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SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS

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

Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 5J: Insulin pump

Recommendation ITU-T H.845.10

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ITU-T H-SERIES RECOMMENDATIONS
AUDIOVISUAL AND MULTIMEDIA SYSTEMS

CHARACTERISTICS OF VISUAL TELEPHONE SYSTEMS	H.100–H.199
INFRASTRUCTURE OF AUDIOVISUAL SERVICES	
General	H.200–H.219
Transmission multiplexing and synchronization	H.220–H.229
Systems aspects	H.230–H.239
Communication procedures	H.240–H.259
Coding of moving video	H.260–H.279
Related systems aspects	H.280–H.299
Systems and terminal equipment for audiovisual services	H.300–H.349
Directory services architecture for audiovisual and multimedia services	H.350–H.359
Quality of service architecture for audiovisual and multimedia services	H.360–H.369
Telepresence	H.420–H.429
Supplementary services for multimedia	H.450–H.499
MOBILITY AND COLLABORATION PROCEDURES	
Overview of Mobility and Collaboration, definitions, protocols and procedures	H.500–H.509
Mobility for H-Series multimedia systems and services	H.510–H.519
Mobile multimedia collaboration applications and services	H.520–H.529
Security for mobile multimedia systems and services	H.530–H.539
Security for mobile multimedia collaboration applications and services	H.540–H.549
VEHICULAR GATEWAYS AND INTELLIGENT TRANSPORTATION SYSTEMS (ITS)	
Architecture for vehicular gateways	H.550–H.559
Vehicular gateway interfaces	H.560–H.569
BROADBAND, TRIPLE-PLAY AND ADVANCED MULTIMEDIA SERVICES	
Broadband multimedia services over VDSL	H.610–H.619
Advanced multimedia services and applications	H.620–H.629
Ubiquitous sensor network applications and Internet of Things	H.640–H.649
IPTV MULTIMEDIA SERVICES AND APPLICATIONS FOR IPTV	
General aspects	H.700–H.719
IPTV terminal devices	H.720–H.729
IPTV middleware	H.730–H.739
IPTV application event handling	H.740–H.749
IPTV metadata	H.750–H.759
IPTV multimedia application frameworks	H.760–H.769
IPTV service discovery up to consumption	H.770–H.779
Digital Signage	H.780–H.789
E-HEALTH MULTIMEDIA SERVICES AND APPLICATIONS	
Personal health systems	H.810–H.819
Interoperability compliance testing of personal health systems (HRN, PAN, LAN, TAN and WAN)	H.820–H.859
Multimedia e-health data exchange services	H.860–H.869

For further details, please refer to the list of ITU-T Recommendations.

Recommendation ITU-T H.845.10

Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 5J: Insulin pump

Summary

Recommendation ITU-T H.845.10 provides a test suite structure (TSS) and the test purposes (TP) for the insulin pump agent 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.845.10 is a transposition of Continua Test Tool DG2016, Test Suite Structure & Test Purposes, Personal Health Devices Interface, Part 5J: Device Specializations, Personal Health Device, Insulin Pump (IP-), Version 1.2 (2017-07-18).

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

History

Edition	Recommendation	Approval	Study Group	Unique ID*
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Keywords

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

* 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.

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Table of Contents

		Page
1	Scope.....	1
2	References.....	2
3	Definitions	2
3.1	Terms defined elsewhere	2
3.2	Terms defined in this Recommendation.....	3
4	Abbreviations and acronyms	3
5	Conventions	4
6	Test suite structure (TSS)	5
7	Electronic attachment	7
	Annex A – Test purposes	8
A.1	TP definition conventions.....	8
A.2	Subgroup 1.3.10: Insulin pump (IP)	10
	Bibliography.....	89

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 the transposition of Continua Test Tool DG2016, Test Suite Structure & Test Purposes, Personal Health Devices Interface, Part 5J: Device Specializations, Personal Health Device (Insulin Pump-IP-), Version 1.2 (2017-07-18), that was developed by the Personal Connected Health Alliance. The table below shows the revision history of this test specification; it may contain versions that existed before transposition.

Version	Date	Revision history
1.0	2016-09-20	Initial Release for Test Tool DG2016 based on the requirements in [ITU-T H.810 (2016)]/[b-CDG 2016].
1.1	2017-03-14	This uses "TSS&TP_DG2016_PHD_PART_5J_v1.0.doc" as a baseline and adds new features included in Continua DG 2016 + Errata and it adds some updates according to the maintenance 2016 activity.
1.2	2017-07-18	Second Maintenance Release for Test Tool DG2016. It uses "TSS&TP_DG2016_PHD_PART_5J_v1.1.doc" as a baseline and corrects minor typos.

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Recommendation ITU-T H.845.10

Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 5J: Insulin pump

1 Scope

The scope of this Recommendation¹ 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 has been divided into the parts specified below. This Recommendation covers Part 5, subpart 5J.

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

¹ This Recommendation includes an electronic attachment with 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 (2016)] Recommendation ITU-T H.810 (2016), *Interoperability design guidelines for personal health systems*.
- [ITU-T H.811] Recommendation ITU-T H.811 (2016), *Interoperability design guidelines for personal health systems: TAN/PAN/LAN interface*.
- [ITU-T H.812] Recommendation ITU-T H.812 (2016), *Interoperability design guidelines for personal health systems: WAN interface*.
- [ITU-T H.812.1] Recommendation ITU-T H.812.1 (2016), *Interoperability design guidelines for personal health systems: WAN interface: Observation upload*.
- [ITU-T H.812.2] Recommendation ITU-T H.812.2 (2016), *Interoperability design guidelines for personal health systems: WAN interface: Questionnaires*.
- [ITU-T H.812.3] Recommendation ITU-T H.812.3 (2016), *Interoperability design guidelines for personal health systems: WAN interface: Capability exchange*.
- [ITU-T H.812.4] Recommendation ITU-T H.812.4 (2016), *Interoperability design guidelines for personal health systems: WAN interface: Authenticated persistent session*.
- [ITU-T H.813] Recommendation ITU-T H.813 (2016), *Interoperability design guidelines for personal health systems: HRN interface*.
- [ISO/IEEE 11073-10419] ISO/IEEE 11073-10419:2016, *Health informatics – Personal health device communication – Part 10419: Device specialization – Insulin pump*.
<https://www.iso.org/standard/69528.html>
- [ISO/IEEE 11073-20601-2016C] 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>

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
PCT	Protocol Conformance Testing
PCO	Point of Control and Observation
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
WDM	Windows Driver Model

5 Conventions

The key words "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "MAY", "MAY NOT" in this document are to be interpreted as in [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.

Generic reference to the ITU-T H.810 series (listed in clause 2) is made through the label [ITU-T H.810 series].

Reference is made in the ITU-T H.820-H.850-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.	–

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

CDG release	Transposed as	Version	Description	Designation
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 1.3.10 (shown in bold):

The Test Purposes (TP) has been divided in two main groups:

- 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 (EXP)
 - 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)
- 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)
- Subgroup 2.3.16: Continuous glucose monitor (CGM)
- Group 2.4: Personal health device transcoding whitepaper (PHDTW)
 - Subgroup 2.4.1: Whitepaper general requirements (GEN)
 - Subgroup 2.4.2: Whitepaper thermometer requirements (TH)
 - Subgroup 2.4.3: Whitepaper blood pressure requirements (BPM)
 - 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)
 - Subgroup 2.4.7: Whitepaper pulse oximeter requirements (PLX)
 - Subgroup 2.4.8: Whitepaper continuous glucose monitoring requirements (CGM)

7 Electronic attachment

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

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

Annex A

Test purposes

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

A.1 TP definition conventions

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

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

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

A.2 Subgroup 1.3.10: Insulin pump (IP)

TP Id		TP/PLT/PHD/CLASS/IP/BV-000_A		
TP label		Get MDS Object for Insulin Pump specialization: Mandatory, Conditional and Optional Attributes.		
Coverage	Spec	[ISO/IEEE 11073-10419]		
	Testable items	MDSAttrIP 1; M	MDSAttrIP 2; M	MDSAttrIP 4; M
		MDSAttrIP 5; M	MDSAttrIP 7; R	
Test purpose		Check that: The MDS Object contains the attributes specified for an Insulin Pump Personal Health Device (PHD)		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158		
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 “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. 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 System-Type-Spec_List ☐ attribute-id = MDC_ATTR_SYS_TYPE_SPEC_LIST ☐ attribute-type = TypeVerList ☐ attribute-value.length = 4 bytes for each configuration supported ☐ attribute-value = { MDC_DEV_SPEC_PROFILE_INSULIN_PUMP, 1} must be found in the list b. Mandatory attribute System-model ☐ attribute-id = MDC_ATTR_ID_MODEL (0x09 0x28) ☐ attribute-type = SystemModel ☐ attribute-value.length = <Variable> ☐ attribute-value = Manufacturer = Check against PIXIT I_AG_OXP_003 Model = Check against PIXIT I_AG_OXP_004 c. Mandatory attribute Dev-Configuration-Id ☐ attribute-id = MDC_ATTR_DEV_CONFIG_ID ☐ attribute-type = ConfigId ☐ attribute-value.length = 2 bytes ☐ attribute-value = IF NOT C_AG_OXP_181 then attribute-value = 0x076C ELSE attribute-value = < between 0x4000 and 0x7FFF > d. Mandatory attribute Base-Offset-Time ☐ attribute-id = MDC_ATTR_TIME_BO (0x0A 0x81) ☐ attribute-type = BaseOffsetTime ☐ attribute-value.length = 8 bytes		

	☐ attribute-value = <not relevant> e. If recommended attribute Power-Status is present ☐ attribute-id = MDC_ATTR_POWER_STAT ☐ attribute-type = PowerStatus (BITS-16) ☐ attribute-value.length = 2 bytes ☐ attribute-value = • ON_BATTERY(0x4000) • ON_MAINS (0x8000) f. If recommended attribute Battery-Level is present ☐ attribute-id = MDC_ATTR_VAL_BATT_CHARGE (0X09 0X9C) ☐ attribute-type = INT-U16 ☐ attribute-value.length = 2 bytes ☐ attribute-value = <not relevant> g. If recommended attribute Remain-Battery-Time is present ☐ attribute-id = MDC_ATTR_TIME_BATT_REMAIN (0X09 0X88) ☐ attribute-type = BatMeasure ☐ attribute-value.length = 6 bytes ☐ attribute-value = <not relevant>
Pass/Fail criteria	All checked values are as specified in the test procedure.
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-000_B		
TP label		MDS Configuration objects events for Insulin Pump specialization.		
Coverage	Spec	[ISO/IEEE 11073-10419]		
	Testable items	MDSEventsIP 1; M		
Test purpose		Check that: Insulin Pump PHD sends the MDS-Configuration-Event using a Confirmed event report and it includes the event-info ConfigReport		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158		
Other PICS		C_AG_OXP_010, 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 b. invoke-id		

	☐ field- type = InvokeIDType ☐ field-length =INT-U16 ☐ field- value =<Not relevant for this test> c. message ☐ field- type = roiv-cmip-confirmed-event-report ☐ field-length =two bytes ☐ field- value =0x01 0x01 (EventReportArgumentSimple) d. obj-handle (EventReportArgumentSimple) ☐ field- type = HANDLE ☐ field-length =INT-U16 e. event-time (EventReportArgumentSimple) ☐ field- type = Relative Time ☐ field-length =INT-U32 ☐ field-value = • IF NOT C_AG_OXP_010 THEN value = 0xFF 0xFF 0xFF 0xFF f. event-type (EventReportArgumentSimple) ☐ field- type = OID-Type ☐ field-length =INT-U16 ☐ field- value=0x0D 0x1C (MDC_NOTI_CONFIG) g. config-report-id (ConfigReport) ☐ field- type = ConfigId ☐ field-length = INT-U16 ☐ field value = <It matches the tested configuration> • IF NOT C_AG_OXP_181 THEN attribute-value = 0x076C (1900) • ELSE attribute-value = <between 0x40 0x00 and 0x7F 0xFF > for extended configuration. h. obj-class (ConfigReport → ConfigObjectList (ConfigObject)) ☐ field- type = OID-Type ☐ field-length = INT-U16 ☐ field- value = At least two MDC_MOC_VMO_METRIC_NU
Pass/Fail criteria	All checked values are as specified in the test procedure.
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-000_C		
TP label		MDS objects events for Insulin Pump specialization.		
Coverage	Spec	[ISO/IEEE 11073-10419]		
	Testable items	MDSEventsIP 3; M	MDSEventsIP 4; M	MDSEventsIP 5; M
		MDSEventsIP 6; M	MDSEventsIP 7; M	MDSEventsIP 8; M
		MDSEventsIP 9; M	MDSEventsIP 10; M	ObjAccServIP 1; 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_000 AND C_AG_OXP_158 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 PHD under test are in the Operating state.
Test procedure	- Take or send stored measurements for every supported Object in the PHD under test. - Wait to receive every event report and check: - APDU Type ☐ 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 confirmed Data APDU - 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/IP/BV-001		
TP label		Objects for Insulin Pump specialization - Standard Configuration (1900)		
Coverage	Spec	[ISO/IEEE 11073-10419]		
	Testable items	BolusDer 1; M	CurrBasRate 1; M	CurrBolus 2; M
		PendBolus 2; M	BasalDel 2; M	BasalRateSch 2; M
		InsToCarb 2; M	InsSensFact 2; M	InsResRem 2; M
		InsConc 2; M	OpStatus 2; M	PHDDMStatus 2; M
		IPStatus 2; M	PMStoreObjIP 7; M	BasalProf 2; M

		InsCHRProf 2; M	ISFProf 2; M	
Test purpose		Check that: The Bolus Delivered Numeric object with Type MDC_INS_BOLUS is supported by an Insulin Pump PHD with Standard Configuration 1900 (0x076C). [AND] The Current Basal Rate Setting Numeric object with Type MDC_INS_BASAL_RATE_SETTING is supported by an Insulin Pump PHD with Standard Configuration 1900 (0x076C). [AND] No more objects are supported by an Insulin Pump with Standard Configuration 1900 (0x076C).		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND (NOT_C_AG_OXP_181)		
Other PICS				
Initial condition		The simulated PHG and PHD 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. Check that the field Dev-Config-Id is set to 0x076C (1900), 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: Attribute-List: a. attribute-value (ConfigReport → ConfigObjectList (ConfigObject) → Attribute List), this value depends on the attribute Type. Values to be checked are: ❑ The Bolus Delivered Numeric object is present → MDC_PART_PHD_DM (0x00 0x80), MDC_INS_BOLUS (0x74 0x28) ❑ The Current Basal Rate Setting Numeric object is present → MDC_PART_PHD_DM (0x00 0x80), MDC_INS_BASAL_RATE_SETTING (0x73 0xFC)		
Pass/Fail criteria		All checked values are as specified in the test procedure and no other object is listed.		
Notes				

TP Id		TP/PLT/PHD/CLASS/IP/BV-002		
TP label		Objects for Insulin Pump specialization - Extended Configuration		
Coverage	Spec	[ISO/IEEE 11073-10419]		
	Testable items	BolusDer 1; M	CurrBasRate 1; M	CurrBolus 1; O
		PendBolus 1; O	BasalDel 1; O	BasalRateSch 1; O
		InsToCarb 1; O	InsSensFact 1; O	InsResRem 1; O
		InsConc 1; O	OpStatus 1; O	PHDDMStatus 1; O
		IPStatus 1; O	BasalProf 1; O	InsCHRProf 1; O
		ISFProf 1; O		
Test purpose		Check that:		

	The Bolus Delivered numeric object with Type MDC_INS_BOLUS is supported by an Insulin Pump PHD with extended configuration. [AND] The Current Basal Rate Setting numeric object with Type MDC_INS_BASAL_RATE_SETTING is supported by an Insulin Pump PHD with extended configuration. [AND] The Current Bolus Setting numeric object with Type MDC_INS_BOLUS_SETTING may be present in the extended configuration. [AND] The Pending Bolus Delay numeric object with Type MDC_INS_BOLUS_PENDING_DELAY may be present in the extended configuration. [AND] The Basal Delivered numeric object with Type MDC_INS_BASAL may be present in the extended configuration. [AND] The Basal Rate Schedule Setting numeric object with Type MDC_INS_BASAL_RATE_SCHED may be present in the extended configuration. [AND] The Insulin to Carbohydrate Ratio Schedule Setting numeric object with Type MDC_INS_I2CHO_SCHED may be present in the extended configuration. [AND] The Insulin Sensitivity Factor Schedule Setting numeric object with Type MDC_INS_ISF_SCHED may be present in the extended configuration. [AND] The Insulin Reservoir Remaining numeric object with Type MDC_INS_RESERVOIR may be present in the extended configuration. [AND] The Insulin Concentration numeric object with Type MDC_INS_CONC may be present in the extended configuration. [AND] The Operational status enumeration object with Type MDC_INS_PUMP_OP_STAT may be present in the extended configuration. [AND] The PHD DM Status enumeration object with Type MDC_PHD_DM_DEV_STAT may be present in the extended configuration. [AND] The Insulin pump status enumeration object with Type MDC_INS_PUMP_DEV_STAT may be present in the extended configuration. [AND] The Basal Profile Settings Schedule-Store object may be present in the extended configuration. [AND] The Insulin to Carbohydrate Ratio Profile Settings Schedule-Store object may be present in the extended configuration. [AND] The Insulin Sensitivity Factor Profile Settings Schedule-Store object may be present in the extended configuration. [AND] PM-Store object may be present in the extended configuration.
Applicability	C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181

Other PICS	C_AG_IP_001, C_AG_IP_002, C_AG_IP_003, C_AG_IP_004, C_AG_IP_005, C_AG_IP_006, C_AG_IP_007, C_AG_IP_008, C_AG_IP_009, C_AG_IP_010, C_AG_IP_011, C_AG_IP_012, C_AG_IP_013, C_AG_IP_014, C_AG_OXP_041
Initial condition	The simulated PHG and PHD 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. Check that the field Dev-Config-Id is in the extended range; if it is not, the PHG responds with an "unsupported-config" and waits for a new configuration. 5. Once the PHD under test sends an extended configuration, Check that: - Attribute-List: a. attribute-value(ConfigReport → ConfigObjectList (ConfigObject)→Attribute List), this value depends on the attribute type. The values we have to check are: ❑ The Bolus Delivered numeric object is present → MDC_PART_PHD_DM (0x00 0x80), MDC_INS_BOLUS (0x74 0x28) ❑ The Current Basal Rate Setting Numeric object is present → MDC_PART_PHD_DM (0x00 0x80), MDC_INS_BASAL_RATE_SETTING (0x73 0xFC) - Any of these objects may be present: ❑ IF C_AG_IP_001 THEN the Current Bolus Setting numeric Object is present → MDC_PART_PHD_DM (0x00 0x80), MDC_INS_BOLUS_SETTING (0x74 0x1C) ❑ IF C_AG_IP_002 THEN the Pending Bolus Delay numeric Object is present → MDC_PART_PHD_DM (0x00 0x80), MDC_INS_BOLUS_PENDING_DELAY (0x74 0x33) ❑ IF C_AG_IP_003 THEN Basal delivered numeric Object is present → MDC_PART_PHD_DM (0x00 0x80), MDC_INS_BASAL (0x73 0xF0) ❑ IF C_AG_IP_004 THEN the Basal Rate Schedule Setting numeric Object is present → MDC_PART_PHD_DM (0x00 0x80), MDC_INS_BASAL_RATE_SCHEDULE (0x74 0x10) ❑ IF C_AG_IP_005 THEN the Insulin to Carbohydrate Ratio Schedule Setting numeric Object is present → MDC_PART_PHD_DM (0x00 0x80), MDC_INS_I2CHO_SCHEDULE (0x74 0x3C) ❑ IF C_AG_IP_006 THEN the Insulin Sensitivity Factor Schedule Setting numeric Object is present → MDC_PART_PHD_DM (0x00 0x80), MDC_INS_ISF_SCHEDULE (0x74 0x48) ❑ IF C_AG_IP_007 THEN the Insulin Reservoir Remaining numeric Object is present → MDC_PART_PHD_DM (0x00 0x80), MDC_INS_RESERVOIR (0x74 0x54) ❑ IF C_AG_IP_008 THEN the Insulin Concentration numeric object is present → MDC_PART_PHD_DM (0x00 0x80), MDC_INS_CONC (0x74 0x60) ❑ IF C_AG_IP_009 THEN the Operational Status enumeration object is present → MDC_PART_PHD_DM (0x00 0x80), MDC_INS_PUMP_OP_STAT (0x74 0x6C) ❑ IF C_AG_IP_010 THEN the PHD DM Status enumeration object is present → MDC_PART_PHD_DM (0x00 0x80), MDC_PHD_DM_DEV_STAT (0x4E 0x20) ❑ IF C_AG_IP_011 THEN the Insulin pump status enumeration object is present → MDC_PART_PHD_DM (0x00 0x80), MDC_INS_PUMP_DEV_STAT (0x74 0x8C) ❑ IF C_AG_IP_012 THEN an instance of MDC_MOC_VMO_SCHEDULESTORE (0x00 0x51) is present. ❑ IF C_AG_IP_013 THEN an instance of MDC_MOC_VMO_SCHEDULESTORE (0x00 0x51) is present.

	☐ IF C_AG_IP_014 THEN an instance of MDC_MOC_VMO_SCHEDSTORE (0x00 0x51) is present. ☐ IF C_AG_IP_041 THEN an instance of MDC_MOC_VMO_PMSTORE (0x00 0x3D) is present at least once.
Pass/Fail criteria	All checked values are as specified in the test procedure.
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-003		
TP label		Bolus Delivered Numeric Object - Standard configuration		
Coverage	Spec	[ISO/IEEE 11073-10419]		
	Testable items	BolusDer 2; M	BolusDer 4; M	BolusDer 6; O
		BolusDer 8; M	BolusDer 10; O	BolusDer 12; O
		BolusDer 14; O	BolusDer 16; C	BolusDer 18; NR
		BolusDer 20; M	BolusDer 22; M	BolusDer 24; O
		BolusDer 26; O	BolusDer 28; O	BolusDer 30; C
		BolusDer 32; M	BolusDer 34; C	BolusDer 36; C
		BolusDer 38; NR	BolusDer 40; C	BolusDer 42; C
		BolusDer 44; M	BolusDer 46; C	BolusDer 48; C
		BolusDer 50; C	BolusDer 52; NR	BolusDer 54; M
		BolusDer 1; M		
Test purpose		Check that: The Bolus Delivered Numeric object contains the attributes specified for Standard Configuration.		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND (NOT C_AG_OXP_181)		
Other PICS				
Initial condition		The simulated PHG and PHD under 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. 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. 3. Check that the field Dev-Config-Id is set to 0x076C (1900). If it is not, the PHG responds with an “unsupported-config” and waits for a new configuration. 4. Once the PHD under test sends a standard configuration, check that Bolus Delivered Object attributes are: a. Mandatory attribute Handle ☐ attribute-id = MDC_ATTR_ID_HANDLE ☐ attribute-type = HANDLE ☐ attribute-value = 0x00 0x01 b. Mandatory attribute Type		

	☐ attribute-id = MDC_ATTR_ID_TYPE ☐ attribute-type = TYPE ☐ attribute-value = MDC_PART_PHD_DM (0x00 0x80), MDC_INS_BOLUS (0x74 0x28) c. Mandatory attribute Metric-Spec-Small ☐ attribute-id = MDC_ATTR_METRIC_SPEC_SMALL ☐ attribute-type = MetricSpecSmall (BITS-16) ☐ attribute-value.length = 2 bytes ☐ 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 • bit 14 (mss-cat-calculation(14)), must be set • the remaining bits shall be set to 0. 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_INTL_UNIT e. Mandatory attribute Attribute-Value-Map ☐ attribute-id = MDC_ATTR_ATTRIBUTE_VAL_MAP ☐ attribute-type = AttrValMap (sequence of attribute-id(OID-Type) and attribute-length(INT-U16)) ☐ attribute-value.length=<variable> ☐ attribute-value= MDC_ATTR_NU_VAL_OBS_BASIC MDC_ATTR_TIME_STAMP_BO f. No other attribute shall be present at configuration or in the measurement
Pass/Fail criteria	All checked values are as specified in the test procedure.
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-004		
TP label		Bolus Delivered Numeric Object - Extended configuration		
Coverage	Spec	[ISO/IEEE 11073-10419]		
	Testable items	BolusDer 5 ; M	BolusDer 7; R	BolusDer 9; M
		BolusDer 19; NR	BolusDer 21; M	BolusDer 25; R
		BolusDer 33; R	BolusDer 39; NR	BolusDer 45; M
		BolusDer 53; NR	BolusDer 1; M	
Test purpose		Check that:		

	The Bolus Delivered Numeric object contains the attributes specified for Extended Configuration.
Applicability	C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181
Other PICS	C_AG_OXP_041, C_AG_OXP_183, C_AG_OXP_189
Initial condition	The simulated PHG and 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. 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. 3. Check that the field Dev-Config-Id is set in the extended range; if it is not, the PHG responds with an "unsupported-config" and waits for a new configuration. 4. The PHD under test sends an Event Report to the simulated PHG including a measurement reported by the object under test. 5. Once the PHD under test sends an extended configuration and a measurement, check that the Bolus Delivered Object attributes are: a. Mandatory attribute Type ☐ attribute-id = MDC_ATTR_ID_TYPE ☐ attribute-type = TYPE ☐ attribute-value = MDC_PART_PHD_DM (0x00 0x80), MDC_INS_BOLUS (0x74 0x28) b. If recommended Supplemental –Types Attribute is present ☐ attribute-id = MDC_ATTR_SUPPLEMENTAL_TYPES ☐ attribute-type = SupplementalTypeList ☐ attribute-value.length = <variable> (Sequence of TYPE (TYPE.length= 4 bytes)) ☐ attribute-value = One of the following values or combinations: • MDC_INS_BOLUS_FAST (0x74 0x29) • MDC_INS_BOLUS_EXT (0x74 0x2A) • MDC_INS_BOLUS_CORR (0x74 0x2B) • MDC_INS_BOLUS_MEAL (0x74 0x2C) • MDC_INS_BOLUS_UNDETERMINED (0x74 0x2D) • Combination of MDC_INS_BOLUS_FAST (0x74 0x29) with MDC_INS_BOLUS_CORR (0x74 0x2B) or MDC_INS_BOLUS_MEAL (0x74 0x2C) • Combination of MDC_INS_BOLUS_EXT (0x74 0x2A) with MDC_INS_BOLUS_CORR (0x74 0x2B) or MDC_INS_BOLUS_MEAL (0x74 0x2C) c. Mandatory attribute Metric-Spec-Small ☐ attribute-id = MDC_ATTR_METRIC_SPEC_SMALL ☐ attribute-type = MetricSpecSmall (BITS-16) ☐ attribute-value.length = 2 bytes ☐ attribute-value ≠ 0x00 0x00 • bit 0 must be set (mss-avail-intermittent(0)) • bit 1 must be set (mss-avail-stored-data(1)) • bit 2 must be set (mss-upd-aperiodic(2)) • bit 3 must be set (mss-msmt-aperiodic(3)) • bit 9 must be set (mss-acc-agent-initiated(9))

	- bit 14 must be set (mss-cat-calculation(14)) - the remaining bits shall be set to 0. d. 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 e. 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_INTL_UNIT f. If 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 = It should point to the current bolus setting object. g. If recommended attribute Base-Offset-Time-Stamp is present ☐ attribute-id = MDC_ATTR_TIME_STAMP_BO ☐ attribute-type = BaseOffsetTime ☐ attribute-value.length = 8 bytes h. If not recommended attribute Measure-Active-Period is present ☐ attribute-id = MDC_ATTR_TIME_PD_MSMT_ACTIVE ☐ attribute-type = FLOAT type ☐ attribute-value.length = 4 bytes i. Mandatory attribute Basic-Nu-Observed-Value ☐ attribute-id = MDC_ATTR_NU_VAL_OBS_BASIC ☐ attribute-type = BasicNuObsValue ☐ attribute-value.length = SFLOAT-Type (INT-U16) j. If not recommended attribute Accuracy is present ☐ attribute-id = MDC_ATTR_NU_ACCUR_MSMT ☐ attribute-type = FLOAT-Type (INT-U32) ☐ attribute-value.length = 4 bytes
Pass/Fail criteria	All checked values are as specified in the test procedure
Notes	Note that: - observational attributes shall be present only in the measurement. - dynamic attributes should be reported in the configuration event report but may be reported in the measurement.

TP Id		TP/PLT/PHD/CLASS/IP/BV-005		
TP label		Current Basal Rate Setting Numeric Object - Standard configuration		
Coverage	Spec	[ISO/IEEE 11073-10419]		
	Testable	CurrBasRate 2; M	CurrBasRate 4; M	CurrBasRate 6; M

	items	CurrBasRate 8; M	CurrBasRate 10; NR	CurrBasRate 12; NR
		CurrBasRate 14; M	CurrBasRate 16; NR	CurrBasRate 18; NR
		CurrBasRate 20; M	CurrBasRate 22; M	CurrBasRate 24; NR
		CurrBasRate 26; O	CurrBasRate 28; O	CurrBasRate 30; C
		CurrBasRate 32; M	CurrBasRate 34; C	CurrBasRate 36; C
		CurrBasRate 38; NR	CurrBasRate 40; C	CurrBasRate 42; C
		CurrBasRate 44; M	CurrBasRate 46; C	CurrBasRate 48; C
		CurrBasRate 50; C	CurrBasRate 52; NR	CurrBasRate 54; M
		CurrBasRate 1; M		
Test purpose		Check that: The current Basal Rate Setting Numeric object contains the attributes specified for Standard Configuration.		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND (NOT C_AG_OXP_181)		
Other PICS				
Initial condition		The simulated PHG and PHD under 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. 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. 3. Check that the field Dev-Config-Id is set to 0x076C (1900). If it is not, the PHG responds with an “unsupported-config” and waits for a new configuration. 4. Once the PHD under test sends a standard configuration, check that Current Basal Rate Setting Object attributes are: a. Mandatory attribute Handle ☐ attribute-id = MDC_ATTR_ID_HANDLE ☐ attribute-type = HANDLE ☐ attribute-value = 0x00 0x02 b. Mandatory attribute Type ☐ attribute-id = MDC_ATTR_ID_TYPE ☐ attribute-type = TYPE ☐ attribute-value = MDC_PART_PHD_DM (0x00 0x80), MDC_INS_BASAL_RATE_SETTING (0x73 0xFC) c. Mandatory attribute Supplemental-Types ☐ attribute-id = MDC_ATTR_SUPPLEMENTAL_TYPES ☐ attribute-type = SupplementalTypeList ☐ attribute-value = MDC_INS_BASAL_PRGM d. Mandatory attribute Metric-Spec-Small ☐ attribute-id = MDC_ATTR_METRIC_SPEC_SMALL ☐ attribute-type = MetricSpecSmall (BITS-16) ☐ attribute-value.length = 2 bytes ☐ 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 9 (mss-acc-agent-initiated(9)), must be set • bit 13 (mss-cat-setting(13)), must be set • the remaining bits shall be set to 0. e. Mandatory attribute Metric-Id ☐ attribute-id = MDC_ATTR_ID_PHYSIO ☐ attribute-type = OID-Type (INT-U16) ☐ attribute-value.length = 2 bytes ☐ attribute-value = MDC_INS_BASAL_DEVICE (0x74 0x01) f. 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_INTL_UNIT_PER_HR g. Mandatory attribute Attribute-Value-Map ☐ attribute-id = MDC_ATTR_ATTRIBUTE_VAL_MAP ☐ attribute-type = AttrValMap (sequence of attribute-id(OID-Type) and attribute-length(INT-U16)) ☐ attribute-value.length=<variable> ☐ attribute-value= MDC_ATTR_NU_VAL_OBS_BASIC MDC_ATTR_TIME_STAMP_BO h. No other attribute shall be present at configuration or in the measurement
Pass/Fail criteria	All checked values are as specified in the test procedure.
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-006		
TP label		Current Basal Rate Setting Numeric Object - Extended configuration		
Coverage	Spec	[ISO/IEEE 11073-10419]		
	Testable items	CurrBasRate 5 ; M	CurrBasRate 7; M	CurrBasRate 9; M
		CurrBasRate11; NR	CurrBasRate 13; NR	CurrBasRate 15; O
		CurrBasRate 17; NR	CurrBasRate 19; NR	CurrBasRate 21; M
		CurrBasRate 25; NR	CurrBasRate 33; R	CurrBasRate 39; NR
		CurrBasRate 45; R	CurrBasRate 53; NR	
Test purpose		Check that: The Current Basal Rate Setting Numeric object contains the attributes specified for Extended Configuration.		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181		
Other PICS		C AG OXP 041, C AG OXP 183, C AG OXP 189		

Initial condition	The simulated PHG and 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. 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. 3. Check that the field Dev-Config-Id is set in the extended range; if it is not, the PHG responds with an "unsupported-config" and waits for a new configuration. 4. The PHD under test sends an Event Report to the simulated PHG including a measurement reported by the object under test. 5. Once the PHD under test sends an extended configuration and a measurement, check that the Current Basal Rate Setting Numeric Object attributes are: a. Mandatory attribute Type ☐ attribute-id = MDC_ATTR_ID_TYPE ☐ attribute-type = TYPE ☐ attribute-value = MDC_PART_PHD_DM (0x00 0x80), MDC_INS_BASAL_RATE_SETTING (0x73 0xFC) b. If recommended Supplemental –Types Attribute is present ☐ attribute-id = MDC_ATTR_SUPPLEMENTAL_TYPES ☐ attribute-type = SupplementalTypeList ☐ attribute-value.length = <variable> (Sequence of TYPE (TYPE.length= 4 bytes)) ☐ attribute-value = One of the following values: • MDC_INS_BASAL_PRGM (0x73 0xFD) • MDC_INS_BASAL_TEMP_ABS (0x73 0xFE) • MDC_INS_BASAL_TEMP_REL (0x73 0xFF) • MDC_INS_BASAL_UNDETERMINED (0x74 0x00) shall be used if an acceptable, existing nomenclature term is not available c. Mandatory attribute Metric-Spec-Small ☐ attribute-id = MDC_ATTR_METRIC_SPEC_SMALL ☐ attribute-type = MetricSpecSmall (BITS-16) ☐ attribute-value.length = 2 bytes ☐ attribute-value ≠ 0x00 0x00 • bit 0 must be set (mss-avail-intermittent(0)) • bit 1 must be set (mss-avail-stored-data(1)) • bit 2 must be set (mss-upd-aperiodic(2)) • bit 9 must be set (mss-acc-agent-initiated(9)) • bit 13 must be set (mss-cat-setting(13)) • the remaining bits shall be set to 0. d. If not recommended attribute Metric-Structure-Small is present ☐ attribute-id = MDC_ATTR_METRIC_STRUCTURE_SMALL ☐ attribute-type = MetricStructureSmall ☐ attribute-value.length = <variable>(Sequence of (ms-struct.length =1byte(INT-U8) + ms-comp-no =1byte(INT-U8))) e. If not recommended attribute Measurement-Status is present ☐ attribute-id = MDC_ATTR_MSMT_STAT ☐ attribute-type = MeasurementStatus (BITS-16) ☐ attribute-value.length = 2 bytes

	f. If optional attribute Metric-Id n is present ☐ attribute-id = MDC_ATTR_ID_PHYSIO ☐ attribute-type = OID-Type (INT-U16) ☐ attribute-value.length = 2 bytes ☐ attribute-value = • MDC_INS_BASAL_DEVICE (0x74 0x01) • MDC_INS_BASAL_REMOTE (0x74 0x02) • MDC_INS_BASAL_AP_CTRL(0x74 0x03) • MDC_INS_BASAL_OTHER (0x74 0x04) g. If not recommended attribute Metric-Id-List is present ☐ attribute-id = MDC_ATTR_ID_PHYSIO_LIST ☐ attribute-type = MetricIdList ☐ attribute-value.length = SEQUENCE OF OID-Type (INT-U16) 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 i. 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_INTL_UNIT_PER_HR j. 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 k. If recommended attribute Base-Offset-Time-Stamp is present ☐ attribute-id = MDC_ATTR_TIME_STAMP_BO ☐ attribute-type = BaseOffsetTime ☐ attribute-value.length = 8 bytes l. If not recommended attribute Measure-Active-Period is present ☐ attribute-id = MDC_ATTR_TIME_PD_MSMT_ACTIVE ☐ attribute-type = FLOAT type ☐ attribute-value.length = 4 bytes m. If recommended attribute Basic-Nu-Observed-Value is present ☐ attribute-id = MDC_ATTR_NU_VAL_OBS_BASIC ☐ attribute-type = BasicNuObsValue ☐ attribute-value.length = SFLOAT-Type (INT-U16) n. If not recommended attribute Accuracy is present ☐ attribute-id = MDC_ATTR_NU_ACCUR_MSMT ☐ attribute-type = FLOAT-Type (INT-U32) ☐ attribute-value.length = 4 bytes
Pass/Fail criteria	All checked values are as specified in the test procedure