ITU-T

H.850.7

(04/2017)

TELECOMMUNICATION STANDARDIZATION SECTOR OF ITU

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 10G: Transcoding for Bluetooth Low

Energy: Personal Health Gateway – Continuous

glucose monitoring

Recommendation ITU-T H.850.7



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 $For {\it further details, please refer to the list of ITU-T Recommendations}.$

Recommendation ITU-T H.850.7

Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 10G: Transcoding for Bluetooth Low Energy: Personal Health Gateway – Continuous glucose monitoring

Summary

Recommendation ITU-T H.850.7 provides a test suite structure (TSS) and the test purposes (TP) for the transcoding of continuous glucose monitoring data by personal health gateways (PHGs) in the Personal Health Devices (PHD) interface of application-level data between the Bluetooth Low Energy Bluetooth Generic Attribute Profile (GATT) format and the IEEE 11073-20601 data format, 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.850.7 is a transposition of clause 3.9 of Continua Test Tool DG2016, Test Suite Structure & Test Purposes, Personal Health Devices Interface; Part 10: PHD Transcoding Whitepaper. Personal Health Gateway (Version 1.7, 2017-07-18), that was developed by the Personal Connected Health Alliance. A number of versions of this specification existed before transposition.

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

This Recommendation is part of ITU-T H.850 that was originally approved in 04/2017 as a single part, but which was split at publication time into eight sub-parts for easier use, maintenance and expandability:

- ITU-T H.850 with the general requirements;
- ITU-T H.850.1 with thermometer PHD requirements;
- ITU-T H.850.2 with blood pressure PHD requirements;
- ITU-T H.850.3 with heart rate PHD requirements;
- ITU-T H.850.4 with glucose meter PHD requirements;
- ITU-T H.850.5 with weighing scale PHD requirements;
- ITU-T H.850.6 with pulse oximeter PHD requirements;
- ITU-T H.850.7 with continuous glucose monitoring PHD requirements.

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

FOREWORD

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

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

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

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

Introduction

This Recommendation is a transposition of clause 3.9 of Continua Test Tool DG2016, Test Suite Structure & Test Purposes, Personal Health Devices Interface; Part 10: PHD Transcoding Whitepaper. Personal Health Gateway (Version 1.7, 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	2012-10-05	Initial release for Test Tool DG2011 based on the requirements in [b-CDG 2011].
1.1	2013-05-24	Initial release for Test Tool DG2012. It uses "TSS&TP_DG2011_LP-PAN_PART_10_v1.0.doc" as a baseline and adds new features included in [b-CDG 2012] (BPM and HR profiles).
1.2	2014-01-24	Initial release for Test Tool DG2013. It uses "TSS&TP_DG2012_LP-PAN_PART_10_v1.1.doc" as a baseline and adds new features included in [b-ITU-T H.810 (2013)]/[b-CDG 2013]: • Adds glucose meter BLE • Adds BLE SSP support • Adds NFC new transport • Adds INR device specialization
1.3	2014-04-24	TM Lite & Doc Enhancements (Test Tool v4.0 Maintenance Release 1). It uses "TSS&TP_DG2013_LP-PAN_PART_10_v1.2.doc" as a baseline and adds new features included in Documentation Enhancements: • "Other PICS" row has been added
1.4	2015-07-01	Initial release for Test Tool DG2015. It uses "TSS&TP_DG2013_LP-PAN_PART_10_v1.3.doc" as a baseline and adds new features included in [b-ITU-T H.810 (2015)]/[b-CDG2015]: • Adds WS/BCA BLE device specialization • Adds SABTE IEEE device specialization
1.5	2016-01-26	First maintenance release for Test Tool DG2015. It uses "TSS&TP_DG2015_LP-PAN_PART_10_v1.4.doc" as a baseline and adds some updates according to the Maintenance 2015 activity.
1.6	2016-09-20	Initial release for Test Tool DG2016. It uses "TSS&TP_DG2016_LP-PAN_PART_10_v1.5.doc" as a baseline and adds new features included in [ITU-T H.810 (2016)]/[b-CDG 2016]: • Adds PLX BLE device specialization • Adds PLX CGM device specialization
1.7	2017-07-18	Second Maintenance Release for Test Tool DG2016. It uses "TSS&TP_DG2016_LP-PAN_PART_10_v1.6.doc" as a baseline and corrects minor typos.

Recommendation ITU-T H.850.7

Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 10G: Transcoding for Bluetooth Low Energy: Personal Health Gateway – Continuous glucose monitoring

1 Scope

The scope of this Recommendation¹ is to provide a test suite structure (TSS) and the test purposes (TP) for the Personal Health Devices interface based on the requirements defined in the Continua Design Guidelines (CDG) [ITU-T H.810 (2016)]. The objective of this test specification is to provide a high probability of interoperability at this interface.

The TSS and TP for the Personal Health Devices interface have been divided into the parts specified below. This Recommendation covers Part 10G.

- 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)

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

- Part 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. In addition to the main part, the document is subdivided in the following subparts:
 - Part 10A: Whitepaper Thermometer requirements
 - Part 10B: Whitepaper Blood pressure requirements
 - Part 10C: Whitepaper Heart rate requirements
 - Part 10D: Whitepaper Glucose meter requirements
 - Part 10E: Whitepaper Weighing scales requirements
 - Part 10F: Whitepaper Pulse oximeter requirements
 - Part 10G: Whitepaper Continuous glucose monitoring requirements

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.

E	
[ITU-T H.810 (2016)]	Recommendation ITU-T H.810 (2016), <i>Interoperability design</i> guidelines for personal health systems.
[Bluetooth PHDT v1.4]	Bluetooth SIG (2013), Personal Health Devices Transcoding White Paper, v1.4. https://www.bluetooth.org/DocMan/handlers/DownloadDoc.ashx?doc_id=294539
[Bluetooth PHDT v1.5]	Bluetooth SIG (2014), <i>Personal Health Devices Transcoding White Paper</i> , v1.5. https://www.bluetooth.org/DocMan/handlers/DownloadDoc.ashx?doc_id=272346
[Bluetooth PHDT v1.6]	Bluetooth SIG (2015), <i>Personal Health Devices Transcoding White Paper</i> , v1.6. https://www.bluetooth.org/DocMan/handlers/DownloadDoc.ashx?doc_id=310657
[ISO/IEEE 11073-104xx]	ISO/IEEE 11073-104xx (in force), <i>Health informatics</i> – <i>Personal health device communication</i> – <i>Device specialization</i> . NOTE – Shorthand to refer to the collection of device specialization standards that utilize [ISO/IEEE 11073-20601-2015A], where xx can be any number from 01 to 99, inclusive.
[ISO/IEEE 11073-20601-2015A]	ISO/IEEE 11073-20601:2010, Health informatics – Personal health device communication – Part 20601: Application profile – Optimized exchange protocol, including ISO/IEEE

11073-20601:2010 Amd 1:2015.

https://www.iso.org/standard/54331.html with https://www.iso.org/standard/63972.html

[ISO/IEEE 11073-20601-2016C] ISO/IEEE 11073-20601:2016, Health informatics – Personal

health device communication – Part 20601: Application profile – Optimized exchange protocol, including ISO/IEEE

11073-20601:2016/Cor.1:2016.

https://www.iso.org/standard/66717.html with https://www.iso.org/standard/71886.html

[IHE PCD TF 1] IHE PCD TF 1 (2012), IHE Patient Care Device Technical

Framework – Revision 2.0. Volume 1: Integration Profiles. http://www.ihe.net/Technical Framework/upload/IHE PCD TF Rev2-

0 Vol1 FT 2012-08-16.pdf

[IHE PCD TF 2] IHE PCD TF 2 (2012), IHE Patient Care Device Technical

Framework – Revision 2.0. Volume 2: Transactions. http://www.ihe.net/Technical_Framework/upload/IHE_PCD_TF_Rev2-

0_Vol2_FT_2012-08-16.pdf

[IHE PCD TF 3] IHE PCD TF 3 (2012), IHE Patient Care Device Technical

Framework – Revision 2.0. Volume 3: Semantic Content. http://www.ihe.net/Technical_Framework/upload/IHE_PCD_TF_Rev2-

0_Vol3_FT_2012-08-16.pdf

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

LSB Least Significant Bit

MDS Medical Device System

MSB Most Significant Bit

NFC Near Field Communication

PAN Personal Area Network

PCD Patient Care Device

PCO Point of Control and Observation

PCT Protocol Conformance Testing

PHD Personal Health Device

PHDC Personal Healthcare Device Class

PHG Personal Health Gateway

PICS Protocol Implementation Conformance Statement

PIXIT Protocol Implementation extra Information for Testing

RACP Record Access Control Point

SABTE Sleep Apnoea Breathing Therapy Equipment

SCR Static Conformance Review SDP Service Discovery Protocol

SOAP Simple Object Access Protocol

TCRL Test Case Reference List

TCWG Test and Certification Working Group

TP Test Purposes

TSS Test Suite Structure
USB Universal Serial Bus
WDM Windows Driver Model

5 Conventions

In this text, the uppercase letter L is used as the symbol for litre.

Several of the test purposes in Annex A refer to "WAN PCD-01 messages"; these messages are specified in the patient care device (PCD) technical framework defined in [IHE PCD TF 1], [IHE PCD TF 2] and [IHE PCD TF 3]. Similarly, the "IEEE 11073 Objects and Attributes" are defined in [ISO/IEEE 11073-104xx].

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

- SHALL is equivalent to 'must' or 'it is required to'.
- SHALL NOT is equivalent to 'must not' or 'it is not allowed'.
- SHOULD is equivalent to 'it is recommended to'.
- SHOULD NOT is equivalent to 'it is not recommended to'.
- MAY is equivalent to 'is permitted'.
- MAY NOT is equivalent to 'it is not required that'.

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

In this document, hexadecimal numbers are denoted either with the prefix "0x" or by "(hex)" after the number; "(dec)" after a number indicates it is expressed in decimal format.

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

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

CDG release	Transposed as	Version	Description	Designation
2016 plus errata	[ITU-T H.810 (2016)]	6.1	Release 2016 plus errata noting all ratified bugs [b-CDG 2016].	_
2016	-	6.0	Release 2016 of the CDG including maintenance updates of the CDG 2015 and additional guidelines that cover new functionalities.	Iris
2015 plus errata	[b-ITU-T H.810 (2015)]	5.1	Release 2015 plus errata noting all ratified bugs [b-CDG 2015]. The 2013 edition of ITU-T H.810 is split into eight parts in the ITU-T 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.	
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.	
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.	
2011 plus errata	_	2.1	CDG 2011 integrated with identified errata.	_
2011	-	2.0	Release 2011 of the CDG including maintenance updates of the CDG 2010 and additional guidelines that cover new functionalities [b-CDG 2011].	
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].	
1.0	_	1.0	First released version of the CDG [b-CDG 1.0].	_

6 Test suite structure

The test purposes (TP) for the Personal Health Devices interface have been divided into the groups and subgroups specified below. Annex A describes the TPs for subgroup 2.4.8 (shown in bold).

- Group 1: Personal Health Device (PHD)
 - Group 1.1: Transport (TR)
 - Subgroup 1.1.1: Design guidelines: Common (DGC)
 - Subgroup 1.1.2: USB design guidelines (UDG)
 - Subgroup 1.1.3: Bluetooth design guidelines (BDG)
 - Subgroup 1.1.4: Pulse oximeter design guidelines (PODG)
 - Subgroup 1.1.5: Cardiovascular design guidelines (CVDG)
 - Subgroup 1.1.6: Activity hub design guidelines (HUBDG)
 - Subgroup 1.1.7: ZigBee design guidelines (ZDG)
 - Subgroup 1.1.8: Glucose meter design guidelines (GLDG)
 - Subgroup 1.1.9: Bluetooth low energy design guidelines (BLEDG)
 - Subgroup 1.1.10: Basic electrocardiograph design guidelines (ECGDG)
 - Subgroup 1.1.11: NFC design guidelines (NDG)
 - Group 1.2: IEEE 20601 Optimized exchange protocol (OXP)
 - Subgroup 1.2.1: PHD domain information model (DIM)
 - Subgroup 1.2.2: PHD service model (SER)
 - Subgroup 1.2.3: PHD communication model (COM)
 - Group 1.3: Devices class specializations (CLASS)
 - Subgroup 1.3.1: Weighing scales (WEG)
 - Subgroup 1.3.2: Glucose meter (GL)
 - Subgroup 1.3.3: Pulse oximeter (PO)
 - Subgroup 1.3.4: Blood pressure monitor (BPM)
 - Subgroup 1.3.5: Thermometer (TH)
 - Subgroup 1.3.6: Cardiovascular (CV)
 - Subgroup 1.3.7: Strength (ST)
 - Subgroup 1.3.8: Activity hub (HUB)
 - Subgroup 1.3.9: Adherence monitor (AM)
 - Subgroup 1.3.10: Insulin pump (IP)
 - Subgroup 1.3.11: Peak flow (PF)
 - Subgroup 1.3.12: Body composition analyser (BCA)
 - Subgroup 1.3.13: Basic electrocardiograph (ECG)
 - Subgroup 1.3.14: International normalized ratio (INR)
 - Subgroup 1.3.15: Sleep apnoea breathing therapy equipment (SABTE)
 - Subgroup 1.3.16: Continuous glucose monitor (CGM)
 - Group 1.4: Personal health device transcoding whitepaper (PHDTW)
 - Subgroup 1.4.1: Whitepaper general requirements (GEN)
 - Subgroup 1.4.2: Whitepaper thermometer requirements (TH)
 - Subgroup 1.4.3: Whitepaper blood pressure requirements (BPM)

- Subgroup 1.4.4: Whitepaper heart rate requirements (HR)
- Subgroup 1.4.5: Whitepaper glucose meter requirements (GL)
- Subgroup 1.4.6: Whitepaper weight scale requirements (WS)
- Subgroup 1.4.7: Whitepaper pulse oximeter requirements (PLX)
- Subgroup 1.4.8: Whitepaper continuous glucose monitoring requirements (CGM)
- Group 2: Personal Health Gateway (PHG)
 - Group 2.1: Transport (TR)
 - Subgroup 2.1.1: Design guidelines: Common (DGC)
 - Subgroup 2.1.2: USB design guidelines (UDG)
 - Subgroup 2.1.3: Bluetooth design guidelines (BDG)
 - Subgroup 2.1.4: Cardiovascular design guidelines (CVDG)
 - Subgroup 2.1.5: Activity hub design guidelines (HUBDG)
 - Subgroup 2.1.6: ZigBee design guidelines (ZDG)
 - Subgroup 2.1.7: Bluetooth low energy design guidelines (BLEDG)
 - Subgroup 2.1.8: NFC design guidelines (NDG)
 - Group 2.2: IEEE 20601 Optimized exchange protocol (OXP)
 - 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)
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 - Group 2.4: Personal health device transcoding whitepaper (PHDTW)
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 - Subgroup 2.4.3: Whitepaper blood pressure measurement 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
 - o 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.
 - o BV: Valid behaviour test
 - o BI: Invalid behaviour test
 - <NNN>: This is a sequential number that identifies a 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 2.4.8 – Whitepaper Continuous glucose monitoring requirements (CGM)

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-000		
TP label		Whitepaper. Continuous Glucose Monitoring MDS Object - System-Type Attribute		
Coverage	Spec	[Bluetooth PHDT v1.6]		
	Testable items	CGM Specific MDS 1; M		
Test purpos	е	Check that:		
		PHG does not include MDS Object – System-Type attribute in transcoder output.		
Applicability	/	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043		
Other PICS				
Initial condi	tion	The PHG under test and the simulated Personal Health Device (PHD) are in the Standby state.		
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a measurement ready to be sent and it is in the Advertising state (it is discoverable).		
		2. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).		
		When the pairing has been completed (Connection state) the simulated PHD sends the Measurement to the PHG under test.		
		4. Check in PHG transcoder output the MDS Object – System-Type attribute		
Pass/Fail criteria		In Step 4, the MDS Object – System-Type attribute is not present.		
Notes		Possible values in typical points of observation after transcoder output are:		
(To assist m testing)	anual	a) IEEE 11073 Objects and Attributes		
tootiiig)		System-Type attribute is not present:		
		☐ Object: MDS Object		
		☐ Attribute-id: MDC_ATTR_SYS_TYPE (2438)		
		☐ Attribute-type: TYPE		
		☐ Attribute-value: <not present=""></not>		
		b) WAN PCD-01 message		
		PCD-01 message does not include segments with System-Type attribute value (67974^MDC_ATTR_SYS_TYPE^MDC)		

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-001	
TP label Whitepaper. Continuous Glucose Monitoring MDS Object - Dev-Configuration-ld Attribute		ng MDS Object - Dev-Configuration-Id Attribute	
Coverage Spec [Bluetooth PHDT v1.6]			
	Testable items	Common MDS 17; M	
Test purpose		Check that: PHG includes MDS Object – Dev-Configur [AND] Dev-Configuration-Id value is set to any va	ation-Id attribute in transcoder output. lue in range of 0x4000 to 0x7FFF (Extended

	Configuration)
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043
Other PICS	
Initial condition	The PHG under test and the simulated PHD are in the Standby state.
Test procedure	1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a measurement ready to be sent and it is in the Advertising state (it is discoverable).
	2. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	 When the pairing has been completed (Connection state) the simulated PHD sends the Measurement to the PHG under test.
	4. Check in PHG transcoder output the MDS Object – Dev-Configuration-Id attribute
Pass/Fail criteria	In Step 4, the MDS Object – Dev-Configuration-Id attribute is present, its value is inside the range 0x4000 - 0x7FFF
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
toomig,	Dev-Configuration-Id attribute is present:
	☐ Object: MDS Object
	☐ Attribute-id: MDC_ATTR_DEV_CONFIG_ID (2628)
	☐ Attribute-type: INT-U16
	Attribute-value: Any value inside the range 16384 - 32767 (dec) or 0x4000 – 0x7FFF (hex)
	b) WAN PCD-01 message
	According to Continua DG, the Dev-Configuration-Id shall not be transmitted in PCD-01 message, therefore it is not possible to check this attribute.

TP ld		TP/LP-PAN/PHG/PHDTW/CG	SM/BV-002	
TP label		Whitepaper. Continuous Gluc	ose Monitoring MDS Object - Syst	em-Type-Spec-List Attribute
Coverage	Spec	[Bluetooth PHDT v1.6]	[Bluetooth PHDT v1.6]	
	Testable items	Common MDS 15; M	CGM Specific MDS 2; M	
Test purpose		Check that: PHG includes MDS Object – System-Type-Spec-List attribute in transcoder output. [AND] System-Type-Spec-List is set to (MDC_DEV_SPEC_PROFILE_CGM, Version 1)		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043		
Other PICS				
Initial condition		The PHG under test and the s	imulated PHD are in the Standby	state.
Test procedure			nfigured with a Continuous Glucos easurement ready to be sent and	
			tes a discovery process (Scanning ts a pairing process with the simu	

	 When the pairing has been completed (Connection state) the simulated PHD sends the Measurement to the PHG under test. Check in PHG transcoder output the MDS Object – System-Type-Spec-List attribute
Pass/Fail criteria	In Step 4, the MDS Object – System-Type-Spec-List attribute is present, its value is (MDC_DEV_SPEC_PROFILE_CGM, Version 1)
Notes (To assist manual testing)	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes System-Type-Spec-List attribute is present: Object: MDS Object Attribute-id: MDC_ATTR_SYS_TYPE_SPEC_LIST (2650) Attribute-type: SEQUENCE OF [{type (INT-U16), version (INT-U16)}] Attribute-value: type: MDC_DEV_SPEC_PROFILE_CGM, 4106 (dec) or 10 0A (hex) version: 1 (dec) or 00 01 (hex) WAN PCD-01 message PCD-01 message PCD-01 message includes a segment like this with System-Type-Spec-List attribute value (check OBX-5): OBX ? NM 68186^MDC_ATTR_SYS_TYPE_SPEC_LIST^MDC 1.0.0.a 528410^MDC_DEV_SPEC_PROFILE_CGM^MDC

TP ld	Id TP/LP-PAN/PHG/PHDTW/CGM/BV-003				
TP label		Whitepaper. Continuous Glucose Monitoring MDS Object - Reg-Cert-Data-List Attribute			
Coverage	Spec	[Bluetooth PHDT v1.6]			
	Testable items	Common MDS 14; M Regulatory Conv 1; M			
Test purpo	se	Check that:			
		PHG transcodes IEEE 11073-20601 Regulatory Certification Data List characteristic into MDS Object – Reg-Cert-Data-List attribute			
Applicabili	ity	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043			
Other PICS					
Initial cond	I condition The PHG under test and the simulated PHD are in the Standby state.				
Test procedure		1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a measurement ready to be sent and it is in the Advertising state (it is discoverable).			
		2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is:			
		a. IEEE 11073-20601 Regulatory Certification Data List (0x2A2A)			
		Format: reg-cert-data-list (opaque structure)			
		Value: 00 02 00 12 02 01 00 08 06 01 00 01 00 02 80 1A 02 02 00 02 80 00 (hex)			
		i. Element:			
		auth-body-and-struc-type:			
		- auth-body: 02 (hex) auth-body-continua(2)			
		- auth-body-struc-type: 01 (hex). continua-version-struct(1)			

	auth-body-data:
	- major-IG-version: 06 (hex)
	- minor-IG-version: 01 (hex)
	- certified-devices: 80 1A (hex) BLE Continuous Glucose Monitor
	ii. Element:
	auth-body-and-struc-type:
	- auth-body: 02 (hex). auth-body-continua(2)
	- auth-body-struc-type: 02 (hex). continua-reg-struct(2)
	auth-body-data:
	- regulation-bit-field: 80 00 (hex). Unregulated device
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with simulated PHD.
	4. When the pairing has been completed (Connection state), force the PHG under test to read IEEE 11073-20601 Regulatory Certification Data List characteristic.
	5. Check in the PHG transcoder output the MDS Object – Reg-Cert-Data-List attribute
Pass/Fail criteria	In Step 5, the MDS Object – Reg-Cert-Data-List attribute is present and its value matches with IEEE 11073-20601 Regulatory Certification Data List characteristic value
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
tooting)	Reg-Cert-Data-List attribute is present:
	□ Object: MDS Object
	☐ Attribute-id: MDC_ATTR_REG_CERT_DATA_LIST (2635)
	☐ Attribute-type: SEQUENCE OF [{auth-body-and-struc-type, auth-body-data}, {}]
	Attribute-value: 00 02 00 12 02 01 00 08 06 01 00 01 00 02 80 1A 02 02 00 02 80 00 (hex) [Note that 0x00 0x02 is the number of elements in the sequence and 0x00 0x12 is the length of the sequence]
	i. Reg-Cert-Data Element:
	auth-body-and-struc-type:
	- auth-body: 02 (hex) auth-body-continua(2)
	- auth-body-struc-type: 01 (hex). continua-version-struct(1)
	auth-body-data:
	- major-IG-version: 06 (hex)
	- minor-IG-version: 01 (hex)
	- certified-devices: 80 1A (hex). BLE Continuous Glucose Monitor
	ii. Reg-Cert-Data Element:
	auth-body-and-struc-type:
	- auth-body: 02 (hex). auth-body-continua(2)
	- auth-body-struc-type: 02 (hex). continua-reg-struct(2)
	auth-body-data:
	- regulation-bit-field: 80 00 (hex). Unregulated device
	b) WAN PCD-01 message
	PCD-01 message includes five segments like these with Reg-Cert-Data-List attribute value (check OBX-5 in five segments):
	OBX ? CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 1.0.0.a 2^auth-body-continua R

OBX ? ST 532352^MDC_REG_CERT_DATA_CONTINUA_VERSION^MDC 1.0.0.a.x 6.1 R
OBX ? NA 532353^MDC_REG_CERT_DATA_CONTINUA_CERT_DEV_LIST^MDC 1.0.0.a.y 32794 R
OBX ? CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 1.0.0.b 2^auth-body-continua R
OBX ? CWE 532354^MDC_REG_CERT_DATA_CONTINUA_REG_STATUS^MDC 1.0.0.b.z 1^unregulated-device(0) R

TP ld	TP/LP-PAN/PHG/PHDTW/CGM/BV-004				
TP label		Whitepaper. Glucose Numeric Object - Handle Attribute			
Coverage	Spec	Bluetooth PHDT v1.6]			
	Testable items	Glucose Numeric 1; O			
[OR]		PHG does not include Glucose Numeric Object – Handle Attribute in transcoder output. [OR] If PHG includes Glucose Numeric Object – Handle attribute in transcoder output, then its value			
Applicability	y	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043			
Other PICS					
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.			
Initial condition Test procedure		 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: CGM Measurement (0x2AA7) Field: Size Format: uint8 Field: Flags Format: 8 bit Value: 0000 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present. Field: CGM Glucose Concentration (mg/dL) Format: SFLOAT Value: Not Relevant Field: Time Offset Format: uint16 Value: Not Relevant This field is not included 			

	vi. Field: CGM Trend Information		
	This field is not included		
	vii. Field: CGM Quality		
	This field is not included		
	viii. Field: E2E-CRC		
	This field is not included		
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).		
	4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Start Time characteristics. Then, the simulated PHD sends the CGM measurement to the PHG under test.		
	5. Check in the PHG transcoder output the Glucose Numeric Object – Handle attribute		
	6. The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP) and the simulated PHD sends the temporarily stored CGM measurement to the PHG under test.		
	7. Check in the PHG transcoder output the Glucose Numeric Object – Handle attribute		
Pass/Fail criteria	In Step 5 and 7, the Glucose Numeric Object – Handle attribute is not present or, if it is present then its value is different than 0.		
Notes	Possible values in typical points of observation after transcoder output are:		
(To assist manual	a) IEEE 11073 Objects and Attributes		
testing)	Handle attribute is not present, or if it is present then:		
	□ Object: Glucose Numeric Object		
	☐ Attribute-id: MDC_ATTR_ID_HANDLE (2337)		
	☐ Attribute-type: INT-U16		
	☐ Attribute-value: Any value different than 0		
	b) WAN PCD-01 message		
	PCD-01 message does not include segments with Handle attribute value		
	ı		

		TD// D DAN/DUO/DUDTH/OOM/D/ con		
TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-005		
TP label		Whitepaper. Glucose Numeric Object - Type Attribute		
Coverage	Spec	Bluetooth PHDT v1.6]		
	Testable items	Glucose Numeric 2; M		
Test purpose		Check that:		
		PHG includes Glucose Numeric Object – Type attribute in transcoder output.		
		[AND]		
		Type is set to the correct value according to CGM Type field value		
Applicability C_MAN_BLE_000 A		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043		
Other PICS				
Initial condition		The PHG under test and the simulated PHD are in the Standby state.		
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement		

temporarily stored.

- 2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:
 - a. CGM Feature (0x2AA8)
 - i. Field: CGM Feature
 - Format: 24 bit
 - Value: 0000 0000 0000 0000 0000 (MSB → LSB). No extra features supported.
 - ii. Field: CGM Type
 - Format: 4 bit
 - Value: 0x1 (capillary wholeblood)
 - iii. Field: CGM Sample Location
 - Format: 4 bit
 - Value: not relevant
 - iv. Field: E2E-CRC
 - Format: uint16
 - Value: not relevant
 - b. CGM Measurement (0x2AA7)
 - i. Field: Size
 - Format: uint8
 - ii. Field: Flags
 - Format: 8 bit
 - Value: 0000 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
 - iii. Field: CGM Glucose Concentration (mg/dL)
 - Format: SFLOAT
 - Value: Not Relevant
 - iv. Field: Time Offset
 - Format: uint16
 - Value: Not Relevant
 - v. Field: Sensor Status Annunciation
 - This field is not included
 - vi. Field: CGM Trend Information
 - This field is not included
 - vii. Field: CGM Quality
 - This field is not included
 - viii. Field: E2E-CRC
 - This field is not included
- The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
- 4. When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature characteristic and CGM Session Start Time characteristic.
- 5. The simulated PHD sends the Measurement to the PHG under test.
- 6. Check in the PHG transcoder output the Glucose Numeric Object Type attribute

- The PHG under test requests the simulated PHD to report stored records by performing a
 writing operation in the Record Access Control Point (RACP) and the simulated PHD
 sends the temporarily stored CGM measurement to the PHG under test.
- 8. Check in the PHG transcoder output the Glucose Numeric Object Type attribute
- 9. End current CGM session and start a new one. The simulated PHD will now have CGM Type field of the CGM Feature characteristic set to 0x2 (capillary plasma). Repeat steps 3-8 and check in PHG transcoder output the Glucose Numeric Object-Type attribute as in step 6 and 8.
- 10. End current CGM session and start a new one. The simulated PHD will now have CGM Type field of the CGM Feature characteristic set to 0x3 (venous wholeblood). Repeat steps 3-8 and check in PHG transcoder output the Glucose Numeric Object-Type attribute as in step 6 and 8.
- 11. End current CGM session and start a new one. The simulated PHD will now have CGM Type field of the CGM Feature characteristic set to 0x4 (venous plasma). Repeat steps 3-8 and check in PHG transcoder output the Glucose Numeric Object-Type attribute as in step 6 and 8.
- 12. End current CGM session and start a new one. The simulated PHD will now have CGM Type field of the CGM Feature characteristic set to 0x5 (arterial wholeblood). Repeat steps 3-8 and check in PHG transcoder output the Glucose Numeric Object-Type attribute as in step 6 and 8.
- 13. End current CGM session and start a new one. The simulated PHD will now have CGM Type field of the CGM Feature characteristic set to 0x6 (arterial plasma). Repeat steps 3-8 and check in PHG transcoder output the Glucose Numeric Object-Type attribute as in step 6 and 8.
- 14. End current CGM session and start a new one. The simulated PHD will now have CGM Type field of the CGM Feature characteristic set to 0x7 (undetermined wholeblood). Repeat steps 3-8 and check in PHG transcoder output the Glucose Numeric Object-Type attribute as in step 6 and 8.
- 15. End current CGM session and start a new one. The simulated PHD will now have CGM Type field of the CGM Feature characteristic set to 0x8 (undetermined plasma). Repeat steps 3-8 and check in PHG transcoder output the Glucose Numeric Object-Type attribute as in step 6 and 8.
- 16. End current CGM session and start a new one. The simulated PHD will now have CGM Type field of the CGM Feature characteristic set to 0x9 (interstitial fluid ISF). Repeat steps 3-8 and check in PHG transcoder output the Glucose Numeric Object-Type attribute as in step 6 and 8.
- 17. End current CGM session and start a new one. The simulated PHD will now have CGM Type field of the CGM Feature characteristic set to 0xA (control solution). Repeat steps 3-8 and check in PHG transcoder output the Glucose Numeric Object-Type attribute as in step 6 and 8.

Pass/Fail criteria

- In Step 6 and 8, the Glucose Numeric Object Type attribute is set to {MDC_PART_SCADA | MDC_CONC_GLU_CAPILLARY_WHOLEBLOOD}
- In Step 9, the Glucose Numeric Object Type attribute is set to {MDC_PART_SCADA | MDC_CONC_GLU_CAPILLARY_PLASMA} in both cases.
- In Step 10, the Glucose Numeric Object Type attribute is set to {MDC_PART_SCADA | MDC_CONC_GLU_VENOUS_WHOLEBLOOD} in both cases.
- In Step 11, the Glucose Numeric Object Type attribute is set to {MDC_PART_SCADA | MDC_CONC_GLU_VENOUS_PLASMA} in both cases.
- In Step 12, the Glucose Numeric Object Type attribute is set to {MDC_PART_SCADA | MDC_CONC_GLU_ARTERIAL_WHOLEBLOOD} in both cases.
- In Step 13, the Glucose Numeric Object Type attribute is set to {MDC_PART_SCADA | MDC_CONC_GLU_ARTERIAL_PLASMA} in both cases.
- In Step 14, the Glucose Numeric Object Type attribute is set to {MDC_PART_SCADA | MDC_CONC_GLU_UNDETERMINED_WHOLEBLOOD} in both cases.
- In Step 15, the Glucose Numeric Object Type attribute is set to {MDC_PART_SCADA | MDC_CONC_GLU_UNDETERMINED_PLASMA} in both cases.
- In Step 16, the Glucose Numeric Object Type attribute is set to {MDC_PART_SCADA |

MDC_CONC_GLU_ISF} in both cases. In Step 17, the Glucose Numeric Object – Type attribute is set to {MDC_PART_SCADA | MDC_CONC_GLU_CONTROL} in both cases. **Notes** Possible values in typical points of observation after transcoder output are: (To assist manual IEEE 11073 Objects and Attributes testing) Type attribute is present: □ Object: Glucose Numeric Object ☐ Attribute-id: MDC_ATTR_ID_TYPE (2351) ☐ Attribute-type : SEQUENCE {partition (INT-U16), code (INT-U16)} ☐ Attribute-value (Steps 6 & 8): partition: MDC_PART_SCADA or 2 (dec) or 00 02 (hex) code: MDC_CONC_GLU_CAPILLARY_WHOLEBLOOD or 29112 (dec) or 71 B8 (hex) ☐ Attribute-value (Step 9): partition: MDC_PART_SCADA or 2 (dec) or 00 02 (hex) code: MDC_CONC_GLU_CAPILLARY_PLASMA or 29116 (dec) or 71 BC (hex) ☐ Attribute-value (Step 10): partition: MDC_PART_SCADA or 2 (dec) or 00 02 (hex) code: MDC_CONC_GLU_VENOUS_WHOLEBLOOD or 29120 (dec) or 71 C0 (hex) ☐ Attribute-value (Step 11): partition: MDC_PART_SCADA or 2 (dec) or 00 02 (hex) code: MDC_CONC_GLU_VENOUS_PLASMA or 29124 (dec) or 71 C4 (hex) ☐ Attribute-value (Step 12): partition: MDC_PART_SCADA or 2 (dec) or 00 02 (hex) code: MDC_CONC_GLU_ARTERIAL_WHOLEBLOOD or 29128 (dec) or 71 C8 (hex) ☐ Attribute-value (Step 13): partition: MDC_PART_SCADA or 2 (dec) or 00 02 (hex) code: MDC_CONC_GLU_ARTERIAL_PLASMA or 29132 (dec) or 71 CC (hex) ☐ Attribute-value (Step 14): partition: MDC_PART_SCADA or 2 (dec) or 00 02 (hex) code: MDC_CONC_GLU_UNDETERMINED_WHOLEBLOOD or 29292 (dec) or 72 6C (hex) ☐ Attribute-value (Step 15): partition: MDC_PART_SCADA or 2 (dec) or 00 02 (hex) code: MDC_CONC_GLU_UNDETERMINED_PLASMA or 29296 (dec) or 72 70 (hex) ☐ Attribute-value (Step 16): partition: MDC_PART_SCADA or 2 (dec) or 00 02 (hex) code: MDC_CONC_GLU_ISF or 29140 (dec) or 71 D4 (hex) ☐ Attribute-value (Step 17): partition: MDC_PART_SCADA or 2 (dec) or 00 02 (hex) code: MDC_CONC_GLU_CONTROL or 29136 (dec) or 71 D0 (hex) WAN PCD-01 message

PCD-01 message includes a segment like this with Type attribute (check OBX-3):

Steps 6 & 8

OBX|n|NM|160184^MDC_CONC_GLU_CAPILLARY_WHOLEBLOOD^MDC| m.0.0.x|[value]|264274^MDC_DIM_MILLI_G_PER_DL^MDC|||||R|||[date_time]

Step 9

OBX|n|NM|160188^MDC_CONC_GLU_CAPILLARY_PLASMA^MDC|m.0.0.x|[value]| 264274^MDC_DIM_MILLI_G_PER_DL^MDC|||||R|||[date_time]

Step 10

 $\label{eq:obx_nlm} OBX|n|NM| \ 160192^MDC_CONC_GLU_VENOUS_WHOLEBLOOD^MDC| \\ m.0.0.x|[value]|264274^MDC_DIM_MILLI_G_PER_DL^MDC|||||R|||[date_time]| \\$

Step 11

 $OBX[n]NM]160196^{M}DC_CONC_GLU_VENOUS_PLASMA^{M}DC[m.0.0.x][value]] \\ 264274^{M}DC_DIM_MILLI_G_PER_DL^{M}DC[||||R|||[date_time]]$

Step 12

OBX|n|NM|160200^MDC_CONC_GLU_ARTERIAL_WHOLEBLOOD^MDC| m.0.0.x|[value]|264274^MDC_DIM_MILLI_G_PER_DL^MDC|||||R|||[date_time]

Step 13

 $OBX|n|NM|160204^{MDC}_CONC_GLU_ARTERIAL_PLASMA^{MDC}|m.0.0.x|[value]|\\ 264274^{MDC}_DIM_MILLI_G_PER_DL^{MDC}|||||R|||[date_time]$

Step 14

OBX|n|NM|160364^MDC_CONC_GLU_UNDETERMINED_WHOLEBLOOD^MDC|m.0.0.x|[value]|264274^MDC_DIM_MILLI_G_PER_DL^MDC||||R|||[date_time]

Step 15

OBX|n|NM|160368^MDC_CONC_GLU_UNDETERMINED_PLASMA^MDC| m.0.0.x|[value]|264274^MDC_DIM_MILLI_G_PER_DL^MDC||||R|||[date_time]

Step 16

OBX|n|NM|160212^MDC_CONC_GLU_ISF^MDC|m.0.0.x|[value]| 264274^MDC_DIM_MILLI_G_PER_DL^MDC||||R|||[date_time]

Step 17

OBX|n|NM|160208^MDC_CONC_GLU_CONTROL^MDC|m.0.0.x|[value]| 264274^MDC_DIM_MILLI_G_PER_DL^MDC|||||R|||[date_time]

TP Id TP/LP-PAN/PHG/PHDTW/CGM/BV-006		TP/LP-PAN/PHG/PHDTW/CGM/BV-006		
TP label Whitepaper. Glucose Numeric Object - Supplemental-Types Attribute		Whitepaper. Glucose Numeric Object - Supplemental-Types Attribute		
Coverage	Spec	[Bluetooth PHDT v1.6]		
	Testable items	Glucose Numeric 3; O		
Test purpose		Check that:		
		PHG may includes Glucose Numeric Object – Supplemental-Types attribute in transcoder output.		
		[AND]		
If present, Supplemental-Types is set to the correct value according to CGM Sample field value				
Applicability C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043		
Other PICS				

Initial condition	The PHG under test and the simulated PHD are in the Standby state.
Test procedure	 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored.
	2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:
	a. CGM Feature (0x2AA8)
	i. Field: CGM Feature
	Format: 24 bit
	 Value: 0000 0000 0000 0000 0000 (MSB → LSB). No extra features supported.
	ii. Field: CGM Type
	Format: 4 bit
	Value: not relevant
	iii. Field: CGM Sample Location
	Format: 4 bit
	Value: 0x1 (finger)
	iv. Field: E2E-CRC
	Format: uint16
	Value: not relevant
	b. CGM Measurement (0x2AA7)
	i. Field: Size
	Format: uint8
	ii. Field: Flags
	Format: 8 bit
	 Value: 0000 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
	iii. Field: CGM Glucose Concentration (mg/dL)
	Format: SFLOAT
	Value: Not Relevant
	iv. Field: Time Offset
	Format: uint16
	Value: Not Relevant
	v. Field: Sensor Status Annunciation
	This field is not included
	vi. Field: CGM Trend Information
	This field is not included
	vii. Field: CGM Quality
	This field is not included
	viii. Field: E2E-CRC
	This field is not included
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).

- 4. When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.
- The simulated PHD sends the Measurement to PHG under test.
- Check in the PHG transcoder output the Glucose Numeric Object–Supplemental-Types attribute
- The PHG under test requests the simulated PHD to report stored records by performing a
 writing operation in the Record Access Control Point (RACP) and the simulated PHD
 sends the temporarily stored CGM measurement to the PHG under test.
- Check in the PHG transcoder output the Glucose Numeric Object Supplemental-Types attribute
- End current CGM session and start a new one. The simulated PHD will now have CGM Sample Location field of the CGM Feature characteristic set to 0x2 (alternative site test).
 Repeat steps 3-8 and check in PHG transcoder output the Glucose Numeric Object-Supplemental-Types attribute as in step 6 and 8.
- 10. End current CGM session and start a new one. The simulated PHD will now have CGM Sample Location field of the CGM Feature characteristic set to 0x3 (earlobe). Repeat steps 3-8 and check in PHG transcoder output the Glucose Numeric Object-Supplemental-Types attribute as in step 6 and 8.
- 11. End current CGM session and start a new one. The simulated PHD will now have CGM Sample Location field of the CGM Feature characteristic set to 0x4 (control solution). Repeat steps 3-8 and check in PHG transcoder output the Glucose Numeric Object-Supplemental-Types attribute as in step 6 and 8.
- 12. End current CGM session and start a new one. The simulated PHD will now have CGM Sample Location field of the CGM Feature characteristic set to 0x5 (subcutaneous tissue). Repeat steps 3-8 and check in PHG transcoder output the Glucose Numeric Object-Supplemental-Types attribute as in step 6 and 8.
- 13. End current CGM session and start a new one. The simulated PHD will now have CGM Sample Location field of the CGM Feature characteristic set to 0xF (sample location value not available). Repeat steps 3-8 and check in PHG transcoder output the Glucose Numeric Object-Supplemental-Types attribute as in step 6 and 8.

Pass/Fail criteria

- In Step 6 and 8, if present, the Glucose Numeric Object Supplemental-Types attribute is set to {MDC_PART_PHD_DM | MDC_CTXT_GLU_SAMPLELOCATION_FINGER}
- In Step 9, if present, the Glucose Numeric Object Supplemental-Types attribute is set to {MDC_PART_PHD_DM | MDC_CTXT_GLU_SAMPLELOCATION_AST} in both cases.
- In Step 10, if present, the Glucose Numeric Object Supplemental-Types attribute is set to {MDC_PART_PHD_DM | MDC_CTXT_GLU_SAMPLELOCATION_EARLOBE} in both cases.
- In Step 11, if present, the Glucose Numeric Object Supplemental-Types attribute is set to {MDC_PART_PHD_DM | MDC_CTXT_GLU_SAMPLELOCATION_CTRLSOLUTION} in both cases.
- In Step 12, if present, the Glucose Numeric Object Supplemental-Types attribute is set to {MDC_PART_PHD_DM | MDC_CTXT_GLU_SAMPLELOCATION_SUBCUTANEOUS} in both cases.
- In Step 13, if present, the Glucose Numeric Object Supplemental-Types attribute is set to {MDC_PART_PHD_DM | MDC_CTXT_GLU_SAMPLELOCATION_UNDERTERMINED} in both cases.

Notes (To assist manual testing)

Possible values in typical points of observation after transcoder output are:

- a) IEEE 11073 Objects and Attributes
 - If Supplemental-Types attribute is present:
 - □ Object: Glucose Numeric Object
 - ☐ Attribute-id: MDC_ATTR_SUPPLEMENTAL_TYPES (2657)
 - ☐ Attribute-type : SEQUENCE of SEQUENCE {partition (INT-U16), code (INT-U16)}
 - ☐ Attribute-value (Steps 6 & 8):

- partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex)
- code: MDC_CTXT_GLU_SAMPLELOCATION_FINGER or 29240 (dec) or 72 38 (hex)
- ☐ Attribute-value (Step 9):
 - partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex)
 - code: MDC_CTXT_GLU_SAMPLELOCATION_AST or 29244 (dec) or 72 3C (hex)
- ☐ Attribute-value (Step 10):
 - partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex)
 - code: MDC_CTXT_GLU_SAMPLELOCATION_EARLOBE or 29248 (dec) or 72 40 (hex)
- ☐ Attribute-value (Step 11):
 - partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex)
 - code: MDC_CTXT_GLU_SAMPLELOCATION_CTRLSOLUTION or 29252 (dec) or 72 44 (hex)
- ☐ Attribute-value (Step 12):
 - partition: MDC PART PHD DM or 128 (dec) or 00 80 (hex)
 - code: MDC_CTXT_GLU_SAMPLELOCATION_SUBCUTANEOUS or 29241 (dec) or 72 39 (hex)
- ☐ Attribute-value (Step 13):
 - partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex)
 - code: MDC_CTXT_GLU_SAMPLELOCATION_UNDERTERMINED or 29237 (dec) or 72 35 (hex)
- b) WAN PCD-01 message

If Supplemental-Types is present, PCD-01 message includes a facet OBX segment of the CGM measurement OBX segment with Supplemental-Types attribute (check OBX-3 and OBX-5):

 $OBX[n]NM[[GlucoseType]]m.0.0.x[[value]]264274^{MDC}_DIM_{MILLI_G_PER_DL} \\ ^{MDC}[||||R|||[date_time]]$

Steps 6 & 8

OBX|n|CWE|68193^MDC_ATTR_SUPPLEMENTAL_TYPES^MDC|m.0.0.x.y| 8417848^MDC_CTXT_GLU_SAMPLELOCATION_FINGER^MDC||||||R

Step 9

OBX|n|CWE|68193^MDC_ATTR_SUPPLEMENTAL_TYPES^MDC|m.0.0.x.y| 8417852^MDC_CTXT_GLU_SAMPLELOCATION_AST^MDC||||||R

• Step 10

OBX|n|CWE|68193^MDC_ATTR_SUPPLEMENTAL_TYPES^MDC|m.0.0.x.y| 8417856^MDC_CTXT_GLU_SAMPLELOCATION_EARLOBE^MDC||||||R

Step 11

OBX|n|CWE|68193^MDC_ATTR_SUPPLEMENTAL_TYPES^MDC|m.0.0.x.y| 8417860^MDC_CTXT_GLU_SAMPLELOCATION_CTRLSOLUTION^MDC||||||R

Step 12

OBX|n|CWE|68193^MDC_ATTR_SUPPLEMENTAL_TYPES^MDC|m.0.0.x.y| 8417849^MDC_CTXT_GLU_SAMPLELOCATION_SUBCUTANEOUS^MDC||||||R

• Step 13

OBX|n|CWE|68193^MDC_ATTR_SUPPLEMENTAL_TYPES^MDC|m.0.0.x.y| 8417845^MDC_CTXT_GLU_SAMPLELOCATION_UNDERTERMINED^MDC||||||R

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-007			
TP label		Whitepaper. Glucose Numeric Object - Metric-Spec-Small Attribute			
Coverage	Spec	[Bluetooth PHDT v1.6]			
	Testable items	Glucose Numeric 4; M			
Test purpose Check that: PHG includes Glucose Numeric Object – Metric-Spec-Small attribute in transcode [AND] Metric-Spec-Small is set to {0xC042}.					
Applicability	y	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043			
Other PICS					
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.			
Test proced	ure	 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored. 			
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:			
		a. CGM Measurement (0x2AA7)			
		i. Field: Size			
		Format: uint8			
		ii. Field: Flags			
		Format: 8 bit			
		 Value: 0000 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present. 			
		iii. Field: CGM Glucose Concentration (mg/dL)			
		Format: SFLOAT			
		Value: Not Relevant			
		iv. Field: Time Offset			
		Format: uint16			
		Value: Not Relevant			
		v. Field: Sensor Status Annunciation			
		This field is not included			
		vi. Field: CGM Trend Information			
		This field is not included			
		vii. Field: CGM Quality			
		This field is not included			
		viii. Field: E2E-CRC			
		This field is not included			
		3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).			
		4. When the pairing has been completed (Connection state), force the PHG to read the CGM			

	Feature and CGM Session Start Time characteristics. Then, the simulated PHD sends the Measurement to PHG under test.			
	5. Check in PHG transcoder output the Glucose Numeric Object- Metric-Spec-Small attribute			
	 The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP) and the simulated PHD sends the temporarily stored CGM measurement to the PHG under test. 			
	7. Check in the PHG transcoder output the Glucose Numeric Object – Metric-Spec-Small attribute			
Pass/Fail criteria	In Step 5 and 7, the Glucose Numeric Object – Metric-Spec-Small attribute is present and its value is {0xC042} (mss-avail-intermittent mss-avail-stored-data mss-acc-agent-initiated mss-cat-calculation)			
Notes	Possible values in typical points of observation after transcoder output are:			
(To assist manual testing)	a) IEEE 11073 Objects and Attributes			
testing)	Metric-Spec-Small attribute is present:			
	☐ Object: Glucose Numeric Object			
	☐ Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630)			
	☐ Attribute-type: BITS-16			
	Attribute-value: 0xC042 (hex) or BITS mss-avail-intermittent (0), mss-avail-stored-data (1), mss-acc-agent-initiated(9), mss-cat-calculation(14) set to TRUE and remaining BITS set to FALSE			
	b) WAN PCD-01 message			
	PCD-01 message does not include segments with Metric-Spec-Small attribute value			

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-008			
TP label		Whitepaper. Glucose Numeric Object – Measurement-Status Attribute			
Coverage	Spec	[Bluetooth PHDT v1.6]			
	Testable items	Glucose Numeric 5; O			
Test purpose		Check that:			
		PHG may include Glucose Numeric Object – Measurement-Status attribute in transcoder output.			
		[AND]			
		If present and related to the Sensor Status Annunciation field, Measurement-Status is set to the correct value			
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043			
Other PICS					
Initial condition		The PHG under test and the simulated PHD are in the Standby state.			
Test procedure		1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored.			
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:			
		a. CGM Feature (0x2AA8)			
		i. Field: CGM Feature			

- Format: 24 bit
- Value: 0000 0000 0000 1111 1111 1111 (MSB → LSB). Calibration supported, patient high/low alerts supported, hypo alerts supported, yper alerts supported, rate of increase/decrease alerts supported, device specific alert supported, sensor malfunction detection supported, sensor temperature high-low detection supported, sensor result high-low detecntion supported, low battery detection supported, sensor type error detection supported, general device fault supported.
- ii. Field: CGM Type
 - Format: 4 bit
 - · Value: not relevant
- iii. Field: CGM Sample Location
 - Format: 4 bit
 - Value: not relevant
- iv. Field: E2E-CRC
 - Format: uint16
 - Value: not relevant
- b. CGM Measurement (0x2AA7)
 - i. Field: Size
 - Format: uint8
 - ii. Field: Flags
 - Format: 8 bit
 - Value: 0100 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) present, Sensor Status Annunciation Field (Status-Octet) not present.
 - iii. Field: CGM Glucose Concentration (mg/dL)
 - Format: SFLOAT
 - · Value: Not Relevant
 - iv. Field: Time Offset
 - Format: uint16
 - Value: Not Relevant
 - v. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0000 1000 (MSB → LSB) (calibration required).
 - vi. Field: CGM Trend Information
 - · This field is not included
 - vii. Field: CGM Quality
 - · This field is not included
 - viii. Field: E2E-CRC
 - This field is not included
- The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
- 4. When the pairing has been completed (Connection state), force the simulated PHG to read the CGM Feature and CGM Start Time characteristics. Then, the simulated PHD sends the Measurement to the PHG under test.
- Check in the PHG transcoder output the Glucose Numeric Object

 Measurement-Status attribute.

- The PHG under test requests the simulated PHD to report stored records by performing a
 writing operation in the Record Access Control Point (RACP) and the simulated PHD
 sends the temporarily stored CGM measurement to the PHG under test.
- Check in the PHG transcoder output the Glucose Numeric Object Measurement-Status attribute
- 8. The simulated PHD sends a Measurement to PHG under test with Sensor Status Annunciation field set to 0001 0000 (MSB → LSB), sensor temperature too high for valid test/result at time of measurement (bit 12). All remaining fields remain equal to those in step 2. The simulated PHD also deletes all stored records in RACP and stores an identical measurement. Repeat steps 5-7.
- 9. The simulated PHD sends a Measurement to PHG under test with Sensor Status Annunciation field set to 0010 0000 (MSB → LSB), sensor temperature too low for valid test/result at time of measurement (bit 13). All remaining fields remain equal to those in step 2. The simulated PHD also deletes all stored records in RACP and stores an identical measurement. Repeat steps 5-7.
- 10. The simulated PHD sends a Measurement to PHG under test with Sensor Status Annunciation field set to 0000 0001 (MSB → LSB) and Flags field set to 1000 0000 (MSB → LSB), Sensor result lower than the Patient Low level (bit 16). All remaining fields remain equal to those in step 2. The simulated PHD also deletes all stored records in RACP and stores an identical measurement. Repeat steps 5-7.
- 11. The simulated PHD sends a Measurement to PHG under test with Sensor Status Annunciation field set to 0000 0010 (MSB → LSB) and Flags field set to 1000 0000 (MSB → LSB), Sensor result higher than the Patient Low level (bit 17). All remaining fields remain equal to those in step 2. The simulated PHD also deletes all stored records in RACP and stores an identical measurement. Repeat steps 5-7.
- 12. The simulated PHD sends a Measurement to PHG under test with Sensor Status Annunciation field set to 0000 0100 (MSB → LSB) and Flags field set to 1000 0000 (MSB → LSB), Sensor result lower than the Hypo level (bit 18). All remaining fields remain equal to those in step 2. The simulated PHD also deletes all stored records in RACP and stores an identical measurement. Repeat steps 5-7.
- 13. The simulated PHD sends a Measurement to PHG under test with Sensor Status Annunciation field set to 0000 1000 (MSB → LSB) and Flags field set to 1000 0000 (MSB → LSB), Sensor result higher than the Hyper level (bit 19). All remaining fields remain equal to those in step 2. The simulated PHD also deletes all stored records in RACP and stores an identical measurement. Repeat steps 5-7.
- 14. The simulated PHD sends a Measurement to PHG under test with Sensor Status Annunciation field set to 0100 0000 (MSB → LSB) and Flags field set to 1000 0000 (MSB → LSB), sensor result lower than the device can process (bit 22). All remaining fields remain equal to those in step 2. The simulated PHD also deletes all stored records in RACP and stores an identical measurement. Repeat steps 5-7.
- 15. The simulated PHD sends a Measurement to PHG under test with Sensor Status Annunciation field set to 1000 0000 (MSB → LSB) and Flags field set to 1000 0000 (MSB → LSB), sensor result higher than the device can process (bit 23). All remaining fields remain equal to those in step 2. The simulated PHD also deletes all stored records in RACP and stores an identical measurement. Repeat steps 5-7.

Pass/Fail criteria

- In Step 5 and 7 the Glucose Numeric Object Measurement-Status attribute, if present, is set to "questionable" (bit 1).
- In Step 8 the Glucose Numeric Object Measurement-Status attribute, if present, is set to "invalid" (bit 0).
- In Step 9 the Glucose Numeric Object Measurement-Status, if present, is set to "invalid" (bit 0).
- In Step 10 the Glucose Numeric Object Measurement-Status attribute, if present, is set to "measurement outside threshold boundaries" (bit 14)
- In Step 11 the Glucose Numeric Object Measurement-Status attribute, if present, is set to "measurement outside threshold boundaries" (bit 14)
- In Step 12 the Glucose Numeric Object Measurement-Status attribute, if present, is set to "measurement outside threshold boundaries" (bit 14)
- In Step 13 the Glucose Numeric Object Measurement-Status attribute, if present, is set

to "measurement outside threshold boundaries" (bit 14) In Step 14 the Glucose Numeric Object - Measurement-Status attribute, if present, is set to "invalid" (bit 0). In Step 15 the Glucose Numeric Object - Measurement-Status attribute, if present, is set to "invalid" (bit 0). Notes Possible values in typical points of observation after transcoder output are: (To assist manual IEEE 11073 Objects and Attributes testing) If Measurement-Status attribute is present: Object: Glucose Numeric Object Attribute-id: MDC_ATTR_MSMT_STAT (2375) Attribute-type: BITS16 Attribute-value (Steps 5 & 7): "questionable" (0x4000) Attribute-value (Step 8): "invalid" (0x8000) Attribute-value (Step 9): "invalid" (0x8000) Attribute-value (Step 10): "measurement outside threshold boundaries" (0x0002) Attribute-value (Step 11): "measurement outside threshold boundaries" (0x0002) Attribute-value (Step 12): "measurement outside threshold boundaries" (0x0002) Attribute-value (Step 13): "measurement outside threshold boundaries" (0x0002) Attribute-value (Step 14): "invalid" (0x8000) Attribute-value (Step 15): "invalid" (0x8000) WAN PCD-01 message If Measurement-Status is present, PCD-01 message includes a segment like this with Measurement-Status attribute value (check OBX-8 and OBX-11): Steps 5 & 7 OBX|n|NM|[GlucoseType]|m.0.0.x|[value]|264274^MDC_DIM_MILLI_G_PER_DL ^MDC||QUES|||R|||[date_time] Step 8 OBX|n|NM|[GlucoseType]|m.0.0.x|[value]|264274^MDC_DIM_MILLI_G_PER_DL ^MDC||INV|||X|||[date_time] Step 9 OBX|n|NM|[GlucoseType]|m.0.0.x|[value]|264274^MDC_DIM_MILLI_G_PER_DL ^MDC||INV|||X|||[date_time] Step 10 OBX|n|NM|[GlucoseType]|m.0.0.x|[value]|264274^MDC_DIM_MILLI_G_PER_DL ^MDC||ALACT|||R|||[date_time] Step 11 OBX|n|NM|[GlucoseType]|m.0.0.x|[value]|264274^MDC_DIM_MILLI_G_PER_DL ^MDC||ALACT|||R|||[date_time] Step 12 OBX|n|NM|[GlucoseType]|m.0.0.x|[value]|264274^MDC_DIM_MILLI_G_PER_DL ^MDC||ALACT|||R|||[date_time] Step 13 OBX|n|NM|[GlucoseType]|m.0.0.x|[value]|264274^MDC_DIM_MILLI_G_PER_DL ^MDC||ALACT|||R|||[date_time] Step 14 OBX|n|NM|[GlucoseType]|m.0.0.x|[value]|264274^MDC_DIM_MILLI_G_PER_DL ^MDC||INV|||X|||[date_time]

•	Step 15
	OBX n NM [GlucoseType] m.0.0.x [value] 264274^MDC_DIM_MILLI_G_PER_DL

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-009				
TP label	Whitepaper. Glucose Numeric Object – Unit-Code Attribute					
Coverage	Spec	[Bluetooth P	[Bluetooth PHDT v1.6]			
	Testable items	Glucose Nui	Glucose Numeric 6; M			
Test purpose		Check that: PHG includes Glucose Numeric Object – Unit-Code attribute in transcoder output. [AND] Unit-Code attribute value is set to MDC_DIM_MILLI_G_PER_DL				
Applicability	,	C_MAN_BL	E_000 AND C_MA	N_BLE_002 AND C_MAN_BLE_	043	
Other PICS						
Initial condi	tion	The PHG un	nder test and the si	mulated PHD are in the Standby	state	
Test proced	ure	The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored.			nt and it is in the Advertising	
			nulated PHD impler Test Case is:	ments several BTLE characteristi	cs. The characteristic of interest	
		a. CGM Measurement (0x2AA7)				
		i. Field: Size				
			Format: uint8	3		
		ii.	Field: Flags			
			Format: 8 bit			
			Quality nor p present, Sen	0000 (MSB → LSB). CGM Trend resent, Sensor Status Annunciat sor Status Annunciation Field (C is Annunciation Field (Status-Oct	ion Field (Warning-Octet) not al/Temp-Octet) not present,	
		iii.	Field: CGM Gluco	ose Concentration (mg/dL)		
			Format: SFL	OAT		
			Value: Not R	elevant		
		iv.	Field: Time Offse	t		
			Format: uint1	16		
			 Value: Not R 	elevant		
		V.	Field: Sensor Sta	tus Annunciation		
			Format: 24 b	it		
			 Value: not re 	levant		
			Field: CGM Trend	d Information		
			This field is r	not included		
		vii.	Field: CGM Quali	ty		

	This field is not included					
	viii. Field: E2E-CRC					
	This field is not included					
	The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).					
	4. When the pairing has been completed (Connection state), force the PHG to read the CGM Feature and CGM Session Start Time characteristic. Then, the simulated PHD sends the Measurement to the PHG under test.					
	5. Check in the PHG transcoder output the Glucose Numeric Object– Unit-Code attribute.					
	6. The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP) and the simulated PHD sends the temporarily stored CGM measurement to the PHG under test.					
	7. Check in the PHG transcoder output the Glucose Numeric Object – Unit-Code attribute					
Pass/Fail criteria	In Step 5 and 7 the Glucose Numeric Object – Unit-Code attribute is present and its value is set to MDC_DIM_MILLI_G_PER_DL					
Notes	Possible values in typical points of observation after transcoder output are:					
(To assist manual testing)	a) IEEE 11073 Objects and Attributes					
3,	Unit-Code attribute is present:					
	□ Object: Glucose Numeric Object					
	☐ Attribute-id: MDC_ATTR_UNIT_CODE (2454)					
	☐ Attribute-type: OID-Type					
	☐ Attribute-value: MDC_DIM_MILLI_G_PER_DL or 2130 (dec) or 08 52 (hex)					
	b) WAN PCD-01 message					
	PCD-01 message includes a segment like this with Unit-Code attribute value (check OBX-6):					
	OBX n NM [GlucoseType] m.0.0.x [value] 264274^MDC_DIM_MILLI_G_PER_DL					

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-010		
TP label		Whitepaper. Glucose Numeric Object - Base-Offset-Time-Stamp Attribute		
Coverage	Spec	[Bluetooth PHDT v1.6]		
	Testable items	Glucose Numeric 7; M	BaseOffset 3; M	
Test purpose		Check that: PHG includes Glucose Numeric Object Base-Offset-Time-Stamp attribute in transcoder output. [AND] Base-Offset-Time-Stamp attribute is set to the correct value according to Base-Offset time stamp derivation		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043		
Other PICS				
Initial condition		The PHG under test and the simulated PHD are in the Standby state.		
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement		

temporarily stored.

- 2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:
 - a. CGM Session Start Time (0x2AAA)
 - i. Field: Session Start Time
 - Format: {uint16, uint8, uint8, uint8, uint8, uint8}
 - Value: {2016, 5, 12, 16, 39, 27} (May 12, 2016, 16:39:27)
 - ii. Field: Time Zone
 - Format: sint8
 - Value: 4 (UTC+1:00)
 - iii. Field: DST-Offset
 - Format: uint8
 - Value: 4 (Daylight Time (+1h))
 - iv. Field: E2E-CRC
 - This field is not included
 - b. CGM Measurement (0x2AA7)
 - i. Field: Size
 - Format: uint8
 - ii. Field: Flags
 - Format: 8 bit
 - Value: 0000 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
 - iii. Field: CGM Glucose Concentration (mg/dL)
 - Format: SFLOAT
 - · Value: Not Relevant
 - iv. Field: Time Offset
 - Format: uint16
 - Value: 20
 - v. Field: Sensor Status Annunciation
 - This field is not included
 - vi. Field: CGM Trend Information
 - This field is not included
 - vii. Field: CGM Quality
 - This field is not included
 - viii. Field: E2E-CRC
 - This field is not included
- 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
- 4. When the pairing has been completed (Connection state), force the PHG under test to read the CGM Features and CGM Session Start Time characteristics.
- 5. The simulated PHD sends the Measurement to the PHG under test.
- Check in the PHG transcoder output the Glucose Numeric Object–Base-Offset-Time-Stamp attribute
- 7. The PHG under test requests the simulated PHD to report stored records by performing a

	writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test.					
	8. Check in PHG transcoder output the Glucose Numeric Object – Base-Offset-Time-Stamp attribute					
Pass/Fail criteria	In Step 6 and 8, the Glucose Numeric Object – Base-Offset-Time-Stamp is set to the addition of CGM Session Start Time characteristic's Session Start Time (May 12, 2016, 16:39:27) field plus CGM Measurement characteristic					
Notes	Possible values in typical points of observation after transcoder output are:					
(To assist manual testing)	a) IEEE 11073 Objects and Attributes					
3,	Base-Offset-Time-Stamp attribute is present:					
	□ Object: Glucose Numeric Object					
	☐ Attribute-id: MDC_ATTR_TIME_STAMP_BO (2690)					
	Attribute-type : SEQUENCE {bo-seconds (INT-U32), bo-fraction (INT-U16), bo-time-offset (INT-I16)}					
	☐ Attribute-value : addition of					
	 CGM Session Start Time characteristic's Session Start Time field (May 12, 2016, 16:39:27) 					
	CGM Measurement characteristic's Time Offset field (20m)					
	Note that the same Base-Offset-Time-Stamp can have different representations depending on bo-time-offset value. If it is set to 20 min (CGM Measurement characteristic's Time Offset field), then Base-Offset-Time-Stamp value shall be {3672059967, 0, 20}					
	b) WAN PCD-01 message					
	PCD-01 message includes a segment like this with Base-Offset-Time-Stamp attribute value (check OBX-14):					
	OBX n NM [GlucoseType] m.0.0.x [value] 264274^MDC_DIM_MILLI_G_PER_DL					

TP ld TP label		TP/LP-PAN/PHG/PHDTW/CGM/BV-011_A				
		Whitepaper. Glucose Numeric Object – Basic-Nu-Observed-Value Attribute				
Coverage	Spec	[Bluetooth PHDT v1.6]				
	Testable items	Glucose Numeric 8; M				
Test purpos	se	Check that:				
		PHG includes Glucose Numeric Object Basic-Nu-Observed-Value attribute in transcoder output.				
		[AND]				
		Basic-Nu-Observed-Value attribute is set to the correct value.				
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043				
Other PICS						
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.				
Test proced	lure	 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored. 				
		2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is:				

		a.	CG	M Measurement (0x2AA7)
			i.	Field: Size
				Format: uint8
			ii.	Field: Flags
				Format: 8 bit
				 Value: 0000 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
			iii.	Field: CGM Glucose Concentration (mg/dL)
				Format: SFLOAT
				• Value: 160.0
			iv.	Field: Time Offset
				Format: uint16
				Value: not relevant
			v.	Field: Sensor Status Annunciation
				This field is not included
			vi.	Field: CGM Trend Information
				This field is not included
			vii.	Field: CGM Quality
				This field is not included
			viii.	Field: E2E-CRC
				This field is not included
	3.			G under test initiates a discovery process (Scanning state), it discovers the d PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4.	Fea	ture	e pairing has been completed (Connection state), force the PHG to read the CGM and CGM Session Start Time characteristics. Then, the simulated PHD sends the ment to the PHG under test.
	5.			the PHG transcoder output the Glucose Numeric Object–Basic-Nu-Observed-tribute
	6.	writi	ing o	G under test requests the simulated PHD to report stored records by performing a peration in the Record Access Control Point (RACP). The simulated PHD sends corarily stored CGM measurement to the PHG under test.
	7.			the PHG transcoder output the Glucose Numeric Object – Basic-Nu-Observed-tribute
Pass/Fail criteria	In S	Step 5	5 and	7, the Glucose Numeric Object – Basic-Nu-Observed-Value is set to 160 mg/dL
Notes	Pos	ssible	valu	ies in typical points of observation after transcoder output are:
(To assist manual testing)	a)	IEE	E 11	073 Objects and Attributes
		Bas	ic-N	u-Observed-Value attribute is present:
			Obj	ect: Glucose Numeric Object
			Attr	bute-id: MDC_ATTR_NU_VAL_OBS_BASIC (2636)
			Attr	bute-type : SFLOAT
			Attr	bute-value : 160 (dec) or 00A0 (hex) or 0110 (hex) or F640 (hex)
	b)	WA	N PC	CD-01 message
				message includes a segment like this with Basic-Nu-Observed-Value attribute neck OBX-5):
			OB	(n NM [GlucoseType] m.0.0.x 160 264274^MDC_DIM_MILLI_G_PER_DL^MDC

R [date_time]	
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TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-011_B							
TP label		Whitepaper. Glucose Numeric Object - Basic-Nu-Observed-Value Attribute Special Values							
Coverage	Spec	[Bluetooth PHDT v1.6]							
	Testable items	Glucose	Numer	ic 9; M	Glucose Numeric 10; M	Float Type 1; C			
		Float Typ	e 2; M						
Test purpos	е	Check th	Check that:						
		PHG transcodes CGM Glucose Concentration field of CGM Measurement characteristic into Glucose Numeric Object – Basic-Nu-Observed-Value attribute							
		[AND]							
		PHG assigns the following special values: NaN (0x07FF), NRes (0x0800), +INFINITY (0x07FE) and -INFINITY (0x0802)							
Applicability	/	C_MAN_	BLE_0	00 AND C_MAN	N_BLE_002 AND C_MAN_BLE	<u>-</u> _043			
Other PICS									
Initial condi	tion	The DHG	Linder	test and the sin	nulated PHD are in the Standb	v state			
Test proced	ure	 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored. 							
			2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:						
		a.	a. CGM Feature (0x2AA8)						
			i. Fie	eld: CGM Featu	re				
			•	Format: 24 bi	t				
			•	supported, pa alerts supporte alert supporte high-low dete low battery de	d, sensor malfunction detectio	, hypo alerts supported, yper alerts supported, device specific n supported, sensor temperature high-low detecntion supported,			
			ii. Fie	eld: CGM Type					
			•	Format: 4 bit					
			•	Value: not rel	evant				
			iii. Fie	eld: CGM Samp	le Location				
			•	Format: 4 bit					
			•	Value: not rel	evant				
			iv. Fie	eld: E2E-CRC					
			•	Format: uint1	6				
			•	Value: not rel	evant				
		b.	CGM N	Measurement (0	x2AA7)				
			i. Fie	eld: Size					
			•	Format: uint8					

- ii. Field: Flags
 - Format: 8 bit
 - Value: 0010 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
- iii. Field: CGM Glucose Concentration (mg/dL)
 - Format: SFLOAT
 - Value: 07 FF(hex). Special value: NaN
- iv. Field: Time Offset
 - Format: uint16
 - Value: not relevant
- v. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0000 1000 (MSB → LSB) (sensor malfunction).
- vi. Field: CGM Trend Information
 - This field is not included
- vii. Field: CGM Quality
 - This field is not included
- viii. Field: E2E-CRC
 - This field is not included
- 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
- When the pairing has been completed (Connection state), the simulated PHD sends the Measurement to the PHG under test.
- Check in the PHG transcoder output the Glucose Numeric Object–Basic-Nu-Observed-Value attribute
- 6. The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test.
- Check in the PHG transcoder output the Glucose Numeric Object Basic-Nu-Observed-Value attribute
- 8. The simulated PHD sends a CGM Measurement to PHG under test with the following values. The simulated PHD also deletes all previous stored records in RACP and stores an identical measurement in it.
 - a. CGM Measurement (0x2AA7)
 - i. Field: Size
 - Format: uint8
 - ii. Field: Flags
 - Format: 8 bit
 - Value: 0010 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
 - iii. Field: CGM Glucose Concentration (mg/dL)
 - Format: SFLOAT
 - Value: 08 00(hex). Special value: NRes
 - iv. Field: Time Offset

Format: uint16

· Value: not relevant

v. Field: Sensor Status Annunciation

Format: 8 bit

Value: 0000 1000 (MSB → LSB) (sensor malfunction).

vi. Field: CGM Trend Information

This field is not included

vii. Field: CGM Quality

This field is not included

viii. Field: E2E-CRC

This field is not included

- Repeat steps 5-7 to check in transcoder output the Glucose Numeric Object Basic-Nu-Observed-Value attribute.
- The simulated PHD sends a CGM Measurement to PHG under test with the following values. The simulated PHD also deletes all stored records in RACP and stores an identical measurement in it.
 - a. CGM Measurement (0x2AA7)

i. Field: Size

Format: uint8

ii. Field: Flags

Format: 8 bit

- Value: 1000 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) present.
- iii. Field: CGM Glucose Concentration (mg/dL)

Format: SFLOAT

Value: 08 02(hex). Special value: -INFINITY

iv. Field: Time Offset

Format: uint16

Value: not relevant

- v. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0100 0000 (MSB → LSB) (sensor result lower than the device can process).
- vi. Field: CGM Trend Information
 - This field is not included
- vii. Field: CGM Quality
 - This field is not included

viii. Field: E2E-CRC

- This field is not included
- Repeat steps 5-7 to check in transcoder output the Glucose Numeric Object Basic-Nu-Observed-Value attribute
- 12. The simulated PHD sends a CGM Measurement to PHG under test with the following values. The simulated PHD also deletes all stored records in RACP and stores an identical measurement in it.
 - CGM Measurement (0x2AA7)

	i. Field: Size
	Format: uint8
	ii. Field: Flags
	Format: 8 bit
	 Value: 1000 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) present.
	iii. Field: CGM Glucose Concentration (mg/dL)
	Format: SFLOAT
	Value: 07 FE(hex). Special value: +INFINITY
	iv. Field: Time Offset
	Format: uint16
	Value: not relevant
	v. Field: Sensor Status Annunciation
	Format: 8 bit
	 Value: 1000 0000 (MSB → LSB) (sensor result higher than the device can process).
	vi. Field: CGM Trend Information
	This field is not included
	vii. Field: CGM Quality
	This field is not included
	viii. Field: E2E-CRC
	This field is not included
	13. Repeat steps 5-7 to check in transcoder output the Glucose Numeric Object – Basic-Nu- Observed-Value attribute
Pass/Fail criteria	In Step 5 and 7, the Glucose Numeric Object – Basic-Nu-Observed-Value is set to 0x07FF
	In Step 9, the Glucose Numeric Object – Basic-Nu-Observed-Value is set to 0x0800 for both cases.
	In Step 11, the Glucose Numeric Object – Basic-Nu-Observed-Value is set to 0x0802 for both cases.
	In Step 13, the Glucose Numeric Object – Basic-Nu-Observed-Value is set to 0x07FE for both cases.
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
testing)	Basic-Nu-Observed-Value attribute is present:
	☐ Object: Glucose Numeric Object
	☐ Attribute-id: MDC_ATTR_NU_VAL_OBS_BASIC (2636)
	☐ Attribute-type : SFLOAT
	☐ Attribute-value (Steps 5 & 7) : 0x07FF (hex)
	☐ Attribute-value (Step 9) : 0x0800 (hex)
	☐ Attribute-value (Step 11) : 0x0802 (hex)
	☐ Attribute-value (Step 13) : 0x07FE (hex)
	b) WAN PCD-01 message
	• Steps 5 & 7

OBX n NM [GlucoseType] m.0.0.x 264274^MDC_DIM_MILLI_G_PER_DL^MDC NAN X [date_time]
• Step 9
OBX n NM [GlucoseType] m.0.0.x 264274^MDC_DIM_MILLI_G_PER_DL^MDC OTH X [date_time]
• Step 11
OBX n NM [GlucoseType] m.0.0.x 264274^MDC_DIM_MILLI_G_PER_DL^MDC NINF X [date_time]
• Step 13
OBX n NM [GlucoseType] m.0.0.x 264274^MDC_DIM_MILLI_G_PER_DL^MDC PINF X [date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-012					
TP label		Whitepaper. Glucose Numeric Object – Threshold-Notification-Text-String					
Coverage	Spec	[Bluetooth PHDT v1.6]					
	Testable items	Glucose Numeric 11; O					
Test purpos	Se	Check that: PHG may transcode bits 16 through 19 of the CGM Sensor Status Annunciation field of CGM Measurement characteristic into Glucose Numeric Object – Threshold-Notification-Text-String attribute					
Applicabilit	у	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043					
Other PICS							
Initial condi	ition	The PHG under test and the simulated PHD are in the Standby state.					
Test proced	lure	 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are: CGM Feature (0x2AA8) Field: CGM Feature Format: 24 bit Value: 0000 0000 0000 1111 1111 1111 (MSB → LSB). Calibration supported, patient high/low alerts supported, hypo alerts supported, yper alerts supported, rate of increase/decrease alerts supported, device specific alert supported, sensor malfunction detection supported, sensor temperature high-low detection supported, sensor result high-low detection supported, low battery detection supported, sensor type error detection supported, general device fault supported. Field: CGM Type Format: 4 bit Value: not relevant Field: CGM Sample Location 					
		Format: 4 bit					

iv. Field: E2E-CRC

Format: uint16

Value: not relevant

- b. CGM Measurement (0x2AA7)
 - Field: Size

Format: uint8

ii. Field: Flags

• Format: 8 bit

- Value: 1000 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) present.
- iii. Field: CGM Glucose Concentration (mg/dL)

Format: SFLOAT

Value: not relevant

iv. Field: Time Offset

Format: uint16

Value: not relevant

- v. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0000 0001 (MSB → LSB) (sensor result lower than the patient low level).
- vi. Field: CGM Trend Information
 - · This field is not included
- vii. Field: CGM Quality
 - · This field is not included

viii. Field: E2E-CRC

- This field is not included
- The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
- When the pairing has been completed (Connection state), the simulated PHD sends the Measurement to the PHG under test.
- Check in the PHG transcoder output the Glucose Numeric Object
 — Threshold-Notification-Text-String attribute
- The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test.
- Check in the PHG transcoder output the Glucose Numeric Object Threshold-Notification-Text-String attribute
- The simulated PHD sends a CGM Measurement to the PHG under test with the following values. The simulated PHD also deletes all previous stored records in RACP and stores an identical measurement in it.
 - a. CGM Measurement (0x2AA7)

i. Field: Size

Format: uint8

ii. Field: Flags

• Format: 8 bit

- Value: 1000 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) present..
- iii. Field: CGM Glucose Concentration (mg/dL)

• Format: SFLOAT

Value: not relevant

iv. Field: Time Offset

Format: uint16

Value: not relevant

- v. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0000 0010 (MSB → LSB) (sensor result higher than the patient high level).
- vi. Field: CGM Trend Information
 - This field is not included
- vii. Field: CGM Quality
 - This field is not included
- viii. Field: E2E-CRC
 - This field is not included
- Repeat steps 5-7 to check in transcoder output the Glucose Numeric Object Threshold-Notification-Text-String attribute.
- The simulated PHD sends a CGM Measurement to PHG under test with the following values. The simulated PHD also deletes all stored records in RACP and stores an identical measurement in it.
 - a. CGM Measurement (0x2AA7)
 - i. Field: Size

Format: uint8

ii. Field: Flags

Format: 8 bit

- Value: 1000 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) present.
- iii. Field: CGM Glucose Concentration (mg/dL)

Format: SFLOAT

Value: not relevant

iv. Field: Time Offset

Format: uint16

Value: not relevant

- v. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0000 0100 (MSB → LSB) (sensor result lower than the Hypo level).
- vi. Field: CGM Trend Information
 - This field is not included
- vii. Field: CGM Quality

This field is not included viii. Field: E2E-CRC This field is not included 11. Repeat steps 5-7 to check in transcoder output the Glucose Numeric Object - Threshold-Notification-Text-String attribute 12. The simulated PHD sends a CGM Measurement to PHG under test with the following values. The simulated PHD also deletes all stored records in RACP and stores an identical measurement in it. a. CGM Measurement (0x2AA7) Field: Size Format: uint8 Field: Flags Format: 8 bit Value: 1000 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present. Sensor Status Annunciation Field (Status-Octet) present. iii. Field: CGM Glucose Concentration (mg/dL) Format: SFLOAT Value: not relevant iv. Field: Time Offset Format: uint16 Value: not relevant Field: Sensor Status Annunciation Format: 8 bit Value: 0000 1000 (MSB → LSB) (sensor result higher than the Hyper Level). vi. Field: CGM Trend Information This field is not included vii. Field: CGM Quality This field is not included viii. Field: E2E-CRC This field is not included 13. Repeat steps 5-7 to check in transcoder output the Glucose Numeric Object - Threshold-Notification-Text-String attribute In Step 5 and 7, if present, the Glucose Numeric Object - Threshold-Notification-Text-Pass/Fail criteria String is set to an OCTET STRING with a readable description of the threshold notification "sensor result lower than the patient low level" In Step 9, if present, the Glucose Numeric Object - Threshold-Notification-Text-String is set to an OCTET STRING with a readable description of the threshold notification "sensor result higher than the patient high level" for both cases. In Step 11, if present, the Glucose Numeric Object – Threshold-Notification-Text-String is set to an OCTET STRING with a readable description of the threshold notification "sensor result lower than the Hypo level" for both cases. In Step 13, if present,, the Glucose Numeric Object - Threshold-Notification-Text-String is set to an OCTET STRING with a readable description of the threshold notification "sensor result higher than the Hyper level" for both cases.

a) IEEE 11073 Objects and Attributes

Possible values in typical points of observation after transcoder output are:

Notes

(To assist manual

testing)	If Threshold-Notification-Text-String attribute is present:
	□ Object: Glucose Numeric Object
	☐ Attribute-id: MDC_ATTR_THRES_NOTIF_TEXT_STRING (2696)
	☐ Attribute-type : OCTET STRING
	Attribute-value (Steps 5 & 7): readable description of the threshold notification "sensor result lower than the patient low level"
	Attribute-value (Step 9): readable description of the threshold notification "sensor result higher than the patient high level"
	Attribute-value (Step 11): readable description of the threshold notification "sensor result lower than the Hypo level"
	Attribute-value (Step 13): readable description of the threshold notification "sensor result higher than the Hyper level"
	b) WAN PCD-01 message
	Threshold-Notification-Text-String attribute is not included in PCD-01 message

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-013					
TP label		Whitepaper. Sensor Calibration Numeric Object - Handle Attribute					
Coverage	Spec	[Bluetooth PHDT v1.6]					
	Testable items	SensCal Numeric 1; O					
Test purpos	se	Check that:					
		PHG does not include Sensor Calibration Numeric Object – Handle Attribute in transcoder output.					
		[OR]					
		If PHG includes Sensor Calibration Numeric Object – Handle attribute in transcoder output, then its value shall be different than 0					
Applicability	y	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043					
Other PICS							
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.					
Test procedure		 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The simulated PHD has a Calibration Data Record stored. 					
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:					
		a. CGM Feature (0x2AA8)					
		i. Field: CGM Feature					
		Format: 24 bit					
		 Value: 0000 0000 0000 0000 0001 (MSB → LSB). Calibration supported. 					
		ii. Field: CGM Type					
		Format: 4 bit					
		Value: not relevant					
		iii. Field: CGM Sample Location					
		Format: 4 bit					
		Value: not relevant					

	iv. Field: E2E-CRC
	Format: uint16
	Value: not relevant
	b. CGM Specific Ops Control Point (0x2AAC)
	i. Field: Op Code
	☐ Format: uint8
	□ Value: 0x06 (Glucose Calibration Value Response)
	ii. Field: Calibration Value – Glucose concentration of Calibration (mg/dL)
	☐ Format: SFLOAT
	□ Value: not relevant
	iii. Field: Calibration Value – Calibration Time
	☐ Format: uint16
	□ Value: not relevant
	iv. Field: Calibration Value – Calibration Type
	☐ Format: 4 bit
	☐ Value: not relevant
	v. Field: Calibration Value – Calibration Sample Location
	☐ Format: 4 bit
	☐ Value: not relevant
	vi. Field: Calibration Value - Next Calibration Time
	☐ Format: uint16
	☐ Value: not relevant
	vii. Field: Calibration Value – Calibration Data Record Number
	☐ Format: uint16
	☐ Value: not relevant
	viii. Field: Calibration Value – Calibration Status
	☐ Format: 8 bit
	☐ Value: not relevant
	ix. Field: E2E-CRC
	☐ This field is not present
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0xFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively).
	5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information.
	6. Check in PHG transcoder output the Sensor Calibration Numeric Object – Handle attribute
Pass/Fail criteria	In Step 6, the Sensor Calibration Numeric Object – Handle attribute is not present or, if it is present then its value is different than 0
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual	a) IEEE 11073 Objects and Attributes
testing)	Handle attribute is not present, or if it is present then:
	20 1 2 commence to the processing of a trace processing of the pro

□ Object: Sensor Calibration Numeric Object
☐ Attribute-id: MDC_ATTR_ID_HANDLE (2337)
☐ Attribute-type: INT-U16
☐ Attribute-value: Any value different than 0
b) WAN PCD-01 message
PCD-01 message does not include segments with Handle attribute value

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-014					
TP label		Whitepaper. Sensor Calibration Numeric Object - Type Attribute					
Coverage	Spec	[Bluetooth PHDT v1.6]					
	Testable items	SensCal Numeric 2; M					
Test purpose		Check that: PHG includes Sensor Calibration Numeric Object – Type attribute in transcoder output. [AND] Type is set to MDC_PART_PHD_DM MDC_CGM_SENSOR_CALIBRATION					
Applicability	,	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043					
Other PICS							
Initial condition		The PHG under test and the simulated PHD are in the Standby state.					
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The simulated PHD has a Calibration Data Record stored.					
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:					
		a. CGM Feature (0x2AA8)					
		i. Field: CGM Feature					
		☐ Format: 24 bit					
		□ Value: 0000 0000 0000 0000 0001 (MSB → LSB). Calibration supported.					
		ii. Field: CGM Type					
		☐ Format: 4 bit					
		□ Value: not relevant					
		iii. Field: CGM Sample Location					
		☐ Format: 4 bit					
		□ Value: not relevant					
		iv. Field: E2E-CRC					
		☐ Format: uint16					
		☐ Value: not relevant					
		b. CGM Specific Ops Control Point (0x2AAC)					
		i. Field: Op Code					
		☐ Format: uint8					
		□ Value: 0x06 (Glucose Calibration Value Response)					
		ii. Field: Calibration Value – Glucose concentration of Calibration (mg/dL)					

	☐ Format: SFLOAT
	□ Value: not relevant
	iii. Field: Calibration Value – Calibration Time □ Format: uint16
	□ Value: not relevant
	iv. Field: Calibration Value – Calibration Type
	☐ Format: 4 bit
	□ Value: not relevant
	v. Field: Calibration Value – Calibration Sample Location
	☐ Format: 4 bit
	☐ Value: not relevant
	vi. Field: Calibration Value - Next Calibration Time
	☐ Format: uint16
	☐ Value: not relevant
	vii. Field: Calibration Value – Calibration Data Record Number
	☐ Format: uint16
	☐ Value: not relevant
	viii. Field: Calibration Value – Calibration Status
	☐ Format: 8 bit
	☐ Value: not relevant
	ix. Field: E2E-CRC
	☐ This field is not present
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0xFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively).
	5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information.
	6. Check in PHG transcoder output the Sensor Calibration Numeric Object – Type attribute
Pass/Fail criteria	In Step 6, the Sensor Calibration Numeric Object – Type attribute is present and set to MDC_PART_PHD_DM MDC_CGM_SENSOR_CALIBRATION
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
,g,	Type attribute is present:
	☐ Object: Sensor Calibration Numeric Object
	☐ Attribute-id: MDC_ATTR_ID_TYPE (2351)
	☐ Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)}
	☐ Attribute-value:
	 partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex)
	 code: MDC_CGM_SENSOR_CALIBRATION or 29428 (dec) or 72 F4 (hex)
	b) WAN PCD-01 message
	PCD-01 message includes a segment like this with Type attribute (check OBX-3):

OBX|n|NM|8418036^MDC_CGM_SENSOR_CALIBRATION^MDC| m.0.0.x|[value]|[unit]||||R|||[date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-015					
TP label		Whitepaper. Sensor Calibration Numeric Object – Supplemental-Types Attribute					
Coverage	Spec	[Bluetooth PHDT v1.6]					
	Testable items	SensCal Numeric 3; O					
Test purpose		Check that: PHG may include Sensor Calibration Numeric Object – Supplemental-Types attribute in transcoder output. [AND] If present, Supplemental-Types is set to the correct value according to Sample Location Nibble in Calibration Data Record					
Applicability	1	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043					
Other PICS							
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.					
Test proced	ure	 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The simulated PHD has six different Calibration Data Records stored. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are: CGM Feature (0x2AA8) Field: CGM Feature Format: 24 bit Value: 0000 0000 0000 0000 0000 0001 (MSB → LSB). Calibration supported. Field: CGM Type Format: 4 bit Value: not relevant Field: CGM Sample Location Format: 4 bit Value: not relevant Field: E2E-CRC Format: uint16 Value: not relevant CGM Specific Ops Control Point (0x2AAC) Field: Op Code Format: uint8 Value: 0x06 (Glucose Calibration Value Response) 					
		 ii. Field: Calibration Value – Glucose concentration of Calibration (mg/dL) □ Format: SFLOAT □ Value: not relevant iii. Field: Calibration Value – Calibration Time 					

		□ Format: uint16
		□ Value: not relevant
	iv.	Field: Calibration Value – Calibration Type
		☐ Format: 4 bit
		□ Value: not relevant
	٧.	Field: Calibration Value – Calibration Sample Location
		□ Format: 4 bit
		□ Value (CDR number 1): 0x1 (finger)
		□ Value (CDR number 2): 0x2 (alternative site test)
		□ Value (CDR number 3): 0x3 (earlobe)
		□ Value (CDR number 4): 0x4 (control solution)
		□ Value (CDR number 5): 0x5 (subcutaneous tissue)
		☐ Value (CDR number 6): 0xF (sample location value not available)
	vi.	Field: Calibration Value - Next Calibration Time
		□ Format: uint16
		□ Value: not relevant
	vii.	Field: Calibration Value – Calibration Data Record Number
		□ Format: uint16
		□ Value: 1 to 6 (six Calibration Data Records (CDR) stored)
	viii.	Field: Calibration Value – Calibration Status
		□ Format: 8 bit
		□ Value: not relevant
	ix.	Field: E2E-CRC
		☐ This field is not present
3.		G under test initiates a discovery process (Scanning state), it discovers the ed PHD and it starts a pairing process with the simulated PHD (Initiating state).
4.	Session using Operform	he pairing has been completed, force the PHG to read CGM Feature and CGM Start Time characteristics, and then to perform a Glucose Calibration procedure p Code "Get Glucose Calibration value" (0x05) with Operand "0x0001" (by ing a write operation to the CGM Specific Ops Control Point characteristic's Op and Calibration Data Record Number fields respectively).
5.	Respons	ulated PHD will respond with an indication including a "Calibration Value se" Op Code (0x06) and a Calibration Data Record containing the requested on information.
6.	Check in Types a	n PHG transcoder output the Sensor Calibration Numeric Object – Supplemental-ttribute
7.	Calibration indication Data Re	the PHG to perform a Glucose Calibration procedure using Op Code "Get Glucose ion value" (0x05) with Operand "0x0002". The simulated PHD will respond with an including a "Calibration Value Response" Op Code (0x06) and a Calibration ecord containing the requested calibration information. Check in PHG transcoder the Sensor Calibration Numeric Object – Supplemental-Types attribute
8.	Calibration indication Data Re	the PHG to perform a Glucose Calibration procedure using Op Code "Get Glucose ion value" (0x05) with Operand "0x0003". The simulated PHD will respond with an including a "Calibration Value Response" Op Code (0x06) and a Calibration ecord containing the requested calibration information. Check in PHG transcoder the Sensor Calibration Numeric Object – Supplemental-Types attribute
9.	Calibration indication Data Re	the PHG to perform a Glucose Calibration procedure using Op Code "Get Glucose ion value" (0x05) with Operand "0x0004". The simulated PHD will respond with an including a "Calibration Value Response" Op Code (0x06) and a Calibration ecord containing the requested calibration information. Check in PHG transcoder the Sensor Calibration Numeric Object – Supplemental-Types attribute

10. Force the PHG to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0x0005". The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. Check in PHG transcoder output the Sensor Calibration Numeric Object - Supplemental-Types attribute 11. Force the PHG to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0x0006". The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. Check in PHG transcoder output the Sensor Calibration Numeric Object - Supplemental-Types attribute Pass/Fail criteria In Step 6, if present, the Sensor Calibration Numeric Object – Supplemental-Types attribute is set to {MDC_PART_PHD_DM | MDC CTXT GLU SAMPLELOCATION FINGER} In Step 7, if present, the Sensor Calibration Numeric Object – Supplemental-Types attribute is to {MDC_PART_PHD_DM | MDC_CTXT_GLU_SAMPLELOCATION_AST} In Step 8, if present, the Sensor Calibration Numeric Object – Supplemental-Types attribute is set to {MDC_PART_PHD_DM | MDC_CTXT_GLU_SAMPLELOCATION_EARLOBE} In Step 9, if pesent, the Sensor Calibration Numeric Object - Supplemental-Types attribute is set to {MDC PART PHD DM I MDC CTXT GLU SAMPLELOCATION CTRLSOLUTION In Step 10, if present the Sensor Calibration Numeric Object – Supplemental-Types attribute is set to {MDC_PART_PHD_DM | MDC_CTXT_GLU_SAMPLELOCATION_SUBCUTANEOUS} In Step 11, if present, the Sensor Calibration Numeric Object – Supplemental-Types attribute is set to {MDC PART PHD DM | MDC CTXT GLU SAMPLELOCATION UNDERTERMINED) Notes Possible values in typical points of observation after transcoder output are: (To assist manual a) IEEE 11073 Objects and Attributes testing) If Supplemental-Types attribute is present: Object: Sensor Calibration Numeric Object ☐ Attribute-id: MDC_ATTR_SUPPLEMENTAL_TYPES (2657) ☐ Attribute-type: SEQUENCE of SEQUENCE {partition (INT-U16), code (INT-U16)} ☐ Attribute-value (Step 6): partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) code: MDC_CTXT_GLU_SAMPLELOCATION_FINGER or 29240 (dec) or 72 38 (hex) ☐ Attribute-value (Step 7): partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) code: MDC_CTXT_GLU_SAMPLELOCATION_AST or 29244 (dec) or 72 3C (hex) ☐ Attribute-value (Step 8): partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) code: MDC_CTXT_GLU_SAMPLELOCATION_EARLOBE or 29248 (dec) or 72 40 (hex) ☐ Attribute-value (Step 9): partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) code: MDC_CTXT_GLU_SAMPLELOCATION_CTRLSOLUTION or 29252 (dec) or 72 44 (hex) ☐ Attribute-value (Step 10):

partition: MDC PART PHD DM or 128 (dec) or 00 80 (hex)

 code: MDC_CTXT_GLU_SAMPLELOCATION_SUBCUTANEOUS or 29241 (dec) or 72 39 (hex)

☐ Attribute-value (Step 11):

- partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex)
- code: MDC_CTXT_GLU_SAMPLELOCATION_UNDERTERMINED or 29237 (dec) or 72 35 (hex)

b) WAN PCD-01 message

If Supplemental-Types is present, PCD-01 message includes a facet OBX segment of the Sensor Calibration OBX segment with Supplemental-Types attribute (check OBX-3 and OBX-5):

OBX|n|NM|8418036^MDC_CGM_SENSOR_CALIBRATION^MDC| m.0.0.x|[value]|[unit]||||R|||[date_time]

• Step 6

OBX|n|CWE|68193^MDC_ATTR_SUPPLEMENTAL_TYPES^MDC|m.0.0.x.y| 8417848^MDC_CTXT_GLU_SAMPLELOCATION_FINGER^MDC||||||R

Step 7

OBX|n|CWE|68193^MDC_ATTR_SUPPLEMENTAL_TYPES^MDC|m.0.0.x.y| 8417852^MDC_CTXT_GLU_SAMPLELOCATION_AST^MDC||||||R

Step 8

OBX|n|CWE|68193^MDC_ATTR_SUPPLEMENTAL_TYPES^MDC|m.0.0.x.y| 8417856^MDC_CTXT_GLU_SAMPLELOCATION_EARLOBE^MDC||||||R

Step 9

OBX|n|CWE|68193^MDC_ATTR_SUPPLEMENTAL_TYPES^MDC|m.0.0.x.y| 8417860^MDC_CTXT_GLU_SAMPLELOCATION_CTRLSOLUTION^MDC|||||R

Step 10

OBX|n|CWE|68193^MDC_ATTR_SUPPLEMENTAL_TYPES^MDC|m.0.0.x.y| 8417849^MDC_CTXT_GLU_SAMPLELOCATION_SUBCUTANEOUS^MDC||||||R

Step 11

OBX|n|CWE|68193^MDC_ATTR_SUPPLEMENTAL_TYPES^MDC|m.0.0.x.y| 8417845^MDC_CTXT_GLU_SAMPLELOCATION_UNDERTERMINED^MDC||||||R

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-016_A					
TP label		Whitepaper. Sensor Calibration Numeric Object - Metric-Spec-Small Attribute 1					
Coverage	Spec	[Bluetooth PHDT v1.6]	[Bluetooth PHDT v1.6]				
	Testable items	SensCal Numeric 4; M	SensCal Numeric 6; M				
Test purpos	se	Check that:					
		PHG includes Sensor Calibration Numeric Object – Metric-Spec-Small attribute in transcoder output.					
		[AND]					
		Metric-Spec-Small is set to {0x604C} when the calibration is updated manually by the user.					
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043					
Other PICS							
Initial condition		The PHG under test and the simulated PHD are in the Standby state.					
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device					

	spe	cializ	zation). The simulated PHD has a Calibration Data Record stored.
2.			ulated PHD implements several BTLE characteristics. The characteristics of for this Test Case are:
	a.	CG	M Feature (0x2AA8)
		i.	Field: CGM Feature
			☐ Format: 24 bit
			□ Value: 0000 0000 0000 0000 0001 (MSB → LSB). Calibration supported.
		ii.	Field: CGM Type
			☐ Format: 4 bit
			□ Value: not relevant
		iii.	Field: CGM Sample Location
			☐ Format: 4 bit
			☐ Value: not relevant
		iv.	Field: E2E-CRC
			☐ Format: uint16
			☐ Value: not relevant
	b.	CG	M Specific Ops Control Point (0x2AAC)
		i.	Field: Op Code
			☐ Format: uint8
			□ Value: 0x06 (Glucose Calibration Value Response)
		ii.	Field: Calibration Value - Glucose concentration of Calibration (mg/dL)
			☐ Format: SFLOAT
			□ Value: not relevant
		iii.	Field: Calibration Value – Calibration Time
			□ Format: uint16
			□ Value: not relevant
		iv.	Field: Calibration Value – Calibration Type
			□ Format: 4 bit
			□ Value: not relevant
		٧.	Field: Calibration Value – Calibration Sample Location
			□ Format: 4 bit
			□ Value: not relevant
		vi.	Field: Calibration Value - Next Calibration Time
			□ Format: uint16
			□ Value: not relevant
		vii.	Field: Calibration Value – Calibration Data Record Number
			□ Format: uint16
			□ Value: not relevant
		viii.	Field: Calibration Value – Calibration Status
			☐ Format: 8 bit
			□ Value: not relevant
		ix.	Field: E2E-CRC
			☐ This field is not present
3.	The	PH	G under test initiates a discovery process (Scanning state), it discovers the

	simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).			
	4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to request the las Calibration Data Record stored performing a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0xFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively).			
	5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information, which was manually updated by the user.			
	6. Check in PHG transcoder output the Sensor Calibration Numeric Object – Metric-Spec-Small attribute			
Pass/Fail criteria	In Step 6, the Sensor Calibration Numeric Object – Metric-Spec-Small attribute is present and its value is {0x604C} (mss-avail-stored-data mss-upd-aperiodic mss-acc-agent-initiated mss-cat-manual mss-cat-setting)			
Notes	Possible values in typical points of observation after transcoder output are:			
(To assist manual testing)	a) IEEE 11073 Objects and Attributes			
testing)	Metric-Spec-Small attribute is present:			
	□ Object: Sensor Calibration Numeric Object			
	☐ Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630)			
	☐ Attribute-type: BITS-16			
	Attribute-value: 0x604C (hex) or BITS mss-avail-stored-data (1), mss-upd-aperiodic(2), mss-acc-agent-initiated(9), mss-cat-manual(12), mss-cat-setting(13) set to TRUE and remaining BITS set to FALSE			
	b) WAN PCD-01 message			
	PCD-01 message does not include segments with Metric-Spec-Small attribute value			

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-016_B						
TP label		Whitepaper. Sensor Calibra	Whitepaper. Sensor Calibration Numeric Object - Metric-Spec-Small Attribute 2					
Coverage	Spec	[Bluetooth PHDT v1.6]						
	Testable items	SensCal Numeric 4; M						
Test purpo	se	Check that:						
		PHG includes Sensor Calibration Numeric Object – Metric-Spec-Small attribute in transcoder output.						
		[AND]						
		Metric-Spec-Small is set to {0x6044} when the Glucose Calibration procedure has been executed.						
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043						
Other PICS								
Initial condition		The PHG under test and the simulated PHD are in the Standby state.						
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization).						
		The simulated PHD im interest for this Test Ca	plements several BTLE characteristi ase are:	ics. The characteristics of				
		a. CGM Feature (0x2	2AA8)					

		i.	Field: CGM Feature
			☐ Format: 24 bit
			□ Value: 0000 0000 0000 0000 0001 (MSB → LSB). Calibration supported.
		ii.	Field: CGM Type
			☐ Format: 4 bit
			□ Value: not relevant
		iii.	Field: CGM Sample Location
			☐ Format: 4 bit
			□ Value: not relevant
		iv.	Field: E2E-CRC
			☐ Format: uint16
			□ Value: not relevant
	b.	CGI	M Specific Ops Control Point (0x2AAC)
		i.	Field: Op Code
			☐ Format: uint8
			□ Value: 0x06 (Glucose Calibration Value Response)
		ii.	Field: Calibration Value – Glucose concentration of Calibration (mg/dL)
			□ Format: SFLOAT
			□ Value: not relevant
		iii.	Field: Calibration Value – Calibration Time
			☐ Format: uint16
			□ Value: not relevant
		iv.	Field: Calibration Value – Calibration Type
			☐ Format: 4 bit
			☐ Value: not relevant
		٧.	Field: Calibration Value - Calibration Sample Location
			☐ Format: 4 bit
			□ Value: not relevant
		vi.	Field: Calibration Value - Next Calibration Time
			□ Format: uint16
			□ Value: not relevant
		vii.	Field: Calibration Value – Calibration Data Record Number
			☐ Format: uint16
			□ Value: not relevant
		viii.	Field: Calibration Value – Calibration Status
			☐ Format: 8 bit
			□ Value: not relevant
		ix.	Field: E2E-CRC
			☐ This field is not present
3.			G under test initiates a discovery process (Scanning state), it discovers the d PHD and it starts a pairing process with the simulated PHD (Initiating state).
4.			e pairing has been completed, force the PHG to read CGM Feature and CGM Start Time characteristics.
5.	Ford	ce th	e PHG to calibrate the CGM Sensor, writing a "Set Glucose Calibration Value" Op

	Code (0x04) and a Calibration Data Record operand with valid values. The simulated PHD will respond with an indication including a Response Op Code value of "Success".				
	6. Then request the last Calibration Data Record stored performing a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0xFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively).				
	7. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the previously set calibration information.				
	8. Check in the PHG transcoder output the Sensor Calibration Numeric Object – Metric-Spec-Small				
Pass/Fail criteria	In Step 6, the Sensor Calibration Numeric Object – Metric-Spec-Small attribute is present and its value is {0x6044} (mss-avail-stored-data mss-upd-aperiodic mss-acc-agent-initiated mss-cat-setting)				
Notes	Possible values in typical points of observation after transcoder output are:				
(To assist manual testing)	a) IEEE 11073 Objects and Attributes				
toomig/	Metric-Spec-Small attribute is present:				
	□ Object: Sensor Calibration Numeric Object				
	☐ Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630)				
	☐ Attribute-type: BITS-16				
	Attribute-value: 0x6044 (hex) or BITS mss-avail-stored-data (1), mss-upd-aperiodic(2), mss-acc-agent-initiated(9), mss-cat-setting(13) set to TRUE and remaining BITS set to FALSE				
	b) WAN PCD-01 message				
	PCD-01 message does not include segments with Metric-Spec-Small attribute value				

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-017						
TP label		Whitepaper. Sensor Calibration Numeric Object – Measurement-Status Attribute						
Coverage	Spec	[Bluetooth PHDT v1.6]						
	Testable items	SensCal Numeric 7; O	SensCal Numeric 7; O SensCal Numeric 8; M Sensc					
Test purpos	se	Check that:						
		PHG may include Sensor Calibration Numeric Object – Measurement-Status attribute in transcoder output.						
		[AND]						
		If present and related to the Sensor Status Annunciation field, Measurement-Status is set to the correct value						
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043						
Other PICS								
Initial cond	ition	The PHG under test and the simulated PHD are in the Standby state.						
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The simulated PHD has four different Calibration Data Records stored.						
		The simulated PHD im interest for this Test Ca	plements several BTLE characterist ase are:	ics. The characteristics of				
		a. CGM Feature (0x2	2AA8)					
		i. Field: CGM F	eature					

			☐ Format: 24 bit
			□ Value: 0000 0000 0000 0000 0001 (MSB → LSB). Calibration supported.
	ii	i.	Field: CGM Type
			☐ Format: 4 bit
			□ Value: not relevant
	ii	ii.	Field: CGM Sample Location
			☐ Format: 4 bit
			□ Value: not relevant
	iv	V.	Field: E2E-CRC
			□ Format: uint16
			□ Value: not relevant
	b. C	CGN	M Specific Ops Control Point (0x2AAC)
	i.		Field: Op Code
			□ Format: uint8
			□ Value: 0x06 (Glucose Calibration Value Response)
	ii	i.	Field: Calibration Value – Glucose concentration of Calibration (mg/dL)
			☐ Format: SFLOAT
			□ Value: not relevant
	ii	ii.	Field: Calibration Value – Calibration Time
			☐ Format: uint16
			□ Value: not relevant
	iv	V.	Field: Calibration Value – Calibration Type
			☐ Format: 4 bit
			□ Value: not relevant
	V	/ .	Field: Calibration Value – Calibration Sample Location
			□ Format: 4 bit
			□ Value: not relevant
	V	/i.	Field: Calibration Value - Next Calibration Time
			□ Format: uint16
			□ Value: not relevant
	V	/ii.	Field: Calibration Value – Calibration Data Record Number
			Format: uint16
			□ Value: 1 to 4 (four Calibration Data Records (CDR) stored)
	V	/iii.	Field: Calibration Value – Calibration Status
			Format: 8 bit
			□ Value (CDR number 1): 0000 0001 (calibration data rejected)
			□ Value (CDR number 2): 0000 0010 (calibration data out-of-range)
			□ Value (CDR number 3): 0000 0200 (calibration process pending)
			□ Value (CDR number 4): 0000 0000
	(i	X.	Field: E2E-CRC
	TL	י ור	☐ This field is not present
3.			Gunder test initiates a discovery process (Scanning state), it discovers the dPHD and it starts a pairing process with the simulated PHD (Initiating state).

When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0x0001" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively). The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. Check in PHG transcoder output the Sensor Calibration Numeric Object - Measurement-Status attribute 7. Force the PHG to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0x0002". The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. Check in PHG transcoder output the Sensor Calibration Numeric Object - Measurement-Status attribute Force the PHG to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0x0003". The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. Check in PHG transcoder output the Sensor Calibration Numeric Object - Measurement-Status attribute Force the PHG to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0x0004". The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. Check in PHG transcoder output the Sensor Calibration Numeric Object - Measurement-Status attribute Pass/Fail criteria In Step 6 the Sensor Calibration Numeric Object - Measurement-Status attribute, if present, is set to "invalid" (bit 0). In Step 7 the Sensor Calibration Numeric Object - Measurement-Status attribute, if present, is set to "invalid" (bit 0). In Step 8 the Sensor Calibration Numeric Object - Measurement-Status, if present, is set to "calibration-ongoing" (bit 3). In Step 9 the Sensor Calibration Numeric Object - Measurement-Status attribute, if present, is set to "validated-data" (bit 8) Notes Possible values in typical points of observation after transcoder output are: (To assist manual IEEE 11073 Objects and Attributes testing) If Measurement-Status attribute is present: Object: Sensor Calibration Numeric Object ☐ Attribute-id: MDC_ATTR_MSMT_STAT (2375) ☐ Attribute-type: BITS16 Attribute-value (Step 6): "invalid" (0x8000) Attribute-value (Step 7): "invalid" (0x8000) Attribute-value (Step 8): "calibration-ongoing" (0x1000) Attribute-value (Step 9): "validated-data" (0x0080) WAN PCD-01 message If Measurement-Status is present, PCD-01 message includes a segment like this with Measurement-Status attribute value (check OBX-8 and OBX-11): Step 6 OBX|n|NM|8418036^MDC_CGM_SENSOR_CALIBRATION^MDC| m.0.0.x|[value]|[unit]||INV|||X|||[date_time] Step 7 OBX|n|NM|8418036^MDC_CGM_SENSOR_CALIBRATION^MDC| m.0.0.x|[value]|[unit]||INV|||X|||[date_time]

• Step 8
OBX n NM 8418036^MDC_CGM_SENSOR_CALIBRATION^MDC m.0.0.x [value] [unit] CAL R [date_time]
Step 9
OBX n NM 8418036^MDC_CGM_SENSOR_CALIBRATION^MDC m.0.0.x [value] [unit] R [date_time]

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-018
TP label		Whitepaper. Sensor Calibration Numeric Object – Unit-Code Attribute
Coverage	Spec	[Bluetooth PHDT v1.6]
	Testable items	SensCal Numeric 10; M
Test purpos	e	Check that: PHG includes Sensor Calibration Numeric Object – Unit-Code attribute in transcoder output. [AND] Unit-Code attribute value is set to MDC_DIM_MILLI_G_PER_DL
Applicability	/	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043
Other PICS		
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.
Test proced	ure	The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The simulated PHD has a Calibration Data Record stored.
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:
		a. CGM Feature (0x2AA8)
		i. Field: CGM Feature
		☐ Format: 24 bit
		□ Value: 0000 0000 0000 0000 0001 (MSB → LSB). Calibration supported.
		ii. Field: CGM Type
		☐ Format: 4 bit
		☐ Value: not relevant
		iii. Field: CGM Sample Location
		☐ Format: 4 bit
		☐ Value: not relevant
		iv. Field: E2E-CRC
		☐ Format: uint16
		□ Value: not relevant
		b. CGM Specific Ops Control Point (0x2AAC)
		i. Field: Op Code
		☐ Format: uint8
		□ Value: 0x06 (Glucose Calibration Value Response)
		ii. Field: Calibration Value – Glucose concentration of Calibration (mg/dL)

	☐ Format: SFLOAT
	□ Value: not relevant
	iii. Field: Calibration Value – Calibration Time ☐ Format: uint16
	□ Value: not relevant
	iv. Field: Calibration Value – Calibration Type
	☐ Format: 4 bit
	□ Value: not relevant
	v. Field: Calibration Value – Calibration Sample Location
	☐ Format: 4 bit
	□ Value: not relevant
	vi. Field: Calibration Value - Next Calibration Time
	☐ Format: uint16
	☐ Value: not relevant
	vii. Field: Calibration Value – Calibration Data Record Number
	☐ Format: uint16
	☐ Value: not relevant
	viii. Field: Calibration Value – Calibration Status
	☐ Format: 8 bit
	☐ Value: not relevant
	ix. Field: E2E-CRC
	☐ This field is not present
	The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0xFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively).
	 The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information.
	 Check in PHG transcoder output the Sensor Calibration Numeric Object – Unit-Code attribute
Pass/Fail criteria	In Step 6, the Sensor Calibration Numeric Object – Unit-Code attribute is present and set to MDC_DIM_MILLI_G_PER_DL
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
testing)	Unit-Code attribute is present:
	☐ Object: Sensor Calibration Numeric Object
	☐ Attribute-id: MDC_ATTR_UNIT_CODE (2454)
	☐ Attribute-type: OID-Type
	☐ Attribute-value: MDC_DIM_MILLI_G_PER_DL or 2130 (dec) or 08 52 (hex)
	b) WAN PCD-01 message
	PCD-01 message includes a segment like this with Unit-Code attribute value (check OBX-6):
	OBX n NM 8418036^MDC_CGM_SENSOR_CALIBRATION^MDC m.0.0.x [value]

264274^MD	C_DIM_MILLI_G_	_PER_DL^MDC R [date_	time]
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TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-019				
TP label		Whitepaper. Sensor Calibration Numeric Object – Base-Offset-Time-Stamp Attribute				
Coverage	Spec	[Bluetooth PHDT v1.6]				
	Testable items	SensCal Numeric 11; M BaseOffset 3; M				
Test purpos	e	Check that: PHG includes Glucose Numeric Object Base-Offset-Time-Stamp attribute in transcoder output. [AND] Base-Offset-Time-Stamp attribute is set to the correct value according to Base-Offset time stamp derivation				
Applicability	<i>T</i>	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043				
Other PICS						
Initial condit	ion	The PHG under test and the simulated PHD are in the Standby state.				
Test procedure		 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The simulated PHD has a Calibration Data Record stored. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are: CGM Session Start Time (0x2AAA) Field: Session Start Time Format: {uint16, uint8, uint8, uint8, uint8} Value: {2016, 5, 12, 16, 39, 27} (May 12, 2016, 16:39:27) Field: Time Zone Format: sint8 Value: 4 (UTC+1:00) Field: DST-Offset Format: uint8 				
		 Value: 4 (Daylight Time (+1h)) iv. Field: E2E-CRC This field is not included b. CGM Feature (0x2AA8) i. Field: CGM Feature Format: 24 bit Value: 0000 0000 0000 0000 0001 (MSB → LSB). Calibration supported. ii. Field: CGM Type Format: 4 bit Value: not relevant iii. Field: CGM Sample Location Format: 4 bit Value: not relevant 				

Format: uint16		iv. Field: E2E-CRC
□ Value: not relevant c. CGM Spacific Ops Control Point (0x2AAC) i. Field: Op Code □ Format: uint8 □ Value: 0x06 (Glucose Calibration Value Response) ii. Field: Calibration Value — Glucose concentration of Calibration (mg/dL) □ Format: SFLOAT □ Value: not relevant iii. Field: Calibration Value — Calibration Time □ Format: uint16 (min) □ Value: not relevant iii. Field: Calibration Value — Calibration Type □ Format: 4 bit □ Value: not relevant v. Field: Calibration Value — Calibration Sample Location □ Format: 4 bit □ Value: not relevant vi. Field: Calibration Value → Calibration Sample Location □ Format: 4 bit □ Value: not relevant vii. Field: Calibration Value → Next Calibration Time □ Format: 4 bit □ Value: not relevant vii. Field: Calibration Value → Calibration Data Record Number □ Format: uint16 □ Value: not relevant viii. Field: Calibration Value — Calibration Status □ Format: bit □ Value: not relevant viii. Field: Calibration Value — Calibration Status □ Format: bit □ Value: not relevant viii. Field: Calibration Value — Calibration Status □ Format: bit □ Value: not relevant viii. Field: E2E-CRC □ This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a paining process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG for ead CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code '\$6 cll clucose Calibration value ('0x05) with Operand "OFFFFF'(by performing a write operation to the CGM Specific Ops Control Point characteristics Op Code and Calibration Data Record (Number fields respectively). 5. The simulated PHD will respond with an indication including a 'Calibration Value Response' Op Code (0x06) and a Calibration Data Record containing the requested calibration information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp attitude Possible v		
c. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code		
i. Field: Op Code Format: uint8 Value: 0x06 (Glucose Calibration Value Response) ii. Field: Calibration Value – Glucose concentration of Calibration (mg/dL) Format: SFLOAT Value: not relevant iii. Field: Calibration Value – Calibration Time Format: uint16 (min) Value: 20 iv. Field: Calibration Value – Calibration Type Format: 4 bit Value: not relevant v. Field: Calibration Value – Calibration Sample Location Format: 4 bit Value: not relevant v. Field: Calibration Value – Calibration Sample Location Format: 4 bit Value: not relevant vi. Field: Calibration Value – Next Calibration Time Format: uint16 Value: not relevant vii. Field: Calibration Value – Calibration Data Record Number Format: uint16 Value: not relevant viii. Field: Calibration Value – Calibration Status Format: uint16 Value: not relevant viii. Field: Calibration Value – Calibration Status Format: bit Value: not relevant viii. Field: Calibration Value – Calibration Status Format: bit Value: not relevant viii. Field: Calibration Value – Calibration Status Format: bit Value: not relevant viii. Field: Calibration Value – Calibration Status Format: bit Value: not relevant viii. Field: Calibration Value – Calibration Status Format: bit Value: not relevant viii. Field: Calibration Value – Calibration Status Format: bit Value: not relevant viii. Field: Calibration Value – Calibration Status Format: bit Value: not relevant viii. Field: Calibration Value – Calibration Status Format: viii Format: bit Value: not relevant viii. Field: Calibration Value – Calibration Status Format: viii Fo		
Format: uint8 Value: 0x06 (Glucose Calibration Value Response)		
Value: 0x06 (Glucose Calibration Value Response) ii. Field: Calibration Value – Glucose concentration of Calibration (mg/dL) Format: SFLOAT Value: not relevant iii. Field: Calibration Value – Calibration Time Format: uint16 (min) Value: 20 iv. Field: Calibration Value – Calibration Type Format: 4 bit Value: not relevant v. Field: Calibration Value – Calibration Sample Location Format: 4 bit Value: not relevant v. Field: Calibration Value – Calibration Sample Location Format: 4 bit Value: not relevant vi. Field: Calibration Value – Next Calibration Time Format: uint16 Value: not relevant vii. Field: Calibration Value – Calibration Data Record Number Format: uint16 Value: not relevant viii. Field: Calibration Value – Calibration Status Format: 4 bit Value: not relevant viii. Field: Calibration Value – Calibration Status Format: 4 bit Value: not relevant viii. Field: Calibration Value – Calibration Status Format: 4 bit Value: not relevant viii. Field: Calibration Value – Calibration Status Format: 4 bit Value: not relevant viii. Field: Calibration Value – Calibration Status Format: 4 bit Value: not relevant viii. Field: Calibration Value – Calibration Status Format: 4 bit Value: not relevant viii. Field: Calibration Value – Calibration Status Format: 5 bit Value: not relevant viii. Field: Calibration Value – Calibration Status Format: 6 bit Value: not relevant viii. Field: Calibration Value – Calibration Status Format: 6 bit Value: not relevant viii. Field: Calibration Value – Calibration Status Format: 6 bit Value: not relevant viii. Field: Calibration Value – Calibration Value (viii) Format: 6 bit Value: not relevant viii. Field: Calibration Value – Calibration Value (viii) Format: 7 bit of viii		
ii. Field: Calibration Value – Glucose concentration of Calibration (mg/dL) Format: SFLOAT Value: not relevant Field: Calibration Value – Calibration Time Format: uint16 (min) Value: 20 Value: 20 Value: a Value – Calibration Type Format: 4 bit Value: not relevant Veried: Calibration Value – Calibration Sample Location Format: 4 bit Value: not relevant Veried: Calibration Value – Calibration Sample Location Format: 4 bit Value: not relevant Veried: Calibration Value – Next Calibration Time Format: uint16 Value: not relevant Vii. Field: Calibration Value – Calibration Data Record Number Format: uint16 Value: not relevant Viii. Field: Calibration Value – Calibration Data Record Number Format: bint16 Value: not relevant Viii. Field: Calibration Value – Calibration Status Format: 8 bit Value: not relevant Viii. Field: EZE-CRC This field is not present The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state), when the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration procedure using Op Code" Get Glucose Calibration procedure using Op Code "Get Glucose Calibration and the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively). 5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. 6. Check in PHG franscoder output the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp attribute Pass/Fall criteria In Step 6 and 8, the Sensor Calibration Numeric Object – Base-		
Format: SFLOAT Value: not relevant		
□ Value: not relevant iii. Field: Calibration Value – Calibration Time □ Format: uint16 (min) □ Value: 20 iv. Field: Calibration Value – Calibration Type □ Format: 4 bit □ Value: not relevant v. Field: Calibration Value – Calibration Sample Location □ Format: 4 bit □ Value: not relevant vi. Field: Calibration Value – Next Calibration Time □ Format: uint16 □ Value: not relevant vii. Field: Calibration Value – Calibration Time □ Format: uint16 □ Value: not relevant viii. Field: Calibration Value – Calibration Data Record Number □ Format: uint16 □ Value: not relevant viii. Field: Calibration Value – Calibration Status □ Format: 8 bit □ Value: not relevant ix. Field: E2E-CRC □ This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (initiating state), 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Qp Code "Cet Glucose Calibration value" (0x65) with Operand "OxFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively). 5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x66) and a Calibration Data Record containing the requested calibration information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp is set to the addition of CGM Session Start Time characteristic's Session Start Time Glaracteristic Session Start Time Glarac		
Format: uint16 (min) Value: 20 iv. Field: Calibration Value – Calibration Type Format: 4 bit Value: not relevant v. Field: Calibration Value – Calibration Sample Location Format: 4 bit Value: not relevant vi. Field: Calibration Value – Next Calibration Time Format: uint16 Value: not relevant vii. Field: Calibration Value – Next Calibration Time Format: uint16 Value: not relevant viii. Field: Calibration Value – Calibration Data Record Number Format: uint16 Value: not relevant viii. Field: Calibration Value – Calibration Status Format: uint16 Value: not relevant viii. Field: E2E-CRC This field is not present This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code Get Glucose Calibration value" (DXS) with Operard "OXFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively). 5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (DXG) and a Calibration Data Record containing the requested calibration information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp attribute In Step 6 and 8, the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp attribute PassiFe In panel Possible values in typical points of observation after transcoder output are:		☐ Value: not relevant
Value: 20 iv. Field: Calibration Value – Calibration Type Format: 4 bit Value: not relevant v. Field: Calibration Value – Calibration Sample Location Format: 4 bit Value: not relevant v. Field: Calibration Value – Next Calibration Time Format: uint16 Value: not relevant vii. Field: Calibration Value – Calibration Data Record Number Format: uint16 Value: not relevant viii. Field: Calibration Value – Calibration Data Record Number Format: uint16 Value: not relevant viii. Field: Calibration Value – Calibration Status Format: 8 bit Value: not relevant viii. Field: Calibration Value – Calibration Status Format: 8 bit Value: not relevant ix. Field: E2E-CRC This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code Geoff Glucose Calibration value' (0x05) with Operand "0xFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively). 5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. Information. Information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp attribute In Step 6 and 8, the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp attribute Possible values in typical points of observation after transcoder output are:		iii. Field: Calibration Value – Calibration Time
Value: 20 iv. Field: Calibration Value – Calibration Type Format: 4 bit Value: not relevant v. Field: Calibration Value – Calibration Sample Location Format: 4 bit Value: not relevant v. Field: Calibration Value – Next Calibration Time Format: uint16 Value: not relevant vii. Field: Calibration Value – Calibration Data Record Number Format: uint16 Value: not relevant viii. Field: Calibration Value – Calibration Data Record Number Format: uint16 Value: not relevant viii. Field: Calibration Value – Calibration Status Format: 8 bit Value: not relevant viii. Field: Calibration Value – Calibration Status Format: 8 bit Value: not relevant ix. Field: E2E-CRC This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code Geoff Glucose Calibration value' (0x05) with Operand "0xFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively). 5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. Information. Information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp attribute In Step 6 and 8, the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp attribute Possible values in typical points of observation after transcoder output are:		☐ Format: uint16 (min)
Format: 4 bit Value: not relevant		
Format: 4 bit Value: not relevant		iv. Field: Calibration Value – Calibration Type
v. Field: Calibration Value – Calibration Sample Location Format: 4 bit Value: not relevant Vi. Field: Calibration Value - Next Calibration Time Format: uint16 Value: not relevant Vii. Field: Calibration Value – Calibration Data Record Number Format: uint16 Value: not relevant Viii. Field: Calibration Value – Calibration Data Record Number Format: uint16 Value: not relevant Viiii. Field: Calibration Value – Calibration Status Format: 8 bit Value: not relevant ix. Field: E2E-CRC This field is not present This field is not present The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0xFFF"(by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively).		•
Format: 4 bit Value: not relevant vi. Field: Calibration Value - Next Calibration Time Format: uint16 Value: not relevant vii. Field: Calibration Value - Calibration Data Record Number Format: uint16 Value: not relevant viii. Field: Calibration Value - Calibration Data Record Number Format: uint16 Value: not relevant viii. Field: Calibration Value - Calibration Status Format: 8 bit Value: not relevant ix. Field: E2E-CRC This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration value using Op Code "Get Glucose Calibration value" (ioX5) with Operand "OxFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively). 5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object - Base-Offset-Time-Stamp attribute Pass/Fail criteria In Step 6 and 8, the Sensor Calibration Numeric Object - Base-Offset-Time-Stamp attribute Possible values in typical points of observation after transcoder output are:		☐ Value: not relevant
Value: not relevant vi. Field: Calibration Value - Next Calibration Time Format: uint16 Value: not relevant vii. Field: Calibration Value - Calibration Data Record Number Format: uint16 Value: not relevant Viii. Field: Calibration Value - Calibration Data Record Number Format: uint16 Value: not relevant viii. Field: Calibration Value - Calibration Status Format: 8 bit Value: not relevant Viii. Field: E2E-CRC This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration Palue using Op Code "Get Glucose Calibration value" (iox50) with Operand "0xFFFF"(by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively). 5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object − Base-Offset-Time-Stamp attribute Pass/Fail criteria In Step 6 and 8, the Sensor Calibration Numeric Object − Base-Offset-Time-Stamp attribute In Step 6 and 8, the Sensor Calibration Numeric Object − Base-Offset-Time-Stamp is set to the addition of CGM Session Start Time characteristic's Session Start Time (May 12, 2016, 16:39:27) field plus the Calibration Time field of the obtained Calibration Data Record (20min). Notes Possible values in typical points of observation after transcoder output are:		v. Field: Calibration Value – Calibration Sample Location
vi. Field: Calibration Value - Next Calibration Time Format: uint16 Value: not relevant Vii. Field: Calibration Value – Calibration Data Record Number Format: uint16 Value: not relevant Viii. Field: Calibration Value – Calibration Status Format: 8 bit Value: not relevant Viii. Field: E2E-CRC This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0xFFFF" (by performing a write operation to the CGM Specific Ops Control Post characteristic's Op Code and Calibration Data Record Number fields respectively). 5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp attribute Pass/Fail criteria		☐ Format: 4 bit
□ Format: uint16 □ Value: not relevant vii. Field: Calibration Value – Calibration Data Record Number □ Format: uint16 □ Value: not relevant viii. Field: Calibration Value – Calibration Status □ Format: 8 bit □ Value: not relevant ix. Field: E2E-CRC □ This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0xFFFF"(by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively). 5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp attribute Pass/Fail criteria In Step 6 and 8, the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp is set to the addition of CGM Session Start Time characteristic's Session Start Time (May 12, 2016, 16:39:27) field plus the Calibration Time field of the obtained Calibration Data Record (20min). Notes Possible values in typical points of observation after transcoder output are:		□ Value: not relevant
Value: not relevant vii. Field: Calibration Value – Calibration Data Record Number Format: uint16 Value: not relevant viii. Field: Calibration Value – Calibration Status Format: 8 bit Value: not relevant ix. Field: E2E-CRC This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0xFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively). 5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object − Base-Offset-Time-Stamp attribute Pass/Fail criteria In Step 6 and 8, the Sensor Calibration Numeric Object − Base-Offset-Time-Stamp is set to the addition of CGM Session Start Time characteristic's Session Start Time (May 12, 2016, 16:39:27) field plus the Calibration Time field of the obtained Calibration Data Record (20min). Notes Possible values in typical points of observation after transcoder output are:		vi. Field: Calibration Value - Next Calibration Time
vii. Field: Calibration Value – Calibration Data Record Number Format: uint16 Value: not relevant Viii. Field: Calibration Value – Calibration Status Format: 8 bit Value: not relevant ix. Field: E2E-CRC This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0xFFFF"(by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively). 5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp attribute Pass/Fail criteria		☐ Format: uint16
Format: uint16		□ Value: not relevant
□ Value: not relevant viii. Field: Calibration Value – Calibration Status □ Format: 8 bit □ Value: not relevant ix. Field: E2E-CRC □ This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0xFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively). 5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp attribute Pass/Fail criteria In Step 6 and 8, the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp is set to the addition of CGM Session Start Time characteristic's Session Start Time (May 12, 2016, 16:39:27) field plus the Calibration Time field of the obtained Calibration Data Record (20min). Notes The seriet manual		vii. Field: Calibration Value - Calibration Data Record Number
viii. Field: Calibration Value – Calibration Status Format: 8 bit Value: not relevant		☐ Format: uint16
□ Format: 8 bit □ Value: not relevant ix. Field: E2E-CRC □ This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0xFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively). 5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp attribute Pass/Fail criteria In Step 6 and 8, the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp is set to the addition of CGM Session Start Time characteristic's Session Start Time (May 12, 2016, 16:39:27) field plus the Calibration Time field of the obtained Calibration Data Record (20min). Notes To assist manual		☐ Value: not relevant
□ Value: not relevant ix. Field: E2E-CRC □ This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x5) with Operand "0xFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively). 5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object − Base-Offset-Time-Stamp attribute Pass/Fail criteria In Step 6 and 8, the Sensor Calibration Numeric Object − Base-Offset-Time-Stamp is set to the addition of CGM Session Start Time characteristic's Session Start Time (May 12, 2016, 16:39:27) field plus the Calibration Time field of the obtained Calibration Data Record (20min). Notes To assist manual		viii. Field: Calibration Value – Calibration Status
ix. Field: E2E-CRC ☐ This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0xFFFF"(by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively). 5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object − Base-Offset-Time-Stamp attribute Pass/Fail criteria In Step 6 and 8, the Sensor Calibration Numeric Object − Base-Offset-Time-Stamp is set to the addition of CGM Session Start Time characteristic's Session Start Time (May 12, 2016, 16:39:27) field plus the Calibration Time field of the obtained Calibration Data Record (20min). Notes To assist manual		☐ Format: 8 bit
This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0xFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively). 5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp attribute Pass/Fail criteria In Step 6 and 8, the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp is set to the addition of CGM Session Start Time characteristic's Session Start Time (May 12, 2016, 16:39:27) field plus the Calibration Time field of the obtained Calibration Data Record (20min). Notes **To assist manual**		☐ Value: not relevant
3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0xFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively). 5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp attribute Pass/Fail criteria In Step 6 and 8, the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp is set to the addition of CGM Session Start Time characteristic's Session Start Time (May 12, 2016, 16:39:27) field plus the Calibration Time field of the obtained Calibration Data Record (20min). Notes (To assist manual)		ix. Field: E2E-CRC
simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0xFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively). 5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp attribute Pass/Fail criteria In Step 6 and 8, the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp is set to the addition of CGM Session Start Time characteristic's Session Start Time (May 12, 2016, 16:39:27) field plus the Calibration Time field of the obtained Calibration Data Record (20min). Notes (To assist manual)		☐ This field is not present
Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0xFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively). 5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp attribute Pass/Fail criteria In Step 6 and 8, the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp is set to the addition of CGM Session Start Time characteristic's Session Start Time (May 12, 2016, 16:39:27) field plus the Calibration Time field of the obtained Calibration Data Record (20min). Notes Possible values in typical points of observation after transcoder output are:		
Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information. 6. Check in PHG transcoder output the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp attribute Pass/Fail criteria In Step 6 and 8, the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp is set to the addition of CGM Session Start Time characteristic's Session Start Time (May 12, 2016, 16:39:27) field plus the Calibration Time field of the obtained Calibration Data Record (20min). Notes Possible values in typical points of observation after transcoder output are:		Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0xFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op
Pass/Fail criteria In Step 6 and 8, the Sensor Calibration Numeric Object – Base-Offset-Time-Stamp is set to the addition of CGM Session Start Time characteristic's Session Start Time (May 12, 2016, 16:39:27) field plus the Calibration Time field of the obtained Calibration Data Record (20min). Notes Possible values in typical points of observation after transcoder output are:		Response" Op Code (0x06) and a Calibration Data Record containing the requested
addition of CGM Session Start Time characteristic's Session Start Time (May 12, 2016, 16:39:27) field plus the Calibration Time field of the obtained Calibration Data Record (20min). Notes Possible values in typical points of observation after transcoder output are:		
(To assist manual	Pass/Fail criteria	addition of CGM Session Start Time characteristic's Session Start Time (May 12, 2016,
(To assist manual	Notes	Possible values in typical points of observation after transcoder output are:
	(To assist manual	

testing)	Base-Offset-Time-Stamp attribute is present:
	□ Object: Sensor Calibration Numeric Object
	☐ Attribute-id: MDC_ATTR_TIME_STAMP_BO (2690)
	Attribute-type : SEQUENCE {bo-seconds (INT-U32), bo-fraction (INT-U16), bo-time-offset (INT-I16)}
	☐ Attribute-value : addition of
	 CGM Session Start Time characteristic's Session Start Time field (May 12, 2016, 16:39:27)
	CGM Special Ops Control Point characteristic's Calibration Time field (20m)
	Note that the same Base-Offset-Time-Stamp can have different representations depending on bo-time-offset value. If it is set to 20 min (CGM Measurement characteristic's Time Offset field), then Base-Offset-Time-Stamp value shall be {3672059967, 0, 20}
	b) WAN PCD-01 message
	PCD-01 message includes a segment like this with Base-Offset-Time-Stamp attribute value (check OBX-14):
	OBX n NM 8418036^MDC_CGM_SENSOR_CALIBRATION^MDC m.0.0.x [value] 264274^MDC_DIM_MILLI_G_PER_DL^MDC R [value described in a) coded in DTM format]

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-020				
TP label		Whitepaper. Sensor Calibration Numeric Object – Basic-Nu-Observed-Value Attribute				
Coverage	Spec	[Bluetooth PHDT v1.6]				
	Testable items	SensCal Numeric 12; M				
Test purpos	e	Check that:				
		PHG includes Sensor Calibration Numeric Object Basic-Nu-Observed-Value attribute in transcoder output.				
		[AND]				
		Basic-Nu-Observed-Value attribute is set to the correct value.				
Applicability	/	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043				
Other PICS						
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.				
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The simulated PHD has a Calibration Data Record stored.				
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:				
		a. CGM Feature (0x2AA8)				
		i. Field: CGM Feature				
		☐ Format: 24 bit				
		□ Value: 0000 0000 0000 0000 0001 (MSB → LSB). Calibration supported.				
		ii. Field: CGM Type				
		☐ Format: 4 bit				
		☐ Value: not relevant				
		iii. Field: CGM Sample Location				

			□ Format: 4 bit
			□ Value: not relevant
		iv.	Field: E2E-CRC
			□ Format: uint16
			□ Value: not relevant
	b.	CG	M Specific Ops Control Point (0x2AAC)
		i.	Field: Op Code
			☐ Format: uint8
			□ Value: 0x06 (Glucose Calibration Value Response)
		ii.	Field: Calibration Value – Glucose concentration of Calibration (mg/dL)
			☐ Format: SFLOAT (mg/dL)
			□ Value: 115.3
		iii.	Field: Calibration Value – Calibration Time
			☐ Format: uint16
			☐ Value: not relevant
		iv.	Field: Calibration Value – Calibration Type
			☐ Format: 4 bit
			☐ Value: not relevant
		٧.	Field: Calibration Value - Calibration Sample Location
			☐ Format: 4 bit
			☐ Value: not relevant
		vi.	Field: Calibration Value - Next Calibration Time
			☐ Format: uint16
			☐ Value: not relevant
		vii.	Field: Calibration Value - Calibration Data Record Number
			☐ Format: uint16
			☐ Value: not relevant
		viii.	Field: Calibration Value – Calibration Status
			☐ Format: 8 bit
			☐ Value: not relevant
		ix.	Field: E2E-CRC
			☐ This field is not present
			G under test initiates a discovery process (Scanning state), it discovers the ed PHD and it starts a pairing process with the simulated PHD (Initiating state).
	S us pe	ession sing O erform	ne pairing has been completed, force the PHG to read CGM Feature and CGM Start Time characteristics, and then to perform a Glucose Calibration procedure p Code "Get Glucose Calibration value" (0x05) with Operand "0xFFFF" (by ing a write operation to the CGM Specific Ops Control Point characteristic's Op and Calibration Data Record Number fields respectively).
	R	espon	ulated PHD will respond with an indication including a "Calibration Value se" Op Code (0x06) and a Calibration Data Record containing the requested on information.
			n PHG transcoder output the Sensor Calibration Numeric Object – Basic-Nu- ed-Value attribute
Pass/Fail criteria			e Sensor Calibration Numeric Object – Unit-Code attribute is present and set to MILLI_G_PER_DL

Notes (To assist manual	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes		
testing)	Basic-Nu-Observed-Value attribute is present:		
	□ Object: Sensor Calibration Numeric Object		
	☐ Attribute-id: MDC_ATTR_NU_VAL_OBS_BASIC (2636)		
	☐ Attribute-type : SFLOAT		
	☐ Attribute-value: 115.3 (dec) or F481 (hex)		
	b) WAN PCD-01 message		
	PCD-01 message includes a segment like this with Basic-Nu-Observed-Value attribute value (check OBX-5):		
	OBX n NM 8418036^MDC_CGM_SENSOR_CALIBRATION^MDC m.0.0.x 15.3 264274^MDC_DIM_MILLI_G_PER_DL^MDC R [date_time]		

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-021
TP label		Whitepaper. Sensor Run-time Numeric Object - Handle Attribute
Coverage	Spec	[Bluetooth PHDT v1.6]
	Testable items	SRT Numeric 1; O
Test purpos	se .	Check that:
		PHG does not include Sensor Run-time Numeric Object – Handle Attribute in transcoder output.
		[OR]
		If PHG includes Sensor Run-time Numeric Object – Handle attribute in transcoder output, then its value shall be different than 0
Applicability	y	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043
Other PICS		
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.
Test proced	ure	The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization).
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:
		a. CGM Session Start Time (0x2AAA)
		i. Field: Session Start Time
		Format: {uint16, uint8, uint8, uint8, uint8, uint8}
		Value: not relevant
		ii. Field: Time Zone
		Format: sint8
		Value: not relevant
		iii. Field: DST-Offset
		Format: uint8
		Value: not relevant
		iv. Field: E2E-CRC
		This field is not included

	b. CGM Session Run Time (0x2AAB)
	i. Field: Session Run Time
	Format: uint16
	Value: not relevant
	ii. Field: E2E-CRC
	This field is not included
	 The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed, force the PHG to read CGM Feature, CGM Session Start Time and CGM Session Run Time characteristics.
	Check in the PHG transcoder output the Sensor Run-time Numeric Object – Handle attribute
Pass/Fail criteria	In Step 5, the Sensor Run-time Numeric Object – Handle attribute is not present or, if it is present then its value is different than 0
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
tooting,	Handle attribute is not present, or if it is present then:
	☐ Object: Sensor Run-time Numeric Object
	☐ Attribute-id: MDC_ATTR_ID_HANDLE (2337)
	☐ Attribute-type: INT-U16
	☐ Attribute-value: Any value different than 0
	b) WAN PCD-01 message
	PCD-01 message does not include segments with Handle attribute value

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-022	
TP label		Whitepaper. Sensor Run-time Numeric Object - Type Attribute	
Coverage	Spec	[Bluetooth PHDT v1.6]	
	Testable items	SRT Numeric 2; M	
Test purpose		Check that: PHG includes Sensor Run-time Numeric Object – Type attribute in transcoder output. [AND] Type is set to MDC_PART_PHD_DM MDC_CGM_SENSOR_RUN_TIME	
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043	
Other PICS			
Initial condition		The PHG under test and the simulated PHD are in the Standby state.	
Test procedure		 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are: 	
		a. CGM Session Start Time (0x2AAA) i. Field: Session Start Time	

Format: {uint16, uint8, uint8, uint8, uint8}
Value: not relevant
ii. Field: Time Zone
Format: sint8
Value: not relevant
iii. Field: DST-Offset
Format: uint8
Value: not relevant
iv. Field: E2E-CRC
This field is not included
b. CGM Session Run Time (0x2AAB)
i. Field: Session Run Time
Format: uint16
Value: not relevant
ii. Field: E2E-CRC
This field is not included
3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
4. When the pairing has been completed, force the PHG to read CGM Feature, CGM Session Start Time and CGM Session Run Time characteristics.
5. Check in the PHG transcoder output the Sensor Run-time Numeric Object – Type attribute
In Step 5, the Sensor Run-time Numeric Object – Type attribute is present and its value is MDC_PART_PHD_DM MDC_CGM_SENSOR_RUN_TIME
Possible values in typical points of observation after transcoder output are:
a) IEEE 11073 Objects and Attributes
Type attribute is not present, or if it is present then:
□ Object: Sensor Run-time Numeric Object
☐ Attribute-id: MDC_ATTR_ID_TYPE (2351)
☐ Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)}
☐ Attribute-value:
 partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex)
 code: MDC_CGM_SENSOR_RUN_TIME or 29432 (dec) or 72 F8 (hex)
b) WAN PCD-01 message
,
PCD-01 message includes a segment like this with Type attribute (check OBX-3):

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-023
TP label		Whitepaper. Sensor Run-time Numeric Object - Metric-Spec-Small Attribute
Coverage	Spec	[Bluetooth PHDT v1.6]
	Testable items	SRT Numeric 3; M

Test purpose	Check that: PHG includes Sensor Run-time Numeric Object – Metric-Spec-Small attribute in transcoder output. [AND] Metric-Spec-Small is set to {0x7046}.
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043
	C_WAN_BEE_000 AND C_WAN_BEE_002 AND C_WAN_BEE_043
Other PICS	
Initial condition	The PHG under test and the simulated PHD are in the Standby state.
Test procedure	The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization).
	2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:
	a. CGM Session Start Time (0x2AAA)
	i. Field: Session Start Time
	Format: {uint16, uint8, uint8, uint8, uint8}
	Value: not relevant
	ii. Field: Time Zone
	Format: sint8
	Value: not relevant
	iii. Field: DST-Offset
	Format: uint8
	Value: not relevant
	iv. Field: E2E-CRC
	This field is not included
	b. CGM Session Run Time (0x2AAB)
	i. Field: Session Run Time
	Format: uint16
	Value: not relevant
	ii. Field: E2E-CRC
	This field is not included
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	 When the pairing has been completed, force the PHG to read CGM Feature, CGM Session Start Time and CGM Session Run Time characteristics.
	 Check in PHG transcoder output the Sensor Run-time Numeric Object – Metric-Spec- Small attribute
Pass/Fail criteria	In Step 5 the Sensor Run-time Numeric Object – Metric-Spec-Small attribute is present and its value is {0x7046} (mss-upd-aperiodic mss-msmt-aperiodic mss-acc-agent-initiated mss-cat-calculation mss-avail-stored-data mss-cat-setting)
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual	a) IEEE 11073 Objects and Attributes
testing)	Metric-Spec-Small attribute is present:
	☐ Object: Sensor Run-time Numeric Object
	☐ Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630)

	☐ Attribute-type: BITS-16
	Attribute-value: 0x7046 (hex) or BITS mss-avail-stored-data (1), mss-upd-aperiodic (2), mss-msmt-aperiodic (3), mss-acc-agent-initiated(9), mss-cat-setting(13), mss-cat-calculation(14) set to TRUE and remaining BITS set to FALSE
b	b) WAN PCD-01 message
	PCD-01 message does not include segments with Metric-Spec-Small attribute value

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-024
TP label		Whitepaper. Sensor Run-time Numeric Object – Unit-Code Attribute
Coverage	Spec	[Bluetooth PHDT v1.6]
	Testable items	SRT Numeric 4; M
Test purpose		Check that: PHG includes Sensor Run-time Numeric Object – Unit-Code attribute in transcoder output. [AND] Unit-Code attribute value is set to MDC_DIM_HR
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043
Other PICS		
Initial condition		The PHG under test and the simulated PHD are in the Standby state.
Test procedure		 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The simulated PHD implements several BTLE characteristics. The characteristics of
		interest for this Test Case are:
		a. CGM Session Start Time (0x2AAA)
		i. Field: Session Start Time
		Format: {uint16, uint8, uint8, uint8, uint8}
		Value: not relevant
		ii. Field: Time Zone
		Format: sint8
		Value: not relevant
		iii. Field: DST-Offset
		Format: uint8
		Value: not relevant
		iv. Field: E2E-CRC
		This field is not included
		b. CGM Session Run Time (0x2AAB)
		i. Field: Session Run Time
		Format: uint16
		Value: not relevant
		ii. Field: E2E-CRC
		This field is not included
		3. The PHG under test initiates a discovery process (Scanning state), it discovers the

	simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed, force the PHG to read CGM Feature, CGM Session Start Time and CGM Session Run Time characteristics.
	Check in PHG transcoder output the Sensor Run-time Numeric Object – Unit-Code attribute
Pass/Fail criteria	In Step 5 the Sensor Run-time Numeric Object – Unit-Code attribute is present and its value is set to MDC_DIM_HR
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
	Unit-Code attribute is present:
	□ Object: Sensor Run-time Numeric Object
	☐ Attribute-id: MDC_ATTR_UNIT_CODE (2454)
	☐ Attribute-type: OID-Type
	☐ Attribute-value: MDC_DIM_HR or 2240 (dec) or 08 C0 (hex)
	b) WAN PCD-01 message
	PCD-01 message includes a segment like this with Unit-Code attribute value (check OBX-6):
	OBX n NM 8418040^MDC_CGM_SENSOR_RUN_TIME^MDC m.0.0.x [value] 264384^MDC_DIM_HR^MDC R [date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-025		
TP label Whitepaper. Sensor Run-time Numeric Object – Base-Offset-Time-Stamp Attributer		Fime-Stamp Attribute		
Coverage	Spec	[Bluetooth PHDT v1.6]		
	Testable items	SRT Numeric 5; M	BaseOffset 2; M	
Test purpos	se	Check that:		
		PHG includes Sensor Ru transcoder output.	ın-time Numeric Object Base-Offset-T	ime-Stamp attribute in
		[AND]		
		Base-Offset-Time-Stamp attribute is set to the correct value according to Base-Offset time stamp derivation		
Applicabilit	у	C_MAN_BLE_000 AND	C_MAN_BLE_002 AND C_MAN_BLE	=_043
Other PICS				
Initial condition The PHG under test and t		The PHG under test and	the simulated PHD are in the Standb	y state.
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization).		
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:		
		a. CGM Session Start Time (0x2AAA)		
		i. Field: Session Start Time		
		• Format	t: {uint16, uint8, uint8, uint8, uint8, uin	nt8}
		Value:	{2016, 5, 12, 16, 39, 27} (May 12, 20	16, 16:39:27)
		ii. Field: Time	Zone	

	Format: sint8
	 Value: 4 (UTC+1:00)
	iii. Field: DST-Offset
	Format: uint8
	 Value: 4 (Daylight Time (+1h))
	iv. Field: E2E-CRC
	This field is not included
	b. CGM Session Run Time (0x2AAB)
	i. Field: Session Run Time
	Format: uint16
	Value: not relevant
	ii. Field: E2E-CRC
	This field is not included
	 The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed, force the PHG to read CGM Feature, CGM Session Start Time and CGM Session Run Time characteristics.
	 Check in PHG transcoder output the Sensor Run-time Numeric Object – Base-Offset- Time-Stamp attribute
Pass/Fail criteria	In Step 5, the Sensor Run-time Numeric Object – Base-Offset-Time-Stamp is set to the CGM Session Start Time characteristic's Session Start Time (May 12, 2016, 16:39:27) field.
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
testing)	Base-Offset-Time-Stamp attribute is present:
	☐ Object: Sensor Run-time Numeric Object
	☐ Attribute-id: MDC_ATTR_TIME_STAMP_BO (2690)
	Attribute-type : SEQUENCE {bo-seconds (INT-U32), bo-fraction (INT-U16), bo-time-offset (INT-I16)}
	☐ Attribute-value :
	 CGM Session Start Time characteristic's Session Start Time field (May 12, 2016, 16:39:27)
	Note that the same Base-Offset-Time-Stamp can have different representations depending on bo-time-offset value. If it is set to 0 min then Base-Offset-Time-Stamp value shall be {3672059967, 0, 0}
	b) WAN PCD-01 message
	PCD-01 message includes a segment like this with Base-Offset-Time-Stamp attribute value (check OBX-14):
	OBX n NM 8418040^MDC_CGM_SENSOR_RUN_TIME^MDC m.0.0.x [value] 264384^MDC_DIM_HR^MDC R [value described in a) coded in DTM format]

TP Id TP/LP-PAN/PHG/PHDTW/CGM/BV-026		TP/LP-PAN/PHG/PHDTW/CGM/BV-026	
TP label Whitepaper. Sensor Run-time Numeric Object – Simple-Nu-C		Whitepaper. Sensor Run-time Numeric Object – Simple-Nu-Observed-Value Attribute	
Coverage	Spec	[Bluetooth PHDT v1.6]	
	Testable items	SRT Numeric 6; M	

Test purpose	Check that: PHG includes Sensor Run-time Numeric Object Simple-Nu-Observed-Value attribute in transcoder output. [AND]		
	Simple-Nu-Observed-Value attribute is set to the correct value.		
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043		
Other PICS			
Initial condition	The PHG under test and the simulated PHD are in the Standby state.		
Test procedure	 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are: 		
	a. CGM Session Start Time (0x2AAA)		
	i. Field: Session Start Time		
	Format: {uint16, uint8, uint8, uint8, uint8}		
	Value: not relevant		
	ii. Field: Time Zone		
	Format: sint8		
	Value: not relevant		
	iii. Field: DST-Offset		
	Format: uint8Value: not relevant		
	This field is not included		
	b. CGM Session Run Time (0x2AAB)		
	i. Field: Session Run Time		
	Format: uint16 (h)		
	• Value: 168		
	ii. Field: E2E-CRC		
	This field is not included		
	The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).		
	4. When the pairing has been completed, force the PHG to read CGM Feature, CGM Session Start Time and CGM Session Run Time characteristics.		
	 Check in PHG transcoder output the Sensor Run-time Numeric Object – Simple-Nu- Observed-Value attribute 		
Pass/Fail criteria	In Step 5 the Sensor Run-time Numeric Object – Simple-Nu-Observed-Value is set to 0x000000A8 (uint16 value converted to FLOAT-Type with an exponent of 0).		
Notes	Possible values in typical points of observation after transcoder output are:		
(To assist manual	a) IEEE 11073 Objects and Attributes		
testing)	Simple-Nu-Observed-Value attribute is present:		
	☐ Object: Sensor Run-time Numeric Object		
	☐ Attribute-id: MDC_ATTR_NU_VAL_OBS_SIMP (2646)		
	☐ Attribute-type : FLOAT		

 □ Attribute-value : 168 (dec) or 000000A8 (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Simple-Nu-Observed-Value attribute value (check OBX-5):
OBX n NM 8418040^MDC_CGM_SENSOR_RUN_TIME^MDC m.0.0.x 168 264384^MDC_DIM_HR^MDC R [date_time]

for this Test Case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Operand • Format: uint8 (min) • Value: not relevant iii. Field: E2E-CRC • This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to perform a CGM Communication Interval procedure using Op Code "Get CGM Communication Interval" (0x02) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code field). 5. The simulated PHD will respond with an indication including a "Communication Interval Response" Op Code (0x03) and an UINT8 containing the communication interval in minutes.	TP Id TP/LP-PAN/PHG/PHDTW/CGM/BV-027		TP/LP-PAN/PHG/PHDTW/CGM/BV-027		
Test purpose Check that: PHG does not include. Glucose Sampling Interval Numeric Object – Handle Attribute in transcoder output. [OR] If PHG includes. Glucose Sampling Interval Numeric Object – Handle attribute in transcoder output, then its value shall be different than 0 Applicability C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 Other PICS Initial condition The PHG under test and the simulated PHD are in the Standby state. 1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). PHD has a manually entered communication interval value stored. 2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Operand • Format: uint8 • Value: not relevant iii. Field: See CRC • This fleid is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to perform a CGM Communication Interval procedure using Op Code "Get CGM Communication Interval" (0x02) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code field). 5. The simulated PHD will respond with an indication including a "Communication Interval Response" Op Code "Get CGN Communication interval in minutes.	TP label		Whitepaper. Glucose Sampling Interval Numeric Object - Handle Attribute		
Test purpose Check that: PHG does not include .Glucose Sampling Interval Numeric Object – Handle Attribute in transcoder output. [OR] If PHG includes .Glucose Sampling Interval Numeric Object – Handle attribute in transcoder output, then its value shall be different than 0 Applicability C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 Other PICS Initial condition The PHG under test and the simulated PHD are in the Standby state. Test procedure 1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). PHD has a manually entered communication interval value stored. 2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Derand • Format: uint8 • Value: not relevant iii. Field: E2E-CRC • This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to perform a CGM Communication Interval procedure using Op Code "Get CGM Communication Interval" (0x02) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code field). 5. The simulated PHD will respond with an indication including a "Communication Interval Response" Op Code (0x03) and an UINT8 containing the communication interval in minutes.	Coverage	Spec	[Bluetooth PHDT v1.6]		
PHG does not include .Glucose Sampling Interval Numeric Object – Handle Attribute in transcoder output. [OR] If PHG includes .Glucose Sampling Interval Numeric Object – Handle attribute in transcoder output, then its value shall be different than 0 Applicability C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 Other PICS Initial condition The PHG under test and the simulated PHD are in the Standby state. Test procedure 1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). PHD has a manually entered communication interval value stored. 2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Operand • Format: uint8 (min) • Value: not relevant iii. Field: E2E-CRC • This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to perform a CGM Communication Interval procedure using Op Code "Cet CGM Communication Interval" (0x02) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code field). 5. The simulated PHD will respond with an indication including a "Communication Interval Response" Op Code (0x03) and an UINT8 containing the communication interval in minutes.			GSI Numeric 1; O		
Other PICS Initial condition The PHG under test and the simulated PHD are in the Standby state.	Test purpose		PHG does not include .Glucose Sampling Interval Numeric Object – Handle Attribute in transcoder output. [OR] If PHG includes .Glucose Sampling Interval Numeric Object – Handle attribute in transcoder output, then its value shall be different than 0		
Initial condition The PHG under test and the simulated PHD are in the Standby state. 1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). PHD has a manually entered communication interval value stored. 2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Operand • Format: uint8 (min) • Value: not relevant iii. Field: E2E-CRC • This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to perform a CGM Communication Interval procedure using Op Code "Get CGM Communication Interval" (0x02) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code field). 5. The simulated PHD will respond with an indication including a "Communication Interval Response" Op Code (0x03) and an UINT8 containing the communication interval in minutes.	Applicability	y	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043		
1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). PHD has a manually entered communication interval value stored. 2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Operand • Format: uint8 (min) • Value: not relevant iii. Field: E2E-CRC • This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to perform a CGM Communication Interval procedure using Op Code "Get CGM Communication Interval" (0x02) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code field). 5. The simulated PHD will respond with an indication including a "Communication Interval Response" Op Code (0x03) and an UINT8 containing the communication interval in minutes.	Other PICS				
specialization). PHD has a manually entered communication interval value stored. 2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Operand • Format: uint8 (min) • Value: not relevant iii. Field: E2E-CRC • This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to perform a CGM Communication Interval procedure using Op Code "Get CGM Communication Interval" (0x02) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code field). 5. The simulated PHD will respond with an indication including a "Communication Interval Response" Op Code (0x03) and an UINT8 containing the communication interval in minutes.	Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.		
6. Check in PHG transcoder output the Glucose Sampling Interval Numeric Object – Handle attribute	specialization). PHD has a manually entered communication interval value. The simulated PHD implements several BTLE characteristics. The characteristic several series case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Operand • Format: uint8 (min) • Value: not relevant iii. Field: E2E-CRC • This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it dissimulated PHD and it starts a pairing process with the simulated PHD (Interval procedure using Op Code "Get CGM Communication Interval" (in a write operation to the CGM Specific Ops Control Point characteristic's 5. The simulated PHD will respond with an indication including a "Communication minutes."		specialization). PHD has a manually entered communication interval value stored. 2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Operand • Format: uint8 (min) • Value: not relevant iii. Field: E2E-CRC • This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to perform a CGM Communication Interval procedure using Op Code "Get CGM Communication Interval" (0x02) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code field). 5. The simulated PHD will respond with an indication including a "Communication Interval Response" Op Code (0x03) and an UINT8 containing the communication interval in minutes. 6. Check in PHG transcoder output the Glucose Sampling Interval Numeric Object – Handle		
	Pass/Fail cr	iteria	In Step 6, the Glucose Sampling Interval Numeric Object – Handle attribute is not present or, if		

	it is present then its value is different than 0	
Notes (To assist manual testing)	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes	
	Handle attribute is not present, or if it is present then: Object: Glucose Sampling Interval Numeric Object Attribute-id: MDC_ATTR_ID_HANDLE (2337) Attribute-type: INT-U16	
	 Attribute-value: Any value different than 0 WAN PCD-01 message PCD-01 message does not include segments with Handle attribute value 	

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-028		
TP label		Whitepaper. Glucose Sampling Interval Numeric Object - Type Attribute		
Coverage	Spec	[Bluetooth PHDT v1.6]		
	Testable items	GSI Numeric 2; M		
Test purpos	se	Check that: PHG includes Glucose Sampling Interval Numeric Object – Type Attribute in transcoder output.		
		[OR] Type is set to MDC_PART_PHD_DM MDC_CGM_SENSOR_SAMPLE_INTERVAL		
Applicabilit	у	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043		
Other PICS				
Initial condi	ition	The PHG under test and the simulated PHD are in the Standby state.		
Test procedure		 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). PHD has a manually entered communication interval value stored. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: CGM Specific Ops Control Point (0x2AAC) Field: Op Code Format: uint8 Value: 0x03 Field: Operand Format: uint8 (min) Value: not relevant Field: E2E-CRC This field is not present The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). When the pairing has been completed, force the PHG to perform a CGM Communication Interval procedure using Op Code "Get CGM Communication Interval" (0x02) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code field). The simulated PHD will respond with an indication including a "Communication Interval Response" Op Code (0x03) and an UINT8 containing the communication interval in 		

	minutes.
	6. Check in PHG transcoder output the Glucose Sampling Interval Numeric Object – Type attribute
Pass/Fail criteria	In Step 6, the Glucose Sampling Interval Numeric Object – Type attribute is present and set to MDC_PART_PHD_DM MDC_CGM_SENSOR_SAMPLE_INTERVAL
Notes (To assist manual testing)	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Type attribute is not present, or if it is present then: Object: Glucose Sampling Interval Numeric Object Attribute-id: MDC_ATTR_ID_TYPE (2351) Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)} Attribute-value: partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) code: MDC_CGM_SENSOR_SAMPLE_INTERVAL or 29436 (dec) or 72 FC (hex) b) WAN PCD-01 message
	PCD-01 message includes a segment like this with Type attribute (check OBX-3): OBX n NM 8418044^MDC_CGM_SENSOR_SAMPLE_INTERVAL^MDC m.0.0.x [value] 264352^MDC_DIM_MIN^MDC R [date_time]

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-029_A			
TP label		Whitepaper. Glucose Sa	Whitepaper. Glucose Sampling Interval Numeric Object - Metric-Spec-Small Attribute 1		
Coverage	Spec	[Bluetooth PHDT v1.6]		_	
	Testable items	GSI Numeric 3; M	GSI Numeric 5; M		
Test purpose Check that: PHG includes Glucose Sampling Interval Numeric Object – Metric-Spec-Small transcoder output. [AND] Metric-Spec-Small is set to {0x604C} when the communication interval was upd by the user					
Applicability C_MAN_BLE_000 AND C_MAN_BLE_002 Other PICS		C_MAN_BLE_002 AND C_MAN_BLE	_043		
Initial condition The PHG under test and the simulated PHD are in the Standby		/ state.			
Test procedure		specialization). The 2. The simulated PHD for this Test Case is a. CGM Specific 0 i. Field: Op 0 • Forma • Value ii. Field: Ope	Ops Control Point (0x2AAC) Code at: uint8 : 0x03	nication interval value stored.	
		• Forma	at: uint8 (min)		

	Value: not relevant	
	iii. Field: E2E-CRC	
	This field is not present	
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).	
	4. When the pairing has been completed, force the PHG to perform a CGM Communication Interval procedure using Op Code "Get CGM Communication Interval" (0x02) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code field).	
	5. The simulated PHD will respond with an indication including a "Communication Interval Response" Op Code (0x03) and an UINT8 containing the communication interval in minutes.	
	6. Check in PHG transcoder output the Glucose Sampling Interval Numeric Object – Metric-Spec-Small attribute	
Pass/Fail criteria	In Step 6, the Glucose Sampling Interval Numeric Object – Metric-Spec-Small attribute is present and its value is {0x604C} (mss-avail-stored-data mss-upd-aperiodic mss-acc-agent-initiated mss-cat-manual mss-cat-setting)	
Notes	Possible values in typical points of observation after transcoder output are:	
(To assist manual testing)	a) IEEE 11073 Objects and Attributes	
testing)	Metric-Spec-Small attribute is present:	
	□ Object: Glucose Sampling Interval Numeric Object	
	☐ Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630)	
	☐ Attribute-type: BITS-16	
	Attribute-value: 0x604C (hex) or BITS mss-avail-stored-data (1), mss-upd-aperiodic(2), mss-acc-agent-initiated(9), mss-cat-manual(12), mss-cat-setting(13) set to TRUE and remaining BITS set to FALSE	
	b) WAN PCD-01 message	
	PCD-01 message does not include segments with Metric-Spec-Small attribute value	

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-029_B			
TP label		Whitepaper. Glucose Sampling Interval Numeric Object - Metric-Spec-Small Attribute 2			
Coverage	Spec	[Bluetooth PHDT v1.6]			
	Testable items	GSI Numeric 3; M	GSI Numeric 4; M		
Test purpos	se	Check that:			
		PHG includes Glucose Sampling Interval Numeric Object – Metric-Spec-Small attribute in transcoder output.			
		[AND]			
		Metric-Spec-Small is set been executed	to {0x6044} when the CGM Commu	unication Interval procedure has	
Applicabilit	у	C_MAN_BLE_000 AND	C_MAN_BLE_002 AND C_MAN_BI	_E_043 AND C_MAN_BLE_044	
Other PICS					
Initial cond	ition	The PHG under test and	the simulated PHD are in the Stand	lby state.	
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization).			
		2. The simulated PHD implements several BTLE characteristics. The characteristic of interest			

	for this Test Case is:
	a. CGM Specific Ops Control Point (0x2AAC)
	i. Field: Op Code
	Format: uint8
	• Value: 0x03
	ii. Field: Operand
	Format: uint8 (min)
	Value: not relevant
	iii. Field: E2E-CRC
	This field is not present
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed, force the PHG to set the communication interval by performing a CGM Communication Interval procedure using Op Code "Set CGM Communication Interval" (0x01) followed by a valid UINT8 value in minutes (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Operand fields, respectively). The simulated PHD will respond with an indication including a Response Op Code value of "Success".
	5. Then force the PHG to perform a CGM Communication Interval procedure using Op Code "Get CGM Communication Interval" (0x02) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code field).
	6. The simulated PHD will respond with an indication including a "Communication Interval Response" Op Code (0x03) and an UINT8 containing the entered communication interval in minutes.
	7. Check in the PHG transcoder output the Glucose Sampling Interval Numeric Object – Metric-Spec-Small attribute
Pass/Fail criteria	In Step 7, the Sensor Calibration Numeric Object – Metric-Spec-Small attribute is present and its value is {0x6044} (mss-avail-stored-data mss-upd-aperiodic mss-acc-agent-initiated mss-cat-setting)
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
testing)	Metric-Spec-Small attribute is present:
	□ Object: Glucose Sampling Interval Numeric Object
	☐ Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630)
	☐ Attribute-type: BITS-16
	Attribute-value: 0x6044 (hex) or BITS mss-avail-stored-data (1), mss-upd-aperiodic(2), mss-acc-agent-initiated(9), mss-cat-setting(13) set to TRUE and remaining BITS set to FALSE
	b) WAN PCD-01 message
	PCD-01 message does not include segments with Metric-Spec-Small attribute value

TP ld		TP/LP-PAN/PHG/PHDTW/CGM	/BV-030	
TP label		Whitepaper. Glucose Sampling Interval Numeric Object – Unit-Code Attribute		
Coverage Spec		[Bluetooth PHDT v1.6]		
	Testable items	GSI Numeric 6; M		
Test purpose		Check that:		

	PHG includes Glucose Sampling Interval Numeric – Unit-Code attribute in transcoder output.
	[AND]
	Unit-Code attribute value is set to MDC_DIM_MIN
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043
Other PICS	
Initial condition	The PHG under test and the simulated PHD are in the Standby state.
Test procedure	The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). PHD has a manually entered communication interval value stored.
	2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is:
	a. CGM Specific Ops Control Point (0x2AAC)
	i. Field: Op Code
	Format: uint8
	• Value: 0x03
	ii. Field: Operand
	Format: uint8 (min)
	Value: not relevant
	iii. Field: E2E-CRC
	This field is not present
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed, force the PHG to perform a CGM Communication Interval procedure using Op Code "Get CGM Communication Interval" (0x02) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code field).
	5. The simulated PHD will respond with an indication including a "Communication Interval Response" Op Code (0x03) and an UINT8 containing the communication interval in minutes.
	6. Check in the PHG transcoder output the Glucose Sampling Interval Numeric Object – Unit-Code attribute
Pass/Fail criteria	In Step 6 the Glucose Sampling Interval Numeric Object – Unit-Code attribute is present and its value is set to MDC_DIM_MIN
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual	a) IEEE 11073 Objects and Attributes
testing)	Unit-Code attribute is present:
	□ Object: Glucose Sampling Interval Numeric Object
	☐ Attribute-id: MDC_ATTR_UNIT_CODE (2454)
	☐ Attribute-type: OID-Type
	☐ Attribute-value: MDC_DIM_MIN or 2208 (dec) or 08 A0 (hex)
	b) WAN PCD-01 message
	PCD-01 message includes a segment like this with Unit-Code attribute value (check OBX-6):
	OBX n NM 8418044^MDC_CGM_SENSOR_SAMPLE_INTERVAL^MDC m.0.0.x [value] 264352^MDC_DIM_MIN^MDC R [date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-031			
TP label		Whitepaper. Glucose Sampling Interval Numeric Object – Base-Offset-Time-Stamp Attribute			
Coverage	Spec	[Bluetooth PHDT v1.6]			
	Testable items	GSI Numeric 7; M BaseOffset 1; M			
Test purpos	e	Check that:			
		PHG includes Glucose Sampling Interval Numeric Object Base-Offset-Time-Stamp attribute in transcoder output.			
		[AND]			
		Base-Offset-Time-Stamp attribute is set to the correct value according to Base-Offset time stamp derivation (Base-Offset-Time-Stamp attribute will be derived from the collector's time at the time of collection)			
Applicability	/	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043			
Other PICS					
Initial condition		The PHG under test and the simulated PHD are in the Standby state.			
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has a manually entered communication interval value stored.			
		2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is:			
		a. CGM Specific Ops Control Point (0x2AAC)			
		i. Field: Op Code			
		Format: uint8			
		Value: 0x03			
		ii. Field: Operand			
		Format: uint8 (min)			
		Value: not relevant			
		iii. Field: E2E-CRC			
		This field is not present			
		3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).			
		4. When the pairing has been completed, force the PHG to perform a CGM Communication Interval procedure using Op Code "Get CGM Communication Interval" (0x02) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code field).			
		5. The simulated PHD will respond with an indication including a "Communication Interval Response" Op Code (0x03) and an UINT8 containing the communication interval in minutes.			
		Check in PHG transcoder output the Glucose Sampling Interval Numeric Object – Base- Offset-Time-Stamp attribute			
Pass/Fail criteria In Step 6 the Glucose Sampling Interval Numeric Object – Base-Offset-Time-present and it is set to the collector's time at the time of collection.		In Step 6 the Glucose Sampling Interval Numeric Object – Base-Offset-Time-Stamp attribute is present and it is set to the collector's time at the time of collection.			
Notes		Possible values in typical points of observation after transcoder output are:			
(To assist m testing)	nanual	a) IEEE 11073 Objects and Attributes			
.comig)		Base-Offset-Time-Stamp attribute is present:			
		□ Object: Glucose Sampling Interval Numeric Object			
		☐ Attribute-id: MDC_ATTR_TIME_STAMP_BO (2690)			

		Attribute-type : SEQUENCE {bo-seconds (INT-U32), bo-fraction (INT-U16), bo-time-offset (INT-I16)}
		Attribute-value: collector's time at the time of collection.
b)	WA	N PCD-01 message
		D-01 message includes a segment like this with Base-Offset-Time-Stamp attribute ue (check OBX-14):
		OBX n NM 8418044^MDC_CGM_SENSOR_SAMPLE_INTERVAL^MDC m.0.0.x [value] 264352^MDC_DIM_MIN^MDC R [value described in a) coded in DTM format]

TP label Whitepaper. Glucose Sampling Interval Numeric Object – Basic-Nu-Observed-Value Attribute Coverage Spec [Bluetooth PHDT v1.6] Testable items Check that: PHG includes Glucose Sampling Interval Numeric Object Basic-Nu-Observed-Value attribute in transcoder output. [AND] Basic-Nu-Observed-Value attribute is set to the correct value. Applicability C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 Other PICS Initial condition The PHG under test and the simulated PHD are in the Standby state. Test procedure 1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has a manually entered communication interval value stored.						
Coverage Spec [Bluetooth PHDT v1.6]	TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-032			
Testable items Check that: PHG includes Glucose Sampling Interval Numeric Object Basic-Nu-Observed-Value attribute in transcoder output. [AND] Basic-Nu-Observed-Value attribute is set to the correct value. Applicability C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 Other PICS Initial condition The PHG under test and the simulated PHD are in the Standby state. Test procedure 1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has a manually entered communication interval value stored. 2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Operand • Format: uint8 (min) • Value: 15 iii. Field: E2E-CRC • This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).	TP label	T	Whitepaper. Glucose Sampling Interval Numeric Object – Basic-Nu-Observed-Value Attribute			
Test purpose Check that: PHG includes Glucose Sampling Interval Numeric Object Basic-Nu-Observed-Value attribute in transcoder output. [AND] Basic-Nu-Observed-Value attribute is set to the correct value. Applicability C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 Other PICS Initial condition The PHG under test and the simulated PHD are in the Standby state. Test procedure 1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has a manually entered communication interval value stored. 2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Operand • Format: uint8 (min) • Value: 15 iii. Field: E2E-CRC • This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).	Coverage	Spec	[Bluetooth PHDT v1.6]			
PHG includes Glucose Sampling Interval Numeric Object Basic-Nu-Observed-Value attribute in transcoder output. [AND] Basic-Nu-Observed-Value attribute is set to the correct value. Applicability C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 Other PICS Initial condition The PHG under test and the simulated PHD are in the Standby state. Test procedure 1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has a manually entered communication interval value stored. 2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Operand • Format: uint8 (min) • Value: 15 iii. Field: E2E-CRC • This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).			GSI Numeric 8; M			
transcoder output. [AND] Basic-Nu-Observed-Value attribute is set to the correct value. Applicability C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 Other PICS Initial condition The PHG under test and the simulated PHD are in the Standby state. 1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has a manually entered communication interval value stored. 2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Operand • Format: uint8 (min) • Value: 15 iii. Field: E2E-CRC • This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).	Test purpose	е	Check that:			
Basic-Nu-Observed-Value attribute is set to the correct value. Applicability C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 Other PICS Initial condition The PHG under test and the simulated PHD are in the Standby state. 1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has a manually entered communication interval value stored. 2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Operand • Format: uint8 (min) • Value: 15 iii. Field: E2E-CRC • This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).			· ·			
Applicability C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 Other PICS Initial condition The PHG under test and the simulated PHD are in the Standby state. 1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has a manually entered communication interval value stored. 2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Operand • Format: uint8 (min) • Value: 15 iii. Field: E2E-CRC • This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).						
Other PICS Initial condition The PHG under test and the simulated PHD are in the Standby state. 1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has a manually entered communication interval value stored. 2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Operand • Format: uint8 (min) • Value: 15 iii. Field: E2E-CRC • This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).			Basic-Nu-Observed-Value attribute is set to the correct value.			
Initial condition The PHG under test and the simulated PHD are in the Standby state. 1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has a manually entered communication interval value stored. 2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Operand • Format: uint8 (min) • Value: 15 iii. Field: E2E-CRC • This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).	Applicability	1	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043			
Test procedure 1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has a manually entered communication interval value stored. 2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Operand • Format: uint8 (min) • Value: 15 iii. Field: E2E-CRC • This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).	Other PICS					
specialization). The PHD has a manually entered communication interval value stored. 2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Operand • Format: uint8 (min) • Value: 15 iii. Field: E2E-CRC • This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).	Initial condition		The PHG under test and the simulated PHD are in the Standby state.			
 Interval procedure using Op Code "Get CGM Communication Interval" (0x02) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code field). 5. The simulated PHD will respond with an indication including a "Communication Interval Response" Op Code (0x03) and an UINT8 containing the communication interval in minutes. 	Test procedure		specialization). The PHD has a manually entered communication interval value stored. 2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this Test Case is: a. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code • Format: uint8 • Value: 0x03 ii. Field: Operand • Format: uint8 (min) • Value: 15 iii. Field: E2E-CRC • This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to perform a CGM Communication Interval procedure using Op Code "Get CGM Communication Interval" (0x02) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code field). 5. The simulated PHD will respond with an indication including a "Communication Interval Response" Op Code (0x03) and an UINT8 containing the communication interval in			
			6. Check in PHG transcoder output the Glucose Sampling Interval Numeric Object – Basic-			

	Nu-Observed-Value attribute	
Pass/Fail criteria	In Step 6 the Glucose Sampling Interval Numeric Object – Basic-Nu-Observed-Value attribute is present and it is set to 0x000F (SFLOAT-Type conversion of uint8 with exponent of 0)	
Notes (To assist manual testing)	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Basic-Nu-Observed-Value attribute is present: Object: Glucose Sampling Interval Numeric Object Attribute-id: MDC_ATTR_NU_VAL_OBS_BASIC (2636) Attribute-type: SFLOAT Attribute-value: 15 (dec) or 000F (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Basic-Nu-Observed-Value attribute value (check OBX-5): OBX n NM 8418044^MDC_CGM_SENSOR_SAMPLE_INTERVAL^MDC m.0.0.x 15 264352^MDC_DIM_MIN^MDC R [date_time]	

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-033			
TP label		Whitepaper. Glucose trend Numeric Object - Handle Attribute			
Coverage	Spec	[Bluetooth PHDT v1.6]			
	Testable items	GT Numeric 1; O			
Test purpose		Check that:			
		PHG does not include Glucose trend Numeric Object – Handle Attribute in transcoder output.			
		[OR]			
		If PHG includes Glucose trend Numeric Object – Handle attribute in transcoder output, then its value shall be different than 0			
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043			
Other PICS					
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.			
Test procedure		1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored.			
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:			
		a. CGM Feature (0x2AA8)			
		i. Field: CGM Feature			
		Format: 24 bit			
		 Value: 0000 0000 1000 0000 0000 0000 (MSB → LSB). CGM trend information supported. 			
		ii. Field: CGM Type			
		Format: 4 bit			
		Value: not relevant			

	iii. Field: CGM Sample Location
	Format: 4 bit
	Value: not relevant
	iv. Field: E2E-CRC
	Format: uint16
	Value: not relevant
	b. CGM Measurement (0x2AA7)
	i. Field: Size
	Format: uint8
	ii. Field: Flags
	Format: 8 bit
	 Value: 0000 0001 (MSB → LSB). CGM Trend information present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
	iii. Field: CGM Glucose Concentration (mg/dL)
	Format: SFLOAT
	Value: not Relevant
	iv. Field: Time Offset
	Format: uint16
	Value: not relevant
	v. Field: Sensor Status Annunciation
	This field is not included
	vi. Field: CGM Trend Information (mg/dL)/min
	Format: SFLOAT
	Value: not relevant
	vii. Field: CGM Quality
	This field is not included
	viii. Field: E2E-CRC
	This field is not included
	 The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	 When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.
	5. The simulated PHD sends the Measurement to the PHG under test.
	6. Check in the PHG transcoder output the Glucose trend Numeric Object- Handle attribute
	7. The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test.
	8. Check in the PHG transcoder output the Glucose trend Numeric Object – Handle attribute
Pass/Fail criteria	In Step 6 and 8, the Glucose Numeric Object – Handle attribute is not present or, if it is present then its value is different than 0
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual	
testing)	 a) IEEE 11073 Objects and Attributes Handle attribute is not present, or if it is present then:
	Handle attribute is not present, or in it is present then.

	□ Object: Glucose trend Numeric Object	
	☐ Attribute-id: MDC_ATTR_ID_HANDLE (2337)	
	☐ Attribute-type: INT-U16	
	☐ Attribute-value: Any value different than 0	
b)) WAN PCD-01 message	
	PCD-01 message does not include segments with Handle attribute value	

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-034		
TP label		Whitepaper. Glucose trend Numeric Object - Type Attribute		
Coverage	Spec	[Bluetooth PHDT v1.6]		
	Testable items	GT Numeric 2; M		
Test purpos	e	Check that: PHG includes Glucose trend Numeric Object – Type attribute in transcoder output. [AND] Type is set to MDC_PART_PHD_DM MDC_CONC_GLU_TREND		
Applicability	/	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043		
Other PICS				
Initial condition		The PHG under test and the simulated PHD are in the Standby state.		
Test proced	ure	 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are: CGM Feature (0x2AA8) Field: CGM Feature Format: 24 bit Value: 0000 0000 1000 0000 0000 0000 (MSB → LSB). CGM trend information supported. Field: CGM Type Format: 4 bit Value: not relevant Field: CGM Sample Location Format: 4 bit Value: not relevant Field: E2E-CRC Format: uint16 Value: not relevant CGM Measurement (0x2AA7) Field: Size 		

	ii. Field: Flags	
	Format: 8 bit	
	 Value: 0000 0001 (MSB → LSB). CGM Trend information present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present. 	
	iii. Field: CGM Glucose Concentration (mg/dL)	
	Format: SFLOAT	
	Value: not Relevant	
	iv. Field: Time Offset	
	Format: uint16	
	Value: not relevant	
	v. Field: Sensor Status Annunciation	
	This field is not included	
	vi. Field: CGM Trend Information (mg/dL)/min	
	Format: SFLOAT	
	Value: not relevant	
	vii. Field: CGM Quality	
	This field is not included	
	viii. Field: E2E-CRC	
	This field is not included	
	 The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 	
	 When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics. 	
	5. The simulated PHD sends the Measurement to the PHG under test.	
	6. Check in the PHG transcoder output the Glucose trend Numeric Object- Type attribute	
	7. The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test.	
	8. Check in PHG transcoder output the Glucose trend Numeric Object – Type attribute	
Pass/Fail criteria	In Step 6 and 8, the Glucose Numeric Object – Type attribute is present and its value is MDC_PART_PHD_DM MDC_CONC_GLU_TREND	
Notes	Possible values in typical points of observation after transcoder output are:	
(To assist manual testing)	a) IEEE 11073 Objects and Attributes	
3,	Type attribute is not present, or if it is present then:	
	□ Object: Glucose trend Numeric Object	
	☐ Attribute-id: MDC_ATTR_ID_TYPE (2351)	
	☐ Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)}	
	☐ Attribute-value:	
	 partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) 	
	code: MDC_CONC_GLU_TREND or 29400 (dec) or 72 D8 (hex)	
	b) WAN PCD-01 message	
	PCD-01 message includes a segment like this with Type attribute (check OBX-3):	
	OBX n NM 8418008^MDC_CONC_GLU_TREND^MDC m.0.0.x [value] 266868^MDC_DIM_MILLI_G_PER_DL_PER_MIN^MDC R [date_time]	

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-035			
TP label		Whitepaper. Glucose trend Numeric Object - Metric-Spec-Small Attribute			
Coverage	Spec	[Bluetooth PHDT v1.6]			
	Testable items	GT Numeric 3; M			
Test purpose		Check that:			
		PHG includes Glucose trend Numeric Object – Metric-Spec-Small attribute in transcoder output.			
		[AND]			
		Metric-Spec-Small is set to {0xF042}.			
Applicability	y	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043			
Other PICS	<u> </u>				
Other PICS					
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.			
Test proced	ure	1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored.			
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:			
		a. CGM Feature (0x2AA8)			
		i. Field: CGM Feature			
		Format: 24 bit			
		 Value: 0000 0000 1000 0000 0000 (MSB → LSB). CGM trend information supported. 			
		ii. Field: CGM Type			
		Format: 4 bit			
		Value: not relevant			
		iii. Field: CGM Sample Location			
		Format: 4 bit			
		Value: not relevant			
		iv. Field: E2E-CRC			
		Format: uint16			
		Value: not relevant			
		b. CGM Measurement (0x2AA7)			
		i. Field: Size			
		• Format: uint8			
		ii. Field: Flags			
		Format: 8 bit			
		 Value: 0000 0001 (MSB → LSB). CGM Trend information present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present. 			
		iii. Field: CGM Glucose Concentration (mg/dL)			

	Format: SFLOAT
	Value: not Relevant
	iv. Field: Time Offset
	Format: uint16
	Value: not relevant
	v. Field: Sensor Status Annunciation
	This field is not included
	vi. Field: CGM Trend Information (mg/dL)/min
	Format: SFLOAT
	Value: not relevant
	vii. Field: CGM Quality
	This field is not included
	viii. Field: E2E-CRC
	This field is not included
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.
	5. The simulated PHD sends the Measurement to the PHG under test.
	Check in the PHG transcoder output the Glucose trend Numeric Object– Metric-Spec- Small attribute
	7. The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test.
	Check in PHG transcoder output the Glucose trend Numeric Object – Metric-Spec-Small attribute
Pass/Fail criteria	In Step 6 and 8, the Glucose trend Numeric Object – Metric-Spec-Small attribute is present and its value is {0xF042} (mss-avail-intermittent mss-upd-aperiodic mss-msmt-aperiodic mss-acc-agent-initiated mss-cat-calculation mss-avail-stored-data)
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual	a) IEEE 11073 Objects and Attributes
testing)	Metric-Spec-Small attribute is present:
	□ Object: Glucose trend Numeric Object
	☐ Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630)
	☐ Attribute-type: BITS-16
	Attribute-value: 0xF042 (hex) or BITS mss-avail-intermittent (0), mss-avail-stored-data (1), mss-upd-aperiodic (2), mss-msmt-aperiodic (3), mss-acc-agent-initiated(9), mss-cat-calculation(14) set to TRUE and remaining BITS set to FALSE
	b) WAN PCD-01 message
	PCD-01 message does not include segments with Metric-Spec-Small attribute value
	· · · · · · · · · · · · · · · · · · ·

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-036		
TP label Whitepaper. Glucose trend Numeric Object – Measurement-Status Attribute		tus Attribute		
Coverage	Spec	[Bluetooth PHDT v1.6]		
	Testable	GT Numeric 4; O		

items			
Test purpose	Check that:		
	PHG may include Glucose trend Numeric Object – Measurement-Status attribute in transcoder output.		
	[AND] If present, and related to Sensor Status Annunciation field, Measurement-Status is set to the correct value.		
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043		
	C_IWAN_BEE_000 AND C_IWAN_BEE_002 AND C_IWAN_BEE_043		
Other PICS			
Initial condition	The PHG under test and the simulated PHD are in the Standby state.		
Test procedure	 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored. 		
	The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:		
	a. CGM Feature (0x2AA8)		
	i. Field: CGM Feature		
	Format: 24 bit		
	 Value: 0000 0000 1000 0000 0001 0000 (MSB → LSB). CGM trend information supported, rate of increase/decrease alert supported. 		
	ii. Field: CGM Type		
	Format: 4 bit		
	Value: not relevant		
	iii. Field: CGM Sample Location		
	Format: 4 bit		
	Value: not relevant		
	iv. Field: E2E-CRC		
	Format: uint16		
	Value: not relevant		
	b. CGM Measurement (0x2AA7)		
	i. Field: Size		
	Format: uint8		
	ii. Field: Flags		
	Format: 8 bit		
	 Value: 1000 0001 (MSB → LSB). CGM Trend information present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) present. 		
	iii. Field: CGM Glucose Concentration (mg/dL)		
	Format: SFLOAT		
	Value: not Relevant		
	iv. Field: Time Offset		
	Format: uint16		
	Value: not relevant		

	v. Field: Sensor Status Annunciation
	Format: 8 bit
	 Value: 0001 0000 (MSB → LSB) (sensor rate of decrease exceeded).
	vi. Field: CGM Trend Information (mg/dL)/min
	Format: SFLOAT
	Value: not relevant
	vii. Field: CGM Quality
	This field is not included
	viii. Field: E2E-CRC
	This field is not included
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.
	5. The simulated PHD sends the Measurement to the PHG under test.
	6. Check in the PHG transcoder output the Glucose trend Numeric Object– Measurement- Status attribute
	7. The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test.
	8. Check in the PHG transcoder output the Glucose trend Numeric Object – Measurement- Status attribute
	9. The simulated PHD sends a Measurement to PHG under test with Sensor Status Annunciation field set to 0010 0000 (MSB → LSB), sensor rate of increase exceeded (bit 21). All remaining fields remain equal to those in step 2. The simulated PHD also deletes all stored records in RACP and stores an identical measurement. Repeat steps 5-7.
Pass/Fail criteria	 In Step 6 and 8 the Glucose trend Numeric Object – Measurement-Status attribute, if present, is set to "measurement outside threshold boundaries" (bit 14).
	In Step 9 the Glucose trend Numeric Object – Measurement-Status attribute, if present is set to "measurement outside threshold boundaries" (bit 14) for both cases.
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual	a) IEEE 11073 Objects and Attributes
testing)	If Measurement-Status attribute is present:
	□ Object: Glucose trend Numeric Object
	☐ Attribute-id: MDC_ATTR_MSMT_STAT (2375)
	☐ Attribute-type: BITS16
	☐ Attribute-value (Steps 6 & 8): "measurement outside threshold boundaries" (0x0020)
	☐ Attribute-value (Step 9): "measurement outside threshold boundaries" (0x0020)
	b) WAN PCD-01 message
	If Measurement-Status is present, PCD-01 message includes a segment like this with Measurement-Status attribute value (check OBX-8 and OBX-11):
	• Steps 6 & 8
	OBX n NM 8418008^MDC_CONC_GLU_TREND^MDC m.0.0.x [value] [266868^MDC_DIM_MILLI_G_PER_DL_PER_MIN^MDC ALACT R [date_time]
	• Step 9
	OBX n NM 8418008^MDC_CONC_GLU_TREND^MDC m.0.0.x [value] [266868^MDC_DIM_MILLI_G_PER_DL_PER_MIN^MDC ALACT R [date_time]

TP Id TP/LP-PAN/PHG/PHDTW/CGM/BV-037		TP/LP-PAN/PHG/PHDTW/CGM/BV-037		
TP label Whitepaper. Glucose trend Numeric Object – Unit-Code Attribute		Whitepaper. Glucose trend Numeric Object – Unit-Code Attribute		
Coverage	Spec	[Bluetooth PHDT v1.6]		
	Testable items	GT Numeric 5; M		
[AND]		PHG includes Glucose trend Numeric Object – Unit-Code attribute in transcoder output.		
Applicability	/	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043		
Other PICS				
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.		
Test procedure 1. The simulated PHD is configured with a Continuous Glucose Monitoring I specialization), it has a CGM measurement ready to be sent and it is in the state (it is discoverable). The simulated PHD also has an identical CGM representation temporarily stored.		specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored.		
		a. CGM Feature (0x2AA8)		
		i. Field: CGM Feature		
		Format: 24 bit		
		 Value: 0000 0000 1000 0000 0000 (MSB → LSB). CGM trend information supported. 		
		ii. Field: CGM Type		
		• Format: 4 bit		
		Value: not relevant		
		iii. Field: CGM Sample Location		
		Format: 4 bit		
		Value: not relevant		
		iv. Field: E2E-CRC		
		• Format: uint16		
		Value: not relevant		
		b. CGM Measurement (0x2AA7)		
		i. Field: Size		
		• Format: uint8		
		ii. Field: Flags		
		Format: 8 bit		
		 Value: 0000 0001 (MSB → LSB). CGM Trend information present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present. 		
		iii. Field: CGM Glucose Concentration (mg/dL)		
		Format: SFLOAT		

	Value: not relevant	
	iv. Field: Time Offset	
	Format: uint16	
	Value: not relevant	
	v. Field: Sensor Status Annunciation	
	This field is not included	
	vi. Field: CGM Trend Information (mg/dL)/min	
	Format: SFLOAT	
	Value: not relevant	
	vii. Field: CGM Quality	
	This field is not included	
	viii. Field: E2E-CRC	
	This field is not included	
	 The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 	
	4. When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.	
	5. The simulated PHD sends the Measurement to the PHG under test.	
	6. Check in PHG transcoder output the Glucose trend Numeric Object– Unit-Code attribute	
	7. The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test.	
	8. Check in PHG transcoder output the Glucose trend Numeric Object – Unit-Code attribute	
Pass/Fail criteria	In Step 6 and 8 the Glucose trend Numeric Object – Unit-Code attribute is present and its value is set to MDC_DIM_MILLI_G_PER_DL_PER_MIN	
Notes	Possible values in typical points of observation after transcoder output are:	
(To assist manual testing)	a) IEEE 11073 Objects and Attributes	
3,	Unit-Code attribute is present:	
	☐ Object: Glucose trend Numeric Object	
	☐ Attribute-id: MDC_ATTR_UNIT_CODE (2454)	
	☐ Attribute-type: OID-Type	
	☐ Attribute-value: MDC_DIM_MILLI_G_PER_DL_PER_MIN or 4724 (dec) or 12 74 (hex)	
	b) WAN PCD-01 message	
	PCD-01 message includes a segment like this with Unit-Code attribute value (check OBX-6):	
	OBX n NM 8418008^MDC_CONC_GLU_TREND^MDC m.0.0.x [value] 266868^MDC_DIM_MILLI_G_PER_DL_PER_MIN^MDC R [date_time]	

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-038		
TP label		Whitepaper. Glucose trend Numeric Object – Base-Offset-Time-Stamp Attribute		Stamp Attribute
Coverage	Spec	[Bluetooth PHDT v1.6]		
	Testable items	GT Numeric 6; M	BaseOffset 3; M	

Test purpose	Check that:				
rest purpose	PHG includes Glucose trend Numeric Object Base-Offset-Time-Stamp attribute in transcoder				
	output.				
	[AND]				
	Base-Offset-Time-Stamp attribute is set to the correct value according to Base-Offset time stamp derivation				
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043				
Other PICS					
Initial condition	The PHG under test and the simulated PHD are in the Standby state.				
Test procedure	The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored.				
	2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:				
	a. CGM Feature (0x2AA8)				
	i. Field: CGM Feature				
	Format: 24 bit				
	 Value: 0000 0000 1000 0000 0000 (MSB → LSB). CGM trend information supported. 				
	ii. Field: CGM Type				
	Format: 4 bit				
	Value: not relevant				
	iii. Field: CGM Sample Location				
	Format: 4 bit				
	Value: not relevant				
	iv. Field: E2E-CRC				
	Format: uint16				
	Value: not relevant				
	b. CGM Measurement (0x2AA7)				
	i. Field: Size				
	Format: uint8				
	ii. Field: Flags				
	Format: 8 bit				
	 Value: 0000 0001 (MSB → LSB). CGM Trend information present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present. 				
	iii. Field: CGM Glucose Concentration (mg/dL)				
	Format: SFLOAT				
	Value: not relevant				
	iv. Field: Time Offset				
	Format: uint16				
	Value: not relevant				
	v. Field: Sensor Status Annunciation				

	This field is not included	
	vi. Field: CGM Trend Information (mg/dL)/min	
	Format: SFLOAT	
	Value: not relevant	
	vii. Field: CGM Quality	
	This field is not included	
	viii. Field: E2E-CRC	
	This field is not included	
	c. CGM Session Start Time (0x2AAA)	
	i. Field: Session Start Time	
	Format: {uint16, uint8, uint8, uint8, uint8}	
	• Value: {2016, 5, 12, 16, 39, 27} (May 12, 2016, 16:39:27)	
	ii. Field: Time Zone	
	Format: sint8	
	• Value: 4 (UTC+1:00)	
	iii. Field: DST-Offset	
	Format: uint8	
	Value: 4 (Daylight Time (+1h))	
	iv. Field: E2E-CRC	
	This field is not included	
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).	
	When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.	
	5. The simulated PHD sends the Measurement to the PHG under test.	
	6. Check in the PHG transcoder output the Glucose trend Numeric Object– Base-Offset- Time-Stamp attribute	
	7. The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test.	
	Check in PHG transcoder output the Glucose trend Numeric Object – Base-Offset-Time-Stamp attribute	
Pass/Fail criteria	In Step 6 and 8, the Glucose Numeric Object – Base-Offset-Time-Stamp is set to the addition of CGM Session Start Time characteristic's Session Start Time (May 12, 2016, 16:39:27) field plus CGM Measurement characteristic's Time Offset field (20min).	
Notes	Possible values in typical points of observation after transcoder output are:	
(To assist manual	a) IEEE 11073 Objects and Attributes	
testing)	Base-Offset-Time-Stamp attribute is present:	
	□ Object: Glucose trend Numeric Object	
	☐ Attribute-id: MDC_ATTR_TIME_STAMP_BO (2690)	
	Attribute-type: SEQUENCE {bo-seconds (INT-U32), bo-fraction (INT-U16), bo-time-offset (INT-I16)}	
	☐ Attribute-value : addition of	
	CGM Session Start Time characteristic's Session Start Time field (May 12, 2016, 16:39:27)	
	CGM Measurement characteristic's Time Offset field (20m)	

Note that the same Base-Offset-Time-Stamp can have different representations depending on bo-time-offset value. If it is set to 20 min (CGM Measurement characteristic's Time
Offset field), then Base-Offset-Time-Stamp value shall be {3672059967, 0, 20}
b) WAN PCD-01 message
PCD-01 message includes a segment like this with Base-Offset-Time-Stamp attribute value (check OBX-14):
OBX n NM 8418008^MDC_CONC_GLU_TREND^MDC m.0.0.x [value] 266868^MDC_DIM_MILLI_G_PER_DL_PER_MIN^MDC R [value described in a) coded in DTM format]

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-039			
TP label		Whitepaper. Glucose trend Numeric Object - Basic-Nu-Observed-Value Attribute			
Coverage	Spec	[Bluetooth PHDT v1.6]			
	Testable items	GT Numeric 7; M			
Test purpos	se	Check that:			
		PHG includes Glucose trend Numeric Object Basic-Nu-Observed-Value attribute in transcoder output.			
		[AND]			
		Basic-Nu-Observed-Value attribute is set to the correct value.			
Applicabilit	у	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043			
Other PICS					
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.			
Test procedure		 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are: 			
		a. CGM Feature (0x2AA8)			
		i. Field: CGM Feature			
		Format: 24 bit			
		 Value: 0000 0000 1000 0000 0000 (MSB → LSB). CGM trend information supported. 			
		ii. Field: CGM Type			
		Format: 4 bit			
		Value: not relevant			
		iii. Field: CGM Sample Location			
		Format: 4 bit			
		Value: not relevant			
		iv. Field: E2E-CRC			
		Format: uint16			
		Value: not relevant			
		b. CGM Measurement (0x2AA7)			

	i. Field: Size	
	Format: uint8	
	ii. Field: Flags	
	Format: 8 bit	
	 Value: 0000 0001 (MSB → LSB). CGM Trend information present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present. 	
	iii. Field: CGM Glucose Concentration (mg/dL)	
	Format: SFLOAT	
	Value: not relevant	
	iv. Field: Time Offset	
	Format: uint16	
	Value: not relevant	
	v. Field: Sensor Status Annunciation	
	This field is not included	
	vi. Field: CGM Trend Information (mg/dL)/min	
	Format: SFLOAT	
	• Value: 3.6	
	vii. Field: CGM Quality	
	This field is not included	
	viii. Field: E2E-CRC	
	This field is not included	
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).	
	4. When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.	
	5. The simulated PHD sends the Measurement to the PHG under test.	
	 Check in the PHG transcoder output the Glucose trend Numeric Object – Basic-Nu- Observed-Value attribute 	
	7. The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test.	
	8. Check in PHG transcoder output the Glucose trend Numeric Object – Basic-Nu-Observed-Value attribute	
Pass/Fail criteria	In Step 6 and 8, the Glucose trend Numeric Object – Basic-Nu-Observed-Value is set to 3.6 (mg/dL)/min	
Notes	Possible values in typical points of observation after transcoder output are:	
(To assist manual testing)	a) IEEE 11073 Objects and Attributes	
testing)	Basic-Nu-Observed-Value attribute is present:	
	□ Object: Glucose trend Numeric Object	
	☐ Attribute-id: MDC_ATTR_NU_VAL_OBS_BASIC (2636)	
	☐ Attribute-type : SFLOAT	
	Attribute-value: 3.6 (dec) or F024 (hex) or E168 (hex) or DE10 (hex)	
	b) WAN PCD-01 message	
	PCD-01 message includes a segment like this with Basic-Nu-Observed-Value attribute value (check OBX-5):	

OBX|n|NM|8418008^MDC_CONC_GLU_TREND^MDC|m.0.0.x|3.6| 266868^MDC_DIM_MILLI_G_PER_DL_PER_MIN^MDC|||||R|||[value described in a) coded in DTM format]

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-040			
TP label		Whitepaper. Glucose trend Numeric Object – Threshold-Notification-Text-String			
Coverage	Spec	[Bluetooth PHDT v1.6]			
	Testable items	GT Numeric 8; O			
Test purpose		Check that: PHG may transcode bits 20 and 21 of the CGM Sensor Status Annunciation field of CGM Measurement characteristic into Glucose trend Numeric Object – Threshold-Notification-Text-String attribute			
Applicabilit	у	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043			
Other PICS					
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.			
Test procedure		 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored. The simulated PHD implements several BTLE characteristics. The characteristics of 			
		interest for this Test Case are:			
		a. CGM Feature (0x2AA8)			
		i. Field: CGM Feature			
		Format: 24 bit			
		 Value: 0000 0000 1000 0000 0001 0000 (MSB → LSB). CGM trend information supported, rate of increase/decrease alerts supported. 			
		ii. Field: CGM Type			
		Format: 4 bit			
		Value: not relevant			
		iii. Field: CGM Sample Location			
		Format: 4 bit			
		Value: not relevant			
		iv. Field: E2E-CRC			
		Format: uint16			
		Value: not relevant			
		b. CGM Measurement (0x2AA7)			
		i. Field: Size			
		Format: uint8			
		ii. Field: Flags			
		Format: 8 bit			
		 Value: 1000 0001 (MSB → LSB). CGM Trend information present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) present. 			

iii. Field: CGM Glucose Concentration (mg/dL)

• Format: SFLOAT

Value: not relevant

iv. Field: Time Offset

Format: uint16

· Value: not relevant

v. Field: Sensor Status Annunciation

Format: 8 bit

• Value: 0001 0000 (MSB → LSB) (sensor rate of decrease exceeded).

vi. Field: CGM Trend Information (mg/dL)/min

Format: SFLOATValue: not relevant

vii. Field: CGM Quality

This field is not included

viii. Field: E2E-CRC

This field is not included

- 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
- 4. When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.
- 5. The simulated PHD sends the Measurement to the PHG under test.
- Check in the PHG transcoder output the Glucose trend Numeric Object

 – Threshold-Notification-Text-String attribute
- 7. The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test.
- Check in PHG transcoder output the Glucose trend Numeric Object Threshold-Notification-Text-String attribute
- The simulated PHD sends a CGM Measurement to PHG under test with the following values. The simulated PHD also deletes all previous stored records in RACP and stores an identical measurement in it.
 - CGM Measurement (0x2AA7)

i. Field: Size

Format: uint8

ii. Field: Flags

Format: 8 bit

- Value: 1000 0001 (MSB → LSB). CGM Trend information present, CGM
 Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not
 present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present,
 Sensor Status Annunciation Field (Status-Octet) present.
- iii. Field: CGM Glucose Concentration (mg/dL)

Format: SFLOAT

Value: not relevant

iv. Field: Time Offset

Format: uint16

Value: not relevant

v. Field: Sensor Status Annunciation

	Format: 8 bit	
	 Value: 0010 0000 (MSB → LSB) (sensor rate of increase exceeded). 	
	vi. Field: CGM Trend Information (mg/dL)/min	
	Format: SFLOAT	
	Value: not relevant	
	vii. Field: CGM Quality	
	This field is not included	
	viii. Field: E2E-CRC	
	This field is not included	
	Repeat steps 6-8 to check in transcoder output the Glucose trend Numeric Object – Threshold-Notification-Text-String attribute.	
Pass/Fail criteria	 In Step 6 and 8, if present, the Glucose trend Numeric Object – Threshold-Notification- Text-String is set to an OCTET STRING that may contain a readable description of the threshold notification "sensor rate of decrease exceeded" 	
	In Step 10, if present, the Glucose trend Numeric Object – Threshold-Notification-Text- String is set to an OCTET STRING that may contain a readable description of the threshold notification "sensor rate of increase exceeded" for both cases.	
Notes	Possible values in typical points of observation after transcoder output are:	
(To assist manual testing)	a) IEEE 11073 Objects and Attributes	
testing)	If Threshold-Notification-Text-String attribute is present:	
	Object: Glucose trend Numeric Object	
	☐ Attribute-id: MDC_ATTR_THRES_NOTIF_TEXT_STRING (2696)	
	☐ Attribute-type : OCTET STRING	
	☐ Attribute-value (Steps 6 & 8): readable description of the threshold notification "sensor rate of decrease exceeded"	
	Attribute-value (Step 10): readable description of the threshold notification "sensor rate of increase exceeded"	
	b) WAN PCD-01 message	
	Threshold-Notification-Text-String attribute is not included in PCD-01 message	

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-041		
TP label		Whitepaper. Patient low/high thresholds Compound Numeric Object - Handle Attribute		
Coverage	Spec	[Bluetooth PHDT v1.6]		
	Testable items	PLH Numeric 1; O		
Test purpose		Attribute in transcoder output. [OR]	w/high thresholds Compound Nu n thresholds Compound Numeric	
		transcoder output, then its value	•	
Applicability		C_MAN_BLE_000 AND C_MAN AND C_MAN_BLE_048	I_BLE_002 AND C_MAN_BLE_0	043 AND C_MAN_BLE_046
Other PICS				

Initial condition	The PHG under test and the simulated PHD are in the Standby state.
Test procedure 1. The simulated PHD is configured with a Continuous Glucose Monitoring P specialization). PHD has manually entered Patient Low Alert Level and Pa Level values stored.	
	2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:
	a. CGM Feature (0x2AA8)
	i. Field: CGM Feature
	Format: 24 bit
	 Value: 0000 0000 0000 0000 0010 (MSB → LSB). Patient High/Low Alerts supported.
	ii. Field: CGM Type
	Format: 4 bit
	Value: not relevant
	iii. Field: CGM Sample Location
	Format: 4 bit
	Value: not relevant
	iv. Field: E2E-CRC
	Format: uint16
	Value: not relevant
	b. CGM Specific Ops Control Point (0x2AAC)
	i. Field: Op Code
	☐ Format: uint8
	□ Value: 0x09 (Patient High Alert Level Response) / 0x0C (Patient Low Alert Level Response)
	ii. Field: Operand
	☐ Format: SFLOAT (mg/dL)
	☐ Value: not relevant
	iii. Field: E2E-CRC
	☐ This field is not present
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Patient High Alert procedure using Op Code "Get Patient High Alert Level" (0x08) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).
	5. The simulated PHD will respond with an indication including a "Patient High Alert Level Response" (0x09) Op Code and an SFLOAT containing the requested value in mg/dL.
	6. Force the PHG to perform a Patient Low Alert procedure using Op Code "Get Patient Low Alert Level" (0x0B) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).
	7. The simulated PHD will respond with an indication including a "Patient Low Alert Level Response" (0x0C) Op Code and an SFLOAT containing the requested value in mg/dL.
	Check in the PHG transcoder output the Patient low/high thresholds Compound Numeric Object – Handle attribute
Pass/Fail criteria	In Step 8, the Patient low/high thresholds Compound Numeric Object – Handle attribute is not present or, if it is present then its value is different than 0
Notes	Possible values in typical points of observation after transcoder output are:

(To assist manual testing)	a)	IEEE 11073 Objects and Attributes	
		Handle attribute is not present, or if it is present then:	
		Object: Patient low/high thresholds Compound Numeric Object	
		Attribute-id: MDC_ATTR_ID_HANDLE (2337)	
		☐ Attribute-type: INT-U16	
		☐ Attribute-value: Any value different than 0	
	b)	WAN PCD-01 message	
		PCD-01 message does not include segments with Handle attribute value	

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-042			
TP label		Whitepaper. Patient low/high thresholds Compound Numeric Object - Type Attribute			
Coverage	Spec	[Bluetooth PHDT v1.6]			
	Testable items	PLH Numeric 2; M			
Test purpos	e	Check that:			
		PHG includes Patient low/high thresholds Compound Numeric Object – Type attribute in transcoder output.			
		[AND]			
		Type is set to MDC_PART_PHD_DM MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH			
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND C_MAN_BLE_046 AND C_MAN_BLE_048			
Other PICS					
Initial condition		The PHG under test and the simulated PHD are in the Standby state.			
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). PHD has manually entered Patient Low Alert Level and Patient High Alert Level values stored.			
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:			
		a. CGM Feature (0x2AA8)			
		i. Field: CGM Feature			
		☐ Format: 24 bit			
		□ Value: 0000 0000 0000 0000 0010 (MSB → LSB). Patient High/Low Alerts supported.			
		ii. Field: CGM Type			
		☐ Format: 4 bit			
		☐ Value: not relevant			
		iii. Field: CGM Sample Location			
		☐ Format: 4 bit			
		□ Value: not relevant			
		iv. Field: E2E-CRC			
		☐ Format: uint16			
		☐ Value: not relevant			

b. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code Format: uint8 Value: 0x09 (Patient High Alert Level Response) / 0x0C (Patient Low Alert Level Response) ii. Field: Operand Format: SFLOAT (mg/dL) Value: not relevant Value: not relevant Format: SFLOAT (mg/dL) Value: not relevant Format: SFLOAT (mg/dL) Value: not relevant Value: not relevant Value: not relevant Field: E2E-CRC This field is not present The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD und it starts a pairing process with the simulated PHD (Initiating state). When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Patient procedure using Op Code "Get Patient High Alert Level" (VoxOB) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Patient High Alert Level Response" (0x0C) Op Code and an SFLOAT containing the requested value in mg/dL. Force the PHG to perform a Patient Low Alert procedure using Op Code "Get Patient Low Alert Level Response" (0x0C) Op Code and an SFLOAT containing the requested value in mg/dL. Force the PHG transcoder output the Patient lowing htresholds Compound Numeric Object — Type attribute is present and set to MDC_PART_PHD_DM MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH		h CCM Specific One Central Beint (0v2AAC)	
□ Format: uint8 □ Value: 0x09 (Patient High Alert Level Response) / 0x0C (Patient Low Alert Level Response) ii. Field: Operand □ Format: SFLOAT (mg/dL) □ Value: not relevant iii. Field: E2E-CRC □ This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Patient High Alert procedure using Op Code "Cet Patient High Alert Level" (0x08) (performing a write operation to the CGM Specific Ops Control Point Alert Level" (0x08) (performing a write operation to the CGM Specific Ops Control Point Alert Level (10x08) (performing a write operation to the Response" (0x09) Op Code and an SFLOAT containing the requested value in mg/dL. 6. Force the PHG to perform a Patient Low Alert procedure using Op Code "Get Patient Low Alert Level" (0x08) (performing a write operation to the CGM Specific Ops Control Point characteristics op Code). 7. The simulated PHD will respond with an indication including a "Patient Low Alert Level Response" (0x0C) Op Code and an SFLOAT containing the requested value in mg/dL. 8. Check in PHG transcoder output the Patient low/high thresholds Compound Numeric Object — Type attribute is present and set to MDC_PART_PHD_DM MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH Possible values in typical points of observation after transcoder output are: □ Object: Patient low/high thresholds Compound Numeric Object □ Attribute-id: MDC_ATTR_ID_TYPE (2351) □ Attribute-id: MDC_ATTR_ID_TYPE (2351) □ Attribute-id: MDC_ATTR_ID_TYPE (2351) □ Attribute-value: • partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) • code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) • code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex)			
Value: 0x09 (Patient High Alert Level Response) / 0x0C (Patient Low Alert Level Response) ii. Field: Operand Format: SFLOAT (mg/dL) Value: not relevant Value: not person Value: not person			
Level Response) ii. Field: Operand Format: SFLOAT (mg/dL) Value: not relevant iii. Field: E2E-CRC This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Patient High Alert procedure using Op Code "Get Patient High Alert Level" (0x08) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). 5. The simulated PHD will respond with an indication including a "Patient High Alert Level Response" (0x09) Op Code and an SFLOAT containing the requested value in mg/dL. 6. Force the PHG to perform a Patient Low Alert procedure using Op Code "Get Patient Low Alert Level" (0x08) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). 7. The simulated PHD will respond with an indication including a "Patient Low Alert Level Response" (0x0c) Op Code and an SFLOAT containing the requested value in mg/dL. 8. Check in PHG transcoder output the Patient low/high thresholds Compound Numeric Object – Type attribute Response" (0x0c) Op Code and an SFLOAT containing the requested value in mg/dL. 8. Check in PHG transcoder output the Patient low/high thresholds Compound Numeric Object – Type attribute is present and set to MDC_PART_PHD_DM MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Type attribute is present: Object: Patient low/high thresholds Compound Numeric Object Attribute-value: • partition: MDC_ATTR_ID_TYPE (2351) Attribute-value: • partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) • code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) b) WAN PCD-01 message			
Format: SFLOAT (mg/dL) Value: not relevant iii. Field: E2E-CRC This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Patient High Alert procedure using Op Code "Get Patient High Alert Level" (DX08) [performing a write operation to the CGM Specific Ops Control Point characteristics Op Code). 5. The simulated PHD will respond with an indication including a "Patient High Alert Level Response" (0x09) Op Code and an SFLOAT containing the requested value in mg/dL. 6. Force the PHG to perform a Patient Low Alert procedure using Op Code "Get Patient Low Alert Level" (0x08) (performing a write operation to the CGM Specific Ops Control Point characteristics Op Code). 7. The simulated PHD will respond with an indication including a "Patient Low Alert Level Response" (0x0C) Op Code and an SFLOAT containing the requested value in mg/dL. 8. Check in PHG transcoder output the Patient low/high thresholds Compound Numeric Object — Type attribute in mg/dL. 8. Check in PHG transcoder output the Patient low/high thresholds Compound Numeric Object — Type attribute is present and set to MDC_PART_PHD_DM MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH			
□ Value: not relevant iii. Field: E2E-CRC □ This field is not present 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Patient High Alert procedure using Op Code "Get Patient High Alert Level" (0x08) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). 5. The simulated PHD will respond with an indication including a "Patient High Alert Level Response" (0x09) Op Code and an SFLOAT containing the requested value in mg/dL. 6. Force the PHG to perform a Patient Low Alert procedure using Op Code "Get Patient Low Alert Level" (0x0B) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). 7. The simulated PHD will respond with an indication including a "Patient Low Alert Level Response" (0x0C) Op Code and an SFLOAT containing the requested value in mg/dL. 8. Check in PHG transcoder output the Patient low/high thresholds Compound Numeric Object — Type attribute and Set of MDC_PART_PHD_DM MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH Notes (To assist manual testing) Notes (To assist manual testing) Possible values in typical points of observation after transcoder output are: □ Object: Patient low/high thresholds Compound Numeric Object □ Attribute-id: MDC_PART_PD_TYPE (2351) □ Attribute-id: MDC_ATTR_ID_TYPE (2351) □ Attribute-value: • partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) • code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) b) WAN PCD-01 message		ii. Field: Operand	
iii. Field: E2E-CRC This field is not present		☐ Format: SFLOAT (mg/dL)	
This field is not present The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Patient High Alert procedure using Op Code "Get Patient High Alert Level" (0x08) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Patient High Alert Level Response" (0x09) Op Code and an SFLOAT containing the requested value in mg/dL. Force the PHG to perform a Patient Low Alert procedure using Op Code "Get Patient Low Alert Level" (0x08) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Patient Low Alert Level Response" (0x0c) Op Code and an SFLOAT containing the requested value in mg/dL. Check in PHG transcoder output the Patient low/high thresholds Compound Numeric Object – Type attribute In Step 8, the Patient low/high thresholds Compound Numeric Object – Type attribute is present and set to MDC_PART_PHD_DM MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH Possible values in typical points of observation after transcoder output are: Describe values in typical points of observation after transcoder output are: Attribute-id: MDC_ATTR_DTYPE (2351) Attribute-id: MDC_ATTR_DTYPE (2351) Attribute-value: partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) WAN PCD-01 message		☐ Value: not relevant	
3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Patient High Alert procedure using Op Code "Get Patient High Alert Level" (0x08) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). 5. The simulated PHD will respond with an indication including a "Patient High Alert Level Response" (0x09) Op Code and an SFLOAT containing the requested value in mg/dL. 6. Force the PHG to perform a Patient Low Alert procedure using Op Code "Get Patient Low Alert Level" (0x08) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). 7. The simulated PHD will respond with an indication including a "Patient Low Alert Level Response" (0x0C) Op Code and an SFLOAT containing the requested value in mg/dL. 8. Check in PHG transcoder output the Patient low/high thresholds Compound Numeric Object – Type attribute Pass/Fail criteria In Step 8, the Patient low/high thresholds Compound Numeric Object – Type attribute is present and set to MDC_PART_PHD_DM MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH Possible values in typical points of observation after transcoder output are: (a) IEEE 11073 Objects and Attributes Type attribute-id: MDC_ATTR_D_TYPE (2351) (a) Attribute-id: MDC_ATTR_DTYPE (2351) (b) Attribute-value: (a) Partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) (c) code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) (b) WAN PCD-01 message		iii. Field: E2E-CRC	
simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Patient High Alert procedure using Op Code "Get Patient High Alert Level" (0x08) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). 5. The simulated PHD will respond with an indication including a "Patient High Alert Level Response" (0x09) Op Code and an SFLOAT containing the requested value in mg/dL. 6. Force the PHG to perform a Patient Low Alert procedure using Op Code "Get Patient Low Alert Level" (0x0B) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). 7. The simulated PHD will respond with an indication including a "Patient Low Alert Level Response" (0x0C) Op Code and an SFLOAT containing the requested value in mg/dL. 8. Check in PHG transcoder output the Patient low/high thresholds Compound Numeric Object — Type attribute Pass/Fail criteria In Step 8, the Patient low/high thresholds Compound Numeric Object — Type attribute is present and set to MDC_PART_PHD_DM MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH Notes (To assist manual testing) Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Type attribute-id: MDC_ATTR_ID_TYPE (2351) a) Attribute-id: MDC_ATTR_ID_TYPE (2351) a) Attribute-id: MDC_ATTR_ID_TYPE (2351) b) Attribute-value: • partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) • code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) b) WAN PCD-01 message		☐ This field is not present	
Session Start Time characteristics, and then to perform a Patient High Alert procedure using Op Code "Get Patient High Alert Level" (0x08) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). 5. The simulated PHD will respond with an indication including a "Patient High Alert Level Response" (0x09) Op Code and an SFLOAT containing the requested value in mg/dL. 6. Force the PHG to perform a Patient Low Alert procedure using Op Code "Get Patient Low Alert Level" (0x0B) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). 7. The simulated PHD will respond with an indication including a "Patient Low Alert Level Response" (0x0C) Op Code and an SFLOAT containing the requested value in mg/dL. 8. Check in PHG transcoder output the Patient low/high thresholds Compound Numeric Object – Type attribute Pass/Fail criteria In Step 8, the Patient low/high thresholds Compound Numeric Object – Type attribute is present and set to MDC_PART_PHD_DM MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Type attribute is present: Object: Patient low/high thresholds Compound Numeric Object Attribute-value: • partition: MDC_ATTR_ID_TYPE (2351) Attribute-value: • partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) • code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) b) WAN PCD-01 message			
Response" (0x09) Op Code and an SFLOAT containing the requested value in mg/dL. 6. Force the PHG to perform a Patient Low Alert procedure using Op Code "Get Patient Low Alert Level" (0x0B) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). 7. The simulated PHD will respond with an indication including a "Patient Low Alert Level Response" (0x0C) Op Code and an SFLOAT containing the requested value in mg/dL. 8. Check in PHG transcoder output the Patient low/high thresholds Compound Numeric Object – Type attribute Pass/Fail criteria In Step 8, the Patient low/high thresholds Compound Numeric Object – Type attribute is present and set to MDC_PART_PHD_DM MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Type attribute is present: Object: Patient low/high thresholds Compound Numeric Object Attribute-id: MDC_ATTR_ID_TYPE (2351) Attribute-id: MDC_ATTR_ID_TYPE (2351) Attribute-value: partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) WAN PCD-01 message		Session Start Time characteristics, and then to perform a Patient High Alert procedure using Op Code "Get Patient High Alert Level" (0x08) (performing a write operation to the	
Alert Level" (0x0B) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). 7. The simulated PHD will respond with an indication including a "Patient Low Alert Level Response" (0x0C) Op Code and an SFLOAT containing the requested value in mg/dL. 8. Check in PHG transcoder output the Patient low/high thresholds Compound Numeric Object – Type attribute object – Type attribute is present and set to MDC_PART_PHD_DM MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH Notes (To assist manual testing) Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Type attribute is present: Object: Patient low/high thresholds Compound Numeric Object Attribute-id: MDC_ATTR_ID_TYPE (2351) Attribute-id: MDC_ATTR_ID_TYPE (2351) Attribute-value: • partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) • code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) b) WAN PCD-01 message			
Response" (0x0C) Op Code and an SFLOAT containing the requested value in mg/dL. 8. Check in PHG transcoder output the Patient low/high thresholds Compound Numeric Object – Type attribute In Step 8, the Patient low/high thresholds Compound Numeric Object – Type attribute is present and set to MDC_PART_PHD_DM MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH Possible values in typical points of observation after transcoder output are: (a) IEEE 11073 Objects and Attributes Type attribute is present: (b) Object: Patient low/high thresholds Compound Numeric Object (c) Attribute-id: MDC_ATTR_ID_TYPE (2351) (c) Attribute-value: (e) partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) (e) code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) (b) WAN PCD-01 message		Alert Level" (0x0B) (performing a write operation to the CGM Specific Ops Control Point	
Object – Type attribute In Step 8, the Patient low/high thresholds Compound Numeric Object – Type attribute is present and set to MDC_PART_PHD_DM MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH Notes (To assist manual testing) Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Type attribute is present: Object: Patient low/high thresholds Compound Numeric Object Attribute-id: MDC_ATTR_ID_TYPE (2351) Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)} Attribute-value: partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) b) WAN PCD-01 message			
present and set to MDC_PART_PHD_DM MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH Notes (To assist manual testing) Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Type attribute is present: Object: Patient low/high thresholds Compound Numeric Object Attribute-id: MDC_ATTR_ID_TYPE (2351) Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)} Attribute-value: partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) b) WAN PCD-01 message			
a) IEEE 11073 Objects and Attributes Type attribute is present: Object: Patient low/high thresholds Compound Numeric Object Attribute-id: MDC_ATTR_ID_TYPE (2351) Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)} Attribute-value: partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) WAN PCD-01 message	Pass/Fail criteria	present and set to MDC_PART_PHD_DM	
a) IEEE 11073 Objects and Attributes Type attribute is present: Object: Patient low/high thresholds Compound Numeric Object Attribute-id: MDC_ATTR_ID_TYPE (2351) Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)} Attribute-value: partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) WAN PCD-01 message	Notes	Possible values in typical points of observation after transcoder output are:	
Type attribute is present: Object: Patient low/high thresholds Compound Numeric Object Attribute-id: MDC_ATTR_ID_TYPE (2351) Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)} Attribute-value: • partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) • code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) b) WAN PCD-01 message	(To assist manual		
 Object: Patient low/high thresholds Compound Numeric Object Attribute-id: MDC_ATTR_ID_TYPE (2351) Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)} Attribute-value: partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) b) WAN PCD-01 message 	testing)		
Attribute-id: MDC_ATTR_ID_TYPE (2351) Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)} Attribute-value: • partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) • code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) b) WAN PCD-01 message			
 Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)} Attribute-value: partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) WAN PCD-01 message 		, , , , , , , , , , , , , , , , , , , ,	
 Attribute-value: partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) b) WAN PCD-01 message 		, ,	
code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) b) WAN PCD-01 message			
code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec) or 72 DC (hex) b) WAN PCD-01 message		partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex)	
b) WAN PCD-01 message		code: MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH or 29404 (dec)	
		· ,	
PUD-01 message includes a segment like this with Type attribute (check OBX-3):		PCD-01 message includes a segment like this with Type attribute (check OBX-3):	
OBX n 8418012^MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH^MDC m.0.x.0 X [date_time]		OBX n 8418012^MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH^MDC	

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-043_A
TP label		Whitepaper. Patient low/high thresholds Compound Numeric Object - Metric-Spec-Small Attribute 1
Coverage Spec		[Bluetooth PHDT v1.6]

Testable items	PLH Numeric 3; M	PLH Numeric 5; M			
Test purpose	Check that:	Check that:			
		h thresholds Compound Numeric	Object – Metric-Spec-Small		
	attribute in transcoder output				
	[AND]	-			
	Metric-Spec-Small is set to {(manually by the user	0x604C} when the patient low/high	thresholds were updated		
Applicability	C_MAN_BLE_000 AND C_M AND C_MAN_BLE_048	IAN_BLE_002 AND C_MAN_BLE_	043 AND C_MAN_BLE_046		
Other PICS					
Initial condition	The PHG under test and the	simulated PHD are in the Standby	state.		
Test procedure		specialization). PHD has manually entered Patient Low Alert Level and Patient High Alert			
	The simulated PHD implinterest for this Test Cas	ements several BTLE characteristice are:	cs. The characteristics of		
	a. CGM Feature (0x2A	A8)			
	i. Field: CGM Fea	ature			
	☐ Format: 24	bit			
	☐ Value: 000 Alerts supp	0 0000 0000 0000 0000 00 1 0 (MSI ported.	B → LSB). Patient High/Low		
	ii. Field: CGM Typ	oe			
	☐ Format: 4 b	pit			
	☐ Value: not	relevant			
	iii. Field: CGM Sar	mple Location			
	☐ Format: 4 k	pit			
	☐ Value: not	relevant			
	iv. Field: E2E-CR0				
	☐ Format: uir	nt16			
	☐ Value: not	relevant			
	b. CGM Specific Ops (Control Point (0x2AAC)			
	i. Field: Op Code				
	☐ Format: uir	nt8			
	☐ Value: 0x0 Level Resp	9 (Patient High Alert Level Respon: oonse)	se) / 0x0C (Patient Low Alert		
	ii. Field: Operand				
	☐ Format: SF	FLOAT (mg/dL)			
	☐ Value: not	relevant			
	iii. Field: E2E-CR0				
	☐ This field is	s not present			
		ates a discovery process (Scanning arts a pairing process with the simu			
	Session Start Time char- using Op Code "Get Pat	en completed, force the PHG to reacteristics, and then to perform a Pient High Alert Level" (0x08) (perforol Point characteristic's Op Code).	atient High Alert procedure ming a write operation to the		

	5. The simulated PHD will respond with an indication including a "Patient High Alert Level Response" (0x09) Op Code and an SFLOAT containing the requested value in mg/dL.	
	6. Force the PHG to perform a Patient Low Alert procedure using Op Code "Get Patient Low Alert Level" (0x0B) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).	
	7. The simulated PHD will respond with an indication including a "Patient Low Alert Level Response" (0x0C) Op Code and an SFLOAT containing the requested value in mg/dL.	
	8. Check in PHG transcoder output the Patient low/high thresholds Compound Numeric Object – Type attributeCheck in PHG transcoder output the Patient low/high thresholds Compound Numeric Object – Metric-Spec-Small attribute	
Pass/Fail criteria	In Step 8, the Patient low/high thresholds Compound Numeric Object – Metric-Spec-Small attribute is present and its value is {0x604C} (mss-avail-stored-data mss-upd-aperiodic mss-acc-agent-initiated mss-cat-manual mss-cat-setting)	
Notes (To assist manual testing)	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Metric-Spec-Small attribute is present: Object: Patient low/high thresholds Compound Numeric Object Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630) Attribute-type: BITS-16 Attribute-value: 0x604C (hex) or BITS mss-avail-stored-data (1), mss-upd-	
	aperiodic(2), mss-acc-agent-initiated(9), mss-cat-manual(12), mss-cat-setting(13) set to TRUE and remaining BITS set to FALSE	
	b) WAN PCD-01 message PCD-01 message does not include segments with Metric-Spec-Small attribute value	

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-043_B					
TP label		Whitepaper. Patient low/high thresholds Compound Numeric Object - Metric-Spec-Small Attribute 2					
Coverage	Spec	[Bluetooth PHDT v1.6]					
	Testable items	PLH Numeric 3; M	PLH Numeric 4; M				
Test purpose		Check that:					
		PHG includes Patient low/high thresholds Compound Numeric Object – Metric-Spec-Small attribute in transcoder output.					
		[AND]					
		Metric-Spec-Small is set to {0x6044} when the Patient High/Low Alert Level procedure has been executed					
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND C_MAN_BLE_045 AND C_MAN_BLE_046 AND C_MAN_BLE_047 AND C_MAN_BLE_048					
Other PICS							
Initial condition		The PHG under test and the simulated PHD are in the Standby state.					
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization).					
		The simulated PHD interest for this Test) implements several BTLE characteristi t Case are:	cs. The characteristics of			
		a. CGM Feature ((0x2AA8)				

			i.	Fiel	d: CGM Feature
					Format: 24 bit
					Value: 0000 0000 0000 0000 0000 0010 (MSB \rightarrow LSB). Patient High/Low Alerts supported.
			ii.	Fiel	d: CGM Type
					Format: 4 bit
					Value: not relevant
			iii.	Fiel	d: CGM Sample Location
					Format: 4 bit
					Value: not relevant
			iv.	Fiel	d: E2E-CRC
					Format: uint16
					Value: not relevant
		b.	CG	M Sp	pecific Ops Control Point (0x2AAC)
			i.	Fiel	d: Op Code
					Format: uint8
					Value: 0x09 (Patient High Alert Level Response) / 0x0C (Patient Low Alert Level Response)
			ii.	Fiel	d: Operand
					Format: SFLOAT (mg/dL)
					Value: not relevant
			iii.	Fiel	d: E2E-CRC
					This field is not present
	3.				der test initiates a discovery process (Scanning state), it discovers the dD and it starts a pairing process with the simulated PHD (Initiating state).
	4.				iring has been completed, force the PHG to read CGM Feature and CGM t Time characteristics.
	5.	prod SFL cha	cedu _OAT racte	re us Γvalu eristic	HG to set the patient high threshold by performing a Patient High Alert sing Op Code "Set Patient High Alert Level" (0x07) followed by a valid use (performing a write operation to the CGM Specific Ops Control Point C's Op Code and Operand fields respectively). The simulated PHD will an indication including a Response Op Code value of "Success".
	6.	prod SFL cha	cedu _OAT racte	re us Γvalu eristic	HG to set the patient low threshold by performing a Patient Low Alert sing Op Code "Set Patient Low Alert Level" (0x0A) followed by a valid use (performing a write operation to the CGM Specific Ops Control Point C's Op Code and Operand fields respectively). The simulated PHD will an indication including a Response Op Code value of "Success".
	7.	Pat	ient I	High	he PHG to perform a Patient High Alert procedure using Op Code "Get Alert Level" (0x08) (performing a write operation to the CGM Specific Ops t characteristic's Op Code).
	8.				od PHD will respond with an indication including a "Patient High Alert Level 0x09) Op Code and an SFLOAT containing the requested value in mg/dL.
	9.	Ale	rt Le	veľ" (HG to perform a Patient Low Alert procedure using Op Code "Get Patient Low 0x0B) (performing a write operation to the CGM Specific Ops Control Point S's Op Code).
	10.				d PHD will respond with an indication including a "Patient Low Alert Level 0x0C) Op Code and an SFLOAT containing the requested value in mg/dL.
	11.	Obj	ect -	- Тур	G transcoder output the Patient low/high thresholds Compound Numeric e attributeCheck in PHG transcoder output the Patient low/high thresholds Iumeric Object – Metric-Spec-Small attribute
Pass/Fail criteria	In S	Step	11, tl	ne Pa	atient low/high thresholds Compound Numeric Object – Metric-Spec-Small

mss-acc-agent-initiated(9), mss-cat-setting(13) set to TRUE and remaining BITS set to FALSE		attribute is present and its value is {0x6044} (mss-avail-stored-data mss-upd-aperiodic mss-acc-agent-initiated mss-cat-setting)	
b) WAN PCD-01 message PCD-01 message does not include segments with Metric-Spec-Small attribute value	(To assist manual	 a) IEEE 11073 Objects and Attributes Metric-Spec-Small attribute is present: Object: Patient low/high thresholds Compound Numeric Object Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630) Attribute-type: BITS-16 Attribute-value: 0x6044 (hex) or BITS mss-avail-stored-data (1), mss-upd-aperiodic(2), mss-acc-agent-initiated(9), mss-cat-setting(13) set to TRUE and remaining BITS set to FALSE b) WAN PCD-01 message 	

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-044				
TP label		Whitepaper. Patient low/high thresholds Compound Numeric Object – Metric-Structure-Small Attribute				
Coverage	Spec	[Bluetooth PHDT v1.6]				
	Testable items	PLH Numeric 6; M				
Test purpose		Check that:				
		PHG includes Patient low/high thresholds Compound Numeric Object – Metric-Structure-Small attribute in transcoder output.				
		[AND]				
		Metric-Structure-Small is set to {0x40, 0x02}				
Applicability	y	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND C_MAN_BLE_046 AND C_MAN_BLE_048				
Other PICS						
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.				
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). PHD has manually entered Patient Low Alert Level and Patient High Alert Level values stored.				
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:				
		a. CGM Feature (0x2AA8)				
		i. Field: CGM Feature				
		☐ Format: 24 bit				
		□ Value: 0000 0000 0000 0000 0010 (MSB → LSB). Patient High/Low Alerts supported.				
		ii. Field: CGM Type				
		☐ Format: 4 bit				
		☐ Value: not relevant				
		iii. Field: CGM Sample Location				
		☐ Format: 4 bit				

	☐ Value: not relevant
	iv. Field: E2E-CRC
	☐ Format: uint16
	□ Value: not relevant
	b. CGM Specific Ops Control Point (0x2AAC)
	i. Field: Op Code
	☐ Format: uint8
	□ Value: 0x09 (Patient High Alert Level Response) / 0x0C (Patient Low Alert Level Response)
	ii. Field: Operand
	☐ Format: SFLOAT (mg/dL)
	☐ Value: not relevant
	iii. Field: E2E-CRC
	☐ This field is not present
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Patient High Alert procedure using Op Code "Get Patient High Alert Level" (0x08) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).
	5. The simulated PHD will respond with an indication including a "Patient High Alert Level Response" (0x09) Op Code and an SFLOAT containing the requested value in mg/dL.
	6. Force the PHG to perform a Patient Low Alert procedure using Op Code "Get Patient Low Alert Level" (0x0B) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).
	7. The simulated PHD will respond with an indication including a "Patient Low Alert Level Response" (0x0C) Op Code and an SFLOAT containing the requested value in mg/dL.
	Check in PHG transcoder output the Patient low/high thresholds Compound Numeric Object – Metric-Structure-Small attribute
Pass/Fail criteria	In Step 8, the Patient low/high thresholds Compound Numeric Object – Metric-Structure-Small attribute is present and set to 0x40 (ms-struct-compound), 0x02 (number of components is 2)
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
	Metric-Structure-Small attribute is present:
	□ Object: Patient low/high thresholds Compound Numeric Object
	☐ Attribute-id: MDC_ATTR_METRIC_STRUCT_SMALL (2675)
	☐ Attribute-type: SEQUENCE {ms-struct (INT-U8), ms-comp-no (INT-U8)}
	☐ Attribute-value:
	ms-struct: 0x40 (ms-struct-compound)
	ms-comp-no: 0x02 (number of components)
	b) WAN PCD-01 message
	PCD-01 message does not include segments with Metric-Structure-Small attribute value

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-045	
TP label		Whitepaper. Patient low/high thresholds Compound Numeric Object – Metric-Id-List Attribute	
Coverage Spec [Bluetooth PHDT v1.6]		[Bluetooth PHDT v1.6]	

	Testable items	PLF	l Nu	meri	c 7; M					
Test purpose		Che	eck th	nat:						
		PHG includes Patient low/high thresholds Compound Numeric Object – Metric-Id-List attribute								
		in transcoder output.								
		[AN	_							
						, 0x0004, MDC_CONC_GLU_PA THRESHOLD_HIGH }	TIENT_THRESHOLD_LOW,			
Applicability					E_000 AND C_MAI N_BLE_048	N_BLE_002 AND C_MAN_BLE_	043 AND C_MAN_BLE_046			
Other PICS										
Initial conditi	on	The	PH(G un	der test and the sir	mulated PHD are in the Standby	state.			
Test procedu	ıre	1.	spe	ciali		igured with a Continuous Glucos nanually entered Patient Low Alei				
		2.			ulated PHD implen for this Test Case	nents several BTLE characteristic are:	cs. The characteristics of			
			a.	CG	M Feature (0x2AA	8)				
				i.	Field: CGM Featu	ire				
					☐ Format: 24 bi	it				
					☐ Value: 0000 (Alerts suppor	0000 0000 0000 0000 00 1 0 (MSE rted.	B → LSB). Patient High/Low			
				ii.	Field: CGM Type					
					☐ Format: 4 bit					
					□ Value: not re	levant				
				iii.	Field: CGM Samp	le Location				
					☐ Format: 4 bit					
					□ Value: not rel	evant				
				iv.	Field: E2E-CRC					
					☐ Format: uint1	6				
					□ Value: not rel	levant				
			b.	CG	M Specific Ops Co	ntrol Point (0x2AAC)				
				i.	Field: Op Code					
					☐ Format: uint8	1				
					☐ Value: 0x09 (Level Respon	Patient High Alert Level Respons nse)	se) / 0x0C (Patient Low Alert			
				ii.	Field: Operand					
					☐ Format: SFL0	OAT (mg/dL)				
					□ Value: not rel	levant				
				iii.	Field: E2E-CRC					
					☐ This field is n	ot present				
		3.				es a discovery process (Scannings a pairing process with the simu				
		4.	Ses usir	sion ng O	Start Time charac p Code "Get Patier	n completed, force the PHG to reateristics, and then to perform a Part High Alert Level" (0x08) (perfor Point characteristic's Op Code).	atient High Alert procedure			

	T
	5. The simulated PHD will respond with an indication including a "Patient High Alert Level Response" (0x09) Op Code and an SFLOAT containing the requested value in mg/dL.
	6. Force the PHG to perform a Patient Low Alert procedure using Op Code "Get Patient Low Alert Level" (0x0B) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).
	7. The simulated PHD will respond with an indication including a "Patient Low Alert Level Response" (0x0C) Op Code and an SFLOAT containing the requested value in mg/dL.
	Check in PHG transcoder output the Patient low/high thresholds Compound Numeric Object – Metric-Id-List attribute
Pass/Fail criteria	In Step 8, the Patient low/high thresholds Compound Numeric Object – Metric-Id-List attribute is present and set to 0x0002 (count of metric ids is 2), 0x0004 (list length is 4 octets), MDC_CONC_GLU_PATIENT_THRESHOLD_LOW, MDC_CONC_GLU_PATIENT_THRESHOLD_HIGH
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual	
testing)	a) IEEE 11073 Objects and Attributes
	Metric-Id-List attribute is present:
	□ Object: Patient low/high thresholds Compound Numeric Object
	☐ Attribute-id: MDC_ATTR_ID_PHYSIO_LIST (2678)
	☐ Attribute-type: SEQUENCE OF [{OID-Type(INT-U16)}]
	☐ Attribute-value: 0x0002 (number of elements), 0x0004 (length of the sequence), followed by
	First element: MDC_CONC_GLU_PATIENT_THRESHOLD_LOW (0x72DD)
	Second element: MDC_CONC_GLU_PATIENT_THRESHOLD_HIGH (0x72DE)
	b) WAN PCD-01 message
	PCD-01 message includes two segments like these with Metric-Id-List attribute values (check OBX-3 in both segments):
	OBX n NM 8418013^MDC_CONC_GLU_PATIENT_THRESHOLD_LOW^MDC m.0.x.a [value] 264274^MDC_DIM_MILLI_G_PER_DL^MDC R
	OBX n NM 8418014^MDC_CONC_GLU_PATIENT_THRESHOLD_HIGH^MDC m.0.x.b [value] 264274^MDC_DIM_MILLI_G_PER_DL^MDC R

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-046					
11 14		TE/LE-FAN/FITG/FITDTW/CGW/BV-040					
TP label		Whitepaper. Patient low/high thresholds Compound Numeric Object – Unit-Code Attribute					
Coverage	Spec	[Bluetooth PHDT v1.6]					
	Testable items	PLH Numeric 8; M					
Test purpose	e	Check that: PHG includes Patient low/high thresholds Compound Numeric Object – Unit-Code attribute in transcoder output. [AND]					
		Unit-Code is set to MDC_DIM_MILLI_G_PER_DL					
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND C_MAN_BLE_046 AND C_MAN_BLE_048					
Other PICS							
Initial condit	ion	The PHG under test and the simulated PHD are in the Standby state.					

Test procedure	The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). PHD has manually entered Patient Low Alert Level and Patient High Alert Level values stored.
	2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:
	a. CGM Feature (0x2AA8)
	i. Field: CGM Feature
	☐ Format: 24 bit
	□ Value: 0000 0000 0000 0000 0010 (MSB → LSB). Patient High/Low Alerts supported.
	ii. Field: CGM Type
	☐ Format: 4 bit
	☐ Value: not relevant
	iii. Field: CGM Sample Location
	☐ Format: 4 bit
	☐ Value: not relevant
	iv. Field: E2E-CRC
	☐ Format: uint16
	□ Value: not relevant
	b. CGM Specific Ops Control Point (0x2AAC)
	i. Field: Op Code
	☐ Format: uint8
	□ Value: 0x09 (Patient High Alert Level Response) / 0x0C (Patient Low Alert Level Response)
	ii. Field: Operand
	☐ Format: SFLOAT (mg/dL)
	□ Value: not relevant
	iii. Field: E2E-CRC
	☐ This field is not present
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Patient High Alert procedure using Op Code "Get Patient High Alert Level" (0x08) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).
	5. The simulated PHD will respond with an indication including a "Patient High Alert Level Response" (0x09) Op Code and an SFLOAT containing the requested value in mg/dL.
	6. Force the PHG to perform a Patient Low Alert procedure using Op Code "Get Patient Low Alert Level" (0x0B) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).
	7. The simulated PHD will respond with an indication including a "Patient Low Alert Level Response" (0x0C) Op Code and an SFLOAT containing the requested value in mg/dL.
	8. Check in the PHG transcoder output the Patient low/high thresholds Compound Numeric Object – Unit-Code attribute
Pass/Fail criteria	In Step 8, the Patient low/high thresholds Compound Numeric Object – Unit-Code attribute is present and set to MDC_DIM_MILLI_G_PER_DL
Notes (To assist manual testing)	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes

	Unit-Code attribute is present:				
	☐ Object: Patient low/high thresholds Compound Numeric Object				
	☐ Attribute-id: MDC_ATTR_UNIT_CODE (2454)				
	☐ Attribute-type: INT-U16				
	☐ Attribute-value: MDC_DIM_MILLI_G_PER_DL or 2130 (dec) or 0x0852 (hex)				
b)	WAN PCD-01 message				
	PCD-01 message includes two segments like these with Unit-Code attribute value (check OBX-6 in both segments):				
	OBX n NM 8418013^MDC_CONC_GLU_PATIENT_THRESHOLD_LOW^MDC m.0.x.a [value] 264274^MDC_DIM_MILLI_G_PER_DL^MDC R				
	OBX n NM 8418014^MDC_CONC_GLU_PATIENT_THRESHOLD_HIGH^MDC m.0.x.b [value] 264274^MDC_DIM_MILLI_G_PER_DL^MDC R				

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-047									
TP label		Whitepaper. Patient low/high thresholds Compound Numeric Object – Base-Offset-Time-Stamp Attribute									
Coverage	Spec	[Bluetooth P	[Bluetooth PHDT v1.6]								
	Testable items	PLH Numer	ic 9; M	9; M BaseOffset 1; M							
Test purpos	e	Check that:									
		PHG include Stamp Attrib		ow/high	thresholds Compound N	umeric (Object – Base-Offset-Time-				
		[AND]									
		stamp deriva	Base-Offset-Time-Stamp attribute is set to the correct value according to Base-Offset time stamp derivation (Base-Offset-Time-Stamp attribute will be derived from the collector's time at the time of collection)								
Applicability	′	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND C_MAN_BLE_046 AND C_MAN_BLE_048									
Other PICS											
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.									
Test proced	ure	 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has manually entered Patient Low Alert Level and Patient High Alert Level values stored. 									
			2. The simulated PHD implements several BTLE characteristics. The characteristics interest for this Test Case are:								
		a. CG	M Feature								
		i.	Field: CG	SM Featu	ıre						
			☐ Form	nat: 24 b	it						
				e: 0000 s suppo		10 (MSI	B → LSB). Patient High/Low				
		ii.	Field: Co	ЭМ Туре							
			☐ Forn	nat: 4 bit							
			☐ Valu	e: not re	levant						
		iii.	Field: CG	SM Samp	ole Location						
			☐ Forn	nat: 4 bit							

				□ Value: not relevant		
		i	V.	Field: E2E-CRC		
				☐ Format: uint16		
				□ Value: not relevant		
		b. (CGI	A Specific Ops Control Point (0x2AAC)		
		i		Field: Op Code		
				☐ Format: uint8		
				■ Value: 0x09 (Patient High Alert Level Response) / 0x0C (Patient Low Alert Level Response)		
		i	i.	Field: Operand		
				☐ Format: SFLOAT (mg/dL)		
				□ Value: not relevant		
		i	ii.	Field: E2E-CRC		
				☐ This field is not present		
	3.			Gunder test initiates a discovery process (Scanning state), it discovers the dPHD and it starts a pairing process with the simulated PHD (Initiating state).		
	4.	Sess	ion I Op	e pairing has been completed, force the PHG to read CGM Feature and CGM Start Time characteristics, and then to perform a Patient High Alert procedure of Code "Get Patient High Alert Level" (0x08) (performing a write operation to the ecific Ops Control Point characteristic's Op Code).		
	5.			lated PHD will respond with an indication including a "Patient High Alert Level e" (0x09) Op Code and an SFLOAT containing the requested value in mg/dL.		
	6.	Alert	Lev	e PHG to perform a Patient Low Alert procedure using Op Code "Get Patient Low rel" (0x0B) (performing a write operation to the CGM Specific Ops Control Point ristic's Op Code).		
	7.		The simulated PHD will respond with an indication including a "Patient Low Alert Level Response" (0x0C) Op Code and an SFLOAT containing the requested value in mg/dL.			
	8.	Check in PHG transcoder output the Patient low/high thresholds Compound Numeric Object – Base-Offset-Time-Stamp attribute				
Pass/Fail criteria				Patient low/high thresholds Compound Numeric Object – Base-Offset-Timete is present and it is set to the collector's time at the time of collection.		
Notes	Pos	ssible	valu	es in typical points of observation after transcoder output are:		
(To assist manual testing)	a)	IEEE	11	073 Objects and Attributes		
,		Base	-Of	set-Time-Stamp attribute is present:		
			Obje	ect: Patient low/high thresholds Compound Numeric Object		
			∆ttri	bute-id: MDC_ATTR_TIME_STAMP_BO (2690)		
				bute-type: SEQUENCE {bo-seconds (INT-U32), bo-fraction (INT-U16), bo-time-et (INT-I16)}		
			٩ttri	bute-value: collector's time at the time of collection.		
	b)	WAN	PC	D-01 message		
		PCD	-01	message includes a segment like this with Type attribute (check OBX-14):		
				(n 8418012^MDC_CONC_GLU_PATIENT_THRESHOLDS_LOW_HIGH^MDC x.0 X [value described in a) coded in DTM format]		

TP ld	TP/LP-PAN/PHG/PHDTW/CGM/BV-048
TP label	Whitepaper. Patient low/high thresholds Compound Numeric Object – Compound-Basic-Nu-Observed-Value Attribute

Coverage	Spec	[Blueto	[Bluetooth PHDT v1.6]										
	Testable items	PLH Nu	umeric	10; M									
Test purpose		Check	Check that:										
		PHG includes Patient low/high thresholds Compound Numeric Object Compound-Basic-Nu-Observed-Value attribute in transcoder output.											
		[AND]											
		Compo	Compound-Basic-Nu-Observed-Value attribute is set to the correct value.										
Applicability				000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND C_MAN_BLE_046 BLE_048									
Other PICS													
Initial condi	tion	The DL	IC und	or tost and the si	mulated DUD are in the Standh	av stato							
initiai condi	lion	THE FF	The PHG under test and the simulated PHD are in the Standby state.										
Test proced	ure	spe	ecializa		figured with a Continuous Gluc nanually entered Patient Low A	ose Monitoring Profile (device lert Level and Patient High Alert							
				ated PHD impler r this Test Case	nents several BTLE characteri are:	stics. The characteristics of							
		a.	CGM	Feature (0x2AA	8)								
			i. F	Field: CGM Featu	ire								
				Format: 24 b	it								
			C	Value: 0000 Alerts suppor	The state of the s	ISB → LSB). Patient High/Low							
			ii. F	Field: CGM Type									
				Format: 4 bit									
				☐ Value: not re	levant								
			iii. F	ield: CGM Samp	ole Location								
				Format: 4 bit									
				☐ Value: not re	levant								
			iv. F	Field: E2E-CRC									
				☐ Format: uint1	6								
				■ Value: not re	levant								
		b.	CGM	Specific Ops Co	introl Point (0x2AAC)								
			i. F	Field: Op Code									
				☐ Format: uint8	}								
			C	Value: 0x09 (Level Respon		onse) / 0x0C (Patient Low Alert							
			ii. F	Field: Operand									
				Format: SFL	OAT (mg/dL)								
				Value: 72.0 (Patient Low threshold) / 144.0	(Patient High threshold)							
			iii. F	Field: E2E-CRC									
			C	This field is n	ot present								
					es a discovery process (Scann s a pairing process with the sin								
		Se	ssion S	tart Time charac	n completed, force the PHG to teristics, and then to perform a nt High Alert Level" (0x08) (per								

	CGM Specific Ops Control Point characteristic's Op Code).						
	5. The simulated PHD will respond with an indication including a "Patient High Alert Level Response" (0x09) Op Code and an SFLOAT containing the requested value in mg/dL.						
	6. Force the PHG to perform a Patient Low Alert procedure using Op Code "Get Patient Low Alert Level" (0x0B) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).						
	7. The simulated PHD will respond with an indication including a "Patient Low Alert Level Response" (0x0C) Op Code and an SFLOAT containing the requested value in mg/dL.						
	Check in PHG transcoder output the Patient low/high thresholds Compound Numeric Object – Compound-Basic-Nu-Observed-Value attribute						
Pass/Fail criteria	In Step 8, the the Patient low/high thresholds Compound Numeric Object – Compound-Basic-Nu-Observed-Value attributeis set to 0x0002 (count of components is 2), 0x0004 (component list length is 4 octets), the Patient Low Alert Level Response Operand followed by the Patient High Alert Level Response Operand						
Notes	Possible values in typical points of observation after transcoder output are:						
(To assist manual	a) IEEE 11073 Objects and Attributes						
testing)	Compound-Basic-Nu-Observed-Value attribute is present:						
	□ Object: Patient low/high thresholds Compound Numeric Object						
	☐ Attribute-id: MDC_ATTR_NU_CMPD_VAL_OBS_BASIC (2677)						
	☐ Attribute-type: SEQUENCE OF [{SFLOAT}]						
	☐ Attribute-value: 0x0002 (number of elements), 0x0004 (length of the sequence), followed by						
	 First element (Patient Low Alert Level Response Operand): 00 48 (hex) or F2 D0 (hex) or 72.0 (dec) 						
	 Second element (Patient High Level Response Operand): 00 90 (hex) or F5 A0 (hex) or 144.0 (dec) 						
	b) WAN PCD-01 message						
	PCD-01 message includes two segments like these with Compound-Basic-Nu-Observed-Value attribute value (check OBX-5 in both segments):						
	OBX n NM 8418013^MDC_CONC_GLU_PATIENT_THRESHOLD_LOW^MDC m.0.x.a 72.0 264274^MDC_DIM_MILLI_G_PER_DL^MDC R						
	OBX n NM 8418014^MDC_CONC_GLU_PATIENT_THRESHOLD_HIGH^MDC m.0.x.b 144.0 264274^MDC_DIM_MILLI_G_PER_DL^MDC R						

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-049					
TP label		Whitepaper. Device hypo/hyper thresholds Compound Numeric Object - Handle Attribute					
Coverage	Spec	[Bluetooth PHDT v1.6]					
	Testable items	DHH Numeric 1; O					
Test purpos	se .	Check that:					
		PHG does not include Device hypo/hyper thresholds Compound Numeric Object – Handle Attribute in transcoder output.					
		[OR]					
		If PHG includes Device hypo/hyper thresholds Compound Numeric Object – Handle attribute in transcoder output, then its value shall be different than 0					
Applicability		C_MAN_BLE_000 AND C_MAN OR C_MAN_BLE_052)	N_BLE_002 AND C_MAN_BLE_0	043 AND (C_MAN_BLE_050			

Other PICS	
Initial condition	The PHG under test and the simulated PHD are in the Standby state.
Test procedure	The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has manually entered Hypo and Hyper Alert Level values stored.
	2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:
	a. CGM Feature (0x2AA8)
	i. Field: CGM Feature
	Format: 24 bit
	 Value: 0000 0000 0000 0000 1100 (MSB → LSB). Hypo Alerts and Hyper Alerts supported.
	ii. Field: CGM Type
	Format: 4 bit
	Value: not relevant
	iii. Field: CGM Sample Location
	Format: 4 bit
	Value: not relevant
	iv. Field: E2E-CRC
	Format: uint16
	Value: not relevant
	b. CGM Specific Ops Control Point (0x2AAC)
	i. Field: Op Code
	☐ Format: uint8
	□ Value: 0x0F (Hypo Alert Level Response) / 0x12 (Hyper Alert Level Response)
	ii. Field: Operand
	☐ Format: SFLOAT (mg/dL)
	☐ Value: not relevant
	iii. Field: E2E-CRC
	☐ This field is not present
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	 When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics.
	5. IF C_MAN_BLE_050 = TRUE, force the PHG to perform a Hypo Alert procedure using Op Code "Get Hypo Alert Level" (0x0E) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). simulated PHD will respond with an indication including a "Hypo Alert Level Response" (0x0F) Op Code and an SFLOAT containing the requested alert level in mg/dL.
	6. IF C_MAN_BLE_052 = TRUE, force the PHG to perform a Hyper Alert procedure using Op Code "Get Hyper Alert Level" (0x11) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Hyper Alert Level Response" (0x12) Op Code and an SFLOAT containing the requested alert level in mg/dL.
	Check in PHG transcoder output the Device hypo/hyper thresholds Compound Numeric Object – Handle attribute
Pass/Fail criteria	In Step 7, the Device hypo/hyper thresholds Compound Numeric Object – Handle attribute is not present or, if it is present then its value is different than 0

Notes		Possible values in typical points of observation after transcoder output are:			
(To assist manual testing)	a)	IEE	E 11073 Objects and Attributes		
		Hai	ndle attribute is not present, or if it is present then:		
			Object: Device hypo/hyper thresholds Compound Numeric Object		
			Attribute-id: MDC_ATTR_ID_HANDLE (2337)		
			Attribute-type: INT-U16		
			Attribute-value: Any value different than 0		
	b)	W۸	N PCD-01 message		
		РС	D-01 message does not include segments with Handle attribute value		

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-050			
TP label		Whitepaper. Device hypo/hyper thresholds Compound Numeric Object - Type Attribute			
Coverage	Spec	[Bluetooth PHDT v1.6]			
	Testable items	DHH Nume	ric 2; M		
Test purpose		Check that: PHG includes Device hypo/hyper thresholds Compound Numeric Object – Type attribute in transcoder output. [AND] Type is set to MDC_PART_PHD_DM MDC_CONC_GLU_THRESHOLDS_HYPO_HYPER			
Applicability	′	C_MAN_BL OR C_MAN		N_BLE_002 AND C_MAN_BLE_0	043 AND (C_MAN_BLE_050
Other PICS					
Initial condit	tion	The PHG under test and the simulated PHD are in the Standby state.			
Test proced	ure	speciali 2. The siminterest	zation). The PHD had nulated PHD implement for this Test Case as M Feature (0x2AA8 Field: CGM Feature). Format: 24 bit	8) re t 0000 0000 0000 0000 11 00 (MSE	lyper Alert Level values stored.
		ii. iii. iv.	Field: CGM Type Format: 4 bit Value: not rele Field: CGM Samp Format: 4 bit Value: not rele Field: E2E-CRC Format: uint10 Value: not rele	le Location evant 6	

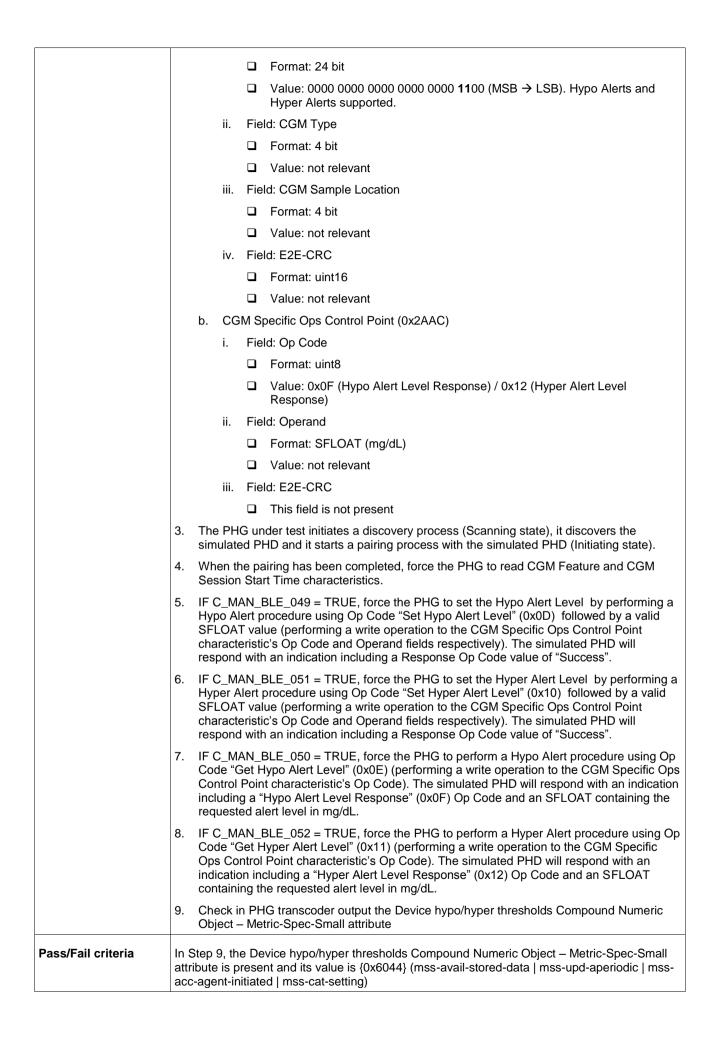
	b. CGM Specific Ops Control Point (0x2AAC)
	i. Field: Op Code
	. □ Format: uint8
	□ Value: 0x0F (Hypo Alert Level Response) / 0x12 (Hyper Alert Level Response)
	ii. Field: Operand
	☐ Format: SFLOAT (mg/dL)
	□ Value: not relevant
	iii. Field: E2E-CRC
	☐ This field is not present
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics.
	5. IF C_MAN_BLE_050 = TRUE, force the PHG to perform a Hypo Alert procedure using Op Code "Get Hypo Alert Level" (0x0E) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Hypo Alert Level Response" (0x0F) Op Code and an SFLOAT containing the requested alert level in mg/dL.
	6. IF C_MAN_BLE_052 = TRUE, force the PHG to perform a Hyper Alert procedure using Op Code "Get Hyper Alert Level" (0x11) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Hyper Alert Level Response" (0x12) Op Code and an SFLOAT containing the requested alert level in mg/dL.
	7. Check in the PHG transcoder output the Device hypo/hyper thresholds Compound Numeric Object – Type attribute
Pass/Fail criteria	In Step 7, the Device hypo/hyper thresholds CompoundNumeric Object – Type attribute is present and set to MDC_PART_PHD_DM MDC_CONC_GLU_THRESHOLDS_HYPO_HYPER
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Type attribute is present:
	☐ Object: Device hypo/hyper thresholds Compound Numeric Object
	☐ Attribute-id: MDC_ATTR_ID_TYPE (2351)
	☐ Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)}
	☐ Attribute-value:
	 partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex)
	code: MDC_CONC_GLU_THRESHOLDS_HYPO_HYPER or 29408 (dec) or 72 E0 (hex)
	b) WAN PCD-01 message
	PCD-01 message includes a segment like this with Type attribute (check OBX-3):
	OBX n 8418016^MDC_CONC_GLU_THRESHOLDS_HYPO_HYPER^MDC m.0.x.0 X [date_time]

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-051_A
TP label		Whitepaper. Device hypo/hyper thresholds Compound Numeric Object - Metric-Spec-Small Attribute 1
Coverage Spec		[Bluetooth PHDT v1.6]

Tes iten	table ns	DHH Nu	meric 3;	М	DHH Numeric 4; M	
Test purpose	Check that:					
	PHG includes Device hypo/hyper thresholds Compound Numeric Object – Metric-Spec-Small attribute in transcoder output.					
		[AND]				
		Metric-S by the us		all is set to {0x6	604C} when the hypo/hyper thre	sholds were updated manually
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND (C_MAN_BLE_050 OR C_MAN_BLE_052)				
Other PICS						
Initial condition		The PHO	under	test and the sir	nulated PHD are in the Standby	state.
Test procedure		spe	cializatio	on). The PHD h	igured with a Continuous Glucos as manually entered Hypo and h nents several BTLE characteristi	Hyper Alert Level values stored.
				his Test Case a		cs. The characteristics of
		a.		eature (0x2AA8	•	
			_	eld: CGM Featu		
				Format: 24 bi		D > 10D> 11 A1 4
				Hyper Alerts	0000 0000 0000 0000 11 00 (MS supported.	B → LSB). Hypo Alerts and
			ii. Fie	eld: CGM Type		
				Format: 4 bit		
				Value: not rel	evant	
			iii. Fie	eld: CGM Samp	le Location	
				Format: 4 bit		
				Value: not rel	evant	
			iv. Fie	ld: E2E-CRC		
				Format: uint1	6	
				Value: not rel	evant	
		b.	CGM S	pecific Ops Co	ntrol Point (0x2AAC)	
			i. Fie	eld: Op Code		
				Format: uint8		
				Value: 0x0F (Response)	(Hypo Alert Level Response) / 0	(12 (Hyper Alert Level)
			ii. Fie	eld: Operand		
				Format: SFL0	DAT (mg/dL)	
				Value: not rel	evant	
			iii. Fie	eld: E2E-CRC		
				This field is n	ot present	
					es a discovery process (Scannin s a pairing process with the simu	
				airing has been rt Time charact	completed, force the PHG to reteristics.	ad CGM Feature and CGM
					UE, force the PHG to perform a l' (0x0E) (performing a write ope	Hypo Alert procedure using Operation to the CGM Specific Ops

	Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Hypo Alert Level Response" (0x0F) Op Code and an SFLOAT containing the requested alert level in mg/dL.			
	6. IF C_MAN_BLE_052 = TRUE, force the PHG to perform a Hyper Alert procedure using Op Code "Get Hyper Alert Level" (0x11) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Hyper Alert Level Response" (0x12) Op Code and an SFLOAT containing the requested alert level in mg/dL.			
	7. Check in PHG transcoder output the Device hypo/hyper thresholds Compound Numeric Object – Metric-Spec-Small attribute			
Pass/Fail criteria	In Step 7, the Device hypo/hyper thresholds Compound Numeric Object – Metric-Spec-Small attribute is present and its value is {0x604C} (mss-avail-stored-data mss-upd-aperiodic mss-acc-agent-initiated mss-cat-manual mss-cat-setting)			
Notes	Possible values in typical points of observation after transcoder output are:			
(To assist manual	a) IEEE 11073 Objects and Attributes			
testing)				
	Metric-Spec-Small attribute is present:			
	Object: Device hypo/hyper thresholds Compound Numeric Object			
	Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630)			
	☐ Attribute-type: BITS-16			
	□ Attribute-value: 0x604C (hex) or BITS mss-avail-stored-data (1), mss-upd-aperiodic(2), mss-acc-agent-initiated(9), mss-cat-manual(12), mss-cat-setting(13) set to TRUE and remaining BITS set to FALSE			
	b) WAN PCD-01 message			
	PCD-01 message does not include segments with Metric-Spec-Small attribute value			

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-051_B				
TP label		Whitepaper. Device hypo/hyper thresholds Compound Numeric Object - Metric-Spec-Small Attribute 2				
Coverage	Spec	[Bluetooth PHDT v1.6]	[Bluetooth PHDT v1.6]			
	Testable items	DHH Numeric 3; M	DHH Numeric 4; M			
Test purpos	е	Check that:				
		PHG includes Device hypo/hyper thresholds Compound Numeric Object – Metric-Spec-Small attribute in transcoder output.				
		[AND]				
		Metric-Spec-Small is set to {0x6044} when either the Hypo Alert or Hyper Alert procedure has been executed				
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND (C_MAN_BLE_050 OR C_MAN_BLE_052) AND (C_MAN_BLE_049 OR C_MAN_BLE_051)				
Other PICS						
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.				
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization).				
		The simulated PHD interest for this Test	implements several BTLE characteristi Case are:	cs. The characteristics of		
		a. CGM Feature (0x2AA8)				
		i. Field: CGM	Feature			



Notes (To assist manual testing)	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes
	Metric-Spec-Small attribute is present:
	☐ Object: Device hypo/hyper thresholds Compound Numeric Object
	☐ Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630)
	☐ Attribute-type: BITS-16
	□ Attribute-value: 0x6044 (hex) or BITS mss-avail-stored-data (1), mss-upd-aperiodic(2), mss-acc-agent-initiated(9), mss-cat-setting(13) set to TRUE and remaining BITS set to FALSE
	b) WAN PCD-01 message
	PCD-01 message does not include segments with Metric-Spec-Small attribute value

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-052				
TP label		Whitepaper. Device hypo/hyper thresholds Compound Numeric Object – Metric-Structure-Small Attribute				
Coverage	Spec	[Bluetooth PHDT v1.6]				
	Testable items	DHH Numeric 6; M				
Test purpos	е	Check that:				
		PHG includes Device hypo/hyper thresholds Compound Numeric Object – Metric-Structure-Small attribute in transcoder output.				
		[AND]				
		Metric-Structure-Small is set to {0x40, 0x02}				
Applicability	1	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND (C_MAN_BLE_050 OR C_MAN_BLE_052)				
Other PICS						
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.				
Test proced	ure	The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has manually entered Hypo and Hyper Alert Level values stored.				
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:				
		a. CGM Feature (0x2AA8)				
		i. Field: CGM Feature				
		☐ Format: 24 bit				
		□ Value: 0000 0000 0000 0000 1100 (MSB → LSB). Hypo Alerts and Hyper Alerts supported.				
		ii. Field: CGM Type				
		☐ Format: 4 bit				
		☐ Value: not relevant				
		iii. Field: CGM Sample Location				
		☐ Format: 4 bit				
		☐ Value: not relevant				
		iv. Field: E2E-CRC				
		☐ Format: uint16				

	☐ Value: not relevant				
	b. CGM Specific Ops Control Point (0x2AAC)				
	i. Field: Op Code				
	☐ Format: uint8				
	□ Value: 0x0F (Hypo Alert Level Response) / 0x12 (Hyper Alert Level Response)				
	ii. Field: Operand				
	☐ Format: SFLOAT (mg/dL)				
	□ Value: not relevant				
	iii. Field: E2E-CRC				
	☐ This field is not present				
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).				
	 When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics. 				
	5. IF C_MAN_BLE_050 = TRUE, force the PHG to perform a Hypo Alert procedure using Op Code "Get Hypo Alert Level" (0x0E) (performing a write operation to the CGM Specific Operation Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Hypo Alert Level Response" (0x0F) Op Code and an SFLOAT containing the requested alert level in mg/dL.				
	6. IF C_MAN_BLE_052 = TRUE, force the PHG to perform a Hyper Alert procedure using Op Code "Get Hyper Alert Level" (0x11) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Hyper Alert Level Response" (0x12) Op Code and an SFLOAT containing the requested alert level in mg/dL.				
	7. Check in the PHG transcoder output the Device hypo/hyper thresholds Compound Numeric Object – Metric-Structure-Small attribute				
Pass/Fail criteria	In Step 7, the Device hypo/hyper thresholds Compound Numeric Object – Metric-Structure-Small attribute is present and set to 0x40 (ms-struct-compound), 0x02 (number of components is 2)				
Notes	Possible values in typical points of observation after transcoder output are:				
(To assist manual testing)	a) IEEE 11073 Objects and Attributes				
testing)	Metric-Structure-Small attribute is present:				
	☐ Object: Device hypo/hyper thresholds Compound Numeric Object				
	☐ Attribute-id: MDC_ATTR_METRIC_STRUCT_SMALL (2675)				
	☐ Attribute-type: SEQUENCE {ms-struct (INT-U8), ms-comp-no (INT-U8)}				
	☐ Attribute-value:				
	ms-struct: 0x40 (ms-struct-compound)				
	ms-comp-no: 0x02 (number of components)				
	b) WAN PCD-01 message				
	PCD-01 message does not include segments with Metric-Structure-Small attribute value				

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-053		
TP label		Whitepaper. Device hypo/hyper thresholds Compound Numeric Object – Metric-Id-List Attribute		
Coverage	Spec	[Bluetooth PHDT v1.6]		
	Testable items	DHH Numeric 7; M		

Test purpose	Check that:				
	PHG includes Device hypo/hyper thresholds Compound Numeric Object – Metric-Id-List				
	attribute in transcoder output.				
	[AND]				
	Metric-Id-List is set to { 0x0002, 0x0004, MDC_CONC_GLU_THRESHOLD_HYPO, MDC_CONC_GLU_THRESHOLD_HYPER }				
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND (C_MAN_BLE_050 OR C_MAN_BLE_052)				
Other PICS					
Initial condition	The PHG under test and the simulated PHD are in the Standby state.				
Test procedure	The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device)				
	specialization). The PHD has manually entered Hypo and Hyper Alert Level values stored				
	The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:				
	a. CGM Feature (0x2AA8)				
	i. Field: CGM Feature				
	☐ Format: 24 bit				
	□ Value: 0000 0000 0000 0000 1100 (MSB → LSB). Hypo Alerts and Hyper Alerts supported.				
	ii. Field: CGM Type				
	☐ Format: 4 bit				
	☐ Value: not relevant				
	iii. Field: CGM Sample Location				
	☐ Format: 4 bit				
	☐ Value: not relevant				
	iv. Field: E2E-CRC				
	☐ Format: uint16				
	☐ Value: not relevant				
	b. CGM Specific Ops Control Point (0x2AAC)				
	i. Field: Op Code				
	☐ Format: uint8				
	□ Value: 0x0F (Hypo Alert Level Response) / 0x12 (Hyper Alert Level Response)				
	ii. Field: Operand				
	☐ Format: SFLOAT (mg/dL)				
	☐ Value: not relevant				
	iii. Field: E2E-CRC				
	☐ This field is not present				
	 The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). 				
	 When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics. 				
	5. IF C_MAN_BLE_050 = TRUE, force the PHG to perform a Hypo Alert procedure using Op Code "Get Hypo Alert Level" (0x0E) (performing a write operation to the CGM Specific Op Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Hypo Alert Level Response" (0x0F) Op Code and an SFLOAT containing the requested alert level in mg/dL.				

	 IF C_MAN_BLE_052 = TRUE, force the PHG to perform a Hyper Alert procedure using Op Code "Get Hyper Alert Level" (0x11) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Hyper Alert Level Response" (0x12) Op Code and an SFLOAT containing the requested alert level in mg/dL. Check in the PHG transcoder output the Device hypo/hyper thresholds Compound Numeric Object – Metric-Id-List attribute 				
	In Step 7, the Device hypo/hyper thresholds Compound Numeric Object – Metric-Id-List attribute is present and set to 0x0002 (count of metric ids is 2), 0x0004 (list length is 4 octets), MDC_CONC_GLU_THRESHOLD_HYPER				
(To assist manual testing)	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Metric-Id-List attribute is present: Object: Device hypo/hyper thresholds Compound Numeric Object Attribute-id: MDC_ATTR_ID_PHYSIO_LIST (2678) Attribute-type: SEQUENCE OF [{OID-Type(INT-U16)}] Attribute-value: 0x0002 (number of elements), 0x0004 (length of the sequence), followed by First element: MDC_CONC_GLU_THRESHOLD_HYPO (0x72E1) Second element: MDC_CONC_GLU_THRESHOLD_HYPER (0x72E2) b) WAN PCD-01 message If both Hypo/Hyper Alert Level Responses are received, then PCD-01 message includes two segments like these with Metric-Id-List attribute values (check OBX-3 in both				
	segments): OBX n NM 8418017^MDC_CONC_GLU_THRESHOLD_HYPO^MDC m.0.x.a [value] 264274^MDC_DIM_MILLI_G_PER_DL^MDC R OBX n NM 8418018^MDC_CONC_GLU_THRESHOLD_HYPER^MDC m.0.x.b [value] 264274^MDC_DIM_MILLI_G_PER_DL^MDC R Note: If one of the responses is not available, its related segment will appear with en empty [value], the value "NAN" in OBX-8 and the value "X" in OBX-11				

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-054					
TP label		Whitepaper. Device hypo/hyper thresholds Compound Numeric Object – Unit-Code Attribute					
Coverage	Spec	[Bluetooth PHDT v1.6]					
Testable items		DHH Numeric 8; M					
Test purpose		Check that: PHG includes Device hypo/hyper thresholds Compound Numeric Object – Unit-Code attribute in transcoder output.					
		[AND] Unit-Code is set to MDC_DIM_MILLI_G_PER_DL					
Applicabilit	у	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND (C_MAN_BLE_050 OR C_MAN_BLE_052)					
Other PICS							
Initial cond	ition	The PHG under test and the simulated PHD are in the Standby state.					

Test procedure The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has manually entered Hypo and Hyper Alert Level values stored. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are: CGM Feature (0x2AA8) Field: CGM Feature ☐ Format: 24 bit □ Value: 0000 0000 0000 0000 1100 (MSB → LSB). Hypo Alerts and Hyper Alerts supported. Field: CGM Type □ Format: 4 bit ■ Value: not relevant iii. Field: CGM Sample Location ■ Format: 4 bit □ Value: not relevant iv. Field: E2E-CRC □ Format: uint16 ■ Value: not relevant CGM Specific Ops Control Point (0x2AAC) Field: Op Code ☐ Format: uint8 Value: 0x0F (Hypo Alert Level Response) / 0x12 (Hyper Alert Level Response) Field: Operand □ Format: SFLOAT (mg/dL) □ Value: not relevant iii. Field: E2E-CRC ☐ This field is not present The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics. IF C_MAN_BLE_050 = TRUE, force the PHG to perform a Hypo Alert procedure using Op Code "Get Hypo Alert Level" (0x0E) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Hypo Alert Level Response" (0x0F) Op Code and an SFLOAT containing the requested alert level in mg/dL. IF C_MAN_BLE_052 = TRUE, force the PHG to perform a Hyper Alert procedure using Op Code "Get Hyper Alert Level" (0x11) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Hyper Alert Level Response" (0x12) Op Code and an SFLOAT containing the requested alert level in mg/dL. Check in the PHG transcoder output the Device hypo/hyper thresholds Compound Numeric Object - Unit-Code attribute Pass/Fail criteria In Step 7, the Device hypo/hyper thresholds Compound Numeric Object - Unit-Code attribute is present and set to MDC_DIM_MILLI_G_PER_DL **Notes** Possible values in typical points of observation after transcoder output are: (To assist manual a) IEEE 11073 Objects and Attributes testing) Unit-Code attribute is present:

	□ Object: Device hypo/hyper thresholds Compound Numeric Object		
	☐ Attribute-id: MDC_ATTR_UNIT_CODE (2454)		
	☐ Attribute-type: INT-U16		
	☐ Attribute-value: MDC_DIM_MILLI_G_PER_DL or 2130 (dec) or 0x0852 (hex)		
b)	WAN PCD-01 message		
	If both Hypo/Hyper Alert Level Responses are received, then PCD-01 message includes two segments like these with Unit-Code attribute value (check OBX-6 in both segments):		
	OBX n NM 8418017^MDC_CONC_GLU_THRESHOLD_HYPO^MDC m.0.x.a [value] 264274^MDC_DIM_MILLI_G_PER_DL^MDC R		
	OBX n NM 8418018^MDC_CONC_GLU_THRESHOLD_HYPER^MDC m.0.x.b [value] 264274^MDC_DIM_MILLI_G_PER_DL^MDC R		
	Note: If one of the responses is not available, its related segment will appear with en empty [value], the value "NAN" in OBX-8 and the value "X" in OBX-11		

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-055								
TP label		Whitepaper. Device hypo/hyper thresholds Compound Numeric Object – Base-Offset-Time-Stamp Attribute								
Coverage	Spec	[Bluetooth PHDT v1.6]								
	Testable items	DHH Numer	ic 9; M	BaseOffset 1; M						
Test purpos	е	Check that:	Check that:							
		PHG include Stamp Attrib	• • • •	per thresholds Compound Numer	ic Object – Base-Offset-Time-					
		[AND]								
			ation (Base-Offset	bute is set to the correct value acc -Time-Stamp attribute will be deri						
Applicability	,	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND (C_MAN_BLE_050 OR C_MAN_BLE_052)								
Other PICS										
Initial condit	tion	The PHG un	The PHG under test and the simulated PHD are in the Standby state.							
Test proced	ure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has manually entered Hypo and Hyper Alert Level values stored.							
		The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:								
		a. CGM Feature (0x2AA8)								
		i.	Field: CGM Fea	ture						
			☐ Format: 24	bit						
				0 0000 0000 0000 0000 1100 (MS s supported.	B → LSB). Hypo Alerts and					
		ii.	Field: CGM Type	е						
			☐ Format: 4 b	it						
			□ Value: not r	elevant						
		iii.	Field: CGM Sam	ple Location						
			☐ Format: 4 b	it						

				1. Value not relevent	
				Value: not relevant ield: E2E-CRC	
		ı	_		
		h (_		
				Specific Ops Control Point (0x2AAC)	
		İ		ield: Op Code 1 Format: uint8	
				Value: 0x0F (Hypo Alert Level Response) / 0x12 (Hyper Alert Level	
				Response)	
		i	. F	ield: Operand	
				Format: SFLOAT (mg/dL)	
		i	i. F	ield: E2E-CRC	
				·	
	3.			under test initiates a discovery process (Scanning state), it discovers the the PHD and it starts a pairing process with the simulated PHD (Initiating state).	
	4.			pairing has been completed, force the PHG to read CGM Feature and CGM tart Time characteristics.	
	5.	IF C_MAN_BLE_050 = TRUE, force the PHG to perform a Hypo Alert procedure using Op Code "Get Hypo Alert Level" (0x0E) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Hypo Alert Level Response" (0x0F) Op Code and an SFLOAT containing the requested alert level in mg/dL.			
	6.	IF C_MAN_BLE_052 = TRUE, force the PHG to perform a Hyper Alert procedure using Op Code "Get Hyper Alert Level" (0x11) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Hyper Alert Level Response" (0x12) Op Code and an SFLOAT containing the requested alert level in mg/dL.			
	7.			PHG transcoder output the Device hypo/hyper thresholds Compound Numeric tase-Offset-Time-Stamp attribute	
Pass/Fail criteria		Step 7, the Device hypo/hyper thresholds Compound Numeric Object – Base-Offset-Time- amp attribute is present and it is set to the collector's time at the time of collection.			
Notes	Pos	ssible	/alue	s in typical points of observation after transcoder output are:	
(To assist manual testing)	a)	IEEE	110	73 Objects and Attributes	
tosting)		Base	-Offs	et-Time-Stamp attribute is present:	
			Objed	t: Device hypo/hyper thresholds Compound Numeric Object	
			Attrib	ute-id: MDC_ATTR_TIME_STAMP_BO (2690)	
				ute-type: SEQUENCE {bo-seconds (INT-U32), bo-fraction (INT-U16), bo-time-(INT-I16)}	
			Attrib	ute-value: collector's time at the time of collection.	
	b)	WAN	PCE	0-01 message	
				essage includes a segment like this with Type attribute (check OBX-14):	
		()BX	n 8418016^MDC_CONC_GLU_THRESHOLDS_HYPO_HYPER^MDC .0 X [value described in a) coded in DTM format]	

TP Id	TP/LP-PAN/PHG/PHDTW/CGM/BV-056_A
TP label	Whitepaper. Device hypo/hyper thresholds Compound Numeric Object – Compound-Basic-Nu-Observed-Value Attribute

Coverage	Spec	[Bluetooth PHDT v1.6]							
	Testable items	DHH N	Numer	ic 10; M					
Test purpos	Check that:								
	PHG includes Device hypo/hyper threshonds Compound Numeric Object Compound-Basic-Nu-Observed-Value attribute in transcoder output.								
		[AND]							
		Compound-Basic-Nu-Observed-Value attribute is set to the correct value.							
Applicability	•			E_000 AND C_MA _BLE_052)	N_BLE_002 AND C_MAN_BLE	E_043 AND (C_MAN_BLE_050			
Other PICS									
Initial condit	ion	The PI	HG ur	nder test and the sin	nulated PHD are in the Standb	y state.			
Test proced	ure				igured with a Continuous Gluco as manually entered Hypo and	ose Monitoring Profile (device Hyper Alert Level values stored.			
				nulated PHD implent for this Test Case	nents several BTLE characteris are:	stics. The characteristics of			
		a.	CG	M Feature (0x2AA	3)				
			i.	Field: CGM Featu	re				
				☐ Format: 24 b	t				
				☐ Value: 0000 (Hyper Alerts	0000 0000 0000 0000 1100 (M supported.	SB → LSB). Hypo Alerts and			
			ii.	Field: CGM Type					
				☐ Format: 4 bit					
				■ Value: not re					
			iii.	Field: CGM Samp	le Location				
				☐ Format: 4 bit					
				□ Value: not re	evant				
			iv.	Field: E2E-CRC					
				☐ Format: uint1					
		b.	CG	☐ Value: not re	ntrol Point (0x2AAC)				
		D.	i.	Field: Op Code	TILIOI POITIL (UXZAAC)				
			1.	☐ Format: uint8					
					(Hypo Alert Level Response) / (0x12 (Hyper Alert Level			
			ii.	Field: Operand					
				☐ Format: SFL	DAT (mg/dL)				
					Hypo Alert Level Response) / 3	60.0 (Hyper Alert Level			
			iii.	Field: E2E-CRC					
				☐ This field is n	ot present				
					es a discovery process (Scanni s a pairing process with the sim				
				ne pairing has beer Start Time charac	completed, force the PHG to reteristics.	read CGM Feature and CGM			

	T
	5. IF C_MAN_BLE_050 = TRUE, force the PHG to perform a Hypo Alert procedure using Op Code "Get Hypo Alert Level" (0x0E) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Hypo Alert Level Response" (0x0F) Op Code and an SFLOAT containing the requested alert level in mg/dL.
	6. IF C_MAN_BLE_052 = TRUE, force the PHG to perform a Hyper Alert procedure using Op Code "Get Hyper Alert Level" (0x11) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Hyper Alert Level Response" (0x12) Op Code and an SFLOAT containing the requested alert level in mg/dL.
	7. Check in PHG transcoder output the Device hypo/hyper threshonds Compound Numeric Object – Compound-Basic-Nu-Observed-Value attribute
Pass/Fail criteria	In Step 7, the the Device hypo/hyper threshonds Compound Numeric Object – Compound-Basic-Nu-Observed-Value attributeis set to 0x0002 (count of components is 2), 0x0004 (component list length is 4 octets), the Hypo Alert Level Response Operand followed by the Hyper Alert Level Response Operand
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
testing)	Compound-Basic-Nu-Observed-Value attribute is present:
	□ Object: Device hypo/hyper threshonds Compound Numeric Object
	☐ Attribute-id: MDC_ATTR_NU_CMPD_VAL_OBS_BASIC (2677)
	☐ Attribute-type: SEQUENCE OF [{SFLOAT}]
	☐ Attribute-value: 0x0002 (number of elements), 0x0004 (length of the sequence), followed by
	 IF C_MAN_BLE_050 = TRUE, first element (Hypo Alert Level Response Operand) will be set to: 00 24 (hex) or F1 68 (hex) or EE 10 (hex) or 36.0 (dec). IF C_MAN_BLE_050 = FALSE, first element will be set to NaN (0x07FF)
	 IF C_MAN_BLE_052 = TRUE, second element (Patient High Level Response Operand) will be set to: 01 24 (hex) or FE 10 (hex) or 360.0 (dec). IF C_MAN_BLE_052 = FALSE, second element will be set to NaN (0x07FF)
	b) WAN PCD-01 message
	If both Hypo/Hyper Alert Level Responses are received,PCD-01 message includes two segments like these with Compound-Basic-Nu-Observed-Value attribute value (check OBX-5 in both segments):
	OBX n NM 8418017^MDC_CONC_GLU_THRESHOLD_HYPO^MDC m.0.x.a 36.0 264274^MDC_DIM_MILLI_G_PER_DL^MDC R
	OBX n NM 8418018^MDC_CONC_GLU_THRESHOLD_HYPER^MDC m.0.x.b 360.0 264274^MDC_DIM_MILLI_G_PER_DL^MDC R
	Note: If one of the responses is not available, its related segment will appear with en empty [value], the value "NAN" in OBX-8 and the value "X" in OBX-11

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-056_B					
TP label Whitepaper. Device hypo/hyper thresholds Compoun Observed-Value Attribute Special Values				c Object – Compound-Basic-Nu-			
Coverage	Spec	[Bluetooth PHDT v1.6]					
	Testable items	DHH Numeric 10; M	DHH Numeric 11; M				
Test purpose		Check that:					
		PHG includes Device hypo/hyper threshonds Compound Numeric Object Compound-Basic-Nu-Observed-Value attribute in transcoder output.					

	[AND]					
	If only one of the Hypo Alert or the Hyper Alert support is indicated in the CGM Feature characteristic, NaN will be used for the component of the Compound-Basic-Nu-Observed-Value that corresponds with the unsupported alert.					
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND (C_MAN_BLE_050 OR C_MAN_BLE_052)					
Other PICS						
Initial condition	The PHG under test and the simulated PHD are in the Standby state.					
Test procedure	The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has manually entered Hypo and Hyper Alert Level values stored.					
	 The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are: 					
	a. CGM Feature (0x2AA8)					
	i. Field: CGM Feature					
	☐ Format: 24 bit					
	□ Value: 0000 0000 0000 0000 0100 (MSB → LSB). Hypo Alerts supported.					
	ii. Field: CGM Type					
	☐ Format: 4 bit					
	☐ Value: not relevant					
	iii. Field: CGM Sample Location					
	☐ Format: 4 bit					
	☐ Value: not relevant					
	iv. Field: E2E-CRC					
	☐ Format: uint16					
	☐ Value: not relevant					
	b. CGM Specific Ops Control Point (0x2AAC)					
	i. Field: Op Code					
	☐ Format: uint8					
	☐ Value: 0x0F (Hypo Alert Level Response)					
	ii. Field: Operand					
	☐ Format: SFLOAT (mg/dL)					
	□ Value: 36.0 (Hypo Alert Level Response)					
	iii. Field: E2E-CRC					
	☐ This field is not present					
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).					
	4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics.					
	5. IF C_MAN_BLE_050 = TRUE, force the PHG to perform a Hypo Alert procedure using Op Code "Get Hypo Alert Level" (0x0E) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Hypo Alert Level Response" (0x0F) Op Code and an SFLOAT containing the requested alert level in mg/dL.					
	6. IF C_MAN_BLE_050 = TRUE, check in PHG transcoder output the Device hypo/hyper threshonds Compound Numeric Object – Compound-Basic-Nu-Observed-Value attribute.					
	7. End current CGM session and start a new one.					

	8.	The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization) and implements several BTLE characteristics. The characteristics of interes for this Test Case are:			
		a.	CG	M F	eature (0x2AA8)
			i.	Fie	ld: CGM Feature
					Format: 24 bit
					Value: 0000 0000 0000 0000 1000 (MSB \rightarrow LSB). Hyper Alerts supported.
			ii.	Fie	ld: CGM Type
					Format: 4 bit
					Value: not relevant
			iii.	Fie	ld: CGM Sample Location
					Format: 4 bit
					Value: not relevant
			iv.	Fie	ld: E2E-CRC
					Format: uint16
					Value: not relevant
		b.	CG	SM S	pecific Ops Control Point (0x2AAC)
					Field: Op Code
					Format: uint8
					Value: 0x12 (Hyper Alert Level Response)
			i.	Fie	ld: Operand
					Format: SFLOAT (mg/dL)
					Value: 360.0 (Hyper Alert Level Response)
			ii.	Fie	ld: E2E-CRC
					This field is not present
	9.				nder test initiates a discovery process (Scanning state), it discovers the HD and it starts a pairing process with the simulated PHD (Initiating state).
	10.	per (pe Co	form rforr de).	a H ning The	airing has been completed, IF C_MAN_BLE_052 = TRUE, force the PHG to yper Alert procedure using Op Code "Get Hyper Alert Level" (0x11) a write operation to the CGM Specific Ops Control Point characteristic's Op simulated PHD will respond with an indication including a "Hyper Alert Level (0x12) Op Code and an SFLOAT containing the requested alert level in mg/dL.
	11.				BLE_052 = TRUE, Check in PHG transcoder output the Device hypo/hyper Compound Numeric Object – Compound-Basic-Nu-Observed-Value attribute
Pass/Fail criteria	•	– C 2),	omp 0x00	oun 004 (s checked, the the Device hypo/hyper threshonds Compound Numeric Object d-Basic-Nu-Observed-Value attributeis set to 0x0002 (count of components is component list length is 4 octets), the Hypo Alert Level Response Operand the special value NaN (0x07FF)
	•	– C 2),	omp 0x00	oun 004 (as checked, the the Device hypo/hyper threshonds Compound Numeric Object d-Basic-Nu-Observed-Value attributeis set to 0x0002 (count of components is component list length is 4 octets), the special value NaN (0x07FF) followed by lert Level Response Operand
Notes	Pos	ssible	e val	ues	in typical points of observation after transcoder output are:
(To assist manual testing)	a)				Objects and Attributes
coung)					Basic-Nu-Observed-Value attribute is present:
			Ob	ject:	Device hypo/hyper threshonds Compound Numeric Object
			Att	ribut	e-id: MDC_ATTR_NU_CMPD_VAL_OBS_BASIC (2677)

		Attribute-type: SEQUENCE OF [{SFLOAT}]
		Attribute-value (If Step 6 was checked): $0x0002$ (number of elements), $0x0004$ (length of the sequence), followed by
		 First element (Hypo Alert Level Response Operand): 00 24 (hex) or F1 68 (hex) or EE 10 (hex) or 36.0 (dec)
		Second element (Patient High Level Response Operand): NaN (0x07FF)
		Attribute-value (if Step 11 was checked): 0x0002 (number of elements), 0x0004 (length of the sequence), followed by
		• First element (Hypo Alert Level Response Operand): NaN (0x07FF)
		 Second element (Patient High Level Response Operand): 01 24 (hex) or FE 10 (hex) or 360.0 (dec)
b)	WA	N PCD-01 message
		D-01 message includes two segments like this with Unit-Code attribute value (check X-5):
	•	If Step 6 was checked:
		OBX n NM 8418017^MDC_CONC_GLU_THRESHOLD_HYPO^MDC m.0.x.a 36.0 264274^MDC_DIM_MILLI_G_PER_DL^MDC R
		OBX n NM 8418017^MDC_CONC_GLU_THRESHOLD_HYPO^MDC m.0.x.a 264274^MDC_DIM_MILLI_G_PER_DL^MDC NAN X
	•	IF Step 11 was checked:
		OBX n NM 8418017^MDC_CONC_GLU_THRESHOLD_HYPO^MDC m.0.x.a 264274^MDC_DIM_MILLI_G_PER_DL^MDC NAN X
		$OBX n NM 8418018^{MDC}_CONC_GLU_THRESHOLD_HYPER^{MDC} m.0.x.b 360.0 \\264274^{MDC}_DIM_MILLI_G_PER_DL^{MDC} R$

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-057						
TP label		Whitepaper.Glucose rate of charge thresholds Compound Numeric Object - Handle Attribute						
Coverage	Spec	[Bluetooth PHDT v1.6]						
	Testable items	GRC Numeric 1; O						
Test purpos	se	Check that:						
		PHG does not include Glucose rate of charge thresholds Compound Numeric Object – Handle Attribute in transcoder output.						
		[OR]						
		If PHG includes Glucose rate of charge thresholds Compound Numeric Object – Handle attribute in transcoder output, then its value shall be different than 0						
Applicabilit	у	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND C_MAN_BLE_054 AND C_MAN_BLE_056						
Other PICS								
Initial cond	ition	The PHG under test and the simulated PHD are in the Standby state.						
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has manually entered Rate of Decrease and Increase Alert Level values stored.						
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:						
		a. CGM Feature (0x2AA8)						

	i. Field: CGM Feature
	☐ Format: 24 bit
	□ Value: 0000 0000 0000 0000 0001 0000 (MSB → LSB). Rate of Increase/Decrease Alerts supported.
	ii. Field: CGM Type
	☐ Format: 4 bit
	□ Value: not relevant
	iii. Field: CGM Sample Location
	☐ Format: 4 bit
	□ Value: not relevant
	iv. Field: E2E-CRC
	☐ Format: uint16
	☐ Value: not relevant
	2. CGM Specific Ops Control Point (0x2AAC)
	i. Field: Op Code
	☐ Format: uint8
	ii. Field: Op Code – Response Codes
	☐ Format: 8 bit
	Value: 0x15 (Rate of Decrease Alert Level Response) / 0x18 (Rate of Increase Alert Level Response)
	iii. Field: Operand
	☐ Format: SFLOAT (mg/dL/min)
	□ Value: not relevant
	iv. Field: E2E-CRC
	☐ This field is not present
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Rate of Decrease Alert Level procedure using Op Code "Get Rate of Decrease Alert Level" (0x14) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).
	 The simulated PHD will respond with an indication including a "Rate of Decrease Alert Level Response" (0x15) Op Code and an SFLOAT containing the requested alert level in mg/dL/min.
	 Force the PHG to perform a Rate of Increase Alert Level procedure using Op Code "Get Rate of Increase Alert Level" (0x17) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).
	7. The simulated PHD will respond with an indication including a "Rate of Increase Alert Level Response" (0x18) Op Code and an SFLOAT containing the requested alert level in mg/dL/min.
	Check in PHG transcoder output the Glucose rate of charge thresholds Compound Numeric Object – Handle attribute
Pass/Fail criteria	In Step 8, the Glucose rate of charge thresholds Compound Numeric Object – Handle attribute is not present or, if it is present then its value is different than 0
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
coung)	Handle attribute is not present, or if it is present then:
	☐ Object: Glucose rate of charge thresholds Compound Numeric Object

	Attribute-id: MDC_ATTR_ID_HANDLE (2337)
	Attribute-type: INT-U16
	Attribute-value: Any value different than 0
b) W	AN PCD-01 message
PC	CD-01 message does not include segments with Handle attribute value

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-058							
TP label		Whitepaper. Glucose rate of charge thresholds Compound Numeric Object - Type Attribute							
Coverage	Spec	[Bluetooth PHDT v1.6]							
	Testable items	GRC Numeric 2; M							
Test purpose		Check that: PHG includes Glucose rate of charge thresholds Compound Numeric Object – Type attribute in transcoder output. [AND] Type is set to MDC_PART_PHD_DM MDC_CONC_GLU_RATE_THRESHOLDS							
Applicabilit	у	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND C_MAN_BLE_054 AND C_MAN_BLE_056							
Other PICS									
Initial condi	ition	The PHG under test and the simulated PHD are in the Standby state.							
Test proced	dure	 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has manually entered Rate of Decrease and Increase Alert Level values stored. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are: 							
		a. CGM Feature (0x2AA8)							
		i. Field: CGM Feature							
		☐ Format: 24 bit							
		□ Value: 0000 0000 0000 0000 0001 0000 (MSB → LSB). Rate of Increase/Decrease Alerts supported.							
		ii. Field: CGM Type							
		☐ Format: 4 bit							
		☐ Value: not relevant							
		iii. Field: CGM Sample Location							
		☐ Format: 4 bit							
		☐ Value: not relevant							
		iv. Field: E2E-CRC							
		☐ Format: uint16							
		□ Value: not relevant							
		b. CGM Specific Ops Control Point (0x2AAC)							
		i. Field: Op Code							
		☐ Format: uint8							
1		ii. Field: Op Code – Response Codes							

☐ Format: 8 bit				
 Value: 0x15 (Rate of Decrease Alert Level Response) / 0x18 (Rate of Increase Alert Level Response) 				
iii. Field: Operand				
☐ Format: SFLOAT (mg/dL/min)				
☐ Value: not relevant				
iv. Field: E2E-CRC				
☐ This field is not present				
3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).				
4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Rate of Decrease Alert Level procedure using Op Code "Get Rate of Decrease Alert Level" (0x14) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).				
 The simulated PHD will respond with an indication including a "Rate of Decrease Alert Level Response" (0x15) Op Code and an SFLOAT containing the requested alert level in mg/dL/min. 				
6. Force the PHG to perform a Rate of Increase Alert Level procedure using Op Code "Get Rate of Increase Alert Level" (0x17) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).				
The simulated PHD will respond with an indication including a "Rate of Increase Alert Level Response" (0x18) Op Code and an SFLOAT containing the requested alert level in mg/dL/min.				
 Check in the PHG transcoder output the Glucose rate of charge thresholds Compound Numeric Object – Type attribute 				
In Step 8, the Glucose rate of charge thresholds Compound Numeric Object – Type attribute is present and set to MDC_PART_PHD_DM MDC_CONC_GLU_RATE_THRESHOLDS				
Possible values in typical points of observation after transcoder output are:				
a) IEEE 11073 Objects and Attributes				
Type attribute is present:				
☐ Object: Glucose rate of charge thresholds Compound Numeric Object				
☐ Attribute-id: MDC_ATTR_ID_TYPE (2351)				
☐ Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)}				
☐ Attribute-value:				
 partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) 				
 code: MDC_CONC_GLU_RATE_THRESHOLDS or 29412 (dec) or 72 E4 (hex) 				
b) WAN PCD-01 message				
PCD-01 message includesa segments like this with Type attribute (check OBX-3):				
OBX n 8391520^MDC_CONC_GLU_RATE_THRESHOLDS^MDC m.0.x.0 X [date_time]				

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-059_A					
TP label		Whitepaper. Glucose rate of charge thresholds Compound Numeric Object - Metric-Spec-Small Attribute 1					
Coverage	Spec	[Bluetooth PHDT v1.6]					
	Testable items	GRC Numeric 3; M	GRCNumeric 5; M				

Test purpose	Check that:							
	PHG includes Glucose rate of charge thresholds Compound Numeric Object – Metric-Spec-Small attribute in transcoder output.							
	[AND]							
	Metric-Spec-Small is set to {0x604C} when the rate of change thresholds were updated							
	manually by the user.							
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND C_MAN_BLE_054 AND C_MAN_BLE_056							
Other PICS								
Initial condition	The PHG under test and the simulated PHD are in the Standby state.							
Tost procedure	The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device)							
Test procedure	 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has manually entered Rate of Decrease and Increase Alert Level values stored. 							
	The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:							
	a. CGM Feature (0x2AA8)							
	i. Field: CGM Feature							
	☐ Format: 24 bit							
	□ Value: 0000 0000 0000 0000 0001 0000 (MSB → LSB). Rate of Increase/Decrease Alerts supported.							
	ii. Field: CGM Type							
	☐ Format: 4 bit							
	□ Value: not relevant							
	iii. Field: CGM Sample Location							
	☐ Format: 4 bit							
	□ Value: not relevant							
	iv. Field: E2E-CRC							
	☐ Format: uint16							
	☐ Value: not relevant							
	b. CGM Specific Ops Control Point (0x2AAC)							
	i. Field: Op Code							
	☐ Format: uint8							
	ii. Field: Op Code – Response Codes							
	☐ Format: 8 bit							
	□ Value: 0x15 (Rate of Decrease Alert Level Response) / 0x18 (Rate of Increase Alert Level Response)							
	iii. Field: Operand							
	☐ Format: SFLOAT (mg/dL/min)							
	☐ Value: not relevant							
	iv. Field: E2E-CRC							
	☐ This field is not present							
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).							
	 4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Rate of Decrease Alert Level procedure using Op Code "Get Rate of Decrease Alert Level" (0x14) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). 							

	 The simulated PHD will respond with an indication including a "Rate of Decrease Alert Level Response" (0x15) Op Code and an SFLOAT containing the requested alert level in mg/dL/min. 					
	6. Force the PHG to perform a Rate of Increase Alert Level procedure using Op Code "Get Rate of Increase Alert Level" (0x17) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).					
	7. The simulated PHD will respond with an indication including a "Rate of Increase Alert Level Response" (0x18) Op Code and an SFLOAT containing the requested alert level in mg/dL/min.					
	Check in the PHG transcoder output the Glucose rate of charge thresholds Compound Numeric Object – Metric-Spec-Small attribute					
Pass/Fail criteria	In Step 8, the Patient low/high thresholds Compound Numeric Object – Metric-Spec-Small attribute is present and its value is {0x604C} (mss-avail-stored-data mss-upd-aperiodic mss-acc-agent-initiated mss-cat-manual mss-cat-setting)					
Notes (To assist manual	Possible values in typical points of observation after transcoder output are:					
testing)	a) IEEE 11073 Objects and Attributes					
	Metric-Spec-Small attribute is present:					
	□ Object: Glucose rate of charge thresholds Compound Numeric Object					
	☐ Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630)					
	☐ Attribute-type: BITS-16					
	Attribute-value: 0x604C (hex) or BITS mss-avail-stored-data (1), mss-upd-aperiodic(2), mss-acc-agent-initiated(9), mss-cat-manual(12), mss-cat-setting(13) set to TRUE and remaining BITS set to FALSE					
	b) WAN PCD-01 message					
	PCD-01 message does not include segments with Metric-Spec-Small attribute value					

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-059_B					
TP label		Whitepaper. Glucose rate of charge thresholds Compound Numeric Object - Metric-Spec-Small Attribute 2					
Coverage	Spec						
	Testable items	GRC Numeric 3; M	GRCNumeric 4; M				
Test purpos	ie	Check that:					
		PHG includes Glucose rate of charge thresholds Compound Numeric Object – Metric-Spec-Small attribute in transcoder output.					
		[AND]					
		Metric-Spec-Small is set to {0x6044} when the Rate of Increase/Decrease Alert Level procedure has been executed					
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND C_MAN_BLE_054 AND C_MAN_BLE_056 AND C_MAN_BLE_053 AND C_MAN_BLE_055					
Other PICS							
Initial condition		The PHG under test and the simulated PHD are in the Standby state.					
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization).					
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:					

	a.	CG	ΜF	eature (0x2AA8)
		i.	Fie	ld: CGM Feature
				Format: 24 bit
				Value: 0000 0000 0000 0000 0001 0000 (MSB \rightarrow LSB). Rate of Increase/Decrease Alerts supported.
		ii.	Fie	ld: CGM Type
				Format: 4 bit
				Value: not relevant
		iii.	Fie	ld: CGM Sample Location
				Format: 4 bit
				Value: not relevant
		iv.	Fie	ld: E2E-CRC
				Format: uint16
				Value: not relevant
	b.	CG	M S	pecific Ops Control Point (0x2AAC)
		i.	Fie	ld: Op Code
				Format: uint8
		ii.	Fie	ld: Op Code – Response Codes
				Format: 8 bit
				Value: 0x15 (Rate of Decrease Alert Level Response) / 0x18 (Rate of Increase Alert Level Response)
		iii.	Fie	ld: Operand
				Format: SFLOAT (mg/dL/min)
				Value: not relevant
		iv.	Fie	ld: E2E-CRC
				This field is not present
3.				nder test initiates a discovery process (Scanning state), it discovers the HD and it starts a pairing process with the simulated PHD (Initiating state).
4.				airing has been completed, force the PHG to read CGM Feature and CGM rt Time characteristics.
5.	Ale by a Poi	rt Le [,] a vali nt ch	vel p id SI arac	HG to set the Rate of Decrease Alert Level by performing a Rate of Decrease procedure using Op Code "Set Rate of Decrease Alert Level" (0x13) followed FLOAT value (performing a write operation to the CGM Specific Ops Control eteristic's Op Code and Operand fields respectively). The simulated PHD will an an indication including a Response Op Code value of "Success".
6.	Ale a va cha	rt Le alid S racte	vel p SFLC eristi	HG to set the Rate of Increase Alert Level by performing a Rate of Increase procedure using Op Code "Set Rate of Increase Alert Level" (0x16) followed by DAT value (performing a write operation to the CGM Specific Ops Control Point c's Op Code and Operand fields respectively). The simulated PHD will an an indication including a Response Op Code value of "Success".
7.	"Ge	t Ra	te of	the PHG to perform a Rate of Decrease Alert Level procedure using Op Code f Decrease Alert Level" (0x14) (performing a write operation to the CGM s Control Point characteristic's Op Code).
8.	Lev		espc	ed PHD will respond with an indication including a "Rate of Decrease Alert onse" (0x15) Op Code and an SFLOAT containing the requested alert level in
9.	Rat	e of	Incre	HG to perform a Rate of Increase Alert Level procedure using Op Code "Get ease Alert Level" (0x17) (performing a write operation to the CGM Specific Ops at characteristic's Op Code).
10.				ed PHD will respond with an indication including a "Rate of Increase Alert Level (0x18) Op Code and an SFLOAT containing the requested alert level in

	mg/dL/min.						
	Check in the PHG transcoder output the Glucose rate of charge thresholds Compound Numeric Object – Metric-Spec-Small attribute						
Pass/Fail criteria	In Step 11, the Glucose rate of charge thresholds Compound Numeric Object – Metric-Spec-Small attribute is present and its value is {0x6044} (mss-avail-stored-data mss-upd-aperiodic mss-acc-agent-initiated mss-cat-setting)						
Notes	Possible values in typical points of observation after transcoder output are:						
(To assist manual testing)	a) IEEE 11073 Objects and Attributes						
3 ,	Metric-Spec-Small attribute is present:						
	☐ Object: Glucose rate of charge thresholds Compound Numeric Object						
	☐ Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630)						
	☐ Attribute-type: BITS-16						
	Attribute-value: 0x6044 (hex) or BITS mss-avail-stored-data (1), mss-upd-aperiodic(2), mss-acc-agent-initiated(9), mss-cat-setting(13) set to TRUE and remaining BITS set to FALSE						
	b) WAN PCD-01 message						
	PCD-01 message does not include segments with Metric-Spec-Small attribute value						

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-060					
TP label		Whitepaper. Glucose rate of charge thresholds Compound Numeric Object – Metric-Structure-Small Attribute					
Spec	[Bluetooth PHDT v1.6]						
Testable items	GRC Numeric 6; M						
)	Check that:						
	PHG includes Glucose rate of charge thresholds Compound Numeric Object – Metric-Structure-Small attribute in transcoder output.						
	_	ura Comallia aat ta	(0,40,0,00)				
	Metric-Structure-Small is set to {0x40, 0x02}						
	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND C_MAN_BLE_054 AND C_MAN_BLE_056						
on	The PHG under test and the simulated PHD are in the Standby state.						
ire	The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has manually entered Rate of Decrease and Increase Alert Level values stored.						
	The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:						
	a. CGM Feature (0x2AA8)						
		i. Field: CGM Feature					
		☐ Format: 24 bi	t				
				MSB → LSB). Rate of			
	ii.	Field: CGM Type					
		☐ Format: 4 bit					
	Testable items	Whitepaper. C Small Attribute Spec [Bluetooth PH Testable items GRC Numeric Check that: PHG includes Structure-Smale [AND] Metric-Structure C_MAN_BLE_AND C_MAN_ on The PHG und specialize values structure structure 1. The simulation interest for a. CGM i.	Whitepaper. Glucose rate of che Small Attribute Spec [Bluetooth PHDT v1.6] Testable items Check that: PHG includes Glucose rate of constructure-Small attribute in transparent [AND] Metric-Structure-Small is set to C_MAN_BLE_000 AND C_MANAND C_MANAND C_MAN_BLE_056 on The PHG under test and the simplement of the simulated PHD is conformal specialization). The PHD have been supported in the simulated PHD implement of the simulat	Whitepaper. Glucose rate of charge thresholds Compound I Small Attribute Spec [Bluetooth PHDT v1.6] Testable items Check that: PHG includes Glucose rate of charge thresholds Compound Structure-Small attribute in transcoder output. [AND] Metric-Structure-Small is set to {0x40, 0x02} C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_B AND C_MAN_BLE_056 on The PHG under test and the simulated PHD are in the Standard PHD and the Standard PHD is configured with a Continuous Gluspecialization). The PHD has manually entered Rate of values stored. 2. The simulated PHD implements several BTLE character interest for this Test Case are: a. CGM Feature (0x2AA8) i. Field: CGM Feature Format: 24 bit Value: 0000 0000 0000 0000 0001 0000 (Increase/Decrease Alerts supported. ii. Field: CGM Type			

	□ Value: not relevant
	iii. Field: CGM Sample Location
	Format: 4 bit
	□ Value: not relevant
	iv. Field: E2E-CRC
	☐ Format: uint16
	□ Value: not relevant
	b. CGM Specific Ops Control Point (0x2AAC)
	i. Field: Op Code
	☐ Format: uint8
	□ Value: 0x15 (Rate of Decrease Alert Level Response) / 0x18 (Rate of Increase Alert Level Response)
	ii. Field: Operand
	☐ Format: SFLOAT (mg/dL/min)
	☐ Value: not relevant
	iii. Field: E2E-CRC
	☐ This field is not present
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Rate of Decrease Alert Level procedure using Op Code "Get Rate of Decrease Alert Level" (0x14) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).
	 The simulated PHD will respond with an indication including a "Rate of Decrease Alert Level Response" (0x15) Op Code and an SFLOAT containing the requested alert level in mg/dL/min.
	6. Force the PHG to perform a Rate of Increase Alert Level procedure using Op Code "Get Rate of Increase Alert Level" (0x17) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).
	7. The simulated PHD will respond with an indication including a "Rate of Increase Alert Level Response" (0x18) Op Code and an SFLOAT containing the requested alert level in mg/dL/min.
	Check in PHG transcoder output the Glucose rate of charge thresholds Compound Numeric Object – Metric-Structure-Small attribute
Pass/Fail criteria	In Step 8, the Glucose rate of charge thresholds Compound Numeric Object – Metric-Structure-Small attribute is present and set to 0x40 (ms-struct-compound), 0x02 (number of components is 2)
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
<i>57</i>	Metric-Structure-Small attribute is present:
	☐ Object: Glucose rate of charge thresholds Compound Numeric Object
	☐ Attribute-id: MDC_ATTR_METRIC_STRUCT_SMALL (2675)
	☐ Attribute-type: SEQUENCE {ms-struct (INT-U8), ms-comp-no (INT-U8)}
	☐ Attribute-value:
	ms-struct: 0x40 (ms-struct-compound)
	ms-comp-no: 0x02 (number of components)
	b) WAN PCD-01 message
	PCD-01 message does not include segments with Metric-Structure-Small attribute value

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-061	
TP label		Whitepaper. Glucose rate of charge thresholds Compound Numeric Object – Metric-Id-List Attribute	
Coverage	Spec	[Bluetooth PHDT v1.6]	
	Testable items	GRC Numeric 7; M	
Test purpos	s e	Check that: PHG includes Glucose rate of charge thresholds Compound Numeric Object – Metric-Id-List attribute in transcoder output. [AND] Metric-Id-List is set to { 0x0002, 0x0004, MDC_CONC_GLU_RATE_THRESHOLD_INCREASE, MDC_CONC_GLU_RATE_THRESHOLD_DECREASE }	
Applicability	y	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND C_MAN_BLE_054 AND C_MAN_BLE_056	
Other PICS			
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.	
Test proced	ure	 1. The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has manually entered Rate of Decrease and Increase Alert Level values stored. 2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are: a. CGM Feature (0x2AA8) i. Field: CGM Feature □ Format: 24 bit □ Value: 0000 0000 0000 0001 0000 (MSB → LSB). Rate of Increase/Decrease Alerts supported. ii. Field: CGM Type □ Format: 4 bit □ Value: not relevant iii. Field: CGM Sample Location □ Format: 4 bit □ Value: not relevant iv. Field: E2E-CRC □ Format: uint16 □ Value: not relevant b. CGM Specific Ops Control Point (0x2AAC) i. Field: Op Code □ Format: uint8 □ Value: 0x15 (Rate of Decrease Alert Level Response) / 0x18 (Rate of Increase Alert Level Response) ii. Field: Operand 	
		ıı. Field: Operand ☐ Format: SFLOAT (mg/dL/min)	
		☐ Value: not relevant	

	iii. Field: E2E-CRC
	☐ This field is not present
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Rate of Decrease Alert Level procedure using Op Code "Get Rate of Decrease Alert Level" (0x14) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).
	 The simulated PHD will respond with an indication including a "Rate of Decrease Alert Level Response" (0x15) Op Code and an SFLOAT containing the requested alert level in mg/dL/min.
	6. Force the PHG to perform a Rate of Increase Alert Level procedure using Op Code "Get Rate of Increase Alert Level" (0x17) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).
	7. The simulated PHD will respond with an indication including a "Rate of Increase Alert Level Response" (0x18) Op Code and an SFLOAT containing the requested alert level in mg/dL/min.
	Check in PHG transcoder output the Glucose rate of charge thresholds Compound Numeric Object – Metric-Id-List attribute
Pass/Fail criteria	In Step 8, the Glucose rate of charge thresholds Compound Numeric Object – Metric-Id-List attribute is present and set to 0x0002 (count of metric ids is 2), 0x0004 (list length is 4 octets), MDC_CONC_GLU_RATE_THRESHOLD_INCREASE, MDC_CONC_GLU_RATE_THRESHOLD_DECREASE
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
testing)	Metric-Id-List attribute is present:
	□ Object: Glucose rate of charge thresholds Compound Numeric Object
	☐ Attribute-id: MDC_ATTR_ID_PHYSIO_LIST (2678)
	☐ Attribute-type: SEQUENCE OF [{OID-Type(INT-U16)}]
	☐ Attribute-value: 0x0002 (number of elements), 0x0004 (length of the sequence), followed by
	First element: MDC_CONC_GLU_RATE_THRESHOLD_INCREASE (0x72E5)
	 Second element: MDC_CONC_GLU_RATE_THRESHOLD_DECREASE (0x72E6)
	b) WAN PCD-01 message
	PCD-01 message includes two segments like these with Metric-Id-List attribute values (check OBX-3 in both segments):
	OBX n NM 8391521^MDC_CONC_GLU_RATE_THRESHOLD_INCREASE^MDC m.0.x.a [value] 266868^MDC_DIM_MILLI_G_PER_DL_PER_MIN^MDC R
	OBX n NM 8391522^MDC_CONC_GLU_RATE_THRESHOLD_DECREASE^MDC m.0.x.b [value] 266868^MDC_DIM_MILLI_G_PER_DL_PER_MIN^MDC R

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-062
TP label		Whitepaper. Glucose rate of charge thresholds Compound Numeric Object – Unit-Code Attribute
Coverage	Spec	[Bluetooth PHDT v1.6]
	Testable items	GRC Numeric 8; M
Test purpose		Check that:

	PHG includes Glucose rate of charge thresholds Compound Numeric Object – Unit-Code attribute in transcoder output.
	[AND]
	Unit-Code is set to MDC_DIM_MILLI_G_PER_DL_PER_MIN
A P 1 . 116	
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND C_MAN_BLE_054 AND C_MAN_BLE_056
Other PICS	
Initial condition	The PHG under test and the simulated PHD are in the Standby state.
Test procedure	 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has manually entered Rate of Decrease and Increase Alert Level values stored.
	The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:
	a. CGM Feature (0x2AA8)
	i. Field: CGM Feature
	☐ Format: 24 bit
	□ Value: 0000 0000 0000 0000 0001 0000 (MSB → LSB). Rate of Increase/Decrease Alerts supported.
	ii. Field: CGM Type
	☐ Format: 4 bit
	☐ Value: not relevant
	iii. Field: CGM Sample Location
	☐ Format: 4 bit
	☐ Value: not relevant
	iv. Field: E2E-CRC
	☐ Format: uint16
	☐ Value: not relevant
	b. CGM Specific Ops Control Point (0x2AAC)
	i. Field: Op Code
	☐ Format: uint8
	□ Value: 0x15 (Rate of Decrease Alert Level Response) / 0x18 (Rate of Increase Alert Level Response)
	ii. Field: Operand
	☐ Format: SFLOAT (mg/dL/min)
	☐ Value: not relevant
	iii. Field: E2E-CRC
	☐ This field is not present
	 The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Rate of Decrease Alert Level procedure using Op Code "Get Rate of Decrease Alert Level" (0x14) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).
	 The simulated PHD will respond with an indication including a "Rate of Decrease Alert Level Response" (0x15) Op Code and an SFLOAT containing the requested alert level in mg/dL/min.
	6. Force the PHG to perform a Rate of Increase Alert Level procedure using Op Code "Get

	Rate of Increase Alert Level" (0x17) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).
	7. The simulated PHD will respond with an indication including a "Rate of Increase Alert Level Response" (0x18) Op Code and an SFLOAT containing the requested alert level in mg/dL/min.
	Check in PHG transcoder output the Glucose rate of charge thresholds Compound Numeric Object – Unit-Code attribute
Pass/Fail criteria	In Step 8, the Glucose rate of charge thresholds Compound Numeric Object – Unit-Code attribute is present and set to MDC_DIM_ MILLI_G_PER_DL_PER_MIN
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
, and the same of	Unit-Code attribute is present:
	☐ Object: Glucose rate of charge thresholds Compound Numeric Object
	☐ Attribute-id: MDC_ATTR_UNIT_CODE (2454)
	☐ Attribute-type: INT-U16
	Attribute-value: MDC_DIM_ MILLI_G_PER_DL_PER_MIN or 4724 (dec) or 0x1274 (hex)
	b) WAN PCD-01 message
	PCD-01 message includes two segments like these with Unit-Code attribute value (check OBX-6 in both segments):
	OBX n NM 8391521^MDC_CONC_GLU_RATE_THRESHOLD_INCREASE^MDC m.0.x.a [value] 266868^MDC_DIM_MILLI_G_PER_DL_PER_MIN^MDC R
	OBX n NM 8391522^MDC_CONC_GLU_RATE_THRESHOLD_DECREASE^MDC m.0.x.b [value] 266868^MDC_DIM_MILLI_G_PER_DL_PER_MIN^MDC R

TP ld		TP/LP-PAN/PHG/PHDTW/0	CGM/BV-063	
TP label		Whitepaper. Glucose rate of charge thresholds Compound Numeric Object – Base-Offset-Time-Stamp Attribute		
Coverage	Spec	[Bluetooth PHDT v1.6]		
	Testable items	GRC Numeric 9; M	BaseOffset 1; M	
Test purpose		Check that:		
		PHG includes Glucose rate of charge thresholds Compound Numeric Object – Base-Offset-Time-Stamp Attribute		
		[AND]		
			tribute is set to the correct value acc set-Time-Stamp attribute will be deriv	
Applicability		C_MAN_BLE_000 AND C_ AND C_MAN_BLE_056	MAN_BLE_002 AND C_MAN_BLE_	043 AND C_MAN_BLE_054
Other PICS				
Initial condition		The PHG under test and the	e simulated PHD are in the Standby	state.
Test procedure			configured with a Continuous Glucos ID has manually entered Rate of Dec	
		The simulated PHD implinterest for this Test Ca	plements several BTLE characteristic ase are:	cs. The characteristics of

	;	a. CC	SM Fe	eature (0x2AA8)
		i.	Fiel	ld: CGM Feature
				Format: 24 bit
				Value: 0000 0000 0000 0000 0001 0000 (MSB \rightarrow LSB). Rate of Increase/Decrease Alerts supported.
		ii.	Fiel	ld: CGM Type
				Format: 4 bit
				Value: not relevant
		iii.	Fiel	ld: CGM Sample Location
				Format: 4 bit
				Value: not relevant
		iv.	Fiel	ld: E2E-CRC
				Format: uint16
			_	Value: not relevant
		b. CC	_	pecific Ops Control Point (0x2AAC)
	'	i.	-	ld: Op Code
		١.		Format: uint8
			_	Value: 0x15 (Rate of Decrease Alert Level Response) / 0x18 (Rate of
		ii.	Fiel	Increase Alert Level Response) ld: Operand
				Format: SFLOAT (mg/dL/min)
				Value: not relevant
		iii.	Fiel	ld: E2E-CRC
				This field is not present
				der test initiates a discovery process (Scanning state), it discovers the HD and it starts a pairing process with the simulated PHD (Initiating state).
	;	Session proced	n Stai ure us	airing has been completed, force the PHG to read CGM Feature and CGM rt Time characteristics, and then to perform a Rate of Decrease Alert Level sing Op Code "Get Rate of Decrease Alert Level" (0x14) (performing a write the CGM Specific Ops Control Point characteristic's Op Code).
			Respo	ed PHD will respond with an indication including a "Rate of Decrease Alert onse" (0x15) Op Code and an SFLOAT containing the requested alert level in
		Rate of	Incre	HG to perform a Rate of Increase Alert Level procedure using Op Code "Get ease Alert Level" (0x17) (performing a write operation to the CGM Specific Ops t characteristic's Op Code).
			nse" (ed PHD will respond with an indication including a "Rate of Increase Alert Level 0x18) Op Code and an SFLOAT containing the requested alert level in
				PHG transcoder output the Glucose rate of charge thresholds Compound ect – Base-Offset-Time-Stamp attribute
Pass/Fail criteria				ucose rate of charge thresholds Compound Numeric Object – Base-Offset- bute is present and it is set to the collector's time at the time of collection.
Notes	Poss	sible va	lues i	n typical points of observation after transcoder output are:
(To assist manual				Objects and Attributes
testing)				Time-Stamp attribute is present:
				Glucose rate of charge thresholds Compound Numeric Object
			-	e-id: MDC_ATTR_TIME_STAMP_BO (2690)
		/		

		Attribute-type: SEQUENCE {bo-seconds (INT-U32), bo-fraction (INT-U16), bo-time-offset (INT-I16)}
		Attribute-value: collector's time at the time of collection.
b)	WA	N PCD-01 message
	PCI	D-01 message includesa segments like this with Type attribute (check OBX-3):
		OBX n 8391520^MDC_CONC_GLU_RATE_THRESHOLDS^MDC m.0.x.0 X [date_time]

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-064				
TP label		Whitepaper. Glucose rate of charge threshonds Compound Numeric Object – Compound-Basic-Nu-Observed-Value Attribute				
Coverage	Spec	[Bluetooth PHDT v1.6]				
	Testable items	GRC Numeric 10; M				
Test purpos	e	Check that:				
		PHG includes Glucose rate of charge threshonds Compound Numeric Object Compound-Basic-Nu-Observed-Value attribute in transcoder output.				
		[AND]				
		Compound-Basic-Nu-Observed-Value attribute is set to the correct value.				
Applicability	y	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND C_MAN_BLE_054 AND C_MAN_BLE_056				
Other PICS						
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.				
ilitiai condi	tion	·				
Test proced	ure	 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has manually entered Rate of Decrease and Increase Alert Level values stored. 				
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:				
		a. CGM Feature (0x2AA8)				
		i. Field: CGM Feature				
		☐ Format: 24 bit				
		□ Value: 0000 0000 0000 0000 0001 0000 (MSB → LSB). Rate of Increase/Decrease Alerts supported.				
		ii. Field: CGM Type				
		☐ Format: 4 bit				
		☐ Value: not relevant				
		iii. Field: CGM Sample Location				
		☐ Format: 4 bit				
		☐ Value: not relevant				
		iv. Field: E2E-CRC				
		☐ Format: uint16				
		☐ Value: not relevant				
		b. CGM Specific Ops Control Point (0x2AAC)				
		i. Field: Op Code				

	Format: uint8
	□ Value: 0x15 (Rate of Decrease Alert Level Response) / 0x18 (Rate of Increase Alert Level Response)
	ii. Field: Operand
	☐ Format: SFLOAT (mg/dL/min)
	□ Value: 9.0 (Rate of Decrease Alert Level Response) / 9.0 (Rate of Increase Alert Level Response)
	iii. Field: E2E-CRC
	☐ This field is not present
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Rate of Decrease Alert Level procedure using Op Code "Get Rate of Decrease Alert Level" (0x14) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).
	5. The simulated PHD will respond with an indication including a "Rate of Decrease Alert Level Response" (0x15) Op Code and an SFLOAT containing the requested alert level in mg/dL/min.
	6. Force the PHG to perform a Rate of Increase Alert Level procedure using Op Code "Get Rate of Increase Alert Level" (0x17) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).
	7. The simulated PHD will respond with an indication including a "Rate of Increase Alert Level Response" (0x18) Op Code and an SFLOAT containing the requested alert level in mg/dL/min.
	Check in PHG transcoder output the Glucose rate of charge threshonds Compound Numeric Object – Compound-Basic-Nu-Observed-Value attribute
Pass/Fail criteria	In Step 8, the the Glucose rate of charge threshonds Compound Numeric Object – Compound-Basic-Nu-Observed-Value attributeis set to 0x0002 (count of components is 2), 0x0004 (component list length is 4 octets), the Rate of Increase Alert Level Response Operand followed by the Rate of Decrease Alert Level Response Operand
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
testing)	Compound-Basic-Nu-Observed-Value attribute is present:
	☐ Object: Glucose rate of charge threshonds Compound Numeric Object
	☐ Attribute-id: MDC_ATTR_NU_CMPD_VAL_OBS_BASIC (2677)
	☐ Attribute-type: SEQUENCE OF [{SFLOAT}]
	☐ Attribute-value: 0x0002 (number of elements), 0x0004 (length of the sequence), followed by
	 First element (Rate of Increase Alert Level Response Operand): 00 09 (hex) or F0 5A (hex) or E3 84 (hex) or 9.0 (dec)
	 Second element (Rate of Decrease Alert Level Response Operand): 00 09 (hex) or F0 5A (hex) or E3 84 (hex) or 9.0 (dec)
	b) WAN PCD-01 message
	PCD-01 message includes two segments like these with Compound-Basic-Nu-Observed-Value attribute value (check OBX-5 in both segments):
	OBX n NM 8391521^MDC_CONC_GLU_RATE_THRESHOLD_INCREASE^MDC m.0.x.a 9.0 266868^MDC_DIM_MILLI_G_PER_DL_PER_MIN^MDC R
	OBX n NM 8391522^MDC_CONC_GLU_RATE_THRESHOLD_DECREASE^MDC m.0.x.b 9.0 266868^MDC_DIM_MILLI_G_PER_DL_PER_MIN^MDC R

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-065				
TP label		Whitepaper. PHD DM Status Enumeration Object - Handle Attribute				
Coverage	Spec	[Bluetooth PHDT v1.6]				
	Testable items	PHDM Enumeration 1; O				
Test purpos	е	Check that:				
		PHG does not include PHD DM Status Enumeration Object – Handle Attribute in transcoder output.				
		[OR]				
		If PHG includes PHD DM Status Enumeration Object – Handle attribute in transcoder output, then its value shall be different than 0				
Applicability	/	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043				
Other PICS						
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.				
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored.				
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:				
		a. CGM Feature (0x2AA8)				
		i. Field: CGM Feature				
		Format: 24 bit				
		 Value: 0000 0000 0000 1010 0000 0000 (MSB → LSB). Low Battery detection supported, General Device Fault supported, 				
		ii. Field: CGM Type				
		Format: 4 bit				
		Value: not relevant				
		iii. Field: CGM Sample Location				
		Format: 4 bit				
		Value: not relevant				
		iv. Field: E2E-CRC				
		Format: uint16				
		Value: not relevant				
		b. CGM Status (0x2AA8)				
		i. Field: Time Offset				
		Format: uint16				
		Value: not relevant.				
		ii. Field: CGM Status				
		Format: 24 bit Values and released.				
		Value: not relevant Field: CCM Sample Location				
		iii. Field: CGM Sample Location				
		Format: 4 bit				

Value: not relevant c. CGM Measurement (0x2AA7) Field: Size Format: uint8 ii. Field: Flags Format: 8 bit Value: 0010 0000 (MSB → LSB), CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present. iii. Field: CGM Glucose Concentration (mg/dL) Format: SFLOAT Value: not Relevant iv. Field: Time Offset Format: uint16 Value: not relevant Field: Sensor Status Annunciation Format: 8 bit Value: not relevant vi. Field: CGM Trend Information (mg/dL) This field is not included vii. Field: CGM Quality This field is not included viii. Field: E2E-CRC This field is not included The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics. The simulated PHD sends the Measurement to PHG under test 6. Check in the PHG transcoder output the PHD DM Status Enumeration Object- Handle attribute The PHG under test requests the simulated PHD to report stored records by performing a 7. writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test Check in the PHG transcoder output the PHD DM Status Enumeration Object - Handle 8. attribute Force the PHG under test to read the CGM Status characteristic to actively request the status of the CGM sensor. 10. Check in the PHG transcoder output the PHD DM Status Enumeration Object - Handle attribute Pass/Fail criteria In Step 6, 8 and 10, the PHD DM Status Enumeration Object - Handle attribute is not present or, if it is present then its value is different than 0 **Notes** Possible values in typical points of observation after transcoder output are: (To assist manual IEEE 11073 Objects and Attributes testing) Handle attribute is not present, or if it is present then: Object: PHD DM Status Enumeration Object

	☐ Attribute-id: MDC_ATTR_ID_HANDLE (2337)
	☐ Attribute-type: INT-U16
	☐ Attribute-value: Any value different than 0
b)	WAN PCD-01 message
	PCD-01 message does not include segments with Handle attribute value

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-066				
TP label		Whitepaper. PHD DM Status Enumeration Object - Type Attribute				
Coverage	Spec	[Bluetooth PHDT v1.6]				
	Testable items	PHDM Enumeration 2; M				
Test purpose		Check that: PHG includes PHD DM Status Enumeration Object – Type attribute in transcoder output. [AND] Type is set to MDC_PART_PHD_DM MDC_PHD_DM_DEV_STAT				
Applicability	,	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043				
Other PICS						
Initial condit	tion	The PHG under test and the simulated PHD are in the Standby state.				
Test procedure		 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored. The simulated PHD implements several BTLE characteristics. The characteristics of 				
		interest for this Test Case are:				
		a. CGM Feature (0x2AA8) i. Field: CGM Feature				
		Format: 24 bit				
		Value: 0000 0000 0000 1010 0000 0000 (MSB → LSB). Low Battery detection supported, General Device Fault supported,				
		ii. Field: CGM Type				
		Format: 4 bit				
		Value: not relevant				
		iii. Field: CGM Sample Location				
		Format: 4 bit				
		Value: not relevant				
		iv. Field: E2E-CRC				
		Format: uint16				
		Value: not relevant				
		b. CGM Status (0x2AA8)				
		i. Field: Time Offset				
		Format: uint16				
		Value: not relevant.				

ii. Field: CGM Status

Format: 24 bit

Value: not relevant

iii. Field: CGM Sample Location

Format: 4 bit

Value: not relevant

c. CGM Measurement (0x2AA7)

i. Field: Size

Format: uint8

ii. Field: Flags

Format: 8 bit

- Value: 0010 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
- iii. Field: CGM Glucose Concentration (mg/dL)

Format: SFLOAT

Value: not Relevant

iv. Field: Time Offset

Format: uint16

Value: not relevant

v. Field: Sensor Status Annunciation

Format: 8 bit

· Value: not relevant

vi. Field: CGM Trend Information (mg/dL)

· This field is not included

vii. Field: CGM Quality

This field is not included

viii. Field: E2E-CRC

This field is not included

- The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
- When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.
- 5. The simulated PHD sends the Measurement to the PHG under test.
- 6. Check in PHG transcoder output the PHD DM Status Enumeration Object- Type attribute
- The PHG under test requests the simulated PHD to report stored records by performing a
 writing operation in the Record Access Control Point (RACP). The simulated PHD sends
 the temporarily stored CGM measurement to the PHG under test
- Check in the PHG transcoder output the PHD DM Status Enumeration Object Type attribute
- Force the PHG under test to read the CGM Status characteristic to actively request the status of the CGM sensor.
- Check in the PHG transcoder output the PHD DM Status Enumeration Object Type attribute

Pass/Fail criteria

In Step 6, 8 and 10, the PHD DM Status Enumeration Object – Type attribute is present and its value is MDC_PART_PHD_DM | MDC_PHD_DM_DEV_STAT

Notes (To assist manual testing)	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes			
	Type attribute is present:			
	□ Object: PHD DM Status Enumeration Object			
	☐ Attribute-id: MDC_ATTR_ID_TYPE (2351)			
	☐ Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)}			
	☐ Attribute-value:			
	 partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) 			
	 code: MDC_PHD_DM_DEV_STAT or 20000 (dec) or 4E 20 (hex) 			
	b) WAN PCD-01 message			
	PCD-01 message includes a segments like this with Type attribute (check OBX-3):			
	OBX n CWE 8408608^MDC_PHD_DM_DEV_STAT^MDC m.0.0.a [value] R [date_time]			

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-067				
TP label		Whitepaper. PHD DM Status Enumeration Object - Supplemental-Types Attribute				
Coverage	Spec	[Bluetooth PHDT v1.6]				
	Testable items	PHDM Enumeration 3; O				
Test purpos	se	Check that:				
		PHG may include PHD DM Status Enumeration Object – Supplemental-Types attribute in transcoder output.				
		[AND]				
		If present, Supplemental-Types is set to a correct value				
Applicability	y	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043				
Other PICS						
Initial condition The PHG under test and the simulated PHD are in the Standby state.						
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored.				
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:				
		a. CGM Feature (0x2AA8)				
		i. Field: CGM Feature				
		Format: 24 bit				
		 Value: 0000 0000 0000 1010 0000 0000 (MSB → LSB). Low Battery detection supported, General Device Fault supported, 				
		ii. Field: CGM Type				
		Format: 4 bit				
		Value: not relevant				
		iii. Field: CGM Sample Location				
		Format: 4 bit				

Value: not relevant

iv. Field: E2E-CRC

Format: uint16

Value: not relevant

b. CGM Status (0x2AA8)

i. Field: Time Offset

Format: uint16

Value: not relevant.

ii. Field: CGM Status

Format: 24 bit

Value: not relevant

iii. Field: CGM Sample Location

• Format: 4 bit

• Value: not relevant

c. CGM Measurement (0x2AA7)

i. Field: Size

Format: uint8

ii. Field: Flags

• Format: 8 bit

- Value: 0010 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
- iii. Field: CGM Glucose Concentration (mg/dL)

Format: SFLOAT

Value: not Relevant

iv. Field: Time Offset

Format: uint16

Value: not relevant

v. Field: Sensor Status Annunciation

Format: 8 bit

Value: not relevant

vi. Field: CGM Trend Information (mg/dL)

· This field is not included

vii. Field: CGM Quality

· This field is not included

viii. Field: E2E-CRC

This field is not included

- 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
- When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.
- 5. The simulated PHD sends the Measurement to the PHG under test.
- Check in the PHG transcoder output the PHD DM Status Enumeration Object– Supplemental-Types attribute

	7. The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test.
	Check in the PHG transcoder output the PHD DM Status Enumeration Object – Supplemental-Types attribute
	9. Force the PHG under test to read the CGM Status characteristic to actively request the status of the CGM sensor.
	Check in the PHG transcoder output the PHD DM Status Enumeration Object – Supplemental-Types attribute
Pass/Fail criteria	In Step 6, 8 and 10, the PHD DM Status Enumeration Object – Supplemental-Types attribute may be present. If present, it is set to one of the following values: MDC_CGM_DEV_TYPE_SENSOR, MDC_CGM_DEV_TYPE_TRANSMITTER, MDC_CGM_DEV_TYPE_RECEIVER, or MDC_CGM_DEV_TYPE_OTHER
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual	a) IEEE 11073 Objects and Attributes
testing)	Supplemental-Types attribute may be present. If it is present:
	□ Object: PHD DM Status Enumeration Object
	Attribute-id: MDC_ATTR_SUPPLEMENTAL_TYPES (2657)
	Attribute-type: SEQUENCE of SEQUENCE {partition (INT-U16)}
	☐ Attribute-value:
	 partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex) followed by one of the following:
	 code: MDC_CGM_DEV_TYPE_SENSOR or 29460 (dec) or 73 14 (hex)
	code: MDC_CGM_DEV_TYPE_TRANSMITTER or 29461 (dec) or 73 15 (hex)
	 code: MDC_CGM_DEV_TYPE_RECEIVER or 29462 (dec) or 73 16 (hex)
	 code: MDC_CGM_DEV_TYPE_OTHER or 29463 (dec) or 73 17 (hex)
	b) WAN PCD-01 message
	If Supplemental-Types attribute is present, PCD-01 message includes a facet OBX segment of the PHD DM Status OBX segment with Supplemental-Types attribute (check OBX-3 and OBX-5):
	OBX n CWE 8408608^MDC_PHD_DM_DEV_STAT^MDC m.0.0.a [value] R [date_time]
	The following facet OBX segments are allowed:
	OBX n CWE 68193^MDC_ATTR_SUPPLEMENTAL_TYPES^MDC m.0.0.a.y 8418068^MDC_CGM_DEV_TYPE_SENSOR^MDC R
	OBX n CWE 68193^MDC_ATTR_SUPPLEMENTAL_TYPES^MDC m.0.0.a.y 8418069^MDC_CGM_DEV_TYPE_TRANSMITTER^MDC R
	OBX n CWE 68193^MDC_ATTR_SUPPLEMENTAL_TYPES^MDC m.0.0.a.y 8418070^MDC_CGM_DEV_TYPE_RECEIVER^MDC R
	OBX n CWE 68193^MDC_ATTR_SUPPLEMENTAL_TYPES^MDC m.0.0.a.y 8418071^MDC_CGM_DEV_TYPE_OTHER^MDC R

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-068	
TP label		Whitepaper. PHD DM Status Enumeration Object – Metric-Spec-Small Attribute	
Coverage	Spec	[Bluetooth PHDT v1.6]	
	Testable items	PHDM Enumeration 4; M	

Test purpose	Check that:		
	PHG includes PHD DM Status Enumeration Object – Metric-Spec-Small attribute in transcoder		
	output.		
	[AND]		
	Metric-Spec-Small is set to {0xF040}.		
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043		
Other PICS			
Initial condition	The PHG under test and the simulated PHD are in the Standby state.		
Test procedure	 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored. 		
	The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:		
	a. CGM Feature (0x2AA8)		
	i. Field: CGM Feature		
	Format: 24 bit		
	 Value: 0000 0000 0000 1010 0000 0000 (MSB → LSB). Low Battery detection supported, General Device Fault supported, 		
	ii. Field: CGM Type		
	Format: 4 bit		
	Value: not relevant		
	iii. Field: CGM Sample Location		
	Format: 4 bit		
	Value: not relevant		
	iv. Field: E2E-CRC		
	Format: uint16		
	Value: not relevant		
	b. CGM Status (0x2AA8)		
	i. Field: Time Offset		
	Format: uint16		
	Value: not relevant.		
	ii. Field: CGM Status		
	Format: 24 bit		
	Value: not relevant		
	iii. Field: CGM Sample Location		
	Format: 4 bit		
	Value: not relevant		
	c. CGM Measurement (0x2AA7)		
	i. Field: Size		
	Format: uint8		
	ii. Field: Flags		
	Format: 8 bit		
	 Value: 0010 0000 (MSB → LSB). CGM Trend information not present, CGM 		

	Quality nor present, Sensor Status Annunciation Field (Warning-Octet)
	present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
	iii. Field: CGM Glucose Concentration (mg/dL)
	Format: SFLOAT
	Value: not Relevant
	iv. Field: Time Offset
	Format: uint16
	Value: not relevant
	v. Field: Sensor Status Annunciation
	Format: 8 bit
	Value: not relevant
	vi. Field: CGM Trend Information (mg/dL)
	This field is not included
	vii. Field: CGM Quality
	This field is not included
	viii. Field: E2E-CRC
	This field is not included
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.
	5. The simulated PHD sends the Measurement to the PHG under test.
	6. Check in the PHG transcoder output the PHD DM Status Enumeration Object– Metric- Spec-Small attribute
	7. The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test.
	8. Check in the PHG transcoder output the PHD DM Status Enumeration Object – Metric-Spec-Small attribute
	9. Force the PHG under test to read the CGM Status characteristic to actively request the status of the CGM sensor.
	10. Check in PHG transcoder output the PHD DM Status Enumeration Object – Metric-Spec-Small attribute
Pass/Fail criteria	In Step 6, 8 and 10, the PHD DM Status Enumeration Object – Metric-Spec-Small attribute is present and its value is 0xF040 (mss-avail-intermittent mss-upd-aperiodic mss-msmt-aperiodic mss-acc-agent-initiated mss-avail-stored-data)
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
,g,	Metric-Spec-Small attribute is present:
	□ Object: PHD DM Status Enumeration Object
	☐ Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630)
	☐ Attribute-type: BITS-16
	Attribute-value: 0xF040 (hex) or BITS mss-avail-intermittent (0), mss-avail-stored-data (1), mss-upd-aperiodic (2), mss-msmt-aperiodic (3), mss-acc-agent-initiated(9) set to TRUE and remaining BITS set to FALSE
	b) WAN PCD-01 message
	PCD-01 message does not include segments with Metric-Spec-Small attribute value

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-069			
TP label		Whitepaper. PHD DM Status Enumeration Object – Base-Offset-Time-Stamp Attribute			
Coverage	Spec	[Bluetooth F	PHDT v1.6]		
	Testable items	PHDM Enu	meration 5; M	BaseOffset 3; M	
Test purpose		Check that: PHG includes PHD DM Status Enumeration Object Base-Offset-Time-Stamp attribute in transcoder output. [AND] Base-Offset-Time-Stamp attribute is set to the correct value according to Base-Offset time stamp derivation			
Applicability Other PICS	<u> </u>	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043			
Initial condit	tion	The PHG u	nder test and the s	simulated PHD are in the Standby	state.
Initial condition Test procedure		special state (in tempor 2. The sir interess a. CC is.	ization), it has a C t is discoverable). arily stored. nulated PHD implet for this Test Case GM Feature (0x2A/Field: CGM Feature 24 Value: 0000 detection sufficient CGM Type Format: 4 b Value: not r Field: CGM Sam Format: 4 b Value: not r	ture bit 0 0000 0000 1010 0000 0000 (MS upported, General Device Fault s e it elevant uple Location it elevant t16 elevant 8) et	nt and it is in the Advertising dentical CGM measurement ics. The characteristics of SB → LSB). Low Battery
		ii.	Field: CGM StatFormat: 24Value: not r	bit	
		iii.	Field: CGM Sam	nple Location	

Format: 4 bit

· Value: not relevant

- c. CGM Measurement (0x2AA7)
 - Field: Size

Format: uint8

- ii. Field: Flags
 - Format: 8 bit
 - Value: 0010 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
- iii. Field: CGM Glucose Concentration (mg/dL)

Format: SFLOAT

Value: not Relevant

iv. Field: Time Offset

Format: uint16

Value: not relevant

- v. Field: Sensor Status Annunciation
 - Format: 8 bit

· Value: not relevant

- vi. Field: CGM Trend Information (mg/dL)
 - This field is not included
- vii. Field: CGM Quality
 - · This field is not included
- viii. Field: E2E-CRC
 - · This field is not included
- d. CGM Session Start Time (0x2AAA)
 - i. Field: Session Start Time
 - Format: {uint16, uint8, uint8, uint8, uint8, uint8}
 - Value: {2016, 5, 12, 16, 39, 27} (May 12, 2016, 16:39:27)
 - ii. Field: Time Zone
 - Format: sint8
 - Value: 4 (UTC+1:00)
 - iii. Field: DST-Offset
 - Format: uint8
 - Value: 4 (Daylight Time (+1h))
 - iv. Field: E2E-CRC
 - This field is not included
- 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
- When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.
- 5. The simulated PHD sends the Measurement to the PHG under test.
- Check in the PHG transcoder output PHD DM Status Enumeration Object Base-Offset-Time-Stamp attribute.

	7.	The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test.
	8.	Check in the PHG transcoder output the PHD DM Status Enumeration Object - Base-Offset-Time-Stamp attribute.
	9.	Force the PHG under test to read the CGM Status characteristic to actively request the status of the CGM sensor.
	10.	. Check in the PHG transcoder output the PHD DM Status Enumeration Object - Base-Offset-Time-Stamp attribute.
Pass/Fail criteria	•	In Step 6 and 8 the PHD DM Status Enumeration Object - Base-Offset-Time-Stamp attribute is present and set is to the addition of CGM Session Start Time characteristic's Session Start Time field (May 12, 2016, 16:39:27) plus CGM Measurement characteristic's Time Offset field (20min).
	•	In Step 10 the PHD DM Status Enumeration Object - Base-Offset-Time-Stamp attribute is present and set is to the addition of CGM Session Start Time characteristic's Session Start Time field (May 12, 2016, 16:39:27) plus CGM Status characteristic's Time Offset field (20min).
Notes	Pos	essible values in typical points of observation after transcoder output are:
(To assist manual		
testing)		Base-Offset-Time-Stamp attribute is present:
		□ Object: PHD DM Status Enumeration Object
		☐ Attribute-id: MDC_ATTR_TIME_STAMP_BO (2690)
		Attribute-type: SEQUENCE {bo-seconds (INT-U32), bo-fraction (INT-U16), bo-time-offset (INT-I16)}
		☐ Attribute-value : addition of
		 CGM Session Start Time characteristic's Session Start Time field (May 12, 2016, 16:39:27)
		• Steps 6 & 8
		CGM Measurement characteristic's Time Offset field (20m)
		Steps 10
		CGM Status characteristic's Time Offset field (20m)
		Note that the same Base-Offset-Time-Stamp can have different representations depending on bo-time-offset value. If it is set to 20 min (CGM Measurement or CGM Status characteristic's Time Offset field), then Base-Offset-Time-Stamp value shall be {3672059967, 0, 20}
	b)	WAN PCD-01 message
		PCD-01 message includes a segment like this with Base-Offset-Time-Stamp attribute value (check OBX-14):
		OBX n CWE 8408608^MDC_PHD_DM_DEV_STAT^MDC m.0.0.a [value] R [value described in a) coded in DTM format]

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-070	
TP label		Whitepaper. PHD DM Status Enumeration Object – Enum-Observed-Value-Simple-Bit-Str	
Coverage	Spec	[Bluetooth PHDT v1.6]	
	Testable items	PHDM Enumeration 6; M	
Test purpose		Check that: PHG includes PHD DM Status Enumeration Obj	ect – Enum-Observed-Value-Simple-Bit-Str

	attribute in transcoder output		
	attribute in transcoder output. [AND]		
	Enum-Observed-Value-Simple-Bit-Str is set to the correct value.		
	Enum-observed-value-simple-bit-str is set to the correct value.		
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043		
Other PICS			
Initial condition	The PHG under test and the simulated PHD are in the Standby state.		
Test procedure	The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored.		
	The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:		
	a. CGM Feature (0x2AA8)		
	i. Field: CGM Feature		
	Format: 24 bit		
	 Value: 0000 0000 0000 1010 0000 0000 (MSB → LSB). Low Battery detection supported, General Device Fault supported, 		
	ii. Field: CGM Type		
	Format: 4 bit		
	Value: not relevant		
	iii. Field: CGM Sample Location		
	Format: 4 bit		
	Value: not relevant		
	iv. Field: E2E-CRC		
	Format: uint16		
	Value: not relevant		
	b. CGM Status (0x2AA8)		
	i. Field: Time Offset		
	Format: uint16		
	Value: not relevant.		
	ii. Field: CGM Status		
	Format: 24 bit		
	 Value: 0000 0000 0000 0000 0010 (MSB -> LSB). Device Battery Low. 		
	iii. Field: CGM Sample Location		
	Format: 4 bit		
	Value: not relevant		
	c. CGM Measurement (0x2AA7)		
	i. Field: Size		
	Format: uint8		
	ii. Field: Flags		
	Format: 8 bit		
	 Value: 0010 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present. 		

- iii. Field: CGM Glucose Concentration (mg/dL)
 - Format: SFLOAT
 - Value: not Relevant
- iv. Field: Time Offset
 - Format: uint16
 - Value: not relevant
- v. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0000 0010 (MSB -> LSB). Device Battery Low.
- vi. Field: CGM Trend Information (mg/dL)
 - This field is not included
- vii. Field: CGM Quality
 - This field is not included
- viii. Field: E2E-CRC
 - This field is not included
- 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
- 4. When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.
- 5. The simulated PHD sends the Measurement to the PHG under test.
- Check in PHG transcoder output the PHD DM Status Enumeration Object

 EnumObserved-Value-Simple-Bit-Str attribute
- 7. The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test.
- Check in the PHG transcoder output the PHD DM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str attribute
- Force the PHG under test to read the CGM Status characteristic to actively request the status of the CGM sensor.
- Check in the PHG transcoder output the PHD DM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str attribute
- 11. End current CGM session and start a new one. The simulated PHD will now have the following values in the specified fields:
 - a. CGM Status (0x2AA8)
 - Field: CGM Status
 - Format: 24 bit
 - Value: 0000 0000 0000 0000 0010 0000 (MSB -> LSB). General device fault has ocurred in the sensor.
 - b. CGM Measurement (0x2AA7)
 - Field: Flags
 - Format: 8 bit
 - Value: 0010 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
 - ii. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0010 0000 (MSB -> LSB). General device fault has ocurred in the

sensor. The rest of the fields will remain with the same value as in step 2. Repeat steps 3-10 to check in PHG transcoder output the PHD DM Status Enumeration Object - Enum-Observed-Value-Simple-Bit-Str attribute like in 6, 8 and 10. 12. End current CGM session and start a new one. The simulated PHD will now have the following values in the specified fields: a. CGM Status (0x2AA8) Field: CGM Status Format: 24 bit Value: 0000 0000 0000 0001 0000 0000 (MSB -> LSB). Time synchronization between sensor and collector required. CGM Measurement (0x2AA7) Field: Flags Format: 8 bit Value: 0100 0000 (MSB → LSB), CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) present, Sensor Status Annunciation Field (Status-Octet) not present. Field: Sensor Status Annunciation Format: 8 bit Value: 0000 0001 (MSB -> LSB). Time synchronization between sensor and collector required. The rest of the fields will remain with the same value as in step 2. Repeat steps 3-10 to check in PHG transcoder output the PHD DM Status Enumeration Object - Enum-Observed-Value-Simple-Bit-Str attribute like in 6, 8 and 10. Pass/Fail criteria In Step 6, 8 and 10, the PHD DM Status Enumeration Object - Enum-Observed-Value-Simple-Bit-Str is present with bit 25 set to 1 (device-status-battery-low). Rest of bits set to In Step 11, the PHD DM Status Enumeration Object - Enum-Observed-Value-Simple-Bit-Str is present with bit 5 set to 1 (device-status-error). Rest of bits set to 0. In Step 12, the PHD DM Status Enumeration Object - Enum-Observed-Value-Simple-Bit-Str is present with bit 16 set to 1 (device-status-service-time-sync-required). Rest of bits set to 0. Notes Possible values in typical points of observation after transcoder output are: (To assist manual IEEE 11073 Objects and Attributes testing) Enum-Observed-Value-Simple-Bit-Str attribute is present: Object: PHD DM Status Enumeration Object ☐ Attribute-id: MDC ATTR ENUM OBS VAL SIMP BIT STR (2661) ☐ Attribute-type: BITS-32 ☐ Attribute-value (Steps 6,8,10): 02 00 00 00 (hex) ☐ Attribute-value (Step 11): 00 00 00 20 (hex) ☐ Attribute-value (Step 12): 00 00 01 00 (hex) WAN PCD-01 message PCD-01 message includes a segment like this with Enum-Observed-Value-Basic-Bit-Str attribute value (check OBX-5): Steps 6, 8 & 10 OBX|n|CWE|8408608^MDC_PHD_DM_DEV_STAT^MDC|m.0.0.a|[1^device-statusbattery-low(25)|||||R|||[date_time] Step 11

OBX n CWE 8408608^MDC_PHD_DM_DEV_STAT^MDC m.0.0.a 1^device-status-error(5) R [date_time] Step 12
OBX n CWE 8408608^MDC_PHD_DM_DEV_STAT^MDC m.0.0.a 1^device-status-service-time-sync-required(16) R [date_time]

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-071		
TP label		Whitepaper. CGM Status Enumeration Object - Handle Attribute		
Coverage	Spec	[Bluetooth PHDT v1.6]		
	Testable items	CGM Enumeration 1; O		
Test purpos	е	Check that:		
		PHG does not include CGM Status Enumeration Object – Handle Attribute in transcoder output.		
		[OR]		
		If PHG includes CGM Status Enumeration Object – Handle attribute in transcoder output, then its value shall be different than 0		
Applicability	1	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043		
Other PICS				
Initial condi	tion	The PHG under test and the simulated PHD are in the Standby state.		
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored.		
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:		
		a. CGM Feature (0x2AA8)		
		i. Field: CGM Feature		
		Format: 24 bit		
		 Value: 0000 0000 0000 0101 1011 1111 (MSB → LSB). Sensor Type Error Detection supported, Device Specific Alert supported, Calibration supported, Sensor Temperature High-Low Detection supported, Patient High/Low Alerts supported, Hypo Alerts supported, Hyper Alerts supported, Rate of Increase/Decrease Alerts supported, Sensor Result High-Low Detection supported. 		
		ii. Field: CGM Type		
		Format: 4 bit		
		Value: not relevant		
		iii. Field: CGM Sample Location		
		Format: 4 bit		

Value: not relevant

iv. Field: E2E-CRC

Format: uint16

Value: not relevant

b. CGM Status (0x2AA8)

i. Field: Time Offset

Format: uint16

Value: not relevant.

ii. Field: CGM Status

Format: 24 bit

Value: not relevant

iii. Field: E2E-CRC

This field is not included

c. CGM Measurement (0x2AA7)

i. Field: Size

Format: uint8

ii. Field: Flags

• Format: 8 bit

- Value: 0010 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
- iii. Field: CGM Glucose Concentration (mg/dL)

Format: SFLOAT

· Value: not Relevant

iv. Field: Time Offset

Format: uint16

Value: not relevant

v. Field: Sensor Status Annunciation

Format: 8 bit

Value: not relevant

vi. Field: CGM Trend Information (mg/dL)

· This field is not included

vii. Field: CGM Quality

· This field is not included

viii. Field: E2E-CRC

· This field is not included

- 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
- When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.
- 5. The simulated PHD sends the Measurement to the PHG under test.
- 6. Check in PHG transcoder output CGM Status Enumeration Object Handle attribute.
- The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends

	the temporarily stored CGM measurement to the PHG under test.
	8. Check in the PHG transcoder output the CGM Status Enumeration Object - Handle attribute.
	9. Force the PHG under test to read the CGM Status characteristic to actively request the status of the CGM sensor.
	10. Check in the PHG transcoder output the CGM Status Enumeration Object - Handle attribute.
Pass/Fail criteria	In Step 6, 8 and 10, the CGM Status Enumeration Object - Handle attribute is not present or, if it is present then its value is different than 0
Notes (To assist manual testing)	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Handle attribute is not present, or if it is present then: Object: CGM Status Enumeration Object Attribute-id: MDC_ATTR_ID_HANDLE (2337) Attribute-type: INT-U16 Attribute-value: Any value different than 0 b) WAN PCD-01 message
	PCD-01 message does not include segments with Handle attribute value

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-072		
TP label		Whitepaper. CGM Status Enumeration Object - Type Attribute		
Coverage	Spec	[Bluetooth PHDT v1.6]		
	Testable items	CGM Enumeration 2; M		
Test purpos	е	Check that:		
		PHG includes CGM Status Enumeration Object – Type attribute in transcoder output. [AND] Type is set to MDC_PART_PHD_DM MDC_CGM_DEV_STAT		
Applicability	1	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043		
Other PICS				
Initial condit	tion	The PHG under test and the simulated PHD are in the Standby state.		
Test procedure		 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are: 		
		a. CGM Feature (0x2AA8)		
		i. Field: CGM Feature		
		Format: 24 bit		
		 Value: 0000 0000 0000 0101 1011 1111 (MSB → LSB). Sensor Type Error Detection supported, Device Specific Alert supported, Calibration supported, Sensor Temperature High-Low Detection supported, Patient High/Low Alerts supported, Hypo Alerts supported, Hyper Alerts supported, Rate of Increase/Decrease Alerts supported, Sensor Result High-Low Detection 		

supported.

ii. Field: CGM Type

• Format: 4 bit

Value: not relevant

iii. Field: CGM Sample Location

• Format: 4 bit

• Value: not relevant

iv. Field: E2E-CRC

Format: uint16

Value: not relevant

b. CGM Status (0x2AA8)

i. Field: Time Offset

Format: uint16

Value: not relevant.

ii. Field: CGM Status

• Format: 24 bit

· Value: not relevant

iii. Field: E2E-CRC

This field is not included

c. CGM Measurement (0x2AA7)

i. Field: Size

• Format: uint8

ii. Field: Flags

Format: 8 bit

- Value: 0010 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
- iii. Field: CGM Glucose Concentration (mg/dL)

Format: SFLOAT

Value: not Relevant

iv. Field: Time Offset

Format: uint16

· Value: not relevant

v. Field: Sensor Status Annunciation

Format: 8 bit

Value: not relevant

vi. Field: CGM Trend Information (mg/dL)

• This field is not included

vii. Field: CGM Quality

This field is not included

viii. Field: E2E-CRC

This field is not included

The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).

	1
	4. When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.
	5. The simulated PHD sends the Measurement to the PHG under test.
	6. Check in the PHG transcoder output CGM Status Enumeration Object - Type attribute.
	 The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test.
	8. Check in the PHG transcoder output the CGM Status Enumeration Object - Type attribute.
	Force the PHG under test to read the CGM Status characteristic to actively request the status of the CGM sensor.
	10. Check in the PHG transcoder output the CGM Status Enumeration Object - Type attribute.
Pass/Fail criteria	In Step 6, 8 and 10, the CGM Status Enumeration Object - Type attribute is present and set to MDC_PART_PHD_DM MDC_CGM_DEV_STAT
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
testing)	Type attribute is not present, or if it is present then:
	□ Object: CGM Status Enumeration Object
	☐ Attribute-id: MDC_ATTR_ID_TYPE (2351)
	☐ Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)}
	☐ Attribute-value:
	 partition: MDC_PART_PHD_DM or 128 (dec) or 00 80 (hex)
	code: MDC_CGM_DEV_STAT or 29452 (dec) or 73 0C (hex)
	b) WAN PCD-01 message
	PCD-01 message includesa segments like this with Type attribute (check OBX-3):
	OBX n CWE 8418060^MDC_CGM_DEV_STAT^MDC m.0.0.a [value] R [date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-073		
TP label		Whitepaper. CGM Status Enumeration Object – Metric-Spec-Small Attribute		
Coverage	Spec	[Bluetooth PHDT v1.6]		
	Testable items	CGM Enumeration 3; M		
Test purpose		Check that:		
		PHG includes CGM Status Enumeration Object – Metric-Spec-Small attribute in transcoder output.		
		[AND]		
		Metric-Spec-Small is set to {0x F040}.		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043		
Other PICS				
Initial condition		The PHG under test and the simulated PHD are in the Standby state.		
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored.		

- The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:
 - a. CGM Feature (0x2AA8)
 - i. Field: CGM Feature
 - Format: 24 bit
 - Value: 0000 0000 0000 0101 1011 1111 (MSB → LSB). Sensor Type Error Detection supported, Device Specific Alert supported, Calibration supported, Sensor Temperature High-Low Detection supported, Patient High/Low Alerts supported, Hypo Alerts supported, Hyper Alerts supported, Rate of Increase/Decrease Alerts supported, Sensor Result High-Low Detection supported.
 - ii. Field: CGM Type
 - Format: 4 bit
 - Value: not relevant
 - iii. Field: CGM Sample Location
 - Format: 4 bit
 - Value: not relevant
 - iv. Field: E2E-CRC
 - Format: uint16
 - Value: not relevant
 - b. CGM Status (0x2AA8)
 - i. Field: Time Offset
 - Format: uint16
 - Value: not relevant.
 - ii. Field: CGM Status
 - Format: 24 bit
 - Value: not relevant
 - iii. Field: E2E-CRC
 - This field is not included
 - c. CGM Measurement (0x2AA7)
 - i. Field: Size
 - Format: uint8
 - ii. Field: Flags
 - Format: 8 bit
 - Value: 0010 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
 - iii. Field: CGM Glucose Concentration (mg/dL)
 - Format: SFLOAT
 - Value: not Relevant
 - iv. Field: Time Offset
 - Format: uint16
 - · Value: not relevant
 - v. Field: Sensor Status Annunciation
 - Format: 8 bit

	Value: not relevant
	vi. Field: CGM Trend Information (mg/dL)
	This field is not included
	vii. Field: CGM Quality
	This field is not included
	viii. Field: E2E-CRC
	This field is not included
	 The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	 When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.
	5. The simulated PHD sends the Measurement to the PHG under test.
	6. Check in the PHG transcoder output CGM Status Enumeration Object – Metric-Spec-Small attribute.
	7. The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test
	Check in the PHG transcoder output the CGM Status Enumeration Object - Metric-Spec- Small attribute.
	Force the PHG under test to read the CGM Status characteristic to actively request the status of the CGM sensor.
	 Check in the PHG transcoder output the CGM Status Enumeration Object - Metric-Spec- Small attribute.
Pass/Fail criteria	In Step 6, 8 and 10, the CGM Status Enumeration Object - Metric-Spec-Small attribute is present and set to 0xF040 (mss-avail-intermittent mss-upd-aperiodic mss-msmt-aperiodic mss-acc-agent-initiated mss-avail-stored-data)
Notes	Possible values in typical points of observation after transcoder output are:
(To assist manual testing)	a) IEEE 11073 Objects and Attributes
testing)	Metric-Spec-Small attribute is present:
	□ Object: CGM Status Enumeration Object
	☐ Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630)
	☐ Attribute-type: BITS-16
	Attribute-value: 0xF040 (hex) or BITS mss-avail-intermittent (0), mss-avail-stored-data (1), mss-upd-aperiodic (2), mss-msmt-aperiodic(3), mss-acc-agent-initiated (9) set to TRUE and remaining BITS set to FALSE
	b) WAN PCD-01 message
	PCD-01 message does not include segments with Metric-Spec-Small attribute value

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-074		
TP label		Whitepaper. CGM Status Enumeration Object – Base-Offset-Time-Stamp Attribute		
Coverage	Spec	[Bluetooth PHDT v1.6]		
	Testable items	CGM Enumeration 4; M	BaseOffset 3; M	
Test purpose		Check that:		
		PHG includes CGM Status Enumeration Object Base-Offset-Time-Stamp attribute in transcoder output.		

	[AND]		
	[AND] Base-Offset-Time-Stamp attribute is set to the correct value according to Base-Offset time stamp derivation		
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043		
Other PICS			
Initial condition	The PHG under test and the simulated PHD are in the Standby state.		
Test procedure	 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are: 		
	a. CGM Feature (0x2AA8)		
	i. Field: CGM Feature		
	Format: 24 bit		
	 Value: 0000 0000 0000 0101 1011 1111 (MSB → LSB). Sensor Type Error Detection supported, Device Specific Alert supported, Calibration supported, Sensor Temperature High-Low Detection supported, Patient High/Low Alerts supported, Hypo Alerts supported, Hyper Alerts supported, Rate of Increase/Decrease Alerts supported, Sensor Result High-Low Detection supported. 		
	ii. Field: CGM Type		
	Format: 4 bit		
	Value: not relevant		
	iii. Field: CGM Sample Location		
	Format: 4 bit		
	Value: not relevant		
	iv. Field: E2E-CRC		
	Format: uint16		
	Value: not relevant		
	b. CGM Status (0x2AA8)		
	i. Field: Time Offset		
	Format: uint16		
	• Value: 20 (min)		
	ii. Field: CGM Status		
	Format: 24 bit		
	Value: not relevant		
	iii. Field: E2E-CRC		
	This field is not included		
	c. CGM Measurement (0x2AA7)		
	i. Field: Size		
	Format: uint8		
	ii. Field: Flags		
	Format: 8 bit		
	 Value: 0010 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) 		

present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.

iii. Field: CGM Glucose Concentration (mg/dL)

Format: SFLOAT

Value: not Relevant

iv. Field: Time Offset

Format: uint16

Value: 20 (min)

v. Field: Sensor Status Annunciation

• Format: 8 bit

Value: not relevant

vi. Field: CGM Trend Information (mg/dL)

This field is not included

vii. Field: CGM Quality

This field is not included

viii. Field: E2E-CRC

This field is not included

CGM Session Start Time (0x2AAA)

i. Field: Session Start Time

• Format: {uint16, uint8, uint8, uint8, uint8, uint8}

Value: {2016, 5, 12, 16, 39, 27} (May 12, 2016, 16:39:27)

ii. Field: Time Zone

Format: sint8

Value: 4 (UTC+1:00)

iii. Field: DST-Offset

• Format: uint8

• Value: 4 (Daylight Time (+1h))

iv. Field: E2E-CRC

This field is not included

- 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
- 4. When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.
- 5. The simulated PHD sends the Measurement to PHG under test.
- Check in the PHG transcoder output CGM Status Enumeration Object Base-Offset-Time-Stamp attribute.
- The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test
- Check in the PHG transcoder output the CGM Status Enumeration Object Base-Offset-Time-Stamp attribute.
- Force the PHG under test to read the CGM Status characteristic to actively request the status of the CGM sensor.
- Check in the PHG transcoder output the CGM Status Enumeration Object Base-Offset-Time-Stamp attribute.

Pass/Fail criteria

 In Step 6 and 8 the CGM Status Enumeration Object - Base-Offset-Time-Stamp attribute is present and set is to the addition of CGM Session Start Time characteristic's Session Start

	Time (May 12, 2016, 14:39:27) field plus CGM Measurement characteristic's Time Offse field (20min).		
	 In Step 10 the CGM Status Enumeration Object - Base-Offset-Time-Stamp attribute is present and set is to the addition of CGM Session Start Time characteristic's Session Start Time (May 12, 2016, 14:39:27) field plus CGM Status characteristic's Time Offset field (20min). 		
Notes	Possible values in typical points of observation after transcoder output are:		
(To assist manual testing)	a) IEEE 11073 Objects and Attributes		
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Base-Offset-Time-Stamp attribute is present:		
	□ Object: CGM Status Enumeration Object		
	☐ Attribute-id: MDC_ATTR_TIME_STAMP_BO (2690)		
	Attribute-type : SEQUENCE {bo-seconds (INT-U32), bo-fraction (INT-U16), bo-time-offset (INT-I16)}		
	☐ Attribute-value : addition of		
	 CGM Session Start Time characteristic's Session Start Time field (May 12, 2016, 14:39:27) 		
	• Steps 6 & 8		
	CGM Measurement characteristic's Time Offset field (20m)		
	Steps 10		
	CGM Status characteristic's Time Offset field (20m)		
	Note that the same Base-Offset-Time-Stamp can have different representations depending on bo-time-offset value. If it is set to 20 min (CGM Measurement or CGM Status characteristic's Time Offset field), then Base-Offset-Time-Stamp value shall be {3672059967, 0, 20}		
	b) WAN PCD-01 message		
	PCD-01 message includes a segment like this with Base-Offset-Time-Stamp attribute value (check OBX-14):		
	OBX n CWE 8418060^MDC_CGM_DEV_STAT^MDC m.0.0.a [value] R [value described in a) coded in DTM format]		

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-075		
TP label		Whitepaper. CGM Status Enumeration Object – Enum-Observed-Value-Simple-Bit-Str		
Coverage	Spec	[Bluetooth PHDT v1.6]		
	Testable items	CGM Enumeration 4; M		
Test purpose		Check that:		
		PHG includes CGM Status Enumeration Object – Enum-Observed-Value-Simple-Bit-Str attribute in transcoder output.		
		[AND]		
		Enum-Observed-Value-Simple-Bit-Str is set to the correct value.		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043		
Other PICS				
Initial condition		The PHG under test and the simulated PHD are in the Standby state.		
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement		

temporarily stored.

- 2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:
 - a. CGM Feature (0x2AA8)
 - i. Field: CGM Feature
 - Format: 24 bit
 - Value: 0000 0000 0000 0101 1011 1111 (MSB → LSB). Sensor Type Error Detection supported, Device Specific Alert supported, Calibration supported, Sensor Temperature High-Low Detection supported, Patient High/Low Alerts supported, Hypo Alerts supported, Hyper Alerts supported, Rate of Increase/Decrease Alerts supported, Sensor Result High-Low Detection supported.
 - ii. Field: CGM Type
 - Format: 4 bit
 - Value: not relevant
 - iii. Field: CGM Sample Location
 - Format: 4 bit
 - · Value: not relevant
 - iv. Field: E2E-CRC
 - Format: uint16
 - Value: not relevant
 - CGM Status (0x2AA8)
 - i. Field: Time Offset
 - Format: uint16
 - Value: 20 (min)
 - ii. Field: CGM Status
 - Format: 24 bit
 - Value: 0000 0000 0000 0000 0001 (MSB -> LSB). Session stopped.
 - iii. Field: E2E-CRC
 - This field is not included
 - c. CGM Measurement (0x2AA7)
 - i. Field: Size
 - Format: uint8
 - ii. Field: Flags
 - Format: 8 bit
 - Value: 0010 0000 (MSB → LSB). CGM Trend information not present, CGM Quality not present, Sensor Status Annunciation Field (Warning-Octet) present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
 - iii. Field: CGM Glucose Concentration (mg/dL)
 - Format: SFLOAT
 - · Value: not Relevant
 - iv. Field: Time Offset
 - Format: uint16
 - Value: 20 (min)
 - v. Field: Sensor Status Annunciation

- Format: 8 bit
- Value: 0000 0001 (MSB -> LSB). Session stopped.
- vi. Field: CGM Trend Information (mg/dL)
 - This field is not included
- vii. Field: CGM Quality
 - This field is not included
- viii. Field: E2E-CRC
 - This field is not included
- The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
- When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.
- 5. The simulated PHD sends the Measurement to the PHG under test.
- Check in the PHG transcoder output the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str attribute
- 7. The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test.
- Check in the the PHG transcoder output the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str attribute
- Force the PHG under test to read the CGM Status characteristic to actively request the status of the CGM sensor.
- Check in the PHG transcoder output the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str attribute
- 11. End current CGM session and start a new one. The simulated PHD will now have the following values in the specified fields:
 - a. CGM Status (0x2AA8)
 - i. Field: CGM Status
 - Format: 24 bit
 - Value: 0000 0000 0000 0000 0100 (MSB -> LSB). Sensor type incorrect for device.
 - b. CGM Measurement (0x2AA7)
 - i. Field: Flags
 - Format: 8 bit
 - Value: 0010 0000 (MSB → LSB). CGM Trend information not present, CGM Quality not present, Sensor Status Annunciation Field (Warning-Octet) present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
 - ii. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0000 0100 (MSB -> LSB). Sensor type incorrect for device.

- 12. End current CGM session and start a new one. The simulated PHD will now have the following values in the specified fields:
 - a. CGM Status (0x2AA8)
 - Field: CGM Status
 - Format: 24 bit

- Value: 0000 0000 0000 0000 1000 (MSB -> LSB). Sensor malfunction.
- b. CGM Measurement (0x2AA7)
 - i. Field: Flags
 - Format: 8 bit
 - Value: 0010 0000 (MSB → LSB). CGM Trend information not present, CGM Quality not present, Sensor Status Annunciation Field (Warning-Octet) present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
 - ii. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0000 1000 (MSB -> LSB). Sensor malfunction.

The rest of the fields will remain with the same value as in step 2. Repeat steps 3-10 to check in PHG transcoder output the CGM Status Enumeration Object – Enum-Observed-Value-Simple-Bit-Str attribute like in 6, 8 and 10.

- 13. End current CGM session and start a new one. The simulated PHD will now have the following values in the specified fields:
 - a. CGM Status (0x2AA8)
 - i. Field: CGM Status
 - Format: 24 bit
 - Value: 0000 0000 0000 0000 0001 0000 (MSB -> LSB). Device specific alert.
 - b. CGM Measurement (0x2AA7)
 - Field: Flags
 - Format: 8 bit
 - Value: 0010 0000 (MSB → LSB). CGM Trend information not present, CGM Quality not present, Sensor Status Annunciation Field (Warning-Octet) present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
 - ii. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0001 0000 (MSB -> LSB). Device specific alert.

- 14. End current CGM session and start a new one. The simulated PHD will now have the following values in the specified fields:
 - a. CGM Status (0x2AA8)
 - Field: CGM Status
 - Format: 24 bit
 - Value: 0000 0000 0000 0010 0000 0000 (MSB -> LSB). Calibration not allowed.
 - b. CGM Measurement (0x2AA7)
 - i. Field: Flags
 - Format: 8 bit
 - Value: 0100 0000 (MSB → LSB). CGM Trend information not present, CGM
 Quality not present, Sensor Status Annunciation Field (Warning-Octet) not
 present, Sensor Status Annunciation Field (Cal/Temp-Octet) present, Sensor
 Status Annunciation Field (Status-Octet) not present.
 - ii. Field: Sensor Status Annunciation
 - Format: 8 bit

• Value: 0000 0010 (MSB -> LSB). Calibration not allowed.

The rest of the fields will remain with the same value as in step 2. Repeat steps 3-10 to check in PHG transcoder output the CGM Status Enumeration Object – Enum-Observed-Value-Simple-Bit-Str attribute like in 6, 8 and 10.

- 15. End current CGM session and start a new one. The simulated PHD will now have the following values in the specified fields:
 - a. CGM Status (0x2AA8)
 - i. Field: CGM Status
 - Format: 24 bit
 - Value: 0000 0000 0000 0100 0000 0000 (MSB -> LSB). Calibration recommended.
 - b. CGM Measurement (0x2AA7)
 - i. Field: Flags
 - Format: 8 bit
 - Value: 0100 0000 (MSB → LSB). CGM Trend information not present, CGM Quality not present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) present, Sensor Status Annunciation Field (Status-Octet) not present.
 - ii. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0000 0100 (MSB -> LSB). Calibration recommended.

The rest of the fields will remain with the same value as in step 2. Repeat steps 3-10 to check in PHG transcoder output the CGM Status Enumeration Object – Enum-Observed-Value-Simple-Bit-Str attribute like in 6, 8 and 10.

- 16. End current CGM session and start a new one. The simulated PHD will now have the following values in the specified fields:
 - a. CGM Status (0x2AA8)
 - i. Field: CGM Status
 - Format: 24 bit
 - Value: 0000 0000 0000 1000 0000 0000 (MSB -> LSB). Calibration required.
 - b. CGM Measurement (0x2AA7)
 - i. Field: Flags
 - Format: 8 bit
 - Value: 0100 0000 (MSB → LSB). CGM Trend information not present, CGM
 Quality not present, Sensor Status Annunciation Field (Warning-Octet) not
 present, Sensor Status Annunciation Field (Cal/Temp-Octet) present, Sensor
 Status Annunciation Field (Status-Octet) not present.
 - ii. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0000 1000 (MSB -> LSB). Calibration required.

- 17. End current CGM session and start a new one. The simulated PHD will now have the following values in the specified fields:
 - a. CGM Status (0x2AA8)
 - i. Field: CGM Status
 - Format: 24 bit
 - Value: 0000 0000 0001 0000 0000 0000 (MSB -> LSB). Sensor temperature

too high for valid test/result at time of measurement.

- b. CGM Measurement (0x2AA7)
 - i. Field: Flags
 - Format: 8 bit
 - Value: 0100 0000 (MSB → LSB). CGM Trend information not present, CGM
 Quality not present, Sensor Status Annunciation Field (Warning-Octet) not
 present, Sensor Status Annunciation Field (Cal/Temp-Octet) present, Sensor
 Status Annunciation Field (Status-Octet) not present.
 - ii. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0001 0000 (MSB -> LSB). Sensor temperature too high for valid test/result at time of measurement.

The rest of the fields will remain with the same value as in step 2. Repeat steps 3-10 to check in PHG transcoder output the CGM Status Enumeration Object – Enum-Observed-Value-Simple-Bit-Str attribute like in 6, 8 and 10.

- 18. End current CGM session and start a new one. The simulated PHD will now have the following values in the specified fields:
 - a. CGM Status (0x2AA8)
 - i. Field: CGM Status
 - Format: 24 bit
 - Value: 0000 0000 0010 0000 0000 0000 (MSB -> LSB). Sensor temperature too low for valid test/result at time of measurement.
 - b. CGM Measurement (0x2AA7)
 - i. Field: Flags
 - Format: 8 bit
 - Value: 0100 0000 (MSB → LSB). CGM Trend information not present, CGM
 Quality not present, Sensor Status Annunciation Field (Warning-Octet) not
 present, Sensor Status Annunciation Field (Cal/Temp-Octet) present, Sensor
 Status Annunciation Field (Status-Octet) not present.
 - ii. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0010 0000 (MSB -> LSB). Sensor temperature too low for valid test/result at time of measurement.

- 19. End current CGM session and start a new one. The simulated PHD will now have the following values in the specified fields:
 - a. CGM Status (0x2AA8)
 - Field: CGM Status
 - Format: 24 bit
 - Value: 0000 0001 0000 0000 0000 0000 (MSB -> LSB). Sensor result lower than the patient low level.
 - b. CGM Measurement (0x2AA7)
 - i. Field: Flags
 - Format: 8 bit
 - Value: 1000 0000 (MSB → LSB). CGM Trend information not present, CGM Quality not present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) present.

- ii. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0000 0001 (MSB -> LSB). Sensor result lower than the patient low level.

The rest of the fields will remain with the same value as in step 2. Repeat steps 3-10 to check in PHG transcoder output the CGM Status Enumeration Object – Enum-Observed-Value-Simple-Bit-Str attribute like in 6, 8 and 10.

- 20. End current CGM session and start a new one. The simulated PHD will now have the following values in the specified fields:
 - a. CGM Status (0x2AA8)
 - i. Field: CGM Status
 - Format: 24 bit
 - Value: 0000 0010 0000 0000 0000 0000 (MSB -> LSB). Sensor result higher than the patient low level.
 - b. CGM Measurement (0x2AA7)
 - i. Field: Flags
 - Format: 8 bit
 - Value: 1000 0000 (MSB → LSB). CGM Trend information not present, CGM Quality not present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) present.
 - ii. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0000 0010 (MSB -> LSB). Sensor result higher than the patient low level.

The rest of the fields will remain with the same value as in step 2. Repeat steps 3-10 to check in PHG transcoder output the CGM Status Enumeration Object – Enum-Observed-Value-Simple-Bit-Str attribute like in 6, 8 and 10.

- 21. End current CGM session and start a new one. The simulated PHD will now have the following values in the specified fields:
 - a. CGM Status (0x2AA8)
 - i. Field: CGM Status
 - Format: 24 bit
 - Value: 0000 0100 0000 0000 0000 (MSB -> LSB). Sensor result lower than the hypo level.
 - b. CGM Measurement (0x2AA7)
 - i. Field: Flags
 - Format: 8 bit
 - Value: 1000 0000 (MSB → LSB). CGM Trend information not present, CGM
 Quality not present, Sensor Status Annunciation Field (Warning-Octet) not
 present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present,
 Sensor Status Annunciation Field (Status-Octet) present.
 - ii. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0000 0100 (MSB -> LSB). Sensor result lower than the hypo level.

The rest of the fields will remain with the same value as in step 2. Repeat steps 3-10 to check in PHG transcoder output the CGM Status Enumeration Object – Enum-Observed-Value-Simple-Bit-Str attribute like in 6, 8 and 10.

22. End current CGM session and start a new one. The simulated PHD will now have the following values in the specified fields:

- a. CGM Status (0x2AA8)
 - i. Field: CGM Status
 - Format: 24 bit
 - Value: 0000 1000 0000 0000 0000 (MSB -> LSB). Sensor result lower than the hyper level.
- b. CGM Measurement (0x2AA7)
 - Field: Flags
 - Format: 8 bit
 - Value: 1000 0000 (MSB → LSB). CGM Trend information not present, CGM Quality not present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) present.
 - ii. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0000 1000 (MSB -> LSB). Sensor result lower than the hyper level.

The rest of the fields will remain with the same value as in step 2. Repeat steps 3-10 to check in PHG transcoder output the CGM Status Enumeration Object – Enum-Observed-Value-Simple-Bit-Str attribute like in 6, 8 and 10.

- 23. End current CGM session and start a new one. The simulated PHD will now have the following values in the specified fields:
 - a. CGM Status (0x2AA8)
 - i. Field: CGM Status
 - Format: 24 bit
 - Value: 0001 0000 0000 0000 0000 0000 (MSB -> LSB). Sensor rate of decrease exceeded.
 - b. CGM Measurement (0x2AA7)
 - i. Field: Flags
 - Format: 8 bit
 - Value: 1000 0000 (MSB → LSB). CGM Trend information not present, CGM Quality not present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) present.
 - ii. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0001 0000 (MSB -> LSB). Sensor rate of decrease exceeded.

- 24. End current CGM session and start a new one. The simulated PHD will now have the following values in the specified fields:
 - a. CGM Status (0x2AA8)
 - i. Field: CGM Status
 - Format: 24 bit
 - Value: 0010 0000 0000 0000 0000 (MSB -> LSB). Sensor rate of increase exceeded.
 - b. CGM Measurement (0x2AA7)
 - i. Field: Flags
 - Format: 8 bit
 - Value: 1000 0000 (MSB → LSB). CGM Trend information not present, CGM

Quality not present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) present.

- ii. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0010 0000 (MSB -> LSB). Sensor rate of increase exceeded.

The rest of the fields will remain with the same value as in step 2. Repeat steps 3-10 to check in PHG transcoder output the CGM Status Enumeration Object – Enum-Observed-Value-Simple-Bit-Str attribute like in 6, 8 and 10.

- 25. End current CGM session and start a new one. The simulated PHD will now have the following values in the specified fields:
 - a. CGM Status (0x2AA8)
 - i. Field: CGM Status
 - Format: 24 bit
 - Value: 0100 0000 0000 0000 0000 0000 (MSB -> LSB). Sensor result lower than the device can process.
 - b. CGM Measurement (0x2AA7)
 - i. Field: Flags
 - Format: 8 bit
 - Value: 1000 0000 (MSB → LSB). CGM Trend information not present, CGM Quality not present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) present.
 - ii. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0100 0000 (MSB -> LSB). Sensor result lower than the device can process.

The rest of the fields will remain with the same value as in step 2. Repeat steps 3-10 to check in PHG transcoder output the CGM Status Enumeration Object – Enum-Observed-Value-Simple-Bit-Str attribute like in 6, 8 and 10.

- 26. End current CGM session and start a new one. The simulated PHD will now have the following values in the specified fields:
 - a. CGM Status (0x2AA8)
 - i. Field: CGM Status
 - Format: 24 bit
 - Value: 1000 0000 0000 0000 0000 0000 (MSB -> LSB). Sensor result higher than the device can process.
 - b. CGM Measurement (0x2AA7)
 - i. Field: Flags
 - Format: 8 bit
 - Value: 1000 0000 (MSB → LSB). CGM Trend information not present, CGM Quality not present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) present.
 - ii. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 1000 0000 (MSB -> LSB). Sensor result higher than the device can process.

The rest of the fields will remain with the same value as in step 2. Repeat steps 3-10 to check in PHG transcoder output the CGM Status Enumeration Object – Enum-Observed-Value-Simple-Bit-Str attribute like in 6, 8 and 10.

Pass/Fail criteria

- In Step 6, 8 and 10, the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str is present with bit 0 set to 1 (sensor-session-stopped). Rest of bits set to 0.
- In Step 11, the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str is present with bit 2 set to 1 (sensor-type-incorrect). Rest of bits set to 0.
- In Step 12, the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str is present with bit 3 set to 1 (sensor-malfunction). Rest of bits set to 0.
- In Step 13, the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str is present with bit 4 set to 1 (device-specific-alert). Rest of bits set to 0.
- In Step 14, the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str is present with bit 7 set to 1 (sensor-calibration-not-allowed). Rest of bits set to 0.
- In Step 15, the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str is present with bit 8 set to 1 (sensor-calibration-recommended). Rest of bits set to 0.
- In Step 16, the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str is present with bit 9 set to 1 (sensor-calibration-required). Rest of bits set to 0.
- In Step 17, the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str is present with bit 10 set to 1 (sensor-temp-too-high). Rest of bits set to 0.
- In Step 18, the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str is present with bit 11 set to 1 (sensor-temp-too-low). Rest of bits set to 0.
- In Step 19, the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str is present with bit 12 set to 1 (sensor-result-below-patient-low). Rest of bits set to 0.
- In Step 20, the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str is present with bit 13 set to 1 (sensor-result-above-patient-high). Rest of bits set to 0.
- In Step 21, the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str is present with bit 14 set to 1 (sensor-low-hypo). Rest of bits set to 0.
- In Step 22, the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str is present with bit 15 set to 1 (sensor-high-hyper). Rest of bits set to 0.
- In Step 23, the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str is present with bit 16 set to 1 (sensor-rate-decrease-exceeded). Rest of bits set to 0.
- In Step 24, the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str is present with bit 17 set to 1 (sensor-rate-increase-exceeded). Rest of bits set to 0.
- In Step 25, the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str is present with bit 18 set to 1 (sensor-result-too-low). Rest of bits set to 0.
- In Step 19, the CGM Status Enumeration Object Enum-Observed-Value-Simple-Bit-Str is present with bit 19 set to 1 (sensor-result-too-high). Rest of bits set to 0.

Notes (To assist manual testing)

Possible values in typical points of observation after transcoder output are:

IEEE 11073 Objects and Attributes

Enum-Observed-Value-Simple-Bit-Str attribute is present:

- Object: PHD DM Status Enumeration Object
- Attribute-id: MDC_ATTR_ENUM_OBS_VAL_SIMP_BIT_STR (2661)
- Attribute-type: BITS-32
- Attribute-value (Steps 6,8,10): 02 00 00 00 (hex)
- Attribute-value (Step 11): 00 00 00 04 (hex)
- Attribute-value (Step 12): 00 00 00 08 (hex)
- Attribute-value (Step 13): 00 00 00 10 (hex)
- Attribute-value (Step 14): 00 00 02 00 (hex)
- Attribute-value (Step 15): 00 00 04 00 (hex)
- Attribute-value (Step 16): 00 00 08 00 (hex)
- Attribute-value (Step 17): 00 00 10 00 (hex)
- Attribute-value (Step 18): 00 00 20 00 (hex)

☐ Attribute-value (Step 19): 00 01 00 00 (hex) Attribute-value (Step 20): 00 02 00 00 (hex) Attribute-value (Step 21): 00 04 00 00 (hex) Attribute-value (Step 22): 00 08 00 00 (hex) Attribute-value (Step 23): 00 10 01 00 (hex) Attribute-value (Step 24): 00 20 01 00 (hex) Attribute-value (Step 25): 00 40 01 00 (hex) Attribute-value (Step 26): 00 80 01 00 (hex) WAN PCD-01 message PCD-01 message includes a segment like this with Enum-Observed-Value-Basic-Bit-Str attribute value (check OBX-5): Steps 6, 8 & 10 OBX|n|CWE|8418060^MDC_CGM_DEV_STAT^MDC|1.0.0.a|1^sensor-sessionstopped(0)|||||R|||[date_time] Step 11 OBX|n|CWE|8418060^MDC_CGM_DEV_STAT^MDC|1.0.0.a|1^sensor-typeincorrect(2)|||||R|||[date_time] OBX|n|CWE|8418060^MDC_CGM_DEV_STAT^MDC|1.0.0.a|1^sensormalfunction(3)|||||R|||[date_time] Step 13 OBX|n|CWE|8418060^MDC_CGM_DEV_STAT^MDC|1.0.0.a|1^device-specificalert(4)||||R|||[date_time] OBX|n|CWE|8418060^MDC_CGM_DEV_STAT^MDC|1.0.0.a|1^sensor-calibrationnot-allowed(7)|||||R|||[date_time] Step 15 OBX|n|CWE|8418060^MDC_CGM_DEV_STAT^MDC|1.0.0.a|1^sensor-calibrationrecommended(8)|||||R|||[date_time] Step 16 OBX|n|CWE|8418060^MDC_CGM_DEV_STAT^MDC|1.0.0.a|1^sensor-calibrationrequired(9)|||||R|||[date_time] Step 17 OBX|n|CWE|8418060^MDC_CGM_DEV_STAT^MDC|1.0.0.a|1^sensor-temp-toohigh(10)|||||R|||[date_time] Step 18 OBX|n|CWE|8418060^MDC_CGM_DEV_STAT^MDC|1.0.0.a|1^sensor-temp-toolow(11)|||||R|||[date_time] Step 19 OBX|n|CWE|8418060^MDC_CGM_DEV_STAT^MDC|1.0.0.a|1^sensor-result-belowpatient-low(12)|||||R|||[date_time] Step 20 OBX|n|CWE|8418060^MDC_CGM_DEV_STAT^MDC|1.0.0.a|1^sensor-result-abovepatient-high(13)|||||R|||[date_time] Step 21 OBX|n|CWE|8418060^MDC_CGM_DEV_STAT^MDC|1.0.0.a|1^sensor-lowhypo(14)|||||R|||[date_time] Step 22

OBX n CWE 8418060^MDC_CGM_DEV_STAT^MDC 1.0.0.a 1^sensor-high-hyper(15) R [date_time]
• Step 23
OBX n CWE 8418060^MDC_CGM_DEV_STAT^MDC 1.0.0.a 1^sensor-rate-decrease-exceeded(16) R [date_time]
• Step 24
OBX n CWE 8418060^MDC_CGM_DEV_STAT^MDC 1.0.0.a 1^sensor-rate-increase-exceeded(17) R [date_time]
• Step 25
OBX n CWE 8418060^MDC_CGM_DEV_STAT^MDC 1.0.0.a 1^sensor-result-too-low(18) R [date_time]
• Step 26
OBX n CWE 8418060^MDC_CGM_DEV_STAT^MDC 1.0.0.a 1^sensor-result-too-high(19) R [date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-076			
TP label Whitepaper. Glucose Numeric Object value					
Coverage	Spec	[Bluetooth PHDT v1.6]			
	Testable	Short Float Type 1; C	BaseOffset 3; M	Glucose Numeric 7; M	
	items	Glucose Numeric 8; M			
Test purpose Check that: PHG processes correctly the values of the Time Offset field (m) of the CGM Measurer field of the CGM Session Start Time characterists.		ne CGM Measurement characte	` • ,		
Applicabilit	у	C_MAN_BLE_000 AND	C_MAN_BLE_002 AND C_MAI	N_BLE_043	
Other PICS					
Initial condi	ition	The PHG under test and the simulated PHD are in the Standby state.			
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored.			
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:			
		a. CGM Session Start Time (0x2AAA)			
		i. Field: Session Start Time			
		• Forma	t: {uint16, uint8, uint8, uint8, uin	nt8, uint8}	
		• Value: {2016, 5, 12, 16, 39, 27} (May 12, 2016, 16:39:27)		12, 2016, 16:39:27)	
		ii. Field: Time Zone			
		• Forma			
			4 (UTC+1:00)		
		iii. Field: DST-			
			t: uint8		
		 Value: iv. Field: E2E- 	4 (Daylight Time (+1h))		

	This field is not included
	b. CGM Measurement (0x2AA7)
	i. Field: Size
	Format: uint8
	ii. Field: Flags
	Format: 8 bit
	 Value: 0000 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
	iii. Field: CGM Glucose Concentration (mg/dL)
	Format: SFLOAT
	• Value: 160.0
	iv. Field: Time Offset
	Format: uint16
	Value: 20
	v. Field: Sensor Status Annunciation
	This field is not included
	vi. Field: CGM Trend Information
	This field is not included
	vii. Field: CGM Quality
	This field is not included
	viii. Field: E2E-CRC
	This field is not included
	The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	 When the pairing has been completed (Connection state), force the PHG under test to read the CGM Features and CGM Session Start Time characteristics.
	5. The simulated PHD sends the Measurement to the PHG under test.
	6. Check that the PHG accepts the measurement and decodes its value properly (glucose concentration value, units and time stamp)
	 The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test
	8. Check that the PHG accepts the measurement and decodes its value properly (glucose concentration value, units and time stamp)
Pass/Fail criteria	In Steps 6 and 8, the PHG under test shows the following measurement: Glucose Concentration = 160(mg/dL) with timestamp '2016-05-12 16:59:27'
Notes (To assist manual testing)	

TP Id TP/LP-PAN/PHG/PHDTW/CGM/BV-077		TP/LP-PAN/PHG/PHDTW/CGM/BV-077
TP label Whitepaper. Sensor Calibration Numeric Object value		Whitepaper. Sensor Calibration Numeric Object value
Coverage Spec [Bluetooth PHDT v1.6]		[Bluetooth PHDT v1.6]

	Testable	Short Float	Type 1; C	BaseOffset 3; M	SensCal Numeric 11; M	
	items	SensCal Nu	ımeric 12; M			
Test purpos	е	Check that:				
		Calibration for Point characters	field (mg/dL) and the cteristic when it reco	e Calibration Time field (m	alue – Glucose concentration of n) of the CGM Specific Ops Control Response, and the CGM Session Start	
Applicability	1	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043				
Other PICS						
		The DUO		and the diplip and in the Ot	an discontate	
Initial condit	tion	The PHG ui	nder test and the si	mulated PHD are in the St	andby state.	
Test proced	ure			figured with a Continuous ted PHD has a Calibratior	Glucose Monitoring Profile (device n Data Record stored.	
			nulated PHD implent for this Test Case		cteristics. The characteristics of	
		a. CO	GM Session Start Ti	me (0x2AAA)		
		i.	Field: Session Sta	art Time		
			Format: {uint	16, uint8, uint8, uint8, uint	8, uint8}	
			 Value: {2016 	, 5, 12, 16, 39, 27} (May 1	2, 2016, 16:39:27)	
		ii.	Field: Time Zone			
			Format: sint8			
			Value: 4 (UT)	C+1:00)		
		iii.	Field: DST-Offset			
			Format: uinta	8		
			Value: 4 (Day	ylight Time (+1h))		
		iv.	Field: E2E-CRC			
			This field is n	ot included		
		b. CG	GM Feature (0x2AA	8)		
		i.	Field: CGM Featu	ire		
			Format: 24 b	it		
			 Value: 0000 (supported. 	0000 0000 0000 0000 0000	1 (MSB → LSB). Calibration	
		ii.	Field: CGM Type			
			Format: 4 bit			
			Value: not re	levant		
		iii.	Field: CGM Samp	ole Location		
			Format: 4 bit			
			Value: not re	levant		
		iv.	Field: E2E-CRC			
			Format: uint1	6		
			Value: not re	levant		
		c. CG	GM Specific Ops Co	introl Point (0x2AAC)		
		i.	Field: Op Code			
			Format: uinn	t8		

	Value: 0x06 (Glucose Calibration Value Response)
	ii. Field: Calibration Value – Glucose concentration of Calibration (mg/dL)
	Format: SFLOAT (mg/dL)
	• Value: 115.3
	iii. Field: Calibration Value – Calibration Time
	Format: uint16 (min)
	• Value: 20
	iv. Field: Calibration Value – Calibration Type
	Format: 4 bit
	Value: not relevant
	v. Field: Calibration Value – Calibration Sample Location
	Format: 4 bit
	Value: not relevant
	vi. Field: Calibration Value - Next Calibration Time
	Format: uint16
	Value: not relevant
	vii. Field: Calibration Value – Calibration Data Record Number
	Format: uint16
	Value: not relevant
	viii. Field: Calibration Value – Calibration Status
	Format: 8 bit
	Value: not relevant
	ix. Field: E2E-CRC
	This field is not present
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Glucose Calibration procedure using Op Code "Get Glucose Calibration value" (0x05) with Operand "0xFFFF" (by performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code and Calibration Data Record Number fields respectively).
	5. The simulated PHD will respond with an indication including a "Calibration Value Response" Op Code (0x06) and a Calibration Data Record containing the requested calibration information.
	6. Check that the PHG accepts the measurement and decodes its value properly (glucose concentration calibration value, units and time stamp).
Pass/Fail criteria	In Step 6, the PHG under test shows the following measurement: Glucose Concentration of Calibration= 115.3(mg/dL) with timestamp '2016-05-12 16:59:27'
Notes (To assist manual testing)	

TP Id TP/LP-PAN/PHG/PHDTW/CGM/BV-078		TP/LP-PAN/PHG/PHDTW/CGM/BV-078
TP label Whitepaper. Sensor Run-time Numeric Object value		Whitepaper. Sensor Run-time Numeric Object value
Coverage Spec [Bluetooth PHDT v1.6]		[Bluetooth PHDT v1.6]

	Testable items	BaseOffset 2	2; M	SRT Numeric 5; M	SRT Numeric 6; M	
Test purpose	•	Check that:				
		PHG processes correctly the values of the Session Run Time field (h) of the CGM Session Run Time characteristic and the CGM Session Start Time field of the CGM Session Start Time characteristic.				
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043				
Other PICS						
Initial conditi	ion	The PHG un	der test and the sin	nulated PHD are in the Standby	state.	
Test procedu	ıre	specializ 2. The sim interest a. CG i. ii. ii. b. CG i. ii. 3. The PHG simulate 4. When the	specialization). 2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are: a. CGM Session Start Time (0x2AAA) i. Field: Session Start Time • Format: {uint16, uint8, uint8, uint8, uint8, uint8} • Value: {2016, 5, 12, 16, 39, 27} (May 12, 2016, 16:39:27) ii. Field: Time Zone • Format: sint8 • Value: 4 (UTC+1:00) iii. Field: DST-Offset • Format: uint8 • Value: 4 (Daylight Time (+1h)) iv. Field: E2E-CRC • This field is not included b. CGM Session Run Time (0x2AAB) i. Field: Session Run Time • Format: uint16 (h) • Value: 168 ii. Field: E2E-CRC • This field is not included 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).			
Pass/Fail crit	teria	In Step 5, the PHG under test shows the following measurement: Sensor Run Time = 168 (h)				
Notes (To assist matesting)	anual	with timestamp '2016-05-12 16:39:27'				

TP ld	TP/LP-PAN/PHG/PHDTW/CGM/BV-079
TP label	Whitepaper. Glucose Sampling Interval Numeric Object value

Coverage	Spec	[Bluetooth PHDT v1.	6]			
	Testable items	BaseOffset 1; M		GSI Numeric 8; M		
Test purpose		Check that: PHG processes correctly the value of the Operand field (m) of the CGM Specific Ops Control Point when it receives a Communication Interval Response, and sets the timestamp to the				
		collector's time of the	e collection			
Applicability	/	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043				
Other PICS						
Initial condi	tion	The PHG under test	and the sin	nulated PHD are in the Standby	state.	
Test proced	ure			igured with a Continuous Glucos manually entered communicatio		
		The simulated P for this Test Cas		nents several BTLE characteristic	cs. The characteristic of interest	
		a. CGM Speci	ific Ops Co	ntrol Point (0x2AAC)		
		i. Field: C	Op Code			
		• Fo	rmat: uint8			
		• Va	lue: 0x03			
		ii. Field: C	Operand			
		• Fo	rmat: uint8	(min)		
		• Va	lue: 15			
		iii. Field: E	E2E-CRC			
		• Th	is field is n	ot present		
				es a discovery process (Scanning s a pairing process with the simu		
		Interval procedu	ire using O	completed, force the PHG to pe p Code "Get CGM Communication M Specific Ops Control Point ch	on Interval" (0x02) (performing	
 The simulated PHD will respond with an indication inc Response" Op Code (0x03) and an UINT8 containing minutes. 						
		6. Check that the F	PHG decod	es values properly (glucose sam	pling interval and units)	
Pass/Fail cr	iteria	In Step 6, the PHG under test shows the following measurement: Glucose Sampling Interval 15 (m) with timestamp set to the collector's time of the collection				
Notes (To assist m testing)	nanual					

TP Id TP/LP-PAN/PHG/PHDTW/CGM/BV-080					
TP label		Whitepaper. Glucose trend Numeric Object value			
Coverage	Spec	[Bluetooth PHDT v1.6]			
	Testable	Short Float Type 1; C	BaseOffset 3; M	GT Numeric 6; M	
	items	GT Numeric 7; M			

Tost nurnoso	Check that:			
Test purpose				
	PHG processes correctly the values of the CGM Trend Information field ((mg/dL)/min) and the Time Offset field (m) of the CGM Measurement characteristic and the CGM Session Start Time field of the CGM Session Start Time characteristic.			
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043			
Other PICS				
Initial condition	The PHG under test and the simulated PHD are in the Standby state.			
Test procedure	 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored. 			
	2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:			
	a. CGM Feature (0x2AA8)			
	i. Field: CGM Feature			
	Format: 24 bit			
	 Value: 0000 0000 1000 0000 0000 0000 (MSB → LSB). CGM trend information supported. 			
	ii. Field: CGM Type			
	Format: 4 bit			
	Value: not relevant			
	iii. Field: CGM Sample Location			
	Format: 4 bit			
	Value: not relevant			
	iv. Field: E2E-CRC			
	Format: uint16			
	Value: not relevant			
	b. CGM Measurement (0x2AA7)			
	i. Field: Size			
	Format: uint8			
	ii. Field: Flags			
	Format: 8 bit			
	 Value: 0000 0001 (MSB → LSB). CGM Trend information present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) not present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present. 			
	iii. Field: CGM Glucose Concentration (mg/dL)			
	Format: SFLOAT			
	Value: not relevant			
	iv. Field: Time Offset			
	Format: uint16			
	Value: not relevant			
	v. Field: Sensor Status Annunciation			
	This field is not included			
	vi. Field: CGM Trend Information (mg/dL)/min			

	Format: SFLOAT
	• Value: 3.6
	vii. Field: CGM Quality
	This field is not included
	viii. Field: E2E-CRC
	This field is not included
	c. CGM Session Start Time (0x2AAA)
	i. Field: Session Start Time
	Format: {uint16, uint8, uint8, uint8, uint8}
	• Value: {2016, 5, 12, 16, 39, 27} (May 12, 2016, 16:39:27)
	ii. Field: Time Zone
	Format: sint8
	• Value: 4 (UTC+1:00)
	iii. Field: DST-Offset
	Format: uint8
	 Value: 4 (Daylight Time (+1h))
	iv. Field: E2E-CRC
	This field is not included
	 The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	 When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.
	5. The simulated PHD sends the Measurement to the PHG under test.
	Check that the PHG accepts the measurement and decodes its value properly (glucose trend value, units and time stamp).
	 The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test.
	Check that the PHG accepts the measurement and decodes its value properly (glucose trend value, units and time stamp).
Pass/Fail criteria	In Steps 6 and 8, the PHG under test shows the following measurement: Glucose Trend = 3.6 (mg/dL/min) with timestamp '2016-05-12 16:59:27'
Notes (To assist manual testing)	

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-081				
TP label		Whitepaper. Patient low/high thresholds Compound Numeric Object value				
Coverage	Spec	[Bluetooth PHDT v1.6]				
	Testable items	Short Float Type 1; C	BaseOffset 1; M	PLH Numeric 9; M		
		PLH Numeric 10; M				
Test purpose		Check that: PHG processes correctly the values of the Operand fields (mg/dL) of the CGM Specific Ops				
		Control Point characteristic who	en it receives a Patient High Aler	t Level Response and a Patient		

	Low Alert Level Response, and sets the timestamp to the collector's time of the collection		
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND C_MAN_BLE_046 AND C_MAN_BLE_048		
Other PICS			
Initial condition	The PHG under test and the simulated PHD are in the Standby state.		
Test procedure	 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). PHD has manually entered Patient Low Alert Level and Patient High Alert Level values stored. 		
	2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:		
	a. CGM Feature (0x2AA8)		
	i. Field: CGM Feature		
	Format: 24 bit		
	 Value: 0000 0000 0000 0000 0010 (MSB → LSB). Patient High/Low Alerts supported. 		
	ii. Field: CGM Type		
	Format: 4 bit		
	Value: not relevant		
	iii. Field: CGM Sample Location		
	Format: 4 bit		
	Value: not relevant		
	iv. Field: E2E-CRC		
	Format: uint16		
	Value: not relevant		
	b. CGM Specific Ops Control Point (0x2AAC)		
	i. Field: Op Code		
	Format: uint8		
	 Value: 0x09 (Patient High Alert Level Response) / 0x0C (Patient Low Alert Level Response) 		
	ii. Field: Operand		
	Format: SFLOAT (mg/dL)		
	 Value: 72.0 (Patient Low threshold) / 144.0 (Patient High threshold) 		
	iii. Field: E2E-CRC		
	This field is not present		
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).		
	4. When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Patient High Alert procedure using Op Code "Get Patient High Alert Level" (0x08) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).		
	5. The simulated PHD will respond with an indication including a "Patient High Alert Level Response" (0x09) Op Code and an SFLOAT containing the requested value in mg/dL.		
	6. Force the PHG to perform a Patient Low Alert procedure using Op Code "Get Patient Low Alert Level" (0x0B) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code).		
	7. The simulated PHD will respond with an indication including a "Patient Low Alert Level Response" (0x0C) Op Code and an SFLOAT containing the requested value in mg/dL.		

Notes (To assist manual testing)	
Pass/Fail criteria	In Step 8, the PHG under test shows the following measurement: Patient low threshold = 72.0 (mg/dL), Patient High threshold = 144.0 (mg/dL) with timestamp set to the collector's time of the collection
	Check that the PHG accepts the measurement and decodes its value properly (patient low and high thresholds and units).

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-082						
TP label		Whitepaper. Device hypo/hyper thresholds Compound Numeric Object value						
Coverage	Spec	[Bluetooth PHDT v1.6]	Bluetooth PHDT v1.6]					
	Testable items	Short Float Type 1; C	BaseOffset 1; M	DHH Numeric 9; M				
		DHH Numeric 10; M						
Test purpose			hen it receives a Hypo Alert L	(mg/dL) of the CGM Specific Ops Level Response and a Hyper Alert time of the collection				
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND (C_MAN_BL OR C_MAN_BLE_052)							
Other PICS	her PICS							
Initial condi	tion	The PHG under test and the	simulated PHD are in the Star	ndby state.				
Test procedure		specialization). PHD has 2. The simulated PHD implication interest for this Test Case a. CGM Feature (0x2A) i. Field: CGM Feature: 24 • Value: 0000 Hyper Alert ii. Field: CGM Typ • Format: 4 b • Value: not iii. Field: CGM Sant • Format: 4 b • Value: not iii. Field: E2E-CRC • Format: uin • Value: not iii.	manually entered Hypo and I ements several BTLE characte are: A8) ature bit 0 0000 0000 0000 0000 1100 as supported. bit relevant relevant relevant control Point (0x2AAC)	lucose Monitoring Profile (device Hyper Alert Level values stored. reristics. The characteristics of				

	 Value: 0x0F (Hypo Response) 	o Alert Level Response) / 0x12 (Hyper Alert Level
	ii. Field: Operand	
	Format: SFLOAT	(mg/dL)
	 Value: 36.0 (Hypo Response) 	Alert Level Response) / 360.0 (Hyper Alert Level
	iii. Field: E2E-CRC	
	 This field is not pr 	esent
		discovery process (Scanning state), it discovers the airing process with the simulated PHD (Initiating state).
	 When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics. 	
	Code "Get Hypo Alert Level" (0: Control Point characteristic's O	force the PHG to perform a Hypo Alert procedure using Op k0E) (performing a write operation to the CGM Specific Ops to Code). The simulated PHD will respond with an indication esponse" (0x0F) Op Code and an SFLOAT containing the
	Code "Get Hyper Alert Level" (C Ops Control Point characteristic	force the PHG to perform a Hyper Alert procedure using Op (x11) (performing a write operation to the CGM Specific 3's Op Code). The simulated PHD will respond with an ert Level Response" (0x12) Op Code and an SFLOAT evel in mg/dL.
	Check that the PHG accepts the hyper thresholds and units).	e measurement and decodes its value properly (hypo and
Pass/Fail criteria	n Step 7, the PHG under test shows the following measurement: Hypo threshold = 36.0 mg/dL), Hyper threshold = 360.0 (mg/dL) with timestamp set to the collector's time of the ollection	
Notes (To assist manual testing)		

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-083				
TP label		Whitepaper.Glucose rate of charge thresholds Compound Numeric Object value				
Coverage	Spec	[Bluetooth PHDT v1.6]				
	Testable	Short Float Type 1; C	BaseOffset 1; M	GRC Numeric 9; M		
	items	GRC Numeric 10; M				
Test purpose		Check that: PHG processes correctly the values of the Operand fields (mg/dL) of the CGM Specific Ops Control Point characteristic when it receives a Rate of Decrease Alert Level Response and a Rate of Decrease Alert Level Response, and sets the timestamp to the collector's time of the collection				
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043 AND C_MAN_BLE_054 AND C_MAN_BLE_056				
Other PICS						
Initial condition		The PHG under test and the simulated PHD are in the Standby state.				
Test procedure		The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization). The PHD has manually entered Rate of Decrease and Increase Alert Level values stored.				

The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are: CGM Feature (0x2AA8) Field: CGM Feature Format: 24 bit Value: 0000 0000 0000 0000 0001 0000 (MSB → LSB). Rate of Increase/Decrease Alerts supported. Field: CGM Type ii Format: 4 bit Value: not relevant iii. Field: CGM Sample Location Format: 4 bit Value: not relevant iv. Field: E2E-CRC Format: uint16 Value: not relevant CGM Specific Ops Control Point (0x2AAC) Field: Op Code Format: uint8 Value: 0x15 (Rate of Decrease Alert Level Response) / 0x18 (Rate of Increase Alert Level Response) Field: Operand Format: SFLOAT (mg/dL/min) Value: 9.0 (Rate of Decrease Alert Level Response) / 9.0 (Rate of Increase Alert Level Response) iii. Field: E2E-CRC This field is not present The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state). When the pairing has been completed, force the PHG to read CGM Feature and CGM Session Start Time characteristics, and then to perform a Rate of Decrease Alert Level procedure using Op Code "Get Rate of Decrease Alert Level" (0x14) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Rate of Decrease Alert Level Response" (0x15) Op Code and an SFLOAT containing the requested alert level in mg/dL/min. Force the PHG to perform a Rate of Increase Alert Level procedure using Op Code "Get Rate of Increase Alert Level" (0x17) (performing a write operation to the CGM Specific Ops Control Point characteristic's Op Code). The simulated PHD will respond with an indication including a "Rate of Increase Alert Level Response" (0x18) Op Code and an SFLOAT containing the requested alert level in mg/dL/min. Check that PHG accepts the measurement and decodes its value properly (glucose rate of decrease and increase thresholds and units).

In Step 8, the PHG under test shows the following measurement: Glucose rate of decrease threshold = 9.0 (mg/dL/min), Glucose rate of increase threshold = 9.0 (mg/dL/min) with

timestamp set to the collector's time of the collection

Pass/Fail criteria

(To assist manual

Notes

testing)

TP Id		TP/LP-PAN/PHG/PHDTW/CGM/BV-084						
TP label		Whitepaper. PHD DM Status Enumeration Object value						
Coverage	Spec	[Blueto	[Bluetooth PHDT v1.6]					
	Testable items	BaseC	BaseOffset 3; M PHDM Enumeration 5; M PHDM Enumeration 6; M					
Test purpose Check that: PHG processes correctly the values of the Se Offset field (m) of the CGM Measurement characteristic and the CGM Session S characteristic.		asurement characteristic, the (CGM Status field of the CGM					
Applicabilit	y	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_043						
Other PICS								
Initial cond	ition	The Pl	HG ur	nder test and the sir	nulated PHD are in the Standl	by state.		
Test procedure		sp sta						
				nulated PHD implent for this Test Case	nents several BTLE characteri are:	stics. The characteristics of		
	a.	CG	GM Feature (0x2AA	3)				
		i.	Field: CGM Featu	re				
				Format: 24 bi	t			
					0000 0000 1 0 1 0 0000 0000 (M ported, General Device Fault			
			ii.	Field: CGM Type				
		Format: 4 bit						
				 Value: not rel 	evant			
			iii.	Field: CGM Samp	le Location			
				Format: 4 bit				
				 Value: not rel 	evant			
			iv.	Field: E2E-CRC				
				Format: uint1	6			
	Value: not relevant							
		b.	CG	GM Status (0x2AA8)				
			i.	Field: Time Offset				
				Format: uint1	6			
				Value: not rel				
			ii.	Field: CGM Status	3			
				Format: 24 bi	t			
				• Value: 0000 (0000 0000 0000 0000 0010 (M	ISB -> LSB). Device Battery Low		
			iii.	Field: CGM Samp	le Location			

Format: 4 bit

Value: not relevant

- c. CGM Measurement (0x2AA7)
 - i. Field: Size

Format: uint8

- ii. Field: Flags
 - Format: 8 bit
 - Value: 0010 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.
- iii. Field: CGM Glucose Concentration (mg/dL)

• Format: SFLOAT

Value: not Relevant

iv. Field: Time Offset

Format: uint16

Value: not relevant

- v. Field: Sensor Status Annunciation
 - Format: 8 bit
 - Value: 0000 0010 (MSB -> LSB). Device Battery Low.
- vi. Field: CGM Trend Information (mg/dL)
 - This field is not included
- vii. Field: CGM Quality
 - · This field is not included
- viii. Field: E2E-CRC
 - · This field is not included
- d. CGM Session Start Time (0x2AAA)
 - i. Field: Session Start Time
 - Format: {uint16, uint8, uint8, uint8, uint8, uint8}
 - Value: {2016, 5, 12, 16, 39, 27} (May 12, 2016, 16:39:27)
 - ii. Field: Time Zone
 - Format: sint8
 - Value: 4 (UTC+1:00)
 - iii. Field: DST-Offset
 - Format: uint8
 - Value: 4 (Daylight Time (+1h))
 - iv. Field: E2E-CRC
 - This field is not included
- 3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
- When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.
- 5. The simulated PHD sends the Measurement to the PHG under test.
- Check that the PHG accepts the measurement and decodes its value properly (sensor status and time stamp).

	7. The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test.
	8. Check that the PHG accepts the measurement and decodes its value properly (sensor status and time stamp).
	Force the PHG under test to read the CGM Status characteristic to actively request the status of the CGM sensor.
	 Check that the PHG accepts the measurement and decodes its value properly (sensor status and time stamp).
Pass/Fail criteria	In Step 6, 8 and 10, the PHG under test shows the following measurement: PHD DM Status = 'device-status-battery-low' (1) with timestamp '2016-05-12 16:59:27'
Notes (To assist manual testing)	

TP ld		TP/LP-PAN/PHG/PHDTW/CGM/BV-085						
TP label		Whitepaper. CGM Status Enumeration Object value						
Coverage	Spec	[Bluetooth P	Bluetooth PHDT v1.6]					
	Testable items	BaseOffset	CGM Enumeration 4; M CGM Enumeration 5; M					
Test purpose		Check that:						
		Offset field ((m) of the CGM Mea	alues of the Sensor Status Annur asurement characteristic, the CG GM Session Start Time field of th	M Status field of the CGM			
Applicability	/	C_MAN_BL	E_000 AND C_MAI	N_BLE_002 AND C_MAN_BLE_	043			
Other PICS								
Initial condi	lition The PHG under test and the simulated PHD are in the Standby state.				state.			
Test procedure		 The simulated PHD is configured with a Continuous Glucose Monitoring Profile (device specialization), it has a CGM measurement ready to be sent and it is in the Advertising state (it is discoverable). The simulated PHD also has an identical CGM measurement temporarily stored. 						
		2. The simulated PHD implements several BTLE characteristics. The characteristics of interest for this Test Case are:						
		a. CGM Feature (0x2AA8)						
		i. Field: CGM Feature						
			Format: 24 bi	t				
			Detection sup Sensor Temp supported, H	2000 0000 0101 1011 1111 (MSi oported, Device Specific Alert su perature High-Low Detection sup ypo Alerts supported, Hyper Aler rease Alerts supported, Sensor	pported, Calibration supported, ported, Patient High/Low Alerts ts supported, Rate of			
		ii.	Field: CGM Type					
			Format: 4 bit					
			 Value: not rel 	evant				
		iii.	Field: CGM Samp	le Location				

Format: 4 bit

Value: not relevant

iv. Field: E2E-CRC

Format: uint16

· Value: not relevant

b. CGM Status (0x2AA8)

i. Field: Time Offset

Format: uint16

Value: 20 (min)

ii. Field: CGM Status

Format: 24 bit

Value: 0000 0000 0000 0000 0001 (MSB -> LSB). Session stopped.

iii. Field: E2E-CRC

• This field is not included

c. CGM Measurement (0x2AA7)

i. Field: Size

Format: uint8

ii. Field: Flags

• Format: 8 bit

 Value: 0010 0000 (MSB → LSB). CGM Trend information not present, CGM Quality nor present, Sensor Status Annunciation Field (Warning-Octet) present, Sensor Status Annunciation Field (Cal/Temp-Octet) not present, Sensor Status Annunciation Field (Status-Octet) not present.

iii. Field: CGM Glucose Concentration (mg/dL)

Format: SFLOAT

Value: not Relevant

iv. Field: Time Offset

• Format: uint16

Value: 20 (min)

v. Field: Sensor Status Annunciation

Format: 8 bit

Value: 0000 0001 (MSB -> LSB). Session stopped.

vi. Field: CGM Trend Information (mg/dL)

This field is not included

vii. Field: CGM Quality

• This field is not included

viii. Field: E2E-CRC

This field is not included

d. CGM Session Start Time (0x2AAA)

i. Field: Session Start Time

• Format: {uint16, uint8, uint8, uint8, uint8, uint8}

Value: {2016, 5, 12, 16, 39, 27} (May 12, 2016, 16:39:27)

ii. Field: Time Zone

Format: sint8

	Т
	• Value: 4 (UTC+1:00)
	iii. Field: DST-Offset
	Format: uint8
	Value: 4 (Daylight Time (+1h))
	vi. Field: E2E-CRC
	This field is not included
	3. The PHG under test initiates a discovery process (Scanning state), it discovers the simulated PHD and it starts a pairing process with the simulated PHD (Initiating state).
	4. When the pairing has been completed (Connection state), force the PHG under test to read the CGM Feature and CGM Session Start Time characteristics.
	5. The simulated PHD sends the Measurement to the PHG under test.
	6. Check that the PHG accepts the measurement and decodes its value properly (sensor status and time stamp).
	7. The PHG under test requests the simulated PHD to report stored records by performing a writing operation in the Record Access Control Point (RACP). The simulated PHD sends the temporarily stored CGM measurement to the PHG under test
	8. Check that the PHG accepts the measurement and decodes its value properly (sensor status and time stamp).
	9. Force the PHG under test to read the CGM Status characteristic to actively request the status of the CGM sensor.
	10. Check that the PHG accepts the measurement and decodes its value properly (sensor status and time stamp).
Pass/Fail criteria	In Step 6, 8 and 10, the PHG under test shows the following measurement: CGM Status = 'sensor-session-stopped' (0) with timestamp '2016-05-12 16:59:27'
Notes (To assist manual testing)	

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