**AUTONOMOUS EMERGENCY BRAKING SYSTEM**

**INTRODUCTION:**

In this document, the Autonomous emergency braking (AEB) system is a safety technology designed to help prevent or mitigate collisions by automatically applying the brakes of a vehicle when a potential collision is detected. The system uses radar to detect potential obstacles in the vehicle's path and apply the brakes if the driver does not respond in time.

**PARAMETERS:**

1. Velocity of the ego vehicle
2. Distance between ego and leading vehicle
3. Velocity of the leading vehicle
4. Time to time collision
5. Braking deceleration
6. Brake pressure

**FUNCTIONAL REQUIREMENT:**

**FR1**: To get the speed of the ego vehicle and leading vehicle and distance between them.

**FR2:** Check if the speed of the ego vehicle is less than 80 Km/hr. If the condition is false, then AEB should not be turned on

**FR3:** If the above condition is true then calculate the time to collision.

**FR4:** If TTC<TTCemerg, then AEB should activate the warning and full braking by calculating the required braking deceleration.

**FR5:** If the above condition fails then check TTC<=TTCm and TTC>TTCemerg. If this condition fails, then AEB will not be active.

**FR6:** If the FR5 is true then AEB should activate the FCW warning.

**FR7:** Then check if the driver applies brakes within the reaction time. Then check the drivers brake force >= required brake force. If the conditions is satisfied then AEB should not be active.

**FR8**: If the driver does not take any action. Then it will go to the partial braking phase and again check the TTC<=TTCemerg . if it is satisfied then go to full braking else move to partial braking

**FR9:** If the driver brake force < partial braking force then it will move to the partial braking phase and check the TTC<= TTCemerg . if it is satisfied then go to full braking else move to partial braking