

# DARTS 9040-G

## The first true 5 GHz bandwidth radar target simulator

第一个真正的 5 GHz 带宽雷达目标模拟器

**Ultra-high-resolution imaging radars, often referred to as 4-D radars, provide detailed images of the radar's surroundings with a wide field of view as well as elevation, distance, and speed information. Tests of these radar sensors place high demands on the capabilities and bandwidth of the radar target simulator (RTS) used. The dSPACE Automotive Radar Test System (DARTS) 9040-G is the first RTS to successfully meet these challenges with powerful radio frequency technology.**

超高分辨率成像雷达，通常被称为 4-D 雷达，提供雷达周围的宽视场详细图像以及海拔、距离和速度信息。这些雷达传感器的测试对所使用的雷达目标模拟器(RTS)的性能和带宽提出了很高的要求。dSPACE 汽车雷达测试系统(DARTS) 9040-G 是第一个使用强大的射频技术成功应对这些挑战的 RTS 系统。



- Over-the-air simulation of radar targets for 4-D radar sensors
- Echoes from less than 3 m up to 300 m with a step size of only 2.5 cm
- Instantaneous bandwidth of 5,000 MHz
- 针对 4-D 雷达传感器的雷达目标空中模拟
- 回声从小于 3 米到 300 米，步长仅为 2.5 厘米
- 瞬时带宽 5000 兆赫

## APPLICATION AREA:

The dSPACE Automotive Radar Test System (DARTS) 9040-G is an industry-proven radar target simulator for testing radar sensors used in civilian vehicles. Its true 5 GHz bandwidth lets you simulate radar targets for particularly demanding automotive E-band radar sensors. Moreover, it is designed and optimized for all next-generation automotive radars, such as imaging and 4-D radars. Due to its convenient over-the-air approach, the system can be used in all major development phases, from chip design to sensor development and end-of-line testing. It is ideal for testing entire advanced driver assistance systems and autonomous vehicles. The tests can be performed during development, production, quality assurance, and approval.

dSPACE 汽车雷达测试系统(DARTS) 9040-G 是一种经过行业验证的雷达目标模拟器，用于测试民用车辆使用的雷达传感器。其真正的 5 GHz 带宽可以让您模拟雷达目标，特别是要求特别高的汽车 e 波段雷达传感器。此外，它还对所有下一代汽车雷达(如成像和 4-D 雷达)进行了设计和优化。由于其方便的无线方式，该系统可以用于所有主要的开发阶段，从芯片设计到传感器开发和线束测试。它是测试整个先进驾驶辅助系统和自动驾驶汽车的理想选择。测试可以在开发、生产、质量保证和批准过程中执行。

## End-of-Line (EOL) Testing

The new DARTS 9040-G is available in different variants for EOL testing. The individual variants are tailored to different requirements in EOL test applications. If you have any questions, dSPACE will be happy to provide more detailed information.

新的 DARTS 9040-G 有不同型号的 EOL 测试。单个变体可以根据 EOL 测试应用程序的不同需求进行定制。如果您有任何问题，dSPACE 将很乐意提供更详细的信息。

## Benefits

The DARTS 9040-G uses technology that considerably simplifies the work process. For example, it is designed to instantly cover the entire 77 GHz radar band – without any synthesizer tuning. It can also stimulate short- and long-range radars without changing the center frequency.

The DARTS 9040-G is optimized for developing complex next-generation radars. It features:

- An exceptionally high spurious-free dynamic range
- An outstandingly low noise figure
- A precise, high-resolution range simulation

Accurate and flexible testing of automotive radar applications has never been easier. The convenient over-the-air method achieves an unmatched test depth and test coverage – supporting all development phases from chip design to vehicle end-of-line testing.

DARTS 9040-G 采用的技术大大简化了工作过程。例如，它被设计为立即覆盖整个 77ghz 雷达波段-没有任何合成器调谐。它也可以在不改变中心频率的情况下刺激短程和远程雷达。

DARTS 9040-G 是为开发复杂的下一代雷达而优化的。它的特点:

- 异常高的无杂散动态范围
- 非常低的噪音
- 精确、高分辨率的距离模拟

精确和灵活的测试汽车雷达应用从来没有像现在这样容易。便捷的无线测试方法实现了无与伦比的测试深度和测试覆盖范围-支持从芯片设计到车辆行尾测试的所有开发阶段。

#### **AT A GLANCE :**

- Radar target simulator for over-the-air testing of automotive radar sensors
- Designed and optimized for all next-generation automotive radars (e.g., imaging radars, 4-D radars)
- Simulates the reflections of one programmable object
- Simulates distance, speed, and size
- High spurious-free dynamic range
- Low noise figure
- Precise, high-resolution range simulation
- Remote operation via control interface
- 用于汽车雷达传感器空中测试的雷达目标模拟器
- 为所有下一代汽车雷达(如成像雷达、4-D 雷达)进行设计和优化
- 模拟一个可编程对象的反射

- 模拟距离、速度和大小
- 高无杂散动态范围
- 低噪声系数
- 精确、高分辨率的距离模拟
- 通过控制界面进行远程操作

#### KEY SPECIFICATION:

- RF front end: 1x Rx, 1x Tx
  - Concept: full MIMO
  - Frequency range: 76 GHz to 81 GHz
  - Bandwidth: 5,000 MHz
  - Min. range:  $\leq 2.5$  m
  - Max. range: 300 m
  - Range steps: 2.5 cm
  - Simulation echoes: 1\*)
  - Speed:  $\pm 500$  km/h
  - Dynamic range:  $> 60$  dB
  - Range accuracy:  $< 10$  mm
- rf 前端: 1x Rx, 1x Tx
  - 概念: 全 MIMO
  - 频率范围: 76 GHz ~ 81 GHz
  - 带宽: 5000 MHz
  - 最小范围:  $\leq 2.5$  m
  - 马克斯。范围: 300
  - 范围步骤: 2.5 厘米
  - 模拟回波: 1\*)
  - 速度:  $\pm 500$  公里/小时
  - 动态范围:  $> 60$  db
  - 射程精度:  $< 10$  毫米

\*) *Additional simulation echoes on request.*