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2016-12-15	1.2.0	AUTOSAR Release Management	• Checked and adapted to Classic Platform Release 4.2.2 • Minor corrections
2015-10-31	1.1.0	AUTOSAR Release Management	Initial release, including test suites on • RS_BRF_01784 - AUTOSAR communication shall support the UDP protocol stack

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Table of Contents

1 Acronyms and Abbreviations

Abbreviation / Acronym:	***Description:***
AT	Acceptance Test
ECU	Electronic Control Unit
IUT	Implementation Under Test
LT	Lower Tester
PDU	Protocol Data Unit
SP	Service Primitive
TS	Test System
UDP	User Datagram Protocol (according to IETF RFC 768)
UT	Upper Tester
IP	Internet Protocol
ICMP	Internet Control Message Protocol
TTL	Time To Live
TOS	Type Of Service
MTU	Maximum Transmission Unit
<LTIface-m>	m-th Interface of LT
<IUTIface-n>	n-th Interface of IUT
<IUTIface-n-IP>	IP address of n-th Interface of IUT
<LTIface-m-IP>	IP address of m-th Interface of LT
SCG	Static Configuration Groups
allSystemMCastAddr	Refers to the multicast address of All Systems on a Subnet
BroadCastAddr	Refers to the broadcast address of a EthIfCtrl

2 Related Documentation

2.1 Input documents

[1] AUTOSAR Specification of TCP/IP Stack
AUTOSAR_SWS_TcpIp.pdf

[2] AUTOSAR System Template
AUTOSAR_TPS_SystemTemplate.pdf

[3] AUTOSAR SRS Ethernet
AUTOSAR_SRS_Ethernet.pdf

[4] AUTOSAR General Specification for Basic Software Modules
AUTOSAR_SWS_BSWGeneral.pdf

[5] Specification of ECU Configuration
AUTOSAR_TPS_ECUConfiguration.pdf

[6] Requirements on AUTOSAR Features
AUTOSAR_RS_Features.pdf

2.2 Related standards and norms

[7] IETF RFC 768
http://tools.ietf.org/html/rfc768

[8] IETF RFC 1122
http://tools.ietf.org/html/rfc1122

2.3 Testability Protocol and Service Primitives

[9] Testability Protocol and Service Primitives
AUTOSAR_PRS_TestabilityProtocolAndServicePrimitives.pdf

3 RS_BRF_01784 - AUTOSAR communication shall support the IP protocol stack

3.1 General Test Objective and Approach

This document intends to provide a test-specification for various features of User Datagram Protocol (UDP) as mentioned in RS_BRF_01784.

It uses the UDP message headers and operations as described in Trace to SWS Item. It also uses various parts of RFC 768 and RFC 1122 as reference.

This test-chapter aims to test following requirements which are mentioned in the "AUTOSAR SWS Specification of TCP/IP Stack" for a UDP stack:

I. [SWS_TCPIP_00060] : implement the User Datagram Protocol (UDP) as defined in IETF RFC 768.
II. [SWS_TCPIP_00103] : fulfill the UDP related requirements specified by IETF RFC 1122, section 4.1.3.1 (Ports), 4.1.3.4 (UDP Checksums), and 4.1.3.6 (Invalid Addresses).
III. [SWS_TCPIP_00170] : UDP-layer shall map received UDP datagrams to sockets based on the destination port as contained in the UDP protocol header and the local address (TcpIpAddrId).
IV. [SWS_TCPIP_00204] : For transmissions the TcpIp Module shall skip the calculation of the protocol checksums and fill the field with the value 0 for frames with respect to the configuration of the Ethernet Controller.

Following test sub-sections have been derived to test the above mentioned requirements:

- UDP message field value verifications.
- UDP message operation verifications.
- UDP user interface operation for unicast messages.
- UDP message reception - functionality verification for unicast configurations.
- UDP message transmission: Source address selection mechanism.

This specification gives the description of required test environments and detailed test cases for executing tests.

Please refer to the "Traceability Matrix" (Appendix-A) mentioned at the end of this document, which gives a consolidated correlation between the AUTOSAR requirement, IETF RFC sections and the test cases mentioned in this document.

3.1.1 Test System

3.1.1.1 Overview on Architecture

The basic test system architecture is depicted in the following figure:

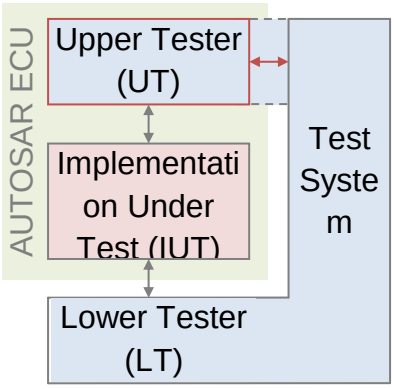


Figure 1: Basic test system architecture

Test System
- controls the Upper Tester and the Lower Tester
- evaluates the test results

The Upper Tester (UT)
- is part of the Test System
- sends / receives Testability SPs and propagates the needed actions to the IUT
- receives return values from the IUT
- communicates return values with the Lower tester to achieve test execution coordination with the Lower tester interface

The Lower Tester (LT)
- is part of the Test System
- records any Ethernet encapsulated packets during the test execution
- sends Ethernet PDUs to the IUT
- coordinates and synchronizes with the Upper Tester

3.1.1.2 Specific Requirements

The Testability Protocol and Service Primitives [9] shall be implemented as a part of the UT
in order to propagate the needed Service Primitives and actions to the IUT.

3.1.1.3 Test Coordination Requirements

As observation of the IUT is done by the test cases at both the Lower Tester and the Upper Tester, a test coordination procedure for collecting the local test verdicts (at LT and UT) at one central place is required. It is up to the test system designer /

implementer to define that “central place” and to design and implement the test coordination functionality.

3.1.2 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. The configuration can be divided into two separate parts. The ‘**UDP Tester Configuration**’ describes variables used to parameterize the Tester. The ‘**UDP IUT Configuration**’ describes the necessary settings of the IUT in order to allow a test case to perform. Now onwards this configuration will be referenced as “*UDP Test Configuration-1*”.

3.1.2.1 **UDP Tester Configuration**

The Test Configuration is changeable during runtime and contains parameters that are referenced by test cases and can be adjusted by a test case itself. In case the test configuration parameter is only referenced the following default parameters will apply.

Test configuration parameters			
Parameter	Descriptions	Default values	Parameter names used during test
Ethernet Interface to be used by Tester	Name of the Ethernet interface on the host machine that tester will use.	Eth-0	<TesterIFace-n> [e.g. <TesterIFace-0>, <TesterIFace-1> etc]
Ethernet Interface to be used by IUT	Name of the Ethernet interface on the host machine that IUT will use.	As configured	<IUTIface-n> [e.g. <IUTIface-0>, <IUTIface-1> etc]
Lower Tester IP Address pool	This is the IP address pool to be used by LT. (Note – Lower Tester may need to simulate a series of IP addressed during a test, this pool will be used for that purpose).	As configured	<Host-n-IP> [e.g. <Host-1-IP>, <Host-2-IP> etc]
Lower Tester port pool	This is the port pool to be used by LT. (Note – Lower Tester may need to use multiple ports during a test, this pool will be used for	20000	<unusedUDP-LT-Port-n>

	that purpose).		
IUT IP Address	This is the IP address of the Implementation Under Test's connection to that network.	As configured	<IUTIface-n-IPAddr> [e.g. <IUTIface-0-IPAddr> denotes the IP address of 0th interface of IUT]
IUT port number	This is the IUT port number to be used during the test.	20001	<unusedUDP-IUT-Port1>
Listen Time	This is the maximum time interval (in seconds) for which LT waits for a packet for cases when a certain event has been triggered on the IUT either by some protocol timer or using some external mechanism.	10 seconds	<ListenTime>
Tolerance Time	Time tolerance (in ms) to be used during various calculations for time sensitive tests.	500 ms	<ToleranceTime>
Sample UDP data	Sample UDP data used by TESTER. e.g. <UDPData-16> indicates 16 octet of UDP data. e.g. <UDPData-17> indicates 17 octet of UDP data.	<UDPDATAUDPDATAUDPDATA….. up to n octets>	<UDPData-n>
Default IP TTL	Specifies the time to live value for outgoing frames.	64	<defaultIPTTL>
Minimum Buffer Size	Minimum Memory size in bytes reserved for TCP/IP buffers	50bytes	MIN_MEM_BUF
All System Multicast Addr	Refers to the multicast address of All Systems on a Subnet. It will be specific to a EthIfCtrl	As Configured	<allSystemMCastAddr>
Broadcast Address	Refers to the broadcast address corresponding to EthIfCtrl of an IUT interface. e.g <BroadCastAddr-0> signifies broad cast address corresponding to EthIfCtrl of <IUTIface-0>	As Configured	<BroadCastAddr-n>

Table 1 Table of input parameters for Tester

3.1.2.2 UDP IUT Configuration

In order to make a test run possible, it is needed to configure various parameters of the IUT. Those configuration parameters can be derived from the AUTOSAR System Template. ECUC Parameters can also be used if needed especially when no corresponding System Template Parameter is present.

3.1.2.2.1 Required System Description

In order to perform the 'Test Cases' of this ATS, following basic System Description must be available.

1. ApplicationEndpoint.TransportProtocolConfiguration.TcpUdpConfig.TcpTp.portNumber > <unusedUDP-IUT-Port1>
2. ApplicationEndpoint.TransportProtocolConfiguration.TcpUdpConfig.TcpTp.dynamicallyAssigned = FALSE
3. For IPv4 scenario:
4. SystemTemplate::Fibex::Fibex4Ethernet::EthernetTopology::NetworkEndpoint Address::IPv4Configuration.ipv4Address = <IUTIface-0-IPAddr>
5. For IPv6 scenario:
6. SystemTemplate::Fibex::Fibex4Ethernet::EthernetTopology::NetworkEndpoint Address:: IPv6Configuration.ipv6Address = <IUTIface-0-IPAddr>
7. SystemTemplate::Fibex::Fibex4Ethernet::EthernetTopology::NetworkEndpoint Address. TcpIpAddressType = TCPIP_UNICAST

3.1.2.2.2 Required values for TCP/IP Stack configuration parameters

1. TcpIp.TcpIpGeneral.TcpIpUdpEnabled = TRUE
2. TcpIp.TcpIpGeneral.TcpIpBufferMemory > MIN_MEM_BUF
3. TcpIp.TcpIpConfig.TcpIpCtrl.TcpIpEthIfCtrlRef = <IUTIface-0>
4. TcpIp.TcpIpConfig.TcpIpLocalAddr = <IUTIface-0-IPAddr>
5. EthGeneral.EthCtrlOffloading.EthCtrlEnableOffloadChecksumUDP = FALSE
6. TcpIp.TcpIpConfig.TcpIpLocalAddr.TcpIpAddressType = TCPIP_UNICAST

3.1.2.3 Required Software Component Description Files

No specific configuration requirements for Software Components.

3.1.2.4 Mandatory vs. Customizable Parts

All the parameters mentioned at section 3.1.2.1 and section 3.1.2.2 are mandatory parameters to run any of the below mentioned test cases.
There could be a need for few more configurations items at ECU, however they are individual test case specific and defined at each test-case level.

3.2 General remarks

Please be aware, that some Test Cases require no reaction from the DUT in order to pass. There should be a generic test to ensure the DUT is still reactive and was not compromised by the previous test case execution. If the DUT is not reactive the previous test case execution must be interpreted as not passed.
One example could be writing a volatile information to the DUT and verify that this information is still available after the test case execution.

3.3 Service Primitives

Depending on the necessity of a test case, the test system may use various service-primitives for the IUT to take certain actions.

For the complete working model of Service Primitives please refer to [9]

Name	Description
CREATE AND BIND	Triggers the IUT to create a socket and optionally binds this socket to a port and a local IP address.
SEND DATA	Triggers the IUT to send a specified data to a specified target.
CLOSE SOCKET	Triggers the IUT to close all the open sockets which were created during a particular test case.
RECEIVE AND FORWARD	Triggers the IUT to receive data from the LT through UDP stack under test and forward back the data to UT.
CONFIGURE SOCKET	This SP is used to select and set certain parameters that can be configured on an UDP socket.

Table 2 Table of Service Primitives

3.4 Assumptions

At the beginning of each test it has to be ensured that the IUT must be in the following conditions:

- All IUT interfaces that are connected to the Test System MUST be enabled.
- All IUT interfaces that are NOT connected to The Test System MUST be disabled
- There's no other unit in the test system that can inadvertently affect a test case.

3.5 Terminologies

This section defines the terminologies used in the test statements.
The following is a brief description of the special terminologies and reusable test steps used in the test sections.

Sl. No.	Phrases	Illustrations
1	Instruct IUT to send a UDP message with source port set to <unusedUDP-IUT-Port1> through <IUTIface-0>	UT issues service primitive <SEND DATA> to instruct IUT to send a UDP message through <IUTIface-0>, containing: - Source-port field set to <unusedUDP-IUT-Port1> - Source IP Address as defined in 'TcpIpLocalAddr' container. - Destination-port field set to <unusedUDP-LT-Port> - Destination IP Address set to <Host-1-IP> - Length field set to UDP header and data length - UDP data field set to 1000 bytes of data - Checksum field set to 16-bit one's complement of the one's complement sum of the UDP header, UDP data and pseudo header.
2	Instruct IUT to send a UDP message with <UDPDefaultData> as data through <IUTIface-0>	UT issues service primitive <SEND DATA> to instruct IUT to send a UDP message through <IUTIface-0>, containing: - Source-port field set to <unusedUDP-IUT-Port1> - Source IP Address as defined in 'TcpIpLocalAddr' container. - Destination-port field set to <unusedUDP-LT-Port> - Destination IP Address set to <Host-1-IP> - Length field set to UDP header and data length - UDP data field set to "Hello world" - Checksum field set to 16-bit one's complement of the one's complement sum of the UDP header, UDP data and pseudo header.
3	Instruct IUT to send a UDP message with <defaultIPTTL+n> as TTL/HopLimit through <IUTIface-0>	UT issues service primitive <SEND DATA> to instruct IUT to send a UDP message through <IUTIface-0>, containing: - Source-port field set to <unusedUDP-IUT-Port1> - Source IP Address as defined in 'TcpIpLocalAddr' container. - Destination-port field set to <unusedUDP-LT-Port> - Destination IP Address set to <Host-1-IP> - Length field set to UDP header and data length - UDP data field set to 1000 bytes of data - Checksum field set to 16-bit one's complement of the one's complement sum of the UDP header, UDP data and pseudo header. - IP-TTL/HopLimit set to <defaultIPTTL+n>

4	Verify that IUT has received the UDP message at <unusedUDP-IUT-Port1> containing: - One or many fields mentioned by tester.	A. UT issues service primitive <RECEIVE AND FORWARD> to check whether IUT has received the UDP message sent from Lower Tester. B. UT will initiate an event message which will forward data portion of the received UDP messages toward the lower tester (LT). Then LT will analyze that forwarded message and perform the necessary verifications. C. The forwarding-process will continue (active phase) until the maximum amount of data requested by UT in the request-message is received. For the complete working model of this Service Primitives please refer to [9].
5	Verify that IUT discards that UDP message.	A. UT issues service primitive <RECEIVE AND FORWARD> to reset the dropCount at IUT B. LT sends an UDP message to IUT by tweaking one or many fields as per the requirement of the test case. C. LT starts sensing the medium up to (<ListenTime> + <ToleranceTime>). D. After the above timeout and LT not receiving any relevant response from IUT, test-system instructs UT to issue service primitive <RECEIVE AND FORWARD> to check whether IUT has received the UDP message sent from LT. E. UT receives the verification-response message containing: - dropCnt is set to: 0 (i.e. the UDP message, sent from LT, was discarded by IUT)
6	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>	A. UT issues service primitive <CREATE AND BIND> to create a UDP socket and optionally binds this socket to a port and a local IP address mentioned in the parameter.

7	Assign broadcast address <BroadCastAddr-0> to EthIf controller <IUTIface-0>	1. For the test sub network, configure the network address and subnet mask in such a way that broadcast address <BroadCastAddr-0> gets set for this subnet.

Table 3 Terminologies

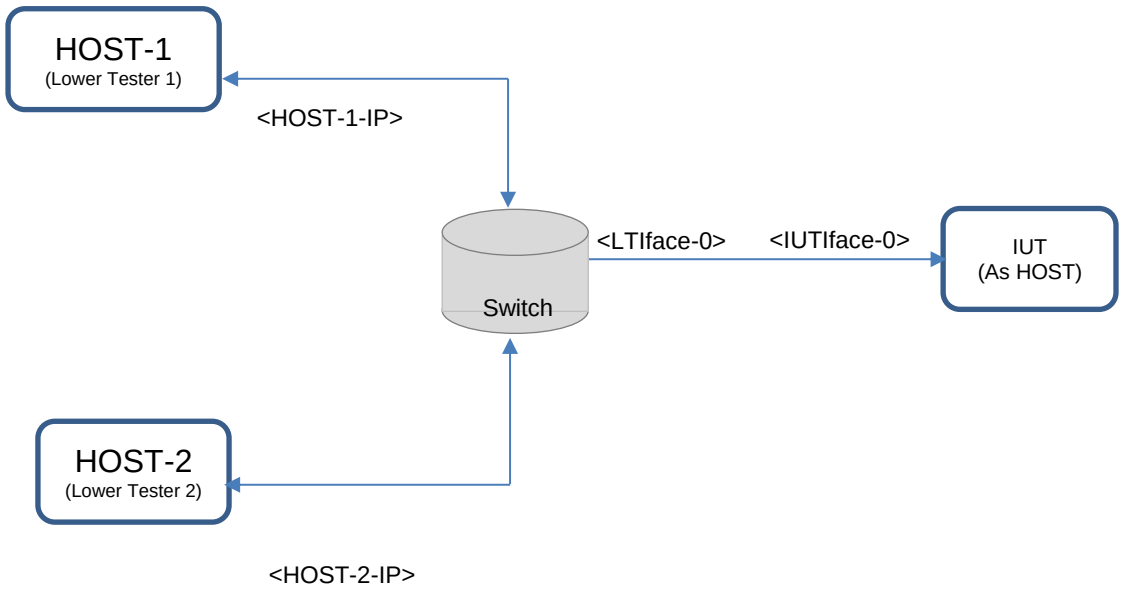
3.6 UDP Topology

3.6.1 UDP Topology-1

DESCRIPTION:

This topology simulates HOST to HOST communication scenario between the IUT and LT. In this topology both LT and IUT should be on the same network.

3.6.2 UDP Topology-2



DESCRIPTION:

This topology simulates a hosts-to-host communication scenario between the IUT and TESTER. In this topology, the IUT is a host and TESTER simulates two HOSTs which are connected to IUT via a switch.

3.7 Test Cases

3.7.1 [ATS_UDP_00360] UDP datagram total length less than 8 octets MUST be discarded

Test Objective	UDP datagram total length less than 8 octets MUST be discarded		
ID	ATS_UDP_00360	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10001		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-1”		
Summary	LT sends a truncated UDP message to IUT through <IUTIface-0> with a length less than 8 bytes. Verify that UDP stack under test discards this UDP message.		
Needed Adaptation to other Releases	None		
Pre-conditions	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[UT] UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>		
Step 2	**[LT]** LT sends UDP message to IUT containing: - truncated message: length less than 8		

	bytes - No UDP Data set. All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 3	**[UT]** Verify that IUT discards that UDP message.	The IUT discards the UDP message silently.
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.	

3.7.2 [ATS_UDP_00435] UDP datagram with length value zero MUST be discarded

Test Objective	UDP datagram with length value zero MUST be discarded		
ID	ATS_UDP_00435	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10002		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-1”		
Summary	LT sends UDP message to IUT through <IUTIface-0> containing Length field set to zero. Verify that UDP stack under test discards this UDP message.		
Needed Adaptation to other Releases	None		
Pre-conditions	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[UT] UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>		

Step 2	**[LT]** LT sends UDP message to IUT containing: - Length field set to zero All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 3	**[UT]** Verify that IUT discards that UDP message.	The IUT discards the UDP message silently.
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.	

3.7.3 [ATS_UDP_00436] UDP datagram length value greater than actual datagram length

Test Objective	UDP datagram length value greater than actual datagram length		
ID	ATS_UDP_00436	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10003		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-1”		
Summary	LT sends UDP message to IUT through <IUTIface-0> containing Length field set to (Length of <UDPData-16> + 8) + 1. Verify that UDP stack under test discards this UDP message.		
Needed Adaptation to other Releases	None		
Pre-conditions	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[UT]		

	UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 2	**[LT]** LT sends UDP message to IUT containing: - Length field set to (Length of <UDPData-16> + 8) + 1 - Data field set to <UDPData-16> All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 3	**[UT]** Verify that IUT discards that UDP message	The IUT discards the UDP message silently.
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.	

3.7.4 [ATS_UDP_00437] UDP datagram length value less than actual datagram length

Test Objective	UDP datagram length value less than actual datagram length		
ID	ATS_UDP_00437	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10004		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-1”		
Summary	LT sends UDP message to IUT through <IUTIface-0> containing Length field set to (Length of <UDPData-16> + 8) - 1. Verify that UDP stack under test discards this UDP message		
Needed Adaptation to other Releases	None		
Pre-conditions	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>		

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[UT] UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 2	**[LT]** LT sends UDP message to IUT containing: - Length field set to (Length of <UDPData-16> + 8) - 1 - Data field set to <UDPData-16> All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 3	**[UT]** Verify that IUT discards that UDP message.	The IUT discards the UDP message silently.
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.	

3.7.5 [ATS_UDP_00438] UDP datagram with max length value is accepted [classifier:SHOULD]

Test Objective	UDP datagram with max length value is accepted [classifier:SHOULD]		
ID	ATS_UDP_00438	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10005		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	A. “UDP Test Configuration-1” B. Test Specific Configurations:		

	• [ECU Configuration Dependencies]: TcpIp.TcpIpGeneral. TcpIpBufferMemory = 65,527 TcpIpIpVXCtrl.TcpIpIpFragmentationConfig.TcpIpIpFragmentationRxEnabled = TRUE
Summary	LT sends UDP message to IUT through <IUTIface-0> containing Length field set to maximum supported value and data set to maximum supported octet size. Verify using UT Service Primitives that IUT's UDP stack successfully received the UDP message containing Length field set to maximum supported value and data set to maximum supported octet size.
Needed Adaptation to other Releases	None
Pre-conditions	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>
Main Test Execution	
Test Steps	**Pass Criteria**
Step 1	[UT] UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>
Step 2	**[LT]** LT sends UDP message to IUT containing: - Length field set to maximum supported value - data set to maximum supported octet size All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.
Step 3	**[UT]** Verify that IUT has received the UDP message **with full data.**	- Verify that IUT has received the UDP message **with full data.**
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.

3.7.6 [ATS_UDP_00439] UDP header with Source Port value set to zero is accepted [classifier:SHOULD]

Test Objective	UDP header with Source Port value set to zero is accepted [classifier:SHOULD]		
ID	ATS_UDP_00439	**AUTOSAR Releases**	4.2.1|4.2.2
Affected	TcpIP, EthIf, Eth	**State**	reviewed

Modules			
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10006		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-1”		
Summary	The LT sends UDP message to IUT containing SOURCE-UDP-PORT set to zero and DESTINATION-UDP-PORT set to <unusedUDP-IUT-Port1>. Verify using UT Service Primitives that IUT’s UDP stack successfully received the UDP message containing SOURCE-UDP-PORT set to zero.		
Needed Adaptation to other Releases	None		
Pre-conditions	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>		
Step 2	**[LT]** LT sends UDP message to IUT containing: • Source UDP Port field set to 0 • Destination UDP Port field set to <unusedUDP-IUT-Port1> All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.		
Step 3	**[UT]** Verify that IUT has received **the UDP message**		Source UDP Port field set to 0
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.		

3.7.7 [ATS_UDP_00440] UDP header with Source IP address value set to multicast-address must be rejected

Test Objective	UDP header with Source IP address value set to multicast-address must be

	rejected		
ID	ATS_UDP_00440	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00103 ATS_SID: SWS_SID_10007		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-1”		
Summary	LT sends UDP message to IUT through <IUTIface-0> containing source IP Address field set to <allSystemMCastAddr> and destination UDP Port field set to <unusedUDP-IUT-Port1>. Verify that UDP stack under test discards this UDP message.		
Needed Adaptation to other Releases	None		
Pre-conditions	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[UT] UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>		
Step 2	**[LT]** LT sends UDP message to IUT containing : - Source IP Address field set to <allSystemMCastAddr> - Destination UDP Port set to <unusedUDP-IUT-Port1> - UDP send data set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.		
Step 3	**[UT]** Verify that IUT discards that UDP message		The IUT discards the UDP message silently.

Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.

3.7.8 [ATS_UDP_00441] UDP header with Source IP address value set to broadcast-address must be rejected

Test Objective	UDP header with Source IP address value set to broadcast-address must be rejected		
ID	ATS_UDP_00441	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00103 ATS_SID: SWS_SID_10008		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-1”		
Summary	LT sends UDP message to IUT through <IUTIface-0> containing source IP Address field set to <BroadCastAddr-0> and destination UDP Port field set to <unusedUDP-IUT-Port1> along with default data-set. Verify that UDP stack under test has discarded UDP message.		
Needed Adaptation to other Releases	None		
Pre-conditions	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	[UT] UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>		
Step 2	**[LT]** LT sends UDP message to IUT containing: - Source IP Address field set to <BroadCastAddr-0> - Destination UDP Port set to <unusedUDP-		

	IUT-Port1> - UDP send data set to <UDPData-16> All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 3	**[UT]** Verify that IUT does not send any response	The IUT discards the UDP message silently.
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.	

3.8 Test Cases - UDP message operation verifications

3.8.1 [ATS_UDP_00442] IUTsends back ICMP Destination Port Unreachable message if it receives a datagram addressed to UDP port with no pending listen call[classifier:SHOULD]

Test Objective	IUTsends back ICMP Destination Port Unreachable message if it receives a datagram addressed to UDP port with no pending listen call[classifier:SHOULD]		
ID	ATS_UDP_00442	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00103 ATS_SID: SWS_SID_10009		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-1”		
Summary	LT sends UDP message to IUT through <IUTIface-0> containing *Destination IP Address field set to <IUTIface-0-IPAddr>* and *Destination UDP Port* field set to <unusedUDP-IUT-Port1>. Ensure that there is no pending BIND call on <unusedUDP-IUT-Port1> at IUT. IUT to send <ICMP-Destination-Unreachable> message to LT		
Needed Adaptation to other Releases	None		
Pre-conditions	UT causes the IUT to <CREATE AND BIND> a UDP socket with doBind flag set to FALSE.		

	Also there is no pending BIND call on <unusedUDP-IUT-Port1> at IUT.	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	**[LT]** Sends message to IUT through <IUTIface-0> containing : - Destination IP Address field set to <IUTIface-0 > - Destination UDP Port field set to <unusedUDP-IUT-Port1> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 2	**[LT]** Verify that the received ICMP Destination Unreachable message from IUT contains: • 'Code' field of ICMP header set to 3.	IUT sends the ICMP Destination Unreachable message with 'code' field of ICMP header set to 3 (i.e. Port unreachable).
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.	

3.8.2 [ATS_UDP_00443] An application can send UDP message at same destination port but more than one different IP addresses

Test Objective	An application can send UDP message at same destination port but more than one different IP addresses		
ID	ATS_UDP_00443	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10010		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-2		
Configuration Parameters	"UDP Test Configuration-1"		
Summary	Externally cause IUT to send a UDP message to LT where destination-port is set to <UnusedUDP-LT-Port> and Destination IP address is set to <Host-1-IP>. LT to receive that message and verify the destination-port and destination-ip		

	addresses are really set to <UnusedUDP-LT-Port> and <Host-1-IP> respectively. Again externally cause IUT to send a UDP message to LT where destination-port is set to <UnusedUDP-LT-Port> and Destination IP address is set to <Host-2-IP>. LT to receive that message and verify the destination-port and destination-ip addresses are really set to <UnusedUDP-LT-Port> and <Host-2-IP> respectively.
Needed Adaptation to other Releases	None
Pre-conditions	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	**[UT]** UT instructs the IUT to <SEND DATA> containing: • Destination-port is set to <UnusedUDP-LT-Port> • Destination IP address is set to <Host-1-IP>	•
Step 2	**[LT<HOST1>]** Verify that the received UDP message from IUT contains • destination-port set to <UnusedUDP-LT-Port> • destination IP address is set to <Host-1-IP>	**[LT]** The UDP message from the IUT shall contain: Destination Port := <UnusedUDP-LT-Port> Destination IP := <HOST-1-IP>
Step 3	**[UT]** UT instructs the IUT to <SEND DATA> containing: • Destination-port is set to <UnusedUDP-LT-Port> • Destination IP address is set to <Host-2-IP>	•
Step 4	**[LT<HOST2>]** Verify that the received UDP message from IUT contains • destination-port set to <UnusedUDP-LT-Port> • destination IP address is set to <Host-2-IP>	**[LT]** The UDP message from the IUT shall contain: Destination Port := <UnusedUDP-LT-Port> Destination IP := <HOST-2-IP>
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.	

3.8.3 [ATS_UDP_00444] An application can specify source port while sending UDP message

Test Objective	An application can specify source port while sending UDP message		
ID	ATS_UDP_00444	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10011		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-1”		
Summary	UT instructs the IUT to originate a UDP message with a specific source-port value and send it to LT. Once LT receives that UDP message it’ll verify the source port of the UDP header is indeed set to that specific value.		
Needed Adaptation to other Releases	None		
Pre-conditions	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	**[UT]** UT instructs the IUT to <SEND DATA> containing: • Destination-port is set to <UnusedUDP-LT-Port> • Destination IP address is set to <Host-1-IP>		•
Step 2	**[LT]** Verify that the received UDP message from IUT contains • source-port set to <unusedUDP-IUT-Port1>		The UDP message from the IUT shall contain: Source Port := <unusedUDP-IUT-Port1>
Step 3	UT causes the IUT to <CREATE AND BIND> UDP sockets on port <unusedUDP-IUT-Port1>+1		

Step 4	**[UT]** UT instructs the IUT to <SEND DATA> containing: • Destination-port is set to <UnusedUDP-LT-Port> • Destination IP address is set to <Host-1-IP>	•
Step 5	**[LT]** Verify that the received UDP message from IUT contains • source-port set to <unusedUDP-IUT-Port1>+1	The UDP message from the IUT shall contain: Source Port := <unusedUDP-IUT-Port1>+1
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.	

3.8.4 [ATS_UDP_00445] Source port of the received UDP message can be used as the destination port while replying back

Test Objective	Source port of the received UDP message can be used as the destination port while replying back		
ID	ATS_UDP_00445	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10011		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-1”		
Summary	IUT receives a UDP message from LT with a specified source port UT instructs IUT to reply to the received UDP message. verify that the IUT uses the source port mentioned in that received UDP datagram as the destination port of the UDP datagram sent to LT.		
Needed Adaptation to other Releases	None		
Pre-conditions	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>		

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	**[LT]** Send UDP message to IUT through <IUTIface-0> containing : - Destination IP Address field set to <IUTIface-0 > - Destination UDP Port field set to <unusedUDP-IUT-Port1> - Source UDP port is set to <UnusedUDP-LT-Port> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 2	**[UT]** UT instructs the IUT to <SEND DATA> containing: • Destination UDP port is set to <UnusedUDP-LT-Port> • Destination IP address is set to <Host-1-IP>	•
Step 3	**[LT]** Verify that the received UDP message from IUT contains: • destination-port set to <UnusedUDP-LT-Port> • destination IP address is set to <Host-1-IP>	The UDP message from the IUT shall contain: Destination Port := <UnusedUDP-LT-Port> Destination IP := <HOST-1-IP>
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.	

3.8.5 [ATS_UDP_00446] An application can receive UDP message at same destination port coming from more than one different IP addresses

Test Objective	An application can receive UDP message at same destination port coming from more than one different IP addresses		
ID	ATS_UDP_00446	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed

Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124	
Trace to SWS Item	TcpIp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10010	
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-2	
Configuration Parameters	“UDP Test Configuration-1”	
Summary	The LT sends UDP message to IUT containing SOURCE-IP-Address is set to <Host-1-IP>, DESTINATION-UDP-PORT set to <unusedUDP-IUT-Port1> and data set to <UDPData-16>. Then again LT sends UDP message to IUT containing SOURCE-IP-Address is set to <Host-2-IP>, DESTINATION-UDP-PORT set to <unusedUDP-IUT-Port1> and data set to <UDPData-32>. IUT MUST receive both the UDP messages properly	
Needed Adaptation to other Releases	None	
Pre-conditions	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 2	**[LT]** Send UDP message to IUT through <IUTIface-0> containing : - Destination IP Address field set to <IUTIface-0-IPAddr> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - Source IP Address field set to <Host-1-IP> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document	
Step 3	**[UT]** Verify that IUT has successfully received **the**	- UDP data field set to <UDPData-16>

	UDP message containing: - UDP data field set to <UDPData-16>	
Step 4	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 5	**[LT]** Send UDP message to IUT through <IUTIface-0> containing : - Destination IP Address field set to <IUTIface-0-IPAddr> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-32> - Source IP Address field set to <Host-2-IP> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document	
Step 6	**[UT]** Verify that IUT has successfully received **the UDP message containing:** - UDP data field set to <UDPData-32>	- UDP data field set to <UDPData-32>
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.	

3.8.6 [ATS_UDP_00447] Length is the length in octets of the message including the header and the data

Test Objective	Length is the length in octets of the message including the header and the data		
ID	ATS_UDP_00447	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10014		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) 3.3 Input Parameters UDP Topology-1		

Configuration Parameters	"UDP Test Configuration-1"	
Summary	Instruct IUT to send a UDP message with data set to <UDPData-16>. LT receives the message and verifies that the 'length' field of the UDP header is set to (<UDPData-16> + 8)	
Needed Adaptation to other Releases	None	
Pre-conditions	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	**[UT]** UT instructs the IUT to <SEND DATA> containing: • Destination-port is set to <UnusedUDP-LT-Port> • Destination IP address is set to <Host-1-IP> • UDP data set to <UDPData-16>	•
Step 2	**[LT]** Verify that the received UDP message from IUT contains: • UDP data set to <UDPData-16> • UDP Length field is set to length of (<UDPData-16> + 8)	The UDP message from the IUT shall contain: • UDP data set to <UDPData-16> • UDP Length field is set to length of (<UDPData-16> + 8)
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.	

3.8.7 [ATS_UDP_00448] An application can send a UDP message with no data and the length field will be set to 8 octets in such cases

Test Objective	An application can send a UDP message with no data and the length field will be set to 8 octets in such cases		
ID	ATS_UDP_00448	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10015		
Requirements / Reference	3.2 Service Primitives (Table-1) UDP Topology-1		

to Test Environment		
Configuration Parameters	"UDP Test Configuration-1"	
Summary	Instruct IUT to send a UDP data of zero size. LT receives the message and verifies that the 'length' field of the UDP header is set to 8 octets.	
Needed Adaptation to other Releases	None	
Pre-conditions	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	**[UT]** UT instructs the IUT to <SEND DATA> containing: • Destination-port is set to <UnusedUDP-LT-Port> • Destination IP address is set to <Host-1-IP> • No UDP Data set.	•
Step 2	**[LT]** Verify that the received UDP message from IUT contains: • No UDP data. UDP Length field is set to 8	The UDP message from the IUT shall contain: • No UDP data. UDP Length field is set to 8
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.	

3.8.8 [ATS_UDP_00449] IUT calculates UDP checksum correctly

Test Objective	IUT calculates UDP checksum correctly		
ID	ATS_UDP_00449	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10016		
Requirements / Reference to Test	3.2 Service Primitives (Table-1) UDP Topology-1		

Environment		
Configuration Parameters	"UDP Test Configuration-1"	
Summary	Instruct IUT to send a UDP message with UDP Data field set to a 16 octet long data. LT receives the message and verifies that the 'checksum' field of the UDP header is correctly calculated and populated with respect to the above mentioned <UDPData-16>.	
Needed Adaptation to other Releases	None	
Pre-conditions	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	**[UT]** UT instructs the IUT to <SEND DATA> containing: • Destination-port is set to <UnusedUDP-LT-Port> • Destination IP address is set to <Host-1-IP> • UDP data set to <UDPData-16>	•
Step 2	**[LT]** Verify that the received UDP message from IUT contains: • UDP data set to <UDPData-16> • UDP Checksum correctly calculated and populated at checksum field.	The UDP message from the IUT shall contain: • UDP data set to <UDPData-16> • UDP Checksum correctly calculated and populated at checksum field.
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.	

3.8.9 [ATS_UDP_00450] IUT calculates UDP checksum correctly by using padding bytes

Test Objective	IUT calculates UDP checksum correctly by using padding bytes		
ID	ATS_UDP_00450	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10016		

Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1	
Configuration Parameters	"UDP Test Configuration-1"	
Summary	Instruct IUT to send a UDP message with UDP Data field set to a 17 octets long data. LT receives the message and verifies that the 'checksum' field of the UDP header is correctly calculated with respect to the above mentioned <UDPData-17> considering required amount of pad-bytes	
Needed Adaptation to other Releases	None	
Pre-conditions	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	**[UT]** UT instructs the IUT to <SEND DATA> containing: • Destination-port is set to <UnusedUDP-LT-Port> • Destination IP address is set to <Host-1-IP> • UDP data set to <UDPData-17> which is just 17 octets long.	•
Step 2	**[LT]** Verify that the received UDP message from IUT contains: • UDP data set to <UDPData-17> UDP Checksum correctly calculated and populated at checksum field considering required amount of pad-bytes	The UDP message from the IUT shall contain: • UDP data set to <UDPData-17> • UDP Checksum correctly calculated and populated at checksum field.
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.	

3.8.10 [ATS_UDP_00451] IUT MUST discard messages with invalid checksums

Test Objective	IUT MUST discard messages with invalid checksums		
ID	ATS_UDP_00451	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance	ATR: ATR_ATR_00124		

Test Document		
Trace to SWS Item	TcpIp: SWS_TCPIP_00103 ATS_SID: SWS_SID_10018	
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1	
Configuration Parameters	“UDP Test Configuration-1”	
Summary	LT sends a UDP message with a non-zero but invalid checksum <incorrectUDPChecksum>. IUT must discard the message.	
Needed Adaptation to other Releases	None	
Pre-conditions	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	[UT] UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 2	**[LT]** LT sends UDP message to IUT containing: - Destination UDP Port set to <unusedUDP-IUT-Port1> - UDP send data set to <UDPData-16> - UDP checksum set to <incorrectUDPChecksum> All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 3	**[UT]** Verify that IUT discards the message.	The IUT discards the UDP message silently.
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.	

3.8.11 [ATS_UDP_00452] IUT accepts messages with all zero filled checksums [classifier:MAY]

Test Objective	IUT accepts messages with all zero filled checksums [classifier:MAY]

ID	ATS_UDP_00452	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00060 ATS_SID: SWS_SID_10019		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-1”		
Summary	LT sends a UDP message with <UDPData-16> where checksum field is filled with all zeros. IUT must accept the message.		
Needed Adaptation to other Releases	None		
Pre-conditions	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps		**Pass Criteria**	
Step 1	[UT] UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>		
Step 2	**[LT]** LT sends UDP message to IUT containing: - Destination UDP Port set to <unusedUDP-IUT-Port1> - UDP send data set to <UDPData-16> - UDP checksum set to zero. All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.		
Step 3	[UT] Verify that IUT has received **the UDP message**		- UDP data set to <UDPData-16>
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.		

3.9 Test Cases - UDP message reception - functionality verification for unicast configurations.

3.9.1 [ATS_UDP_00458] Destination IP Address – Unicast; IP Address Selected at Bind () – Unicast

Test Objective	Destination IP Address – Unicast; IP Address Selected at Bind () – Unicast		
ID	ATS_UDP_00458	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-1”		
Summary	UT instructs the IUT to create and bind an UDP socket to unicast address (<IUTIface-0-IPAddr> for EthIf controller <IUTIface-0> LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to <IUTIface-0-IPAddr>. UT verifies that IUT accepts the message as it passed the acceptance filter		
Needed Adaptation to other Releases	None		
Pre-conditions			
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	**[UT]** UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>		
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>		
Step 3	**[LT]** Send UDP message to IUT through		

	<IUTIface-0> containing : - Destination IP Address field set to <IUTIface-0-IPAddr> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document	
Step 4	**[UT]** Verify that IUT receives **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT accepts the UDP message with UDP data set to <UDPData-16>
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.	

3.9.2 [ATS_UDP_00459] Destination IP Address – Multicast; IP Address Selected at Bind () – Unicast

Test Objective	Destination IP Address – Multicast; IP Address Selected at Bind () – Unicast		
ID	ATS_UDP_00459	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-1”		
Summary	UT instructs the IUT to create and bind an UDP socket to Unicast address (<IUTIface-0-IPAddr>. LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to an IP Multicast address. UT verifies that IUT discards the message		
Needed Adaptation to other Releases	None		

Pre-conditions	Assign unicast address <IUTIface-0-IPAddr> to EthIf controller <IUTIface-0>	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	**[UT]** UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>	
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 3	**[LT]** Send UDP message to IUT through <IUTIface-0> containing : - Destination IP Address field set to multicast address <allSystemMCastAddr> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document	
Step 4	**[UT]** Verify that IUT discards **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT discards the UDP message
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignment to <IUTIface-0>	

3.9.3 [ATS_UDP_00460] Destination IP Address – Broadcast; IP Address Selected at Bind () – Unicast (IF-match)

Test Objective	Destination IP Address – Broadcast; IP Address Selected at Bind () – Unicast (IF-match)		
ID	ATS_UDP_00460	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance	ATR: ATR_ATR_00124		

Test Document		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170	
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1	
Configuration Parameters	“UDP Test Configuration-1”	
Summary	UT instructs the IUT to create and bind an UDP socket to Unicast address (<IUTIface-0-IPAddr> of <IUTIface-0> LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to broadcast address. UT verifies that IUT accepts the message as it passed the acceptance filter.	
Needed Adaptation to other Releases	None	
Pre-conditions	Assign unicast address <IUTIface-0-IPAddr> to EthIf controller <IUTIface-0> Assign broadcast address <BroadCastAddr-0> to EthIf controller <IUTIface-0>	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>	
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 3	**[LT]** Send UDP message to IUT through <IUTIface-0> containing : - Destination IP Address field set to <BroadCastAddr-0> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	**[UT]** Verify that IUT receives **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT receives the UDP message with UDP data set to <UDPData-16>

Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignment to <IUTIface-0>

3.9.4 [ATS_UDP_00461] Destination IP Address – Broadcast; IP Address Selected at Bind () – Unicast (IF not match)

Test Objective	Destination IP Address – Broadcast; IP Address Selected at Bind () – Unicast (IF not match)		
ID	ATS_UDP_00461	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-1”		
Summary	UT instructs the IUT to create and bind an UDP socket to Unicast address (<IUTIface-0-IPAddr> of <IUTIface-0> LT sends UDP message to IUT with <UDPData-16> and destination IP address set to broadcast address which is not related to <IUTIface-0> UT verifies that IUT discards the message		
Needed Adaptation to other Releases	None		
Pre-conditions	Assign unicast address <IUTIface-0-IPAddr> to EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>		
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>		
Step 3	**[LT]** Send UDP message to IUT containing : - Destination IP Address field set to		

	<BroadCastAddr-1> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	**[UT]** Verify that IUT discards **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT discards the UDP message
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignment to <IUTIface-0>	

4 RS_BRF_01784 - AUTOSAR communication shall support the IP protocol stack

4.1 General Test Objective and Approach

This document intends to provide a test-specification for multicast message handling features of User Datagram Protocol (UDP) as mentioned in RS_BRF_01784.

It uses the UDP message headers and operations as described in Trace to SWS Item. It also uses various parts of RFC 768 and RFC 1122 as reference.

This test-chapter aims to test following requirements which are mentioned in the "AUTOSAR SWS Specification of TCP/IP Stack" for a UDP stack:

I. [SWS_TCPIP_00171] : For received UDP datagrams where the local address (TcpIpAddrId) is a broadcast or multicast address, all matching sockets shall receive the incoming message.
II. [SWS_TCPIP_00178] : If data is transmitted using an UDP socket which is bound to a local address (TcpIpAddrId) of type Multicast, then the TcpIp shall use the IP address of the configured local address (TcpIpAddrId), which is of type IP Unicast and assigned to the same EthIfCtrl, as the bound local address (TcpIpAddrId) as source IP address in the IP datagram header.
III. [SWS_TCPIP_00179] : If data is transmitted using an UDP socket which is bound to a local address (TcpIpAddrId) of type Broadcast, then the TcpIp shall use the IP address of the configured local address (TcpIpAddrId), which is of type IP Unicast and assigned to the same EthIfCtrl, as the bound local address (TcpIpAddrId) as source IP address in the IP datagram header.

Following test sub-sections have been derived to test the above mentioned requirements:

UDP message reception - functionality verification for multicast messages.
UDP message transmission - functionality verification for multicast messages.

This specification gives the description of required test environments and detailed test cases for executing tests.

Please refer to the "Traceability Matrix" (Appendix-A) mentioned at the end of this document, which gives a consolidated correlation between the AUTOSAR requirement, IETF RFC sections and the test cases mentioned in this document.

4.1.1 Test System

4.1.1.1 Overview on Architecture

This is same as mentioned at Section 3.1.1

4.1.1.2 Specific Requirements

Same as Section 3.1.1.2

4.1.1.3 Test Coordination Requirements

Same as Section 3.1.1.3

4.1.2 UDP 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. Now onwards this section will be referred as “UDP Test Configuration-2”.

4.1.2.1 Required ECU Extract of System Description Files

The purpose of the tests is to check the implementation of the SOP SW version as black box test. So only the final SOP System Description is required.

1. ApplicationEndpoint.TransportProtocolConfiguration.TcpUdpConfig.TcpTp.portNumber > <unusedUDP-IUT-Port1>
2. ApplicationEndpoint.TransportProtocolConfiguration.TcpUdpConfig.TcpTp.dynamicallyAssigned = FALSE
3. SystemTemplate::Fibex::Fibex4Ethernet::EthernetTopology::NetworkEndpoint Address. TcpIpLocalAddr =<IUTIface-0-IPAddr>
4. SystemTemplate::Fibex::Fibex4Ethernet::EthernetTopology::NetworkEndpoint Address. TcpIpAddressType = TCPIP_MULTICAST

4.1.2.2 Required ECU Configuration Description Files

1. TcpIp.TcpIpGeneral. TcpIpUdpEnabled = TRUE
2. TcpIp.TcpIpGeneral. TcpIpBufferMemory > MIN_MEM_BUF
3. TcpIp.TcpIpConfig.TcpIpCtrl.TcpIpEthIfCtrlRef = <IUTIface-0>
4. TcpIp.TcpIpConfig.TcpIpCtrl.TcpIpLocalAddr = <IUTIface-0-IPAddr>
5. EthGeneral.EthCtrlOffloading.EthCtrlEnableOffloadChecksumTCP = FALSE
6. TcpIp.TcpIpConfig.TcpIpCtrl.TcpIpLocalAddr.TcpIpAddressType = TCPIP_MULTICAST

4.1.2.3 Required Software Component Description Files

No specific configuration requirements for Software Components.

4.1.2.4 **User defined Input Parameters**

Following input parameters are needed for Tester to run the test cases.

Test configuration parameters			
Parameter	Descriptions	Default values	Parameter names used during test
Ethernet Interface to be used by Tester	Name of the Ethernet interface on the host machine that tester will use.	Eth-0	<TesterIFace-n> [e.g. <TesterIFace-0>, <TesterIFace-1> etc]
Ethernet Interface to be used by IUT	Name of the Ethernet interface on the host machine that IUT will use.	As configured	<IUTIface-n> [e.g. <IUTIface-0>, <IUTIface-1> etc]
Lower Tester IP Address pool	This is the IP address pool to be used by LT. (Note – Lower Tester may need to simulate a series of IP addressed during a test, this pool will be used for that purpose).	As configured	<Host-n-IP> [e.g. <Host-1-IP>, <Host-2-IP> etc]
Lower Tester port pool	This is the port pool to be used by LT. (Note – Lower Tester may need to use multiple ports during a test, this pool will be used for that purpose).	20000	<unusedUDP-LT-Port-n>
IUT IP Address	This is the IP address of the Implementation Under Test's connection to that network.	As configured	<IUTIface-n-IPAddr> [e.g. <IUTIface-0-IPAddr> denotes the IP address of 0th interface of IUT]

IUT port number	This is the IUT port number to be used during the test.	20001	<unusedUDP-IUT-Port1>
Listen Time	This is the maximum time interval (in seconds) for which LT waits for a packet for cases when a certain event has been triggered on the IUT either by some protocol timer or using some external mechanism.	10 seconds	<ListenTime>
Tolerance Time	Time tolerance (in ms) to be used during various calculations for time sensitive tests.	500 ms	<ToleranceTime>
Sample UDP data	Sample UDP data used by TESTER. e.g. <UDPData-16> indicates 16 octet of UDP data. e.g. <UDPData-17> indicates 17 octet of UDP data.	<UDPDATAUDPDATAUDPDATA….. up to n octets>	<UDPData-n>
Default IP TTL	Specifies the time to live value for outgoing frames.	64	<defaultIPTTL>
Minimum Buffer Size	Minimum Memory size in bytes reserved for TCP/IP buffers	50bytes	MIN_MEM_BUF
All System Multicast Addr	Refers to the multicast address of All Systems on a Subnet. It will be specific to a EthIfCtrl	As Configured	<allSystemMCastAddr>
Broadcast Address	Refers to the broadcast address corresponding to EthIfCtrl of an IUT interface. e.g <BroadCastAddr-0> signifies broad cast address corresponding to EthIfCtrl of <IUTIface-0>	As Configured	<BroadCastAddr-n>

Table 3: Table of input parameters for Tester

4.1.2.5 **Mandatory vs. Customizable Parts**

All the parameters mentioned at section 3.1.2.1, section 3.1.2.2 and section 3.1.2.4 are mandatory parameters to run any of the below mentioned test cases.
There could be a need for few more configurations items at ECU, however they are individual test case specific and defined at each test-case level.

4.1.3 Test Case Design

Not Applicable

4.2 Service Primitives

Same as section 3.2

4.3 Assumptions

Same as section 3.3

4.4 Terminologies

Same as section 3.4

4.5 UDP Topology

Same as section 3.5

4.6 Test Cases - UDP message reception: Acceptance Filter test

4.6.1 [ATS_UDP_00462] Destination IP Address – Unicast; IP Address Selected at Bind () – Multicast

Test Objective	Destination IP Address – Unicast; IP Address Selected at Bind () – Multicast		
ID	ATS_UDP_00462	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-2”		
Summary	UT instructs the IUT to create and bind an UDP socket to multicast IP address that is mapped to <IUTIface-0>. LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to <IUTIface-0-IPAddr>. UT verifies that IUT discards the message		
Needed Adaptation to other Releases	None		
Pre-conditions	Assign multicast address <allSystemMCastAddr> to EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	**[UT]** UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to multicast address <allSystemMCastAddr> for EthIf controller <IUTIface-0>		
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>		
Step 3	**[LT]** Send UDP message to IUT through		

	<IUTIface-0> containing : - Destination IP Address field set to <IUTIface-0-IPAddr> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	**[UT]** Verify that IUT discards **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT discards the UDP message
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignments to <IUTIface-0>	

4.6.2 [ATS_UDP_00463] Destination IP Address – Unicast; IP Address Selected at Bind () – Broadcast

Test Objective	Destination IP Address – Unicast; IP Address Selected at Bind () – Broadcast		
ID	ATS_UDP_00463	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-2”		
Summary	UT instructs the IUT to create and bind an UDP socket to a Broadcast IP address. LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to <IUTIface-0-IPAddr>. UT verifies that IUT discards the message.		
Needed Adaptation to other Releases	None		

Pre-conditions	Assign broadcast address < BroadCastAddr-0> to EthIf controller <IUTIface-0>	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	**[UT]** UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to broadcast address <BroadCastAddr-0> for EthIf controller <IUTIface-0	
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 3	**[LT]** Send UDP message to IUT through <IUTIface-0> containing : - Destination IP Address field set to <IUTIface-0-IPAddr> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	**[UT]** Verify that IUT discards **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT discards the UDP message
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignments to <IUTIface-0>	

4.6.3 [ATS_UDP_00464] Destination IP Address – Unicast; IP Address Selected at Bind () – ANY

Test Objective	Destination IP Address – Unicast; IP Address Selected at Bind () – ANY		
ID	ATS_UDP_00464	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance	ATR: ATR_ATR_00124		

Test Document		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170	
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1	
Configuration Parameters	“UDP Test Configuration-2”	
Summary	UT instructs the IUT to create and bind an UDP socket to ANY address of <IUTIface-0>. LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to <IUTIface-0-IPAddr>. UT verifies that IUT accepts the message as it passed the acceptance filter	
Needed Adaptation to other Releases	None	
Pre-conditions	Assign unicast address <IUTIface-0-IPAddr> to EthIf controller <IUTIface-0>	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	**[UT]** UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to ANY for EthIf controller <IUTIface-0>	
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 3	**[LT]** Send UDP message to IUT through <IUTIface-0> containing : - Destination IP Address field set to <IUTIface-0-IPAddr> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document	
Step 4	**[UT]** Verify that IUT receives **the UDP message containing:**	IUT receives the UDP message with UDP data set to <UDPData-16>

	- UDP data field set to <UDPData-16>	
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignment to <IUTIface-0>	

4.6.4 [ATS_UDP_00465] Destination IP Address – Unicast (not exact match with interface); IP Address Selected at Bind () – ANY

Test Objective	Destination IP Address – Unicast (not exact match with interface); IP Address Selected at Bind () – ANY		
ID	ATS_UDP_00465	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-2”		
Summary	UT instructs the IUT to create and bind an UDP socket to ANY address of <IUTIface-0>. LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to (<IUTIface-0-IPAddr> + 1). UT verifies that IUT discards the message as it doesn’t pass the acceptance filter.		
Needed Adaptation to other Releases	None		
Pre-conditions	Assign unicast address <IUTIface-0-IPAddr> to EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to ANY for EthIf controller <IUTIface-0>		
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>		
Step 3	**[LT]** Send UDP message to IUT through		

	<IUTIface-0> containing : - Destination IP Address field set to (<IUTIface-0-IPAddr>+1) - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	**[UT]** Verify that IUT discards **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT discards the UDP message
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignment to <IUTIface-0>	

4.6.5 [ATS_UDP_00466] Destination IP Address – Unicast; IP Address Selected at Bind () – TCPIP_LOCALADDRID_ANY

Test Objective	Destination IP Address – Unicast; IP Address Selected at Bind () – TCPIP_LOCALADDRID_ANY		
ID	ATS_UDP_00466	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-		
Configuration Parameters	“UDP Test Configuration-2”		
Summary	UT instructs the IUT to create and bind an UDP socket to TCPIP_LOCALADDRID_ANY (i.e. wildcard for any IP address on any interface). 1) LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to <IUTIface-0-IPAddr>. 2) UT verifies that IUT accepts the message as it passed the acceptance filter		
Needed Adaptation to	None		

other Releases		
Pre-conditions	Assign unicast address <IUTIface-0-IPAddr> to EthIf controller <IUTIface-0>	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	**[UT]** UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to TCPIP_LOCALADDRID_ANY for any EthIf controllers of IUT.	
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 3	**[LT]** Send UDP message to IUT through <IUTIface-0> containing : - Destination IP Address field set to <IUTIface-0-IPAddr> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	**[UT]** Verify that IUT accepts **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT accepts the UDP message with UDP data set to <UDPData-16>
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignment to <IUTIface-0>	

4.6.6 [ATS_UDP_00467] Destination IP Address – Unicast; IP Address Selected at Bind () – w/o bind

Test Objective	Destination IP Address – Unicast; IP Address Selected at Bind () – w/o bind		
ID	ATS_UDP_00467	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance	ATR: ATR_ATR_00124		

Test Document		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170	
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1	
Configuration Parameters	“UDP Test Configuration-2”	
Summary	UT instructs the IUT to create an UDP socket and do not bind it to ANY IP address. LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to <IUTIface-0-IPAddr>. UT verifies that IUT discards the message.	
Needed Adaptation to other Releases	None	
Pre-conditions	Assign unicast address <IUTIface-0-IPAddr> to EthIf controller <IUTIface-0>	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	UT causes the IUT to <CREATE AND BIND> a UDP socket with *doBind* flag set to FALSE .	
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 3	**[LT]** Send UDP message to IUT through <IUTIface-0> containing : - Destination IP Address field set to <IUTIface-0-IPAddr> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	**[UT]** Verify that IUT discards **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT discards the UDP message
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.	

4.6.7 [ATS_UDP_00468] Destination IP Address – Multicast; IP Address Selected at Bind () – Multicast (exact match)

Test Objective	Destination IP Address – Multicast; IP Address Selected at Bind () – Multicast (exact match)		
ID	ATS_UDP_00468	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00171		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-2”		
Summary	UT instructs the IUT to create and bind an UDP socket to multicast IP address that is mapped to <IUTIface-0>. LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to a matching multicast IP address. UT verifies that IUT accepts the message as it passed the acceptance filter		
Needed Adaptation to other Releases	None		
Pre-conditions	Assign multicast address <allSystemMCastAddr> to EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	**[UT]** UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to multicast address <allSystemMCastAddr> for EthIf controller <IUTIface-0>		
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>		
Step 3	**[LT]** Send UDP message to IUT through <IUTIface-0> containing : - Destination IP Address field set to		

	<allSystemMCastAddr> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document	
Step 4	**[UT]** Verify that IUT accepts **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT accepts the UDP message with UDP data set to <UDPData-16>
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignments to <IUTIface-0>	

4.6.8 [ATS_UDP_00469] Destination IP Address – Multicast; IP Address Selected at Bind () – Multicast (not exact match)

Test Objective	Destination IP Address – Multicast; IP Address Selected at Bind () – Multicast (not exact match)		
ID	ATS_UDP_00469	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00171		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-2”		
Summary	UT instructs the IUT to create and bind an UDP socket to multicast IP address that is mapped to <IUTIface-0>. LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to a multicast IP address that doesn’t match with the multicast IP address bound to the socket. UT verifies that IUT discards the message as it doesn’t pass the acceptance filter.		
Needed Adaptation to other Releases	None		
Pre-conditions	Assign multicast address <allSystemMCastAddr> to EthIf controller <IUTIface-0>		

Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	**[UT]** UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to multicast address <allSystemMCastAddr> for EthIf controller <IUTIface-0>	
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 3	**[LT]** Send UDP message to IUT through <IUTIface-0> containing : - Destination IP Address field set to (<allSystemMCastAddr>+1) - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	**[UT]** Verify that IUT discards **the UDP message containing:** - UDP data field set to <UDPData-16	IUT discards the UDP message
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignments to <IUTIface-0>	

4.6.9 [ATS_UDP_00470] Destination IP Address – Multicast; IP Address Selected at Bind () – Broadcast

Test Objective	Destination IP Address – Multicast; IP Address Selected at Bind () – Broadcast		
ID	ATS_UDP_00470	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		

Trace to SWS Item	TcpIp: SWS_TCPIP_00171	
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1	
Configuration Parameters	“UDP Test Configuration-2”	
Summary	UT instructs the IUT to create and bind an UDP socket to a Broadcast IP address. LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to a multicast IP address. UT verifies that IUT discards the message	
Needed Adaptation to other Releases	None	
Pre-conditions	Assign broadcast address <BroadCastAddr-0> to EthIf controller <IUTIface-0>	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	**[UT]** UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to broadcast address < BroadCastAddr-0> for EthIf controller <IUTIface-0>	
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 3	**[LT]** Send UDP message to IUT through <IUTIface-0> containing : - Destination IP Address field set to <allSystemMCastAddr > - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	**[UT]** Verify that IUT discards **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT discards the UDP message

Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignments to <IUTIface-0>

4.6.10 [ATS_UDP_00471] Destination IP Address – Multicast; IP Address Selected at Bind () – ANY (if-match scenario)

Test Objective	Destination IP Address – Multicast; IP Address Selected at Bind () – ANY (if-match scenario)		
ID	ATS_UDP_00471	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00171		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-2”		
Summary	UT instructs the IUT to create and bind an UDP socket to ANY address of <IUTIface-0> LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to an IP multicast address. UT verifies that IUT accepts the message as it passed the acceptance filter.		
Needed Adaptation to other Releases	None		
Pre-conditions	Assign multicast address <allSystemMCastAddr> to EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	**[UT]** UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> > to ANY for EthIf controller <IUTIface-0>		
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>		
Step 3	**[LT]** Send UDP message to IUT through		

	<IUTIface-0> containing : - Destination IP Address field set to <allSystemMCastAddr > - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document	
Step 4	**[UT]** Verify that IUT accepts **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT accepts the UDP message with UDP data set to <UDPData-16>
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignments to <IUTIface-0>	

4.6.11 [ATS_UDP_00472] Destination IP Address – Multicast; IP Address Selected at Bind () – ANY (if-not-match scenario)

Test Objective	Destination IP Address – Multicast; IP Address Selected at Bind () – ANY (if-not-match scenario)		
ID	ATS_UDP_00472	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-2”		
Summary	UT instructs the IUT to create and bind an UDP socket to ANY address of <IUTIface-0>. LT sends UDP message to IUT with <UDPData-16> and destination IP address set to an IP multicast address which is not related to <IUTIface-0> UT verifies that IUT discards the message as it doesn’t pass the acceptance filter		
Needed Adaptation to	None		

other Releases		
Pre-conditions	Assign unicast address <IUTIface-0-IPAddr> to EthIf controller <IUTIface-0>	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	**[UT]** UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> > to ANY for EthIf controller <IUTIface-0>	
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 3	**[LT]** Send UDP message to IUT containing : - Destination IP Address field set to <allSystemMCastAddr+1> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document	
Step 4	**[UT]** Verify that IUT discards **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT discards the UDP message
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignments to <IUTIface-0>	

4.6.12 [ATS_UDP_00473] Destination IP Address – multicast; IP Address Selected at Bind () – TCPIP_LOCALADDRID_ANY

Test Objective	Destination IP Address – multicast; IP Address Selected at Bind () – TCPIP_LOCALADDRID_ANY		
ID	ATS_UDP_00473	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance	ATR: ATR_ATR_00124		

Test Document		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170	
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1	
Configuration Parameters	"UDP Test Configuration-2"	
Summary	UT instructs the IUT to create and bind an UDP socket to TCPIP_LOCALADDRID_ANY (i.e. wildcard for any IP address on any interface). 1) LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to <allSystemMCastAddr>. 2) UT verifies that IUT accepts the message as it passed the acceptance filter.	
Needed Adaptation to other Releases	None	
Pre-conditions	Enable EthIf controllers at <IUTIface-0> of IUT. Assign multicast address <allSystemMCastAddr> to EthIf controller <IUTIface-0>	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	**[UT]** UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to TCPIP_LOCALADDRID_ANY for any EthIf controllers of IUT.	
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 3	**[LT]** Send UDP message to IUT through <IUTIface-0> containing : - Destination IP Address field set to < allSystemMCastAddr> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	**[UT]** Verify that IUT accepts **the UDP message**	IUT accepts the UDP message with UDP data set to <UDPData-16>

	containing: - UDP data field set to <UDPData-16>	
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignment to <IUTIface-0>	

4.6.13 [ATS_UDP_00474] Destination IP Address – Multicast; IP Address Selected at Bind () – w/o bind

Test Objective	Destination IP Address – Multicast; IP Address Selected at Bind () – w/o bind		
ID	ATS_UDP_00474	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-2”		
Summary	UT instructs the IUT to create an UDP socket and do not bind it to any IP address. LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to a multicast address. UT verifies that IUT discards the message		
Needed Adaptation to other Releases	None		
Pre-conditions	Enable EthIf controllers at <IUTIface-0> of IUT. Assign multicast address <allSystemMCastAddr> to EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	UT causes the IUT to <CREATE AND BIND> a UDP socket with *doBind* flag set to FALSE .		
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>		
Step 3	**[LT]** Send UDP message to IUT through		

	<IUTIface-0> containing : - Destination IP Address field set to <allSystemMCastAddr > - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	**[UT]** Verify that IUT discards **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT discards the UDP message
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.	

4.6.14 [ATS_UDP_00475] Destination IP Address – Broadcast; IP Address Selected at Bind () – Multicast (IF-match)

Test Objective	Destination IP Address – Broadcast; IP Address Selected at Bind () – Multicast (IF-match)		
ID	ATS_UDP_00475	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-2”		
Summary	UT instructs the IUT to create and bind an UDP socket to a multicast IP address that is mapped to <IUTIface-0> LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to broadcast address. UT verifies that IUT accepts the message as it passed the acceptance filter.		
Needed Adaptation to other Releases	None		

Pre-conditions	Assign multicast address <allSystemMCastAddr> for EthIf controller <IUTIface-0> Assign broadcast address <BroadCastAddr-0> for EthIf controller <IUTIface-0>	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to multicast address <allSystemMCastAddr> for EthIf controller <IUTIface-0>	
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 3	**[LT]** Send UDP message to IUT through <IUTIface-0> containing : - Destination IP Address field set to <BroadCastAddr-0> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	**[UT]** Verify that IUT receives **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT accepts the UDP message with UDP data set to <UDPData-16>
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignment to <IUTIface-0>	

4.6.15 [ATS_UDP_00476] Destination IP Address – Broadcast; IP Address Selected at Bind () – Multicast (IF not match)

Test Objective	Destination IP Address – Broadcast; IP Address Selected at Bind () – Multicast (IF not match)		
ID	ATS_UDP_00476	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		

Trace to SWS Item	TcpIp: SWS_TCPIP_00170	
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1	
Configuration Parameters	“UDP Test Configuration-2”	
Summary	UT instructs the IUT to create and bind an UDP socket to multicast address that is mapped to <IUTIface-0> LT sends UDP message to IUT with <UDPData-16> and destination IP address set to broadcast address which is not related to <IUTIface-0> UT verifies that IUT discards the message.	
Needed Adaptation to other Releases	None	
Pre-conditions	Assign multicast address <allSystemMCastAddr> for EthIf controller <IUTIface-0>	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to multicast address <allSystemMCastAddr> for EthIf controller <IUTIface-0>	
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 3	**[LT]** Send UDP message to IUT containing : - Destination IP Address field set to <BroadCastAddr-1> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	**[UT]** Verify that IUT discards **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT discards **the UDP message containing:** - UDP data field set to <UDPData-16>
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignment to <IUTIface-0>	

4.6.16 [ATS_UDP_00477] Destination IP Address – Broadcast; IP Address Selected at Bind () – Broadcast (IF-match)

Test Objective	Destination IP Address – Broadcast; IP Address Selected at Bind () – Broadcast (IF-match)		
ID	ATS_UDP_00477	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-2”		
Summary	UT instructs the IUT to create and bind an UDP socket to a broadcast IP address that is mapped to <IUTIface-0> LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to broadcast address. UT verifies that IUT accepts the message as it passed the acceptance filter		
Needed Adaptation to other Releases	None		
Pre-conditions	Assign broadcast address <BroadCastAddr-0> for EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to broadcast address <BroadCastAddr-0> for EthIf controller <IUTIface-0>		
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>		
Step 3	**[LT]** Send UDP message to IUT through <IUTIface-0> containing : - Destination IP Address field set to <BroadCastAddr-0> - Destination UDP Port field set to		

	<unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	**[UT]** Verify that IUT receives **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT accepts the UDP message with UDP data set to <UDPData-16>
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignment to <IUTIface-0>	

4.6.17 [ATS_UDP_00478] Destination IP Address – Broadcast; IP Address Selected at Bind () – Broadcast (IF not match)

Test Objective	Destination IP Address – Broadcast; IP Address Selected at Bind () – Broadcast (IF not match)		
ID	ATS_UDP_00478	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-2”		
Summary	UT instructs the IUT to create and bind an UDP socket to broadcast address that is mapped to <IUTIface-0> LT sends UDP message to IUT with <UDPData-16> and destination IP address set to broadcast address not related to <IUTIface-0> UT verifies that IUT discards the message		
Needed Adaptation to other Releases	None		
Pre-conditions	Assign broadcast address <BroadCastAddr-0> for EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	UT causes the IUT to <CREATE AND BIND>		

	a UDP socket on port <unusedUDP-IUT-Port1> to broadcast address <BroadCastAddr-0> for EthIf controller <IUTIface-0>	
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 3	**[LT]** Send UDP message to IUT containing : - Destination IP Address field set to <BroadCastAddr-1> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	**[UT]** Verify that IUT discards **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT discards the UDP message
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignment to <IUTIface-0>	

4.6.18 [ATS_UDP_00479] Destination IP Address – Broadcast; IP Address Selected at Bind () – ANY (IF-match scenario)

Test Objective	Destination IP Address – Broadcast; IP Address Selected at Bind () – ANY (IF-match scenario)		
ID	ATS_UDP_00479	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		

Configuration Parameters	"UDP Test Configuration-2"	
Summary	UT instructs the IUT to create and bind an UDP socket to a ANY address that is mapped to <IUTIface-0> LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to broadcast address. UT verifies that IUT has successfully received the message as it passed the acceptance filter.	
Needed Adaptation to other Releases	None	
Pre-conditions	Assign unicast address <IUTIface-0-IPAddr> to EthIf controller <IUTIface-0> Assign broadcast address <BroadCastAddr-0> for EthIf controller <IUTIface-0>	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to ANY for EthIf controller <IUTIface-0>	
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 3	**[LT]** Send UDP message to IUT through <IUTIface-0> containing : - Destination IP Address field set to <BroadCastAddr-0> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	**[UT]** Verify that IUT accepts **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT accepts the UDP message with UDP data set to <UDPData-16>
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignment to <IUTIface-0>	

4.6.19 [ATS_UDP_00480] Destination IP Address – Broadcast; IP Address Selected at Bind () – ANY (IF not match scenario)

Test Objective	Destination IP Address – Broadcast; IP Address Selected at Bind () – ANY (IF not match scenario)		
ID	ATS_UDP_00480	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-2”		
Summary	UT instructs the IUT to create and bind an UDP socket to ANY address that is mapped to <IUTIface-0> LT sends UDP message to IUT with <UDPData-16> and destination IP address set to broadcast address not related to <IUTIface-0> UT verifies that IUT discards the message.		
Needed Adaptation to other Releases	None		
Pre-conditions	Assign unicast address <IUTIface-0-IPAddr> to EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to ANY for EthIf controller <IUTIface-0>		
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>		
Step 3	**[LT]** Send UDP message to IUT containing : - Destination IP Address field set to <BroadCastAddr-0> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16>		

	- All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	**[UT]** Verify that IUT discards **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT discards the UDP message
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignment to <IUTIface-0>	

4.6.20 [ATS_UDP_00481] Destination IP Address – Broadcast; IP Address Selected at Bind () – TCPIP_LOCALADDRID_ANY

Test Objective	Destination IP Address – Broadcast; IP Address Selected at Bind () – TCPIP_LOCALADDRID_ANY		
ID	ATS_UDP_00481	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-2”		
Summary	UT instructs the IUT to create and bind an UDP socket to TCPIP_LOCALADDRID_ANY (i.e. wildcard for any IP address on any interface). 1) LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to <BroadCastAddr-0>. 2) UT verifies that IUT accepts the message as it passed the acceptance filter.		
Needed Adaptation to other Releases	None		
Pre-conditions	Enable EthIf controllers at <IUTIface-0> of IUT. Assign broadcast address <BroadCastAddr-0> for EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	**[UT]** UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-		

	Port1> to TCPIP_LOCALADDRID_ANY for any EthIf controllers of IUT.	
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 3	**[LT]** Send UDP message to IUT through <IUTIface-0> containing : - Destination IP Address field set to <BroadCastAddr-0> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	**[UT]** Verify that IUT accepts **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT accepts the UDP message with UDP data set to <UDPData-16>
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignment to <IUTIface-0>	

4.6.21 [ATS_UDP_00482] Destination IP Address – Broadcast; IP Address Selected at Bind () – w/o bind

Test Objective	Destination IP Address – Broadcast; IP Address Selected at Bind () – w/o bind		
ID	ATS_UDP_00482	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00170		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-2”		

Summary	UT instructs the IUT to create an UDP socket and do not bind it to any IP address. LT sends UDP message to IUT through <IUTIface-0> with <UDPData-16> and destination IP address set to a broadcast address. UT verifies that IUT discards the message	
Needed Adaptation to other Releases	None	
Pre-conditions	Enable EthIf controllers at <IUTIface-0> of IUT. Assign multicast address <allSystemMCastAddr> to EthIf controller <IUTIface-0>	
Main Test Execution		
Test Steps		**Pass Criteria**
Step 1	UT causes the IUT to <CREATE AND BIND> a UDP socket with *doBind* flag set to FALSE .	
Step 2	**[UT]** UT causes the IUT to <RECEIVE AND FORWARD> from LT at <unusedUDP-IUT-Port1> through <IUTIface-0>	
Step 3	**[LT]** Send UDP message to IUT through <IUTIface-0> containing : - Destination IP Address field set to <BroadCastAddr-0> - Destination UDP Port field set to <unusedUDP-IUT-Port1> - UDP data field set to <UDPData-16> - All other fields are set to their default values as mentioned in section 3.1.2.1 of this document.	
Step 4	**[UT]** Verify that IUT discards **the UDP message containing:** - UDP data field set to <UDPData-16>	IUT discards the UDP message
Post-conditions	UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test.	

4.7 Test Cases - UDP message transmission: Source address selection mechanism.

4.7.1 [ATS_UDP_00483] Source address selection when “Multicast IP address is selected during Bind”

Test Objective	Source address selection when “Multicast IP address is selected during Bind”		
ID	ATS_UDP_00483	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00178		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-2”		
Summary	UT instructs the IUT to create and bind an UDP socket to a multicast IP address that is mapped to <IUTIface-0>. UT instructs IUT to send an UDP message. UT verifies that IUT has selected a unicast IP address that corresponds to the interface <IUTIface-0> and also belongs to the TcpIpLocalAddr container as the source IP address of the UDP message		
Needed Adaptation to other Releases	None		
Pre-conditions	Assign unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>. And EthIf controller <IUTIface-0> must not have any other unicast IP address mapped to it. Assign multicast address <allSystemMCastAddr> to EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to multicast address <allSystemMCastAddr> for EthIf controller <IUTIface-0>		
Step 2	**[UT]** UT instructs the IUT to <SEND DATA> containing: • Destination-port is set to <UnusedUDP-LT-Port> • Destination IP address is set to <Host-1-IP>		•

Step 3	**[LT]** Verify that the received UDP message from IUT contains • Source IP address is set to < IUTIface-0-IPAddr >	The UDP message from the IUT shall contain: Source IP address := < IUTIface-0-IPAddr >
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignment to <IUTIface-0>	

4.7.2 [ATS_UDP_00484] Source address selection when “Broadcast IP address during Bind”

Test Objective	Source address selection when “Broadcast IP address during Bind”		
ID	ATS_UDP_00484	**AUTOSAR Releases**	4.2.1|4.2.2
Affected Modules	TcpIP, EthIf, Eth	**State**	reviewed
Trace to Requirement on Acceptance Test Document	ATR: ATR_ATR_00124		
Trace to SWS Item	TcpIp: SWS_TCPIP_00179		
Requirements / Reference to Test Environment	3.2 Service Primitives (Table-1) UDP Topology-1		
Configuration Parameters	“UDP Test Configuration-2”		
Summary	UT instructs the IUT to create and bind an UDP socket to a broadcast IP address that is mapped to <IUTIface-0>. UT instructs IUT to send an UDP message. UT verifies that IUT has selected a unicast IP address that corresponds to the interface <IUTIface-0>, and also belongs to the TcpIpLocalAddr container, as the source IP address of the UDP message.		
Needed Adaptation to other Releases	None		
Pre-conditions	Assign unicast address <IUTIface-0-IPAddr> for EthIf controller <IUTIface-0>. And EthIf controller <IUTIface-0> must not have any other unicast IP address mapped to it. Assign broadcast address <BroadCastAddr-0> for EthIf controller <IUTIface-0>		
Main Test Execution			
Test Steps			**Pass Criteria**
Step 1	UT causes the IUT to <CREATE AND BIND> a UDP socket on port <unusedUDP-IUT-Port1> to broadcast address <BroadCastAddr-0> for EthIf controller		

	<IUTIface-0>	
Step 2	**[UT]** UT instructs the IUT to <SEND DATA> containing: • Destination-port is set to <UnusedUDP-LT-Port> • Destination IP address is set to <Host-1-IP>	•
Step 3	**[LT]** Verify that the received UDP message from IUT contains • Source IP address is set to <IUTIface-0-IPAddr>	The UDP message from the IUT shall contain: Source IP address := <IUTIface-0-IPAddr>
Post-conditions	1) UT issues <CLOSE SOCKET> to IUT to close all UDP sockets created during this test. 2) Restore the default address assignment to <IUTIface-0>	

5 Appendix – A :: Traceability Matrix

The AUTOSAR SWS for TCP/IP contain some requirements which are not granular enough for testing. There are few requirements which references to some IETF RFC (or sections of IETF RFCs) where multiple test cases need to be derived.

In other ATS documents, the test cases reference to the specific items from AUTOSAR SWS documents, but for the Ethernet related scenario this would blow up into many test cases referencing the same AUTOSAR specification item (i.e. “Trace to SWS Item”).

For this purpose, this ATS document proposes an identification of specification statement from the IETF RFCs so that they can be referenced in the test cases.

Below mentioned table gives a consolidated picture about each test cases, their origination point (i.e. reference at relevant RFC’s section, page etc), their purpose and it also provides a ‘classifier’ that depicts the importance of the feature. All the testable statements that falls under mandatory category with respect to the reference RFC sections has been taken in here.

Please refer to Appendix-C which summarizes the coverage on ‘Acceptance filter cases’ during UDP datagram receive scenarios.

Below table is organized with the following columns

1. Statement ID
    - Is a unique identifier.
    - For example: ATS_SID_10000, ATS_SID_10001
2. Related AUTOSAR specification item
    - Single AUTOSAR SWS requirement which requires the statement
3. Reference in IETF RFC
    - provides the location of the statement
    - It is constructed with a comma separated list of:
        - IETF RFC number,
        - Page number,
        - section number (if exists)
        - section name,
    - For example: RFC 1122, Page 77, Section 4.1.3.1, 'Ports'.
4. Content
    - The statement copy pasted from corresponding IETF RFC or from AUTOSAR SWS document. The test method is derived to verify this ‘statement’.
5. Classifier
    - It is used to signify the requirement category in the specification. There are five different types of classifiers:
        - MUST: This classifier means that the relevant statement is an absolute requirement of the specification. Usually corresponding statements consists words like “must”, “shall”, “required”.
        - MUST NOT: This classifier means that the relevant statement is an absolute prohibition of the specification. Usually corresponding statements consists words like “must not”, “shall not”.
        - SHOULD: This classifier means that for the relevant statement there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before

choosing a different course. Usually corresponding statements consists words like “should”, “would”, “recommended”, “suggested”.

- SHOULD NOT: This classifier means that for the relevant statement there may exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the full implications must be understood and carefully weighed before choosing a different course. Usually corresponding statements consists words like “should not”, “not recommended”.
- MAY: This classifier signifies that an item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because the vendor feels that it enhances the product while another vendor may omit the same item. An implementation which does not include a particular option MUST be prepared to interoperate with another implementation which does include the option, though perhaps with reduced functionality. In the same vein an implementation which does include a particular option MUST be prepared to interoperate with another implementation which does not include the option (except, of course, for the feature the option provides.). Usually corresponding statements consists words like “may”, “optional”.

Sl. No.	Statement ID	AUTOSAR SWS #	Reference in IETF RFC	Content	Classifier
1	ATS_SID_10001	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2	A UDP datagram of total length less than 8 octets MUST be discarded.	MUST
2	ATS_SID_10002	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2	A UDP datagram having 'length' field set to zero MUST be discarded.	MUST
3	ATS_SID_10003	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2	A UDP datagram having length value greater than the actual datagram length MUST be discarded.	MUST
4	ATS_SID_10004	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2	A UDP datagram having length value less than the actual datagram length MUST be discarded.	MUST
5	ATS_SID_10005	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2	A UDP datagram having length value set to MAX-LENGTH (65535) MUST be accepted.	MUST
6	ATS_SID_10006	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2	UDP header with Source Port value set to zero should be accepted	SHOULD
7	ATS_SID_10007	SWS_TCPIP_00103	RFC 1122, Section 4.1.3.6, 'Invalid Addresses', Page 79	UDP header with Source IP address value set to multicast-address must be rejected	MUST
8	ATS_SID_10008	SWS_TCPIP_00103	RFC 1122, Section 4.1.3.6, 'Invalid Addresses', Page 79	UDP header with Source IP address value set to broadcast-address must be rejected	MUST
9	ATS_SID_10009	SWS_TCPIP_00103	RFC 1122, Section 4.1.3.1, 'Ports', Page 77	If a datagram arrives addressed to a UDP port for which there is no pending LISTEN call, UDP SHOULD send an ICMP Destination Port Unreachable message.	SHOULD

10	ATS_SID_10010	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2	Destination Port has a meaning within the context of a particular internet destination address.	MUST
11	ATS_SID_10011	SWS_TCPIP_00060	RFC 768, 'Fields', Page 1	Source Port is an optional field, when meaningful, it indicates the port of the sending process, and may be assumed to be the port to which a reply should be addressed in the absence of any other information.	MUST
13	ATS_SID_10013	SWS_TCPIP_00060	RFC 768, 'Fields', Page 1	Destination Port has a meaning within the context of a particular internet destination address.	MUST
14	ATS_SID_10014	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2	Length is the length in octets of this user message including this header and the data.	MUST
15	ATS_SID_10015	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2	Length is the length in octets of this user datagram including this header and the data. (This means the minimum value of the length is eight.)	MUST
16	ATS_SID_10016	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2	Checksum is the 16-bit one's complement of the one's complement sum of a pseudo header of information from the IP header, the UDP header, and the data, padded with zero octets at the end (if necessary) to make a multiple of two octets.	MUST
18	ATS_SID_10018	SWS_TCPIP_00103	RFC 1122, Section 4.1.3.4, 'UDP Checksums', Page 78	If a UDP datagram is received with a checksum that is non-zero and invalid, UDP MUST silently discard the datagram.	MUST
19	ATS_SID_10019	SWS_TCPIP_00060	RFC 768, 'Fields', Page 2	An all zero transmitted checksum value means that the transmitter generated no checksum (for debugging or for higher level protocols that don't care).	MUST

Table 4 Traceability matrix

6 Appendix – B :: Test Matrix

Sl. No.	Statement ID	Content	Special Configuration dependency
1	ATS_SID_10005	A UDP datagram having length value set to MAX-LENGTH (65535) MUST be accepted.	TcpIp.TcpIpGeneral..TcpIpBufferMemory = 65,527

7 Appendix – C :: UDP Acceptance Filter scenarios

The below table provides the list of UDP reception scenarios tested according to SWS_TCPIP_00170.

Accept --> IUT Accepts the Reception
Discard --> IUT Discards the Reception

Upper Tester causes following actions at IUT	**LT Sends with Destination IP address**					
	Matching Unicast IP	Mismatching Unicast IP	Multicast - Valid (IF match case)	Multicast - InValid (IF not match case)	Broadcast - Valid (IF match case)	Broadcast - InValid (IF not match case)
create and bind an UDP socket to ANY address of <IUTIface-0>	Accept	Discard	Accept	Discard	Accept	Discard
<CREATE AND BIND> a UDP socket with doBind flag set to FALSE i.e. No IP addr bound to the socket	Discard		Discard		Discard	
Create & Bind a socket with valid Broadcast Addr.	Discard		Discard		Accept	Discard
Create & Bind a socket with valid Unicast Addr.	Accept		Discard		Accept	Discard
Create & Bind a socket with valid Multicast Addr.	Discard		Accept		Accept	
Create & Bind a socket with Invalid Multicast Addr (IF-NotMatch case)			Discard		Discard	
Create & Bind a socket to TCPIP_LOCALADDRID_ANY for any EthIf controllers of IUT.	Accept		Accept		Accept	

Legends	Covered in current ATS	Planned to cover in future	**No plan to cover as of now.**