



# MilliBox™

MMWAVE ANTENNA TEST CHAMBERS



## Product Guide 2020



Milliwave Silicon Solutions

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## mmWave Chambers

**COMPACT-** The device under test (DUT) antenna size and operating frequency dictates the far-field distance requirement for over-the-air (OTA) testing and drives the chamber dimensions. At mmWave frequencies, the far-field dimension is small enough so that MilliBox chambers can comfortably fit on a lab benchtop.

The deck has multiple measurement positions with 8cm (3") pass-through holes for direct wiring without connector ports. Conveniently, measurement instruments can be placed just below the MilliBox chamber deck, which reduces the RF coax length and cable loss.

The horn post and the DUT positioners are placed on opposite ends of the chamber deck. Access to the inside is granted through the front doors that close to seal the chamber during test.

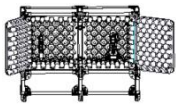
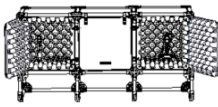
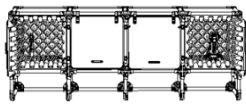
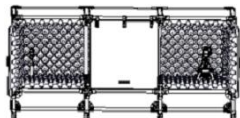


**MODULAR-** MilliBox chambers are built of modular construction components allowing the creation of several configurations to address differing needs. The MBX0x series is made of 60cm (24") cubic modules and the MBX3x series of 80cm (30") cubic modules. The chamber size is selected to satisfy your far-field requirements, and extension "cubes" can be added later if the need arises.

The four top corners of the chamber feature passthrough access for accessories like air extraction, cameras, lights, or sensors. Other accessories, like sniffer mounts and fixed or oscillating trihedral corner reflector mounts, are also available.

**AFFORDABLE-** Compared to "Do-It-Yourself" systems, MilliBox are complete solutions that are priced advantageously, offer better performance, and do not waste scarce engineering resources to develop and maintain.

MilliBox chambers come standard with a GIM01 3D DUT positioner, matching HOR01 horn post with WR2.2 to WR15 horn clamp, power supply, USB dongle, and Python controller software. Other options are available.

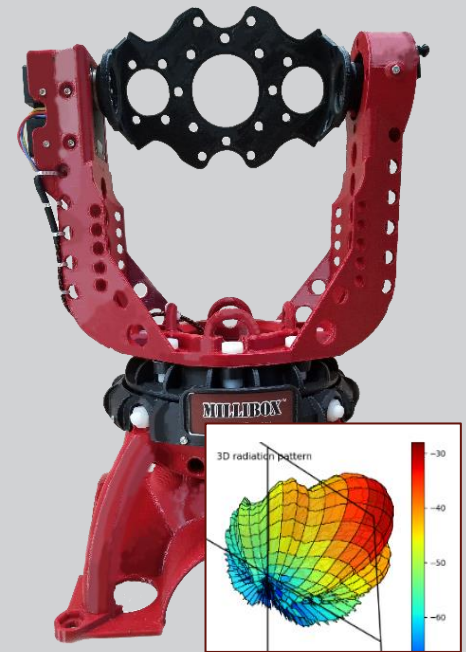
	MBX02	MBX03	MBX04	MBX33
				
Exterior Dimensions (W x H x D)	128 x 95 x 66cm (50" x 37" x 26")	188 x 95 x 66cm (74" x 37" x 26")	245 x 95 x 66cm (96" x 37" x 26")	240 x 112 x 82cm (95" x 44" x 32")
Interior Cavity (W x H x D)	101 x 40 x 40cm (40" x 16" x 16")	161 x 40 x 40cm (63" x 16" x 16")	221 x 40 x 40cm (87" x 16" x 16")	213 x 57 x 57cm (84" x 22" x 22")
Far Field (GIM01/GIM1D)	77cm (30")	138cm (54")	198cm (78")	186cm (73")
Far Field (GIM03)	72cm (28")	133cm (52")	193cm (76")	176cm (69")
Measurement Positions	2	4	6	8
Instrument Bay Height	29cm (12")			
Absorber Performance	-50dB from 18GHz to 95GHz			
Manufacturer Warranty	1 year all parts			

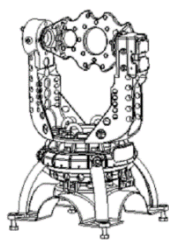
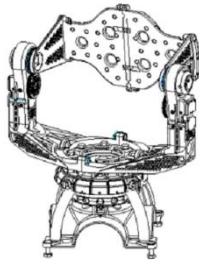
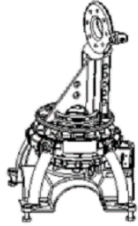
## mmWave Positioners

**PRACTICAL-** MilliBox offers several positioners for different DUT size and weight requirements. The positioners are built of high-performance printed PLA biomaterial with low dielectric constant limiting stray reflections. The wiring to the DUT is done using a passthrough in the horizontal and vertical bearings to prevent wire tangling during operation.

**ACCURATE-** A laser crosshair guide helps precisely align the initial DUT boresight direction to the measurement horn. The real-time position control is achieved with the feedback of a built-in 12-bit absolute position encoder.

**OPEN FRAMEWORK-** MilliBox positioners are controlled over USB with Python software delivered in source. The software also controls any SCPI-compatible instrument connected by LAN, GPIB, or USB. All this helps to seamlessly integrate MilliBox into your existing RF testing environment. Many radiation pattern types like HV plots or 3D plots come standard and can be easily modified and augmented as desired.



	GIM01	GIM03	GIM1D
			
Max DUT Width	11 cm (4")	27cm (10")	–
Max DUT Weight	0.5kg (1lb)	3kg (6lb)	5kg (10lb)
Position Range	360° x 360°	360° x 360°	360° Azimuth only
Angular Resolution	0.088°		
Variable Velocity	0 to 11 RPM	0 to 9 RPM	0 to 11 RPM
Measurement Height	32.7cm (13")		
Wiring Passthrough Diameter	20mm (0.79")	24mm (1")	–

## Customization

**OPTIONS-** Standard horn clamp options are available for common waveguide sizes, and MilliBox can design and fabricate custom horn and DUT mounts, when needed. Design files of critical mechanical parts are available upon request to help you design accessories, mounts, or modify the original design.





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**MBX-PG20-01**