International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

H.845.1

(04/2017)

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 5A: Weighing scales

Recommendation ITU-T H.845.1

International Telecommunication Union

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Recommendation ITU-T H.845.1

Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 5A: Weighing scales

Summary

Recommendation ITU-T H.845.1 provides a test suite structure (TSS) and the test purposes (TP) for weighing scales 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.845.1 is a transposition of Continua Test Tool DG2016, Test Suite Structure & Test Purposes, Personal Health Devices Interface; Part 5A: Device Specializations. Personal Health Device (Weighing Scale) (Version 1.6, 2016-09-20), 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*
1.0	ITU-T H.845.1	2015-01-13	16	11.1002/1000/12262
2.0	ITU-T H.845.1	2016-07-14	16	11.1002/1000/12938
3.0	ITU-T H.845.1	2017-04-13	16	11.1002/1000/13219

Keywords

Conformance testing, Continua Design Guidelines, e-health, IEEE 11073 device specialization, ITU-T H.810, personal area network, personal connected health devices, Personal Health Devices interface, touch area network, weighing scales.

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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.

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

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.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at http://www.itu.int/ITU-T/ipr/.

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Electronic attachment: 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.

Introduction

This Recommendation is a transposition of Continua Test Tool DG2016, Test Suite Structure & Test Purposes, Personal Health Device Interface; Part 5A: Device Specializations. Personal Health Device (Weighing Scale) (Version 1.6, 2016-09-20), 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
1.2	2012-10-05	Initial release for Test Tool DG2011. This is the same version as "TSS&TP_1.5_PAN-LAN_PART_5A_v1.2.doc" because new features included in [b-CDG 2011] do not affect the test procedures specified in this document.
1.3	2013-05-24	Initial release for Test Tool DG2012. It uses "TSS&TP_DG2011_PAN-LAN_PART_5A_v1.2.doc" as a baseline and adds new features included in [b-CDG 2012]: • max APDU size for GM, BCA and ECG
1.4	2014-01-24	Initial release for Test Tool DG2013. It uses "TSS&TP_DG2012_PAN-LAN_PART_5A_v1.3.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
1.5	2014-04-24	TM Lite & Doc Enhancements (Test Tool v4.0 Maintenance Release 1). It uses "TSS&TP_DG2013_PLT_PART_5A_v1.4.doc" as a baseline and adds new features included in Documentation Enhancements: • "Other PICS" row added
1.5	2015-07-01	Initial release for Test Tool DG2015. It is the same version as "TSS&TP_DG2013_PLT_PART_5A_v1.4.doc" because the new features included in [ITU-T H.810 (2015)]/[b-CDG 2015] do not affect the test procedures specified in this document.
1.6	2016-09-20	Initial release for Test Tool DG2016. It uses "TSS&TP_DG2015_PLT_PART_5A_v1.5.doc" as a baseline and adds new features included in [ITU-T H.810 (2016)]/[b-CDG 2016]

Recommendation ITU-T H.845.1

Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 5A: Weighing scales

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 5, subpart 5A.

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

[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 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 11073-10415] ISO/IEEE 11073-10415-2010, *Health Informatics – Personal health device communication – Part 10415: Device specialization – Weighing scale*.

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

DUT	Device Under Test
GUI	Graphical User Interface
INR	International Normalized Ratio
IP	Insulin Pump
IUT	Implementation Under Test
MDS	Medical Device System
NFC	Near Field Communication
PAN	Personal Area Network
PCO	Point of Control and Observation
PCT	Protocol Conformance Testing
PCHA	Personal Connected Health Alliance
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
TCWG	Test and Certification Working Group
TP	Test Purpose
TSS	Test Suite Structure
USB	Universal Serial Bus

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].	–
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 subgroup 1.3.1 (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: IEEE 20601 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: IEEE 20601 Optimized exchange protocol (OXP)
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    - Subgroup 2.3.3: Pulse oximeter (PO)
    - Subgroup 2.3.4: Blood pressure monitor (BPM)
    - Subgroup 2.3.5: Thermometer (TH)
    - Subgroup 2.3.6: Cardiovascular (CV)
    - Subgroup 2.3.7: Strength (ST)
    - Subgroup 2.3.8: Activity hub (HUB)
    - Subgroup 2.3.9: Adherence monitor (AM)
    - Subgroup 2.3.10: Insulin pump (IP)
    - Subgroup 2.3.11: Peak flow (PF)
    - Subgroup 2.3.12: Body composition analyser (BCA)
    - Subgroup 2.3.13: Basic electrocardiograph (ECG)
    - Subgroup 2.3.14: International normalized ratio (INR)
    - Subgroup 2.3.15: Sleep apnoea breathing therapy equipment (SABTE)
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    - 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 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 1.3.1: Weighing scales (WEG)

TP Id		TP/PLT/PHD/CLASS/WEG/BV-000		
TP label		MDS Object for Standard - Extended Configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10415]		
	Testable items	MDSClassAttr 1; M	MDSClassAttr 2; M	MDSClassAttr 3; M
		MDSClassAttr 4; M	MDSClassAttr 5; R	MDSClassAttr 6; R
		MDSClassAttr 7; R	MDSClassAttr 8; M	MDSServices 1; M
		Weighing.InfoExt 3; C	Weighing.Oper 1; M	
Test purpose		Check that: The Personal Health Device (PHD) supports a Get command that requests all attributes [AND] The MDS Object contains the attributes specified for a Weighing Scale PHD.		
Applicability		C_AG_OXP_174 AND C_AG_OXP_000		
Other PICS		C_AG_OXP_181		
Initial condition		The simulated Personal Health Gateway (PHG) and the PHD under test are in the Operating state.		
Test procedure		1. The simulated PHG issues a "roiv-cmip-get" command with the handle set to 0 (to request the MDS object) and the attribute-id-list set to 0 to indicate all attributes. 2. 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: MDS attributes: a. Mandatory attribute Dev-Configuration-Id ❑ If NOT C_AG_OXP_181 then attribute-value = 0x05DC (1500) ❑ If C_AG_OXP_181 then attribute-value = < between 0x4000 and 0x7FFF > b. Attribute System-Type must not be present. c. Mandatory attribute System-model ❑ attribute-id = MDC_ATTR_ID_MODEL (0x09 0x28) ❑ attribute-type = SystemModel ❑ attribute-value.length = <Variable> ❑ attribute-value ={Manufacturer, Model} d. If recommended Power-Status attribute is present: ❑ attribute-id = MDC_ATTR_POWER_STAT ❑ attribute-type = PowerStatus ❑ attribute-value.length = 2 bytes ❑ attribute-value = ▪ ON_MAINS (0x8000) or ON_BATTERY(0x4000) Only one of the following may be active: ▪ chargingFull(8), ▪ chargingTrickle(9), ▪ chargingOff(10).		

	e. If recommended Battery-Level attribute is present: ❑ attribute-id = MDC_ATTR_VAL_BATT_CHARGE ❑ attribute-type = BITS-16 ❑ attribute-value.length = 2 bytes ❑ attribute-value = <value between 0 and 100> If value >100, the meaning of the value is "undefined" f. If recommended Remaining-Battery-Time attribute is present: ❑ attribute-id = MDC_ATTR_TIME_BATT_REMAIN ❑ attribute-type = BatMeasure ❑ attribute-value.length = 6 bytes ❑ attribute-value = <4 bytes to define the value. 2 remaining bytes to define the units, which shall be set to one of: MDC_DIM_MIN (0x08 0xA0), MDC_DIM_HR (0x08 0xC0), MDC_DIM_DAY (0x08 0xE0) > g. Mandatory attribute System-Type-Spec-List ❑ attribute-id = MDC_ATTR_SYS_TYPE_SPEC_LIST ❑ attribute-type = TypeVerList ❑ attribute-value.length = 4 bytes ❑ attribute-value = {MDC_DEV_SPEC_PROFILE_SCALE (0x10 0x0F), 1}
Pass/Fail criteria	All checked values are as specified in the test procedure.
Notes	

TP Id		TP/PLT/PHD/CLASS/WEG/BV-001		
TP label		Body Weight Object for Standard Configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10415]		
	Testable items	Concepts 2; M	WeightNumClass 2; M	WeightNumClass 3; M
		WeightNumClass 4; M	WeightNumClass 6; R	WeightNumClass 8; M
		WeightNumClass 10: R	WeightNumClass 12; O	WeightNumClass 14; R
		WeightNumClass 16; R	WeightNumClass 18; R	WeightNumClass 20; M
		WeightNumClass 22; M	WeightNumClass 23; R	WeightNumClass 25; R
		WeightNumClass 27; C	WeightNumClass 28; R	WeightNumClass 30; C
Test purpose		Check that: Body Weight Object contains the attributes specified for Standard Configuration		
Applicability		C_AG_OXP_174 AND (NOT C_AG_OXP_181) AND C_AG_OXP_000		
Other PICS				
Initial condition		The simulated PHG and the PHD under test have been associated, but the PHD configuration is unknown for the simulated PHG, so the PHD and the simulated PHG will be in the Configuring 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. Check that the field Dev-Config-Id is set to 0x05DC (1500); if it is not, the PHG responds with an "unsupported-config" and waits for a new configuration. 5. Once the PHD under test sends a standard configuration, check that the only object present in the configuration shall be the Body Weight. 6. Body Weight object attributes must be: a. Mandatory attribute Handle ❑ attribute-id = MDC_ATTR_ID_HANDLE ❑ attribute-type = HANDLE ❑ attribute-value = 1 b. Mandatory attribute Type ❑ attribute-id = MDC_ATTR_ID_TYPE ❑ attribute-type = TYPE ❑ attribute-value = 0x00 0x02(MDC_PART_SCADA), 0xE1 0x40(MDC_MASS_BODY_ACTUAL 57664) c. Mandatory attribute Metric-Spec-Small (for standard and extended configuration) ❑ attribute-id = MDC_ATTR_METRIC_SPEC_SMALL ❑ attribute-type = MetricSpecSmall (BITS-16) ❑ attribute-value ≠ 0x00 0x00 ▪ bit 0 (mss-avail-intermittentt(0)) must be set ▪ bit 1 (mss-avail-stored-data(1)) must be set ▪ bit 2 (mss-upd-aperiodic(2)) must be set ▪ bit 3 (mss-msmt-aperiodic(3)) must be set ▪ bit 9 (mss-acc-agent-initiated) must be set d. Mandatory attribute Unit-Code ❑ attribute-id = MDC_ATTR_UNIT_CODE ❑ attribute-type = OID-Type ❑ attribute-value.length = INT-U16 ❑ attribute-value = MDC_DIM_KILO_G e. Mandatory attribute Attribute-Value-Map ❑ attribute-id = MDC_ATTR_ATRIBUTE_VAL_MAP ❑ attribute-type = AttrValMap (sequence of attribute-id(OID-Type) and attribute-length(INT-U16)) ❑ attribute-value map.length = 8 bytes ❑ attribute-value = MDC_ATTR_NU_VAL_OBS_SIMPLE | MDC_ATTR_TIME_STAMP_ABS 7. Check that there are no more present attributes in the initial configuration.
Pass/Fail criteria	All checked values are as specified in the test procedure. Besides, the only object present in the configuration shall be the Body Weight.
Notes	

TP Id		TP/PLT/PHD/CLASS/WEG/BV-002
TP label		Body Weight Object for Extended Configuration
Coverage	**Spec**	[ISO/IEEE 11073-10415]

	Testable items	Concepts 2; M	WeightNumClass 2; M	WeightNumClass 5; M
		WeightNumClass 7; R	WeightNumClass 9; M	WeightNumClass 11; R
		WeightNumClass 13; R	WeightNumClass 15; R	WeightNumClass 17; R
		WeightNumClass 19; R	WeightNumClass 21; M	WeightNumClass 24; R
		WeightNumClass 26; R	WeightNumClass 29; R	
Test purpose		Check that: Body Weight Object contains the attributes specified for Extended Configuration		
Applicability		C_AG_OXP_174 AND C_AG_OXP_181 AND C_AG_OXP_000		
Other PICS				
Initial condition		The simulated PHG and the PHD under test have been associated, but the PHD configuration is unknown for the simulated PHG, so the PHD and the simulated PHG will be in the Configuring 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. Check that the field Dev-Config-Id is in the extended range. If it is not, the simulated PHG must respond with an "unsupported-config" and wait for a new configuration. Repeat this step until a Dev-config-Id in the extended range is received. 5. Once the PHD under test sends an extended configuration, Body Weight object attributes must be: a. Mandatory attribute Type ❑ attribute-id = MDC_ATTR_ID_TYPE ❑ attribute-type = TYPE ❑ attribute-value = 0x00 0x02(MDC_PART_SCADA) , 0xE1 0x40(MDC_MASS_BODY_ACTUAL 57664) b. If Supplemental-Types is present: ❑ attribute-id = MDC_ATTR_SUPPLEMENTAL_TYPES ❑ attribute-type = SupplementalTypeList ❑ attribute-value.length =Sequence of TYPE (TYPE.length= 4 bytes) ❑ attribute-value = <Not relevant for this test> c. Mandatory attribute Metric-Spec_Small ❑ attribute-id = MDC_ATTR_METRIC_SPEC_SMALL ❑ attribute-type = MetricSpecSmall (BITS-16) ❑ attribute-value ≠ 0x00 0x00 ▪ Bit 0 (mss-avail-intermittentt(0)) must be set. ▪ Bit 1 (mss-avail-stored-data(1)) must be set. ▪ Bit 2 (mss-upd-aperiodic(2)) must be set. ▪ Bit 3 (mss-msmt-aperiodic(3)) must be set. ▪ Bit 9 (mss-acc-agent-initiated(9)) must be set. d. If attribute Metric-Structure-Small is present: ❑ attribute-id = MDC_ATTR_METRIC_STRUCTURE_SMALL ❑ attribute-type = MetricStructureSmall		

	❑ attribute-value.length = Sequence of (ms-struct.length =1byte(INT-U8) + ms-comp-no =1byte(INT-U8)) ❑ attribute-value = <Not relevant for this test> e. If attribute Measurement-Status is present: ❑ attribute-id = MDC_ATTR_MSMT_STAT ❑ attribute-type = MeasurementStatus ❑ attribute-value.length = 2 bytes.(BITS-16) ❑ attribute-value = <Not relevant for this test> f. If attribute Metric-Id is present: ❑ attribute-id = MDC_ATTR_ID_PHYSIO ❑ attribute-type = OID-Type ❑ attribute-value.length =2 bytes g. Only one attribute of Metric-Id and Metric-Id-List shall be present. h. If attribute Metric-Id-List is present: ❑ attribute-id = MDC_ATTR_ID_PHYSIO_LIS ❑ attribute-type = MetricIdList ❑ attribute-value.length= SEQUENCE OF OID-Type (INT-U16) ❑ attribute-value = <Not relevant for this test> ❑ The [Metric-Id-List] attribute shall be used if a compound observed value is used, which does not incorporate the Metric-Id directly. The order of the Metric-Id-List shall correspond to the order of the elements in the compound observed value. Only one attribute of Metric-Id and Metric-Id-List shall be present. i. If attribute Metric-Id-Part is present: ❑ attribute-id = MDC_ATTR_METRIC_ID_PART ❑ attribute-type = NomPartition ❑ attribute-value.length = INT-U16 ❑ attribute-value =<Not relevant for this test> j. Mandatory attribute Unit-Code ❑ attribute-id = MDC_ATTR_UNIT_CODE ❑ attribute-type = OID-Type ❑ attribute-value.length = INT-U16 ❑ attribute-value = MDC_DIM_KILO_G OR MDC_DIM_LB k. If attribute Source-Handle-Reference is present: ❑ attribute-id = MDC_ATTR_SOURCE_HANDLE_REF ❑ attribute-type = HANDLE ❑ attribute-value.length = INT-U16 ❑ attribute-value = <Not relevant for this test> l. If attribute Measure-Active-Period is present: ❑ attribute-id = MDC_ATTR_TIME_PD_MSMT_ACTIVE ❑ attribute-type = FLOAT-Type ❑ attribute-value.length = INT-U32 ❑ attribute-value = <Not relevant for this test> m. If attribute Accuracy is present: ❑ attribute-id = MDC_ATTR_NU_ACCUR_MSMT ❑ attribute-type = FLOAT-Type (INT-U32)

	❑ attribute-value.length = 4 bytes ❑ 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/WEG/BV-003		
TP label		Body Height Object		
Coverage	**Spec**	[ISO/IEEE 11073-10415]		
	Testable items	Concepts 4; M	HeightNumClass 1; O	HeightNumClass 4; M
		HeightNumClass 5; R	HeightNumClass 6; M	HeightNumClass 7; R
		HeightNumClass 8; R	HeightNumClass 9; R	HeightNumClass 10; R
		HeightNumClass 11; R	HeightNumClass 12; M	HeightNumClass 13; R
		HeightNumClass 14; R	HeightNumClass 15; R	
Test purpose		Check that: Body Height Object contains the attributes specified for Extended Configuration		
Applicability		C_AG_OXP_174 AND C_AG_OXP_181 AND C_AG_WEG_059 AND C_AG_OXP_000		
Other PICS				
Initial condition		The simulated PHG and the PHD under test have been associated, but the PHD configuration is unknown for the simulated PHG, so the PHD and the simulated PHG will be in the Configuring 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. Check that the field Dev-Config-Id is in the extended range; if it is not, the simulated PHG must respond with an "unsupported-config" and wait for a new configuration. 5. Once the PHD under test sends an extended configuration, check that the Height object attributes are: a. Mandatory attribute Type ❑ attribute-id = MDC_ATTR_ID_TYPE ❑ attribute-type = TYPE ❑ attribute-value=0x00 0x02(MDC_PART_SCADA) , 0xE1 0x44(MDC_LEN_BODY_ACTUAL 57668) b. If not recommended attribute Supplemental-Types is present: ❑ attribute-id = MDC_ATTR_SUPPLEMENTAL_TYPES ❑ attribute-type = SupplementalTypeList ❑ attribute-value.length = SEQUENCE OF (SIZE 4) ❑ attribute-value = <Not relevant for this test> c. Mandatory attribute Metric-Spec_Small		

	❑ attribute-id = MDC_ATTR_METRIC_SPEC_SMALL ❑ attribute-type = MetricSpecSmall (BITS-16) ❑ attribute-value ≠ 0x00 0x00 ▪ Bit 0 (mss-avail-intermittentt(0)) must be set. ▪ Bit 1 (mss-avail-stored-data(1)) must be set. ▪ Bit 2 (mss-upd-aperiodic(2)) must be set. ▪ Bit 3 (mss-msmt-aperiodic(3)) must be set. ▪ Bit 9 (mss-acc-agent-initiated(9)) must be set ▪ Bit 12 (mss-cat-manual(12)) Must be set, the metric is acquired manually. d. If not recommended attribute Metric-Structure-Small is present: ❑ attribute-id = MDC_ATTR_METRIC_STRUCTURE_SMALL ❑ attribute-type = MetricStructureSmall ❑ attribute-value.length = 2 bytes ❑ attribute-value = ▪ ms-struct = one of the following: ° ms-struct-simple (0x01) ° ms-struct-compound (0x02) ° ms-struct-reserved (0x03) ° ms-struct-compound-simple (0x04) ▪ ms-compound-no = one of the following: ° If ms-struct = ms-struct-simple THEN = 0 ° ELSE = maximum number of components in a compound value e. If recommended attribute Measurement-Status is present: ❑ attribute-id = MDC_ATTR_MSMT_STAT ❑ attribute-type = MeasurementStatus ❑ attribute-value.length = 2 bytes ❑ attribute-value = <Not relevant for this test> f. Only one attribute of Metric-Id and Metric-Id-List shall be present. g. If not recommended attribute Metric-Id is present: ❑ attribute-id = MDC_ATTR_ID_PHYSIO ❑ attribute-type = OID-Type ❑ attribute-value.length =INT-U16 h. If not recommended attribute Metric-Id-List is present: ❑ attribute-id = MDC_ATTR_ID_PHYSIO_LIS ❑ attribute-type = MetricIdList ❑ attribute-value.length= SEQUENCE OF OID-Type (INT-U16) ❑ attribute-value = ❑ The [Metric-Id-List] attribute shall be used if a compound observed value is used, which does not incorporate the Metric-Id directly. The order of the Metric-Id-List shall correspond to the order of the elements in the compound observed value. Only one attribute of Metric-Id and Metric-Id-List shall be present. i. If not recommended attribute Metric-Id-Partition is present: ❑ attribute-id = MDC_ATTR_METRIC_ID_PART ❑ attribute-type = NomPartition ❑ attribute-value.length = INT-U16

	j. Mandatory attribute Unit-Code ❑ attribute-id = MDC_ATTR_UNIT_CODE ❑ attribute-type = OID-Type ❑ attribute-value.length = INT-U16 ❑ attribute-value = MDC_DIM_CENTI_M or MDC_DIM_INCH k. If not recommended attribute Source-Handle-Reference is present: ❑ attribute-id = MDC_ATTR_SOURCE_HANDLE_REF ❑ attribute-type = HANDLE ❑ attribute-value.length = INT-U16 l. If not recommended attribute Measurement-Active-Period: ❑ attribute-id = MDC_ATTR_TIME_PD_MSMT_ACTIVE ❑ attribute-type = FLOAT-Type ❑ attribute-value.length = INT-U32 m. If recommended attribute Accuracy is present: ❑ attribute-id = MDC_ATTR_NU_ACCUR_MSMT ❑ attribute-type = FLOAT-Type (INT-U32) ❑ attribute-value.length = FLOAT-Type (INT-U32)
Pass/Fail criteria	All checked values are as specified in the test procedure.
Notes	

TP Id		TP/PLT/PHD/CLASS/WEG/BV-004		
TP label		Body Mass Index Object		
overage	**Spec**	[ISO/IEEE 11073-10415]		
	Testable items	MassNumClass 1; O	MassNumClass 3; M	MassNumClass 4; R
		MassNumClass 5; M	MassNumClass 6; R	MassNumClass 7; R
		MassNumClass 8; R	MassNumClass 9; R	MassNumClass 10; R
		MassNumClass 11; M	MassNumClass 12; M	MassNumClass 13; R
		MassNumClass 14; R		
Test purpose		Check that: Body Mass Index Object contains the attributes specified for Extended Configuration		
Applicability		C_AG_OXP_174 AND C_AG_WEG_056 AND C_AG_OXP_181 AND C_AG_OXP_000		
Other PICS				
Initial condition		The simulated PHG and the PHD under test have been associated, but the PHD configuration is unknown for the simulated PHG, so the PHD and the simulated PHG will be in the Configuring 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. Check that the field Dev-Config-Id is in the extended range; if it is not, the simulated PHG must respond with an "unsupported-config" and wait for a new configuration.
5. Once the PHD under test sends an extended configuration, check that Body Mass Index Object attributes are:
   a. Mandatory attribute Type
      - ❑ attribute-id = MDC_ATTR_ID_TYPE
      - ❑ attribute-type = TYPE
      - ❑ attribute-value=0x00 0x02(MDC_PART_SCADA) , 0xE1 0x50(MDC_RATIO_MASS_BODY_LEN_SQ 57680)
   b. If not recommended attribute Supplemental-Types:
      - ❑ attribute-id = MDC_ATTR_SUPPLEMENTAL_TYPES
      - ❑ attribute-type = SupplementalTypeList
      - ❑ attribute-value.length =Sequence of TYPE (TYPE.length= 4 bytes)
   c. Mandatory attribute Metric-Spec_Small
      - ❑ attribute-id = MDC_ATTR_METRIC_SPEC_SMALL
      - ❑ attribute-type = MetricSpecSmall (BITS-16)
      - ❑ attribute-value ≠ 0x00 0x00
        - Bit 0 (mss-avail-intermittentt(0)) must be set.
        - Bit 1 (mss-avail-stored-data(1)) must be set.
        - Bit 2 (mss-upd-aperiodic(2)) must be set.
        - Bit 3 (mss-msmt-aperiodic(3)) must be set.
        - Bit 9 (mss-acc-agent-initiated(9)) must be set.
        - If bit 14 is set(mss-cat_calculation(14)) is set, the metric represents a calculated value.
   d. If not recommended attribute Metric-Structure-Small:
      - ❑ attribute-id = MDC_ATTR_METRIC_STRUCTURE_SMALL
      - ❑ attribute-type = MetricStructureSmall
      - ❑ attribute-value.length = 2 bytes
      - ❑ attribute-value
        - ms-struct = one of the following:
          - ms-struct-simple (0x01)
          - ms-struct-compound (0x02)
          - ms-struct-reserved (0x03)
          - ms-struct-compound-simple (0x04)
        - ms-compound-no = one of the following:
          - If ms-struct = ms-struct-simple THEN = 0
          - ELSE = maximum number of components in a compound value
   e. If recommended attribute Measurement-Status is present:
      - ❑ attribute-id = MDC_ATTR_MSMT_STAT
      - ❑ attribute-type = MeasurementStatus
      - ❑ attribute-value.length = 2 bytes
      - ❑ attribute-value = <Not relevant for this test>
   f. Only one attribute of Metric-Id and Metric-Id-List shall be present.
   g. If not recommended attribute Metric-Id is present:
      - ❑ attribute-id = MDC_ATTR_ID_PHYSIO

	❑ attribute-type = OID-Type ❑ attribute-value.length =INT-U16 ❑ attribute-value = h. If not recommended attribute Metric-Id-List is present: ❑ attribute-id = MDC_ATTR_ID_PHYSIO_LIS ❑ attribute-type = MetricIdList ❑ attribute-value.length= SEQUENCE OF OID-Type (INT-U16) ❑ attribute-value = ❑ The [Metric-Id-List] attribute shall be used if a compound observed value is used, which does not incorporate the Metric-Id directly. The order of the Metric-Id-List shall correspond to the order of the elements in the compound observed value. Only one attribute of Metric-Id and Metric-Id-List shall be present. i. If not recommended attribute Metric-Id -Partition is present: ❑ attribute-id = MDC_ATTR_METRIC_ID_PART ❑ attribute-type = NomPartition ❑ attribute-value.length = INT-U16 ❑ attribute-value = one of the next ▪ nom-part-unspec (0x00 0x00) ▪ nom-part-obj (0x00 0x01) ▪ nom-part-metric (0x00 0x02) ▪ nom-part-alert (0x00 0x03) ▪ nom-part-dim (0x00 0x04) ▪ nom-part-vattr (0x00 0x05) ▪ nom-part-pgrp (0x00 0x06) ▪ nom-part-sites (0x00 0x07) ▪ nom-part-infrastruc (0x00 0x08) ▪ nom-part-fef (0x00 0x09) ▪ nom-part-ecg-extn (0x00 0x0A) ▪ nom-part-phd-dm (0x00 0x80) ▪ nom-part-phd-hf (0x00 0x81) ▪ nom-part-phd-ai (0x00 0x82) ▪ nom-part-ret-code(0x00 0xFF) ▪ nom-part-ext-nom (0x01 0x00) ▪ nom-part-priv (0x04 0x00) j. Mandatory attribute Unit-Code ❑ attribute-id = MDC_ATTR_UNIT_CODE ❑ attribute-type = OID-Type ❑ attribute-value.length = INT-U16 ❑ attribute-value = MDC_DIM_KG_PER_M_SQ k. If not recommended attribute Measure-Active-Period is present ❑ attribute-id = MDC_ATTR_TIME_PD_MSMT_ACTIVE ❑ attribute-type = FLOAT-Type ❑ attribute-value.length = INT-U32 ❑ attribute-value =

	l. Mandatory attribute Source-Handle-Reference ❑ attribute-id = MDC_ATTR_SOURCE_HANDLE_REF ❑ attribute-type = HANDLE ❑ attribute-value.length = INT-U16 ❑ attribute-value = It must be equal to the handle of another metric object in the configuration and it must point to an object that has a type of MDC_MASS_BODY_ACTUAL. m. If recommended attribute Accuracy is present: ❑ attribute-id = MDC_ATTR_NU_ACCUR_MSMT ❑ attribute-type = FLOAT-Type (INT-U32) ❑ attribute-value.length = FLOAT-Type (INT-U32)
Pass/Fail criteria	All checked values are as specified in the test procedure.
Notes	

TP Id		TP/PLT/PHD/CLASS/WEG/BV-005		
TP label		Events for Update Data		
Coverage	**Spec**	[ISO/IEEE 11073-10415]		
	Testable items	MDSEvents 3; M	MDSEvents 4; M	MDSEvents 5; M
		MDSEvents 6; M	Weighing.Service 1; M	Weighing.Service 2; M
Test purpose		Check that: Agent-initiated mode is supported for measurement data transmission and all types of event reports are used in confirmed mode [AND] The PHD sends the MDS-Dynamic-Data-Update-Fixed using a confirmed event report and it includes the event-info ScanReportInfoFixed [OR] The PHD sends the MDS-Dynamic-Data-Update-Var using a confirmed event report and it includes the event-info ScanReportInfoVar [OR] The PHD sends the MDS-Dynamic-Data-Update-MP-Fixed using a confirmed event report and it includes the event-info ScanReportInfoMPFixed [OR] The PHD sends the MDS-Dynamic-Data-Update-MP-Var using a confirmed event report and it includes the event-info ScanReportInfoMPVar		
Applicability		C_AG_OXP_174 AND C_AG_OXP_000 AND (C_AG_OXP_182 OR C_AG_OXP_183 OR C_AG_OXP_184 OR C_AG_OXP_189)		
Other PICS				
Initial condition		The simulated PHG and the PHD under test are in the Operating state.		
Test procedure		1. Take measurements for every supported object in the PHD under test. 2. Wait to receive every event report and check: a. message ▪ field- type = Event Report		

	▪ field-length = 2 bytes ▪ field- value=0x01 0x01 (EventReportArgumentSimple, confirmed) This field identifies the type of message sent by the PHD; for the confirmed event configuration, roiv-cmip-confirmed-event-report.
Pass/Fail criteria	Check that every received report is one of the following Data APDU and that it is confirmed. • MDC_NOTI_SCAN_REPORT_FIXED • MDC_NOTI_SCAN_REPORT_MP_FIXED • MDC_NOTI_SCAN_REPORT_VAR • MDC_NOTI_SCAN_REPORT_MP_VAR
Notes	

TP Id		TP/PLT/PHD/CLASS/WEG/BV-011		
TP label		Communication Model: Association Procedure		
Coverage	**Spec**	[ISO/IEEE 11073-10415]		
	Testable items	Weighing.Methods 5; M	Weighing.Association 1; M	Weighing.Association 2; M
		Weighing.Association 5; M	Weighing.Association 10; M	Weighing.Association 11; M
Test purpose		Check that: The association procedure data exchange is correct		
Applicability		C_AG_OXP_174 AND C_AG_OXP_000		
Other PICS		C_AG_OXP_002, C_AG_OXP_017		
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, the relevant field for this test: a. functional – units ❑ field- type = FunctionalUnits ❑ field-length = 4 bytes ▪ Bit 0 must be 0. ▪ Bits 1 and 2 may be set ▪ The rest of the bits must not be set b. dev-config-id ❑ field- type = ConfigId ❑ field-length = INT-U16 ❑ field- value = ▪ 0x05DC (1500) for standard configuration. ▪ Between 0x40 0x00 and 0x7F 0xFF for extended configuration. c. data-req-mode-flags (DataReqModeCapab) ❑ field- type = DataReqModeFlags ❑ field-length = BITS-16 If the PHD implements only the weighing scales specialization ❑ field- value = data-req-supp-init-agent will be set.		

	d. data-req-init-agent-count (DataReqModeCapab) ❑ field- type = INT-U8 ❑ field-length = = INT-U8 If the PHD implements only this Device Specialization: ❑ field- value = 0x01
Pass/Fail criteria	All checked attributes have proper values.
Notes	

TP Id		TP/PLT/PHD/CLASS/WEG/BV-012		
TP label		Configuring Procedure		
Coverage	**Spec**	[ISO/IEEE 11073-10415]		
	Testable items	Concepts 3; C	MDSEvents 1; M	HeightNumClass 2; C
		HeightNumClass 3; M	MassNumClass2; M	Weighing.Config 1; M
Test purpose		Check that: The configuring procedure is correct		
Applicability		C_AG_OXP_174 AND C_AG_OXP_000		
Other PICS		C_AG_OXP_010, C_AG_WEG_056, C_AG_WEG_059, C_AG_OXP_181		
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. a. APDU Type ❑ field- type = PrstApdu ❑ field-length =2 bytes ❑ field-value =0xE7 0x00 ❑ This value is for presentation APDU "prst" (PrstApdu). b. The following two bytes indicates the length of the message (could be helpful to analyse the fields). c. The following two bytes indicate the length of the OCTET STRING that contains the DataApdu (could be helpful to analyse the fields). d. invoke-id ❑ field- type = InvokeIDType ❑ field-length =INT-U16 ❑ field- value= ❑ This value identifies the message, the confirmed response that will be sent by the simulated PHG shall have the same invoke-id. e. Message ❑ field- type = ❑ field-length =two bytes ❑ field- value=0x01 0x01 (EventReportArgumentSimple)		

- ❑ This field identifies the type of message sent by the PHD; for the confirmed event configuration, roiv-cmip-confirmed-event-report.

f. The following two bytes indicate the length of the fields that make up the EventReportArgumentSimple.

g. obj-handle (EventReportArgumentSimple)

- ❑ field- type = HANDLE
- ❑ field-length =INT-U16

h. event-time (EventReportArgumentSimple)

- ❑ field- type = Relative Time
- ❑ field-length =INT-U32
- ❑ If the PHD does not support relative time:
  - field- value=0x FF 0x FF 0x FF 0x FF

i. event-type (EventReportArgumentSimple)

- ❑ field- type = OID-Type
- ❑ field-length =INT-U16
- ❑ field- value=0x 0D 0x 1C (MDC_NOTI_CONFIG)

j. The following two bytes indicate the length for event-info (ConfigReport). This value shall not be 0. It is the start of ConfigReport.

k. config-report-id (ConfigReport)

- ❑ field- type = ConfigId
- ❑ field-length = INT-U16
- ❑ field- value=
  - 0x 05DC for standard configuration.
  - <between 0x40 0x00 and 0x7F 0xFF> for extended configuration.

l. The following two bytes indicate the number of ConfigObjectList; this value shall not be 0. (The PHD will have at least one ObjectList)

m. The following two bytes indicate the length for ConfigObjectList, this value shall not be 0.

n. obj-class (ConfigReport = ConfigObjectList (ConfigObject))

- ❑ field- type = OID-Type
- ❑ field-length = INT-U16
- ❑ field- value= 0 x00 0x06 (MDC_MOC_VMO_METRIC_NU --6) OR 0x00 0x25 (MDC_MOC_VMS_MDS_SIMP --37)
- ❑ MDS- Object and Numeric object are only required for the weighing scales PHD, and for this reason only two classes identify codes that are possible.

o. obj-handle (ConfigReport = ConfigObjectList (ConfigObject))

- ❑ field- type = HANDLE
- ❑ field-length = INT-U16
- ❑ field- value=

p. The following two bytes indicate the number of Attributes; this value shall not be 0. (ConfigReport = ConfigObjectList (ConfigObject) = AttributeList)

q. The following two bytes indicates the length (bytes) for the Attributes List; this value shall not be 0.

r. attribute-id (ConfigReport = ConfigObjectList (ConfigObject) = Attribute List)

- ❑ field- type = OID-Type
- ❑ field-length = INT-U16

s. The following two bytes indicate the attribute-value.length, (i.e., length for the

	attribute value); this value shall not be 0. t. attribute-value(ConfigReport = ConfigObjectList (ConfigObject) Attribute List); this value depends on the attribute type. u. The last three fields will repeat until the number of bytes for Attributes List is completed. v. If Configuration is Standard then the body height numeric and body mass numeric object cannot be present. ❑ For every obj-class we have analysed in the message ▪ attribute-id = MDC_ATTR_ID_TYPE ▪ attribute-value !=MDC_PART_SCADA | MDC_LEN_BODY_ACTUAL OR MDC_PART_SCADA | MDC_RATIO_MASS_BODY_LEN_SQ
Pass/Fail criteria	Attributes of the configuration are properly formatted.
Notes	

TP Id		TP/PLT/PHD/CLASS/WEG/BV-016		
TP label		Body mass and body height numeric objects		
Coverage	**Spec**	[ISO/IEEE 11073-10415]		
	Testable items	Concepts 5; C	Concepts 6; M	
Test purpose		Check that: The body mass index (BMI) is a measure for indicating an over- or under-weight condition of a person and is defined as the individual's body weight, in kilograms, divided by the square of height, in meters [AND] In the case where pounds and inches are used as measurement units instead of kilograms and meters, the BMI may be calculated as follows BMI=703x (body weight in lb / body height squared in inc^2)		
Applicability		C_AG_OXP_174 AND C_AG_WEG_056 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. Take weight and height measurements with the PHD under test. 6. Wait for the simulated PHG to receive an event report with the weight, height and BMI.
Pass/Fail criteria	• Check PICS to make sure that if the BMI PIC is set, the Height PIC must also be set. • If the BMI object is present, the Height object must be present too. • Check that the BMI values are coherent with the height and weight values according to the formula defined in the specification.
Notes	

TP Id		TP/PLT/PHD/CLASS/WEG/BV-017		
TP label		Config Changes Service. Contextual Attribute.		
Coverage	**Spec**	[ISO/IEEE 11073-10415]		
	Testable items	WeightNumClass 1;M		
	Spec	[b-ITU-T H.810 (2015)]		
	Testable items	Communication 8; M		
Test purpose		Check that: Whenever a contextual attribute changes, the PHD shall report these changes to the PHG using an MDS object event prior to reporting any of the dependent values [AND] Service component reports configuration changes to future measurements only		
Applicability		C_AG_OXP_174 AND C_AG_WEG_060 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. If an attribute that is going to be changed is reported in the fixed format event report, take some measurements with the PHD under test. 2. Make a change to the contextual attribute Unit-Code for Body Weight Object (Pounds to kg or kg to pounds.) 3. The PHD shall send an MDS event report indicating the new contextual attribute value. 4. Take some more measurements. 5. Wait for the PHG to receive new event reports from the PHD which reports the measurements from step 4.		
Pass/Fail criteria		• The PHD sends an MDS event report to inform of the contextual attribute that has been changed. • Data has changed in accordance with the new contextual attribute.		
Notes				

TP Id		TP/PLT/PHD/CLASS/WEG/BV-018		
TP label		Config Changes Service. Height object Contextual Attribute.		
Coverage	**Spec**	[ISO/IEEE 11073-10415]		
	Testable items	WeightNumClass 1;M		
Test purpose		Check that: Whenever a contextual attribute changes, the PHD shall report these changes to the PHG using an MDS object event prior to reporting any of the dependent values.		
Applicability		C_AG_OXP_174 AND C_AG_WEG_059 AND C_AG_WEG_061 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. If an attribute that is going to be changed is reported in the fixed format event report, take some measurements with the PHD under test. 2. Make a change to the contextual attribute Unit-Code for Body Height Object (centimetres to inches or inches to centimetres). 3. The PHD shall send an MDS event report indicating the new contextual attribute value. 4. Take some more measurements. 5. Wait for the PHG to receive new event reports from the PHD which reports the measurements from step 4.		
Pass/Fail criteria		• The PHD sends an MDS event report to inform of the contextual attribute that has been changed. • Data has changed in accordance with the new contextual attribute.		
Notes				

TP Id		TP/PLT/PHD/CLASS/WEG/BV-019		
TP label		Operating State. PHG to PHD Maximum APDU Size		
Coverage	**Spec**	[ISO/IEEE 11073-20601-2015A] and [ISO/IEEE 11073-20601-2016C]		
	Testable items	CommonCharac 3; M		
	Spec	[ISO/IEEE 11073-10415]		
	Testable items	Weighing.CommModel 2; M		
Test purpose		Check that: The total size of the response do not exceed of the maximum APDU size established by the specialization [AND] A PHD according to this definition shall be capable of receiving an APDU up to the size of at least Nrx. For this standard it is Nrx = 224 octets		
Applicability		C_AG_OXP_000 AND C_AG_OXP_174		
Other PICS		C_AG_OXP_041, C_AG_OXP_100		

Initial condition	The simulated PHG and the PHD are in the Operating state.
Test procedure	1. The simulated PHG issues the "Remote Operation Invoke | Get" command with: a. Obj-handle set to 0 (to request the MDS object) b. attribute-id-list.count = 103 c. attribute-id-list: (MDC_ATTR_ID_MODEL, MDC_ATTR_SYS_ID, MDC_ATTR_DEV_CONFIG_ID) repeated 34 times followed by an additional MDC_ATTR_ID_MODEL 2. Check the response of the PHD. 3. The simulated PHG issues the "Remote Operation Invoke | Get" command with the handle set to 0 (to request the MDS object) and an empty attribute-id-list to indicate all attributes. 4. Check the response of the PHD.
Pass/Fail criteria	• In step 2, the PHD under test may respond with a rors-cmip-get listing all the requested attributes, or with a roer message. If PICS C_AG_OXP_100 =TRUE and the PHD does not respond with a rors-cmip-get message, it will respond with a roer message or rorj(resource-limitation) message; a WARNING will appear. o If the response is a get response, the total size of the response cannot exceed the sum of the APDU sizes of the supported specializations (limited to an absolute limit of 64512 octets): ▪ Pulse oximeter -> 9216 octets ▪ Weighing scales -> 896 octets ▪ Glucose meter -> 5120 octets or 64512 octets if PHD supports PM-Store ▪ Blood pressure -> 896 octets ▪ Thermometer -> 896 octets ▪ Independent activity hub -> 5120 octets ▪ Cardiovascular -> 64512 octets or 6624 octets PHD under test only supports Step Counter Profile ▪ Strength -> 64512 octets: ▪ Adherence monitor -> 1024 octets ▪ Peak flow -> 2030 octets ▪ Body composition analyser -> 7730 octets ▪ Basic ECG/Simple ECG -> 7168 octets or 64512 octets if PHD supports PM-Store ▪ Basic ECG/Heart rate -> 1280 octets or 64512 octets if PHD supports PM-Store ▪ International normalized ratio -> 896 octets or 64512 if PHD supports PM-Store o In case it responds with a roer, the reason must not be protocol-violation (code value 23) • In step 4, the PHD must respond with a rors-cmip-get message.
Notes	

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Printed in Switzerland
Geneva, 2017