Hazard ID	Situational Analysis						
	Operational Mode	**Operational Scenario**	**Environmental Details**	**Situation Details**	**Other Details (optional)**	**Item Usage (function)**	**Situation Description**
HA-001	OM3 Normal Driving	OS04 Highway	EN06 Rain (slippery road)	SD02 High speed		IU01 Correctly used	Normal Driving on a highway during Rain (slipperyroad) with high speed and correctly used system
HA-002	OM3 Normal Driving	OS03 Country Road	EN01 Normal conditions	SD02 High speed		IU02 Incorrectly used	Normal driving on country roads during normal conditions with high speed (the driver is misusing the lane keeping assistance function as a fully autonomous function)
HA-003	OM3 Normal Driving	OS04 Highway	EN01 Normal conditions	SD02 High speed	Sudden braking	IU01 Correctly used	Normal Driving on highway roads during normal conditions with high speed and using the Lane Assistance Sytem Item correctly. The driver has to suddenly change lanes to avoid colliding with a car in front without signalling the lane change
HA-004	OM3 Normal Driving	OS02 City Road	EN01 Normal conditions	SD01 Low speed	In a parking lot	IU01 Correctly used	Normal Driving on City Road during normal condition with low speed and using the Lane Assistance System Item correctly. The driver is in a parking lot and is attempting to park the car where other drivers have not respected the parking lines

Hazard Identification					
Function	**Deviation**	**Deviation Details**	**Hazardous Event (resulting effect)**	**Event Details**	**Hazardous Event Description**
Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback	DV04 Actor effect is too much	The LDW function applies an oscillating torque with very high torque (above limit).	EV00 Collision with other vehicle	High haptic feedback can affect driver's ability to steer as intended. The driver could lose control of the vehicle and collide with another vehicle or with road infrastructure.	The LDW function applies too high an oscillating torque to the steering wheel (above limit).
Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	DV03 Function always activated	The LKA function is unable to keep vehicle in lane since the vehicle is going too fast for a curve in the road and the lane boundaries are unclear	EV00 Collision with other vehicle	Treating the LKA function as 100% reliable and using it to steer the vehicle regardless of speed, can result in veering out of the lane and colliding with another vehicle.	The LKA function provides false sense of security by always being active regardless of level of correction needed or user engagement.
Lane Assistance System Item shall alert if vehicle drifts out of ego lane and keep driver in ego lane by applying steering torque	DV02 Function unexpectedly activated	The LKA function is unexpectedly activated when trying to suddently change lanes and veer out the way of an obstacle on the highway. Instead of allowing the lane change, the LKA forces driver back into the ego lane	EV00 Collision with other vehicle	Being forced back into the original ego lane, the driver collides at high speed with the other vehicle and obstacle that appeared in their lane	The LKA function doesn't understand that the driver wants to avoid an obstacle and didn't have time to signal lane change. It unexpectedly activates in trying to force the car back into the lane with the obstacle
Lane Assistance System Item shall alert if vehicle drifts out of ego lane and keep driver in ego lane by applying steering torque	DV02 Function unexpectedly activated	The LKA fuction is unexpectedly activated when parking the car. Instead of respecting drivers decision on where the car should be parked, the LKA steers the car between two parking lines that it incorrectly identifies as lanes	EV00 Collision with other vehicle	At low speed, the car is forced in between parking lines that are wrongly identified as lanes resulting in a possible collision with cars parked nearby that may not be respecting lane boundaries	The LKA function is wrongly activated in the parking lot. It doesn't understand these parking lines that should just be ignored at low speed

Hazardous Event Classification						Determination of ASIL and Safety Goals	
Exposure (of situation)	**Rationale (for exposure)**	**Severity (of potential harm)**	**Rationale (for severity)**	**Controllability (of hazardous event)**	**Rationale (for controllability)**	**ASIL Determination**	**Safety Goal**
E3 Medium probability	According to functional safety standard, driving on wet roads is E3. Can happen once a month or so	S3 Life-threatening or fatal injuries	Collision at high speed	C3 Difficult to control or uncontrollable	It would be challenging to keep the vehicle stable with a oscillating steering wheel and wet roads causing the car to become unstable	C	The oscillating steering torque from the lane departure warning function shall be limited
E2 Low Probability	Driving on country roads is not that common. Normally happens a few times a year	S3 Life-threatening or fatal injuries	Collision at high speed	C3 Difficult to control or uncontrollable	Driver's both hands were not on the wheel, so hard to control the vehicle	B	The lane keeping assistance function should add extra steering torque for a limited amount of time and then stop providing extra torque. That way, the driver cannot treat the function as if it were meant to for fully autonomous driving
E2 Low Probability	A few times a year you may run into a highway drive requiring sudden braking / lane change to avoid debris or vehicle	S3 Life-threatening or fatal injuries	collision at high speed	C3 Difficult to control or uncontrollable	Driver wanted to change lanes. The LKA function attempted to bring the car back. The driver can override the steering wheel, but will have wasted precious time fightning the wheel instead of focusing on the road and avoiding a collision. Probably of being able to change lanes becomes low	B	The lane keeping assistance function should not turn on if there is suddent breaking or if the steering wheel has been turned a certain amount so that it doesn't override driver intent
E4 High probability	Almost every drive you're in a parking lot at the end or start of it	S1 Light and moderate injuries	collision at really low speed	C2 Normally controllable	Vehicle is moving slowly in the parking lot. Driver should have enough time to force steering wheel back in the direction they want	A	Lane Assistance System should be turned off fully at low speed (<10mph) that are normal for parking lots