

Hazard ID	Situational Analysis			
	Operational Mode	Operational Scenario	Environmental Details	Situation Details
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	OM03 - Normal Driving	OS04 - Highway	EN07 - Snow (slippery road)	SD02 - High speed
HA-004	OM03 - Normal Driving	OS04 - Highway	EN01 - Normal conditions	SD02 - High speed

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Other Details (optional)	Item Usage (function)	Situation Description	Function
	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
	IU02 - Incorrectly used	Normal driving on a country road 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
	IU01 - Correctly used	Normal driving on a highway on snow (slippery road) with high speed and correctly used system.	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane
	IU02 - Incorrectly used	Normal driving on a highway during normal conditions with high speed and incorrectly used system.	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback

Hazard Identification			
Deviation	Deviation Details	Hazardous Event (resulting effect)	Event Details
DV04 - Actor effect is too much	The Lane Departure Warning 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 loose control and could collide with another vehicle or side of the road.
DV03 - Function is always activated	The Lane Keeping function is always activated	EV00 - Collision with other vehicle	Driver uses the function as if the car was a self-driving car and loose driving attention.
DV03 - Function is always activated	The Lane Keeping function generates a high motor torque	EV00 - Collision with other vehicle	The lane keeping function acts aggressively
DV02 - Function unexpectedly activated	The camera sensor stop working and the Lane Keeping Assistance function continue to be activated.	EV00 - Collision with other vehicle	The Lane Departure Warning continue to be activated starting executing random torque to the vehicle making the driver to loose control with potential collision with other vehicle.

			Hazard
Hazardous Event Description	Exposure (of situation)	Rationale (for exposure)	Severity (of potential harm)
The Lane Departure Warning function applies an oscillating torque with very high torque (above limit.)	E3 - Medium probability	Driving on a highway with rain could happen between 1% and 10% of the time operating the vehicle.	S3 - Life-threatening or fatal injuries
The driver does not use the function properly.	E2 - Low probability	The combination between driving at a country road and misusing system should not happen often. Less than 1% of the time operating the vehicle.	S3 - Life-threatening or fatal injuries
Lane Keeping function generates a high motor torque	E3 - Medium probability	Driving on a highway with snow could happen between 1% and 10% of the time operating the vehicle.	S3 - Life-threatening or fatal injuries
The Lane Departure Warning start acting randomly when the camera sensor is not working.	E3 - Medium probability	Driving on a highway with rain could happen between 1% and 10% of the time operating the vehicle.	S3 - Life-threatening or fatal injuries

dous Event Classification

Rationale (for severity)	Controllability (of hazardous event)	Rationale (for controllability)
Collisions at high speed could cause fatal injuries.	C3 - Difficult to control or uncontrollable	It is difficult to stay calm and react properly when the steering wheel is moving too much.
Collisions at high speed could cause fatal injuries.	C3 - Difficult to control or uncontrollable	Because hands aren't on the wheel at high speeds, a vehicle accident would not be controllable
Collisions at high speed could cause fatal injuries.	C3 - Difficult to control or uncontrollable	When the driver loses control of the vehicle, it is very difficult to realize the situation and act accordingly
Collisions at high speed could cause fatal injuries.	C3 - Difficult to control or uncontrollable	When the driver loses control of the vehicle, it is very difficult to realize the situation and act accordingly

Determination of ASIL and Safety Goals	
ASIL Determination	Safety Goal
C	The oscillating steering torque from the Lane Departure Warning function shall be limited.
B	The Lane Keeping Assistance function shall be time limited, and additional steering torque shall end after a given time interval so the driver cannot misuse the system for autonomous driving.
C	The Assistance provided by the Lane Keeping System shall be limited.
C	The Lane Departure Warning function shall be deactivated when the camera sensor stop working.