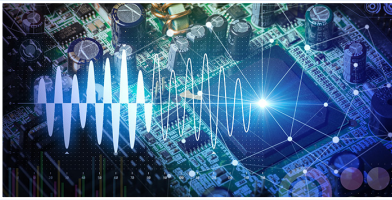


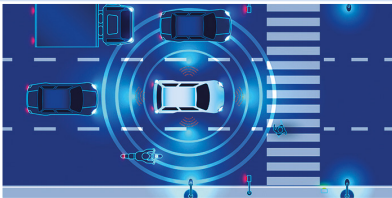
## Use Cases



Testing radar transceivers.



Performance and plausibility tests with radar sensors.



Scenario-based tests with radar sensors.



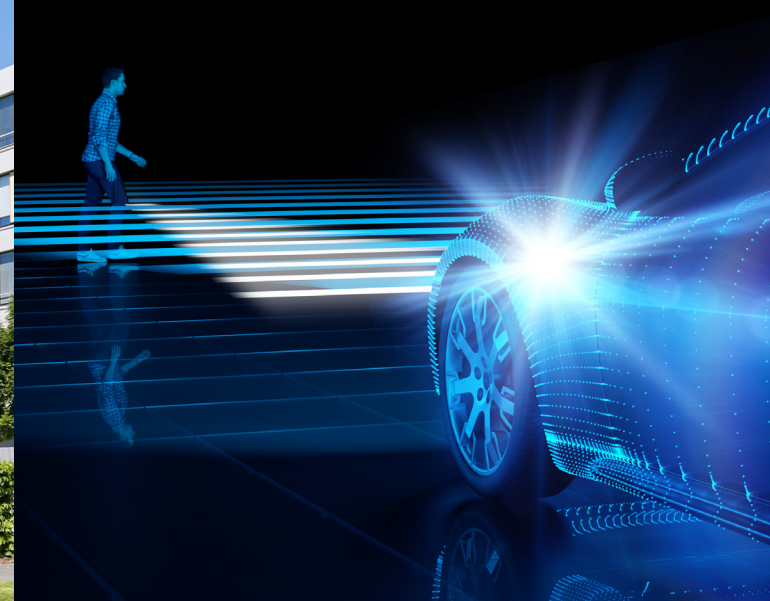
Radar sensor tests under the influence of surrounding components.



End-of-line testing of radar sensors.



Type approval of autonomous vehicles and radar sensors.



## dSPACE Automotive Radar Test Systems (DARTS)

Over-the-air simulation of radar echoes in real time

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**dSPACE**

**dSPACE**

# DARTS

The precise testing of radar sensors and applications is a critical requirement in development, production, quality assurance, and maintenance. The dSPACE Automotive Radar Test Systems (DARTS) enable easy-to-use but very realistic over-the-air tests. This is done by simulating radar echoes of objects in road traffic with programmable distance, speed, and size.

## Highlights

- Accurate over-the-air simulation of radar echoes in real time
- Best-in-class range coverage, speed, and size simulation
- Precise characterization and validation of all types of radar sensors
- Easy setup of the scalable systems for all ADAS/AD applications
- The ideal choice for chip testing, R&D, end-of-line, and type approval



DARTS 9030-MS



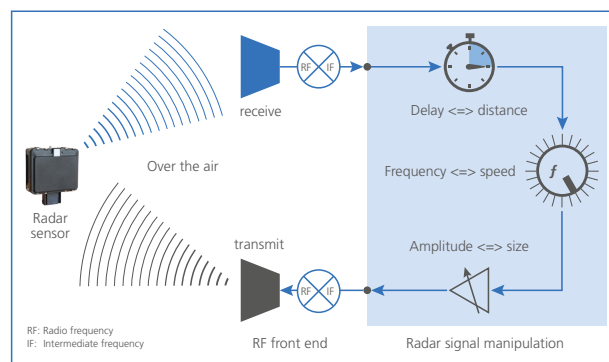
DARTS 9018-D



DARTS 9040-G

## Overview of Radar Test Systems

	DARTS 9030-MS	DARTS 9030-M	Multitarget Option <sup>1)</sup>	DARTS 9020-S	DARTS 9018-D	DARTS 9040-G
<b>RF front end</b>	■ 1x Rx, 1x Tx	■ 1x Rx, 1x Tx	■ 1x Rx, 1x Tx	■ 1x Rx, 1x Tx	■ 1x Rx, 1x Tx	■ 1x Rx, 1x Tx
<b>Concept</b>	■ full MIMO	■ full MIMO	■ full MIMO	■ full MIMO	■ full MIMO	■ full MIMO
<b>Frequency range</b>	■ 23 GHz to 26 GHz or 75 GHz to 82 GHz	■ 23 GHz to 26 GHz or 75 GHz to 82 GHz	■ 23 GHz to 26 GHz or 75 GHz to 82 GHz	■ 23 GHz to 26 GHz or 75 GHz to 82 GHz	■ 23 GHz to 26 GHz or 75 GHz to 82 GHz	■ 76 GHz to 81 GHz
<b>Bandwidth</b>	■ 1,200 MHz <sup>2)</sup>	■ 1,200 MHz <sup>2)</sup>	■ 1,200 MHz <sup>2)</sup>	■ 4,000 MHz <sup>3)</sup>	■ 4,000 MHz <sup>3)</sup>	■ 5,000 MHz
<b>Min. range</b>	■ 1.8 m	■ 5.5 m	■ 10.4 m	■ 0.6 m	■ 0.8 m	■ ≤ 2.5 m
<b>Max. range</b>	■ 1,000 m	■ 1,000 m	■ 500 m	■ 6.8 m	■ user defined	■ 300 m
<b>Range steps</b>	■ 6 cm	■ 6 cm	■ 6 cm	■ 10 cm	■ fixed range	■ 2.5 cm
<b>Simulation echoes</b>	■ 1	■ 1	■ up to 4	■ 1	■ 1	■ 1 <sup>4)</sup>
<b>Speed</b>	■ ± 700 km/h	■ ± 700 km/h	■ ± 700 km/h	■ ± 700 km/h	■ ± 700 km/h	■ ± 500 km/h
<b>Dynamic range</b>	■ > 60 dB	■ > 60 dB	■ > 110 dB	■ > 60 dB	■ > 60 dB	■ 70 dB
<b>Range accuracy</b>	■ < 1 mm / < 20 mm <sup>5)</sup>	■ < 1 mm	■ < 1 mm	■ < 20 mm	■ typically 10 cm	■ 5 mm
<b>Processing</b>	■ digital/analog	■ digital	■ digital	■ analog	■ analog	■ analog



DARTS work according to the over-the-air principle: The real sensor is stimulated in real time during operation.

## Advantages

- Particularly realistic tests of ADAS/AD applications
- Validation of the entire radar transmission channel
- Very fast and thorough tests
- Simple test setups
- Short commissioning
- Seamless integration into existing test environments
- Minimization of time to market

<sup>1)</sup> For DARTS 9030-MS and DARTS 9030-M  
<sup>2)</sup> Usable operational bandwidth: 1,200 MHz.  
 Instantaneous bandwidth: 1,000 MHz  
<sup>3)</sup> Usable operational bandwidth: 4,000 MHz.  
 Instantaneous bandwidth: 3,500 MHz  
<sup>4)</sup> Additional simulation echoes on request.  
<sup>5)</sup> digital: < 1 mm / analog: < 20 mm

