CRS DRIM Update Tests V1

Information 1 - Example requirements for an automotive **brake system**. [8.11]

1 Functional Requirements [8.10]

Requirement 1 - **Braking Force**: The brake system must provide sufficient braking force to bring a fully loaded vehicle from a speed of 100 km/h to a complete stop within a distance of 40 meters. [8.11]

Requirement 2 - **Anti-lock Braking System (ABS)**: The brake system must include an Anti-lock Braking System (ABS) to prevent wheel lockup during emergency braking. [8.11]

Requirement 3 - **Electronic Brake-force Distribution (EBD)**: The brake system should incorporate Electronic Brake-force Distribution (EBD) to automatically adjust the brake force on each wheel based on load conditions. [8.11]

Requirement 4 - **Brake Assist Functionality**: The brake system must include a Brake Assist feature that detects emergency braking situations and applies maximum braking force. [8.11]

2 Performance Requirements [8.3] [8.10]

Requirement 6 -**Temperature Tolerance**: The brake components must function effectively within a temperature range of -30°C to 500°C. [8.4] [8.11]

Requirement 7 - **Fade Resistance**: The brake system must demonstrate fade resistance by maintaining at least 85% of its initial braking performance after 10 consecutive full stops from 100 km/h. [8.4] [8.6]

Requirement 8 - **Response Time**: The brake system should have a response time of less than 0.1 seconds from the moment the brake pedal is pressed to the start of brake application. [8.4] [8 .11]

Requirement 9 - **Durability**: Brake pads must have a minimum lifespan of 50,000 kilometers under normal driving conditions.[8.4] [8.11]

Requirement 10 - **Corrosion Resistance**: All exposed brake system components must resist corrosion in a salt spray test for a minimum of 1000 hours. [8.4] [8.11]

3 Safety Requirements [8.3] [8.5]

Requirement 11 - **Redundancy**: The brake system must have a redundant circuit to ensure continued operation in case of a failure in one part of the system. [8.4] [8.6]

Requirement 12 - **Fluid Leakage**: The brake system must not leak brake fluid under a pressure of 1500 psi for a duration of 10 minutes. [8.4] [8.11]

Requirement 13 - **Emergency Stop Capability**: The brake system must be capable of performing an emergency stop within a distance of 10 meters at a speed of 30 km/h. [8.4] [8.11]

Requirement 14 - **Compliance with Regulations**: The brake system must comply with all relevant safety standards and regulations, including FMVSS (Federal Motor Vehicle Safety Standards) and ECE R13 (United Nations Economic Commission for Europe Regulation 13).[8.4] [8.11]

Requirement 15 - **Brake Override System**: The brake system must incorporate a brake override feature that automatically reduces engine power if the brake pedal is applied simultaneously with the accelerator pedal. This ensures priority is given to braking in case of an unintended acceleration, enhancing overall safety. [8.4] [8.11]

4 Environmental Requirements [8.5]

Requirement 16 - **Environmental Impact**: Brake pads must not contain hazardous materials such as asbestos, lead, or heavy metals. [8.6]

Requirement 17 - **Dust Emissions**: The brake system must minimize particulate matter emissions [8.6]

Requirement 18 - **Temperature-Related Expansion**: The brake system materials must account for thermal expansion, maintaining consistent performance in both cold and hot conditions. [8.7]

5 User Experience Requirements [8.8]

Requirement 19 - **Pedal Feel and Feedback**: The brake pedal must provide a consistent and linear feedback to the driver, ensuring intuitive control and confidence during braking. [8.9]

Requirement 20 - **Ease of Maintenance**: The brake system should be designed for easy maintenance and replacement of brake pads and rotors, with clear access points and minimal requirement for special tools. [8.11]