 Signal Properties:

Fibex::FibexCore::CoreCommunication::ISignalToPduMapping	Fibex::FibexCore::CoreCommunication::ISignalToIPduMapping.transferProperty	Com Notification
Sn_11	PENDING	Rte_ComCbkTAck_Sn_11
Sn_12	TRIGGERED_ON_CHANGE	Rte_ComCbkTAck_Sn_12
Sn_13	PENDING	Rte_ComCbkTAck_Sn_13
Sg11	PENDING	Rte_ComCbkTAck_Sg11
Sg12	TRIGGERED_ON_CHANGE	Rte_ComCbkTAck_Sg12

AT_723_IPDU_Structure:

B7								
B6	Sn_11							
B5							Sn_12	
B4								
B3	Sg12_3		Sg12_2		Sg12_1			
B2								
B1	Sg11_4	Sg11_3	Sg11_2		Sg11_1			
B0					Sn_13			
	D7	D6	D5	D4	D3	D2	D1	D0

AT_724 Signal Properties:

Fibex::FibexCore::CoreCommunication::ISignalToPduMapping	Fibex::FibexCore::CoreCommunication::ISignalToIPduMapping.transferProperty	Com Notification
Sn_14	TRIGGERED_ON_CHANGE	Rte_ComCbkTAck_Sn_14
Sn_15	PENDING	Rte_ComCbkTAck_Sn_15
Sn_16	PENDING	Rte_ComCbkTAck_Sn_16
Sg13	TRIGGERED_ON_CHANGE	Rte_ComCbkTAck_Sg13
Sg14	PENDING	Rte_ComCbkTAck_Sg14

AT_724_IPDU_Structure:

B7								
B6	Sn_14							
B5							Sn_15	
B4								
B3	Sg14_3		Sg14_2		Sg14_1			
B2								
B1	Sg13_4	Sg13_3	Sg13_2		Sg13_1			
B0					Sn_16			
	D7	D6	D5	D4	D3	D2	D1	D0

AT_725 Signal Properties

Fibex::FibexCore::CoreCommunication::ISignalToPduMapping	Fibex::FibexCore::CoreCommunication::ISignalToIPduMapping.transferProperty	Com Notification
Sn_17	TRIGGERED_WITHOUT_REPETITION	Rte_ComCbkTAck_Sn_17
Sn_18	PENDING	Rte_ComCbkTAck_Sn_18
Sn_19	PENDING	Rte_ComCbkTAck_Sn_19
Sg15	PENDING	Rte_ComCbkTAck_Sg15
Sg16	TRIGGERED_WITHOUT_REPETITION	Rte_ComCbkTAck_Sg16

AT_725_IPDU_Structure:

B7						Sn_19		
B6								
B5			Sn_18					
B4								
B3	Sg16_5	Sg16_4	Sg16_3	Sg16_2			Sg16_1	
B2								
B1	Sg15_4	Sg15_3	Sg15_2		Sg15_1			
B0			Sn_17					
	D7	D6	D5	D4	D3	D2	D1	D0

AT_726 Signal Properties:

Fibex::FibexCore::CoreCommunication::ISignalToPduMapping	Fibex::FibexCore::CoreCommunication::ISignalToIPduMapping.transferProperty	Com Notification
Sn_65	PENDING	Rte_ComCbkTAck_Sn_65
Sn_66	PENDING	Rte_ComCbkTAck_Sn_66
Sn_67	TRIGGERED_WITHOUT_REPETITION	Rte_ComCbkTAck_Sn_67
Sg17	TRIGGERED_WITHOUT_REPETITION	Rte_ComCbkTAck_Sg17
Sg18	PENDING	Rte_ComCbkTAck_Sg18

AT_726_IPDU_Structure:

B7						Sn_67		
B6								
B5			Sn_66					
B4								
B3	Sg17_5	Sg17_4	Sg17_3	Sg17_2			Sg17_1	
B2								
B1	Sg18_4	Sg18_3	Sg18_2		Sg18_1			
B0			Sn_65					
	D7	D6	D5	D4	D3	D2	D1	D0

AT_727 Signal Properties:

Fibex::FibexCore::CoreCommunication::ISignalToPduMapping	Fibex::FibexCore::CoreCommunication::ISignalToIPduMapping.transferProperty	Com Notification
Sn_90	TRIGGERED_ON_CHANGE_WITHOUT_REPETITION	Rte_ComCbkTAck_Sn_90
Sn_91	PENDING	Rte_ComCbkTAck_Sn_91
Sg91	TRIGGERED_ON_CHANGE_WITHOUT_REPETITION	Rte_ComCbkTAck_Sg91
Sg92	PENDING	Rte_ComCbkTAck_Sg92
Sg93	PENDING	Rte_ComCbkTAck_Sg93

AT_727_IPDU_Structure:

B7					Sn_90			
B6								
B5						Sn_91		
B4		Sg91_5	Sg91_4	Sg91_3	Sg91_2	Sg91_1		
B3	Sg92_5	Sg92_4	Sg92_3	Sg92_2			Sg92_1	
B2								
B1	Sg93_4	Sg93_3	Sg93_2		Sg93_1			
B0								
	D7	D6	D5	D4	D3	D2	D1	D0

AT_728 Signal Properties:

Fibex::FibexCore::CoreCommunication::ISignalToPduMapping	Fibex::FibexCore::CoreCommunication::ISignalToIPduMapping.transferProperty	Com Notification
Sn_95	TRIGGERED	Rte_ComCbkTAck_Sn_95
Sn_96	PENDING	Rte_ComCbkTAck_Sn_96
Sn_97	PENDING	Rte_ComCbkTAck_Sn_97
Sg96	TRIGGERED	Rte_ComCbkTAck_Sg96
Sg97	PENDING	Rte_ComCbkTAck_Sg97

AT_728_IPDU_Structure:

B7								
B6	Sn_95							
B5							Sn_96	
B4								
B3	Sg96_3		Sg96_2		Sg96_1			
B2								
B1	Sg97_4	Sg97_3	Sg97_2		Sg97_1			
B0					Sn_97			
	D7	D6	D5	D4	D3	D2	D1	D0

AT_729 Signal Properties

Fibex::FibexCore::CoreCommunication::ISignalToPduMapping	Fibex::FibexCore::CoreCommunication::ISignalToIPduMapping.transferProperty
Sn_74	TRIGGERED
Sn_75	PENDING
Sn_76	PENDING
Sg74	PENDING
Sg75	PENDING

AT_729_IPDU_Structure:

B7								
B6	Sn_74							

B5							Sn_75	
B4								
B3	Sg74_3		Sg74_2		Sg74_1			
B2								
B1	Sg75_4	Sg75_3	Sg75_2		Sg75_1			
B0					Sn_76			
	D7	D6	D5	D4	D3	D2	D1	D0

AT_730 Signal Properties

Fibex::FibexCore::CoreCommunication::ISignalToPduMapping	Fibex::FibexCore::CoreCommunication::ISignalToIPduMapping.transferProperty
Sn_80	TRIGGERED
Sn_78	PENDING
Sn_77	PENDING
Sg77	PENDING
Sg78	PENDING

AT_730_IPDU_Structure:

B7								
B6	Sn_80							
B5							Sn_78	
B4								
B3	Sg78_3		Sg78_2		Sg78_1			
B2								
B1	Sg77_4	Sg77_3	Sg77_2		Sg77_1			
B0					Sn_77			
	D7	D6	D5	D4	D3	D2	D1	D0

AT_731 Signal Properties

Fibex::FibexCore::CoreCommunication::ISignalToPduMapping	Fibex::FibexCore::CoreCommunication::ISignalToIPduMapping.transferProperty	Com Notification
Sn_43	PENDING	Rte_ComCbkTAck_Sn_43
sn_44	TRIGGERED	Rte_ComCbkTAck_Sn_44
Sg43	PENDING	Rte_ComCbkTAck_Sg43

AT_731_IPDU_Structure:

B7			USg43		USn44			USn43
B6								
B5	Sn_44							
B4								
B3								
B2		Sn_43						
B1	Sg43_1				Sg43_2			
B0								

	D7	D6	D5	D4	D3	D2	D1	D0

AT_732 Signal Properties

Fibex::FibexCore::CoreCommunication::ISignalToPduMapping	Fibex::FibexCore::CoreCommunication::ISignalToIPduMapping.transferProperty	Com Notification
Sn_46	PENDING	Rte_ComCbkTAck_Sn_46
sn_45	PENDING	Rte_ComCbkTAck_Sn_45
Sg45	PENDING	Rte_ComCbkTAck_Sg45

AT_732_IPDU_Structure:

B7			USg45		USn46			USn45
B6								
B5	Sn_46							
B4								
B3								
B2		Sn_45						
B1	Sg45_1				Sg45_2			
B0								
	D7	D6	D5	D4	D3	D2	D1	D0

AT_733 Signal Properties

Fibex::FibexCore::CoreCommunication::ISignalToPduMapping	Fibex::FibexCore::CoreCommunication::ISignalToIPduMapping.transferProperty	Com Notification
Sn_48	TRIGGERED	Rte_ComCbkTAck_Sn_48
sn_47	PENDING	Rte_ComCbkTAck_Sn_47
Sg47	PENDING	Rte_ComCbkTAck_Sg47

AT_733_IPDU_Structure:

B7			USg47		USn48			USn47
B6								
B5	Sn_48							
B4								
B3								
B2		Sn_47						
B1	Sg47_1				Sg47_2			
B0								
	D7	D6	D5	D4	D3	D2	D1	D0

AT_734_Rx_IPDU_SR STRUCTURE

B7			USg49		USn60			USn49
B6								
B5	Sn_60							
B4								

B3								
B2		Sn_49						
B1	Sg49_1				Sg49_2			
B0								
	D7	D6	D5	D4	D3	D2	D1	D0

AT_734_Tx_IPDU_SR STRUCTURE

B7			USg49		USn60			USn49
B6								
B5	Sn_60							
B4	Sn_66							
B3								
B2		Sn_49						
B1	Sg49_1				Sg49_2			
B0								
	D7	D6	D5	D4	D3	D2	D1	D0

AT_735_Rx_IPDU_SR STRUCTURE

B7			USg41		USn42			USn41
B6								
B5	Sn_42							
B4								
B3								
B2								
B1	Sg41_1				Sg41_2			
B0			Sn_41					
	D7	D6	D5	D4	D3	D2	D1	D0

AT_735_Tx_IPDU_SR STRUCTURE:

:B7								
B6								
B5	Sn_42							
B4	Sn_70							
B3								
B2								
B1	Sg41_1				Sg41_2			
B0			Sn_41					
	D7	D6	D5	D4	D3	D2	D1	D0

AT_736_Rx_IPDU_SR STRUCTURE

B7			USg61		USn62			USn61
B6								
B5	Sn_62							
B4								
B3								
B2		Sn_61						
B1	Sg61_1				Sg61_2			
B0								
	D7	D6	D5	D4	D3	D2	D1	D0

AT_736_Tx_IPDU_SR STRUCTURE:

B7								
B6								
B5	Sn_62							
B4								
B3								
B2		Sn_61						
B1	Sg61_1				Sg61_2			
B0								
	D7	D6	D5	D4	D3	D2	D1	D0

7.1.2.2 Required ECU Configuration Description Files

No specific configuration requirements for ECU Configuration files as they can be derived from EcuExtract.

7.1.2.3 Required Software Component Description Files

No specific configuration requirements for Software Components.

7.1.2.4 Mandatory vs. Customizable Parts

Mandatory parameters are listed in Tests Cases (see 7.3 Test Cases).

Customizable parameters are (these values are test case independent):

- ComSignalType (ISignal.networkRepresentationProps.swBaseType), ComSignalLength (baseTypeSize) and ComBitSize (ISignal.length) => must be consistent to associated dataElement
- ComSignalInitValue (ISignal.initValue)
- PduLength (Pdu.length)
- ComBitPosition (ISignalToIPduMapping.startPosition) and ComUpdateBitPosition (ISignalToIPduMapping.updateIndicationBitPosition) values => the location of these elements in the pdu
- CAN, LIN and FlexRay frames identifiers

7.1.3 Test Case Design

Not Applicable.

7.2 Re-usable Test Steps

Not Applicable.

7.3 Test Cases

7.3.1 [ATS_COMINDEP_00200] Group Control - Time Based frame (PERIODIC)

Test Objective	Group Control - Time Based frame (PERIODIC)		
ID	ATS_COMINDEP_00200	**AUTOSAR**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2

		Releases	
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00115 ATR: ATR_ATR_00116		
Trace to SWS Item	COM: SWS_Com_00217 COM: SWS_Com_00222 COM: SWS_Com_00228 COM: SWS_Com_00334 COM: SWS_Com_00444 COM: SWS_Com_00677 COM: SWS_Com_00740 COM: SWS_Com_00787		
Requirements / Reference to Test Environment	Use Case UC04.01		
Configuration Parameters	Please refer to the basic communication Database present in sub-chapter "Test Configuration" of this test suite. In addition to that: ComIpdu(SignalIPdu): AT_200_Ipdu - ComTxIPduUnusedAreasDefault (unusedBitPattern) is configured - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- ComTxModeMode (TransmissionModeTiming) = PERIODIC (CyclicTiming) --- ComTxModeTimeOffset(timeOffset) > ComTxModeTimePeriod(timePeriod) ComSignal(ISignalToPduMapping): AT_200_Sg1/AT_200_Sg2 - ComUpdateBitPosition (updateIndicationBitPosition) is configured - ComSignalInitValue (ISignal.initValue) = Sg1_Value_init/Sg2_Value_init ComSignalGroup(ISignalToPduMapping): AT_200_SgGr1 - ComUpdateBitPosition (updateIndicationBitPosition) is configured - ComGroupSignal(ISignalToPduMapping): AT_200_GrSg1/AT_200_GrSg2 -- ComSignalInitValue (ISignal.initValue) = GrSg1_Value_init/GrSg2_Value_init		
Summary	Aim: - No signal and no group signal filter, so only One TxMode (ComTxModeTrue) [SWS_Com_00677] 1) Check that update signal and group signal values on stopped ipdu (ipdu never started) has no effect 2) Check that starting an ipdu group on first time, initilializes signal values, respects Offset and Period times, fulfills unused byte of the Ipdu [SWS_Com_00740][SWS_Com_00787][SWS_Com_00222][SWS_Com_00217] 3) Check that stopping an ipdu group, stop send of time based frames 4) Check that signal and group signal values are updated even if the ipdu is stopped [SWS_Com_00334] 5) Check that starting an ipdu group (with initialize = FALSE), uses last signal values and doesn't restart Offset time [SWS_Com_00787][SWS_Com_00228]		
Needed Adaptation to other Releases	None		

Pre-conditions	Com stack is initialized, but ipdu groups are not running	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Send signal AT_200_Sg1 (call Rte_Write() for Sender Port AT_200_Sg1) with value AT_200_Sg1_Value_1 AT_200_SgGr1.AT_200_GrSg1=AT_200_GrSg1_Value_1 AT_200_SgGr1.AT_200_GrSg2=AT_200_GrSg2_Value_1 Send signal group AT_200_SgGr1 (call Rte_Write() for Sender Port AT_200_GrSg1) (Rte will send group signal AT_200_GrSg1 with value AT_200_GrSg1_Value_1, send group signal AT_200_GrSg2 with value AT_200_GrSg2_Value_1, send signal group AT_200_SgGr1)	[SWC] Rte_Write shall return "RTE_E_COM_STOPPED"
Step 2	-	[LT] AT_200_Ipdu is not sent out.
Step 3	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_ACTIVATED (start Ipdu group AT_200_IpduGroup with INITIALIZE = FALSE)	[LT] First AT_200_Ipdu is sent out after Offset time value. Other AT_200_Ipdu occurences are sent out every Period time value. AT_200_Sg1 value shall be AT_200_Sg1_Value_Init AT_200_Sg2 value shall be AT_200_Sg2_Value_Init AT_200_GrSg1 value shall be AT_200_GrSg1_Value_1 AT_200_GrSg2 value shall be AT_200_GrSg2_Value_1 AT_200_Sg1, AT_200_Sg2 UpdateBits are cleared (0) for all AT_200_Ipdu occurrences Update bit of “AT_200_SgGr1” set(1) for the first Transmission and cleared (0) for subsequent transmissions Unused areas in AT_200_Ipdu are filled with configured UnusedBitPattern
Step 4	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_DEACTIVATED (stop Ipdu group AT_200_IpduGroup)	[LT] AT_200_Ipdu is not sent out
Step 5	[SWC] Send signal AT_200_Sg2 (call Rte_Write() for Sender Port AT_200_Sg2) with value AT_200_Sg2_Value_1 AT_200_SgGr1.AT_200_GrSg1 = AT_200_GrSg1_Value_Init AT_200_SgGr1.AT_200_GrSg2 = AT_200_GrSg2_Value_1 Send signal group AT_200_GrSg1 (call Rte_Write() for Sender Port AT_200_GrSg1) (Rte will send group signal AT_200_GrSg2 with value	[SWC] Rte_Write shall return "RTE_E_COM_STOPPED"

	AT_200_GrSg2_Value_1, send signal group AT_200_SgGr1)	
Step 6	-	[LT] AT_200_Ipdu is not sent out.
Step 7	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_ACTIVATED (start Ipdu group AT_200_IpduGroup with INITIALIZE = FALSE)	[LT] First AT_200_Ipdu is sent out after at last Period time value (not offset time). Other AT_200_Ipdu occurences are sent out every Period time value AT_200_Sg2 value shall be AT_200_Sg2_Value_1 AT_200_GrSg2 value shall be AT_200_GrSg2_Value_1 AT_200_Sg1 value shall be AT_200_Sg1_Value_Init AT_200_GrSg1 value shall be AT_200_GrSg1_Value_Init AT_200_Sg1, AT_200_Sg2, AT_200_SgGr1 UpdateBits are cleared (0) for all AT_200_Ipdu occurences Unused areas in AT_200_Ipdu are filled with configured UnusedBitPattern
Post-conditions	Not Applicable	

7.3.2 [ATS_COMINDEP_00205] Group Control - User Request frame (DIRECT) + MDT

Test Objective	Group Control - User Request frame (DIRECT) + MDT		
ID	ATS_COMINDEP_00205	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00115 ATR: ATR_ATR_00116		
Trace to SWS Item	COM: SWS_Com_00305 COM: SWS_Com_00330 COM: SWS_Com_00787 COM: SWS_Com_00812		
Requirements / Reference to Test Environment	Use Case UC04.01		
Configuration Parameters	Please refer to the basic communication Database present in sub-chapter "Test Configuration" of this test suite. In addition to that: ComIpdu(SignalIPdu): AT_205_Ipdu - ComTxIPduUnusedAreasDefault (unusedBitPattern) is configured - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND		

	- ComMinimumDelayTime (IPduTiming.minimumDelay) = y ms - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- ComTxModeMode (TransmissionModeTiming) = DIRECT (EventControlledTiming) --- ComTxModeRepetitionPeriod(RepetitionPeriod) = x ms --- ComTxModeNumberOfRepetitions(numberOfRepetitions) = 3 ==> Constraint: y << x ComSignal(ISignalToPduMapping): AT_205_Sg1 - ComTransferProperty (transferProperty) = TRIGGERED - ComUpdateBitPosition (updateIndicationBitPosition) is not configured - DataSendCompletedEvent mapped on signal transmission (ComNotification is configured)
Summary	Aim: - Check that ipdu group stops the Minimum Delay Time (MDT) [SWS_Com_00787] - Check that a send triggered signal (related to DIRECT Ipdu) respects the Repetition Period [SWS_Com_00812][SWS_Com_00330][SWS_Com_00305] => See Attached file (AT-205 overview) for more details
Needed Adaptation to other Releases	For Release < 4.2.1 : For steps 2, 4 and 6, AT_205_Ipdu is transmitted on the bus 3 times.
Pre-conditions	Com stack is initialized, but ipdu groups are not running
Main Test Execution	
Test Steps	**Pass Criteria**
Step 1	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_ACTIVATED (start Ipdu group AT_205_IpduGroup)
Step 2	[SWC] Send triggered signal AT_205_Sg1 (call to Rte_Write() API for Port AT_205_Sig1) with AT_205_Sg1_Value_1	[LT] AT_205_Ipdu is sent out 4 times First sent is done on trigger Others sent are done every RepetitionPeriod AT_205_Sg1 value shall be AT_205_Sg1_Value_1 for the 3 AT_205_Ipdu items
Step 3	[CP] Wait DataSendCompletedEvent occurrence on SWC Sender side.
Step 4	[SWC] When DataSendCompletedEvent occurs, send triggered signal AT_205_Sg1 (call to Rte_Write() API for Port AT_205_Sig1) with AT_205_Sg1_Value_2	[LT] AT_205_Ipdu is sent out 4 times First sent is done after MinimumDelayTime Others sent are done every RepetitionPeriod AT_205_Sg1 value shall be AT_205_Sg1_Value_2 for the 3 AT_205_Ipdu items
Step 5	[CP] Wait DataSendCompletedEvent occurrence on SWC Sender side.
Step 6	[SWC] When DataSendCompletedEvent occurs, Request ModeSwitch (call to

	BswMModeRequest Port) to IPDU_OFF_ON (Actions: stop Ipdu group AT_205_IpduGroup; start Ipdu group AT_205_IpduGroup)	
Step 7	[SWC] Immediately Send triggered signal AT_205_Sg1 (call to Rte_Write() API for Port AT_205_Sig1) with AT_205_Sg2_Value_3	[LT] AT_205_Ipdu is sent out 4 times First sent is done on trigger (no MDT applied, reset by IpduGroup start) Others sent are done every RepetitionPeriod AT_205_Sg1 value shall be AT_205_Sg1_Value_3 for the 3 AT_205_Ipdu items
Post-conditions	Not Applicable	

7.3.3 [ATS_COMINDEP_00259] User Request frame (DIRECT) + MDT

Test Objective	User Request frame (DIRECT) + MDT		
ID	ATS_COMINDEP_00259	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00115 ATR: ATR_ATR_00119		
Trace to SWS Item	COM: SWS_Com_00698 COM: SWS_Com_00812		
Requirements / Reference to Test Environment	Use Case UC04.01		
Configuration Parameters	Please refer to the basic communication Database present in sub-chapter "Test Configuration" of this test suite. In addition to that: ComIpdu(SignalIPdu): AT_259_Ipdu - ComTxIPduUnusedAreasDefault (unusedBitPattern) is configured - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComMinimumDelayTime (IPduTiming.minimumDelay) = y ms - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- ComTxModeMode (TransmissionModeTiming) = DIRECT (EventControlledTiming) --- ComTxModeNumberOfRepetitions(numberOfRepetitions) = 1 ComSignal(ISignalToPduMapping): AT_259_Sg1 - ComTransferProperty (transferProperty) = TRIGGERED - ComUpdateBitPosition (updateIndicationBitPosition) is configured - DataSendCompletedEvent mapped on signal transmission (ComNotification is configured)		
Summary	Aim: - Check that a send triggered signal (related to DIRECT Ipdu) respects the MDT [SWS_Com_00812][SWS_Com_00698]		
Needed	None		

Adaptation to other Releases		
Pre-conditions	Com stack is initialized, but ipdu groups are not running	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_ACTIVATED (start Ipdu group AT_259_IpduGroup)	
Step 2	[SWC] Send triggered signal AT_259_Sg1 (call to Rte_Write() API for Port AT_259_Sg1) with AT_259_Sg1_Value_1	[LT] AT_259_Ipdu sent out shall occur only one time AT_259_Sg1 value shall be AT_259_Sg1_Value_1
Step 3	[CP] Wait DataSendCompletedEvent occurence on SWC Sender side.	-
Step 4	[SWC] When DataSendCompletedEvent occurs, send triggered signal AT_259_Sg1 (call to Rte_Write() API for Port AT_259_Sg1) with AT_259_Sg1_Value_2	[LT] AT_259_Ipdu sent out shall occur after MinimumDelayTime AT_259_Sg1 value shall be AT_259_Sg1_Value_2
Post-conditions	Not Applicable	

7.3.4 [ATS_COMINDEP_00260] User Request frame (DIRECT) + several triggers

Test Objective	User Request frame (DIRECT) + several triggers		
ID	ATS_COMINDEP_00260	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00115		
Trace to SWS Item	COM: SWS_Com_00330		
Requirements / Reference to Test Environment	Use Case UC04.01		
Configuration Parameters	Please refer to the basic communication Database present in sub-chapter "Test Configuration" of this test suite. In addition to that: ComIpdu(SignalIPdu): AT_260_Ipdu - ComTxIPduUnusedAreasDefault (unusedBitPattern) is configured - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming)		

	-- ComTxModeMode (TransmissionModeTiming) = DIRECT (EventControlledTiming) --- ComTxModeNumberOfRepetitions(numberOfRepetitions) = 4 ComSignal(ISignalToPduMapping): AT_260_Sg1 - ComTransferProperty (transferProperty) = TRIGGERED - ComUpdateBitPosition (updateIndicationBitPosition) is configured - DataSendCompletedEvent mapped on signal transmission (ComNotification is configured)	
Summary	Aim: - Check that multiple send triggered signal (related to DIRECT Ipdu) does not cause triggers accumulation	
Needed Adaptation to other Releases	For Release < 4.2.1 : For step 4: The frame would have been transmitted 7 times in total and it would have been received with AT_260_Sg1_Value_3 for the last 4 times	
Pre-conditions	Com stack is initialized, but ipdu groups are not running	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_ACTIVATED (start Ipdu group AT_260_IpduGroup)	[LT] Start frame monitoring
Step 2	[SWC] Send triggered signal AT_260_Sg1 (call Rte_Write() API for Port AT_260_Sig1) with AT_260_Sg1_Value_1	
Step 3	[SWC] 1,3 * repetitions period after, send triggered signal AT_260_Sg1(call Rte_Write() API for Port AT_260_Sig1) with AT_260_Sg1_Value_2	
Step 4	[SWC] 1,3 * repetitions period after, send triggered signal AT_260_Sg1 (call Rte_Write() API for Port AT_260_Sig1) with AT_260_Sg1_Value_3	[LT] Stop frame monitoring, analyse frames received during monitoring: - AT_260_Ipdu sent out shall occur 8 times - Each occurrence shall be done every RepetitionPeriod - AT_260_Sg1 value shall be AT_260_Sg1_Value_1 in sent out (1) and (2) - AT_260_Sg1 value shall be AT_260_Sg1_Value_2 in sent out (3) - AT_260_Sg1 value shall be AT_260_Sg1_Value_3 in sent out (4), (5), (6), (7) & (8)
Post-conditions	Not Applicable	

7.3.5 [ATS_COMINDEP_00212] Tx notification

Test Objective	Tx notification

ID	ATS_COMINDEP_00212	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00031		
Trace to SWS Item	COM: SWS_Com_00479		
Requirements / Reference to Test Environment	Use Case UC04.01		
Configuration Parameters	Please refer to the basic communication Database present in sub-chapter "Test Configuration" of this test suite. In addition to that: ComIpdu(SignalIPdu): AT_212_Ipdu - ComTxIPduUnusedAreasDefault (unusedBitPattern) is configured - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- ComTxModeMode (TransmissionModeTiming) = DIRECT (EventControlledTiming) --- ComTxModeNumberOfRepetitions(numberOfRepetitions) = 1 - No ComTxModeFalse (transmissionModeFalseTiming) ComSignal(ISignalToPduMapping): Sg1 - ComTransferProperty (transferProperty) = PENDING ComSignalGroup(ISignalToPduMapping): SgGr1 - ComTransferProperty (transferProperty) = PENDING ComSignal(ISignalToPduMapping): Sg2 - ComTransferProperty (transferProperty) = TRIGGERED for Sg1/SgGr1/Sg2: - ComUpdateBitPosition (updateIndicationBitPosition) is not configured - DataSendCompletedEvent mapped on signal transmissio		
Summary	Aim: - Test PENDING signal and signal group - Test Signal and Signal Group Tx notifications - Tests Signal and Signal Group Error notification on ipdu group control stop [SWS_Com_00479]		
Needed Adaptation to other Releases	None		
Pre-conditions	Com stack is initialized, but ipdu groups are not running		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_ACTIVATED (start Ipdu group AT_212_IpduGroup)		
Step 2	[SWC] Send pending signal AT_212_Sg1 (call Rte_Write() on Port AT_212_Sig1) with AT_212_Sg1_Value_1		[LT] AT_212_Ipdu shall not be sent out

Step 3	[SWC] AT_212_SgGr1.AT_212_GrSg1 = AT_212_GrSg1_Value_1 AT_212_SgGr1.AT_212_GrSg2 = AT_212_GrSg2_Value_1 AT_212_SgGr1.AT_212_GrSg3 = AT_212_GrSg3_Value_1\ Send pending signal group AT_212_SgGr1 call (Rte_Write() for Port AT_212_SgGr1)	[LT] AT_212_Ipdu shall not be sent out
Step 4	[SWC] Send triggered signal AT_212_Sg2 (call Rte_Write() for Port AT_212_Sg2) with AT_212_Sg2_Value_1	[LT] AT_212_Ipdu shall be sent 1 time AT_212_Sg1 value shall be AT_212_Sg1_Value_1 AT_212_Sg2 value shall be AT_212_Sg2_Value_1 AT_212_GrSg1 value shall be AT_212_GrSg1_Value_1 AT_212_GrSg2 value shall be AT_212_GrSg2_Value_1 AT_212_GrSg3 value shall be AT_212_GrSg3_Value_1 DataSendCompletedEvent (Tx notification functions callback) associated to signal AT_212_Sg1, signal group AT_212_SgGr1 and signal AT_212_Sg2 shall be called
Step 5	[SWC] Send triggered signal AT_212_Sg2 (call Rte_Write() API for Port AT_212_Sg2) and stop Ipdu group AT_212_IpduGroup (call to BswMModeRequest to IPU_DEACTIVATED) before Tx Irq Confirmation.	
Step 6	[CP] WAIT 200ms	
Step 7	[SWC] Call Rte_feedback() API for AT_212_Sg2	[SWC] Rte_feedback() should return RTE_E_COM_STOPPED
Post-conditions	Not Applicable	

7.3.6 [ATS_COMINDEP_00220] Tx Mode Switch (TMS) - PERIODIC/PERIODIC

Test Objective	Tx Mode Switch (TMS) - PERIODIC/PERIODIC		
ID	ATS_COMINDEP_00220	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00115		
Trace to	COM: SWS_COM_00799		

SWS Item	COM: SWS_Com_00032 COM: SWS_Com_00231 COM: SWS_Com_00326 COM: SWS_Com_00495 COM: SWS_Com_00676
Requirements / Reference to Test Environment	Use Case UC04.01
Configuration Parameters	Please refer to the basic communication Database present in sub-chapter "Test Configuration" of this test suite. In addition to that: ComIpdu(SignalIPdu): AT_220_Ipdu - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- PERIODIC (TransmissionModeTiming.CyclicTiming) --- timeOffset = 0 --- timePeriod > 0 - ComTxModeFalse(transmissionModeFalseTiming) -- PERIODIC (TransmissionModeTiming.CyclicTiming) --- timeOffset and timePeriod values are different from ModeTrue ComSignal(ISignalToPduMapping): Sg1 - No ComFilter ComSignal(ISignalToPduMapping): Sg2 - ComFilter(DataFilter) -- dataFilterType = ONE_EVERY_N -- period/offset configured => TMC = FALSE - ComSignalInitValue ComSignalGroup(ISignalToPduMapping): SgGr1 - ComGroupSignal(ISignalToPduMapping): GrSg1 -- No ComFilter - ComGroupSignal(ISignalToPduMapping): GrSg2 -- ComFilter(DataFilter) --- dataFilterType = MASK
Summary	Aim: - Check that updating Signal and Group Signal that have no filter does not impact the TMS [SWS_Com_00676][SWS_Com_00236] - Check that updating Signal and Group Signal that have filter impacts the TMS [SWS_Com_00676][SWS_Com_00236] - Check that if one of TMCs is True, TxModeTrue is used [SWS_Com00032] - Check that if all TMCs are False, TxModeFalse is used [SWS_Com00799] - Test MASKED_NEW_EQUALS_X filter - Test ONE_EVERY_N filter [SWS_Com_00231] - Test that a TMS does an immediate sent (respecting TimeOffset) [SWS_Com_00495]
Needed Adaptation to other Releases	None
Pre-conditions	Com stack is initialized, but ipdu groups are not running

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Request ModeSwitch (call to BswMModeRequest port)	[LT] 1st AT_220_Ipdu sent out shall

	to IPDU_ACTIVATED (start Ipdu group AT_220_IpduGroup)	be done after TxModeTrue Period Others AT_220_Ipdu sent out shall be done every TxModeTrue Period AT_220_Sg1 value is AT_220_Sg1_Value_Init AT_220_Sg2 value is AT_220_Sg2_Value_Init AT_220_GrSg1 value is AT_220_GrSg1_Value_Init AT_220_GrSg2 value is AT_220_GrSg2_Value_Init
Step 2	[SWC] Send signal AT_220_Sg1 (call to Rte_Write() for Port AT_220_Sg1) with value AT_220_Sg1_Value_1 AT_220_SgGr1.AT_220_GrSg1=AT_220_GrSg1_Value_1 AT_220_SgGr1.AT_220_GrSg2=AT_220_GrSg2_Value_Init Call Rte_Write() for Port AT_220_SgGr1	[LT] Tx mode is not changed (TxModeTrue Period is respected) AT_220_Sg1 value is AT_220_Sg1_Value_1 AT_220_Sg2 value is AT_220_Sg2_Value_Init AT_220_GrSg1 value is AT_220_GrSg1_Value_1 AT_220_GrSg2 value is AT_220_GrSg2_Value_Init
Step 3	[SWC] AT_220_SgGr1.AT_220_GrSg1=AT_220_GrSg1_Value_1 AT_220_SgGr1.AT_220_GrSg2=AT_220_GrSg2_Value_1 (This value changes the signal TMC to FALSE) Call Rte_Write() for Port AT_220_SgGr1	[LT] 1st AT_220_Ipdu sent out shall be done after TxModeFalse Offset Others AT_220_Ipdu sent out shall be done every TxModeFalse Period AT_220_Sg1 value is AT_220_Sg1_Value_1 AT_220_Sg2 value is AT_220_Sg2_Value_Init AT_220_GrSg1 value is AT_220_GrSg1_Value_1 AT_220_GrSg2 value is AT_220_GrSg2_Value_1
Step 4	[SWC] Do several Send signal AT_220_Sg2 (call to Rte_Write() for Port AT_220_Sg2) with value AT_220_Sg2_Value_1 (The last sent change the group signal TMC to TRUE) Send signal group AT_220_SgGr1 (call to Rte_Write() for Port AT_220_SgGr1)	[LT] 1st AT_220_Ipdu sent out immediatly Others AT_220_Ipdu sent out shall be done every TxModeTrue Period AT_220_Sg1 value is AT_220_Sg1_Value_1 AT_220_Sg2 value is AT_220_Sg2_Value_1 AT_220_GrSg1 value is AT_220_GrSg1_Value_1 AT_220_GrSg2 value is AT_220_GrSg2_Value_1
Step 5	[SWC] AT_220_SgGr1.AT_220_GrSg2=AT_220_GrSg2_Value_2 (This value changes the signal TMC to TRUE) Call Rte_Write() for Port AT_220_SgGr1	[LT] Tx mode is not changed (TxModeTrue Period is respected) AT_220_Sg1 value is

		AT_220_Sg1_Value_1 AT_220_Sg2 value is AT_220_Sg2_Value_1 AT_220_GrSg1 value is AT_220_GrSg1_Value_1 AT_220_GrSg2 value is AT_220_GrSg2_Value_2
Post-conditions	Not Applicable	

7.3.7 [ATS_COMINDEP_00221] Tx Mode Switch (TMS) - MIXED/DIRECT

Test Objective	Tx Mode Switch (TMS) - MIXED/DIRECT		
ID	ATS_COMINDEP_00221	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00115		
Trace to SWS Item	COM: SWS_Com_00495		
Requirements / Reference to Test Environment	Use Case UC04.01		
Configuration Parameters	Please refer to the basic communication Database present in sub-chapter "Test Configuration" of this test suite. In addition to that: ComIpdu(SignalIPdu): AT_221_Ipdu - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- DIRECT (EventControlledTiming) --- NumberOfRepetitions = 2 --- RepetitionPeriod = x - ComTxModeFalse(transmissionModeFalseTiming) -- MIXED (EventControlledTiming and CyclicTiming) --- NumberOfRepetitions = 3 --- RepetitionPeriod = y --- timeOffset != timePeriod (timePeriod >3 * y) ComSignal(ISignalToPduMapping): Sg1 - ComTransferProperty (transferProperty) = TRIGGERED - No ComFilter - DataSendCompletedEvent mapped on signal transmission (ComNotification is configured) ComSignal(ISignalToPduMapping): Sg2 - ComTransferProperty (transferProperty) = PENDING - ComFilter(DataFilter) -- dataFilterType = MASKED_NEW_DIFFERS_X -- period/offset configured =		
Summary	Aim:		

	- Check that Time Offset for MIXED ipdu is started on TMS change [SWS_Com_00495] - Check that the direct (event) frame in the MIXED ipdu does not perturb the periodic frames - Test MASKED_NEW_DIFFERS_X filter - Test that updating a pending signal does not generate a DIRECT sent but can generate a TMS switch	
Needed Adaptation to other Releases	None	
Pre-conditions	Com stack is initialized, but ipdu groups are not running	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_ACTIVATED (start Ipdu group AT_221_IpduGroup)	[LT] Tx Mode True is used (AT_221_Ipdu is not sent out) Start AT_221_Ipdu frame monitoring
Step 2	[SWC] Send signal AT_221_Sg1 (call Rte_Write() for Port AT_221_Sg1) with AT_221_Sg1_Value_1	
Step 3	[CP] Wait <x + SafetyMargin> (x = RepetitionPeriod of AT_221_Ipdu)	[LT] Stop frame monitoring, analyse frames received during monitoring: - AT_221_Ipdu is sent out 2 times - First send is immediate after previous step action Rte_Write() - Second send is done after <x> RepetitionPeriod (ModeTrue) - AT_221_Sg1 value is AT_221_Sg1_Value_1 - AT_221_Sg2 value is AT_221_Sg2_Value_1_Init
Step 4	-	[SWC] AT_221_Sg1 notification (DataSendCompletedEvent) is called only one time
Step 5	[SWC] Send signal AT_220_Sg2 (Call Rte_Write() for Port AT_221_Sg2)with value AT_220_Sg2_Value_1 (This value does not change the signal TMC to FALSE)	[LT] AT_221_Ipdu is not sent out Start AT_221_Ipdu frame monitoring
Step 6	[SWC] Send signal AT_220_Sg2 (call Rte_Write() for Port AT_221_Sg2) with value AT_220_Sg2_Value_2 (This value changes the signal TMC to FALSE)	
Step 7	[CP] Wait <10 * timePeriod>	[LT] Stop frame monitoring, analyse frames received during monitoring:

		- AT_221_Ipdu periodic sent is started after previous step action Rte_Write() - Fisrt sent is done after TimeOffset (ModeFalse) - Others sent are done each TimePeriod (ModeFalse) - AT_221_Sg1 value is AT_221_Sg1_Value_1 - AT_221_Sg2 value is AT_221_Sg2_Value_2
Step 8	-	[SWC] AT_221_Sg1 notification (DataSendCompletedEvent) is called on each ipdu sent out
Step 9	[SWC] When DataSendCompletedEvent occurs (AT_221_Sg1 notification), send signal AT_221_Sg1 (call Rte_Write() for Port AT_221_Sg1) with AT_221_Sg1_Value_2	
Step 10	[CP] Wait <10 * timePeriod>	[LT] Stop frame monitoring, analyse frames received during monitoring: - 3 AT_221_Ipdu are sent immediately after previous step action Rte_Write() (each sent is done every RepetitionPeriod - Mode False) - AT_221_Sg1 value is AT_221_Sg1_Value_2 - AT_221_Sg2 value is AT_221_Sg2_Value_2 - AT_221_Ipdu Periodic sent out is not disturbed
Step 11	-	[SWC] AT_221_Sg1 notification (DataSendCompletedEvent) is done only one time for the Direct sent and at each time for periodic sent
Post-conditions	Not Applicable	

7.3.8 [ATS_COMINDEP_00261] DIRECT + TRIGGERED ON CHANGE WITHOUT REPETITIONS

Test Objective	DIRECT + TRIGGERED ON CHANGE WITHOUT REPETITIONS		
ID	ATS_COMINDEP_00261	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document			

Trace to SWS Item	COM: SWS_Com_00768 COM: SWS_Com_00770
Requirements / Reference to Test Environment	Use Case UC04.01
Configuration Parameters	Please refer to the basic communication Database present in sub-chapter "Test Configuration" of this test suite. In addition to that: ComIpdu(SignalIPdu): AT_261_Ipdu - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- DIRECT (TransmissionModeTiming.EventControlledTiming) --- NumberOfRepetitions = 5 --- RepetitionPeriod ComSignal(ISignalToPduMapping): Sg1 - ComTransferProperty (transferProperty) = TRIGGERED_ON_CHANGE_WITHOUT_REPETITION - No ComFilter - ComSignalInitValue(ISignal.initValue) ComSignalGroup(ISignalToPduMapping): SgGr1 - ComTransferProperty (transferProperty) = TRIGGERED_ON_CHANGE_WITHOUT_REPETITION - ComGroupSignal(ISignalToPduMapping): GrSg1/GrSg2 -- No ComFilter -- ComSignalInitValue(ISignal.initValue) ComSignalGroup(ISignalToPduMapping): SgGr2 - ComTransferProperty (transferProperty) = TRIGGERED - ComGroupSignal(ISignalToPduMapping): GrSg3/GrSg4
Summary	Aim: - Test TRIGGERED_ON_CHANGE_WITHOUT_REPETITION signal [SWS_Com_00768] - Test TRIGGERED_ON_CHANGE_WITHOUT_REPETITION signal group [SWS_Com_00770]
Needed Adaptation to other Releases	For Release < 4.2.1: For step 2, the IPDU is transmitted on the bus 5 times.
Pre-conditions	Com stack is initialized, but ipdu groups are not running

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_ACTIVATED (start Ipdu group AT_261_IpduGroup)	[LT] AT_261_Ipdu is not sent out
Step 2	[SWC] AT_261_SgGr2.AT_261_GrSg3=AT_261_GrSg3_Value_Init AT_261_SgGr2.AT_261_GrSg4=AT_261_GrSg4_Value_Init Call Rte_Write() for Port AT_261_SgGr2 (Rte will send group signal AT_261_GrSg3	[LT] AT_261 is sent out 6 times 1st send is immediate Time between each send is Repetition Period AT_261_Sg1 value is AT_261_Sg1_Value_Init

	with AT_261_GrSg3_Value_Init, then send group signal AT_261_GrSg4 with AT_261_GrSg4_Value_Init, and finally send signal group AT_261_SgGr2)	AT_261_GrSg1 value is AT_261_GrSg1_Value_Init AT_261_GrSg2 value is AT_261_GrSg2_Value_Init AT_261_GrSg3 value is AT_261_GrSg3_Value_Init AT_261_GrSg4 value is AT_261_GrSg4_Value_Init
Step 3	[SWC] Send signal AT_261_Sg1 (call Rte_Write() API for Port AT_261_Sg1) with the initial value AT_261_Sg1_Value_Init	[LT] AT_261 is not sent out
Step 4	[SWC] Send signal AT_261_Sg1 (call Rte_Write() API for Port AT_261_Sg1) with a new value AT_261_Sg1_Value_1	[LT] AT_261 is sent out only 1 time (this sent is immediate) AT_261_Sg1 value is AT_261_Sg1_Value_1 AT_261_GrSg1 value is AT_261_GrSg1_Value_Init AT_261_GrSg2 value is AT_261_GrSg2_Value_Init AT_261_GrSg3 value is AT_261_GrSg3_Value_Init AT_261_GrSg4 value is AT_261_GrSg4_Value_Init
Step 5	[SWC] AT_261_SgGr1.AT_261_GrSg1=AT_261_GrSg1_Value_Init AT_261_SgGr1.AT_261_GrSg2=AT_261_GrSg2_Value_Init call Rte_Write() for Port AT_261_SgGr1 (Rte will send group signal AT_261_GrSg1 with AT_261_GrSg1_Value_Init, then send group signal AT_261_GrSg2 with AT_261_GrSg2_Value_Init and finally send signal group AT_261_SgGr1)	[LT] AT_261 is not sent out
Step 6	[SWC] AT_261_SgGr1.AT_261_GrSg1=AT_261_GrSg1_Value_Init AT_261_SgGr1.AT_261_GrSg2=AT_261_GrSg2_Value_1 call Rte_Write() for Port AT_261_SgGr1 (Rte will send group signal AT_261_GrSg1 with AT_261_GrSg1_Value_Init, then send group signal AT_261_GrSg2 with AT_261_GrSg2_Value_1 and finally send signal group AT_261_SgGr1)	[LT] AT_261 is sent out only 1 time (this sent is immediate) AT_261_Sg1 value is AT_261_Sg1_Value_1 AT_261_GrSg1 value is AT_261_GrSg1_Value_Init AT_261_GrSg2 value is AT_261_GrSg2_Value_1 AT_261_GrSg3 value is AT_261_GrSg3_Value_Init AT_261_GrSg4 value is AT_261_GrSg4_Value_Init
Post-conditions	Not Applicable	

7.3.9 [ATS_COMINDEP_00222] Tx Mode Switch (TMS) - PERIODIC/MIXED + MDT

Test Objective	Tx Mode Switch (TMS) - PERIODIC/MIXED + MDT

ID	ATS_COMINDEP_00222	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00115		
Trace to SWS Item	COM: SWS_Com_00582 COM: SWS_Com_00698		
Requirements / Reference to Test Environment	Use Case UC04.01		
Configuration Parameters	Please refer to the basic communication Database present in sub-chapter "Test Configuration" of this test suite. In addition to that: ComIpdu(SignalIPdu): AT_222_Ipdu - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- MIXED (EventControlledTiming and CyclicTiming) --- NumberOfRepetitions = 1 --- timeOffset = 0 --- timePeriod > 0 - ComTxModeFalse(transmissionModeFalseTiming) -- PERIODIC (CyclicTiming) --- timeOffset > timePeriod - minimumDelay < timePeriod(TxModeTrue) ComSignalGroup(ISignalToPduMapping): SgGr1 - No updateIndicationBitPosition - ComTransferProperty (transferProperty) = TRIGGERED - DataSendCompletedEvent mapped on signal transmission (ComNotification is configured) - ComGroupSignal(ISignalToPduMapping): GrSg1 -- No ComFilter - ComGroupSignal(ISignalToPduMapping): GrSg2 -- ComFilter(DataFilter) --- dataFilterType = NEW_IS_OUTSIDE -- ComSignalInit		
Summary	Aim: - Check that Minimum Delay Time (MDT) is checked on TMS change [SWS_Com_00582] - Check that Minimum Delay Time (MDT) is started on pdur transmission request [SWS_Com_00698] - Test NEW_IS_OUTSIDE filter		
Needed Adaptation to other Releases	None		
Pre-conditions	Com stack is initialized, but ipdu groups are not running		
Main Test Execution			

Test Steps		Pass Criteria
Step 1	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_ACTIVATED (start Ipdu group AT_222_IpduGroup)	[LT] Start AT_222_Ipdu frame monitoring
Step 2	[CP] Wait <10 * timePeriod(TxModeFalse)>	[LT] Stop frame monitoring, analyse frames received during monitoring: - First sent out (after previous step action) is done after TxModeFalse Offset - AT_222_Ipdu is sent out periodically (each TxMode False Period) - AT_222_GrSg1 value is AT_222_GrSg1_Value_Init - AT_222_GrSg2 value is AT_222_GrSg2_Value_Init
Step 3	-	[SWC] Signal group AT_222_SgGr1 notification (DataSendCompletedEvent) is called at each sent out
Step 4	[SWC] When DataSendCompletedEvent occurs (AT_222_SgGr1 notification): AT_222_SgGr1.AT_222_GrSg1=AT_222_GrSg2_value_Init AT_222_SgGr1.AT_222_GrSg2=AT_222_GrSg2_value_1 (this value changes the group signal TMC to TRUE) Call Rte_Write() for Port AT_222_SgGr1	[LT] AT_222_Ipdu Direct sent out is not done immediately. It shall be done after MDT One or more Periodic sent out of AT_222_Ipdu is postponed to respect the MDT AT_222_GrSg1 value is AT_222_GrSg1_Value_Init AT_222_GrSg2 value is AT_222_GrSg2_Value_1
Post-conditions	Not Applicable	

7.3.10 [ATS_COMINDEP_00224] Tx Mode Switch (TMS) - DIRECT/PERIODIC

Test Objective	Tx Mode Switch (TMS) - DIRECT/PERIODIC		
ID	ATS_COMINDEP_00224	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00115		
Trace to SWS Item	COM: SWS_Com_00302 COM: SWS_Com_00303 COM: SWS_Com_00603		

	COM: SWS_Com_00604
Requirements / Reference to Test Environment	Use Case UC04.01
Configuration Parameters	Please refer to the basic communication Database present in sub-chapter "Test Configuration" of this test suite. In addition to that: ComIpdu(SignalIPdu): AT_224_Ipdu - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- PERIODIC (CyclicTiming) --- timeOffset = 0 --- timePeriod > 0 - ComTxModeFalse(transmissionModeFalseTiming) -- DIRECT (EventControlledTiming) --- NumberOfRepetitions = 1 ComSignal(ISignalToPduMapping): Sg1 - ComTransferProperty (transferProperty) = TRIGGERED - ComSignalInitValue(ISignal.initValue) => TMC = TRUE - ComFilter(DataFilter) -- dataFilterType = MASKED_NEW_DIFFERS_MASKED_OLD ComSignalGroup(ISignalToPduMapping): SgGr1 - ComTransferProperty (transferProperty) = TRIGGERED - ComGroupSignal(ISignalToPduMapping): GrSg1 -- ComSignalInitValue(ISignal.initValue) => TMC = FALSE -- ComFilter(DataFilter) --- dataFilterType = MASKED_NEW_DIFFERS_MAS
Summary	Aim: - Test MASKED_NEW_DIFFERS_MASKED_OLD filter [SWS_Com_00604][SWS_Com_00603][SWS_Com_00302][SWS_Com_00303]
Needed Adaptation to other Releases	None
Pre-conditions	Com stack is initialized, but ipdu groups are not running

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_ACTIVATED (start Ipdu group AT_224_IpduGroup)	[LT] AT_224_Ipdu is sent out after Period and after each Period (TxMode True) AT_224_Sg1 value is AT_224_Sg1_Value_Init AT_224_GrSg1 value is AT_224_GrSg1_Value_Init AT_224_GrSg2 value is AT_224_GrSg2_Value_Init
Step 2	[SWC] Send signal AT_224_Sg1 (call Rte_Write() API for Port AT_224_Sg1) with AT_224_Sg1_Value_1 (this value	[LT] AT_224_Ipdu is sent out every Period (TxMode True)

	does not change the signal TMC: TRUE)	AT_224_Sg1 value is AT_224_Sg1_Value_1 AT_224_GrSg1 value is AT_224_GrSg1_Value_Init AT_224_GrSg2 value is AT_224_GrSg2_Value_Init
Step 3	[SWC] Send signal AT_224_Sg1 (call Rte_Write() API for Port AT_224_Sg1) with AT_224_Sg1_Value_2 (this value changes the signal TMC: FALSE)	[LT] AT_224_Ipdu is sent out immediately and only 1 time (TxMode False) AT_224_Sg1 value is AT_224_Sg1_Value_2 AT_224_GrSg1 value is AT_224_GrSg1_Value_Init AT_224_GrSg2 value is AT_224_GrSg2_Value_Init
Step 4	[SWC] AT_224_SgGr1.AT_224_GrSg1=AT_224_GrSg1_Value_1 (this value changes the group signal TMC: TRUE) AT_224_SgGr1.AT_224_GrSg2=AT_224_GrSg2_Value_Init call Rte_Write() for Port AT_224_SgGr1	[LT] AT_224_Ipdu is sent out immediately and after each Period (TxMode True) AT_224_Sg1 value is AT_224_Sg1_Value_2 AT_224_GrSg1 value is AT_224_GrSg1_Value_1 AT_224_GrSg2 value is AT_224_GrSg2_Value_Init
Step 5	[SWC] AT_224_SgGr1.AT_224_GrSg1=AT_224_GrSg1_Value_2 (this value does not change the signal TMC: TRUE) AT_224_SgGr1.AT_224_GrSg2=AT_224_GrSg2_Value_Init call Rte_Write() for Port AT_224_SgGr1	[LT] AT_224_Ipdu is sent out every each Period (TxMode True) AT_224_Sg1 value is AT_224_Sg1_Value_2 AT_224_GrSg1 value is AT_224_GrSg1_Value_2 AT_224_GrSg2 value is AT_224_GrSg2_Value_Init
Post-conditions	Not Applicable	

7.3.11 [ATS_COMINDEP_00225] Manual Tx Mode Switch (TMS) PERODIC/PERIODIC

Test Objective	Manual Tx Mode Switch (TMS) PERODIC/PERIODIC		
ID	ATS_COMINDEP_00225	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00115		
Trace to SWS	COM: SWS_Com_00223		

Item	COM: SWS_Com_00228 COM: SWS_Com_00229 COM: SWS_Com_00495 COM: SWS_Com_00602 COM: SWS_Com_00784
Requirements / Reference to Test Environment	Use Case UC04.01
Configuration Parameters	Please refer to the basic communication Database present in sub-chapter "Test Configuration" of this test suite. In addition to that: ComIpdu(SignalIPdu): AT_225_Ipdu - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- PERIODIC (CyclicTiming) --- timeOffset != timePeriod - ComTxModeFalse(transmissionModeFalseTiming) -- PERIODIC (CyclicTiming) --- timeOffset != timePeriod (different value from ModeTrue) ComSignal(ISignalToPduMapping): Sg1 - ComTransferProperty (transferProperty) = TRIGGERED - ComSignalInitValue(ISignal.initValue) => TMC = FALSE - ComFilter(DataFilter) -- dataFilterType = NEW_IS_WITHIN
Summary	Aim: - Check that Ipdu group determines the correct Transmission Mode [SWS_Com_00228][SWS_Com_00223] => TxModeFalse - Check that SwitchIpduTxMode (FALSE) does not change the Tx mode [SWS_Com_00784] => TxModeFalse - Check that SwitchIpduTxMode (TRUE) changes the mode [SWS_Com_00784][SWS_Com_00495] => TxModeTrue - Check that a send signal changes the Tx Mode => TxModeFalse and even if TMC is false signal is not filter out [SWS_Com_00602] - Check that upate a signal (change TMC) and restart the IpduGroup determines the new Transmission Mode [SWS_Com_00223][SWS_Com_00229] => TxModeTrue - Test NEW_IS_WITHIN filter
Needed Adaptation to other Releases	Configuration: [yes] Test Steps: [n/a] — `In BswM R3.2.x, SwitchIPduMode action is not available. UserCallout action must be used in this case.`
Pre-conditions	Com stack is initialized, but ipdu groups are not running

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_ACTIVATED (start Ipdu group AT_225_IpduGroup)	[LT] AT_225_Ipdu is sent out after OffsetFalse and after each PeriodFalse AT_225_Sg1 value is AT_225_Sg1_Value_Init

Step 2	[SWC] Request ModeSwitch (call to BswMModeRequest port) to TXMODE_FALSE (SwitchIpduTxMode to FALSE)	[LT] AT_225_Ipdu is sent out every PeriodFalse AT_225_Sg1 value is AT_225_Sg1_Value_Init
Step 3	[SWC] Request ModeSwitch (call to BswMModeRequest port) to TXMODE_TRUE (SwitchIpduTxMode to TRUE)	[LT] AT_225_Ipdu is sent out after OffsetTrue and after each PeriodTrue AT_225_Sg1 value is AT_225_Sg1_Value_Init
Step 4	[SWC] Update signal AT_225_Sg1 (Call Rte_Write for Port AT_225_Sg1) to AT_225_Sg1_Value_1 (TMC keeps to FALSE)	[LT] AT_225_Ipdu is sent out after OffsetFalse and after each PeriodFalse AT_225_Sg1 value is AT_225_Sg1_Value_1
Step 5	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_DEACTIVATED (stop Ipdu group AT_225_IpduGroup)	[LT] AT_225_Ipdu Ipdu is not send out
Step 6	[SWC] Update signal AT_225_Sg1 (Call Rte_Write() for Port AT_225_Sg1) to AT_225_Sg1_Value_2 (TMC keeps to TRUE)	[LT] AT_225_Ipdu is not send out
Step 7	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_ACTIVATED (start Ipdu group AT_225_IpduGroup) (Initialize = FALSE)	[LT] AT_225_Ipdu is sent out after OffsetTrue and after each PeriodTrue AT_225_Sg1 value is AT_225_Sg1_Value_2
Post-conditions	Not Applicable	

7.3.12 [ATS_COMINDEP_00223] Manual Tx Send (Trigger IPdu Send) + MDT

Test Objective	Manual Tx Send (Trigger IPdu Send) + MDT		
ID	ATS_COMINDEP_00223	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00115 ATR: ATR_ATR_00119		
Trace to SWS Item	COM: SWS_Com_00348 COM: SWS_Com_00388		
Requirements / Reference to Test Environment	Use Case UC04.01		
Configuration	ComIpdu(SignalIPdu): AT_223_Ipdu		

Parameters	- ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - No ComTxModeFalse(transmissionModeFalseTiming) - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- DIRECT (TransmissionModeTiming.EventControlledTiming) --- ComTxModeNumberOfRepetitions(numberOfRepetitions) = 2 --- ComTxModeRepetitionPeriod(RepetitionPeriod) = y ms - ComMinimumDelayTime (IPduTiming.minimumDelay) = x ms => constraint: x < y ComSignal(ISignalToPduMapping): Sg1 - ComTransferProperty (transferProperty) = TRIGGERED - DataSendCompletedEvent mapped on signal transmission (ComNotification is configured)
Summary	Aim: - Check that Trigger Ipdu Send takes into account the MDT - Check that Trigger Ipdu Send does not take into account the number of repetitions
Needed Adaptation to other Releases	Configuration: [yes] Test Steps: [n/a] `In BswM R3.2.x, TriggerIpduSend action is not available. UserCallout action must be used in this case.`
Pre-conditions	Com stack is initialized, but ipdu groups are not running

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Request ModeSwitch (call Rte_Switch associated to BswMMode port) to IPDU_ACTIVATED (start Ipdu group AT_223_IpduGroup)	[LT] AT_223_Ipdu is not sent out
Step 2	[SWC] Send triggered signal AT_223_Sg1 (call Rte_Write() API for Port AT_223_Sg1) with AT_223_Sg1_Value_1	[LT] The AT_223_Ipdu is sent two times (number of repetitions and repetition period are respected) AT_223_Sg1 value is AT_223_Sg1_Value_1
Step 3	[SWC] Wait DataSendCompletedEvent during <TransmissionAckTimeout>	[LT] DataSendCompletedEvent occurs before <TransmissionAckTimeout>
Step 4	[SWC] In Runnable activated by DataSendCompletedEvent, Get Transmission Feedback of signal AT_223_Sg1 (call Rte_Feedback)	[SWC] Return Value of Rte_Feedback is RTE_E_TRANSMIT_ACK
Step 5	[SWC] In Runnable activated by DataSendCompletedEvent, Request ModeSwitch (call Rte_Switch associated to BswMMode port) to TRIG_IPDU_SEND (action call TriggerIpduSend for Ipdu_AT_223)	[LT] AT_223_Ipdu is sent out only 1 time after MDT elapsed (MDT is respected, number of repetitions is ignored) AT_223_Sg1 value is AT_223_Sg1_Value_1
Step 6	[SWC]	[SWC]

	Get Transmission Feedback of signal AT_223_Sg1 (call Rte_Feedback) until Return Value is RTE_E_TRANSMIT_ACK	Return Value of Rte_Feedback is RTE_E_TRANSMIT_ACK before <TransmissionAckTimeout> DataSendCompletedEvent was called 2 times (once after Rte_Write, once after TriggerIpduSend)
Post-conditions	Not Applicable	

7.3.13 [ATS_COMINDEP_00226] Ipdu and Trigger Transmit Callouts

Test Objective	Ipdu and Trigger Transmit Callouts		
ID	ATS_COMINDEP_00226	**AUTOSAR Releases**	3.2.1|3.2.2|4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00117		
Trace to SWS Item	COM: SWS_Com_00346 COM: SWS_Com_00492		
Requirements / Reference to Test Environment	Use Case UC04.01		
Configuration Parameters	ComIpdu(SignalIPdu): AT_226_Ipdu1 - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - No ComTxModeFalse - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- DIRECT (TransmissionModeTiming.EventControlledTiming) --- ComTxModeNumberOfRepetitions(numberOfRepetitions) = 1 - ComIPduCallout is configured ComSignal(ISignalToPduMapping): Sg1 - ComTransferProperty (transferProperty) = TRIGGERED ComIpdu(SignalIPdu): AT_226_Ipdu2 - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - No ComTxModeFalse - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- NONE (no timing assigned) - ComIPduTriggerTransmitCallout is configured ComSignal(ISignalToPduMapping): Sg2 Hint: For Ipdu2 Trigger Transmit mechanism is needed. Therefore LIN, FlexRay or CanNM Pdu should be used for Ipdu2.		
Summary	Aim: 1) Ipdu Callout [SWS_Com_00346][SWS_Com_00492]		

	- Check that if return value of the callout is False, ipdu is not sent out - Check that if return value of the callout is True, ipdu is sent out (and Ipdu value can be modified by the callout) - Check that trigger IpduSend call also the callout 2) Trigger Transmit Callout [SWS_Com_00346] - Check that the return value of the Trigger Transmit Callout has no effect (Ipdu is sent out even if the return value is false) - Check if Trigger Transmit Callout modifies ipdu value, new value is taken into account
Needed Adaptation to other Releases	
Pre-conditions	Com stack is initialized, but ipdu groups are running

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Update signal AT_226_Sg1 (call Rte_Write() API for Port AT_226_Sg1) with AT_226_Sg1_Value_1	[SWC] AT_226_Ipdu1_Callout is called
Step 2	[SWC] In AT_226_Ipdu1_Callout, set return value to FALSE	[LT] AT_226_IPdu1 is not sent out
Step 3	[SWC] Update signal AT_226_Sg1 (call Rte_Write() API for Port AT_226_Sg1) with AT_226_Sg1_Value_1	[SWC] AT_226_Ipdu1_Callout is called
Step 4	[SWC] In AT_226_Ipdu1_Callout, modify ipdu data (set AT_226_Sg1 value to AT_226_Sg1_Value_2) Set AT_226_Ipdu1_Callout return value to TRUE	[LT] AT_226_IPdu1 is sent out one time AT_226_Sg1 value is AT_226_Sg1_Value_2
Step 5	[SWC] Call trigger ipdu send for AT_226_Ipdu1 by Requesting ModeSwitch (call Rte_Switch associated to BswMMode port) to TRIG_IPDU_SEND (action call TriggerIpduSend for Ipdu_AT_226)	[SWC] AT_226_Ipdu1_Callout is called
Step 6	[SWC] In AT_226_Ipdu1_Callout, set return value to TRUE	[LT] AT_226_IPdu1 is sent out one time AT_226_Sg1 value is AT_226_Sg1_Value_2
Step 7	[SWC] Wait call of AT_226_Ipdu2_TriggerTransmitCallout Set AT_226_Ipdu2_TriggerTransmitCallout return value to FALSE	[LT] AT_226_IPdu2 is sent out one time AT_226_Sg2 value is AT_226_Sg2_Value_Init
Step 8	[SWC] Wait call of AT_226_Ipdu2_TriggerTransmitCallout In AT_226_Ipdu2_TriggerTransmitCallout, modify ipdu data (set AT_226_Sg2 value to AT_226_Sg2_Value_1 different from init)	[LT] AT_226_IPdu2 is sent out one time AT_226_Sg2 value is AT_226_Sg2_Value_1

	Set AT_226_Ipdu2_TriggerTransmitCallout return value to TRUE	
Step 9	[SWC] Call Com_IpduGroupControl using generic BswM Request from Application SWC to stop the I-PDU groups	[SWC] The ComIPduTriggerTransmitCallout shall not be called
Post-conditions	Not Applicable	

7.3.14 [ATS_COMINDEP_00723] Transmission Of An I-PDU having DIRECT Tx Mode Consisting of Signal And Signal Group with Triggered On Change Transfer Property

Test Objective	Transmission Of An I-PDU having DIRECT Tx Mode Consisting of Signal And Signal Group with Triggered On Change Transfer Property		
ID	ATS_COMINDEP_00723	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	proposed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00138 COM: SWS_Com_00734 COM: SWS_Com_00743		
Requirements / Reference to Test Environment	none		
Configuration Parameters	For signal properties, please refer to "AT_723 Signal Properties:" in chapter 6.1.2.1.1 For IPDU Structure, please refer to "AT_723_IPDU_Structure" in chapter 6.1.2.1.1 Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = DIRECT Fibex::FibexCore::CoreCommunication.EventControlledTiming.numberOfRepetitions= 3 Fibex::FibexCore::CoreCommunication::EventControlledTiming.repetitionPeriod = 300 ms		
Summary	The transmission of assigned I-PDU shall be verified using Com transmission confirmation of the respective I-PDU and data observed on the bus log.		
Needed Adaptation to other Releases			
Pre-conditions	DUT shall be in Full communication state		
Main Test Execution			

Test Steps		Pass Criteria
Step 1	[SWC] Trigger Rte_Write for Signal_13 and Signal_12 with valid data	[SWC] E_OK shall be returned for the request
Step 2	-	[LT] Frame shall be observed on the bus by the DUT twice for every Com Transmission Mode Repetition Period
Step 3	-	[SWC] Com transmission confirmation for the configured signals should be invoked
Step 4	[SWC] Trigger Rte_Write for Signal_12 with same data as before	[SWC] E_OK shall be returned for the request
Step 5	-	[LT] Corresponding frame is not transmitted by the DUT
Step 6	[SWC] Trigger Rte_Write for Signal_11 Signal_Group_11 and Signal_Group_12 with valid data	[SWC] E_OK shall be returned for the request
Step 7	-	[LT] Frame shall be observed on the bus by the DUT thrice for every Com Transmission Mode Repetition Period
Step 8	-	[SWC] Com transmission confirmation for the configured signals should be invoked
Step 9	[SWC] Trigger Rte_Write for Signal_Group_12 with same data as before	[SWC] E_OK shall be returned for the request
Step 10	-	[LT] Corresponding frame is not transmitted by the DUT
Post-conditions	None	

7.3.15 [ATS_COMINDEP_00724] Transmission Of An I-PDU having MIXED Tx Mode Consisting of Signal And Signal Group With Triggered On Change Transfer Property

Test Objective	Transmission Of An I-PDU having MIXED Tx Mode Consisting of Signal And Signal Group With Triggered On Change Transfer Property		
ID	ATS_COMINDEP_00724	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	proposed
Trace to Requirement on Acceptance Test Document			

Trace to SWS Item	COM: SWS_Com_00734 COM: SWS_Com_00743
Requirements / Reference to Test Environment	none
Configuration Parameters	For signal properties, please refer to "AT_724 Signal Properties:" in chapter 6.1.2.1.1 For IPDU Structure, please refer to "AT_724_IPDU_Structure" in chapter 6.1.2.1.1 Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = MIXED Fibex::FibexCore::CoreCommunication.EventControlledTiming.numberOfRepetitions= 2 Fibex::FibexCore::CoreCommunication::EventControlledTiming.repetitionPeriod = 100 ms Fibex::FibexCore::CoreCommunication::CyclicTiming.timePeriod = 500ms
Summary	The transmission of assigned I-Pdu shall be verified using COM transmission confirmation of the respective I-Pdu and data observed on the trace log.
Needed Adaptation to other Releases	
Pre-conditions	DUT shall be in Full communication state

Main Test Execution

Test Steps		**Pass Criteria**
Step 1	[SWC] Trigger Rte_Write for Signal_16 and Signal_14 with valid data	[SWC] E_OK shall be returned for the request
Step 2	-	[LT] Frame shall be observed on the bus by the DUT twice for every Com Transmission Mode RepetitionPeriod
Step 3	-	[SWC] Com transmission confirmation for the configured signals should be invoked
Step 4	[SWC] Trigger Rte_Write for Signal_14 with same data as before	[SWC] E_OK shall be returned for the request
Step 5	-	[LT] Corresponding frame is not transmitted by the DUT
Step 6	[SWC] Trigger Rte_Write for SignalGroup_14 and SignalGroup_13 with valid data	[SWC] E_OK shall be returned for the request
Step 7	-	[LT] Frame shall be observed on the bus by the DUT twice in a period of Com Transmission Mode Repetition Period and periodically for every Cycle time
Step 8	-	[SWC] Com transmission confirmation for the configured signals should be invoked
Step 9	[SWC] Trigger Rte_Write for SignalGroup_13 with same data as before	[SWC] E_OK shall be returned for the request
Step 10	-	[LT]

		Immediate transmission of frame is not observed and only regular periodic instances of the frame are observed
Post-conditions	None	

7.3.16 [ATS_COMINDEP_00725] Transmission Of An I-PDU having DIRECT Tx Mode Consisting of Signal And Signal Group with TRIGGERED WITHOUT REPETITION Transfer Property

Test Objective	Transmission Of An I-PDU having DIRECT Tx Mode Consisting of Signal And Signal Group with TRIGGERED WITHOUT REPETITION Transfer Property		
ID	ATS_COMINDEP_00725	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	proposed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00767 COM: SWS_Com_00769		
Requirements / Reference to Test Environment	none		
Configuration Parameters	For signal properties, please refer to "AT_725 Signal Properties:" in chapter 6.1.2.1.1 For IPDU Structure, please refer to "AT_725_IPDU_Structure" in chapter 6.1.2.1.1 Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = DIRECT Fibex::FibexCore::CoreCommunication.EventControlledTiming.numberOfRepetitions= 3 Fibex::FibexCore::CoreCommunication::EventControlledTiming.repetitionPeriod = 100 ms		
Summary	The transmission of assigned I-PDU shall be verified using Com transmission confirmation of the respective I-PDU and data observed on the trace log.		
Needed Adaptation to other Releases			
Pre-conditions	DUT shall be in Full communication mode		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[SWC] Trigger Rte_Write for Signal_18 and Signal_17 with valid data		[SWC] E_OK shall be returned for the request
Step 2	-		[LT] Frame shall be transmitted once by the DUT
Step 3	-		[SWC]

		Com transmission confirmation for the configured signals should be invoked
Step 4	[SWC] Trigger Rte_Write for Signal_19 Signal_Group_15 and Signal_Group_16 with valid data	[SWC] E_OK shall be returned for the request
Step 5	-	[LT] Frame shall be transmitted once by the DUT
Step 6	-	[SWC] Com transmission confirmation for the configured signals should be invoked
Post-conditions	None	

7.3.17 [ATS_COMINDEP_00726] Transmission Of An I-PDU Having MIXED Tx Mode Consisting of Signal And Signal Group with TRIGGERED WITHOUT REPETITION Transfer Property

Test Objective	Transmission Of An I-PDU Having MIXED Tx Mode Consisting of Signal And Signal Group with TRIGGERED WITHOUT REPETITION Transfer Property		
ID	ATS_COMINDEP_00726	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	proposed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00767 COM: SWS_Com_00769		
Requirements / Reference to Test Environment	none		
Configuration Parameters	For signal properties, please refer to "AT_726 Signal Properties:" in chapter 6.1.2.1.1 For IPDU Structure, please refer to "AT_726_IPDU_Structure" in chapter 6.1.2.1.1 Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = MIXED Fibex::FibexCore::CoreCommunication.EventControlledTiming.numberOfRepetitions= 3 Fibex::FibexCore::CoreCommunication::EventControlledTiming.repetitionPeriod = 100 ms Fibex::FibexCore::CoreCommunication::CyclicTiming.timePeriod = 200 ms		
Summary	The transmission of assigned I-PDU shall be verified using Com transmission confirmation of the respective I-PDU and data observed on the trace log.		
Needed Adaptation to other Releases			
Pre-	DUT shall be in Full communication state		

conditions		
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Trigger Rte_Write for Signal_66 and Signal_67 with valid data	[SWC] E_OK shall be returned for the request
Step 2	-	[LT] Frame shall be observed once on the bus immediately and periodically on the bus by the DUT for every Com Transmission Mode Time Period time
Step 3	-	[SWC] Com transmission confirmation for the configured signals should be invoked
Step 4	[SWC] Trigger Rte_Write for Signal_65 Signal_Group_18 and Signal_Group_17 with valid data	[SWC] E_OK shall be returned for the request
Step 5	-	[LT] Frame shall be observed once on the bus immediately and periodically on the bus by the DUT for every Com Transmission Mode Time Period time
Step 6	-	[SWC] Com transmission confirmation for the configured signals should be invoked
Post-conditions	None	

7.3.18 [ATS_COMINDEP_00727] Transmission Of An I-PDU having MIXED Tx Mode Consisting of Signal And Signal Group with TRIGGERED ON CHANGE WITHOUT REPETITION Transfer Property

Test Objective	Transmission Of An I-PDU having MIXED Tx Mode Consisting of Signal And Signal Group with TRIGGERED ON CHANGE WITHOUT REPETITION Transfer Property		
ID	ATS_COMINDEP_00727	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	proposed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00768 COM: SWS_Com_00770		
Requirements / Reference to Test Environment	none		
Configuration Parameters	For signal properties, please refer to "AT_727 Signal Properties:" in chapter 6.1.2.1.1 For IPDU Structure, please refer to "AT_727_IPDU_Structure" in chapter 6.1.2.1.1		

	Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = MIXED Fibex::FibexCore::CoreCommunication.EventControlledTiming.numberOfRepetitions= 3 Fibex::FibexCore::CoreCommunication::EventControlledTiming.repetitionPeriod = 100 ms Fibex::FibexCore::CoreCommunication::CyclicTiming.timePeriod = 200 ms	
Summary	The transmission of assigned I-Pdu shall be verified using Com transmission confirmation of the respective I-PDU and data observed on the trace log.	
Needed Adaptation to other Releases		
Pre-conditions	DUT shall be in Full communication state	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Trigger Rte_Write for Signal_91 and Signal_90 with valid data	[SWC] E_OK shall be returned for the request
Step 2	-	[LT] Frame shall be observed on the bus immediately and periodically for every Com Transmission Mode Time Periodtime
Step 3	-	[SWC] Com transmission confirmation for the configured signals should be invoked
Step 4	[SWC] Trigger Rte_Write for Signal_90 with same data as before	[SWC] E_OK shall be returned for the request
Step 5	-	[LT] Corresponding frame is not transmitted by the DUT
Step 6	[SWC] Trigger Rte_Write for Signal_Group_93 Signal_Group_92 and Signal_Group_91 with valid data	[SWC] E_OK shall be returned for the request
Step 7	-	[LT] Frame shall be observed on the bus immediately and periodically for every Com Transmission Mode Time Periodtime
Step 8	-	[SWC] Com transmission confirmation for the configured signals should be invoked
Step 9	[SWC] Trigger Rte_Write for Signal_Group_91 with same data as before	[SWC] E_OK shall be returned for the request
Step 10	-	[LT] Immediate transmission of frame is not observed and only regular periodic instances of the frame are observed
Post-conditions	None	

7.3.19 [ATS_COMINDEP_00728] Triggered Transmission Of An I-Pdu With MIXED Mode And Minimum Delay Timer Configured

Test Objective	Triggered Transmission Of An I-Pdu With MIXED Mode And Minimum Delay Timer Configured		
ID	ATS_COMINDEP_00728	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	proposed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00625		
Requirements / Reference to Test Environment	none		
Configuration Parameters	For signal properties, please refer to "AT_728 Signal Properties:" in chapter 6.1.2.1.1 For IPDU Structure, please refer to "AT_728_IPDU_Structure" in chapter 6.1.2.1.1 Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = MIXED Fibex::FibexCore::CoreCommunication::CyclicTiming.timePeriod = 500 ms CoreCommunication::IPduTiming.minimumDelay = 300 ms Fibex::FibexCore::CoreCommunication::EventControlledTiming.repetitionPeriod = 250 ms Fibex::FibexCore::CoreCommunication.EventControlledTiming.numberOfRepetitions= 2		
Summary	By using the Com_MinimumDelayTime we shall observe whether the immediate transmission of the assigned I-Pdu is occurring or not.		
Needed Adaptation to other Releases			
Pre-conditions	DUT shall be in Full communication state		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[SWC] Call Rte_Write for Signal_95 Signal_97 and SignalGroup_96 with valid data		[SWC] E_OK shall be returned for the request
Step 2	-		[LT] Frames should be observed with the value on bus by the DUT twice in a period of 250ms and periodically for every Com Transmission Mode Repetition Period
Step 3	-		[SWC] Com transmission confirmation for the configured signals and signal groups should be invoked accordingly

Step 4	[SWC] Call Rte_Write for SignalGroup_97 with valid data before expiry of Minimum Delay Timer	[SWC] E_OK shall be returned for the request
Step 5	-	[LT] Corresponding Frame should not be observed immediately on bus by the DUT
Step 6	[SWC] Call Rte_Write for SignalGroup_97 with valid data after expiry of Minimum Delay Timer	[SWC] E_OK shall be returned for the request
Step 7	-	[LT] Frames should be observed with the value on bus by the DUT after Com Minimum Delay Time twice in a period of Com Transmission Mode Repetition Period and periodically for every Com Transmission Mode Time Period
Step 8	-	[LT] Com transmission confirmation for the configured signals and signal groups should be invoked accordingly
Post-conditions	None	

7.3.20 [ATS_COMINDEP_00729] Transmit I-PDU Callout With Tx Mode PERIODIC

Test Objective	Transmit I-PDU Callout With Tx Mode PERIODIC		
ID	ATS_COMINDEP_00729	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	proposed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00719		
Requirements / Reference to Test Environment	none		
Configuration Parameters	For signal properties, please refer to "AT_729 Signal Properties:" in chapter 6.1.2.1.1 For IPDU Structure, please refer to "AT_729_IPDU_Structure" in chapter 6.1.2.1.1 Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = PERIODIC Fibex::FibexCore::CoreCommunication::CyclicTiming.timePeriod = 200 ms Fibex::FibexCore::CoreTopology::CommConnectorPort.communicationDirection = SEND ComIPduCallout = App_Com_Tx_IPdu_Request_Sn_74		
Summary	The invocation of I-Pdu callout shall be verified by configuring Com transmission I-Pdu callout.		
Needed			

Adaptation to other Releases		
Pre-conditions	DUT shall be in Full communication state	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Call Rte_Write for Signal_75 Signal_76 SignalGroup_74 and SignalGroup_75 with valid data	[SWC] E_OK shall be returned for the request
Step 2	[SWC] Call Rte_Write for Signal_74 with valid data	[SWC] E_OK shall be returned for the request
Step 3	-	[SWC] Com transmission I-Pdu callout with Data should be invoked periodically for every Com Transmission Mode Time Period
Post-conditions	None	

7.3.21 [ATS_COMINDEP_00730] Transmit I-PDU Callout With Tx Mode MIXED

Test Objective	Transmit I-PDU Callout With Tx Mode MIXED		
ID	ATS_COMINDEP_00730	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	proposed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00719		
Requirements / Reference to Test Environment	none		
Configuration Parameters	For signal properties, please refer to "AT_730 Signal Properties:" in chapter 6.1.2.1.1 For IPDU Structure, please refer to "AT_730_IPDU_Structure" in chapter 6.1.2.1.1 Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = MIXED Fibex::FibexCore::CoreCommunication::CyclicTiming.timePeriod = 500 ms Fibex::FibexCore::CoreCommunication.EventControlledTiming.numberOfRepetitions = 1 Fibex::FibexCore::CoreTopology::CommConnectorPort.communicationDirection = SEND ComIPduCallout = App_Com_Tx_IPdu_Request_Sn_80		
Summary	The invocation of I-Pdu callout shall be verified by configuring Com transmission I-Pdu callout.		
Needed Adaptation to other Releases			

Pre-conditions	DUT shall be in Full communication state	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Trigger Rte_Write for Signal_77 Signal_78 SignalGroup_77 and SignalGroup_78 with valid data	[SWC] E_OK shall be returned for the request
Step 2	[SWC] Trigger Rte_Write for Signal_80 with valid data	[SWC] E_OK shall be returned for the request
Step 3	-	[SWC] Com transmission I-Pdu callout with Data shall be invoked immediately and periodically for every 500 ms
Post-conditions	None	

7.3.22 [ATS_COMINDEP_00731] Verify The Update Bits In An IPDU With TX MODE DIRECT when Com_Sendsignal / Com_SendSignalGroup is invoked

Test Objective	Verify The Update Bits In An IPDU With TX MODE DIRECT when Com_Sendsignal / Com_SendSignalGroup is invoked		
ID	ATS_COMINDEP_00731	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	proposed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00061 COM: SWS_Com_00324		
Requirements / Reference to Test Environment	none		
Configuration Parameters	For signal properties, please refer to "AT_731 Signal Properties:" in chapter 6.1.2.1.1 For IPDU Structure, please refer to "AT_731_IPDU_Structure" in chapter 6.1.2.1.1 Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = DIRECT		
Summary	The update bit should be set in data observed on the trace log.		
Needed Adaptation to other Releases			
Pre-conditions	DUT shall be in Full communication state		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[SWC] Trigger Explicit Rte_Write for SignalGroup_43 Signal_43 and Signal_44		[SWC] E_OK shall be returned for the request

	with valid data	
Step 2	-	[LT] Frame shall be transmitted on the bus by the DUT and check if the updated bits are updated for each signal
Step 3	-	[SWC] Com transmission confirmation for the configured signals and signal groups should be invoked
Step 4	[SWC] Trigger Explicit Rte_Write for Signal_44 with valid data	[SWC] E_OK shall be returned for the request
Step 5	-	[LT] Frame shall be transmitted on the bus by the DUT and check that the updated bit is updated only for Signal_44 and not for other two.
Step 6	-	[SWC] Com transmission confirmation for the configured Signal_44 should be invoked
Post-conditions	None	

7.3.23 [ATS_COMINDEP_00732] Verify The Update Bits In An IPDU With TX MODE PERIODIC when Com_Sendsignal / Com_SendSignalGroup is invoked

Test Objective	Verify The Update Bits In An IPDU With TX MODE PERIODIC when Com_Sendsignal / Com_SendSignalGroup is invoked		
ID	ATS_COMINDEP_00732	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	proposed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00061 COM: SWS_Com_00324		
Requirements / Reference to Test Environment	none		
Configuration Parameters	For signal properties, please refer to "AT_732 Signal Properties:" in chapter 6.1.2.1.1 For IPDU Structure, please refer to "AT_732_IPDU_Structure" in chapter 6.1.2.1.1 Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = PERIODIC Fibex::FibexCore::CoreCommunication::CyclicTiming.timePeriod = 200 ms		
Summary	The update bit should be set in data observed on the trace log.		
Needed Adaptation to			

other Releases		
Pre-conditions	DUT shall be in Full communication state	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Trigger Explicit Rte_Write for Signal_45 Signal_46 and SignalGroup_45 with valid data	[SWC] E_OK shall be returned for the requests
Step 2	-	[LT] Frames shall be transmitted by the DUT and check if the updated bits are updated for each signal on the first periodic transmission and no update bits are set for the subsequent transmissions
Step 3	-	[SWC] Com transmission confirmation for the configured signals and signal groups should be invoked
Step 4	[SWC] Trigger Explicit Rte_Write for Signal_45 and SignalGroup_45 with valid data	[SWC] E_OK shall be returned for the requests
Step 5	-	[LT] Frames shall be transmitted on the bus by the DUT and check that updated bits are updated only for Signal_45 and SignalGroup_45 but not for Signal_46 on the first periodic transmission
Step 6	-	[SWC] Com transmission confirmation for the configured signals and signal groups should be invoked
Post-conditions	None	

7.3.24 [ATS_COMINDEP_00733] Verify The Update Bits In An IPDU With MIXED TX MODE when Com_Sendsignal / Com_SendSignalGroup is invoked

Test Objective	Verify The Update Bits In An IPDU With MIXED TX MODE when Com_Sendsignal / Com_SendSignalGroup is invoked		
ID	ATS_COMINDEP_00733	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	proposed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00061 COM: SWS_Com_00324		

Requirements / Reference to Test Environment	none	
Configuration Parameters	For signal properties, please refer to "AT_733 Signal Properties:" in chapter 6.1.2.1.1 For IPDU Structure, please refer to "AT_733_IPDU_Structure" in chapter 6.1.2.1.1 Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = MIXED Fibex::FibexCore::CoreCommunication::CyclicTiming.timePeriod = 200 ms Fibex::FibexCore::CoreCommunication.EventControlledTiming.numberOfRepetitions= 2 Fibex::FibexCore::CoreCommunication::EventControlledTiming.repetitionPeriod = 100 ms	
Summary	The update bit should be set in data observed on the trace log.	
Needed Adaptation to other Releases		
Pre-conditions	DUT shall be in Full communication state	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Trigger Explicit Rte_Write for Signal_47 SignalGroup_47 and Signal_48 with valid data	[SWC] E_OK shall be returned for the request
Step 2	-	[LT] Frames shall be transmitted by the DUT and check if the updated bits are updated for each signal on the immediate transmission and no update bits are set for the subsequent periodic transmissions
Step 3	-	[SWC] Com transmission confirmation for the configured signals and signal groups should be invoked
Step 4	[SWC] Trigger Explicit Rte_Write for Signal_48 with a different valid data	[SWC] E_OK shall be returned for the request
Step 5	-	[LT] Frames shall be transmitted by the DUT and check if the updated bits are updated for only Signal_48 on the immediate transmission and no update bits are set for the subsequent periodic transmissions
Step 6	-	[SWC] Com transmission confirmation for the configured signals and signal groups should be invoked
Post-conditions	None	

7.3.25 [ATS_COMINDEP_00734] Signal Routing When Source And Destination Signals/signal group have Update Bit And Update Bit Of The Received Signal Is Not Set

Test Objective	Signal Routing When Source And Destination Signals/signal group have Update Bit And Update Bit Of The Received Signal Is Not Set		
ID	ATS_COMINDEP_00734	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	proposed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00703		
Requirements / Reference to Test Environment	none		
Configuration Parameters	Rx_IPDU_SR STRUCTURE: For IPDU Structure, please refer to "AT_734_Rx_IPDU_SR STRUCTURE" in chapter 6.1.2.1.1 Tx_IPDU_SR STRUCTURE For IPDU Structure, please refer to "AT_734_Tx_IPDU_SR STRUCTURE" in chapter 6.1.2.1.1 Fibex::FibexCore::CoreCommunication::ISignalToIPduMapping.transferProperty = TRIGGERED(For all the signals and signal groups configured) Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = DIRECT		
Summary	The routing of signal shall be verified observing data on the trace log.		
Needed Adaptation to other Releases			
Pre-conditions	DUT shall be in Full communication state		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Send the frame Rx_IPDU_SR from Tester to the DUT without setting any of the update bits configured		[LT] Frame Tx_IPDU_SR is not transmitted by the DUT
Step 2	[SWC] Trigger Rte_Write for Signal_66 with a valid data		[SWC] E_OK shall be returned for the request
Step 3	-		[LT] Frame TX_IPDU_SR is transmitted with just the updated value for Signal_66 and no other signal has updated values
Step 4	[LT] Send the frame Rx_IPDU_SR from Tester to the DUT with all the signals with a different values and update bits set		[LT] DUT transmits Frame TX_IPDU_SR with the updated values and their corresponding update bits se (except Signal_66)t
Post-conditions	None		

7.3.26 [ATS_COMINDEP_00735] Signal Routing When Source Signals Has Update Bit And Destination Signals has no Update Bit And Update Bit Of The Received Signal Is Not Set

Test Objective	Signal Routing When Source Signals Has Update Bit And Destination Signals has no Update Bit And Update Bit Of The Received Signal Is Not Set		
ID	ATS_COMINDEP_00735	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	proposed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00705		
Requirements / Reference to Test Environment	none		
Configuration Parameters	Rx_IPDU_SR STRUCTURE: For IPDU Structure, please refer to "AT_735_Rx_IPDU_SR STRUCTURE" in chapter 6.1.2.1.1 Tx_IPDU_SR STRUCTURE For IPDU Structure, please refer to "AT_735_Tx_IPDU_SR STRUCTURE" in chapter 6.1.2.1.1 Fibex::FibexCore::CoreCommunication::ISignalToIPduMapping.transferProperty = TRIGGERED(For all the signals and signal groups configured) Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = DIRECT		
Summary	The routing of signal shall be verified observing data on the trace log.		
Needed Adaptation to other Releases			
Pre-conditions	DUT shall be in Full communication state		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Send the frame Rx_IPDU_SR from Tester to the DUT without setting any of the update bits configured		[LT] Frame Tx_IPDU_SR is not transmitted by the DUT
Step 2	[SWC] Trigger Rte_Write for Signal_70 with a valid data		[SWC] E_OK shall be returned for the request
Step 3	-		[LT] Frame TX_IPDU_SR is transmitted with updated value for just Signal_70 and the routed signals without any change in value.
Post-conditions	None		

7.3.27 [ATS_COMINDEP_00736] Signal Routing When Source Signals Has Update Bit And Destination Signals has no Update Bit With Update Bit Of The Received Signal Is Set

Test Objective	Signal Routing When Source Signals Has Update Bit And Destination Signals has no Update Bit With Update Bit Of The Received Signal Is Set		
ID	ATS_COMINDEP_00736	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	proposed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00704		
Requirements / Reference to Test Environment	none		
Configuration Parameters	Rx_IPDU_SR STRUCTURE: For IPDU Structure, please refer to "AT_736_Rx_IPDU_SR STRUCTURE" in chapter 6.1.2.1.1 Tx_IPDU_SR STRUCTURE For IPDU Structure, please refer to "AT_736_Tx_IPDU_SR STRUCTURE" in chapter 6.1.2.1.1 Fibex::FibexCore::CoreCommunication::ISignalToIPduMapping.transferProperty = TRIGGERED(For all the signals and signal groups configured) Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = DIRECT		
Summary	The routing of signal shall be verified by data observed on the trace log.		
Needed Adaptation to other Releases			
Pre-conditions	DUT shall be in Full communication state		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Send the frame Rx_IPDU_SR from Tester to the DUT without setting any of the update bits configured		[LT] Frame TX_IPDU_SR is not transmitted
Step 2	[LT] Send the frame Rx_IPDU_SR from Tester to the DUT with all updated signals and their corresponding update bits set		[LT] Frame TX_IPDU_SR is transmitted with all updated values
Post-conditions	None		

7.3.28 [ATS_COMINDEP_00737] The Filter Mechanism Of "MASKED_NEW_DIFFERS_MASKED_OLD" On Reception Of An I-Pdu

Test Objective	The Filter Mechanism Of "MASKED_NEW_DIFFERS_MASKED_OLD" On Reception Of An I-Pdu		
ID	ATS_COMINDEP_00737	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	proposed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00695		
Requirements / Reference to Test Environment	none		
Configuration Parameters	ISignalIPdu RX_IPDU_FIL with: Fibex::FibexCore::CoreCommunication::ISignalToPduMapping = Sn_51 Com Notification = Rte_ComCbk_Sn_51 Com Filter Algorithm = MASKED_NEW_DIFFERS_MASKED_OLD ComFilterMask = 0xFF SWComponentTemplate::Communcation::ComSpec.initValue or SystemTemplate::Fibex::FibexCore::CoreCommuncation::ISignal.initValue.= 0x05		
Summary	The I-PDU is configured with a signal having filter mechanism of "MASKED_NEW_DIFFERS_MASKED_OLD". If the masked value has changed then the filter should pass any signal or signal group.		
Needed Adaptation to other Releases			
Pre-conditions	DUT shall be in Full communication state		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Transmit the frame RX_IPDU_FIL with the value different than the initial value (e.g. 0x80)		[SWC] Com notification for the configured signal should be invoked
Step 2	[SWC] Call Rte_Read for a Signal_51		[SWC] Signal value should be the same as transmitted one
Step 3	[LT] Transmit the frame RX_IPDU_FIL with the value same values as previous one (e.g. 0x80)		[SWC] No notification is called
Step 4	[SWC] Rte_Read for a Signal_51		[SWC] Data was the same as the last received one
Step 5	[LT] Transmit the frame RX_IPDU_FIL with the value different than the initial value (e.g. 0x88)		[SWC] Com notification for the configured signal should be invoked
Step 6	[SWC] Rte_Read for a Signal_51		[SWC] Signal value should be newly

		transmitted value
Post-conditions	None	

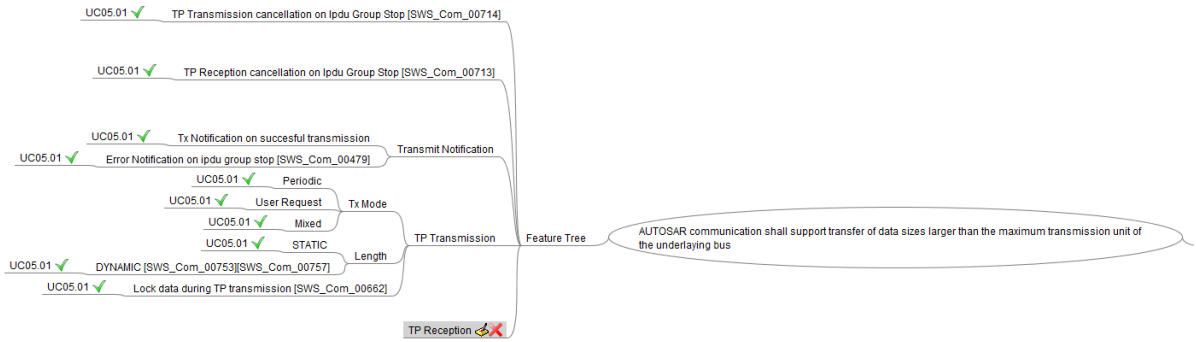
8 RS_BRF_01648 - Large Data Type

8.1 General Test Objective and Approach

This Test Specification intends to cover the communication transfer of data sizes larger than the maximum transmission unit of the underlying bus as described in the AUTOSAR Feature [RS_BRF_01648].

The tests use a test bench environment and Embedded Software Components that use the feature.

This test case document has been established to cover the following features:



This specification gives the description of required tests environments (test bench, uses case, arxml files) and detailed tests cases for executing tests.

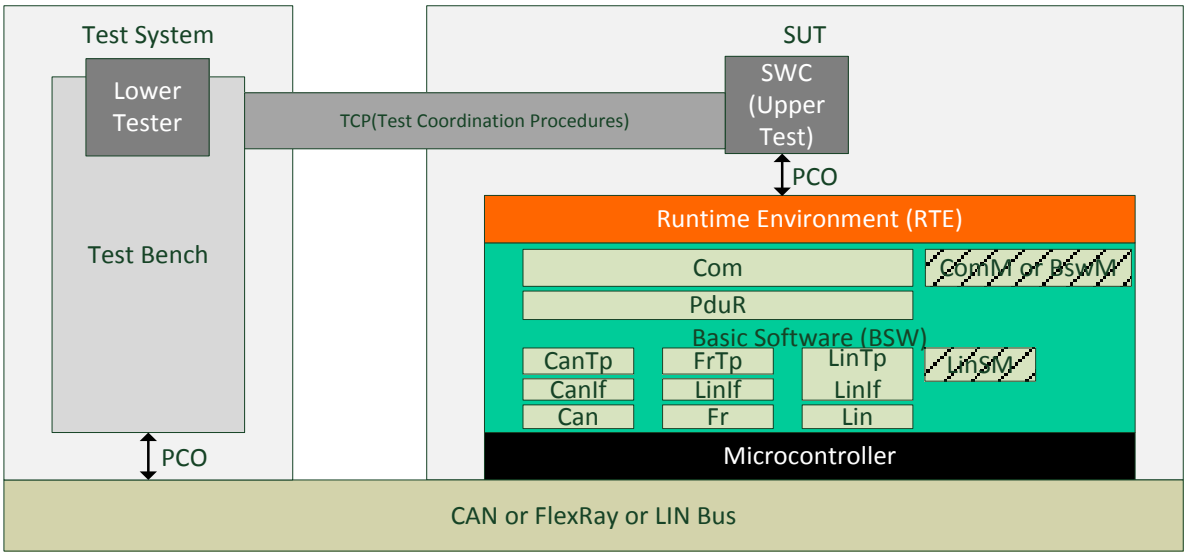
8.1.1 Test System

8.1.1.1 Overview on Architecture

In order to cover the required features / sub-features coverage, the environment has been separated in several uses case.

8.1.1.1.1 Use case 05.01: General features

For this use case, the aim is to test general large data type transfer features independently of the Bus.



The test system architecture consists of Test Bench that executes only test sequencer and gives actions request through Test coordination Procedures to embedded SWC.

The Bus used (CAN or FlexRay or Lin) is independent for this use case.

8.1.1.2 Specific Requirements

Not Applicable.

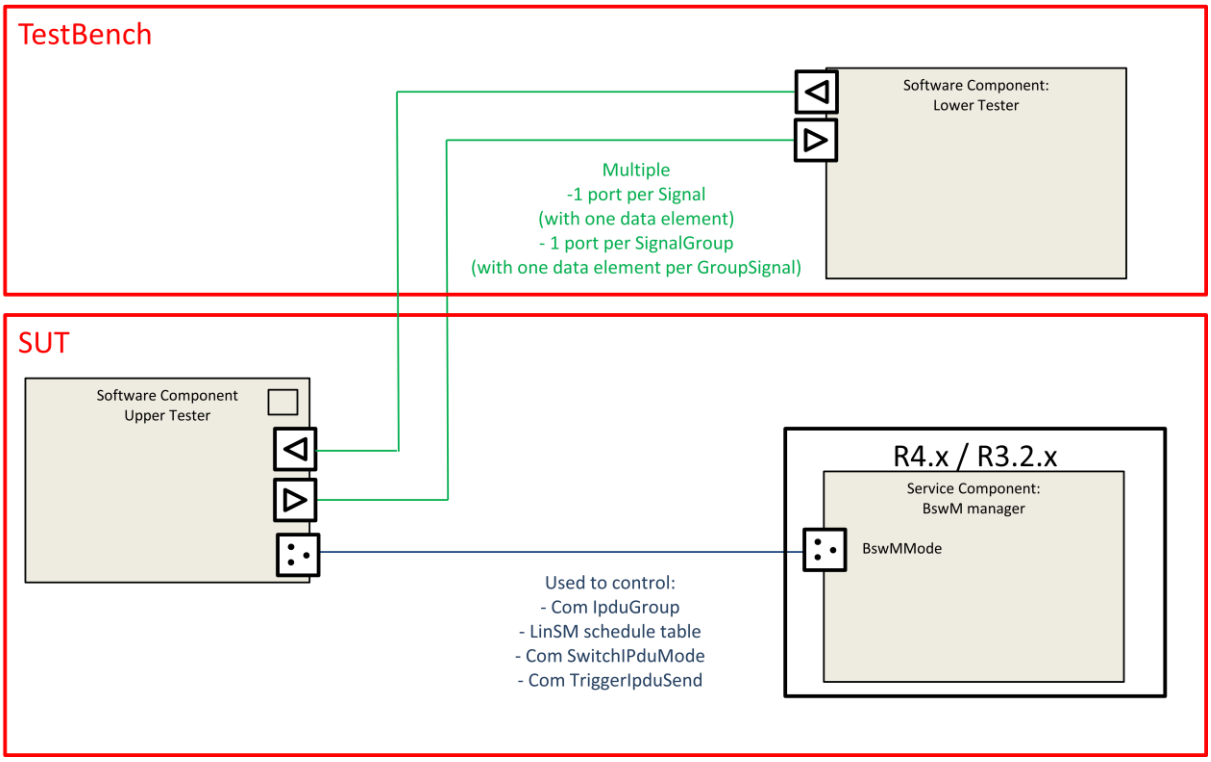
8.1.1.3 Test Coordination Requirements

Not Applicable.

8.1.2 Test Configuration

This section describes sets of requirements on configuration. These sets are later referenced by test cases. No configuration files are provided. They need to be developed when the test suite is implemented.

8.1.2.1 Required ECU Extract of System Description Files



A Mode-Switch Interface IF_AT_SwC_ActionsBswM must be created. The SWC Upper Tester is the owner of this state machine and BswM read the state through BswMMode Port. BswM shall launch actions according to following table (check 8.3 Test Cases for details):

ModeDeclaration	BswM Actions
IPDU_ACTIVATED	OnEntry: -Start IpduGroup
IPDU_DEACTIVATED	OnEntry: -Stop IpduGroup
IPDU_OFF_ON	OnEntry: -Stop IpduGroup -Re-start IpduGroup
TXMODE_TRUE	OnEntry: -SwitchIPduMode to TRUE
TXMODE_FALSE	OnEntry: -SwitchIPduMode to FALSE
TRIG_IPDU_SEND	OnEntry: -TriggerIpduSend
LIN_START_SCHEDULE	OnEntry: -Start LIN Schedule Table
IPDU_ACTIVATED_LIN_START_SCHEDULE	OnEntry: -Start IpduGroup -Start LIN Schedule Table

For the Software Component point of view, for each test case, the communication interfaces are defined as follow:

Port name	Data element type	Dataelement	Mapping	Type
<TestCaseName>_<signalname>	Uint8	<signalname>	<Signalname>	Signal

<TestCaseName>_<signalgroupname>	Struct
	{
	Uint8: groupsignal1;
	…
	Uint8: groupsignalx;
	}
		Groupsignal	Groupsignal1->
			<signal1name>
			Groupsignal2->
			<signal2name>
			<PortName>->
			<signalgroupname>	

Therefore ports and signals names change according to Test Case number, but the building rule is the same.

Unless a different configuration is specified in test case, Sender/Receiver Ports used for communication queued Data Element (RTE restriction concerning Large Data Type) and Explicit Data access for associated runnables.

8.1.2.1.1 Use Case 05.01: General features

The communication database is depicted below:

IPduGroup	IPdu	SignalGroup	Signal	Tx ECU	Rx ECU
AT_233_IpduGroup	AT_233_Ipdu	AT_233_Sg1	AT_233_Sg1	SUT	TestBench
		AT_233_SgGr1	AT_233_GrSg1		
			AT_233_GrSg2		
AT_234_IpduGroup	AT_234_Ipdu	AT_234_Sg1	AT_234_Sg1	SUT	TestBench
AT_235_IpduGroup	AT_235_Ipdu	AT_235_Sg1	AT_235_Sg1	SUT	TestBench
AT_236_IpduGroup	AT_236_Ipdu	AT_236_Sg1	AT_236_Sg1 (Not dynamic)	SUT	TestBench
		AT_236_Sg2	AT_236_Sg2 (dynamic)		
AT_238_IpduGroup	AT_238_Ipdu	AT_238_Sg1	AT_238_Sg1	SUT	TestBench
AT_275_IpduGroup	AT_275_Ipdu	AT_275_Sg1	AT_275_Sg1	TestBench	SUT

8.1.2.2 Required ECU Configuration Description Files

No specific configuration requirements for ECU Configuration files as they can be derived from EcuExtract.

8.1.2.3 Required Software Component Description Files

No specific configuration requirements for Software Components.

8.1.2.4 Mandatory vs. Customizable Parts

Mandatory parameters are listed in Tests Cases (see 8.3 Test Cases).

Customizable parameters are (these values are test case independent):

- ComSignalType (ISignal.networkRepresentationProps.swBaseType), ComSignalLength (baseTypeSize) and ComBitSize (ISignal.length) => must be consistent to associated dataElement
- ComSignalInitValue (ISignal.initValue)
- PduLength (Pdu.length)
- ComBitPosition (ISignalToIPduMapping.startPosition) and ComUpdateBitPosition (ISignalToIPduMapping.updateIndicationBitPosition) values => the location of these elements in the pdu
- CAN, LIN and FlexRay frames identifiers

8.1.3 Test Case Design

Not Applicable.

8.2 Re-usable Test Steps

Not Applicable.

8.3 Test Cases

8.3.1 [ATS_COMINDEP_00233] DIRECT TP transmission

Test Objective	DIRECT TP transmission		
ID	ATS_COMINDEP_00233	**AUTOSAR Releases**	4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com, PduR, BusTp, BusIf, BusDrv	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00115		
Trace to SWS Item	COM: ECUC_Com_00761		
Requirements / Reference to Test Environment	Use Case UC05.01		
Configuration Parameters	ComIpdu(SignalIPdu): AT_233_Ipdu1 (large I-PDU) - ComIPduType = TP(TpConfig.TpConnection) - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- DIRECT (TransmissionModeTiming.EventControlledTiming) --- ComTxModeNumberOfRepetitions(numberOfRepetitions) = 1 ComSignal(ISignalToPduMapping): Sg1 - ComSignalLength(baseTypeSize) > Size of <BUS> capability		

	- Signal is queued - ComTransferProperty (transferProperty) = TRIGGERED - DataSendCompletedEvent mapped on signal transmission (ComNotification is configured) - ComSignalInitValue ComSignalGroup(ISignalToPduMapping): SgGr1 - Signal is queued - ComTransferProperty (transferProperty) = TRIGGERED - DataSendCompletedEvent mapped on signal transmission (ComNotification is configured) - ComGroupSignal(ISignalToPduMapping): GrSg1/GrSg2 -- ComSignalInitValue
Summary	Aim: - Check that on User Request (triggered event) a TP transmission is executed by Com module - Check that TP transmission can be done only if ipdu group is started - Test Tx notification Sequence: 1) Action: Do a send Send signal - Result: TP transmission is not done 2) Start ipdu group - Result: TP transmission is not done 3) Action: Send a triggered signal - Result: TP transmission is done - Result: Group Signal values are initial value - Result: Signal value is changed - Result: Signal and SignalGroup Tx notifications are called when the last segmented frame is sent out 4) Action: Send a triggered signal group (after updating group signal) - Result: TP transmission is done - Result: Group Signal values are changed - Result: Signal value is not changed - Result: Signal and SignalGroup Tx notifications are called when the last segmented frame is sent out
Needed Adaptation to other Releases	Configuration: [n/a] Test Steps: [n/a] `Large data types and TP for regular COM is not possible in R3.x.` This test case shall be removed
Pre-conditions	Com stack is initialized, but ipdu groups are not running

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Call Rte_Send() for Port AT_233_Sg1 (Rte will perform a send signal AT_233_Sg1)	[LT] TP transmission is not done
Step 2	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_ACTIVATED (start Ipdu group AT_233_IpduGroup)	[LT] TP transmission is not done
Step 3	[SWC] Call Rte_Send() for Port AT_233_Sg1 with AT_233_Sg1_Value_1	[LT] TP transmission is done AT_233_Sg1 value

	(Rte will send signal AT_233_Sg1 with AT_233_Sg1_Value_1)	is AT_233_Sg1_Value_1 AT_233_GrSg1 value is AT_233_GrSg1_Value_Init AT_233_GrSg2 value is AT_233_GrSg2_Value_Init
Step 4	-	[SWC] AT_233_Sg1 and AT_233_SgGr1 notifications (DataSendCompletedEvent) are called when the last segmented frame is sent out
Step 5	[SWC] AT_233_SgGr1.AT_233_GrSg1=AT_233_GrSg1_Value_1 AT_233_SgGr1.AT_233_GrSg2=AT_233_GrSg2_Value_1 call Rte_Send() for Port AT_233_SgGr1 (Rte will send group signal AT_233_GrSg1 with AT_233_GrSg1_Value_1, the, send group signal AT_233_GrSg2 with AT_233_GrSg1_Value_2 and finally send signal group AT_233_SgGr1)	[LT] TP transmission is done AT_233_Sg1 value is AT_233_Sg1_Value_1 AT_233_GrSg1 value is AT_233_GrSg1_Value_1 AT_233_GrSg2 value is AT_233_GrSg2_Value_1
Step 6	-	[SWC] AT_233_Sg1 and AT_233_SgGr1 notifications (DataSendCompletedEvent) are called when the last segmented frame is sent out
Post-conditions	Not Applicable	

8.3.2 [ATS_COMINDEP_00234] PERIODIC TP transmission

Test Objective	PERIODIC TP transmission		
ID	ATS_COMINDEP_00234	**AUTOSAR Releases**	4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com, PduR, BusTp, BusIf, BusDrv	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00115		
Trace to SWS Item	COM: ECUC_Com_00761		
Requirements / Reference to Test Environment	Use Case UC05.01		
Configuration Parameters	ComIpdu(SignalIPdu): AT_234_Ipdu1 (large I-PDU) - ComIPduType = TP(TpConfig.TpConnection) - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming)		

	-- PERIODIC (CyclicTiming) --- timeOffset != timePeriod ComSignal(ISignalToPduMapping): Sg1 - ComSignalLength(baseTypeSize) > Size of <BUS> capability - Signal is queued - ComTransferProperty (transferProperty) = PENDING - DataSendCompletedEvent mapped on signal transmission (ComNotification is configured) - ComSignalInitValue
Summary	Aim: - Check that a periodic TP transmission is executed by Com module Sequence: 1) Start ipdu group - Result: first TP transmission is done after OffsetTime - Result: other TP transmissions are started every PeriodTime - Signal value is the initial value 2) Action: Update a pending signal - Result: Periodic sent are not disturbed - Result: Signal value is changed
Needed Adaptation to other Releases	Configuration: [n/a] Test Steps: [n/a] `Large data types and TP for regular COM is not possible in R3.x.` This test case shall be removed
Pre-conditions	Com stack is initialized, but ipdu groups are not running

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_ACTIVATED (start Ipdu group AT_234_IpduGroup)	[LT] First TP transmission is done after OffsetTime, other TP transmissions are started every PeriodTime AT_234_Sg1 value is AT_234_Sg1_Value_Init
Step 2	[SWC] Call Rte_Send() for AT_234_Sg1 with AT_234_Sg1_Value_1 (Update a pending signal AT_234_Sg1 with AT_234_Sg1_Value_1)	[LT] Periodic sent are not disturbed AT_234_Sg1 value is now AT_234_Sg1_Value_1
Post-conditions	Not Applicable	

8.3.3 [ATS_COMINDEP_00235] MIXED TP transmission

Test Objective	MIXED TP transmission		
ID	ATS_COMINDEP_00235	**AUTOSAR Releases**	4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com, PduR, BusTp, BusIf, BusDrv	**State**	reviewed
Trace to Requirement	ATR: ATR_ATR_00115		

on Acceptance Test Document	
Trace to SWS Item	COM: ECUC_Com_00761
Requirements / Reference to Test Environment	Use Case UC05.01
Configuration Parameters	ComIpdu(SignalIPdu): AT_235_Ipdu1 (large I-PDU) - ComIPduType = TP(TpConfig.TpConnection) - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- MIXED(EventControlledTiming and CyclicTiming) --- NumberOfRepetitions = 1 --- timeOffset != timePeriod ComSignal(ISignalToPduMapping): Sg1 - ComSignalLength(baseTypeSize) > Size of <BUS> capability - Signal is queued - ComTransferProperty (transferProperty) = TRIGGERED - DataSendCompletedEvent mapped on signal transmission (ComNotification is configured) - ComSignalInitValue
Summary	Aim: - Check that a periodic TP transmission is executed by Com module - Check that on User Request (triggered event) a TP transmission is executed by Com module Sequence: 1) Start ipdu group - Result: TP transmission is done periodically 2) Action: Send a triggered signal - Result: one event TP transmission is inserted between two periodic TP transmissions

Needed Adaptation to other Releases	Configuration: [n/a]
	Test Steps: [n/a]
	
	`Large data types and TP for regular COM is not possible in R3.x.`
	`This test case shall be removed`

Pre-conditions	Com stack is initialized, but ipdu groups are not running

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_ACTIVATED (start Ipdu group AT_235_IpduGroup)	[LT] TP transmission is done periodically AT_235_Sg1 value is AT_235_Sg1_Value_Init
Step 2	[SWC] Call Rte_Send() for Port AT_235_Sg1 with AT_235_Sg1_Value_1 (Rte will send a triggered signal AT_235_Sg1 with AT_235_Sg1_Value_1)	[LT] One event TP transmission is inserted between two periodic TP transmissions AT_235_Sg1 value is now AT_235_Sg1_Value_1
Post-conditions	Not Applicable	

8.3.4 [ATS_COMINDEP_00236] Dynamic send message

Test Objective	Dynamic send message		
ID	ATS_COMINDEP_00236	**AUTOSAR Releases**	4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com, PduR, BusTp, BusIf, BusDrv	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00117		
Trace to SWS Item	COM: SWS_Com_00753 COM: SWS_Com_00757		
Requirements / Reference to Test Environment	Use Case UC05.01		
Configuration Parameters	ComIpdu(SignalIPdu): AT_236_Ipdu1 (large I-PDU) - ComIPduType = TP(TpConfig.TpConnection) - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComTxModeTrue(IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- DIRECT(EventControlledTiming) --- NumberOfRepetitions = 1 ComSignal(ISignalToPduMapping): Sg1 - ComSignalType(networkRepresentationProps.swBaseType) != UINT8_DYN - ComBitSize(ISignal.length) = 8 bits - ComTransferProperty (transferProperty) = PENDING ComSignal(ISignalToPduMapping): Sg2 - ComSignalType(swBaseType + SystemSignal.dynamicLength) = UINT8_DYN(NoBaseTypeEncoding/BaseTypeSize=maxBaseTypeSize + dynamicLength=true) - ComSignalLength(baseTypeSize) = 254 bytes - ComTransferProperty (transferProperty) = TRIGGERED for Sg1/Sg2: - Signal is queued - DataSendCompletedEvent mapped on signal transmission (ComNotification is configured)		
Summary	Aim: - Check that dynamic send is taken into account for the TP transmission Sequence: 1) Start ipdu group - Result: TP transmission is not done 2) Action: update pending signal (Sg1) - Result: TP transmission is not done 3) Action: Send a triggered dynamic signal (Sg2) (ipdu length lower than a SF) - Result: TP transmission is done - Result: TP IPDU length is adjusted (only Single frame is sent) - Result: Sg1 and Sg2 values are different from initial values		

	4) Action: Send a triggered dynamic signal (Sg2) (ipdu length greater than a SF) - Result: TP transmission is done - Result: TP IPDU length is adjusted (complete TP exchange is done, FF, CF and FC (except for Lin)) - Result: Sg1 and Sg2 values are different from initial values

Needed Adaptation to other Releases	Configuration: [n/a]
	Test Steps: [n/a]
	`Transmission of dynamic messages is not possible in R3.x.`
	`This test case shall be removed`

Pre-conditions	Com stack is initialized, but ipdu groups are not running

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_ACTIVATED (start Ipdu group AT_236_IpduGroup)	[LT] No frame sent out
Step 2	[SWC] Call Rte_Send() for Port AT_236_Sg1 with AT_236_Sg1_Value_1 (Rte will send the pending signal (AT_236_Sg1) with AT_236_Sg1_Value_1)	[LT] No frame sent out
Step 3	[SWC] Call Rte_Send(<data>, <length = 5>) for Port AT_236_Sg2 with value AT_236_Sg2_Value_1(Rte will send a triggered dynamic signal (AT_236_Sg2) (length is 5) with AT_236_Sg2_Value_1)	[LT] Only 1 Single frame (FlexRay = STF Start Frame) is sent. AT_236_Sg1 (1 byte) value is AT_236_Sg1_Value_1 (Static Length) AT_236_Sg2 (5 bytes) value is AT_236_Sg2_Value_1 (Dynamic Length) Data bytes Length (SF_DL / STF_ML) is 6 bytes
Step 4	[SWC] Call Rte_Send(<data>, <length = 254>) for Port AT_236_Sg2 with AT_236_Sg2_Value_2 (Rte will send a triggered dynamic signal (AT_236_Sg2) (length is 254) with AT_236_Sg2_Value_2)	[LT] TP transmission is started: First frame (FlexRay = STF Start Frame) is sent. Data bytes Length (FF_DL / STF_ML) is 255 bytes complete TP exchanges are done (CF...) AT_236_Sg1 (1 byte) value is AT_236_Sg1_Value_1 (Static Length) AT_236_Sg2 (254 bytes) value is AT_236_Sg2_Value_2 (Dynamic Length)
Post-conditions	Not Applicable	

8.3.5 [ATS_COMINDEP_00238] Stop Ipdu group even if TP transmission is not complete

Test Objective	Stop Ipdu group even if TP transmission is not complete

ID	ATS_COMINDEP_00238	**AUTOSAR Releases**	4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com, PduR, BusTp, BusIf, BusDrv	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00116		
Trace to SWS Item	COM: SWS_Com_00479 COM: SWS_Com_00714		
Requirements / Reference to Test Environment	Use Case UC05.01		
Configuration Parameters	ComIpdu(SignalIPdu): AT_238_Ipdu1 (large I-PDU) - length is very large (many Consecutive Frame are needed - more than 2 - depending on <BUS> capability) - ComIPduType = TP(TpConfig.TpConnection) - ComIPduDirection(CommConnectorPort.communicationDirection) = SEND - ComTxModeTrue (IPduTiming.TransmissionModeDeclaration.transmissionModeTrueTiming) -- DIRECT(EventControlledTiming) --- NumberOfRepetitions = 1 ComSignal(ISignalToPduMapping): Sg1 - Signal is queued - DataSendCompletedEvent mapped on signal transmission (ComNotification is configured) - ComErrorNotification is configured - ComTransferProperty (transferProperty) = TRIGGERED		
Summary	Aim: - Check that stop an ipdu group cancel the ongoing TP transmission Sequence: 1) Start ipdu group - Result: TP transmission is not done 2) Action: Send a triggered signal - Result: TP transmission is started 3) Action: Stop ipdu group before all consecutives frames are sent out - Result: TP transmission is stopped - Result: SIgnal error notification is called		
Needed Adaptation to other Releases	Configuration: [n/a] Test Steps: [n/a]	`Transmission of dynamic messages is not possible in R3.x.` This test case shall be removed	
Pre-conditions	Com stack is initialized, but ipdu groups are not running		
Main Test Execution			
Test Steps		**Pass Criteria**	
Step 1	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_ACTIVATED (start Ipdu group AT_238_IpduGroup)	[LT] TP transmission is not done	

Step 2	[SWC] Call Rte_Send() for Port AT_238_Sg1 with AT_238_Sg1_Value (send a triggered signal AT_238_Sg1 with AT_238_Sg1_Value)	[LT] TP transmission is started (First Frame is sent out)
Step 3	-	[SWC] Return Value of Rte_Feedback for AT_238_Sg1 is RTE_E_NO_DATA
Step 4	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_DEACTIVATED (stop Ipdu group AT_238_IpduGroup (and BUS shall not send the Flow Control frame))	
Step 5	[CP] Wait 200ms	[SWC] Return Value of Rte_Feedback for AT_238_Sg1 is RTE_E_COM_STOPPED (Signal error notification was called by SUT) AT_238_Sg1 DataSendCompletedEvent NOT called
Step 6	[LT] Send the Flow Control frame (except for LIN bus where Flow Control is not needed)	[LT] No consecutives frames are sent out
Post-conditions	Not Applicable	

8.3.6 [ATS_COMINDEP_00275] Stop Ipdu group even if TP Reception is not complete

Test Objective	Stop Ipdu group even if TP Reception is not complete		
ID	ATS_COMINDEP_00275	**AUTOSAR Releases**	4.0.3|4.1.1|4.2.1|4.2.2
Affected Modules	Com, PduR, BusTp, BusIf, BusDrv	**State**	reviewed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00713		
Requirements / Reference to Test Environment	Use Case UC1		
Configuration Parameters	ComIpdu(SignalIPdu): AT_275_Ipdu1 (large I-PDU) - length is very large (many Consecutive Frame are needed - more than 2 - depending on <BUS> capability) - ComIPduType = TP(TpConfig.TpConnection) - ComIPduDirection(CommConnectorPort.communicationDirection) = RECEIVE ComSignal(ISignalToPduMapping): Sg1 - Signal is queued - DataReceivedEvent mapped on signal reception (ComNotification is configured)		

Summary	Aim: - Check that stop an ipdu group cancel the ongoing TP reception Sequence: 1) Start ipdu group 2) Action: Lower Tester Send FF of TP frame - Result: TP reception is started 3) Action: Stop ipdu group before all consecutives frames are sent out - Result: TP reception is stopped - Result: partly received Data is not provided to SWC	
Needed Adaptation to other Releases	Configuration: [n/a] Test Steps: [n/a]	`Transmission of dynamic messages is not possible in R3.x.` This test case shall be removed
Pre-conditions	Com stack is initialized, but ipdu groups are not running	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_ACTIVATED (start Ipdu group AT_275_IpduGroup)	
Step 2	[LT] Send AT_275_Sg1 with AT_275_Sg1_Value1 (First Frame of TP Frame is sent)	[LT] TP transmission is started (First Frame is sent out)
Step 3	[LT] Wait Flow Control frame from SUT (except for LIN bus where Flow Control is not needed)	[LT] Flow Control frame is received
Step 4	[SWC] Request ModeSwitch (call to BswMModeRequest port) to IPDU_DEACTIVATED (stop Ipdu group AT_275_IpduGroup)	
Step 5	[LT] Consecutive Frame shall not be sent	
Step 6	[LT] Send the Consecutive Frame	[LT] No Flow Control frame is received (except for LIN bus where Flow Control is not needed)
Step 7	[SWC] Read value of AT_275_Sg1 (Rte_Receive())	[SWC] Return Value of Rte_Receive is RTE_E_NO_DATA DataReceivedEvent never called
Post-conditions	Not Applicable	

8.3.7 [ATS_COMINDEP_00739] Unsuccessful Transmission Of An I-PDU Consisting Of A Dynamic Signal With Periodic Mode And Having ComTransferProperty As TRIGGERED

Test Objective	Unsuccessful Transmission Of An I-PDU Consisting Of A Dynamic Signal With Periodic Mode And Having ComTransferProperty As TRIGGERED		
ID	ATS_COMINDEP_00739	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00629		
Requirements / Reference to Test Environment	none		
Configuration Parameters	Signal:Signal_101 Fibex::FibexCore::CoreCommunication::ISignalToIPduMapping.transferProperty = TRIGGERED Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = PERIODIC Fibex::FibexCore::CoreCommunication::CyclicTiming.timePeriod = 300 CoreCommunication::IPduTiming.minimumDelay = 200 SWComponentTemplate::Communcation::ComSpec.initValue or SystemTemplate::Fibex::FibexCore::CoreCommuncation::ISignal.initValue = 0 SystemTemplate::Fibex::FibexCore::CoreCommunication::SystemSignal.networkRepresentationProps.swBaseType = UINT8_DYN Datatype::DataTypes::OpaqueType.numberOfBits = 8		
Summary	The unsuccessful transmission of the assigned I-PDU shall be verified configuring the mode to PERIODIC and the signal has Triggered transfer property.		
Needed Adaptation to other Releases			
Pre-conditions	DUT shall be in Full communication state		
Main Test Execution			
Test Steps		**Pass Criteria**	
Step 1	[SWC] Call Rte_Write for Signal_101 with valid array of data and its length	[SWC] E_OK shall be returned for the request	
Step 2	-	[LT] Respective IPDU is not transmitted by DUT.	
Post-conditions	None		

8.3.8 [ATS_COMINDEP_00740] Unsuccessful Transmission Of An I-PDU Consisting Of A Dynamic Signal Having ComTransferProperty As PENDING

Test Objective	Unsuccessful Transmission Of An I-PDU Consisting Of A Dynamic Signal Having ComTransferProperty As PENDING		
ID	ATS_COMINDEP_00740	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00630		
Requirements / Reference to Test Environment	none		
Configuration Parameters	Signal :Signal_108 Fibex::FibexCore::CoreCommunication::ISignalToIPduMapping.transferProperty = PENDING Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = DIRECT SWComponentTemplate::Communcation::ComSpec.initValue or SystemTemplate::Fibex::FibexCore::CoreCommuncation::ISignal.initValue = 0 SystemTemplate::Fibex::FibexCore::CoreCommunication::SystemSignal.networkRepresentationProps.swBaseType = UINT8_DYN Datatype::DataTypes::OpaqueType.numberOfBits = 8		
Summary	The unsuccessful transmission of the assigned I-PDU shall be verified by configuring the transfer property as PENDING along with other required parameters.		
Needed Adaptation to other Releases			
Pre-conditions	DUT shall be in Full communication state		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[SWC] Call Rte_Write for Signal_108 with valid array of data and length		[SWC] E_OK shall be returned for the request
Step 2	-		[LT] Respective frame shall be not be transmitted immediately.
Post-conditions	None		

8.3.9 [ATS_COMINDEP_00741] Reception Of Dynamic Length I-PDU

Test Objective	Reception Of Dynamic Length I-PDU		
ID	ATS_COMINDEP_00741	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00758		
Requirements / Reference to Test Environment	none		
Configuration Parameters	Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = DIRECT Fibex::FibexCore::CoreTopology::CommConnectorPort.communicationDirection = RECEIVE ComNotification = Rte_ComCbk_Sig_052 SystemTemplate::Fibex::FibexCore::CoreCommunication::SystemSignal.networkRepresentationProps.swBaseType = UINT8_DYN		
Summary	The AUTOSAR COM module shall calculate the length of the contained dynamic length signal and Com I-Pdu callout shall notify the SWC.		
Needed Adaptation to other Releases			
Pre-conditions	DUT shall be in Full communication state		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Transmit the frame from TESTER with the dynamic length signal and its size		[COM]Com notification for the configured signal shall be invoked
Step 2	[SWC] Call inter Rte_read for Signal_052		[SWC] E_OK shall be returned for the request with the transmitted value
Post-conditions	None		

8.3.10 [ATS_COMINDEP_00742] Reception Of A Large I-PDU Via The TP Interface

Test Objective	Reception Of A Large I-PDU Via The TP Interface		
ID	ATS_COMINDEP_00742	**AUTOSAR**	4.0.3|4.2.1|4.2.2

		Releases	
Affected Modules	Com	**State**	reviewed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	COM: SWS_Com_00720		
Requirements / Reference to Test Environment	none		
Configuration Parameters	Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = DIRECT Fibex::FibexCore::CoreTopology::CommConnectorPort.communicationDirection = RECEIVE TransportProtocols::CanTpConnection = TP ComNotification = Rte_ComCbkTAck_Sig_053 SystemTemplate::Fibex::FibexCore::CoreCommunication::SystemSignal.networkRepresentationProps.swBaseType= UINT8		
Summary	The I-PDU reception will be verified by using reception confirmation		
Needed Adaptation to other Releases			
Pre-conditions	DUT shall be in Full communication state		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[LT] Transmit the frame from TESTER with valid value for the large IPDu		[SWC] Com notification for the configured signal shall be invoked
Step 2	[SWC] Call inter Rte_read for a Signal_053		[SWC] Rte return E_OK and data shall be updated
Post-conditions	None		

8.3.11 [ATS_COMINDEP_00743] Data Sequence control when Received I-PDU counter is greater than expected I-PDU counter + threshold

Test Objective	Data Sequence control when Received I-PDU counter is greater than expected I-PDU counter + threshold		
ID	ATS_COMINDEP_00743	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	Com	**State**	reviewed
Trace to Requirement			

on Acceptance Test Document		
Trace to SWS Item	COM: SWS_Com_00727	
Requirements / Reference to Test Environment	none	
Configuration Parameters	Fibex::FibexCore::CoreCommunication::SignalIPduCounter.pduCounterThreshold = 1 Fibex::FibexCore::CoreCommunication::SignalIPduCounter.pduCounterSize = 4 bits Fibex::FibexCore::CoreCommunication::SignalIPduCounter.pduCounterStartPosition = 2 ComI-PDUCounterErrorNotification = App_Rte_Com_CbkCounterErr_55 ComNotification = Rte_ComCbkTAck_Sig_055 SWComponentTemplate::Communcation::ComSpec.initValue or SystemTemplate::Fibex::FibexCore::CoreCommuncation::ISignal.initValue = 0x22	
Summary	The mismatch of the expected and received I-PDU counter is achieved by using the configured error notification for a signal.	
Needed Adaptation to other Releases		
Pre-conditions	DUT shall be in Full communication state	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[LT] Transmit the Frames with counter value updated counters and signal values incremented every time	[SWC] Com notification for the configured signal shall be invoked
Step 2	[SWC] Call Rte_Read for the configured Signal	[SWC] Correct value of the signal shall be received
Step 3	[LT] Transmit the frame with wrong IPDU counter	[SWC] Com I-Pdu Counter Error Notification for the configured signal with Expected Counter Value and Received Counter Value shall be invoked
Step 4	[SWC] Call Rte_Read for the configured Signal	[SWC] Rte shall provide the previously received value
Post-conditions	None	

9 Miscellaneous features

9.1 General Test Objective and Approach

This test suite provides additional test cases for miscellaneous features of the Bus Independent features, when they do not require a complete test suite on their own.

This specification gives the description of required tests environments (test bench, uses case, arxml files) and detailed tests cases for executing tests.

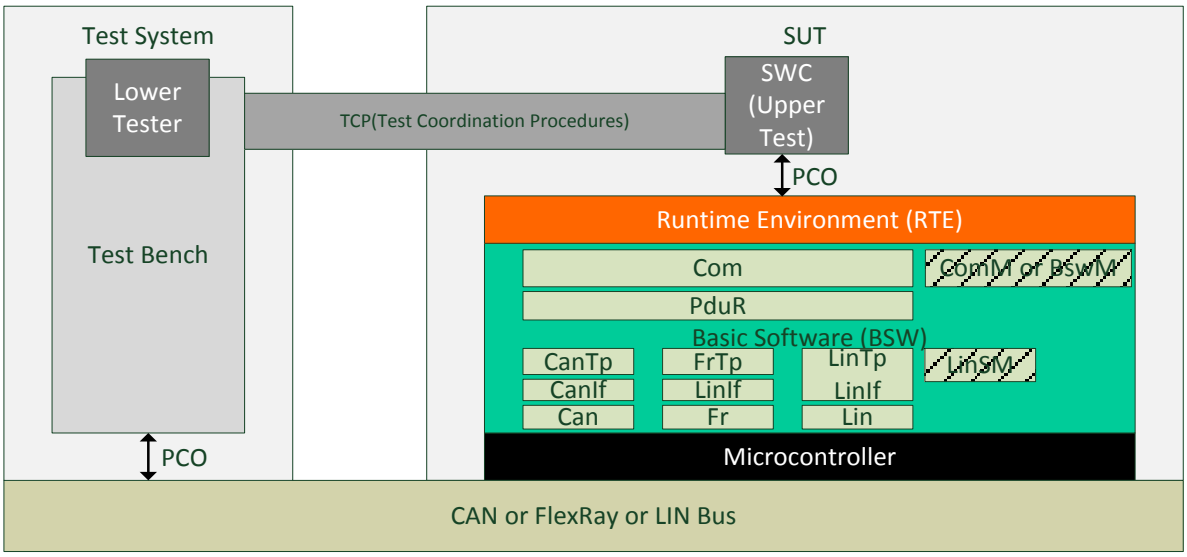
9.1.1 Test System

9.1.1.1 Overview on Architecture

In order to cover the required features / sub-features coverage, the environment has been separated in several uses case.

9.1.1.1.1 Use case 05.01: General features

For this use case, the aim is to test general large data type transfer features independently of the Bus.



The test system architecture consists of Test Bench that executes only test sequencer and gives actions request through Test coordination Procedures to embedded SWC.

The Bus used (CAN or FlexRay or Lin) is independent for this use case.

9.1.1.2 Specific Requirements

None

9.1.1.3 Test Coordination Requirements

Not Applicable.

9.1.2 Test Configuration

The configuration required to implement and execute the test cases is described in the “Configuration Parameters” field of each test case.

9.2 Re-usable Test Steps

Not Applicable.

9.3 Test Cases

9.3.1 [ATS_COMINDEP_00744] Check The Functionality Of PduR_EnableRouting And PduR_DisableRouting

Test Objective	Check The Functionality Of PduR_EnableRouting And PduR_DisableRouting		
ID	ATS_COMINDEP_00744	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	PDUR	**State**	reviewed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	PDURouter: SWS_PduR_00615 PDURouter: SWS_PduR_00617		
Requirements / Reference to Test Environment	none		
Configuration Parameters	BswPduRouterAction = BSWM_PDUR_E-BLE BswPduRouterAction = BSWM_PDUR_DISABLE BswMUserCallout = App_PduR_User_RENBL(callout for enabling the PduR uting) App_PduR_User_RDSBL(callout for disabling the PduR routing)PduRUpperModule = TRUE(Com) PduRLowerModule = TRUE(CanIf) PduRDestPduDataProvision = PDUR_DIRECT(CanIf) Frame Configuration: Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = DIRECT Fibex::FibexCore::CoreCommunication::Timing.EventControlledTiming.numberOfRepeats = Ex: 2 (user configurable) Fibex::FibexCore::CoreCommunication::EventControlledTiming.repetitionPeriod = Ex: 100 ms (user configurable)		
Summary	The functionality of PduR_EnableRouting and PduR_DisableRouting shall be achieved by using the BswM module’s functionality BswMPduRouterControl action where a configured user callout shall be invoked in ComM current state notification which will in turn switch the BswM mode.		
Needed Adaptation to other Releases			
Pre-	DUT shall be in Full Communication		

conditions		
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Invoke Rte_Write for sending the data.	[SWC] Rte_Write shall return RTE_E_OK.
Step 2	-	[LT] The respective frame is not transmitted on the bus.
Step 3	[SWC] SendBswM_RequestMode for changing BswM mode to disable the routing.	[SWC] Callout function App_PduR_User_RDSBL shall be invoked indicating the call of PduR_DisableRouting
Step 4	[SWC] Invoke Rte_Write for sending the data.	[SWC] Rte_Write shall return RTE_E_OK.
Step 5	[SWC] SendBswM_RequestMode for changing BswM mode to enable the routing.	[SWC] Callout function App_PduR_User_RENBL shall be invoked indicating the call of PduR_EnableRouting
Step 6	[SWC] Invoke Rte_Write for sending the data.	[LT] Tester shall observe for expected frames on bus.
Post-conditions	None	

9.3.2 [ATS_COMINDEP_00745] Interface PDU Transmission During Singlecast When Source PDU Belongs To Com And Destination PDU Belongs To CanIf

Test Objective	Interface PDU Transmission During Singlecast When Source PDU Belongs To Com And Destination PDU Belongs To CanIf		
ID	ATS_COMINDEP_00745	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	PDUR	**State**	reviewed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	PDURouter: SWS_PduR_00627 PDURouter: SWS_PduR_00625 PDURouter: SWS_PduR_00626		
Requirements / Reference to Test Environment	none		
Configuration Parameters	PduRUpperModule = TRUE(Com) PduRLowerModule = TRUE(CanIf) PduRTxConfirmation = TRUE PduRDestPduDataProvision = PDUR_DIRECT		

	ComNotification = App_Com_CbkTxAck_TC_002(callback function to be called on Sender side) Frame Configuration: Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = DIRECT Fibex::FibexCore::CoreCommunication::Timing.EventControlledTiming.numberOfRepeats = Ex: 2 (user configurable) Fibex::FibexCore::CoreCommunication::EventControlledTiming.repetitionPeriod = Ex: 100 ms (user configurable) Signal = Signal_TC2Tx	
Summary	The required functionality shall be tested indirectly through Rte confirmation for the configured signal and the data observed on the trace log.	
Needed Adaptation to other Releases		
Pre-conditions	DUT should be in full communication	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Invoke Rte_Write for sending the data with Signal_TC2Tx.	[SWC] Rte_Write shall return RTE_E_OK.
Step 2	-	[LT] Tester shall observe for expected frames on bus.
Step 3	-	[SWC] Com notification App_Com_CbkTxAck_TC_002 shall be invoked
Post-conditions	None	

9.3.3 [ATS_COMINDEP_00746] Interface PDU Transmission During Multicast When Source PDU Is From Com Module And Destination PDU Belongs To Lower Layer (CanIf, LinIf, FRIF)

Test Objective	Interface PDU Transmission During Multicast When Source PDU Is From Com Module And Destination PDU Belongs To Lower Layer (CanIf, LinIf, FRIF)		
ID	ATS_COMINDEP_00746	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	PDUR	**State**	reviewed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	PDURouter: SWS_PduR_00625 PDURouter: SWS_PduR_00430 PDURouter: SWS_PduR_00661		
Requirement	none		

s / Reference to Test Environment			
Configuration Parameters	PduRUpperModule = TRUE(Com) PduRLowerModule = TRUE(CanIf LinIf FrIf) PduRTriggerTransmit = TRUE PduRDestPduDataProvision = PDUR_DIRECT(CanIf) PduRDestPduDataProvision = PDUR_TRIGGERTRANSMIT(LinIf) PduRDestPduDataProvision = PDUR_TRIGGERTRANSMIT(FrIf) Frame Configuration: Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = DIRECT Fibex::FibexCore::CoreCommunication::Timing.EventControlledTiming.numberOfRepeats = Ex: 2 (user configurable) Fibex::FibexCore::CoreCommunication::EventControlledTiming.repetitionPeriod = Ex: 100 ms (user configurable) Signal = Signal_TC3Tx		
Summary	The required functionality shall be achieved by invoking Rte_Write and observing the data on the trace log. It's an indirect testing.		
Needed Adaptation to other Releases			
Pre-conditions	DUT shall be in full communication Lin and FlexRay schedule table shall be started		
Main Test Execution			
Test Steps		**Pass Criteria**	
Step 1	[SWC] Invoke Rte_Write for sending the data with Signal_TC3Tx.	[SWC] Rte_Write shall return RTE_E_OK.	
Step 2	-	[LT] Tester shall observe for expected CAN LIN & FlexRay frames on bus.	
Post-conditions	None		

9.3.4 [ATS_COMINDEP_00747] Frame Gateway From CanIf To LinIf, CanIf And FrIf

Test Objective	Frame Gateway From CanIf To LinIf, CanIf And FrIf		
ID	ATS_COMINDEP_00747	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	PDUR	**State**	reviewed
Trace to Requirement on Acceptance Test Document			
Trace to SWS Item	PDURouter: SWS_PduR_00436		

Requirements / Reference to Test Environment	none
Configuration Parameters	PduRUpperModule = TRUE(Com) PduRLowerModule = TRUE(CanIf LinIf Frif) PduRTxConfirmation = TRUE PduRDestPduDataProvision = PDUR_DIRECT(CanIf) PduRDestPduDataProvision = PDUR_DIRECT(CanIf) PduRDestPduDataProvision = PDUR_TRIGGERTRANSMIT(LinIf) PduRDestPduDataProvision = PDUR_TRIGGERTRANSMIT(FrIf) Frame Configuration: Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = DIRECT Fibex::FibexCore::CoreCommunication::Timing.EventControlledTiming.numberOfRepeats = Ex: 2 (user configurable) Fibex::FibexCore::CoreCommunication::EventControlledTiming.repetitionPeriod = Ex: 100 ms (user configurable)
Summary	The required functionality shall be achieved by sending the data from tester and the frame is replicated in other buses. This can be confirmed by observing it on the trace log for the corresponding gateway frames.
Needed Adaptation to other Releases	
Pre-conditions	DUT shall be in full communication

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[LT] Transmit the source CAN frame from the tester	[SWC] Com notification for the corresponding signal shall be invoked
Step 2	-	[LT] Tester shall observe for expected frames in CANLIN and FlexRay buses.
Post-conditions	None	

9.3.5 [ATS_COMINDEP_00748] Tp PDU Transmission During Singlecast When Source PDU Belongs To Com and Destination PDU Belongs To CanTp

Test Objective	Tp PDU Transmission During Singlecast When Source PDU Belongs To Com and Destination PDU Belongs To CanTp		
ID	ATS_COMINDEP_00748	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	PDUR	**State**	reviewed
Trace to Requirement on Acceptance Test Document			
Trace to SWS	PDURouter: SWS_PduR_00634		

Item	PDURouter: SWS_PduR_00299 PDURouter: SWS_PduR_00676 PDURouter: SWS_PduR_00301
Requirements / Reference to Test Environment	none
Configuration Parameters	PduRUpperModule = TRUE(Com) PduRLowerModule = TRUE(CanTp) PduRTxConfirmation = TRUE PduRDestPduDataProvision = PDUR_DIRECT(CanTp) ComNotification = App_Com_CbkTxAck_TC_009(Com transmission confirmation) Frame Configuration: Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = DIRECT Fibex::FibexCore::CoreCommunication::Timing.EventControlledTiming.numberOfRepeats = Ex: 2 (user configurable) Fibex::FibexCore::CoreCommunication::EventControlledTiming.repetitionPeriod = Ex: 100 ms (user configurable) Signal = Signal_TC9Tx
Summary	The required functionality shall be tested indirectly through Rte confirmation for the configured signal and the data observed on the trace log.
Needed Adaptation to other Releases	
Pre-conditions	DUT shall be in full communication

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[SWC] Invoke Rte_Write for Signal_TC9Tx with data.	[SWC] Rte_Write shall return RTE_E_OK.
Step 2	-	[LT] Corresponding frame is transmitted on the bus.
Step 3	-	[SWC] Com transmission confirmation App_Com_CbkTxAck_TC_009 shall be invoked.
Post-conditions	None	

9.3.6 [ATS_COMINDEP_00749] Frame Gateway From CanTp To LINTP, CanTp and FrTp

Test Objective	Frame Gateway From CanTp To LINTP, CanTp and FrTp		
ID	ATS_COMINDEP_00749	**AUTOSAR Releases**	4.0.3|4.2.1|4.2.2
Affected Modules	PDUR	**State**	reviewed
Trace to Requirement			

on Acceptance Test Document		
Trace to SWS Item	PDURouter: SWS_PduR_00551	
Requirements / Reference to Test Environment	none	
Configuration Parameters	PduRUpperModule = TRUE(Com) PduRLowerModule = TRUE(CanTp FrTp LinTp) PduRTxConfirmation = TRUE PduRDestPduDataProvision = PDUR_DIRECT(CanTp) PduRDestPduDataProvision = PDUR_TRIGGERTRANSMIT(FrTp) PduRDestPduDataProvision = PDUR_TRIGGERTRANSMIT(LinTp) ComNotification = App_Com_CbkRxAck_TC_013 Frame Configuration: Fibex::FibexCore::CoreCommunication::TransmissionModeTiming = DIRECT Fibex::FibexCore::CoreCommunication::Timing.EventControlledTiming.numberOfRepeats = Ex: 2 (user configurable) Fibex::FibexCore::CoreCommunication::EventControlledTiming.repetitionPeriod = Ex: 100 ms (user configurable)	
Summary	The required functionality shall be achieved by sending the data from tester and finally observing it on the trace log for the corresponding gateway signal.	
Needed Adaptation to other Releases		
Pre-conditions	DUT shall be in full communication	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[LT] Transmit the configured TP frame to the DUT.	[SWC] Com notification App_Com_CbkRxAck_TC_013 for the configured signal shall be invoked after the complete reception of the frame
Step 2	-	[LT] Same frame shall be observed also on the other buses also.
Post-conditions	None	