

Hazard ID	Situational Analysis						
	Operational Mode	Operational Scenario	Environmental Details	Situation Details	Other Details (optional)	Item Usage (function)	Situation Description
HA-001	Normal driving	Highway	Rain (slippery road)	High speed		Correctly used	Normal driving on a highway during rain (slippery road) with high speed and correctly used system
HA-002	Normal driving	Country roads	Normal conditions	High speed		Incorrectly used	Normal driving on country roads during normal conditions with high speed and incorrectly used system (the driver is misusing the lane keeping assistance function as an autonomous function)
HA-003	Normal driving	Highway	Normal conditions	High speed	Trying to pass another car	Correctly used	Normal driving on a highway during normal conditions with high speed and correctly used system. Trying to pass a slower moving vehicle
HA-004	Parked	City roads	Normal conditions	Low speed	Stopped on a traffic light over a lane line	Correctly used	Parked on a traffic light on city roads during normal conditions with low speed and correctly used system

Hazard ID	Hazard Identification					
	Function	Deviation	Deviation Details	Hazardous Event (resulting effect)	Event Details	Hazardous Event Description
HA-001	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback	Actor effect is too much	The LDW function applies an oscillating torque with very high torque (above limit)	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)
HA-002	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	Function always activated	The LKA function applies torque for too long a period	Collision with other vehicle	Unlimited function active time can lead the driver to misuse the assistance as an fully autonomous function	The LKA function has no time limit
HA-003	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	Function unexpectedly activated	The driver forgets to signal he is changing lanes	Collision with other vehicle	The driver doesn't expect the torque trying to keep him in the lane and could hit the car he is trying to pass	The LKA function lacks a complete ability to determine the driver's intention
HA-004	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback	Function always activated	The LDW function applies a vibrational torque while the car is stopped	None	Car has stopped over a lane line and for that reason the system activates and vibrates the steering wheel	The LDW function remains active even when the car is not moving

Hazard ID	Hazardous Event Classification					
	Exposure (of situation)	Rationale (for exposure)	Severity (of potential harm)	Rationale (for severity)	Controllability (of hazardous event)	Rationale (for controllability)
HA-001	E3 - Medium probability	Highway driving on a wet road is a situation that happens quite often	S3 - Life-threatening or fatal injuries	The driver is traveling at high speed	C3 - Difficult to control or uncontrollable	Most drivers would have difficulty controlling the vehicle with too high an oscillating torque driving on a slippery road
HA-002	E2 - Low probability	The combination of driving on a country road and misusing the system does not happen often	S3 - Life-threatening or fatal injuries	The driver is traveling at high speed	C3 - Difficult to control or uncontrollable	Because hands aren't on the wheel at high speeds, a vehicle accident would not be controllable
HA-003	E3 - Medium probability	Highway driving on normal condition is a situation that happens quite often	S3 - Life-threatening or fatal injuries	The driver is traveling at high speed	C3 - Difficult to control or uncontrollable	Passing normally requires precise maneuvers and any unexpected behavior can cause the driver to lose control of the car
HA-004	E3 - Medium probability	Normally people would stop inside the boundaries of the lane	S0 - No injuries	The car is not moving	C0 - Controllable in general	The car is not moving

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Hazard ID	Determination of ASIL and Safety Goals	
	ASIL Determination	Safety Goal
HA-001	C	The oscillating steering torque from the lane departure warning function shall be limited
HA-002	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
HA-003	C	The lane keeping assistance function shall be able to recognize the driver's intention to change lanes even when he does not clearly signal it
HA-004	QM	No vibration should be felt by the driver when the car is not moving