Hazard ID	Situational Analysis				
	Operational Mode	**Operational Scenario**	**Environmental Details**	**Situation Details**	**Other Details (optional)**
HA-001	OM03 - Normal driving	OS04 - Highway	EN06 - Rain (slippery road)	SD02 - High speed	NA
HA-002	OM03 - Normal driving	OS03 - Country Road	EN01 - Normal conditions	SD02 - High speed	NA
HA-003	OM03 - Normal driving	OS05 -Mountain Pass	EN07 - Snow (slippery road)	SD01 - Low speed	NA
HA-004	OM03 - Normal driving	OS06 - Off Road	EN01 - Normal conditions	SD01 - Low speed	NA

[Operational Mode] on [Operational Scenario] during [Environmental Details] with [Situational Details] and [Item Usage] system.

Risk = Exposure * Severity * Controllability

		Hazard Identification			
Item Usage (function)	**Situation Description**	**Function**	**Deviation**	**Deviation Details**	**Hazardous Event (resulting effect)**
IU01 - Correctly used	Normal driving on a highway with a wet slippery road at high speed and correctly used system.	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
IU02 - Incorrectly used	Normal driving on country roads during normal conditions with high speed and incorrectly used system	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	DV03 - Function always activated	The malfunction is that the LKA function is always activated.	EV00 - Collision with other vehicle
IU01 - Correctly used	Normal driving on a mountain pass during snow at low speed and correctly used system.	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback	DV07 - Actor action too late	The LDW function is unable to detect lane markings and applies an oscillating torque a bit late.	EV00 - Collision with other vehicle
IU02 - Incorrectly used	Normal driving, off road during normal conditions at low speed and incorrectly used system.	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	DV03 - Function always activated	The malfunction is that the LKA function is always activated.	EV02 - Collision with pedestrian

				Hazardo
Event Details	**Hazardous Event Description**	**Exposure (of situation)**	**Rationale (for exposure)**	**Severity (of potential harm)**
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).	E3 - Medium probability	Since it is highway, makes it very frequent. Considering that it rains once in a month and together with highway scenario makes it E3.	S3 - Life-threatening or fatal injuries
The lane keeping assistance function should add extra steering torque for a limited amount of time and then stop providing extra torque.	The driver cannot treat the function as if it were meant for fully autonomous driving (the driver is misusing the lane keeping assistance function as an autonomous function).	E2 - Low probability	Taking into account that both "country road" driving and incorrectly used system are less frequent	S3 - Life-threatening or fatal injuries
There is a delay in haptic feedback and can affect driver's ability to steer in time.	The driver might act a bit late and collide with another vehicle or with road infrastructure.	E2 - Low probability	Considering that snowy days are seasonal, less frequent and occurs in certain parts of the country	S2 - Severe and life-threatening injuries
The lane keeping assistance function should stop providing extra torque.	The driver cannot treat the function as if it were meant for fully autonomous driving and should act in off-road conditions.	E3 - Medium probability	This situation is reproduceable in all conditions whenever the car is off the road and outside lane markings. Eg: 1. Gas stations / shopping areas to road 2. Parking at home. Since the system is incorrectly used, assigned E3	S2 - Severe and life-threatening injuries

us Event Classification			Determination of ASIL and Safety Goals	
Rationale (for severity)	**Controllability (of hazardous event)**	**Rationale (for controllability)**	**ASIL Determination**	**Safety Goal**
High speed driving	C3 - Difficult to control or uncontrollable	If the lane departure warning function causes the steering wheel to vibrate excessively with wild swings of the steering wheel, most drivers would have difficulty controlling the vehicle.	C	Oscillating steering torque from the lane departure warning function shall be limited.
High speed driving	C3 - Difficult to control or uncontrollable	The malfunction was that the lane keeping assistance was always on and had no time limit, so drivers could take both hands off the wheel. Because hands aren't on the wheel at high speeds, a vehicle accident would not be controllable.	B	The lane keeping assistance function shall be time limited and the additional steering torque shall end after a given time interval so that the driver cannot misuse the system for autonomous driving.
Low speed driving, but accidents at high elevated roads can get severe	C2 - Normally controllable	Since the vehicle is at lower speeds, driver should be able to normally control the vehicle	QM	
Low speed driving, but while considering kids and aged people walking around	C2 - Normally controllable	The malfunction is that the LKA function randomly applies steering torque when no lane lines are visible.	A	The lane keeping assistance function shall not apply steering torque when no lane lines are visible.