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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

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*
1.0	ITU-T H.845.10	2017-04-13	16	11.1002/1000/13234
1.1	ITU-T H.845.10 (2017) Cor. 1	2017-11-29	16	11.1002/1000/13423

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.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

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

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

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

NOTE

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

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

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

Table of Contents

Page

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.

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

The TSS and TP for the Personal Health Devices interface 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 (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)
- 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)

<table>
<tr><td colspan="2">TP Id</td><td colspan="3">TP/PLT/PHD/CLASS/IP/BV-000_A</td></tr>
<tr><td colspan="2">TP label</td><td colspan="3">Get MDS Object for Insulin Pump specialization: Mandatory, Conditional and Optional Attributes.</td></tr>
<tr><td rowspan="3">Coverage</td><td>Spec</td><td colspan="3">[ISO/IEEE 11073-10419]</td></tr>
<tr><td rowspan="2">Testable items</td><td>MDSAttrIP 1; M</td><td>MDSAttrIP 2; M</td><td>MDSAttrIP 4; M</td></tr>
<tr><td>MDSAttrIP 5; M</td><td>MDSAttrIP 7; R</td><td></td></tr>
<tr><td colspan="2">Test purpose</td><td colspan="3">Check that:
The MDS Object contains the attributes specified for an Insulin Pump Personal Health Device (PHD)</td></tr>
<tr><td colspan="2">Applicability</td><td colspan="3">C_AG_OXP_000 AND C_AG_OXP_158</td></tr>
<tr><td colspan="2">Other PICS</td><td colspan="3">C_AG_OXP_181</td></tr>
<tr><td colspan="2">Initial condition</td><td colspan="3">The simulated Personal Health Gateway (PHG) and the PHD under test are in the Operating state.</td></tr>
<tr><td colspan="2">Test procedure</td><td colspan="3">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
❑ atribute-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</td></tr>
</table>

	❑ 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	1. Take or send stored measurements for every supported Object in the PHD under test. 2. Wait to receive every event report and check: a. 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. atribute-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_SCHED (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_SCHED (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_SCHED (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_SCHEDSTORE (0x00 0x51) is present. ❑ IF C_AG_IP_013 THEN an instance of MDC_MOC_VMO_SCHEDSTORE (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_ATRIBUTE_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_ATRIBUTE_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

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-007		
TP label		Current Bolus Setting Numeric Object - Extended configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	CurrBolus 4; M	CurrBolus 5; R	CurrBolus 6; M
		CurrBolus 9; R	CurrBolus 11; NR	CurrBolus 12; M
		CurrBolus 14; NR	CurrBolus 18; R	CurrBolus 23; NR
		CurrBolus 24; R	CurrBolus 28; NR	
Test purpose		Check that: The Current Bolus 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 AND C_AG_IP_001		
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 Bolus Setting 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_SETTING (0x74 0x1C) b. If recommended Supplemental –Types Attribute is present ❑ attribute-id = MDC_ATTR_SPPLEMENTAL_TYPES ❑ attribute-type = SupplementalTypeList ❑ attribute-value.length =<variable> (Sequence of TYPE (TYPE.length= 4 bytes)) ❑ attribute-value = one of the following: • Combination of modality MDC_INS_BOLUS_FAST (0x74 0x29) with reason MDC_INS_BOLUS_CORR (0x74 0x2B) or MDC_INS_BOLUS_MEAL (0x74 0x2C) • Combination of modality MDC_INS_BOLUS_EXT (0x74 0x2A) with reason MDC_INS_BOLUS_CORR (0x74 0x2B) or MDC_INS_BOLUS_MEAL (0x74 0x2C)		

	If an acceptable, existing nomenclature term is not available, MDC_INS_BOLUS_UNDETERMINED (0x74 0x2D) shall be used. Combinations including MDC_INS_BOLUS_CORR (0x74 0x2B) and MDC_INS_BOLUS_MEAL (0x74 0x2C) are not recommended. 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 12 must be set (mss-cat-manual(12)) • bit 13 must be set (mss-cat-setting(13)) • bit 14 must be set (mss-cat-calculation(14)) d. If 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: one of the following values: ▪ MDC_INS_BOLUS_MANUAL (0x74 0x2E) ▪ MDC_INS_BOLUS_RECOMMENDED (0x74 0x2F) ▪ MDC_INS_BOLUS_MANUAL_CHANGE (0x74 0x30) ▪ MDC_INS_BOLUS_COMMANDED (0x74 0x31) ▪ MDC_INS_BOLUS_OTHER (0x74 0x32) e. 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 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 (0x15 0x60) if Suppemental-Types attribute contains MDC_INS_BOLUS_FAST (0x74 0x29) ▪ MDC_DIM_INTL_UNIT_PER_HR (0x16 0x40) if Suppemental-Types attribute contains MDC_INS_BOLUS_EXT (0x74 0x2A) g. 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 h. If recommended attribute Base-Offset-Time-Stamp is present ❑ attribute-id = MDC_ATTR_TIME_STAMP_BO

	❑ attribute-type = BaseOffsetTime ❑ attribute-value.length = 8 bytes i. If not recommended attribute Compound-Simple-Nu-Observed-Value is present ❑ attribute-id = MDC_ATTR_NU_CMPD_VAL_OBS_SIMP ❑ attribute-type = SimpleNuObsValueCmp ❑ attribute-value.length = <variable> (Sequence of SimpleNuObsValue (SimpleNuObsValue ::= FLOAT-Type (INT-U32))) j. If recommended attribute Basic-Nu-Observed-Value ❑ attribute-id = MDC_ATTR_NU_VAL_OBS_BASIC ❑ attribute-type = BasicNuObsValue ❑ attribute-value.length = SFLOAT-Type (INT-U16) k. 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-008		
TP label		Pending Bolus Delay Numeric Object - Extended configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	PendBolus 4; M	PendBolus 5; NR	PendBolus 6; M
		PendBolus 9; NR	PendBolus 10; NR	PendBolus 11; NR
		PendBolus 12; M	PendBolus 14; R	PendBolus 18 ; R
		PendBolus 24; M	PendBolus 28; NR	
Test purpose		Check that: The Pending Bolus Delay Numeric object contains the attributes specified for Extended Configuration.		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND C_AG_IP_002		
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 Pending Bolus Delay 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_PENDING_DELAY (0x74 0x33) b. If not recommended Supplemental –Types Attribute is present ❑ attribute-id = MDC_ATTR_SPPLEMENTAL_TYPES ❑ attribute-type = SupplementalTypeList ❑ attribute-value.length =<variable> (Sequence of TYPE (TYPE.length= 4 bytes)) c. Mandatory attribute Metric-Spec-Small ❑ attribute-id = MDC_ATTR_METRIC_SPEC_SMALL ❑ attribute-type = MetricSpecSmall (BITS-16) ❑ attribute-value.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 12 must be set (mss-cat-manual(12)) ▪ bit 13 must be set (mss-cat-setting(13)) d. 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 e. 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) f. 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 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_MIN or MDC_DIM_SEC h. 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

	i. IF recommended attribute Base-Offset-Time-Stamp is present ❑ attribute-id = MDC_ATTR_TIME_STAMP_BO ❑ attribute-type = BaseOffsetTime ❑ attribute-value.length = 8 bytes j. 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 ❑ attribute-value = <not relevant for this test> k. Mandatory attribute Basic-Nu-Observed-Value ❑ attribute-id = MDC_ATTR_NU_VAL_OBS_BASIC ❑ attribute-type = BasicNuObsValue ❑ attribute-value.length = SFLOAT-Type (INT-U16) l. 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-009		
TP label		Basal delivered Numeric Object - Extended configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	BasalDel 4; M	BasalDel 6; M	BasalDel 7; NR
		BasalDel 8; NR	BasalDel 12; M	BasalDel 18; R
		BasalDel 21; NR	BasalDel 24; R	BasalDel 28; NR
Test purpose		Check that: The Basal 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 AND C_AG_IP_003		
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 Basal delivered 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 (0x73 0xF0)
   b. 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))
   c. If not recommended attribute Metric-Structure-Small is present
      - ❑ attribute-id = MDC_ATTR_METRIC_STRUCTURE_SMALL
      - ❑ attribute-type = MetricStructureSmall
      - ❑ attribute-value = <variable>(Sequence of (ms-struct.length =1byte(INT-U8) + ms-comp-no =1byte(INT-U8)))
   d. If not recommended attribute Measurement-Status is present
      - ❑ attribute-id = MDC_ATTR_MSMT_STAT
      - ❑ attribute-type = MeasurementStatus (BITS-16)
      - ❑ attribute-value = 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 Base-Offset-Time-Stamp is present
      - ❑ attribute-id = MDC_ATTR_TIME_STAMP_BO
      - ❑ attribute-type = BaseOffsetTime
      - ❑ attribute-value.length = 8 bytes
   g. 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
   h. If recommended attribute Basic-Nu-Observed-Value
      - ❑ attribute-id = MDC_ATTR_NU_VAL_OBS_BASIC
      - ❑ attribute-type = BasicNuObsValue

	❑ attribute-value.length = SFLOAT-Type (INT-U16) i. 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-010		
TP label		Basal rate schedule setting Numeric Object - Extended configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	BasalRateSch 4; M	BasalRateSch 5; NR	BasalRateSch 6; M
		BasalRateSch 7; NR	BasalRateSch 8; NR	BasalRateSch 9; NR
		BasalRateSch 10; NR	BasalRateSch 11; NR	BasalRateSch 12; M
		BasalRateSch 14; NR	BasalRateSch 18; R	BasalRateSch 21; NR
		BasalRateSch 22; M	BasalRateSch 23; NR	BasalRateSch 24; M
		BasalRateSch 28; NR		
Test purpose		Check that: The Basal rate schedule 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 AND C_AG_IP_004 AND C_AG_IP_012		
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 simulated PHG issues a Get for the Basal Profile Settings Schedule-Store object. 5. The PHD under test responds with the attributes of the Basal Profile Settings Schedule-Store 6. The simulated PHG issues a Get-Schedule-Segment-Info with SchedSegmSelection set to all-sched-segments and receives the information. 7. The simulated PHG sends a request for the Schedule-Segment Data to one of the Schedule-Segments that contain a measurement reported by the object under test and receives the data. If no data is available, add to the Schedule-Store object a measurement reported by the object under test.		

	8. Once the PHD under test sends an extended configuration and a measurement, check that the Basal rate schedule 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_SCHED (0x74 0x10) b. 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 13 must be set (mss-cat-setting(13)) c. If not recommended attribute Metric-Structure-Small is present ❑ attribute-id = MDC_ATTR_METRIC_STRUCTURE_SMALL ❑ attribute-type = MetricStructureSmall ❑ attribute-value = <variable>(Sequence of (ms-struct.length =1byte(INT-U8) + ms-comp-no =1byte(INT-U8))) d. If not recommended attribute Measurement-Status is present ❑ attribute-id = MDC_ATTR_MSMT_STAT ❑ attribute-type = MeasurementStatus (BITS-16) ❑ attribute-value = 2 bytes e. 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 f. 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) g. 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 h. 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 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 j. If recommended attribute Base-Offset-Time-Stamp is present ❑ attribute-id = MDC_ATTR_TIME_STAMP_BO ❑ attribute-type = BaseOffsetTime ❑ attribute-value.length = 8 bytes k. If not recommended attribute Measure-Active-Period is present ❑ attribute-id = MDC_ATTR_TIME_PD_MSMT_ACTIVE ❑ attribute-type = FLOAT type ❑ attribute-value.length = 4 bytes l. Mandatory attribute Simple-Nu-Observed-Value ❑ attribute-id = MDC_ATTR_NU_VAL_OBS_SIMP ❑ attribute-type = SimpleNuObsValue ❑ attribute-value.length = FLOAT-Type (INT-U32) m. If not recommended attribute Compound-Simple-Nu-Observed-Value is present ❑ attribute-id = MDC_ATTR_NU_CMPD_VAL_OBS_SIMP ❑ attribute-type = SimpleNuObsValueCmp ❑ attribute-value.length = <variable> (Sequence of SimpleNuObsValue (SimpleNuObsValue ::= FLOAT-Type (INT-U32))) 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.
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-011		
TP label		Insulin to carbohydrate ratio schedule setting Numeric Object - Extended configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	InsToCarb 4; M	InsToCarb 5; NR	InsToCarb 6; M
		InsToCarb 7; NR	InsToCarb 8; NR	InsToCarb 9; NR
		InsToCarb 10; NR	InsToCarb 11; NR	InsToCarb 12; M
		InsToCarb 14; NR	InsToCarb 18; R	InsToCarb 21; NR
		InsToCarb 23; NR	InsToCarb 28; NR	
Test purpose		Check that: The Insulin to carbohydrate ratio schedule 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 AND C_AG_IP_005 AND C_AG_IP_013
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 simulated PHG issues a Get for the Insulin to Carbohydrate Ratio Profile Settings Schedule-Store object. 5. The PHD under test responds with the attributes of the Insulin to Carbohydrate Ratio Profile Settings Schedule-Store. 6. The simulated PHG issues a Get-Schedule-Segment-Info with SchedSegmSelection set to all-sched-segments and receives the information. 7. The simulated PHG sends a request for the Schedule-Segment Data to one of the Schedule-Segments that contains a measurement reported by the object under test and receives the data. If no data is available, add to the Schedule-Store object a measurement reported by the object under test. 8. Once the PHD under test sends an extended configuration and a measurement, check that the Insulin to carbohydrate ratio schedule 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_I2CHO_SCHED (0x74 0x3C) b. Not recommended Supplemental –Types Attribute ❑ attribute-id = MDC_ATTR_SPPLEMENTAL_TYPES ❑ attribute-type = SupplementalTypeList ❑ attribute-value.length =<variable> (Sequence of TYPE (TYPE.length= 4 bytes c. Mandatory attribute Metric-Spec-Small ❑ attribute-id = MDC_ATTR_METRIC_SPEC_SMALL ❑ attribute-type = MetricSpecSmall (BITS-16) ❑ attribute-value.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 13 must be set (mss-cat-setting(13)) d. If not recommended attribute Metric-Structure-Small is present ❑ attribute-id = MDC_ATTR_METRIC_STRUCTURE_SMALL ❑ attribute-type = MetricStructureSmall ❑ attribute-value = <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 = 2 bytes 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 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_G 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 not recommended attribute Compound-Simple-Nu-Observed-Value is present ❑ attribute-id = MDC_ATTR_NU_CMPD_VAL_OBS_SIMP ❑ attribute-type = SimpleNuObsValueCmp ❑ attribute-value.length = <variable> (Sequence of SimpleNuObsValue (SimpleNuObsValue ::= FLOAT-Type (INT-U32))) 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.

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-012		
TP label		Insulin sensitivity factor schedule setting Numeric Object - Extended configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	InsSensFact 4; M	InsSensFact 5; NR	InsSensFact 6; M
		InsSensFact 7; NR	InsSensFact 8; NR	InsSensFact 9; NR
		InsSensFact 10; NR	InsSensFact 11; NR	InsSensFact 12; M
		InsSensFact 14; NR	InsSensFact 18; R	InsSensFact 21; NR
		InsSensFact 22; M	InsSensFact 23; NR	InsSensFact 28; NR
Test purpose		Check that: The Insulin sensitivity factor schedule 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 AND C_AG_IP_006 AND C_AG_IP_014		
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 simulated PHG issues a Get for the Insulin Sensitivity Factor Profile Settings Schedule-Store object. 5. The PHD under test responds with the attributes of the Insulin Sensitivity Factor Profile Settings Schedule-Store 6. The simulated PHG issues a Get-Schedule-Segment-Info with SchedSegmSelection set to all-sched-segments and receives the information 7. The simulated PHG sends a request for the Schedule-Segment Data to one of the Schedule-Segments that contains a measurement reported by the object under test and receives the data. If no data is available, add to the Schedule-Store object a measurement reported by the object under test. 8. Once the PHD under test sends an extended configuration and a measurement, check that the Insulin sensitivity factor schedule 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_ISF_SCHED (0x74 0x48) b. Not recommended Supplemental –Types Attribute		

	❑ attribute-id = MDC_ATTR_SPPLEMENTAL_TYPES ❑ attribute-type = SupplementalTypeList ❑ attribute-value.length =<variable> (Sequence of TYPE (TYPE.length= 4 bytes c. Mandatory attribute Metric-Spec-Small ❑ attribute-id = MDC_ATTR_METRIC_SPEC_SMALL ❑ attribute-type = MetricSpecSmall (BITS-16) ❑ attribute-value.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 13 must be set (mss-cat-setting(13)) d. If not recommended attribute Metric-Structure-Small is present ❑ attribute-id = MDC_ATTR_METRIC_STRUCTURE_SMALL ❑ attribute-type = MetricStructureSmall ❑ attribute-value = <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 = 2 bytes 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 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= one of • MDC_DIM_MILLI_MOLE_PER_L • MDC_DIM_MILLI_G_PER_DL 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 ❑ attribute-id = MDC_ATTR_NU_VAL_OBS_BASIC ❑ attribute-type = BasicNuObsValue ❑ attribute-value.length = SFLOAT-Type (INT-U16) n. If not recommended attribute Compound-Simple-Nu-Observed-Value is present ❑ attribute-id = MDC_ATTR_NU_CMPD_VAL_OBS_SIMP ❑ attribute-type = SimpleNuObsValueCmp ❑ attribute-value.length = <variable> (Sequence of SimpleNuObsValue (SimpleNuObsValue ::= FLOAT-Type (INT-U32))) o. 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-013		
TP label		Insulin reservoir remaining Numeric Object - Extended configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	InsResRem 4; M	InsResRem 6; M	InsResRem 7; NR
		InsResRem 8; NR	InsResRem 12; M	InsResRem 14; R
		InsResRem 18; R	InsResRem 21; NR	InsResRem 24; R
		InsResRem 28; NR		
Test purpose		Check that: The Insulin reservoir remaining Numeric Object contains the attributes specified for Extended Configuration.		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND C_AG_IP_007		

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 Insulin reservoir remaining 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_RESERVOIR (0x74 0x54) b. 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)) c. If not recommended attribute Metric-Structure-Small is present ❑ attribute-id = MDC_ATTR_METRIC_STRUCTURE_SMALL ❑ attribute-type = MetricStructureSmall ❑ attribute-value = <variable>(Sequence of (ms-struct.length =1byte(INT-U8) + ms-comp-no =1byte(INT-U8))) d. If not recommended attribute Measurement-Status is present ❑ attribute-id = MDC_ATTR_MSMT_STAT ❑ attribute-type = MeasurementStatus (BITS-16) ❑ attribute-value = 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 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

	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. If recommended 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-014		
TP label		Insulin Concentration Numeric Object - Extended configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	InsConc 4; M	InsConc 5; NR	InsConc 6; M
		InsConc 7; NR	InsConc 8; NR	InsConc 12; M
		InsConc 14; NR	InsConc 18; R	InsConc 21; NR
		InsConc 24; R	InSConc 28; NR	
Test purpose		Check that: The Insulin Concentration Numeric Object contains the attributes specified for Extended Configuration.		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND C_AG_IP_008		
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 Insulin concentration 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_CONC (0x74 0x60)
   b. Not recommended Supplemental –Types Attribute
      - ❑ attribute-id = MDC_ATTR_SPPLEMENTAL_TYPES
      - ❑ attribute-type = SupplementalTypeList
      - ❑ attribute-value.length =<variable> (Sequence of TYPE (TYPE.length= 4 bytes
   c. Mandatory attribute Metric-Spec-Small
      - ❑ attribute-id = MDC_ATTR_METRIC_SPEC_SMALL
      - ❑ attribute-type = MetricSpecSmall (BITS-16)
      - ❑ attribute-value.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))
   d. If not recommended attribute Metric-Structure-Small is present
      - ❑ attribute-id = MDC_ATTR_METRIC_STRUCTURE_SMALL
      - ❑ attribute-type = MetricStructureSmall
      - ❑ attribute-value = <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 = 2 bytes
   f. Mandatory attribute Unit-Code
      - ❑ attribute-id = MDC_ATTR_UNIT_CODE
      - ❑ attribute-type = OID-Type(INT-U16)
      - ❑ attribute-value.length = 2 bytes
      - ❑ attribute-value= one of:
        - MDC_DIM_INTL_UNIT_PER_ML
        - MDC_DIM_INTL_UNIT_PER_L
        - MDC_DIM_INTL_UNIT_PER_M_CUBE
        - MDC_DIM_INTL_UNIT_PER_CM_CUBE
   g. 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 h. If recommended attribute Base-Offset-Time-Stamp is present ❑ attribute-id = MDC_ATTR_TIME_STAMP_BO ❑ attribute-type = BaseOffsetTime ❑ attribute-value.length = 8 bytes 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 = 4 bytes j. If recommended attribute Basic-Nu-Observed-Value ❑ attribute-id = MDC_ATTR_NU_VAL_OBS_BASIC ❑ attribute-type = BasicNuObsValue ❑ attribute-value.length = SFLOAT-Type (INT-U16) k. 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-015		
TP label		Operational status Enumeration Object - Extended configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	OpStatus 4; M	OpStatus 5; NR	OpStatus 6; M
		OpStatus 7; NR	OpStatus 8; NR	OpStatus 9; NR
		OpStatus 10; NR	OpStatus 11; NR	OpStatus 12; NR
		OpStatus 14; NR	OpStatus 15; NR	OpStatus 16; NR
		OpStatus 18; R	OpStatus 21; NR	OpStatus 22; NR
		OpStatus 23; NR	OpStatus 24; R	
Test purpose		Check that: The Operational status Enumeration Object contains the attributes specified for Extended Configuration.		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND C_AG_IP_009		
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 Operational status Enumeration 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_PUMP_OP_STAT (0x74 0x6C)
   b. Not recommended Supplemental –Types Attribute
      - ❑ attribute-id = MDC_ATTR_SPPLEMENTAL_TYPES
      - ❑ attribute-type = SupplementalTypeList
      - ❑ attribute-value.length =<variable> (Sequence of TYPE (TYPE.length= 4 bytes
   c. Mandatory attribute Metric-Spec-Small
      - ❑ attribute-id = MDC_ATTR_METRIC_SPEC_SMALL
      - ❑ attribute-type = MetricSpecSmall (BITS-16)
      - ❑ attribute-value.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))
   d. If not recommended attribute Metric-Structure-Small is present
      - ❑ attribute-id = MDC_ATTR_METRIC_STRUCTURE_SMALL
      - ❑ attribute-type = MetricStructureSmall
      - ❑ attribute-value = <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 = 2 bytes
   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
   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. If not recommended attribute Unit-Code is present ❑ attribute-id = MDC_ATTR_UNIT_CODE ❑ attribute-type = OID-Type(INT-U16) ❑ attribute-value.length = 2 bytes 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 not recommended attribute Label-String is present ❑ attribute-id = MDC_ATTR_ID_LABEL_STRING ❑ attribute-type = OCTET STRING ❑ attribute-value.length = <variable> ❑ attribute-value = <Printable ASCII> l. If not recommended attribute Unit-Label-String is present ❑ attribute-id = MDC_ATTR_UNIT_LABEL_STRING ❑ attribute-type = OCTET STRING ❑ attribute-value.length = <variable> ❑ attribute-value = <Printable ASCII> m. If recommended attribute Base-Offset-Time-Stamp is present ❑ attribute-id = MDC_ATTR_TIME_STAMP_BO ❑ attribute-type = BaseOffsetTime ❑ attribute-value.length = 8 bytes n. 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 o. If not recommended attribute Enum-Observed-Value-Simple_OID is present ❑ attribute-id= MDC_ATTR_ENUM_OBS_VAL_SIMP_OID ❑ attribute-type = OID-Type(INT-U16) ❑ attribute-value.length = 2 bytes p. If not recommended attribute Enum-Observed-Value-Simple-Bit-Str is present ❑ attribute-id = MDC_ATTR_ENUM_OBS_VAL_SIMP_BIT_STR ❑ attribute-type = BITS-32 ❑ attribute-value.length = 4 bytes q. IF recommended attribute Enum-Observed-Value-Basic-Bit-Str is present ❑ attribute-id= MDC_ATTR_ENUM_OBS_VAL_BASIC_BIT_STR ❑ attribute-type = BITS-16 ❑ attribute-value.length = 2 bytes ❑ attribute-value = ▪ insulin-device-op-undetermined (bit 0) may be set ▪ insulin-device-op-off (bit 1) may be set ▪ insulin-device-op-standby (bit 2) may be set

	▪ insulin-device-op-preparing (bit 3) may be set ▪ insulin-device-op-priming (bit 4) may be set ▪ insulin-device-op-waiting (bit 5) may be set ▪ insulin-device-op-ready (bit 6) may be set ▪ insulin-device-therapy-stop (bit 9) may be set ▪ insulin-device-therapy-pause (bit 10) may be set ▪ insulin-device-therapy-run (bit 11) may be set ❑ At least one current therapy condition bit (insulin-device-therapy-stop (9), insulin-device-therapy-pause (10), or insulin-device-therapy-run(11)) shall be set for any of the operating conditions ❑ The insulin-device-therapy-run (11) condition shall only be set when the insulin-device-op-ready (6) condition is set. r. If not recommended attribute Enum-Observed-Value-Simple-Str is present ❑ attribute-id= MDC_ATTR_ENUM_OBS_VAL_SIMP_STR ❑ attribute-type = BITS-16 ❑ attribute-value.length = 2 bytes s. If not recommended attribute Enum-Observed-Value is present ❑ attribute-id = MDC_ATTR_VAL_ENUM_OBS ❑ attribute-type = EnumObsValue ❑ attribute-value.length = <Variable> t. If not recommended attribute Enum-Observed-Value-Partition is present ❑ attribute-id = MDC_ATTR_ENUM_OBS_VAL_PART ❑ attribute-type = NomPartition ❑ attribute-value.length = 2 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-016		
TP label		PHD DM status Enumeration Object - Extended configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	PHDDMStatus 4; M	PHDDMStatus 5; NR	PHDDMStatus 6; M
		PHDDMStatus 7; NR	PHDDMStatus 8; NR	PHDDMStatus 9; NR
		PHDDMStatus 10; NR	PHDDMStatus 11; NR	PHDDMStatus 12; NR
		PHDDMStatus 14; NR	PHDDMStatus 15; NR	PHDDMStatus 16; NR
		PHDDMStatus 18; R	PHDDMStatus 21; NR	PHDDMStatus 22; NR
		PHDDMStatus 23; M		
Test purpose		Check that:		

	The PHD DM status Enumeration Object contains the attributes specified for Extended Configuration.
Applicability	C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND C_AG_IP_010
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 PHD DM status Enumeration 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_PHD_DM_DEV_STAT (0x4E 0x20) b. Not recommended Supplemental –Types Attribute ❑ attribute-id = MDC_ATTR_SPPLEMENTAL_TYPES ❑ attribute-type = SupplementalTypeList ❑ attribute-value.length =<variable> (Sequence of TYPE (TYPE.length= 4 bytes c. Mandatory attribute Metric-Spec-Small ❑ attribute-id = MDC_ATTR_METRIC_SPEC_SMALL ❑ attribute-type = MetricSpecSmall (BITS-16) ❑ attribute-value.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)) d. If not recommended attribute Metric-Structure-Small is present ❑ attribute-id = MDC_ATTR_METRIC_STRUCTURE_SMALL ❑ attribute-type = MetricStructureSmall ❑ attribute-value = <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 = 2 bytes 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 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. If not recommended attribute Unit-Code is present ❑ attribute-id = MDC_ATTR_UNIT_CODE ❑ attribute-type = OID-Type(INT-U16) ❑ attribute-value.length = 2 bytes 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 not recommended attribute Label-String is present ❑ attribute-id = MDC_ATTR_ID_LABEL_STRING ❑ attribute-type = OCTET STRING ❑ attribute-value.length = <variable> ❑ attribute-value = <Printable ASCII> l. If not recommended attribute Unit-Label-String is present ❑ attribute-id = MDC_ATTR_UNIT_LABEL_STRING ❑ attribute-type = OCTET STRING ❑ attribute-value.length = <variable> ❑ attribute-value = <Printable ASCII> m. If recommended attribute Base-Offset-Time-Stamp is present ❑ attribute-id = MDC_ATTR_TIME_STAMP_BO ❑ attribute-type = BaseOffsetTime ❑ attribute-value.length = 8 bytes n. 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 o. If not recommended attribute Enum-Observed-Value-Simple_OID is present ❑ attribute-id= MDC_ATTR_ENUM_OBS_VAL_SIMP_OID ❑ attribute-type = OID-Type(INT-U16) ❑ attribute-value.length = 2 bytes p. Mandatory attribute Enum-Observed-Value-Simple-Bit-Str ❑ attribute-id = MDC_ATTR_ENUM_OBS_VAL_SIMP_BIT_STR ❑ attribute-type = BITS-32 ❑ attribute-value.length = 4 bytes ❑ attribute-value =

	▪ device-status-undetermined (bit 0) may be set ▪ device-status-reset (bit 1) may be set ▪ device-status-error (bit 5) may be set ▪ device-status-error-mechanical (bit 6) may be set ▪ device-status-error-electronic (bit 7) may be set ▪ device-status-error-software (bit 8) may be set ▪ device-status-error-battery (bit 9) may be set ▪ device-status-service (bit 15) may be set ▪ device-status-service-time-sync-required (bit 16) may be set
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-017		
TP label		Insulin pump status Enumeration Object - Extended configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	IPStatus 4; M	IPStatus 5; NR	IPStatus 6; M
		IPStatus 7; NR	IPStatus 8; NR	IPStatus 9; NR
		IPStatus 10; NR	IPStatus 11; NR	IPStatus 12; NR
		IPStatus 14; NR	IPStatus 18; R	IPStatus 21; NR
		IPStatus 23; M	IPStatus 24; NR	IPStatus 25; NR
		IPStatus 26; NR		
Test purpose		Check that: The Insulin pump status Enumeration Object contains the attributes specified for Extended Configuration.		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND C_AG_IP_011		
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 Insulin pump status Enumeration 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_PUMP_DEV_STAT (0x74 0x8C) b. Not recommended Supplemental –Types Attribute ❑ attribute-id = MDC_ATTR_SPPLEMENTAL_TYPES ❑ attribute-type = SupplementalTypeList ❑ attribute-value.length =<variable> (Sequence of TYPE (TYPE.length= 4 bytes c. Mandatory attribute Metric-Spec-Small ❑ attribute-id = MDC_ATTR_METRIC_SPEC_SMALL ❑ attribute-type = MetricSpecSmall (BITS-16) ❑ attribute-value.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)) d. If not recommended attribute Metric-Structure-Small is present ❑ attribute-id = MDC_ATTR_METRIC_STRUCTURE_SMALL ❑ attribute-type = MetricStructureSmall ❑ attribute-value = <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 = 2 bytes 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 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. If not recommended attribute Unit-Code is present ❑ attribute-id = MDC_ATTR_UNIT_CODE ❑ attribute-type = OID-Type(INT-U16) ❑ attribute-value.length = 2 bytes 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. Mandatory attribute Enum-Observed-Value-Simple-Bit-Str ❑ attribute-id = MDC_ATTR_ENUM_OBS_VAL_SIMP_BIT_STR ❑ attribute-type = BITS-32 ❑ attribute-value.length = 4 bytes ❑ attribute-value = ▪ air-pressure-out-of-range (bit 0) may be set ▪ bolus-canceled (bit 1) may be set ▪ delivery-max (bit 2) may be set ▪ infusion-set-detached (bit 3) may be set ▪ infusion-set-incomplete (bit 4) may be set ▪ occlusion-detected (bit 5) may be set ▪ power-insufficient (bit 6) may be set ▪ priming-issue (bit 7) may be set ▪ reservoir-empty (bit 8) may be set ▪ reservoir-issue (bit 9) may be set ▪ reservoir-low (bit 10) may be setx ▪ reservoir-attached (bit 11) may be set ▪ temp-basal-canceled (bit 12) may be set ▪ temp-basal-expired (bit 13) may be set ▪ temperature-out-of-range (bit 14) may be set n. If not recommended attribute Enum-Observed-Value-Basic-Bit-Str is present ❑ attribute-id= MDC_ATTR_ENUM_OBS_VAL_BASIC_BIT_STR ❑ attribute-type = BITS-16 ❑ attribute-value.length = 2 bytes o. If not recommended attribute Enum-Observed-Value-Simple-Str is present ❑ attribute-id= MDC_ATTR_ENUM_OBS_VAL_SIMP_STR ❑ attribute-type = BITS-16 ❑ attribute-value.length = 2 bytes p. If not recommended attribute Enum-Observed-Value is present ❑ attribute-id = MDC_ATTR_VAL_ENUM_OBS ❑ attribute-type = EnumObsValue ❑ attribute-value.length = <Variable>

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-018		
TP label		PM-Store Attributes for Extended Configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	PMStrObjAttIP 2; M	PMStrObjAttIP 4; M	PMStrObjAttIP 5; M
		PMStrObjAttIP 8; NR	PMStrObjAttIP 11; C	
		PMStrObjAttIP 12; M	PMStrObjAttIP 13; M	PMStrObjMethIP 3; M
Test purpose		Check that: PM-Store Object contains the attributes specified for Extended Configuration. [AND] An insulin pump PHD with a PM-Store shall support the [Get-Segment-Id-List] method with [Confirmed] mode.		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_041 AND C_AG_OXP_181		
Other PICS				
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 3. The PHD responds with a “Remote Operation Invoke | Confirmed Event Report” message with an MDC_NOTI_CONFIG event to send its configuration to the PHG. 4. The simulated PHG shall send a Get-Segment-Id-List to the PM-Store object. 5. The PHD responds to the ACTION. Get-Segment-Id-List command with a list of the instance numbers. 6. The simulated PHG shall send a Get request for the PM-Store object with an attribute-id-list set to 0 to indicate all PM-Store attributes. 7. The PHD issues a GET response with the PM-Store attributes it supports: a. Mandatory Store-Capacity-Count ❑ attribute-id = MDC_ATTR_METRIC_STORE_CAPAC_CNT ❑ attribute-type = INT-U32 ❑ attribute-value.length = 4 bytes ❑ attribute-value = See relation with next attribute b. Mandatory attribute Store-Usage-Count ❑ attribute-id = MDC_ATTR_METRIC_STORE_USAGE_CNT ❑ attribute-type = INT-U32 ❑ attribute-value.length = 4 bytes ❑ attribute-value = consistent with actual number of segments present and always ≤ than Storage-Capacity-Count		

	c. IF Not Recommended attribute Sample-Period is present ❑ attribute-id = MDC_ATTR_TIME_PD_SAMP ❑ attribute-type = RelativeTime ❑ attribute-value.length = 4 bytes ❑ attribute-value = <Not relevant in this test> d. Mandatory attribute PM-Store-Capab ❑ attribute-id = MDC_ATTR_PM_STORE_CAPAB ❑ attribute-type = PmStoreCapab ❑ attribute-value.length = 2 bytes ❑ attribute-value ▪ pmsc-var-no-of-segm (bit 0) shall be set If the PHD creates new segments either due to storing data of multiple sessions or due to time changes ▪ pmsc-epi-seg-entries (bit 4) shall be set ▪ pmsc-peri-seg-entries (bit 5) shall not be set ▪ All other bits are PHD specific
Pass/Fail criteria	All checked values are as specified in the test procedure.
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-019_A		
TP label		PM Segment Attributes for Extended Configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	PMStoreObjIP 4; M	PMStoreObjIP 5; O	PMStoreObjIP 6; M
		PMSegObjIP 2; M	PMSegObjIP 4; M	PMSegObjIP 12; M
Test purpose		Check that: PM-Segment objects contain the attributes specified for Extended Configuration. [AND] The segments holding readings from the objects for bolus delivered and current basal rate setting shall be supported if the metric PM-store is implemented. [AND] The other segments are optional and hold observations from the further objects that are instantiated.		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_041 AND C_AG_OXP_181		
Other PICS				
Initial condition		The simulated PHG and PHD under test are in the Operating state.		
Test procedure		1. The simulated PHG shall send a Get request for the PM-Store object with an attribute-id-list set to 0 to indicate all PM-Store attributes. 2. The simulated PHG shall send a Get-Segment-Info object action for the PM-Segment object with SegmSelection = all-segments to indicate the PM-Segments attributes of all available PM-Segments. 3. The PHD issues a response with the PM-Segment attributes it supports: a. Mandatory attribute PM-Segment-Entry-Map		

	❑ SegmentEntryHeader.value = One of the next must be set: • seg-elem-hdr-relative-time(1) • seg-elem-hdr-hires-relative-time(2) • seg-elem-hdr-bo-time(3) ❑ SegmEntryElem: <Record the fields for later comparison> b. Mandatory attribute Operational-State ❑ attribute-id = MDC_ATTR_OP_STAT ❑ attribute-type = OperationalState ❑ attribute-value.length = 2 bytes ❑ attribute-value = one of • disabled (0x00 0x00) • enabled (0x00 0x01) • notAvailable (0x00 0x02) c. Mandatory attribute Segment-Usage-Count ❑ attribute-id = MDC_ATTR_SEG_USAGE_CNT ❑ attribute-type = INT-U32 ❑ attribute-value.length = 4 bytes ❑ attribute-value = <not relevant in this test> 4. Repeat for every PM-Segment object
Pass/Fail criteria	• All checked values are as specified in the test procedure • Every segm-entry-header must contain one of the time formats • At least one PM-Segment must reference the Bolus Delivered Numeric object in its PM-Segm-Entry-Map • At least one PM-Segment must reference the Current Basal Rate Setting Numeric object in its PM-Segm-Entry-Map • If there are more PM-Segment objects, the rest of them must reference one of the objects defined in the spec in its PM-Segm-Entry-Map
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-019_B		
TP label		PM-Segment Object for Extended Configuration.MDS Event Reports		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	PMStoreObjIP 3; M		
Test purpose		Check that: Any configuration with a PM Store for persistent storage shall disable agent-initiated transmission and enable access to PM-Store transmissions		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_041 AND C_AG_OXP_181		
Other PICS				
Initial condition		The simulated PHG and PHD under test are in the Operating state.		
Test procedure		1. The simulated PHG shall send a Get request for the PM-Store object with an attribute-id-list set to 0 to indicate all PM-Store attributes.		

	2. The simulated PHG shall send a Get-Segment-Info object action for the PM-Segment object with SegmSelection = all-segments to indicate the PM-Segments attributes of all available PM-Segments. 3. The simulated PHG asks for a measurement. 4. Check event reports that are sent by the PHD.
Pass/Fail criteria	In step 4, the PHD shall not send the data with MDS event reports
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-020		
TP label		Schedule-Store Attributes for Extended Configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	SchStoreObjIP 1; M	SchStrObjAtt 2; M	SchStrObjAtt 3; M
		SchStrObjAtt 4; M	BasalProf 12; C	BasalProf 13; M
		BasalProf 14; M	InsCHRProf 12; C	InsCHRProf 13; M
		InsCHRProf 14; M	ISFProf 12; C	ISFProf 13; M
		ISFProf 14; M	SchStrObjAtt 5; O	BasalProf 7; M
		InsCHRProf 7; M	ISFProf 7; M	SchStrObjAtt 6; O
		BasalProf 8; M	InsCHRProf 8; M	ISFProf 8; M
		SchStrObjAtt 7; M	SchStrObjAtt 8; O	SchStrObjAtt 9; M
		GET_SchServ 1; M		
Test purpose		Check that: The nomenclature code to identify the Schedule-Store class is MDC_MOC_VMO_SCHEDSTORE [AND] The GET service shall be supported by any PHD that supports one or more schedule-store objects [AND] Schedule-Store Objects contain the attributes specified for Extended Configuration.		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND (C_AG_IP_012 OR C_AG_IP_013 OR C_AG_IP_014)		
Other PICS				
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 3. The PHD responds with a “Remote Operation Invoke | Confirmed Event Report” message with an MDC_NOTI_CONFIG event to send its configuration to the PHG. 4. The simulated PHG shall send a Get request for all Schedule-Store objects with an attribute-id-list set to 0 to indicate all Schedule-Store attributes. 5. The PHD issues a GET response with the Schedule-Store attributes it supports:		

	a. Mandatory attribute Active-Schedule-Segment-Instance-Number shall be present ❑ attribute-id = MDC_ATTR_SCHED_STORE_ACTIVE_INSTNO ❑ attribute-type = InstNumber ❑ attribute-value.length = 2 bytes ❑ attribute-value = <Not relevant in this test case> b. Mandatory attribute Updated-Schedule-Segment-Instance-Number-List shall be present ❑ attribute-id = MDC_ATTR_SCHED_STORE_UPDATED_INSTNO ❑ attribute-type = InstNumberList ❑ attribute-value.count = <Variable> ❑ attribute-value.length = <Variable> (SEQUENCE OF InstNumber (2 bytes)) ❑ attribute-value = <Not relevant in this test case> c. Mandatory attribute Schedule-Store-Capab ❑ attribute-id = MDC_ATTR_SCHED_STORE_CAPAB ❑ attribute-type = SchedStoreCapab ❑ attribute-value.length = 4 bytes ❑ attribute-value = ▪ schedsc-var-no-of-segm (bit 0) may be set ▪ schedsc-segm-id-list-selec t(bit 3) may be set ▪ schedsc-epi-seg-entries (bit 4) shall be set ▪ schedsc-peri-seg-entries (bit 5) shall not be set ▪ schedsc-multi-person (bit 12) may be set ▪ schedsc-get-segm-info-sup (bit 13) may be set ▪ schedsc-get-segm-id-list-sup (bit 14) may be set ▪ Remaining bits are agent-specific d. Mandatory attribute Schedule-Store-Capacity-Count ❑ attribute-id = MDC_ATTR_SCHED_STORE_CAPAC_CNT ❑ attribute-type = INT-U32 ❑ attribute-value.length = 4 bytes ❑ attribute-value = See relation with next attribute e. Mandatory attribute Schedule-Store-Usage-Count ❑ attribute-id = MDC_ATTR_SCHED_STORE_USAGE_CNT ❑ attribute-type = INT-U32 ❑ attribute-value.length = 4 bytes ❑ attribute-value = consistent with actual number of segments present and always ≤ than Schedule-Store-Capacity-Count f. Mandatory attribute Schedule-Store-Operational-Status ❑ attribute-id = MDC_ATTR_SCHED_STORE_OP_STAT ❑ attribute-type = OperationalState ❑ attribute-value.length = 2 bytes ❑ attribute-value = One of the next ▪ disabled (0x00 0x00) ▪ enabled (0x00 0x01) ▪ notAvailable (0x00 0x02)

	g. Mandatory attribute Number-Of-Schedule-Segments ❑ attribute-id = MDC_ATTR_SCHED_SEG_NUM ❑ attribute-type = INT-U16 ❑ attribute-value.length = 2 bytes ❑ attribute-value = number of currently instantiated schedule segments contained in the schedule-store
Pass/Fail criteria	All checked values are as specified in the test procedure
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-021		
TP label		Schedule-Segment Attributes for Extended Configuration		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	SchStoreObjIP 1; M	SchStrObjMeth 1; M	SchStrObjMeth 2; M
		SchSegObj 1; M	SchSegObj 2; M	SchSegObj 3; M
		SchSegObj 4; O	SchSegObj 5; O	SchSegObj 6; O
		SchSegObj 7; O	SchSegObj 8; C	SchSegObj 9; C
		SchSegObj 10; R	SchSegObj 11; C	SchSegObj 12; R
		SchSegObj 13; C	SchSegObj 14; C	SchSegObj 15; R
		SchSegObj 16; R	SchSegObj 18; O	SchSegObj 19; M
		BasalProf 15; O	BasalProf 16; M	InsCHRProf 15; O
		InsCHRProf 16; M	ISFProf 15; O	ISFProf 16; M
Test purpose		Check that: If an insulin pump PHD supports the Schedule-Store class, the support of the Get-Schedule-Segment-Info and the Get-Schedule-Segment-Id-List is mandatory [AND] Schedule-Segment Objects contain the attributes specified for Extended Configuration. [AND] Within a basal profile schedule-segment, at least one entry shall be used to account for a basal rate schedule setting [AND] Within an I:CHO profile schedule-segment, at least one entry shall be used to account for an I:CHO schedule setting. [AND] Within an ISF profile schedule-segment, at least one entry shall be used to account for an ISF schedule setting.		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND (C_AG_IP_012 OR C_AG_IP_013 OR C_AG_IP_014)		
Other PICS				
Initial condition		The simulated PHG and PHD under test are in the Unassociated state.		

Test procedure	1. IF C_AG_IP_012 = TRUE, the simulated PHG shall send a Get-Schedule-Segment-Id-List object action for the Schedule-Segment object in the Basal Profile Settings Schedule-Store object. IF C_AG_IP_012 = FALSE, proceed to step 6. 2. The PHD issues a "rors-cmip-confirmed-action" response with a list of the instance numbers. 3. The simulated PHG shall send a Get-Schedule-Segment-Info object action for the Schedule-Segment object in the Basal Profile Settings Schedule-Store object with SchedSegmSelection = all-sched-segments to indicate the Schedule-Segments attributes of all available Schedule-Segments. 4. The PHD issues a "rors-cmip-confirmed-action" response with the Schedule-Segment attributes it supports: For every Schedule-Segment, check: a. Mandatory attribute Schedule-Segment-Instance-Number ❑ attribute-id = MDC_ATTR_SCHED_SEG_INSTNO ❑ attribute-type = InstNumber ❑ attribute-length = 2 bytes ❑ attribute-value = unique in its Schedule-Store b. Mandatory attribute Schedule-Segment-Entry-Map ❑ attribute-id = MDC_ATTR_SCHED_SEG_MAP ❑ attribute-type = ScheduleSegmentEntryMap ❑ attribute-value = SEQUENCE, it must match the entries c. Mandatory attribute Schedule-Segment-Period ❑ attribute-id = MDC_ATTR_SCHED_SEG_PERIOD ❑ attribute-type = HighResRelativeTime ❑ attribute-value.length = 8 bytes ❑ attribute-value = period of the schedule segments. d. If recommended attribute Schedule-Segment-LastUpdated-BO-Time is present ❑ attribute-id = MDC_ATTR_SCHED_SEG_LAST_UPDATED_BO_TIME ❑ attribute-type = BaseOffsetTime ❑ attribute-value.length = 8 bytes ❑ attribute-value = <Not relevant in this test> ❑ If this attribute is used, neither the ScheduleSegment-LastUpdated-AbsTime nor Schedule-SegmentLastUpdated-HiRes-Time shall be used. e. If recommended attribute Schedule-Segment-Reference-BO-Time is present ❑ attribute-id = MDC_ATTR_SCHED_SEG_REF_BO_TIME ❑ attribute-type = BaseOffsetTime ❑ attribute-value.length = 8 bytes ❑ attribute-value = <Not relevant in this test> ❑ If this attribute is used, ScheduleSegment-Reference-AbsTime attribute shall not be used. f. If recommended attribute Schedule-Segment-Start-BO-Time is present ❑ attribute-id = MDC_ATTR_SCHED_SEG_START_BO_TIME ❑ attribute-type = BaseOffsetTime ❑ attribute-value.length = 8 bytes ❑ attribute-value = <Not relevant in this test> ❑ IIf this attribute is used, the Schedule-Segment-Start-Abs-Time shall not be used.

	g. If recommended attribute Schedule-Segment-End- BO-Time is present ❑ attribute-id = MDC_ATTR_SCHED_SEG_END_BO_TIME ❑ attribute-type = BaseOffsetTime ❑ attribute-value.length = 8 bytes ❑ attribute-value = <Not relevant in this test> ❑ IIf this attribute is used, the Schedule-Segment-End-Abs-Time shall not be used. h. Mandatory attribute Schedule_Transfer-Timeout ❑ attribute-id = MDC_ATTR_SCHED_SEG_TRANSFER_TIMEOUT ❑ attribute-type = RelativetTime ❑ attribute-value.length =4 bytes ❑ attribute-value = <Not relevant in this test> 5. Check in 4.b that at least one entry shall be used to account for a basal rate schedule setting (MDC_INS_BASAL_RATE_SCHED). 6. IF C_AG_IP_013 = TRUE, the simulated PHG shall send a Get-Schedule-Segment-Id-List object action for the Schedule-Segment object in the Insulin to Carbohydrate Ratio Profile Settings Schedule-Store object. IF C_AG_IP_013 = FALSE, proceed to step 11. 7. The PHD issues a "rors-cmip-confirmed-action" response with a list of the instance numbers. 8. The simulated PHG shall send a Get-Schedule-Segment-Info object action for the Schedule-Segment object in the Insulin to Carbohydrate Ratio Profile Settings Schedule-Store object with SchedSegmSelection = all-sched-segments to indicate the Schedule-Segments attributes of all available Schedule-Segments. 9. Repeat step 4 for each Schedule-Segment. 10. Check in 4.b that at least one entry shall be used to account for an I:CHO schedule setting (MDC_INS_I2CHO_SCHED). 11. IF C_AG_IP_014 = TRUE, the simulated PHG shall send a Get-Schedule-Segment-Id-List object action for the Schedule-Segment object in the Insulin Sensitivity Factor Profile Settings Schedule-Store object. IF C_AG_IP_014 = FALSE, skip the next steps. 12. The PHD issues a "rors-cmip-confirmed-action" response with a list of the instance numbers. 13. The simulated PHG shall send a Get-Schedule-Segment-Info object action for the Schedule-Segment object in the Insulin Sensitivity Factor Profile Settings Schedule-Store object with SchedSegmSelection = all-sched-segments to indicate the Schedule-Segments attributes of all available Schedule-Segments. 14. Repeat step 4 for each Schedule-Segment. 15. Check in 4.b that at least one entry shall be used to account for an ISF schedule setting (MDC_INS_ISF_SCHED).
Pass/Fail criteria	All checked values are as specified in the test procedure.
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-022		
TP label		Schedule-Store Data Transfer		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	SchStrObjMeth 3; M	SchStrObjEvent 1; M	SchSegObj 17; M
Test purpose		Check that:		

	An insulin pump PHD with at least one Schedule-Store object shall support the [Trig-Schedule-Segment-Data-Xfer] method with [Confirmed] mode. [AND] An insulin pump shall send the [Schedule-Segment-Data-Event] using a [Confirmed] event report. [AND] The [Schedule-Segment-Data-Event] shall include the event-info [ScheduleSegmentDataEvent]
Applicability	C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND (C_AG_IP_012 OR C_AG_IP_013 OR C_AG_IP_014)
Other PICS	
Initial condition	The simulated PHG and PHD under test are in the Operating state and Schedule Store objects have at least one Schedule Segment object with data.
Test procedure	1. IF C_AG_IP_012 = TRUE, the simulated PHG issues a Get for the Basal Profile Settings Schedule-Store object. IF C_AG_IP_012 = FALSE, proceed to step 9. 2. The PHD under test responds with the attributes of the Basal Profile Settings Schedule-Store 3. The simulated PHG issues a Get-Schedule-Segment-Info with SchedSegmSelection set to all-sched-segments 4. The simulated PHG sends a request for the Schedule-Segment Data to one of the Schedule-Segments that contains data: a. Data APDU ❑ Type = Invoke | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_TRIG_XFER ❑ TrigSchedSegmDataXferReq = <Instance number of the selected Schedule-Segment that contains the data> 5. The PHD issues an action response a. Data APDU ❑ Type = Response | Confirmed Action, ❑ HANDLE = obj-handle b. Action = MDC_ACT_SCHED_SEG_TRIG_XFER ❑ TrigSchedSegmDataXferRsp = <Same Instance number> | tsxr-succesful (0x00 0x00) 6. The PHD under Test starts Data transfer: a. Data APDU ❑ Invoke | CfmEventReport ❑ Action = MDC_NOTI_SCHED_SEGMENT_DATA ❑ ScheduleSegmentDataEvent 7. The simulated PHG response to transferred data APDU's a. Data APDU ❑ Type = Response | Confirmed Action, ❑ Action = MDC_NOTI_SCHED_SEGMENT_DATA ❑ ScheduleSegmentDataResult 8. The PHD under test repeats steps 6 and 7 until all the data is transferred 9. IF C_AG_IP_013 = TRUE, the simulated PHG issues a Get for the Insulin to Carbohydrate Ratio Profile Settings Schedule-Store object. IF C_AG_IP_013 = FALSE,

	proceed to step 12. 10. The PHD under test responds with the attributes of the Insulin to Carbohydrate Ratio Profile Settings Schedule-Store 11. Repeat steps 3 to 8 for the Insulin to Carbohydrate Ratio Profile Settings Schedule-Store object. 12. IF C_AG_IP_014 = TRUE, the simulated PHG issues a Get for the Insulin Sensitivity Factor Profile Settings Schedule-Store object. IF C_AG_IP_013 = FALSE, skip next steps. 13. The PHD under test responds with the attributes of the Insulin Sensitivity Factor Profile Settings Schedule-Store 14. Repeat steps 3 to 8 for the Insulin Sensitivity Factor Profile Settings Schedule-Store object.
Pass/Fail criteria	• All checked values are as specified in the test procedure • Data is transferred where requested • The [Fixed-Schedule-Segment-Data] attribute shall be present
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-023		
TP label		Communication Model: Association Procedure		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	AgProcAsIP 1; M	AgProcAsIP 2; M	AgProcAsIP 4; M
		AgProcAsIP 5; M	AgProcAsIP 6; M	AgProcAsIP 7; M
		AgProcAsIP 8; M	AgProcAsIP 9; M	AgProcAsIP 10; M
		AgProcAsIP 11; M	AgProcAsIP 12; M	AgProcAsIP 13; O
		MDSMethodsIP 3;M		
Test purpose		Check that: The association procedure data exchange is correct		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158		
Other PICS		C_AG_OXP_002, C_AG_OXP_017		
Initial condition		The simulated PHG and PHD under test are in the Unassociated state.		
Test procedure		1. The PHD sends a message to associate to the simulated PHG, the expected fields sent by the PHD 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= At least bit protocol-version3(2) is set to 1 (0x20 0x00 0x00 0x00 OR 0xA0 0x00 0x00 0x00 OR 0x60 0x00 0x00 0x00 OR 0xE0 0x00 0x00 0x00)

e. encoding rules
- ❑ field- type = EncodingRules
- ❑ field-length = 2 bytes
- ❑ field- value=
  - bit 0 must be set (support for MDER)
  - bits 1 (XER) and 2 (PER) may be set
  - All other bits must be 0.

f. nomenclature version
- ❑ field- type = NomenclatureVersion
- ❑ field-length = 4 bytes
- ❑ field- value=0x80 0x00 0x00 0x00
- ❑ This value indicates version1 is supported (nom-version1(0) is set).

g. functional – units
- ❑ field- type = FunctionalUnits
- ❑ field-length = 4 bytes
  - bit 0 must be 0.
  - bits 1 and 2 may be set
  - the remaining bits must not be set

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 =
  - 0x07 0x6C 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 ❑ field.value = IF NOT C_AG_OXP_017 -> 0x00 0x01 (data-req-supp-init-agent) l. data-req-init-agent-count (DataReqModeCapab) ❑ field- type = INT-U8 ❑ field-length = 2 bytes ❑ field.value = IF NOT C_AG_OXP_017 -> 0x01 m. data-req-init-manager-count (DataReqModeCapab) ❑ field- type = INT-U8 ❑ field-length = 2 bytes ❑ field.value = IF NOT C_AG_OXP_017 -> 0x00
Pass/Fail criteria	All checked values are as specified in the test procedure
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-024		
TP label		Operating State. PHG to PHD Maximum APDU Size		
Coverage	**Spec**	[ISO/IEEE 11073-20601-2016C]		
	Testable items	CommonCharac 3; M		
	Spec	[ISO/IEEE 11073-10419]		
	Testable items	ComCharIP 2; M		
Test purpose		Check that: Check that the total size of the response does not exceed of the maximum APDU size established by the specialization [AND] An insulin pump PHD implementing only this device specialization shall be capable of receiving any APDU up to the size of Nrx. For this standard, Nrx shall be 224 octets		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158		
Other PICS		C_AG_OXP_041, C_AG_OXP_100		
Initial condition		The simulated PHG and PHD are in the Operating state.		
Test procedure		1. The simulated PHG issues “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 additonal MDC_ATTR_ID_MODEL 2. Check the response of the PHD. 3. The simulated PHG issues “Remote Operation Invoke | Get” command with 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 PHD.		

Pass/Fail criteria	• In step 2, the PHD under test may respond with a rors-cmip-get listing all the requested attributes, or with a roer message. If PICS C_AG_OXP_100 = TRUE and PHD does not respond with a rors-cmip-get message, and it responds with a roer message or rorj(resource-limitation) message, a WARNING will appear. o If the response is a get response, the total size of the response cannot exceed the following APDU sizes: ▪ Insulin Pump wihout PM-Store → 7168 octets ▪ Insulin Pump with PM-Store → 5120 octets o In case it responds with a roer, the reason must not be protocol-violation (23) • In step 4, the PHD must respond with a rors-cmip-get message.
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-025		
TP label		Set Time (Absolute Time) Insulin Pump		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	MDSMethodsIP 5; M		
Test purpose		Check that: If the PHD supports the [Absolute-Time-Stamp] attribute, the Set -Time method shall be implemented		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_009		
Other PICS				
Initial condition		The simulated PHG and PHD under test are in Operating state.		
Test procedure		1. The simulated PHG sends a SET action: ❑ CHOICE = SetTimeInvoke ❑ action-type = MDC_ACT_SET_TIME ❑ the action-info-args are SetTimeInvoke ▪ date-time = <century, year ≤ 99, month ≤ 12, day ≤ 31, hour ≤ 24, minute ≤ 60, second ≤ 60, sec-fractions ≤ 100> ▪ accuracy = 0 2. The PHD under test response shall be a rors-cmip-confirmed-action: ❑ action-type = MDC_ACT_SET_TIME ❑ action-info-args shall be empty.		
Pass/Fail criteria		All checked values are as specified in the test procedure.		
Notes				

TP Id		TP/PLT/PHD/CLASS/IP/BV-026
TP label		Set Time (Base Offset Time) Insulin Pump
Coverage	**Spec**	[ISO/IEEE 11073-10419]

	Testable items	MDSMethodsIP 6; M		
Test purpose		Check that: If the PHD supports the [Base-Offset-Time-Stamp] attribute, the Set-Base-Offset-Time method shall be implemented		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_014		
Other PICS				
Initial condition		The simulated PHG and PHD under test are in Operating state.		
Test procedure		1. The simulated PHG sends a SET action: ❑ CHOICE = SetBOTimeInvoke ❑ action-type = MDC_ACT_SET_BO_TIME ❑ the action-info-args are SetBOTimeInvoke ▪ date-time = bo-seconds = 0x00 0x00 0x00 0x00, bo-fractions = 0x00 0x00, bo-time-offset = 0x3C 2. The PHD under test response shall be a rors-cmip-confirmed-action: ❑ action-type = MDC_ACT_SET_BO_TIME ❑ action-info-args shall be empty.		
Pass/Fail criteria		All checked values are as specified in the test procedure.		
Notes				

TP Id		TP/PLT/PHD/CLASS/IP/BV-027		
TP label		Schedule-Store Object: Mandatory, Conditional and Optional Attributes 1		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	SchStoreClass 1; M	SchStoreClassAttr 1; M	SchStoreClassAttr 3; M
		SchStoreClassAttr 4; M	SchStoreClassAttr 5; O	SchStoreClassAttr 6; O
		SchStoreClassAttr 7; M	SchStoreClassAttr 8; O	SchStoreClassAttr 9; M
		SchStoreMeth 1; M	SchStoreMeth 3; C	SchStoreMeth 4; M
		SchStoreMeth 6; M	SchStoreMeth 7; O	SchStoreMeth 10; C
		SchStoreMeth 11; M	SchStoreMeth 12; C	SchedStoreService 1; M
		SchedStoreTX 2; M	SchStoreMeth 7B; M	
	Spec	[ISO/IEEE 11073-20601-2016C]		
	Testable items	ConfEventRep 30		
	Spec	[ITU-T H.810 series]		
	Testable items	Communication 6; M		
Test purpose		Check that:		

	Schedule-Store objects contain all mandatory attributes, conditional attributes as required by their conditions and may contain optional attributes [AND] The nomenclature code to identify the Schedule-Store class is MDC_MOC_VMO_SCHEDSTORE [AND] The handle value is placed in the obj-handle field of the message and is not present in the attribute-id list of the request or the attribute-list of the response.
Applicability	C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND (C_AG_IP_012 OR C_AG_IP_013 OR C_AG_IP_014)
Other PICS	
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 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. Record the handle value of the Schedule-Store object. 5. The simulated PHG shall send a Get request for the Schedule-Store object with an attribute-id-list set to 0 to indicate all Schedule-Store attributes. 6. The PHD issues a GET response with the Schedule-Store attributes it supports: Verify the invoke-id is mirrored from the Get request. a. Mandatory attribute Active-Schedule-Segment-Instance-Number shall be present ❑ attribute-id = MDC_ATTR_SCHED_STORE_ACTIVE_INSTNO ❑ attribute-type = InstNumber ❑ attribute-value.length = 2 bytes ❑ attribute-value = <Not relevant in this test case> b. Mandatory attribute Schedule-Store-Capab ❑ attribute-id = MDC_ATTR_SCHED_STORE_CAPAB ❑ attribute-type = SchedStoreCapab ❑ attribute-value.length = 4 bytes ❑ attribute-value = one or more of the following bits may be set: ▪ schedsc-var-no-of-segm(0) ▪ schedsc-segm-id-list-select(3) (record for later use) ▪ schedsc-epi-seg-entries(4) ▪ schedsc-peri-seg-entries(5) ▪ schedsc-multi-person(12) ▪ schedsc-get-segm-info-sup(13) (record for later use) ▪ schedsc-get-segm-id-list-sup(14) (record for later use) ▪ All other bits shall be set to zero c. Mandatory Schedule-Store-Capacity-Count ❑ attribute-id = MDC_ATTR_SCHED_STORE_CAPAC_CNT ❑ attribute-type = INT-U32 ❑ attribute-value.length = 4 bytes ❑ attribute-value = See relation with next attribute

	d. Mandatory Schedule-Store-Usage-Count ❑ attribute-id = MDC_ATTR_SCHED_STORE_USAGE_CNT ❑ attribute-type = INT-U32 ❑ attribute-value.length = 4 bytes ❑ attribute-value = always ≤ than Schedule-Storage-Capacity-Count e. Mandatory attribute Schedule-Store-Operational-Status ❑ attribute-id = MDC_ATTR_SCHED_STORE_OP_STAT ❑ attribute-type = OperationalState ❑ attribute-value.length = 2 bytes ❑ attribute-value = One of the next ▪ disabled (0x00 0x00) ▪ enabled (0x00 0x01) ▪ notAvailable (0x00 0x02) f. IF optional attribute Schedule-Store-Label is present ❑ attribute-id = MDC_ATTR_SCHED_STORE_LABEL_STRING ❑ attribute-type = OCTET STRING ❑ attribute-value.length = <variable> ❑ attribute-value = Printable ASCII g. Mandatory attribute Number-Of-Schedule-Segments ❑ attribute-id = MDC_ATTR_SCHED_SEG_NUM ❑ attribute-type = INT-U16 ❑ attribute-value.length = 2 bytes ❑ attribute-value = <not relevant for this test> 7. The simulated PHG shall send a Get-Schedule-Segment-Info object action for the Schedule-Store object with SchedSegmSelection set to all-sched-segments. 8. If the method is supported, the PHD issues a response (rors-cmip-confirmed-action) with the Schedule-Segment attributes it supports in the SchedSegmentInfoList. Structure. If the method is not supported, proceed to step 11. 9. The simulated PHG shall send a Get-Schedule-Segment-Info object action for the Schedule-Store object with SchedSegmSelection set to a particular sched-segm-id-list (with data obtained from 8). 10. If the option is supported, the PHD issues a response (rors-cmip-confirmed-action) with the requested Schedule-Segments attributes in a SchedSegmentInfoList structure. 11. The simulated PHG shall send a Get-Schedule-Segment-Id-List object action for the Schedule-Store object. 12. If the PHD supports this method, it issues a response (rors-cmip-confirmed-action) with the list of all the Schedule-Segments in the Schedule-Store object in a SchedSegmIdList structure.
Pass/Fail criteria	• All checked values are as specified in the test procedure. • In step 6.d, check that at least one of schedsc-get-segm-info-sup(13) and schedsc-get-segm-id-list-sup(14) is checked. • If, in step 8, if the Get-Schedule-Segment-Info method is supported by the PHD and response is as expected, check that bit schedsc-get-segm-info-sup(13) in Schedule-Store-Capab attribute is set. Else, check that this bit is not set. • If, in step 10, if the Get-Schedule-Segment-Info method and the sched-segm-id-list choice are supported by the PHD and response is as expected, check that bit schedsc-segm-id-list-select(3) in Schedule-Store-Capab attribute is set. Else, check that bit is not set.

	• IF in step 12, if the Get-Schedule-Segment-Id-List method is supported by the PHD and the response is as expected, check that bit schedsc-get-segm-id-list-sup(14) in Schedule-Store-Capab attribute is set. Else, check that bit is not set. • Check that if the Get-Schedule-Segment-Id-List method and Get-Schedule-Segment-Info methods are supported, then he PHD shall support the action of Get-Schedule-Segment-Info by ID list (schedsc-segm-id-list-select(3) is set).
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-028		
TP label		Schedule-Store Object: Mandatory, Conditional and Optional Attributes 2		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	SchStoreClassAttr 9; M	SchStoreClassAttr 2;M	SchStoreClassAttr 4; M
Test purpose		Check that: Schedule-Store object includes the Number-Of-Schedule-Segments attribute [AND] The Number-Of-Schedule-Segments attribute is of type INT-U16 [AND] The Number-Of-Schedule-Segments attribute value is correct, and its behaviour is coherent with Schedule-Store-Capab attribute [AND] If no schedule segment is currently active or there are currently no schedule segments, the value of the Active-Schedule-Segment-Instance-Number attribute shall be 0.		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND (C_AG_IP_012 OR C_AG_IP_013 OR C_AG_IP_014)		
Other PICS				
Initial condition		The simulated PHG and PHD under test are in the Operating state.		
Test procedure		1. Make sure there are no measurements being taken and that no schedule segment is currently active (or there are no schedule segments). 2. The simulated PHG shall send a Get request for the Schedule-Store object with an attribute-id-list set to 0 to indicate all Schedule-Store attributes. 3. The PHD issues a GET response with the Schedule-Store attributes. The attributes of interest are: a. Mandatory attribute Schedule-Store-Capab ❑ attribute-id = MDC_ATTR_SCHED_STORE_CAPAB ❑ attribute-type = SchedStoreCapab ❑ attribute-value.length = 4 bytes ❑ attribute-value = ▪ schedsc-var-no-of-segm(0). Record state for later comparison b. Mandatory attribute Number-Of-Schedule-Segments ❑ attribute-id = MDC_ATTR_SCHED_SEG_NUM ❑ attribute-type = INT-U16 ❑ attribute-value.length = 2 bytes ❑ attribute-value = <record for later comparison>		

	c. Mandatory attribute Active-Schedule-Segment-Instance-Number ❑ attribute-id = MDC_ATTR_SCHED_STORE_ACTIVE_INSTNO ❑ attribute-type = InstNumber ❑ attribute-value.length = 2 bytes ❑ attribute-value = <record for later comparison> 4. The simulated PHG shall send a Get-Schedule-Segment-Info object action for the Schedule-Store object with SchedSegmSelection set to all-sched-segments. a. Data APDU ❑ Type = Invoke | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_GET_INFO ❑ SchedSegmSelection = all-sched-segments 5. The PHD issues a response (rors-cmip-confirmed-action)with the Schedule-Segment attributes it supports in the SchedSegmentInfoList structure a. Verify the invoke-id is mirrored from the Get request. b. Data APDU ❑ Type = Response | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_GET_INFO ❑ SchedSegmentInfoList = <Attributes of the segments> 6. Record the number of existing Schedule Segments 7. Check in 3.c that Active-Schedule-Segment-Instance-Number value is 0 (inactive o no schedule segments present) 8. If the PHD can record measurements in its Schedule-Store while it is connected then take measurements and store them in schedule-segments. 9. Repeat steps 2 through 5
Pass/Fail criteria	• In step 2.a), if bit schedsc-var-no-of-segm(0) is not set, number of schedule segments stated in step 2.b) and checked in step 5.b) must remain unchanged • Schedule-Store attribute Number-Of-Schedule-Segments value must contain the exact number of schedule segments recorded in step 6
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-029		
TP label		Schedule-Store Object: Mandatory, Conditional and Optional Attributes 3		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	SchStoreClass 1; M	SchStoreClassAttr 1; M	SchStoreClassAttr 3; M
		SchStoreClassAttr 4; M	SchStoreClassAttr 5; O	SchStoreClassAttr 6; O
		SchStoreClassAttr 7; M	SchStoreClassAttr 8; O	SchStoreClassAttr 9; M
		SchedStoreService 3; O		
	Spec	[ITU-T H.810 series]		
	Testable items	Communication 6; M		

Test purpose	Check that: Schedule-Store objects contain all mandatory attributes, conditional attributes as required by their conditions and may contain optional attributes [AND] A PHD may send scan event reports providing the PHG with updates of the current attribute values, but this is not a mandated PHD behaviour.
Applicability	C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND (C_AG_IP_012 OR C_AG_IP_013 OR C_AG_IP_014)
Other PICS	
Initial condition	The simulated PHG and PHD under test are in the Operating 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. Schedule-Store object attributes must be(ConfigReport -> ConfigObject-> AttributeList): a. Mandatory attribute Active-Schedule-Segment-Instance-Number shall be present ❑ attribute-id = MDC_ATTR_SCHED_STORE_ACTIVE_INSTNO ❑ attribute-type = InstNumber ❑ attribute-value.length = 2 bytes ❑ attribute-value = <Not relevant in this test case> b. Mandatory attribute Updated-Schedule-Segment-Instance-Number-List shall not be present (observational) ❑ attribute-id = MDC_ATTR_SCHED_STORE_UPDATED_INSTNO ❑ attribute-type = InstNumberList ❑ attribute-value.count = <Variable> ❑ attribute-value.length = <Variable> (SEQUENCE OF InstNumber (2 bytes)) ❑ attribute-value = <Not relevant in this test case> c. Mandatory attribute Schedule-Store-Capab shall be present ❑ attribute-id = MDC_ATTR_SCHED_STORE_CAPAB ❑ attribute-type = SchedStoreCapab ❑ attribute-value.length = 4 bytes ❑ attribute-value = one or more of the following bits may be set: ▪ schedsc-var-no-of-segm(0) ▪ schedsc-segm-id-list-select(3) (record for later use) ▪ schedsc-epi-seg-entries(4) ▪ schedsc-peri-seg-entries(5) ▪ schedsc-multi-person(12) ▪ schedsc-get-segm-info-sup(13) (record for later use) ▪ schedsc-get-segm-id-list-sup(14) (record for later use) ▪ All other bits shall be set to zero d. Schedule-Store-Capacity-Count may be present ❑ attribute-id = MDC_ATTR_SCHED_STORE_CAPAC_CNT ❑ attribute-type = INT-U32 ❑ attribute-value.length = 4 bytes

	❑ attribute-value = See relation with next attribute e. Schedule-Store-Usage-Count may be present ❑ attribute-id = MDC_ATTR_SCHED_STORE_USAGE_CNT ❑ attribute-type = INT-U32 ❑ attribute-value.length = 4 bytes ❑ attribute-value = always ≤ than Schedule-Storage-Capacity-Count f. Mandatory attribute Schedule-Store-Operational-Status shall be present ❑ attribute-id = MDC_ATTR_SCHED_STORE_OP_STAT ❑ attribute-type = OperationalState ❑ attribute-value.length = 2 bytes ❑ attribute-value = One of the next ▪ disabled (0x00 0x00) ▪ enabled (0x00 0x01) ▪ notAvailable (0x00 0x02) g. Attribute Schedule-Store-Label may be present ❑ attribute-id = MDC_ATTR_SCHED_STORE_LABEL_STRING ❑ attribute-type = OCTET STRING ❑ attribute-value.length = <variable> ❑ attribute-value = Printable ASCII h. Mandatory attribute Number-Of-Schedule-Segments shall be present ❑ attribute-id = MDC_ATTR_SCHED_SEG_NUM ❑ attribute-type = INT-U16 ❑ attribute-value.length = 2 bytes ❑ attribute-value = <not relevant for this test> Furthermore, if MDS event reports are sent by the PHD: 5. Take a measurement with the PHD 6. Wait for a variable format event report from the PHD, check that dynamic attributes for Schedule-Store may be reported (Active-Schedule-Segment-Instance-Number, Schedule-Store-Usage-Count, Schedule-Store-Operational-Status, Number-Of-Schedule-Segments, Updated-Schedule-Segment-Instance-Number-List)
Pass/Fail criteria	All checked values are as specified in the test procedure.
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-030		
TP label		Schedule-Store Object: Episodic Semantics		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	SchStoreClassAttr 10; M		
Test purpose		Check that: If a Schedule-Store has some or all Schedule-Segments than contain episodic entries then it has to contain explicit time stamp information		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND (C_AG_IP_012 OR C_AG_IP_013 OR C_AG_IP_014)		

Other PICS	
Initial condition	The simulated PHG and PHD under test are in the Unassociated state.
Test procedure	1. Make sure there are no measurements being taken. 2. The simulated PHG receives an association request from the PHD under test. 3. The simulated PHG responds with a result = accepted-unknown-config 4. The PHD responds with a “Remote Operation Invoke | Confirmed Event Report” message: a. Event-type=MDC_NOTI_CONFIG 5. Check that the Schedule-Store-Capab attribute has the schedsc-epi-seg-entries(4) bit set. 6. The simulated PHG shall send a Get-Schedule-Segment-Info object action for the Schedule-Store object with SchedSegmSelection set to all-sched- segments. 7. The PHD shall respond to the Get-Schedule-Segment-Info, indicating the attributes of the schedule segments. 8. Check the Schedule-Segment-Entry-Map attribute of the schedule segments to make sure that a Time-Stamp is associated with measurement data. 9. Take measurements with the PHD under test 10. The simulated PHG sends a request for the Schedule-Segment Data to one of the Schedule-Segments that contains data (sends the Action MDC_ACT_SCHED_SEG_TRIG_XFER). 11. The PHD issues an action response 12. The PHD under test starts Data transfer: a. Data APDU ❑ Invoke | CfmEventReport ❑ Action = MDC_NOTI_SCHED_SEGMENT_DATA ❑ ScheduleSegmentDataEvent 13. The simulated PHG responds to transferred data APDU's a. Data APDU ❑ Response | CfmEventReport ❑ Action = MDC_NOTI_SCHED_SEGMENT_DATA ❑ ScheduleSegmentDataResult
Pass/Fail criteria	The Schedule-Segment-Entry-Map contains a Time-Stamp associated with measurement data, and it has the correct format in the ScheduleSegmentDataEvent received.
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-031		
TP label		Schedule-Store Object. Change Unit Code attribute		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	SchStoreClassGen 1; M		
Test purpose		Check that: If an attribute value in a schedule-segment depends on an attribute value not stored in the schedule-segment, then that dependent attribute shall not change value during the lifetime of the schedule-segment. Otherwise, the PHD shall store the dependent attribute value in the schedule-segment.		

Applicability	C_AG_OXP_000 AND C_AG_IP_015 AND C_AG_OXP_158 AND C_AG_OXP_181 AND (C_AG_IP_012 OR C_AG_IP_013 OR C_AG_IP_014)
Other PICS	
Initial condition	The simulated PHG and PHD under test are in the Operating state.
Test procedure	1. Make a change to the contextual attribute Unit-Code for an object that is stored in the Schedule-Store object 2. The simulated PHG sends a request (Get-Schedule-Segment-Info) for the Schedule-Segment attributes with SchedSegmSelection = 1 to obtain all the schedule segments for the Schedule-Store: a. Data APDU ❑ Type = Invoke | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_GET_INFO ❑ SchedSegmSelection = all-sched-segments 3. The PHD issues a response with the Schedule-Segments attributes a. Data APDU ❑ Type = Response | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_GET_INFO ❑ SchedSegmentInfoList: Record value for Schedule-Segment-Entry-Map attribute
Pass/Fail criteria	In step 2, there is at least one schedule segment that stores Unit-code attribute (Schedule-Segment-Entry-Map).
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-032_A		
TP label		Schedule-Store Object. Get-Schedule-Segment-Info method 1		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	SchStoreMeth 3; C	SchStoreMeth 4; M	SchStoreMeth 6; M
		SchStoreMeth 7; O	SchedStoreTX 4; M	SchStoreMeth 7A; M
		SchStoreMeth 7B; M		
Test purpose		Check that: PHD may support Get-Schedule-Segment-Info method [AND] The PHD shall support the all-sched-segments choice in the SchedSegmSelection action-info-args of the Get-Schedule-Segment-Info method. [AND] The PHD may support the sched-segm-id-list choice in the SchedSegmSelection action-info-args of the Get-Schedule-Segment-Info method. [AND] Values in the Schedule-Store-Capab attribute represent that support		

Applicability	C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND (C_AG_IP_012 OR C_AG_IP_013 OR C_AG_IP_014)
Other PICS	
Initial condition	The simulated PHG and PHD under test are in Operating state.
Test procedure	1. The simulated PHG shall send a Get request for the Schedule-Store object with an attribute-id-list set to 0 to indicate all Schedule-Store attributes. 2. The PHD under test issues a GET response with the Schedule-Store attributes it supports, check the values of the Schedule-Store-Capab attribute: a. Schedule-Store-Capab: ❑ attribute-id = MDC_ATTR_SCHED_STORE_CAPAB ❑ attribute-type = SchedStoreCapab ❑ attribute-value = one or more of the following bits may be set: ▪ schedsc-var-no-of-segm(0) ▪ schedsc-segm-id-list-select(3) (record for later use) ▪ schedsc-epi-seg-entries(4) ▪ schedsc-peri-seg-entries(5) ▪ schedsc-multi-person(12) ▪ schedsc-get-segm-info-sup(13) (record for later use) ▪ schedsc-get-segm-id-list-sup(14) IF schedsc-get-segm-info-sup(13) is NOT set: 3. The simulated PHG sends a request for the Schedule-Segment Data with SchedSegmSelection = 0 to obtain all the schedule segments: a. Data APDU ❑ Type = Invoke | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_GET_INFO ❑ SchedSegmSelection = all-sched-segments 4. The PHD under test issues a response: a. Data APDU ❑ Type = Roer ❑ ErrorResult = not-allowed-by-object (24) IF schedsc-get-segm-info-sup(13) is set: 5. The simulated PHG sends a request for the Schedule-Segment Data with SchedSegmSelection = 0 to obtain all the schedule segments: a. Data APDU ❑ Type = Invoke | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_GET_INFO ❑ SchedSegmSelection = all-sched-segments 6. The PHD under test issues a response with the Schedule-Segments attributes a. Data APDU ❑ Type = Response | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_GET_INFO

	❑ SchedSegmentInfoList IF Get-Schedule-Segment-Info method is supported and schedsc-segm-id-list-select(3) is set 7. The simulated PHG sends a request for the Schedule-Segment Data with SchedSegmSelection = sched-segm-id-list, which is know because in the previous phase we retrieved the info of all the schedule segments: a. Data APDU ❑ Type = Invoke | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_GET_INFO ❑ SchedSegmSelection = sched-segm-id-list (List of integers with the instance numbers of the selected schedule segments) 8. The PHD under test issues a response with the required Schedule-Segments attributes a. Data APDU ❑ Type = Response | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_GET_INFO ❑ SchedSegmentInfoList IF Get-Schedule-Segment-Info method is supported and schedsc-segm-id-list-select(3) is NOT set: 9. The simulated PHG sends a Get-Schedule-Segment-Info: a. Data APDU ❑ Type = Invoke | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_GET_INFO ❑ SegmSelection = sched-segm-id-list (List of integers with the instance numbers of the selected schedule segments) 10. PHD under test operation response: a. Data APDU ❑ Type = Roer ❑ ErrorResult = unsupported-choice (27)
Pass/Fail criteria	The PHD properly sends the required Schedule-Segment attributes in supported cases or the specified error otherwise.
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-032_B		
TP label		Schedule-Store Object. Get-Schedule-Segment-Info method 2		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	SchStoreMeth 3; C	SchStoreMeth 4; M	SchStoreMeth 6; M
		SchStoreMeth 7; O	SchStoreMeth 7C; M	SchStoreMeth 7D; M
Test purpose		Check that: When using all-sched-segments choice, if no schedule segments are found by the action, then this is not an error and a normal response is sent, and the segment info list will just be empty. [AND]		

	If the choice of SchedSegmSelection in the Get-Schedule-Segment-Info method is sched-segm-id-list and the sched-segm-id-list is empty then the response shall be a sched-segment-info-list that is empty.
Applicability	C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND (C_AG_IP_012 OR C_AG_IP_013 OR C_AG_IP_014)
Other PICS	
Initial condition	The simulated PHG and PHD under test are in Operating state. Schedule-Store object has no schedule-segments.
Test procedure	1. The simulated PHG shall send a Get request for the Schedule-Store object with an attribute-id-list set to 0 to indicate all Schedule-Store attributes. 2. The PHD under test issues a GET response with the Schedule-Store attributes it supports, check the values of the Schedule-Store-Capab attribute: a. Schedule-Store-Capab: ❑ attribute-id = MDC_ATTR_SCHED_STORE_CAPAB ❑ attribute-type = SchedStoreCapab ❑ attribute-value = one or more of the following bits may be set: ▪ schedsc-var-no-of-segm(0) ▪ schedsc-segm-id-list-select(3) (record for later use) ▪ schedsc-epi-seg-entries(4) ▪ schedsc-peri-seg-entries(5) ▪ schedsc-multi-person(12) ▪ schedsc-get-segm-info-sup(13) (record for later use) ▪ schedsc-get-segm-id-list-sup(14) IF schedsc-get-segm-info-sup(13) is NOT set 3. The simulated PHG sends a request for the Schedule-Segment Data with SchedSegmSelection = 0 to obtain all the schedule segments: a. Data APDU ❑ Type = Invoke | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_GET_INFO ❑ SchedSegmSelection = all-sched-segments 4. The PHD under test issues a response: a. Data APDU ❑ Type = Roer ❑ ErrorResult = not-allowed-by-object (24) IF schedsc-get-segm-info-sup(13) is set 5. The simulated PHG sends a request for the Schedule-Segment Data with SchedSegmSelection = 0 to obtain all the schedule segments: a. Data APDU ❑ Type = Invoke | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_GET_INFO ❑ SchedSegmSelection = all-sched-segments 6. The PHD under test issues a response with the Schedule-Segments attributes a. Data APDU

	❑ Type = Response | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_GET_INFO ❑ SchedSegmentInfoList = <empty> IF Get-Schedule-Segment-Info method is supported and schedsc-segm-id-list-select(3) is set 7. The simulated PHG sends a request for the Schedule-Segment Data with SchedSegmSelection = sched-segm-id-list, a. Data APDU ❑ Type = Invoke | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_GET_INFO ❑ SchedSegmSelection = <empty sched-segm-id-list> 8. The PHD under test issues a response with the required Schedule-Segments attributes a. Data APDU ❑ Type = Response | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_GET_INFO ❑ SchedSegmentInfoList = <empty> IF Get-Schedule-Segment-Info method is supported and schedsc-segm-id-list-select(3) is NOT set 9. The simulated PHG sends a Get-Schedule-Segment-Info: a. Data APDU ❑ Type = Invoke | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_GET_INFO ❑ SegmSelection = sched-segm-id-list (List of integers with the instance numbers of the selected schedule segments) 10. The PHD under test operation response: a. Data APDU ❑ Type = Roer ❑ ErrorResult = unsupported-choice (27)
Pass/Fail criteria	The PHD issues the response specified in steps 6 and 8.
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-033		
TP label		Schedule-Store Object. Get-Schedule-Segment-Id-List method		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	SchStoreMeth 10; C	SchStoreMeth 11; M	SchStoreMeth 12; C
Test purpose		Check that: PHD may support the Get-Schedule-Segment-Id-List method [AND]		

	Values in the Schedule-Store-Capab attribute represent that support
Applicability	C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND (C_AG_IP_012 OR C_AG_IP_013 OR C_AG_IP_014)
Other PICS	
Initial condition	The simulated PHG and PHD under test are in Operating state.
Test procedure	1. The simulated PHG shall send a Get request for the Schedule-Store object with an attribute-id-list set to 0 to indicate all Schedule-Store attributes. 2. The PHD under test issues a GET response with the Schedule-Store attributes it supports, check the values of the Schedule-Store-Capab attribute: a. Schedule-Store-Capab: ❑ attribute-id = MDC_ATTR_SCHED_STORE_CAPAB ❑ attribute-type = SchedStoreCapab ❑ attribute-value = one or more of the following bits may be set: ▪ schedsc-var-no-of-segm(0) ▪ schedsc-segm-id-list-select(3) ▪ schedsc-epi-seg-entries(4) ▪ schedsc-peri-seg-entries(5) ▪ schedsc-multi-person(12) ▪ schedsc-get-segm-info-sup(13) ▪ schedsc-get-segm-id-list-sup(14) (record for later use) IF schedsc-get-segm-id-list-sup(14) is NOT set 3. The simulated PHG sends a request for the Schedule-Store to retrieve a list of the instance numbers of all the schedule segments it contains a. Data APDU ❑ Type = Invoke | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_GET_ID_LIST ❑ <empty> 4. The PHD under test issues a response: a. Data APDU ❑ Type = Roer ❑ ErrorResult = not-allowed-by-object (24) IF schedsc-get-segm-id-list-sup(14) is set 5. The simulated PHG sends a request for the Schedule-Store to retrieve a list of the instance numbers of all the schedule segments it contains a. Data APDU ❑ Type = Invoke | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_GET_ID_LIST ❑ <empty> 6. The PHD under test issues a response with the Schedule-Segments instance numbers a. Data APDU ❑ Type = Response | Confirmed Action, ❑ HANDLE = obj-handle

	❑ Action = MDC_ACT_SCHED_SEG_GET_ID_LIST ❑ SchedSegmentIdList
Pass/Fail criteria	The PHD properly sends the required list of schedule segments ids in supported cases or the specified error otherwise.
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-034		
TP label		Schedule-Store Object. Trig-Schedule-Segment-Data-Xfer method		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	SchStoreMeth 1; M	SchStoreMeth 14; M	SchedStoreTX 13; M
		SchedStoreEvent 2; M	ComCharIP 2; M	ComCharIP 3; M
		SchedStoreTX 12; M	SchedStoreEvent 1; M	SchedSegmAttr 17; M
Test purpose		Check that: If a PHD supports the Schedule-store class, the support of the Trig-Schedule-Segment-Data-Xfer method is mandatory [AND] If PHD receives the Trig-Schedule-Segment-Data-Xfer request method, then it responds with an operation type of rors-cmip-confirmed-action [AND] If PHD receives the Trig-Schedule-Segment-Data-Xfer request method, then it responds with an action-info-args type TrigSchedSegmDataXferRsp [AND] Once the data transfer is triggered via a Trig-Schedule-Segment-Data-Xfer method, the PHD sends Schedule-Segment-Data-Event messages until the complete Fixed-Schedule-Segment-Data is transferred or the transfer is aborted by the PHG or PHD [AND] When sending a Schedule-Segment-Data-Event event, the event type is MDC_NOTI_SCHED_SEGMENT_DATA [AND] When sending a [Schedule-Segment-Data-Event] event the event-info parameter is ScheduleSegmentDataEvent. [AND] The total size of the response does not exceed the maximum APDU size established by the specialization		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND (C_AG_IP_012 OR C_AG_IP_013 OR C_AG_IP_014)		
Other PICS				
Initial condition		The simulated PHG and PHD under test are in the Operating state and the PHD has one Schedule-Segment with more data loaded than the maximum allowed by the specialization.		
Test procedure		1. The simulated PHG issues a GET for the Schedule-Store object 2. The PHD under test responds with the attributes of the Schedule-Store 3. The simulated PHG will get information about the available Schedule-Segments using Get-Schedule-Segment-Info or Get-Schedule-Segment-Id-List.		

	4. The simulated PHG sends a request for the Schedule-Segment Data to the Schedule-Segment that contains the data a. Data APDU ❑ Type = Invoke | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_TRIG_XFER ❑ TrigSchedSegmDataXferReq = <Instance number of the selected Schedule-Segment that contains the data> 5. The PHD issues an action response a. Data APDU ❑ Type = Response | Confirmed Action, ❑ HANDLE = obj-handle b. Action = MDC_ACT_SCHED_SEG_TRIG_XFER ❑ TrigSchedSegmDataXferRsp = <Same Instance number> | tsxr-succesful (0x00 0x00) 6. The PHD under Test starts Data transfer: a. Data APDU ❑ Invoke | CfmEventReport ❑ Action = MDC_NOTI_SCHED_SEGMENT_DATA ❑ ScheduleSegmentDataEvent 7. The simulated PHG response to transferred data APDU's a. Data APDU ❑ Type = Response | Confirmed Action,, ❑ HANDLE = obj-handle ❑ Action = MDC_NOTI_SCHED_SEGMENT_DATA ❑ ScheduleSegmentDataResult 8. The PHD under test repeats steps 6 and 7 until all the data is transferred
Pass/Fail criteria	• All checked values are as specified in the test procedure • Data is transferred ([Fixed-Schedule-Segment] attribute is fully retrieved) • Total size of the response cannot exceed the maximum APDU size of the specialization
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-035		
TP Label		Schedule-Store Object. Specific Attributes Request		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	SchedStoreTX 4; O		
Test purpose		Ckeck that It is not required for a PHD to support the retrieval of specific attributes of the Schedule-Store object. If this capability is not implemented, then the PHD shall respond with an error (roer) message with an error-value of not-allowed-by-object.		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND (C_AG_IP_012 OR C_AG_IP_013 OR C_AG_IP_014)		

Other PICS	
Initial condition	The simulated PHG and PHD under test are in the Operating state.
Test procedure	1. The simulated PHG issues “Remote Operation Invoke | Get” command with a. Obj-handle set to <Schedule-Store handle> b. attribute-id-list.count=1 and a single AVA_Type MDC_ATTR_SCHED_STORE_CAPAB (0X0A 0XF3) to retrieve the mandatory [Schedule-Store-Capab] attribute 2. The PHD under test responds with: • IF PHD supports the retrieval of specific attributes of the Schedule-Store object THEN: with a “rors-cmip-get” service message which contains the [Schedule-Store-Capab] • ELSE: with a “roer” service message with error-value set to not-allowed-by-object (24)
Pass/Fail criteria	In step 2, the PHD properly sends the requested attribute or the error (not-allowed-by-object)
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-036		
TP label		Schedule-Store Object. Schedule Segment Data Event		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	SchedStoreTX 13; M	SchedStoreTX 14; M	SchedStoreTX 16; M
		SchedStoreTX 17; M	SchedStoreTX 19; M	ComCharIP 2; M
		ComCharIP 3; M		
Test purpose		Check that: The PHD shall send confirmed Schedule-Segment-Data-Event event reports until all entries in the schedule-segment are sent to the PHG or the transfer is aborted by either the schsevtsta-agent-abort or schsevtsta-manager-abort bits [AND] The PHD fills in the ScheduleSegmentDataEvent structure with information about the segment being sent. [AND] The PHD shall always set any schsevtsta-manager-* bits to 0. [AND] If the message contains the first entry and/or the last entry of the data entries, then the PHD shall set the schsevtsta-first-entry and/or schsevtsta-last-entry bits, respectively. [AND] When transferring a segment, the PHD uses the sched-segm-data-event-entries field to send all the entries. [AND] The total size of the response does not exceed the maximum APDU size established by the specialization		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND (C_AG_IP_012 OR C_AG_IP_013 OR C_AG_IP_014)		
Other PICS				
Initial condition		The simulated PHG and PHD under test are in the Operating state.		

Test procedure	1. Take some measurements with the PHD under test. 2. The simulated PHG shall send a Get request for the Schedule-Store object with an attribute-id-list set to 0 to indicate all Schedule-Store attributes. 3. The PHD issues a GET response with the Schedule-Store attributes it supports 4. The simulated PHG retrieves a list of schedule-segments using supported methods. 5. The simulated PHG sends a request for a Schedule-Segment Data a. Data APDU ❑ Type = Invoke | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_TRIG_XFER ❑ TrigSchedSegmDataXferReq 6. The PHD issues a response a. Data APDU ❑ Type = Response | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_TRIG_XFER ❑ TrigSchedSegmDataXferRsp = <Same Instance number> | tsxr-succesful (0x00 0x00) 7. The PHD under Test starts Data transfer: a. Data APDU ❑ Invoke | CfmEventReport ❑ Action = MDC_NOTI_SCHED_SEGMENT_DATA ❑ ScheduleSegmentDataEvent 8. The simulated PHG response to transferred data APDU's a. Data APDU ❑ Type = Response | Confirmed Action ❑ HANDLE = obj-handle ❑ Action = MDC_NOTI_SCHED_SEGMENT_DATA ❑ ScheduleSegmentDataResult 9. Step 8 and 9 are repeated until all the data has been sent
Pass/Fail criteria	• The PHD replies to the Get request with the requested Data and schsevtsta -manager-* bits to 0 • In the first Data event sent schsevtsta -first-entry bit must be set by the PHD • In the last Data event sent schsevtsta -last-entry bit must be set by the PHD • In step 7 total size of the message cannot exceed the maximum APDU size established by the specialization.
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-037		
TP label		Schedule-Store Object. Schedule-Segment structure		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	SchedStoreTX 22; M	SchedStoreTX 13; M	

Test purpose	Check that: Each entry shall be formatted according to the structure defined in the schedulesegment Schedule-Segment-Entry-Map; [AND] The PHD shall send confirmed Schedule-Segment-Data-Event event reports until all entries in the schedule-segment are sent to the PHG or the transfer is aborted by either the schsevtsta-agent-abort or schsevtsta-manager-abort bits
Applicability	C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND (C_AG_IP_012 OR C_AG_IP_013 OR C_AG_IP_014)
Other PICS	
Initial condition	The simulated PHG and PHD under test are in the Operating state.
Test procedure	1. The simulated PHG shall send a Get request for the Schedule-Store object with an attribute-id-list set to 0 to indicate all Schedule-Store attributes. 2. The PHD issues a GET response with the Schedule-Store attributes. 3. The simulated PHG issues a Get-Schedule-Segment-Info action with SchedSegmSelection set to all-sched-segments. If this action is not supported by the PHD, next steps must be skipped and verdict will be inconclusive. 4. Once the simulated PHG retrieves the attributes, check: a. Mandatory attribute Schedule-Segment-Entry-Map ❑ attribute-id = MDC_ATTR_SCHED_SEG_MAP ❑ attribute-type = ScheduleSegmentEntryMap ❑ attribute-value = <save for later comparison> 5. The simulated PHG sends a request for a Schedule-Segment that contains data a. Data APDU ❑ Type = Invoke | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_TRIG_XFER ❑ TrigSchedSegmDataXferReq 6. The PHD issues an action response a. Data APDU ❑ Type = Response | Confirmed Action, ❑ HANDLE = obj-handle ❑ Action = MDC_ACT_SCHED_SEG_TRIG_XFER ❑ TrigSchedSegmDataXferRsp = <Same Instance number> | tsxr-succesful (0x00 0x00) 7. The PHD under Test starts Data transfer: a. Data APDU ❑ Invoke | CfmEventReport ❑ Action = MDC_NOTI_SCHED_SEGMENT_DATA ❑ Check in ScheduleSegmentDataEvent: • schsevtsta-first-entry (0)=1 • sched-segm-data-event-entries =Data 8. The simulated PHG response to transferred data APDU's with an abort transfer a. Data APDU ❑ Type = Response | Confirmed Action

	❑ HANDLE = obj-handle ❑ Action = MDC_NOTI_SCHED_SEGMENT_DATA ❑ ScheduleSegmentDataResult: • schsevtsta-manager-abort (12)=1
Pass/Fail criteria	The format of the data has to coincide with the format expresed in the ScheduleSegmentEntryMap field and PHD does not send any ScheduleSegmentDataEvent after step 8.
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-038		
TP label		Schedule-Segment Object: Mandatory, Conditional and Optional Attributes		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	SchedSegmAttr 1; M	SchedSegmAttr 2; M	SchedSegmAttr 3; M
		SchedSegmAttr 4; C	SchedSegmAttr 5; C	SchedSegmAttr 6; O
		SchedSegmAttr 7; O	SchedSegmAttr 8; C	SchedSegmAttr 9; C
		SchedSegmAttr 10; C	SchedSegmAttr 11; C	SchedSegmAttr 12; C
		SchedSegmAttr 13; O	SchedSegmAttr 14; O	SchedSegmAttr 15; O
		SchedSegmAttr 16; O	SchedSegmAttr 18; O	SchedSegmAttr 19; M
Test purpose		Schedule-Segment objects contain all mandatory and conditional attributes as required by their conditions and may also contain optional attributes		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND (C_AG_IP_012 OR C_AG_IP_013 OR C_AG_IP_014)		
Other PICS		C_AG_OXP_009, C_AG_OXP_014, C_AG_OXP_011		
Initial condition		The simulated PHG and the PHD under test are in the Operating state.		
Test procedure		1. The simulated PHG shall send a Get request for the Schedule-Store object with an attribute-id-list set to 0 to indicate all Schedule-Store attributes. 2. The PHD issues a GET response with the Schedule-Store attributes. 3. The simulated PHG shall send a Get-Schedule-Segment-Info object action for the Schedule-Store object with SchedSegmSelection = all-sched-segments to indicate the Schedule-Segment attributes of all available Schedule-Segments. 4. If the action is supported, the PHD issues a “rors-cmip-confirmed-action” response with the Schedule-Segment attributes it supports: Verify the invoke-id is mirrored from the Get request. a. Mandatory attribute Schedule-Segment-Instance-Number ❑ attribute-id = MDC_ATTR_SCHED_SEG_INSTNO ❑ attribute-type = InstNumber ❑ attribute-length = 2 bytes ❑ attribute-value = unique in its Schedule-Store(This is why we ask for all the attributes of all the Schedule-Segments) b. Mandatory attribute Schedule-Segment-Entry-Map ❑ attribute-id = MDC_ATTR_SCHED_SEG_MAP		

	❑ attribute-type = ScheduleSegmentEntryMap ❑ attribute-value = SEQUENCE, it must match the entries c. Mandatory attribute Schedule-Segment-Period ❑ attribute-id = MDC_ATTR_SCHED_SEG_PERIOD ❑ attribute-type = HighResRelativeTime ❑ attribute-value.length = 8 bytes d. IF attribute Schedule-Segment-Transfer-Timeout is present ❑ attribute-id = MDC_ATTR_SCHED_SEG_TRANSFER_TIMEOUT ❑ attribute-type = RelativeTime ❑ attribute-value.length = 4 bytes e. IF attribute Schedule-Segment-Entry-Interval is present ❑ attribute-id = MDC_ATTR_SCHED_SEG_ENTRY_INTERVAL ❑ attribute-type = HighResRelativeTime ❑ attribute-value.length = 8 bytes f. IF attribute Schedule-Segment-Person-Id is present ❑ attribute-id = MDC_ATTR_SCHED_SEG_PERSON_ID ❑ attribute-type = PersonId ❑ attribute-value.length = 2 bytes ❑ If the schedule segment is able to have schedule data for multiple persons, it shall set the schedsc-multi-person bit in the Sched-Store-Capab attribute. If this bit is set (check values obtained in step 2) check that all schedule-segments support this attribute. g. IF attribute Schedule-Segment-Entry-Count is present ❑ attribute-id = MDC_ATTR_SCHED_SEG_ENTRY_CNT ❑ attribute-type = INT-U32 ❑ attribute-value.length = 4 bytes ❑ attribute-value = actual number of schedule-segment entries. h. IF attribute Schedule-Segment-Label is present ❑ attribute-id = MDC_ATTR_SCHED_SEG_LABEL_STRING ❑ attribute-type = OCTET STRING ❑ attribute-value.length = consistent with value ❑ attribute-value = <printable ASCII> i. IF (C_AG_OXP_009 = TRUE) THEN Schedule-Segment-Last-Updated-Abs-Time may be present ELSE it shall not be present ❑ attribute-id = MDC_ATTR_SCHED_SEG_LAST_UPDATED_ABS_TIME ❑ attribute-type = AbsoluteTime ❑ attribute-value.length = 8 bytes ❑ attribute-value = ▪ century = ▪ year ≤ 99 ▪ month ≤ 12 ▪ day ≤ 31 ▪ hour ≤ 24 ▪ minute ≤ 60 ▪ second ≤ 60

- sec-fractions ≤ 100

❑ If this attribute is used, neither the [Schedule-Segment-Last-Updated-HiRes-Time] nor [Schedule-Segment-Last-Updated-BO-Time] shall be used.

j. IF (C_AG_OXP_011 = TRUE) THEN attribute Schedule-Segment-Last-Updated-HiRes-Time may be presnt ELSE it shall not be present

❑ attribute-id = MDC_ATTR_SCHED_SEG_LAST_UPDATED_HIRES_TIME

❑ attribute-type = HiResRelativeTime

❑ attribute-value.length = 8 bytes

❑ attribute-value = <Not relevant in this test>

❑ If this attribute is used, neither the [Schedule-Segment-Last-Updated-Abs-Time] nor [Schedule-Segment-Last-Updated-BO-Time] shall be used.

k. IF (C_AG_OXP_014 = TRUE) THEN attribute Schedule-Segment-Last-Updated-BO-Time may be present ELSE it shall not be present

❑ attribute-id = MDC_ATTR_SCHED_SEG_LAST_UPDATED_BO_TIME

❑ attribute-type = BaseOffsetTime

❑ attribute-value.length = 8 bytes

❑ attribute-value = <Not relevant in this test>

❑ If this attribute is used, neither the [Schedule-Segment-Last-Updated-HiRes-Time] nor [Schedule-Segment-Last-Updated-Abs-Time] shall be used.

l. IF (C_AG_OXP_009 = TRUE) THEN Schedule-Segment-Reference-Abs-Time may be present ELSE it shall not be present

❑ attribute-id = MDC_ATTR_SCHED_SEG_REF_ABS_TIME

❑ attribute-type = AbsoluteTime

❑ attribute-value.length = 8 bytes

❑ attribute-value =

- century =
- year ≤ 99
- month ≤ 12
- day ≤ 31
- hour ≤ 24
- minute ≤ 60
- second ≤ 60
- sec-fractions ≤ 100

❑ This attribute shall be used, if the [Schedule-Segment-Reference-BO-Time] is not used.

m. IF (C_AG_OXP_014 = TRUE) THEN attribute Schedule-Segment-Reference-BO-Time may be present ELSE it shall not be present

❑ attribute-id = MDC_ATTR_SCHED_SEG_REF_BO_TIME

❑ attribute-type = BaseOffsetTime

❑ attribute-value.length = 8 bytes

❑ attribute-value = <Not relevant in this test>

❑ This attribute shall be used, if the [Schedule-Segment-Reference-Abs-Time] is not used.

n. IF (C_AG_OXP_009 = TRUE) THEN Schedule-Segment-Start-Abs-Time may be present ELSE it shall not be present

❑ attribute-id = MDC_ATTR_SCHED_SEG_START_ABS_TIME

❑ attribute-type = AbsoluteTime

	❑ attribute-value.length = 8 bytes ❑ attribute-value = ▪ century = ▪ year ≤ 99 ▪ month ≤ 12 ▪ day ≤ 31 ▪ hour ≤ 24 ▪ minute ≤ 60 ▪ second ≤ 60 ▪ sec-fractions ≤ 100 ❑ If this attribute is used, the [Schedule-Segment-Start-BO-Time] shall not be used. o. IF (C_AG_OXP_009 = TRUE) THEN Schedule-Segment-End-Abs-Time may be present ELSE it shall not be present ❑ attribute-id = MDC_ATTR_SCHED_SEG_END_ABS_TIME ❑ attribute-type = AbsoluteTime ❑ attribute-value.length = 8 bytes ❑ attribute-value = ▪ century = ▪ year ≤ 99 ▪ month ≤ 12 ▪ day ≤ 31 ▪ hour ≤ 24 ▪ minute ≤ 60 ▪ second ≤ 60 ▪ sec-fractions ≤ 100 ❑ If this attribute is used, the [Schedule-Segment-End-BO-Time] shall not be used. p. IF (C_AG_OXP_014 = TRUE) THEN attribute Schedule-Segment-Start-BO-Time may be present ELSE it shall not be present ❑ attribute-id = MDC_ATTR_SCHED_SEG_START_BO_TIME ❑ attribute-type = BaseOffsetTime ❑ attribute-value.length = 8 bytes ❑ attribute-value = <Not relevant in this test> ❑ If this attribute is used, the [Schedule-Segment-Start-Abs-Time] shall not be used. q. IF (C_AG_OXP_014 = TRUE) THEN Schedule-Segment-End-BO-Time may be present ELSE it shall not be present ❑ attribute-id = MDC_ATTR_SCHED_SEG_END_BO_TIME attribute-type = BaseOffsetTime ❑ attribute-value.length = 8 bytes ❑ attribute-value = <Not relevant in this test> ❑ If this attribute is used, the [Schedule-Segment-End-Abs-Time] shall not be used. r. IF attribute Schedule-Segment-Confirm-Timeout is present ❑ attribute-id = MDC_ATTR_SCHED_SEG_CONFIRM_TIMEOUT ❑ attribute-type = RelativeTime

	❑ attribute-value.length = 4 bytes 5. Repeat for every Segment
Pass/Fail criteria	All checked values are as specified in the test procedure.
Notes	

TP Id		TP/PLT/PHD/CLASS/IP/BV-039		
TP label		Schedule-Segment Object. Semantic of Schedule-Segment-Person-Id attribute		
Coverage	**Spec**	[ISO/IEEE 11073-10419]		
	Testable items	SchedSegmAttr 5; C		
Test purpose		Check that: If the Schedule-Store is able to store data for multiple persons, it sets the schedsc-multi-person(12) bit in the Schedule-Store-Capab attribute. [AND] If this bit is set, all Schedule-Segment instances contained in the Schedule-Store support the Schedule-Segment-Person-Id attribute		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND (C_AG_IP_012 OR C_AG_IP_013 OR C_AG_IP_014) AND C_AG_IP_016		
Other PICS				
Initial condition		The simulated PHG and the PHD under test are in the Operating state.		
Test procedure		1. The simulated PHG shall send a Get request for the Schedule-Store object with an attribute-id-list set to 0 to indicate all Schedule-Store attributes. 2. The PHD issues a GET response with the Schedule-Store attributes. 3. The simulated PHG shall send a Get-Schedule-Segment-Info object action for the Schedule-Store object with SchedSegmSelection set to all-sched-segments to indicate all Schedule-Segment attributes. 4. If the method is supported by the PHD, the PHD issues a response with the Schedule-Segment attributes it supports 5. The simulated PHG sends a request for the Schedule-Segment Data. 6. The PHD issues an action response (action: MDC_ACT_SCHED_SEG_TRIG_XFER, action-info-args: TrigSchedSegmDataXferRsp) 7. The PHD under Test sends a Schedule-Segment-Data-Event message.		
Pass/Fail criteria		The schedsc-multi-person bit in the Schedule-Store-Capab attribute must be set and all Schedule-Segment instances contained in the Schedule-Store must contain the Schedule-Segment-Person-Id attribute. In step 7, measurements stored in the Schedule-Store have to be assigned correctly to every person.		
Notes				

TP Id		TP/PLT/PHD/CLASS/IP/BV-040
TP label		Schedule-Segment Object. Confirm Timeout
Coverage	**Spec**	[ISO/IEEE 11073-20601-20601C]

	Testable items	TimeOutVar 2; C	OperErrorCond 5; M	OperErrorCond 6; M
	Spec	[ISO/IEEE 11073-10419]		
	Testable items	SchedSegmAttr 18; O		
Test purpose		Check that: If Schedule-Segment-Confirm-Timeout attribute is supported, then its value matches with the actual timeout value that the PHD uses for the Confirmed Event Report generated from the Schedule-Store Object		
Applicability		C_AG_OXP_000 AND C_AG_OXP_158 AND C_AG_OXP_181 AND (C_AG_IP_012 OR C_AG_IP_013 OR C_AG_IP_014)		
Other PICS				
Initial condition		The simulated PHG and PHD under test are in the Operating state.		
Test procedure		1. The simulated PHG shall send a Get-Schedule-Segment-Info object action for the Schedule-Store object with SchedSegmSelection set to all-sched-segments to indicate all Schedule-Segments attributes. 2. Record the Schedule-Segment-Confirm-Timeout value. 3. The simulated PHG sends a request for the Schedule-Segment Data. 4. The PHD issues an action response (action: MDC_ACT_SCHED_SEG_TRIG_XFER, action-info-args: TrigSchedSegmDataXferRsp) 5. The PHD under Test sends a Schedule-Segment-Data-Event message. 6. The simulated PHG does not respond for at least the time specified in the field Schedule-Segment-Confirm-Timeout. 7. The PHD waits field Schedule-Segment-Confirm-Timeout time and then it must send an abort message to the PHG and move to the Unassociated state		
Pass/Fail criteria		The PHD waits during the specified time, and then it must send an abort message to the PHG and changes to Unassociated		
Notes				

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