

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION

SPECTRAL INSTRUMENTS IMAGING, LLC,	§	
	§	
	§	
<i>Plaintiff,</i>	§	Civil Action No. 4:22-cv-00043
	§	
v.	§	JURY TRIAL DEMANDED
	§	
SCINTICA, INC.	§	
	§	
<i>Defendant.</i>	§	

**PLAINTIFF’S DISCLOSURE OF ASSERTED CLAIMS AND PRELIMINARY
INFRINGEMENT CONTENTIONS AND DOCUMENT PRODUCTION**

Pursuant to Local Patent Rules 3-1 and 3-2, Plaintiff Spectral Instruments Imaging LLC (“Spectral”) makes the following disclosure of Asserted Claims and Preliminary Infringement Contentions, and provides herewith the requisite document production based on the information and documents currently available to Spectral. In making the following disclosure and production, Spectral does not waive any claim, contention, or argument regarding the factual and/or legal details of the following preliminary infringement contentions. Moreover, the following disclosure should not be construed as Spectral’s construction or interpretation of any asserted claim, claim limitation or claim term.

These contentions are based on Spectral’s research and investigation to date and materials in the public domain. Spectral reserves the right to modify, amend, supplement, or otherwise alter these contentions based on receipt of further information that will be furnished by, produced by, or otherwise made available by Defendant Scintica Inc. (“Scintica”) or third-parties through

discovery, during claim construction, through invalidity and prior art assertions, and/or any additional information provided by Scintica. For example, but without limitation, because discovery has not yet commenced, Spectral has not obtained a physical copy of the Accused Products offered for sale by Scintica. Accordingly, certain details of the Accused Products' structure and operation are not yet known to Spectral and Spectral reserves the right to supplement and/or amend its contentions.

Further, the claim charts attached herewith are not designed to represent the entire scope of infringement but are merely to illustrate Spectral's current understanding of the manner in which the Accused Products infringe the identified claims of Spectral's patent. Additionally, the identification of claim elements in the attached claim charts is neither intended to be a modification of the claim language nor an admission that the claims should be construed by such identification. Rather, the identification of claim elements is provided for purposes of convenience and clarity.

DISCLOSURE OF ASSERTED CLAIMS & INFRINGEMENT CONTENTIONS

I. Disclosure Under Local Patent Rule 3-1(a)

Spectral asserts that Scintica infringes at least claims 1-7, 9, 14-18, 20, and 22-25 (collectively, the "Asserted Claims") of U.S. Patent No. 8,901,516 (the "'516 Patent" or "Patent-in-Suit"). Spectral alleges that Scintica infringes each of the Asserted Claims of the Patent-in-Suit as alleged in these Disclosures, the accompanying chart and in the Complaint.

II. Disclosure Under Local Patent Rule 3-1(b)

Spectral alleges that the Vilber Newton 7.0 family of products and other similar products (the "Accused Products") infringe each of the Asserted Claims of the '516 Patent. On information and belief, the functionality of each model within the Vilber product line (including, BT100,

BT500, FT100, FT500, and BIO for Plant Imaging) utilizes the same elements and functionality identified in the attached claim chart which illustrates the presence of each infringing element in the Vilber Newton 7.0 Spectral believes and contends that there may be other infringing products both within and outside of the Vilber product line that infringe the '516 Patent, and accordingly, Spectral reserves the right to amend this disclosure as additional information is provided during discovery.

III. Disclosure of Under Local Patent Rule 3-1(c)

A chart identifying examples of where each element of each Asserted Claims is found within the Accused Products is attached as Attachment 1. Spectral reserves the right to supplement its infringement contentions based upon additional information obtained through discovery and other proceedings in this litigation, such as claim construction and Defendant's invalidity and prior art assertions.

IV. Disclosure Under Local Patent Rule 3-1(d)

Spectral asserts that each element of each of the Asserted Claims is literally present in the Accused Products. In the alternative, Spectral contends that any claim element not literally present in the Accused Products or methods of using the Accused Products is found in those products or methods under the doctrine of equivalents. Pursuant to Local Patent Rules 3-6 and 3-7, Spectral reserves the right to supplement and/or amend its infringement contentions based on the Court's rulings in this matter, including claim construction, and based on the information, documents and testimony provided during fact and expert discovery.

V. Disclosure Under Local Patent Rule 3-1(e)

Discovery in this matter has not yet begun and Spectral does not have the benefit of knowing how the Accused Products are made (and by whom), how the Accused Products are

marketed and sold (and by whom), and the full extent of Scintica's conduct with regard to the Accused Products either by itself or in concert with third-party Vilber. Accordingly, Spectral has no disclosure to make under Local Patent Rule 3-1(e) at this time, but reserves the right to augment and/or supplement this disclosure as new and additional information is uncovered during the course of discovery.

VI. Disclosure Under Local Patent Rule 3-1(f)

Each of the Asserted Claims of the '516 Patent are each entitled to a priority date of September 1, 2010. Should any Asserted Claim not be entitled to a priority date of September 1, 2010, the priority of that claim is entitled, in the alternative, to a priority date of August 31, 2011. Spectral reserves its rights to amend the priority date of the '516 Patent.

VII. Disclosure Under Local Patent Rule 3-1(g)

Pursuant to the priority date of September 1, 2010, pre-AIA provisions of 35 U.S.C. §102 apply.

VIII. Disclosure Under Local Patent Rule 3-1(h)

Spectral identifies the following Spectral products practices the claimed invention set forth in the Asserted Claims of the '516 Patent: LAGO, LAGO X, AMI HT, AMI HTX, KINO.

DOCUMENT PRODUCTION ACCOMPANYING DISCLOSURE

I. Disclosure Under P.R. 3-2(a)(1)

Concurrently herewith, Spectral is producing copies of discoverable non-privileged documents in its possession, custody, or control sufficient to show discussions, disclosures, or manners of providing to third-parties sales, offers for sale, or public uses of the claimed invention prior to the application date for the patent-in-suit, including SPECTRAL_0000989-991.

II. Disclosure Under P.R. 3-2(a)(2)

Concurrently herewith, Spectral is producing copies of non-privileged documents in its possession, custody, or control relating to the conception, reduction to practice, design, and development of the invention(s) described in the Asserted Claims, including: SPECTRAL_0000001-21; 992-993.

III. Disclosure Under P.R. 3-2(a)(3)

Concurrently herewith, Spectral is producing copies of the certified file history of the Patent-in-Suit at SPECTRAL_0000022-987.

IV. Disclosure Under P.R. 3-2(a)(4)

Spectral is not presently aware of any non-privileged documents in its possession, custody, or control relating to this category of documents.

V. Disclosure Under Local Patent Rule 3-2(a)(5)

Concurrently herewith, Spectral is producing copies of the assignment history of the Patent-in-Suit at SPECTRAL_0000988.

Respectfully submitted,

July 11, 2022

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ATTORNEYS FOR PLAINTIFF INSTRUMENTS
IMAGING, LLC

CERTIFICATE OF SERVICE

This is to certify that all counsel of record who are deemed to have consented to electronic service are being served with a copy of the foregoing document via the Court's CM/EMF system on the 11th day of July, 2022.

By: /s/ Dawn M. Jenkins
Dawn M. Jenkins

ATTACHMENT 1

INITIAL DISCLOSURE OF ASSERTED CLAIMS & PRELIMINARY INFRINGEMENT CONTENTIONS

Pursuant to Patent Local Rules 3-1 and 3-2, Plaintiff Spectral Instruments Imaging, LLC (“Plaintiff” or “Spectral”) sets forth below its initial disclosure of the asserted claims of U.S. Patent No. 8,901,516 (the “’516 Patent”) and identification of the Accused Instrumentality. For purposes of this disclosure, Spectral has set forth below its contentions with regard to Defendant Scintica, Inc.’s (“Scintica”) infringing product known as the Vilber Newton 7.0 (“Newton”)¹. Discovery in this case, however, has not yet begun and Spectral reserves the right to supplement this disclosure and its infringement contentions after further discovery from Scintica, or other relevant third parties, including with documents, testing results, documentation, and photographs, scientific and mathematical modeling process and their results, and other discovery regarding Scintica’s Newton and other products that infringe the ’516 Patent (collectively, the “Accused Products”). Additionally, Spectral has not yet had the ability nor has it been given the opportunity to physically examine the Newton or other Accused Products, in order to conduct a detailed review of its arrangement, apparatus, structure and/or function. Accordingly, Spectral also reserves the right to assert additional claims of the ’516 Patent, accuse additional products of being infringed and/or identify alternative literal and/or equivalent infringing elements that meet the claim limitations of the ’516 Patent.²

¹ The Vilber Newton 7.0 system, sold and offered for sale in the United States by Scintica Inc., has five models (BT100, BT500, FT100, FT500, BIO). On information and belief, all five systems operate in substantially the same way. The differences between the systems are minimal, for example, in terms of specimen capacity, number of filters, and fixed- vs. moveable-camera and specimen stage. See Scintica website, accessible at <https://www.scintica.com/products/vilber-imaging/vilber-newton-7/>.

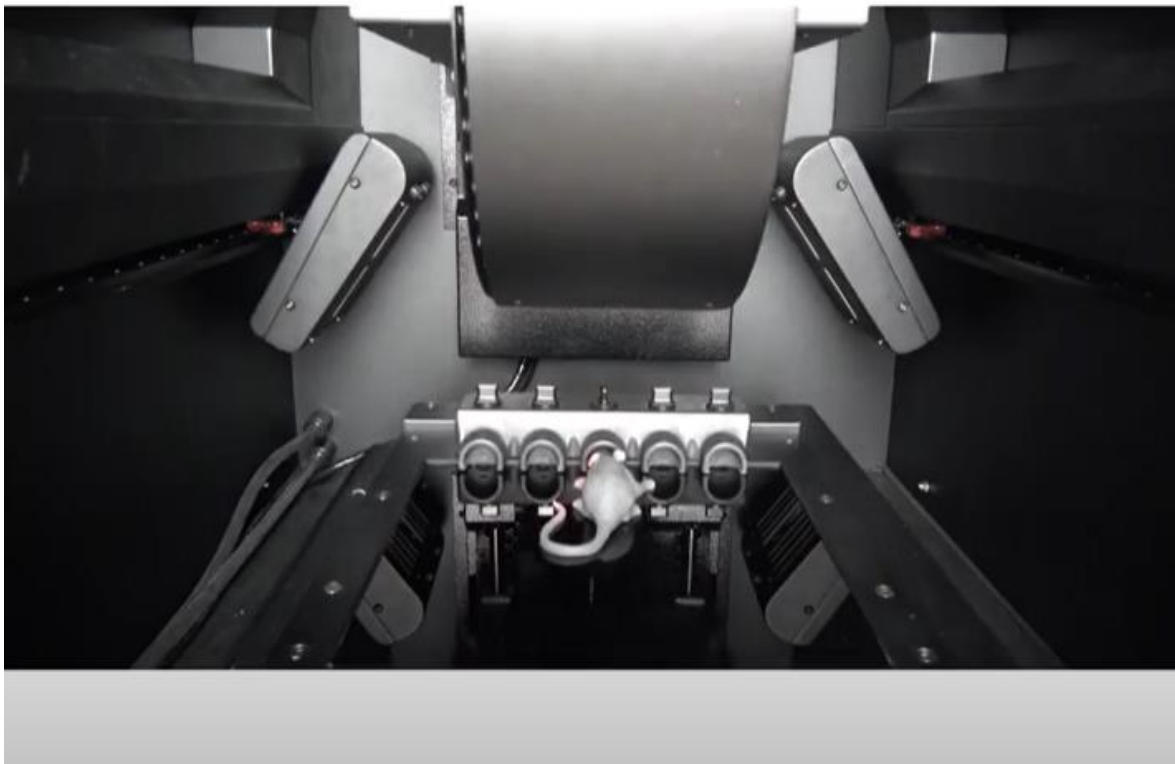
²The portions of the evidence of the Accused Products cited below are not intended to be exhaustive but are exemplary in nature, and Plaintiff reserves the right to rely on additional citations or sources of evidence that may also be applicable, or that may become applicable in light of claim construction and/or information obtained during discovery as the case progresses.

ATTACHMENT 1

Spectral asserts that the limitations of Claims 1-7, 9, 14-18, 20 and 22-25 of the '516 Patent are satisfied literally in the Accused Products. To the extent that any claim element is found not to be literally embodied in the Accused Products, Spectral contends that the Accused Products embody such claim elements under the doctrine of equivalents. In order to provide the requisite detail required by the local Patent Rules, Spectral has separately identified and analyzed in the chart below each of the main limitations that exist within each claim. The format of the chart and/or the identification of the specific limitation is not intended to provide any construction or interpretation of the actual claim language and Spectral reserves its rights to seek any and all appropriate constructions during the Markman proceedings without regard to how the claim limitation is presented below.

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
Claim 1	An excitation light source assembly, comprising:	The Newton 7.0 includes an excitation light source assembly. For example:

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		 INTUITIVE SOFTWARE INTERFACE  See image excerpt from Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:41.

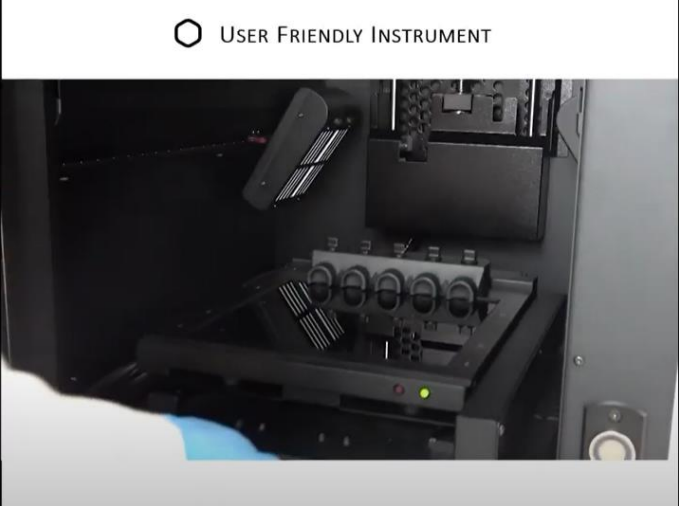
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")					
		<table><tr><th>Feature</th><th>Benefit</th></tr><tr><td>Powerful Fluorescence Excitation</td><td>The Newton 7.0 offers 8 excitation channels in the visible RGB and near infrared spectrums. The very tight LED spectrum is additionally constrained with a very narrow excitation filter; these excitation sources are categorized as a Laser Class II due to their intense power. Movement of the excitation source over the entire FOV ensures consistent and reproducible results over the course of a longitudinal study.</td></tr></table>	Feature	Benefit	Powerful Fluorescence Excitation	The Newton 7.0 offers 8 excitation channels in the visible RGB and near infrared spectrums. The very tight LED spectrum is additionally constrained with a very narrow excitation filter; these excitation sources are categorized as a Laser Class II due to their intense power. Movement of the excitation source over the entire FOV ensures consistent and reproducible results over the course of a longitudinal study.	The Newton 7.0 has a contained excitation light source. See Scintica website, https://www.scintica.com/products/vilber-imaging/vilber-newton-7/. Spectral does not express a position at this time as to whether the preamble of this claim limits the claim's scope.
Feature	Benefit						
Powerful Fluorescence Excitation	The Newton 7.0 offers 8 excitation channels in the visible RGB and near infrared spectrums. The very tight LED spectrum is additionally constrained with a very narrow excitation filter; these excitation sources are categorized as a Laser Class II due to their intense power. Movement of the excitation source over the entire FOV ensures consistent and reproducible results over the course of a longitudinal study.						
	a housing defining a central opening therein and	The Newton includes a housing defining a central opening therein. For example:					

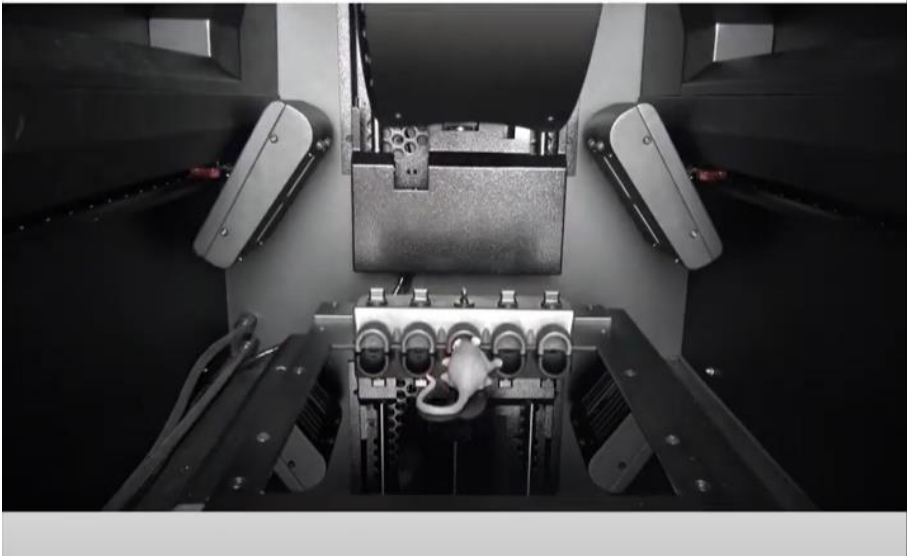
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		Come Inside Discover our world of quality, design and precision.  See Vilber website, https://www.vilber.com/newton-7-0/.

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")	
		 NEWTON 7.0 FT500 IN VIVO 3D OPTICAL TOMOGRAPHY NOW ACCESSIBLE TO EVERYONE ○ ULTRA ROBUST METALLIC DARKROOM	 ○ USER FRIENDLY INSTRUMENT
	a plurality of lamp receptacles surrounding the central opening,	See image excerpt from Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:30. The Newton further includes a plurality of lamp receptacles surrounding the central opening. For example:	

ATTACHMENT 1

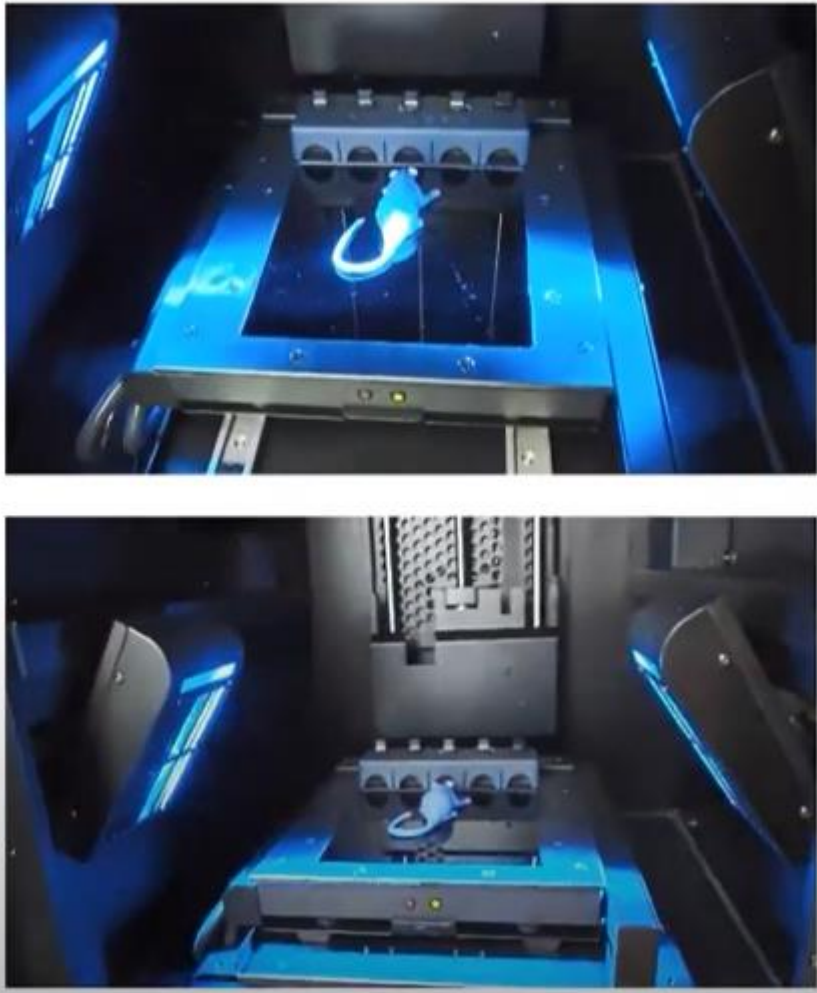
Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		 See image excerpt from Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:41.

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		FLUORESCENCE The advent of novel fluorescent probes has increased the demands on in-vivo fluorescence imaging systems to be able to deftly handle a variety of simultaneous signals. The best spectral range for penetrating an animal is between 600 nm and 900 nm. With NIR fluorescence detection, background is very low, and tissue autofluorescence does not limit performance. The NEWTON 7.0 offers 8 excitation channels in the visible RGB and NIR spectrums. Each individual light source delivers a precisely defined range of the spectrum. The very tight LED spectrum is additionally constrained with a very narrow excitation filter. This means less background in the images of your sample and a higher signal to noise ratio to detect the weakest signals.

ATTACHMENT 1

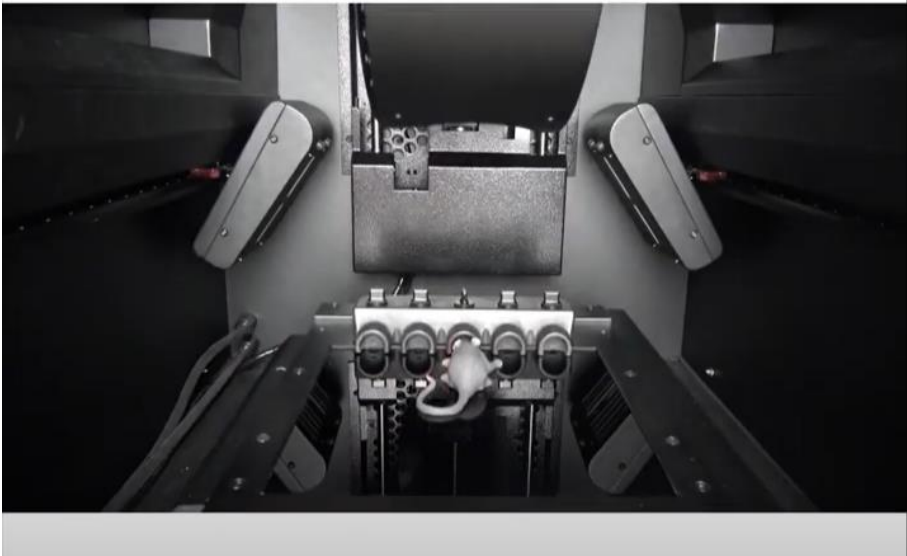
Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		See Ex. 1; Scintica FT500 Brochure, available at https://www.scintica.com/wp-content/uploads/2021/06/BROCHURE-NEWTON-7.0-FT500-2.pdf at 2, disclosing the use of a plurality of light source receptacles and light sources.

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Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		Infinite imaging Capabilities  See Scintica On-demand Webinar – Introducing the Newton 7.0 Optical Imaging System, available at https://www.youtube.com/watch?v=grCko3rR0KA&t=2245s at 12:28.

Vilber's, Scintica Instrumentation, Inc.'s., and Scintica, Inc.'s Infringement of U.S. Patent No. 8,901,516 (the "'516 Patent")

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
	said housing being mountable to a support structure so that the central opening is aligned with a camera also mounted to the support structure so that a field of view of the camera is unobstructed by said housing;	The Newton 7.0 further includes a housing that is mountable to a support structure so that the central opening is aligned with a camera that is also mounted to the support structure so that a field of view of the camera is unobstructed by the housing. For example: The Newton includes a track (support structure) along the back wall. The housing and camera are mounted to the track so that the camera aligns with the central opening and the housing does not obstruct the camera's field of view.  See image excerpt from Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:41.
	a light source positioned within each of	The Newton includes a light source positioned within each of the plurality of lamp receptacles. For example:

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
	the plurality of lamp receptacles,	 See Scintica On-demand Webinar – Introducing the Newton 7.0 Optical Imaging System, available at https://www.youtube.com/watch?v=grCko3rR0KA&t=2245s at 12:28.

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		FLUORESCENCE The advent of novel fluorescent probes has increased the demands on in-vivo fluorescence imaging systems to be able to deftly handle a variety of simultaneous signals. The best spectral range for penetrating an animal is between 600 nm and 900 nm. With NIR fluorescence detection, background is very low, and tissue autofluorescence does not limit performance. The NEWTON 7.0 offers 8 excitation channels in the visible RGB and NIR spectrums. Each individual light source delivers a precisely defined range of the spectrum. The very tight LED spectrum is additionally constrained with a very narrow excitation filter. This means less background in the images of your sample and a higher signal to noise ratio to detect the weakest signals. See Ex. 1, at 2.

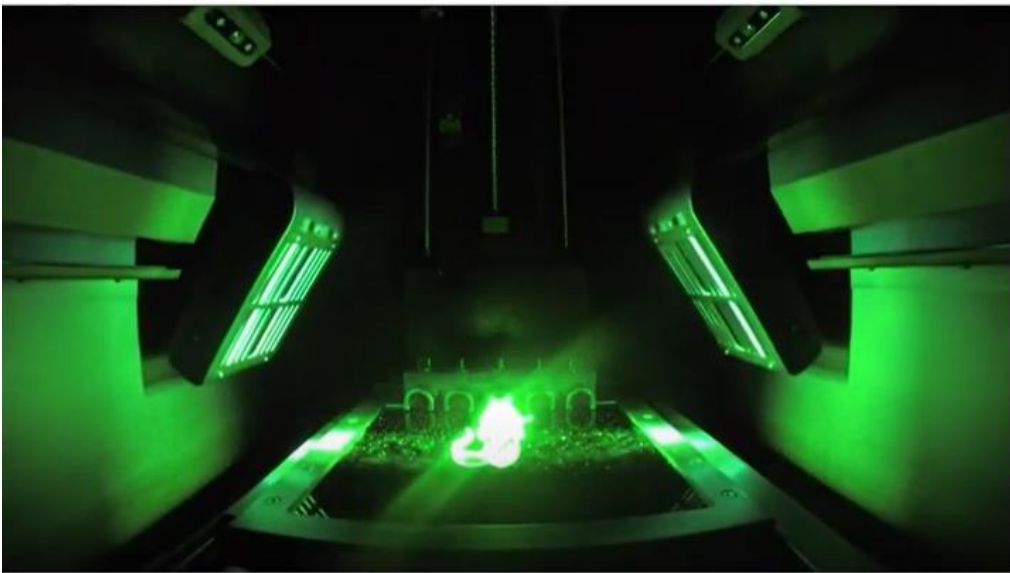
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")													
		Powerful Fluorescence Excitation Full Spectrum Tunability	The Newton 7.0 offers 8 excitation channels in the visible RGB and near infrared spectrums. The very tight LED spectrum is additionally constrained with a very narrow excitation filter; these excitation sources are categorized as a Laser Class II due to their intense power. Movement of the excitation source over the entire FOV ensures consistent and reproducible results over the course of a longitudinal study. 8 excitation channels and 8 emission filters are available to cover the complete spectrum from Blue to infra-red. Narrow bandpass filters are used for both excitation and emission to reduce cross talk between dyes, allowing for up to 3 dyes to be imaged simultaneously. See https://www.scintica.com/products/vilber-imaging/vilber-newton-7/ disclosing the use of multiple excitation light sources.												
	wherein at least one of said light sources comprises a narrow-band light source; and	The Newton includes narrow-band light sources, demonstrating the existence of a narrow band light source comprising at least one of said light sources. For example: EXCITATION <table><tr><td>White-Light</td><td>Dual EPI-White light LED panels</td><td>Dual EPI-White light LED panels</td></tr><tr><td>Fluorescence</td><td>Upgradeable to Fluorescence</td><td>8 Fluorescent channels included 420 / 480 / 520 / 580 / 640 / 680 / 740 / 780nm</td></tr></table> EMISSION <table><tr><td>Filter Wheel</td><td>10-position Motorized filter wheel</td><td>10-position Motorized filter wheel</td></tr><tr><td>Emission Filters</td><td>4 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm</td><td>8 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm</td></tr></table>		White-Light	Dual EPI-White light LED panels	Dual EPI-White light LED panels	Fluorescence	Upgradeable to Fluorescence	8 Fluorescent channels included 420 / 480 / 520 / 580 / 640 / 680 / 740 / 780nm	Filter Wheel	10-position Motorized filter wheel	10-position Motorized filter wheel	Emission Filters	4 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm	8 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm
White-Light	Dual EPI-White light LED panels	Dual EPI-White light LED panels													
Fluorescence	Upgradeable to Fluorescence	8 Fluorescent channels included 420 / 480 / 520 / 580 / 640 / 680 / 740 / 780nm													
Filter Wheel	10-position Motorized filter wheel	10-position Motorized filter wheel													
Emission Filters	4 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm	8 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm													

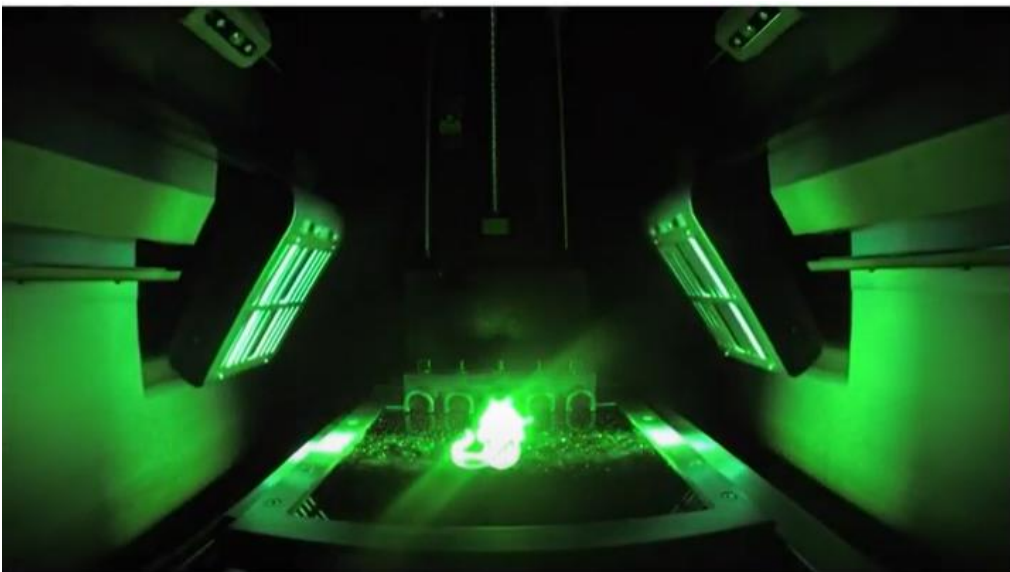
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")	
		Full Spectrum Tunability See https://www.scintica.com/products/vilber-imaging/vilber-newton-7/. FLUORESCENCE The advent of novel fluorescent probes has increased the demands on in-vivo fluorescence imaging systems to be able to deftly handle a variety of simultaneous signals. The best spectral range for penetrating an animal is between 600 nm and 900 nm. With NIR fluorescence detection, background is very low, and tissue autofluorescence does not limit performance. The NEWTON 7.0 offers 8 excitation channels in the visible RGB and NIR spectrums. Each individual light source delivers a precisely defined range of the spectrum. The very tight LED spectrum is additionally constrained with a very narrow excitation filter. This means less background in the images of your sample and a higher signal to noise ratio to detect the weakest signals. See Ex. 1 at 2, demonstrating the excitation channels are generated from narrow band light sources.	8 excitation channels and 8 emission filters are available to cover the complete spectrum from Blue to infra-red. Narrow bandpass filters are used for both excitation and emission to reduce cross talk between dyes, allowing for up to 3 dyes to be imaged simultaneously.
	a diffuser positioned within at least some of the	On information and belief, the Newton includes a diffuser positioned within at least some of the plurality of lamp receptacles. For example:	

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
	plurality of lamp receptacles,	 See Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:58. 

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		See Scintica On-demand Webinar – Introducing the Newton 7.0 Optical Imaging System, available at https://www.youtube.com/watch?v=grCko3rR0KA&t=2245s at 12:28.
	each of said diffusers diffusing light produced by each of said light sources; and	On information and belief, the Newton includes a diffuser that diffuses light produced by a light source. For example:  See Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:58.

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		 See Scintica On-demand Webinar – Introducing the Newton 7.0 Optical Imaging System, available at https://www.youtube.com/watch?v=grCko3rR0KA&t=2245s at 12:28.
	a control system operatively connected to each of said light sources said control system operating selected ones of said light sources to provide a desired excitation illumination to an object within the field of view of said camera,	The Newton includes a control system connected to the light sources. For example:

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		 The image shows the Scintica Newton 7.0 Bioluminescence & Fluorescence Imaging system. It consists of a large, white, rectangular unit with a black band across the middle featuring the 'VILBER' logo. To the right of the unit is a computer monitor displaying three bioluminescence images of mice. The background is a blurred laboratory setting with a person. Text at the top left of the image reads 'NEWTON 7.0 BIOLUMINESCENCE & FLUORESCENCE IMAGING'. Text at the top right reads 'Scintica:' followed by contact information: 'TEL: +1 (519) 914-5495', 'info@scintica.com', 'FAX: +1 (226) 884-5502', and 'www.scintica.com'. The unit itself has 'NEWTON 7.0' printed at the bottom right. See Ex. 1 at 1.

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")	
		NEWTON 7.0 FT500 <i>IN VIVO</i> 3D OPTICAL TOMOGRAPHY NOW ACCESSIBLE TO EVERYONE ○ ULTRA ROBUST METALLIC DARKROOM ○ SLIDE OUT HEATED BED ○ INDIVIDUAL GAS BREATHERS ○ UP TO 5 ANIMALS AT A TIME	 USER FRIENDLY INSTRUMENT
		See Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:34. The control system operates the selected light sources to provide a desired excitation illumination to an object within the field of view of the camera. FLUORESCENCE & BIOLUMINESCENCE APPS STUDIO APPLICATION LIBRARY The NEWTON 7.0 includes our revolutionary Apps Studio approach to imaging. The Apps Studio is an innovative library of applications which contains more than 40 different protocols for a wide variety of targeted and easily activated fluorescent probes and reporters. The Apps Studio contains the excitation and the emission spectra of the main fluorophores used in modern molecular biology laboratory. It also suggests	

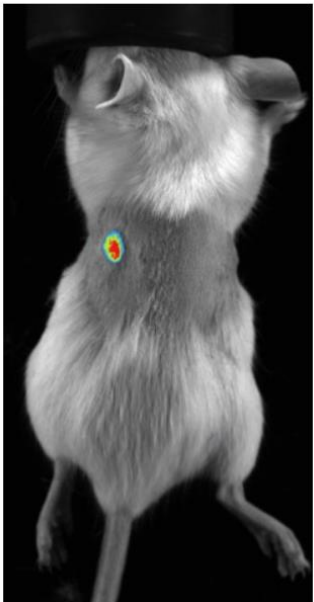
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		See Ex. 2, Vilber Newton 7.0 BIO Brochure, available at https://www.scintica.com/wp-content/uploads/2021/07/VILBER-Newton-7.0-Bio-Brochure-2021.pdf-1.pdf at 2. The controlled excitation illumination is directed to an object within the field of view of the camera, where the camera images the object. For example: "Multispectral in vivo imaging is possible by using different luciferase enzyme/substrate pairs or by using different fluorescent dyes. Signals can be overlaid within the same image, up to 3 reporters can be imaged simultaneously." See https://www.scintica.com/products/vilber-imaging/vilber-newton-7/.
	the object fluorescing in response to the excitation illumination provided by said light sources.	The Newton 7.0 images objects fluorescing in response to excitation illumination from the Newton's excitation light sources. For example:

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		 See Ex. 1 at 1 (enhanced).

ATTACHMENT 1

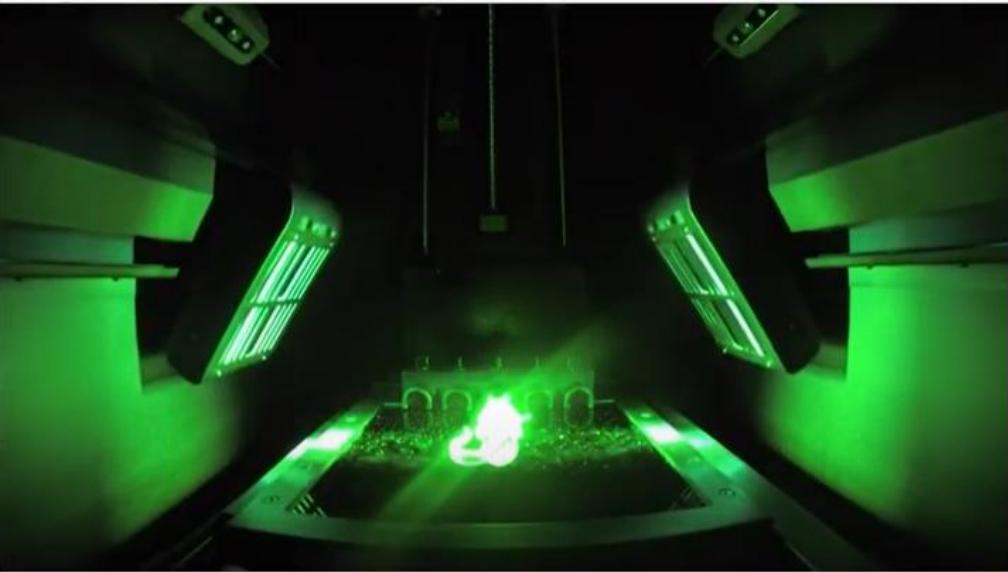
Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		Fluorescence imaging can be used to detect fluorescent reporter genes or dyes <i>in vivo</i> using Vilber's dynamic range of excitation filters.  See https://www.scintica.com/products/vilber-imaging/vilber-newton-7/.
Claim 2	The excitation light source assembly of claim 1 wherein said narrow-band light source emits light having a bandwidth of about 35 nm.	The Newton includes narrow-band light source that emits within a bandwidth of about 35 nm. For example:

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")									
		FLUORESCENCE The advent of novel fluorescent probes has increased the demands on in-vivo fluorescence imaging systems to be able to deftly handle a variety of simultaneous signals. The best spectral range for penetrating an animal is between 600 nm and 900 nm. With NIR fluorescence detection, background is very low, and tissue autofluorescence does not limit performance. The NEWTON 7.0 offers 8 excitation channels in the visible RGB and NIR spectrums. Each individual light source delivers a precisely defined range of the spectrum. The very tight LED spectrum is additionally constrained with a very narrow excitation filter. This means less background in the images of your sample and a higher signal to noise ratio to detect the weakest signals. See Ex. 1 at 2. <table><tr><th colspan="3">EXCITATION</th></tr><tr><td>White-Light</td><td>Dual EPI-White Light LED Panels</td><td>Dual EPI-White Light LED Panels</td></tr><tr><td>Fluorescence</td><td>Upgradeable to Fluorescence</td><td>8 Fluorescent Channels Included 420 / 480 / 520 / 580 / 640 / 680 / 740 / 780nm</td></tr></table>	EXCITATION			White-Light	Dual EPI-White Light LED Panels	Dual EPI-White Light LED Panels	Fluorescence	Upgradeable to Fluorescence	8 Fluorescent Channels Included 420 / 480 / 520 / 580 / 640 / 680 / 740 / 780nm
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ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")				
		See the Newton 7.0's excitation fluorescent channels at https://www.scintica.com/products/vilber-imaging/vilber-newton-7/ .				
Claim 3	The excitation light source assembly of claim 2 wherein said at least one narrow-band light source comprises a light emitting diode.	At least one of the Newton's narrow-band light sources comprises a light emitting diode. For example: <table><tr><th>Feature</th><th>Benefit</th></tr><tr><td>Powerful Fluorescence Excitation</td><td>The Newton 7.0 offers 8 excitation channels in the visible RGB and near infrared spectrums. The very tight LED spectrum is additionally constrained with a very narrow excitation filter; these excitation sources are categorized as a Laser Class II due to their intense power. Movement of the excitation source over the entire FOV ensures consistent and reproducible results over the course of a longitudinal study.</td></tr></table> See the Newton 7.0's discussion of the "very tight LED spectrum" at https://www.scintica.com/products/vilber-imaging/vilber-newton-7/.	Feature	Benefit	Powerful Fluorescence Excitation	The Newton 7.0 offers 8 excitation channels in the visible RGB and near infrared spectrums. The very tight LED spectrum is additionally constrained with a very narrow excitation filter; these excitation sources are categorized as a Laser Class II due to their intense power. Movement of the excitation source over the entire FOV ensures consistent and reproducible results over the course of a longitudinal study.
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Claim 4	The excitation light source assembly of claim 1, further comprising at least one filter positioned adjacent at least one diffuser in at least one of the lamp receptacles defined by said housing.	On information and belief, the Newton 7.0 contains at least one filter positioned adjacent at least one diffuser in at least one of the lamp receptacles defined by the housing. For example: <table><tr><td>Powerful Fluorescence Excitation</td><td>The Newton 7.0 offers 8 excitation channels in the visible RGB and near infrared spectrums. The very tight LED spectrum is additionally constrained with a very narrow excitation filter; these excitation sources are categorized as a Laser Class II due to their intense power. Movement of the excitation source over the entire FOV ensures consistent and reproducible results over the course of a longitudinal study.</td></tr><tr><td>Full Spectrum Tunability</td><td> 8 excitation channels and 8 emission filters are available to cover the complete spectrum from Blue to infra-red. Narrow bandpass filters are used for both excitation and emission to reduce cross talk between dyes, allowing for up to 3 dyes to be imaged simultaneously. </td></tr></table> See https://www.scintica.com/products/vilber-imaging/vilber-newton-7/.	Powerful Fluorescence Excitation	The Newton 7.0 offers 8 excitation channels in the visible RGB and near infrared spectrums. The very tight LED spectrum is additionally constrained with a very narrow excitation filter; these excitation sources are categorized as a Laser Class II due to their intense power. Movement of the excitation source over the entire FOV ensures consistent and reproducible results over the course of a longitudinal study.	Full Spectrum Tunability	8 excitation channels and 8 emission filters are available to cover the complete spectrum from Blue to infra-red. Narrow bandpass filters are used for both excitation and emission to reduce cross talk between dyes, allowing for up to 3 dyes to be imaged simultaneously.
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ATTACHMENT 1

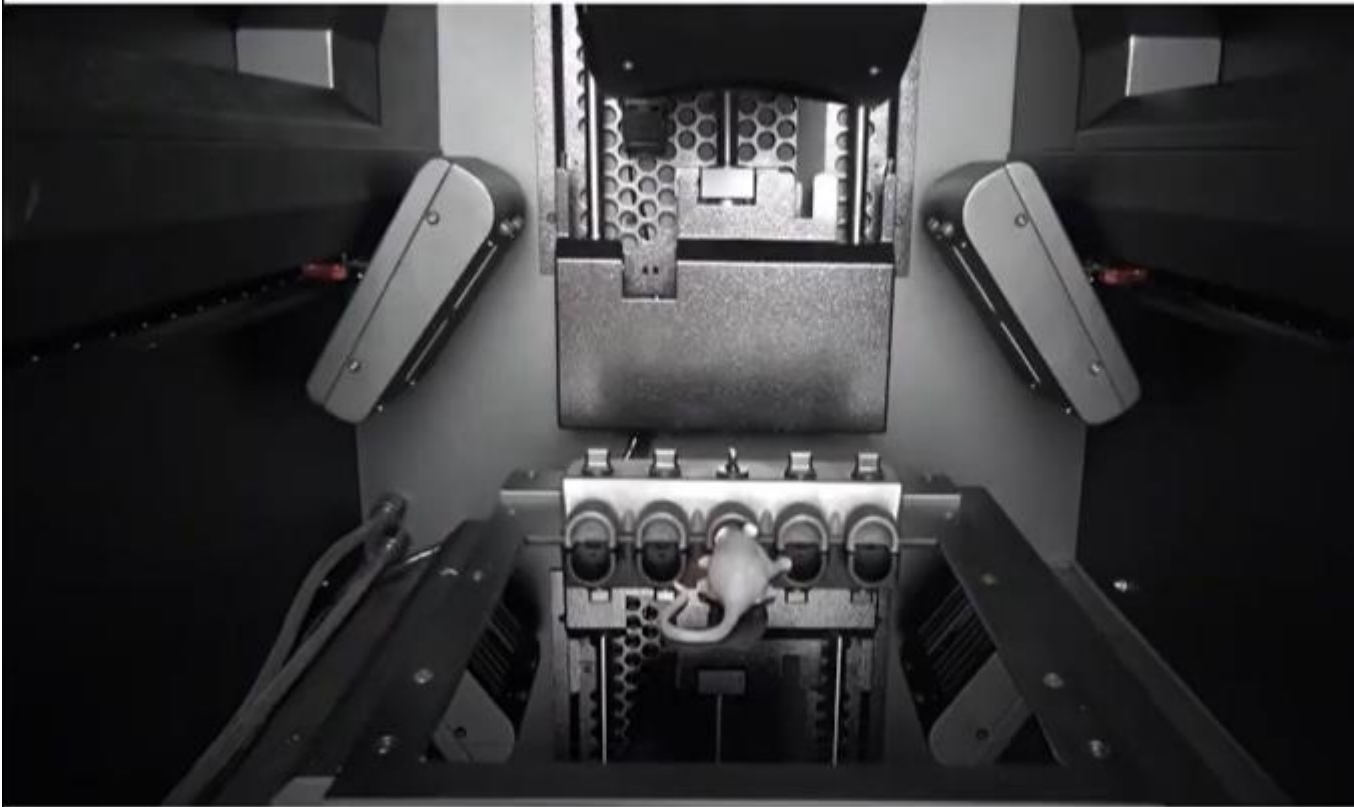
Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		 See Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:58. 

Vilber's, Scintica Instrumentation, Inc.'s., and Scintica, Inc.'s Infringement of U.S. Patent No. 8,901,516 (the "516 Patent")

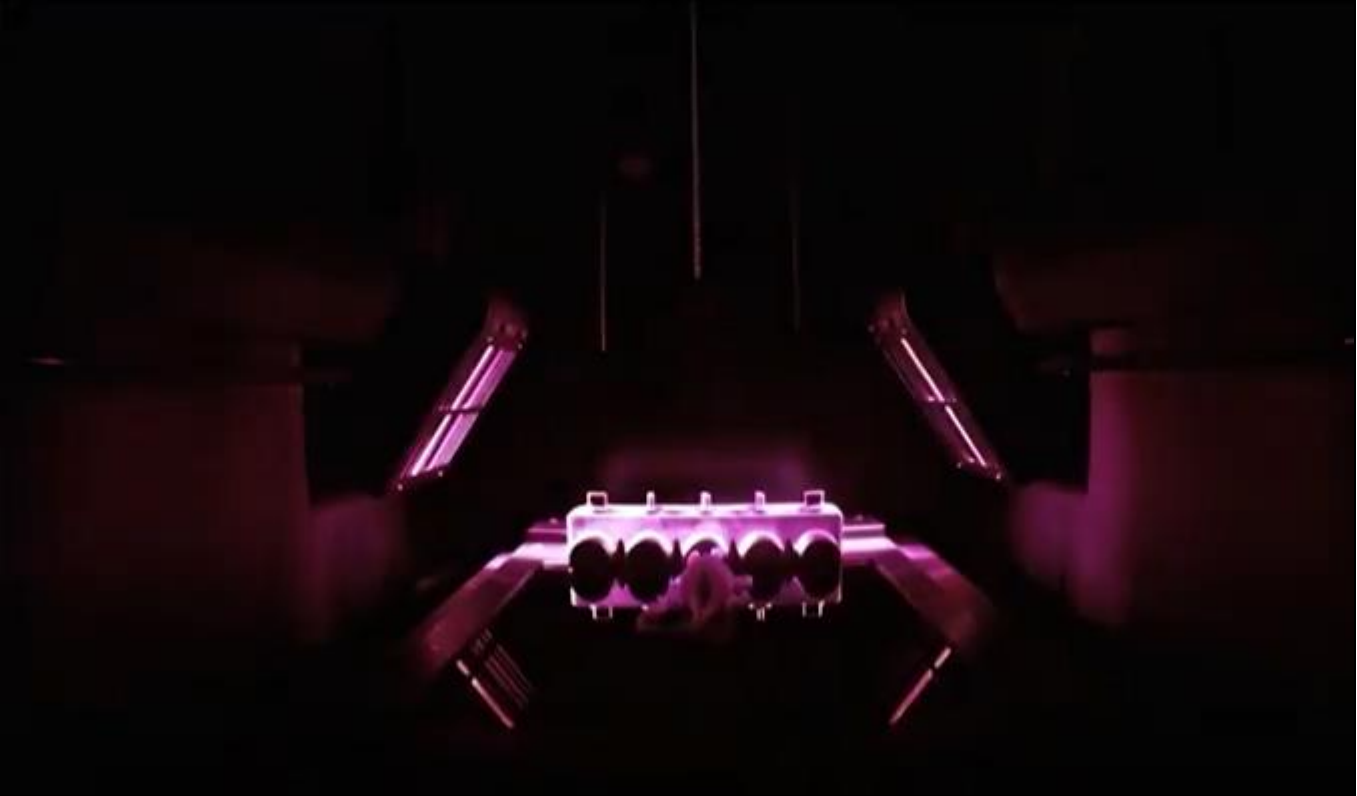
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 (“Newton”)																		
		See Scintica On-demand Webinar – Introducing the Newton 7.0 Optical Imaging System, available at https://www.youtube.com/watch?v=grCko3rR0KA&t=2245s at 12:28.																		
Claim 5	The excitation light source assembly of claim 4, wherein said at least one filter comprises a notch filter having a wavelength bandpass range of about 30 nm.	On information and belief, the Newton 7.0 contains a notch filter having a wavelength bandpass range of about 30 nm. For example: <table><tr><td>Powerful Fluorescence Excitation</td><td>The Newton 7.0 offers 8 excitation channels in the visible RGB and near infrared spectrums. The very tight LED spectrum is additionally constrained with a very narrow excitation filter; these excitation sources are categorized as a Laser Class II due to their intense power. Movement of the excitation source over the entire FOV ensures consistent and reproducible results over the course of a longitudinal study.</td></tr><tr><td>Full Spectrum Tunability</td><td>8 excitation channels and 8 emission filters are available to cover the complete spectrum from Blue to infra-red. Narrow bandpass filters are used for both excitation and emission to reduce cross talk between dyes, allowing for up to 3 dyes to be imaged simultaneously.</td></tr></table>	Powerful Fluorescence Excitation	The Newton 7.0 offers 8 excitation channels in the visible RGB and near infrared spectrums. The very tight LED spectrum is additionally constrained with a very narrow excitation filter; these excitation sources are categorized as a Laser Class II due to their intense power. Movement of the excitation source over the entire FOV ensures consistent and reproducible results over the course of a longitudinal study.	Full Spectrum Tunability	8 excitation channels and 8 emission filters are available to cover the complete spectrum from Blue to infra-red. Narrow bandpass filters are used for both excitation and emission to reduce cross talk between dyes, allowing for up to 3 dyes to be imaged simultaneously.														
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		See https://www.scintica.com/products/vilber-imaging/vilber-newton-7/ .																		
Claim 6	The excitation light source assembly of claim 1, wherein at least one of the light sources comprises a broad-band light source.	The Newton comprises a broad-band light source. Specifically, the Newton 7.0 comprises a “Dual EPI-White light LED panel.” For example: <table><tr><th colspan="3">EXCITATION</th></tr><tr><td>White-Light</td><td>Dual EPI-White light LED panels</td><td>Dual EPI-White light LED panels</td></tr><tr><td>Fluorescence</td><td>Upgradeable to Fluorescence</td><td>8 Fluorescent channels included 420 / 480 / 520 / 580 / 640 / 680 / 740 / 780nm</td></tr><tr><th colspan="3">EMISSION</th></tr><tr><td>Filter Wheel</td><td>10-position Motorized filter wheel</td><td>10-position Motorized filter wheel</td></tr><tr><td>Emission Filters</td><td>4 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm</td><td>8 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm</td></tr></table>	EXCITATION			White-Light	Dual EPI-White light LED panels	Dual EPI-White light LED panels	Fluorescence	Upgradeable to Fluorescence	8 Fluorescent channels included 420 / 480 / 520 / 580 / 640 / 680 / 740 / 780nm	EMISSION			Filter Wheel	10-position Motorized filter wheel	10-position Motorized filter wheel	Emission Filters	4 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm	8 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm
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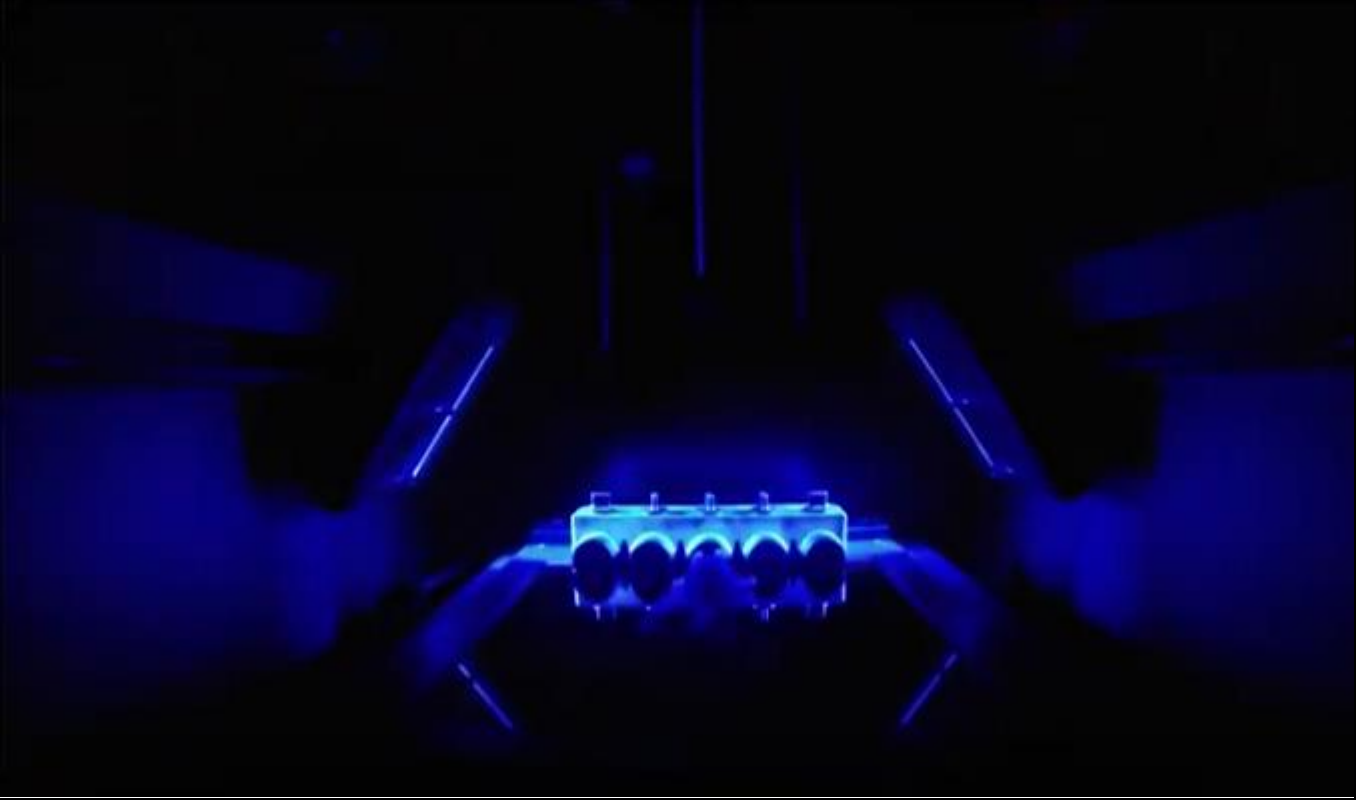
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
Claim 7	The excitation light source assembly of claim 1, wherein at least some of said plurality of lamp receptacles comprise opposed pairs of lamp receptacles on opposite sides of said central opening, each opposed pair of lamp receptacles producing light of the same color.	At least some of the Newton 7.0's lamp receptacles comprise opposed pairs of lamp receptacles on opposite sides of the central opening producing light of the same color (wavelength). For example:  The opposed pairs of lamp receptacles produce light of the same color.

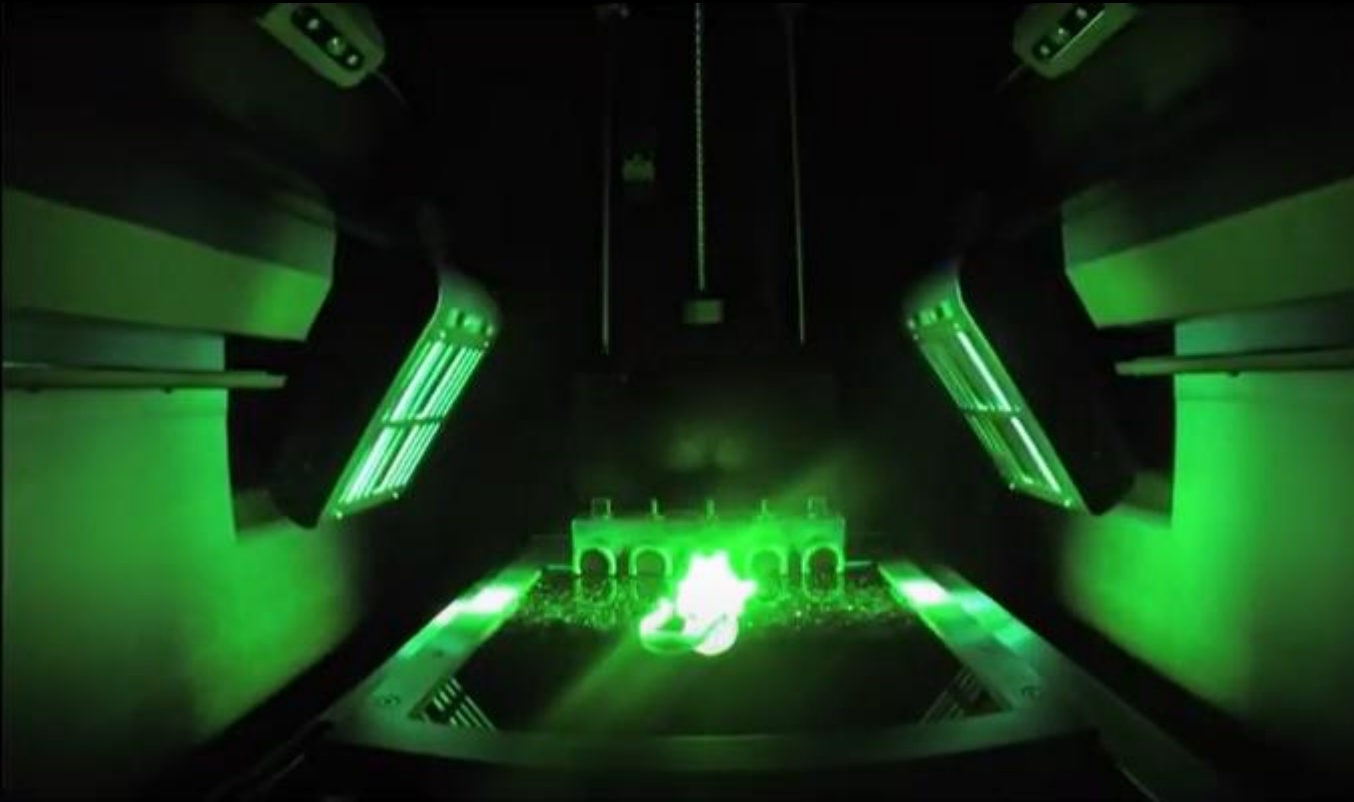
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		

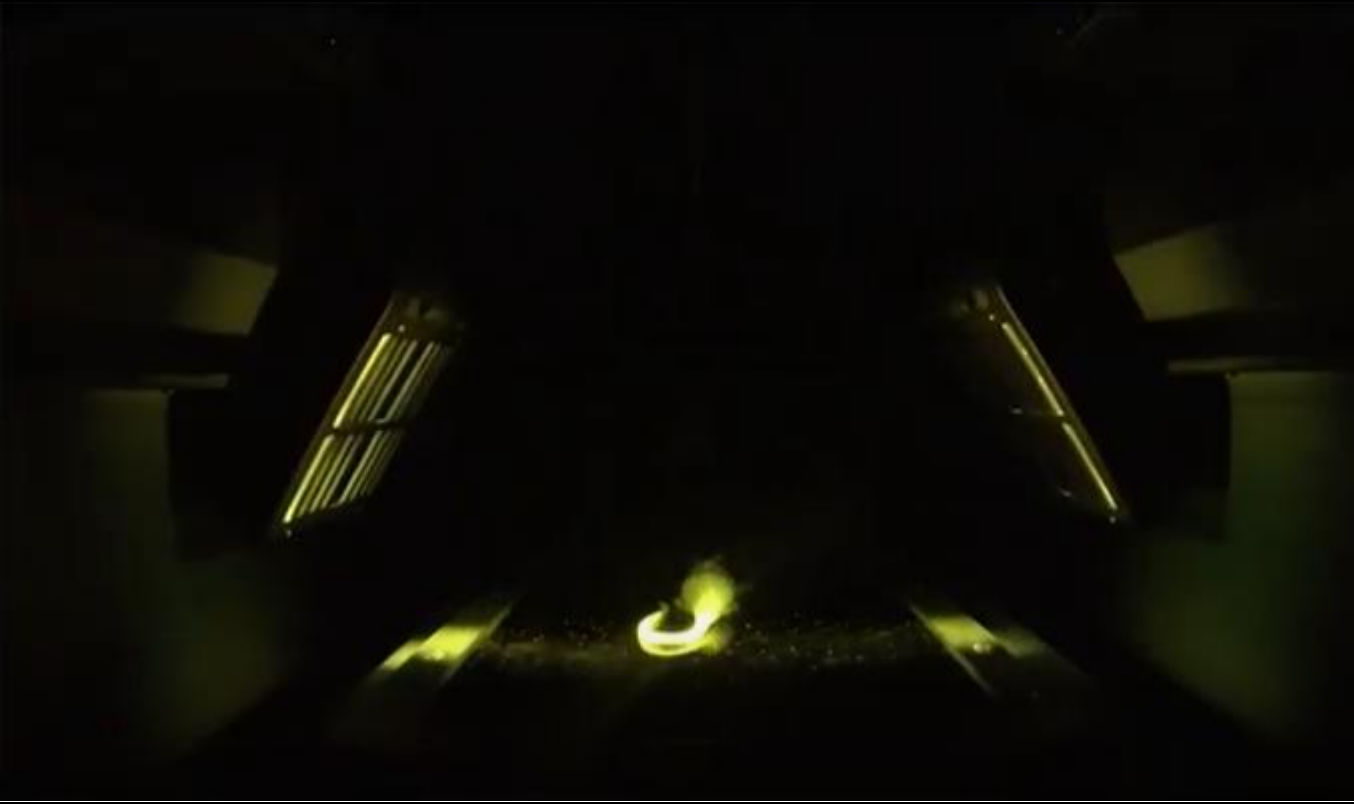
ATTACHMENT 1

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ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		

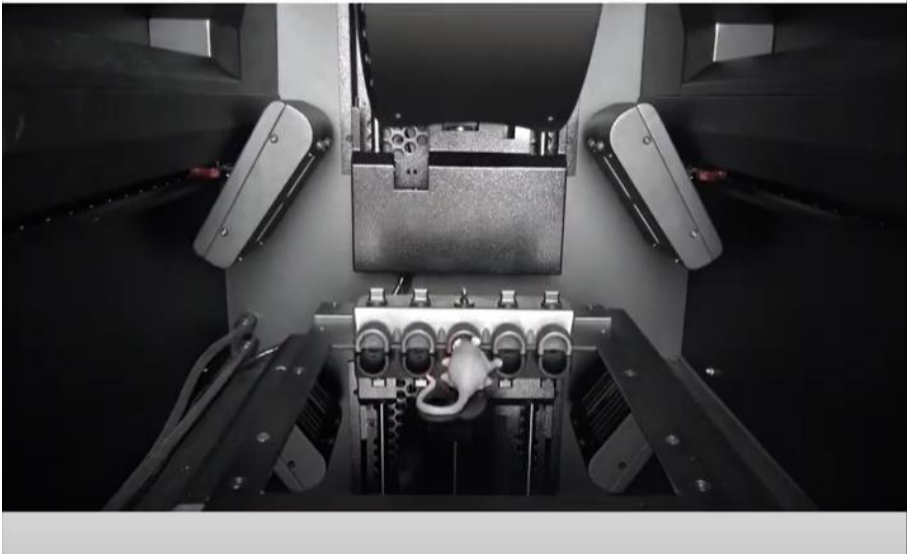
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		 See Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:38; 0:53; 0:55; 0:57; 0:59; 1:02.
Claim 9	The excitation light source assembly of claim 1, wherein the light source positioned within each of the plurality of	The Newton's light source, positioned within the lamp receptacle, does not extend beyond the lamp receptacle as shown below. Stated another way, the light source does not break the plane of the lamp receptacle. For example:

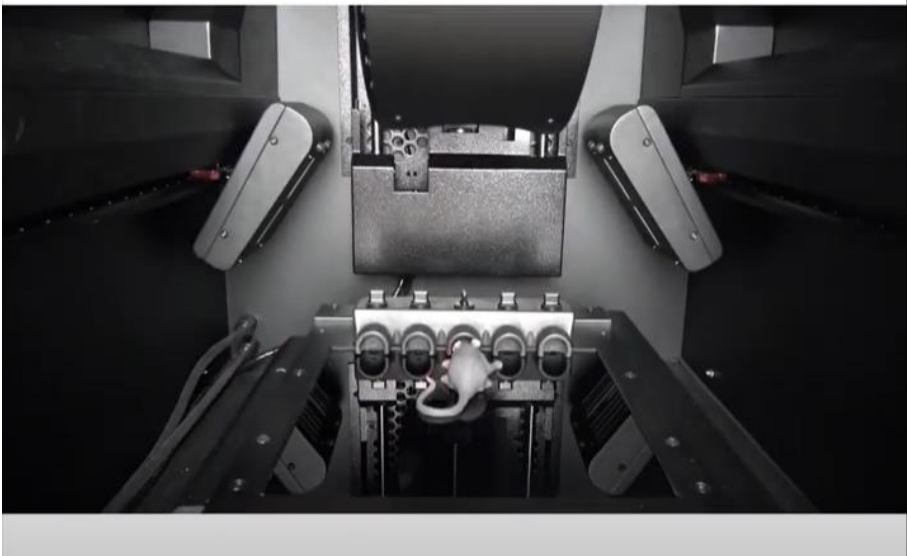
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
	lamp receptacles does not extend beyond the lamp receptacle.	 See Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 1:02.
Claim 14	An assembly, comprising:	The Newton 7.0 includes an assembly. Specifically, an excitation light source assembly capable of being used for molecular imaging. Spectral does not express a position at this time as to whether the preamble of this claim limits the claim's scope.
	A support structure;	The Newton 7.0 contains a support structure. For example:

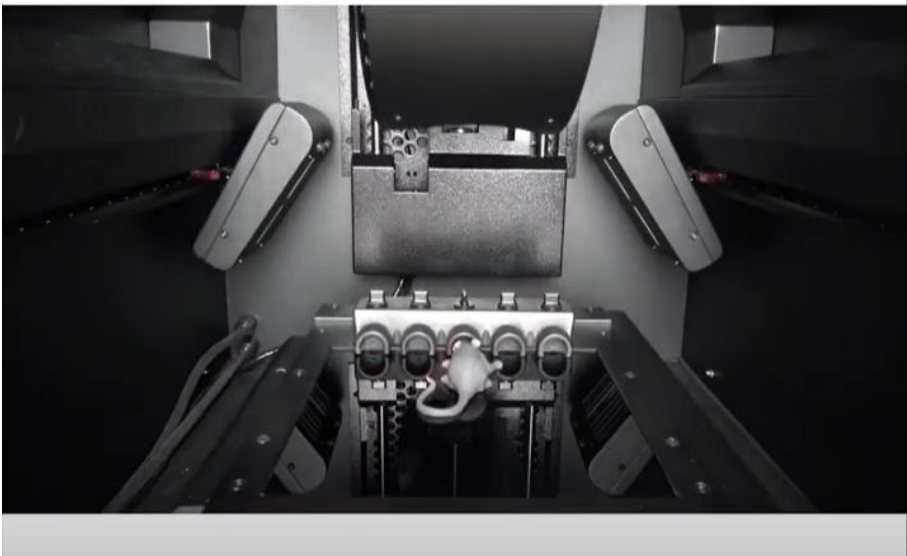
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		 See image excerpt from Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:41.
	A camera mounted to said support structure;	The Newton 7.0 contains a camera mounted to said support structure. For example:

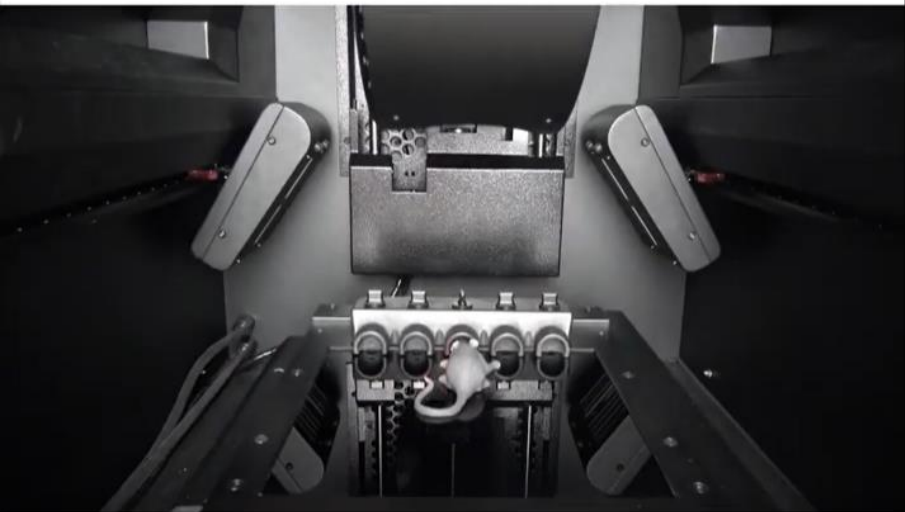
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		 See image excerpt from Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:41.
	An excitation light source assembly mounted to said support structure, said excitation light source assembly comprising;	The Newton 7.0 contains an excitation light source assembly mounted to the support structure. For example:

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		 See image excerpt from Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:41.
	A housing defining a central opening therein and a plurality of lamp receptacles surrounding the central opening, said housing being mounted to said support structure so that the central	The Newton includes a housing defining a central opening therein and a plurality of lamp receptacles surrounding the central opening. For example:

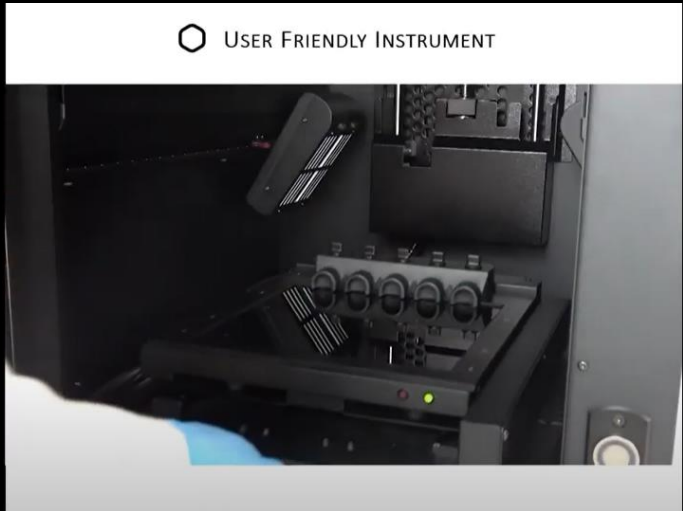
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")	
	opening is aligned with said camera and so that a field of view of said camera is substantially unobstructed by said housing;	 See image excerpt from Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:41.	

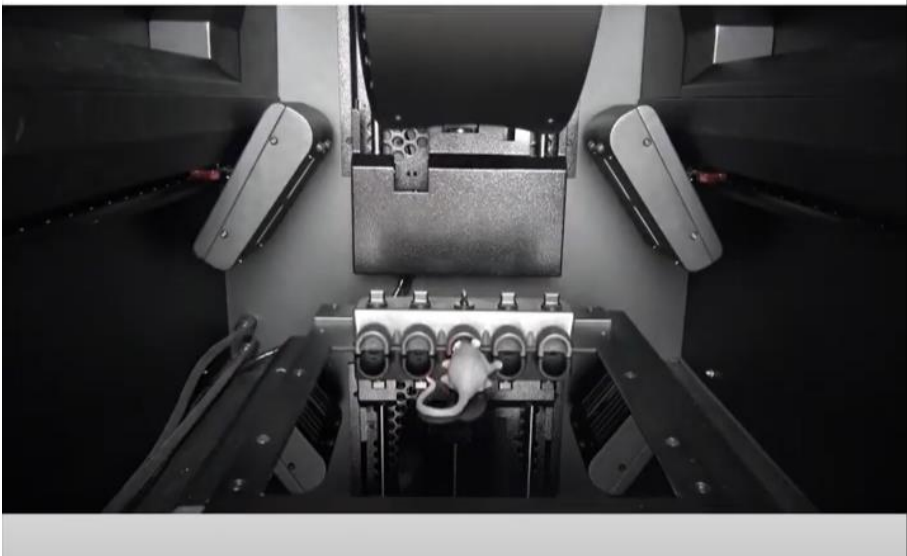
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		Come Inside Discover our world of quality, design and precision.  See Vilber website, https://www.vilber.com/newton-7-0/.

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")	
		NEWTON 7.0 FT500 IN VIVO 3D OPTICAL TOMOGRAPHY NOW ACCESSIBLE TO EVERYONE ○ ULTRA ROBUST METALLIC DARKROOM	 See image excerpt from Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:30. The housing is mounted to the support structure so that the central opening is aligned with a camera that is also mounted to the support structure so that the field of view of the camera is unobstructed by said housing:

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		 See image excerpt from Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:41.
	At least one narrow-band light source positioned within at least one of the plurality of lamp receptacles; and	The Newton includes a narrow-band light source, positioned within at least one of the plurality of the lamp receptacles. For example:

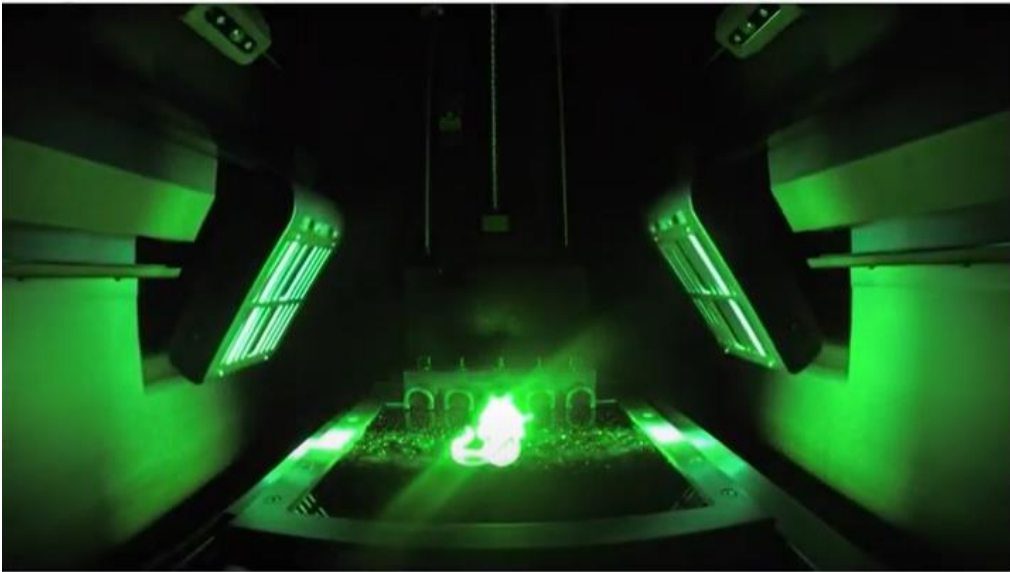
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")															
		EXCITATION <table><tr><td>White - Light</td><td>Dual EPI-White light LED panels</td><td>Dual EPI-White light LED panels</td></tr><tr><td>Fluorescence</td><td>Upgradeable to Fluorescence</td><td>8 Fluorescent channels included 420 / 480 / 520 / 580 / 640 / 680 / 740 / 780nm</td></tr></table> EMISSION <table><tr><td>Filter Wheel</td><td>10-position Motorized filter wheel</td><td>10-position Motorized filter wheel</td></tr><tr><td>Emission Filters</td><td>4 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm</td><td>8 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm</td></tr></table> <table><tr><td>Full Spectrum Tunability</td><td>8 excitation channels and 8 emission filters are available to cover the complete spectrum from Blue to infra-red. Narrow bandpass filters are used for both excitation and emission to reduce cross talk between dyes, allowing for up to 3 dyes to be imaged simultaneously.</td></tr></table>		White - Light	Dual EPI-White light LED panels	Dual EPI-White light LED panels	Fluorescence	Upgradeable to Fluorescence	8 Fluorescent channels included 420 / 480 / 520 / 580 / 640 / 680 / 740 / 780nm	Filter Wheel	10-position Motorized filter wheel	10-position Motorized filter wheel	Emission Filters	4 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm	8 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm	Full Spectrum Tunability	8 excitation channels and 8 emission filters are available to cover the complete spectrum from Blue to infra-red. Narrow bandpass filters are used for both excitation and emission to reduce cross talk between dyes, allowing for up to 3 dyes to be imaged simultaneously.
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		See https://www.scintica.com/products/vilber-imaging/vilber-newton-7/ .															

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		FLUORESCENCE The advent of novel fluorescent probes has increased the demands on in-vivo fluorescence imaging systems to be able to deftly handle a variety of simultaneous signals. The best spectral range for penetrating an animal is between 600 nm and 900 nm. With NIR fluorescence detection, background is very low, and tissue autofluorescence does not limit performance. The NEWTON 7.0 offers 8 excitation channels in the visible RGB and NIR spectrums. Each individual light source delivers a precisely defined range of the spectrum. The very tight LED spectrum is additionally constrained with a very narrow excitation filter. This means less background in the images of your sample and a higher signal to noise ratio to detect the weakest signals. See Ex. 1 at 2, demonstrating the excitation channels are generated from narrow band light sources.
	A diffuser positioned within at least some of the plurality of lamp receptacles, each of said diffusers diffusing light produced by each of said narrow band	On information and belief, the Newton includes a diffuser positioned within at least some of the plurality of lamp receptacles, each of said diffusers diffusing light produced by each of said narrow band light sources. For example:

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
	light sources; and	 See Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:58. 

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		See Scintica On-demand Webinar – Introducing the Newton 7.0 Optical Imaging System, available at https://www.youtube.com/watch?v=grCko3rR0KA&t=2245s at 12:28.
	A control system operatively connected to each of said narrow-band light sources, said control system operating selected ones of said narrow-band light sources to provide a desired excitation illumination to a fluorescent material within the field of view of said camera	The Newton includes a control system connected to the light sources. For example:

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		 The image shows the Scintica Newton 7.0 Bioluminescence & Fluorescence Imaging system. It consists of a large, white, rectangular unit with a black band across the middle featuring the 'VILBER' logo. To the right of the unit is a computer monitor displaying three bioluminescent images of mice. The background is a blurred laboratory setting with a person. Text at the top left reads 'NEWTON 7.0 BIOLUMINESCENCE & FLUORESCENCE IMAGING'. Text at the top right includes the 'Scintica' logo and contact information: TEL: +1 (519) 914-5495, info@scintica.com, FAX: +1 (226) 884-5502, www.scintica.com. See Ex. 1 at 1.

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		NEWTON 7.0 FT500 <i>IN VIVO</i> 3D OPTICAL TOMOGRAPHY NOW ACCESSIBLE TO EVERYONE ○ ULTRA ROBUST METALLIC DARKROOM ○ SLIDE OUT HEATED BED ○ INDIVIDUAL GAS BREATHERS ○ UP TO 5 ANIMALS AT A TIME  See Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:34. The control system operates the selected light sources to provide a desired excitation illumination to an object within the field of view of the camera. FLUORESCENCE & BIOLUMINESCENCE APPS STUDIO APPLICATION LIBRARY The NEWTON 7.0 includes our revolutionary Apps Studio approach to imaging. The Apps Studio is an innovative library of applications which contains more than 40 different protocols for a wide variety of targeted and easily activated fluorescent probes and reporters. The Apps Studio contains the excitation and the emission spectra of the main fluorophores used in modern molecular biology laboratory. It also suggests

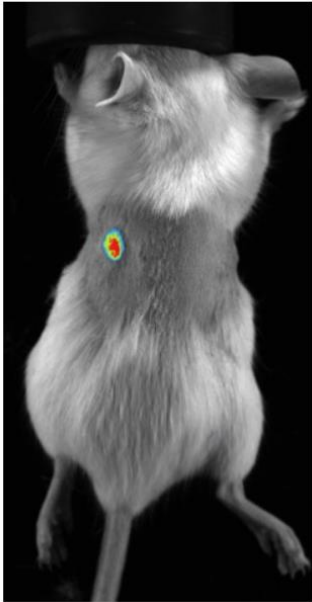
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		See Ex. 2, Vilber Newton 7.0 BIO Brochure, available at https://www.scintica.com/wp-content/uploads/2021/07/VILBER-Newton-7.0-Bio-Brochure-2021.pdf-1.pdf at 2. The controlled excitation illumination is directed to an object within the field of view of the camera, where the camera images the object. For example: "Multispectral in vivo imaging is possible by using different luciferase enzyme/substrate pairs or by using different fluorescent dyes. Signals can be overlaid within the same image, up to 3 reporters can be imaged simultaneously." See https://www.scintica.com/products/vilber-imaging/vilber-newton-7/.
	The fluorescent material fluorescing in response to the excitation illumination.	The Newton 7.0 images objects fluorescing in response to excitation illumination from the Newton's excitation light sources. For example:

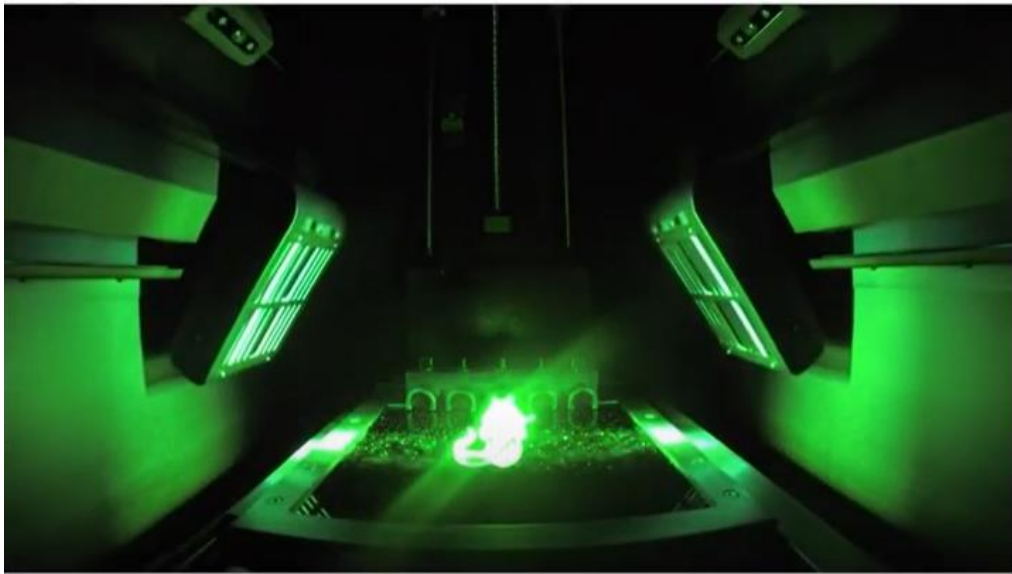
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		 See Ex. 1 at 1 (enhanced).

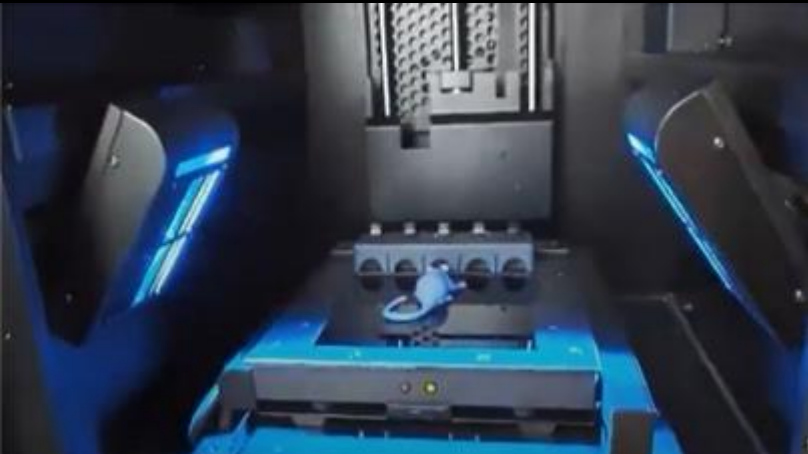
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		Fluorescence imaging can be used to detect fluorescent reporter genes or dyes <i>in vivo</i> using Vilber's dynamic range of excitation filters.  See https://www.scintica.com/products/vilber-imaging/vilber-newton-7/.
Claim 15	The assembly of claim 14, further comprising a light filter positioned adjacent each of the diffusers.	On information and belief, the Newton 7.0 contains a light filter positioned adjacent the diffusers in the lamp receptacles defined by the housing. For example:

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")	
		Powerful Fluorescence Excitation	The Newton 7.0 offers 8 excitation channels in the visible RGB and near infrared spectrums. The very tight LED spectrum is additionally constrained with a very narrow excitation filter; these excitation sources are categorized as a Laser Class II due to their intense power. Movement of the excitation source over the entire FOV ensures consistent and reproducible results over the course of a longitudinal study.
		Full Spectrum Tunability	8 excitation channels and 8 emission filters are available to cover the complete spectrum from Blue to infra-red. Narrow bandpass filters are used for both excitation and emission to reduce cross talk between dyes, allowing for up to 3 dyes to be imaged simultaneously.
	See https://www.scintica.com/products/vilber-imaging/vilber-newton-7/.  See Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:58.		

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		 See Scintica On-demand Webinar – Introducing the Newton 7.0 Optical Imaging System, available at https://www.youtube.com/watch?v=grCko3rR0KA&t=2245s at 12:28.
Claim 16	The assembly of claim 14, wherein each of the lamp receptacles defined by said housing are angled with respect to a central axis of said housing so that light emitted from each of said narrow-band light sources is	The Newton includes lamp receptacles angled with respect to the central axis of the housing so that light emitted from each of the narrow-band light sources is directed to the desired area within the field of view of the camera. For example: 

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")																		
	directed to a desired area within the field of view of said camera.	See Scintica On-demand Webinar – Introducing the Newton 7.0 Optical Imaging System, available at https://www.youtube.com/watch?v=grCko3rR0KA&t=2245s at 12:28.																		
Claim 17	The assembly of claim 14, wherein each of said narrow-band light sources is selected to provide desired number of illumination bands over a desired spectral range.	The Newton includes narrow-band light sources in a number of illumination bands over a desired range. For example: <table border="1"> <thead> <tr> <th colspan="3">EXCITATION</th></tr> </thead> <tbody> <tr> <td>White-Light</td><td>Dual EPI-White light LED panels</td><td>Dual EPI-White light LED panels</td></tr> <tr> <td>Fluorescence</td><td>Upgradeable to Fluorescence</td><td>8 Fluorescent channels included 420 / 480 / 520 / 580 / 640 / 680 / 740 / 780nm</td></tr> <tr> <th colspan="3">EMISSION</th></tr> <tr> <td>Filter Wheel</td><td>10-position Motorized filter wheel</td><td>10-position Motorized filter wheel</td></tr> <tr> <td>Emission Filters</td><td>4 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm</td><td>8 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm</td></tr> </tbody> </table> See https://www.scintica.com/products/vilber-imaging/vilber-newton-7/.	EXCITATION			White-Light	Dual EPI-White light LED panels	Dual EPI-White light LED panels	Fluorescence	Upgradeable to Fluorescence	8 Fluorescent channels included 420 / 480 / 520 / 580 / 640 / 680 / 740 / 780nm	EMISSION			Filter Wheel	10-position Motorized filter wheel	10-position Motorized filter wheel	Emission Filters	4 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm	8 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm
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Claim 18	The assembly of claim 17, wherein the desired spectral range is from about 430 nm to about 745 nm.	The Newton includes narrow-band light sources in a number of illumination bands, including at least 480nm, 520nm, 740nm. For example:																		

ATTACHMENT 1

Claim		Claim Element		Vilber's Newton 7.0 ("Newton")																													
		<table><tr><td colspan="4">EXCITATION</td></tr><tr><td>White - Light</td><td colspan="2">Dual EPI-White light LED panels</td><td colspan="2">Dual EPI-White light LED panels</td></tr><tr><td>Fluorescence</td><td colspan="2">Upgradeable to Fluorescence</td><td colspan="2">8 Fluorescent channels included 420 / 480 / 520 / 580 / 640 / 680 / 740 / 780nm</td></tr><tr><td colspan="4">EMISSION</td></tr><tr><td>Filter Wheel</td><td colspan="2">10-position Motorized filter wheel</td><td colspan="2">10-position Motorized filter wheel</td></tr><tr><td>Emission Filters</td><td colspan="2">4 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm</td><td colspan="2">8 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm</td></tr></table>				EXCITATION				White - Light	Dual EPI-White light LED panels		Dual EPI-White light LED panels		Fluorescence	Upgradeable to Fluorescence		8 Fluorescent channels included 420 / 480 / 520 / 580 / 640 / 680 / 740 / 780nm		EMISSION				Filter Wheel	10-position Motorized filter wheel		10-position Motorized filter wheel		Emission Filters	4 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm		8 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm	
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Claim 20	The assembly of claim 17, wherein each desired illumination band has a bandwidth ranging from about 30 nm to about 35 nm.	See https://www.scintica.com/products/vilber-imaging/vilber-newton-7/ . On information and belief, the Newton 7.0 includes narrow bandwidth excitation wavelengths ranging from about 30 nm to about 35 nm. For example:																															

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		FLUORESCENCE The advent of novel fluorescent probes has increased the demands on in-vivo fluorescence imaging systems to be able to deftly handle a variety of simultaneous signals. The best spectral range for penetrating an animal is between 600 nm and 900 nm. With NIR fluorescence detection, background is very low, and tissue autofluorescence does not limit performance. The NEWTON 7.0 offers 8 excitation channels in the visible RGB and NIR spectrums. Each individual light source delivers a precisely defined range of the spectrum. The very tight LED spectrum is additionally constrained with a very narrow excitation filter. This means less background in the images of your sample and a higher signal to noise ratio to detect the weakest signals. See Ex. 1 at 2. The Newton 7.0's documentation provides that the channels are typically between 40nm and 60nm, which demonstrates that the channels themselves are more narrow than 40 nm to 60nm.

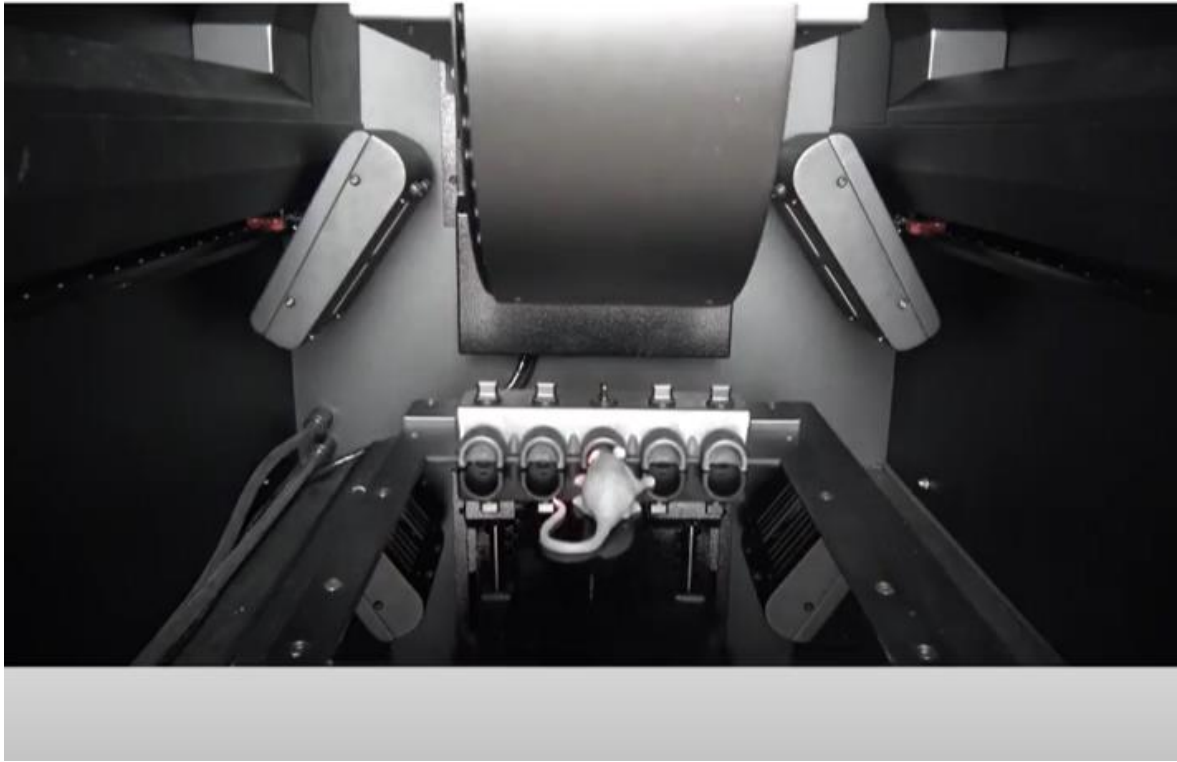
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		ILLUMINATION 8 excitation channels: 420nm - 480nm - 520nm - 580nm 640nm - 680nm - 740nm - 780nm 10-position motorized filter wheel 8 narrow bandpass emission filters: 500nm - 550nm - 600nm - 650nm 700nm - 750nm - 800nm - 850nm See Ex. 1 at 5.
Claim 22	The assembly of claim 17, wherein the desired spectral range is from about 430 nm to about 800 nm.	The Newton includes narrow-band light sources in a number of illumination bands ranging from 420nm (about 430nm) to 780nm (about 800nm). For example. ILLUMINATION 8 excitation channels: 420nm - 480nm - 520nm - 580nm 640nm - 680nm - 740nm - 780nm 10-position motorized filter wheel 8 narrow bandpass emission filters: 500nm - 550nm - 600nm - 650nm 700nm - 750nm - 800nm - 850nm See Ex. 1 at 5.
Claim 23	The assembly of claim 14, wherein each of said narrow-band light sources comprises a light emitting diode.	The narrow-band light sources in the Newton 7.0 include LED light sources. For example:

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		FLUORESCENCE The advent of novel fluorescent probes has increased the demands on in-vivo fluorescence imaging systems to be able to deftly handle a variety of simultaneous signals. The best spectral range for penetrating an animal is between 600 nm and 900 nm. With NIR fluorescence detection, background is very low, and tissue autofluorescence does not limit performance. The NEWTON 7.0 offers 8 excitation channels in the visible RGB and NIR spectrums. Each individual light source delivers a precisely defined range of the spectrum. The very tight LED spectrum is additionally constrained with a very narrow excitation filter. This means less background in the images of your sample and a higher signal to noise ratio to detect the weakest signals. Ex. 1 at 2 (discussing "[t]he very tight LED spectrum. . .").
Claim 24	The assembly of claim 14, wherein said housing comprises a polyoxymethylene thermoplastic material.	On information and belief, the Vilber Newton 7.0 is made of a polyoxymethylene thermoplastic, for example trade name Delrin®.
Claim 25	An excitation light source assembly,	The Newton 7.0 includes an excitation light source assembly. For example:

ATTACHMENT 1

Claim	Claim Element Vilber's Newton 7.0 ("Newton")
	comprising:  See image excerpt from Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:41.

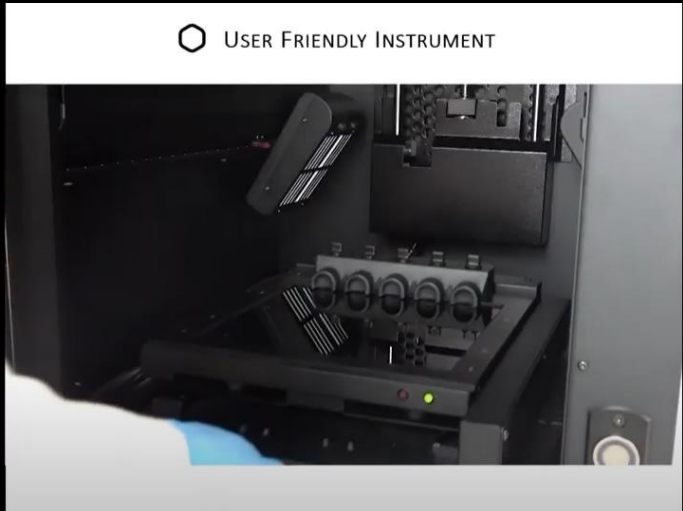
ATTACHMENT 1

Claim		Claim Element		Vilber's Newton 7.0 ("Newton")					
		<table><tr><th>Feature</th><th>Benefit</th></tr><tr><td>Powerful Fluorescence Excitation</td><td>The Newton 7.0 offers 8 excitation channels in the visible RGB and near infrared spectrums. The very tight LED spectrum is additionally constrained with a very narrow excitation filter; these excitation sources are categorized as a Laser Class II due to their intense power. Movement of the excitation source over the entire FOV ensures consistent and reproducible results over the course of a longitudinal study.</td></tr></table>	Feature	Benefit	Powerful Fluorescence Excitation	The Newton 7.0 offers 8 excitation channels in the visible RGB and near infrared spectrums. The very tight LED spectrum is additionally constrained with a very narrow excitation filter; these excitation sources are categorized as a Laser Class II due to their intense power. Movement of the excitation source over the entire FOV ensures consistent and reproducible results over the course of a longitudinal study.	The Newton 7.0 has a contained excitation light source. See Scintica website, https://www.scintica.com/products/vilber-imaging/vilber-newton-7/. Spectral does not express a position at this time as to whether the preamble of this claim limits the claim's scope.		
Feature	Benefit								
Powerful Fluorescence Excitation	The Newton 7.0 offers 8 excitation channels in the visible RGB and near infrared spectrums. The very tight LED spectrum is additionally constrained with a very narrow excitation filter; these excitation sources are categorized as a Laser Class II due to their intense power. Movement of the excitation source over the entire FOV ensures consistent and reproducible results over the course of a longitudinal study.								
	a housing defining a central opening therein and a plurality of lamp receptacles therein surrounding the central opening, said housing being mountable to a support structure so that the central opening is aligned with a camera also mounted to the	The Newton includes a housing defining a central opening therein. For example:							

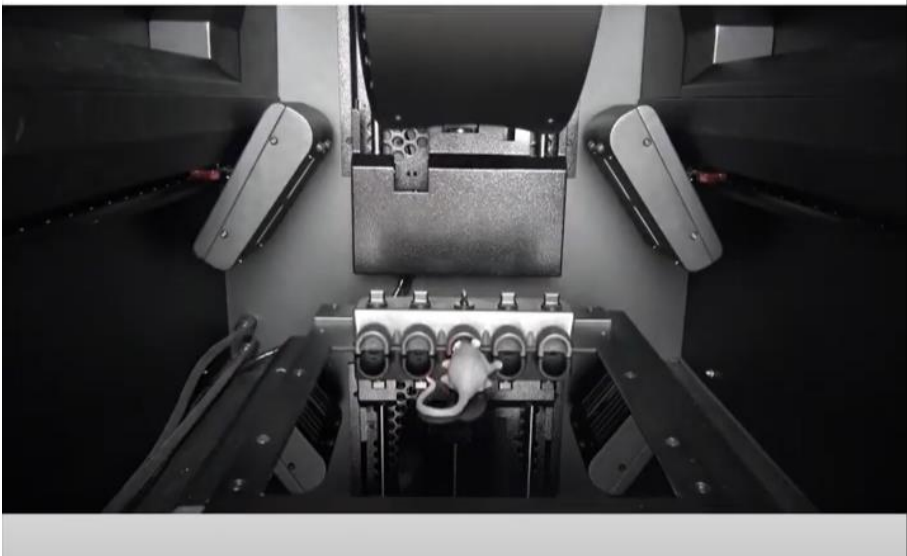
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
	support structure so that a field of view of the camera is unobstructed by said housing;	Come Inside Discover our world of quality, design and precision.  See Vilber website, https://www.vilber.com/newton-7-0/.

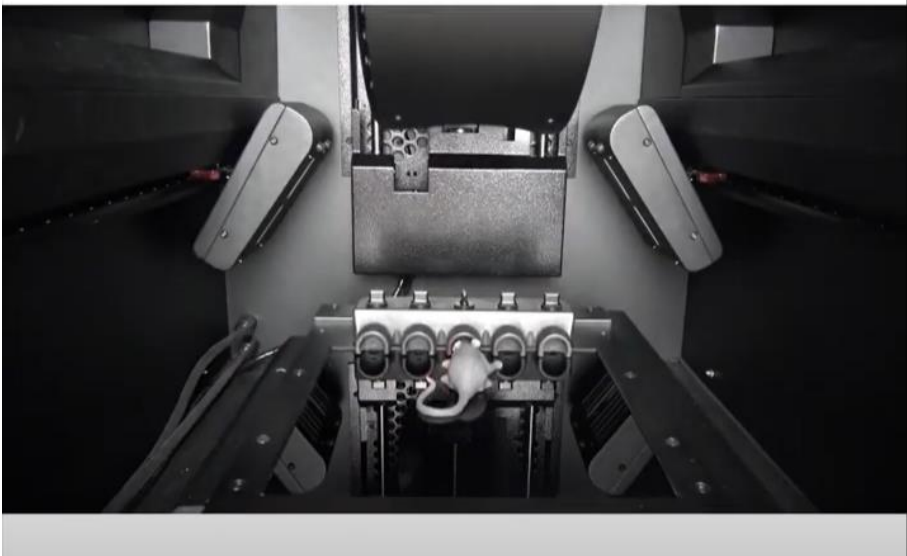
ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")	
		NEWTON 7.0 FT500 <i>IN VIVO</i> 3D OPTICAL TOMOGRAPHY NOW ACCESSIBLE TO EVERYONE ○ ULTRA ROBUST METALLIC DARKROOM	 See image excerpt from Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:30. The Newton further includes a plurality of lamp receptacles surrounding the central opening. For example:

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		 See image excerpt from Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:41. The housing in the Newton 7.0 is mountable to a support structure so that the central opening is aligned with a camera also mounted to the support structure so that a field of view of the camera is unobstructed by said housing. For example:

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		 See image excerpt from Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:41.
	a light source positioned within each of the plurality of lamp receptacles so that said light sources do not extend beyond the lamp receptacles, wherein at least one of said light	The Newton includes a narrow-band light source, positioned within at least one of the plurality of the lamp receptacles that do not extend beyond the plane of the lamp receptacle. For example:

ATTACHMENT 1

Claim	Claim Element	Vilber’s Newton 7.0 (“Newton”)	
	sources comprises a narrow-band light source; and	EXCITATION	
		White - Light Dual EPI-White light LED panels	Dual EPI-White light LED panels
		Fluorescence Upgradeable to Fluorescence	8 Fluorescent channels included 420 / 480 / 520 / 580 / 640 / 680 / 740 / 780nm
		EMISSION	
		Filter Wheel 10-position Motorized filter wheel	10-position Motorized filter wheel
		Emission Filters 4 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm	8 Narrow Band-pass filters included for the BLI Tomography 500 / 550 / 600 / 650nm
		Full Spectrum Tunability 8 excitation channels and 8 emission filters are available to cover the complete spectrum from Blue to infra-red. Narrow bandpass filters are used for both excitation and emission to reduce cross talk between dyes, allowing for up to 3 dyes to be imaged simultaneously.	
		See https://www.scintica.com/products/vilber-imaging/vilber-newton-7/ .	

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		FLUORESCENCE The advent of novel fluorescent probes has increased the demands on in-vivo fluorescence imaging systems to be able to deftly handle a variety of simultaneous signals. The best spectral range for penetrating an animal is between 600 nm and 900 nm. With NIR fluorescence detection, background is very low, and tissue autofluorescence does not limit performance. The NEWTON 7.0 offers 8 excitation channels in the visible RGB and NIR spectrums. Each individual light source delivers a precisely defined range of the spectrum. The very tight LED spectrum is additionally constrained with a very narrow excitation filter. This means less background in the images of your sample and a higher signal to noise ratio to detect the weakest signals. See Ex. 1 at 2, demonstrating the excitation channels are generated from narrow band light sources. The light sources do not extend beyond the plane of the receptacles. For example:

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		 See Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 1:02.
	a control system operatively connected to each of said light sources, said	The Newton includes a control system connected to the light sources. For example:

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
	control system operating selected ones of said light sources to provide a desired excitation illumination to an object within the field of view of the camera, the excitation illumination causing fluorescent materials in the object to fluoresce, the camera capturing an image of the fluorescing material in the object.	 See Ex. 1 at 1.

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		NEWTON 7.0 FT500 <i>IN VIVO</i> 3D OPTICAL TOMOGRAPHY NOW ACCESSIBLE TO EVERYONE ○ ULTRA ROBUST METALLIC DARKROOM ○ SLIDE OUT HEATED BED ○ INDIVIDUAL GAS BREATHERS ○ UP TO 5 ANIMALS AT A TIME  See Vilber marketing video, available at https://www.youtube.com/watch?v=Zw6QxSuUZ24 at 0:34. The control system operates the selected light sources to provide a desired excitation illumination to an object within the field of view of the camera.

ATTACHMENT 1

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		FLUORESCENCE & BIOLUMINESCENCE APPS STUDIO APPLICATION LIBRARY The NEWTON 7.0 includes our revolutionary Apps Studio approach to imaging. The Apps Studio is an innovative library of applications which contains more than 40 different protocols for a wide variety of targeted and easily activated fluorescent probes and reporters. The Apps Studio contains the excitation and the emission spectra of the main fluorophores used in modern molecular biology laboratory. It also suggests See Ex. 2 at 2. The controlled excitation illumination is directed to an object within the field of view of the camera, where the camera images the object. For example: "Multispectral in vivo imaging is possible by using different luciferase enzyme/substrate pairs or by using different fluorescent dyes. Signals can be overlaid within the same image, up to 3 reporters can be imaged simultaneously." See https://www.scintica.com/products/vilber-imaging/vilber-newton-7/. The excitation illumination from the Newton 7.0 machine causes fluorescent materials in the object to fluoresce, and the camera of the Newton 7.0 captures an image of the fluorescing material in the object.

Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		 See Ex. 1 at 1 (enhanced).

ATTACHMENT 1

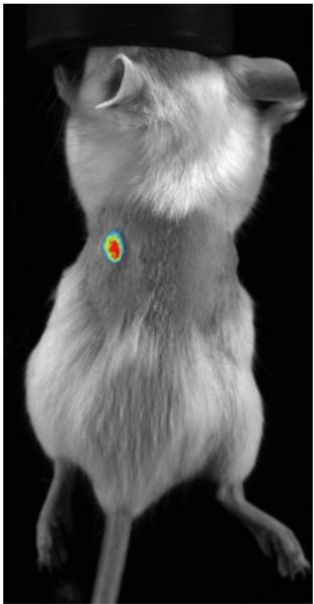
Claim	Claim Element	Vilber's Newton 7.0 ("Newton")
		Fluorescence imaging can be used to detect fluorescent reporter genes or dyes <i>in vivo</i> using Vilber's dynamic range of excitation filters.  See https://www.scintica.com/products/vilber-imaging/vilber-newton-7/.

Exhibit 1

NEWTON 7.0

BIOLUMINESCENCE &
FLUORESCENCE IMAGING

Scintica:

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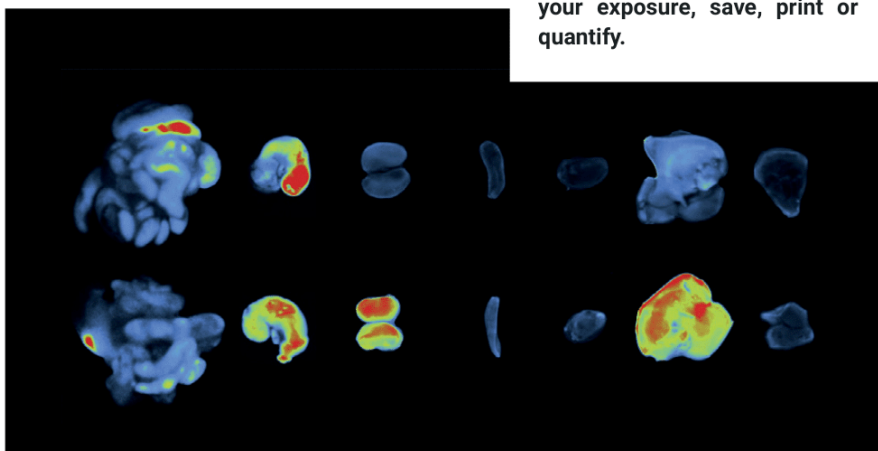
www.scintica.com



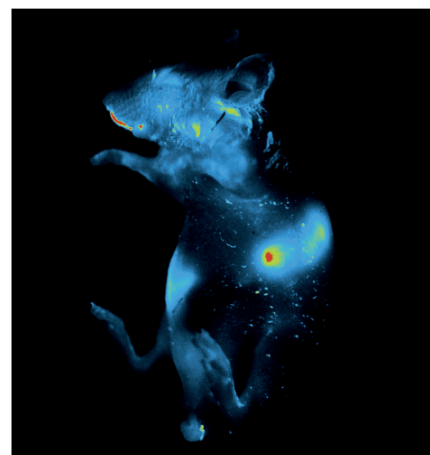
IN VIVO - IN VITRO IMAGING

IVILBER
Smart Imaging

The NEWTON's protocol driven image acquisition is as quick as it is intuitive: adjust your exposure, save, print or quantify.



Dox distribution - Ex vivo fluorescence imaging of organs at 10 h post-oral-administration



Tumoral cells expressing luciferase, 6 weeks after injection

Newton 7.0 FT-500

APPLICATIONS

The NEWTON 7.0 is a highly sensitive optical imaging system dedicated to the visualization of in vivo, in vitro and ex vivo applications. Various bioluminescent reporters like firefly luciferase and many fluorescent molecular reagents can be used to visualize and track tumor, disease or inflammation development, target molecules to nanoparticles or follow biodistribution and pharmacokinetics studies within living animals in a non-invasive manner.

BIOLUMINESCENCE

The NEWTON 7.0 proprietary optics have been specifically developed for macro imaging with high light collection capacity, incorporating a unique combination of high numerical aperture and long working distance.

The NEWTON 7.0 custom made V.070 lens combines sensitivity and optical performance for very faint light conditions. The optical system includes ultra-low dispersion components to enhance the sensitivity, and aspheric elements to deliver consistently sharp images. The main function of a camera lens is to collect light. The lens aperture represents its capability to collect as much light as possible in a given period. Its sensitivity is usually expressed by a range of f-stops. The smaller the f-stop number, the larger the aperture. A lower f-number denotes a greater aperture opening, which allows more light to reach the CCD sensor. The aperture of the V.070 lens is f/0.70, providing faster imaging and better sensitivity compared to all other imagers.

FLUORESCENCE

The advent of novel fluorescent probes has increased the demands on in-vivo fluorescence imaging systems to be able to deftly handle a variety of simultaneous signals. The best spectral range for penetrating an animal is between 600 nm and 900 nm. With NIR fluorescence detection, background is very low, and tissue autofluorescence does not limit performance.

The NEWTON 7.0 offers 8 excitation channels in the visible RGB and NIR spectrums. Each individual light source delivers a precisely defined range of the spectrum. The very tight LED spectrum is additionally constrained with a very narrow excitation filter. This means less background in the images of your sample and a higher signal to noise ratio to detect the weakest signals.

Bright fluorescence observation can be performed in a rapid scanning mode that shortens exposure times and minimizes specimen damage. The scientific LED beam scans the entire imaging bed surface to provide an unrivalled light homogeneity for a more accurate signal quantification, delivering a precise and traceable quantity of energy for 100% reproducibility of an experiment.

Signals can be overlaid so that several reporters can be visualized simultaneously for multispectral imaging applications. Crosstalk issues are then overcome using Spectral Unmixing function that separates the different signals, so that each channel contains only the signal from one reporter.

A large number of probes and stains can be used such as GFP, RFP, FITC, mCherry, DAPI, Alexa Fluor® 680, 700, 750, Cy® 3, 5, 5.5, DyeLight, IRDye® 800CW, VivoTrack 680, VivoTag 750...

The NEWTON 7.0 is calibrated according to NIST standards. The calibration is based on the use of a NIST traceable luminometer reference source that allows the reading comparison to the NIST established baseline. The system's performance can then be tested periodically with confidence.

3D OPTICAL TOMOGRAPHY

Bioluminescence Tomography (BLT) as well as Fluorescence Molecular Tomography (FMT) are imaging techniques providing further quantitative and localized analyses of a source distribution within a living animal from signals measured on the body surface of the animal.

The NEWTON 7.0 integrates an innovative 3D Tomography imaging module that reconstructs bioluminescent or fluorescent signals into volume that are overlaid within the 3D topographic model of the subject.

For a better understanding of anatomical and deeper tissue structures, the digital organ library allows the superimposition of the mouse organs to the tomographic image to identify the source localization with precision.



SUPERIOR QUANTITATIVE RESULTS

Ultimate linearity for precise protein quantification over the full dynamic range.



MULTISPECTRAL IMAGING

Ultra-low noise imaging thanks to a dual camera amplifier architecture.



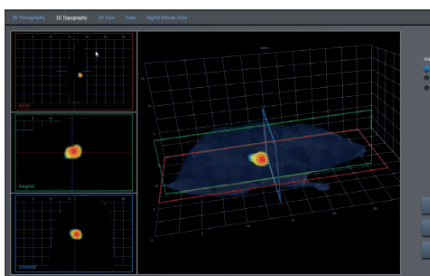
CUSTOM MADE V.070 LENS

Newton custom made lens for enhanced sensitivity and sharpness.

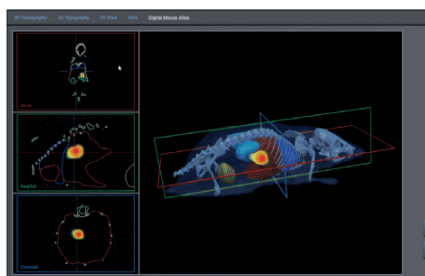


NARROW BANDPASS FILTERS

Time to get the image is drastically reduced and precious antibody can be saved.



3D BLT imaging



Digital mouse organs co-registration



Biosthesia station

USER FRIENDLINESS

The NEWTON's protocol driven image acquisition is as quick as it is intuitive. Easily position the animals using the sliding-out imaging bed, select your protocol and click on start. The camera is motorized on the Z-axis to go from a large field of view to a macro imaging with ease of use. The imaging bed is by default thermoregulated to +37°C and its temperature can be controlled from 20°C to 40°C, or even switched off for ex vivo or in vitro applications. It is also motorized on X/Y-axis and is detachable should you need to do preparative work on the bench before the imaging process.

ANIMAL MANAGEMENT

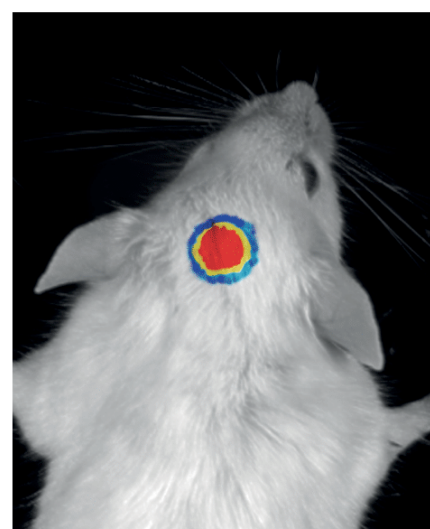
The BIOSTHESIA system has been specially designed for inhalation of isoflurane agents by laboratory animals. The BIOSTHESIA is a small weight device, compact and robust, which can be used as a standalone unit on a

table. As it is transportable, it can be moved from one place to another in no time and can be immediately operational.

The system is composed of a medical grade digital flowmeter, a precision TEC3 format vaporizer, an active charcoal filter, a breathing circuit with mouse nose-cone/mask and an induction box.

The BIOSTHESIA vaporizer is designed to operate with isoflurane and is calibrated using a laser refractometer, to ensure accuracy of use. In addition, our vaporizer has a safety lock function, to prevent accidental turn on making the BIOSTHESIA vaporizer not only one of the most accurately manufactured and certified vaporizer, but one of the safest.

An isolation chamber sealed with HEPA-SPF filters can be supplied for the transportation and the imaging of immunocompromised animals, so that pathogens cannot get inside or outside the box.



Imaging Versatility

- Visualization and tracking of tumor development or disease progression in the living animal
- Signals overlay so that several reporters can be visualized simultaneously
- In vitro and in vivo cells migration tracking
- Signal quantification

NEWTON 7.0

Performance

- Proprietary V.070 lens with f0.70 aperture
- 1" scientific grade CCD camera
- Bioluminescence detection
- Fluorescence detection
- 3D Optical Tomography



Ease Of Use

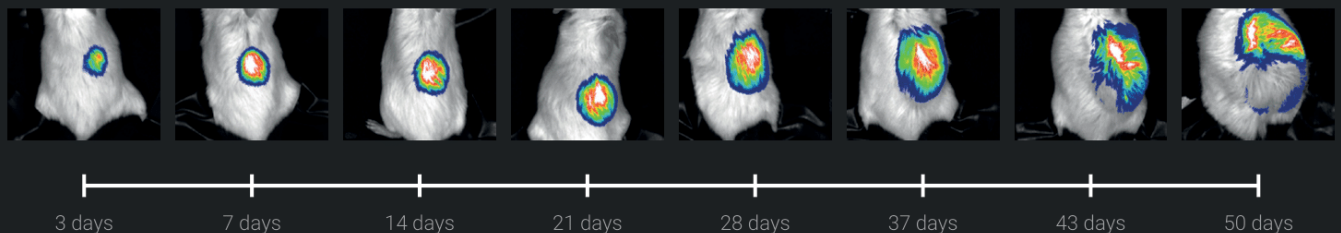
- Intuitive user interface
- One click to get the image
- Auto-exposure and automatic illumination control
- Easy to clean

Animal Management

- Large 20x20 cm FOV for multi-subject imaging
- Heated animal bed
- EQUAFLOW™ breather to deliver equal gas to each nose cone to prevent unwanted animals awakening
- Active gas scavengers
- Compatible with the BIOTHESIA gas anesthesia system
- Up to 5 mice

Non-Invasive Imaging

The NEWTON bioluminescence imaging mode allows the non-invasive detection and quantification of orthotopic, metastatic and spontaneous tumors in the whole mouse. The system allows you to monitor tumor development right from the onset and collect and compare data throughout tumor development.



NEWTON 7.0 - FT-500

Bioluminescence & fluorescence detection

CAMERA & OPTICS

Scientific grade 16-bit CCD camera

Grade 0, 400-900nm / 4.8 O.D.

-90°C delta cooling

f/0.70 motorized lens aperture

Image resolution: 10 megapixels

Native resolution: 2160x2160

Peak Quantum Efficiency: 80%

FOV minimum: 6x6cm (macro imaging)

FOV maximum: 20x20cm (5 animals capacity)

ILLUMINATION

8 excitation channels:

420nm - 480nm - 520nm - 580nm

640nm - 680nm - 740nm - 780nm

10-position motorized filter wheel

8 narrow bandpass emission filters:

500nm - 550nm - 600nm - 650nm

700nm - 750nm - 800nm - 850nm

HARDWARE CAPABILITIES

Intelligent Darkroom concept

Fully-automatic system:

- Motorized optical lens
- Z-axis motorized camera
- X/Y-axis motorized sample stage

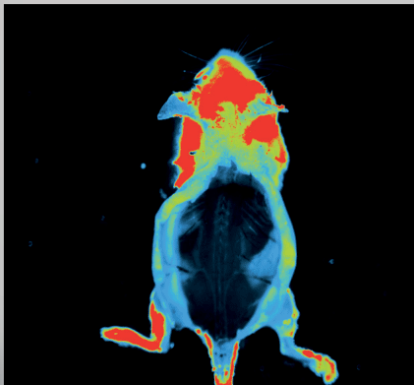
ANIMAL MANAGEMENT

Biosthesis gas anesthesia station

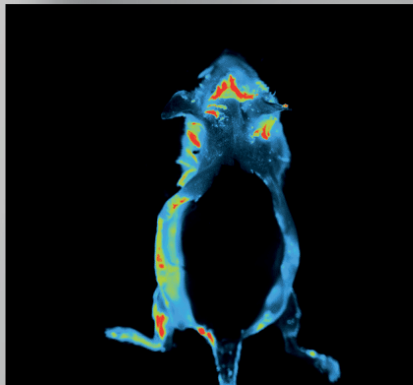
Heated Mouse Pad

Animal breather for 5 mice

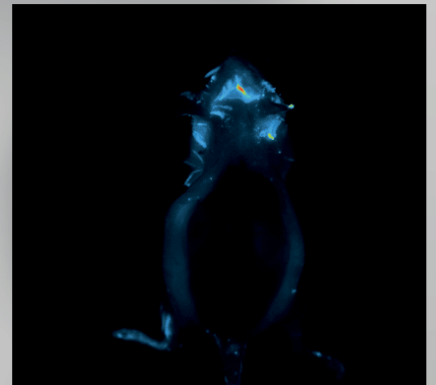
Waste gas scavenger



Blue excitation - High autofluorescence



Green excitation - Moderate autofluorescence



Near infrared excitation - Low autofluorescence



HEADQUARTERS

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Exhibit 2

NEWTON 7.0 - BIO

Bioluminescence &
Fluorescence Imaging

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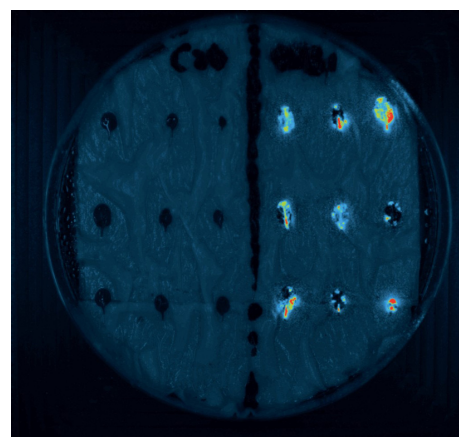
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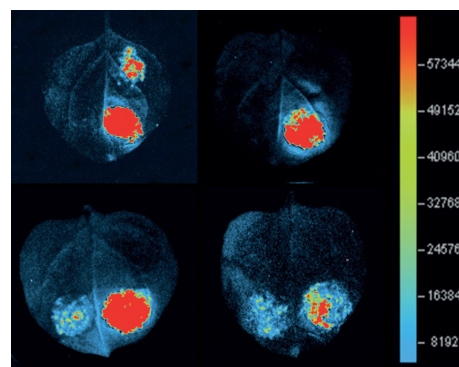
WHOLE PLANT IMAGING

VILBER
Smart Imaging

The NEWTON's protocol driven image acquisition is as quick as it is intuitive: adjust your exposure, save, print or quantify.



Cloned Plant screening: *Arabidopsis thaliana* seedlings transfected with luciferase (right) and nontransfected (left), 3min exposure after 1 mM luciferin was sprayed onto the leaves.



Research on microbial infection of plants - *BIK1* and *FLS2* interact with *RbohD* in *N. benthamiana*. The indicated constructs were transiently expressed in *N. benthamiana*, and luciferase complementation imaging assay was performed.

SMART IMAGING SYSTEM

The NEWTON 7.0 system combines high sensitivity with advanced plant imaging features and user-friendly time-saving operation.

The NEWTON 7.0 proprietary optics have been specifically developed for macro imaging with high light collection capacity, incorporating a unique combination of high numerical aperture and long working distance. Bright fluorescence observation can be performed in a rapid scanning mode that shortens exposure times and minimizes specimen damage. Observation is thus possible even with slight body movement. The fast lens is also ideal for luminescence applications requiring longer exposure time.



Ultimate sensitivity with the widest f/0.70 lens aperture

The advent of novel fluorescent probes has increased the demands on in-vivo fluorescence imaging systems to be able to deftly handle a variety of simultaneous signals. Our dual magnetron filter technology ensures transmission above 90% and very narrow band cutting - meaning improved spectral separation and increased sensitivity. Our detection spectral range goes from 400 to 900nm, making the NEWTON 7.0 ideal for GFP, YFP or simultaneously. IR applications. With the NEWTON 7.0 optical imaging system, you can image bioluminescent reporters like firefly luciferase and rapidly quantify the signal. The system allows you to visualize infections in whole plants and leaves, compare plant virology, regulate plants growth or observe the stress tolerance.

FLUORESCENCE & BIOLUMINESCENCE APPS STUDIO APPLICATION LIBRARY

The NEWTON 7.0 includes our revolutionary Apps Studio approach to imaging. The Apps Studio is an innovative library of applications which contains more than 40 different protocols for a wide variety of targeted and easily activated fluorescent probes and reporters. The Apps Studio contains the excitation and the emission spectra of the main fluorophores used in modern molecular biology laboratory. It also suggests

the best possible system configuration in terms of light source excitation, emission filter and sensitivity level. The Apps Studio ensures reproducibility and one click image acquisition for the best ease of use.

The Newton 7.0 accommodates 8 excitation channels in the visible RGB and NIR spectrum.. Signals can be overlaid so that several reporters can be visualized

Each individual light source delivers a precisely defined range of the spectrum. The very tight LED spectrum is additionally constrained with a very narrow excitation filter. This means less background in the images of your sample and a higher signal to noise ratio to detect the weakest signals. The LED Spectra Capsules can be easily changed, meaning that NEWTON 7.0 can be adapted simply as the requirements of your applications evolve.

A large number of dyes and stains can be used such as GFP, YFP, Pro-Q Emerald 300, Sypro-Ruby, FITC, DAPI, Alexa Fluor® 680, 700, 750, Cy® 3, 5, 5.5, DyeLight, IRDye® 800CW, VivoTrack 680, VivoTag 750...



NEWTON 7.0 BIO



SUPERIOR QUANTITATIVE RESULTS

Ultimate linearity for precise protein quantification over the full dynamic range.



MULTISPECTRAL IMAGING

Ultra-low noise imaging thanks to a dual camera amplifier architecture.



CUSTOM MADE V.070 LENS

FUSION custom made lens for enhanced sensitivity and sharpness.



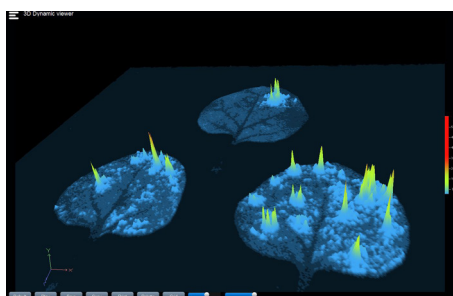
NARROW BANDPASS FILTERS

Time to get the image is drastically reduced and precious antibody can be saved.

QUANTITATIVE IMAGING

Sensitivity is a key feature to detect a bioluminescence or fluorescence signal. Broad linear dynamic range is necessary to compare weak and strong signals in the same image.

The NEWTON 7.0 achieves the best signal to noise ratio for the lowest limits of detection. The system is extremely linear over its wide dynamics and can easily detect large intensity difference between bright and faint signals before reaching saturation. The broad linear dynamic range enables relative quantification of target proteins with confidence.



NEWTON 7.0 Software - 3D Dynamic Scan

PLANT MANIPULATION ROTATING STAGE

The NEWTON 7.0 BIO has been specially designed to handle plants with minimum manipulation. Simply position your pot on the dedicated tray, the stage can be inclined by 15° on the X/Y axis to visualize the plants from different angles and is easily controlled from the software interface, avoiding time consuming manipulation. The rotating stage is also motorized on the Z-axis to get closer to the CCD camera depending on your sample size, giving the possibility to image whole plants, leaves and seedlings with an enhanced sensitivity and image resolution.



Height Adjustable Plant Stage

When a whole plant is being imaged, it could be difficult to focus on a specific part of the plant. With the NEWTON 7.0 BIO's new generation of CCD camera, simply click on the leaf of interest for an immediate focusing with no manual adjustment.

Various imaging modes are available from automatic, manual, or time-lapse imaging program. Benefit from our 3D Dynamic Scan technology and observe the different signal intensities in a live 3D video reconstruction. The unique color imaging mode helps you acquire a quick snapshot of your plants with a true color representation, making the documentation faster!

Versatile Applications

- Comparative Plant Virology
- Genetic Regulation
- Infection Monitoring
- Regulation of Plant Growth
- Stress Tolerance

NEWTON 7.0 BIO

Performance

- Proprietary V.070 lens with f0.70 aperture
- 1" scientific grade CCD camera
- Bioluminescence detection
- Fluorescence detection



Ease of Use

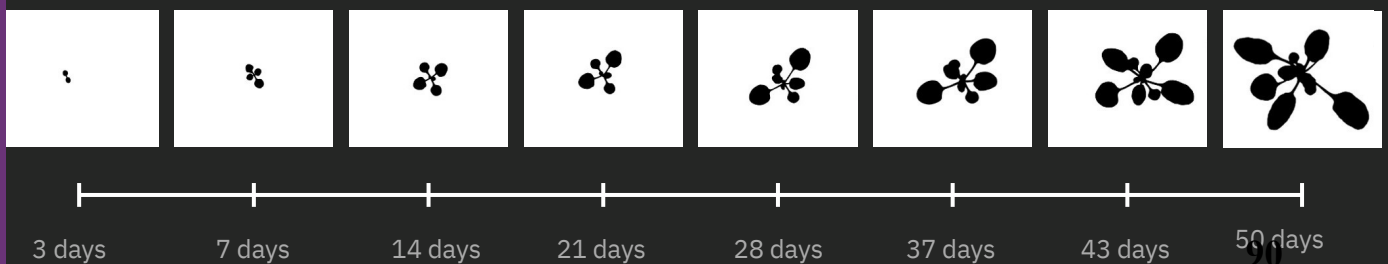
- Intuitive user interface
- One click to get the image
- Auto-exposure and automatic illumination control
- Easy to clean

Wide Detection

- Luciferase Expression
- GFP Expression
- Chlorophyll Phosphorescence
- NIR Illumination

Daylight / Nightlight Simulation

Monitor the growth of a plant overtime thanks to the Daylight and Nightlight simulation modes. The system allows you to collect and compare data throughout the growth of plants.



NEWTON 7.0 BIO

Bioluminescence, Chemiluminescence
& Fluorescence detection

PERFORMANCE

Bioluminescence detection : femtogram level
Fluorescence detection : picogram level

CAMERA & OPTICS

Scientific grade 16-bit CCD camera
Grade 0, 400-900nm / 4.8 O.D.
-90°C delta Cooling
f/0.70 motorized lens aperture
Image resolution: 10 megapixels
Native resolution: 2160x2160
Peak Quantum Efficiency: 80%
FOV minimum: 6x6cm (macro imaging)
FOV maximum: 20x20cm (whole plant)

ILLUMINATION

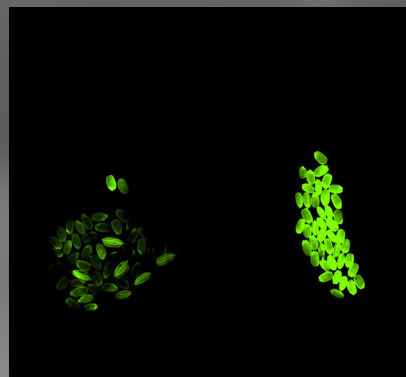
Dual White-Light LED Panels
8 excitation channels:
440nm - 480nm - 540nm - 580nm
640nm - 680nm - 740nm - 780nm
11-Position Motorized Filter Wheel
8 Narrow Bandpass Emission Filters:
500nm - 550nm - 600nm - 650nm
700nm - 750nm - 800nm - 850nm

HARDWARE CAPABILITIES

Intelligent Darkroom concept
Fully-automatic system
•Motorized Optical Lens
•Z-axis Motorized Camera
•15° Tilting sample stage

SOFTWARE

Automatic, Manual & Serial Acquisition modes
Exposure time minimum: 40 milliseconds
Exposure time maximum: 2 hours
3D live Dynamic Scan
Image Editing and Image Analysis
included Chemiluminescence and fluorescence on
Western, Northern or Southern blot.



*eGFP transfected rice grains
excitation 480nm and emission filter F-565,
exposure time 0.8 sec.*



*GFP expression
GFP-transfected (right) and Control (left)
tobacco leaves, Epi
excitation 480nm and emission filter F-565,
exposure time 2sec.*



*Plant Virology
Agroinfiltration in Nicotiana Benthamiana
16c, observed under blue excitation (480nm
with F-565) to localize the GFP expression*

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