

Mini-Compact Range



LITTLE BIG LAB

Little in size,
BIG in performance



Made to meet the high frequency testing challenge! The Mini-Compact Range and chamber assembly has been designed to enable cost effective testing of microwave and millimeter wave antennas, with a quiet zone diameter up to 0.5 m. The system provides a compact, accessible test tool for small antenna designs. It is particularly well suited for high frequency antenna measurements and production testing. A complete system (RF, VNA, controller, camera, ventilation, PC, etc.) can be powered up with a single touch.

SOLUTION FOR

- mmWave Antenna Measurement
- mmWave OTA Testing
- Automotive radar testing

Main features

Technology

- Compact Range

Measurement main capabilities

- Gain
- Beamwidth
- Cross polarization
- Sidelobe levels
- 3D radiation pattern
- Radiation pattern in any polarization (linear or circular)

Frequency bands

- CR-M8: 18-110 GHz
- CR-M12: 8-110 GHz
- CR-M20: 4-110 GHz

Max. size of DUT

- Up to 0.5 m diameter

Max. weight of DUT

- Up to 100 lbs (45 kg) for Azimuth (AZ) Only
- Up to 29 lbs (13 kg) for Roll/AZ (according to EL axis)
- Up to 50 lbs (23 kg) for Roll/AZ with AL-161-1P

Typical dynamic range

- 80 dB

System configurations

Software

Measurement control, data acquisition and post processing

- Wavestudio, Midas, 959 Spectrum

Equipment

- Compact shielded anechoic chamber
- DUT positioner:
 - Roll over azimuth model tower positioning configuration, with elevation (squint) axis (± 6 deg) and manual slide
 - Compact AZ/EL or EL/AZ mini positioner (**NEW** option)
- RF absorber*
- Reflector system
- Feed horns (One user-selectable band up to 90 GHz included)**
- Feed polarization rotator with an easy "slide&lock" mechanism for feed replacement
- Data acquisition and analysis workstation
- AL- 4164 positioner controller***
- Standard rotary joints and waveguide RJ mechanism for mmWave
- mmWave boxes for required band
- RF cables
- Vector network analyzer

Add-ons

- Feed horns (additional bands)**
- RF system up converters/down converters above 50 GHz

Accessories

- Standard gain horns (SGH)**
- Generic mounting fixtures for both SGH and mmWave antennas

Services

- Installation
- Warranty
- Training
- Post warranty service plans****

* See www.mvg-world.com/absorbers

** www.mvg-world.com/antennas

*** www.mvg-world.com/positioners

**** Refer to www.mvg-world.com/services/post-warranty-service-plan

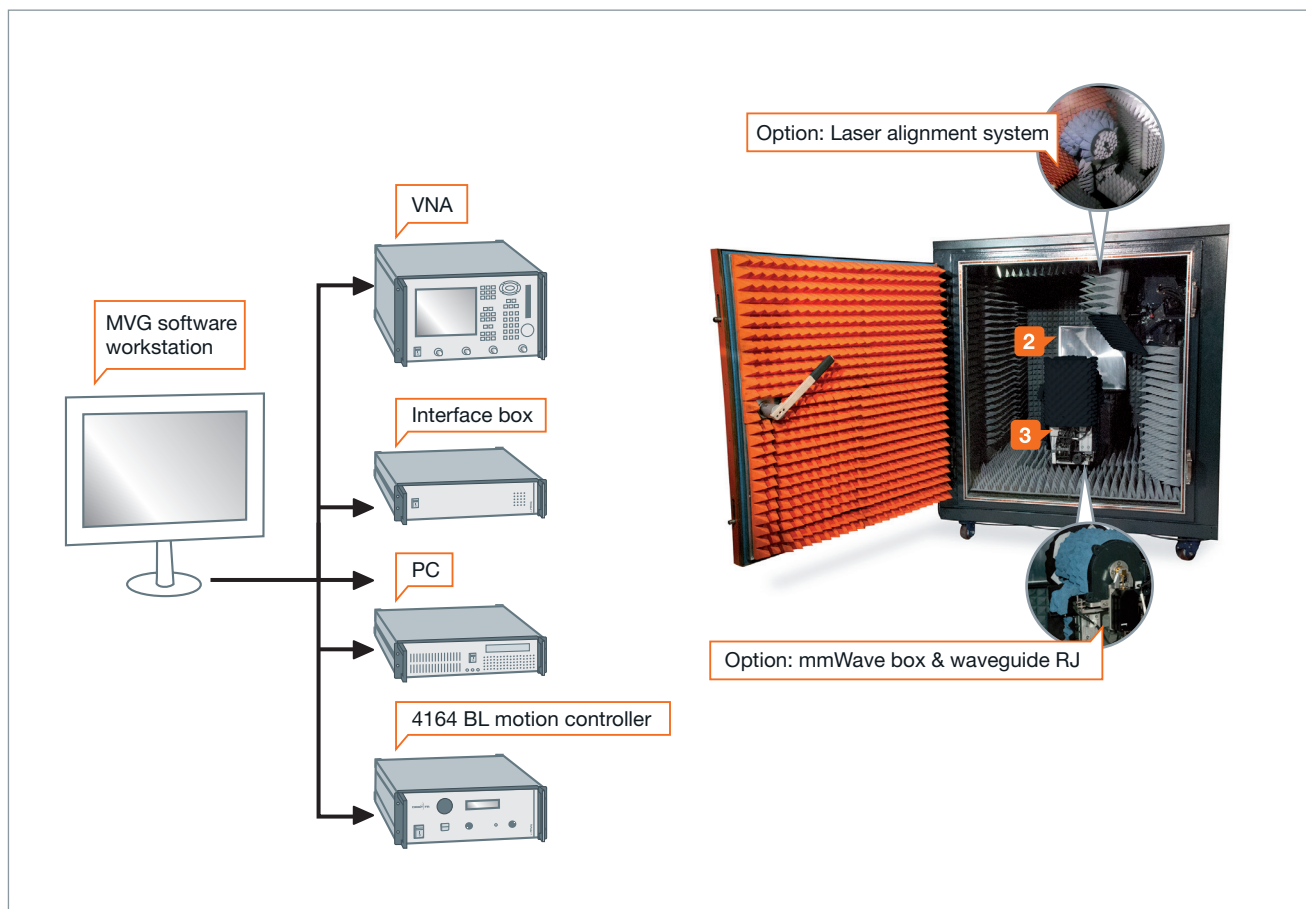
■ Included □ Optional ○ Required

The basic configuration allows for full 3-D patterns to be collected using standard Vector Network Analyzers. The chamber provides a modest level of shielding and easy access to the DUT positioner and compact range feed area. The smaller models (CR-M8, CR-M12) are portable, and mounted on a caster assembly for convenient transportation between different production or test sites.

A compact range feed polarization rotator enables the transmit polarization to be changed during a single test or in between tests. Linked axis motion of the transmit rotator and roll axis allows for automatic acquisition of E & H plane patterns in a single test. A squint (elevation) axis allows E&H plane patterns through the peak of the beam in case electrical and mechanical boresight do not coincide. The AL-4160 series controller supports the control of up to four (4) axes, and allows for simultaneous motion if required.

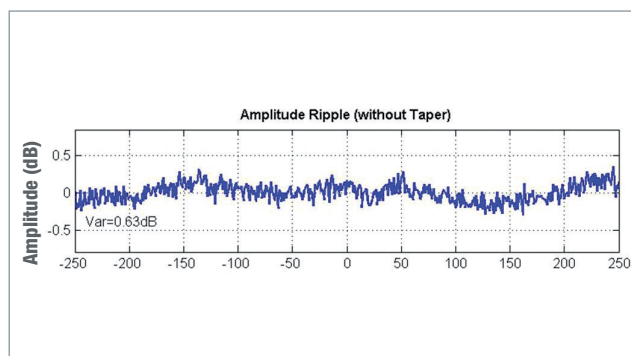
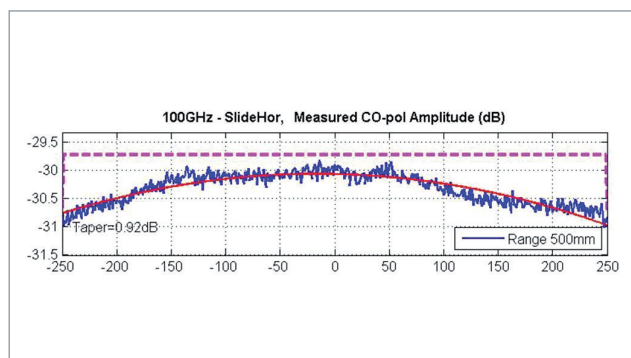
The data acquisition and analysis workstation comes equipped with MVG software, allowing for a versatile and powerful data acquisition and analysis tool. Upon request, the compact range reflector and positioner system without the installation of a compact anechoic chamber can be procured by customers with existing anechoic chambers.

System overview

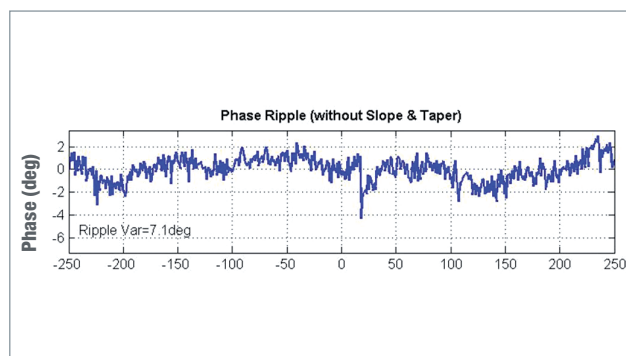


Typical field probing performance

Scan Direction: horizontal, CR-Feed: vertical, Frequency: 100.0 GHz



Compact AZ/EL light-duty mini positioner **NEW!**




Standard system components

1 Absorbers and anechoic chambers



- Dimension based on selected quiet zone size
- Moderate shielding

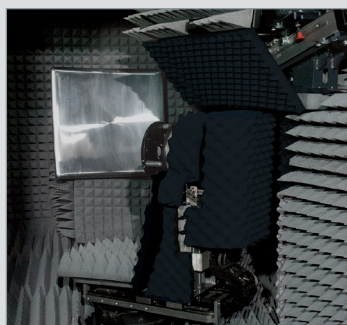
 www.mvg-world.com/absorbers

2 Reflector system




- Rolled edge reflector configuration
- Corner-fed geometry
- Single-piece reflector

3 Positioning subsystem



- Standard AL-161 Roll positioner over AL-461 AZ positioner
- AL-4160 series positioner controller
- AL-161 Roll positioner with squint axis (± 6 deg) and manual slide

 www.mvg-world.com/positioners

System Specifications

SYSTEMS	CR-M8	CR-M12	CR-M20
Reflector Subsystem			
Reflector Model	AL-260606	AL-23101	AL-23101-20
Geometry	Top fed	Corner fed	Corner fed
Frequency Range	18 to 110 GHz	8 to 110 GHz ⁽¹⁾	4 to 110 GHz ⁽²⁾
Quiet Zone Shape	Cylinder	Cylinder	Cylinder
Quiet Zone Dimensions (\emptyset x depth)	8 x 8 in 20 x 20 cm	12 x 12 in 30 x 30 cm	20 x 20 in 50 x 50 cm
Cross Polarization (typ)	27 dB	30 dB	30 dB
Amplitude Total Variation	• 18 to 26.5 GHz: 1.4 dB • 26.5 to 40 GHz: 1.3 dB • 40 to 110 GHz: 1.4 dB	• 8.2 to 12.4 GHz: 1.7 dB • 12.4 to 18 GHz: 1.5 dB	• 4 to 6 GHz: 1.7 dB • 6 to 8 GHz: 1.5 dB
Total Phase Variation	• 18 to 40 GHz: 6° • > 40 GHz: 0.2° x F	• 8.2 to 12.4 GHz: 12° • 12.4 to 18 GHz: 10° • > 40 GHz: 0.25° x F	• 4 to 6 GHz: 12° • 6 to 8 GHz: 10° • > 40 GHz: 0.25° x F
Reflector Construction	Aluminum, rolled edge	Aluminum, rolled edge	Aluminum, rolled edge
Nominal Reflector Size	16 x 16 in 41 x 41 cm	24 x 24 in 60 x 60 cm	40 x 40 in 100 x 100 cm
Positioning Subsystem⁽³⁾			
DUT Positioner	Elevation/Azimuth Slide – N/A Elevation: ± 45 deg Azimuth: ± 90 deg	Roll / Squint / Slide / Azimuth Manual slide: 150 mm travel Squint: ± 6 deg AL-161 roll	Roll / Squint / Slide / Azimuth Manual slide: 300 mm travel Squint: ± 10 deg AL-161 roll
Feed Positioner ⁽⁴⁾	AL-061-1P / Manual	AL-161-1P polarization	AL-161-1P polarization
Positioner Controller	AL-4164 /AL-4162	AL-4164	AL-4164
RF Subsystem			
Feeds (Frequency-dependant)	AL-2310 series AL-061 roll (optional)	AL-2309 series Manual slide: 101 mm travel AL-161 roll	AL-2309 series Manual slide: 203 mm travel AL-161 roll
Optional RF Receiver & Accessories	• VNA ⁽⁵⁾ • LNA ⁽⁶⁾ • Polarization switch	• VNA • LNA • Polarization switch	• VNA • LNA • Polarization switch
Cabling	RF & Control	RF & control	RF & control
Anechoic Chamber			
Chamber Enclosure Construction	Portable aluminum structure Not shielded (optional ⁽⁷⁾)	Aluminum w/ door Chamber shielding 80 dB effectiveness (100 dB optional)	Aluminum w/ hinged access Chamber shielding 80 dB effectiveness (100 dB optional)
Max. Chamber Size (H x W x L)	195 x 86 x 150 cm	150 x 150 x 240 cm	290 x 240 x 400 cm
Anechoic Treatment ⁽⁸⁾	AEP-4	AEP-4	AEP-8
Portability	Yes	Yes	Optional

1) Could be used down to 6 GHz

2) Could be used down to 4 GHz

(3) See www.mvg-world.com/positioners for more information

(4) See www.mvg-world.com/antennas for more information

(5) Vector Network Analyser

(6) Low Noise Amplifier

(7) optional shielded chamber 40-60 dB effectiveness

(8) See www.mvg-world.com/absorbers for more information



Contact your local sales representative for more information

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