BACnet® TESTING LABORATORIES ADDENDA

Addendum fix2 to BTL Test Package 26.1

Revision final
Revised 8/12/2026

Approved by the BTL Working Group on August 6, 2026;
Approved by the BTL Working Group Voting Members on September 1, 2026;
Published on September 2, 2026.

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[This foreword and the "Overview" on the following pages are not part of this Test Package. They are merely informative and do not contain requirements necessary for conformance to the Test Package.]

FOREWORD

The purpose of this addendum is to present current changes being made to the BTL Test Package. These modifications are the result of change proposals made pursuant to the continuous maintenance procedures and of deliberations within the BTL-WG Committee. The changes are summarized below.

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In the following document, language to be added to existing clauses within the BTL Test Package 26.1 is indicated through the use of *italics*, while deletions are indicated by ~~strikethrough~~. Where entirely new subclauses are proposed to be added, plain type is used throughout.

In contrast, changes to BTL Specified Tests also contain a yellow highlight to indicate the changes made by this addendum. When this addendum is applied, all highlighting will be removed. Change markings on tests will remain to indicate the difference between the new test and an existing 135.1 test. If a test being modified has never existed in 135.1, the applied result should not contain any change markings. When this is the case, square brackets will be used to describe the changes required for this test.

Each addendum can stand independently unless specifically noted via dependency within the addendum. If multiple addenda change the same test or section, each future released addendum that changes the same test or section will note in square brackets whether or not those changes are reflected.

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BTL-26.1 fix2-1: Fix MS/TP Renaming Oversights [BTLWG-1825]

Overview:

Fixed MS/TP renaming oversights.

Changes:

Checklist Changes

Data Link Layer - Virtual Network		
	R	Base Requirements
	R	Supports GW-VN-B
	C[1]	Supports the Network Port object
	C[1,2]	Supports writable Network_Number property
	O[1]	Supports configurable Out_Of_Service property
	C[1,3]	Supports hierarchical Network Port objects
	C[1,3]	Supports Non-hierarchical Network Port objects
	O[1]	Supports the Routing_Table property
	O[1]	Supports the Network Port object Command property
	O[1,4]	Supports the DISCARD_CHANGES command
	O[1,4]	Supports the RENEW_FD_REGISTRATION command
	O[1,4]	Supports the *RESTART_SUBORDINATE_DISCOVERY* ~~RESTART_SLAVE_DISCOVERY~~ command
	O[1,4]	Supports the RENEW_DHCP command
	O[1,4]	Supports the RESTART_AUTONEGOTIATION command
	O[1,4]	Supports the RESTART_PORT command
	O[4,5]	Supports the GENERATE_CSR_FILE command
	O[4,5]	Supports the VALIDATE_CHANGES command
[1] Protocol_Revision 17 or higher must be claimed. [2] The Network_Number property shall be present and writable. [3] At least one of these options is required. [4] At least one of these options is required if the Network Port object Command property is supported. [5] Protocol_Revision 24 or higher must be claimed.		

Test Plan Changes

9.10 Data Link Layer - Virtual Network

9.10.9 Supports the Network Port Object Command Property

The IUT contains a Network Port object with Network_Type = VIRTUAL and supports the Command property.

...		
BTL~~135.1-2025~~ **- 7.3.2.46.3.4.2 -** ***RESTART_SUBORDINATE_DISCOVERY*** ~~**RESTART_SLAVE_DISCOVERY**~~ **Command Failure Test**		
	Test Conditionality	Must be executed if the Network Port object does not support the *RESTART_SUBORDINATE_DISCOVERY* ~~RESTART_SLAVE_DISCOVERY~~ command.
	Test Directives	
	Testing Hints	

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...

9.10.12 Supports the *RESTART_SUBORDINATE_DISCOVERY* ~~RESTART_SLAVE_DISCOVERY~~ Command

The IUT contains a Network Port object with Network_Type = VIRTUAL and Protocol_Level = BACNET_APPLICATION and supports the *RESTART_SUBORDINATE_DISCOVERY* ~~RESTART_SLAVE_DISCOVERY~~ command.

***BTL~~135.1-2025~~ - 7.3.2.46.3.4.1 - RESTART_SUBORDINATE_DISCOVERY ~~RESTART_SLAVE_DISCOVERY~~* Command Test**		
	Test Conditionality	Must be executed.
	Test Directives	
	Testing Hints	

Specified Test Changes

7.3.2.46.3.4 *RESTART_SUBORDINATE_DISCOVERY* ~~RESTART_SLAVE_DISCOVERY~~ Command Tests

7.3.2.46.3.4.1 *RESTART_SUBORDINATE_DISCOVERY* ~~RESTART_SLAVE_DISCOVERY~~ Command Test

Purpose: To verify that the Network Port restarts the subordinate discovery process when commanded to.

Test Concept: Starting with a Network Port object which is configured as an MS/TP Subordinate Proxy, command the Network Port to *RESTART_SUBORDINATE_DISCOVERY* ~~RESTART_SLAVE_DISCOVERY~~. Verify that the IUT restarts subordinate discovery.

Test Configuration Configure an MSTP Network Port object to act as an MS/TP Subordinate Proxy with Auto_Subordinate_Discovery set to TRUE. Configure the TD to act as an MS/TP subordinate. Delay the stat of the test until after the IUT has completed its initial subordinate confirmation. If the IUT does not support automatic subordinate discovery, or the IUT does not support the *RESTART_SUBORDINATE_DISCOVERY* ~~RESTART_SLAVE_DISCOVERY~~ command, then this test shall be skipped.

Notes to Tester: The IUT may interrogate the subordinate addresses in any order. The IUT is allowed to generate any other traffic during the test, including, and is not limited to reading property values from the devices it finds.

Test Steps:

-- make sure our initial conditions are good
1. VERIFY Network_Type = MSTP
2. VERIFY Subordinate_Proxy_Enable = TRUE

-- request the renewal, and wait for it to timeout
3. WRITE Command = *RESTART_SUBORDINATE_DISCOVERY* ~~RESTART_SLAVE_DISCOVERY~~
4. BEFORE **Subordinate Proxy Confirm Interval**
5. REPEAT addr=(all MS/TP addresses excluding the IUT's MAC address) DO {
6. RECEIVE DESTINATION=addr, SRC=IUT
   ReadProperty-Request,
   'Object Identifier' = (DEVICE,4194303),
   'Property Identifier' = Protocol_Services_Supported
   }
7. VERIFY Command = IDLE

7.3.2.46.3.4.2 *RESTART_SUBORDINATE_DISCOVERY* ~~RESTART_SLAVE_DISCOVERY~~ Command Failure Test

Purpose: To verify that Network Port object respond to *RESTART_SUBORDINATE_DISCOVERY* ~~RESTART_SLAVE_DISCOVERY~~ commands when the command is not supported / enabled.

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Test Concept: Attempt to command a Network Port which is not acting as a subordinate proxy to *RESTART_SUBORDINATE_DISCOVERY* ~~RESTART_SLAVE_DISCOVERY~~. Verify that the attempt fails with an Error Class of PROPERTY and an error code of VALUE_OUT_OF_RANGE.

Configuration Requirements: Select a Network Port which is not configured to be a subordinate proxy. If the IUT supports subordinate proxy functionality, this test shall be skipped as the standard does not specify how the IUT should respond when subordinate proxy is supported but not enabled. If the IUT does not support the Command property, then this test shall be skipped.

Test Steps:

1. TRANSMIT WriteProperty-Request,
   'Object Identifier' = (the Network Port object),
   'Property Identifier' = Command,
   'Property Value' = *RESTART_SUBORDINATE_DISCOVERY* ~~RESTART_SLAVE_DISCOVERY~~
2. IF Network_Type is MSTP THEN
3. RECEIVE BACnet-Error-PDU
   'Error Class' = PROPERTY,
   'Error Code' = OPTIONAL_FUNCTIONALITY_SUPPORTED
   ELSE
4. RECEIVE BACnet-Error-PDU
   'Error Class' = PROPERTY,
   'Error Code' = VALUE_OUT_OF_RANGE
5. VERIFY Command = IDLE

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BTL-26.1 fix2-2: Fix Indentation for Test 7.3.2.46.7.1 [BTLWG-1827]

Overview:

Test 7.3.2.46.7.1 indentation is wrong for step 1 and renumber all steps.

Changes:

Checklist Changes

None

Test Plan Changes

[Change test 7.3.2.46.7.1 in BTL Testplan from 135.1-2025 to BTL Specified Tests]

Specified Test Changes

[Move test 7.3.2.46.7.1 from 135.1-2025 into the BTL Specified Tests, and modify]

7.3.2.46.7.1 Basic IPv4 DHCP Test

Reason for change: Fix step 1 indentation and renumber all steps.

Purpose: Verify that the IUT is able to participate in IPv4 DHCP and correctly report its DHCP status.

Test Concept: The DHCP server is removed from network. The IUT is then configured with an IPv4 network requiring DHCP, and if required, its DHCP settings are cleared. The related Network Port object is queried to verify that the DHCP related properties have the appropriate values indicating DHCP has not completed. The DHCP is connected to the network. It is verified that the IUT obtains network ~~setttings~~*settings* from the DHCP server, and that the DHCP properties reflect the current status.

Configuration Requirements: The DHCP is disconnected from the network or turned off. The IUT is configured for DHCP and any settings it previously received via DHCP are cleared.

Test Steps:

1. IF the IUT has a second enabled network port THEN {
2. VERIFY IP_DHCP_Enable = True
3. IF IP_DHCP_Lease_Time property is present THEN
4. VERIFY IP_DHCP_Lease_Time = 0
5. IF IP_DHCP_Lease_Time_Remaining property is present THEN
6. VERIFY IP_DHCP_Lease_Time_Remaining = 0
7. IF IP_DHCP_Server property is present THEN
8. VERIFY IP_DHCP_Server = X'00000000'

   }
9. MAKE(connect the DHCP server to the network)
10. WAIT until the IUT obtains DHCP information
11. IF IP_DHCP_Lease_Time property is present THEN
12. VERIFY IP_DHCP_Lease_Time = (0 or the value provided by the DHCP server)
13. IF IP_DHCP_Lease_Time_Remaining property is present THEN
14. VERIFY IP_DHCP_Lease_Time_Remaining = (0 or a value less than that provided by the DHCP server)
15. IF IP_DHCP_Server property is present THEN
16. VERIFY IP_DHCP_Server = (the DHCP server's address or X'00000000')
17. VERIFY IP_Address = (the value served by the DHCP server)
18. VERIFY IP_Default_Gateway = (the value served by the DHCP server)

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BTL-26.1 fix2-3: Fix Property Reference and Indentation for Test 7.3.2.46.7.2 [BTLWG-1828]

Overview:

Test 7.3.2.46.7.2 references property IPv6_DHCP_Enable which does not exist. It also compares IPv6_DHCP_Server to the wrong value.

Changes:

Checklist Changes

None

Test Plan Changes

[Change all occurrences of test 7.3.2.46.7.2 from 135.1-2025 to BTL]

Specified Test Changes

[Move test 7.3.2.46.7.2 from 135.1-2025 into the BTL Specified Tests, and modify]

7.3.2.46.7.2 Basic IPv6 DHCP Test

Reason for change: IPv6_DHCP_Enable property does not exist. Fix IPv6_DHCP_Server value.

Purpose: Verify that the IUT is able to participate in IPv6 DHCP and correctly report its DHCP status

Test Concept: The DHCP server is removed from network. The IUT is then configured with an IPv6 network requiring DHCP, and if required, its DHCP settings are cleared. The related Network Port object is queried to verify that the DHCP related properties have the appropriate values indicating DHCP has not completed. The DHCP is connected to the network. It is verified that the IUT obtains network settings from the DHCP server, and that the DHCP properties reflect the current DHCP status.

Configuration Requirements: The DHCP is disconnected from the network or turned off. The IUT is configured for DHCP and any settings it previously received via DHCP are cleared.

Test Steps:

1. IF the IUT has a second enabled network port THEN {
2. VERIFY ~~IPv6_DHCP_Enable~~*IPv6_Auto_Addressing_Enable* = True
3. IF IPv6_DHCP_Lease_Time property is present THEN
4. VERIFY IPv6_DHCP_Lease_Time = 0
5. IF IPv6_DHCP_Lease_Time_Remaining property is present THEN
6. VERIFY IPv6_DHCP_Lease_Time_Remaining = 0
7. IF IPv6_DHCP_Server property is present THEN
8. VERIFY IPv6_DHCP_Server = X'00000000*00000000000000000000000000*'

}

9. MAKE (connect the DHCP server to the network)
10. WAIT until the IUT obtains DHCP information
11. IF IPv6_DHCP_Lease_Time property is present THEN
12. VERIFY IPv6_DHCP_Lease_Time = (0 or the value provided by the DHCP server)
13. IF IPv6_DHCP_Lease_Time_Remaining property is present THEN
14. VERIFY IPv6_DHCP_Lease_Time_Remaining = (0 or a value less than that provided by the DHCP server)
15. IF IPv6_DHCP_Server property is present THEN
16. VERIFY IPv6_DHCP_Server = (the DHCP server's address or X'00000000*00000000000000000000000000*')
17. VERIFY IPv6_Address = (the value served by the DHCP server)
18. VERIFY IPv6_Default_Gateway = (the value served by the DHCP server)

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BTL-26.1 fix2-4: Update BTL Test Plan for non NPO B/SC Certificate Tests [BTLWG-1858]

Overview:

The following tests were introduced before the NPO and they reference using the IUT's configuration tool for generating the CSR.

- 135.1-2025 12.5.1.3.1 Configuration Via PEM Test
- 135.1-2025 12.5.1.3.2 Configuration Tool Accepts Arbitrary Valid Certificate Parameters Test
- 135.1-2025 12.5.1.3.3 Factory Defaults Test

There are now three new tests that work with the NPO.

- 135.1-2025 13.11.4 Adding a New Issuer Certificate to the Device
- 135.1-2025 13.11.5 Replace the Operational Certificate
- 135.1-2025 13.11.6 Removing an Outdated Issuer Certificate from the Device

Since we now have these new tests, we can mark 12.5.1.3.1/12.5.1.3.2/12.5.1.3.3 as run-only if PR < 24.

Changes:

Checklist Changes

None

Test Plan Changes

9.9 Data Link Layer - Secure Connect

[Modify the Data Link Layer Secure Connect test conditionality for 'Is Able to Operate as a Node Without a Local Hub Function']

9.9.2 Is Able to Operate as a Node Without a Local Hub Function

The IUT supports operating as a node without a local hub function enabled

…		
135.1-2025 - 12.5.1.3.1 - Configuration Via PEM Test		
	Test Conditionality	Must be executed *if the IUT is Protocol_Revision 23 or less*.
	Test Directives	
	Testing Hints	
135.1-2025 - 12.5.1.3.2 - Configuration Tool Accepts Arbitrary Valid Certificate Parameters Test		
	Test Conditionality	Must be executed *if the IUT is Protocol_Revision 23 or less*.
	Test Directives	
	Testing Hints	
135.1-2025 - 12.5.1.3.3 - Factory Defaults Test		
	Test Conditionality	Must be executed *if the IUT is Protocol_Revision 23 or less*.
	Test Directives	
	Testing Hints	
…		

Specified Test Changes

None

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BTL-26.1 fix2-5: Improve Test Directives for External Device Requirements [BTLWG-1824]

Overview:

The external BIBBs in the testplan use Test Directives that do not mention that the tests should be run on external objects. The section descriptions also do not mention anything about external objects. They currently look identical to the descriptions and tests in the internal BIBBs.

Changes to make:

- Update the section descriptions to specify if an external object is used
- 5.3.6 to 5.3.29 Test Directives should be consistent.
- 7.4.2 to 7.4.14 Test Directives should be changed to mention 'external'
- 7.8.3 to 7.8.9 Test Directives should be changed to mention 'external'

Changes:

Checklist Changes

None

Test Plan Changes

[Modify the '5.3 Alarm and Event Management - Notification - External - B' section]

5.3 Alarm and Event Management - Notification - External - B

5.3.1 Base Requirements

Base requirements must be met by any IUT claiming conformance to this BIBB.

The IUT will monitor objects that are located in a device other than the IUT.

135.1-2025 - 8.4.17.10 - After FAULT-to-NORMAL, Re-Notification of OFFNORMAL (ConfirmedEventNotifications)		
	Test Conditionality	If the IUT does not support an Event Enrollment object which ~~h~~is capable of generating OFFNORMAL transitions, this test shall be skipped.
	Test Directives	Execute test using an Event Enrollment object monitoring an object (O1) in a device other than the IUT.
	Testing Hints	
135.1-2025 - 8.5.17.10 - After FAULT-to-NORMAL, Re-Notification of OFFNORMAL (UnconfirmedEventNotifications)		
	Test Conditionality	If the IUT does not support an Event Enrollment object which ~~h~~is capable of generating OFFNORMAL transitions, this test shall be skipped.
	Test Directives	Execute test using an Event Enrollment object monitoring an object (O1) in a device other than the IUT.
	Testing Hints	

5.3.3 Supports DS-RP-A for Retrieving Monitored Values

The IUT is able to use ReadProperty to retrieve property values that are monitored via an Event Enrollment object *that is monitoring an object in a device other than the IUT.*

135.1-2025 - 8.4 - ConfirmedEventNotification Service Initiation Tests or **135.1-2025 - 8.5 - UnconfirmedEventNotification Service Initiation Tests**

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	Test Conditionality	The specific tests that can be executed are detailed under the test cases for the specific algorithms. If at least one of the referenced tests is executed with the monitored object in a device that does not support ReadPropertyMultiple or SubscribeCOV, then this test case shall be satisfied.
	Test Directives	*Execute test using an Event Enrollment object monitoring an object in a device other than the IUT.*
	Testing Hints	This functionality will be tested by the clause 8.4 or 8.5 algorithm tests listed later in this section.

5.3.4 Supports the Event Enrollment Object

The IUT contains, or can be made to contain an Event Enrollment object, that can generate ConfirmedEventNotifications and UnconfirmedEventNotifications *while monitoring an object in a device other than the IUT.*

…		
Verify Test Selection		
	Test Conditionality	Must be executed.
	Test Directives	Ensure this functionality is tested on Event Enrollment objects by the clause 8.4 or 8.5 algorithm tests listed later in this section. *This test shall be executed with an Event Enrollment object that is configured to monitor an object in a device other than the IUT.*
	Testing Hints	

5.3.5 Implements the CHANGE_OF_BITSTRING Algorithm

The IUT contains, or can be made to contain, an Event Enrollment object that can generate EventNotifications with an Event_Type of CHANGE_OF_BITSTRING *while monitoring an object in a device other than the IUT.*

5.3.6 Implements the CHANGE_OF_STATE Algorithm

The IUT contains, or can be made to contain, an Event Enrollment object that can generate EventNotifications with an Event_Type of CHANGE_OF_STATE *while monitoring an object in a device other than the IUT.*

5.3.7 Implements the Numeric Form of the CHANGE_OF_VALUE Algorithm

The IUT contains, or can be made to contain, an Event Enrollment object that can generate EventNotifications with an Event_Type of CHANGE_OF_VALUE where the monitored value is of data type Real *and is located in an object in a device other than the IUT.*

5.3.8 Implements the Bit String Form of the CHANGE_OF_VALUE Algorithm

The IUT contains, or can be made to contain, an Event Enrollment object that can generate EventNotifications with an Event_Type of CHANGE_OF_VALUE where the monitored value is of datatype bit string *and is located in an object in a device other than the IUT.*

5.3.9 Implements the COMMAND_FAILURE Algorithm

The IUT contains, or can be made to contain, an Event Enrollment object that can generate EventNotifications with an Event_Type of COMMAND_FAILURE *while monitoring an object in a device other than the IUT.*

5.3.10 Implements the FLOATING_LIMIT Algorithm

The IUT contains, or can be made to contain, an Event Enrollment object that can generate EventNotifications with an Event_Type of FLOATING_LIMIT *while monitoring an object in a device other than the IUT.*

5.3.11 Implements the OUT_OF_RANGE Algorithm

The IUT contains, or can be made to contain, an Event Enrollment object that can generate EventNotifications with an Event_Type of OUT_OF_RANGE *while monitoring an object in a device other than the IUT.*

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5.3.12 Implements the DOUBLE_OUT_OF_RANGE Algorithm

The IUT contains, or can be made to contain, an Event Enrollment object that can generate EventNotifications with an Event_Type of DOUBLE_OUT_OF_RANGE *while monitoring an object in a device other than the IUT.*

5.3.13 Implements the SIGNED_OUT_OF_RANGE Algorithm

The IUT contains, or can be made to contain, an Event Enrollment object that can generate EventNotifications with an Event_Type of SIGNED_OUT_OF_RANGE *while monitoring an object in a device other than the IUT.*

5.3.14 Implements the UNSIGNED_OUT_OF_RANGE Algorithm

The IUT contains, or can be made to contain, an Event Enrollment object that can generate EventNotifications with an Event_Type of UNSIGNED_OUT_OF_RANGE *while monitoring an object in a device other than the IUT.*

5.3.15 Implements the CHANGE_OF_CHARACTERSTRING Algorithm

The IUT contains, or can be made to contain, an Event Enrollment object that can generate EventNotifications with an Event_Type of CHANGE_OF_CHARACTERSTRING *while monitoring an object in a device other than the IUT.*

5.3.16 Implements the CHANGE_OF_STATUS_FLAGS Algorithm

The IUT contains, or can be made to contain, an Event Enrollment object that can generate EventNotifications with an Event_Type of CHANGE_OF_STATUS_FLAGS *while monitoring an object in a device other than the IUT.*

135.1-2025 - 8.4.15 - CHANGE_OF_STATUS_FLAGS Test (ConfirmedEventNotification)		
	Test Conditionality	Must be executed.
	Test Directives	This test must be repeated once for each object type that is capable of generating event notifications with an Event_Type of CHANGE_OF_STATUS_FLAGS. *This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	
135.1-2025 - 8.5.15 - CHANGE_OF_STATUS_FLAGS Test (UnconfirmedEventNotification)		
	Test Conditionality	Must be executed.
	Test Directives	This test must be repeated once for each object type that is capable of generating event notifications with an Event_Type of CHANGE_OF_STATUS_FLAGS. *This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	

5.3.17 Implements the UNSIGNED_RANGE Algorithm

The IUT contains, or can be made to contain an Event Enrollment object that can generate EventNotifications with an Event_Type of UNSIGNED_RANGE *while monitoring an object in a device other than the IUT.*

5.3.18 Implements the CHANGE_OF_RELIABILITY - NONE

The IUT contains, or can be made to contain, an object that can generate EventNotifications with an Event_Type of CHANGE_OF_RELIABILITY and supports the specified algorithm *while monitoring an object in a device other than the IUT.*

135.1-2025 - 8.4.17.1 - CHANGE_OF_RELIABILITY with No Fault Algorithm (ConfirmedEventNotifications)		
	Test Conditionality	The IUT contains, or can be made to contain, an object that can generate EventNotifications with an Event_Type of CHANGE_OF_RELIABILITY and which does not apply a standardized fault algorithm.
	Test Directives	Apply this test to all object types that support fault detection but do not apply a standardized fault algorithm. *This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*

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	Testing Hints	
135.1-2025 - 8.5.17.1 - CHANGE_OF_RELIABILITY with No Fault Algorithm (UnconfirmedEventNotifications)		
	Test Conditionality	The IUT contains, or can be made to contain, an object that can generate EventNotifications with an Event_Type of CHANGE_OF_RELIABILITY and which does not apply a standardized fault algorithm.
	Test Directives	Apply this test to all object types that support fault detection but do not apply a standardized fault algorithm. *This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	

5.3.19 Implements the CHANGE_OF_RELIABILITY - FAULT_CHARACTERSTRING Algorithm

The IUT contains, or can be made to contain, an object that can generate EventNotifications with an Event_Type of CHANGE_OF_RELIABILITY and supports the specified algorithm *while monitoring an object in a device other than the IUT.*

135.1-2025 - 8.4.17.2 - CHANGE_OF_RELIABILITY with the FAULT_CHARACTERSTRING Algorithm (ConfirmedEventNotifications)		
	Test Conditionality	Must be executed.
	Test Directives	Repeat the test for each object type that supports this fault algorithm. *This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	
135.1-2025 - 8.5.17.2 - CHANGE_OF_RELIABILITY with the FAULT_CHARACTERSTRING Algorithm (UnconfirmedEventNotifications)		
	Test Conditionality	Must be executed.
	Test Directives	Repeat the test for each object type that supports this fault algorithm. *This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	

5.3.20 Implements the CHANGE_OF_RELIABILITY - FAULT_EXTENDED Algorithm

The IUT contains, or can be made to contain, an object that can generate EventNotifications with an Event_Type of CHANGE_OF_RELIABILITY and supports the specified algorithm *while monitoring an object in a device other than the IUT.*

135.1-2025 - 8.4.17.3 - CHANGE_OF_RELIABILITY with the FAULT_EXTENDED Algorithm (ConfirmedEventNotifications)		
	Test Conditionality	Must be executed.
	Test Directives	Repeat the test for each object type that supports this fault algorithm. *This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	
135.1-2025 - 8.5.17.3 - CHANGE_OF_RELIABILITY with the FAULT_EXTENDED Algorithm (UnconfirmedEventNotifications)		
	Test Conditionality	Must be executed.
	Test Directives	Repeat the test for each object type that supports this fault algorithm. *This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	

5.3.21 Implements the CHANGE_OF_RELIABILITY - FAULT_LIFE_SAFETY Algorithm

The IUT contains, or can be made to contain, an object that can generate EventNotifications with an Event_Type of CHANGE_OF_RELIABILITY and supports the specified algorithm *while monitoring an object in a device other than the IUT.*

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135.1-2025 - 8.4.17.4 - CHANGE_OF_RELIABILITY with the FAULT_LIFE_SAFETY Algorithm (ConfirmedEventNotifications)		
	Test Conditionality	Must be executed.
	Test Directives	Repeat the test for each object type that supports this fault algorithm. *This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	
135.1-2025 - 8.5.17.4 - CHANGE_OF_RELIABILITY with the FAULT_LIFE_SAFETY Algorithm (UnconfirmedEventNotifications)		
	Test Conditionality	Must be executed.
	Test Directives	Repeat the test for each object type that supports this fault algorithm. *This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	

5.3.22 Implements the CHANGE_OF_RELIABILITY - FAULT_STATE Algorithm

The IUT contains, or can be made to contain, an object that can generate EventNotifications with an Event Type of CHANGE_OF_RELIABILITY and supports the specified algorithm *while monitoring an object in a device other than the IUT.*

135.1-2025 - 8.4.17.5 - CHANGE_OF_RELIABILITY with the FAULT_STATE Algorithm (ConfirmedEventNotifications)		
	Test Conditionality	Must be executed.
	Test Directives	Repeat the test for each object type that supports this fault algorithm. *This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	
135.1-2025 - 8.5.17.5 - CHANGE_OF_RELIABILITY with the FAULT_STATE Algorithm (UnconfirmedEventNotifications)		
	Test Conditionality	Must be executed.
	Test Directives	Repeat the test for each object type that supports this fault algorithm. *This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	

5.3.23 Implements the CHANGE_OF_RELIABILITY - FAULT_STATUS_FLAGS Algorithm

The IUT contains, or can be made to contain, an object that can generate EventNotifications with an Event_Type of CHANGE_OF_RELIABILITY and supports the specified algorithm *while monitoring an object in a device other than the IUT.*

135.1-2025 - 8.4.17.6 - CHANGE_OF_RELIABILITY with the FAULT_STATUS_FLAGS Algorithm (ConfirmedEventNotifications)		
	Test Conditionality	Must be executed.
	Test Directives	Repeat the test for each object type that supports this fault algorithm. *This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	
135.1-2025 - 8.5.17.6 - CHANGE_OF_RELIABILITY with the FAULT_STATUS_FLAGS Algorithm (UnconfirmedEventNotifications)		
	Test Conditionality	Must be executed.
	Test Directives	Repeat the test for each object type that supports this fault algorithm. *This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	

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5.3.24 Implements the CHANGE_OF_RELIABILITY - FAULT_LISTED Algorithm

The IUT contains, or can be made to contain, an object that can generate EventNotifications with an Event_Type of CHANGE_OF_RELIABILITY and supports the specified algorithm *while monitoring an object in a device other than the IUT.*

135.1-2025 - 8.4.17.12.1 - NORMAL to FAULT Transition (ConfirmedEventNotification)		
	Test Conditionality	Must be executed.
	Test Directives	*This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	
135.1-2025 - 8.4.17.12.2 - FAULT-to-FAULT transition (ConfirmedEventNotification)		
	Test Conditionality	If the IUT supports only one fault condition, this test shall be skipped.
	Test Directives	*This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	
135.1-2025 - 8.5.17.12.1 - NORMAL to FAULT Transition (UnconfirmedEventNotification)		
	Test Conditionality	Must be executed.
	Test Directives	*This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	
135.1-2025 - 8.5.17.12.2 - FAULT-to-FAULT transition (UnconfirmedEventNotification)		
	Test Conditionality	If the IUT supports only one fault condition, this test shall be skipped.
	Test Directives	*This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	

5.3.25 Supports CHANGE_OF_RELIABILITY in the Event Enrollment Object

The IUT contains, or can be made to contain, an Event Enrollment object that can generate EventNotifications with an Event_Type of CHANGE_OF_RELIABILITY *while monitoring an object in a device other than the IUT.*

5.3.26 Implements the CHANGE_OF_DISCRETE_VALUE Algorithm

The IUT contains, or can be made to contain, an object that can generate EventNotifications with an Event_Type of CHANGE_OF_DISCRETE_VALUE *while monitoring an object in a device other than the IUT.*

135.1-2025 - 8.4.18 - CHANGE_OF_DISCRETE_VALUE Test (ConfirmedEventNotification)		
	Test Conditionality	Must be executed.
	Test Directives	This test must be repeated for each datatype, BOOLEAN, Unsigned, Integer, Enumerated, CharacterString, Octet String, Date, Time, BACnetObjectIdentifier, or BACnetDateTime supported by the Object_Property_Reference property of the Event Enrollment object. *This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	
135.1-2025 - 8.5.18 - CHANGE_OF_DISCRETE_VALUE Test (UnconfirmedEventNotification)		
	Test Conditionality	Must be executed.
	Test Directives	This test must be repeated for each datatype, BOOLEAN, Unsigned, Integer, Enumerated, CharacterString, Octet String, Date, Time, BACnetObjectIdentifier, or BACnetDateTime supported by the Object_Property_Reference property of the Event Enrollment object. *This test shall be executed with an Event Enrollment object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	

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5.3.27 Implements the CHANGE_OF_TIMER Algorithm

The IUT contains, or can be made to contain, an object that can generate EventNotifications with an Event_Type of CHANGE_OF_TIMER *while monitoring an object in a device other than the IUT.*

5.3.28 Implements the CHANGE_OF_RELIABILITY - FAULT_OUT_OF_RANGE Algorithm

The IUT contains, or can be made to contain, an Event Enrollment object that can generate EventNotifications with an Event_Type of CHANGE_OF_RELIABILITY and supports the specified algorithm *while monitoring an object in a device other than the IUT.*

5.3.29 Implements a Proprietary Algorithm

The IUT contains, or can be made to contain, an Event Enrollment object that can generate ConfirmedEventNotifications and UnconfirmedEventNotifications with an Event_Type of Extended *while monitoring an object in a device other than the IUT.*

[Modify the '7.4 Trending - Viewing and Modifying Trends - External - B' section]

7.4 Trending - Viewing and Modifying Trends - External - B

7.4.1 Base Requirements

Base requirements must be met by any IUT claiming conformance to this BIBB.

This BIBB requires support of T-VMT-I-B, DS-RP-A.

This BIBB requires that the Log_DeviceObjectProperty and Log_Interval properties must be present and writable.

The IUT will log values that located are in a device other than the IUT.

…		
135.1-2025 - 7.3.2.24.20 - Status/Failure Logging		
	Test Conditionality	Must be executed.
	Test Directives	*This test shall be executed with a Trend Log object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	Tester may want to try other error conditions.
135.1-2025 - 7.3.2.24.16 - Interval Gathering of External Trends Test		
	Test Conditionality	Must be executed.
	Test Directives	*This test shall be executed with a Trend Log object that is configured to monitor a property in a device other than the IUT.*
	Testing Hints	

7.4.2 Is Able to Trend REAL Values

The IUT can be made to trend REAL type properties *located in a device other than the IUT*.

135.1-2025 - 9.21.1 - Positive ReadRange Service Execution Tests		
	Test Conditionality	Must be executed.
	Test Directives	Configure the log object referencing a property of REAL *located in a device other than the IUT.* Apply one of the following tests 9.21.1.1, 9.21.1.2, 9.21.1.3, 9.21.1.4, 9.21.1.4.1, 9.21.1.9 and 9.21.1.10
	Testing Hints	

7.4.3 Is Able to Trend Unsigned Values

The IUT can be made to trend Unsigned type properties *located in a device other than the IUT*.

135.1-2025 - 9.21.1 - Positive ReadRange Service Execution Tests		
	Test Conditionality	Must be executed.

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	Test Directives	Configure the log object referencing a property of UNSIGNED *located in a device other than the IUT.* Apply one of the following tests 9.21.1.1, 9.21.1.2, 9.21.1.3, 9.21.1.4, 9.21.1.4.1, 9.21.1.9 and 9.21.1.10
	Testing Hints	

7.4.4 Is Able to Trend INTEGER (Signed) Values

The IUT can be made to trend Integer type properties *located in a device other than the IUT*.

135.1-2025 - 9.21.1 - Positive ReadRange Service Execution Tests		
	Test Conditionality	Must be executed.
	Test Directives	Configure the log object referencing a property of INTEGER *located in a device other than the IUT.* Apply one of the following tests 9.21.1.1, 9.21.1.2, 9.21.1.3, 9.21.1.4, 9.21.1.4.1, 9.21.1.9 and 9.21.1.10
	Testing Hints	

7.4.5 Is Able to Trend BOOLEAN Values

The IUT can be made to trend BOOLEAN type properties *located in a device other than the IUT*

135.1-2025 - 9.21.1 - Positive ReadRange Service Execution Tests		
	Test Conditionality	Must be executed.
	Test Directives	Configure the log object referencing a property of BOOLEAN *located in a device other than the IUT.* Apply one of the following tests 9.21.1.1, 9.21.1.2, 9.21.1.3, 9.21.1.4, 9.21.1.4.1, 9.21.1.9 and 9.21.1.10
	Testing Hints	

7.4.6 Is Able to Trend Bit String Values

The IUT can be made to trend Bit String type properties *located in a device other than the IUT*

135.1-2025 - 9.21.1 - Positive ReadRange Service Execution Tests		
	Test Conditionality	Must be executed.
	Test Directives	Configure the log object referencing a property of Bit String *located in a device other than the IUT.* Apply one of the following tests 9.21.1.1, 9.21.1.2, 9.21.1.3, 9.21.1.4, 9.21.1.4.1, 9.21.1.9 and 9.21.1.10
	Testing Hints	

7.4.7 Is Able to Trend Enumerated Values

The IUT can be made to trend Enumerated type properties *located in a device other than the IUT*.

135.1-2025 - 9.21.1 - Positive ReadRange Service Execution Tests		
	Test Conditionality	Must be executed.
	Test Directives	Configure the log object referencing a property of Enumerated *located in a device other than the IUT.* Apply one of the following tests 9.21.1.1, 9.21.1.2, 9.21.1.3, 9.21.1.4, 9.21.1.4.1, 9.21.1.9 and 9.21.1.10
	Testing Hints	

7.4.8 Is Able to Trend NULL Values

The IUT can be made to trend any type property*, located in a device other than the IUT,* that may change to a value of NULL.

135.1-2025 - 9.21.1 - Positive ReadRange Service Execution Tests		
	Test Conditionality	Must be executed.
	Test Directives	Configure the log object referencing a property of NULL value *located in a device other than the IUT.*

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		Apply one of the following tests 9.21.1.1, 9.21.1.2, 9.21.1.3, 9.21.1.4, 9.21.1.4.1, 9.21.1.9 and 9.21.1.10
	Testing Hints	The best way to do this is to trend an entry in a priority array. Schedule_Default and Present_Value of the Schedule Object, Alarm_Values and Fault_Values of the CharacterString Value Object and Low_Diff_Limit in the Loop Object, are standard properties that should accept a written NULL.

7.4.9 Is Able to Trend Double Values

The IUT can be made to trend Double type properties *located in a device other than the IUT*.

135.1-2025 - 9.21.1 - Positive ReadRange Service Execution Tests		
	Test Conditionality	Must be executed.
	Test Directives	Configure the log object referencing a property of Double *located in a device other than the IUT.* Apply one of the following tests 9.21.1.1, 9.21.1.2, 9.21.1.3, 9.21.1.4, 9.21.1.4.1, 9.21.1.9 and 9.21.1.10
	Testing Hints	

7.4.10 Is Able to Trend Character String Values

The IUT can be made to trend Character String type properties *located in a device other than the IUT*.

135.1-2025 - 9.21.1 - Positive ReadRange Service Execution Tests		
	Test Conditionality	Must be executed.
	Test Directives	Configure the log object referencing a property of Character String *located in a device other than the IUT.* Apply one of the following tests 9.21.1.1, 9.21.1.2, 9.21.1.3, 9.21.1.4, 9.21.1.4.1, 9.21.1.9 and 9.21.1.10
	Testing Hints	

7.4.11 Is Able to Trend Octet String Values

The IUT can be made to trend Octet String type properties *located in a device other than the IUT*.

135.1-2025 - 9.21.1 - Positive ReadRange Service Execution Tests		
	Test Conditionality	Must be executed.
	Test Directives	Configure the log object referencing a property of Octet String *located in a device other than the IUT.* Apply one of the following tests 9.21.1.1, 9.21.1.2, 9.21.1.3, 9.21.1.4, 9.21.1.4.1, 9.21.1.9 and 9.21.1.10
	Testing Hints	

7.4.12 Is Able to Trend Date Values

The IUT can be made to trend Date type properties *located in a device other than the IUT*.

135.1-2025 - 9.21.1 - Positive ReadRange Service Execution Tests		
	Test Conditionality	Must be executed.
	Test Directives	Configure the log object referencing a property of Date *located in a device other than the IUT.* Apply one of the following tests 9.21.1.1, 9.21.1.2, 9.21.1.3, 9.21.1.4, 9.21.1.4.1, 9.21.1.9 and 9.21.1.10
	Testing Hints	

7.4.13 Is Able to Trend Time Values

The IUT can be made to trend Time type properties *located in a device other than the IUT*.

135.1-2025 - 9.21.1 - Positive ReadRange Service Execution Tests		
	Test Conditionality	Must be executed.

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	Test Directives	Configure the log object referencing a property of Time *located in a device other than the IUT.* Apply one of the following tests 9.21.1.1, 9.21.1.2, 9.21.1.3, 9.21.1.4, 9.21.1.4.1, 9.21.1.9 and 9.21.1.10
	Testing Hints	

7.4.14 Is Able to Trend BACnetObjectIdentifier Values

The IUT can be made to trend BACneObjectIdentifier type properties *located in a device other than the IUT.*

135.1-2025 - 9.21.1 - Positive ReadRange Service Execution Tests		
	Test Conditionality	Must be executed.
	Test Directives	Configure the log object referencing a property of BACnetObjectIdentifier *located in a device other than the IUT.* Apply one of the following tests 9.21.1.1, 9.21.1.2, 9.21.1.3, 9.21.1.4, 9.21.1.4.1, 9.21.1.9 and 9.21.1.10
	Testing Hints	

[Modify the '7.8 Trending - Viewing and Modifying Multiple Values - External - B' section]

7.8 Trending - Viewing and Modifying Multiple Values - External - B

7.8.1 Base Requirements

Base requirements must be met by any IUT claiming conformance to this BIBB.

This BIBB requires support of T-VMMV-I-B, DS-RPM-A.

This BIBB requires that the Log_DeviceObjectProperty and Log_Interval properties must be present and writable.

The IUT will log values that located are in a device other than the IUT.

…		
135.1-2025 - 7.3.2.24.20 - Status/Failure Logging		
	Test Conditionality	Must be executed.
	Test Directives	*This test shall be executed with a Trend Log Multiple object that is configured to log a property in a device other than the IUT.*
	Testing Hints	Tester may want to try other error conditions.
135.1-2025 - 7.3.2.24.16 - Interval Gathering of External Trends Test		
	Test Conditionality	Must be executed.
	Test Directives	*This test shall be executed with a Trend Log Multiple object that is configured to log a property in a device other than the IUT.*
	Testing Hints	

7.8.2 Supports T-VMMV-I-B

Verify Checklist		
	Test Conditionality	Must be executed.
	Test Directives	Verify that the IUT claims support for T-VMMV-I-B.
	Testing Hints	

7.8.3 Is Able to Trend REAL Datatypes

The IUT*'s Trend Log Multiple Object is able to trend a REAL data type in a device other than the IUT.*~~is able to trend REAL data type in a Trend Log Multiple Object.~~

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135.1-2025 - 9.21.1.1 - Reading All Items in the List, or 135.1-2025 - 9.21.1.2 - Reading Items by Position with Positive Count, or 135.1-2025 - 9.21.1.3 - Reading Items by Position with Negative Count, or 135.1-2025 - 9.21.1.4 - Reading Items by Time, or 135.1-2025 - 9.21.1.4.1 - Reading Items by Time with Negative Count, or 135.1-2025 - 9.21.1.9 - Reading Items by Sequence with Positive Count, or 135.1-2025 - 9.21.1.10 - Reading Items by Sequence with Negative Count.		
	Test Conditionality	At least one of the tests listed above shall be run.
	Test Directives	As per test description. The Trend Log Multiple object used for this test shall contain REAL data types. The TLM object may contain other data types as well. *The trended data types shall be located in a device other than the IUT.*
	Testing Hints	

7.8.4 Is Able to Trend Unsigned Datatypes

The IUT*'s Trend Log Multiple Object is able to trend an Unsigned data type in a device other than the IUT.*~~is able to trend Unsigned data type in a Trend Log Multiple Object.~~

135.1-2025 - 9.21.1.1 - Reading All Items in the List, or 135.1-2025 - 9.21.1.2 - Reading Items by Position with Positive Count, or 135.1-2025 - 9.21.1.3 - Reading Items by Position with Negative Count, or 135.1-2025 - 9.21.1.4 - Reading Items by Time, or 135.1-2025 - 9.21.1.4.1 - Reading Items by Time with Negative Count, or 135.1-2025 - 9.21.1.9 - Reading Items by Sequence with Positive Count, or 135.1-2025 - 9.21.1.10 - Reading Items by Sequence with Negative Count.		
	Test Conditionality	At least one of the tests listed above shall be run.
	Test Directives	As per test description. The Trend Log Multiple object used for this test shall contain Unsigned data types. The TLM object may contain other data types as well. *The trended data types shall be located in a device other than the IUT.*
	Testing Hints	

7.8.5 Is Able to Trend INTEGER Datatypes

The IUT*'s Trend Log Multiple Object is able to trend an INTEGER data type in a device other than the IUT.*~~is able to trend INTEGER data type in a Trend Log Multiple Object.~~

135.1-2025 - 9.21.1.1 - Reading All Items in the List, or 135.1-2025 - 9.21.1.2 - Reading Items by Position with Positive Count, or 135.1-2025 - 9.21.1.3 - Reading Items by Position with Negative Count, or 135.1-2025 - 9.21.1.4 - Reading Items by Time, or 135.1-2025 - 9.21.1.4.1 - Reading Items by Time with Negative Count, or 135.1-2025 - 9.21.1.9 - Reading Items by Sequence with Positive Count, or 135.1-2025 - 9.21.1.10 - Reading Items by Sequence with Negative Count.		
	Test Conditionality	At least one of the tests listed above shall be run.
	Test Directives	As per test description. The Trend Log Multiple object used for this test shall contain INTEGER data types. The TLM object may contain other data types as well. *The trended data types shall be located in a device other than the IUT.*
	Testing Hints	

7.8.6 Is Able to Trend BOOLEAN Datatypes

The IUT*'s Trend Log Multiple Object is able to trend a BOOLEAN data type in a device other than the IUT.*~~is able to trend BOOLEAN data type in a Trend Log Multiple Object.~~

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135.1-2025 - 9.21.1.1 - Reading All Items in the List, or 135.1-2025 - 9.21.1.2 - Reading Items by Position with Positive Count, or 135.1-2025 - 9.21.1.3 - Reading Items by Position with Negative Count, or 135.1-2025 - 9.21.1.4 - Reading Items by Time, or 135.1-2025 - 9.21.1.4.1 - Reading Items by Time with Negative Count, or 135.1-2025 - 9.21.1.9 - Reading Items by Sequence with Positive Count, or 135.1-2025 - 9.21.1.10 - Reading Items by Sequence with Negative Count.		
	Test Conditionality	At least one of the tests listed above shall be run.
	Test Directives	As per test description. The Trend Log Multiple object used for this test shall contain BOOLEAN data types. The TLM object may contain other data types as well. *The trended data types shall be located in a device other than the IUT.*
	Testing Hints	

7.8.7 Is Able to Trend Bit String Datatypes

The IUT*'s Trend Log Multiple Object is able to trend a Bit String data type in a device other than the IUT.*~~is able to trend Bit String data type in a Trend Log Multiple Object.~~

135.1-2025 - 9.21.1.1 - Reading All Items in the List, or 135.1-2025 - 9.21.1.2 - Reading Items by Position with Positive Count, or 135.1-2025 - 9.21.1.3 - Reading Items by Position with Negative Count, or 135.1-2025 - 9.21.1.4 - Reading Items by Time, or 135.1-2025 - 9.21.1.4.1 - Reading Items by Time with Negative Count, or 135.1-2025 - 9.21.1.9 - Reading Items by Sequence with Positive Count, or 135.1-2025 - 9.21.1.10 - Reading Items by Sequence with Negative Count.		
	Test Conditionality	At least one of the tests listed above shall be run.
	Test Directives	As per test description. The Trend Log Multiple object used for this test shall contain Bit String data types. The TLM object may contain other data types as well. *The trended data types shall be located in a device other than the IUT.*
	Testing Hints	

7.8.8 Is Able to Trend Enumerated Datatypes

The IUT*'s Trend Log Multiple Object is able to trend an Enumerated data type in a device other than the IUT.*~~is able to trend Enumerated data type in a Trend Log Multiple Object.~~

135.1-2025 - 9.21.1.1 - Reading All Items in the List, or 135.1-2025 - 9.21.1.2 - Reading Items by Position with Positive Count, or 135.1-2025 - 9.21.1.3 - Reading Items by Position with Negative Count, or 135.1-2025 - 9.21.1.4 - Reading Items by Time, or 135.1-2025 - 9.21.1.4.1 - Reading Items by Time with Negative Count, or 135.1-2025 - 9.21.1.9 - Reading Items by Sequence with Positive Count, or 135.1-2025 - 9.21.1.10 - Reading Items by Sequence with Negative Count.		
	Test Conditionality	At least one of the tests listed above shall be run.
	Test Directives	As per test description. The Trend Log Multiple object used for this test shall contain Bit String data types. The TLM object may contain other data types as well. *The trended data types shall be located in a device other than the IUT.*
	Testing Hints	

7.8.9 Is Able to Trend NULL Datatypes

The IUT*'s Trend Log Multiple Object is able to trend a NULL data type in a device other than the IUT.*~~is able to trend NULL data type in a Trend Log Multiple Object.~~

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135.1-2025 - 9.21.1.1 - Reading All Items in the List, or 135.1-2025 - 9.21.1.2 - Reading Items by Position with Positive Count, or 135.1-2025 - 9.21.1.3 - Reading Items by Position with Negative Count, or 135.1-2025 - 9.21.1.4 - Reading Items by Time, or 135.1-2025 - 9.21.1.4.1 - Reading Items by Time with Negative Count, or 135.1-2025 - 9.21.1.9 - Reading Items by Sequence with Positive Count, or 135.1-2025 - 9.21.1.10 - Reading Items by Sequence with Negative Count.		
	Test Conditionality	At least one of the tests listed above shall be run.
	Test Directives	As per test description. The Trend Log Multiple object used for this test shall contain NULL data types. The TLM object may contain other data types as well. *The trended data types shall be located in a device other than the IUT.*
	Testing Hints	Schedule_Default and Present_Value of the Schedule Object, Alarm_Values and Fault_Values of the CharacterString Value Object and Low_Diff_Limit in the Loop Object, are standard properties that should accept a written NULL.

Specified Test Changes

None

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