

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	
HA-002	OM03: Normal Driving	OS03: Country Road	EN01: Normal Conditions	SD02: High Speed	
HA-003	OM05: Degraded Driving	OS02: City Road	EN01: Normal Conditions	SD01: Low Speed	
HA-004	OM03: Normal Driving	OS04: Highway	EN07: Snow (slippery road)	SD05: Normal Braking	

Item Usage (function)	Situation Description	Function	Deviation	Deviation Details
IU01: Correctly Used	Driver is correctly using the lane departure warning system during high speed driving on a wet road	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).
IU02: Incorrectly Used	Driver is misusing the lane keeping assistance function as an autonomous function	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 provides torque after a specified period of time.
IU01: Correctly Used	Driver is correctly using the lane keeping assistance function while the vehicle is in a degraded condition, e.g. with a flat tire	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane.	DV04: Actor effect is too much.	The LKA function provides torque when the driver has limited control of the vehicle.
IU01: Correctly Used	Driver is correctly using the lane keeping assistance function on the highway during normal braking in snowy (slippery) conditions	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane.	DV04: Actor effect is too much.	The LKA function provides torque during braking, when the driver does not expect the torque.

Hazard Identification				
Hazardous Event (resulting effect)	Event Details	Hazardous Event Description	Exposure (of situation)	Rationale (for exposure)
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).	E3	High-speed driving in the rain occurs once a month or more often for an average driver.
EV00: Collision with other vehicle.	Because the LKA function does not deactivate after a limited amount of time, the driver believes the vehicle drives autonomously. The vehicle could collide with another vehicle or with road infrastructure.	The LKA does not stop providing torque after a limited amount of time.	E2	Misuse on a country road is a rare occurrence for most drivers.
EV00: Collision with other vehicle.	Because the LKA function does not deactivate in a degraded state, the driver cannot safely maneuver the vehicle off the road, potentially causing a collision with another vehicle or road infrastructure.	The LKA does not stop providing torque even when the vehicle is degraded.	E1	Degraded driving is a rare occurrence for most drivers.
EV00: Collision with other vehicle.	Because the LKA may activate even in snowy (slippery conditions), the driver does not expect the vehicle to apply steering torque, potentially causing a collision with another vehicle or road infrastructure.	The LKA does not stop providing torque when the driver does not expect it to activate	E2	Snowy, high-speed driving and braking is not a common occurrence for most drivers.

Hazardous Event Classification				Determinir
Severity (of potential harm)	Rationale (for severity)	Controllability (of hazardous event)	Rationale (for controllability)	ASIL Determination
S3	Driver is traveling at a high speed, over 40 km/h	C3	Driver is unable to regain control of the vehicle. Less than 90% or more of all drivers or other traffic participants are usually able, or barely able, to avoid harm	C
S3	Driver is traveling at a high speed, over 40 km/h	C3	Vehicle is uncontrollable with hands off the wheel. Less than 90% or more of all drivers or other traffic participants are usually able, or barely able, to avoid harm	B
S1	Vehicle is traveling in traffic, but at relatively low speed.	C3	Driver is unable to safely maneuver the vehicle out of traffic. Less than 90% or more of all drivers or other traffic participants are usually able, or barely able, to avoid harm	QM
S3	Vehicles traveling/braking at high speeds in snowy conditions are likely to be involved in a severe accident.	C3	Driver is unable to safely maneuver the vehicle during braking in snowy conditions with unexpected steering torque. Less than 90% or more of all drivers or other traffic participants are usually able, or barely able, to avoid harm	B

Definition of ASIL and Safety Goals
Safety Goal
<p>The oscillating steering torque from the lane departure warning function shall be limited.</p>
<p>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.</p>
<p>The lane keeping assistance function shall be disabled or reduced in amplitude in the event of degraded driver, to allow safe maneuvering of the vehicle.</p>
<p>The lane keeping assistance function shall be disabled or reduced in amplitude in the event of highway braking during snowy conditions, to prevent unexpected vehicle behavior.</p>