

Functional Design eCM Test scenarios for the EFET Test facility

- **Broker Tests**
- **Product tests**

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By order of EFET

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1 INTRODUCTION

EFET defined the electronic Confirmation and Matching (eCM) system to enable electronic exchange of Trade Confirmations and Match suggestions regarding these trades.

Starting with version 3.0 of this standard the messaging layer 'below' this standard is based on ebXML MS V2.0. With this requirement all implementations of the eCM should be interoperable, even when coming from different sources.

In order to check if the standard is detailed enough to reach this interoperability and to check if implementers and users have followed the standard as it was meant, EFET asked KEMA to provide a test facility that is able to simulate the applicable participant roles covering the complete functionality of the eCM standard. This test facility must comprise various test scenarios, selected by EFET, which must be performed by the System Under Test with positive result in order to be certified. The System Under Test can have different functionality, performing the role of a Trader (Seller or Buyer) or Broker. Important is that the Test facility can only test the interfacing with the System Under Test. The test facility will be available on the public Internet, 24 hours per day 7 days per week

This document describes the test scenarios that are to be performed to certify eCM version 3.2 compliant products and a market participant using these products. When the test scenarios are approved by EFET, KEMA will propose selections from the list of scenarios that must be performed in a vendor test and in a market participant test.

Chapter two describes in general the checks that will be performed by the test facility.

In chapter three the behavior of the test facility in case a message is received is described.

Chapter four describes the coding of the test scenarios.

Chapter five describes in details the test scenarios on the transport, semantic and syntax level. Paragraph two of this chapter describes the scenarios for the ebXML layer. These tests always have to be performed prior to all other scenarios. Paragraph three of chapter five describes the scenarios for the business document flow of the EFET eCM.

2 GENERAL CHECKS

This section describes the general checks that will be performed by the test facility on all incoming messages, unless otherwise specified in a test scenario.

- Correct XML structure
- Correct eCM documents conform EFET eCM XML Schema's
- Correct eCM message according to eCM V3.2
- The use of correct EIC-codes
- Correct use of ebXML parameters (CPAID, Service, Action, ConversationID, MessageID, PartyID)
- Correct use of ebXML message encodings (signature formats, compression)
- Each party has one party address where they should send their messages.
- The messages should be according to the test scenario currently active. This involves checking of:
 - Expected message
 - expected changes in data
 - expected references to previous messages

3 GENERAL ACTIONS OF THE TEST FACILITY

This section describes the general actions that will be performed by the Test Facility when it has received a message, unless otherwise specified in a test scenario.

Incoming Message	Action
The source of the incoming message is unknown (the party address is unknown)	<ul style="list-style-type: none">– Message is discarded– No error message is displayed on website
There is no scenario active for the sender of the message	<ul style="list-style-type: none">– Message is discarded– No error message is displayed on website
Message is not a valid eCM message while a scenario is active	<ul style="list-style-type: none">– Scenario is aborted– Error message is displayed on website– Rejection is sent with code “Validation error”
Message is a valid eCM message but not as expected by the scenario	<ul style="list-style-type: none">– Scenario is aborted– Error message is displayed on website– No reply is sent
Message is valid and as expected by the scenario	<ul style="list-style-type: none">– Scenario proceeds to the next step (if there is a next step)– Positive ACK is sent– If required by the scenario, the next message is sent.

4 GENERAL REMARKS ABOUT THE SCENARIOS

Each scenario has a unique code (for example S101010). The scheme for this code is as follows:

- Position 1: An 'S' to indicate that the System Under Test (**SUT**) has to send the first message, a "T" when the Test Facility takes the initiative.
- Position 2: At the moment this number will always be 1. If the eCM Test Facility needs to be extended in the future with a new set of scenarios, this number can be increased for the new scenarios.
- Position 3+4: The eCM message Type:
 - 01: CNF (Trade Confirmation)
 - 02: REJ (Rejection)
 - 03: MSU (Match Suggestion)
 - 04: MSA (Match Suggestion Acceptance)
 - 05: MSR (Match Suggestion Rejection)
 - 06: CAN (Cancellation)
 - 07: ACK (Acknowledgement)
 - 08: BFI (Broker Fee Information)
 - 09: BMN (Broker Match Notification)
 - 10: BCN (Broker Confirmation)
- Position 5+6: The scenario number
- Position 7: Version number. When a scenario needs to be changed (due to an error or new insights) after the parties have started testing, this number can be used to show the scenario is a new version. Standard this number will be 0.

The scenarios contain references to make it easier for the helpdesk to find the necessary specifications. All references are to the eCM standard documents.

The steps of the scenarios are numbered in the following way for a S-Scenario:

- Steps that require action from the SUT (the system of the party performing the test): Odd step numbers
- Steps that require action from the Test Facility: Even step numbers

This can result in skipping a step-number, when one of the systems needs to perform two steps after each other (for example, when the SUT needs to send an Acknowledgement and a Confirmation).

The steps of the scenarios are numbered in the following way for a T-Scenario:

- Steps that require action from the Test Facility: Odd step numbers
- Steps that require action from the SUT (the system of the party performing the test): Even step numbers

This can result in skipping a step-number, when one of the systems needs to perform two steps after each other (for example, when the Test Facility needs to send an Acknowledgement and a Confirmation) .

We defined most scenarios as S-scenarios because we want to avoid the following:

- Test Facility sends a CNF for a Commodity / Market / TransactionType the SUT does not support.
- Test Facility uses locations not supported by the SUT

These situations would never result in a MATCHING status.

In some scenarios the data that must be send must be containing specific data fields.

All specific data entries must be specified and agreed upon before the scenario's can be implemented.

This is avoided when the SUT sends in what they support. The Test Facility can make offences or not on the received data. For the Test Facility it is in most scenario's not relevant which Commodity / Market / TransactionType and locations are being used. In paragraph 5.3.4 there are defined special scenarios so the SUT can prove that they support multiple Commodity / Market / TransactionType combinations.

Each SUT will be assigned a unique EIC-code for the communication. The Test Facility will have a unique EIC-code for:

- Trader Role
- Broker Role

The Test Facility has to perform two roles in some scenario's to test the actual situation as close as possible.

The overall purpose of the testing is that the Test Facility must check that the incoming messages at the test facility side are according what is expected. In the process of entering them at the beginning of the cycle and the delivery at the test facility no changes may occur. Also the other way around: In the process of sending by the test facility and handling the received files at the SUT-side changes may not occur either.

Therefore for every scenario the configured input and changes must be prescribed to be able to verify this (automatically by the Test Facility or manually by the SUT-operator).

For example:

- SUT sends a CNF which contains the information from Trade A. The contents of this trade A must then be specified in the appendix so that there is no discussion about the contents and values that are required
 - The only difference with the appendix may be the EIC-codes of the SUT (Sender / Receiver / Buyer / Seller)
 - Other key fields must stay the same
 - Informational fields may be changed because they should not influence the matching process
- SUT must send an amendment, containing the information from Trade B.
- Test Facility will send an amendment with the information from Trade B.

In combination with the wish of the EFET members the state changes are specified in the scenarios, so checks can be done manually at the SUT-side to verify that the states are according what is expected. **The specified states are the states after handling the step.**

When errors are detected at the Test Facility side the scenario will fail, and the history will show the results of the steps. The states and generated files can then be verified to see where the problem occurred within the SUT.

The Testing of BFI is a local matter and can not be tested with the Test Facility.

Below is an example of the manner how to prescribe specific trades used in scenarios and the state changes required for a good result.

Overview of statuses for CNF and BCN during the scenario

	System Under Test (Buyer)		Test Facility (Seller)	Test Facility (Broker)
Step	CNF 1	BFI 1	CNF 2	BCN 1
1	Sending to CP Trade ...			
2	Pending			
3		Valid		
4				Start Trade ...
5				Pending

Colors indicate the following knowledge:

Color in Step Column	Explanation
Yellow	CNF 1 / BCN 1 of SUT
Light Yellow	CNF 2 / BCN 2 of SUT
Light Green	CNF 3 / BCN 3 of SUT
Light Grey	CNF 1 of Test Facility
Dark Grey	CNF 2 of Test Facility
Medium Grey	CNF 3 of Test Facility
Purple	Related to matching process

Color in Step Column	Explanation
Yellow	CNF 1 / BCN 1 of SUT
Light Yellow	CNF 2 / BCN 1 of SUT
Light Green	CNF 3 / BCN 1 of SUT
Light Cyan	BFI 1 of SUT
Light Grey	CNF 1 of Test Facility
Dark Grey	CNF 2 of Test Facility
Medium Grey	CNF 3 of Test Facility
Light Blue	BCN 1 of Test Facility
Medium Blue	BCN 2 of Test Facility
Dark Blue	BCN 3 of Test Facility

Special attention is required for the states not mentioned in the state diagrams of the EFET eCM standard. These states are:

State	Explanation
Not Applicable	<p>The state of a trade confirmation document being received is rejected by the ebXML layer</p> <p>The situation is not in the state diagrams but this situation can occur when:</p> <ul style="list-style-type: none">▪ document not according schema▪ ebXML validation is turned on▪ errors detected by the ebXML layer when validating document against schema
Rejected	<p>The state of a trade confirmation document being received from counterparty and sent rejection document</p> <p>The situation is not in the state diagrams but this situation can occur when:</p> <ul style="list-style-type: none">▪ errors not detected by the ebXML layer▪ errors not detected by the schema

The states specified in this document are the states seen in the SUT and not the states seen in the testsystem. Making the scenario's understandable is possible in this document by indicating what the other side is doing. Therefore two states are added:

- The state "Sending to CP" can only be seen in the local system, therefore this state is indicated as "**Start**" to differentiate the local and remote states. This involves CNF and BCN documents.
- The state "Potential Match" can only be seen in the local system, therefore this state is indicated as "**Potential**" to differentiate the local and remote states.

4.1 Testdata product testing

Testdata for product testing will be generated by the Test Facility:

- Activation using a web-interface
- Generation of testfiles (XML-files)
 - Broker Confirmation documents
 - Cancellation documents
- Zipping of all testfiles into a zipfile
- Downloading the zipfile from the website

After receiving the zipfile the testing party (SUT) needs to activate the scenario's and needs to send the required testfiles when required. The filenames of the test data will contain clear references to the scenario's and the step within the scenario's so the testing party knows when to use which file. Only Trade Confirmation documents and Cancellation documents are part of the testdata, as all other documents must be created by the EFET-box of the SUT.

When not all scenario's can be completed with success, the generation of test data must be repeated to retry the scenario's that failed. The generated data for already completed scenario's will also be regenerated, because all tests must succeed in one run without errors, within the certification.

Besides for certification the testfacility can also be used for:

- Development (product-test)
- Learning (end-user test)
- Integration (end-user test after certification before taking new partners into operation)

For these purposes it is allowed to have failed scenario's and then also testdata will be regenerated for already completed scenario's, being able to repeat them again.

When registering on the website a login will be generated for:

- Certification
- Testmode (development, learning and integration)

It will only be possible to test on one of the two accounts at every point in time. This will be handled by agreeing a certain time period for each type of test.

Outside the time periods it will not be possible to use the test facility.

Example of different time periods and different accounts:

From ... till ...	From ... till ...	From ... till ...
Development Account 1	Certification Account 2	Integration Account 1

5 TEST SCENARIOS

5.1 Overview

Subject of the test	Type of tests	Used in	References
EFET extensions to EbXML MS V2.0	EbXML messaging	Prod. + Part. Test	EbXML MS 2.0 EFET eCM standard V3.2F draft
Real World Business	Business Document Flow <ul style="list-style-type: none"> ▪ Normal behavior ▪ Normal behavior combined with offences 	Prod. + Part. Test	EFET eCM standard V3.2F draft
	Business Rules <ul style="list-style-type: none"> ▪ Normal behavior ▪ Offences 	Prod. + Part. Test	EFET eCM standard V3.2F draft
	ECM Fields <ul style="list-style-type: none"> ▪ Normal behavior ▪ Type errors not covered by schema 	Prod. + Part. Test	EFET eCM standard V3.2F draft
eCM XML document exchange	Syntax	Prod. + Part. Test	EFET eCM standard V3.2F draft

5.2 Connectivity testing

The purpose of connectivity testing is that it will check if the communication between two systems is valid and makes it possible to continue testing all scenarios.

These scenarios should verify that ebXML Messaging layer works and complies with the eCM Standard ebXML Profile and the ebXML Messaging Service Standard 2.0.

Issues that must be working are:

- Valid ebXML messages
- Communication to the right URI
- Encryption and Decryption of the messages
- Compression and Decompression of the messages

Look at the standard for the required settings.

When problems are available with one of the mentioned issues they must be solved before the testing with the Test Facility can be continued. For all test scenarios the eCM Standard ebXML Profile and the ebXML Messaging Service Standard 2.0 requirements will be tested on the background as it will be stopping the progress during the test scenarios.

When both systems have the “ping-pong” functionality available, this can verify that the other side is reachable and that the configured URI’s are valid.

Preconditions:

- The SUT ebXML implementation is setup with one private/public key pair for its own usage
- SUT provides an external URL for ebXML Service Access by means of HTTP

Look in the standard for the required settings for the ebXML profile mandated by ebXML MS 2.0 / EFET 3.2. The required settings will be tested by the EFET test facility.

Connectivity Test 1: Test the ping-pong functionality (when supported by at least one side)

System Under Test	Test Facility
	Activate Ping-pong
Activate Ping-pong	

Checks performed

- Validate that ping-pong works from Testfacility to System Under Test
- Validate that ping-pong works from System Under Test to Testfacility
- Communication is configured correctly for:
 - Ebxml
 - Routers
 - Firewalls
 - DNZ

Scenario: T101010 – Send a Trade Confirmation (CNF)
 Purpose: To check the ebXML interoperability between the parties
 Test type: Product test and end-user test

Step	System Under Test	State SUT	Test Facility	State TS
1		-	Send a CNF	Start
2	Send an ACK	Pending		Pending
3		-	Send a CAN to cancel the CNF <ul style="list-style-type: none"> ▪ DocumentID and DocumentVersion of previous sent CNF (<u>Step 1</u>) 	-
4	Send an ACK	Cancelled		Cancelled
6	Send a CNF	Sending to CP		-
7		Pending	Send an ACK	Pending
8	Send a CAN to cancel the CNF <ul style="list-style-type: none"> ▪ DocumentID and DocumentVersion of previous sent CNF (<u>Step 6</u>) 			
9		Cancelled	Send an ACK	Cancelled

Checks performed

- Validate ebXML message against XSD of ebXML
- Check if an Acknowledgement (for CNF) was received
- Check if an Acknowledgement (for CAN) was received
- EFET box functionality can be used in the communication
- Communication works both ways

Overview of statuses for CNF during the scenario

	System Under Test	Test Facility
Step	CNF 2	CNF 1
1		Start Trade 4A
2		Pending
3		
4		Cancelled
6	Start Trade 2A	
7	Pending	
8		
9	Cancelled	

Scenario: T101020 – Send a Trade Confirmation (CNF) with an error in ebXML
 ➔ DocumentID missing (structure not according the XML Schema)
 Purpose: To check the ebXML validation against the XML Schema
 Test type: Product test and end-user test

Step	System Under Test	State SUT	Test Facility	State TS
1		-	Send a CNF	Start
2	Send an ebXML error with DocumentID missing. Note that the error to return is not defined by the eCM-standard.	Not Applicable		Not Applicable

Checks performed

- Check if a XML Rejection was received
- Check if the correct rejection reason is returned

Overview of statuses for CNF during the scenario

	System Under Test	Test Facility
Step		CNF 1
1		Start Trade 24A
2		Not Applicable

Scenario: T101030 – Send a Trade Confirmation (CNF) with an enumeration error in ebXML
 ➔ AgreementType is invalid (enumeration not valid according the XML Schema)
 Purpose: To check the ebXML validation against the XML Schema
 Test type: Product test and end-user test

Step	System Under Test	State SUT	Test Facility	State TS
1		-	Send a CNF	Start
2	Send an ebXML error with DocumentID missing. Note that the error to return is not defined by the eCM-standard.	Not Applicable		Not Applicable

Checks performed

- Check if an ebXML Rejection was received
- Check if the correct rejection reason is returned

Overview of statuses for CNF during the scenario

	System Under Test	Test Facility
Step		CNF 1
1		Start Trade 24A
2		Not Applicable

5.3 Scenarios for testing eCM Standard compliance

These scenarios should show that the SUT handles and processes the eCM documents in conformance to the EFET eCM V3.2 standard.

5.3.1 Broker Confirmation Matching Process – (Broker) - Normal behavior

Scenario: S49 – Full Broker Confirmation Matching process with Preliminary Match (SUT = Broker)

Purpose: To test the full document flow of the Confirmation Matching Process and if the documents comply with the Business Rules.

Role: Test Facility acts as a Trader

Test type: Product test

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
1	Send a BCN to Trader <ul style="list-style-type: none"> ▪ Document complies with the Business Rules for BCN. ▪ DocumentID: new and unique 	-		-
2		Pending	Send an ACK if the BCN is correct	Pending
4		-	Send a BMN – Preliminary Match Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN, CNF and BFI 	-
5	Send an ACK if the BMN is correct	Preliminary Matched		Preliminary Matched
6		-	Send a BMN – Match (Final) Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN, CNF and BFI 	-
7	Send an ACK if the BMN is correct	Matched		Matched

Overview of statuses for CNF and BCN during the scenario

	System Under Test (Broker)	Test Facility (Trader)
Step	BCN 1	CNF 1
1	Sending to CP Trade 21A	
2	Pending	
4		Pending
5	Preliminary Matched	
6		Matched
7	Matched	

Scenario: S50 – Full Broker Confirmation Matching process without Preliminary Match (SUT = Broker)

Purpose: To test the full document flow of the Confirmation Matching Process and if the documents comply with the Business Rules.

Role: Test Facility acts as a Trader

Test type: Product test

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
1	Send a BCN to Trader <ul style="list-style-type: none"> Document complies with the Business Rules for BCN. DocumentID: new and unique 	-		-
2		Pending	Send an ACK if the BCN is correct	Pending
4		-	Send a BMN – Match (Final) Contents: <ul style="list-style-type: none"> DocumentID: new and unique Document References to BCN, CNF and BFI 	-
5	Send an ACK if the BMN is correct	Matched		Matched

Overview of statuses for CNF and BCN during the scenario

	System Under Test (Broker)	Test Facility (Trader)
Step	BCN 1	CNF 1
1	Sending to CP Trade 21A	
2	Pending	
4		Matched
5	Matched	

Scenario: S52 – Full Broker Confirmation Matching process with Amendment after Preliminary Match (SUT = Broker)

Purpose: To test the full document flow of the Confirmation Matching Process and if the documents comply with the Business Rules.

Role: Test Facility acts as a Trader

Test type: Product test and end-user test

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
1	Send a BCN to Trader <ul style="list-style-type: none"> Document complies with the Business Rules for BCN. DocumentID: new and unique 	-		-
2		Pending	Send an ACK if the BCN is correct	Pending
4		-	Send a BMN – Preliminary Match Contents: <ul style="list-style-type: none"> DocumentID: new and unique Document References to BCN (<u>Step 1</u>), CNF and BFI 	-
5	Send an ACK if the BMN is correct	Preliminary Matched		Preliminary Matched
7	Send a BCN Amendment <ul style="list-style-type: none"> Document complies with the Business Rules for BCN. DocumentID: Same as in <u>step 1</u> DocumentVersion: <u>Augmented from step 1</u> 	-		-
8		Amended + Pending	Send an ACK if the BCN is correct	Amended + Pending
10		-	Send a BMN – <u>Reversal</u> Contents: <ul style="list-style-type: none"> DocumentID: new and unique Document References to BCN (<u>Step 1</u>), CNF and BFI 	-
11	Send an ACK if the BMN is correct	Pending		Pending
12		-	Send a BMN – Preliminary Match Contents: <ul style="list-style-type: none"> DocumentID: new and unique Document References to BCN (<u>Step 7</u>), CNF and BFI 	-
13	Send an ACK if the BMN is correct	Preliminary Matched		Preliminary Matched

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
14		-	Send a BMN – Match (Final) Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN (<u>Step Z</u>), CNF and BFI 	-
15	Send an ACK if the BMN is correct	Matched		Matched

Overview of statuses for CNF and BCN during the scenario

	System Under Test (Broker)		Test Facility (Trader)
Step	BCN 1	BCN 2	CNF 1
1	Sending to CP Trade 21A		
2	Pending		
4			Pending
5	Preliminary Matched		
7		Sending to CP Trade 21A	
8	Amended	Pending	Pending
10			
11	Amended		Pending
12			Pending
13		Preliminary Matched	
14			Matched
15		Matched	

Scenario: S53 – Full Broker Confirmation Matching process with Cancellation after Preliminary Match (SUT = Broker)

Purpose: To test the full document flow of the Confirmation Matching Process and if the documents comply with the Business Rules.

Role: Test Facility acts as a Trader

Test type: Product test and end-user test

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
1	Send a BCN to Trader <ul style="list-style-type: none"> ▪ Document complies with the Business Rules for BCN. ▪ DocumentID: new and unique 	-		-
2		Pending	Send an ACK if the BCN is correct	Pending
4		-	Send a BMN – Preliminary Match Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN (<u>Step 1</u>), CNF and BFI 	-
5	Send an ACK if the BMN is correct	Preliminary Matched		Preliminary Matched
7	Send a Cancellation Contents <ul style="list-style-type: none"> ▪ DocumentID and DocumentVersion of BCN (<u>Step 1</u>) 	-		-
8		Cancelled	Send an ACK if the BCN is correct	Cancelled
10		-	Send a BMN – <u>Reversal</u> Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN (<u>Step 1</u>), CNF and BFI 	-
11	Send an ACK if the BMN is correct	Cancelled		Cancelled

Overview of statuses for CNF and BCN during the scenario

	System Under Test (Broker)	Test Facility (Trader)
Step	BCN 1	CNF 1
1	Sending to CP <input type="text" value="Trade 21A"/>	
2	Pending	
4		Pending
5	Preliminary Matched	
7		
8	Cancelled	Pending
10		
11	Cancelled	Pending

Scenario: S56 – Full Broker Confirmation Matching process with CNF Amendment after Preliminary Match (SUT = Broker)

Purpose: To test the full document flow of the Confirmation Matching Process and if the documents comply with the Business Rules.

Role: Test Facility acts as a Trader

Test type: Product test

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
1	Send a BCN to Trader <ul style="list-style-type: none"> ▪ Document complies with the Business Rules for BCN. ▪ DocumentID: new and unique ▪ TotalVolume = 1200 	-		-
2		Pending	Send an ACK if the BCN is correct	Pending
4		-	Send a BMN – Preliminary Match Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN (<u>Step 1</u>), CNF and BFI 	-
5	Send an ACK if the BMN is correct	Preliminary Matched		Preliminary Matched
6		-	Send a BMN – <u>Reversal because of changed CNF</u> Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN (<u>Step 1</u>), CNF and BFI 	-
7	Send an ACK if the BMN is correct	Pending		Pending
9	Send a BCN to Trader <ul style="list-style-type: none"> ▪ Document complies with the Business Rules for BCN. ▪ DocumentID: Same as in <u>Step 1</u> ▪ DocumentVersion: Augmented from <u>Step 1</u> ▪ TotalVolume = 900 	-		-
10		Amended + Pending	Send an ACK if the BCN is correct	Amended + Pending

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
12		-	Send a BMN – <u>Preliminary Match with changed CNF</u> Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN (<u>Step 9</u>), CNF (DocumentVersion: Augmented from <u>step 6</u>) and BFI 	-
13	Send an ACK if the BMN is correct	Preliminary Matched		Preliminary Matched
14		-	Send a BMN – <u>Match (Final) with changed CNF</u> Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN (<u>Step 9</u>), CNF (<u>Same DocumentVersion as in step 12</u>) and BFI 	-
15	Send an ACK if the BMN is correct	Matched		Matched

Overview of statuses for CNF and BCN during the scenario

Step	System Under Test (Broker)		Test Facility (Trader)	
	BCN 1	BCN 2	CNF 1	CNF 2
1	Sending to CP Trade 21B			
2	Pending			
4			Pending	
5	Preliminary Matched		Pending	
7	Pending			
9		Sending to CP Trade 21C		
10	Amended	Pending	Pending	
12			Amended	Pending
13		Preliminary Matched		
14				Matched
15		Matched		

5.3.2 Broker Confirmation Matching Process – (Broker) - Business Rules Offences

Scenario: S57 – Referenced BCN is never used (SUT = Broker)

Purpose: To verify the detection of an eCM Business Rule offence and checking that it does not disturb the matching process

Role: Test Facility acts as a Trader

Test type: Product test

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
1	Send a BCN to Trader <ul style="list-style-type: none"> ▪ Document complies with the Business Rules for BCN. ▪ DocumentID: new and unique 	-		-
2		Pending	Send an ACK if the BCN is correct	Pending
4		-	Send a BMN – Preliminary Match Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN (<u>Not referencing the BCN of Step 1</u>), CNF and BFI 	-
5	Send a REJ with “EFET:ReferencedDocNotExists”	Pending		Pending
6		-	Send a BMN – Preliminary Match Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN (<u>Step 1</u>), CNF and BFI 	-
7	Send an ACK if the BMN is correct	Preliminary Matched		Preliminary Matched
8		-	Send a BMN – Match (Final) Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN (<u>Step 1</u>), CNF and BFI ▪ Referenced DocumentVersion BCN <u>changed</u> 	-
9	Send a REJ with “EFET:ReferencedDocNotExists”	Preliminary Matched		Preliminary Matched

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
10		-	Send a BMN – Match (Final) Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN (<u>Step 1</u>), CNF and BFI 	-
11	Send an ACK if the BMN is correct	Matched		Matched

Overview of statuses for CNF and BCN during the scenario

	System Under Test (Broker)	Test Facility (Trader)
Step	BCN 1	CNF 1
1	Sending to CP Trade 21A	
2	Pending	
4		Pending
5	Pending	
6		Pending
7	Preliminary Matched	
8		
9	Preliminary Matched	
10		Matched
11	Matched	

Scenario: S62 – Referenced BCN does not exist (SUT = Broker)

Purpose: To verify the detection of an eCM Business Rule offence and checking that it does not disturb the matching process

Role: Test Facility acts as a Trader

Test type: Product test

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
1	Send a BCN to Trader <ul style="list-style-type: none"> ▪ Document complies with the Business Rules for BCN. ▪ DocumentID: new and unique 	-		-
2		Pending	Send an ACK if the BCN is correct	Pending
4		-	Send a BMN – Preliminary Match Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN (<u>Step 1</u>), CNF and BFI 	-
5	Send an ACK if the BMN is correct	Preliminary Matched		Preliminary Matched
6		-	Send a BMN – Match (Final) Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN (<u>Step 1</u>), CNF and BFI ▪ Referenced DocumentVersion BCN <u>changed</u> 	-
7	Send a REJ with “EFET:ReferencedDocNotExists”	Preliminary Matched		Preliminary Matched
8		-	Send a BMN – Match (Final) Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN (<u>Step 1</u>), CNF (<u>Step 4</u>) and BFI (<u>Step 4</u>) 	-
9	Send an ACK if the BMN is correct	Matched		Matched

Overview of statuses for CNF and BCN during the scenario

	System Under Test (Broker)	Test Facility (Trader)
Step	BCN 1	CNF 1
1	Sending to CP Trade 21A	
2	Pending	Pending
4		
5	Preliminary Matched	
6		Pending
7	Preliminary Matched	
8		Matched
9	Matched	

Scenario: S63 – State of BCN is invalid (SUT = Broker)
 Purpose: To verify the detection of an eCM Business Rule offence and checking that it does not disturb the matching process
 Role: Test Facility acts as a Trader
 Test type: Product test

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
1	Send a BCN to Trader <ul style="list-style-type: none"> ▪ Document complies with the Business Rules for BCN. ▪ DocumentID: new and unique 	-		-
2		Pending	Send an ACK if the BCN is correct	Pending
4		-	Send a BMN – Preliminary Match Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN (<u>Step 1</u>), CNF and BFI 	-
5	Send an ACK if the BMN is correct	Preliminary Matched		Preliminary Matched
6		-	Send a BMN – Preliminary Match (<u>again</u>) Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN (<u>Step 1</u>), CNF and BFI 	-
7	Send a REJ with “EFET:RefDocInvalidState”	Preliminary Matched		Preliminary Matched
8		-	Send a BMN – Match (Final) Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN (<u>Step 1</u>), CNF (<u>Step 4</u>) and BFI (<u>Step 4</u>) 	-
9	Send an ACK if the BMN is correct	Matched		Matched

Overview of statuses for CNF and BCN during the scenario

	System Under Test (Broker)	Test Facility (Trader)
Step	BCN 1	CNF 1
1	Sending to CP Trade 21A	
2	Pending	Pending
4		
5	Preliminary Matched	
6		Pending
7	Preliminary Matched	
8		Matched
9	Matched	

5.3.3 Broker Confirmation Matching Process – (Broker) - eCM Field Type Offences

This paragraph describes test scenario's, which cause eCM Field offences which will not be detected by the schema. The outcome of each scenario is still a match. This makes it possible to check that the offence is detected and does not disturb the matching process.

Scenario: S64 – ReceiverRole invalid (SUT = Broker)

Purpose: To verify the detection of an eCM Business Rule offence and checking that it does not disturb the matching process

Role: Test Facility acts as a Trader

Test type: Product test

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
1	Send a BCN to Trader <ul style="list-style-type: none"> Document complies with the Business Rules for BCN. DocumentID: new and unique 	-		-
2		Pending	Send an ACK if the BCN is correct	Pending
4		-	Send a BMN – Preliminary Match Contents: <ul style="list-style-type: none"> DocumentID: new and unique Document References to BCN (<u>Step 1</u>), CNF and BFI ReceiverRole = <u>Trader</u> 	-
5	Send a REJ with “EFET:InvalidData”	Pending		Pending
6		-	Send a BMN – Preliminary Match Contents: <ul style="list-style-type: none"> DocumentID: new and unique Document References to BCN (<u>Step 1</u>), CNF and BFI ReceiverRole = <u>Broker</u> 	-
7	Send an ACK if the BMN is correct	Preliminary Matched		Preliminary Matched
8		-	Send a BMN – Match (Final) Contents: <ul style="list-style-type: none"> DocumentID: new and unique Document References to BCN (<u>Step 1</u>), CNF (<u>Step 6</u>) and BFI (<u>Step 6</u>) 	-
9	Send an ACK if the BMN is correct	Matched		Matched

Overview of statuses for CNF and BCN during the scenario

	System Under Test (Broker)	Test Facility (Trader)
Step	BCN 1	CNF 1
1	Sending to CP Trade 21A	
2	Pending	Pending
4		
5	Pending	
6		Pending
7	Preliminary Matched	
8		Matched
9	Matched	

5.3.4 **Broker Confirmation Matching Process – (Broker) - Commodities and markets**

This paragraph describes test scenario's, which validate the different allowed commodities and markets. The outcome of each scenario is still a match. This makes it possible to check that the offence is detected and does not disturb the matching process.

Testing is normally the combination of the following three aspects:

- Commodity
- Market
- Scenario

This then becomes a three dimensional matrix describing all the test possibilities. We only make a selection of this matrix to limit the amount of tests.

We assume that most parties will support the Commodities Gas and Power for the Markets UK, BE, DE and NL. From these 16 combinations we have chosen 8 of them to have a good representation of the real-life situations later on.

Also EUA Trades are part of the tests.

Scenario: S65 – Gas Commodity – UK - FOR (SUT = Broker)
 Purpose: To test the full document flow of the Confirmation Matching Process and if the documents comply with the Business Rules.
 Role: Test Facility acts as a Trader
 Test type: Product test and end-user test

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
1	Send a BCN to Trader <ul style="list-style-type: none"> ▪ Document complies with the Business Rules for BCN. ▪ DocumentID: new and unique ▪ Commodity = <u>Gas</u> ▪ Market = <u>UK</u> ▪ TransactionType = <u>FOR</u> 	-		-
2		Pending	Send an ACK if the BCN is correct	Pending
4		-	Send a BMN – Match (Final) Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN, CNF and BFI 	-
5	Send an ACK if the BMN is correct	Matched		Matched

Overview of statuses for CNF and BCN during the scenario

	System Under Test (Broker)	Test Facility (Trader)
Step	BCN 1	CNF 1
1	Sending to CP Trade 31A	
2	Pending	Pending
4		Matched
5	Matched	

Scenario: S66 – Gas Commodity – UK - OPT (SUT = Broker)
 Purpose: To test the full document flow of the Confirmation Matching Process and if the documents comply with the Business Rules.
 Role: Test Facility acts as a Trader
 Test type: Product test and end-user test

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
1	Send a BCN to Trader <ul style="list-style-type: none"> ▪ Document complies with the Business Rules for BCN. ▪ DocumentID: new and unique ▪ Commodity = <u>Gas</u> ▪ Market = <u>UK</u> ▪ TransactionType = <u>OPT</u> 	-		-
2		Pending	Send an ACK if the BCN is correct	Pending
4		-	Send a BMN – Match (Final) Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN, CNF and BFI 	-
5	Send an ACK if the BMN is correct	Matched		Matched

Overview of statuses for CNF and BCN during the scenario

	System Under Test (Broker)	Test Facility (Trader)
Step	BCN 1	CNF 1
1	Sending to CP Trade 31B	
2	Pending	Pending
4		Matched
5	Matched	

Scenario: S67 – Gas Commodity – BE - FOR (SUT = Broker)
 Purpose: To test the full document flow of the Confirmation Matching Process and if the documents comply with the Business Rules.
 Role: Test Facility acts as a Trader
 Test type: Product test and end-user test

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
1	Send a BCN to Trader <ul style="list-style-type: none"> ▪ Document complies with the Business Rules for BCN. ▪ DocumentID: new and unique ▪ Commodity = <u>Gas</u> ▪ Market = <u>UK</u> ▪ TransactionType = <u>FOR</u> 	-		-
2		Pending	Send an ACK if the BCN is correct	Pending
4		-	Send a BMN – Match (Final) Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN, CNF and BFI 	-
5	Send an ACK if the BMN is correct	Matched		Matched

Overview of statuses for CNF and BCN during the scenario

	System Under Test (Broker)	Test Facility (Trader)
Step	BCN 1	CNF 1
1	Sending to CP Trade 31C	
2	Pending	Pending
4		Matched
5	Matched	

Scenario: S68 – Gas Commodity – BE - OPT (SUT = Broker)
 Purpose: To test the full document flow of the Confirmation Matching Process and if the documents comply with the Business Rules.
 Role: Test Facility acts as a Trader
 Test type: Product test and end-user test

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
1	Send a BCN to Trader <ul style="list-style-type: none"> ▪ Document complies with the Business Rules for BCN. ▪ DocumentID: new and unique ▪ Commodity = <u>Gas</u> ▪ Market = <u>UK</u> ▪ TransactionType = <u>OPT</u> 	-		-
2		Pending	Send an ACK if the BCN is correct	Pending
4		-	Send a BMN – Match (Final) Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN, CNF and BFI 	-
5	Send an ACK if the BMN is correct	Matched		Matched

Overview of statuses for CNF and BCN during the scenario

	System Under Test (Broker)	Test Facility (Trader)
Step	BCN 1	CNF 1
1	Sending to CP Trade 31D	
2	Pending	Pending
4		Matched
5	Matched	

Scenario: S69 – Power Commodity – UK - FOR (SUT = Broker)
 Purpose: To test the full document flow of the Confirmation Matching Process and if the documents comply with the Business Rules.
 Role: Test Facility acts as a Trader
 Test type: Product test and end-user test

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
1	Send a BCN to Trader <ul style="list-style-type: none"> ▪ Document complies with the Business Rules for BCN. ▪ DocumentID: new and unique ▪ Commodity = <u>Power</u> ▪ Market = <u>UK</u> ▪ TransactionType = <u>FOR</u> 	-		-
2		Pending	Send an ACK if the BCN is correct	Pending
4		-	Send a BMN – Match (Final) Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN, CNF and BFI 	-
5	Send an ACK if the BMN is correct	Matched		Matched

Overview of statuses for CNF and BCN during the scenario

	System Under Test (Broker)	Test Facility (Trader)
Step	BCN 1	CNF 1
1	Sending to CP Trade 31E	
2	Pending	Pending
4		Matched
5	Matched	

Scenario: S70 – Power Commodity – UK - OPT (SUT = Broker)
 Purpose: To test the full document flow of the Confirmation Matching Process and if the documents comply with the Business Rules.
 Role: Test Facility acts as a Trader
 Test type: Product test and end-user test

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
1	Send a BCN to Trader <ul style="list-style-type: none"> ▪ Document complies with the Business Rules for BCN. ▪ DocumentID: new and unique ▪ Commodity = <u>Power</u> ▪ Market = <u>UK</u> ▪ TransactionType = <u>OPT</u> 	-		-
2		Pending	Send an ACK if the BCN is correct	Pending
4		-	Send a BMN – Match (Final) Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN, CNF and BFI 	-
5	Send an ACK if the BMN is correct	Matched		Matched

Overview of statuses for CNF and BCN during the scenario

	System Under Test (Broker)	Test Facility (Trader)
Step	BCN 1	CNF 1
1	Sending to CP Trade 31F	
2	Pending	Pending
4		Matched
5	Matched	

Scenario: S71 – Power Commodity – NL - FOR (SUT = Broker)
 Purpose: To test the full document flow of the Confirmation Matching Process and if the documents comply with the Business Rules.
 Role: Test Facility acts as a Trader
 Test type: Product test and end-user test

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
1	Send a BCN to Trader <ul style="list-style-type: none"> ▪ Document complies with the Business Rules for BCN. ▪ DocumentID: new and unique ▪ Commodity = <u>Power</u> ▪ Market = <u>UK</u> ▪ TransactionType = <u>FOR</u> 	-		-
2		Pending	Send an ACK if the BCN is correct	Pending
4		-	Send a BMN – Match (Final) Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN, CNF and BFI 	-
5	Send an ACK if the BMN is correct	Matched		Matched

Overview of statuses for CNF and BCN during the scenario

	System Under Test (Broker)	Test Facility (Trader)
Step	BCN 1	CNF 1
1	Sending to CP Trade 31G	
2	Pending	Pending
4		Matched
5	Matched	

Scenario: S72 – Power Commodity – NL - OPT (SUT = Broker)
 Purpose: To test the full document flow of the Confirmation Matching Process and if the documents comply with the Business Rules.
 Role: Test Facility acts as a Trader
 Test type: Product test and end-user test

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
1	Send a BCN to Trader <ul style="list-style-type: none"> ▪ Document complies with the Business Rules for BCN. ▪ DocumentID: new and unique ▪ Commodity = <u>Power</u> ▪ Market = <u>UK</u> ▪ TransactionType = <u>OPT</u> 	-		-
2		Pending	Send an ACK if the BCN is correct	Pending
4		-	Send a BMN – Match (Final) Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN, CNF and BFI 	-
5	Send an ACK if the BMN is correct	Matched		Matched

Overview of statuses for CNF and BCN during the scenario

	System Under Test (Broker)	Test Facility (Trader)
Step	BCN 1	CNF 1
1	Sending to CP Trade 31H	
2	Pending	Pending
4		Matched
5	Matched	

Scenario: S113 – EUA_Phase1 (SUT = Broker)
 Purpose: To test the full document flow of the Confirmation Matching Process and if the documents comply with the Business Rules.
 Role: Test Facility acts as a Trader
 Test type: Product test and end-user test

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
1	Send a BCN to Trader <ul style="list-style-type: none"> ▪ Document complies with the Business Rules for BCN. ▪ DocumentID: new and unique ▪ Commodity = <u>EUA_Phase1</u> ▪ Market = <u><n/a></u> ▪ TransactionType = <u>FOR</u> 	-		-
2		Pending	Send an ACK if the BCN is correct	Pending
4		-	Send a BMN – Match (Final) Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN, CNF and BFI 	-
5	Send an ACK if the BMN is correct	Matched		Matched

Overview of statuses for CNF and BCN during the scenario

	System Under Test (Broker)	Test Facility (Trader)
Step	BCN 1	CNF 1
1	Sending to CP Trade 31I	
2	Pending	Pending
4		Matched
5	Matched	

Scenario: S114 – EUA_Phase2 (SUT = Broker)
 Purpose: To test the full document flow of the Confirmation Matching Process and if the documents comply with the Business Rules.
 Role: Test Facility acts as a Trader
 Test type: Product test and end-user test

Step	System Under Test (Broker)	State SUT	Test Facility (Trader)	State TS
1	Send a BCN to Trader <ul style="list-style-type: none"> ▪ Document complies with the Business Rules for BCN. ▪ DocumentID: new and unique ▪ Commodity = <u>EUA_Phase2</u> ▪ Market = <n/a> ▪ TransactionType = <u>FOR</u> 	-		-
2		Pending	Send an ACK if the BCN is correct	Pending
4		-	Send a BMN – Match (Final) Contents: <ul style="list-style-type: none"> ▪ DocumentID: new and unique ▪ Document References to BCN, CNF and BFI 	-
5	Send an ACK if the BMN is correct	Matched		Matched

Overview of statuses for CNF and BCN during the scenario

	System Under Test (Broker)	Test Facility (Trader)
Step	BCN 1	CNF 1
1	Sending to CP Trade 31J	
2	Pending	Pending
4		Matched
5	Matched	