

# Test Protocol

Autonomous Truck with Trailer

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Version 0.2

# ADAPT™

## Status

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## DOCUMENT HISTORY

Version	Date	Changes made	Sign	Reviewer
0.1	2022-12-05	First draft.	C.Elf	A.Sundstedt
0.2	2022-12-12	Second draft. Added column for comments	E.Wiman	A.Sundstedt

## 1 INTRODUCTION

This test protocol contains the results of the tests conducted in the project. Test descriptions for each test can be found in the Test Plan [1].

## 2 TEST PROTOCOL STRUCTURE

Table 1 shows the general test protocol structure with test number, what requirements were tested, the date of execution, responsible group members, amount of trials and the test result (Pass/Fail/Pass with complementary work).

**Table 1:** General test protocol structure.

Test Number	Requirements tested	Execution	Test responsible	Trials	Status	Comments
1	Requirement number tested	Date of execution	Responsible project member(s)	Number of trials	Test grade	Comments
2	...	...	...	...	...	...
3	...	...	...	...	...	...

### 3 TESTS

This section presents test results for all requirements with priority 1. If there is more time left towards the end of the project, requirements with lower priorities will be conducted and added to the test protocol.

#### 3.1 Test of general requirements

**Table 2:** Test results for general requirements.

Test Number	Requirements tested	Execution	Test responsible	Trials	Status	Comments
1	1	Continuously	Group	-	Pass	
2	2	2022-12-01	J.Barreng, Charlie E	1	Pass	
3	4	2022-12-02	Group	1	Pass	

#### 3.2 Test of physical requirements for the LEGO truck

Here are test results of physical requirements of the LEGO truck presented in Table 3.

**Table 3:** Test results of LEGO truck.

Test Number	Requirements tested	Execution	Test responsible	Trials	Status	Comments
4	5	2022-12-01	J.Barreng	1	Pass	

#### 3.3 Control system tests

In this section test results regarding the control system are presented.

##### 3.3.1 Test of design requirements

Here are test results of design requirements for the control system presented in Table 4.

**Table 4:** Test results for design requirements.

Test Number	Requirements tested	Execution	Test responsible	Trials	Status	Comments
5	7	2022-12-02	J.Barreng	1	Fail	Lack of time to implement the full controller on the truck
6	8, 9	2022-12-02	J.Barreng	1	Fail	Lack of time to implement the full controller on the RPi
7	10	2022-12-02	J.Barreng	1	Fail	Lack of time to implement the motion planner on the RPi
8	11	Continuously	E.Wiman	-	Pass	
9	12	2022-12-02	J.Barreng	1	Fail	Control system has not been fully implemented on the truck
10	13	2022-12-02	Charlie E, Isak B	1	Pass	

### 3.3.2 Test of functional requirements

Here are test results of functional requirements for the control system presented in Table 5.

**Table 5:** Test results for functional requirements of the control system.

Test Number	Requirements tested	Execution	Test responsible	Trials	Status	Comments
11	14, 17	2022-12-02	J.Barreng	1	Fail	Truck software not fully implemented and visualization not developed in Visionen
12	15	2022-12-02	J.Barreng	1	Pass with comp.	Previous planner and controller fulfills these requirements
13	18	2022-12-02	E.Wiman	1	Pass	
14	21, 22	2022-12-12	C.Elf	1	Pass	Can take longitudinal action in simulation to avoid dynamic obstacles.
15	24	2022-12-02	J.Barreng	1	Fail	The complete controller has not been implemented

### 3.3.3 Interface tests

Here are test results of interface requirements for the control system presented in Table 6.

**Table 6:** Test results for interface requirements of the control system.

Test Number	Requirements tested	Execution	Test responsible	Trials	Status	Comments
16	25	2022-12-02	J.Barreng	1	Pass	
17	26	2022-12-02	Charlie E, Isak B	1	Pass	
18	27	2022-12-02	E.Wiman	1	Fail	Lack of time to integrate predictor with QualiSys
19	28	2022-12-02	E.Wiman, Charlie E	1	Pass	

### 3.4 Performance requirements tests

In this section test results of the performance requirements for the entire system are presented. The tests can be seen in Table 7.

**Table 7:** Test results for performance requirements of the control system.

Test Number	Requirements tested	Execution	Test responsible	Trials	Status	Comments
20	29	2022-12-01	J.Barreng	1	Pass	
21	31	2022-12-02	J.Barreng	1	Fail	The complete controller has not been implemented on the truck
22	32	2022-12-02	J.Barreng	1	Fail	The complete controller has not been implemented on the truck

### 3.5 Visualization tests

In this section test results of the visualization requirements are presented. The tests can be seen in Table 8.



**Table 8:** Test results for visualization requirements.

Test Number	Requirements tested	Execution	Test responsible	Trials	Status	Comments
23	33	2022-12-01	J.Barreng	1	Pass	
24	34, 35, 36, 37	2022-12-02	J.Barreng	1	Fail	Lack of time to implement visualization in Visionen
25	38, 39	2022-12-02	J.Barreng	1	Fail	Lack of time to implement visualization in Visionen

### 3.6 Software quality tests

In this section test results of software quality is presented. The tests can be seen in Table 9.

**Table 9:** Test results for software quality requirements.

Test Number	Requirements tested	Execution	Test responsible	Trials	Status	Comments
26	49	2022-12-02	E.Wiman	1	Pass	
27	50, 51	2022-12-02	E.Wiman	1	Pass	
28	52, 53	2022-12-02	E.Wiman	1	Pass	

## REFERENCES

- [1] M. Axelsson et al. *Test Plan, Autonomous Truck with Trailer*. 2022. URL: [http://www.isy.liu.se/edu/projekt/tsrt10/2022/rev\\_truck/](http://www.isy.liu.se/edu/projekt/tsrt10/2022/rev_truck/) (visited on 10/04/2022).