PRE-CRASH SAFETY SYSTEM

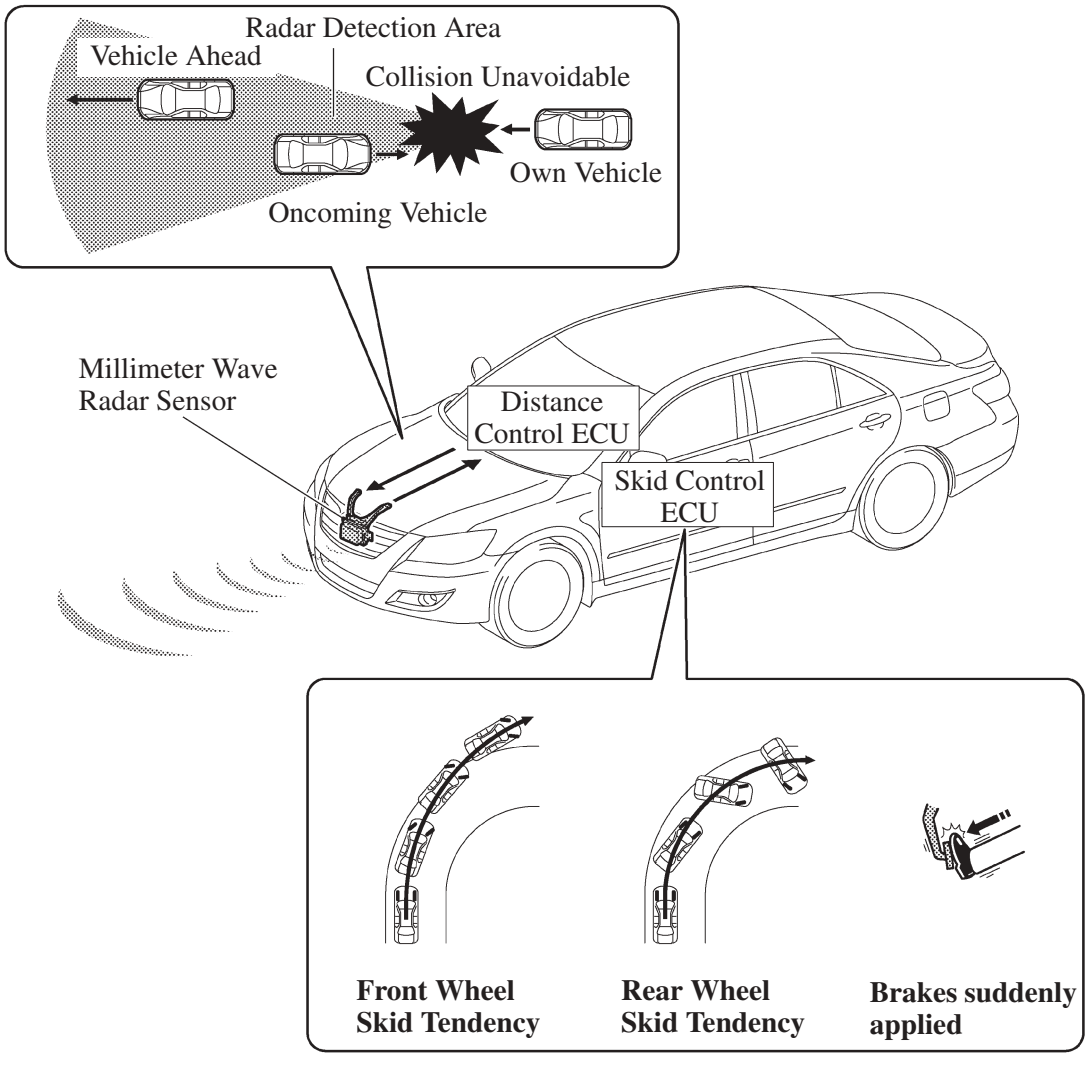
■ DESCRIPTION

The pre-crash safety system retracts the slack in the front seatbelts and brings the brake control system to the brake assist standby condition when the conditions below are present before a collision to reduce injury to the driver and front passenger.

Operating Condition	● When a collision with an obstacle in front of the vehicle or a collision with the vehicle ahead is determined to be unavoidable. ● When the brakes are suddenly applied. ● When the front wheels lose grip in relation to the rear wheels (front wheel skid tendency). ● When the rear wheels lose grip in relation to the front wheels (rear wheel skid tendency).

- The pre-crash safety system is used as standard on G grade models with 2GR-FE engines for Taiwan and models with 2GR-FE engines for Thailand.
- The millimeter wave radar sensor and distance control ECU determine whether a collision with an obstacle in front of the vehicle or a collision with the vehicle ahead is unavoidable.
- The millimeter wave radar sensor and distance control ECU make this determination based on the vehicle speed relative to the speed of an oncoming vehicle or based on the speed with which an object is being approached.
- The skid control ECU determines emergency braking, front wheel skid tendency and rear wheel skid tendency. (For details, see page CH-137)

Unavoidable Collision Judgment



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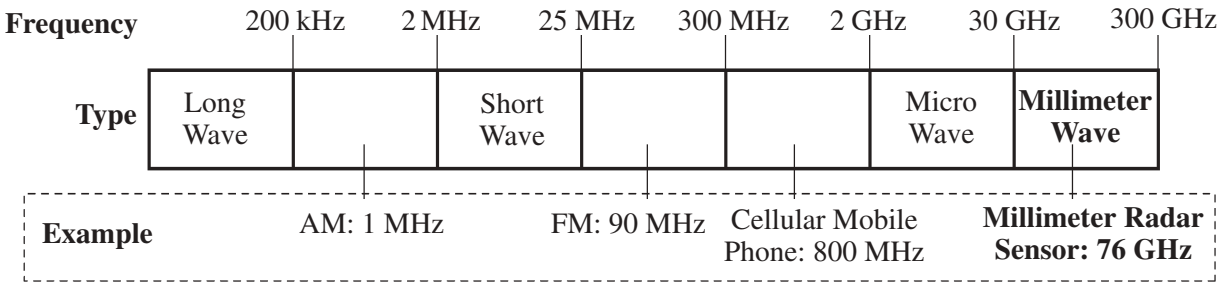
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- The pre-crash safety system will not operate under the following conditions.

Non-Operating Condition	1) Oncoming vehicle relative speed is approx. 30 km/h (20 mph) or less. 2) Vehicle speed is approx. 5 km/h (3 mph) or less. 3) The seat belt is not buckled. 4) Collision objects that cannot be detected by the millimeter wave radar sensor: ● Objects that cannot be detected: plastic items (Safety Cones, etc.), etc. ● Objects that cannot be detected in a stable manner: people, bicycles, motorcycles, trees, animals, snow fence, etc. 5) Power source is OFF or ACC. 6) Multi-information display in the combination meter displays "**CHECK PCS SYSTEM**" and "**PCS NOT AVAILABLE NOW**" warning messages. 7) The vehicle collides with an object located outside the detection area of the millimeter wave radar sensor.

— REFERENCE —

Millimeter Wave Radar:
Millimeter wave radar uses an extremely high frequency band between 30 GHz and 300 GHz, with an extremely short wavelength between 1 and 10 mm (0.04 to 0.40 in.) in a vacuum. The millimeter wave radar sensor of the pre-crash safety system uses frequencies in the 76 GHz band.
The millimeter wave radar is less affected by weather conditions such as rain, fog, or snow, and provides excellent characteristics for recognizing objects. Therefore, it is well suited to the pre-crash safety system and the dynamic radar cruise control system.



Main Wave Types and Frequencies

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