StarMIMO
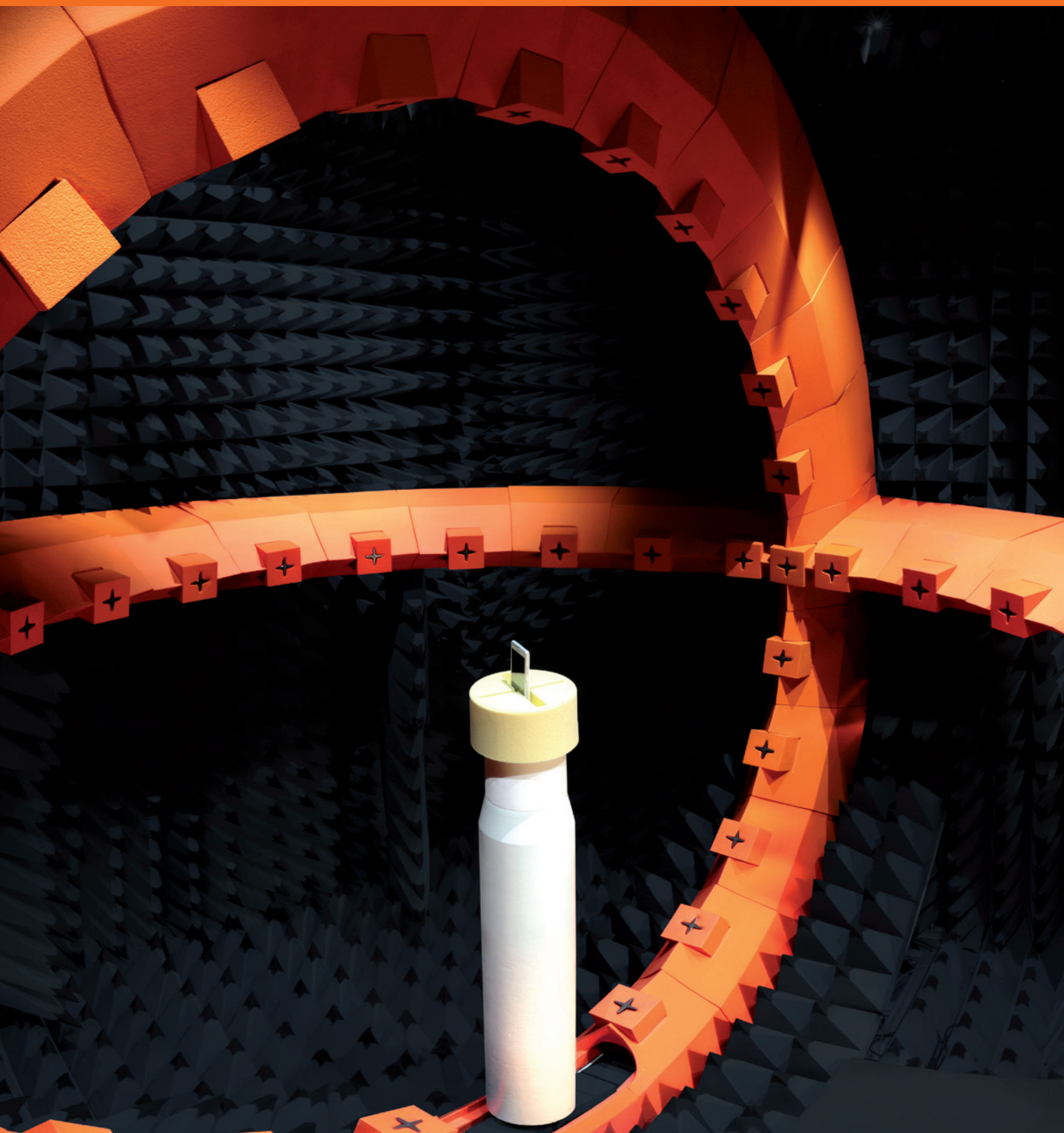
StarMIMO provides flexible, fast and efficient end-to-end testing of MIMO devices using 4G/LTE technology in a controlled realistic RF environment. The characterization of the performance of the device is complete in a single measurement. StarMIMO is a major asset in the design cycle and product validation of mobile devices.

- **End-to-end testing**
- **Controlled RF environment**

SOLUTION FOR
- **MIMO Measurement**
- **MIMO OTA Testing**

Main features

Technology

- MIMO

Measurement capabilities

- Evaluation of the OTA performances of RX Diversity and MIMO based wireless devices supported wireless technologies are HSPA, LTE, IEEE 802.11 and WiMax
- Emulation of widely standardized (3GPP) channel propagation models in a controlled environment:
  - Single Cluster, SCME Urban Micro and Urban Macro
  - Multiple Cluster - SCME Urban Micro and SCME Urban Macro
- Emulation of variable angles of arrival, angular spread, Cross Polar Ratio (XPR), Doppler and delay spread
- Device throughput measurement in controlled fading environments, channel capacity and Bit Error Rate

Frequency bands

- 400 MHz to 6 GHz (depending on the specification of the spatial channel emulator)

Max DUT Size

- Depending on the number of probes

Probes

- From 24 to 64 MIMO dual polarized probes

2 configurations available

- StarMIMO-H: Stand alone horizontal arch
- StarMIMO-HU: Horizontal arch as an upgrade for SG 24, SG 32, SG 64

Positioner

- A choice of azimuth positioners
- An optional roll over azimuth positioner, allowing testing of the DUT in various orientations

System configurations

Software

Measurement control, data acquisition and post processing
- ■ SatEnv
- ■ SAM MIMO

Equipment

- ■ Arch with up to 64 dual-polarized MIMO probes
- ■ MIMO amplification unit
- ■ MV-Cal™ calibration unit
- ■ Instrumentation rack
- ■ Motion controller
- ☐ Full switch matrix for all probes
- ☐ Roll over azimuth DUT positioner
- ⬤ Radio communication tester
- ⬤ Spatial channel emulator (SCE)
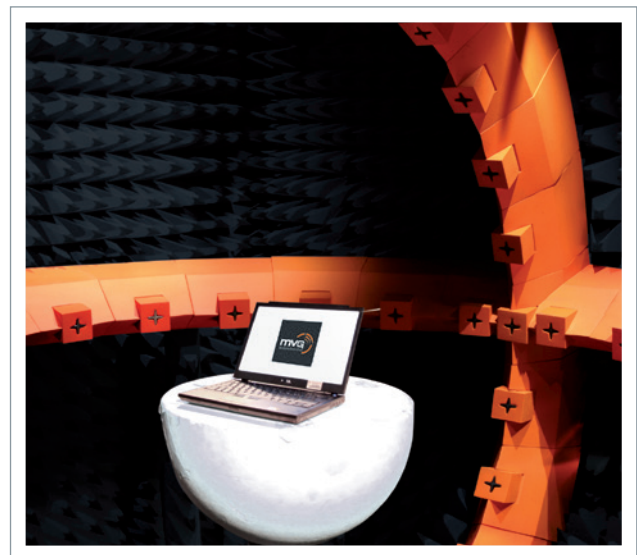- ⬤ Vector network analyzer (VNA)

Add-on

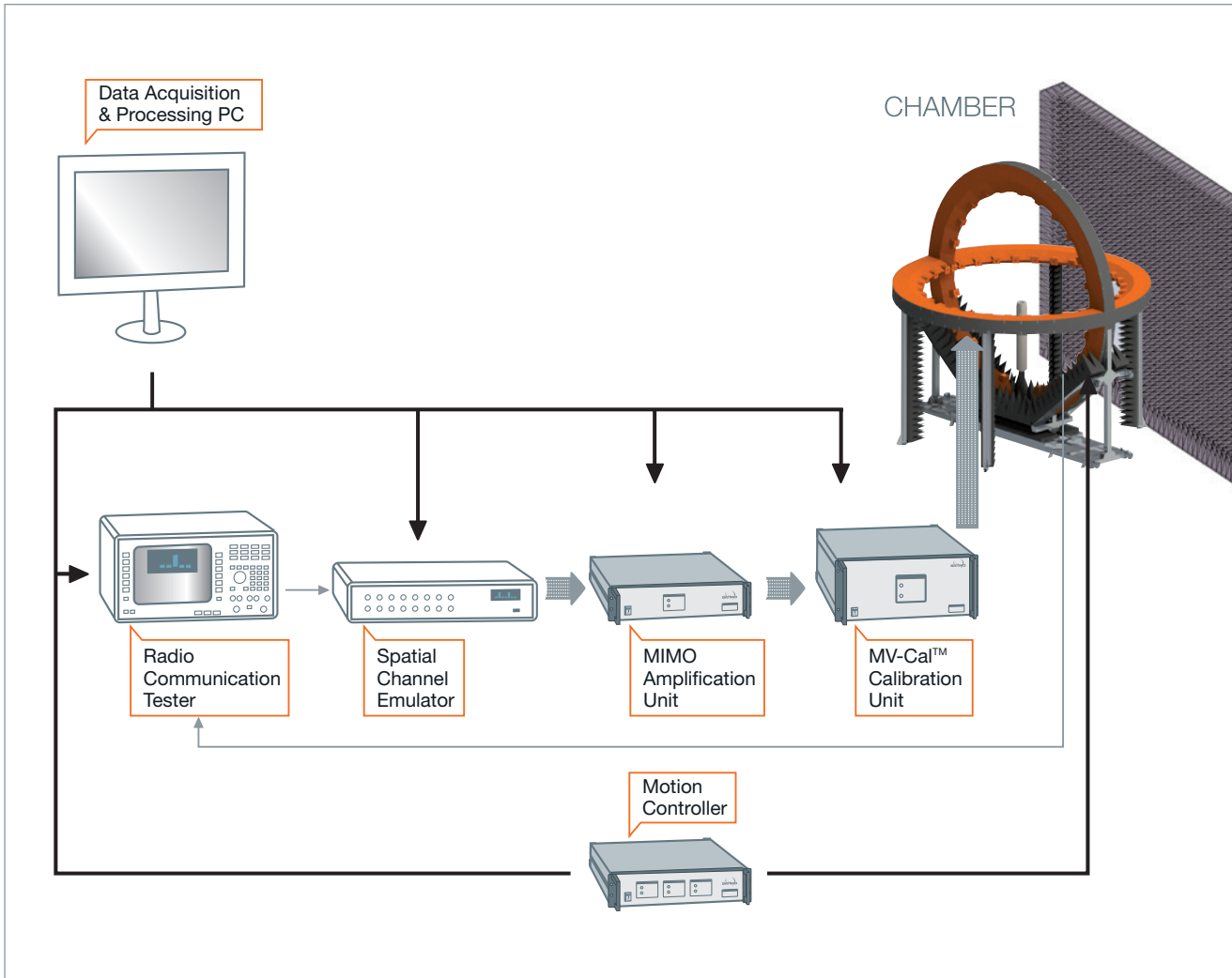- ⬤ Shielded anechoic chamber*

Services

- ■ Installation and calibration
- ■ Project management
- ■ Training
- ■ Warranty
- ☐ Post warranty service plans

* See MVG-EMC Systems catalogs for more information

■ Included ☐ Optional ⬤ Required

/ System overview

The signal generated by the Radio Communication Tester is modified by the Spatial Channel Emulator that creates multi-path signals including delay dispersion, fast fading, path delays and Doppler shift. Those signals are then amplified by the amplification unit and transmitted simultaneously to different locations by probes. The probes can be used to represent the direct signal, multi-path signals or interferers, thus creating a specific RF propagation environment at the DUT position.

StarMIMO setup recreates real RF environments in a shielded anechoic chamber
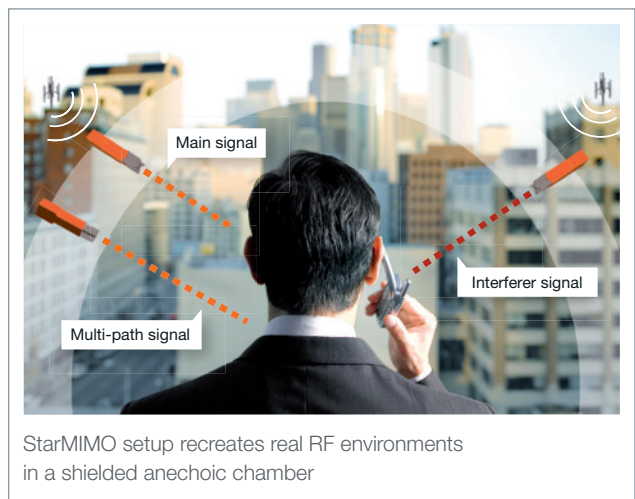
Types of StarMIMO
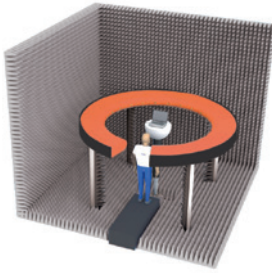
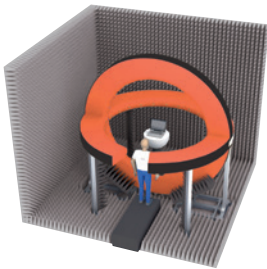

StarMIMO-H
Dedicated to MIMO Testing

- StarMIMO-H comes in different diameters and offers up to 64 probes.

- Upgradeable by adding a vertical arch for traditional antenna radiation patterns as well as Single Input Single Output (SISO) OTA measurements.

- Easy implementation makes StarMIMO-H the perfect tool for dedicated MIMO testing.

> **Horizontal Arch**
- Different diameters available with up to 64 MIMO probes
- 1.2m or 1.6m by radius

> **Positioner**
- A choice of azimuth positioners
- A roll over azimuth positioner (optional)

StarMIMO-HU
The Perfect Upgrade for Existing SG Systems

- StarMIMO-HU is composed of a circular, multi-probe horizontal arch mounted to an existing vertical one.

- The vertical array can still be used for traditional antenna radiation patterns as well as Single Input Single Output (SISO) OTA measurements.

- StarMIMO-HU is the perfect upgrade, bringing MIMO testing capabilities to your SG system at minimum cost.

> **Horizontal Arch**
- Different diameters available with up to 64 MIMO probes

> **Positioner**
- A choice of azimuth positioners
- A roll over azimuth positioner (optional)

Read the white paper on MIMO/OTA measurement technology entitled: "OTA of Diversity and MIMO Capable Terminals" and/or the application note "RX Diversity and MIMO OTA Test Range" Please request it by using our contact form.
http://www.microwavevision.com/content/request-information

MV-Cal™

PATENTED

Quick Calibration Tool for MIMO Testing

MIMO calibration requires that each channel have the same behavior in terms of group delay, amplitude and phase. Industry standards are being drafted to make calibration with a set of dipoles covering the frequency band of interest mandatory. The drawbacks are:

- Dipoles are narrow band, so many dipoles must be used
- Dipoles are mono-polarized so that electric and magnetic dipoles must be used if dual polarized tests are to be performed
- Each channel contains active elements that are time and temperature dependent, so that this calibration (which can take up to 2 hours each time) must be performed up to several times per day
- This calibration does not calibrate the probe array itself (the radioelectric axis of each probe should still be calibrated for high quality testing)

MV-Cal™ takes root in MVG's experience in multiprobe system calibration. It's an automated, fast, and simple OTA MIMO Test System calibration solution. Two sets of coefficients are processed and stored:

- **The first set** calibrates the RF equipment outside the anechoic chamber. It is measured quasi-instantenously and can be reassessed automatically as part as the measurement process.
- **The second set** calibrates the probe array itself. Probe array calibration is the same whether you want to perform SISO or MIMO measurements. MVG has more than 10 years of expertise in probe array calibration. The MVG process ensures that each probe has the same amplitude, phase and polarization response. As the probe characteristics do not vary over short time periods, this calibration is generally necessary only once a year for high quality results.

With MV-Cal™, both sets of coefficients are applied during the measurements. This removes the task of recalibration with a dipole or loop antenna, which normally takes a couple of hours. When associated with StarMIMO, the overall measurement time is drastically reduced.

Watch a StarMIMO video to find out more:
http://www.youtube.com/embed/lkwnasn4Yog

Contact your local sales representative for more information
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