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SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS

E-health multimedia services and applications – Interoperability compliance testing of personal health systems (HRN, PAN, LAN, TAN and WAN)

Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 3: Continua Design Guidelines: Personal Health Device

Recommendation ITU-T H.843

International Telecommunication Union

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Recommendation ITU-T H.843

Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 3: Continua Design Guidelines: Personal Health Device

Summary

Recommendation ITU-T H.843 provides a test suite structure (TSS) and the test purposes (TP) for personal health devices in the Personal Health Devices (PHD) interface, based on the requirements defined in the Recommendations of the ITU-T H.810 sub-series, of which Recommendation ITU-T H.810 (2016) is the base Recommendation. The objective of this test specification is to provide a high probability of interoperability at this interface.

Recommendation ITU-T H.843 is a transposition of Continua Test Tool DG2016, Test Suite Structure & Test Purposes, Personal Health Devices Interface; Part 3: Continua Design Guidelines. Personal Health Device (Version 1.11, 2017-07-18), that was developed by the Personal Connected Health Alliance. A number of versions of this specification existed before transposition.

This Recommendation includes an electronic attachment with the protocol implementation conformance statements (PICS) and the protocol implementation extra information for testing (PIXIT) required for the implementation of Annex A.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
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Conformance testing, Continua Design Guidelines, e-health, ITU-T H.810, personal area network, personal connected health devices, Personal Health Devices interface, touch area network.

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* To access the Recommendation, type the URL http://handle.itu.int/ in the address field of your web browser, followed by the Recommendation's unique ID. For example, http://handle.itu.int/11.1002/1000/11830-en.

FOREWORD

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The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

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Electronic attachment with the protocol implementation conformance statements (PICS) and the protocol implementation extra information for testing (PIXIT) required for the implementation of Annex A.

Introduction

This Recommendation is a transposition of Continua Test Tool DG2016, Test Suite Structure & Test Purposes, Personal Health Devices Interface; Part 3: Continua Design Guidelines. Personal Health Device (Version 1.11, 2017-07-18), that was developed by the Personal Connected Health Alliance. The table below shows the revision history of this test specification; it may contain versions that existed before transposition.

Version	Date	Revision history
1.4	2012-10-05	Initial release for Test Tool DG2011. This uses "TSS&TP_1.5_PAN-LAN_PART_3_v1.3.doc" as a baseline and adds new features included in [b-CDG 2011]: • ZigBee One-to-Many and Errata
1.5	2013-05-24	Initial release for Test Tool DG2012. This uses "TSS&TP_1.5_PAN-LAN_PART_3_v1.4.doc" as a baseline and adds new features included in [b-CDG 2012]: • Updates test procedures according to new requirements included in [b-CDG 2012] (e.g., SSP requirements) • Adds body composition analyser device specialization • Adds basic electrocardiograph device specialization
1.6	2014-01-24	Initial release for Test Tool DG2013. This uses "TSS&TP_DG2012_PAN-LAN_PART_3_v1.5.doc" as a baseline and adds new features included in [b-ITU-T H.810 (2013)]/[b-CDG 2013]: • Adds glucose meter BLE • Adds BLE SSP support • Adds NFC new transport • Adds INR device specialization
1.7	2014-04-24	TM Lite & Doc Enhancements (Test Tool v4.0 Maintenance Release 1). It uses "TSS&TP_DG2013_PLT_PART_3_v1.6.doc" as a baseline and adds new features included in Documentation Enhancements: • "Other PICS" row has been added
1.8	2015-07-01	Initial Release for Test Tool DG2015. It uses "TSS&TP_DG2013_PLT_PART_3_v1.7.doc" as a baseline and adds new features included in [b-ITU-T H.810 (2015)]/[b-CDG 2015]
1.9	2016-01-26	First Maintenance Release for Test Tool DG2015. It uses "TSS&TP_DG2015_LP-PAN_PART_3_v1.8.doc" as a baseline and adds some updates according to the Maintenance 2015 activity.
1.10	2016-09-20	Initial release for Test Tool DG2016. It uses "TSS&TP_DG2015_PLT_PART_3_v1.9.doc" as a baseline and adds new features included in [ITU-T H.810 (2016)]/[b-CDG 2016]
1.11	2017-07-18	Second maintenance release for Test Tool DG2016. It uses "TSS&TP_DG2015_PLT_PART_3_v1.10.doc" as a baseline to correct minor typos.

Recommendation ITU-T H.843

Conformance of ITU-T H.810 personal health system: Personal Health Devices interface

1 Scope

The scope of this Recommendation[1] is to provide a test suite structure (TSS) and the test purposes (TP) for the Personal Health Devices interface based on the requirements defined in the Continua Design Guidelines (CDG) [ITU-T H.810 (2016)]. The objective of this test specification is to provide a high probability of interoperability at this interface.

The TSS and TP for the Personal Health Devices interface have been divided into the parts specified below. This Recommendation covers Part 3.

– Part 1: Optimized exchange protocol. Personal Health Device

– Part 2: Optimized exchange protocol. Personal Health Gateway

– **Part 3: Continua design guidelines. Personal Health Device**

– Part 4: Continua design guidelines. Personal Health Gateway

– Part 5: Device specializations. Personal Health Devices interface. This document is divided into the following subparts:

  - Part 5A: Weighing scales
  - Part 5B: Glucose meter
  - Part 5C: Pulse oximeter
  - Part 5D: Blood pressure monitor
  - Part 5E: Thermometer
  - Part 5F: Cardiovascular fitness and activity monitor
  - Part 5G: Strength fitness equipment
  - Part 5H: Independent living activity hub
  - Part 5I: Adherence monitor
  - Part 5J: Insulin pump
  - Part 5K: Peak expiratory flow monitor
  - Part 5L: Body composition analyser
  - Part 5M: Basic electrocardiograph
  - Part 5N: International normalized ratio monitor
  - Part 5O: Sleep apnoea breathing therapy equipment (SABTE)
  - Part 5P: Continuous glucose monitor (CGM)

– Part 6: Device specializations. Personal Health Gateway

– Part 7: Continua Design Guidelines. BLE Personal Health Device

– Part 8: Continua Design Guidelines. BLE Personal Health Gateway

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[1] This Recommendation includes an electronic attachment with the protocol implementation conformance statements (PICS) and the protocol implementation extra information for testing (PIXIT) required for the implementation of Annex A.

– Part 9: Personal Health Devices Transcoding Whitepaper. Personal Health Devices

– Part 10: Personal Health Devices Transcoding Whitepaper. Personal Health Gateway

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[ITU-T H.810 (2016)] Recommendation ITU-T H.810 (2016), *Interoperability design guidelines for personal health systems*.

[ISO/IEEE 11073-20601-2015A] ISO/IEEE 11073-20601:2010, *Health informatics – Personal health device communication – Part 20601: Application profile – Optimized exchange protocol*, including ISO/IEEE 11073-20601:2010 Amd 1:2015.
https://www.iso.org/standard/54331.html with
https://www.iso.org/standard/63972.html

[ISO/IEEE 11073-20601-2016C] ISO/IEEE 11073-20601:2016, *Health informatics – Personal health device communication – Part 20601: Application profile – Optimized exchange protocol*, including ISO/IEEE 11073-20601:2016/Cor.1:2016.
https://www.iso.org/standard/66717.html with
https://www.iso.org/standard/71886.html

[ISO/IEEE 11073-104xx] ISO/IEEE 11073-104xx (in force), *Health informatics – Personal health device communication – Device specialization*.
NOTE – This is shorthand used to refer to the collection of device specialization standards that utilize [ISO/IEEE 11073-20601-2015A], where xx can be any number from 01 to 99, inclusive.

[ISO/IEEE 11073-10404] ISO/IEEE 11073-10404:2010, *Health informatics – Personal health device communication – Part 10404: Device specialization – Pulse oximeter*.
https://www.iso.org/standard/54572.html

[ISO/IEEE 11073-10406] ISO/IEEE 11073-10406-2012, *Health informatics – Personal health device communication – Part 10406: Device specialization – Basic electrocardiograph (ECG) (1- to 3-lead ECG)*.
https://www.iso.org/standard/61876.html

[ISO/IEEE 11073-10407] ISO/IEEE 11073-10407:2010, *Health informatics – Personal health device communication – Device specialization – Blood pressure monitor, version 1.0*.
https://www.iso.org/standard/54573.html

[ISO/IEEE 11073-10408] ISO/IEEE 11073-10408:2010, *Health informatics – Personal health device communication – Part 10408: Device specialization – Thermometer*.
https://www.iso.org/standard/54310.html

[ISO/IEEE 11073-10415] ISO/IEEE 11073-10415:2010, *Health informatics – Personal health device communication – Part 10415: Device specialization – Weighing scale.*
https://www.iso.org/standard/54310.html

[ISO/IEEE 11073-10417] ISO/IEEE 11073-10417:2014, *Health informatics – Personal health device communication – Part 10417: Device specialization – Glucose meter*.
https://www.iso.org/standard/61896.html

[ISO/IEEE 11073-10418C] ISO/IEEE 11073-10418-2014, *Health informatics – Personal health device communication – Part 10418: Device specialization – International Normalized Ratio (INR) monitor*, including ISO/IEEE 11073-10418:2014/Cor 1:2016.
https://www.iso.org/standard/61897.html with
https://www.iso.org/standard/70740.html

[ISO/IEEE 11073-10419] ISO/IEEE 11073-10419:2016, *Health informatics – Personal health device communication – Part 10419: Device specialization – Insulin pump*.
https://www.iso.org/standard/69528.html

[ISO/IEEE 11073-10420] ISO/IEEE 11073-10420-2012, *Health informatics – Personal health device communication – Part 10420: Device specialization – Body composition analyzer*.
https://www.iso.org/standard/61055.html

[ISO/IEEE 11073-10421] ISO/IEEE 11073-10421:2012, *Health informatics – Personal health device communication – Part 10421: Device specialization – Peak expiratory flow monitor (peak flow).*
https://www.iso.org/standard/61056.html

[ISO/IEEE 11073-10424] ISO/IEEE 11073-10424:2016, *Health informatics – Personal health device communication – Part 10424: Device specialization – Sleep apnoea breathing therapy equipment (SABTE).*
https://www.iso.org/standard/68906.html
NOTE – equivalent to IEEE 11073-10424-2014, Health informatics – Personal health device communication – Part 10424: Device Specialization – Sleep Apnoea Breathing Therapy Equipment (SABTE).
http://dx.doi.org/10.1109/IEEESTD.2014.6911927

[ISO/IEEE 11073-10425] ISO/IEEE 11073-10425:2016, *Health informatics – Personal health device communication – Part 10425: Device specialization – Continuous glucose monitor (CGM).*
https://www.iso.org/standard/67821.html

[ISO/IEEE 11073-10441] ISO/IEEE 11073-10441-2015, *Health informatics – Personal Health Device Communication – Part 10441: Device Specialization – Cardiovascular fitness and activity monitor*.
https://www.iso.org/standard/64868.html

[ISO/IEEE 11073-10442] ISO/IEEE 11073-10442:2015, *Health informatics – Personal health device communication – Part 10442: Device specialization – Strength fitness equipment*.
http://standards.ieee.org/findstds/standard/11073-10442-2008.html

[ISO/IEEE 11073-10471] ISO/IEEE 11073-10471:2010, *Health informatics – Personal health device communication – Part 10471: Device*

	specialization – Independent living activity hub. https://www.iso.org/standard/54328.html
[ISO/IEEE 11073-10472]	ISO/IEEE 11073-10472:2012, *Health informatics – Personal health device communication – Part 10472: Device specialization – Medication monitor*. https://www.iso.org/standard/54364.html

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 agent [ISO/IEEE 11073-20601-2016C]: A node that collects and transmits personal health data to an associated manager.

3.1.2 manager [ISO/IEEE 11073-20601-2016C]: A node receiving data from one or more agent systems. Some examples of managers include a cellular phone, health appliance, set top box, or a computer system.

3.2 Terms defined in this Recommendation

None.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

ATS	Abstract Test Suite
CDG	Continua Design Guidelines
CGM	Continuous Glucose Monitor
CESL	Continua Enabling Software Library
DUT	Device Under Test
GUI	Graphical User Interface
INR	International Normalized Ratio
IP	Insulin Pump
MDS	Medical Device System
NFC	Near Field Communication
PAN	Personal Area Network
PCO	Point of Control and Observation
PCT	Protocol Conformance Testing
PHD	Personal Health Device
PHDC	Personal Healthcare Device Class
PHG	Personal Health Gateway
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation extra Information for Testing
SABTE	Sleep Apnoea Breathing Therapy Equipment

SCR Static Conformance Review

SDP Service Discovery Protocol

SOAP Simple Object Access Protocol

TCRL Test Case Reference List

TCWG Test and Certification Working Group

TP Test Purpose

TSS Test Suite Structure

USB Universal Serial Bus

WDM Windows Driver Model

5 Conventions

The key words "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "MAY", "MAY NOT" in this Recommendation are to be interpreted as in [b-ETSI SR 001 262].

– SHALL is equivalent to 'must' or 'it is required to'.

– SHALL NOT is equivalent to 'must not' or 'it is not allowed'.

– SHOULD is equivalent to 'it is recommended to'.

– SHOULD NOT is equivalent to 'it is not recommended to'.

– MAY is equivalent to 'is permitted'.

– MAY NOT is equivalent to 'it is not required that'.

NOTE – The above-mentioned key words are capitalized for illustrative purposes only and they do not appear capitalized within this Recommendation.

Reference is made in the ITU-T H.800-series of Recommendations to different versions of the Continua Design Guidelines (CDG) by a specific designation. The list of terms that may be used in this Recommendation is provided in Table 1.

Table 1 – List of designations associated with the various versions of the CDG

CDG release	Transposed as	Version	Description	Designation
2016 plus errata	[ITU-T H.810 (2016)]	6.1	Release 2016 plus errata noting all ratified bugs [b-CDG 2016].	–
2016	–	6.0	Release 2016 of the CDG including maintenance updates of the CDG 2015 and additional guidelines that cover new functionalities.	Iris
2015 plus errata	[b-ITU-T H.810 (2015)]	5.1	Release 2015 plus errata noting all ratified bugs [b-CDG 2015]. The 2013 edition of H.810 is split into eight parts in the H.810-series.	–
2015	–	5.0	Release 2015 of the CDG including maintenance updates of the CDG 2013 and additional guidelines that cover new functionalities.	Genome
2013 plus errata	[b-ITU-T H.810 (2013)]	4.1	Release 2013 plus errata noting all ratified bugs [b-CDG 2013].	–

Table 1 – List of designations associated with the various versions of the CDG

CDG release	Transposed as	Version	Description	Designation
2013	–	4.0	Release 2013 of the CDG including maintenance updates of the CDG 2012 and additional guidelines that cover new functionalities.	Endorphin
2012 plus errata	–	3.1	Release 2012 plus errata noting all ratified bugs [b-CDG 2012].	–
2012	–	3.0	Release 2012 of the CDG including maintenance updates of the CDG 2011 and additional guidelines that cover new functionalities.	Catalyst
2011 plus errata	–	2.1	CDG 2011 integrated with identified errata.	–
2011	–	2.0	Release 2011 of the CDG including maintenance updates of the CDG 2010 and additional guidelines that cover new functionalities [b-CDG 2011].	Adrenaline
2010 plus errata	–	1.6	CDG 2010 integrated with identified errata	–
2010	–	1.5	Release 2010 of the CDG with maintenance updates of the CDG Version 1 and additional guidelines that cover new functionalities [b-CDG 2010].	1.5
1.0	–	1.0	First released version of the CDG [b-CDG 1.0].	–

6 Test suite structure (TSS)

The test purposes (TPs) for the Personal Health Devices interface have been divided into the main subgroups specified below. Annex A describes the TPs for subgroups 1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.10, 1.1.11 (shown in bold).

– Group 1: Personal Health Device (PHD)
  - Group 1.1: Transport (TR)
    - **Subgroup 1.1.1: Design guidelines: common (DGC)**
    - **Subgroup 1.1.2: USB design guidelines (UDG)**
    - **Subgroup 1.1.3: Bluetooth design guidelines (BDG)**
    - **Subgroup 1.1.4: Pulse oximeter design guidelines (PODG)**
    - **Subgroup 1.1.5: Cardiovascular design guidelines (CVDG)**
    - **Subgroup 1.1.6: Activity hub design guidelines (HUBDG)**
    - **Subgroup 1.1.7: ZigBee design guidelines (ZDG)**
    - Subgroup 1.1.8: Glucose meter design guidelines (GLDG)
    - Subgroup 1.1.9: Bluetooth low energy design guidelines (BLEDG)
    - **Subgroup 1.1.10: Basic electrocardiograph design guidelines (ECGDG)**
    - **Subgroup 1.1.11: NFC design guidelines (NDG)**
  - Group 1.2: Optimized exchange protocol (OXP)

- Subgroup 1.2.1: PHD domain information model (DIM)
- Subgroup 1.2.2: PHD service model (SER)
- Subgroup 1.2.3: PHD communication model (COM)

- Group 1.3: Devices class specializations (CLASS)
  - Subgroup 1.3.1: Weighing scales (WEG)
  - Subgroup 1.3.2: Glucose meter (GL)
  - Subgroup 1.3.3: Pulse oximeter (PO)
  - Subgroup 1.3.4: Blood pressure monitor (BPM)
  - Subgroup 1.3.5: Thermometer (TH)
  - Subgroup 1.3.6: Cardiovascular (CV)
  - Subgroup 1.3.7: Strength (ST)
  - Subgroup 1.3.8: Activity hub (HUB)
  - Subgroup 1.3.9: Adherence monitor (AM)
  - Subgroup 1.3.10: Insulin pump (IP)
  - Subgroup 1.3.11: Peak flow (PF)
  - Subgroup 1.3.12: Body composition analyser (BCA)
  - Subgroup 1.3.13: Basic electrocardiograph (ECG)
  - Subgroup 1.3.14: International normalized ratio (INR)
  - Subgroup 1.3.15: Sleep apnoea breathing therapy equipment (SABTE)
  - Subgroup 1.3.16: Continuous glucose monitor (CGM)
- Group 1.4: Personal health device transcoding whitepaper (PHDTW)
  - Subgroup 1.4.1: Whitepaper general requirements (GEN)
  - Subgroup 1.4.2: Whitepaper thermometer requirements (TH)
  - Subgroup 1.4.3: Whitepaper blood pressure requirements (BPM)
  - Subgroup 1.4.4: Whitepaper heart rate requirements (HR)
  - Subgroup 1.4.5: Whitepaper glucose meter requirements (GL)
  - Subgroup 1.4.6: Whitepaper weight scale requirements (WS)
  - Subgroup 1.4.7: Whitepaper pulse oximeter requirements (PLX)
  - Subgroup 1.4.8: Whitepaper continuous glucose monitoring requirements (CGM)

– Group 2: Personal Health Gateway (PHG)

- Group 2.1: Transport (TR)
  - Subgroup 2.1.1: Design guidelines: Common (DGC)
  - Subgroup 2.1.2: USB design guidelines (UDG)
  - Subgroup 2.1.3: Bluetooth design guidelines (BDG)
  - Subgroup 2.1.4: Cardiovascular design guidelines (CVDG)
  - Subgroup 2.1.5: Activity hub design guidelines (HUBDG)
  - Subgroup 2.1.6: ZigBee design guidelines (ZDG)
  - Subgroup 2.1.7: Bluetooth low energy design guidelines (BLEDG)
  - Subgroup 2.1.8: NFC design guidelines (NDG)
- Group 2.2: 20601 Optimized exchange protocol (OXP)
  - Subgroup 2.2.1: General (GEN)

    - Subgroup 2.2.2: PHD domain information model (DIM)
    - Subgroup 2.2.3: PHD service model (SER)
    - Subgroup 2.2.4: PHD communication model (COM)
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    - Subgroup 2.4.6: Whitepaper weight scale requirements (WS)
    - Subgroup 2.4.7: Whitepaper pulse oximeter requirements (PLX)
    - Subgroup 2.4.8: Whitepaper continuous glucose monitoring requirements (CGM)

7 Electronic attachment

The protocol implementation conformance statements (PICS) and the protocol implementation extra information for testing (PIXIT) required for the implementation of Annex A can be downloaded from http://handle.itu.int/11.1002/2000/12067.

In the electronic attachment, letters "C" and "I" in the column labelled "Mandatory" are used to distinguish between "PICS" and "PIXIT" respectively during testing. If the cell is empty, the corresponding PICS is "independent". If the field contains a "C", the corresponding PICS is dependent on other PICS, and the logical expression is detailed in the "SCR_Expression" field. The static conformance review (SCR) is used in the test tool to assert whether the PICS selection is consistent.

Annex A

Test purposes

(This annex forms an integral part of this Recommendation.)

A.1 TP definition conventions

The test purposes (TPs) are defined according to the following rules:

- **TP Id**: This is a unique identifier (TP/<TT>/<DUT>/<GR>/<SGR>/<XX> – <NNN>). It is specified according to the naming convention defined below:
  - Each test purpose identifier is introduced by the prefix "TP".
  - <TT>: This is the test tool that will be used in the test case:
    - PAN: Personal area network (Bluetooth or USB)
    - LAN: Local area network (ZigBee)
    - PAN-LAN: Personal area network (Bluetooth or USB) – Local area network (ZigBee)
    - LP-PAN: Low power personal area network (Bluetooth Low Energy)
    - TAN: Touch area network (NFC)
    - PLT: Personal area network (Bluetooth or USB) – Local area network (ZigBee) – Touch area network (NFC)
  - <DUT>: This is the device under test:
    - PHD: Personal Health Device
    - PHG: Personal Health Gateway
  - <GR>: This identifies a group of test cases.
  - <SGR>: This identifies a subgroup of test cases.
  - <XX>: This identifies the type of testing:
    - BV: Valid behaviour test
    - BI: Invalid behaviour test
  - <NNN>: This is a sequential number that identifies the test purpose.
- **TP label**: This is the TP's title.
- **Coverage**: This contains the specification reference and clause to be checked by the TP.
  - Spec: This indicates the earliest version of the specification from which the testable items to be checked by the TP were included.
  - Testable item: This contains the testable items to be checked by the TP.
- **Test purpose**: This is a description of the requirements to be tested.
- **Applicability**: This contains the PICS items that define if the test case is applicable or not for a specific device. When a TP contains an "ALL" in this field it means that it applies to the device under test within that scope of the test (specialization, transport used, etc.).
- **Other PICS**: This contains additional PICS items (apart from the PICS specified in the Applicability row) which are used within the test case implementation and can modify the final verdict. When this row is empty, it means that only the PICS specified in the Applicability row are used within the test case implementation.
- **Initial condition**: This indicates the state to which the DUT needs to be moved at the beginning of TC execution.

- **Test procedure**: This describes the steps to be followed in order to execute the test case.
- **Pass/Fail criteria**: This provides criteria to decide whether the DUT passes or fails the test case.

A.2 Subgroup 1.1.1 – Design guidelines: Common (DGC)

TP Id		TP/PLT/PHD/TR/DGC/BI-000		
TP label		PAN Device AHD Linkage		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Linkage 1; M	NFCDev 1; M	
Test purpose		Check that: Device cannot actively communicate with a second AHD		
Applicability		C_AG_OXP_000		
Other PICS				
Initial condition		The Personal Health Device (PHD) under test and simulated Personal Health Gateway (PHG) are in the Operating state.		
Test procedure		1. IF the PHD is currently using a USB as a connection mode: a. If the device allows for a second type-B connector, connect the device to a new simulated PHG using that connector and attempt to associate it. b. If the device allows for a Bluetooth connection (in addition to the currently used USB connection), attempt to associate it to a new simulated PHG using the Bluetooth connection. c. If the device allows for an NFC connection (in addition to the currently used USB connection), attempt to associate it with a new simulated PHG using the NFC connection. 2. IF the device is currently using a Bluetooth as a connection mode: a. If the device allows for a Bluetooth connection, attempt to associate it with a new simulated PHG using the BT connection. b. If the device allows for a USB connector, connect the device to a new simulated PHG using that connector and attempt to associate it. c. If the device allows for an NFC connection, attempt to associate it with a new simulated PHG using the NFC connection. 3. IF the device is currently using an NFC as a connection mode: a. If the device allows for a Bluetooth connection, attempt to associate it with a new simulated PHG using the BT connection. b. If the device allows for a USB connector, connect the device to a new simulated PHG using that connector and attempt to associate it. c. If the device allows for a NFC connection, attempt to associate it with a new simulated PHG using the NFC connection.		
Pass/Fail criteria		The PHD shall not be able to associate with a second AHD in any of the cases tested.		
Notes				

TP Id		TP/PLT/PHD/TR/DGC/BI-001		
TP label		Manager-initiated communications		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Communication 3; M		
Test purpose		Check that: Service component does not support manager-initiated event reporting as a mechanism of measurement transfer		
Applicability		C_AG_OXP_000		
Other PICS				

Initial condition	The service under test and the simulated PHG are in the Unassociated state.
Test procedure	1. The simulated PHG receives an Association request from the PHD under test. 2. The simulated PHG sends an Association Response with a result = accepted-unknown-config. 3. The PHD responds with a "Remote Operation Invoke | Confirmed Event Report" message with an MDC_NOTI_CONFIG event type to send its configuration to the PHG. 4. The PHG sends a Remote Operation Response | Confirmed Event report to accept the configuration. 5. The attributes of interest for this test are: a. In the Association request message: Data-Req-Mode-Capab: ❑ field- type = DataReqModeCapab ❑ field-length = 4 bytes ❑ data-req-init-manager-count = 0 b. In the Configuration report message: Check the mss-acc-manager-initiated parameter in the Metric-Spec-Small attribute for every metric derived object declared in the configuration report 6. The simulated PHG issues an MDS-Data-Req to the PHD, with any metric-derived data attribute supported by the PHD.
Pass/Fail criteria	• mss-acc-manager-initiated (bit 8) must be set to 0 in the Metric-Spec-Small field of all the metric derived objects and • the PHD must respond with an error to step 6 (roer message = 0x0300, RoerErrorValue = no-such-action), indicating this procedure is not supported.
Notes	

TP Id		TP/PLT/PHD/TR/DGC/BV-002		
TP label		DataReqMode Alignment		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Communication 4; M		
Test purpose		Check that: The fields in the Metric-Spec-Small attribute of metric objects are aligned with what was declared in the DataReqModeCapab structure during Association for the Service		
Applicability		C_AG_OXP_000 AND (C_AG_OXP_040 OR C_AG_OXP_042 OR C_AG_OXP_043)		
Other PICS				
Initial condition		The service under test and the simulated PHG are in the Unassociated state.		
Test procedure		1. The simulated PHG receives an association request from the PHD under test. 2. The simulated PHG sends an Association Response with a result = accepted-unknown-config. 3. The PHD responds with a "Remote Operation Invoke | Confirmed Event Report" message with an MDC_NOTI_CONFIG event to send its configuration to the PHG. 4. The PHG sends a Remote Operation Response | Confirmed Event report to accept the configuration. 5. The attributes of interest for this test are: a. In the Association request message:Data-Req-Mode-Capab: ❑ field- type = DataReqModeCapab ❑ field-length = 2 bytes ❑ field- value =SEQUENCE { data-req-mode-flags DataReqModeFlags,		

	data-req-init-agent-count INT-U8, -- maximum number of parallel agent-initiated data requests data-req-init-manager-count INT-U8, -- maximum number of parallel manager-initiated data requests b. In the Configuration report message: Check the mss-acc-manager-initiated parameter in the Metric-Spec-Small attribute for every metric derived object declared in the configuration report.
Pass/Fail criteria	The fields of the attribute must be aligned with what was previously declared. Specifically: In Metric-Spec-Small, the parameter mss-acc-manager-initiated shall be =0, and the parameter mss-acc-agent-initiated shall be =1 for all the metric derived objects, In the Association request message, the field data-req-init-manager-count shall be =0. and the field data-req-init-agent-count shall be =1; In addition, the parameter DataReqModeFlags shall contain the data-req-supp-init-agent (bit 15) set to 1.. All unassigned DataReqModeFlags bit values are reserved for future expansion and shall be set to zero.
Notes	

TP Id		TP/PLT/PHD/TR/DGC/BV-003		
TP label		FIFO store and forward		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable Items	Communication 5; C		
Test purpose		Check that: Service component designed to store and forward temporary measurements transmits data in a First-In First-Out sequence		
Applicability		C_AG_OXP_000 AND (C_AG_OXP_032 OR C_AG_OXP_041)		
Other PICS		C_AG_DGC_009, C_AG_OXP_009, C_AG_OXP_014, C_AG_OXP_032, C_AG_OXP_041, C_AG_OXP_182, C_AG_OXP_183, C_AG_OXP_184, C_AG_OXP_189, C_AG_OXP_293		
Initial condition		The service under test and the simulated PHG are disconnected. This may be achieved by physically disconnecting the USB cable between the PHD and PHG (USB) or by moving the PHD out of range of the PHG (BT).		
Test procedure		1. Take some measurements of different values with the PHD under test. Record the measurements in order. 2. Connect the PHD under test to the simulated PHG. 3. Wait for the PHD and simulated PHG to associate: a. The simulated PHG receives an association request from the PHD under test. b. The simulated PHG sends an Association Response with a result = accepted-unknown-config. c. The PHD sends a Remote roiv-cmip-confirmed-event-report message with an MDC_NOTI_CONFIG event to send its configuration to the PHG. d. The simulated PHG sends a rors-cmip-confirmed-event-report with reason "accepted" to accept the PHD's configuration. e. IF C_AG_OXP_293 THEN: i. Once in Configuring/Sending GetMDS substate simulated PHG issues roiv-cmip-get command with handle set to 0 (to request for MDS object) and attribute-id-list set to 0 to indicate all attributes. ii. The PHD responds with a rors-cmip-get service message in which the attribute-list contains a list of all implemented attributes of the MDS object. iii. IF the mds-time-mgr-set-time bit is set: ❑ The PHG moves to Configuring/Sending Set Time substate and: • IF C_AG_OXP_009 THEN it issues the Set-Time action command.		

	• IF C_AG_OXP_014 THEN it issues the Set-Base-Offset-Time action command. ❑ Once its internal time setting operation is completed, the PHD responds to the PHG. 4. If the PHD under test supports a fixed or variable format MDS event report, the simulated PHG waits to receive the measurements from the PHD under test. The measurements that are transferred through the MDS event report are recorded. 5. If the PHD under test supports PM-Store, the simulated PHG performs a Get-Segment-Info and forces the PHD to send the information stored in the PM-Segments (Trig-Segment-Data-Xfer).The PHD under test sends the measurements stored in the PM-Segment (Segment-Data-Event). The measurements that are transferred through the Segment-Data-Event are recorded. 6. A pop-up shows the stored data in steps 4 and 5. 7. IF C_AG_OXP_032, check that the temporarily stored measurements are sent in a FIFO way. 8. IF NOT C_AG_OXP_032, check that the stored measurements are NOT sent, so the measurements received by the PHG are new measurements.
Pass/Fail criteria	If Store and Forward measurements PICS is supported (C_AG_OXP_032), the temporary stored measurements shall be sent in a FIFO way (in the same order as they were taken). If the PICS (C_AG_OXP_032) is not set, the device shall not be capable of storing temporary measurements, or shall not transmit them, so the first event reports with measurements are with new data (not stored data).
Notes	

TP Id		TP/PLT/PHD/TR/DGC/BV-008		
TP label		Updating attributes previously defined		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Communication 11; M		
Test purpose		Check that: Continua PAN/LAN service components shall send changes to any particular attribute via a single Scanner object (if enabled) or the MDS object, but never more than one object (of either MDS or Scanner type)		
Applicability		C_AG_OXP_000 AND (C_AG_OXP_046 OR C_AG_OXP_047)		
Other PICS		C_AG_OXP_180		
Initial condition		The service under test and the simulated PHG are in the Operating state		
Test procedure		1. Make changes to an attribute of any metric that is collected by a scanner object. 2. Check and record the attributes for metric objects that have been reported using MDS event reports. 3. Set the Operational State to 1 for the Scanner object. 4. Wait until the PHD under test starts to send its data using Scanner event reports and record it. 5. Set the Operational State to 0 for the Scanner object. 6. Repeat steps 3 to 5 for all scanner objects.		
Pass/Fail criteria		Check that all attributes for metric objects reported using Scanner event reports in step 4 have not been reported via MDS event reports.		
Notes				

TP Id	TP/PLT/PHD/TR/DGC/BV-009
TP label	MDS Device and Regulatory information

<table>
<tr><td rowspan="12">Coverage</td><td>Spec</td><td colspan="3">[b-ITU-T H.810 (2015)]</td></tr>
<tr><td rowspan="10">Testable items</td><td>Dev.Information 1; M</td><td>Dev.Information 2; O</td><td>Dev.Information 3; M</td></tr>
<tr><td>Dev.Information 4; O</td><td>Dev.Information 5; M</td><td>Dev.Information 6; M</td></tr>
<tr><td>Dev.Information 7; M</td><td>Dev.Information 8; C</td><td>Regulatory 1; M</td></tr>
<tr><td>Regulatory 2; M</td><td>Regulatory 3; M</td><td>Regulatory 6; M</td></tr>
<tr><td>Regulatory 7; M</td><td>Regulatory 9; M</td><td>Cardio_DG 7; M</td></tr>
<tr><td>Hub_DG 2; M</td><td>Hub_DG 4; M</td><td>Hub_DG 6; M</td></tr>
<tr><td>Hub_DG 8; M</td><td>Hub_DG 10; M</td><td>Hub_DG 12; M</td></tr>
<tr><td>Hub_DG 14; M</td><td>Hub_DG 16; M</td><td>Hub_DG 18; M</td></tr>
<tr><td>Hub_DG 20; M</td><td>Hub_DG 22; M</td><td>Hub_DG 24; M</td></tr>
<tr><td>Hub_DG 26; M</td><td>Hub_DG 28; M</td><td>Versioning 1; M</td></tr>
<tr><td>Spec</td><td colspan="3">[ISO/IEEE 11073-20601-2015A] and [ISO/IEEE 11073-20601-2016C]</td></tr>
<tr><td>Testable items</td><td>MDSClassAttr 8; O</td><td>ConfNormalProc 23; M</td><td></td></tr>
<tr><td colspan="2">Test purpose</td><td colspan="3">Check that:
Device information fields of an Service component's MDS object are correct</td></tr>
<tr><td colspan="2">Applicability</td><td colspan="3">C_AG_OXP_000</td></tr>
<tr><td colspan="2">Other PICS</td><td colspan="3">C_AG_OXP_185</td></tr>
<tr><td colspan="2">Initial condition</td><td colspan="3">The service under test and the simulated PHG are in the Unassociated state.</td></tr>
<tr><td colspan="2">Test procedure</td><td colspan="3">1. The simulated PHG receives an association request from the PHD under test.
2. The simulated PHG sends an association response with a result = accepted-unknown-config.
3. The PHD sends a "Remote Operation Invoke | Confirmed Event Report" message with an MDC_NOTI_CONFIG event to send its configuration to the PHG.
4. The simulated PHG issues a remote Operation Response | Confirmed Event Report message with result code = "accepted".
5. The simulated PHG issues a roiv-cmip-get with handle=0 and attribute list=empty, to request for all the attributes supported by the PHD.
6. The attributes of interest to be checked (obtained from the Configuration event report and the GET request are):
a. Mandatory attribute System-Id
❑ OUI = OUI assigned to the original manufacturer
❑ 40-bit manufacturer part = device ID set by the original manufacturer. Check the value declared by manufacturer in the PIXIT list.
b. Mandatory attribute System-Model
❑ Manufacturer = (original manufacturer OR customer facing company). Check the value declared by the manufacturer in the PIXIT list.
❑ Model-number = (original manufacturer OR customer facing company). Check the value declared by the manufacturer in the PIXIT list.
c. Mandatory attribute Product-Specification
❑ Spec-type = serial-number
❑ Prod-spec = (serial number of the device). Check the value declared by the manufacturer in the PIXIT list.
IF a firmware number is declared in the Product-Specification attribute
❑ Mandatory attribute Product-Specification
1. Spec-type = fw-revision
2. Prod-spec = (firmware revision of the device)</td></tr>
</table>

	IF a firmware number is not declared in the Product-Specification attribute, THEN it is not present in Product-Specification attribute. d. Mandatory attribute Reg-Cert-Data-List: ❑ attribute-id = MDC_ATTR_REG_CERT_DATA_LIST ❑ attribute-type = RegCertDataList Search for the RegCertData element that contains: • auth-body = auth-body-continua • auth-body-struc-type = continua-version-struct • auth-body-data = ContinuaBodyStruct Within ContinuaBodyStruct: major-IG-version = 6 minor-IG-version = 1 certified-devices = <CDC list matches all implemented and only the implemented Certified Device Classes and value for CertifiedDeviceClassEntry is: MDC_DEV_*_SPEC_PROFILE_* - 4096 + TCode x 8192 with TCode = ▪ It is recommended to include the supported MDC_DEV_*_SPEC_PROFILE_* codes along with a TCode of 0 to interoperate with version 1 client components. ▪ IF C_AG_UDG_001=TRUE, THEN TCode=1 (Wired PAN) ▪ IF C_AG_BDG_001=TRUE, THEN TCode=2 (Wireless PAN) ▪ IF C_AG_ZDG_001=TRUE, THEN TCode=3 (Wireless LAN) And the RegCertData element that contains: • auth-body = auth-body-continua • auth-body-struc-type = continua-reg-struct • auth-body-data = ContinuaRegStruct Within ContinuaRegStruct: regulation-bit-field = 0 if device is listed as regulated in certification application, 1 otherwise e. Mandatory attribute System-Type-Spec-List ❑ <CDC list matches those declared in the certification application → Note this only needs to list the CDCs that will be utilized concurrently. If the device is a hub, this list may be a subset of the full CDC list.> <It is acceptable for the CDC list to include additional specializations not part of the application.>
Pass/Fail criteria	All checked values are as specified in the test procedure: • If the PHD supports Step Counter sub-specialization (profile):MDC_DEV_*_SPEC_PROFILE_* is MDC_DEV_SUB_SPEC_PROFILE_STEP_COUNTER = 4200 (0x1068) • If the PHD supports Fall Sensor sub-specialization (profile): MDC_DEV_*_SPEC_PROFILE_* is MDC_DEV_SUB_SPEC_PROFILE_FALL_SENSOR = 4213 (0x1075) • If the PHD supports Motion Sensor sub-specialization (profile): MDC_DEV_*_SPEC_PROFILE_* is MDC_DEV_SUB_SPEC_PROFILE_MOTION_SENSOR = 4219 (0x107B) • If the PHD supports Enuresis Sensor sub-specialization (profile): MDC_DEV_*_SPEC_PROFILE_* is MDC_DEV_SUB_SPEC_PROFILE_ENURESIS_SENSOR = 4221 (0x107D). • If the PHD supports Contact Closure Sensor sub-specialization (profile):MDC_DEV_*_SPEC_PROFILE_* is MDC_DEV_SUB_SPEC_PROFILE_CONTACTCLOSURE_SENSOR = 4222 (0x107E) • If the PHD supports Switch Sensor sub-specialization (profile): MDC_DEV_*_SPEC_PROFILE_* is MDC_DEV_SUB_SPEC_PROFILE_SWITCH_SENSOR = 4224 (0x1080).

	• If the PHD supports Dosage Sensor sub-specialization (profile): MDC_DEV_*_SPEC_PROFILE_* is MDC_DEV_SUB_SPEC_PROFILE_DOSAGE_SENSOR = 4225 (0x1081) • If the PHD supports Water Sensor sub-specialization (profile): MDC_DEV_*_SPEC_PROFILE_* is MDC_DEV_SUB_SPEC_PROFILE_WATER_SENSOR = 4217 (0x1079). • If the PHD supports Smoke Sensor sub-specialization (profile): MDC_DEV_*_SPEC_PROFILE_* is MDC_DEV_SUB_SPEC_PROFILE_SMOKE_SENSOR = 4215 (0x1077) • If the PHD supports Property Exit Sensor sub-specialization (profile): MDC_DEV_*_SPEC_PROFILE_* is MDC_DEV_SUB_SPEC_PROFILE_PROPEXIT_SENSOR = 4220 (0x107C) (0x107B) • If the PHD supports Temperature Sensor sub-specialization (profile): MDC_DEV_*_SPEC_PROFILE_* is MDC_DEV_SUB_SPEC_PROFILE_TEMP_SENSOR = 4226 (0x1082). • If the PHD supports Usage Sensor sub-specialization (profile):MDC_DEV_*_SPEC_PROFILE_* is MDC_DEV_SUB_SPEC_PROFILE_USAGE_SENSOR = 4223 (0x107F). • If the PHD supports PERS Sensor sub-specialization (profile): MDC_DEV_*_SPEC_PROFILE_* is MDC_DEV_SUB_SPEC_PROFILE_PERS_SENSOR = 4214 (0x1076) • If the PHD supports CO Sensor sub-specialization (profile): MDC_DEV_*_SPEC_PROFILE_* is MDC_DEV_SUB_SPEC_PROFILE_CO_SENSOR = 4216 (0x1078) • If the PHD supports Gas Sensor sub-specialization (profile): MDC_DEV_*_SPEC_PROFILE_* is MDC_DEV_SUB_SPEC_PROFILE_GAS_SENSOR = 4218 (0x107A).
Notes	

TP Id		TP/PLT/PHD/TR/DGC/BV-010		
TP label		Unsupported Service Component 1		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Unsupport 8; R	Unsupport 10; R	
		Unsupport_LAN 6; R		
Test purpose		Check that: Service component should notify the user of failure of the connection and corresponding reason, if the client has released or rejected the association due to service component does not support at least one Continua certified device class supported by the client component [AND] Service component with appropriate UI capabilities should use the following text string to notify the user of failure of the connection: “Thank you for choosing Continua certified personal health products. The device you are connecting either has not been Continua certified or the data is not intended for use in this solution. Please see your user manual for more details.” This test procedure covers the scenario in which the simulated PHG does not request MDS attributes while they are in Waiting Approval state.		
Applicability		C_AG_OXP_000 AND (C_AG_DGC_013 OR C_AG_DGC_014)		
Other PICS				
Initial condition		The service under test and the simulated PHG are in the Unassociated state.		
Test procedure		1. The simulated PHG receives an association request from the PHD under test. 2. The PHG sends an association response with a result = accepted-unknown-config. 3. The PHD sends with a "Remote Operation Invoke | Confirmed Event Report" message with an MDC_NOTI_CONFIG event to send its configuration to the PHG.		

	4. The PHG sends a Release Request (RLRQ) APDU the with reason "no-more-configurations". 5. The PHD shall send a Release response (RLRE) with the reason "normal". 6. Visual inspection of the PHD.
Pass/Fail criteria	IF C_AG_DCG_013 is supported: The error display should look something like the following (exact text not required): "Thank you for choosing Continua certified personal health products. The device you are connecting to either has not been Continua certified or the data is not intended for use in this solution. Please see your user manual for more details." IF C_AG_DGC_014 is supported (product has no text-based UI), some other visual indication is provided. In all the cases, the PHD shall respond to the RLRQ message with the reason "no-more-configs" by sending a RLRE.
Notes	

TP Id		TP/PLT/PHD/TR/DGC/BV-010_A		
TP label		Unsupported Service Component 2		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Unsupport 8; R	Unsupport 10; R	Unsupport_LAN 4; R
Test purpose		Check that: Service component should notify the user of failure of the connection and corresponding reason, if the client has released or rejected the association due to service component does not support at least one Continua certified device class supported by the client component [AND] Service component with appropriate UI capabilities should use the following text string to notify the user of failure of the connection: “Thank you for choosing Continua certified personal health products. The device you are connecting either has not been Continua certified or the data is not intended for use in this solution. Please see your user manual for more details.” This test procedure covers the scenario in which the PHG does request MDS attributes in Waiting Approval state.		
Applicability		C_AG_OXP_000 AND (C_AG_DGC_013 OR C_AG_DGC_014)		
Other PICS				
Initial condition		The service under test and the simulated PHG are in the Unassociated state.		
Test procedure		1. The simulated PHG receives an association request from the PHD under test. 2. The PHG sends an association response with a result = accepted-unknown-config. 3. The PHD sends with a "Remote Operation Invoke | Confirmed Event Report" message with an MDC_NOTI_CONFIG event to send its configuration to the PHG. 4. IF NOT C_AG_OXP_293 THEN a. The PHG sends a roiv-cmip-get message with handle 0 and an empty list of attributes (to request all the attributes of the MDS object). b. The PHD responds to the Get request by sending a rors-cmip-get with all the supported attributes of the MDS. 5. The PHG sends a Release Request (RLRQ) APDU with the reason "no-more-configurations". 6. The PHD shall send a Release response (RLRE) with the reason "normal". 7. Visual inspection of the PHD.		
Pass/Fail criteria		IF C_AG_DCG_013 is supported: The error display should look something like the following (exact text not required): "Thank you for choosing Continua certified personal health products. The device you are connecting to either has not been Continua certified or the data is not intended for use in this solution. Please see your user manual for more details" IF C_AG_DGC_014 is supported (product has no text-based UI), some other visual indication		

	is provided. In all the cases, the PHD shall respond to the RLRQ message with the reason "no-more-configs" by sending a RLRE.
Notes	

TP Id		TP/PLT/PHD/TR/DGC/BV-011		
TP label		DataMessaging BiDIR QoS		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	QoS 1; M		
	Spec	[ISO/IEEE 11073-20601-2015A] and [ISO/IEEE 11073-20601-2016C]		
	Testable items	SysContext 1; M		
Test purpose		Check that: Service component supports to send the following messages with the desired QoS bins: - DATA(Response-ConfirmSet()) {scanner OperationalState} - DATA(Invoke-UnconfirmedEventReport(Buf-Scan-Report-*), ScanReportInfo*) - DATA(Invoke-ConfirmedEventReport(Buf-Scan-Report-*), ScanReportInfo*) - DATA(Response-ConfirmSet()) {scanner OperationalState} - DATA(Invoke-UnconfirmedEventReport(Unbuf-Scan-Report-*), ScanReportInfo*) - DATA(Invoke-ConfirmedEventReport(Unbuf-Scan-Report-*), ScanReportInfo*) DATA(Response-ConfirmGet()) {PM-Store attributes} - DATA(Response-ConfirmedAction(Get-Segment-Info), SegmentInfoList) - DATA(Response-ConfirmedAction(Trig-Segment-Data-Xfer), TrigSegmDataXferRsp) - DATA(Invoke-ConfirmedEventReport(Segment-Data-Event), SegmentDataEvent) - DATA(Response-ConfirmedAction(Clear-Segments)) DATA(Invoke-UnconfirmedEventReport (MDS-Dynamic-Data-Update-*), ScanReportInfo*) - DATA(Invoke-ConfirmedEventReport (MDS-Dynamic-Data-Update-*), ScanReportInfo*) - DATA(Response-ConfirmedAction(Set-Time))		
Applicability		(C_AG_OXP_053 OR C_AG_OXP_008 OR C_AG_OXP_041 OR C_AG_OXP_046 OR C_AG_OXP_047) AND C_AG_OXP_000		
Other PICS		C_AG_OXP_071, C_AG_OXP_180		
Initial condition		The service under test and the simulated PHG are in the Operating state.		
Test procedure		1. IF the PHD under test supports fixed or variable format MDS event reports, it is forced to send a variable or fixed format MDS event report: roiv-cmip-confirmed-event-report with event-type: MDC_NOTI_SCAN_REPORT_FIXED MDC_NOTI_SCAN_REPORT_VAR MDC_NOTI_SCAN_REPORT_MP_VAR MDC_NOTI_SCAN_REPORT_MP_FIXED 2. If the PHD supports Episodic Scanner objects, the simulated PHG sets to enable the Operational-State for the scanner object. IF the PHD supports confirmed Set, the PHD will send the response for the Set command: rors-cmip-confirmed-set. When the scanner object is enabled, the PHD under test will send a scanner object events roiv-cmip-confirmed-event-report with event-type: MDC_NOTI_UNBUF_SCAN_REPORT_GROUPED MDC_NOTI_UNBUF_SCAN_REPORT_MP_GROUPED MDC_NOTI_UNBUF_SCAN_REPORT_FIXED		

	MDC_NOTI_UNBUF_SCAN_REPORT_MP_FIXED MDC_NOTI_UNBUF_SCAN_REPORT_VAR MDC_NOTI_UNBUF_SCAN_REPORT_MP_VAR 3. If the PHD supports Periodic Scanner objects, the simulated PHG sets to enable the Operational-State scanner object. IF the PHD supports confirmed Set, the PHD will send the response for the Set command: rors-cmip-confirmed-set. When the scanner object is enabled, the PHD under test will send a scanner object events roiv-cmip-confirmed-event-report with event-type: MDC_NOTI_BUF_SCAN_REPORT_GROUPED MDC_NOTI_BUF_SCAN_REPORT_MP_GROUPED MDC_NOTI_BUF_SCAN_REPORT_FIXED MDC_NOTI_BUF_SCAN_REPORT_MP_ FIXED MDC_NOTI_BUF_SCAN_REPORT_VAR MDC_NOTI_BUF_SCAN_REPORT_MP_VAR 4. If the PHD supports Set-Time", the simulated PHG sends a roiv-cmip-confirmed-action with action-type = MDC_ACT_SET_TIME. The PHD shall reply with a rors-cmip-confirmed-action with action-type=MDC_ACT_SET_TIME. 5. If the PHD supports PM-Store: • The simulated PHG will perform a Get-Segment-Info action, the PHD under test shall reply with rors-confirmed-action with action-type= MDC_ACT_SEG_GET_INFO. • The simulated PHG will perform a Trig-Segment-Data-Xfer action, the PHD under test shall reply with rors-confirmed-action with action-type= MDC_ACT_SEG_TRIG_XFER, and the PHD under test will send Segment-Data-Event, roiv-cmip-confirmed–event report with event-type=MDC_NOTI_SEGMENT_DATA 6. If the PHD supports PM-Store and Clear-Segment action, the simulated PHG will perform a Get request for the PM-Store attributes to read Clear-Timeout attribute. After this, it will perform the Clear-Segments. Then, the simulated PHG will perform a Clear-Segment action, and the PHD shall reply with rors-cmip-confirmed-action with action-type=MDC_ACT_SEG_CLR.
Pass/Fail criteria	The PHD shall use a reliable channel (QoS best.medium) for the messages sent by it and specified in the test procedure.
Notes	Roer and Rorj messages are checked in TP/PLT/PHD/OXP/BV-003_D and TP/PLT/PHD/OXP/BV-003_F.

TP Id		TP/PLT/PHD/TR/DGC/BV-013		
TP label		Continua_Nomenclature_Codes		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Conformance 3; M		
	Spec	[ISO/IEEE 11073-20601-2015A] and [ISO/IEEE 11073-20601-2016C]		
	Testable items	InfoExt 3; O		
Test purpose		Check that: Service component that use private nomenclature codes allocates them from the range 0xF000 through 0xFBFF [AND] Vendor specified classes may be defined. Vendor specified objects may be created from those classes or any classes defined in this series of standards		
Applicability		C_AG_OXP_000		
Other PICS		C_AG_DGC_009, C_AG_OXP_009, C_AG_OXP_014, C_AG_OXP_189, C_AG_OXP_293		

Initial condition	The service under test and the simulated PHG are in the Unassociated state.
Test procedure	1. The PHD sends an association request (AarqApdu) from the PHD under test. 2. The simulated PHG sends an association response (AareApdu) with a result = accepted-unknown-config. 3. The PHD sends a roiv-cmip-confirmed-event-report message with an MDC_NOTI_CONFIG event to send its configuration to the PHG. Check all object types and attribute types to ensure they are not in the range 0xFC00 to 0xFFFF. 4. The PHG accepts the configuration by sending a rors-cmip-confirmed-event-report with reason=accepted. 5. IF C_AG_OXP_293 THEN: a. Once in Configuring/Sending GetMDS substate simulated PHG issues roiv-cmip-get command with handle set to 0 (to request for MDS object) and attribute-id-list set to 0 to indicate all attributes. b. The PHD responds with a rors-cmip-get service message in which the attribute-list contains a list of all implemented attributes of the MDS object. c. IF the mds-time-mgr-set-time bit is set: ❑ The PHG moves to Configuring/Sending Set Time substate and: • IF C_AG_OXP_009 THEN it issues the Set-Time action command. • IF C_AG_OXP_014 THEN it issues the Set-Base-Offset-Time action command. ❑ Once its internal time setting operation is completed, the PHD responds to the PHG. 6. IF C_AG_OXP_189 is supported: PHD sends a roiv-cmip-event-report message (or roiv-cmip-confirmed-event-report) with event-type=MDC_NOTI_SCAN_REPORT_*, with measurements. Check that none of the attribute types are in the range 0xFC00 to 0xFFFF.
Pass/Fail criteria	In steps 1, 3 and 6, if the PHD uses Private Nomenclature Codes (C_AG_DGC_009 = TRUE), Private Nomenclature values must be between 0xF000 through 0xFBFF, otherwise, nomenclature values must be between 0x0000 through 0xEFFF (no Private Nomenclature values must be present).
Notes	

TP Id		TP/PLT/PHD/TR/DGC/BV-014		
TP label		PM-Store Date-and-Time adjustment while transfer PM-Segment		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items		Communication 15; M	
Test purpose		Check that: Continua PAN service components that are in the middle of a PM-Segment transfer shall not update the PM-Segment object Date-and-Time–Adjustment attribute regardless of any time changes that occur while the segment continues to be transferred		
Applicability		C_AG_OXP_000 AND C_AG_OXP_036		
Other PICS				
Initial condition		The service under test and the simulated PHG are in the Operating state. The PHD must have stored measurements in the PM-Store object to transfer it.		
Test procedure		1. The simulated PHG issues a Get-Segment-Info with SegmSelection set to all-segments. 2. Inform the operator that the simulated PHG is going to trigger a Segment Data event and ask the operator to force the PHD to make a noticeable change in the Date or Time while it is transferring the PM-Segment. 3. The simulated PHG sends a request for the PM-Segment Data to one of the PM-Segments that contains data: a. Data APDU		

	❑ Type = Invoke | Confirmed Action ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SEG_TRIG_XFER ❑ TrigSegmDataXferReq = <Instance number of the selected PM-Segment that contains the data> 4. The PHD issues an action response: a. Data APDU ❑ Type = Invoke | Confirmed Action ❑ HANDLE = obj-handle b. Action = MDC_ACT_SEG_TRIG_XFER ❑ TrigSegmDataXferRsp = <Same Instance number> | tsxr-succesful (0x00 0x00) 5. The PHD under Test starts Data transfer: a. Data APDU ❑ Invoke | CfmEventReport ❑ Action = MDC_NOTI_SEGMENT_DATA ❑ SegmentDataEvent 6. The simulated PHG response to transferred data APDU's: a. Data APDU ❑ Type = Invoke | Confirmed Action ❑ HANDLE = obj-handle ❑ Action = MDC_NOTI_SEGMENT_DATA ❑ SegmentDataResult 7. Wait until all the data is transferred by the PHD under test. 8. The simulated PHG shall send a Get-Segment-Info object action for the PM-Store object with SegmSelection set to all-segments. 9. The PHD shall respond to the Get-Segment-Info, indicating the attributes of the PM-Segment: ▪ Date-and-Time adjustment attribute is not present, 10. Repeat from step 2 to step 9 until every PM-Store and segment instance has been checked.
Pass/Fail criteria	In step 9, the Date-and-Time adjustment attribute must not be present.
Notes	

A.3 Subgroup 1.1.2 – USB design guidelines (UDG)

TP Id		TP/PAN/PHD/TR/UDG/BV-000		
TP label		Association process		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Data_mess 1; M	Data_mess 3;M	Data_mess 4; O
		Multi 1; M		
Test purpose		Check that: Service component sets the USB PHDC v1.0 bPHDCDataCode field of the PHDC Class Function descriptor equal to PHDC_11073_20601 [AND] Service component sets the wDevSpecializations field(s) to the corresponding ISO/IEEE 11073-20601-2008 and ISO/IEEE 11073-20601A-2010 MDC_DEV_SPEC_PROFILE_* value(s) corresponding to the Certified Device Class(es) the component supports [AND]		

	Service component may add additional ISO/IEEE 11073-20601-2008 and ISO/IEEE 11073-20601A-2010 MDC_DEV_SPEC_PROFILE_* value(s) corresponding to supported IEEE specializations that are not Continua certified in the wDevSpecializations array [AND] Service component, whether multi-function or single function, implements one and only one USB PHDC interface for the component's ISO/IEEE 11073 -20601-2008 and ISO/IEEE 11073-20601A-2010 association
Applicability	C_AG_OXP_000 AND C_AG_UDG_001
Other PICS	C_AG_DGC_016
Initial condition	The service under test is in in the Disconnected state.
Test procedure	1. Connect the USB connector of the PHD to the simulated PHG through the USB sniffer. 2. Capture the descriptors. Check that: a. In the PHDC Class Function descriptor (20h), the bPHDCDataCode field is equal to 02h (PHDC_11073_20601). b. In the PHDC 11073 PHD Function Extension descriptor (30h), the wDevSpecializations field(s) of the is set to the corresponding ISO/IEEE 11073-20601 version 1.0 MDC_DEV_SPEC_PROFILE_* value(s) corresponding to the Certified Device Class or Classes the component supports, as defined in the certification application (values below are in decimal format): • Pulse oximeter (MDC_DEV_SPEC_PROFILE_PULS_OXIM 4100) • Blood pressure monitor (MDC_DEV_SPEC_PROFILE_BP 4103) • Temperature (MDC_DEV_SPEC_PROFILE_TEMP 4104) • Weighing scales (MDC_DEV_SPEC_PROFILE_SCALE 4111) • Glucose meter (MDC_DEV_SPEC_PROFILE_GLUCOSE 4113) • Cardiovascular (MDC_DEV_SPEC_PROFILE_HF_CARDIO 4137) • Strength (MDC_DEV_SPEC_PROFILE_HF_STRENGTH 4138) • Activity Hub (MDC_DEV_SPEC_PROFILE_AI_ACTIVITY_HUB 4167) • Adherence monitor (MDC_DEV_SPEC_PROFILE_AI_MED_MINDER 4168) • Peak flow (MDC_DEV_SPEC_PROFILE_PEFM 4117) • Body composition analyser (MDC_DEV_SPEC_PROFILE_BCA 4116) • Basic electrocardiograph specialization/Heart rate profile or basic electrocardiograph Specialization/Simple ECG profile (MDC_DEV_SPEC_PROFILE_ECG 4102) • International normalized ratio (MDC_DEV_SPEC_PROFILE_COAG 4114) • Sleep Apnoea Breathing Therapy Equipment (MDC_DEV_SPEC_PROFILE_SABTE 4121) • Insulin Pump (MDC_DEV_SPEC_PROFILE_INSULIN_PUMP 4115) • Continuous Glucose Monitor (MDC_DEV_SPEC_PROFILE_CGM 4122) c. If (C_AG_DGC_016), some other additional device specializations may be contained in the wDevSpecializations array. 3. If the device has multiple interfaces, only one interface implements the USB PHDC device class (i.e., bInterfaceClass = 0x0F in the interface descriptor preceding the descriptors above or bDeviceClass = 0x0F in the device descriptor preceding the descriptors above).
Pass/Fail criteria	The above fields are as requested.
Notes	

TP Id	TP/PAN/PHD/TR/UDG/BV-001
TP label	QoS management

Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	QoS 1; C	QoS 2; C	
Test purpose		Check that: Service component that implements the Continua best.medium QoS bin utilizes the USB PHDC best.medium QoS bin to do this [AND] Service component that implements the Continua good.medium QoS bin utilizes the USB PHDC good.medium QoS bin to do this		
Applicability		C_AG_OXP_000 AND C_AG_UDG_001		
Other PICS		C_AG_DGC_011		
Initial condition		The service under test is in the Disconnected state.		
Test procedure		1. Connect the USB connector of the PHD to the simulated PHG, through the USB sniffer. 2. Capture the descriptors. 3. The field bmLatencyReliability of each BULK endpoint descriptor received is analysed. 4. If C_AG_DGC_011, the good.medium bit (1) is active. 5. The best.medium bit (3) is active.		
Pass/Fail criteria		The above fields are as requested.		
Notes		The rest of this test procedure is tested in TP/PLT/PHD/TR/DGC/BV-011.		

TP Id		TP/PAN/PHD/TR/UDG/BV-002		
TP label		USB Data rates		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Data_Rate 1; M	Data_Rate 2; R	Data_Rate 3; M
Test purpose		Check that: Service component does not use low speed (USB 1.1) [AND] Continua PAN wired USB components should implement USB 2.0 [AND] Continua PAN wired USB components shall implement at least USB 1.1 or any superior version compatible with USB 1.1		
Applicability		C_AG_OXP_000 AND C_AG_UDG_001		
Other PICS				
Initial condition		The service under test is in the Disconnected state.		
Test procedure		1. Connect the USB connector of the PHD to the simulated PHG, through the USB sniffer. 2. Capture the negotiation process and the device descriptor. 3. Check the data rate of the PHD during negotiation. 4. Inspect the device descriptor and check the field bcdUSB.		
Pass/Fail criteria		In step 3, the data rate must be set to Full Speed (FS) or High Speed (HS), but never Low Speed (LS) In step 4, indicate the value of the bcdUSB. A value of 0200h or greater (=USB2.0) is recommended, but a value of 0110h (USB1.1) or greater is also accepted.		
Notes				

A.4 Subgroup 1.1.3 – Bluetooth design guidelines (BDG)

TP Id		TP/PAN/PHD/TR/BDG/BI-000		
TP label		Service component is not allowed to initiate discovery		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Discovery_Pairing 2; R		
Test purpose		Check that: PHD should not be allowed to initiate a discovery procedure		
Applicability		C_AG_OXP_000 AND C_AG_BDG_001		
Other PICS				
Initial condition		The PHD under test and the simulated PHG are in the Disconnected state and they have not been paired before.		
Test procedure		NOTE: This test case must be executed manually. Bluetooth sniffer is needed to perform the verification required in this test case. 1. Turn on the PHD under test and enable Bluetooth transport. 2. With the simulated PHG and the Bluetooth sniffer, check if the PHD under test initiates a discovery process within 5 minutes.		
Pass/Fail criteria		The PHD under test should not initiate a discovery process within 5 minutes If it has initiated a discovery process, the test operator must include a warning message in the manual verdict.		
Notes		Due to CESL restrictions, this test case has to be executed manually. A Bluetooth sniffer is needed for this test case.		

TP Id		TP/PAN/PHD/TR/BDG/BI-001		
TP label		Abnormal cases management - Change of information without pairing		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Discovery_Pairing 8; M		
Test purpose		Check that: The PHD does not exchange data (except HDP SPD record and static information) with PHG for which a pairing has not been established		
Applicability		C_AG_OXP_000 AND C_AG_BDG_001		
Other PICS				
Initial condition		The PHD under test and the simulated PHG are in the Disconnected state and they have not been paired before.		
Test procedure		1. Reset the PHD under test to the default configuration and turn it on. 2. The simulated PHG initiates discovery, it finds the PHD under test, but it does not start the pairing process. 3. The simulated PHG waits until a 2 minute timeout expires. During this time, the PHD under test shall not exchange data (except HDP SDP record and static information) with the simulated PHG.		
Pass/Fail criteria		The PHD under test does not exchange data without pairing.		
Notes				

TP Id		TP/PAN/PHD/TR/BDG/BI-002		
TP label		Abnormal cases management - Pairing failure		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Notify 4; R	Notify 6; R	

Test purpose	Check that: When a pairing fails, the PHD should inform the user, whenever possible, whether the failure was because no data types are supported in common by both client component and service component (incompatible device), or the pairing failed (pairing failure) [AND] When any authentication/security failure is encountered by the PHD, it should notify the user whenever possible
Applicability	C_AG_OXP_000 AND C_AG_BDG_001 AND C_AG_BDG_002
Other PICS	
Initial condition	The PHD under test and the simulated PHG are in the Disconnected state and they have not been paired before.
Test procedure	1. Configure the simulated PHG with a supported device specialization different to the device specialization supported by the PHD under test. 2. Enable pairable mode in the simulated PHG. 3. Reset the PHD under test to the default configuration and turn it on. 4. The simulated PHG initiates a discovery process, it finds the PHD under test and starts a pairing process with it. The PHD under test should notify an error due to both devices not having any device specialization in common. 5. Configure the simulated PHG with a supported device specialization that matches the PHD under test device specialization. 6. Disable the pairable mode in the simulated PHG. 7. Turn off the PHD under test and reset it to the default configuration and turn it on. 8. The simulated PHG initiates a discovery process, it finds the PHD under test and starts a pairing process with it. The PHD under test should notify an error as the pairing cannot be completed. 9. Check if the PHD under test has notified the two previous errors using different procedures/indications.
Pass/Fail criteria	In step 3, the PHD under test should notify a pairing error. If this notification is not indicated, the test tool gives a Warning message. In step 8, the PHD under test should notify a pairing error. If this notification is not indicated, the test tool gives a Warning message. The PHD under test should issue different kind of indications for both pairing errors. If both indications are not different, the test tool gives a Warning message.
Notes	

TP Id		TP/PAN/PHD/TR/BDG/BV-000		
TP label		Successfully Discovery and Pairing process		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Discovery_Pairing 4; M	Discovery_Pairing 12; R	Notify 2; R
Test purpose		Check that: Once the PHD has been made discoverable, it shall support pairing with compatible PHGs. [AND] If a new pairing relationship is created, then the PHD should notify to the user whenever possible [AND] When the PHD is discoverable and successfully completes a pairing procedure, then it should immediately become undiscoverable		
Applicability		C_AG_OXP_000 AND C_AG_BDG_001		
Other PICS				

Initial condition	The PHD under test and the simulated PHG support the same device specialization, they are in the Disconnected state and they have not been paired before.
Test procedure	1. Turn on the PHD under test and configure it as a discoverable Bluetooth device, as stated in the product documentation. 2. The test tool simulated PHG initiates a discovery process, it discovers the PHD under test and it starts a pairing process with PHD under test. 3. When the PHD under test is paired, check if it notifies the user (by any procedure defined in the user manual). 4. The simulated PHG initiates a new discovery process. Check if the PHD under test is discoverable or not.
Pass/Fail criteria	In step 3, the PHD under test should show any indication to the user indicating a pairing has succeeded. If this notification is not indicated, the test tool gives a Warning message. In step 4, the PHD under test should not be discoverable. If it is discoverable, the test tool gives a Warning message.
Notes	

TP Id		TP/PAN/PHD/TR/BDG/BV-001_A		
TP label		Service component timer for discoverable mode		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Discovery_Pairing 11; R		
Test purpose		Check that: The PHD should provide a documented minimum duration for discoverable mode (decided by the vendor), once initiated, after which it ceases to be discoverable.		
Applicability		C_AG_OXP_000 AND C_AG_BDG_001		
Other PICS				
Initial condition		The PHD under test and the simulated PHG support the same device specialization, they are in the Disconnected state and they have not been paired before.		
Test procedure		1. Turn on the PHD under test and configure it as a discoverable Bluetooth device. 2. The simulated PHG waits a quantity of time Twait1: Twait1= Tdiscoverable – Tguard 3. When Twait1 expires, the simulated PHG initiates a discovery process. Check if the simulated PHG finds the PHD under test. 4. The simulated PHG waits a quantity of time Twait2 (from initial time = 0): Twait2 = Tdiscoverable + Tguard 5. When Twait2 expires, the simulated PHG initiates a new discovery process. Check if the simulated PHG finds the PHD under test.		
Pass/Fail criteria		In step 3, the PHD under test is discoverable. In step 5, the PHD under test should not be discoverable. If it is discoverable, the test tool gives a Warning message.		
Notes		Tdiscoverable is defined in PIXIT I_AG_BDG_001 Tguard = Tdiscoverable/2		

TP Id		TP/PAN/PHD/TR/BDG/BV-001_B		
TP label		Pairing prevented in non-discoverable state		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Discovery_Pairing 13; R		
Test purpose		Check that: If the PHD is able to prevent pairing while in non-discoverable states, then it does so		
Applicability		C_AG_OXP_000 AND C_AG_BDG_001 AND C_AG_BDG_003		
Other PICS				
Initial condition		The PHD under test and the simulated PHG support the same device specialization, they are in the Disconnected state and they have not been paired before.		
Test procedure		1. Turn on the PHD under test and configure it as non-discoverable Bluetooth device. 2. The simulated PHG initiates a discovery process, it does not find the PHD under test. 3. The simulated PHG initiates a pairing process with the PHD under test (although it has not been discovered).		
Pass/Fail criteria		In step 3, the PHD under test and the simulated PHG cannot be paired. If the pairing process can be completed successfully, the test tool gives a Warning message.		
Notes				

TP Id		TP/PAN/PHD/TR/BDG/BV-002		
TP label		Service component mode of "discoverable by client component"		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Discovery_Pairing 7; M	Discovery_Pairing 9; R	
Test purpose		Check that: Once PHD has been paired with a PHG, it shall remain possible to re-initiate the mode "discoverable by the client component (manager)" [AND] By default, PHD under test should not be discoverable unless it puts in that mode		
Applicability		C_AG_OXP_000 AND C_AG_BDG_001		
Other PICS				
Initial condition		The PHD under test and the simulated PHG support the same device specialization, they are in the Disconnected state and they have not been paired before.		
Test procedure		1. Reset the PHD under test to the default configuration and turn it on. 2. The simulated PHG initiates discovery. Check if the PHD under test is discoverable. 3. Set the PHD under test to "discoverable by the client (manager)" as defined in the product documentation. 4. The simulated PHG initiates a discovery process, it finds the PHD under test and it establishes a pairing with PHD under test. 5. Disconnect PHD under test and the simulated PHG 6. In the PHD under test, re-initiate the mode "discoverable by the client (manager)" as it is described in the product documentation. 7. The simulated PHG initiates another discovery process. Check if the simulated PHG finds the PHD under test.		
Pass/Fail criteria		In step 2, the PHD under test should not be discoverable. If it is discoverable, the test tool gives a Warning message. In step 7, the PHD under test shall be discoverable.		

Notes	

TP Id		TP/PAN/PHD/TR/BDG/BV-003		
TP label		HDP SDP Record contents		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Discoverable_mode 2; R	Discoverable_mode 3; M	Discoverable_mode 4: O
Test purpose		Check that: When possible, the PHD in "discoverable mode" should allow access to their SDP entries without first requiring a pairing to be established [AND] The specializations claimed in Continua certification shall match the list of specializations advertised in the PHD HDP SDP record [AND] PHD HDP SDP record may contain additional specialization identifiers that are not Continua certified		
Applicability		C_AG_OXP_000 AND C_AG_BDG_001		
Other PICS				
Initial condition		The PHD under test and the simulated PHG support the same device specialization, they are in the Disconnected state and they have not been paired before.		
Test procedure		NOTE: This test case must be executed manually. A Bluetooth sniffer is needed to perform the verification required in this test case. 1. Turn on the PHD under test and configure it as a discoverable Bluetooth device. 2. The simulated PHG initiates a discovery process, it finds the device, but it does not start the pairing process. 3. The simulated PHG accesses the PHD under test SDP record and recovers the Supported Features (MDEP List) attribute 4. If it is not possible to access the SDP record before pairing (step 3 cannot be executed), pair the PHD under test with the simulated PHG and then the simulated PHG accesses the PHD under test SDP record and recovers the Supported Features (MDEP List) attribute. 5. Check for each entry of the MDEP List attribute the MDEP Data Type element value. The MDEP List shall contain an entry per device specialization claimed in the Continua certification and the corresponding MDEP Data Type element value shall match with the Bluetooth Assigned number for each device specialization: • If Glucose meter specialization is going to be certified (C_AG_OXP_233 = TRUE) then MDEP Data Type element = 0x1011 (4113 decimal). • If Thermometer specialization is going to be certified (C_AG_OXP_234 = TRUE) then MDEP Data Type element= 0x1008 (4104 decimal) • If Pulse oximeter specialization is going to be certified (C_AG_OXP_235 = TRUE) then MDEP Data Type element = 0x1004 (4102 decimal) • If Blood pressure monitor specialization is going to be certified (C_AG_OXP_236 = TRUE) then MDEP Data Type element = 0x1007 (4103 decimal). • If Weighing scales specialization is going to be certified (C_AG_OXP_237 = TRUE) then MDEP Data Type element = 0x100F (4111 decimal) • If Cardiovascular specialization is going to be certified (C_AG_OXP_238 = TRUE) then MDEP Data Type element = 0x1029 (4137 decimal) • If Step counter sub-specialization (profile) is going to be certified (C_AG_OXP_239 = TRUE) then MDEP Data Type element = 0x1068 (4200 decimal). • If Strength fitness specialization is going to be certified (C_AG_OXP_240 = TRUE) then MDEP Data Type element = 0x102A (4138 decimal)		

	• If Adherence monitor specialization is going to be certified (C_AG_OXP_241 = TRUE) then MDEP Data Type element = 0x1048 (4168 decimal) • If Peak flow specialization is going to be certified (C_AG_OXP_243 = TRUE) then MDEP Data Type element = 0x1015 (4117 decimal) • If Activity hub specialization is going to be certified (C_AG_OXP_244 = TRUE) then MDEP Data Type element = 0x1047 (4167 decimal) • If Fall sensor sub-specialization (profile) is going to be certified (C_AG_OXP_245 = TRUE) then MDEP Data Type element = 0x1075 (4213 decimal) • If Motion sensor sub-specialization (profile) is going to be certified (C_AG_OXP_246 = TRUE) then MDEP Data Type element = 0x107B (4219 decimal) • If Enuresis sensor sub-specialization (profile) is going to be certified (C_AG_OXP_247 = TRUE) then MDEP Data Type element = 0x107D (4221 decimal) • If Contact closure sensor sub-specialization (profile) is going to be certified (C_AG_OXP_248 = TRUE) then MDEP Data Type element = 0x107E (4222 decimal) • If Switch Sensor sub-specialization (profile) is going to be certified (C_AG_OXP_249 = TRUE) then MDEP Data Type element = 0x1080 (4224 decimal) • If Dosage sensor sub-specialization (profile) is going to be certified (C_AG_OXP_250 = TRUE) then MDEP Data Type element = 0x1081 (4225 decimal) • If Water sensor sub-specialization (profile) is going to be certified (C_AG_OXP_251 = TRUE) then MDEP Data Type element = 0x1079 (4217 decimal) • If Smoke sensor sub-specialization (profile) is going to be certified (C_AG_OXP_252 = TRUE) then MDEP Data Type element = 0x1077 (4215 decimal) • If Property exit sensor sub-specialization (profile) is going to be certified (C_AG_OXP_253 = TRUE) then MDEP Data Type element = 0x107C (4220 decimal) • If Temperature sensor sub-specialization (profile) is going to be certified (C_AG_OXP_254 = TRUE) then MDEP Data Type element = 0x1082 (4226 decimal) • If Usage sensor sub-specialization (profile) is going to be certified (C_AG_OXP_255 = TRUE) then MDEP Data Type element = 0x107F (4223 decimal) • If PERS sensor sub-specialization (profile) is going to be certified (C_AG_OXP_256 = TRUE) then MDEP Data Type element = 0x1076 (4214 decimal) • If CO sensor sub-specialization (profile) is going to be certified (C_AG_OXP_257 = TRUE) then MDEP Data Type element = 0x1078 (4216 decimal) • If Gas sensor sub-specialization (profile) is going to be certified (C_AG_OXP_258 = TRUE) then MDEP Data Type element = 0x107A (4218 decimal) • If Body Composition Analyser specialization is going to be certified (C_AG_OXP_259 = TRUE) then MDEP Data Type element = 0x1014 (4116 decimal) • If Basic electrocardiograph specialization/Simple ECG profile (C_AG_OXP_261 = TRUE) is going to be certified then MDEP Data Type element = 0x1006 (4102 decimal) • If Basic electrocardiograph specialization/Heart rate profile (C_AG_OXP_262 = TRUE) is going to be certified then MDEP Data Type element = 0x1006 (4102 decimal) 6. Check for each entry of the MDEP List attribute the MDEP Data Type element value. The MDEP List may contain an entry per Continua device specialization that is not claimed in the Continua certification but it is supported by the PHD under test and the corresponding MDEP Data Type element value shall match with the Bluetooth Assigned number for each device specialization • If the PHD supports Glucose meter specialization (C_AG_OXP_204 = TRUE) and (C_AG_OXP_233 = FALSE) then MDEP Data Type element may contain 0x1011 (4113 decimal) value.

	• If the PHD supports Thermometer specialization (C_AG_OXP_205 = TRUE) and (C_AG_OXP_234 = FALSE) then MDEP Data Type element may contain 0x1008 (4104 decimal) value. • If the PHD supports Pulse oximeter specialization (C_AG_OXP_206 = TRUE) and (C_AG_OXP_235 = FALSE) then MDEP Data Type element may contain 0x1004 (4102 decimal) value. • If the PHD supports Blood pressure monitor specialization (C_AG_OXP_207 = TRUE) and (C_AG_OXP_236 = FALSE) then MDEP Data Type element may contain 0x1007 (4103 decimal) value. • If the PHD supports Weighing scales specialization (C_AG_OXP_208 = TRUE) and (C_AG_OXP_237 = FALSE) then MDEP Data Type element may contain 0x100F (4111 decimal) value. • If the PHD supports Cardiovascular specialization (C_AG_OXP_209 = TRUE) and (C_AG_OXP_238 = FALSE) then MDEP Data Type element may contain 0x1029 (4137 decimal) value. • If the PHD supports Step counter sub-specialization (profile) (C_AG_OXP_210 =TRUE) and (C_AG_OXP_239 = FALSE) then MDEP Data Type element may contain 0x1068 (4200 decimal) value. • If the PHD supports Strength fitness specialization (C_AG_OXP_211 = TRUE) and (C_AG_OXP_240 = FALSE) then MDEP Data Type element may contain 0x102A (4138 decimal) value. • If the PHD supports Adherence monitor specialization (C_AG_OXP_212 = TRUE) and (C_AG_OXP_241 = FALSE) then MDEP Data Type element may contain 0x1048 (4168 decimal) value. • If the PHD supports Peak flow specialization (C_AG_OXP_214 = TRUE) and (C_AG_OXP_243 = FALSE) then MDEP Data Type element may contain 0x1015 (4117 decimal) value. • If the PHD supports Activity hub specialization (C_AG_OXP_215 = TRUE) and (C_AG_OXP_244 = FALSE) then MDEP Data Type element may contain 0x1047 (4167 decimal) value. • If the PHD supports Fall sensor sub-specialization (profile) (C_AG_OXP_216 = TRUE) and (C_AG_OXP_245 = FALSE) then MDEP Data Type element may contain 0x1075 (4213 decimal) value. • If the PHD supports Motion sensor sub-specialization (profile) (C_AG_OXP_217 = TRUE) and (C_AG_OXP_246 = FALSE) then MDEP Data Type element may contain 0x107B (4219 decimal) value. • If the PHD supports Enuresis sensor sub-specialization (profile) (C_AG_OXP_218 = TRUE) and (C_AG_OXP_247= FALSE) then MDEP Data Type element may contain 0x107D (4221 decimal) value. • If the PHD supports Contact closure sensor sub-specialization (profile) (C_AG_OXP_219 = TRUE) and (C_AG_OXP_248 = FALSE) then MDEP Data Type element may contain 0x107E (4222 decimal) value. • If the PHD supports Switch sensor sub-specialization (profile) (C_AG_OXP_220 = TRUE) and (C_AG_OXP_249 = FALSE) then MDEP Data Type element may contain 0x1080 (4224 decimal) value. • If the PHD supports Dosage sensor sub-specialization (profile) (C_AG_OXP_221 = TRUE) and (C_AG_OXP_250 = FALSE) then MDEP Data Type element may contain 0x1081 (4225 decimal) value. • If the PHD supports Water sensor sub-specialization (profile) (C_AG_OXP_222 = TRUE) and (C_AG_OXP_251 = FALSE) then MDEP Data Type element may contain 0x1079 (4217 decimal) value. • If the PHD supports Smoke sensor sub-specialization (profile) (C_AG_OXP_223 = TRUE) and (C_AG_OXP_252 = FALSE) then MDEP Data Type element may contain 0x1077 (4215 decimal) value. • If the PHD supports Property exit sensor sub-specialization (profile) (C_AG_OXP_224 = TRUE) and (C_AG_OXP_253 = FALSE) then MDEP Data Type element may contain 0x107C (4220 decimal)

	• If the PHD supports Temperature sensor sub-specialization (profile) (C_AG_OXP_225 = TRUE) and (C_AG_OXP_254 = FALSE) then MDEP Data Type element may contain 0x1082 (4226 decimal) value. • If PHD supports Usage sensor sub-specialization (profile) (C_AG_OXP_226 = TRUE) and (C_AG_OXP_255 = FALSE) then MDEP Data Type element may contain 0x107F (4223 decimal) value. • If the PHD supports PERS sensor sub-specialization (profile) (C_AG_OXP_227 = TRUE) and (C_AG_OXP_256 = FALSE) then MDEP Data Type element may contain 0x1076 (4214 decimal) value. • If the PHD supports CO sensor sub-specialization (profile) (C_AG_OXP_228 = TRUE) and (C_AG_OXP_257 = FALSE) then MDEP Data Type element may contain 0x1078 (4216 decimal) value. • If the PHD supports Gas sensor sub-specialization (profile) (C_AG_OXP_229 = TRUE) and (C_AG_OXP_258 = FALSE) then MDEP Data Type element may contain 0x107A (4218 decimal) value. • If the PHD supports Body composition analyser specialization (C_AG_OXP_283 = TRUE) and (C_AG_OXP_259 = FALSE) then MDEP Data Type element may contain 0x1014 (4116 decimal) • If the PHD supports Basic electrocardiograph specialization/Simple ECG profile (C_AG_OXP_281 = TRUE) (C_AG_OXP_261 = FALSE) then MDEP Data Type element may contain 0x1006 (4102 decimal) • If the PHD supports Basic electrocardiograph specialization/Heart rate profile (C_AG_OXP_282 = TRUE) and (C_AG_OXP_262 = FALSE) is going to be certified then MDEP Data Type element may contain 0x1006 (4102 decimal)
Pass/Fail criteria	In step 3, the PHD should allow access to its SDP record. If it is not allowed the test operator must include a warning message in the manual verdict. In step 5 the specializations claimed in the Continua certification shall match the list of specializations advertised in the PHD under test HDP SDP record In step 6, the PHD under test HDP SDP record may contain other Continua device specializations that the PHD supports but are not going to be certified.
Notes	Bluetooth MDEP assigned numbers are available at https://www.bluetooth.org/Technical/AssignedNumbers/host_operating.htm

TP Id		TP/PAN/PHD/TR/BDG/BV-004		
TP label		Pairing data storage		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Discovery_Pairing 14; M		
Test purpose		Check that: PHD shall store the pairing data from at least the most recently paired device in such a way that the data will be retained through normal power interruptions, including battery replacement		
Applicability		C_AG_OXP_000 AND C_AG_BDG_001		
Other PICS				
Initial condition		The PHD under test and the simulated PHG are in the Disconnected state and they have not been paired before.		
Test procedure		1. Reset the PHD under test to the default configuration and turn it on. 2. The simulated PHG initiates a discovery process, it finds the PHD under test and it establishes a pairing with PHD under test. 3. Turn the PHD under test off by removing the batteries or unplugging the power supply. 4. Turn on the PHD under test again. 5. The simulated PHG initiates a Bluetooth connection with the PHD under test. Check if the pairing process is dispatched again.		

Pass/Fail criteria	In Step 5, the pairing process shall not be dispatched again because both devices have stored the pairing data from the previous pairing process.
Notes	

TP Id		TP/PAN/PHD/TR/BDG/BV-005		
TP label		FCS Data Channel		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	QoS 3; R		
Test purpose		Check that: When possible and appropriate to the device, Continua PAN wireless service components should use FCS for all data channel		
Applicability		C_AG_OXP_000 AND C_AG_BDG_001		
Other PICS		C_AG_BDG_004, C_AG_BDG_005		
Initial condition		The service under test and the simulated PHG are in the Disconnected state.		
Test procedure		Check PICS: C_AG_BDG_004 and C_AG_BDG_005		
Pass/Fail criteria		• If one of these PICS or both PICS are set to TRUE, the test case gives a warning message: "The Continua requirement that Continua wireless service components should use FCS for all data channels is probably not being met. It is recommended that you assess whether FCS is possible and appropriate for your device and enable it if so." • If both PICS are set to FALSE, the test case will not give a warning message.		
Notes				

TP Id		TP/PAN/PHD/TR/BDG/BV-006		
TP label		Secure Simple Pairing support		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Discovery_Pairing 19; M		
Test purpose		Check that: PHD shall support at least one of the following Bluetooth 2.1 pairing methods depending on its I/O capabilities and appropriate security for the PHD device type: Just Works, Numeric Comparison, or Passkey Entry		
Applicability		C_AG_OXP_000 AND C_AG_BDG_001		
Other PICS				
Initial condition		The PHD under test and the simulated PHG support the same device specialization, they are in the Disconnected state and they have not been paired before.		
Test procedure		1. Check the PHD under test Secure Simple Pairing support declared in PIXIT I_AG_BDG_004. 2. Check the PHD under test IO capabilities declared in PIXIT I_AG_BDG_005, the Man In The Middle (MITM) protection declared in PIXIT I_AG_BDG_006 and the Association Model declared in PIXIT I_AG_BDG_007 a. IF the PHD under test does not support MITM protection (PIXIT I_AG_BDG_006 = FALSE) THEN • IF the PHD under test supports Just Works Association Model (PIXIT I_AG_BDG_007 = 0) THEN the test tool simulated PHG is configured with NoInputOutput capabilities and without MITM support • IF the PHD under test supports the Numeric Comparison or the Passkey Entry Association Model (PIXIT I_AG_BDG_007 = 1 or 2) THEN the combination of IO capabilities, the Association Model and MITM support declared by the PHD under test in PIXITs is not feasible and the test case ends giving a FAIL verdict		

	due to inconsistency among the PHD under test SSP features declared in PIXITs b. IF the PHD under test supports MITM protection (PIXIT I_AG_BDG_006 = TRUE) THEN • IF the PHD under test supports the Just Works Association Model (PIXIT I_AG_BDG_007 = 0) THEN the combination of IO capabilities, Association Model and MITM support declared by the PHD under test in PIXITs is not feasible and the test case ends giving a FAIL verdict due to inconsistency among the PHD under test SSP features declared in PIXITs • IF the PHD under test supports the Numeric Comparison Association Model (PIXIT I_AG_BDG_007 = 1) and DisplayYesNo capabilities (PIXIT I_AG_BDG_005 = 1) THEN the test tool simulated PHG is configured with DisplayYesNo capabilities and with MITM support • IF the PHD under test supports the Numeric Comparison Association Model (PIXIT I_AG_BDG_007 = 1) and DisplayOnly or KeyboardOnly capabilities (PIXIT I_AG_BDG_005 = 0 or 2) THEN the combination of IO capabilities, Association Model and MITM support declared by the PHD under test in PIXITs is not feasible and the test case ends giving a FAIL verdict due to inconsistency among the PHD under test SSP features declared in PIXITs • IF the PHD under test supports the Passkey Entry Association Model (PIXIT I_AG_BDG_007 = 2) and DisplayOnly capabilities (PIXIT I_AG_BDG_005 = 0) THEN the test tool simulated PHG is configured with KeyboardOnly capabilities and with MITM support • IF the PHD under test supports the Passkey Entry Association Model (PIXIT I_AG_BDG_007 = 2) and DisplayYesNo capabilities (PIXIT I_AG_BDG_005 = 1) THEN the test tool simulated PHG is configured with KeyboardOnly capabilities and with MITM support • IF the PHD under test supports the Passkey Entry Association Model (PIXIT I_AG_BDG_007 = 2) and KeyboardOnly capabilities (PIXIT I_AG_BDG_005 = 2) THEN the test tool simulated PHG is configured with DisplayOnly capabilities and with MITM support • IF the PHD under test supports the Numeric Comparison or Passkey Entry Association Model (PIXIT I_AG_BDG_007 = 1 or 2) and NoInputNoOutput capabilities (PIXIT I_AG_BDG_005 = 3) THEN the combination of IO capabilities, Association Model and MITM support declared by the PHD under test in PIXITs is not feasible and the test case ends giving a FAIL verdict due to inconsistency among the PHD under test SSP features declared in PIXITs 3. Turn on the PHD under test and configure it as a discoverable Bluetooth device, as stated in the product documentation. 4. The test tool simulated PHG initiates a discovery process, it discovers the PHD under test and starts a pairing process with PHD under test.
Pass/Fail criteria	In step 1, the PHD under test supports Secure Simple Pairing (PIXIT I_AG_BDG_004 = TRUE). In step 2, the PHD under test SSP features declared in PIXIT are consistent. In step 4, the PHD under test completes the pairing process successfully.
Notes	

A.5 Subgroup 1.1.4 – Pulse oximeter device specialization design guidelines (PODG)

TP Id		TP/PLT/PHD/CLASS/PODG/BV-000		
TP label		Pulse Oximeter: PM-Store attributes		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	PODG PM_Store 4; M	PODG PM_Store 5; M	PODG PM_Store 6; M
		PODG General 2; C		
Test purpose		Check that: PM-Store object contains the specified attributes PM-Store Capab and PM-Store Label for Extended Configuration.		
Applicability		C_AG_OXP_173 AND C_AG_OXP_041 AND C_AG_OXP_000		
Other PICS				
Initial condition		The simulated PHG and the PHD under test are in the Operating state.		
Test procedure		1. The simulated PHG issues a "Remote Operation Invoke | Get" command with the handle set to the PM-Store and the attribute-id-list set to 0 to indicate all attributes. 2. The PHD response must contain: a. Mandatory attribute PM-Store-Capab ❑ attribute-id = MDC_ATTR_PM_STORE_CAPAB ❑ attribute-type = PmStoreCapab ❑ attribute-value.lenght=BITS-16 ❑ attribute-value= ▪ Bit 8 (pmsc-clear-seg-by-time-sup (8)) has to be clear.(This bit indicates that clearing by time range is supported). ▪ Bit 10 (pmsc-clear-segm-all-sup (10)) has to be set. (This bit indicates that clearing all segments is supported). b. Optional attribute PM-Store-Label ❑ attribute-id = MDC_ATTR_PM_STORE_LABEL_STRING ❑ attribute-type = OCTET STRING ❑ attribute-value.length <= 255 octets ❑ attribute-value = <Not relevant for this Test>		
Pass/Fail criteria		All checked values are as specified in the test procedure.		
Notes				

TP Id		TP/PLT/PHD/CLASS/PODG/BV-001		
TP label		Pulse Oximeter: PM-Store, PM-Segment attributes		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	PODG PM_Store 7; C	PODG PM_Store 8; C	
Test purpose		Check that: Continua PAN/ Sensor-LAN Pulse Oximeter service components shall implement the Sample-Period attribute of a PM-Store object, if the stored measurements are periodic and the Sample-Period attribute is not implemented in each of the PM-Segment objects created within that PM-Store object. [AND] If the Sample-Period is defined in both the PM-Store and in the PM-Segment(s), the PM-Segment attribute value shall take precedence		
Applicability		C_AG_OXP_173 AND C_AG_OXP_041 AND C_AG_OXP_000		
Other PICS				

Initial condition	The simulated PHG and the PHD under test are in the Operating state.
Test procedure	1. The simulated PHG issues a Get request for the PM-Store object with an attribute-id-list set to 0 to indicate all PM-Store attributes. 2. The PHD issues a GET response with the PM-Store attributes it supports: a. Conditional attribute Sample-Period ❑ attribute-id = MDC_ATTR_TIME_PD_SAMP ❑ attribute-type = RelativeTime ❑ attribute-value.length= 4 bytes ❑ attribute-value= <Not relevant for this Test> 3. The simulated PHG shall send a Get-Segment-Info object action for the PM-Store object with SegmSelection set to all-segments a. Conditional attribute Sample-Period ❑ attribute-id = MDC_ATTR_TIME_PD_SAMP ❑ attribute-type = RelativeTime ❑ attribute-value.length= 4 bytes ❑ attribute-value= <Not relevant for this test>
Pass/Fail criteria	The Attribute Sample-Period shall be implemented in PM-Store if it is not implemented in every PM-Segment.
Notes	

TP Id		TP/PLT/PHD/CLASS/PODG/BV-002		
TP label		Pulse Oximeter: PM-Segment attributes		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	PODG PM_Store 1; R	PODG PM_Store 2; M	PODG General 2; C
Test purpose		Check that: PM-Segment contain the specified attributes for Extended Configuration.		
Applicability		C_AG_OXP_173 AND C_AG_OXP_041 AND C_AG_OXP_000		
Other PICS				
Initial condition		The simulated PHG and the PHD under test are in the Operating state.		
Test procedure		1. The simulated PHG shall send a Get request for the PM-Store object with an attribute-id-list set to 0 to indicate all PM-Store attributes. 2. The PHD issues a GET response with the PM-Store attributes. 3. The simulated PHG shall send a Get-Segment-Info object action for the PM-Segment object with SegmSelection = all-segments to indicate the PM-Segments attributes of all available PM-Segments. 4. The PHD issues a response with the PM-Segment attributes it supports, the attributes of interest are: a. Attribute Segment-Start-Abs-Time is mandatory: ❑ attribute-id = MDC_ATTR_TIME_START_SEG ❑ attribute-type = AbsoluteTime ❑ attribute-value.length = 8 bytes ❑ attribute-value = ▪ century = ▪ year ≤ 99		

	▪ month ≤ 12 ▪ day ≤ 31 ▪ hour ≤ 24 ▪ minute ≤ 60 ▪ second ≤ 60 ▪ sec-fractions ≤ 100 b. Attribute Segment-End-Abs-Time is mandatory ❑ attribute-id = MDC_ATTR_TIME_END_SEG ❑ attribute-type = AbsoluteTime ❑ attribute-value.length = 8 bytes ❑ attribute-value = ▪ century = ▪ year ≤ 99 ▪ month ≤ 12 ▪ day ≤ 31 ▪ hour ≤ 24 ▪ minute ≤ 60 ▪ second ≤ 60 ▪ sec-fractions ≤ 100 c. Mandatory attribute PM-Segment-Entry-Map. ❑ attribute-id = MDC_ATTR_PM_SEG_MAP ❑ attribute-type = PmSegmentEntryMap ❑ attribute-value = Recommended values ▪ SegmEntryElemList.count = 2 i. SegmEntryElem #1: SpO2 - obj-class = MDC_MOC_VMO_METRIC_NU - metric-type = MDC_PART_SCADA | MDC_PULS_OXIM_SAT_O2 - HANDLE (shall be set to appropriate handle-id for SpO2) ii. SegmEntryElem #2: Pulse rate - obj-class = MDC_MOC_VMO_METRIC_NU - metric-type = MDC_PART_SCADA | MDC_PULS_OXIM_PULS_RATE - HANDLE (shall be set to appropriate handle-id for Pulse rate) ▪ OR SegmEntryElemList.count = 1 i. SegmEntryElem #1: SpO2 or Pulse rate - obj-class = MDC_MOC_VMO_METRIC_NU - metric-type = MDC_PART_SCADA | MDC_PULS_OXIM_SAT_O2 or MDC_PULS_OXIM_PULS_RATE - HANDLE (shall be set to appropriate handle-id for SpO2 or Pulse Rate)

Pass/Fail criteria	All attribute values are as specified in the test procedure. In the case that the PM-Segment-Entry-Map contains only one element (SpO2 or Pulse Rate object), there should be another segment with a PM-Segment-Entry-Map that contains (Pulse Rate if the first segment contains SpO2 measurement or SpO2 if the first segment contains Pulse Rate measurement).
Notes	

TP Id		TP/PLT/PHD/CLASS/PODG/BV-003		
TP label		Pulse Oximeter: Overlapped PM-Segments		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	PODG PM_Store 3; M		
Test purpose		Check that: Continua PAN/Sensor-LAN Pulse Oximeter service components shall create PM-segments within the same PM-store, if the PM-segment are overlapping in time		
Applicability		C_AG_OXP_173 AND C_AG_OXP_041 AND C_AG_OXP_000		
Other PICS		C_AG_OXP_009		
Initial condition		The simulated PHG and the PHD under test are in the Operating state.		
Test procedure		For each PM-Store object: 1. The simulated PHG shall send a Get-Segment-Info object action for the PM-Segment object with SegmSelection = all-segments to indicate the PM-Segments attributes of all available PM-Segments. 2. The PHD issues a response with the PM-Segment attributes it supports, the attributes of interest are: • Conditional attribute Segment-Start-Abs-Time ❑ attribute-id = MDC_ATTR_TIME_START_SEG ❑ attribute-type = AbsoluteTime ❑ attribute-value = <Record value for future comparison> • Conditional attribute Segment-End-Abs-Time ❑ attribute-id = MDC_ATTR_TIME_END_SEG ❑ attribute-type = AbsoluteTime ❑ attribute-value = <Record value for future comparison> 3. Check all PM-Segments time intervals (Segment-Start-Abs-Time and Segment-End-Abs-Time).		
Pass/Fail criteria		• In Step 3, overlapped PM-Segments must be included in the same PM-Store object.		
Notes				

A.6 Subgroup 1.1.5 – Cardiovascular design guidelines (CVDG)

TP Id		TP/PLT/PHD/CLASS/CVDG/BV-000		
TP label		Cardiovascular: Step Counter sub-specialization (profile)		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Cardio_DG 3; M	Cardio_DG 5; O	
	Spec	[ISO/IEEE 11073-20601-2015A] and [ISO/IEEE 11073-20601-2016C]		
	Testable items	ConfEventRep 35; M		
Test purpose		Check that: Continua PAN/Sensor-LAN step counter service components shall support the Session and Distance object in units of steps. [AND] Continua PAN/Sensor-LAN step counter service components may support the Subsession, Cadence, Speed, Distance (in meters and/or feet), Stride Length, or Energy Expended objects as defined in [ISO/IEEE 11073-10441]. [AND] Objects that are mandatory or conditional in the specialization remain mandatory or conditional in a profile Objects that are optional in the specialization may either remain optional or become mandatory within a profile		
Applicability		C_AG_OXP_172 AND C_AG_CV_001 AND C_AG_OXP_000		
Other PICS				
Initial condition		The PHD under test is in the Unassociated state.		
Test procedure		1. The simulated PHG receives an association request from the PHD under test. 2. The simulated PHG responds with an Association Response with result = "accepted-unknown-config". 3. The PHD responds with a roiv-cmip-confirmed-event report message with a MDC_NOTI_CONFIG event to send its configuration to the PHG. 4. A Session object and a Distance object shall be present. 5. A Distance object shall be present, with the Unit-Code attribute: a. Mandatory attribute Unit-Code ❑ attribute-id = MDC_ATTR_UNIT_CODE ❑ attribute-type = OID-Type (INT-U16) ❑ attribute-value.length = 2 bytes ❑ attribute-value = MDC_DIM_X_STEP 6. Subsession, Cadence, Speed, Stride Length and Energy Expended and additional Distance object may be present.		
Pass/Fail criteria		In steps 4, 5 and 6 checked values are as specified.		
Notes				

A.7 Subgroup 1.1.6 – Activity hub design guidelines (HUBDG)

<table>
<tr><td colspan="2">TP Id</td><td colspan="3">TP/PLT/PHD/CLASS/HUBDG/BV-000</td></tr>
<tr><td colspan="2">TP label</td><td colspan="3">Activity Hub sub-specializations (profiles)</td></tr>
<tr><td rowspan="8">Coverage</td><td>Spec</td><td colspan="3">[b-ITU-T H.810 (2015)]</td></tr>
<tr><td rowspan="5">Testable items</td><td>Hub_DG 1; M</td><td>Hub_DG 3; M</td><td>Hub_DG 5; M</td></tr>
<tr><td>Hub_DG 7; M</td><td>Hub_DG 9; M</td><td>Hub_DG 11; M</td></tr>
<tr><td>Hub_DG 13; M</td><td>Hub_DG 15; M</td><td>Hub_DG 17; M</td></tr>
<tr><td>Hub_DG 19; M</td><td>Hub_DG 21; M</td><td>Hub_DG 23; M</td></tr>
<tr><td>Hub_DG 25; M</td><td>Hub_DG 27; M</td><td></td></tr>
<tr><td>Spec</td><td colspan="3">[ISO/IEEE 11073-20601-2015A] and [ISO/IEEE 11073-20601-2016C]</td></tr>
<tr><td>Testable items</td><td>ConfEventRep 35; M</td><td></td><td></td></tr>
<tr><td colspan="2">Test purpose</td><td colspan="3">Check that:
An independent living activity hub that follows a profile supports the appropriate object.
[AND]
Objects that are mandatory or conditional in the specialization remain mandatory or conditional in a profile
Objects that are optional in the specialization may either remain optional or become mandatory within a profile</td></tr>
<tr><td colspan="2">Applicability</td><td colspan="3">C_AG_OXP_176 AND C_AG_OXP_181 AND C_AG_OXP_000 AND (C_AG_HUB_001 OR C_AG_HUB_002 OR C_AG_HUB_003 OR C_AG_HUB_004 OR C_AG_HUB_005 OR C_AG_HUB_006 OR C_AG_HUB_007 OR C_AG_HUB_008 OR C_AG_HUB_009 OR C_AG_HUB_010 OR C_AG_HUB_011 OR C_AG_HUB_012 OR C_AG_HUB_013 OR C_AG_HUB_014)</td></tr>
<tr><td colspan="2">Other PICS</td><td colspan="3"></td></tr>
<tr><td colspan="2">Initial condition</td><td colspan="3">The simulated PHG and the PHD under test are in the Configuring state.</td></tr>
<tr><td colspan="2">Test procedure</td><td colspan="3">1. The simulated PHG receives an association request from the PHD under test.
2. The simulated PHG responds with a result = accepted-unknown-config.
3. The PHD responds with a "Remote Operation Invoke | Confirmed Event Report" message with an MDC_NOTI_CONFIG event to send its configuration to the PHG. Check the ConfigObjectList:
a. obj-class (ConfigReport then ConfigObjectList (ConfigObject))
• field- type = OID-Type
• field-length = 2 bytes
• field- value= MDC_MOC_VMO_METRIC_ENUM
b. obj-handle (ConfigReport then ConfigObjectList (ConfigObject))
• field- type = HANDLE
• field-length = 2 bytes
• field- value= 0x00
c. attribute-id (ConfigReport then ConfigObjectList (ConfigObject)then AttributeList then attribute-id
• field- type = OID-Type
• field-length = 2 bytes
• field- value= MDC_ATTR_ID_TYPE (0x09 0x2F) then This attribute let us know the type of measurement
d. attribute-value(ConfigReport then ConfigObjectList (ConfigObject) then Attribute</td></tr>
</table>

	List), this value depends on the attribute type. The values we have to check are: ❑ IF the PHD supports Fall Sensor Specialization THEN the Fall Sensor object shall be present. ❑ IF the PHD supports Motion Sensor Specialization THEN the Motion Sensor object shall be present. ❑ IF the PHD supports Enuresis Sensor Specialization THEN the Enuresis Sensor object shall be present. ❑ IF the PHD supports Contact Closure Sensor Specialization THEN the Contact Closure Sensor object shall be present. ❑ IF the PHD supports Switch Sensor Specialization THEN the Switch Sensor object shall be present. ❑ IF the PHD supports Dosage Sensor Specialization THEN the Dosage Sensor object shall be present. ❑ IF the PHD supports Water Sensor Specialization THEN the Water Sensor object shall be present. ❑ IF the PHD supports Smoke Specialization THEN the Smoke object shall be present. ❑ IF the PHD supports Property Exit Sensor Specialization THEN the Property Exit Sensor object shall be present. ❑ IF the PHD supports Ambient Temperature Sensor Specialization THEN the Temperature Sensor object shall be present. ❑ IF the PHD supports Usage Sensor Specialization THEN the Usage Sensor object shall be present. ❑ IF the PHD supports PERS Sensor Specialization THEN the PERS Sensor object shall be present. ❑ IF the PHD supports CO Sensor Specialization THEN the CO Sensor object shall be present. ❑ IF the PHD supports Gas Sensor Specialization THEN the Gas Sensor object shall be present.
Pass/Fail criteria	All checked values are as specified in the test procedure.
Notes	

A.8 Subgroup 1.1.7 – ZigBee design guidelines (ZDG)

TP Id		TP/LAN/PHD/TR/ZDG/BV-000		
TP label		ZigBee QoS best.medium		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	ZQoS 1; M		
Test purpose		Check that: Continua Sensor-LAN service components that implement the Continua best.medium QoS bin shall utilize ZigBee APS acknowledgements		
Applicability		C_AG_OXP_000 AND C_AG_ZDG_001		
Other PICS				
Initial condition		The simulated PHG and the PHD under test are in the Operating state.		
Test procedure		1. The simulated PHG sends a GET request for an MDS object. 2. Check that the PHD utilizes APS-ack when it receives the GET message from the simulated PHG.		
Pass/Fail criteria		The service shall use APS-ack when it receives the GET message.		
Notes				

TP Id		TP/LAN/PHD/TR/ZDG/BV-001		
TP label		ZigBee One-to-Many. Endpoints and Associations		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	ZB Multiple Connections 1; M	Dominant Assoc 1; M	
Test purpose		Check that: PHD that establish multiple Sensor-LAN interface connections (ZigbBee One-to_Many) shall use a separate ZigBee endpoint for each [AND] Any PHD that establishes more than one, simultaneous connection to one or more PHGs at the same point in time shall create a ISO/IEEE 11073- 20601 Association to a PHG per connection		
Applicability		C_AG_OXP_000 AND C_AG_ZDG_001 AND C_AG_ZDG_002		
Other PICS				
Initial condition		Simulated PHG #1 (Coordinator), simulated PHG #2 and the PHD under test are disconnected.		
Test procedure		1. Start simulated PHG #1 as ZigBee coordinator. 2. Start simulated PHG #2 and join it to the simulated PHG #1 network. 3. Start the PHD under test and join it to the simulated PHG #1 network. 4. Simulated PHG #1 performs a Discovery in ZigBee network. It gets all endpoints available in this network. 5. Simulated PHG #1 selects one Continua End Point available in the PHD under test and creates a 11073 Protocol Tunnel with the PHD under test. 6. Force the PHD under test to associate with simulated PHG #1 and complete the association procedure until both reach the Operating state. 7. Simulated PHG #2 performs a Discovery in the ZigBee network. It gets all endpoints available in this network. 8. Simulated PHG #2 selects another Continua End Point available in the PHD under test (it		

	is a different End Point than that still used by Simulated PHG #1) and it creates a 11073 Protocol Tunnel with the PHD under test. 9. Force the PHD under test to associate with simulated PHG #2 and complete the association procedure until both reach the Operating state. 10. Check the Continua End Points used by the PHD in both associations.
Pass/Fail criteria	In Step 4, simulated PHG #1 discovers at least two End Points with Continua device specializations (Continua End Points) in the PHD under test. In Step 6, in the association with simulated manger #1 the PHD under test reaches the Operating state. In Step 9, in the association with simulated manger #2 the PHD under test reaches the Operating state. In Step 10, the PHD under test uses two different Continua End Points to associate with the simulated PHGPHGs #1 and #2.
Notes	

TP Id		TP/LAN/PHD/TR/ZDG/BV-002		
TP label		ZigBee One-to-Many. New Association 1		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Dominant Assoc 3; M		
Test purpose		Check that: PHDs that establish more than one, simultaneous connection to one PHG at the same point in time shall create a new association to that PHG if and only if all other connections are in the Unassociated or Operating state		
Applicability		C_AG_OXP_000 AND C_AG_ZDG_001 AND C_AG_ZDG_002		
Other PICS				
Initial condition		Simulated PHG #1 (Coordinator), simulated PHG #2 and the PHD under test are disconnected.		
Test procedure		1. Start simulated PHG #1 as ZigBee coordinator. 2. Start simulated PHG #2 and join it to the simulated PHG #1 network. 3. Start the PHD under test and join it to the simulated PHG #1 network. 4. Simulated PHG #1 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. 5. Simulated PHG #2 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. 6. Simulated PHG #1 selects one Continua End Point available in the PHD under test and creates a 11073 Protocol Tunnel with the PHD under test. 7. Force the PHD under test to associate with simulated PHG #1, but when the PHD under test sends the AARQ then simulated manger #1 does not respond (the PHD under test will try to associate with simulated PHG #1 during 3*TOassoc = 30 seconds). 8. In parallel with step 7, during the 3*TOassoc period: a. Simulated PHG #2 selects another Continua End Point available in the PHD under test (it is a different End Point than that still being used by simulated PHG #1) and it creates a 11073 Protocol Tunnel with the PHD under test b. Force the PHD under test to associate with simulated PHG #2.		
Pass/Fail criteria		In Step 4, simulated PHG #1 discovers at least two End Points with Continua device specializations (Continua End Points) in the PHD under test. In Step 7, simulated PHG #1 receives an AARQ message 4 times (RCassoc + 1 = 4). In parallel, in Step 8b, simulated PHG #2 does not receive the AARQ message within the 3*TOassoc period.		
Notes				

TP Id		TP/LAN/PHD/TR/ZDG/BV-003		
TP label		ZigBee One-to-Many. New Association 2		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Dominant Assoc 3; M		
Test purpose		Check that: PHDs that establish more than one, simultaneous connection to one PHG at the same point in time shall create a new association to that PHG if and only if all other connections are in the Unassociated or Operating state		
Applicability		C_AG_OXP_000 AND C_AG_ZDG_001 AND C_AG_ZDG_002		
Other PICS				
Initial condition		Simulated PHG #1 (Coordinator), Simulated PHG #2 and the PHD under test are disconnected.		
Test procedure		1. Start simulated PHG #1 as a ZigBee coordinator. 2. Start simulated PHG #2 and join it to simulated PHG #1 network. 3. Start the PHD under test and join it to simulated PHG #1 network. 4. Simulated PHG #1 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. 5. Simulated PHG #1 selects one Continua End Point available in the PHD under test and it creates a 11073 Protocol Tunnel with the PHD under test. 6. Force the PHD under test to associate with simulated PHG #1 and complete the association procedure until both reach the Operating state. 7. Simulated PHG #2 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. 8. Once the PHD under test and simulated PHG #1 are in the Operating state: a. Simulated PHG #2 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. b. Simulated PHG #2 selects another Continua End Point available in the PHD under test (it is a different End Point than the End Point that simulated PHG #1 is still using) and it creates a 11073 Protocol Tunnel with the PHD under test. c. Force the PHD under test to associate with simulated PHG #2 and complete the association procedure until both reach the Operating state.		
Pass/Fail criteria		In Step 4, simulated PHG #1 discovers at least two End Points with Continua device specializations (Continua End Points) in the PHD under test. In Step 7, in the association with simulated PHG #1 the PHD under test reaches the Operating state. In Step 8b, in the association with simulated PHG #2 the PHD under test reaches the Operating state.		
Notes				

TP Id		TP/LAN/PHD/TR/ZDG/BV-004		
TP label		ZigBee One-to-Many. Dominant Association 1 (Set Time)		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Dominant Assoc 4; M	Dominant Assoc 5; M	
Test purpose		Check that: PHDs shall have at most a single dominant ISO/IEEE Association at a single point in time AND PHDs shall not set any of following MDS-Time-Info attribute bits or PM-Store-Capab attribute		

	bits for other than its dominant association: mds-time-mgr-set-time, mds-time-capab-set-clock, pmsc-clear-segm-by-list-sup, pmsc-clear-segm-by-time-sup, pmsc-clear-segm-remove, pmsc-clear-segm-all-sup
Applicability	C_AG_OXP_000 AND C_AG_ZDG_001 AND C_AG_ZDG_002 AND C_AG_OXP_008
Other PICS	
Initial condition	Simulated PHG #1 (Coordinator), Simulated PHG #2 and the PHD under test are connected to the same ZigBee network.
Test procedure	1. Simulated PHG #1 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. Simulated PHG #1 selects one Continua End Point available in the PHD under test and creates a 11073 Protocol Tunnel with the PHD under test. 2. Force the PHD under test to associate with simulated PHG #1 and complete the association procedure until both reach the Operating state (Association #1). 3. Simulated PHG #2 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. 4. Simulated PHG #2 selects another Continua End Point available in the PHD under test (it is a different End Point than that being used by Simulated PHG #1) and it creates a 11073 Protocol Tunnel with the PHD under test. 5. Force the PHD under test to associate with simulated PHG #2 and complete the association procedure until both reach the Operating state (Association #2). 6. Through Association #1: a. Simulated PHG #1 sends a "Remote Operation Invoke | Get" command with the handle set to 0 (to request an MDS object) and the attribute-id-list set to 0 to indicate all attributes. b. The PHD under test responds with a "rors-cmip-get" service message in which the attribute-list contains a list of all implemented attributes of the MDS object. The attribute of interest of this test is MDSTimeInfo: ❑ attribute-id = MDC_ATTR_MDS_TIME_INFO (0x0A 0x45) ❑ attribute-type = MdsTimeInfo ❑ attribute-value = Record bits mds-time-mgr-set-time and mds-time-capab-set-clock values 7. Through Association #2: a. Simulated PHG #2 sends a "Remote Operation Invoke | Get" command with the handle set to 0 (to request an MDS object) and the attribute-id-list set to 0 to indicate all attributes. b. The PHD under test responds with a "rors-cmip-get" service message in which the attribute-list contains a list of all implemented attributes of the MDS object. The attribute of interest of this test is MDSTimeInfo: ❑ attribute-id = MDC_ATTR_MDS_TIME_INFO (0x0A 0x45) ❑ attribute-type = MdsTimeInfo ❑ attribute-value = Record bits mds-time-mgr-set-time and mds-time-capab-set-clock values 8. Compare the bits mds-time-mgr-set-time and mds-time-capab-set-clock values between Association #1 and Association #2: a. IF bits mds-time-mgr-set-time and/or mds-time-capab-set-clock are set to 1 in Association #1 THEN bits mds-time-mgr-set-time and mds-time-capab-set-clock both are set to 0 in Association #2 b. IF bits mds-time-mgr-set-time and/or mds-time-capab-set-clock are set to 1 in Association #2 THEN bits mds-time-mgr-set-time and mds-time-capab-set-clock both are set to 0 in Association #1
Pass/Fail criteria	In Step 8, mds-time-mgr-set-time and mds-time-capab-set-clock bits values in both Associations are as specified in test procedure.
Notes	

TP Id		TP/LAN/PHD/TR/ZDG/BV-005		
TP label		ZigBee One-to-Many. Dominant Association 2 (PM-Store Clear Segment)		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Dominant Assoc 4; M	Dominant Assoc 5; M	
Test purpose		Check that: PHDs shall have at most a single dominant ISO/IEEE 11073 Association at a single point in time AND PHDs shall not set any of following MDS-Time-Info attribute bits or PM-Store-Capab attribute bits for other than its dominant association: mds-time-mgr-set-time, mds-time-capab-set-clock, pmsc-clear-segm-by-list-sup, pmsc-clear-segm-by-time-sup, pmsc-clear-segm-remove, pmsc-clear-segm-all-sup		
Applicability		C_AG_OXP_000 AND C_AG_ZDG_001 AND C_AG_ZDG_002 AND C_AG_OXP_041 AND C_AG_OXP_071		
Other PICS				
Initial condition		Simulated PHG #1 (Coordinator), Simulated PHG #2 and the PHD under test are connected to the same ZigBee network.		
Test procedure		1. Simulated PHG #1 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. Simulated PHG #1 selects one Continua End Point available in the PHD under test and creates a 11073 Protocol Tunnel with the PHD under test. 2. Force the PHD under test to associate with simulated PHG #1 and complete the association procedure until both reach the Operating state (Association #1). 3. Simulated PHG #2 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. 4. Simulated PHG #2 selects another Continua End Point available in the PHD under test (it is a different End Point than that being used by Simulated PHG #1) and it creates a 11073 Protocol Tunnel with the PHD under test. 5. Force the PHD under test to associate with simulated PHG #2 and complete the association procedure until both reach the Operating state (Association #2). 6. Through Association #1: a. Simulated PHG #1 sends a "Remote Operation Invoke | Get" command with the handle set to 0 (to request an MDS object) and the attribute-id-list set to 0 to indicate all attributes. b. The PHD under test responds with a "rors-cmip-get" service message in which the attribute-list contains a list of all implemented attributes of the MDS object. The attribute of interest of this test is MDSTimeInfo: ❑ attribute-id = MDC_ATTR_MDS_TIME_INFO (0x0A 0x45) ❑ attribute-type = MdsTimeInfo ❑ attribute-value = Record bits mds-time-mgr-set-time and mds-time-capab-set-clock values c. Simulated PHG #1 sends a Get request for the PM-Store object with an attribute-id-list set to 0 to indicate all PM-Store attributes. d. The PHD under test responds with the PM-Store attribute list. The attribute of interest of this test is PMStoreCapab: ❑ attribute-id = MDC_ATTR_PM_STORE_CAPAB (0x0A 0x4D) ❑ attribute-type = PmStoreCapab ❑ attribute-value = Record bits pmsc-clear-segm-by-list-sup, pmsc-clear-segm-by-time-sup, pmsc-clear-segm-remove and pmsc-clear-segm-all-sup values 7. Through Association #2: a. Simulated PHG #2 sends a "Remote Operation Invoke | Get" command with the handle set to 0 (to request an MDS object) and the attribute-id-list set to 0 to indicate		

	all attributes. b. The PHD under test responds with a "rors-cmip-get" service message in which the attribute-list contains a list of all implemented attributes of the MDS object. The attribute of interest of this test is MDSTimeInfo: ❑ attribute-id = MDC_ATTR_MDS_TIME_INFO (0x0A 0x45) ❑ attribute-type = MdsTimeInfo ❑ attribute-value = Record bits mds-time-mgr-set-time and mds-time-capab-set-clock values c. Simulated PHG #2 sends a Get request for the PM-Store object with an attribute-id-list set to 0 to indicate all PM-Store attributes. d. The PHD under test responds with the PM-Store attribute list. The attribute of interest of this test is PMStoreCapab: ❑ attribute-id = MDC_ATTR_PM_STORE_CAPAB (0x0A 0x4D) ❑ attribute-type = PmStoreCapab ❑ attribute-value = Record bits pmsc-clear-segm-by-list-sup, pmsc-clear-segm-by-time-sup, pmsc-clear-segm-remove and pmsc-clear-segm-all-sup values 8. Compare bits mds-time-mgr-set-time, mds-time-capab-set-clock, pmsc-clear-segm-by-list-sup, pmsc-clear-segm-by-time-sup, pmsc-clear-segm-remove and pmsc-clear-segm-all-sup values between Association #1 and Association #2 a. IF any of bits mds-time-mgr-set-time, mds-time-capab-set-clock, pmsc-clear-segm-by-list-sup, pmsc-clear-segm-by-time-sup, pmsc-clear-segm-remove or pmsc-clear-segm-all-sup is set to 1 in Association #1 THEN all bits mds-time-mgr-set-time, mds-time-capab-set-clock, pmsc-clear-segm-by-list-sup, pmsc-clear-segm-by-time-sup, pmsc-clear-segm-remove and pmsc-clear-segm-all-sup are set to 0 in Association #2 b. IF any of bits mds-time-mgr-set-time, mds-time-capab-set-clock, pmsc-clear-segm-by-list-sup, pmsc-clear-segm-by-time-sup, pmsc-clear-segm-remove or pmsc-clear-segm-all-sup is set to 1 in Association #2 THEN all bits mds-time-mgr-set-time, mds-time-capab-set-clock, pmsc-clear-segm-by-list-sup, pmsc-clear-segm-by-time-sup, pmsc-clear-segm-remove and pmsc-clear-segm-all-sup are set to 0 in Association #1
Pass/Fail criteria	In step 8, mds-time-mgr-set-time, mds-time-capab-set-clock, pmsc-clear-segm-by-list-sup, pmsc-clear-segm-by-time-sup, pmsc-clear-segm-remove and pmsc-clear-segm-all-sup bits values in both associations are as specified in the test procedure.
Notes	

TP Id		TP/LAN/PHD/TR/ZDG/BV-006		
TP label		ZigBee One-to-Many. Set Time and Date-and-Time update		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Dominant Assoc 6; M		
Test purpose		Check that: PHDs that modified their clock based on the reception of a Set-Time action via its dominant association shall send an event report that contains the new Date-and-Time attribute value for all their non-dominant associations prior to sending any temporarily stored measurements and prior to starting a new transfer of a PM-Segment		
Applicability		C_AG_OXP_000 AND C_AG_ZDG_001 AND C_AG_ZDG_002 AND C_AG_OXP_008		
Other PICS				
Initial condition		Simulated PHG #1 (Coordinator), Simulated PHG #2 and the PHD under test are connected to the same ZigBee network.		
Test procedure		1. Simulated PHG #1 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. Simulated PHG #1 selects one Continua End Point available in the PHD under test and it creates a 11073 Protocol Tunnel with the PHD under test. 2. Force the PHD under test to associate with simulated PHG #1 and complete the		

	association procedure until both reach the Operating state (Association #1). 3. Simulated PHG #2 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. 4. Simulated PHG #2 selects another Continua End Point available in the PHD under test (it is a different End Point than that being used by Simulated PHG #1) and it creates a 11073 Protocol Tunnel with the PHD under test. 5. Force the PHD under test to associate with simulated PHG #2 and complete the association procedure until both reach the Operating state (Association #2). 6. Through Association #1: a. Simulated PHG #1 sends a "Remote Operation Invoke | Get" command with the handle set to 0 (to request an MDS object) and the attribute-id-list set to 0 to indicate all attributes. b. The PHD under test responds with a "rors-cmip-get" service message in which the attribute-list contains a list of all implemented attributes of the MDS object. The attribute of interest of this test is MDSTimeInfo: ❑ attribute-id = MDC_ATTR_MDS_TIME_INFO (0x0A 0x45) ❑ attribute-type = MdsTimeInfo ❑ attribute-value = Record bit mds-time-capab-set-clock value 7. Through Association #2: a. Simulated PHG #2 sends a "Remote Operation Invoke | Get" command with the handle set to 0 (to request an MDS object) and the attribute-id-list set to 0 to indicate all attributes. b. The PHD under test responds with a "rors-cmip-get" service message in which the attribute-list contains a list of all implemented attributes of the MDS object. The attribute of interest of this test is MDSTimeInfo: ❑ attribute-id = MDC_ATTR_MDS_TIME_INFO (0x0A 0x45) ❑ attribute-type = MdsTimeInfo ❑ attribute-value = Record bit mds-time-capab-set-clock value 8. Check bit mds-time-capab-set-clock value in Association #1 and Association #2. It must be set to 1 in one, and only one, Association 9. IF bit mds-time-capab-set-clock is set to 1 in Association #1 (dominant association) THEN a. Simulated PHG #1 sends a SET action through Association #1: ❑ CHOICE = SetTimeInvoke ❑ action-type = MDC_ACT_SET_TIME ❑ the action-info-args are SetTimeInvoke • date-time = century ≤ 99, year ≤ 99, month ≤ 12, day ≤ 31, hour ≤ 24, minute ≤ 60, second ≤ 60, sec-fractions ≤ 100 • accuracy = 0 b. The PHD under test responds through Association #1 with rors-cmip-confirmed-action with action-info-args empty. c. Force the PHD under test to acquire a new measurement and report it through Association #2. d. The PHD under test sends through Association #2 (non-dominant association) an event report (fixed or variable format) containing the new Date-and-Time attribute value of the MDS object. 10. IF bit mds-time-capab-set-clock is set to 1 in Association #2 (Dominant Association) THEN a. Simulated PHG #2 sends a SET action through Association #2: ❑ CHOICE = SetTimeInvoke ❑ action-type = MDC_ACT_SET_TIME ❑ the action-info-args are SetTimeInvoke

	• date-time = century ≤ 99, year ≤ 99, month ≤ 12, day ≤ 31, hour ≤ 24, minute ≤ 60, second ≤ 60, sec-fractions ≤ 100 • accuracy = 0 b. The PHD under test responds through Association #2 with rors-cmip-confirmed-action with action-info-args empty. c. Force the PHD under test to acquire a new measurement and report it through Association #1. d. The PHD under test sends through Association #1 (non-dominant association) an event report (fixed or variable format) containing the new Date-and-Time attribute value of the MDS object.
Pass/Fail criteria	In step 9.d or 10.d, the PHD sends through a Non-Dominant Association an event report (fixed or variable format) containing the new Date-and-Time attribute value of the MDS object.
Notes	

TP Id		TP/LAN/PHD/TR/ZDG/BV-008		
TP label		ZigBee One-to-Many. Close Dominant Association		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Dominant Assoc 9; O		
Test purpose		Check that: PHDs may close their dominant association		
Applicability		C_AG_OXP_000 AND C_AG_ZDG_001 AND C_AG_ZDG_002 AND C_AG_ZDG_003		
Other PICS		C_AG_OXP_008, C_AG_OXP_071		
Initial condition		Simulated PHG #1 (Coordinator), simulated PHG #2 and the PHD under test are connected to the same ZigBee network.		
Test procedure		1. Simulated PHG #1 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. Simulated PHG #1 selects one Continua End Point available in the PHD under test and creates a 11073 Protocol Tunnel with the PHD under test. 2. Force the PHD under test to associate with simulated PHG #1 and complete the association procedure until both reach the Operating state (Association #1). 3. Simulated PHG #2 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. Simulated PHG #2 selects another Continua End Point available in the PHD under test (it is a different End Point than that being used by Simulated PHG #1) and it creates a 11073 Protocol Tunnel with the PHD under test. 4. Force the PHD under test to associate with simulated PHG #2 and complete the association procedure until both reach the Operating state (Association #2). 5. Through Association #1: a. IF C_AG_OXP_008 THEN • Simulated PHG #1 sends a "Remote Operation Invoke | Get" command with the handle set to 0 (to request an MDS object) and the attribute-id-list set to 0 to indicate all attributes. • The PHD under test responds with a "rors-cmip-get" service message in which the attribute-list contains a list of all implemented attributes of the MDS object. • Record bits mds-time-mgr-set-time and mds-time-capab-set-clock values from MdsTimeInfo attribute. b. IF (C_AG_OXP_041 AND C_AG_OXP_071) THEN • Simulated PHG #1 sends a Get request for the PM-Store object with an attribute-id-list set to 0 to indicate all PM-Store attributes. • The PHD under test responds with the PM-Store attribute list. • Record bits pmsc-clear-segm-by-list-sup, pmsc-clear-segm-by-time-sup, pmsc-clear-segm-remove and pmsc-clear-segm-all-sup values from PmStoreCapab		

	attribute. 6. Through Association #2: a. IF C_AG_OXP_008 THEN • Simulated PHG #2 sends a "Remote Operation Invoke | Get" command with the handle set to 0 (to request an MDS object) and the attribute-id-list set to 0 to indicate all attributes. • The PHD under test responds with a "rors-cmip-get" service message in which the attribute-list contains a list of all implemented attributes of the MDS object. • Record bits mds-time-mgr-set-time and mds-time-capab-set-clock values from MdsTimeInfo attribute. b. IF (C_AG_OXP_041 AND C_AG_OXP_071) THEN • Simulated PHG #2 sends a Get request for the PM-Store object with an attribute-id-list set to 0 to indicate all PM-Store attribute. • The PHD under test responds with the PM-Store attribute list. • Record bits pmsc-clear-segm-by-list-sup, pmsc-clear-segm-by-time-sup, pmsc-clear-segm-remove and pmsc-clear-segm-all-sup values from PmStoreCapab attribute. 7. Compare bits mds-time-mgr-set-time, mds-time-capab-set-clock, pmsc-clear-segm-by-list-sup, pmsc-clear-segm-by-time-sup, pmsc-clear-segm-remove and pmsc-clear-segm-all-sup values between Association #1 and Association #2 and determine the dominant association (it is the association that has one of these bits set to 1). 8. Force the PHD under test to release the dominant association. 9. Check that the message sent by PHD under test sends through dominant association.
Pass/Fail criteria	In Step 9, the PHD under test sends one of the following messages: • Release Request with reason = normal (0) • Release Request with reason = configuration-change (2) • Abort with reason = undefined (0)
Notes	

TP Id		TP/LAN/PHD/TR/ZDG/BV-009		
TP label		ZigBee One-to-Many. Downgrade/Upgrade Dominant Association 1 (Set Time)		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Dominant Assoc 10; O	Dominant Assoc 11; O	
Test purpose		Check that: PHDs may downgrade their dominant association to become a non-dominant association [AND] PHDs that do not have a dominant association may upgrade an existing non-dominant association to become the dominant association		
Applicability		C_AG_OXP_000 AND C_AG_ZDG_001 AND C_AG_ZDG_002 AND C_AG_ZDG_004 AND C_AG_OXP_008		
Other PICS				
Initial condition		Simulated PHG #1 (Coordinator), simulated PHG #2 and the PHD under test are connected to the same ZigBee network.		
Test procedure		1. Simulated PHG #1 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. Simulated PHG #1 selects one Continua End Point available in the PHD under test and creates a 11073 Protocol Tunnel with the PHD under test. 2. Force the PHD under test to associate with simulated PHG #1 and complete the association procedure until both reach the Operating state (Association #1). 3. Simulated PHG #2 performs a discovery in the ZigBee network. It gets all the endpoints		

	available in this network. Simulated PHG #2 selects another Continua End Point available in the PHD under test (it is a different End Point than that being used by simulated PHG #1) and it creates a 11073 Protocol Tunnel with the PHD under test. 4. Force the PHD under test to associate with simulated PHG #2 and complete the association procedure until both reach the Operating state (Association #2). 5. Through Association #1: a. Simulated PHG #1 sends a "Remote Operation Invoke | Get" command with the handle set to 0 (to request an MDS object) and the attribute-id-list set to 0 to indicate all attributes. b. The PHD under test responds with a "rors-cmip-get" service message in which the attribute-list contains a list of all implemented attributes of the MDS object. The attribute of interest of this test is MDSTimeInfo: ❑ attribute-id = MDC_ATTR_MDS_TIME_INFO (0x0A 0x45) ❑ attribute-type = MdsTimeInfo ❑ attribute-value = Record bit mds-time-capab-set-clock value 6. Through Association #2: a. Simulated PHG #2 sends a "Remote Operation Invoke | Get" command with the handle set to 0 (to request an MDS object) and the attribute-id-list set to 0 to indicate all attributes. b. The PHD under test responds with a "rors-cmip-get" service message in which the attribute-list contains a list of all implemented attributes of the MDS object. The attribute of interest of this test is MDSTimeInfo: ❑ attribute-id = MDC_ATTR_MDS_TIME_INFO (0x0A 0x45) ❑ attribute-type = MdsTimeInfo ❑ attribute-value = Record bit mds-time-capab-set-clock value 7. Check bit mds-time-capab-set-clock value in Association #1 and Association #2. It must be set to 1 in one, and only one, association. The association with bit mds-time-capab-set-clock set to 1 is the Dominant Association 8. Force the PHD under test to change the Dominant Association to the other association (i.e., if the Dominant Association is association #1, the PHD under test must downgrade association #1 and upgrade association #2 or if the Dominant Association is association #2, the PHD under test must downgrade association #2 and upgrade association #1). 9. IF bit mds-time-capab-set-clock is set to 1 in association #1 (Dominant Association) THEN a. The PHD under test sends through association #1 (Dominant Association) a variable format event report containing the new Mds-Time-Info attribute value of MDS Object. Bits mds-time-mgr-set-time and mds-time-capab-set-clock are both set to 0 and association #1 becomes a Non-Dominant Association b. The PHD under test sends through association #2 (Non-Dominant Association) a variable format event report containing the new Mds-Time-Info attribute value of the MDS object. At least bit mds-time-capab-set-clock is set to 1 and association #2 becomes a Dominant Association. 10. IF bit mds-time-capab-set-clock is set to 1 in association #2 (Dominant Association) THEN a. The PHD under test sends through association #2 (Dominant Association) a variable format event report containing the new Mds-Time-Info attribute value of the MDS object. Bits mds-time-mgr-set-time and mds-time-capab-set-clock are both set to 0 and association #2 becomes a Non-Dominant Association b. The PHD under test sends through association #1 (Non-Dominant Association) a variable format event report containing the new Mds-Time-Info attribute value of the MDS object. At least bit mds-time-capab-set-clock is set to 1 and association #1 becomes a Dominant Association.
Pass/Fail criteria	In step 9 or 10, the PHD under test sends through Dominant and Non-Dominant Associations the messages detailed in the test procedure.
Notes	

TP Id		TP/LAN/PHD/TR/ZDG/BV-010		
TP label		ZigBee One-to-Many. Downgrade/Upgrade Dominant Association 2 (PM-Store Clear Segment)		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	Dominant Assoc 10; O	Dominant Assoc 11; O	
Test purpose		Check that: PHDs may downgrade their dominant association to become a non-dominant association [AND] PHDs that do not have a dominant association may upgrade an existing non-dominant association to become the dominant association		
Applicability		C_AG_OXP_000 AND C_AG_ZDG_001 AND C_AG_ZDG_002 AND C_AG_ZDG_004 AND C_AG_OXP_041 AND C_AG_OXP_071		
Other PICS				
Initial condition		Simulated PHG #1 (Coordinator), simulated PHG #2 and the PHD under test are connected to the same ZigBee network.		
Test procedure		1. Simulated PHG #1 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. Simulated PHG #1 selects one Continua End Point available in the PHD under test and creates a 11073 Protocol Tunnel with the PHD under test. 2. Force the PHD under test to associate with simulated PHG #1 and complete the association procedure until both reach the Operating state (association #1). 3. Simulated PHG #2 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. 4. Simulated PHG #2 selects another Continua End Point available in the PHD under test (it is a different End Point than that being used by simulated PHG #1) and it creates a 11073 Protocol Tunnel with the PHD under test. 5. Force the PHD under test to associate with simulated PHG #2 and complete the association procedure until both reach the Operating state (association #2). 6. Through Association #1: a. Simulated PHG #1 sends a Get request for the PM-Store object with an attribute-id-list set to 0 to indicate all PM-Store attributes b. The PHD under test responds with the PM-Store attribute list. The attribute of interest of this test is PMStoreCapab: ❑ attribute-id = MDC_ATTR_PM_STORE_CAPAB (0x0A 0x4D) ❑ attribute-type = PmStoreCapab ❑ attribute-value = Record bits pmsc-clear-segm-by-list-sup, pmsc-clear-segm-by-time-sup, pmsc-clear-segm-remove and pmsc-clear-segm-all-sup values 7. Through Association #2: a. Simulated PHG #2 sends a Get request for the PM-Store object with an attribute-id-list set to 0 to indicate all PM-Store attributes. b. The PHD under test responds with the PM-Store attribute list. The attribute of interest of this test is PMStoreCapab: ❑ attribute-id = MDC_ATTR_PM_STORE_CAPAB (0x0A 0x4D) ❑ attribute-type = PmStoreCapab ❑ attribute-value = Record bits pmsc-clear-segm-by-list-sup, pmsc-clear-segm-by-time-sup, pmsc-clear-segm-remove and pmsc-clear-segm-all-sup values 8. Check bits pmsc-clear-segm-by-list-sup, pmsc-clear-segm-by-time-sup, pmsc-clear-segm-remove and pmsc-clear-segm-all-sup values in Association #1 and Association #2. One or more of these bits must be set to 1 in one, and only one association. The association with one or more of these bits set is the Dominant Association. 9. Force the PHD under test to change the Dominant Association to the other association (i.e., if the Dominant Association is association #1, the PHD under test must downgrade		

	Association #1 and upgrade association #2 or if the Dominant Association is association #2, the PHD under test must downgrade association #2 and upgrade association #1). 10. IF one or more bits pmsc-clear-segm-by-list-sup, pmsc-clear-segm-by-time-sup, pmsc-clear-segm-remove and pmsc-clear-segm-all-sup are set to 1 in Association #1 (Dominant Association) THEN a. The PHD under test sends through Association #1 (Dominant Association) one of the following messages: • Release Request with reason = normal (0) • Release Request with reason = configuration-change (2) • Abort with reason = undefined (0) b. The PHD under test sends through Association #2 (Non-Dominant Association) one of the following messages: • Release Request with reason = normal (0) • Release Request with reason = configuration-change (2) • Abort with reason = undefined (0) 11. IF one or more bits pmsc-clear-segm-by-list-sup, pmsc-clear-segm-by-time-sup, pmsc-clear-segm-remove and pmsc-clear-segm-all-sup are set to 1 in association #2 (Dominant Association) THEN a. The PHD under test sends through association #1 (Dominant Association) one of the following messages: • Release Request with reason = normal (0) • Release Request with reason = configuration-change (2) • Abort with reason = undefined (0) b. The PHD under test sends through Association #2 (Non-Dominant Association) one of the following messages: • Release Request with reason = normal (0) • Release Request with reason = configuration-change (2) • Abort with reason = undefined (0)
Pass/Fail criteria	In step 10 or 11, the PHD under test sends through Dominant and Non-Dominant Associations the messages detailed in the test procedure.
Notes	

TP Id		TP/LAN/PHD/TR/ZDG/BV-011		
TP label		ZigBee One-to-Many. Timestamps		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	TimeStamp 1; M	TimeStamp 2; M	
Test purpose		Check that: PHDs shall do timestamping for data that is intended to be sent multiple times over different connections AND PHDs shall use the same timestamp for data that is transmitted multiple times		
Applicability		C_AG_OXP_000 AND C_AG_ZDG_001 AND (C_AG_OXP_182 OR C_AG_OXP_183 OR C_AG_OXP_184 OR C_AG_OXP_189)		
Other PICS				
Initial condition		Simulated PHG #1 (Coordinator), simulated PHG #2 and the PHD under test are connected to the same ZigBee network.		
Test procedure		1. Simulated PHG #1 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. Simulated PHG #1 selects one Continua End Point available in		

	the PHD under test and it creates a 11073 Protocol Tunnel with the PHD under test. 2. Force the PHD under test to associate with simulated PHG #1 and complete the association procedure until both reach the Operating state (association #1). 3. Simulated PHG #2 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. 4. Simulated PHG #2 selects another Continua End Point available in the PHD under test (it is a different End Point than that being used by simulated PHG #1) and it creates a 11073 Protocol Tunnel with the PHD under test. 5. Force the PHD under test to associate with simulated PHG #2 and complete the association procedure until both reach the Operating state (association #2). 6. Force the PHD under test to acquire a new measurement and report it through association #1 and association #2. 7. The PHD under test sends through association #1 an event report containing the measurement value and the timestamp. 8. The PHD under test sends through association #2 an event report containing the measurement value and the timestamp.
Pass/Fail criteria	In steps 7 and 8 the PHD under test reports the same measurement value and the same timestamp value.
Notes	

TP Id		TP/LAN/PHD/TR/ZDG/BV-012		
TP label		ZigBee One-to-Many. Timeout		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	TimeoutManagement 1; M	TimeoutManagement 2; R	
Test purpose		Check that: PHDs shall not cause a timeout on a particular connection, due to activity related to another existing connection AND PHDs that implement and use the PM-Store model should properly initialize the PM-Segment object Transfer-Timeout attribute to a value accounting for the maximum number of entries stored in the segment as well as the maximum number of supported ongoing segment transfers via other associations		
Applicability		C_AG_OXP_000 AND C_AG_ZDG_001 AND C_AG_ZDG_002 AND C_AG_OXP_041		
Other PICS				
Initial condition		Simulated PHG #1 (Coordinator), simulated PHG #2 and the PHD under test are connected to the same ZigBee network.		
Test procedure		1. Simulated PHG #1 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. Simulated PHG #1 selects one Continua End Point available in the PHD under test and it creates a 11073 Protocol Tunnel with the PHD under test. 2. Force the PHD under test to associate with simulated PHG #1 and complete the association procedure until both reach the Operating state (association #1). 3. Simulated PHG #2 performs a discovery in the ZigBee network. It gets all the endpoints available in this network. 4. Simulated PHG #2 selects another Continua End Point available in the PHD under test (it is a different End Point than that being used by simulated PHG #1) and it creates a 11073 Protocol Tunnel with the PHD under test 5. Force the PHD under test to associate with simulated PHG #2 and complete the association procedure until both reach the Operating state (Association #2) 6. Through association #1: a. Simulated PHG #1 sends through association #1 a "Get-Segment-Info". b. The PHD under test responds through association #1 with a rors-cmip-confirmed-		

	action with the PM-Segments attributes. The attribute of interest of this test is Transfer-Timeout: ❑ attribute-id = MDC_ATTR_TRANSFER_TIMEOUT (0x0A 0x64) ❑ attribute-type = RelativeTime ❑ attribute-value = Record attribute value 7. Through association #2: a. Simulated PHG #2 sends through association #2 a "Get-Segment-Info" b. The PHD under test responds through association #2 with a rors-cmip-confirmed-action with the PM-Segments attributes. The attribute of interest of this test is Transfer-Timeout: ❑ attribute-id = MDC_ATTR_TRANSFER_TIMEOUT (0x0A 0x64) ❑ attribute-type = RelativeTime ❑ attribute-value = Record attribute value 8. At the same point in time (i.e., concurrently): a. Through Association #1: 1. Simulated PHG #1 sends through association #1 a request for the PM-Segment Data to one of the PM-Segments that contains data: • Data APDU ❑ Type = Invoke | Confirmed Action ❑ Handle = obj-handle • action-type = MDC_ACT_SEG_TRIG_XFER ❑ TrigSegmDataXferReq = <Instance number of the selected PM-Segment that contains the data> 2. The PHD under test responds through association #1 with a rors-cmip-confirmed-action: • Data APDU ❑ Type = Invoke | Confirmed Action ❑ Handle = obj-handle • action-type = MDC_ACT_SEG_TRIG_XFER ❑ TrigSegmDataXferReq = <Same Instance number> | tsxr-succesful (0x00 0x00) 3. The PHD under test starts the PM-Segment data transfer through association #1. 4. Simulated PHG #1 waits until PM-Segment Transfer-Timeout to receive the complete PM-Segment. b. Through association #2: 1. Simulated PHG #2 sends through association #2 a request for the PM-Segment Data to one of the PM-Segments that contains data: • Data APDU ❑ Type = Invoke | Confirmed Action ❑ Handle = obj-handle • action-type = MDC_ACT_SEG_TRIG_XFER ❑ TrigSegmDataXferReq = <Instance number of the selected PM-Segment that contains the data> 2. The PHD under test responds through association #2 with rors-cmip-confirmed-action: • Data APDU ❑ Type = Invoke | Confirmed Action ❑ Handle = obj-handle

	• action-type = MDC_ACT_SEG_TRIG_XFER ❑ TrigSegmDataXferReq = <Same Instance number> | tsxr-succesful (0x00 0x00) 3. The PHD under test starts the PM-Segment data transfer through association #2. 4. Simulated PHG #2 waits until PM-Segment Transfer-Timeout to receive the complete PM-Segment.
Pass/Fail criteria	In step 8.a the PM-Segment is transferred completely through association #1 and simulated PHG #1 timeout does not expire. In Step 8.b the PM-Segment is transferred completely through association #2 and simulated PHG #2 timeout does not expire.
Notes	

A.9 Subgroup 1.1.10 – Basic electrocardiograph design guidelines (ECGDG)

TP Id		TP/PLT/PHD/CLASS/ECGDG/BV-000		
TP label		Basic ECG/Simple ECG: Recommended Layout for PM-Store		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	ECG_DG 3; C		
Test purpose		Check that: Continua PAN Basic 1-3 Lead ECG service components should follow the storage layout as shown in Figure 7 of IEEE Std 11073-10406-2011		
Applicability		C_AG_OXP_165 AND C_AG_OXP_041 AND C_AG_OXP_000		
Other PICS				
Initial condition		The simulated PHG and the PHD under test are in the Operating state.		
Test procedure		1. The simulated PHG shall send a Get-Segment-Info object action for the PM-Segment object with SegmSelection = all-segments to indicate the PM-Segments attributes of all available PM-Segments. 2. The PHD issues a response with the PM-Segment attributes it supports, the attributes of interest are: a. Mandatory attribute PM-Segment-Entry-Map. ❑ attribute-id = MDC_ATTR_PM_SEG_MAP ❑ attribute-type = PmSegmentEntryMap ❑ attribute-value = Recommended values ▪ SegmEntryElemList.count = 3 i. SegmEntryElem #1: Lead I - class-id = MDC_MOC_VMO_METRIC_SA_RT - metric-type = {MDC_PART_SCADA (2), MDC_ECG_ELEC_POTL_I (257)} - handle = Handle of Lead I object - attr-val-map = MDC_MOC_VMO_METRIC_SA_RT ii. SegmEntryElem #2: Lead II - class-id = MDC_MOC_VMO_METRIC_SA_RT - metric-type = {MDC_PART_SCADA (2), MDC_ECG_ELEC_POTL_II (258)} - handle = Handle of Lead II object - attr-val-map = MDC_MOC_VMO_METRIC_SA_RT		

	iii. SegmEntryElem #3: Lead III - class-id = MDC_MOC_VMO_METRIC_SA_RT - metric-type = {MDC_PART_SCADA (2), MDC_ECG_ELEC_POTL_III (317)} - handle = Handle of Lead III object - attr-val-map = MDC_MOC_VMO_METRIC_SA_RT
Pass/Fail criteria	The PM-Segment-Entry-Map should be implemented as specified in the test procedure. If the PM-Segment-Entry-Map is not implemented as recommended, by IEEE specification, then the test tool issues a Warning message.
Notes	

TP Id		TP/PLT/PHD/CLASS/ECGDG/BV-001		
TP label		Basic ECG: PM-Store-Label attribute		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	ECG_DG 6; M	HeartRate_DG 6; M	
Test purpose		Check that: PM-Store-Label attribute of the PM-Store object, shall not set a value of size larger than 255 octets		
Applicability		(C_AG_OXP_164 OR C_AG_OXP_165) AND C_AG_OXP_041 AND C_AG_OXP_000		
Other PICS				
Initial condition		The simulated PHG and the PHD under test are in the Operating state.		
Test procedure		1. The simulated PHG issues a "Remote Operation Invoke | Get" command with the handle set to the PM-Store and the attribute-id-list set to 0 to indicate all attributes. 2. The PHD response must contain: a. Optional attribute PM-Store-Label ❑ attribute-id = MDC_ATTR_PM_STORE_LABEL_STRING ❑ attribute-type = OCTET STRING ❑ attribute-value.length <= 255 octets ❑ attribute-value = <Not relevant for this Test>		
Pass/Fail criteria		If the PHD implements the PM-Store-Label attribute then it shall not have a size larger than 255.		
Notes				

TP Id		TP/PLT/PHD/CLASS/ECGDG/BV-002		
TP label		Basic ECG: Overlapped PM-Segments		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	ECG_DG 4; M	ECG_DG 5; M	HeartRate_DG 5; M
		HeartRate_DG 6; M		
Test purpose		Check that: For periodic measurements, Continua PAN Basic 1-3 Lead ECG and Heart Rate PHD shall create PM-segments within the same periodic PM-store, if the PM-segments are overlapping in time [AND] For aperiodic measurements, Continua PAN Basic 1-3 Lead ECG and Heart Rate PHD shall create PM-segments within the same aperiodic PM-store, if the PM-segments are overlapping in time		

Applicability	(C_AG_OXP_164 OR C_AG_OXP_165) AND C_AG_OXP_041 AND C_AG_OXP_000
Other PICS	C_AG_OXP_009, C_AG_OXP_014, C_AG_OXP_293
Initial condition	The simulated PHG and the PHD under test are in the Unassociated state.
Test procedure	1. The simulated PHG receives an association request from the PHD under test. 2. The simulated PHG responds with a result = accepted-unknown-config. 3. The PHD responds with a "Remote Operation Invoke | Confirmed Event Report" message with an MDC_NOTI_CONFIG event to send its configuration to the PHG. 4. IF C_AG_OXP_293 THEN: a. Once in Configuring/Sending GetMDS substate simulated PHG issues roiv-cmip-get command with handle set to 0 (to request for MDS object) and attribute-id-list set to 0 to indicate all attributes. b. The PHD responds with a rors-cmip-get service message in which the attribute-list contains a list of all implemented attributes of the MDS object. c. IF the mds-time-mgr-set-time bit is set: ❑ The PHG moves to Configuring/Sending Set Time substate and: • IF C_AG_OXP_009 THEN it issues the Set-Time action command. • IF C_AG_OXP_014 THEN it issues the Set-Base-Offset-Time action command. ❑ Once its internal time setting operation is completed, the PHD responds to the PHG. 5. Record the handle for the PM-Store objects and check the PM-Store-Capab attribute of each PM-Store: a. Mandatory attribute PM-Store-Capab ❑ attribute-id = MDC_ATTR_PM_STORE_CAPAB ❑ attribute-type = PmStoreCapab ❑ attribute-value.length = 2 bytes ❑ attribute-value = • For Periodic PM-Store objects = Bit 4 (pmsc-epi-seg-entries) is set to FALSE and Bit 5 (pmsc-peri-seg-entries) must be set to TRUE • For Aperiodic PM-Store objects = Bit 4 (pmsc-epi-seg-entries) is set to TRUE and Bit 5 (pmsc-peri-seg-entries) must be set to FALSE 6. For each Periodic PM-Store object: a. The simulated PHG shall send a Get-Segment-Info object action for the PM-Segment object with SegmSelection = all-segments to indicate the PM-Segments attributes of all available PM-Segments. b. The PHD issues a response with the PM-Segment attributes it supports, the attributes of interest are: IF the PHD supports Absolute Time THEN • Conditional attribute Segment-Start-Abs-Time ❑ attribute-id = MDC_ATTR_TIME_START_SEG ❑ attribute-type = AbsoluteTime ❑ attribute-value = <Record value for future comparison> • Conditional attribute Segment-End-Abs-Time ❑ attribute-id = MDC_ATTR_TIME_END_SEG ❑ attribute-type = AbsoluteTime ❑ attribute-value = <Record value for future comparison> ELSE (the PHD supports Base Offset Time) • Conditional attribute Segment-Start-BO-Time

	❑ attribute-id = MDC_ATTR_TIME_START_SEG_BO ❑ attribute-type = BaseOffsetTime ❑ attribute-value = <Record value for future comparison> • Conditional attribute Segment-End-BO-Time ❑ attribute-id = MDC_ATTR_TIME_END_SEG_BO ❑ attribute-type = BaseOffsetTime ❑ attribute-value = <Record value for future comparison> c. Check all PM-Segments time intervals (Segment-Start-Abs-Time/Segment-Start-BO-Time and Segment-End-Abs-Time/Segment-End-BO-Time) 7. For each Aperiodic PM-Store object a. The simulated PHG shall send a Get-Segment-Info object action for the PM-Segment object with SegmSelection = all-segments to indicate the PM-Segments attributes of all available PM-Segments. b. The PHD issues a response with the PM-Segment attributes it supports, the attributes of interest are: IF the PHD supports Absolute Time THEN • Conditional attribute Segment-Start-Abs-Time ❑ attribute-id = MDC_ATTR_TIME_START_SEG ❑ attribute-type = AbsoluteTime ❑ attribute-value = <Record value for future comparison> • Conditional attribute Segment-End-Abs-Time ❑ attribute-id = MDC_ATTR_TIME_END_SEG ❑ attribute-type = AbsoluteTime ❑ attribute-value = <Record value for future comparison> ELSE (the PHD supports Base Offset Time) • Conditional attribute Segment-Start-BO-Time ❑ attribute-id = MDC_ATTR_TIME_START_SEG_BO ❑ attribute-type = BaseOffsetTime ❑ attribute-value = <Record value for future comparison> • Conditional attribute Segment-End-BO-Time ❑ attribute-id = MDC_ATTR_TIME_END_SEG_BO ❑ attribute-type = BaseOffsetTime ❑ attribute-value = <Record value for future comparison> c. Check all PM-Segments time intervals (Segment-Start-Abs-Time/Segment-Start-BO-Time and Segment-End-Abs-Time/Segment-End-BO-Time)
Pass/Fail criteria	• In step 6.c, overlapped PM-Segments must be included in the same Periodic PM-Store object. • In step 7.c, overlapped PM-Segments must be included in the same Aperiodic PM-Store object.
Notes	

A.10 Subgroup 1.1.11 – NFC design guidelines (NDG)

TP Id		TP/TAN/PHD/TR/NDG/BV-000		
TP label		Completion of data exchange within an acceptable amount of time		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable	NFCUser 1; O	NFCUser 2; O	

	items			
Test purpose		Check that: A Continua TAN service component should complete data exchange within 3 seconds [AND] Continua TAN service component with appropriate UI capabilities should notify the user when data exchange is completed		
Applicability		C_AG_OXP_000 AND C_AG_NDG_001		
Other PICS		C_AG_OXP_009, C_AG_OXP_014, C_AG_OXP_293		
Initial condition		The simulated PHG and the PHD under test are in the Unassociated state.		
Test procedure		1. The simulated PHG receives an association request from the PHD under test. 2. The simulated PHG responds with a result = accepted-unknown-config. 3. The PHD responds with a roiv-cmip-confirmed-event report message with an MDC_NOTI_CONFIG event to send its configuration to the PHG. 4. The simulated PHG responds with a rors-cmip-confirmed-event-report with result "accepted". 5. IF C_AG_OXP_293 THEN: a. Once in Configuring/Sending GetMDS substate simulated PHG issues roiv-cmip-get command with handle set to 0 (to request for MDS object) and attribute-id-list set to 0 to indicate all attributes. b. The PHD responds with a rors-cmip-get service message in which the attribute-list contains a list of all implemented attributes of the MDS object. c. IF the mds-time-mgr-set-time bit is set: ❑ The PHG moves to Configuring/Sending Set Time substate and: 1. IF C_AG_OXP_009 THEN it issues the Set-Time action command. 2. IF C_AG_OXP_014 THEN it issues the Set-Base-Offset-Time action command. ❑ Once its internal time setting operation is completed, the PHD responds to the PHG. 6. Once in the Operating state, the simulated PHG issues roiv-cmip-get command with the handle set to 0 (to request an MDS object) and the attribute-id-list set to 0 to indicate all attributes. 7. The PHD responds with a "rors-cmip-get" service message in which the attribute-list contains a list of all implemented attributes of the MDS object. 8. The PHD under test takes a measurement and sends it to the simulated PHG. 9. The simulated PHG sends a Release Request to the PHD under test with reason = normal(0). 10. The PHD under test responds with a Release Response. 11. The PHD under test notifies the user that the data Exchange is completed.		
Pass/Fail criteria		• In step 10, the data exchange should be completed within 3 seconds. • In step 11, the PHD under test should notify the user when the data exchange is completed.		
Notes				

TP Id		TP/TAN/PHD/TR/NDG/BV-001		
TP label		NFC_QoS		
Coverage	**Spec**	[b-ITU-T H.810 (2015)]		
	Testable items	NFCQoS 1;M	NFCQoS 2;M	
Test purpose		Check that:		

	NFC PHDC transport does exchange all data on best.medium QoS bin
Applicability	C_AG_OXP_000 AND C_AG_NDG_001
Other PICS	C_AG_OXP_008, C_AG_OXP_009, C_AG_OXP_014
Initial condition	The simulated PHG and the PHD under test are in the Unassociated state.
Test procedure	NOTE – This test case must be executed manually. NFC sniffer is needed to perform the verification required in this test case. 1. The simulated PHG receives an association request from the PHD under test on the best.medium QoS bin. 2. The simulated PHG responds with a result = accepted-unknown-config. 3. The PHD responds with a "Remote Operation Invoke | Confirmed Event Report" message with an MDC_NOTI_CONFIG event to send its configuration to the PHG on the best.medium QoS bin. 4. The simulated PHG issues a "roiv-cmip-get" command with the handle set to 0 (to request an MDS object) and an empty attribute-id-list to indicate all attributes. 5. The PHD under test responds with a "rors-cmip-get" service message in which the attribute-list contains a list of all implemented attributes of the MDS object on the best.medium QoS bin. 6. If the PHD supports Set-Time, the simulated PHG sends a roiv-cmip-confirmed-action with action-type = MDC_ACT_SET_TIME (IF C_AG_OXP_009) or MDC_ACT_SET_BO_TIME (IF C_AG_OXP_014). 7. The PHD shall reply with rors-cmip-confirmed-action with action-type=MDC_ACT_SET_TIME (IF C_AG_OXP_009) or MDC_ACT_SET_BO_TIME (IF C_AG_OXP_014) on the best.medium QoS bin. 8. Make the PHD send at least one measurement on the best.medium QoS bin. 9. The simulated PHG sends an Association Release Request (Rlrq) message to the PHD under test, with reason =0 (normal). 10. The PHD under test shall respond with an Association Release Response (Rlre) message with reason =0 (normal) on the best.medium QoS bin.
Pass/Fail criteria	The PHD under test issues all responses on the best.medium QoS bin as defined by the steps above.
Notes	

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