IVIS® Lumina S5™

PRODUCT NOTE

Pre-clinical *In Vivo* Imaging

Key Features:

- High-throughput (five mouse) optical imaging
- Supports mouse and rat imaging
- Compute Pure Spectrum (CPS) spectral unmixing
- Full fluorescence tunability through the NIR spectrum
- Unique accessories to streamline workflow, data acquisition and analysis

High-Throughput 2D Optical Imaging in a Benchtop Format

The IVIS Lumina S5 combines best in class high throughput 2D in vivo bioluminescence and fluorescence imaging into a compact system that fits easily on a benchtop. With an expanded five mouse field of view for 2D optical imaging plus our unique line of accessories to accelerate setup and labeling, it has never been easier or faster to get robust data – and answers – on anatomical and molecular aspects of disease. The IVIS Lumina S5 also includes state of the art spectral unmixing features for sensitive multispectral imaging to monitor multiple biological events in the same animal.

PerkinElmer®
For the Better

Improve Productivity with High-throughput Optical

The IVIS Lumina S5 integrates a one inch CCD camera into our benchtop Lumina instrument providing a high-throughput 20 x 20 cm FOV sufficient for imaging five animals at a time with bioluminescence and fluorescence (Figure 1).

As with other IVIS Lumina systems, the S5 is equipped with 26 filters tunable to image fluorescent sources that emit from green to near-infrared. Novel illumination technology effectively increases fluorescent transmission through 900 nm. Moreover, the IVIS Lumina S5 incorporates PerkinElmer's patented Compute Pure Spectrum (CPS) algorithm for spectral library generation software tools to ensure accurate autofluorescence removal, unmixing and fluorophore quantitation.

Standard on all IVIS instruments, absolute calibration affords consistent and reproducible results independent of magnification, filter selection, or acquisition settings from one instrument to any IVIS instrument within an organization or around the world.

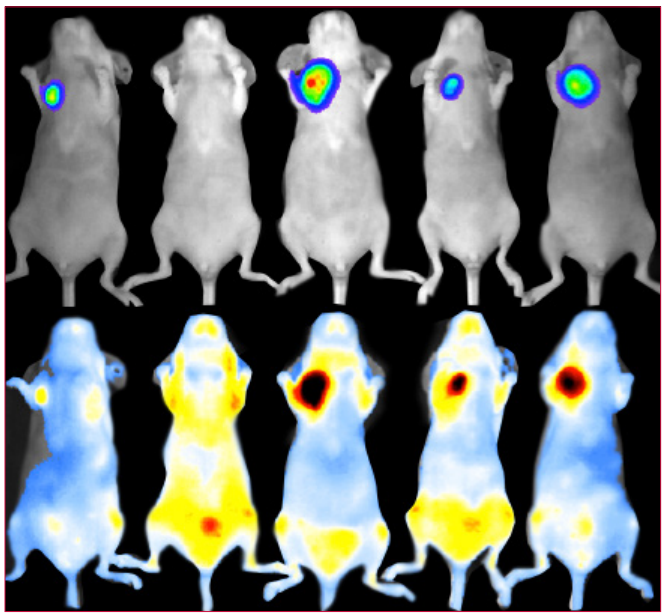


Figure 1. Bioware® Brite 4T1-Red-Fluc orthotopic breast tumor imaged on IVIS Lumina S5: (top) bioluminescent signal acquisition, (bottom) fluorescence detection of IntegriSense™ 750 accumulation at tumor site.

IVIS Lumina S5 – A High-Throughput Solution

Not only does the IVIS Lumina S5 offer higher throughput imaging via the one inch CCD, but it is also compatible with a set of smart animal handling accessories (purchased separately) designed with throughput and safety in mind.

Smart loading trays (Figure 2) will allow users to pose animals on the benchtop before placing the tray into the IVIS. Using fiducials built into the tray, the software can automatically recognize and draw ROIs providing automated animal identification.

Animal trays are designed with ease of use and user safety in mind. No nose cones are required thus minimizing cleanup. All tray parts have been tested and are resistant to repeated use with common laboratory disinfectants. Furthermore when used with the next generation anesthesia unit (RAS-4), strong vacuum capabilities minimize excess gas from escaping thus preventing exposure of users to anesthetic gas.

Finally, Living Image® software brings IVIS technology to life by facilitating an intuitive workflow for in vivo optical analysis and data organization. The software will support input of unique animal IDs when using chip technologies and readers from third party vendors thus streamlining labeling, setup and subsequent export of data for analysis.

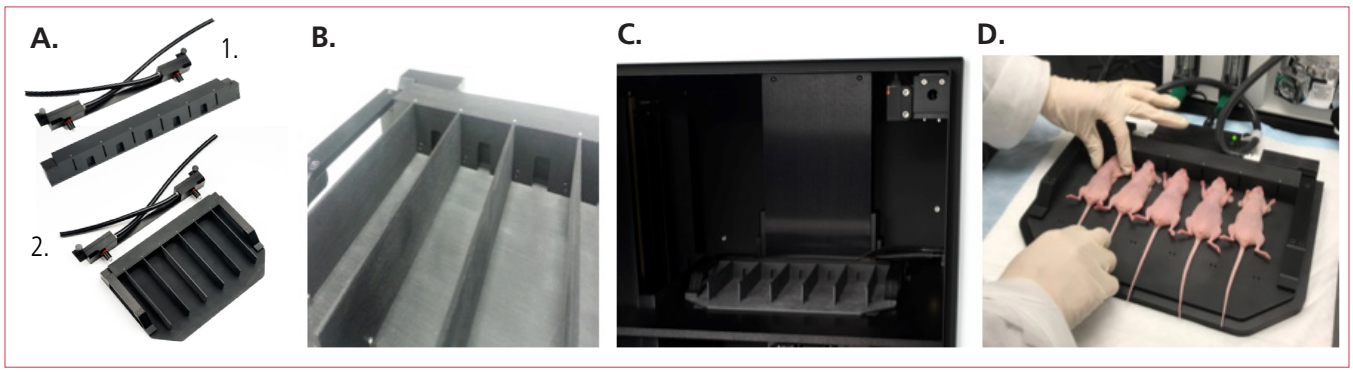


Figure 2. PerkinElmer's new mouse handling accessories were designed with safety, ease of use and speed of acquisition in mind. A quick connect anesthesia port and 5 mouse/2 rat manifold come standard with the IVIS Lumina S5 (a1). The high throughput five mouse tray (purchased separately) connects seamlessly to the supplied quick connect port (a2). The ergonomic tray design does not require nose cones; new baffles securely isolate signal for data integrity; and fiducials present in the tray allow automatic subject recognition during image acquisition (b). The tray can connect either inside the IVIS (c) or it can be used for prepositioning animals (d) on the benchtop when used in conjunction with the benchtop posing station (sold separately).

Inside the IVIS Lumina S5

- Back-thinned, back-illuminated 2.7 x 2.7 cm grade 1 CCD provides high quantum efficiency over the entire visible to near-infrared spectrum
- Light-tight imaging chamber
- 19 excitation filters and eight emission filters support CPS spectral unmixing
- LED lamps for photographic images
- Heated stage to maintain optimum body temperature
- Motor controlled stage, filter wheels, lens position, and f-stop

Optional Accessories

- Animal tray to accelerate setup, labeling and analysis with benchtop posing accessory
- Syringe injection system, integrated with Living Image, allows the user to acquire real time functional responses to compounds
- Animal ID software support
- MVI-2™ for 360 degree surface mapping

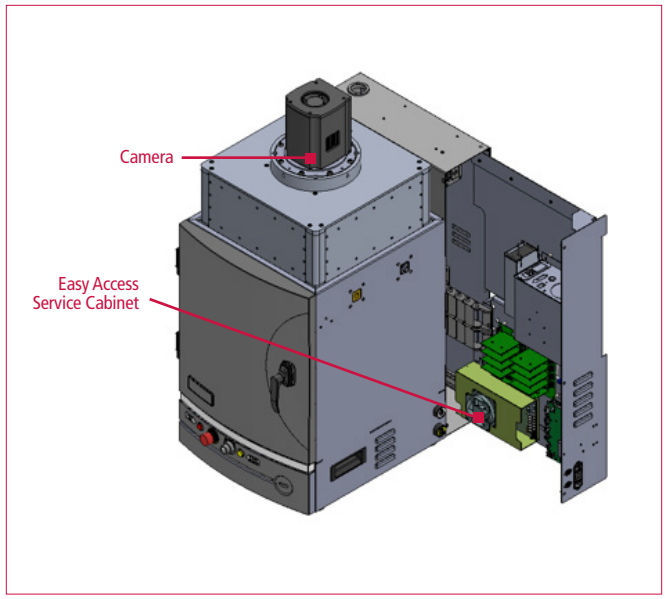


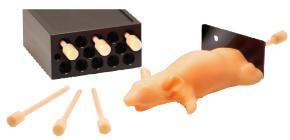
Figure 3. Diagram of external features of IVIS Lumina S5.

IVIS Lumina Platform System Accessories- Expand your IVIS Lumina Instrument with features when you need them!

Smart High Throughput Imaging Kit
CLS148874

MVI-2 Module for 360 Degree Surface Mapping
CLS143807

RAS-4 Rodent Anesthesia System
CLS146737



XPM-2 Phantom Mouse for Bioluminescent Imaging
Cat No. 118993

XFM-2 Phantom Mouse for Fluorescent Imaging
Cat No. 133803

XRM-5 X-RAY Phantom Mouse
Cat No. 133793

IVIS Syringe Injection Sytem
Cat No. 124633

XWS-260 Workbench
Cat No. 119207

Table 1. IVIS Lumina platform comparison.

Features	Lumina LT	Lumina III	Lumina XRMS	Lumina S5	Lumina X5
Capacity	3 mice	3 mice	3 mice	5 mice	5 mice
1.3 x 1.3 cm CCD -90 °C	√	√	√		
2.7 x 2.7 cm CCD -90 °C				√	√
2D Bioluminescence	√	√	√	√	√
2D Epifluorescence Imaging	√	√	√	√	√
Extended Range 150 W Tungsten EKE	√	√	√	√	√
Narrow Bandpass Excitation Filters Supporting CPS Spectral Unmixing		√	√	√	√
Standard X-ray Package			√		
Microfocus X-ray Source – High-Resolution X-ray					√
Animal ID Support (optional)				√	√
Mouse Tray with Automatic Subject Recognition (optional)				√	√

Table 2. IVIS Lumina S5 Specifications.

Imaging System Components:	Specifications
Camera Sensor	Back-thinned, back-illuminated, cooled Grade 1 CCD, frame transfer
CCD Size	2.7 x 2.7 cm
CCD Operating Temperature	-90 °C
Imaging Pixels	2048 x 2048
Quantum Efficiency	> 85% at 500-700 nm, > 30% at 400-900 nm
Pixel Size	13.5 microns
Optical Field of View (FOV) cm	10 x 10, 15 x 15, 20 x 20 cm
Lens	f/1 – f/10
Minimum Image Pixel Resolution	50 microns
Minimum Read Noise (e-) (Typical)	< 3.8 electrons for bin 1-16
Dark Current (Typical)	< 50 electrons/s/cm
Illumination Source	Extended NIR Range 150 W Tungsten EKE
Excitation Fluorescence Filters	19
Emission Fluorescence Filters	7
Imaging System Space Requirement	48 x 69 x 122 cm (W x D x H)
Imaging Chamber Interior Dimension	37 x 37 x 43 cm (W x D x H)
Power Requirements	3.0A max @ 100-127 Vac, 50-60 Hz (± 10%) 1.5A max @ 200-240 Vac, 50-60 Hz (± 10%)
Stage Temperature	20-40 °C
Computer (Minimum specifications)	Windows® 7, 4 GB RAM, nVidia Quadro 600, 250 GB and 1 TB HD, 24" widescreen LED Monitor

For more information, please visit our website at www.perkinelmer.com/*invivo*

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