RanLOS Sub-6 GHz

RanLOS Sub-6 GHz OTA test system is an affordable and smart solution for converting near field to far field, enabling measurements of both throughput and antenna radiation patterns.

Make your measurements easier, faster and smarter

Key features:

Compact far field over-the-air (OTA) test system based on the Random Line-of-Sight technology

Unrivalled performance versus price within a test volume of 2.5 m^3

Enables measurements of all relevant standards, such as 3G, 4G, 5G and WiFi

Frequency band 0.7 to 6 GHz and upgradeable to higher frequencies

Portable system that can be rolled into existing EMC chambers or other test facilities

The RanLOS Sub-6 GHz test system consists of a cylindrical reflector fed by a dual polarized passive linear antenna array. The system provides two operational modes: Passive for antenna radiation pattern measurements and active for communication performance testing, for example, throughput.

RanLOS also provides an advanced measurement software for controlling instruments and positioners. Visualization in 1D, 2D and 3D, and analysis of measurement data can conveniently be done directly in the measurement software.

A large number of instruments, turntables and other test equipment are compatible with the RanLOS system which enables quick and easy handling of the total test setup.
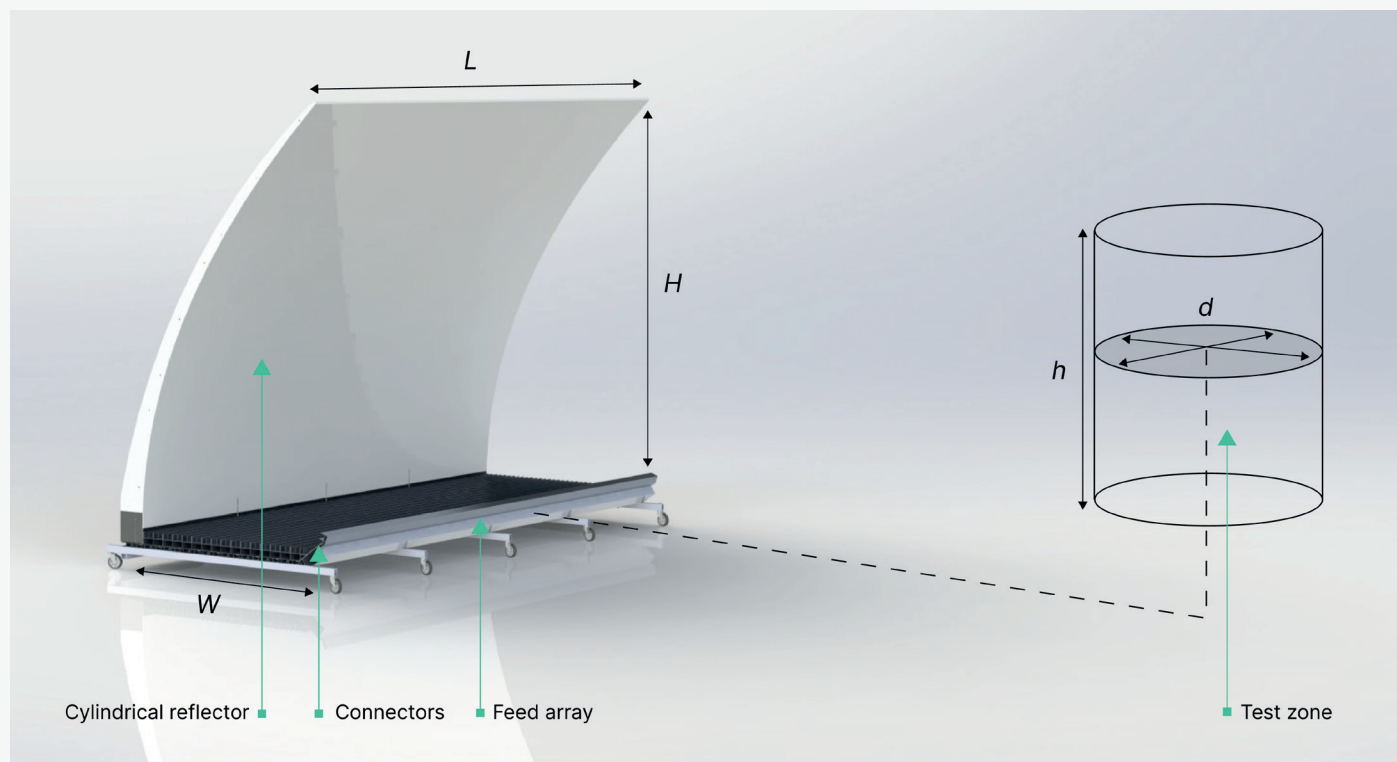
In summary, the RanLOS Sub-6 GHz test system is an affordable and easy to use solution for testing active and passive larger devices, such as vehicles and base stations.
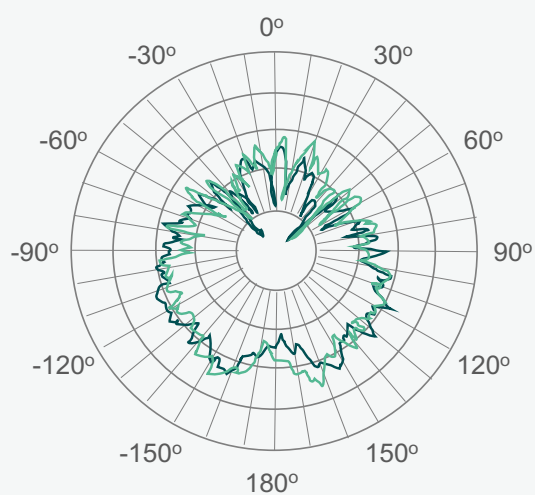
Specifications

RanLOS Sub-6 GHz

Frequency range [1]		0.7 GHz to 6 GHz
Polarization	Feed antenna	Dual polarized
RF connectors	Feed antenna	2 x N-type (female)
Impedance	Feed antenna	50 Ω
Quiet zone quality		
STD (cylindrical volume) [2]	Amplitude	< 1.6 dB
STD (cylindrical volume) [2]	Phase	< 10⁰
Peak-to-peak (circular area) [3]	Amplitude	< 3 dB
Peak-to-peak (circular area) [3]	Phase	< 10⁰
Repeatability [4]	Amplitude	< 0.15 dB
Dimensions	W x H x L	2.1 m x 3.3 m x 4.3 m
Weight		Approx. 350 kg

1. The frequency range is covered by using three different feed arrays, sectioned as follows, 0.7 GHz to 1.5 GHz, 1.5 GHz to 3 GHz and 3 GHz to 6 GHz.
2. The standard deviation is calculated in a cylindrical test volume with d = 1.5 m and h = 1.4 m, see the figure on next page.
3. The peak-to-peak variation is calculated in a circular test plane with d = 1.5 m and h = 0 m, see the figure on next page.
4. Repeatability based on an MSA analysis at 1.7 GHz done at a customer site with the RanLOS system.

Cylindrical reflector · Connectors · Feed array · Test zone

RanLOS vs NF-FF test facility

Measurements of an antenna mounted on the roof of a vehicle. Comparison between measurements using the RanLOS test system and an accredited lab using a NF/FF system.

RanLOS Sub-6 GHz

Accredited test facility

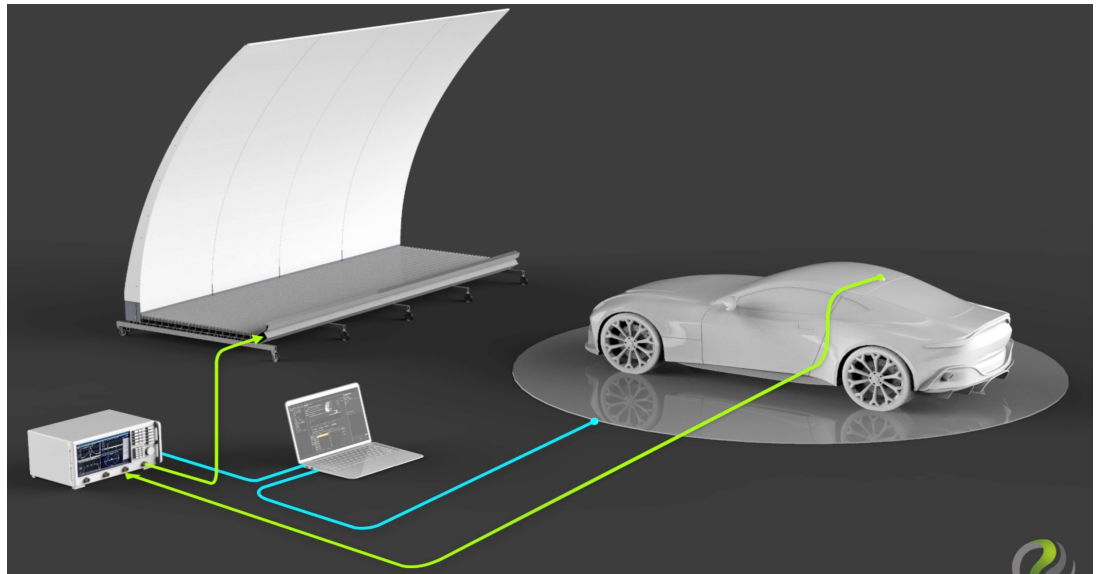■ RanLOS   ■ Accredited test facility

Measurements done during SIVERT - a FFI-Vinnova project
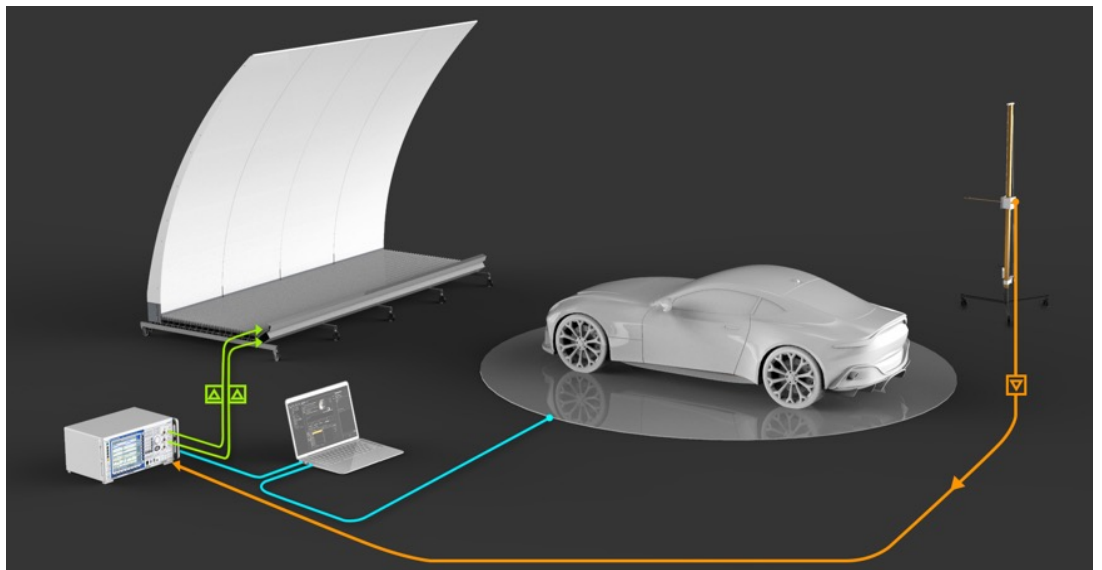
Measurement setup

Passive

The setup for passive measurements uses a Vector Network Analyzer to collect the data. The instrument and turntable are controlled by the RanLOS software. It is possible to measure both polarizations simultaneously by using a 4-port instrument.

Active

The setup for active measurements uses a Communication Tester that acts as the base station and feeds the dual polarized antenna array. A separate uplink antenna is used to keep the connection. The instrument and turntable are controlled by the RanLOS software. Up to 2x2 MIMO measurements can be performed.

Setups using the RanLOS Sub-6 GHz test system

About RanLOS:

The idea of an affordable and easy-to-use OTA measurement system using Random Line-of-Sight (RanLOS) technology came from Professor Per-Simon Kildal (1951-2016) at Chalmers University of Technology.

As a result, RanLOS AB was founded in 2016 and has been granted several patents of the Random Line-of-Sight technology. The products have been realized by PhD Madeleine Schilliger Kildal and Professor Jan Carlsson among others.

www.ranlos.com