

Hazard ID	Situational Analysis						Hazard Identification		Hazardous Event		Hazardous Event Classification		Determination of ASIL and Safety Goals								
	Operational Mode	Operational Scenario	Environmental Factors	Situation Details	Other Details (Contextual)	Ram Usage (Functionality)	Situation Description	Function	Deviation	Deviation Details	Hazardous Event (Description/Effect)	Event Details	Hazardous Event Description	Exposure (Inf. situation)	Rationale (Inf. assessment)	Severity (Inf. potential harm)	Rationale (Inf. assessment)	Controllability (Inf. assessment)	Rationale (Inf. controllability)	ASIL Determination	Safety Goal
HA-001	OM03 - Normal driving	OS04 - Highway	EN06 - Rain (slippery)	SD02 - High speed		IU01 - Correctly used	Normal driving on a highway during rain (slippery road) with 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	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	Highway during rain (slippery road) occurs once a month or more often for an average driver	S3 - Life-threatening or fatal injuries	Driving with high speed	C3 - Difficult to control or uncontrollable	Since the system applies high torque on the steering wheel on slippery roads with high speed, the situation is difficult to control.	ASIL C	The oscillating steering torque from the lane departure warning shall be limited.
HA-002	OM03 - 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)*.	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane.	DV03 - Function always activated	Lane keeping assistant was always on and had no time limit.	EV00 - Collision with other vehicle	The driver is misusing the lane keeping assistance function as a fully autonomous function which the system is not designed for.	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 avoidable.	E2 - Low probability	Driver misusage of the system does not happen often.	S3 - Life-threatening or fatal injuries	Driving with high speed	C3 - Difficult to control or uncontrollable	Since the drivers hands aren't on the steering wheel, the situation is difficult to control.	ASIL 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	OM03 - Normal driving	OS10 - Road with construction site	EN01 - Normal conditions	SD01 - Low speed	Merged lanes. Additional temporary lane lines in other color.	IU01 - Correctly used	Normal driving on highway with construction site with merged lanes and additional lane lines.	Lane Keeping Assistance (LKA) shall recognise lane lines and help keep vehicle inside ego lane.	DV19 - Sensor detection is wrong	The LKA misrecognizes the lane lines and steers the vehicle out of lane.	EV-02 - Side collision with other traffic	The LKA applies torque wrongly and steers the vehicle out of the ego lane, which the driver has to compensate for.	The LKA steered the vehicle into the adjacent lane and didn't compensate fast enough.	E4 - High probability	Construction site are very common.	S2 - Severe and life-threatening injuries	Side collision with other vehicle at low speed.	C1 - Simply controllable	Since the vehicle is slow and in normal driving conditions, the situation should be easy to control.	ASIL A	If the system detects contradictory lane lines, the system shall disable and inform the driver.
HA-004	OM03 - Normal driving	OS02 - City Road	EN07 - Snow (slippery road)	SD01 - Low speed	Lane lines not available or visible.	IU01 - Correctly used	Normal driving in city with snow on the street.	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback.	DV02 - Function unexpectedly activated	Due to patches of snow on the street the system activates unexpectedly.	EV03 - Car spins out of control	High haptic feedback can affect driver's ability to steer as intended. The driver could lose control of the vehicle and spin out on the slippery road.	The sudden haptic feedback caused the driver to jerk on the steering wheel, which led to the vehicle spinning.	E2 - Low probability	Snow in the city is common but seasonal.	S1 - Light and moderate injuries	Spin out at low speed in city traffic.	C2 - Normally controllable	The vehicle is slow but on snowy, slippery roads.	QM	The lane departure warning shall detect consistent lane lines before warning about a lane departure.