

T8.4.2 SS074 Test Report

for testing the STM ATB

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1 Preface

Text, STMA-73264 - This test report presents the results of the integration tests regarding the STM part of the STM ATBEG, against the test sets defined by ERA in subset-074-2. Together with the test plan [T8.4.0] and verification report [R8.99], this test report gives a complete analysis of the quality of implementation regarding the STM related requirements from Subset-035.



1.1 References

Text, STMA-14296 - Reference documents



All the documents references used in this document can be found in the document  [P6.1](#)

[Bibliography](#) available in the Polarion folder  [Processes](#)

Abbreviations, definitions and terminology

An overview of the abbreviations, definitions and terminology used in this document can be found in document  [P6.2 List of abbreviations, definitions and terms](#) available in the Polarion folder  [Processes](#)

Requirement identification

The STM ATB project makes use of an automated requirement management system. In this system each requirement has been identified as a work item. Each work item has been automatically assigned with a unique ID, with the format "STMA-<number>". As a result requirement ID's are not in logical order. An overview of all the used STMA-numbers is given in document  [P6.3 Requirement Overview](#) available in the Polarion folder  [Processes](#)

1.2 Identification

Text, STMA-73247 - This test report contains the results of the tests done at DLR.

The tests are executed on the test object, with the following specific software identification details.

Item	Identification
Functional Processor	Version: 0.968 Git hash: 26768549ea60e4ab7cce15bb14beba8dc95baf9d
Profibus Processor	Version: 0.968 Git hash: 26768549ea60e4ab7cce15bb14beba8dc95baf9d
FPGA	v1.0
NetX51	

Text, STMA-73269 - The hardware identification details are:

Board	Version
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SAP board	IC169403 (C2)
AIN board	172388 (R110)
PS + DIO board	187108 (R110)
Backplane	109038 (R110)

2 Analysis of the tests

Text, STMA-77142 - This chapter discusses the status of the tests.

2.1 Test plan

Text, STMA-77136 - The test plan contains the test objectives and criteria.

The tests were performed in accordance with the verified test plan:

Document	Location	Status	Revision
T8.4.0	Polarion	Verified	478378

2.1.1 Coverage of requirements to test plan

Text, STMA-77135 -

The coverage of requirements in [D4.7.4] by the test plan [T8.4.0] was verified by [R4.7.4.1].

Document	Location	Status	Revision
R4.7.4.1	Polarion	Verified	521705

2.2 Test implementation

Text, STMA-77137 - The tests have been implemented by DLR.

2.2.1 Coverage of test plan to implementation

Text, STMA-77143 - The coverage of the test plan to implementation has been guaranteed by DLR.

3 Analysis of test results

Text, STMA-73249 - The Subset-074-2 tests have been performed by DLR on an older firmware version than currently released. This analysis has been created to identify differences between the tested version and the current release. From this delta between the two versions it can be derived if there is a significant risk to the validity of the test results. To mitigate the risk that a change will negatively impact the interoperability of the STM with any EVC, the results test [STMA-70123 - T9.0.1.0 Annex 1 - Functional integration tests](#) on one of the latest firmware versions can be checked. This proves that the interface is compliant.

Text, STMA-73248 -

Number	Difference	Impact
1	All code related to Packet 45 has been removed	None
2	In both versions, in response to Packet STM-180 a packet STM-179 is sent. In the current version this only done when the STM is in states CS/HS/DA.	Test case 2a.11: No impact, test is done in state DA.
3	A number of changes were made in the computation by the STM Layer of the speed information to be used by the ATB EG Function.	None
4	Sounds to DMI are also updated when there is a change in the connection status or there is a change in the active DMI changes.	None
5	Transition 9 (CO -> CO Requested -> CS) has an extra condition on stml_m_modestm : (stml_m_modestm != Sleeping/NonLeading)	Adding the extra condition has no impact on the expected result. The result was already OK and will not change due to the extra condition.
6	Transition 18 (DA Trip -> DA) has an extra condition on state order: (state_order != eSTO_U_CS)	Adding the extra condition has no impact on the expected result. The result was already OK and will not change due to the extra

		condition.
7	Transition 22 (* -> FA) has an extra condition: (STM ATB machine did not change to responsible in time)	None
8	The current version sends an additional type of JRU packet. The STM ATB sends JRU packets more often.	None
9	Operating the Override button is now recognized via both packet STM-7 and STM-34 instead of only via packet STM-7.	This is not tested by any SS-074-2 test case relevant for the STM.
10	If the STM is ordered from NonLeading or Sleeping to another mode and not all parameters are available safe default values are used. This now also applies to stml_m_brake_percentage_stm.	Brake percentage is not used for testing purposes.
11	If an illegal value is received in packet STM-175 for V_MAXTRAIN the value is no longer stored but a safe value is stored instead (30 km/h).	STM-175 is used only in the happy flow, No tests on illegal values is present.
12	A failing BIU connection is signalled as an event when in state DA.	The status FAIL of the BIU is not tested in SS-074.
13	Icon IDs for the indicators in packet STM-35 where changed.	The ID's have been reordered. This has no impact on the functionality and this as no impact on the SS-074-2 tests.
14	If the STMATB state is 'Responsible' or 'Preparing' and then changes to 'Inactive' all indicators, buttons, and sounds are cleared.	This behaviour has no impact on the tests in SS-074.
15	The Indicator for the lowest guarded no longer contains text with the corresponding speed.	This has no impact on the SS-074 tests, the indicators of the NTC system are no part of the checks in SS-074
16	Variable length array in STM-Packets are checked for overflow in the Subset 58 decoder.	There are no test cases related to overflow of packets defined in SS-074.
17	The rate at which the gong can be triggered via	The timing of sounds in done in a

	Packet STM-46 has been limited.	window of 5 s. The 400 ms delay in the repeat of a sound is not registered.
18	The Test button is no longer displayed.	No impact, the TEST part of the SS-074 was not tested, as it was already clear the STM ATBEG doesn't have a test.
19	The Safety Layer now disconnects when the transfer time parameters are not set during connection setup.	No unhappy flow tests are defined for the connection setup.

4 Detailed test results

STMA-73292 - The subset-074-2 tests have been performed by DLR and have been successfully concluded without remarks. Please see the formal test report below. [🔍 Verified]

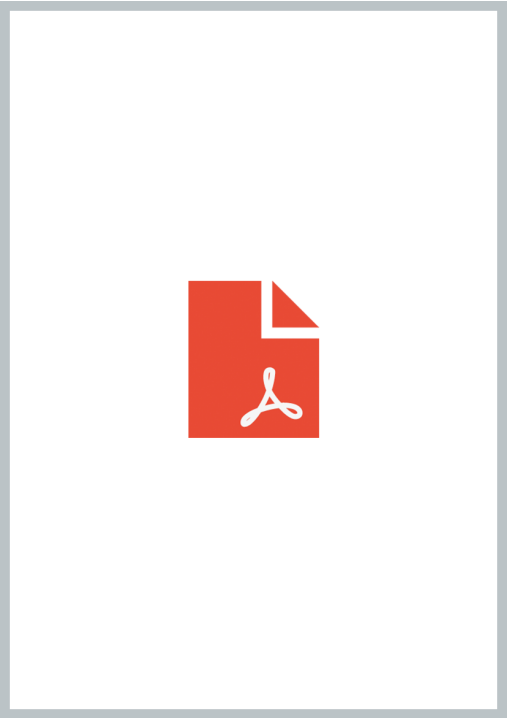


Figure 1 Final test report from DLR

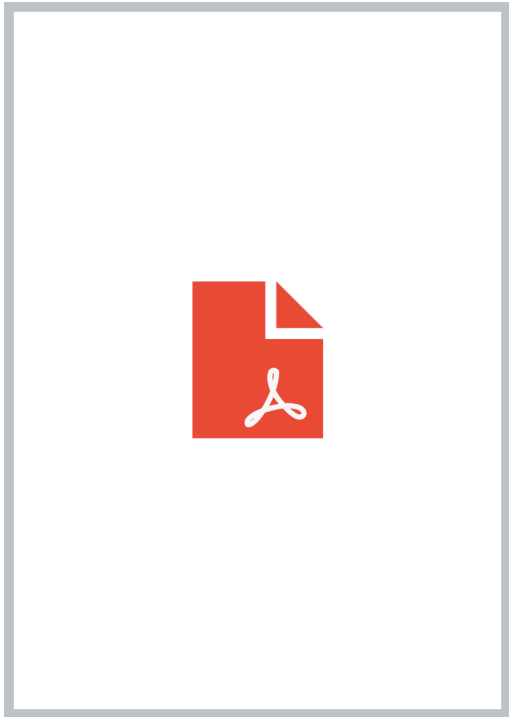




Figure 2 Signed front page of the test report

Text, STMA-77133 - The table below shows the concluding result of the test done by DLR as can be seen in the test report.

Test definition	Test result	Status
 STMA-73160	STMA-73292	Passed

5 Conclusion

Text, STMA-73303 - No issues were reported by DLR in the test results added to STMA-73292 . The test report shows the STM ATBEG has passed all relevant Subset-074-2 V3.1.0 tests. This provides evidence that the STM ATBEG is fully compliant with the Subset-035 V3.2.0.