PATENT ASSIGNMENT COVER SHEET

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Stylesheet Version v1.2

EPAS ID: PAT6382132

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
TRILUMINA CORP.	10/29/2020

RECEIVING PARTY DATA

Name:	LUMENTUM OPERATIONS LLC
Street Address:	1001 RIDDER PARK DRIVE
City:	SAN JOSE
State/Country:	CALIFORNIA
Postal Code:	95131

PROPERTY NUMBERS Total: 37

Property Type	Number
Application Number:	12707657
Application Number:	12970880
Application Number:	13077769
Application Number:	13109832
Application Number:	13300531
Application Number:	13594714
Application Number:	13865143
Application Number:	13868034
Application Number:	13900489
Application Number:	13902555
Application Number:	14085686
Application Number:	14813011
Application Number:	14946730
Application Number:	15040975
Application Number:	15133094
Application Number:	15785312
Application Number:	15898048
Application Number:	16045633
Application Number:	16406846
Application Number:	16627958

Property Type	Number
Application Number:	16680404
Application Number:	16733901
Application Number:	16840003
Application Number:	16840030
Application Number:	16840063
Application Number:	61153190
Application Number:	61288269
Application Number:	61345513
Application Number:	61625633
Application Number:	61636570
Application Number:	61671036
Application Number:	61675282
Application Number:	62030481
Application Number:	62409144
Application Number:	62536918
Application Number:	62668750
Application Number:	62767302

CORRESPONDENCE DATA

Fax Number: (571)432-0808

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

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NAME OF SUBMITTER:	RACHEL ALLEN
SIGNATURE:	/Rachel Allen/
DATE SIGNED:	11/03/2020

Total Attachments: 9
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ASSIGNMENT OF PATENTS

This ASSIGNMENT OF PATENTS (this "Assignment") is entered into on October 29, 2020 (the "Effective Date"), between Lumentum Operations LLC, a Delaware limited liability company ("Assignee"), and TriLumina Corp., a Delaware corporation ("Assignor"). This Assignment is being entered into on the Effective Date pursuant to the transactions contemplated by that certain Asset Purchase Agreement made and entered into as of October 29, 2020 by and among Assignee and Assignor (the "Purchase Agreement"). Capitalized terms not defined herein will have the meaning set forth in the Purchase Agreement.

RECITALS

WHEREAS, Assignor is the owner of the entire right, title and interest in and to the patents, patent applications and industrial design registrations set forth in Schedule A attached hereto and in the inventions claimed therein (collectively, the "Patents"), and Assignee wants to acquire the entire right, title and interest in and to the aforesaid Patents and the inventions claimed therein.

AGREEMENT

In consideration of the mutual covenants contained herein and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereby agree as follows:

1. Patents. Assignor does hereby assign, transfer and convey to Assignee its entire right, title and interest in and to said Patents, all corresponding patents, patent applications, in all countries, all reissues, divisions, and extensions thereof and to any Letters Patents which have or may issue based thereon and all benefits, privileges, causes of action, claims and remedies arising out of or relating to the Patents, the exploitation thereof, and the use and ownership of any of the Patents, including but not limited to the right to sue for past damages.

2. Assignment. This Assignment shall inure to the benefit of and be binding upon the parties hereto and their respective successors and assigns.

3. Governing Law. This Assignment shall be construed, interpreted and applied in accordance with the laws of the State of California.

4. Amendments. This Assignment may be amended or modified only by a written instrument signed by each Party.

5. Counterparts. This Assignment may be executed in one or more counterparts, all of which shall be considered one and the same agreement, and subject to the Closing under the Purchase Agreement and shall become effective when one or more such counterparts have been signed by each of the Parties and delivered to the other Party.

[Signature on following page]

IN WITNESS WHEREOF, the undersigned, intending to be legally bound hereby, has duly executed this Assignment to be effective as of the date first written above. By signing below with a digital signature, the undersigned indicates its intent to effect this Assignment.

Assignor:

TriLumina Corp.

By: Brian Wong
Name: Brian Wong
Title: Chief Executive Officer

SCHEDULE A

Patents

Authority	Pub	Application #	Filing Date	Title
Brazil	BR112014004612A2	BR112014004612	2012-08-24	COMUNICAÇÕES ÓPTICAS EM ESPAÇO LIVRE EM ALTA VELOCIDADE
Canada	CA2784958C	CA2784958	2010-12-16	System and method for combining laser arrays for digital outputs
Canada	CA2784958A1	CA2784958	2010-12-16	System and method for combining laser arrays for digital outputs
Canada	CA2846843C	CA2846843	2012-08-24	High speed free-space optical communications
Canada	CA2846843A1	CA2846843	2012-08-24	High speed free-space optical communications
Canada	CA2910202C	CA2910202	2013-05-24	Microlenses for multibeam arrays of optoelectronic devices for high frequency operation
Canada	CA2910202A1	CA2910202	2013-05-24	Microlenses for multibeam arrays of optoelectronic devices for high frequency operation
Canada	CA2931482A1	CA2931482	2014-11-20	System for combining laser array outputs into a single beam carrying digital data
Canada	CA3018888A1	CA3018888	2017-04-14	Semiconductor lens optimization of fabrication
Canada	CA3071264A1	CA3071264	2018-07-25	A single-chip series connected vcsel array
Canada	CA3072760A1	CA3072760	2018-08-13	A surface-mount compatible vcsel array
China	CN102959811B	CN201080064212.6	2011-01-19	用于组合用于数字输出的激光器阵列的系统和方法
China	CN102959811A	CN201080064212.6	2011-01-19	System and method for combining laser arrays for digital outputs
China	CN104185961B	CN201280052549.4	2012-08-24	高速自由空间光通信
China	CN104185961A	CN201280052549.4	2012-08-24	High speed free-space optical communications
China	CN105874662B	CN201380076768.0	2013-05-24	用于高频率操作的光电器件的多光束阵列的微透镜
China	CN105874662A	CN201380076768.0	2013-05-24	Microlenses for multibeam arrays of optoelectronic devices for high frequency operation
China	CN105899870B	CN201480073105.8	2014-11-20	用于将激光器阵列输出组合为携带数字数据的单个光束的系统
China	CN105899870A	CN201480073105.8	2014-11-20	System for combining laser array outputs into a single beam carrying digital data
China	CN107483112A	CN201710695448.3	2012-08-24	High speed free-space optical communications
China	CN109416417A	CN201780024803.2	2017-04-14	Semiconductor lens optimization of fabrication
China	CN110114936A	CN201780078129.6	2017-10-17	Matching drive device for multi-beam optoelectronic arrays
China	CN111149226A	CN201880062285.8	2018-07-25	A single-chip series connected vcsel array
China	CN111226360A	CN201880066965.7	2018-08-13	表面贴装的兼容的VCSEL阵列
EPO	EP2517321A1	EP2010838272	2010-12-16	System and method for combining laser arrays for digital outputs
EPO	EP2517321A4	EP2010838272	2010-12-16	System and method for combining laser arrays for digital outputs
EPO	EP2748956B1	EP2012828777	2012-08-24	High speed free-space optical communications
EPO	EP2748956A4	EP2012828777	2012-08-24	High speed free-space optical communications
EPO	EP2748956A1	EP2012828777	2012-08-24	High speed free-space optical communications
EPO	EP3000157B1	EP2013882974	2013-05-24	Microlenses for multibeam arrays of optoelectronic devices for high frequency operation

EPO	EP3000157A1	EP2013882974	2013-05-24	Microlenses for multibeam arrays of optoelectronic devices for high frequency operation
EPO	EP3000157A4	EP2013882974	2013-05-24	Microlenses for multibeam arrays of optoelectronic devices for high frequency operation
EPO	EP3071880A4	EP2014864733	2014-11-20	System for combining laser array outputs into a single beam carrying digital data
EPO	EP3071880A1	EP2014864733	2014-11-20	System for combining laser array outputs into a single beam carrying digital data
EPO	EP3446160A1	EP2017786386	2017-04-14	Semiconductor lens optimization of fabrication
EPO	EP3446160A4	EP2017786386	2017-04-14	Semiconductor lens optimization of fabrication
EPO	EP3526854A1	EP2017862969	2017-10-17	Matching drive device for multi-beam optoelectronic arrays
EPO	EP3526854A4	EP2017862969	2017-10-17	Matching drive device for multi-beam optoelectronic arrays
EPO	EP3407510A1	EP2018183404	2012-08-24	High speed free-space optical communications
EPO	EP3659188A1	EP2018839037	2018-07-25	A single-chip series connected vcsel array
EPO	EP3669430A1	EP2018846248	2018-08-13	A surface-mount compatible vcsel array
Hong Kong	HK1227983A	HK17101706	2017-02-16	System for combining laser array outputs into a single beam carrying digital data
Hong Kong	HK1228112A1	HK17101753	2017-02-17	Microlenses for multibeam arrays of optoelectronic devices for high frequency operation
Hong Kong	HK1228112A	HK17101753	2017-02-17	Microlenses for multibeam arrays of optoelectronic devices for high frequency operation
Hong Kong	HK1248409A	HK18107527	2018-06-11	High speed free-space optical communications
Hong Kong	HK40005137A	HK19128561	2019-08-22	Semiconductor lens optimization of fabrication
Hong Kong	HK40012945A	HK62020002465	2020-02-10	Matching drive device for multi-beam optoelectronic arrays
India	IN10359DELNP2015A	IN10359DELNP2015	2015-11-06	Microlenses for multibeam arrays of optoelectronic devices for high frequency operation
India	IN201617018887A	IN201617018887	2016-06-01	System for combining laser array outputs into a single beam carrying digital data
India	IN201817042865A	IN201817042865	2018-11-14	Semiconductor lens optimization of fabrication
India	IN202017007772A	IN202017007772	2020-02-24	A single-chip series connected vcsel array
India	IN202017010436A	IN202017010436	2020-03-11	A surface-mount compatible vcsel array
India	IN2231DELNP2014A	IN2231DELNP2014	2014-03-24	High speed free space optical communications
India	IN5470DELNP2012A	IN5470DELNP2012	2012-06-19	System and method for combining laser arrays for digital outputs
Japan	JP2013527484A	JP2012544858	2011-01-19	デジタル出力用レーザアレイを組み合わせるためのシステムおよび方法
Japan	JP2013527484A5	JP2012544858	2011-01-19	デジタル出力用レーザアレイを組み合わせるためのシステムおよび方法
Japan	JP6281872B2	JP2014528480	2012-08-24	高速自由空間光通信
Japan	JP2014525717A	JP2014528480	2012-08-24	高速自由空間光通信
Japan	JP2014525717A5	JP2014528480	2012-08-24	高速自由空間光通信
Japan	JP6268224B2	JP2016108933	2016-05-31	デジタル出力用レーザアレイを組み合わせるためのシステムおよび方法
Japan	JP2016225630A	JP2016108933	2016-05-31	System and method for combining laser arrays for digital output

Japan	JP6339665B2	JP2016510662	2013-05-24	高周波動作のための光電子装置のマルチビームアレイ用マイクロレンズ
Japan	JP2016519436A	JP2016510662	2013-05-24	高周波動作のための光電子装置のマルチビームアレイ用マイクロレンズ
Japan	JP2016519436A5	JP2016510662	2013-05-24	高周波動作のための光電子装置のマルチビームアレイ用マイクロレンズ
Japan	JP2018088694A	JP2018005020	2018-01-16	High speed free-space optical communications
Japan	JP2018088694A5	JP2018005020	2018-01-16	High speed free-space optical communications
Japan	JP2018117348A	JP2018005023	2018-01-16	High speed free-space optical communications
Japan	JP6759274B2	JP2018091469	2018-05-10	高周波動作のための光電子装置のマルチビームアレイ用マイクロレンズ
Japan	JP2018164089A	JP2018091469	2018-05-10	Microlenses for multibeam arrays of optoelectronic devices for high frequency operation
Japan	JP2019514073A	JP2018554755	2017-04-14	半導体レンズの製造の最適化
Japan	JP2019514073A5	JP2018554755	2017-04-14	半導体レンズの製造の最適化
Japan	JP2019180101A	JP2019120217	2019-06-27	High speed free-space optical communications
Japan	JP2020061746A	JP2019220512	2019-12-05	High speed free-space optical communication
Japan	JP2020500430A	JP2019541691	2017-10-17	マルチビーム光電子アレイ用の整合性ドライブデバイス
Korea	KR1020190084964A	KR1020197013374	2017-10-17	멀티-빔 광전자 어레이들을 위한 정합 드라이브 디바이스
Korea	KR1020200066608A	KR1020207005275	2018-07-25	단일 칩 직렬 연결의 VCSEL 어레이
Korea	KR1020200072465A	KR1020207006997	2018-08-13	표면 장착 호환식 VCSEL 어레이
WIPO	WO2011075609A1	PCT/US2010/060897	2010-12-16	System and method for combining laser arrays for digital outputs
WIPO	WO2012068563A1	PCT/US2011/061553	2011-11-18	Optical pumping of solid-state laser material using addressable laser array
WIPO	WO2013032954A1	PCT/US2012/052397	2012-08-24	High speed free-space optical communications
WIPO	WO2014189518A1	PCT/US2013/042523	2013-05-23	High brightness pulsed vcsel sources
WIPO	WO2014175901A1	PCT/US2013/042767	2013-05-24	Microlenses for multibeam arrays of optoelectronic devices for high frequency operation
WIPO	WO2014018684A1	PCT/US2013/051905	2013-07-24	Multibeam array of top emitting vcsel elements
WIPO	WO2015077516A1	PCT/US2014/066725	2014-11-20	System for combining laser array outputs into a single beam carrying digital data
WIPO	WO2017184455A1	PCT/US2017/027674	2017-04-14	Semiconductor lens optimization of fabrication
WIPO	WO2018075475A1	PCT/US2017/056913	2017-10-17	Matching drive device for multi-beam optoelectronic arrays
WIPO	WO2019023401A1	PCT/US2018/043786	2018-07-25	A single-chip series connected vcsel array
WIPO	WO2019036383A1	PCT/US2018/046552	2018-08-13	A surface-mount compatible vcsel array
WIPO	WO2019036383A9	PCT/US2018/046552	2018-08-13	A surface-mount compatible vcsel array
WIPO	WO2020102111A1	PCT/US2019/060793	2019-11-11	In-situ bias voltage measurement of vcsels
WIPO	WO2020198261A1	PCT/US2020/024516	3/24/2020	Spatial Multiplexing of Lens Arrays With Surface-Emitting Lasers For Multi-Zone Illumination
Taiwan	TWI650583B	TW106113106	2017-04-19	Semiconductor lens optimization system and method of fabrication

Taiwan	TW201802497A	TW106113106	2017-04-19	Semiconductor lens optimization of fabrication
Taiwan	TWI675521B	TW106135394	2017-10-17	Matching drive device for multi-beam optoelectronic arrays
Taiwan	TW201826649A	TW106135394	2017-10-17	Matching drive device for multi-beam optoelectronic arrays
Taiwan	TW201921818A	TW107125771	2018-07-25	A single-chip series connected vcsel array
Taiwan	TWI692161B	TW107128329	2018-08-14	A surface-mount compatible vcsel array
Taiwan	TW201921819A	TW107128329	2018-08-14	A surface-mount compatible vcsel array
United States	US7949024	US12/707657	2010-02-17	Multibeam arrays of optoelectronic devices for high frequency operation
United States	US20100303113A1	US12/707657	2010-02-17	Multibeam Arrays of Optoelectronic Devices for High Frequency Operation
United States	US8613536	US12/970880	2010-12-16	System and method for combining laser arrays for digital outputs
United States	US20110148328A1	US12/970880	2010-12-16	System and method for combining laser arrays for digital outputs
United States	US8848757	US13/077769	2011-03-31	Multibeam arrays of optoelectronic devices for high frequency operation
United States	US20110176567A1	US13/077769	2011-03-31	Multibeam arrays of optoelectronic devices for high frequency operation
United States	US20110279903A1	US13/109832	2011-05-17	Optical beam bundle combiner for multiple laser arrays
United States	US8520713	US13/300531	2011-11-18	Optical pumping of solid-state laser material using addressable laser array
United States	US20120128015A1	US13/300531	2011-11-18	Optical Pumping of Solid-State Laser Material Using Addressable Laser Array
United States	US20130223846A1	US13/594714	2012-08-24	High speed free-space optical communications
United States	US9065239	US13/865143	2013-04-17	Multibeam array of top emitting VCSEL elements
United States	US20130272330A1	US13/865143	2013-04-17	Multibeam array of top emitting vcsel elements
United States	US9232592	US13/868034	2013-04-22	Addressable illuminator with eye-safety circuitry
United States	US20130278151A1	US13/868034	2013-04-22	Addressable illuminator with eye-safety circuitry
United States	US8995485	US13/900489	2013-05-22	High brightness pulsed VCSEL sources
United States	US20150063387A1	US13/900489	2013-05-22	High brightness pulsed vcsel sources
United States	US8995493	US13/902555	2013-05-24	Microlenses for multibeam arrays of optoelectronic devices for high frequency operation
United States	US20130266326A1	US13/902555	2013-05-24	Microlenses for Multibeam Arrays of Optoelectronic Devices for High Frequency Operation
United States	US8979338	US14/085686	2013-11-20	System for combining laser array outputs into a single beam carrying digital data
United States	US20140079088A1	US14/085686	2013-11-20	System and method for combining laser arrays for digital outputs
United States	US10038304	US14/813011	2015-07-29	Laser arrays for variable optical properties
United States	US20150340841A1	US14/813011	2015-07-29	Laser arrays for variable optical properties
United States	US10615871	US14/946730	2015-11-19	High speed free-space optical communications
United States	US20160080077A1	US14/946730	2015-11-19	High speed free-space optical communications
United States	US10244181	US15/040975	2016-02-10	Compact multi-zone infrared laser illuminator

United States	US20160164261A1	US15/040975	2016-02-10	Compact multi-zone infrared laser illuminator
United States	US9927558	US15/133094	2016-04-19	Semiconductor lens optimization of fabrication
United States	US20170299781A1	US15/133094	2016-04-19	Semiconductor lens optimization of fabrication
United States	US10243324	US15/785312	2017-10-16	Matching drive device for multi-beam optoelectronic arrays
United States	US20180109071A1	US15/785312	2017-10-16	Matching drive device for multi-beam optoelectronic arrays
United States	US20180172885A1	US15/898048	2018-02-15	Semiconductor lens optimization of fabrication
United States	US10530128	US16/045633	2018-07-25	Single-chip series connected VCSEL array
United States	US20190036308A1	US16/045633	2018-07-25	Single-chip series connected vcsel array
United States	US20190268068A1	US16/406846	2019-05-08	Wide-angle illuminator module
United States	US20200169065A1	US16/627958	2018-08-13	A Surface-Mount Compatible VCSEL Array
United States	US20200153195A1	US16/680404	2019-11-11	In-situ bias voltage measurement of vcsels
United States	US10756515	US16/733901	2020-01-03	Single-chip series connected VCSEL array
United States	US20200144791A1	US16/733901	2020-01-03	Single-chip series connected vcsel array
United States	US20200235809A1	US16/840003	2020-04-03	System for optical free-space transmission of a string of binary data
United States	US20200235810A1	US16/840030	2020-04-03	Eye-safe free-space optical communications systems
United States	US20200235811A1	US16/840063	2020-04-03	Optical communications device for free-space optical comm
United States	US61153190P0	US61/153190	2009-02-17	Multibeam arrays of optoelectronic devices for high frequency operation
United States	US61288269P0	US61/288269	2009-12-19	Laser arrays combined for digital outputs including display imaging
United States	US61345513P0	US61/345513	2010-05-17	Optical Beam Bundle Combiner for Multiple Laser Arrays
United States	US61415765P0	US61/415765	2010-11-19	Optical Pumping of Solid-State Laser Material Using Addressable Laser Array
United States	US61528119P0	US61/528119	2011-08-26	High speed free-space optical communications
United States	US61625633P0	US61/625633	2012-04-17	Method of Fabrication for Multi-Beam Array of Top Emitting VCSEL Elements
United States	US61636570P0	US61/636570	2012-04-20	Addressable Illuminator with Eye-Safety Circuitry
United States	US61671036P0	US61/671036	2012-07-12	Free Space Optical Communication
United States	US61675282P0	US61/675282	2012-07-24	Method of fabrication for a multibeam array of top emitting vcsel elements
United States	US62030481P0	US62/030481	2014-07-29	Laser arrays for variable optical properties
United States	US62409144P0	US62/409144	2016-10-17	Matching drive device for multi-beam optoelectronic arrays
United States	US62536918P0	US62/536918	2017-07-25	Single-chip series connected vcsel array
United States	US62545363P0	US62/545363	2017-08-14	Surface-mount compatible vcsel array
United States	US62668750P0	US62/668750	2018-05-08	Wide Angle Illuminator Module
United States	US62767302P0	US62/767302	2018-11-14	In-situ bias voltage measurement of vcsels

Authority	Application #	Filing Date	Title
US	US16/406846	5/8/2019	Wide Angle Illuminator Module
US	US16/828815	3/24/2020	Spatial Multiplexing of Lens Arrays with Surface-Emitting Lasers for Multi-Zone Illumination
US	US16/840003	4/3/2020	System for Optical Free-Space Transmission of a String of Binary Data
US	US16/840030	4/3/2020	Eye-Safe Free-Space Optical Communication Systems
US	US16/840063	4/3/2020	Optical Communications Device for Free-Space Optical Comm
US	US16/917785	6/30/2020	VCSEL Device with Multiple Stacked Active Regions
US	US16/406846	5/8/2019	Wide Angle Illuminator Module
TW	108141455	11/14/2019	In-situ Bias Voltage Measurement of VCSELs
JP	JP2020-508311	2/13/2020	A Surface-Mount Compatible VCSEL Array
JP	JP2020-504029	1/24/2020	A Single-Chip Series Connected VCSEL Array