Hazard ID	Situational Analysis					
	Operational Mode	Operational Scenario	Environmental Details	Situation Details	Other Details (optional)	Item Usage (function)
HA-001	OM03 - Normal driving	OS04 - Highway	EN06 - Rain (slippery road)	SD02 - High speed		IU01 - Correctly used
HA-002	OM03 - Normal driving	OS03 - Country Road	EN01 - Normal conditions	SD02 - High speed		IU02 - Incorrectly used
HA-003	OM03 - Normal driving	OS05 - Mountain Pass	EN01 - Normal conditions	SD02 - High speed		IU01 - Correctly used
HA-004	OM03 - Normal driving	OS01 - Any Road	EN03 - Fog (degraded view)	SD01 - Low speed		IU01 - Correctly used

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Situation Description	**Function**	**Deviation**	**Deviation Details**
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).
Normal Driving on a country road during normal conditions at high speed. (the 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 lane keeping assistance function is not limited in time duration which leads to misuse as an autonomous driving function
Normal Driving on a mountain pass during normal conditions at high speeds.	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane.	DV02 - Function unexpectedly activated	The lane keeping assistance function unexpectedly turns on during technical mountain driving
Normal Driving on any road at low speeds during fog that degrades vision. (The driver is using the system and driving slowly due to poor visibility from the fog)	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback	DV19 - Sensor detection is wrong	The lane keeping system cannot detect the lane markings due to the fog

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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 - Medium probability	Highway driving is common but rain is not.
EV00 - Collision with other vehicle	The vehicle may collide with other traffic causing injury to the driver	Driving on country road at high speed and misusing the system	E2 - Low probability	The driver is on a country road and misusing the system. That combination does not happen often, so we will label the exposure E2
EV04 - Car comes off the road	The lane keeping assistance function may try to over correct and send the vehicle off the road	Driving on mountain pass at high speed and unexpected torque is applied to steering	E1 - Very low probability	Most drivers rarely drive on mountain passes. Compounded with the odds of the system turning on, this might even be a candidate for E0
EV00 - Collision with other vehicle	Vehicle alerts the driver of a lane change who incorrectly swerves causing an accident	Driving in fog at low speed and lane departure warnings are incorrect	E2 - Low probability	Fog is relatively uncommon, but since our system is camera based, the lane lines will almost certainly be undetectable in this case.

Hazardous Event Classification				Determin
Severity (of potential harm)	**Rationale (for severity)**	**Controllability (of hazardous event)**	**Rationale (for controllability)**	**ASIL Determination**
S3 - Life-threatening or fatal injuries	Driver is traveling at high speed	C3 - Difficult to control or uncontrollable	A vehicle accident would not be contorllable because the steering wheel is vibrating too much	C
S3 - Life-threatening or fatal injuries	Because the driver is traveling at high speed, severity would be S3	C3 - Difficult to control or uncontrollable	The malfunciton 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. We will label this hazardous situation as C3.	B
S3 - Life-threatening or fatal injuries	Coming off the road on a mountain pass can be lethal	C2 - Normally controllable	The lane keeping assistance system caused a torque on technical driving. Some users and scenarios may be controllable but maybe 10%	QM
S2 - Severe and life-threatening injuries	Low speed accident can be just S2	C1 - Simply controllable	Most users should be able to react appropriately to an incorrect alert.	QM

ation of ASIL and Safety Goals
Safety Goal
The oscillating torque feedback from the lane departure warning function shall be limited in both frequency and amplitude.
The lane keeping assistance function shall be time limited.
The lane keeping assistance function shall not activate unless the driver has explicitly enabled to use the feature.
The lane keeping assistance funciton shall deactivate when the lane lanes are undetectable