

Electrically Scanned Millimeter-Wave Automotive Radar



To develop a stable sensor that detects the range, relative speed and azimuthal angular position of obstacles near and around the vehicle in any weather conditions.
For use in smart cruising systems and preventative safety systems, etc.

Principle

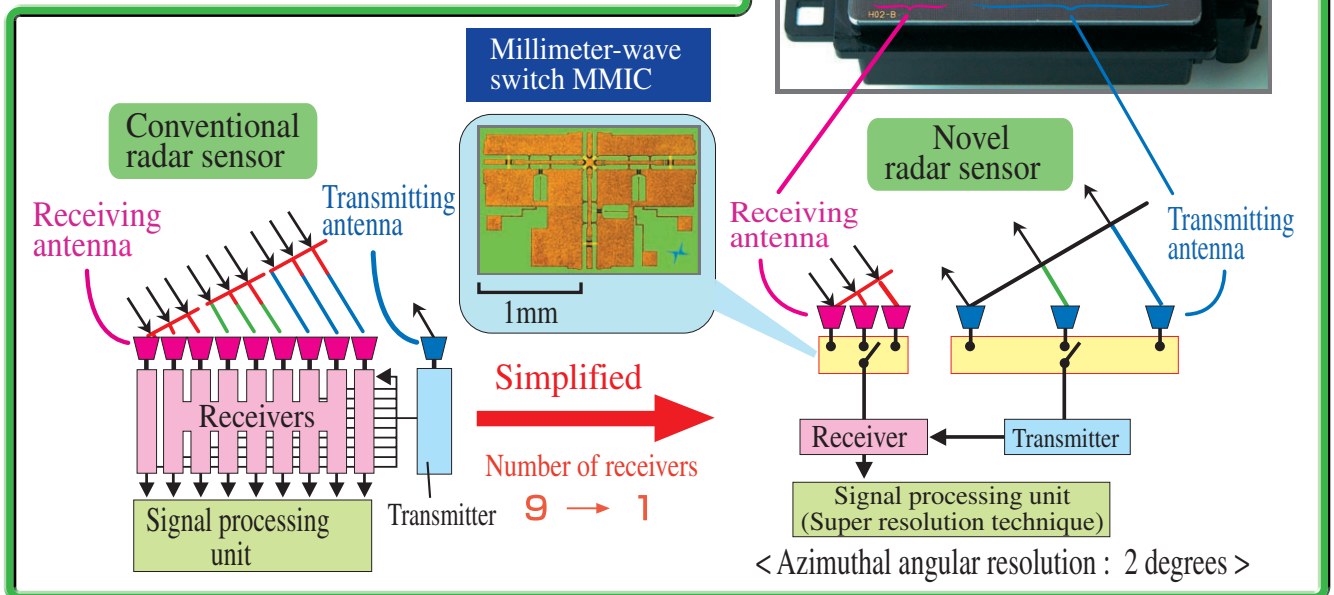
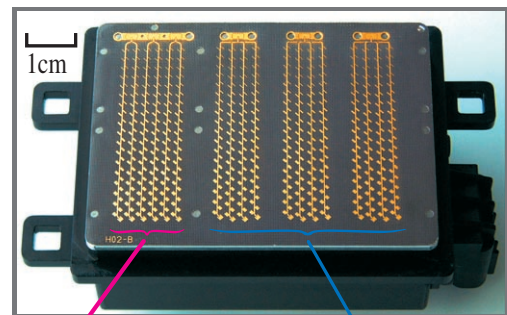


- **Detection of range:** utilizes the time lag of reflected waves
- **Detection of relative speed:** utilizes the frequency shift (Doppler Effect) of reflected waves
- **Detection of angular position:** utilizes the phase differences between signals received by multiple antennas
- Utilizes millimeter-waves*, the transmission of which is affected less during rainy conditions as compared with laser beam (*electromagnetic wave with free space wavelength of 1-10 mm)

Characteristics

- Simplified structure by means of switching both transmitting and receiving antennas
- High efficiency millimeter-wave antenna (efficiency > 50 %)
- Low loss millimeter-wave switch MMIC (insertion loss < 1.5 dB)
- Super resolution signal processing with advanced capacity for separating multiple targets in the same range (azimuthal angular resolution < 2 degrees)

Electrically scanned millimeter-wave radar sensor



Performance

For application in adaptive cruise control systems (ACC) that maintain a safe distance to vehicles in front of your lane by controlling vehicle speeds.

Field of View	$\pm 15^\circ$	(0.2°)
Range	2~150m	(1m)
Relative Speed	$\pm 150\text{km/h}$	(1km/h)

(): Accuracy