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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 devices: PAN/LAN/TAN interface Part 5D: Blood pressure monitor: Agent

Recommendation ITU-T H.845.4

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Recommendation ITU-T H.845.4

Conformance of ITU-T H.810 personal health devices: PAN/LAN/TAN interface Part 5D: Blood pressure monitor: Agent

Summary

Recommendation ITU-T H.845.4 is a transposition of Continua Test Tool DG2013, Test Suite Structure & Test Purposes, PAN-LAN-TAN Interface; Part 5D: Device Specializations. Agent (Blood Pressure Monitor) (Version 1.4, 2014-01-24), that was developed by the Continua 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.845.4	2015-01-13	16	11.1002/1000/12265
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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 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.

INTELLECTUAL PROPERTY RIGHTS

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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/.

Table of Contents

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 DG2013, Test Suite Structure & Test Purposes, PAN-LAN-TAN Interface; Part 5D: Device Specializations. Agent (Blood Pressure Monitor) (Version 1.4, 2014-01-24), that was developed by the Continua Health Alliance. A number of versions of this specification existed before transposition and these can be found in the table below.

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_5D_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. This uses "TSS&TP_DG2011_PAN-LAN_PART_5D_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. This uses "TSS&TP_DG2012_PAN-LAN_PART_5D_v1.3.doc" as a baseline and adds new features included in [ITU-T H.810 (2015)]: • Adds glucose meter BLE • Adds BLE SSP support • Adds NFC new transport • Adds INR device specialization

Recommendation ITU-T H.845.4

Conformance of ITU-T H.810 personal health devices: PAN/LAN/TAN interface Part 5D: Blood pressure monitor: Agent

1 Scope

The scope of this Recommendation[1] is to provide a test suite structure and the test purposes (TSS & TP) for the PAN/LAN/TAN interface based on the requirements defined in the Continua Design Guidelines (CDG) [ITU-T H.810 (2015)]. The objective of this test specification is to provide a high probability of air interface interoperability between different devices.

The TSS and TP for the PAN/LAN/TAN interface document have been divided into ten parts. Each part is listed below:

– **Part 1:** Optimized exchange protocol [ISO/IEEE 11073-20601A] Agent
– **Part 2:** Optimized exchange protocol [ISO/IEEE 11073-20601A] Manager
– **Part 3:** Continua design guidelines. Agent
– **Part 4:** Continua design guidelines. Manager
– **Part 5:** Device specializations. Agent. This document is divided in 12 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 (Future development)
  - **Part 5K:** Peak flow
  - **Part 5L:** Body composition analyser
  - **Part 5M:** Basic electrocardiograph
  - **Part 5N:** International normalized ratio monitor
– **Part 6:** Device specializations. Manager
– **Part 7:** Continua design guidelines. Agent BLE
– **Part 8:** Continua design guidelines. Manager BLE
– **Part 9:** Personal health devices transcoding white paper. Agent
– **Part 10:** Personal health devices transcoding white paper. Manager

[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.

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 (2015)] Recommendation ITU-T H.810 (2015), *Interoperability design guidelines for personal health systems*.

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

[ISO/IEEE 11073-20601A] 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.
<http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=54331> with
<http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=63972>

[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 11073-20601A], where xx can be any number from 01 to 99, inclusive.

[ISO/IEEE 11073-10407] ISO/IEEE 11073-10407-2010, *Health informatics – Personal health device communication – Device specialization – Blood pressure monitor*.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

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

3.1.2 manager [ISO/IEEE 11073-20601A]: 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

DUT Device Under Test

GUI	Graphical User Interface
INR	International Normalized Ratio
IUT	Implementation Under Test
MDS	Medical Device System
NaN	Not a Number
NFC	Near Field Communication
PAN	Personal Area Network
PCT	Protocol Conformance Testing
PCO	Point of Control and Observation
PHD	Personal Healthcare Device
PHDC	Personal Healthcare Device Class
PHM	Personal Health Manager
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation extra Information for Testing
SABTE	Sleep Apnoea Breathing Therapy Equipment
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 name	Transposed as	Version	Description	Designation
2016 plus errata	[ITU-T H.810 (2016)]	6.1	Release 2016 plus errata noting all ratified bugs [ITU-T H.810 (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	[ITU-T H.810 (2015)]	5.1	Release 2015 plus errata noting all ratified bugs [ITU-T H.810 (2015)].	–
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-ITU-T H.810 (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 PAN/LAN/TAN interface have been divided into the main subgroups specified below. Annex A describes the TPs for subgroup 1.3.4 (shown in bold).

– Group 1: Agent (AG)
  - 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: 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) (Future development)
  - Subgroup 1.3.11: Peak flow (PF)
  - Subgroup 1.3.12: Body composition analyzer (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)
- 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)

– Group 2: Manager (MAN)
  - 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)
  - Group 2.3: Devices class specializations (CLASS)
    - Subgroup 2.3.1: Weighing scales (WEG)
    - Subgroup 2.3.2: Glucose meter (GL)
    - 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) (Future development)
    - Subgroup 2.3.11: Peak flow (PF)
    - Subgroup 2.3.12: Body composition analyzer (BCA)
    - Subgroup 2.3.13: Basic electrocardiograph (ECG)
    - Subgroup 2.3.14: International normalized ratio (INR)
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    - Subgroup 2.4.4: Whitepaper heart rate requirements (HR)
    - Subgroup 2.4.5: Whitepaper glucose meter requirements (GL)
    - Subgroup 2.4.6: Whitepaper weight scale requirements (WS)

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_Expression2 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 bellow:
  - 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.
    - AG: PAN/LAN Agent
    - MAN: PAN/LAN Manager
  - <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**: It 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**: It 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 1.3.4: Blood pressure monitor (BPM)

TP Id		TP/PLT/AG/CLASS/BPM/BV-000		
TP label		Get MDS Object: Mandatory, Conditional and Optional Attributes1		
Coverage	**Spec**	[ISO/IEEE 11073-10407]		
	Testable items	MDSBPAttr 1; M	MDSBPAttr 2; M	MDSBPAttr 3; M
		MDSBPAttr 4; M	MDSBPAttr 5; R	MDSBPAttr 6; R
		MDSBPAttr 7; R	BldExt 2; M	
Test Purpose		Check that: The Agent supports a Get command that requests all attributes [AND] The MDS Object contains the attributes specified for a Blood Pressure Monitor Agent.		
Applicability		C_AG_OXP_000 AND C_AG_OXP_177		
Other PICS		C_AG_OXP_181		
Initial condition		The simulated manager and the agent under test are in the operating state.		
Test procedure		1. The simulated manager issues "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 agent 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 = 0x02BC (700) ❑ IF C_AG_OXP_181 then attribute-value = < between 0x4000 and 0x7FFF > b Attribute System-Type not present c Mandatory attribute System-Type-Spec-List ❑ attribute-id = MDC_ATTR_SYS_TYPE_SPEC_LIST ❑ attribute-type = TypeVerList ❑ attribute-value.length = 4 bytes for each specialization supported ❑ attribute-value = {MDC_DEV_SPEC_PROFILE_BP , 1} must be found on the list d Mandatory attribute System-model ❑ attribute-id = MDC_ATTR_ID_MODEL (0x09 0x28) ❑ attribute-type = SystemModel ❑ attribute-value.length = <Variable> ❑ attribute-value ={Manufacturer, Model} e 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), but both bits cannot be active at the same time Only one of the following may be active: ■ chargingFull(8), ■ chargingTrickle(9), ■ chargingOff(10), ■ The rest of the bits must not be set. f IF Recommended Battery-Level attribute is present ❑ attribute-id = MDC_ATTR_VAL_BATT_CHARGE ❑ attribute-type = INT-U16 ❑ attribute-value.length = 2 bytes ❑ attribute-value = <value between 0 and 100> If value >100, the meaning of the value is "undefined" g 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) >.
Pass/Fail criteria	All checked values are as specified in the test procedure.
Notes	

TP Id		TP/PLT/AG/CLASS/BPM/BV-003		
TP label		Systolic, Diastolic, MAP Object for Standard Configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10407]		
	Testable items	SystDiast 3; M	SystDiast 5; M	SystDiast 7; R
		SystDiast 9; M	SystDiast 11; M	SystDiast 15; R
		SystDiast 17; M	SystDiast 19; R	SystDiast 21; M
		SystDiast 23; M	SystDiast 25; R	SystDiast 31; C
		SystDiast 37; R	SystDiast 39; R	SystDiast 41; R
		SystDiast 43; R	SystDiast 45; C	SystDiast 47; R
		SystDiast 49; R	SystDiast 51; R	SystDiast 54; M
		SystDiast 1; M		
Test Purpose		Check that: Systolic, Diastolic, MAP Object contains the attributes specified for Standard Configuration		
Applicability		C_AG_OXP_000 AND C_AG_OXP_177 AND (NOT C_AG_OXP_181)		

Other PICS	
Initial condition	The simulated manager and the agent under test have been associated, but the agent configuration is unknown to the simulated manager, so the agent and the simulated manager will be in the configuring state.
Test procedure	1. The simulated manager receives an association request from the agent under test. 2. The simulated manager responds with a result = accepted-unknown-config. 3. The agent responds with a "Remote Operation Invoke | Confirmed Event Report" message with an MDC_NOTI_CONFIG event to send its configuration to the manager. 4. Check that the field Dev-Config-Id is set to 0x02BC (700). If it is not the manager responds with a "unsupported-config" and waits for a new configuration. Repeat this step until a Dev-config-Id equal to 0x02BC is received. 5. Wait until the agent under test has sent a standard configuration. 6. The Systolic, Diastolic, Mean Arterial Pressure object must be defined in the configuration event report and its 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) , 0x4A 0x04 (MDC_PRESS_BLD_NONINV 18948) 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. ■ Bits 6, 7, 10, 11 and 15 must not be set d. Mandatory attribute Metric-Structure-Small ❑ attribute-id = MDC_ATTR_METRIC_STRUCTURE_SMALL ❑ attribute-type = MetricStructureSmall ❑ attribute-value.length = 2 bytes ❑ attribute-value = ■ ms-struct = ms-struct-compound-fix (0x03) ■ ms-compound-no = 3 e. Mandatory attribute Attribute-Value-Map ❑ attribute-id = MDC_ATTR_ATRIBUTE_VAL_MAP ❑ attribute-type = AttrValMap (sequence of attribute-id(OID-Type) ❑ attribute-length= 12 bytes ❑ attribute-value map.length = 8 bytes ❑ attribute-value = 0x0A 0x4C 0x00 0x02

	(MDC_ATTR_NU_CMPD_VAL_OBS_BASIC, 10 MDC_ATTR_TIME_STAMP_ABS, 8) ❑ attribute-id is the identifier for the attribute that are to be reported in fixed format (that are "described" in Attribute-Value-Map) and the length is the length for this attribute, for example: MDC_ATTR_TIME_STAMP_ABS (AbsoluteTime data type)will be composed by 8 fields INT-U8 , this length is 8 bytes(0x00 0x08). f. Mandatory attribute Metric-Id-List ❑ attribute-id = MDC_ATTR_ID_PHYSIO_LIS ❑ attribute-type = MetricIdList ❑ attribute-value.length= <variable>SEQUENCE OF OID-Type (INT-U16) ❑ attribute-value = MDC_PRESS_BLD_NONINV_SYS, MDC_PRESS_BLD_NONINV_DIA, then MDC_PRESS_BLD_NONINV_MEAN. 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. g. 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_MMHG h. Conditional attribute Absolute-Time-Stamp ❑ attribute-id = MDC_ATTR_TIME_STAMP_ABS ❑ attribute-type = AbsoluteTime ❑ attribute-value.length = 8 bytes ❑ If the standard configuration is not adjusted and the fixed format is used → This attribute is Mandatory. 7. Check that no other attributes are present in the initial configuration.
Pass/Fail criteria	All checked values are as specified in the test procedure.
Notes	

TP Id		TP/PLT/AG/CLASS/BPM/BV-003_A		
TP label		Systolic, Diastolic, MAP Object format for Standard Configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10407]		
	Testable items	SystDiast 53; M		
Test Purpose		Check that: Systolic, Diastolic, MAP measurement values are in the right order in event report		
Applicability		C_AG_OXP_000 AND C_AG_OXP_177 AND (NOT C_AG_OXP_181) AND C_AG_OXP_182		
Other PICS				
Initial condition		The simulated manager and the agent under test are in the unassociated state.		
Test procedure		1. The simulated manager receives an association request from the agent under test.		

	2. The simulated manager responds with a result = accepted-unknown-config. 3. The agent responds with a "Remote Operation Invoke | Confirmed Event Report" message with an MDC_NOTI_CONFIG event to send its configuration to the manager. 4. Check that the field Dev-Config-Id is set to 0x02BC (700), if it is not, Manager responds with a "unsupported-config" and waits for a new configuration. 5. Once the agent under test has sent a standard configuration and the simulated manager has sent a "roiv-cmip-get" to get all the attributes of the MDS, record the value of Date-and-Time. 6. Once the agent under test is in the operating state, take a measurement and record the value of the measurement. 7. Wait until the agent under test sends an Event Report to the simulated manager, the relevant fields are: a. event-type = MDC_NOTI_SCAN_REPORT_FIXED b. ScanReportInfoFixed ❑ obj-handle = 1 ❑ Cmpound Object Count = 3 ❑ obs-val-data.value = ■ Systolic (2 bytes) ■ Dyastolic (2 bytes) ■ MAP (2 bytes) ■ Time Stamp (8 bytes).
Pass/Fail criteria	• The received data must be coherent with that previously recorded. • The Time Stamp must be coherent with the one received in the MDS attribute. • The data must be received in this exact order.
Notes	

TP Id		TP/PLT/AG/CLASS/BPM/BV-004		
TP label		Systolic, Diastolic, MAP Object for Extended Configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10407]		
	Testable items	SystDiast 1; M	SystDiast 6; M	SystDiast 8; R
		SystDiast 12; R	SystDiast 14; R	SystDiast 16; R
		SystDiast 18; R	SystDiast 20; R	SystDiast 22; M
		SystDiast 26; R	SystDiast 38; R	SystDiast 52; R
Test Purpose		Check that: Systolic, Diastolic, MAP Object contains the attributes specified for Extended Configuration		
Applicability		C_AG_OXP_000 AND C_AG_OXP_177 AND C_AG_OXP_181		
Other PICS		C_AG_OXP_182		
Initial condition		The simulated manager and the agent under test have been associated, but the agent configuration is unknown to the simulated manager, so the agent and the simulated manager will be in the configuring state.		
Test procedure		1. The simulated manager receives an association request from the agent under test.		

2. The simulated manager responds with a result = accepted-unknown-config.
3. The agent responds with a "Remote Operation Invoke | Confirmed Event Report" message with an MDC_NOTI_CONFIG event to send its configuration to the manager.
4. Check that the field Dev-Config-Id is in the extended range. If it is not, the manager responds with a "unsupported-config" and waits for a new configuration. Repeat this step until a Dev-config-Id in the extended range is received.
5. Wait until the agent under test has sent an extended configuration.
6. The Systolic, Diastolic, Mean Arterial Pressure object must be defined in the configuration event report and its attributes must be:
   a. Mandatory attribute Type
      - ❑ attribute-id = MDC_ATTR_ID_TYPE
      - ❑ attribute-type = TYPE
      - ❑ attribute-value=0x00 0x02(MDC_PART_SCADA) , 0x4A 0x04 (MDC_PRESS_BLD_NONINV 18948)
   b. Mandatory attribute Unit-Code
      - ❑ attribute-id = MDC_ATTR_UNIT_CODE
      - ❑ attribute-type = OID-Type
      - ❑ attribute-value.length = INT-U16
      - ❑ attribute-value = MDC_DIM_MMHG OR MDC_DIM_KILO_PASCAL
   c. 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)
      - ❑ attribute-value = <Not relevant for this test>
   d. IF Recommended attribute Metric-Structure-Small
      - ❑ attribute-id = MDC_ATTR_METRIC_STRUCTURE_SMALL
      - ❑ attribute-type = MetricStructureSmall
      - ❑ attribute-value.length = 2 bytes
      - ❑ attribute-value = <Not relevant for this test>
   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. 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 = <Not relevant for this test>
   g. IF 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 = <Not relevant for this test>
   h. 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 = <Not relevant for this test> i. 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 = <Not relevant for this test> j. IF Not Recommended attribute Source-Handle-Reference ❑ attribute-id = MDC_ATTR_SOURCE_HANDLE_REF ❑ attribute-type = HANDLE ❑ attribute-value.length = INT-U16 ❑ attribute-value = <Not relevant for this test> k. 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) ❑ attribute-value = <Not Relevant for this test>.
Pass/Fail criteria	• All checked values are as specified in the test procedure. • IF C_AG_OXP_182 THEN check that the attribute *-Nu-Obs-Value received was the one specified in the Attribute-Value-Map.
Notes	

TP Id		TP/PLT/AG/CLASS/BPM/BV-005		
TP label		Pulse Object for Standard Configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10407]		
	Testable items	PulsRat 1; R	PulsRat 2; M	PulsRat 4; M
		PulsRat 6; R	PulsRat 8; M	PulsRat 10; R
		PulsRat 14; R	PulsRat 16; R	PulsRat 18; R
		PulsRat 20; M	PulsRat 22; M	PulsRat 24; R
		PulsRat 30; C	PulsRat 32; R	PulsRat 34; R
		PulsRat 36; R	PulsRat 42; M	PulsRat 46; R
		PulsRat 48; R	PulsRat 50; R	PulsRat 52; M
		BPConcepts 4; O		
Test Purpose		Check that: Pulse Object contains the attributes specified for Standard Configuration		
Applicability		C_AG_OXP_000 AND C_AG_OXP_177 AND (NOT C_AG_OXP_181)		
Other PICS				

Initial condition	The simulated manager and the agent under test are in the unassociated state.
Test procedure	1. The simulated manager receives an association request from the agent under test. 2. The simulated manager responds with a result = accepted-unknown-config. 3. The agent responds with a "Remote Operation Invoke | Confirmed Event Report" message with an MDC_NOTI_CONFIG event to send its configuration to the manager. 4. Check that the field Dev-Config-Id is set to 0x02BC (700). If it is not, the manager responds with a "unsupported-config" and waits for a new configuration. Repeat this step until a Dev-config-Id equal to 0x02BC is received. 5. Wait until the agent under test sends a standard configuration. 6. The Pulse Object must be defined in the configuration event report, and its attributes must be: a. Mandatory attribute Handle ❑ attribute-id = MDC_ATTR_ID_HANDLE ❑ attribute-type = HANDLE ❑ attribute-value = 2 b. Mandatory attribute Type ❑ attribute-id = MDC_ATTR_ID_TYPE ❑ attribute-type = TYPE ❑ attribute-value = 0x00 0x02(MDC_PART_SCADA) , 0x48 0x2A(MDC_PULS_RATE_NON_INV 18474) 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-intermittent(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 ■ Bits 6, 7, 10, 11 and 15 must not be set d. 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_BEAT_PER_MIN e. Mandatory attribute Attribute-Value-Map is present ❑ attribute-id = MDC_ATTR_ATRIBUTE_VAL_MAP ❑ attribute-type = AttrValMap (sequence of attribute-id(OID-Type) and (INT-U16)) ❑ attribute-length = 12 bytes ❑ attribute-value = MDC_ATTR_NU_VAL_OBS_BASIC OR MDC_ATTR_TIME_STAMP_ABS. 7. Check that no other attributes are present.
Pass/Fail criteria	All checked values are as specified in the test procedure in order to indicate that the event report is confirmed.

Notes	

TP Id		TP/PLT/AG/CLASS/BPM/BV-006		
TP label		Pulse Object for Extended Configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10407]		
	Testable items	PulsRat 5; M	PulsRat 7; R	PulsRat 11; R
		PulsRat 13; R	PulsRat 15; R	PulsRat 17; R
		PulsRat 19; R	PulsRat 21; M	PulsRat 25; R
		PulsRat 37; C	PulsRat 51; R	PulsRat_1; R
		BPConcepts 4; O		
Test Purpose		Check that: Pulse Object contains the attributes specified for Extended Configuration		
Applicability		C_AG_OXP_000 AND C_AG_OXP_177 AND C_AG_OXP_181 AND C_AG_BPM_003		
Other PICS				
Initial condition		The simulated manager and the agent under test are in the unassociated state.		
Test procedure		1. The simulated manager receives an association request from the agent under test. 2. The simulated manager responds with a result = accepted-unknown-config. 3. The agent responds with a "Remote Operation Invoke | Confirmed Event Report" message with an MDC_NOTI_CONFIG event to send its configuration to the manager. 4. Check that the field Dev-Config-Id is in the extended range. If it is not, the manager responds with a "unsupported-config" and waits for a new configuration. Repeat this step until a Dev-config-Id in the extended range is received. 5. Wait until the agent under test sends an extended configuration. 6. Pulse Rate Object attributes must be: a. Mandatory attribute Type ❑ attribute-id = MDC_ATTR_ID_TYPE ❑ attribute-type = TYPE ❑ attribute-value = 0x00 0x02(MDC_PART_SCADA) , 0x48 0x2A(MDC_PULS_RATE_NON_INV 18474) b. 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_BEAT_PER_MIN c. 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> d. Not Recommended attribute Supplemental-Types		

	❑ attribute-id = MDC_ATTR_SPPLEMENTAL_TYPES ❑ attribute-type = SupplementalTypeList ❑ attribute-value.length = <variable>Sequence of TYPE (TYPE.length= 4 bytes) ❑ attribute-value = <Not relevant for this test> e. IF Not recommended attribute Metric-Structure-Small is present ❑ attribute-id = MDC_ATTR_METRIC_STRUCTURE_SMALL ❑ attribute-type = MetricStructureSmall ❑ attribute-length = 2 bytes ❑ attribute-value = <Not relevant for this test> f. IF Not recommended attribute Metric-Id is present ❑ attribute-id = MDC_ATTR_ID_PHYSIO ❑ attribute-type = OID-Type(INT-U16) ❑ attribute-value.length =2 bytes ❑ attribute-value = <Not relevant for this test> g. IF Not Recommended attribute Metric-Id-List is present ❑ attribute-id = MDC_ATTR_ID_PHYSIO_LIS ❑ attribute-type = MetricIdList ❑ attribute-value = <Not relevant for this test> h. IF Not recommended attribute Metric-Id-Partition is present ❑ attribute-id = MDC_ATTR_METRIC_ID_PART ❑ attribute-type = NomPartition(INT-U16) ❑ attribute-value.length = 2 bytes ❑ attribute-value = <Not relevant for this test> i. IF Not recommended attribute Source-Handle-Reference is present ❑ attribute-id = MDC_ATTR_SOURCE_HANDLE_REF ❑ attribute-type = HANDLE(INT-U16) ❑ attribute-value.length = 2 bytes ❑ attribute-value = <Not relevant for this test> j. IF Recommended 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 in order to indicate that the event report is confirmed.
Notes	

<table>
<tr><td colspan="2">TP Id</td><td colspan="3">TP/PLT/AG/CLASS/BPM/BV-007</td></tr>
<tr><td colspan="2">TP label</td><td colspan="3">Communication Model: Association Procedure</td></tr>
<tr><td rowspan="6">Coverage</td><td>Spec</td><td colspan="3">[ISO/IEEE 11073-10407]</td></tr>
<tr><td rowspan="5">Testable items</td><td>MDSEvents 2; M</td><td>MDSEvents 4; M</td><td>MDSEvents 5; M</td></tr>
<tr><td>AsProc 2; M</td><td>AsProc 3; M</td><td>AsProc 4; M</td></tr>
<tr><td>AsProc 5; M</td><td>AsProc 6; M</td><td>AsProc 7; M</td></tr>
<tr><td>AsProc 8; M</td><td>AsProc 9; M</td><td>AsProc 10; M</td></tr>
<tr><td>AsProc 12; M</td><td>AsProc 13; M</td><td></td></tr>
<tr><td colspan="2">Test Purpose</td><td colspan="3">Check that:
The association procedure data exchange is correct</td></tr>
<tr><td colspan="2">Applicability</td><td colspan="3">C_AG_OXP_000 AND C_AG_OXP_177</td></tr>
<tr><td colspan="2">Other PICS</td><td colspan="3">C_AG_OXP_002, C_AG_OXP_017, C_AG_OXP_179</td></tr>
<tr><td colspan="2">Initial condition</td><td colspan="3">The simulated manager and the agent under test are in the unassociated state.</td></tr>
<tr><td colspan="2">Test procedure</td><td colspan="3">1. The agent sends a message to associate with the simulated manager, the expected fields sent by that agent are:
a. APDU Type
❑ field- type = AarqApdu
❑ field-length =2 bytes
❑ field-value =0xE2 0x00.
b. assoc-version
❑ field- type = AssociationVersion
❑ field-length =BITS-32
❑ field- value=0x80 0x00 0x00 0x00
c. data-proto-id
❑ field- type = DataProtoId(INT-U16)
❑ field-length =2 bytes
❑ field- value=0x50 0x79 (20601)
d. protocol-version
❑ field- type = Protocol Version
❑ field-length = 4 bytes
❑ field- value=0x80 0x00 0x00 0x00
e. encoding rules
❑ field- type = EncodingRules
❑ field-length = 2 bytes
❑ field- value= 0x80 0x00 , at least pulse oximeter will support MDER
f. nomenclature version
❑ field- type = NomenclatureVersion
❑ field-length = 4 bytes
❑ field- value=0x80 0x00 0x00 0x00</td></tr>
</table>

	❑ This value indicates version1 is supported (nom-version1(0) is set) g. functional – units ❑ field- type = FunctionalUnits ❑ field-length = 4 bytes ❑ If NOT C_AG_OXP_179 THEN: field-value = 0x00 0x00 0x00 0x00 ❑ If C_AG_OXP_179 THEN: field- value= 0x40 0x00 0x00 0x00 ❑ If C_AG_OXP_179 AND requires that the Manager stablish a Test Association: field- value= 0x60 0x00 0x00 0x00 h. System type ❑ field- type = SystemType ❑ field-length = 4 bytes ❑ field- value = 0x00 0x80 0x00 0x00 (sys-type-agent) i. System-Id ❑ field- type = OCTET STRING ❑ field-length = 8 bytes ❑ field- value = 0xXX 0xXX 0xXX 0xXX 0xXX 0xXX 0xXX 0xXX (octet string length = 8 |UI-64 manufacturer and device) ❑ This value will be System Id attribute of MDS Object j. dev-config-id ❑ field- type = ConfigId(INT-U16) ❑ field-length = 2 bytes ❑ field- value = ■ 0x02 0xBC for standard configuration ■ <between 0x40 0x00 and 0x7F 0xFF > for extended configuration k. data-req-mode-flags (DataReqModeCapab) ❑ field- type = DataReqModeFlags ❑ field-length = 2 bytes ❑ If the agent supports Agent-initiated measurement transfer → Bit 15 is set (data-req-supp-init-agent(15)) ❑ If the agent supports requesting objects based on object handle →Bit 6 will be set (data-req-supp-scope-handle(6)) ❑ If the agent supports single response →Bit 8 will be set (data-req-supp-mode-single-rsp(8)) ❑ If the agent supports time unlimited data request →Bit 10 will be set (data-req-supp-mode-time-no-limit(10)) l. data-req-init-agent-count (DataReqModeCapab) ❑ field- type = INT-U8 ❑ field-length = 2 bytes ❑ field.value = 0x01 m. data-req-init-manager-count (DataReqModeCapab) ❑ field- type = INT-U8 ❑ field-length = 2 bytes ❑ field.value = 0x00.
Pass/Fail criteria	All checked attributes have proper values.
Notes	

TP Id		TP/PLT/AG/CLASS/BPM/BV-010		
TP label		Not a Number (NaN)		
Coverage	**Spec**	[ISO/IEEE 11073-10407]		
	Testable items	SysDiast 2; M		
Test Purpose		Check that: If an Agent does not measure one or more systolic, diastolic, MAP values, then the special value NaN is reported instead.		
Applicability		C_AG_OXP_000 AND C_AG_OXP_177 AND C_AG_BPM_005		
Other PICS				
Initial condition		The simulated manager and the agent under test are in the operating state.		
Test procedure		1. Take a measurement with the agent under test without measuring any value. 2. Wait for the simulated manager to receive the event report with the measurement.		
Pass/Fail criteria		The value of the systolic, diastolic and MAP measurements must be NaN.		
Notes				

TP Id		TP/PLT/AG/CLASS/BPM/BV-011		
TP label		Reporting systolic and diastolic blood pressures		
Coverage	**Spec**	[ISO/IEEE 11073-10407]		
	Testable items	BPConcepts 2; M	BPConcepts 3; M	SystDiast_55; M
Test Purpose		Check that: Both systolic, diastolic blood pressures and MAP are always reported together		
Applicability		C_AG_OXP_000 AND C_AG_OXP_177		
Other PICS				
Initial condition		The simulated manager and the agent under test are in the unassociated state.		
Test procedure		1. The simulated manager receives an association request from the agent under test. 2. The simulated manager responds with a result = accepted-unknown-config. 3. The agent responds with a "Remote Operation Invoke | Confirmed Event Report" message with an MDC_NOTI_CONFIG event to send its configuration to the manager. Record ConfigObject for every Sys/Dias/MAP object. 4. Take some measurements with the agent under test. 5. Wait for the manager to receive the event reports of the measurements.		
Pass/Fail criteria		The values of the systolic, diastolic and mean arterial pressure must be sent always in the same object in the event report, and using the same units.		
Notes		http://continua.plugfests.com/show_bug.cgi?id=62		

TP Id		TP/PLT/AG/CLASS/BPM/BV-012		
TP label		MDS Configuration objects events for Blood Pressure Monitor agent.		
Coverage	**Spec**	[ISO/IEEE 11073-10407]		
	Testable items	MDSEvents 7; M		
Test Purpose		Check that: A Blood Pressure Monitor sends the MDS-Configuration-Event using a Confirmed event report and the MDS-Configuration-Event includes the event-info ConfigReport		
Applicability		C_AG_OXP_000 AND C_AG_OXP_177		
Other PICS		C_AG_OXP_010, C_AG_OXP_181, C_AG_BPM_003		
Initial condition		The simulated manager and the agent under test are in the unassociated state.		
Test procedure		1. The simulated manager receives an association request from the agent under test. 2. The simulated manager responds with a result = accepted-unknown-config. 3. The agent responds with a "Remote Operation Invoke | Confirmed Event Report" message with an MDC_NOTI_CONFIG event to send its configuration to the manager. 4. Check ConfigObject (ConfigReport → ConfigObjectList (ConfigObject)). 5. IF C_AG_BPM_003 THEN Pulse Object numeric Object is present, ELSE it is not present.		
Pass/Fail criteria		The configuration event report must be confirmed.		
Notes				

TP Id		TP/PLT/AG/CLASS/BPM/BV-013		
TP label		MDS objects events for Blood Pressure agent		
Coverage	**Spec**	[ISO/IEEE 11073-10407]		
	Testable items	MDSEvents 9; M	MDSEvents 10; M	MDSEvents 11; M
		MDSEvents 12; M	MDSEvents 13; M	MDSEvents 14; M
		MDSEvents 15; M	MDSEvents 16; M	BldServ_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 Agent sends the MDS-Dynamic-Data-Update-Fixed using a confirmed event report and it includes the event-info ScanReportInfoFixed [OR] The Agent sends the MDS-Dynamic-Data-Update-Var using a confirmed event report and it includes the event-info ScanReportInfoVar [OR] The Agent sends the MDS-Dynamic-Data-Update-MP-Fixed using a confirmed event report and it includes the event-info ScanReportInfoMPFixed [OR]		

	The Agent sends the MDS-Dynamic-Data-Update-MP-Var using a confirmed event report and it includes the event-info ScanReportInfoMPVar
Applicability	C_AG_OXP_000 AND C_AG_OXP_177 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 manager and the agent under test are in the operating state.
Test procedure	1. Take measurements for every supported object in the agent 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 agent, for the confirmed event configuration, roiv-cmip-confirmed-event-report.
Pass/Fail criteria	Check that every received report is a 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/AG/CLASS/BPM/BV-014		
TP label		Config Changes Service. Contextual Attribute.		
Coverage	**Spec**	[ITU-T H.810 (2015)]		
	Testable items	Communication 8; M		
Test Purpose		Check that: Service component reports configuration changes to future measurements only		
Applicability		C_AG_OXP_000 AND C_AG_OXP_177 AND C_AG_BPM_004		
Other PICS				
Initial condition		The simulated manager and the agent under test are in the operating state.		
Test procedure		1. Take some measurements with the agent under test. 2. Make a change to the contextual attribute Unit-Code for the Sys/Dias/MAP object. 3. The agent shall send an MDS event report indicating the new contextual attribute value. 4. Take some more measurements. 5. Wait for the manager to receive new event reports from the agent which report the measurements from step 4.		
Pass/Fail criteria		• The agent sends an MDS event report to inform about the contextual attribute that has been changed.		

	• Data has changed accordingly to a new contextual attribute.
Notes	

TP Id		TP/PLT/AG/CLASS/BPM/BV-015		
TP label		Operating State. Manager to Agent Maximum APDU Size		
Coverage	**Spec**	[ISO/IEEE 11073-20601A]		
	Testable items	CommonCharac 3; M		
	Spec	[ISO/IEEE 11073-10407]		
	Testable items	ComCh_2; M		
Test Purpose		Check that: Check that the total size of the response do not exceed of the maximum APDU size established by the specialization [AND] An Agent 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_177		
Other PICS		C_AG_OXP_041, C_AG_OXP_100		
Initial condition		The simulated manager and the agent are in the operating state.		
Test procedure		1. The simulated manager issues a "Remote Operation Invoke | Get" command with: a. Obj-handle set to 0 (to request for 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 agent. 3. The simulated manager issues "Remote Operation Invoke | Get" command with the handle set to 0 (to request for MDS object) and an empty attribute-id-list to indicate all attributes. 4. Check the response of the agent.		
Pass/Fail criteria		• In step 2, the agent 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 agent does not respond with a rors-cmip-get message, it responds with a roer message or a rorj(resource-limitation) message, a WARNING will appear. ❑ 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 the agent supports PM-Store ○ Blood pressure -> 896 octets ○ Thermometer -> 896 octets ○ Independent activity hub -> 5120 octets		

	○ Cardiovascular -> 64512 octets or 6624 octets if the agent 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 the agent supports PM-Store ○ Basic ECG/Heart Rate -> 1280 octets or 64512 octets if the agent supports PM-Store ○ International Normalized Ratio -> 896 octets or 64512 if agent supports PM-Store ❑ In case it responds with a roer, the reason must not be protocol-violation (23). • In step 4, the agent must respond with a rors-cmip-get message.
Notes	

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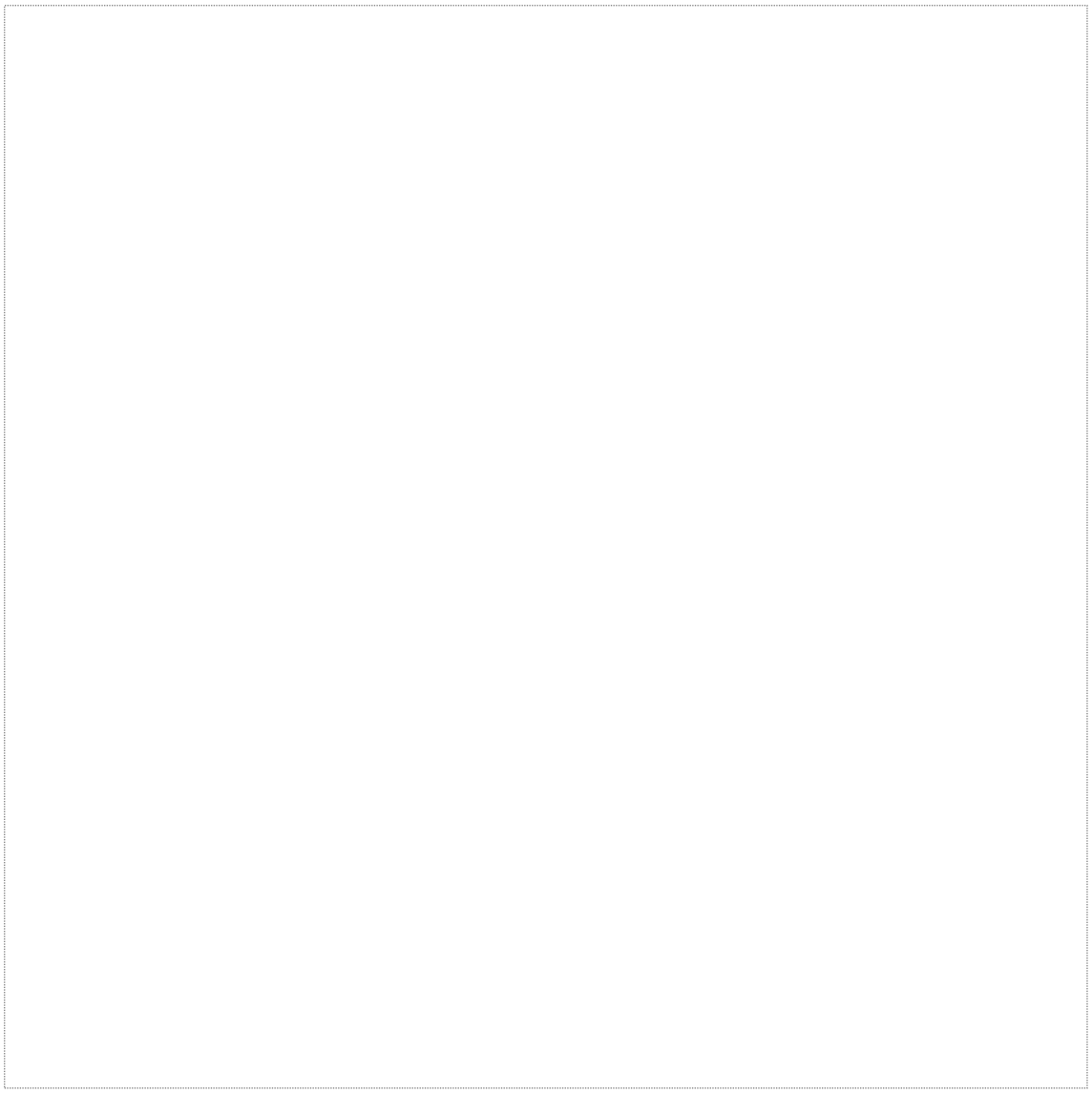
[b-Manager PICS & PIXIT]	PLT Manager DG2013 *PICS and PIXIT excel sheet v1.6*



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