Technical Report of the REM Remote Plugtests™ Event (June-July 2021)

Reference

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Electronic Signature,

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Abstract

This document is the technical report of the 2021 Remote Plugtests Event on REM (Registered Electronic Mail ETSI EN 319 532), organized by ETSI Centre of Testing and Interoperability (CTI) conducted using the ETSI portal supporting remote interoperability Plugtests.

For Non Disclosure Agreement reason, the report does not list the results of each testcases. It only shows the overall and anonymous statistics, without link to the company names.

Status of this Document

This document is provided by ETSI Centre of Testing and Interoperability (CTI). For further details on Plugtests services, please see: http://www.etsi.org/Website/OurServices/Plugtests/home.aspx .

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1 Introduction

ETSI has organized the remote Plugtests event on REM (Registered Electronic Mail), held from 31st May to 16th July 2021.

It was the first Plugtests event on the REM standard and the proposed interoperability testing has allowed participants to test their REM services, including the new REM Baseline, according to the multi-parts specifications ETSI EN 319 532-1 to 4. It was also a unique opportunity to run testing to validate the draft update of ETSI EN 319 532-4 during the standardization process, to ensure it can proceed taking into account the feedback from developers and improve the quality of the standard.

This Plugtests event enabled participants to conduct 4 types of interoperability tests

- Type 1 tests: Generation and cross-checks of ERDS Evidences.
- Type 2 tests: Generation and cross-checks of REM Dispatches and REMS Receipts.
- Type 3 tests: Real life tests on REM protocol .
- Type 4 tests: Tests on REM protocol simulations.

The present document is organized as indicated below.

Clause 2 provides details on the scope of the testing and how the material of the portal is organized and the services it provides to the participants of the Plugtests Events.

Clause 3 lists the participants to the 2021 REM Remote Plugtests Event.

Clause 4 provides some conclusions of the Plugtests.

Clause 5 provides details of REM/ERDS issues raised at the Plugtests.

Section 6 provides details on the Interoperability testcases provided for the Plugtests event.

2 REM Plugtests

2.1 Scope

The scope of the proposed testing is to check the interoperability of REM services by verifying Secure Electronic Mail service exchange and the ability to generate trusted electronic evidence attesting that certain relevant events have occurred. The goal is to ensure maximal interoperability in cross-REM interoperability domain and, specifically, in cross-border use of REM services.

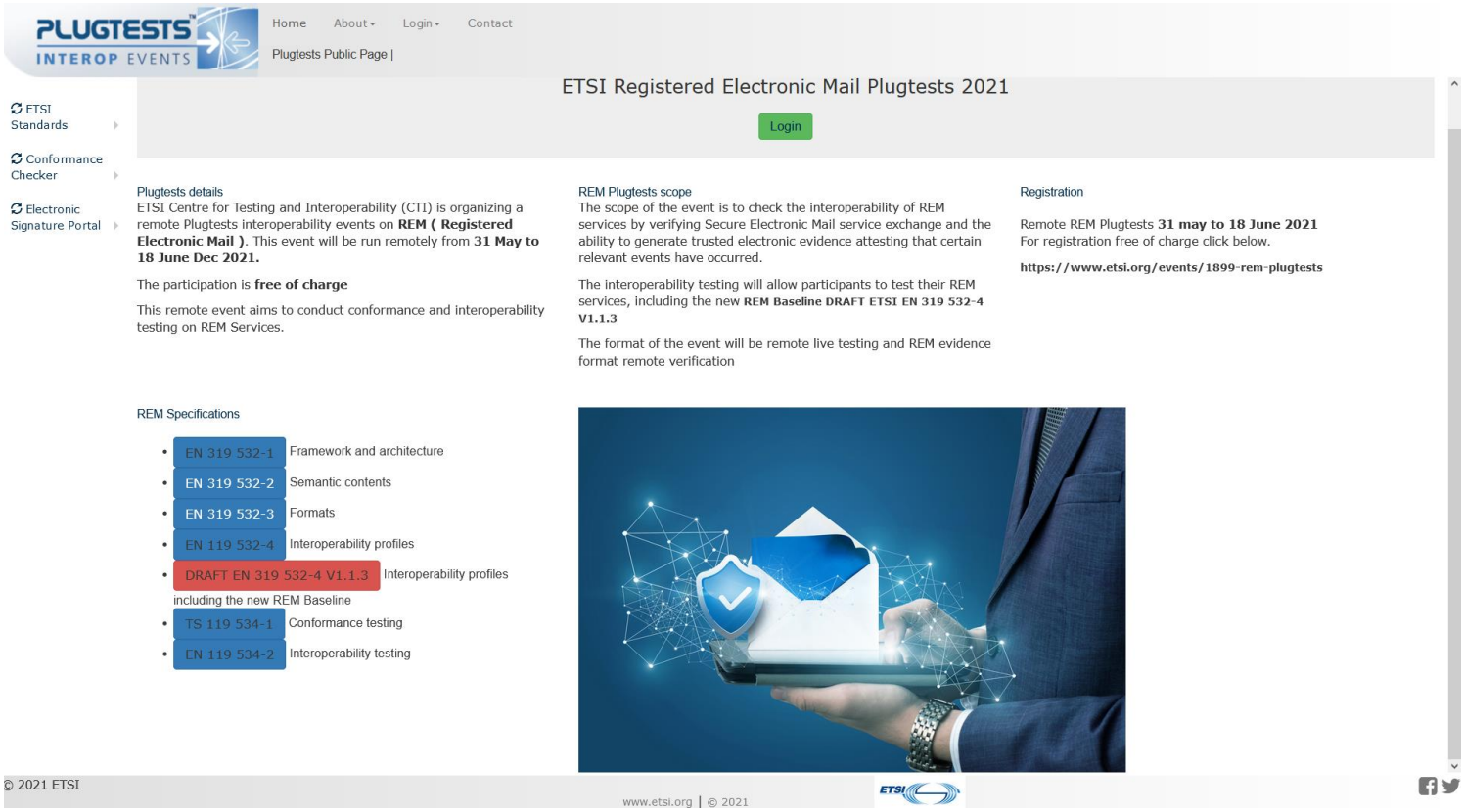
The interoperability testing allowed participants to test their REM services, including the new REM Baseline, according to the following standards:

- ETSI EN 319 532-1 Framework and architecture
- ETSI EN 319 532-2 Semantic content
- ETSI EN 319 532-3 Formats
- ETSI EN 319 532-4 Interoperability profiles
- Draft ETSI EN 319 532-4 V1.1.3 Interoperability profiles including the new REM Baseline (published by ETSI/ESI for testing/comments as part of the ETSI EN 319 532-4 revision process)

The Draft ETSI EN 319 532-4 is available here:
https://docbox.etsi.org/ESI/Open/Latest_Drafts/ETSI%20ESI%20DRAFT%20TS%20319532-4%20v010103%20PUBLIC.pdf

2.2 Plugtests portal

2.2.1 Public part of the portal



As mentioned above, this part remains as it was for previous events. It includes the following contents:

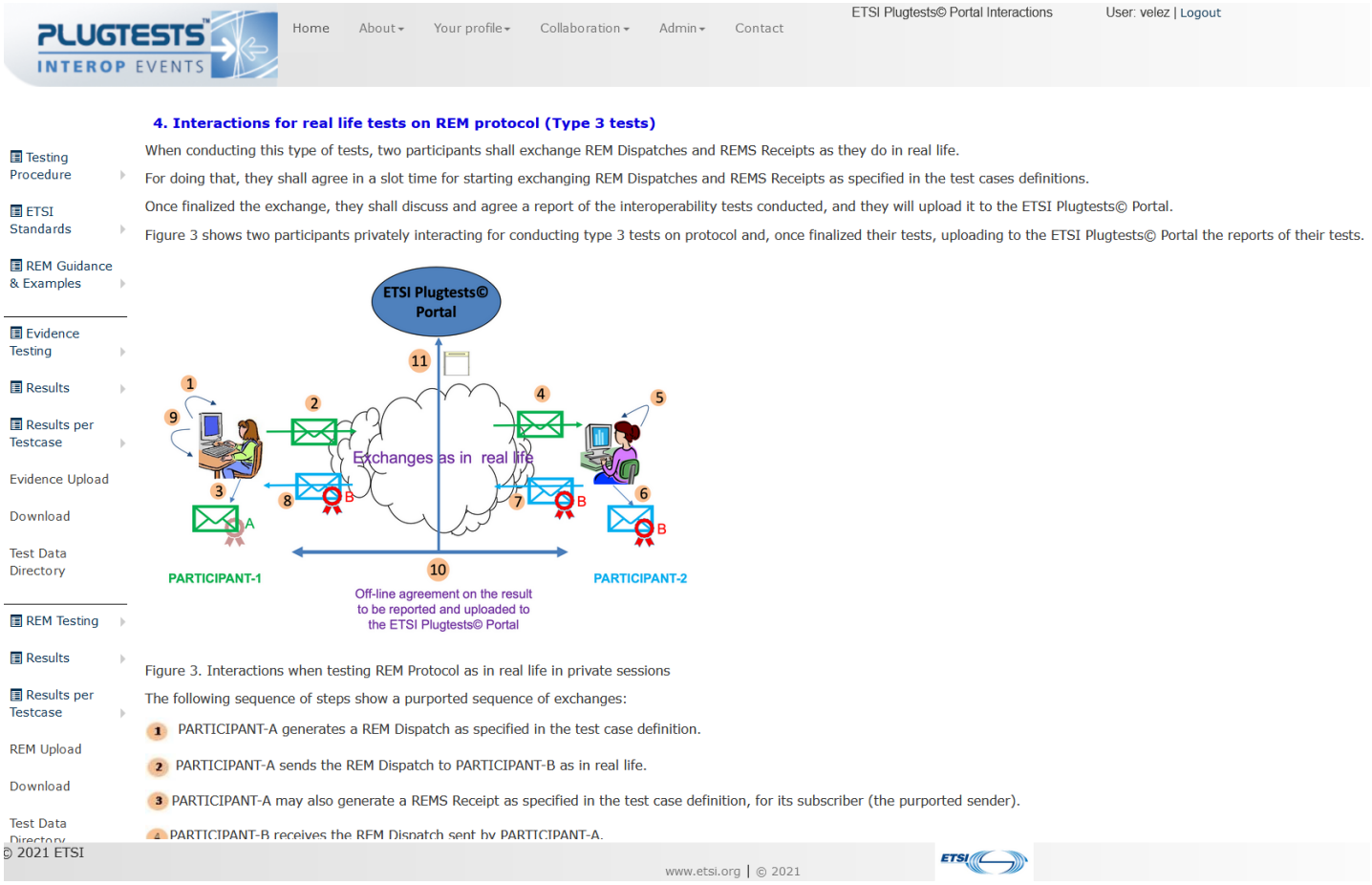
- The REM Plugtests page, providing some more details on the event itself, namely targeted specification, targeted audience, some general info on how to conduct such event, etc.
- The Registration page, providing details on the Plugtests registration process.
- The **Login to Plugtests Area** page gives access to the **protected area** of the portal.

2.2.2 Private part of the portal

This part is visible only for the participants of the Plugtests event. It is structured in three main areas:

- **Common area**. This area contains a number of pages that provide generic information to the participants, which is relevant to participants of interoperability tests.
- **Evidence specific area**. This area contains a number of pages that support the interoperability tests on Evidence.
- **REM specific area**. This area contains a number of pages that support the interoperability tests on REM Dispatch and Receipt.

Sub-clauses below provide details of the contents of these pages.



2.3 Conducting Plugtests

This Plugtests event allows to conduct 4 types of tests:

- Type 1 tests: Generation and cross-checks of ERDS Evidences.
  Each participant is invited to generate (generation phase) a certain set of the ERDS Evidence that may be generated when being compliant with draft EN 319 532-4v1.1.3: "Electronic Signatures and Infrastructures (ESI);Registered Electronic Mail (REM) Services;Part 4: Interoperability profiles" (REM Baseline hereinafter). The rest of participants are invited afterwards to verify these ERDS Evidence set (cross-verification phase) and upload their results. Upon the upload of these results, the ETSI Plugtests© Portal shall automatically generate and update a set of interoperability matrixes showing the results that all the participants may access.
- Type 2 tests: Generation and cross-checks of REM Dispatches and REMS Receipts.
  Each participant is invited to generate (generation phase) a certain set of the REM Dispatches and REMS Receipts that should be compliant with the REM Baseline. The rest of participants are invited afterwards to verify these REM Dispatches and REMS Receipts set (cross-verification phase) and upload their results. As with type 1 tests, upon the upload of these results, the ETSI Plugtests© Portal shall automatically generate and update a set of interoperability matrixes showing the results that all the participants may access.

- Type 3 tests: Real life tests on REM protocol .
  Each participant is invited to agree with another participant in selecting a time slot for conducting this type of tests. During these tests, the two participants shall exchange REM messages as in real life, according to certain constraints, which are provided in a set of test cases definitions. Once these tests are finalized, they will agree in the result and will notify it.

- Type 4 tests: Tests on REM protocol simulations.
  Participants that may not conduct by any reason real life tests on protocol, may still conduct this fourth type, as they shall not exchange REM messages as in real life. Instead, they will agree between them in a way to exchange the REM Messages specified in the corresponding test case. They may select the mechanism they

prefer (email, a private slack channel provided by ETSI in the ETSI Plugtests© Portal, ftp, git, etc). These exchanges will emulate the direct exchange of messages as occurs in real life operation of the services. Once these tests are finalized, they will agree in the result and will notify it.

2.4 Event details

2.4.1 Meeting Support page

The Meeting Support page contains all the information related to the meetings that took place during the Plugtests event. It includes:

- Introduction presentation. This presentation was made available before the start of the Plugtests™, and it provides the most relevant information on the event, including structure of the portal, relevant URLs, rules to be followed during the participation, etc
- Calendar for the meetings (Gotowebinar conference calls).
- The agenda for each meeting.
- Links to the minutes of each meeting.

2.4.2 Mailing list

2 Mailing lists were set up :

- REM_UPLOADS@list.etsi.org : used by the Plugtests portal to automatically notify the participants after each upload of signatures or verification reports
- REM_PLUGTESTS@list.etsi.org : used to contact the participants and exchanges information. It was used for fruitful technical discussions and to raise some issues.

2.4.3 Slack workspace

In order to allow better exchanges between participants, a slack workspace was set up at https://rem-Plugtests.slack.com.
Each participant was invited to create an account and use slack discussion forum.
In complement of the mailing list, it was an excellent way for participant to raise technical discussions and to share experience, information, and best practise.

3 Participants list

The table below shows the details of all the organizations and persons that have registered to the REM Plugtests.

There have been **39 different organizations** and 65 people participating in the event.

Company	Country
Actalis SPA	ITALY
AGID	ITALY
Allied Bits Ltd	UNITED KINGDOM
ANF AC	SPAIN
Aruba PEC SpA	ITALY
Bureau Veritas	SLOVENIA
Comfact AB	SWEDEN
COPYRIGHT SAS	FRANCE
Correos	SPAIN
Devise Futures, Lda	PORTUGAL
DIAN, TAXES AND CUSTOMS OF .CO	COLOMBIA
Doceo software SL	SPAIN
ETSI	FRANCE
Globtim d.o.o.	SLOVENIA
Ministry of Digital Governance	GREECE
Greev	AUSTRIA
IIT-CNR	ITALY
InfoCert S.p.A.	ITALY
INTESI GROUP S.p.A.	ITALY
Information Services JSC	BULGARIA
ISTI-National Research Council	ITALY
ITnet s.r.l.	ITALY
Mainline S.r.l.	ITALY
Institute for Standardization of Moldova	MOLDOVA,
Namirial S.p.A.	ITALY
Otip Office	JAPAN
Par-Tec	ITALY
Polysys Ltd	HUNGARY
Poste Italiane SPA	ITALY
PWPW S.A.	POLAND
Register SpA	ITALY
secrypt GmbH	GERMANY
SeguriData Privada, SA de CV	MEXICO
Ministry of Transport and Construction	SLOVAKIA
TI Trust Technologies S.r.l.	ITALY
TÜRKKEP Kayıtlı Elektronik A.Ş	TURKEY
UCR	COSTA RICA
UNIFO	ITALY
UPC	SPAIN

4 Plugtests conclusions

4.1 Remote vs. Face to Face

Due to Covid crisis, the remote event was the best option to run such testing activity. It would have been impossible to organise it in a face-to-face event, in any case experience shows that for this type of event remote participation is the most convenient option for the participants.

4.2 Communication supporting technologies

The utilization of Web conference (GotoWebinar) has been very appreciated by participants. It has allowed the participants to get very interactive conferences, by sharing the same document or application. At the welcome meeting, the team explained how to conduct the testing by making a real case demo.

3 conference calls have been organized during the event, one kick off conf call to present the testing and 2 other ones regularly to discuss the issues and answer to any technical questions.

The chat of the slack workspace has also been very important for the participants to write their questions or request and also it has been used as meeting minutes.

4.3 Event duration

The event was initially planned to run until 18th June, but it was extended to 16th July on request from the participants. The reason was that due to the important number of tests proposed, some participants needed more time to complete the testing.

5 REM Plugtests related issues

5.0 Introduction

The present clause lists some of the issues raised during the REM Plugtests event in June and July 2021. This technical report will be provided to ETSI TC ESI which is the technical body in charge of the standardization of the ETSI Electronic Signatures, for possible action/input for further changes in standards.

5.1 RelayFailure event in the case of unknown recipient

At the Plugtests it was noted that when the RelayFailure event originated at S-REM side, producing a RelayFailure evidence, involves a subset of the intended recipients, there is no element that can indicate the impacted recipient(s).

The issue is similar for RelayRejection and RelayAcceptance events too, even if they occur at R-REMS side. Indeed, a RelayRejection event can involve a subset of recipients (and so this concerns also the RelayAcceptance event for the complementary part of the accepted/un-rejected recipients) that have to be outlined to the S-REMS (that in turn issues a corresponding RelayFailure to the sender).

5.2 Identity elements in ERDS evidence

At the Plugtests it was asked to provide a fully defined copy of xsd for the elements EvidenceIssuerDetails, SenderDetails, RecipientDetails that refer to eIDAS TS SAML attribute Profile or clear instructions concerning how to retrieve such xsd. Moreover it would be important to specify better the tags <saml:AttributeValue type="eidas:LegalNameType"> and <saml:AttributeValue type="eidas:PersonIdentifierType"> in order to be able to verify the syntax of the values used as LegalNameType/ PersonIdentifierType.

5.3 AssuranceLevelDetails in ERDS evidence

At the Plugtests it was suggested to restrict the possible choices in REM baseline for AssuranceLevelsDetails element providing a unique choice, if possible. At the moment several choices are defined: AssuranceLevel, PolicyID, PolicyIDDetails, PolicyIDDetailsResources. If they are left all open, without significant needs for REM baseline, they can make it harder, for REMS, the interoperability. Moreover, the AuthenticationTime element should be further specified clarifying to which authentication event it is referred within a long sequence of client authentication operations.

5.4 Relay operation when sender and recipient use the same REMS

At the Plugtests some participants were confused and asked about whether the Relay operation shall be performed or not in cases where sender and recipient are both in the same REMS. Indeed, there are some controversial statements in ETSI EN 532-1 (what stated in clause 4.3.1 vs. what stated in clause 6.2.2).

Furthermore, if the Relay shall not be performed when sender and recipient are both in the same REMS, it is not clear which receipt shall receive the sender in case of unknown recipient event. Shall the sender receive a RelayFailure with Code=RB10/UnknownRecipient? But in such case, being a RelayFailure possible only as an answer to a Relay operation, shall relay be performed even if not required by requirements? Conversely, if a Relay operation shall not be

performed, shall the sender receive a ContentConsignmentFailure? But in ContentConsignment event there isn't a code for unknown recipient. Which shall be the error code to use in such case?

5.5 Subject field in ERDS evidence

At the Plugtests the participants highlighted the absence in the ERDS evidence schema of an element able to contain the Subject metadata of the user content. The component M02/MD14 User content information is mandatory in ERDS evidence. And in M02/MD14 semantic (ETSI EN 522-2 Clauses 8.2.24 and 6.2.14) it is stated that in case the payload is accompanied with an **application layer identifier**, this information should be captured in this component and that in case the payload is accompanied with an **application layer subject**, this information should be captured in this component. The first (application layer identifier) finds a match in the ERDS evidence schema (ETSI EN 522-3 Clauses 4.3.13): `UserContentInfo/AppLayerIdentifier`. The second (application layer **subject**) doesn't have a match.

5.6 Semantic of the element "Source CC"/"Dest CC"/"userid"

At the Plugtests some participants asked clarifications on the correct usage of the element "Source CC"/"Dest CC"/"userid" of the attribute PersonIdentifierType of Identity ERDS evidence defined in draft ETSI EN 319 532-4 v.1.1.3.

For example, is "Source CC" the country code of the user (sender or recipient)? And is "Dest CC" the country code of the relevant/pertinent service provider (S-REMS or R-REMS)?

There could be also another interpretation: use the first CC for the Country Code of the S-REMS and the second Country Code for the R-REMS. Both interpretations theoretically work, but the first interpretation is closer to that illustrated in the reference documentation.

5.7 Some proposed improvements in ETSI EN 319 532-4 v.1.1.3

At the Plugtests it was suggested to include a table in ETSI EN 319 532-4 v.1.1.3 specifying cardinality of every element included in ERDS evidence XMLs and REM message EMLs in REM baseline. Also drafting an informative annex including a list of working and significant examples of ERDS evidence XMLs and REM message EMLs in REM baseline has been considered very helpful.

5.8 Some proposed amendments

At the Plugtests the participants highlighted the need to amend the contents of "Figure A.4: Detailed REM dispatch example", Table 2, Table 12 and clause 8.3 in ETSI EN 319 532-3 because they contain some inconsistencies and errors.

5.9 Some proposed amendments

At the Plugtests the participants highlighted the need to amend the contents of XML/EML examples in ETSI EN 319 532-4 v1.1.3 because they contain some inconsistencies and errors.

5.10 Message digest computation and validation

At the Plugtests there were some discussions concerning the computation of the original message digest and some different interpretations have been provided by different participants. For example, some participants use a stream approach without considering the "0x0a0d" characters that are at the end of the file therefore obtaining a different digest than the participants that consider the "0x0a0d" characters at the end of the file being REM a store-and-forward technology based on files for which the final characters "0x0a0d" are implicit. This issue has raised the need to have a summary of the checks that any REMS shall perform on the received objects (above all concerning signatures verification and acceptance).

5.11 Consideration on URI for MessageSuccessfullyRelayed

At the Plugtests some participants stated that the URI http://uri.etsi.org/19522/EventReason/S_ERDS_MessageSuccessfullyRelayed is not consistent because the «Successful Relayed» event arises at R-ERDS side therefore the S_ERDS prefix is misleading.

5.12 ExternalSystem vs ForwardedToExternalSystem

At the Plugtests some participants highlighted that in ETSI EN 319 522-3 the ExternalSystem element is defined while in the xsd the ForwardedToExternalSystem element is defined. In ETSI EN 319 522-3 it is stated that the xsd schema takes precedence, so there is no functional issue but, the element name ForwardedToExternalSystem is confusing in a ReceivedFromNonERDS event, the element name ExternalSystem would be more suitable.

5.13 Typo in table numbering in ETSI EN 319 522-3

At the Plugtests it was highlighted that in ETSI EN 319 522-3 there is a typo in clause 5.2.2.7. The string “Code child element may have values different than those that are listed in Table 4 to respond to specific requirements of the ERDS” shall be changed in “Code child element may have values different than those that are listed in Table 3 to respond to specific requirements of the ERDS”.

6 REM Plugtests Interoperability Testing

6.1 Evidence test cases

6.1.1 Positive Test cases for ERDS-Evidence.SCOK TestSet.

6.1.1.0 Introduction

The test cases in this clause deal with the ERDS-Evidence.SCOK TestSet, i.e. test cases on Submission Acceptance. They include data structures, formats and constraints as specified within EN_319532-2, EN_319532-3 and EN_319532-4.

In the 'positive test' participants will do following:

1. A partiticipating implementation may generate as many REM evidences as the participant considers worth; the participant will do it as described in the test case definitions. Generated REM evidences shall be valid. That's why we say 'positive test' for this test.
2. A participant will upload REM evidences to the portal.
3. A participant will download REM evidences generated by other participants.
4. Validate REM evidences from other participants.
5. Upload verification results as XML files.
6. See test result matrix.

Properties and attributes required as input for REM evidences generation for any test case are as specified in the related test case definition and are available in the Data folder.

6.1.1.1 Submission Acceptance

SUB_ACC_RA01:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++MessageIdentifier
++UserContentInfo
++Signature

This test case tests the evidence that the REMS has accepted the submitted original message, the REMSP takes responsibility for trying to deliver it to all specified recipients respecting the policy rules and all delivery options given by the sender. The event reason shall be MessageAccepted.

6.1.1.2 SubmissionRejection

SUB_REJ_RA02:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++MessageIdentifier
++UserContentInfo
++Signature

This test case tests the case in which the REMS has rejected the submitted original message. The REMS shall inform the sender about the reason(s) for the rejection. The event reason shall be InvalidMessageFormat.

SUB_REJ_RA03:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++MessageIdentifier
++UserContentInfo
++Signature
This test case tests the case in which the REMS has rejected the submitted original message. The REMS shall inform the sender about the reason(s) for the rejection. The event reason shall be MalwareFound.

SUB_REJ_RA04:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++MessageIdentifier
++UserContentInfo
++Signature
This test case tests the case in which the REMS has rejected the submitted original message. The REMS shall inform the sender about the reason(s) for the rejection. The event reason shall be SenderSigningCertExpiredOrRevoked.

SUB_REJ_RA05:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++MessageIdentifier
++UserContentInfo
++Signature
This test case tests the case in which the REMS has rejected the submitted original message. The REMS shall inform the sender about the reason(s) for the rejection. The event reason shall be S_ERDS_PolicyViolation.

6.1.1.3 RelayAcceptance records

REL_ACC_RB01:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++MessageIdentifier
++UserContentInfo
++ExternalERDSDetails
++Signature
This test case tests the case in which the receiving REMS has accepted the relayed REM message containing the user content, the REMSP takes responsibility for handling it according to the policy rules. The event reason shall be S_ERDS_MessageSuccessfullyRelayed

6.1.1.4 RelayRejection records

REL_REJ_RB02:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++MessageIdentifier
++UserContentInfo
++ExternalERDSDetails

++Signature
This test case tests the case in which the receiving REMS has rejected the relayed REM message containing user content. The receiving REMS shall inform the sending REMS about the reason(s) for the rejection. The event reason shall be R_ERDS_MessageRejected.

REL_REJ_RB03:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++MessageIdentifier
++UserContentInfo
++ExternalERDSDetails
++Signature
This test case tests the case in which the receiving REMS has rejected the relayed REM message containing user content. The receiving REMS shall inform the sending REMS about the reason(s) for the rejection. The event reason shall be R_ERDS_MessageRejectedForMalware.

REL_REJ_RB04:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++MessageIdentifier
++UserContentInfo
++ExternalERDSDetails
++Signature
This test case tests the case in which the receiving REMS has rejected the relayed REM message containing user content. The receiving REMS shall inform the sending REMS about the reason(s) for the rejection. The event reason shall be R_ERDS_MessageRejectedForInvalidSignature.

REL_REJ_RB05:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime

++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++MessageIdentifier
++UserContentInfo
++ExternalERDSDetails
++Signature
This test case tests the case in which the receiving REMS has rejected the relayed REM message containing user content. The receiving REMS shall inform the sending REMS about the reason(s) for the rejection. The event reason shall be R_ERDS_MessageRejectedForInvalidCertificate.

REL_REJ_RB06:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++MessageIdentifier
++UserContentInfo
++ExternalERDSDetails
++Signature
This test case tests the case in which the receiving REMS has rejected the relayed REM message containing user content. The receiving REMS shall inform the sending REMS about the reason(s) for the rejection. The event reason shall be R_ERDS_PolicyViolation.

6.1.1.5 RelayFailure records

REL_FAIL_RB07:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++MessageIdentifier
++UserContentInfo
++ExternalERDSDetails
++Signature
This test case tests the case in which the sending REMS was unable to relay the REM message containing user content to the receiving REMS within a given time period, or the receiving REMS did not return any ERDS evidence about the acceptance or rejection of the REM message within that time period. The event reason shall be R_ERDS_Malfunction.

REL_FAIL_RB08:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++MessageIdentifier
++UserContentInfo
++ExternalERDSDetails
++Signature
This test case tests the case in which the sending REMS was unable to relay the REM message containing user content to the receiving REMS or the receiving REMS returned an ERDS evidence about the rejection of the REM message. The event reason shall be R_ERDS_NotIdentified.

REL_FAIL_RB09:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++MessageIdentifier
++UserContentInfo
++ExternalERDSDetails
++Signature
This test case tests the case in which the sending REMS was unable to relay the REM message containing user content to the receiving REMS or the receiving REMS returned an ERDS evidence about the rejection of the REM message. The event reason shall be R_ERDS_Unreachable.

REL_FAIL_RB10:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++MessageIdentifier
++UserContentInfo
++ExternalERDSDetails
++Signature
This test case tests the case in which the receiving REMS was unable to accept the relay of the REM message because the recipient of the REM message was unknown. The event reason shall be UnknownRecipient.

6.1.1.6 ContentConsignment records

CONT_CONS_RD01:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++EvidenceRefersToRecipient
++MessageIdentifier
++UserContentInfo
++Signature
This test case tests the case in which the R-REMS has made the user content available to the recipient. The event reason code shall be MessageConsignedToRecipient.

CONT_CONS_RD02:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++EvidenceRefersToRecipient
++MessageIdentifier
++UserContentInfo
++Signature
This test case tests the case in which the R-REMS has made the user content available to the recipient. The event reason code shall be MessageConsignedToDelegate.

6.1.1.7 ContentConsignmentFailure records

CONT_CONS_FAIL_RD03:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++EvidenceRefersToRecipient
++MessageIdentifier

++UserContentInfo
++Signature
This test case tests the case in which the REMS could not make the user content available to the recipient within a given time period, or the REMS did not receive ERDS evidence within a given time period about the successful or unsuccessful consignment of the user content from the other REMS to which it had relayed the user content. The event reason shall be S_ERDSP_ReceivedNoDeliveryInfoFromR_ERDSP.

CONT_CONS_FAIL_RD04:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++EvidenceRefersToRecipient
++MessageIdentifier
++UserContentInfo
++Signature
This test case tests the case in which the REMS could not make the user content available to the recipient within a given time period. The event reason shall be MessageNotConsignedForQuota.

CONT_CONS_FAIL_RD05:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++EvidenceRefersToRecipient
++MessageIdentifier
++UserContentInfo
++Signature
This test case tests the case in which the REMS could not make the user content available to the recipient within a given time period, or the REMS did not receive ERDS evidence within a given time period about the successful or unsuccessful consignment of the user content from the other REMS to which it had relayed the user content. The event reason shall be MessageNotConsignedForMalfunction.

CONT_CONS_FAIL_RD06:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails

++SenderDetails
++RecipientDetails
++SubmissionTime
++EvidenceRefersToRecipient
++MessageIdentifier
++UserContentInfo
++Signature
This test case tests the case in which the REMS could not make the user content available to the recipient within a given time period, or the REMS did not receive ERDS evidence within a given time period about the successful or unsuccessful consignment of the user content from the other REMS to which it had relayed the user content. The event reason shall be MessageNotConsignedForUnallowedType.

6.1.1.8 RelayToNonERDS records

REL_T_NERDS_RF01:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++MessageIdentifier
++UserContentInfo
++ExternalSystem
++Signature
This test case tests the case in which the REMS has successfully relayed the user content to the given non-ERDS system. The event reason shall be MessageRelayedToNonERDS.

REL_T_NERDS_FAIL_RF02:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++MessageIdentifier
++UserContentInfo
++ExternalSystem
++Signature
This test case tests the case in which the REMS was unable to relay the user content to the non-ERDS system within a given time period. The event reason shall be ExternalSystemUnreachable.

REL_T_NERDS_FAIL_RF03:

++EvidenceIdentifier
+++EventReason

++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++MessageIdentifier
++UserContentInfo
++ExternalSystem
++Signature
This test case tests the case in which the REMS was unable to relay the user content to the non-ERDS system within a given time period. The event reason shall be MessageRejectedByExternalSystem.

REC_F_NERDS_RF04:

++EvidenceIdentifier
+++EventReason
++++Code
++EventTime
++EvidenceIssuerPolicyID
+++PolicyID
++EvidenceIssuerDetails
++SenderDetails
++RecipientDetails
++SubmissionTime
++MessageIdentifier
++UserContentInfo
++Signature
This test case tests the case in which the REMS has received the user content from a non-ERDS system, therefore all information related to its sending, like the sender's identifier and the sending time, cannot be trusted per se. The event reason shall be MessageReceivedFromNonERDS.

6.1.2 Negative Test cases for `ERDS-Evidence.SCUN` TestSet.

In the 'negative test' participants will do the following:

1. A partiticipating implementation must verify the REM evidences. Verification of the REM evidences shall be negative. That's why we say 'negative test' for this test.
2. A participant will download REM evidences generated by the organizers.
3. Verify REM evidences.
4. Upload verification results as XML files.
5. See test result matrix.

Negative test cases files are in the 'NegativeTests' folder grouped by REM evidences TestSet.

ERDSN1:

> This **negative** test case tests an ERDS evidence including a not existing EventId. The ERDS evidence includesthe undefined EventId value http://uri.etsi.org/19522/Event/SubmissionFailure.

ERDSN2:

This **negative** test case tests an ERDS evidence including an invalid signature. The ERDS evidence includes an invalid signature (from the cryptographic point of view).

6.2 REM test cases

6.2.1 Positive Test cases for REM-Messages.SCOK TestSet.

6.2.1.0 Introduction

The test cases in this section deal with the REM-Messages.SCOK TestSet, i.e. test cases on REM Submission Acceptance receipt. They include data structures, formats and constraints as specified within [EN_319532-2], [EN_319532-3] and [EN_319532-4].

6.2.1.1 REM Dispatches

Participant-1 creates and uploads the REM dispatch defined in the test cases, Participant-2 checks the REM dispatch from Participant-1 and reports on the checks.

REM_DTC1:

REM-Message
+REMdispatch
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
+++++Header
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body

This test case tests the creation of a REM dispatch from a S-REMS for a SubmissionAcceptance event (the S-REMS has accepted the incoming message), the REMSP shall upload the REM dispatch.and duplicate it in the filenames specified above. The REM dispatch shall include only one recipient in REM dispatch header and all mandatory fields ad any optional fields. The REM dispatch may include any optional fields too. The event reason of the included ERDS-Evidence shall be MessageAccepted, as specified in the test case SUB_ACC_RA01.

REM_DTC2:

REM-Message
+REMdispatch
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
+++++Header
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body

This test case tests the creation of a REM dispatch from a S-REMS for a MessageReceivedFromNonERDS event (the S-REMS has accepted the incoming message), the REMSP [PARTICIPANT-1] shall upload the REM dispatch. The REMSP [PARTICIPANT-2] shall download and check the REM dispatch file dispatch-DTC2.eml created by [PARTICIPANT-1] ,create and upload a report including the REM dispatch checks outcome The REM dispatch shall include one recipient in REM dispatch header and all mandatory fields. The REM dispatch may include any optional fields too. The event reason of the included ERDS-Evidence shall be MessageReceivedFromNonERDS, as specified in the test case REC_F_NERDS_RF04.

6.2.1.2 REM SubmissionAcceptance receipts

Participant-1 creates and uploads the REM receipt defined in the test cases, Participant-2 checks the REM receipt from Participant-1 and reports on the checks.

DTC0_RTC101:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body
This test case tests the creation of a REM receipt from a S-REMS for a SubmissionAcceptance event, the REMSP [PARTICIPANT-1] shall upload the REM receipt. The REMSP [PARTICIPANT-2] shall download and check the REM receipt file receipt-DTC0_RTC101.eml created by [PARTICIPANT-1] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be MessageAccepted, as specified in the test case SUB_ACC_RA01.

6.2.1.3 REM SubmissionRejection receipts

Participant-1 creates and uploads the REM receipt defined in the test cases, Participant-2 checks the REM receipt from Participant-1 and reports on the checks.

DTC0_RTC201:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject

+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body

This test case tests the creation of a REM receipt from a S-REMS for a SubmissionRejection event, the REMSP [PARTICIPANT-1] shall upload the REM receipt. The REMSP [PARTICIPANT-2] shall download and check the REM receipt file receipt-DTC0_RTC201.eml created by [PARTICIPANT-1] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be InvalidMessageFormat, as specified in the test case SUB_REJ_RA02.

DTC0_RTC202:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type

+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body
This test case tests the creation of a REM receipt from a S-REMS for a SubmissionRejection event, the REMSP [PARTICIPANT-1] shall upload the REM receipt. The REMSP [PARTICIPANT-2] shall download and check the REM receipt file receipt-DTC0_RTC202.eml created by [PARTICIPANT-1] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be MalwareFound, as specified in the test case SUB_REJ_RA03.

DTC0_RTC203:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body

+++REMSignature
++++Header
++++Body
This test case tests the creation of a REM receipt from a S-REMS for a SubmissionRejection event, the REMSP [PARTICIPANT-1] shall upload the REM receipt. The REMSP [PARTICIPANT-2] shall download and check the REM receipt file receipt-DTC0_RTC203.eml created by [PARTICIPANT-1] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be SenderSigningCertExpiredOrRevoked, as specified in the test case SUB_REJ_RA04.

DTC0_RTC204:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body
This test case tests the creation of a REM receipt from a S-REMS for a SubmissionRejection event, the REMSP [PARTICIPANT-1] shall upload the REM receipt. The REMSP [PARTICIPANT-2] shall download and check the REM receipt file receipt-DTC0_RTC204.eml created by [PARTICIPANT-1] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be S_ERDS_PolicyViolation, as specified in the test case SUB_REJ_RA05.

6.2.1.4 REM RelayToNonERDS receipts

Participant-1 creates and uploads the REM receipt defined in the test cases, Participant-2 checks the REM receipt from Participant-1 and reports on the checks.

DTC0_RTC301:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body
This test case tests the creation of a REM receipt from a S-REMS for a RelayToNonERDS event, the REMSP [PARTICIPANT-1] shall upload the REM receipt. The REMSP [PARTICIPANT-2] shall download and check the REM receipt file receipt-DTC0_RTC301.eml created by [PARTICIPANT-1] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be MessageRelayedToNonERDS, as specified in the test case REL_T_NERDS_RF01.

6.2.1.5 REM RelayToNonERDSFailure receipts

Participant-1 creates and uploads the REM receipt defined in the test cases, Participant-2 checks the REM receipt from Participant-1 and reports on the checks.

DTC0_RTC401:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject

+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body

This test case tests the creation of a REM receipt from a S-REMS for a RelayToNonERDSFailure event, the REMSP [PARTICIPANT-1] shall upload the REM receipt. The REMSP [PARTICIPANT-2] shall download and check the REM receipt file receipt-DTC0_RTC401.eml created by [PARTICIPANT-1] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be ExternalSystemUnreachable, as specified in the test case REL_T_NERDS_FAIL_RF02.

DTC0_RTC402:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header

+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body
This test case tests the creation of a REM receipt from a S-REMS for a RelayToNonERDSFailure event, the REMSP [PARTICIPANT-1] shall upload the REM receipt. The REMSP [PARTICIPANT-2] shall download and check the REM receipt file receipt-DTC0_RTC402.eml created by [PARTICIPANT-1] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be MessageRejectedByExternalSystem, as specified in the test case REL_T_NERDS_FAIL_RF03.

6.2.1.6 REM RelayAcceptance receipts

Participant-2 checks the REM dispatch from Participant-1, reports on the checks, and generates a REMS RelayAcceptance event receipt. Participant-1 will check the REM receipt generated by Participant-2 and reports on the checks.

DTC1_RTC101:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header

++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body
This test case tests the creation of a REM dispatch from a S-REMS and a REM receipt from a R-REMS for a RelayAcceptance event, the REMSP [PARTICIPANT-2] shall download and check the REM dispatch file dispatch-DTC1_RTC101.eml created by [PARTICIPANT-1] ,create the corresponding REMS RelayAcceptance receipt and upload the REM receipt. and a report including the REM dispatch checks outcome. The REMSP [PARTICIPANT-1] shall download and check the REM receipt file receipt_to_[PARTICIPANT-1]_dispatch-DTC1_RTC101.eml created by [PARTICIPANT-2] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be S_ERDS_MessageSuccessfullyRelayed, as specified in the test case REL_ACC_RB01.

6.2.1.7 REM RelayRejection receipts

Participant-2 checks the REM dispatch from Participant-1, reports on the checks, and generates a REMS RelayRejection event receipt. Participant-1 will check the REM receipt generated by Participant-2 and reports on the checks.

DTC1_RTC201:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header

++++Body
This test case tests the creation of a REM dispatch from a S-REMS and a REM receipt from a R-REMS for a RelayRejection event, the REMSP [PARTICIPANT-2] shall download and check the REM dispatch file dispatch-DTC1_RTC201.eml created by [PARTICIPANT-1] ,create the corresponding REMS RelayRejection receipt and upload the REM receipt. and a report including the REM dispatch checks outcome. The REMSP [PARTICIPANT-1] shall download and check the REM receipt file receipt_to_[PARTICIPANT-1]_dispatch-DTC1_RTC201.eml created by [PARTICIPANT-2] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be R_ERDS_MessageRejected, as specified in the test case REL_REJ_RB02.

DTC1_RTC202:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body
This test case tests the creation of a REM dispatch from a S-REMS and a REM receipt from a R-REMS for a RelayRejection event, the REMSP [PARTICIPANT-2] shall download and check the REM dispatch file dispatch-DTC1_RTC202.eml created by [PARTICIPANT-1] ,create the corresponding REMS RelayRejection receipt and upload the REM receipt. and a report including the REM dispatch checks outcome. The REMSP [PARTICIPANT-1] shall download and check the REM receipt file receipt_to_[PARTICIPANT-1]_dispatch-DTC1_RTC202.eml created by [PARTICIPANT-2] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be R_ERDS_MessageRejectedForMalware, as specified in the test case REL_REJ_RB03.

DTC1_RTC203:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body
This test case tests the creation of a REM dispatch from a S-REMS and a REM receipt from a R-REMS for a RelayRejection event, the REMSP [PARTICIPANT-2] shall download and check the REM dispatch file dispatch-DTC1_RTC203.eml created by [PARTICIPANT-1] ,create the corresponding REMS RelayRejection receipt and upload the REM receipt. and a report including the REM dispatch checks outcome. The REMSP [PARTICIPANT-1] shall download and check the REM receipt file receipt_to_[PARTICIPANT-1]_dispatch-DTC1_RTC203.eml created by [PARTICIPANT-2] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be R_ERDS_MessageRejectedForInvalidSignature, as specified in the test case REL_REJ_RB04.

DTC1_RTC204:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm

+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body
This test case tests the creation of a REM dispatch from a S-REMS and a REM receipt from a R-REMS for a RelayRejection event, the REMSP [PARTICIPANT-2] shall download and check the REM dispatch file dispatch-DTC1_RTC204.eml created by [PARTICIPANT-1] ,create the corresponding REMS RelayRejection receipt and upload the REM receipt. and a report including the REM dispatch checks outcome. The REMSP [PARTICIPANT-1] shall download and check the REM receipt file receipt_to_[PARTICIPANT-1]_dispatch-DTC1_RTC204.eml created by [PARTICIPANT-2] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be R_ERDS_MessageRejectedForInvalidCertificate, as specified in the test case REL_REJ_RB05.

DTC1_RTC205:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type

++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body
This test case tests the creation of a REM dispatch from a S-REMS and a REM receipt from a R-REMS for a RelayRejection event, the REMSP [PARTICIPANT-2] shall download and check the REM dispatch file dispatch-DTC1_RTC205.eml created by [PARTICIPANT-1] ,create the corresponding REMS RelayRejection receipt and upload the REM receipt. and a report including the REM dispatch checks outcome. The REMSP [PARTICIPANT-1] shall download and check the REM receipt file receipt_to_[PARTICIPANT-1]_dispatch-DTC1_RTC205.eml created by [PARTICIPANT-2] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be R_ERDS_PolicyViolation, as specified in the test case REL_REJ_RB06.

6.2.1.8 REM RelayFailure receipts

Participant-2 checks the REM dispatch from Participant-1, reports on the checks, and generates a REMS RelayFailure event receipt. Participant-1 will check the REM receipt generated by Participant-2 and reports on the checks.

DTC1_RTC301:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body

++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body
This test case tests the creation of a REM dispatch from a S-REMS and a REM receipt from a R-REMS for a RelayFailure event, the REMSP [PARTICIPANT-2] shall download and check the REM dispatch file dispatch-DTC1_RTC301.eml created by [PARTICIPANT-1] ,create the corresponding REMS RelayFailure receipt and upload the REM receipt. and a report including the REM dispatch checks outcome. The REMSP [PARTICIPANT-1] shall download and check the REM receipt file receipt_to_[PARTICIPANT-1]_dispatch-DTC1_RTC301.eml created by [PARTICIPANT-2] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be R_ERDS_Malfunction, as specified in the test case REL_FAIL_RB07.

DTC1_RTC302:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body
This test case tests the creation of a REM dispatch from a S-REMS and a REM receipt from a R-REMS for a RelayFailure event, the REMSP [PARTICIPANT-2] shall download and check the REM dispatch file dispatch-DTC1_RTC302.eml created by [PARTICIPANT-1] ,create the corresponding REMS RelayFailure receipt and upload the REM receipt. and a report including the REM dispatch checks outcome. The REMSP [PARTICIPANT-1] shall download and check the REM receipt file receipt_to_[PARTICIPANT-1]_dispatch-DTC1_RTC302.eml created by [PARTICIPANT-2] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall

include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be R_ERDS_NotIdentified, as specified in the test case REL_FAIL_RB08.

DTC1_RTC303:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body
This test case tests the creation of a REM dispatch from a S-REMS and a REM receipt from a R-REMS for a RelayFailure event, the REMSP [PARTICIPANT-2] shall download and check the REM dispatch file dispatch-DTC1_RTC303.eml created by [PARTICIPANT-1] ,create the corresponding REMS RelayFailure receipt and upload the REM receipt. and a report including the REM dispatch checks outcome. The REMSP [PARTICIPANT-1] shall download and check the REM receipt file receipt_to_[PARTICIPANT-1]_dispatch-DTC1_RTC303.eml created by [PARTICIPANT-2] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be R_ERDS_Unreachable, as specified in the test case REL_FAIL_RB09.

DTC1_RTC304:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To

+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body

This test case tests the creation of a REM dispatch from a S-REMS and a REM receipt from a R-REMS for a RelayFailure event, the REMSP [PARTICIPANT-2] shall download and check the REM dispatch file dispatch-DTC1_RTC304.eml created by [PARTICIPANT-1] ,create the corresponding REMS RelayFailure receipt and upload the REM receipt. and a report including the REM dispatch checks outcome. The REMSP [PARTICIPANT-1] shall download and check the REM receipt file receipt_to_[PARTICIPANT-1]_dispatch-DTC1_RTC304.eml created by [PARTICIPANT-2] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be UnknownRecipient, as specified in the test case REL_FAIL_RB10.

6.2.1.9 REM ContentConsignment receipts

Participant-2 checks the REM dispatch from Participant-1, reports on the checks, and generates a REMS ContentConsignment event receipt. Participant-1 will check the REM receipt generated by Participant-2 and reports on the checks.

DTC1_RTC401:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm

+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body
This test case tests the creation of a REM dispatch from a S-REMS and a REM receipt from a R-REMS for a ContentConsignment event, the REMSP [PARTICIPANT-2] shall download and check the REM dispatch file dispatch-DTC1_RTC401.eml created by [PARTICIPANT-1] ,create the corresponding REMS ContentConsignment receipt and upload the REM receipt. and a report including the REM dispatch checks outcome. The REMSP [PARTICIPANT-1] shall download and check the REM receipt file receipt_to_[PARTICIPANT-1]_dispatch-DTC1_RTC401.eml created by [PARTICIPANT-2] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be MessageConsignedToRecipient, as specified in the test case CONT_CONS_RD01.

DTC1_RTC402:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody

+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body
This test case tests the creation of a REM dispatch from a S-REMS and a REM receipt from a R-REMS for a ContentConsignment event, the REMSP [PARTICIPANT-2] shall download and check the REM dispatch file dispatch-DTC1_RTC402.eml created by [PARTICIPANT-1] ,create the corresponding REMS ContentConsignment receipt and upload the REM receipt. and a report including the REM dispatch checks outcome. The REMSP [PARTICIPANT-1] shall download and check the REM receipt file receipt_to_[PARTICIPANT-1]_dispatch-DTC1_RTC402.eml created by [PARTICIPANT-2] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be MessageConsignedToDelegate, as specified in the test case CONT_CONS_RD02.

6.2.1.10 REM ContentConsignmentFailure receipts

Participant-2 checks the REM dispatch from Participant-1, reports on the checks, and generates a REMS ContentConsignmentFailure event receipt. Participant-1 will check the REM receipt generated by Participant-2 and reports on the checks.

DTC1_RTC501:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body

++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body
This test case tests the creation of a REM dispatch from a S-REMS and a REM receipt from a R-REMS for a ContentConsignmentFailure event, the REMSP [PARTICIPANT-2] shall download and check the REM dispatch file dispatch-DTC1_RTC501.eml created by [PARTICIPANT-1] ,create the corresponding REMS ContentConsignmentFailure receipt and upload the REM receipt. and a report including the REM dispatch checks outcome. The REMSP [PARTICIPANT-1] shall download and check the REM receipt file receipt_to_[PARTICIPANT-1]_dispatch-DTC1_RTC501.eml created by [PARTICIPANT-2] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be S_ERDSP_ReceivedNoDeliveryInfoFromR_ERDSP, as specified in the test case CONT_CONS_FAIL_RD03.

DTC1_RTC502:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body
This test case tests the creation of a REM dispatch from a S-REMS and a REM receipt from a R-REMS for a ContentConsignmentFailure event, the REMSP [PARTICIPANT-2] shall download and check the REM dispatch file dispatch-DTC1_RTC502.eml created by [PARTICIPANT-1] ,create the corresponding REMS ContentConsignmentFailure receipt and upload the REM receipt. and a report including the REM dispatch checks outcome. The REMSP [PARTICIPANT-1] shall download and check the REM receipt file

receipt_to_[PARTICIPANT-1]_dispatch-DTC1_RTC502.eml created by [PARTICIPANT-2] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be MessageNotConsignedForQuota, as specified in the test case CONT_CONS_FAIL_RD04.

DTC1_RTC503:

REM-Message
+REMSreceipt
++REMSReceiptHeader
+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body
This test case tests the creation of a REM dispatch from a S-REMS and a REM receipt from a R-REMS for a ContentConsignmentFailure event, the REMSP [PARTICIPANT-2] shall download and check the REM dispatch file dispatch-DTC1_RTC503.eml created by [PARTICIPANT-1] ,create the corresponding REMS ContentConsignmentFailure receipt and upload the REM receipt. and a report including the REM dispatch checks outcome. The REMSP [PARTICIPANT-1] shall download and check the REM receipt file receipt_to_[PARTICIPANT-1]_dispatch-DTC1_RTC503.eml created by [PARTICIPANT-2] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be MessageNotConsignedForMalfunction, as specified in the test case CONT_CONS_FAIL_RD05.

DTC1_RTC504:

REM-Message
+REMSreceipt
++REMSReceiptHeader

+++Reply-To
+++From
+++To
+++Subject
+++Date
+++Message-ID
+++REM-MetadataVersion
+++REM-MessageType
+++REM-DigestAlgorithm
+++REM-DigestValue
+++REM-EventIdentifier
+++MIME-Version
+++Content-Type
++REMReceiptBody
+++Header
++++Content-Type
+++Body
++++Header
+++++REM-Section-Type
+++++Content-Type
++++MainBody
+++++PlainTextIntroduction
++++++Header
++++++Body
+++++HTMLIntroduction
++++++Header
++++++Body
++++ERDS-Evidence
+++++Header
+++++Body
+++REMSignature
++++Header
++++Body

This test case tests the creation of a REM dispatch from a S-REMS and a REM receipt from a R-REMS for a ContentConsignmentFailure event, the REMSP [PARTICIPANT-2] shall download and check the REM dispatch file dispatch-DTC1_RTC503.eml created by [PARTICIPANT-1] ,create the corresponding REMS ContentConsignmentFailure receipt and upload the REM receipt. and a report including the REM dispatch checks outcome. The REMSP [PARTICIPANT-1] shall download and check the REM receipt file receipt_to_[PARTICIPANT-1]_dispatch-DTC1_RTC503.eml created by [PARTICIPANT-2] ,create and upload a report including the REM receipt checks outcome. The REM receipt shall include all mandatory fields. The REM receipt may include any optional fields too. The event reason of the included ERDS-Evidence shall be MessageNotConsignedForUnallowedType, as specified in the test case CONT_CONS_FAIL_RD06.

6.2.2 Negative Test cases for `REM-Message.SCUN` TestSet.

6.2.2.0 Introduction

The test cases in this clause deal with the REM-Messages.SCUN TestSet, i.e. test cases on Submission Acceptance receipt. They include data structures, formats and constraints as specified within [EN_319532-2], [EN_319532-3] and [EN_319532-4].

6.2.2.1 Invalid REM Dispatches

The test cases defined in REM-Messages.SCUN are for not valid REM dispatches as specified in [EN_319532-2].

REM_DTCN1:

This negative test case tests a REM dispatch not including a mandatory field/component. The REM dispatch header does not include the Subject field.

REM_DTCN2:

This negative test case tests a REM dispatch including an invalid value in a field/component. The REM dispatch header includes an invalid value in the REM-EventIdentifier field.

REM_DTCN3:

This negative test case tests a REM dispatch including an invalid ERDS Evidence. The REM dispatch includes an invalid ERDS Evidence compared to the value included in the REM-EventIdentifier field in the REM dispatch header.

REM_DTCN4:

This negative test case tests a REM dispatch including an invalid signature. The REM dispatch includes an incorrect signature from the cryptographic point of view.

6.2.2.2 Invalid REM receipts

The following test cases defined in REM-Messages.SCUN for not valid REM receipts as specified in [EN_319532-2].

REMS_RCPTN1:

This negative test case tests a REM receipt not including a mandatory field/component. The REM receipt header does not include the From field.

REMS_RCPTN2:

This negative test case tests a REM receipt including an invalida value in a field/component. The REM receipt header includes an invalid value in the REM-EventIdentifier field.

REMS_RCPTN3:

This negative test case tests a REM receipt including an invalid ERSD Evidence. The REM receipt includes an invalid ERDS Evidence compared to the value included in the REM-EventIdentifier field.

REMS_RCPTN4:

This negative test case tests a REM receipt including an invalid signature. The REM receipt includes an invalid signature (from the cryptogrphic point of view).

6.2.3 Positive Test cases for REM-Protocol.SCOK TestSet.

6.2.3.0 Introduction

The test cases in this clause deal with the REM-Protocol.SCOK TestSet, i.e. test cases on REM dispatch and consequent REM receipts creation. They include data structures, formats and constraints as specified within [EN_319532-2], [EN_319532-3] and [EN_319532-4].

6.2.3.1 Store and Forward

TC1:

Successful scenario with SREMS and RREMS operating Store and Forward as specified in [EN_319532-2]

- SREMS accepts the submission of the original message.

- SREMS generates a SubmissionAcceptance ERDS evidence and sends it back to the sender within a REM SubmissionAcceptance receipt.
- SREMS generates a REM dispatch (with attached the original message and the SubmissionAcceptance ERDS evidence) defining two recipients and relays it to RREMS.
- RREMS accepts the relay, generates a RelayAcceptance ERDS evidence to be included in a REM receipt for SREMS.
- RREMS generates and sends to SREMS a REM RelayAcceptance receipt (the RelayAcceptance receipt is for SREMS only).
- RREMS delivers the REM dispatch to the recipient in receiving side: the delivery is succesful.
- RREMS generates a ContentConsignment ERDS evidence attesting the success of the delivery.
- RREMS generates and sends to SREMS a REM ContentConsignment receipt including the ContentConsignment ERDS evidence attesting the success of the delivery.
- SREMS sends back to the sender the REM receipts including the ContentConsignment ERDS evidence.

This test case tests the protocol in which a SREMS [PARTICIPANT-1] accepts the submission of a message for one recipient from a sender, the SREMS generates a SubmissionAcceptance ERDS evidence and sends it back to the sender within a REM SubmissionAcceptance receipt then generates a REM dispatch (with the message sent by the sender and the SubmissionAcceptance ERDS evidence included) and relays it to RREMS [PARTICIPANT-2]. The RREMS accepts the relay, generates a RelayAcceptance ERDS evidence to be included in a REM receipt (filename receipt_2-[PARTICIPANT-1]_TC1.eml) sent to the SREMS, delivers the REM dispatch to the unique recipient (the delivery is successful), generates a ContentConsignment ERDS evidence related to the unique recipient to be included in the REM receipt attesting the success of the delivery and sends such receipt to SREMS that sends it (with the ContentConsignment ERDS evidence included) back to the sender. The REMSPs shall upload the REM dispatch and receipts. The REM dispatch shall include one recipient in the REM dispatch header. The REM dispatch and receipts shall include all mandatory fields. The REM dispatch and receipts may include any optional fields too.

TC2:

Failure scenario with SREMS and RREMS operating Store and Forward as specified in [EN_319532-2].

- SREMS accepts the submission of the original message.
- SREMS generates a SubmissionAcceptance ERDS evidence and sends it back to the sender within a REM SubmissionAcceptance receipt.
- SREMS generates a REM dispatch (with attached the original message and the SubmissionAcceptance ERDS evidence) and relays it to RREMS.
- RREMS rejects the relay, generates a RelayRejection ERDS evidence to be included in a REM receipt for SREMS.
- RREMS generates and sends to SREMS a REM RelayRejection receipt (the RelayRejection receipt is for SREMS only).
- SREMS generates a RelayFailure ERDS evidence and sends it back to the sender within a REM RelayFailure receipt.

This test case tests the protocol in which a SREMS [PARTICIPANT-1] accepts the submission of a message from a sender, the SREMS generates a SubmissionAcceptance ERDS evidence and sends it back to the sender within a REM SubmissionAcceptance receipt then generates a REM dispatch (including the message sent by the sender and the SubmissionAcceptance ERDS evidence) and relays it to RREMS [PARTICIPANT-2]. The RREMS rejects the relay, generates a RelayRejection ERDS evidence to be included in a REM receipt sent to the SREMS that generates a RelayFailure ERDS evidence and sends it back to the sender within a REM RelayFailure receipt. The REMSPs shall upload the REM dispatch and receipts. The REM dispatch shall include only one recipient in the REM dispatch header. The RelayRejection ERDS evidence shall include the EventCode S_ERDS_PolicyViolation. The REM dispatch and receipts shall include all mandatory fields. The REM dispatch and receipts may include any optional fields too.

TC3:

Successful scenario with SREMS and RREMS operating Store and Forward as specified in [EN_319532-2].

- SREMS accepts the submission of the original message.

- SREMS generates a SubmissionAcceptance ERDS evidence and sends it back to the sender within a REM SubmissionAcceptance receipt.
- SREMS generates a REM dispatch (with attached the original message and the SubmissionAcceptance ERDS evidence) defining two recipients and relays it to RREMS.
- RREMS accepts the relay, generates a RelayAcceptance ERDS evidence to be included in a REM receipt for SREMS.
- RREMS generates and sends to SREMS a REM RelayAcceptance receipt (the RelayAcceptance receipt is for SREMS only).
- RREMS delivers the REM dispatch to the 2 recipients in receiving side: the delivery relevant to both recipients are succesful.
- RREMS generates a ContentConsignment ERDS evidence (one for any recipient to be included in the respective REM receipts) attesting the success of the delivery.
- RREMS generates and sends to SREMS two REM ContentConsignment receipts.
- SREMS sends back to the sender the two REM receipts, both with a ContentConsignment ERDS evidence included.

This test case tests the protocol in which a SREMS [PARTICIPANT-1] accepts the submission of a message for two recipients from a sender, the SREMS generates a SubmissionAcceptance ERDS evidence and sends it back to the sender within a REM SubmissionAcceptance receipt then generates a REM dispatch (with the message sent by the sender and the SubmissionAcceptance ERDS evidence included) and relays it to RREMS [PARTICIPANT-2]. The RREMS accepts the relay, generates a RelayAcceptance ERDS evidence to be included in a REM receipt (filename receipt_2-[PARTICIPANT-1]_TC3.eml) sent to the SREMS, delivers the REM dispatch to the two recipients (the deliveries relevant to both recipients are successful), generates a ContentConsignment ERDS evidence related to any recipient to be included in the respective REM receipt attesting the success of the delivery and sends both receipts to SREMS that sends the two REM receipts (both with a ContentConsignment ERDS evidence included) back to the sender. The REMSPs shall upload the REM dispatch and receipts. The REM dispatch shall include two recipients in the REM dispatch header. The REM dispatch and receipts shall include all mandatory fields. The REM dispatch and receipts may include any optional fields too.

TC4:

Successful/unsuccessful scenario with SREMS and RREMS operating Store and Forward as specified in [EN_319532-2].

- SREMS accepts the submission of the original message.
- SREMS generates a SubmissionAcceptance ERDS evidence and sends it back to the sender within a REM SubmissionAcceptance receipt.
- SREMS generates a REM dispatch (with attached the original message and the SubmissionAcceptance ERDS evidence) defining two recipients and relays it to RREMS.
- RREMS accepts the relay, generates a RelayAcceptance ERDS evidence to be included in a REM receipt for SREMS.
- RREMS generates and sends to SREMS a REM RelayAcceptance receipt (the RelayAcceptance receipt is for SREMS only).
- RREMS delivers the REM dispatch to the 2 recipients in receiving side: the delivery relevant to one recipient is succesful while the other one is unsuccessful.
- RREMS generates a ContentConsignment ERDS evidence (related to the recipient whose delivery has been successful) to be included in the REM receipt attesting the success of the delivery and sends such REM receipt to SREMS.
- RREMS generates a ContentConsignmentFailure ERDS evidence (related to the recipient whose delivery has been unsuccessful) to be included in the REM receipt attesting the failure of the delivery and sends such REM receipt to SREMS.
- SREMS sends back to the sender the two REM receipts: a receipt including a ContentConsignment ERDS evidence and the other one including a ContentConsignmentFailure ERDS evidence.

This test case tests the protocol in which a SREMS [PARTICIPANT-1] accepts the submission of a message for two recipients from a sender, the SREMS generates a SubmissionAcceptance ERDS evidence and sends it back to the sender within a REM SubmissionAcceptance receipt then generates a REM dispatch (with the message sent by the

sender and the SubmissionAcceptance ERDS evidence included) and relays it to RREMS [PARTICIPANT-2]. The RREMS accepts the relay, generates a RelayAcceptance ERDS evidence to be included in a REM receipt (filename receipt_2-[PARTICIPANT-1]_TC4.eml) sent to the SREMS and delivers the REM dispatch to the two recipients (the delivery relevant to one recipient is successful while the other one is unsuccessful), therefore the RREMS generates a ContentConsignment ERDS evidence for one delivery and a ContentConsignmentFailure ERDS evidence for the other delivery to be included in the respective REM receipt attesting respectively the success and the failure of the delivery and sends both REM receipts to SREMS that sends them back to the sender: a receipt including a ContentConsignment ERDS evidence and the other one including a ContentConsignmentFailure ERDS evidence. The REMSPs shall upload the REM dispatch and receipts. The REM dispatch shall include two recipients in the REM dispatch header. The ContentConsignmentFailure ERDS evidence shall include the EventCode MessageNotConsignedForQuota. The REM dispatch and receipts shall include all mandatory fields. The REM dispatch and receipts may include any optional fields too.

TC5:

Successful/unsuccessful scenario with SREMS and RREMS operating Store and Forward as specified in [EN_319532-2].

- SREMS accepts the submission of the original message.
- SREMS generates a SubmissionAcceptance ERDS evidence and sends it back to the sender within a REM SubmissionAcceptance receipt.
- SREMS generates a REM dispatch (with attached the original message and the SubmissionAcceptance ERDS evidence) defining two recipients and relays it to RREMS.
- RREMS accepts the relay for one recipient, generates a RelayAcceptance ERDS evidence to be included in a REM receipt that is sent to the SREMS (the RelayAcceptance receipt is for SREMS only).
- RREMS rejects the relay for the other recipient, generates a RelayRejection ERDS evidence to be included in a REM receipt that is sent to the SREMS (the RelayRejection receipt is for SREMS only).
- SREMS generates a RelayFailure ERDS Evidence and sends it back to the sender within a REM receipt.
- RREMS delivers the REM dispatch to one recipient in receiving side: the delivery relevant to such recipient is successful.
- RREMS generates a ContentConsignment ERDS evidence (related to the recipient whose delivery has been successfully completed) to be included in the REM receipt attesting the success of the delivery and sends such REM receipt to SREMS.
- SREMS sends back to the sender the REM receipt including a ContentConsignment ERDS evidence.

This test case tests the protocol in which a SREMS [PARTICIPANT-1] accepts the submission of a message for two recipients from a sender, the SREMS generates a SubmissionAcceptance ERDS evidence and sends it back to the sender within a REM SubmissionAcceptance receipt then generates a REM dispatch (with the message sent by the sender and the SubmissionAcceptance ERDS evidence included) and relays it to RREMS [PARTICIPANT-2]. The RREMS accepts the relay regarding one recipient, generates a RelayAcceptance ERDS evidence to be included in a REM receipt sent to the SREMS and delivers the REM dispatch to the recipient. The RREMS rejects the relay regarding the other recipient, generates a RelayRejection ERDS evidence to be included in a REM receipt sent to the SREMS. The SREMS receives the two REM receipts and generates a RelayFailure ERDS evidence included in a REM receipt sent back to the sender. The RREMS successfully delivers the REM dispatch to one recipient and therefore generates a ContentConsignment ERDS evidence for this delivery to be included in the REM receipt attesting the successful delivery that is sent to the SREMS. The SREMS sends back to the sender the REM receipt including the ContentConsignment ERDS evidence. The REMSPs shall upload the REM dispatch and receipts. The REM dispatch shall include two recipients in the REM dispatch header. The RelayRejection ERDS evidence shall include the EventCode R_ERDS_MessageRejected. The REM dispatch and receipts shall include all mandatory fields. The REM dispatch and receipts may include any optional fields too.

TC6:

Failure scenario with SREMS and RREMS operating Store and Forward as specified in [EN_319532-2].

- SREMS accepts the submission of the original message.

- SREMS generates a SubmissionAcceptance ERDS evidence and sends it back to the sender within a REM SubmissionAcceptance receipt.
- SREMS generates a REM dispatch (with attached the original message and the SubmissionAcceptance ERDS evidence) and relays it to RREMS.
- RREMS rejects the relay, generates a RelayRejection ERDS evidence to be included in a REM receipt for SREMS.
- RREMS generates and sends to SREMS a REM RelayRejection receipt (the RelayRejection receipt is for SREMS only).
- SREMS generates a RelayFailure ERDS evidence and sends it back to the sender within a REM RelayFailure receipt.

This test case tests the protocol in which a SREMS [PARTICIPANT-1] accepts the submission of a message for one recipient from a sender, the SREMS generates a SubmissionAcceptance ERDS evidence and sends it back to the sender within a REM SubmissionAcceptance receipt then generates a REM dispatch (with the message sent by the sender and the SubmissionAcceptance ERDS evidence included) and relays it to RREMS [PARTICIPANT-2]. The RREMS rejects the relay because of a malware in the message content, generates a RelayRejection ERDS evidence to be included in a REM receipt sent to the SREMS. The SREMS receives the REM receipt and generates a RelayFailure ERDS evidence included in a REM receipt sent back to the sender. The REMSPs shall upload the REM dispatch and receipts. The REM dispatch shall include one recipient in the REM dispatch header. The RelayRejection ERDS evidence shall include the EventCode R_ERDS_MessageRejectedForMalware. The REM dispatch and receipts shall include all mandatory fields. The REM dispatch and receipts may include any optional fields too.

Change History

Document history		
1.0	05.10.2021	Final version