

# dbSAFE ARMOR



## Advanced mmWave OTA RF Test Enclosure

The dbSAFE ARMOR 3232 / 4242 utilizes DVTEST's advanced double-wall design providing superior isolation without adding bulk. The cube shape maximizes working volume and its symmetrical aspect ratio provides consistent results independent of UE placement. This is the most compact RF test enclosure and is perfectly suited for all wireless frequencies to 90 GHz. The unit is available in two sizes: 32 inches and 42 inches.



## Specifications for 3232 / 4242

### Isolation

Shielding Effectiveness (dB) (Isolation measurements taken adjacent to each seam)	300 MHz - 40 GHz > 100 dB 40 GHz - 90 GHz > 90 dB
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### Construction

Wall Type	Double Wall
Door Style	Front Opening Dual Point Latch
RF Gasket	Triple Layer Braid Over Foam
Absorber	High Performance, High Density 2.25" Pyramidal Absorber (Other absorber styles available, consult factory)
Base Type	Extruded Aluminum Trolley

### Enclosure Options

Test Equipment Rack	19" Rack Frame Trolley Attaches (Left or Right)
Cooling	Passive Waveguide Vent Active Waveguide Ventilation Module
Waveguide Optical Data Feedthrough	1 or 10 Position Modules Available
USB to Fiber Interface	USB 2.0 / 3.0 / 3.1
Ethernet to Fiber Interface	Up To 10 Gbps
Thermal	Extreme Temperature Testing Forced Air -45°C to +90°C

### Measurement Software (Optional)

(System Controller Not Included)	Antenna Under Test OTA DUT Near-Field to Far-Field Spherical Measurement 3D Antenna Patterns Near-Field to Far-Field and Direct Far-Field
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### Accessories

OTA Performance Verification	Noise Source and Power Sensor
Test Probe Antenna	dbDIRECT Cross Polarized Vivaldi
Calibration Antenna	dbDIRECT Series Standard Gain Horn

### All Dimensions WxDxH Inch (mm)

Model 3232 Dimensions	40" (1016) x 40" (1016) x 40" (1016) 32" (813) x 32" (813) x 32" (813)
Model 4242 Dimensions (Internal pyramidal absorber tip-tip)	50" (1270) x 50" (1270) x 50" (1270) 42" (1067) x 42" (1067) x 42" (1067)

### I/O Panel Options

RF Connectors	SMA, N, K (2.92 mm), V (1.85 mm), W (1.00 mm), Waveguide Adapters
I/O Connectors and Data Modules	USB 2.0 / 3.0 / 3.1 Ethernet up to 1 Gbps with POE Audio 3.5 mm (2, 4 or 20 position) HDMI 1.4 Data Module D-Sub: DB-9, DB-15, DB-25, DB-37 (50 position and HD D-sub's available on request). 50V/5A Per Pin
AC Power	120/250 V - 15 A, 50/60 Hz AC Module
DC Power	0-100 VDC - 20 A, Two Position DC Module

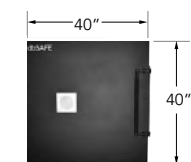
### Positioning System

(Optional)	Manually Adjusted Rotational and Translational Probe and DUT Mounts
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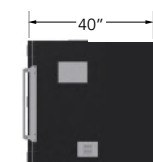
### Ordering Information

All dimensions W x D x H Inch (mm)	Model: 3232 Model: 4242
Warranty	2 Years, Parts and Labor (with product registration)

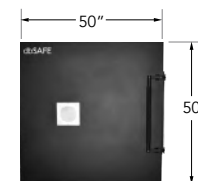
Please contact factory for custom sizing, additional options, and unique design application ideas.



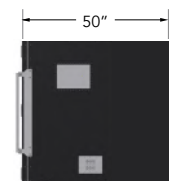
Front View 3232



Side View 3232



Front View 4242



Side View 4242

# dbSAFE ARMOR



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## Dual Cavity mmWave RF Test Enclosure

The dbSAFE ARMOR 2418R is a unique RF test enclosure which houses two internally isolated cavities. The upper section is designed for UE testing, while the lower section is perfect for placement of 19" rackmount compatible test equipment such as RF switching, signal sources, RF power sensors, spectrum analyzers, and VNAs. By eliminating costly interconnects, the 2418R reduces the overall RF path loss and significantly lowers cost of implementation.



## Specifications for 2418R

### Isolation

Shielding Effectiveness (dB) (Isolation measurements taken adjacent to each seam)	300 MHz - 40 GHz > 100 dB 40 GHz - 90 GHz > 90 dB
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### Construction

Wall Type	Double Wall, Double Cavity
Door Style	Front Opening Dual Point Latch
RF Gasket	Triple Layer Braid Over Foam
Absorber	High Performance, High Density 2.25" Pyramidal Absorber (Other absorber styles available, consult factory)
Base Type	Standard Benchtop Optional Extruded Aluminum Trolley (Space for storage and/or equipment)

### Enclosure Options

Base Type	Extruded Aluminum Trolley (Space for storage and/or equipment)
Cooling	Passive Waveguide Vent Active Waveguide Ventilation Module
Waveguide Optical Data Feedthrough	1 or 10 Position Modules Available
USB to Fiber Interface	USB 2.0 / 3.0 / 3.1
Ethernet to Fiber Interface	Up To 10 Gbps
Thermal	Extreme Temperature Testing Forced Air -45°C to +90°C Thermoelectric -10°C to +90°C

### Measurement Software (Optional)

(System Controller Not Included)	Antenna Under Test OTA DUT Near-Field to Far-Field Spherical Measurement 3D Antenna Patterns Near-Field to Far-Field and Direct Far-Field
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### Accessories

OTA Performance Verification	Noise Source and Power Sensor
Test Probe Antenna	dbDIRECT Cross Polarized Vivaldi
Calibration Antenna	dbDIRECT Series Standard Gain Horn

### All Dimensions WxDxH Inch (mm)

Model 2418R Dimensions (Internal pyramidal absorber tip-tip) (19" rackmount 4U)	32" (813) x 36.5" (927) x 46.5" (1181) 24" (610) x 27.5" (699) x 24" (610) 24.5" (622) x 28" (711) x 7.00" (175)
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### I/O Panel Options

RF Connectors	SMA, N, K (2.92 mm), V (1.85 mm), W (1.00 mm), Waveguide Adapters
I/O Connectors and Data Modules	USB 2.0 / 3.0 / 3.1 Ethernet up to 1 Gbps with POE Audio 3.5 mm (2, 4 or 20 position) HDMI 1.4 Data Module D-Sub: DB-9, DB-15, DB-25, DB-37 (50 position and HD D-sub's available on request). 50V/5A Per Pin
AC Power	120/250 V - 15 A, 50/60 Hz AC Module
DC Power	0-100 VDC - 20 A, Two Position DC Module

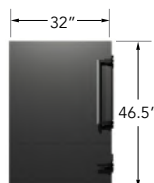
### Positioning System

(Optional)	Manually Adjusted Rotational and Translational Probe and DUT Mounts
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### Ordering Information

All Dimensions W x D x H Inch (mm)	Model: 2418R
Warranty	2 Years, Parts and Labor (with product registration)

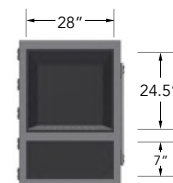
Please contact factory for custom sizing, additional options, and unique design application ideas.



Front View



Side View



Internal Front View

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## Advanced 5G OTA RF Test Enclosure

The dbSAFE ARMOR 3270 is the most compact direct field OTA RF test enclosure. The 3270 occupies only 1,280 sq inches of floor space, making it one of the smallest 5G mmWave enclosure footprints. With an internal working distance of up to 70 inches, the 3270 can be used for direct far-field or near-field measurements. I/O panels are conveniently located minimizing cable loss while maximizing signal integrity.



## Specifications for 3270

### Isolation

Shielding Effectiveness (dB) (Isolation measurements taken adjacent to each seam)	300 MHz - 40 GHz > 100 dB 40 GHz - 90 GHz > 90 dB
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### Construction

Wall Type	Double Wall
Door Style	Front Opening Triple Point Latch
RF Gasket	Triple Layer Braid Over Foam
Absorber	High Performance, High Density 2.25" Pyramidal Absorber (Other absorber styles available, consult factory)
Base Type	Heavy Duty Aluminum Base with Manual Leveling Casters; Complete with Protected Anti-Vibration Axles, Ratcheting Mechanisms and Hardened Steel Raceway Sleeve

### Enclosure Options

Test Equipment Rack	19" Rack Frame Trolley Attaches (Left or Right)
Cooling	Passive Waveguide Vent Active Waveguide Ventilation Module
Waveguide Optical Data Feedthrough	1 or 10 Position Modules Available
USB to Fiber Interface	USB 2.0 / 3.0 / 3.1
Ethernet to Fiber Interface	Up To 10 Gbps
Thermal	Extreme Temperature Testing Forced Air -45°C to +90°C

### Measurement Software (Optional)

(System Controller Not Included)	Antenna Under Test OTA DUT Near-Field to Far-Field Spherical Measurement 3D Antenna Patterns Near-Field to Far-Field and Direct Far-Field
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### Accessories

OTA Performance Verification	Noise Source and Power Sensor
Test Probe Antenna	dbDIRECT Cross Polarized Vivaldi
Calibration Antenna	dbDIRECT Series Standard Gain Horn

### All Dimensions WxDxH Inch (mm)

Model 3270 Dimensions (Internal pyramidal absorber tip-tip)	40" (1016) x 32.5" (826) x 82" (2083) 32" (813) x 24" (610) x 70" (1778)
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### I/O Panel Options

RF Connectors	SMA, N, K (2.92 mm), V (1.85 mm), W (1.00 mm), Waveguide Adapters
I/O Connectors and Data Modules	USB 2.0 / 3.0 / 3.1 Ethernet up to 1 Gbps with POE Audio 3.5 mm (2, 4 or 20 position) HDMI 1.4 Data Module D-Sub: DB-9, DB-15, DB-25, DB-37 (50 position and HD D-sub available on request). 50V/5A Per Pin
AC Power	120/250 V - 15 A, 50/60 Hz AC Module
DC Power	0-100 VDC - 20 A, Two Position DC Module

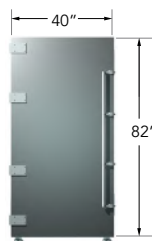
### Positioning System (Optional)

Manual	Manually Adjusted Rotational and Translational Probe and DUT Mounts
Programmable	Full Spherical Coverage 0.1° Accuracy 60 RPM Low-Permittivity Plastic

### Ordering Information

All Dimensions W x D x H Inch (mm)	Model: 3270
Warranty	2 Years, Parts and Labor (with product registration)

Please contact factory for custom sizing, additional options, and unique design application ideas.



Front View



Side View

# dbSAFE ARMOR



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## Advanced Modular 5G OTA RF Test Enclosure

The dbSAFE ARMOR 5242 is a modular 5G RF test enclosure that meets the demands of testing larger UEs or ideal for optimizing antenna arrays. The width accommodates all 5G FR1 & FR2 frequencies and provides space for antenna placement when far-field testing is necessary. The 5242 can also be linked together with other ARMOR Series enclosures—creating a building block multi-UE test scenario. This provides a cost effective means of utilizing one set of test equipment for multiple DUTs.



## Specifications for 5242

### Isolation

Shielding Effectiveness (dB) (Isolation measurements taken adjacent to each seam)	300 MHz - 40 GHz > 100 dB 40 GHz - 90 GHz > 90 dB
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### Construction

Wall Type	Double Wall
Door Style	Front Opening Dual Point Latch
RF Gasket	Triple Layer Braid Over Foam
Absorber	High Performance, High Density 2.25" Pyramidal Absorber (Other absorber styles available, consult factory)
Base Type	Extruded Aluminum Trolley (Space for storage and/ or equipment)

### Enclosure Options

Test Equipment Rack	19" Rack Frame Trolley Attaches (Left or Right)
Cooling	Passive Waveguide Vent Active Waveguide Ventilation Module
Waveguide Optical Data Feedthrough	1 or 10 Position Modules Available
USB to Fiber Interface	USB 2.0 / 3.0 / 3.1
Ethernet to Fiber Interface	Up To 10 Gbps
Thermal	Extreme Temperature Testing Forced Air -45°C to +90°C

### Measurement Software (Optional)

(System Controller Not Included)	Antenna Under Test OTA DUT Near-Field to Far-Field Spherical Measurement 3D Antenna Patterns Near-Field to Far-Field and Direct Far-Field
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### Accessories

OTA Performance Verification	Noise Source and Power Sensor
Test Probe Antenna	dbDIRECT Cross Polarized Vivaldi
Calibration Antenna	dbDIRECT Series Standard Gain Horn

### All Dimensions WxDxH Inch (mm)

Model 5242 Dimensions (Internal pyramidal absorber tip-tip)	60" (1524) x 50" (1270) x 50" (1270) 52" (1321) x 42" (1067) x 42" (1067)
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### I/O Panel Options

RF Connectors	SMA, N, K (2.92 mm), V (1.85 mm), W (1.00 mm), Waveguide Adapters
I/O Connectors and Data Modules	USB 2.0 / 3.0 / 3.1 Ethernet up to 1 Gbps with POE Audio 3.5 mm (2, 4 or 20 position) HDMI 1.4 Data Module D-Sub: DB-9, DB-15, DB-25, DB-37 (50 position and HD D-sub's available on request). 50V/5A Per Pin
AC Power	120/250 V - 15 A, 50/60 Hz AC Module
DC Power	0-100 VDC - 20 A, Two Position DC Module

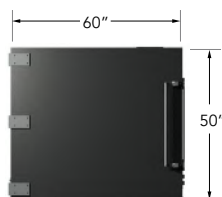
### Positioning System (Optional)

Manual	Manually Adjusted Rotational and Translational Probe and DUT Mounts
Programmable	Full Spherical Coverage 0.1° Accuracy 60 RPM Low-Permittivity Plastic

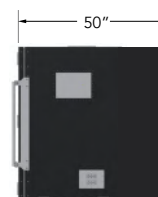
### Ordering Information

All Dimensions W x D x H Inch (mm)	Model: 5242 Model: 4242 Secondary Enclosure (Includes all interconnect pass throughs)
Warranty	2 Years, Parts and Labor (with product registration)

Please contact factory for custom sizing, additional options, and unique design application ideas.



Front View 5242



Side View 5242

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## Advanced Modular 5G OTA RF Test System

The dbSAFE ARMOR 5GS is a modular OTA test system ideal for the characterization of 5G antennas and DUTs to 90 GHz. The 5GS is available in two footprints, each fully configured to meet the demands that 5G will pose on test engineers. Antenna placement for direct field testing is achieved using DVTEST's advanced positioner. Full spherical coverage can be performed with rotation speeds of 60 rpm and 0.1 deg accuracy. The 5GS can also be linked together with other ARMOR Series enclosures—creating a building block multi-UE test scenario while utilizing one set of test equipment.



## Specifications for 5GS

### Isolation

Shielding Effectiveness (dB) (Isolation measurements taken adjacent to each seam)	300 MHz - 40 GHz > 100 dB 40 GHz - 90 GHz > 90 dB
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### Construction

Wall Type	Double Wall
Door Style	Front Opening Dual Point Latch
RF Gasket	Triple Layer Braid Over Foam
Absorber	High Performance, High Density 2.25" Pyramidal Absorber (Other absorber styles available, consult factory)
Base Type	Extruded Aluminum Trolley (Space for storage and/or equipment)

### Enclosure Options

Test Equipment Rack	19" Rack Frame Trolley Attaches (Left or Right)
Cooling	Passive Waveguide Vent Active Waveguide Ventilation Module
Waveguide Optical Data Feedthrough	1 or 10 Position Modules Available
USB to Fiber Interface	USB 2.0 / 3.0 / 3.1
Ethernet to Fiber Interface	Up To 10 Gbps
Thermal	Extreme Temperature Testing Forced Air -45°C to +90°C

### Measurement Software (Optional)

(System Controller Not Included)	Antenna Under Test OTA DUT Near-Field to Far-Field Spherical Measurement 3D Antenna Patterns Near-Field to Far-Field and Direct Far-Field
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### Accessories

OTA Performance Verification	Noise Source and Power Sensor
Test Probe Antenna	dbDIRECT Cross Polarized Vivaldi
Calibration Antenna	dbDIRECT Series Standard Gain Horn

### All Dimensions WxDxH Inch (mm)

Model 5GS-3270 Dimensions	40" (1016) x 32.5" (826) x 82" (2083) 32" (813) x 24" (610) x 70" (1778)
Model 5GS-5242 Dimensions (Internal pyramidal absorber tip-tip)	60" (1524) x 50" (1270) x 50" (1270) 52" (1321) x 42" (1067) x 42" (1067)

### I/O Panel Options

RF Connectors	SMA, N, K (2.92 mm), V (1.85 mm), W (1.00 mm), Waveguide Adapters
I/O Connectors and Data Modules	USB 2.0 / 3.0 / 3.1 Ethernet up to 1 Gbps with POE Audio 3.5 mm (2, 4 or 20 position) HDMI 1.4 Data Module D-Sub: DB-9, DB-15, DB-25, DB-37 (50 position and HD D-sub's available on request). 50V/5A Per Pin
AC Power	120/250 V - 15 A, 50/60 Hz AC Module
DC Power	0-100 VDC - 20 A, Two Position DC Module

### Positioning System (Optional)

Standard	Full Spherical Coverage 0.1° Accuracy 60 RPM Low-Permittivity Plastic
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### Ordering Information

All Dimensions W x D x H Inch (mm)	Model: 5GS-3270 Model: 5GS-5242 Model: 5GS-4242 Secondary Enclosure (Includes all interconnect pass throughs)
Warranty	2 Years, Parts and Labor (with product registration)

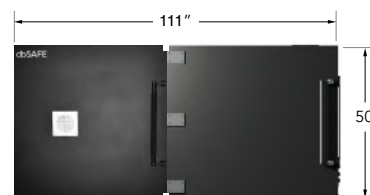
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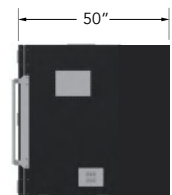
Front View



Side View

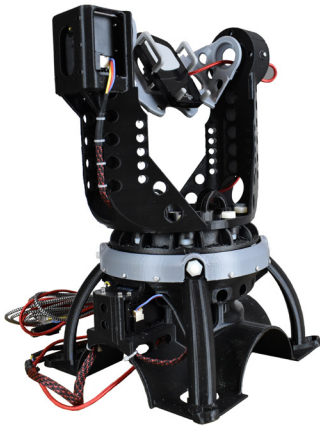


4242 Front View 5242



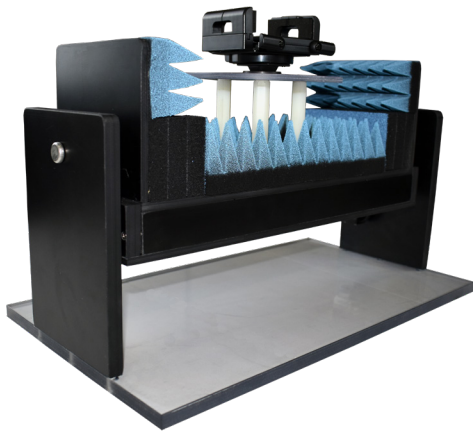
Side View 5242

# Positioners



## Positioner LD

The DVTEST Positioner LD is a two-axis elevation over azimuth positioner for precise angular positioning with full spherical coverage. It is designed for the precise characterization of lightweight devices. The positioner is constructed from a low-permittivity polymer for minimal reflections and multipath. For increased accuracy, the motor is outfitted with an absolute encoder and laser guided calibration. A USB controller is included with the positioner, operated via Python or Matlab software libraries.



## Positioner HD

Positioner HD is a two-axis azimuth over elevation positioner for precise angular positioning with full spherical coverage. Designed for antenna and RF device measurement, it is built out of low-reflection materials, with additional RF shielding for minimal multipath and improved measurement accuracy. A slip ring is included to allow for continuous 360° rotation in both axes. This system is highly configurable with options for RF rotary joints, slip rings for data communications, and custom sizing. An external motor controller is included by default. This motor controller connects to a computer via USB and includes an easy-to-use graphic interface. Other software interface command options are available. The controller also includes a digital I/O trigger system for precise synchronization with other devices.

## Specifications for Positioners LD and HD

	Positioner LD	Positioner HD
Number of Axes	2	2
Axis Type	Elevation over Azimuth	Azimuth over Elevation
Rotation Range	+/- 180°	Continuous 360°
Maximum Rotation Speed	75°/s	115°/s
Maximum DUT Size Inch (mm)	7.9" (200) x 4.3" (110) x 1.5" (40)	6.5 (165.1) x 6.5 (165.1) x 1.5 (38.1)
Maximum DUT Weight	1 lb	10 lbs
Construction Material	PLA Polyester	G10 Fiberglass Composite with Pyramidal Absorbers
Communication Interface	USB	USB or RS-232
Motor Control Resolution	0.088° Horizontal, 0.176° Vertical	0.00023°
Motor Encoder	Absolute Encoder	Relative Encoder with Home Sensor
Accuracy	1°	0.08°
Software Interfaces	Command Line Libraries: Python, Matlab	Console with a Graphic User Interface, Software Libraries: Matlab, Python, LabVIEW, C#, C++, JavaScript
Manual Control	N/A	Manual Control Knobs
Additional Features	Laser Guided Alignment	Digital I/O Trigger System