

ISO/TS 23792-1:2023-06 (E)

Intelligent transport systems - Motorway chauffeur systems (MCS) - Part 1: Framework and general requirements

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Abbreviated terms	4
5	Characteristics of MCS	4
5.1	General.....	4
5.2	Operational design domain.....	4
5.2.1	General.....	4
5.2.2	Roadway physical characteristics.....	5
5.2.3	Traffic in the surrounding environment.....	6
5.2.4	Abnormalities in roadway operational condition.....	6
5.2.5	Ambient environmental conditions.....	6
5.3	System functionalities.....	6
5.3.1	General.....	6
5.3.2	Basic functionalities to realize in-lane operation.....	7
5.3.3	Lane changing functionalities.....	7
5.4	System limitations.....	7
5.5	Providing information to the user.....	7
6	Operational requirements	8
6.1	Operating conditions.....	8
6.1.1	General.....	8
6.1.2	Engagement conditions.....	8
6.1.3	Disengagement triggering conditions.....	8
6.1.4	Direct disengagement conditions.....	8
6.2	State transition.....	8
6.2.1	General.....	8
6.2.2	Off state.....	9
6.2.3	Standby state.....	10
6.2.4	Normal state.....	11
6.2.5	Requesting fallback state.....	12
6.3	System functions.....	12
6.3.1	General.....	12
6.3.2	Object and event detection and response (OEDR).....	13
6.3.3	Vehicle motion control (VMC).....	13
6.3.4	Generation of request to intervene (RTI).....	14
6.3.5	Status indication.....	14
6.3.6	User control interface.....	16
6.3.7	FRU input detection.....	16
6.3.8	MCS monitoring the FRU.....	17
6.3.9	Subject vehicle condition monitor.....	18
6.3.10	MCS condition monitor.....	18
6.3.11	Localization.....	18
6.3.12	External warning generation.....	18
6.3.13	Function required for route following functionalities.....	18
6.3.14	Related functions.....	18

6.4	Requirements for continuing operation after detecting disengagement-triggering conditions.....	19
6.4.1	General.....	19
6.4.2	Classification of adverse situations.....	19
6.4.3	Responses to adverse situations.....	20
7	Minimum performance requirements of the DDT.....	20
7.1	General.....	20
7.2	Operating speed range.....	21
7.3	Normal operation.....	21
7.3.1	Sustained longitudinal vehicle motion control.....	21
7.3.2	Sustained lateral vehicle motion control.....	21
7.3.3	Crash avoidance.....	22
7.4	Performance-impaired operation.....	22
7.5	MCS reaction to unresponsive FRU.....	22
8	Test procedures.....	23
8.1	General.....	23
8.1.1	Purpose.....	23
8.1.2	Driving environment.....	23
8.1.3	System settings and test driver roles.....	23
8.1.4	Common test pass criteria.....	23
8.1.5	Confirmation of the HMI design.....	23
8.1.6	Success rate and number of trials.....	24
8.1.7	List of test scenarios.....	24
8.1.8	Test sites.....	24
8.2	Scenario 1: MCS reaction to unresponsive FRU.....	25
8.2.1	Test scenario.....	25
8.2.2	Pass criteria.....	25
8.3	Scenario 2: Direct disengagement by steering input.....	25
8.3.1	Test scenario.....	25
8.3.2	Pass criteria.....	25
8.4	Scenario 3: Continued operation after brake intervention.....	25
8.4.1	Test scenario.....	25
8.4.2	Pass criteria.....	26
8.5	Scenario 4: Forward vehicle braking hard.....	26
8.5.1	Test scenario.....	26
8.5.2	Pass criteria.....	26
8.6	Scenario 5: Aggressive cut-in from the adjacent lane.....	26
8.6.1	Test scenario.....	26
8.6.2	Pass criteria.....	27
8.7	Scenario 6: Obstacle in lane.....	27
8.7.1	Test scenario.....	27
8.7.2	Pass criteria.....	28
8.8	Scenario 8: Approaching geographical ODD boundary.....	28
8.8.1	Test scenario.....	28
8.8.2	Pass criteria.....	28
8.9	Scenario 9: Engagement restricted outside ODD.....	29
8.9.1	Test scenario.....	29
8.9.2	Pass criteria.....	29
	Bibliography.....	30