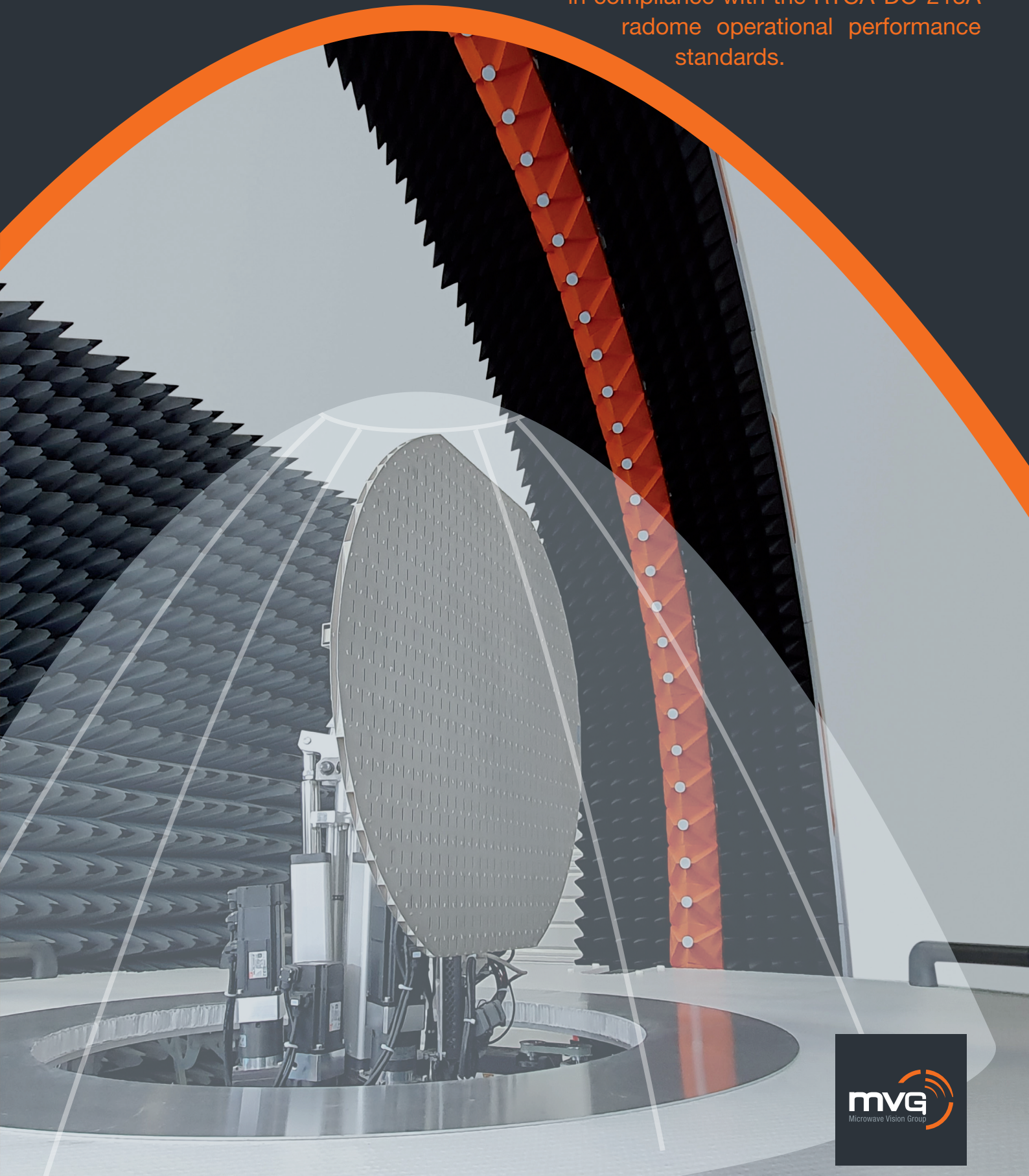
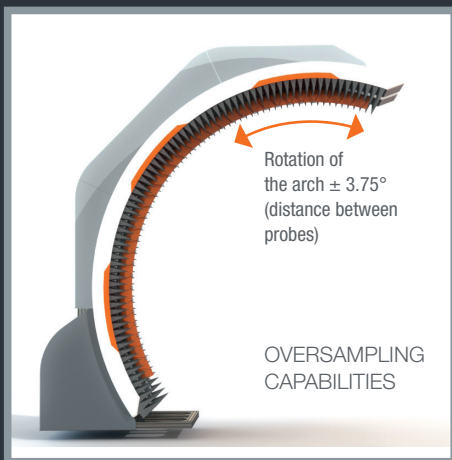


# AEROLAB

A multi-probe near-field measurement system specifically designed to test the after-repair quality of aircraft nose-mounted radomes in compliance with the RTCA-DO-213A radome operational performance standards.

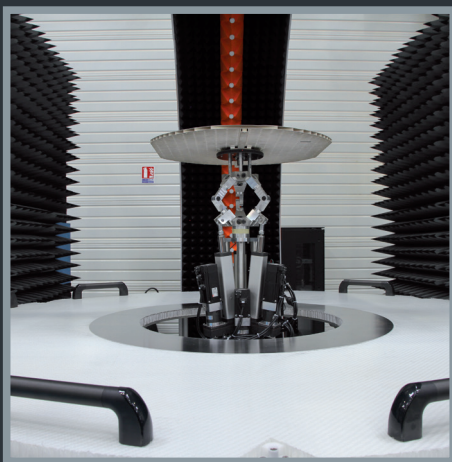


# INNOVATION IN RADOME TESTING



## MULTI-PROBE TECHNOLOGY AND OVERSAMPLING

Test time is greatly shortened with AeroLab's multi-probe electronic scanning technology. One position scan for a medium sized radome (190 x 190 cm) takes only 1.3 minutes. A full 92 point spherical measurement in this case can be completed in approximately 2 hours. Oversampling capabilities add to the accuracy of the measurement as the mechanical movement of the arch, equal to the distance between two consecutive probes (3.75 deg), multiplies the number of measurement points to satisfy the near-field sampling criteria necessary to meet accuracy requirements of NF to FF transformation.



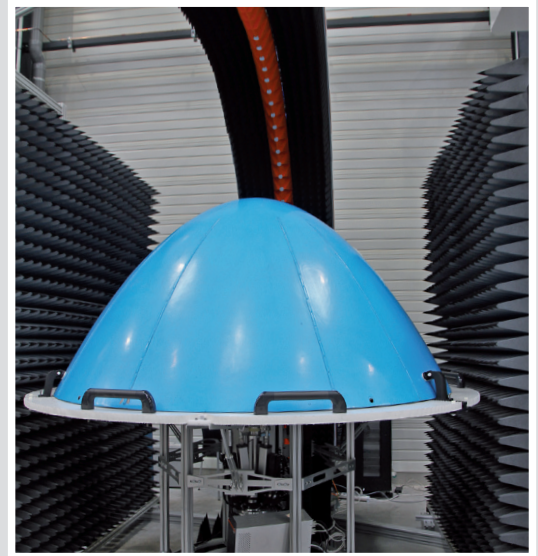
## TRIPOD GIMBAL

The RTCA/DO-213A requires the transmission measurements to be done in two antenna positions separated by  $\frac{1}{4} \lambda$  in the boresight direction. In the AeroLab, the test radar antenna is mounted on a multi-axis tripod gimbal positioner. This innovative positioner grants full pointing capabilities on the forward hemisphere, with the possibility to align the radar antenna axes with any measurement grid axes.

# AEROLAB

## Fast and accurate aircraft nose radome testing to RTCA standards

Facing the increased accuracy requirements imposed by the latest version of the RTCA-D0-213A, the growing pressure to repair and test radomes at a much faster rate than traditional test systems are able to perform, and the space constraints modern business tends to impose, the airline industry looked to MVG expertise in multi-probe technology to develop an accurate, fast and compact measurement solution for radome testing. The result is AEROLAB.



### RTCA-DO-213A: Minimum Operational Performance Standards for Nose-Mounted Radomes

The RTCA-DO-213A performance standards include testing requirements to ensure that radomes continue to perform optimally after repair. Aerolab performs tests to meet the following requirements:

#### TRANSMISSION EFFICIENCY

The radome class shall be determined based on its average and minimum transmission efficiencies, as defined in Table 1 below.

Table 1: Radome Class Definition

	Average	Minimum
<b>Class A</b>	90%	85%
<b>Class B</b>	87%	82%
<b>Class C</b>	84%	78%
<b>Class D</b>	80%	75%
<b>Class E</b>	70%	55%

#### SIDELOBE LEVEL

The radome category shall be determined based on the increase in sidelobe levels, as defined in Table 2.

Table 2: Allowable limit for sidelobe levels with "Radome ON"

	Reference SL	> -21 dB	-21 dB to -40 dB	< -40 dB
<b>Category 1</b>	Area 1: Window area within $\pm 25$ degrees in azimuth and $\pm 10$ degrees in elevation	No more than a 1 dB increase	No higher than $y = Ax + B$ with: x = SLL radome OFF, y = SLL radome ON, A = 12/19 and B = -128/19	No higher than -32 dB
	Area 2: Everywhere else	The maximum of (-23 dB, Category 1 Area 1 spec +1 dB)		
<b>Category 2</b>	Everywhere	The maximum of (-23 dB, Category 1 Area 1 spec +1 dB)		

#### BEAMWIDTH

The radome shall not cause the half power (-3 dB) main beam width, within the window area, to be increased by more than 10 percent.

AeroLab is an advanced multi-probe near-field measurement system specifically designed to test the after-repair quality of aircraft nose-mounted radomes in compliance with the RTCA-DO-213A.



- Near-field spherical measurements
- Ultra-fast test process – results in minutes
- High measurement accuracy
- Flexible and compact

### SOLUTION FOR

- Aircraft nose-mounted radome testing
- Electromagnetic quality evaluation
- RTCA radome compliance testing

## Main features

### Features

- 31 dual-polarized probes
- Probe array with integrated oversampling technology
- Azimuth DUT positioning rotation up to 15 RPM
- Asynchronous gimballed movement (versus alpha and epsilon) while in azimuth motion

### Measurement capabilities

- Transmission efficiency
- Beam width
- Sidelobe levels
- Spherical geometry

### Frequency bands

- 9.3-9.5 GHz

### Oversampling

- Arch rotation – up to 3.75° (distance between probes)

## System configurations

### Software

- WaveStudio™ for measurement control, data acquisition, NF to FF transforms, and post processing

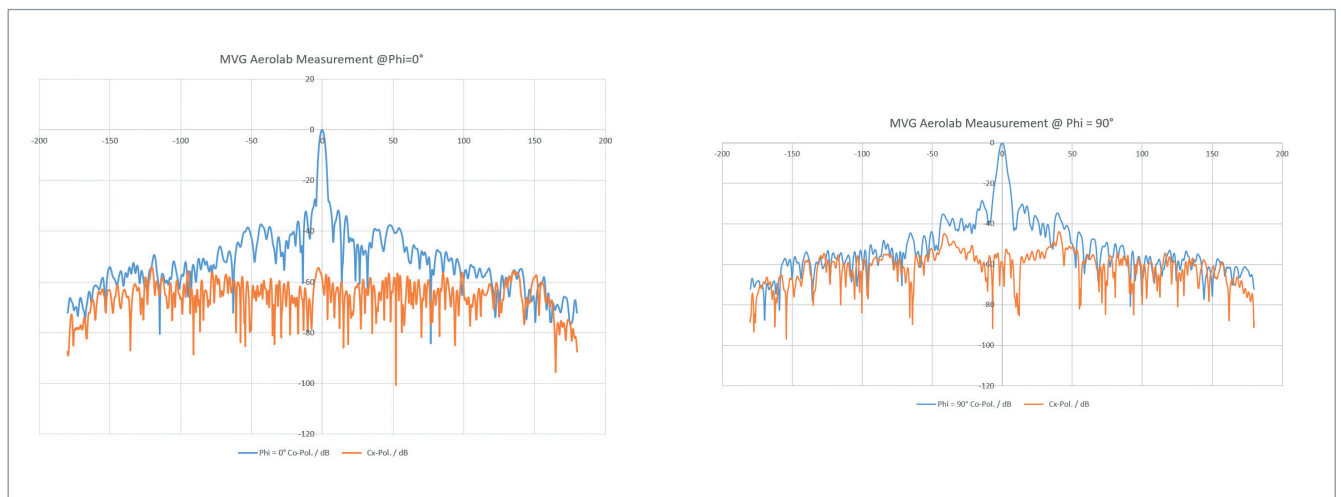
### Equipment

- Arch with probe array
- Azimuth positioner
- Vertical translation axis positioner
- Multi-axis tripod gimbal
- Rubberized absorbers
- Power and control unit
- Instrumentation rack
- Uninterruptible power supply
- Vector Network Analyzer
- Anechoic chamber

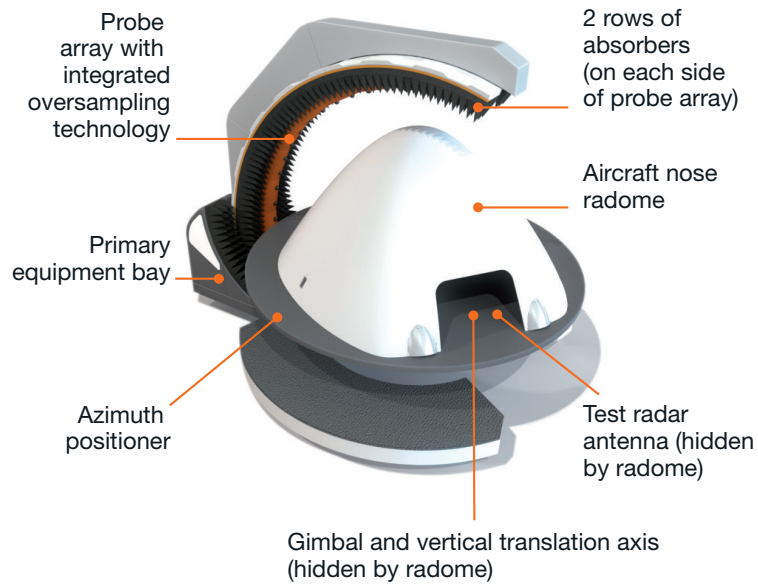
### Services

- Installation
- Training
- Warranty
- Post warranty service plans

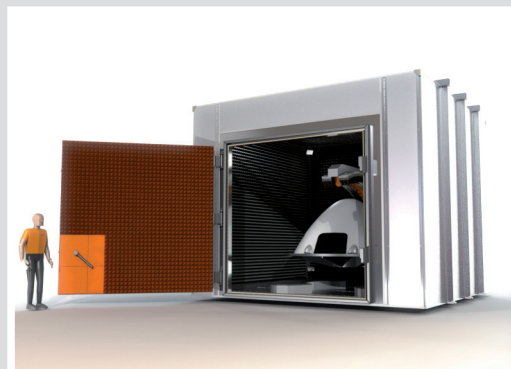
■ Included □ Optional



## PRODUCT OVERVIEW



The near-field multi-probe measurement technique for radome testing after-repair, introduced with the Aerolab, meets the RTCA-DO-213A accuracy requirements in test results, brings flexibility in test installations, keeps testing space footprint at a minimum, and gains record time in the repair and test process.



# MVG - Testing Connectivity for a Wireless World

The Microwave Vision Group offers cutting-edge technologies for the visualisation of electromagnetic waves. Enhancing the speed and accuracy of wireless connectivity testing, as well as the performance and reliability of anechoic and EMC technologies, our systems are integral to meeting the testing challenges of a fully connected world.

## WORLDWIDE GROUP, LOCAL SUPPORT

Our teams, in offices around the world, guide and support you from purchase, through design, to delivery and installation. Because we are local, we can assure speed and attention in project follow through. This includes customer support and maintenance once the system is in place. For the exact addresses and up-to-date contact information: [www.mvg-world.com/contact](http://www.mvg-world.com/contact)



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