dbSAFE MAX Series

## Maximum flexibility in a large format RF Test Enclosure

The dbSAFE MAX Series family has been engineered from the ground up, to be DVTEST's most versatile large form factor RF Test Enclosure with our latest advanced shielding technology.

These enclosures maximize working volume resulting in repeatable antenna measurements independent of UE placement. Featuring a large inner cavity while maintaining a compact footprint makes this RF test enclosure perfectly suited for all wireless devices, frequencies, and protocols.

The unit is available in two models, the X and the DUO. Each model offers two standard sizes to choose from; however custom sizing can easily be accommodated.

The dbSafe MAX DUO is the only true full double wall engineered enclosure on the market. This allows users maximum flexibility for not only DUT placement, but also the ability to offset multiple I/O panels. There are many advantages to offset I/O panels; the exterior panel connectors can be optimized for test equipment, and interior panel connectors can be chosen for the specific DUT. The offsetting of the I/O panel locations minimizes crosstalk and improves the isolation of the enclosure.

The MAX DUO offers the best in class shielding effectiveness, greater than 100 dB isolation measured adjacent to each seam.
The dbSafe MAX X has similar characteristics to the MAX DUO however, the main RF cavity is constructed out of a single wall.
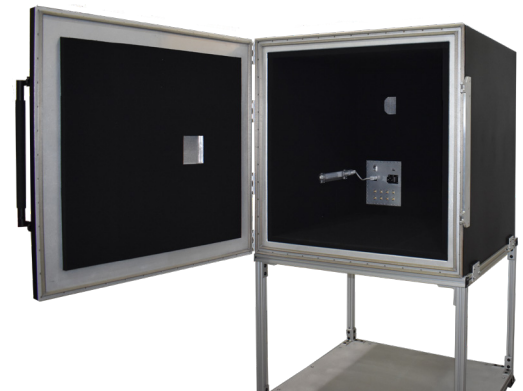
The MAX is ideal for performing device characterization reliability as well as full speed data throughput testing, where campaign test times for 5G devices may last hours. The best isolation gives you better results, it's all about repeatability and data correlation.

The dbSAFE MAX can also be equipped with a long list of options including, thermal testing, roll out trays, shelves, antenna mounts, cameras, microphones, lighting, and DUT positioners.
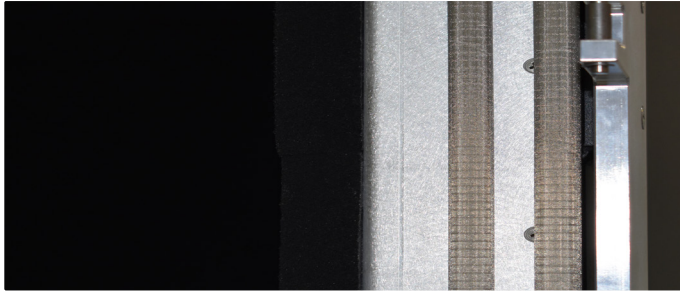

RF Absorber Foam Liner

The dbSAFE MAX minimizes reflections across its interior with the use of an RF absorbing foam liner, which is precision cut and fitted to the exact interior dimensions. This allows the DUT to be positioned anywhere with virtually no effect on attenuation caused by reflections or leaks.

RF Gaskets

Multiple RF gaskets are used in all seams and I/O connections to eliminate leakage.

High quality nickel fabric over urethane foam gaskets with mitered and sleeved edge installation, resist compression set and are rated for a minimum 50,000 cycles.
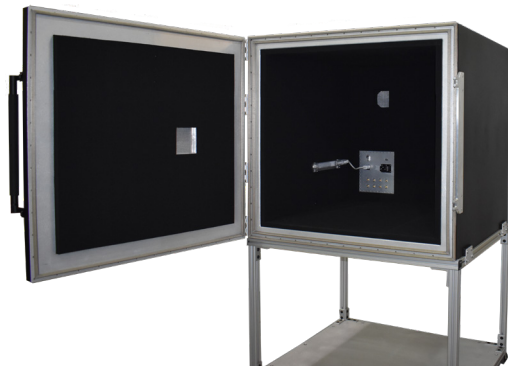
Full Double Wall Construction

The dbSAFE MAX DUO is composed of two layers of aluminum treated by DVTEST's proprietary **Tri-Shield[©]** passivation process to eliminate oxidation; ensuring no degradation in isolation performance over the life of the enclosure.

This form of construction not only improves the structural strength, but provides an additional 20 dB of RF isolation.
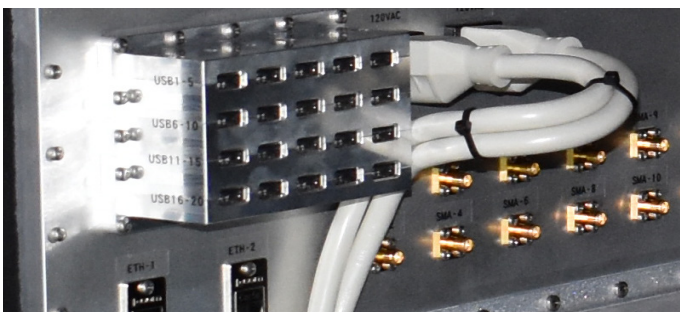

User Defined Inner and Outer I/O Panels

The dbSAFE MAX has multiple I/O panels that can be connectorized by technology depending on the use case. The outer connectors may be more suitable for your test equipment while the inner panel(s) may be adapted to the DUT.

Options include:

- RF Connectors: SMA, SMB, BNC, TNC, UHF, N
- RF filtered connectors: USB 2.0/3.0/3.1 (Single, dual, quad port)
- Ethernet 1 & 10 GigE+PoE
- HDMI 1.4, 2.0
- Fiber optics: ST and FC
- AC filtered interface; 120/240V
- DC filtered interface; 0-100V DC, 20 A
- Data: D-Sub 9,15,25,37,50, RJ45, Audio 3.5 mm
- Waveguide with 6 or 12 ports for fiber insertion
- Air ventilation with AC or DC fan

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dbSAFE MAX X Vs DUO Feature Comparison

	dbSAFE MAX X	dbSAFE MAX DUO
Loading Style	Front loading	
Chassis Wall Type	Single	Full Double
Door type	Double wall door with roller bearing hinges	
Use Case	Versatile x-large RF Enclosure for lab use and pre-compliance testing. Largest usable I/O panel in industry.	Customizable large format RF Enclosure suitable for larger DUTs and test setups, automation, or multi-device testing.
Shielding Effectiveness (Isolation spec measured at each seam)	> 90 dB	> 100 dB
Standard Sizes (internal usable dimension)	MAX X 24" (610) x 24" (610) x 24" (610) MAX X+ 36" (914) x 32" (813) x 36" (914)	MAX DUO 18" (457) x 24" (622) x 30" (762) MAX DUO+ 32" (813) x 32" (813) x 32" (813)
Custom Sizes Available	⬛	⬛
Enclosure construction	Tri-Shield© MIL-DTL-5541F Process	
Frequency Range (GHz)	0.3 - 18	
Enclosure mounting	Lab bench top 80/20 extruded cart Heavy duty rugged frame	
Extreme Temperature Testing		⬛
Waveguide Passive Cooling	⬛	⬛
Waveguide Active Cooling	⬛	⬛
Heavy Duty Rugged Frame Base	⬛	⬛
Positioner - Manual Rotation and/or Translation	⬛	⬛
Positioner - Full Spherical Pattern	⬛	⬛
Measurement Software (Optional)	⬛	⬛
OTA Performance Verification Tools Available	⬛	⬛
I/O Panel	Multiple panel location placement	Dual I/O panels with offset placement
Warranty	2 Years	3 Years

Specifications for dbSAFE MAX Series

Isolation		MAX DUO	MAX X
Shielding Effectiveness (dB)*	300 MHz - 3 GHz 3 GHz - 6 GHz 6 GHz - 18 GHz	≥ 100 dB ≥ 95 dB ≥ 90 dB	≥ 90 dB ≥ 85 dB ≥ 80 dB

Isolation measurements taken adjacent to each seam.

Construction

Chassis Type	Double or Single Wall Welded Aluminum Structure
Surface Treatment	Tri-Shield coated to MIL-DTL-5541F
Door Style	Front Load Dual Lever Latch
RF Gasket	Braid Over Foam
Absorber	Broadband Lossy Foam Absorber

Enclosure Options

Cooling	Passive Waveguide Vent Active Waveguide Vent Module with AC Fan (30 CFM) Optional high output airflow to 500 CFM
Waveguide Optical Data Feedthrough	6 Position Modules Available
USB to Fiber Interface	USB 2.0/3.0/3.1
Ethernet to Fiber Interface	Up to 10 Gbps
Extreme Temperature Testing	Forced Air -45°C to +90°C

Accessories

OTA Performance Verification	Noise Source and Power Sensor
Test Probe Antenna	dbDIRECT Cross Polarized Vivaldi
Calibration Antenna	dbDIRECT Series Standard Gain Horn
Antenna Couplers	dbCoupler Series (Standard, Mini)
I/O Panel Exchange Tool	PN: 09925X-OPTION 909 Torque Screwdriver

I/O Panel Options

RF Connectors	SMA, SMB, UHF, N Type, BNC, TNC
I/O Data Modules	USB 2.0/3.0/3.1*, 1 & 10 GigE+PoE, HDMI 1.4/2.0 , Audio 3.5 mm *USB single, dual, quad and high density port versions available
I/O Connectors	D-Sub DB-9, DB-15, DB-25, DB-37 50V/5A Per Pin
AC Power	TYPE A - 120V AC Module (IEC-320 to NEMA 5R) TYPE F - 250V AC Module (IEC-320 to Schuko) TYPE G - 230V AC Module (IEC-320 to BS 1363)
DC Power	DC - 100V/20A Module (+.- terminals)

Positioning System (Optional)

Manual	Manually Adjusted Rotational, Translational Probe and DUT Mounts

Measurement Software

(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

Dimensions W x D x H inches (mm)	Internal
dbSAFE MAX X 099400	24" (610) x 24" (610) x 24" (610)
dbSAFE MAX X+ 099410	36" (914) x 32" (813) x 36" (914)
dbSAFE MAX DUO 272003	18" (457) x 24" (622) x 30" (762)
dbSAFE MAX DUO+ 272009	32" (813) x 32" (813) x 32" (813)

Please contact factory for custom sizing, additional options, and unique design application ideas.
Specifications are subject to change without notice.