

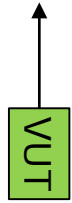


Submitted by Germany

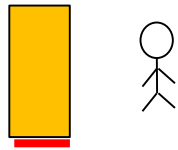
Informal document ACSF-24-13

Requirements for ALKS Low Speed

Safety-critical situations for L3 systems



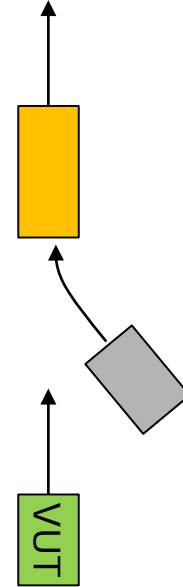
Lane Keeping



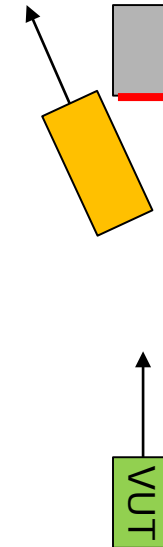
Stopping for a traffic participant in lane



Following a vehicle



Lane change into lane

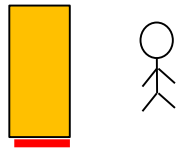


Other vehicle lane change out of lane

Performance Requirements



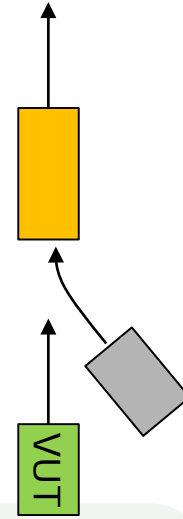
Lane Keeping –
Do not cross line



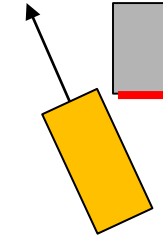
Stopping for a traffic participant in lane –
Avoid collision



Following a vehicle –
Maintain safety distance



Lane change into lane –
Avoid collision up to specific parameters



Other vehicle lane change out of lane –
Avoid collision up to specific parameters

Example: Performance Req's (Section 2.5)



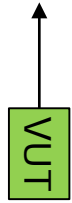
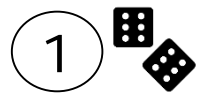
Prevents ego-vehicle-caused accidents

Situation	Regular maneuver [<4 m/s ²]	Emergency maneuver [>4 m/s ²]	>
Lane Following	Never leave lane	-	Do not change strategy (do the best avoidance not required)
Stopped traffic participant in lane (visible!)	Stop in all situations	-	
Following a lead vehicle	Maintain safety distance up to [4] m/s ²	Avoid collision [4..10] m/s ²	
Lane change into lane	Avoid collision vrel < [20] km/h, TTC > [2.0], vlat < [3.5] m/s	Avoid collision vrel < [20] km/h, TTC > [1.0], vlat < [3.5] m/s	
Lane change out of lane	Avoid collision vrel < [20] km/h, TTC > [2.0], vlat < [3.5] m/s	Avoid collision vrel < [20] km/h, TTC > [1.0], vlat < [3.5] m/s	

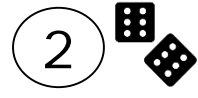
Test Concept (Annex X)



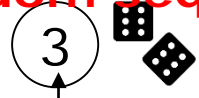
Random sequence and parameters!



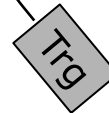
Check of lane following function



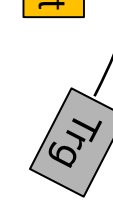
Check if VUT stops for stopped vehicle



Check of VUT following behavior



Check if VUT allows cut-in and adjusts safety distance



Check if VUT adjusts safety distance; preparation for phase 6

Summary - Performance and Validation Concept for ALKS

- ➔ Requirements for section 2.5 (main text for ALKS)
- ➔ Performance requirements for 6 situations
- ➔ Avoidance required
 - Parameter range for regular situations (ego $< 4 \text{ m/s}^2$)
 - Parameter range for emergency situations (ego $> 4 \text{ m/s}^2$)
- ➔ Maintain control strategy required but collisions acceptable
 - Parameters out of range
- ➔ Test concept without requirements in separate annex



Other Traffic – Test Track

