

| Hazard ID | Situational Analysis | | | | | | | | | | Hazard Identification | | Hazardous Event Classification | | | | Determination of ASIL and Safety Goals | | | | |
|-----------|-----------------------|----------------------|-----------------------------------|-------------------|--------------------------|-------------------------|---|---|----------------------------------|--|---|---|--|-------------------------|--|---|---|---|--|--------------------|--|
| | Operational Mode | Operational Scenario | Environmental Details | Situation Details | Other Details (optional) | Item Usage (function) | Situation Description | Function | Deviation | Deviation Details | Hazardous Event (resulting effect) | Event Details | Hazardous Event Description | Exposure (of situation) | Rationale (for exposure) | Severity (of potential harm) | Rationale (for severity) | Controllability (of hazardous event) | Rationale (for controllability) | ASIL Determination | Safety Goal |
| HA-001 | OM03 - Normal Driving | OS04 - Highway | EN06 - Rain (slippery road) | 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 torque with very high torque (above limit) | 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 side of the road | 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 | Cause accidents that may lead to fatal injuries | C3 - Difficult to control or uncontrollable | It is difficult to control the steering vehicle when a very high oscillating torque is applied on the steering wheel at high speeds | C | The oscillating steering torque from the lane departure warning function 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 and incorrectly used system. | 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 is always activated | EV00 - Collision with other vehicle | Driver use the function as if the car was a self-driving car and loose driving attention | The LKA function is always activated and the driver does not use the function as intended. | E2 - Low probability | The convolution 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 | Cause accidents that may lead to fatal injuries | C3 - Difficult to control or uncontrollable | As the driver is not using function properly and not paying attention, the driver will find it very difficult to control the vehicle | B | The LKA 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 | OS04 - Highway | EN03 - Fog (degraded view) | SD01 - Low speed | | IU01 - Correctly used | Normal driving on a highway during fog (degraded view) with low speed and correctly used system. | Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback | DV19 - Sensor detection is wrong | The camera subsystem detects lane lines may be failed due to degraded view | EV00 - Collision with other vehicle | Due to degraded view, the camera sensor is not able to identify lane lines or incorrectly identifies lane lines. The driver may get incorrect feedback and may cause vehicle collisions | The camera subsystem in the LDW function provides incorrect feedback to the steering wheel due to degraded view. | E3 - Medium probability | Driving on a highway on degraded view such as fog may happen between 1% to 10% of the average operating time | S3 - Life-threatening or fatal injuries | Driving on degraded view even though in low speed can cause accidents that may cause fatal injuries | C3 - Difficult to control or uncontrollable | As the visibility is less and due to incorrect feedback, the driver gets incorrect information the driver may find it very difficult to control the vehicle if he finds in a hazardous event | C | The LDW function shall be turned off with a warning to the user when operated in degraded viewing conditions |
| HA-004 | OM03 - Normal Driving | OS04 - Highway | EN05 - Cross-wind (lateral force) | SD02 - High speed | | IU01 - Correctly used | Normal driving on a highway road during cross-wind (lateral force) conditions 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 | DV05 - Actor effect is too less | The LKA function applies less torque when lateral forces exist | EV-02 - Side collision with other traffic | As lesser torque is applied, the car may still be going out of the lane | The LKA function applies less torque | E3 - Medium probability | Driving on a highway when cross-winds exist may happen between 1% to 10% of the average operating time | S2 - Severe and life-threatening injuries | Side-on collisions may happen that can cause severe injuries | C2 - Normally controllable | Since, the driver uses the function properly, he may be able to control the vehicle and apply the extra torque to the steering | A | The LKA function shall apply extra torque when a lateral force exists on the vehicle |