



VISTA: Virtual road – simulation and test area

The Virtual Road – Simulation and Test Area (VISTA) serves research, development and system evaluation of automotive wireless services as well as real-time capable X-in-the-loop test environments. The test area consists of a pyramidal absorber-lined and air-conditioned em shielded chamber of size 16 m × 12 m × 9 m.

The main frequency range from 400 up to 6000 MHz is covered with 111 dual polarised antennas in the elevation range from -20° to $+90^{\circ}$. Radio services like DVB-T, GNSS, SDARS, LTE, and ITS-G5 operate in this range. The side frequency range from 70 up to 400 MHz is covered with 22 dual polarised antennas and enables to additionally address analogue and digital audio broadcast. The turntable has a diameter of 6.5 m and can be adjusted over 360° with 0.1° resolution. The maximal distance for EMC measurements is 5 m. A dynamometer with maximal mechanical load of 2500 kg and a wheel base up to 3.5 m provides driving speeds up to 100 km/h.

An additional mechanical positioning system (gantry, accuracy 0.02°) allows to illuminate the area of the turntable with any antenna system (< 20 kg) on circular paths of 3 m diameter (elevation $\pm 110^{\circ}$) up to the millimeter wave frequency range.

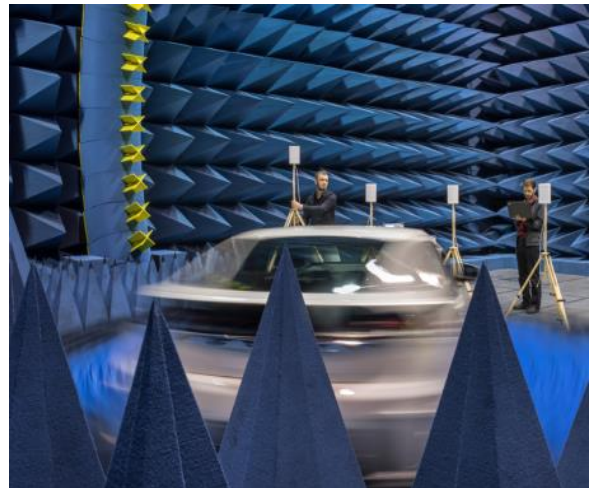




VISTA – Virtual road – simulation- and test area

- Combination of wireless and automotive engineering measurement methods with focus on antennas, radar sensing, and system performance
- Emulation of environmental and operating conditions and their interactions
- Verification & validation in virtual environment, over-the-air testing of installed system performance
- Concepts for automated and connected driving on road and rail: Automotive antennas, sensor technologies, EMC, human exposure, combined terrestrial and satellite-based mobile communications, radar, navigation

Shielded chamber	16 m × 12 m × 9 m
Frequency range	70...6000 MHz
Turntable	Ø 6.5 m, (360±0.1)°
EMC distance	≤ 5 m
Speed	≤ 100 km/h
Car wheel base	≤ 3.5 m, Mass load ≤ 2.5



Antenna measurements in VISTA

- Measurement of automotive antennas in installed state
- Antenna characteristics, radiation pattern, gain, polarisation, derived measurement parameters (TRP, XPD, AR, etc.), influence of installation site and environment
- Comprehensive software for digital post-processing of measured data
- Antenna measurement arch with multi-probe technology

Manufacturer	Satimo Industries SAS
Technology	Spherical nearfield measurement
Frequency range	70...6000 MHz
Probes (resolution)	111 at 400...6000 MHz (1°) 22 at 70...400 MHz (5°)
Max. object size	4 m (< 220 MHz) 5.2 m (< 3300 MHz) 3 m (5800 MHz)
Typ. measurement time	30 min for 3D pattern at up to 10 frequency points

