



EUR AMHS Manual

Appendix H

Application/Service oriented AMHS Profiles	
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References

- [1] ICAO EUR Doc 033, Guidelines for the Implementation of OPMET Data Exchange using IWXXM in the EUR Region, Second Edition, 2016
- [2] ICAO EUR DOC 020, EUR AMHS Manual, latest version
- [3] EUR ATS Messaging Service Profile, EUR AMHS Manual Appendix B, latest version
- [4] ISO/IEC International Standardized Profile ISP 12062-2 (2003): AMH21 – IPM Content
- [5] (Advance Release) ICAO Doc 9880-AN/466, Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols, Part II – Ground-Ground Applications - Air Traffic Services Messaging Handling Services (ATSMHS), Second Edition, 2016
- [6] ISO/IEC 10021-7 (2003) / ITU-T X.420 (1999): Information technology – Message Handling Systems (MHS) – Interpersonal Messaging System
- [7] ICAO Annex 10 – Aeronautical Telecommunications, Volume II: Communication Procedures

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1. Introduction

1.1 Purpose of the Document

1.1.1 This document defines specific AMHS profiles for the support of given applications/services, acting in limited environments, using ATS Message Handling Service. Such profiles provide detailed specification of X.400 and AMHS parameters to be adopted depending on the needs of each identified application/service. The profiles are explicitly and exclusively applicable to the application/service which they have been defined to serve.

1.2 Structure of the Document

1.2.1 The first chapter describes the purpose and the structure of the document.

1.2.2 The second chapter provides an overview concerning profiling in general and it presents the rationale for defining specific application/service oriented AMHS profiles.

1.2.3 The third chapter includes the detailed specification of these profiles. Currently it contains the AMHS Profile for OPMET IWXXM data exchange as well as guidance material for conducting conformance testing of the involved implementations.

1.2.4 Upon identification of similar profiling tasks for other applications/services chapter 3 will be updated accordingly.

2. Profiles and Requirement Lists

2.1 Overview

2.1.1 A number of standards have been established by ISO for Message Handling Systems. In order to describe which standards or group of standards, together with options and parameters, are needed to accomplish a function, it is necessary to specify a profile. Such profiles have been standardized by ISO and are known as International Standardized Profiles (ISPs). Profiles standardize the use of options and other variations in the base standards and deal primarily with the use of implemented capabilities in order to meet requirements for interoperability and efficient interworking.

2.1.2 ICAO Doc 9880, Part II (ref. [5]) contains the detailed technical specifications for ATSMHS based on a number of international standards and ISPs, complemented by additional requirements. The basic and the extended ATSMHS services meet the basic requirements of the respective ISPs but additional features and supplementary functions are incorporated as necessary in ICAO Doc 9880, Part II. In order to express conformance requirements, i.e. static capability, ICAO Doc 9880, Part II uses the classification defined in the ISPs to include different levels of support (mandatory, optional, etc.). These requirements, applying to the related parameters or elements are specified in the form of Profile requirement lists (PRLs). In a limited number of cases, the PRLs may also include dynamic behaviour requirements, using another classification also defined in the ISPs.

2.1.3 In the same spirit, Appendix B of the EUR AMHS Manual describes the ‘European ATS Messaging Service Profile’. Its purpose is to provide a single, relatively short specification of protocols and system capabilities and it is intended to ensure end-to-end message transfer between International COM Centres over AMHS.

2.2 Relation between AMHS specification and ISO/IEC ISPs

2.2.1 It is noted that the classification of a feature as mandatory in the ISPs corresponds to a requirement regarding static capability, i.e. the ability to generate and/or receive, encode and/or decode a specific parameter, but not to use this parameter in every message sent or received. The same logic is applicable to ICAO Doc 9880, Part II and the EUR AMHS Manual.

2.2.2 Furthermore, it is recalled that in ICAO Doc 9880, Part II, for the Basic ATS Message Handling Service, the interface between the ATS Message User Agent and the ATS Message Server has been left open, since this is often an implementation matter local to each AMHS Management Domain. Conversely, for the Extended ATS Message Handling Service, implementation of a P2/P3 or P2/P7 profile compliant with the relevant MHS ISP (among ISP AMH23 to AMH26) is mandated. The main reason for this requirement was to enable reference to the Functional Group (FG) Security S0 defined in these ISPs, SEC S0 being the agreed solution for AMHS security.

2.2.3 The question of compliance with a P2/P3 or P2/P7 ISP for AMHS conformance has never been addressed in the context of an implementation making use of some functionalities

part of the Extended Service, but not of the whole of it. In particular, it is not specified whether a partial Extended Service implementation which does not include AMHS Security requires conformance with one of the AMH23 to AMH26 profiles or not.

2.3 Profiling per application/service

2.3.1 The European ATS Messaging Service Profile specifies a number of AMHS protocols and system capabilities for exchanging ATS messages between users through international Message Transfer Agents. It applies to Message Transfer Agents, Message Stores and User Agents. Dedicated sections of Appendix B include the requirements of each of the above mentioned AMHS System components.

2.3.2 The message categories handled by the AFS are defined by Annex 10, Volume II. The users of these message categories are the ATS as well as the AIS, ATFM, MET and SAR Services. Several ATM applications such as Digital NOTAM and Digital Flight Plan deploy new data requirements and information exchange models. These common information exchange models, i.e. AIXM and FIXM, are specifications designed to enable the encoding and the distribution of information in digital format, ensuring at the same time interoperability. These information exchange models make use of the Extensible Markup Language (XML) for encoding, representation and exchange of information. Similarly, ICAO Annex 3 foresees the exchange of OPMET data not only in the Traditional Alphanumeric Code format but also in the format defined by the ICAO Meteorological Information Exchange Model (IWXXM).

2.3.3 The ATS Message Handling Service already provides appropriate means for exchanging such data types. Furthermore, proper refinement of the specification has been foreseen and incorporated in Appendix B of this Manual, suitable for conveyance of known binary data formats.

2.3.4 However, it is obvious that a user agent in support of one of the above mentioned applications will not necessarily have to support the same set of features like a user agent in support of another application. On the contrary, implementing all of the requirements specified for UAs by ICAO Doc 9880, Part II, and Appendix B of the EUR AMHS Manual, independently of the served application/service and the type of the user agent, could be considered as an over-specification. For example it is not likely that a host user, which is a computer application running on ATN end systems and interacts with the ATS message service by means of APIs, would need to generate and submit probes.

2.3.5 Furthermore user agents may be implemented exclusively for the support of a specific application/service. Such dedicated user agents may not need to implement all the features defined by ICAO Doc 9880, Part II, and Appendix B of the EUR AMHS Manual. For example, dedicated user agents implemented for the exchange of OPMET data formatted based on the IWXXM model are not supposed to generate messages with SS priority. Similarly these user agents are not expected to receive messages with SS priority, although this could happen at the reception direction, at least by mistake.

2.3.6 Mandating implementation of features which are not required by the application/service served by certain user agents may generate additional complexity and impose implementation delay, effort and cost, without any operational benefit. In order to

eliminate such impediments and facilitate the adoption of the ATS Message Handling Service by end users, the need of defining application/service oriented AMHS profiles, which clarify requirements and may relax some of them by mandating less features than the current AMHS specification, has been recognized. These profiles are applicable to explicit, limited environments, e.g. submission of OPMET data, taking into consideration which features are useless for the specific application/service. The relaxed requirements concern message submission only.

2.3.7 Implementations complying with an application/service oriented AMHS profile are accepted for connection to the AMHS, although possibly not fully compliant from a formal standpoint, provided that conformance to the profile is verified. For this purpose, UA conformance testing, as specified in Appendix D-UA, needs to be tailored according to the given profile specification.

3. Application/Service oriented AMHS Profiles

3.1 General

3.1.1 The following sections present the AMHS profiles specified for implementations, for which support of all features mandated by ICAO Doc 9880 (ref. [5]) and Appendix B of the EUR AMHS Manual (ref. [3]) is not required.

3.1.2 The exchange of OPMET data based on IWXXM has been identified as the first application using AMHS, for which the definition of a profile would accommodate the implementation deployment.

3.1.3 This section needs to be updated each time a similar need appears for other applications/services.

3.2 AMHS Profile for OPMET IWXXM data exchange

3.2.1 Introduction

3.2.1.1 It has been commonly agreed by the MET and AFS ICAO EUR communities that AMHS is the intended communication means for MET IWXXM data exchanges in the EUR Region. More specifically, FTBP is to be used for IWXXM data. This agreement is reflected in the EUR Doc033 (ref. [1]).

3.2.1.2 UAs complying with ICAO Doc 9880, Part II, Second Edition (ref. [5]) and with the additional provisions of the EUR AMHS Manual (ref. [2]) and of the European ATS Messaging Service Profile (ref. [3]) are capable to originate and receive AMHS messages containing such data. The support by UAs of IPM Heading Extensions (IHE), defined in ICAO Doc 9880, Part II as part of the Extended ATS Message Handling Service, is additionally required but represents a minor upgrade already available in several UA implementations.

3.2.1.3 However, to ensure unambiguous interpretation of messages upon reception, and to facilitate their origination, it is necessary to establish a detailed specification of X.400 and AMHS parameters to be adopted for conveyance of such messages, including those associated with the AMHS file-transfer-body-parts (FTBP). This task is a typical profiling activity, which is preferably performed before implementation deployment is started.

3.2.2 Scope of the profile

3.2.2.1 This profile specification is established for application by AMHS UAs submitting and/or receiving OPMET data in IWXXM format through a P2/P3 or a P2/P7 interface, implemented as part of the following centres or systems (as defined in EUR Doc033 [1], section 2):

- National OPMET Centre (NOC)
- Regional OPMET Centre (ROC)

- Interregional OPMET Gateway (IROG)
- Regional OPMET Databank (RODB)
- any terminal or system receiving or requesting OPMET data in IWXXM format from one of the above centres/systems

3.2.2.2 This specification is based on the following assumptions, which identify topics out of scope of the AMHS profile, which are addressed in the MET domain:

- The MET domain may add further data types to the IWXXM without affecting the AMHS profile. It is assumed that irrespective of the data format (bulletin or report), the MET domain will always pass an unstructured binary file with a defined file-name to the AMHS.
- Data compression will always be performed in the MET domain. The AMHS will not perform compression.
- The MET Domain will define procedures for the submission of RQX messages to RODBs.

3.2.3 Definition of the profile

3.2.3.1 Level of service

3.2.3.1.1 A profile based on the exclusive use of the Extended Service shall be used. As a result the IPM-Heading-extensions (IHE) need to be used to carry the ATS priority, Filing time and Optional Heading Information. However, only some of the functional groups which are part of the Extended Service are needed for the profile, namely FTBP and IHE. More specifically, the profile does not require support of AMHS security.

3.2.3.2 Number of body parts

3.2.3.2.1 The IPM body shall contain exactly one body-part which is an FTBP. This is compliant with the following text (EUR AMHS Manual, Appendix B, ref. [3], section 3.3.2, para 2):

“In case of one body-part only, the IPM contains either:

[...]

d) a single file-transfer body part in support of binary data exchange.”

3.2.3.2.2 The body part selection shall be as represented using the following tabular description.

**Table 1: Body part selection for the IWXXM profile
(derived from ICAO Doc 9880 Part II Tables 3-1 and 3-2)**

Ref	Element	Doc 9880 static support (Extended Service) Orig/Rec	Doc 9880 reference	Dynamic action upon generation of IWXXM message	Value and/or comments
Part 2: AMH21/A.1.3 IPM body					
1	ia5-text	O/M		X	
1.2	data	M/M	3.3.3	X	
10	bilaterally-defined	O/M	3.3.5	X	
Part 3: AMH21/A.1.3.1 Extended body part support					
1	ia5-text-body-part	O/M		X	
9	bilaterally-defined-body-part	O/M	3.3.5.1	X	
11	general-text-body-part	M/M	3.3.3 and Part 4, Table 3-1	X	
12	file-transfer-body-part	M/M	3.3.5.1 and 3.3.5.2	G	AMH21/ A.1.3.3
M = mandatory support (static support) O = optional support (static support) or optionally generated (dynamic behaviour) G = generated X = not used					

3.2.3.3 Selection of IPM heading parameters and parameter values

3.2.3.3.1 The IPM Heading parameter selection and values are listed in Table 2 below.

**Table 2: IPM Heading parameters for the IWXXM profile
(derived from ICAO Doc 9880 Part II Table 3-2)**

Ref	Element	Doc 9880 static support (Extended Service) Orig/Rec	Doc 9880 reference	Dynamic action upon generation of IWXXM message	Value and/or comments
Part 1: AMH21/A.1.2 IPM heading fields					
1	this-IPM	M/M	3.1.2.2.1, 3.1.4.2.1 (AMH21 support)	G	Address of the originating OPMET system (MET switch)
2	originator	M/M		G	
3	authorizing-users	O/M		X	
4	primary-recipients	M/M		G	Recipient addresses are populated by the MET switch based on its routing table (EUR Doc 033, ref. [1] section 5.1.4)
5	copy-recipients	M/M		X	
6	blind-copy-recipients	O/M		X	
7	replied-to-IPM	M/M		X	
8	obsoleted-IPMs	O/M		X	

Ref	Element	Doc 9880 static support (Extended Service) Orig/Rec	Doc 9880 reference	Dynamic action upon generation of IWXXM message	Value and/or comments
9	related-IPMs	O/M		X	
10	subject	M/M		G	This field shall carry the TTAaiiCCCCYYGGggBBB part of the filename of FTBP. It is assumed that the subject field is easier to access for human operators in case of retrieval or analysis of transferred messages
11	expiry-time	O/M		X	
12	reply-time	O/M		X	
13	reply-recipients	O/M		X	
14	importance	O/M		X	The receiving UA shall assume that this field takes its default value ("normal")
15	sensitivity	O/M		X	
16	auto-forwarded	O/M		X	
17	extensions	M/M	3.3.4.1	G	
17.6	authorization-time	M/M	3.3.4.2	G	Equivalent to filing time
17.12	originators-reference	M/M	3.3.4.3	X	To avoid confusion with the use of this field in the IHE context (where it is carrying data converted to/from AFTN OHI)
17.13	precedence-policy-identifier	M/M	3.3.4.5, 3.3.4.6 and 3.3.4.7	G	OID value {iso (1) identified-organisation (3) icao (27) atn-amhs (8) parameters (0) amhs-precedence-policy (0)} (see Doc 9880, ref. [5], 3.3.4.7)
Part 4: AMH21/A.1.5 common data types					
1	RecipientSpecifier				
1.2	notification-requests	M/M	3.3.6	X	
1.2.1	rn	M/M	3.3.6	X	IWXXM never use priority SS
1.2.2	nrn	M/M		X	Doc 9880 does not foresee the presence of nrn-request
1.4	recipient-extensions	M/M	3.3.4.1	G	
1.4.3	precedence	M/M	3.3.4.8	G	Equivalent to priority GG: precedence value = 28 (TAF, METAR/SPECI, and also in case of AMD, COR or RTD reports/bulletins) Equivalent to priority FF: precedence value = 57 (AIRMET, SIGMET, VAA, TCA)
2	ORDescriptor				
2.1	formal-name	M1/M1		G	used for originator-address and recipient-addresses
M = mandatory support (static support) M1 = mandatory O/R name minimal support (static support) O = optional support (static support) or optionally generated (dynamic behaviour)					

<i>Ref</i>	<i>Element</i>	<i>Doc 9880 static support (Extended Service) Orig/Rec</i>	<i>Doc 9880 reference</i>	<i>Dynamic action upon generation of IWXXM message</i>	<i>Value and/or comments</i>
G = generated X = not used					

3.2.3.4 Content of body parts

3.2.3.4.1 The parameters composing the FTBP shall be in line with the specification of EUR ATS Messaging Profile, Appendix B to EUR AMHS Manual (ref. [3]), section A.2.4.2, and complemented with the details provided in Table 3 below.

**Table 3: File Transfer parameters for the IWXXM profile
(derived from European ATS Messaging Service Profile, section A.2.4.2)**

<i>Ref</i>	<i>Element</i>	<i>European ATS Messaging Service Profile - static support Orig/Rec</i>	<i>European ATS Messaging Service Profile - reference</i>	<i>Dynamic action upon generation of IWXXM message</i>	<i>Value and/or comments</i>
1	related-stored-file	-			
2	contents-type				
2.1	document-type				
2.1.1	document-type-name	M/M	A.2.4.2.1	G	default OID value: 1.0.8571.5.3 {iso(1) standard(0) 8571(8571) document- type(5) unstructured- binary(3)}
3	environment				
3.1	application-reference				
3.1.1	registered-identifier	O/M	A.2.4.2.2 and A.2.4.2.6	G	OID value: 1.3.27.8.1.2 {iso (1) identified- organisation (3) icao (27) atn-amhs (8) application (1) digital-met (2)}
3.4	user-visible-string	O/M	A.2.4.2.6	G	“Digital MET”
4	compression	-			See para 3.2.3.4.2 below
5	file-attributes				
5.1	pathname				
5.1.1	incomplete-pathname	O/M	A.2.4.2.3	G	bulletin file name as specified in EUR Doc 033, ref. [1], section 5.1.4
5.5	date-and-time-of-last- modification	O/M	A.2.4.2.4	O	

<i>Ref</i>	<i>Element</i>	<i>European ATS Messaging Service Profile - static support</i> <i>Orig/Rec</i>	<i>European ATS Messaging Service Profile - reference</i>	<i>Dynamic action upon generation of IWXXM message</i>	<i>Value and/or comments</i>
5.13	object-size				
5.13.2	actual-values	O/M	A.2.4.2.5	O	
6	extensions	-			
M = mandatory support (static support) O = optional support (static support) or optionally generated (dynamic behaviour) G = generated X = not used					

3.2.3.4.2 Compression of the data to be transferred, if needed, shall be performed in the MET domain before creating the FTBP, as assumed in section 3.2.2.2 above. This avoids using the “compression” field of FTBP, reduces the UA complexity and limits the FTBP functionality to message exchange mechanisms.

3.2.3.4.3 The IWXXM data itself shall be included in the FileTransferData element of the file-transfer-body-part. It should be noted that ISO/IEC 10021-7 / ITU-T X.420 (section 7.4.12) specifies the ASN.1 encoding to be used, and that ISO/IEC ISP 12062-2 (section A.1.3.1) expresses additional recommendations regarding this encoding, which should be “octet-aligned EXTERNAL”. Only one EXTERNAL component should be used.

3.2.3.5 Selection of used P3/P1 envelope parameter values

3.2.3.5.1 The mapping of P2 parameters onto P3 envelope parameters shall be as specified in ICAO Doc 9880 (ref. [5]) and X.420 (ref. [6]).

3.2.3.5.2 IPMs with a precedence value of 28 shall use the priority abstract-value “non-urgent”. IPMs with a precedence value of 57 shall use the priority abstract-value “normal”.

3.2.3.5.3 The encoded-information-types in the P3 submission-envelope shall be limited to the OID value specified for FTBP (see ITU-T X.420:1999 7.4.12.8, 20.4.c and Annex C), i.e. OID {joint-iso-itu-t(2) mhs(6) ipms(1) eit(12) file-transfer(0)}.

3.2.3.6 Relaxed requirements from complete AMHS specification

3.2.3.6.1 Implementers must be aware that due to the “relaxed” status of the requirements above, any of these requirements may be reverted back to a “mandatory” status in a future profile version, as soon as the need for the corresponding missing feature(s) appears operationally. Conformance with the profile implies a commitment to support such evolutions in the profile, which may be considered as “return-to-normal” in terms of AMHS conformance.

3.2.4 Proposed Conformance Tests

3.2.4.1 General description

3.2.4.1.1 This section proposes a list of functional tests that allows verification of conformance of UA implementations dedicated for OPMET IWXXM data exchange. UA conformance testing, as specified in Appendix D-UA, for such implementations needs to be adapted based on the profile specification defined in section 3.2.3.

3.2.4.1.2 The proposed conformance tests are divided to three categories:

- profile specific submission tests;
- profile specific delivery tests; and
- submission and delivery tests according to Appendix D-UA.

3.2.4.1.3 The scope of the profile specific submission and delivery tests is to ensure conformance of UA implementations specifically deployed for the conveyance of OPMET IWXXM data to the respective profile. A test identification scheme of the form WXM_xnn has been used, where x=1 is used for submission tests and x=2 for delivery tests. Wherever applicable, reference to the respective Appendix D-UA test is made.

3.2.4.1.4 Reference to specific UA conformance tests as specified in Appendix D-UA is included in section 3.2.4.4, especially for the reception direction. The scope of these tests is to ensure that UA implementations dedicated for OPMET IWXXM data exchange will not malfunction upon reception of a field or element not defined by the specific profile, but classified as mandatory in the ISPs and thus also mandatory in AMHS.

3.2.4.2 Profile specific submission tests

WXM101	Submission of an IPM including a bulletin consisting of METAR
Test criteria	The test is successful if the UA submits an IPM including a bulletin consisting of METAR according to the profile defined in section 3.2.3.
Scenario description	<p>Submit from the UA under test an IPM including a bulletin consisting of METAR.</p> <p>Check that:</p> <ul style="list-style-type: none"> - the P3 submission-envelope includes the following parameters with the correct values: <ul style="list-style-type: none"> ○ <i>originator-name</i>: OR-name of the originator ○ <i>recipient-name</i>: OR-name of each recipient of the message ○ <i>content-type</i>: 22 ○ <i>encoded-information-types</i>: OID 2.6.1.12.0 ○ <i>priority</i>: non urgent - the following IPM heading fields are present with the correct values: <ul style="list-style-type: none"> ○ <i>originator</i>: address of the originating OPMET system (MET switch) ○ <i>primary-recipients</i>: recipient addresses as populated by the MET switch ○ <i>subject</i>: TTAAiiCCCCYYGGggBBB part of the filename of FTBP

	<ul style="list-style-type: none"> ○ <i>importance</i>: normal, if present ○ <i>authorization-time</i> of the IPM heading extensions field: equivalent to filing time ○ <i>precedence-policy-identifier</i> of the IPM heading extensions field: OID 1.3.27.8.0.0 ○ <i>originators-reference</i> of the IPM heading extensions field: absent - the following elements in the common data types are present with the corresponding values: <ul style="list-style-type: none"> ○ <i>precedence</i>: 28 ○ <i>formal-name</i>: originator address and recipient addresses - the elements <i>rn</i> and <i>nrn</i> in the common data types are absent - the message has exactly one file-transfer-body-part - the parameters composing FTBP are according to section A.2.4.2 of the EUR AMHS Manual Appendix B and the following elements are present with the correct values: <ul style="list-style-type: none"> ○ <i>document-type-name</i>: OID 1.0.8571.5.3 ○ <i>registered-identifier</i>: OID 1.3.27.8.1.2 ○ <i>user-visible-string</i>: 'Digital MET' ○ <i>incomplete-pathname</i>: bulletin file name as specified in section 5.1.4 of EUR Doc 033, for example: A_LAFR31LFPW171500_C_LFPW_20151117150010.xml.[compression_suffix] ○ If generated, check the element <i>date-and-time-of-last-modification</i> ○ If generated, check the element <i>actual-values</i>, the value of which represents the size of the Attachment data in bytes - the elements <i>related-stored-file</i>, <i>compression</i> and <i>extensions</i> of the FTBP parameters are absent - The IWXXM data itself are included in the FileTransferData element of the file-transfer-body-part; the octet-aligned encoding should be used.
Appendix D-UA ref:	CTUA1501, FTBP Capability

WXM102	Submission of IPMs including bulletins of different file size consisting of METAR
Test criteria	The test is successful if the UA submits several IPMs including bulletins of different file size consisting of METAR according to the profile defined in section 3.2.3.
Scenario description	<p>Submit from the UA under test a sequence of several IPMs including each time a bulletin of different file size consisting of METAR.</p> <p>The size of the message should not exceed the limit defined in Appendix B, F.2.4.3</p> <p>Check all parameters listed in test case WXM101, with the corresponding values.</p> <p>If the element <i>actual-values</i> is generated check each time the respective value, which represents the size of the Attachment data in bytes.</p>
Appendix D-UA ref:	CTUA1501, FTBP Capability with different body-part size

WXM103	Submission of an IPM including a bulletin consisting of SPECI or TAF
Test criteria	The test is successful if the UA submits an IPM including a bulletin consisting of SPECI or TAF according to the profile defined in section 3.2.3.
Scenario description	<p>Submit from the UA under test an IPM including a bulletin consisting of SPECI.</p> <p>Check that all parameters and their respective values are in accordance to test case WXM101, except that the value of the element <i>incomplete-pathname</i> is according to the bulletin file name as specified in section 5.1.4 of EUR Doc 033.</p> <p>The test is repeated with the submission of an IPM including bulletin consisting of TAF.</p>
Appendix D-UA ref:	CTUA1501, FTBP Capability

WXM104	Submission of an IPM including a bulletin consisting of AIRMET
Test criteria	The test is successful if the UA submits an IPM including a bulletin consisting of AIRMET according to the profile defined in section 3.2.3.
Scenario description	<p>Submit from the UA under test an IPM including a bulletin consisting of AIRMET.</p> <p>Check that all parameters and their respective values are in accordance to test case WXM101, except that:</p> <ul style="list-style-type: none"> - the <i>priority</i> abstract value of the P3 submission-envelope is normal - the value of the element <i>precedence</i> is 57 - the value of the element <i>incomplete-pathname</i> is according to the bulletin file name as specified in section 5.1.4 of EUR Doc 033.
Appendix D-UA ref:	CTUA1501, FTBP Capability

WXM105	Submission of an IPM including a bulletin consisting of SIGMET or VAA or TCA
Test criteria	The test is successful if the UA submits an IPM including bulletin consisting of SIGMET or VAA or TCA according to the profile defined in section 3.2.3.
Scenario description	<p>Submit from the UA under test an IPM including a bulletin consisting of SIGMET.</p> <p>Check that all parameters and their respective values are in accordance to test case WXM101, except that:</p> <ul style="list-style-type: none"> - the <i>priority</i> abstract value of the P3 submission-envelope is normal - the value of the element <i>precedence</i> is 57 - the value of the element <i>incomplete-pathname</i> is according to the bulletin file name as specified in section 5.1.4 of EUR Doc 033. <p>The test is repeated with the submission of an IPM including bulletin consisting of VAA.</p>

	The test is repeated with the submission of an IPM including bulletin consisting of TCA.
Appendix D-UA ref:	CTUA1501, FTBP Capability

3.2.4.3 Profile specific delivery tests

WXM201	Delivery of an IPM including a bulletin consisting of METAR
Test criteria	The test is successful if an IPM, including a bulletin consisting of METAR, sent by an MTA is received by the UA under test and the parameters specified by the profile defined in section 3.2.3 are properly received.
Scenario description	<p>The MTA sends an IPM including a bulletin consisting of METAR.</p> <p>Check that the UA under test receives the IPM with the following parameters:</p> <ul style="list-style-type: none"> - the message delivery envelope includes the following parameters with the correct values: <ul style="list-style-type: none"> ○ <i>originator-name</i>: OR-name of the originator ○ <i>this-recipient-name</i>: OR-name of the recipient to whom the message is delivered ○ <i>content-type</i>: 22 ○ <i>encoded-information-types</i>: OID 2.6.1.12.0 ○ <i>priority</i>: non urgent ○ <i>message-delivery-identifier</i>: it shall have the same value as the message-submission-identifier supplied to the originator of the message when the message was submitted (X.411, section 8.3.1.1.1.1) ○ <i>message-delivery-time</i>: it contains the time at which delivery occurs and at which the MTS is relinquishing responsibility for the message (X.411, section 8.3.1.1.1.2) - the following IPM heading fields are present with the correct values: <ul style="list-style-type: none"> ○ <i>originator</i> ○ <i>primary-recipients</i> ○ <i>subject</i>: TTAAiiCCCCYYGGgBBB part of the filename of FTBP ○ <i>importance</i>: normal, if present ○ <i>authorization-time</i> of the IPM heading extensions field: equivalent to filing time ○ <i>precedence-policy-identifier</i> of the IPM heading extensions field: OID 1.3.27.8.0.0 ○ <i>originators-reference</i> of the IPM heading extensions field: absent - the following parameters in the common data types are present with the corresponding values: <ul style="list-style-type: none"> ○ <i>precedence</i>: 28 - the elements <i>rn</i> and <i>nrrn</i> in the common data types are absent - the message has exactly one file-transfer-body-part - the parameters composing the FTBP are according to section A.2.4.2 of the EUR AMHS Manual Appendix B and the following elements are present with the correct values: <ul style="list-style-type: none"> ○ <i>document-type-name</i>: OID 1.0.8571.5.3

	<ul style="list-style-type: none"> ○ <i>registered-identifier</i>: OID 1.3.27.8.1.2 ○ <i>user-visible-string</i>: ‘Digital MET’ ○ <i>incomplete-pathname</i>: bulletin file name as specified in section 5.1.4 IWXXM Guidelines, for example: A_LAFR31LFPW171500_C_LFPW_ 20151117150010.xml.[compression_suffix] ○ If generated, check the element <i>date-and-time-of-last-modification</i> ○ If generated, check the element <i>actual-values</i>, the value of which represents the size of the Attachment data in bytes <ul style="list-style-type: none"> - the elements <i>related-stored-file</i>, <i>compression</i> and <i>extensions</i> of the FTBP parameters are absent - The IWXXM data itself are included in the FileTransferData element of the file-transfer-body-part; the octet-aligned encoding should be used.
Appendix D-UA ref:	CTUA1601, FTBP Capability

WXM202	Delivery of IPMs including bulletins of different file size consisting of METAR
Test criteria	The test is successful if several IPMs, including bulletins of different file size consisting of METAR, sent by an MTA are received by the UA under test and the parameters specified by the profile defined in section 3.2.3 are properly received.
Scenario description	<p>The MTA sends a sequence of several IPMs including each time a bulletin of different file size consisting of METAR.</p> <p>Check that the UA under test receives all IPMs and that the parameters described in test case WXM201 are received with the corresponding values.</p> <p>If the element <i>actual-values</i> is present check each time the respective value, which represents the size of the Attachment data in bytes.</p>
Appendix D-UA ref:	CTUA1601, FTBP Capability with different body-part size

WXM203	Delivery of an IPM including a bulletin consisting of SPECI or TAF
Test criteria	The test is successful if an IPM, including a bulletin consisting of SPECI or TAF, sent by an MTA is received by the UA under test and the parameters specified by the profile defined in section 3.2.3 are properly received.
Scenario description	<p>The MTA sends an IPM including a bulletin consisting of SPECI.</p> <p>Check that the UA under test receives the IPM and the parameters described in test case WXM201 are received with the corresponding values, except the element <i>incomplete-pathname</i> which value is according to the bulletin file name as specified in section 5.1.4 of EUR Doc 033.</p> <p>The test is repeated with the delivery of an IPM including a bulletin consisting of TAF.</p>
Appendix D-UA ref:	CTUA1601, FTBP Capability

WXM204	Delivery of an IPM including a bulletin consisting of AIRMET
Test criteria	The test is successful if an IPM, including a bulletin consisting of AIRMET, sent by an MTA is received by the UA under test and the parameters specified by the profile defined in section 3.2.3 are properly received.
Scenario description	The MTA sends an IPM including a bulletin consisting of AIRMET. Check that the UA under test receives the IPM and the parameters described in test case WXM201 are received with the corresponding values, except that: <ul style="list-style-type: none"> - the <i>priority</i> abstract value of the P3 submission-envelope is normal - the value of the element <i>precedence</i> is 57 - the value of the element <i>incomplete-pathname</i> is according to the bulletin file name as specified in section 5.1.4 of EUR Doc 033.
Appendix D-UA ref:	CTUA1601, FTBP Capability

WXM205	Delivery of an IPM including a bulletin consisting of SIGMET or VAA or TCA
Test criteria	The test is successful if an IPM, including a bulletin consisting of SIGMET or VAA or TAF, sent by an MTA is received by the UA under test and the parameters specified by the profile defined in section 3.2.3 are properly received.
Scenario description	The MTA sends an IPM including a bulletin consisting of SIGMET. Check that the UA under test receives the IPM and the parameters described in test case WXM201 are received with the corresponding values, except that: <ul style="list-style-type: none"> - the <i>priority</i> abstract value of the P3 submission-envelope is normal - the value of the element <i>precedence</i> is 57 - the value of the element <i>incomplete-pathname</i> is according to the bulletin file name as specified in section 5.1.4 of EUR Doc 033. <p>The test is repeated with the delivery of an IPM including a bulletin consisting of VAA.</p> <p>The test is repeated with the delivery of an IPM including a bulletin consisting of TCA.</p>
Appendix D-UA ref:	CTUA1601, FTBP Capability

3.2.4.4 Submission and delivery tests according to Appendix D-UA

3.2.4.4.1 The scope of the tests included in the following list is to ensure that UAs implemented for the sake of the exchange of OPMET IWXXM data will not malfunction upon reception of AMHS messages, fields or elements according to the standards but not defined by the profile specified in section 3.2.3. The main objective is to realize the behaviour of these specific UA implementations upon reception of such messages, fields or elements.

3.2.4.4.2 The execution of the delivery tests defined in Appendix D-UA is encouraged. However if this is not possible the following test list is suggested.

Basic Delivery Operations (A2)	
CTUA201	Deliver an IPM to the IUT – basic capability (A2)
CTUA203	Deliver an IPM containing optional-heading-information in the ATS-message-header
CTUA204	Deliver an IPM containing different kinds of recipient addresses
CTUA206	Deliver an IPM with invalid originator address similar to CAAS
CTUA207	Deliver an IPM with invalid originator address similar to XF

Specific Delivery Operations	
CTUA401	Deliver a non-delivery report (NDR) to an AMHS user

Enhanced Delivery UA Capability	
CTUA601	Deliver an IPM with the implemented capability of one body-part
CTUA602	Deliver an IPM with the implemented capability of two body-parts

Delivery Operations (A2-IHE)	
CTUA1201	Deliver an IPM with IHE to the IUT – basic capability (A2-IHE)
CTUA1203	Deliver an IPM with IHE, containing optional heading information
CTUA1204	Deliver an IPM with IHE, containing different kinds of recipient address

Specific Submission Operations with IHE	
CTUA1303	Checking of default envelope elements (flag setting) in submitted IPMs with IHE

Specific Delivery Operations with IHE	
CTUA1401	Deliver a non-delivery report (NDR) to an AMHS user

Enhanced Delivery UA Capability with IHE	
CTUA1602	Deliver an IPM with IHE with the implemented capability of two body-parts

End of Appendix H