International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

H.850.5

(04/2017)

SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS

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

Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 10E: Transcoding for Bluetooth Low Energy: Personal Health Gateway – Weighing scales

Recommendation ITU-T H.850.5

International Telecommunication Union

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Recommendation ITU-T H.850.5

Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 10E: Transcoding for Bluetooth Low Energy: Personal Health Gateway – Weighing scales

Summary

Recommendation ITU-T H.850.5 provides a test suite structure (TSS) and the test purposes (TP) for the transcoding of weighing scales data by personal health gateways 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.850.5 is a transposition of clause 3.7 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 scales PHD requirements;
– ITU-T H.850.6 with pulse oximeter PHD requirements;
– ITU-T H.850.7 with continuous glucose monitoring PHD requirements.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T H.850.5	2017-04-29	16	11.1002/1000/13358

Keywords

Bluetooth Generic Attribute Profile, Bluetooth Low Energy (BLE), Continua Design Guidelines, Conformance testing, data format transcoding, e-health, IEEE 11073-20601, ITU-T H.810, personal area network, personal connected health devices, Personal Health Devices interface, Personal Health Gateway, touch area network, weighing scales.

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

FOREWORD

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

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

Introduction

This Recommendation is a transposition of clause 3.7 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-CDG 2015]: • 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.850.5

Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 10E: Transcoding for Bluetooth Low Energy: Personal Health Gateway – Weighing scales

1 Scope

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

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

– 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)

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

– Part 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.

[ITU-T H.810 (2016)] Recommendation ITU-T H.810 (2016), *Interoperability design 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), *Personal Health Devices Transcoding White Paper, v1.5*. https://www.bluetooth.org/DocMan/handlers/DownloadDoc.ashx?doc_id=272346

[Bluetooth PHDT v1.6] Bluetooth SIG (2015), *Personal Health Devices Transcoding White Paper, v1.6*. https://www.bluetooth.org/DocMan/handlers/DownloadDoc.ashx?doc_id=310657

[ISO/IEEE 11073-104xx] ISO/IEEE 11073-104xx (in force), *Health informatics – Personal health device communication – Device specialization*. 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.	Genome
2013 plus errata	[b-ITU-T H.810 (2013)]	4.1	Release 2013 plus errata noting all ratified bugs [b-CDG 2013].	–
2013	–	4.0	Release 2013 of the CDG including maintenance updates of the CDG 2012 and additional guidelines that cover new functionalities.	Endorphin
2012 plus errata	–	3.1	Release 2012 plus errata noting all ratified bugs [b-CDG 2012].	–
2012	–	3.0	Release 2012 of the CDG including maintenance updates of the CDG 2011 and additional guidelines that cover new functionalities.	Catalyst
2011 plus errata	–	2.1	CDG 2011 integrated with identified errata.	–
2011	–	2.0	Release 2011 of the CDG including maintenance updates of the CDG 2010 and additional guidelines that cover new functionalities [b-CDG 2011].	Adrenaline
2010 plus errata	–	1.6	CDG 2010 integrated with identified errata.	–
2010	–	1.5	Release 2010 of the CDG with maintenance updates of the CDG Version 1 and additional guidelines that cover new functionalities [b-CDG 2010].	1.5
1.0	–	1.0	First released version of the CDG [b-CDG 1.0].	–

6 Test suite structure

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 2.4.6 (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)
  - Subgroup 2.3.16: Continuous glucose monitor (CGM)
- Group 2.4: Personal health device transcoding whitepaper (PHDTW)
  - Subgroup 2.4.1: Whitepaper general requirements (GEN)
  - Subgroup 2.4.2: Whitepaper thermometer requirements (TH)
  - Subgroup 2.4.3: Whitepaper blood pressure 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
  - PHG: Personal Health Gateway
- <GR>: This identifies a group of test cases.
- <SGR>: This identifies a subgroup of test cases.
- <XX>: This identifies the type of testing.
  - BV: Valid behaviour test
  - BI: Invalid behaviour test
- <NNN>: This is a sequential number that identifies 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 2.4.6 – Whitepaper Weight scale requirements (WS)

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-000		
TP label		Whitepaper. Weight Scale MDS Object - System-Type Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	WS Specific MDS 1; M		
Test purpose		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_017 OR C_MAN_BLE 018)		
Other PICS				
Initial condition		The PHG under test and the simulated Personal Health Device (PHD) are in Standby state.		
Test procedure		1. The simulated PHD is configured with a Weight Scale 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). 3. 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: a) IEEE 11073 Objects and Attributes System-Type attribute is not present: ❑ Object: MDS Object ❑ Attribute-id: MDC_ATTR_SYS_TYPE (2438) ❑ Attribute-type: TYPE ❑ Attribute-value: <NOT PRESENT> b) WAN PCD-01 message PCD-01 message does not include segments with System-Type attribute value (67974^MDC_ATTR_SYS_TYPE^MDC)		

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-001		
TP label		Whitepaper. Weight Scale MDS Object - Dev-Configuration-Id Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Common MDS 17; M		
Test purpose		Check that: PHG includes MDS object, Dev-Configuration-Id attribute in transcoder output. [AND] Dev-Configuration-Id value is set to any value in range of 0x4000 to 0x7FFF (Extended Configuration)		

Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND (C_MAN_BLE_017 OR C_MAN_BLE_018)
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 Weight Scale 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). 3. 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: a) IEEE 11073 Objects and Attributes 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 Id		TP/LP-PAN/PHG/PHDTW/WS/BV-002		
TP label		Whitepaper. Weight Scale MDS Object - System-Type-Spec-List Attribute [Profile Scale]		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Common MDS 15; M	WS 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_SCALE, Version 1)		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_017 AND (NOT C_MAN_BLE_018)		
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 Weight Scale Profile (device specialization), it has a measurement ready to be sent and it is in the Advertising state (it is discoverable). It exposes only the Weight Scale Service. 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). 3. 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-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_SCALE, Version 1)
Notes	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_SCALE, 4111 (dec) or 10 0F (hex) • version: 1 (dec) or 00 01 (hex) b) WAN 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| 528399^MDC_DEV_SPEC_PROFILE_SCALE^MDC|||||R

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-002_A		
TP label		Whitepaper. Weight Scale MDS Object - System-Type-Spec-List Attribute [Profile BCA]		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Common MDS 15; M	WS 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_BCA, Version 1)		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_017 AND C_MAN_BLE_018		
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 Weight Scale Profile (device specialization), it has a measurement ready to be sent and it is in the Advertising state (it is discoverable). It exposes both Weight Scale Service and Body Composition Service. 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). 3. 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-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_BCA, Version 1).		
Notes		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_BCA, 4116 (dec) or 10 14 (hex) • version: 1 (dec) or 00 01 (hex) b) WAN 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| 528404^MDC_DEV_SPEC_PROFILE_BCA ^MDC|||||R

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-003		
TP label		Whitepaper. Weight Scale MDS Object - Reg-Cert-Data-List Attribute [Profile Scale]		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Common MDS 14; M	Regulatory Conv 1; M	
Test purpose		Check that: PHG transcodes IEEE 11073-20601 Regulatory Certification Data List characteristic into MDS object, Reg-Cert-Data-List attribute		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_017 AND (NOT C_MAN_BLE_018)		
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 Weight Scale Profile (device specialization), it has a measurement ready to be sent and it is in the Advertising state (it is discoverable). It exposes only the Weight Scale Service. 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 0F 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 0F (hex) BTLE Weight Scale.		

	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 the 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 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: a) IEEE 11073 Objects and Attributes 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 0F 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 0F (hex). BTLE Weight Scale. 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|32783|||||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 Id		TP/LP-PAN/PHG/PHDTW/WS/BV-003_A		
TP label		Whitepaper. Weight Scale MDS Object - Reg-Cert-Data-List Attribute [Profile BCA]		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Common MDS 14; M	Regulatory Conv 1; M	
Test purpose		Check that: PHG transcodes IEEE 11073-20601 Regulatory Certification Data List characteristic into MDS object, Reg-Cert-Data-List attribute		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_017 AND C_MAN_BLE_018		
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 Weight Scale 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 14 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 14 (hex). BTLE Body Composition. 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 the 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 PHG transcoder output the MDS object, Reg-Cert-Data-List attribute		
Pass/Fail criteria		In Step 6, 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: a) IEEE 11073 Objects and Attributes 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 14 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 14 (hex). BTLE Body Composition. 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|32788|||||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 Id		TP/LP-PAN/PHG/PHDTW/WS/BV-004		
TP label		Whitepaper. Weight Numeric Object - Handle Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Weight Numeric 1; O		
Test purpose		Check that: PHG does not include Weight Numeric object, Handle Attribute in transcoder output [OR]		

	If PHG includes Weight 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_017 OR C_MAN_BLE_018)
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 Weight Scale 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. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 0010 (MSB → LSB). Weight Measurement Value in units of Kg and Time Stamp fields are included, Height, BMI and User ID fields are not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • This field is not included vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • This field is not included viii. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the Weight Numeric object, Handle attribute
Pass/Fail criteria	In Step 5, the Weight 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: a) IEEE 11073 Objects and Attributes Handle attribute is not present, or if it is present then: ❑ Object: Weight 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/WS/BV-005		
TP label		Whitepaper. Weight Numeric Object - Type Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Weight Numeric 2; M		
Test purpose		Check that: PHG includes Weight Numeric object, Type attribute in transcoder output. [AND] Type is set to {MDC_PART_SCADA, MDC_MASS_BODY_ACTUAL}		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND (C_MAN_BLE_017 OR C_MAN_BLE_018)		
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 Weight Scale 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. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 0010 (MSB → LSB). Weight Measurement Value in units of Kg and Time Stamp fields are included, BMI, Height and User ID fields are not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • This field is not included vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • This field is not included viii. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the Weight Numeric object, Type attribute
Pass/Fail criteria	In Step 5, the Weight Numeric object, Type attribute is present and its value is {MDC_PART_SCADA, MDC_MASS_BODY_ACTUAL}
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Type attribute is present: ❑ Object: Weight Numeric Object ❑ Attribute-id: MDC_ATTR_ID_TYPE (2351) ❑ Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)} ❑ Attribute-value: • partition: MDC_PART_SCADA or 2 (dec) or 00 02 (hex) • code: MDC_MASS_BODY_ACTUAL or 57664 (dec) or E1 40 (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Type attribute (check OBX-3): OBX|?||188736^MDC_MASS_BODY_ACTUAL^MDC|1.0.a||||||X|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-006		
TP label		Whitepaper. Weight Numeric Object - Metric-Spec-Small Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Weight Numeric 3; M		
Test purpose		Check that: PHG includes Weight Numeric object, Metric-Spec-Small attribute in transcoder output. [AND] Metric-Spec-Small is set to {0xF040} (mss-avail-intermittent | mss-avail-stored-data | mss-upd-aperiodic | mss-msmt-aperiodic | mss-acc-agent-initiated).		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND (C_MAN_BLE_017 OR C_MAN_BLE_018)		
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 Weight Scale 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. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 0010 (MSB → LSB). Weight Measurement Value in units of Kg and Time Stamp fields are included, Height, BMI and User ID fields are not included		

	ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • This field is not included vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • This field is not included viii. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the Weight Numeric object, Metric-Spec-Small attribute
Pass/Fail criteria	In Step 5, the Weight Numeric object, Metric-Spec-Small attribute is present and its value is {0xF040} (mss-avail-intermittent | mss-avail-stored-data | mss-upd-aperiodic | mss-msmt-aperiodic | mss-acc-agent-initiated).
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Metric-Spec-Small attribute is present: ❑ Object: Weight Numeric Object ❑ Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630) ❑ Attribute-type: BITS-16 ❑ Attribute-value: F0 40 (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/WS/BV-007		
TP label		Whitepaper. Weight Numeric Object - Unit-Code Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Weight Numeric 4; M	Weight Numeric 5; M	
Test purpose		Check that: PHG includes Weight Numeric object, Unit-Code attribute in transcoder output.		

	[AND] IF Weight (Kg) field of Weight Measurement characteristic is present THEN Weight Numeric object, Unit-Code attribute is set to MDC_DIM_KILO_G [AND] IF Weight (lb) field of Weight Measurement characteristic is present THEN Weight Numeric object, Unit-Code attribute is set to MDC_DIM_LB
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND (C_MAN_BLE_017 OR C_MAN_BLE_018)
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 Profile (device specialization) supported by the PHG under test, 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. Weight Measurement (0x2A9D) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 0010 (MSB → LSB). Weight Measurement Value in units of Kg and Time Stamp fields are included, Height, BMI and User ID fields are not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • This field is not included vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • This field is not included viii. Field: User ID • This field is not included 5. Check in PHG transcoder output the Weight Numeric object, Unit-Code attribute 6. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D)

	i. Field: Flags • Format: 8 bit • Value: 0000 0011 (MSB → LSB). Weight Measurement Value in units of Pounds and Time Stamp fields are included, Height, BMI and User ID fields are not included ii. Field: Weight (Kg) • This field is not included iii. Field: Weight (lb) • Format: UINT16 • Value: Not relevant iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • This field is not included vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • This field is not included viii. Field: User ID • This field is not included 7. Check in PHG transcoder output the Weight Numeric object, Unit-Code attribute
Pass/Fail criteria	In Step 5, the Weight Numeric object, Unit-Code attribute is present and its value is MDC_DIM_KILO_G In Step 7, the Weight Numeric Object – Unit-Code attribute is present and its value is MDC_DIM_LB
Notes	In Step 5, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Unit-Code attribute is present: ❑ Object: Weight Numeric Object ❑ Attribute-id: MDC_ATTR_UNIT_CODE (2454) ❑ Attribute-type: INT-U16 ❑ Attribute-value: MDC_DIM_KILO_G or 1731 (dec) or 06 C3 (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Unit-Code attribute value (check OBX-6): OBX|?|NM|188736^MDC_MASS_BODY_ACTUAL^MDC|1.0.a|XX|263875^MDC_DIM_KILO_G^MDC||||R|||[current_date_time] In Step 7, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Unit-Code attribute is present: ❑ Object: Weight Numeric Object ❑ Attribute-id: MDC_ATTR_UNIT_CODE (2454) ❑ Attribute-type: INT-U16 ❑ Attribute-value: MDC_DIM_LB or 1760 (dec) or 06 E0 (hex)

	b) WAN PCD-01 message PCD-01 message includes a segment like this with Unit-Code attribute value (check OBX-6): OBX|?|NM|188736^MDC_MASS_BODY_ACTUAL^MDC|1.0.a|XX| 263904^MDC_DIM_LB^MDC|||||R|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-008		
TP label		Whitepaper. Weight Numeric Object - Absolute-Time-Stamp Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Weight Numeric 6; M	Date-Time Conv 2; M	Date-Time Conv 3; M
		Date-Time Conv 4; M	Date-Time Conv 5; M	
Test purpose		Check that: PHG transcodes Time Stamp field of Weight Measurement characteristic into Weight Numeric Object - Absolute-Time-Stamp attribute [AND] PHG transcodes the Bluetooth Time Stamp field format to Absolute Time format [AND] The fraction of seconds in Absolute Time at transcoder output is 0		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_024 AND (C_MAN_BLE_017 OR C_MAN_BLE_018)		
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 Profile (device specialization) supported by the PHG under test, 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. Weight Measurement (0x2A9D) 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) the simulated PHD sends the Measurement to PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 0010 (MSB → LSB). Weight Measurement Value in units of Kg and Time Stamp fields are included, Height, BMI and User ID fields are not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp		

	• Format: Date and Time • Value: August 2nd, 2012, 10:39:27 v. Field: Height (m) • This field is not included vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • This field is not included viii. Field: User ID • This field is not included 5. Check in PHG transcoder output the Weight Numeric object, Absolute-Time-Stamp attribute
Pass/Fail criteria	In Step 5, the Weight Numeric object, Absolute-Time-Stamp attribute is present, its value matches with Time Stamp field of Weight Measurement characteristic and fraction of seconds is set to 0
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Absolute-Time-Stamp attribute is present: ❑ Object: Weight Numeric Object ❑ Attribute-id: MDC_ATTR_TIME_STAMP_ABS (2448) ❑ Attribute-type: SEQUENCE {century (INT-U8), year (INT-U8), month (INT-U8), day (INT-U8), hour (INT-U8), minute (INT-U8), second (INT-U8), sec-fractions (INT-U8)} (BCD encoding) ❑ Attribute-value: • century: 20 (hex) or 32 (dec) • year: 12 (hex) or 18 (dec) • month: 08 (hex) or 8 (dec) • day: 02 (hex) or 2 (dec) • hour: 10 (hex) or 16 (dec) • minute: 39 (hex) or 57 (dec) • second: 27 (hex) or 39 (dec) • sec-fractions: 00 (hex) or 0 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Absolute-Time-Stamp attribute value (check OBX-14): OBX|?||188736^MDC_MASS_BODY_ACTUAL^MDC|1.0.a|XX|||||X||| 20120802103927+0000

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-009		
TP label		Whitepaper. Weight Numeric Object - Simple-Nu-Observed-Value Attribute 1		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Weight Numeric 7; M	Float Type 1; C	

Test purpose	Check that: PHG transcodes Weight Value field of Weight Measurement characteristic into Weight Numeric Object - Simple-Nu-Observed-Value attribute
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND (C_MAN_BLE_017 OR C_MAN_BLE_018)
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 Profile (device specialization) supported by the PHG under test, 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. Weight Measurement (0x2A9D) 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 (Initiating state). 4. When the pairing has been completed (Connection state) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 0010 (MSB → LSB). Weight Measurement Value in units of Kg and Time Stamp fields are included, Height, BMI and User ID fields are not included ii. Field: Weight (Kg) • Format: UINT16 • Value: 16000 (80.0 kg) iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • This field is not included vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • This field is not included viii. Field: User ID • This field is not included 5. Check in PHG transcoder output the Weight Numeric object, Simple-Nu-Observed-Value attribute 6. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit

	• Value: 0000 0011 (MSB → LSB). Weight Measurement Value in units of Pounds, Time Stamp field is included and Height, BMI and User ID fields are not included ii. Field: Weight (Kg) • This field is not included iii. Field: Weight (lb) • Format: UINT16 • Value: 17600 (176.0 lb) iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • This field is not included vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • This field is not included viii. Field: User ID • This field is not included 7. Check in PHG transcoder output the Weight Numeric object, Simple-Nu-Observed-Value attribute
Pass/Fail criteria	In Step 5, the Weight Numeric object, Simple-Nu-Observed-Value attribute is present and its value matches with Weight Measurement Value (Kg) fields of Weight Measurement characteristic (80.0) In Step 7, the Weight Numeric object, Simple-Nu-Observed-Value attribute is present and its value matches with Weight Measurement Value (lb) fields of Weight Measurement characteristic (176.0)
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Object: Weight Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FB 7A 12 00 (hex) or FC 0C 35 00 (hex) or FD 01 38 80 (hex) or FE 00 1F 40 (hex) or FF 00 03 20 (hex) or 00 00 00 50 (hex) or 01 00 00 08 (hex) or 80.0 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Simple-Nu-Observed-Value attribute value (check OBX-5): OBX|?|NM|188736^MDC_MASS_BODY_ACTUAL^MDC|1.0.a|80.0|263875^MDC_DIM_KILO_G^MDC||||R|||[current_date_time] In Step 7, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Object: Weight Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT

	❑ Attribute-value: FC 1A DB 00 (hex) or FD 02 AF 80 (hex) or FE 00 44 C0 (hex) or FF 00 06 E0 (hex) or 00 00 00 B0 (hex) or 176 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Simple-Nu-Observed-Value attribute value (check OBX-5): OBX|?|NM|188736^MDC_MASS_BODY_ACTUAL^MDC|1.0.a|176.0|263904^MDC_DIM_LB^MDC||||R|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-010		
TP label		Whitepaper. Weight Numeric Object - Simple-Nu-Observed-Value Attribute 2		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Weight Numeric 7; M	Float Type 1; C	Float Type 2; M
Test purpose		Check that: PHG transcodes Weight Value field of Weight Measurement characteristic into Weight Numeric Object - Simple-Nu-Observed-Value attribute [AND] PHG assigns the following special values: NaN (0x007FFFFF).		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND (C_MAN_BLE_017 OR C_MAN_BLE_018)		
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 Profile (device specialization) supported by the PHG under test, 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. Weight Measurement (0x2A9D) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 0010 (MSB → LSB). Weight Measurement Value in units of Kg and Time Stamp fields are included, Height, BMI and User ID fields are not included ii. Field: Weight (Kg) • Format: UINT16 • Value: 16000 (80.0 kg) iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time		

	• Value: Not relevant v. Field: Height (m) • This field is not included vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • This field is not included viii. Field: User ID • This field is not included 5. Check in PHG transcoder output the Weight Numeric object, Simple-Nu-Observed-Value attribute 6. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 0010 (MSB → LSB). Weight Measurement Value in units of Kg and Time Stamp fields are included, Height, BMI and User ID fields are not included ii. Field: Weight (Kg) • Format: UINT16 • Value: FF FF (hex). Unsuccessful measurement iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • This field is not included vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • This field is not included viii. Field: User ID • This field is not included 7. Check in PHG transcoder output the Weight Numeric object, Simple-Nu-Observed-Value attribute
Pass/Fail criteria	In Step 5, the Weight Numeric object, Simple-Nu-Observed-Value attribute is present and its value is 80.0. In Step 7, the Weight Numeric object, Simple-Nu-Observed-Value attribute is present and its value is 0x007FFFFF.
Notes	In Step 5, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Weight Numeric Object

	❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FB 7A 12 00 (hex) or FC 0C 35 00 (hex) or FD 01 38 80 (hex) or FE 00 1F 40 (hex) or FF 00 03 20 (hex) or 00 00 00 50 (hex) or 01 00 00 08 (hex) or 80.0 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Simple-Nu-Observed-Value attribute value (check OBX-5): OBX|?|NM|188736^MDC_MASS_BODY_ACTUAL^MDC|1.0.a|80.0|263875^ MDC_DIM_KILO_G^MDC||||R|||[current_date_time] In Step 7, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Weight Numeric Object ❑ Attribute-id: MDC_ATTR_NU_ VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: 00 7F FF FF (hex) or NaN (note that a decimal value is not allowed) b) WAN PCD-01 message PCD-01 message does not include segment with Simple-Nu-Observed-Value attribute value (188736^MDC_MASS_BODY_ACTUAL^MDC) because it has a special value and this value is not included in PCD-01 message.

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-011		
TP label		Whitepaper. Weight Numeric Object - Weight Measurement value		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Float Type 1; C	Date-Time Conv 1; M	Weight Numeric 6; M
		Weight Numeric 7; M		
Test purpose		Check that: PHG processes correctly the Weight Measurement Value (Kg), Weight Measurement Value (lb) and Time Stamp fields of Weight Measurement		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_024 AND (C_MAN_BLE_017 OR C_MAN_BLE_018)		
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 Profile (device specialization) supported by the PHG under test, 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 are: a. Weight Measurement (0x2A9D) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D)		

i. Field: Flags
   - Format: 8 bit
   - Value: 0000 0010 (MSB → LSB). Weight Measurement Value in units of Kg and Time Stamp fields are included, Height, BMI and User ID fields are not included

ii. Field: Weight (Kg)
   - Format: UINT16
   - Value: 16000 (80.0 kg)

iii. Field: Weight (lb)
   - This field is not included

iv. Field: Time Stamp
   - Format: Date and Time
   - Value: August 2nd, 2012, 11:08:25

v. Field: Height (m)
   - This field is not included

vi. Field: Height (in)
   - This field is not included

vii. Field: BMI (kg/m^2)
   - This field is not included

viii. Field: User ID
   - This field is not included

5. Check that the PHG accepts the measurement and decodes its value properly (measurement values, units and time stamp).
6. The simulated PHD sends the Measurement to the PHG under test with the following value:
   a. Weight Measurement (0x2A9D)
      i. Field: Flags
         - Format: 8 bit
         - Value: 0000 0011 (MSB → LSB). Weight Measurement Value in units of Pounds and Time Stamp fields are included, Height, BMI and User ID fields are not included

      ii. Field: Weight (Kg)
         - This field is not included

      iii. Field: Weight (lb)
         - Format: UINT16
         - Value: 17600 (176.0 lb)

      iv. Field: Time Stamp
         - Format: Date and Time
         - Value: August 2nd, 2012, 11:09:05

      v. Field: Height (m)
         - This field is not included

      vi. Field: Height (in)
         - This field is not included

      vii. Field: BMI (kg/m^2)
         - This field is not included

	viii. Field: User ID • This field is not included 7. Check that the PHG accepts the measurement and decodes its value properly (measurement values, units and time stamp)
Pass/Fail criteria	In Step 5, the PHG under test shows the following measurement: 80.0 Kg, with timestamp '2012-08-02 11:08:25' In Step 7, the PHG under test shows the following measurement 176.0 lbs, with timestamp '2012-08-02 11:09:05'
Notes	

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-012		
TP label		Whitepaper. Height Numeric Object - Handle Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Height Numeric 1; O		
Test purpose		Check that: PHG does not include Height Numeric object, Handle Attribute in transcoder output [OR] If PHG includes Height 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_017 OR C_MAN_BLE_18) AND C_MAN_BLE 019		
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 Weight Scale 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. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1010 (MSB → LSB). Weight Measurement Value in units of Kg, Time Stamp, Height in units of metre and BMI fields are included, User ID fields is not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m)		

	• Format: UINT16 • Value: Not relevant vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: Not relevant viii. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the Height Numeric object, Handle attribute
Pass/Fail criteria	In Step 5, the Height 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: a) IEEE 11073 Objects and Attributes Handle attribute is not present, or if it is present then: ❑ Object: Height 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/WS/BV-013		
TP label		Whitepaper. Height Numeric Object - Type Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Height Numeric 2; M		
Test purpose		Check that: PHG includes Height Numeric object, Type attribute in transcoder output. [AND] Type is set to {MDC_PART_SCADA, MDC_LEN_BODY_ACTUAL}		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND (C_MAN_BLE_017 OR C_MAN_BLE_18) AND C_MAN_BLE 019		
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 Weight Scale 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. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1010 (MSB → LSB). Weight Measurement Value in units of Kg, Time Stamp, Height in units of metre and BMI fields are included, User ID field is not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • Format: UINT16 • Value: Not relevant vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: Not relevant viii. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the Height Numeric object, Type attribute
Pass/Fail criteria	In Step 5, the Height Numeric object, Type attribute is present and its value is {MDC_PART_SCADA, MDC_LEN_BODY_ACTUAL}
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Type attribute is present: ❑ Object: Height Numeric Object ❑ Attribute-id: MDC_ATTR_ID_TYPE (2351) ❑ Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)} ❑ Attribute-value: • partition: MDC_PART_SCADA or 2 (dec) or 00 02 (hex) • code: MDC_LEN_BODY_ACTUAL or 57668 (dec) or E1 44 (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Type attribute (check OBX-3): OBX|?||188740^MDC_LEN_BODY_ACTUAL^MDC|1.0.a||||||X|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-014		
TP label		Whitepaper. Height Numeric Object - Metric-Spec-Small Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Height Numeric 3; M		
Test purpose		Check that: PHG includes Height Numeric object, Metric-Spec-Small attribute in transcoder output. [AND] Metric-Spec-Small is set to {0xF048} (mss-avail-intermittent | mss-avail-stored-data | mss-upd-aperiodic | mss-msmt-aperiodic | mss-acc-agent-initiated | mss-cat-manual).		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND (C_MAN_BLE_017 OR C_MAN_BLE_18) AND C_MAN_BLE 019		
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 Weight Scale 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. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1010 (MSB → LSB). Weight Measurement Value in units of Kg, Time Stamp, Height in units of metre and BMI fields are included, User ID field is not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • Format: UINT16 • Value: Not relevant vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: Not relevant viii. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the Height Numeric object, Metric-Spec-Small attribute
Pass/Fail criteria	In Step 5, the Height Numeric object, Metric-Spec-Small attribute is present and its value is {0xF048} (mss-avail-intermittent | mss-avail-stored-data | mss-upd-aperiodic | mss-msmt-aperiodic | mss-acc-agent-initiated | mss-cat-manual).
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Metric-Spec-Small attribute is present: ❑ Object: Height Numeric Object ❑ Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630) ❑ Attribute-type: BITS-16 ❑ Attribute-value: F0 48 (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-manual(12) 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/WS/BV-015		
TP label		Whitepaper. Height Numeric Object - Unit-Code Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Height Numeric 4; M	Height Numeric 5; M	
Test purpose		Check that: PHG includes Weight Numeric object, Unit-Code attribute in transcoder output. [AND] IF Height (m) field of Weight Measurement characteristic is present THEN Height Numeric object, Unit-Code attribute is set to MDC_DIM_CENTI_M [AND] IF Height (in) field of Weight Measurement characteristic is present THEN Height Numeric object, Unit-Code attribute is set to MDC_DIM_INCH		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND (C_MAN_BLE_017 OR C_MAN_BLE_18) AND C_MAN_BLE 019		
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 Profile (device specialization) supported by the PHG under test, 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. Weight Measurement (0x2A9D) 3. PHG under test initiates 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) the simulated PHD sends the Measurement to PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1010 (MSB → LSB). Weight Measurement Value in units of Kg, Time Stamp, Height in units of metre and BMI fields are included, User ID field is not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • Format: UINT16 • Value: Not relevant vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: Not relevant viii. Field: User ID • This field is not included 5. Check in PHG transcoder output the Height Numeric object, Unit-Code attribute 6. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1011 (MSB → LSB). Weight Measurement Value in units of pound, Time Stamp, Height in units of inch and BMI fields are included, User ID field is not included ii. Field: Weight (Kg) • This field is not included iii. Field: Weight (lb) • Format: UINT16 • Value: Not relevant iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • This field is not included vi. Field: Height (in)

	• Format: UINT16 • Value: Not relevant vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: Not relevant viii. Field: User ID • This field is not included 7. Check in PHG transcoder output the Height Numeric object, Unit-Code attribute
Pass/Fail criteria	In Step 5, the Height Numeric object, Unit-Code attribute is present and its value is MDC_DIM_CENTI_M In Step 7, the Height Numeric Object – Unit-Code attribute is present and its value is MDC_DIM_INCH
Notes	In Step 5, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Unit-Code attribute is present: ❑ Object: Height Numeric Object ❑ Attribute-id: MDC_ATTR_UNIT_CODE (2454) ❑ Attribute-type: INT-U16 ❑ Attribute-value: MDC_DIM_CENTI_M or 1297 (dec) or 05 11 (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Unit-Code attribute value (check OBX-6): OBX|?|NM|188740^MDC_LEN_BODY_ACTUAL^MDC|1.0.a|XX| 263441^MDC_DIM_CENTI_M^MDC||||R|||[current_date_time] In Step 7, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Unit-Code attribute is present: ❑ Object: Weight Numeric Object ❑ Attribute-id: MDC_ATTR_UNIT_CODE (2454) ❑ Attribute-type: INT-U16 ❑ Attribute-value: MDC_DIM_INCH or 1376 (dec) or 05 60 (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Unit-Code attribute value (check OBX-6): OBX|?|NM|188740^MDC_LEN_BODY_ACTUAL^MDC|1.0.a|XX| 263520^MDC_DIM_INCH^MDC||||R|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-016		
TP label		Whitepaper. Height Numeric Object - Absolute-Time-Stamp Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Height Numeric 6; M	Date-Time Conv 2; M	Date-Time Conv 3; M
		Date-Time Conv 4; M	Date-Time Conv 5; M	
Test purpose		Check that:		

	PHG transcodes Time Stamp field of Weight Measurement characteristic into Height Numeric Object - Absolute-Time-Stamp attribute [AND] PHG transcodes the Bluetooth Time Stamp field format to Absolute Time format [AND] The fraction of seconds in Absolute Time at transcoder output is 0
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND (C_MAN_BLE_017 OR C_MAN_BLE_18) AND C_MAN_BLE 019 AND C_MAN_BLE_024
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 Profile (device specialization) supported by the PHG under test, 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. Weight Measurement (0x2A9D) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1010 (MSB → LSB). Weight Measurement Value in units of Kg, Time Stamp, Height in units of metre and BMI fields are included, User ID field is not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: August 2nd, 2012, 10:39:27 v. Field: Height (m) • Format: UINT16 • Value: Not relevant vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: Not relevant viii. Field: User ID • This field is not included 5. Check in PHG transcoder output the Height Numeric object, Absolute-Time-Stamp attribute

Pass/Fail criteria	In Step 5, the Height Numeric object, Absolute-Time-Stamp attribute is present, its value matches with Time Stamp field of Weight Measurement characteristic and fraction of seconds is set to 0
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Absolute-Time-Stamp attribute is present: ❑ Object: Height Numeric Object ❑ Attribute-id: MDC_ATTR_TIME_STAMP_ABS (2448) ❑ Attribute-type: SEQUENCE {century (INT-U8), year (INT-U8), month (INT-U8), day (INT-U8), hour (INT-U8), minute (INT-U8), second (INT-U8), sec-fractions (INT-U8)} (BCD encoding) ❑ Attribute-value: • century: 20 (hex) or 32 (dec) • year: 12 (hex) or 18 (dec) • month: 08 (hex) or 8 (dec) • day: 02 (hex) or 2 (dec) • hour: 10 (hex) or 16 (dec) • minute: 39 (hex) or 57 (dec) • second: 27 (hex) or 39 (dec) • sec-fractions: 00 (hex) or 0 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Absolute-Time-Stamp attribute value (check OBX-14): OBX|?||188740^MDC_LEN_BODY_ACTUAL^MDC|1.0.a|XX|||||X||| 20120802103927+0000

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-017		
TP label		Whitepaper. Height Numeric Object - Simple-Nu-Observed-Value Attribute 1		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Height Numeric 7; M	Float Type 1; C	
Test purpose		Check that: PHG transcodes Height Value field of Weight Measurement characteristic into Height Numeric Object - Simple-Nu-Observed-Value attribute		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND (C_MAN_BLE_017 OR C_MAN_BLE_18) AND C_MAN_BLE 019		
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 Profile (device specialization) supported by the PHG under test, 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. Weight Measurement (0x2A9D)		

	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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1010 (MSB → LSB). Weight Measurement Value in units of Kg, Time Stamp, Height in units of metre and BMI fields are included, User ID field is not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • Format: UINT16 • Value: 1800 (1.80 m) vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: Not relevant viii. Field: User ID • This field is not included 5. Check in PHG transcoder output the Height Numeric object, Simple-Nu-Observed-Value attribute. 6. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1011 (MSB → LSB). Weight Measurement Value in units of Pounds, Time Stamp, Height in units of inch and BMI fields are included, User ID field is not included ii. Field: Weight (Kg) • This field is not included iii. Field: Weight (lb) • Format: UINT16 • Value: Not relevant iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant

	v. Field: Height (m) • This field is not included vi. Field: Height (in) • Format: UINT16 • Value: 709 (70.9 in) vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: Not relevant viii. Field: User ID • This field is not included 7. Check in PHG transcoder output the Height Numeric object, Simple-Nu-Observed-Value attribute.
Pass/Fail criteria	In Step 5, the Height Numeric object, Simple-Nu-Observed-Value (cm) attribute is present and its value matches with Height Value (m) field of Weight Measurement characteristic (1.80) In Step 7, the Height Numeric object, Simple-Nu-Observed-Value attribute is present and its value matches with Height Value (in) field of Weight Measurement characteristic (70.9)
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Object: Height Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FC 1B 77 40 (hex) or FD 02 BF 20 (hex) or FE 00 46 50 (hex) or FF 00 07 08 (hex) or 00 00 00 B4 (hex) or 01 00 00 12 (hex) or 180.0 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Simple-Nu-Observed-Value attribute value (check OBX-5): OBX|?|NM|188740^MDC_LEN_BODY_ACTUAL^MDC|1.0.a|180.0|263441^MDC_DIM_CENTI_M^MDC||||R|||[current_date_time] In Step 7, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Object: Height Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FB 6C 2F 50 (hex) or FC 0A D1 88 (hex) or FD 01 14 F4 (hex) or FE 00 1B B2 (hex) or FF 00 02 C5 (hex) or 70.9 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Simple-Nu-Observed-Value attribute value (check OBX-5): OBX|?|NM|188740^MDC_LEN_BODY_ACTUAL^MDC|1.0.a|70.9|263520^MDC_DIM_INCH^MDC||||R|||[current_date_time]

TP Id	TP/LP-PAN/PHG/PHDTW/WS/BV-018
TP label	Whitepaper. Height Numeric Object - Simple-Nu-Observed-Value Attribute 2

Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Height Numeric 7; M	Float Type 1; C	Float Type 2; M
Test purpose		Check that: PHG transcodes Height Value field of Weight Measurement characteristic into Height Numeric Object - Simple-Nu-Observed-Value attribute [AND] PHG assigns the following special values: NaN (0x007FFFFF).		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND (C_MAN_BLE_017 OR C_MAN_BLE_18) AND C_MAN_BLE 019		
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 Profile (device specialization) supported by the PHG under test, 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. Weight Measurement (0x2A9D) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1010 (MSB → LSB). Weight Measurement Value in units of Kg, Time Stamp, Height in units of metre and BMI fields are included, User ID field is not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • Format: UINT16 • Value: 1800 (1.80 m) vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: Not relevant viii. Field: User ID		

	• This field is not included 5. Check in PHG transcoder output the Height Numeric object, Simple-Nu-Observed-Value attribute 6. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1010 (MSB → LSB). Weight Measurement Value in units of Kg, Time Stamp, Height in units of metre and BMI fields are included, Height, User ID field is not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • Format: UINT16 • Value: FF FF (hex). Unsuccessful measurement vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: Not relevant viii. Field: User ID • This field is not included 7. Check in PHG transcoder output the Height Numeric object, Simple-Nu-Observed-Value attribute.
Pass/Fail criteria	In Step 5, the Height Numeric object, Simple-Nu-Observed-Value attribute is present and its value is 180.0. In Step 7, the Height Numeric object, Simple-Nu-Observed-Value attribute is present and its value is 0x007FFFFF.
Notes	In Step 5, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Height Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FC 1B 77 40 (hex) or FD 02 BF 20 (hex) or FE 00 46 50 (hex) or FF 00 07 08 (hex) or 00 00 00 B4 (hex) or 01 00 00 12 (hex) or 180.0 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Simple-Nu-Observed-Value attribute value (check OBX-5):

	OBX|?|NM|188740^MDC_LEN_BODY_ACTUAL^MDC|1.0.a|180| 263441^MDC_DIM_CENTI_M^MDC|||||R|||[current_date_time] In Step 7, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Height Numeric Object ❑ Attribute-id: MDC_ATTR_NU_ VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: 00 7F FF FF (hex) or NaN (note that a decimal value is not allowed) b) WAN PCD-01 message PCD-01 message does not include segment with Simple-Nu-Observed-Value attribute value (188740^MDC_LEN_BODY_ACTUAL^MDC) because it has a special value and this value is not included in PCD-01 message.

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-019		
TP label		Whitepaper. Height Numeric Object - Height value		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Float Type 1; C	Date-Time Conv 1; M	Height Numeric 6; M
		Height Numeric 7; M		
Test purpose		Check that: PHG processes correctly the Height Value (cm), Height Value (in) and Time Stamp fields of Weight Measurement		
Applicability		C_MAN_BLE_000 AND (C_MAN_BLE_017 OR C_MAN_BLE_18) AND C_MAN_BLE 019 AND C_MAN_BLE_024		
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 Profile (device specialization) supported by the PHG under test, 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 are: a. Weight Measurement (0x2A9D) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1010 (MSB → LSB). Weight Measurement Value in units of Kg, Time Stamp, Height in units of metre and BMI fields are included, User ID field is not included ii. Field: Weight (Kg) • Format: UINT16		

	• Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: August 2nd, 2012, 11:08:25 v. Field: Height (m) • Format: UINT16 • Value: 1800 (1.80 m) vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: Not relevant viii. Field: User ID • This field is not included 5. Check that the PHG accepts the measurement and decodes its value properly (measurement values, units and time stamp). 6. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1011 (MSB → LSB). Weight Measurement Value in units of pound, Time Stamp, Height in units of inch and BMI fields are included, User ID field is not included ii. Field: Weight (Kg) • This field is not included iii. Field: Weight (lb) • Format: UINT16 • Value: Not relevant iv. Field: Time Stamp • Format: Date and Time • Value: August 2nd, 2012, 11:09:05 v. Field: Height (m) • This field is not included vi. Field: Height (in) • Format: UINT16 • Value: 709 (70.9 in) vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: Not relevant viii. Field: User ID • This field is not included

	7. Check that the PHG accepts the measurement and decodes its value properly (measurement values, units and time stamp).
Pass/Fail criteria	In Step 5, the PHG under test shows the following measurement: 180 cm, with timestamp '2012-08-02 11:08:25' In Step 7, the PHG under test shows the following measurement 70.9 in, with timestamp '2012-08-02 11:09:05'
Notes	

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-020		
TP label		Whitepaper. Body Mass Index Numeric Object - Handle Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	BMI Numeric 1; O		
Test purpose		Check that: PHG does not include BMI Numeric object, Handle Attribute in transcoder output [OR] If PHG includes BMI 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_017 OR C_MAN_BLE_018) AND C_MAN_BLE_020		
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 Weight Scale 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. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1010 (MSB → LSB). Weight Measurement Value in units of Kg, Time Stamp, Height in units of metre and BMI fields are included, User ID fields is not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • Format: UINT16 • Value: Not relevant		

	vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: Not relevant viii. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the BMI Numeric object, Handle attribute
Pass/Fail criteria	In Step 5, the BMI 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: a) IEEE 11073 Objects and Attributes Handle attribute is not present, or if it is present then: ❑ Object: BMI 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/WS/BV-021		
TP Label		Whitepaper. Body Mass Index Numeric Object - Type Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	BMI Numeric 2; M		
Test purpose		Check that: PHG includes BMI Numeric object, Type attribute in transcoder output. [AND] Type is set to {MDC_PART_SCADA, MDC_RATIO_MASS_BODY_LEN_SQ}		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND (C_MAN_BLE_017 OR C_MAN_BLE_018) AND C_MAN_BLE_020		
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 Weight Scale 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. Weight Measurement (0x2A9D)		

	i. Field: Flags • Format: 8 bit • Value: 0000 1010 (MSB → LSB). Weight Measurement Value in units of Kg, Time Stamp, Height in units of metre and BMI fields are included, User ID field is not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • Format: UINT16 • Value: Not relevant vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: Not relevant viii. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the BMI Numeric object, Type attribute
Pass/Fail criteria	In Step 5, the Weight Numeric object, Type attribute is present and its value is {MDC_PART_SCADA, MDC_RATIO_MASS_BODY_LEN_SQ}
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Type attribute is present: ❑ Object: BMI Numeric Object ❑ Attribute-id: MDC_ATTR_ID_TYPE (2351) ❑ Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)} ❑ Attribute-value: • partition: MDC_PART_SCADA or 2 (dec) or 00 02 (hex) • code: MDC_RATIO_MASS_BODY_LEN_SQ or 57680 (dec) or E1 50 (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Type attribute (check OBX-3): OBX|?||188752^MDC_RATIO_MASS_BODY_LEN_SQ^MDC| 1.0.a|XX|||||X|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-022		
TP label		Whitepaper. Body Mass Index Numeric Object - Metric-Spec-Small Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	BMI Numeric 3; M		
Test purpose		Check that: PHG includes BMI Numeric object, Metric-Spec-Small attribute in transcoder output. [AND] Metric-Spec-Small is set to {0xF042} (mss-avail-intermittent | mss-avail-stored-data | mss-upd-aperiodic | mss-msmt-aperiodic | mss-acc-agent-initiated | mss-cat-calculation).		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND (C_MAN_BLE_017 OR C_MAN_BLE_018) AND C_MAN_BLE_020		
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 Weight Scale 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. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1010 (MSB → LSB). Weight Measurement Value in units of Kg, Time Stamp, Height in units of metre and BMI fields are included, User ID field is not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • Format: UINT16 • Value: Not relevant vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: Not relevant viii. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the BMI Numeric object, Metric-Spec-Small attribute
Pass/Fail criteria	In Step 5, the BMI Numeric object, Metric-Spec-Small attribute is present and its value is {0xF042} (mss-avail-intermittent | mss-avail-stored-data | mss-upd-aperiodic | mss-msmt-aperiodic | mss-acc-agent-initiated | mss-cat-calculation).
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Metric-Spec-Small attribute is present: ❑ Object: BMI Numeric Object ❑ Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630) ❑ Attribute-type: BITS-16 ❑ Attribute-value: F0 42 (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 Id		TP/LP-PAN/PHG/PHDTW/WS/BV-023		
TP label		Whitepaper. Body Mass Index Numeric Object - Unit-Code Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	BMI Numeric 4; M	BMI Numeric 5; M	
Test purpose		Check that: PHG includes BMI Numeric object, Unit-Code attribute in transcoder output. [AND] IF BMI (Kg/m^2) field of Weight Measurement characteristic is present THEN BMI Numeric object, Unit-Code attribute is set to MDC_DIM_KG_PER_M_SQ		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND (C_MAN_BLE_017 OR C_MAN_BLE_018) AND C_MAN_BLE_020		
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 Profile (device specialization) supported by the PHG under test, 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. Weight Measurement (0x2A9D) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags		

	• Format: 8 bit • Value: 0000 1010 (MSB → LSB). Weight Measurement Value in units of Kg, Time Stamp, Height in units of metre and BMI fields are included, User ID field is not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • Format: UINT16 • Value: Not relevant vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: Not relevant viii. Field: User ID • This field is not included 5. Check in PHG transcoder output the Height Numeric object, Unit-Code attribute
Pass/Fail criteria	In Step 5, the BMI Numeric object, Unit-Code attribute is present and its value is MDC_DIM_KG_PER_M_SQ
Notes	In Step 5, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Unit-Code attribute is present: ❑ Object: BMI Numeric Object ❑ Attribute-id: MDC_ATTR_UNIT_CODE (2454) ❑ Attribute-type: INT-U16 ❑ Attribute-value: MDC_DIM_KG_PER_M_SQ or 1952 (dec) or 07 A0 (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Unit-Code attribute value (check OBX-6): OBX|?|NM|188752^MDC_RATIO_MASS_BODY_LEN_SQ^MDC|1.0.a|XX|264096^MDC_DIM_KG_PER_M_SQ^MDC||||R|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-024		
TP label		Whitepaper. Body Mass Index Numeric Object - Absolute-Time-Stamp Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable	BMI Numeric 6; M	Date-Time Conv 2; M	Date-Time Conv 3; M

	items	Date-Time Conv 4; M	Date-Time Conv 5; M	
Test purpose		Check that: PHG transcodes Time Stamp field of Weight Measurement characteristic into BMI Numeric Object - Absolute-Time-Stamp attribute [AND] PHG transcodes the Bluetooth Time Stamp field format to Absolute Time format [AND] The fraction of seconds in Absolute Time at transcoder output is 0		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND (C_MAN_BLE_017 OR C_MAN_BLE_018) AND C_MAN_BLE_020 AND C_MAN_BLE_024		
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 Profile (device specialization) supported by the PHG under test, 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. Weight Measurement (0x2A9D) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1010 (MSB → LSB). Weight Measurement Value in units of Kg, Time Stamp, Height in units of metre and BMI fields are included, User ID field is not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: August 2nd, 2012, 10:39:27 v. Field: Height (m) • Format: UINT16 • Value: Not relevant vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: Not relevant viii. Field: User ID		

	• This field is not included 5. Check in PHG transcoder output the BMI Numeric object, Absolute-Time-Stamp attribute
Pass/Fail criteria	In Step 5, the BMI Numeric object, Absolute-Time-Stamp attribute is present, its value matches with Time Stamp field of Weight Measurement characteristic and fraction of seconds is set to 0
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Absolute-Time-Stamp attribute is present: ❑ Object: BMI Numeric Object ❑ Attribute-id: MDC_ATTR_TIME_STAMP_ABS (2448) ❑ Attribute-type: SEQUENCE {century (INT-U8), year (INT-U8), month (INT-U8), day (INT-U8), hour (INT-U8), minute (INT-U8), second (INT-U8), sec-fractions (INT-U8)} (BCD encoding) ❑ Attribute-value: • century: 20 (hex) or 32 (dec) • year: 12 (hex) or 18 (dec) • month: 08 (hex) or 8 (dec) • day: 02 (hex) or 2 (dec) • hour: 10 (hex) or 16 (dec) • minute: 39 (hex) or 57 (dec) • second: 27 (hex) or 39 (dec) • sec-fractions: 00 (hex) or 0 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Absolute-Time-Stamp attribute value (check OBX-14): OBX|?||188752^MDC_RATIO_MASS_BODY_LEN_SQ^MDC|1.0.a||||||X||| 20120802103927+0000

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-025		
TP label		Whitepaper. Body Mass Index Numeric Object - Simple-Nu-Observed-Value Attribute 1		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	BMI Numeric 7; M	Float Type 1; C	
Test purpose		Check that: PHG transcodes BMI Value field of Weight Measurement characteristic into BMI Numeric Object - Simple-Nu-Observed-Value attribute		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND (C_MAN_BLE_017 OR C_MAN_BLE_018) AND C_MAN_BLE_020		
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 Profile (device specialization) supported by the PHG under test, 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. Weight Measurement (0x2A9D) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1010 (MSB → LSB). Weight Measurement Value in units of Kg, Time Stamp, Height in units of metre and BMI fields are included, User ID field is not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • Format: UINT16 • Value: Not relevant vi. Field: Height (in) • This field is not included vii. Field: BMI • Format: UINT16 • Value: 247 (24.7) viii. Field: User ID • This field is not included 5. Check in PHG transcoder output the BMI Numeric object, Simple-Nu-Observed-Value attribute
Pass/Fail criteria	In Step 5, the BMI Numeric object, Simple-Nu-Observed-Value attribute is present and its value matches with BMI Value (kg/m^2) field of Weight Measurement characteristic (24.7)
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Object: BMI Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FF 00 00 F7 (hex) or 24.7 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Simple-Nu-Observed-Value attribute value (check OBX-5):

	OBX|?|NM|188752^MDC_RATIO_MASS_BODY_LEN_SQ^MDC|1.0.a|24.7| 264096^MDC_DIM_KG_PER_M_SQ^MDC||||R|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-027		
TP label		Whitepaper. BMI Numeric object, BMI value		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Float Type 1; C	Date-Time Conv 1; M	BMI Numeric 6; M
		BMI Numeric 7; M		
Test purpose		Check that: PHG processes correctly the BMI Value (kg/m^2) and Time Stamp fields of Weight Measurement		
Applicability		C_MAN_BLE_000 AND (C_MAN_BLE_017 OR C_MAN_BLE_018) AND C_MAN_BLE_020 AND C_MAN_024		
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 Profile (device specialization) supported by the PHG under test, 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 are: a. Weight Measurement (0x2A9D) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1010 (MSB → LSB). Weight Measurement Value in units of Kg, Time Stamp, Height in units of metre and BMI fields are included, User ID field is not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: August 2nd, 2012, 11:08:25 v. Field: Height (m) • Format: UINT16 • Value: Not relevant vi. Field: Height (in)		

	• This field is not included vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: 247 (24.7) viii. Field: User ID • This field is not included 5. Check that the PHG accepts the measurement and decodes its value properly (measurement values, units and time stamp).
Pass/Fail criteria	In Step 5, the PHG under test shows the following measurement: 24.7 kg/m^2, with timestamp '2012-08-02 11:08:25'
Notes	

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-028		
TP label		Whitepaper. Body Fat Numeric Object - Handle Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Body Fat Numeric 1; O		
Test purpose		Check that: PHG does not include Body Fat Numeric object, Handle Attribute in transcoder output [OR] If PHG includes Body Fat 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_018		
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 Weight Scale 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. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0000 0010 (MSB → LSB). Body Fat Percentage in units of % and Time Stamp fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Soft Lean Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant		

	iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the Body Fat Numeric object, Handle attribute
Pass/Fail criteria	In Step 5, the Body Fat 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: a) IEEE 11073 Objects and Attributes Handle attribute is not present, or if it is present then: ❑ Object: Body Fat 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/WS/BV-029		
TP label		Whitepaper. Body Fat Numeric Object - Type Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Body Fat Numeric 2; M		
Test purpose		Check that: PHG includes Body Fat Numeric object, Type attribute in transcoder output. [AND] Type is set to {MDC_PART_SCADA, MDC_BODY_FAT}		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018		
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 Weight Scale 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. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0000 0010 (MSB → LSB). Body Fat Percentage in units of % and Time Stamp fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Soft Lean Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included		

	xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the Body Fat Numeric object, Type attribute
Pass/Fail criteria	In Step 5, the Body Fat Numeric object, Type attribute is present and its value is {MDC_PART_SCADA, MDC_BODY_FAT}
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Type attribute is present: ❑ Object: Body Fat Numeric Object ❑ Attribute-id: MDC_ATTR_ID_TYPE (2351) ❑ Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)} ❑ Attribute-value: • partition: MDC_PART_SCADA or 2 (dec) or 00 02 (hex) • code: MDC_BODY_FAT or 57676 (dec) or E1 4C (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Type attribute (check OBX-3): OBX|?||188748^MDC_BODY_FAT^MDC|1.0.a||||||X|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-030		
TP label		Whitepaper. Body Fat Numeric Object - Metric-Spec-Small Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Body Fat Numeric 3; M		
Test purpose		Check that: PHG includes Body Fat Numeric object, Metric-Spec-Small attribute in transcoder output. [AND] Metric-Spec-Small is set to {0xF042} (mss-avail-intermittent | mss-avail-stored-data | mss-upd-aperiodic | mss-msmt-aperiodic | mss-acc-agent-initiated | mss-cat-calculation).		

Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018
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 Weight Scale 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. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0000 0010 (MSB → LSB). Body Fat Percentage in units of % and Time Stamp fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Soft Lean Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included

	xvi. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the Body Fat Numeric object, Metric-Spec-Small attribute
Pass/Fail criteria	In Step 5, the Body Fat Numeric object, Metric-Spec-Small attribute is present and its value is {0xF042} (mss-avail-intermittent | mss-avail-stored-data | mss-upd-aperiodic | mss-msmt-aperiodic | mss-acc-agent-initiated | mss-cat-calculation).
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Metric-Spec-Small attribute is present: ❑ Object: Body Fat Numeric Object ❑ Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630) ❑ Attribute-type: BITS-16 ❑ Attribute-value: F0 42 (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 Id		TP/LP-PAN/PHG/PHDTW/WS/BV-031		
TP label		Whitepaper. Body Fat Numeric Object - Unit-Code Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Body Fat Numeric 4; M	Body Fat Numeric 5; M	
Test purpose		Check that: PHG includes Body Fat Numeric object, Unit-Code attribute in transcoder output. [AND] IF Body Fat Percentage (%) field of Body Composition Measurement characteristic is present THEN Body Fat Numeric object, Unit-Code attribute is set to MDC_DIM_PERCENT		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018		
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 Profile (device specialization) supported by the PHG under test, 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. Body Composition Measurement (0x2A9C) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0000 0010 (MSB → LSB). Body Fat Percentage in units of % and Time Stamp fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Soft Lean Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 5. Check in PHG transcoder output the Body Fat Numeric object, Unit-Code attribute
Pass/Fail criteria	In Step 5, the Body Fat Numeric object, Unit-Code attribute is present and its value is MDC_DIM_PERCENT

Notes	In Step 5, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Unit-Code attribute is present: ❑ Object: Body Fat Numeric Object ❑ Attribute-id: MDC_ATTR_UNIT_CODE (2454) ❑ Attribute-type: INT-U16 ❑ Attribute-value: MDC_DIM_PERCENT or 544 (dec) or 02 20 (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Unit-Code attribute value (check OBX-6): OBX|?|NM|188748^MDC_BODY_FAT^MDC|1.0.a|XX| 262688^MDC_DIM_PERCENT^MDC|||||R|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-032		
TP label		Whitepaper. Body Fat Numeric Object - Absolute-Time-Stamp Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Body Fat Numeric 6; M	Date-Time Conv 2; M	Date-Time Conv 3; M
		Date-Time Conv 4; M	Date-Time Conv 5; M	
Test purpose		Check that: PHG transcodes Time Stamp field of Body Composition Measurement characteristic into Body Fat Numeric Object - Absolute-Time-Stamp attribute [AND] PHG transcodes the Bluetooth Time Stamp field format to Absolute Time format [AND] The fraction of seconds in Absolute Time at transcoder output is 0		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_025		
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 Profile (device specialization) supported by the PHG under test, 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. Body Composition Measurement (0x2A9C) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0000 0010 (MSB → LSB). Body Fat Percentage in units of % and Time Stamp fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Soft Lean Mass, Body Water		

	Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: August 2nd, 2012, 10:39:27 iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 5. Check in PHG transcoder output the Body Fat Numeric object, Absolute-Time-Stamp attribute
Pass/Fail criteria	In Step 5, the Body Fat Numeric object, Absolute-Time-Stamp attribute is present, its value matches with Time Stamp field of Body Composition Measurement characteristic and fraction of seconds is set to 0
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Absolute-Time-Stamp attribute is present: ❑ Object: Body Fat Numeric Object ❑ Attribute-id: MDC_ATTR_TIME_STAMP_ABS (2448) ❑ Attribute-type: SEQUENCE {century (INT-U8), year (INT-U8), month (INT-U8), day

	(INT-U8), hour (INT-U8), minute (INT-U8), second (INT-U8), sec-fractions (INT-U8)} (BCD encoding) ❑ Attribute-value: • century: 20 (hex) or 32 (dec) • year: 12 (hex) or 18 (dec) • month: 08 (hex) or 8 (dec) • day: 02 (hex) or 2 (dec) • hour: 10 (hex) or 16 (dec) • minute: 39 (hex) or 57 (dec) • second: 27 (hex) or 39 (dec) • sec-fractions: 00 (hex) or 0 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Absolute-Time-Stamp attribute value (check OBX-14): OBX|?||188748^MDC_BODY_FAT^MDC|1.0.a||||||X|||20120802103927+0000

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-033		
TP label		Whitepaper. Body Fat Numeric Object - Simple-Nu-Observed-Value Attribute 1		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Body Fat Numeric 7; M	Float Type 1; C	
Test purpose		Check that: PHG transcodes Body Fat Percentage Value field of Body Composition Measurement characteristic into Body Fat Numeric Object - Simple-Nu-Observed-Value attribute		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018		
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 Profile (device specialization) supported by the PHG under test, 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. Body Composition Measurement (0x2A9C) 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 (Initiating state). 4. When the pairing has been completed (Connection state) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0000 0010 (MSB → LSB). Body Fat Percentage in units of % and Time Stamp fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Soft Lean Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%)		

	• Format: UINT16 • Value: 125 (12.5 %) iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 5. Check in PHG transcoder output the Body Fat Numeric object, Simple-Nu-Observed-Value attribute
Pass/Fail criteria	In Step 5, the Body Fat Numeric object, Simple-Nu-Observed-Value attribute is present and its value matches with Body Fat Percentage Value (%) field of Body Composition Measurement characteristic (12.5)
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Object: Body Fat Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FF 00 00 7D (hex) or 12.5 (dec)

	b) WAN PCD-01 message PCD-01 message includes a segment like this with Simple-Nu-Observed-Value attribute value (check OBX-5): OBX|?|NM|188748^MDC_BODY_FAT^MDC|1.0.a|12.5| 262688^MDC_DIM_PERCENT^MDC|||||R|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-034		
TP label		Whitepaper. Body Fat Numeric Object - Simple-Nu-Observed-Value Attribute 2		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Body Fat Numeric 7; M	Float Type 1; C	Float Type 2; M
Test purpose		Check that: PHG transcodes Body Fat Percentage Value field of Body Composition Measurement characteristic into Body Fat Numeric Object - Simple-Nu-Observed-Value attribute [AND] PHG assigns the following special values: NaN (0x007FFFFF).		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018		
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 Profile (device specialization) supported by the PHG under test, 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. Body Composition Measurement (0x2A9C) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0000 0010 (MSB → LSB). Body Fat Percentage in units of % and Time Stamp fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Soft Lean Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: 125 (12.5 %) iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included		

	v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 5. Check in PHG transcoder output the Body Fat Numeric object, Simple-Nu-Observed-Value attribute 6. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0000 0010 (MSB → LSB). Body Fat Percentage in units of % and Time Stamp fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Soft Lean Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: FF FF (hex). Unsuccessful measurement iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included

	vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 7. Check in PHG transcoder output the Body Fat Numeric object, Simple-Nu-Observed-Value attribute
Pass/Fail criteria	In Step 5, the Body Fat Numeric object, Simple-Nu-Observed-Value attribute is present and its value is 12.5. In Step 7, the Body Fat Numeric object, Simple-Nu-Observed-Value attribute is present and its value is 0x007FFFFF.
Notes	In Step 5, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Body Fat Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FA BE BC 20 (hex) or FB 13 12 D0 (hex) or FC 01 E8 48 (hex) or FD 00 30 D4 (hex) or FE 00 04 E2 (hex) or FF 00 00 7D (hex) or 12.5 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Simple-Nu-Observed-Value attribute value (check OBX-5): OBX|?|NM|188748^MDC_BODY_FAT^MDC|1.0.a|12.5| 262688^MDC_DIM_PERCENT^MDC||||R|||[current_date_time] In Step 7, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Body Fat Numeric Object

	❑ Attribute-id: MDC_ATTR_NU_ VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: 00 7F FF FF (hex) or NaN (note that a decimal value is not allowed) b) WAN PCD-01 message PCD-01 message does not include segment with Simple-Nu-Observed-Value attribute value (188748^MDC_BODY_FAT^MDC) because it has a special value and this value is not included in PCD-01 message

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-035		
TP label		Whitepaper. Body Fat Numeric object, Body Fat Percentage value		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Float Type 1; C	Date-Time Conv 1; M	Body Fat Numeric 6; M
		Body Fat Numeric 7; M		
Test purpose		Check that: PHG processes correctly the Body Fat Percentage Value and Time Stamp fields of Body Composition Measurement		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_018 AND C_MAN_BLE_025		
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 Profile (device specialization) supported by the PHG under test, 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 are: a. Body Composition Measurement (0x2A9C) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0000 0010 (MSB → LSB). Body Fat Percentage in units of % and Time Stamp fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Soft Lean Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: 125 (12.5 %) iii. Field: Time Stamp • Format: Date and Time • Value: August 2nd, 2012, 11:08:25 iv. Field: Fat Free Mass (kg) • This field is not included		

	v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 5. Check that the PHG accepts the measurement and decodes its value properly (measurement values, units and time stamp).
Pass/Fail criteria	In Step 5, the PHG under test shows the following measurement: 12.5 %, with timestamp '2012-08-02 11:08:25'
Notes	

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-036		
TP label		Whitepaper. Fat Free Mass Numeric Object - Handle Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Fat Free Numeric 1; O		
Test purpose		Check that: PHG does not include Fat Free Mass Numeric object, Handle Attribute in transcoder output [OR] If PHG includes Fat Free Mass 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_018 AND C_MAN_BLE_021		

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 Weight Scale Profile (device specialization), it has a measurement ready to be sent and it is in Advertising state (it is discoverable). 2. The simulated PHD implements several BTLE characteristics. The characteristic of interest for this test case is: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0100 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Fat Free Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Soft Lean Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • Format: UINT16 • Value: Not relevant v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height

	• This field is not included xvi. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the Fat Free Mass Numeric object, Handle attribute
Pass/Fail criteria	In Step 5, the Fat Free Mass 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: a) IEEE 11073 Objects and Attributes Handle attribute is not present, or if it is present then: ❑ Object: Fat Free Mass 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/WS/BV-037		
TP label		Whitepaper. Fat Free Mass Numeric Object - Type Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Fat Free Numeric 2; M		
Test purpose		Check that: PHG includes Fat Free Mass Numeric object, Type attribute in transcoder output. [AND] Type is set to {MDC_PART_SCADA, MDC_MASS_BODY_FAT_FREE}		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_021		
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 Weight Scale 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. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0100 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Fat Free Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Soft Lean Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not		

	included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • Format: UINT16 • Value: Not relevant v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the Fat Free Mass Numeric object, Type attribute
Pass/Fail criteria	In Step 5, the Fat Free Mass Numeric object, Type attribute is present and its value is {MDC_PART_SCADA, MDC_MASS_BODY_FAT_FREE}
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Type attribute is present:

	❑ Object: Fat Free Mass Numeric Object ❑ Attribute-id: MDC_ATTR_ID_TYPE (2351) ❑ Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)} ❑ Attribute-value: • partition: MDC_PART_SCADA or 2 (dec) or 00 02 (hex) • code: MDC_MASS_BODY_FAT_FREE or 57684 (dec) or E1 54 (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Type attribute (check OBX-3): OBX|?||188756^MDC_MASS_BODY_FAT_FREE^MDC|1.0.a||||||X|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-038		
TP label		Whitepaper. Fat Free Mass Numeric Object - Metric-Spec-Small Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Fat Free Numeric 3; M		
Test purpose		Check that: PHG includes Fat Free Mass Numeric object, Metric-Spec-Small attribute in transcoder output. [AND] Metric-Spec-Small is set to {0xF040} (mss-avail-intermittent | mss-avail-stored-data | mss-upd-aperiodic | mss-msmt-aperiodic | mss-acc-agent-initiated).		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_021		
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 Weight Scale 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. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0100 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Fat Free Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Soft Lean Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg)		

	• Format: UINT16 • Value: Not relevant v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the Fat Free Mass Numeric object, Metric-Spec-Small attribute
Pass/Fail criteria	In Step 5, the Height Numeric object, Metric-Spec-Small attribute is present and its value is {0xF040} (mss-avail-intermittent | mss-avail-stored-data | mss-upd-aperiodic | mss-msmt-aperiodic | mss-acc-agent-initiated).
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Metric-Spec-Small attribute is present: ❑ Object: Fat Free Mass Numeric Object ❑ Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630) ❑ Attribute-type: BITS-16 ❑ Attribute-value: F0 40 (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/WS/BV-039		
TP label		Whitepaper. Fat Free Mass Numeric Object - Unit-Code Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Fat Free Numeric 4; M	Fat Free Numeric 5; M	
Test purpose		Check that: PHG includes Fat Free Mass Numeric object, Unit-Code attribute in transcoder output. [AND] IF Fat Free Mass (kg) field of Body Composition Measurement characteristic is present THEN Height Numeric object, Unit-Code attribute is set to MDC_DIM_KILO_G [AND] IF Fat Free Mass (lb) field of Body Composition Measurement characteristic is present THEN Height Numeric object, Unit-Code attribute is set to MDC_DIM_LB		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_021		
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 Profile (device specialization) supported by the PHG under test, 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. Body Composition Measurement (0x2A9C) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0100 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Fat Free Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Soft Lean Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • Format: UINT16		

	• Value: Not relevant v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 5. Check in the PHG transcoder output the Fat Free Mass Numeric object, Unit-Code attribute 6. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0100 0011 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Fat Free Mass in units of pound fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Soft Lean Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included

	v. Field: Fat Free Mass (lb) • Format: UINT16 • Value: Not relevant vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 7. Check in PHG transcoder output the Fat Free Mass Numeric object, Unit-Code attribute
Pass/Fail criteria	In Step 5, the Fat Free Mass Numeric object, Unit-Code attribute is present and its value is MDC_DIM_KILO_G In Step 7, the Fat Free Mass Numeric Object – Unit-Code attribute is present and its value is MDC_DIM_LB
Notes	In Step 5, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Unit-Code attribute is present: ❑ Object: Fat Free Mass Numeric Object ❑ Attribute-id: MDC_ATTR_UNIT_CODE (2454) ❑ Attribute-type: INT-U16 ❑ Attribute-value: MDC_DIM_KILO_G or 1731 (dec) or 06 C3 (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Unit-Code attribute value (check OBX-6): OBX|?|NM|188756^MDC_MASS_BODY_FAT_FREE^MDC|1.0.a|XX| 263875^MDC_DIM_KILO_G^MDC||||R|||[current_date_time] In Step 7, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes

	Unit-Code attribute is present: ❑ Object: Fat Free Mass Numeric Object ❑ Attribute-id: MDC_ATTR_UNIT_CODE (2454) ❑ Attribute-type: INT-U16 ❑ Attribute-value: MDC_DIM_LB or 1760 (dec) or 06 E0 (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Unit-Code attribute value (check OBX-6): OBX|?|NM|188756^MDC_MASS_BODY_FAT_FREE^MDC|1.0.a|XX|263904^MDC_DIM_LB^MDC|||||R|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-040		
TP label		Whitepaper. Fat Free Mass Numeric Object - Absolute-Time-Stamp Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Fat Free Numeric 6; M	Date-Time Conv 2; M	Date-Time Conv 3; M
		Date-Time Conv 4; M	Date-Time Conv 5; M	
Test purpose		Check that: PHG transcodes Time Stamp field of Body Composition Measurement characteristic into Fat Free Mass Numeric Object - Absolute-Time-Stamp attribute [AND] PHG transcodes the Bluetooth Time Stamp field format to Absolute Time format [AND] The fraction of seconds in Absolute Time at transcoder output is 0		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_021 AND C_MAN_BLE_025		
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 Profile (device specialization) supported by the PHG under test, 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. Body Composition Measurement (0x2A9C) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0100 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Fat Free Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Soft Lean Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included		

	ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: August 2nd, 2012, 10:39:27 iv. Field: Fat Free Mass (kg) • Format: UINT16 • Value: Not relevant v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 5. Check in PHG transcoder output the Fat Free Mass Numeric object, Absolute-Time-Stamp attribute
Pass/Fail criteria	In Step 5, the Fat Free Mass Numeric object, Absolute-Time-Stamp attribute is present, its value matches with Time Stamp field of Body Composition Measurement characteristic and fraction of seconds is set to 0
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Absolute-Time-Stamp attribute is present: ❑ Object: Fat Free Mass Numeric Object ❑ Attribute-id: MDC_ATTR_TIME_STAMP_ABS (2448)

	❑ Attribute-type: SEQUENCE {century (INT-U8), year (INT-U8), month (INT-U8), day (INT-U8), hour (INT-U8), minute (INT-U8), second (INT-U8), sec-fractions (INT-U8)} (BCD encoding) ❑ Attribute-value: • century: 20 (hex) or 32 (dec) • year: 12 (hex) or 18 (dec) • month: 08 (hex) or 8 (dec) • day: 02 (hex) or 2 (dec) • hour: 10 (hex) or 16 (dec) • minute: 39 (hex) or 57 (dec) • second: 27 (hex) or 39 (dec) • sec-fractions: 00 (hex) or 0 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Absolute-Time-Stamp attribute value (check OBX-14): OBX|?||188756^MDC_MASS_BODY_FAT_FREE^MDC|1.0.a|XX|||||X||| 20120802103927+0000

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-041		
TP label		Whitepaper. Fat Free Mass Numeric Object - Simple-Nu-Observed-Value Attribute 1		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Fat Free Numeric 7; M	Float Type 1; C	
Test purpose		Check that: PHG transcodes Fat Free Mass Value field of Body Composition Measurement characteristic into Fat Free Mass Numeric Object - Simple-Nu-Observed-Value attribute		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_021		
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 Profile (device specialization) supported by the PHG under test, 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. Body Composition Measurement (0x2A9C) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0100 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Fat Free Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Soft Lean Mass,		

	Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • Format: UINT16 • Value: 12800 (64.0 kg) v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 5. Check in PHG transcoder output the Fat Free Mass Numeric object, Simple-Nu-Observed-Value attribute 6. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0100 0011 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Fat Free Mass in units of pound fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Soft Lean Mass,

	Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • Format: UINT16 • Value: 14080 (140.8 lb) vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 7. Check in PHG transcoder output the Fat Free Mass Numeric object, Simple-Nu-Observed-Value attribute
Pass/Fail criteria	In Step 5, the Fat Free Mass Numeric object, Simple-Nu-Observed-Value attribute is present and its value matches with Fat Free Mass Value (kg) field of Body Composition Measurement characteristic (64.0) In Step 7, the Fat Free Mass Numeric object, Simple-Nu-Observed-Value attribute is present and its value matches with Fat Free Mass Value (lb) field of Body Composition Measurement characteristic (140.8)
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes

	Simple-Nu-Observed-Value attribute is present: ❑ Object: Fat Free Mass Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FB 61 A8 00 (hex) or FC 09 C4 00 (hex) or FD 00 FA 00 (hex) or FE 00 19 00 (hex) or FF 00 02 80 (hex) or 00 00 00 40 (hex) or 64.0 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Simple-Nu-Observed-Value attribute value (check OBX-5): OBX|?|NM|188756^MDC_MASS_BODY_FAT_FREE^MDC|1.0.a|64.0|263875^MDC_DIM_KILO_G^MDC|||||R|||[current_date_time] In Step 7, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Object: Fat Free Mass Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FB D6 D8 00 (hex) or FC 15 7C 00 (hex) or FD 02 26 00 (hex) or FE 00 37 00 (hex) or FF 00 05 80 (hex) or 140.8 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Simple-Nu-Observed-Value attribute value (check OBX-5): OBX|?|NM|188756^MDC_MASS_BODY_FAT_FREE^MDC|1.0.a|140.8|263904^MDC_DIM_LB^MDC|||||R|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-042		
TP label		Whitepaper. Fat Free Mass Numeric Object - Simple-Nu-Observed-Value Attribute 2		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Fat Free Numeric 7; M	Float Type 1; C	Float Type 2; M
Test purpose		Check that: PHG transcodes Fat Free Mass Value field of Body Composition Measurement characteristic into Fat Free Mass Numeric Object - Simple-Nu-Observed-Value attribute [AND] PHG assigns the following special values: NaN (0x007FFFFF).		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_021		
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 Profile (device specialization) supported by the PHG under test, 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. Body Composition Measurement (0x2A9C)		

	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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0100 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Fat Free Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Soft Lean Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • Format: UINT16 • Value: 12800 (64.0 kg) v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included

	5. Check in PHG transcoder output the Fat Free Mass Numeric object, Simple-Nu-Observed-Value attribute 6. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0100 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Fat Free Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Soft Lean Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • Format: UINT16 • Value: FF FF (hex). Unsuccessful measurement v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included

	7. Check in PHG transcoder output the Fat Free Mass Numeric object, Simple-Nu-Observed-Value attribute
Pass/Fail criteria	In Step 5, the Fat Free Mass Numeric object, Simple-Nu-Observed-Value attribute is present and its value is 64.0. In Step 7, the Fat Free Mass Numeric object, Simple-Nu-Observed-Value attribute is present and its value is 0x007FFFFF.
Notes	In Step 5, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Fat Free Mass Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FB 61 A8 00 (hex) or FC 09 C4 00 (hex) or FD 00 FA 00 (hex) or FE 00 19 00 (hex) or FF 00 02 80 (hex) or 00 00 00 40 (hex) or 64.0 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Simple-Nu-Observed-Value attribute value (check OBX-5): OBX|?|NM|188756^MDC_MASS_BODY_FAT_FREE^MDC|1.0.a|64.0|263875^MDC_DIM_KILO_G^MDC||||R|||[current_date_time] In Step 7, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Fat Free Mass Numeric Object ❑ Attribute-id: MDC_ATTR_NU_ VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: 00 7F FF FF (hex) or NaN (note that a decimal value is not allowed) b) WAN PCD-01 message PCD-01 message does not include segment with Simple-Nu-Observed-Value attribute value (188756^MDC_MASS_BODY_FAT_FREE^MDC) because it has a special value and this value is not included in PCD-01 message

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-043		
TP label		Whitepaper. Fat Free Mass Numeric Object - Fat Free Mass value		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Float Type 1; C	Date-Time Conv 1; M	Fat Free Numeric 6; M
		Fat Free Numeric 7; M		
Test purpose		Check that: PHG processes correctly the Fat Free Mass Value (kg), Fat Free Mass Value (lb) and Time Stamp fields of Body Composition Measurement		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_018 AND C_MAN_BLE_021 AND C_MAN_BLE_025		
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 Profile (device specialization) supported by the		

	PHG under test, 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 characteristics of interest for this test case are: a. Body Composition Measurement (0x2A9C) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 0100 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Fat Free Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Soft Lean Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: August 2nd, 2012, 11:08:25 iv. Field: Fat Free Mass (kg) • Format: UINT16 • Value: 12800 (64.0 kg) v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included

xv. Field: Height

- This field is not included

xvi. Field: User ID

- This field is not included

5. Check that the PHG accepts the measurement and decodes its value properly (measurement values, units and time stamp).
6. The simulated PHD sends the Measurement to the PHG under test with the following value:
   a. Body Composition Measurement (0x2A9C)
      i. Field: Flags
         - Format: 16 bit
         - Value: 0000 0000 0100 0011 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Fat Free Mass in units of pound fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Soft Lean Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included

      ii. Field: Body Fat Percentage (%)
         - Format: UINT16
         - Value: Not relevant

      iii. Field: Time Stamp
         - Format: Date and Time
         - Value: August 2nd, 2012, 11:09:05

      iv. Field: Fat Free Mass (kg)
         - This field is not included

      v. Field: Fat Free Mass (lb)
         - Format: UINT16
         - Value: 14080 (140.8 lb)

      vi. Field: Soft Lean Mass (kg)
         - This field is not included

      vii. Field: Soft Lean Mass (lb)
         - This field is not included

      viii. Field: Body Water Mass (kg)
         - This field is not included

      ix. Field: Body Water Mass (lb)
         - This field is not included

      x. Field: Basal Metabolism
         - This field is not included

      xi. Field: Muscle Percentage
         - This field is not included

      xii. Field: Muscle Mass
         - This field is not included

      xiii. Field: Impedance
         - This field is not included

      xiv. Field: Weight
         - This field is not included

	xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 7. Check that the PHG accepts the measurement and decodes its value properly (measurement values, units and time stamp).
Pass/Fail criteria	In Step 5, the PHG under test shows the following measurement: 64.0 kg, with timestamp '2012-08-02 11:08:25' In Step 7, the PHG under test shows the following measurement 140.8 lbs, with timestamp '2012-08-02 11:09:05'
Notes	

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-044		
TP label		Whitepaper. Soft Lean Mass Numeric Object - Handle Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Soft Lean Numeric 1; O		
Test purpose		Check that: PHG does not include Soft Lean Mass Numeric object, Handle Attribute in transcoder output [OR] If PHG includes Soft Lean Mass 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_018 AND C_MAN_BLE_022		
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 Weight Scale 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. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 1000 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Soft Lean Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg)		

	• This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • Format: UINT16 • Value: Not relevant vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the Soft Lean Mass Numeric object, Handle attribute
Pass/Fail criteria	In Step 5, the Soft Lean Mass 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: a) IEEE 11073 Objects and Attributes Handle attribute is not present, or if it is present then: ❑ Object: Soft Lean Mass 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/WS/BV-045		
TP label		Whitepaper. Soft Lean Mass Numeric Object - Type Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Soft Lean Numeric 2; M		
Test purpose		Check that: PHG includes Soft Lean Mass Numeric object, Type attribute in transcoder output. [AND] Type is set to {MDC_PART_SCADA, MDC_MASS_BODY_SOFT_LEAN}		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_022		
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 Weight Scale 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. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 1000 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Soft Lean Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • Format: UINT16 • Value: Not relevant vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism		

	• This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the Soft Lean Mass Numeric object, Type attribute
Pass/Fail criteria	In Step 5, the Weight Numeric object, Type attribute is present and its value is {MDC_PART_SCADA, MDC_MASS_BODY_SOFT_LEAN}
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Type attribute is present: ❑ Object: Soft Lean Mass Numeric Object ❑ Attribute-id: MDC_ATTR_ID_TYPE (2351) ❑ Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)} ❑ Attribute-value: • partition: MDC_PART_SCADA or 2 (dec) or 00 02 (hex) • code: MDC_MASS_BODY_SOFT_LEAN or 57688 (dec) or E1 58 (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Type attribute (check OBX-3): OBX|?||188760^MDC_MASS_BODY_SOFT_LEAN^MDC| 1.0.a||||||X|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-046		
TP label		Whitepaper. Soft Lean Mass Numeric Object - Metric-Spec-Small Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Soft Lean Numeric 3; M		
Test purpose		Check that: PHG includes Soft Lean Mass Numeric object, Metric-Spec-Small attribute in transcoder output. [AND]		

	Metric-Spec-Small is set to {0xF040} (mss-avail-intermittent | mss-avail-stored-data | mss-upd-aperiodic | mss-msmt-aperiodic | mss-acc-agent-initiated).
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_022
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 Weight Scale 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. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 1000 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Soft Lean Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • Format: UINT16 • Value: Not relevant vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight

	• This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the Soft Lean Mass Numeric object, Metric-Spec-Small attribute
Pass/Fail criteria	In Step 5, the Soft Lean Mass Numeric object, Metric-Spec-Small attribute is present and its value is {0xF040} (mss-avail-intermittent | mss-avail-stored-data | mss-upd-aperiodic | mss-msmt-aperiodic | mss-acc-agent-initiated).
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Metric-Spec-Small attribute is present: ❑ Object: Soft Lean Mass Numeric Object ❑ Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630) ❑ Attribute-type: BITS-16 ❑ Attribute-value: F0 40 (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/WS/BV-047		
TP label		Whitepaper. Soft Lean Mass Numeric Object - Unit-Code Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Soft Lean Numeric 4; M	Soft Lean Numeric 5; M	
Test purpose		Check that: PHG includes Soft Lean Numeric object, Unit-Code attribute in transcoder output. [AND] IF Soft Lean Mass (Kg) field of Body Composition Measurement characteristic is present THEN Soft Lean Mass Numeric object, Unit-Code attribute is set to MDC_DIM_KILO_G [AND] IF Soft Lean Mass (lb) field of Body Composition Measurement characteristic is present THEN Soft Lean Mass Numeric object, Unit-Code attribute is set to MDC_DIM_LB		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_022		
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 Profile (device specialization) supported by the		

	PHG under test, 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. Body Composition Measurement (0x2A9C) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 1000 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Soft Lean Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • Format: UINT16 • Value: Not relevant vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included

	xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 5. Check in PHG transcoder output the Soft Lean Mass Numeric object, Unit-Code attribute 6. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 1000 0011 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Soft Lean Mass in units of pound fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • Format: UINT16 • Value: Not relevant viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height

	• This field is not included xvi. Field: User ID • This field is not included 7. Check in PHG transcoder output the Soft Lean Mass Numeric object, Unit-Code attribute.
Pass/Fail criteria	In Step 5, the Soft Lean Mass Numeric object, Unit-Code attribute is present and its value is MDC_DIM_KILO_G In Step 7, the Soft Lean Mass Numeric object, Unit-Code attribute is present and its value is MDC_DIM_LB
Notes	In Step 5, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Unit-Code attribute is present: ❑ Object: Soft Lean Mass Numeric Object ❑ Attribute-id: MDC_ATTR_UNIT_CODE (2454) ❑ Attribute-type: INT-U16 ❑ Attribute-value: MDC_DIM_KILO_G or 1731 (dec) or 06 C3 (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Unit-Code attribute value (check OBX-6): OBX|?|NM|188760^MDC_MASS_BODY_SOFT_LEAN^MDC|1.0.a|XX|263875^MDC_DIM_KILO_G^MDC||||R|||[current_date_time] In Step 7, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Unit-Code attribute is present: ❑ Object: Soft Lean Mass Numeric Object ❑ Attribute-id: MDC_ATTR_UNIT_CODE (2454) ❑ Attribute-type: INT-U16 ❑ Attribute-value: MDC_DIM_LB or 1760 (dec) or 06 E0 (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Unit-Code attribute value (check OBX-6): OBX|?|NM|188760^MDC_MASS_BODY_SOFT_LEAN^MDC|1.0.a|XX|263904^MDC_DIM_LB^MDC||||R|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-048		
TP label		Whitepaper. Soft Lean Mass Numeric Object - Absolute-Time-Stamp Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Soft Lean Numeric 6; M	Date-Time Conv 2; M	Date-Time Conv 3; M
		Date-Time Conv 4; M	Date-Time Conv 5; M	
Test purpose		Check that: PHG transcodes Time Stamp field of Body Composition Measurement characteristic into Soft Lean Mass Numeric Object - Absolute-Time-Stamp attribute [AND]		

	PHG transcodes the Bluetooth Time Stamp field format to Absolute Time format [AND] The fraction of seconds in Absolute Time at transcoder output is 0
Applicability	C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_022 AND C_MAN_BLE_025
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 Profile (device specialization) supported by the PHG under test, 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. Body Composition Measurement (0x2A9C) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 1000 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Soft Lean Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: August 2nd, 2012, 10:39:27 iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • Format: UINT16 • Value: Not relevant vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included

	xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 5. Check in PHG transcoder output the Soft Lean Mass Numeric object, Absolute-Time-Stamp attribute
Pass/Fail criteria	In Step 5, the Soft Lean Mass Numeric object, Absolute-Time-Stamp attribute is present, its value matches with Time Stamp field of Body Composition Measurement characteristic and fraction of seconds is set to 0
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Absolute-Time-Stamp attribute is present: ❑ Object: Soft Lean Mass Numeric Object ❑ Attribute-id: MDC_ATTR_TIME_STAMP_ABS (2448) ❑ Attribute-type: SEQUENCE {century (INT-U8), year (INT-U8), month (INT-U8), day (INT-U8), hour (INT-U8), minute (INT-U8), second (INT-U8), sec-fractions (INT-U8)} (BCD encoding) ❑ Attribute-value: • century: 20 (hex) or 32 (dec) • year: 12 (hex) or 18 (dec) • month: 08 (hex) or 8 (dec) • day: 02 (hex) or 2 (dec) • hour: 10 (hex) or 16 (dec) • minute: 39 (hex) or 57 (dec) • second: 27 (hex) or 39 (dec) • sec-fractions: 00 (hex) or 0 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Absolute-Time-Stamp attribute value (check OBX-14): OBX|?||188760^MDC_MASS_BODY_SOFT_LEAN^MDC|1.0.a||||||X||| 20120802103927+0000

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-049
TP label		Whitepaper. Soft Lean Mass Numeric Object - Simple-Nu-Observed-Value Attribute 1
Coverage	**Spec**	[Bluetooth PHDT v1.5]

	Testable items	Soft Lean Numeric 7; M	Float Type 1; C	
Test purpose		Check that: PHG transcodes Soft Lean Mass Value field of Body Composition Measurement characteristic into Soft Lean Mass Numeric Object - Simple-Nu-Observed-Value attribute		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_022		
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 Profile (device specialization) supported by the PHG under test, 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. Body Composition Measurement (0x2A9C) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 1000 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Soft Lean Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • Format: UINT16 • Value: 8760 (43.8 kg) vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism		

	• This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 5. Check in PHG transcoder output the Soft Lean Mass Numeric object, Simple-Nu-Observed-Value attribute 6. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 1000 0011 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Soft Lean Mass in units of pound fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • Format: UINT16 • Value: 9640 (96.4 lb) viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included

	xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 7. Check in PHG transcoder output the Soft Lean Mass Numeric object, Simple-Nu-Observed-Value attribute.
Pass/Fail criteria	In Step 5, the Soft Lean Mass Numeric object, Simple-Nu-Observed-Value attribute is present and its value matches with Soft Lean Mass Value (kg) field of Body Composition Measurement characteristic (43.8) In Step 7, the Soft Lean Mass Numeric object, Simple-Nu-Observed-Value attribute is present and its value matches with Soft Lean Mass Value (lb) field of Body Composition Measurement characteristic (96.4).
Notes	In Step 5, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Object: Soft Lean Mass Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FB 42 D5 60 (hex) or FC 06 AE F0 (hex) or FD 00 AB 18 (hex) or FE 00 11 1C (hex) or FF 00 01 B6 (hex) or 43.8 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Simple-Nu-Observed-Value attribute value (check OBX-5): OBX|?|NM|188760^MDC_MASS_BODY_SOFT_LEAN^MDC|1.0.a|43.8|263875^MDC_DIM_KILO_G^MDC||||R|||[current_date_time] In Step 7, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Object: Soft Lean Mass Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FB 93 18 40 (hex) or FC 0E B5 A0 (hex) or FD 01 78 90 (hex) or FE 00 25 A8 (hex) or FF 00 03 C4 (hex) or 96.4 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Simple-Nu-Observed-Value attribute value (check OBX-5): OBX|?|NM|188760^MDC_MASS_BODY_SOFT_LEAN^MDC|1.0.a|96.4|263904^MDC_DIM_LB^MDC||||R|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-050		
TP label		Whitepaper. Soft Lean Mass Numeric Object - Simple-Nu-Observed-Value Attribute 2		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Soft Lean Numeric 7; M	Float Type 1; C	Float Type 2; M
Test purpose		Check that: PHG transcodes Soft Lean Mass Value field of Body Composition Measurement characteristic into Soft Lean Mass Numeric Object - Simple-Nu-Observed-Value attribute [AND] PHG assigns the following special values: NaN (0x007FFFFF)		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_022		
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 Profile (device specialization) supported by the PHG under test, 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. Body Composition Measurement (0x2A9C) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 1000 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Soft Lean Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • Format: UINT16 • Value: 8760 (43.8 kg) vii. Field: Soft Lean Mass (lb)		

	• This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 5. Check in PHG transcoder output the Soft Lean Mass Numeric object, Simple-Nu-Observed-Value attribute 6. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 1000 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Soft Lean Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • Format: UINT16 • Value: FF FF (hex). Unsuccessful measurement vii. Field: Soft Lean Mass (lb) • This field is not included

	viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 7. Check in PHG transcoder output the Soft Lean Mass Numeric object, Simple-Nu-Observed-Value attribute.
Pass/Fail criteria	In Step 5, the Soft Lean Mass Numeric object, Simple-Nu-Observed-Value attribute is present and its value is 43.8. In Step 7, the Soft Lean Mass Numeric object, Simple-Nu-Observed-Value attribute is present and its value is 0x007FFFFF.
Notes	In Step 5, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Soft Lean Mass Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FB 42 D5 60 (hex) or FC 06 AE F0 (hex) or FD 00 AB 18 (hex) or FE 00 11 1C (hex) or FF 00 01 B6 (hex) or 43.8 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Simple-Nu-Observed-Value attribute value (check OBX-5): OBX|?|NM|188760^MDC_MASS_BODY_SOFT_LEAN ^MDC|1.0.a|43.8| 263875^MDC_DIM_KILO_G ^MDC||||R|||[current_date_time] In Step 7, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Soft Lean Mass Numeric Object ❑ Attribute-id: MDC_ATTR_NU_ VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: 00 7F FF FF (hex) or NaN (note that a decimal value is not allowed) b) WAN PCD-01 message

	PCD-01 message does not include segment with Simple-Nu-Observed-Value attribute value (188760^MDC_MASS_BODY_SOFT_LEAN^MDC) because it has a special value and this value is not included in PCD-01 message

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-051		
TP label		Whitepaper. Soft Lean Mass Numeric object, Soft Lean Mass value		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Float Type 1; C	Date-Time Conv 1; M	Soft Lean Numeric 6; M
		Soft Lean Numeric 7; M		
Test purpose		Check that: PHG processes correctly the Soft Lean Mass Value (kg) and Time Stamp fields of Body Composition Measurement		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_018 AND C_MAN_BLE_022 AND C_MAN_BLE_025		
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 Profile (device specialization) supported by the PHG under test, 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 characteristics of interest for this test case are: a. Body Composition Measurement (0x2A9C) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 1000 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Soft Lean Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: August 2nd, 2012, 11:08:25 iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • Format: UINT16		

	• Value: 8760 (43.8 kg) vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 5. Check that the PHG accepts the measurement and decodes its value properly (measurement values, units and time stamp). 6. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0000 1000 0011 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Soft Lean Mass in units of pound fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Body Water Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: August 2nd, 2012, 11:09:05 iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb)

	• Format: UINT16 • Value: 9640 (96.4 lb) viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 7. Check that the PHG accepts the measurement and decodes its value properly (measurement values, units and time stamp).
Pass/Fail criteria	In Step 5, the PHG under test shows the following measurement: 43.8 kg, with timestamp '2012-08-02 11:08:25' In Step 7, the PHG under test shows the following measurement: 96.4 lbs, with timestamp '2012-08-02 11:09:05'
Notes	

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-052		
TP label		Whitepaper. Body Water Mass Numeric Object - Handle Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Body Water Numeric 1; O		
Test purpose		Check that: PHG does not include Body Water Numeric object, Handle Attribute in transcoder output [OR] If PHG includes Body Water 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_018 AND C_MAN_BLE_023		
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 Weight Scale 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. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0001 0000 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Body Water Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Soft Lean Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • Format: UINT16 • Value: Not relevant ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the Body Water Numeric object, Handle attribute
Pass/Fail criteria	In Step 5, the Body Water 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: a) IEEE 11073 Objects and Attributes Handle attribute is not present, or if it is present then: ❑ Object: Body Water 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/WS/BV-053		
TP label		Whitepaper. Body Water Mass Numeric Object - Type Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Body Water Numeric 2; M		
Test purpose		Check that: PHG includes Body Water Numeric object, Type attribute in transcoder output. [AND] Type is set to {MDC_PART_SCADA, MDC_MASS_BODY_WATER}		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_023		
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 Weight Scale 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. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0001 0000 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Body Water Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Soft Lean Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp		

	• Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • Format: UINT16 • Value: Not relevant ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the Body Water Numeric object, Type attribute
Pass/Fail criteria	In Step 5, the Weight Numeric object, Type attribute is present and its value is {MDC_PART_SCADA, MDC_MASS_BODY_WATER}
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Type attribute is present: ❑ Object: Body Water Numeric Object ❑ Attribute-id: MDC_ATTR_ID_TYPE (2351) ❑ Attribute-type: SEQUENCE {partition (INT-U16), code (INT-U16)} ❑ Attribute-value:

	• partition: MDC_PART_SCADA or 2 (dec) or 00 02 (hex) • code: MDC_MASS_BODY_WATER or 57692 (dec) or E1 5C (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Type attribute (check OBX-3): OBX|?||188764^MDC_MASS_BODY_WATER^MDC|1.0.a||||||X|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-054		
TP label		Whitepaper. Body Water Mass Numeric Object - Metric-Spec-Small Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Body Water Numeric 3; M		
Test purpose		Check that: PHG includes Body Water Numeric object, Metric-Spec-Small attribute in transcoder output. [AND] Metric-Spec-Small is set to {0xF040} (mss-avail-intermittent | mss-avail-stored-data | mss-upd-aperiodic | mss-msmt-aperiodic | mss-acc-agent-initiated).		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_023		
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 Weight Scale 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. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0001 0000 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Body Water Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Soft Lean Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included		

	vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • Format: UINT16 • Value: Not relevant ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • 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) the simulated PHD sends the Measurement to the PHG under test. 5. Check in PHG transcoder output the Body Water Numeric object, Metric-Spec-Small attribute
Pass/Fail criteria	In Step 5, the Body Water Numeric object, Metric-Spec-Small attribute is present and its value is {0xF040} (mss-avail-intermittent | mss-avail-stored-data | mss-upd-aperiodic | mss-msmt-aperiodic | mss-acc-agent-initiated).
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Metric-Spec-Small attribute is present: ❑ Object: Body Water Numeric Object ❑ Attribute-id: MDC_ATTR_METRIC_SPEC_SMALL (2630) ❑ Attribute-type: BITS-16 ❑ Attribute-value: F0 40 (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/WS/BV-055
TP label	Whitepaper. Body Water Mass Numeric Object - Unit-Code Attribute

Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Body Water Numeric 4; M	Body Water Numeric 5; M	
Test purpose		Check that: PHG includes Body Water Numeric object, Unit-Code attribute in transcoder output. [AND] IF Body Water Mass (Kg) field of Body Composition Measurement characteristic is present THEN Body Water Numeric object, Unit-Code attribute is set to MDC_DIM_KILO_G [AND] IF Body Water Mass (lb) field of Body Composition Measurement characteristic is present THEN Body Water Numeric object, Unit-Code attribute is set to MDC_DIM_LB		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_023		
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 Profile (device specialization) supported by the PHG under test, 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. Body Composition Measurement (0x2A9C) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0001 0000 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Body Water Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Soft Lean Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included		

viii. Field: Body Water Mass (kg)
- Format: UINT16
- Value: Not relevant

ix. Field: Body Water Mass (lb)
- This field is not included

x. Field: Basal Metabolism
- This field is not included

xi. Field: Muscle Percentage
- This field is not included

xii. Field: Muscle Mass
- This field is not included

xiii. Field: Impedance
- This field is not included

xiv. Field: Weight
- This field is not included

xv. Field: Height
- This field is not included

xvi. Field: User ID
- This field is not included

5. Check in PHG transcoder output the Body Water Numeric object, Unit-Code attribute
6. The simulated PHD sends the Measurement to the PHG under test with the following value:
   a. Body Composition Measurement (0x2A9C)
      i. Field: Flags
      - Format: 16 bit
      - Value: 0000 0001 0000 0011 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Body Water Mass in units of pound fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Soft Lean Mass, Fat Free Mass, Impedance, Weight, Height and User ID fields are not included

      ii. Field: Body Fat Percentage (%)
      - Format: UINT16
      - Value: Not relevant

      iii. Field: Time Stamp
      - Format: Date and Time
      - Value: Not relevant

      iv. Field: Fat Free Mass (kg)
      - This field is not included

      v. Field: Fat Free Mass (lb)
      - This field is not included

      vi. Field: Soft Lean Mass (kg)
      - This field is not included

      vii. Field: Soft Lean Mass (lb)
      - This field is not included

      viii. Field: Body Water Mass (kg)

	• This field is not included ix. Field: Body Water Mass (lb) • Format: UINT16 • Value: Not relevant x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 7. Check in PHG transcoder output the Body Water Numeric object, Unit-Code attribute.
Pass/Fail criteria	In Step 5, the Body Water Numeric object, Unit-Code attribute is present and its value is MDC_DIM_KILO_G In Step 7, the Body Water Numeric object, Unit-Code attribute is present and its value is MDC_DIM_LB
Notes	In Step 5, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Unit-Code attribute is present: ❑ Object: Body Water Numeric Object ❑ Attribute-id: MDC_ATTR_UNIT_CODE (2454) ❑ Attribute-type: INT-U16 ❑ Attribute-value: MDC_DIM_KILO_G or 1731 (dec) or 06 C3 (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Unit-Code attribute value (check OBX-6): OBX|?|NM|188764^MDC_MASS_BODY_WATER^MDC|1.0.a|XX| 263875^MDC_DIM_KILO_G^MDC||||R|||[current_date_time] In Step 7, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Unit-Code attribute is present: ❑ Object: Body Water Numeric Object ❑ Attribute-id: MDC_ATTR_UNIT_CODE (2454) ❑ Attribute-type: INT-U16 ❑ Attribute-value: MDC_DIM_LB or 1760 (dec) or 06 E0 (hex) b) WAN PCD-01 message PCD-01 message includes a segment like this with Unit-Code attribute value (check

	OBX-6): OBX|?|NM|188764^MDC_MASS_BODY_WATER^MDC|1.0.a|XX| 263904^MDC_DIM_LB^MDC||||R|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-056		
TP label		Whitepaper. Body Water Mass Numeric Object - Absolute-Time-Stamp Attribute		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Body Water Numeric 6; M	Date-Time Conv 2; M	Date-Time Conv 3; M
		Date-Time Conv 4; M	Date-Time Conv 5; M	
Test purpose		Check that: PHG transcodes Time Stamp field of Body Composition Measurement characteristic into Body Water Numeric Object - Absolute-Time-Stamp attribute [AND] PHG transcodes the Bluetooth Time Stamp field format to Absolute Time format [AND] The fraction of seconds in Absolute Time at transcoder output is 0		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_023 AND C_MAN_BLE_025		
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 Profile (device specialization) supported by the PHG under test, 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. Body Composition Measurement (0x2A9C) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0001 0000 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Body Water Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Soft Lean Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: August 2nd, 2012, 10:39:27 iv. Field: Fat Free Mass (kg)		

	• This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • Format: UINT16 • Value: Not relevant ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 5. Check in PHG transcoder output the Body Water Numeric object, Absolute-Time-Stamp attribute
Pass/Fail criteria	In Step 5, the Body Water Numeric object, Absolute-Time-Stamp attribute is present, its value matches with Time Stamp field of Body Composition Measurement characteristic and fraction of seconds is set to 0
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Absolute-Time-Stamp attribute is present: ❑ Object: Body Water Numeric Object ❑ Attribute-id: MDC_ATTR_TIME_STAMP_ABS (2448) ❑ Attribute-type: SEQUENCE {century (INT-U8), year (INT-U8), month (INT-U8), day (INT-U8), hour (INT-U8), minute (INT-U8), second (INT-U8), sec-fractions (INT-U8)} (BCD encoding) ❑ Attribute-value: • century: 20 (hex) or 32 (dec) • year: 12 (hex) or 18 (dec) • month: 08 (hex) or 8 (dec) • day: 02 (hex) or 2 (dec)

	• hour: 10 (hex) or 16 (dec) • minute: 39 (hex) or 57 (dec) • second: 27 (hex) or 39 (dec) • sec-fractions: 00 (hex) or 0 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Absolute-Time-Stamp attribute value (check OBX-14): OBX|?||188764^MDC_MASS_BODY_WATER^MDC|1.0.a||||||X||| 20120802103927+0000

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-057		
TP label		Whitepaper. Body Water Mass Numeric Object - Simple-Nu-Observed-Value Attribute 1		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Body Water Numeric 7; M	Float Type 1; C	
Test purpose		Check that: PHG transcodes Body Water Mass Value field of Body Composition Measurement characteristic into Body Water Numeric Object - Simple-Nu-Observed-Value attribute		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_023		
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 Profile (device specialization) supported by the PHG under test, 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. Body Composition Measurement (0x2A9C) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0001 0000 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Body Water Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Soft Lean Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant		

iv. Field: Fat Free Mass (kg)
- This field is not included

v. Field: Fat Free Mass (lb)
- This field is not included

vi. Field: Soft Lean Mass (kg)
- This field is not included

vii. Field: Soft Lean Mass (lb)
- This field is not included

viii. Field: Body Water Mass (kg)
- Format: UINT16
- Value: 9500 (47.5 kg)

ix. Field: Body Water Mass (lb)
- This field is not included

x. Field: Basal Metabolism
- This field is not included

xi. Field: Muscle Percentage
- This field is not included

xii. Field: Muscle Mass
- This field is not included

xiii. Field: Impedance
- This field is not included

xiv. Field: Weight
- This field is not included

xv. Field: Height
- This field is not included

xvi. Field: User ID
- This field is not included

5. Check in PHG transcoder output the Body Water Numeric object, Simple-Nu-Observed-Value attribute

6. The simulated PHD sends the Measurement to the PHG under test with the following value:

   a. Body Composition Measurement (0x2A9C)

      i. Field: Flags
      - Format: 16 bit
      - Value: 0000 0001 0000 0011 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Body Water Mass in units of pound fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Soft Lean Mass, Fat Free Mass, Impedance, Weight, Height and User ID fields are not included

      ii. Field: Body Fat Percentage (%)
      - Format: UINT16
      - Value: Not relevant

      iii. Field: Time Stamp
      - Format: Date and Time
      - Value: Not relevant

	iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • Format: UINT16 • Value: 10450 (104.5 lb) x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 7. Check in PHG transcoder output the Body Water Numeric object, Simple-Nu-Observed-Value attribute.
Pass/Fail criteria	In Step 5, the Body Water Numeric object, Simple-Nu-Observed-Value attribute is present and its value matches with Body Water Mass Value (kg) field of Body Composition Measurement characteristic (47.5) In Step 7, the Body Water Numeric object, Simple-Nu-Observed-Value attribute is present and its value matches with Body Water Mass Value (lb) field of Body Composition Measurement characteristic (104.5).
Notes	In Step 5, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Object: Body Water Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FB 48 7A B0 (hex) or FC 07 3F 78 (hex) or FD 00 B9 8C (hex) or FE 00 12 8E (hex) or FF 00 01 DB (hex) or 47.5 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Simple-Nu-Observed-Value attribute

	value (check OBX-5): OBX|?|NM|188764^MDC_MASS_BODY_WATER^MDC|1.0.a|47.5| 263875^MDC_DIM_KILO_G^MDC||||R|||[current_date_time] In Step 7, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Object: Body Water Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FB 9F 74 50 (hex) or FC 0F F2 08 (hex) or FD 01 98 34 (hex) or FE 00 28 D2 (hex) or FF 00 04 15 (hex) or 104.5 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Simple-Nu-Observed-Value attribute value (check OBX-5): OBX|?|NM|188764^MDC_MASS_BODY_WATER^MDC|1.0.a|104.5| 263904^MDC_DIM_LB^MDC||||R|||[current_date_time]

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-058		
TP label		Whitepaper. Body Water Mass Numeric Object - Simple-Nu-Observed-Value Attribute 2		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Body Water Numeric 7; M	Float Type 1; C	Float Type 2; M
Test purpose		Check that: PHG transcodes Body Water Mass Value field of Body Composition Measurement characteristic into Body Water Numeric Object - Simple-Nu-Observed-Value attribute [AND] PHG assigns the following special values: NaN (0x007FFFFF).		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_023		
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 Profile (device specialization) supported by the PHG under test, 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. Body Composition Measurement (0x2A9C) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0001 0000 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Body Water Mass in units of Kg fields are included,		

	Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Soft Lean Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • Format: UINT16 • Value: 9500 (47.5 kg) ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 5. Check in PHG transcoder output the Body Water Numeric object, Simple-Nu-Observed-Value attribute 6. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0001 0000 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Body Water Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Soft

	Lean Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • Format: UINT16 • Value: FF FF (hex). Unsuccessful measurement. ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 7. Check in PHG transcoder output the Soft Lean Mass Numeric object, Simple-Nu-Observed-Value attribute
Pass/Fail criteria	In Step 5, the Body Water Numeric object, Simple-Nu-Observed-Value attribute is present and its value is 47.5. In Step 7, the Body Water Numeric object, Simple-Nu-Observed-Value attribute is present and its value is 0x007FFFFF.
Notes	In Step 5, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Body Water Numeric Object

	❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FB 48 7A B0 (hex) or FC 07 3F 78 (hex) or FD 00 B9 8C (hex) or FE 00 12 8E (hex) or FF 00 01 DB (hex) or 47.5 (dec) b) WAN PCD-01 message PCD-01 message includes a segment like this with Simple-Nu-Observed-Value attribute value (check OBX-5): OBX|?|NM|188764^MDC_MASS_BODY_WATER ^MDC|1.0.a|47.5| 263875^MDC_DIM_KILO_G ^MDC|||||R|||[current_date_time] In Step 7, possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Body Water Numeric Object ❑ Attribute-id: MDC_ATTR_NU_ VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: 00 7F FF FF (hex) or NaN (note that a decimal value is not allowed) b) WAN PCD-01 message PCD-01 message does not include segment with Simple-Nu-Observed-Value attribute value (188764^MDC_MASS_BODY_WATER^MDC) because it has a special value and this value is not included in PCD-01 message

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-059		
TP label		Whitepaper. Body Water Mass Numeric object, Body Water Mass value		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Float Type 1; C	Date-Time Conv 1; M	Body Water Numeric 6; M
		Body Water Numeric 7; M		
Test purpose		Check that: PHG processes correctly the Body Water Mass Value (kg) and Time Stamp fields of Body Composition Measurement		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_018 AND C_MAN_BLE_023 AND C_MAN_BLE_025		
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 Profile (device specialization) supported by the PHG under test, 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 characteristics of interest for this test case are: a. Body Composition Measurement (0x2A9C) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags		

	• Format: 16 bit • Value: 0000 0001 0000 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Body Water Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Fat Free Mass, Soft Lean Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: August 2nd, 2012, 11:08:25 iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • Format: UINT16 • Value: 9500 (47.5 kg) ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 5. Check that the PHG accepts the measurement and decodes its value properly (measurement values, units and time stamp). 6. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit

	• Value: 0000 0001 0000 0011 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp and Body Water Mass in units of pound fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Soft Lean Mass, Fat Free Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: August 2nd, 2012, 11:09:05 iv. Field: Fat Free Mass (kg) • This field is not included v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • This field is not included vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • This field is not included ix. Field: Body Water Mass (lb) • Format: UINT16 • Value: 10450 (104.5 lb) x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 7. Check that the PHG accepts the measurement and decodes its value properly (measurement values, units and time stamp).
Pass/Fail criteria	In Step 5, the PHG under test shows the following measurement: 47.5 kg, with timestamp '2012-08-02 11:08:25' In Step 7, the PHG under test shows the following measurement: 104.5 lbs, with timestamp '2012-08-02 11:09:05'
Notes	

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-060		
TP label		Whitepaper. Weight Scale Feature Characteristic – Measurement Resolution		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	WS Feature 1; M	WS Feature 2; M	WS Feature 3; M
		WS Feature 4; M	WS Feature 5; M	WS Feature 6; M
Test purpose		Check that: PHG transcodes Weight Scale measurements and presents them properly in transcoder output.		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_017		
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 Weight Scale 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 are: a. Weight Scale Feature (0x2A9E) • Format: 32 bit • Value: 0000 0000 0000 0000 0000 0001 0011 0111 (MSB → LSB). Time Stamp, Multiple Users, Height and BMI supported. Weight resolution of 0.01 kg / 0.02 lb, Height resolution of 0.005 m / 0.5 in. b. Weight Measurement (0x2A9D) 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 Weight Scale Feature characteristic. 5. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1010 (MSB → LSB). Weight Measurement Value in units of Kg, Time Stamp, Height and BMI fields are included, User ID fields is not included ii. Field: Weight (Kg) • Format: UINT16 • Value: 16094 (80.47 kg) iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • Format: UINT16		

	• Value: 1805 (1.805 m) vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • Format: UINT16. • Value: Not relevant viii. Field: User ID • This field is not included 6. Check in PHG transcoder output the measurements values.
Pass/Fail criteria	In Step 5, the PHG under test shows the following measurements: Weight 80.47 kg, Height 180.5 cm.
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Weight Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FE 00 1F 6F (hex) or 80.47 (dec) Simple-Nu-Observed-Value attribute is present: ❑ Height Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FF 00 07 0D (hex) or 180.5 (dec)

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-061		
TP label		Whitepaper. Body Composition Feature Characteristic – Measurement Resolution		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	BC Feature 1; M	BC Feature 2; M	BC Feature 3; M
		BC Feature 5; M	BC Feature 6; M	BC Feature 7; M
Test purpose		Check that: PHG transcodes Body Composition measurements and presents them properly in transcoder output.		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018		
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 Profile (device specialization) supported by the PHG under test, 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 characteristics of interest for this test case are: a. Body Composition Feature (0x2A9B)		

	• Format: 32 bit • Value: 0000 0000 0000 0000 0011 0000 1110 0011 (MSB → LSB). Time Stamp, Multiple Users, Fat Free Mass, Soft Lean Mass and Body Water Mass supported. Weight resolution of 0.01 kg / 0.02 lb. b. Body Composition Measurement (0x2A9C) 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 Body Composition Scale Feature characteristic. 5. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0000 0001 1100 0010 (MSB → LSB). Body Fat Percentage in units of %, Time Stamp, Fat Free Mass in units of Kg, Soft Lean Mass in units of Kg and Body Water Mass in units of Kg fields are included, Basal Metabolism, Muscle Percentage, Muscle Mass, Impedance, Weight, Height and User ID fields are not included ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: Not relevant iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant iv. Field: Fat Free Mass (kg) • Format: UINT16 • Value: 12864 (64.32 kg) v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • Format: UINT16 • Value: 14022 (70.11 kg) vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • Format: UINT16 • Value: 11296 (56.48 kg) ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • This field is not included xi. Field: Muscle Percentage • This field is not included xii. Field: Muscle Mass • This field is not included

	xiii. Field: Impedance • This field is not included xiv. Field: Weight • This field is not included xv. Field: Height • This field is not included xvi. Field: User ID • This field is not included 6. Check in PHG transcoder output the measurements values.
Pass/Fail criteria	In Step 6, the PHG under test shows the following measurements: Fat Free Mass 64.32 kg, Soft Lean Mass 70.11 kg, Body Water Mass 56.48 kg.
Notes	Possible values in typical points of observation after transcoder output are: a) IEEE 11073 Objects and Attributes Simple-Nu-Observed-Value attribute is present: ❑ Fat Free Mass Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FE 00 19 20 (hex) or 64.32 (dec) Simple-Nu-Observed-Value attribute is present: ❑ Soft Lean Mass Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FE 00 1B 63 (hex) or 70.11 (dec) Simple-Nu-Observed-Value attribute is present: ❑ Body Water Numeric Object ❑ Attribute-id: MDC_ATTR_NU _VAL_OBS_SIMP (2646) ❑ Attribute-type: FLOAT ❑ Attribute-value: FE 00 16 10 (hex) or 56.48 (dec)

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-062		
TP label		Whitepaper. Weight Measurement – Height and BMI pair		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Pair Numeric 1; M		
Test purpose		Check that: Weight Measurement includes, if present, both Height and BMI Value fields as a pair.		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_017		
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 Profile (device specialization) supported by the PHG under test, 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. Weight Measurement (0x2A9D) 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) the simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1010 (MSB → LSB). Weight Measurement Value in units of Kg, Time Stamp, Height in units of metre and BMI fields are included, User ID field is not included ii. Field: Weight (Kg) • Format: UINT16 • Value: Not relevant iii. Field: Weight (lb) • This field is not included iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • Format: UINT16 • Value: 1800 (1.80 m) vi. Field: Height (in) • This field is not included vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: 247 (24.7) viii. Field: User ID • This field is not included 5. Check that the PHG accepts the measurement and decodes its value properly (measurement values, units and time stamp). 6. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1011 (MSB → LSB). Weight Measurement Value in units of pound, Time Stamp, Height in units of inch and BMI fields are included, User ID field is not included ii. Field: Weight (Kg) • This field is not included iii. Field: Weight (lb) • Format: UINT16 • Value: Not relevant

	iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • Format: UINT16 • Value: 1800 (1.80 m) vi. Field: Height (in) • This field is not included. vii. Field: BMI (kg/m^2) • This field is not included. viii. Field: User ID • This field is not included. 7. Check that the PHG accepts the measurement and decodes its value properly (measurement values, units and time stamp). 8. The simulated PHD sends the Measurement to the PHG under test with the following value: a. Weight Measurement (0x2A9D) i. Field: Flags • Format: 8 bit • Value: 0000 1011 (MSB → LSB). Weight Measurement Value in units of pound, Time Stamp, Height in units of inch and BMI fields are included, User ID field is not included ii. Field: Weight (Kg) • This field is not included iii. Field: Weight (lb) • Format: UINT16 • Value: Not relevant iv. Field: Time Stamp • Format: Date and Time • Value: Not relevant v. Field: Height (m) • This field is not included. vi. Field: Height (in) • This field is not included. vii. Field: BMI (kg/m^2) • Format: UINT16 • Value: 247 (24.7) viii. Field: User ID • This field is not included. 9. Check that the PHG accepts the measurement and decodes its value properly (measurement values, units and time stamp).
Pass/Fail criteria	In Step 5, both Height and BMI measurements are properly received and transcoded by the PHG. In Step 7, the PHG shows an error message due to the absence of BMI Value. In Step 9, the PHG shows an error message due to the absence of Height Value.

Notes	

TP Id		TP/LP-PAN/PHG/PHDTW/WS/BV-063		
TP label		Whitepaper. Body Composition Measurement Characteristic – Multiple Packet Measurement		
Coverage	**Spec**	[Bluetooth PHDT v1.5]		
	Testable items	Multi Packet Numeric 1; M		
Test purpose		Check that: PHG is able to transcode a measurement that has been sent in two pieces.		
Applicability		C_MAN_BLE_000 AND C_MAN_BLE_002 AND C_MAN_BLE_018 AND C_MAN_BLE_038		
Other PICS		C_MAN_BLE_026, C_MAN_BLE_027, C_MAN_BLE_028, C_MAN_BLE_029, C_MAN_BLE_031, C_MAN_BLE_032, C_MAN_BLE_033, C_MAN_BLE_034, C_MAN_BLE_035		
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 Profile (device specialization) supported by the PHG under test, 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 characteristics of interest for this test case are: a. Body Composition Measurement (0x2A9C) 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) the simulated PHD sends the next message split in two independent Body Composition Measurements: a. Body Composition Measurement (0x2A9C) i. Field: Flags • Format: 16 bit • Value: 0001 X XXXX XXX0 (MSB → LSB). Multiple Packet Measurement bit is set to 1. Measurement Units bit is set to 0. The other bits are set following the PICS ii. Field: Body Fat Percentage (%) • Format: UINT16 • Value: 125 (12.5 %) iii. Field: Time Stamp • Format: Date and Time • Value: Not relevant. Present if (C_MAN_BLE_026 = TRUE) iv. Field: Fat Free Mass (kg) • Format: UINT16 • Value: Not relevant. Present if (C_MAN_BLE_032 = TRUE) v. Field: Fat Free Mass (lb) • This field is not included vi. Field: Soft Lean Mass (kg) • Format: UINT16 • Value: Not relevant. Present if (C_MAN_BLE_033 = TRUE)		

	vii. Field: Soft Lean Mass (lb) • This field is not included viii. Field: Body Water Mass (kg) • Format: UINT16 • Value: Not relevant. Present if (C_MAN_BLE_034 = TRUE) ix. Field: Body Water Mass (lb) • This field is not included x. Field: Basal Metabolism • Format: UINT16 • Value: Not relevant. Present if (C_MAN_BLE_028 = TRUE) xi. Field: Muscle Percentage • Format: UINT16 • Value: Not relevant. Present if (C_MAN_BLE_029 = TRUE) xii. Field: Muscle Mass (kg) • Format: UINT16 • Value: Not relevant. Present if (C_MAN_BLE_031 = TRUE) xiii. Field: Muscle Mass (lb) • This field is not included xiv. Field: Impedance • Format: UINT16 • Value: Not relevant. Present if (C_MAN_BLE_035 = TRUE) xv. Field: Weight • This field is not included xvi. Field: Height • This field is not included xvii. Field: User ID • Format: UINT8 • Value: Not relevant. Present if (C_MAN_BLE_027 = TRUE) 5. The PHG receives the first Body Composition Measurement, checks that Multiple Packet Measurement bit Flag is set to 1, and waits for the second Body Composition Measurement. 6. The PHG receives the second Body Composition Measurement. 7. Check in PHG transcoder output the measurements values.
Pass/Fail criteria	In Step 7, both pieces of the Measurement are presented in transcoder output as a unique Measurement.
Notes	

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Printed in Switzerland
Geneva, 2017