

# R&S®ATS1500C

## ANTENNA TEST CHAMBER FOR AUTOMOTIVE RADAR SENSORS

Antenna characterization, validation and  
calibration in a small footprint



Product Flyer  
Version 02.00

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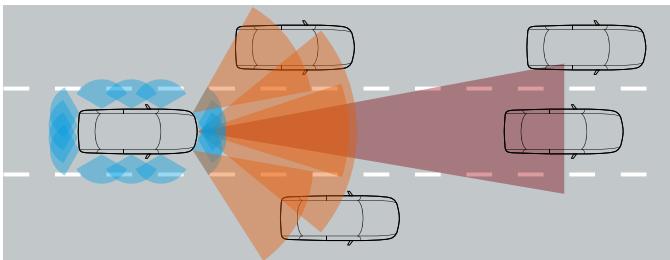


# AT A GLANCE

The R&S®ATS1500C antenna test chamber is a CATR based compact, movable antenna test chamber for calibration and validation of 77 GHz/79 GHz automotive radar sensors. It is carefully designed to eliminate ghost targets within the chamber during target simulation tests and provides a highly accurate positioner for angular measurements.

The R&S®ATS1500C together with the R&S®AREG100A automotive radar echo generator is the most complete system available on the market, tailored and designed for automotive radar module development, validation and calibration.

## Vehicle equipped with automotive radar sensors



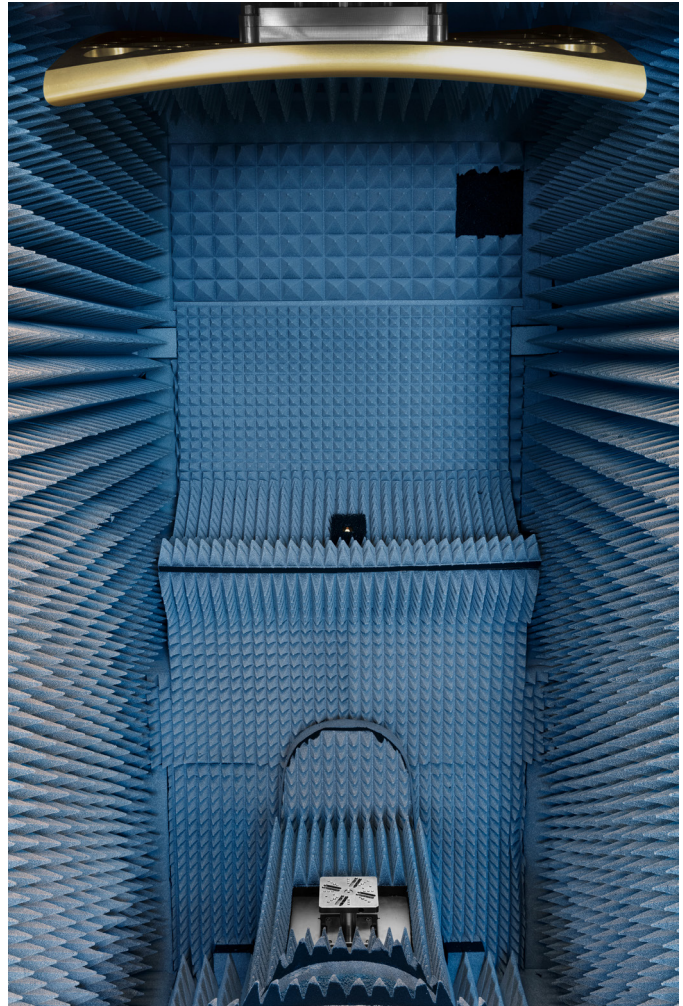
With next generation advanced driver assistance systems (ADAS) and upcoming autonomous driving right around the corner, automotive radar sensors will play a much bigger role to improve driving safety. Hence, compatibility, functionality and accuracy have to be validated with a reliable and accurate system.

The fully shielded chamber is a compact antenna test range (CATR) consisting of a gold-plated parabolic reflector, a two-axis positioner allowing for 3D movements and the R&S®AREG100A frontend as the feed antenna.

The unique, patented parabolic reflector with optimized rolled edges promises well-distributed power of the collimated beams after reflection. Moreover, the reflector manufactured by Rohde & Schwarz has an extremely high-precision surface that minimizes quiet zone ripple, especially at high frequencies. The CATR setup works bidirectionally for transmit and receive signals.

Although the R&S®ATS1500C has a remarkably compact size of 0.90 m × 1.99 m × 1.61 m (W × H × D), the CATR system allows measurements in far-field conditions even for premium MIMO sensors. The maximum aperture size of a sensor can be Ø 30 cm. The high-precision 3D tilt-tilt positioner was carefully designed to mimic the radar sensors in actual operation. Both axes have to move simultaneously to simulate target detection in real-world conditions, and this can also be achieved by the R&S®ATS1500C positioner.

When choosing the optional hardware trigger, measurements can be performed while continuously moving the positioner axes. This significantly reduces measuring times.



Interior view

The positioner axes swing in a circular motion so that the DUT always keeps the polarization and distance aligned to the feed antenna. For measuring the orthogonal polarization, the DUT holder can be manually rotated in 22.5° steps.

## Applications

In terms of applications, the setup of the R&S®ATS1500C and R&S®AREG100A can be further complemented by other Rohde&Schwarz state-of-the-art test and measuring instruments for a variety of applications, including ETSI RED and FCC in-band precompliance tests, interference tests, angular calibration and antenna characterization, making it a must-have chamber for every automotive radar manufacturer.

## Key facts

- ▶ Very compact and transportable far-field over-the-air (OTA) test system based on CATR technology
- ▶ State-of-the-art CATR reflector with optimized edges for uniform power distribution and high-precision surface finishing for minimal deviations in quiet zone
- ▶ Large quiet zone to accommodate large MIMO radars
- ▶ Very high frequency range for automotive radar sensors
- ▶ High-precision high-speed 3D tilt-tilt positioner for significantly shorter test time
- ▶ High shielding effectiveness of typically > 90 dB and extremely low reflections to eliminate ghost targets
- ▶ Multiple standardized interfaces for control and data transmission
- ▶ RF shielded ventilation system to maintain a stable temperature during measurements
- ▶ Suitable for ETSI and FCC validation, including interference tests, angular calibration and antenna characterization

# SPECIFICATIONS IN BRIEF

Specifications in brief		
In-band frequency range	with R&S®AREG100A-B177S	76.0 GHz to 77.0 GHz
	with R&S®AREG100A-B181S	76.0 GHz to 81.0 GHz
Out-of-band frequency range <sup>1)</sup>	chamber	6 GHz to 110 GHz
Shielding effectiveness	chamber	> 90 dB (typ.)
Polarization	feed antenna	linear, vertical polarization, horizontal polarization possible by rotating frontend module
Quiet zone <sup>2)</sup>	reflector	Ø 30 cm
	average amplitude taper	< 1.5 dB
	average amplitude ripple	< 0.5 dB
Angular resolution	resolution of feedback	0.03° (inner and outer axis) (nom.)
Tilt angle	outer axis	±180°
	inner axis	±45°
DUT load capability	positioner	2.0 kg, centered
Hardware triggering	positioner	optional (requires BNC feedthrough)
Positioner API	positioner	yes (C / C++ / C# / VB.NET / Python / MATLAB®, ...)
Power supply	chamber	100 V to 230 V (AC) (-5%/+10%), max. 13 A
Weight	chamber	approx. 500 kg (1102.31 lb)
Dimensions (W × H × D)	chamber	0.90 m × 1.99 m × 1.61 m (2.95 ft × 6.5 ft × 5.28 ft)
Temperature range	operating temperature range	+20 °C to +30 °C

For more information, see data sheet (PD 3608.2065.22)

<sup>1)</sup> Limited by feeding structure, e.g. R&S®AREG100A-B177S.

<sup>2)</sup> Measured at 76.5 GHz.

# ORDERING INFORMATION

For ordering information, see data sheet (PD 3608.2065.22) and [www.rohde-schwarz.com](http://www.rohde-schwarz.com)

## Service that adds value

- ▶ Worldwide
- ▶ Local und personalized
- ▶ Customized and flexible
- ▶ Uncompromising quality
- ▶ Long-term dependability

## Rohde & Schwarz

The Rohde & Schwarz electronics group offers innovative solutions in the following business fields: test and measurement, broadcast and media, secure communications, cybersecurity, monitoring and network testing. Founded more than 80 years ago, the independent company which is headquartered in Munich, Germany, has an extensive sales and service network with locations in more than 70 countries.

[www.rohde-schwarz.com](http://www.rohde-schwarz.com)

## Sustainable product design

- ▶ Environmental compatibility and eco-footprint
- ▶ Energy efficiency and low emissions
- ▶ Longevity and optimized total cost of ownership

Certified Quality Management

ISO 9001

Certified Environmental Management

ISO 14001

## Rohde & Schwarz training

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