

CEC TEN-T ATM Task UK/96/94

ACCESS

ATN Compliant Communications
European Strategy Study

ATSMHS Interoperability Test Schedule

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The work described herein has been undertaken by the author(s) as part of the European Community ACCESS project, within the framework of the TEN-T programme, with a financial contribution by the European Commission. The following companies and administrations are involved in the project: National Air Traffic Services (NATS), Deutsche Flugsicherung (DFS) and Service Technique de la Navigation Aerienne (STNA). The ACCESS final report has been synthesized from the original work packages developed during the ACCESS project.

EXECUTIVE SUMMARY

The "ATN Compliant Communication European Strategy Study" (ACCESS) project aims at defining the initial architecture of the ATN in Europe (i.e. selection of the initial applications, definition of the initial network topology, definition of the routing organisation and addressing plan, etc.) and participating in the ATSMHS interoperability testing activities set up in Europe.

The document concerns the ATSMHS interoperability testing.

Its objectives are to plan the execution and to estimate the duration of the tests which have been clarified and described in the Work Package 262: "ATSMHS Interoperability Tests Specification".

This document contains the deliverable of work package 263:

The sequence given to perform the tests has been established to facilitate the linking, to minimise manipulations so that to avoid as much as possible configuration errors and finally to reduce the global test performance duration.

The test duration estimation concerns only the test suite execution. The time dedicated to elaborate the tests is not considered in this document.

To establish the test suite execution duration some hypothesis have been taken into account. The conclusion rises that to perform the entirety of tests it is needed up to 13 days for 2 people, one in each site.

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1. Introduction

1.1 Project Background

The "ATN Compliant Communications European Strategy Study" (ACCESS) project that is being run under the European Commission's programme for financial aid in the field of Trans-European Transport Network (TEN-T), ATM Task UK/96/94, aims at defining the initial architecture of the ATN in Europe (i.e. selection of the initial applications, definition of the initial network topology, definition of the routing organisation and addressing plan, etc.) and participating in the ATSMHS interoperability testing activities set up in Europe.

1.2 Scope

1.2.1 Generality

This document is part of a set of documents in relation with the ATSMHS interoperability testing activities.

This document derives directly from the WP 262, which describes and specifies the ATSMHS interoperability tests. Each test is intended to one of 5 configurations:

- Two configurations involving the AMHS Gateway to be tested in combination with either an other AMHS Gateway (configuration 1) or an ATS Message Server (configuration 2). This set of tests corresponds to an amount of 25 scenarios (cf. WP 261). In this case the AMHS Gateway to be tested represents the IUT (Implementation Under Test).
- Three configurations involving the ATS Message Server to be tested, an AMHS Gateway, an ATS Message Store and an ATS Message User Agent. This whole set of tests corresponds to the remaining 25 scenarios. In this case the ATS Message Server to be tested represents the IUT.

The main goals of the document is on one side to classify the tests in sequence to make easier the test execution as well as to reduce the global test duration and on the other side to assess each test duration.

Even if the tests are Interoperability tests and not Conformance tests in reference to the OSI Standard, it is however meaningful to use the OSI terminology; thus the "test classification in sequence" in this document is named: the "test suite".

1.2.2 Test suite

To establish the test suite, the following considerations are taken into account and listed hierarchically:

- The Implementation Under Test type (the Gateway or the Message Server),
- the configuration used to perform a test (one configuration among five),
- in a given configuration, the initiator of the communication (the Local site or the Remote site)
- If any, the test(s) directly in relation with a specific test to be "classified" (e.g. Test leading to a Non Delivery Report).

Practically, in reference to the items immediately above, in order to minimise the number of re-configurations and the associated workload too, it has been considered thus some basic principles such as:

- The gathering of the whole of the tests referring to a configuration for a given Implementation Under Test. This permits at least to avoid hardware reconfigurations.
- The gathering, in a given configuration, of the whole of the tests applying to a communication direction.
- And for a given Implementation Under Test, all the tests referring to the configuration of a particular site (local or remote) have to be done in sequence.

1.2.3 Test duration estimation

The duration of tests is closely related to the type of the test itself. It depends on:

- the configuration that have to be set up,
- the complexity of the “manual” activities involved (e.g. Connections and de-connections cables),
- the number and the type of parameters to be checked,
- the tool automaticity level used for the test “implementation” or installation.

Note:

The programs or scripts essential to get benefits of test tools are not considered either in terms of contents or in terms of duration. It not an objective of this document.

1.2.4 Intended audience

The intended audience of this document is:

- On one side the people who will be in charge of specifying tests tools and,
- On the other side the people who will be in charge of performing the ATSMHS Interoperability tests.

1.3 Document organisation

The document is divided into 3 sections:

- The first one being the current section (Introduction),
- The second one corresponds to the test duration estimation explanation and justification.
- The third one corresponds to the test suite schedule,

1.4 Document Background

1.4.1 Tests identifications

Each test is identified by a reference with the following format.

The reference numbers used for each test are based on the reference numbers attributed for the Interoperability Operating Scenarios. Thus each reference test has 5 fields:

- OSC - Operating Scenario
- XX - identifies the type of IUT - GW for a Gateway, MS for a Message Server and UA for a User Agent
- nn - is a serial number which qualifies the Operating Scenario reference (Range from 1 to 50)
- CT - C for Configuration T for Test
- ct - serial number referencing the test: « c » corresponding to the type of configuration (Range from 1 to 5) ; « t » referencing the test itself.

1.4.2 Different types of configurations

This paragraph reminds the 5 different types of configurations defined in the document ATSMHS Interoperability Operating Scenarios corresponding to the serial number “c”.

1.4.2.1 Configurations applying to the Gateway as an IUT

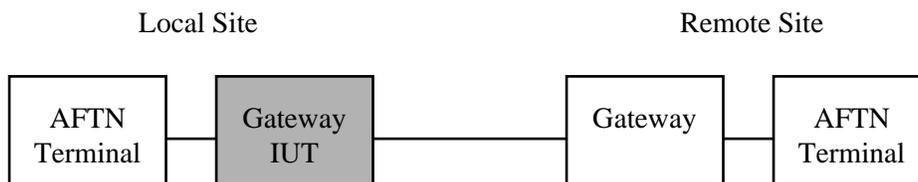


Figure 1: Configuration 1 - gateway to gateway

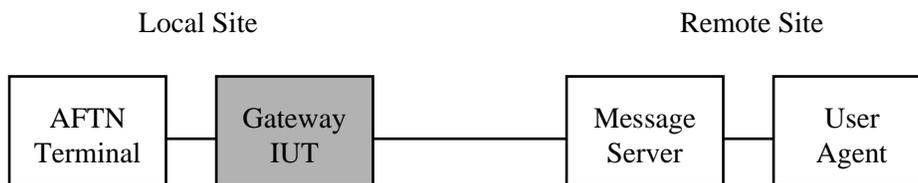


Figure 2: Configuration 2 - gateway to message server

1.4.2.2 Configurations applying to the ATS Message Server as an IUT

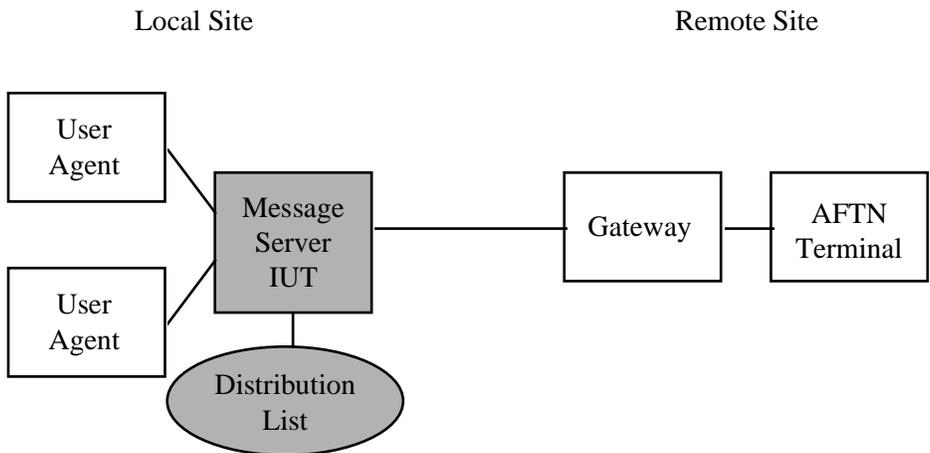


Figure 3: Configuration 3 - message server to gateway

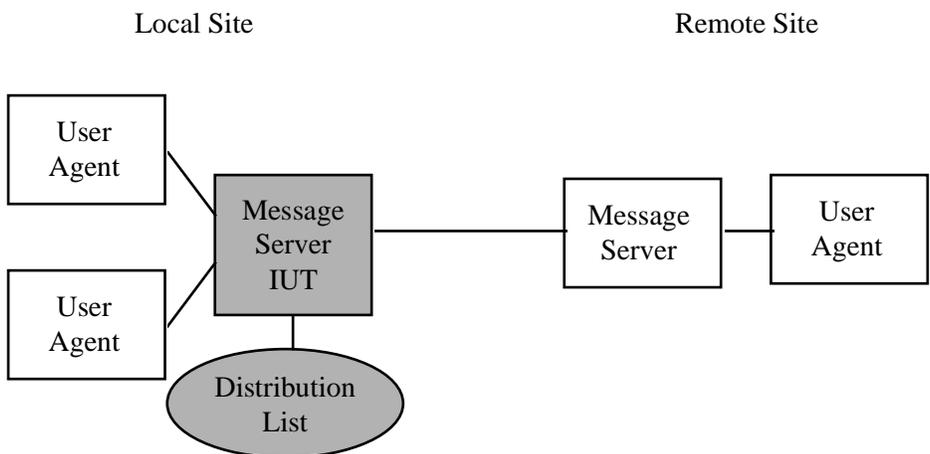


Figure 4: Configuration 4 - message server to message server



Figure 5: Configuration 5 - user agent to message server

1.4.3 Notations

In the definition of tests above:

- For the configurations 1 and 3: in the Remote AFTN site the “Gateway” is also named the “Auxiliary Gateway”,
- For the configuration 2 and 4: in the Remote AMHS site the Message Server is also named the “ATS Message Server” in reference to the ATSMHS SARPs.

1.5 References

Reference	Title
[A260]	WP260 Define Trials Objectives
[A261]	WP261 Define Operating Scenarios
[A262]	WP262 Produce Test Specification
[A263]	WP263 Produce Test Schedule
[A264]	WP264 Define Interoperability Test Tools
[A265]	WP265 Configure Trials Scenario
[A266]	WP266 Conduct ATSMHS Trials
[A270]	WP270 Conformance Test Requirements
[A271]	WP271 Conformance Test Specification
[ICAO1]	ICAO, Aeronautical Telecommunications Network (ATN), Standards and Recommended Practices (SARPs), Sub-Volume 3, Ground-Ground Applications, Version 2.2, January 1998
[ICAO2]	Guidance Material on [ICAO1]
[ICA16]	ATSMHS SARPs
[ICA17]	ATSMHS Guidance Material

1.6 Glossary

ACCESS	ATN Compliant Communications European Strategy Study
AFTN	Aeronautical Fixed Telecommunications Network
AMHS	ATS Message Handling System
ATN	Aeronautical Telecommunications Network
ATS	Air Traffic Services
ATSMHS	Air Traffic Services Message Handling Services
IPM	Interpersonal Message
IUT	Implementation Under Test
MS	Message Server
UA	User Agent

2. Test duration estimation

This current section focus on justifying and explaining all the aspects dealing with the test duration estimation.

One of the goals of the "test duration estimation" is to forecast with a certain degree of confidence the overall test execution duration. The final conclusion of this section will produce a set of figures intended to enable the test performers to achieve a trustworthy opinion of the time they should spend and consequently the cost of the operation.

The result is used in the next section where each test of the test suite has been given a "duration estimation". Before considering the activity aiming at producing figures it is necessary to precise the process leading to get this practical result.

The reliability of the result is closely linked to some hypothesis listed below.

The framework created by these hypothesis bring about to bear in mind that figures are set up with a certain degree of confidence which can be translated into a margin of error.

Finally, all things considered, figures are provided.

2.1 Hypothesis

The following hypothesis may have, at least, to be considered to insure the validity of the estimation.

- The first hypothesis recommends the use of automatic test tools. The characteristics and the benefits of interoperability test tools for the AMHS interoperability testing are presented in the ACCESS project document: WP264. The database comprised in such test tools is of a great help to record in sequence, meeting the test schedule scheme, all the interoperability tests as well as to enable to separate the two different activities being the test "program" and the test "execution".
- The second hypothesis is closed and in a narrow relationship with the previous one. It is the number of equipment test tools, which have to be involved in the interoperability testing activity. As in each interoperability scenario two sites are at stake and for each scenario a test may be initiated either from the local site or from the remote site; two interoperability test tools sound to be a minimum and a reasonable number.
- The third hypothesis lies in the fact that despite the use of automatic interoperability test tools, the monitoring of the execution of each test must remain manual. The test programs must be done in this way. Thus the checking is achieved test after test and in case it happens a test failure, the execution of the test suite can just re-start after this test failure.
- The forth hypothesis related to the previous one concerns the way to execute each test and overall the way to insure the transition process between each test. This way has to be the easiest and the fastest one. For instance a button click remains a suitable manual operation to go through the test suite enabling to keep the monitoring of the process.
- The fifth hypothesis concerns the "correct" test suite execution. It is assumed that no test failure happen. Thus when a test fails it is required to execute the following one. The consideration of a different test status regarding the positive or negative execution result might lead to examine another test schedule beginning at this point. This matter is not a subject of this document.
- The sixth hypothesis assumes that the two sites involved in a configuration (the local site and the remote site are geographically remote so that:
 - the test execution behaviour remains as close as possible to an operational configuration,
 - the margin of error is limited.

2.2 Margin of error

The margin of error is a consequence of approximations used. This, have to be analysed mainly to be aware of the potential consequences and the degree of reliability of the final results.

The margin of error does not involve errors that might be originated by some hypothesis listed above that are not met.

For instance: if the hypothesis of the happening of a test failure, occurring during the whole test suite execution, is not met.

Otherwise the margin of error may be originated by:

- The capacity of the AMHS network support (in term of the throughput of links or trunks).
- Unexpected failures.
- Difficulties to analyse the results as it depends on the type or the “quality” of the Human Machine Interface used to display.
- The test tool configurations.

2.3 Duration estimation

The test suite can be divided into 4 categories of tests:

- Those aiming at exchanging a few number of small sized messages.
- Those aiming at testing the throughput.
- Those aiming at testing the AMHS system behaviour in case of a network failure.
- Those implying the sending of a large number of messages or of a long sized message.

Each test execution process can be broken down into different steps the duration of which can be estimated.

The 4 following steps can be distinguished:

- 1 the interval between the previous and the current test,
- 2 the manual test triggering off,
- 3 the different operation processing implied by the crossing of the various AMHS components,
- 4 the checking and the analyse of the final test results comprising both the verification of messages received and logging files.

The 4 following paragraphs focus on the test duration estimation for each test type.

2.3.1 Exchange of a few number of small sized messages

It represents the large majority of tests.

- The major impact is due to the last two items of the step list above
The exchange of this type of messages is different from a file transfer in term of time transfer. It is thus reasonable to fix the duration to process messages from the sender to its recipient(s) to the order of a few minutes (3 minutes).
- The duration value of the final test result checking is set up to 4 minutes for each test (at first sight it is a reasonable assessment to check a logging file and message(s) received).
- The first two steps (interval between tests and test starting) are given a value of the order of a few minutes (2 minutes).
- Ultimately the conclusion raises that a value of 5 minutes dedicated to each test bringing about the processing of several AMHS messages is satisfying according to the set of hypothesis and approximations listed above.

- The spreadsheet below summarises all the items above.

Step	Duration (minute)	Margin of error (minute)
Interval between the previous and the current test.	4	± 2
Manual test triggering off.	1	± 1
Processing of the message between the sender and the recipient(s).	10	± 2
Checking and analyse of the final test result.	15	± 2
Total for a test.	30 ± 7 minutes *	

2.3.2 Test of the throughput

Each test concerning the throughput lasts 1-hour in order to verify if the IUT is able to handle a given traffic load during a peak hour.

The step intended to verify the results is therefore “longer” than for all other types of tests.

Step	Duration (minute)	Margin of error (minute)
Interval between the previous and the current test.	10	± 2
Manual test triggering off.	1	± 1
Processing of the message between the sender and the recipient(s).	60	± 2
Checking and analyse of the final test result.	20	± 5
Total for a test.	90 ± 10 minutes*	

*Note:

The margin of error is lower than for all other categories of tests thanks to the large part of the test dedicated to the automatic message processing which by principle minimises the margin of error.

2.3.3 Test of network failures

In case of a test failure the 3 following items have a particular consequence on the total test duration:

- The test achievement needs specific hardware or software manipulations (de-connection and connection cables or put network links out of order)
- Before performing the failure, time is needed to transfer messages,
- After the end of the failure, time is needed for the system to recover before examining the results.

Step	Duration (minute)	Margin of error (minute)
Interval between the previous and the current test.	4	± 2
Manual test triggering off.	1	± 1
Transfer of several messages before achieving the failure.	5	± 1
Hardware or software manipulations	30	± 5
System recovery and continuation to transfer messages after the failure.	5	± 1
Checking and analyse of the final test result.	15	± 5
Total for a test.	60 ± 15 minutes	

2.3.4 Tests concerning large sized messages

It corresponds to a few numbers of tests. It mainly deals with tests intended to check if a long sized message sent by an X.400 terminal can be correctly split to be conveyed in the AFTN domain through a gateway.

Step	Duration (minute)	Margin of error (minute)
Interval between the previous and the current test.	4	± 2
Manual test triggering off.	1	± 1
Processing of the messages between the sender and the recipient(s).	30	± 5
Checking and analyse of the final test result.	15	± 4
Total for a test.	50 ± 12 minutes	

2.4 Interpretation of results

Finally, the total test suite execution is foreseen to last 43 hours.

The margin of error is estimated to be about 13 hours.

Therefore the rate of error is about 30 %.

As according to organisational matters concerning the work organisation:

- the number of hours of work per day may be different,
- as well as breaks!

Thus, practically, the following spreadsheet schedules the number of days to be spent pending the real number of work hour per day.

Number of hours of work per day.	Total nominal value of the test suite duration.	Total maximum value of the test suite duration.
5	8 days and 3 hours	11 days and 1 hour
6	7 days and 1 hour	9 days and 2 hours
7	6 days and 1 hour	8 days

It is foreseeable that some tests will fail, therefore to include this possibility 20 % is added to the previous figures.

The final result becomes:

Number of hours of work per day.	Total nominal value of the test suite duration.	Total maximum value of the test suite duration.
5	10 days and 2 hours	13 days
6	8 days and 4 hour	10 days and 5 hours
7	7 days and 3 hour	9 days and 2 hours

3. Test suite schedule

3.1 The Gateway as an Implementation Under Test

3.1.1 Configuration 1: Local site, initiator of the communication

N°	Test reference	Test description	Duration Forecast (min)
1	OSC-GW-01-CT-11	Send a message from the Local AFTN site with a DD priority to the Remote AFTN site.	30
2	OSC-GW-01-CT-12	Send a message from the Local AFTN site with a FF priority to the Remote AFTN site.	30
3	OSC-GW-02-CT-11	Send a message from the Local AFTN site with GG priority to several AFTN addressees with one among them unknown in the Remote Gateway (Auxiliary Gateway).	30
4	OSC-GW-11-CT-11	Send a « Non Delivery Report » (AFTN Unknown Addressee Service Message converted into a NDR) from the Remote AFTN site to the Local AFTN Site.	30
5	OSC-GW-02-CT-12	Send a message from the local AFTN site with KK priority to several AFTN addressees with one among them unknown in the Remote Gateway (Auxiliary Gateway).	30
6	OSC-GW-11-CT-11	Send a « Non Delivery Report » (AFTN Unknown Addressee Service Message converted into a NDR) from the Remote AFTN site to the Local AFTN Site.	30
7	OSC-GW-03-CT-11	Send a message from the Local AFTN site to the Remote AFTN site with SS priority.	30
8	OSC-GW-09-CT-11	Send an AFTN Acknowledgement Service Message from the Remote AFTN site to the Local AFTN site.	30
9	OSC-GW-13-CT-11	Send a large number of messages from the Local AFTN site to the Remote AFTN site.	90
10	OSC-GW-14-CT-11	Send messages from the Local AFTN site to the Remote AFTN site when a transient network failure occurs between the IUT Gateway and the Auxiliary Gateway.	50
11	OSC-GW-15-CT-11	Send a message from the Local AFTN site to the unavailable Remote AFTN site.	30
12	OSC-GW-16-CT-11	Send an AFTN message with an unknown addressee from the AFTN Local site to the AFTN Remote site.	30
13	OSC-GW-17-CT-11	Send an AFTN message with an unknown Origin to the IUT Gateway (Intended to the AFTN Remote site).	30
Total duration time :			7 h 50 min

3.1.2 Configuration 1: Remote site, initiator of the communication

N°	Test reference	Test description	Duration Forecast (min)
14	OSC-GW-04-CT-11	Send a message from the Remote AFTN site with DD priority to several AFTN addressees with one among them unknown in the Local AFTN site.	30
15	OSC-GW-12-CT-11	Send an AFTN Unknown Addressee Service Message from the Local AFTN site to the Remote AFTN site.	30
16	OSC-GW-04-CT-12	Send a message from the Remote AFTN site with FF priority to several AFTN addressees with one among them unknown in the Local AFTN site.	30
17	OSC-GW-12-CT-11	Send an AFTN Unknown Addressee Service Message from the Local AFTN site to the Remote AFTN site.	30
18	OSC-GW-05-CT-11	Send a message from the Remote AFTN site with SS priority to an AFTN destination in the Local AFTN site.	30
19	OSC-GW-10-CT-11	Send an AFTN Acknowledgement Service Message from the Local AFTN site to the Remote AFTN site.	30
20	OSC-GW-13-CT-12	Send a large number of messages from the Remote AFTN site to the Local AFTN site.	90
21	OSC-GW-14-CT-12	Send messages from the Remote AFTN site to the Local AFTN site when a transient network failure occurs between the IUT Gateway and the Auxiliary Gateway.	60
22	OSC-GW-18-CT-11	Send an AFTN message from the Remote site containing one valid recipient address and one recipient address that cannot be translated by the IUT Gateway.	30
23	OSC-GW-19-CT-11	Send an AFTN message from the Remote AFTN site containing an Origin address that cannot be translated by the IUT Gateway.	30
Total estimation duration			7 h

3.1.3 Configuration 2: Local site, initiator of the communication

N°	Test reference	Tests description	Duration Forecast (min)
24	OSC-GW-01-CT-21	Send a message from the Local AFTN site with a DD priority to the Remote AMHS site.	30
25	OSC-GW-01-CT-22	Send a message from the Local AFTN site with a FF priority to the Remote AMHS site.	30
26	OSC-GW-02-CT-21	Send a message from the Local AFTN site with GG priority, to several AMHS recipients with one among them unknown by the Message Server.	30
27	OSC-GW-11-CT-21	Send a « Non Delivery Report » from the Remote AMHS site to the Local AFTN site.	30
28	OSC-GW-02-CT-22	Send a message from the Local AFTN with KK priority, to several AMHS recipients with one among them unknown by the Message Server.	30
29	OSC-GW-11-CT-21	Send a « Non Delivery Report » from the Remote AMHS site to the Local AFTN site.	30
30	OSC-GW-03-CT-22	Send a message from the Local AFTN site to the Remote AMHS site with SS priority.	30
31	OSC-GW-09-CT-21	Send an AMHS Receipt Notification from the Remote AMHS site to the Local AFTN site.	30
32	OSC-GW-13-CT-21	Send a large number of messages from the Local AFTN site to the Remote AMHS site.	90
33	OSC-GW-14-CT-21	Send messages from the Local AFTN site to the Remote AMHS site when a transient network failure occurs between the IUT Gateway and the ATS Message Server.	30
34	OSC-GW-15-CT-21	Send a message from the Local AFTN site to the unavailable Remote AMHS site.	30
35	OSC-GW-16-CT-21	Send an AFTN message with an unknown addressee from the AFTN Local site to the AMHS Remote site.	30
36	OSC-GW-17-CT-21	Send an AFTN message with an unknown Origin to the IUT Gateway (Intended to the AMHS Remote site).	30
Total estimation duration			7 h 30

3.1.4 Configuration 2: Remote site, initiator of the communication

N°	Test reference	Tests description	Duration Forecast (min)
37	OSC-GW-04-CT-21	Send a message from the Remote AMHS site with DD priority to several AFTN addressees with one among them unknown in the Local AFTN site.	30
38	OSC-GW-12-CT-21	Send an AFTN Unknown Addressee Service Message from the Local AFTN site to the Remote AMHS site.	30
39	OSC-GW-04-CT-22	Send a message from the Remote AMHS site with FF priority to several AFTN addressees with one among them unknown in the Local AFTN site.	30
40	OSC-GW-12-CT-21	Send an AFTN Unknown Addressee Service Message from the Local AFTN site to the Remote AMHS site.	30
41	OSC-GW-05-CT-21	Send a message from the Remote AMHS site with SS priority to an AFTN destination in the Local AFTN site.	30
42	OSC-GW-10-CT-21	Send an AFTN Acknowledgement Service Message from the Local AFTN site to the Remote AMHS site.	30
43	OSC-GW-06-CT-21	Send a message from the Remote AMHS site with 4500 characters in the ATS-Message-Text to an AFTN destination.	50
44	OSC-GW-07-CT-21	Send a message from the Remote AMHS site containing 50 recipients to the Local AFTN site.	50
45	OSC-GW-08-CT-21	Send a message of 100K characters containing 50 recipients from the Remote AMHS site to the Local AFTN site.	50
46	OSC-GW-13-CT-22	Send a large number of messages from the Remote AMHS site to the Local AFTN site.	90
47	OSC-GW-14-CT-22	Send messages from the Remote AMHS site to the Local AFTN site when a transient network failure occurs between the ATS message server and the IUT Gateway.	60
48	OSC-GW-18-CT-21	Send an AMHS message from the Remote AMHS site containing one valid recipient address and one recipient address that cannot be translated by the IUT Gateway.	30
49	OSC-GW-19-CT-21	Send an AMHS message from the Remote AMHS site containing an Originator address that cannot be translated by the IUT Gateway.	30
50	OSC-GW-20-CT-21	Send an AMHS message with a non IPM content type from the Remote AMHS to an AFTN Destination mapped onto an AMHS Recipient with the <i>responsability</i> element of the <i>per-</i>	30

		<i>recipient-indicators</i> containing the abstract-value « responsible ».	
51	OSC-GW-21-CT-21	Send an AMHS message from the Remote AMHS site with a non-AFTN compatible Body part to an AFTN Destination.	30
52	OSC-GW-22-CT-21	Send an AMHS message from the Remote AMHS site containing five IA5 text Body parts to an AFTN Destination.	30
53	OSC-GW-23-CT-21	Send an AMHS message from the AMHS Remote site without ATS-Message-Header to an AFTN destination.	30
54	OSC-GW-24-CT-21	Send an AMHS message with a non AFTN compatible Body part without the ATS-Message-Priority from the Remote AMHS site to an AFTN destination.	30
55	OSC-GW-24-CT-22	Send an AMHS message with a non AFTN compatible Body part without the ATS-Message-Filing-Time from the Remote AMHS site to an AFTN Destination.	30
56	OSC-GW-25-CT-21	Send an AMHS message with conversion-with-loss-prohibited set to "prohibited" and containing a semicolon (;) in the message text from the Remote AMHS site to an AFTN Destination.	30
Total estimation duration			11 h 30 min

3.2 The Message Server as an Implementation Under Test

3.2.1 Configuration 3, Local site, initiator of the communication

N°	Test reference	Test description	Test duration forecast (min)
57	OSC-MS-01-CT-31	Send a valid AMHS message from the Local site to a valid AFTN addressee in the Remote site.	30
58	OSC-MS-03-CT-31	Send a probe message from the local site with: - the abstract-value of the <i>content-type</i> being « interpersonal-messaging-1984 » or being « interpersonal-messaging 1988 » - the abstract-value of the current <i>encoded-information-types</i> neither being « ia5-text » nor extended « ia5-text » to a valid AFTN Recipient in the Remote site	30
59	OSC-MS-03-CT-32	Send a probe message from the local site with: - the abstract-value of the <i>content-type</i> being « interpersonal-messaging-1984 » or being « interpersonal-messaging 1988 » - the abstract-value of the current <i>encoded-information-types</i> being « ia5-text » or being extended « ia5-text » - the abstract-value of the <i>implicit-conversion-prohibited</i> in the <i>per-message-indicator</i> being « prohibited » to a valid AFTN Recipient in the Remote site	30
60	OSC-MS-03-CT-33	Send a probe message from the local site with: - the abstract-value of the <i>content-type</i> being « interpersonal-messaging-1984 » or being « interpersonal-messaging 1988 » - the abstract-value of the current <i>encoded-information-types</i> being « ia5-text » or being extended « ia5-text » - the abstract-value of the <i>implicit-conversion-prohibited</i> in the <i>per-message-indicator</i> being « prohibited » the element <i>content-length</i> exceeds the conversion capability of the AMHS/AFTN Gateway to a valid AFTN Recipient in the Remote site	30
61	OSC-MS-03-CT-34	Send a probe message from the local site with: the abstract-value of the <i>content-type</i> neither being « interpersonal-messaging-1984 » nor being « interpersonal-messaging 1988 » to a valid AFTN Recipient in the Remote site.	30
62	OSC-MS-06-CT-31	Send an AMHS message from the Local site requesting Delivery Reports to a valid AFTN addressee and an unknown AFTN Addressee both in the Remote site.	30

63	OSC-MS-07-CT-31	Send a large number of messages from the Local AMHS site to the Remote AFTN site.	90
64	OSC-MS-08-CT-31	Send an AMHS message from the Local site to a Local Distribution List containing one Local AMHS Recipient and an AFTN addressee in the AFTN Remote site with the AFTN Priority set to FF.	30
65	OSC-MS-24-CT-31	Send AMHS messages from the Local site to the AFTN Remote site when a transient network failure occurs.	60
66	OSC-MS-25-CT-31	Send an AMHS message from the Local site to an AFTN addressee which is initially unavailable.	30
Total estimation duration			6 h 30

3.2.2 Configuration 3, Remote site, initiator of the communication

N°	Test reference	Test description	Test duration forecast (min)
67	OSC-MS-02-CT-31	Send a valid AFTN message from the Remote site to a valid AMHS Recipient in the Local site.	30
68	OSC-MS-07-CT-32	Send a large number of messages from the Remote AFTN site to the Local AMHS site.	90
69	OSC-MS-09-CT-31	Send an AFTN message from the Remote site to a Distribution List on the Local site containing one Local AMHS Recipient and an AFTN addressee in the AFTN Remote site with the AFTN Priority set to FF.	30
Total estimation duration			2 h 30 min

3.2.3 Configuration 4 , Local site, initiator of the communication

N°	Test reference	Test description	Test duration forecast (min)
70	OSC-MS-01-CT-41	Send a valid AMHS message from the Local site to a valid Recipient of the AMHS Remote site.	30
71	OSC-MS-03-CT-41	Send a probe message from the local site to a valid AMHS Recipient of the Remote site.	30
72	OSC-MS-06-CT-41	Send an AMHS message from the Local site requesting Delivery Reports to a valid AMHS Recipient and an unknown AMHS Recipient both in the Remote site.	30
73	OSC-MS-07-CT-41	Send a large number of messages from the Local AMHS site to the Remote AMHS site.	90

74	OSC-MS-08-CT-41	Send an AMHS message from the Local site to a Local Distribution List containing one Local AMHS Recipient and an AMHS Remote Recipient.	30
75	OSC-MS-08-CT-42	Send an AMHS message requesting Delivery Reports from the Local site to a Local Distribution List containing one Local AMHS Recipient, an AMHS Remote Recipient and an unknown AMHS Remote Recipient.	30
76	OSC-MS-24-CT-41	Send AMHS messages from the Local site to the AMHS Remote site when a transient network failure occurs.	30
77	OSC-MS-25-CT-41	Send an AMHS message from the Local site to the AMHS Remote Recipient which is initially unavailable.	30
Total estimation duration			5 h

3.2.4 Configuration 4 , Remote site, initiator of the communication

N°	Test reference	Test description	Test duration forecast (min)
78	OSC-MS-02-CT-41	Send a valid AMHS message from the Remote site to a valid AMHS Recipient of the Local site.	30
79	OSC-MS-04-CT-41	Send a probe message from the Remote site to a valid AMHS Recipient of the Local site.	30
80	OSC-MS-05-CT-41	Send an AMHS message from the Remote site requesting Delivery Reports to a valid AMHS Recipient and an unknown Recipient both of the Local site.	30
81	OSC-MS-07-CT-42	Send a large number of messages from the Remote AMHS site to the Local AMHS site.	90
82	OSC-MS-09-CT-41	Send an AMHS message from the Remote site to a Distribution List on the Local site containing one Local AMHS Recipient and an AMHS Recipient in the AMHS Remote site.	30
Total estimation duration			3 h 30

3.2.5 Configuration 5

N°	Test reference	Test description	Test duration forecast (min)
83	OSC-MS-10-CT-51	Send an AMHS message from a User Agent through the Message Server to a valid AMHS Recipient.	30
84	OSC-MS-12-CT-51	An AMHS Message Delivery to a valid AMHS Remote Recipient.	30
85	OSC-MS-13-CT-51	Send an AMHS message from a the Local User Agent to a valid AMHS Recipient leading to the delivery of a Delivery Report to the Local User Agent by the Message Server.	30
86	OSC-MS-14-CT-51	Send an AMHS message from a Local User Agent to an invalid (unknown) AMHS Recipient leading to the delivery of a Non Delivery Report to the Local User Agent.	30
87	OSC-MS-11-CT-51	Send a probe message from a User Agent through the Message Server to a valid AMHS Recipient.	30
88	OSC-MS-11-CT-51	User Agent Bind to the Message Store with User Password and subsequent Unbind.	30
89	OSC-MS-15-CT-52	User Agent Bind to the Message Store without User Password and subsequent Unbind.	30
90	OSC-MS-11-CT-53	User Agent Bind to the Message Store using an Invalid User Password and subsequent Unbind.	30
91	OSC-MS-15-CT-54	User Agent issues MS-Register operation changing User Password.	30
92	OSC-MS-16-CT-51	Send a request by the AMHS User Agent to the Message Server Message Store to retrieve a summary of the numbers and types of entries in the user's Message Store.	30
93	OSC-MS-17-CT-51	Send a request by the AMHS User Agent to the Message Server Message Store to retrieve a list of messages in the user's Message Store by specifying selected criteria and the message attributes to be displayed.	30
94	OSC-MS-17-CT-52	Send a request by the AMHS User Agent to the Message Server Message Store to retrieve a list of messages in the user's Message Store by specifying neither criteria nor message attributes to be displayed.	30
95	OSC-MS-18-CT-51	Send a request by the AMHS User Agent to the Message Server Message Store to fetch small messages (< 2K each) which have been submitted before by specifying selected criteria and message attributes to be returned.	30

96	OSC-MS-18-CT-52	Send a request by the AMHS User Agent to the Message Server Message Store to fetch one large « message » (more than 1 Mo) which have been submitted before.	30
97	OSC-MS-18-CT-53	Send a request by the AMHS User Agent to the Message Server Message Store to fetch one large « message » (with multiple Body parts) which have been submitted before.	30
98	OSC-MS-19-CT-51	The User Agent deletes an IPM from the Message Store before the content has been fetched.	30
99	OSC-MS-19-CT-52	The User Agent deletes an IPM from the Message Store where Receipt Notification is requested before the content has been fetched.	30
100	OSC-MS-20-CT-51	Send a message by the AMHS User Agent to a Distribution List causing a Non-Delivery Report failure due to « DL Expansion Prohibited »	30
101	OSC-MS-20-CT-52	Send a message by the AMHS User Agent to a valid AMHS Recipient including an Expiring Date Indication. A Non-Delivery Report failure is generated due to the maximum time expired.	30
102	OSC-MS-20-CT-53	Send a message by the AMHS User Agent to an unrecognised AMHS Recipient. A Non-Delivery Report failure is thus generated.	30
103	OSC-MS-21-CT-51	Send a message by the AMHS User Agent to a Distribution List being itself one of the list members.	30
104	OSC-MS-22-CT-51	Send a message by the AMHS User Agent to a Distribution List with DL-Expansion-Prohibited set to « prohibited ».	30
105	OSC-MS-23-CT-51	Send a message to a Distribution List with one of the Recipient name which does not exist.	30
Total estimation duration			11 h 30