

Hazard ID			
	Operational Mode	Operational Scenario	Environmental Details
HA-001	Normal driving	Highway	Rain (slippery road)
HA-002	Normal driving	Country Road	Normal conditions
HA-003	Towing (passive)	Country Road	Normal conditions
HA-004	Normal driving	Highway	Sun blares (degraded view)

Situational Analysis

Situation Details	Other Details (optional)	Item Usage (function)
High speed		Correctly used
High speed		Incorrectly used
Low speed		Correctly used
High speed		Correctly used

Situation Description	
Normal driving on a highway during rain(slippery road) with high speed and correctly used system	
Normal driving on country roads during normal conditions with high speed (the driver is misusing the lane keeping	
Towing (passive) on a Country Road during Normal conditions with low speed and correctly used system	
Normal driving on a Highway during Sun blars on the camera with high speed and correctly used system	

Function
Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic
Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane
Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic
Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane

Deviation
Actor effect is too much
Function always activated
Function unexpectedly activated
Function unexpectedly activated

Deviation Details

The LDW function applies an oscillating torque with very high torque (above limit).
The lane keeping assistance function adds extra steering torque and does not stop providing the extra torque after
In towing (passive) mode the LDW function should not activate but it unexpectedly activated
when there are sun blares the LKA function should not activate but it unexpectedly activated

Location	
Hazardous Event (resulting effect)	
Collision with other vehicle	
Collision with other vehicle	
Collision with other vehicle	
Front collision with ahead traffic	

Event Details	
High haptic feedback can affect driver's ability to steer as intended. The driver could lose control of the vehicle and c	
the driver treats the function as if it were meant for fully autonomous driving.	
The haptic feedback can affect driver's ability to steer as intended. The towing (avtive) car can lose control of the ve	
when there are sun blares on the camera, it will not see the road clearly, resulting in threat of collision with ahead	

Hazardous Event Description
The LDW function applies too high an oscillating torque to the steering wheel (above limit).
The LKA function applies constant torque to the steering wheel.
The LDW function applies an oscillating torque to the steering wheel without the need to do so.
The LKA function applies torque to the steering wheel without the need to do so.

Exposure (of situation)
E3
E2
E2
E3

Rationale (for exposure)	
these condition may occure in range of 1 % to 10 % of average operating time	
That combination probably does not happen often	
That combination probably does not happen often	
these condition may occure in range of 1 % to 10 % of average operating time	

Hazardous Event Classification	
Severity (of potential harm)	Rationale (for severity)
S3	Because the driver is traveling at high speed
S3	Because the driver is traveling at high speed
S1	Because the driver is traveling at low speed
S3	Because the driver is traveling at high speed

Controllability (of hazardous event)	
C3	
C3	
	C2
C3	

Rationale (for controllability)	
Most drivers will have difficulty controlling the steering wheel	
The malfunction was that the lane keeping assistance was always on and had no time limit, so drivers could take	
because we are at low speed the situation is controllable	
The malfunction was that the lane keeping assistance was active while there are sun blares. the vehicle may think	

ASIL Determination
C
B
QM
C

Determination of ASIL and Safety Goals
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Safety Goal

The oscillating steering wheel from the LDW function shall be limited

The LKA function shall be time limited and the additional steering torque shall end after a given amount of time
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The LDW function shall check regularly on its status and turn it off if the vehicle is being towed
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The LKA function shall ensure that it is inactive while there is a fail-safe situation reported from the camera
