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Corrigendum 1
(11/2017)

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: Services interface Part 6: PCD-01 HL7
messages: Health & Fitness Service receiver:
Alignment with CDG2016 (Iris)

Corrigendum 1

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New Corrigendum 1 to Recommendation ITU-T H.830.6

Conformance of ITU-T H.810 personal health system: Services interface Part 6: PCD-01 HL7 messages: Health & Fitness Service receiver: Alignment with CDG2016 (Iris)

Summary

Recommendation ITU-T H.830.6 provides a test suite structure (TSS) and the test purposes (TP) for PCD-01 HL7 messages through the Health & Fitness Service (HFS) receiver in the Services interface, based on the requirements defined in the Recommendations of the ITU-T H.810 sub-series, of which Recommendation ITU-T H.810 (2016) is the base Recommendation. The objective of this test specification is to provide a high probability of interoperability at this interface.

Recommendation ITU-T H.830.6 is a transposition of Continua Test Tool DG2016, Test Suite Structure & Test Purposes, Services Interface; Part 6: PCD-01 HL7 Messages. HFS Receiver (Version 1.8, 2017-03-14), 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.

Keywords

Conformance testing, Continua Design Guidelines, e-health, ITU-T H.810, PCD-01 HL7 messages, personal connected health devices, Health & Fitness Service receiver, Services interface.

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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 the transposition of Continua Test Tool DG2016, Test Suite Structure & Test Purposes, Services Interface; Part 6: PCD-01 HL7 Messages. HFS Receiver (Version 1.8, 2017-03-14), 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
1.2	2012-10-05	Initial release for Test Tool DG2011. This is the same version as "TSS&TP_1.5_WAN_PART_6_(REC PCD-01)_v1.2.doc" because new features included in [b-CDG 2011] do not affect the test procedures specified in this document.
1.3	2013-05-24	Initial release for Test Tool DG2012. This uses "TSS&TP_DG2011_WAN_PART_6_(REC PCD-01)_v1.2" as baseline and adds new features included in [b-CDG 2012]: <ul style="list-style-type: none"> • Adds glucose meter new spec version • Adds body composition analyser device specialization • Adds basic electrocardiograph device specialization
1.4	2014-01-24	Initial release for Test Tool DG2013. This uses "TSS&TP_DG2012_WAN_PART_6_(REC PCD-01)_v1.3.doc" as a baseline and adds new features included in [b-ITU-T H.810 (2013)]/[b-CDG 2013]: <ul style="list-style-type: none"> • Adds glucose meter BLE • Adds BLE SSP support • Adds NFC new transport • Adds INR device specialization
1.5	2014-04-24	TM Lite & Doc Enhancements (Test Tool v4.0 Maintenance Release 1). It uses "TSS&TP_DG2013_WAN_PART_6_(REC PCD-01)_v1.4.doc" as a baseline and it adds new features included in Documentation Enhancements: <ul style="list-style-type: none"> • "Other PICS" row has been added
1.6	2015-07-01	Initial release for Test Tool DG2015. It uses "TSS&TP_DG2011_WAN_PART_6_(REC PCD-01)_v1.5" as a baseline and adds new features included in Continua DG 2015: <ul style="list-style-type: none"> • Changes in test suite structure • Added international normalized ratio device specialization • Added sleeping apnoea breathing therapy equipment device specialization • Added support for hData Observation Upload
1.7	2016-09-20	Initial release for Test Tool DG2016. It implements changes according to [ITU-T H.810 (2016)]/[b-CDG 2016] (Iris + Errata) refreshments.
1.8	2017-03-14	Added insulin pump and continuous glucose monitor specializations support.

Recommendation ITU-T H.830.6

Conformance of ITU-T H.810 personal health system: Services interface Part 6: PCD-01 HL7 messages: Health & Fitness Service receiver

1 Scope

The scope of this Recommendation¹ is to provide a test suite structure (TSS) and the test purposes (TP) for the Services 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 Services interface have been divided into the parts specified below. This Recommendation covers Part 6.

- Part 1: Web services interoperability. Health & Fitness Service sender
- Part 2: Web services interoperability. Health & Fitness Service receiver
- Part 3: SOAP/ATNA. Health & Fitness Service sender
- Part 4: SOAP/ATNA. Health & Fitness Service receiver
- Part 5: PCD-01 HL7 messages. Health & Fitness Service sender
- **Part 6: PCD-01 HL7 messages. Health & Fitness Service receiver**
- Part 7: Consent Management. Health & Fitness Service sender
- Part 8: Consent Management. Health & Fitness Service receiver
- Part 9: hData Observation Upload. Health & Fitness Service sender
- Part 10: hData Observation Upload. Health & Fitness Service receiver
- Part 11: Questionnaires. Health & Fitness Service sender
- Part 12: Questionnaires. Health & Fitness Service receiver

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*.

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.

[ITU-T H.812.1]	Recommendation ITU-T H.812.1 (2016), <i>Interoperability design guidelines for personal health systems: Services interface: Observation upload certified capability class.</i>
[IHE PCD-TF-2]	Integrating the Healthcare Enterprise (2011), <i>IHE Patient Care Device (PCD) Technical Framework, Volume 2 (PCD TF-2): Transactions, Revision 1.0.</i> http://www.ihe.net/Technical_Framework/upload/IHE_PCD_TF_Vol2_FT_2011-08-12.pdf

3 Definitions

3.1 Terms defined elsewhere

None.

3.2 Terms defined in this Recommendation

None.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

AHD	Application Hosting Device
ATS	Abstract Test Suite
ATNA	Audit Trail and Node Authentication
CDG	Continua Design Guidelines
CGM	Continuous Glucose Monitor
DUT	Device Under Test
GUI	Graphical User Interface
HFS	Health & Fitness Service
HFSS	Health & Fitness Service Sender
HFSR	Health & Fitness Service Receiver
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol Secure
INR	International Normalized Ratio
IP	Insulin Pump
IUT	Implementation Under Test
MDS	Medical Device System
NFC	Near Field Communication
PCD	Patient Care Device
PCT	Protocol Conformance Testing
PCO	Point of Control and Observation
PHD	Personal Health Device
PHDC	Personal Healthcare Device Class

PHG	Personal Health Gateway
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation extra Information for Testing
SABTE	Sleep Apnoea Breathing Therapy Equipment
SCR	Static Conformance Review
SDP	Service Discovery Protocol
SOAP	Simple Object Access Protocol
TCRL	Test Case Reference List
TCWG	Test and Certification Working Group
TLS	Transport Level Security
TP	Test Purpose
TSS	Test Suite Structure
USB	Universal Serial Bus
URI	Uniform Resource Identifier
WAN	Wide Area Network
WDM	Windows Driver Model
WS	Web Service
WSDL	Web Service Description Language
XML	extensible Markup Language

5 Conventions

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

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

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

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

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

CDG 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 (TSS)

The test purposes (TPs) for the Services interface have been divided into the main subgroups specified below. Annex A describes the TPs for subgroups 2.4.1 to 2.4.16 (shown in bold).

- Group 1: HFS sender (HFSS)
 - Group 1.1: Web services interoperability (WSI)

- Subgroup 1.1.1: Basic profile (BP)
- Subgroup 1.1.2: Basic security profile (BSP)
- Subgroup 1.1.3: Reliable messaging (RM)
- Group 1.2: Simple object access protocol (SOAP)
 - Subgroup 1.2.1: SOAP headers (HEAD)
- Group 1.3: Audit trail and node authentication (ATNA)
 - Subgroup 1.3.1: General (GEN)
 - Subgroup 1.3.2: PCD-01 (PCD-01)
 - Subgroup 1.3.3: Consent Management (CM)
- Group 1.4: PCD-01 HL7 messages (PCD-01-DATA)
 - Subgroup 1.4.1: General (GEN)
 - Subgroup 1.4.2: Design guidelines (DG)
 - Subgroup 1.4.3: Pulse oximeter (PO)
 - Subgroup 1.4.4: Blood pressure monitor (BPM)
 - Subgroup 1.4.5: Thermometer (TH)
 - Subgroup 1.4.6: Weighing scales (WEG)
 - Subgroup 1.4.7: Glucose meter (GL)
 - Subgroup 1.4.8: Cardiovascular fitness and activity monitor (CV)
 - Subgroup 1.4.9: Strength fitness equipment (ST)
 - Subgroup 1.4.10: Independent living activity hub (HUB)
 - Subgroup 1.4.11: Adherence monitor (AM)
 - Subgroup 1.4.12: Peak expiratory flow monitor (PF)
 - Subgroup 1.4.13: Body composition analyser (BCA)
 - Subgroup 1.4.14: Basic electrocardiograph (ECG)
 - Subgroup 1.4.15: International normalized ratio (INR)
 - Subgroup 1.4.16: Sleep apnoea breathing therapy equipment (SABTE)
 - Subgroup 1.4.17: Insulin pump (IP)
 - Subgroup 1.4.18: Continuous glucose monitor (CGM)
- Group 1.5: Consent Management (CM)
 - Subgroup 1.5.1: HFS XDR transaction (TRANS)
 - Subgroup 1.5.2: HFS metadata validation (META)
 - Subgroup 1.5.3: HFS consent directive validation (CDV)
- Group 1.6: hData Observation Upload (HDATA)
 - Subgroup 1.6.1: General (GEN)
- Group 1.7: Questionnaires (QUE)
 - Subgroup 1.7.1: General (GEN)
 - Subgroup 1.7.2: CDA validation (CDA)
- Group 2: HFS receiver (HFSR)
 - Group 2.1: Web service interoperability (WSI)
 - Subgroup 2.1.1: Basic profile (BP)
 - Subgroup 2.1.2: Basic security profile (BSP)

- Subgroup 2.1.3: Reliable messaging (RM)
- Group 2.2: SOAP (SOAP)
 - Subgroup 2.2.1: SOAP headers (HEAD)
- Group 2.3: Audit (ATNA)
 - Subgroup 2.3.1: General (GEN)
 - Subgroup 2.3.2: PCD-01 (PCD-01)
 - Subgroup 2.3.3: Consent Management (CM)
- **Group 2.4: PCD-01 HL7 messages (PCD-01-DATA)**
 - **Subgroup 2.4.1: General (GEN)**
 - **Subgroup 2.4.2: Design guidelines (DG)**
 - **Subgroup 2.4.3: Pulse oximeter (PO)**
 - **Subgroup 2.4.4: Blood pressure monitor (BPM)**
 - **Subgroup 2.4.5: Thermometer (TH)**
 - **Subgroup 2.4.6: Weighing scales (WEG)**
 - **Subgroup 2.4.7: Glucose meter (GL)**
 - **Subgroup 2.4.8: Cardiovascular fitness and activity monitor (CV)**
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 - **Subgroup 2.4.11: Adherence monitor (AM)**
 - **Subgroup 2.4.12: Peak expiratory flow monitor (PF)**
 - **Subgroup 2.4.13: Body composition analyser (BCA)**
 - **Subgroup 2.4.14: Basic electrocardiograph (ECG)**
 - **Subgroup 2.4.15: International normalized ratio (INR)**
 - **Subgroup 2.4.16: Sleep apnoea breathing therapy equipment (SABTE)**
 - **Subgroup 2.4.17: Insulin pump (IP)**
 - **Subgroup 2.4.18: Continuous glucose monitor (CGM)**
- Group 2.5: Consent Management (CM)
 - Subgroup 2.5.1: HFS XDR transaction (TRANS)
 - Subgroup 2.5.2: HFS service validation (SER)
- Group 2.6: hData Observation Upload (HDATA)
 - Subgroup 2.6.1: General (GEN)
 - Subgroup 2.6.2: hData record format (HRF)
- Group 2.7: Questionnaires (QUE)
 - Subgroup 2.7.1: General (GEN)
 - Subgroup 2.7.2: CDA validation (CDA)
 - Subgroup 2.7.3: hData record format (HRF)

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.
 - HFS: Health & Fitness Services Interface
 - <DUT>: This is the device under test.
 - SEN: HFS sender
 - REC: HFS receiver
 - <GR>: This identifies a group of test cases.
 - <SGR>: This identifies a subgroup of test cases.
 - <XX>: This identifies the type of testing.
 - BV: Valid behaviour test
 - BI: Invalid behaviour test
 - <NNN>: This is a sequential number that identifies the test purpose (TP).
- **TP label:** This is the title of the TP.
- **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 are 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 2.4.1: General (GEN)

TP Id		TP/HFS/REC/PCD-01-DATA/GEN/BV-000		
TP label		MSH Segment		
Coverage	Spec	[ITU-T H.812.1]		
	Testable items	MSH-1; M	MSH-2; M	MSH-3; M
		MSH-4; M	MSH-5; M	MSH-6; M
		MSH-7; M	MSH-8; M	MSH-9; M
		MSH-10; M	MSH-11; M	MSH-12; M
		MSH-13; M	MSH-14; M	MSH-15; M
		MSH-16; M	MSH-17; M	MSH-18; M
		MSH-19; M	MSH-20; M	MSH-21; M
		MSH-22; M	MSH-23; M	MSH-24; M
		MSH-25; M	HL7Concept 2; M	CWEDataType 1; M
		CWEDataType 2; M	CWEDataType 3; C	DateTimeDataType 1; M
		NumericDataType 1; M	StringDataType 1; M	IDDataType 1; M
		ISDataType 1; M	EIDDataType 1; M	EIDDataType 2; O
		EIDDataType 3; O	EIDDataType 4; O	EIUse1; C
		EIUse2; C	EIUse3; C	EIUse4; C
	Spec	[IHE PCD-TF-2]		
Testable items	HDUse1; M	HDUse2; C	HDUse3; C	
	HD-1; M	HD-2; M	HD-3; M	
Test purpose		Check that: The elements of the MSH segment of a message [AND] The data type of each element.		
Applicability		C_REC_000		
Other PICS		C_REC_DATA_001, C_REC_DATA_002, C_REC_DATA_003, C_REC_DATA_004		
Initial condition		The HFS receiver under test has published a WebService and the simulated HFS sender is ready to send a SOAP message with an observation.		
Test procedure		1. The simulated HFS sender sends an HL7 message inside a SOAP body including an observation. 2. The HFS receiver under test responds using another HL7 message. Check in the captured message that: a. Only one MSH segment is present and: ☐ The character ' ' is the separator element. ☐ MSH-2 = ^~\& (for Encoding characters element). ☐ MSH-3 = <Namespace ID (data type IS)>^<Universal ID (data type ST)>^<Universal Type (data type ID)> <ul style="list-style-type: none">If C_REC_DATA_001=TRUE, Namespace ID (HD-1) is optional and may contain a locally unique name for the application implementing PCD actor(s). Universal ID (HD-2) contains the EUI-64 identifier as a hexadecimal string. The IEEE defined 64-bit extended unique identifier (EUI-64) is a concatenation of the 24-bit company_id value assigned by the IEEE Registration Authority, and a 40-bit extension identifier assigned by the organization having that company_id assignment.Universal ID (HD-2) contains all three components, Third component (required): EUI-64If C_REC_DATA_002=TRUE, "Namespace ID" (HD-1) containing the name of the assigning authority, "Universal ID" (HD-2) containing its universal OID, and "Universal ID Type" (HD-3) containing the value ISO		

- Otherwise, if Universal Type (HD-3) is valued, it takes one of the following values:
 - 'DNS' - An Internet dotted name. Either in ASCII or as integers.
 - 'GUID' - is the same as UUID.
 - 'HCD' - The CEN Healthcare Coding Scheme Designator. (Identifiers used in DICOM follow this assignment scheme.)
 - 'HL7' - Reserved for future HL7 registration schemes.
 - 'L','M','N' - These are reserved for locally defined coding schemes.
 - 'Random' - Usually a base64 encoded string of random bits. The uniqueness depends on the length of the bits. Mail systems often generate ASCII string "unique names", from a combination of random bits and system names. Obviously, such identifiers will not be constrained to the base64 character set.
 - 'URI' - Uniform resource identifier.
 - 'UUID' - The DCE universal unique identifier.
 - 'x400' - An X.400 MHS format identifier.
 - 'x500' - An X.500 directory name.

☐ MSH-4, MSH-5, MSH-6 may be empty, but if they are not empty, they have the same encoding as MSH-3.

☐ MSH-7 is encoded as YYYY[MM[DD[HH[MM[SS]]]]][+/-ZZZZ].

☐ MSH-8 is empty

☐ MSH-9 = ACK^R01^ACK

☐ MSH-10 is a string (that uniquely identifies the message)

☐ MSH-11 = <Processing ID (data type ID)>^<Processing Mode (data type ID)>
where 'Processing ID' can be one of the following values:

- 'D' for debugging
- 'P' for processing
- 'T' for training.

And 'Processing Mode', can be one of the following values:

- 'A' for archive
- 'I' for initial load
- 'R' for restore from archive
- 'T' for current processing, transmitted at intervals
- Not present (empty), meaning current processing.

☐ MSH-12 = 2.6

☐ MSH-13 should not be valued, but if it is valued, it is a sequence number (it is allowed to have any of these characters: '+','-' and '.')

☐ MSH-14 is empty

☐ MSH-15 = NE

☐ MSH-16 = AL

☐ MSH-17 may be empty, but if it is valued, it uses a 3-character (alphabetic) form of ISO 3166.

☐ MSH-18 may be empty, but if it is valued, it has one or more of these codes:

- 'ASCII' (the default)
- '8859/1'
- '8859/2'
- '8859/3'

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	<ul style="list-style-type: none"> • '8859/4' • '8859/5' • '8859/6' • '8859/7' • '8859/8' • '8859/9' • '8859/15' • 'ISO IR14' • 'ISO IR87' • 'ISO IR159' • 'GB 18030-2000' • 'KS X 1001' • 'CNS 11643-1992' • 'BIG-5' • 'UNICODE' • 'UNICODE UTF-8' • 'UNICODE UTF-16' • 'UNICODE UTF-32' <p>☐ MSH-19 may be empty, but if it is valued, it is encoded as CWE data type: <Identifier (ST)>^<Text (ST)>^<Name of Coding System (ID)> ^<Alternate Identifier (ST)>^<Alternate Text (ST)>^<Name of Alternate Coding System (ID)>^<Coding System Version ID (ST)>^<Alternate Coding System Version ID (ST)>^<Original Text (ST)></p> <p>where CWE-1 is required, CWE-2 to CWE-6 are required but may be empty and the rest can be present.</p> <p>☐ MSH-20 is empty</p> <p>☐ MSH-21 = <Entity Identifier (data type ST)> ^ <Namespace ID (data type IS)> ^ <Universal ID (data type ST)> ^ <Universal ID Type (data type ID)>, where NamespaceID and UniversalID are 'HL7'</p> <p>☐ MSH-22, MSH-23, MSH-24, MSH-25 are empty</p>
Pass/Fail criteria	In step 2, all elements are as specified.
Notes	

TP Id		TP/HFS/REC/PCD-01-DATA/GEN/BV-001		
TP label		MSA and Segment Sequence Error		
Coverage	Spec	[ITU-T H.812.1]		
	Testable items	MSAUse; M	MSA-1; M	MSA-2; M
		MSA-3; M	MSA-4; M	MSA-5; M
		MSA-6; M	MSA-7; M	MSA-8; M
		ERRUse 1; O	ERRUse 2; M	ERR-1; M
		ERR-2; R	ERR-3; M	ERR-4; M
		ERR-5; M	ERR-6; M	ERR-7; O
		CWEDataType 1; M	CWEDataType 2; M	CWEDataType 3; C
		CWEDataType 4; R	NumericDataType 1; M	StringDataType 1; M
		DateTimeDataType 1; M	EIDDataType 1; M	EIDDataType 2; M

	EIDataType 3; M	EIDataType 4; M	EIUse1; C
	EIUse2; C	EIUse3; C	EIUse4; C
	IDDataType 1; M	ISDataType 1; M	XTNDataType 1; M
	XTNDataType 2; M	XTNDataType 3; M	XTNDataType 4; M
	XTNDataType 5; M	XTNDataType 6; M	XTNDataType 7; M
	XTNDataType 8; M	XTNDataType 9; M	XTNDataType 10; M
	XTNDataType 11; M		
Test purpose	Check that: The elements of every segment of the message [AND] The data type of each element.		
Applicability	C_REC_000		
Other PICS	C_REC_DATA_003, C_REC_DATA_004		
Initial condition	The HFS receiver under test has published a WebService and the simulated HFS sender is ready to send a SOAP message with an observation.		
Test procedure	1. The simulated HFS sender sends the following HL7 message without an MSH segment inside a SOAP body to make the HFS receiver respond with another HL7 message: PID 789567^^^Imaginary Hospital^PI Doe^John^Joseph^^^^L OBR 1 POTest^AT4_AHD^1234567890ABCDEF^EUI-64 POTest^AT4_AHD^1234567890ABCDEF^EUI-64 182777000^monitoring of patient^SNOMED-CT 20100813095715+0000 OBX 1 531981^MDC_MOC_VMS_MDS_AHD^MDC 0 X FEEDABEEDEADBEEF^EUI-64 OBX 2 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 0.0.0.1 2^auth-body-continua R OBX 3 ST 532352^MDC_REG_CERT_DATA_CONTINUA_VERSION^MDC 0.0.0.1.1 6.1 R OBX 4 NA 532353^MDC_REG_CERT_DATA_CONTINUA_CERT_DEV_LIST^MDC 0.0.0.1.2 8196~16388 R OBX 5 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 0.0.0.2 2^auth-body-continua R OBX 6 CWE 532354^MDC_REG_CERT_DATA_CONTINUA_REG_STATUS^MDC 0.0.0.2.1 1^unregulated-device(0) R OBX 7 CWE 68220^MDC_TIME_SYNC_PROTOCOL^MDC 0.0.0.3 532224^MDC_TIME_SYNC_NONE^MDC R OBX 8 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 0.0.0.4 2^auth-body-continua R OBX 9 CWE 64515^MDC_REG_CERT_DATA_CONTINUA_AHD_CERT_LIST^MDC 0.0.0.4.1 0~1 R OBX 10 528388^MDC_DEV_SPEC_PROFILE_PULS_OXIM^MDC 1 X 1234567890ABCDEF^EUI-64 OBX 11 ST 531969^MDC_ID_MODEL_NUMBER^MDC 1.0.0.1 PulseOx v1. 5 R OBX 12 ST 531970^MDC_ID_MODEL_MANUFACTURER^MDC 1.0.0.2 AT4 Wireless R OBX 13 DTM 67975^MDC_ATTR_TIME_ABS^MDC 1.0.0.3 20100813095715+0000 R 20100813095715+0000 OBX 14 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 1.0.0.4 2^auth-body-continua R OBX 15 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 1.0.0.5 2^auth-body-continua R		

OBX|16|ST|532352^MDC_REG_CERT_DATA_CONTINUA_VERSION^MDC|1.0.0.4.1|1.5|||||R

OBX|17|NA|532353^MDC_REG_CERT_DATA_CONTINUA_CERT_DEV_LIST^MDC|1.0.0.4.2|16388|||||R

OBX|18|CWE|532354^MDC_REG_CERT_DATA_CONTINUA_REG_STATUS^MDC|1.0.0.5.1|0^unregulated-device(0)|||||R

OBX|19|NM|150456^MDC_PULS_OXIM_SAT_O2^MDC|1.0.0.8|80.5|262688^MDC_DIM_PERCENT^MDC|||||R|||20100813095715+0000

OBX|20|NM|149530^MDC_PULS_OXIM_PULS_RATE^MDC|1.0.0.9|70|264864^MDC_DIM_BEAT_PER_MIN^MDC|||||R|||20100813095715+0000

2. The HFS receiver under test responds using another HL7 message. Check in the captured message that:

a. Only one MSA segment is present and:

- ☐ MSA-1 is 'AE' – Accept Acknowledgment: Application Error
- ☐ MSA-2 contains the message control ID from the MSH-10 (Message Control ID) of the incoming message for which this acknowledgement is being sent
- ☐ MSA-3 to MSA-8 are empty

b. If the ERR segment referring to the MSA is present:

- ☐ ERR-1 is empty
- ☐ ERR-2 should be valued with the location in the message related to the identified error, warning, or message. This field is repeated for errors which result from the combination of multiple locations. Components: *<Segment ID (ST)> ^ <Segment Sequence (NM)> ^ <Field Position (NM)> ^ <Field Repetition (NM)> ^ <Component Number (NM)> ^ <Sub-Component Number (NM)>*
- ☐ ERR-3 starts with the error code '100', other optional subfields might be included
- ☐ ERR-4 is set to:
 - 'E' – Error
- ☐ ERR-5 and ERR-6 are empty
- ☐ ERR-7 may be empty, but if it is valued, it is a text data
- ☐ ERR-8 may be empty, but if it is valued, it is a text data
- ☐ ERR-9 may be empty, but if it is valued, it is one of these values:
 - 'PAT'
 - 'NPAT'
 - 'USR'
 - 'HD'
- ☐ ERR-10 may be empty, but if it is valued, it is encoded as: *<Identifier (ST)>^<Text (ST)>^< Name of Coding System (ID)>* the rest of the elements of the CWE data type are not used in the Services interface.
- ☐ ERR-11 may be empty, but if it is valued, it is encoded as: *<Identifier (ST)>^<Text (ST)>^< Name of Coding System (ID)>* the rest of the elements of the CWE data type are not used in the Services interface.
- ☐ ERR-12 may be empty, but if it is valued, it is encoded as: *<WITHDRAWN Constituent>^<Telecommunication Use Code (ID)>^<Telecommunication Equipment Type (ID)>^<Communication Address (ST)>^<Country Code (NM)>^<Area/City Code (NM)>^<Local Number (NM)>^<Extension (NM)>^<Any Text (ST)>^<Extension Prefix (ST)>^<Speed Dial Code (ST)>^<Unformatted Telephone Number (ST)>^<Effective Start Date (DTM)>^<Expiration Date (DTM)>^<Expiration Reason (CWE)>^<Protection Code (CWE)>^<Shared Telecommunication Identifier (EI)>^<Preference Order (NM)>*

Where:

- Expiration Reason subcomponents are: *<Identifier (ST)>^<Text (ST)>^< Name of Coding System (ID)> ^<Alternate Identifier (ST)>^<Alternate Text*

	<p>(ST)>&<Name of Alternate Coding System (ID)>&<Coding System Version ID (ST)>&<Alternate Coding System Version ID (ST)>&<Original Text (ST)></p> <ul style="list-style-type: none"> Protection code subcomponents are: <Identifier (ST)>&<Text (ST)>&<Name of Coding System (ID)> &<Alternate Identifier (ST)>&<Alternate Text (ST)>&<Name of Alternate Coding System (ID)>&<Coding System Version ID (ST)>&<Alternate Coding System Version ID (ST)>&<Original Text (ST)> Shared Telecommunication Identifier subcomponents are: <Entity Identifier (ST)>&<Namespace ID (IS)>&<Universal ID (ST)>&<Universal ID Type (ID)> <p>Where XTN-2 and XTN-3 are required and XTN-4 to XTN-10 are required but may be empty. The rest are not supported.</p>
Pass/Fail criteria	In step2, all elements in each segment are as specified.
Notes	

TP Id		TP/HFS/REC/PCD-01-DATA/GEN/BV-002		
TP label		MSA and Required Field Missing Error		
Coverage	Spec	[ITU-T H.812.1]		
	Testable items	MSAUse; M	MSA-1; M	MSA-2; M
		MSA-3; M	MSA-4; M	MSA-5; M
		MSA-6; M	MSA-7; M	MSA-8; M
		ERRUse 1; O	ERRUse 2; M	ERR-1; M
		ERR-2; R	ERR-3; M	ERR-4; M
		ERR-5; M	ERR-6; M	ERR-7; O
		CWEDataType 1; M	CWEDataType 2; M	CWEDataType 3; C
		CWEDataType 4; R	NumericDataType 1; M	StringDataType 1; M
		DateTimeDataType 1; M	EIDataType 1; M	EIDataType 2; M
		EIDataType 3; M	EIDataType 4; M	EIUse1; C
		EIUse2; C	EIUse3; C	EIUse4; C
		IDDataType 1; M	ISDataType 1; M	XTNDataType 1; M
		XTNDataType 2; M	XTNDataType 3; M	XTNDataType 4; M
		XTNDataType 5; M	XTNDataType 6; M	XTNDataType 7; M
		XTNDataType 8; M	XTNDataType 9; M	XTNDataType 10; M
		XTNDataType 11; M		
Test purpose		Check that: The elements of every segment of the message [AND] The data type of each element.		
Applicability		C_REC_000		
Other PICS		C_REC_DATA_003, C_REC_DATA_004		
Initial condition		The HFS receiver under test has published a WebService and the simulated HFS sender is ready to send a SOAP message with an observation.		
Test procedure		1. The simulated HFS sender sends the following HL7 message with an MSH segment including a MSH-7 empty inside a SOAP body to make the HFS receiver respond with another HL7 message: MSH ^~\& AT4_AHD^1234567890ABCDEF^EUI-64 ORU^R01^ORU_R01 MSGID12 P 2.6 NE AL IHE PCD ORU-R012006^HI 7^2.16.840.1.113883.9.n.m^HI 7		

	<p>PID 789567^^^Imaginary Hospital^PI Doe^John^Joseph^^^L</p> <p>OBR 1 POTest^AT4_AHD^1234567890ABCDEF^EUI-64 POTest^AT4_AHD^1234567890ABCDEF^EUI-64 182777000^monitoring of patient^SNOMED-CT 20100813095715+0000</p> <p>OBX 1 531981^MDC_MOC_VMS_MDS_AHD^MDC 0 X FEEDABEEDEADBEEF^EUI-64</p> <p>OBX 2 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 0.0.0.1 2^auth-body-continua R</p> <p>OBX 3 ST 532352^MDC_REG_CERT_DATA_CONTINUA_VERSION^MDC 0.0.0.1.1 6.1 R</p> <p>OBX 4 NA 532353^MDC_REG_CERT_DATA_CONTINUA_CERT_DEV_LIST^MDC 0.0.0.1.2 8196~16388 R</p> <p>OBX 5 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 0.0.0.2 2^auth-body-continua R</p> <p>OBX 6 CWE 532354^MDC_REG_CERT_DATA_CONTINUA_REG_STATUS^MDC 0.0.0.2.1 1^unregulated-device(0) R</p> <p>OBX 7 CWE 68220^MDC_TIME_SYNC_PROTOCOL^MDC 0.0.0.3 532224^MDC_TIME_SYNC_NONE^MDC R</p> <p>OBX 8 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 0.0.0.4 2^auth-body-continua R</p> <p>OBX 9 CWE 64515^MDC_REG_CERT_DATA_CONTINUA_AHD_CERT_LIST^MDC 0.0.0.4.1 0~1 R</p> <p>OBX 10 528388^MDC_DEV_SPEC_PROFILE_PULS_OXIM^MDC 1 X 1234567890ABCDEF^EUI-64</p> <p>OBX 11 ST 531969^MDC_ID_MODEL_NUMBER^MDC 1.0.0.1 PulseOx v1. 5 R</p> <p>OBX 12 ST 531970^MDC_ID_MODEL_MANUFACTURER^MDC 1.0.0.2 AT4 Wireless R</p> <p>OBX 13 DTM 67975^MDC_ATTR_TIME_ABS^MDC 1.0.0.3 20100813095715+0000 R 20100813095715+0000</p> <p>OBX 14 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 1.0.0.4 2^auth-body-continua R</p> <p>OBX 15 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 1.0.0.5 2^auth-body-continua R</p> <p>OBX 16 ST 532352^MDC_REG_CERT_DATA_CONTINUA_VERSION^MDC 1.0.0.4.1 1.5 R</p> <p>OBX 17 NA 532353^MDC_REG_CERT_DATA_CONTINUA_CERT_DEV_LIST^MDC 1.0.0.4.2 16388 R</p> <p>OBX 18 CWE 532354^MDC_REG_CERT_DATA_CONTINUA_REG_STATUS^MDC 1.0.0.5.1 0^unregulated-device(0) R</p> <p>OBX 19 NM 150456^MDC_PULS_OXIM_SAT_O2^MDC 1.0.0.8 90 262688^MDC_DIM_PERCENT^MDC R 20100813095715+0000</p> <p>OBX 20 NM 149530^MDC_PULS_OXIM_PULS_RATE^MDC 1.0.0.9 80 264864^MDC_DIM_BEAT_PER_MIN^MDC R 20100813095715+0000</p> <p>2. The HFS receiver under test responds using another HL7 message. Check in the captured message that:</p> <p>a. Only one MSA segment is present and:</p> <ul style="list-style-type: none"> ☐ MSA-1 is 'AE' – Accept Acknowledgment: Application Error ☐ MSA-2 contains the message control ID from the MSH-10 (Message Control ID) of the incoming message for which this acknowledgement is being sent ☐ MSA-3 to MSA-8 are empty <p>b. If the ERR segment referring to the MSA is present:</p> <ul style="list-style-type: none"> ☐ ERR-1 is empty
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	<ul style="list-style-type: none"> ❑ ERR-2 should be valued with the location in the message related to the identified error, warning, or message. This field is repeated for errors which result from the combination of multiple locations. Components: <i><Segment ID (ST)> ^ <Segment Sequence (NM)> ^ <Field Position (NM)> ^ <Field Repetition (NM)> ^ <Component Number (NM)> ^ <Sub-Component Number (NM)></i> ❑ ERR-3 starts with the error code '101', other optional subfields might be included ❑ ERR-4 is set to: <ul style="list-style-type: none"> • 'E' – Error ❑ ERR-5 and ERR-6 are empty ❑ ERR-7 may be empty, but if it is valued, it is a text data ❑ ERR-8 may be empty, but if it is valued, it is a text data ❑ ERR-9 may be empty, but if it is valued, it is one of these values: <ul style="list-style-type: none"> • 'PAT' • 'NPAT' • 'USR' • 'HD' ❑ ERR-10 may be empty, but if it is valued, it is encoded as: <i><Identifier (ST)>^<Text (ST)>^< Name of Coding System (ID)></i> the rest of the elements of the CWE data type are not used in the Services interface. ❑ ERR-11 may be empty, but if it is valued, it is encoded as: <i><Identifier (ST)>^<Text (ST)>^< Name of Coding System (ID)></i> the rest of the elements of the CWE data type are not used in the Services interface. ❑ ERR-12 may be empty, but if it is valued, it is encoded as: <i><WITHDRAWN Constituent>^<Telecommunication Use Code (ID)>^<Telecommunication Equipment Type (ID)>^<Communication Address (ST)>^<Country Code (NM)>^<Area/City Code (NM)>^<Local Number (NM)>^<Extension (NM)>^<Any Text (ST)>^<Extension Prefix (ST)>^<Speed Dial Code (ST)>^<Unformatted Telephone Number (ST)>^<Effective Start Date (DTM)>^<Expiration Date (DTM)>^<Expiration Reason (CWE)>^<Protection Code (CWE)>^<Shared Telecommunication Identifier (EI)>^<Preference Order (NM)></i> <p>Where:</p> <ul style="list-style-type: none"> • Expiration Reason subcomponents are: <i><Identifier (ST)>&<Text (ST)>&< Name of Coding System (ID)> &<Alternate Identifier (ST)>&<Alternate Text (ST)>&<Name of Alternate Coding System (ID)>&<Coding System Version ID (ST)>&<Alternate Coding System Version ID (ST)>&<Original Text (ST)></i> • Protection code subcomponents are: <i><Identifier (ST)>&<Text (ST)>&< Name of Coding System (ID)> &<Alternate Identifier (ST)>&<Alternate Text (ST)>&<Name of Alternate Coding System (ID)>&<Coding System Version ID (ST)>&<Alternate Coding System Version ID (ST)>&<Original Text (ST)></i> • Shared Telecommunication Identifier subcomponents are: <i><Entity Identifier (ST)>&<Namespace ID (IS)>&<Universal ID (ST)>&<Universal ID Type (ID)></i> <p>Where XTN-2 and XTN-3 are required and XTN-4 to XTN-10 are required but may be empty. The rest are not supported.</p>
Pass/Fail criteria	In step 2, all elements in each segment are as specified.
Notes	

TP Id	TP/HFS/REC/PCD-01-DATA/GEN/BV-003
TP label	MSA and Data Type Error
Coverage	Spec [ITU-T H.812.1]

Testable items	MSAUse; M	MSA-1; M	MSA-2; M
	MSA-3; M	MSA-4; M	MSA-5; M
	MSA-6; M	MSA-7; M	MSA-8; M
	ERRUse 1; O	ERRUse 2; M	ERR-1; M
	ERR-2; R	ERR-3; M	ERR-4; M
	ERR-5; M	ERR-6; M	ERR-7; O
	CWEDataType 1; M	CWEDataType 2; M	CWEDataType 3; C
	CWEDataType 4; R	NumericDataType 1; M	StringDataType 1; M
	DateTimeDataType 1; M	EIDataType 1; M	EIDataType 2; M
	EIDataType 3; M	EIDataType 4; M	EIUse1; C
	EIUse2; C	EIUse3; C	EIUse4; C
	IDDataType 1; M	ISDataType 1; M	XTNDataType 1; M
	XTNDataType 2; M	XTNDataType 3; M	XTNDataType 4; M
	XTNDataType 5; M	XTNDataType 6; M	XTNDataType 7; M
	XTNDataType 8; M	XTNDataType 9; M	XTNDataType 10; M
	XTNDataType 11; M		
Test purpose	Check that: The elements of every segment of the message [AND] The data type of each element.		
Applicability	C_REC_000		
Other PICS	C_REC_DATA_003, C_REC_DATA_004		
Initial condition	The HFS receiver under test has published a WebService and the simulated HFS sender is ready to send a SOAP message with an observation.		
Test procedure	1. The simulated HFS sender sends the following HL7 message including a wrong data type in the first OBX segment inside a SOAP body to make the HFS receiver respond with another HL7 message: MSH ^~\& AT4_AHD^1234567890ABCDEF^EUI-64 20101015102130+0000 ORU^R01^ORU_R01 MSGID1 P 2.6 NE AL IHE PCD ORU-R012006^HL7^2.16.840.1.113883.9.n.m^HL7 PID 789567^^^Imaginary Hospital^PI Doe^John^Joseph^^^^L OBR 1 POTest^AT4_AHD^1234567890ABCDEF^EUI-64 POTest^AT4_AHD^1234567890ABCDEF^EUI-64 182777000^monitoring of patient^SNOMED-CT 20100522083542+0000 OBX 1 531981^MDC_MOC_VMS_MDS_AHD^MDC 0 X FEEDABEEDEADBEEF^EUI-64 OBX 2 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 0.0.0.1 2^auth-body-continua R OBX 3 ST 532352^MDC_REG_CERT_DATA_CONTINUA_VERSION^MDC 0.0.0.1.1 6.1 R OBX 4 NA 532353^MDC_REG_CERT_DATA_CONTINUA_CERT_DEV_LIST^MDC 0.0.0.1.2 8196~16388 R OBX 5 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 0.0.0.2 2^auth-body-continua R OBX 6 CWE 532354^MDC_REG_CERT_DATA_CONTINUA_REG_STATUS^MDC 0.0.0.2.1 1^unregulated-device(0) R OBX 7 ST 68220^MDC_TIME_SYNC_PROTOCOL^MDC 0.0.0.3 532224^MDC_TIME_SYNC_NONE^MDC R OBX 8 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 0.0.0.4 2^auth-body-		

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	<p>continua R</p> <p>OBX 9 CWE 64515^MDC_REG_CERT_DATA_CONTINUA_AHD_CERT_LIST^MDC 0.0.0.4.1 0~1 R</p> <p>OBX 10 528388^MDC_DEV_SPEC_PROFILE_PULS_OXIM^MDC 1 X 1234567890ABCDEF^EUI-64</p> <p>OBX 11 ST 531969^MDC_ID_MODEL_NUMBER^MDC 1.0.0.1 PulseOx v1.5 R</p> <p>OBX 12 ST 531970^MDC_ID_MODEL_MANUFACTURER^MDC 1.0.0.2 AT4 Wireless R</p> <p>OBX 13 DTM 67975^MDC_ATTR_TIME_ABS^MDC 1.0.0.3 20100522083542+0000 R 20100522083542+0000</p> <p>OBX 14 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 1.0.0.4 2^auth-body-continua R</p> <p>OBX 15 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 1.0.0.5 2^auth-body-continua R</p> <p>OBX 16 ST 532352^MDC_REG_CERT_DATA_CONTINUA_VERSION^MDC 1.0.0.4.1 1.5 R</p> <p>OBX 17 NA 532353^MDC_REG_CERT_DATA_CONTINUA_CERT_DEV_LIST^MDC 1.0.0.4.2 16388 R</p> <p>OBX 18 CWE 532354^MDC_REG_CERT_DATA_CONTINUA_REG_STATUS^MDC 1.0.0.5.1 0^unregulated-device(0) R</p> <p>OBX 19 NM 150456^MDC_PULS_OXIM_SAT_O2^MDC 1.0.0.8 76 262688^MDC_DIM_PERCENT^MDC R 20100522083542+0000</p> <p>OBX 20 NM 149530^MDC_PULS_OXIM_PULS_RATE^MDC 1.0.0.9 100 264864^MDC_DIM_BEAT_PER_MIN^MDC R 20100522083542+0000</p> <p>2. The HFS receiver under test responds using another HL7 message. Check in the captured message that:</p> <p>a. Only one MSA segment is present and:</p> <ul style="list-style-type: none"> ☐ MSA-1 is 'AE' – Accept Acknowledgment: Application Error ☐ MSA-2 contains the message control ID from the MSH-10 (Message Control ID) of the incoming message for which this acknowledgement is being sent ☐ MSA-3 to MSA-8 are empty <p>b. If ERR segment referring to the MSA is present:</p> <ul style="list-style-type: none"> ☐ ERR-1 is empty ☐ ERR-2 should be valued with the location in the message related to the identified error, warning, or message. This field is repeated for errors which result from the combination of multiple locations. Components: <Segment ID (ST)> ^ <Segment Sequence (NM)> ^ <Field Position (NM)> ^ <Field Repetition (NM)> ^ <Component Number (NM)> ^ <Sub-Component Number (NM)> ☐ ERR-3 starts with the error code '102', other optional subfields might be included ☐ ERR-4 is set to: <ul style="list-style-type: none"> • 'E' – Error ☐ ERR-5 and ERR-6 are empty ☐ ERR-7 may be empty, but if it is valued, it is a text data ☐ ERR-8 may be empty, but if it is valued, it is a text data ☐ ERR-9 may be empty, but if it is valued, it is one of these values: <ul style="list-style-type: none"> • 'PAT' • 'NPAT' • 'USR' • 'HD' ☐ ERR-10 may be empty, but if it is valued, it is encoded as: <Identifier
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	<p>(ST)>^<Text (ST)>^< Name of Coding System (ID)> the rest of the elements of the CWE data type are not used in the Services interface.</p> <p>❑ ERR-11 may be empty, but if it is valued, it is encoded as: <Identifier (ST)>^<Text (ST)>^< Name of Coding System (ID)> the rest of the elements of the CWE data type are not used in the Services interface.</p> <p>❑ ERR-12 may be empty, but if it is valued, it is encoded as: <WITHDRAWN Constituent>^<Telecommunication Use Code (ID)>^<Telecommunication Equipment Type (ID)>^<Communication Address (ST)>^<Country Code (NM)>^<Area/City Code (NM)>^<Local Number (NM)>^<Extension (NM)>^<Any Text (ST)>^<Extension Prefix (ST)>^<Speed Dial Code (ST)>^<Unformatted Telephone Number (ST)>^<Effective Start Date (DTM)>^<Expiration Date (DTM)>^<Expiration Reason (CWE)>^<Protection Code (CWE)>^<Shared Telecommunication Identifier (EI)>^<Preference Order (NM)></p> <p>Where:</p> <ul style="list-style-type: none"> Expiration Reason subcomponents are: <Identifier (ST)>&<Text (ST)>&< Name of Coding System (ID)> &<Alternate Identifier (ST)>&<Alternate Text (ST)>&<Name of Alternate Coding System (ID)>&<Coding System Version ID (ST)>&<Alternate Coding System Version ID (ST)>&<Original Text (ST)> Protection code subcomponents are: <Identifier (ST)>&<Text (ST)>&< Name of Coding System (ID)> &<Alternate Identifier (ST)>&<Alternate Text (ST)>&<Name of Alternate Coding System (ID)>&<Coding System Version ID (ST)>&<Alternate Coding System Version ID (ST)>&<Original Text (ST)> Shared Telecommunication Identifier subcomponents are: <Entity Identifier (ST)>&<Namespace ID (IS)>&<Universal ID (ST)>&<Universal ID Type (ID)> <p>Where XTN-2 and XTN-3 are required and XTN-4 to XTN-10 are required but may be empty. The rest are not supported.</p>
Pass/Fail criteria	In step 2, all elements in each segment are as specified.
Notes	

TP Id		TP/HFS/REC/PCD-01-DATA/GEN/BV-004		
TP label		MSA and Table Value not found Error		
Coverage	Spec	[ITU-T H.812.1]		
	Testable items	MSAUse; M	MSA-1; M	MSA-2; M
		MSA-3; M	MSA-4; M	MSA-5; M
		MSA-6; M	MSA-7; M	MSA-8; M
		ERRUse 1; O	ERRUse 2; M	ERR-1; M
		ERR-2; R	ERR-3; M	ERR-4; M
		ERR-5; M	ERR-6; M	ERR-7; O
		CWEDataType 1; M	CWEDataType 2; M	CWEDataType 3; C
		CWEDataType 4; R	NumericDataType 1; M	StringDataType 1; M
		DateTimeDataType 1; M	EIDataType 1; M	EIDataType 2; M
		EIDataType 3; M	EIDataType 4; M	EIUse1; C
		EIUse2; C	EIUse3; C	EIUse4; C
		IDDataType 1; M	ISDataType 1; M	XTNDataType 1; M
		XTNDataType 2; M	XTNDataType 3; M	XTNDataType 4; M
		XTNDataType 5; M	XTNDataType 6; M	XTNDataType 7; M
		XTNDataType 8; M	XTNDataType 9; M	XTNDataType 10; M
		XTNDataType 11; M		

Test purpose	<p>Check that:</p> <p>The elements of every segment of the message</p> <p>[AND]</p> <p>The data type of each element.</p>
Applicability	C_REC_000
Other PICS	C_REC_DATA_003, C_REC_DATA_004
Initial condition	The HFS receiver under test has published a WebService and the simulated HFS sender is ready to send a SOAP message with an observation.
Test procedure	<p>1. The simulated HFS sender sends the following HL7 message with an MSH segment including a MSH-15 = 'XXX' inside a SOAP body to make the HFS receiver respond with another HL7 message:</p> <pre> MSH ^~\& AT4_AHD^1234567890ABCDEF^EUI-64 20100930102130+0000 ORU^R01^ORU_R01 MSGID123 P 2.6 XXX AL IHE PCD ORU- R012006^HL7^2.16.840.1.113883.9.n.m^HL7 PID 789567^^^Imaginary Hospital^PI Doe^John^Joseph^^^L OBR 1 POTest^AT4_AHD^1234567890ABCDEF^EUI-64 POTest^AT4_AHD^ 1234567890ABCDEF^EUI-64 182777000^monitoring of patient^SNOMED-CT 20100713150214+0000 OBX 1 531981^MDC_MOC_VMS_MDS_AHD^MDC 0 X FEEDABEEDEADBEEF ^EUI-64 OBX 2 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 0.0.0.1 2^auth-body- continua R OBX 3 ST 532352^MDC_REG_CERT_DATA_CONTINUA_VERSION^MDC 0.0.0.1.1 6.1 R OBX 4 NA 532353^MDC_REG_CERT_DATA_CONTINUA_CERT_DEV_LIST^MDC 0.0. 0.1.2 8196~16388 R OBX 5 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 0.0.0.2 2^auth-body- continua R OBX 6 CWE 532354^MDC_REG_CERT_DATA_CONTINUA_REG_STATUS^MDC 0.0.0 .2.1 1^unregulated-device(0) R OBX 7 CWE 68220^MDC_TIME_SYNC_PROTOCOL^MDC 0.0.0.3 532224^MDC_TIME _SYNC_NONE^MDC R OBX 8 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 0.0.0.4 2^auth-body- continua R OBX 9 CWE 64515^MDC_REG_CERT_DATA_CONTINUA_AHD_CERT_LIST^MDC 0.0 .0.4.1 0~1 R OBX 10 528388^MDC_DEV_SPEC_PROFILE_PULS_OXIM^MDC 1 X 12345678 90ABCDEF^EUI-64 OBX 11 ST 531969^MDC_ID_MODEL_NUMBER^MDC 1.0.0.1 PulseOx v1. 5 R OBX 12 ST 531970^MDC_ID_MODEL_MANUFACTURER^MDC 1.0.0.2 AT4 Wireless R OBX 13 DTM 67975^MDC_ATTR_TIME_ABS^MDC 1.0.0.3 20100713150214+0000 R 20100713150214+0000 OBX 14 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 1.0.0.4 2^auth- body-continua R OBX 15 CWE 68218^MDC_REG_CERT_DATA_AUTH_BODY^MDC 1.0.0.5 2^auth- body-continua R OBX 16 ST 532352^MDC_REG_CERT_DATA_CONTINUA_VERSION^MDC 1.0.0.4.1 1. 5 R OBX 17 NA 532353^MDC_REG_CERT_DATA_CONTINUA_CERT_DEV_LIST^MDC 1.0 .0.4.2 16388 R OBX 18 CWE 532354^MDC_REG_CERT_DATA_CONTINUA_REG_STATUS^MDC 1.0. 0.5.1 0^unregulated-device(0) R </pre>

OBX|19|NM|150456^MDC_PULS_OXIM_SAT_O2^MDC|1.0.0.8|99.1|262688^MDC_DIM_PERCENT^MDC||||R|||20100713150214+0000

OBX|20|NM|149530^MDC_PULS_OXIM_PULS_RATE^MDC|1.0.0.9|82|264864^MDC_DIM_BEAT_PER_MIN^MDC||||R|||20100713150214+0000

2. The HFS receiver under test responds using another HL7 message. Check in the captured message that:

- a. Only one MSA segment is present and:
 - ☐ MSA-1 is 'AE' – Accept Acknowledgment: Application Error
 - ☐ MSA-2 contains the message control ID from the MSH-10 (Message Control ID) of the incoming message for which this acknowledgement is being sent
 - ☐ MSA-3 to MSA-8 are empty
- b. If the ERR segment referring to the MSA is present:
 - ☐ ERR-1 is empty
 - ☐ ERR-2 should be valued with the location in the message related to the identified error, warning, or message. This field is repeated for errors which result from the combination of multiple locations. Components: <Segment ID (ST)> ^ <Segment Sequence (NM)> ^ <Field Position (NM)> ^ <Field Repetition (NM)> ^ <Component Number (NM)> ^ <Sub-Component Number (NM)>
 - ☐ ERR-3 starts with the error code '103', other optional subfields might be included
 - ☐ ERR-4 is set to:
 - 'E' – Error
 - ☐ ERR-5 and ERR-6 are empty
 - ☐ ERR-7 may be empty, but if it is valued, it is a text data
 - ☐ ERR-8 may be empty, but if it is valued, it is a text data
 - ☐ ERR-9 may be empty, but if it is valued, it is one of these values:
 - 'PAT'
 - 'NPAT'
 - 'USR'
 - 'HD'
 - ☐ ERR-10 may be empty, but if it is valued, it is encoded as: <Identifier (ST)>^<Text (ST)>^< Name of Coding System (ID)> the rest of the elements of the CWE data type are not used in the Services interface.
 - ☐ ERR-11 may be empty, but if it is valued, it is encoded as: <Identifier (ST)>^<Text (ST)>^< Name of Coding System (ID)> the rest of the elements of the CWE data type are not used in the Services interface.
 - ☐ ERR-12 may be empty, but if it is valued, it is encoded as: <WITHDRAWN Constituent>^<Telecommunication Use Code (ID)>^<Telecommunication Equipment Type (ID)>^<Communication Address (ST)>^<Country Code (NM)>^<Area/City Code (NM)>^<Local Number (NM)>^<Extension (NM)>^<Any Text (ST)>^<Extension Prefix (ST)>^<Speed Dial Code (ST)>^<Unformatted Telephone Number (ST)>^<Effective Start Date (DTM)>^<Expiration Date (DTM)>^<Expiration Reason (CWE)>^<Protection Code (CWE)>^<Shared Telecommunication Identifier (EI)>^<Preference Order (NM)>

Where:

- Expiration Reason subcomponents are: <Identifier (ST)>&<Text (ST)>&< Name of Coding System (ID)> &<Alternate Identifier (ST)>&<Alternate Text (ST)>&<Name of Alternate Coding System (ID)>&<Coding System Version ID (ST)>&<Alternate Coding System Version ID (ST)>&<Original Text (ST)>
- Protection code subcomponents are: <Identifier (ST)>&<Text (ST)>&< Name of Coding System (ID)> &<Alternate Identifier (ST)>&<Alternate Text (ST)>&<Name of Alternate Coding System (ID)>&<Coding System Version ID (ST)>&<Alternate Coding System Version ID (ST)>&<Original Text