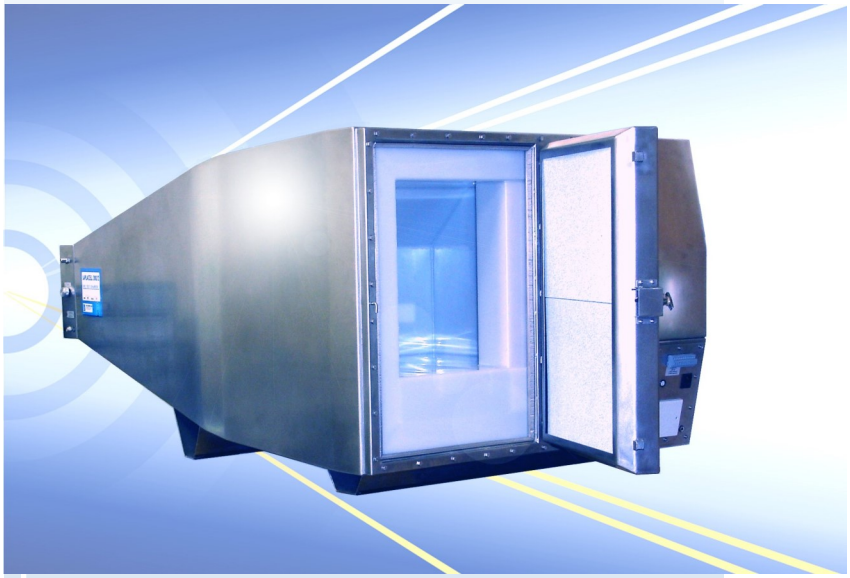
EMC Test cells

Lc300
Lc600

Compact and Calibrated test cells for emissions and immunity testing

- Fully calibrated and delivered ready-to-use.
- Avoid the hassles of OATS testing.
- Compact - ideal if space is limited.
- Efficient - Commercial test levels achieved with low RF power input requirements.
- Frequency range from 30MHz up to 6GHz



The LaplaCell is a unique concept featuring a balanced sepum design, proven to deliver better uniformity of field than any other GTEM or similar compact cell. Two models are available, covering EUT sizes up to 60cm cube, and frequencies up to 6GHz. The cells are fitted internally-with a field strength sensor, so no need to provide this as a separate item. Each cell is individually calibrated and shipped fully checked and tested so that when they arrive, simply connect to the ancillary equipment, switch on and go. When used with the RF3000 or RF6000 system controller for immunity testing, operation is entirely automatic.

Photo shows Lc300

Emissions Avoid all the difficulties of background signals, test site calibration, poor weather conditions and lack of space by using the LaplaCell.

Immunity Efficient design means that 20V/m can be delivered with just 25W RF input power. If used in conjunction with the Laplace signal generators and software, testing is fully automated

Compliance These cells provide the capability to test to IEC61000-4-3, domestic, commercial, medical and industrial levels. For emissions measurements these cells provide excellent correlation against OATS results for non– cabled products

Convenience The LaplaCell occupies just one small corner in the lab, yet provides a simple and immediate resource for EMC testing as and when you need it. Testing prototypes or production samples avoids potentially costly and time consuming rectification work at a later date.

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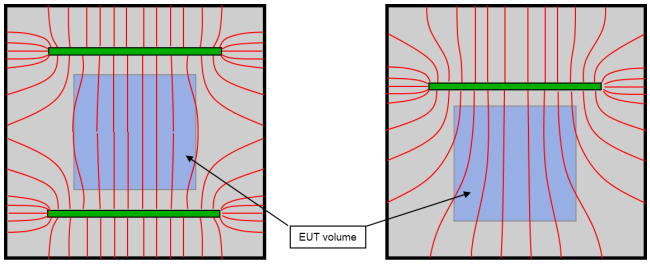
Emissions….problem?	Solution	Immunity…. Problem?	Solution
Strong ambient signals	The cells provide an ambient-free environment due to total screening	Expensive ancillaries	The LaplaCell includes an internal field sensor as standard
Test site distortion	The cells are fully correlated and traceable to a 3m OATS	Power amplifier require-ments	Very efficient design so that power amplifier requirements are minimal
Lack of ground plane and height scanning	Not required!	Leakage of high power RF	Fully screened with filtered I/O connections
Lack of space	These cells are very compact. Just fit into an odd corner of the lab.	Field uniformity	LaplaCell concept inherently pro-duces better uniformity than GTEM.

APPLICATION

IMMUNITY
IEC61000-4-3 sets the requirements for RF immunity testing. It specifies fields of up to 10V/m over the range 80MHz to 6GHz and provides minimum performance requirements. The LaplaCell range fully meets these requirements and, when used in conjunction with the Laplace synthesiser and power amplifier, provides a complete integrated solution.

EMISSIONS
European, US and international EMC/EMI standards all require the use of an OATS (Open Area Test Site). This is a demanding requirement in terms of space, resources, calibration and exper-tise. The LaplaCell range provides an ideal solution, delivering equivalent OATS performance without all the hassle.



LaplaCell fields GTEM fields

Uniformity: The balanced septum design ensures good uniformity, even when compared with the 'industry-standard' GTEM type. The above views make this obvious.

Impedance: The aim of a test cell is to emulate an OATS test. Free space impedance on an OATS is 377ohm. Conventional test cells (eg GTEM) are 50ohm systems. The unique design of the LaplaCell, matches the incoming 50ohm impedance to around 200ohm inside the cell, a much closer match to the free space impedance.

Calibration: The calibration of LaplaCells is in accordance with IE-C61000-4-20. Our standard technique measures the performance every 2MHz or 4MHz over the full range for each individual cell, and the resultant data is supplied on disk.

Loading an Lc600

SPECIFICATION SUMMARY

	Lc300	Lc600
EUT size (Uniform volume)	30 x 30x 30cm	60x 60 x 60cm
EUT volume	35 x 38 x 45	78 x 82 x 87
Frequency range	30MHz to 3GHz (6GHz with Lc-6 option)	
Range switching	2 bands switched (local and remote control) Automatic with Laplace synthesisers.	
Screening	>60dB	>60dB
Max RF power input	40W	40W
Power for 10V/m	10W	20W
Field @ max RF input	30V/m	20V/m
RF input/output	N type/50ohm. VSWR better than 2:1	
Power requirements	15V dc Power unit supplied with cell. 110– 240V 50/60Hz	
Field sensor for im-munity testing	Included with cell. calibrated against volumetric field uni-formity. (0-3v dc out). Hardcopy and data file (csv format) included.	
Emissions calibration	Antenna Factor correlated to 3m OATS. Hardcopy and data file included	
Door interlock	Yes	Yes
Filtered I/O feeds for EUT (these are included as standard)	Mains qty 12 single lines (240v,5A) Ethernet	Mains qty 12 single lines (240v,5A) Ethernet Fibre optic cable duct.
Options	• 6GHz calibration for emissions and immunity (standard is 3GHz) • Camera and lighting • Additional I/O feeds (eg, USB, RS232, RS485, Co-ax, 3 phase power...etc • Forced air cooling for EUT volume	
Construction	Stainless steel, welded construction, with Polypropylene EUT chamber	
Mounting	Bench top	Floor, fitted with castors
Total weight	200kg	410kg
EUT weight (max)	20kg	100kg
Overall size L x H x W	2.3 x 1.0 x 0.87 (m)	3.2 x 1.6 x 1.3 (m)

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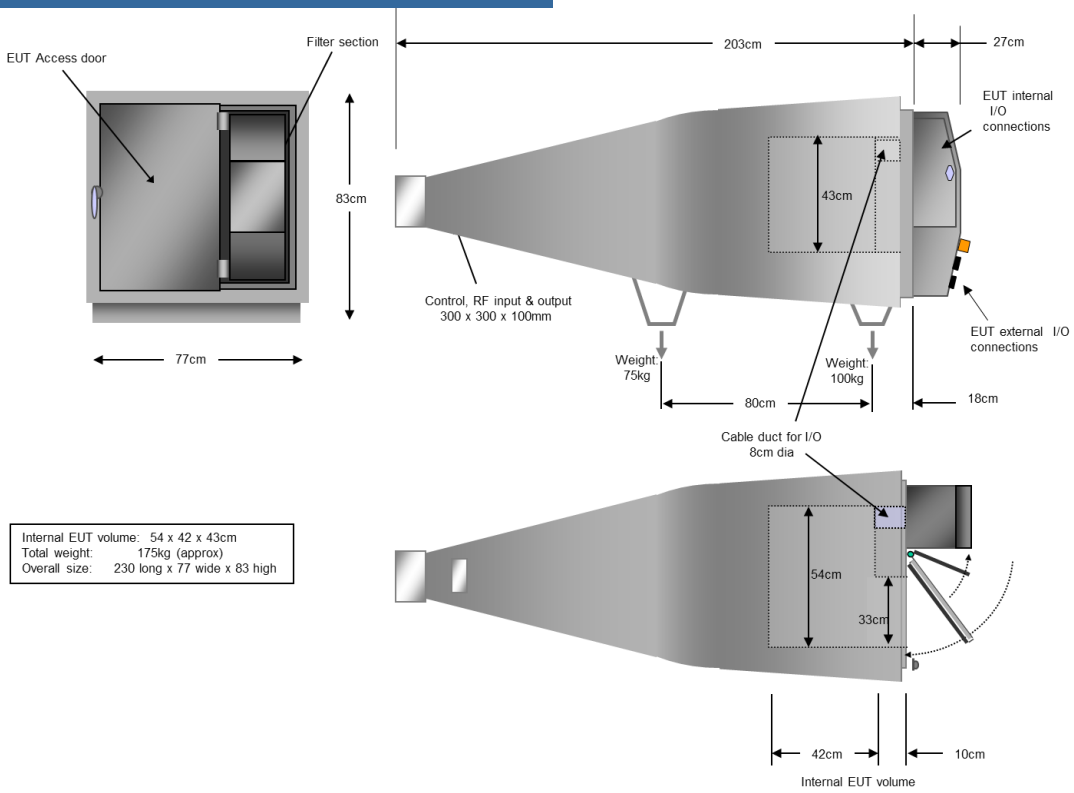
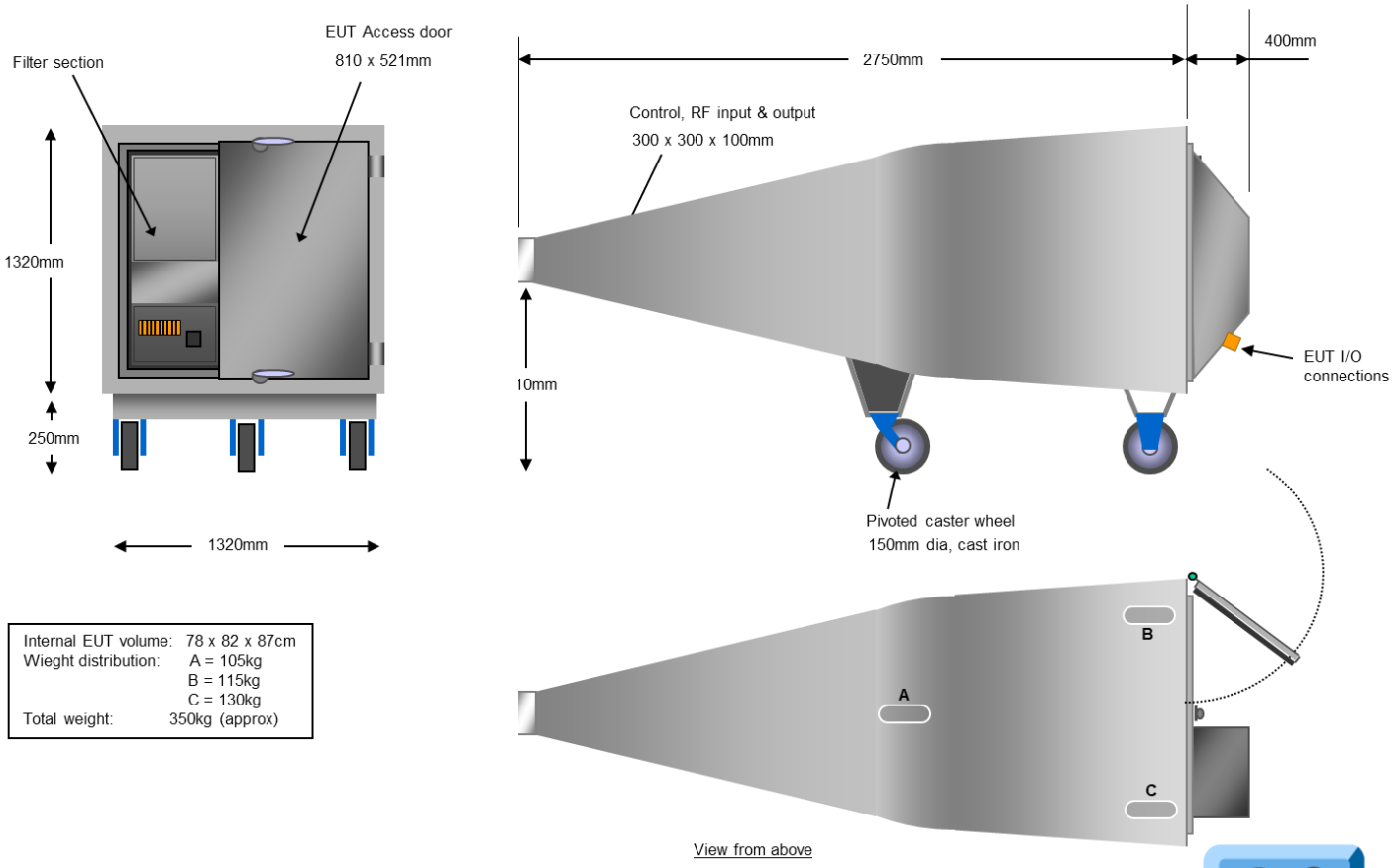
Lc300 General arrangement



Internal EUT volume:	54 x 42 x 43cm
Total weight:	175kg (approx)
Overall size:	230 long x 77 wide x 83 high

Lc600 General arrangement



Internal EUT volume:	78 x 82 x 87cm
Wieght distribution:	A = 105kg
	B = 115kg
	C = 130kg
Total weight:	350kg (approx)

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The options

Order Code	Item	Note
Lc-6	6GHz calibration	Standard cells are calibrated for emissions and immunity to 3GHz. This option increases the calibrated range to 6GHz for both.
Lc-cam	Camera and lighting	High definition colour camera with infra-red lighting. Full PTZ control and power via POE link and filtered ethernet feed.
Lc-feeds (xyz)	Additional EUT filtered feeds	(xyz) specifies the feed to be fitted. Each feed has an internal bulkhead connector for connection to the EUT and an external bulkhead connector for connection to the associated equipment (AE). See photographs below. Each connector should be specified in any order. Eg, for USB, specify type A or type B for internal ands external connector.
Lc-fan	Cooling system for EUT	EUT volume is ventilated with external mains powered fan, installed adjacent to the filter compartment. Will tolerate up to 200W dissipation by the EUT.
Lc-duct	Screened duct for air/liquid supply to EUT	This duct clips to the side of the filter compartment and provides access for non-conducting services and externally filtered cables. Internal size: 70 x 20mm

Typical filter compartment arrangement specified by end user

This requirement for an Lc300 included…

- Mains (UK)
- Qty 12 single lines (7A/240v)
- USB
- Ethernet (RJ45)
- 5 pin Din
- 8 pin Din

Available from:

LAPLACE INSTRUMENTS LTD
Tudor House, Grammar School Road,
North Walsham, Norfolk. NR28 9JH UK
Tel: +44 (0)16 92 40 20 70
Fax: +44 (0)16 92 40 49 10
Web site: www.laplace.co.uk
E-mail: tech@laplace.co.uk