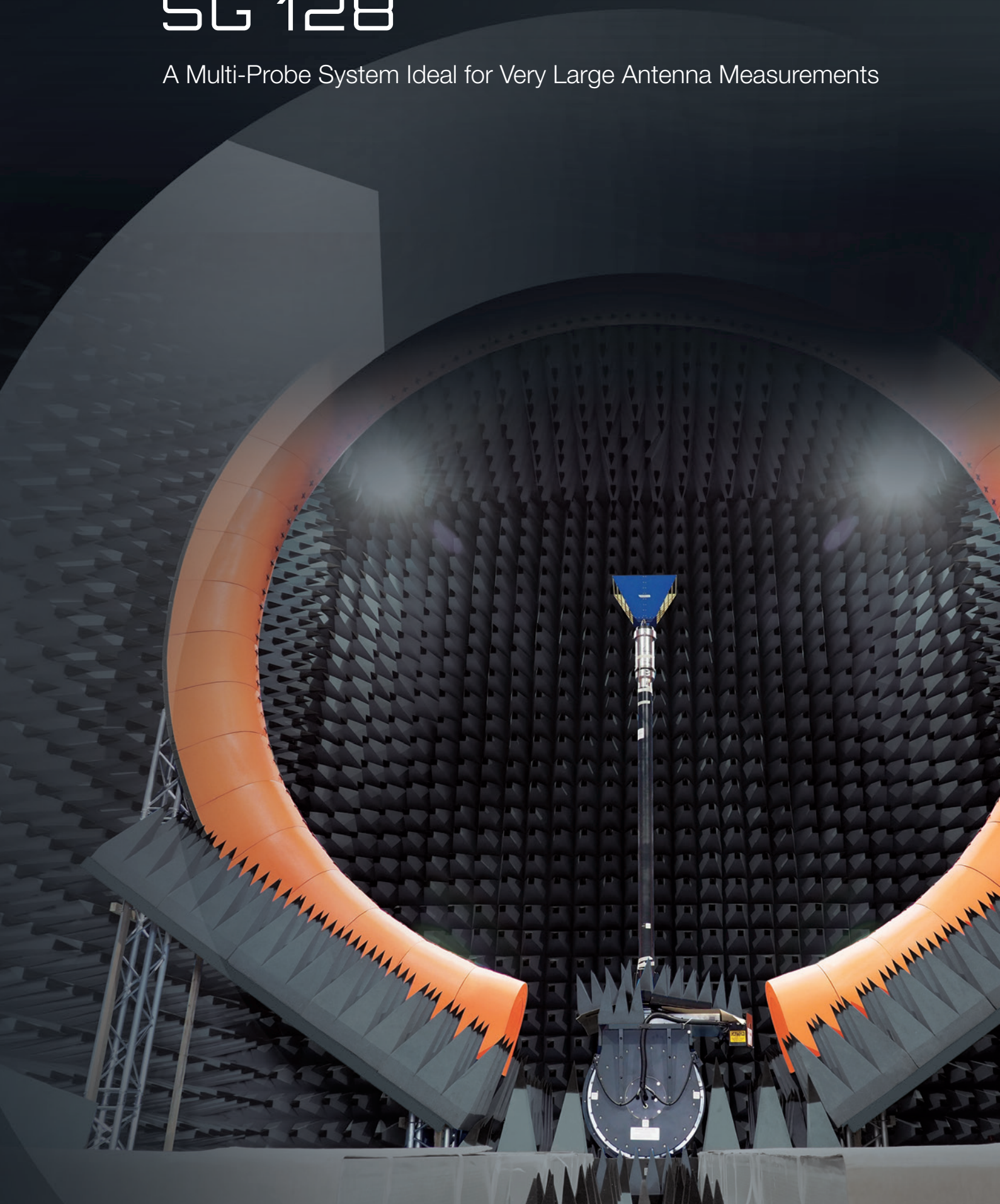
SG 128

A Multi-Probe System Ideal for Very Large Antenna Measurements



Ideal for very large antenna measurements. SG 128 is a bigger version of the SG 64 with 127 probes (+1 reference channel) and is particularly adapted to the measurement of BTS antennas.

Large dimensions for very large antenna measurements

SOLUTION FOR

- **Antenna Measurement**
- **Linear Array Antenna Measurement**
- **Sub-System Antenna Measurement**

MAIN FEATURES

Technology

- Near-field / Spherical
- Far-field

Measurement capabilities

- Gain
- Directivity
- Beamwidth
- Cross polar discrimination
- Sidelobe levels
- Front to Back ratio
- 1D, 2D and 3D radiation patterns
- Radiation pattern in any polarization (linear or circular)
- Antenna efficiency

Frequency bands

- SG128 - 6 GHz: 400 MHz to 6 GHz
- SG 128 - 18 GHz: 400 MHz to 18 GHz
- SG 128 HF: 6 GHz to 18 GHz

Max. size of DUT

- SG 128: 4.16 m
- SG 128 HF: 2.85 m and 2.73 m

Max. weight of DUT

- 5 kg on polystyrene mast
- 25 kg on fiberglass mast
- 50 kg on metal mast
- 200 kg
- 400 kg

Typical dynamic range

- 70 dB

Oversampling

- Elevation tilt by goniometer

SYSTEM CONFIGURATIONS

Software

Measurement control, data acquisition and post processing

■ MVG WaveStudio

Near-field/far-field transform

■ MV-Sphere

OTA measurement suite

□ MVG WaveStudio

Advanced post processing

□ Insight

Equipment

■ Amplification unit
■ Mixer unit
■ N-PAC
■ Uninterruptible power supply
■ Instrumentation rack
■ DUT positioner
○ Primary synthetizer
○ Auxiliary synthetizer

Add-ons

○ Shielded anechoic chamber*

Accessories

■ Polystyrene mast
■ Acquisition PC & touch screen PC
□ PVC chair
□ Positioning laser pointer
□ Laptop interface
□ Head and hand phantoms
□ Polystyrene platform mast for wide devices (tv, laptop)
□ Fiberglass mast
□ Metal mast
□ Linear antenna pole mast
○ Reference antennas (horns, sleeve dipoles, loops, linear array)

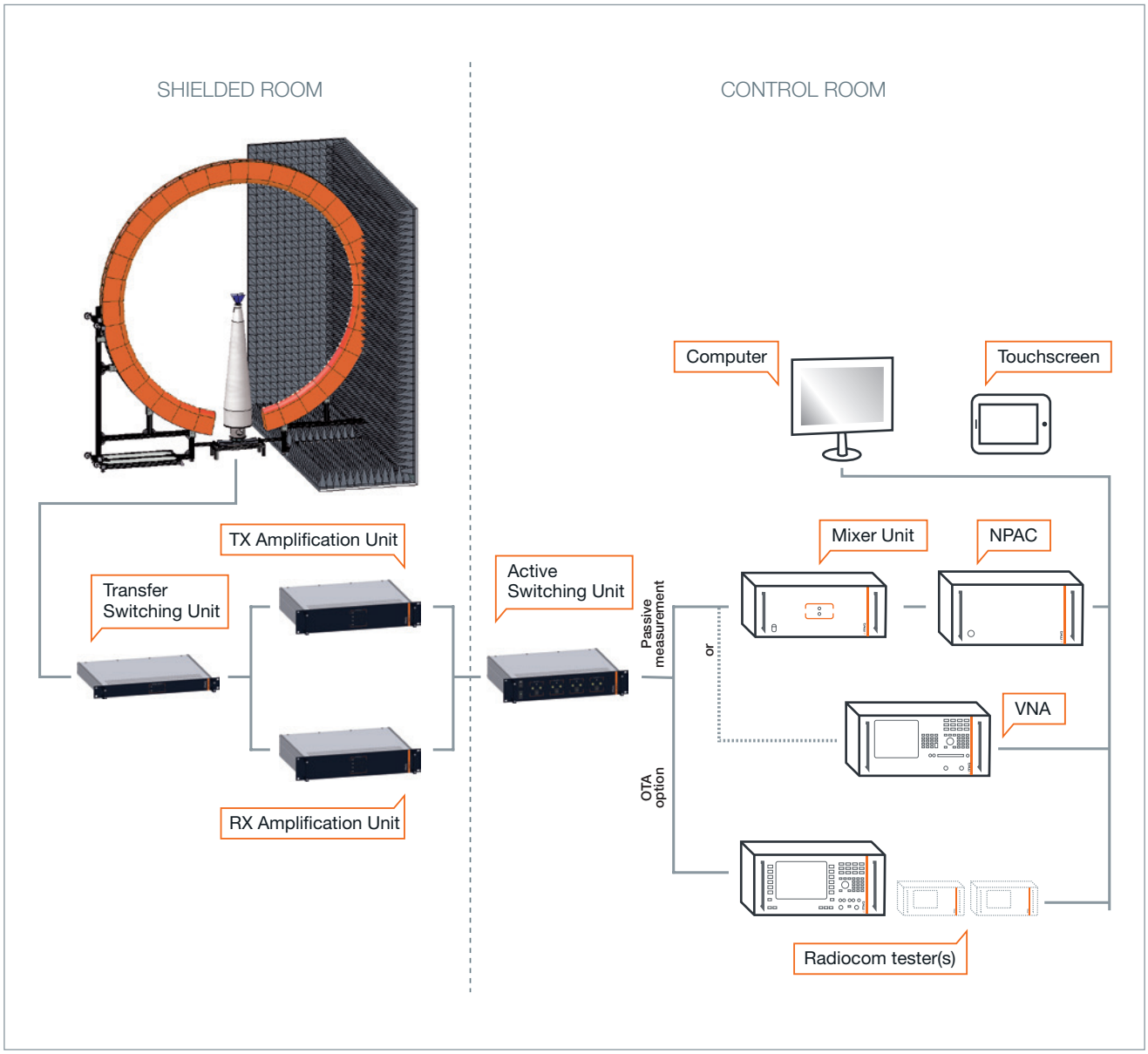
Services

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

■ Included □ Optional ○ Required

* See MVG-EMC product pages: mvg.link/EMC for more information

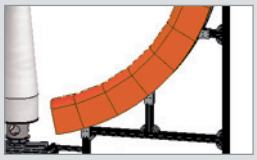
System Overview



SG 128 is designed to characterize very large antennas, particularly base transceiver station (BTS). It uses analog RF signal generators to emit EM waves from the probe array to the antenna under test (AUT) or vice versa. It uses the NPAC as a RF receiver for antenna measurements. The NPAC also drives the electronic scanning of the probe array. The NPAC includes the fastest and most accurate sources and receivers on the market. Adding the NPAC to your configuration is a great way to boost your SG 128 system capabilities. Alternatively, an existing VNA can be used if dedicated to the SG 128 system.

Standard system components

1 Arch

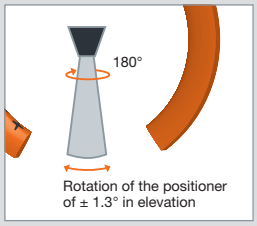


- Other or additional configurations available upon customer request

2 Mast

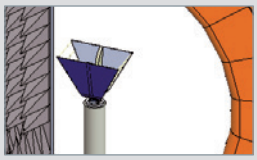
- Mast selection according to max. weight of DUT
- Linear antenna mast
- PVC chair
- Laptop interface
- TV mast

3 Patented Oversampling



- Goniometer below positioner – size of arch, weight of DUT, and frequency range dependent.

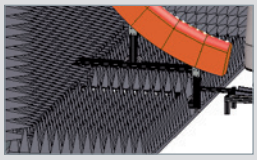
4 Antennas



- A choice of reference antennas (horns, dipoles and loops)

See Antenna Product Overview
www.mvg.link/antennas

5 Absorbers and anechoic chambers



- A choice of standard, adapted and specialty absorbers
- Anechoic chambers with integrated design, production, installation and testing services

See Absorber Product Overview
www.mvg.link/absorbers

AUT Comparison Table

	10 dBi AUT	20 dBi AUT	30 dBi AUT
PEAK GAIN REPEATABILITY			
- 10 dB SIDELOBES ACCURACY	-	± 1.2 dB	± 1.2 dB

For DUT size above 2.73 and up to 2.85 m

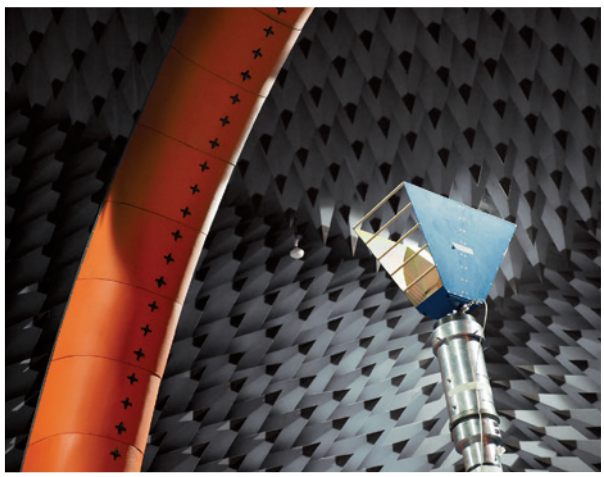
System specifications*

	SG 128	SG 128 HF
Measurement time for 11 frequencies**	< 4 min	< 15 min
Typical dynamic range	70 dB	70 dB

	10 dBi AUT	20 dBi AUT	30 dBi AUT
PEAK GAIN ACCURACY			
0.4 GHz - 0.8 GHz	± 0.7 dB	± 0.6 dB	-
0.8 GHz - 1 GHz	± 0.5 dB	± 0.5 dB	-
1 GHz - 6 GHz	± 0.5 dB	± 0.5 dB	-
6 GHz - 18 GHz	± 0.5 dB	± 0.5 dB	± 0.5 dB
Peak gain repeatability	± 0.3 dB	± 0.3 dB	-
- 10 dB SIDELOBES ACCURACY			
0.4 GHz - 0.8 GHz	± 0.8 dB	± 0.5 dB	-
0.8 GHz - 1 GHz	± 0.7 dB	± 0.5 dB	-
1 GHz - 6 GHz	± 0.7 dB	± 0.5 dB	-
6 GHz - 18 GHz	± 0.7 dB	± 0.5 dB	± 0.4 dB
- 20 dB SIDELOBES ACCURACY			
0.4 GHz - 0.8 GHz	± 2.6 dB	± 0.8 dB	-
0.8 GHz - 1 GHz	± 2.1 dB	± 0.7 dB	-
1 GHz - 6 GHz	± 2.1 dB	± 0.7 dB	-
6 GHz - 18 GHz	± 2.2 dB	± 0.7 dB	± 0.5 dB
- 30 dB SIDELOBES ACCURACY			
0.4 GHz - 0.8 GHz	-	± 2.6 dB	-
0.8 GHz - 1 GHz	-	± 2.1 dB	-
1 GHz - 6 GHz	-	± 2.1 dB	-
6 GHz - 18 GHz	-	± 2.2 dB	± 0.7 dB

* Specifications given according to the following assumptions:
- Controlled temperature and humidity during measurement
- Specifications on radiation pattern are given for a normalized pattern
- Measurements inside an anechoic chamber
- Peak gain is given for a ± 0.3 dB of gain error on the reference antenna
- DUT phase center does not exceed 15 cm from arch center
- Measurement performed with a suitable mast depending on the load and directivity of the DUT

** No oversampling, no averaging



Calibrating the SG 128

Mechanical characteristics*

	SG 128
Probe array diameter (int/ext)	6.4 m
Shielded anechoic chamber size	10 x 10 x 10 m
Angle between probes	2.61°
Azimuth accuracy	0.02°
Azimuth max. speed	30°/s
Oversampling capability	Goniometer

DUT MAX. WEIGHT	
Styrofoam mast	5 kg
Ultra rigid mast	50 kg
PVC chair	100 kg
BTS antenna pole mast	200 kg

* Centered load without oversampling

RF equipment characteristics

Number of probes	127 + 1 ref. channel
Frequency range	0.4 GHz to 6 GHz

Maximum diameter of the DUT (m)

FREQUENCY (GHz)	NUMBER OF OVERSAMPLING x 1	x 2	x 3	x 5	x 10
0.4	3.40	3.40	3.40	3.40	3.40
1	4.16	4.16	4.16	4.16	4.16
2	3.29	4.16	4.16	4.16	4.16
3	2.20	4.16	4.16	4.16	4.16
4	1.65	3.29	4.16	4.16	4.16
5	1.32	2.64	3.95	4.16	4.16
6	1.10	2.20	3.29	4.16	4.16

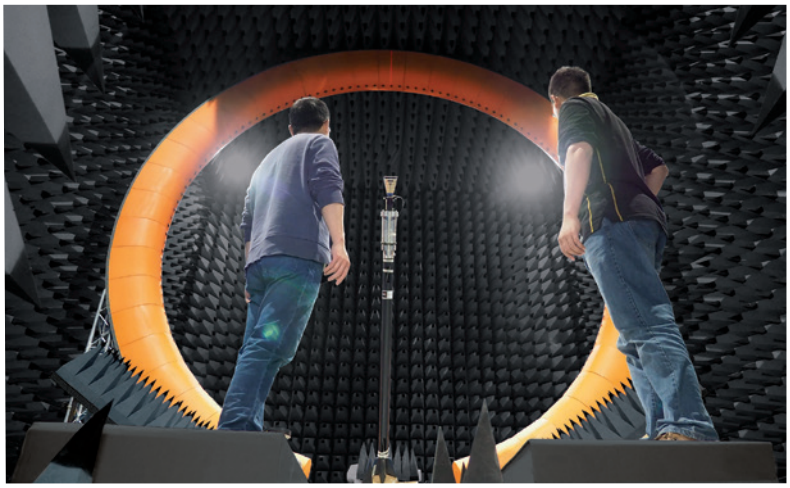
+ Linear antenna measurement

Linear antenna measurement characteristics

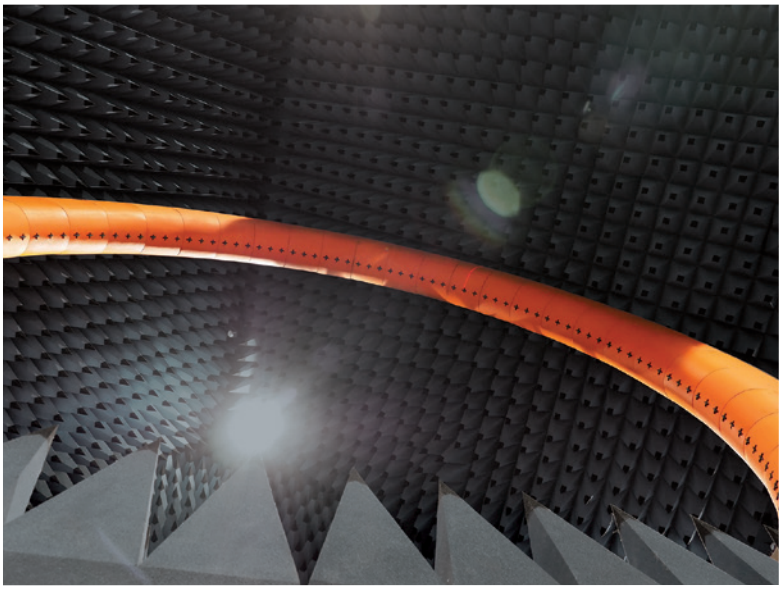
	SG 128
Linear antenna measurement capability	Yes
Geometry	Spherical
Linear antenna max Length/Weight	416 cm / 200 kg
Measurement Time for 11 frequencies*	< 4 min

* 1 port (no oversampling, no averaging), Linear antenna of 160 cm at GSM900

SG 128 system



SG 128 in a shielded anechoic chamber



SG 128 probe array

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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