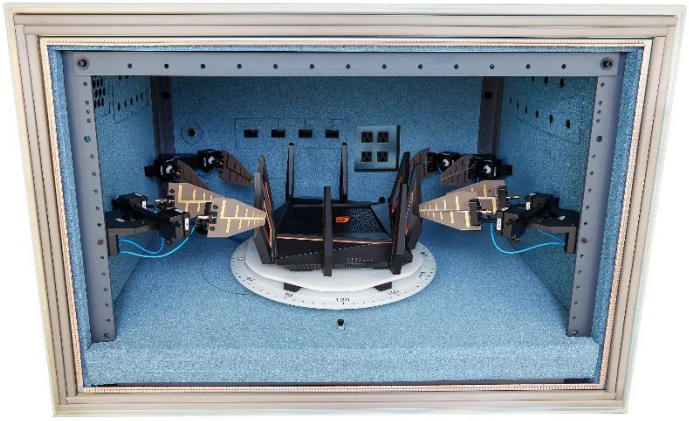
octoBox Small Semi-Anechoic Chamber

Complete RF isolation and stable RF conditions enable repeatable MIMO Over the Air testing. Built-in turn table enables automated measurements vs. device antenna orientation. Built-in test instrumentation enables sophisticated automated testbeds.



octoBox® is a small semi-anechoic chamber offering complete isolation from external interference thanks to its high-rejection filters for data and power connections. With metal surfaces covered by absorber foam, octoBox dampens reflections, making the small space inside model reflections of a typical room. A built-in plastic turn table enables rotation of the device during the test or precisely orients the device antennas to determine nulls and peaks in the antenna propagation pattern.

The octoBox can be turned into a smartBox™ by adding a Pal2456 subsystem, based on one of the most advanced Wi-Fi 6 chipsets on the market supporting all the Wi-Fi protocols, IEEE 802.11a/b/g/n/ac/ax, in the 2.4 and 5 GHz bands. With the access to the chipset's driver and firmware, you can configure the smartBox as a real device or as a test instrument. As a real device, the smartBox runs the standard station and AP (access point) drivers and hence supports the full protocol stack, including PHY, MAC, IP and application layers. As an instrument, the smartBox can emulate virtual stations for testing APs under heavy traffic load from multiple stations, perform expert monitoring and analysis, replay captured traffic or operate as a sniffer.

APPLICATIONS

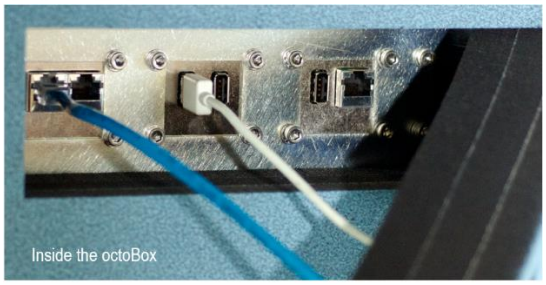
- Wi-Fi (802.11a/b/g/p/n/ac), Bluetooth and cellular (GSM, UMTS, LTE, FDD, TD-LTE and LTE-Advanced) testing
- Throughput vs. range vs. orientation measurements using the octoBox testbed
- Certification testing
- RX dynamic range testing
- Antenna pattern measurement
- Measurements under controlled signal and noise power settings
- Video over Wi-Fi testing with monitor mount for viewing video quality

FEATURES & BENEFITS

- Complete isolation from outside interference
- 20 dB of absorption
- Built-in non-reflective turn table
- Support for 700 MHz to 6 GHz frequency band of operation
- Filtered gig Ethernet, USB, HDMI, fiber optic high speed connections
- Filtered AC and DC power
- Filtered ventilation
- Peel & stick easy-to-replace gasketing to maintain isolation year after year

octoBox is the main building block of the octoBox stackable wireless testbeds. It provides excellent MIMO environment for maximum over the air (OTA) throughput. It supports a variety of filters for high speed data, video and power that enable you to control the devices inside without breaching the isolation of the octoBox.

Filters are key for a small chamber testbed. When testing in a traditional walk-in chamber, all the equipment comprising the testbed is in the same physical space as the DUT, so cabling such as Ethernet, USB, HDMI, etc. can be directly connected. When testing in a small chamber such as the octoBox, these cables have to get to the DUT through the walls of the chamber. How to get these cables through without breaching the isolation of the octoBox? Filters are the answer.



octoBox high speed data filters pass the high speed data signals while rejecting the frequencies of wireless transmission. Rejection band starts at 700 MHz and extends to over 6 GHz. octoBox filters include gigabit Ethernet with POE (power over Ethernet), USB, HDMI, 3.5mm phono and DC power.

octoBox also features a waveguide filter for feeding fiber optic or other non-conductive cables through to the devices inside.

Antenna kits, shelves and other options shown below make octoBox easily adaptable for a variety of test configurations.

BUILT-IN TURN TABLE

octoBox model BOX-38-TT features a built-in turn table. The turntable enables software controllable DUT rotation while you measure throughput, RX sensitivity and other parameters.

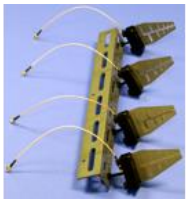
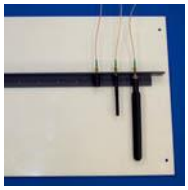
- RPM controllable from 0 to 10 RPM
- Precision angular resolution of 1°
- Supports up to 10 kg DUT
- Flexible DUT mounting system
- Ethernet and USB control interfaces
- Software automates MIMO throughput measurements vs. orientation of the DUT and vs. range

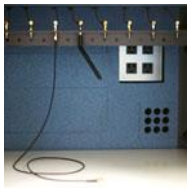
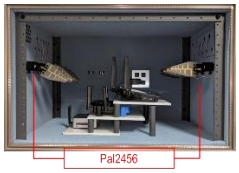
See the octoBox turntable datasheet for details.

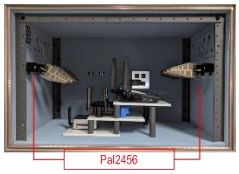
OCTOBOX OPTIONS

The octoBox options are listed below. All options are for the OB-38 model of the octoBox. Click on any image to get more information.

Clickable image	Option #	Description
	**OBS-04** N-connectors	octoBox has 8 RF connectors, SMA by default. Order option OBS-04 to have the octoBox configured with N-type connectors.
	**OBS-05-X2** Gig Ethernet filter	Dual gigabit Ethernet filter shown here supports gigabit Ethernet with POE (Power Over Ethernet)
	**OBS-06** USB filter	USB filter shown here supports USB 2.0.
	**OBS-07** DC filter	DC power filter shown here has 4 isolated circuits, each rated at 10A, 50 VDC. Two mating plugs are supplied with each DC filter. To make your own adapter cable, strip the wires, insert them into the mating plug and secure them with screws. The connector is Phoenix Connector P/N 1754481
	**OBS-08** HDMI filter	HDMI filter shown here supports HDMI 1.4.
	**OBS-09** Gig Ethernet plus USB filter	A combination gigabit Ethernet and USB filter shown here supports gig Ethernet with POE and USB 2.0.

	**OBS-10** 3.5 mm phono jack filter	3-conductor phono jack filter for coupling up to 4 audio connections or IR blaster connections for testing Wi-Fi set top boxes.
	**OBS-14** High Gain antenna array	MIMO antenna array consists of 4 broadband (2 to 6 GHz) high gain antennas mounted on a plastic rail. Plastic mounts are used inside the octoBox to minimize reflections. The antennas are log-periodic, custom designed for the octoBox.
	**OBS-11** Smartphone antenna kit	Smartphone antenna kit consists of multi-band cellular, dual-band Wi-Fi and multi-band GPS antennas mounted on a plastic rail to minimize reflections. The rail is perforated, allowing you to easily position the antennas for optimum over-the-air coupling. Multiband cellular antenna is Pulse-Larsen SPDA24700/2700 or equivalent. Dual-band Wi-Fi antenna is Pasternack PE51083 or equivalent. Multi-band GPS antenna is Maxtena M1516HCT-SMA or equivalent.
	**OBS-13** Wi-Fi MIMO antenna kit	Wi-Fi MIMO antenna kit consists of 4 dual-band (2.4 and 5 GHz) Wi-Fi antennas mounted on a plastic bracket and rail. Plastic mounts are used inside the octoBox to minimize reflections. The antennas are Pasternak PE51083 or equivalent. The plastic bracket is perforated, allowing you to adjust the position and spacing of the antennas as needed for optimum over-the-air coupling.
	**OBS-16** High current 4-port USB hub	High current USB hub is Vaunix LPH-204B hub mounted onto a plastic bracket that mounts onto a corner octoBox bracket for a tidy test setup. This hub guarantees at least 1A at 5VDC on each of its 4 USB 2.0 ports.

	**OBS-17** Rail with 8 SMA barrel connectors	Rail with 8 SMA barrel connectors offers convenient access to the 8 octoBox RF ports. Each SMA connector is cabled to one of the octoBox RF ports. These connectors support connections to antennas or coaxial cables.
	**OBS-19** Locking mechanism	This locking mechanism allows you to lock the octoBox door in 2 positions: with the door ajar or with the door fully closed and latched. Leaving the door ajar does not compress the gasket, thereby extending the gasket's useful life. You can use any lock that fits. The lock is not supplied.
	**OBS-25** Waveguide for fiber optic connections	Waveguide filter shown here supports non-metallic connections, such as fiber optic cabling. You can feed non-metallic cables through this waveguide to make connections to the devices inside the octoBox. Up to 4 SC type fiber optic connectors can fit through the waveguide.
	OBS-27 Replacement gasket kit	The octoBox door gasketing is peel-and-stick, making it easy to replace in the field. Gasketing loses its elasticity with normal use. When the gasket does not return to its original rounded shape after the door is closed and opened, the door seal may be non-optimum and octoBox isolation may be degraded. Gasketing should be replaced when it loses elasticity. For model OB-38 octoBox please order the OBS-27-OB38 gasket replacement kit. Follow the gasket replacement procedure to replace the gasket.
	**OBS-30** Filter installation kit	The octoBox filters can be installed in the field using the filter installation kit, OBS-30. Please follow the filter installation procedure and make sure the seal between the filter and the octoBox is uniform and firm.
	**OBS-32** Multi-DUT shelf	A variety of multi-DUT shelves are available and can be customized for a large number of devices to enable scalable real-life testing with real devices.
	**OBS-50** Pal-6	Pal-6 is essentially the Wi-Fi 6 subsystem based on one of the most advanced Wi-Fi 6 chipsets on the market. With the access to the chipset's driver and firmware, you can configure the smartBox as a real device or as a powerful test instrument.

	**OBS-51** BT module for Pal-6	Bluetooth module for theOBS-50 Pal-6 subsystem; field upgradeable

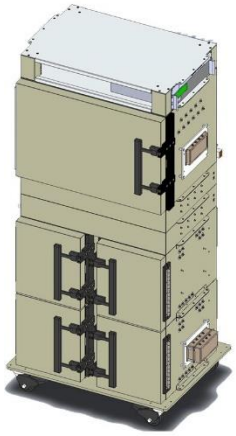
SPECIFICATIONS

Feature	Specification
AC power entry module	IEC-320 C14 inlet connector 120/240VAC 50/60Hz with 6A 5x20mm fuse
Cooling	80mm square axial fan; filters over inlet and outlet for isolation
Filtered data connections	Gig Ethernet (with PoE), USB, HDMI or DC power ports
RF ports	20 RF barrel SMA connectors, 1 barrel F-connector, 1 trigger SMA connector
Waveguide	For fiber optic or other non-metallic feeds
Isolation	>90 dB. No detection of Wi-Fi traffic up to 6 GHz at close range; annual maintenance is required to maintain complete isolation.
Absorption	>20 dB from 1.3 to 40 GHz; >15 dB down to 700 MHz
Operating temperature	0 to 40 degrees C
Operating humidity	5% to 95% non-condensing @ 40 degrees C

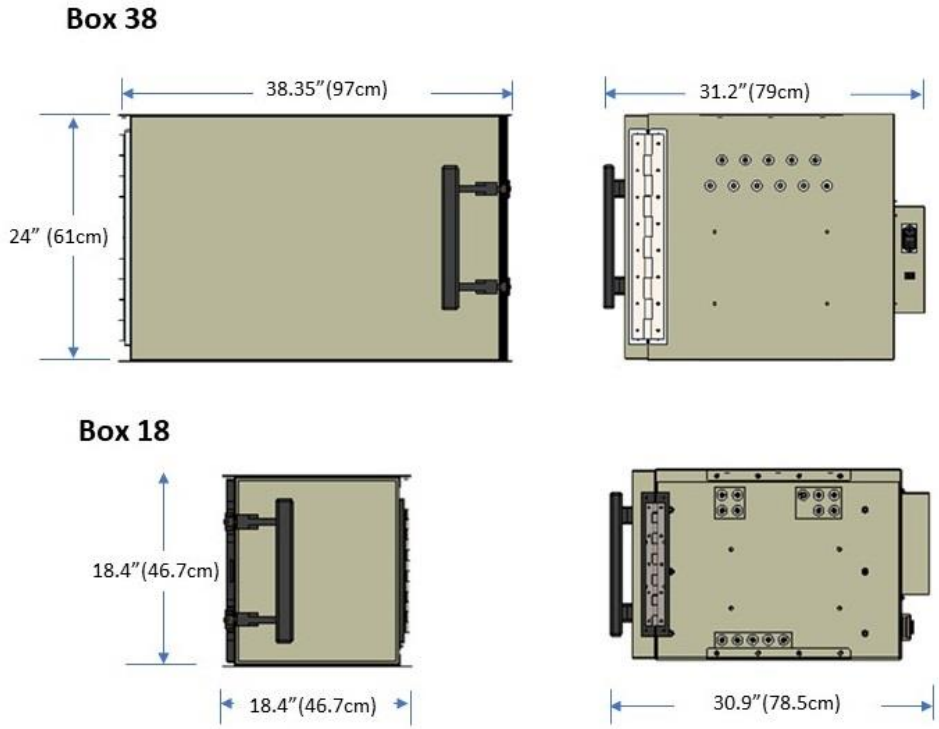
Turn table specifications

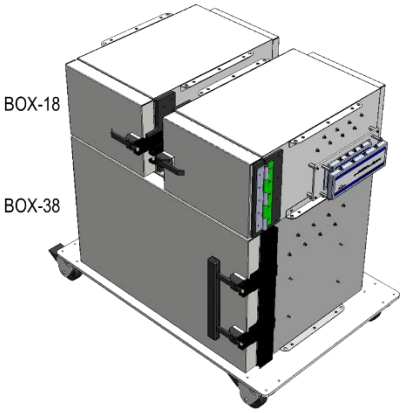
Parameter	Specification
Angular positioning accuracy	+/- 1°
Rotational speed	0 to 6 rpm
Payload weight	10 kg (22 LBS) max
Command line or API controls	✓ Set angular position (move N degrees clockwise or counter-clockwise) ✓ Set rotation velocity ✓ Set ‘home’ position ✓ Go to ‘home’ position

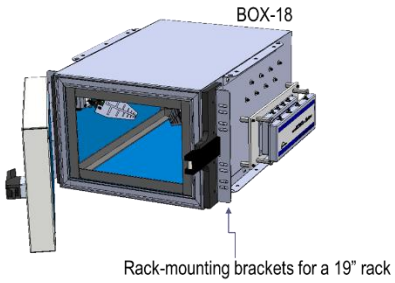
octoBox is available in 2 models: BOX-18, and BOX-38.

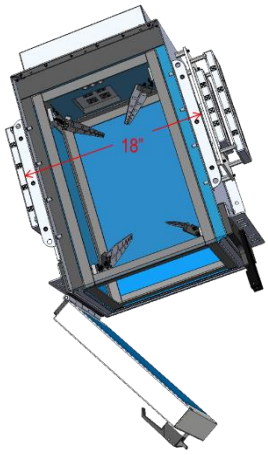


DIMENSIONS









DIMENSIONS

BOX-18		
	American	Metric
Outside:	18.4"H x 18.4"W x 30.9"D	46.7cm H x 46.7cm W x 78.5cm D
Inside:	16"H x 13.6"W x 21.3"D	40.6cm H x 34.5cm W x 54.1cm D
Inside (SBOX):	12"H x 13.6"W x 21.3"D	30.5cm H x 34.5cm W x 54.1cm D
Weight:	89 LBS	40 kg
Weight (SBOX):	93 LBS	42 kg

BOX-38		
	American	Metric
Outside	24" H x 38.35"W x 31.2"D	61cm H x 97cm W x 79cm D
Inside	19.35"H x 31.5"W x 21. 5"D	49cm H x 80cm W x 55cm D
Inside (SBOX)	17"H x 31.5"W x 21. 5"D	43.2cm H x 80cm W x 55cm D
Weight	172 LBS	78 kg
Weight (SBOX):	181 LBS	82 kg
Weight TT	187 LBS	85 kg

SUMMARY OF FEATURES

Model	AC Power	Fan	Vents	Turntable	Filters (default)	Filters (max)	HG Antennas
BOX-18	Y	Y	Y		2	4	4
SBOX-18	Y	Y	Y		4	6	8
BOX-38	Y	Y	Y		4	8	4
SBOX-38	Y	Y	Y		6	8	8
BOX-38-TT	Y	Y	Y	Y	4	8	4
SBOX-38-TT	Y	Y	Y	Y	6	8	8

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