

PRE-CRASH SAFETY SYSTEM

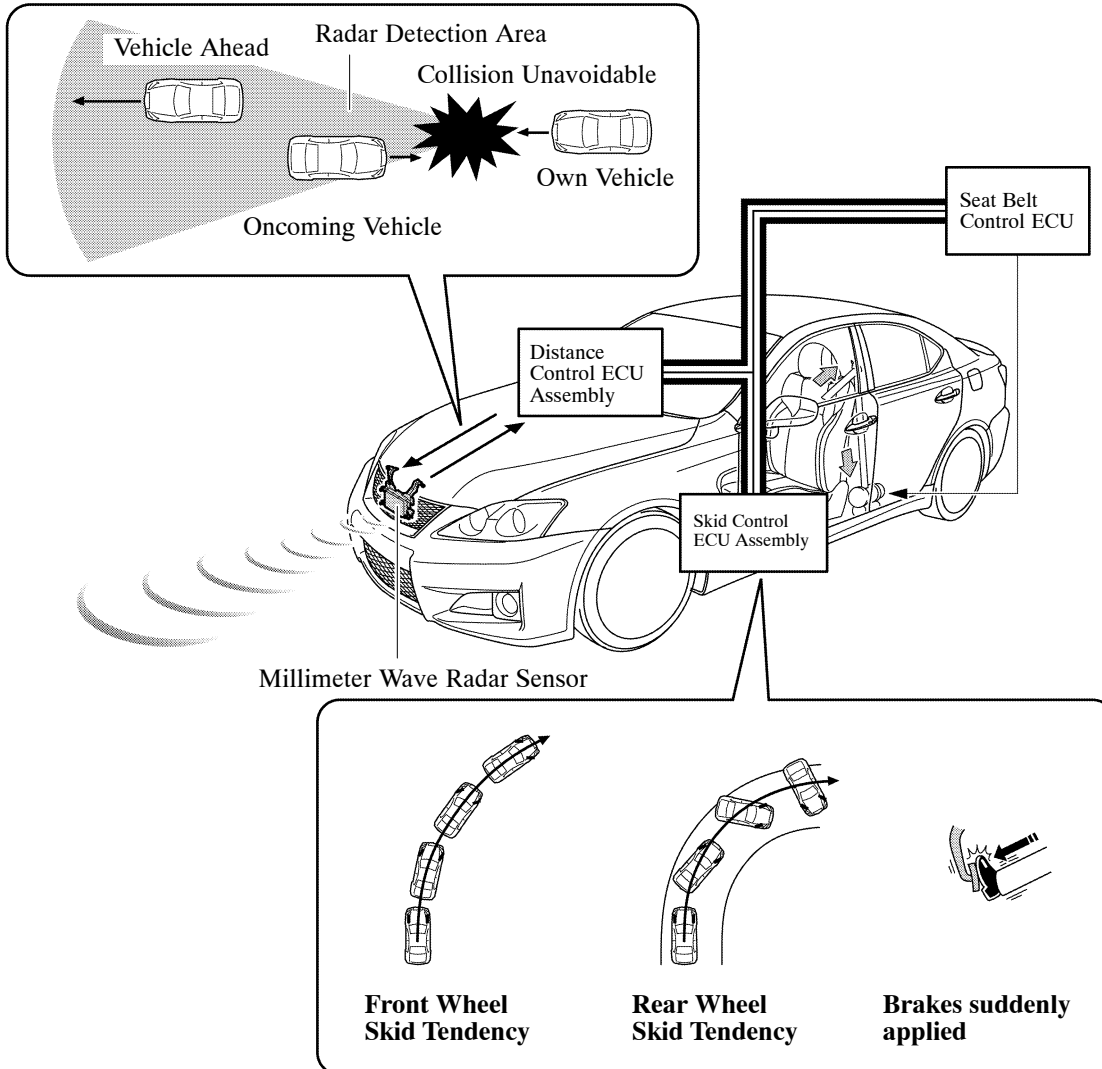
DESCRIPTION

The pre-crash safety system retracts the slack in the front seatbelts and warns the driver by sounding a buzzer and indicating a warning on the multi-information display. Then, it sets the brake control system in the brake assist standby mode and applies the brakes when the conditions indicated below are present before a collision. This lessens the injury sustained by the driver and front passenger.

Operating Condition	<ul style="list-style-type: none"> • 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 available as optional equipment.
- The millimeter wave radar sensor and distance control ECU assembly 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 assembly 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 assembly determines emergency braking, front wheel skid tendency and rear wheel skid tendency. (For details, see page CH-100 and 103)

Unavoidable Collision Judgment



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

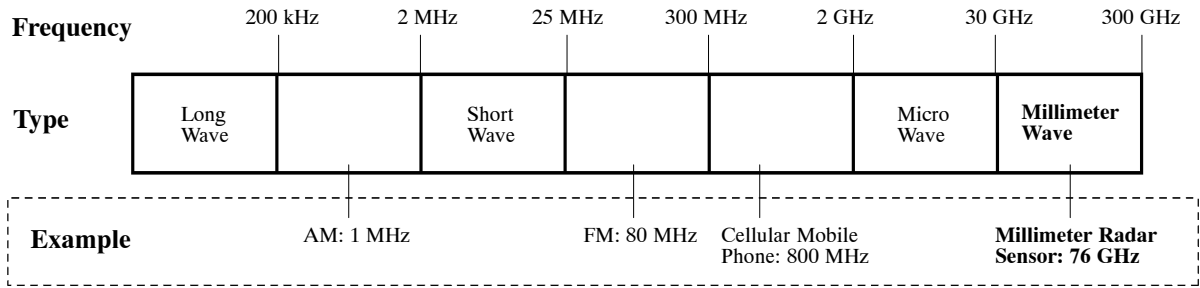
Non-operating Condition	<ol style="list-style-type: none"> 1) Oncoming vehicle relative speed is approx. 30 km/h (20 mph) or less. 2) Vehicle speed is approx. 5 km/h (3 mph) or less. 3) The seat belt is not buckled. 4) Collision objects that cannot be detected by the millimeter wave radar sensor: <ul style="list-style-type: none"> • 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) Engine switch is off or on (ACC). 6) Multi-information display in the combination meter assembly 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.



BE

Main Wave Types and Frequencies

269LS102