METAWAVE

WARLORD™:

Intelligent Automotive Radar With True 3D Vision

Metawave's WARLORD™ radar "digital eye" combines ultra-fast beamsteering with AI algorithms to enable precise 3D imaging at long ranges, superior identification and classification of objects, non-line-of-sight object detection, multi-beam object tracking, and other smart functionalities like accident anticipation by analyzing traffic patterns, with operation in all-weather conditions.

WARLORD: **W**-band **A**dvanced **R**adar for **L**ong-range **O**bject **R**ecognition and **D**etection

THE CHALLENGE

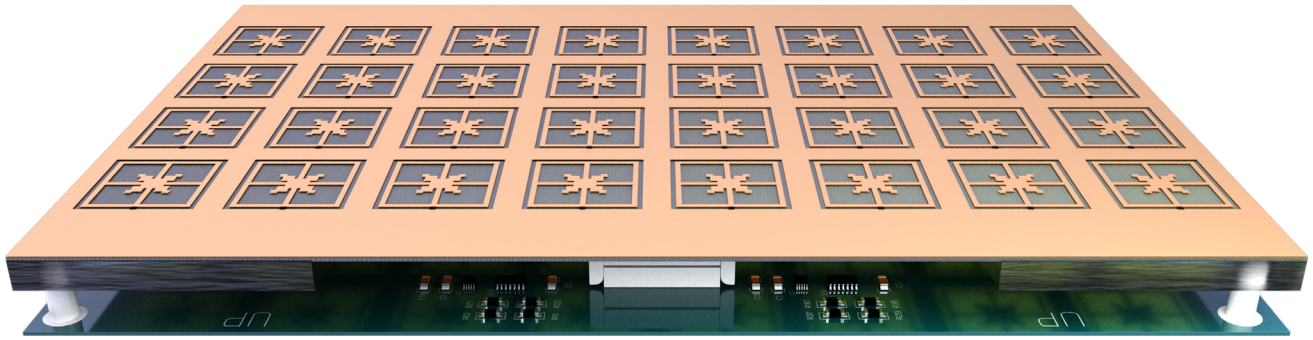
Today's digital beamforming (DBF) radars have a complex architecture; are slow; do not support high resolution and high SNR simultaneously at long ranges; and are susceptible to signal interferences (i.e., ghost images).

DBF radars have reduced field of view at long ranges; and cannot discriminate road objects.

METAWAVE'S SOLUTION

WARLORD™ leverages adaptive metamaterials, to replace traditional phase shifters, thus offering true analog RF beamforming, while reducing power, complexity, and cost. Its analogue architecture is fast (µs speed), supports both high resolution and high SNR (at least 10× more than DBF), and significantly suppresses interferences.

WARLORD™ supports 1° pencil beams, has significantly reduced sides lobes (<-25 dB), possess large 3D FoV (120° cone angles), and uses its AI engine for accurate and robust object discrimination.



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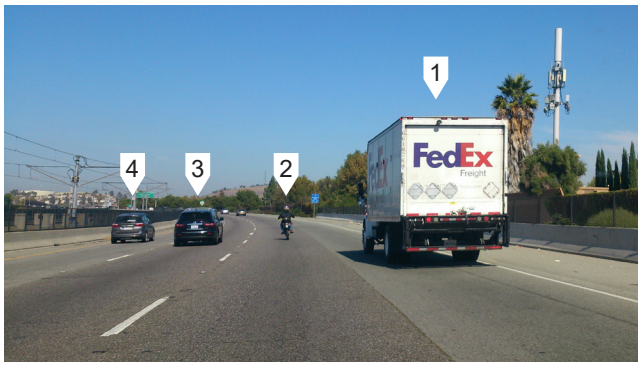
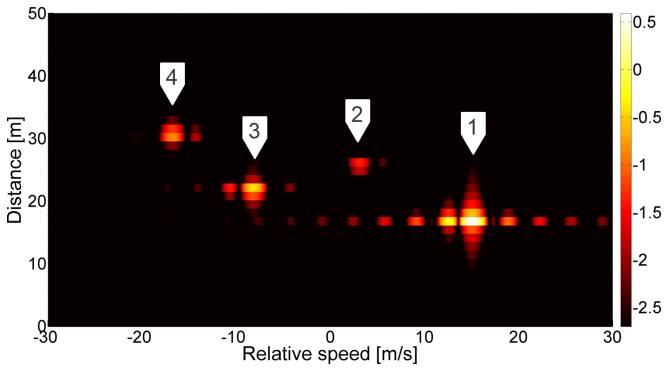
Metamaterial Frequency-Adaptive Steerable Technology
- The Core Component

TARGET DETECTION AND CLASSIFICATION AT 77 GHz

Simulation of results for detection, clustering, and classification of targets at 77 GHz range.



Multiple targets acquired in a 120° field of view. Multiple arrays can be assembled to yield 360° scanning and tracking.



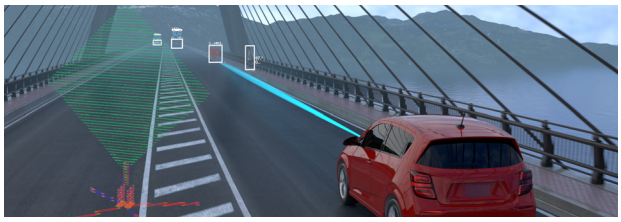
Range-speed response pattern of acquired targets by an FMCW beam at 77 GHz.

WARLORD™ Automotive Radar Specifications

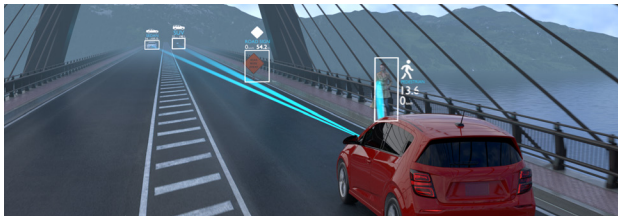
PARAMETER	WARLORD Specifications
Frequency	76-81 GHz
Range	> 250 m
Azimuth Scan Angle	+/- 60 degrees
Elevation Scan Angle	+/- 25 degrees
Polarization	Horizontal and Vertical
Instantaneous Bandwidth	1 GHz
Operating Temperature	-40°C to 85°C
Switching Speed	200 µsec
Peak EIRP	55 dBm
Beamwidth	1° (boresight)
Dimension	20 cm x 7cm x 3 cm
Gain	30 dB
Side Lobes	<-25 dB

Pencil Beam Scanning / Object Discrimination

Raster Scanning / 3D Imaging



Speed-range Determination; And Object Recognition



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