



#### Germany

Konrad GmbH Fritz-Reichle-Ring 12 78315 Radolfzell Germany

Tel: +49 7732 9815-0 Fax: +49 7732 9815-104

#### **United States**

Konrad Technologies, Inc. 901 Campisi Way, Suite 205 Campbell, CA 95008

Konrad Technologies, Inc. 27300 Haggerty Rd. Suite F10 Farmington Hills, MI 48331

info-usa@konrad-technologies.com

**United Kingdom** 

Konrad-Technologies UK Ltd 15 Pitreavie Court Pitreavie Business Park Dunfermline, KY11 8UU Scotland

Konrad-Technologies UK Ltd Suite S20 Bedford i-lab Stannard Way Priory Business Park Bedford MK44 3RZ England

sales-UK@konrad-technologies.co.uk



info@konrad-technologies.de www.konrad-technologies.com

China

Zixing Road 588 Minghang District, Shanghai, 200241

china.info@konrad-technologies.cn

#### Austria

Konrad Test Automation Technology Co. Ltd. Room 02, Floor 6, Building 2 Konrad GmbH Wassergasse 18 3324 Euratsfeld Austria

info-austria@konrad-technologies.at



# **EXPERTISE AND INNOVATION** IN VEHICLE RADAR TEST SOLUTIONS

echnologies.com









www.adas-iit.com

« Radar Production Test System

## WE KNOW HOW TO TEST!

#### 

# **KT Radar Production Test System**

for 24 GHz or 76-81 GHz Automotive Sensors



#### Modular Architecture

Instrumentation Module Variable Spacer Module Anechoic Chamber Module DUT Load/Unload Module

### **Key Benefits**

- One modular and scalable system for object simulation and RF measurements
- Customizable and configurable
- Meets manufacturing safety standards
- Automated radar measurements
- Remote API for measurements and object simulation
- Small footprint
- Standalone or integrated solution

#### **Preliminary Specifications**

Parameter	Specification
Frequency Range	24 GHz or 76-81 GHz
Instantaneous Bandwidth	1 GHz
Transmit/Receive Isolation	65 dB for bistatic
Max Tx Output Power (before Tx antenna)	0 dBm
Phase Noise, 77 GHz at 100 kHz Offset	-85 dBc/Hz typical
Number of Simulated Objects	1-multiple
Angles of Arrival (AoA)	1-2
Range (depending on setup)	3 to 300+ m
Range Resolution	10 cm
Distance Accuracy	± 15 cm
Object Velocity (Doppler Frequency Shift)	0 to ±500+ km/hr (75 kHz)
Doppler Resolution	0.1 km/hr (15 Hz)
Radar Cross Section (RCS) Range <sup>1</sup>	105 dB (-20 dBsm to 85 dBsm)
RCS Resolution	0.25 dB typical
Distance between VRTS and Radar DUT	0.7-3.0 m

<sup>1</sup> Spurious reflection may appear, >35 dB down for target above 10 m and RCS above 25 dBsm. All values are typical.

#### **Overview**

The Konrad Technologies Radar Production Test System (KT-RPTS) is a customizable, modular, standalone and safety compliant radar test system complete with instrumentation and mechatronics controls. As autonomous driving regulations evolve, the KT-RPTS is designed to meet the complex test requirements for both production and radar sensor design verification. The KT-RPTS is production ready and meets over 12 manufacturing safety standards. With Konrad Technologies, manufacturers can customize radar sensor test plans, while increasing yield and quality of test.





## Configure & Customize

Several features of the KT-RPTS can be customized to fulfill specific test and measurement requirements. Frequency ranges around 24 GHz and 77 GHz can be covered with the interchangeable frontends. The KT-RPTS has an automation interface for control and test sequence execution with manual and automated load and unload options. The modular and scalable system can be deployed either vertically or horizontally with adjustable height and length options. It can operate as a standalone test cell or be integrated into a production line.

Overall, automotive manufacturers benefit from the extensive customization options and can optimize radar sensor verification and production processes as a result, reducing overall development time and manufacturing cost.

## Application and Technology

The complete solution provided by Konrad Technologies is built on the flexible and modular National Instruments Vehicle Radar Test System platform. The KT Radar Production Test System offers obstacle simulation and RF measurement capabilities. The KT Radar Test & Measurement Suite allows for a variety of plug-ins that enable the user to perform physical layer measurements of the sensor output.

Users can define and configure a wide variety of test plans, including moving or stationary objects, as well as various numbers of objects and angles of arrival. These scenariobased tests can simultaneously be combined with antenna pattern measurements for sensor calibration and performance verification.



Typical RF measurements

- EIRP
- Occupied Bandwidth (OBW)
- Phase Noise
- Chirp Linearity

www.konrad-technologies.com



## Hardware Features

- · Anechoic chamber, instrumentation and sensor fixture integrated into a self-contained enclosure with either a vertical or horizontal orientation and small footprint
- Adjustable height options (starting at 1 meter) to satisfy far-field test requirement needs per sensor specifications
- Touchscreen display for operator interface
- Single or dual axis motion for sensor rotation
- Rear access panel for maintenance
- Manual or automated loading/unloading of device under test
- · Simultaneous multi-DUT loading/unloading option, where the removal/insertion of DUT happens in parallel with test of second DUT to maximize Units per Hour (UPH)
- · Precise motorized DUT carriage assembly for accurate DUT positioning

#### **Safety Regulations**

Satisfies the following 12 safety regulations:

Directive 2006/42/EG EN ISO 12100:2011-03 EN 60204 -1:2007-06 EN ISO 13857:2008-06 EN ISO 13850:2016-05 EN ISO 14120:2016-05 EN ISO 13849-1:2016-06 EN ISO 13855:2010-10 EN ISO 14119:2014-03 EN 61310-2:2008-09 EN 62061:2016-05 EN ISO 14118:2018-07