STARLAB

DATASHEET

mvg
Microwave Vision Group

The New StarLab Portfolio

For over a decade, StarLab has supported hundreds of companies and research laboratories worldwide, recognized for its compact footprint, measurement reliability, and intuitive operation.

From satellite antenna development to IoT and 5G testing, it has helped accelerate innovation across industries without compromise.

As testing requirements evolve, with higher frequencies, more integrated devices, and tighter links between hardware and software, a new approach is needed.

Introducing the StarLab Portfolio Suite: a fully integrated line of OTA and passive test systems, built to meet today's demands and adapt to tomorrow's challenges.

+ Covers testing needs from basic validation to defense-grade R&D
+ Offers modular software bundles tailored to your workflow
+ Supports flexible, scalable configurations to grow with your needs

Choose the right system for your requirements — and move faster with confidence!

MAIN FEATURES

Technology

- Near-field/Spherical
- Near-field/Cylindrical

Measurement capabilities

- Gain
- Directivity
- Beamwidth
- Cross polar discrimination
- Sidelobe levels
- 3D radiation pattern
- Radiation pattern in any polarization (linear or circular)
- Antenna efficiency
- TRP, TIS, EIRP, and EIS

SYSTEM CONFIGURATIONS

Equipment

- Arch with probe array, AUT positioner
- Control unit
- Power and control unit
- Tx and Rx amplification units
- Instrumentation rack
- Uninterruptible power supply
- Vector network analyzer

Add-ons

- Shielded anechoic chamber (OTA testing)
- Linearpositioner for linear array antenna measurements (cylindrical testing)

OTA Equipment

- Radio communication tester
- Active switching unit
- Transfer switching unit

Max size of DUT

- 45 max diameter
- Up to 400 cm L x 45 cm W - for cylindrical set-up (only on Pro and Pro+)

Max. weight of DUT (centered load)

- 10 kg on polystyrene mast
- 50 kg on ultra-rigid mast
- 80 kg for cylindrical mode

Accessories

- Reference horns
- PC
- Ultra-rigid mast
- Laptop support interface
- Hand and head phantom
- Reference antennas
- Rail system for cylindrical mode

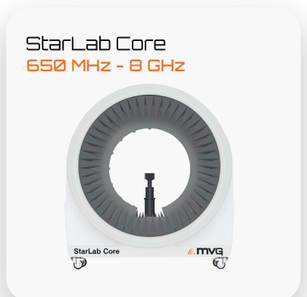
Services

- Installation
- Training
- Warranty
- Post warranty service plans

■ Included □ Optional ○ Required

Tailored Solutions for Your Measurement Needs

Each system in the StarLab Portfolio Suite offers specific capabilities to match your goals



Affordable OTA Testing Made Easy

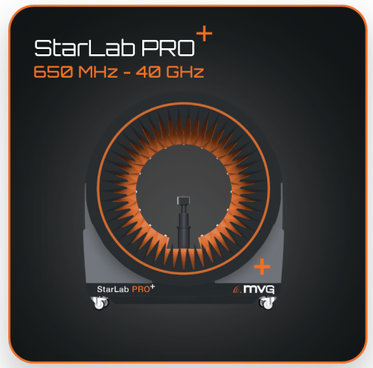
The entry level OTA system with essential passive functionalities.

All-in-One OTA & Passive

OTA-friendly system delivered with advanced OTA software pack. Allow for essential passive testing and optional advanced passive capabilities. All protocols availables.

Versatile Platform for R&D

Covers 650 MHz–18 GHz with interleaved probes. Includes Passive Advanced, and gives access to cylindrical config, and full OTA support. API & OTA Non-signaling uplink included to the Developer-Mode and downlink available. Academic version available.



Test Power Without Compromise

Frequency range extended to 40 GHz with interleaved probes. Gives access to cylindrical config, and full OTA support. API & OTA Non-signaling uplink included to the Developer-Mode and downlink available. Academic version available.

The Ultimate Test System

Covers up to 50 GHz. Available in Wideband or Passive Special versions. Suitable for passive and OTA testing. API & OTA Non-signaling uplink included to the Developer-Mode and downlink available. US Defense-grade option. Academic version available. Rentable.

SYSTEM OVERVIEW

Cutting-edge Probes

Up to 3 different types of probes to cover frequency bands from 650 MHz - 50 GHz
Low directional, dual-polarized

High Accuracy Reference Antennas

For reference measurements

High Precision Unlimited Sampling

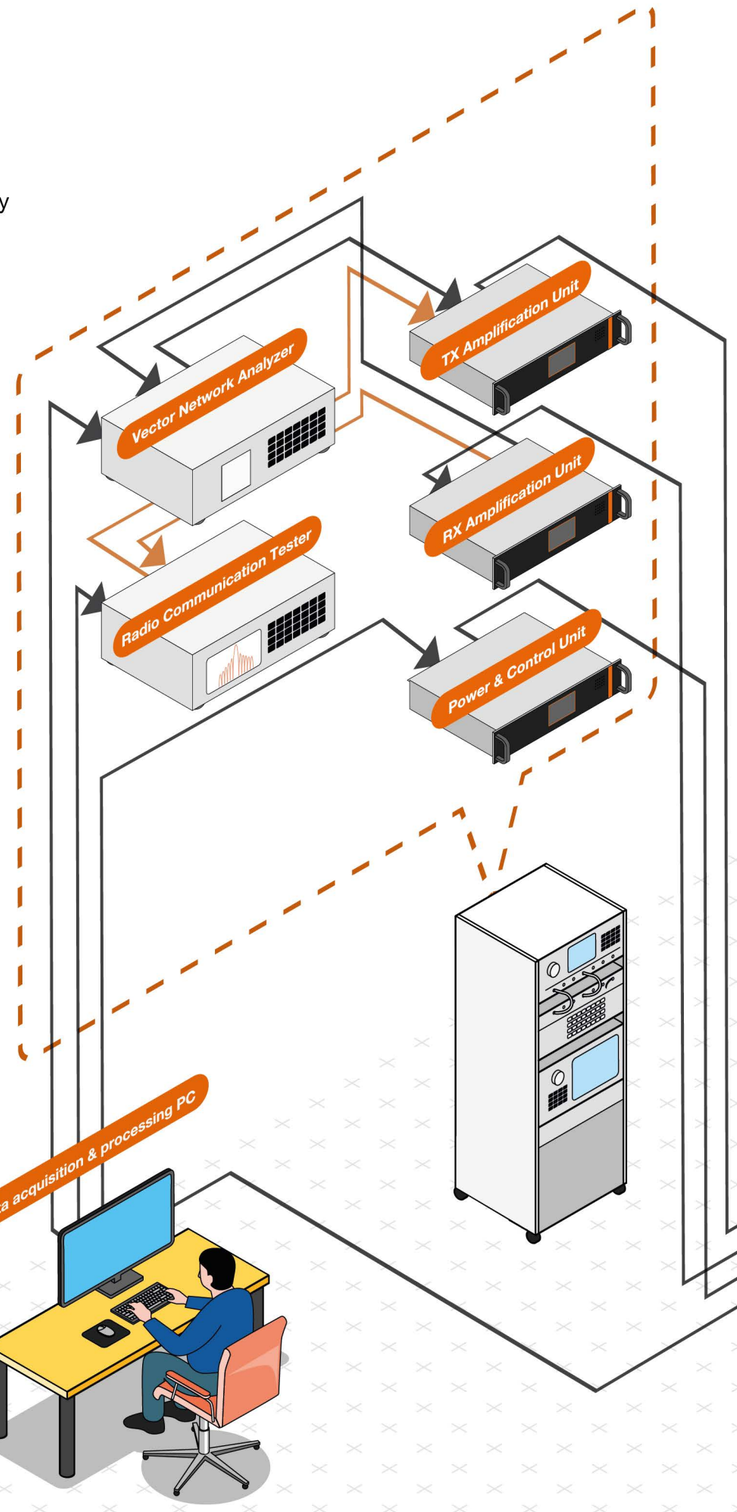
The mechanical rotation of the arch in elevation allows for unlimited sampling of the DUT

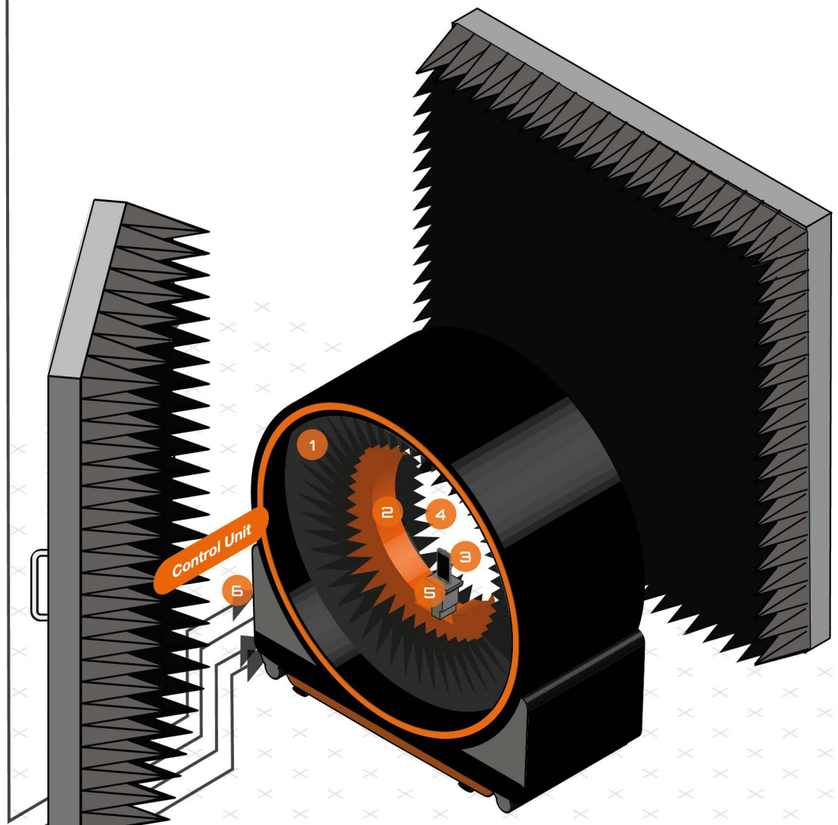
Sturdy Transparent Positioner

Rigid microwave transparent mast or high precision metallic mast

Accurate Stabilizers

Fine level adjustement on PRO+ and ULTRA models for accurate positioning in the test environment





Cylindrical Measurement

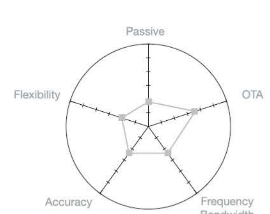
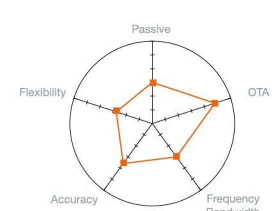
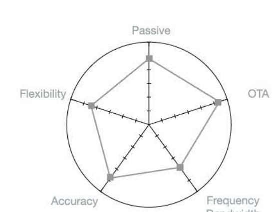
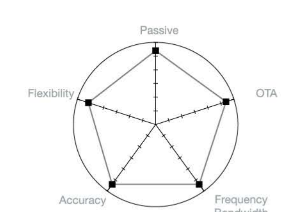
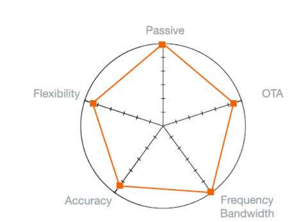
StarLab Pro and Pro+ can switch to cylindrical near-field mode with a linear positioner, ideal for linear arrays like BTS or radar antennas. This setup also enables beam tilt and sidelobe measurements up to 70° from boresight.

StarLab

Extended Portfolio



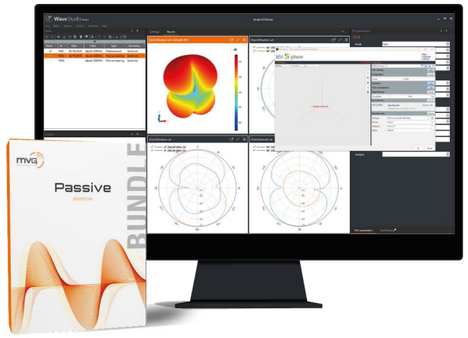


		StarLab Core	StarLab Core+	StarLab PRO	StarLab PRO+	StarLab ULTRA Wideband	StarLab ULTRA Passive
Applications		Affordable OTA Testing Made Easy	All-in-One OTA & Passive Testing up to 11GHz	Versatile Platform for R&D Below 18 GHz	40 GHz Test Power Without Compromise	The Ultimate Test System for Defense and Innovation	
Software	Included	Passive-Essential, OTA-Mobile Cellular - Essential (LTE)	Passive-Essential, OTA-Mobile Cellular - Advanced (NR)	Passive-Advanced Developer-Mode (OTA Non-signaling uplink & API)	Passive-Advanced Developer Mode (OTA Non-signaling uplink & API)	Passive - Advanced, OTA-Mobile Cellular - Advanced Insight, Developer Mode (OTA Non-signaling uplink & API)	Passive - Advanced, Insight, Developer Mode (OTA Non-signaling uplink & API)
	Optional	OTA-IOT-Essential	Passive-Advanced OTA-IoT (Essential & Advanced)	Full OTA (Essential & Advanced)	Full OTA (Essential & Advanced)	OTA IoT (Essential & Advanced)	No OTA
	Developer-Mode (optional)	Non applicable		OTA Non-signaling DL	OTA Non-signaling DL	OTA Non-signaling DL	OTA Non-signaling DL
Functional Specifications	Frequency	650 MHz - 8 GHz	650 MHz – 11* GHz (*) 10 GHz for passive, 11 GHz for OTA	650 MHz - 18 GHz	650 MHz - 40 GHz	650 MHz - 50 GHz	18 GHz - 50 GHz
	Number of Probes	Half arch: Single array 8x Low Frequency probes Total: 8 Probes	Full arch: Single probe array 15x Low Frequency (650MHz - 11GHz) Total : 15 Probes	Full arch: Interleaved 15x Low Frequency (650MHZ - 11GHz) + 14x High Frequency (11GHz - 18GHz) Total : 29 Probes	Full arch: Interleaved 14x Low Frequency (650MHz - 11GHz) + 15xUHF (11GHz - 40GHz) Total : 29 Probes	Full arch: Half-Half H1 : 7x Low Frequency (650MHz -11GHz) + 7x High Frequency (11GHz - 18 GHz) H2 : 15x UHF (18GHz - 50GHz) Total : 29 Probes	Full arch: Single probe array 29x UHF (18GHz - 50GHz) Total : 29 Probes
	Probe Angle	22.5 deg	22.5 deg	22.5 deg	22.5 deg	22.5 deg for LF & HF 11.25 deg for UHF	11.25 deg
	Cylindrical	Not available		Available	Available	Not available	
	Absorbers	Non-rubberized absorbers	Rubberized absorbers	Rubberized absorbers	Rubberized absorbers	Rubberized absorbers	
Options					On the fly measurement	Logo on Styrofoam CAP in the chamber or absorber wall / On the fly measurement / US Defense-grade / Rentable	
							


Software Bundles

A modular suite designed to address the specific requirements of passive, OTA Mobile Cellular, IoT, and cylindrical testing.

PASSIVE MEASUREMENTS



Passive Essential

The essential package for passive antenna measurements. It includes basic data acquisition with WaveStudio Passive and fundamental computation with MV-Sphere Basic.

Passive Advanced

An enhanced version of Passive Core with expanded computation and analysis tools. It includes MV-Sphere Advanced for improved spherical Near-Field to Far-Field (NF-to-FF) transformation, plus advanced features:

+ Computation tools:

- MV-Holography computes the field on a planar surface (planar back-propagation) from FF or SWC data
- MV-Iterative extrapolates a spherical field measurement in the truncated region (area in which data is not measured) to estimate the field over the full spherical measurement grid.
- MV-Phase determines the phase center of an antenna using 3D FF data
- MV-Translate & Rotate allows the Spherical FF data to be translated and rotated within the coordinate system

+ Analysis tool

- Antenna Analyzer is advanced analysis tool to extract most of antenna factors & radiation patterns from WS FF dataset

OTA MEASUREMENTS

OTA Mobile Cellular Essential

The essential package for cellular testing, covering all legacy 2G-4G standards, including TDSCDMA, LTE Unlicensed and License Assisted Access LAA. It includes a legacy Radio Com Tester driver.

OTA Mobile Cellular Advanced

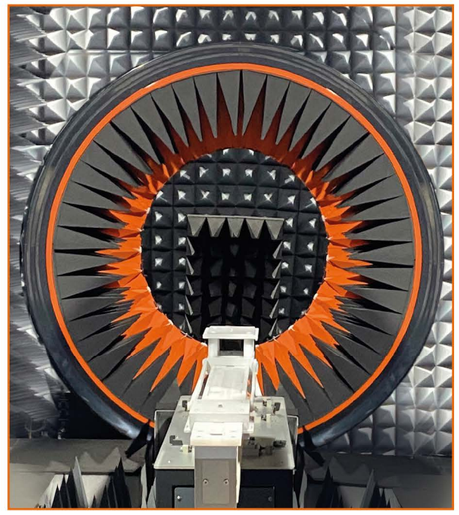
An advanced version of Mobile Cellular Essential with full 5G support. It adds NR Standalone (SA) and NR Non-Standalone (NSA) modes (LTE/NR anchored) and includes an advanced Radio Com Tester (single-box/one-box type) driver.

OTA IoT Essential

The essential package for IoT connectivity testing, covering all legacy WLAN and Bluetooth standards. It supports 802.11 a/b/g/n/ac/ax, Bluetooth, BLE (including test mode, advertising channels, and signaling), and includes a legacy Radio Com Tester driver.

OTA IoT Advanced

An extended version of IoT Core with additional capabilities. It introduces support for the latest WLAN 802.11be standard, Standalone GNSS (GPS, etc.), and an advanced Radio Com Tester (single-box/one-box type) driver.



Cylindrical Mode

An add-on bundle that unlocks StarLab's cylindrical scanning capability, enabling passive antenna measurements and precise 3D characterization of long linear arrays—up to 4 meters in length.

By overcoming the 45 cm DUT size limitation of spherical mode, Cylindrical Mode transforms StarLab's compact circular design into a powerful asset for evaluating large, linear antennas. A dedicated rail setup supports the DUT during measurement, enabling smooth and accurate cylindrical scanning.

This expansion enhances StarLab's versatility for advanced passive measurements — without compromising accuracy and with minimal impact on system footprint.

<DEVELOPER/> MODE

StarLab PRO and ULTRA Developer-Mode give you full control over system operations with both OTA Non-signaling (ONS) and API integration. Enables custom scripting and automation for advanced test scenarios.

ONS (OTA Non-Signaling)

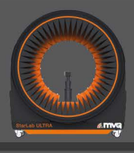
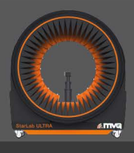
Direct hardware control for custom OTA test scenarios via Python scripting in WaveStudio. Enables automated measurements of uplink/downlink signals.

Software and Hardware API remote control

Supports external scripting for automation and custom application integration for the control over MVG systems (Arch API) and software (Remote WaveStudio API).

Software Compatibility Matrix

Discover which StarLab systems support which software bundles and advanced features.

	Passive		Cylindrical MODE	OTA Mobile Cellular		OTA IoT		<Developer/> MODE		
										
	Essential	Advanced		Essential	Advanced	Essential	Advanced	API	OTA NS UL *	ONS DL **
 StarLab Core	✓	✗	✗	✓	✗	○	✗	✗	✗	✗
StarLab Core+	✓	○	✗	✓	✓	○	○	✗	✗	✗
 StarLab PRO	✓	✓	○	○	○	○	○	✓	✓	○
 StarLab PRO+	✓	✓	○	○	○	○	○	✓	✓	○
 StarLab ULTRA WB	✓	✓	✗	✓	✓	○	○	✓	✓	○
 StarLab ULTRA Passive	✓	✓	✗	✗	✗	✗	✗	✓	✓	○

* OTA Non-signaling uplink

** OTA Non-signaling downlink

✓ Included ○ Optional ✗ Unavailable

StarLab Core

650 MHz - 8 GHz

System Specification

Measurement Time (10 Frequencies)	
AUT size 15cm - 2.4 GHz	3 min
AUT size 15cm - 7.2 GHz	10 min
AUT size 45cm - 2.4 GHz	10 min
Typical Dynamic Range	50 - 60 dB

Radiation Pattern Accuracy	Core	10dBi AUT	20dBi AUT	30dBi AUT
Peak Gain Accuracy	0.65-1GHz	<± 2.0 dB	.	.
	1- 8GHz	<± 1.0 dB	<± 0.9 dB	.
-10 dB Sidelobe Accuracy	0.65-1GHz	<± 2.1 dB	.	.
	1- 8GHz	<± 1.1 dB	<± 0.9 dB	.
-20 dB Sidelobe Accuracy	0.65-1GHz	<± 5.0 dB	.	.
	1- 8GHz	<± 2.9 dB	<± 1.1 dB	.
-30 dB Sidelobe Accuracy	0.65-1GHz	.	.	.
	1- 8GHz	.	<± 3.0 dB	.
Peak Gain Repeatability	<± 0.5 dB			
Probe Network	0.65 - 8 GHz 8 Probes			

Mechanical characteristics

External dimensions of StarLab	1.9 x 1.1 x 2.0 m (L x W x H)
Probe array internal diameter	0.9 m
Optional anechoic chamber size	2.4 x 2.4 x 2.4 m
Angle between probes in the same frequency band	22.50°

DUT Max. Weight

Styrofoam mast	10 kg
Ultra rigid mast	50 kg
Linear antenna	Not available

StarLab Core+

650 MHz - 11 GHz

System Specification

Measurement Time (10 Frequencies)	
AUT size 15cm - 2.4 GHz	1 min
AUT size 15cm - 11 GHz	8 min
AUT size 45cm - 2.4 GHz	5 min
Typical Dynamic Range	60 - 70 dB

Radiation Pattern Accuracy		10dBi AUT	20dBi AUT	30dBi AUT
Peak Gain Accuracy	0.65-1GHz	<± 1.5 dB	.	.
	1-11GHz	<± 0.8 dB	<± 0.7 dB	.
-10 dB Sidelobe Accuracy	0.65-1GHz	<± 1.6 dB	.	.
	1-11GHz	<± 0.9 dB	<± 0.6 dB	.
-20 dB Sidelobe Accuracy	0.65-1GHz	<± 4.5 dB	.	.
	1-11GHz	<± 2.7 dB	<± 0.9 dB	.
-30 dB Sidelobe Accuracy	0.65-1GHz	.	.	.
	1-11GHz	.	<± 2.7 dB	.
Peak Gain Repeatability	<± 0.3 dB			
Probe Network	0.65-11GHz - 15 Probes			

Mechanical characteristics

External dimensions of StarLab	1.9 x 1.1 x 2.0 m (L x W x H)
Probe array internal diameter	0.9 m
Optional anechoic chamber size	2.4 x 2.4 x 2.4 m
Angle between probes in the same frequency band	22.50°

DUT Max. Weight

Styrofoam mast	10 kg
Ultra rigid mast	50 kg

StarLab PRO

650 MHz - 18 GHz

System Specification

Measurement Time (10 Frequencies)	
AUT size 15cm - 2.4 GHz	1 min
AUT size 15cm - 18 GHz	18 min
AUT size 45cm - 2.4 GHz	5 min
Typical Dynamic Range	60 - 70 dB

Radiation Pattern Accuracy		10dBi AUT	20dBi AUT	30dBi AUT
Peak Gain Accuracy	0.65-1GHz	<± 1.5 dB	.	.
	1-18GHz	<± 0.8 dB	<± 0.7 dB	<± 0.6 dB
-10 dB Sidelobe Accuracy	0.65-1GHz	<± 1.6 dB	.	.
	1-18GHz	<± 0.9 dB	<± 0.6 dB	<± 0.4 dB
-20 dB Sidelobe Accuracy	0.65-1GHz	<± 4.5 dB	.	.
	1-18GHz	<± 2.7 dB	<± 0.9 dB	<± 0.6 dB
-30 dB Sidelobe Accuracy	0.65-1GHz	.	.	.
	1-18GHz	.	<± 2.7 dB	<± 1.0 dB
Peak Gain Repeatability	<± 0.3 dB			
Probe Network	0.65-11GHz - 15 Probes	11-18GHz - 14 Probes		

Mechanical characteristics

External dimensions of StarLab	1.9 x 1.1 x 2.0 m (L x W x H)
Probe array internal diameter	0.9 m
Optional anechoic chamber size	2.4 x 2.4 x 2.4 m
Angle between probes in the same frequency band	22.50°

DUT Max. Weight

Styrofoam mast	10 kg	
Ultra rigid mast	50 kg	

Linear antenna measurement characteristics

Geometry	Cylindrical	
Standard rail length	6m	9m
Linear array antenna max length	2.5m	4m
Linear array antenna max.weight	80 kg	

StarLab PRO+

650 MHz - 40 GHz

System Specification

Measurement Time (10 Frequencies)	
AUT size 15cm - 2.4 GHz	1 min
AUT size 15cm - 40 GHz	45 min
AUT size 45cm - 2.4 GHz	5 min
Typical Dynamic Range	60 - 70 dB

Radiation Pattern Accuracy		10dBi AUT	20dBi AUT	30dBi AUT
Peak Gain Accuracy	0.65-1GHz	<± 1.5 dB	.	.
	1-11GHz	<± 0.8 dB	<± 0.7 dB	.
	11-40 GHz	<± 0.9 dB	<± 0.7 dB	<± 0.6 dB
-10 dB Sidelobe Accuracy	0.65-1GHz	<± 1.6 dB	.	.
	1-11GHz	<± 0.9 dB	-	.
	11-40GHz	<± 1.0 dB	<± 0.6 dB	<± 0.4 dB
-20 dB Sidelobe Accuracy	0.65-1GHz	<± 4.5 dB	.	.
	1-11GHz	<± 2.7 dB	<± 0.9 dB	.
	11-40GHz	<± 3.2 dB	<± 1.0 dB	<± 0.6 dB
-30 dB Sidelobe Accuracy	0.65-1GHz	.	.	.
	1-11GHz	.	<± 2.7 dB	-
	11-40GHz	.	<± 3.2 dB	<± 1.0 dB
Peak Gain Repeatability	<± 0.3 dB			
Probe Network	0.65-11GHz - 14 Probes	11-40GHz - 15 Probes		

Mechanical characteristics

External dimensions of StarLab	1.9 x 1.1 x 2.0 m (L x W x H)
Probe array internal diameter	0.9 m
Optional anechoic chamber size	2.4 x 2.4 x 2.4 m
Angle between probes in the same frequency band	22.50°

DUT Max. Weight

Styrofoam mast	10 kg	
Ultra rigid mast	50 kg	

Linear antenna measurement characteristics

Geometry	Cylindrical	
Standard rail length	6m	9m
Linear array antenna max length	2.5m	4m
Linear array antenna max.weight	80 kg	

StarLab ULTRA WB

650 MHz - 50 GHz

System Specification

Typical Measurement Time (10 Frequencies)*	
AUT size 15cm - 2.4 GHz	1.5 min
AUT size 15cm - 50 GHz	1.5 h
AUT size 45cm - 2.4 GHz	8 min
Typical Dynamic Range	50 - 70 dB

Radiation Pattern Accuracy		10dBi AUT	20dBi AUT	30dBi AUT
Peak Gain Accuracy	0.65-1GHz	<± 1.5 dB	.	.
	1-18GHz	<± 0.9 dB	<± 0.7 dB	.
	18-50GHz	<± 0.9 dB	<± 0.7 dB	<± 0.6 dB
-10 dB Sidelobe Accuracy	0.65-1GHz	<± 1.6 dB	.	.
	1-18GHz	<± 0.9 dB	<± 0.6 dB	.
	18-50GHz	<± 0.9 dB	<± 0.6 dB	<± 0.4 dB
-20 dB Sidelobe Accuracy	0.65-1GHz	<± 4.5 dB	.	.
	1-18GHz	<± 2.7 dB	<± 0.9 dB	.
	18-50GHz	<± 2.9 dB	<± 1.0 dB	<± 0.6 dB
-30 dB Sidelobe Accuracy	0.65-1GHz	.	.	.
	1-18GHz	.	<± 3.2 dB	<± 1.0 dB
	18-50GHz	.	<± 2.9 dB	<± 1.0 dB
Peak Gain Repeatability	<± 0.3 dB			
Probe Network	0.65-11GHz - 7 Probes	11-18GHz - 7 Probes	18-50GHz - 15 Probes	

Mechanical characteristics

External dimensions of StarLab	1.9 x 1.1 x 2.0 m (L x W x H)
Probe array internal diameter	0.9 m
Optional anechoic chamber size	2.4 x 2.4 x 2.4 m
Angle between probes in the same frequency band	22.50°

DUT Max. Weight	
Styrofoam mast	10 kg
Ultra rigid mast	50 kg

* Measurement time can vary by VNA model & IFBW setup

StarLab ULTRA PS

18 GHz - 50 GHz

System Specification

Typical Measurement Time (10 Frequencies)	
AUT size 15cm - 18 GHz	4 min
AUT size 15cm - 50 GHz	1.5 h
AUT size 45cm - 18 GHz	40 min
Typical Dynamic Range	50 dB

Radiation Pattern Accuracy		10dBi AUT	20dBi AUT	30dBi AUT
Peak Gain Accuracy	18-50GHz	<± 0.9 dB	<± 0.7 dB	<± 0.6 dB
-10 dB Sidelobe Accuracy	18-50GHz	<± 0.9 dB	<± 0.6 dB	<± 0.4 dB
-20 dB Sidelobe Accuracy	18-50GHz	<± 2.9 dB	<± 1.0 dB	<± 0.6 dB
-30 dB Sidelobe Accuracy	18-50GHz	.	<± 2.9 dB	<± 1.0 dB
Peak Gain Repeatability	<± 0.3 dB			
Probe Network	18-50GHz - 29 Probes			

Mechanical characteristics

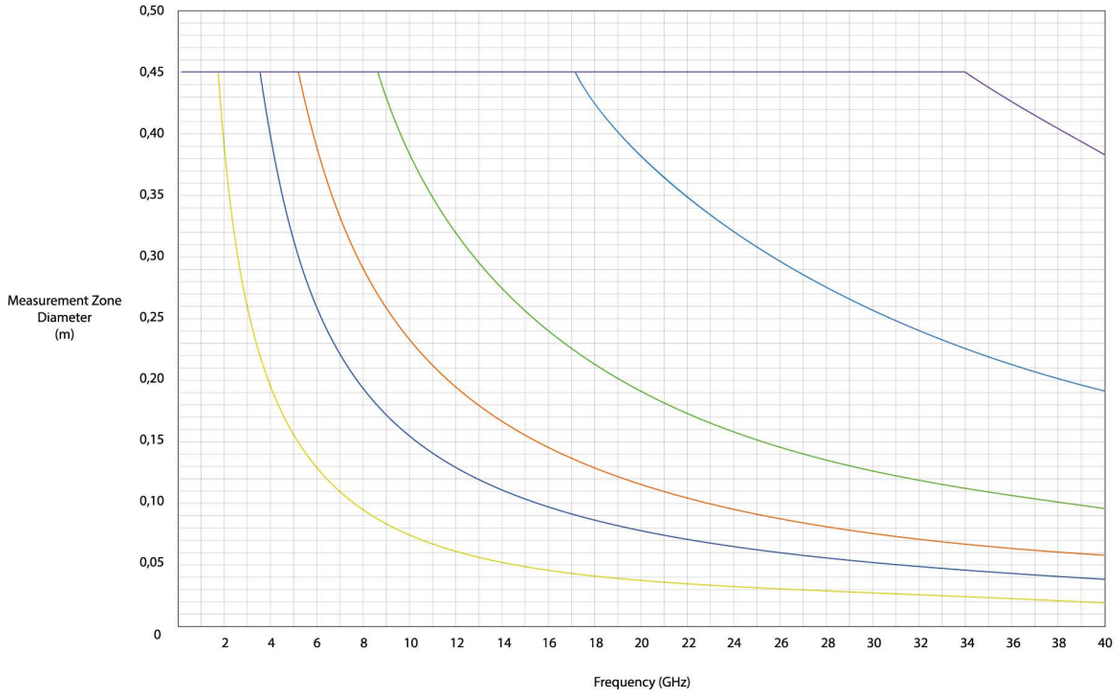
External dimensions of StarLab	1.9 x 1.1 x 2.0 m (L x W x H)
Probe array internal diameter	0.9 m
Optional anechoic chamber size	2.4 x 2.4 x 2.4 m
Angle between probes in the same frequency band	11.25°
DUT Max. Weight	
Styrofoam mast	10 kg
Ultra rigid mast	50 kg

* Measurement time can vary by VNA model & IFBW setup

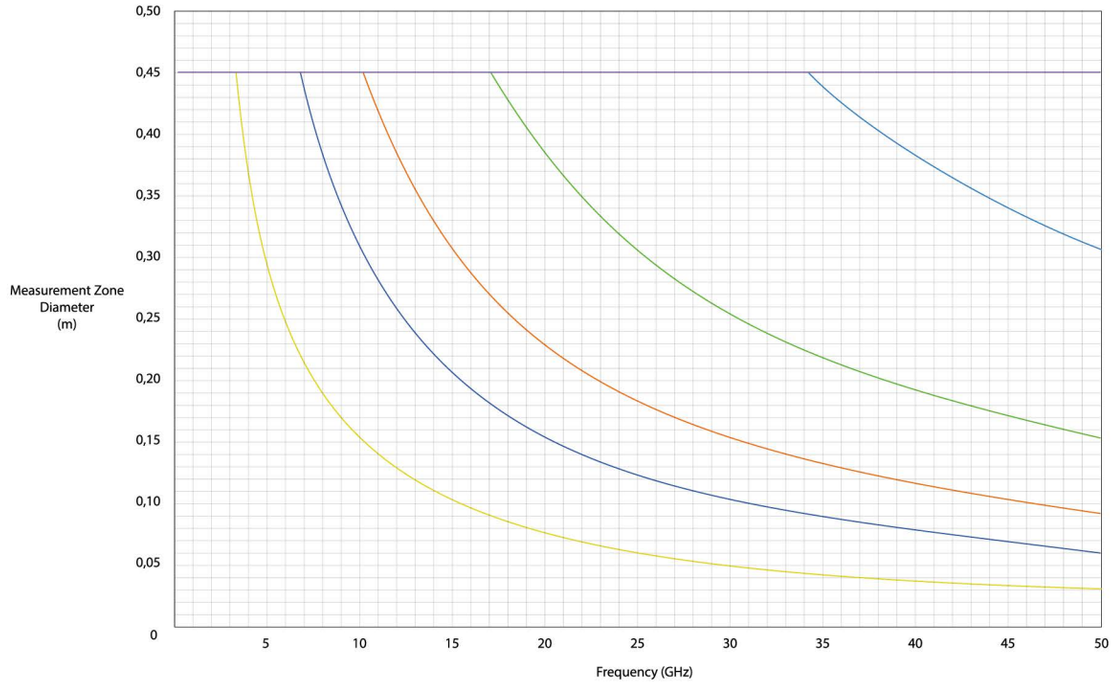
Measurement Zone Capabilities

DUT size vs. frequency comparison

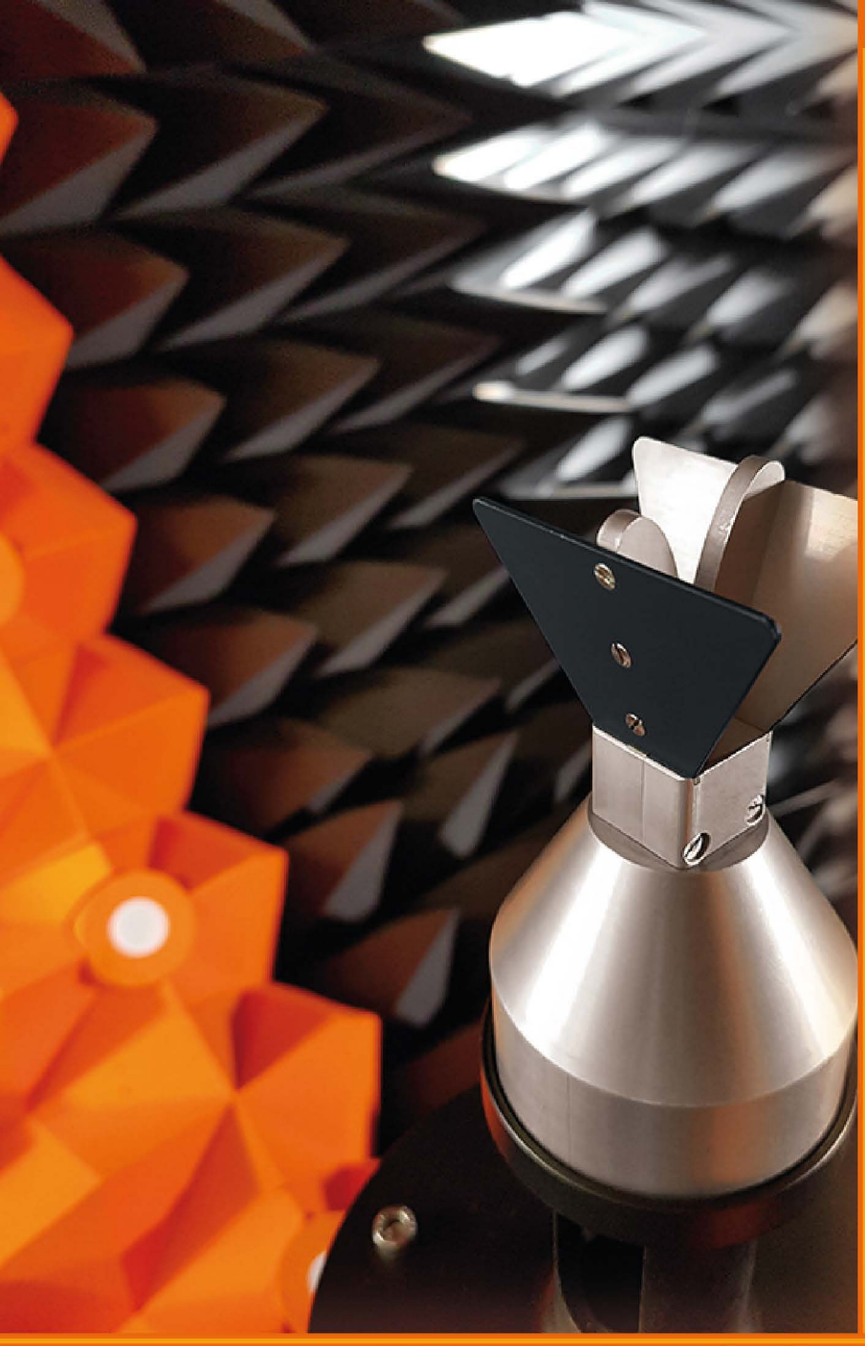
StarLab Core to Pro+



StarLab ULTRA



Default sampling — x2 Oversampling — x3 Oversampling — x5 Oversampling — x10 Oversampling — x20 Oversampling

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Testing Connectivity for a Wireless World

The Microwave Vision Group offers cutting-edge technologies for the visualization of electromagnetic waves. With advanced test solutions for antenna characterization, radar signature evaluation and electromagnetic measurements, we support company R&D teams in their drive to innovate and boost product development.

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